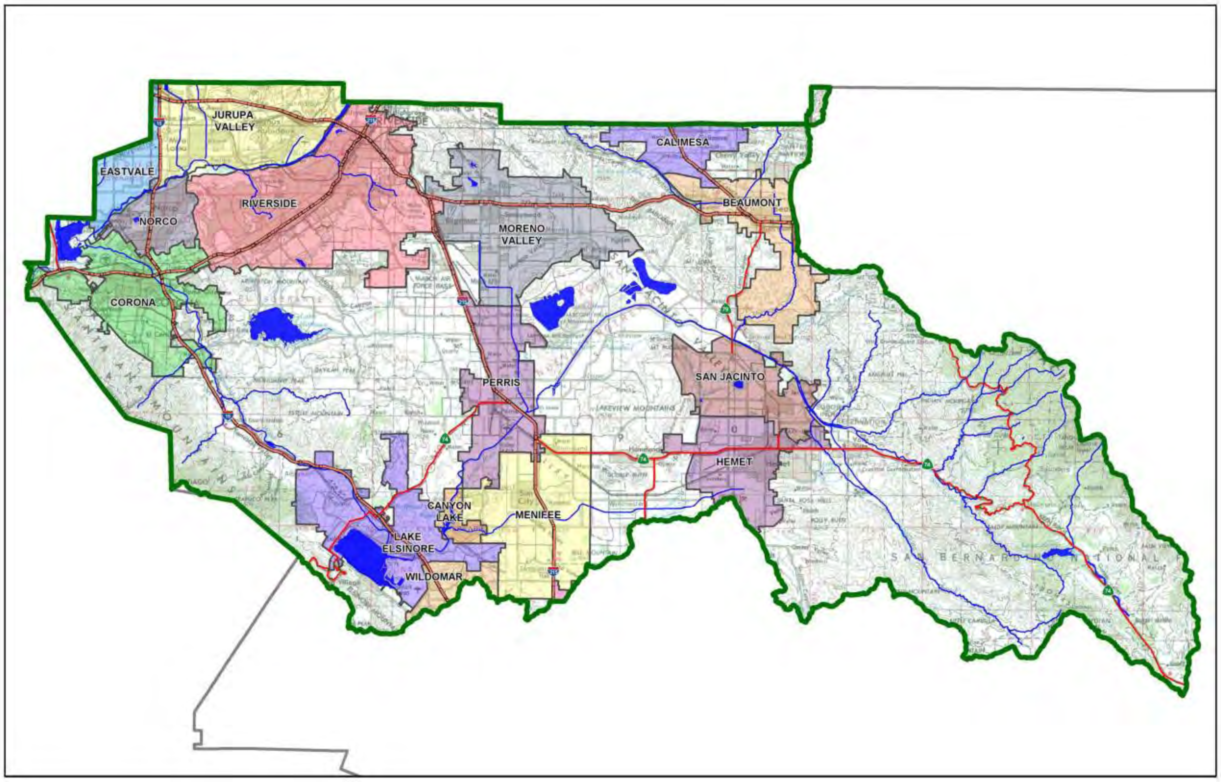
Project Specific Water Quality Management Plan

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

Project Title: SWC Ramona & Perris Industrial

Development No: DPR19-00012

Design Review/Case No: DPR19-00012



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☒ **Preliminary**
☐ **Final**

Original Date Prepared: January 12, 2021

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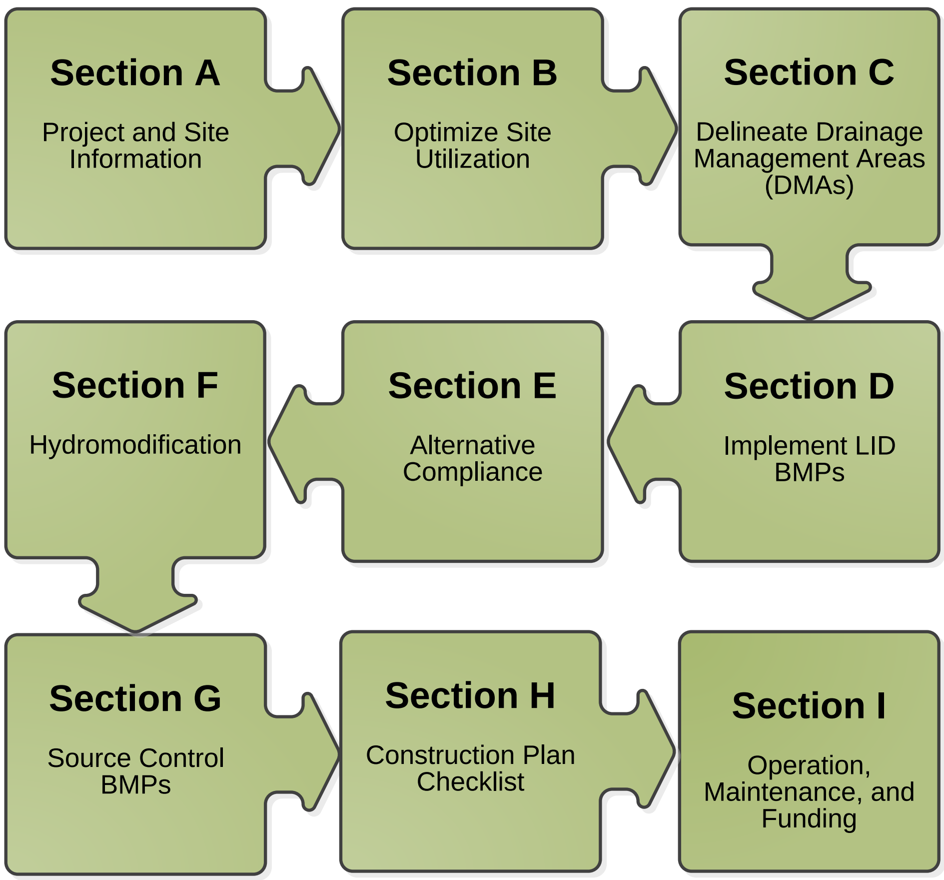
Prepared for Compliance with
Regional Board Order No. **R8-2010-0033**

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 PR Partners, LLC by United Engineering Group CA, Inc. for the SWC Ramona & Perris Industrial Project P19-00012.

This WQMP is intended to comply with the requirements of City of Perris for Ordinance 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 the 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."

Mark T. Burger

Owner's Signature

8/2/2021

Date

Mark T. Burger

Owner's Printed Name

PR PARTNERS, LLC
Manager

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. **R8-2010-0033** and any subsequent amendments thereto."

Chris Lenz

Preparer's Signature

7-29-21

Date

Christopher F Lenz

Preparer's Printed Name

PE/Principal

Preparer's Title/Position

Preparer's Licensure: CA 63001

CALIFORNIA ACKNOWLEDGMENT CIVIL CODE § 1189

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California }
County of Los Angeles

On August 2, 2021 before me, Judy Mercado, notary public,
Date Here Insert Name and Title of the Officer

personally appeared Mark T. Burger
Name(s) of Signer(s)

who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

JUDY MERCADO
Notary Public - California
Los Angeles County
Commission # 2230523
My Comm. Expires Mar 5, 2022

Place Notary Seal and/or Stamp Above

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature Judy Mercado
Signature of Notary Public

OPTIONAL

Completing this information can deter alteration of the document or fraudulent reattachment of this form to an unintended document.

Description of Attached Document

Title or Type of Document: PROJECT SPECIFIC WATER QUALITY MANAGEMENT PLAN

Document Date: ORIGINAL DATE 1-12-2021 Number of Pages: 3

Signer(s) Other Than Named Above: CHRISTOPHER F. LENZ

Capacity(ies) Claimed by Signer(s)

Signer's Name: MARK T. BURGER
- ☐ Corporate Officer – Title(s):
- ☐ Partner – ☐ Limited ☐ General
- ☐ Individual ☐ Attorney in Fact
- ☐ Trustee ☐ Guardian or Conservator
- ☒ Other: MANAGER

Signer is Representing: PR PARTNERS, LLC

Signer's Name:
- ☐ Corporate Officer – Title(s):
- ☐ Partner – ☐ Limited ☐ General
- ☐ Individual ☐ Attorney in Fact
- ☐ Trustee ☐ Guardian or Conservator
- ☐ Other:

Signer is Representing:

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Section A: Project and Site Information

PROJECT INFORMATION		
Type of Project:	Development Plan Review – 347k sf Industrial Warehouse	
Planning Area:	PVCC	
Community Name:	N/A	
Development Name:	SWC Ramona & Perris Industrial Project	
PROJECT LOCATION		
Latitude & Longitude (DMS): 33d50'43"N, 117d13'33"W		
Project Watershed and Sub-Watershed: Santa Ana, San Jacinto River, Canyon Lake		
APN(s): 303-060-020.		
Project Acreage: 20.11 acres (gross acreage includes street right of way) 16 acres net.		
Map Book and Page No.:		
PROJECT CHARACTERISTICS		
Proposed or Potential Land Use(s)		Warehouse
Proposed or Potential SIC Code(s)		4225
Area of Impervious Project Footprint (SF)		656,994*
Total Area of proposed Impervious Surfaces within the Project Limits (SF)/or Replacement		656,994*
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 (SF)		None
Is the project located within any MSHCP Criteria Cell?		☐ Y ☒ N
If so, identify the Cell number:		Insert text here.
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)		C
What is the Water Quality Design Storm Depth for the project?		0.58"
*Note: Areas based on 75% impervious area within the developed portion of the project.		

Project Description:
The 20.11 gross acre (includes street right of way), 16 acre net, project is a proposed approximately 347k sf building development with parking and truck access and below grade bay loading provided on the south side of the building. The offsite flows that impact the property originate west of the site and will be collected on the east side of Indian and conveyed to the existing storm drain in Perris Blvd via storm drain. Onsite flows are divided into 10 DMA's with all but one routed through grassed swales. There is one area at the northeast corner that cannot be accepted into the projects water quality treatment due to design grades. The use of swales is chosen due to the proximity of the project to the airport and the risk of bird strike from any surface ponding (no bio-retention allowed). The site has no infiltration potential, but does have subsurface storage proposed (and required due to the sub grade loading bay). It is proposed that the underground detention be pumped to the surface bio-swales for WQMP treatment. Pumps and piping for this system will be designed at FWQMP stage.

A.1 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

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.2 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
San Jacinto River Reach 3 HU #802.11	None	AGR,GWR, REC1, REC2, WARM, WILD	Not designated as RARE
Canyon Lake HU #802.11 & 12	Nutrients & Pathogens	MUN, AGR, GWR, REC1, REC2, WARM, WILD	Not designated as RARE
San Jacinto River Reach 1 HU #801.32 & #802.31	None	MUN, AGR, GWR, REC1, REC2, WARM, WILD	Not designated as RARE
Lake Elsinore HU #802.31	Nutrients, Organics, PCB's-Sediment Toxicity, Unknown Toxicity	REC1, REC2, WARM, WILD	Not designated as RARE

A.3 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)*	☐ 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.

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?

Yes. In the developed project, flows are directed in the general direction of existing patterns.

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

No, the site has been graded.

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

No, infiltration rates were tested to be too low for effective infiltration (Avg. 0.064in/hr).

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

Yes. Impervious areas have been minimized to just what is needed for safe travel. The site plan also provides open space areas within the parking lot and around the buildings.

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

No, with no infiltration potential, and requirement to reduce surface ponding, the most effective design is to route runoff with the paving areas, and to collect runoff into a system of stormdrain.

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]	Area (AC.)	DMA Type
DMA A	Concrete and Asphalt	1.15	Type D
DMA B	Concrete and Asphalt	0.33	Type D
DMA C	Mixed	4.35	Type D
DMA D	Mixed	3.70	Type D
DMA E	Concrete and Asphalt	6.42	Type D
DMA F	Mixed	1.46	Type D
DMA G	Mixed	0.41	Type D
DMA H	Mixed	0.31	Type D
DMA I	Mixed	0.48	Type D
DMA J	Concrete and Asphalt	0.80	Type D
DMA K	Ornamental Landscape	0.25	Type B
DMA L	Ornamental Landscape	0.13	Type B
DMA M	Ornamental Landscape	0.13	Type B
DMA N	Ornamental Landscape	0.21	Type B

[1]*Reference Table 2-1 in the WQMP Guidance Document to populate this column*

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]
DMA K	Landscape	10,740	0.58			
DMA L	Landscape	5,501	0.58			
DMA M	Landscape	5,558	0.58			
DMA N	Landscape	9,174	0.58			

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

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

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

DMA Name or ID	BMP Name or ID
DMA A	BMP 1
DMA B	BMP 1
DMA C	BMP 1
DMA D	BMP 2
DMA E	BMP 3
DMA F	BMP 4
DMA G	BMP 5
DMA H	BMP 6
DMA I	BMP 7

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. 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 Co-Permittee 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: **All, see attached infiltration report**		
…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: All, in order to raise site out of flood plain significant fill will be required. Refer to the attached letter from ALTA Geotechnical (Appendix 3 and 5).		
…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 Co-Permittee).

☐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 neither 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: 3.02 ac

Type of Landscaping (Conservation Design or Active Turf): Ornimental Landscaping, Swales

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: 15.1 ac

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: 0.79

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: 11.9 ac

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)**
11.9 ac	3 ac

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: 105gal/day (30 employees x 7gal/employee/day)

Project Type: Commercial

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: 11.9 ac

Step 3: Enter the Design Storm depth for the project site (see Exhibit A) into the left column of Table 2-1 in Chapter 2 to determine the minimum number or toilet users per tributary impervious acre (TUTIA).

Enter your TUTIA factor: 132

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: 359

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)**
1571	210

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.

N/A

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 2-3 in Chapter 2 to determine the minimum demand for non-potable uses per tributary impervious acre.

Enter the factor from Table 2-3: Enter Value

Step 4: Multiply the unit value obtained from Step 4 by the total of impervious areas from Step 3 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 Number of Daily Toilet Users (Step 1) to the minimum required number of toilet users (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, unless a site-specific analysis has been completed that demonstrates technical infeasibility as noted in D.3 below.

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:

X 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	☐	☐	☐	X☒	☐
DMA B	☐	☐	☐	☒	X☐
DMA C	☐	☐	☐	X☒	☐
DMA D	☐	☐	☐	X☒	☐
DMA E	☐	☐	☐	X☒	☐
DMA F	☐	☐	☐	X☒	☐
DMA G	☐	☐	☐	X☒	☐
DMA H	☐	☐	☐	X☒	☐
DMA I	☐	☐	☐	X☒	☐
DMA J	☐	☐	☐	☐	X☒
DMA K			X		
DMA L			X		
DMA M			X		
DMA N			X		

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.

The design of the site does not afford an opportunity to accept all of the flows from the intersection of Perris and Ramona (DMA J). The area will continue to drain into existing storm drain inlet at the southwest corner of Perris and Ramona Blvd.

Through consultation with the City, an inlet at Indian will carry regional flows from the property edge to the Line E Channel. Thus, the project cannot provide treatment of DMA B.

Due to proximity to the airport, and as confirmed through the ALUC process, the site cannot have surface ponding for fear of nesting areas that may lead to bird strike. Therefore, bio-retention was not a treatment option. As such, swales have been chosen to treat the site runoff. See appendix 5 for detail.

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 Co-Permittee. Utilize the worksheets found in the LID BMP Design Handbook or consult with your Co-Permittee 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	***Basin A***		
	[A]		[B]	[C]	[A] x [C]			
						Design Storm Depth (in)	*Design Capture Volume,* **V_{BMP}** *(cubic feet)*	*Proposed Volume on Plans (cubic feet)*
	$A_T = \Sigma[A]$				$\Sigma = [D]$			

[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

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	***Basin B***		
	[A]		[B]	[C]	[A] x [C]			
						Design Storm Depth (in)	*Design Capture Volume,* **V_{BMP}** *(cubic feet)*	*Proposed Volume on Plans (cubic feet)*
	$A_T = \Sigma[A]$				$\Sigma = [D]$			

Design of the site is not based on Vbmp but will provide treatment through swales. Thus, Qbmp is the design factor used. Refer to Appendix 6 for calculations.

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 Co-Permittee). 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* -

X 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.

Intersection of Ramona and Perris (DMA J) and Intersection of Indian and Ramona (DMA B)
The design of the site, does not afford an opportunity to accept all of the flows from the intersections of Perris and Ramona (DMA J) and Indian and Ramona (DMA B). The areas will continue to drain into existing storm drain inlets and be carried by the Line E system.

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]				
						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)*
	$A_T = \Sigma[A]$				$\Sigma = [D]$	[E]			[I]

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

[E] is 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 Co-Permittee 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 Sensitivity 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:

INSERT TEXT HERE

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.

Note: This project is located within the Riverside County HCOC Exemption area as presented in the Riverside Co Geodatabse approved April 20, 2017. See Map in Appendix 7.

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. Co-Permittee 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 "Only Rain Down the Storm Drain".	Maintain markings and provide info to owners. Add Language to lease agreements to prevent tenants from allowing discharges to storm drain.
B. Interior Floor Drains	To be connected to Sewer	Inspect and maintain drains
D2. Landscaping	Preserve existing native trees, shrubs, and ground cover to the maximum extent possible. Design landscaping to minimize irrigation and runoff, to promote	Maintain landscaping using minimum or no pesticides. See applicable operational BMPs in "What you should know for…..Landscape and Gardening"

	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 establishment, select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.	at http://rcflood.org/stormwater/ Provide IPM information to new owners, lessees and operators.
G. Refuse Area	Trash enclosures to be built per City of Perris Standards with Signs noting "Do not dump Hazardous Materials"	Trash enclosures to be built per City of Perris Standards. A regular inspection and maintenance program to be required by tenants/owner.
P. Parking Lots		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)

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.

Section I: Operation, Maintenance and Funding

The Co-Permittee will periodically verify that Stormwater BMPs on your site are maintained and continue to operate as designed. To make this possible, your Co-Permittee 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: Property Owners Association

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

☒ Y ☐ N

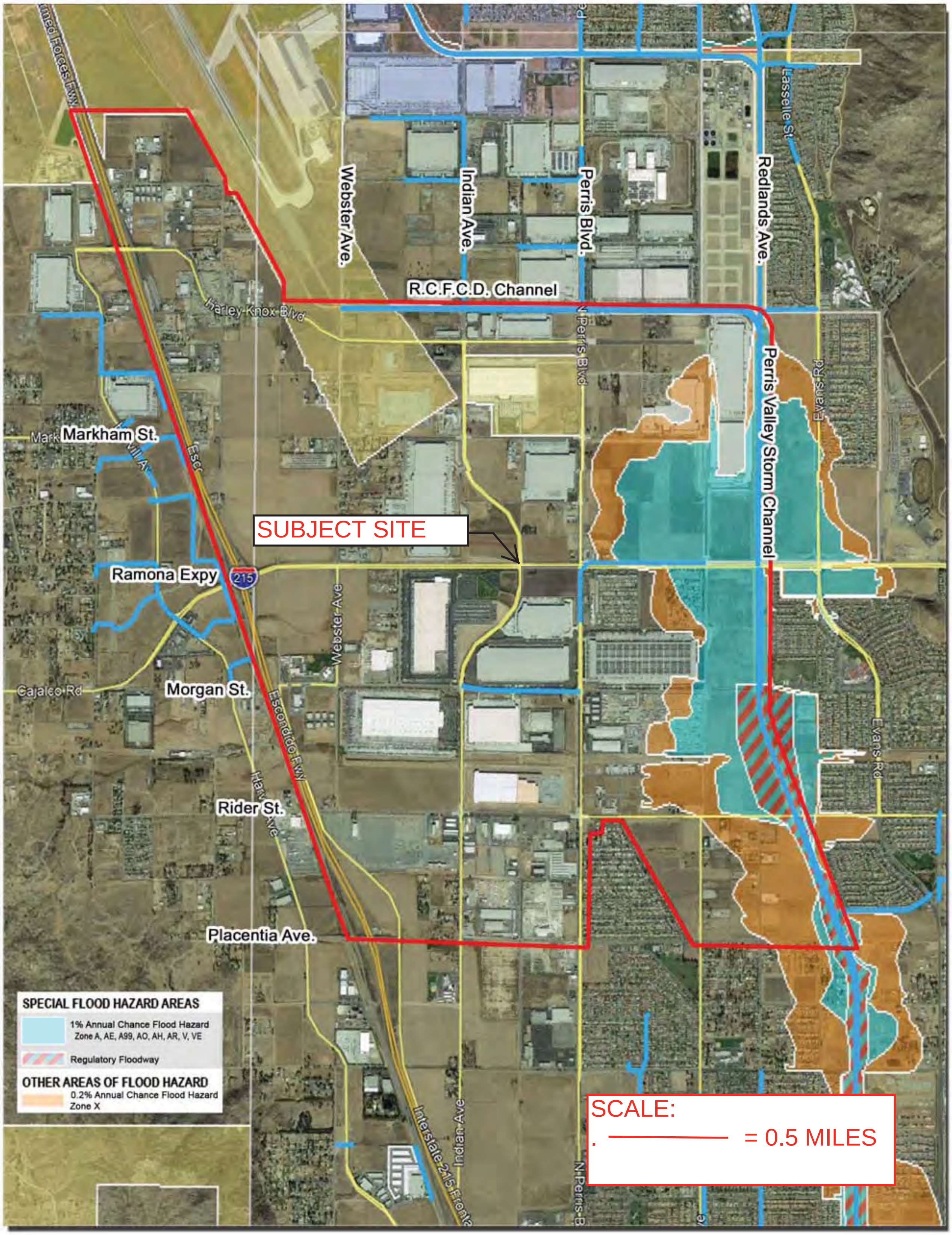
Include your Operation and Maintenance Plan and Maintenance Mechanism in Appendix 9. Additionally, include all pertinent forms of educational materials for those personnel that will be maintaining the proposed BMPs within this Project-Specific WQMP in Appendix 10.

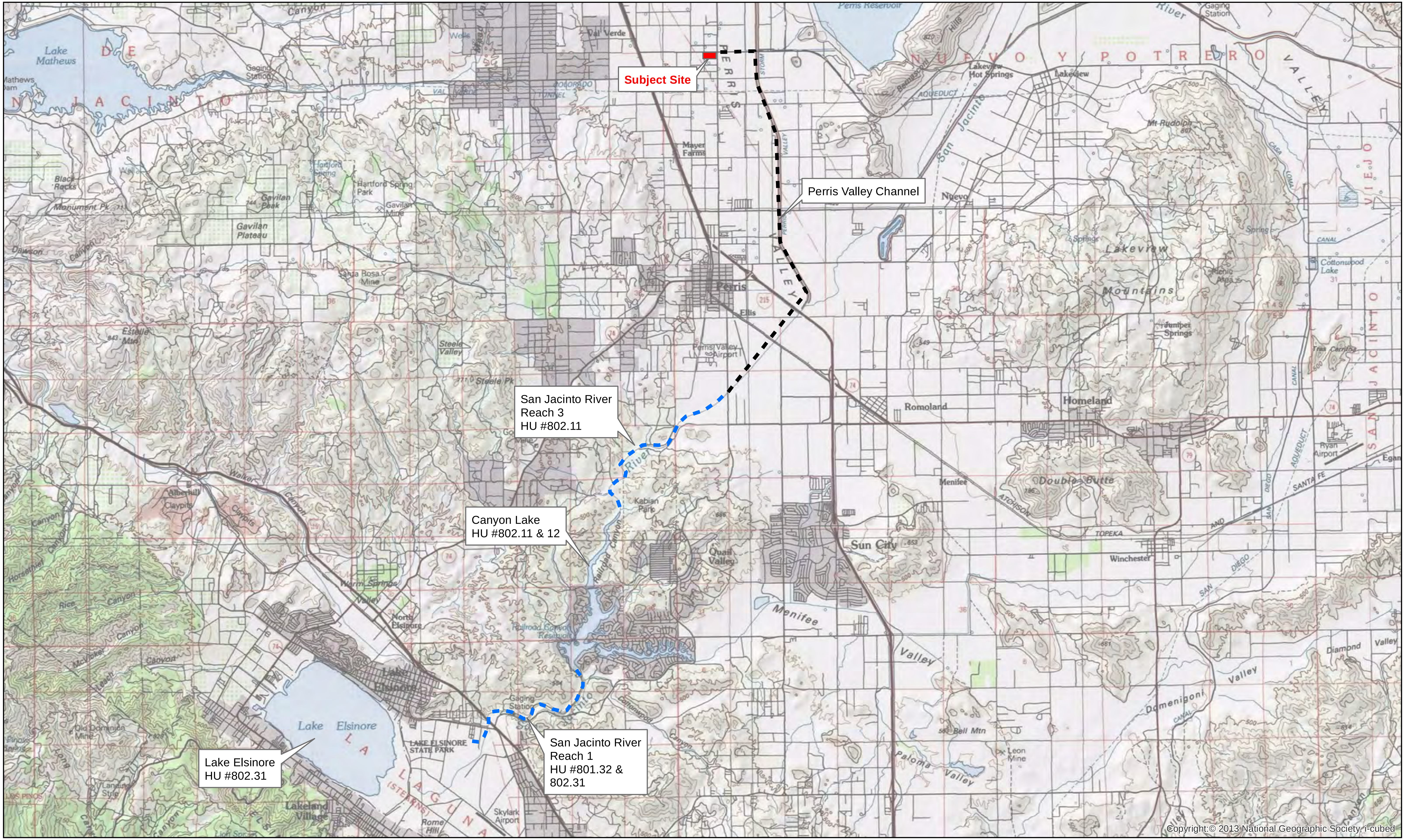
To be provided at FWQMP

Appendix 1: Maps and Site Plans

Location Map, WQMP Site Plan and Receiving Waters Map

SWC RAMONA AND PERRIS WQMP
VICINITY MAP





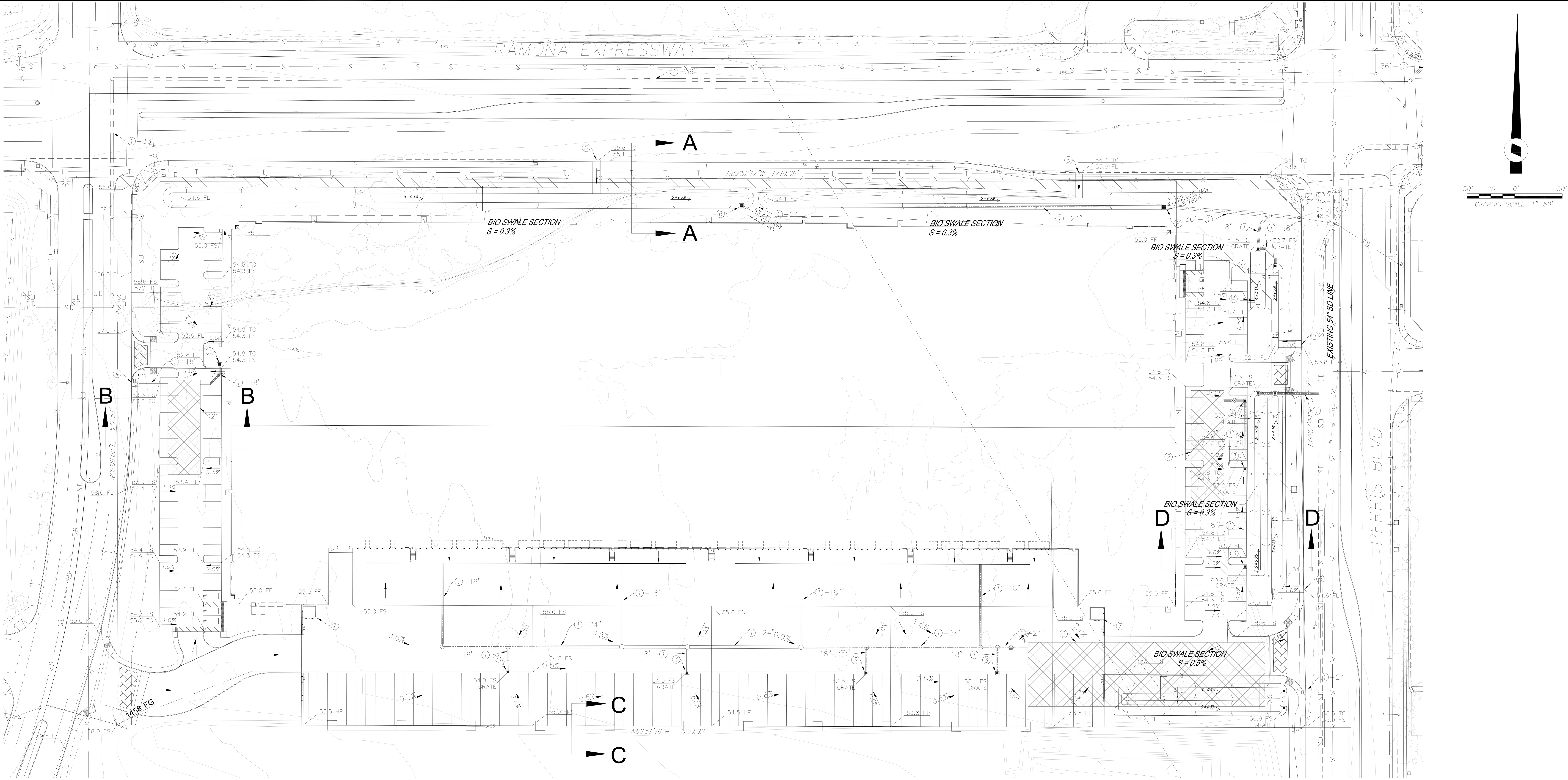
SWC - Ramona & Perris

Perris, California

0 1.5 Miles

united engineering group

Vicinity Map / Receiving Waters Map



LEGEND/ABBREVIATION

CF	CURB FACE
FG	FINISH GRADE
FF	FINISHED FLOOR
FL	FLOW LINE
GB	GRADE BREAK
HP	HIGH POINT
INV	INVERT
LP	LOW POINT
R/W	RIGHT-OF-WAY
P=XX.X	PAD ELEVATION
FF=XX.X	FINISH FLOOR ELEVATION
2%	DIRECTION OF DRAINAGE/GRADE
TC	TOP OF CURB
TG	TOP OF GRATE
SD	STORM DRAIN
ℙ	PROPERTY LINE
PED.	PEDESTRIAN
TYP.	TYPICAL
	EXISTING FIRE HYDRANT
	WATER VALVE
W	WATER METER
	STREET LIGHT
	PROPOSED STORM DRAIN LINE
1425	EXISTING CONTOUR

CONSTRUCTION NOTES:

1. CONSTRUCT RCP STORM DRAIN AND FITTINGS PER G&D PLANS AT SIZES SHOWN.
2. CONSTRUCT CONTECH TYPE OR EQUIVALENT UNDERGROUND STORAGE SYSTEM PER PLAN.
3. CONSTRUCT GRATE INLET PER PLAN SIZING AND DETAIL PER GRADING PLAN
4. CONSTRUCT CATCH BASIN (WIDTH PER PLAN) PER COUNTY OF RIVERSIDE STD.
5. CONSTRUCT INVERTED UNDER SIDEWALK DRAIN CAST IN PLACE PER COUNTY OF RIVERSIDE STD. NO. 309.
6. INSTALL JENSEN PRECAST DROP INLET DI363636, WITH PEDESTRIAN GRATE.
7. INSTALL TRASH ENCLOSURE PER LANDSCAPE ARCHITECT PLAN.
8. INSTALL JENSEN PRECAST DROP INLET DI484848, WITH PEDESTRIAN GRATE.

BGR NO. XXXXXX WDID: XXXXXX

SEAL-ENGINEER
REGISTERED PROFESSIONAL ENGINEER
CHRISTOPHER F. LENZ
NO. 63001
EXP. 6/30/22
CIVIL
STATE OF CALIFORNIA

united engineering group
8885 Haven Avenue - Suite 195
Rancho Cucamonga, CA 91730
Phone: 909.466.9240
www.unitedeng.com

PREPARED UNDER THE DIRECTION OF:
CHRISTOPHER F. LENZ 63001
DATE: ________ REGISTRATION EXPIRES 6-30-22

BENCH MARK:
BOLT AND WASHER ILLEGIBLE, AT THE CENTERLINE INTERSECTION OF MARKHAM STREET AND PERRIS BOULEVARD. RIVERSIDE COUNTY BENCHMARK NUMBER BM-CSA4 AND RCM81.

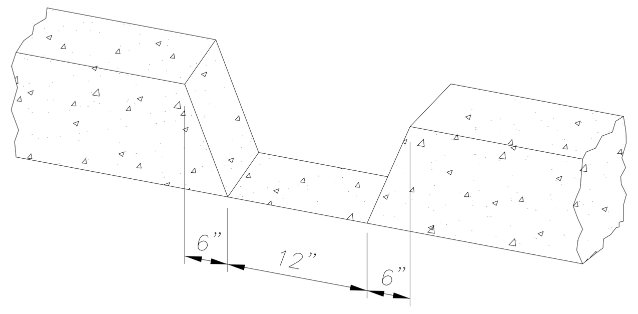
ELEVATION 1455.224

DPR 19-00012 I.P. No. XXXXXX
PERRIS CA, 92571

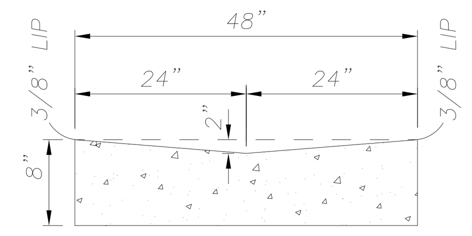
POST CONSTRUCTION BMP SITE PLAN
SWC RAMONA & PERRIS
DPR 19-00012
SITE DESIGN PLAN

SHEET NO. 1 OF 5 SHEETS

FOR: PACIFIC DEVELOPMENT PARTNERS, LLC
W.O.
CITY FILE NO. DPR 19-00012



DETAIL "A" - CURB FACE OPENING
NTS



DETAIL "B" - VALLEY GUTTER
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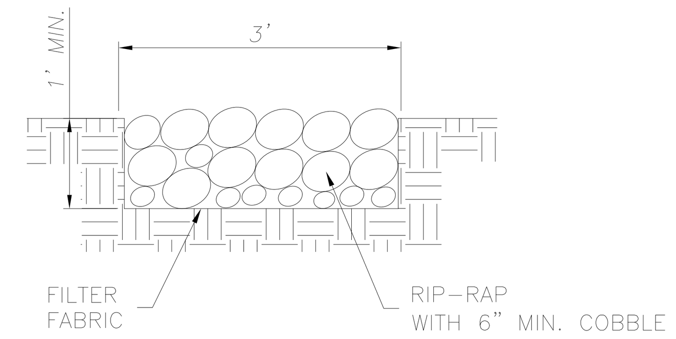

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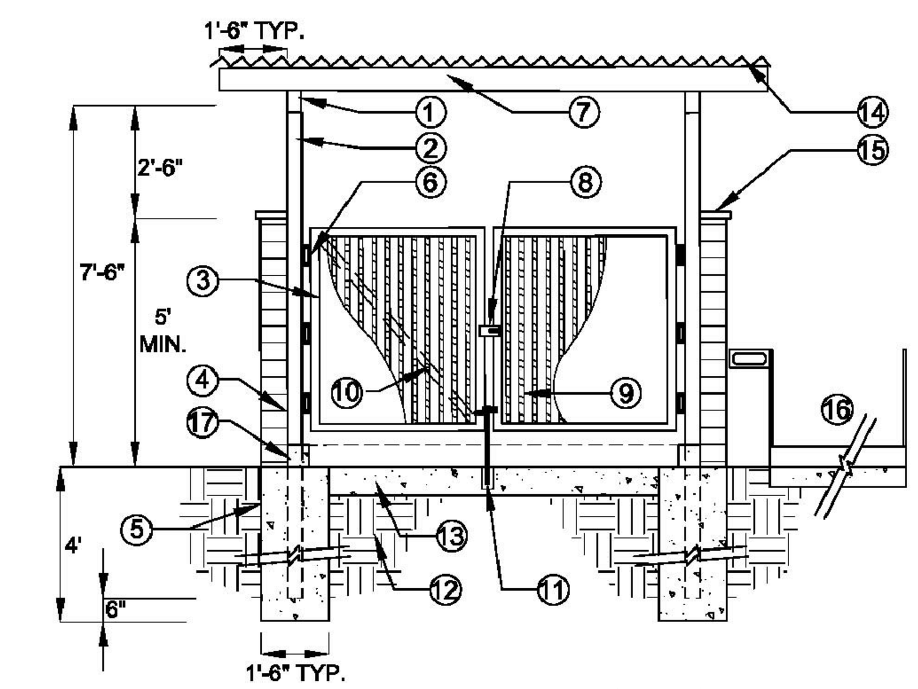
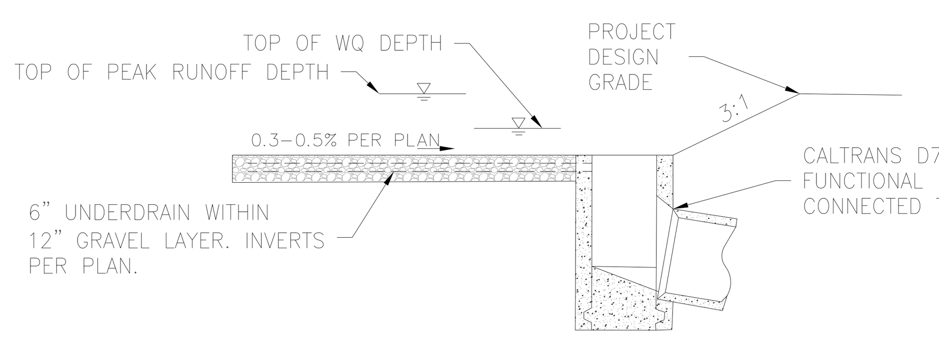
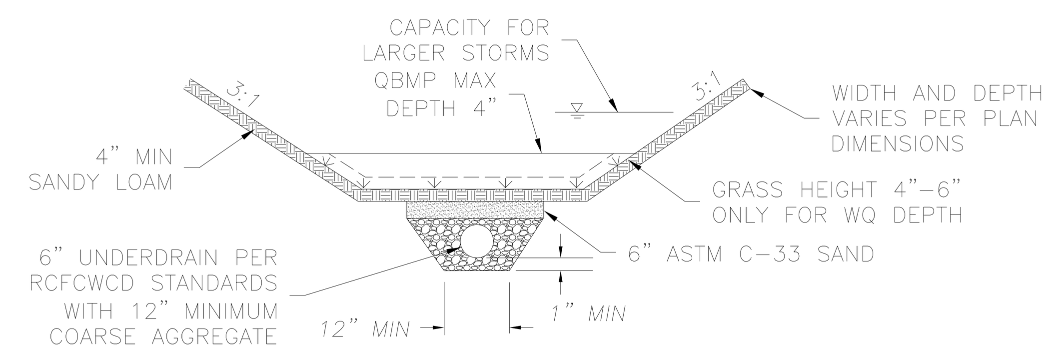


TRASH ENCLOSURE COVER (TYP.) NOTE 7
N.T.S.

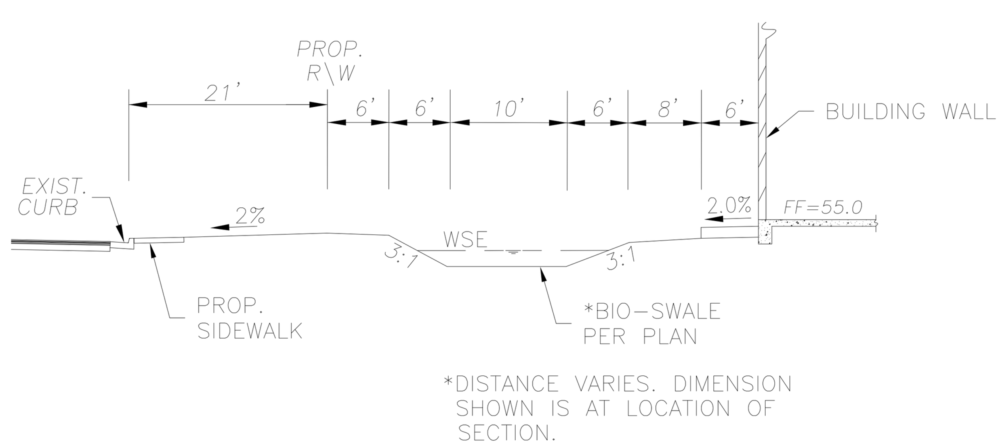
TRASH ENCLOSRE COVER NOTES:
1. 4-INCH X 6-INCH METAL BEAM POWDER COATED
2. 4-INCH X 4-INCH TUBULAR STEEL POST. SET POST FLUSH TO WALL. GROUT FILL POST SOLID. PAINT WITH 2 COATS ZINC PRIMER & 2 COATS SATIN FINISH PAINT.
3. GATE FRAME CONTINUOUS, ATTACH GATE FRAME TO STEEL POST WITH 3 HEAVY DUTY HINGES. CONTRACTOR SHALL SUPPLY SHOP DRAWINGS FOR APPROVAL PRIOR TO CONSTRUCTION.
4. CMU WALL / REFER TO STRUCTURAL ENGINEERS SPECIFICATIONS FOR REINFORCEMENT.
5. CONCRETE FOOTING / REFER TO STRUCTURAL ENGINEERS SPECIFICATIONS FOR REINFORCEMENT.
6. HEAVY DUTY HINGES.
7. METAL TRELLIS POWDER COATED (OR 2 COATS ZINC PRIMER & 2 COATS SATIN FINISH PAINT); COLOR TO BE SELECTED /REFER TO SHOP DRAWINGS FOR ROOF FRAMING.
8. 3-INCH X 8-INCH X 1/4-INCH THICK GALVANIZED STEEL SJOP PLATE AND LOCKABLE KEEPER. WELD TO GATE FRAME - AS SHOWN / CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR APPROVAL.
9. MINI-V-BEAM 26 GAUGE WITH ENDURA CLAD FINISH AS MANUFACTURED BY ASC PACIFIC INC. OR APPROVED EQUAL. SPOT WELD TO ANGLE FRAME (CONTRACTOR TO SUBMIT SHOP DRAWINGS).
10. 9-INCH X 1/2-INCH GALVANIZED STEEL DIAGONAL CROSS BRACE / FILLET WELD TO FRAME AND SPOT WELD TO MINI-V-BEAM (AT BACK OF GATE).
11. HEAVY DUTY DROP CRANE BOLT. ATTACH TO GATE FRAME. SET 1-6 INCHES LONG X 1-INCH O.D. GALVANIZED PIPE SLEEVE TO ACCEPT BOLT. 'STANLY' CD 10009-18 INCHES OR APPROVED EQUAL.
12. COMPACTED SUBGRADE PER GEOTECHNICAL REPORT.
13. 6-INCH THICK PCC CONCRETE PAD WITH 6 X 6 X 10 WWM.
14. METAL ROOF; CORRUGATED STEEL - BERRIDGE LEAD-COPE STRAIGHT S-DECK / INSTALL PER MANUFACTURERS SPECIFICATIONS.
15. 8-INCH X 2-INCH X 16-INCH CMU CAP TO MATCH WALL COLOR.
16. DISABLED ACCESSIBLE RAMP AND HANDRAIL IF REQUIRED.
17. CONCRETE CURB
NOTES
A. CONCRETE FOOTING TO ACHIEVE 4300 PSI @ 28 DAYS.
B. TRASH BINS - SIZE AND NUMBER AS REQUIRED BY CITY.



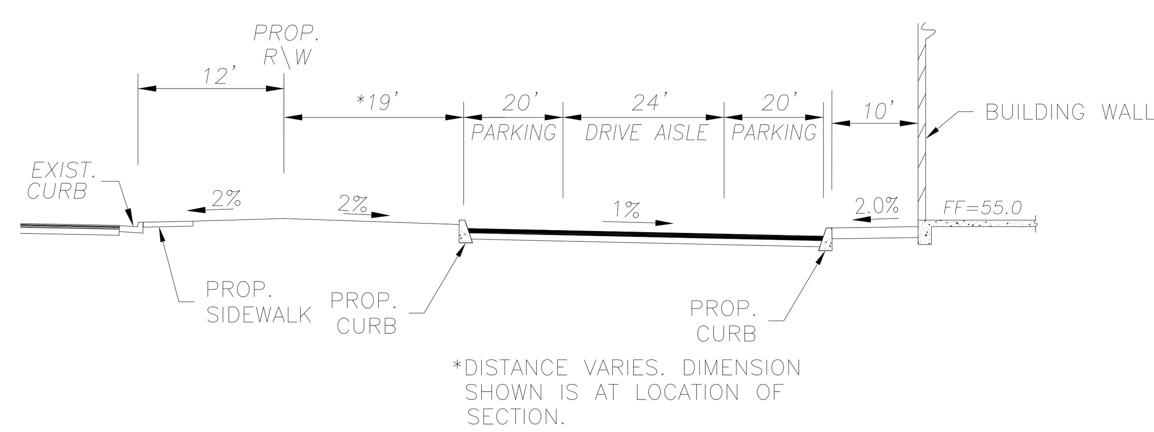
BIO-SWALE END DRAIN DETAIL
NTS



BIO-SWALE SECTION
NTS



SECTION "A-A"
NTS



SECTION "B-B"
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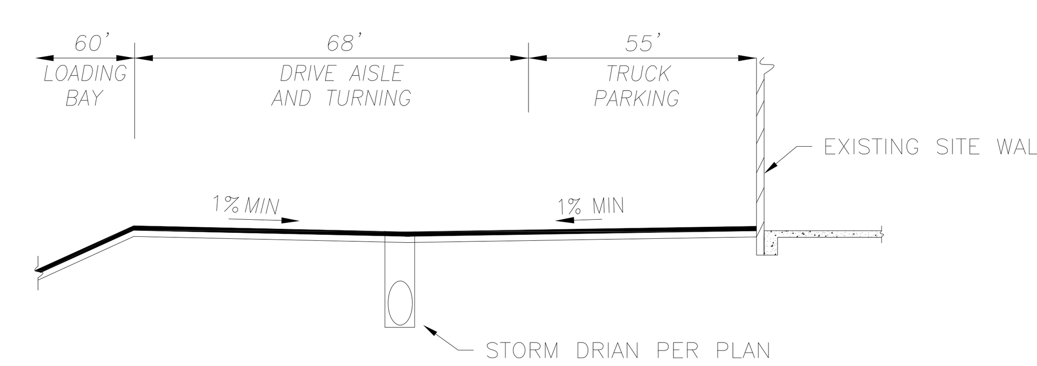

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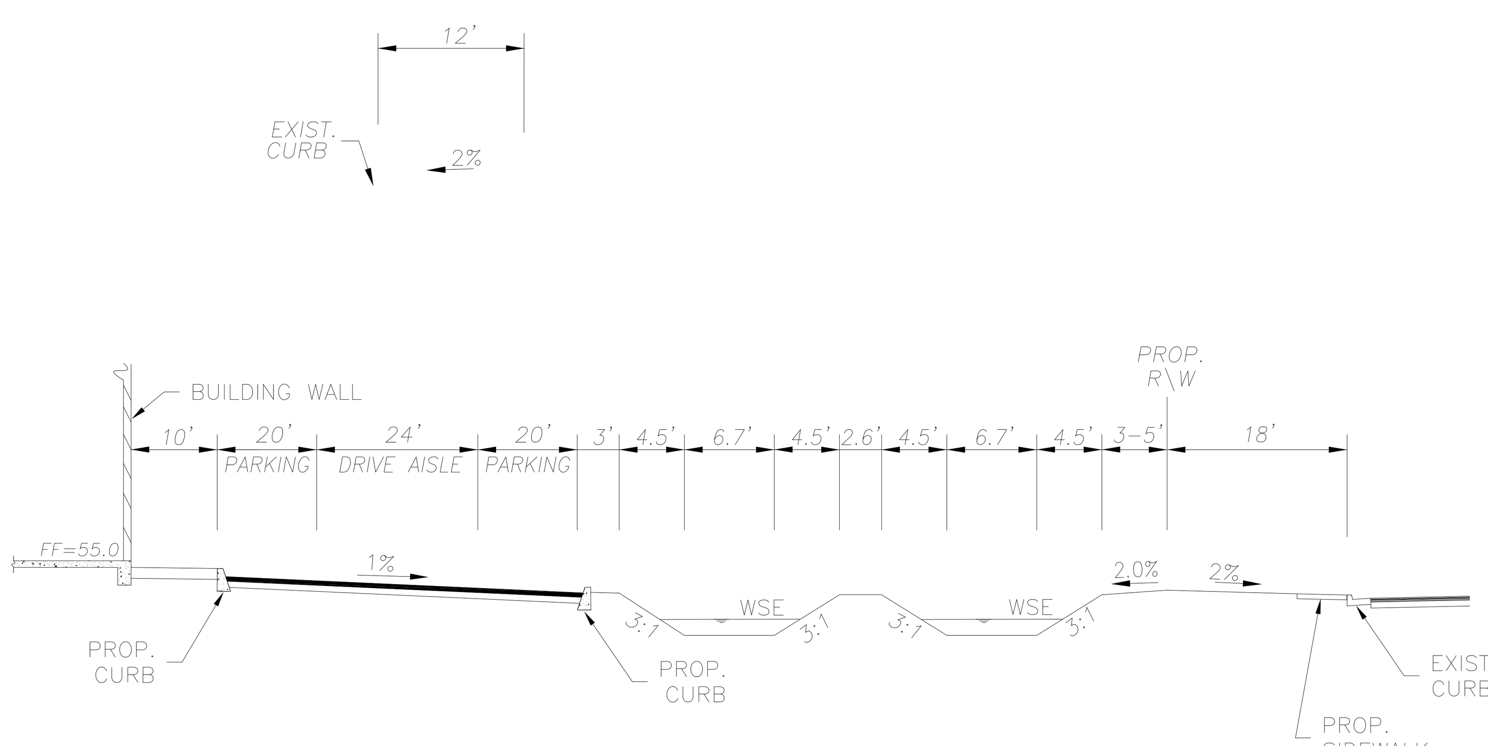

SECTION "D-D"
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CONSTRUCTION NOTES:

1. CONSTRUCT RCP STORM DRAIN AND FITTINGS PER G&D PLANS AT SIZES SHOWN.
2. CONSTRUCT CONTECH TYPE OR EQUIVALENT UNDERGROUND STORAGE SYSTEM PER PLAN.
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7. INSTALL TRASH ENCLOSURE PER LANDSCAPE ARCHITECT PLAN.
8. INSTALL JENSEN PRECAST DROP INLET DI484848, WITH PEDESTRIAN GRATE.

BGR NO. XXXXXX WDID: XXXXXX

SEAL-ENGINEER
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EXP. 6/30/22
CIVIL
STATE OF CALIFORNIA

ueg
united engineering group

8885 Haven Avenue - Suite 195
Rancho Cucamonga, CA 91730
Phone: 909.466.9240
www.unitedeng.com

PREPARED UNDER THE DIRECTION OF:
CHRISTOPHER F. LENZ 63001
DATE: ________ REGISTRATION EXPIRES 6-30-22

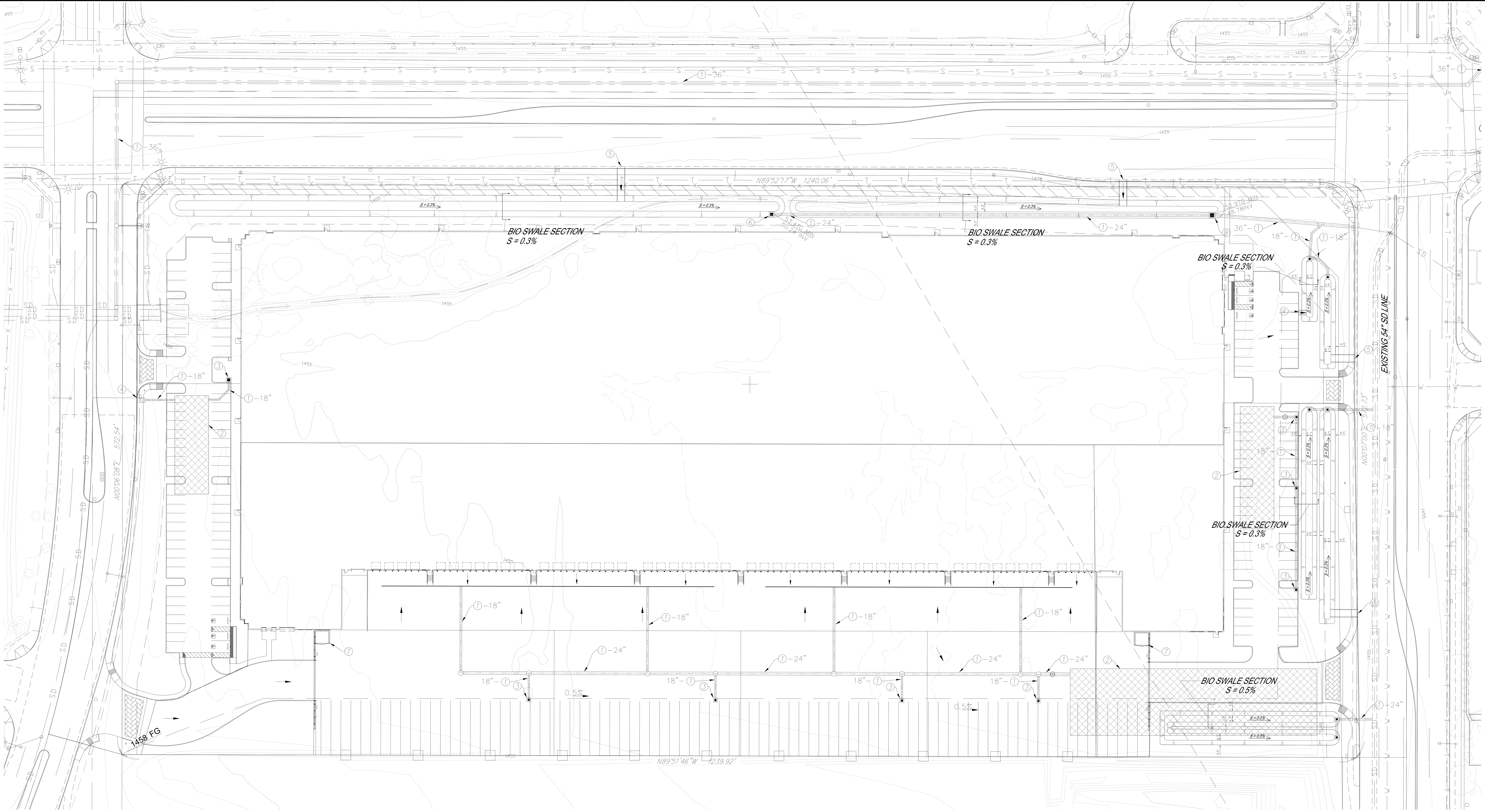
BENCH MARK:
BOLT AND WASHER ILLEGIBLE, AT THE CENTERLINE INTERSECTION OF MARKHAM STREET AND PERRIS BOULEVARD. RIVERSIDE COUNTY BENCHMARK NUMBER BM-CSA4 AND RCM81.
1"=50'
ELEVATION 1455.224

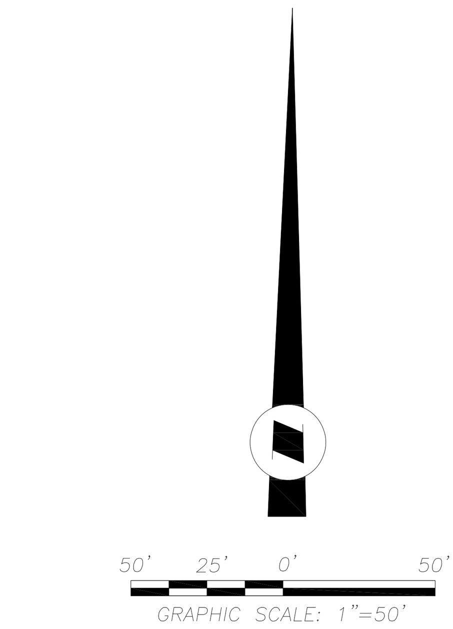
DPR 19-00012
PERRIS CA, 92571
I.P. No. XXXXXX

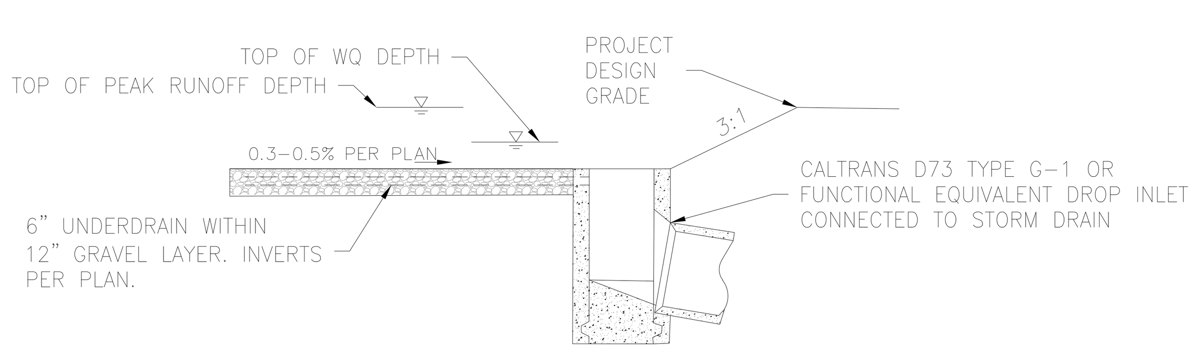
POST CONSTRUCTION BMP SITE PLAN
SWC RAMONA & PERRIS
DPR 19-00012
DETAILS AND SECTIONS

FOR: PACIFIC DEVELOPMENT PARTNERS, LLC
W.O.
CITY FILE NO. DPR 19-00012

SHEET NO.
2
OF 5 SHEETS

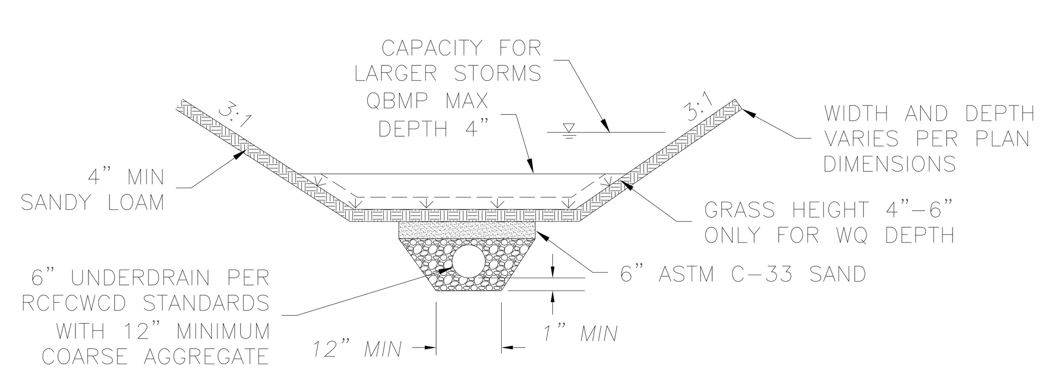






BIO-SWALE END DRAIN DETAIL

N.T.S.



BIO-SWALE SECTION

NTS

LEGEND/ABBREVIATION

CF	CURB FACE	TC	TOP OF CURB
FG	FINISH GRADE	TG	TOP OF GRATE
FF	FINISHED FLOOR	SD	STORM DRAIN
FL	FLOW LINE	℄	PROPERTY LINE
GB	GRADE BREAK	PED.	PEDESTRIAN
HP	HIGH POINT	TYP.	TYPICAL
INV	INVERT		EXISTING FIRE HYDRANT
LP	LOW POINT		WATER VALVE
R/W	RIGHT-OF-WAY	W	WATER METER
P=XX.X	PAD ELEVATION		STREET LIGHT
FF=XX.X	FINISH FLOOR ELEVATION		PROPOSED STORM DRAIN LINE
2%	DIRECTION OF DRAINAGE/GRADE	1425	EXISTING CONTOUR

CONSTRUCTION NOTES:

1. CONSTRUCT RCP STORM DRAIN AND FITTINGS PER G&D PLANS AT SIZES SHOWN.
2. CONSTRUCT CONTECH TYPE OR EQUIVALENT UNDERGROUND STORAGE SYSTEM PER PLAN.
3. CONSTRUCT GRATE INLET PER PLAN SIZING AND DETAIL PER GRADING PLAN
4. CONSTRUCT CATCH BASIN (WIDTH PER PLAN) PER COUNTY OF RIVERSIDE STD.
5. CONSTRUCT INVERTED UNDER SIDEWALK DRAIN CAST IN PLACE PER COUNTY OF RIVERSIDE STD. NO. 309.
6. INSTALL JENSEN PRECAST DROP INLET DI363636, WITH PEDESTRIAN GRATE.
7. INSTALL TRASH ENCLOSURE PER LANDSCAPE ARCHITECT PLAN.
8. INSTALL JENSEN PRECAST DROP INLET DI484848, WITH PEDESTRIAN GRATE.

BGR NO. XXXXXX WDID: XXXXXX

SEAL-ENGINEER

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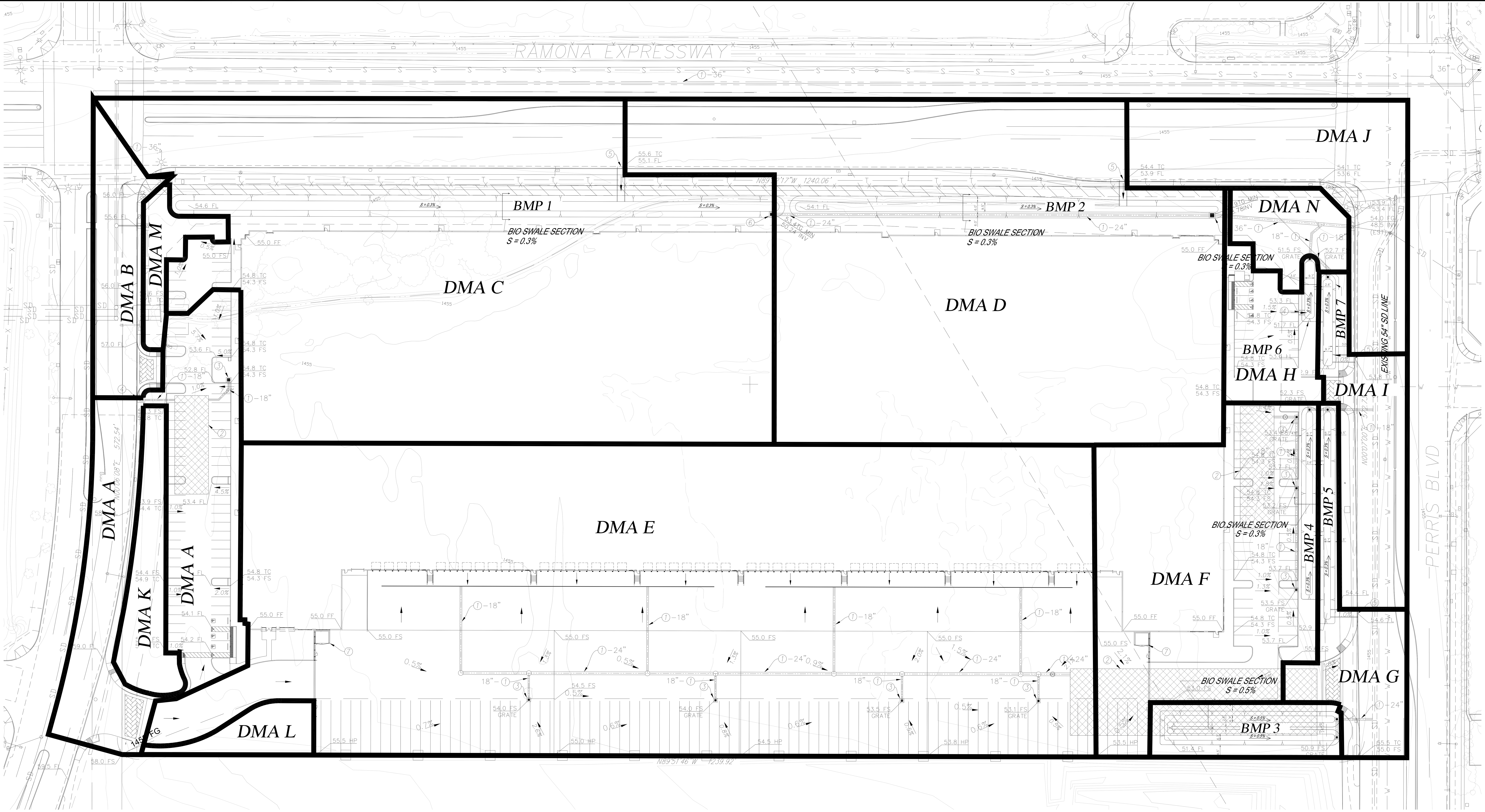
POST CONSTRUCTION BMP SITE PLAN
SWC RAMONA & PERRIS
DPR 19-00012
PRIVATE STORM DRAIN PLAN

SHEET NO. 3 OF 5 SHEETS

FOR: PACIFIC DEVELOPMENT PARTNERS, LLC

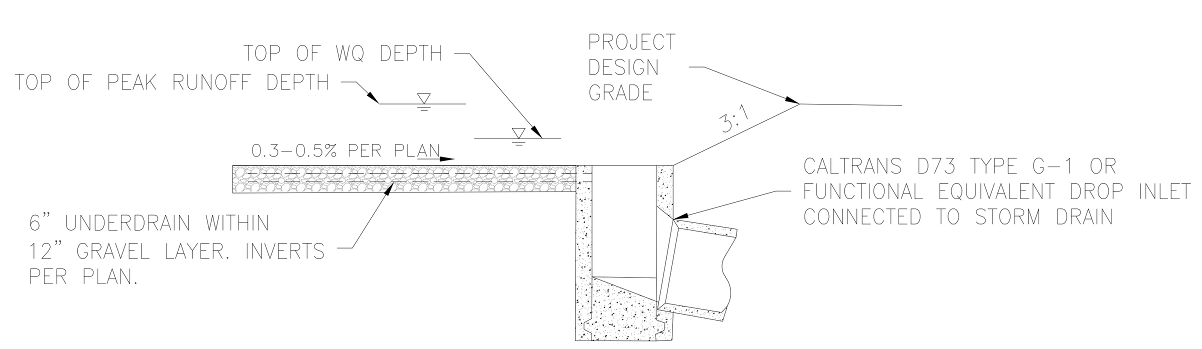
W.O.

CITY FILE NO. DPR 19-00012



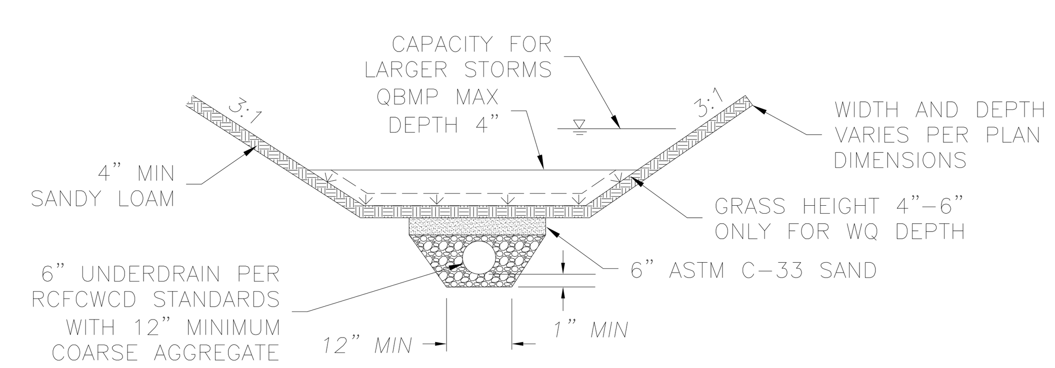
DMA	AREA [AC]	2YR 24HR FLOW [CFS] – Qbmp	BMP
A	1.15	0.28	1
B	0.33	0.08	NONE
C	4.35	1.06	1
D	3.70	0.90	2
E	6.42	1.57	3
F	1.46	0.36	4
G	0.41	0.10	5
H	0.31	0.08	6
I	0.48	0.12	7
J	0.80	0.20	NONE
DMA	AREA [AC]	DESIGN STORM [CF] – Vbmp	BMP
K	0.25	57.3	SELF
L	0.13	29.4	SELF
M	0.13	29.7	SELF
N	0.21	49.0	SELF

BMP	LENGTH [FT]	WIDTH [FT]
1	606	10
2	425	10
3	342	6.7
4	184	6.7
5	209	6.7
6	84	10
7	97	10



BIO-SWALE END DRAIN DETAIL

N.T.S.



