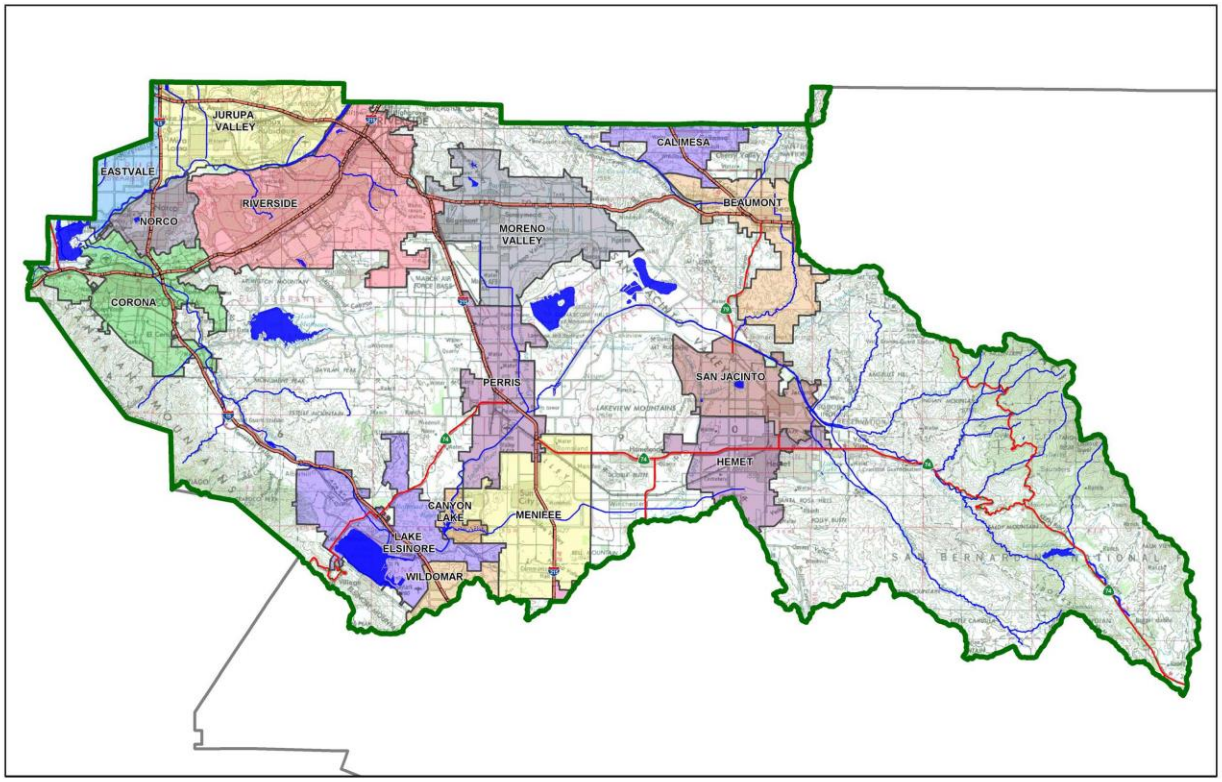
Project Specific Water Quality Management Plan

*A Template for Projects located within the **Santa Ana Watershed** Region of Riverside County*

Project Title: FIR Wilson

Development No: 19-00007



☒ **Preliminary**
☐ **Final**

Original Date Prepared: April 2019

Revision Date(s): August 2019

Prepared for Compliance with
Regional Board Order No. **R8-2013-0024**
Template revised June 30, 2016

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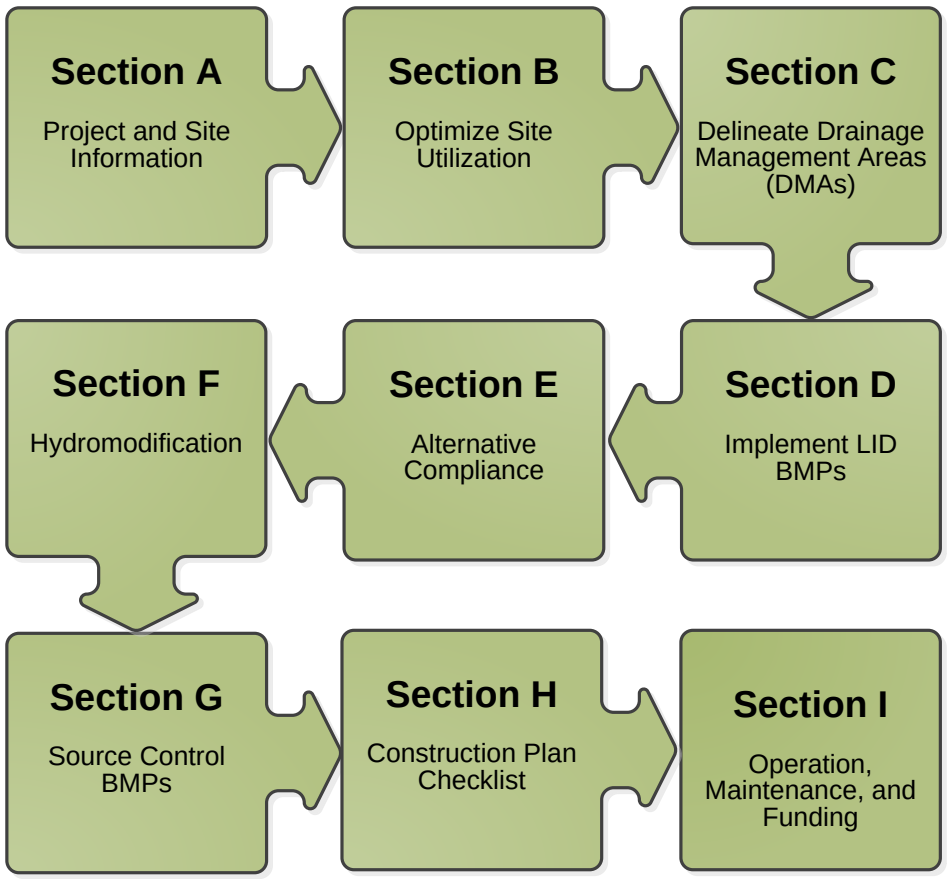
A Brief Introduction

This Project-Specific WQMP Template for the **Santa Ana Region** has been prepared to help guide you in documenting compliance for your project. Because this document has been designed to specifically document compliance, you will need to utilize the WQMP Guidance Document as your "how-to" manual to help guide you through this process. Both the Template and Guidance Document go hand-in-hand, and will help facilitate a well prepared Project-Specific WQMP. Below is a flowchart for the layout of this Template that will provide the steps required to document compliance.



OWNER'S CERTIFICATION

This Project-Specific Water Quality Management Plan (WQMP) has been prepared for First Industrial Realty Trust by Albert A. Webb Associates for the FIR Wilson project (19-00007).

This WQMP is intended to comply with the requirements of City of Perris for Water Quality Ordinance No. 1194 which includes the requirement for the preparation and implementation of a Project-Specific WQMP.

The undersigned, while owning the property/project described in the preceding paragraph, shall be responsible for the implementation and funding of this WQMP and will ensure that this WQMP is amended as appropriate to reflect up-to-date conditions on the site. In addition, the property owner accepts responsibility for interim operation and maintenance of Stormwater BMPs until such time as this responsibility is formally transferred to a subsequent owner. This WQMP will be reviewed with the facility operator, facility supervisors, employees, tenants, maintenance and service contractors, or any other party (or parties) having responsibility for implementing portions of this WQMP. At least one copy of this WQMP will be maintained at the project site or project office in perpetuity. The undersigned is authorized to certify and to approve implementation of this WQMP. The undersigned is aware that implementation of this WQMP is enforceable under City of Perris Water Quality Ordinance (Municipal Code Section 1194).

"I, the undersigned, certify under penalty of law that the provisions of this WQMP have been reviewed and accepted and that the WQMP will be transferred to future successors in interest."

Owner's Signature	Date
Owner's Printed Name	Owner's Title/Position

PREPARER'S CERTIFICATION

"The selection, sizing and design of stormwater treatment and other stormwater quality and quantity control measures in this plan meet the requirements of Regional Water Quality Control Board Order No. **R8-2013-0024** and any subsequent amendments thereto."

Preparer's Signature	Date
D.J. Arellano, PE	Senior Engineer
Preparer's Printed Name	Preparer's Title/Position

Preparer's Licensure:



Table of Contents

Section A: Project and Site Information 6

A.1 Project Description 6
A.2 Maps and Site Plans 7
A.3 Identify Receiving Waters 7
A.4 Additional Permits/Approvals required for the Project: 8

Section B: Optimize Site Utilization (LID Principles) 9

Section C: Delineate Drainage Management Areas (DMAs) 11

Section D: Implement LID BMPs 13

D.1 Infiltration Applicability 13
D.2 Harvest and Use Assessment 14
D.3 Bioretention and Biotreatment Assessment 16
D.4 Feasibility Assessment Summaries 17
D.5 LID BMP Sizing 18

Section E: Alternative Compliance (LID Waiver Program) 19

E.1 Identify Pollutants of Concern 20
E.2 Stormwater Credits 21
E.3 Sizing Criteria 21
E.4 Treatment Control BMP Selection 22

Section F: Hydromodification 23

F.1 Hydrologic Conditions of Concern (HCOC) Analysis 23
F.2 HCOC Mitigation 24

Section G: Source Control BMPs 25

Section H: Construction Plan Checklist 29

Section I: Operation, Maintenance and Funding 30

List of Tables

Table A.1 Identification of Receiving Waters 7
Table A.2 Other Applicable Permits 8
Table C.1 DMA Classifications* 11
Table C.2 Type 'A', Self-Treating Areas 11
Table C.3 Type 'B', Self-Retaining Areas 11
Table C.4 Type 'C', Areas that Drain to Self-Retaining Areas 12
Table C.5 Type 'D', Areas Draining to BMPs 12
Table D.1 Infiltration Feasibility 13
Table D.2 LID Prioritization Summary Matrix 17
Table D.3 DCV Calculations for LID BMPs 18
Table E.1 Potential Pollutants by Land Use Type 20
Table E.2 Water Quality Credits 21
Table E.3 Treatment Control BMP Sizing 21
Table E.4 Treatment Control BMP Selection 22
Table F.1 Hydrologic Conditions of Concern Summary 23
Table G.1 Permanent and Operational Source Control Measures 25
Table H.1 Construction Plan Cross-reference 29

List of Appendices

Appendix 1: Maps and Site Plans 31
Appendix 2: Construction Plans 32
Appendix 3: Soils Information 33
Appendix 4: Historical Site Conditions 34
Appendix 5: LID Infeasibility 35
Appendix 6: BMP Design Details 36
Appendix 7: Hydromodification 37
Appendix 8: Source Control 38
Appendix 9: O&M 39
Appendix 10: Educational Materials 40

Section A: Project and Site Information

PROJECT INFORMATION	
Type of Project:	Commercial/Industrial
Planning Area:	Mead Valley Area Plan
Community Name:	Perris Valley Commerce Center (PVCC) Specific Plan
Development Name:	FIR Wilson
PROJECT LOCATION	
Latitude & Longitude (DMS): 33°49'35.68", -117°12'39.93"	
Project Watershed and Sub-Watershed: Santa Ana, San Jacinto Valley	
Gross Acres: 15.6 APN(s): 300-170-009	
Map Book and Page No.: Thomas Brothers Map: Page 777, Grid J4	
PROJECT CHARACTERISTICS	
Proposed or Potential Land Use(s)	Commercial/Industrial
Proposed or Potential SIC Code(s)- **1541** (General Contractors-Industrial Building), **4225** (General Warehousing & Storage)	
Area of Impervious Project Footprint (SF)	513,787
Total Area of proposed Impervious Surfaces within the Project Footprint (SF)/or Replacement	513,787
Does the project consist of offsite road improvements?	☐ Y ☒ N
Does the project propose to construct unpaved roads?	☐ Y ☒ N
Is the project part of a larger common plan of development (phased project)?	☐ Y ☒ N
EXISTING SITE CHARACTERISTICS	
Total area of existing Impervious Surfaces within the Project limits Footprint (SF)	0
Is the project located within any MSHCP Criteria Cell?	☐ Y ☒ N
If so, identify the Cell number:	N/A
Are there any natural hydrologic features on the project site?	☐ Y ☒ N
Is a Geotechnical Report attached?	☒ Y ☐ N
If no Geotech. Report, list the NRCS soils type(s) present on the site (A, B, C and/or D)	N/A
What is the Water Quality Design Storm Depth for the project?	0.65

A.1 Project Description

The FIR Wilson Project is located south of Rider Street, north of Placentia Avenue and situated between Wilson Avenue and the Perris Valley Storm Drain Channel. The existing land use is vacant and barren with minimal vegetative scrub. The existing topography slopes approximately 0.2% in a northwest to southeast direction. Existing elevations range from approximately 1441 in the northwest corner to approximately 1438 in the southeast corner (NAVD 88). The existing drainage path is characterized by sheet flows that follow the existing topography and discharge into the Perris Valley Storm Drain Channel. The site currently does not experience any concentrated run-on flows.

The planned site conditions will propose a commercial/industrial warehouse (approximately 297,020 square-feet) on roughly 13.7 acres. The project proposes truck and auto parking as well as about 13% landscaped area. All on-site flows generated from the project will be collected by a proposed bio-retention basin which will treat the runoff for water quality level storm events and discharge high level storm events into the Perris Valley Storm Drain Channel. The bio-retention basin will have 2.4' of

engineered media over 1-foot of gravel, and it will have a water quality ponding depth of 6-inches. It will also have the required bottom area to fully treat the water quality volume.

The proposed project is within an HCOC exemption area. Proposed land use flowrates will not be required to match existing land use flowrates.

The project is located within the Perris Valley Commerce Center (PVCC) specific plan and is also within the Perris Valley Master Drainage Plan (PVMDP) adopted July 1987 and revised June 1991. This project is tabled to discharge into MDP Line A-C, which does not currently exist. However, WEBB believes that construction of this MDP facility is not the burden of this development. The alignment of Line A-C crosses Wilson Avenue at an existing low point via a cross gutter roughly 200' south of the project's southerly property line, not through the project site. In addition, the proposed RCTC Mid County Parkway (MCP) – currently in the early stages of design - runs directly through the Line A-C alignment and surrounding surface draining tributary areas (see Appendix A). The MCP will change these areas and drainage paths, so the mitigation of these impacts – including Line A-C dissolution - is the burden of the MCP project. Accordingly, WEBB proposes to connect this development directly to the Perris Valley Storm Drain Channel from the southeasterly basin.

A.2 Maps and Site Plans

When completing your Project-Specific WQMP, include a map of the local vicinity and existing site. In addition, include all grading, drainage, landscape/plant palette and other pertinent construction plans in Appendix 2. At a **minimum**, your WQMP Site Plan should include the following:

- Drainage Management Areas
- Proposed Structural BMPs
- Drainage Path
- Drainage Infrastructure, Inlets, Overflows
- Source Control BMPs
- Buildings, Roof Lines, Downspouts
- Impervious Surfaces
- Standard Labeling
- BMP Locations (Lat/Long)

Use your discretion on whether or not you may need to create multiple sheets or can appropriately accommodate these features on one or two sheets. Keep in mind that the Co-Permittee plan reviewer must be able to easily analyze your project utilizing this template and its associated site plans and maps.

A.3 Identify Receiving Waters

Using Table A.1 below, list in order of upstream to downstream, the receiving waters that the project site is tributary to. Continue to fill each row with the Receiving Water's 303(d) listed impairments (if any), designated beneficial uses, and proximity, if any, to a RARE beneficial use. Include a map of the receiving waters in Appendix 1.

Table A.1 Identification of Receiving Waters

Receiving Waters	EPA Approved 303(d) List Impairments	Designated Beneficial Uses	Proximity to RARE Beneficial Use
Perris Valley Storm Drain Channel	None	None	Not a water body classified as RARE
San Jacinto River (Reach 3) (HU# 802.11)	None	Intermittent: MUN, AGR, GWR, REC1, REC2, WARM, WILD	Not a water body classified as RARE

San Jacinto River (Reach 2) (HU# 802.11)	None	Intermittent: MUN, AGR, GWR, REC1, REC2, WARM, WILD	Not a water body classified as RARE
Canyon Lake (HU# 802.11, 802.12)	Nutrients, Pathogens	MUN, AGR, GWR, REC1, REC2, WARM, WILD	Not a water body classified as RARE
San Jacinto River (Reach 1) (HU# 802.31, 802.32)	None	MUN, AGR, GWR, REC1, REC2, WARM, WILD	Not a water body classified as RARE
Lake Elsinore (HU# 802.31)	PCBs, (Organic Compound), Nutrients, Organic Enrichment (Low DO), Sediment Toxicity, Unknown Toxicity	REC1, REC2, WARM, WILD	Not a water body classified as RARE

A.4 Additional Permits/Approvals required for the Project:

Table A.2 Other Applicable Permits

Agency	Permit Required	
State Department of Fish and Game, 1602 Streambed Alteration Agreement	☐ Y	☒ N
State Water Resources Control Board, Clean Water Act (CWA) Section 401 Water Quality Cert.	☐ Y	☒ N
US Army Corps of Engineers, CWA Section 404 Permit	☐ Y	☒ N
US Fish and Wildlife, Endangered Species Act Section 7 Biological Opinion	☐ Y	☒ N
Statewide Construction General Permit Coverage	☒ Y	☐ N
Statewide Industrial General Permit Coverage	☒ Y	☐ N
Western Riverside MSHCP Consistency Approval (e.g., JPR, DBESP)	☐ Y	☐ N
Other *(please list in the space below as required)* Grading Permit	☒ Y	☐ N

If yes is answered to any of the questions above, the Co-Permittee may require proof of approval/coverage from those agencies as applicable including documentation of any associated requirements that may affect this Project-Specific WQMP.

Section B: Optimize Site Utilization (LID Principles)

Review of the information collected in Section 'A' will aid in identifying the principal constraints on site design and selection of LID BMPs as well as opportunities to reduce imperviousness and incorporate LID Principles into the site and landscape design. For example, **constraints** might include impermeable soils, high groundwater, groundwater pollution or contaminated soils, steep slopes, geotechnical instability, high-intensity land use, heavy pedestrian or vehicular traffic, utility locations or safety concerns. **Opportunities** might include existing natural areas, low areas, oddly configured or otherwise unbuildable parcels, easements and landscape amenities including open space and buffers (which can double as locations for bioretention BMPs), and differences in elevation (which can provide hydraulic head). Prepare a brief narrative for each of the site optimization strategies described below. This narrative will help you as you proceed with your LID design and explain your design decisions to others.

The 2010 Santa Ana MS4 Permit further requires that LID Retention BMPs (Infiltration Only or Harvest and Use) be used unless it can be shown that those BMPs are infeasible. Therefore, it is important that your narrative identify and justify if there are any constraints that would prevent the use of those categories of LID BMPs. Similarly, you should also note opportunities that exist which will be utilized during project design. Upon completion of identifying Constraints and Opportunities, include these on your WQMP Site plan in Appendix 1.

Consideration of "highest and best use" of the discharge should also be considered. For example, Lake Elsinore is evaporating faster than runoff from natural precipitation can recharge it. Requiring infiltration of 85% of runoff events for projects tributary to Lake Elsinore would only exacerbate current water quality problems associated with Pollutant concentration due to lake water evaporation. In cases where rainfall events have low potential to recharge Lake Elsinore (i.e. no hydraulic connection between groundwater to Lake Elsinore, or other factors), requiring infiltration of Urban Runoff from projects is counterproductive to the overall watershed goals. Project proponents, in these cases, would be allowed to discharge Urban Runoff, provided they used equally effective filtration-based BMPs.

Site Optimization

The following questions are based upon Section 3.2 of the WQMP Guidance Document. Review of the WQMP Guidance Document will help you determine how best to optimize your site and subsequently identify opportunities and/or constraints, and document compliance.

Did you identify and preserve existing drainage patterns? If so, how? If not, why?

The natural drainage patterns have generally been preserved. The proposed site conveys flows from the northwest to the southeast into the proposed bio-retention basin in the southeast corner.

Did you identify and protect existing vegetation? If so, how? If not, why?

The existing project site is vacant with little to no vegetative scrub. Dense vegetation areas with established trees do not exist.

Did you identify and preserve natural infiltration capacity? If so, how? If not, why?

Per the attached infiltration and geotechnical reports, the recommended design infiltration rate is 1.25 in/hr. This is below the recommended 1.6 in/hr for infiltration BMPs; therefore infiltration is not feasible for this site.

Did you identify and minimize impervious area? If so, how? If not, why?

Impervious areas were minimized given the proposed site usage and required parameters.

Did you identify and disperse runoff to adjacent pervious areas? If so, how? If not, why?

Runoff will be routed towards the proposed bio-retention basin. There are some landscape areas that may be converted to self-retaining areas during final engineering, but for this preliminary report landscaped areas will be analyzed as type D to remain conservative in the basin water quality design.

Section C: Delineate Drainage Management Areas (DMAs)

Utilizing the procedure in Section 3.3 of the WQMP Guidance Document which discusses the methods of delineating and mapping your project site into individual DMAs, complete Table C.1 below to appropriately categorize the types of classification (e.g., Type A, Type B, etc.) per DMA for your project site. Upon completion of this table, this information will then be used to populate and tabulate the corresponding tables for their respective DMA classifications.

Table C.1 DMA Classifications*

DMA Name or ID	Surface Type(s)[1][2]	Area (Sq. Ft.)	DMA Type
L-A	ROOF		D
R-A	HARDSCAPE		D
H-A	LANDSCAPE		D
BMP-A	LANDSCAPE		D

[1]*Reference Table 2-1 in the WQMP Guidance Document to populate this column*
[2]*If multi-surface provide back-up*
*Self-retaining area exists, but they weren't used in order to remain conservative with basin sizing. They will be looked at further during the final WQMP.

Table C.2 Type 'A', Self-Treating Areas

DMA Name or ID	Area (Sq. Ft.)	Stabilization Type	Irrigation Type (if any)

Table C.3 Type 'B', Self-Retaining Areas

Self-Retaining Area				**Type 'C' DMAs that are draining to the Self-Retaining Area**		
DMA Name/ ID	Post-project surface type	Area (square feet) [A]	Storm Depth (inches) [B]	DMA Name / ID	[C] from Table C.4 = [C]	Required Retention Depth (inches) [D]

$$[D] = [B] + \frac{[B] \cdot [C]}{[A]}$$

Table C.4 Type 'C', Areas that Drain to Self-Retaining Areas

DMA					Receiving Self-Retaining DMA		
DMA Name/ ID	Area (square feet)	Post-project surface type	Impervious fraction	Product		Area (square feet)	Ratio
	[A]		[B]	[C] = [A] x [B]	DMA name /ID	[D]	[C]/[D]

Table C.5 Type 'D', Areas Draining to BMPs

DMA Name or ID	BMP Name or ID
L-A	BMP-A
R-A	
H-A	

Note: More than one drainage management area can drain to a single LID BMP, however, one drainage management area may not drain to more than one BMP.

Section D: Implement LID BMPs

D.1 Infiltration Applicability

Is there an approved downstream 'Highest and Best Use' for stormwater runoff (see discussion in Chapter 2.4.4 of the WQMP Guidance Document for further details)? ☐ Y ☒ N

If yes has been checked, Infiltration BMPs shall not be used for the site; proceed to section D.3

If no, continue working through this section to implement your LID BMPs. It is recommended that you contact your Co-Permittee to verify whether or not your project discharges to an approved downstream 'Highest and Best Use' feature.

Geotechnical Report

A Geotechnical Report or Phase I Environmental Site Assessment may be required by the Copermittee to confirm present and past site characteristics that may affect the use of Infiltration BMPs. In addition, the Co-Permittee, at their discretion, may not require a geotechnical report for small projects as described in Chapter 2 of the WQMP Guidance Document. If a geotechnical report has been prepared, include it in Appendix 3. In addition, if a Phase I Environmental Site Assessment has been prepared, include it in Appendix 4.

Is this project classified as a small project consistent with the requirements of Chapter 2 of the WQMP Guidance Document? ☐ Y ☒ N

Infiltration Feasibility

Table D.1 below is meant to provide a simple means of assessing which DMAs on your site support Infiltration BMPs and is discussed in the WQMP Guidance Document in Chapter 2.4.5. Check the appropriate box for each question and then list affected DMAs as applicable. If additional space is needed, add a row below the corresponding answer.

Table D.1 Infiltration Feasibility

Does the project site…	YES	NO
…have any DMAs with a seasonal high groundwater mark shallower than 10 feet?		X
If Yes, list affected DMAs:		
…have any DMAs located within 100 feet of a water supply well?		X
If Yes, list affected DMAs:		
…have any areas identified by the geotechnical report as posing a public safety risk where infiltration of stormwater could have a negative impact?		X
If Yes, list affected DMAs:		
…have measured in-situ infiltration rates of less than 1.6 inches / hour?	X	
If Yes, list affected DMAs: **DMA-A: 1.25 in/hr**		
…have significant cut and/or fill conditions that would preclude in-situ testing of infiltration rates at the final infiltration surface?		X
If Yes, list affected DMAs:		
…geotechnical report identify other site-specific factors that would preclude effective and safe infiltration?		X
Describe here:		

If you answered "Yes" to any of the questions above for any DMA, Infiltration BMPs should not be used for those DMAs and you should proceed to the assessment for Harvest and Use below.

D.2 Harvest and Use Assessment

Please check what applies*:*

☒ Reclaimed water will be used for the non-potable water demands for the project.

☐Downstream water rights may be impacted by Harvest and Use as approved by the Regional Board (verify with the Copermittee).

☐The Design Capture Volume will be addressed using Infiltration Only BMPs. In such a case, Harvest and Use BMPs are still encouraged, but it would not be required if the Design Capture Volume will be infiltrated or evapotranspired.

If any of the above boxes have been checked, Harvest and Use BMPs need not be assessed for the site. If none of the above criteria applies, follow the steps below to assess the feasibility of irrigation use, toilet use and other non-potable uses (e.g., industrial use).

Irrigation Use Feasibility

Complete the following steps to determine the feasibility of harvesting stormwater runoff for Irrigation Use BMPs on your site:

Step 1: Identify the total area of irrigated landscape on the site, and the type of landscaping used.

Total Area of Irrigated Landscape: Insert Area (Acres)

Type of Landscaping (Conservation Design or Active Turf): List Landscaping Type

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for irrigation use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: Insert Area (Acres)

Step 3: Cross reference the Design Storm depth for the project site (see Exhibit A of the WQMP Guidance Document) with the left column of Table 2-3 in Chapter 2 to determine the minimum area of Effective Irrigated Area per Tributary Impervious Area (EIATIA).

Enter your EIATIA factor: EIATIA Factor

Step 4: Multiply the unit value obtained from Step 3 by the total of impervious areas from Step 2 to develop the minimum irrigated area that would be required.

Minimum required irrigated area: Insert Area (Acres)

Step 5: Determine if harvesting stormwater runoff for irrigation use is feasible for the project by comparing the total area of irrigated landscape (Step 1) to the minimum required irrigated area (Step 4).

Minimum required irrigated area (Step 4)	Available Irrigated Landscape (Step 1)
Insert Area (Acres)	Insert Area (Acres)

Toilet Use Feasibility

Complete the following steps to determine the feasibility of harvesting stormwater runoff for toilet flushing uses on your site:

Step 1: Identify the projected total number of daily toilet users during the wet season, and account for any periodic shut downs or other lapses in occupancy:

Projected Number of Daily Toilet Users: Number of daily Toilet Users

Project Type: Enter 'Residential', 'Commercial', 'Industrial' or 'Schools'

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for toilet use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: Insert Area (Acres)

Step 3: Enter the Design Storm depth for the project site (see Exhibit A) into the left column of Table 2-2 in Chapter 2 to determine the minimum number or toilet users per tributary impervious acre (TUTIA).

Enter your TUTIA factor: TUTIA Factor

Step 4: Multiply the unit value obtained from Step 3 by the total of impervious areas from Step 2 to develop the minimum number of toilet users that would be required.

Minimum number of toilet users: Required number of toilet users

Step 5: Determine if harvesting stormwater runoff for toilet flushing use is feasible for the project by comparing the Number of Daily Toilet Users (Step 1) to the minimum required number of toilet users (Step 4).

Minimum required Toilet Users (Step 4)	**Projected number of toilet users (Step 1)**
Insert Area (Acres)	Insert Area (Acres)

Other Non-Potable Use Feasibility

Are there other non-potable uses for stormwater runoff on the site (e.g. industrial use)? See Chapter 2 of the Guidance for further information. If yes, describe below. If no, write N/A.

Insert narrative description here.

Step 1: Identify the projected average daily non-potable demand, in gallons per day, during the wet season and accounting for any periodic shut downs or other lapses in occupancy or operation.

Average Daily Demand: Projected Average Daily Use (gpd)

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for the identified non-potable use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: Insert Area (Acres)

Step 3: Enter the Design Storm depth for the project site (see Exhibit A) into the left column of Table 2-4 in Chapter 2 to determine the minimum demand for non-potable uses per tributary impervious acre.

Enter the factor from Table 2-4: Enter Value

Step 4: Multiply the unit value obtained from Step 3 by the total of impervious areas from Step 2 to develop the minimum number of gallons per day of non-potable use that would be required.

Minimum required use: Minimum use required (gpd)

Step 5: Determine if harvesting stormwater runoff for other non-potable use is feasible for the project by comparing the projected average daily use (Step 1) to the minimum required non-potable use (Step 4).

Minimum required non-potable use (Step 4)	**Projected average daily use (Step 1)**
Minimum use required (gpd)	Projected Average Daily Use (gpd)

If Irrigation, Toilet and Other Use feasibility anticipated demands are less than the applicable minimum values, Harvest and Use BMPs are not required and you should proceed to utilize LID Bioretention and Biotreatment per Section 3.4.2 of the WQMP Guidance Document.

D.3 Bioretention and Biotreatment Assessment

Other LID Bioretention and Biotreatment BMPs as described in Chapter 2.4.7 of the WQMP Guidance Document are feasible on nearly all development sites with sufficient advance planning.

Select one of the following:

☒ LID Bioretention/Biotreatment BMPs will be used for some or all DMAs of the project as noted below in Section D.4 (note the requirements of Section 3.4.2 in the WQMP Guidance Document).

☐ A site-specific analysis demonstrating the technical infeasibility of all LID BMPs has been performed and is included in Appendix 5. If you plan to submit an analysis demonstrating the technical infeasibility of LID BMPs, request a pre-submittal meeting with the Copermittee to discuss this option. Proceed to Section E to document your alternative compliance measures.

D.4 Feasibility Assessment Summaries

From the Infiltration, Harvest and Use, Bioretention and Biotreatment Sections above, complete Table D.2 below to summarize which LID BMPs are technically feasible, and which are not, based upon the established hierarchy.

Table D.2 LID Prioritization Summary Matrix

DMA Name/ID	LID BMP Hierarchy				No LID (Alternative Compliance)
	1. Infiltration	2. Harvest and use	3. Bioretention	4. Biotreatment	
DMA-A	☐	☐	☒	☐	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐

For those DMAs where LID BMPs are not feasible, provide a brief narrative below summarizing why they are not feasible, include your technical infeasibility criteria in Appendix 5, and proceed to Section E below to document Alternative Compliance measures for those DMAs. Recall that each proposed DMA must pass through the LID BMP hierarchy before alternative compliance measures may be considered.

All runoff generated from DMA-A will be treated by Bio-Retention Basin A.

D.5 LID BMP Sizing

Each LID BMP must be designed to ensure that the Design Capture Volume will be addressed by the selected BMPs. First**,** calculate the Design Capture Volume for each LID BMP using the V_{BMP} worksheet in Appendix F of the LID BMP Design Handbook. Second**,** design the LID BMP to meet the required V_{BMP} using a method approved by the Copermittee. Utilize the worksheets found in the LID BMP Design Handbook or consult with your Copermittee to assist you in correctly sizing your LID BMPs. Complete Table D.3 below to document the Design Capture Volume and the Proposed Volume for each LID BMP. Provide the completed design procedure sheets for each LID BMP in Appendix 6. You may add additional rows to the table below as needed.

Table D.3 DCV Calculations for LID BMPs

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Enter BMP Name / Identifier Here*		
	[A]		[B]	[C]	[A] x [C]			
L-A	64,800	LANDSCAPE	0.1	0.11	7,157.7			
R-A	297,020	ROOFS	1	0.89	264,941.8			
H-A	216,767	HARDSCAPE	1	0.89	193,356.2			
BMP-A	15,746	LANDSCAPE	0.1	0.11	1,739.3			
	594,333				467,195	0.65	25,306.4	***25,310***

Design Storm Depth (in)

Design Capture Volume, V_{BMP} *(cubic feet)*

Proposed Volume on Plans (cubic feet)

[B], [C] is obtained as described in Section 2.3.1 of the WQMP Guidance Document

[E] is obtained from Exhibit A in the WQMP Guidance Document

[G] is obtained from a design procedure sheet, such as in LID BMP Design Handbook and placed in Appendix 6

Section E: Alternative Compliance (LID Waiver Program)

LID BMPs are expected to be feasible on virtually all projects. Where LID BMPs have been demonstrated to be infeasible as documented in Section D, other Treatment Control BMPs must be used (subject to LID waiver approval by the Copermittee). Check one of the following Boxes:

☒ LID Principles and LID BMPs have been incorporated into the site design to fully address all Drainage Management Areas. No alternative compliance measures are required for this project and thus this Section is not required to be completed.

- Or -

☐ The following Drainage Management Areas are unable to be addressed using LID BMPs. A site-specific analysis demonstrating technical infeasibility of LID BMPs has been approved by the Co-Permittee and included in Appendix 5. Additionally, no downstream regional and/or sub-regional LID BMPs exist or are available for use by the project. The following alternative compliance measures on the following pages are being implemented to ensure that any pollutant loads expected to be discharged by not incorporating LID BMPs, are fully mitigated.

E.1 Identify Pollutants of Concern

Utilizing Table A.1 from Section A above which noted your project's receiving waters and their associated EPA approved 303(d) listed impairments, cross reference this information with that of your selected Priority Development Project Category in Table E.1 below. If the identified General Pollutant Categories are the same as those listed for your receiving waters, then these will be your Pollutants of Concern and the appropriate box or boxes will be checked on the last row. The purpose of this is to document compliance and to help you appropriately plan for mitigating your Pollutants of Concern in lieu of implementing LID BMPs.

Table E.1 Potential Pollutants by Land Use Type

Priority Development Project Categories and/or Project Features (check those that apply)	General Pollutant Categories							
	Bacterial Indicators	Metals	Nutrients	Pesticides	Toxic Organic Compounds	Sediments	Trash & Debris	Oil & Grease
☐ Detached Residential Development	P	N	P	P	N	P	P	P
☐ Attached Residential Development	P	N	P	P	N	P	P	P(2)
☒ Commercial/Industrial Development	P(3)	P	P(1)	P(1)	P(5)	P(1)	P	P
☐ Automotive Repair Shops	N	P	N	N	P(4, 5)	N	P	P
☐ Restaurants (>5,000 ft^2)	P	N	N	N	N	N	P	P
☐ Hillside Development (>5,000 ft^2)	P	N	P	P	N	P	P	P
☒ Parking Lots (>5,000 ft^2)	P(6)	P	P(1)	P(1)	P(4)	P(1)	P	P
☐ Retail Gasoline Outlets	N	P	N	N	P	N	P	P
Project Priority Pollutant(s) of Concern	☒	☒	☒	☒	☒	☒	☒	☒

P = Potential

N = Not Potential

(1) A potential Pollutant if non-native landscaping exists or is proposed onsite; otherwise not expected

(2) A potential Pollutant if the project includes uncovered parking areas; otherwise not expected

(3) A potential Pollutant is land use involving animal waste

(4) Specifically petroleum hydrocarbons

(5) Specifically solvents

(6) Bacterial indicators are routinely detected in pavement runoff

E.2 Stormwater Credits

Projects that cannot implement LID BMPs but nevertheless implement smart growth principles are potentially eligible for Stormwater Credits. Utilize Table 3-8 within the WQMP Guidance Document to identify your Project Category and its associated Water Quality Credit. If not applicable, write N/A.

Table E.2 Water Quality Credits

Qualifying Project Categories	Credit Percentage[2]
N/A	
Total Credit Percentage[1]	

[1]*Cannot Exceed 50%*
[2]*Obtain corresponding data from Table 3-8 in the WQMP Guidance Document*

E.3 Sizing Criteria

After you appropriately considered Stormwater Credits for your project, utilize Table E.3 below to appropriately size them to the DCV, or Design Flow Rate, as applicable. Please reference Chapter 3.5.2 of the WQMP Guidance Document for further information.

Table E.3 Treatment Control BMP Sizing

DMA Type/ID	**DMA Area (square feet)**	**Post-Project Surface Type**	**Effective Impervious Fraction, I_f**	**DMA Runoff Factor**	**DMA Area x Runoff Factor**		***Enter BMP Name / Identifier Here***		
	[A]		[B]	[C]	[A] x [C]				
N/A						*Design Storm Depth (in)*	*Minimum Design Capture Volume or Design Flow Rate (cubic feet or cfs)*	*Total Storm Water Credit % Reduction*	*Proposed Volume or Flow on Plans (cubic feet or cfs)*
	A_T = Σ[A]				Σ= [D]	[E]	$[F] = \frac{[D]x[E]}{[G]}$	[F] X (1-[H])	[I]

[B], [C] is obtained as described in Section 2.3.1 from the WQMP Guidance Document
[E] is for Flow-Based Treatment Control BMPs [E] = .2, for Volume-Based Control Treatment BMPs, [E] obtained from Exhibit A in the WQMP Guidance Document
[G] is for Flow-Based Treatment Control BMPs [G] = 43,560, for Volume-Based Control Treatment BMPs, [G] = 12
[H] is from the Total Credit Percentage as Calculated from Table E.2 above
[I] as obtained from a design procedure sheet from the BMP manufacturer and should be included in Appendix 6

E.4 Treatment Control BMP Selection

Treatment Control BMPs typically provide proprietary treatment mechanisms to treat potential pollutants in runoff, but do not sustain significant biological processes. Treatment Control BMPs must have a removal efficiency of a medium or high effectiveness as quantified below:

- **High**: equal to or greater than 80% removal efficiency
- **Medium**: between 40% and 80% removal efficiency

Such removal efficiency documentation (e.g., studies, reports, etc.) as further discussed in Chapter 3.5.2 of the WQMP Guidance Document, must be included in Appendix 6. In addition, ensure that proposed Treatment Control BMPs are properly identified on the WQMP Site Plan in Appendix 1.

Table E.4 Treatment Control BMP Selection

Selected Treatment Control BMP Name or ID[1]	Priority Pollutant(s) of Concern to Mitigate[2]	Removal Efficiency Percentage[3]

[1] Treatment Control BMPs must not be constructed within Receiving Waters. In addition, a proposed Treatment Control BMP may be listed more than once if they possess more than one qualifying pollutant removal efficiency.

[2] Cross Reference Table E.1 above to populate this column.

[3] As documented in a Co-Permittee Approved Study and provided in Appendix 6.

Section F: Hydromodification

F.1 Hydrologic Conditions of Concern (HCOC) Analysis

Once you have determined that the LID design is adequate to address water quality requirements, you will need to assess if the proposed LID Design may still create a HCOC. Review Chapters 2 and 3 (including Figure 3-7) of the WQMP Guidance Document to determine if your project must mitigate for Hydromodification impacts. If your project meets one of the following criteria which will be indicated by the check boxes below, you do not need to address Hydromodification at this time. However, if the project does not qualify for Exemptions 1, 2 or 3, then additional measures must be added to the design to comply with HCOC criteria. This is discussed in further detail below in Section F.2.

HCOC EXEMPTION 1: The Priority Development Project disturbs less than one acre. The Copermittee has the discretion to require a Project-Specific WQMP to address HCOCs on projects less than one acre on a case by case basis. The disturbed area calculation should include all disturbances associated with larger common plans of development.

Does the project qualify for this HCOC Exemption? ☐ Y ☒ N

If Yes, HCOC criteria do not apply.

HCOC EXEMPTION 2: The volume and time of concentration[1] of storm water runoff for the post-development condition is not significantly different from the pre-development condition for a 2-year return frequency storm (a difference of 5% or less is considered insignificant) using one of the following methods to calculate:

- Riverside County Hydrology Manual
- Technical Release 55 (TR-55): Urban Hydrology for Small Watersheds (NRCS 1986), or derivatives thereof, such as the Santa Barbara Urban Hydrograph Method
- Other methods acceptable to the Co-Permittee

Does the project qualify for this HCOC Exemption? ☐ Y ☒ N

If Yes, report results in Table F.1 below and provide your substantiated hydrologic analysis in Appendix 7.

Table F.1 Hydrologic Conditions of Concern Summary

	2 year – 24 hour		
	Pre-condition	**Post-condition**	**% Difference**
Time of Concentration	INSERT VALUE	INSERT VALUE	INSERT VALUE
Volume (Cubic Feet)	INSERT VALUE	INSERT VALUE	INSERT VALUE

[1] Time of concentration is defined as the time after the beginning of the rainfall when all portions of the drainage basin are contributing to flow at the outlet.

HCOC EXEMPTION 3: All downstream conveyance channels to an adequate sump (for example, Prado Dam, Lake Elsinore, Canyon Lake, Santa Ana River, or other lake, reservoir or naturally erosion resistant feature) that will receive runoff from the project are engineered and regularly maintained to ensure design flow capacity; no sensitive stream habitat areas will be adversely affected; or are not identified on the Co-Permittees Hydromodification Susceptibility Maps.

Does the project qualify for this HCOC Exemption? ☐ Y ☒ N

If Yes, HCOC criteria do not apply and note below which adequate sump applies to this HCOC qualifier:

F.2 HCOC Mitigation

If none of the above HCOC Exemption Criteria are applicable, HCOC criteria is considered mitigated if they meet one of the following conditions:

a. Additional LID BMPS are implemented onsite or offsite to mitigate potential erosion or habitat impacts as a result of HCOCs. This can be conducted by an evaluation of site-specific conditions utilizing accepted professional methodologies published by entities such as the California Stormwater Quality Association (CASQA), the Southern California Coastal Water Research Project (SCCRWP), or other Co-Permittee approved methodologies for site-specific HCOC analysis.

b. The project is developed consistent with an approved Watershed Action Plan that addresses HCOC in Receiving Waters.

c. Mimicking the pre-development hydrograph with the post-development hydrograph, for a 2-year return frequency storm. Generally, the hydrologic conditions of concern are not significant, if the post-development hydrograph is no more than 10% greater than pre-development hydrograph. In cases where excess volume cannot be infiltrated or captured and reused, discharge from the site must be limited to a flow rate no greater than 110% of the pre-development 2-year peak flow.

Be sure to include all pertinent documentation used in your analysis of the items a, b or c in Appendix 7.

The project is located within the HCOC Exemption area as found in the approved Riverside County HCOC Applicability Map dated April 20, 2017. See Appendix 7 for approved HCOC Applicability Map.

Section G: Source Control BMPs

Source control BMPs include permanent, structural features that may be required in your project plans — such as roofs over and berms around trash and recycling areas — and Operational BMPs, such as regular sweeping and "housekeeping", that must be implemented by the site's occupant or user. The MEP standard typically requires both types of BMPs. In general, Operational BMPs cannot be substituted for a feasible and effective permanent BMP. Using the Pollutant Sources/Source Control Checklist in Appendix 8, review the following procedure to specify Source Control BMPs for your site:

1. ***Identify Pollutant Sources*:** Review Column 1 in the Pollutant Sources/Source Control Checklist. Check off the potential sources of Pollutants that apply to your site.

2. ***Note Locations on Project-Specific WQMP Exhibit*:** Note the corresponding requirements listed in Column 2 of the Pollutant Sources/Source Control Checklist. Show the location of each Pollutant source and each permanent Source Control BMP in your Project-Specific WQMP Exhibit located in Appendix 1.

3. ***Prepare a Table and Narrative*:** Check off the corresponding requirements listed in Column 3 in the Pollutant Sources/Source Control Checklist. In the left column of Table G.1 below, list each potential source of runoff Pollutants on your site (from those that you checked in the Pollutant Sources/Source Control Checklist). In the middle column, list the corresponding permanent, Structural Source Control BMPs (from Columns 2 and 3 of the Pollutant Sources/Source Control Checklist) used to prevent Pollutants from entering runoff. **Add additional narrative** in this column that explains any special features, materials or methods of construction that will be used to implement these permanent, Structural Source Control BMPs.

4. ***Identify Operational Source Control BMPs:*** To complete your table, refer once again to the Pollutant Sources/Source Control Checklist. List in the right column of your table the Operational BMPs that should be implemented as long as the anticipated activities continue at the site. Copermittee stormwater ordinances require that applicable Source Control BMPs be implemented; the same BMPs may also be required as a condition of a use permit or other revocable Discretionary Approval for use of the site.

Table G.1 Permanent and Operational Source Control Measures

Potential Sources of Runoff pollutants	Permanent Structural Source Control BMPs	Operational Source Control BMPs
A. On-site storm drain inlets	*Mark all inlets with the works "Only Rain Down the Storm Drain" or similar. Catch Basin Markers may be available from the Riverside County Flood Control and Water Conservation District, call 951-955-1200 to verify.*	*Maintain and periodically repaint or replace inlet markings.* *Provide stormwater pollution prevention information to new site owners, lessees, or operators.* *See applicable operational BMPs in Fact Sheet SC-44, "Drainage System Maintenance," in Appendix 10 (CASQA Stormwater Quality Handbook at www.cabmphandbooks.com*

	On-site drainage structures, including all storm drain clean outs, area drains, inlets, catch basins, inlet & outlet structures, forebays, & water treatment control basins shall be inspected and maintained on a regular basis to insure their operational adequacy.	*Include the following in lessee agreements: "Tenants shall not allow anyone to discharge anything to storm drains or to store or deposit materials so as to create a potential discharge to storm drains"* *Maintenance should include removal of trash, debris, & sediment and the repair of any deficiencies or damage that may impact water quality.*
B. Interior floor drains and elevator shaft sump	*The interior floor drains and elevator shaft sump pumps will be plumbed to sanitary sewer*	*Inspect and maintain drains to prevent blockages and overflow.*
C. Landscape/Outdoor Pesticide Use	*The final landscape shall be designed to accomplish all of the following:* *Preserve existing native trees, shrubs and ground cover to the maximum extent possible.* *Design landscape to minimize irrigation and runoff, to promote surface infiltration where appropriate and to minimize the use of fertilizers and pesticides that can contribute to stormwater pollution.* *Where landscaped areas are used to retain or detain stormwater, specify plants that are tolerant of saturated soil conditions.* *Consider using pest-resistant plants, especially adjacent to hardscape.* *To insure successful establishments, select plants appropriate to site, soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency and plant interactions.* *Pesticide usage should be at a necessary minimum and be consistent with the instructions contained on product labels and with the regulations administered by the State Department of Pesticide Regulation. Pesticides should be used at an absolute minimum or not at all in the retention/infiltration basin. If*	*Maintain landscaping using minimum or no pesticides.* *See applicable operational BMPs in "What you should know for…. Landscape and Gardening" at http://rcflood.org/stormwater and Appendix 10.* *Provide IPM information to new owners, lessees and operators.* *Landscape maintenance should include mowing, weeding, trimming, removal of trash & debris, repair of erosion, re-vegetation, and removal of cut & dead vegetation.* *Irrigation maintenance should include the repair of leaky or broken sprinkler heads, the maintaining of timing apparatus accuracy, and the maintaining of shut off valves in good working order.*

	used, it should not be applied in close proximity to the rainy season.	
D. Refuse Trash Storage areas	*Trash container storage areas shall be paved with an impervious surface, designed not to allow run-on from adjoining areas, designed to divert drainage from adjoining roofs and pavements from the surrounding area, and screened or walled to prevent off-site transport of trash.* *Trash dumpsters (containers) shall be leak proof and have attached covers or lids.* *Trash enclosures shall be roofed per City standards and the details on the PWQMP Exhibit in Appendix 1.* *Trash compactors shall be roofed and set on a concrete pad per City standards. The pad shall be a minimum of one foot larger all around than the trash compactor and sloped to drain to a sanitary sewer line. Connection of trash area drains to the MS4 is prohibited.* *See CASQA SD-32 BMP Fact Sheets in Appendix 10 for additional information.* *Signs shall be posted on or near dumpsters with the words "Do not dump hazardous materials here" or similar.*	*Adequate number of receptacles shall be provided. Inspect receptacles regularly; repair or replace leaky receptacles. Keep receptacles covered. Prohibit/prevent dumping of liquid or hazardous wastes. Post "no hazardous materials" signs. Inspect and pick up litter daily and clean up spills immediately. Keep spill control materials available on-site.See Fact Sheet SC-34, in Appendix 10, "Waste Handling and Disposal" in the CASQA Stormwater Quality Handbook at www.cabmphandbooks.com*
E. Loading Docks	*Loading docks will not be covered and are 4 feet above finished pavement surface.* *Spill kits are to be kept on-site at all times per SC-11*	*Move loaded and unloaded items indoors as soon as possible.* *Inspect for accumulated trash and debris. Implement good housekeeping procedures on a regular basis. Sweep areas clean instead of using wash water.* *Loading docks will be kept in a clean and orderly condition, through a regular program of sweeping and litter control, and immediate clean up of any spills or broken containers. Property owner will ensure that loading docks will be swept as needed. Cleanup procedures will not include the use of wash-down water. Property owner will be responsible for implementation of loading dock housekeeping procedures*

		See the Fact Sheet SC-30, in Appendix 10, "Outdoor Loading and Unloading" in the CASQA Stormwater Quality Handbooks a www.cabmphandbooks.com
F. Fire Sprinkler Test Water	*Provide a means to drain fire sprinkler test water to the sanitary sewer.*	*See the note in the Fact Sheet SC-41, in Appendix 10, "Building and Grounds Maintenance", in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com*
G. Miscellaneous Drain or Wash Water or Other Sources	*Boiler drain lines shall be directly or indirectly connected to the sanitary sewer system and may not discharge to the storm drain system*	
Boiler drain lines	*Condensate drain lines may discharge to landscaped areas if the flow is small enough that runoff will not occur.*	
Condensate drain lines	*Condensate drain lines may not discharge to the storm drain system.*	
Rooftop equipment	*Rooftop equipment with potential to produce pollutants shall be roofed and/or have secondary containment.*	
Drainage sumps	*Any drainage sumps on-site shall feature a sediment sump to reduce the quantity of sediment in pumped water.*	
Roofing, gutters and trim	*Avoid roofing, gutters and trim made of copper of other unprotected metals that may leach into runoff.*	
Other sources	*Include controls for other sources as specified by local reviewer.*	
H. Plazas, sidewalks, and parking lots	*Spill kits are to be kept on-site at all times per SC-11*	*Sweep plazas, sidewalks, and parking lots regularly to prevent accumulation of litter and debris. Collect debris from pressure washing to prevent entry into the storm drain system. Collect washwater containing any cleaning agent or degreaser and discharge to the sanitary sewer not to a storm drain.*

Section H: Construction Plan Checklist

Populate Table H.1 below to assist the plan checker in an expeditious review of your project. The first two columns will contain information that was prepared in previous steps, while the last column will be populated with the corresponding plan sheets. This table is to be completed with the submittal of your final Project-Specific WQMP.

Table H.1 Construction Plan Cross-reference

BMP No. or ID	BMP Identifier and Description	Corresponding Plan Sheet(s)	BMP Location (Lat/Long)
*	*	*	*

Note that the updated table — or Construction Plan WQMP Checklist — is **only a reference tool** to facilitate an easy comparison of the construction plans to your Project-Specific WQMP. Co-Permittee staff can advise you regarding the process required to propose changes to the approved Project-Specific WQMP.

*To be completed during final engineering

Section I: Operation, Maintenance and Funding

The Copermittee will periodically verify that Stormwater BMPs on your site are maintained and continue to operate as designed. To make this possible, your Copermittee will require that you include in Appendix 9 of this Project-Specific WQMP:

1. A means to finance and implement facility maintenance in perpetuity, including replacement cost.
2. Acceptance of responsibility for maintenance from the time the BMPs are constructed until responsibility for operation and maintenance is legally transferred. A warranty covering a period following construction may also be required.
3. An outline of general maintenance requirements for the Stormwater BMPs you have selected.
4. Figures delineating and designating pervious and impervious areas, location, and type of Stormwater BMP, and tables of pervious and impervious areas served by each facility. Geo-locating the BMPs using a coordinate system of latitude and longitude is recommended to help facilitate a future statewide database system.
5. A separate list and location of self-retaining areas or areas addressed by LID Principles that do not require specialized O&M or inspections but will require typical landscape maintenance as noted in Chapter 5, pages 85-86, in the WQMP Guidance. Include a brief description of typical landscape maintenance for these areas.

Your local Co-Permittee will also require that you prepare and submit a detailed Stormwater BMP Operation and Maintenance Plan that sets forth a maintenance schedule for each of the Stormwater BMPs built on your site. An agreement assigning responsibility for maintenance and providing for inspections and certification may also be required.

Details of these requirements and instructions for preparing a Stormwater BMP Operation and Maintenance Plan are in Chapter 5 of the WQMP Guidance Document.

Maintenance Mechanism: WQMP Covenant and Agreement

Will the proposed BMPs be maintained by a Home Owners' Association (HOA) or Property Owners Association (POA)?

☐ Y ☒ N

Include your Operation and Maintenance Plan and Maintenance Mechanism in Appendix 9. Additionally, include all pertinent forms of educational materials for those personnel that will be maintaining the proposed BMPs within this Project-Specific WQMP in Appendix 10.

*More information to be provided during final engineering

Appendix 1: Maps and Site Plans

Location Map, WQMP Site Plan and Receiving Waters Map

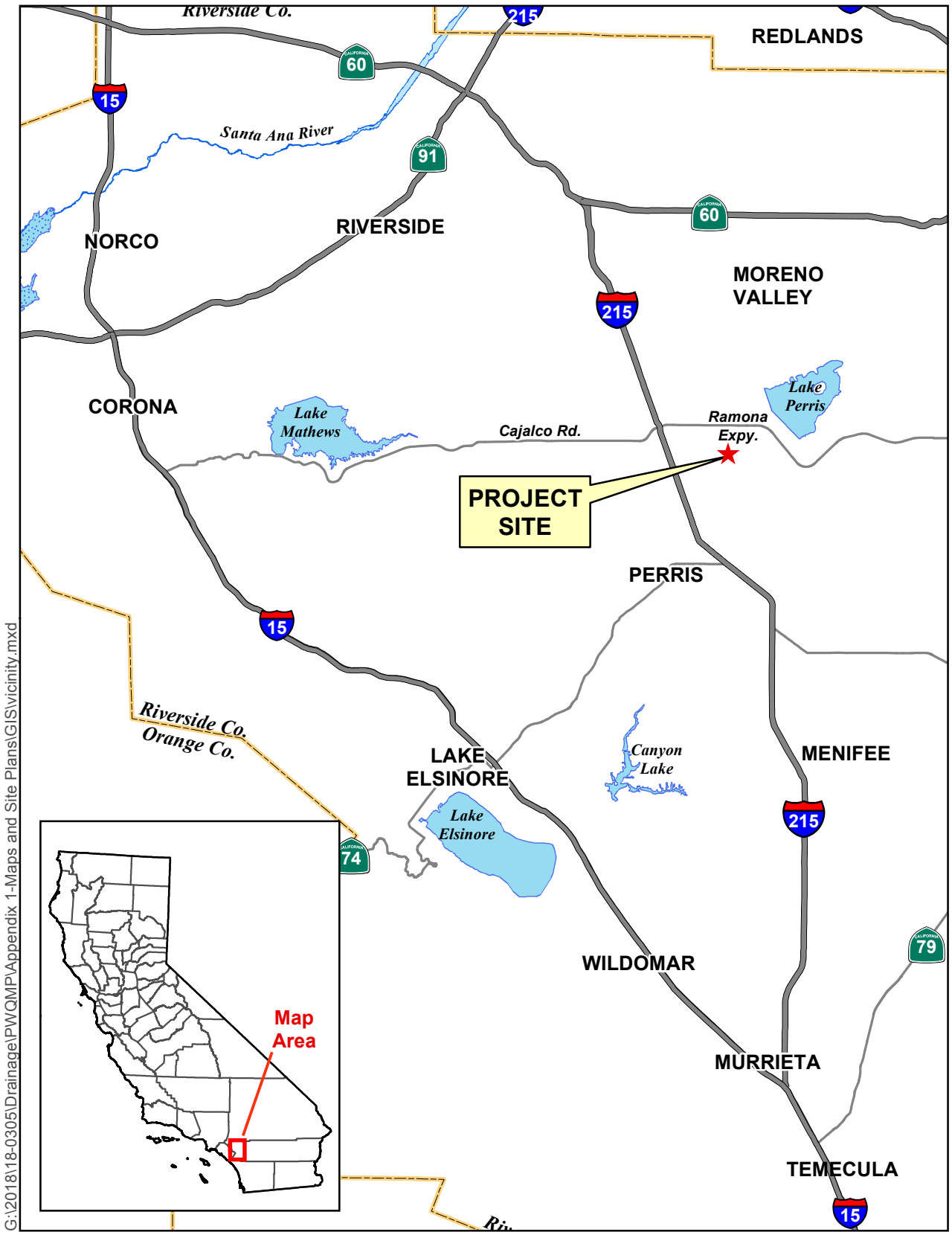
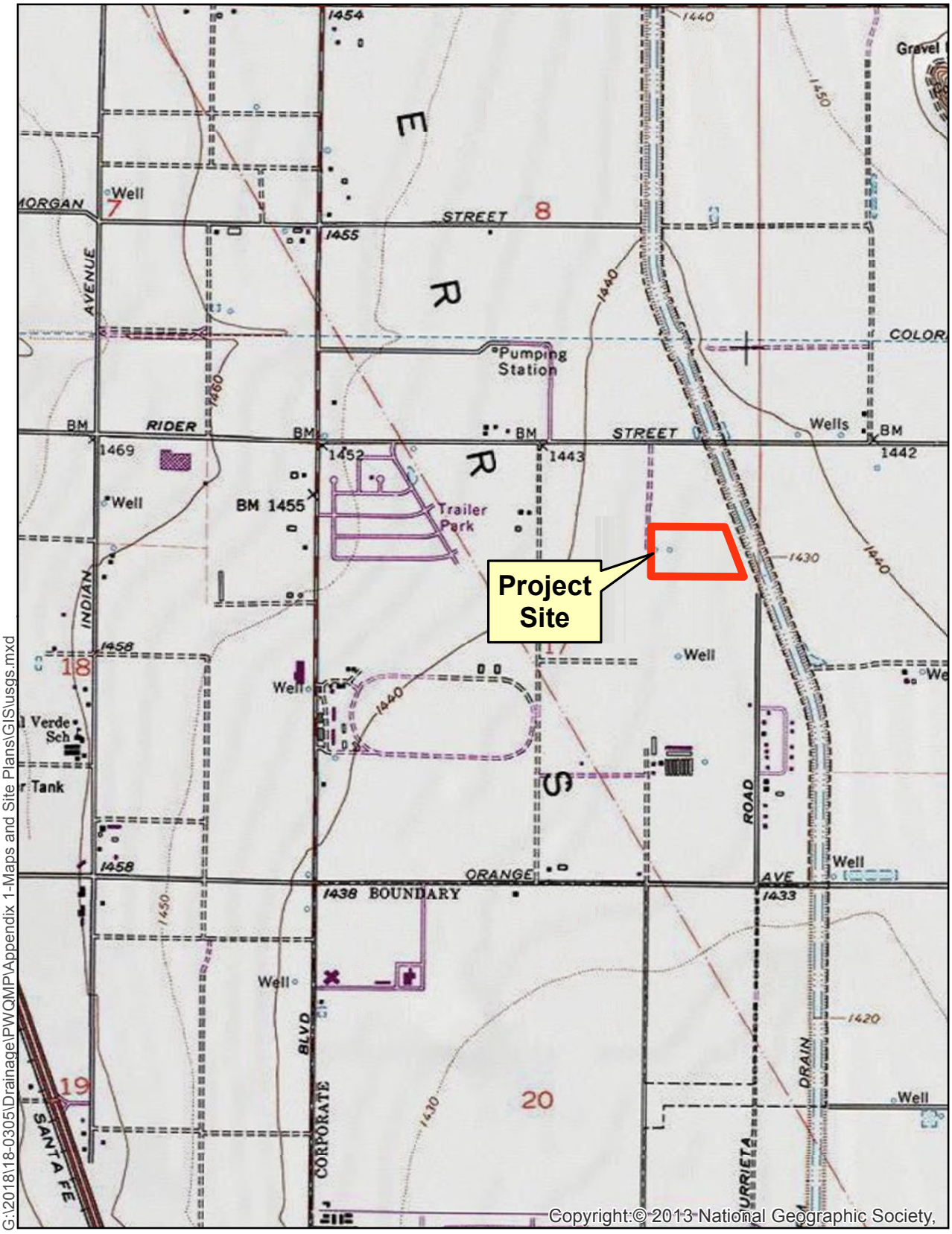


Figure 1. Vicinity Map

0 2.5 5 Miles



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Sources: ESRI / USGS 7.5min Quad
DRGs: PERRIS

Figure 2. USGS Topography Map

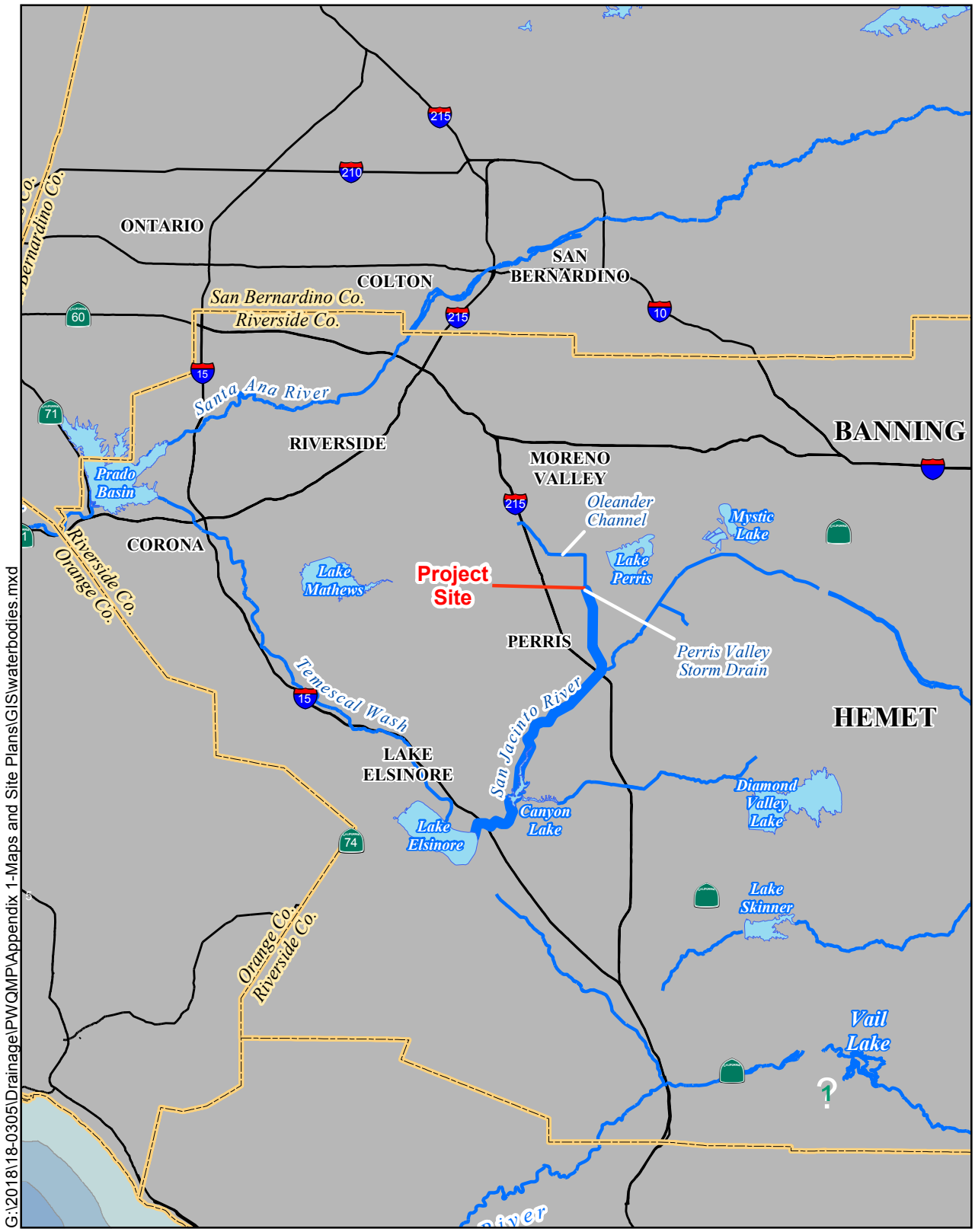
0 1,000 2,000 Feet



Sources: County of Riverside GIS, 2013; Eagle Aerial, April 2012.