BIO-SWALE SECTION

NTS

LEGEND/ABBREVIATION

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HP	HIGH POINT	TYP.	TYPICAL
INV	INVERT		EXISTING FIRE HYDRANT
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R/W	RIGHT-OF-WAY	W	WATER METER
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2%	DIRECTION OF DRAINAGE/GRADE	1425	EXISTING CONTOUR

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BGR NO. XXXXXX WDID: XXXXXX

SEAL-ENGINEER

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PREPARED UNDER THE DIRECTION OF:

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DATE: REGISTRATION EXPIRES 6-30-22

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ELEVATION 1455.224

DPR 19-00012 I.P. No. XXXXXX
PERRIS CA, 92571

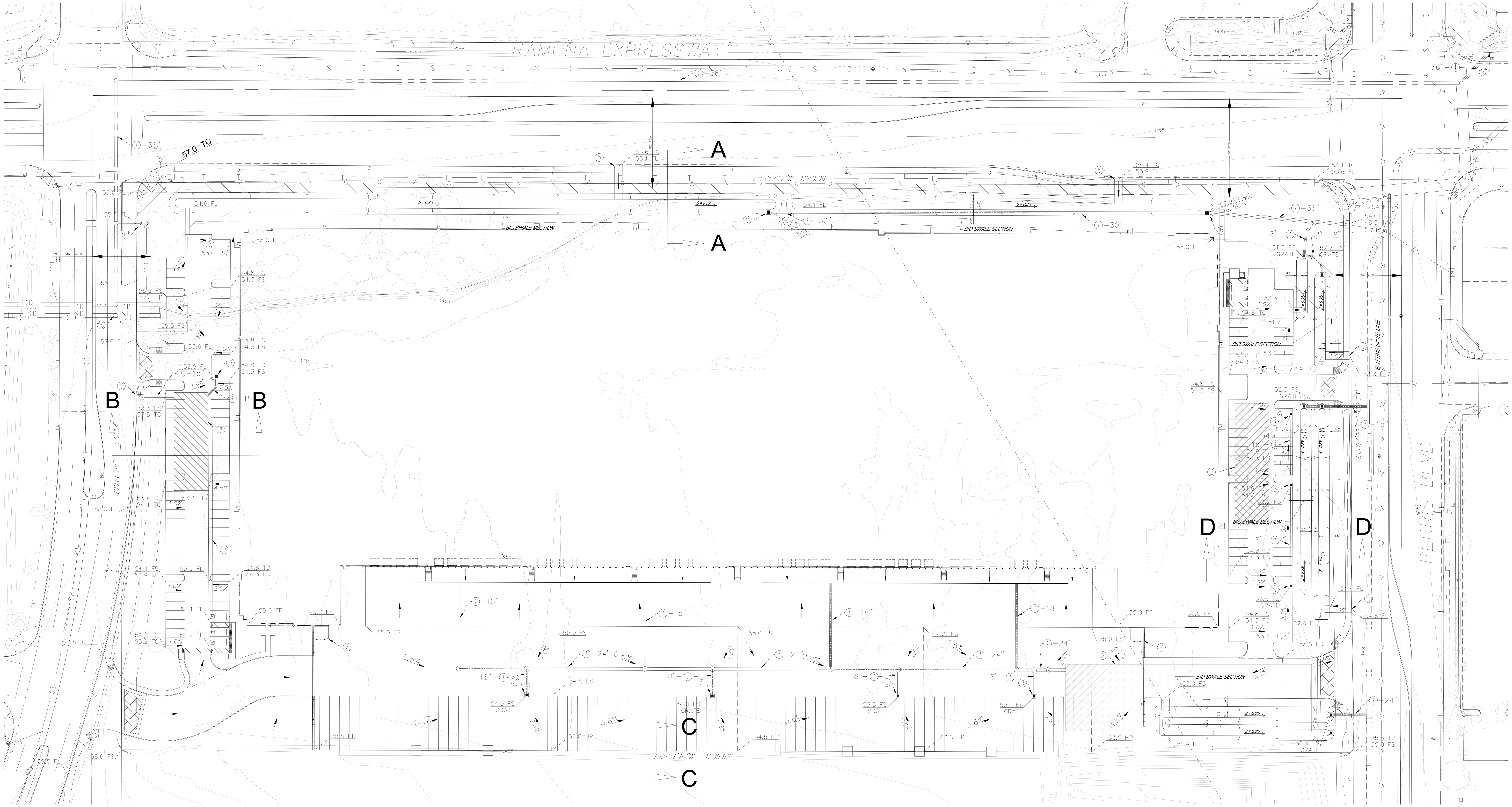
POST CONSTRUCTION BMP SITE PLAN
SWC RAMONA & PERRIS
DPR 19-00012
WQMP - DMA MAP

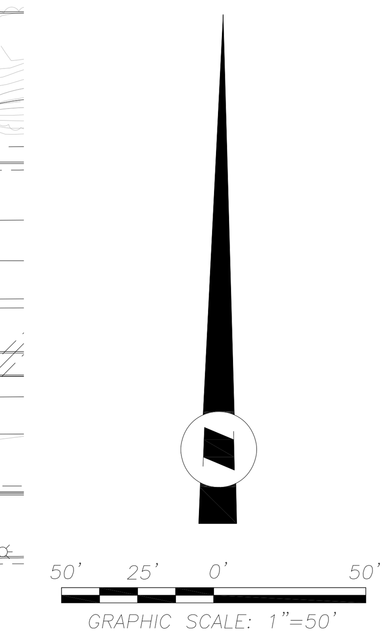
SHEET NO. 4 OF 5 SHEETS

FOR: PACIFIC DEVELOPMENT PARTNERS, LLC | W.O. | CITY FILE NO. DPR 19-00012

Appendix 2: Construction Plans

Grading and Drainage Plans





LEGEND/ABBREVIATION

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8. INSTALL JENSEN PRECAST DROP INLET DI484848, WITH PEDESTRIAN GRATE.
9. INSTALL VALLEY GUTTER AT 0.5% SLOPE PER DETAIL B.

CONSTRUCTION NOTES:

10. CONNECT EXISTING LOWES OUTLET PIPES TO A SINGLE 36" RCP STORM DRAIN LINE AS SHOWN. CONNECT TO CLOSEST EXISTING LINE E FACILITIES AT TIME OF FINAL DESIGN.
11. RECONSTRCUT OR REPLACE CATCH BASIN TO CONNECT TO 36" RCP STORM DRIAN LINE AS SHOWN.

BGR NO. _______ WDID:

DIGALERT
DIAL BEFORE YOU DIG
TWO WORKING DAYS BEFORE YOU DIG
TOLL FREE 1-800-227-2600
A PUBLIC SERVICE BY UNDERGROUND SERVICE ALERT

NOTE:
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THE PRIVATE ENGINEER SIGNING THESE PLANS IS RESPONSIBLE FOR ASSURING THE ACCURACY OF DESIGN AND ACCEPTABILITY OF THE WORK HEREON. IN THE EVENT OF DISCREPANCIES ARISING AFTER CITY APPROVAL OR DURING CONSTRUCTION, THE PRIVATE ENGINEER SHALL BE RESPONSIBLE DETERMINING AN ACCEPTABLE SOLUTION AND REVISING THE PLANS FOR APPROVAL BY CITY.

MARK	BY	DATE	REVISIONS	APPR.	DATE
ENGINEER				CITY	

DESIGN BY: DRAWN BY: CHECKED BY:

CITY OF PERRIS
APPROVED BY:
CITY ENGINEER DATE

SEAL-ENGINEER
REGISTERED PROFESSIONAL ENGINEER
CHRISTOPHER F. LENZ
NO. 63001
EXP. 6/30/22
CIVIL
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ELEVATION = 1455.224'

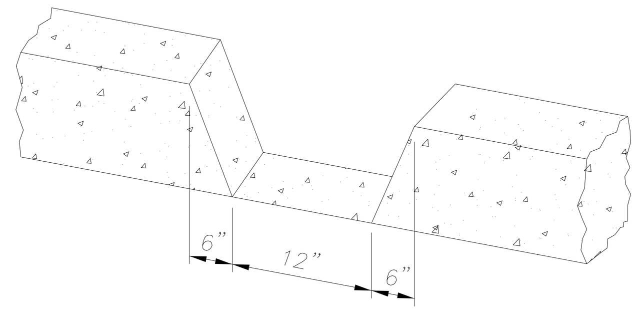
SCALE 1"=50'
FIELD BOOK
DESIGN
DRAWN
CHECKED

ZONING CASE #DPR 19-00012 I.P. No. ______
PERRIS CA, 92571
COUNTY OF RIVERSIDE

PRELIMINARY GRADING & DRAINAGE PLAN SWC RAMONA & PERRIS PRELIMINARY DESIGN PLAN

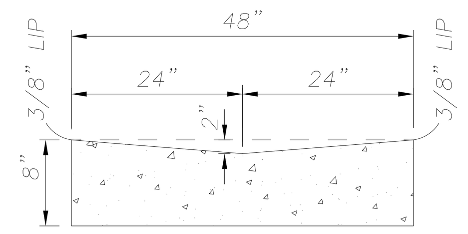
FOR: PACIFIC DEV. PARTNERS
W.O.
CITY FILE NO. DPR 19-00012

SHEET NO. 1 OF 2 SHEETS



DETAIL "A" - CURB FACE OPENING

NTS



DETAIL "B" - VALLEY GUTTER

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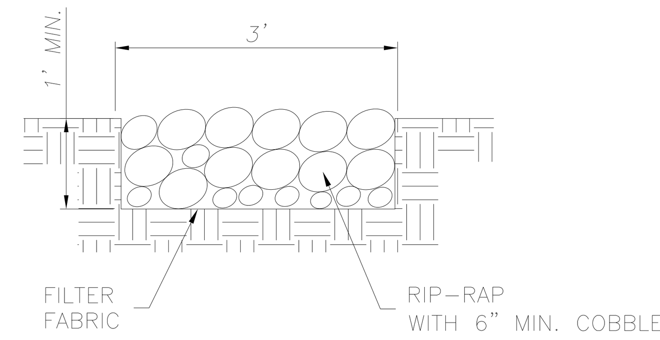
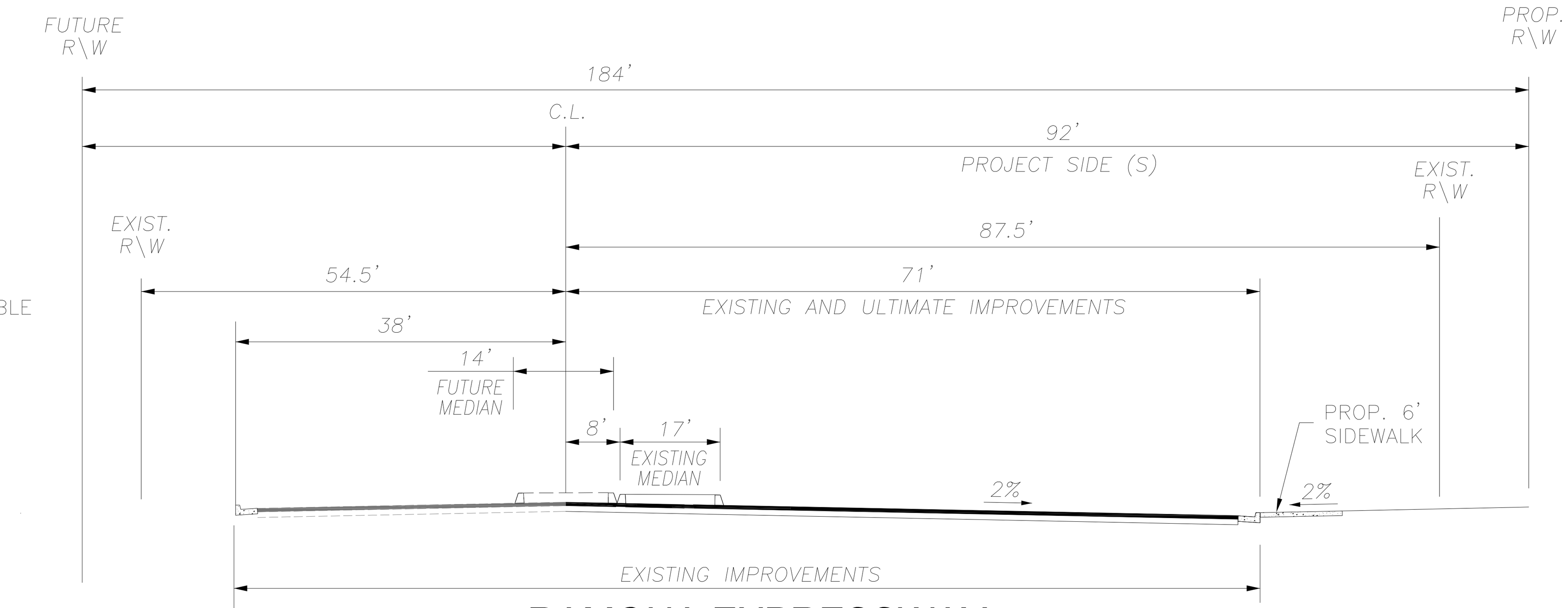


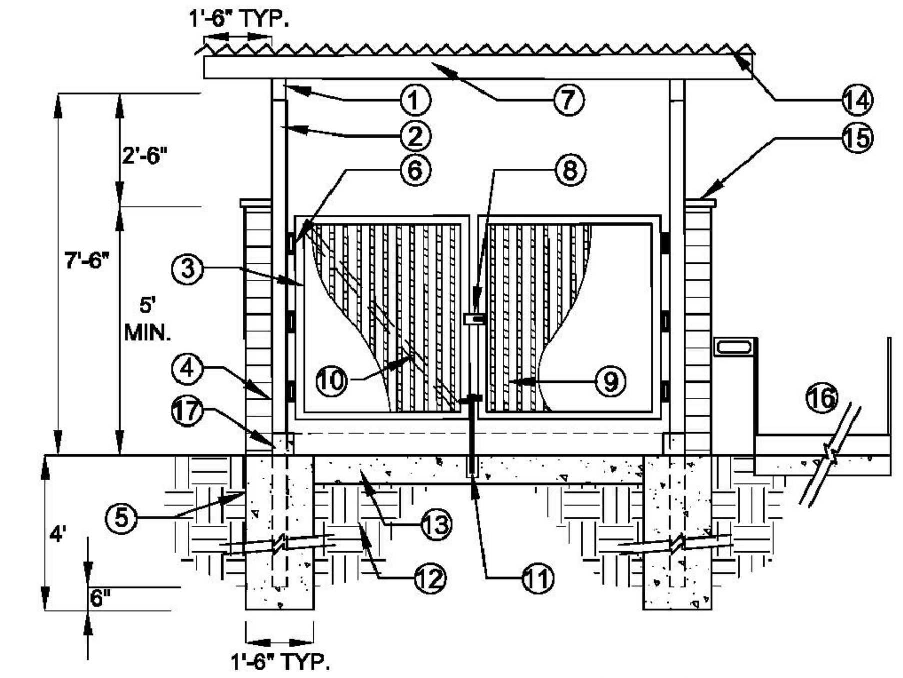
DETAIL "C" - RIP-RAP PAD

NTS



RAMONA EXPRESSWAY
STANDARD WIDTH

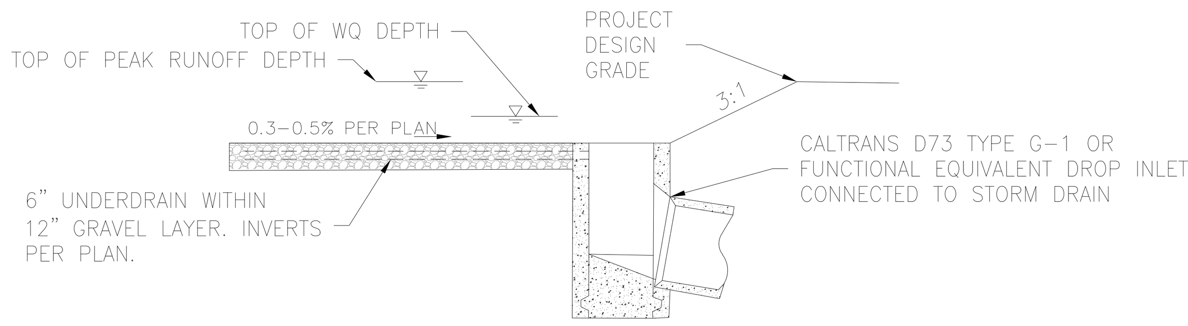
N.T.S.



TRASH ENCLOSURE COVER (TYP.) NOTE 7

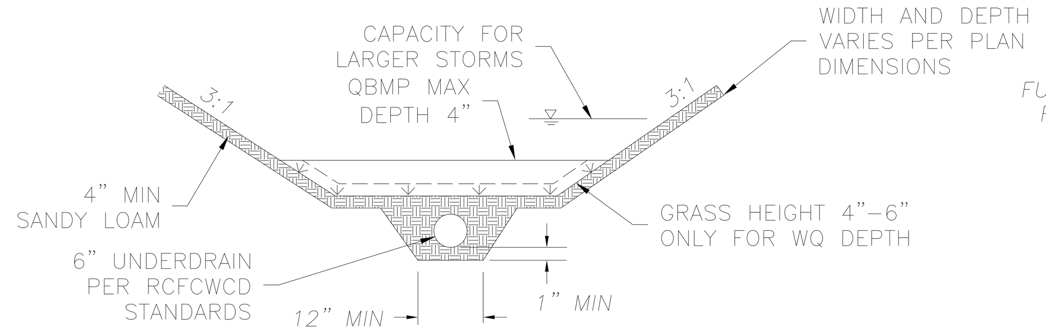
N.T.S.

TRASH ENCLOSRE COVER NOTES:
1. 4-INCH X 6-INCH METAL BEAM POWDER COATED
2. 4-INCH X 4-INCH TUBULAR STEEL POST. SET POST FLUSH TO WALL. GROUT FILL POST SOLID. PAINT WITH 2 COATS ZINC PRIMER & 2 COATS SATIN FINISH PAINT.
3. GATE FRAME CONTINUOUS, ATTACH GATE FRAME TO STEEL POST WITH 3 HEAVY DUTY HINGES. CONTRACTOR SHALL SUPPLY SHOP DRAWINGS FOR APPROVAL PRIOR TO CONSTRUCTION.
4. CMU WALL / REFER TO STRUCTURAL ENGINEERS SPECIFICATIONS FOR REINFORCEMENT.
5. CONCRETE FOOTING / REFER TO STRUCTURAL ENGINEERS SPECIFICATIONS FOR REINFORCEMENT.
6. HEAVY DUTY HINGES.
7. METAL TRELLIS POWDER COATED (OR 2 COATS ZINC PRIMER & 2 COATS SATIN FINISH PAINT); COLOR TO BE SELECTED /REFER TO SHOP DRAWINGS FOR ROOF FRAMING.
8. 3-INCH X 8-INCH X 1/4-INCH THICK GALVANIZED STEEL SJOP PLATE AND LOCKABLE KEEPER. WELD TO GATE FRAME - AS SHOWN / CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR APPROVAL.
9. MINI-V-BEAM 26 GAUGE WITH ENDURA CLAD FINISH AS MANUFACTURED BY ASC PACIFIC INC. OR APPROVED EQUAL. SPOT WELD TO ANGLE FRAME (CONTRACTOR TO SUBMIT SHOP DRAWINGS).
10. 9-INCH X 1/2-INCH GALVANIZED STEEL DIAGONAL CROSS BRACE / FILLET WELD TO FRAME AND SPOT WELD TO MINI-V-BEAM (AT BACK OF GATE).
11. HEAVY DUTY DROP CRANE BOLT. ATTACH TO GATE FRAME. SET 1-6 INCHES LONG X 1-INCH O.D. GALVANIZED PIPE SLEEVE TO ACCEPT BOLT. 'STANLY' CD 10009-18 INCHES OR APPROVED EQUAL.
12. COMPACTED SUBGRADE PER GEOTECHNICAL REPORT.
13. 6-INCH THICK PCC CONCRETE PAD WITH 6 X 6 X 10 WWM.
14. METAL ROOF; CORRUGATED STEEL - BERRIDGE LEAD-COPE STRAIGHT S-DECK / INSTALL PER MANUFACTURERS SPECIFICATIONS.
15. 8-INCH X 2-INCH X 16-INCH CMU CAP TO MATCH WALL COLOR.
16. DISABLED ACCESSIBLE RAMP AND HANDRAIL IF REQUIRED.
17. CONCRETE CURB
NOTES
A. CONCRETE FOOTING TO ACHIEVE 4300 PSI @ 28 DAYS.
B. TRASH BINS - SIZE AND NUMBER AS REQUIRED BY CITY.



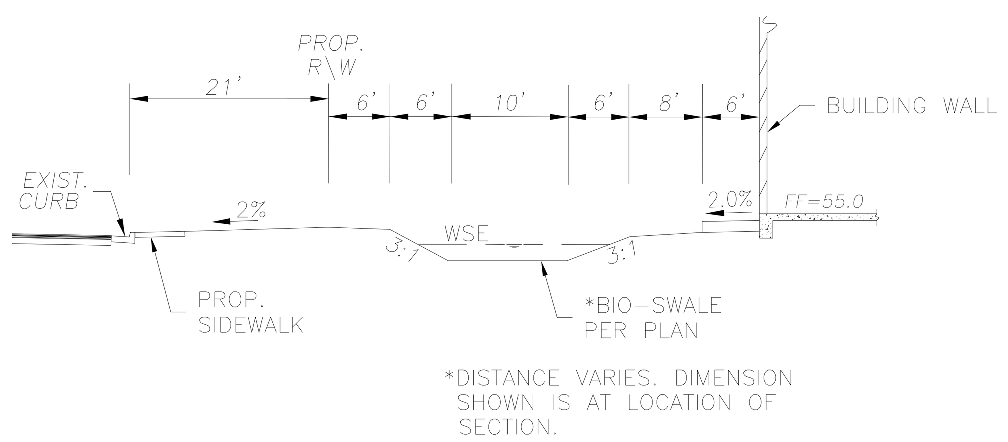
BIO-SWALE END DRAIN DETAIL

NTS



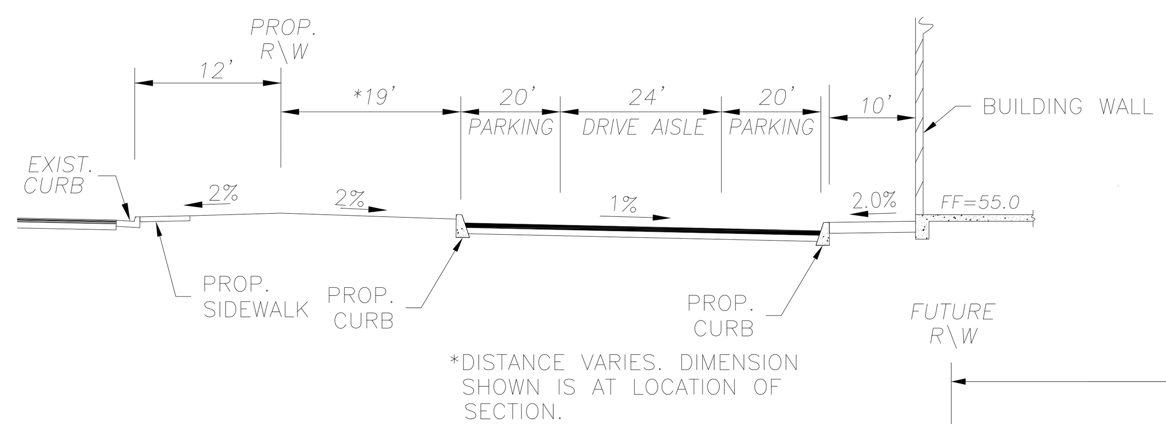
BIO-SWALE SECTION

NTS



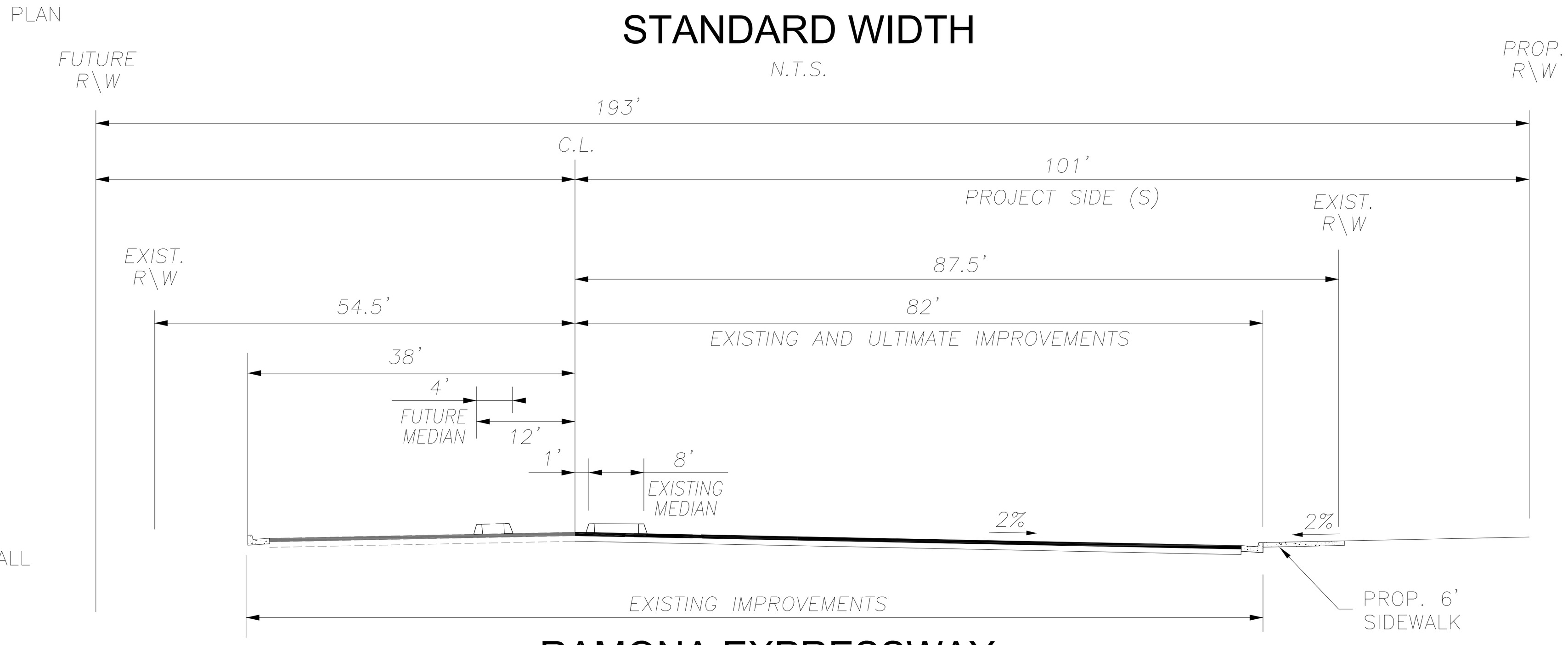
SECTION "A-A"

NTS



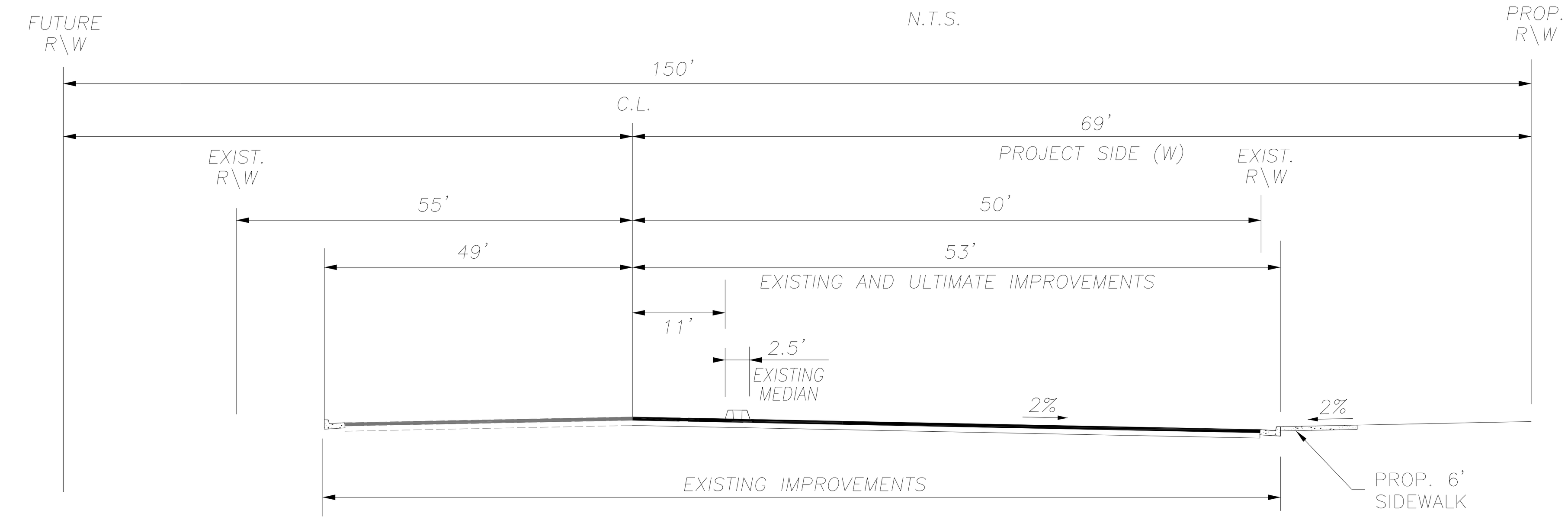
SECTION "B-B"

NTS



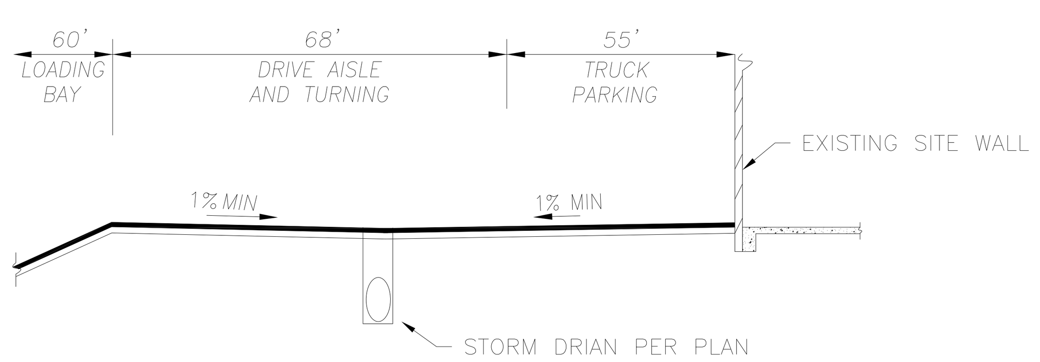
RAMONA EXPRESSWAY
EXPANDED WIDTH INTERSECTION PER PVCC SP

N.T.S.



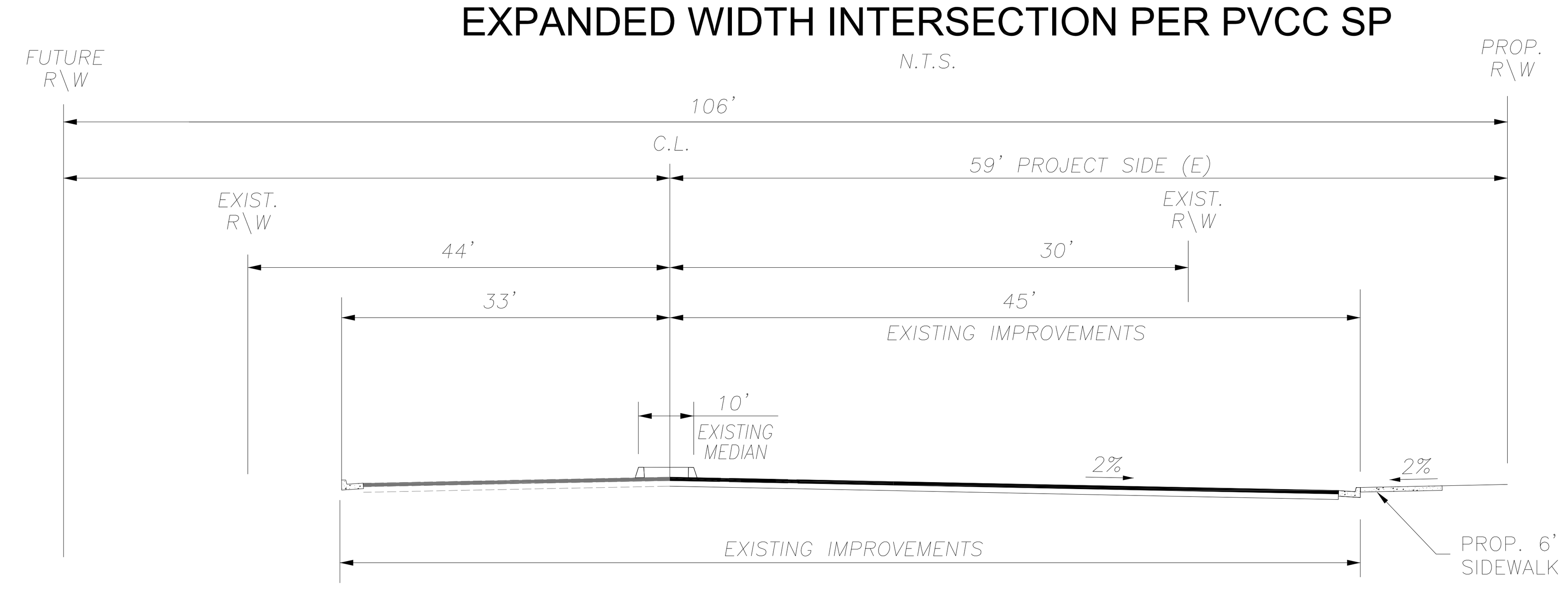
PERRIS BOULEVARD
EXPANDED WIDTH INTERSECTION PER PVCC SP

N.T.S.



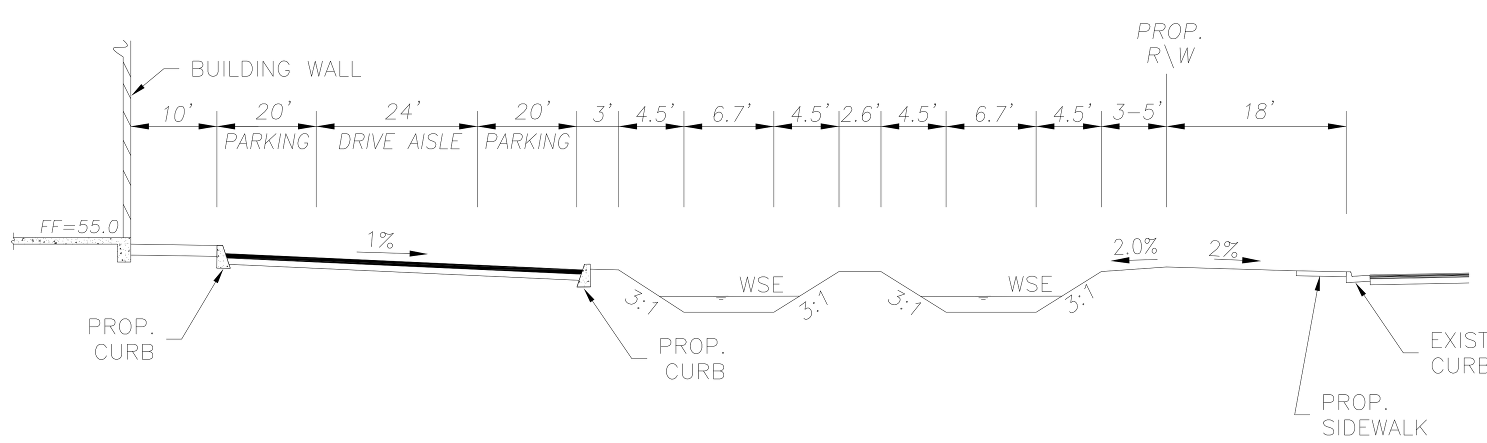
SECTION "C-C"

NTS



INDIAN AVENUE
EXPANDED WIDTH INTERSECTION PER PVCC SP

N.T.S.



SECTION "D-D"

NTS

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MARK	BY	DATE		APPR.	DATE
ENGINEER			REVISIONS	CITY	
DESIGN BY:		DRAWN BY:		CHECKED BY:	

CITY OF PERRIS
APPROVED BY:
CITY ENGINEER DATE

SEAL-ENGINEER
REGISTERED PROFESSIONAL ENGINEER — CHRISTOPHER F. LENZ — NO. 63001 — EXP. 6/30/22 — CIVIL — STATE OF CALIFORNIA

ueg united engineering group
8885 Haven Avenue - Suite 195
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FIELD BOOK
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ZONING CASE #DPR 19-00012 I.P. No. ______
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COUNTY OF RIVERSIDE

PRELIMINARY GRADING & DRAINAGE PLAN SWC RAMONA & PERRIS DETAIL SHEET

FOR: PACIFIC DEV. PARTNERS
W.O.
CITY FILE NO. DPR 19-00012

SHEET NO. 2 OF 2 SHEETS

Appendix 3: Soils Information

Geotechnical Study and Other Infiltration Testing Data

GEOTECHNICAL UPDATE & PERCOLATION TEST REPORT

WAREHOUSE BUILDING SOUTHWEST CORNER OF RAMONA EXPRESSWAY & PERRIS BOULEVARD PERRIS, CALIFORNIA

GEOCON
WEST, INC.

GEOTECHNICAL
ENVIRONMENTAL
MATERIALS

PREPARED FOR

PACIFIC DEVELOPMENT PARTNERS, LLC
SAN JUAN CAPISTRANO, CALIFORNIA

APRIL 28, 2020
PROJECT NO. T2400-22-02

Project No. T2400-22-02
April 28, 2020

Pacific Development Partners, LLC
30220 Rancho Viejo Road, Suite B
San Juan Capistrano, California 92675

Attention: Mr. Lars Anderson

Subject: GEOTECHNICAL UPDATE & PERCOLATION TEST REPORT
WAREHOUSE BUILDING
SOUTHWEST CORNER OF
RAMONA EXPRESSWAY & PERRIS BOULEVARD
PERRIS, CALIFORNIA

Dear Mr. Anderson:

In accordance with your authorization of Proposal No. IE-2431, Geocon West Inc. (Geocon) herein submits the results of our geotechnical update and percolation test results for the subject site. The accompanying report presents the results of our study, and the conclusions and recommendations pertaining to the geotechnical aspects of the proposed warehouse building. The site is considered suitable for proposed development, provided the recommendations of this report are followed.

Should you have questions regarding this report, or if we may be of further service, please contact the undersigned at your convenience.

Very truly yours,

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GEOTECHNICAL UPDATE
& PERCOLATION TEST REPORT

1. PURPOSE AND SCOPE

This report presents the results of our geotechnical update and percolation testing as it pertains to the construction of the proposed warehouse building at a site located immediately southwest of the corner of Ramona Expressway and Perris Boulevard, in the City of Perris, California (see *Vicinity Map*, Figure 1). Geocon performed a geotechnical investigation at the site in 2006 which serves as the basis for this update.

The purpose of this study was to evaluate the existing site geology and subsurface soil conditions, identify geologic and geotechnical constraints that may affect development of the property, and provide geotechnical recommendations as they pertain to the proposed development based on the 2019 California Building Code (CBC). The scope of this investigation also included a review of readily available published and unpublished geologic literature (see *List of References*).

The scope of this study included performing a site reconnaissance, drilling and testing of percolation borings, collecting and testing of soil samples, reviewing our 2006 geotechnical report for the site, performing engineering analyses, and preparing this report.

Our original subsurface investigation was performed on August 4 and 7, 2006. We drilled, logged, and sampled eighteen geotechnical borings to depths ranging between 16 and 51½ feet. On March 15 and 16, 2020 we drilled, logged, and sampled seven percolation test borings to depths of 5 and 11 feet in areas where storm water infiltration systems are proposed. The *Geologic Map* (Figure 2) presents the approximate locations of the geotechnical and percolation test borings. *Appendix A* provides a detailed discussion of the field investigation including logs of the borings and percolation test results.

Laboratory testing was performed on select soil samples collected during our field investigations. Our laboratory testing program consisted of in-situ dry density and moisture content, maximum dry density and optimum moisture content, direct shear strength, collapse/swell potential, consolidation characteristics, expansion index/potential, corrosion screening, and grain size distribution. Details of the laboratory tests and a summary of the test results are presented in *Appendix B.*

The recommendations presented herein are based on the engineering evaluation of data obtained from our field investigations and our understanding of the development as presently proposed. If project details vary significantly from those described herein, Geocon should be contacted to evaluate the necessity for review and possible revision of this report.

2. SITE AND PROJECT DESCRIPTION

The subject site is located on the southwest corner of the intersection of Ramona Expressway and Perris Boulevard, in the City of Perris, California. The site is currently vacant with grass, weeds, and small shrubs within the interior, and some stumps of recently cut trees in the northeast corner. Based on available historic aerial photographs provided by *Historic Aerials* (NETR Online), it appears the site was previously utilized as a sod farm until sometime between 2005 and 2009. Storm water mitigation systems exist on the northwestern and northeastern corners of the site. The existing site grades range from approximately elevation 1,455 feet above Mean Sea Level (MSL) in the east to 1,462 feet above MSL in the west. The site is at latitude 33.8436 and longitude -117.2283.

Based on the referenced *Conceptual Site Plan* (2019) we understand the proposed development will consist of a 352,240-square-foot industrial building with a warehouse and associated offices. Parking and driveway areas will surround the building. Storm water infiltration swales are proposed along the western, northern, and eastern property boundaries. Based on the current site topography and surrounding grades, we anticipate cuts and fills will be on the order of 10 feet or less (exclusive of remedial grading).

Although we have not been provided structural loading information at this time, we expect that the proposed building will generally consist of reinforced concrete tilt-up walls supported on a conventional shallow foundation with a concrete slab-on-grade system, with column loads of up to 200 kips and wall loads of up to 10 kips per linear foot. Our preliminary geotechnical recommendations are based on these load assumptions; Geocon should be contacted to provide additional recommendations if higher loads are used in design.

The findings, conclusions, and recommendations presented herein are based on our site reconnaissance, field investigations and testing, laboratory testing, engineering analyses, and review of published geologic literature. Additionally, if project plans differ from the project descriptions provided herein, Geocon should be contacted for review of the plans and possible revisions to this report.

3. GEOLOGIC SETTING

The subject site, like the rest of southern California, is located within a seismically active region near the margin between the North American and Pacific tectonic plates. The site is located within the Perris Valley which is bounded on the west by the Perris Erosion Surface, the east by several granitic hills and mountains, most notably of which are the Lakeview Mountains, the north by the Box Springs Mountains, and the south by a relatively undefined area of the Menifee Valley (Jenkins, 1965). The Perris Valley is a north-northwest trending alluvial basin which has been filled with sediment emanating from the surrounding bedrock highlands. Drainage within the valley is to the south and west.

Major faults within this area include the San Jacinto Valley (Casa Loma and Claremont branches) and San Bernardino segments of the San Jacinto fault, and the Glen Ivy and Wildomar segments of the Elsinore fault. The Casa Loma fault is nearest to the site. Distances to local faults from the subject site are listed in Table 5.2 of this report.

4. SOIL AND GEOLOGIC CONDITIONS

During our 2006 and current field investigations, we encountered Pleistocene-age very old alluvium to the maximum depth explored of 51½ feet below the ground surface; this geologic unit was encountered across the site in its entirety. This geologic unit is depicted on the *Geologic Map* (Figure 2) and its nomenclature follows that of D.M. Morton (2003).

4.1 Very Old Alluvial Fan Deposits (Qvof)

The very old alluvial fan deposits were encountered in all of our borings from the surface to the maximum depths explored of 51½ feet. As encountered the unit was observed to consist of moist, brown, dark brown, and reddish brown, loose to dense sand with varying amounts of silt and clay. Discontinuous layers of silt and clay were observed within the main body of sand encountered.

5. GROUNDWATER

Groundwater or seepage were not encountered during either of our field investigations (2006 and 2020) at the site. According to the California Department of Water Resources' *Water Data Library*, well data recorded within the last ten years indicates the depth to shallow groundwater to range between 9 and 53 feet below ground surface within two miles of the site. Although groundwater was not encountered during our field investigations, it is not uncommon for seepage conditions to develop where none previously existed. Perched water and seepage are dependent on seasonal precipitation, irrigation, land use, among other factors, and vary as a result. Proper surface drainage will be important to future performance of the improvements.

6. GEOLOGIC HAZARDS

6.1 Faulting

The numerous faults in southern California include active, potentially active, and inactive faults. The criteria for these major groups are based on criteria developed by the California Geological Survey (CGS, formerly known as CDMG) for the Alquist-Priolo Earthquake Fault Zone Program (Bryant and Hart, 2007). By definition, an active fault is one that has had surface displacement within Holocene time (about the last 11,000 years). A potentially active fault has demonstrated surface displacement during Quaternary time (approximately the last 1.6 million years) but has had no known Holocene movement. Faults that have not moved in the last 1.6 million years are considered inactive.

The site is not within a currently established State of California Alquist-Priolo Earthquake Fault Zone (APEFZ) or a Riverside County Fault Hazard Zone (RCFHZ) for surface fault rupture hazards. No active or potentially active faults with the potential for surface fault rupture are known to pass directly beneath the site.

According to the *Fault Activity Map of California* (2010), the closest active fault to the site is the Casa Loma fault, located 8 miles southeast of the site. Faults within a 50-mile radius of the site are listed in Table 6.1.

TABLE 6.1
KNOWN ACTIVE FAULTS WITHIN 50 MILES OF THE SITE

Fault Name	Distance from Site (miles)	Direction from Site	Maximum Earthquake Magnitude (Mw)
Casa Loma	8	SE	6.9
Claremont	8	NE	6.7
Main St.	15	SW	6.8
Glen Ivy North	15	SW	6.8
Chino	20	W	6.7
Mill Creek	21	N	7.5
Clark	22	SE	7.2
Whittier	24	W	6.8
San Gorgonio Pass	25	E	7.0
Cucamonga	26	NW	7.0
San Jacinto	28	N	6.8
Glen Helen	28	N	6.7
North Branch	38	N	7.1
Sky Hi Ranch	42	N	7.2
Helendale	42	N	7.3
Coachella	44	E	7.5
Johnson Valley	46	N	6.7
Burnt Mountain	49	NE	6.5
Homestead Valley	50	N	7.3

Historic earthquakes in southern California of magnitude 6.0 and greater, their magnitude, distance, and direction from the site are listed in Table 5.1.2.

TABLE 5.1.2
HISTORIC EARTHQUAKE EVENTS WITH REPECT TO THE SITE

Earthquake (Oldest to Youngest)	Date of Earthquake	Magnitude	Distance to Epicenter (Miles)	Direction to Epicenter
Near Redlands	July 23, 1923	6.3	11	N
Long Beach	March 10, 1933	6.4	45	WSW
Tehachapi	July 21, 1952	7.5	129	NW
San Fernando	February 9, 1971	6.6	78	WNW
Whittier Narrows	October 1, 1987	5.9	51	WNW
Sierra Madre	June 28, 1991	5.8	53	WNW
Landers	June 28, 1992	7.3	52	ENE
Big Bear	June 28, 1992	6.4	34	NE
Northridge	January 17, 1994	6.7	79	WNW
Hector Mine	October 16, 1999	7.1	76	NE
Ridgecrest China Lake Fault	July 5, 2019	7.1	134	N

6.2 Ground Rupture

Ground surface rupture occurs when movement along a fault is sufficient to cause a gap or rupture where the upper edge of the fault zone intersects that earth surface. The potential for ground rupture is considered to be very low due to the absence of active or potentially active faults at the subject site.

6.3 Liquefaction

Liquefaction is a phenomenon in which loose, saturated, relatively cohesionless soil deposits lose shear strength during strong ground motions. Primary factors controlling liquefaction include intensity and duration of ground motion, gradation characteristics of the subsurface soils, in-situ stress conditions, and the depth to groundwater. Seismically induced settlement may occur whether the potential for liquefaction exists or not.

The current standard of practice as outlined in the *Recommended Procedures for Implementation of DMG Special Publication 117, Guidelines for Analyzing and Mitigating Liquefaction in California* (SCEC, 1999) requires a liquefaction analysis to a depth of 50 feet below the lowest portion of the proposed structure. Liquefaction typically occurs in areas where the soils below the water table are composed of poorly consolidated, fine to medium-grained, primarily sandy soil. In addition to the requisite soil conditions, the ground acceleration and duration of the earthquake must also be of a sufficient level to induce liquefaction.

According to the Riverside County Information Technology (RCIT) *Map My County* public web data, the site is located within an area mapped as having a "low" potential for liquefaction.

We performed a liquefaction analysis of the soils underlying the site using the spreadsheet template LIQ2_30.WQ1 developed by Thomas F. Blake (1996). This program utilizes the 1996 NCEER method of analysis. Our liquefaction potential evaluation was performed by utilizing a groundwater depth of greater than 50 feet, a magnitude 8.1 earthquake, and the site-specific peak horizontal acceleration for the site.

Due to the lack of shallow groundwater, liquefaction is not a design consideration for the site. However, an evaluation of seismically induced "dry-sand" settlement indicates some of the alluvium below the planned improvements and anticipated depth of engineered fill could be prone to seismic settlement during a high-magnitude earthquake. The resulting seismic settlement is estimated to be up to 1½ inch. Differential seismic settlement of the soils is expected to be on the order of ¾ of an inch over a horizontal distance of 30 feet. An analysis of seismically induced "dry-sand" settlement is included on Figure 3.

6.4 Expansive Soil

The geologic units near the ground surface at the site generally consist of sand with lesser extents of silt and clay. Laboratory testing on samples indicated this soil is "non-expansive" as defined by 2019 CBC Section 1803.5.3, with Expansion Indices of 3 and 18 for the site, which are classified as "very low" (Expansion Index [EI] between 0 and 20) in accordance with ASTM D4829.

6.4 Hydrocompression

Hydrocompression is the tendency of unsaturated soil structure to collapse upon wetting resulting in the overall settlement of the affected soil and overlying foundations or improvements supported thereon. Potentially compressible soils underlying the site are typically removed and recompacted during remedial site grading. However, if compressible soil is left in-place, a potential for settlement due to hydrocompression of the soil exists.

Laboratory testing indicates that potentially collapsible surficial soil exists on the north-central portion of the site in proximity to borings B-15 and B-16, where select samples collected from the borings were tested for hyrdocompression, producing test results of 3.4 and 1.6 percent, respectively, when water was added at a pressure of 2,000 psf. This increased potential for collapse is likely associated with a lower in-situ moisture content when comparing the test results against hydrocompression tests performed on samples collected in the other borings.

6.5 Seiches and Tsunamis

Seiches are large waves which overspill from a large body of water due to aseismic event. The site is located approximately 2.1 miles east-southeast of the Perris Reservoir. Based on the California Department of Water Resources' online *Dam Breach Inundation Map*, an inundation scenario indicates the site could be impacted by flooding.

A tsunami is a series of long-period waves generated in the ocean by a sudden displacement of large volumes of water. Causes of tsunamis include underwater earthquakes, volcanic eruptions, or offshore slope failures. The site is located approximately 37 miles from the Pacific Ocean at an elevation greater than 1,400 feet MSL. Therefore, the risk of tsunamis affecting the site is negligible and not a design consideration.

6.6 Flooding

The site is located in a mapped area of minimal flood hazard, as per information provided by the Federal Emergency Management Agency Flood Map Service Center, *Flood Map 06065C1430H*, effective August 18, 2014.

6.7 Landslides

Due to the relatively level topography at the site, we opine that landslides are not present at the property or at a location that could impact the subject site.

6.7 Rock Fall Hazards

Rock falls are not a design consideration due to the lack of natural bedrock slopes above and adjacent to the site.

6.7 Slope Stability

Although a grading plan was not provided for our review as of the date of this report, we expect that graded slopes on the order of 8 feet or less will be incorporated in the design of the detention basins that are located along the northern, western, and eastern site boundaries. In general, permanent cut and fill slopes, or fill over cut slopes, inclined no steeper than 2:1 (h:v) with slope heights of 8 feet or less will possess Factors of Safety equal to or greater than 1.5 under static loading and 1.1 under pseudo-static loading, assuming they are constructed of on-site materials compacted as recommended herein. Graded slopes should be designed in accordance with the requirements of the local building codes of the City of Perris and the 2019 CBC. Proposed slopes should be reviewed when a grading plan is available and additional recommendations provided as needed.

7. SITE INFILTRATION

Percolation testing was performed in general accordance with Table 1 Infiltration Basin Option 2 of Appendix A of the Riverside County – *Low Impact Development BMP Design Handbook* (Handbook). The percolation tests were performed in general accordance with Section 2.3 *Shallow Percolation Test* (for test holes 10 feet or less in depth) and *Deep Percolation Test* (for test holes greater than 10 feet in depth) methods. Seven percolation tests were conducted within borings P-1 through P-7. The tests were performed at depths of approximately 5 and 11 feet below ground surface. Test borings were drilled using 8-inch-diameter hollow-stem augers. A 3-inch-diameter perforated PVC pipe encased in silt filter sock was placed in each test hole and approximately 2 inches of gravel was placed at the bottom of the perforated PVC pipe. The percolation tests were performed approximately 24 hours after the borings were presaturated. The shallow test holes (5 feet in depth) were filled with a minimum of 20 inches of water, with readings taken at 30-minute intervals. The deep test holes (11 feet in depth) were filled with water to within approximately 4 feet of the ground surface, with readings taken at 30-minute intervals.

The percolation test locations are depicted on the *Geologic Map* (Figure 2). Percolation test logs are presented in *Appendix A* of this report, with the percolation test results summarized in Table 7.0. Percolation test results should be provided to the civil engineer or storm water mitigation system designer. The *Handbook* requires a factor of safety of 3 be applied to the values below based on the test method used.

The in-situ field percolation tests performed provide short-term infiltration rates, which apply mainly to the initiation of the infiltration process due to the short time of the test (hours instead of days) and the amount of water used. Where appropriate the short-term infiltration rates shall be converted to long-term infiltration rates using reduction factors depending upon the degree of infiltrate quality, maintenance access and frequency, site variability, subsurface stratigraphy variation, and other factors. The small-scale percolation testing cannot model the complexity of the effect of interbedded layers of different soil composition, and our test results should be considered only as index values of infiltration rates.

TABLE 7.0
INFILTRATION TEST RATES FOR PERCOLATION AREAS

Parameter	P-1	P-2	P-3	P-4	P-5	P-6	P-7
Depth (inches)	5	5	11	5	5	11	5
Test Type	Normal	Normal	Normal	Normal	Normal	Normal	Normal
Change in head over time: ΔH (inches)	0.0	0.2	1.1	0.2	0.2	2.3	0.8
Average head: Havg (inches)	30.7	24.5	83.1	22.8	23.9	81.5	26
Time Interval (minutes): Δt (minutes)	30	30	30	30	30	30	30
Radius of test hole: r (inches)	4	4	4	4	4	4	4
Tested Infiltration Rate: It (inches/hour)	0.00	0.04	0.10	0.04	0.04	0.11	0.12

8. CONCLUSIONS AND RECOMMENDATIONS

8.1 General

8.1.1 From a geotechnical engineering standpoint, the site is suitable for construction of the proposed industrial / warehouse development provided the recommendations presented herein are implemented in design and construction of the project.

8.1.2 Potential geologic hazards at the site include seismic shaking, unsuitable near surface alluvium, hydrocompression, and potentially expansive soils.

8.1.3 The site is located approximately 8 miles from the nearest active fault. Based on our background research and previous investigation, it is our opinion active, potentially active, or inactive faults do not extend across the site. Risks associated with seismic activity consist of the potential for moderate to strong seismic shaking.

8.1.4 Our field investigation indicates the site is underlain by very old alluvial fan deposits. The upper portion of the alluvium across the site is not considered suitable for the support of compacted fill and settlement-sensitive structures. Remedial grading of the surficial soil will be required as discussed herein. The existing site soils are suitable for re-use as engineered fill provided the recommendations in the *Grading* section of this report are followed.

8.1.5 Granular soils having little to no cohesion may be subject to caving in un-shored excavations and should be expected at the site.

8.1.6 Remedial grading will address the hydrocompression potential of the near-surface soils on the north-central portion of the site in proximity to borings B-15 and B-16.

8.1.7 Changes in the design, location or elevation of improvements, as outlined in this report, should be reviewed by this office. Once final grading plans become available, they should be reviewed by this office to evaluate the necessity for review and possible revision of this report.

8.2 Excavation and Soil Characteristics

8.2.1 The *in-situ* soils should generally be excavatable with moderate effort using conventional earth moving equipment in proper functioning order.

8.2.2 The soils encountered during this investigation should be considered "non-expansive" (expansion index [EI] of 20 or less) as defined by the 2019 CBC, Section 1813.5.3. Table 8.2.2 presents soil classifications based on the expansion index. Based on the laboratory test results, we expect that the soil encountered will possess a "very low" expansion potential (EI between 0 and 20). Should medium to highly expansive soils be encountered at the site, they should be selectively graded to not be placed within 4 feet of the proposed improvements.

TABLE 8.2.2
SOIL CLASSIFICATION BASED ON EXPANSION INDEX

Expansion Index (EI)	Expansion Classification	2019 CBC Expansion Classification
0 – 20	**Very Low**	**Non-Expansive**
21 – 50	Low	Expansive
51 – 90	Medium	
91 – 130	High	
Greater Than 130	Very High	

8.2.3 Laboratory tests were performed on a representative sample of the site materials to measure the percentage of water-soluble sulfate content. *Appendix B* presents results of the laboratory water-soluble sulfate content tests. Test results indicate the on-site materials tested possess a sulfate content of up to 0.014% (140 parts per million [ppm]) equating to an exposure class of "S0" to concrete structures as defined by 2019 CBC Section 1904.3 and ACI 318. Table 8.2.3 below presents a summary of concrete requirements set forth by 2019 CBC Section 1904.3 and ACI 318.

TABLE 8.2.3
REQUIREMENTS FOR CONCRETE
EXPOSED TO SULFATE-CONTAINING SOLUTIONS

Sulfate Exposure Class	Water-Soluble Sulfate Percent by Weight	Cement Type	Maximum Water to Cement Ratio by Weight	Minimum Compressive Strength (psi)
S0	**0.00-0.10**	**--**	**--**	**2,500**
S1	0.10-0.20	II	0.50	4,000
S2	0.20-2.00	V	0.45	4,500
S3	> 2.00	V+Pozzolan or Slag	0.45	4,500

8.2.4 The presence of water-soluble sulfates is not a visually discernible characteristic; therefore, other soil samples from the site could yield different concentrations. Additionally, over time landscaping activities along the access roads or from nearby developments (i.e., addition of fertilizers and other soil nutrients) may affect the concentration.

8.2.5 Laboratory testing indicates the site soils have a minimum electrical resistivity of 811 ohm-cm, possess up to 340 parts per million (ppm) chloride, possess up to 140 ppm sulfate, and have a low tested pH of 6.5. As shown in Table 8.2.5 below, the site would be classified as "corrosive" to buried improvements, in accordance with the Caltrans Corrosion Guidelines (Caltrans, 2018).

TABLE 8.2.5
CALTRANS CORROSION GUIDELINES

Corrosion Exposure	Resistivity (ohm-cm)	Chloride (ppm)	Sulfate (ppm)	pH
Corrosive	**<1,100**	500 or greater	1,500 or greater	5.5 or less

8.2.6 Geocon does not practice in the field of corrosion engineering; therefore, based on the corrosivity of site soils, further evaluation by a corrosion engineer should be performed for site improvements susceptible to corrosion.

8.3 Grading

8.3.1 Earthwork operations should be observed and the compacted fill tested by representatives of Geocon.

8.3.2 Grading should be performed in accordance with the recommendations provided herein, the *Recommended Grading Specifications* contained in *Appendix C* of this report, and the grading ordinances of the City of Perris.

8.3.3 A preconstruction conference should be held at the site prior to the beginning of grading operations with a representative of the City of Perris, contractor, civil engineer, and geotechnical engineer in attendance. Special soil handling requirements can be discussed at that time.

8.3.4 Site preparation should commence with the removal of existing improvements from areas to be graded. The areas to receive compacted fill shall be stripped of vegetation, existing undocumented fill (if present), and loose or disturbed soils.

8.3.5 The upper portion of alluvium within a 1:1 (h:v) projection of the limits of grading should be removed to expose competent alluvium having a minimum of 85 percent relative compaction as determined by ASTM D1557. Removals in proposed building structure areas should extend to depths on the order of 4 to 8 feet below the ground surface, or at least 3 feet below the bottom of planned foundations; remedial removal depths for structural areas are depicted on the *Geologic Map* (Figure 2). Removals in pavement and walkway areas should extend at least 3 feet below subgrade and into competent alluvium. Areas of loose, dry, or compressible soils will require a deeper excavation and processing prior to fill placement. The actual depth of removal should be evaluated by the engineering geologist during grading operations. Where over-excavation and compaction is to be conducted, the excavations should be extended laterally beyond the building footprint for a minimum distance of 5 feet or a distance equal to the depth of removal, whichever is greater. The bottom of the excavations should be scarified to a depth of at least 1 foot, moisture conditioned to 0 to 2 percent above optimum moisture content, and properly compacted to at least 90 percent of the maximum dry density as determined by ASTM D1557.

8.3.6 Where relatively loose, soft, or wet soils are encountered in the site excavations, subgrade stabilization will be required prior to placing fill or installing utilities. Where required, subgrade stabilization can be achieved by over-excavating the loose or soft materials and replacing with compacted fill, placing a reinforcing geogrid at the bottom of the excavation, placing 3-inch diameter rock in the soft bottom and working the rock into soil until it is stabilized, placing gravel wrapped in filter fabric at the bottom of the excavation, or other method recommended by the contractor with guidance by the engineering geologist based on the conditions encountered. Where used, gravel should consist of a 12- to 18- inch thick layer of washed angular ¾ inch gravel atop a filter fabric (Mirafi 500X or equivalent) on the excavation bottom. The filter fabric should be placed in a manner so that the gravel does not have direct contact with the soil. Once the gravel is placed and vibrated to a relatively dense state, a top layer of filter fabric should be placed to cover the gravel. Recommendations for stabilizing excavation bottoms should be based on an evaluation in the field by Geocon at the time of construction.

8.3.7 The site soils are suitable for re-use as an engineered fill provided oversize material (greater than 6 inches) and deleterious debris is removed. Deleterious debris must not be mixed with the fill soils. Asphalt and concrete should not be mixed with the fill soils unless approved by the geotechnical engineer. Existing underground improvements planned for removal should be excavated and the resulting depressions properly backfilled in accordance with the procedures described herein.

8.3.8 Import fill (if necessary) should consist of granular materials with a “low” expansion potential (EI of 50 or less), less corrosive than onsite soils, generally free of deleterious material and contain no rock fragments larger than 6 inches. Geocon should be notified of the import soil source and should perform geotechnical laboratory testing of import soil to evaluate its suitability prior to its arrival at the site for use as fill material. Environmental testing of import fill should be performed by the project environmental consultant in accordance with City of Perris requirements.

8.3.9 Excavated site soils should be thoroughly blended and moisture conditioned prior to placement and compaction. Fill and backfill soils should be placed in horizontal loose layers no thicker than will allow for adequate bonding and compaction (approximately 6 to 8 inches thick), moisture conditioned to 0 to 2 percent above optimum moisture content, and compacted to at least 90 percent of the maximum dry density, as determined by ASTM D1557. Fill materials placed below the moisture content recommended will require additional moisture conditioning prior to placing additional fill.

8.4 Earthwork Grading Factors

8.4.1 Estimates of shrinkage factors are based on empirical judgments comparing the material in its existing or natural state as encountered in the exploratory excavations to a compacted state. Variations in natural soil density and in compacted fill density render shrinkage value estimates very approximate. As an example, the contractor can compact the fill to a dry density of 90 percent or higher of the laboratory maximum dry density. Thus, the contractor has an approximately 10 percent range of control over the fill volume. Based on our experience with similar site soils, the shrinkage of the alluvium is expected to be on the order of 5 to 10 percent, when compacted to at least 90 percent of the laboratory maximum dry density. This estimate is for preliminary quantity estimates only. Due to the variations in the actual shrinkage/bulking factors, a balance area should be provided to accommodate variations.

8.5 Utility Trench Backfill

8.5.1 Utility trenches should be properly backfilled in accordance with the requirements of the City of Perris and the latest edition of the *Standard Specifications for Public Works Construction* (Greenbook). The pipes should be bedded with well graded crushed rock or clean sands (Sand Equivalent greater than 30) to a depth of at least one foot over the pipe. <u>The use of uniformly graded crushed rock is only acceptable if used in conjunction with filter fabric to prevent the gravel from having direct contact with soil.</u> The remainder of the trench backfill may be derived from onsite soil or approved import soil, compacted as necessary, until the required compaction is obtained. Backfill of utility trenches should not contain rocks greater than 3 inches in diameter. The use of 2-sack slurry and controlled low strength material (CLSM) are also acceptable as backfill. However, consideration should be given to the possibility of differential settlement where the slurry ends and earthen backfill begins. These transitions should be minimized and additional stabilization should be considered at these transitions.

8.5.2 Utility trench backfill should be placed in layers no thicker than will allow for adequate bonding and compaction. Utility backfill should be compacted to a dry density of at least 90 percent of the laboratory maximum dry density and moisture conditioned at 0 to 2 percent above optimum moisture content as determined by ASTM D1557. Backfill at the finish subgrade elevation of new pavements should be compacted to at least 95 percent of the maximum dry density. Backfill materials placed below the recommended moisture content may require additional moisture conditioning prior to placing additional fill.

8.6 Seismic Design Criteria

8.6.1 The following table summarizes site-specific design criteria obtained from the 2019 California Building Code (CBC; Based on the 2018 International Building Code [IBC] and ASCE 7-16), Chapter 16 Structural Design, Section 1613 Earthquake Loads. The data was calculated using the online application *Seismic Design Maps*, provided by OSHPD. The short spectral response uses a period of 0.2 second. We evaluated the Site Class based on the discussion in Section 1613.2.2 of the 2019 CBC and Table 20.3-1 of ASCE 7-16. The values presented below are for the risk-targeted maximum considered earthquake (MCE_R).

TABLE 8.6.1
2019 CBC SEISMIC DESIGN PARAMETERS

Parameter	Value	2019 CBC Reference
Site Class	D	Section 1613.2.2
MCE_R Ground Motion Spectral Response Acceleration – Class B (short), S_S	1.5g	Figure 1613.2.1(1)
MCE_R Ground Motion Spectral Response Acceleration – Class B (1 sec), S_1	0.579g	Figure 1613.2.1(2)
Site Coefficient, F_A	1.0	Table 1613.2.3(1)
Site Coefficient, F_V	*1.721	Table 1613.2.3(2)
Site Class Modified MCE_R Spectral Response Acceleration (short), S_{MS}	1.5g	Section 1613.2.3 (Eqn 16-36)
Site Class Modified MCE_R Spectral Response Acceleration – (1 sec), S_{M1}	*0.996	Section 1613.2.3 (Eqn 16-37)
5% Damped Design Spectral Response Acceleration (short), S_{DS}	1.0g	Section 1613.2.4 (Eqn 16-38)
5% Damped Design Spectral Response Acceleration (1 sec), S_{D1}	*0.664	Section 1613.2.4 (Eqn 16-39)

Note: Per Section 11.4.8 of ASCE/SEI 7-16, a ground motion hazard analysis shall be performed for projects for Site Class "E" sites with Ss greater than or equal to 1.0g and for Site Class "D" and "E" sites with S1 greater than 0.2g. Section 11.4.8 also provides exceptions which indicates that the ground motion hazard analysis may be waived provided the exceptions are followed. Using the code based values presented in the table above, in lieu of performing a ground motion hazard analysis, requires the exceptions outlined in ASCE 7-16 Section 11.4.8 be followed.

*See Section 11.4.8

8.6.2 The table below presents the mapped maximum considered geometric mean (MCE_G) seismic design parameters for projects located in Seismic Design Categories of D through F in accordance with ASCE 7-16.

TABLE 8.6.2
ASCE 7-16 PEAK GROUND ACCELERATION

Parameter	Value	ASCE 7-16 Reference
Mapped MCE_G Peak Ground Acceleration, PGA	0.5g	Figure 22-7
Site Coefficient, F_{PGA}	1.1	Table 11.8-1
Site Class Modified MCE_G Peak Ground Acceleration, PGA_M	0.55g	Section 11.8.3 (Eqn 11.8-1)

8.6.3 The Maximum Considered Earthquake Ground Motion (MCE) is the level of ground motion that has a 2 percent chance of exceedance in 50 years, with a statistical return period of 2,475 years. According to the 2019 California Building Code and ASCE 7-16, the MCE is to be utilized for the evaluation of liquefaction, lateral spreading, seismic settlements, and it is our understanding that the intent of the Building code is to maintain "Life Safety" during a MCE event.

8.6.4 Deaggregation of the MCE peak ground acceleration was performed using the USGS online Unified Hazard Tool, 2014 Conterminous U.S. Dynamic edition (v4.2.0). The result of the deaggregation analysis indicates that the predominant earthquake contributing to the MCE peak ground acceleration is characterized as a 8.1 magnitude event occurring at a hypocentral distance of 13.7 kilometers from the site.

8.6.5 Conformance to the criteria in the above tables for seismic design does not constitute any kind of guarantee or assurance that significant structural damage or ground failure will not occur if a large earthquake occurs. The primary goal of seismic design is to protect life, not to avoid all damage, since such design may be economically prohibitive.

8.7 Shallow Foundation and Concrete Slabs-On-Grade

8.7.1 The foundation recommendations presented herein are for the proposed building subsequent to the recommended grading. We understand that the future building will be supported on a conventional shallow foundation with concrete slabs-on-grade, deriving support in newly placed engineered fill.

8.7.2 The foundation for the structure may consist of either continuous strip footings and/or isolated spread footings. Conventionally reinforced continuous footings should be at least 24 inches wide and extend at least 2 feet below lowest adjacent pad grade. Isolated spread footings should have a minimum width of 48 inches and should extend at least 2 feet below lowest adjacent pad grade. At least 4 feet of compacted fill should be placed below the bottom level of foundations (see the *Grading* section of this report for earthwork recommendations). Footings subject to heavy structural loading should be tied-up to each other by tie beams and/or grade beams. A wall/column footing dimension detail depicting footing embedment is provided on Figure 4.

8.7.3 From a geotechnical engineering standpoint, concrete slabs-on-grade for the structure should be at least 4 inches thick and be reinforced with at least No. 3 steel reinforcing bars placed 24 inches on center in both directions. The concrete slab-on-grade recommendations are based on soil support characteristics only. The project structural engineer should evaluate the structural requirements of the concrete slab for supporting equipment and storage loads. A thicker concrete slab may be required for heavier loading conditions. To reduce the effects of differential settlement on the foundation system, thickened slabs and/or an increase in steel reinforcement can provide a benefit to reduce concrete cracking

8.7.4 Following remedial grading, foundations for the buildings may be designed for an allowable soil bearing pressure of 3,000 psf (dead plus live load). The allowable bearing pressure may be increased by one-third for transient loads due to wind or seismic forces.