Figure 3. Aerial Photograph

0 400 800 Feet



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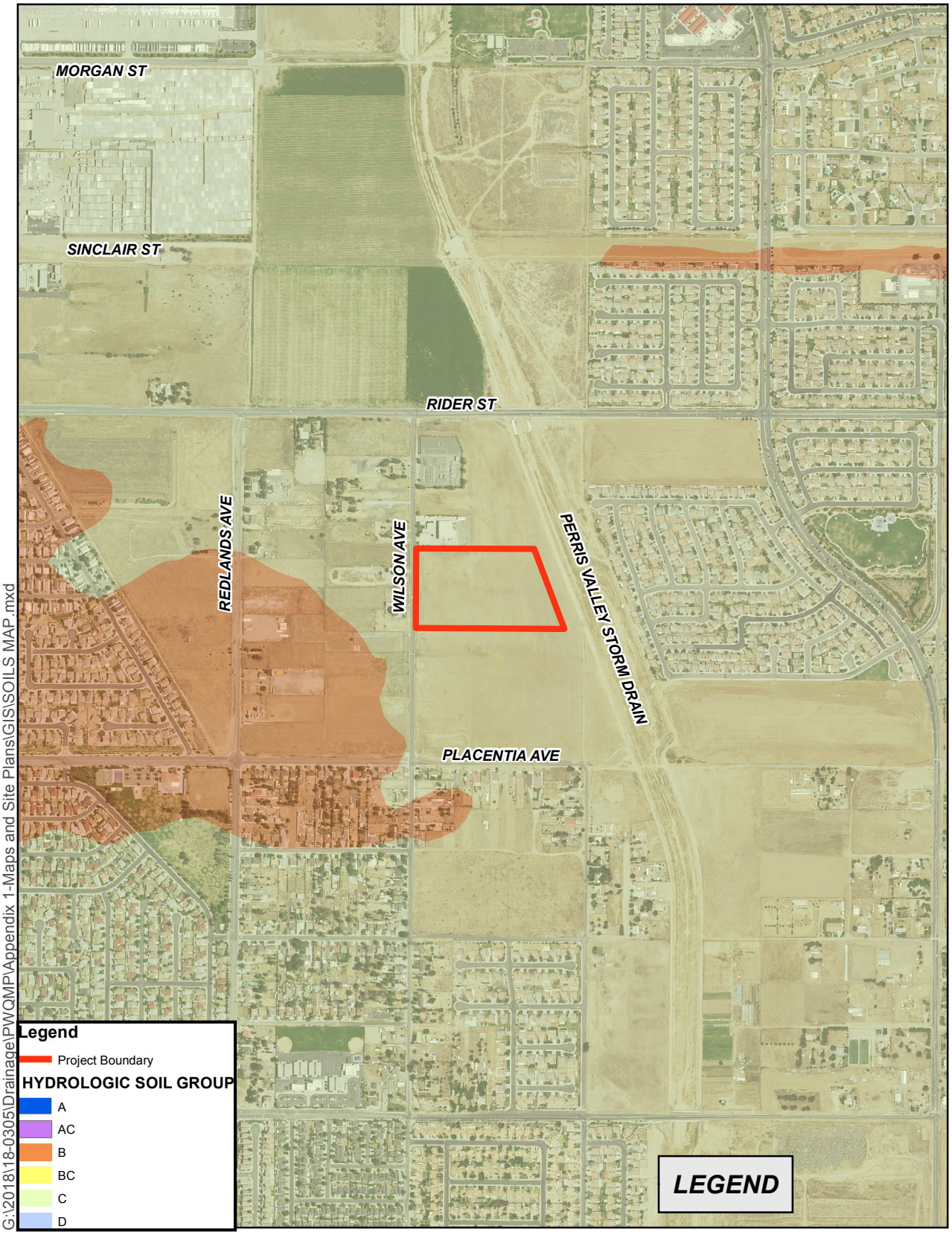
Sources: USGS 30 Meter DEM;
USGS Digital Line Graph

Figure 4. Receiving Waterbodies

0 2 4 6
Miles

Flowpath

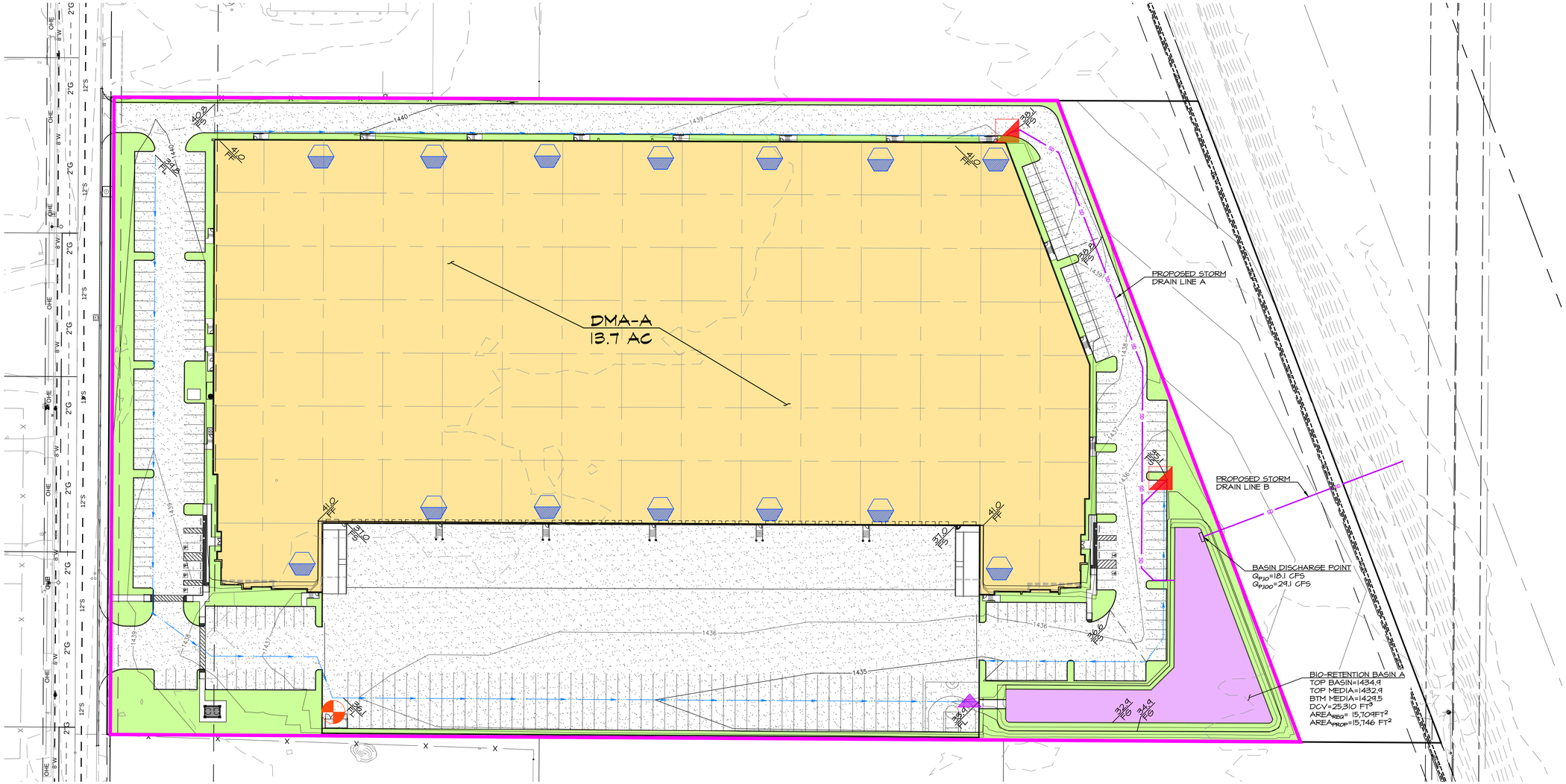


Eagle Aerial, April 2010;
Riverside County GIS, 2012
RCFC&WCD Hydology Manual Plate C-1.30

N
W E
S

0 500 1,000
Feet

Figure 5. Soils Map



LEGEND

- DRAINAGE MANAGEMENT BOUNDARY
- LANDSCAPING
- ROOF
- CONCRETE OR ASPHALT
- WQ BASIN
- FLOW DIRECTION
- SD — STORM DRAIN PIPE
- ROOF DRAIN DOWNSPOUT
- CURB OPENING/CUT
- STORM INLET
- TRASH ENCLOSURE

DRAINAGE MANAGEMENT AREAS

LEGEND	DMA-ID	TYPE	AREA (SF)
	L-A	LANDSCAPE	73,739
	R-A	ROOF	299,340
	H-A	HARDSCAPE	209,782
	BMP-A	SELF-TREATING	15,746

N
W WEBB E
S

1" = 50'

50 0 50 100 150

CITY OF PERRIS

POST CONSTRUCTION BMP SITE MAP
FIR WILSON
19-00007

SCALE:	1"=50'
DATE:	8/14/19
DESIGNED:	TSH
CHECKED:	DJA
PLN CK REF:	
F.B.	

ALBERT A. WEBB ASSOCIATES
ENGINEERING CONSULTANTS
3788 McCRAY STREET
RIVERSIDE CA. 92506
PH. (951) 686-1070
FAX (951) 788-1256

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SHEET	
OF 2	SHEETS
DWG. NO.	

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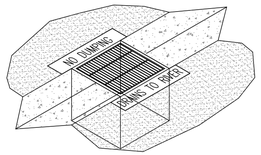
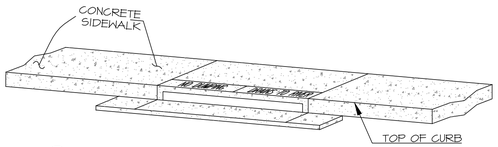
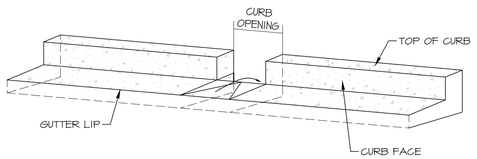




1. STENCILS TO HAVE 2" LETTERS AS FOLLOWS: "NO DUMPING - DRAINS TO RIVER"
2. PLACE BOTH STENCILS CENTERED WITHIN THE CATCHBASIN OPENINGS AND WITHIN THE TOP OF THE CURB.
3. SPRAY BOTH STENCILS WITH WHITE PAINT.
4. REMOVE STENCILS WHEN PAINT IS DRY.

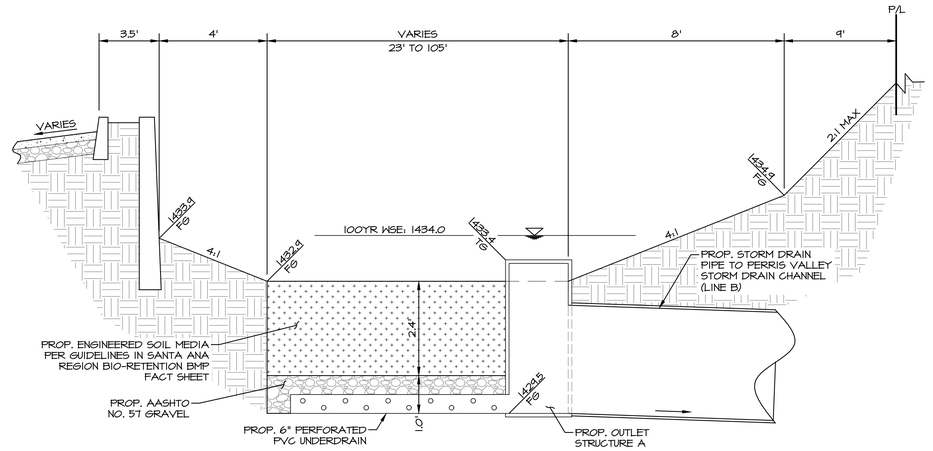
CATCH BASIN STENCILING DETAIL

NTS



TYPICAL CURB OPENING DETAIL

N.T.S.



WQ BASIN A TYPICAL SECTION

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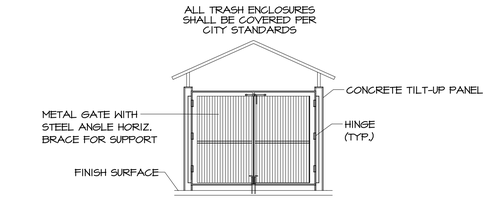

TRASH ENCLOSURE GATE ELEVATION

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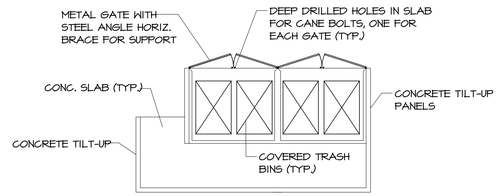

TRASH ENCLOSURE PLAN DETAIL

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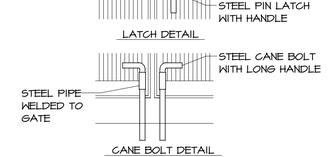

NOTE:
LATCH AND CANE TO BE AT EXTERIOR SIDE OF GATES

TRASH ENCLOSURE GATE LATCHES DETAIL

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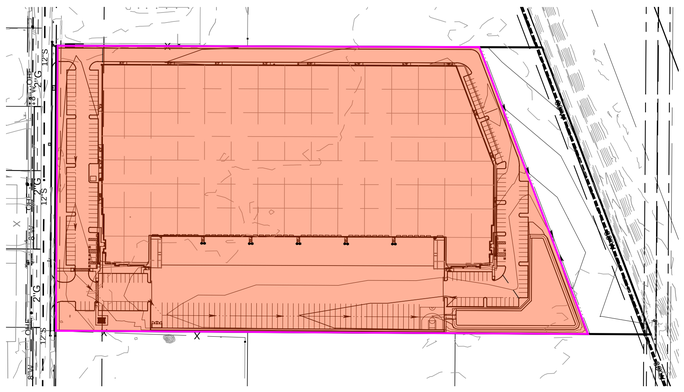
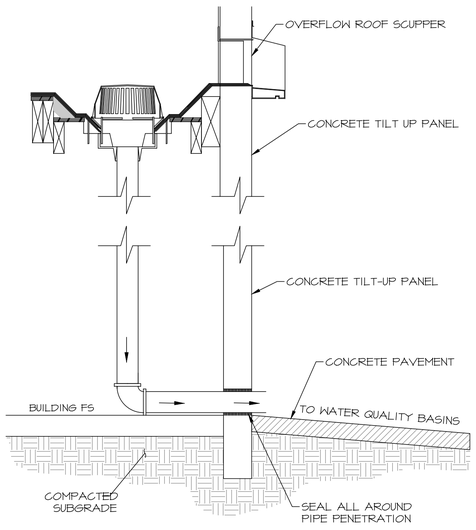


DMA SITE MAP

DMA-A



ROOF DRAIN DETAIL

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CITY OF PERRIS

POST CONSTRUCTION BMP SITE MAP
FIR WILSON
19-00007

SCALE:	1"=150'	ALBERT A. WEBB ASSOCIATES	W.O. 18-0305
DATE:	8/14/19	ENGINEERING CONSULTANTS 3788 McCRAY STREET RIVERSIDE, CA. 92506 PH. (951) 686-1070 FAX (951) 788-1256	SHEET 2 OF 2 SHEETS
DESIGNED:	TSN		
CHECKED:	DJA		
PLN CK REF:			DWG. NO.
F.B.			

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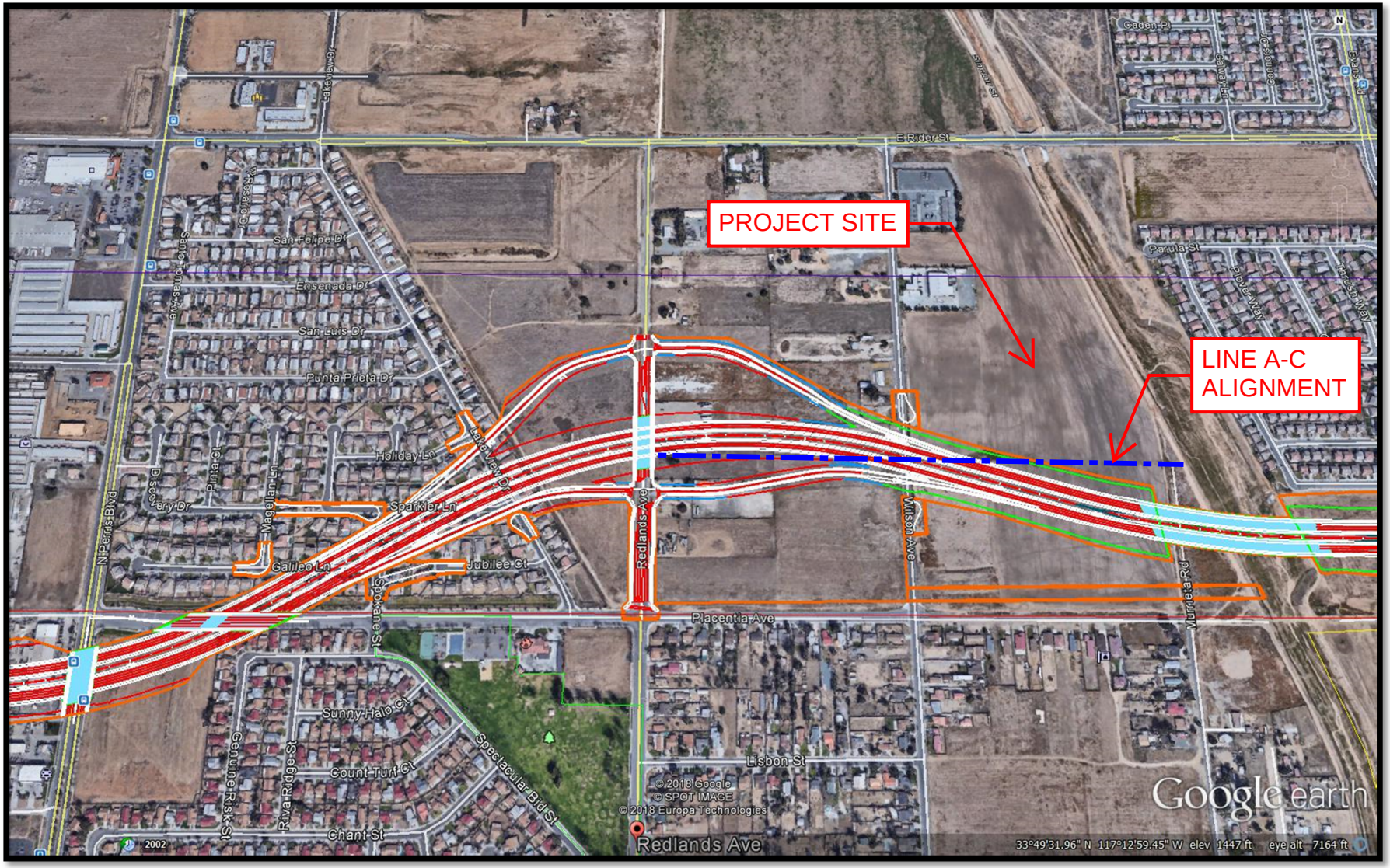
RCTC MID COUNTY PARKWAY ALIGNMENT



Appendix 2: Construction Plans

Grading and Drainage Plans

To be included in FWQMP

Appendix 3: Soils Information

Geotechnical Study and Other Infiltration Testing Data

ARAGÓN GEOTECHNICAL, INC.
Consultants in the Earth & Material Sciences

PRELIMINARY GEOTECHNICAL INVESTIGATION
LIGHT INDUSTRIAL PROJECT, APN 300-170-009
CITY OF PERRIS, RIVERSIDE COUNTY, CALIFORNIA

FOR
FIRST INDUSTRIAL REALTY TRUST, INC.
898 N. PACIFIC COAST HWY., SUITE 175
EL SEGUNDO, CALIFORNIA 90245

PROJECT NO. 4488-SFLI
JANUARY 21, 2019

16801 Van Buren Blvd., Bldg. B
Riverside, CA 92504
Tel: 951.776.0345 ● **Fax:** 951.776.0395
www.aragongeo.com

ARAGÓN GEOTECHNICAL, INC.
Consultants in the Earth & Material Sciences

January 21, 2019
Project No. 4488-SFLI

First Industrial Realty Trust, Inc.
898 N. Pacific Coast Highway, Suite 175
El Segundo, California 90245

Attention: Mr. Matt Pioli

Subject: Preliminary Geotechnical Investigation Report
Proposed Light Industrial Project, APN 300-170-009
City of Perris, Riverside County, California.

Gentlemen:

In accordance with our revised proposal dated December 4, 2018 and your authorization, Aragón Geotechnical Inc. (AGI) has completed preliminary geotechnical and geological assessments for the above-referenced project. The attached report presents in detail the findings, opinions, and recommendations developed as a result of surface inspections, subsurface exploration and field tests, laboratory testing, and quantitative analyses. Our scope included an infiltration feasibility study for storm water BMPs, but excluded environmental research and materials testing for contaminants in soil, groundwater, or air at the site. Infiltration-related findings have been presented in a separate report for the designer's use in formulating a required water quality management plan.

Ten exploratory borings were sited within the proposed construction area to characterize local soil units and potential influences from groundwater. The locality is fundamentally a deep alluvium site. Drilled intervals encountered massive Pleistocene-age alluvial strata comprising silty clay, clayey silt, and clayey sand as majority classifications within 35 feet of existing grades. Deeper horizons were typically dense to very dense silty sand. Surficial clay soils have become thoroughly weathered and texturally altered to low-density masses within 5 to 8 feet of the surface. AGI did not find evidence for pre-existing fill. However, the entire site appears to have undergone agricultural ripping to depths of 2½ to 3 feet. Groundwater was encountered in only one boring at a depth of 34.0 feet.

Geologic constraints to development will require inclusion of structural measures to mitigate the high likelihood of strong earthquake ground motions at the site. However,

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risks from other natural hazards including liquefaction, surface fault rupture, excessive settlement, gross instability or landsliding, seiching, induced flooding, and tsunami appear to range from extremely low to zero.

Findings indicate the site should be adequate from a geotechnical viewpoint, with the proviso that site design and construction account for highly expansive soils. AGI recommends that the shallow porous alluvium be removed and replaced as compacted engineered fill for adequate support of new fills, structures, and new pavements. Acceptable remedial grading "bottoms" below the building outline will generally be between 5 and 8 feet below existing surfaces. Reuse of clay soil in structural fills is acceptable unless extreme flatness or floor stability is required by a proposed industrial process.

It is AGI's preliminary conclusion that properly designed and constructed conventional shallow footings should provide adequate building support. Overexcavation is recommended when or if needed to supply at least 24 inches of engineered fill below all shallow spread and continuous footings. Pavement areas should be partly stripped and partly processed-in-place to create recompacted depths of approximately 36 inches. AGI has preliminarily determined that pavements should rest on an engineered lime-treated zone at least 18 inches thick to minimize future distress and to reduce design structural sections.

In addition to foundation design guidelines, including preliminary recommended design values for both vertical and lateral loads, this report presents recommendations for site earthwork, prescriptive code values for use in seismic groundshaking mitigation, concrete mix designs, and construction observation. It is recommended that grading and foundation plan reviews be performed by AGI prior to construction.

Thank you very much for this opportunity to be of service. Please do not hesitate to call our Riverside office if you should have any questions.

Very truly yours,
Aragón Geotechnical Inc.

Mark G. Doerschlag, CEG 1752
Engineering Geologist

C. Fernando Aragón, P.E., M.S.
Geotechnical Engineer, G.E. No. 2994

MGD/CFA:mma

Distribution: (4) Addressee

TABLE OF CONTENTS

Page

1.0 INTRODUCTION 1
2.0 PROPOSED CONSTRUCTION 3
3.0 FIELD INVESTIGATION AND LABORATORY TESTING 3
4.0 SITE GEOTECHNICAL CONDITIONS 5
4.1 Previous Site Uses 5
4.2 Surface Conditions 6
4.3 Subsurface Conditions 6
4.4 Groundwater 8
5.0 ENGINEERING GEOLOGIC ANALYSES 8
5.1 Regional Geologic Setting 8
5.2 Local Geologic Conditions 9
5.3 Slope Stability 10
5.4 Flooding 10
5.5 Faulting and Regional Seismicity 13
5.5.1 Fault Rupture Potential 13
5.5.2 Strong Motion Potential 14
5.6 Liquefaction Potential 18
5.7 Secondary Seismic Hazards 19
6.0 CONCLUSIONS AND RECOMMENDATIONS 21
6.1 General 21
6.2 Site Grading 22
6.3 Earthwork Volume Adjustments 25
6.4 Slopes 25
6.5 Foundation Design 26
6.6 Floor Slab Design 27
6.7 2016 California Building Code Seismic Criteria 30
6.8 Pavements 32
6.9 Retaining Walls 35
6.10 Temporary Sloped Excavations 36
6.11 Trench Backfill 37
6.12 Soil Corrosivity 37
6.13 Construction Observation 38
6.14 Investigation Limitations 38
7.0 CLOSURE 39
REFERENCES 40

Geotechnical Map Explanation & Subsurface Exploration Logs . . . . . APPENDIX A
Laboratory Testing . . . . . APPENDIX B
Liquefaction Hazard Analysis . . . . . APPENDIX C

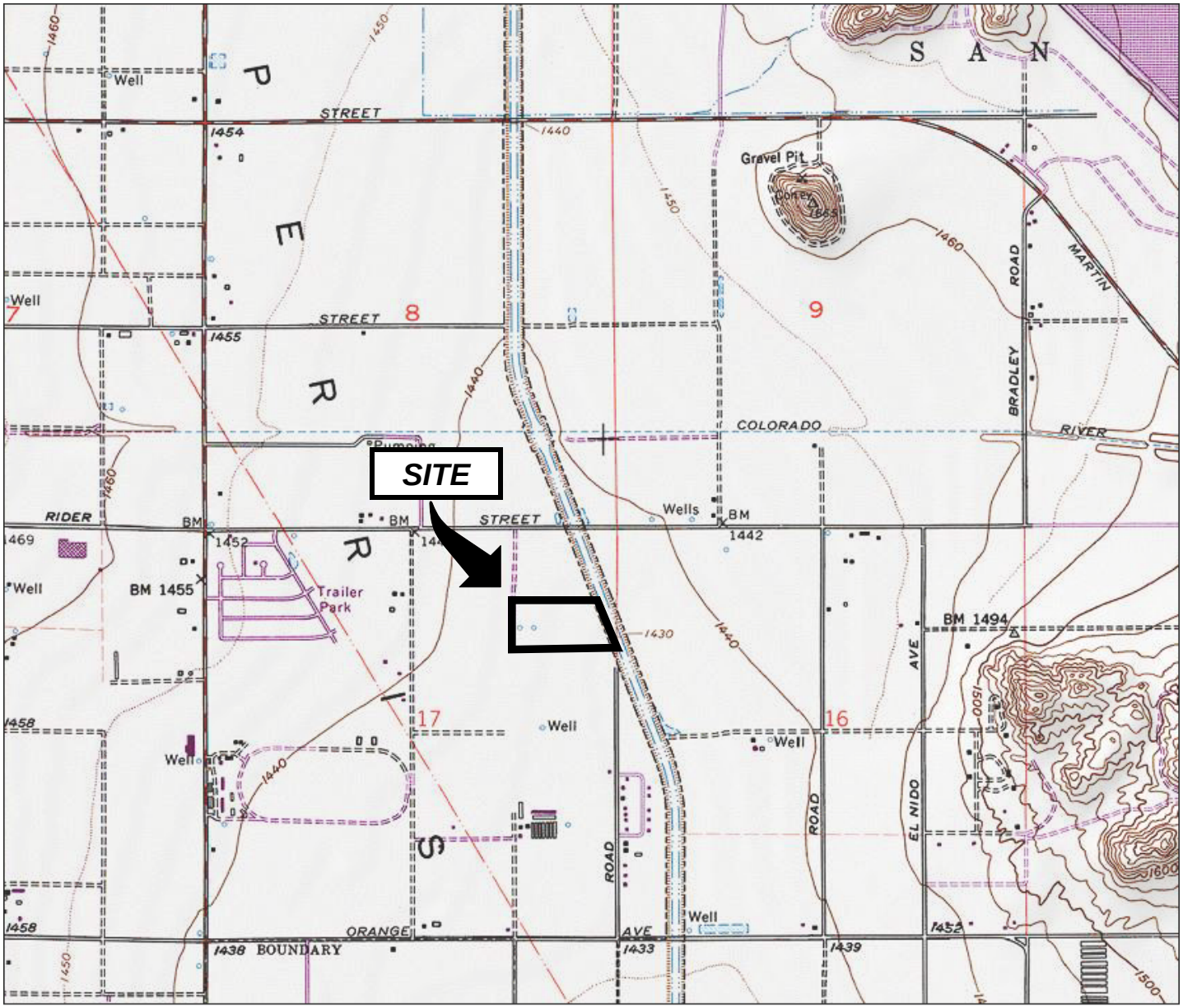
PRELIMINARY GEOTECHNICAL INVESTIGATION
PROPOSED LIGHT INDUSTRIAL PROJECT, APN 300-170-009
CITY OF PERRIS, RIVERSIDE COUNTY, CALIFORNIA

1.0 INTRODUCTION

This report presents the results of preliminary soils engineering and geologic evaluations conducted by Aragón Geotechnical, Inc. (AGI) for the noted project, located south of the intersection of Wilson Avenue at Rider Street, Perris, California. The trapezoidal project site encompasses 15.45 acres. Map coordinates are 33.82732°N x 117.20958°W at the northeast corner of the project (this coordinate point was selected for seismological analyses based on closest site-to-source distance). Situs per the Public Lands Survey System places the project in the NE¼ of Section 17, Township 4 South, Range 3 West (San Bernardino Baseline and Meridian). Construction is envisioned to include a logistics warehouse or light manufacturing facility with all access points facing Wilson Avenue. The accompanying Site Location Map (Figure No. 1) depicts the general location of the project on a 1:24,000-scale topographic quadrangle map. Although out-of-date with respect to the rapid urbanization of the surrounding Perris Valley area, the older map series was selected for clearer depictions of ground slope and drainage patterns.

The primary objectives of our preliminary investigation were to determine the nature and engineering properties of the subsurface materials underlying the project area, in order to confirm general site suitability for the building and to provide *preliminary* foundation design, grading, and construction recommendations. Accordingly, our scope included reconnaissance of the site and surrounding acreage, aerial photo interpretation, geologic literature research, subsurface exploration, recovery of representative soil samples, laboratory testing, and geotechnical analyses. Authorized services included field tests to characterize water infiltration potential at a prospective water-quality basin site. An infiltration feasibility report has been issued by AGI under separate cover for the design civil engineer's use in formulating a required water quality management plan.

Geological assessments focused on risks posed by active earthquake faults, strong ground motion, liquefaction or other secondary seismic hazards, and groundwater. These were evaluated using published resources and site-specific quantitative analyses, plus conclusions drawn from field findings and local case-history experience. However, environmental research, Phase I or Phase II environmental site assessments, well construction, or contaminant testing of air or groundwater found in the site were beyond the scope of this geotechnical investigation.



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Reference: U. S. Geological Survey 7½-Minute Series Topographic Map, Perris Quadrangle (1979).

AGI	**SITE LOCATION MAP**		
	APN 300-170-009, CITY OF PERRIS, RIVERSIDE COUNTY, CALIF.		
	PROJECT NO. 4488-SFLI	DATE: 1/21/19	**FIGURE 1**

2.0 PROPOSED CONSTRUCTION

A conceptual site development plan originating from the Irvine firm of RGA Office of Architectural Design was referenced for property information and borehole locality selection. The scaled plan (Scheme A1-01r1) lacked elevation contours but included the planned envelope of an approximately rectangular 301,020-square-foot industrial building more or less centered in the site. Clearance-under-beam dimensions and finish floor elevations have not been specified. Two office areas, one or both with mezzanine levels, would be situated in the southwestern and southeastern building corners. Thirty-nine dock doors would be included in the structure. Based on regional practices, AGI anticipated that the structural system would feature concrete tilt-up walls with parapet heights of possibly 38 to 45 feet, resting on perimeter shallow foundations. Engineered roof trusses would rest on isolated interior steel columns. Moderate foundation loads would be predicted for walls and columns.

Surrounding the building, concrete paving is expected in truck areas while lighter-duty asphalt sections could be substituted in automobile driveways and stalls. Basements or other subterranean construction were not shown on the drawing and would be unlikely. Live sewer, water, and gas utilities exist next to the property, and would presumably connect with the new building via buried service laterals.

It is believed raw cut-and-fill earthwork volumes required to develop the very flat site will be modest. Maximum elevation changes from present surface grades in the project area are not expected to exceed two to three feet. It is speculated that a slightly raised fill pad will be needed to promote proper drainage. Slopes were not illustrated on the available concept plan and are not expected except for shallow basin side slopes.

3.0 FIELD INVESTIGATION AND LABORATORY TESTING

Subsurface geotechnical site characterization comprising 10 exploratory soil borings was completed by AGI on December 28, 2018. The site did not have access impediments posed by very soft soils, vegetation, or existing structures. AGI-selected drill sites were cleared of utility interference issues by notification to the 811 DigAlert service in advance of AGI's work. Soil boring sites were preferentially sited to explore possible "least-favorable" locations identified from aerial photos and other geological resources, while also

meeting a goal of spanning the building envelope to gauge the degree of geotechnical site variability. Soil boring locations and depths were not fixed, however, and were modified by AGI's field geologist where appropriate to obtain data concerning (1) Soil material classifications, water contents, in-place densities, and settlement potential in light of local geological interpretations; (2) Presence or absence of groundwater; (3) Continuity of layers or units across the property; and (4) Unit geological origins and a derivation of site "stiffness" for earthquake engineering purposes.

The soil borings were drilled with a truck-mounted hollow-stem auger rig capable of driving and retrieving soil sample barrels. Borehole termination depths ranged from 7.5 to 51.5 feet. None of the borings encountered bedrock or were halted by machine refusal. As expected, all borings encountered deep sediments that were amenable to drive-tube sampling, performed at 2-foot to 5-foot depth increments. At shallow depths where soil bearing capacity and settlement potential would be the main items of concern, relatively undisturbed soil samples were recovered by driving a 3.0-inch-diameter "California modified" split-barrel sampler lined with brass rings. Deeper horizons in most borings included Standard Penetration Tests (SPTs) conducted using an unlined 2.0-inch O.D. split-barrel spoon. All sampler driving was done using rods and a mechanically actuated automatic 140-pound hammer free-falling 30 inches. Bulk samples of auger cuttings representative of shallow native materials found near the eastern and western ends of the proposed building were bagged. All geotechnical samples were brought to AGI's Riverside laboratory for assigned soils testing.

Drill cuttings and each discrete sample were visually/manually examined and classified according to the Unified Soil Classification System, and observations made concerning relative density, constituent grain size, visible macro-porosity, plasticity, and past or present groundwater conditions. Continuous logs of the subsurface conditions encountered were recorded by a senior Engineering Geologist, and the results are presented on the Field Boring Logs in Appendix A. The approximate locations of the borehole explorations are illustrated on the Geotechnical Map (Plate No. 1 fold-out), located at the back of this report.

"Undisturbed" samples were tested for dry density and water content. One-dimensional consolidation tests were conducted on selected barrel samples in order to evaluate settlement or collapse potential. Collapsible soils undergo rapid, irreversible compression

when brought close to saturation while also subjected to loads such as from buildings or fill. The recovered bulk soil samples were evaluated for index and engineering properties such as shear strength, compaction criteria, expansion potential, plasticity index, and corrosivity characteristics. Discussions of the laboratory test standards used and the test results are presented in Appendix B.

4.0 SITE GEOTECHNICAL CONDITIONS

4.1 Previous Site Uses

AGI's scope included limited historical research to ascertain changes to surficial conditions through time, and address known or possible geotechnical impacts to project design or construction. Stereoscopic aerial photographs archived at the Riverside County Flood Control and Water Conservation District headquarters in Riverside, California, were interpreted for evidence of past structures, land use, and for geological assessments of active faulting potential and geomorphic history. Older monoscopic pictures were downloaded from the U.C. Santa Barbara Aerial Collections web application. Finally, the on-line version of the U.S. Geological Survey Historical Map Collection was accessed for digital scans of topographic quadrangle sheets pre-dating the referenced maps used for Figure No. 1. Reviewed historical sources are listed under "References" at the end of this report.

For decades beginning before 1938 and up until after 2010, the site was used for dry-farmed grain crops and possibly irrigated alfalfa. Buildings have never existed on the property. There were no confirmed past uses for stock raising, poultry, feedlot, or dairying operations.

Incomplete State records and site reconnaissance disclosed at least one former on-site agricultural well that may have been drilled in 1953. A small concrete pad for an engine-driven pump and a bent and blocked steel casing were observed about 120 feet east of the Wilson Avenue street centerline (Plate No. 1). If the well records correctly correlate to the found bore, then the well would be about 440 feet deep. Closer to the paved road, standpipes or weirs may have served to distribute the groundwater. A speculative second well might have been installed later. No records or obvious field evidence exists for the second well, but aerial images less than 10 years old show some shed-like feature roughly coincident with a well symbol [small

circles] placed on the 1978 topographic quadrangle map excerpted in Figure 1. Wilson Avenue does not appear to have been built as a dedicated improved street until around 1990.

4.2 Surface Conditions

The site features an extremely low-gradient slope of under one percent toward the south-southeast according to Riverside County Flood Control contour maps. Relief within the project area is estimated to be only about 2 feet. Disturbed soil surfaces dominate the site. Regular weed abatement discing has been applied for several years. It appears that most incident rainfall is absorbed by the loosened surface horizons, although excess water runoff can move unimpeded as sheetflow toward the Perris Valley Drain bordering the eastern edge of the site. The drain channel is a simple unlined trapazoidal cut about 8 feet deep with near-continuous wet-season surface stream flows. Information from the Eastern Municipal Water District indicated a buried 36-inch diameter water transmission line parallels the channel about 10 feet inside the APN 300-170-009 property line.

At the time of AGI's field work, the site was only sparsely vegetated except for incipient green annual grasses and weeds, plus clumps of dried Russian thistle (tumbleweeds). There was flowing water in the Perris Valley Drain. Surrounding land uses composed other vacant and fallow terrain, a fenced but unused equipment storage yard to the south, and a small industrial building surrounded by pavement and a block wall owned by a distributor of erosion control products to the north.

4.3 Subsurface Conditions

AGI soil borings penetrated vertically heterogeneous alluvial soil sequences dominated by silty clay (USCS classification CL) within 5 to 9½ feet of existing grades. The clay zone thickens westward, toward Wilson Avenue. No signs of man-made fill were noted in borings. Silt and very fine sand proportions increased almost imperceptibly from west to east (toward the Perris Valley Drain). Laboratory tests corroborated field logs of expansive, fine-grained soils. Near-surface clay collected from a boring near Wilson Avenue produced an expansion index of 91 (categorically "highly expansive" soil), a plasticity index of 16, and a relatively low modified-Proctor maximum dry density of 111.0 pounds per cubic foot. The slightly siltier soils farther

east had a lower “medium” expansion index of 59, lower plasticity index of 11, and slightly higher achievable maximum dry density of 115 pounds per cubic foot.

Most of the silty clay layer was shot through with abundant whitish-colored carbonate deposits. The carbonates and possibly some silica cement are chemical precipitates that form *in situ* from intense and very long-term weathering of the soil surface. Textural attributes included very soft, porous, “punky” carbonate + clay fillings between small cohesive blocks (soil peds) caused by seasonal shrink-swell effects. The active soil zone was noted to range from about 5 feet to 8 feet thick, deepening westward. The active zone was marked by lower penetration resistance for soil sampling tools and significantly lower dry unit weights.

All borings encountered mechanical soil disturbance to an average depth of about 3 feet. This is believed to be an artifact of agricultural deep ripping, a very common practice in Perris Valley that is done to help break up clay hardpans for increased water retention. We would extrapolate 3-foot-thick disturbed zones exist over the *entire* development site.

Below the silty clay horizon, alluvial sediments were logged as very stiff to hard clayey or sandy silt, sandy clay, and sometimes dense very silty sand. In some borings, the upper 15 to 20 feet of the alluvial sequence could be interpreted as gradually fining-up deposits. Below 35 feet, stratification became more distinct. The sedimentary layers were dominated by silty and clayey sand, sometimes with occasional thin beds of almost clean sand. Visible macro-porosity was uniformly absent below surficial silty clay deposits. Penetration resistance was typically high for soil sampling tools, with raw SPT N-values ranging from 28 to 88 blows per one-foot increment for sample depths between 15 and 50 feet. Bedrock was not encountered, and would not likely occur shallower than 400 feet at the study site based on water well data (Woodford, et al., 1971). Section 5.2 (Local Geologic Conditions) and the drill logs in Appendix A contain considerable additional descriptions and interpretations of soil conditions in the project area.

4.4 Groundwater

Slow groundwater inflows were observed in one exploratory boring close to the Perris Valley Drain. A stable water level 34.0 feet below grade was measured after several hours. Shallower and deeper soil samples were not mottled with iron oxide stains, a common proxy for detecting past historical high groundwater. All other soil borings remained dry.

According to many years of monitoring well records reviewed through the State CASGEM website, groundwater within a radius of about a half-mile from the property has had minimum measured depths of about 40 feet northeast of the site, and 57 to 81 feet to the west. The hydrogeologic regime is complex due to the heterogeneity of the alluvial basin fill, substantial erosional relief of the buried bedrock surfaces under the southern Perris Valley, and municipal groundwater pumping. Shallow groundwater close to the Perris Valley Drain would not be unexpected, as this feature represents a (seasonal) line of basin recharge. There has been a historic tendency for groundwater levels to rise across the valley. Rising water levels are attributed to changing land uses in the Perris Plain vicinity, such as the cessation of formerly widespread agricultural pumping and introduction of irrigated suburban tracts.

Under current and predicted future conditions, *we judge that groundwater should remain at or below the measured 34-foot depth*. Shallower soils tend to be cemented and/or fine-grained, and will not readily transmit the seasonal recharge volumes that manage to infiltrate through the bottom of the Perris Valley Drain. Groundwater should not influence building design or construction. Any open excavation or shaft deeper than 35 feet, however, could encounter saturated ground and water inflows. Future fluctuations in shallow water elevations are possible, however, due to variations in precipitation, temperature, consumptive uses, or land use changes in Perris which were not present at the time observations were made.

5.0 ENGINEERING GEOLOGIC ANALYSES

5.1 Regional Geologic Setting

All of western Riverside County lies within the Peninsular Ranges Physiographic Province, one of 11 continental provinces recognized in California. The physiographic provinces are topographic-geologic groupings of convenience based primarily on

landforms, characteristic lithologies, and late Cenozoic structural and geomorphic history. The Peninsular Ranges encompass southwestern California west of the Imperial-Coachella Valley trough and south of the escarpments of the San Gabriel and San Bernardino Mountains. Most of the province lies outside of California, where it comprises much of the Baja California Peninsula. The province is characterized by youthful, steeply sloped, northwest-trending elongated ranges and intervening valleys.

Structurally, the Peninsular Ranges province in California is composed of a number of relatively stable, elongated crustal blocks bounded by active faults of the San Andreas transform system. Although some folding, minor faulting, and random seismic activity can be found within the blocks, intense structural deformation and large earthquakes are mostly limited to the block margins. Exceptions are most notable approaching the Los Angeles Basin, where compressive stress gives rise to increasing degrees of vertical offset along the transform faults and a change in deformation style that includes young folds and active thrust ramps. Perris is located in the central portion of the Perris tectonic block, the longest sides of which are bounded by the San Jacinto fault zone to the northeast and the Elsinore and Chino fault systems to the southwest.

The Peninsular Ranges structural blocks are dominated by the presence of intrusive granitic rock types similar to those in the Sierra Nevada, although the province additionally contains a diverse array of metamorphic, sedimentary, and extrusive volcanic rocks. In general, the metamorphic rocks represent the highly altered host rocks for the episodic emplacement of Mesozoic-age granitic masses of varying composition. Parts of the province include thick sequences of younger marine and non-marine clastic sedimentary rocks of Mesozoic and Tertiary age, ranging from claystones to conglomerate. Pre-Quaternary sedimentary rocks are conspicuously absent from most of the Perris Block, however, which is dominated by crystalline basement materials.

5.2 Local Geologic Conditions

Bounded by sometimes bold mountainous terrain to the east and west, the Perris Plain is entirely underlain by massive to crudely bedded alluvium. Morton and Miller (2006) assign an early to middle Pleistocene age for very old alluvium (unit $Qvof_a$,

Figure 2) that composes the majority of the topographical valley floor. The map exhibit also delineates a ribbon-like zone of younger Quaternary alluvium that follows the valley axis and supposedly underlie the site. AGI drill findings showed that younger deposits are absent, however. In our experience, the younger sediments are generally sandy, fairly loose, and are more obvious much farther north such as toward Moreno Valley and March ARB. The regional map is erroneous. Most of Moreno Valley and the Perris Plain where the Wilson Avenue industrial project is located are considered part of the "Paloma" depositional surface of Woodford et al. (1971), typified by fairly strongly developed illuvial clay and calcic horizons atop the older parent materials.

The alluvium conceals several deep erosional channels carved into granitic basement bedrock that can be considered tributaries to an ancestral San Jacinto River. The maximum depth of the $Qvof_a$ unit at the warehouse site is not known with certainty, but as noted earlier has been inferred to be at least 400 feet. Bedrock contour maps suggest the site is actually over a bedrock valley that angles northeast towards Lake Perris. Granitic bedrock consisting of weakly foliated quartz diorite (Lakeview Mountains tonalite) rises to the surface only about 0.9 miles east of the project site.

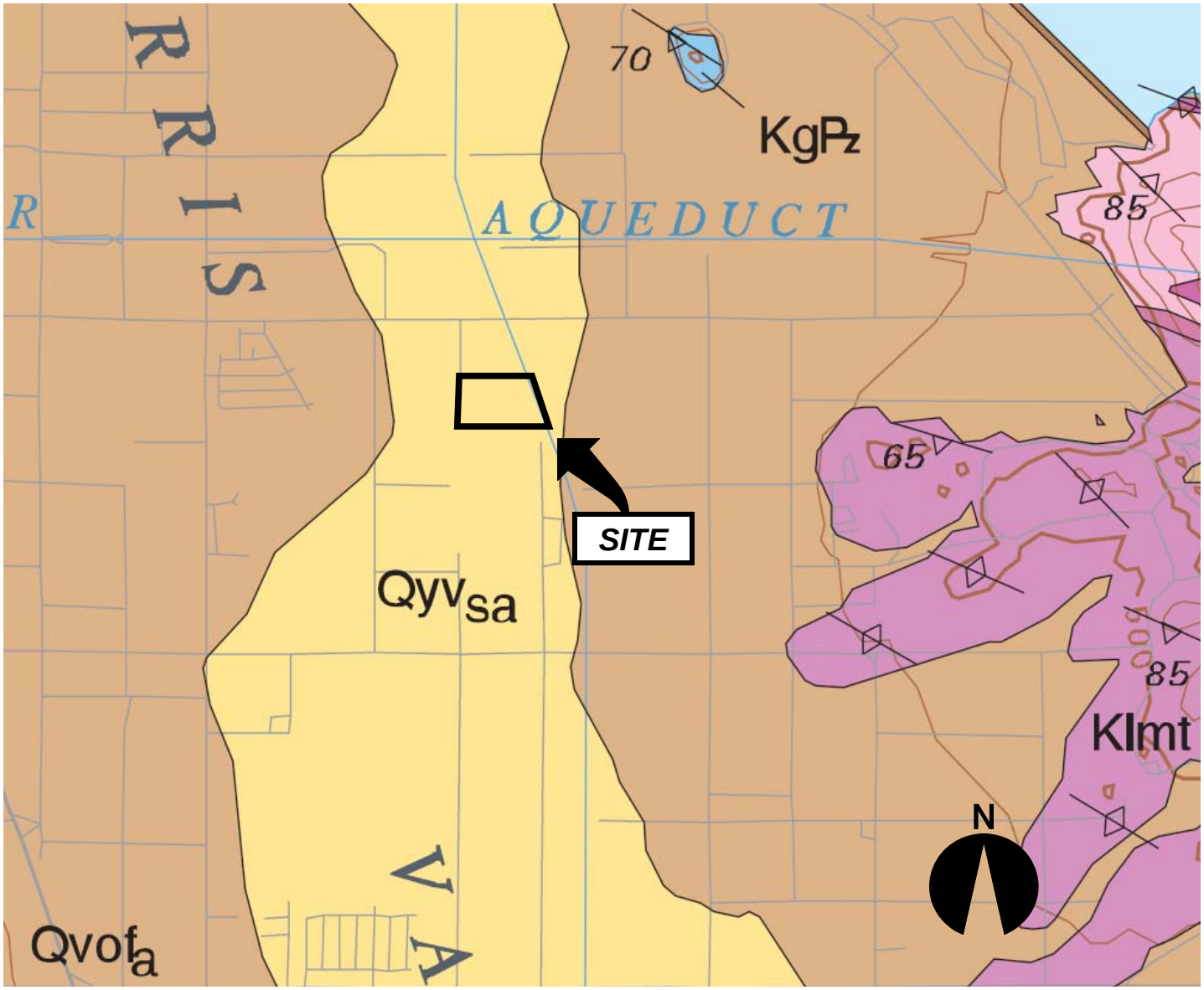
5.3 Slope Stability

The almost zero-relief site was found to be free of natural features associated with gross instability of slopes. The property is also distant from mountainous slopes surrounding Perris Valley. We judge landslide risks to be nil.

5.4 Flooding

AGI noted early in the project scope that about 1.8 acres of the site next to the Perris Valley Drain was labeled on the site plan for dedication to the County for flood control. The dedication appeared to correlate to mapped limits of the "100-year" floodplain shown on Riverside County GIS maps. However, according to the revised (2014) FEMA Flood Insurance Rate Map for the site and vicinity, "100-year" flood volumes should remain within the Perris Valley Drain channel (Figure 3). We suspect the GIS map is out-of-date.

Fig 2 geo map



Selected vicinity units:

0 0.5 1.0 mi.

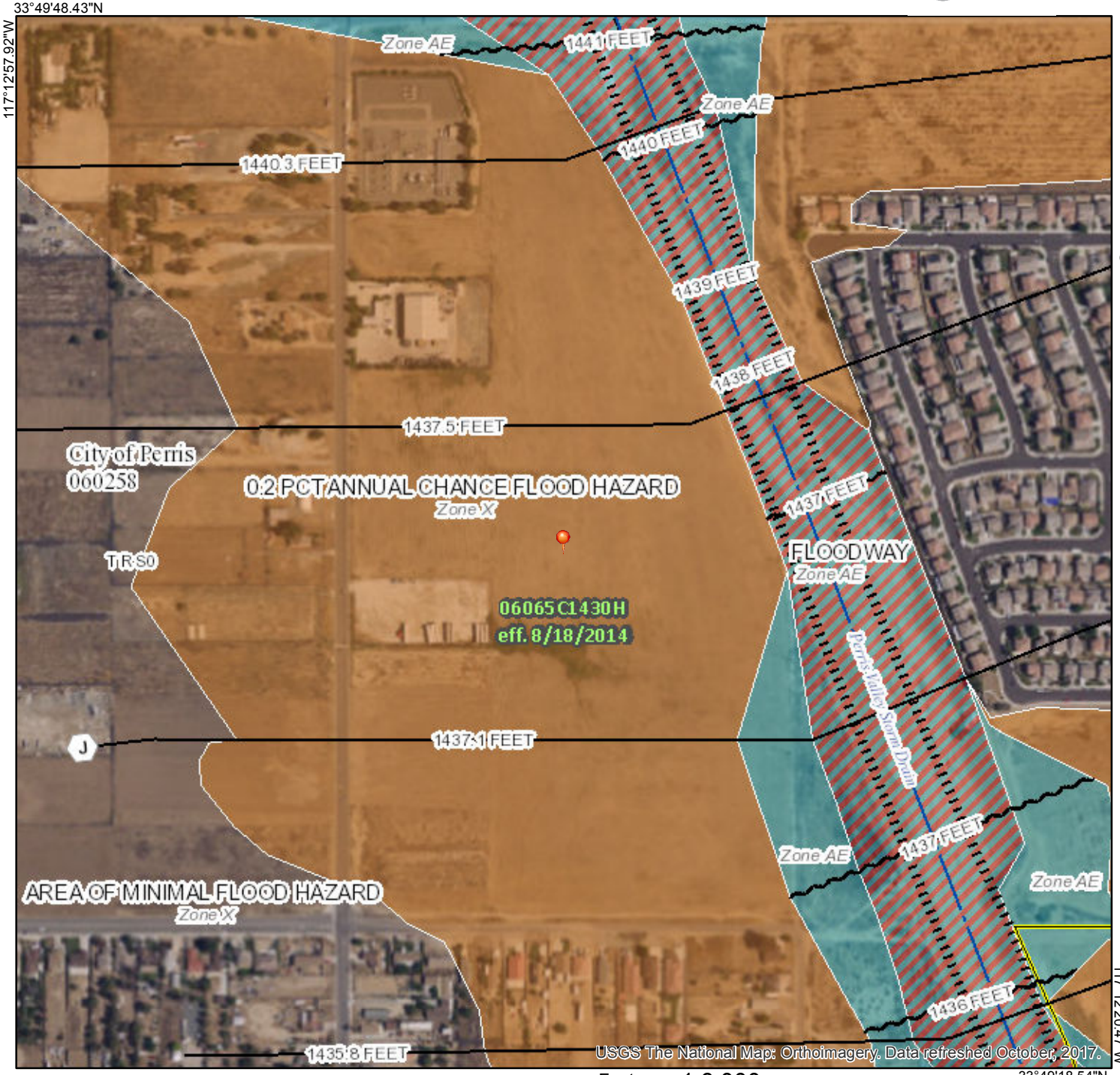
Qyv$_{sa}$		Young sandy axial-valley alluvial deposits (Holocene and late Pleistocene)
Qvof$_a$		Very old sandy alluvial-fan deposits (middle to early Pleistocene)
KgPz	|	Granitic and mixed intrusive/metamorphic basement rocks composed of tonalite,
Klmt	|	granodiorite, and banded gneiss (Cretaceous and older)

Reference: Modified after Morton and Miller (2006). Scale is approximate.

AGI	**VICINITY GEOLOGIC MAP**		
	APN 300-170-009, CITY OF PERRIS, RIVERSIDE COUNTY, CALIF.		
	PROJECT NO. 4488-SFLI	DATE: 1/21/19	**FIGURE 2**

National Flood Hazard Layer FIRMette

FEMA



Feet

0 250 500 1,000 1,500 2,000

1:6,000

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 1/23/2019 at 1:48:38 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

FIGURE 3

Per the referenced rate map, all of the project site is zoned for 0.2 percent chance per annum for flood hazard, i.e., "500-year" floodplain. There are normally few restrictions for non-critical facilities developed in 500-year risk management zones, although an owner's election to protect against flooding by raising the building floor can be considered. The owner and civil designer may wish to review whether the 123-foot-wide dedication strip is mandated by the local building authority, thus potentially expanding the development area.

5.5 Faulting and Regional Seismicity

The project is situated in region of active and potentially active faults, as is all of metropolitan Southern California. Active faults present several potential risks to structures and people. Hazards associated with active faults include strong earthquake ground shaking, soil densification and liquefaction, mass wasting (landsliding), and surface rupture along active fault traces. Generally, the following four factors are the principal determinants of seismic risk at a given location:

- Distance to seismogenically capable faults.
- The maximum or "characteristic" magnitude earthquake for a capable fault.
- Seismic recurrence interval, in turn related to tectonic slip rates.
- Nature of earth materials underlying the site.

5.5.1 Fault Rupture Potential

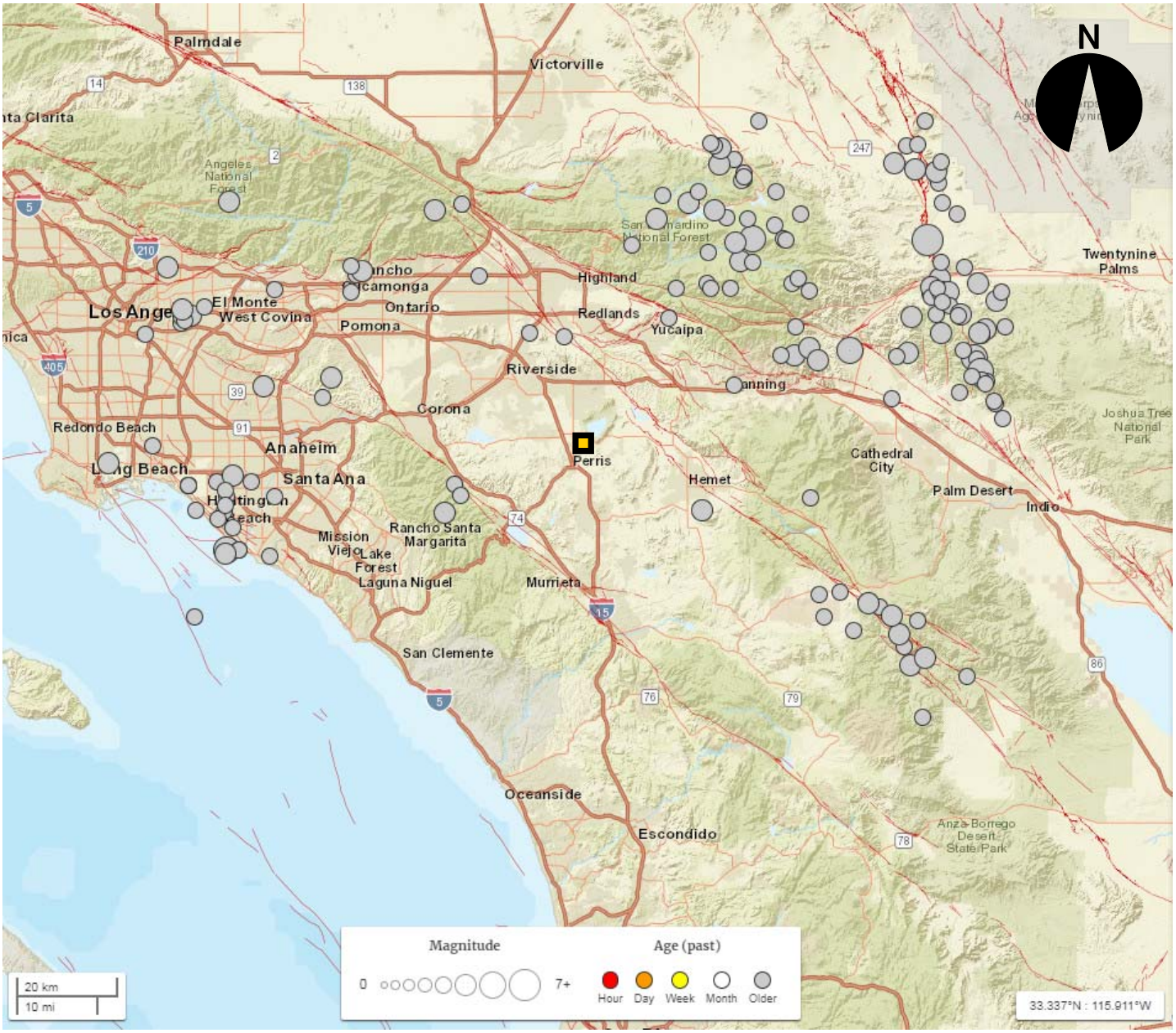
Surface rupture presents a primary or direct potential hazard to structures built across an active fault trace. Reviews of official maps delineating State of California Earthquake Fault Zones and Riverside County Fault Hazard Management zones indicated the project site is distant from zones of required investigation for active faulting. The closest known active regional fault traces are associated with the San Jacinto Fault east of Moreno Valley, about 6.9 miles away at closest approach. Aerial photographic interpretations did not suggest visible lineaments or manifestations of fault topography related to active fault traces on or adjacent to the site. Accordingly, chances for direct surface fault rupture affecting the project are judged to be extremely low.

5.5.2 Strong Motion Potential

All Southern California construction is considered to be at high risk of experiencing strong ground motion during a structure's design life. In addition to the previously mentioned San Jacinto fault zone, the San Andreas Fault can be considered a potentially significant sources of lower-frequency and longer-duration shaking at the project. Other, more-distant regional faults are very unlikely to cause shaking as intense as that caused by rupture of one of the two listed faults. Probabilistic risk models for the Perris-Moreno Valley area fundamentally assign the highest seismic risks from large characteristic seismic events along the San Jacinto fault system. The mode-magnitude event for peak ground acceleration at a 2% in 50-year exceedance risk is a multi-segment M_w8.1 earthquake on the San Jacinto fault (U.S. Geological Survey, 2019b; dynamic conterminous U.S. 2014 model).

The searchable ANSS Comprehensive Earthquake Catalog indicates about 159 events of local magnitude M4.5 or greater have occurred within 100 kilometers of the project since instrumented recordings started in 1932 (Figure 4, next page). Clusters of epicenters are associated with the 1992 Landers and triggered Big Bear Lake events. These and other notable historical earthquakes in southern California over the last 30 years (e.g., Northridge, Hector Mine) were far away. They produced estimated peak ground accelerations well under 0.20g in the City of Perris area. Interestingly, earthquakes larger than the selected M4.5 intensity threshold have been rare along the northern San Jacinto fault and the San Andreas fault, even though both have among the fastest slip rates and shortest mean recurrence intervals among all California faults.

San Jacinto Fault: The San Jacinto fault constitutes a set of *en-échelon* or right- and left-stepping fault segments stretching from near Cajon Pass to the Imperial Valley region. The primary sense of slip along the zone is right-lateral, although many individual fault segments show evidence of at least several thousand feet of vertical displacement. The San Jacinto fault zone has been very active, producing possibly eight historical earthquakes of local magnitude 6.0 or greater. The communities of Hemet and San Jacinto were heavily damaged in 1918 and



Reference: U. S. Geological Survey (2019c) real-time earthquake epicenter map. Plotted are 159 epicenters of instrument-recorded events from 1932 to present (1/21/19) of local magnitude M4.5 or greater within a radius of ~62 miles (100 kilometers) of the site. Location accuracy varies. The site is indicated by the gold square. The red lines indicate the approximate surface traces of Quaternary active faults. The selected magnitude corresponds to a threshold intensity value where light damage potential begins. These events are also generally widely felt by persons. Notable Southern California historical events with epicenters just beyond the selected search radius would include the Northridge earthquake [San Fernando Valley], and the Hector Mine event in the Mojave Desert north of Yucca Valley.

AGI	**SIGNIFICANT EVENT EPICENTER EXHIBIT**		
	APN 300-170-009, CITY OF PERRIS, RIVERSIDE COUNTY, CALIF.		
	PROJECT NO. 4488-SFLI	DATE: 1/21/19	**FIGURE 4**

again in 1923 from events on the San Jacinto Fault. Pre-instrumental interpreted magnitudes for these events were M_L6.8 and M_L6.3, respectively. The historical record suggests each discrete segment *usually* reacts to tectonic stress more or less independently from the others, and to have its own characteristic large earthquake with differing maximum magnitude potential and recurrence interval. Researchers and code development authorities now model the fault with potential for multi-segment rupture, however, with consequent increases in calculated risk to structures.

San Andreas Fault: For most of its over-550-mile length, the San Andreas Fault can be clearly defined as a narrow, discrete zone of predominantly right-lateral shear. The southern terminus is close to the eastern shore of the Salton Sea, where it joins a crustal spreading center marked by the Brawley Seismic Zone. To the northwest, a major interruption of the otherwise relatively simple slip model for the San Andreas fault is centered in the San Gorgonio Pass region. Here, structural complexity resulting from a 15-kilometer left step in the fault zone has created (or reactivated) a myriad of separate faults spanning a zone 5 to 7 kilometers wide (Matti, et al., 1985; Sieh and Yule, 1997; 1998). Continuing research is refining speculation that propagation of ruptures from other portions of the San Andreas Fault might not be impeded through the Pass region. New data suggest the San Bernardino and Coachella Valley segments of the fault may experience concurrent rupture roughly once out of every three to four events. Multi-segment cascade rupture is currently considered in all 2008 and later State of California seismic hazard models (Petersen, 2008; Working Group, 2013), and has been adopted as a scenario event for emergency response training such as the annual ShakeOut drill.

Source characteristics for the two regional active fault zones with the highest contributions to site risks are listed in the following table. Fault data have been summarized from WGCEP (2013) as implemented for the latest California fault model. Magnitudes are based on a probabilistic recurrence interval of 2,475 years for each source, binned to nearest 0.05 magnitude decrement. The reference magnitudes usually reflect cascade ruptures.

Regional Seismic Source Parameters

Fault Name (segment)	Distance from Site (km)	Length (km)	Geologic Slip Rate (mm/yr)	Magnitude @ 2% in 50 Yr. Prob., M_w
San Jacinto (w/ stepovers)	11.2	25	14.0	8.1
San Andreas (Coachella→Mojave South)	26.5	302	10.0 to 32.5	8.25

Version 3 of the Uniform California Earthquake Rupture Forecast (UCERF3) will be the reference fault source model for future California building codes and insurance risk analyses. Utilizing knowledge of tectonic slip rates and last historical or constrained paleoseismic event dates, UCERF3 includes *time-dependent* rupture probabilities for many major California faults. For the San Jacinto fault zone (stepovers combined) between Hemet and Moreno Valley, the model ascribed a 13.8% chance for an earthquake of $M \geq 6.7$ in the next 30 years beginning in 2015 (Field et al., 2015). The conditional probability for an earthquake of magnitude $M_W \geq 6.7$ somewhere along the southern San Andreas Fault was calculated at 57 percent in 30 years. These probabilities will increase each year for successive 30-year windows. Most researchers peg the southern San Andreas as “overdue” for a very large earthquake.

Earthquake shaking hazards are quantified by deterministic calculation (specified source, specified magnitude, and a distance attenuation function), or probabilistic analysis (chance of intensity exceedance considering all sources and all potential magnitudes for a specified exposure period). With certain special exceptions, today’s engineering codes and practice generally utilize (time-independent) probabilistic hazard analysis. Prescribed parameter values calculated for the latest 2014 U.S. national hazard model indicate the site has a 10 percent risk in 50 years of peak ground accelerations (pga) exceeding approximately 0.53g, and 2 percent chance in 50-year exposure period of exceeding .95g (U.S. Geological Survey, 2019b). The reported pga values were linearly interpolated from 0.01-degree gridded data and include soil correction

(NEHRP site class D; local shear wave velocity estimate $V_{s30} \approx 280$ m/sec). Calculated peak or spectral acceleration values should never be construed as representing exact predictions of site response, however. *Actual* shaking intensities from any seismic source may be substantially higher or lower than estimated for a given earthquake event, due to complex and unpredictable effects from variables such as:

- Near-source directivity of horizontal shaking components
- Fault rupture propagation direction, length, and mode (strike-slip, normal, reverse)
- Depth and consistency of unconsolidated sediments or fill
- Topography
- Geologic structure underlying the site
- Seismic wave reflection, refraction, and interference (basin effects)

5.6 Liquefaction Potential

Liquefaction is the transformation of a granular material from a solid state into a semi-fluid state as a consequence of increased pore-water pressure. Certain soil materials subjected to ground vibrations will tend to compact and decrease in volume. If the materials are saturated and drainage is unable to occur, the tendency to decrease in volume will result in an increase in pore-water pressure. Intergranular pressures may build up to a point where they equal the overburden stress and the effective stress becomes zero, whereupon the soil loses strength and may become capable of flowing as a viscous fluid. Liquefaction risks are usually highest in seismic regions where loose sand or non-plastic silt occur below groundwater.

Calculation or estimation of two variables is required for evaluation of liquefaction potential. These variables are the seismic demand placed on a soil layer, expressed in terms of cyclic stress ratio (CSR), and the capacity of the soil to resist liquefaction, expressed in terms of cyclic resistance ratio (CRR) (Youd and Idriss, 1997). CSR is dependent on the peak horizontal ground acceleration, depth to groundwater, and depth of the soil layer under analysis. CRR is an empirically derived value that discriminates between soils with observed liquefaction effects and those that did not liquefy in actual earthquakes. In most natural soil deposits, CRR increases with increasing depth, increasing geologic age, or increasing clay content. Soils that are

not close to or at saturation are normally considered free of liquefaction hazards, but may still have susceptibility and opportunity for related phenomena such as volumetric strain settlement to occur.