8.7.5 The maximum expected static settlement for the planned structures, supported on conventional foundation systems with the above allowable bearing pressures and deriving support in engineered fill, is estimated to be on the order of 1¾ inch and to occur below the heaviest loaded structural element, with differential static settlement to be on the order of ~~¾~~ 1 inch over a horizontal distance of 40 feet; settlement of the foundation system is expected to occur on initial application of loading. Seismic settlement is estimated to be on the order of 1½ inch, with differential seismic settlement to be on the order of ¾ of an inch over a horizontal distance of 30 feet.

8.7.6 Once the design and foundation loading configuration proceeds to a more finalized plan, the estimated settlements within this report should be reviewed and revised, if necessary.

8.7.7 Steel reinforcement for continuous footings should consist of at least two No. 4 steel reinforcing bars placed horizontally in the footings, one near the top and one near the bottom. Steel reinforcement for the spread footings should be designed by the project structural engineer.

8.7.8 Foundation excavation bottoms must be observed and approved in writing by a qualified representative of Geocon, prior to placement of reinforcing steel or concrete.

8.7.9 Slabs that may receive moisture-sensitive floor coverings or may be used to store moisture-sensitive materials should be underlain by a vapor retarder. The vapor retarder design should be consistent with the guidelines presented in the American Concrete Institute's (ACI) Guide for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials (ACI 302.2R-06). The vapor retarder used should be specified by the project architect or developer based on the type of floor covering that will be installed and if the structure will possess a humidity-controlled environment.

8.7.10 The bedding sand thickness should be evaluated by the project foundation engineer, architect, and/or developer. However, we should be contacted to provide recommendations if the bedding sand is thicker than 4 inches. Placement of 3 inches and 4 inches of sand is common practice in southern California for 5-inch and 4-inch thick slabs, respectively. The foundation engineer should provide appropriate concrete mix design criteria and curing measures that may be utilized to assure proper curing of the slab to reduce the potential for rapid moisture loss and subsequent cracking and/or slab curl. We suggest that the foundation design engineer present the concrete mix design and proper curing methods on the foundation plans. It is critical that the foundation contractor understands and follows the recommendations presented on the foundation plans.

8.7.11 Special subgrade presaturation is not deemed necessary prior to placing concrete; however, the exposed foundation and slab subgrade soil should be moisturized to maintain a moist condition between 0 and 2 percent above optimum moisture content.

8.7.12 The recommendations of this report are intended to reduce the potential for cracking of slabs due to expansive soil (if present), differential settlement of existing soil or soil with varying thicknesses. However, even with the incorporation of the recommendations presented herein, foundations, walls, and slabs-on-grade placed on such conditions may still exhibit some cracking due to soil movement and/or shrinkage. The occurrence of concrete shrinkage cracks is independent of the supporting soil characteristics. Their occurrence may be reduced and/or controlled by limiting the slump of the concrete, proper concrete placement and curing, and by the placement of crack control joints at periodic intervals, in particular where re-entrant slab corners occur.

8.7.13 Geocon should be consulted to provide additional design parameters as required by the structural engineer.

8.8 Miscellaneous Foundations

8.8.1 Foundations for small outlying structures, such as block walls up to 6 feet in height, planter walls or trash enclosures which will not be tied to the proposed structure may be supported on conventional shallow foundations bearing on a minimum of 2 feet of newly placed engineered fill which extends laterally at least 2 feet beyond the foundation area. Where excavation and compaction cannot be performed or is undesirable, such as adjacent to property lines, foundations may derive support in the undisturbed alluvium generally found at or below a depth of 3 feet, and should be deepened as necessary to maintain a minimum 5 foot embedment below grade.

8.8.2 If the soils exposed in the excavation bottom are soft, compaction of the soft soils will be required prior to placing steel or concrete. Miscellaneous foundations may be designed for a bearing value of 1,500 psf, and should be a minimum of 12 inches in width and a minimum of 24 inches in depth below the lowest adjacent grade, bearing on the recommended thickness of engineered fill. The allowable bearing pressure may be increased by up to one-third for transient loads due to wind or seismic forces.

8.8.3 Foundation excavations should be observed and approved in writing by the geotechnical engineer, prior to the placement of reinforcing steel and concrete to verify that the excavations and exposed soil conditions are consistent with those anticipated.

8.9 Retaining Walls

8.9.1 The recommendations presented below are generally applicable to the design of rigid concrete or masonry retaining walls having a maximum height of 10 feet that have been backfilled with select granular site soils or import with a “low” expansion potential (EI of 50 or less). In the event that cantilever walls higher than 10 feet are planned, Geocon should be contacted for additional recommendations.

8.9.2 Retaining walls not restrained at the top and having a level backfill surface should be designed for an active soil pressure equivalent to the pressure exerted by a fluid density of 40 pounds per cubic foot (pcf). Where the backfill will be inclined at no steeper than 2:1 (horizontal to vertical), an active soil pressure of 65 pcf is recommended. These soil pressures assume that the backfill materials within an area bounded by the wall and a 1:1 plane extending upward from the base of the wall possess an EI of 50 or less. For walls where backfill materials do not conform to the criteria herein, Geocon should be consulted for additional recommendations.

8.9.3 Unrestrained walls are those that are allowed to rotate more than 0.001H (where H equals the height of the retaining portion of the wall in feet) at the top of the wall. Where walls are restrained from movement at the top, the walls should be designed for a soil pressure equivalent to the pressure exerted by a fluid density of 62 pcf.

8.9.4 The structural engineer should determine the seismic design category for the project in accordance with Section 1613 of the 2019 CBC. If the project possesses a seismic design category of D, E, or F, proposed retaining walls in excess of 6 feet in height should be designed with seismic lateral pressure (Section 1803.5.12 of the 2019 CBC).

8.9.5 An incremental seismic load of 25 pcf should be used for design of walls that support more than 6 feet of backfill in accordance with Section 1803.5.12 of the 2019 CBC. The pressure should be taken as an inverted triangular distribution with the zero-pressure point at the toe of the wall and 25H (psf where H in feet) at the top of the wall, where H is the wall height in feet. The point of application of the dynamic thrust may be taken at 0.6H above the toe of the wall. This seismic load should be applied in addition to the active earth pressure. The earth pressure is based on half of two-thirds of PGA_M calculated from ASCE 7-10 Section 11.8.3.

8.9.6 Unrestrained walls will move laterally when backfilled and loading is applied. The amount of lateral deflection is dependent on the wall height, the type of soil used for backfill, and loads acting on the wall. The retaining walls and improvements above the retaining walls should be designed to incorporate an appropriate amount of lateral deflection as determined by the structural engineer.

8.9.7 Retaining walls should be provided with a drainage system adequate to prevent the buildup of hydrostatic forces and waterproofed as required by the project architect. The soil immediately adjacent to the backfilled retaining wall should be composed of free draining material completely wrapped in Mirafi 140N (or equivalent) filter fabric for a lateral distance of 1 foot for the bottom two-thirds of the height of the retaining wall. The upper one-third should be backfilled with less permeable compacted fill to reduce water infiltration. Alternatively, a drainage panel, such as a Miradrain 6000 or equivalent, can be placed along the back of the wall. Typical retaining wall drainage details are shown on Figure 5. The use of drainage openings through the base of the wall (weep holes) is not recommended where the seepage could be a nuisance or otherwise adversely affect the property adjacent to the base of the wall. The recommendations herein assume a properly compacted backfill (EI of 50 or less) with no hydrostatic forces or imposed surcharge load. If conditions different than those described are expected or if specific drainage details are desired, Geocon should be contacted for additional recommendations.

8.9.8 Wall foundations should be designed in accordance with the above foundation recommendations.

8.10 Lateral Design

8.10.1 Resistance to lateral loading may be provided by friction acting at the base of foundations, slabs and by passive earth pressure. A passive pressure exerted by an equivalent fluid weight of 300 pounds per cubic foot (pcf) with a maximum earth pressure of 3,000 psf should be used for the design of footings or shear keys poured neat against newly compacted fill. The allowable passive pressure assumes a horizontal surface extending at least 5 feet, or three times the surface generating the passive pressure, whichever is greater. The upper 12 inches of material in areas not protected by floor slabs or pavement should not be included in design for passive resistance.

8.10.2 If friction is to be used to resist lateral loads, an allowable coefficient of friction between newly compacted fill soil and concrete of 0.35 should be used for design. When combining passive pressure and friction for lateral resistance, the passive component should be reduced by one-third.

8.11 Exterior Concrete Flatwork

8.11.1 Exterior concrete flatwork not subject to vehicular traffic should be constructed in accordance with the recommendations herein assuming the subgrade materials possess a “low” expansion potential (expansion index of 50 or less). Subgrade soils should be compacted to 90 percent relative compaction, at 0 to 2 percent above optimum moisture content. Slab panels should be a minimum of 4 inches thick and when in excess of 8 feet square should be reinforced with No. 3 reinforcing bars spaced 24 inches center-to-center in both directions to reduce the potential for cracking. In addition, concrete flatwork should be provided with crack control joints to reduce and/or control shrinkage cracking. Crack control spacing should be determined by the project structural engineer based upon the slab thickness and intended usage. Criteria of the American Concrete Institute (ACI) should be taken into consideration when establishing crack control spacing.

8.11.2 The exterior flatwork has the potential for distress should the subgrade soils become wet or saturated. Subgrade soil for exterior slabs not subjected to vehicle loads should be compacted in accordance with criteria presented in the grading section prior to concrete placement. Subgrade soil should be properly compacted and the moisture content of subgrade soil should be verified prior to placing concrete.

8.11.3 Even with the incorporation of the recommendations of this report, the exterior concrete flatwork has a potential to experience some uplift due to expansive soil beneath grade or differential settlement. The steel reinforcement should overlap continuously in flatwork to reduce the potential for vertical offsets within flatwork.

8.11.4 Where exterior flatwork abuts the structure at entrant or exit points, the exterior slab should be dowelled into the structure's foundation stem wall. This recommendation is intended to reduce the potential for differential elevations that could result from differential settlement or minor heave of the flatwork. Dowelling details should be designed by the project structural engineer.

8.11.5 The recommendations presented herein are intended to reduce the potential for cracking of exterior slabs as a result of differential movement. However, even with the incorporation of the recommendations presented herein, slabs-on-grade will still crack. The occurrence of concrete shrinkage cracks is independent of the soil supporting characteristics. Their occurrence may be reduced and/or controlled by limiting the slump of the concrete, the use of crack control joints and proper concrete placement and curing. Crack control joints should be spaced at intervals no greater than 12 feet. Literature provided by the Portland Concrete Association (PCA) and American Concrete Institute (ACI) present recommendations for proper concrete mix, construction, and curing practices, and should be incorporated into project construction.

8.12 Preliminary Pavement Recommendations

8.12.1 The final pavement sections for driveways and parking lot areas should be based on the R-value of the subgrade soils encountered at final subgrade elevation. The civil engineer should evaluate the final traffic index for the pavements. Pavements should be designed and constructed in accordance with County of Riverside *Ordinance 461* when final Traffic Indices and R-value test results of subgrade soil are completed. We have assumed an R-value of 30 for on-site soils and have utilized an R-Value of 78 for Class 2 Aggregate Base material, for the purposes of this preliminary analysis. Preliminary flexible pavement sections are presented in Table 8.12.1.

TABLE 8.12.1
PRELIMINARY FLEXIBLE PAVEMENT SECTIONS

Location	Assumed Traffic Index	Assumed Subgrade R-Value	Asphalt Concrete (inches)	Class 2 Aggregate Base (inches)
Parking Lots and Access Roads - **Light** Vehicular Traffic Loads and Equipment	6.0	30	4	8
Parking Lots and Access Roads – **Medium and Heavy** Vehicular Traffic Loads and Equipment	9.0	30	6	12

8.12.2 The upper 12 inches of the subgrade soil should be compacted to a dry density of at least 95 percent of the laboratory maximum dry density at 0 to 2 percent over optimum moisture content beneath pavement sections.

8.12.3 Prior to construction of new pavement sections, remedial grading should be performed in accordance with the earthwork recommendations in this report. Asphalt concrete should conform to Section 203-6 of the Greenbook. Class 2 aggregate base materials should conform to Section 26-1.02A of the "*Standard Specifications of the State of California, Department of Transportation"* (Caltrans). Aggregate base materials should be compacted to a dry density of at least 95 percent of the laboratory maximum dry density near to slightly above optimum moisture content. Asphalt concrete should be compacted to a density of 95 percent of the laboratory Hveem density in accordance with ASTM D 1561.

8.12.4 A rigid Portland cement concrete (PCC) pavement section should be placed in driveway aprons and cross gutters, and may be used in driveways and parking areas where desired. We calculated the rigid pavement section in general conformance with the procedure recommended by the American Concrete Institute, Report ACI 330R-08, *Guide for Design and Construction of Concrete Parking Lots* using the parameters presented in Table 8.12.4.

TABLE 8.12.4
RIGID PAVEMENT DESIGN PARAMETERS

Design Parameter	Design Value
Modulus of subgrade reaction, k	100 pci
Modulus of rupture for concrete, M_R	500 psi
Traffic Category, TC	C and D
Average daily truck traffic, ADTT	300 and 700

8.12.5 Based on the criteria presented herein, the PCC pavement sections should have a minimum thickness as presented in Table 8.12.5.

TABLE 8.12.5
RIGID PAVEMENT RECOMMENDATIONS

Location	Portland Cement Concrete (inches)
Light Truck Traffic (TC = C)	7.5
Medium and Heavy Truck Traffic (TC = D)	8.0

8.12.6 The PCC pavement should be placed over subgrade soil that is compacted to a dry density of at least 95 percent of the laboratory maximum dry density at 0 to 2 percent above optimum moisture content. This pavement section is based on a minimum concrete compressive strength of approximately 3,500 psi (pounds per square inch). Aggregate base material will not be required beneath concrete improvements.

8.12.7 A thickened edge or integral curb should be constructed on the outside of concrete slabs subjected to wheel loads. The thickened edge should be 1.2 times the slab thickness or a minimum thickness of 2 inches, whichever results in a thicker edge, and taper back to the recommended slab thickness 4 feet behind the face of the slab (e.g., a 9-inch-thick slab would have an 11-inch-thick edge). Reinforcing steel will not be necessary within the concrete for geotechnical purposes with the possible exception of dowels at construction joints as discussed herein.

8.12.8 To control the location and spread of concrete shrinkage cracks, crack-control joints (weakened plane joints) should be included in the design of the concrete pavement slab in accordance with the referenced ACI report.

8.12.9 The performance of pavement is highly dependent on providing positive surface drainage away from the edge of the pavement. Ponding of water on or adjacent to the pavement surfaces will likely result in pavement distress and subgrade failure. Drainage from landscaped areas should be directed to controlled drainage structures. Landscape areas adjacent to the edge of asphalt pavements are not recommended due to the potential for surface or irrigation water to infiltrate the underlying permeable aggregate base and cause distress. Where such a condition cannot be avoided, consideration should be given to incorporating measures that will significantly reduce the potential for subsurface water migration into the aggregate base. If planter islands are planned, the perimeter curb should extend at least 6 inches below the level of the base materials.

8.13 Elevator Pit Design

8.13.1 If used, the elevator pit slab and retaining walls should be designed by the project structural engineer. Elevator pit slab and walls may be designed in accordance with the recommendations in the foundation and retaining wall sections of this report.

8.13.2 Additional active pressure should be added for a surcharge condition due to sloping ground, vehicular traffic or adjacent foundations and should be designed for each condition as the project progresses.

8.13.3 If retaining wall drainage is to be provided, the drainage system should be designed in accordance with the retaining wall section of this report, and the typical retaining wall drainage details shown on Figure 5.

8.13.4 We recommend that the exterior walls and slab be waterproofed to prevent excessive moisture inside of the elevator pit. Waterproofing design and installation is not the responsibility of the geotechnical engineer.

8.14 Elevator Piston

8.14.1 If a plunger-type elevator piston is installed for this project, a deep drilled excavation will be required. It is important to verify that the drilled excavation is not situated immediately adjacent to a foundation or shoring pile, or the drilled excavation could compromise the existing foundation or pile support, especially if the drilling is performed subsequent to the foundation or pile construction.

8.14.2 Some caving is expected and the contractor should be prepared to use casing and should have it readily available at the commencement of drilling activities. Continuous observation of the drilling and installation of the elevator piston by the geotechnical engineer is required.

8.14.3 The annular space between the piston casing and drilled excavation wall should be filled with a minimum of 2-sack slurry pumped from the bottom up. As an alternative, pea gravel may be utilized. The use of soil to backfill the annular space is not acceptable.

8.15 Temporary Excavations and Shoring

8.15.1 Excavations of up to 10 feet in vertical height are expected during the construction of the site improvements. The contractor’s competent person should evaluate the necessity for lay back of vertical cut areas. Vertical excavations up to 5 feet may be attempted where loose soils or caving sands are not present, and where not surcharged by existing structures or vehicle/construction equipment loads.

8.15.2 Vertical excavations greater than 5 feet will require sloping or shoring measures in order to provide a stable excavation. Due to existing improvements adjacent to the site and the relatively loose nature of the site soils, we expect shoring will be needed.

8.15.3 We expect that braced shoring, such as conventionally braced shields, cross-braced hydraulic shoring, or driven sheet piles will be utilized; however, the selection of the shoring system is the responsibility of the contractor. Shoring systems should be designed by a California licensed civil or structural engineer with experience in designing shoring systems.

8.15.4 We recommend that an equivalent fluid pressure based on the table below be utilized for design of temporary shoring. These pressures are based on the assumption that the shoring is supporting a level backfill and there are no hydrostatic pressures above the bottom of the excavation.

TABLE 8.15.4
RECOMMENDED SHORING PRESSURES

HEIGHT OF SHORED EXCAVATION (FEET)	EQUIVALENT FLUID PRESSURE (Pounds Per Cubic Foot) (ACTIVE PRESSURE)	Equivalent Fluid Pressure (Pounds Per Cubic Foot) (Active Pressure with 2:1 Slope	EQUIVALENT FLUID PRESSURE (Pounds Per Cubic Foot) (AT-REST PRESSURE)
Up to 10	35	60	55

8.15.5 Active pressures can only be achieved when movement in the soil (earth wall) occurs. If movement in the soil is not acceptable, such as adjacent to an existing structure or where braced shoring will be utilized, the at-rest pressure should be considered for design purposes.

8.15.6 Additional active pressure should be added for a surcharge condition due to sloping ground, construction equipment, vehicular traffic, or adjacent structures and should be designed for each condition as the project progresses.

8.15.7 In addition to the recommended earth pressure, the upper 5 feet of the shoring adjacent to roadways or driveway areas should be designed to resist a uniform lateral pressure of 100 psf, acting as a result of an assumed 300 psf surcharge behind the shoring due to normal street traffic. If the traffic is kept back at least 10 feet from the shoring, the traffic surcharge may be neglected. Higher surcharge loads may be required to account for construction equipment.

8.15.8 It is difficult to accurately predict the amount of deflection of a shored embankment. Some deflection will occur. We recommend that the deflection be minimized to prevent damage to existing structures and adjacent improvements. Where public right-of-ways are present or adjacent offsite structures do not surcharge the shoring excavation, the shoring deflection should be limited to less than 1 inch at the top of the shored embankment. Where offsite structures are within the shoring surcharge area, we recommend the beam deflection be limited to less than ½ inch at the elevation of the adjacent offsite foundation, and no deflection at all if deflections will damage existing structures. The allowable deflection is dependent on many factors, such as the presence of structures and utilities near the top of the embankment and will be assessed and designed by the project shoring engineer.

8.16 Surface Drainage

8.16.1 Proper site drainage is critical to reduce the potential for differential soil movement, erosion and subsurface seepage. Under no circumstances should water be allowed to pond adjacent to footings. The site should be graded and maintained such that surface drainage is directed away from structures in accordance with 2019 CBC 1804.4 or other applicable standards. In addition, surface drainage should be directed away from the top of slopes into swales or other controlled drainage devices. Roof and pavement drainage should be directed into conduits that carry runoff away from the proposed structure.

8.16.2 Underground utilities should be leak free. Utility and irrigation lines should be checked periodically for leaks, and detected leaks should be repaired promptly. Detrimental soil movement could occur if water is allowed to infiltrate the soil for prolonged periods of time.

8.16.3 Landscaping planters adjacent to paved areas are not recommended due to the potential for surface or irrigation water to infiltrate the pavement's subgrade and base course. We recommend that area drains be used to collect excess irrigation water and transmit it to drainage structures or impervious above-grade planter boxes. In addition, where landscaping is planned adjacent to pavement, we recommend construction of a cutoff wall or the use of an impermeable geosynthetic along the edge of the pavement that extends at least 6 inches below the bottom of the base material.

8.16.4 If not properly constructed, there is a potential for distress to improvements and properties located hydrologically down gradient or adjacent to infiltration areas. Factors such as the amount of water to be detained, its residence time, and soil permeability have an important effect on seepage transmission and the potential adverse impacts that may occur if the storm water management features are not properly designed and constructed. We have not performed a hydrogeology study at the site. Down-gradient and adjacent structures may be subjected to seeps, movement of foundations and slabs, or other impacts as a result of water infiltration.

8.17 Plan Review

8.17.1 Geocon should review the grading and foundation plans for the project prior to final submittal to verify that the plans have been prepared in substantial conformance with the recommendations of this report. Additional analyses may be required after review of the project plans.

LIMITATIONS AND UNIFORMITY OF CONDITIONS

1. The recommendations of this report pertain only to the site investigated and are based upon the assumption that the soil conditions do not deviate from those disclosed in the investigation. If any variations or undesirable conditions are encountered during construction, or if the proposed construction will differ from that anticipated herein, Geocon West, Inc. should be notified so that supplemental recommendations can be given. The evaluation or identification of the potential presence of hazardous or corrosive materials was not part of the scope of services provided by Geocon West, Inc.

2. This report is issued with the understanding that it is the responsibility of the owner, or of their representative, to ensure that the information and recommendations contained herein are brought to the attention of the engineer and contractor for the project and incorporated into the plans, and the necessary steps are taken to see that the contractor and subcontractors carry out such recommendations in the field.

3. The findings of this report are valid as of the date of this report. However, changes in the conditions of a property can occur with the passage of time, whether they are due to natural processes or the works of man on this or adjacent properties. In addition, changes in applicable or appropriate standards may occur, whether they result from legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated wholly or partially by changes outside our control. Therefore, this report is subject to review and should not be relied upon after a period of three years.

4. The firm that performed the geotechnical investigation for the project should be retained to provide testing and observation services during construction to provide continuity of geotechnical interpretation and to check that the recommendations presented for geotechnical aspects of site development are incorporated during site grading, construction of improvements, and excavation of foundations. If another geotechnical firm is selected to perform the testing and observation services during construction operations, that firm should prepare a letter indicating their intent to assume the responsibilities of project Geotechnical Engineer of Record. A copy of the letter should be provided to the regulatory agency for their records. In addition, that firm should provide revised recommendations concerning the geotechnical aspects of the proposed development, or a written acknowledgement of their concurrence with the recommendations presented in our report. They should also perform additional analyses deemed necessary to assume the role of Geotechnical Engineer of Record.

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0' 2000' 4000'

SCALE: 1" = 2000'

SOURCE: Google Earth, 2020

N

VICINITY MAP

GEOCON WEST, INC.
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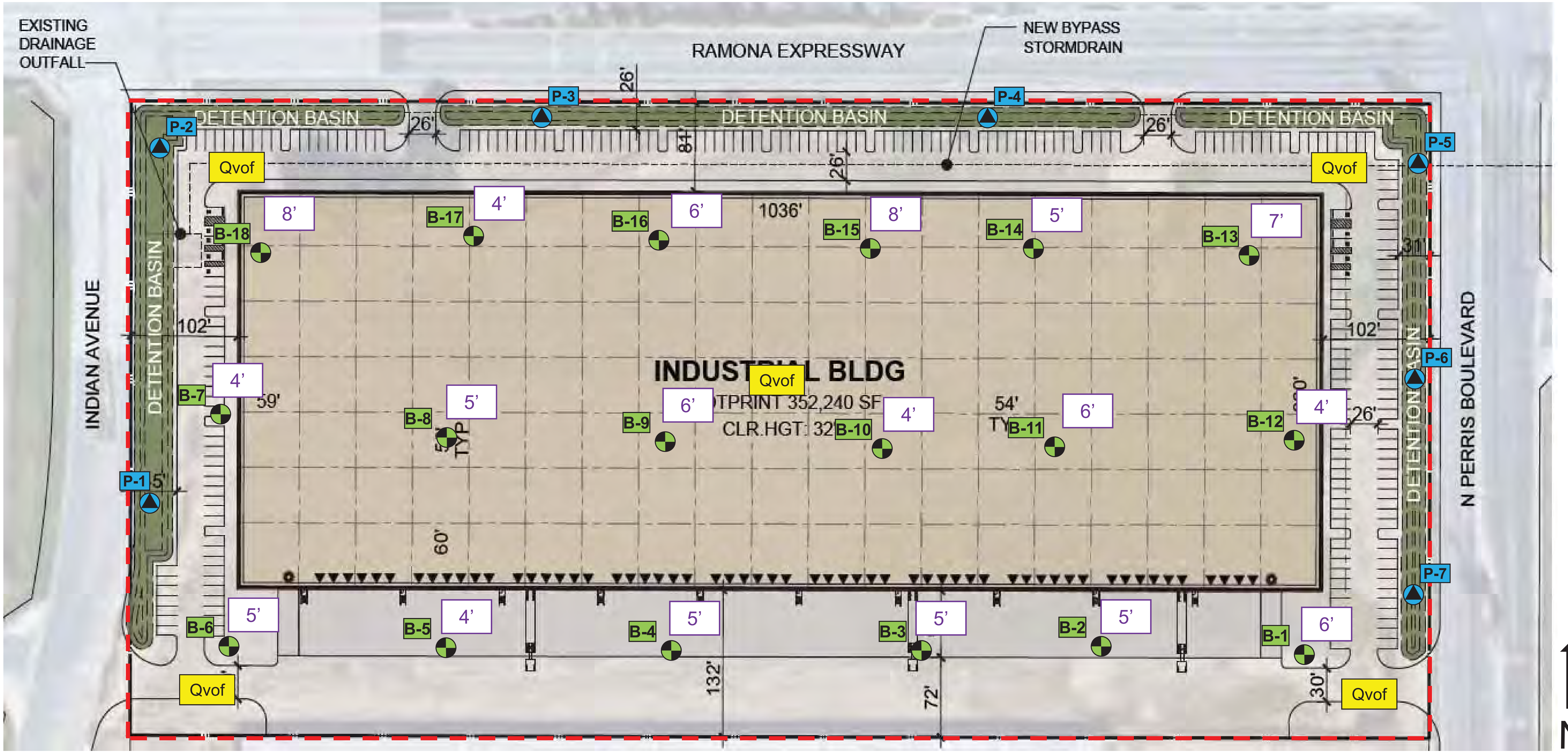
WAREHOUSE BUILDING
SWC OF RAMONA EXPRESSWAY
& PERRIS BOULEVARD
PERRIS, CALIFORNIA

LCW			APRIL 2020	PROJECT NO. T2400-22-02	FIG. 1



Source: Pacific Development Partners, LLC., *Conceptual Site Plan*, dated July, 2019.

GEOCON LEGEND

Locations are approximate

B-18 .... GEOTECHNICAL BORING LOCATION (2006)

P-7 .... PERCOLATION TEST BORING LOCATION

8' .... ANTICIPATED REMOVAL DEPTHS IN BUILDING STRUCTURE AREAS. SEE REPORT FOR REMOVAL DEPTHS IN ALL OTHER AREAS.

.... PROJECT LIMITS

Qvof .... VERY OLD ALLUVIAL FAN DEPOSITIS

0 100 200

SCALE 1" = 100'

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GEOLOGIC MAP

WAREHOUSE BUILDING
SWC OF RAMONA EXPRESSWAY
& PERRIS BOULEVARD
PERRIS, CALIFORNIA

LCW			APRIL 2020	PROJECT NO. T2400-22-02	FIG. 2

GEOCON

Project : WAREHOUSE BUILDING
File No. : T2400-22-02
Boring : B-4 (with other boring data incorporated)

TECHNICAL ENGINEERING AND DESIGN GUIDES AS ADAPTED FROM THE US ARMY CORPS OF ENGINEERS, NO. 9
EVALUATION OF EARTHQUAKE-INDUCED SETTLEMENTS IN DRY SANDY SOILS
MAXIMUM CONSIDERED EARTHQUAKE

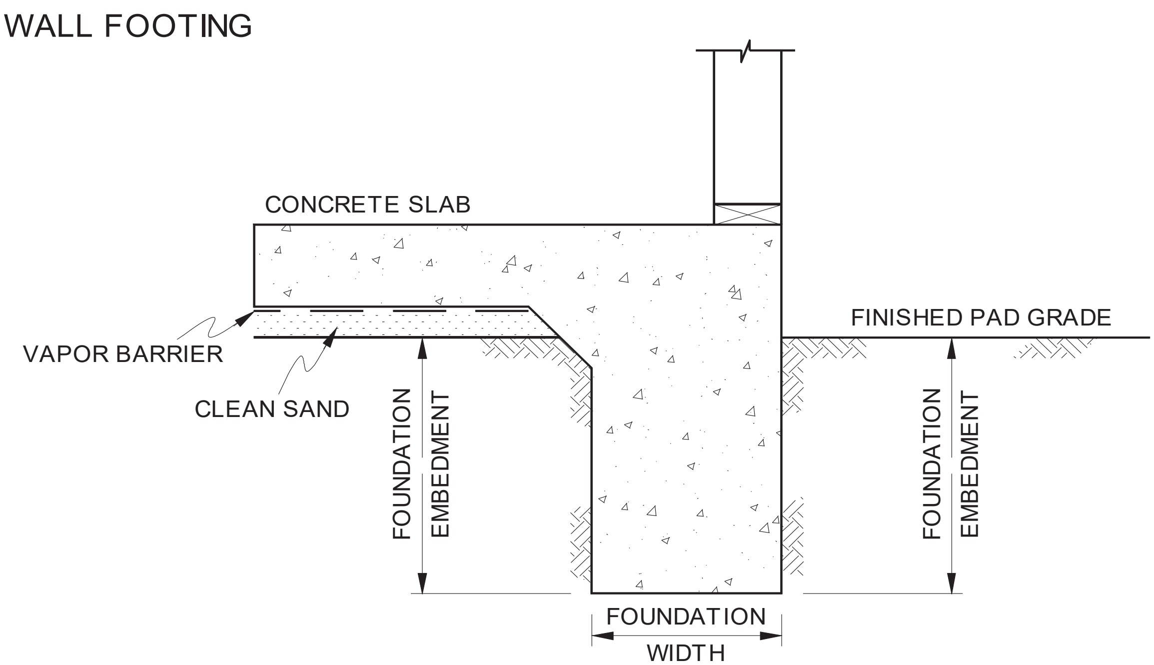
MCE EARTHQUAKE INFORMATION:

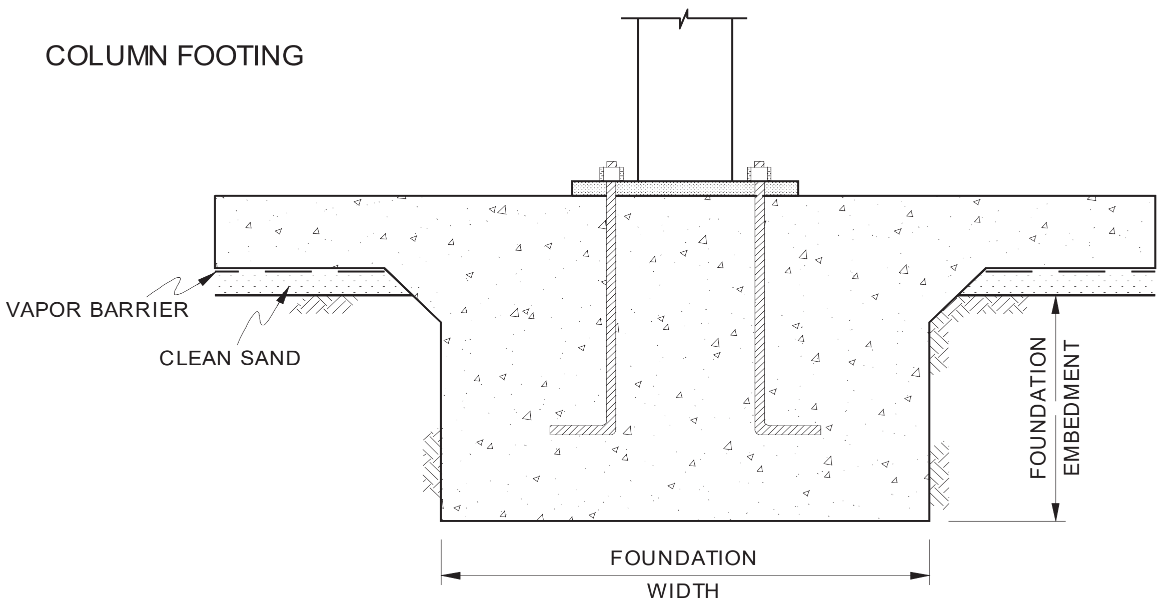
Earthquake Magnitude:	8.10
Peak Horiz. Acceleration (g):	0.550

Depth of Base of Strata (ft)	Thickness of Layer (ft)	Depth of Mid-point of Layer (ft)	Soil Unit Weight (pcf)	Overburden Pressure at Mid-point (tsf)	Mean Effective Pressure at Mid-point (tsf)	Average Cyclic Shear Stress [Tav]	Field SPT [N]	Correction Factor [Cer]	Relative Density [Dr] (%)	Correction Factor [Cn]	Corrected [N1]60	rd Factor	Maximum Shear Mod. [Gmax] (tsf)	[yeff]*[Geff] [Gmax]	yeff Shear Strain	[yeff]*100%	Volumetric Strain M7.5 [E15} (%)	Number of Strain Cycles [Nc]	Corrected Vol. Strains [Ec]	Estimated Settlement [S] (inches)
1.0	1.0	0.5	132.6	0.03	0.02	0.012	11	1.3	77.0	2.0	31.7	1.0	210.762	5.57E-05	7.80E-05	0.008	4.49E-03	21.3669	5.27E-03	0.001
2.0	1.0	1.5	132.6	0.10	0.07	0.036	11	1.3	77.0	2.0	31.7	1.0	365.050	9.45E-05	1.90E-04	0.019	1.09E-02	21.3669	1.28E-02	0.003
3.0	1.0	2.5	132.6	0.17	0.11	0.059	11	1.3	77.0	2.0	31.7	1.0	471.277	1.20E-04	1.70E-04	0.017	9.79E-03	21.3669	1.15E-02	0.003
4.0	1.0	3.5	132.6	0.23	0.16	0.083	11	1.3	77.0	2.0	31.7	1.0	557.623	1.39E-04	1.70E-04	0.017	9.79E-03	21.3669	1.15E-02	0.003
5.0	1.0	4.5	135.8	0.30	0.20	0.107	17	1.3	90.7	1.9	42.6	1.0	698.966	1.40E-04	1.50E-04	0.015	6.05E-03	21.3669	7.10E-03	0.002
6.0	1.0	5.5	135.8	0.37	0.25	0.131	17	1.3	90.7	1.7	39.1	1.0	752.674	1.57E-04	1.50E-04	0.015	6.70E-03	21.3669	7.86E-03	0.002
7.0	1.0	6.5	135.8	0.43	0.29	0.155	17	1.3	90.7	1.5	36.5	1.0	800.669	1.71E-04	1.50E-04	0.015	7.28E-03	21.3669	8.54E-03	0.002
8.0	1.0	7.5	135.8	0.50	0.34	0.179	9	1.3	61.3	1.4	21.5	1.0	721.908	2.15E-04	4.50E-04	0.045	4.12E-02	21.3669	4.83E-02	0.012
9.0	1.0	8.5	135.8	0.57	0.38	0.203	9	1.3	61.3	1.4	20.6	1.0	758.335	2.29E-04	4.50E-04	0.045	4.33E-02	21.3669	5.08E-02	0.012
10.0	1.0	9.5	136.5	0.64	0.43	0.226	13	1.3	70.6	1.3	25.6	1.0	862.266	2.21E-04	4.50E-04	0.045	3.34E-02	21.3669	3.92E-02	0.009
11.0	1.0	10.5	136.5	0.71	0.47	0.250	13	1.3	70.6	1.2	24.7	1.0	896.147	2.31E-04	4.50E-04	0.045	3.49E-02	21.3669	4.09E-02	0.010
12.0	1.0	11.5	136.5	0.78	0.52	0.274	13	1.3	70.6	1.2	23.9	0.9	928.195	2.40E-04	3.70E-04	0.037	2.99E-02	21.3669	3.50E-02	0.008
13.0	1.0	12.5	136.5	0.84	0.57	0.297	13	1.3	70.6	1.1	23.2	0.9	958.665	2.49E-04	3.70E-04	0.037	3.09E-02	21.3669	3.63E-02	0.009
14.0	1.0	13.5	139.1	0.91	0.61	0.320	12	1.3	61.7	1.1	22.5	0.9	986.358	2.57E-04	3.70E-04	0.037	3.22E-02	21.3669	3.77E-02	0.009
15.0	1.0	14.5	139.1	0.98	0.66	0.344	12	1.3	61.7	1.0	21.9	0.9	1014.718	2.64E-04	3.70E-04	0.037	3.31E-02	21.3669	3.89E-02	0.009
16.0	1.0	15.5	139.1	1.05	0.70	0.367	12	1.3	61.7	1.0	21.4	0.9	1041.961	2.70E-04	3.70E-04	0.037	3.41E-02	21.3669	4.00E-02	0.010
17.0	1.0	16.5	139.1	1.12	0.75	0.390	12	1.3	61.7	1.0	21.0	0.9	1068.204	2.76E-04	3.70E-04	0.037	3.50E-02	21.3669	4.10E-02	0.010
18.0	1.0	17.5	139.1	1.19	0.80	0.413	12	1.3	61.7	0.9	20.5	0.9	1093.545	2.82E-04	3.70E-04	0.037	3.58E-02	21.3669	4.20E-02	0.010
19.0	1.0	18.5	139.1	1.26	0.84	0.436	12	1.3	61.7	0.9	20.2	0.9	1118.067	2.87E-04	3.70E-04	0.037	3.66E-02	21.3669	4.29E-02	0.010
20.0	1.0	19.5	136.5	1.33	0.89	0.458	21	1.3	75.3	0.9	31.9	0.9	1337.828	2.49E-04	3.70E-04	0.037	2.11E-02	21.3669	2.48E-02	0.006
21.0	1.0	20.5	136.5	1.40	0.94	0.479	21	1.3	75.3	0.9	31.3	0.9	1362.864	2.52E-04	3.70E-04	0.037	2.16E-02	21.3669	2.54E-02	0.006
22.0	1.0	21.5	136.5	1.47	0.98	0.501	21	1.3	75.3	0.8	30.7	0.9	1387.188	2.56E-04	3.70E-04	0.037	2.21E-02	21.3669	2.59E-02	0.006
23.0	1.0	22.5	136.5	1.53	1.03	0.522	21	1.3	75.3	0.8	30.2	0.9	1410.853	2.59E-04	3.00E-04	0.030	1.83E-02	21.3669	2.15E-02	0.005
24.0	1.0	23.5	136.5	1.60	1.07	0.543	21	1.3	75.3	0.8	29.7	0.9	1433.907	2.62E-04	3.00E-04	0.030	1.87E-02	21.3669	2.19E-02	0.005
25.0	1.0	24.5	136.5	1.67	1.12	0.563	26	1.3	78.2	0.8	36.4	0.9	1566.555	2.46E-04	3.00E-04	0.030	1.46E-02	21.3669	1.72E-02	0.004
26.0	1.0	25.5	136.5	1.74	1.16	0.584	26	1.3	78.2	0.8	35.8	0.9	1589.664	2.48E-04	3.00E-04	0.030	1.49E-02	21.3669	1.75E-02	0.004
27.0	1.0	26.5	136.5	1.81	1.21	0.604	26	1.3	78.2	0.8	35.2	0.9	1612.238	2.50E-04	3.00E-04	0.030	1.52E-02	21.3669	1.78E-02	0.004
28.0	1.0	27.5	136.5	1.88	1.26	0.623	26	1.3	78.2	0.7	34.7	0.9	1634.307	2.52E-04	3.00E-04	0.030	1.55E-02	21.3669	1.82E-02	0.004
29.0	1.0	28.5	136.5	1.94	1.30	0.643	26	1.3	78.2	0.7	34.2	0.9	1655.903	2.54E-04	3.00E-04	0.030	1.57E-02	21.3669	1.85E-02	0.004
30.0	1.0	29.5	136.5	2.01	1.35	0.662	29	1.3	77.8	0.7	38.2	0.9	1748.230	2.45E-04	3.00E-04	0.030	1.38E-02	21.3669	1.62E-02	0.004
31.0	1.0	30.5	136.5	2.08	1.39	0.680	29	1.3	77.8	0.7	37.7	0.9	1769.594	2.47E-04	3.00E-04	0.030	1.40E-02	21.3669	1.64E-02	0.004
32.0	1.0	31.5	136.5	2.15	1.44	0.699	29	1.3	77.8	0.7	37.2	0.9	1790.542	2.48E-04	3.00E-04	0.030	1.42E-02	21.3669	1.67E-02	0.004
33.0	1.0	32.5	136.5	2.22	1.48	0.717	29	1.3	77.8	0.7	36.8	0.9	1811.093	2.49E-04	3.00E-04	0.030	1.45E-02	21.3669	1.69E-02	0.004
34.0	1.0	33.5	136.5	2.28	1.53	0.734	29	1.3	77.8	0.7	36.3	0.8	1831.269	2.50E-04	3.00E-04	0.030	1.47E-02	21.3669	1.72E-02	0.004
35.0	1.0	34.5	139.1	2.35	1.58	0.752	18	1.3	58.1	0.7	24.9	0.8	1639.594	2.84E-04	3.00E-04	0.030	2.30E-02	21.3669	2.70E-02	0.006
36.0	1.0	35.5	139.1	2.42	1.62	0.769	18	1.3	58.1	0.7	24.7	0.8	1657.859	2.85E-04	3.00E-04	0.030	2.33E-02	21.3669	2.74E-02	0.007
37.0	1.0	36.5	139.1	2.49	1.67	0.786	18	1.3	58.1	0.6	24.4	0.8	1675.824	2.85E-04	3.00E-04	0.030	2.36E-02	21.3669	2.77E-02	0.007
38.0	1.0	37.5	139.1	2.56	1.72	0.803	18	1.3	58.1	0.6	24.2	0.8	1693.504	2.86E-04	3.00E-04	0.030	2.39E-02	21.3669	2.80E-02	0.007
39.0	1.0	38.5	136.5	2.63	1.76	0.819	23	1.3	62.5	0.6	28.7	0.8	1816.221	2.70E-04	3.00E-04	0.030	1.95E-02	21.3669	2.28E-02	0.005
40.0	1.0	39.5	136.5	2.70	1.81	0.835	23	1.3	62.5	0.6	28.4	0.8	1833.712	2.70E-04	3.00E-04	0.030	1.97E-02	21.3669	2.31E-02	0.006
41.0	1.0	40.5	139.1	2.77	1.85	0.850	19	1.3	54.3	0.6	24.4	0.8	1766.726	2.84E-04	3.00E-04	0.030	2.36E-02	21.3669	2.76E-02	0.007
42.0	1.0	41.5	139.1	2.84	1.90	0.865	19	1.3	54.3	0.6	24.2	0.8	1783.521	2.84E-04	3.00E-04	0.030	2.38E-02	21.3669	2.79E-02	0.007
43.0	1.0	42.5	139.1	2.91	1.95	0.880	19	1.3	54.3	0.6	24.0	0.8	1800.080	2.84E-04	3.00E-04	0.030	2.41E-02	21.3669	2.82E-02	0.007
44.0	1.0	43.5	139.1	2.98	1.99	0.895	19	1.3	54.3	0.6	23.8	0.8	1816.414	2.85E-04	3.00E-04	0.030	2.43E-02	21.3669	2.85E-02	0.007
45.0	1.0	44.5	139.1	3.05	2.04	0.909	19	1.3	54.3	0.6	23.6	0.8	1832.532	2.85E-04	1.00E-02	1.000	8.19E-01	21.3669	9.60E-01	0.230
46.0	1.0	45.5	136.5	3.12	2.09	0.923	28	1.3	63.3	0.6	31.2	0.8	2033.756	2.59E-04	1.00E-02	1.000	5.86E-01	21.3669	6.87E-01	0.165
47.0	1.0	46.5	136.5	3.18	2.13	0.936	28	1.3	63.3	0.6	31.0	0.8	2050.166	2.59E-04	1.00E-02	1.000	5.92E-01	21.3669	6.94E-01	0.167
48.0	1.0	47.5	136.5	3.25	2.18	0.949	28	1.3	63.3	0.6	30.7	0.8	2066.370	2.59E-04	1.00E-02	1.000	5.98E-01	21.3669	7.01E-01	0.168
49.0	1.0	48.5	136.5	3.32	2.22	0.961	28	1.3	63.3	0.6	30.5	0.8	2082.376	2.58E-04	1.00E-02	1.000	6.03E-01	21.3669	7.07E-01	0.170
50.0	1.0	49.5	136.5	3.39	2.27	0.973	28	1.3	63.3	0.6	30.2	0.8	2098.188	2.58E-04	1.00E-02	1.000	6.09E-01	21.3669	7.14E-01	0.171

TOTAL SETTLEMENT = **1.34**

FIGURE 3





NOTE: SEE REPORT FOR FOUNDATION WIDTH AND DEPTH RECOMMENDATION

NO SCALE

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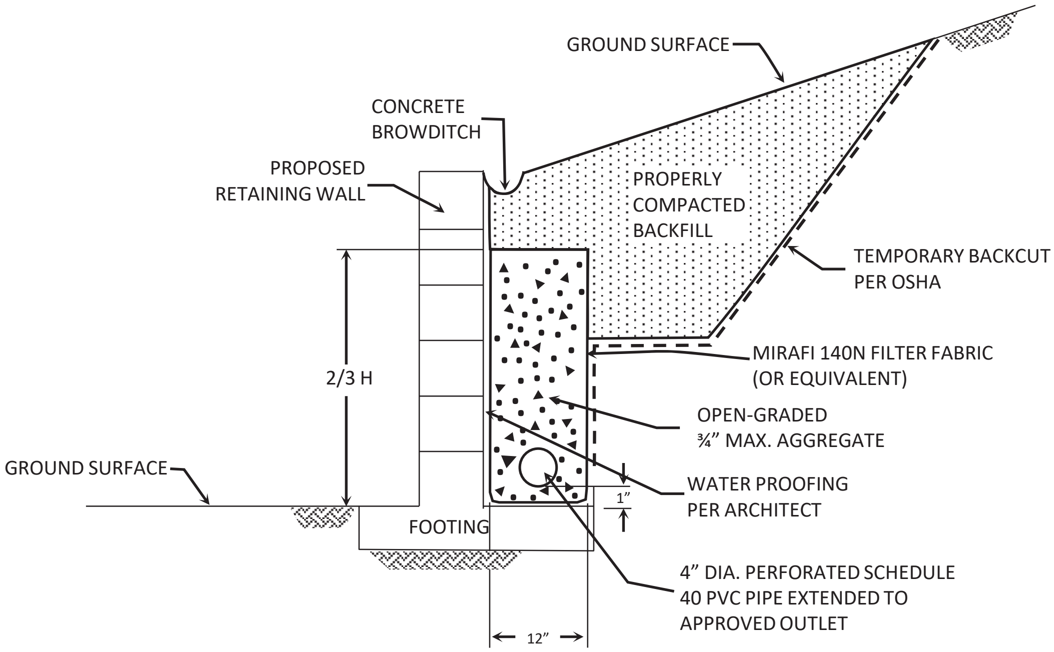
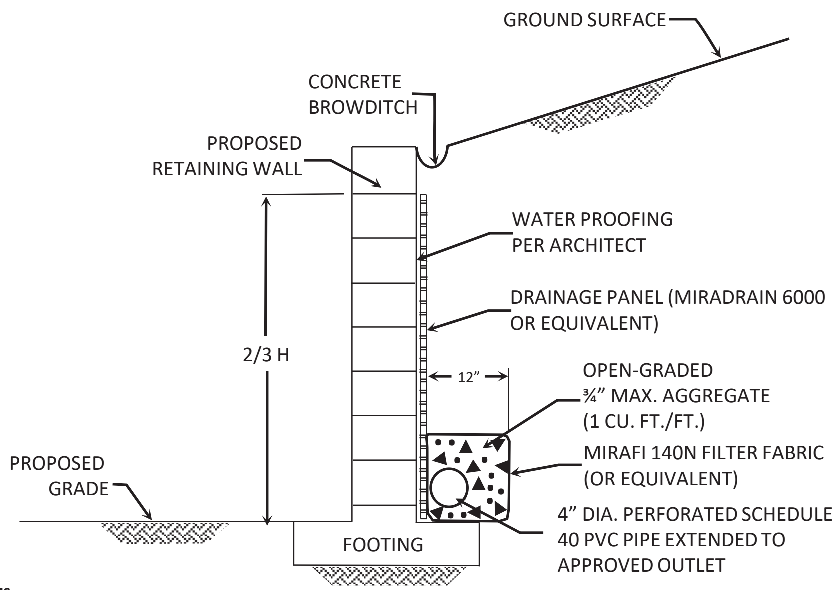
WALL / COLUMN FOOTING DETAIL

WAREHOUSE BUILDING
SWC OF RAMONA EXPRESSWAY
& PERRIS BOULEVARD
PERRIS, CALIFORNIA

APRIL 2020	PROJECT NO. T2400-22-02	FIG. 4





NOTES:

DRAIN SHOULD BE UNFORMLY SLOPED TO GRAVITY OUTLET
OR TO A SUMP WHERE WATER CAN BE REMOVED BY PUMPIMG

CONCRETE BROW DITCH RECOMMENDED FOR SLOPE HEIGHTS
GREATER THAN 6 FEET

NO SCALE

TYPICAL RETAINING WALL DRAIN DETAIL

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WAREHOUSE BUILDING
SWC OF RAMONA EXPRESSWAY
& PERRIS BOULEVARD
PERRIS, CALIFORNIA

APRIL 2020	PROJECT NO. T2400-22-02	FIG. 5

APPENDIX A

APPENDIX A

FIELD INVESTIGATION

Field work for our investigation included a site reconnaissance, subsurface explorations, soil sampling, and percolation testing. Our original subsurface exploration took place on August 4 and 7, 2006, where we drilled, logged, and sampled eighteen geotechnical borings to depths ranging between 16 and 51½ feet. On March 15 and 16, 2020 we drilled, logged, and sampled seven percolation test borings to depths of 5 and 11 feet in areas where storm water infiltration systems are proposed. All borings were drilled utilizing a truck mounted CME-75 hollow-stem auger drilling rig. The *Geologic Map*, Figure 2, presents the locations of our exploratory borings.

We collected bulk and relatively undisturbed samples from the borings by driving a 3-inch O. D. California Modified Sampler and a 2-inch O. D. Split-Spoon Sampler into the “undisturbed” soil mass with blows from a 140-pound hammer falling 30 inches. The California Modified Sampler was equipped with 1-inch high by 2³/₈-inch inside diameter brass sampler rings to facilitate removal and testing. The samplers were driven 18 inches into the bottom of the excavations. Blow counts are recorded for every 6 inches the sampler is driven. The penetration resistances shown on the boring logs are shown in terms of blows per foot. The values indicated on the boring logs are the sum of the last 12 inches of the sampler if driven 18 inches. If the sampler was not driven for 18 inches, an approximate value is calculated in term of blows per foot or the final 6-inch interval is reported. These values are not to be taken as N-values, adjustments have not been applied. Relatively undisturbed samples and bulk samples of disturbed soils were transported to our laboratory for testing. We estimated elevations shown on the boring logs from either *Google Earth Pro* or other available topographic information.

We visually examined the soil conditions encountered within the borings, classified, and logged them in general conformance with the Unified Soil Classification System (USCS). Logs of the geotechnical and percolation test borings are presented on Figures A-1 through A-25. The logs depict the general soil and geologic conditions encountered and the depth at which we obtained the soil samples.

Percolation testing was performed on March 17, 2020 in accordance with *Riverside County Flood Control and Water Conservation District, LID BMP Manual, Appendix A*. The percolation tests were run in general accordance with Section 2.3 *Shallow Percolation Test* (for test holes 10 feet or less in depth) and *Deep Percolation Test* (for test holes greater than 10 feet in depth) methods. The percolation test data is presented on Figures A-26 and A-32.

PROJECT NO. T2400-22-01

BORING B 1

ELEV. (MSL.) ~1455' DATE COMPLETED 08-04-2006

EQUIPMENT CME 75 BY: K. COX

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0	B1-1			CL	**ALLUVIUM** Stiff, moist, brown, Sandy CLAY			
2	B1-2					18	123.6	12.5
4				SM	Medium dense, moist, brown, Silty, fine to medium SAND			
	B1-3					17		
6								
8	B1-4					19	120.6	13.2
10	B1-5					17		
12								
14								
	B1-6					22		
16					BORING TERMINATED AT 16 FEET No groundwater encountered			

Figure A-1,
Log of Boring B 1, Page 1 of 1

T2400-22-01.GPJ

SAMPLE SYMBOLS			
	... SAMPLING UNSUCCESSFUL	... STANDARD PENETRATION TEST	... DRIVE SAMPLE (UNDISTURBED)
	... DISTURBED OR BAG SAMPLE	... CHUNK SAMPLE	... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. T2400-22-01

BORING B 2

ELEV. (MSL.) ~1455' DATE COMPLETED 08-04-2006

EQUIPMENT CME 75 BY: K. COX

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SM	**ALLUVIUM** Dense, moist, brown, Silty, fine to medium SAND; some mica			
2	B2-1					52		
4	B2-2				-Becomes loose and fine grained at 5'	13	107.3	12.9
6				SP	Medium dense, moist, brown, fine to coarse SAND; trace silt			
8	B2-3					41	121.6	6.7
10	B2-4					29		
12				SM	Medium dense, moist, brown, Silty, fine SAND			
14	B2-5					23		
16					BORING TERMINATED AT 16 FEET No groundwater encountered			

Figure A-2,
Log of Boring B 2, Page 1 of 1

T2400-22-01.GPJ

SAMPLE SYMBOLS			
	... SAMPLING UNSUCCESSFUL	... STANDARD PENETRATION TEST	... DRIVE SAMPLE (UNDISTURBED)
	... DISTURBED OR BAG SAMPLE	... CHUNK SAMPLE	... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. T2400-22-01

BORING B 3

ELEV. (MSL.) ~1455' DATE COMPLETED 08-04-2006

EQUIPMENT CME 75 BY: K. COX

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SC	**ALLUVIUM** Medium dense, moist, brown, Clayey, fine to medium SAND			
2	B3-1					35		
4								
5	B3-2			SM	Medium dense, moist, brown, Silty, fine to medium SAND	33	129.0	10.3
6								
8	B3-3					22	119.5	10.6
10	B3-4			SP	Medium dense, moist, brown, fine to medium SAND; trace silt	24		
12								
14				SM	Medium dense, moist, brown, Silty, fine SAND; trace clay			
15	B3-5					19		
16					BORING TERMINATED AT 16 FEET No groundwater encountered			

T2400-22-01.GPJ

Figure A-3,
Log of Boring B 3, Page 1 of 1

SAMPLE SYMBOLS			
	☐ ... SAMPLING UNSUCCESSFUL	◧ ... STANDARD PENETRATION TEST	■ ... DRIVE SAMPLE (UNDISTURBED)
	⊠ ... DISTURBED OR BAG SAMPLE	◩ ... CHUNK SAMPLE	▼ ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. T2400-22-01

BORING B 4

ELEV. (MSL.) ~1455' DATE COMPLETED 08-04-2006

EQUIPMENT CME 75 BY: K. COX

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0	B4-1			SM	**ALLUVIUM** Medium dense, moist, brown, Silty, fine to medium SAND; trace clay			
2	B4-2					11		
4								
6	B4-3					27	120.7	12.5
8	B4-4				-Becomes fine grained at 7'	9		
10	B4-5				-Becomes fine to medium grained at 10'	21		
12								
14				ML	Stiff, moist, brown, Sandy SILT			
16	B4-6					12		
18								
20	B4-7			SM	Medium dense, moist, brown, Silty, fine to medium SAND	34		
22								
24								
26	B4-8					26		
28								

Figure A-4,
Log of Boring B 4, Page 1 of 2

T2400-22-01.GPJ

SAMPLE SYMBOLS			
	... SAMPLING UNSUCCESSFUL	... STANDARD PENETRATION TEST	... DRIVE SAMPLE (UNDISTURBED)
	... DISTURBED OR BAG SAMPLE	... CHUNK SAMPLE	... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

BORING B 4

ELEV. (MSL.) ~1455' DATE COMPLETED 08-04-2006

EQUIPMENT CME 75 BY: K. COX

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
30	B4-9					46		
32								
34								
	B4-10			ML	Very stiff, moist, brown SILT; trace sand	18		
36								
38								
				SM	Medium dense, moist, brown, Silty, fine to medium SAND			
40	B4-11					37		
				ML	Very stiff, moist, brown SILT; trace sand			
42								
44								
	B4-12					19		
46				SM	Medium dense, moist, brown, Silty, very fine SAND			
48								
50	B4-13					44		
					BORING TERMINATED AT 51 FEET No groundwater encountered			

Figure A-4,
Log of Boring B 4, Page 2 of 2

T2400-22-01.GPJ

SAMPLE SYMBOLS			
... SAMPLING UNSUCCESSFUL	... STANDARD PENETRATION TEST	... DRIVE SAMPLE (UNDISTURBED)	
... DISTURBED OR BAG SAMPLE	... CHUNK SAMPLE	... WATER TABLE OR SEEPAGE	

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

BORING B 5

ELEV. (MSL.) ~1455' DATE COMPLETED 08-04-2006

EQUIPMENT CME 75 BY: K. COX

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SC	**ALLUVIUM** Medium dense, moist, brown, Clayey, fine to medium SAND			
2	B5-1					22	128.0	10.9
4								
6	B5-2					29	121.8	11.9
8	B5-3			SM	Medium dense, moist, brown, Silty, fine to medium SAND	32		
10	B5-4					20		
12								
14								
16	B5-5				-Becomes fine grained at 15'	18		

BORING TERMINATED AT 16 FEET
No groundwater encountered

T2400-22-01.GPJ

Figure A-5,
Log of Boring B 5, Page 1 of 1

SAMPLE SYMBOLS			
	... SAMPLING UNSUCCESSFUL	... STANDARD PENETRATION TEST	... DRIVE SAMPLE (UNDISTURBED)
	... DISTURBED OR BAG SAMPLE	... CHUNK SAMPLE	... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. T2400-22-01

BORING B 6

ELEV. (MSL.) ~1455' DATE COMPLETED 08-04-2006

EQUIPMENT CME 75 BY: K. COX

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0	B6-1			SM	**ALLUVIUM** Medium dense, moist, brown, Silty, fine to medium SAND			
2	B6-2					18	124.2	9.9
4								
6	B6-3					30	127.3	11.9
8	B6-4				-Becomes fine grained at 7'	41	118.3	13.6
10	B6-5				-Becomes fine to medium grained at 10'	26		
12								
14								
16	B6-6				-Becomes fine grained at 15'	36		
					BORING TERMINATED AT 16 FEET No groundwater encountered			

Figure A-6,
Log of Boring B 6, Page 1 of 1

T2400-22-01.GPJ

SAMPLE SYMBOLS			
	... SAMPLING UNSUCCESSFUL	... STANDARD PENETRATION TEST	... DRIVE SAMPLE (UNDISTURBED)
	... DISTURBED OR BAG SAMPLE	... CHUNK SAMPLE	... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. T2400-22-01

BORING B 7

ELEV. (MSL.) ~1455' DATE COMPLETED 08-04-2006

EQUIPMENT CME 75 BY: K. COX

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SC	**ALLUVIUM** Medium dense, moist, brown, Clayey, fine to medium SAND			
2	B7-1					24	123.2	12.5
4								
	B7-2			SM	Medium dense, moist, brown, Silty, fine to medium SAND	29	122.2	14.8
6								
8	B7-3			SP	Medium dense, moist, brown, fine to medium SAND; trace silt	30		
10	B7-4				-Becomes clean, fine to medium sand at 10'	14		
12								
14								
	B7-5			SC	Medium dense, moist, brown, Clayey, fine to medium SAND	33		
16					BORING TERMINATED AT 16 FEET No groundwater encountered			

T2400-22-01.GPJ

Figure A-7,
Log of Boring B 7, Page 1 of 1

SAMPLE SYMBOLS
- ... SAMPLING UNSUCCESSFUL
- ... DISTURBED OR BAG SAMPLE
- ... STANDARD PENETRATION TEST
- ... CHUNK SAMPLE
- ... DRIVE SAMPLE (UNDISTURBED)
- ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. T2400-22-01

BORING B 8

ELEV. (MSL.) ~1455' DATE COMPLETED 08-04-2006

EQUIPMENT CME 75 BY: K. COX

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0	B8-1			SM	**ALLUVIUM** Medium dense, moist, brown, Silty, fine to coarse SAND			
2	B8-2					14	123.4	9.5
4								
6	B8-3					26	125.1	8.6
8	B8-4				-Becomes fine to medium grained at 7½'	32		
10	B8-5			SP	Medium dense, moist, brown, fine to medium SAND; trace silt	33		
12								
14								
16	B8-6			SM	Medium dense, moist, brown, Silty, fine to medium SAND	35		

BORING TERMINATED AT 16 FEET
No groundwater encountered

Figure A-8,
Log of Boring B 8, Page 1 of 1

T2400-22-01.GPJ

SAMPLE SYMBOLS

☐ ... SAMPLING UNSUCCESSFUL
☒ ... DISTURBED OR BAG SAMPLE
◧ ... STANDARD PENETRATION TEST
◪ ... CHUNK SAMPLE
■ ... DRIVE SAMPLE (UNDISTURBED)
▼ ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. T2400-22-01

BORING B 9

ELEV. (MSL.) ~1455' DATE COMPLETED 08-04-2006

EQUIPMENT CME 75 BY: K. COX

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SM	**ALLUVIUM** Medium dense, moist, brown, Silty, fine to medium SAND			
2								
	B9-1					18	122.7	5.9
4								
	B9-2					18	124.2	11.1
6								
8	B9-3					32	120.8	11.3
10	B9-4					23		
12								
14								
	B9-5				-Becomes fine grained at 15'	34		
16					BORING TERMINATED AT 16 FEET No groundwater encountered			

Figure A-9,
Log of Boring B 9, Page 1 of 1

T2400-22-01.GPJ

SAMPLE SYMBOLS			
	... SAMPLING UNSUCCESSFUL	... STANDARD PENETRATION TEST	... DRIVE SAMPLE (UNDISTURBED)
	... DISTURBED OR BAG SAMPLE	... CHUNK SAMPLE	... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. T2400-22-01

BORING B 10

ELEV. (MSL.) ~1455' DATE COMPLETED 08-04-2006

EQUIPMENT CME 75 BY: K. COX

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SM	**ALLUVIUM** Loose, moist, brown, Silty, fine to medium SAND			
2	B10-1					13	120.9	6.6
4	B10-2				-Becomes medium dense at 5'	26	130.0	10.0
6								
8	B10-3					38	126.0	12.5
10	B10-4					22		
12								
14	B10-5				-Becomes fine grained at 15'	39		
16					BORING TERMINATED AT 16 FEET No groundwater encountered			

Figure A-10,
Log of Boring B 10, Page 1 of 1

T2400-22-01.GPJ

SAMPLE SYMBOLS
- ... SAMPLING UNSUCCESSFUL
- ... DISTURBED OR BAG SAMPLE
- ... STANDARD PENETRATION TEST
- ... CHUNK SAMPLE
- ... DRIVE SAMPLE (UNDISTURBED)
- ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. T2400-22-01

BORING B 11

ELEV. (MSL.) ~1455' DATE COMPLETED 08-04-2006

EQUIPMENT CME 75 BY: K. COX

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0	B11-1			SC	**ALLUVIUM** Loose, moist, brown, Clayey, fine SAND			
2	B11-2					12	121.5	13.0
4	B11-3			SM	Loose, moist, brown, Silty, fine to medium SAND	14	121.9	11.4
8	B11-4					13		
				SP	Medium dense, moist, brown, clean SAND			
10	B11-5					20		
				ML	Stiff, moist, brown, Sandy SILT			
12								
14								
	B11-6			SM	Medium dense, moist, brown, Silty, fine to medium SAND	30		
16					BORING TERMINATED AT 16 FEET No groundwater encountered			

T2400-22-01.GPJ

Figure A-11,
Log of Boring B 11, Page 1 of 1

SAMPLE SYMBOLS
- ☐ ... SAMPLING UNSUCCESSFUL
- ... STANDARD PENETRATION TEST
- ... DRIVE SAMPLE (UNDISTURBED)
- ... DISTURBED OR BAG SAMPLE
- ... CHUNK SAMPLE
- ▼ ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. T2400-22-01

BORING B 12

ELEV. (MSL.) ~1455' DATE COMPLETED 08-04-2006

EQUIPMENT CME 75 BY: K. COX

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SM	**ALLUVIUM** Medium dense, moist, brown, Silty, fine to medium SAND			
2	B12-1					41	128.8	11.8
4	B12-2					31	123.8	13.4
6								
8	B12-3					22		
10	B12-4			SP	Medium dense, moist, brown, fine to coarse SAND; trace silt	18		
				SM	Medium dense, moist, brown, Silty, fine to medium SAND			
12								
14	B12-5				-Becomes fine grained at 15'	29		
16					BORING TERMINATED AT 16 FEET No groundwater encountered			

Figure A-12,
Log of Boring B 12, Page 1 of 1

T2400-22-01.GPJ

SAMPLE SYMBOLS
- ... SAMPLING UNSUCCESSFUL
- ... DISTURBED OR BAG SAMPLE
- ... STANDARD PENETRATION TEST
- ... CHUNK SAMPLE
- ... DRIVE SAMPLE (UNDISTURBED)
- ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. T2400-22-01

BORING B 13

ELEV. (MSL.) ~1455' DATE COMPLETED 08-07-2006

EQUIPMENT CME 75 BY: K. COX

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0	B13-1			SM	**ALLUVIUM** Medium dense, moist, brown, Silty, fine to medium SAND			
2	B13-2					14	123.5	7.4
4								
	B13-3					2		
6				SC	Loose, moist, olive-brown, Clayey, fine to medium SAND			
8	B13-4					24	117.1	17.2
				SM	Medium dense, moist, brown, Silty, fine to medium SAND			
10	B13-5					10		
12								
14								
	B13-6					38		
16				ML	Very stiff, moist, brown SILT; trace sand			
18								
20	B13-7					21		
22								
24								
	B13-8			SM	Very dense, moist, brown, Silty, fine to coarse SAND, some gravel	84/11"		
26								
28								

T2400-22-01.GPJ

Figure A-13,
Log of Boring B 13, Page 1 of 2

SAMPLE SYMBOLS
- ... SAMPLING UNSUCCESSFUL
- ... DISTURBED OR BAG SAMPLE
- ... STANDARD PENETRATION TEST
- ... CHUNK SAMPLE
- ... DRIVE SAMPLE (UNDISTURBED)
- ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

BORING B 13

ELEV. (MSL.) ~1455' DATE COMPLETED 08-07-2006

EQUIPMENT CME 75 BY: K. COX

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
30	B13-9			ML	Stiff, moist, light brown SILT; trace sand and gravel	10		
32								
34								
	B13-10				-Becomes brown	20		
36								
38								
40	B13-11			CL	Stiff, moist, brown CLAY; trace sand	15		
42								
44								
	B13-12			ML	Very stiff, moist, brown SILT; trace sand	34		
46								
48								
50	B13-13			SM	Medium dense, moist, brown, Silty, fine to medium SAND	28		
					BORING TERMINATED AT 51½ FEET No groundwater encountered			

Figure A-13,
Log of Boring B 13, Page 2 of 2

T2400-22-01.GPJ

SAMPLE SYMBOLS			
	... SAMPLING UNSUCCESSFUL	... STANDARD PENETRATION TEST	... DRIVE SAMPLE (UNDISTURBED)
	... DISTURBED OR BAG SAMPLE	... CHUNK SAMPLE	... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

BORING B 14

ELEV. (MSL.) ~1455' DATE COMPLETED 08-07-2006

EQUIPMENT CME 75 BY: K. COX

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SM	**ALLUVIUM** Medium dense, moist, brown, Silty, fine to medium SAND			
2								
	B14-1					43		
4								
	B14-2					39	128.0	7.4
6								
8	B14-3					39		
10	B14-4					37		
12								
14								
	B14-5					27		
				ML	Very stiff, moist, brown, SILT; trace sand			
16					BORING TERMINATED AT 16 FEET No groundwater encountered			

T2400-22-01.GPJ

Figure A-14,
Log of Boring B 14, Page 1 of 1

SAMPLE SYMBOLS	... SAMPLING UNSUCCESSFUL	... STANDARD PENETRATION TEST	... DRIVE SAMPLE (UNDISTURBED)
	... DISTURBED OR BAG SAMPLE	... CHUNK SAMPLE	... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. T2400-22-01

BORING B 15

ELEV. (MSL.) ~1455' DATE COMPLETED 08-07-2006

EQUIPMENT CME 75 BY: K. COX

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0	B15-1			SM	**ALLUVIUM** Medium dense, moist, brown, Silty, fine to medium SAND; voids			
2	B15-2					37		
4								
6	B15-3					30	116.9	4.7
8	B15-4				-Becomes dense with no voids at 7'	47		
10	B15-5			ML	Very stiff, moist, brown SILT	38		
12								
14								
16	B15-6					18		
					BORING TERMINATED AT 16 FEET No groundwater encountered			

Figure A-15,
Log of Boring B 15, Page 1 of 1

T2400-22-01.GPJ

SAMPLE SYMBOLS

- ... SAMPLING UNSUCCESSFUL
- ... DISTURBED OR BAG SAMPLE
- ... STANDARD PENETRATION TEST
- ... CHUNK SAMPLE
- ... DRIVE SAMPLE (UNDISTURBED)
- ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. T2400-22-01

BORING B 16

ELEV. (MSL.) ~1455' DATE COMPLETED 08-07-2006

EQUIPMENT CME 75 BY: K. COX

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SM	**ALLUVIUM** Medium dense, moist, brown, Silty, fine to medium SAND			
2	B16-1					37		
4								
6	B16-2					31	128.7	6.8
8	B16-3					40	120.6	6.4
10	B16-4					26		
12								
14				ML	Stiff, moist, brown SILT; trace sand			
16	B16-5					15		

BORING TERMINATED AT 16 FEET
No groundwater encountered

T2400-22-01.GPJ

Figure A-16,
Log of Boring B 16, Page 1 of 1

SAMPLE SYMBOLS			
	... SAMPLING UNSUCCESSFUL	... STANDARD PENETRATION TEST	... DRIVE SAMPLE (UNDISTURBED)
	... DISTURBED OR BAG SAMPLE	... CHUNK SAMPLE	... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. T2400-22-01

BORING B 17

ELEV. (MSL.) ~1455' DATE COMPLETED 08-07-2006

EQUIPMENT CME 75 BY: K. COX

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SM	**ALLUVIUM** Medium dense, moist, brown, Silty, fine to medium SAND			
2								
	B17-1					28	129.5	10.2
4								
	B17-2					27	129.1	10.1
6								
8	B17-3					35	123.6	9.1
10	B17-4			SP	Medium dense, moist, brown, fine to coarse SAND; trace silt	22		
12								
14								
	B17-5			SM	Medium dense, moist, brown, Silty, fine to medium SAND	29		
16					BORING TERMINATED AT 16 FEET No groundwater encountered			

T2400-22-01.GPJ

Figure A-17,
Log of Boring B 17, Page 1 of 1

SAMPLE SYMBOLS			
	... SAMPLING UNSUCCESSFUL	... STANDARD PENETRATION TEST	... DRIVE SAMPLE (UNDISTURBED)
	... DISTURBED OR BAG SAMPLE	... CHUNK SAMPLE	... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. T2400-22-01

BORING B 18

ELEV. (MSL.) ~1455' DATE COMPLETED 08-07-2006

EQUIPMENT CME 75 BY: K. COX

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0	B18-1			SM	**ALLUVIUM** Medium dense, moist, brown, Silty, fine to medium SAND			
2	B18-2					22		
4								
6	B18-3				-Becomes fine grained at 5'	39	124.6	12.4
8	B18-4				-Becomes loose at 7½'	8		
10	B18-5					11		
12								
14								
16	B18-6					7		
18								
20	B18-7				-Becomes dense at 20'	45		
22								
24								
26	B18-8			ML	Very stiff, moist, brown, Sandy SILT	21		
28								

Figure A-18,
Log of Boring B 18, Page 1 of 2

T2400-22-01.GPJ

SAMPLE SYMBOLS			
	... SAMPLING UNSUCCESSFUL	... STANDARD PENETRATION TEST	... DRIVE SAMPLE (UNDISTURBED)
	... DISTURBED OR BAG SAMPLE	... CHUNK SAMPLE	... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

BORING B 18

ELEV. (MSL.) ~1455' DATE COMPLETED 08-07-2006

EQUIPMENT CME 75 BY: K. COX

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
30	B18-9					21		
32								
34								
	B18-10			SM	Medium dense, moist, brown, Silty, fine SAND	20		
36								
38								
40	B18-11			ML	Very stiff, moist, brown, Sandy SILT	54		
42								
44								
	B18-12					16		
46								
48								
50	B18-13			SM	Dense, moist, brown, Silty, fine to medium SAND	65		
					BORING TERMINATED AT 51 FEET No groundwater encountered			

Figure A-18,
Log of Boring B 18, Page 2 of 2

T2400-22-01.GPJ

SAMPLE SYMBOLS

- ... SAMPLING UNSUCCESSFUL
- ... DISTURBED OR BAG SAMPLE
- ... STANDARD PENETRATION TEST
- ... CHUNK SAMPLE
- ... DRIVE SAMPLE (UNDISTURBED)
- ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. T2400-22-02

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	BORING P-1 ELEV. (MSL.) 1460 DATE COMPLETED 03/16/2020 EQUIPMENT CME 75 BY: Weidman	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
					MATERIAL DESCRIPTION			
0				SM	**VERY OLD ALLUVIUM (Qvof)** Silty SAND, medium dense, moist, dark brown; fine to coarse sand; suficial grass			
2								
4	P1@4.5-5'			ML	Sandy SILT, stiff, moist, dark brown; fine to medium sand			
					Total Depth = 5' Groundwater not encountered Backfilled with cuttings 03/17/2020			

Figure A-19,
Log of Boring P-1, Page 1 of 1

T2400-22-02 BORING LOGS.GPJ

SAMPLE SYMBOLS			
	... SAMPLING UNSUCCESSFUL	... STANDARD PENETRATION TEST	... DRIVE SAMPLE (UNDISTURBED)
	... DISTURBED OR BAG SAMPLE	... CHUNK SAMPLE	... WATER TABLE OR SEEPAGE

PROJECT NO. T2400-22-02

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	BORING P-2 ELEV. (MSL.) 1459 DATE COMPLETED 03/16/2020 EQUIPMENT CME 75 BY: Weidman	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
					MATERIAL DESCRIPTION			
0				SM	**VERY OLD ALLUVIUM (Qvof)** Silty SAND, medium dense, moist, dark brown; fine to coarse sand; suficial grass			
2					-Becomes brown; increase in fine and medium sand			
4	P2@4.5-5'				-Increase in coarse sand			
					Total Depth = 5' Groundwater not encountered Backfilled with cuttings 03/17/2020			

Figure A-20,
Log of Boring P-2, Page 1 of 1

T2400-22-02 BORING LOGS.GPJ

SAMPLE SYMBOLS

- ... SAMPLING UNSUCCESSFUL
- ... STANDARD PENETRATION TEST
- ... DRIVE SAMPLE (UNDISTURBED)
- ... DISTURBED OR BAG SAMPLE
- ... CHUNK SAMPLE
- ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. T2400-22-02

BORING P-3

ELEV. (MSL.) **1458** DATE COMPLETED **03/16/2020**

EQUIPMENT **CME 75** BY: **Weidman**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SM	**VERY OLD ALLUVIUM (Qvof)** Silty SAND, medium dense, moist, dark brown; fine to coarse sand; suficial gravel			
2								
4								
6								
8					-Increase in coarse sand			
10	P3@10.5-11			ML	Sandy SILT, stiff, moist, reddish brown; fine to medium sand; gravel lens			
					Total Depth = 11' Groundwater not encountered Backfilled with cuttings 03/17/2020			

Figure A-21,
Log of Boring P-3, Page 1 of 1

T2400-22-02 BORING LOGS.GPJ

SAMPLE SYMBOLS			
	... SAMPLING UNSUCCESSFUL	... STANDARD PENETRATION TEST	... DRIVE SAMPLE (UNDISTURBED)
	... DISTURBED OR BAG SAMPLE	... CHUNK SAMPLE	... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. T2400-22-02

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	BORING P-4 ELEV. (MSL.) 1458 DATE COMPLETED 03/16/2020 EQUIPMENT CME 75 BY: Weidman	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
					MATERIAL DESCRIPTION			
0				SM	**VERY OLD ALLUVIUM (Qvof)** Silty SAND, medium dense, moist, dark brown; fine to coarse sand; suficial grass			
2								
4	P4@4.5-5'				-Becomes reddish brown; dense			
					Total Depth = 5' Groundwater not encountered Backfilled with cuttings 03/17/2020			

Figure A-22,
Log of Boring P-4, Page 1 of 1

T2400-22-02 BORING LOGS.GPJ

SAMPLE SYMBOLS			
	☐ ... SAMPLING UNSUCCESSFUL	◧ ... STANDARD PENETRATION TEST	■ ... DRIVE SAMPLE (UNDISTURBED)
	⊠ ... DISTURBED OR BAG SAMPLE	◪ ... CHUNK SAMPLE	▼ ... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. T2400-22-02

BORING P-5

ELEV. (MSL.) **1458** DATE COMPLETED **03/16/2020**

EQUIPMENT **CME 75** BY: **Weidman**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SM	**VERY OLD ALLUVIUM (Qvof)** Silty SAND, medium dense, moist, dark brown; fine to coarse sand; suficial grass			
2								
4	P5@4.5-5'			ML	Sandy SILT, stiff, moist, dark reddish brown; fine to medium sand			

Total Depth = 5'
Groundwater not encountered
Backfilled with cuttings 03/17/2020

Figure A-23,
Log of Boring P-5, Page 1 of 1

T2400-22-02 BORING LOGS.GPJ

SAMPLE SYMBOLS			
	... SAMPLING UNSUCCESSFUL	... STANDARD PENETRATION TEST	... DRIVE SAMPLE (UNDISTURBED)
	... DISTURBED OR BAG SAMPLE	... CHUNK SAMPLE	... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. T2400-22-02

BORING P-6

ELEV. (MSL.) **1458** DATE COMPLETED **03/16/2020**

EQUIPMENT **CME 75** BY: **Weidman**

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SM	**VERY OLD ALLUVIUM (Qvof)** Silty SAND, medium dense, moist, dark brown; fine to coarse sand; suficial gravel			
2					-Becomes damp			
4								
6					-Becomes brown; increase in coarse sand			
					-Becomes very dense			
8								
10					-Becomes dark brown; dense; moist			
	P6@10.5-1							
					Total Depth = 11' Groundwater not encountered Backfilled with cuttings 03/17/2020			

Figure A-24,
Log of Boring P-6, Page 1 of 1

T2400-22-02 BORING LOGS.GPJ

SAMPLE SYMBOLS			
	... SAMPLING UNSUCCESSFUL	... STANDARD PENETRATION TEST	... DRIVE SAMPLE (UNDISTURBED)
	... DISTURBED OR BAG SAMPLE	... CHUNK SAMPLE	... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PROJECT NO. T2400-22-02

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	BORING P-7 ELEV. (MSL.) 1458 DATE COMPLETED 03/16/2020 EQUIPMENT CME 75 BY: Weidman	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
					MATERIAL DESCRIPTION			
0				SM	**VERY OLD ALLUVIUM (Qvof)** Silty SAND, medium dense, moist, dark brown; fine to coarse sand; suficial grass			
2								
4					-Increase in coarse sand			
	P7@4.5-5'							
					Total Depth = 5' Groundwater not encountered Backfilled with cuttings 03/17/2020			

Figure A-25,
Log of Boring P-7, Page 1 of 1

T2400-22-02 BORING LOGS.GPJ

SAMPLE SYMBOLS			
	... SAMPLING UNSUCCESSFUL	... STANDARD PENETRATION TEST	... DRIVE SAMPLE (UNDISTURBED)
	... DISTURBED OR BAG SAMPLE	... CHUNK SAMPLE	... WATER TABLE OR SEEPAGE

NOTE: THE LOG OF SUBSURFACE CONDITIONS SHOWN HEREON APPLIES ONLY AT THE SPECIFIC BORING OR TRENCH LOCATION AND AT THE DATE INDICATED. IT IS NOT WARRANTED TO BE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.

GEOCON

PERCOLATION TEST REPORT							
Project Name:		PDP Perris Perc UGI			**Project No.:**		T2400-22-02
Test Hole No.:		P-1			**Date Excavated:**		3/16/2020
Length of Test Pipe:			60.0	inches	**Soil Classification:**		ML
Height of Pipe above Ground:			0.0	inches	**Presoak Date:**		3/16/2020
Depth of Test Hole:			60.0	inches	**Perc Test Date:**		3/17/2020
Check for Sandy Soil Criteria Tested by:				Weidman	**Percolation Tested by:**		Weidman
Water level measured from BOTTOM of hole							
Sandy Soil Criteria Test							
Trial No.	**Time**	**Time Interval (min)**	**Total Elapsed Time (min)**	**Initial Water Level (in)**	**Final Water Level (in)**	**Δ in Water Level (in)**	**Percolation Rate (min/inch)**
1	8:35 AM 9:00 AM	25	25	32.6	32.4	0.2	104.2
2	9:00 AM 9:25 AM	25	50	32.4	32.3	0.1	208.3
			Soil Criteria: Normal				
Percolation Test							
Reading No.	**Time**	**Time Interval (min)**	**Total Elapsed Time (min)**	**Initial Water Head (in)**	**Final Water Head (in)**	**Δ in Water Level (in)**	**Percolation Rate (min/inch)**
1	9:25 AM 9:55 AM	30	30	32.3	32.3	0.0	No Rate
2	9:55 AM 10:25 AM	30	60	32.3	32.3	0.0	No Rate
3	10:25 AM 10:55 AM	30	90	32.3	32.3	0.0	No Rate
4	10:55 AM 11:25 AM	30	120	32.3	32.3	0.0	No Rate
5	11:25 AM 11:55 AM	30	150	32.3	32.3	0.0	No Rate
6	11:55 AM 12:25 PM	30	180	30.8	30.8	0.0	No Rate
7	12:25 PM 12:55 PM	30	210	30.8	30.8	0.0	No Rate
8	12:55 PM 1:25 PM	30	240	30.8	30.8	0.0	No Rate
9	1:25 PM 1:55 PM	30	270	30.8	30.7	0.1	250.0
10	1:55 PM 2:25 PM	30	300	30.7	30.7	0.0	No Rate
11	2:25 PM 2:55 PM	30	330	30.7	30.7	0.0	No Rate
12	2:55 PM 3:25 PM	30	360	30.7	30.7	0.0	No Rate
Infiltration Rate (in/hr):			0.0				
Radius of test hole (in):			4				**Figure A-26**
Average Head (in):			30.7				

PERCOLATION TEST REPORT

Project Name:	PDP Perris Perc UGI	**Project No.:**	T2400-22-02
Test Hole No.:	P-2	**Date Excavated:**	3/16/2020
Length of Test Pipe:	60.0 inches	**Soil Classification:**	SM
Height of Pipe above Ground:	0.0 inches	**Presoak Date:**	3/16/2020
Depth of Test Hole:	60.0 inches	**Perc Test Date:**	3/17/2020
Check for Sandy Soil Criteria Tested by:	Weidman	**Percolation Tested by:**	Weidman

Water level measured from BOTTOM of hole

Sandy Soil Criteria Test

Trial No.	Time	Time Interval (min)	Total Elapsed Time (min)	Initial Water Level (in)	Final Water Level (in)	Δ in Water Level (in)	Percolation Rate (min/inch)
1	8:36 AM 9:01 AM	25	25	31.3	30.6	0.7	34.7
2	9:01 AM 9:26 AM	25	50	30.6	29.9	0.7	34.7

Soil Criteria: Normal

Percolation Test

Reading No.	Time	Time Interval (min)	Total Elapsed Time (min)	Initial Water Head (in)	Final Water Head (in)	Δ in Water Level (in)	Percolation Rate (min/inch)
1	9:26 AM 9:56 AM	30	30	29.9	29.3	0.6	50.0
2	9:56 AM 10:26 AM	30	60	29.3	28.8	0.5	62.5
3	10:26 AM 10:56 AM	30	90	28.8	27.7	1.1	27.8
4	10:56 AM 11:26 AM	30	120	27.7	27.0	0.7	41.7
5	11:26 AM 11:56 AM	30	150	28.0	26.3	1.7	17.9
6	11:56 AM 12:26 PM	30	180	26.3	25.9	0.4	83.3
7	12:26 PM 12:56 PM	30	210	25.9	25.8	0.1	250.0
8	12:56 PM 1:26 PM	30	240	25.8	25.2	0.6	50.0
9	1:26 PM 1:56 PM	30	270	25.2	25.1	0.1	250.0
10	1:56 PM 2:26 PM	30	300	25.1	24.8	0.2	125.0
11	2:26 PM 2:56 PM	30	330	24.8	24.6	0.2	125.0
12	2:56 PM 3:26 PM	30	360	24.6	24.4	0.2	125.0

Infiltration Rate (in/hr):	0.04
Radius of test hole (in):	4
Average Head (in):	24.5

Figure A-27

PERCOLATION TEST REPORT

Project Name:		PDP Perris Perc UGI			**Project No.:**		T2400-22-02
Test Hole No.:		P-3			**Date Excavated:**		3/16/2020
Length of Test Pipe:			132.0	inches	**Soil Classification:**		ML
Height of Pipe above Ground:			0.0	inches	**Presoak Date:**		3/16/2020
Depth of Test Hole:			132.0	inches	**Perc Test Date:**		3/17/2020
Check for Sandy Soil Criteria Tested by:				Weidman	**Percolation Tested by:**		Weidman

Water level measured from BOTTOM of hole

Sandy Soil Criteria Test

Trial No.	Time	Time Interval (min)	Total Elapsed Time (min)	Initial Water Level (in)	Final Water Level (in)	Δ in Water Level (in)	Percolation Rate (min/inch)
1	8:37 AM 9:02 AM	25	25	104.4	96.5	7.9	3.2
2	9:02 AM 9:27 AM	25	50	96.5	93.4	3.1	8.0

Soil Criteria: Normal

Percolation Test

Reading No.	Time	Time Interval (min)	Total Elapsed Time (min)	Initial Water Head (in)	Final Water Head (in)	Δ in Water Level (in)	Percolation Rate (min/inch)
1	9:27 AM 9:57 AM	30	30	93.4	90.5	2.9	10.4
2	9:57 AM 10:27 AM	30	60	90.5	88.9	1.6	19.2
3	10:27 AM 10:57 AM	30	90	88.9	87.5	1.4	20.8
4	10:57 AM 11:27 AM	30	120	87.5	85.2	2.3	13.2
5	11:27 AM 11:57 AM	30	150	85.2	84.0	1.2	25.0
6	11:57 AM 12:27 PM	30	180	84.0	83.2	0.8	35.7
7	12:27 PM 12:57 PM	30	210	83.2	82.6	0.6	50.0
8	12:57 PM 1:27 PM	30	240	88.8	87.1	1.7	17.9
9	1:27 PM 1:57 PM	30	270	87.1	86.2	1.0	31.2
10	1:57 PM 2:27 PM	30	300	86.2	84.7	1.4	20.8
11	2:27 PM 2:57 PM	30	330	84.7	83.6	1.1	27.8
12	2:57 PM 3:27 PM	30	360	83.6	82.6	1.1	27.8

Infiltration Rate (in/hr):	0.1	
Radius of test hole (in):	4	**Figure A-28**
Average Head (in):	83.1	

PERCOLATION TEST REPORT							
Project Name:		PDP Perris Perc UGI			**Project No.:**		T2400-22-02
Test Hole No.:		P-4			**Date Excavated:**		3/16/2020
Length of Test Pipe:			60.0	inches	**Soil Classification:**		SM
Height of Pipe above Ground:			0.0	inches	**Presoak Date:**		3/16/2020
Depth of Test Hole:			60.0	inches	**Perc Test Date:**		3/17/2020
Check for Sandy Soil Criteria Tested by:				Weidman	**Percolation Tested by:**		Weidman
Water level measured from BOTTOM of hole							
Sandy Soil Criteria Test							
Trial No.	**Time**	**Time Interval (min)**	**Total Elapsed Time (min)**	**Initial Water Level (in)**	**Final Water Level (in)**	**Δ in Water Level (in)**	**Percolation Rate (min/inch)**
1	8:38 AM 9:03 AM	25	25	29.3	29.0	0.2	104.2
2	9:03 AM 9:28 AM	25	50	29.0	28.2	0.8	29.8
		Soil Criteria: Normal					
		Percolation Test					
Reading No.	**Time**	**Time Interval (min)**	**Total Elapsed Time (min)**	**Initial Water Head (in)**	**Final Water Head (in)**	**Δ in Water Level (in)**	**Percolation Rate (min/inch)**
1	9:28 AM 9:58 AM	30	30	28.2	27.7	0.5	62.5
2	9:58 AM 10:28 AM	30	60	27.7	27.5	0.2	125.0
3	10:28 AM 10:58 AM	30	90	27.5	26.3	1.2	25.0
4	10:58 AM 11:28 AM	30	120	26.3	25.1	1.2	25.0
5	11:28 AM 11:58 AM	30	150	25.1	24.2	0.8	35.7
6	11:58 AM 12:28 PM	30	180	24.2	23.3	1.0	31.3
7	12:28 PM 12:58 PM	30	210	24.7	24.4	0.4	83.3
8	12:58 PM 1:28 PM	30	240	24.4	24.1	0.2	125.0
9	1:28 PM 1:58 PM	30	270	24.1	23.8	0.4	83.3
10	1:58 PM 2:28 PM	30	300	23.8	23.4	0.4	83.3
11	2:28 PM 2:58 PM	30	330	23.4	22.9	0.5	62.5
12	2:58 PM 3:28 PM	30	360	22.9	22.7	0.2	125.0
Infiltration Rate (in/hr):			0.04				
Radius of test hole (in):			4				**Figure A-29**
Average Head (in):			22.8				

PERCOLATION TEST REPORT

Project Name:	PDP Perris Perc UGI	**Project No.:**	T2400-22-02
Test Hole No.:	P-5	**Date Excavated:**	3/16/2020
Length of Test Pipe:	60.0 inches	**Soil Classification:**	ML
Height of Pipe above Ground:	0.0 inches	**Presoak Date:**	3/16/2020
Depth of Test Hole:	60.0 inches	**Perc Test Date:**	3/17/2020
Check for Sandy Soil Criteria Tested by:	Weidman	**Percolation Tested by:**	Weidman

Water level measured from BOTTOM of hole

Sandy Soil Criteria Test

Trial No.	Time	Time Interval (min)	Total Elapsed Time (min)	Initial Water Level (in)	Final Water Level (in)	Δ in Water Level (in)	Percolation Rate (min/inch)
1	8:39 AM 9:04 AM	25	25	33.5	32.4	1.1	23.1
2	9:04 AM 9:29 AM	25	50	32.4	31.4	1.0	26.0

Soil Criteria: Normal

Percolation Test

Reading No.	Time	Time Interval (min)	Total Elapsed Time (min)	Initial Water Head (in)	Final Water Head (in)	Δ in Water Level (in)	Percolation Rate (min/inch)
1	9:29 AM 9:59 AM	30	30	31.4	30.5	1.0	31.3
2	9:59 AM 10:29 AM	30	60	30.5	29.6	0.8	35.7
3	10:29 AM 10:59 AM	30	90	29.6	28.9	0.7	41.7
4	10:59 AM 11:29 AM	30	120	28.9	28.2	0.7	41.7
5	11:29 AM 11:59 AM	30	150	26.8	26.3	0.5	62.5
6	11:59 AM 12:29 PM	30	180	26.3	25.9	0.4	83.3
7	12:29 PM 12:59 PM	30	210	25.9	25.4	0.5	62.5
8	12:59 PM 1:29 PM	30	240	25.4	25.1	0.4	83.3
9	1:29 PM 1:59 PM	30	270	25.1	24.8	0.2	125.0
10	1:59 PM 2:29 PM	30	300	24.8	24.6	0.2	125.0
11	2:29 PM 2:59 PM	30	330	24.6	24.0	0.6	50.0
12	2:59 PM 3:29 PM	30	360	24.0	23.8	0.2	125.0

Infiltration Rate (in/hr):	0.04
Radius of test hole (in):	4
Average Head (in):	23.9

Figure A-30

PERCOLATION TEST REPORT							
Project Name:		PDP Perris Perc UGI			**Project No.:**		T2400-22-02
Test Hole No.:		P-6			**Date Excavated:**		3/16/2020
Length of Test Pipe:			132.0	inches	**Soil Classification:**		SM
Height of Pipe above Ground:			0.0	inches	**Presoak Date:**		3/16/2020
Depth of Test Hole:			132.0	inches	**Perc Test Date:**		3/17/2020
Check for Sandy Soil Criteria Tested by:				Weidman	**Percolation Tested by:**		Weidman
Water level measured from BOTTOM of hole							
Sandy Soil Criteria Test							
Trial No.	**Time**	**Time Interval (min)**	**Total Elapsed Time (min)**	**Initial Water Level (in)**	**Final Water Level (in)**	**Δ in Water Level (in)**	**Percolation Rate (min/inch)**
1	8:40 AM 9:05 AM	25	25	93.6	86.0	7.6	3.3
2	9:05 AM 9:30 AM	25	50	86.0	82.7	3.4	7.4
		Soil Criteria: Normal					
Percolation Test							
Reading No.	**Time**	**Time Interval (min)**	**Total Elapsed Time (min)**	**Initial Water Head (in)**	**Final Water Head (in)**	**Δ in Water Level (in)**	**Percolation Rate (min/inch)**
1	9:30 AM 10:00 AM	30	30	82.7	80.3	2.4	12.5
2	10:00 AM 10:30 AM	30	60	92.4	88.1	4.3	6.9
3	10:30 AM 11:00 AM	30	90	88.1	84.4	3.7	8.1
4	11:00 AM 11:30 AM	30	120	99.5	95.6	3.8	7.8
5	11:30 AM 12:00 PM	30	150	91.2	87.6	3.6	8.3
6	12:00 PM 12:30 PM	30	180	87.6	85.1	2.5	11.9
7	12:30 PM 1:00 PM	30	210	85.1	82.3	2.8	10.9
8	1:00 PM 1:30 PM	30	240	92.2	89.5	2.6	11.4
9	1:30 PM 2:00 PM	30	270	89.5	87.4	2.2	13.9
10	2:00 PM 2:30 PM	30	300	87.4	84.8	2.5	11.9
11	2:30 PM 3:00 PM	30	330	84.8	82.7	2.2	13.9
12	3:00 PM 3:30 PM	30	360	82.7	80.4	2.3	13.2
Infiltration Rate (in/hr):			0.11				
Radius of test hole (in):			4				**Figure A-31**
Average Head (in):			81.5				

PERCOLATION TEST REPORT							
Project Name:		PDP Perris Perc UGI			**Project No.:**		T2400-22-02
Test Hole No.:		P-7			**Date Excavated:**		3/16/2020
Length of Test Pipe:			60.0	inches	**Soil Classification:**		SM
Height of Pipe above Ground:			0.0	inches	**Presoak Date:**		3/16/2020
Depth of Test Hole:			60.0	inches	**Perc Test Date:**		3/17/2020
Check for Sandy Soil Criteria Tested by:				Weidman	**Percolation Tested by:**		Weidman
Water level measured from BOTTOM of hole							
Sandy Soil Criteria Test							
Trial No.	**Time**	**Time Interval (min)**	**Total Elapsed Time (min)**	**Initial Water Level (in)**	**Final Water Level (in)**	**Δ in Water Level (in)**	**Percolation Rate (min/inch)**
1	8:41 AM 9:06 AM	25	25	28.3	27.6	0.7	34.7
2	9:06 AM 9:31 AM	25	50	27.6	26.5	1.1	23.1
		Soil Criteria: Normal					
Percolation Test							
Reading No.	**Time**	**Time Interval (min)**	**Total Elapsed Time (min)**	**Initial Water Head (in)**	**Final Water Head (in)**	**Δ in Water Level (in)**	**Percolation Rate (min/inch)**
1	9:31 AM 10:01 AM	30	30	26.5	26.2	0.4	83.3
2	10:01 AM 10:31 AM	30	60	26.2	25.4	0.7	41.7
3	10:31 AM 11:01 AM	30	90	25.4	25.0	0.5	62.5
4	11:01 AM 11:31 AM	30	120	25.0	24.5	0.5	62.5
5	11:31 AM 12:01 PM	30	150	24.0	22.8	1.2	25.0
6	12:01 PM 12:31 PM	30	180	22.8	21.6	1.2	25.0
7	12:31 PM 1:01 PM	30	210	21.6	18.8	2.8	10.9
8	1:01 PM 1:31 PM	30	240	29.9	28.8	1.1	27.8
9	1:31 PM 2:01 PM	30	270	28.8	28.1	0.7	41.7
10	2:01 PM 2:31 PM	30	300	28.1	27.2	0.8	35.7
11	2:31 PM 3:01 PM	30	330	27.2	26.4	0.8	35.7
12	3:01 PM 3:31 PM	30	360	26.4	25.6	0.8	35.7
Infiltration Rate (in/hr):			0.12				
Radius of test hole (in):			4				**Figure A-32**
Average Head (in):			26.0				

APPENDIX B

APPENDIX B

LABORATORY TESTING

We performed laboratory tests in accordance with current, generally accepted test methods of ASTM International (ASTM) or other suggested procedures. For our laboratory testing program of our 2006 geotechnical investigation, we analyzed selected soil samples for in-situ dry density and moisture content, maximum dry density and optimum moisture content, direct shear strength, collapse/swell potential, consolidation characteristics, expansion index/potential, and corrosion screening. For our current laboratory testing program, we determined the grain size distribution of the soil encountered at the bottom of our percolation test borings. The results of our laboratory testing are presented on Figures B-1 through B-11.

APPENDIX B

LABORATORY TESTING

Laboratory tests were performed in accordance with generally accepted test methods of the American Society for Testing and Materials (ASTM) or other suggested procedures. Selected undisturbed samples were tested to evaluate their in-place dry density and moisture content, shear strength, collapse potential, and consolidation characteristics. Disturbed bulk samples were tested to obtain maximum dry density and optimum moisture content, expansion characteristics, soluble sulfate content, potential of hydrogen, resistivity, and chloride content. Results of the laboratory tests are presented in tabular and graphic form herewith.

TABLE B-I
SUMMARY OF LABORATORY MAXIMUM DRY DENSITY AND OPTIMUM MOISTURE CONTENT TEST RESULTS
ASTM D 1557-02

Sample No.	Description	Maximum Dry Density (pcf)	Optimum Moisture Content (% dry wt.)
B1-1	SM - Dark brown, Silty, fine to coarse SAND	133.5	7.5
B11-1	SM - Dark brown, Silty, fine to coarse SAND	136.4	8.1
B18-1	SM - Gray brown, Silty, fine to medium SAND , with little clay	131.9	8.4

TABLE B-II
SUMMARY OF LABORATORY EXPANSION INDEX TEST RESULTS
ASTM D4829-03

Sample No.	Moisture Content		Dry Density (pcf)	Expansion Index
	Before Test (%)	After Test (%)		
B1-1*	8.7	18.1	116.6	18
B8-1*	7.5	14.7	121.7	3

* Expansion index was corrected in accordance with §10.2.3 of ASTM D4829.

TABLE B-III
SUMMARY OF DIRECT SHEAR TEST RESULTS

Sample No.	Dry Density (pcf)	Moisture Content (%)	Unit Cohesion (psf)	Angle of Shear Resistance (degrees)
B11-1	122.8	8.0	180	31
B18-1	117.0	10.0	210	26

Samples remolded to 90 percent relative compaction at near or slightly above optimum moisture content.

TABLE B-IV
SUMMARY OF LABORATORY WATER-SOLUBLE SULFATE TEST RESULTS
CALIFORNIA TEST NO. 417

Sample No.	Water-Soluble Sulfate	Sulfate Exposure*
B4-4	0.014%	Negligible
B15-1	0.002%	Negligible

* Per UBC Table 19-A-4.

TABLE B-V
SUMMARY OF SINGLE-POINT CONSOLIDATION (COLLAPSE) TESTS
ASTM D-2435-96

Sample Number	In-situ Dry Density (pcf)	Moisture Content Before Test	Axial Load with Water Added (psf)	Consolidation Before Water Added (%)	Percent Collapse
B1-4	120.6	13.2	2,000	1.7	0.1
B2-2	107.3	12.9	2,000	2.1	0.8
B3-3	119.5	10.6	2,000	1.9	0.4
B5-1	128.0	10.9	2,000	1.6	0.0
B6-2	124.2	9.9	2,000	1.5	0.3
B6-3	127.3	11.9	2,000	2.8	0.7
B7-2	122.2	14.8	2,000	1.8	0.3
B8-2	123.4	9.5	2,000	1.6	0.6
B9-2	124.2	11.1	2,000	1.6	0.2
B9-3	120.8	11.3	2,000	1.4	0.3
B10-2	130.0	10.0	2,000	1.9	0.2
B11-2	121.5	13.0	2,000	2.1	0.4
B11-3	121.9	11.4	2,000	1.5	0.2
B12-1	128.8	11.8	2,000	2.0	0.7
B13-4	117.1	17.2	2,000	1.7	0.2
B15-3	116.9	4.7	2,000	1.5	3.4
B16-2	128.7	6.8	2,000	1.5	1.6
B17-2	129.1	10.1	2,000	1.9	0.4

Negative sign indicates soil expansion

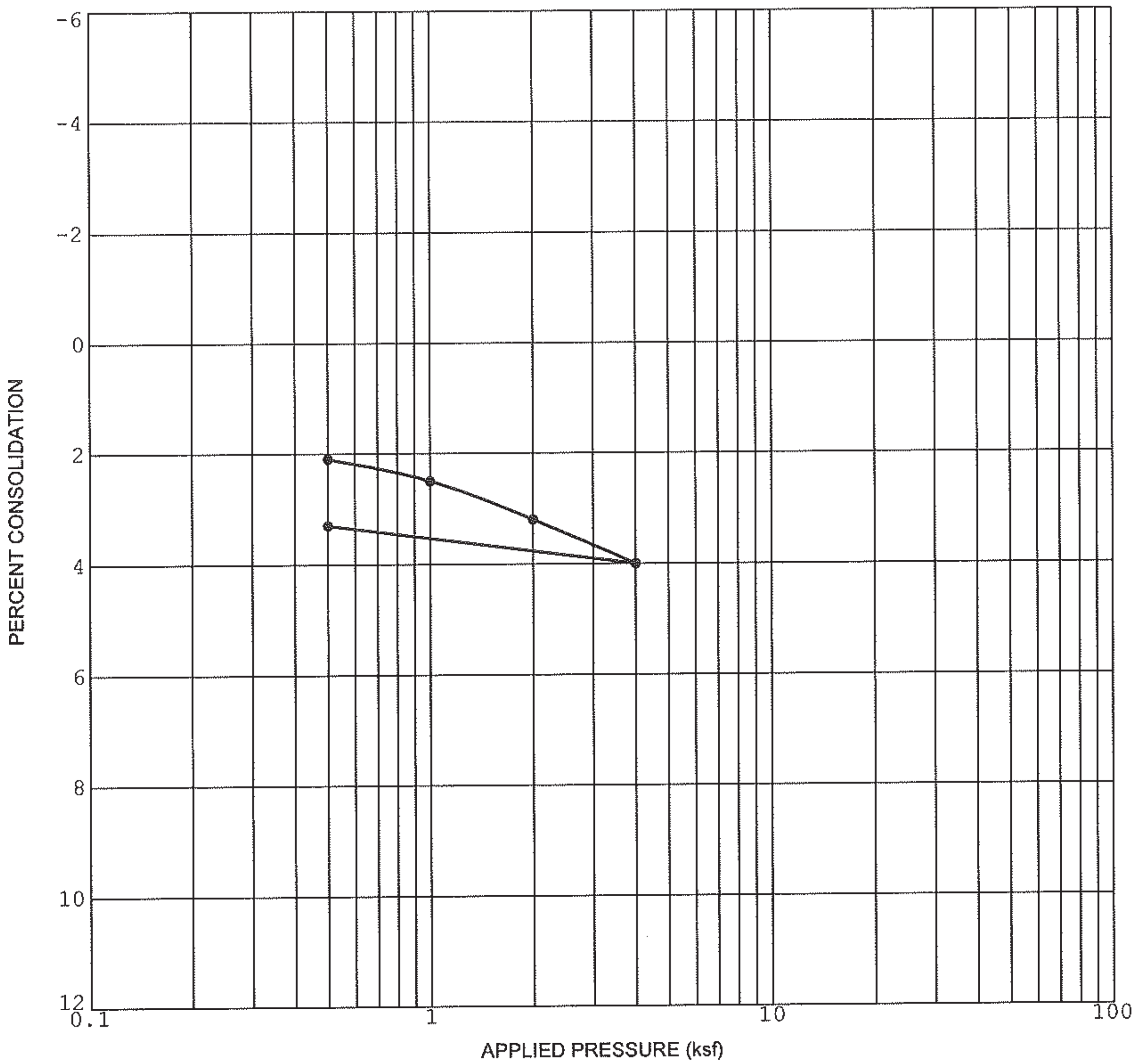
TABLE B-VI
SUMMARY OF PH, RESISTIVITY AND CHLORIDE TESTS

Sample No.	pH	Chloride (ppm)	Resistivity (Ohm-cm)
B4-1	7.4	340	811
B15-1	6.5	21	5408

Resistivity and pH tests were performed in accordance with Cal Trans Test 532.

PROJECT NO. T2400-22-01

SAMPLE NO. B4-3



Initial Dry Density (pcf)	120.7
Initial Water Content (%)	12.5

Initial Saturation (%)	88.7
Sample Saturated at (ksf)	2.0

CONSOLIDATION CURVE

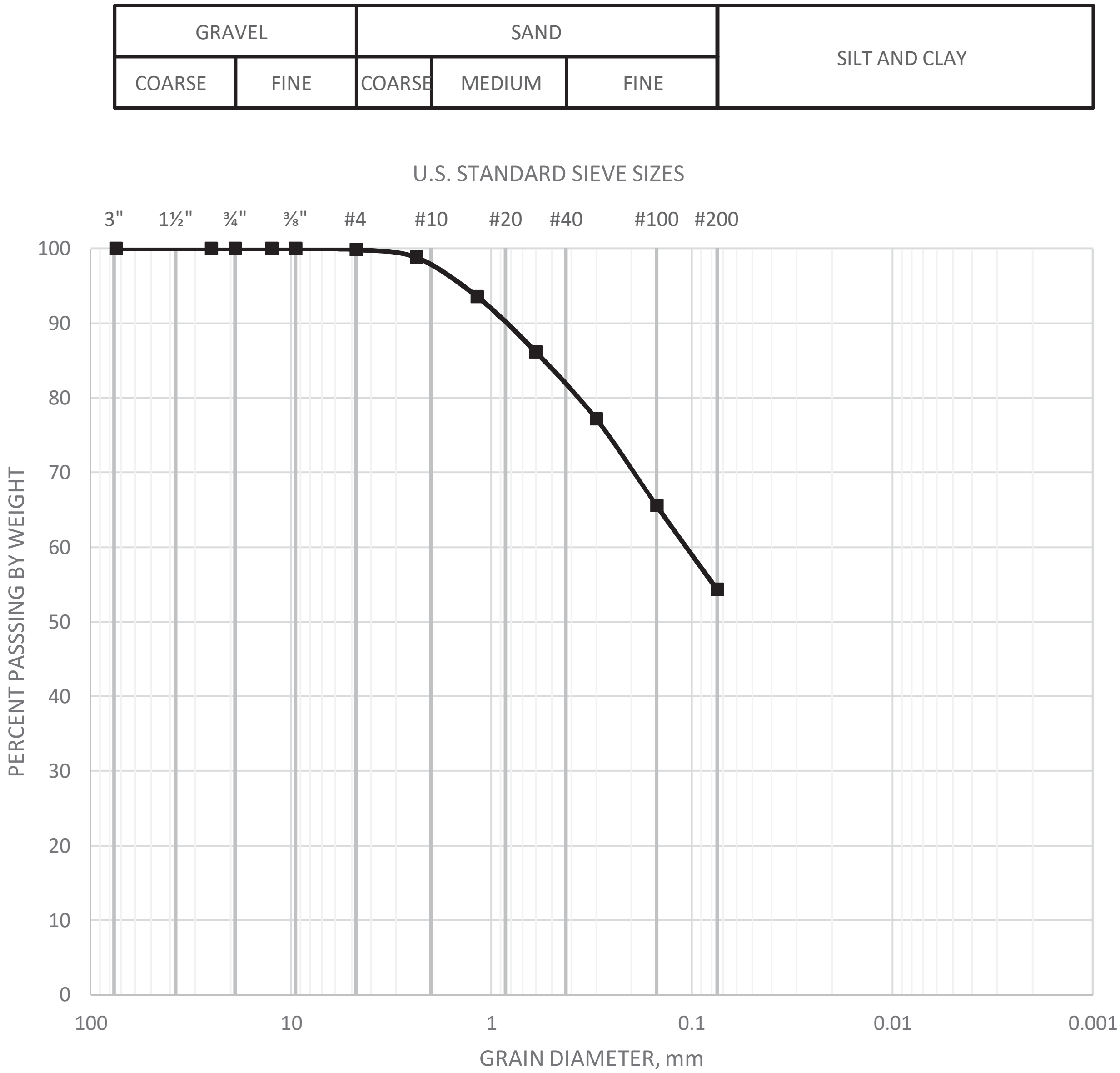
RAMONA CROSSING

PARIS, CALIFORNIA

T2400-22-01.GPJ

GEOCON

Figure B-4



SAMPLE	CLASSIFICATION	D60	D30	D10
P1@4.5-5'	Sandy SILT (ML), dark brown			

GEOCON

GRAIN SIZE DISTRIBUTION

ASTM D-422

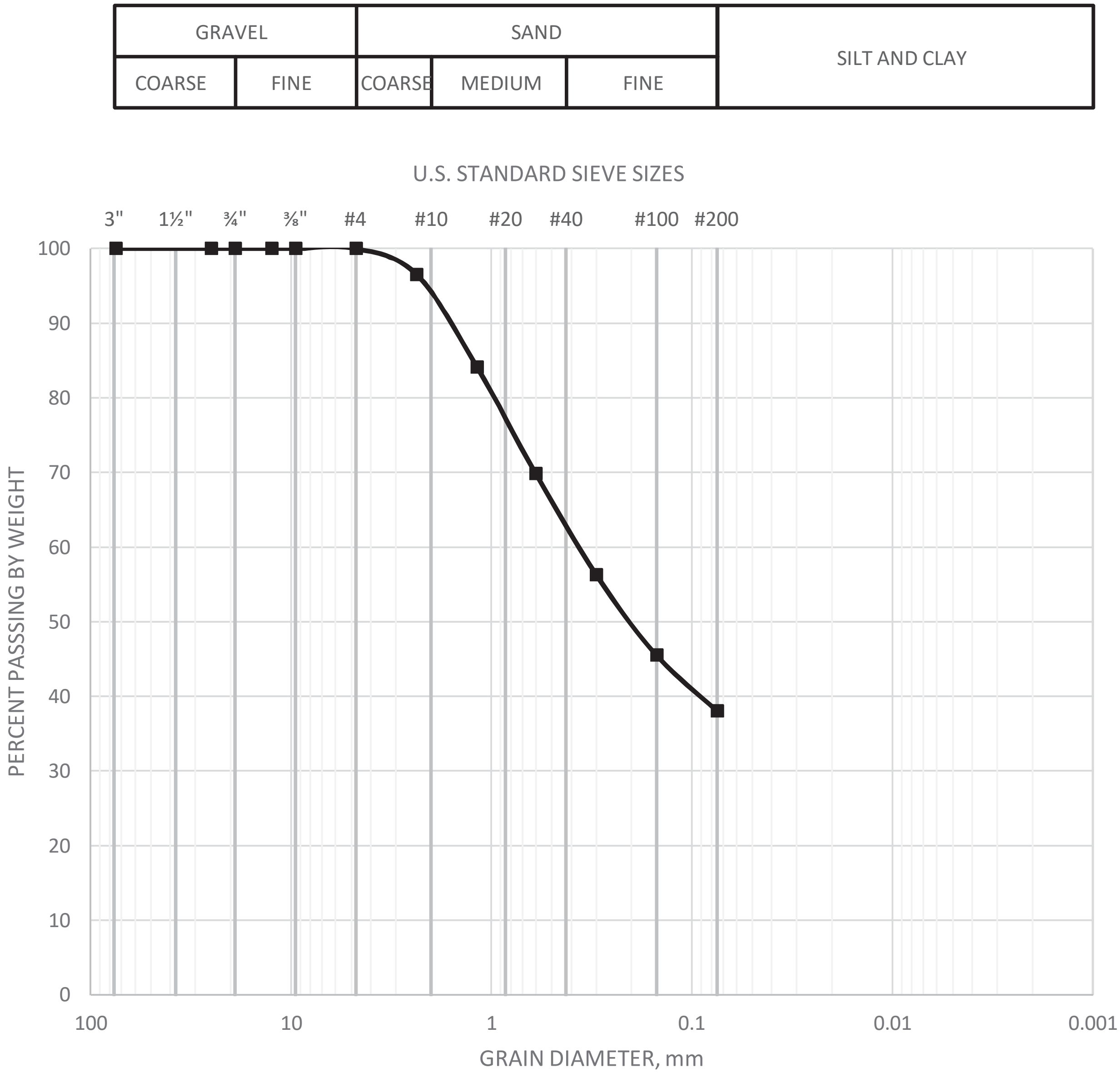
Checked by: MJ

Project No.: T2400-22-02

WAREHOUSE BUILDING
SWC RAMONA EXPRESSWAY & PERRIS BOULEVARD
PERRIS, CALIFORNIA

April 2020

Figure B-5



SAMPLE	CLASSIFICATION	D60	D30	D10
P2@4.5-5'	Silty SAND (SM), brown	0.38	0.04	0.005

GEOCON

GRAIN SIZE DISTRIBUTION

ASTM D-422

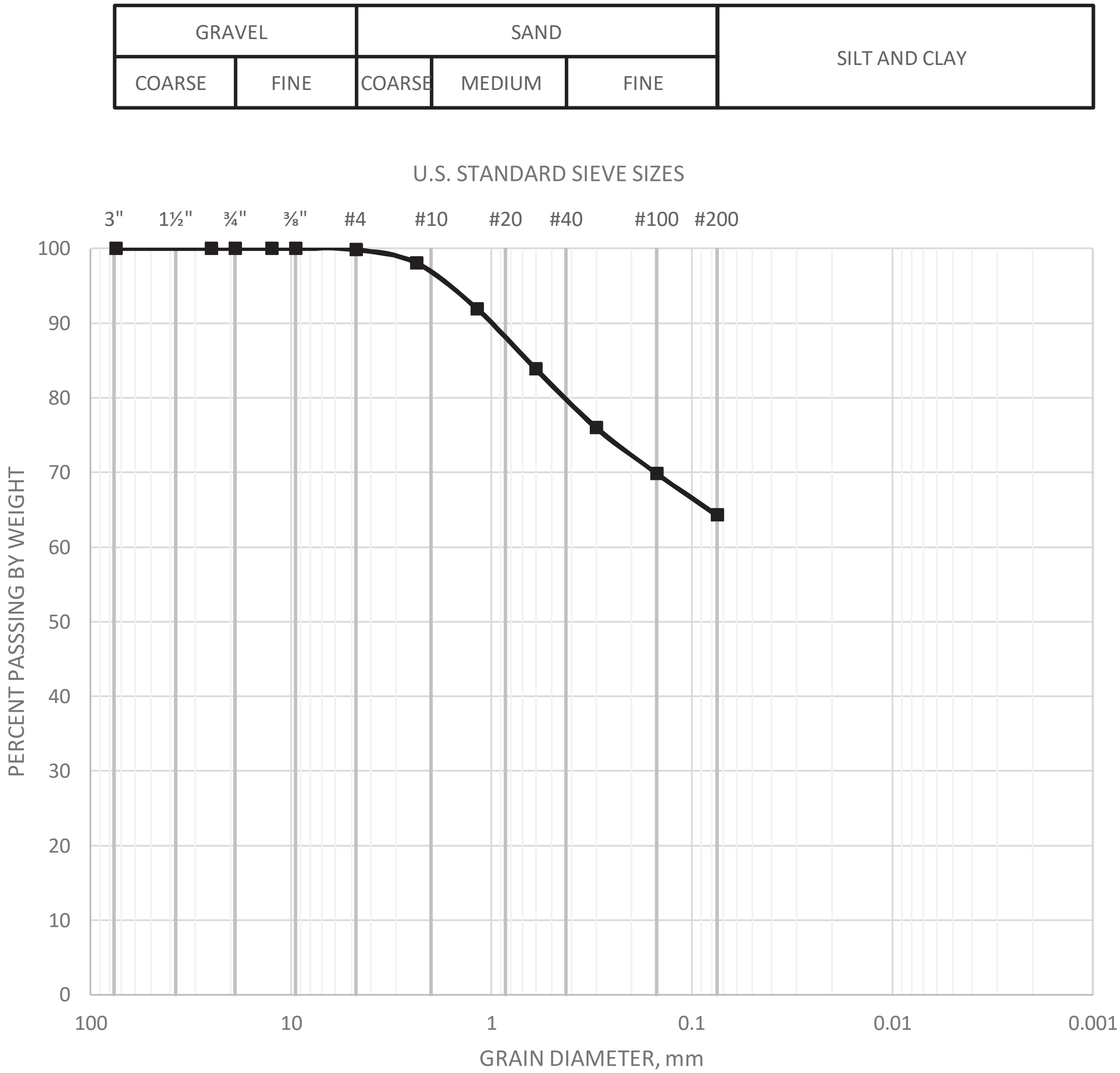
Checked by: MJ

Project No.: T2400-22-02

WAREHOUSE BUILDING
SWC RAMONA EXPRESSWAY & PERRIS BOULEVARD
PERRIS, CALIFORNIA

April 2020

Figure B-6



SAMPLE	CLASSIFICATION	D60	D30	D10
P3@10.5-11'	Sandy SILT (ML), reddish brown			

GEOCON

GRAIN SIZE DISTRIBUTION

ASTM D-422

Checked by: MJ

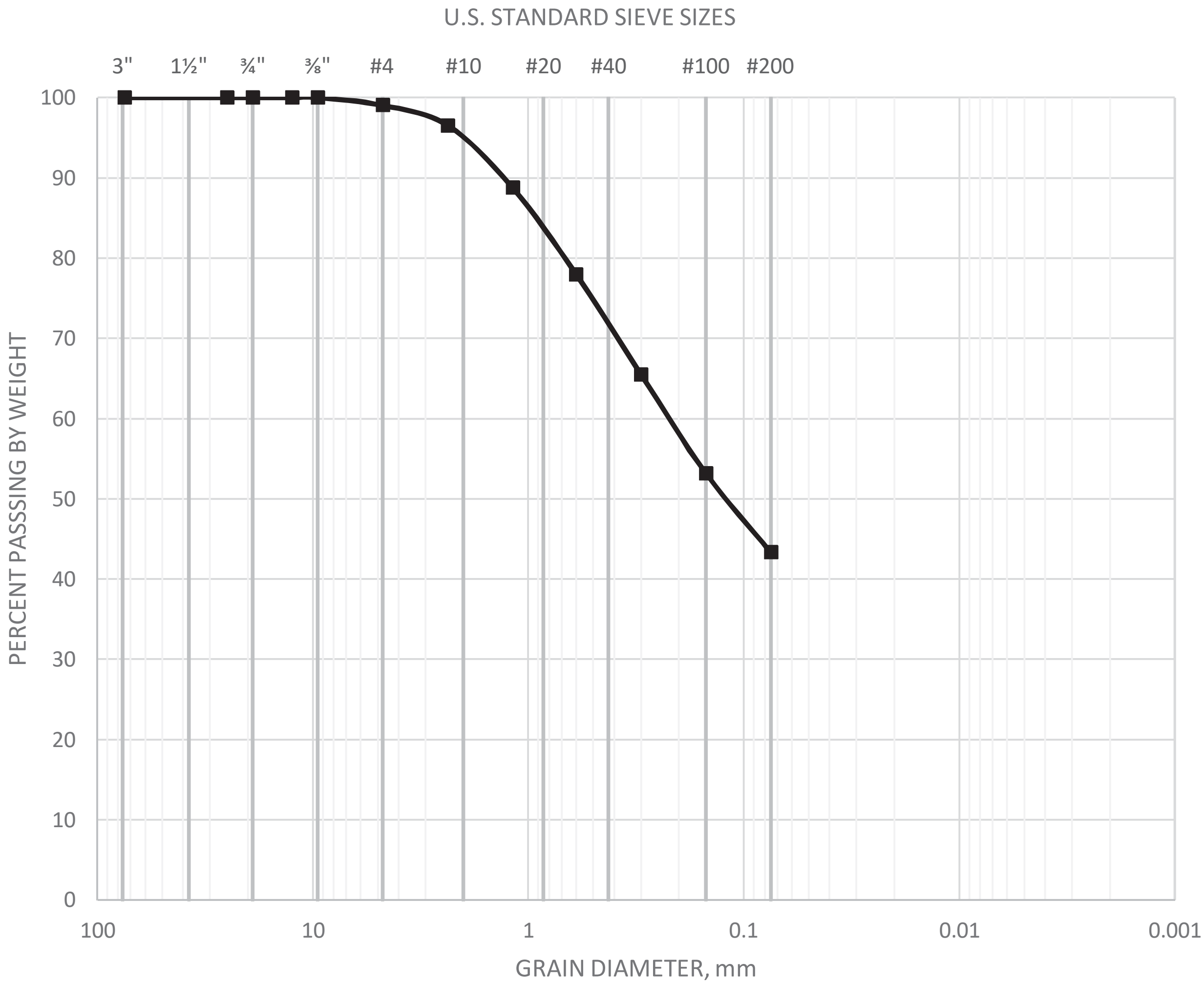
Project No.: T2400-22-02

WAREHOUSE BUILDING
SWC RAMONA EXPRESSWAY & PERRIS BOULEVARD
PERRIS, CALIFORNIA

April 2020

Figure B-7

GRAVEL		SAND			SILT AND CLAY
COARSE	FINE	COARSE	MEDIUM	FINE	



SAMPLE	CLASSIFICATION	D60	D30	D10
P4@4.5-5'	Silty SAND (SM), reddish brown	0.22	0.027	0.009

GEOCON

GRAIN SIZE DISTRIBUTION

ASTM D-422

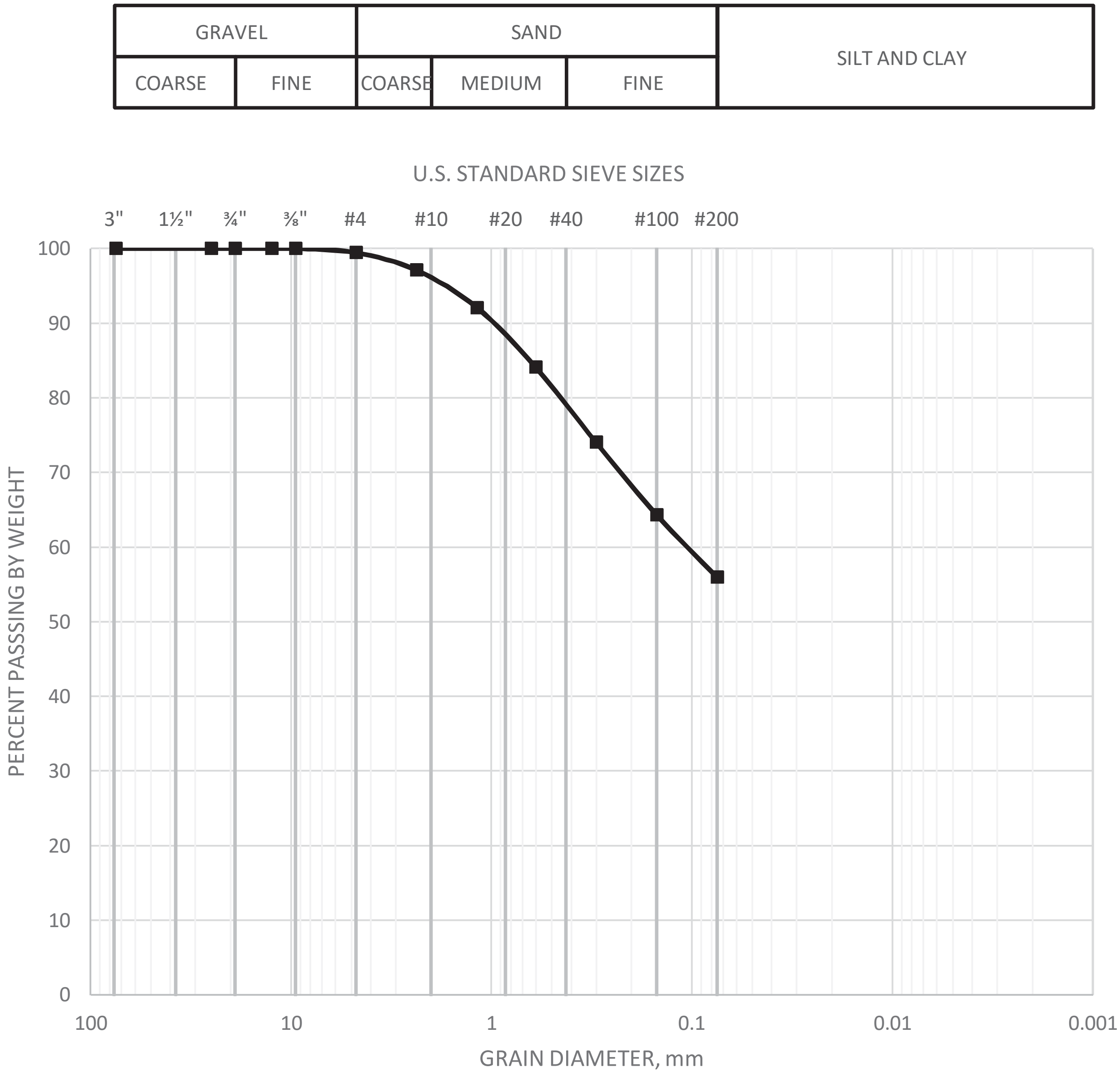
Checked by: MJ

Project No.: T2400-22-02

WAREHOUSE BUILDING
SWC RAMONA EXPRESSWAY & PERRIS BOULEVARD
PERRIS, CALIFORNIA

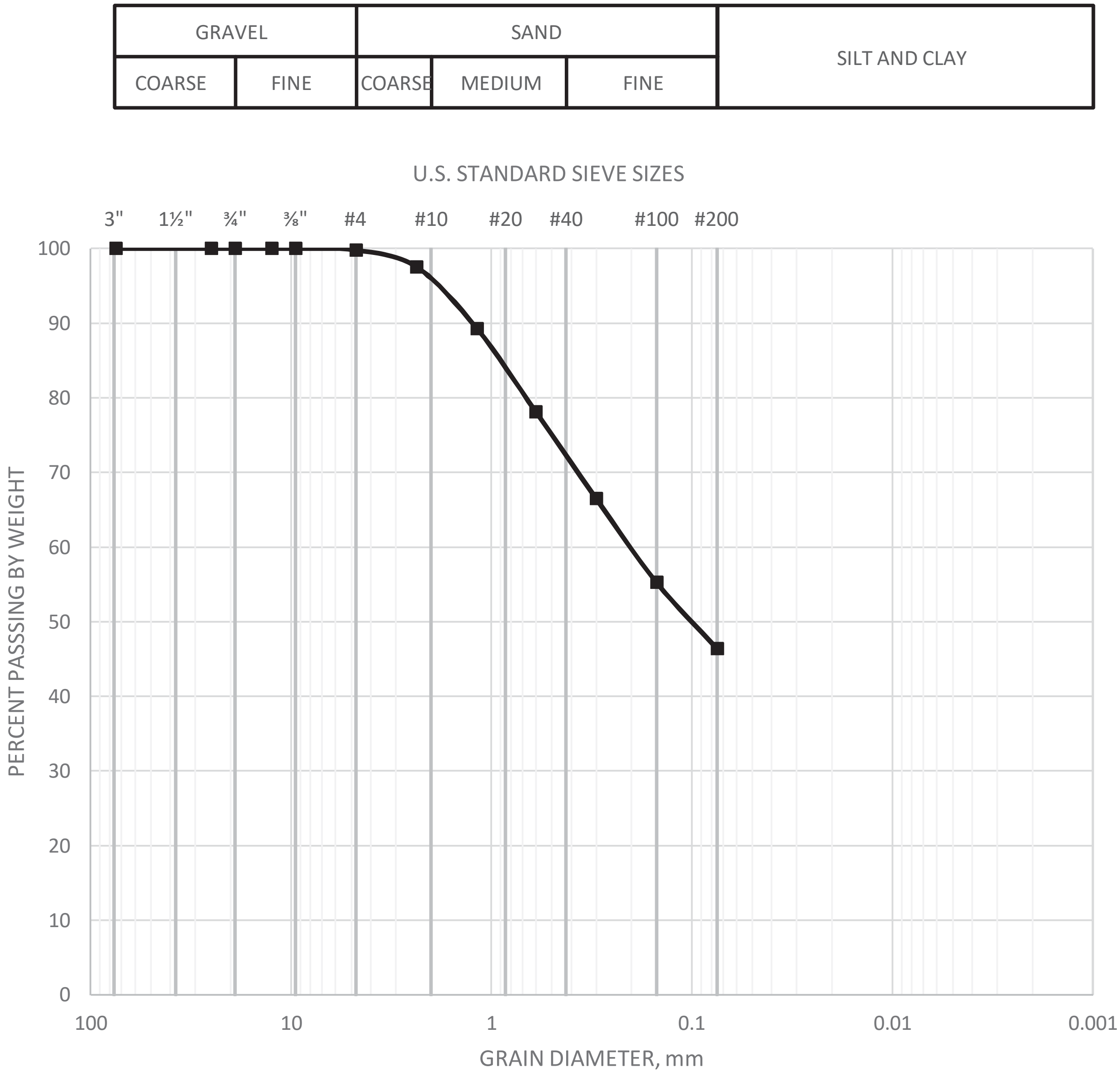
April 2020

Figure B-8



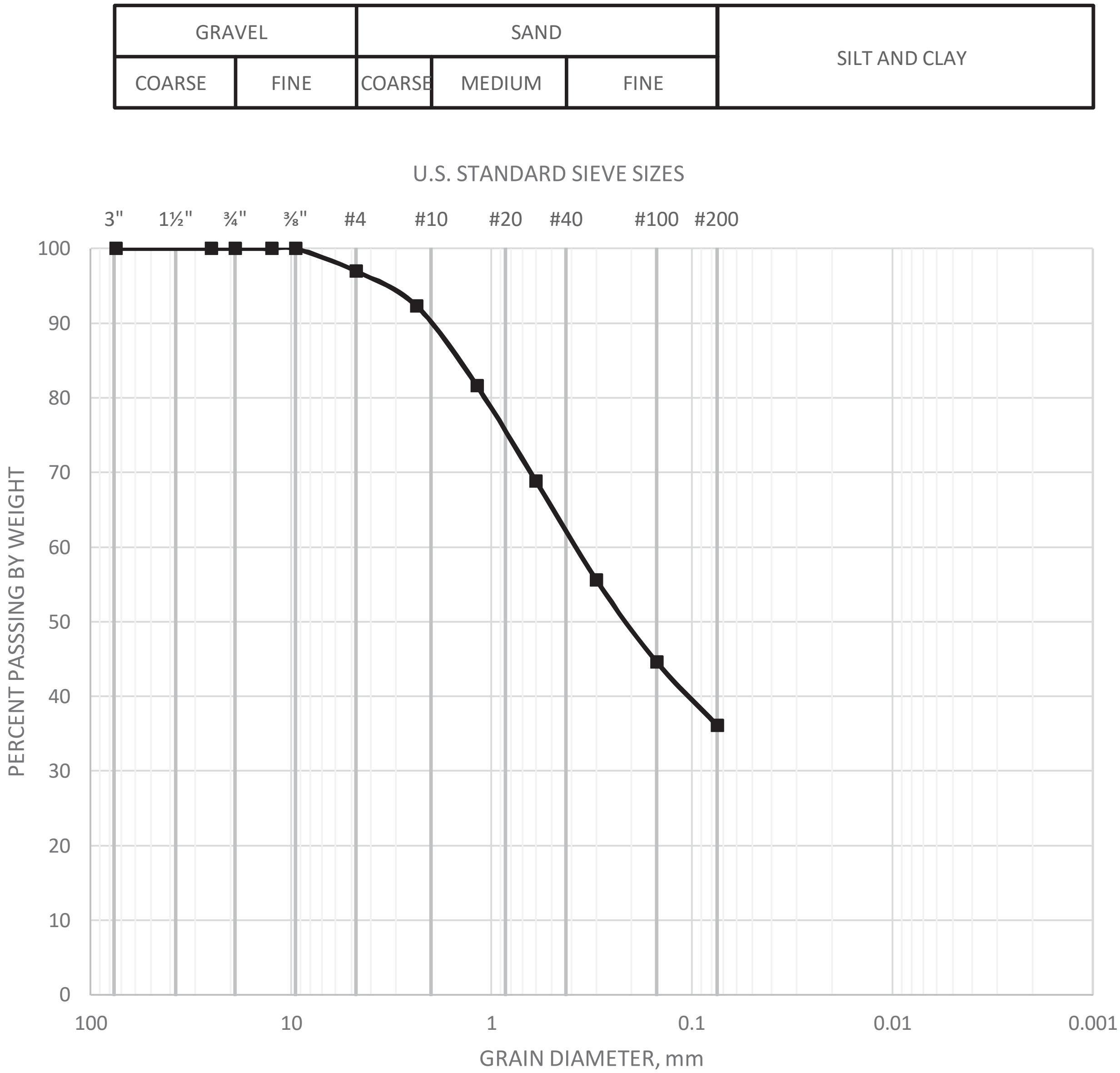
SAMPLE	CLASSIFICATION	D60	D30	D10
P5@4.5-5'	Sandy SILT (ML), dark reddish brown			

GEOCON	**GRAIN SIZE DISTRIBUTION** ASTM D-422	Project No.: T2400-22-02
		WAREHOUSE BUILDING SWC RAMONA EXPRESSWAY & PERRIS BOULEVARD PERRIS, CALIFORNIA
	Checked by: MJ	April 2020 Figure B-9



SAMPLE	CLASSIFICATION	D60	D30	D10
P6@10.5-11'	Silty SAND (SM), dark brown	0.21	0.02	0.004

GEOCON	**GRAIN SIZE DISTRIBUTION** ASTM D-422	Project No.: T2400-22-02 WAREHOUSE BUILDING SWC RAMONA EXPRESSWAY & PERRIS BOULEVARD PERRIS, CALIFORNIA
	Checked by: MJ	April 2020 Figure B-10



SAMPLE	CLASSIFICATION	D60	D30	D10
P7@4.5-5'	Silty SAND with trace gravel (SM), dark brown	0.4	0.044	0.008

GEOCON	**GRAIN SIZE DISTRIBUTION** ASTM D-422	Project No.: T2400-22-02 WAREHOUSE BUILDING SWC RAMONA EXPRESSWAY & PERRIS BOULEVARD PERRIS, CALIFORNIA
	Checked by: MJ	April 2020 Figure B-11

APPENDIX C

APPENDIX C

RECOMMENDED GRADING SPECIFICATIONS

FOR

WAREHOUSE BUILDING
SOUTHWEST CORNER OF RAMONA EXPRESSWAY &
PERRIS BOULEVARD
PERRIS, CALIFORNIA

PROJECT NO. T2400-22-02

RECOMMENDED GRADING SPECIFICATIONS

1. GENERAL

1.1 These Recommended Grading Specifications shall be used in conjunction with the Geotechnical Report for the project prepared by Geocon. The recommendations contained in the text of the Geotechnical Report are a part of the earthwork and grading specifications and shall supersede the provisions contained hereinafter in the case of conflict.

1.2 Prior to the commencement of grading, a geotechnical consultant (Consultant) shall be employed for the purpose of observing earthwork procedures and testing the fills for substantial conformance with the recommendations of the Geotechnical Report and these specifications. The Consultant should provide adequate testing and observation services so that they may assess whether, in their opinion, the work was performed in substantial conformance with these specifications. It shall be the responsibility of the Contractor to assist the Consultant and keep them apprised of work schedules and changes so that personnel may be scheduled accordingly.

1.3 It shall be the sole responsibility of the Contractor to provide adequate equipment and methods to accomplish the work in accordance with applicable grading codes or agency ordinances, these specifications and the approved grading plans. If, in the opinion of the Consultant, unsatisfactory conditions such as questionable soil materials, poor moisture condition, inadequate compaction, and/or adverse weather result in a quality of work not in conformance with these specifications, the Consultant will be empowered to reject the work and recommend to the Owner that grading be stopped until the unacceptable conditions are corrected.

2. DEFINITIONS

2.1 **Owner** shall refer to the owner of the property or the entity on whose behalf the grading work is being performed and who has contracted with the Contractor to have grading performed.

2.2 **Contractor** shall refer to the Contractor performing the site grading work.

2.3 **Civil Engineer** or **Engineer of Work** shall refer to the California licensed Civil Engineer or consulting firm responsible for preparation of the grading plans, surveying and verifying as-graded topography.

2.4 **Consultant** shall refer to the soil engineering and engineering geology consulting firm retained to provide geotechnical services for the project.

2.5 **Soil Engineer** shall refer to a California licensed Civil Engineer retained by the Owner, who is experienced in the practice of geotechnical engineering. The Soil Engineer shall be responsible for having qualified representatives on-site to observe and test the Contractor's work for conformance with these specifications.

2.6 **Engineering Geologist** shall refer to a California licensed Engineering Geologist retained by the Owner to provide geologic observations and recommendations during the site grading.

2.7 **Geotechnical Report** shall refer to a soil report (including all addenda) which may include a geologic reconnaissance or geologic investigation that was prepared specifically for the development of the project for which these Recommended Grading Specifications are intended to apply.

3. MATERIALS

3.1 Materials for compacted fill shall consist of any soil excavated from the cut areas or imported to the site that, in the opinion of the Consultant, is suitable for use in construction of fills. In general, fill materials can be classified as *soil* fills, *soil-rock* fills or *rock* fills, as defined below.

3.1.1 **Soil fills** are defined as fills containing no rocks or hard lumps greater than 12 inches in maximum dimension and containing at least 40 percent by weight of material smaller than ¾ inch in size.

3.1.2 **Soil-rock fills** are defined as fills containing no rocks or hard lumps larger than 4 feet in maximum dimension and containing a sufficient matrix of soil fill to allow for proper compaction of soil fill around the rock fragments or hard lumps as specified in Paragraph 6.2. **Oversize rock** is defined as material greater than 12 inches.