Riverside County has classified parts of the site as "high" liquefaction potential. Our suspicion is that the classification was based on (erroneous) regional mapping identifying young sediments at the property, combined with projected shallow-water influences from seepage beneath Perris Dam. SPT-based liquefaction and settlement potential analyses were completed for the sedimentary stack represented by Boring B-5, using the PC-hosted software package LiquefyPro (version 4.3, ©CivilTech Software, 2003). The analyses were done in conformance with the 2016 California Building Code for triggering at the MCE_G value, published guidelines and recommendations of the State of California (California Geological Survey, 1997) and a technical committee of seismological researchers, consultants, and building officials (Martin and Lew, 1999). For risk screening purposes we considered a reasonable speculative present and future high-water level of 34 feet below the surface. Details of user-selectable parameters, the expected seismic condition assumed by AGI for this investigation, settlement calculations, and a program output plot with liquefiable zones and total strain settlements depicted are presented in Appendix C.

The evaluation results indicate that liquefaction triggering is not expected. The sedimentary layers are geologically old and have high relative densities. Saturated granular sediments at depth meet simplified screening criteria for non-susceptibility based on corrected SPT $N_{1(60)cs}$ values uniformly in excess of 30. Special structural design or ground modification will not be required for the project.

5.7 Secondary Seismic Hazards

Settlement. Calculated total surface settlements from the liquefaction model analysis are of extremely low magnitude (approximately 0.1 inch). Differential settlements would be even less. We think the tiny calculated differential settlement potentials are reasonable engineering assumptions for this site, and are less than AGI's predicted consolidation settlements from structural loads. Risks will be insignificant.

Flow Slides and Lateral Spreading. Translational site instability, mobilized by either a reduction in static resisting forces to values lower than static driving forces (flow slides) or by earthquake inertial loading (lateral spreads), often poses the most damaging liquefaction-related hazard. Early concerns focused on the nearby Perris Valley Drain and whether loose and liquefiable material might be present close to the channel bed elevation. Empirical research (e.g., Bartlett and Youd, 1995; Youd et al., 2002) has found that for earthquakes of less than magnitude M_w8.0, lateral spreads can occur when liquefiable materials exist at depths shallower than 30 feet and $(N_1)_{60}$ <15. However, bored explorations have confirmed more than 30 feet of cemented, cohesive, and unsaturated surficial soils are present near the drain channel. This fact, combined with almost-flat site gradients and the modest depth of the Perris Valley Drain should completely prevent flow slide or free-face lateral spread hazards, in our opinion.

Surface Manifestation. In addition to large-scale translational failures from flow slides or lateral spreads, common surface manifestations of liquefaction include ground cracking or fissuring, and ejection of pressurized sand-water mixtures from shallow liquefied layers. With anticipated depths to historic high groundwater exceeding 30 feet and non-susceptibility of shallower soils to liquefaction triggering, fissures and sand boils should not occur.

Landsliding. It is our opinion that induced landslide hazard potentials (collectively deep-seated landslides or shallow earth flows, slumps, slides, or rockfall) are effectively zero. The project site is flat and very distant from possible landslide or rockfall runout zones.

Induced Flooding. AGI categorically rules out tsunami and seiche hazards. The project site is inland and not adjacent to lakes or open reservoirs. Induced flooding risks from municipal water storage tanks are also absent.

Parts of the Perris Valley including the Wilson Avenue site would be impacted by breaching of the Lake Perris dam. Other reservoirs near Hemet (Lake Hemet; Diamond Valley Lake) do not pose inundation hazard, as the site appears to be passively protected by elevation. In July 2005, the State identified potential seismic

safety problems with Perris Dam. Deficiencies with the embankment foundation soils were addressed by several years of construction to stabilize the downstream embankment and mitigate liquefaction potential. Work was completed in 2018. We believe reservoir loss potential is now extremely remote and is below a level of regulatory concern for ordinary construction.

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 General

Based on the results of our field exploration and laboratory tests, engineering analyses, local experience, and judgment, it is our professional opinion that the project site should be suitable from a geotechnical viewpoint for the proposed project. Geological hazards imposed on the warehouse building appear to be limited to strong ground motion due to earthquake. Geotechnical constraints include materials disturbed by deep tilling, low-density natural materials judged susceptible to compression under building loads, and highly expansive clay soils. Deeper alluvium within zones of near-constant soil moisture is demonstrably hard, cemented, and has very low compressibility.

Prescriptive mitigation for the hazard of strong ground motion is nominally provided structural design adherence to local adopted building codes. Section 6.7 contains recommended short- and long-period design spectral accelerations for the project.

The clayey site soils pose serious potential project performance problems without substantial remedial earthwork and careful detailing of site drainage, flexible and rigid pavements, and concrete floor slabs. Soil excavation and compaction to create dense engineered fill are recommended to mitigate the unsuitable active-soil horizon that would otherwise be present below shallow structural foundations, pavements, and planned engineered fills. Listed below are the recommended earthwork actions for existing soil conditions impacting site development:

(1) Remedial grading should replace all active shrink-swell horizons as compacted engineered fill beside and below the building envelope, and below concrete site walls. The active horizon is physically distinguishable by a peculiar granulated or “exploded” texture, abundant white carbonate, and visible macro-porosity. There is a fairly abrupt

transition from unsuitable clay to competent alluvium. Based on the exploration logs, expected "removal" depths from existing grades will range between approximately 5 feet and 8 feet. The deepest removals will occur close to Wilson Avenue, and should lessen to the predicted minimum near the east end of the light industrial building. Overexcavations should be deepened, if required, so that at least 24 inches of engineered fill is created beneath all future continuous or spread footings. Lateral excavation limits at final bottom elevations should be at least 5.0 feet beyond footing edges. Bottom elevations should be uniform across the entire design envelope, i.e., "slot-cutting" for individual column lines or continuous footings without treating unsuitable clay zones below industrial floors is not recommended.

(2) At least 24 inches of soil stripping before placement of compacted engineered fill is recommended in all future new pavement or walkway areas. The remaining 12 inches may be processed and compacted in place. The intent is to recompact all mechanically tilled soils. Should pavement or walkway subgrades be planned more than 24 inches below current surfaces, in-place processing shall be instituted to create at least 12 inches of engineered soil fill below flexible or rigid pavement structural sections.

6.2 Site Grading

The general guidelines presented below should be included in the project construction specifications to provide a basis for quality control during grading. It is recommended that all compacted fills be placed and compacted under continuous engineering observation and in accordance with the following:

- Demolition and removal of any and all abandoned buried improvements including foundations, slabs, irrigation pipes, tanks, or cables. Features may be found due east and due west of the one known well site. Live utilities next to Wilson Avenue and the EMWD transmission line next to the Perris Valley Drain should be protected in place.

- Well closure: The known well casing and any other confirmed water wells should be properly grouted, sealed, and capped by a C57-licensed drilling contractor in accordance with Riverside County and State DWR regulations. We advise exploratory potholes or obtaining a geophysical survey (magnetometer) to rule out

a second well near Wilson Avenue close to the labeled box on Plate No. 1. A copy of the well closure report(s) must be submitted to AGI.

- Clearing and disposal of heavy weeds and foreign objects should be initiated prior to grading. If necessary in the opinion of the Geotechnical Engineer, the grading contractor must be prepared to supply personnel to pick roots or debris from engineered fill during the grading operations.

- Excavation of fill, disturbed or porous native soil, or other unsuitable material as determined at the time of grading by the Geotechnical Engineer shall be performed as discussed in Section 6.1 for support of compacted engineered fill, structures, and improvements. Bottom acceptance will be by geological observation, probing, and density testing in alluvium. Competent soils shall demonstrate in-place dry densities of 85% or greater of the laboratory-determined maximum dry density to be accepted, and exhibit insignificant macro-porosity. All of the site soils appear to be acceptable for re-use in new engineered compacted fill if free from organic debris and trash. Final determinations of removal depths shall be made during grading based upon conditions encountered during earthwork activities.

- Observation and acceptance of all stripped areas by the Geotechnical Engineer and/or Engineering Geologist and/or their designated representative shall be done prior to placing fill.

- Shallow scarification of exposed bottoms to a depth of 4 to 6 inches (or as field conditions dictate), moisture-conditioning by adding moisture or drying back to above-optimum moisture contents as described below, and recompaction to at least 90 percent of the maximum dry density as determined by the ASTM D1557-12 test standard.

- Fill soils should be uniformly moisture-conditioned by mixing and blending to <u>110 percent of optimum water content or higher</u>, and placed in lifts having thicknesses commensurate with the type of compaction equipment used, but generally no greater than 6 to 8 inches. Light pre-watering of the site is recommended in

advance of earthwork (depending upon seasonal conditions) to moisten the upper 36 inches of material. This will help reduce fugitive dust, and more importantly allow for easier mixing and clod crushing. Care will be needed to avoid overwatering the clay and creating sticky, muddy, impassable conditions. *Fill water contents below the recommended minimum water content shall constitute a basis for non-acceptance of the fill irrespective of measured relative compaction, and at the discretion of the Geotechnical Engineer may require the fill be reworked to produce uniform water contents at or over the desired 110% of optimum moisture.*

- The contractor should utilize means and methods that result in uniform compaction of engineered fill meeting at least 90 percent of the laboratory maximum dry density determined by the ASTM D1557-12 standard. Sheepsfoot rollers and/or a Rex compactor are recommended for mixing and kneading action that will be needed to distribute water in the clayey fill and break down clods.

- Rocks or other similar irreducible inert particles larger than about 3 inches in diameter should be excluded from engineered structural fills on this site. Rocks should be very rare or absent.

- Field observation and testing shall be performed to verify that the recommended compaction and soil water contents are being uniformly achieved. Where compaction of less than 90 percent is indicated, additional compaction effort, with adjustment of the water content as necessary, should be made until at least 90 percent compaction is obtained. Field density tests should be performed at frequencies not less than one test per 2-foot rise in fill elevation and/or per 1,000 cubic yards of fill placed and compacted at this site.

- Import soils, if required, should consist of predominantly granular material with low or negligible expansion potential and be free of deleterious organic matter and large rocks. The borrow site and import soils must be reviewed and accepted by the Geotechnical Engineer prior to use.
- Proper surface drainage should be carefully taken into consideration during site development planning and warehouse construction. Finish surface contours

should everywhere result in drainage being directed away from building foundations to swales, area drains, or water quality basins. The use of descending ramps to proposed dock doors should be discouraged; a better approach is an elevated building finish floor and exterior pavement surfaces sloping away from the dock doors. Roof runoff should not be directed to planter strips. Landscape beds should not be placed next to structures unless xeriscape and micro-irrigation design practices can be enforced.

- It is recommended that expansion index and Atterberg limits testing be performed upon completion of rough grading in the building pad. The exact number of tests should be determined by site observations made during grading, but should not be less than one test for every soil type encountered or 5 tests overall, whichever is greater.

6.3 Earthwork Volume Adjustments

Removal and recompaction of the unsuitable surficial clay alluvium will result in material volume loss. The calculation of earth balance factors for the site as a whole is subject to some uncertainty, based on imprecise estimates of shallow soil density from 0 to 3 feet (tilled zone), and the future achieved degrees of compaction. We believe that civil designers should make allowances for at least 12 to 17 percent shrinkage in the building removal areas. Exterior paved areas may shrink closer to 20 percent. Bottom subsidence from heavy equipment is predicted to be very low in the cemented soils, and would conservatively not even reach 0.1 foot.

6.4 Slopes

Permanent manufactured slopes of any height are not expected at this project. If expectations change, though, slope design should in general conform to the following recommendations:

- Cut and fill slopes should be constructed at maximum slope inclinations of 2:1 (horizontal:vertical).
- The surfaces of all fill slopes should be compacted as generally recommended under Site Grading, and should be free of slough or loose soils in their finished

condition. The desired result should be 90 percent relative compaction to the slope face.

- The fill portion of any fill-over-cut slopes should maintain a minimum horizontal thickness of 5 feet or one-half the remaining fill slope height (whichever is greater), and be adequately benched into undisturbed competent materials. Cut slopes in local native surficial alluvium (other than basin side slopes 3:1 or flatter) should be reconstructed as stabilization fill slopes with the same minimum horizontal dimensions.
- Erosion control measures should be implemented for all slopes as soon as practicable after slope completion, per applicable City ordinances.

6.5 Foundation Design

Although information regarding anticipated foundation loads was not available for this report, the predicted construction type implies moderate imposed soil loads. Foundation plans, once they become available, must be evaluated by this firm for compatibility with the preliminary recommendations presented below.

Conventional shallow continuous or spread footings embedded entirely within compacted engineered fill appear feasible for the light industrial building. Structural loads may be supported on continuous or isolated spread footings at least 18 inches wide. *All* footings including site wall foundations should be bottomed a minimum of 24 inches below the lowest adjacent final grade. The recommended maximum allowable bearing value is limited to 2,000 pounds per square foot (FS $\geq$3.0). Bearing values may be increased by one-third when considering short-duration seismic or wind loads.

Lateral load resistance will be provided by friction between the supporting materials and building support elements, and by passive pressure. A friction coefficient of 0.28 may be utilized for foundations and slabs constructed atop structural fill composed of silty clay. A passive earth pressure of 250 pounds per square foot, per foot of depth, may be used for the sides of footings. When combining passive pressure and frictional resistance, the passive pressure component should be reduced by one-third.

Any exterior isolated building footings should be tied in at least two perpendicular directions by grade beams or tie beams to reduce the potential for lateral drift or differential distortion. The base of the grade beams should enter the adjoining footings at the same depth as the footings (viewed in profile). The grade beam steel should be continuous at the footing connection. Footings should either be continuous across large openings, such as loading docks or main entrances, or be tied with a grade beam or tie beam.

Interior columns should be supported on spread footings or integrated footing and grade beam systems. Column loads should not be supported directly by slabs. When designing the interior building footings, the structural engineer should consider utilizing grade beams to control lateral drift of isolated column footings, if the combination of friction and passive earth pressure will not be sufficient to resist lateral forces.

Minimum foundation reinforcement should consist of four No. 5 bars, two near the top and two near the bottom (viewed in cross-section), or as dictated by loading conditions. However, footing and grade beam reinforcement specified by the project structural engineer shall take precedence over the latter guidelines.

Provided that AGI's recommendations for engineered fill depths below footings are incorporated into final design and construction, foundation settlements should be of low magnitude. Much of the anticipated foundation settlement is expected to occur during construction. Maximum consolidation settlements are not expected to exceed a ½-inch and should occur below the heaviest loaded columns. Differential settlement is not expected to exceed approximately ¼ to ½ of an inch between similarly loaded elements in a 30-foot span.

6.6 Floor Slab Design

Concrete slab-on-grade industrial floor construction is planned. The following recommendations are presented as options for minimum design parameters for the slabs, accounting for soil expansive pressures and measured soil strengths only. The minimum design parameters do not account for concentrated loads (e.g., machinery, pallet racks, etc.) and/or the use of freezers or heating boxes.

AGI believes there is an unavoidable and substantial probability that as-built pad soils will fall into the medium-high expansive soil range (expansion indices ~80-95). A relatively low soil modulus can be expected. For smaller buildings, these conditions can be mitigated by soil pre-conditioning (presaturation), thicker concrete, thicker and more closely-spaced reinforcing bars, or selection of structural options such as post-tensioned slabs-on-grade. For large buildings with multi-acre floor areas, structural reinforcement options can become technically or economically infeasible. If absolute flatness and settlement-swell resistance is required (not expected of a warehouse-type end use), then soil stabilization or substitution with non-expansive sand would be the recommended approaches.

AGI recommends that all interior floor slabs and exterior walkway or patio slabs rest on a minimum of 6 inches of ¾-inch clean crushed rock or similar *open-graded* aggregate rolled and/or vibrated into place. A chocking layer of coarse sand is acceptable on the top course if needed to counteract instability or to leave a smooth subgrade surface. Well-graded road base or reclaimed materials are not advised since in the compacted state they become almost impermeable and can allow capillary moisture to reach the concrete. The underlayment should be compacted to a minimum relative compaction of 95 percent in the upper 12 inches.

The information and recommendations presented in these sections are not meant to supersede design by the project structural engineer. We have conceptualized options based on as-built subgrades having an expansion index of 90 or less, at a plasticity index less than 20, as AGI anticipates for local silty clay materials placed during mass grading. Generally, the indicated dimensions or materials may be varied by the structural engineer to produce acceptable performance for heavy or point loads, or to reduce section thicknesses. Final verification of the applicability of these or any modified recommendations must be confirmed by expansion index testing at the conclusion of pad precise grading.

Lightly Loaded Floor Slabs. Commercial/office slabs in areas which will receive relatively light live loads (i.e., less than approximately 125 psf) may be a minimum of 5.0 inches thick if reinforced with No. 3 reinforcing bars at 12 inches on-center in two horizontally perpendicular directions. Reinforcing should be properly supported on

chairs or blocks to ensure placement near the vertical midpoint of the slab. "Hooking" of the reinforcement is not considered an acceptable method of positioning the steel. The recommended minimum compressive strength of concrete in this application is 3,000 pounds per square inch (psi).

The owner and civil designer should consider the same dimensions, concrete materials, and slab reinforcement for non-structural exterior pedestrian and landscape walkways. Plain concrete or only wire-mesh reinforcement are not recommended. Differential movement may be unavoidable between walkway slabs and heavier building walls or curbs unless special joint detailing and sealing can be specified.

Transverse and longitudinal control joints are advised to isolate slab cracking due to concrete shrinkage or expansion. If utilized in lieu of added reinforcement or concrete additives, crack control joints should be spaced no more than 12 feet on center and constructed to a minimum depth of T/4, where "T" equals the slab thickness in inches. Construction joints between pours should utilize dowel baskets to control vertical deflections from either interior loads or soil uplift pressures.

Highly Loaded Floor Slabs. The project structural engineer should design slabs in the event of expected high loads (i.e., machinery, forklifts, storage racks, etc.). Designs utilizing the modulus of subgrade reaction (k-value) may be used. A k-value of 100 pounds per square inch per inch may conservatively used for on-site soils. Recommended R-value tests for final pavement section design, and/or plate load tests, may be used to verify the subgrade modulus after completion of grading.

Plain concrete slabs should be at least 6 inches thick. The concrete used in slab construction should conform to Class 560-C-3250. Transverse and longitudinal crack control joints (if utilized) should be spaced no more than 12 feet on center and constructed to a minimum depth of T/4, where "T" equals the slab thickness in inches. Construction joints between pours should utilize dowel baskets to control vertical deflections from either interior loads or soil uplift pressures. These suggested design factors can be altered as long as comparable stiffness and strength objectives can be achieved.

Moisture Protection. Ground-floor office portions of the warehouse building slab would be expected to have interior floor finishes (wood, vinyl, carpet) potentially sensitive to subgrade moisture or water vapor. AGI recommends a minimum 6-mil-thick plastic vapor retarder installed per manufacturer and code specifications with all laps/openings sealed. The barrier should be situated between the gravel underlayment and clay subgrade. Optional thicker 10-mil vapor retarders (e.g., StegoWrap®) have greater damage resistance and even lower transmissivity. Protected areas should be separated from any areas that are not similarly protected. The separation may be created by a concrete cut-off wall extending at least 24 inches into the subgrade soil.

Subgrade Pre-Saturation. Pre-saturation is recommended for all pad soil and pedestrian walkway subgrades demonstrating post-grading expansion indices exceeding 20. For expansion indices of 50 to 90, AGI would recommend that soil water contents meet or exceed 120 percent of the optimum soil water content to a depth of at least 18 inches prior to vapor retarder installation or concrete placement. Open-graded gravel underlayment is specified in large part because it is permeable, and can be placed and densified before starting any required watering. Construction sequencing that helps preserve grading water should be encouraged. Allowing the pad to dry back will be detrimental. Pre-saturation could then take several days. Soil water contents should be checked and verified as suitable by AGI technical staff no more than 48 hours prior to concrete placement.

6.7 2016 California Building Code Seismic Criteria

Prescriptive mitigation for the hazard of strong ground motion is nominally provided by structural design adherence to local adopted building codes. The 2016 CBC, based on the 2015 *International Building Code*, maintains a "look-up" code convention for seismic engineering, using as primary inputs the site's location and the assigned site class. The latter is a measure of soil or rock elastic resistance determined by borehole tests or geophysical methods. For non-critical structures, the 2016 code continues past practice that quantifies seismic risk based on the probabilistic 2008 National Seismic Hazard model and the 2009 NEHRP *Recommended Seismic Provisions*. Design coefficients are ultimately functions of distance to active faults, fault activity, and measured or correlated mean shear wave velocity within 30 meters

(~100 feet) of the ground surface. The tabulated criteria presented below were derived in accordance with the rules of Section 1613 of the 2016 CBC and ASCE/SEI Standard 7-10.

Table 6.7-1
2016 CBC Seismic Design Factors and Coefficients
(Lat. 33.82732, Long. 117.20958)

2016 CBC Section #	Seismic Parameter	Indicated Value or Classification
1613.3.1	Mapped Acceleration S_s	1.500g (Note 1)
	Mapped Acceleration S_1	0.600g (Note 1)
1613.2.2	Site Class	D (Note 2)
1613.3.3(1)	Site Coefficient F_a	1.0
1613.3.3(2)	Site Coefficient F_v	1.5
1613.3.3	Adjusted MCE Spectral Response S_{MS}	1.500g
	Adjusted MCE Spectral Response S_{M1}	0.900g
1613.3.4	Design Spectral Response S_{DS}	1.000g (Note 3)
	Design Spectral Response S_{D1}	0.600g (Note 3)

Notes

(1) Interpolated from 0.01-degree gridded data in the probabilistic 2008 National Seismic Hazard Model (U.S. Geol. Survey, 2019d), 2% in 50-year exceedance probability.
(2) Based on minimal site grading, borehole SPT data, and estimated V_{s30} ≈280 m/sec.
(3) Defined by 2016 CBC §1613.1 and the statement of ASCE/SEI 7-10 §21.2.3 indicating site-specific MCE response spectral acceleration at any period shall be taken as the lesser of the probabilistic or deterministic spectral response accelerations, with the latter subject to lower-limit values. The design spectral response accelerations are calculated as ⅔ of the MCE value.

Based on ASCE 7-10 and CBC §1613.3.5, a Seismic Design Category of **D** for risk category I-III buildings/structures is assigned for buildings sited where $S_{D1} > 0.20g$ and $S_1 < 0.75g$. The option for alternative seismic design category determination based on a structure's fundamental period and CBC Table 1613.3.5(1) is allowed. The site-modified zero-period MCE_R ground motion estimate PGA_M is 0.50g. Seismic response coefficients determined by the USGS tool from Figures 22-17 and 22-18 of ASCE 7-10 would be:

C_{RS} = 1.057 C_{R1} = 1.025

It should be understood that the 2016 CBC and most other building codes define minimum criteria needed to produce acceptable life-safety performance. Code-compliant structures can still suffer damage. Project owners should be aware that structures can be designed to further limit earthquake damage, sometimes for modest cost premiums. Ultimately, final selection of design coefficients should be made by the structural consultant based on local guidelines and ordinances, expected structural response, and desired performance objectives.

6.8 Pavements

Depending upon budget, aesthetics, life-cycle costs, and proposed end use, Portland cement concrete (PCC) pavement or a mix of PCC and lighter-duty asphalt surfaces could be specified for the project. Customarily, truck driveways and trailer stalls use PCC pavement. It is anticipated that the uppermost mechanically tilled topsoils in areas that will support new asphalt or PCC pavements, curbs and gutter, sidewalks, or other flatwork will be removed and recompacted as recommended in Section 6.1. Mechanical stabilization alone, however, will not change soil plasticity indices that may range to 15 or greater, or raise subgrade R-values beyond a predicted range of 5 to 15.

AGI recommends chemical soil stabilization measures to mitigate very low subgrade R-values and provide a stronger, uniform bearing substrate for the engineered pavement structural sections. Using specialty mixing and spreading equipment, we advise selection of lime+soil stabilization to a depth of 18 inches. Lime treatment is preliminarily judged feasible based on plasticity tests and predicted clay type. Treatment should encompass the entire proposed vehicular pavement area. Mixtures should be compacted in lifts as engineered fill. After initial curing, most flexible pavement installations are preceded by a “pre-cracking” process to restore resiliency to the subgrade and help reduce chances for development of block cracks in the final hot mix asphalt (HMA) mat.

Lime stabilization treatment changes the clay chemistry. When selected as a subgrade stabilization method, multiple important benefits are gained: (1) Treatment

reduces soil plasticity, while improving workability and compaction properties; (2) Infiltration potential (hydraulic conductivity) is minimized; (3) Volumetric stability is achieved; (4) Soil strengths are greatly increased, sometimes by a factor of 10 or higher; and (5) Pavement structural section thicknesses, inclusive of aggregate base courses and HMA layers, can be reduced to dimensions approaching or meeting practical minimums demanded only by expected traffic loading. Many engineering studies have demonstrated lime stabilization benefits are maintained and even improve after years of in-service life for roads and airfields, although it should be noted that truly permanent improvement (decades) remains outside of case-history experience.

The following table presents *preliminary* recommended structural sections for employee parking lot asphalt pavement based upon Caltrans design methods, a 20-year pavement lifetime, and a representative soil R-value for the untreated case. An estimated R-value is shown for lime-treated soils. Generally, the recommended section for treated soils will be applicable for any final R-value greater than 40, for loading corresponding to a traffic index of 5.5 or less. This is the minimum structural section recommended for passenger automobile loads. Final recommended sections may change and should be based on expected loading, desired pavement lifetime, and recommended R-value tests on soils collected from as-built subgrades.

Table 6.8-1
Preliminary Conventional Asphalt Pavement Designs

Employee Parking Lot Automobile Stalls & Driveways	Traffic Index	R-Value	A.C. Thickness	Base Thickness
Untreated Clay Subgraded	5.5	10	3.5" 4.5"	10.0" 8.0"
Hydrated Lime-treated Subgrade	5.5	40	3.0"	6.0"

Soils treated with hydrated lime may have different compaction control criteria than those outlined for untreated clay subgrades. These criteria will need to be developed in concert with the mix design.

Portland Cement Concrete Pavements. Portland cement concrete pavements are expected for the truck dock areas and could be implemented site-wide. It is expected that concrete pavements will rest on lime-treated subgrade. It may be feasible, though, to waive lime treatment should at least 18 inches of compacted granular soil, granular subbase, or select aggregate base be used in substitution of active clayey soils beneath the structural section. The soil replacement option depends in large part on whether adequate site slope and drainage characteristics can be engineered. - Substitute materials should classify as non-expansive (expansion index <20).

For an assumed traffic index of 8.0 and equivalent maximum single-axle loads of 13,000 pounds, the recommended preliminary design section includes 7 inches of un-reinforced (plain) concrete, over 18 inches of lime stabilized soil. Concrete used for pavement should have a minimum 28-day compressive strength f_c of 4,500 pounds per square inch. The structural engineer could consider alternative sections that include reinforcement or different-strength concrete mixes in the event of a different design traffic index, special conditions including ESALs exceeding 13,000 pounds, or requests for a thinner concrete section.

It is recommended that concrete curbs and ribbon gutters be poured neat against compacted soil subgrades in advance of pavement subgrade excavation and base course placement. It is especially critical that drainage pathways from tree wells or nearby landscaped areas not be created by inadvertent construction of curbs atop permeable base course layers.

Generally, subexcavation of pavement areas should not exceed that needed to mitigate compressible surficial soils described in Section 6.1. AGI recommends the uppermost 12 inches of (untreated) soil subgrade materials that are composed of silty clay or clayey silt (USCS classifications CL, ML) below pavement structural sections or curb-and-gutter installations be processed and compacted to a minimum of 90 percent of the laboratory maximum dry density determined by ASTM D1557-12. Granular subgrades, if used, should be processed and compacted to a minimum of 95 percent of the laboratory maximum dry density determined by ASTM D1557-12. Base course should meet materials specifications for Caltrans Class 2 aggregate base material or better, and should be placed and fully compacted in lifts no greater than

6 inches thick to a minimum dry density of 95 percent of the laboratory maximum dry density per the ASTM D1557-12 standard. Pavement gradients should be designed to allow rapid and unimpaired flows of runoff water, and concrete gutters should be provided at all flow lines.

6.9 Retaining Walls

Available plans did not depict retaining walls, and the lack of site relief suggests walls will not be required except possibly for dock door areas. Preliminary recommended earth pressure values for walls are shown below. AGI assumes that a well-drained, select granular import material with a sand equivalent value of 30 or better will be utilized for backfill. Site clay soil is not recommended for wall backfill. Live loading (e.g., forklifts) must be added to the stated values. Wall pressures from seismic inertial loads must also be included for tall walls (none expected). Seismic loads may be based on a design peak ground acceleration of 0.50g and MCE event magnitude M_w7.5. Other expected site conditions such as drained, granular backfill soils appear to be consistent with the assumptions of the widely used Mononobe-Okabe method or similar later variations of rigid plastic methods for finding force magnitudes on the wall. Standard reduction factors for pga (e.g., 0.5 for M-O method) may thus be implemented.

Table 6.9-1
Preliminary Retaining Wall Fluid Pressure

Inclination of Retained Material	Equivalent Fluid Pressure (psf)	
	Unrestrained	Restrained
Level	40	60

It is recommended preliminary wall designs be reviewed by AGI for locality-specific modifications and/or needs for additional soil tests before construction. The same recommended maximum foundation bearing value of 2,000 psf for structures may also be assumed for retaining walls and site walls. Granular wall backfill at dock doors should be mechanically compacted to a minimum of 95 percent relative compaction; 90 percent or greater is sufficient where not subject to live loads. Density testing is recommended to verify the adequacy of compaction. Exterior walls retaining more

than 3 feet of soil should be provided with a means of drainage to prevent hydrostatic forces. Drainage provisions may be based on the wall height, wall length, and any irrigated land uses next to the improvement. Typical approaches would be a continuous perforated subdrain line embedded in open-graded crushed rock placed at the inside bottom of the wall, or through-the-wall options such as weepholes, or open head joints for CMU structures.

6.10 Temporary Sloped Excavations

Excavations at the site would be expected to encounter massive, cohesive sequences of clayey alluvium, and/or engineered fill after mass grading. Excavations up to 5 feet in depth in these materials should stand vertically for temporary periods. Trenches open for any extended period of time, trenches placed in disturbed native ground, and all excavations greater than 5 feet in depth should be properly sloped or shored. Where sufficient space is available for a sloped excavation and the cut will be open for 24 hours or less, the side slopes should be inclined to no steeper than ½:1 (horizontal to vertical) per current rules for excavation material Type A and an excavation depth of 12 feet or less in unsaturated soil. The exposed earth materials in the excavation side slopes should be observed and verified as suitable by a geotechnical engineer. The exposed slope faces should be kept moist and not allowed to dry out.

Surcharge loads should not be permitted within five feet from the top of excavations, unless the cut or trench is properly shored. Contractors are ultimately responsible for verifying that slope height, slope inclination, excavation depths, and shoring design are in compliance with Cal-OSHA safety regulations (Title 8, Section 1540-1543 et seq.), or successor regulations.

6.11 Trench Backfill

All soil-backfilled utility trenches on this site should be backfilled in lifts and mechanically compacted to at least 90 percent of the laboratory maximum dry density. Utility purveyors may specify a greater degree of compaction in streets (e.g., lateral

connections into Wilson Avenue) than this stated minimum. Flooded or jetted backfill is not recommended except for densification of select imported granular bedding materials placed directly around utility lines. The local soils are deemed unsuitable to serve as pipe bedding materials. Density testing is recommended to verify the adequacy of compaction efforts.

6.12 Soil Corrosivity

Chemical analyses were performed to provide a general evaluation of the corrosivity of the native soils and included soluble sulfates, soluble chlorides, nitrate, and ammonia in addition to several electrochemical potential tests. Findings indicated the site soils should not be highly aggressive to concrete, but could be extremely corrosive to buried metal. Analytic tests reported soluble sulfate ranged from 0.0021 to 0.0120 weight percent across the property. Slightly saline conditions were detected toward the Perris Valley Drain. Saturated resistivity was only 737 to 938 ohm-cm in two samples, confirming that all surficial site soils fall under a general classification of “very severe” risk for electrolytic-type corrosion of ferrous metals. We strongly encourage the owner to engage a qualified corrosion engineer for a more in-depth evaluation of risks to buried ferrous objects and for specification of special corrosion protection features that may be required. Fire protection lines should be keyed upon.

The categorically “negligible” sulfate concentrations indicate that normal Type I-II cement should be suitable for concrete mix designs utilized for this project, based on American Concrete Institute (ACI) 318 Table 4.3.1. Type V cement may optionally be used for any site concrete mix, and would be mandatory for measured sulfate concentrations exceeding 0.20 weight percent. It is recommended that all concrete which will come in contact with on-site soil materials be selected, batched, and placed in accordance with the latest California Building Code and ACI technical recommendations.

6.13 Construction Observation

The preliminary foundation recommendations presented in this report are based on the assumption that all foundations will bear entirely within properly compacted engineered fill approved by this office. It is recommended that all engineered fill placement operations be performed under continuous engineering observation and

testing by AGI personnel. Engineered fill shall constitute any load-bearing soil placements, irrespective of yardage quantity or depth. Continuous observation is a 2016 CBC requirement for engineered fill. Continuous or periodic fill observation and testing may be suitable for trench backfills depending mostly on trench depth and contractor production. Verification testing of completed soil-subgrade expansion potentials, soluble sulfate content, soil plasticity index, and pre-saturation of the fill pad is recommended at appropriate points in the construction time line. All foundation excavations should be observed prior to placing concrete to verify that foundations are embedded within satisfactory materials and that excavations are free of loose or disturbed soils and made to the recommended depths.

6.14 Investigation Limitations

The present findings and recommendations are based on the results of the field exploration combined with interpolations of soil and groundwater conditions between a limited number of subsurface excavations. The nature and extent of variations beyond or between the explorations may not become evident until construction. If conditions encountered during construction vary significantly from those indicated by this report, then additional geotechnical tests, analyses, and recommendations could be required from this office. Because this report has also incorporated assumed conditions or characteristics of the proposed structure where specific information was not available, foundation plan reviews by this firm are recommended prior to site grading in order to evaluate the proposed facilities from a geotechnical viewpoint and allow modifications to the preliminary recommendations developed to date.

We recommend that the project engineer incorporate this report and subsequent plan review reports into the overall project specification by title and date references on final drawings. Lastly, a pre-construction meeting with the owner, grading contractor, and civil engineer is strongly encouraged to present, explain, and clarify geotechnical concerns, uncertainties, and recommendations for the site.

7.0 CLOSURE

This report was prepared for the use of First Industrial Realty Trust, Inc. and their designates, in cooperation with this office. All professional services provided in connection with the preceding report were prepared in accordance with generally accepted

7.0 CLOSURE

This report was prepared for the use of First Industrial Realty Trust, Inc. and their designates, in cooperation with this office. All professional services provided in connection with the preceding report were prepared in accordance with generally accepted professional engineering principles and local practice in the fields of soil mechanics, foundation engineering, and engineering geology, as well as the general requirements of Riverside County and the City of Perris in effect at the time of report issuance. We make no other warranty, either expressed or implied. We cannot guarantee acceptance of the final report by regulating authorities without needs for additional services.

AGI appreciates the opportunity to help engineer the owner's planned business improvements in the Inland Empire. If you should have any questions, please contact the undersigned at our Riverside office at (951) 776-0345.

Respectfully submitted,
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Attachments: Appendices A-C
Geotechnical Map, Plate No. 1 (foldout)

Distribution: (4) Addressee

REFERENCES

Bartlett, S.F., and Youd, T.L., 1995, Empirical prediction of liquefaction-induced lateral spread: Journal of Geotechnical Engineering, American Society of Civil Engineers, v. 121, no. 4, p. 316-329.

California Division of Mines and Geology, 2008, *Guidelines for Evaluation and Mitigation of Seismic Hazards in California:* CDMG Special Publication 117 [Rev. September 11, 2008], online version at http://www.consrv.ca.gov/dmg/pubs/sp/117.htm

California Department of Conservation, Division of Mines and Geology, 2019a, Digital images of official maps of Alquist-Priolo Earthquake Fault Zones of California, on-line versions at Internet URL http://www.quake.ca.gov/gmaps/ap/ap_maps.htm

California Department of Conservation, California Geological Survey, 2019b, Digital images of official maps of liquefaction and landslide Seismic Hazard Zones, on-line versions at Internet URL http://www.conservation.ca.gov/cgs/shzp

County of Riverside, Transportation and Land Management Agency, 2002, *Technical Guidelines for Review of Geologic and Geotechnical Reports*, 63 p.

FEMA, 2014, Flood Insurance Rate Map, Community Map No. 06065C1430H, 8-18-2014.

Field, E.H., and 2014 Working Group on California Earthquake Probabilities, 2015, UCERF3: A new earthquake forecast for California's complex fault system: U.S. Geological Survey 2015–3009, 6 p., http://dx.doi.org/10.3133/fs20153009

Ishihara, K., 1985, Stability of natural deposits during earthquakes, in *Proceedings of the Eleventh International Conference on Soil Mechanics and Foundation Engineering*, San Francisco, CA, vol. 1, p. 321-376.

Ishihara, K., and Yoshimine, M., 1992, Evaluation of settlements in sand deposits following liquefaction during earthquakes: Soils and Foundations, JSSMFE, v. 32, no. 1, March 1992.

Matti, J.C., Morton, D.M., and Cox, B.F., 1985, Distribution and geologic relations of fault systems in the vicinity of the central Transverse Ranges, southern California: U.S. Geological Survey Open File Report OFR 85-365.

Martin, G.R., and Lew, M. (eds.), 1999, *Recommended Procedures for Implementation of DMG Special Publication 117 Guidelines for Analyzing and Mitigating Liquefaction Hazards in California:* Southern California Earthquake Center Contribution 462, 63 p.

Morton, D.M., and Miller, F.K., 2006, Geologic map of the San Bernardino and Santa Ana 30' x 60' quadrangles, California [ver. 1.0], U.S. Geological Survey Open File Report 2006-1217, scale 1:100,000.

Petersen, Mark D., Frankel, Arthur D., Harmsen, Stephen C., Mueller, Charles S., Haller, Kathleen M., Wheeler, Russell L., Wesson, Robert L., Zeng, Yuehua, Boyd, Oliver S., Perkins, David M., Luco, Nicolas, Field, Edward H., Wills, Chris J., and Rukstales, Kenneth S., 2008, *Documentation for the 2008 Update of the United States National Seismic Hazard Maps:* U.S. Geological Survey Open-File Report 2008–1128, 61 p.

Sieh, K, and Yule, D., 1997, Neotectonic and paleoseismic investigation of the San Andreas fault system, San Gorgonio Pass: Progress report to Southern California Earthquake Center, 4 p.

Sieh, K., and Yule, D., 1998, Neotectonic and paleoseismic investigation of the San Andreas fault system, San Gorgonio Pass: Southern California Earthquake Center, Annual Report for 1998, 2 p. and figures. http://www.scec.org/research/98progreports/

Sieh, K., and Yule, D., 1999, Neotectonic and paleoseismic investigation of the San Andreas fault system, San Gorgonio Pass: Southern California Earthquake Center, Annual Report for 1999, 4 p. and figures. http://www.scec.org/research/99progreports/

Tokimatsu, K., and Seed, H.B., 1987, Evaluation of settlement in sands due to earthquake shaking: Journal of Geotechnical Engineering, ASCE, vol. 113, no. 8, p. 861-878.

U.S. Geological Survey, 2019a, Riverside East (1953 and 1967) 7.5' topographic quadrangle sheets, and Perris (1953) 15' topographic quadrangle sheet, download files at The National Map: Historical Topographical Map Collection, access date 12/18/17 from Internet URL http://nationalmap.gove/historical/

U.S. Geological Survey, 2019b, Unified Hazard Tool: Internet URL https://earthquake.usgs.gov/hazards/interactive/

U.S. Geological Survey, 2019c, Worldwide Earthquake Map, with embedded access to Quaternary faults and folds, and ANSS Comprehensive Earthquake Catalog [COMCAT], Internet URL http://earthquake.usgs.gov/earthquakes/map/

U.S. Geological Survey, 2019d, Design Maps utility, access date 1/21/19 from SEAOC/OSHPD Internet URL http://seismicmaps.org

Woodford, A.O., Shelton, J.S., Doehring, D.O., and Morton, R.K., 1971, Pliocene-Pleistocene history of the Perris Block, southern California: Geological Society of America Bulletin, v. 82, p. 3421-3448.

WGCEP, 2013, The uniform California earthquake rupture forecast, Version 3 (UCERF3) – the time-independent model: U.S. Geological Survey Open-File Report 2013-1165, 97 p.

Youd, T.L., and Idriss, I.M. (eds.), 1997, Summary Report, in Proceedings of the NCEER Workshop on Evaluation of Liquefaction Resistance of Soils: National Center for Earthquake Engineering Research Technical Report NCEER-97-0022, p. 1-40.

Youd, T.L., Hansen, C.M., and Bartlett, S.F., 2002, Revised multilinear regression equations for prediction of lateral spread displacement: Journal of Geotechnical and Geoenvironmental Engineering, v. 128, no. 12, p. 1007-1017.

AERIAL PHOTOGRAPHS

RCFCWCD Aerial Photography Collection, Riverside

Date Flown	Flight Number	Scale	Frame Numbers
1-28-62	Fairchild #24244	1:24,000	Line 1, Nos.43-44
5-24-74	1974 County	1:24,000	Nos. 380-381
4-10-80	1980 County	1:24,000	Nos. 399-400
2-4-84	1984 County	1:19,200	Nos. 1148-1149
1-21-90	1990 County	1:19,200	Line 8, Nos. 26-27
1-30-95	1995 County	1:19,200	Line 8, Nos. 24-25
3-11-00	2000 County	1:19,200	Line 8, Nos. 26-27
4-14-05	2005 County	1:19,200	Line 8, Nos. 23-24
3-14-10	2010 County	1:19,200	Line 8, Nos. 24-25

U.C. Santa Barbara Aerial Image Collections

Date Flown	Flight Number	Scale	Frame Numbers
6-7-38	AXM-1938A	1:20,000	Line 45, #58
8-28-53	AXM-1953B	1:20,000	Line 2K, #111
5-15-67	AXM-1967	1:12,000	3HH-31
3-8-04	EAG RV 04	1:21,000	616

APPENDIX A

A P P E N D I X A

MAP EXPLANATION & SUBSURFACE EXPLORATION LOGS

The Geotechnical Map (Plate No. 1, foldout at the back of this report) was prepared based upon information supplied by the client, or others, along with Aragón Geotechnical's field measurements and observations. Field exploration locations illustrated on the map were derived from taped and paced measurements of distance to surrounding improvements, and should be considered approximate. The selected boring locations were deemed sufficient by AGI for characterizing the possible range of subsurface conditions occurring at the site.

The Field Boring Logs on the following pages schematically depict and describe the subsurface (soil and groundwater) conditions encountered at the specific exploration locations on the date that the explorations were performed. Unit descriptions reflect predominant soil types; actual variability may be much greater. Unit boundaries may be approximate or gradational. Text information often incorporates the field investigator's interpretations of geologic history, origin, diagenesis, and unit identifiers such as formation name or time-stratigraphic group. Additionally, soil conditions between recovered samples are based in part on judgment. Therefore, the logs contain both factual and interpretive information. Subsurface conditions may differ between exploration locations and within areas of the site that were not explored. The subsurface conditions may also change at the exploration locations over the passage of time.

The investigation scope and field operations were conducted in general accordance with the procedures recommended by the American Society for Testing and Materials (ASTM) standard D420-98 entitled "Site Characterization for Engineering Design and Construction Purposes" and/or other relevant specifications. Soil samples were preserved and transported to AGI's Riverside laboratory in general accordance with the procedures recommended by ASTM standard D4220 entitled "Standard Practices for Preserving and Transporting Soil Samples". Brief descriptions of the sampling and testing procedures are presented below:

Ring-Lined Barrel Sampling – ASTM D3550-01

In this procedure, a thick-walled barrel sampler constructed to receive thin-wall liners (either a stack of 1-inch-high brass rings or 6-inch stainless steel tubes for environmental testing) is used to collect soil samples for classification and laboratory tests. Samples were collected from selected depths in all 6 hollow-stem auger borings. The drilling rig was equipped with a 140-pound mechanically actuated automatic driving hammer operated to fall 30 inches, acting on rods. A 12-inch-long sample barrel fitted with 2.50-inch-diameter rings and tubes plus a waste barrel extension was subsequently driven a distance of 18 inches or to practical refusal (considered to be ≥50 blows for 6 inches). The raw blow counts for each 6-inch increment of penetration (or fraction thereof) were recorded and are shown on the Field Boring Logs. An asterisk (*) marks refusal within the initial 6-inch seating interval. The hammer weight of 140 pounds and fall of 30 inches allow rough

correlations to be made (via conversion factors that normally range from 0.60 to 0.65 in Southern California practice) to uncorrected Standard Penetration Test N-values, and thus approximate descriptions of consistency or relative density could be derived. The method provides relatively undisturbed samples that fit directly into laboratory test instruments without additional handling and disturbance.

Standard Penetration Tests – ASTM D1586-11

In deeper boreholes, Standard Penetration Tests were performed to recover disturbed samples suitable for classification, and to provide baseline data for liquefaction susceptibility analysis and site class for seismic design. A split-barrel sampler with a 2.0-inch outside diameter is driven by successive blows of a 140-pound hammer with a vertical fall of 30 inches, for a distance of 18 inches at the desired depth. The drill rig used for this investigation was equipped with an automatic trip hammer acting on drilling rods. The total number of blows required to drive the sampler the last 12 inches of the 18-inch sample interval is defined as the Standard Penetration Resistance, or "N-value". Penetration resistance counts for each 6-inch interval and the raw, uncorrected N-value for each test are shown on the Field Boring Logs. Drive efficiencies for automatic hammers are higher than older rope-and-cathead systems, which are disappearing from practice. Where practical refusal was encountered within a 6-inch interval, defined as penetration resistance ≥50 blows per 6 inches, the raw blow count was recorded for the noted fractional interval; an asterisk (*) marks refusal within the initial 6-inch seating interval. The N-value represents an index of the relative density for granular soils or comparative consistency for cohesive soils.

Bulk Sample

A relatively large volume of soil is collected with a shovel or trowel. The sample is transported to the materials laboratory in a sealed plastic bag or bucket.

Classification of Samples

Bulk auger cuttings and discrete soil samples were visually-manually classified based on texture and plasticity, utilizing the procedures outlined in the ASTM D2487-11 standard. The assignment of a group name to each of the collected samples was performed according to the Unified Soil Classification System (ASTM D2488-09). The plasticity reported on field logs refers to soil behavior at field moisture content unless noted otherwise. Site material classifications are reported on the Field Boring Logs.

FIELD LOG OF BORING B - 1

Sheet 1 of 2

Project: *LIGHT INDUSTRIAL PROJECT, APN 300-170-009*

Location: *CITY OF PERRIS, RIVERSIDE COUNTY, CALIF.*

Date(s) Drilled:	**12/28/18**	Logged By:	**M. Doerschlag**
Drilled By:	**GP Drilling**	Total Depth:	**21.5 Ft.**
Rig Make/Model:	**Mobile B-61**	Hammer Type:	**Automatic trip**
Drilling Method:	**Hollow-Stem Auger**	Hammer Weight/Drop:	**140 Lb./30 In.**
Hole Diameter:	**8 In.**	Surface Elevation:	**± 1440.5 Ft. AMSL, RCFC NAD 83**

Comments: Located near NWC of proposed structure.

DEPTH (ft.)	ELEVATION (MSL DATUM)	SAMPLE INTERVALS: BULK / DRIVE / TYPE, "N" or (Blows/ft.)	GRAPHIC LOG	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (pcf)	WATER CONTENT (%)	WELL COMPLETION	OTHER TESTS
0	1440			CL	Silty Clay: Brown; soft upper 3' (mechanically disturbed), becoming very stiff below; subjectively slightly moist; traces of fine to medium sand. Granulated, fine blocky texture, with abundant carbonate below 2 feet. [Very old alluvium]				BULK: MAX, SHEAR, EI, LL/PL, CORROSION SUITE
		RING 6 13 13 (26)		CL	← Silty clay, disaggregated small blocky peds with soft punky interstitial fills, abundant carbonate, visibly porous.	88.2	12.5		CONSOL
5	1435	RING 13 15 17 (32)		CL	← Silty clay, similar to 3' sample and continued visibly porous to at least 6' depth.	102.4	14.1		CONSOL
		RING 13 17 19 (36)		CL	← Silty clay, with 15-20% fine sand. Heavy carbonate and punky textures die out by ~8 feet, not visibly porous below.	103.0	13.9		
				ML	Clayey Silt: Yellowish brown; very stiff; slightly moist; moderately cohesive; non-plastic; massive; not visibly porous. Common MnO spots/films. Very slowly grades less clay and more granular with depth (coarsening down). [Very old alluvium]				
10	1430	RING 13 17 20 (37)				125.2	6.7		
15									

Continued on next sheet.

FIELD LOG OF BORING B - 1

Sheet 2 of 2

Project: ***LIGHT INDUSTRIAL PROJECT, APN 300-170-009***

Location: ***CITY OF PERRIS, RIVERSIDE COUNTY, CALIF.***

DEPTH (ft.)	ELEVATION (MSL DATUM)	SAMPLE INTERVALS: BULK / DRIVE / TYPE, "N" or (Blows/ft.)	GRAPHIC LOG	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (pcf)	WATER CONTENT (%)	WELL COMPLETION	OTHER TESTS
15	1425	SPT 22 26 27 N=53		ML	Sandy Silt: Dark yellowish brown; primarily hard; moist; cohesive and with some clay content but lacks visible carbonate; non-plastic; averages ~15% fine to medium-grained sand; massive. Continues to slowly coarsen with depth. [Very old alluvium]				
20	1420	SPT 10 17 22 N=39		SM/ML	← Grades to very silty f-m sand, massive, friable and uncemented, dark yellowish brown.				

Bottom of boring at 21.5 ft.
No groundwater encountered.
Boring backfilled with compacted soil cuttings.

FIELD LOG OF BORING B - 2

Sheet 1 of 2

Project: *LIGHT INDUSTRIAL PROJECT, APN 300-170-009*

Location: *CITY OF PERRIS, RIVERSIDE COUNTY, CALIF.*

Date(s) Drilled:	**12/28/18**	Logged By:	**M. Doerschlag**
Drilled By:	**GP Drilling**	Total Depth:	**31.5 Ft.**
Rig Make/Model:	**Mobile B-61**	Hammer Type:	**Automatic trip**
Drilling Method:	**Hollow-Stem Auger**	Hammer Weight/Drop:	**140 Lb./30 In.**
Hole Diameter:	**8 In.**	Surface Elevation:	**± 1440.0 Ft. AMSL, RCFC NAD 83**

Comments: Located near SWC of proposed structure.

DEPTH (ft.)	ELEVATION (MSL DATUM)	SAMPLE INTERVALS (BULK / DRIVE / TYPE, "N" or (Blows/ft.))	GRAPHIC LOG	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (pcf)	WATER CONTENT (%)	WELL COMPLETION	OTHER TESTS
0	1440			CL	Silty Clay: Brown; soft in mechanically disturbed zone, becoming very stiff below; subjectively slightly moist; traces of fine to medium sand. Granulated, fine blocky texture, with ubiquitous carbonate below 2.5 feet. [Very old alluvium]				
		RING 15 24 22 (46)		CL	← Silty clay, with sharp contact between mechanically ripped and natural deposits at 2.5-foot depth, latter with disaggregated small blocky peds with soft punky interstitial fills, abundant carbonate, visibly porous.	102.9	14.0		CONSOL
		RING 8 17 18 (35)							
5	1435			CL	← Silty clay, similar to 3' sample and continued visibly porous.	104.4	12.6		CONSOL
		RING 17 21 24 (45)		CL	← Silty clay, carbonate now finely disseminated, sandier (about 20%). Continues partly friable and punky texture, with some pinhole pores. Lower unit contact approximate.	106.6	11.4		
10	1430	RING 18 27 35 (62)		SC, ML	Clayey Sand: Brown; dense; slightly moist; cohesive and cemented; non-plastic; not visibly porous. Some subordinate zones classify as sandy silt. Not visibly porous. [Very old alluvium]	124.1	5.2		
15	1425								

Continued on next sheet.

FIELD LOG OF BORING B - 2

Sheet 2 of 2

Project: ***LIGHT INDUSTRIAL PROJECT, APN 300-170-009***

Location: ***CITY OF PERRIS, RIVERSIDE COUNTY, CALIF.***

DEPTH (ft.)	ELEVATION (MSL DATUM)	SAMPLE INTERVALS: BULK / DRIVE / TYPE, "N" or (Blows/ft.)	GRAPHIC LOG	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (pcf)	WATER CONTENT (%)	WELL COMPLETION	OTHER TESTS
15	1425	SPT 10 16 22 N=38		SC	Clayey Sand: At 15 feet grades dark yellowish brown; dense; slightly moist; cohesive and with estimated 35-40% fines; non-plastic; not visibly porous. Becomes firm drilling in remainder of boring. [Very old alluvium]				
20	1420	SPT 16 35 40 N=75		SC, CL	← Becomes very dense clayey sand and sandy clay, crude beds, cohesive, brown color, lacks carbonate.				
25	1415	SPT 16 21 24 N=45		CL / SM	Silty Sand: Primarily yellowish brown; dense to very dense; slightly moist; averages around 20-25% almost entirely silty fines, but is very clayey and very cohesive at top of sample (paleosol?). May be crudely layered ~1 foot thick. Easier drilling. [Very old alluvium]				
30	1410	SPT 9 16 34 N=50		ML	← Massive yellowish brown moist silt, traces of sand and clay.				

Bottom of boring at 31.5 ft.
No groundwater encountered.
Boring backfilled with compacted soil cuttings.

FIELD LOG OF BORING B - 3

Sheet 1 of 2

Project: *LIGHT INDUSTRIAL PROJECT, APN 300-170-009*

Location: *CITY OF PERRIS, RIVERSIDE COUNTY, CALIF.*

Date(s) Drilled:	**12/28/18**	Logged By:	**M. Doerschlag**
Drilled By:	**GP Drilling**	Total Depth:	**21.5 Ft.**
Rig Make/Model:	**Mobile B-61**	Hammer Type:	**Automatic trip**
Drilling Method:	**Hollow-Stem Auger**	Hammer Weight/Drop:	**140 Lb./30 In.**
Hole Diameter:	**8 In.**	Surface Elevation:	**± 1440.0 Ft. AMSL, RCFC NAD 83**

Comments: Warehouse building, center region.

DEPTH (ft.)	ELEVATION (MSL DATUM)	SAMPLE INTERVALS: BULK / DRIVE / TYPE, "N" or (Blows/ft.)	GRAPHIC LOG	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (pcf)	WATER CONTENT (%)	WELL COMPLETION	OTHER TESTS
0	1440			CL	Silty Clay: Brown; soft in mechanically disturbed zone, becoming very stiff below; subjectively slightly moist; traces of fine to medium sand. Granulated, fine blocky texture, with ubiquitous carbonate below 3 feet. [Very old alluvium]				
		RING 5 7 13 (20)		CL	← Silty clay, with sharp contact between mechanically ripped and natural deposits at 3-foot depth, latter with disaggregated small blocky peds with soft punky interstitial fills, abundant carbonate, visibly porous.	92.2	11.2		
5	1435	RING 8 13 25 (38)		CL	← Silty clay, blocky small peds with abundant reticulate and diffuse carbonate, crumbly, continued visibly porous.	97.5	14.2		
		RING 15 21 31 (52)		CL	← Silty clay, cohesive and far better texture than "exploded" active zone above, minor finely disseminated carbonate, not visibly porous.	118.2	12.0		
10	1430	SPT 8 12 16 N=28		SC	Clayey Sand: Brown; medium dense grading to dense; slightly moist; fine to medium grained; cohesive, but relatively low fines at estimated 20%; not visibly porous. Appears massive. [Very old alluvium]				
15	1425								

Continued on next sheet.

FIELD LOG OF BORING B - 3

Sheet 2 of 2

Project: ***LIGHT INDUSTRIAL PROJECT, APN 300-170-009***

Location: ***CITY OF PERRIS, RIVERSIDE COUNTY, CALIF.***

DEPTH (ft.)	ELEVATION (MSL DATUM)	SAMPLE INTERVALS: BULK / DRIVE / TYPE, "N" or (Blows/ft.)	GRAPHIC LOG	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (pcf)	WATER CONTENT (%)	WELL COMPLETION	OTHER TESTS
15	1425	SPT 11 17 33 N=50		SC/CL	Clayey Sand: At 15 feet grades dark reddish brown and much more clay; very dense; slightly moist; strongly cohesive; non-plastic at field water content; fine to medium weathered sand; not visibly porous. Firm drilling. [Very old alluvium]				
					Silty Sand: Yellowish brown; very dense; slightly moist; averages around 25% fines with traces of clay (still uncemented); fine to medium grained; appears massive. Notably easier drilling. [Very old alluvium]				
20	1420	SPT 15 33 55 N=88		SM	← Silty sand, as above.				

Bottom of boring at 21.5 ft.
No groundwater encountered.
Boring backfilled with compacted soil cuttings.

FIELD LOG OF BORING B - 4

Sheet 1 of 2

Project: *LIGHT INDUSTRIAL PROJECT, APN 300-170-009*

Location: *CITY OF PERRIS, RIVERSIDE COUNTY, CALIF.*

Date(s) Drilled:	**12/28/18**	Logged By:	**M. Doerschlag**
Drilled By:	**GP Drilling**	Total Depth:	**21.5 Ft.**
Rig Make/Model:	**Mobile B-61**	Hammer Type:	**Automatic trip**
Drilling Method:	**Hollow-Stem Auger**	Hammer Weight/Drop:	**140 Lb./30 In.**
Hole Diameter:	**8 In.**	Surface Elevation:	**± 1440.0 Ft. AMSL, RCFC NAD 83**

Comments: Warehouse building, center region.

DEPTH (ft.)	ELEVATION (MSL DATUM)	SAMPLE INTERVALS: BULK / DRIVE / TYPE, "N" or (Blows/ft.)	GRAPHIC LOG	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (pcf)	WATER CONTENT (%)	WELL COMPLETION	OTHER TESTS
0	1440	RING 9 13 13 (26)		CL	Silty Clay: Brown; mechanically disturbed to around 3 feet, abruptly becoming very stiff below; subjectively slightly moist; traces of fine to medium sand. Granulated, fine blocky texture, with ubiquitous carbonate below tilled layer. [Very old alluvium]				
				CL	← Silty clay, with sharp contact between mechanically ripped and natural deposits near the 3-foot mark, native soils feature soft punky interstitial fills of pedogenic carbonate, visibly porous.	101.6	11.0		
		RING 9 15 26 (41)							
5	1435			CL	← Silty clay, common reticulate carbonate with punky expanded textures and visibly porous to ~5' depth.	101.4	13.9		
		RING 19 36 50/5"		ML	Clayey Silt: Dark yellowish brown; hard; slightly moist; moderately cohesive with ~15% fine sand; non-plastic; not visibly porous; massive. Common MnO grain films. [Very old alluvium]	125.4	9.7		
10	1430	SPT 23 36 50 N=86		CL	Sandy Clay: Brown; hard; slightly moist; strongly cohesive but with estimated 35-40% sand; not visibly porous. May be upper part of a thick fining-up sedimentary package. [Very old alluvium]				
15	1425				Approximate or gradational contact.				

Continued on next sheet.

FIELD LOG OF BORING B - 4

Sheet 2 of 2

Project: ***LIGHT INDUSTRIAL PROJECT, APN 300-170-009***

Location: ***CITY OF PERRIS, RIVERSIDE COUNTY, CALIF.***

DEPTH (ft.)	ELEVATION (MSL DATUM)	SAMPLE INTERVALS: BULK / DRIVE / TYPE, "N" or (Blows/ft.)	GRAPHIC LOG	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (pcf)	WATER CONTENT (%)	WELL COMPLETION	OTHER TESTS
15	1425	SPT 10 24 40 N=64		ML	Sandy Silt: Primarily yellowish brown; hard; still only slightly moist; averages around 30-40% fine to medium-grained sand; uncemented; lacks carbonate. Firm drilling to bottom. [Very old alluvium]				
20	1420	SPT 20 29 41 N=70		SM	← Sample classifies as silty sand with trace of clay, uncemented, fine to medium grained. lacks carbonate.				

Bottom of boring at 21.5 ft.
No groundwater encountered.
Boring backfilled with compacted soil cuttings.

FIELD LOG OF BORING B - 5

Sheet 1 of 3

Project: *LIGHT INDUSTRIAL PROJECT, APN 300-170-009*

Location: *CITY OF PERRIS, RIVERSIDE COUNTY, CALIF.*

Date(s) Drilled:	**12/28/18**	Logged By:	**M. Doerschlag**
Drilled By:	**GP Drilling**	Total Depth:	**51.5 Ft.**
Rig Make/Model:	**Mobile B-61**	Hammer Type:	**Automatic trip**
Drilling Method:	**Hollow-Stem Auger**	Hammer Weight/Drop:	**140 Lb./30 In.**
Hole Diameter:	**8 In.**	Surface Elevation:	**± 1440.0 Ft. AMSL, RCFC NAD 83**

Comments: Located at NEC of proposed industrial building. Perris Valley Drain has surface stream flow.

DEPTH (ft.)	ELEVATION (MSL DATUM)	SAMPLE INTERVALS: BULK / DRIVE / TYPE, "N" or (Blows/ft.)	GRAPHIC LOG	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (pcf)	WATER CONTENT (%)	WELL COMPLETION	OTHER TESTS
0	1440	RING 8 12 21 (33)		CL	Silty Clay: Pale brown; mechanically disturbed to around 3 feet, abruptly becoming very stiff below; subjectively slightly moist; traces of fine-grained sand. Granulated, fine blocky texture, with ubiquitous carbonate below tilled layer. [Very old alluvium]				BULK: MAX, EI, LL/PL, CORROSIVITY SUITE
				CL	← Very silty clay, with sharp contact between mechanically ripped and natural deposits near the 3-foot mark, native soils feature soft punky interstitial fills of pedogenic carbonate, not visibly porous and appears massive.	95.4	10.8		
		RING 17 50/6"				117.8	7.6		
5	1435			ML/SM	Sandy Silt: Light yellowish brown; hard and cemented; slightly moist; cohesive with subequal proportions of silt and fine sand; non-plastic; not visibly porous; massive. Possible top of 20'+ thick very gradual fining-up package. [Very old alluvium]				
		RING 27 50/6"		ML/SM		114.8	6.3		
10	1430	RING 12 30 39 (69)		SM	Silty Sand: Yellowish brown; very dense; slightly moist; fine to coarse grained (weathered granitic particles); slightly cohesive and cemented but lacks visible carbonate; estimated 35-40% fines; not visibly porous. [Very old alluvium]	128.8	4.8		
15	1425								

Continued on next sheet.

FIELD LOG OF BORING B - 5

Sheet 2 of 3

Project: ***LIGHT INDUSTRIAL PROJECT, APN 300-170-009***

Location: ***CITY OF PERRIS, RIVERSIDE COUNTY, CALIF.***

DEPTH (ft.)	ELEVATION (MSL DATUM)	SAMPLE INTERVALS (BULK / DRIVE / TYPE, "N" or (Blows/ft.))	GRAPHIC LOG	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (pcf)	WATER CONTENT (%)	WELL COMPLETION	OTHER TESTS
15	1425	SPT 11 36 50/5"		SM	Silty Sand: Yellowish brown; very dense; still only slightly moist; mostly fine to medium grained and siltier than above, plus traces of clay which may increase with depth (drill rate firms for next several feet); uncemented and lacks carbonate. [Very old alluvium]				
20	1420	SPT 13 18 21 N=39		SM	← Silty sand, grades to moist, estimated 40% fines including traces of clay, massive and not visibly porous. Grades sandier with depth.				
25	1415	SPT 15 22 26 N=48		SM	Base of fining-up sequence?				
				ML	Sandy Silt: Yellowish brown; hard; moist; no clay at top and averages 20% very fine sand. Cuttings continue to be low-clay silt. [Very old alluvium]				
30	1410	SPT 9 17 18 N=35		ML	← Silt, with some clay and traces of fine sand, grossly uncemented but exhibits thin laminar carbonate deposits, not visibly porous.				
35	1405								

Continued on next sheet.

FIELD LOG OF BORING B - 5

Sheet 3 of 3

Project: ***LIGHT INDUSTRIAL PROJECT, APN 300-170-009***

Location: ***CITY OF PERRIS, RIVERSIDE COUNTY, CALIF.***

DEPTH (ft.)	ELEVATION (MSL DATUM)	SAMPLE INTERVALS: BULK / DRIVE / TYPE, "N" or (Blows/ft.)	GRAPHIC LOG	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (pcf)	WATER CONTENT (%)	WELL COMPLETION	OTHER TESTS
35	1405	SPT 9 12 18 N-30		SC	Clayey Sand: Around 35 feet begins better-stratifed sequences of predominantly coarse-grained classifications, beds commonly 2"-10" thick. Clayey sand is wet, variably as low as 20-25% fines, and is fine to coarse grained. Slow, stiff drilling progress noted to beyond 40 feet, with plastic silty clay cuttings recorded between 35 and 40 feet. [Very old alluvium]				
40	1400	SPT 7 18 18 N=36		ML, SP-SM	← Bedded clayey silt and medium to coarse-grained sand with silt (granitic source), layers 4-8" thick, wet.				
45	1395	SPT 16 22 24 N=46		SM, SP-SM	Silty Sand: Stratified yellowish brown and light brown; dense; wet. Crude beds 8"-12" thick of silty sand and almost clean medium-coarse sand. Uncemented. [Very old alluvium]				
50	1390	SPT 9 12 19 N=31		SM, ML	← About half silty f-c sand and half hard, non-plastic clayey silt, former with traces of fine gravel, strata 3-6" thick.				

Bottom of boring at 51.5 ft.
Static groundwater measured at 34.0 feet after 8 hours.
Boring backfilled with compacted soil cuttings.

FIELD LOG OF BORING B - 6

Sheet 1 of 2

Project: *LIGHT INDUSTRIAL PROJECT, APN 300-170-009*

Location: *CITY OF PERRIS, RIVERSIDE COUNTY, CALIF.*

Date(s) Drilled:	**12/28/18**	Logged By:	**M. Doerschlag**
Drilled By:	**GP Drilling**	Total Depth:	**21.5 Ft.**
Rig Make/Model:	**Mobile B-61**	Hammer Type:	**Automatic trip**
Drilling Method:	**Hollow-Stem Auger**	Hammer Weight/Drop:	**140 Lb./30 In.**
Hole Diameter:	**8 In.**	Surface Elevation:	**± 1440.0 Ft. AMSL, RCFC NAD 83**

Comments: Warehouse building, south-center dock door areas.