3.1.3 **Rock fills** are defined as fills containing no rocks or hard lumps larger than 3 feet in maximum dimension and containing little or no fines. Fines are defined as material smaller than ¾ inch in maximum dimension. The quantity of fines shall be less than approximately 20 percent of the rock fill quantity.

3.2 Material of a perishable, spongy, or otherwise unsuitable nature as determined by the Consultant shall not be used in fills.

3.3 Materials used for fill, either imported or on-site, shall not contain hazardous materials as defined by the California Code of Regulations, Title 22, Division 4, Chapter 30, Articles 9 and 10; 40CFR; and any other applicable local, state or federal laws. The Consultant shall not be responsible for the identification or analysis of the potential presence of hazardous materials. However, if observations, odors or soil discoloration cause Consultant to suspect the presence of hazardous materials, the Consultant may request from the Owner the termination of grading operations within the affected area. Prior to resuming grading operations, the Owner shall provide a written report to the Consultant indicating that the suspected materials are not hazardous as defined by applicable laws and regulations.

3.4 The outer 15 feet of *soil-rock* fill slopes, measured horizontally, should be composed of properly compacted *soil* fill materials approved by the Consultant. *Rock* fill may extend to the slope face, provided that the slope is not steeper than 2:1 (horizontal:vertical) and a soil layer no thicker than 12 inches is track-walked onto the face for landscaping purposes. This procedure may be utilized provided it is acceptable to the governing agency, Owner and Consultant.

3.5 Samples of soil materials to be used for fill should be tested in the laboratory by the Consultant to determine the maximum density, optimum moisture content, and, where appropriate, shear strength, expansion, and gradation characteristics of the soil.

3.6 During grading, soil or groundwater conditions other than those identified in the Geotechnical Report may be encountered by the Contractor. The Consultant shall be notified immediately to evaluate the significance of the unanticipated condition

4. CLEARING AND PREPARING AREAS TO BE FILLED

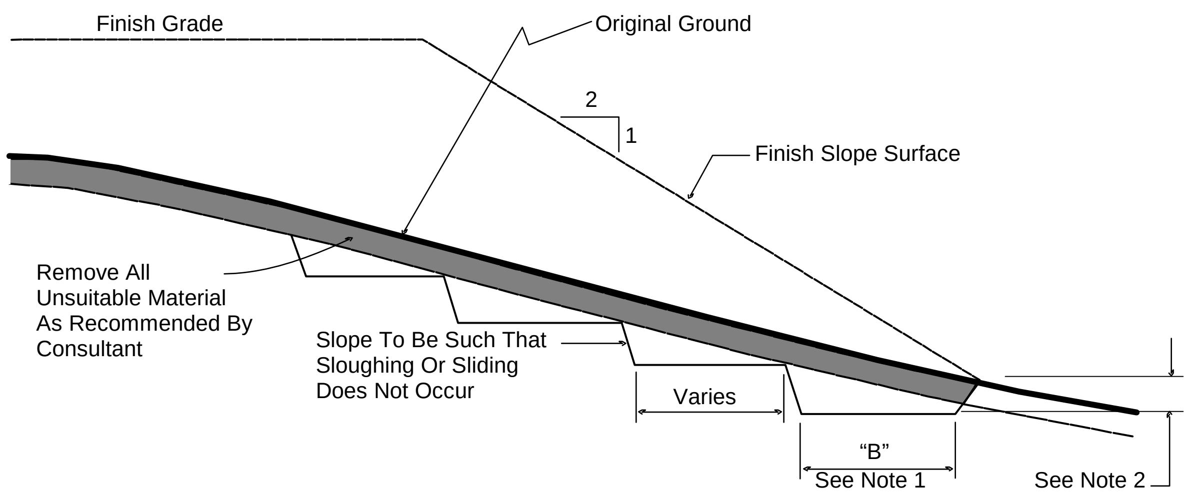
4.1 Areas to be excavated and filled shall be cleared and grubbed. Clearing shall consist of complete removal above the ground surface of trees, stumps, brush, vegetation, man-made structures, and similar debris. Grubbing shall consist of removal of stumps, roots, buried logs and other unsuitable material and shall be performed in areas to be graded. Roots and other projections exceeding 1½ inches in diameter shall be removed to a depth of 3 feet below the surface of the ground. Borrow areas shall be grubbed to the extent necessary to provide suitable fill materials.

4.2 Asphalt pavement material removed during clearing operations should be properly disposed at an approved off-site facility or in an acceptable area of the project evaluated by Geocon and the property owner. Concrete fragments that are free of reinforcing steel may be placed in fills, provided they are placed in accordance with Section 6.2 or 6.3 of this document.

4.3 After clearing and grubbing of organic matter and other unsuitable material, loose or porous soils shall be removed to the depth recommended in the Geotechnical Report. The depth of removal and compaction should be observed and approved by a representative of the Consultant. The exposed surface shall then be plowed or scarified to a minimum depth of 6 inches and until the surface is free from uneven features that would tend to prevent uniform compaction by the equipment to be used.

4.4 Where the slope ratio of the original ground is steeper than 5:1 (horizontal:vertical), or where recommended by the Consultant, the original ground should be benched in accordance with the following illustration.

TYPICAL BENCHING DETAIL



No Scale

DETAIL NOTES: (1) Key width "B" should be a minimum of 10 feet, or sufficiently wide to permit complete coverage with the compaction equipment used. The base of the key should be graded horizontal, or inclined slightly into the natural slope.

(2) The outside of the key should be below the topsoil or unsuitable surficial material and at least 2 feet into dense formational material. Where hard rock is exposed in the bottom of the key, the depth and configuration of the key may be modified as approved by the Consultant.

4.5 After areas to receive fill have been cleared and scarified, the surface should be moisture conditioned to achieve the proper moisture content, and compacted as recommended in Section 6 of these specifications.

5. COMPACTION EQUIPMENT

5.1 Compaction of *soil* or *soil-rock* fill shall be accomplished by sheepsfoot or segmented-steel wheeled rollers, vibratory rollers, multiple-wheel pneumatic-tired rollers, or other types of acceptable compaction equipment. Equipment shall be of such a design that it will be capable of compacting the *soil* or *soil-rock* fill to the specified relative compaction at the specified moisture content.

5.2 Compaction of *rock* fills shall be performed in accordance with Section 6.3.

6. PLACING, SPREADING AND COMPACTION OF FILL MATERIAL

6.1 *Soil* fill, as defined in Paragraph 3.1.1, shall be placed by the Contractor in accordance with the following recommendations:

6.1.1 *Soil* fill shall be placed by the Contractor in layers that, when compacted, should generally not exceed 8 inches. Each layer shall be spread evenly and shall be thoroughly mixed during spreading to obtain uniformity of material and moisture in each layer. The entire fill shall be constructed as a unit in nearly level lifts. Rock materials greater than 12 inches in maximum dimension shall be placed in accordance with Section 6.2 or 6.3 of these specifications.

6.1.2 In general, the *soil* fill shall be compacted at a moisture content at or above the optimum moisture content as determined by ASTM D 1557.

6.1.3 When the moisture content of *soil* fill is below that specified by the Consultant, water shall be added by the Contractor until the moisture content is in the range specified.

6.1.4 When the moisture content of the *soil* fill is above the range specified by the Consultant or too wet to achieve proper compaction, the *soil* fill shall be aerated by the Contractor by blading/mixing, or other satisfactory methods until the moisture content is within the range specified.

6.1.5 After each layer has been placed, mixed, and spread evenly, it shall be thoroughly compacted by the Contractor to a relative compaction of at least 90 percent. Relative compaction is defined as the ratio (expressed in percent) of the in-place dry density of the compacted fill to the maximum laboratory dry density as determined in accordance with ASTM D 1557. Compaction shall be continuous over the entire area, and compaction equipment shall make sufficient passes so that the specified minimum relative compaction has been achieved throughout the entire fill.

6.1.6 Where practical, soils having an Expansion Index greater than 50 should be placed at least 3 feet below finish pad grade and should be compacted at a moisture content generally 2 to 4 percent greater than the optimum moisture content for the material.

6.1.7 Properly compacted *soil* fill shall extend to the design surface of fill slopes. To achieve proper compaction, it is recommended that fill slopes be over-built by at least 3 feet and then cut to the design grade. This procedure is considered preferable to track-walking of slopes, as described in the following paragraph.

6.1.8 As an alternative to over-building of slopes, slope faces may be back-rolled with a heavy-duty loaded sheepsfoot or vibratory roller at maximum 4-foot fill height intervals. Upon completion, slopes should then be track-walked with a D-8 dozer or similar equipment, such that a dozer track covers all slope surfaces at least twice.

6.2 *Soil-rock* fill, as defined in Paragraph 3.1.2, shall be placed by the Contractor in accordance with the following recommendations:

6.2.1 Rocks larger than 12 inches but less than 4 feet in maximum dimension may be incorporated into the compacted *soil* fill, but shall be limited to the area measured 15 feet minimum horizontally from the slope face and 5 feet below finish grade or 3 feet below the deepest utility, whichever is deeper.

6.2.2 Rocks or rock fragments up to 4 feet in maximum dimension may either be individually placed or placed in windrows. Under certain conditions, rocks or rock fragments up to 10 feet in maximum dimension may be placed using similar methods. The acceptability of placing rock materials greater than 4 feet in maximum dimension shall be evaluated during grading as specific cases arise and shall be approved by the Consultant prior to placement.

6.2.3 For individual placement, sufficient space shall be provided between rocks to allow for passage of compaction equipment.

6.2.4 For windrow placement, the rocks should be placed in trenches excavated in properly compacted *soil* fill. Trenches should be approximately 5 feet wide and 4 feet deep in maximum dimension. The voids around and beneath rocks should be filled with approved granular soil having a Sand Equivalent of 30 or greater and should be compacted by flooding. Windrows may also be placed utilizing an "open-face" method in lieu of the trench procedure, however, this method should first be approved by the Consultant.

6.2.5 Windrows should generally be parallel to each other and may be placed either parallel to or perpendicular to the face of the slope depending on the site geometry. The minimum horizontal spacing for windrows shall be 12 feet center-to-center with a 5-foot stagger or offset from lower courses to next overlying course. The minimum vertical spacing between windrow courses shall be 2 feet from the top of a lower windrow to the bottom of the next higher windrow.

6.2.6 Rock placement, fill placement and flooding of approved granular soil in the windrows should be continuously observed by the Consultant.

6.3 *Rock* fills, as defined in Section 3.1.3, shall be placed by the Contractor in accordance with the following recommendations:

6.3.1 The base of the *rock* fill shall be placed on a sloping surface (minimum slope of 2 percent). The surface shall slope toward suitable subdrainage outlet facilities. The *rock* fills shall be provided with subdrains during construction so that a hydrostatic pressure buildup does not develop. The subdrains shall be permanently connected to controlled drainage facilities to control post-construction infiltration of water.

6.3.2 *Rock* fills shall be placed in lifts not exceeding 3 feet. Placement shall be by rock trucks traversing previously placed lifts and dumping at the edge of the currently placed lift. Spreading of the *rock* fill shall be by dozer to facilitate *seating* of the rock. The *rock* fill shall be watered heavily during placement. Watering shall consist of water trucks traversing in front of the current rock lift face and spraying water continuously during rock placement. Compaction equipment with compactive energy comparable to or greater than that of a 20-ton steel vibratory roller or other compaction equipment providing suitable energy to achieve the required compaction or deflection as recommended in Paragraph 6.3.3 shall be utilized. The number of passes to be made should be determined as described in Paragraph 6.3.3. Once a *rock* fill lift has been covered with *soil* fill, no additional *rock* fill lifts will be permitted over the *soil* fill.

6.3.3 Plate bearing tests, in accordance with ASTM D 1196, may be performed in both the compacted *soil* fill and in the *rock* fill to aid in determining the required minimum number of passes of the compaction equipment. If performed, a minimum of three plate bearing tests should be performed in the properly compacted *soil* fill (minimum relative compaction of 90 percent). Plate bearing tests shall then be performed on areas of *rock* fill having two passes, four passes and six passes of the compaction equipment, respectively. The number of passes required for the *rock* fill shall be determined by comparing the results of the plate bearing tests for the *soil* fill and the *rock* fill and by evaluating the deflection variation with number of passes. The required number of passes of the compaction equipment will be performed as necessary until the plate bearing deflections are equal to or less than that determined for the properly compacted *soil* fill. In no case will the required number of passes be less than two.

6.3.4 A representative of the Consultant should be present during *rock* fill operations to observe that the minimum number of “passes” have been obtained, that water is being properly applied and that specified procedures are being followed. The actual number of plate bearing tests will be determined by the Consultant during grading.

6.3.5 Test pits shall be excavated by the Contractor so that the Consultant can state that, in their opinion, sufficient water is present and that voids between large rocks are properly filled with smaller rock material. In-place density testing will not be required in the *rock* fills.

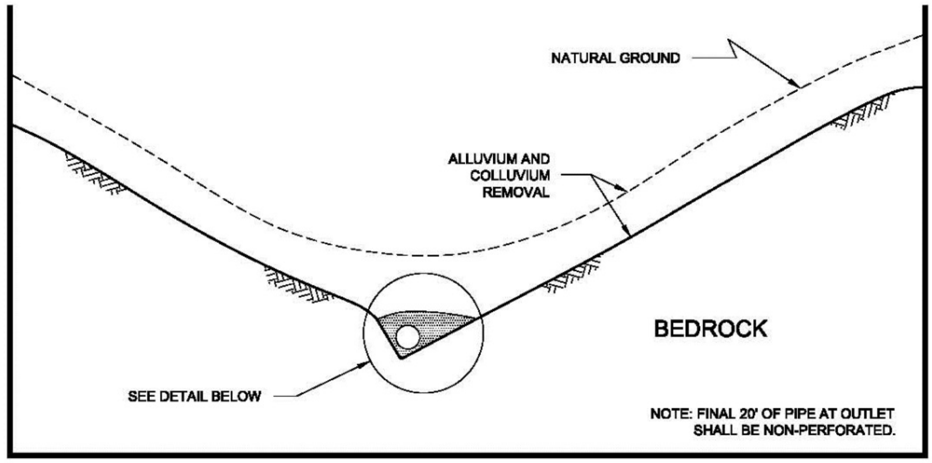
6.3.6 To reduce the potential for “piping” of fines into the *rock* fill from overlying *soil* fill material, a 2-foot layer of graded filter material shall be placed above the uppermost lift of *rock* fill. The need to place graded filter material below the *rock* should be determined by the Consultant prior to commencing grading. The gradation of the graded filter material will be determined at the time the *rock* fill is being excavated. Materials typical of the *rock* fill should be submitted to the Consultant in a timely manner, to allow design of the graded filter prior to the commencement of *rock* fill placement.

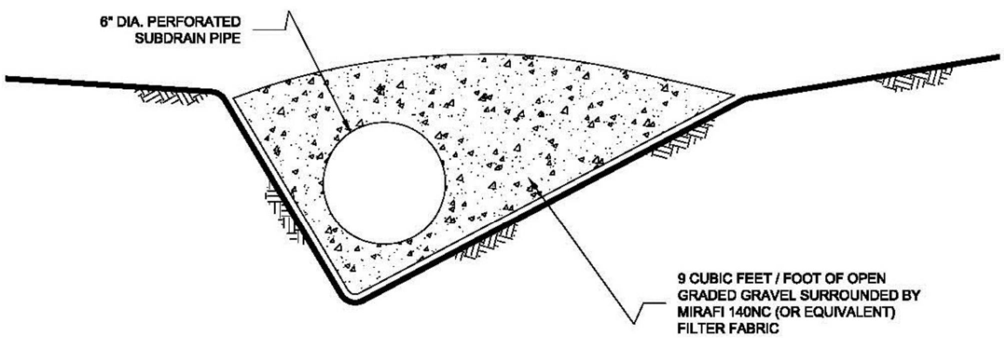
6.3.7 *Rock* fill placement should be continuously observed during placement by the Consultant.

7. SUBDRAINS

7.1 The geologic units on the site may have permeability characteristics and/or fracture systems that could be susceptible under certain conditions to seepage. The use of canyon subdrains may be necessary to mitigate the potential for adverse impacts associated with seepage conditions. Canyon subdrains with lengths in excess of 500 feet or extensions of existing offsite subdrains should use 8-inch-diameter pipes. Canyon subdrains less than 500 feet in length should use 6-inch-diameter pipes.

TYPICAL CANYON DRAIN DETAIL





NOTES:

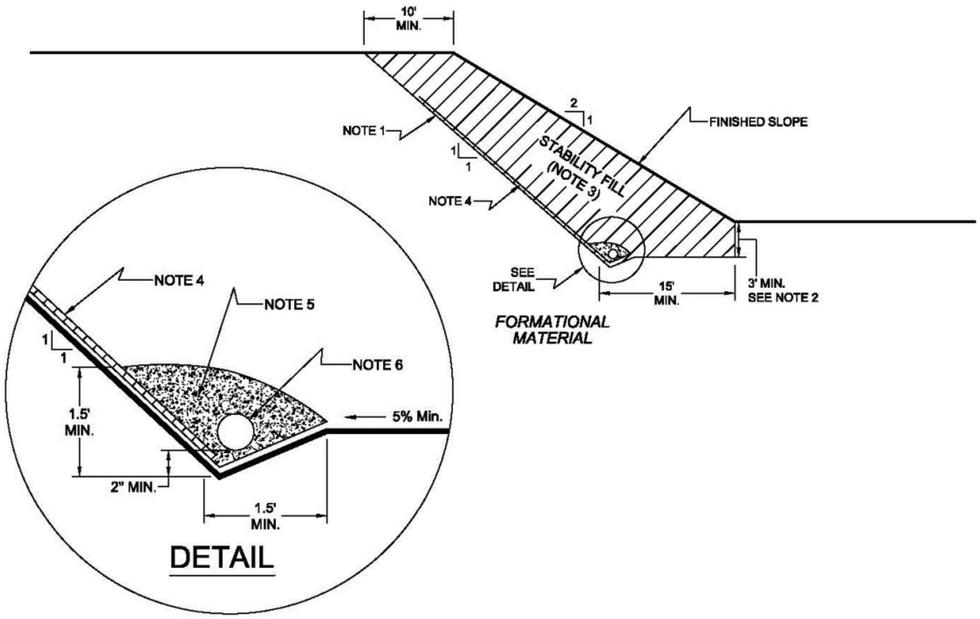
1......6-INCH DIAMETER, SCHEDULE 80 PVC PERFORATED PIPE FOR FILLS IN EXCESS OF 100-FEET IN DEPTH OR A PIPE LENGTH OF LONGER THAN 500 FEET.

2......6-INCH DIAMETER, SCHEDULE 40 PVC PERFORATED PIPE FOR FILLS LESS THAN 100-FEET IN DEPTH OR A PIPE LENGTH SHORTER THAN 500 FEET.

NO SCALE

7.2 Slope drains within stability fill keyways should use 4-inch-diameter (or lager) pipes.

TYPICAL STABILITY FILL DETAIL



NOTES:

1.....EXCAVATE BACKCUT AT 1:1 INCLINATION (UNLESS OTHERWISE NOTED).

2.....BASE OF STABILITY FILL TO BE 3 FEET INTO FORMATIONAL MATERIAL, SLOPING A MINIMUM 5% INTO SLOPE.

3.....STABILITY FILL TO BE COMPOSED OF PROPERLY COMPACTED GRANULAR SOIL.

4.....CHIMNEY DRAINS TO BE APPROVED PREFABRICATED CHIMNEY DRAIN PANELS (MIRADRAIN G200N OR EQUIVALENT) SPACED APPROXIMATELY 20 FEET CENTER TO CENTER AND 4 FEET WIDE. CLOSER SPACING MAY BE REQUIRED IF SEEPAGE IS ENCOUNTERED.

5.....FILTER MATERIAL TO BE 3/4-INCH, OPEN-GRADED CRUSHED ROCK ENCLOSED IN APPROVED FILTER FABRIC (MIRAFI 140NC).

6.....COLLECTOR PIPE TO BE 4-INCH MINIMUM DIAMETER, PERFORATED, THICK-WALLED PVC SCHEDULE 40 OR EQUIVALENT, AND SLOPED TO DRAIN AT 1 PERCENT MINIMUM TO APPROVED OUTLET.

NO SCALE

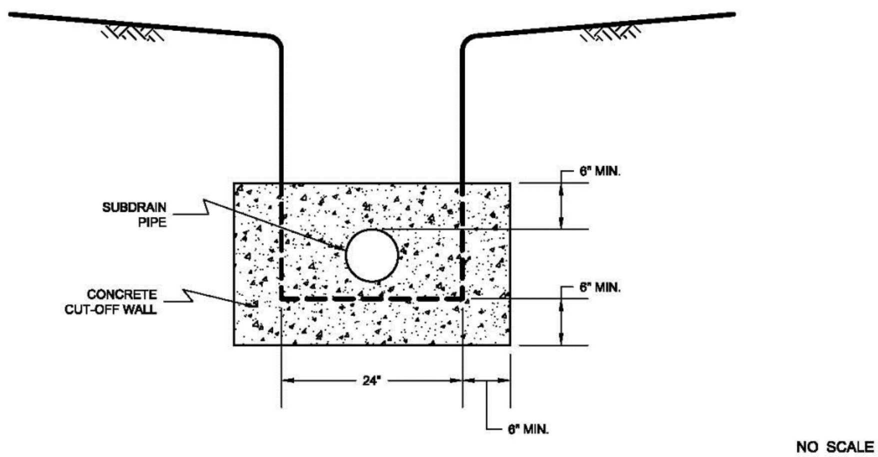
7.3 The actual subdrain locations will be evaluated in the field during the remedial grading operations. Additional drains may be necessary depending on the conditions observed and the requirements of the local regulatory agencies. Appropriate subdrain outlets should be evaluated prior to finalizing 40-scale grading plans.

7.4 *Rock* fill or *soil-rock* fill areas may require subdrains along their down-slope perimeters to mitigate the potential for buildup of water from construction or landscape irrigation. The subdrains should be at least 6-inch-diameter pipes encapsulated in gravel and filter fabric. *Rock* fill drains should be constructed using the same requirements as canyon subdrains.

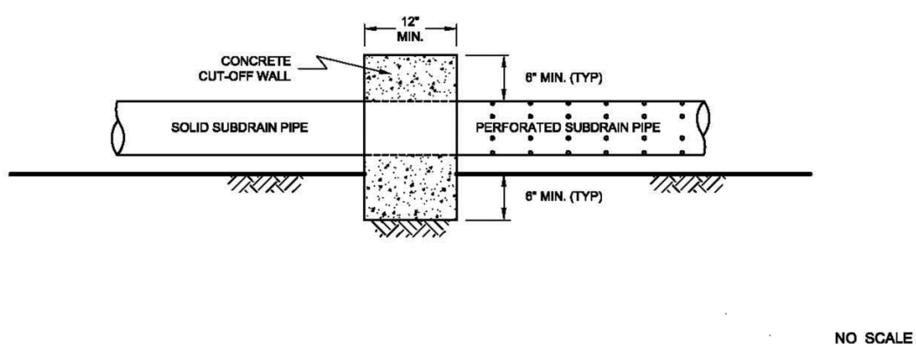
7.5 Prior to outletting, the final 20-foot segment of a subdrain that will not be extended during future development should consist of non-perforated drainpipe. At the non-perforated/ perforated interface, a seepage cutoff wall should be constructed on the downslope side of the pipe.

TYPICAL CUT OFF WALL DETAIL

FRONT VIEW

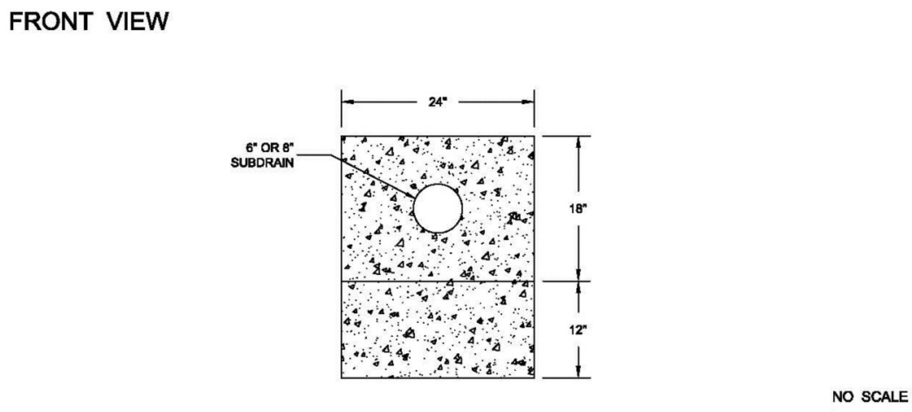


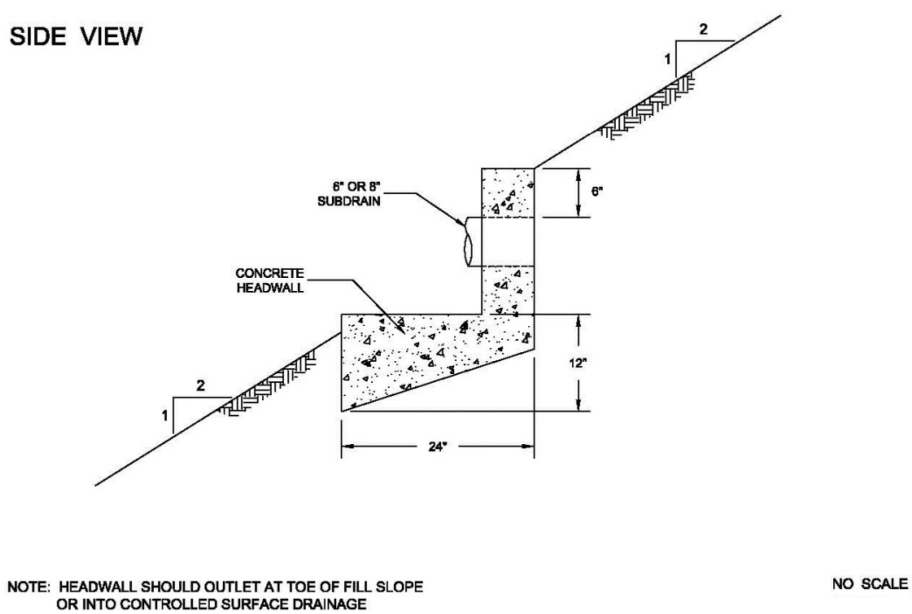
SIDE VIEW



7.6 Subdrains that discharge into a natural drainage course or open space area should be provided with a permanent headwall structure.

TYPICAL HEADWALL DETAIL





7.7 The final grading plans should show the location of the proposed subdrains. After completion of remedial excavations and subdrain installation, the project civil engineer should survey the drain locations and prepare an "as-built" map showing the drain locations. The final outlet and connection locations should be determined during grading operations. Subdrains that will be extended on adjacent projects after grading can be placed on formational material and a vertical riser should be placed at the end of the subdrain. The grading contractor should consider videoing the subdrains shortly after burial to check proper installation and functionality. The contractor is responsible for the performance of the drains.

8. OBSERVATION AND TESTING

8.1 The Consultant shall be the Owner's representative to observe and perform tests during clearing, grubbing, filling, and compaction operations. In general, no more than 2 feet in vertical elevation of *soil* or *soil-rock* fill should be placed without at least one field density test being performed within that interval. In addition, a minimum of one field density test should be performed for every 2,000 cubic yards of *soil* or *soil-rock* fill placed and compacted.

8.2 The Consultant should perform a sufficient distribution of field density tests of the compacted *soil* or *soil-rock* fill to provide a basis for expressing an opinion whether the fill material is compacted as specified. Density tests shall be performed in the compacted materials below any disturbed surface. When these tests indicate that the density of any layer of fill or portion thereof is below that specified, the particular layer or areas represented by the test shall be reworked until the specified density has been achieved.

8.3 During placement of *rock* fill, the Consultant should observe that the minimum number of passes have been obtained per the criteria discussed in Section 6.3.3. The Consultant should request the excavation of observation pits and may perform plate bearing tests on the placed *rock* fills. The observation pits will be excavated to provide a basis for expressing an opinion as to whether the *rock* fill is properly seated and sufficient moisture has been applied to the material. When observations indicate that a layer of *rock* fill or any portion thereof is below that specified, the affected layer or area shall be reworked until the *rock* fill has been adequately seated and sufficient moisture applied.

8.4 A settlement monitoring program designed by the Consultant may be conducted in areas of *rock* fill placement. The specific design of the monitoring program shall be as recommended in the Conclusions and Recommendations section of the project Geotechnical Report or in the final report of testing and observation services performed during grading.

8.5 We should observe the placement of subdrains, to check that the drainage devices have been placed and constructed in substantial conformance with project specifications.

8.6 Testing procedures shall conform to the following Standards as appropriate:

8.6.1 Soil and Soil-Rock Fills:

8.6.1.1 Field Density Test, ASTM D 1556, *Density of Soil In-Place By the Sand-Cone Method.*

8.6.1.2 Field Density Test, Nuclear Method, ASTM D 6938, *Density of Soil and Soil-Aggregate In-Place by Nuclear Methods (Shallow Depth)*.

8.6.1.3 Laboratory Compaction Test, ASTM D 1557, *Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10-Pound Hammer and 18-Inch Drop*.

8.6.1.4. Expansion Index Test, ASTM D 4829, *Expansion Index Test*.

9. PROTECTION OF WORK

9.1 During construction, the Contractor shall properly grade all excavated surfaces to provide positive drainage and prevent ponding of water. Drainage of surface water shall be controlled to avoid damage to adjoining properties or to finished work on the site. The Contractor shall take remedial measures to prevent erosion of freshly graded areas until such time as permanent drainage and erosion control features have been installed. Areas subjected to erosion or sedimentation shall be properly prepared in accordance with the Specifications prior to placing additional fill or structures.

9.2 After completion of grading as observed and tested by the Consultant, no further excavation or filling shall be conducted except in conjunction with the services of the Consultant.

10. CERTIFICATIONS AND FINAL REPORTS

10.1 Upon completion of the work, Contractor shall furnish Owner a certification by the Civil Engineer stating that the lots and/or building pads are graded to within 0.1 foot vertically of elevations shown on the grading plan and that all tops and toes of slopes are within 0.5 foot horizontally of the positions shown on the grading plans. After installation of a section of subdrain, the project Civil Engineer should survey its location and prepare an *as-built* plan of the subdrain location. The project Civil Engineer should verify the proper outlet for the subdrains and the Contractor should ensure that the drain system is free of obstructions.

10.2 The Owner is responsible for furnishing a final as-graded soil and geologic report satisfactory to the appropriate governing or accepting agencies. The as-graded report should be prepared and signed by a California licensed Civil Engineer experienced in geotechnical engineering and by a California Certified Engineering Geologist, indicating that the geotechnical aspects of the grading were performed in substantial conformance with the Specifications or approved changes to the Specifications.

Appendix 4: Historical Site Conditions

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

March 26, 2020 Project No. 024-20017

Mr. Ron Recht
PR Partners, LLC
30220 Rancho Viejo Road, Suite B
San Juan Capistrano, California 92675
rar@pdpllc.net

RE: Revised Phase I Environmental Site Assessment
155 Ramona Expressway
APN: 303-060-20
15.15 Acres
Perris, California

Dear Mr. Recht:

Krazan & Associates, Inc., (Krazan) completed a Phase I Environmental Site Assessment at the referenced site summarized in a report dated March 26, 2020. We appreciate the opportunity to serve your environmental due diligence needs. During the course of this assessment, Krazan identified no evidence of recognized environmental conditions (RECs), controlled RECs (CRECs) or historical RECs (HRECs) in conjunction with the subject site as defined by ASTM E 1527-13. However, the following Potential Area of Concern (PAOC) was identified and presented below:

- According to Krazan's review of historical aerial photographs, the subject site was in agricultural use with row crops as early as 1938 and included a rural dwelling with outbuildings within the northwest portion of the subject site as early as 1949. Krazan's experience with similar properties has shown that in some cases property owners installed USTs in the vicinity of structures for their convenience. During Krazan's site reconnaissances that were conducted in 2006 (previous Phase I ESA) and during this March 2020 site reconnaissance, no obvious evidence (vent pipes, fill pipes, dispensers, etc.) of USTs was noted within the areas observed. Additionally, no records of USTs were identified on file with the local regulatory agencies for the subject site. USTs utilized for the storage of fuel on rural and agricultural properties historically have been exempt from requirements for registration with regulatory agencies. Therefore, in spite of the standard research conducted in the course of this assessment, the presence or absence of undocumented USTs at the subject site is unknown. However, based upon the lack of indications of USTs during the site reconnaissance's, a city demolition permit record for 1996 issued for a structure at the subject site, and the lack of historical or current regulatory knowledge regarding USTs at the subject site, the potential for subsurface features such as unregistered USTs to be present at the subject site appears to be low. According to the property owner, should a UST be discovered during subsequent redevelopment and construction on the subject site, it will be properly removed in accordance with applicable State and local guidelines.

If you have any questions regarding the information presented in this report, please call me at (661) 837-9200.

Respectfully Submitted:
KRAZAN & ASSOCIATES, INC.

William R. Cooper

William R. Cooper, P.G. 7427
Environmental Manager

WRC/mlt

REVISED PHASE I ENVIRONMENTAL SITE ASSESSMENT
155 RAMONA EXPRESSWAY
APN: 303-060-20 (15.15 ACRES)
PERRIS, CALIFORNIA

Pursuant to ASTM E 1527-13

Project No. 024-20017
March 26, 2020

Prepared for:
Mr. Ron Recht
PR Partners, LLC
30220 Rancho Viejo Road, Suite B
San Juan Capistrano, California 92675
(949) 481-0463

Prepared by:
Krazan & Associates, Inc.
2205 Coy Avenue
Bakersfield, California 93307
(661) 837-9200

Krazan & ASSOCIATES, INC.
SITE DEVELOPMENT ENGINEERS

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Krazan & ASSOCIATES, INC.

GEOTECHNICAL ENGINEERING • ENVIRONMENTAL ENGINEERING
CONSTRUCTION TESTING & INSPECTION

March 26, 2020 Project No. 024-20017

REVISED PHASE I ENVIRONMENTAL
SITE ASSESSMENT
155 RAMONA EXPRESSWAY
APN: 303-060-20 (15.15 ACRES)
PERRIS, CALIFORNIA

1.0 EXECUTIVE SUMMARY

Krazan & Associates, Inc. (Krazan) has conducted a Phase I Environmental Site Assessment (ESA) of the Property at 155 Ramona Expressway APN 303-060-20, 15.15 Acres, in the Perris, California (subject site). It is incumbent upon the user to read this Phase I ESA report in its entirety. If not otherwise defined within the text of this report, please refer to the Glossary of Terms Section following the References Section for definitions of terms and acronyms utilized within this Phase I ESA report. Krazan conducted the Phase I ESA of the subject site in conformance with the American Society for Testing and Materials (ASTM) E 1527-05 *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process.* This Phase I ESA constitutes all appropriate inquiry (AAI) designed to identify recognized environmental conditions (RECs) in connection with the previous ownership and uses of the subject site as defined by ASTM E 1527-13.

ASTM E 1527-13 Section 1.1.1 *Recognized Environmental Conditions* – In defining a standard of good commercial and customary practice for conducting an environmental site assessment of a parcel of property, the goal of the processes established by this practice is to identify recognized environmental conditions. The term recognized environmental conditions means 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. *De minimis* conditions are not recognized environmental conditions.

During the course of this assessment, Krazan identified no evidence of recognized environmental conditions (RECs), controlled RECs (CRECs) or historical RECs (HRECs) in conjunction with the subject site as defined by ASTM E-1527-13. However, a Potential Area of Concern (PAOC) was identified related to the historical agricultural farm setting and possibility for on-site fuel storage which is discussed in Section 8.0 of this report.

2.0 PURPOSE AND SCOPE OF ASSESSMENT

2.1 Purpose

According to ASTM E 1527-13, the purpose of this practice is to define good commercial and customary practice in the United States of America for conducting an *environmental site assessment* of a parcel of *commercial real estate* with respect to the range of contaminants within the scope of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) (42 U.S.C. §9601) and *petroleum products.* As such, this practice is intended to permit a *user* to satisfy one of the requirements to qualify for the *innocent landowner, contiguous property owner,* or *bona fide prospective purchaser* limitation on CERCLA liability (hereinafter, the *landowner liability protections,* or *LLPs*): that is, the practice that constitutes *"all appropriate inquiry* into the previous ownership and uses of the *property* consistent with good commercial or customary practice" as defined at 42 U.S.C. §9601(35)(B). This report was also conducted in conformance with the ASTM E 1527-13 *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process.*

2.2 Scope of Work

The Phase I ESA includes the following scope of work: a) a site reconnaissance of existing on-site conditions and observations of adjacent property uses, b) a review of user-provided documents, c) a review of historical aerial photographs, a review of pertinent building permit records, city directories, historical Sanborn Fire Insurance Maps (SFIMs), and interview(s) with person(s) knowledgeable of the previous and current ownership and uses of the subject site, d) a review of local regulatory agency records, and e) a review of local, state, and federal regulatory agency lists compiled by Environmental Data Resources, Inc. (EDR). The scope of work for this Phase I ESA conforms to ASTM E 1527-13. Krazan was provided written authorization to conduct the Phase I ESA by Mr. Lars Anderson with PR Partners, LLC on February 25, 2020 in Agreement No. P20-025 between Krazan and PR Partners, LLC.

3.0 SITE DESCRIPTION

The subject site is a 15.15-acre vacant property located adjacent to the south of Ramona Expressway, east of Indian Avenue and west of Perris Boulevard, in Perris, California. The subject site has the assigned address of 155 Ramona Expressway with the Riverside County Assessor's Parcel Number of 303-060-20. General property information and property use are summarized in the following Table I. Refer to Figures No. 1 – 4 following the Reference Section.

TABLE I
Subject Site Information Summary

Current Owner:	PR Partners, LLC
Assessor's Parcel Number:	APN: 303-060-20
Address:	155 Ramona Expressway
Historical Address:	None
General Location:	South of Ramona Expressway, east of Indian Avenue and west of Perris Boulevard, Perris, California
Acreage:	Approximately 15.15 acres
Existing Use	Vacant land
Original Construction Date:	Circa 1940s
Proposed Use:	Residential
Topographic Maps:	U.S. Geological Survey, 7.5 minute Perris, California topographic quadrangle maps, dated 1942 thru 2012.
Topographic Map Location:	Section 7, Township 4 South, Range 3 West, San Bernardino Baseline and Meridian
Latitude/Longitude:	33.8436/-117.2285
Topography:	Relatively flat, approximately 1,426 feet above mean sea level
Approximate Depth to Groundwater:	80 feet below ground surface (bgs) Regional Water Quality Control Board (RWQCB)-
Regional Groundwater Flow Direction:	Southwest, RWQCB/Southeast, EDR

3.1 Geology and Hydrogeology

The subject site is located in the Perris Valley within the Peninsular Ranges Geomorphic Province of California. The Perris Valley is situated just north of the Menifee Valley between the Santa Rosa Mountains and the San Jacinto Mountains to the east; and Santa Ana Mountains to the west and south. The uplands surrounding the valley in the vicinity of the subject site are predominately comprised of sedimentary rocks consisting of sandstone, conglomerate, and interbedded mudstone and siltstone; as well as granitic rocks.

The Menifee/Perris Valley has been filled with a variable thickness of relatively young, heterogeneous alluvial deposits. The Perris Valley, in the vicinity of the project site, is drained by the Salt Creek Flood Control Channel and its tributaries toward the Railroad Canyon Reservoir. Portions of the Salt Creek Flood Control Channel have been realigned and channelized. The depth to groundwater in the vicinity of the subject site is reported to be approximately 80 feet below ground surface (bgs). The groundwater flow direction in the subject area is reported to be generally towards the southwest to southeast.

4.0 SITE RECONNAISSANCE

A site reconnaissance, which included a visual observation of the subject site and surrounding properties, was conducted by Mr. William Cooper, Krazan's Environmental Professional, on March 4, 2020.

Krazan's Environmental Assessor was unaccompanied during the site reconnaissance. The objective of the site reconnaissance is to obtain information indicating the likelihood of identifying recognized environmental conditions, including hazardous substances and petroleum products, in connection with the property (including soils, surface waters, and groundwater).

4.1 Observations

The following Table II summarizes conditions encountered during our site reconnaissance. A discussion of visual observations follows the table below. Refer to the Site Map (Figure No. 3) and color photographs following the text for the locations of items discussed in this section of the report.

TABLE II
Summary of Site Reconnaissance

Feature Obse	rved	Not Observed
Structures (existing)		X
Evidence of Past Uses		X
Hazardous Substances and/or Petroleum Products (including containers)		X
Aboveground Storage Tanks (ASTs)		X
Underground Storage Tanks (USTs) or Evidence of USTs		X
Evidence of Underground Pipelines		X
Strong, Pungent, or Noxious Odors		X
Pools of Liquid Likely to be Hazardous Materials or Petroleum Products		X
Drums		X
Unidentified Substance Containers		X
Potential Polychlorinated Biphenyl (PCB)-Containing Equipment		X
Subsurface Hydraulic Equipment		X
Heating/Ventilation/Air conditioning (HVAC)		X
Stains or Corrosion on Floors, Walls, or Ceilings		X
Floor Drains, Sumps, or Oil/Water Clarifiers		X
Storm Drains		X
Pits, Ponds, or Storm Water Basins		X
Stained Soil and/or Pavement		X
Soil Piles		X
Stressed Vegetation		X
Railroad tracks/spurs		X
Waste or Wastewater Discharges to Surface/ Surface Waters		X
Wells (irrigation, domestic, dry, oil wells, monitoring wells)		X
Septic Systems		X

The subject site comprises approximately 15.15 acres of land located south of Ramona Expressway, east of Indian Avenue and west of Perris Boulevard, in Perris, California. Refer to Figure No. 3, Site Map, for locations of the following referenced on-site features:

- The subject site was observed to be vacant land that is predominantly covered with grasses. The area within the northwest portion of the subject site is rough-graded level. This northwestern area is identified by aerial photographic review to be a former dwelling area associated with a former sod farm. An irrigation ditch traverses east-west within the northern portion of the subject site and a shallow drainage swale borders the boundary between Ramona Expressway and the subject site. The northwest and northeast corners of the subject site include traffic signal utilities.

- During the visual observations of the subject site, no hazardous materials were observed. Exposed surface soils did not exhibit obvious signs of discoloration. No obvious evidence (vent pipes, fill pipes, dispensers, etc.) of USTs was noted within the areas observed. No unusual standing water or major depressions were observed on the subject site. No former foundations were observed on the subject site. No high-voltage, tower-mounted electrical transmission lines were observed on the subject site and no pad or pole-mounted transformers were observed on the subject site.

4.2 Utilities

Based on Krazan's research, no utilities currently provide service the subject site. Based on Krazan's research, the following Table III presents the companies/municipalities that currently provide utility services to the area of the subject site.

TABLE III
Municipal Service / Utility Providers

Service / Utility	Provider	Connection Date
Electricity	Southern California Edison	N/A
Natural Gas	Southern California Gas Company	N/A
Potable Water	*Eastern Municipal Water District (EMWD)	N/A
Sanitary Sewer	**EMWD	N/A
Solid Waste Removal	Unknown	N/A

*Upon development, the water purveyor for the subject site will be the Eastern Municipal Water District (EMWD). The EMWD's water quality monitoring is an on-going program with water samples obtained on a regular basis. It is the responsibility of the EMWD to provide customers with potable water in compliance with the California State Maximum Contaminant Levels (MCLs) for primary drinking water constituents in water supplied to the public. ** Upon development, Sanitary Sewer services will be provided by EMWD.

Water W ells - Krazan's review of historical aerial photographs indicates that structures have been located on the subject site from at least the late 1940s until the late 1990s. Water wells or indications of a water well were not observed at the subject site during Krazan's site reconnaissance. If a water well(s) is/are discovered during development of the subject site, it/they should be destroyed in compliance with State and local requirements.

Septic Systems – As referenced above, structures have been located on the subject site from at least the late 1940s until the late 1990s. During Krazan's site reconnaissance, septic systems or indications of a septic system were not observed at the subject site. If septic system(s) is/are discovered during development of the subject site, it/they should be destroyed in compliance with State and local requirements.

4.3 Adjacent Streets and Property Usage

The following Table IV summarizes the current adjacent roads and adjacent property uses observed during the site reconnaissance.

TABLE IV
Adjacent Streets and Property Use

Direction	Adjacent Street	Adjacent Property Use
North	Ramona Expwy.	Vacant and Shell Gasoline Station
South	None	Commercial – Perris Ridge Commerce Center
East	Perris Blvd	Mobil Gasoline Station
West	Indian Ave.	Vacant

Based on the observed uses of the properties located immediately adjacent to the subject site, it is unlikely that significant quantities of hazardous materials are currently stored at the adjacent properties with the exceptions of gasoline stations identified at the eastern and northeastern adjacent properties which are discussed in detail in Section 6.4.

4.4 ASTM Non-Scope Considerations

According to ASTM E 1527-13, there may be environmental issues or conditions at the subject site that are outside the scope of the Phase I ESA practice (non-scope considerations). Some substances may be present at the subject site in quantities and under conditions that may lead to contamination of the subject site or of nearby properties but are not included in CERCLA’s definition of hazardous substances (42 U.S.C. §9601[14]). ASTM non-scope considerations are discussed below.

Asbestos-Containing Materials

Asbestos is a group of naturally occurring mineral fibers that have been used commonly in a variety of building construction materials for insulation and as a fire-retardant. Because of its fiber strength and heat resistant properties, asbestos has been used for a wide range of manufactured goods, mostly in building materials, vehicle brakes, and heat-resistant fabrics, packaging, gaskets, and coatings. When asbestos-containing materials (ACMs) are damaged or disturbed by repair, remodeling, or demolition activities, microscopic asbestos fibers may become airborne and can be inhaled into the lungs, where they can cause significant health problems. No structures located on the subject site; therefore, ACMs are not an environmental concern.

Lead-Based Paint

Although lead-based paint (LBP) was banned in 1978, many building constructed prior to 1978 have paint that contains lead. Lead from paint, chips, and dust can pose serious health hazards if not addressed properly. No structures located on the subject site; therefore, LBP is not an environmental concern.

Mold and Moisture Intrusion

A class of fungi, molds have been found to cause a variety of health problems in humans, including allergic, toxicological, and infectious responses. Molds are decomposers of organic materials, and thrive in humid environments, and produce spores to reproduce, just as plants produce seeds. When mold spores land on a damp spot indoors, they may begin growing and digesting whatever they are growing on in order to survive. When excessive moisture or water accumulates indoors, mold growth will often occur, particularly if the moisture problem remains undiscovered or unaddressed. As such, interior areas of buildings characterized by poor ventilation and high humidity are the most common locations of mold growth. Building materials including drywall, wallpaper, baseboards, wood framing, insulation and carpeting often play host to such growth. Moisture control is the key to mold control. Molds need both food and water to survive; since molds can digest most things, water is the factor that limits mold growth.

No structures located on the subject site; therefore, mold and moisture intrusion is not an environmental concern.

Radon

Radon is a radioactive gas that is found in certain geologic environments and is formed by the natural breakdown of radium, which is found in the earth's crust. A radon survey was not included within the scope of this investigation; however, the State of California Department of Health Services (CDHS) maintains a statewide database of radon results in designated geographic areas. Radon detection devices are placed in homes throughout the study region to determine geographic regions with elevated radon concentrations. The U.S. EPA has set the safety standard for radon gas in homes to be 4.0 pico Curies per liter (pCi/L).

The US EPA has prepared a map to assist National, State and local organizations to target their resources and to implement radon-resistant building codes. The map divides the country into three Radon Zones, Zone 1 being those areas with the average predicted indoor radon concentration in residential dwellings exceeding the EPA Action Limit of 4.0 pCi/L. It is important to note that the EPA has found homes with elevated levels of radon in all three zones, and the EPA recommends site-specific testing in order to determine radon levels at a specific location. However, the map does give a valuable indication of the propensity of radon gas accumulation in structures. Review of the EPA Map of Radon Zones places the Property in Zone 2, where average predicted radon levels are between 2.0 and 4.0 pCi/L. Therefore, the available data suggests that the potential for radon to adversely impact the subject site appears to be low.

Wetlands

As defined by the U.S. EPA and the Department of Army, Corps of Engineers, wetlands are "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." Jurisdictional wetlands are regulated under Section 404 of the Clean Water Act (1972, 1977, and 1987, and also the 1985 and 1990 Farm Bills), and are important for protection of aquatic waterfowl and species, water purification, and flood control. According to current Corps of Engineers information, three basic criteria are currently used to define wetlands:

- Wetland hydrology - areas exhibiting surface or near-surface saturation or inundation at some point in time (greater than 12.5 percent of growing season defined on basis of frost-free days) during an average rainfall year.
- Hydrophilic vegetation - frequency of occurrence of wetland indicator plants (plant life growing in water, soil, or substrate that is periodically deficient in oxygen as a result of excessive water content).
- Hydric soil - landscape patterns identified by saturation, flooding, or ponding long enough during the growing season (generally seven days) which develop characteristic color changes in the upper part of the soil as a result of anaerobic conditions.

Based on Krazan's reconnaissance of the subject site, evidence was not apparent to suggest that the site contained a wetland. Furthermore, according to the U. S. Fish & Wildlife Service (USFWS) National Wetlands Inventory available via the USFWS Internet website, the subject site does not contain a designated wetland. Therefore, at this time, regulations pertaining to wetlands do not appear to impact the subject site.

Environmental Non-Compliance Issue

No material non-compliance issue was identified in connection with the subject site in the process of preparing this report.

Activity and Use Limitations

No activity and use limitations were identified in connection with the subject site in the process of preparing this report.

5.0 USER-PR OVIDED INFORMATION

A review of user-provided information was conducted in order to help identify pertinent information regarding potential environmental impacts associated with the subject site.

5.1 Environmen tal Liens/Activity and Use Limitations Report

On February 28, 2020, an Environmental Lien/Activity and Use Limitations (EL/AUL) Report was prepared by AFX Corp. Inc. (AFX), for the subject site. The AFX EL/AUL Report provides results from a search of available land title records for environmental cleanup liens and other activity and use limitations, such as engineering controls and institutional controls. The subject site EL/AUL Report was reviewed to identify potential environmental liens, institutional controls (ICs), land use controls (LUCs), activity and use limitations (AULs), or declaration of environmental use restrictions (DEULs) which may have been filed against the subject site or exist in connection with the subject site as indicated by the subject site EL/AUL Report. Krazan's review of the EL/AUL Report indicated no liens, judgments, ICs, LUCs, AULs, or DEULs were found for the subject site according to the scope of work and limitations. Please refer to Appendix A for a copy of the AFX EL/AUL report.

5.2 Phase I Environmental Site Assessment User Questionnaire

In order to qualify for one of the *Landowner Liability Protections (LLPs)* offered by the Small Business Liability Relief and Brownfields Revitalization Act of 2001 (the *Brownfields Amendments*), the *user* must provide the following information (if available) to the *environmental professional*. Failure to provide this information could result in a determination that *all appropriate inquiry* is not complete. The user is asked to provide information or knowledge of the following:

1. Environmental cleanup liens that are filed or recorded against the site.
2. Activity and land use limitations that are in place on the site or that have been filed or recorded in a registry.
3. Specialized knowledge or experience of the person seeking to qualify for the LLPs.
4. Relationship of the purchase price to the fair market value of the *property* if it were not contaminated.
5. Commonly known or *reasonably ascertainable* information about the *property*.
6. The degree of obviousness of the presence or likely presence of contamination at the *property*, and the ability to detect the contamination by appropriate investigation.
7. The reason for preparation of this Phase I ESA.

On March 16, 2020, a completed Phase I ESA user/owner questionnaire was received from Mr. Lars Anderson with PR Partners, LLC, the Phase I ESA user. Please refer to Appendix B for a copy of the completed Phase I ESA user/owner questionnaire.

According to the questionnaire responses, Mr. Anderson, to the best of his knowledge as a representative of PR Partners, the user of this Phase I ESA, was not aware of any environmental cleanup liens and activity or land use limitations which have been filed or recorded against the subject site. Mr. Anderson indicated that he did not have knowledge of chemical utilization, past or current presence of specific chemicals, or hazardous materials, unauthorized spills or chemical releases or of any environmental cleanups in connection with the subject site. Mr. Anderson stated that the purchase price of the subject site reasonably reflects fair market value. Additionally, Mr. Anderson indicated that the reason for preparation of this Phase I ESA is related to a potential development of the subject site. Mr. Anderson, to the best of his knowledge as a representative of the owner of the subject site, indicated that he has been familiar with the subject site since 2006 and that the property has remained vacant during this time.

6.0 SITE USAGE SURVEY

The property usage survey included assessing property history, and reviewing local, state, and federal regulatory agency records.

6.1 Site History

A review of historical aerial photographs, reasonably ascertainable Haines Criss-Cross Directories (HCCDs), Sanborn Fire Insurance Maps (SFIMs), and Phase I ESA Owner interview were utilized to assess the history of the subject site.

Previous Environmental Assessment

Krazan conducted a previous Phase I ESA for the subject site titled *Phase I ESA, Vacan t Land, 1 55 Ramona Expressway, Perris, California.* and is dated May 17, 2006, Krazan's Report Number 114-06063 (2006 Phase I ESA). All pertinent information from the 2006 Phase I ESA is included in this report. The findings of the 2006 Phase I ESA are summarized below.

The 2006 Phase I ESA revealed no evidence of RECs in connection with the subject site. However, the following Potential Area of Concern (PAOC) was presented.

According to Krazan's review of historical aerial photographs, the subject site was in agricultural use with row crops as early as 1938 and included a rural dwelling with outbuildings within the northwest portion of the subject site as early as 1949. Krazan's experience with similar properties has shown that in some cases property owners installed USTs in the vicinity of structures for their convenience. During Krazan's site reconnaissance, no obvious evidence (vent pipes, fill pipes, dispensers, etc.) of USTs was noted within the areas observed. Additionally, no records of USTs were identified on file with the local regulatory agencies for the subject site. However, USTs utilized for the storage of fuel on rural and agricultural properties historically have been exempt from requirements for registration with regulatory agencies. Therefore, in spite of the standard research conducted in the course of this assessment, undocumented USTs could be present at the subject site. However, based on the lack of indications of USTs during the site reconnaissance and a city demolition permit record for 1996, and the lack of historical or current regulatory knowledge regarding USTs, a low potential exists for subsurface features such as unregistered USTs to be present at the subject site.

Additionally, the following Site-Development Issues were identified:

- A septic system and domestic water well were likely associated with the former on-site dwelling, historically located near the northwest corner of the subject site. The presence of a septic system is not anticipated to adversely impact the subject site due to its use for domestic purposes only. If a septic system and/or domestic water well are uncovered during the redevelopment of the subject site, the septic system and domestic water well should be properly abandoned/closed or destroyed in accordance with all applicable local and State guidelines.

The following excerpt from Krazan's Phase I ESA describes the subject site as observed in 2006:

The subject site consists of one rectangular-shaped parcel of land encompassing approximately 16.2 acres located on the southwest corner of Ramona Expressway and Perris Boulevard in Perris, California. At the time of Krazan's site reconnaissance the subject site was occupied by a sod farm.

- During the visual observations of the subject site, one irrigation pond and associated irrigation water pumping station was observed on the northeast corner of the subject site. One approximate 500-gallon steel aboveground storage tank (AST) containing diesel fuel is associated with the pumping station. No secondary containment was observed. Minor surface soil staining to a depth of approximately one inch bgs was observed beneath the east end of the diesel AST. No additional hazardous substances were observed to be stored or handled on the subject site.

- One approximate 10' x 15' rectangular-shaped concrete pad foundation and what appeared to be a circular-shaped concrete drain pipe and associated metal grate were observed near the northwest corner of the subject site in the location of the former residential structure. At the time of Krazan's site reconnaissance, the suspected concrete drain was observed to be overgrown with vegetation and the metal grate could not be removed, thereby preventing the visual inspection of the drain's interior.

Aerial Photograph Interpretation

Historical aerial photographs dated 1938, 1949, 1953, 1967, 1978, 1989, 1997, 2002, 2006, 2009, 2012, and 2016 were reviewed to assess the history of the subject site. These photographs were obtained from EDR. The aerial photograph summary is provided in the following Table V. Please refer to Appendix C for a copy of the historical aerial photographs.

TABLE V
Summary of Aerial Photograph Map Review

Year/Scale	Site Use	Site and Adjacent Property Observation
1938 1" = 500'	Agricultural	The subject and adjacent properties appear to be in agricultural use with row crops. A two-lane paved road (Ramona Expressway) adjoins the subject site to the north. A two-lane paved road (Perris Boulevard) adjoins the subject site to the east.
1949 1" = 500'	Agricultural/ Residential	The subject site appears to be utilized primarily for agricultural purposes for the cultivation of row crops. A residential structure and what appear to be associated farming structures occupy the northwest corner of the subject site. All adjoining properties are primarily used for agricultural purposes for the cultivation of row crops.
1953 1" = 500'	Agricultural/ Residential	Conditions on the subject site and adjacent properties appear relatively similar to the 1949 aerial photograph.
1967 1" = 500'	Agricultural/ Residential	Conditions on the subject site and adjacent properties appear relatively similar to the 1953 aerial photograph.
1978 1" = 500'	Agricultural/ Residential	Conditions on the subject site and adjacent properties appear relatively similar to the 1967 aerial photograph.
1989 1" = 500'	Agricultural/ Residential	The subject site and all adjoining properties appear similar to the 1978 aerial photograph with the exception of what appears to be commercial development adjoining the subject site to the east beyond Perris Boulevard.
1997 1" = 500'	Agricultural/ Residential	Conditions on the subject site and adjacent properties appear relatively similar to the 1989 aerial photograph.
2002 1" = 500'	Vacant	The subject site appears to be utilized primarily for agricultural purposes as a sod farm. What appears to be an irrigation pond similar in size and shape to the irrigation pond observed during Krazan's May 4, 2006 site reconnaissance is located near the northeast corner of the subject site. Ramona Expressway adjoins the subject site to the north, beyond which is vacant land and what appears to be a gasoline service station located on the northwest corner of Ramona Expressway and Perris Boulevard. Perris Boulevard adjoins the subject site to the east, beyond which is commercial development. What appears to be a gasoline service station is located on the southeast corner of Ramona Expressway and Perris Boulevard. Adjoining the subject site to the south is agricultural land, beyond which is Dawes Avenue and agricultural land. Barrett Avenue adjoins the subject site to the west, beyond which is vacant graded land.
2006 1" = 500'	Vacant	Conditions on the subject site and adjacent properties appear relatively similar to the 2002 aerial photograph.
2009 1" = 500'	Vacant	Conditions on the subject site appear relatively similar to the 2006 aerial photograph.

TABLE V (continued)
Summary of Aerial Photograph Map Review

Year/Scale	Site Use	Site and Adjacent Property Observation
2012 1" = 500'	Vacant	The subject site remains vacant land that is relatively similar to conditions noted in the 2009 aerial photograph. Perris Crossing Shopping Center (PCSC) and the associated retail shops within the PCSC are present to the north and northwest of the subject site.
2016 1" = 500'	Vacant	Conditions on the subject site and the adjacent properties appear relatively similar to those noted in the 2009 aerial photograph.

City of Perris Building and Planning Department

During Krazan's 2006 Phase I ESA, the City of Perris Planning Department (PPD) was contacted for information regarding the subject site. According to PPD officials, a demolition permit was issued on August 19, 1996 for the "demolition of structure." No other building permits for items of environmental significance such as references to USTs, ASTs or septic systems were on file for the subject site APN. According to a representative with the PPD at that time, the subject site vacant land with the assigned street address of 155 West Ramona Expressway. Based on Krazan's review of aerial photographs, no buildings or structures have been located on the subject site since the 2006 Phase I ESA. Therefore, building permits were not searched due to the current absence of structures associated with the subject site.

City Directories

As part of Krazan's 2006 Phase I ESA, Reasonably ascertainable HCCDs and PGDs dated 1970 through 2005 were provided by EDR for the subject site address of 155 West Ramona Expressway. The subject site address was not listed in the HCCD or PGDs provided. Based on Krazan's review of aerial photographs, no buildings or structures have been located on the subject site since the 2006 Phase I ESA. Therefore, a further city directory review was not conducted.

Sanborn Fire Insurance Maps

Krazan reviews SFIMs to evaluate prior land use of the subject site and the adjacent properties. SFIMs typically exist for cities with populations of 2,000 or more, the coverage dependent on the location of the subject site within the city limits. Krazan's research indicates no SFIM coverage for the subject site area.

6.2 Owner Questionnaire

On March 17, 2020, a completed Phase I ESA user/owner questionnaire was received from Mr. Lars Anderson with PR Partners, LLC, the property owner. Mr. Andersen's responses as a representative of the user and owner of the subject site are discussed in Section 5.2. Please refer to Appendix B for a copy of the completed Phase I ESA user/owner questionnaire.

6.3 Agricultural Chemicals

Review of historical aerial photographs indicates the subject site was utilized for agricultural purposes for the cultivation of row crops from at least 1938 to at least 1997. Although the potential exists that environmentally persistent pesticides/herbicides were historically applied to crops grown on the subject site, 1) no material evidence of the use of environmentally persistent pesticides/herbicides was obtained during the course of this assessment, and 2) it is anticipated that any environmentally persistent pesticides/herbicides potentially located on site will be dislocated and diluted as a result of the rough grading and trenching operations which will be conducted in conjunction with the planned development of the property. Consequently, given the above-referenced factors and Krazan's experience in the subject site vicinity which generally indicates that the potential is low for elevated concentrations of environmentally persistent pesticides/herbicides related to crop cultivation to exist in the near-surface soils of common agricultural ground at concentrations which would require regulatory action, despite the absence of specific data, the potential for elevated concentrations of environmentally persistent pesticides or herbicides to currently exist in the near-surface soils of the subject site at concentrations which would require regulatory action appears to be low.

6.4 Regulatory Agency Interface

A review of regulatory agency records was conducted to help determine if hazardous materials have been handled, stored, or generated on the subject site and/or the adjacent properties and businesses. Regulatory records are reviewed based on the following criteria: 1) properties with known soils and/or groundwater releases considered to represent the potential for impact to the subject site that are located within 1,760 feet of the subject site for volatile organic compound constituents, and 528 feet of the subject site for petroleum hydrocarbon impacts; 2) properties that are adjacent or in proximity to the subject site included within the EDR regulatory database report or noted during the site reconnaissance to possibly handle, store, or generate hazardous materials. Please refer to Appendix D for a copy of the applicable property records.

Riverside County Department of Environmental Health

On March 4, 2020, the Riverside County Department of Environmental Health (RCDEH) was contacted regarding records of historical hazardous/flammable permits, hazardous materials handling, hazardous/flammable incidents, and/or USTs that are on file for the subject site. However, due to the absence of historical or current structures and an assigned address for the subject site, no records of historical hazardous/flammable permits, hazardous materials handling, hazardous/flammable incidents and/or USTs were available from the RCDEH for the subject site. Records are on file with RCDEH for adjacent properties that are discussed below:

Mobil Gasoline Station 819 feet adjacent to the east
3995 North Perris Boulevard
According to RCDEH, this facility is a permitted UST site. This facility is reported to be located approximately 819 feet adjacent to the subject site to the east across Perris Boulevard. This facility is identified on the leaking UST (LUST) database as having had an unauthorized release of gasoline on August 20, 2001 which impacted soil only at the facility. Remediation of the soil was completed to the satisfaction of the lead governmental agency and a "case closed" designation was issued on June 20, 2003. Based upon the successful remediation of the soil-only release and regulatory closure of this facility and its distance from the subject site, evidence suggests that the Mobil gasoline station site appears to have a low potential to environmentally impact the subject site.

Shell Gasoline Station 998 feet adjacent to the north
4039 North Perris Boulevard
According to RCDEH, this facility is a permitted UST site. This facility is reported to be located approximately 998 feet adjacent to the subject site to the north across Ramona Expressway. This facility is identified on the LUST database as having had an unauthorized release of gasoline reported in April 2007 which impacted soil and groundwater at the facility. Remediation of the soil, soil vapor and groundwater was completed to the satisfaction of the lead governmental agency and a "case closed" designation was issued on January 14, 2010. Based upon the successful remediation and regulatory closure of this facility, its distance from the subject site and depth to groundwater, evidence suggests that the Shell gasoline station LUST site appears to have a low potential to environmentally impact the subject site.

State of California Regional Water Quality Control Board - Geotracker

Krazan's review of the State of California Regional Water Quality Control Board (RWQCB) Geotracker database available via the RWQCB Internet Website indicated that no LUST sites, land disposal sites, or military sites are listed for the subject site. Two adjacent facilities were identified by Geotracker as closed LUST sites. These facilities, Mobil Station at 3995 Perris Blvd and Shell Station at 4039 Perris Blvd were discussed in detail above.

State of California Department of Toxic Substances Control - Envirostor

Krazan's review of the State of California Department of Toxic Substances Control (DTSC) Envirostor database available via the DTSC's Internet Website indicated that the subject site and adjacent properties are not listed. Further review of Envirostor did not reveal State response sites, voluntary cleanup sites, or military evaluation sites that are listed for the subject site, the adjacent properties, or properties located within 500 feet of the subject site; and, no Federal Superfund – National Priorities List (NPL) sites were determined to be located within a one-mile radius of the subject site.

California Department of Conservation, Division of Oil, Gas and Geothermal Resources - DOMS

Krazan's review of the State of California Department of Conservation, Division of Oil, Gas and Geothermal Resources (DOGGR) Online Mapping System (DOMS) indicated that there are no oil wells located on or adjacent to the subject site.

Local Area Tribal Records

No Indian reservations, USTs on Indian land, or LUSTs on Indian land were reported on the subject site, adjacent properties, or vicinity properties in the EDR-provided database report.

6.5 Regulatory Agency Lists Review

Several agencies have published documents that list businesses or properties which have handled hazardous materials or waste or may have experienced site contamination. The lists consulted in the course of our assessment were compiled by EDR and Krazan and represent reasonably ascertainable current listings. Krazan did not verify the locations and distances of every property listed by EDR. Krazan verified the location and distances of the properties Krazan deemed as having the potential to adversely impact the subject site. The actual location of the listed properties may differ from the EDR listing. Refer to Table VI for a summary of the listed properties located within the specified ASTM Search Radii. The actual distances of the listed properties (which are summarized in the table below) are based on observations during Krazan's site reconnaissance. No EDR-listed unmapped (non geocoded) sites were determined to be located on or adjacent to the subject site. Please refer to Appendix E for a copy of the EDR Radius Map report.