DEPTH (ft.)	ELEVATION (MSL DATUM)	SAMPLE INTERVALS (BULK / DRIVE / TYPE, "N" or (Blows/ft.))	GRAPHIC LOG	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (pcf)	WATER CONTENT (%)	WELL COMPLETION	OTHER TESTS
0	1440			CL	Silty Clay: Brown; mechanically disturbed to around 2½ feet, abruptly becoming very stiff below; subjectively slightly moist; traces of fine to medium sand. Granulated, fine blocky texture, with ubiquitous carbonate below tilled layer. [Very old alluvium]				
		RING 6 13 25 (38)		CL	← Silty clay, with sharp contact between mechanically ripped and natural deposits near the 2½-foot mark, native soils feature soft punky interstitial fills of pedogenic carbonate, visibly porous.	99.8	13.0		
		RING 17 18 33 (51)		CL	← Silty clay, estimated 10-15% sand, abundant carbonate with punky expanded textures and visibly porous to ~5' depth.	98.9	14.0		
5	1435	RING 15 15 23 (38)		ML/CL	← Borderline clayey silt, about 15% sand, continued abundant carbonate, but better textured and lacks soft crumbly ped interstices.	106.4	14.8		
				ML	Clayey Silt: Dark yellowish brown; hard; slightly moist; moderately cohesive with typical ~15% fine sand (more sand near 10-foot depth); non-plastic; not visibly porous; massive. [Very old alluvium]				
10	1430	SPT 16 35 39 N=74		ML					
15	1425								

Continued on next sheet.

FIELD LOG OF BORING B - 6

Sheet 2 of 2

Project: ***LIGHT INDUSTRIAL PROJECT, APN 300-170-009***

Location: ***CITY OF PERRIS, RIVERSIDE COUNTY, CALIF.***

DEPTH (ft.)	ELEVATION (MSL DATUM)	SAMPLE INTERVALS: BULK / DRIVE / TYPE, "N" or (Blows/ft.)	GRAPHIC LOG	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (pcf)	WATER CONTENT (%)	WELL COMPLETION	OTHER TESTS
15	1425	SPT 10 15 23 N=38		ML	Clayey Silt: Dark yellowish brown; hard but easily crumbled; slightly moist; estimated 15-20% fine sand; massive; not visibly porous. Common MnO spots and grain films, but no obvious carbonate. [Very old alluvium]				
20	1420	SPT 25 34 45 N=79		SC	← Sample classifies as reddish brown clayey sand, fine to coarse grained, cohesive, ~30% fines.				

Bottom of boring at 21.5 ft.
No groundwater encountered.
Boring backfilled with compacted soil cuttings.

FIELD LOG OF BORING B - 7

Sheet 1 of 1

Project: *LIGHT INDUSTRIAL PROJECT, APN 300-170-009*

Location: *CITY OF PERRIS, RIVERSIDE COUNTY, CALIF.*

Date(s) Drilled:	**12/28/18**	Logged By:	**M. Doerschlag**
Drilled By:	**GP Drilling**	Total Depth:	**7.5 Ft.**
Rig Make/Model:	**Mobile B-61**	Hammer Type:	**Automatic trip**
Drilling Method:	**Hollow-Stem Auger**	Hammer Weight/Drop:	**140 Lb./30 In.**
Hole Diameter:	**8 In.**	Surface Elevation:	**± 1440.0 Ft. AMSL, RCFC NAD 83**

Comments: Truck yard area, west.

DEPTH (ft.)	ELEVATION (MSL DATUM)	SAMPLE INTERVALS (BULK / DRIVE / TYPE, "N" or (Blows/ft.))	GRAPHIC LOG	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (pcf)	WATER CONTENT (%)	WELL COMPLETION	OTHER TESTS
0	1440			CL	Silty Clay: Brown; mechanically disturbed to around 3 feet, abruptly becoming stiff below; subjectively slightly moist; traces of fine to medium sand. Soft, porous textures indicative of highly active soils. [Very old alluvium]				
		RING 7 7 10 (17)		CL	← Silty clay, with sharp contact between mechanically ripped and natural deposits at 3 feet. Native is porous, with soft and punky interstitial white ped fills.	89.6	10.5		
		RING 6 9 12 (21)		CL	← Silty clay, composed of small die-shaped cohesive peds surrounded by soft punky carbonate.	89.5	15.6		
5	1435	RING 12 23 39 (62)		ML/CL	← Borderline clayey silt, about 15% sand, far better texture but still with abundant veins/clots of carbonate, cohesive, not visibly porous.	115.6	12.1		

Bottom of boring at 7.5 ft.
No groundwater encountered.
Boring backfilled with compacted soil cuttings.

FIELD LOG OF BORING B - 8

Sheet 1 of 1

Project: *LIGHT INDUSTRIAL PROJECT, APN 300-170-009*

Location: *CITY OF PERRIS, RIVERSIDE COUNTY, CALIF.*

Date(s) Drilled:	**12/28/18**	Logged By:	**M. Doerschlag**
Drilled By:	**GP Drilling**	Total Depth:	**7.5 Ft.**
Rig Make/Model:	**Mobile B-61**	Hammer Type:	**Automatic trip**
Drilling Method:	**Hollow-Stem Auger**	Hammer Weight/Drop:	**140 Lb./30 In.**
Hole Diameter:	**8 In.**	Surface Elevation:	**± 1439.5 Ft. AMSL, RCFC NAD 83**

Comments: Truck yard area, east.

DEPTH (ft.)	ELEVATION (MSL DATUM)	SAMPLE INTERVALS: BULK / DRIVE / TYPE, "N" or (Blows/ft.)	GRAPHIC LOG	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (pcf)	WATER CONTENT (%)	WELL COMPLETION	OTHER TESTS
0				CL	Silty Clay: Very pale brown; mechanically disturbed to around 3 feet, abruptly becoming very stiff below; subjectively slightly moist; traces of fine to medium sand. Soft, porous textures to about 5' deep indicative of highly active soils. [Very old alluvium]				
		RING 6 12 22 (34)		CL	← Silty clay, undisturbed deposits start at about 3 feet. Native is porous, with soft and punky interstitial white ped fills.	98.7	14.0		
	1435	RING 13 14 16 (30)		CL	← Silty clay, lightens to brownish yellow, continued abundant soft, punky carbonate.	97.3	6.6		
5		RING 22 39 50 (89)		ML	Sandy Silt: Yellowish brown; hard; slightly moist; contains a few pinhole pores to 6½ feet in massive, non-plastic deposit, some fine laminar MnO films. [Very old alluvium]	125.6	9.8		

Bottom of boring at 7.5 ft.
No groundwater encountered.
Boring backfilled with compacted soil cuttings.

FIELD LOG OF BORING B - 9

Sheet 1 of 2

Project: *LIGHT INDUSTRIAL PROJECT, APN 300-170-009*

Location: *CITY OF PERRIS, RIVERSIDE COUNTY, CALIF.*

Date(s) Drilled:	**12/28/18**	Logged By:	**M. Doerschlag**
Drilled By:	**GP Drilling**	Total Depth:	**21.0 Ft.**
Rig Make/Model:	**Mobile B-61**	Hammer Type:	**Automatic trip**
Drilling Method:	**Hollow-Stem Auger**	Hammer Weight/Drop:	**140 Lb./30 In.**
Hole Diameter:	**8 In.**	Surface Elevation:	**± 1439.0 Ft. AMSL (RCFC NAD 83)**

Comments: Located near SEC of proposed structure.

DEPTH (ft.)	ELEVATION (MSL DATUM)	SAMPLE INTERVALS: BULK / DRIVE / TYPE, "N" or (Blows/ft.)	GRAPHIC LOG	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (pcf)	WATER CONTENT (%)	WELL COMPLETION	OTHER TESTS
0				CL	Silty Clay: Brown; soft upper 3' (mechanically disturbed), becoming very stiff below; slightly moist; traces of fine to medium sand. Massive and porous, with abundant carbonate below 3 feet. [Very old alluvium]				
	1435	RING 10 27 30 (57)		CL	← Silty clay, with heavy diffuse carbonate and visibly porous. Has rare thin stringers of medium to coarse sand.	104.6	7.6		
5		RING 15 22 27 (49)		SM	Silty Sand: Brown; dense to very dense; slightly moist; fines-rich at 45-50% with trace of clay, cohesive; massive; some diffuse carbonate but not visibly porous. [Very old alluvium]	115.6	7.5		CONSOL
		RING 22 33 50/4"		SM/ML	← Silty sand, very fine-grained and very silty, cemented, with thin laminar carbonate deposits and common MnO grain films.	120.0	5.9		CONSOL
	1430	RING 17 31 50/5"		CL	Sandy Clay: Brown; hard; moist; strongly cohesive, with around 30% fine to coarse weathered sand grains; non-plastic. Hard drilling. [Very old alluvium]	127.0	11.4		
10					Drill rate picks up.				
	1425			SC	Clayey Sand: Yellowish brown; very dense; slightly moist; [Very old alluvium]				
15									

Continued on next sheet.

FIELD LOG OF BORING B - 9

Sheet 2 of 2

Project: ***LIGHT INDUSTRIAL PROJECT, APN 300-170-009***

Location: ***CITY OF PERRIS, RIVERSIDE COUNTY, CALIF.***

DEPTH (ft.)	ELEVATION (MSL DATUM)	SAMPLE INTERVALS: BULK / DRIVE / TYPE, "N" or (Blows/ft.)	GRAPHIC LOG	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (pcf)	WATER CONTENT (%)	WELL COMPLETION	OTHER TESTS
15		SPT 17 31 40 N=71		SC	Clayey Sand: Yellowish brown; very dense; slightly moist; fine to medium grained and cemented; massive, not visibly porous. Lacks carbonate. [Very old alluvium]				
	1420			ML	Sandy Silt: Yellowish brown; hard; slightly moist; mostly fine-grained sand but has rare weathered granules and a trace of clay, massive; not visibly porous. Easier drilling than above subunit. [Very old alluvium]				
20		SPT 17 50/6"		ML	← Sandy silt, as above.				

Bottom of boring at 21.0 ft.
No groundwater encountered.
Boring backfilled with compacted soil cuttings.

FIELD LOG OF BORING B - 10

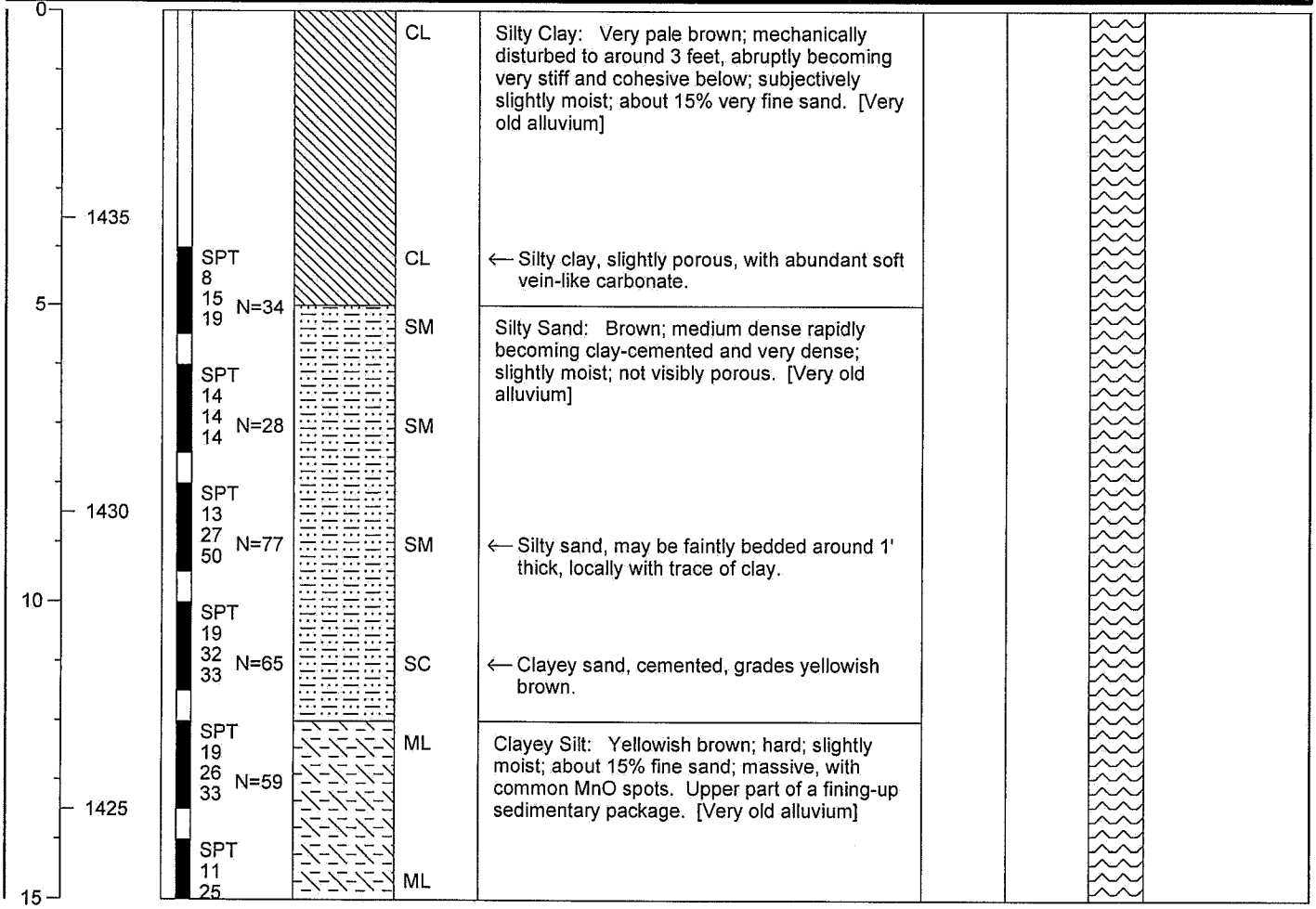
Sheet 1 of 2

Project: *LIGHT INDUSTRIAL PROJECT, APN 300-170-009*

Location: *CITY OF PERRIS, RIVERSIDE COUNTY, CALIF.*

Date(s) Drilled:	**12/28/18**	Logged By:	**M. Doerschlag**
Drilled By:	**GP Drilling**	Total Depth:	**19.5 Ft.**
Rig Make/Model:	**Mobile B-61**	Hammer Type:	**Automatic trip**
Drilling Method:	**Hollow-Stem Auger**	Hammer Weight/Drop:	**140 Lb./30 In.**
Hole Diameter:	**8 In.**	Surface Elevation:	**± 1438.5 Ft. AMSL, RCFC NAD 83**

Comments: Water quality basin boring, expected bottom elevation of about -6 feet bgs.



Continued on next sheet.

FIELD LOG OF BORING B - 10

Sheet 2 of 2

Project: ***LIGHT INDUSTRIAL PROJECT, APN 300-170-009***

Location: ***CITY OF PERRIS, RIVERSIDE COUNTY, CALIF.***

DEPTH (ft.)	ELEVATION (MSL DATUM)	SAMPLE INTERVALS: BULK / DRIVE / TYPE; "N" or (Blows/ft.)	GRAPHIC LOG	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (pcf)	WATER CONTENT (%)	WELL COMPLETION	OTHER TESTS
15		47 N=72		SC	Clayey Sand: Yellowish brown; very dense; slightly moist; somewhat variable clay content but generally cemented and very firm drilling. [Very old alluvium]				
		SPT 19 40 50/4"							
	1420	SPT 13 25 33 N=58		SC	← Clayey sand, up to ~40% fines, moist.				

Bottom of boring at 19.5 ft.
No groundwater encountered.
Boring backfilled with compacted soil cuttings.

APPENDIX B

A P P E N D I X B

LABORATORY TESTING

Water Content - Dry Density Determinations – ASTM D2216-10

The dry unit weight and field moisture content were determined for each of the recovered barrel samples. The moisture-density information provides a gross indication of soil consistency and can assist in delineating local variations. The information can also be used to correlate soils and define units between individual exploration locations on the project site, as well as with units found on other sites in the general area.

Measured dry densities ranged from approximately 88.2 to 128.8 pounds per cubic foot. Water contents in ring samples ranged from 4.8 to 15.6 percent of dry unit weight. Sample locations and the corresponding test results are illustrated on the Field Boring Logs.

Modified Effort Compaction Tests – ASTM D1557-12

Bulk soil samples were collected from the eastern and western ends of the prospective building envelope. The representative future fill materials were tested to determine their maximum dry densities and optimum water contents per the Method A procedure in the noted ASTM standard. The test method uses 25 blows of a 10-pound hammer falling 18 inches on each of 5 soil layers in a 1/30 cubic foot cylinder. Soil samples were prepared at varying moisture contents to create a curve illustrating achieved dry density as a function of water content. The test results are listed below and shown graphically on pages B-4 and B-5.

Maximum Density - Optimum Water Content Determinations

Soil Description	Location	Maximum Dry Density (pcf)	Optimum Moisture Content (%)
Silty Clay (CL), trace of sand [Very old alluvium]	B - 1 @ 0 - 5 ft.	111.0	16.5
Silty Clay (CL), trace of sand [Very old alluvium]	B - 5 @ 0 - 4 ft.	115.0	14.5

Shear Strength Tests – ASTM D3080-11

Direct shear tests were performed on soils prepared to represent future compacted fill derived from surficial native site alluvium. We expect mass grading operations should produce soil masses with roughly equivalent strengths. "Fill" test samples were remolded to approximately 90 percent of the maximum dry density, at optimum water content as determined from a compaction test. All samples were initially saturated, consolidated and drained of excess moisture, and tested in a direct shear machine of the strain control type.

Test samples are initially prepared and/or retained within standard one-inch-high brass rings. Samples were tested at increasing normal loads to determine the Mohr-Coulomb shear strength parameters illustrated on page B-7. Peak and ultimate shear strength values are illustrated on the plot.

Expansion Index Tests – ASTM D4829-11

Laboratory clay expansion tests of typical clay materials expected to be incorporated into structural compacted fill were performed in general accordance with the 1994 Uniform Building Code Standard 18-2 and subsequent modern ASTM adoption. A remolded sample is compacted in two layers in a 4-inch I.D. mold to a total compacted thickness of about 1.0 inch, using a 5.5-pound hammer falling 12 inches at 15 blows per layer. The sample is initially at a saturation between 49 and 51 percent. After remolding, the sample is confined under a normal load of 144 pounds per square foot and allowed to soak for 24 hours. The resulting volume change due to increase in moisture content within the sample is recorded and the Expansion Index (EI) calculated.

Expansion Index Test Results

Soil Description	Location	Expansion Index	Expansion Classification
Silty Clay (CL), trace of sand [Very old alluvium]	B - 1 @ 0 - 5 ft.	91	High
Silty Clay (CL), trace of sand [Very old alluvium]	B - 5 @ 0 - 4 ft.	59	Medium

Consolidation Tests – ASTM D2435M-11

Natural alluvium was checked for collapse susceptibility and overall compressibility within predicted removal intervals and in probable competent materials. A series of cumulative vertical loads are applied to a small, laterally confined soil sample. The apparatus is designed to accept a one-inch-high brass ring containing an undisturbed or remolded soil sample. During each load increment, vertical compression (consolidation) of the sample is measured and recorded at selected time intervals. Porous stones are placed in contact with both sides of the specimen to permit the ready addition or release of water. Undisturbed samples are initially at field moisture content, and are subsequently inundated to determine soil behavior under saturated conditions. The test results are plotted graphically on pages B-8 through B-13.

Atterberg Limits Determinations – ASTM D4318-10e1

Liquid limit and plastic limit determinations were made on selected samples of clayey alluvium as a check on soil classification and potential suitability for soil-cement treatments. The plastic limit constitutes the water content at which a manually remolded cohesive soil will just form a 1/8-inch-diameter thread without crumbling. The liquid limit constitutes the water content at which a soil will just begin to flow if jarred several times. Practically, it is determined by subjecting a grooved remolded soil pat to successive small impacts in a mechanical liquid limit device; the numerical result is the minimum water content at which the groove closes. The plasticity index (liquid limit minus plastic limit) and derived soil classification for the tested samples are indicated below. The test is performed only on the grain size fraction passing a 40-mesh screen.

Logged Soil Description	Location	Plastic Limit	Liquid Limit	Plasticity Index	USCS Symbol (Fines)
Silty Clay (CL), trace of sand [Very old alluvium]	Boring B - 1 0 - 5 ft.	20	36	16	CL
Silty Clay (CL), trace of sand [Very old alluvium]	Boring B-5 0 - 4 ft.	17	29	12	CL

Soil Corrosivity

Soil samples representative of future mass-graded fill in future contact with concrete or ferrous metals was tested in the laboratories of Project X Corrosion Engineers, Murrieta, California, to determine the tabulated data on the next page. The submitted soil samples were tested in general accordance with ASTM and Standard Methods listed at the top of the table. Soluble-species quantitative determinations were based on 1:3 water-to-soil extracts.

Soil Analysis Lab Results

Client: Aragon Geotechnical Inc
Job Name: 4488-SFI FIRST IND REALTY
Client Job Number: 4488
Project X Job Number: S190108E-2
January 11, 2019

	Method	ASTM G187		ASTM D516		ASTM D512B		SM 4500-NO3-E	SM 4500-NH3-C	SM 4500-S2-D	ASTM G200	ASTM G51
Bore# / Description	**Depth**	**Resistivity** As Rec'd	Minimum	**Sulfates**		**Chlorides**		**Nitrate**	**Ammonia**	**Sulfide**	**Redox**	**pH**
	(ft)	(Ohm-cm)	(Ohm-cm)	(mg/kg)	(wt%)	(mg/kg)	(wt%)	(mg/kg)	(mg/kg)	(mg/kg)	(mV)	
B-1	0.0-5.0	12,060	938	21	0.0021	69	0.0069	36	0.5	ND	182	8.25
B-5	0.0-4.0	6,097	737	120	0.0120	324	0.0324	42	1.0	ND	176	7.93

Unk = Unknown
NT = Not Tested
ND = 0 = Not Detected
mg/kg = milligrams per kilogram (parts per million) of dry soil weight
Chemical Analysis performed on 1:3 Soil-To-Water extract

Please call if you have any questions.

Prepared by,

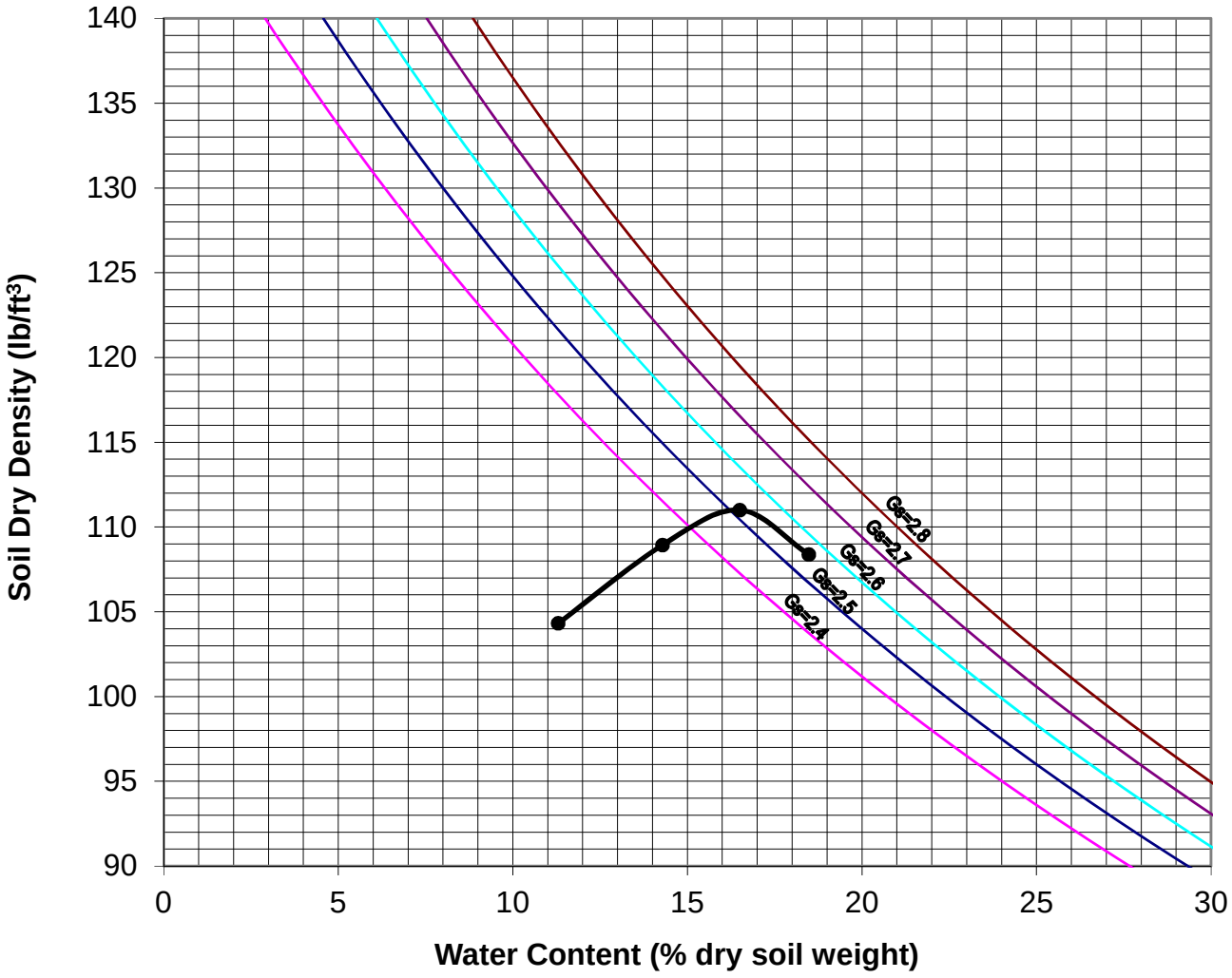
Ernesto Padilla, BSME
Field Engineer

Respectfully Submitted,



Eddie Hernandez, M.Sc., P.E.
Sr. Corrosion Consultant
NACE Corrosion Technologist #16592
Professional Engineer
California No. M37102
ehernandez@projectxcorrosion.com

Soil Dry Density vs. Water Content



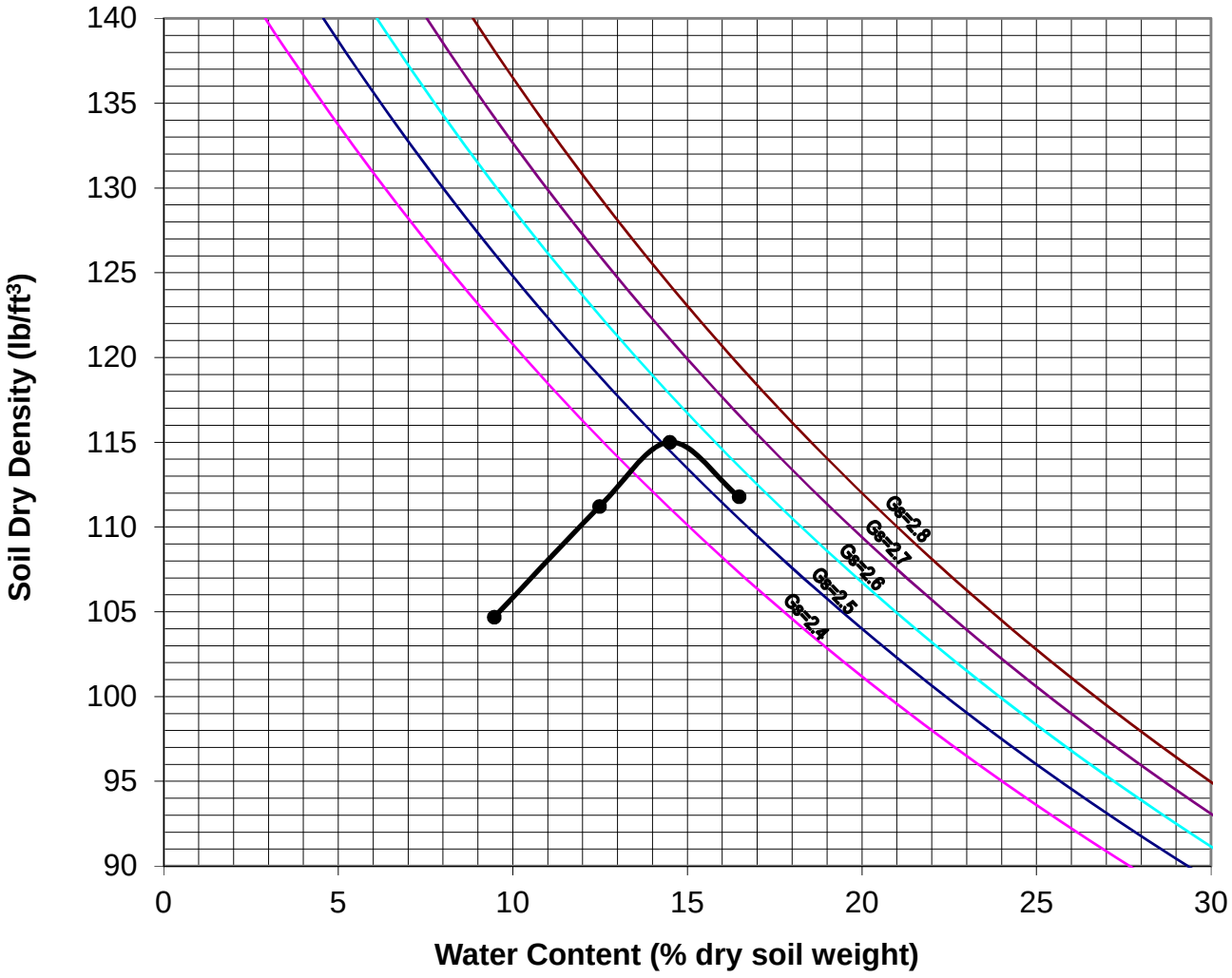
Boring: B - 1	Depth (ft.): 0.0 - 5.0
Optimum Water Content (%): 16.5	Maximum Density (pcf): 111.0
Sample Description: Silty clay (CL), trace of sand. [Very old alluvium]	

MODIFIED EFFORT COMPACTION CURVE

APN 300-170-009, PERRIS, RIVERSIDE COUNTY, CALIFORNIA

PROJECT NO. 4488-SFLI | DATE: 1/21/19 | **PAGE B-5**

Soil Dry Density vs. Water Content

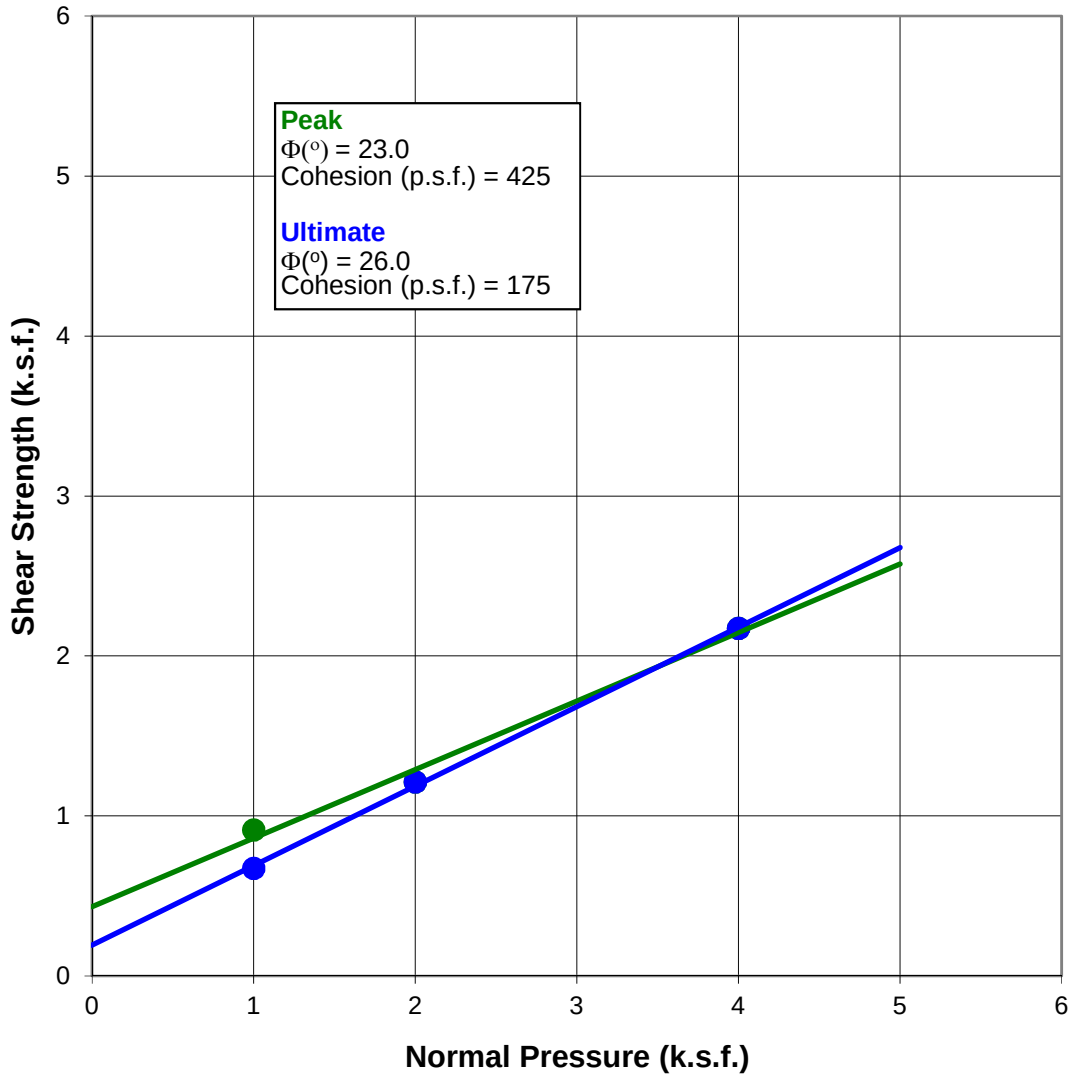


Boring: B - 5	Depth (ft.): 0.0 - 4.0
Optimum Water Content (%): 14.5	Maximum Density (pcf): 115.0
Sample Description: Silty clay (CL), trace fine sand. [Very old alluvium]	

MODIFIED EFFORT COMPACTION CURVE

APN 300-170-009, PERRIS, RIVERSIDE COUNTY, CALIFORNIA

PROJECT NO. 4488-SFLI	DATE: 1/21/19	**PAGE B-6**

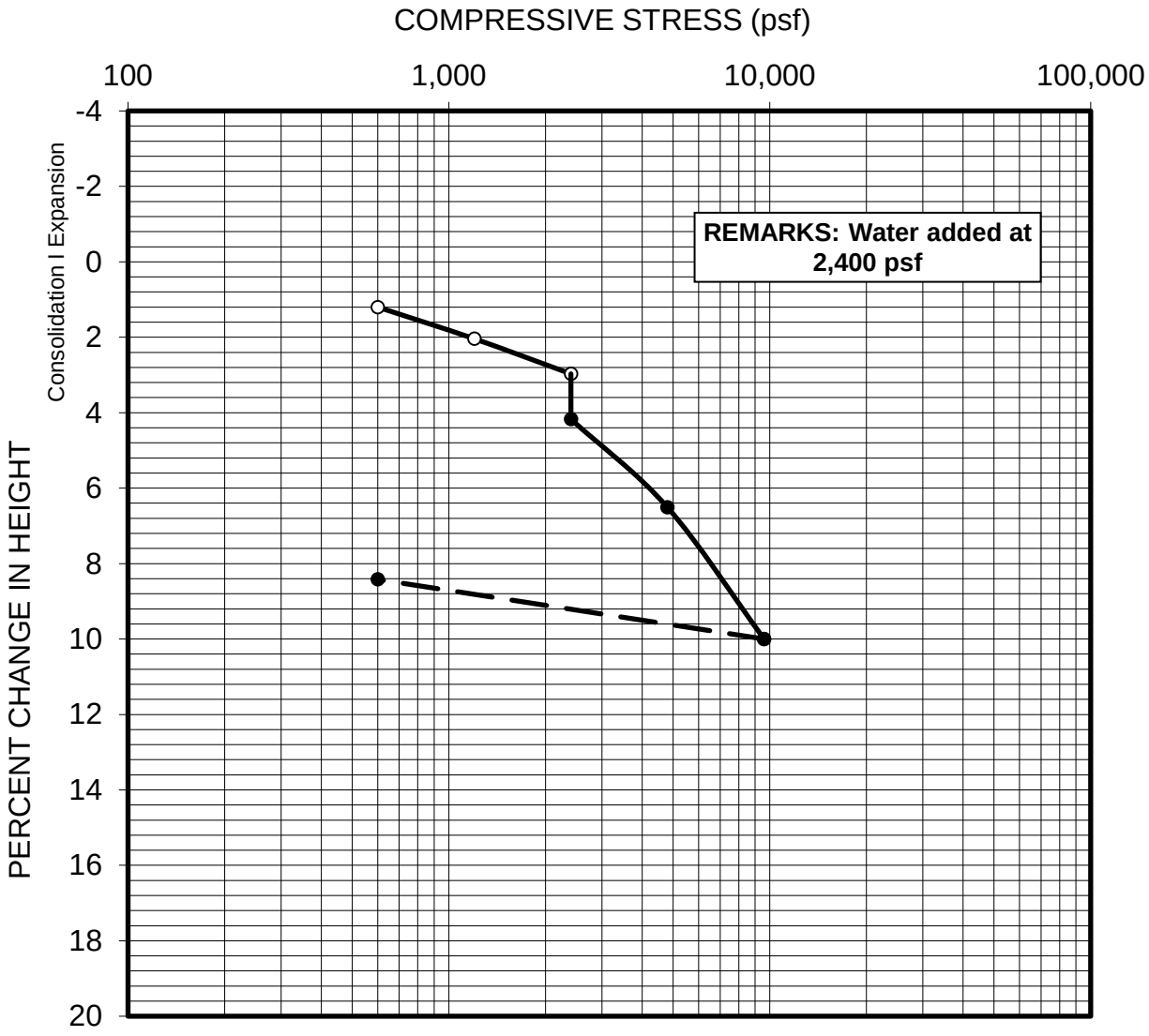


Location: B - 1	Depth (ft.): 0.0 - 5.0	Sample I.D. Number: 19-1006
Test Condition: Remolded, Consolidated, Drained.		
Sample Description: Silty clay (CL), trace of sand. [Very old alluvium]		

DIRECT SHEAR TEST DIAGRAM

APN 300-170-009, PERRIS, RIVERSIDE COUNTY, CALIFORNIA

PROJECT NO. 4488-SFLI	DATE: 1/21/19	**PAGE B-7**

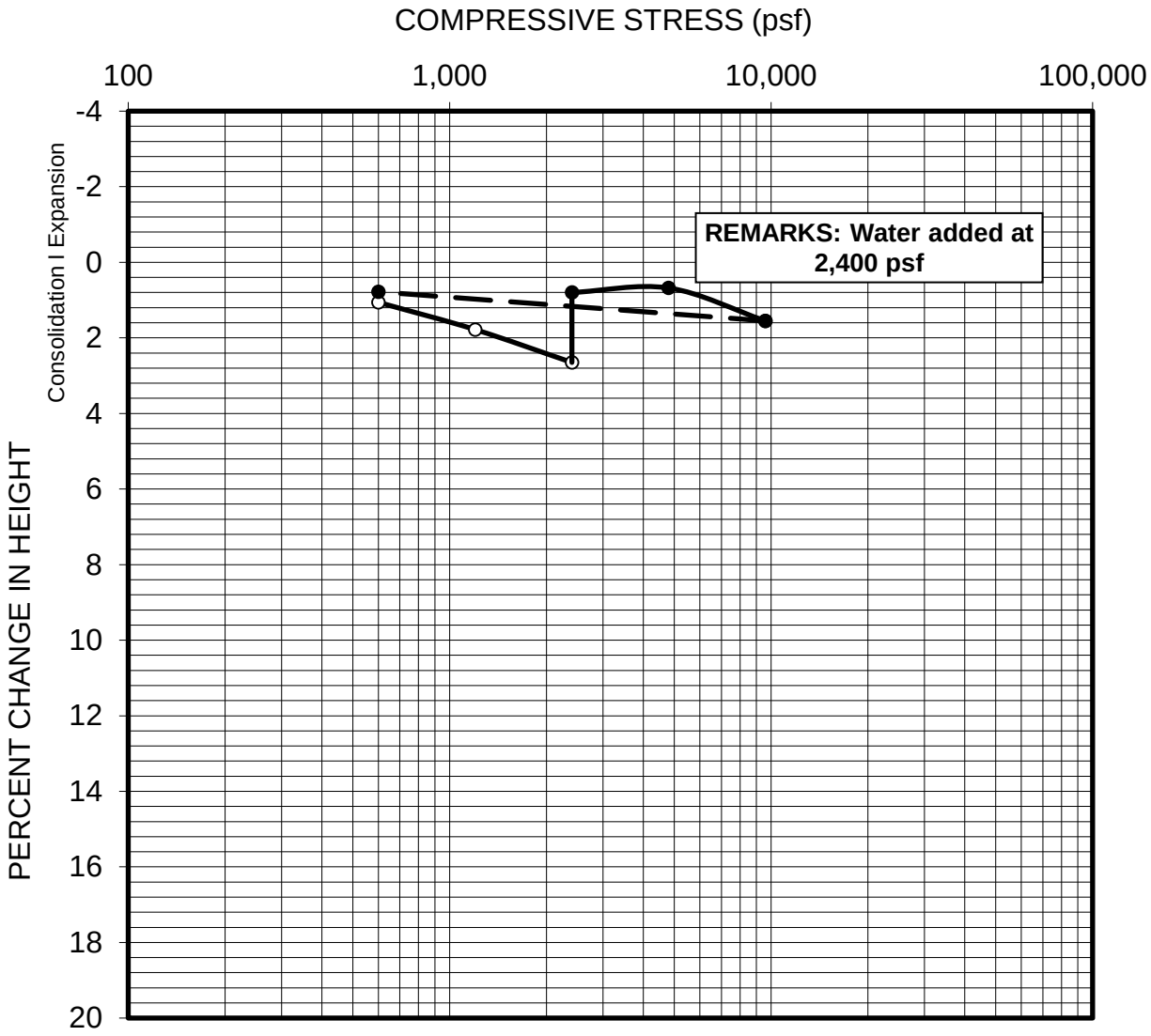


Boring: B - 1	Depth (ft.): 3.0	
Dry Density (pcf): 88.2	Saturation (%): 37.0	Moisture (%): 12.5
Sample Description: Silty clay (CL), small peds and visibly porous. [Very old alluvium]		

CONSOLIDATION CURVE

APN 300-170-009, PERRIS, RIVERSIDE COUNTY, CALIFORNIA

PROJECT NO. 4488-SFLI | DATE: 1/21/19 | **PAGE B-8**

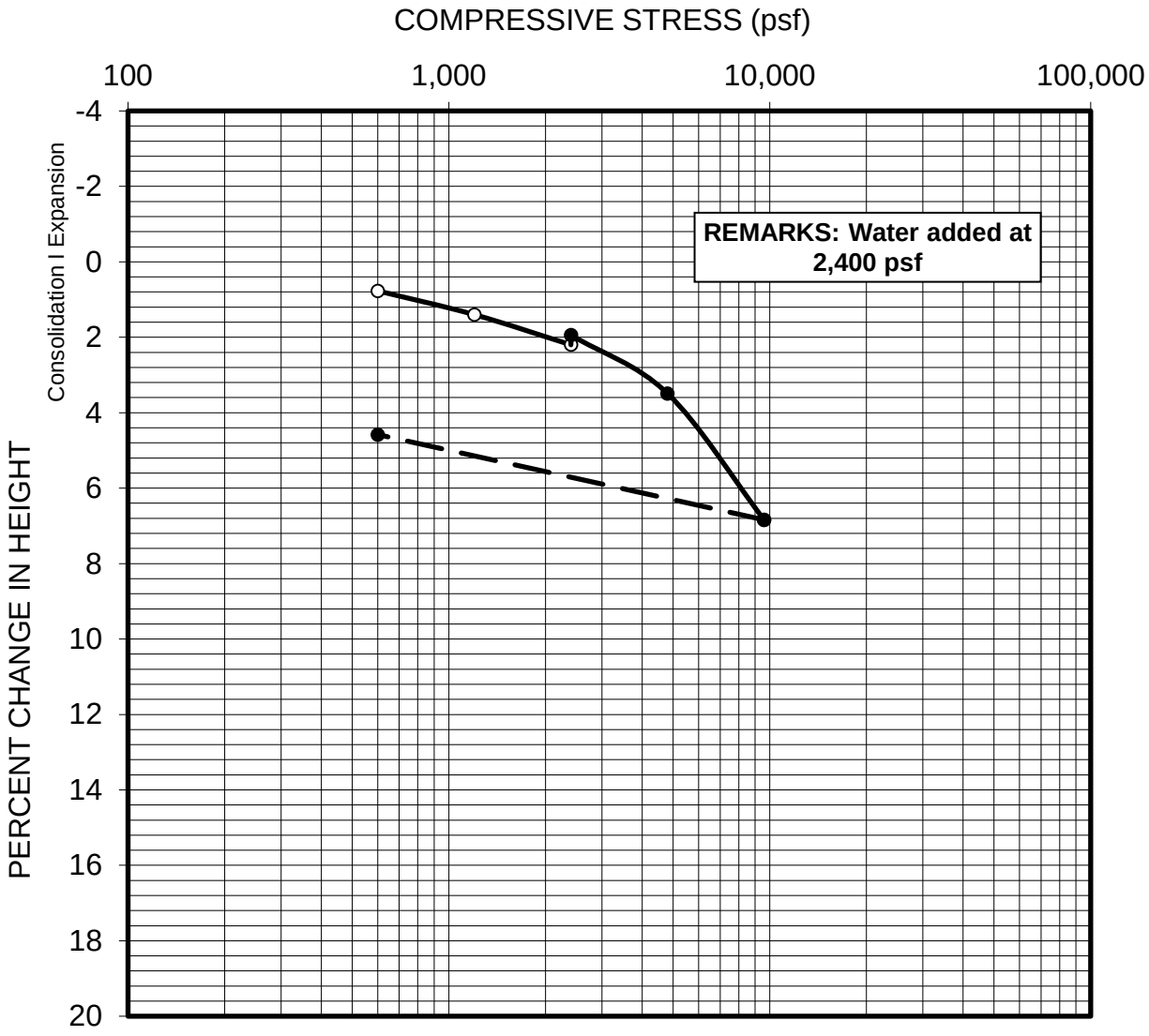


Boring: B - 1	Depth (ft.): 5.0	
Dry Density (pcf): 102.4	Saturation (%): 58.9	Moisture (%): 14.1
Sample Description: Silty clay (CL), visibly porous. [Very old alluvium]		

CONSOLIDATION CURVE

APN 300-170-009, PERRIS, RIVERSIDE COUNTY, CALIFORNIA

PROJECT NO. 4488-SFLI	DATE: 1/21/19	**PAGE B-9**

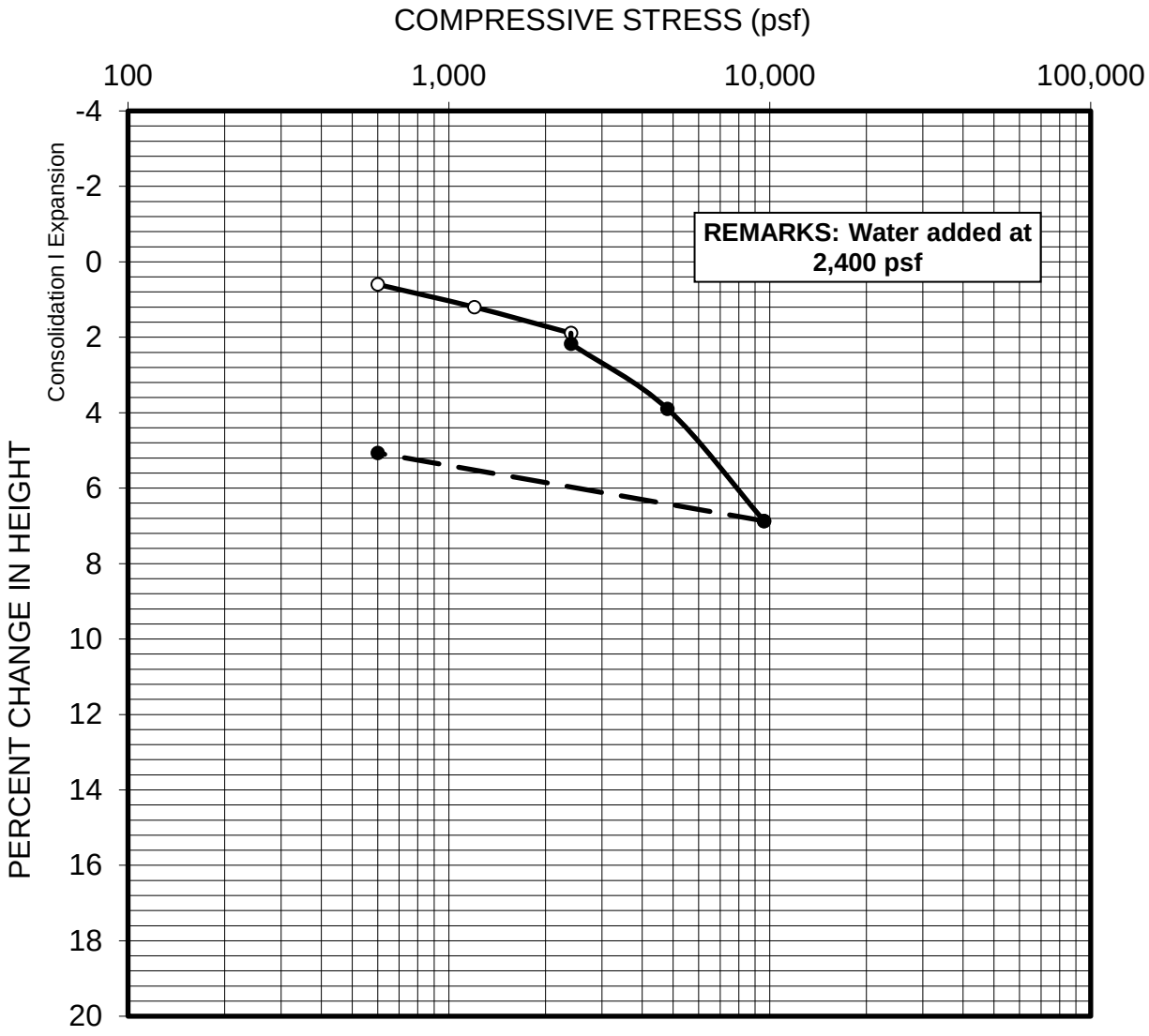


Boring: B - 2	Depth (ft.): 4.0	
Dry Density (pcf): 104.4	Saturation (%): 55.3	Moisture (%): 12.6
Sample Description: Silty clay (CL), small blocky peds. [Very old alluvium]		

CONSOLIDATION CURVE

APN 300-170-009, PERRIS, RIVERSIDE COUNTY, CALIFORNIA

PROJECT NO. 4488-SFLI | DATE: 1/21/19 | **PAGE B-10**

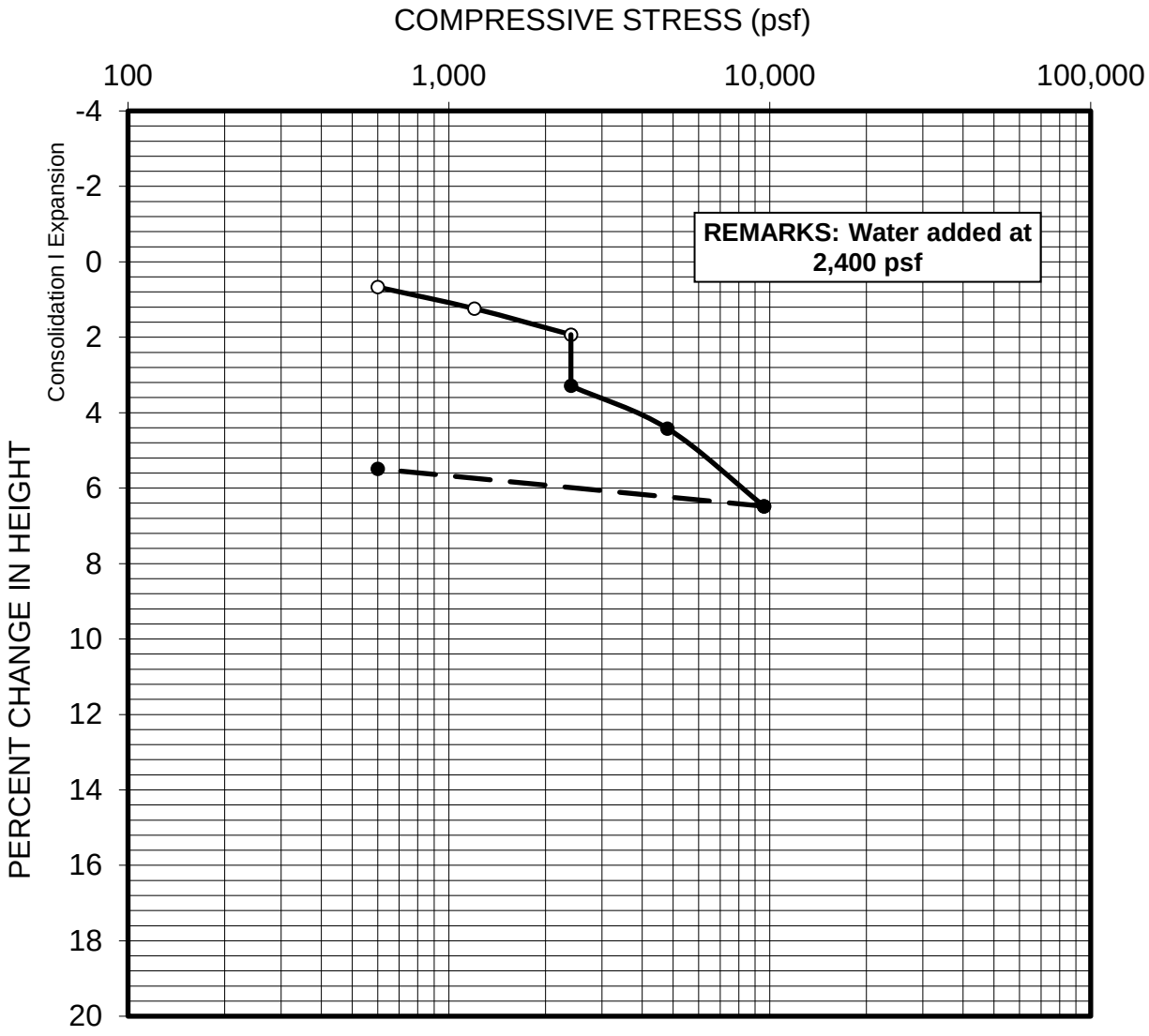


Boring: B - 2	Depth (ft.): 6.0	
Dry Density (pcf): 106.6	Saturation (%): 52.9	Moisture (%): 11.4
Sample Description: Silty clay (CL), porous, crumbly. [Very old alluvium]		

CONSOLIDATION CURVE

APN 300-170-009, PERRIS, RIVERSIDE COUNTY, CALIFORNIA

PROJECT NO. 4488-SFLI | DATE: 1/21/19 | **PAGE B-11**

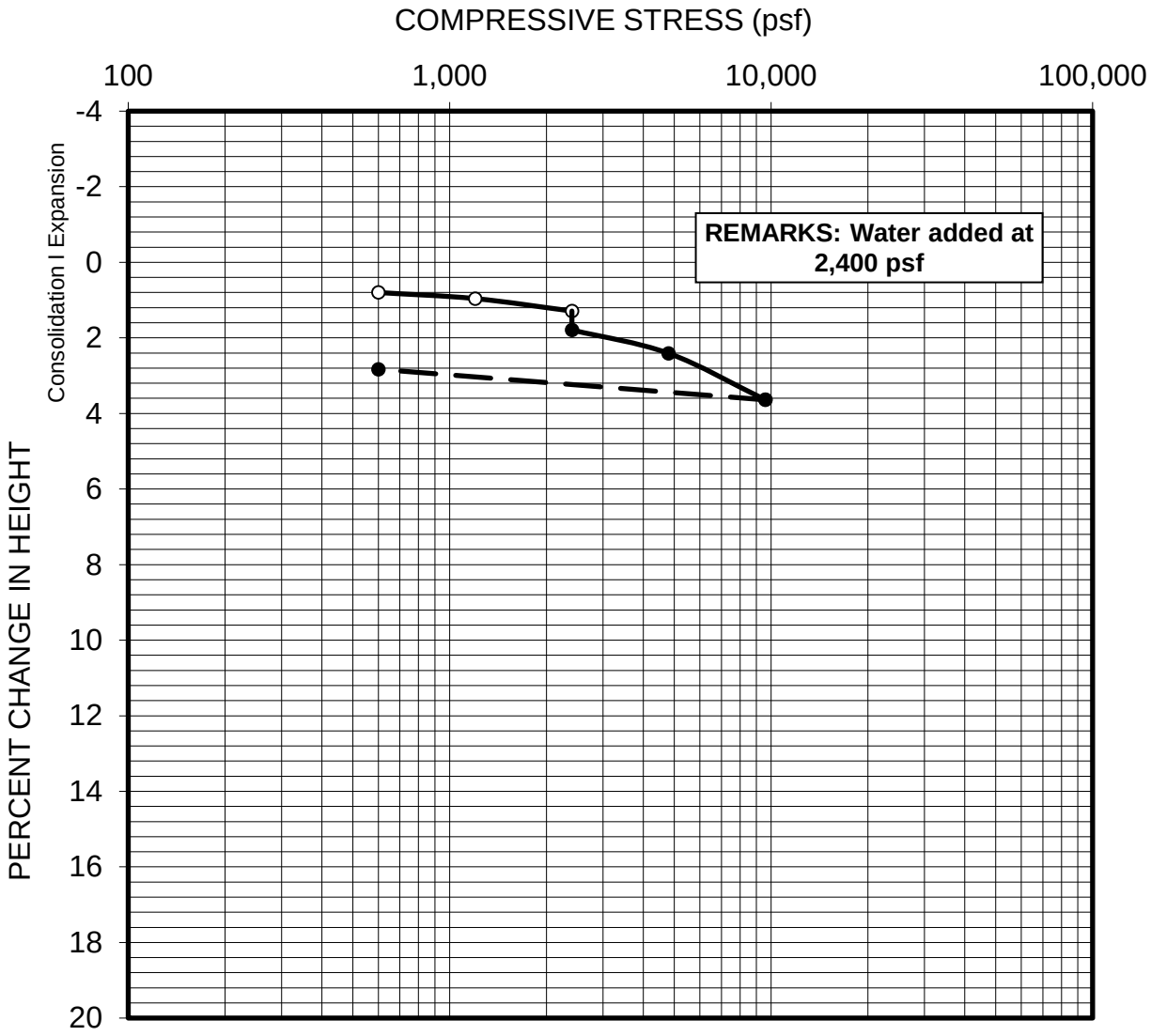


Boring: B - 9	Depth (ft.): 5.0	
Dry Density (pcf): 115.6	Saturation (%): 44.2	Moisture (%): 7.5
Sample Description: Silty sand (SM), trace clay, not visibly porous. [Very old alluvium]		

CONSOLIDATION CURVE

APN 300-170-009, PERRIS, RIVERSIDE COUNTY, CALIFORNIA

PROJECT NO. 4488-SFLI | DATE: 1/21/19 | **PAGE B-12**



Boring: B - 9	Depth (ft.): 7.0	
Dry Density (pcf): 120.0	Saturation (%): 39.3	Moisture (%): 5.9
Sample Description: Silty sand (SM), cemented. [Very old alluvium]		

CONSOLIDATION CURVE

APN 300-170-009, PERRIS, RIVERSIDE COUNTY, CALIFORNIA

PROJECT NO. 4488-SFLI | DATE: 1/21/19 | **PAGE B-13**

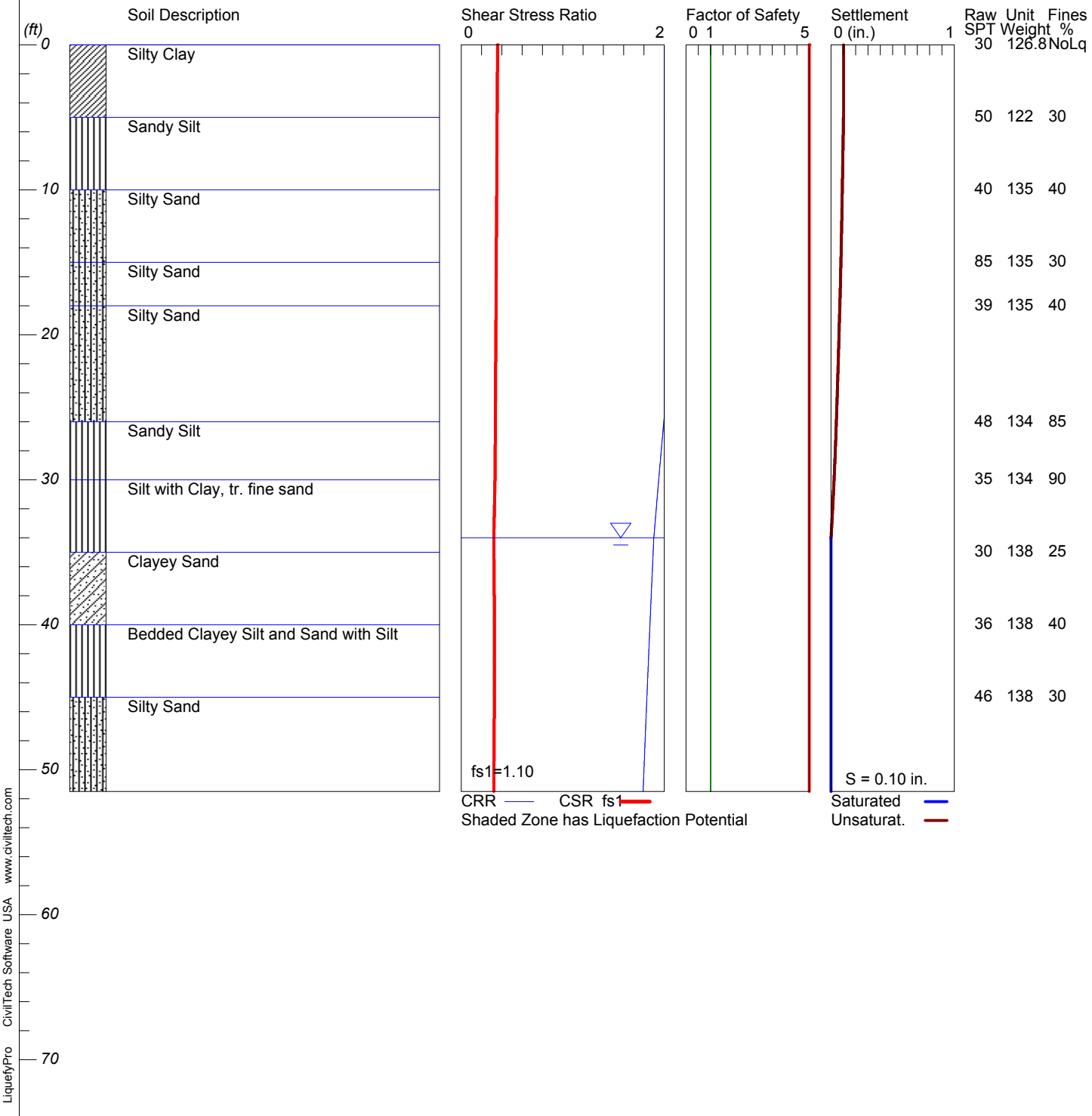
APPENDIX C

LIQUEFACTION ANALYSIS

APN 300-170-009, Perris, County of Riverside

Hole No.=B-5 Water Depth=34 ft Surface Elev.=~1440

Magnitude=7.5
Acceleration=0.5g



LiquefyPro CivilTech Software USA www.civiltech.com

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LIQUEFACTION ANALYSIS SUMMARY

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Input File Name: \\agi\Documents\To File\First Industrial\Wilson Avenue\4488-SFLI Liquefaction\4488-SFLI B-5.liq
Title: APN 300-170-009, Perris, County of Riverside
Subtitle: 4488-SFLI

Surface Elev.=~1440
Hole No.=B-5
Depth of Hole= 51.50 ft
Water Table during Earthquake= 34.00 ft
Water Table during In-Situ Testing= 34.00 ft
Max. Acceleration= 0.5 g
Earthquake Magnitude= 7.50

Input Data:
Surface Elev.=~1440
Hole No.=B-5
Depth of Hole=51.50 ft
Water Table during Earthquake= 34.00 ft
Water Table during In-Situ Testing= 34.00 ft
Max. Acceleration=0.5 g
Earthquake Magnitude=7.50
No-Liquefiable Soils: CL, OL are Non-Liq. Soil

1. SPT or BPT Calculation.
2. Settlement Analysis Method: Ishihara / Yoshimine
3. Fines Correction for Liquefaction: Idriss/Seed
4. Fine Correction for Settlement: During Liquefaction*
5. Settlement Calculation in: All zones*
6. Hammer Energy Ratio, Ce = 1.3
7. Borehole Diameter, Cb= 1.15
8. Sampling Method, Cs= 1.15
9. User request factor of safety (apply to CSR) , User= 1.1
   Plot one CSR curve (fs1=User)
10. Use Curve Smoothing: Yes*
* Recommended Options

In-Situ Test Data:

Depth ft	SPT	gamma pcf	Fines %
0.00	30.00	126.80	NoLiq
5.00	50.00	122.00	30.00
10.00	40.00	135.00	40.00
15.00	85.00	135.00	30.00
18.00	39.00	135.00	40.00
26.00	48.00	134.00	85.00
30.00	35.00	134.00	90.00
35.00	30.00	138.00	25.00
40.00	36.00	138.00	40.00

45.00	46.00	138.00	30.00
51.50	46.00	138.00	30.00

Output Results:

Settlement of Saturated Sands=0.00 in.
Settlement of Unsaturated Sands=0.10 in.
Total Settlement of Saturated and Unsaturated Sands=0.10 in.
Differential Settlement=0.050 to 0.067 in.