TABLE VI
Summary of Findings

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	1.000		0	0	0	0	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Federal CERCLIS NFRAP site list								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		1	1	NR	NR	NR	2
RCRA-SQG	0.250		0	1	NR	NR	NR	1
RCRA-VSQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	TP		NR	NR	NR	NR	NR	0
State- and tribal - equivalent NPL								
RESPONSE	1.000		0	0	0	0	NR	0
State- and tribal - equivalent CERCLIS								
ENVIROSTOR	1.000		0	0	0	0	NR	0
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		0	0	0	NR	NR	0
State and tribal leaking storage tank lists								
LUST	0.500		0	4	0	NR	NR	4

TABLE VI (continued)
Summary of Findings

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN LUST	0.500		0	0	0	NR	NR	0
CPS-SLIC	0.500		0	0	0	NR	NR	0
State and tribal registered storage tank lists								
FEMA UST	0.250		0	0	NR	NR	NR	0
UST	0.250		0	4	NR	NR	NR	4
AST	0.250		1	0	NR	NR	NR	1
INDIAN UST	0.250		0	0	NR	NR	NR	0
State and tribal voluntary cleanup sites								
VCP	0.500		0	0	0	NR	NR	0
INDIAN VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
WMUDS/SWAT	0.500		0	0	0	NR	NR	0
SWRCY	0.500		0	0	0	NR	NR	0
HAULERS	TP		NR	NR	NR	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	TP		NR	NR	NR	NR	NR	0
HIST Cal-Sites	1.000		0	0	0	0	NR	0
SCH	0.250		0	0	NR	NR	NR	0
CDL	TP		NR	NR	NR	NR	NR	0
Toxic Pits	1.000		0	0	0	0	NR	0
CERS HAZ WASTE	0.250		1	4	NR	NR	NR	5
US CDL	TP		NR	NR	NR	NR	NR	0
PFAS	0.500		0	0	0	NR	NR	0
Local Lists of Registered Storage Tanks								
SWEEPS UST	0.250		0	1	NR	NR	NR	1
HIST UST	0.250		0	0	NR	NR	NR	0
CA FID UST	0.250		0	1	NR	NR	NR	1
CERS TANKS	0.250		1	3	NR	NR	NR	4
Local Land Records								
LIENS	TP		NR	NR	NR	NR	NR	0

TABLE VI (continued)
Summary of Findings

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
LIENS 2	TP		NR	NR	NR	NR	NR	0
DEED	0.500		0	0	0	NR	NR	0
Records of Emergency Release Reports								
HMIRS	TP		NR	NR	NR	NR	NR	0
CHMIRS	TP		NR	NR	NR	NR	NR	0
LDS	TP		NR	NR	NR	NR	NR	0
MCS	TP		NR	NR	NR	NR	NR	0
SPILLS 90	TP		NR	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		1	4	NR	NR	NR	5
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	TP		NR	NR	NR	NR	NR	0
EPA WATCH LIST	TP		NR	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	TP		NR	NR	NR	NR	NR	0
TRIS	TP		NR	NR	NR	NR	NR	0
SSTS	TP		NR	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	TP		NR	NR	NR	NR	NR	0
RAATS	TP		NR	NR	NR	NR	NR	0
PRP	TP		NR	NR	NR	NR	NR	0
PADS	TP		NR	NR	NR	NR	NR	0
ICIS	TP		NR	NR	NR	NR	NR	0
FTTS	TP		NR	NR	NR	NR	NR	0
MLTS	TP		NR	NR	NR	NR	NR	0
COAL ASH DOE	TP		NR	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	TP		NR	NR	NR	NR	NR	0
RADINFO	TP		NR	NR	NR	NR	NR	0
HIST FTTS	TP		NR	NR	NR	NR	NR	0
DOT OPS	TP		NR	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	TP		NR	NR	NR	NR	NR	0
US AIRS	TP		NR	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	0.250		0	0	NR	NR	NR	0
FINDS	TP		NR	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0
DOCKET HWC	TP		NR	NR	NR	NR	NR	0
ECHO	TP		NR	NR	NR	NR	NR	0
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
CA BOND EXP. PLAN	1.000		0	0	0	0	NR	0
Cortese	0.500		0	0	0	NR	NR	0
CUPA Listings	0.250		0	0	NR	NR	NR	0

TABLE VI (continued)
Summary of Findings

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
EMI	TP		NR	NR	NR	NR	NR	0
ENF	TP		NR	NR	NR	NR	NR	0
Financial Assurance	TP		NR	NR	NR	NR	NR	0
HAZNET	TP		NR	NR	NR	NR	NR	0
ICE	TP		NR	NR	NR	NR	NR	0
HIST CORTESE	0.500		0	0	0	NR	NR	0
HWP	1.000		0	0	0	0	NR	0
HWT	0.250		0	0	NR	NR	NR	0
MINES	0.250		0	0	NR	NR	NR	0
MWMP	0.250		0	0	NR	NR	NR	0
NPDES	TP		NR	NR	NR	NR	NR	0
PEST LIC	TP		NR	NR	NR	NR	NR	0
PROC	0.500		0	0	0	NR	NR	0
Notify 65	1.000		0	0	0	0	NR	0
UIC	TP		NR	NR	NR	NR	NR	0
UIC GEO	TP		NR	NR	NR	NR	NR	0
WASTEWATER PITS	0.500		0	0	0	NR	NR	0
WDS	TP		NR	NR	NR	NR	NR	0
WIP	0.250		0	0	NR	NR	NR	0
MILITARY PRIV SITES	TP		NR	NR	NR	NR	NR	0
PROJECT	TP		NR	NR	NR	NR	NR	0
WDR	TP		NR	NR	NR	NR	NR	0
CIWQS	TP		NR	NR	NR	NR	NR	0
CERS	TP		NR	NR	NR	NR	NR	0
NON-CASE INFO	TP		NR	NR	NR	NR	NR	0
OTHER OIL GAS	TP		NR	NR	NR	NR	NR	0
PROD WATER PONDS	TP		NR	NR	NR	NR	NR	0
SAMPLING POINT	TP		NR	NR	NR	NR	NR	0
WELL STIM PROJ	TP		NR	NR	NR	NR	NR	0
MINES MRDS	TP		NR	NR	NR	NR	NR	0
HWTS	0.250		7	18	NR	NR	NR	25
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125		0	NR	NR	NR	NR	0
EDR Hist Cleaner	0.125		0	NR	NR	NR	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA LF	TP		NR	NR	NR	NR	NR	0
RGA LUST	TP		NR	NR	NR	NR	NR	0
- Totals --		0	12	41	0	0	0	53

The subject site location is not listed by EDR. The following adjacent properties were listed by EDR and are discussed below:

Mobil Gasoline Station 3995 North Perris Boulevard	adjacent to the east

According to EDR, this facility is listed in the LUST database and is a Riverside County permitted UST site. This facility was discussed in detail in Section 6.4 and was determined to represent a low potential for environmental impact to the subject site.

Shell Gasoline Station adjacent to the north
4039 North Perris Boulevard
According to EDR, this facility is listed in the LUST database and is a Riverside County permitted UST site. This facility was discussed in detail in Section 6.4 and was determined to represent a low potential for environmental impact to the subject site.

Additional properties within the specified search radius of the subject site which appeared on local, state, or federally published lists of sites that have had releases of hazardous materials are of sufficient distance and/or situated hydraulically cross- or downgradient from the subject site such that impact to the subject site is not likely.

No engineering control sites, sites with institutional controls, or sites with deed restrictions were listed for the subject site, adjacent sites or vicinity properties in the EDR-provided government database report.

Hazardous Materials Migration in Soils and/or Groundwater

Sites with reported releases of hazardous materials to the subsurface that were reported within the subject site vicinity were determined not to pose a significant threat to the subject site. In general, potentially hazardous materials or petroleum products released from facilities located approximately hydraulically upgradient within the subject site vicinity, or in a hydraulically cross-gradient direction in proximity to the site, may have a reasonable potential of migrating to the subject site via groundwater flow. This opinion is based on the assumption that non-vaporous hazardous materials generally do not migrate large distances laterally within the soil, but rather tend to migrate with groundwater in the general direction of groundwater flow.

Hazardous Materials Migration in Vapor

Hazardous materials or petroleum product vapors which may have the potential to migrate into the subsurface of the subject site may be caused by the release of vapors from contaminated soil or groundwater either on or in the vicinity of the subject site from current or historical uses of the subject site and/or adjacent or vicinity properties. Current or past land uses such as gasoline stations (using petroleum hydrocarbons), dry cleaning establishments (using chlorinated volatile organic compounds), former manufactured gas plant sites (using volatile and semi-volatile organic compounds), and former industrial sites such as those that had vapor degreasing or other parts-cleaning operations (using chlorinated volatile organic compounds) are of particular concern. Constituent of concern vapors are capable of migrating great distances omni-directionally along subsurface conduits such as pipelines, utility lines, sewer and stormwater lines, and building foundations.

Based on Krazan's observations and review of the EDR regulatory database report, no facilities that appear to represent a significant vapor encroachment concern to the subject site were identified. However, the screening process for vapor migration in connection with the subject site is described in the ASTM E 2600-10 *Standard Guide for Vapor Encroachment Screening on Property Involved in Real Estate Transactions,* an industry consensus methodology to assess vapor migration which is not included in the scope of work of this Phase I ESA.

7.0 DISCUSSION OF FINDINGS

Historical Uses

Based on Krazan's review of historical aerial photographs, a site reconnaissance, and contacts with the local regulatory agencies and the owner of the subject site, there is no evidence that recognized environmental conditions exist in connection with the historical uses of the subject site. However, a potential area of concern was revealed which is discussed in Section 8.0 of this report.

Current Uses

Based on Krazan's site reconnaissance, contacts with local regulatory agencies, and an interview with the owner of the subject site, there is no evidence that recognized environmental conditions exist in connection with the current uses of the subject site.

Adjacent or Vicinity Property Uses

Based on Krazan's field observations, review of the EDR government database report, and consultation with local regulatory agencies, there is no evidence that recognized environmental conditions exist in connection with the subject site from adjacent or vicinity property uses.

7.1 Evaluation of Data Gaps/Data Failure

In accordance with ASTM E 1527-13 guidance, data gaps represent a lack of or inability to obtain information required by this practice despite good faith efforts by the environmental professional to gather such information. Data gaps may result from incompleteness in any of the activities required by this practice. Data failure represents the failure to achieve the historical research objectives of this practice even after reviewing the standard historical sources that are available and likely to be useful.

Data failure is one type of data gap. No data gaps were encountered in the process of preparing this report.

8.0 CONCLUSIONS/OPINIONS

We have conducted a Phase I ESA of the subject site in conformance with the scope and limitations of the ASTM E 1527-13 *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process* guidance documents. Any deviations from this practice were previously described in this report. During the course of this assessment, Krazan identified no evidence of recognized environmental conditions (RECs), controlled RECs (CRECs) or historical RECs (HRECs) in conjunction with the subject site as defined by ASTM E 1527-13. However, the following Potential Area of Concern (PAOC) was identified and is presented below:

- According to Krazan's review of historical aerial photographs, the subject site was in agricultural use with row crops as early as 1938 and included a rural dwelling with outbuildings within the northwest portion of the subject site as early as 1949. Krazan's experience with similar properties has shown that in some cases property owners installed USTs in the vicinity of structures for their convenience. During Krazan's site reconnaissances that were conducted in 2006 (previous Phase I ESA) and during this March 2020 site reconnaissance, no obvious evidence (vent pipes, fill pipes, dispensers, etc.) of USTs was noted within the areas observed. Additionally, no records of USTs were identified on file with the local regulatory agencies for the subject site. USTs utilized for the storage of fuel on rural and agricultural properties historically have been exempt from requirements for registration with regulatory agencies. Therefore, in spite of the standard research conducted in the course of this assessment, the presence or absence of undocumented USTs at the subject site is unknown. However, based upon the lack of indications of USTs during the site reconnaissances, a city demolition permit record for 1996 issued for a structure at the subject site, and the lack of historical or current regulatory knowledge regarding USTs at the subject site, the potential for subsurface features such as unregistered USTs to be present at the subject site appears to be low. According to the property owner, should a UST be discovered during subsequent redevelopment and construction on the subject site, it will be properly removed in accordance with applicable State and local guidelines.

9.0 RELIANCE

This report was prepared solely for use by Client and should not be provided to any other person or entity without Krazan & Associates' prior written consent. No party other than Client may rely on this report without Krazan & Associates' express prior written consent. Reliance rights for third parties will only be in effect once requested by Client and authorized by Krazan & Associates with authorization granted by way of a Reliance Letter. The Reliance Letter will require that the relying party(ies) agree to be bound to the terms and conditions of the agreement between Client and Krazan & Associates as if originally issued to the relying party(ies), or as so stipulated in the Reliance Letter.

10.0 LIMITATIONS

The site reconnaissance and research of the subject site has been limited in scope. This type of assessment is undertaken with the calculated risk that the presence, full nature, and extent of contamination would not be revealed by visual observation alone. Although a thorough site reconnaissance was conducted in accordance with ASTM E 1527-13, and employing a professional standard of care, no warranty is given, either expressed or implied, that hazardous material contamination or buried structures, which would not have been disclosed through this investigation, do not exist at the subject site. Therefore, the data obtained are clear and accurate only to the degree implied by the sources and methods used. The findings presented in this report were based upon field observations during a single property visit, review of available data, and discussions with local regulatory and advisory agencies. Observations describe only the conditions present at the time of this investigation. The data reviewed and observations made are limited to accessible areas and currently available records searched. Krazan cannot guarantee the completeness or accuracy of the regulatory agency records reviewed. Additionally, in evaluating the property, Krazan has relied in good faith upon representations and information provided by individuals noted in the report with respect to present operations and existing property conditions, and the historic uses of the property. It must also be understood that changing circumstances in the property usage, proposed property usage, subject site zoning, and changes in the environmental status of the other nearby properties can alter the validity of conclusions and information contained in this report. Therefore, the data obtained are clear and accurate only to the degree implied by the sources and methods used. This report is provided for the exclusive use of the client noted on the cover page and shall be subject to the terms and conditions in the applicable contract between the client and Krazan. Any third party use of this report, including use by Client's lender, shall also be subject to the terms and conditions governing the work in the contract between the client and Krazan. The unauthorized use of, reliance on, or release of the information contained in this report without the express written consent of Krazan is strictly prohibited and will be without risk or liability to Krazan.

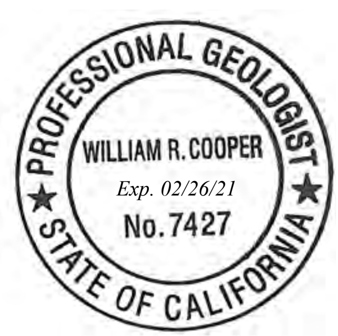
Conclusions and recommendations contained in this report are based on the evaluation of information made available during the course of this assessment. It is not warranted that such data cannot be superseded by future environmental, legal, geotechnical or technical developments. Consequently, given the possibility for unanticipated hazardous conditions to exist on a subject site which may not have been discovered, this Phase I ESA is not intended as the basis for a buyer or developer of real property to waive their rights of recovery based upon environmental unknowns. Parties that choose to waive rights of recovery prior to site development do so at their own risk.

Parties who seek to rely upon Phase I Environmental Site Assessment reports dated more than 180 days prior to the date of reliance do so at their own risk. This limitation in reliance is based on the potential for physical changes at the site, changes in circumstances, technological and professional advances, and guidance related to the continued viability of Environmental Site Assessment reports, user's responsibilities, and requirements for updating of components of the inquiry.

11.0 QUALIFICATIONS

This Phase I ESA was conducted under the supervision or responsible charge of Krazan's undersigned environmental professional. The work was conducted in accordance with ASTM E 1527-13 *for a Phase I Environmental Site Assessment,* and generally accepted industry standards for environmental due diligence in place at the time of the preparation of this report, and Krazan's quality-control policies. 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 property.

If you have any questions or if we can be of further assistance, please do not hesitate to contact our office at (661) 837-9200.



Respectfully submitted,
KRAZAN & ASSOCIATES, INC

William R. Cooper, P.G. No. 7427
Environmental Professional

Arthur C. Farkas, REA No. 07818
Environmental Professional

WRC/ACF/mlt

REFERENCES

Aerial photographs were obtained from EDR

American Society for Testing and Materials (ASTM), *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment (ESA) Process*, ASTM Designations: E 1527-13.

ASTM, *Standard Guide for Vapor Encroachment Screening on Property Involved in Real Estate Transactions,* ASTM Designation E 2600-10.

California Department of Conservation, Department of Oil and Gas (DOGGR), Online Mapping System (DOMS).

City of Perris Planning and Building Department.

EDR, Regulatory Database Report.

Riverside County Department of Environmental Health (RCDEH).

State of California Department of Conservation, Division of Oil, Gas and Geothermal Resources (DOGGR) Maps Website: http://www.conservation.ca.gov/dog/maps/Pages/index_map.aspx

State of California Department of Toxic Substances Control, Envirostor Website: http://www.envirostor.dtsc.ca.gov/public

State of California Regional Water Quality Control Board, Geotracker Website: http://geotracker.swrcb.ca.gov

State of California, Department of Water Resources.

U.S. Environmental Protection Agency (EPA) *Map of Radon Zones*.

U.S. Fish & Wildlife Service National Wetland Inventory *Wetlands Mapper:* http://www.fws.gov/wetlands/Data/Mapper.html

U.S. Geological Survey, 7.5 minute Perris, California topographic quadrangle map, dated 1953.

GLOSSARY OF TERMS

Subject Site: The real property being investigated under this Phase I ESA.

Adjacent Properties: Properties which are contiguous with the subject site, or would be contiguous except for a street, road, or other public thoroughfare.

Subject Site Vicinity: Properties located within a 500-foot radius of the subject site.

Environmental Professional: A person meeting the education, training, and experience requirements as set forth in 40 CFR §312.10(b). The EP may be an independent contractor or an employee of the user.

User: The party seeking to use Practice E 1527 to complete an environmental site assessment of the subject site. A user may include, without limitation, a potential purchaser of the subject site, a potential tenant of the subject site, an owner of the subject site, a lender, or a property manager.

Recognized Environmental Condition (REC): In defining a standard of good commercial and customary practice for conducting an environmental site assessment of a parcel of property, the goal of the processes established by this practice is to identify recognized environmental conditions. The term recognized environmental conditions means 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. *De minimis* conditions are not recognized environmental conditions.

Controlled Recognized Environmental Condition (CREC) : A recognized environmental condition resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority (for example, as evidenced by the issuance of a no further action letter or equivalent, or meeting risk-based criteria established by regulatory authority), with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls (for example, property use restrictions, activity and use limitations, institutional controls, or engineering controls). For example, if a leaking underground storage tank has been cleaned up to a commercial use standard, but does not meet unrestricted residential cleanup criteria, this would be considered a CREC. The "control" is represented by the restriction that the property use remain commercial. A condition considered by the environmental professional to be a CREC shall be listed in the findings section of the Phase I ESA report and as an REC in the conclusions section. A condition identified as a CREC does not imply that the environmental professional has evaluated or confirmed the adequacy, implementation, or continued effectiveness of the required control that has been, or is intended to be, implemented.

Historical Recognized Environmental Condition (HREC): A past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted use criteria established by a regulatory authority, without subjecting the property to any required controls (for example, property use restrictions, activity and use limitations, institutional controls, or engineering controls). Before calling the past release an HREC, the environmental professional must determine whether the past release is an REC at the time the Phase I ESA is conducted (for example, if there has been change in the regulatory criteria). If the EP considers the past release to be an REC at the time the Phase I ESA is conducted, the condition shall be included in the conclusions section of the report as an REC.

GLOSSARY OF TERMS (continued)

Potential Area of Concern (PAOC): A term adopted to provide an alternative designation to the REC and HREC for a range of environmental issues related to current subject site uses, historical subject site uses, or from adjacent and/or vicinity property uses. The PAOC is utilized to emphasize full disclosure and provide the User with conclusions and recommendations related to potential environmental issues in connection with the subject site based on Krazan's professional experience in cases where official documentation or other evidence may be absent in order to identify an REC or HREC, thereby aiding the User's considerations of environmental due diligence risk tolerance.

Migrate/migration: For the purposes of this practice, "migrate" and "migration" refer to the movement of hazardous substances or petroleum products in any form, including, for example, solid and liquid at the surface or subsurface, and vapor in the subsurface. Vapor migration in the subsurface is described in ASTM E 2600-10 guidance; however, nothing in the E 1527-13 practice should be construed to require application of the E 2600-10 standard to achieve compliance with AAI.

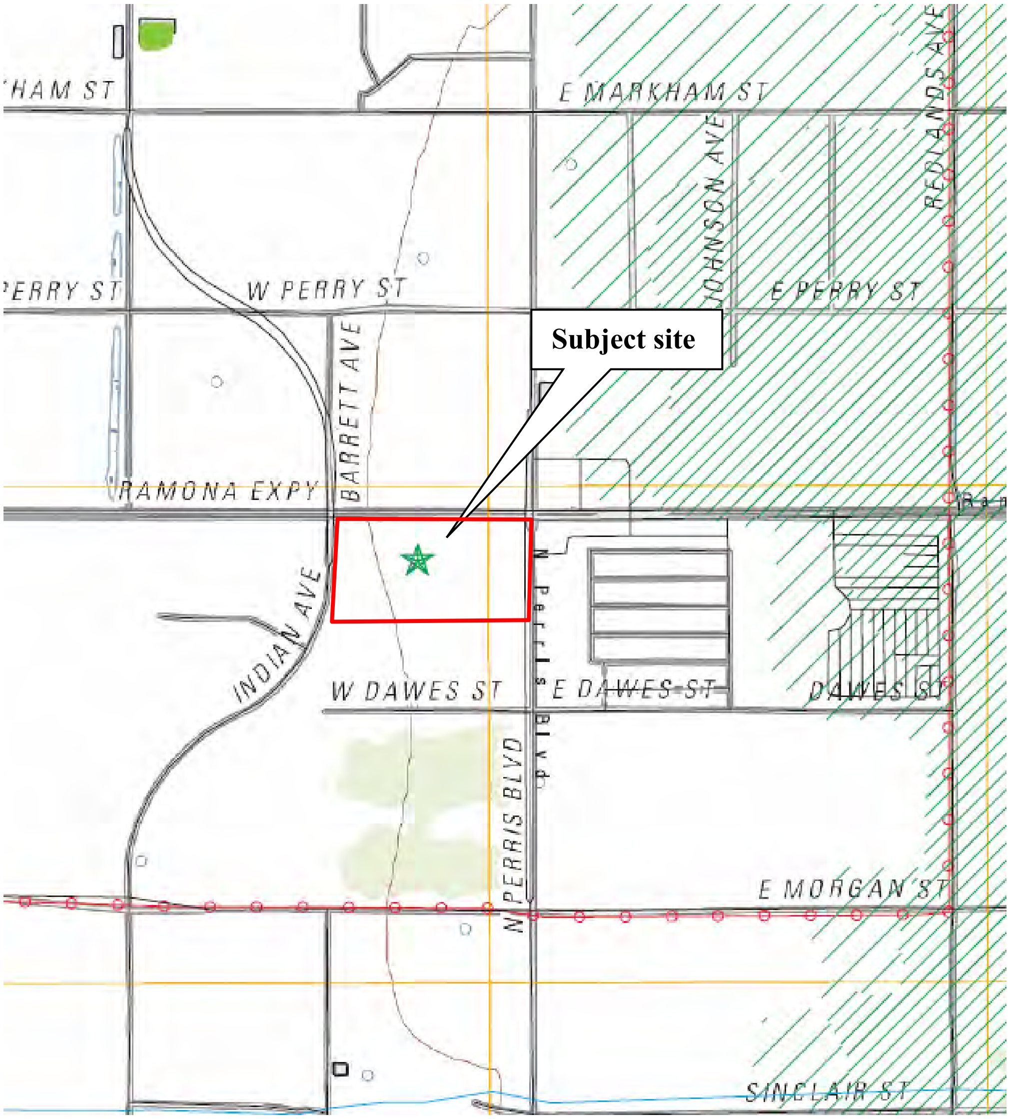
De minimis condition: A condition that generally does not present a threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies. Condition determined to be *de minimis conditions* are not RECS or CRECs.

Data Gap: A lack of or inability to obtain information required by this practice despite good faith efforts by the Environmental Professional to gather such information. Data gaps may result from incompleteness in any of the activities required by this practice, including, but not limited to the site reconnaissance and interviews.

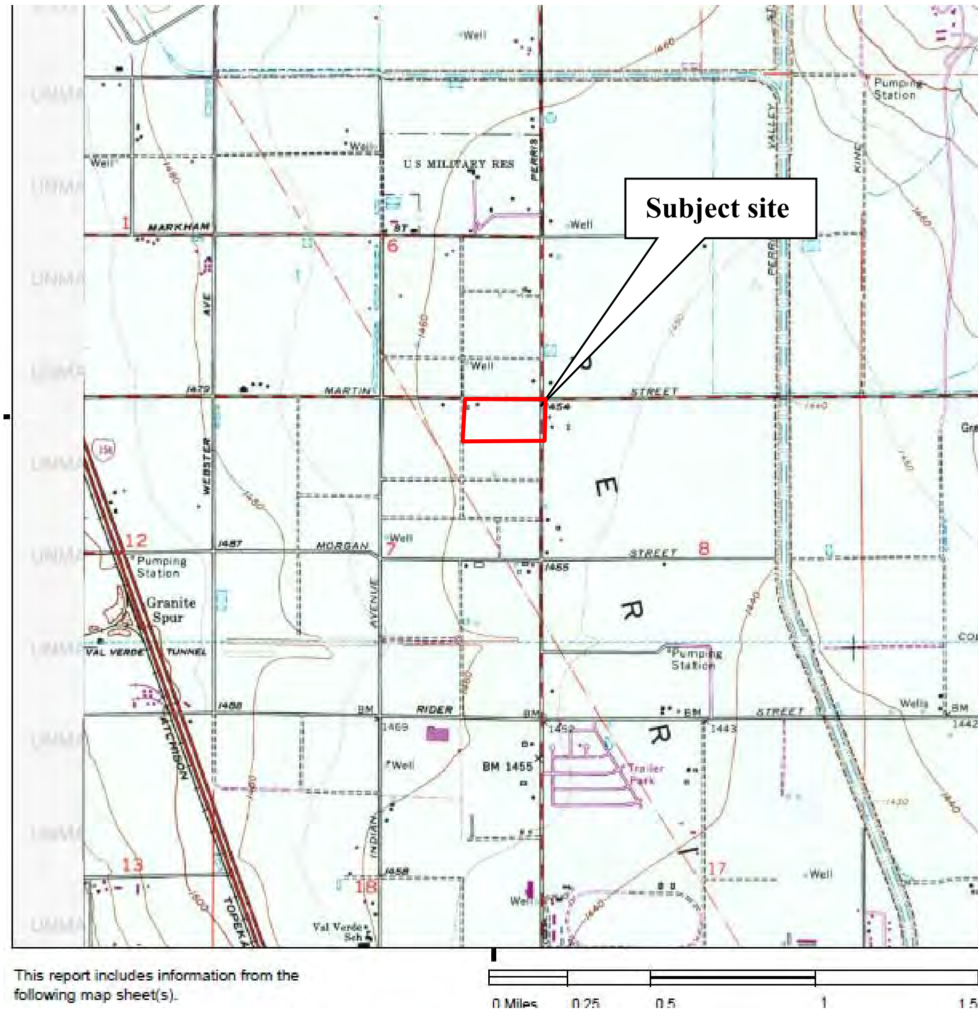
Data Failure: A failure to achieve the historical research objectives even after reviewing the standard historical sources that are reasonably ascertainable and likely to be useful. Data failure is one type of data gap.

GLOSSARY OF TERMS (continued)

AAI	All Appropriate Inquiries
AC	Asphalt Concrete
ACM	Asbestos-Containing Materials
AOC	Area of Concern
APN	Assessor's Parcel Number
AST	Aboveground Storage Tank
ASTM	American Society for Testing and Materials
AS	Air Sparging
AUL	Activity & Use Limitations
bgs	Below Ground Surface
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CESQG	Conditionally Exempt Small Quantity Generator
CFR	Code of Federal Regulations
CMU	Concrete Masonry Unit
COCs	Constituents of Concern
DEULs	Declaration of Environmental Use Restrictions
DOGGR	Division of Oil, Gas & Geothermal Resources (CA)
DTSC	Department of Toxic Substances Control (CA)
EC	Engineering Control
EDR	Environmental Data Resources
EP	Environmental Professional
EPA	United States Environmental Protection Agency
ERP	Emergency Response Plan
ESA	Environmental Site Assessment
ESL	Environmental Screening Level
FOIA	Freedom of Information Act
GPR	Ground Penetrating Radar
HCCD	Haines Criss-Cross Directory
HFIM	Historical Fire Insurance Map
HMBP	Hazardous Materials Business Plan
HREC	Historical Recognized Environmental Condition
HVAC	Heating, Ventilation, Air Conditioning
IC	Institutional Control
LBP	Lead-Based Paint
LLP	Landowner Liability Protection
LQG	Large Quantity Generator
LUC	Land Use Control
LUST	Leaking Underground Storage Tank
MCL	Maximum Contaminant Level
µg/L	Micrograms Per Liter
mg/kg	Milligrams Per Kilogram
mg/L	Milligrams Per Liter
MSDS	Material Safety Data Sheet
MTBE	Methyl Tertiary Butyl Ether
MFR	Multi-Family Residential
ND	Nondetectable
NFA	No Further Action (letter)
NPDES	National Pollution Discharge Elimination System
NPL	National Priorities List
O&M	Operations & Maintenance Plan
PAOC	Potential Area of Concern
PCB	Polychlorinated Biphenyl
PCC	Portland Cement Concrete
PCE	Perchloroethylene
PEC	Potential Environmental Concern (TS)
PGD	Polk Guide Directory
PG&E	Pacific Gas & Electric
PHCs	Petroleum Hydrocarbon Constituents
PID	Photoionization Detector
ppb	Parts Per Billion
ppm	Parts Per Million
PRG	Preliminary Remediation Goal
PRP	Potentially Responsible Party
RAP	Remedial Action Plan
RCRA	Resource Conservation and Recovery Act
REC	Recognized Environmental Condition
RP	Responsible Party
RWQCB	Regional Water Quality Control Board (CA)
SBA	Small Business Administration
SFR	Single-Family Residential
SPCC	Spill Prevention Control and Countermeasure Plan
SQG	Small Quantity Generator
SCE	Southern California Edison
SVE	Soil Vapor Extraction
SVOC	Semi-Volatile Organic Compound
SWRCB	State Water Resources Control Board
TCE	Trichloroethylene
TPH	Total Petroleum Hydrocarbons
TPH-D	Total Petroleum Hydrocarbons as Diesel
TPH-G	Total Petroleum Hydrocarbons as Gasoline
TPH-MO	Total Petroleum Hydrocarbons as Motor Oil
TS	Transaction Screen
USGS	United States Geological Survey
USFWS	United States Fish & Wildlife Service
UST	Underground Storage Tank
VEC	Vapor Encroachment Condition
VES	Vapor Encroachment Screening
VOCs	Volatile Organic Compounds



VICINITY MAP	Scale: NTS	Date: March 2020	Krazan
155 RAMONA EXPRESSWAY APN: 303-060-20 15.15 ACRES PERRIS, CALIFORNIA	Drawn By: BC	Approved by: BC	SITE DEVELOPMENT ENGINEERS *With Offices Serving the Western United States*
	Project No. 024-20017	Figure No. 1	

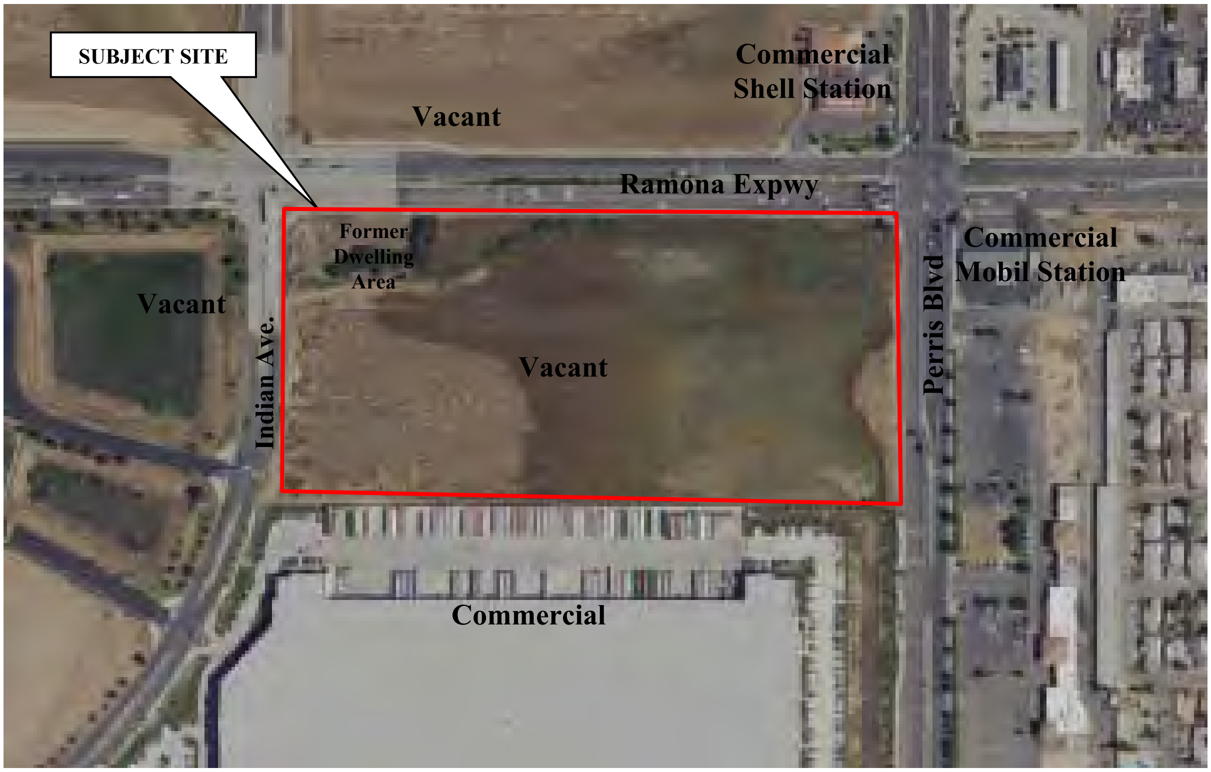


This report includes information from the following map sheet(s).

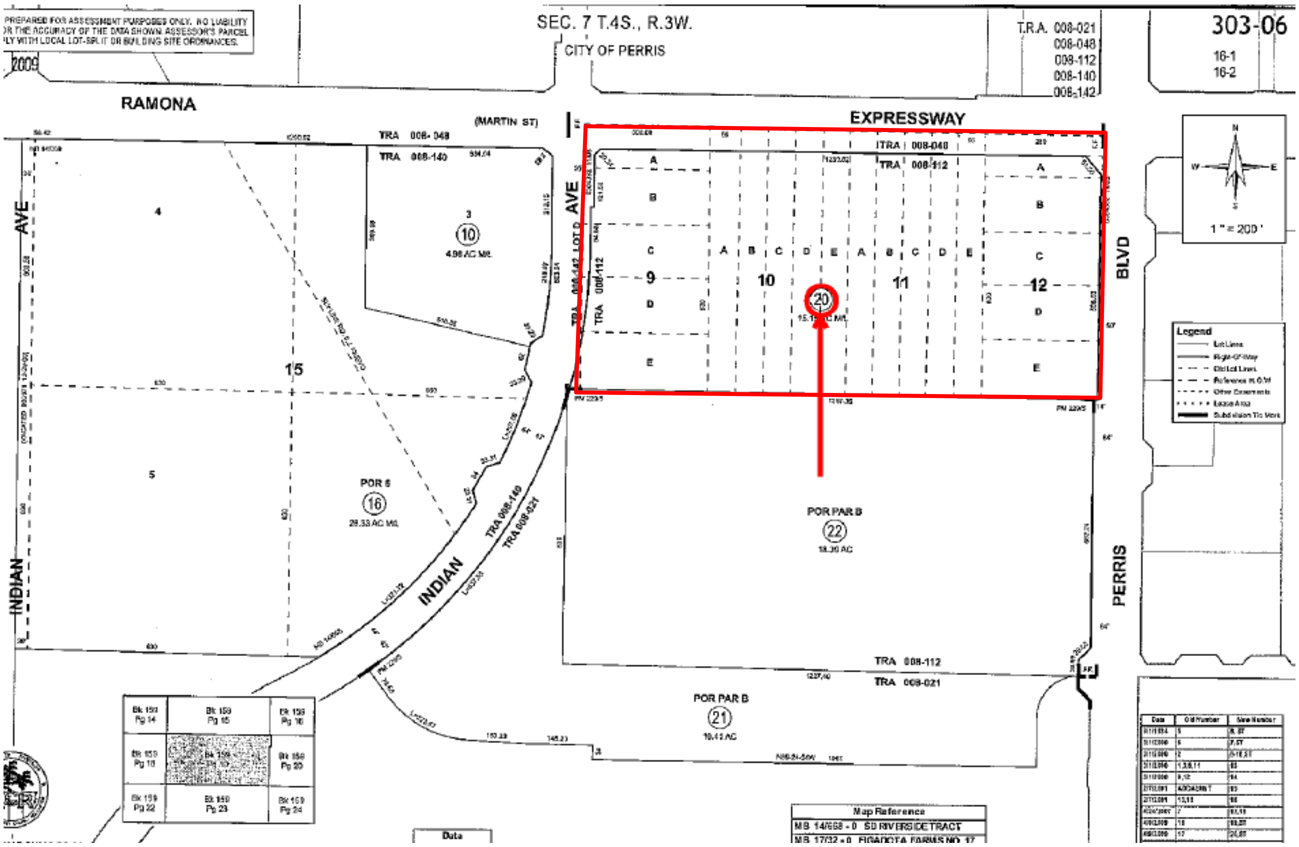
0 Miles 0.25 0.5 1 1.5

7.5-MINUTE SERIES
USGS TOPOGRAPHIC MAPS
PERRIS, CALIFORNIA
DATED 1953

TOPOGRAPHIC MAP	**Scale:** NTS	**Date:** March 2020	Krazan
155 RAMONA EXPRESSWAY APN: 303-060-20 15.15 ACRES PERRIS, CALIFORNIA	**Drawn By:** BC	**Approved by:** BC	**SITE DEVELOPMENT ENGINEERS**
	Project No. 024-20017	**Figure No.** 2	***With Offices Serving the Western United States***



SITE MAP	Scale: NTS	Date: March 2020	Krazan SITE DEVELOPMENT ENGINEERS *With Offices Serving the Western United States*
155 RAMONA EXPRESSWAY APN: 303-060-20 15.15 ACRES PERRIS, CALIFORNIA	Drawn By: BC	Approved by: BC	
	Project No. 024-20017	Figure No. 3	



Assessor's Parcel Map	Scale: NTS	Date: March 2020	Krazan
155 RAMONA EXPRESSWAY APN: 303-060-20 15.15 ACRES PERRIS, CALIFORNIA	Drawn By: BC	Approved by: BC	SITE DEVELOPMENT ENGINEERS *With Offices Serving the Western United States*
	Project No. 024-20017	Figure No. 4	

Photo 1: Northern-facing view from the central area of the western boundary. Indian Avenue is pictured to the left (west) of the vacant subject site. Ramona Expressway is pictured in the background.

Photo 2: Eastern-facing view of the western-central area of the subject site.

155 Ramona Expressway **APN: 303-060-20** **15.15 Acres** **Perris, California**	**Project No.** 024-20017 **Date:** March 2020 **Approved by:** BC	Krazan

x

Photo 3: Southern-facing view from the central area of the western boundary. Indian Avenue is pictured to the right (west) of the vacant subject site.

Photo 4: Eastern-facing view from the northwest corner boundary. Ramona Expressway is pictured to the left (north) of the vacant subject site.

Photo 5: Southern-facing view of the northern-central portion of the subject site.

Photo 6: Western-facing view of the northern-central portion of the subject site; a swale or small ditch is located adjacent to the nearby Ramona Expressway.

Photo 7: Southern-facing view along the eastern boundary; Perris Blvd is pictured to the left.

Photo 8: Western-facing view from the northeastern corner boundary of the subject site; Ramona Expressway is pictured. A few Palm trees are present along the northeastern side.

Photo 9: Southwestern-facing view from the northeast corner of the subject site.

Photo 10: Northwestern-facing view from the central part of the eastern boundary.

Photo 11: Northern-facing view along the eastern boundary of the subject site; Perris Blvd is pictured.

Photo 12: Southwestern-facing view of the eastern portion of the subject site.

Photo 13: Western-facing view from the southeast corner along the southern boundary of the vacant subject site.

Photo 14: Northwestern-facing view from the southeast corner of the subject site.

Photo 15: Southeastern facing view from the central area of the subject site.

Photo 16: Western facing view from the central area of the subject site.

Photo 17: Northern facing view from the central area of the subject site.

Photo 18: Northern facing view from the central area of the subject site.

Appendix A

ENVIRONMENTAL LIEN AND AUL REPORT

Order Number:
79-127409-47

Subject Property:
303-060-020
PERRIS, CA

Completed:
02/28/2020

AFX RESEARCH, LLC

A Quarter-Century of Title Document Research Expertise

999 Monterey St. Suite 380, San Luis Obispo, CA 93401

(877) 848-5337 / www.afxllc.com

ENVIRONMENTAL LIEN AND AUL REPORT

Order #: 79-127409-47 | Completed: 02/28/2020

SOURCES SEARCHED

Source 1:	RIVERSIDE COUNTY RECORDER'S OFFICE
Source 2:	CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY
Source 3:	UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

TARGET PROPERTY

Current Owner(s):	PR PARTNERS LLC		
Street Address:	303-060-020		
City, State:	PERRIS, CA		
APN/Parcel/PIN:	303-060-020	County:	RIVERSIDE
Legal Description:	15.15 ACRES M/L IN POR BLKS 9, 10, 11 & 12 MB 017/032 FIGADOTA FARMS 17		

PROPERTY OWNERSHIP

Instrument: **GRANT DEED**

Date Recorded:	08/10/2006	Instrument:	2006-0590349
Dated:	08/03/2006		
Grantor(s):	MIJO INVESTMENTS, LP 24.75% INTEREST, ETAL		
Grantee(s):	PR PARTNERS LLC		

ENVIRONMENTAL LIENS

NO ENVIRONMENTAL LIENS WERE FOUND FOR SUBJECT PROPERTY.

ACTIVITY AND USE LIMITATIONS (AUL)

NO AUL WERE FOUND FOR SUBJECT PROPERTY.

LEASES AND MISCELLANEOUS INSTRUMENTS

NO LEASES OR MISCELLANEOUS INSTRUMENTS FOUND FOR SUBJECT PROPERTY.

AFX RESEARCH, LLC
999 Monterey St. Suite 380, San Luis Obispo, CA 93401
Ph: (877) 848-5337 Fax: (800) 201-0620
http://www.afxllc.com

THANK YOU FOR YOUR ORDER

For questions, please contact our office at 1-877-848-5337.

Order Number:
79-127409-47

Our Environmental Lien and AUL report provides a summary of recorded information on a specific property from the time the current owner purchased the property, to present time. The report is intended to assist in the search for environmental liens filed in land title records. The report will verify property ownership and provide information on recorded environmental liens and/or Activity and Use Limitations that have been recorded from the time the current owner purchased the property, forward.

Our professional network of trained researchers follow established industry protocols and use client-supplied property information to complete this Environmental Lien and AUL report. The research is conducted at all appropriate government offices based on the location of the subject property. This would include city, county, state, federal and tribal offices as needed. The report includes:

- Current deed information (i.e. grantor, grantee, recording dates)
- Legal Description
- Environmental Lien information
- Activity and Use Limitation information
- Any Environmental Liens and/or documents referencing AULs that are listed within our summary report

Appendix B

KRAZAN & ASSOCIATES, INC.
PHASE I ESA OWNER/USER QUESTIONNAIRE

Date: March 16, 2020 Completed By: Lars Andersen

Site Address: SW Corner Ramona Expressway, Perris Boulevard, Perris, CA

Owner /Name/ Company / Address: PR Partners, LLC, 11601 Wilshire Boulevard, Suite 2110, Los Angeles, CA 90025

Owner Telephone No: (310) 393-4141 Owner Email Address: mtb@pdpllc.net

Knowledge of Previous Owner(s) and Phone Number? Refer to Krazan Phase I #114-06063 Dated May 17, 2006

How are you associated with the subject site? Employed by the Land Owners

How long have you been associated with the subject site? Since their purchase in 2006

What is the subject site currently used for? Vacant Land

Are there structures on the subject site? No How Many/General Size N/A

Do you know of any previous structures on the subject site? No

Do you have any current or past knowledge of the presence or underground or aboveground storage tanks being located on the subject site? No Knowledge

Please describe any past earthwork, grading or excavations at the subject site? Agriculture Activity

Do you know of any chemical or hazardous materials, persistent pesticides/herbicides being used, stored or discharged on the subject site? No

Do you know of any Environmental Institutional Controls, Environmental Cleanup Liens, or Engineering Controls (slurry walls or vapor barriers) filed or recorded for or against the subject site? None

Do you know of any buried materials, burn pits, or dry wells on the subject site? No

Do you know of any current or former pipelines on the subject site? No

Do you know of any current or former septic systems on the subject site? No

Do you know of any current or former water wells on the subject site? No

Do you know of any current or former monitoring wells on the subject site? No

Are there any drainage or disposal ponds located on the subject site? Drainage on west side from adjoining property

Is the subject site connected to municipal water and sewer systems? No utilities currently to the site

Do you have obvious indications pointing to the presence of likely presence of contamination of the subject site? None

Do you have any concerns about adjacent property usage such as gasoline stations, industrial uses or USTs or ASTs on adjacent properties? Not aware of any issues.

AAI – USER Questions

"In order to qualify for one of the *Landowner Liability Protections (LLPs)* offered by the Small Business Liability Relief and Brownfield Revitalization Act of 2001 (the 'Brownfields Amendments'), the user must provide the following information (if available) to the environmental professional. Failure to provide this information could result in a determination that 'all appropriate inquiry' is not completed"- American Society for Testing and Materials (ASTM) E1527-05 Appendix X3: User Questionnaire

1. Are you aware of any environmental cleanup liens against the subject site that are filed or recorded under federal, tribal, state, or local law?
Not aware of any.

2. Are you aware of any activity use limitations (AULs) such as engineering controls, land use restrictions, or institutional controls that are in place at the subject site and/or have been filed or recorded in a registry under federal, tribal, state, or local law?
Not aware of any.

3. As the user of the Phase I Environmental Site Assessment (ESA), do you have any specialized knowledge or experience related to the subject site or nearby properties? For example, are you involved in the same line of business as the current or former occupants of the subject site or an adjacent property so that you would have specialized knowledge of the chemicals and processes used by this type of business?

Vacant Land

4. Does the purchase price being paid for the subject site reasonably reflect the fair market value of the subject site? Yes No No change of Ownership. This is an Update to the previous Phase I

A. If you conclude that there is a difference, have you considered whether the lower purchase price is because contamination is known or believed to be present at the subject site?

____

5. Are you aware of commonly known or reasonably ascertainable information about the subject site that would help the environmental professional to identify conditions indicative of releases or threatened releases? For example:

A. Do you know the past uses of the subject site? If so, briefly explain.
Agriculture____

B. Do you know of specific chemicals that are present or once were present at the subject site? If so, briefly explain.
Do Not Know what was used.____

C. Do you know of spills or other chemical releases that have taken place at the subject site? If so, briefly explain.
Not aware of any.____

D. Do you know of any environmental cleanups that have taken place at the subject site? If so, briefly explain.
Not aware of any.____

6. As the user of the Phase I ESA, based on your knowledge and experience related to the subject site, are there any obvious indicators that point to the presence or likely presence of contamination at the subject site?
None____

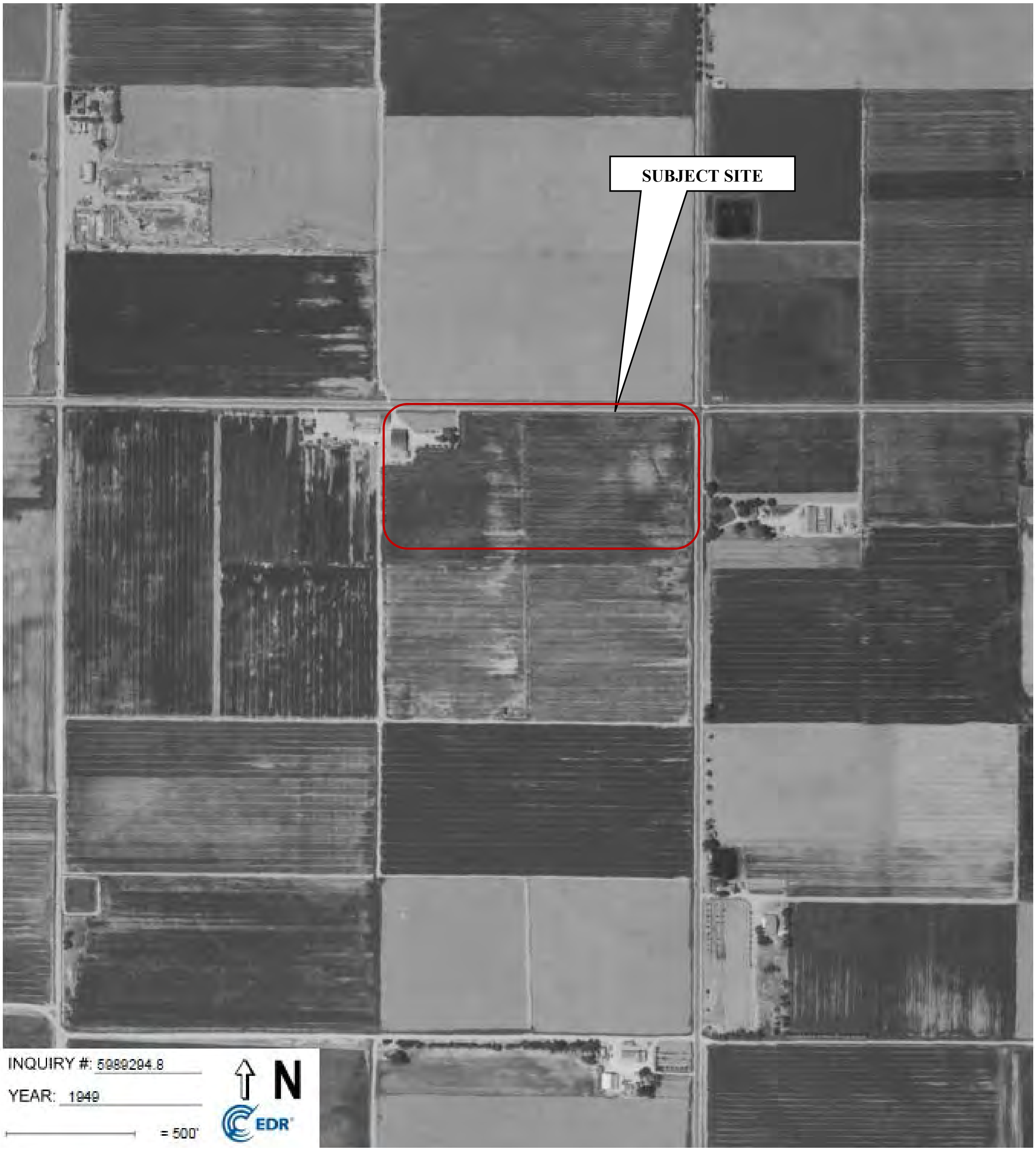
7. What is the reason for preparation of this Phase I ESA? (Property purchase/sale; bank loan; proposed development; etc.)
Potential Development____

Name: Lars Andersen______________________ Date: March 16, 2020___________
(Please Print)

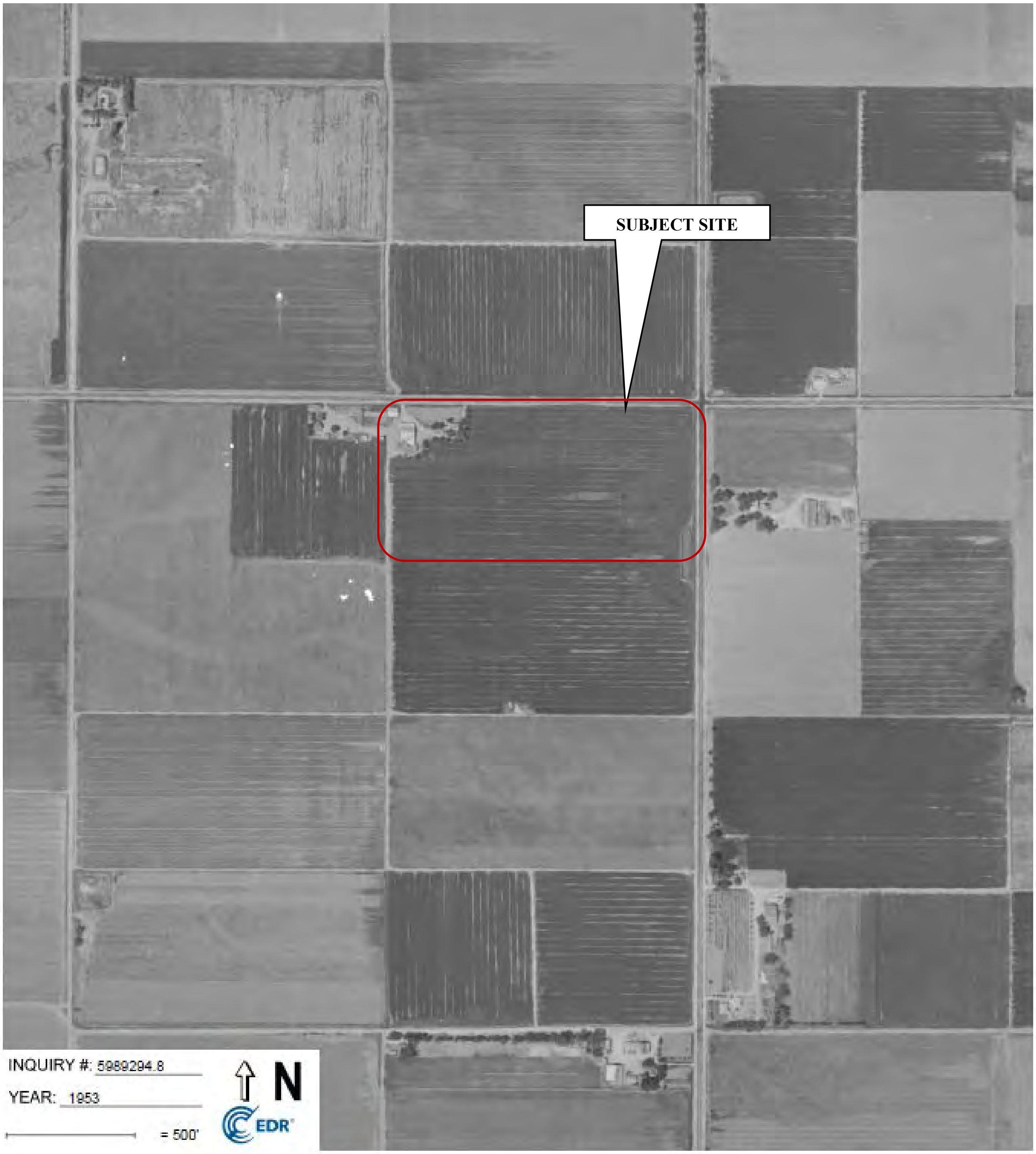
Signature: Lars A______________________

Appendix C

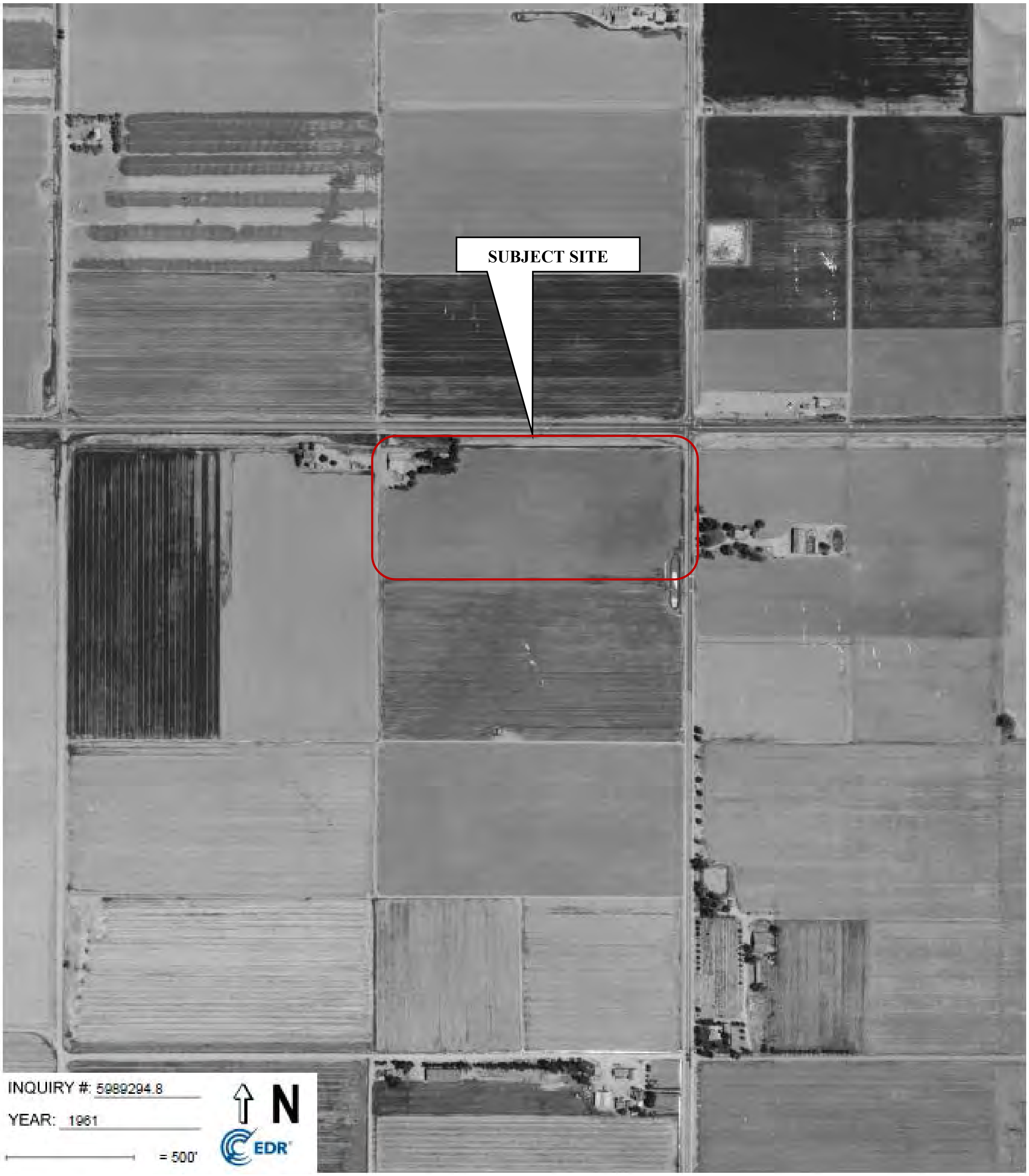
1938 AERIAL PHOTOGRAPH	**Scale:** See Photo	**Date:** March 2020	Krazan
Vacant Property **155 Ramona Expressway** **APN: 303-060-20** **Perris, California**	**Drawn By:** BC	**Approved by:** BC	**SITE DEVELOPMENT ENGINEERS** ***Serving the Western United States***
	Project No. 024-20017	**Source:** EDR	



1949 AERIAL PHOTOGRAPH	Scale: See Photo	Date: March 2020	Krazan SITE DEVELOPMENT ENGINEERS *Serving the Western United States*
Vacant Property **155 Ramona Expressway** **APN: 303-060-20** **Perris, California**	**Drawn By:** BC	**Approved by:** BC	
	Project No. 024-20017	**Source:** EDR	

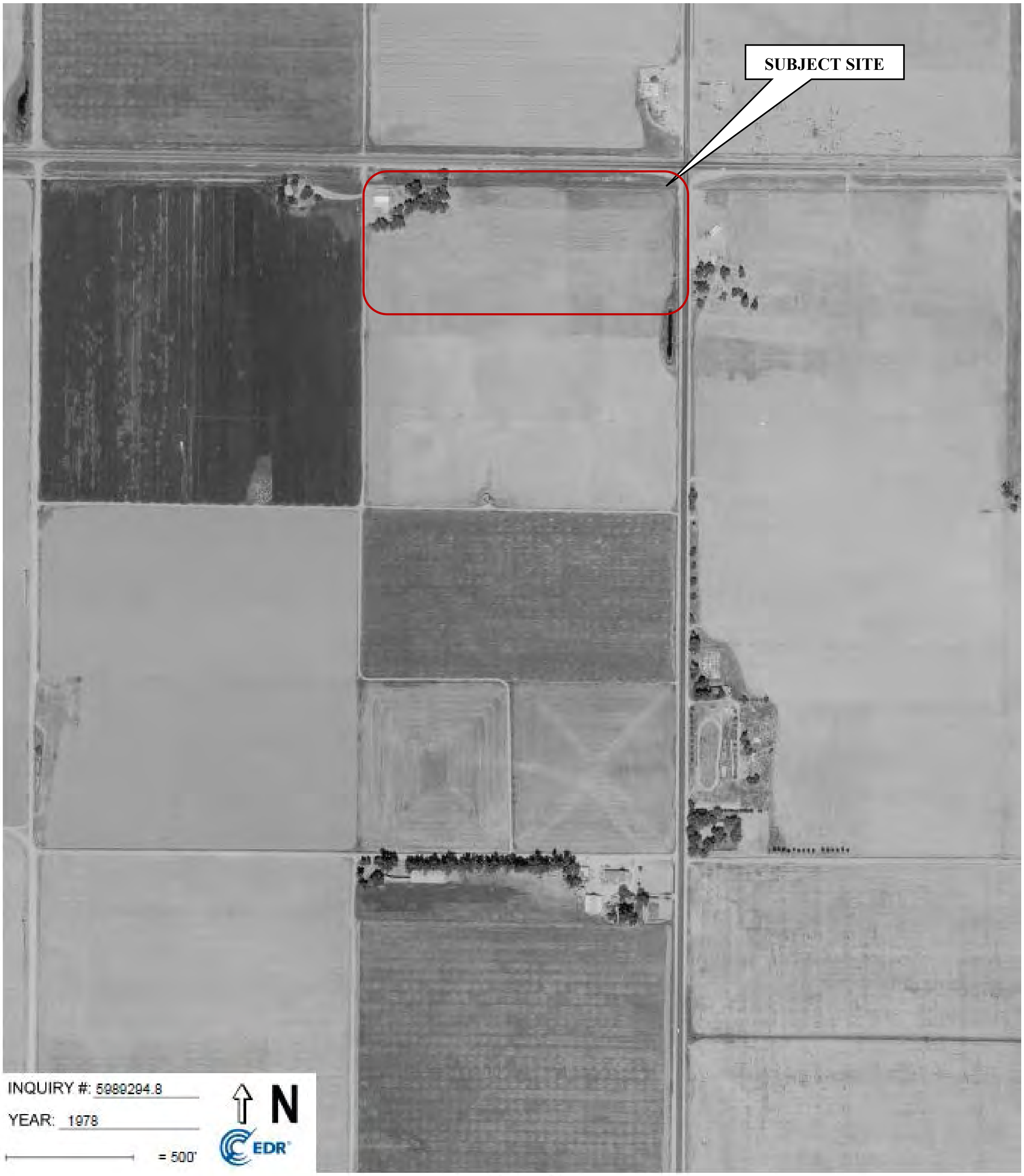


1953 AERIAL PHOTOGRAPH	Scale: See Photo	Date: March 2020	Krazan SITE DEVELOPMENT ENGINEERS *Serving the Western United States*
Vacant Property **155 Ramona Expressway** **APN: 303-060-20** **Perris, California**	Drawn By: BC	Approved by: BC	
	Project No. 024-20017	Source: EDR	



1961 AERIAL PHOTOGRAPH	Scale: See Photo	Date: March 2020	Krazan
Vacant Property **155 Ramona Expressway** **APN: 303-060-20** **Perris, California**	**Drawn By:** BC	**Approved by:** BC	**SITE DEVELOPMENT ENGINEERS** *Serving the Western United States*
	Project No. 024-20017	**Source:** EDR	

1967 AERIAL PHOTOGRAPH	Scale: See Photo	Date: March 2020	Krazan
Vacant Property 155 Ramona Expressway APN: 303-060-20 Perris, California	Drawn By: BC	Approved by: BC	SITE DEVELOPMENT ENGINEERS *Serving the Western United States*
	Project No. 024-20017	Source: EDR	



1978 AERIAL PHOTOGRAPH	Scale: See Photo	Date: March 2020	Krazan
Vacant Property 155 Ramona Expressway APN: 303-060-20 Perris, California	Drawn By: BC	Approved by: BC	SITE DEVELOPMENT ENGINEERS *Serving the Western United States*
	Project No. 024-20017	Source: EDR	

1985 AERIAL PHOTOGRAPH	Scale: See Photo	Date: March 2020	Krazan
Vacant Property **155 Ramona Expressway** **APN: 303-060-20** **Perris, California**	**Drawn By:** BC	**Approved by:** BC	**SITE DEVELOPMENT ENGINEERS** *Serving the Western United States*
	Project No. 024-20017	**Source:** EDR	

1996 AERIAL PHOTOGRAPH	Scale: See Photo	Date: March 2020	Krazan SITE DEVELOPMENT ENGINEERS *Serving the Western United States*
Vacant Property 155 Ramona Expressway APN: 303-060-20 Perris, California	**Drawn By:** BC	**Approved by:** BC	
	Project No. 024-20017	**Source:** EDR	

2002 AERIAL PHOTOGRAPH	Scale: See Photo	Date: March 2020	Krazan SITE DEVELOPMENT ENGINEERS *Serving the Western United States*
Vacant Property **155 Ramona Expressway** **APN: 303-060-20** **Perris, California**	**Drawn By:** BC	**Approved by:** BC	
	Project No. 024-20017	**Source:** EDR	

2009 AERIAL PHOTOGRAPH	Scale: See Photo	Date: March 2020	Krazan SITE DEVELOPMENT ENGINEERS *Serving the Western United States*
Vacant Property 155 Ramona Expressway APN: 303-060-20 Perris, California	**Drawn By:** BC	**Approved by:** BC	
	Project No. 024-20017	**Source:** EDR	

2012 AERIAL PHOTOGRAPH	Scale: See Photo	Date: March 2020	Krazan SITE DEVELOPMENT ENGINEERS *Serving the Western United States*
Vacant Property 155 Ramona Expressway APN: 303-060-20 Perris, California	**Drawn By:** BC	**Approved by:** BC	
	Project No. 024-20017	**Source:** EDR	

2016 AERIAL PHOTOGRAPH	Scale: See Photo	Date: March 2020	Krazan SITE DEVELOPMENT ENGINEERS *Serving the Western United States*
Vacant Property 155 Ramona Expressway APN: 303-060-20 Perris, California	Drawn By: BC	Approved by: BC	
	Project No. 024-20017	Source: EDR	

Appendix D

CASE CLOSURE SUMMARY
LEAKING UNDERGROUND FUEL STORAGE TANK PROGRAM

SITE NAME: Shell Perris #121222 SITE NO: 200723493

I. Agency Information

Date: 5/7/2009

AGENCY NAME:	County of Riverside, Department of Environmental Health Environmental Resource Management Division
ADDRESS:	38686 El Cerrito Rd, Palm Desert CA 92211 (760) 393-3390
STAFF PERSON:	Linda D. Shurlow, REHS—Environmental Health Specialist

II. Case Information

Site Name: Shell Perris #121222
Site Address/City: 4039 N. Perris Blvd. Perris
RB Case No: **Lop/Local Case No**: 200723493
URR Filing Date: April 23, 2007 **Global ID**: T0606524504

Responsible Parties	Address	Phone Number
Shell Oil Products US Attn: Andrea Wing	20945 S. Wilmington Ave. Carson CA 90810	
Earnest and Elza Hancz	919 Alpine Drive Beverly Hills CA 90210	

Tank #	Size	Contents	Removed/Closed In-Place?	Date
1	10K gal	diesel	active	
2	12K gal	gasoline	active	
3	20 K gal	gasoline	active	

III. Release and Site Characterization Information

Cause & Type Of Release: gasoline and diesel release
Site Characterization Complete? Yes [X] No [ ]
Date Approved By Oversight Agency: 1/9/08

Monitoring Wells Installed? Yes [X] No [ ] Number:
Proper Screen Interval? Yes [ ] No [ ] N/A [ ]
Historical Depth To GW: 80.52 ft bgs to 83.09 ft bgs **Current Depth To GW:** 80.52'
Flow Direction: Southwest

Most Sensitive Current GW Use: domestic
Are Drinking Water Wells Affected? Yes[ ] No [X] **Nearest Water Well:** 2212' NW of site
Aquifer Name: San Jacinto Groundwater Basis

Surface Water Affected? Yes [ ] No [X]
Nearest/Affected SW Name:
Off-Site Beneficial Use Impacts (Address/Locations):

Reports On File? Yes [X] No [ ]
Location Of Reports: County of Riverside, Department of Environmental Health
4065 County Circle Dr, Rm 104 Riverside CA 92503
P.O. Box 7489 Riverside CA 92513
(951) 358-5055 / (951) 955-8982

CASE CLOSURE SUMMARY
LEAKING UNDERGROUND FUEL STORAGE TANK PROGRAM

SITE NAME: Shell Perris #121222 SITE NO: 200723493

III. Release and Site Characterization Information (cont.)

Treatment & Disposal Of Affected Material

Material	Amount	Action (Treatment or disposal & destination)	Date
Tank		Phase II Assessment	April 2007
HC vapors TPHg MTBE	 44 lbs 37 lbs	Removed via SVE	June 2008 to January 2009

Maximum Documented Contaminant Concentrations -- Before & After Cleanup

Contaminant	Soil (mg/kg)				Groundwater (ug/L)	
	Maximum	Depth	Recent	Depth	Maximum	Recent
TPH (Gas)	11 ppm (MW-3)	30'	0.7 ppm (CB-2)	40'	ND<50	ND<50
TPH (Diesel)	16 ppm	30'	NA		NA	NA
Benzene	ND<0.001		ND<0.005		ND<0.5	ND<0.5
Toluene	ND<0.001		ND<0.005		ND<1	ND<1
Xylene	ND<0.002		ND<0.005		ND<1	ND<1
Ethyl Benzene	ND<0.001		ND<0.005		ND<1	ND<1
MTBE	17 ppm (MW-3)	35'	0.64 ppm (CB-2)	40'	19	ND<1
TBA	1.3 ppm (B03)	40'	0.2 ppb (CB-1)	40'	24	ND<10
DIPE	ND<0.002		ND<0.01		ND<2	ND<2
ETBE	ND<0.002		ND<0.01		ND<2	ND<2
TAME	ND<0.002		ND<0.01		ND<2	ND<2
ETHANOL	ND<0.2		ND<0.25		ND<100	ND<100

Comments (soil types, depth of remediation, etc.):
See Section VII for additional information.

IV. Closure

Does Completed Corrective Action Protect Existing Beneficial Uses As Per The Regional Board Basin Plan? Yes [X] No [ ]
Does Completed Corrective Action Protect Potential Beneficial Uses Per The Regional Board Basin Plan? Yes [X] No [ ]
Does The Corrective Action Protect Public Health For Current Land Use? Yes[X] No [ ]
Site Management Requirements:

Should Corrective Action Be Reviewed If Land Use Changes? Yes [X] No [ ]

Monitoring Wells Decommissioned? Yes [*] No [ ] None Installed [ ] *Prior to issuance of NFA letter.
Number Decommissioned: * **Number Retained**:

List Enforcement Actions Taken/Rescinded:

rev. 12/2008

CASE CLOSURE SUMMARY
LEAKING UNDERGROUND FUEL STORAGE TANK PROGRAM

SITE NAME: Shell Perris #121222 SITE NO: 200723493

V. Local Agency Representative Data

Name: Sharon Boltinghouse	**Title:** Associate Public Health Professional Geologist
Signature: SBolt	**Date:** 1-14-10

VI. RWQCB Notification

Date Submitted To RWQCB:	**Date Signed By RWQCB:** 9/22/09
RWQCB Staff Assigned To Case: Carl Bernhardt	
RWQCB Response: Concurs w/ Closure	
Signature: Kenneth R Williams	**Title:** Chief, UST Section

VII. Additional Comments, Data, Etc.

On April 12 and 13, 2007, a Phase II assessment was completed for the sale of the property. 8 borings were drilled; 3 near the tank pit to 51.5' and 5 near the dispensers to 31.5'. Up to 2.2 ppm TPHg, 16 ppm TPHd, 4.5 ppm MTBE, and 1.3 ppm TBA were detected in the soil. The site was placed into the LOP program.

Three groundwater monitoring wells were installed to 100' on July 16-19, 2007. The soil from well 1 had ND TPHg, BTEX and a high of 0.027 ppm MTBE. Soil from Well 2 had 0.9 ppm TPHg, ND BTEX, up to 2.8 ppm MTBE, 0.41 ppm TBA, 0.017 ppm TAME. Well 3 had up to 11 ppm TPHg, ND BTEX, up to 17 ppm MTBE, 0.89 ppm TBA, 0.062 ppm TAME. Highest concentrations were between 30-45 ft in the borings. GW encountered at approximately 80 ft bgs

3 SVE wells were installed November 12 and 13, 2007. Wells were drilled to 40'and screened from 25-40'. Up to 0.83 ppm TPHg, 7.8 ppm TPHd, 2 ppmv MTBE, 0.18 ppm TBA and 0.0084 ppm TAME was detected in the soil.

Soil Vapor Extraction was conducted from June 26, 2008 to December 9, 2008 when the system was shut down for a successful rebound test. 44 lbs of TPHg and 37 lbs of MTBE were removed. Influent TPHg went from 41 ppmv to 2.1 ppmv. MTBE started at 47 ppmv and ended at 1.9 ppmv.

Four confirmation borings were proposed; however CB-4 (to be drilled north of MW-3) could not be drilled due to pea gravel in the air-knifed hole and could not be relocated due to an electric transformer and power pole, tree, vent lines, and a water line in the area around the proposed boring location. On March 30 and 31, 2009, three borings were drilled to 85' and soil samples were taken every 5' beginning at 10'. TPHg was detected in one sample (CB-2 at 40') at 0.7 ppm. MTBE was detected in 6 samples from all three borings between 40-55' with a maximum of 0.64 ppm. TBA was detected in one sample (CB-1 at 40') at 0.2 ppm. No BTEX, DIPE, ETBE, TAME or ethanol was detected.

The groundwater was sampled quarterly from the third quarter 2007 until the first quarter 2009. No TPHg or BTEX was detected. All three wells had MTBE (2.2, 29 and 1.3 ppb) during the first sampling event but have been ND<1 ppb since. MW-1 had 24 ppb TBA during the second quarter of 2008.

The consultant is requesting no further action be conducted at the site due to the minimal hydrocarbons remaining in the soil. Even though CB-4 could not be drilled, the ROI for the site is 31', which encompasses the soil in the vicinity of MW-3. Additionally, groundwater analytical data of MW-3 indicates MTBE degraded from 1.3 ppb to ND<1 ppb and has not been detected since the third quarter 2007. Access of the alley to the north of the site was investigated in order to relocate CB-4. The alley is shared with 8 parcels of land and would require a city issued encroachment permit and notification of all the property owners. The alley is trafficked by large trucks and due to a power pole located near the alley, overhead obstructions would require the entire alley be blocked for further soil investigations.

CASE CLOSURE SUMMARY
LEAKING UNDERGROUND FUEL STORAGE TANK PROGRAM

SITE NAME: Shell Perris #121222 SITE NO: 200723493

Subsurface Soil types: fine to coarse grained sands, silty sand, sandy silt and silt
Depth to GW: 80.52 ft bgs to 83.09 ft bgs **Current Depth To GW:** 80.52'
GW Flow: southwest
Remediation: soil vapor extraction
Sensitive Receptors: one active public well located 2212' northeast of site
Other information: UST system currently installed and operating at the site.

NOTE: This closure summary does not include all of the data for this cleanup. It was prepared by the Riverside County DEH for the purpose of providing a brief summary for case closure evaluation. The Closure Report (*Confirmation Boring Assessment Report and Closure Request,* Delta, April 22, 2009) and all other environmental reports pertaining to this cleanup site as well as the DEH Local Oversight Program case file should be reviewed in their entirety to obtain further details regarding this cleanup.

CSM REPORT FOR PUBLIC NOTICING

PROJECT INFORMATION (DATA PULLED FROM GEOTRACKER) - MAP THIS SITE

SITE NAME / ADDRESS	STATUS	STATUS DATE	RELEASE REPORT DATE	AGE OF CASE	CLEANUP OVERSIGHT AGENCIES
MOBIL #18-BLN (Global ID: T0606505176) 3995 N PERRIS BLVD. PERRIS, CA 92571	Completed - Case Closed	6/20/2003	8/20/2001	19	RIVERSIDE COUNTY LOP *(LEAD) - CASE #: 200117733* ***CASEWORKER:*** *SHARON BOLTINGHOUSE* - ***SUPERVISOR:*** *JEFF JOHNSON* SANTA ANA RWQCB (REGION 8) ***CASEWORKER:*** *ROSE SCOTT* - ***SUPERVISOR:*** *Ken Williams*

SITE HISTORY

<NO SITE HISTORY ENTERED>

RESPONSIBLE PARTIES

NAME	ORGANIZATION	CONTACT TYPE	ADDRESS	CITY	EMAIL
JOHNNY MEDRANO	MOBIL OIL CORPORTATION		3700 W. 190TH STREET, TPT-2	TORRANCE	

CLEANUP ACTION INFO

ACTION TYPE	BEGIN DATE	END DATE	PHASE	CONTAMINANT MASS REMOVED	DESCRIPTION
OTHER (USE DESCRIPTION FIELD)	8/20/2001				TO BE DETERMINED

RISK INFORMATION — VIEW CASE REVIEWS

CONTAMINANTS OF CONCERN	CURRENT LAND USE	BENEFICIAL USE	DISCHARGE SOURCE	DATE REPORTED	STOP METHOD	NEARBY / IMPACTED WELLS
Gasoline			Other	8/20/2001	Other Means	0

FREE PRODUCT	OTHER CONSTITUENTS	NAME OF WATER SYSTEM	LAST REGULATORY ACTIVITY	LAST ESI UPLOAD	LAST EDF UPLOAD	EXPECTED CLOSURE DATE	MOST RECENT CLOSURE REQUEST
			5/8/2019	5/31/2019			

CDPH WELLS WITHIN 1500 FEET OF THIS SITE

NONE

CALCULATED FIELDS (BASED ON LATITUDE / LONGITUDE)

APN	GW BASIN NAME	WATERSHED NAME
303100017	San Jacinto (8-005)	San Jacinto Valley - Perris - Perris Valley (802.11)

COUNTY

Riverside

PUBLIC WATER SYSTEM(S)

- **EASTERN MUNICIPAL WD** - P.O. BOX 8300, PERRIS, CA 92572
- **METROPOLITAN WATER DIST. OF SO. CAL.** - P.O. BOX 54153, LOS ANGELES, CA 90054

MOST RECENT CONCENTRATIONS OF PETROLEUM CONSTITUENTS IN GROUNDWATER — VIEW ESI SUBMITTALS

NO GROUNDWATER DATA HAS BEEN SUBMITTED TO GEOTRACKER ESI FOR THIS SITE

MOST RECENT CONCENTRATIONS OF PETROLEUM CONSTITUENTS IN SOIL — VIEW ESI SUBMITTALS

NO SOIL DATA HAS BEEN SUBMITTED TO GEOTRACKER ESI FOR THIS SITE

MOST RECENT GEO_WELL DATA — VIEW ESI SUBMITTALS

NO GEO_WELL DATA HAS BEEN SUBMITTED TO GEOTRACKER ESI FOR THIS SITE

Appendix E

PDP
155 Ramona Expressway
Perris, CA 92571

Inquiry Number: 5989294.2s
February 27, 2020

The EDR Radius Map™ Report with GeoCheck®

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

TABLE OF CONTENTS

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E 2247-16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E 1528-14) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

155 RAMONA EXPRESSWAY
PERRIS, CA 92571

COORDINATES

Latitude (North):	33.8436700 - 33˚ 50' 37.21''
Longitude (West):	117.2285200 - 117˚ 13' 42.67''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	478857.6
UTM Y (Meters):	3744652.2
Elevation:	1460 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	5641330 PERRIS, CA
Version Date:	2012

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20140603
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
155 RAMONA EXPRESSWAY
PERRIS, CA 92571

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
A1	WALGREENS #13176	3984 INDIAN AVE	HAZNET, HWTS	Higher	566, 0.107, WNW
A2	PACKAGING SERVICES C	3984 INDIAN AVE.	HAZNET, HWTS	Higher	566, 0.107, WNW
A3	HEALTHWORKS MED GROU	3984 INDIAN AVE	RCRA NonGen / NLR	Higher	566, 0.107, WNW
A4	LOWE'S #966	3984 INDIAN AVE	CERS HAZ WASTE, CERS TANKS, CERS	Higher	566, 0.107, WNW
A5	LOWES RDC 966	3984 INDIAN AVE	HAZNET, HWTS	Higher	566, 0.107, WNW
A6	LOWES CA RDC #966	3984 INDIAN AVE	HAZNET, HWTS	Higher	566, 0.107, WNW
A7	LOWES HOME IMPROVEME	3984 INDIAN AVE	RCRA-LQG, FINDS, ECHO	Higher	566, 0.107, WNW
A8	MY HEALTH CENTER AT	3984 INDIAN AVE	HWTS	Higher	566, 0.107, WNW
A9	LOWES CALIFORNIA REG	3984 INDIAN AVE	HAZNET, NPDES, CIWQS, CERS, HWTS	Higher	566, 0.107, WNW
A10	KNIGHT TRANSPORTATIO	3984 INDIAN AVE	HAZNET, HWTS	Higher	566, 0.107, WNW
A11	LOWE'S #966	3984 INDIAN AVE	AST	Higher	566, 0.107, WNW
12	JNM SALES INC.	3900 INDIAN AVE.	HWTS	Higher	815, 0.154, SW
B13	MOBIL #18-BLN	3995 PERRIS BLVD	SWEEPS UST, CA FID UST	Lower	819, 0.155, ENE
B14	MOBIL STATION #18-BL	3995 PERRIS BLVD	UST	Lower	819, 0.155, ENE
B15	1X MOBIL OIL CORP ST	3995 PERRIS BLVD	HWTS	Lower	819, 0.155, ENE
C16	EXPRESS AM PM	4040 N PERRIS BLVD	CERS HAZ WASTE, CERS TANKS, HAZNET, CERS, HWTS	Lower	824, 0.156, NE
C17	SAFAR & SAFAR BROTHE	4040 N PERRIS BLVD	HWTS	Lower	824, 0.156, NE
C18	SAFAR & SAFAR BROTHE	4040 N PERRIS BLVD	UST	Lower	824, 0.156, NE
C19		4040 N PERRIS BLVD	RCRA NonGen / NLR	Lower	824, 0.156, NE
D20	ORTEGA'S WHEELS, TIR	3865A N PERRIS BLVD	HWTS	Lower	870, 0.165, ESE
D21	RENTERIA CUSTOM WHEE	3865 N PERRIS BLVD S	HWTS	Lower	873, 0.165, ESE
D22	BEST FOR LESS TIRES	3865 N PERRIS BLVD U	CERS HAZ WASTE, HAZNET, CERS, HWTS	Lower	873, 0.165, ESE
B23	EXXONMOBIL OIL CORP	3995 NO PERRIS BLVD	HAZNET, HWTS	Lower	902, 0.171, East
B24	CIRCLE K STORE #2709	3995 N PERRIS BLVD	HAZNET, HWTS	Lower	902, 0.171, East
B25	MOBIL #18-BLN	3995 N PERRIS BLVD.	LUST, CERS	Lower	902, 0.171, East
B26	MOBIL #18-BLN	3995 N PERRIS BLVD	LUST, CHMIRS	Lower	902, 0.171, East
B27	CIRCLE K STORES INC.	3995 N PERRIS BLVD	CERS HAZ WASTE, CERS TANKS, CHMIRS, CERS	Lower	902, 0.171, East
B28	EXXON MOBIL OIL COPR	3995 N PERRIS BLVD	RCRA-SQG, UST, FINDS, ECHO	Lower	902, 0.171, East
B29	CIRCLE K STORE #2709	3995 N PERRIS BLVD	RCRA NonGen / NLR	Lower	902, 0.171, East
B30	MOBIL #18-BLN	3995 NORTH PERRIS BL	LUST	Lower	902, 0.171, East
D31	MALKI LIVING TRUST,T	3845 PERRIS BLVD	HWTS	Lower	908, 0.172, ESE
E32	HERITAGE DEVELOPMENT	4025 NORTH PERRIS BL	HAZNET, HWTS	Lower	985, 0.187, NE
E33	JB HUNT TRANSPORT IN	4039 N PERRIS BLVD	HAZNET, HWTS	Lower	998, 0.189, ENE
E34	TEXACO SERVICE STATI	4039 N PERRIS	LUST, CERS HAZ WASTE, CERS TANKS, RCRA NonGen /...	Lower	998, 0.189, ENE
E35	TEXACO	4039 N PERRIS BLVD	HAZNET, HWTS	Lower	998, 0.189, ENE
E36	TESORO SHELL 68585	4039 N PERRIS BLVD	RCRA NonGen / NLR	Lower	998, 0.189, ENE
E37	TESORO (SHELL) 68585	4039 N PERRIS BLVD	UST	Lower	998, 0.189, ENE
E38	TESORO SHELL 68585	4039 N PERRIS BLVD	HAZNET, HWTS	Lower	998, 0.189, ENE
F39	RAMONA EXPRESSWAY CE	3845 N PERRIS BLVD	RCRA-LQG	Lower	1258, 0.238, SE

MAPPED SITES SUMMARY

Target Property Address:
155 RAMONA EXPRESSWAY
PERRIS, CA 92571

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
F40	ATLAS OIL INC	3845 N PERRIS BLVD	HWTS	Lower	1258, 0.238, SE
F41	WEST COAST YAMAHA, I	3845 N PERRIS BLVD	HAZNET, HWTS	Lower	1258, 0.238, SE
42	PERRIS VALLEY PRINTI	85 E RAMONA EXPRSWY	HAZNET, HWTS	Lower	1269, 0.240, East

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL - National Priority List
Proposed NPL - Proposed National Priority List Sites
NPL LIENS - Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL - National Priority List Deletions

Federal CERCLIS list

FEDERAL FACILITY - Federal Facility Site Information listing
SEMS - Superfund Enterprise Management System

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE - Superfund Enterprise Management System Archive

Federal RCRA CORRACTS facilities list

CORRACTS - Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF - RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-VSQG - RCRA - Very Small Quantity Generators (Formerly Conditionally Exempt Small Quantity Generators)

Federal institutional controls / engineering controls registries

LUCIS - Land Use Control Information System
US ENG CONTROLS - Engineering Controls Sites List
US INST CONTROL - Sites with Institutional Controls

EXECUTIVE SUMMARY

Federal ERNS list

ERNS - - - - - Emergency Response Notification System

State- and tribal - equivalent NPL

RESPONSE - - - - - State Response Sites

State- and tribal - equivalent CERCLIS

ENVIROSTOR - - - - - EnviroStor Database

State and tribal landfill and/or solid waste disposal site lists

SWF/LF - - - - - Solid Waste Information System

State and tribal leaking storage tank lists

INDIAN LUST - - - - - Leaking Underground Storage Tanks on Indian Land
CPS-SLIC - - - - - Statewide SLIC Cases

State and tribal registered storage tank lists

FEMA UST - - - - - Underground Storage Tank Listing
INDIAN UST - - - - - Underground Storage Tanks on Indian Land

State and tribal voluntary cleanup sites

VCP - - - - - Voluntary Cleanup Program Properties
INDIAN VCP - - - - - Voluntary Cleanup Priority Listing

State and tribal Brownfields sites

BROWNFIELDS - - - - - Considered Brownfieds Sites Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS - - - - - A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT - - - - - Waste Management Unit Database
SWRCY - - - - - Recycler Database
HAULERS - - - - - Registered Waste Tire Haulers Listing
INDIAN ODI - - - - - Report on the Status of Open Dumps on Indian Lands
ODI - - - - - Open Dump Inventory
DEBRIS REGION 9 - - - - - Torres Martinez Reservation Illegal Dump Site Locations
IHS OPEN DUMPS - - - - - Open Dumps on Indian Land

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL - - - - - Delisted National Clandestine Laboratory Register

EXECUTIVE SUMMARY

HIST Cal-Sites - - - - Historical Calsites Database
SCH - - - - School Property Evaluation Program
CDL - - - - Clandestine Drug Labs
Toxic Pits - - - - Toxic Pits Cleanup Act Sites
US CDL - - - - National Clandestine Laboratory Register
PFAS - - - - PFAS Contamination Site Location Listing

Local Lists of Registered Storage Tanks

HIST UST - - - - Hazardous Substance Storage Container Database

Local Land Records

LIENS - - - - Environmental Liens Listing
LIENS 2 - - - - CERCLA Lien Information
DEED - - - - Deed Restriction Listing

Records of Emergency Release Reports

HMIRS - - - - Hazardous Materials Information Reporting System
CHMIRS - - - - California Hazardous Material Incident Report System
LDS - - - - Land Disposal Sites Listing
MCS - - - - Military Cleanup Sites Listing
SPILLS 90 - - - - SPILLS 90 data from FirstSearch

Other Ascertainable Records

FUDS - - - - Formerly Used Defense Sites
DOD - - - - Department of Defense Sites
SCRD DRYCLEANERS - - - - State Coalition for Remediation of Drycleaners Listing
US FIN ASSUR - - - - Financial Assurance Information
EPA WATCH LIST - - - - EPA WATCH LIST
2020 COR ACTION - - - - 2020 Corrective Action Program List
TSCA - - - - Toxic Substances Control Act
TRIS - - - - Toxic Chemical Release Inventory System
SSTS - - - - Section 7 Tracking Systems
ROD - - - - Records Of Decision
RMP - - - - Risk Management Plans
RAATS - - - - RCRA Administrative Action Tracking System
PRP - - - - Potentially Responsible Parties
PADS - - - - PCB Activity Database System
ICIS - - - - Integrated Compliance Information System
FTTS - - - - FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
MLTS - - - - Material Licensing Tracking System
COAL ASH DOE - - - - Steam-Electric Plant Operation Data
COAL ASH EPA - - - - Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER - - - - PCB Transformer Registration Database
RADINFO - - - - Radiation Information Database
HIST FTTS - - - - FIFRA/TSCA Tracking System Administrative Case Listing
DOT OPS - - - - Incident and Accident Data
CONSENT - - - - Superfund (CERCLA) Consent Decrees
INDIAN RESERV - - - - Indian Reservations
FUSRAP - - - - Formerly Utilized Sites Remedial Action Program
UMTRA - - - - Uranium Mill Tailings Sites

EXECUTIVE SUMMARY

LEAD SMELTERS	Lead Smelter Sites
US AIRS	Aerometric Information Retrieval System Facility Subsystem
US MINES	Mines Master Index File
ABANDONED MINES	Abandoned Mines
FINDS	Facility Index System/Facility Registry System
UXO	Unexploded Ordnance Sites
DOCKET HWC	Hazardous Waste Compliance Docket Listing
ECHO	Enforcement & Compliance History Information
FUELS PROGRAM	EPA Fuels Program Registered Listing
CA BOND EXP. PLAN	Bond Expenditure Plan
Cortese	"Cortese" Hazardous Waste & Substances Sites List
CUPA Listings	CUPA Resources List
DRYCLEANERS	Cleaner Facilities
EMI	Emissions Inventory Data
ENF	Enforcement Action Listing
Financial Assurance	Financial Assurance Information Listing
HAZNET	Facility and Manifest Data
ICE	ICE
HIST CORTESE	Hazardous Waste & Substance Site List
HWP	EnviroStor Permitted Facilities Listing
HWT	Registered Hazardous Waste Transporter Database
MINES	Mines Site Location Listing
MWMP	Medical Waste Management Program Listing
NPDES	NPDES Permits Listing
PEST LIC	Pesticide Regulation Licenses Listing
PROC	Certified Processors Database
Notify 65	Proposition 65 Records
UIC	UIC Listing
UIC GEO	UIC GEO (GEOTRACKER)
WASTEWATER PITS	Oil Wastewater Pits Listing
WDS	Waste Discharge System
WIP	Well Investigation Program Case List
MILITARY PRIV SITES	MILITARY PRIV SITES (GEOTRACKER)
PROJECT	PROJECT (GEOTRACKER)
WDR	Waste Discharge Requirements Listing
CIWQS	California Integrated Water Quality System
CERS	CERS
NON-CASE INFO	NON-CASE INFO (GEOTRACKER)
OTHER OIL GAS	OTHER OIL & GAS (GEOTRACKER)
PROD WATER PONDS	PROD WATER PONDS (GEOTRACKER)
SAMPLING POINT	SAMPLING POINT (GEOTRACKER)
WELL STIM PROJ	Well Stimulation Project (GEOTRACKER)
MINES MRDS	Mineral Resources Data System

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP	EDR Proprietary Manufactured Gas Plants
EDR Hist Auto	EDR Exclusive Historical Auto Stations
EDR Hist Cleaner	EDR Exclusive Historical Cleaners

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF	Recovered Government Archive Solid Waste Facilities List

EXECUTIVE SUMMARY

RGA LUST - - - - - - - - - - - - - - - - - - Recovered Government Archive Leaking Underground Storage Tank

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

STANDARD ENVIRONMENTAL RECORDS

Federal RCRA generators list

RCRA-LQG: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

A review of the RCRA-LQG list, as provided by EDR, and dated 12/16/2019 has revealed that there are 2 RCRA-LQG sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
LOWES HOME IMPROVEME EPA ID:: CAR000096867	***3984 INDIAN AVE***	***WNW 0 - 1/8 (0.107 mi.)***	***A7***	***100***

Lower Elevation	Address	Direction / Distance	Map ID	Page
RAMONA EXPRESSWAY CE EPA ID:: CAP000193821	3845 N PERRIS BLVD	SE 1/8 - 1/4 (0.238 mi.)	F39	301

RCRA-SQG: RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

A review of the RCRA-SQG list, as provided by EDR, and dated 12/16/2019 has revealed that there is 1 RCRA-SQG site within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
EXXON MOBIL OIL COPR EPA ID:: CAL000055799	***3995 N PERRIS BLVD***	***E 1/8 - 1/4 (0.171 mi.)***	***B28***	***245***

EXECUTIVE SUMMARY

State and tribal leaking storage tank lists

LUST: Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

A review of the LUST list, as provided by EDR, has revealed that there are 4 LUST sites within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
MOBIL #18-BLN	***3995 N PERRIS BLVD.***	***E 1/8 - 1/4 (0.171 mi.)***	***B25***	***231***
Database: LUST, Date of Government Version: 12/09/2019 Global Id: T0606505176 Status: Completed - Case Closed				
MOBIL #18-BLN	***3995 N PERRIS BLVD***	***E 1/8 - 1/4 (0.171 mi.)***	***B26***	***233***
Database: RIVERSIDE CO. LUST, Date of Government Version: 10/17/2019 Facility Id: 200117733 Facility Status: 9				
MOBIL #18-BLN	3995 NORTH PERRIS BL	E 1/8 - 1/4 (0.171 mi.)	B30	247
Database: LUST REG 8, Date of Government Version: 02/14/2005 Facility Status: Case Closed Global ID: T0606505176				
TEXACO SERVICE STATI	***4039 N PERRIS***	***ENE 1/8 - 1/4 (0.189 mi.)***	***E34***	***252***
Database: LUST, Date of Government Version: 12/09/2019 Database: RIVERSIDE CO. LUST, Date of Government Version: 10/17/2019 Facility Id: 200723493 Global Id: T0606524504 Facility Status: 9 Status: Completed - Case Closed				

State and tribal registered storage tank lists

UST: The Underground Storage Tank database contains registered USTs. USTs are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA). The data come from the State Water Resources Control Board’s Hazardous Substance Storage Container Database.

A review of the UST list, as provided by EDR, has revealed that there are 4 UST sites within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
MOBIL STATION #18-BL	3995 PERRIS BLVD	ENE 1/8 - 1/4 (0.155 mi.)	B14	121
Database: UST, Date of Government Version: 12/09/2019 Facility Id: 512				
SAFAR & SAFAR BROTHE	4040 N PERRIS BLVD	NE 1/8 - 1/4 (0.156 mi.)	C18	148
Database: UST, Date of Government Version: 12/09/2019 Database: RIVERSIDE CO. UST, Date of Government Version: 10/17/2019				
EXXON MOBIL OIL COPR	***3995 N PERRIS BLVD***	***E 1/8 - 1/4 (0.171 mi.)***	***B28***	***245***
Database: UST, Date of Government Version: 12/09/2019 Database: RIVERSIDE CO. UST, Date of Government Version: 10/17/2019				

Facility Id: FA0036723

TESORO (SHELL) 68585	4039 N PERRIS BLVD	ENE 1/8 - 1/4 (0.189 mi.)	E37	281

Database: UST, Date of Government Version: 12/09/2019
Database: RIVERSIDE CO. UST, Date of Government Version: 10/17/2019
Facility Id: 753
Facility Id: FA0019645

AST: A listing of aboveground storage tank petroleum storage tank locations.

A review of the AST list, as provided by EDR, has revealed that there is 1 AST site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
LOWE'S #966	3984 INDIAN AVE	WNW 0 - 1/8 (0.107 mi.)	A11	118

Database: AST, Date of Government Version: 07/06/2016

ADDITIONAL ENVIRONMENTAL RECORDS

Local Lists of Hazardous waste / Contaminated Sites

CERS HAZ WASTE: List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Hazardous Chemical Management, Hazardous Waste Onsite Treatment, Household Hazardous Waste Collection, Hazardous Waste Generator, and RCRA LQ HW Generator programs.

A review of the CERS HAZ WASTE list, as provided by EDR, and dated 10/21/2019 has revealed that there are 5 CERS HAZ WASTE sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
LOWE'S #966	***3984 INDIAN AVE***	***WNW 0 - 1/8 (0.107 mi.)***	***A4***	***16***

Lower Elevation	Address	Direction / Distance	Map ID	Page
EXPRESS AM PM	***4040 N PERRIS BLVD***	***NE 1/8 - 1/4 (0.156 mi.)***	***C16***	***122***
BEST FOR LESS TIRES	***3865 N PERRIS BLVD U***	***ESE 1/8 - 1/4 (0.165 mi.)***	***D22***	***151***
CIRCLE K STORES INC.	***3995 N PERRIS BLVD***	***E 1/8 - 1/4 (0.171 mi.)***	***B27***	***234***
TEXACO SERVICE STATI	***4039 N PERRIS***	***ENE 1/8 - 1/4 (0.189 mi.)***	***E34***	***252***

Local Lists of Registered Storage Tanks

SWEEPS UST: Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

A review of the SWEEPS UST list, as provided by EDR, and dated 06/01/1994 has revealed that there is 1 SWEEPS UST site within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
MOBIL #18-BLN	***3995 PERRIS BLVD***	***ENE 1/8 - 1/4 (0.155 mi.)***	***B13***	***119***
Status: A Tank Status: A Comp Number: 39996				

CA FID UST: The Facility Inventory Database contains active and inactive underground storage tank locations. The source is the State Water Resource Control Board.

A review of the CA FID UST list, as provided by EDR, and dated 10/31/1994 has revealed that there is 1 CA FID UST site within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
MOBIL #18-BLN	***3995 PERRIS BLVD***	***ENE 1/8 - 1/4 (0.155 mi.)***	***B13***	***119***
Facility Id: 33007030 Status: A				

CERS TANKS: List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Aboveground Petroleum Storage and Underground Storage Tank regulatory programs.

A review of the CERS TANKS list, as provided by EDR, and dated 10/21/2019 has revealed that there are 4 CERS TANKS sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
LOWE’S #966	***3984 INDIAN AVE***	***WNW 0 - 1/8 (0.107 mi.)***	***A4***	***16***

Lower Elevation	Address	Direction / Distance	Map ID	Page
EXPRESS AM PM	***4040 N PERRIS BLVD***	***NE 1/8 - 1/4 (0.156 mi.)***	***C16***	***122***
CIRCLE K STORES INC.	***3995 N PERRIS BLVD***	***E 1/8 - 1/4 (0.171 mi.)***	***B27***	***234***
TEXACO SERVICE STATI	***4039 N PERRIS***	***ENE 1/8 - 1/4 (0.189 mi.)***	***E34***	***252***

Other Ascertainable Records

RCRA NonGen / NLR: RCRAInfo is EPA’s comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

A review of the RCRA NonGen / NLR list, as provided by EDR, and dated 12/16/2019 has revealed that there are 5 RCRA NonGen / NLR sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
HEALTHWORKS MED GROU	3984 INDIAN AVE	WNW 0 - 1/8 (0.107 mi.)	A3	15
EPA ID:: CAL000445422				

Lower Elevation	Address	Direction / Distance	Map ID	Page
Not reported	4040 N PERRIS BLVD	NE 1/8 - 1/4 (0.156 mi.)	C19	149

EPA ID:: CAL000341521				
CIRCLE K STORE #2709 EPA ID:: CAL000369454	3995 N PERRIS BLVD	E 1/8 - 1/4 (0.171 mi.)	B29	246
TEXACO SERVICE STATI EPA ID:: CAR000125716	***4039 N PERRIS***	***ENE 1/8 - 1/4 (0.189 mi.)***	***E34***	***252***
TESORO SHELL 68585 EPA ID:: CAL000321813	4039 N PERRIS BLVD	ENE 1/8 - 1/4 (0.189 mi.)	E36	280

HWTS: -> Description here.

A review of the HWTS list, as provided by EDR, and dated 10/15/2019 has revealed that there are 25 HWTS sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
WALGREENS #13176	***3984 INDIAN AVE***	***WNW 0 - 1/8 (0.107 mi.)***	***A1***	***9***
PACKAGING SERVICES C	***3984 INDIAN AVE.***	***WNW 0 - 1/8 (0.107 mi.)***	***A2***	***13***
LOWES RDC 966	***3984 INDIAN AVE***	***WNW 0 - 1/8 (0.107 mi.)***	***A5***	***22***
LOWES CA RDC #966	***3984 INDIAN AVE***	***WNW 0 - 1/8 (0.107 mi.)***	***A6***	***99***
MY HEALTH CENTER AT	3984 INDIAN AVE	WNW 0 - 1/8 (0.107 mi.)	A8	105
LOWES CALIFORNIA REG	***3984 INDIAN AVE***	***WNW 0 - 1/8 (0.107 mi.)***	***A9***	***106***
KNIGHT TRANSPORTATIO	***3984 INDIAN AVE***	***WNW 0 - 1/8 (0.107 mi.)***	***A10***	***116***
JNM SALES INC.	3900 INDIAN AVE.	SW 1/8 - 1/4 (0.154 mi.)	12	119

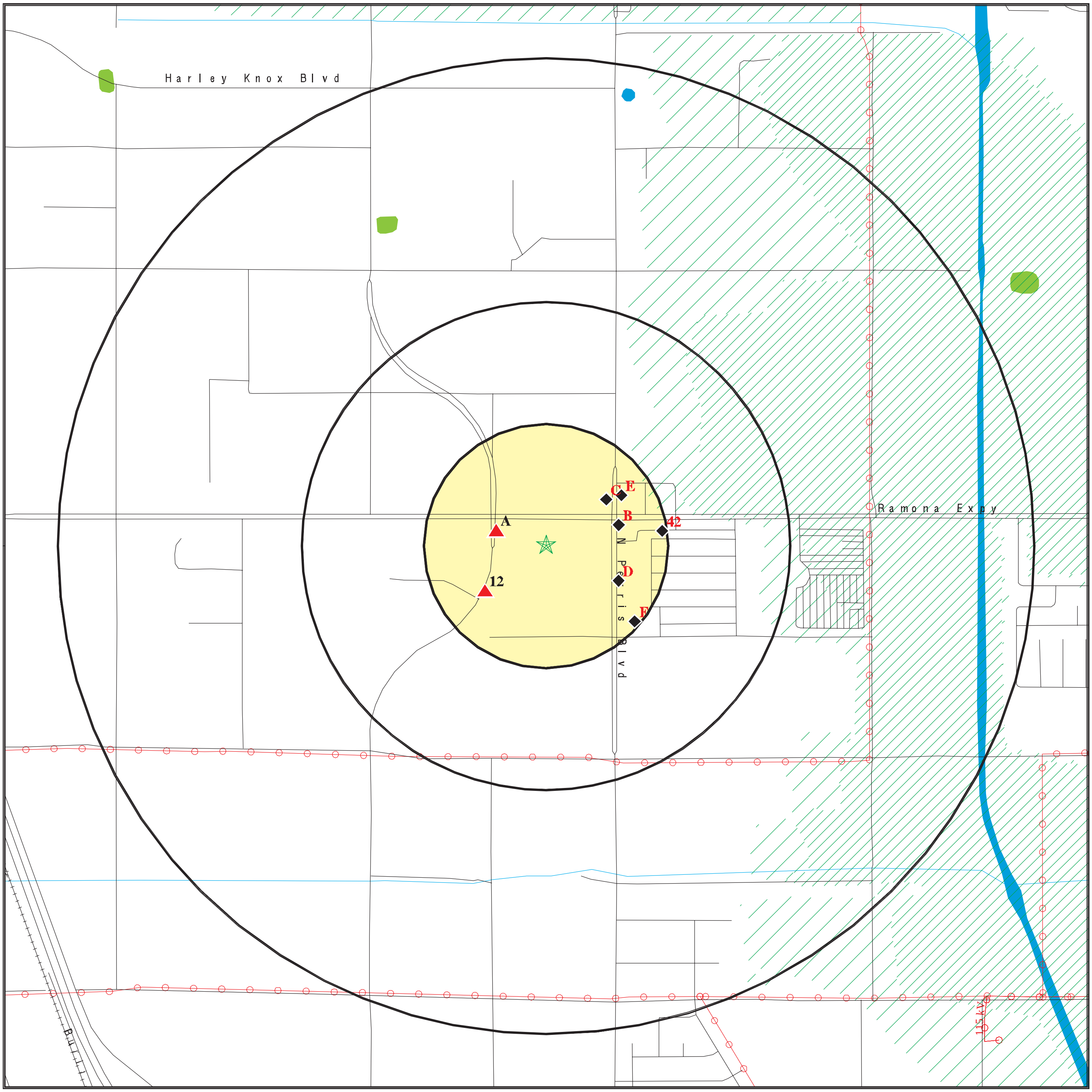
Lower Elevation	Address	Direction / Distance	Map ID	Page
1X MOBIL OIL CORP ST	3995 PERRIS BLVD	ENE 1/8 - 1/4 (0.155 mi.)	B15	121
EXPRESS AM PM	***4040 N PERRIS BLVD***	***NE 1/8 - 1/4 (0.156 mi.)***	***C16***	***122***
SAFAR & SAFAR BROTHE	4040 N PERRIS BLVD	NE 1/8 - 1/4 (0.156 mi.)	C17	147
ORTEGA’S WHEELS, TIR	3865A N PERRIS BLVD	ESE 1/8 - 1/4 (0.165 mi.)	D20	150
RENTERIA CUSTOM WHEE	3865 N PERRIS BLVD S	ESE 1/8 - 1/4 (0.165 mi.)	D21	151
BEST FOR LESS TIRES	***3865 N PERRIS BLVD U***	***ESE 1/8 - 1/4 (0.165 mi.)***	***D22***	***151***
EXXONMOBIL OIL CORP	***3995 NO PERRIS BLVD***	***E 1/8 - 1/4 (0.171 mi.)***	***B23***	***173***
CIRCLE K STORE #2709	***3995 N PERRIS BLVD***	***E 1/8 - 1/4 (0.171 mi.)***	***B24***	***219***
MALKI LIVING TRUST,T	3845 PERRIS BLVD	ESE 1/8 - 1/4 (0.172 mi.)	D31	249
HERITAGE DEVELOPMENT	***4025 NORTH PERRIS BL***	***NE 1/8 - 1/4 (0.187 mi.)***	***E32***	***249***
JB HUNT TRANSPORT IN	***4039 N PERRIS BLVD***	***ENE 1/8 - 1/4 (0.189 mi.)***	***E33***	***250***
TEXACO SERVICE STATI	***4039 N PERRIS***	***ENE 1/8 - 1/4 (0.189 mi.)***	***E34***	***252***
TEXACO	***4039 N PERRIS BLVD***	***ENE 1/8 - 1/4 (0.189 mi.)***	***E35***	***279***
TESORO SHELL 68585	***4039 N PERRIS BLVD***	***ENE 1/8 - 1/4 (0.189 mi.)***	***E38***	***282***
ATLAS OIL INC	3845 N PERRIS BLVD	SE 1/8 - 1/4 (0.238 mi.)	F40	302
WEST COAST YAMAHA, I	***3845 N PERRIS BLVD***	***SE 1/8 - 1/4 (0.238 mi.)***	***F41***	***303***
PERRIS VALLEY PRINTI	***85 E RAMONA EXPRSWY***	***E 1/8 - 1/4 (0.240 mi.)***	***42***	***310***

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 1 records.

Site Name	Database(s)
	CDL

OVERVIEW MAP - 5989294.2S



Target Property
Sites at elevations higher than or equal to the target property
Sites at elevations lower than the target property
Manufactured Gas Plants
National Priority List Sites
Dept. Defense Sites

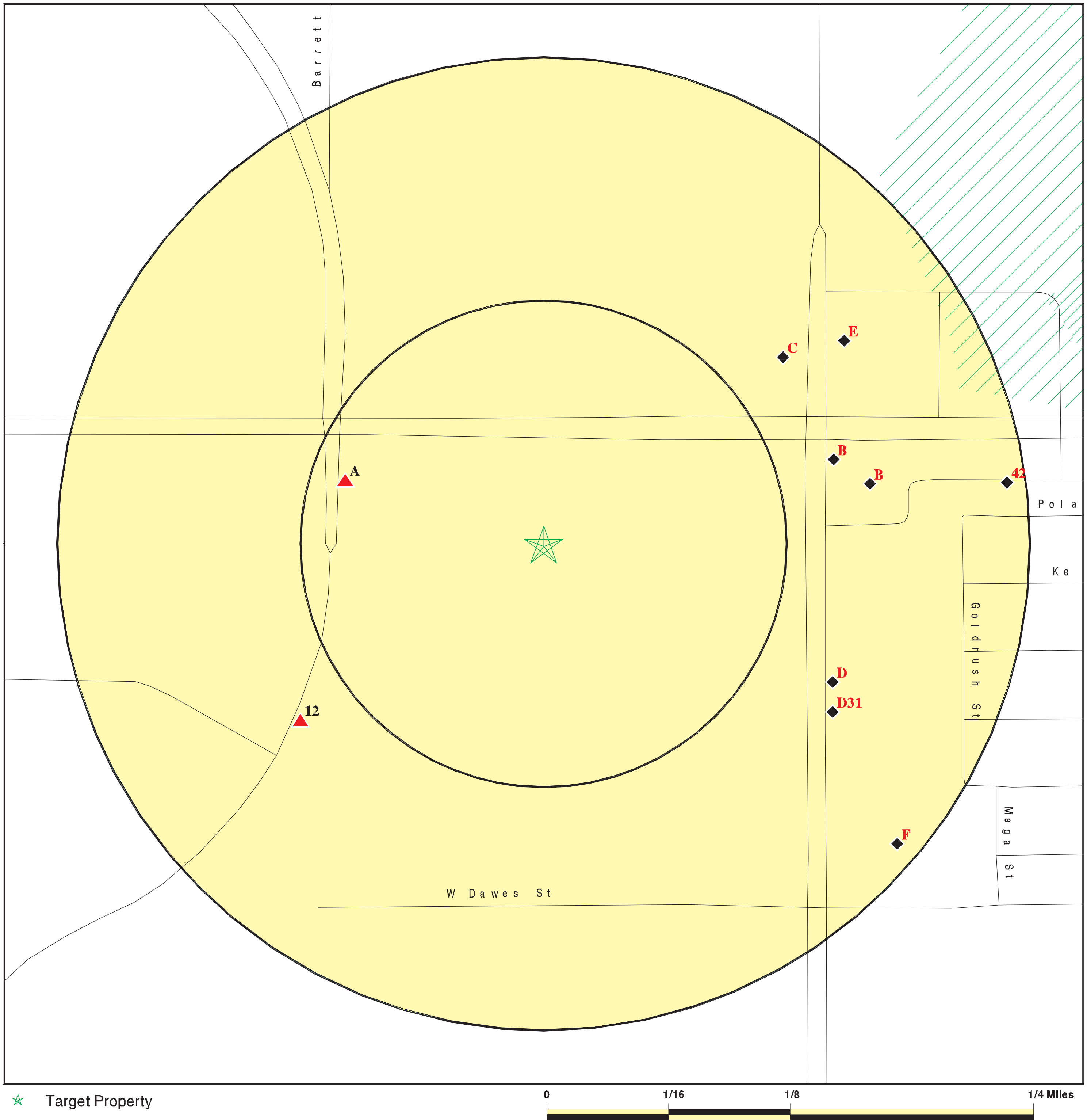
Indian Reservations BIA
Power transmission lines
Special Flood Hazard Area (1%)
0.2% Annual Chance Flood Hazard
National Wetland Inventory
State Wetlands

Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: PDP ADDRESS: 155 Ramona Expressway Perris CA 92571 LAT/LONG: 33.84367 / 117.22852	CLIENT: Krazan & Associates, Inc. CONTACT: Bill Cooper INQUIRY #: 5989294.2s DATE: February 27, 2020 5:13 pm

DETAIL MAP - 5989294.2S



Target Property
Sites at elevations higher than or equal to the target property
Sites at elevations lower than the target property
Manufactured Gas Plants
Sensitive Receptors
National Priority List Sites
Dept. Defense Sites

Indian Reservations BIA
Special Flood Hazard Area (1%)
0.2% Annual Chance Flood Hazard

Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	PDP	CLIENT:	Krazan & Associates, Inc.
ADDRESS:	155 Ramona Expressway Perris CA 92571	CONTACT:	Bill Cooper
		INQUIRY #:	5989294.2s
LAT/LONG:	33.84367 / 117.22852	DATE:	February 27, 2020 5:18 pm

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	1.000		0	0	0	0	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Federal CERCLIS NFRAP site list								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		1	1	NR	NR	NR	2
RCRA-SQG	0.250		0	1	NR	NR	NR	1
RCRA-VSQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	TP		NR	NR	NR	NR	NR	0
State- and tribal - equivalent NPL								
RESPONSE	1.000		0	0	0	0	NR	0
State- and tribal - equivalent CERCLIS								
ENVIROSTOR	1.000		0	0	0	0	NR	0
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		0	0	0	NR	NR	0
State and tribal leaking storage tank lists								
LUST	0.500		0	4	0	NR	NR	4

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN LUST	0.500		0	0	0	NR	NR	0
CPS-SLIC	0.500		0	0	0	NR	NR	0
State and tribal registered storage tank lists								
FEMA UST	0.250		0	0	NR	NR	NR	0
UST	0.250		0	4	NR	NR	NR	4
AST	0.250		1	0	NR	NR	NR	1
INDIAN UST	0.250		0	0	NR	NR	NR	0
State and tribal voluntary cleanup sites								
VCP	0.500		0	0	0	NR	NR	0
INDIAN VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0

ADDITIONAL ENVIRONMENTAL RECORDS

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
WMUDS/SWAT	0.500		0	0	0	NR	NR	0
SWRCY	0.500		0	0	0	NR	NR	0
HAULERS	TP		NR	NR	NR	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	TP		NR	NR	NR	NR	NR	0
HIST Cal-Sites	1.000		0	0	0	0	NR	0
SCH	0.250		0	0	NR	NR	NR	0
CDL	TP		NR	NR	NR	NR	NR	0
Toxic Pits	1.000		0	0	0	0	NR	0
CERS HAZ WASTE	0.250		1	4	NR	NR	NR	5
US CDL	TP		NR	NR	NR	NR	NR	0
PFAS	0.500		0	0	0	NR	NR	0
Local Lists of Registered Storage Tanks								
SWEEPS UST	0.250		0	1	NR	NR	NR	1
HIST UST	0.250		0	0	NR	NR	NR	0
CA FID UST	0.250		0	1	NR	NR	NR	1
CERS TANKS	0.250		1	3	NR	NR	NR	4
Local Land Records								
LIENS	TP		NR	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
LIENS 2	TP		NR	NR	NR	NR	NR	0
DEED	0.500		0	0	0	NR	NR	0
Records of Emergency Release Reports								
HMIRS	TP		NR	NR	NR	NR	NR	0
CHMIRS	TP		NR	NR	NR	NR	NR	0
LDS	TP		NR	NR	NR	NR	NR	0
MCS	TP		NR	NR	NR	NR	NR	0
SPILLS 90	TP		NR	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		1	4	NR	NR	NR	5
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	TP		NR	NR	NR	NR	NR	0
EPA WATCH LIST	TP		NR	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	TP		NR	NR	NR	NR	NR	0
TRIS	TP		NR	NR	NR	NR	NR	0
SSTS	TP		NR	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	TP		NR	NR	NR	NR	NR	0
RAATS	TP		NR	NR	NR	NR	NR	0
PRP	TP		NR	NR	NR	NR	NR	0
PADS	TP		NR	NR	NR	NR	NR	0
ICIS	TP		NR	NR	NR	NR	NR	0
FTTS	TP		NR	NR	NR	NR	NR	0
MLTS	TP		NR	NR	NR	NR	NR	0
COAL ASH DOE	TP		NR	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	TP		NR	NR	NR	NR	NR	0
RADINFO	TP		NR	NR	NR	NR	NR	0
HIST FTTS	TP		NR	NR	NR	NR	NR	0
DOT OPS	TP		NR	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	TP		NR	NR	NR	NR	NR	0
US AIRS	TP		NR	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	0.250		0	0	NR	NR	NR	0
FINDS	TP		NR	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0
DOCKET HWC	TP		NR	NR	NR	NR	NR	0
ECHO	TP		NR	NR	NR	NR	NR	0
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
CA BOND EXP. PLAN	1.000		0	0	0	0	NR	0
Cortese	0.500		0	0	0	NR	NR	0
CUPA Listings	0.250		0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
EMI	TP		NR	NR	NR	NR	NR	0
ENF	TP		NR	NR	NR	NR	NR	0
Financial Assurance	TP		NR	NR	NR	NR	NR	0
HAZNET	TP		NR	NR	NR	NR	NR	0
ICE	TP		NR	NR	NR	NR	NR	0
HIST CORTESE	0.500		0	0	0	NR	NR	0
HWP	1.000		0	0	0	0	NR	0
HWT	0.250		0	0	NR	NR	NR	0
MINES	0.250		0	0	NR	NR	NR	0
MWMP	0.250		0	0	NR	NR	NR	0
NPDES	TP		NR	NR	NR	NR	NR	0
PEST LIC	TP		NR	NR	NR	NR	NR	0
PROC	0.500		0	0	0	NR	NR	0
Notify 65	1.000		0	0	0	0	NR	0
UIC	TP		NR	NR	NR	NR	NR	0
UIC GEO	TP		NR	NR	NR	NR	NR	0
WASTEWATER PITS	0.500		0	0	0	NR	NR	0
WDS	TP		NR	NR	NR	NR	NR	0
WIP	0.250		0	0	NR	NR	NR	0
MILITARY PRIV SITES	TP		NR	NR	NR	NR	NR	0
PROJECT	TP		NR	NR	NR	NR	NR	0
WDR	TP		NR	NR	NR	NR	NR	0
CIWQS	TP		NR	NR	NR	NR	NR	0
CERS	TP		NR	NR	NR	NR	NR	0
NON-CASE INFO	TP		NR	NR	NR	NR	NR	0
OTHER OIL GAS	TP		NR	NR	NR	NR	NR	0
PROD WATER PONDS	TP		NR	NR	NR	NR	NR	0
SAMPLING POINT	TP		NR	NR	NR	NR	NR	0
WELL STIM PROJ	TP		NR	NR	NR	NR	NR	0
MINES MRDS	TP		NR	NR	NR	NR	NR	0
HWTS	0.250		7	18	NR	NR	NR	25
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125		0	NR	NR	NR	NR	0
EDR Hist Cleaner	0.125		0	NR	NR	NR	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA LF	TP		NR	NR	NR	NR	NR	0
RGA LUST	TP		NR	NR	NR	NR	NR	0
- Totals --		0	12	41	0	0	0	53

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

PDP
155 RAMONA EXPRESSWAY
PERRIS, CA 92571

TARGET PROPERTY COORDINATES

Latitude (North):	33.84367 - 33˚ 50’ 37.21’’
Longitude (West):	117.22852 - 117˚ 13’ 42.67’’
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	478857.6
UTM Y (Meters):	3744652.2
Elevation:	1460 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	5641330 PERRIS, CA
Version Date:	2012

EDR’s GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

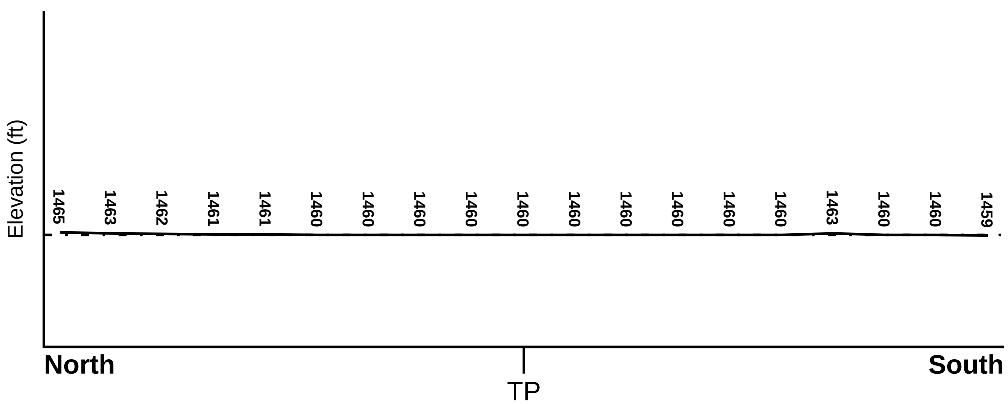
TOPOGRAPHIC INFORMATION

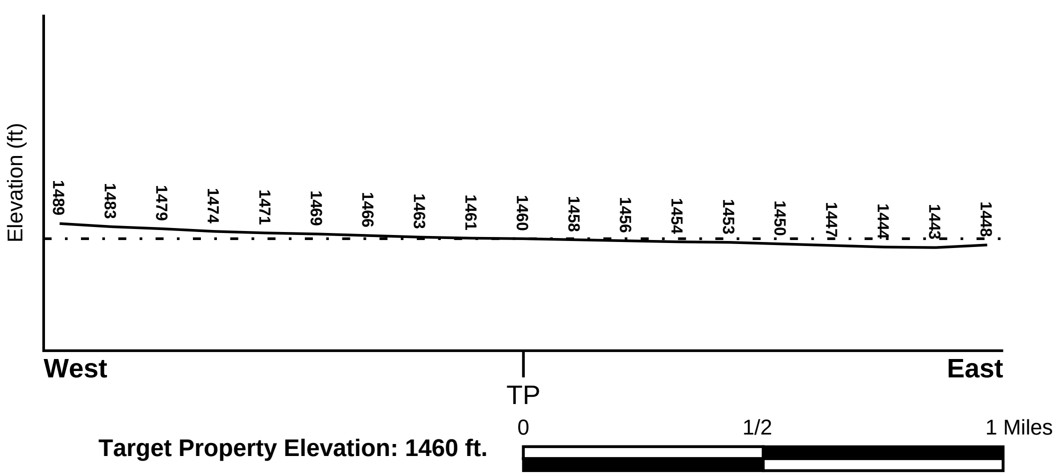
Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General East

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES





Target Property Elevation: 1460 ft.

Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Flood Plain Panel at Target Property	FEMA Source Type
06065C1430H	FEMA FIRM Flood data

Additional Panels in search area:	FEMA Source Type
Not Reported	

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
NOT AVAILABLE	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius: 1.25 miles
Status: Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

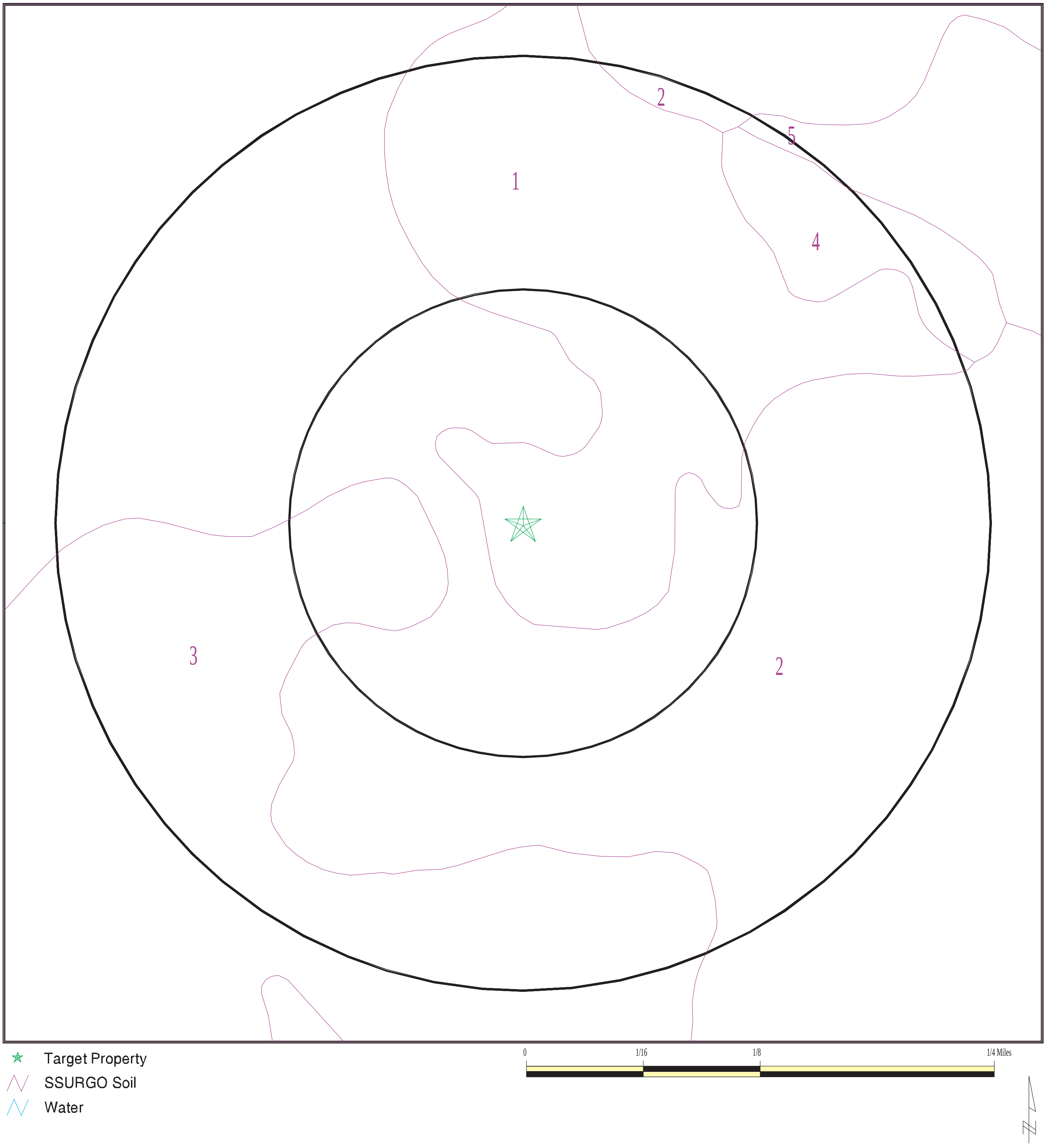
Era:	Mesozoic
System:	Cretaceous
Series:	Cretaceous granitic rocks
Code:	Kg *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Plutonic and Intrusive Rocks

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 5989294.2s



SITE NAME: PDP	CLIENT: Krazan & Associates, Inc.
ADDRESS: 155 Ramona Expressway Perris CA 92571	CONTACT: Bill Cooper INQUIRY #: 5989294.2s
LAT/LONG: 33.84367 / 117.22852	DATE: February 27, 2020 5:19 pm

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: PACHAPPA

Soil Surface Texture: fine sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		Soil Reaction (pH)
1	0 inches	20 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 14 Min: 4	Max: 7.8 Min: 6.6
2	20 inches	62 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 14 Min: 4	Max: 7.8 Min: 6.6

Soil Map ID: 2

Soil Component Name: EXETER

Soil Surface Texture: sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	16 inches	sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 4 Min: 1.4	Max: 8.4 Min: 7.4
2	16 inches	37 inches	sandy clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 4 Min: 1.4	Max: 8.4 Min: 7.4
3	37 inches	50 inches	indurated	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 4 Min: 1.4	Max: 8.4 Min: 7.4
4	50 inches	59 inches	stratified sandy loam to silt loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 4 Min: 1.4	Max: 8.4 Min: 7.4

Soil Map ID: 3

Soil Component Name: GREENFIELD

Soil Surface Texture: sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		Soil Reaction (pH)
1	0 inches	25 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 8.4 Min: 6.6
2	25 inches	42 inches	fine sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 8.4 Min: 6.6
3	42 inches	59 inches	loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 8.4 Min: 6.6
4	59 inches	72 inches	stratified loamy sand to sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 8.4 Min: 6.6

Soil Map ID: 4

Soil Component Name: HANFORD

Soil Surface Texture: coarse sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Somewhat excessively drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		Soil Reaction (pH)
1	0 inches	7 inches	coarse sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 7.8 Min: 5.6
2	7 inches	40 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 7.8 Min: 5.6
3	40 inches	59 inches	stratified loamy sand to coarse sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 141 Min: 42	Max: 7.8 Min: 5.6

Soil Map ID: 5

Soil Component Name: EXETER

Soil Surface Texture: sandy loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	16 inches	sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 4 Min: 1.4	Max: 8.4 Min: 7.4
2	16 inches	37 inches	sandy clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 4 Min: 1.4	Max: 8.4 Min: 7.4
3	37 inches	50 inches	indurated	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 4 Min: 1.4	Max: 8.4 Min: 7.4
4	50 inches	59 inches	stratified sandy loam to silt loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 4 Min: 1.4	Max: 8.4 Min: 7.4

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A3	USGS40000138560	1/4 - 1/2 Mile NW
6	USGS40000138576	1/4 - 1/2 Mile NW
B8	USGS40000138517	1/4 - 1/2 Mile South
C9	USGS40000138509	1/2 - 1 Mile South
D12	USGS40000138607	1/2 - 1 Mile NNE
D13	USGS40000138608	1/2 - 1 Mile NNE
14	USGS40000138615	1/2 - 1 Mile NNW
15	USGS40000138621	1/2 - 1 Mile North

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

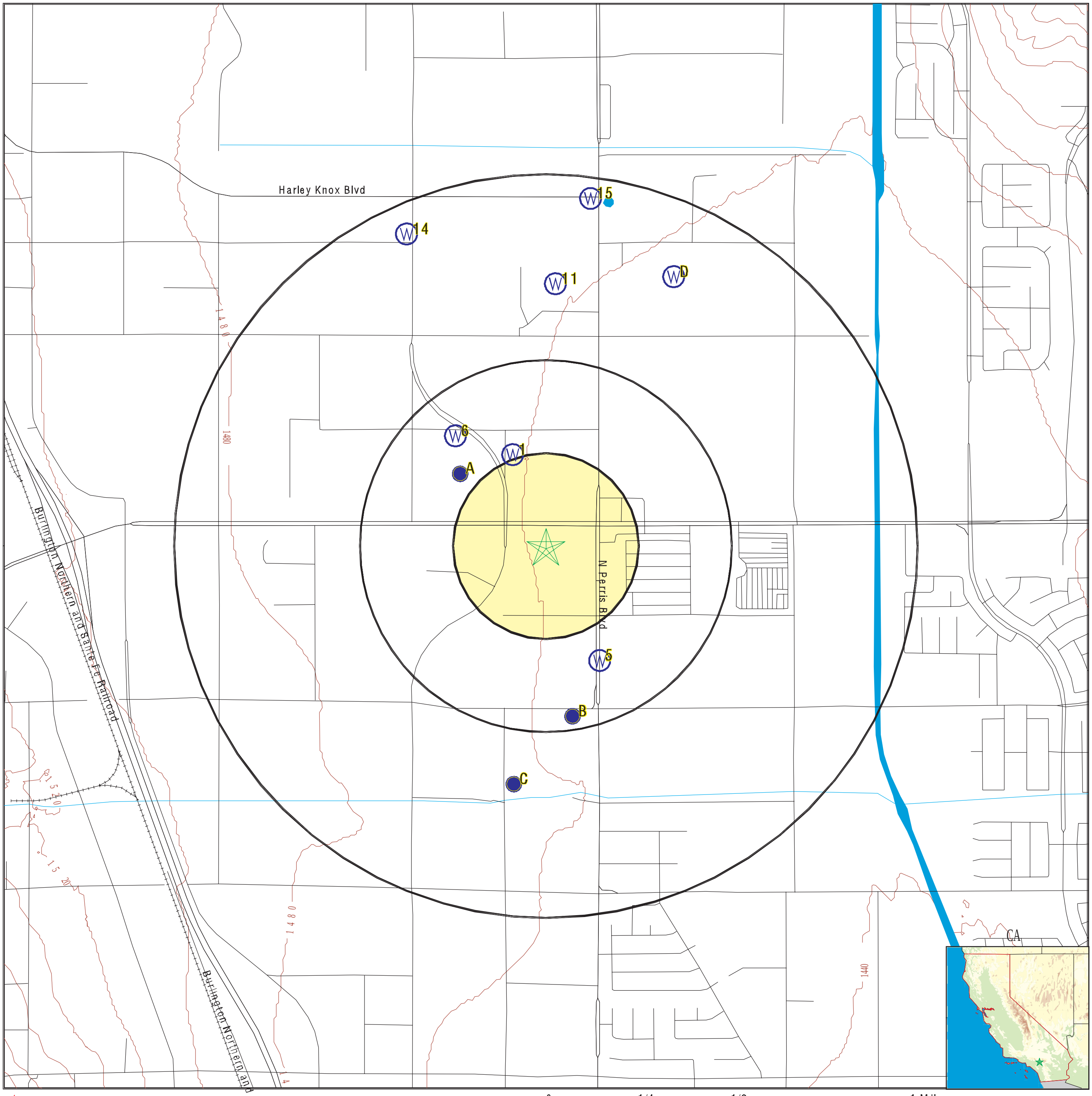
MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
1	4816	1/4 - 1/2 Mile NNW
A2	CADWR8000005837	1/4 - 1/2 Mile NW
A4	4815	1/4 - 1/2 Mile NW
5	CADWR8000005806	1/4 - 1/2 Mile SSE
B7	CADWR8000005790	1/4 - 1/2 Mile South
C10	CADWR8000005777	1/2 - 1 Mile South
11	4814	1/2 - 1 Mile North

PHYSICAL SETTING SOURCE MAP - 5989294.2s



County Boundary
Major Roads
Contour Lines
Earthquake Fault Lines
Earthquake epicenter, Richter 5 or greater
Water Wells
Public Water Supply Wells
Cluster of Multiple Icons

Groundwater Flow Direction
GI Indeterminate Groundwater Flow at Location
GV Groundwater Flow Varies at Location
HD Closest Hydrogeological Data
Oil, gas or related wells

SITE NAME: PDP ADDRESS: 155 Ramona Expressway Perris CA 92571 LAT/LONG: 33.84367 / 117.22852	CLIENT: Krazan & Associates, Inc. CONTACT: Bill Cooper INQUIRY #: 5989294.2s DATE: February 27, 2020 5:19 pm

Map ID Direction Distance Elevation		Database	EDR ID Number
1 **NNW** **1/4 - 1/2 Mile** **Higher**		**CA WELLS**	**4816**

Seq:	4816	Prim sta c:	04S/03W-06Q04 S
Frds no:	3310009045	County:	33
District:	14	User id:	WAT
System no:	3310009	Water type:	G
Source nam:	PERRY STREET #2 WELL	Station ty:	WELL/AMBNT/MUN/INTAKE
Latitude:	335050.0	Longitude:	1171345.0
Precision:	3	Status:	AR
Comment 1:	Not Reported	Comment 2:	Not Reported
Comment 3:	Not Reported	Comment 4:	Not Reported
Comment 5:	Not Reported	Comment 6:	Not Reported
Comment 7:	Not Reported		

System no:	3310009	System nam:	Eastern Municipal Wd
Hqname:	EASTERN MUNICIPAL WATER DIST	Address:	P.O. Box 8300
City:	San Jacinto	State:	CA
Zip:	92381	Zip ext:	1300
Pop serv:	253705	Connection:	84839
Area serve:	HEMET-SAN JACINTO-SUN CITY		

Sample date:	18-JAN-18	Finding:	5.
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	03-OCT-17	Finding:	4.9
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	01-AUG-17	Finding:	1.6
Chemical:	GROSS BETA MDA95	Report units:	PCI/L
Dlr:	0.		
Sample date:	01-AUG-17	Finding:	0.506
Chemical:	RADIUM 228 MDA95	Report units:	PCI/L
Dlr:	0.		
Sample date:	01-AUG-17	Finding:	1350.
Chemical:	SPECIFIC CONDUCTANCE	Report units:	US
Dlr:	0.		
Sample date:	01-AUG-17	Finding:	7.3
Chemical:	PH, LABORATORY	Report units:	Not Reported
Dlr:	0.		
Sample date:	01-AUG-17	Finding:	150.
Chemical:	ALKALINITY (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		
Sample date:	01-AUG-17	Finding:	180.
Chemical:	BICARBONATE ALKALINITY	Report units:	MG/L
Dlr:	0.		
Sample date:	01-AUG-17	Finding:	5.2
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		

Sample date:	01-AUG-17	Finding:	420.
Chemical:	HARDNESS (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		
Sample date:	01-AUG-17	Finding:	120.
Chemical:	CALCIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	01-AUG-17	Finding:	29.
Chemical:	MAGNESIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	01-AUG-17	Finding:	120.
Chemical:	SODIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	01-AUG-17	Finding:	320.
Chemical:	CHLORIDE	Report units:	MG/L
Dlr:	0.		
Sample date:	01-AUG-17	Finding:	64.
Chemical:	SULFATE	Report units:	MG/L
Dlr:	0.5		
Sample date:	01-AUG-17	Finding:	0.38
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)	Report units:	MG/L
Dlr:	0.1		
Sample date:	01-AUG-17	Finding:	45.
Chemical:	SILICA	Report units:	MG/L
Dlr:	0.		
Sample date:	01-AUG-17	Finding:	260.
Chemical:	BARIUM	Report units:	UG/L
Dlr:	100.		
Sample date:	01-AUG-17	Finding:	620.
Chemical:	BORON	Report units:	UG/L
Dlr:	100.		
Sample date:	01-AUG-17	Finding:	980.
Chemical:	TOTAL DISSOLVED SOLIDS	Report units:	MG/L
Dlr:	0.		
Sample date:	01-AUG-17	Finding:	4.4
Chemical:	TURBIDITY, LABORATORY	Report units:	NTU
Dlr:	0.1		
Sample date:	01-AUG-17	Finding:	11.9
Chemical:	AGGRSSIVE INDEX (CORROSIVITY)	Report units:	Not Reported
Dlr:	0.		
Sample date:	01-AUG-17	Finding:	1.2
Chemical:	CHROMIUM, HEXAVALENT	Report units:	UG/L
Dlr:	1.		
Sample date:	01-AUG-17	Finding:	7.58
Chemical:	GROSS ALPHA	Report units:	PCI/L
Dlr:	3.		
Sample date:	01-AUG-17	Finding:	2.13
Chemical:	GROSS ALPHA COUNTING ERROR	Report units:	PCI/L

Dlr:	0.		
Sample date:	01-AUG-17	Finding:	4.82
Chemical:	GROSS BETA	Report units:	PCI/L
Dlr:	4.		
Sample date:	01-AUG-17	Finding:	1.53
Chemical:	GROSS BETA COUNTING ERROR	Report units:	PCI/L
Dlr:	0.		
Sample date:	01-AUG-17	Finding:	0.145
Chemical:	RADIUM 226 COUNTING ERROR	Report units:	PCI/L
Dlr:	0.		
Sample date:	01-AUG-17	Finding:	0.44
Chemical:	RADIUM 228 COUNTING ERROR	Report units:	PCI/L
Dlr:	0.		
Sample date:	01-AUG-17	Finding:	4.51
Chemical:	URANIUM (PCI/L)	Report units:	PCI/L
Dlr:	1.		
Sample date:	01-AUG-17	Finding:	1.49
Chemical:	URANIUM COUNTING ERROR	Report units:	PCI/L
Dlr:	0.		
Sample date:	01-AUG-17	Finding:	2.07
Chemical:	GROSS ALPHA MDA95	Report units:	PCI/L
Dlr:	0.		
Sample date:	01-AUG-17	Finding:	0.47
Chemical:	URANIUM MDA95	Report units:	PCI/L
Dlr:	0.		
Sample date:	01-AUG-17	Finding:	0.363
Chemical:	RADIUM 226 MDA95	Report units:	PCI/L
Dlr:	0.		
Sample date:	20-JUL-17	Finding:	5.1
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	19-APR-17	Finding:	1.3
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	10-JAN-17	Finding:	5.2
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	10-OCT-16	Finding:	5.2
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	13-SEP-16	Finding:	5.
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	02-AUG-16	Finding:	29.
Chemical:	MAGNESIUM	Report units:	MG/L
Dlr:	0.		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Sample date:	02-AUG-16	Finding:	11.9
Chemical:	AGGRSSIVE INDEX (CORROSIVITY)	Report units:	Not Reported
Dlr:	0.		
Sample date:	02-AUG-16	Finding:	5.1
Chemical:	NITRATE + NITRITE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	02-AUG-16	Finding:	1530.
Chemical:	SPECIFIC CONDUCTANCE	Report units:	US
Dlr:	0.		
Sample date:	02-AUG-16	Finding:	7.3
Chemical:	PH, LABORATORY	Report units:	Not Reported
Dlr:	0.		
Sample date:	02-AUG-16	Finding:	140.
Chemical:	ALKALINITY (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		
Sample date:	02-AUG-16	Finding:	170.
Chemical:	BICARBONATE ALKALINITY	Report units:	MG/L
Dlr:	0.		
Sample date:	02-AUG-16	Finding:	5.1
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	02-AUG-16	Finding:	0.42
Chemical:	TOTAL ORGANIC CARBON (TOC)	Report units:	MG/L
Dlr:	0.3		
Sample date:	02-AUG-16	Finding:	410.
Chemical:	HARDNESS (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		
Sample date:	02-AUG-16	Finding:	120.
Chemical:	CALCIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	02-AUG-16	Finding:	120.
Chemical:	SODIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	02-AUG-16	Finding:	310.
Chemical:	CHLORIDE	Report units:	MG/L
Dlr:	0.		
Sample date:	02-AUG-16	Finding:	63.
Chemical:	SULFATE	Report units:	MG/L
Dlr:	0.5		
Sample date:	02-AUG-16	Finding:	0.39
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)	Report units:	MG/L
Dlr:	0.1		
Sample date:	02-AUG-16	Finding:	42.
Chemical:	SILICA	Report units:	MG/L
Dlr:	0.		
Sample date:	02-AUG-16	Finding:	270.
Chemical:	BARIUM	Report units:	UG/L

Dlr:	100.		
Sample date:	02-AUG-16	Finding:	610.
Chemical:	BORON	Report units:	UG/L
Dlr:	100.		
Sample date:	02-AUG-16	Finding:	890.
Chemical:	TOTAL DISSOLVED SOLIDS	Report units:	MG/L
Dlr:	0.		
Sample date:	16-JUN-16	Finding:	5.
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	02-MAR-16	Finding:	4.9
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	09-FEB-16	Finding:	4.9
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	17-NOV-15	Finding:	4.8
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	05-AUG-15	Finding:	1490.
Chemical:	SPECIFIC CONDUCTANCE	Report units:	US
Dlr:	0.		
Sample date:	05-AUG-15	Finding:	7.2
Chemical:	PH, LABORATORY	Report units:	Not Reported
Dlr:	0.		
Sample date:	05-AUG-15	Finding:	150.
Chemical:	ALKALINITY (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		
Sample date:	05-AUG-15	Finding:	180.
Chemical:	BICARBONATE ALKALINITY	Report units:	MG/L
Dlr:	0.		
Sample date:	05-AUG-15	Finding:	0.48
Chemical:	TOTAL ORGANIC CARBON (TOC)	Report units:	MG/L
Dlr:	0.3		
Sample date:	05-AUG-15	Finding:	440.
Chemical:	HARDNESS (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		
Sample date:	05-AUG-15	Finding:	130.
Chemical:	CALCIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	05-AUG-15	Finding:	31.
Chemical:	MAGNESIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	05-AUG-15	Finding:	130.
Chemical:	SODIUM	Report units:	MG/L
Dlr:	0.		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Sample date:	05-AUG-15	Finding:	320.
Chemical:	CHLORIDE	Report units:	MG/L
Dlr:	0.		
Sample date:	05-AUG-15	Finding:	62.
Chemical:	SULFATE	Report units:	MG/L
Dlr:	0.5		
Sample date:	05-AUG-15	Finding:	0.43
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)	Report units:	MG/L
Dlr:	0.1		
Sample date:	05-AUG-15	Finding:	46.
Chemical:	SILICA	Report units:	MG/L
Dlr:	0.		
Sample date:	05-AUG-15	Finding:	270.
Chemical:	BARIUM	Report units:	UG/L
Dlr:	100.		
Sample date:	05-AUG-15	Finding:	630.
Chemical:	BORON	Report units:	UG/L
Dlr:	100.		
Sample date:	05-AUG-15	Finding:	980.
Chemical:	TOTAL DISSOLVED SOLIDS	Report units:	MG/L
Dlr:	0.		
Sample date:	05-AUG-15	Finding:	23.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	05-AUG-15	Finding:	0.2
Chemical:	TURBIDITY, LABORATORY	Report units:	NTU
Dlr:	0.1		
Sample date:	05-AUG-15	Finding:	11.9
Chemical:	AGGRSSIVE INDEX (CORROSIVITY)	Report units:	Not Reported
Dlr:	0.		
Sample date:	05-AUG-15	Finding:	5.2
Chemical:	NITRATE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	05-AUG-15	Finding:	5200.
Chemical:	NITRATE + NITRITE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	22-APR-15	Finding:	23.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	14-JAN-15	Finding:	20.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	14-AUG-14	Finding:	940.
Chemical:	TOTAL DISSOLVED SOLIDS	Report units:	MG/L
Dlr:	0.		
Sample date:	14-AUG-14	Finding:	0.179
Chemical:	RA-226 OR TOTAL RA BY 903.0 C.E.	Report units:	PCI/L

Dlr:	0.		
Sample date:	14-AUG-14	Finding:	0.116
Chemical:	RA-226 FOR CWS OR TOTAL RA FOR NTNC BY 903.0		
Report units:	PCI/L	Dlr:	0.
Sample date:	14-AUG-14	Finding:	1.72
Chemical:	GROSS BETA MDA95	Report units:	PCI/L
Dlr:	0.		
Sample date:	14-AUG-14	Finding:	1370.
Chemical:	SPECIFIC CONDUCTANCE	Report units:	US
Dlr:	0.		
Sample date:	14-AUG-14	Finding:	7.4
Chemical:	PH, LABORATORY	Report units:	Not Reported
Dlr:	0.		
Sample date:	14-AUG-14	Finding:	140.
Chemical:	ALKALINITY (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		
Sample date:	14-AUG-14	Finding:	170.
Chemical:	BICARBONATE ALKALINITY	Report units:	MG/L
Dlr:	0.		
Sample date:	14-AUG-14	Finding:	430.
Chemical:	HARDNESS (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		
Sample date:	14-AUG-14	Finding:	120.
Chemical:	CALCIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	14-AUG-14	Finding:	30.
Chemical:	MAGNESIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	14-AUG-14	Finding:	120.
Chemical:	SODIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	14-AUG-14	Finding:	3.6
Chemical:	POTASSIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	14-AUG-14	Finding:	330.
Chemical:	CHLORIDE	Report units:	MG/L
Dlr:	0.		
Sample date:	14-AUG-14	Finding:	61.
Chemical:	SULFATE	Report units:	MG/L
Dlr:	0.5		
Sample date:	14-AUG-14	Finding:	0.39
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)	Report units:	MG/L
Dlr:	0.1		
Sample date:	14-AUG-14	Finding:	45.
Chemical:	SILICA	Report units:	MG/L
Dlr:	0.		