Depth ft	CRRm	CSRfs	F.S.	S_sat. in.	S_dry in.	S_all in.
0.00	2.00	0.36	5.00	0.00	0.10	0.10
0.10	2.00	0.36	5.00	0.00	0.10	0.10
0.20	2.00	0.36	5.00	0.00	0.10	0.10
0.30	2.00	0.36	5.00	0.00	0.10	0.10
0.40	2.00	0.36	5.00	0.00	0.10	0.10
0.50	2.00	0.36	5.00	0.00	0.10	0.10
0.60	2.00	0.36	5.00	0.00	0.10	0.10
0.70	2.00	0.36	5.00	0.00	0.10	0.10
0.80	2.00	0.36	5.00	0.00	0.10	0.10
0.90	2.00	0.36	5.00	0.00	0.10	0.10
1.00	2.00	0.36	5.00	0.00	0.10	0.10
1.10	2.00	0.36	5.00	0.00	0.10	0.10
1.20	2.00	0.36	5.00	0.00	0.10	0.10
1.30	2.00	0.36	5.00	0.00	0.10	0.10
1.40	2.00	0.36	5.00	0.00	0.10	0.10
1.50	2.00	0.36	5.00	0.00	0.10	0.10
1.60	2.00	0.36	5.00	0.00	0.10	0.10
1.70	2.00	0.36	5.00	0.00	0.10	0.10
1.80	2.00	0.36	5.00	0.00	0.10	0.10
1.90	2.00	0.36	5.00	0.00	0.10	0.10
2.00	2.00	0.36	5.00	0.00	0.10	0.10
2.10	2.00	0.36	5.00	0.00	0.10	0.10
2.20	2.00	0.36	5.00	0.00	0.10	0.10
2.30	2.00	0.36	5.00	0.00	0.10	0.10
2.40	2.00	0.36	5.00	0.00	0.10	0.10
2.50	2.00	0.36	5.00	0.00	0.10	0.10
2.60	2.00	0.36	5.00	0.00	0.10	0.10
2.70	2.00	0.36	5.00	0.00	0.10	0.10
2.80	2.00	0.36	5.00	0.00	0.10	0.10
2.90	2.00	0.36	5.00	0.00	0.10	0.10
3.00	2.00	0.35	5.00	0.00	0.10	0.10
3.10	2.00	0.35	5.00	0.00	0.10	0.10
3.20	2.00	0.35	5.00	0.00	0.10	0.10
3.30	2.00	0.35	5.00	0.00	0.10	0.10
3.40	2.00	0.35	5.00	0.00	0.10	0.10
3.50	2.00	0.35	5.00	0.00	0.10	0.10
3.60	2.00	0.35	5.00	0.00	0.10	0.10
3.70	2.00	0.35	5.00	0.00	0.10	0.10
3.80	2.00	0.35	5.00	0.00	0.10	0.10
3.90	2.00	0.35	5.00	0.00	0.10	0.10
4.00	2.00	0.35	5.00	0.00	0.10	0.10
4.10	2.00	0.35	5.00	0.00	0.10	0.10
4.20	2.00	0.35	5.00	0.00	0.10	0.10
4.30	2.00	0.35	5.00	0.00	0.10	0.10
4.40	2.00	0.35	5.00	0.00	0.10	0.10
4.50	2.00	0.35	5.00	0.00	0.10	0.10
4.60	2.00	0.35	5.00	0.00	0.10	0.10
4.70	2.00	0.35	5.00	0.00	0.10	0.10
4.80	2.00	0.35	5.00	0.00	0.10	0.10
4.90	2.00	0.35	5.00	0.00	0.10	0.10

5.00	2.00	0.35	5.00	0.00	0.10	0.10
5.10	2.00	0.35	5.00	0.00	0.10	0.10
5.20	2.00	0.35	5.00	0.00	0.10	0.10
5.30	2.00	0.35	5.00	0.00	0.10	0.10
5.40	2.00	0.35	5.00	0.00	0.10	0.10
5.50	2.00	0.35	5.00	0.00	0.10	0.10
5.60	2.00	0.35	5.00	0.00	0.10	0.10
5.70	2.00	0.35	5.00	0.00	0.10	0.10
5.80	2.00	0.35	5.00	0.00	0.10	0.10
5.90	2.00	0.35	5.00	0.00	0.10	0.10
6.00	2.00	0.35	5.00	0.00	0.10	0.10
6.10	2.00	0.35	5.00	0.00	0.10	0.10
6.20	2.00	0.35	5.00	0.00	0.10	0.10
6.30	2.00	0.35	5.00	0.00	0.10	0.10
6.40	2.00	0.35	5.00	0.00	0.10	0.10
6.50	2.00	0.35	5.00	0.00	0.10	0.10
6.60	2.00	0.35	5.00	0.00	0.10	0.10
6.70	2.00	0.35	5.00	0.00	0.10	0.10
6.80	2.00	0.35	5.00	0.00	0.10	0.10
6.90	2.00	0.35	5.00	0.00	0.10	0.10
7.00	2.00	0.35	5.00	0.00	0.10	0.10
7.10	2.00	0.35	5.00	0.00	0.10	0.10
7.20	2.00	0.35	5.00	0.00	0.10	0.10
7.30	2.00	0.35	5.00	0.00	0.10	0.10
7.40	2.00	0.35	5.00	0.00	0.10	0.10
7.50	2.00	0.35	5.00	0.00	0.10	0.10
7.60	2.00	0.35	5.00	0.00	0.10	0.10
7.70	2.00	0.35	5.00	0.00	0.10	0.10
7.80	2.00	0.35	5.00	0.00	0.10	0.10
7.90	2.00	0.35	5.00	0.00	0.10	0.10
8.00	2.00	0.35	5.00	0.00	0.10	0.10
8.10	2.00	0.35	5.00	0.00	0.10	0.10
8.20	2.00	0.35	5.00	0.00	0.10	0.10
8.30	2.00	0.35	5.00	0.00	0.10	0.10
8.40	2.00	0.35	5.00	0.00	0.09	0.09
8.50	2.00	0.35	5.00	0.00	0.09	0.09
8.60	2.00	0.35	5.00	0.00	0.09	0.09
8.70	2.00	0.35	5.00	0.00	0.09	0.09
8.80	2.00	0.35	5.00	0.00	0.09	0.09
8.90	2.00	0.35	5.00	0.00	0.09	0.09
9.00	2.00	0.35	5.00	0.00	0.09	0.09
9.10	2.00	0.35	5.00	0.00	0.09	0.09
9.20	2.00	0.35	5.00	0.00	0.09	0.09
9.30	2.00	0.35	5.00	0.00	0.09	0.09
9.40	2.00	0.35	5.00	0.00	0.09	0.09
9.50	2.00	0.35	5.00	0.00	0.09	0.09
9.60	2.00	0.35	5.00	0.00	0.09	0.09
9.70	2.00	0.35	5.00	0.00	0.09	0.09
9.80	2.00	0.35	5.00	0.00	0.09	0.09
9.90	2.00	0.35	5.00	0.00	0.09	0.09
10.00	2.00	0.35	5.00	0.00	0.09	0.09
10.10	2.00	0.35	5.00	0.00	0.09	0.09
10.20	2.00	0.35	5.00	0.00	0.09	0.09
10.30	2.00	0.35	5.00	0.00	0.09	0.09
10.40	2.00	0.35	5.00	0.00	0.09	0.09
10.50	2.00	0.35	5.00	0.00	0.09	0.09
10.60	2.00	0.35	5.00	0.00	0.09	0.09
10.70	2.00	0.35	5.00	0.00	0.09	0.09
10.80	2.00	0.35	5.00	0.00	0.09	0.09
10.90	2.00	0.35	5.00	0.00	0.09	0.09
11.00	2.00	0.35	5.00	0.00	0.09	0.09
11.10	2.00	0.35	5.00	0.00	0.09	0.09
11.20	2.00	0.35	5.00	0.00	0.09	0.09

11.30	2.00	0.35	5.00	0.00	0.09	0.09
11.40	2.00	0.35	5.00	0.00	0.09	0.09
11.50	2.00	0.35	5.00	0.00	0.09	0.09
11.60	2.00	0.35	5.00	0.00	0.09	0.09
11.70	2.00	0.35	5.00	0.00	0.09	0.09
11.80	2.00	0.35	5.00	0.00	0.09	0.09
11.90	2.00	0.35	5.00	0.00	0.09	0.09
12.00	2.00	0.35	5.00	0.00	0.09	0.09
12.10	2.00	0.35	5.00	0.00	0.09	0.09
12.20	2.00	0.35	5.00	0.00	0.09	0.09
12.30	2.00	0.35	5.00	0.00	0.09	0.09
12.40	2.00	0.35	5.00	0.00	0.09	0.09
12.50	2.00	0.35	5.00	0.00	0.09	0.09
12.60	2.00	0.35	5.00	0.00	0.09	0.09
12.70	2.00	0.35	5.00	0.00	0.09	0.09
12.80	2.00	0.35	5.00	0.00	0.09	0.09
12.90	2.00	0.35	5.00	0.00	0.09	0.09
13.00	2.00	0.35	5.00	0.00	0.09	0.09
13.10	2.00	0.35	5.00	0.00	0.09	0.09
13.20	2.00	0.35	5.00	0.00	0.08	0.08
13.30	2.00	0.35	5.00	0.00	0.08	0.08
13.40	2.00	0.35	5.00	0.00	0.08	0.08
13.50	2.00	0.35	5.00	0.00	0.08	0.08
13.60	2.00	0.35	5.00	0.00	0.08	0.08
13.70	2.00	0.35	5.00	0.00	0.08	0.08
13.80	2.00	0.35	5.00	0.00	0.08	0.08
13.90	2.00	0.35	5.00	0.00	0.08	0.08
14.00	2.00	0.35	5.00	0.00	0.08	0.08
14.10	2.00	0.35	5.00	0.00	0.08	0.08
14.20	2.00	0.35	5.00	0.00	0.08	0.08
14.30	2.00	0.35	5.00	0.00	0.08	0.08
14.40	2.00	0.35	5.00	0.00	0.08	0.08
14.50	2.00	0.35	5.00	0.00	0.08	0.08
14.60	2.00	0.35	5.00	0.00	0.08	0.08
14.70	2.00	0.35	5.00	0.00	0.08	0.08
14.80	2.00	0.35	5.00	0.00	0.08	0.08
14.90	2.00	0.35	5.00	0.00	0.08	0.08
15.00	2.00	0.34	5.00	0.00	0.08	0.08
15.10	2.00	0.34	5.00	0.00	0.08	0.08
15.20	2.00	0.34	5.00	0.00	0.08	0.08
15.30	2.00	0.34	5.00	0.00	0.08	0.08
15.40	2.00	0.34	5.00	0.00	0.08	0.08
15.50	2.00	0.34	5.00	0.00	0.08	0.08
15.60	2.00	0.34	5.00	0.00	0.08	0.08
15.70	2.00	0.34	5.00	0.00	0.08	0.08
15.80	2.00	0.34	5.00	0.00	0.08	0.08
15.90	2.00	0.34	5.00	0.00	0.08	0.08
16.00	2.00	0.34	5.00	0.00	0.08	0.08
16.10	2.00	0.34	5.00	0.00	0.08	0.08
16.20	2.00	0.34	5.00	0.00	0.08	0.08
16.30	2.00	0.34	5.00	0.00	0.08	0.08
16.40	2.00	0.34	5.00	0.00	0.08	0.08
16.50	2.00	0.34	5.00	0.00	0.08	0.08
16.60	2.00	0.34	5.00	0.00	0.08	0.08
16.70	2.00	0.34	5.00	0.00	0.08	0.08
16.80	2.00	0.34	5.00	0.00	0.08	0.08
16.90	2.00	0.34	5.00	0.00	0.08	0.08
17.00	2.00	0.34	5.00	0.00	0.07	0.07
17.10	2.00	0.34	5.00	0.00	0.07	0.07
17.20	2.00	0.34	5.00	0.00	0.07	0.07
17.30	2.00	0.34	5.00	0.00	0.07	0.07
17.40	2.00	0.34	5.00	0.00	0.07	0.07
17.50	2.00	0.34	5.00	0.00	0.07	0.07

17.60	2.00	0.34	5.00	0.00	0.07	0.07
17.70	2.00	0.34	5.00	0.00	0.07	0.07
17.80	2.00	0.34	5.00	0.00	0.07	0.07
17.90	2.00	0.34	5.00	0.00	0.07	0.07
18.00	2.00	0.34	5.00	0.00	0.07	0.07
18.10	2.00	0.34	5.00	0.00	0.07	0.07
18.20	2.00	0.34	5.00	0.00	0.07	0.07
18.30	2.00	0.34	5.00	0.00	0.07	0.07
18.40	2.00	0.34	5.00	0.00	0.07	0.07
18.50	2.00	0.34	5.00	0.00	0.07	0.07
18.60	2.00	0.34	5.00	0.00	0.07	0.07
18.70	2.00	0.34	5.00	0.00	0.07	0.07
18.80	2.00	0.34	5.00	0.00	0.07	0.07
18.90	2.00	0.34	5.00	0.00	0.07	0.07
19.00	2.00	0.34	5.00	0.00	0.07	0.07
19.10	2.00	0.34	5.00	0.00	0.07	0.07
19.20	2.00	0.34	5.00	0.00	0.07	0.07
19.30	2.00	0.34	5.00	0.00	0.07	0.07
19.40	2.00	0.34	5.00	0.00	0.07	0.07
19.50	2.00	0.34	5.00	0.00	0.07	0.07
19.60	2.00	0.34	5.00	0.00	0.07	0.07
19.70	2.00	0.34	5.00	0.00	0.07	0.07
19.80	2.00	0.34	5.00	0.00	0.07	0.07
19.90	2.00	0.34	5.00	0.00	0.07	0.07
20.00	2.00	0.34	5.00	0.00	0.07	0.07
20.10	2.00	0.34	5.00	0.00	0.06	0.06
20.20	2.00	0.34	5.00	0.00	0.06	0.06
20.30	2.00	0.34	5.00	0.00	0.06	0.06
20.40	2.00	0.34	5.00	0.00	0.06	0.06
20.50	2.00	0.34	5.00	0.00	0.06	0.06
20.60	2.00	0.34	5.00	0.00	0.06	0.06
20.70	2.00	0.34	5.00	0.00	0.06	0.06
20.80	2.00	0.34	5.00	0.00	0.06	0.06
20.90	2.00	0.34	5.00	0.00	0.06	0.06
21.00	2.00	0.34	5.00	0.00	0.06	0.06
21.10	2.00	0.34	5.00	0.00	0.06	0.06
21.20	2.00	0.34	5.00	0.00	0.06	0.06
21.30	2.00	0.34	5.00	0.00	0.06	0.06
21.40	2.00	0.34	5.00	0.00	0.06	0.06
21.50	2.00	0.34	5.00	0.00	0.06	0.06
21.60	2.00	0.34	5.00	0.00	0.06	0.06
21.70	2.00	0.34	5.00	0.00	0.06	0.06
21.80	2.00	0.34	5.00	0.00	0.06	0.06
21.90	2.00	0.34	5.00	0.00	0.06	0.06
22.00	2.00	0.34	5.00	0.00	0.06	0.06
22.10	2.00	0.34	5.00	0.00	0.06	0.06
22.20	2.00	0.34	5.00	0.00	0.06	0.06
22.30	2.00	0.34	5.00	0.00	0.06	0.06
22.40	2.00	0.34	5.00	0.00	0.06	0.06
22.50	2.00	0.34	5.00	0.00	0.06	0.06
22.60	2.00	0.34	5.00	0.00	0.06	0.06
22.70	2.00	0.34	5.00	0.00	0.06	0.06
22.80	2.00	0.34	5.00	0.00	0.06	0.06
22.90	2.00	0.34	5.00	0.00	0.06	0.06
23.00	2.00	0.34	5.00	0.00	0.05	0.05
23.10	2.00	0.34	5.00	0.00	0.05	0.05
23.20	2.00	0.34	5.00	0.00	0.05	0.05
23.30	2.00	0.34	5.00	0.00	0.05	0.05
23.40	2.00	0.34	5.00	0.00	0.05	0.05
23.50	2.00	0.34	5.00	0.00	0.05	0.05
23.60	2.00	0.34	5.00	0.00	0.05	0.05
23.70	2.00	0.34	5.00	0.00	0.05	0.05
23.80	2.00	0.34	5.00	0.00	0.05	0.05

23.90	2.00	0.34	5.00	0.00	0.05	0.05
24.00	2.00	0.34	5.00	0.00	0.05	0.05
24.10	2.00	0.34	5.00	0.00	0.05	0.05
24.20	2.00	0.34	5.00	0.00	0.05	0.05
24.30	2.00	0.34	5.00	0.00	0.05	0.05
24.40	2.00	0.34	5.00	0.00	0.05	0.05
24.50	2.00	0.34	5.00	0.00	0.05	0.05
24.60	2.00	0.34	5.00	0.00	0.05	0.05
24.70	2.00	0.34	5.00	0.00	0.05	0.05
24.80	2.01	0.34	5.00	0.00	0.05	0.05
24.90	2.01	0.34	5.00	0.00	0.05	0.05
25.00	2.01	0.34	5.00	0.00	0.05	0.05
25.10	2.01	0.34	5.00	0.00	0.05	0.05
25.20	2.01	0.34	5.00	0.00	0.05	0.05
25.30	2.00	0.34	5.00	0.00	0.05	0.05
25.40	2.00	0.34	5.00	0.00	0.05	0.05
25.50	2.00	0.34	5.00	0.00	0.05	0.05
25.60	2.00	0.34	5.00	0.00	0.05	0.05
25.70	2.00	0.34	5.00	0.00	0.04	0.04
25.80	2.00	0.34	5.00	0.00	0.04	0.04
25.90	2.00	0.34	5.00	0.00	0.04	0.04
26.00	2.00	0.34	5.00	0.00	0.04	0.04
26.10	1.99	0.34	5.00	0.00	0.04	0.04
26.20	1.99	0.34	5.00	0.00	0.04	0.04
26.30	1.99	0.34	5.00	0.00	0.04	0.04
26.40	1.99	0.34	5.00	0.00	0.04	0.04
26.50	1.99	0.34	5.00	0.00	0.04	0.04
26.60	1.99	0.34	5.00	0.00	0.04	0.04
26.70	1.99	0.34	5.00	0.00	0.04	0.04
26.80	1.99	0.34	5.00	0.00	0.04	0.04
26.90	1.98	0.34	5.00	0.00	0.04	0.04
27.00	1.98	0.33	5.00	0.00	0.04	0.04
27.10	1.98	0.33	5.00	0.00	0.04	0.04
27.20	1.98	0.33	5.00	0.00	0.04	0.04
27.30	1.98	0.33	5.00	0.00	0.04	0.04
27.40	1.98	0.33	5.00	0.00	0.04	0.04
27.50	1.98	0.33	5.00	0.00	0.04	0.04
27.60	1.98	0.33	5.00	0.00	0.04	0.04
27.70	1.97	0.33	5.00	0.00	0.04	0.04
27.80	1.97	0.33	5.00	0.00	0.04	0.04
27.90	1.97	0.33	5.00	0.00	0.04	0.04
28.00	1.97	0.33	5.00	0.00	0.03	0.03
28.10	1.97	0.33	5.00	0.00	0.03	0.03
28.20	1.97	0.33	5.00	0.00	0.03	0.03
28.30	1.97	0.33	5.00	0.00	0.03	0.03
28.40	1.97	0.33	5.00	0.00	0.03	0.03
28.50	1.96	0.33	5.00	0.00	0.03	0.03
28.60	1.96	0.33	5.00	0.00	0.03	0.03
28.70	1.96	0.33	5.00	0.00	0.03	0.03
28.80	1.96	0.33	5.00	0.00	0.03	0.03
28.90	1.96	0.33	5.00	0.00	0.03	0.03
29.00	1.96	0.33	5.00	0.00	0.03	0.03
29.10	1.96	0.33	5.00	0.00	0.03	0.03
29.20	1.96	0.33	5.00	0.00	0.03	0.03
29.30	1.95	0.33	5.00	0.00	0.03	0.03
29.40	1.95	0.33	5.00	0.00	0.03	0.03
29.50	1.95	0.33	5.00	0.00	0.03	0.03
29.60	1.95	0.33	5.00	0.00	0.03	0.03
29.70	1.95	0.33	5.00	0.00	0.03	0.03
29.80	1.95	0.33	5.00	0.00	0.03	0.03
29.90	1.95	0.33	5.00	0.00	0.03	0.03
30.00	1.95	0.33	5.00	0.00	0.02	0.02
30.10	1.94	0.33	5.00	0.00	0.02	0.02

30.20	1.94	0.33	5.00	0.00	0.02	0.02
30.30	1.94	0.33	5.00	0.00	0.02	0.02
30.40	1.94	0.33	5.00	0.00	0.02	0.02
30.50	1.94	0.33	5.00	0.00	0.02	0.02
30.60	1.94	0.33	5.00	0.00	0.02	0.02
30.70	1.94	0.33	5.00	0.00	0.02	0.02
30.80	1.94	0.33	5.00	0.00	0.02	0.02
30.90	1.93	0.33	5.00	0.00	0.02	0.02
31.00	1.93	0.33	5.00	0.00	0.02	0.02
31.10	1.93	0.33	5.00	0.00	0.02	0.02
31.20	1.93	0.33	5.00	0.00	0.02	0.02
31.30	1.93	0.33	5.00	0.00	0.02	0.02
31.40	1.93	0.33	5.00	0.00	0.02	0.02
31.50	1.93	0.33	5.00	0.00	0.02	0.02
31.60	1.93	0.33	5.00	0.00	0.02	0.02
31.70	1.92	0.33	5.00	0.00	0.01	0.01
31.80	1.92	0.33	5.00	0.00	0.01	0.01
31.90	1.92	0.33	5.00	0.00	0.01	0.01
32.00	1.92	0.33	5.00	0.00	0.01	0.01
32.10	1.92	0.33	5.00	0.00	0.01	0.01
32.20	1.92	0.33	5.00	0.00	0.01	0.01
32.30	1.92	0.33	5.00	0.00	0.01	0.01
32.40	1.92	0.33	5.00	0.00	0.01	0.01
32.50	1.92	0.33	5.00	0.00	0.01	0.01
32.60	1.91	0.32	5.00	0.00	0.01	0.01
32.70	1.91	0.32	5.00	0.00	0.01	0.01
32.80	1.91	0.32	5.00	0.00	0.01	0.01
32.90	1.91	0.32	5.00	0.00	0.01	0.01
33.00	1.91	0.32	5.00	0.00	0.01	0.01
33.10	1.91	0.32	5.00	0.00	0.01	0.01
33.20	1.91	0.32	5.00	0.00	0.01	0.01
33.30	1.91	0.32	5.00	0.00	0.00	0.00
33.40	1.90	0.32	5.00	0.00	0.00	0.00
33.50	1.90	0.32	5.00	0.00	0.00	0.00
33.60	1.90	0.32	5.00	0.00	0.00	0.00
33.70	1.90	0.32	5.00	0.00	0.00	0.00
33.80	1.90	0.32	5.00	0.00	0.00	0.00
33.90	1.90	0.32	5.00	0.00	0.00	0.00
34.00	1.90	0.32	5.00	0.00	0.00	0.00
34.10	1.90	0.32	5.00	0.00	0.00	0.00
34.20	1.90	0.32	5.00	0.00	0.00	0.00
34.30	1.90	0.32	5.00	0.00	0.00	0.00
34.40	1.89	0.32	5.00	0.00	0.00	0.00
34.50	1.89	0.32	5.00	0.00	0.00	0.00
34.60	1.89	0.32	5.00	0.00	0.00	0.00
34.70	1.89	0.32	5.00	0.00	0.00	0.00
34.80	1.89	0.32	5.00	0.00	0.00	0.00
34.90	1.89	0.32	5.00	0.00	0.00	0.00
35.00	1.89	0.32	5.00	0.00	0.00	0.00
35.10	1.89	0.32	5.00	0.00	0.00	0.00
35.20	1.89	0.32	5.00	0.00	0.00	0.00
35.30	1.89	0.32	5.00	0.00	0.00	0.00
35.40	1.89	0.32	5.00	0.00	0.00	0.00
35.50	1.89	0.32	5.00	0.00	0.00	0.00
35.60	1.89	0.32	5.00	0.00	0.00	0.00
35.70	1.89	0.32	5.00	0.00	0.00	0.00
35.80	1.89	0.32	5.00	0.00	0.00	0.00
35.90	1.88	0.32	5.00	0.00	0.00	0.00
36.00	1.88	0.32	5.00	0.00	0.00	0.00
36.10	1.88	0.32	5.00	0.00	0.00	0.00
36.20	1.88	0.32	5.00	0.00	0.00	0.00
36.30	1.88	0.32	5.00	0.00	0.00	0.00
36.40	1.88	0.32	5.00	0.00	0.00	0.00

36.50	1.88	0.32	5.00	0.00	0.00	0.00
36.60	1.88	0.32	5.00	0.00	0.00	0.00
36.70	1.88	0.32	5.00	0.00	0.00	0.00
36.80	1.88	0.32	5.00	0.00	0.00	0.00
36.90	1.88	0.32	5.00	0.00	0.00	0.00
37.00	1.88	0.32	5.00	0.00	0.00	0.00
37.10	1.88	0.32	5.00	0.00	0.00	0.00
37.20	1.88	0.32	5.00	0.00	0.00	0.00
37.30	1.88	0.32	5.00	0.00	0.00	0.00
37.40	1.88	0.32	5.00	0.00	0.00	0.00
37.50	1.87	0.32	5.00	0.00	0.00	0.00
37.60	1.87	0.32	5.00	0.00	0.00	0.00
37.70	1.87	0.32	5.00	0.00	0.00	0.00
37.80	1.87	0.32	5.00	0.00	0.00	0.00
37.90	1.87	0.32	5.00	0.00	0.00	0.00
38.00	1.87	0.33	5.00	0.00	0.00	0.00
38.10	1.87	0.33	5.00	0.00	0.00	0.00
38.20	1.87	0.33	5.00	0.00	0.00	0.00
38.30	1.87	0.33	5.00	0.00	0.00	0.00
38.40	1.87	0.33	5.00	0.00	0.00	0.00
38.50	1.87	0.33	5.00	0.00	0.00	0.00
38.60	1.87	0.33	5.00	0.00	0.00	0.00
38.70	1.87	0.33	5.00	0.00	0.00	0.00
38.80	1.87	0.33	5.00	0.00	0.00	0.00
38.90	1.87	0.33	5.00	0.00	0.00	0.00
39.00	1.87	0.33	5.00	0.00	0.00	0.00
39.10	1.86	0.33	5.00	0.00	0.00	0.00
39.20	1.86	0.33	5.00	0.00	0.00	0.00
39.30	1.86	0.33	5.00	0.00	0.00	0.00
39.40	1.86	0.33	5.00	0.00	0.00	0.00
39.50	1.86	0.33	5.00	0.00	0.00	0.00
39.60	1.86	0.33	5.00	0.00	0.00	0.00
39.70	1.86	0.33	5.00	0.00	0.00	0.00
39.80	1.86	0.33	5.00	0.00	0.00	0.00
39.90	1.86	0.33	5.00	0.00	0.00	0.00
40.00	1.86	0.33	5.00	0.00	0.00	0.00
40.10	1.86	0.33	5.00	0.00	0.00	0.00
40.20	1.86	0.33	5.00	0.00	0.00	0.00
40.30	1.86	0.33	5.00	0.00	0.00	0.00
40.40	1.86	0.33	5.00	0.00	0.00	0.00
40.50	1.86	0.33	5.00	0.00	0.00	0.00
40.60	1.86	0.33	5.00	0.00	0.00	0.00
40.70	1.85	0.33	5.00	0.00	0.00	0.00
40.80	1.85	0.33	5.00	0.00	0.00	0.00
40.90	1.85	0.33	5.00	0.00	0.00	0.00
41.00	1.85	0.33	5.00	0.00	0.00	0.00
41.10	1.85	0.33	5.00	0.00	0.00	0.00
41.20	1.85	0.33	5.00	0.00	0.00	0.00
41.30	1.85	0.33	5.00	0.00	0.00	0.00
41.40	1.85	0.33	5.00	0.00	0.00	0.00
41.50	1.85	0.33	5.00	0.00	0.00	0.00
41.60	1.85	0.33	5.00	0.00	0.00	0.00
41.70	1.85	0.33	5.00	0.00	0.00	0.00
41.80	1.85	0.33	5.00	0.00	0.00	0.00
41.90	1.85	0.33	5.00	0.00	0.00	0.00
42.00	1.85	0.33	5.00	0.00	0.00	0.00
42.10	1.85	0.33	5.00	0.00	0.00	0.00
42.20	1.85	0.33	5.00	0.00	0.00	0.00
42.30	1.85	0.33	5.00	0.00	0.00	0.00
42.40	1.84	0.33	5.00	0.00	0.00	0.00
42.50	1.84	0.33	5.00	0.00	0.00	0.00
42.60	1.84	0.33	5.00	0.00	0.00	0.00
42.70	1.84	0.33	5.00	0.00	0.00	0.00

42.80	1.84	0.33	5.00	0.00	0.00	0.00
42.90	1.84	0.33	5.00	0.00	0.00	0.00
43.00	1.84	0.33	5.00	0.00	0.00	0.00
43.10	1.84	0.33	5.00	0.00	0.00	0.00
43.20	1.84	0.33	5.00	0.00	0.00	0.00
43.30	1.84	0.33	5.00	0.00	0.00	0.00
43.40	1.84	0.33	5.00	0.00	0.00	0.00
43.50	1.84	0.33	5.00	0.00	0.00	0.00
43.60	1.84	0.33	5.00	0.00	0.00	0.00
43.70	1.84	0.33	5.00	0.00	0.00	0.00
43.80	1.84	0.33	5.00	0.00	0.00	0.00
43.90	1.84	0.33	5.00	0.00	0.00	0.00
44.00	1.83	0.33	5.00	0.00	0.00	0.00
44.10	1.83	0.33	5.00	0.00	0.00	0.00
44.20	1.83	0.33	5.00	0.00	0.00	0.00
44.30	1.83	0.33	5.00	0.00	0.00	0.00
44.40	1.83	0.33	5.00	0.00	0.00	0.00
44.50	1.83	0.33	5.00	0.00	0.00	0.00
44.60	1.83	0.33	5.00	0.00	0.00	0.00
44.70	1.83	0.33	5.00	0.00	0.00	0.00
44.80	1.83	0.33	5.00	0.00	0.00	0.00
44.90	1.83	0.33	5.00	0.00	0.00	0.00
45.00	1.83	0.33	5.00	0.00	0.00	0.00
45.10	1.83	0.33	5.00	0.00	0.00	0.00
45.20	1.83	0.33	5.00	0.00	0.00	0.00
45.30	1.83	0.33	5.00	0.00	0.00	0.00
45.40	1.83	0.33	5.00	0.00	0.00	0.00
45.50	1.83	0.33	5.00	0.00	0.00	0.00
45.60	1.83	0.33	5.00	0.00	0.00	0.00
45.70	1.82	0.33	5.00	0.00	0.00	0.00
45.80	1.82	0.33	5.00	0.00	0.00	0.00
45.90	1.82	0.33	5.00	0.00	0.00	0.00
46.00	1.82	0.33	5.00	0.00	0.00	0.00
46.10	1.82	0.33	5.00	0.00	0.00	0.00
46.20	1.82	0.33	5.00	0.00	0.00	0.00
46.30	1.82	0.33	5.00	0.00	0.00	0.00
46.40	1.82	0.33	5.00	0.00	0.00	0.00
46.50	1.82	0.32	5.00	0.00	0.00	0.00
46.60	1.82	0.32	5.00	0.00	0.00	0.00
46.70	1.82	0.32	5.00	0.00	0.00	0.00
46.80	1.82	0.32	5.00	0.00	0.00	0.00
46.90	1.82	0.32	5.00	0.00	0.00	0.00
47.00	1.82	0.32	5.00	0.00	0.00	0.00
47.10	1.82	0.32	5.00	0.00	0.00	0.00
47.20	1.82	0.32	5.00	0.00	0.00	0.00
47.30	1.82	0.32	5.00	0.00	0.00	0.00
47.40	1.81	0.32	5.00	0.00	0.00	0.00
47.50	1.81	0.32	5.00	0.00	0.00	0.00
47.60	1.81	0.32	5.00	0.00	0.00	0.00
47.70	1.81	0.32	5.00	0.00	0.00	0.00
47.80	1.81	0.32	5.00	0.00	0.00	0.00
47.90	1.81	0.32	5.00	0.00	0.00	0.00
48.00	1.81	0.32	5.00	0.00	0.00	0.00
48.10	1.81	0.32	5.00	0.00	0.00	0.00
48.20	1.81	0.32	5.00	0.00	0.00	0.00
48.30	1.81	0.32	5.00	0.00	0.00	0.00
48.40	1.81	0.32	5.00	0.00	0.00	0.00
48.50	1.81	0.32	5.00	0.00	0.00	0.00
48.60	1.81	0.32	5.00	0.00	0.00	0.00
48.70	1.81	0.32	5.00	0.00	0.00	0.00
48.80	1.81	0.32	5.00	0.00	0.00	0.00
48.90	1.81	0.32	5.00	0.00	0.00	0.00
49.00	1.81	0.32	5.00	0.00	0.00	0.00

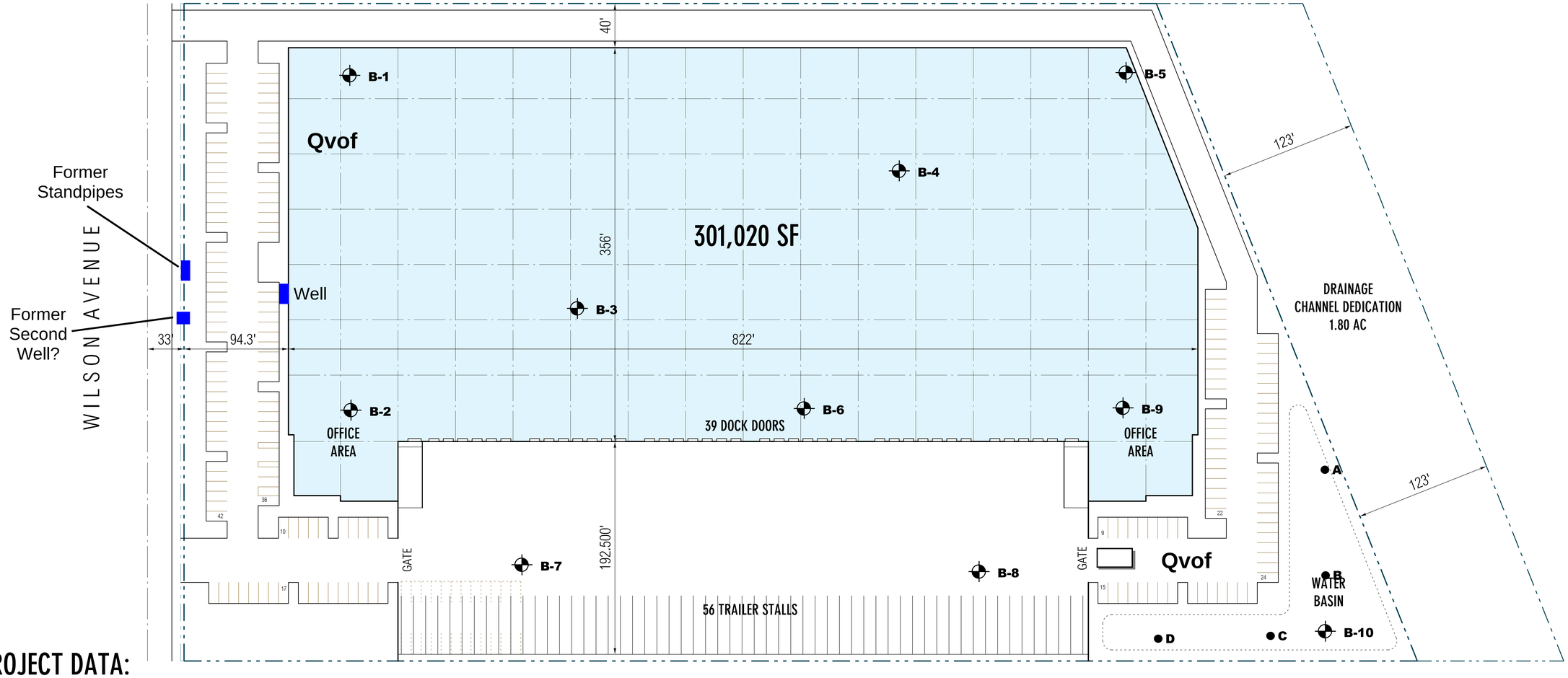
49.10	1.81	0.32	5.00	0.00	0.00	0.00
49.20	1.80	0.32	5.00	0.00	0.00	0.00
49.30	1.80	0.32	5.00	0.00	0.00	0.00
49.40	1.80	0.32	5.00	0.00	0.00	0.00
49.50	1.80	0.32	5.00	0.00	0.00	0.00
49.60	1.80	0.32	5.00	0.00	0.00	0.00
49.70	1.80	0.32	5.00	0.00	0.00	0.00
49.80	1.80	0.32	5.00	0.00	0.00	0.00
49.90	1.80	0.32	5.00	0.00	0.00	0.00
50.00	1.80	0.32	5.00	0.00	0.00	0.00
50.10	1.80	0.32	5.00	0.00	0.00	0.00
50.20	1.80	0.32	5.00	0.00	0.00	0.00
50.30	1.80	0.32	5.00	0.00	0.00	0.00
50.40	1.80	0.32	5.00	0.00	0.00	0.00
50.50	1.80	0.32	5.00	0.00	0.00	0.00
50.60	1.80	0.32	5.00	0.00	0.00	0.00
50.70	1.80	0.32	5.00	0.00	0.00	0.00
50.80	1.80	0.32	5.00	0.00	0.00	0.00
50.90	1.79	0.32	5.00	0.00	0.00	0.00
51.00	1.79	0.32	5.00	0.00	0.00	0.00
51.10	1.79	0.32	5.00	0.00	0.00	0.00
51.20	1.79	0.32	5.00	0.00	0.00	0.00
51.30	1.79	0.32	5.00	0.00	0.00	0.00
51.40	1.79	0.32	5.00	0.00	0.00	0.00
51.50	1.79	0.32	5.00	0.00	0.00	0.00

* F.S.<1, Liquefaction Potential Zone
(F.S. is limited to 5, CRR is limited to 2, CSR is limited to 2)

Units: Unit: qc, fs, Stress or Pressure = atm (1.0581tsf); Unit Weight = pcf; Depth = ft; Settlement = in.

---

1 atm (atmosphere) = 1 tsf (ton/ft2)
CRRm Cyclic resistance ratio from soils
CSRsf Cyclic stress ratio induced by a given earthquake (with user request factor of safety)
F.S. Factor of Safety against liquefaction, F.S.=CRRm/CSRsf
S_sat Settlement from saturated sands
S_dry Settlement from Unsaturated Sands
S_all Total Settlement from Saturated and Unsaturated Sands
NoLiq No-Liquefy Soils



PROJECT DATA:

ZONE:	LIGHT INDUSTRIAL
GROSS SITE AREA:	673,003 SF / 15.45 AC
CHANNEL DEDICATION:	78,670 SF / 1.80 AC
NET SITE AREA	594,333 SF / 13.65 AC
BUILDING AREA:	
FOOTPRINT:	297,020 SF
MEZZANINE:	4,000 SF
TOTAL:	301,020 SF
NET LOT COVERAGE: (50% MAX)	49.97 %
NET FAR: (75% MAX)	50.64 %
PARKING REQUIRED:	
6,000 SF OFFICE @ 1/300 SF	20 STALLS
WAREHOUSE	
0-20,000 SF (1/1000 SF)	20 STALLS
20K AND ABV (1/2000 SF)	138 STALLS
TOTAL	178 STALLS
PARKING PROVIDED:	179 STALLS
LANDSCAPE:	80,546 SF / 12 % MIN.

GEOTECHNICAL LEGEND

B-10	Approximate location of exploratory boring
D	Approximate location of percolation test
Qvof	Very old fan alluvium (valley fill), weathered surface

EXPLORATION & TEST LOCATION MAP

APN 300-170-009, PERRIS, CALIFORNIA

PROJECT NO. 4488-I	DATE: 1/21/19	PLATE NO. 1

SCALE: 1" = 40'-0" 0' 10' 20' 50' 100'

RGA
Office of Architectural Design
15231 Alton Parkway, Suite 100
Irvine, CA 92618
T 949-341-0920
FX 949-341-0922

WILSON AVENE

00000 WILSON AVENUE, CITY OF PERRIS

PRELIMINARY SITE PLAN - SCHEME 01r1

MARK	DATE	DESCRIPTION
	10/1/18	CONCEPTUAL SITE PLAN

RGA PROJECT NO:	18120.00
CAD FILE NAME:	18120-00-A1-01r1
DRAWN BY:	MG
CHK'D BY:	CS
COPYRIGHT: RGA, OFFICE OF ARCHITECTURAL DESIGN	
SHEET TITLE	

A1-01r1

ARAGÓN GEOTECHNICAL, INC.
Consultants in the Earth & Material Sciences

January 22, 2019
Project No. 4488-I

First Industrial Realty Trust, Inc.
898 N. Pacific Coast Highway, Suite 175
El Segundo, California 90245

Attention: Mr. Matt Pioli

Subject: WQMP Site Assessment & Infiltration Test Results
Proposed Wilson Avenue Light Industrial Project, APN 300-170-009
City of Perris, Riverside County, California.

Dear Mr. Pioli:

In accordance with our proposal dated December 4, 2018, Aragón Geotechnical Inc. (AGI) has completed site testing and analyses of soil infiltration potential. Our conclusions are intended to support the creation of a site-specific water quality management plan (WQMP) and final selection of stormwater best management practices (BMPs) at the listed project. Data and recommendations for BMP engineering design and construction of low impact development (LID), hydromodification, and pollution prevention features are required by the Santa Ana Region (SAR) *Water Quality Management Plan* effective January 1, 2013. AGI services were performed concurrently with a preliminary geotechnical design investigation for the proposed industrial development. Subsurface explorations, geological reconnaissance and research, and characterization of the local groundwater regime were requirements for both of AGI's current studies. Our primary tasks for the infiltration feasibility assessment consisted of (1) Review of local and regional geologic, soil, and groundwater elevation maps plus proprietary data from other nearby AGI investigations; (2) Machine drilling of percolation test borings to estimated elevations of a proposed infiltration system, using a hollow-stem auger drill rig; (3) Field tests of water absorption rates; and (4) Preparation of this results report. Calculations or recommendations for the design precipitation event intensity or duration, climate coefficients, storm water retention or treatment flow rates, or treatment volumes were outside of AGI's scope.

16801 Van Buren Blvd., Bldg. B
Riverside, CA 92504
Tel: 951.776.0345 ● **Fax:** 951.776.0395
www.aragongeo.com

Proposed Construction

AGI was furnished with a conceptual development plan dated October 1, 2018, prepared by the Irvine firm RGA Office of Architectural Design. The site plan included a proposed structure outline, but lacked topographic contours or preliminary finish surface elevations. The primary new features in the approximately 15.45-acre project site would be a 301,020-square-foot warehouse surrounded by access driveways and parking stalls for automobiles and heavy trucks. Concrete pavements are expected with limited possible exceptions for automobile parking lots. The logistics or light industrial building would reasonably comprise concrete tilt-up walls resting on shallow strip footings, with a concrete slab-on-grade industrial floor.

One BMP for stormwater management has been assessed by this study: A simple excavated water quality basin in the southeast corner of the project site. Estimated infiltration surface elevations were described by the civil designer at 6 feet below current grade. Overflows or controlled discharges would presumably be directed to the Perris Valley Drain, an unlined trapezoidal flood channel bordering the eastern side of the property. Based on City-minimum landscape area guidelines, we would predict up to 88 percent of the site's incident precipitation will intercept impermeable surfaces composed of the building and surrounding pavements.

Field Observations and Permeability Testing

At the time of AGI's investigations, the project site consisted of a very flat, vacant, and formerly agricultural open field. A relict concrete slab and remains of an old well casing were situated some distance west of the BMP locality, close to Wilson Avenue. Field work encountered ground surfaces that were soft and furrowed from weed abatement plowing.

AGI's infiltration determinations were based on technical guidelines for percolation testing in small-diameter boreholes. Most California jurisdictions including co-permittees of the Riverside County master discharge permit accept percolation test results for stormwater BMP design, with the proviso that percolation test data be adjusted to an equivalent one-dimensional (1-D) infiltration velocity. Boreholes of course infiltrate water both vertically and laterally. Considering expected low percolation rates and the desired test elevations below grade, AGI elected to use the falling-head deep borehole percolation method. Measured water takes in units of time/unit length are converted by formula into an equivalent infiltration test velocity in units of length/time. All field exploration, percolation

testing, and derivations of equivalent infiltration rates were performed by the following qualified company principals or consultants:

- Fernando Aragón, P.E.: California Registered Civil Engineer and Geotechnical Engineer, with over 15 years of professional experience.
- Mark G. Doerschlag: California Professional Geologist and Certified Engineering Geologist, with over 35 years of professional experience.
- Keith Doerschlag: BMP Engineering Technician.

One deep exploration boring and 4 percolation test holes were drilled within the proposed BMP outline on December 28, 2018. The 8-inch-diameter soil borings were drilled with a truck-mounted hollow-stem auger rig. Discrete-interval soil samples were collected with Standard Penetration Test split-spoon tools at increments of every 2 feet in the exploration hole. Preliminary judgments concerning absorption capabilities could be inferred from sampler penetration resistance, and from soil characteristics derived from visual-manual procedures. All geotechnical and basin-specific exploratory borings were observed and continuously logged during drilling by a qualified engineering geologist. Subsurface conditions were described according to standardized soil classification criteria. Exploratory borings were immediately backfilled with compacted soil cuttings. The log for the BMP-specific exploratory boring B-10 is reproduced at the end of this report. A modified version of the project engineer's conceptual development plan is introduced as AGI's Exploration & Infiltration Test Location Map, Plate No. 1 (attached).

The as-built test hole depths were established at 6.0 feet below ground surfaces (bgs). Approximately 2 to 3 inches of 3/4" gravel was placed in the bottom of each test hole, followed by insertion of a 3¼-inch O.D. PVC perforated pipe encased in filter fabric material. Well bore gravel filter packs were omitted from the annular space between the plastic pipe and hole sidewalls given stable and cohesive soils in the test intervals. Test borings were presaturated overnight with one full-depth filling of water before commencing absorption tests the next day. It was observed that all test bores drained completely by the next morning.

Heads of 5.0 feet were assigned for all tested locations. Absolute water levels were easily monitored with a folding rod measuring from a fixed ground-surface reference point. Incremental water level drops were recorded to 0.01-foot precision every 30 minutes until total test durations of at least 6 hours were completed. Typical percolation tests will show

incremental rates asymptotically approaching a minimum rate. Near-steady-state water takes were achieved for all 6 tests. Record sheets with the field measurement data are attached to the back of this report.

FINDINGS

Local Soil Conditions

Surface soils throughout the Wilson Avenue project site consist of brown-colored silty clay with traces of sand (Unified Soil Classification System symbol CL). The clay zone is about 5 feet thick in the proposed BMP basin area, deepening to slightly more than 9 feet thick toward the west and Wilson Avenue. The upper 2½ to 3 feet is soft and has been mechanically disturbed by agricultural deep ripping. Below 3 feet the clay is part of an active, highly expansive soil pedon composed of small cohesive blocks surrounded by abundant soft whitish-colored carbonate.

Materials at and just below the prospective basin-bottom elevation constitute medium dense to very dense, massive, and clay-cemented silty sand. Fine-grained deposits classified as clayey silt return at about 12 feet deep, while very dense clayey sand seems to compose the interval from about 15 feet to more than 20 feet. The latter interval was strongly cemented and hard to drill during the exploration phase. Site geotechnical borings did not find significant intervals of uncemented silty sand or sand until depths of more than 35 feet were reached.

From a soil science viewpoint, the National Resources Conservation Service classifies surficial site materials as Domino silt loam Du and Domino silt loam, saline-alkali Dv. The basin would be in the latter unit. Domino soils characteristically have pedogenic clay and indurated duripans in the upper 20 to 40 inches feet that are impediments to very shallow infiltration. Silt loam Dv is assigned to hydrologic soil group D, with a minimum saturated hydraulic conductivity K_{sat} of 0.00 inches per hour . Soil classifications and hydrologic soil groups are usually limited to materials shallower than 60 inches or so; thus, the proposed infiltration improvement will completely bypass NRCS soil series and cannot be qualified solely on the basis of NRCS hydrologic soil groups.

AGI's geotechnical studies identified the site materials as early to middle Pleistocene alluvium (unit $Qvof_a$ of Morton & Miller, 2006). Regional maps erroneously considered the site to comprise much younger and sandier materials than we found in every site soil

boring. Most of the Perris Plain where the Wilson Avenue project is sited is considered part of the "Paloma" depositional surface of Woodford et al. (1971), typified by fairly strongly developed illuvial clay and calcic horizons atop the older parent materials. Detrital sediments have originated from granitic bedrock terrains located west, east, and north of the project. The alluvium buries and conceals several deep erosional channels carved into granitic basement bedrock that can be considered tributaries to an ancestral San Jacinto River. The maximum depth of the $Qvof_a$ unit at the warehouse site is not known with certainty, but may be approximately 400 feet based on water well data (Woodford et al. 1971).

Groundwater

AGI's BMP exploration boring did not encountered groundwater within the 19½-foot total exploration depth. At geotechnical boring B-5 to the north, slow groundwater inflows were observed. A stable water level 34.0 feet below grade was measured after several hours. Shallower and deeper soil samples were not mottled with iron oxide stains, a common proxy for detecting past historical high groundwater. All other soil borings remained dry.

The project site is within the West San Jacinto groundwater subbasin. According to many years of monitoring well records reviewed through the State CASGEM website, groundwater within a radius of about a half-mile from the property has had minimum measured depths of about 40 feet northeast of the site, and 57 to 81 feet to the west. The hydrogeologic regime is complex due to the heterogeneity of the alluvial basin fill, substantial erosional relief of the buried bedrock surfaces under the southern Perris Valley, and municipal groundwater pumping. Shallower groundwater close to the Perris Valley Drain would not be unexpected, as this feature represents a (seasonal) line of basin recharge. There has been a historic tendency for groundwater levels to rise across the valley. Rising water levels are attributed to changing land uses in the Perris Plain vicinity, such as the cessation of formerly widespread agricultural pumping and introduction of irrigated suburban tracts. Nonetheless, AGI concludes that minimum depths to permanent groundwater at the project site have always been in excess of 30 feet.

Jurisdictional requirements usually mandate a minimum separation between stormwater BMPs and groundwater of at least 10 feet and up to 40 feet (for very permeable soils). Data thus indicate there should be zero limitations on BMP design or construction due to groundwater at the project.

Percolation Test Results

The following table summarizes the obtained field test results. Raw percolation rates for each borehole percolation test were converted to a 1-D infiltration velocity by Porchet's method. The corrected infiltration test velocities I_t would roughly correspond to velocities obtained by double-ring infiltrometers.

Variable and somewhat better-than-expected test results were obtained. All tested intervals penetrated at least a foot or so into deposits classified as silty sand. It is uncertain what proportion of each total water uptake was accepted by the upper 5 feet of silty clay at the borings, but the volume was probably very low.

Test Location	Saturation Test Interval Depth Below Existing Ground Surface (feet)	Raw Percolation Rate, DEH Test Method (min/in)	Corrected 1-D Infiltration Velocity I_t (in/hr via Porchet method)
Hole A	1.0 - 6.0	1.8	1.57
Hole B	1.0 - 6.0	2.8	0.95
Hole C	1.0 - 6.0	3.7	0.71
Hole D	1.0 - 6.0	1.7	1.71

Conclusions, Recommendations, and Advice

The SAR *Water Quality Management Plan* explicitly requires any infiltration-based BMP to be clear of water in 72 hours or less after the design storm event. Mathematically, for typical volume-based BMP improvements, this requires field infiltration velocities I_t of roughly 1.6 inches per hour or faster. AGI recommends a mean field-test infiltration test velocity of 1.25 inches per hour for the prospective Wilson Avenue basin. *A BMP basin utilizing this test velocity must be bottomed at least 6 feet below present grades.* We further recommend that zero infiltration credit be assumed for basin side slope area, which will expose impermeable clay.

We think actual performance could still be considerably less once available vadose-zone storage is filled during first-of-the-season storm events and the wetting front encounters deeper impermeable clay strata. Riverside County guidelines for storm water best

management practices specify a factor of safety of 3.0 when calculating the design infiltration velocity I_d for an infiltration-type BMP, based on the methods and results of this investigation (Appendix A, Table 1, *Design Handbook for Low Impact Development Best Management Practices)*. The recommended average I_t should be reduced by a factor of 3 to derive final I_d. If the designated WQMP BMP site cannot rely solely on surface infiltration for the total capture volume, then hydromodification to reduce peak flows will likely require detention, treatment, and thence controlled release to the MS4 system [Perris Valley Drain].

The tested soil intervals are in our view the "best available" materials for absorption. Soils shallower than 5 feet are everywhere composed of expansive clay and judged completely impermeable. We did not identify any deeper intervals that might prove favorable to an alternate BMP system such as engineered drywells.

It is important to note the test velocities were obtained in carefully prepared test holes as free as practicable of surface sealing and boundary-zone compaction. Field performance of any designed LID improvement could be markedly lower than AGI's achieved results if precautions are not maintained during construction. It will be imperative to ***specify*** construction practices for minimizing excavation bottom compaction. Excavations should be made with backhoes, grade-alls, or excavators working from beside the basin bottom. An overall goal of preventing heavy equipment from rolling or tracking any infiltration system excavation bottom should be understood.

Lastly, AGI concludes from test and exploration findings that the selected BMP location should neither cause structural concerns, nor result in significantly increased risks to the proposed building from slope instability, liquefaction, or settlement. Future grading plan reviews are recommended, however, to analyze bottom elevations and lateral setbacks to nearby pavements so that pavement integrity goals are met.

Investigation Limitations

The findings in this report may require modification as a result of later field observations. Our opinions have been based on the results of limited testing within the planned water-quality BMP site combined with extrapolations of soil conditions away from the test bores.

The nature and extent of variations within or beyond the proposed BMP may not become evident until construction. If conditions encountered during construction vary significantly from those indicated by this report, or BMP type or location changes are proposed, then additional site testing, preparation recommendations, or as-built tests may be needed to achieve correct designs for the treatment control BMP system(s).

Closure

This report was prepared for the use of First Industrial Realty Trust, Inc., their civil engineers, and authorized designates in cooperation with this office. Our findings and recommendations were prepared in accordance with generally accepted professional principles and local practice in the fields of engineering geology and geotechnical engineering. We make no other warranties either expressed or implied. Questions concerning the test results or design advice are invited, and may be directed to the undersigned at our Riverside office at (951) 776-0345.

Respectfully submitted,
Aragón Geotechnical, Inc.

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Attachments: Exploratory Boring Log, Boring B-10
Percolation Field Test Data, Sites A through D
Plate No. 1, Exploration & Infiltration Test Location Map (fold-out)

Distribution: (4) Addressee

REFERENCES

Morton, D.M., and Miller, F.K., 2006, Geologic map of the San Bernardino and Santa Ana 30' x 60' quadrangles, California [ver. 1.0], U.S. Geological Survey Open File Report 2006-1217, scale 1:100,000.

Natural Resources Conservation Service, 2019, Web Soil Survey utility, accessed 1/21/19 from Internet URL http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm

Riverside County Flood Control and Water Conservation District, 2011, *Design Handbook for Low Impact Development Best Management Practices*, Riverside, California, download file at Internet URL http://rcflood.org/downloads/NPDES/Documents/LIDManual/LID_BMP_Design_Handbook.pdf

Woodford, A.O., Shelton, J.S., Doehring, D.O., and Morton, R.K., 1971, Pliocene-Pleistocene history of the Perris Block, southern California: Geological Society of America Bulletin, v. 82, p. 3421-3448.

FIELD LOG OF BORING B - 10

Sheet 1 of 2

Project: *LIGHT INDUSTRIAL PROJECT, APN 300-170-009*

Location: *CITY OF PERRIS, RIVERSIDE COUNTY, CALIF.*

Date(s) Drilled:	**12/28/18**	Logged By:	**M. Doerschlag**
Drilled By:	**GP Drilling**	Total Depth:	**19.5 Ft.**
Rig Make/Model:	**Mobile B-61**	Hammer Type:	**Automatic trip**
Drilling Method:	**Hollow-Stem Auger**	Hammer Weight/Drop:	**140 Lb./30 In.**
Hole Diameter:	**8 In.**	Surface Elevation:	**± 1438.5 Ft. AMSL, RCFC NAD 83**

Comments: Water quality basin boring, expected bottom elevation of about -6 feet bgs.

DEPTH (ft.)	ELEVATION (MSL DATUM)	SAMPLE INTERVALS: BULK / DRIVE / TYPE, "N" or (Blows/ft.)	GRAPHIC LOG	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (pcf)	WATER CONTENT (%)	WELL COMPLETION	OTHER TESTS
0				CL	Silty Clay: Very pale brown; mechanically disturbed to around 3 feet, abruptly becoming very stiff and cohesive below; subjectively slightly moist; about 15% very fine sand. [Very old alluvium]				
	1435								
		SPT 8 15 19 N=34		CL	← Silty clay, slightly porous, with abundant soft vein-like carbonate.				
5				SM	Silty Sand: Brown; medium dense rapidly becoming clay-cemented and very dense; slightly moist; not visibly porous. [Very old alluvium]				
		SPT 14 14 14 N=28		SM					
	1430	SPT 13 27 50 N=77		SM	← Silty sand, may be faintly bedded around 1' thick, locally with trace of clay.				
10		SPT 19 32 33 N=65		SC	← Clayey sand, cemented, grades yellowish brown.				
		SPT 19 26 33 N=59		ML	Clayey Silt: Yellowish brown; hard; slightly moist; about 15% fine sand; massive, with common MnO spots. Upper part of a fining-up sedimentary package. [Very old alluvium]				
	1425								
		SPT 11 25		ML					
15									

Continued on next sheet.

FIELD LOG OF BORING B - 10

Sheet 2 of 2

Project: ***LIGHT INDUSTRIAL PROJECT, APN 300-170-009***

Location: ***CITY OF PERRIS, RIVERSIDE COUNTY, CALIF.***

DEPTH (ft.)	ELEVATION (MSL DATUM)	SAMPLE INTERVALS (BULK / DRIVE / TYPE, "N" or (Blows/ft.))	GRAPHIC LOG	USCS	GEOTECHNICAL DESCRIPTION	DRY DENSITY (pcf)	WATER CONTENT (%)	WELL COMPLETION	OTHER TESTS
15		47 N=72		SC	Clayey Sand: Yellowish brown; very dense; slightly moist; somewhat variable clay content but generally cemented and very firm drilling. [Very old alluvium]				
		SPT 19 40 50/4"							
	1420	SPT 13 25 33 N=58		SC	← Clayey sand, up to ~40% fines, moist.				

Bottom of boring at 19.5 ft.
No groundwater encountered.
Boring backfilled with compacted soil cuttings.

Percolation Data Sheet (Leach Line, ATU, Stormwater BMP)

Project: 4488-I		Project No. WILSON AVE WAREHOUSE	
Test Hole No. A		Date Excavated: 12/28/18	
Depth of Test Hole: 6.0' bgs		Soil Classification: Bottom = SM	
Check for Sandy Soil Criteria Tested By: N/A		Date: 1/4/19	Presoak: FILLED TO -1' bgs
Field Percolation Test By: KED		Date: 1/5/19	

Sandy Soil Criteria Test

Trial No.	Time	Time Interval (Min.)	Initial Water Level (In.)	Final Water Level (In.)	Δ in Water Level (In.)
1	N/A				
2					

Use: ☒ Normal Soil Criteria ☐ Sandy Soil Criteria (>6" drop in <25 min. both trials)

Time	Time Interval (min.)	Total Elapsed Time (min.)	Initial Water Level (ft., datum)	Final Water Level (ft., datum)	Δ in Water Level (ft.)	Percolation Rate (Min./In.)
11:24						
11:54	30	30	1.00	3.45	2.45	1.0
11:54						
12:24		60	1.05	3.01	1.96	1.28
12:24						
12:54		90	1.00	2.90	1.90	1.32
12:54						
1:24		120	0.95	2.70	1.75	1.43
1:24						
1:54		150	0.94	2.57	1.63	1.53
1:54						
2:24		180	0.95	2.51	1.56	1.60
2:24						
2:54		210	0.95	2.48	1.53	1.63
2:54						
3:24		240	0.90	2.40	1.50	1.67
3:24						
3:54		270	1.00	2.35	1.35	1.85
3:54						
4:24		300	0.90	2.29	1.39	1.80
4:24						
4:54		320	0.90	2.30	1.40	1.79
4:54						
5:24		360	0.95	2.34	1.39	1.80

raining @ 4PM

DARK!

Percolation Data Sheet (Leach Line, ATU, Stormwater BMP)

Project: Wilson Ave Warehouse		Project No. 4488-I	
Test Hole No. B		Date Excavated: 12/28/18	
Depth of Test Hole: 6.0' bgs		Soil Classification: Bottom = SM	
Check for Sandy Soil Criteria Tested By: N/A		Date: 1/4/19	Presoak: Filled to -1' BGS
Field Percolation Test By: KED		Date: 1/5/19	

Sandy Soil Criteria Test

Trial No.	Time	Time Interval (Min.)	Initial Water Level (In.)	Final Water Level (In.)	Δ in Water Level (In.)
1	N/A				
2					

Use: ☑ Normal Soil Criteria ☐ Sandy Soil Criteria (>6" drop in <25 min. both trials)

Time	Time Interval (min.)	Total Elapsed Time (min.)	Initial Water Level (ft., datum)	Final Water Level (ft., datum)	Δ in Water Level (ft.)	Percolation Rate (Min./In.)
11:34 12:04	30	30	1.00	2.53	1.53	1.63
12:04 12:34	↓	60	1.00	2.41	1.41	1.77
12:34 1:04		90	0.92	2.20	1.28	1.95
1:04 1:34		120	1.00	2.11	1.11	2.25
1:34 2:04		150	0.96	2.02	1.06	2.36
2:04 2:34		180	0.95	1.98	1.03	2.43
2:34 3:04		210	1.00	1.95	0.95	2.63
3:04 3:34		240	1.02	1.95	0.93	2.69
3:34 4:04		270	1.00	1.90	0.90	2.78
4:04 4:34		300	1.00	1.89	0.89	2.81
4:34 5:04		330	1.00	1.88	0.88	2.84
5:04 5:34	↓	360	1.02	1.91	0.89	2.81

Percolation Data Sheet (Leach Line, ATU, Stormwater BMP)

Project: Wilson Ave Warehouse		Project No. 4488-I	
Test Hole No. C		Date Excavated: 12/28/18	
Depth of Test Hole: 6.0' bgs		Soil Classification: Bot = SM	
Check for Sandy Soil Criteria Tested By: N/A		Date: 1/4/19	Presoak: Filled to 1' bgs
Field Percolation Test By: KED		Date: 1/5/19	

Sandy Soil Criteria Test

Trial No.	Time	Time Interval (Min.)	Initial Water Level (In.)	Final Water Level (In.)	Δ in Water Level (In.)
1	N/A				
2					

Use: ☒ Normal Soil Criteria ☐ Sandy Soil Criteria (>6" drop in <25 min. both trials)

Time	Time Interval (min.)	Total Elapsed Time (min.)	Initial Water Level (ft., datum)	Final Water Level (ft., datum)	Δ in Water Level (ft.)	Percolation Rate (Min./In.)
11:39 12:09	30	30	1.00	2.00	1.00	2.50
12:09 12:39		60	0.84	1.97	1.13	2.21
12:39 1:09		90	1.00	1.90	0.90	2.78
1:09 1:39		120	0.95	1.89	0.94	2.66
1:39 2:09		150	0.98	1.78	0.80	3.13
2:09 2:39		180	1.01	1.78	0.77	3.25
2:39 3:09		210	0.98	1.71	0.73	3.42
3:09 3:39		240	1.02	1.69	0.67	3.73
3:39 4:09		270	0.81	1.60	0.79	3.16
(rain) 4:09 4:39		300	1.00	1.66	0.66	3.79
4:39 5:09		330	1.00	1.70	0.70	3.57
5:09 5:39	4	360	1.00	1.68	0.68	3.67

Percolation Data Sheet (Leach Line, ATU, Stormwater BMP)

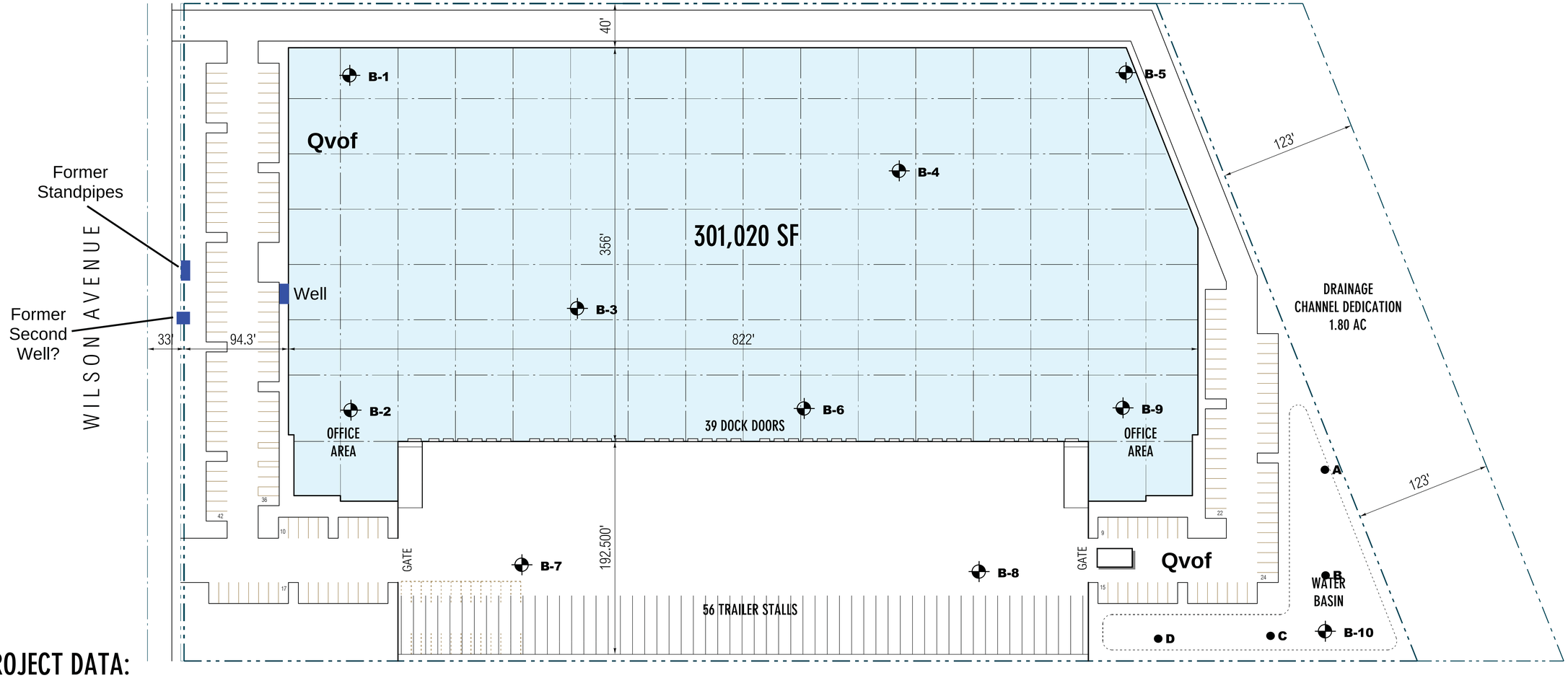
Project: WILSON AVE WAREHOUSE	Project No. 4488-I		
Test Hole No. D	Date Excavated: 12/28/18		
Depth of Test Hole: 6.0' bgs	Soil Classification: BOTTOM = SM		
Check for Sandy Soil Criteria Tested By: N/A	Date: 1/4/19	Presoak: FILLED TO 1" PBGS	
Field Percolation Test By: KED	Date: 1/5/19		

Sandy Soil Criteria Test

Trial No.	Time	Time Interval (Min.)	Initial Water Level (In.)	Final Water Level (In.)	Δ in Water Level (In.)
1	N/A				
2					

Use: ☒ Normal Soil Criteria ☐ Sandy Soil Criteria (>6" drop in <25 min. both trials)

Time	Time Interval (min.)	Total Elapsed Time (min.)	Initial Water Level (ft., datum)	Final Water Level (ft., datum)	Δ in Water Level (ft.)	Percolation Rate (Min./In.)
11:44 12:14	30	30	1.00	3.08	2.08	1.20
12:14 12:44		60	1.00	3.01	2.01	1.24
12:44 1:14		90	0.95	2.87	1.92	1.30
1:14 1:44		120	1.00	2.84	1.84	1.36
1:44 2:14		150	0.95	2.69	1.74	1.44
2:14 2:44		180	0.96	2.70	1.74	1.44
2:44 3:14		210	1.00	2.65	1.65	1.52
3:14 3:44		240	0.97	2.63	1.66	1.51
3:44 4:14		270	0.96	2:54	1.58	1.58
4:14 4:44		300	1.00	2.52	1.52	1.64
4:44 5:14		330	0.98	2.55	1.57	1.59
5:14 5:44	↓	360	1.00	2.50	1.50	1.67



PROJECT DATA:

ZONE:	LIGHT INDUSTRIAL
GROSS SITE AREA:	673,003 SF / 15.45 AC
CHANNEL DEDICATION:	78,670 SF / 1.80 AC
NET SITE AREA	594,333 SF / 13.65 AC
BUILDING AREA:	
FOOTPRINT:	297,020 SF
MEZZANINE:	4,000 SF
TOTAL:	301,020 SF
NET LOT COVERAGE: (50% MAX)	49.97 %
NET FAR: (75% MAX)	50.64 %
PARKING REQUIRED:	
6,000 SF OFFICE @ 1/300 SF	20 STALLS
WAREHOUSE	
0-20,000 SF (1/1000 SF)	20 STALLS
20K AND ABV (1/2000 SF)	138 STALLS
TOTAL	178 STALLS
PARKING PROVIDED:	179 STALLS
LANDSCAPE:	80,546 SF / 12 % MIN.

GEOTECHNICAL LEGEND

B-10	Approximate location of exploratory boring
D	Approximate location of percolation test
Qvof	Very old fan alluvium (valley fill), weathered surface

EXPLORATION & TEST LOCATION MAP

APN 300-170-009, PERRIS, CALIFORNIA

PROJECT NO. 4488-I	DATE: 1/21/19	PLATE NO. 1

SCALE: 1" = 40'-0" 0' 10' 20' 50' 100'

RGA
Office of Architectural Design
15231 Alton Parkway, Suite 100
Irvine, CA 92618
T 949-341-0920
FX 949-341-0922

WILSON AVENE

00000 WILSON AVENUE, CITY OF PERRIS

PRELIMINARY SITE PLAN - SCHEME 01r1

MARK	DATE	DESCRIPTION
	10/1/18	CONCEPTUAL SITE PLAN

RGA PROJECT NO:	18120.00
CAD FILE NAME:	18120-00-A1-01r1
DRAWN BY:	MG
CHK'D BY:	CS
COPYRIGHT: RGA, OFFICE OF ARCHITECTURAL DESIGN	
SHEET TITLE	

A1-01r1

Appendix 4: Historical Site Conditions

Phase I Environmental Site Assessment or Other Information on Past Site Use

PHASE I ENVIRONMENTAL SITE ASSESSMENT

Wilson Avenue Property
County of Riverside APN 300-170-009
Perris, California

AEC Project No. 18-410SD
January 23, 2019

Prepared for:

First Industrial Realty Trust, Inc.
and First Industrial, L.P.
One North Wacker Drive, Suite 4200
Chicago, IL 60606

Prepared by:

Advantage Environmental Consultants, LLC
145 Vallecitos De Oro, Suite 201
San Marcos, California 92069
Phone (760) 744-3363 • FAX (760) 744-3383

ADVANTAGE
ENVIRONMENTAL
CONSULTANTS, LLC.

January 23, 2019

Mr. Mike Reese
Environmental Risk Manager
First Industrial Realty Trust, Inc.
One North Wacker Drive, Suite 4200
Chicago, IL 60606

Subject: **Phase I Environmental Site Assessment**
Wilson Avenue Property
County of Riverside APN 300-170-009-8
Perris, California
AEC Project No. 18-410SD

Dear Mr. Reese:

Advantage Environmental Consultants, LLC (AEC) has performed a Phase I Environmental Site Assessment (ESA) in conformance with the scope and limitations of ASTM International Practice E 1527-13, 40 Code of Federal Regulations Part 312 and the First Industrial Scope of Work for the project of the above-referenced property. This ESA included public environmental agency and historical record reviews, interviews, site observations, and report preparation. This report includes AEC's findings, conclusions, recommendations, and supporting documentation.

We appreciate the opportunity to be of service to you on this project. If you should have any questions regarding this report, or if we can be of further assistance, please contact us at (760) 744-3363.

Sincerely,

ADVANTAGE ENVIRONMENTAL CONSULTANTS, LLC



Daniel Weis, R.E.H.S.
Branch Manager
Western Regional Office



Keith Sy
Project Manager

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TABLE OF CONTENTS

1.0 EXECUTIVE SUMMARY 1
1.1 Summary and Findings 1
1.2 Conclusions and Recommendations 2
2.0 INTRODUCTION 3
2.1 Purpose 3
2.2 Detailed Scope of Services 4
2.3 Significant Assumptions 5
2.4 Limitations and Exceptions 5
2.5 Special Terms and Conditions 6
2.6 User Reliance 6
3.0 SITE DESCRIPTION 7
3.1 Location and Legal Description 7
3.2 Site and Vicinity General Characteristics 7
3.3 Current Use of the Site 7
3.4 Description of Structures, Roads, Other Improvements on the Site 7
3.5 Current Uses of the Adjoining Properties 7
4.0 USER PROVIDED INFORMATION 8
4.1 Title Records 8
4.2 Environmental Liens or Activity and Use Limitations 8
4.3 Specialized Knowledge 8
4.4 Commonly Known or Reasonably Ascertainable Information 8
4.5 Valuation Reduction for Environmental Issues 8
4.6 Owner, Property Manager, and Occupant Information 8
4.7 Reason for Performing Phase I ESA 8
5.0 RECORDS REVIEW 9
5.1 Standard Environmental Record Sources 9
5.2 Additional Environmental Record Sources 12
5.3 Physical Setting Sources 13
5.3.1 Topography and Hydrology 13
5.3.2 Geology and Hydrogeology 13
5.4 Historical Use Information on the Subject Site and Adjoining Properties 14
5.4.1 Topographic Maps 14
5.4.2 Aerial Photographs 14
5.4.3 State of California Division of Oil and Gas Records 15
6.0 SITE RECONNAISSANCE 16
6.1 Methodology and Limiting Conditions 16
6.2 General Site Setting 16
6.3 Site Observations 16
7.0 INTERVIEW INFORMATION 18
7.1. Interview With Owner 18
7.2 Interview With Site Manager 18
7.3 Interviews With Occupants 18

7.4 Interview With Local Government Official 18
7.5 Interview With Others 18

8.0 FINDINGS, OPINIONS, CONCLUSIONS AND RECOMMENDATIONS 19

9.0 DEVIATIONS AND DATA GAPS 20

10.0 ADDITIONAL SERVICES 21

10.1 Wetlands 21
10.2 Radon Potential Records Review 21
10.3 Limited Lead in Drinking Water Assessment 21
10.4 National Pollution Discharge Elimination System (NPDES) 21
10.5 Threatened/Endangered Species, Landmark/Historical/Cultural Significance Review 21

11.0 REFERENCES 22

12.0 SIGNATURES AND QUALIFICATIONS OF ENVIRONMENTAL PROFESSIONALS 23

13.0 APPENDICES

13.1 Vicinity Map
13.2 Site Plan
13.3 Site Photographs
13.4 Regulatory Database Report
13.5 Regulatory Agency Records
13.6 Qualifications of the Environmental Professionals

1.0 Executive Summary

1.1 Summary and Findings

At the request of First Industrial Realty Trust, Inc. and First Industrial L.P., Advantage Environmental Consultants, LLC (AEC) conducted a Phase I Environmental Site Assessment (ESA) the approximately 15.6-acre Wilson Avenue Property located to the east of Wilson Avenue, south of E Rider Street and north of Placentia Avenue in the City of Perris, California (i.e. "Site"). The Site is further identified by Riverside County APN 300-170-009. The Phase I ESA was conducted in conformance with the scope and limitations of ASTM International Practice E 1527-13, 40 Code of Federal Regulations (CFR) Part 312 and the First Industrial Scope of Work for the project.

The Site is situated an area comprised of residential, commercial and vacant land uses. The Site is currently vacant and unoccupied. Two concrete pads possibly related to former water supply wells are present at the western portion of the Site. No significant environmental concerns were noted during our reconnaissance of the Site.

AEC reviewed Federal and State environmental databases provided by Environmental Risk Information Services (ERIS) for information pertaining to documented and/or suspected releases of regulated hazardous substances and/or petroleum products within specified search distances. The Site is not listed on any standard regulatory databases or non-ASTM databases searched by ERIS. In addition, regulatory agency file reviews pertaining to the Site completed with multiple environmental regulatory agencies also did not reveal environmental concerns in connection with the Site.

AEC reviewed historic aerial photographs, topographic maps, and city directories pertaining to the Site. According to the historic resources reviewed by AEC, the Site was used for agricultural purposes from prior to 1966. No significant environmental concerns were revealed during the review of the historical resources.

A review of historical aerial photographs and topographic maps indicates that the Site was historically utilized for agricultural crop production. During historical agricultural activities throughout the State of California, various pesticides and more specifically organochlorine pesticides were commonly applied during the normal course of agricultural operations. Such compounds have since been banned from production and use in the United States. Section 105215 of the California Health and Safety Code discusses the regulatory reporting of incidents that pertain to pesticide spills and accidental releases of pesticide products. Based on the regulatory and historical research completed during the preparation of this assessment, no information has been revealed that would lead AEC to believe that an accidental spill or release of pesticide products has occurred at the Site. In addition, neither stressed vegetation, nor evidence of the storage of pesticides was observed on the property during the Site reconnaissance or based on regulatory and historical research reviews. As such, the former agricultural use of the Site is not considered to be a recognized environmental condition in connection with the Site.

1.2 Conclusions and Recommendations

This assessment has revealed no evidence of current, historical, or controlled recognized environmental conditions in connection with the Site. Additional environmental investigation at the Site is not recommended at this time.

2.0 Introduction

2.1 Purpose

The purpose of this Phase I ESA is to provide a professional opinion on the presence of recognized environmental conditions and other suspect environmental conditions in connection with the Site, as they existed on the date of the site inspection, and to recommend whether further investigation is required. ASTM Standard Practice E 1527-13, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, specifies minimum requirements for conducting an ESA of a parcel of commercial real estate with respect to the range of contaminants pertinent to the scope of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), as well as petroleum products. As such, this ESA is intended to satisfy one of the threshold criteria for satisfying the landowner liability protections to CERCLA liability assuming compliance with other elements of the defense. In other words, this ESA represents one of the practices that constitute “all appropriate inquiry” into the previous ownership and uses of the property consistent with good commercial or customary practice, as defined in 42 USC Section 9601(35)(B) and 40 CFR Part 312.

The goal of the process is to identify recognized environmental conditions, which are defined by the Practice as “the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: 1) due to any 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. The term recognized environmental condition includes hazardous substances or petroleum products even under conditions in compliance with laws. In addition, the term also included historical recognized environmental conditions and controlled recognized environmental conditions. A historical recognized environmental condition is defined by the Practice as “a past release of hazardous substances or petroleum products that has occurred in connection with a 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 (for example, property use restrictions, activity and use limitations, institutional controls, or engineering controls).” A controlled recognized environmental condition is defined by the Practice as “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 (for example, property use restrictions, activity and use limitations, institutional controls, or engineering controls).” The term recognized environmental condition is not intended to include *de minimis* conditions that generally do not present a material risk of harm to public 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.

The term "environment" is defined in CERCLA 42 USC 9601(8) as "(A) the navigable waters, the water of the contiguous zone, and the ocean waters of which the natural resources are under the exclusive management authority of the United States under the Magnuson-Stevens Fishery conservation and Management Act", and "(B) any other surface water, ground water, drinking water supply, land surface or subsurface strata, or ambient air within the United States or under the jurisdiction of the United States."

The term “release” means any "spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment (including the abandonment or discarding of barrels, containers, and other closed receptacles containing any hazardous substance or pollutant or contaminant)", but excludes "(A) any release which results in exposure to persons solely within a workplace, with respect to a claim which such persons may assert against the employer of such persons, (B) emissions from the engine exhaust of a motor vehicle, rolling stock, aircraft, vessel, or pipeline pumping station engine, (C) release of source, byproduct, or special nuclear material from a nuclear incident, as those terms are defined in the Atomic Energy Act of 1954 [42 U.S.C. 2011 et seq.], if such release is subject to requirements with respect to financial protection established by the Nuclear Regulatory Commission under section 170 of such Act [42 U.S.C. 2210], or, for the purposes of 42 USC 9604 or any other response action, any release of source byproduct, or special nuclear material from any processing site designated under section 7912(a)(1) or 7942(a) of this title, and (D) the normal application of fertilizer."

2.2 Detailed Scope of Services

The Phase I ESA was conducted in accordance with generally accepted Phase I industry standards using ASTM Standard Practice E 1527-13, 40 CFR Part 312, and the First Industrial Scope of Work for the project. The following services were provided for this assessment:

- A search for environmental liens in connection with the Site.
- An evaluation of standard environmental record sources contained within Federal, State and local environmental databases within specific search distances.
- An evaluation of additional environmental record sources obtained from local regulatory departments/agencies.
- A qualitative evaluation of the physical characteristics of the Site through a review of published topographic, geologic, and hydrogeologic maps; published groundwater data; and area observations to characterize surface water flow in the Site area.
- An evaluation of past Site and adjacent/nearby property uses through a review of historical resources including topographic maps and aerial photographs.
- A physical inspection of the Site conducted to search for conditions indicative of potential environmental concerns including underground storage tanks (USTs), aboveground storage tanks (ASTs), and associated tank piping; stained soil or pavement; equipment that may contain or have historically contained polychlorinated biphenyls (PCBs); and other potential environmental concerns as defined in the ASTM E 1527-13 standard.
- A physical assessment of indications of past uses and visual observations of adjacent and surrounding properties (from curbside or public spaces) to assess potential impacts to the Site.
- Interviews completed with a representative of the current owner of the Site and local regulatory officials.

- The preparation of this Phase I ESA report, which includes the findings of the study and our opinion regarding their level of significance. Conclusions have been drawn based on the significance levels of the findings with subsequent recommendations provided.

2.3 Significant Assumptions

This Phase I ESA was conducted in accordance with ASTM guidelines, 40 CFR Part 312, and the First Industrial Scope of Work for this project, for the performance of such assessment. No other warranties either express or implied, are made by AEC. AEC's evaluations, analyses, and opinions should not be taken as representations regarding subsurface conditions or the actual value of the Site. Subsurface conditions may differ from the conditions implied by the surficial observations, and can only be reliably evaluated through intrusive techniques.

Documentation and data provided by the client, designated representatives, other interested third parties, or from the public domain, and referred to in the preparation of this assessment, are assumed to be complete and correct and have been used and referenced with the understanding that AEC assumes no responsibility or liability for their accuracy. AEC's conclusions are based upon such information and documentation and on our observations of Site conditions, as they existed on the date of the site inspection. Because Site conditions may change significantly over a short period of time and additional data may become available, data reported and conclusions drawn in this report are limited to current conditions and may not be relied upon on a significantly later date.

2.4 Limitations and Exceptions

Reasonable efforts have been made during this assessment to uncover evidence of USTs, ASTs, ancillary equipment associated with such tanks, and other subsurface structures. "Reasonable efforts" are limited to information gained from visual observation of unobstructed areas, recorded database information held in public record, and available information gathered from interviews. Such methods may not identify subsurface equipment that may have been hidden from view due to paving, construction or debris pile storage, or incorrect information from sources.

This investigation was not an environmental compliance audit. While some observations and discussion in this report may address conditions and/or operations that may be regulated, the regulatory compliance of those conditions and/or operations is outside the scope of this investigation. Nothing in this report constitutes a legal opinion or legal advice. For information regarding specific individual or organizational liability, AEC recommends consultation with independent legal counsel.

According to 40 CFR Part 312, Standards and Practices for All Appropriate Inquiry: Final Rule, CERCLA liability rests with the owner or operator of a property and not with an environmental professional hired by the prospective landowner and who is not involved with the ownership or operation of the property. This report meets the requirements set forth in 40 CFR Part 312 Standards and Practices for All Appropriate Inquiries; Final Rule. However, in order to qualify for certain landowner liability protections under CERCLA, "Bona Fide Prospective Purchasers, Contiguous Property Owners, and/or Innocent Landowners" must meet additional requirements of CERCLA (42 U.S.C. 9601 (35)(B)).

2.5 Special Terms and Conditions

No special terms and conditions between AEC and the client pertinent to the findings of this ESA or methodology used to complete this assessment are noted. In addition, AEC does not have a financial interest in the subject property.

2.6 User Reliance

This report may be relied upon by First Industrial Realty Trust, Inc. and First Industrial L.P., and its assignees. The report is not for the use or benefit of, nor may it be relied upon by any other person or entity not referenced above for any purpose without the advance written consent of AEC. AEC makes no representation to any third party except that it has used the degree of care and skill ordinarily exercised by a reasonable prudent environmental professional in the same community and in the same time frame given the same or similar facts and circumstances. No other use or disclosure is intended or authorized by AEC. In the preparation of this ESA, AEC has used the degree of care and skill ordinarily exercised by a reasonably prudent environmental professional in the same community and in the same time frame given the same or similar facts and circumstances. No other warranties are made to any third party, either express or implied.

3.0 Site Description

3.1 Location and Legal Description

The Site is a reported 15.6 acres in size and located to the east of Wilson Avenue, south of E Rider Street and north of Placentia Avenue in the City of Perris, County of Riverside, California. The Site is further identified by Riverside County APN 300-170-009. A Vicinity Map depicting the location of the Site is included in Section 13.1.

3.2 Site and Vicinity General Characteristics

The Site is situated an area comprised of residential, commercial and vacant land. Additional details of the Site and adjoining properties are provided in the sections below.

3.3 Current Use of the Site

The Site is currently vacant and undeveloped land.

3.4 Description of Structures, Roads, Other Improvements on the Site

As stated previously, the Site is currently vacant and undeveloped land. Two concrete pads, possibly related to former water supply wells are present at the western portion of the Site. Electricity in the area is provided by Southern California Edison. Other utilities in the area are provided by the City of Perris (water and sewer), and The Gas Company (natural gas). A Site Plan is included in Section 13.2. Photographs taken of the Site during the Site visit are included in Section 13.3.

3.5 Current Uses of the Adjoining Properties

The surrounding area consists of commercial and residential land uses. AEC performed a visual inspection of adjoining properties from adjacent sidewalks and public right-of-ways. The following table identifies the adjacent property uses:

Direction	Adjoining Property Use
North	Commercial warehouse and vacant land.
South	Vacant land.
West	Wilson Avenue, then residential properties
East	Storm channel then residential development.

No environmental concerns to the Site relative to adjacent properties were noted during the Site reconnaissance.

4.0 User Provided Information

4.1 Title Records

The Site is currently owned by DL Family LLC. No environmentally related liens, deed restrictions or activity and use limitations pertaining to the Site were noted during the research completed with the County of Riverside Tax Assessor. In addition, the client is unaware of such encumbrances recorded against the Site.

4.2 Environmental Liens or Activity and Use Limitations

The client has no knowledge of environmental related liens, deed restrictions or activity and use limitations that are related to potential environmental issues at the Site.

4.3 Specialized Knowledge

The client has no specialized knowledge pertinent to potential recognized environmental conditions at the Site.

4.4 Commonly Known or Reasonably Ascertainable Information

The client has no knowledge of commonly known or reasonably ascertainable information pertinent to potential recognized environmental conditions at the Site.

4.5 Valuation Reduction for Environmental Issues

The client has no information pertaining to possible influences on the estimated fair market value of the property that might indicate that significant contamination exists.

4.6 Owner, Property Manager, and Occupant Information

The Site is currently owned and managed by DL Family LLC. The Site is vacant and unoccupied.

4.7 Reason for Performing Phase I ESA

AEC has been retained to conduct this Phase I ESA to identify environmental issues which may be present and to comply with 40 CFR Part 312.

5.0 Records Review

5.1 Standard Environmental Record Sources

AEC reviewed Federal, State and local environmental databases provided by Environmental Risk Information Services (ERIS) for information pertaining to documented and/or suspected releases of regulated hazardous substances and/or petroleum products within specified search distances.

AEC also reviewed unmappable sites listed in the environmental database report by cross-referencing addresses and site names. Unmappable sites are sites that cannot be plotted with confidence, but can be located by zip code or city name. In general, a site cannot be mapped because of inaccurate or missing location information in the record provided by the regulatory agency. Any unmappable sites that AEC identified within the specified search radii are included and discussed in the corresponding database sections. Detailed descriptions of each database and their data release frequency are included in the ERIS report, included in Section 13.4.

The following Federal databases related to potential on-site and off-site sources of contamination were reviewed and interpreted by AEC:

Federal Databases	Search Distance From Site
National Priorities List (NPL)	One mile
National Priority List – Proposed (Proposed NPL)	One mile
Deleted National Priorities List (Deleted NPL)	One-half mile
Superfund Enterprise Management System (SEMS)	One-half mile
SEMS Archive Sites (SEMS Archive)	One-half mile
Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS)	One-half mile
CERCLIS No Further Remedial Action Planned (CERCLIS NFRAP)	One-half mile
CERCLIS Liens (CERCLIS LIENS)	Site
Resource Conservation and Recovery Act (RCRA) CORRACTS Corrective Action	One mile
RCRA non-CORRACTS Treatment, Storage, and Disposal (TSD) Facilities	One-half mile
RCRA Large-Quantity Generator (LQG)	One-quarter mile
RCRA Small-Quantity Generator (SQG)	One-quarter mile
RCRA Conditionally Exempt Small Quantity Generator (CESQG)	One-quarter mile
RCRA Non-Generators (RCRA NON GEN)	One-quarter mile
Federal Engineering Controls (FED ENG)	One-half mile
Federal Institutional Controls (FED INST)	One-half mile
Emergency Response Notification System (ERNS)	Site
Federal Brownfields (FED BROWNFIELDS)	One-half mile
FEMA Underground Storage Tank Listing (FEMA UST)	One-quarter mile
Lien on Property (SEMS LIEN)	Property Only

The following State/local databases related to potential on-site and off-site sources of contamination were also searched and reviewed:

State/Local Databases	Search Distance From Site
State Response Sites (RESPONSE)	One mile

State/Local Databases	Search Distance From Site
EnviroStor Database (ENVIROSTOR)	One mile
Delisted State Response Sites (DELISTED ENVS)	One mile
Solid Waste Information System (SWF/LF)	One-half mile
EnviroStor Hazardous Waste Facilities (HWP)	One mile
Land Disposal Sites (LDS)	One-half mile
Leaking Underground Fuel Tank Reports (LUST)	One-half mile
Delisted Leaking Storage Tanks (DLST)	One-half mile
Permitted Underground Storage Tanks (UST)	One-quarter mile
Proposed Closure of Underground Storage Tank Cases (UST Closure)	One-half mile
Historical Hazardous Substance Storage Information Database (HHSS)	One-quarter mile
Aboveground Storage Tanks (AST)	One-quarter mile
Delisted Storage Tanks (Delisted TNK)	One-quarter mile
California Environmental Reporting System Tanks (CERS TANK)	One-quarter mile
Delisted Environmental Reporting System Hazardous Waste Sites (DELISTED HAZ)	One-half mile
Site Mitigation and Brownfields Reuse Program Facility Sites with Land Use Restrictions (LUR)	One-half mile
Hazardous Waste Management Program Facility Sites with Deed/Land Use Restrictions (HLUR)	One-half mile
Deed Restriction and Land Use Restriction (DEED)	One-half mile
Voluntary Cleanup Program (VCP)	One-half mile
GeoTracker Cleanup Sites Data (Cleanup Sites)	One-half mile
California Environmental Reporting System Hazardous Waste Sites (CERS HAZ)	One-eighth mile
Delisted California Environmental Reporting System Tanks (DELISTED CTNK)	One-quarter mile
Historical Hazardous Substance Storage Container Information (HIST TANK)	One-quarter mile
Leaking Underground Storage Tanks on Indian Lands (INDIAN LUST)	One-half mile
Underground Storage Tanks on Indian Lands (INDIAN UST)	One-quarter mile
Delisted County Records (DELISTED COUNTY)	One-half mile
Riverside County Local Oversight Program List (RIVERSIDE LOP)	One-half mile
Riverside County Underground Storage Tanks List (UST RIVERSIDE)	One-quarter mile

Descriptions/sources of each of the above referenced regulatory databases and the dates these databases were last updated by the applicable regulatory agencies are included in the ERIS report.

Subject Site

The Site is not identified in the standard ASTM regulatory databases reviewed in the ERIS database report.

Adjoining and Nearby Properties

Three listings are mapped in the standard regulatory databases within one-half mile of the Site. The table below presents a summary of the listed properties and an opinion regarding the potential impact to the Site.

Listed Property and Address	Database(s)	Mapped Distance and Direction From Site	Details	Environmental Concern To Site?
Perris West End Middle School Placentia Av & Wilson Av	ENVIROSTOR	0.37-mile S	Referenced with an inactive – withdrawn case status as of 11/5/2007.	No
Val Verde Continuation High School Nevada Av/Morgan St	ENVIROSTOR	0.39-mile SE	Referenced with a no further action case status as of 5/23/2002.	No
Waste Management Inland Empire, Moreno Valley Solid Waste R&T Facility 17700 Indian St	CERS TANK, RCRA SQG, SWF	0.08-mile SW	Referenced as a transfer/processing facility of construction/demolition, green materials, metals, and mixed municipal waste and a small quantity generator of hazardous waste with no reported violations or indications of a release.	No

The above referenced properties are not considered to be significant environmental concerns to the Site. There are also two ENVIROSTOR listings mapped between one-half and one mile of the Site. These listings are also not considered to be significant environmental concerns to the Site. These opinions are based on several factors including the nature of the regulatory database listings, distance of the off-Site listed properties from the Site, orientation of the listed properties relative to the Site, interpreted direction of groundwater flow and/or regulatory case status information for the various properties as described in the databases.

Non-ASTM Regulatory Databases

Below is a list of non-ASTM databases searched by ERIS and reviewed by AEC during the preparation of this assessment. The descriptions of each database and their data release frequency are included in the ERIS report, included in Section 13.4.

Federal

FINDS/FRS – Facility Registry Service/Facility Index
TRIS – Toxic Chemical Release Inventory System
HMIRS – Hazardous Materials Information Reporting System
NCDL – National Clandestine Drug Labs
ODI – Open Dump Inventory
IODI – EPA Report on the Status of Open Dumps on Indian Lands
TSCA – Toxic Substances Control Act
HIST TSCA – Toxic Substances Control Act
FTTS ADMIN – Federal Insecticide, Fungicide, & Rodenticide (FIFRA) and Toxic Substances Control Act (TSCA), together known as FTTS, Administrative Case Listing
FTTS INSP – FTTS Inspection Case Listing
PRP – Potentially Responsible Parties List
SCRD DRYCLEANER – State Coalition for Remediation of Drycleaners Listing
ICIS – Integrated Compliance Information System
FED DRYCLEANERS – Drycleaner Facilities
DELISTED FED DRY – Delisted Drycleaner Facilities

FUDS – Formerly Used Defense Sites
MLTS – Material Licensing Tracking System
HIST MLTS – Historic Material Licensing Tracking System Sites
MINES – Mines Mater Index File
ALT FUELS – Alternative Fueling Stations
SUPERFUND ROD – Superfund Decision Documents
SSTS – Registered Pesticide Establishments
PCB – Polychlorinated Biphenyl (PCB) Notifiers

State
INSP COMP ENF – EnviroStor Inspection, Compliance, and Enforcement
CDL – Clandestine Drug Labs
SCH – School Property Evaluation Program Sites
CHMIRS – California Hazardous Material Incident Report System
SWAT – Sites Listed in the Solid Waste Assessment Test Program Report
HAZNET – Facility and Manifest Data
SWRCB SWF – Solid Waste Disposal Sites
HWSS CLEANUP – Hazardous Waste and Substances Site List- Site Cleanup
DTSC HWF – List of Hazardous Waste Facilities Subject to Corrective Action
HIST MANIFEST – Historical Hazardous Waste Manifest Data
HIST CHMIRS – Historical California Hazardous Material Incident Report System
HIST CORTESE – Historical Cortese List
CDO/CAO – Cease and Desist Orders and Cleanup and Abatement Orders
DRYCLEANERS – Cleaner Facilities
DELISTED DRYC – Delisted Drycleaners
WASTE DISCHG – Waste Discharge Requirements
EMISSIONS – Toxic Pollutant Emissions Facilities
RIVERSIDE HWG – Riverside County Hazardous Waste Generator Sites List
RIVERSIDE HZH – Riverside County Disclosure Facility List

Subject Site

The Site is not listed on any of the non-ASTM databases searched by ERIS.

Adjoining and Nearby Properties

Multiple non-ASTM database listings on the HAZNET, FINDS/FRS, CHMIRS, CDL and EMISSIONS regulatory databases searched by ERIS for nearby off-Site properties are mapped within specified search distances of the Site. These listings are not considered to be significant environmental concerns to the Site. This opinion is based on several factors including the type and nature of the facility listings, regulatory case status, distance of the off-Site listed properties from the Site, orientation of the listed properties relative to the Site, and interpreted direction of groundwater flow.

5.2 Additional Environmental Record Sources

California State Water Resources Control Board (Geotracker) and Envirostor

AEC searched for information regarding possible releases at the Site on the Geotracker database maintained by the California Water Resources Control Board and the Envirostor database maintained by the DTSC. No release cases pertaining to the Site were identified in the database

search of the Site. Information included in the databases regarding nearby properties is consistent with the information found in the ERIS database report.

County of Riverside Department of Environmental Health (CRDEH)

AEC requested public records pertaining to the Site from the CRDEH. The CRDEH indicated that they were unable to search for records for the Site as it does not have a specific address at the time of this report. If any records are provided to AEC at a later date, any pertinent information will be provided to the client in an addendum to this report. However, it should be noted that no records are anticipated that would result in modifications to the conclusions and recommendations of this report. A copy of information obtained from the DEH is included in Section 13.5.

5.3 Physical Setting Sources

The following physical setting sources were reviewed to provide information about the topographic, hydrologic, geologic and/or hydrogeologic characteristics of the Site.

5.3.1 Topography and Hydrology

USGS Topographic Quadrangle

Based on the review of United States Geological Survey (USGS) 7.5-minute topographic map of Perris, California 7.5 Minute Quadrangle (2018), the Site is depicted as relatively level at an elevation of approximately 1,430 feet above mean sea level. Regional topography is depicted as sloping downward to the southwest towards San Jacinto River. No structures are depicted on Site. Two blue circles are depicted on the western portion of the site indicating likely water supply wells. Perris Valley Storm Drain is depicted to the east of the Site. Roadways in the vicinity of the Site are depicted similar to their current configurations.

Hydrology/Storm Water Management

Surface runoff at the Site generally drains to curb storm drain inlets and drains along Wilson Avenue west of the Site and into a flood control channel east of the Site. Given the topography of the area, the Site does not appear to receive significant runoff during storm events from adjacent and nearby properties.

5.3.2 Geology and Hydrogeology

The Site lies within the Peninsular Ranges Geologic Province of California. This geomorphic province is traversed by a group of northwest trending sub-parallel fault zones and encompasses an area that extends 125 miles from the Transverse Ranges and the Los Angeles Basin south to the Mexican Border and beyond another 775 miles to the tip of Baja California. Rocks within the Peninsular Range Province were emplaced during Cretaceous age orogenic events and uplifted into the present mountain ranges during the late Tertiary and Quaternary. Igneous, metamorphic and sedimentary rocks are all found within the Peninsular Ranges. The area is seismically active, with several known active faults crossing the Province. The Site vicinity is located within thick sequences of alluvial deposits consisting of unconsolidated silts, sands and clays. The depth to bedrock is expected to be greater than 100 feet below ground surface (bgs). Based on geologic resources, the Site is located in the San Jacinto Valley and is underlain by Quaternary Age alluvial fan deposits which include silt and silty sand from the surface to approximately 45 feet bgs

followed by clayey silt and clay from approximately 45 feet to 95 feet bgs. The Site, as is most of Southern California, is located in a seismically active area. The closest known recently active faults are located in the San Jacinto Fault Zone, located approximately 10 miles northeast.

According to the Water Quality Control Plan for the Santa Ana Region, published by the California Regional Water Quality Control Board (RWQCB), the Property is situated within the Perris Valley Hydrologic Subarea (HSA) of the Perris River Hydrologic Area of the San Jacinto Valley Hydrologic Unit. Groundwater within the Perris Valley HSA has existing beneficial uses for municipal, agricultural and industrial service/process supply purposes. Based on regional groundwater information, groundwater beneath the Site is anticipated to be greater than 50 feet below the ground surface with an anticipated flow to the southeast. The depth and flow of groundwater beneath the Site may vary with seasonal rainfall, groundwater flow rates, bedrock structure, local faulting and other factors.

5.4 Historical Use Information on the Subject Site and Adjoining Properties

Several historical sources (as described in the following sections) were reviewed to develop a history of the previous uses of the Site, in order to help identify the likelihood of past uses having led to recognized environmental conditions in connection with the Site.

5.4.1 Topographic Maps

AEC reviewed topographic maps from 1954, 1961, 1963, 1965, 1969, 1975, 1980, 2012 ad 2015 as provided via online resources. No structures are depicted on any of the maps. Two likely water supply wells, indicated by blue circles are depicted at the western portion of the Site on the 1969 through 2015 maps. Perris Valley Storm Drain is depicted adjacent to the east of the Site on the 1969 through 2015 maps.

5.4.2 Aerial Photographs

AEC reviewed aerial photographs from 1966, 1967, 1978, 1997, 2002, 2005, 2009, 2010, 2012, 2014, and 2018 as provided via online resources. The results of the aerial photograph review are summarized in the following table:

Aerial Photograph Review	
Year	**Observations**
1966, 1967 & 1978	**SITE:** The Site appears to be agricultural land. **SURROUNDING AREA:** Adjacent properties appear as agricultural land or as vacant and undeveloped land. A storm channel appears adjacent to the east of the Site.
1997 & 2002	**SITE:** The Site appears to be vacant and undeveloped land. **SURROUNDING AREA:** Wilson Avenue appears similar to its current configuration adjacent to the west of the Site. Residential properties appear adjacent to the west of the Site beyond Wilson Avenue.

Aerial Photograph Review	
Year	**Observations**
2005, 2009, 2010, & 2012	**SITE:** The Site appears to be vacant and undeveloped land. **SURROUNDING AREA:** The northwestern adjacent property appears similar to its current configuration with a commercial warehouse.
2014 & 2018	**SITE:** The Site appears to be vacant undeveloped land. **SURROUNDING AREA:** The southwestern adjacent property appears as a trailer parking lot. Surrounding properties appear similar to the previous photograph.

A review of historical aerial photographs and topographic maps indicates that the Site was historically utilized for agricultural crop production. During historical agricultural activities throughout the State of California, various pesticides and more specifically organochlorine pesticides were commonly applied during the normal course of agricultural operations. Such compounds have since been banned from production and use in the United States. Section 105215 of the California Health and Safety Code discusses the regulatory reporting of incidents that pertain to pesticide spills and accidental releases of pesticide products. Based on the regulatory and historical research completed during the preparation of this assessment, no information has been revealed that would lead AEC to believe that an accidental spill or release of pesticide products has occurred at the Site. In addition, neither stressed vegetation, nor evidence of the storage of pesticides was observed on the property during the Site reconnaissance or based on regulatory and historical research reviews. As such, the former agricultural use of the Site is not considered to be a recognized environmental condition in connection with the Site.

5.4.3 State of California Division of Oil and Gas Records

According to online resources provided by the California Department of Conservation, Division of Oil, Gas and Geothermal Resources, there are no oil, gas or geothermal wells mapped on the Site or adjacent properties.

6.0 Site Reconnaissance

The objective of the Site reconnaissance was to obtain information indicating the likelihood of recognized environmental conditions in connection with the Site. The Site walk was conducted on December 28, 2018 by Mr. Keith Sy of AEC's Western Regional office. Mr. Sy was unescorted during the Site reconnaissance.

6.1 Methodology and Limiting Conditions

The Site reconnaissance consisted of inspecting the Site and walking accessible areas and pedestrian walkways surrounding the Site. Full access to the Site was provided. As stated previously, a Site Plan is included in Section 13.2. Photographs of the Site were taken to document existing Site conditions and several are included and described in Section 13.3.

6.2 General Site Setting

The Site is situated an area comprised of residential, commercial and vacant land. The Site is currently vacant and undeveloped. The current uses of the Site and its adjacent properties are not indicative of the use, treatment, storage, disposal or generation of significant quantities of hazardous substances or petroleum products that have adversely impacted the Site.

6.3 Site Observations

AEC examined the Site for evidence of the following potential environmental concerns:

Conditions	Not Observed or Noted	Observed or Noted	Significant Environmental Concern?
Hazardous Substances/Petroleum Products	X		--
Waste Generation/Storage/Disposal	X		--
Aboveground Storage Tanks (ASTs)	X		--
Underground Storage Tanks (USTs)	X		--
PCB Containing Equipment	X		--
Chemical/Petroleum Odors	X		--
Pools of Liquid	X		--
Floor Drains/Sumps/Wells	X		--
Drums	X		--
Stains or Corrosion	X		--
Unidentified Substance Containers	X		--
Stained Soil or Pavement	X		--
Stressed Vegetation	X		--
Pits, Ponds or Lagoons	X		--
Wastewater Discharges/Disposal Systems	X		--
Septic Systems/Cesspools	X		--
Non-Hazardous Solid Waste Disposal Areas		X	No
Drinking Water Systems/Water Wells	X		--
Other Features		X	No

The noted items in the table above are discussed below:

Non-Hazardous Solid Waste Disposal Areas

Minor amounts of litter and automobile tires were noted on Site with no suspect conditions or evidence of unauthorized dumping noted.

Other Features

Two concrete pads were noted at the western portion of the Site. These concrete features may be associated with water supply wells noted during the topographic map review.

7.0 Interview Information

7.1. Interview With Owner

The Site is currently vested in DL Family LLC. The Site owner is unaware of environmental concerns in connection with the Site.

7.2 Interview With Site Manager

The Site owner is also considered to be the Site Manager. Please refer to Section 7.1 above.

7.3 Interviews With Occupants

The Site is vacant with no known occupants.

7.4 Interview With Local Government Official

During the preparation of this assessment, AEC consulted with various regulatory agency sources regarding potential environmental concerns at the Site.

7.5 Interview With Others

Interviews with other persons were not conducted during the preparation of this assessment.

8.0 Findings, Opinions, Conclusions and Recommendations

Advantage Environmental Consultants, LLC has performed a Phase I Environmental Site Assessment, in conformance with the scope and limitations of ASTM Practice E 1527-13, 40 CFR Part 312 and the First Industrial Scope of Work for the project of the Wilson Avenue property located in Perris, California. Any exceptions to, or deletions from, this practice are described in Section 9.0 of this report.

This assessment has revealed no evidence of current, historical, or controlled recognized environmental conditions in connection with the Site. Additional environmental investigation at the Site is not recommended at this time.

9.0 Deviations and Data Gaps

The oldest historical resource reviewed during the preparation of this assessment was an aerial photograph from 1966, which showed the Site as being developed for agricultural use. The lack of review of historical sources dating back to a time when the Site was undeveloped is considered a data gap as defined by ASTM E 1527-13 but does not alter AEC's conclusions and recommendations regarding the Site.

10.0 Additional Services

The following items and additional services were completed by AEC during the preparation of this assessment:

10.1 Wetlands

According to online resources maintained by the United States Fish and Wildlife Service, wetlands are not mapped on the Site.

10.2 Radon Potential Records Review

The Site is located within US EPA Radon Zone 2 which has predicted average indoor levels of radon between 2 and 4 picoCuries per liter (pCi/L). Radon is not considered to be a concern at the Site.

10.3 Limited Lead in Drinking Water Assessment

According to the most recent water quality report for the City of Perris, the drinking water supplied to the area is in compliance with all EPA regulations.

10.4 National Pollution Discharge Elimination System (NPDES)

AEC is unaware of current NPDES related requirements in connection with the Site.

10.5 Threatened/Endangered Species, Landmark/Historical/Cultural Significance Review

Biological, archeological and paleontological studies pertaining to the Site were prepared concurrently with this Phase I ESA. The results of such studies have been provided to the client under separate cover.

No other additional services were completed by AEC during the preparation of this assessment.

11.0 References

"All Appropriate Inquiry" as necessary to satisfy the defenses available under 42 U.S.C. §§ 9607(b)(3), 9607(r)(1), and 9607(q), relying on definitions provided at 42 U.S.C. §§ 9601(35)(B); and as further explained in 40 CFR §§ 312.1 – 312.31;

ASTM International, "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process," ASTM Designation E 1527-13, Published November 2013;

California Geological Survey, California Geomorphic Provinces, Note 36, 2002;

California Geological Society, Geologic Data Map No 2, 2010 Geologic Map of California, Jennings, Charles W.: http://www.quake.ca.gov/gmaps/GMC/stategeologicmap.html

California Geological Society, Geologic Data Map No 6, 2010 Fault Activity Map of California, Jennings, Charles W. and Bryant, William A.: http://www.quake.ca.gov/gmaps/FAM/faultactivitymap.html;

California Regional Water Quality Control Board – Santa Ana Region (Region 8), "Water Quality Control Plan, Santa Ana River Basin", 1995;

California State Water Resources Control Board, GeoTracker online database: http://www.geotracker.swrcb.ca.gov;

Environmental Risk Information Services, December 20, 2018, Database Report, Wilson Ave, Perris, CA;

State of California Department of Conservation, Division of Oil and Gas and Geothermal Resources, DOGGR Online Mapping System: http://maps.conservation.ca.gov/doms/doms-app.html;

United States Environmental Protection Agency, EPA Map of Radon Zones: http://www.epa.gov/radon/zonemap.html;

United States Fish and Wildlife Service, National Wetlands Inventory: http://www.fws.gov/wetlands/Data/Mapper.html;

United States Geological Survey (USGS), 2018, Perris, CA, Quadrangle 7.5 Minute Topographic Map.

12.0 Signatures and Qualifications of Environmental Professionals

We declare that, to the best of our professional knowledge and belief, we meet the definition of Environmental Professional as defined in 40 CFR 312.10. We have the specific qualifications based on education, training and experience to assess a property of the nature, history and setting of the subject Site. We have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.





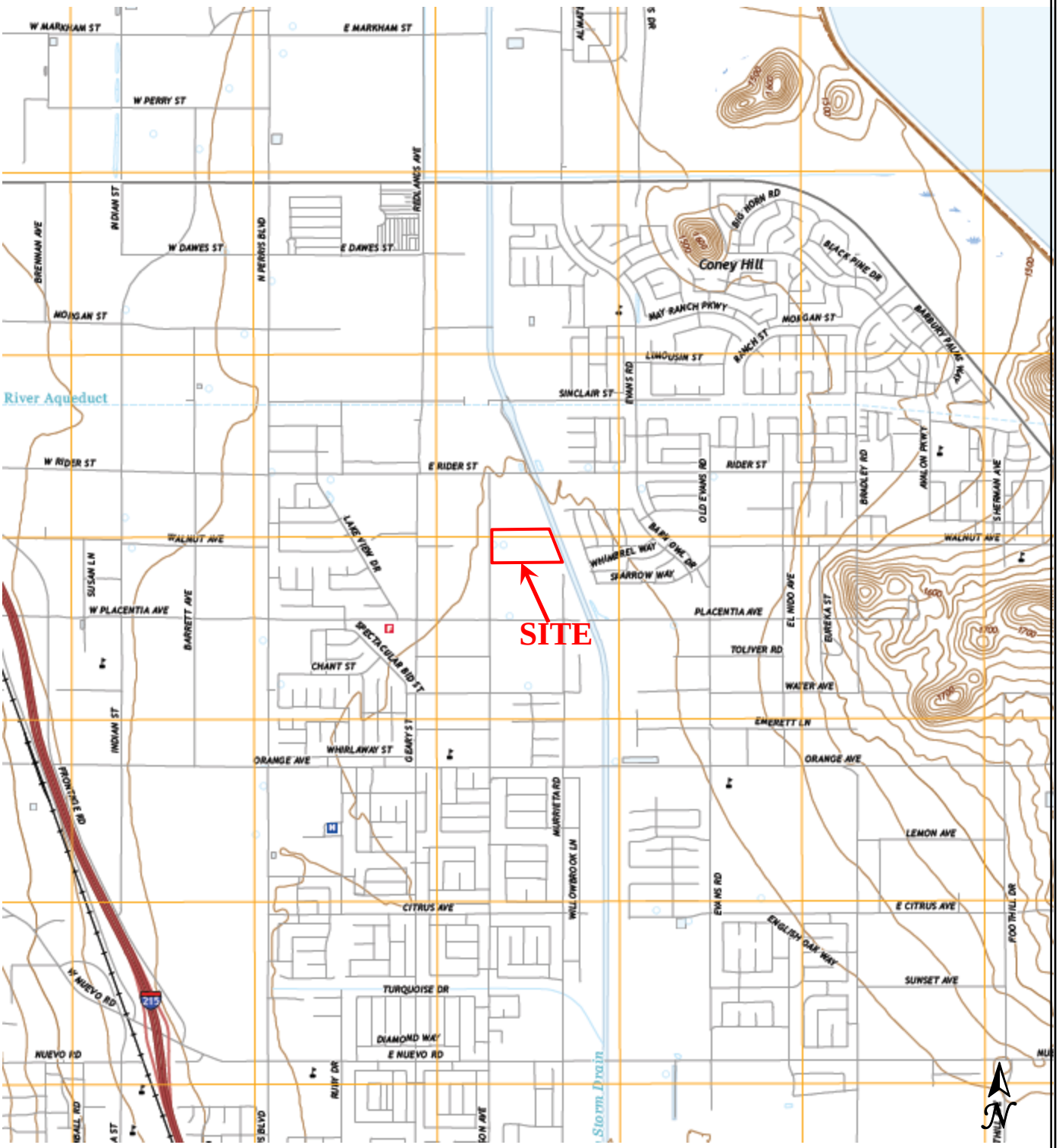
Daniel Weis, R.E.H.S.
Branch Manager

Keith Sy
Project Manager

Qualifications for the environmental professionals involved in the performance of the Phase I ESA are included in Section 13.6.

13.0 Appendices

13.1 Vicinity Map



Perris, CA (2018) - 7.5' topographic quadrangle

Advantage Environmental Consultants, LLC

145 Vallecitos De Oro, Suite 201
San Marcos, CA 92069
Phone: 760-744-3363 Fax: 760-744-3383

VICINITY MAP
Wilson Avenue Property
County of Riverside APN 300-170-009
Perris, California

Work Order No.:	Report Date:	Drawn By:
18-410SD	January 2019	KS

13.2 Site Plan



Approximate Site Boundary

Advantage Environmental Consultants, LLC
145 Vallecitos De Oro, Suite 201
San Marcos, CA 92069
Phone: 760-744-3363 Fax: 760-744-3383

SITE PLAN
Wilson Avenue Property
County of Riverside APN 300-170-009
Perris, California

Work Order No.:	Report Date:	Drawn By:
18-410SD	January 2019	KS

13.3 Site Photographs



1. View east of the Site from Wilson Avenue.



2. View east of the southern border of the Site.



3. View east of the northern border of the Site.



4. View north of the Site from the center of the Site.



5. View south along the eastern border of the Site. Eawstern adjacent Perris Valley Storm Drain visible.



6. View southwest of the Site from the northeastern corner.



7. Concrete structure at the western portion of the Site adjacent to Wilson Avenue.



8. Concrete structure, possible former well house at the western portion of the Site.



9. Northern adjacent commercial property.



10. Southern adjacent vacant property.



11. Western adjacent residential properties beyond Wilson Avenue



12. Eastern adjacent Perris Valley Storm Drain and residential properties beyond.

13.4 Regulatory Database Report

ENVIRONMENTAL RISK INFORMATION SERVICES

DATABASE REPORT

Project Property:	*Wilson Ave, Perris* *300-170-009* *Perris CA*
Project No:	*18-410SD*
Report Type:	*Database Report*
Order No:	*20181220189*
Requested by:	*Advantage Environmental Consultants Llc*
Date Completed:	*December 20, 2018*

Environmental Risk Information Services
A division of Glacier Media Inc.
1.866.517.5204 | info@erisinfo.com | erisinfo.com

Table of Contents

Table of Contents.....2
Executive Summary.....3
Executive Summary: Report Summary.....4
Executive Summary: Site Report Summary - Project Property.....8
Executive Summary: Site Report Summary - Surrounding Properties.....9
Executive Summary: Summary by Data Source.....11
Map.....14
Aerial.....17
Topographic Map.....18
Detail Report.....19
Unplottable Summary.....33
Unplottable Report.....35
Appendix: Database Descriptions.....47
Definitions.....58

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Executive Summary

Property Information:

Project Property: *Wilson Ave, Perris*
300-170-009 Perris CA

Project No: *18-410SD*

Coordinates:

Latitude:	*33.826506*
Longitude:	*-117.21102*
UTM Northing:	*3,742,939.57*
UTM Easting:	*480,473.19*
UTM Zone:	*UTM Zone 11S*

Elevation: *1,437 FT*

Order Information:

Order No: *20181220189*
Date Requested: *December 20, 2018*
Requested by: *Advantage Environmental Consultants Llc*
Report Type: *Database Report*

Historicals/Products:

Executive Summary: Report Summary

Database	Searched	Search Radius	Project Property	Within 0.12mi	.125mi to 0.25mi	0.25mi to 0.50mi	0.50mi to 1.00mi	Total
Standard Environmental Records								
Federal								
NPL	Y	1	0	0	0	0	0	0
PROPOSED NPL	Y	1	0	0	0	0	0	0
DELETED NPL	Y	.5	0	0	0	0	-	0
SEMS	Y	.5	0	0	0	0	-	0
ODI	Y	.5	0	0	0	0	-	0
SEMS ARCHIVE	Y	.5	0	0	0	0	-	0
IODI	Y	.5	0	0	0	0	-	0
CERCLIS	Y	.5	0	0	0	0	-	0
CERCLIS NFRAP	Y	.5	0	0	0	0	-	0
CERCLIS LIENS	Y	.125	0	0	-	-	-	0
RCRA CORRACTS	Y	1	0	0	0	0	0	0
RCRA TSD	Y	.5	0	0	0	0	-	0
RCRA LQG	Y	.125	0	0	-	-	-	0
RCRA SQG	Y	.125	0	0	-	-	-	0
RCRA CESQG	Y	.125	0	0	-	-	-	0
RCRA NON GEN	Y	.125	0	0	-	-	-	0
FED ENG	Y	.5	0	0	0	0	-	0
FED INST	Y	.5	0	0	0	0	-	0
ERNS 1982 TO 1986	Y	.125	0	0	-	-	-	0
ERNS 1987 TO 1989	Y	.125	0	0	-	-	-	0
ERNS	Y	.125	0	0	-	-	-	0
FED BROWNFIELDS	Y	.5	0	0	0	0	-	0
FEMA UST	Y	.25	0	0	0	-	-	0
SEMS LIEN	Y	PO	0	-	-	-	-	0
SUPERFUND ROD	Y	1	0	0	0	0	0	0
State								
RESPONSE	Y	1	0	0	0	0	0	0

Database	Searched	Search Radius	Project Property	Within 0.12mi	.125mi to 0.25mi	0.25mi to 0.50mi	0.50mi to 1.00mi	Total
ENVIROSTOR	Y	1	0	0	0	2	3	5
DELISTED ENVS	Y	1	0	0	0	0	0	0
SWF/LF	Y	.5	0	0	0	0	-	0
HWP	Y	1	0	0	0	0	0	0
LDS	Y	.5	0	0	0	0	-	0
SWAT	Y	.5	0	0	0	0	-	0
LUST	Y	.5	0	0	0	0	-	0
DELISTED LST	Y	.5	0	0	0	0	-	0
UST	Y	.125	0	0	-	-	-	0
SWRCB SWF	Y	.5	0	0	0	0	-	0
UST CLOSURE	Y	.5	0	0	0	0	-	0
HHSS	Y	.125	0	0	-	-	-	0
AST	Y	.125	0	0	-	-	-	0
DELISTED TNK	Y	.125	0	0	-	-	-	0
CERS TANK	Y	.25	0	0	0	-	-	0
LUR	Y	.5	0	0	0	0	-	0
HLUR	Y	.5	0	0	0	0	-	0
DEED	Y	.5	0	0	0	0	-	0
VCP	Y	.5	0	0	0	0	-	0
CLEANUP SITES	Y	.5	0	0	0	0	-	0
DELISTED CTNK	Y	.25	0	0	0	-	-	0
HIST TANK	Y	.25	0	0	0	-	-	0
Tribal								
INDIAN LUST	Y	.5	0	0	0	0	-	0
INDIAN UST	Y	.125	0	0	-	-	-	0
DELISTED ILST	Y	.5	0	0	0	0	-	0
DELISTED IUST	Y	.125	0	0	-	-	-	0
County								
DELISTED COUNTY	Y	.125	0	0	-	-	-	0
RIVERSIDE LOP	Y	.5	0	0	0	0	-	0
UST RIVERSIDE	Y	.125	0	0	-	-	-	0
Additional Environmental Records								
Federal								
FINDS/FRS	Y	.125	0	5	-	-	-	5
TRIS	Y	.125	0	0	-	-	-	0
HMIRS	Y	.125	0	0	-	-	-	0
NCDL	Y	.125	0	0	-	-	-	0
TSCA	Y	.125	0	0	-	-	-	0
HIST TSCA	Y	.125	0	0	-	-	-	0

Database	Searched	Search Radius	Project Property	Within 0.12mi	.125mi to 0.25mi	0.25mi to 0.50mi	0.50mi to 1.00mi	Total
FTTS ADMIN	Y	.125	0	0	-	-	-	0
FTTS INSP	Y	.125	0	0	-	-	-	0
PRP	Y	.125	0	0	-	-	-	0
SCRD DRYCLEANER	Y	.125	0	0	-	-	-	0
ICIS	Y	.125	0	0	-	-	-	0
FED DRYCLEANERS	Y	.125	0	0	-	-	-	0
DELISTED FED DRY	Y	.25	0	0	0	-	-	0
FUDS	Y	1	0	0	0	0	0	0
MLTS	Y	.125	0	0	-	-	-	0
HIST MLTS	Y	PO	0	-	-	-	-	0
MINES	Y	.25	0	0	0	-	-	0
ALT FUELS	Y	.25	0	0	0	-	-	0
SSTS	Y	.25	0	0	0	-	-	0
PCB	Y	.5	0	0	0	0	-	0
State								
DRYCLEANERS	Y	.125	0	0	-	-	-	0
DELISTED DRYCLEANERS	Y	.25	0	0	0	-	-	0
DRYC GRANT	Y	.25	0	0	0	-	-	0
HWSS CLEANUP	Y	.125	0	0	-	-	-	0
DTSC HWF	Y	.5	0	0	0	0	-	0
INSP COMP ENF	Y	1	0	0	0	0	0	0
SCH	Y	.125	0	0	-	-	-	0
CHMIRS	Y	.125	0	2	-	-	-	2
HAZNET	Y	.125	0	1	-	-	-	1
HIST CHMIRS	Y	.125	0	0	-	-	-	0
HIST MANIFEST	Y	.125	0	0	-	-	-	0
HIST CORTESE	Y	.125	0	0	-	-	-	0
CDO/CAO	Y	.125	0	0	-	-	-	0
CERS HAZ	Y	.125	0	0	-	-	-	0
DELISTED HAZ	Y	.5	0	0	0	0	-	0
WASTE DISCHG	Y	.25	0	0	0	-	-	0
EMISSIONS	Y	.25	0	0	1	-	-	1
CDL	Y	.125	0	1	-	-	-	1
Tribal	***No Tribal additional environmental record sources available for this State.***							
County								
RIVERSIDE HWG	Y	.125	0	0	-	-	-	0
RIVERSIDE HZH	Y	.125	0	0	-	-	-	0

Database	Searched	Search Radius	Project Property	Within 0.12mi	.125mi to 0.25mi	0.25mi to 0.50mi	0.50mi to 1.00mi	Total
Total:			0	9	1	2	3	15

**** PO – Property Only***
**** 'Property and adjoining properties' database search radii are set at 0.25 miles.***

Executive Summary: Site Report Summary - Project Property

Map Key	DB	Company/Site Name	Address	Direction	Distance (mi/ft)	Elev Diff (ft)	Page Number

No records found in the selected databases for the project property.

Executive Summary: Site Report Summary - Surrounding Properties

Map Key	DB	Company/Site Name	Address	Direction	Distance (mi/ft)	Elev Diff (ft)	Page Number
1	HAZNET	ISAAC CASTRO	3020 WILSON AVE PERRIS CA 92571	WNW	0.01 / 40.39	3	19
2	FINDS/FRS	AMERICAN FIBER ROLLS & EROSION CONTROL PRODUCTS INC.	3175 WILSON AVENUE PERRIS CA 92571	WNW	0.01 / 57.58	2	19
2	FINDS/FRS	HIGH GRADE FORM	3175 WILSON PERRIS CA 92571	WNW	0.01 / 57.58	2	20
3	FINDS/FRS	MAY RANCH PHASE 4	CA	NE	0.04 / 223.22	1	20
4	CHMIRS	Edison	2900 Wilson Ave Perris CA 92571	SW	0.05 / 242.55	2	21
5	FINDS/FRS	TM 31178-WESTERLY STORM DRAIN	CA	SE	0.06 / 303.11	-4	22
5	FINDS/FRS	RELOCATION OF STORM DRAIN OUTFALL ON MAY RANCH PHASE 4 TRACT 31416	CA	SE	0.06 / 303.11	-4	22
6	CDL		3080 WILSON AVE PERRIS CA 92571	NW	0.07 / 360.84	3	23
6	CHMIRS	Riverside Co FD	3080 Wilson Perris CA	NW	0.07 / 360.84	3	23
7	EMISSIONS	EASTERN MUNICIPAL WATER DISTRICT	3054 MURRIETA RD PERRIS CA 92571	SSE	0.20 / 1,032.53	-3	24
8	ENVIROSTOR	PERRIS WEST END MIDDLE SCHOOL	PLACENTIA AVENUE & WILSON AVENUE PERRIS CA 92571 ***Estor/EPA ID	Cleanup Status:*** 60000647 | INACTIVE - WITHDRAWN AS OF 11/5/2007	S	0.37 / 1,936.48	-1	25
9	ENVIROSTOR	VAL VERDE CONTINUATION HIGH SCHOOL	NEVADA AVENUE/MORGAN STREET PERRIS CA 92571-3103 ***Estor/EPA ID	Cleanup Status:*** 33010050 | NO FURTHER ACTION AS OF 5/23/2002	SE	0.39 / 2,067.04	0	26

Map Key	DB	Company/Site Name	Address	Direction	Distance (mi/ft)	Elev Diff (ft)	Page Number
10	ENVIROSTOR	PROPOSED TRIPLE CROWN ELEMENTARY SCHOOL	ORANGE AVE. / VALENCIA ST. PERRIS CA 92571 ***Estor/EPA ID	Cleanup Status:*** 33000043 | NO FURTHER ACTION AS OF 4/13/2005	SSW	0.71 / 3,742.61	0	27
11	ENVIROSTOR	PROPOSED MORGAN STREET ELEMENTARY SCHOOL	NW CORNER OF EVANS ROAD & MORGAN STREET PERRIS CA 92571 ***Estor/EPA ID	Cleanup Status:*** 60000175 | NO FURTHER ACTION AS OF 6/26/2006	NNE	0.78 / 4,134.51	14	29
12	ENVIROSTOR	FUTURE SOUTHEAST HIGH SCHOOL	ORANGE AVENUE/EVANS ROAD PERRIS CA 92571 ***Estor/EPA ID	Cleanup Status:*** 33000041 | NO FURTHER ACTION AS OF 10/15/2007	SE	0.86 / 4,541.22	5	30

Executive Summary: Summary by Data Source

Standard

State

ENVIROSTOR - EnviroStor Database

A search of the ENVIROSTOR database, dated Jul 18, 2018 has found that there are 5 ENVIROSTOR site(s) within approximately 1.00 miles of the project property.

Equal/Higher Elevation	Address	Direction	Distance (mi/ft)	Map Key
VAL VERDE CONTINUATION HIGH SCHOOL	NEVADA AVENUE/MORGAN STREET PERRIS CA 92571-3103	SE	0.39 / 2,067.04	9
	***Estor/EPA ID	Cleanup Status**: 33010050	NO FURTHER ACTION AS OF 5/23/2002*		
PROPOSED MORGAN STREET ELEMENTARY SCHOOL	NW CORNER OF EVANS ROAD & MORGAN STREET PERRIS CA 92571	NNE	0.78 / 4,134.51	11
	***Estor/EPA ID	Cleanup Status**: 60000175	NO FURTHER ACTION AS OF 6/26/2006*		
FUTURE SOUTHEAST HIGH SCHOOL	ORANGE AVENUE/EVANS ROAD PERRIS CA 92571	SE	0.86 / 4,541.22	12
	***Estor/EPA ID	Cleanup Status**: 33000041	NO FURTHER ACTION AS OF 10/15/2007*		

Lower Elevation	Address	Direction	Distance (mi/ft)	Map Key
PERRIS WEST END MIDDLE SCHOOL	PLACENTIA AVENUE & WILSON AVENUE PERRIS CA 92571	S	0.37 / 1,936.48	8
	***Estor/EPA ID	Cleanup Status**: 60000647	INACTIVE - WITHDRAWN AS OF 11/5/2007*		
PROPOSED TRIPLE CROWN ELEMENTARY SCHOOL	ORANGE AVE. / VALENCIA ST. PERRIS CA 92571	SSW	0.71 / 3,742.61	10
	***Estor/EPA ID	Cleanup Status**: 33000043	NO FURTHER ACTION AS OF 4/13/2005*		

Non Standard

Federal

FINDS/FRS - Facility Registry Service/Facility Index

A search of the FINDS/FRS database, dated Oct 17, 2018 has found that there are 5 FINDS/FRS site(s) within approximately 0.12 miles of the project property.

Equal/Higher Elevation	Address	Direction	Distance (mi/ft)	Map Key
AMERICAN FIBER ROLLS & EROSION CONTROL PRODUCTS INC.	3175 WILSON AVENUE PERRIS CA 92571	WNW	0.01 / 57.58	2

Equal/Higher Elevation	Address	Direction	Distance (mi/ft)	Map Key
HIGH GRADE FORM	3175 WILSON PERRIS CA 92571	WNW	0.01 / 57.58	2
MAY RANCH PHASE 4	CA	NE	0.04 / 223.22	3

Lower Elevation	Address	Direction	Distance (mi/ft)	Map Key
RELOCATION OF STORM DRAIN OUTFALL ON MAY RANCH PHASE 4 TRACT 31416	CA	SE	0.06 / 303.11	5
TM 31178-WESTERLY STORM DRAIN	CA	SE	0.06 / 303.11	5

State

CHMIRS - California Hazardous Material Incident Report System (CHMIRS)

A search of the CHMIRS database, dated Jun 19, 2018 has found that there are 2 CHMIRS site(s) within approximately 0.12 miles of the project property.

Equal/Higher Elevation	Address	Direction	Distance (mi/ft)	Map Key
Edison	2900 Wilson Ave Perris CA 92571	SW	0.05 / 242.55	4
Riverside Co FD	3080 Wilson Perris CA	NW	0.07 / 360.84	6

HAZNET - Hazardous Waste Manifest Data

A search of the HAZNET database, dated Oct 24, 2016 has found that there are 1 HAZNET site(s) within approximately 0.12 miles of the project property.

Equal/Higher Elevation	Address	Direction	Distance (mi/ft)	Map Key
ISAAC CASTRO	3020 WILSON AVE PERRIS CA 92571	WNW	0.01 / 40.39	1

EMISSIONS - Toxic Pollutant Emissions Facilities

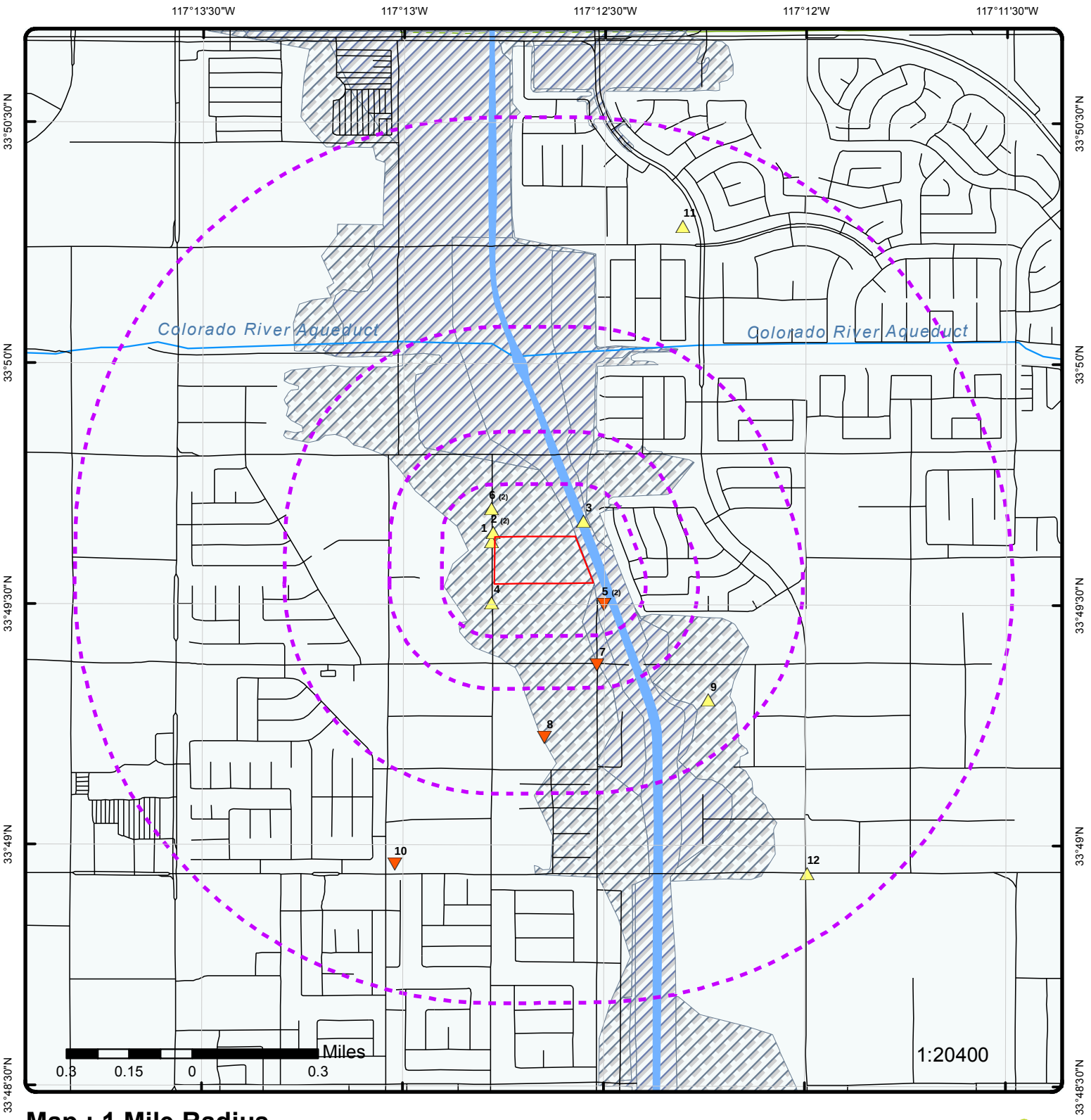
A search of the EMISSIONS database, dated Dec 31, 2016 has found that there are 1 EMISSIONS site(s) within approximately 0.25 miles of the project property.

Lower Elevation	Address	Direction	Distance (mi/ft)	Map Key
EASTERN MUNICIPAL WATER DISTRICT	3054 MURRIETA RD PERRIS CA 92571	SSE	0.20 / 1,032.53	7

CDL - Clandestine Drug Lab Sites

A search of the CDL database, dated Dec 31, 2017 has found that there are 1 CDL site(s) within approximately 0.12 miles of the project property.

Equal/Higher Elevation	Address	Direction	Distance (mi/ft)	Map Key
	3080 WILSON AVE PERRIS CA 92571	NW	0.07 / 360.84	6



Map : 1 Mile Radius

Order No: 20181220189

Address: 300-170-009, Perris, CA

ERIS
ENVIRONMENTAL RISK INFORMATION SERVICES

- Project Property
- **Buffer Outline**
- Eris Sites with Higher Elevation
- Eris Sites with Same Elevation
- Eris Sites with Lower Elevation
- Eris Sites with Unknown Elevation
- County Boundary
- Rails
- Major Highways
- Major Highways Ramps
- Major Roads
- Major Roads Ramps
- Secondary Roads
- Secondary Roads Ramps
- Local Roads and Ramps
- State Boundary
- National Priority List Sites
- National Wetland
- Indian Reserve Land
- Historic Fill
- 100 Year Flood Zone
- 500 Year Flood Zone
- FWS Special Designation Areas
- State Brownfield Sites
- State Brownfield Areas
- State Superfund Areas:Dept. of Defense
- State Superfund Areas:NPL
- WQARF Areas
- Federal Lands: Dept. of Defense (owned/administered areas)

Source: © 2016 ESRI

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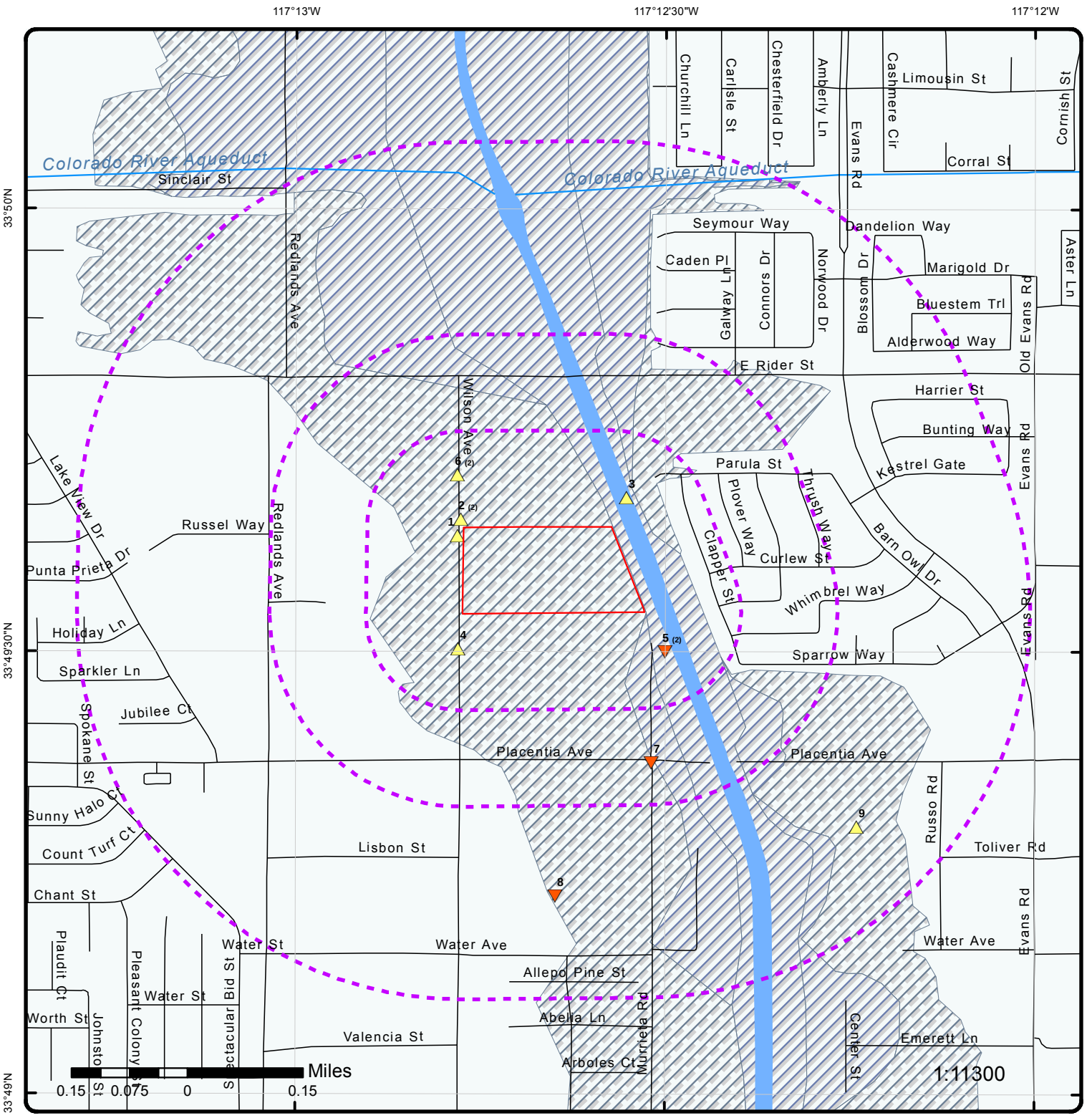

Map : 0.5 Mile Radius

Order No: 20181220189

Address: 300-170-009, Perris, CA

ENVIRONMENTAL RISK INFORMATION SERVICES

- Project Property
- **Buffer Outline**
- Eris Sites with Higher Elevation
- Eris Sites with Same Elevation
- Eris Sites with Lower Elevation
- Eris Sites with Unknown Elevation
- County Boundary
- Rails
- Major Highways
- Major Highways Ramps
- Major Roads
- Major Roads Ramps
- Secondary Roads
- Secondary Roads Ramps
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- National Wetland
- Indian Reserve Land
- Historic Fill
- 100 Year Flood Zone
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- State Superfund Areas:NPL
- WQARF Areas
- Federal Lands: Dept. of Defense (owned/administered areas)

Source: © 2016 ESRI

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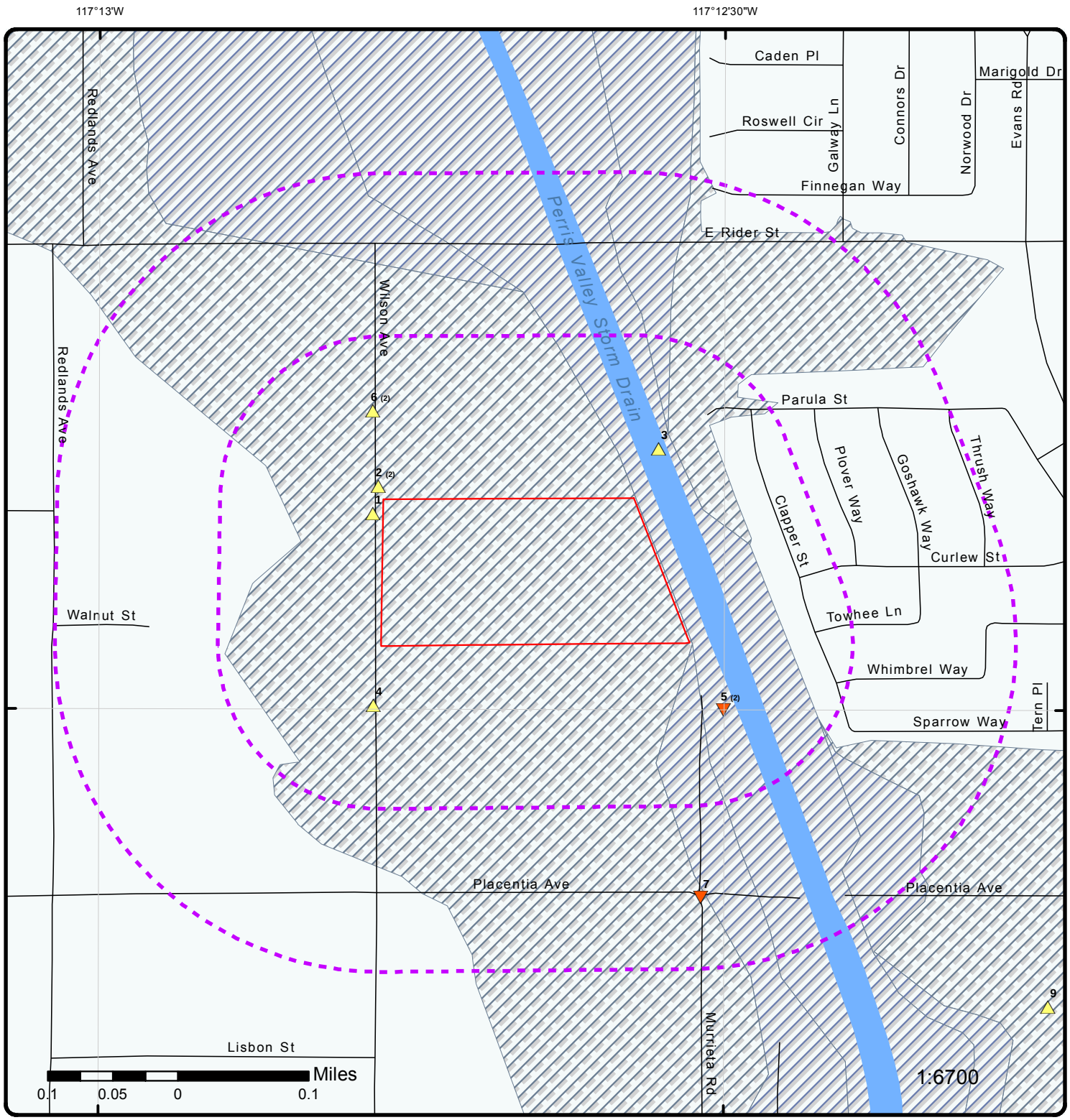

Map : 0.25 Mile Radius

Order No: 20181220189

Address: 300-170-009, Perris, CA

ENVIRONMENTAL RISK INFORMATION SERVICES

- Project Property
- **Buffer Outline**
- Eris Sites with Higher Elevation
- Eris Sites with Same Elevation
- Eris Sites with Lower Elevation
- Eris Sites with Unknown Elevation
- County Boundary
- Rails
- Major Highways
- Major Highways Ramps
- Major Roads
- Major Roads Ramps
- Secondary Roads
- Secondary Roads Ramps
- Local Roads and Ramps
- State Boundary
- National Priority List Sites
- National Wetland
- Indian Reserve Land
- Historic Fill
- 100 Year Flood Zone
- 500 Year Flood Zone
- FWS Special Designation Areas
- State Brownfield Sites
- State Brownfield Areas
- State Superfund Areas:Dept. of Defense
- State Superfund Areas:NPL
- WQARF Areas
- Federal Lands: Dept. of Defense (owned/administered areas)

Source: © 2016 ESRI

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117°12'30"W



Aerial (2017)

Order No: 20181220189

Address: 300-170-009, Perris, CA

Source: ESRI World Imagery

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ENVIRONMENTAL RISK INFORMATION SERVICES

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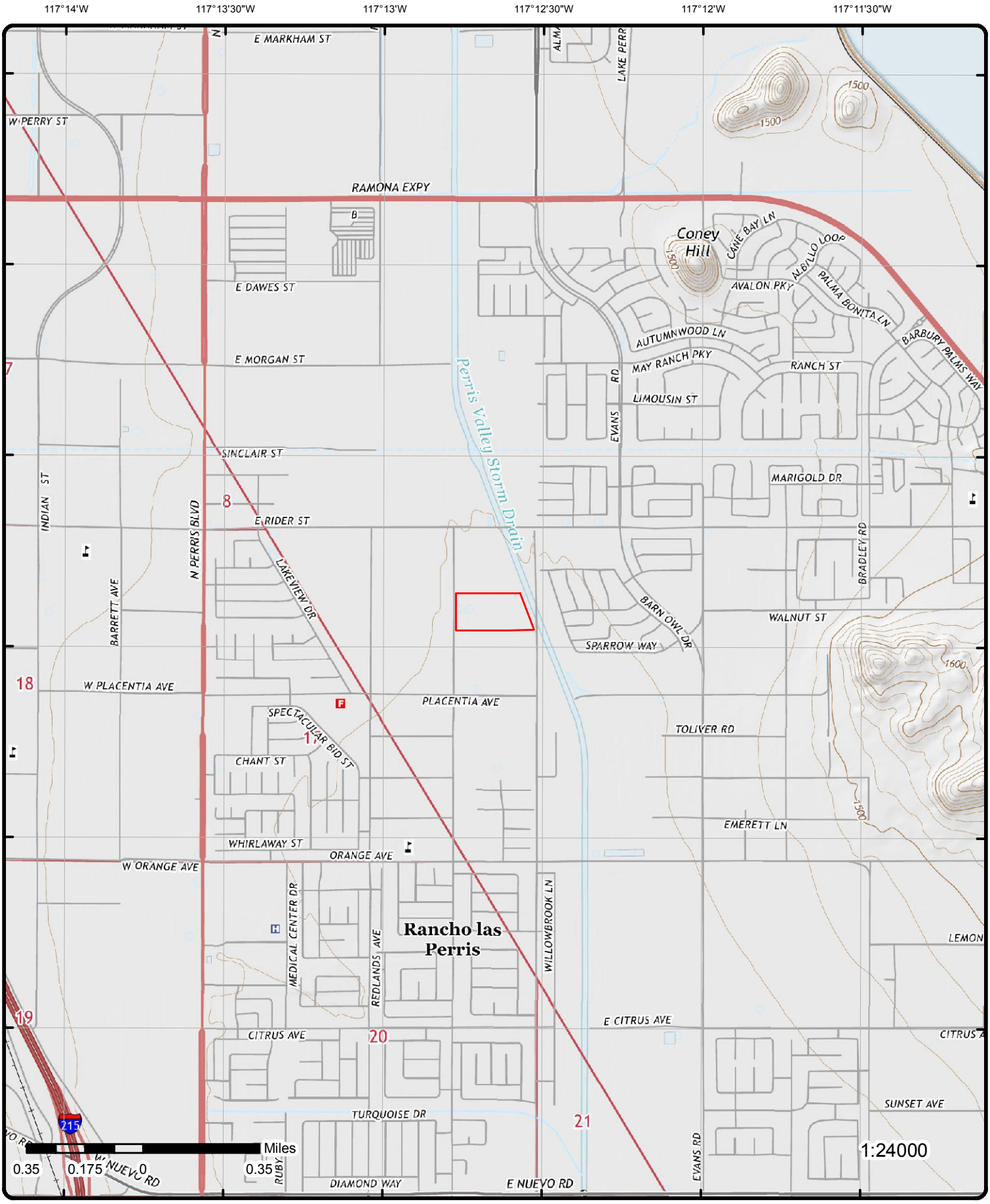

Topographic Map (2015)

Address: 300-170-009, Perris, CA

Quadrangle(s): Perris, CA

Source: USGS Topographic Map

Order No: 20181220189

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ENVIRONMENTAL RISK INFORMATION SERVICES

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Detail Report

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
1	1 of 1	WNW	0.01 / 40.39	1,439.54 / 3	ISAAC CASTRO 3020 WILSON AVE PERRIS CA 92571	HAZNET

SIC Code:		**Mailing City:**	PERRIS
NAICS Code:		**Mailing State:**	CA
EPA ID:	CAC002627822	**Mailing Zip:**	925716504
Create Date:	3/11/2008	**Region Code:**	4
Fac Act Ind:	No	**Owner Name:**	ISAAC CASTRO
Inact Date:	9/8/2008	**Owner Addr 1:**	3509 RIVERWALK CT
County Code:	33	**Owner Addr 2:**	
County Name:	Riverside	**Owner City:**	PERRIS
Mail Name:		**Owner State:**	CA
Mailing Addr 1:	3509 RIVERWALK CT	**Owner Zip:**	925716504
Mailing Addr 2:		**Owner Phone:**	9514896164
Owner Fax:			

Contact Information

--	--
Contact Name:	ISAAC CASTRO
Street Address 1:	3509 RIVERWALK CT
Street Address 2:	
City:	PERRIS
State:	CA
Zip:	925716504
Phone:	9514896164
--	--

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
2	1 of 2	WNW	0.01 / 57.58	1,438.82 / 2	AMERICAN FIBER ROLLS & EROSION CONTROL PRODUCTS INC. 3175 WILSON AVENUE PERRIS CA 92571	FINDS/FRS

Registry ID:	110070295746
FIPS Code:	
Program Acronyms:	OSHA-OIS
HUC Code:	
Site Type Name:	
Location Description:	
Supplemental Location:	
Create Date:	27-SEP-2018 03:58:30
Update Date:	
Interest Types:	OSHA ESTABLISHMENT
SIC Codes:	
SIC Code Descriptions:	
NAICS Codes:	313210, 313310
NAICS Code Descriptions:	BROADWOVEN FABRIC MILLS.
Conveyor:	
Federal Facility Code:	
Federal Agency Name:	
Tribal Land Code:	
Tribal Land Name:	
Congressional Dist No.:	
Census Block Code:	
EPA Region Code:	09
County Name:	
US/Mexico Border Ind:	

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB

Latitude:	
Longitude:	
Reference Point:	
Coord Collection Method:	
Accuracy Value:	
Datum:	NAD83
Source:	
Facility Detail Rprt URL:	http://ofmpub.epa.gov/enviro/fii_query_detail.disp_program_facility?p_registry_id=110070295746

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
2	2 of 2	WNW	0.01 / 57.58	1,438.82 / 2	HIGH GRADE FORM 3175 WILSON PERRIS CA 92571	FINDS/FRS

Registry ID:	110065760064
FIPS Code:	
Program Acronyms:	CA-ENVIROVIEW
HUC Code:	18070202
Site Type Name:	STATIONARY
Location Description:	
Supplemental Location:	
Create Date:	13-OCT-2015 14:21:27
Update Date:	
Interest Types:	STATE MASTER
SIC Codes:	
SIC Code Descriptions:	
NAICS Codes:	
NAICS Code Descriptions:	
Conveyor:	FRS-GEOCODE
Federal Facility Code:	
Federal Agency Name:	
Tribal Land Code:	
Tribal Land Name:	
Congressional Dist No.:	49
Census Block Code:	060650426182001
EPA Region Code:	09
County Name:	RIVERSIDE COUNTY
US/Mexico Border Ind:	
Latitude:	33.82796
Longitude:	-117.21135
Reference Point:	CENTER OF A FACILITY OR STATION
Coord Collection Method:	ADDRESS MATCHING-HOUSE NUMBER
Accuracy Value:	30
Datum:	NAD83
Source:	
Facility Detail Rprt URL:	http://ofmpub.epa.gov/enviro/fii_query_detail.disp_program_facility?p_registry_id=110065760064

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
3	1 of 1	NE	0.04 / 223.22	1,437.50 / 1	MAY RANCH PHASE 4 CA	FINDS/FRS

Registry ID:	110065921195
FIPS Code:	
Program Acronyms:	CA-ENVIROVIEW
HUC Code:	18070202
Site Type Name:	STATIONARY
Location Description:	
Supplemental Location:	
Create Date:	14-OCT-2015 08:55:24
Update Date:	
Interest Types:	STATE MASTER
SIC Codes:	
SIC Code Descriptions:	
NAICS Codes:	
NAICS Code Descriptions:	
Conveyor:	CALEPA

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB

Federal Facility Code:
Federal Agency Name:
Tribal Land Code:
Tribal Land Name:
Congressional Dist No.: 49
Census Block Code: 060650426202051
EPA Region Code: 09
County Name: RIVERSIDE
US/Mexico Border Ind:
Latitude: 33.8279
Longitude: -117.2092
Reference Point:
Coord Collection Method: UNKNOWN
Accuracy Value:
Datum: NAD83
Source:
Facility Detail Rprt URL: http://ofmpub.epa.gov/enviro/fii_query_detail.disp_program_facility?p_registry_id=110065921195

4	1 of 1	SW	0.05 / 242.55	1,438.54 / 2	Edison 2900 Wilson Ave Perris CA 92571	CHMIRS

ID: 15-4758
Control No: '15-4758
Year: 2015
Notified Date: 8/15/2015 20:54
Notified Date Time:
County: Riverside County

California Hazardous Material Incident Report System

Contained: Yes
1 Substance: Mineral Oil
1 Measure: Gal(s)
1 Other:
1 Quantity: 10
1 Type: PETROLEUM
1 Pipeline: No
1 Vessel >= 300 Tons: No
2 Substance:
2 Quantity:
2 Measure:
2 Type:
2 Other:
2 Pipeline: No
2 Vessel >= 300 Tons: No
3 Substance:
3 Quantity:
3 Measure:
3 Type:
3 Other:
3 Pipeline: No
3 Vessel >= 300 Tons: No
Incident Date: 8/15/2015
Incident Time: 1845
Spill Site: Road
Injuries?: No
No of Injuries:
Fatals?: No
No of Fatals:
Evacs?: No
No of Evacs:
Cleanup: Contractor
Site:
Cause: Collision
Cause Other:
Dog No:
Water: No
Water Way:
City: Perris
County: Riverside County
Zip: 92571
Admin Agency: Riverside County Environmental Health
Notification Area: AA/CUPA,DFG-OSPR,DTSC,RWQCB,US EPA,USFWS,Co/Hlth,Co/E-Hlth
Location: 2900 Wilson Ave
Description: RP stated, a car hit the pole resulting in the release of < 10 gallons of Mineral Oil onto the ground. The release is contained and cleanup is underway. No waterways have been impacted.

Main Page Information

On Scene:
Other on Scene:
Other Notified:
Admin Agency: Riverside County Environmental Health
Admin Agency 2:
Additional County:
Document Title: SPILL Report
Creation Date: 08/15/2015 08:54 PM

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB

Received By:
Person Notifying Cal OES:
Phone No:
Ext:
Pag Cell:
Water: PETROLEUM
Cause Description for Other:
Amount 1: 10
Amount 2:
Amount 3:
Doc URL: https://w3.calema.ca.gov/operational/malhaz.nsf/f1841a103c102734882563e200760c4a/d9ab6d71586aeed688257ea3001575ea?OpenDocument
Spill Site:
Type:

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
5	1 of 2	SE	0.06 / 303.11	1,432.54 / -4	TM 31178-WESTERLY STORM DRAIN CA	FINDS/FRS

Registry ID: 110066392512
FIPS Code:
Program Acronyms: CA-ENVIROVIEW
HUC Code: 18070202
Site Type Name: STATIONARY
Location Description:
Supplemental Location:
Create Date: 14-OCT-2015 11:18:04
Update Date:
Interest Types: STATE MASTER
SIC Codes:
SIC Code Descriptions:
NAICS Codes:
NAICS Code Descriptions:
Conveyor: CALEPA
Federal Facility Code:
Federal Agency Name:
Tribal Land Code:
Tribal Land Name:
Congressional Dist No.: 49
Census Block Code: 060650426182001
EPA Region Code: 09
County Name: RIVERSIDE
US/Mexico Border Ind:
Latitude: 33.825
Longitude: -117.208333
Reference Point:
Coord Collection Method: UNKNOWN
Accuracy Value:
Datum: NAD83
Source:
Facility Detail Rprt URL: http://ofmpub.epa.gov/enviro/fii_query_detail.disp_program_facility?p_registry_id=110066392512

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
5	2 of 2	SE	0.06 / 303.11	1,432.54 / -4	RELOCATION OF STORM DRAIN OUTFALL ON MAY RANCH PHASE 4 TRACT 31416 CA	FINDS/FRS

Registry ID: 110066615354
FIPS Code:
Program Acronyms: CA-ENVIROVIEW
HUC Code: 18070202
Site Type Name: STATIONARY
Location Description:
Supplemental Location:

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB

Create Date:	14-OCT-2015 12:22:29
Update Date:	
Interest Types:	STATE MASTER
SIC Codes:	
SIC Code Descriptions:	
NAICS Codes:	
NAICS Code Descriptions:	
Conveyor:	CALEPA
Federal Facility Code:	
Federal Agency Name:	
Tribal Land Code:	
Tribal Land Name:	
Congressional Dist No.:	49
Census Block Code:	060650426182001
EPA Region Code:	09
County Name:	RIVERSIDE
US/Mexico Border Ind:	
Latitude:	33.825
Longitude:	-117.208333
Reference Point:	
Coord Collection Method:	UNKNOWN
Accuracy Value:	
Datum:	NAD83
Source:	
Facility Detail Rprt URL:	http://ofmpub.epa.gov/enviro/fii_query_detail.disp_program_facility?p_registry_id=110066615354

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
6	1 of 2	NW	0.07 / 360.84	1,439.54 / 3	3080 WILSON AVE PERRIS CA 92571	CDL

Clue:	1999-03-010
Date:	3/2/1999
County:	RIVERSIDE
Lab Type:	L
Lab Type Description:	Illegal Drug Lab - location where an illegal drug lab was operated or drug lab equipment and/or materials were stored.

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
6	2 of 2	NW	0.07 / 360.84	1,439.54 / 3	Riverside Co FD 3080 Wilson Perris CA	CHMIRS

ID:	99-0983	**Notified Date:**	3/3/199908:26:12 AM
Control No:	99-0983	**Notified Date Time:**	
Year:	1999	**County:**	Riverside County

California Hazardous Material Incident Report System

Contained:	Yes	**Bbls:**	0
Substance:	Misc Drug Lab Waste	**Cups:**	0
Incident Date:	3/2/199912:00:00 AM	**Cuft:**	0
No of Injuries:	0	**Gals:**	213
No of Fatals:	0	**Grams:**	0
No of Evacs:	0	**Lbs:**	0
Cleanup:	DDTSC	**Liters:**	0
Water:	No	**Oz:**	0
Water Way:		**Pts:**	0
City:	Perris	**Qts:**	0
County:	Riverside County	**Sheen:**	0
Zip:		**Tons:**	0
Site:	Residence	**Unknown:**	0
Admin Agency:	Riverside County Environmental Health		
Location:	3080 Wilson		
Description:	Misc druglab waste		

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
7	1 of 1	SSE	0.20 / 1,032.53	1,433.54 / -3	EASTERN MUNICIPAL WATER DISTRICT 3054 MURRIETA RD PERRIS CA 92571	EMISSIONS

2004 Criteria Data

Facility ID:	70295	***CERR Code:***	
Facility SIC Code:	4941	***TOGT:***	.2302
CO:	33	***ROGT:***	.02104028
Air Basin:	SC	***COT:***	.381
District:	SC	***NOXT:***	.3192
COID:	RIV	***SOXT:***	.00142
DISN:	SOUTH COAST AQMD	***PMT:***	.02375
CHAPIS:		***PM10T:***	.0236075

2004 Toxic Data

Facility ID:	70295	***COID:***	RIV
Facility SIC Code:	4941	***DISN:***	SOUTH COAST AQMD
CO:	33	***CHAPIS:***	
Air Basin:	SC	***CERR Code:***	
District:	SC		
TS:			
Health Risk Asmt:			
Non-Cancer Chronic Haz Ind:			
Non-Cancer Acute Haz Ind:			

2005 Criteria Data

Facility ID:	70295	***CERR Code:***	
Facility SIC Code:	4941	***TOGT:***	4.770240700218818380743982494529540481 4
CO:	33	***ROGT:***	.436
Air Basin:	SC	***COT:***	.531
District:	SC	***NOXT:***	.638
COID:	RIV	***SOXT:***	.001
DISN:	SOUTH COAST AQMD	***PMT:***	.028
CHAPIS:		***PM10T:***	.027832

2005 Toxic Data

Facility ID:	70295	***COID:***	RIV
Facility SIC Code:	4941	***DISN:***	SOUTH COAST AQMD
CO:	33	***CHAPIS:***	
Air Basin:	SC	***CERR Code:***	
District:	SC		
TS:			
Health Risk Asmt:			
Non-Cancer Chronic Haz Ind:			
Non-Cancer Acute Haz Ind:			

2006 Criteria Data

Facility ID:	70295	***CERR Code:***	
Facility SIC Code:	4941	***TOGT:***	2.943107221006564551422319474835886214 44
CO:	33	***ROGT:***	.269
Air Basin:	SC	***COT:***	.344
District:	SC	***NOXT:***	.343
COID:	RIV	***SOXT:***	.002
DISN:	SOUTH COAST AQMD	***PMT:***	.022

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB

CHAPIS:		**PM10T:**	.021868

2006 Toxic Data

Facility ID:	70295	**COID:**	RIV
Facility SIC Code:	4941	**DISN:**	SOUTH COAST AQMD
CO:	33	**CHAPIS:**	
Air Basin:	SC	**CERR Code:**	
District:	SC		
TS:			
Health Risk Asmt:			
Non-Cancer Chronic Haz Ind:			
Non-Cancer Acute Haz Ind:			

2007 Criteria Data

Facility ID:	70295	**CERR Code:**	
Facility SIC Code:	4941	**TOGT:**	2.9431072210065645514223194748358862144
CO:	33	**ROGT:**	.269
Air Basin:	SC	**COT:**	.344
District:	SC	**NOXT:**	.343
COID:	RIV	**SOXT:**	.002
DISN:	SOUTH COAST AQMD	**PMT:**	.022
CHAPIS:		**PM10T:**	.021868

2007 Toxic Data

Facility ID:	70295	**COID:**	RIV
Facility SIC Code:	4941	**DISN:**	SOUTH COAST AQMD
CO:	33	**CHAPIS:**	
Air Basin:	SC	**CERR Code:**	
District:	SC		
TS:			
Health Risk Asmt:			
Non-Cancer Chronic Haz Ind:			
Non-Cancer Acute Haz Ind:			

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
8	1 of 1	S	0.37 / 1,936.48	1,435.53 / -1	**PERRIS WEST END MIDDLE SCHOOL** **PLACENTIA AVENUE & WILSON AVENUE** **PERRIS CA 92571**	ENVIROSTOR

Estor/EPA ID:	60000647	**County:**	RIVERSIDE
Site Code:	404750	**Latitude:**	33.8204
Special Program:		**Longitude:**	-117.2108
Census Tract:	6065042618	**Office:**	SOUTHERN CALIFORNIA SCHOOLS & BROWNFIELDS OUTREACH
Permit Renew Lead:		**Nat Priority List:**	NO
Project Manager:		**Funding:**	SCHOOL DISTRICT
Pub Particip Spec:		**Assembly District:**	61
Supervisor:	* TAWFIQ DEEK	**Senate District:**	31

Site Type: SCHOOL
Cleanup Status: INACTIVE - WITHDRAWN AS OF 11/5/2007
Clean Up Oversight Agency: DTSC - SITE CLEANUP PROGRAM - LEAD AGENCY
Cause of Contamination: AGRICULTURAL - LIVESTOCK, AGRICULTURAL - ROW CROPS, RESIDENTIAL AREA
Potential Media Affected: SOIL
School District: VAL VERDE UNIFIED SCHOOL DISTRICT
APN: NONE SPECIFIED
Acres: 25 ACRES
Potential Contaminants:

METALS
ORGANOCHLORINE PESTICIDES (8081 OCPS)

OTHER
UNDER INVESTIGATION

Site History:

The site consists of 19 separate parcels totaling 25 acres. The site consists of mostly undeveloped land except for one residence in the NE corner. Historically, the site was used for agricultural row crops from 1938-1953. One residence and several long rectangular buildings were located on the SW corner. A small reservoir and a water wall were also located on the SW corner. Possible dairy barns were onsite in the past. Also an offsite dairy farm is present adjacent to the SE corner.

Oct. 25,2007: PEA Workplan is proposing to investigate for CAM17 metals, OCPs, termiticides, methane and leadbased paint.

Nov. 5, 2007: The District has cancelled the project due to insufficient funding and inability to acquire the site. The PEA has been cancelled effective Nov. 5, 2007.

Program Type: SCHOOL EVALUATION
Status: INACTIVE - WITHDRAWN
Cal Enviro Score: 71-75%
Summary Link: http://www.envirostor.dtsc.ca.gov/public/profile_report?global_id=60000647

Completed Activities

Date Completed: 6/14/2007
Area Name:
Sub Area:
Title: Phase I (Background Info)
Area Link:
Sub Area Link:
Title Link:
Document Type: Other Report
Comments: Received Phase I report as background information for upcoming PEA.

Date Completed: 6/21/2007
Area Name:
Sub Area:
Title: EOA
Area Link:
Sub Area Link:
Title Link: http://www.envirostor.dtsc.ca.gov/public/final_documents2?global_id=60000647&enforcement_id=6011009
Document Type: Environmental Oversight Agreement
Comments: Signed Agreement sent (FedEx) to District.

9	1 of 1	SE	0.39 / 2,067.04	1,436.54 / 0	VAL VERDE CONTINUATION HIGH SCHOOL NEVADA AVENUE/MORGAN STREET PERRIS CA 92571-3103	ENVIROSTOR

Estor/EPA ID: 33010050
Site Code: 404250
Special Program:
Census Tract: 6065042620
Permit Renew Lead:
Project Manager:
Pub Particip Spec:
Supervisor: JAVIER HINOJOSA
County: RIVERSIDE
Latitude: 33.8217
Longitude: -117.204
Office: SOUTHERN CALIFORNIA SCHOOLS & BROWNFIELDS OUTREACH
Nat Priority List: NO
Funding: SCHOOL DISTRICT
Assembly District: 61
Senate District: 31
Site Type: SCHOOL
Cleanup Status: NO FURTHER ACTION AS OF 5/23/2002
Clean Up Oversight Agency: DTSC - LEAD AGENCY
Cause of Contamination: AGRICULTURAL - ROW CROPS
Potential Media Affected: SOIL
School District: VAL VERDE UNIFIED SCHOOL DISTRICT
APN: NONE SPECIFIED
Acres: 18 ACRES
Potential Contaminants:

ARSENIC
ORGANOCHLORINE PESTICIDES (8081 OCPS)

Site History:

The undeveloped site consists of an irregularly shaped parcel, approximately 18-acres, bounded by Morgan Street to the south, Nevada Avenue to the west, Webster Avenue to the east, and undeveloped farm property to the north. The site may have been used for agriculture purposes, indicating the potential use of pesticides.

Program Type: SCHOOL EVALUATION
Status: NO FURTHER ACTION
Cal Enviro Score: 91-95%
Summary Link: http://www.envirostor.dtsc.ca.gov/public/profile_report?global_id=33010050

Completed Activities

Date Completed: 12/5/2001
Area Name:
Sub Area:
Title: * Workplan
Area Link:
Sub Area Link:
Title Link:
Document Type: * Workplan
Comments:

Date Completed: 5/23/2002
Area Name:
Sub Area:
Title: Preliminary Endangerment Assessment Report
Area Link:
Sub Area Link:
Title Link:
Document Type: Preliminary Endangerment Assessment Report
Comments:

Date Completed: 9/18/2001
Area Name:
Sub Area:
Title: * Site Visit - Site Inspections/visit
Area Link:
Sub Area Link:
Title Link:
Document Type: Site Inspections/Visit (Non LUR)
Comments:

Date Completed: 7/13/2001
Area Name:
Sub Area:
Title: Environmental Oversight Agreement
Area Link:
Sub Area Link:
Title Link: http://www.envirostor.dtsc.ca.gov/public/final_documents2?global_id=33010050&enforcement_id=6003910
Document Type: Environmental Oversight Agreement
Comments:

10	*1 of 1*	*SSW*	*0.71 / 3,742.61*	*1,436.20 / 0*	***PROPOSED TRIPLE CROWN ELEMENTARY SCHOOL ORANGE AVE. / VALENCIA ST. PERRIS CA 92571***	***ENVIROSTOR***

Estor/EPA ID: 33000043
Site Code: 404590
Special Program:
Census Tract: 6065042618
County: RIVERSIDE
Latitude: 33.816
Longitude: -117.217
Office: SOUTHERN CALIFORNIA SCHOOLS & BROWNFIELDS OUTREACH

Permit Renew Lead:
Project Manager:
Pub Particip Spec:
Supervisor: SHAHIR HADDAD
Site Type: SCHOOL
Cleanup Status: NO FURTHER ACTION AS OF 4/13/2005
Clean Up Oversight Agency: DTSC - SITE CLEANUP PROGRAM - LEAD AGENCY
Cause of Contamination: UNKNOWN
Potential Media Affected: SOIL, SOIL VAPOR
School District: VAL VERDE UNIFIED SCHOOL DISTRICT
APN: NONE SPECIFIED
Acres: 10 ACRES
Potential Contaminants:

Nat Priority List: NO
Funding: SCHOOL DISTRICT
Assembly District: 61
Senate District: 31

LEAD
METHANE

Site History:

The surrounding area consists of residential and commercial development, as well as small open fields awaiting development. An old wood-plank barn was constructed prior to 1938 and is associated with a rural residence located at the Southwest corner of the subject site. The general area was used for horse breeding and training during the 1930s through the 1970s. There was an old race track Northwest of the site between 1953-1976. The area was constructed with tract homes beginning in the late 1970s and continued through the 1980s.

Program Type: SCHOOL EVALUATION
Status: NO FURTHER ACTION
Cal Enviro Score: 71-75%
Summary Link: http://www.envirostor.dtsc.ca.gov/public/profile_report?global_id=33000043

Completed Activities

Date Completed: 11/5/2004
Area Name:
Sub Area:
Title: Phase 1
Area Link:
Sub Area Link:
Title Link: http://www.envirostor.dtsc.ca.gov/public/final_documents2?global_id=33000043&doc_id=6003671
Document Type: Phase 1
Comments:

Date Completed: 1/19/2005
Area Name:
Sub Area:
Title: Environmental Oversight Agreement
Area Link:
Sub Area Link:
Title Link: http://www.envirostor.dtsc.ca.gov/public/final_documents2?global_id=33000043&enforcement_id=6003669
Document Type: Environmental Oversight Agreement
Comments:

Date Completed: 2/10/2005
Area Name:
Sub Area:
Title: Technical Memorandums
Area Link:
Sub Area Link:
Title Link:
Document Type: Technical Report
Comments:

Date Completed: 4/13/2005
Area Name:
Sub Area:
Title: PEA Report
Area Link:
Sub Area Link:

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB

Title Link: http://www.envirostor.dtsc.ca.gov/public/final_documents2?global_id=33000043&doc_id=6010936
Document Type: Preliminary Endangerment Assessment Report
Comments: DTSC issued no further action determination based on a PEA report

Date Completed: 8/26/2004
Area Name:
Sub Area:
Title: * Site Visit - Site Inspections/visit
Area Link:
Sub Area Link:
Title Link:
Document Type: Site Inspections/Visit (Non LUR)
Comments:

11	1 of 1	NNE	0.78 / 4,134.51	1,450.53 / 14	PROPOSED MORGAN STREET ELEMENTARY SCHOOL NW CORNER OF EVANS ROAD & MORGAN STREET PERRIS CA 92571	ENVIROSTOR

Estor/EPA ID: 60000175
Site Code: 404682
Special Program:
Census Tract: 6065042620
Permit Renew Lead:
Project Manager:
Pub Particip Spec:
Supervisor: YOLANDA GARZA
County: RIVERSIDE
Latitude: 33.8381
Longitude: -117.2051
Office: SOUTHERN CALIFORNIA SCHOOLS & BROWNFIELDS OUTREACH
Nat Priority List: NO
Funding: SCHOOL DISTRICT
Assembly District: 61
Senate District: 31
Site Type: SCHOOL
Cleanup Status: NO FURTHER ACTION AS OF 6/26/2006
Clean Up Oversight Agency: DTSC - SITE CLEANUP PROGRAM - LEAD AGENCY
Cause of Contamination: AGRICULTURAL - ROW CROPS
Potential Media Affected: NO MEDIA AFFECTED
School District: VAL VERDE UNIFIED SCHOOL DISTRICT
APN: NONE SPECIFIED
Acres: 13 ACRES
Site History:

This site is comprised of a 13 acre parcel that was historically used for agriculture and is currently undeveloped. Site has been rough graded and used as a borrow site for nearby development. Potential for residual pesticides remaining in the site soils.

Potential Contaminants:

NO CONTAMINANTS FOUND

Program Type: SCHOOL EVALUATION
Status: NO FURTHER ACTION
Cal Enviro Score: 91-95%
Summary Link: http://www.envirostor.dtsc.ca.gov/public/profile_report?global_id=60000175

Completed Activities

Date Completed: 2/24/2006
Area Name:
Sub Area:
Title: Phase I
Area Link:
Sub Area Link:
Title Link:
Document Type: Phase 1
Comments: Reviewed Phase I and it was determined that PEA is required.

Date Completed: 3/22/2006
Area Name:
Sub Area:

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB

Title: EOA
Area Link:
Sub Area Link:
Title Link: http://www.envirostor.dtsc.ca.gov/public/final_documents2?global_id=60000175&enforcement_id=6009007
Document Type: Environmental Oversight Agreement
Comments:

Date Completed: 6/26/2006
Area Name:
Sub Area:
Title: PEA Report
Area Link:
Sub Area Link:
Title Link: http://www.envirostor.dtsc.ca.gov/public/final_documents2?global_id=60000175&doc_id=6011151
Document Type: Preliminary Endangerment Assessment Report
Comments: PEA Approval letter sent 06/26/06.

Date Completed: 4/4/2006
Area Name:
Sub Area:
Title: Technical Memorandum
Area Link:
Sub Area Link:
Title Link:
Document Type: Preliminary Endangerment Assessment Report
Comments: DTSC issued an approval letter for the Tech Memo. District informed DTSC that contractor will start moving imported fill material into the site. DTSC was on the fast track to make sure the soil in place is free of contaminants.

12	1 of 1	SE	0.86 / 4,541.22	1,441.06 / 5	***FUTURE SOUTHEAST HIGH SCHOOL*** ***ORANGE AVENUE/EVANS ROAD*** ***PERRIS CA 92571***	***ENVIROSTOR***

Estor/EPA ID: 33000041
Site Code: 404616
Special Program:
Census Tract: 6065042620
Permit Renew Lead:
Project Manager: AMIT PATHAK
Pub Particip Spec:
Supervisor: SHAHIR HADDAD
County: RIVERSIDE
Latitude: 33.8157
Longitude: -117.1999
Office: SOUTHERN CALIFORNIA SCHOOLS & BROWNFIELDS OUTREACH
Nat Priority List: NO
Funding: SCHOOL DISTRICT
Assembly District: 61
Senate District: 31
Site Type: SCHOOL
Cleanup Status: NO FURTHER ACTION AS OF 10/15/2007
Clean Up Oversight Agency: DTSC - SITE CLEANUP PROGRAM - LEAD AGENCY
Cause of Contamination: AGRICULTURAL - ROW CROPS
Potential Media Affected: SOIL
School District: VAL VERDE UNIFIED SCHOOL DISTRICT
APN: NONE SPECIFIED
Acres: 60 ACRES
Potential Contaminants:

TOXAPHENE

Site History:

The Site was historically utilized for agricultural purposes, indicatin potential pesticide application. The approximately 60-acre Site is currently vacant land, surrounded by residential homes, vacant land, and farmland.

The PEA and SSI were conducted. The Site was granted NFA after SSI investigation.

Program Type: SCHOOL EVALUATION
Status: NO FURTHER ACTION
Cal Enviro Score: 91-95%
Summary Link: http://www.envirostor.dtsc.ca.gov/public/profile_report?global_id=33000041

Completed Activities

Date Completed: 7/24/2006
Area Name:
Sub Area:
Title: PEA
Area Link:
Sub Area Link:
Title Link: http://www.envirostor.dtsc.ca.gov/public/final_documents2?global_id=33000041&doc_id=6008930
Document Type: Preliminary Endangerment Assessment Report
Comments: DTSC issued a Further Action determination based on a Preliminartion Environmental Assessment report. DTSC requested a Supplemental Site Investigation.

Date Completed: 4/6/2005
Area Name:
Sub Area:
Title: Site Visit - Site Inspections/visit
Area Link:
Sub Area Link:
Title Link:
Document Type: Site Inspections/Visit (Non LUR)
Comments:

Date Completed: 8/3/2006
Area Name:
Sub Area:
Title: Voluntary Cleanup Agreement
Area Link:
Sub Area Link:
Title Link:
Document Type: Voluntary Cleanup Agreement
Comments:

Date Completed: 3/30/2005
Area Name:
Sub Area:
Title: Environmental Oversight Agreement
Area Link:
Sub Area Link:
Title Link: http://www.envirostor.dtsc.ca.gov/public/final_documents2?global_id=33000041&enforcement_id=6003661
Document Type: Environmental Oversight Agreement
Comments:

Date Completed: 9/28/2006
Area Name:
Sub Area:
Title: SSI Tech Memo
Area Link:
Sub Area Link:
Title Link:
Document Type: Supplemental Site Investigation Workplan
Comments: SSI Tech Memo Approved. Field work completed on 10/5/06.

Date Completed: 7/31/2007
Area Name:
Sub Area:
Title: Supplemental Site Investigation Report
Area Link:
Sub Area Link:
Title Link: http://www.envirostor.dtsc.ca.gov/public/final_documents2?global_id=33000041&doc_id=6013959
Document Type: Supplemental Site Investigation Report
Comments: No Further Action

Date Completed: 4/28/2005
Area Name:
Sub Area:
Title: Technical Memorandums
Area Link:
Sub Area Link:
Title Link:

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB

Document Type: Preliminary Endangerment Assessment Workplan
Comments:

Unplottable Summary

Total: 12 Unplottable sites

DB	Company Name/Site Name	Address	City	Zip	ERIS ID
CDL		IN WILSON CREEK @ SAGE RD (SEE GREEN)	CA	92536	820124576
CHMIRS	Southern Calif Gas	30480 Murrieta Road	Perris CA		821779064
CHMIRS	Union Pacific RR	Agua Mansa, and Wilson St. @ MM 6.2 on Crestmoore Industrial Lead	Riverside CA		848862234
CHMIRS	NRC	Ocean Ave. across from Wilson	Riverside CA		821776883
CHMIRS	riv co fd	murrieta rd 1/4 mile south of case rd	perris CA	92570	860458714
CHMIRS	SoCal Gas	Cross street of Mildred St. and West of Murrieta St.	Perris CA		867284209
EMISSIONS	RITCHIE BROS. AUCTIONEERS (AMERICA) INC.	765 RIDER ST	PERRIS CA	92571	861221984
FINDS/FRS	EMWD MURRIETA ROAD BOOSTER PLANT	25877 MURRIETA RD	PERRIS CA	92570	840137667
FINDS/FRS	TRACT NO. 31678	NEC SAN JACINTO AVENA WILSON AV	PERRIS CA	92570	840023566
FINDS/FRS	TRACTNAPERRIS	BETWEEN WILSON AND MURRIETA	PERRIS CA	92570	840160217
HIST CHMIRS		SUNSET AVENUE 6/10MI NORTH WILSON STREET	UNINC CA		826019564

RIVERSIDE HZH	EMWD Murrieta Booster	25877 Murrieta Rd	Perris CA	92570	823023307

Unplottable Report

Site:
IN WILSON CREEK @ SAGE RD (SEE GREEN) CA 92536 CDL

Clue:	1997-12-009
Date:	12/2/1997
County:	RIVERSIDE
Lab Type:	A
Lab Type Description:	Abandoned Drug Lab Waste - location away from an actual illegal drug lab where drug lab waste and/or equipment were abandoned.

Site: ***Southern Calif Gas***
30480 Murrieta Road Perris CA CHMIRS

ID:	12-3216	***Notified Date:***	6/1/2012 9:10
Control No:	'12-3216	***Notified Date Time:***	
Year:	2012	***County:***	Riverside County

California Hazardous Material Incident Report System

Contained:	No	***3 Vessel >= 300 Tons:***	No
1 Substance:	Natural Gas Vapor	***Incident Date:***	6/1/2012
1 Measure:	Unknown	***Incident Time:***	805
1 Other:		***Spill Site:***	Road
1 Quantity:	unk	***Injuries?:***	No
1 Type:	VAPOR	***No of Injuries:***	
1 Pipeline:	No	***Fatals?:***	No
1 Vessel >= 300 Tons:	No	***No of Fatals:***	
2 Substance:		***Evacs?:***	No
2 Quantity:		***No of Evacs:***	
2 Measure:		***Cleanup:***	Unrecoverable
2 Type:		***Site:***	
2 Other:		***Cause:***	Human Error
2 Pipeline:	No	***Cause Other:***	
2 Vessel >= 300 Tons:	No	***Dog No:***	
3 Substance:		***Water:***	No
3 Quantity:		***Water Way:***	
3 Measure:		***City:***	Perris
3 Type:		***County:***	Riverside County
3 Other:		***Zip:***	
3 Pipeline:	No		

Admin Agency:	Riverside County Environmental Health
Notification Area:	AA/CUPA,DFG-OSPR,DTSC,RWQCB,US EPA,USFWS,AIR RESOURCES BD,PUC
Location:	30480 Murrieta Road
Description:	A third party contractor excavating hit and damaged one of their 4 inch lines. The line should be shut down within 30-60 minutes.

Main Page Information

On Scene:	
Other on Scene:	
Other Notified:	
Admin Agency:	Riverside County Environmental Health
Admin Agency 2:	
Additional County:	
Document Title:	SPILL Report
Creation Date:	06/01/2012 09:10 AM
Received By:	
Person Notifying Cal OES:	

Phone No:
Ext:
Pag Cell:
Water: VAPOR
Cause Description for Other:
Amount 1: unk
Amount 2:
Amount 3:
Doc URL: https://w3.calema.ca.gov/operational/malhaz.nsf/f1841a103c102734882563e200760c4a/619ea684d3e22c5a88257a100058d64a?OpenDocument
Spill Site:
Type:

Site: ***Union Pacific RR***
Agua Mansa, and Wilson St. @ MM 6.2 on Crestmoore Industrial Lead Riverside CA CHMIRS

ID:	16-3345	***Notified Date:***	6/4/2016 2:02
Control No:	'16-3345	***Notified Date Time:***	
Year:	2016	***County:***	Riverside County

California Hazardous Material Incident Report System

Contained:	Unknown	***Incident Date:***	6/4/2016
1 Substance:	Diesel Fuel	***Incident Time:***	140
1 Quantity:	25	***Spill Site:***	Rail Road
1 Measure:	Gal(s)	***Injuries?:***	No
1 Type:	PETROLEUM	***No of Injuries:***	
1 Pipeline:	No	***Fatals?:***	No
1 Vessel >= 300 Tons:	No	***No of Fatals:***	
1 Other:		***Evacs?:***	No
2 Substance:		***No of Evacs:***	
2 Quantity:		***Cleanup:***	Contractor
2 Measure:		***Site:***	
2 Type:		***Cause:***	Collision
2 Other:		***Cause Other:***	
2 Pipeline:	No	***Drinking Wtr Imp:***	No
2 Vessel >= 300 Tons:	No	***Known Impact:***	Other - Temporary Rail Closing
3 Substance:		***Water:***	No
3 Quantity:		***Water Way:***	
3 Measure:		***City:***	Riverside
3 Type:		***County:***	Riverside County
3 Other:		***Zip:***	
3 Pipeline:	No	***DOG No:***	
3 Vessel >= 300 Tons:	No		

Admin Agency: Riverside City Fire Department
Notification Area: AA/CUPA,DFG-OSPR,DTSC,RWQCB,US EPA,USFWS,PUC,Co/Hlth,Co/E-Hlth
Location: Agua Mansa, and Wilson St. @ MM 6.2 on Crestmoore Industrial Lead
Description: RP States: Approx. 25 gallons of diesel fuel was released when a vehicle struck a crossing mechanism at a grade crossing. No trains, or rail cars were involved in the collision. Riverside County Sheriff's Department is on scene on scene and will conduct the clean-up.

California OES Update

Notify Date: 06/04/2016
Notify Time: 202
Occurence Date: 06/04/2016
Occurence Time: 140
Upd Known Impact:
Update Cause:
Pers Notifying Upd Place: Person Notifying Update
Pers Notifying Upd Nme:
Phone No.:
Ext:
Pag Cell:
Fax Notifi List:
Person Notifying Cal Oes Agenc:
Person Reporting Spill Agency:
Op Area:

Unknown Header:
Substance 1:
Qty Amount 1:
Measure 1:
Type 1:
Other 1:
Pipeline 1:
Vessel 1:
Substance 2:
Qty Amount 2:
Measure 2:
Type 2:
Other 2:
Pipeline 2:
Vessel 2:
Substance 3:
Qty Amount 3:
Measure 3:
Type 3:
Other 3:
Pipeline 3:
Vessel 3:
Administering Agency:
Secondary Agency:
Additional Counties:
Additional Admin Agency:
Other Notified:
RWQCB Unit:
Confirmation Request:
Fax Notification List 2:
Administering Agency 2:
Additional Admin Agency 2:
Secondary Agency 2:
Additional Counties 2:
DOG Unit:
RWQCB Unit 2:
Doc URL: https://w3.calema.ca.gov/operational/malhaz.nsf/f1841a103c102734882563e200760c4a/a318aecda5db9bfc88257fc8003691f5?OpenDocument
Update Description:

Situation Update:

RP States: The collision and subsequent fuel release happened off of Union Pacific RR's land.

Original Description:

California OES Update Quantities

Amount:
Measure: Gal(s)

California OES Update

Notify Date: 06/04/2016
Notify Time: 202
Occurence Date: 06/04/2016
Occurence Time: 140
Upd Known Impact:
Update Cause:
Pers Notifying Upd Place: Person Notifying Update
Pers Notifying Upd Nme:
Phone No.:
Ext:
Pag Cell:
Fax Notifi List:
Person Notifying Cal Oes Agenc:
Person Reporting Spill Agency:
Op Area:

Unknown Header:
Substance 1:
Qty Amount 1:
Measure 1:
Type 1:
Other 1:
Pipeline 1:
Vessel 1:
Substance 2:
Qty Amount 2:
Measure 2:
Type 2:
Other 2:
Pipeline 2:
Vessel 2:
Substance 3:
Qty Amount 3:
Measure 3:
Type 3:
Other 3:
Pipeline 3:
Vessel 3:
Administering Agency:
Secondary Agency:
Additional Counties:
Additional Admin Agency:
Other Notified:
RWQCB Unit:
Confirmation Request:
Fax Notification List 2:
Administering Agency 2:
Additional Admin Agency 2:
Secondary Agency 2:
Additional Counties 2:
DOG Unit:
RWQCB Unit 2:
Doc URL: https://w3.calema.ca.gov/operational/malhaz.nsf/f1841a103c102734882563e200760c4a/a318aecda5db9bfc88257fc8003691f5?OpenDocument
Update Description:

Situation Update:

RP States: The collision and subsequent fuel release happened off of Union Pacific RR's land.

Original Description:

California OES Update Quantities

Amount:
Measure: Gal(s)

Main Page Information

On Scene:
Other on Scene:
Other Notified:
Admin Agency: Riverside City Fire Department
Admin Agency 2:
Additional County:
Document Title: SPILL Report
Creation Date: 06/04/2016 02:02 AM
Received By:
Person Notifying Cal OES:
Phone No:
Ext:
Pag Cell:
Water: PETROLEUM
Cause Description for Other:
Amount 1: 25

Amount 2:
Amount 3:
Doc URL: https://w3.calema.ca.gov/operational/malhaz.nsf/f1841a103c102734882563e200760c4a/300bb8b0e76930e788257fc80031b434?OpenDocument
Spill Site:
Type:

Site: ***NRC***
Ocean Ave. across from Wilson Riverside CA

CHMIRS

ID:	01-5811	***Notified Date:***	10/13/200110:09:40 PM
Control No:	01-5811	***Notified Date Time:***	
Year:	2001	***County:***	Riverside County

California Hazardous Material Incident Report System

Contained:	Unknown	***Bbls:***	0
Substance:	Unknown Material;;;	***Cups:***	0
Incident Date:	10/13/200112:00:00 AM	***Cuft:***	0
No of Injuries:	0	***Gals:***	0
No of Fatals:	0	***Grams:***	0
No of Evacs:	0	***Lbs:***	0
Cleanup:	Co. HazMat	***Liters:***	0
Water:	No	***Oz:***	0
Water Way:		***Pts:***	0
City:	Riverside	***Qts:***	0
County:	Riverside County	***Sheen:***	0
Zip:		***Tons:***	0
Site:	Road,Other	***Unknown:***	Unknown

Admin Agency: Riverside City Fire Department
Location: Ocean Ave. across from Wilson
Description: Faxed to OES by NRC: The caller stated a private citizen discovered a yellow powder inside the community mail box. Source of material is unknown. Hazmat team is onsite and has taken a sample for testing. Also, the caller stated the material has been inside thre mailbox for approx one week.

Site: ***riv co fd***
murrieta rd 1/4 mile south of case rd perris CA 92570

CHMIRS

ID:	014329	***Notified Date:***	6/21/1996
Control No:	014329	***Notified Date Time:***	01:12:53 PM
Year:	1996	***County:***	RIVERSIDE

California Hazardous Material Incident Report System

Contained:	NO	***Incident Date:***	0858/6-21-96
Substance:	meth lab waste	***Injuries?:***	NO
Type:	PETROLEUM CHEMICAL	***Fatals?:***	NO
Qty:		***Evacs?:***	NO
Other:		***Cleanup:***	co health
Measure:		***Site:***	RD
Amount:	32 gallons	***City:***	perris
Water:	YES	***County:***	RIVERSIDE
Water Way:		***Zip:***	92570

Location: murrieta rd 1/4 mile south of case rd
Description: illegal dumping.

Site: ***SoCal Gas***
Cross street of Mildred St. and West of Murrieta St. Perris CA

CHMIRS

ID:	18-0320	***Notified Date:***	1/15/2018 5:02
Control No:	'18-0320	***Notified Date Time:***	
Year:	2018	***County:***	Riverside County

California Hazardous Material Incident Report System

Contained:	Yes	***Incident Date:***	1/15/2018

1 Substance:	Non PCB mineral oil	***Incident Time:***	430
1 Quantity:	10	***Spill Site:***	Residence
1 Measure:	Gal(s)	***Injuries?:***	No
1 Type:	PETROLEUM	***No of Injuries:***	
1 Pipeline:	No	***Fatals?:***	No
1 Vessel >= 300 Tons:	No	***No of Fatals:***	
1 Other:		***Evacs?:***	No
2 Substance:		***No of Evacs:***	
2 Quantity:		***Cleanup:***	CalTrans
2 Measure:		***Site:***	
2 Type:		***Cause:***	Collision
2 Other:		***Cause Other:***	
2 Pipeline:	No	***Drinking Wtr Imp:***	No
2 Vessel >= 300 Tons:	No	***Known Impact:***	None
3 Substance:		***Water:***	No
3 Quantity:		***Water Way:***	
3 Measure:		***City:***	Perris
3 Type:		***County:***	Riverside County
3 Other:		***Zip:***	
3 Pipeline:	No	***DOG No:***	
3 Vessel >= 300 Tons:	No		

Admin Agency:	Riverside County Environmental Health
Notification Area:	AA/CUPA,DTSC,RWQCB,US EPA,USFWS
Location:	Cross street of Mildred St. and West of Murrieta St.
Description:	RP states that 10 gallons of non PCB mineral oil was released onto the concrete and grass from a pad mounted transformer due to a car struck the pad. The release is contained and cleanup is enroute.

Main Page Information

On Scene:	
Other on Scene:	
Other Notified:	
Admin Agency:	
Admin Agency 2:	
Additional County:	
Document Title:	SPILL Report
Creation Date:	01/15/2018 05:02 AM
Received By:	
Person Notifying Cal OES:	
Phone No:	
Ext:	
Pag Cell:	
Water:	PETROLEUM
Cause Description for Other:	
Amount 1:	
Amount 2:	
Amount 3:	
Doc URL:	https://w3.calema.ca.gov/operational/malhaz.nsf/f1841a103c102734882563e200760c4a/eab928f9d5961ef7882582160047a093?OpenDocument
Spill Site:	Residence
Type:	

Site: ***RITCHIE BROS. AUCTIONEERS (AMERICA) INC.***
765 RIDER ST PERRIS CA 92571

EMISSIONS

2002 Criteria Data

Facility ID:	119642	***CERR Code:***	
Facility SIC Code:	7389	***TOGT:***	.0332
CO:	33	***ROGT:***	.03279828
Air Basin:	SC	***COT:***	
District:	SC	***NOXT:***	
COID:	RIV	***SOXT:***	
DISN:	SOUTH COAST AQMD	***PMT:***	
CHAPIS:		***PM10T:***	

2002 Toxic Data

Facility ID: 119642
Facility SIC Code: 7389
CO: 33
Air Basin: SC
District: SC
TS:
Health Risk Asmt:
Non-Cancer Chronic Haz Ind:
Non-Cancer Acute Haz Ind:
COID: RIV
DISN: SOUTH COAST AQMD
CHAPIS:
CERR Code:

2003 Criteria Data

Facility ID: 119642
Facility SIC Code: 7389
CO: 33
Air Basin: SC
District: SC
COID: RIV
DISN: SOUTH COAST AQMD
CHAPIS:
CERR Code:
TOGT: .033
ROGT: .04
COT:
NOXT:
SOXT:
PMT:
PM10T:

2003 Toxic Data

Facility ID: 119642
Facility SIC Code: 7389
CO: 33
Air Basin: SC
District: SC
TS:
Health Risk Asmt:
Non-Cancer Chronic Haz Ind:
Non-Cancer Acute Haz Ind:
COID: RIV
DISN: SOUTH COAST AQMD
CHAPIS:
CERR Code:

2006 Criteria Data

Facility ID: 119642
Facility SIC Code: 7389
CO: 33
Air Basin: SC
District: SC
COID: RIV
DISN: SOUTH COAST AQMD
CHAPIS:
CERR Code:
TOGT: 4.014206670969800430783297415544766233 23
ROGT: 3.904
COT: .232
NOXT: .858
SOXT: .004
PMT: .264
PM10T: .25294

2006 Toxic Data

Facility ID: 119642
Facility SIC Code: 7389
CO: 33
Air Basin: SC
District: SC
TS:
Health Risk Asmt:
Non-Cancer Chronic Haz Ind:
Non-Cancer Acute Haz Ind:
COID: RIV
DISN: SOUTH COAST AQMD
CHAPIS:
CERR Code:

2007 Criteria Data

Facility ID: 119642
Facility SIC Code: 7389
CO: 33
Air Basin: SC
District: SC
COID: RIV
CERR Code:
TOGT: 4.014206670969800430783297415544766233 23
ROGT: 3.904
COT: .232
NOXT: .858
SOXT: .004

DISN: SOUTH COAST AQMD
CHAPIS:
PMT: .264
PM10T: .25294

2007 Toxic Data

Facility ID: 119642
Facility SIC Code: 7389
CO: 33
Air Basin: SC
District: SC
TS:
Health Risk Asmt:
Non-Cancer Chronic Haz Ind:
Non-Cancer Acute Haz Ind:
COID: RIV
DISN: SOUTH COAST AQMD
CHAPIS:
CERR Code:

2008 Criteria Data

Facility ID: 119642
Facility SIC Code: 7389
CO: 33
Air Basin: SC
District: SC
COID: RIV
DISN: SOUTH COAST AQMD
CHAPIS:
CERR Code:
TOGT: 3.858986075310403202291066288639194605 27
ROGT: 3.7907
COT: .02712
NOXT: .10075
SOXT: .00045
PMT: .17396
PM10T: .1644865

2008 Toxic Data

Facility ID: 119642
Facility SIC Code: 7389
CO: 33
Air Basin: SC
District: SC
TS:
Health Risk Asmt:
Non-Cancer Chronic Haz Ind:
Non-Cancer Acute Haz Ind:
COID: RIV
DISN: SOUTH COAST AQMD
CHAPIS:
CERR Code:

2009 Criteria Data

Facility ID: 119642
Facility SIC Code: 7389
CO: 33
Air Basin: SC
District: SC
COID: RIV
DISN: SOUTH COAST AQMD
CHAPIS:
CERR Code:
TOGT: 2.137214843000831136812273607764322532 89
ROGT: 1.51474
COT: .02539
NOXT: .11
SOXT: .0005204
PMT: .12599
PM10T: .1199373

2009 Toxic Data

Facility ID: 119642
Facility SIC Code: 7389
CO: 33
Air Basin: SC
District: SC
TS:
Health Risk Asmt:
Non-Cancer Chronic Haz Ind:
Non-Cancer Acute Haz Ind:
COID: RIV
DISN: SOUTH COAST AQMD
CHAPIS:
CERR Code:

2010 Toxic Data

Facility ID: 119642
COID: RIV

Facility SIC Code: 7389
CO: 33
Air Basin: SC
District: SC
TS:
Health Risk Asmt:
Non-Cancer Chronic Haz Ind:
Non-Cancer Acute Haz Ind:
DISN: SOUTH COAST AQMD
CHAPIS:
CERR Code:

2011 Criteria Data

Facility ID: 119642
Facility SIC Code: 7389
CO: 33
Air Basin: SC
District: SC
COID: RIV
DISN: SOUTH COAST AQMD
CHAPIS:
CERR Code:
TOGT: .8454850306111725856004189669135848626 41
ROGT: .82624
COT: .0326
NOXT: .12418
SOXT: .00073
PMT: .08457
PM10T: .08077304

2011 Toxic Data

Facility ID: 119642
Facility SIC Code: 7389
CO: 33
Air Basin: SC
District: SC
TS:
Health Risk Asmt:
Non-Cancer Chronic Haz Ind:
Non-Cancer Acute Haz Ind:
COID: RIV
DISN: SOUTH COAST AQMD
CHAPIS:
CERR Code:

2012 Criteria Data

Facility ID: 119642
Facility SIC Code: 7389
CO: 33
Air Basin: SC
District: SC
COID: RIV
DISN: SOUTH COAST AQMD
CHAPIS:
CERR Code:
TOGT: 1.0871723447534508497773439520968882689 1
ROGT: 1.06724
COT: .02508
NOXT: .09515
SOXT: .00038448
PMT: .07528
PM10T: .07170316

2012 Toxic Data

Facility ID: 119642
Facility SIC Code: 7389
CO: 33
Air Basin: SC
District: SC
TS:
Health Risk Asmt:
Non-Cancer Chronic Haz Ind:
Non-Cancer Acute Haz Ind:
COID: RIV
DISN: SOUTH COAST AQMD
CHAPIS:
CERR Code:

2013 Criteria Data

Facility ID: 119642
Facility SIC Code: 7389
CO: 33
Air Basin: SC
District: SC
COID: RIV
DISN: SOUTH COAST AQMD
CERR Code:
TOGT: 2.153718922216958979865575926976422776 63
ROGT: 2.12308
COT: .03637
NOXT: .08369
SOXT: .00019
PMT: .1131

CHAPIS:

PM10T: .10784424

2013 Toxic Data

Facility ID: 119642
Facility SIC Code: 7389
CO: 33
Air Basin: SC
District: SC
TS:
Health Risk Asmt:
Non-Cancer Chronic Haz Ind:
Non-Cancer Acute Haz Ind:

COID: RIV
DISN: SOUTH COAST AQMD
CHAPIS:
CERR Code:

2016 Criteria Data

Facility ID: 119642
Facility SIC Code: 7389
CO: 33
Air Basin: SC
District: SC
COID: RIV
DISN: SOUTH COAST AQMD
CHAPIS:

CERR CODE:
TOGT: 1.0934545454545454545454545454545454555
ROGT: 1.09152
COT: .0076
NOXT: .02
SOXT: .00013
PMT: .0030257
PM10T: .002751372

2016 Toxic Data

Facility ID: 119642
Facility SIC Code: 7389
CERR CODE:
COID: RIV
CO: 33
DISN: SOUTH COAST AQMD
CHAPIS:

TS:
HRA:
CH Index:
AH Index:
Air Basin: SC
District: SC

Site: ***EMWD MURRIETA ROAD BOOSTER PLANT***
25877 MURRIETA RD PERRIS CA 92570

FINDS/FRS

Registry ID: 110066476575
FIPS Code:
Program Acronyms: CA-ENVIROVIEW
HUC Code:
Site Type Name: STATIONARY
Location Description:
Supplemental Location:
Create Date: 14-OCT-2015 11:39:46
Update Date:
Interest Types: STATE MASTER
SIC Codes: 4941
SIC Code Descriptions: WATER SUPPLY
NAICS Codes:
NAICS Code Descriptions:
Conveyor:
Federal Facility Code:
Federal Agency Name:
Tribal Land Code:
Tribal Land Name:
Congressional Dist No.:
Census Block Code:
EPA Region Code: 09
County Name: RIVERSIDE COUNTY
US/Mexico Border Ind:
Latitude:
Longitude:
Reference Point:
Coord Collection Method:
Accuracy Value:

Datum: NAD83
Source:
Facility Detail Rprt URL: http://ofmpub.epa.gov/enviro/fii_query_detail.disp_program_facility?p_registry_id=110066476575

Site: ***TRACT NO. 31678***
NEC SAN JACINTO AVENA WILSON AV PERRIS CA 92570

FINDS/FRS

Registry ID: 110065526149
FIPS Code:
Program Acronyms: CA-ENVIROVIEW
HUC Code:
Site Type Name: STATIONARY
Location Description:
Supplemental Location:
Create Date: 13-OCT-2015 11:01:45
Update Date:
Interest Types: STATE MASTER
SIC Codes:
SIC Code Descriptions:
NAICS Codes:
NAICS Code Descriptions:
Conveyor:
Federal Facility Code:
Federal Agency Name:
Tribal Land Code:
Tribal Land Name:
Congressional Dist No.:
Census Block Code:
EPA Region Code: 09
County Name: RIVERSIDE COUNTY
US/Mexico Border Ind:
Latitude:
Longitude:
Reference Point:
Coord Collection Method:
Accuracy Value:
Datum: NAD83
Source:
Facility Detail Rprt URL: http://ofmpub.epa.gov/enviro/fii_query_detail.disp_program_facility?p_registry_id=110065526149

Site: ***TRACTNAPERRIS***
BETWEEN WILSON AND MURRIETA PERRIS CA 92570

FINDS/FRS

Registry ID: 110066736848
FIPS Code:
Program Acronyms: CA-ENVIROVIEW
HUC Code:
Site Type Name: STATIONARY
Location Description:
Supplemental Location:
Create Date: 14-OCT-2015 12:48:07
Update Date:
Interest Types: STATE MASTER
SIC Codes: 1521
SIC Code Descriptions: GENERAL CONTRACTORS-SINGLE-FAMILY HOUSES
NAICS Codes:
NAICS Code Descriptions:
Conveyor:
Federal Facility Code:
Federal Agency Name:
Tribal Land Code:
Tribal Land Name:
Congressional Dist No.:
Census Block Code:
EPA Region Code: 09
County Name: RIVERSIDE COUNTY
US/Mexico Border Ind:

Latitude:
Longitude:
Reference Point:
Coord Collection Method:
Accuracy Value:
Datum: NAD83
Source:
Facility Detail Rprt URL: http://ofmpub.epa.gov/enviro/fii_query_detail.disp_program_facility?p_registry_id=110066736848

Site:
SUNSET AVENUE 6/10MI NORTH WILSON STREET UNINC CA

HIST CHMIRS

OES Control NO:	9099205	***Incident Date:***	5/16/1990
Release Factors:	Abandoned,Intentional Act,Suspicious Act	***Date Reported:***	6/8/1990
Release Text:		***Fatalities:***	0
Equipm Involved:		***Other Injury:***	0
Action Taken Text:		***Other Decon:***	0
Chemicals:	ACETONE	***Other Fatal:***	0
Case Number:		***Vehicle:***	
HazMat Other:		***State:***	
HM Injury:	0	***CA DOT PUC ICC:***	
Decon:	0	***Company Name:***	
Agency Name:	CHP	***County:***	RIVERSIDE
HazMat Pers:			
Action Taken:	Investigate,Traffic Control		
More than three involved?:	2		

Site: ***EMWD Murrieta Booster***
25877 Murrieta Rd Perris CA 92570

RIVERSIDE HZH

Appendix: Database Descriptions

Environmental Risk Information Services (ERIS) can search the following databases. The extent of historical information varies with each database and current information is determined by what is publicly available to ERIS at the time of update. ERIS updates databases as set out in ASTM Standard E1527-13, Section 8.1.8 Sources of Standard Source Information:

"Government information from nongovernmental sources may be considered current if the source updates the information at least every 90 days, or, for information that is updated less frequently than quarterly by the government agency, within 90 days of the date the government agency makes the information available to the public."

Standard Environmental Record Sources

Federal

National Priority List: NPL

National Priorities List (Superfund)-NPL: EPA's (United States Environmental Protection Agency) list of the most serious uncontrolled or abandoned hazardous waste sites identified for possible long-term remedial action under the Superfund program. The NPL, which EPA is required to update at least once a year, is based primarily on the score a site receives from EPA's Hazard Ranking System. A site must be on the NPL to receive money from the Superfund Trust Fund for remedial action.

Government Publication Date: Oct 10, 2018

National Priority List - Proposed: PROPOSED NPL

Includes sites proposed (by the EPA, the state, or concerned citizens) for addition to the NPL due to contamination by hazardous waste and identified by the Environmental Protection Agency (EPA) as a candidate for cleanup because it poses a risk to human health and/or the environment.

Government Publication Date: Oct 10, 2018

Deleted NPL: DELETED NPL

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.

Government Publication Date: Oct 10, 2018

SEMS List 8R Active Site Inventory: SEMS

The Superfund Program has deployed the Superfund Enterprise Management System (SEMS), which integrates multiple legacy systems into a comprehensive tracking and reporting tool. This inventory contains active sites evaluated by the Superfund program that are either proposed to be or are on the National Priorities List (NPL) as well as sites that are in the screening and assessment phase for possible inclusion on the NPL. The Active Site Inventory Report displays site and location information at active SEMS sites. An active site is one at which site assessment, removal, remedial, enforcement, cost recovery, or oversight activities are being planned or conducted.

Government Publication Date: Aug 13, 2018

Inventory of Open Dumps, June 1985: ODI

The Resource Conservation and Recovery Act (RCRA) provides for publication of an inventory of open dumps. The Act defines "open dumps" as facilities which do not comply with EPA's "Criteria for Classification of Solid Waste Disposal Facilities and Practices" (40 CFR 257).

Government Publication Date: Jun 1985

SEMS List 8R Archive Sites: SEMS ARCHIVE

The Superfund Enterprise Management System (SEMS) Archived Site Inventory displays site and location information at sites archived from SEMS. An archived site is one at which EPA has determined that assessment has been completed and no further remedial action is planned under the Superfund program at this time.

Government Publication Date: Aug 13, 2018

EPA Report on the Status of Open Dumps on Indian Lands: IODI

Public Law 103-399, The Indian Lands Open Dump Cleanup Act of 1994, enacted October 22, 1994, identified congressional concerns that solid waste open dump sites located on American Indian or Alaska Native (AI/AN) lands threaten the health and safety of residents of those lands and contiguous areas. The purpose of the Act is to identify the location of open dumps on Indian lands, assess the relative health and environment hazards posed by those sites, and provide financial and technical assistance to Indian tribal governments to close such dumps in compliance with Federal standards and regulations or standards promulgated by Indian Tribal governments or Alaska Native entities.

Government Publication Date: Dec 31, 1998

Comprehensive Environmental Response, Compensation and Liability Information System - CERCLIS: CERCLIS

Superfund is a program administered by the United States Environmental Protection Agency (EPA) to locate, investigate, and clean up the worst hazardous waste sites throughout the United States. CERCLIS is a database of potential and confirmed hazardous waste sites at which the EPA Superfund program has some involvement. It contains sites that are either proposed to be or are on the National Priorities List (NPL) as well as sites that are in the screening and assessment phase for possible inclusion on the NPL. The EPA administers the Superfund program in cooperation with individual states and tribal governments; this database is made available by the EPA.

Government Publication Date: Oct 25, 2013

CERCLIS - No Further Remedial Action Planned: CERCLIS NFRAP

An archived site is one at which EPA has determined that assessment has been completed and no further remedial action is planned under the Superfund program at this time. The Archive designation means 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 this site on the National Priorities List (NPL). This 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 a potential NPL site.

Government Publication Date: Oct 25, 2013

CERCLIS Liens: CERCLIS LIENS

A Federal Superfund lien exists at any property where EPA has incurred Superfund costs to address contamination ("Superfund site") and has provided notice of liability to the property owner. A Federal CERCLA ("Superfund") lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. This database is made available by the United States Environmental Protection Agency (EPA).

Government Publication Date: Jan 30, 2014

RCRA CORRACTS-Corrective Action: RCRA CORRACTS

RCRA Info 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. At these sites, the Corrective Action Program ensures that cleanups occur. EPA and state regulators work with facilities and communities to design remedies based on the contamination, geology, and anticipated use unique to each site.

Government Publication Date: Aug 2, 2018

RCRA non-CORRACTS TSD Facilities: RCRA TSD

RCRA Info 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. This database includes Non-Corrective Action sites listed as treatment, storage and/or disposal facilities of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA).

Government Publication Date: Aug 2, 2018

RCRA Generator List: RCRA LQG

RCRA Info 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. RCRA Info replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System (RCRIS) and the Biennial Reporting System (BRS). A hazardous waste generator is any person or site whose processes and actions create hazardous waste (see 40 CFR 260.10). Large Quantity Generators (LQGs) generate 1,000 kilograms per month or more of hazardous waste or more than one kilogram per month of acutely hazardous waste.

Government Publication Date: Aug 2, 2018

RCRA Small Quantity Generators List: RCRA SQG

RCRA Info is the 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. RCRA Info replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System (RCRIS) and the Biennial Reporting System (BRS). A hazardous waste generator is any person or site whose processes and actions create hazardous waste (see 40 CFR 260.10). Small Quantity Generators (SQGs) generate more than 100 kilograms, but less than 1,000 kilograms, of hazardous waste per month.

Government Publication Date: Aug 2, 2018

RCRA Conditionally Exempt Small Quantity Generators List: RCRA CESQG

RCRA Info is the 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. RCRA Info replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System (RCRIS) and the Biennial Reporting System (BRS). A hazardous waste generator is any person or site whose processes and actions create hazardous waste (see 40 CFR 260.10). Conditionally Exempt Small Quantity Generators (CESQG) generate 100 kilograms or less per month of hazardous waste or one kilogram or less per month of acutely hazardous waste.

Government Publication Date: Aug 2, 2018

RCRA Non-Generators: RCRA NON GEN

RCRA Info 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. RCRA Info replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System (RCRIS) and the Biennial Reporting System (BRS). A hazardous waste generator is any person or site whose processes and actions create hazardous waste (see 40 CFR 260.10). Non-Generators do not presently generate hazardous waste.

Government Publication Date: Aug 2, 2018

Federal Engineering Controls-ECs: FED ENG

Engineering controls (ECs) encompass a variety of engineered and constructed physical barriers (e.g., soil capping, sub-surface venting systems, mitigation barriers, fences) to contain and/or prevent exposure to contamination on a property. This database is made available by the United States Environmental Protection Agency (EPA).

Government Publication Date: Jan 20, 2016

Federal Institutional Controls- ICs: FED INST

Institutional controls are non-engineered instruments, such as administrative and legal controls, that help minimize the potential for human exposure to contamination and/or protect the integrity of the remedy. Although it is EPA's (United States Environmental Protection Agency) expectation that treatment or engineering controls will be used to address principal threat wastes and that groundwater will be returned to its beneficial use whenever practicable, ICs play an important role in site remedies because they reduce exposure to contamination by limiting land or resource use and guide human behavior at a site.

Government Publication Date: Jan 20, 2016

Emergency Response Notification System: ERNS 1982 TO 1986

Database of oil and hazardous substances spill reports controlled by the National Response Center. The primary function of the National Response Center is to serve as the sole national point of contact for reporting oil, chemical, radiological, biological, and etiological discharges into the environment anywhere in the United States and its territories.

Government Publication Date: 1982-1986

Emergency Response Notification System: ERNS 1987 TO 1989

Database of oil and hazardous substances spill reports controlled by the National Response Center. The primary function of the National Response Center is to serve as the sole national point of contact for reporting oil, chemical, radiological, biological, and etiological discharges into the environment anywhere in the United States and its territories.

Government Publication Date: 1987-1989

Emergency Response Notification System: ERNS

Database of oil and hazardous substances spill reports controlled by the National Response Center. The primary function of the National Response Center is to serve as the sole national point of contact for reporting oil, chemical, radiological, biological, and etiological discharges into the environment anywhere in the United States and its territories. This database is made available by the United States Environmental Protection Agency (EPA).

Government Publication Date: Sep 24, 2018

The Assessment, Cleanup and Redevelopment Exchange System (ACRES) Brownfield Database: FED BROWNFIELDS

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 protects the environment, reduces blight, and takes development pressures off greenspaces and working lands. This database is made available by the United States Environmental Protection Agency (EPA).

Government Publication Date: Feb 20, 2018

FEMA Underground Storage Tank Listing: FEMA UST

The Federal Emergency Management Agency (FEMA) of the Department of Homeland Security maintains a list of FEMA owned underground storage tanks.

Government Publication Date: Dec 31, 2017

LIEN on Property: SEMS LIEN

The EPA Superfund Enterprise Management System (SEMS) provides LIEN information on properties under the EPA Superfund Program.

Government Publication Date: Aug 13, 2018

Superfund Decision Documents: SUPERFUND ROD

This database contains a listing of decision documents for Superfund sites. Decision documents serve to provide the reasoning for the choice of (or) changes to a Superfund Site cleanup plan. The decision documents include Records of Decision (ROD), ROD Amendments, Explanations of Significant Differences (ESD), along with other associated memos and files. This information is maintained and made available by the US EPA (Environmental Protection Agency).

Government Publication Date: Nov 14, 2018

State

State Response Sites: RESPONSE

A list of identified confirmed release sites where the Department of Toxic Substances Control (DTSC) is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk. This database is state equivalent NPL.

Government Publication Date: Jul 18, 2018

EnviroStor Database: ENVIROSTOR

The EnviroStor Data Management System is made available by the Department of Toxic Substances Control (DTSC). Includes Corrective Action sites, Tiered Permit sites, Historical Sites and Evaluation/Investigation sites. This database is state equivalent CERCLIS.

Government Publication Date: Jul 18, 2018

Delisted State Response Sites: DELISTED ENVS

Sites removed from the list of State Response Sites made available by the EnviroStor Data Management System, Department of Toxic Substances Control (DTSC).

Government Publication Date: Jul 18, 2018

Solid Waste Information System (SWIS): SWF/LF

The Solid Waste Information System (SWIS) database made available by the Department of Resources Recycling and Recovery (CalRecycle) contains information on solid waste facilities, operations, and disposal sites throughout the State of California. The types of facilities found in this database include landfills, transfer stations, material recovery facilities, composting sites, transformation facilities, waste tire sites, and closed disposal sites.

Government Publication Date: Nov 23, 2018

EnviroStor Hazardous Waste Facilities: HWP

A list of hazardous waste facilities including permitted, post-closure and historical facilities found in the Department of Toxic Substances Control (DTSC) EnviroStor database.

Government Publication Date: Aug 23, 2018

Land Disposal Sites: LDS

Land Disposal Sites in GeoTracker, the State Water Resources Control Board (SWRCB)'s data management system. The Land Disposal program regulates of waste discharge to land for treatment, storage and disposal in waste management units. Waste management units include waste piles, surface impoundments, and landfills.

Government Publication Date: Jul 19, 2018

Sites Listed in the Solid Waste Assessment Test (SWAT) Program Report: SWAT

In a 1993 Memorandum of Understanding, the State Water Resources Control Board (SWRCB) agreed to submit a comprehensive report on the Solid Waste Assessment Test (SWAT) Program to the California Integrated Waste Management Board (CIWMB). This report summarizes the work completed to date on the SWAT Program, and addresses both the impacts that leakage from solid waste disposal sites (SWDS) may have upon waters of the State and the actions taken to address such leakage.

Government Publication Date: Dec 31, 1995

Leaking Underground Fuel Tank Reports: LUST

List of Leaking Underground Storage Tanks within the Cleanup Sites data in GeoTracker database. GeoTracker is the State Water Resources Control Board's (SWRCB) data management system for managing sites that impact groundwater, especially those that require groundwater cleanup (Underground Storage Tanks, Department of Defense and Site Cleanup Program) as well as permitted facilities such as operating Underground Storage Tanks. The Leak Prevention Program that overlooks LUST sites is the SWRCB in California's Environmental Protection Agency.

Government Publication Date: Nov 30, 2018

Delisted Leaking Storage Tanks: DELISTED LST

List of Leaking Underground Storage Tanks (LUST) cleanup sites removed from GeoTracker, the State Water Resources Control Board (SWRCB)'s database system, as well as sites removed from the SWRCB's list of UST Case closures.

Government Publication Date: Nov 30, 2018

Permitted Underground Storage Tank (UST) in GeoTracker: UST

List of Permitted Underground Storage Tank (UST) sites made available by the State Water Resources Control Board (SWRCB) in California's Environmental Protection Agency (EPA).

Government Publication Date: Oct 2, 2018

Solid Waste Disposal Sites with Waste Constituents Above Hazardous Waste Levels: SWRCB SWF

This is a list of solid waste disposal sites identified by California State Water Resources Control Board with waste constituents above hazardous waste levels outside the waste management unit.

Government Publication Date: Sep 20, 2006

Proposed Closure of Underground Storage Tank Cases: UST CLOSURE

List of UST cases that are being considered for closure by either the California Environmental Protection Agency, State Water Resources Control Board or the Executive Director that have been posted for a 60-day public comment period.

Government Publication Date: Dec 11, 2018

Historical Hazardous Substance Storage Information Database: HHSS

The Historical Hazardous Substance Storage database contains information collected in the 1980s from facilities that stored hazardous substances. The information was originally collected on paper forms, was later transferred to microfiche, and recently indexed as a searchable database. When using this database, please be aware that it is based upon self-reported information submitted by facilities which has not been independently verified. It is unlikely that every facility responded to the survey and the database should not be expected to be a complete inventory of all facilities that were operating at that time. This database is maintained by the California State Water Resources Control Board's (SWRCB) Geotracker.

Government Publication Date: Aug 27, 2015

Aboveground Storage Tanks: AST

A statewide list from 2009 of aboveground storage tanks (ASTs) made available by the Cal FIRE Office of the State Fire Marshal (OSFM). This list is no longer maintained or updated by the Cal FIRE OSFM.

Government Publication Date: Aug 31, 2009

Delisted Storage Tanks: DELISTED TNK

This database contains a list of storage tank sites that were removed by the State Water Resources Control Board (SWRCB) in California's Environmental Protection Agency (EPA) and the Cal FIRE Office of State Fire Marshal (OSFM).

Government Publication Date: Oct 2, 2018

California Environmental Reporting System (CERS) Tanks: CERS TANK

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. The CalEPA oversees the statewide implementation of the Unified Program which applies regulatory standards to protect Californians from hazardous waste and materials.

Government Publication Date: Nov 29, 2018

Site Mitigation and Brownfields Reuse Program Facility Sites with Land Use Restrictions: LUR

The Department of Toxic Substances Control (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 land use restrictions that are active. Some sites have multiple land use restrictions.

Government Publication Date: Jul 18, 2018

Hazardous Waste Management Program Facility Sites with Deed / Land Use Restrictions: HLUR

The Department of Toxic Substances Control (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.

Government Publication Date: Aug 8, 2018

Deed Restrictions and Land Use Restrictions: DEED

List of Deed Restrictions, Land Use Restrictions and Covenants in GeoTracker made available by the State Water Resources Control Board (SWRCB) in California's Environmental Protection Agency. A deed restriction (land use covenant) may be required to facilitate the remediation of past environmental contamination and to protect human health and the environment by reducing the risk of exposure to residual hazardous materials.

Government Publication Date: Jul 27, 2018

Voluntary Cleanup Program: VCP

List of sites in the Voluntary Cleanup Program made available by the Department of Toxic Substances and Control (DTSC). The Voluntary Cleanup Program was designed to respond to lower priority sites. Under the Voluntary Cleanup Program, DTSC enters site-specific agreements with project proponents for DTSC oversight of site assessment, investigation, and/or removal or remediation activities, and the project proponents agree to pay DTSC's reasonable costs for those services.

Government Publication Date: Jul 18, 2018

GeoTracker Cleanup Sites Data: CLEANUP SITES

A list of cleanup sites in the state of California made available by The State Water Resources Control Board (SWRCB) of the California Environmental Protection Agency (EPA). SWRCB tracks leaking underground storage tank cleanups as well as other water board cleanups.

Government Publication Date: Nov 30, 2018

Delisted California Environmental Reporting System (CERS) Tanks: DELISTED CTNK

This database contains a list of Aboveground Petroleum Storage and Underground Storage Tank sites that were removed from in the California Environmental Protection Agency (CalEPA) Regulated Site Portal.

Government Publication Date: Nov 29, 2018

Historical Hazardous Substance Storage Container Information - Facility Summary: HIST TANK

The State Water Resources Control Board maintained the Hazardous Substance Storage Containers listing and inventory in th 1980s. This facility summary lists historic tank sites where the following container types were present: farm motor vehicle fuel tanks; waste tanks; sumps; pits, ponds, lagoons, and others; and all other product tanks. This set, published in May 1988, lists facility and owner information, as well as the number of containers. This data is historic and will not be updated.

Government Publication Date: May 27, 1988

Tribal

Leaking Underground Storage Tanks (LUSTs) on Indian Lands: INDIAN LUST

LUSTs on Tribal/Indian Lands in Region 9, which includes California.

Government Publication Date: Dec 31, 2017

Underground Storage Tanks (USTs) on Indian Lands: INDIAN UST

USTs on Tribal/Indian Lands in Region 9, which includes California.

Government Publication Date: Dec 31, 2017

Delisted Tribal Leaking Storage Tanks: DELISTED ILST

Leaking Underground Storage Tank facilities which have been removed from the Regional Tribal LUST lists made available by the EPA.

Government Publication Date: Oct 14, 2017

Delisted Tribal Underground Storage Tanks: DELISTED IUST

Underground Storage Tank facilities which have been removed from the Regional Tribal UST lists made available by the EPA.

Government Publication Date: Oct 14, 2017

County

Delisted County Records: DELISTED COUNTY

Records removed from county or CUPA databases. Records may be removed from the county lists made available by the respective county departments because they are inactive, or because they have been deemed to be below reportable thresholds.

Government Publication Date: Dec 3, 2018

Riverside County Local Oversight Program List: RIVERSIDE LOP

A list of Leaking Underground Storage Tank (LUST) facilities in Riverside County. This list is made available by Riverside County Department of Environmental Health. Environmental Cleanup Program provides oversight of assessments and cleanups at properties that have been, or may have been, contaminated with hazardous substances from LUSTs or releases associated with other commercial/industrial use.

Government Publication Date: Nov 15, 2018

Riverside County Underground Storage Tanks List: UST RIVERSIDE

A list of registered Underground Storage Tank (UST) sites in Riverside County. This list is made available by Riverside County Department of Environmental Health. The Hazardous Materials Management Branch (HMMB) regulates and oversees the inspections of constructions, repairs, upgrades, system operation and removal of UST systems.

Government Publication Date: Nov 15, 2018

Additional Environmental Record Sources

Federal

Facility Registry Service/Facility Index: FINDS/FRS

The US Environmental Protection Agency (EPA)'s Facility Registry System (FRS) is a centrally managed database that identifies facilities, sites or places subject to environmental regulations or of environmental interest. FRS creates high-quality, accurate, and authoritative facility identification records through rigorous verification and management procedures that incorporate information from program national systems, state master facility records, data collected from EPA's Central Data Exchange registrations and data management personnel.

Government Publication Date: Oct 17, 2018

Toxics Release Inventory (TRI) Program: TRIS

The EPA's Toxics Release Inventory (TRI) is a database containing data on disposal or other releases of over 650 toxic chemicals from thousands of U.S. facilities and information about how facilities manage those chemicals through recycling, energy recovery, and treatment. One of TRI's primary purposes is to inform communities about toxic chemical releases to the environment.

Government Publication Date: Dec 31, 2017

Hazardous Materials Information Reporting System: HMIRS

US DOT - Department of Transportation Pipeline and Hazardous Materials Safety Administration (PHMSA) Incidents Reports Database taken from Hazmat Intelligence Portal, U.S. Department of Transportation.

Government Publication Date: May 23, 2018

National Clandestine Drug Labs: NCDL

The U.S. Department of Justice ("the Department") provides this data 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.

Government Publication Date: Jul 18, 2018

Toxic Substances Control Act: TSCA

The Environmental Protection Agency (EPA) is amending the Toxic Substances Control Act (TSCA) section 8(a) Inventory Update Reporting (IUR) rule and changing its name to the Chemical Data Reporting (CDR) rule.
The CDR enables EPA to collect and publish information on the manufacturing, processing, and use of commercial chemical substances and mixtures (referred to hereafter as chemical substances) on the TSCA Chemical Substance Inventory (TSCA Inventory). This includes current information on chemical substance production volumes, manufacturing sites, and how the chemical substances are used. This information helps the Agency determine whether people or the environment are potentially exposed to reported chemical substances. EPA publishes submitted CDR data that is not Confidential Business Information (CBI).

Government Publication Date: Jun 30, 2017

Hist TSCA: HIST TSCA

The Environmental Protection Agency (EPA) is amending the Toxic Substances Control Act (TSCA) section 8(a) Inventory Update Reporting (IUR) rule and changing its name to the Chemical Data Reporting (CDR) rule.
The 2006 IUR data summary report includes information about chemicals manufactured or imported in quantities of 25,000 pounds or more at a single site during calendar year 2005. In addition to the basic manufacturing information collected in previous reporting cycles, the 2006 cycle is the first time EPA collected information to characterize exposure during manufacturing, processing and use of organic chemicals. The 2006 cycle also is the first time manufacturers of inorganic chemicals were required to report basic manufacturing information.
Government Publication Date: Dec 31, 2006

FTTS Administrative Case Listing: FTTS ADMIN
An administrative case listing from the Federal Insecticide, Fungicide, & Rodenticide Act (FIFRA) and Toxic Substances Control Act (TSCA), together known as FTTS. This database was obtained from the Environmental Protection Agency's (EPA) National Compliance Database (NCDB). The FTTS and NCDB was shut down in 2006.
Government Publication Date: Jan 19, 2007

FTTS Inspection Case Listing: FTTS INSP
An inspection case listing from the Federal Insecticide, Fungicide, & Rodenticide Act (FIFRA) and Toxic Substances Control Act (TSCA), together known as FTTS. This database was obtained from the Environmental Protection Agency's (EPA) National Compliance Database (NCDB). The FTTS and NCDB was shut down in 2006.
Government Publication Date: Jan 19, 2007

Potentially Responsible Parties List: PRP
Early in the cleanup process, the Environmental Protection Agency (EPA) conducts a search to find the potentially responsible parties (PRPs). EPA looks for evidence to determine liability by matching wastes found at the site with parties that may have contributed wastes to the site.
Government Publication Date: Aug 13, 2018

State Coalition for Remediation of Drycleaners Listing: SCRD DRYCLEANER
The State Coalition for Remediation of Drycleaners (SCRD) was established in 1998, with support from the U.S. Environmental Protection Agency (EPA) Office of Superfund Remediation and Technology Innovation. Coalition members are states with mandated programs and funding for drycleaner site remediation. Current members are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.
Government Publication Date: Nov 08, 2017

Integrated Compliance Information System (ICIS): ICIS
The Integrated Compliance Information System (ICIS) is a system that provides information for the Federal Enforcement and Compliance (FE&C) and the National Pollutant Discharge Elimination System (NPDES) programs. The FE&C component supports the Environmental Protection Agency's (EPA) Civil Enforcement and Compliance program activities. These activities include Compliance Assistance, Compliance Monitoring and Enforcement. The NPDES program supports tracking of NPDES permits, limits, discharge monitoring data and other program reports.
Government Publication Date: Nov 18, 2016

Drycleaner Facilities: FED DRYCLEANERS
A list of drycleaner facilities from the Integrated Compliance Information System (ICIS). The Environmental Protection Agency (EPA) tracks facilities that possess NAIC and SIC codes that classify businesses as drycleaner establishments.
Government Publication Date: May 29, 2018

Delisted Drycleaner Facilities: DELISTED FED DRY
List of sites removed from the list of Drycleaner Facilities (sites in the EPA's Integrated Compliance Information System (ICIS) with NAIC or SIC codes identifying the business as a drycleaner establishment).
Government Publication Date: May 29, 2018

Formerly Used Defense Sites: FUDS
Formerly Used Defense Sites (FUDS) are properties that were formerly owned by, leased to, or otherwise possessed by and under the jurisdiction of the Secretary of Defense prior to October 1986, where the Department of Defense (DoD) is responsible for an environmental restoration. This list is published by the U.S. Army Corps of Engineers.
Government Publication Date: Oct 23, 2018

Material Licensing Tracking System (MLTS): MLTS
A list of sites that store radioactive material subject to the Nuclear Regulatory Commission (NRC) licensing requirements. This list is maintained by the NRC. As of September 2016, the NRC no longer releases location information for sites. Site locations were last received in July 2016.

Government Publication Date: Nov 1, 2018

Historic Material Licensing Tracking System (MLTS) sites: HIST MLTS

A historic list of sites that have inactive licenses and/or removed from the Material Licensing Tracking System (MLTS). In some cases, a site is removed from the MLTS when the state becomes an "Agreement State". An Agreement State is a State that has signed an agreement with the Nuclear Regulatory Commission (NRC) authorizing the State to regulate certain uses of radioactive materials within the State.

Government Publication Date: Jan 31, 2010

Mines Master Index File: MINES

The Master Index File (MIF) contains mine identification numbers issued by the Department of Labor Mine Safety and Health Administration (MSHA) for mines active or opened since 1971. Note that addresses may or may not correspond with the physical location of the mine itself.

Government Publication Date: Jan 30, 2018

Alternative Fueling Stations: ALT FUELS

List of alternative fueling stations made available by the US Department of Energy's Office of Energy Efficiency & Renewable Energy. Includes Biodiesel stations, Ethanol (E85) stations, Liquefied Petroleum Gas (Propane) stations, Ethanol (E85) stations, Natural Gas stations, Hydrogen stations, and Electric Vehicle Supply Equipment (EVSE). The National Renewable Energy Laboratory (NREL) obtains information about new stations from trade media, Clean Cities coordinators, a Submit New Station form on the Station Locator website, and through collaborating with infrastructure equipment and fuel providers, original equipment manufacturers (OEMs), and industry groups.

Government Publication Date: Oct 16, 2018

Registered Pesticide Establishments: SSTS

List of active EPA-registered foreign and domestic pesticide-producing and device-producing establishments based on data from the Section Seven Tracking System (SSTS). The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Section 7 requires that facilities producing pesticides, active ingredients, or devices be registered. The list of establishments is made available by the EPA.

Government Publication Date: Mar 1, 2018

Polychlorinated Biphenyl (PCB) Notifiers: PCB

Facilities included in the national list of facilities that have notified the United States Environmental Protection Agency (EPA) of Polychlorinated Biphenyl (PCB) activities. Any company or person storing, transporting or disposing of PCBs or conducting PCB research and development must notify the EPA and receive an identification number.

Government Publication Date: Sep 14, 2018

State

Drycleaner Facilities: DRYCLEANERS

A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial, linen supply, commercial laundry, dry cleaning and pressing machines - Coin Operated Laundry and Dry Cleaning. This is provided by the Department of Toxic Substance Control.

Government Publication Date: Oct 18, 2018

Delisted Drycleaners: DELISTED DRYCLEANERS

Sites removed from the list of drycleaner related facilities that have EPA ID numbers, made available by the California Department of Toxic Substance Control.

Government Publication Date: Oct 18, 2018

Non-Toxic Dry Cleaning Incentive Program: DRYC GRANT

A list of grant recipients of the Non-Toxic Dry Cleaning Incentive Program made available by the California Air Resources Board (CARB). The program provides grants to eligible dry cleaning businesses to assist them in transitioning away from PERC machines to alternative non-toxic and non-smog forming technologies.

Government Publication Date: Feb 28, 2018

Hazardous Waste and Substances Site List - Site Cleanup: HWSS CLEANUP

The Hazardous Waste and Substances Sites (Cortese) List is a planning document used by the State, local agencies and developers to comply with the California Environmental Quality Act requirements in providing information about the location of hazardous materials release sites. This list is published by California Department of Toxic Substance Control.

Government Publication Date: Dec 4, 2018

List of Hazardous Waste Facilities Subject to Corrective Action: DTSC HWF

This is a list of hazardous waste facilities identified in Health and Safety Code (HSC) § 25187.5. These facilities are those where Department of Toxic Substances Control (DTSC) has taken or contracted for corrective action because a facility owner/operator has failed to comply with a date for taking corrective action in an order issued under HSC § 25187, or because DTSC determined that immediate corrective action was necessary to abate an imminent or substantial endangerment.

Government Publication Date: Jul 18, 2016

EnviroStor Inspection, Compliance, and Enforcement: INSP COMP ENF

A list of permitted facilities with inspections and enforcements tracked in the Department of Toxic Substance Control (DTSC) EnviroStor.

Government Publication Date: Oct 2, 2018

School Property Evaluation Program Sites: SCH

A list of sites registered with The Department of Toxic Substances Control (DTSC) School Property Evaluation and Cleanup (SPEC) Division. SPEC is responsible for assessing, investigating and cleaning up proposed school sites. The Division ensures that selected properties are free of contamination or, if the properties were previously contaminated, that they have been cleaned up to a level that protects the students and staff who will occupy the new school.

Government Publication Date: Jul 18, 2018

California Hazardous Material Incident Report System (CHMIRS): CHMIRS

A list of reported hazardous material incidents, spills, and releases from the California Hazardous Material Incident Report System (CHMIRS). This list has been made available by the California Office of Emergency Services (OES).

Government Publication Date: Jun 19, 2018

Hazardous Waste Manifest Data: HAZNET

A list of hazardous waste manifests received each year by Department of Toxic Substances Control (DTSC). The volume of manifests is typically 900,000 - 1,000,000 annually, representing approximately 450,000 - 500,000 shipments.

Government Publication Date: Oct 24, 2016

Historical California Hazardous Material Incident Report System (CHMIRS): HIST CHMIRS

A list of reported hazardous material incidents, spills, and releases from the California Hazardous Material Incident Report System (CHMIRS) prior to 1993. This list has been made available by the California Office of Emergency Services (OES).

Government Publication Date: Jan 1, 1993

Historical Hazardous Waste Manifest Data: HIST MANIFEST

A list of historic hazardous waste manifests received by the Department of Toxic Substances Control (DTSC) from year the 1980 to 1992. The volume of manifests is typically 900,000 - 1,000,000 annually, representing approximately 450,000 - 500,000 shipments.

Government Publication Date: Dec 31, 1992

Historical Cortese List: HIST CORTESE

List of sites which were once included on the Cortese list. The Hazardous Waste and Substances Sites (Cortese) List is a planning document used by the State, local agencies and developers to comply with the California Environmental Quality Act requirements for providing information about the location of hazardous sites.

Government Publication Date: Nov 13, 2008

Cease and Desist Orders and Cleanup and Abatement Orders: CDO/CAO

The California Environment Protection Agency "Cortese List" of active Cease and Desist Orders (CDO) and Cleanup and Abatement Orders (CAO). This list contains many CDOs and CAOs that do NOT concern the discharge of wastes that are hazardous materials. Many of the listed orders concern, as examples, discharges of domestic sewage, food processing wastes, or sediment that do not contain hazardous materials, but the Water Boards' database does not distinguish between these types of orders.

Government Publication Date: Feb 16, 2012

California Environmental Reporting System (CERS) Hazardous Waste Sites: CERS HAZ

List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the following regulatory programs: Hazardous Chemical Management, Hazardous Waste Onsite Treatment, Household Hazardous Waste Collection, Hazardous Waste Generator, RCRA LQ HW Generator. The CalEPA oversees the statewide implementation of the Unified Program which applies regulatory standards to protect Californians from hazardous waste and materials.

Government Publication Date: Nov 29, 2018

Delisted Environmental Reporting System (CERS) Hazardous Waste Sites: DELISTED HAZ

This database contains a list of sites that were removed from the California Environmental Protection Agency (CalEPA) in the following regulatory programs: Hazardous Chemical Management, Hazardous Waste Onsite Treatment, Household Hazardous Waste Collection, Hazardous Waste Generator, RCRA LQ HW Generator.

Government Publication Date: Nov 29, 2018

Waste Discharge Requirements: WASTE DISCHG

List of sites in California State Water Resources Control Board (SWRCB) Waste Discharge Requirements (WDRs) Program in California, made available by the SWRCB via GeoTracker. The WDR program regulates point discharges that are exempt pursuant to Subsection 20090 of Title 27 and not subject to the Federal Water Pollution Control Act. The scope of the WDRs Program also includes the discharge of wastes classified as inert, pursuant to section 20230 of Title 27.

Government Publication Date: May 30, 2018

Toxic Pollutant Emissions Facilities: EMISSIONS

A list of criteria and toxic pollutant emissions data for facilities in California made available by the California Environmental Protection Agency - Air Resources Board (ARB). Risk data may be based on previous inventory submittals. The toxics data are submitted to the ARB by the local air districts as requirement of the Air Toxics "Hot Spots" Program. This program requires emission inventory updates every four years.

Government Publication Date: Dec 31, 2016

Clandestine Drug Lab Sites: CDL

The Department of Toxic Substances Control (DTSC) maintains a listing of drug lab sites. DTSC is responsible for removal and disposal of hazardous substances discovered by law enforcement officials while investigating illegal/clandestine drug laboratories.

Government Publication Date: Dec 31, 2017

Tribal

No Tribal additional environmental record sources available for this State.

County

Riverside County Hazardous Waste Generator Sites List: RIVERSIDE HWG

A list of Hazardous Waste Generator Sites in the County of Riverside. This list is made available by Riverside County Department of Environmental Health which has been designated as the CUPA for the County.

Government Publication Date: Nov 15, 2018

Riverside County Disclosure Facility List: RIVERSIDE HZH

A list of facilities disclosed to Riverside County Department of Environmental Health (DEH). This list is made available by Riverside County DEH which has been designated as the CUPA for the County. A business is required to establish and submit a Business Plan if the facility handles hazardous material equal to or greater than 55 gallons, 500 pounds or 200 cubic feet at any time during the year.

Government Publication Date: Nov 15, 2018

Definitions

Database Descriptions: This section provides a detailed explanation for each database including: source, information available, time coverage, and acronyms used. They are listed in alphabetic order.

Detail Report: This is the section of the report which provides the most detail for each individual record. Records are summarized by location, starting with the project property followed by records in closest proximity.

Distance: The distance value is the distance between plotted points, not necessarily the distance between the sites' boundaries. All values are an approximation.

Direction: The direction value is the compass direction of the site in respect to the project property and/or center point of the report.

Elevation: The elevation value is taken from the location at which the records for the site address have been plotted. All values are an approximation. Source: Google Elevation API.

Executive Summary: This portion of the report is divided into 3 sections:

'Report Summary'- Displays a chart indicating how many records fall on the project property and, within the report search radii.

'Site Report Summary'-Project Property'- This section lists all the records which fall on the project property. For more details, see the 'Detail Report' section.

'Site Report Summary-Surrounding Properties'- This section summarizes all records on adjacent properties, listing them in order of proximity from the project property. For more details, see the 'Detail Report' section.

Map Key: The map key number is assigned according to closest proximity from the project property. Map Key numbers always start at #1. The project property will always have a map key of '1' if records are available. If there is a number in brackets beside the main number, this will indicate the number of records on that specific property. If there is no number in brackets, there is only one record for that property.

The symbol and colour used indicates 'elevation': the red inverted triangle will dictate 'ERIS Sites with Lower Elevation', the yellow triangle will dictate 'ERIS Sites with Higher Elevation' and the orange square will dictate 'ERIS Sites with Same Elevation.'

Unplottables: These are records that could not be mapped due to various reasons, including limited geographic information. These records may or may not be in your study area, and are included as reference.

13.5 Regulatory Agency Records

County of Riverside

DEPARTMENT OF ENVIRONMENTAL HEALTH

STEVE VAN STOCKUM, DIRECTOR

Incomplete Records Request Notice

January 4, 2019

Request No: 43557

Request Date: 01/03/2019

AEC
145 Vallecitos De Oro
Suite 201
San Marcos, CA 92069
Attn: Keith Sy

Re: **APN 300-170-009-8, Wilson Ave. Perris**

We have received your request for records however a search of our records cannot be conducted based on the information provided.

Please reference a specific site address(s) of inquiry and resubmit the records request.

The Hazardous Materials Management Division is unable to provide information about sites based on APN's or similar geographic site data.

Please direct questions or correspondence to:

Department of Environmental Health
Hazardous Materials Management Division
4065 County Circle Dr., Rm. 104
P.O. Box 7909
Riverside, CA 92513-7909
Attention: Records Management
Telephone: 951-358-5055
Fax: 951-358-5017

You may also visit our website at **www.rivcoeh.org**

Note: Records for disclosure information of the cities of Corona 951-736-2220, and Riverside 951-826-5737 will need to be directed to the City Fire Department.

13.6 Qualifications of the Environmental Professionals

Advantage Environmental Consultants, LLC

ENVIRONMENTAL DUE DILIGENCE AND REMEDIATION SPECIALISTS

Keith Sy
Project Manager

EDUCATION

Bachelor of Science - Biology – University of California, Riverside, CA (1996)
California Professional Clear Single Subject Teaching Credential; Biological Sciences – Los Angeles Unified School District Intern Program (1999)

PROFESSIONAL REGISTRATIONS, LICENSES, AND CERTIFICATIONS

OSHA 40-hour Hazardous Waste Operations Worker and Annual Refreshers
API (American Petroleum Institute) Work Safe

PROFESSIONAL SUMMARY

Mr. Sy has been a project manager with Advantage Environmental Consultants (AEC) since May 2011. He has 10 years of experience in the environmental sciences and consulting fields and is supported by Professional Geologists, Engineers and other technical team members of the AEC staff. His responsibilities at AEC include project management, technical oversight and quality control for assessment and remediation services. Mr. Sy also completes technical services (including field activities) required of select projects completed by AEC. Mr. Sy has also specialized in groundwater sampling while previously working with Blaine Tech Services. He was responsible for skilled use of purpose-built vehicles and equipment to perform groundwater sampling at a variety of sites throughout California while utilizing a variety of sampling protocols. Mr. Sy also has eight years experience as a high school science teacher with the Los Angeles Unified School District. He demonstrated extensive content knowledge through competent instruction of Honors Biology, Honors Integrated Science, and Advanced Placement Environmental Science.

PROFESSIONAL EXPERIENCE

Experience conducting, preparing, and reviewing environmental site inspections and technical reports of Phase I ESAs and Transaction Screens for various local and federal government entities, redevelopment agencies, affordable housing developers, environmental and land use attorneys, architectural and engineering firms, commercial lending institutions, conservancies, commercial/industrial real estate owners/managers, insurance companies, and real estate developers. Mr. Sy has conducted Phase I ESA's and related services in California, Arizona, Texas, and Washington.

Managed several Phase II subsurface investigations throughout Southern California including groundwater monitoring well installations and sampling, soil and soil vapor sampling, drilling activities, and has conducted oversight on remedial excavation and construction projects. Mr Sy has experience utilizing a variety of field instrumentation for such projects including photoionization detector (PID), a variety submersible water pumps, interface probe, water level meter, flow cell and water quality meters for groundwater sampling, dust monitors, and XRF analyzer.

Vista Burn Site "French Field", Oceanside, California
AEC was contracted to provide environmental oversight for remediation activities at the former 10 acre, Vista Burn Dump in Oceanside, CA. The site was historically used as a burn dump by the County of San Diego from 1944-1967. The site was then leased for use as baseball fields in 1974 with fill material and grading used in construction of the ball fields. Little League activities were later ceased at the site as refuse and contaminated soils were discovered. The remediation project involved containment of contaminated soils by consolidation and capping the area with a one foot minimum layer of clean fill soil for development of the site as new little league baseball fields. Mr. Sy's oversight activities included monitoring field activities of contractors, quality assurance of segregation of contaminated and non impacted soils, and air quality monitoring during the construction activities. The effectiveness of fugitive dust control measures were observed through collection of real time data with a portable dust monitor to limit exposure to contaminated fugitive dust as approved by the DTSC. Meteorological measurements were recorded with an anemometer. The placement of PVC markers at the base of the cap was also observed. These markers would indicate the extent of the minimum one foot clean fill cap. Exposures of these markers through wear of the site and would indicate the need for additional clean fill to be added to maintain the integrity of the cap.

845 Morena Boulevard, San Diego, California
Mr. Sy has been involved in this Phase II subsurface investigation of this UST impacted site. He first worked at the site with Blaine Tech to conduct the initial sampling of the new groundwater wells as contracted by AEC. Later with AEC, he aided in the oversight of the installation of 4 new monitoring wells, conducted soil profiling and soil sampling during the drilling of each well. He also supervised well development and surface completion of each well. Mr. Sy then conducted oversight of quarterly groundwater sampling events at the site.

Parcel 9, Broadway and Pacific Highway, San Diego, California
Mr. Sy executed the county approved Soil Management Plan (SMP) drafted by AEC and conducted remedial excavation oversight for the construction of a mixed use high rise development in downtown San Diego. The project entailed the excavation of a 60,000 square foot city block to excavation depths ranging from 35 to 43 feet below existing street grades. Management activities overseen by Mr. Sy included the following:

- Characterization of lead contaminated fill material for removal soil sampling activities, data logging and reporting.
- Contractor completed excavation, segregation, stockpiling and loading of contaminated soil which was subsequently transported and disposed/recycled at off-Site licensed receiving facilities.
- Excavation, segregation, stockpiling and export of non-contaminated soil generated during excavation activities.

Advantage Environmental Consultants, LLC
ENVIRONMENTAL DUE DILIGENCE AND REMEDIATION SPECIALISTS

DANIEL A. WEIS, R.E.H.S.
Branch Manager – Western Regional Office

EDUCATION

- Bachelor of Arts - University of Delaware, Newark, DE (1995)
- Master of Science – Public Health, San Diego State University, San Diego, CA (1998)

PROFESSIONAL REGISTRATIONS, LICENSES, AND CERTIFICATIONS

- Registered Environmental Health Specialist #8172 in the State of California
- OSHA 40-hour Hazardous Waste Operations Worker and Supervisor Certifications and Annual Refreshers

PROFESSIONAL SUMMARY

Mr. Weis is the branch manager of AEC's western regional office based in the City of San Marcos, San Diego County, California. He has 20 years of experience in the environmental sciences and consulting fields and is supported by Professional Geologists, Engineers and other technical team members of AEC staff. His responsibilities at AEC include client development and management, project management, technical oversight and quality control for assessment, remediation and construction oversight services, project staffing, and office financial management. Mr. Weis also completes technical services (including field activities) required of select projects completed by AEC. He has a proven ability to manage multiple personnel and technical projects, negotiate with regulatory agencies and maintain strong and trusting client relationships. Such clientele include but are not limited to local government entities, developers (affordable housing and market rate), Federal government entities, law firms, architectural and engineering firms, commercial lending institutions, conservancies, commercial/industrial real estate owners/managers, insurance companies, wireless telecommunication carriers and other real estate developers. He is also very experienced in the completion of assessment, construction and remediation quality assurance during the completion of urban redevelopment/brownfields projects, many of which have been located in downtown areas of San Diego, Los Angeles, Oakland, San Francisco, and other urban communities throughout the State of California.

PROFESSIONAL EXPERIENCE SUMMARY

Mr. Weis has completed or managed over 2,000 due diligence related environmental assessments and has completed or managed over 500 subsurface environmental investigations of soil gas, soil, groundwater and other media. Such investigations have also included human health and ecological risk assessments, evaluations of indoor air conditions based on interpretations of subsurface conditions, underground storage tank (UST) evaluation/closure and hazardous waste characterization/management. Subsurface activities performed include the completion of soil borings using various drilling technologies, soil and groundwater sampling, installation and sampling of groundwater monitoring wells, free product evaluations, exploratory trenching and real-time delineation using mobile analytical laboratories and other soil screening technology. Assets evaluated include industrial, commercial, residential, agricultural and vacant land sites throughout the State of California and numerous additional states of the Nation, with many of the assessments completed under the regulatory oversight of local environmental regulatory agencies, the California

Regional Water Quality Control Boards (RWQCBs) and the California Environmental Protection Agency Department of Toxic Substances Control (DTSC). Mr. Weis has also conducted and/or managed hundreds of public/environmental health related assessments including electromagnetic field surveys, radionuclide surveys, indoor air quality investigations, radon surveys, drinking water assessments, asbestos containing materials (ACM) and lead-based paint (LBP) surveys and mold/microbial evaluations.

Mr. Weis has managed over 100 remediation or construction management related projects primarily related to source removal of subsurface contaminants including but not limited to petroleum hydrocarbons, chlorinated solvents, heavy metals, organochlorine pesticides and other agricultural related chemicals, dioxins and furans and polychlorinated biphenyls (PCBs). Cost effective solutions and various remedial action options are provided prior to remedial action implementation. He is very proficient in developing remediation cost estimates and evaluating multiple remedial strategies on specific projects and conducting budget tracking to ensure the accuracy of such estimates during remedial implementation. Mr. Weis also assists clients with the preparation of contractor bid specifications, contractor bid and change order reviews for such projects, contractor agreements and project status reports/updates and has conducted presentations to client personnel, regulatory agencies and/or the public pertaining to such remediation related projects. He has also assisted numerous clients in cost recovery efforts from private parties and State/Federal funding programs for environmental assessment and remediation work and has served as an expert witness during legal proceedings (including mediation and jury trial settings) pertaining to environmental related claims. Site specific project descriptions and information is available upon request. Client references are also available upon request.

SPECIFIC PROJECT EXPERIENCE

- 14th and Island, San Diego, California – Development of Site Mitigation Plan, contaminated soil management and disposal concurrent with site construction activities at the superblock construction site in downtown San Diego and achievement of regulatory closure with the County of San Diego Department of Environmental Health.

- 2198 Market Street, San Francisco, California – Phase I and II Environmental Site Assessments, supplemental subsurface investigation, Site Mitigation Plan development, contaminated soil management and disposal concurrent with site construction activities and negotiation/achievement of regulatory closure with the City of San Francisco Department of Public Health.

- Former EZ Serve, 9305 Mission Gorge Road, Santee, California – Closure report preparation and San Diego Regional Water Quality Control Board interface and negotiation/achievement of regulatory closure under State of California low-threat policy.

- French Field – Former Vista Burn Dump, Oceanside, California – Oversight of the capping of a former burn dump/landfill facility and restoration for public use as a sports facility. Negotiation and achievement of regulatory closure with the California Department of Toxic Substances Control with concurrence from the San Diego Regional Water Quality Control Board and the County of San Diego Local Enforcement Agency.

- Indoor Skydiving Facility, 1401 Imperial Avenue, San Diego, California – Development of Soil Management Plan and contaminated soil management and disposal concurrent with site construction activities in downtown San Diego.

- Lemon Grove Avenue Realignment Project, Lemon Grove, California – Development of Impacted Soil Management Plan, Community Health and Safety Plan and Worker Health and Safety Plan and oversight of the implementation of such plans during construction activities.

- North Side Interior Road and Utilities Project at San Diego International Airport, San Diego, California - Subsurface assessment, development of Soil Management Plan and Work Health and Safety Plan and implementation and monitoring of soil management strategies.

- Olympic and Hill, Los Angeles, California – Removal of multiple underground storage tanks and underlying contaminated soil and achievement of regulatory closure with the City of Los Angeles Fire Department.

- San Ysidro - U.S. Land Port of Entry, San Diego, California – Subsurface assessment and development and implementation of soil management strategies.

- Tabata Ranch Site, Carlsbad, California – Development of Soil Management Plan and Community Health and Safety Plan, completion of soil removal action of petroleum hydrocarbon impacted soil, oversight and management of selective reuse and replacement of pesticide impacted soil and subsequent export of inert soils and achievement of regulatory closure with the County of San Diego Department of Environmental Health. Consent to discharge inert soils at an off-site receiving location was granted by the San Diego Regional Water Quality Control Board.

- VA Medical Center Long Beach, 5901 East 7th Street, Long Beach, California - VA Long Beach: Seismic Corrections – Mental Health, Community Living Center and Chiller Replacements Project – Asbestos containing materials and lead-based paint surveys and preparation of abatement contractor bid specifications.

PUBLICATIONS

- Gersberg, R.M., Brown, C., Zambrano, V., Worthington, K., and Weis, D. (2000) Quality of urban runoff in the Tijuana River watershed. In Westerhoff, P. (editors), SCERP Monograph Series (no.2) on Water Issues Along the United States and Mexico Border. : Southwest Center for Environmental Research and Policy, 31-45.
- Weis, D.A., Callaway, J.C., and R.M. Gersberg (2001). Vertical Accretion Rates and Heavy Metal Chronologies in Wetland Sediments of the Tijuana Estuary. Estuaries 24(6A).
- Gersberg, R.M., Pitt, J.L., Weis, D.A., and D.D. Yorkey. Characterizing In-Stream Metal Loading in the Tijuana River Watershed. (2002). National TMDL Science and Policy Conference, Specialty Conference Proceeding on CD Rom, November 13-16, Phoenix, Arizona

AFFILIATIONS

Building Industry Association
San Diego Environmental Professionals
San Diego Housing Federation

PROFESSIONAL REFERENCES

Available On Request

Appendix 5: LID Infeasibility

LID Technical Infeasibility Analysis

Not Applicable

Appendix 6: BMP Design Details

BMP Sizing, Design Details and other Supporting Documentation

Santa Ana Watershed - BMP Design Volume, V_{BMP}

(Rev. 10-2011)

Legend: Required Entries / Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name: Albert A. Webb Associates — Date: 4/16/2019

Designed by: TSW — Case No: PX-XXXX

Company Project Number/Name: FIR Wilson

BMP Identification

BMP NAME / ID: Basin A

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E

D_{85}= 0.65 inches

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
L-A	*64,800*	*Ornamental Landscaping*	*0.1*	*0.11*	*7157.7*			
R-A	*297,020*	*Concrete or Asphalt*	*1*	*0.89*	*264941.8*			
H-A	*216,767*	*Roofs*	*1*	*0.89*	*193356.2*			
BMP-A	*15,746*	*Ornamental Landscaping*	*0.1*	*0.11*	*1739.3*			
	594333		***Total***		**467195**	**0.65**	***25306.4***	***25310***

Notes:

Bioretention Facility - Design Procedure	BMP ID: Basin A	Legend:	Required Entries / Calculated Cells

Company Name:	Albert A. Webb Associates	Date:	4/16/2019
Designed by:	TSW	County/City Case No.:	PX-XXX

Design Volume

Enter the area tributary to this feature	A_T=	13.7	acres
Enter V_{BMP} determined from Section 2.1 of this Handbook	V_{BMP}=	25,310	ft^3

Type of Bioretention Facility Design

(●) Side slopes required (parallel to parking spaces or adjacent to walkways)

( ) No side slopes required (perpendicular to parking space or Planter Boxes)

Bioretention Facility Surface Area

Depth of Soil Filter Media Layer	d_S =	2.4	ft
Top Width of Bioretention Facility, excluding curb	w_T =	80.0	ft
Total Effective Depth, d_E $d_E = (0.3) \times d_S + (0.4) \times 1 - (0.7/w_T) + 0.5$	d_E =	1.61	ft
Minimum Surface Area, A_m $A_M\ (ft^2) = \frac{V_{BMP}\ (ft^3)}{d_E\ (ft)}$	A_M =	15,709	ft^2
Proposed Surface Area	A=	15,746	ft^2

Bioretention Facility Properties

Side Slopes in Bioretention Facility	z =	4	:1
Diameter of Underdrain		6	inches
Longitudinal Slope of Site (3% maximum)		0	%
6" Check Dam Spacing		0	feet
Describe Vegetation:		Other	

Notes:

Weir Inlet
Ponding Depth Calculation

ALBERT A WEBB ASSOCIATES
ENGINEERING CONSULTANTS

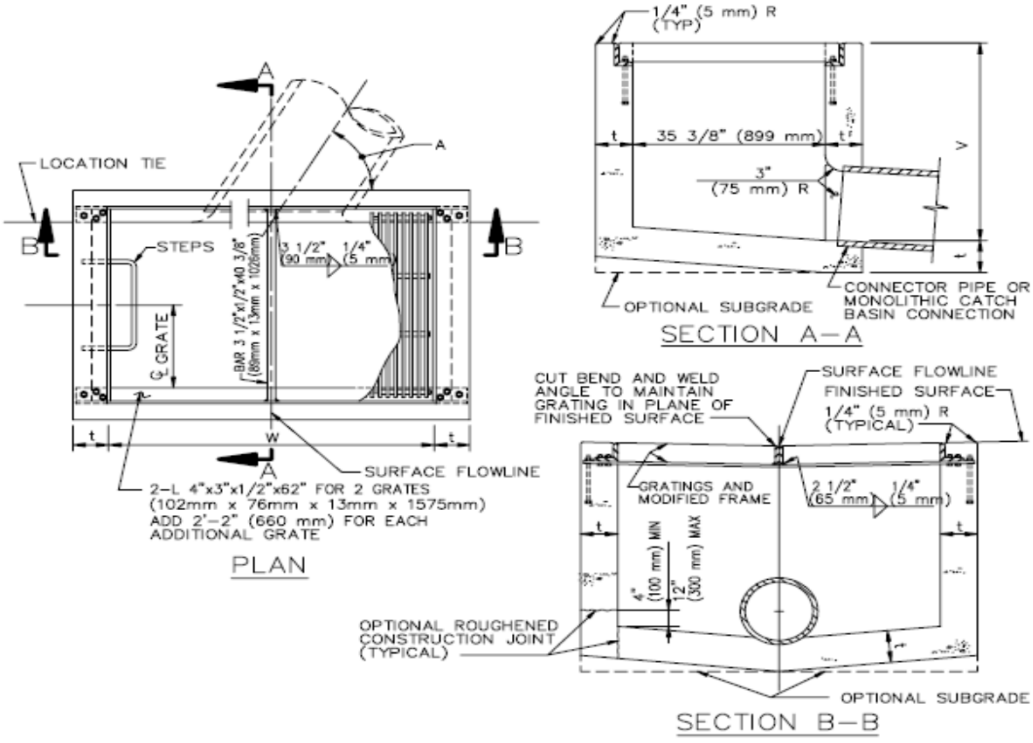
Designer:	TSW
Date:	4/16/2019
Project:	FIR Wilson
Location:	Outlet Structure for WQ Basin A

OUTLET STRUCTURE PONDING DEPTH SPPWC 305-3

DISCHARGE (cfs)		29.1	
NUMBER OF GRATES		4	
LENGTH (ft)		23.146	
WEIR COEFFICIENT	C	3	
WEIR LENGTH	L	23.146	ft^2
HEAD	h	0.56	ft
Flow	Q	29.10	cfs

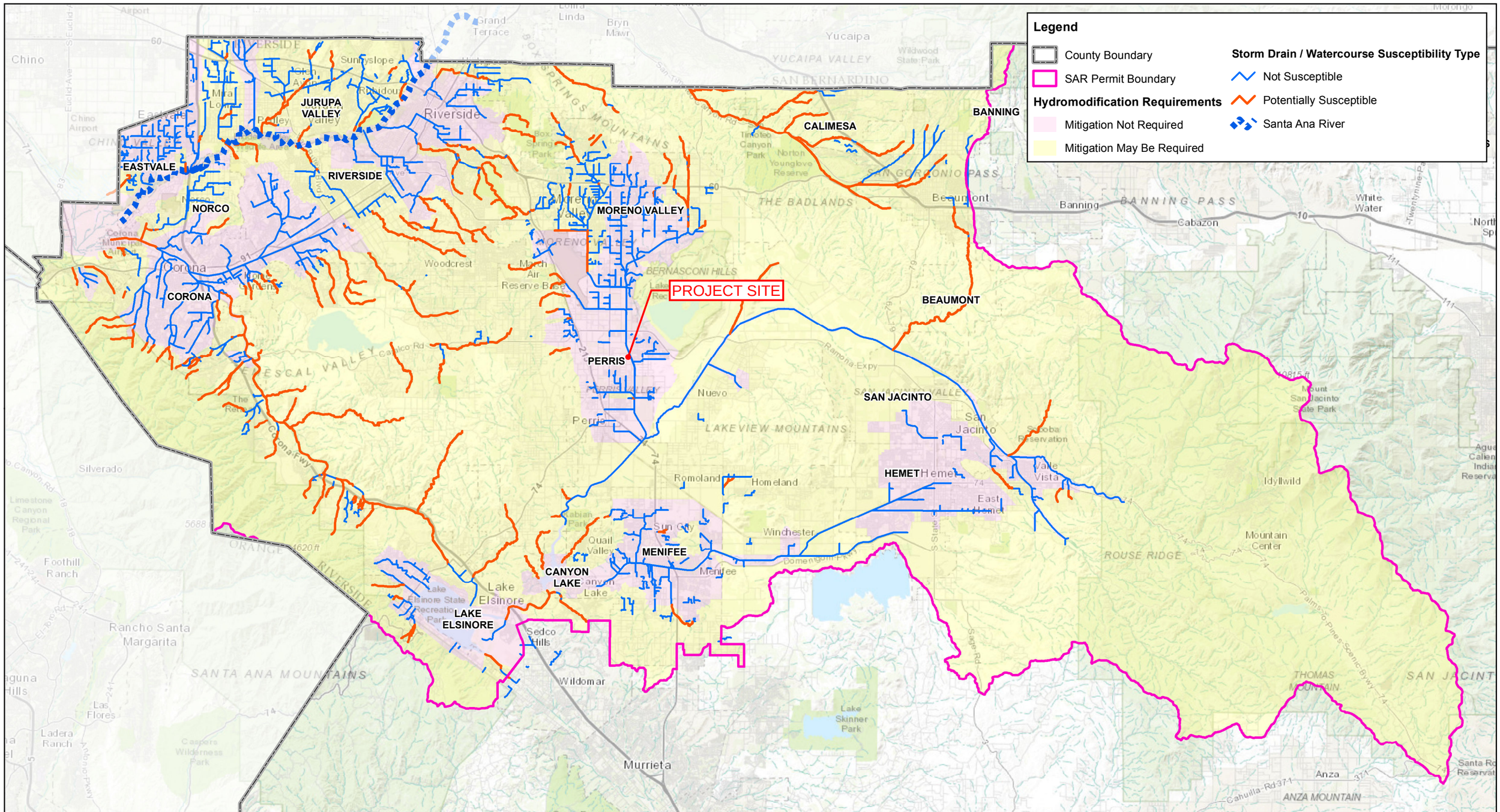
$$Q = C L (h)^{3/2}$$

Top of Weir Elevation: 1433.4
Water Surface Elevation: 1433.96



Appendix 7: Hydromodification

Supporting Detail Relating to Hydrologic Conditions of Concern



HCOC Applicability Map
SAR Permittees

Map 2

Appendix 8: Source Control

Pollutant Sources/Source Control Checklist

To be included in FWQMP

Appendix 9: O&M

Operation and Maintenance Plan and Documentation of Finance, Maintenance and Recording Mechanisms

To be included in FWQMP

Appendix 10: Educational Materials

BMP Fact Sheets, Maintenance Guidelines and Other End-User BMP Information

To be included in FWQMP