Sample date:	14-AUG-14	Finding:	270.
Chemical:	BARIUM	Report units:	UG/L
Dlr:	100.		
Sample date:	14-AUG-14	Finding:	620.
Chemical:	BORON	Report units:	UG/L
Dlr:	100.		
Sample date:	14-AUG-14	Finding:	0.47
Chemical:	RADIUM, TOTAL, MDA95-NTNC ONLY, BY 903.0		
Report units:	PCI/L	Dlr:	0.
Sample date:	14-AUG-14	Finding:	0.101
Chemical:	LANGELIER INDEX AT SOURCE TEMP.	Report units:	Not Reported
Dlr:	0.		
Sample date:	14-AUG-14	Finding:	22.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	14-AUG-14	Finding:	1.8
Chemical:	TURBIDITY, LABORATORY	Report units:	NTU
Dlr:	0.1		
Sample date:	14-AUG-14	Finding:	12.
Chemical:	AGGRSSIVE INDEX (CORROSIVITY)	Report units:	Not Reported
Dlr:	0.		
Sample date:	14-AUG-14	Finding:	1.2
Chemical:	CHROMIUM, HEXAVALENT	Report units:	UG/L
Dlr:	1.		
Sample date:	14-AUG-14	Finding:	0.54
Chemical:	TRICHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	14-AUG-14	Finding:	6.04
Chemical:	GROSS ALPHA	Report units:	PCI/L
Dlr:	3.		
Sample date:	14-AUG-14	Finding:	2.51
Chemical:	GROSS ALPHA COUNTING ERROR	Report units:	PCI/L
Dlr:	0.		
Sample date:	14-AUG-14	Finding:	1.53
Chemical:	GROSS BETA COUNTING ERROR	Report units:	PCI/L
Dlr:	0.		
Sample date:	14-AUG-14	Finding:	0.462
Chemical:	RADIUM 228 COUNTING ERROR	Report units:	PCI/L
Dlr:	0.		
Sample date:	14-AUG-14	Finding:	3.7
Chemical:	URANIUM (PCI/L)	Report units:	PCI/L
Dlr:	1.		
Sample date:	14-AUG-14	Finding:	1.24
Chemical:	URANIUM COUNTING ERROR	Report units:	PCI/L
Dlr:	0.		
Sample date:	14-AUG-14	Finding:	2.08
Chemical:	GROSS ALPHA MDA95	Report units:	PCI/L

Dlr:	0.		
Sample date:	14-AUG-14	Finding:	0.3
Chemical:	URANIUM MDA95	Report units:	PCI/L
Dlr:	0.		
Sample date:	14-AUG-14	Finding:	0.253
Chemical:	RADIUM 228 MDA95	Report units:	PCI/L
Dlr:	0.		
Sample date:	24-APR-14	Finding:	20.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	27-JAN-14	Finding:	21.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	04-NOV-13	Finding:	20.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	04-NOV-13	Finding:	0.53
Chemical:	TRICHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	14-AUG-13	Finding:	3.4
Chemical:	POTASSIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	14-AUG-13	Finding:	0.55
Chemical:	TRICHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	14-AUG-13	Finding:	4600.
Chemical:	NITRATE + NITRITE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	14-AUG-13	Finding:	1410.
Chemical:	SPECIFIC CONDUCTANCE	Report units:	US
Dlr:	0.		
Sample date:	14-AUG-13	Finding:	7.2
Chemical:	PH, LABORATORY	Report units:	Not Reported
Dlr:	0.		
Sample date:	14-AUG-13	Finding:	160.
Chemical:	ALKALINITY (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		
Sample date:	14-AUG-13	Finding:	190.
Chemical:	BICARBONATE ALKALINITY	Report units:	MG/L
Dlr:	0.		
Sample date:	14-AUG-13	Finding:	390.
Chemical:	HARDNESS (TOTAL) AS CACO3	Report units:	MG/L
Dlr:	0.		
Sample date:	14-AUG-13	Finding:	110.
Chemical:	CALCIUM	Report units:	MG/L
Dlr:	0.		

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Sample date:	14-AUG-13	Finding:	27.
Chemical:	MAGNESIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	14-AUG-13	Finding:	110.
Chemical:	SODIUM	Report units:	MG/L
Dlr:	0.		
Sample date:	14-AUG-13	Finding:	270.
Chemical:	CHLORIDE	Report units:	MG/L
Dlr:	0.		
Sample date:	14-AUG-13	Finding:	57.
Chemical:	SULFATE	Report units:	MG/L
Dlr:	0.5		
Sample date:	14-AUG-13	Finding:	0.35
Chemical:	FLUORIDE (F) (NATURAL-SOURCE)	Report units:	MG/L
Dlr:	0.1		
Sample date:	14-AUG-13	Finding:	41.
Chemical:	SILICA	Report units:	MG/L
Dlr:	0.		
Sample date:	14-AUG-13	Finding:	250.
Chemical:	BARIUM	Report units:	UG/L
Dlr:	100.		
Sample date:	14-AUG-13	Finding:	560.
Chemical:	BORON	Report units:	UG/L
Dlr:	100.		
Sample date:	14-AUG-13	Finding:	850.
Chemical:	TOTAL DISSOLVED SOLIDS	Report units:	MG/L
Dlr:	0.		
Sample date:	14-AUG-13	Finding:	20.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	14-AUG-13	Finding:	0.2
Chemical:	TURBIDITY, LABORATORY	Report units:	NTU
Dlr:	0.1		
Sample date:	09-APR-13	Finding:	23.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	28-JAN-13	Finding:	0.65
Chemical:	TRICHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	28-JAN-13	Finding:	20.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	08-OCT-12	Finding:	0.62
Chemical:	TRICHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	01-AUG-12	Finding:	22.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L

Dlr:	2.		
Sample date:	01-AUG-12	Finding:	0.63
Chemical:	TRICHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	01-AUG-12	Finding:	5000.
Chemical:	NITRATE + NITRITE (AS N)	Report units:	MG/L
Dlr:	0.4		
Sample date:	09-APR-12	Finding:	22.
Chemical:	NITRATE (AS NO3)	Report units:	MG/L
Dlr:	2.		
Sample date:	09-APR-12	Finding:	0.71
Chemical:	TRICHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		
Sample date:	11-JAN-12	Finding:	0.6
Chemical:	TRICHLOROETHYLENE	Report units:	UG/L
Dlr:	0.5		

A2
NW
1/4 - 1/2 Mile
Higher

CA WELLS CADWR8000005837

State Well #:	Not Reported	Station ID:	48225
Well Name:	EMWD11044	Well Use:	Irrigation
Well Type:	Single Well	Well Depth:	807
Basin Name:	San Jacinto	Well Completion Rpt #:	Not Reported

A3
NW
1/4 - 1/2 Mile
Higher

FED USGS USGS40000138560

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	004S003W06Q001S	Type:	Well
Description:	Not Reported	HUC:	18070202
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	Not Reported
Well Depth Units:	Not Reported	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

A4
NW
1/4 - 1/2 Mile
Higher

CA WELLS 4815

Seq:	4815	Prim sta c:	04S/03W-06Q03 S
Frds no:	3310009010	County:	33
District:	14	User id:	WAT

System no:	3310009	Water type:	G
Source nam:	WELL 1341 PERRY - ABANDONED	Station ty:	WELL/AMBNT
Latitude:	335049.0	Longitude:	1171355.0
Precision:	2	Status:	AB
Comment 1:	Not Reported	Comment 2:	Not Reported
Comment 3:	Not Reported	Comment 4:	Not Reported
Comment 5:	Not Reported	Comment 6:	Not Reported
Comment 7:	Not Reported		

System no:	3310009	System nam:	Eastern Municipal Wd
Hqname:	EASTERN MUNICIPAL WATER DIST	Address:	P.O. Box 8300
City:	San Jacinto	State:	CA
Zip:	92381	Zip ext:	1300
Pop serv:	253705	Connection:	84839
Area serve:	HEMET-SAN JACINTO-SUN CITY		

5
SSE
1/4 - 1/2 Mile
Lower

CA WELLS **CADWR8000005806**

State Well #:	Not Reported	Station ID:	48226
Well Name:	EMWD11048	Well Use:	Irrigation
Well Type:	Single Well	Well Depth:	465
Basin Name:	San Jacinto	Well Completion Rpt #:	Not Reported

6
NW
1/4 - 1/2 Mile
Higher

FED USGS **USGS40000138576**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	004S003W06Q004S	Type:	Well
Description:	Not Reported	HUC:	Not Reported
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Cenozoic Erathem	Aquifer Type:	Unconfined single aquifer
Construction Date:	19940115	Well Depth:	760
Well Depth Units:	ft	Well Hole Depth:	905
Well Hole Depth Units:	ft		

Ground water levels,Number of Measurements:	1	Level reading date:	2001-03-12
Feet below surface:	109.8	Feet to sea level:	Not Reported
Note:	Not Reported		

B7
South
1/4 - 1/2 Mile
Lower

CA WELLS **CADWR8000005790**

State Well #:	Not Reported	Station ID:	48227
Well Name:	EMWD11049	Well Use:	Irrigation
Well Type:	Single Well	Well Depth:	432
Basin Name:	San Jacinto	Well Completion Rpt #:	Not Reported

Map ID Direction Distance Elevation	Database	EDR ID Number
B8 **South** **1/4 - 1/2 Mile** **Lower**	**FED USGS**	**USGS40000138517**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	004S003W07J002S	Type:	Well
Description:	Not Reported	HUC:	18070202
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	Not Reported
Well Depth Units:	Not Reported	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

C9 **South** **1/2 - 1 Mile** **Higher**	**FED USGS**	**USGS40000138509**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	004S003W07J001S	Type:	Well
Description:	Not Reported	HUC:	18070202
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	420
Well Depth Units:	ft	Well Hole Depth:	420
Well Hole Depth Units:	ft		

C10 **South** **1/2 - 1 Mile** **Higher**	**CA WELLS**	**CADWR8000005777**

State Well #:	Not Reported	Station ID:	48228
Well Name:	EMWD12404	Well Use:	Irrigation
Well Type:	Single Well	Well Depth:	0
Basin Name:	San Jacinto	Well Completion Rpt #:	Not Reported

11 **North** **1/2 - 1 Mile** **Higher**	**CA WELLS**	**4814**

Seq:	4814	Prim sta c:	04S/03W-06H02 S
Frds no:	3310700002	County:	33
District:	14	User id:	WAT
System no:	3310700	Water type:	G
Source nam:	WELL 06 - ABANDONED	Station ty:	WELL/AMBNT

Latitude:	335114.0	Longitude:	1171338.0
Precision:	2	Status:	AB
Comment 1:	Not Reported	Comment 2:	Not Reported
Comment 3:	Not Reported	Comment 4:	Not Reported
Comment 5:	Not Reported	Comment 6:	Not Reported
Comment 7:	Not Reported		

System no:	3310700	System nam:	March Afb
Hqname:	MARCH AFB	Address:	722 CES/CC 840 MACDILL,BLD2506
City:	MARCH AFB	State:	CA
Zip:	92518	Zip ext:	Not Reported
Pop serv:	8186	Connection:	2348
Area serve:	MARCH AFB		

D12
NNE
1/2 - 1 Mile
Lower

FED USGS **USGS40000138607**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	004S003W06H001S	Type:	Well
Description:	Not Reported	HUC:	18070202
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	Not Reported
Well Depth Units:	Not Reported	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

D13
NNE
1/2 - 1 Mile
Lower

FED USGS **USGS40000138608**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	004S003W06H002S	Type:	Well
Description:	Not Reported	HUC:	18070202
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	Not Reported
Well Depth Units:	Not Reported	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

14
NNW
1/2 - 1 Mile
Higher

FED USGS **USGS40000138615**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	004S003W06C001S	Type:	Well
Description:	Not Reported	HUC:	18070202

Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	Not Reported
Well Depth Units:	Not Reported	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

15
North
1/2 - 1 Mile
Higher

FED USGS **USGS40000138621**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	004S003W06A003S	Type:	Well
Description:	Not Reported	HUC:	18070202
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	Not Reported
Well Depth Units:	Not Reported	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zipcode	Num Tests	> 4 pCi/L
92571	1	0

Federal EPA Radon Zone for RIVERSIDE County: 2

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for RIVERSIDE COUNTY, CA

Number of sites tested: 12

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.117 pCi/L	100%	0%	0%
Living Area - 2nd Floor	0.450 pCi/L	100%	0%	0%
Basement	1.700 pCi/L	100%	0%	0%

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

HYDROLOGIC INFORMATION

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish and Wildlife
Telephone: 916-445-0411

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Service, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Water Well Database
Source: Department of Water Resources
Telephone: 916-651-9648

California Drinking Water Quality Database
Source: Department of Public Health
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

OTHER STATE DATABASE INFORMATION

California Oil and Gas Well Locations
Source: Dept of Conservation, Geologic Energy Management Division
Telephone: 916-323-1779
Oil and Gas well locations in the state.

California Earthquake Fault Lines
Source: California Division of Mines and Geology
The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

RADON

State Database: CA Radon
Source: Department of Public Health
Telephone: 916-210-8558
Radon Database for California

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

STREET AND ADDRESS INFORMATION

PDP

155 Ramona Expressway

Perris, CA 92571

Inquiry Number: 5989294.3

February 27, 2020

Certified Sanborn® Map Report

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

02/27/20

Site Name:

PDP
155 Ramona Expressway
Perris, CA 92571
EDR Inquiry # 5989294.3

Client Name:

Krazan & Associates, Inc.
2205 Coy Ave
Bakersfield, CA 93307
Contact: Bill Cooper

The Sanborn Library has been searched by EDR and maps covering the target property location as provided by Krazan & Associates, Inc. were identified for the years listed below. The Sanborn Library is the largest, most complete collection of fire insurance maps. The collection includes maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow, and others. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by the Sanborn Library LLC, the copyright holder for the collection. Results can be authenticated by visiting www.edrnet.com/sanborn.

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Certified Sanborn Results:

Certification # ABBA-48D2-8CA4

PO # NA

Project 02420017

UNMAPPED PROPERTY

This report certifies that the complete holdings of the Sanborn Library, LLC collection have been searched based on client supplied target property information, and fire insurance maps covering the target property were not found.

Sanborn® Library search results

Certification #: ABBA-48D2-8CA4

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- ✔ Library of Congress
- ✔ University Publications of America
- ✔ EDR Private Collection

The Sanborn Library LLC Since 1866™

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Appendix F

Krazan & ASSOCIATES, INC.

SITE DEVELOPMENT ENGINEERS

William R. Cooper, P.G.

Bakersfield Environmental Department Manager

AREAS OF EXPERTISE	Phase I Environmental Assessment, Phase II Environmental Site Assessments, Characterizations, and Remediation
EDUCATION AND CERTIFICATIONS	Bachelor of Science in Geology California State University, Fresno, 1979 California Professional Geologist (P.G. 7427)
PROFESSIONAL AFFILIATIONS	Member, American Association of Petroleum Geologist/ San Joaquin Geological Society Member, San Joaquin Well Logging Society

PROFESSIONAL EXPERIENCE

April 2005 to Present	**Professional Geologist, Krazan & Associates, Inc.** Extensive experience conducting numerous ASTM Phase I Environmental Site Assessments (ESAs) for existing and proposed development of commercial, industrial, and residential property uses, and Phase II Soil and Groundwater Investigations, Site Characterization and Remediation projects of diverse geologic environments. Responsibilities include managing professional and technical environmental project personnel in the Bakersfield, California office that conduct Phase I ESAs and Phase II Soil and Groundwater Assessments and Remediation projects. Further responsibilities include preparation of proposals/cost estimates, planning and coordinating project scheduling, maintaining and establishing point-of-contact responsibilities, and marketing services to the Kern County client-base, consulting and negotiating with regulatory agencies for soil and groundwater investigations.
October 2001 to April 2005	**Phase I ESA Manager, Twining Laboratories, Inc.** Responsibilities included managing professional and technical environmental project personnel in the Fresno, California office that conducted Phase I ESAs. Additionally, Project Manager for Phase II Site Characterization and Remediation projects.
June 2001 to October 2001	**Project Geologist/Environmental Assessor,** **Advanced Environmental Concepts** Responsibilities included conducting Phase I ESAs and Phase II Site Characterization and Remediation projects.
May 1980 to January 2001	**Project Geologist/Environmental Coordinator/Technical Sales Representative** **Goode Core Analysis Service** Responsibilities included planning and performing geological and engineering investigations for petroleum exploration and production. Developed, administered, and monitored policies, and procedures which addressed environmental health and safety issues.

Krazan & ASSOCIATES, INC.

SITE DEVELOPMENT ENGINEERS

Art Farkas, R.E.A.

Vice President
Environmental Division

AREAS OF EXPERTISE	Project Management and Oversight Senior Quality Control Review Staff Development Information Management Marketing, Public Relations and Publicity
EDUCATION AND ACCOMPLISHMENTS	California Environmental Protection Agency Department of Toxic Substances Control Registered Environmental Assessor I No. 07818 Bachelor of Electronic Engineering Technology, University of Dayton, Ohio CEQA Training: University of California Davis Extension NEPA Training: U.S. Department of Housing and Urban Development Region 9, San Francisco

PROFESSIONAL EXPERIENCE

February 1998 to Present	**Vice President, Krazan & Associates, Inc., Environmental Division** CEQA and NEPA project management specialist. Project Manager and senior quality control reviewer for Phase I and Phase II Environmental Site Assessments. Activities include division oversight, business development, regional coordination of technical services and delivery of efficient integrated site development engineering services in conjunction with the Geotechnical and Construction Testing and Inspection Divisions of the firm
Dec. 1994 to Feb. 1998	**Executive Director, Downtown Association of Fresno** Responsibilities included management of business association for Central Business District of Fresno; Director of the Fresno Main Street Program; project operations and promotions management; policy formation, budgeting; marketing, public relations; publicity, fundraising and public speaking; management of 18-member Board of Directors for non-profit organization.
Apr. 1974 to Dec. 1994	**Operations Manager/Program Director/Air Personality: Radio Broadcasting** 1974 - 1980 KFIG 1981 - 1991 KKDJ 1980 - 1981 KIOY 1991 - 1994 KTHT Responsibilities included operations management of staff and systems; program direction; on-air performance; production' promotions' public affairs and marketing.

Appendix 5: LID Infeasibility

LID Technical Infeasibility Analysis

Low-Impact Development. In recent years, Riverside County has focused on Low-Impact Development (LID), which includes techniques to filter, store and retain runoff on-site. LID BMPs retain runoff to optimize infiltration/recharge, and many promote the use of vegetation to provide for the uptake of pollutants. Although LID BMPs can provide environmental, economic and community benefits, they can retain

N/A - site infiltration too low

attract hazardous wildlife ... aircraft operations and must be considered with caution within the AIA.

N/A - site infiltration too low

Aviation-Specific Stor...

edges that project-related ... factors, such as soil types ... structability, etc. United S...

N/A - no demand

N/A - site infiltration too low

and FAA have identified ... be considered during BMP design and incorporated to make most BMPs less attractive to wildlife (Table 2).

ADAPTIVE MEASURES

When open water detention ponds must be used within the AIA, the ponds may be equipped with bird balls, floating covers, nets, or overhead wires to cover open water and discourage use by hazardous wildlife. For example, concrete basins are unlikely to attract wildlife, and pond liners can prevent the development of hydrophytic vegetation. These technologies must be used with caution and only in areas

N/A - site infiltration too low

Infiltration trenches detain water for brief periods. This tre...

Per Paul we are Zone B, but also stated that anything below 30' does not trigger a BASH study.

Bioretention facilities can provide food and shelter for potentially hazardous wildlife, but may be suitable with modification.

Table 1. Structural Best Management Practices (BMPs) and Compatibility in an Airport Influence Area (AIA)

BMP	Compatibility within the AIA
Infiltration trenches Recommended	■ Suitable because water accumulates below ground surface. ■ Vegetation must be selected and reviewed by a FAA-qualified Airport Wildlife Hazard Biologist (qualified biologist) to discourage wildlife.
Permeable Pavement Recommended	Does not include water storage. Appropriate for parking lots and other paved surfaces that are not high-traffic areas.
Harvest and Use (RWH) Recommended	Suitable as long as water is stored in enclosed areas.
Sand Filter Basins Recommended	Desirable because standing water is treated through an underdrain system.
Vegetated Filter Strips and Vegetated Swales Recommended	Desirable because neither BMP involves ponded water. However, vegetation must be selected to discourage hazardous wildlife and reviewed by a qualified biologist.
Water Quality Inlets Recommended	Desirable because they do not provide ponded water. Associated vegetation must be selected to discourage hazardous wildlife and reviewed by a qualified biologist.
Infiltration Basins Not recommended without Modification. Suitable only if design addresses wildlife hazards	■ Unsuitable in ALUCP Compatibility Zone A. ■ Suitable in Zones B and C with appropriate modifications, such as: Drawdown within 48 hours or manufactured cover to prevent view and availability of open water; and absence of landscape or landscaping approved by a qualified biologist. ■ Steep slopes (steeper than 3:1).
Bioretention Facilities Not Recommended without Modification (also known as rain gardens bioretention basins, infiltration basins, landscaped filter basins)	Although bioretention can mask open water, BMP is not recommended for airports based on its potential to provide food, water, and shelter for hazardous wildlife. ■ Unsuitable in Compatibility Zone A. ■ Potentially suitable in Zones B and C only when small in size (e.g., parking islands, site entrances, planter boxes, etc.) and when vegetation is selected to discourage hazardous wildlife and reviewed by a qualified biologist. ■ Potentially suitable in Zones D and E when basin is less than 30 feet in length/width; and vegetation is selected to discourage hazardous wildlife and reviewed by a qualified biologist.
Extended Detention Basin Not Recommended	■ Unsuitable in Zones A through C. ■ Should be avoided in Zones D and E. If necessary, modify detention period to provide no visible water within 48 hours, provide steep slopes (1:1), provide hardscape for walls and sides; and do not provide vegetation within or adjacent to the pond.

Small bioretention facilities that provide sparse vegetation may be suitable in an aviation environment.

Extended detention basins are frequently used to serve both water quality management and to provide amenities. These basins hold water and would not be appropriate within an AIA because of the open water.

Sand filter at the base of the bioswale promotes infiltration.

Porous pavements allow water to infiltrate to a soil layer below the surface.

Adaptive measures such as liners, a concrete basin, and overhead wire grid can make extended detention strategies less attractive to hazardous wildlife.

Vegetated bioswales improve water quality and prevent water accumulation. However, dense and tall vegetation may be attractive to hazardous wildlife.

Infiltration basins with rock bottoms are less attractive to birds because they mask water and do not provide vegetation.

STORMWATER BEST MANAGEMENT PRACTICES

Riverside County and its incorporated cities require water quality/stormwater management controls for development and redevelopment projects. The Riverside Conservation District has prepared a separate Water Quality Management Plan for each watershed in the County that identifies treatment control Best Management Practices (BMPs) for improving water quality and managing stormwater volumes/flows following the design storm (i.e., 24-hour storm). Structural BMPs identified in Riverside County guidance and their compatibility within the AIA are summarized in Table 1.

ADDITIONAL RESOURCES/MORE INFORMATION:

- Riverside County Flood Control and Water Conservation District, Water Quality Management Webpage. Available at: http://rcflood.org/npdes.
- FAA Advisory Circular 150/5200-33, "Wildlife Hazard Attractants On and Near Airports": https://www.faa.gov/documentLibrary/media/advisory_circular/150-5200-33B/150_5200_33b.pdf.
- Airport Cooperative Research Program, Balancing Airport Stormwater and Bird Hazard Management: https://www.nap.edu/login.php?action=guest&record_id=22216.

Mead & Hunt

Table 2. Recommended Measures to Reduce Wildlife Attraction Associated with Stormwater BMPs

BMP Characteristic	Recommended Design Measure
Exposed Surface Water • Especially attractive to waterfowl, shorebirds, and flocking birds. • Provides source for drinking and nest building. • More attractive when constructed near other open water features or ponds.	• Reduce availability by providing 48-hour drawdown following a design storm (i.e., 24-hour storm). • Cover using bird balls. • Consider earth-bottom culverts, French drains, trench covers, and underground storage options. • Avoid within 8 km (5 miles) of other open water features or facilities.
Vegetation and Landscaping • Provides food. • Tall vegetation provides shelter and nesting opportunities. • Diverse vegetation attracts more diverse wildlife.	• Eliminate vegetation (concrete banks, steep slopes, etc.). • If necessary, provide a monoculture or decreased diversity. • Never use species that provide a food source (seeds, berries, nuts, and drupes). • Provide regular maintenance to prevent seeding and shelter.
Aspect/Geometry • Slopes can provide opportunities for nesting and loafing.	Avoid or reduce available shoreline: • Implement narrow, linear trenches rather than open water or regular circles as pond shapes. • Create steep slopes (<3:1). • Avoid irregular shapes for basins. • Avoid vegetation.

WHAT YOU CAN DO:

Airport operators, developers and communities must work together to manage stormwater in the airport vicinity to reduce hazards to air travelers and the public while addressing site-specific challenges.

- Identify whether your project is near an airport and in an AIA or critical area. (http://www.rcaluc.org/Plans/New-Compatibility-Plan).
- Work with the airport operator, ALUC, and city/county staff to identify an acceptable water quality management strategy.
- Contact the applicable airport to review your stormwater plans or request plan review by a FAA-qualified wildlife biologist. The form is available at: http://www.rcaluc.org/Portals/0/PDFGeneral/form/Wildlife%20Attractants%20-%20FAA%20Review.pdf.

AIRPORTS, WILDLIFE AND STORMWATER MANAGEMENT

GUIDANCE FOR PROPOSED PROJECTS IN AN AIRPORT INFLUENCE AREA

Riverside County includes diverse topography and is home to three watersheds and a portion of the Salton Sea, an important stop along the Pacific Flyway for migrating bird species. The County's arid climate makes water quality management and water conservation paramount.

The County is also the home to Palm Springs International Airport, 12 public use general aviation airports, and the March Air Reserve Base, whose operations can be challenged by the presence of hazardous wildlife such as raptors, water-fowl, doves/pigeons, gulls, flocking birds, and mammals (coyote and deer). Since 1990, more than 150 wildlife strikes with aircraft have occurred in Riverside County, some of which have led to substantial aircraft damage. Most strikes occur at low altitude (less than 3,500 feet above runway height). Much of the geographic area associated with these altitudes coincides with an Airport Influence Area (AIA) as defined in the Riverside County Airport Land Use Compatibility Plan (ALUCP).

AIRPORTS, WILDLIFE AND STORMWATER MANAGEMENT

The Federal Aviation Administration (FAA) identifies stormwater management facilities on and near airports as one of the greatest attractants to hazardous wildlife. Many species are attracted to open water features and associated vegetation that offers water, food, and shelter. The FAA warns against the construction of new open water bodies or mitigation sites within 10,000 feet of aircraft movement areas and within 5 miles of approach/departure surfaces (FAA Advisory Circular 150/5200-33B).

Remains of an owl ingested by an aircraft engine.

Riverside County
Airport Land Use Commission

AIRPORT LAND USE COMMISSION
RIVERSIDE COUNTY

July 16, 2020

Kenneth Phung, Project Planner
City of Perris Planning Department
135 N. D Street
Perris CA 92570

RE: AIRPORT LAND USE COMMISSION (ALUC) DEVELOPMENT REVIEW

File No.:	ZAP1390MA19
Related File Nos.:	PLN19-00012 (Specific Plan Amendment), PLN19-05287 (Zone Change), DPR19-00012 (Development Plan Review)
Compatibility Zone:	B1-APZ-II, C1
APNs:	303-060-020

Dear Mr. Phung:

On July 9, 2020, the Riverside County Airport Land Use Commission (ALUC) found City of Perris Case Nos. PLN19-00012 (Specific Plan Amendment) PLN19-05287 (Zone Change), a proposal to amend the Perris Valley Commerce Center Specific Plan on 16.1 acres located on the southwest corner of Perris Boulevard and Ramona Expressway, and also change its zoning from Commercial to Light Industrial, **CONSISTENT** with the 2014 March Air Reserve Base/Inland Port Airport Land Use Compatibility Plan.

On July 9, 2020, the Riverside County Airport Land Use Commission (ALUC) also found City of Perris Case No. DPR19-00012 (Development Plan Review), a proposal to construct a 347,919 square foot industrial e-commerce and warehouse building on 16.1 acres (as located above), **CONSISTENT** with the 2014 March Air Reserve Base/Inland Port Airport Land Use Compatibility Plan, subject to the following conditions.

CONDITIONS:

1. Any outdoor lighting installed shall be hooded or shielded so as to prevent either the spillage of lumens or reflection into the sky. Outdoor lighting shall be downward facing.

2. The following uses/activities are not included in the proposed project and shall be prohibited at this site:

   (a) Any use which would direct a steady light or flashing light of red, white, green, or amber colors associated with airport operations toward an aircraft engaged in an initial straight climb following takeoff or toward an aircraft engaged in a straight final approach toward a landing at an airport, other than an FAA-approved navigational signal light or visual approach slope indicator.

   (b) Any use which would cause sunlight to be reflected towards an aircraft engaged in an initial straight climb following takeoff or towards an aircraft engaged in a straight final approach towards a landing at an airport.

   (c) Any use which would generate smoke or water vapor or which would attract large concentrations of birds, or which may otherwise affect safe air navigation within the area. (Such uses include landscaping utilizing water features, aquaculture, production of cereal grains, sunflower, and row crops, composting operations, trash transfer stations that are open on one or more sides, recycling centers containing putrescible wastes, construction and demolition debris facilities, fly ash disposal, and incinerators.)

(d) Any use which would generate electrical interference that may be detrimental to the operation of aircraft and/or aircraft instrumentation.

(e) Children's schools, day care centers, libraries, hospitals, skilled nursing and care facilities, congregate care facilities, hotels/motels, restaurants, places of assembly (including churches and theaters), buildings with more than 3 aboveground habitable floors, noise sensitive outdoor nonresidential uses, critical community infrastructure facilities and hazards to flight.

(f) Any other uses not permitted in Accident Potential Zone II pursuant to DoDI 4165.57.

3. Prior to issuance of any building permits, the landowner shall convey and have recorded an avigation easement to the March Inland Port Airport Authority. Contact March Joint Powers Authority at (951) 656-7000 for additional information.

4. The attached notice shall be given to all prospective purchasers of the property and tenants of the buildings.

5. Any proposed detention basins or facilities shall be designed and maintained to provide for a maximum 48-hour detention period following the design storm, and remain totally dry between rainfalls. Vegetation in and around the detention basins that would provide food or cover for birds would be incompatible with airport operations and shall not be utilized in project landscaping. Trees shall be spaced so as to prevent large expanses of contiguous canopy, when mature. Landscaping in and around the detention basin(s) shall not include trees or shrubs that produce seeds, fruits, or berries.

   Landscaping in the detention basin, if not rip-rap, should be in accordance with the guidance provided in ALUC "LANDSCAPING NEAR AIRPORTS" brochure, and the "AIRPORTS, WILDLIFE AND STORMWATER MANAGEMENT" brochure available at RCALUC.ORG which list acceptable plants from Riverside County Landscaping Guide or other alternative landscaping as may be recommended by a qualified wildlife hazard biologist.

   A notice sign, in a form similar to that attached hereto, shall be permanently affixed to the stormwater basin with the following language: "There is an airport nearby. This stormwater basin is designed to hold stormwater for only 48 hours and not attract birds. Proper maintenance is necessary to avoid bird strikes". The sign will also include the name, telephone number or other contact information of the person or entity responsible to monitor the stormwater basin.

6. March Air Reserve Base must be notified of any land use having an electromagnetic radiation component to assess whether a potential conflict with Air Base radio communications could result. Sources of electromagnetic radiation include radio wave transmission in conjunction with remote equipment inclusive of irrigation controllers, access gates, etc.

7. Noise attenuation measures shall be incorporated into the design of the office areas of the structure, to the extent such measures are necessary to ensure that interior noise levels from aircraft operations are at or below 45 CNEL.

8. The project does not propose rooftop solar panels at this time. However, if the project were to propose solar rooftop panels in the future, the applicant/developer shall prepare a solar glare study that analyzes glare impacts, and this study shall be reviewed by the Airport Land Use Commission and March Air Reserve Base.

9. This project has been evaluated as a proposal for 260,076 square feet of e-commerce area, 79,843 square feet of warehouse area, and 8,000 square feet of office floor area. Any increase in building area or change in use will require review by the Airport Land Use Commission. In addition, this project shall not store, process or manufacture hazardous materials without review and approval by the Airport Land Use Commission.

Supporting documentation was provided to the Airport Land Use Commission and is available online at www.rcaluc.org, click Agendas 07-09-20 Agenda, Bookmark Agenda Item No. 3.1.

The written communication from the Deputy Base Civil Engineer at March Air Reserve Base, representing the U.S. Air Force Reserve Command, was not available at the time the agenda was posted, and was presented at the meeting. Therefore, a copy of that communication is included herewith.

If you have any questions, please contact Paul Rull, ALUC Principal Planner, at (951) 955-6893.

Sincerely,
RIVERSIDE COUNTY AIRPORT LAND USE COMMISSION

Simon A. Housman, ALUC Director

Attachments: Notice of Airport in Vicinity
Notice of Storm Water Basin
Base Civil Engineer March Air Reserve Base comment letter

cc: PR Partners, LLC (applicant/property owner)
Mike Naggar & Associates, Inc (representative)
Gary Gosliga, March Inland Port Airport Authority
Doug Waters, Base Civil Engineer March Air Reserve Base
ALUC Case File

Y:\AIRPORT CASE FILES\March\ZAP1390MA19\ZAP1390MA19.LTR.doc

NOTICE OF AIRPORT IN VICINITY

This property is presently located in the vicinity of an airport, within what is known as an airport influence area. For that reason, the property may be subject to some of the annoyances or inconveniences associated with proximity to airport operations (for example: noise, vibration, or odors). Individual sensitivities to those annoyances [can vary from person to person. You may wish to consider what airport annoyances], if any, are associated with the property before you complete your purchase and determine whether they are acceptable to you. Business & Professions Code Section 11010 (b)(13)(A)

NOTICE

THERE IS AN AIRPORT NEARBY.

THIS STORM WATER BASIN IS DESIGNED TO HOLD STORM WATER FOR ONLY 48 HOURS AND NOT TO ATTRACT BIRDS

PROPER MAINTENANCE IS NECESSARY TO AVOID BIRD STRIKES

RIVERSIDE COUNTY
ALUC
AIRPORT LAND USE COMMISSION

IF THIS BASIN IS OVERGROWN, PLEASE CONTACT:

Name: ______________________ Phone: ______________________

#31

Rull, Paul

From: Pacino, Brian <Brian.Pacino@jacobs.com>
Sent: Wednesday, July 1, 2020 5:12 PM
To: WATERS, DOUGLAS S GS-13 USAF AFRC 452 MSG/CE
Cc: Rull, Paul
Subject: 9 JUL 2020 ALUC Hearing_MARB Preliminary Comments
Attachments: Meridian U1-L2_Revised Site Plan_062020.PDF; ZAP1390MA19_ALUC Staff Report.doc

Doug,

In preparation for the July 9 ALUC hearing meeting and at request of Paul Rull, please note the following preliminary comments on behalf of MARB BCE. Please respond with Paul copied, with your approval and any additional input or questions.

For the Meridian U1-L2 warehouse (site almost entirely in Runway 14 APZ I) please recall our 20 May teleconference with March JPA (Jeff Smith), Developer, and ALUC, after which Developer revised the site plan per attached PDF based on your comments regarding safety concerns tied to office space intensities exceeding AF/DoD restriction levels for portions inside APZs.

I wanted to get you and Paul my preliminary review comments before heading out on leave starting tomorrow through July 14.

V/r,

Brian
CTR, 452 MSG/CE

FOR OFFICIAL USE ONLY:

ALUC Case#	Development Title	Rooftop Solar?	ALUC Zone	Comments
ZAP1390MA20	City of Perris Warehouse, PR Partners LLC	No	**B1** (11.8 acres in APZ II) **C1** (3.9 acres)	• CONCUR with review comments and conditions to be met by developer/applicant based on ALUC staff report for ZAP1390MA20 (attached and first received by MARB on 22 June 2020) as follows: *<u>- Non-Residential Single-Acre Land Use Intensity</u>: The proposed project complies with the restrictions on permitted uses and lot coverage, and intensity limits. The Air Force understands the DoDI criteria as limiting intensity to a maximum of 50 people in any given acre of APZ-II. As noted above,* ***"the project would be expected to result in a single acre occupancy of 44 people in APZ-II."***

				*- <u>AICUZ</u>: Appendix A of the 2018 MARB AICUZ study provides Land Use Compatibility Tables for the APZs, which "**cite warehousing as a permitted use in APZ-II. Warehouses are also compatible pursuant to Department of Defense Instruction (DODI) No. 4165.57.**"* *- <u>Noise</u>: Although the site is in the 60-70 CNEL contour range, "as a primarily industrial use not sensitive to noise (and considering typical anticipated building construction noise attenuation of approximately 20 dBA), **the warehouse area would not require special measures to mitigate aircraft-generated noise.** However, a condition is included to provide for adequate noise attenuation within office areas of the building."* *- <u>FAA Part 77</u>: Concur with findings that FAA-OES investigation not required since maximum proposed building height of 36 ft. plus existing site elevation (1,464 ft.) is less than 1,571 ft. AMSL.* *- <u>Hazards to Flight/BASH</u>: Concur with ALUC's assessment that developer/applicant proposal to install vegetative swales is suitable for BASH mitigation for a project that is located 8,300 feet from Runway 32, "**the project proposes 13,247 square feet of vegetative swale area. Vegetative swales are an acceptable form of stormwater management, pursuant to the study "Wildlife Hazard Management at Riverside County Airports: Background and Policy"**, and are acceptable within the vicinity of airports as they do not usually involve ponded water, provided that the proposed vegetation/landscaping are not attractive to hazardous wildlife, and that it is adequately maintained."*
ZAP1393MA20	Innovation Industrial Warehouse – Meridian Lot 2, Unit 1 **This project is being coordinated with March JPA (POC is Jeff Smith, Sr, Planner)*	No	**B1** (2.4 acres in APZ I) **B2** (0.82 acres)	• Conference call held between March JPA, Developer, ALUC, and MARB on 20 May 2020. Per MARB BCE concerns related to office density proposals in APZ I, the developer has revised site plan. Based on ALUC interpretation, MARB is in concurrence as follows: *- Based on this revision, the project proposes 29,988 sq.ft. of warehouse area in Zone B1, which would accommodate an occupancy of 60 people (at a warehouse ratio of 1/500), and **result in an average intensity of 24***

				people per acre, which is consistent with Zone-B1-APZ-I average intensity criteria of 25 people per acre. *- The project also proposes 9,242 sq.ft. of warehouse area (19 people) and 9,600 sq.ft. of office area (48 people) in Zone B2, which would accommodate an occupancy of 67 people, and* ***result in an average intensity of 100 people per acre, which is consistent with Zone B2 average intensity criteria of 100 people per acre.*** • Despite alterations to average intensities noted above, MARB still requires that the applicant adhere to previous VDA agreement to utilize a covenant limiting occupancy of the building to 25 person in any give acre.
ZAP1425MA20	City of Perris - Newcastle Harvill Logistics Warehouse (located easterly of Harvill Avenue, westerly of Interstate 215 Freeway, southerly of Orange Avenue, and northerly of Daytona Cove)	Yes	C2 (Not in APZs)	• Concur with Enertis Solar Glare Hazard Analysis report (Dec. 28, 2019) and ForgeSolar PASS findings for proposed rooftop solar (yellow and green glare applicable to MARB flight tracks and ATCT), however we support analysis of cumulative impacts on airfield operations as part of upcoming Compatible Use Study in conjunction with the OEA. • Otherwise, concur with typical set of ALUC Development Conditions criteria to which applicant/developer compliance is required.

Brian J. Pacino, AICP | Jacobs | Buildings, Infrastructure & Advanced Facilities |
949.224.7635 office | 703.627.3010 mobile | brian.pacino@jacobs.com | www.jacobs.com

From: Rull, Paul <PRull@RIVCO.ORG>
Sent: Monday, June 22, 2020 7:13 AM
To: Pacino, Brian <Brian.Pacino@jacobs.com>
Cc: WATERS, DOUGLAS S GS-13 USAF AFRC 452 MSG/CEV <douglas.waters.2@us.af.mil>
Subject: [EXTERNAL] RE: ZAP1421MA20 ALUC review

Attached is a copy of the draft staff report to show you our calculations regarding intensity and review of the hazard to wildlife.

If you have any questions, please feel free to contact me.

Paul Rull
ALUC Principal Planner

Appendix 6: BMP Design Details

BMP Sizing, Design Details and other Supporting Documentation

Santa Ana Watershed - BMP Design Flow Rate, Q_{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: UEG
Date: 7/29/2021
Designed by:
Case No: DPR 19-00012
Company Project Number/Name: SWC Ramona & Perris Industrial Warehouse

BMP Identification

BMP NAME / ID: BMP 1 - Bio Swale along Ramona Expressway Western Swale

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

Design Rainfall Intensity I = 0.20 in/hr

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMAs

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type (use pull-down menu)	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Rainfall Intensity (in/hr)*	*Design Flow Rate (cfs)*	*Proposed Flow Rate (cfs)*
A	*50084*	*Concrete or Asphalt*	*1*	*0.89*	*44674.9*			
B	*14564*	*Concrete or Asphalt*	*1*	*0.892*	*12991.1*			
C	*189383*	*Mixed Surface Types*	*0.9*	*0.730282*	*138303*			
	254031	**Total**			195969	0.20	0.9	1.52

Notes:

Santa Ana Watershed - BMP Design Flow Rate, Q_{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: UEG | Date: 7/29/2021
Designed by: | Case No: DPR 19-00012
Company Project Number/Name: SWC Ramona & Perris Industrial Warehouse

BMP Identification

BMP NAME / ID: BMP 2 - Bio Swale along Ramona Expressway Eastern Swale

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

Design Rainfall Intensity: I = 0.20 in/hr

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMAs

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type (use pull-down menu)	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Rainfall Intensity (in/hr)*	*Design Flow Rate (cfs)*	*Proposed Flow Rate (cfs)*
D	*159430*	*Mixed Surface Types*	*0.9*	*0.73*	*116428.9*			
	159430	***Total***			**116428.9**	**0.20**	**0.5**	**0.9**

Notes:

Santa Ana Watershed - BMP Design Flow Rate, Q_{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 UEG

Date 7/29/2021

Designed by

Case No DPR 19-00012

Company Project Number/Name SWC Ramona & Perris Industrial Warehouse

BMP Identification

BMP NAME / ID BMP 3 - Bio Swale along Perris Blvd - SEC of site

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

Design Rainfall Intensity I = 0.20 in/hr

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 (use pull-down menu)	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Rainfall Intensity (in/hr)*	*Design Flow Rate (cfs)*	*Proposed Flow Rate (cfs)*
DMAs	*E*	*279673*	*Roofs*	*1*	*0.89*	*249468.3*			
		279673	***Total***			**249468.3**	**0.20**	***1.1***	***1.6***

Notes:

Santa Ana Watershed - BMP Design Flow Rate, Q_{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 UEG

Designed by

Company Project Number/Name SWC Ramona & Perris Industrial Warehouse

Date 7/29/2021

Case No DPR 19-00012

BMP Identification

BMP NAME / ID BMP 4 - Bio Swale along East side of building parking

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

Design Rainfall Intensity I = 0.20 in/hr

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMAs

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type (use pull-down menu)	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Rainfall Intensity (in/hr)*	*Design Flow Rate (cfs)*	*Proposed Flow Rate (cfs)*
F	*65537*	*Mixed Surface Types*	*0.85*	*0.66*	*43337.6*			
	65537	**Total**			**43337.6**	**0.20**	**0.2**	**0.37**

Notes:

Santa Ana Watershed - BMP Design Flow Rate, Q_{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: UEG
Date: 7/29/2021
Designed by:
Case No: DPR 19-00012
Company Project Number/Name: SWC Ramona & Perris Industrial Warehouse

BMP Identification

BMP NAME / ID: BMP 5 - Bio Swale along Perris Blvd south of entrance

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

Design Rainfall Intensity: I = 0.20 in/hr

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 (use pull-down menu)	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Rainfall Intensity (in/hr)*	*Design Flow Rate (cfs)*	*Proposed Flow Rate (cfs)*
DMAs	*G*	*17744*	*Mixed Surface Types*	*0.9*	*0.73*	*12958.1*			
		17744	***Total***			**12958.1**	**0.20**	***0.1***	***0.1***

Notes:

Santa Ana Watershed - BMP Design Flow Rate, Q_{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 UEG

Date 7/29/2021

Designed by

Case No DPR 19-00012

Company Project Number/Name SWC Ramona & Perris Industrial Warehouse

BMP Identification

BMP NAME / ID BMP 6 - Bio Swale along northeast parking area

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

Design Rainfall Intensity I = 0.20 in/hr

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 (use pull-down menu)	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Rainfall Intensity (in/hr)*	*Design Flow Rate (cfs)*	*Proposed Flow Rate (cfs)*
DMAs	*H*	*13538*	*Mixed Surface Types*	*0.85*	*0.66*	*8952.3*			
		13538	***Total***			**8952.3**	**0.20**	***0***	***0.13***

Notes:

Santa Ana Watershed - BMP Design Flow Rate, Q_{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 UEG | Date 7/29/2021

Designed by | Case No DPR 19-00012

Company Project Number/Name SWC Ramona & Perris Industrial Warehouse

BMP Identification

BMP NAME / ID BMP ~~6~~ 7 - Bio Swale along Perris Blvd north of entrance

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

Design Rainfall Intensity I = 0.20 in/hr

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 (use pull-down menu)	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Rainfall Intensity (in/hr)*	*Design Flow Rate (cfs)*	*Proposed Flow Rate (cfs)*
I	*20914*	*Mixed Surface Types*	*0.9*	*0.73*	*15273.1*			
	20914	**Total**			**15273.1**	**0.20**	**0.1**	**0.12**

DMAs

Notes:

Santa Ana Watershed - BMP Design Flow Rate, Q_{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: UEG

Date: 7/29/2021

Designed by:

Case No: DPR 19-00012

Company Project Number/Name: SWC Ramona & Perris Industrial Warehouse

BMP Identification

BMP NAME / ID: DMA J - Perris Blvd & Ramona Intersection

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

Design Rainfall Intensity: I = 0.20 in/hr

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMAs

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type (use pull-down menu)	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Rainfall Intensity (in/hr)*	*Design Flow Rate (cfs)*	*Proposed Flow Rate (cfs)*
J	*35061*	*Concrete or Asphalt*	*1*	*0.89*	*31274.4*			
	35061	***Total***			**31274.4**	**0.20**	**0.1**	**0.1**

Notes:

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 UEG

Date 7/29/2021

Designed by

Case No DPR 19-00012

Company Project Number/Name SWC Ramona & Perris Industrial Warehouse

BMP Identification

BMP NAME / ID DMA K

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}= 0.58 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)*
K	*10740*	*Ornamental Landscaping*	*0.1*	*0.11*	*1186.3*			
	10740	***Total***			1186.3	0.58	*57.3*	*58*

Notes:

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 UEG

Date 7/29/2021

Designed by

Case No DPR 19-00012

Company Project Number/Name SWC Ramona & Perris Industrial Warehouse

BMP Identification

BMP NAME / ID DMA L

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}= 0.58 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 Imperious 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	*5501*	*Ornamental Landscaping*	*0.1*	*0.11*	*607.6*			
	5501	***Total***			**607.6**	**0.58**	***29.4***	***30***

Notes:

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 UEG

Date 7/29/2021

Designed by

Case No DPR 19-00012

Company Project Number/Name SWC Ramona & Perris Industrial Warehouse

BMP Identification

BMP NAME / ID DMA M

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}= 0.58 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 Impervious 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)*
M	*5558*	*Ornamental Landscaping*	*0.1*	*0.11*	*613.9*			
	5558	***Total***			**613.9**	**0.58**	***29.7***	***30***

Notes:

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: UEG

Date: 7/29/2021

Designed by:

Case No: DPR 19-00012

Company Project Number/Name: SWC Ramona & Perris Industrial Warehouse

BMP Identification

BMP NAME / ID: DMA N

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}= 0.58 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)*
N	*9174*	*Ornamental Landscaping*	*0.1*	*0.11*	*1013.3*			
	9174	**Total**			**1013.3**	**0.58**	**49**	**50**

Notes:

Effective Impervious Fraction

Developed Cover Types	Effective Impervious Fraction
Roofs	1.00
Concrete or Asphalt	1.00
Grouted or Gapless Paving Blocks	1.00
Compacted Soil (e.g. unpaved parking)	0.40
Decomposed Granite	0.40
Permeable Paving Blocks w/ Sand Filled Gap	0.25
Class 2 Base	0.30
Gravel or Class 2 Permeable Base	0.10
Pervious Concrete / Porous Asphalt	0.10
Open and Porous Pavers	0.10
Turf block	0.10
Ornamental Landscaping	0.10
Natural (A Soil)	0.03
Natural (B Soil)	0.15
Natural (C Soil)	0.30
Natural (D Soil)	0.40
Mixed Surface Types	

Use this table to determine the effective impervious fraction for the V_{BMP} and Q_{BMP} calculation sheets

Worksheet 9

Design Procedure Form for Grassed Swale

Designer: Christopher Morgan
Company: United Engineering Group
Date: 7-29-2021
Project: SWC Ramona & Perris Warehouse
Location: SWC Ramona & Perris

1. Determine Design Flow (Use Worksheet 2)	Q_{BMP} = Varies cfs See Attached
2. Swale Geometry a. Swale bottom width (b) b. Side slope (z) c. Flow direction slope (s)	 b = ________ ft z = ________ s = ________ %
3. Design flow velocity (Manning n = 0.2)	v = ________ ft/s
4. Depth of flow (D)	D = ________ ft
5. Design Length (L) L = (7 min) x (flow velocity, ft/sec) x 60	L = Varies ft See Attached
6. Vegetation (describe)	________________ ________________
8. Outflow Collection (check type used or describe "other")	___ Grated Inlet' ___ Infiltration Trench ___ Underdrain ___ Other____________

Notes:

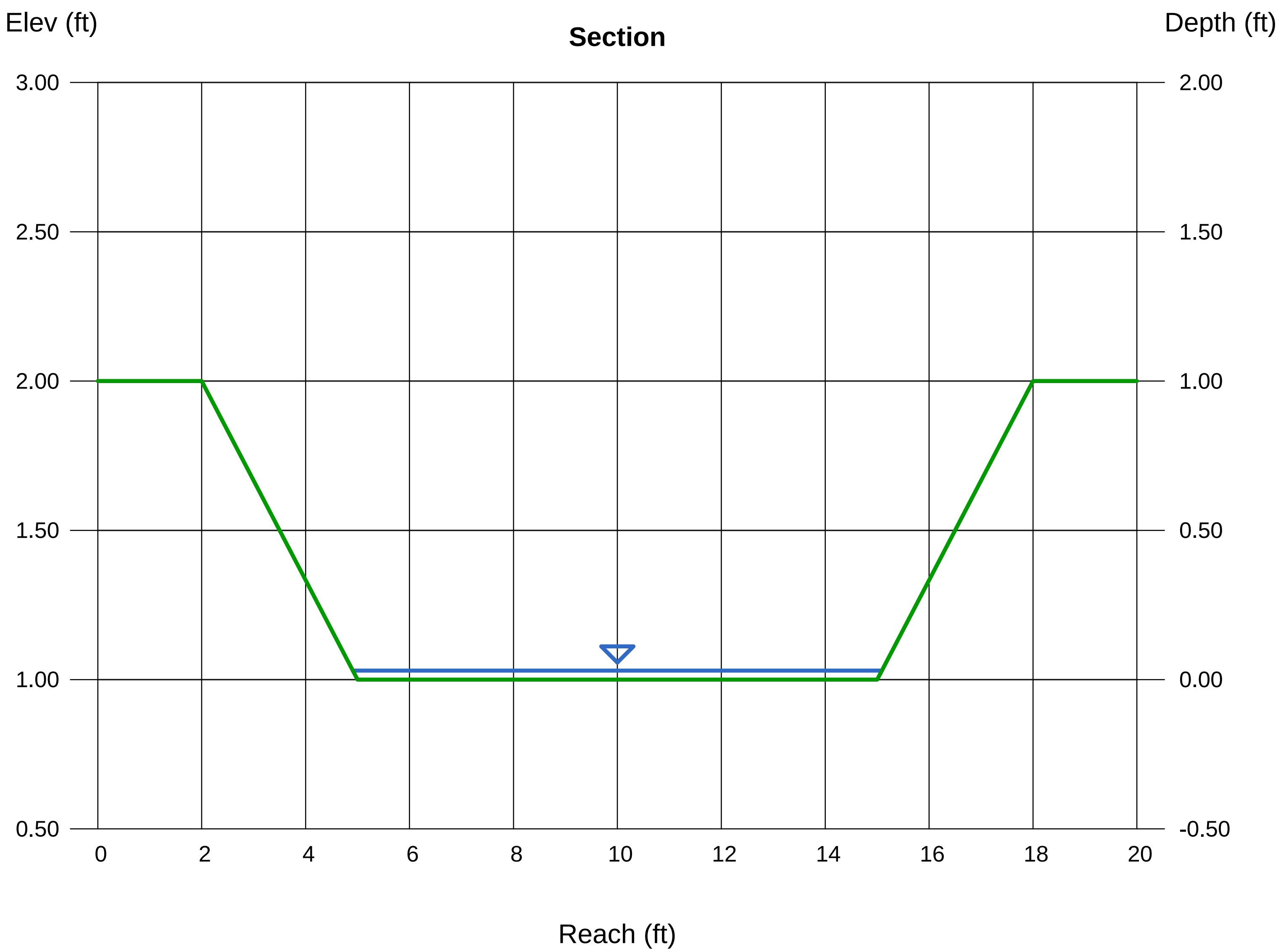
Channel Report

BMP7 - Design Q - Design Length = V*60*7min = 97 ft

Trapezoidal		**Highlighted**	
Bottom Width (ft)	= 10.00	Depth (ft)	= 0.03
Side Slopes (z:1)	= 3.00, 3.00	Q (cfs)	= 0.070
Total Depth (ft)	= 1.00	Area (sqft)	= 0.30
Invert Elev (ft)	= 1.00	Velocity (ft/s)	= 0.23
Slope (%)	= 0.30	Wetted Perim (ft)	= 10.19
N-Value	= 0.020	Crit Depth, Yc (ft)	= 0.02
		Top Width (ft)	= 10.18
		EGL (ft)	= 0.03

Calculations

Compute by:	Known Q
Known Q (cfs)	= 0.07



Channel Report

BMP6 - Design Q - Design Length = V*60*7min = 84 ft

Trapezoidal

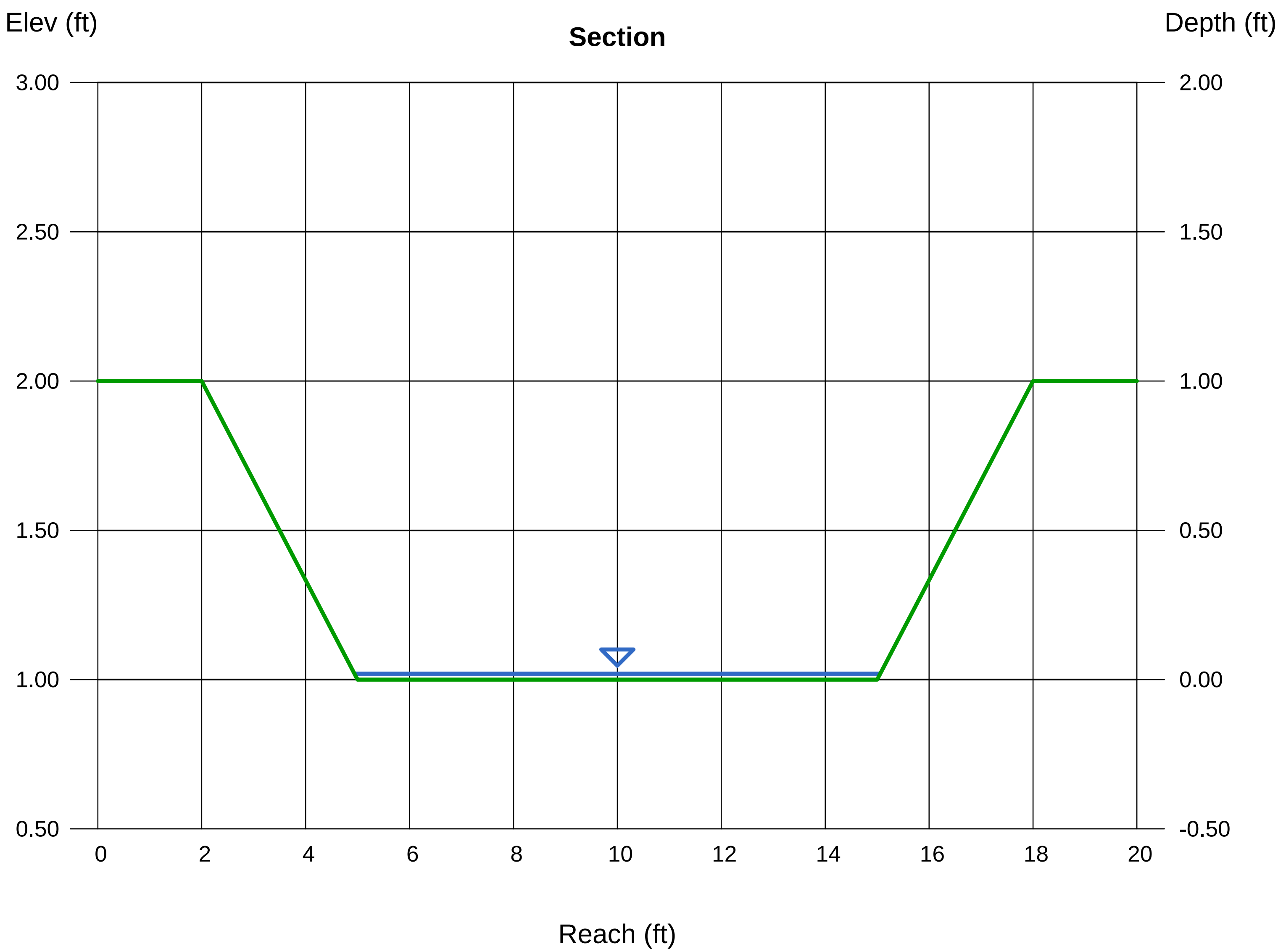
Bottom Width (ft)	= 10.00
Side Slopes (z:1)	= 3.00, 3.00
Total Depth (ft)	= 1.00
Invert Elev (ft)	= 1.00
Slope (%)	= 0.30
N-Value	= 0.020

Calculations

Compute by:	Known Q
Known Q (cfs)	= 0.04

Highlighted

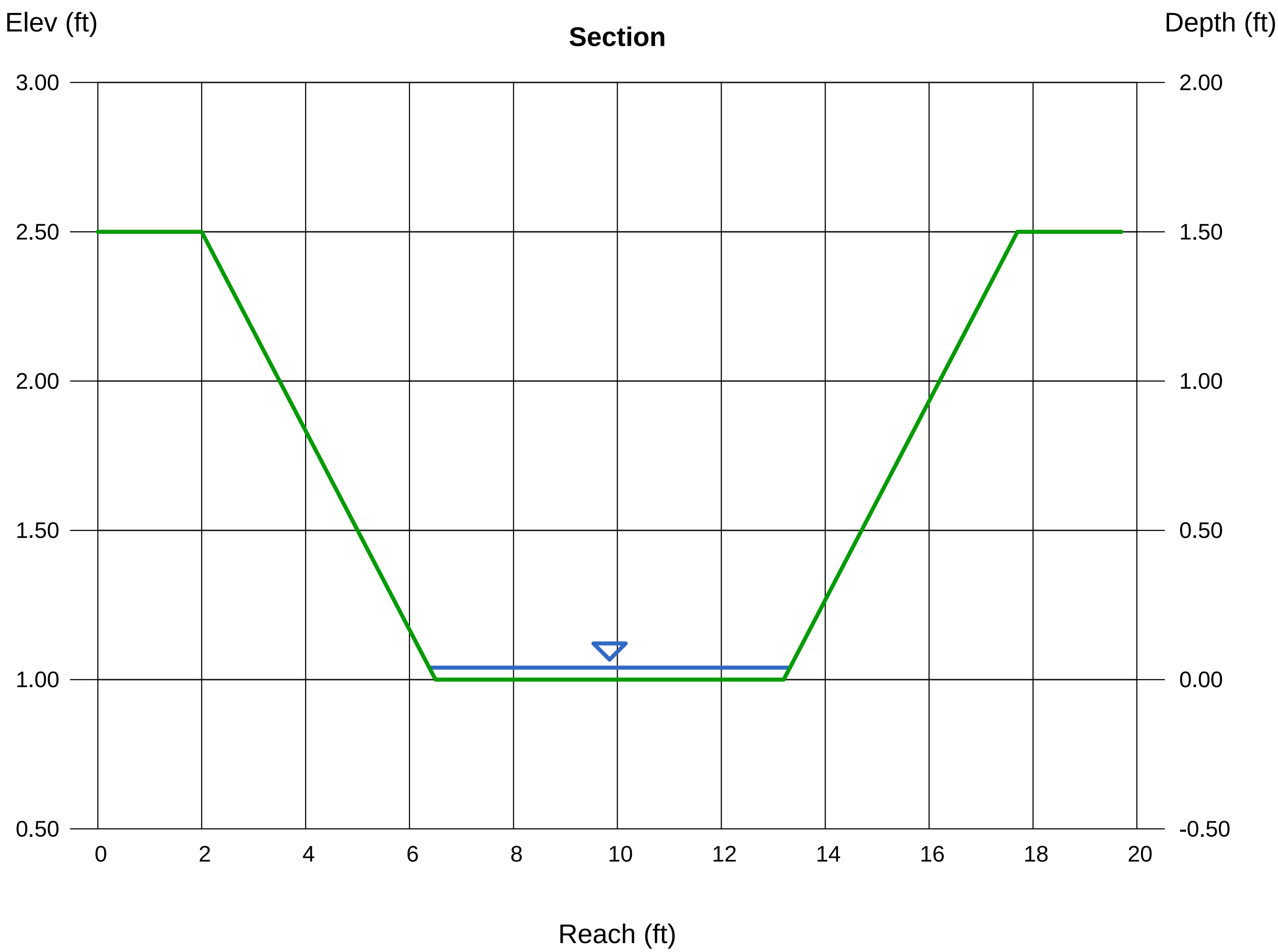
Depth (ft)	= 0.02
Q (cfs)	= 0.040
Area (sqft)	= 0.20
Velocity (ft/s)	= 0.20
Wetted Perim (ft)	= 10.13
Crit Depth, Yc (ft)	= 0.01
Top Width (ft)	= 10.12
EGL (ft)	= 0.02



Channel Report

BMP5 - Design Q - Design Length = V*60*7min = 156 ft

Trapezoidal		**Highlighted**	
Bottom Width (ft)	= 6.70	Depth (ft)	= 0.04
Side Slopes (z:1)	= 3.00, 3.00	Q (cfs)	= 0.100
Total Depth (ft)	= 1.50	Area (sqft)	= 0.27
Invert Elev (ft)	= 1.00	Velocity (ft/s)	= 0.37
Slope (%)	= 0.30	Wetted Perim (ft)	= 6.95
N-Value	= 0.020	Crit Depth, Yc (ft)	= 0.02
		Top Width (ft)	= 6.94
Calculations		EGL (ft)	= 0.04
Compute by:	Known Q		
Known Q (cfs)	= 0.10		



Channel Report

BMP 4 - Design Q - Design Length = V*60*7min = 155 ft

*Note: The flow entering this BMP can and will be controlled by the underground systems pumps.

Trapezoidal

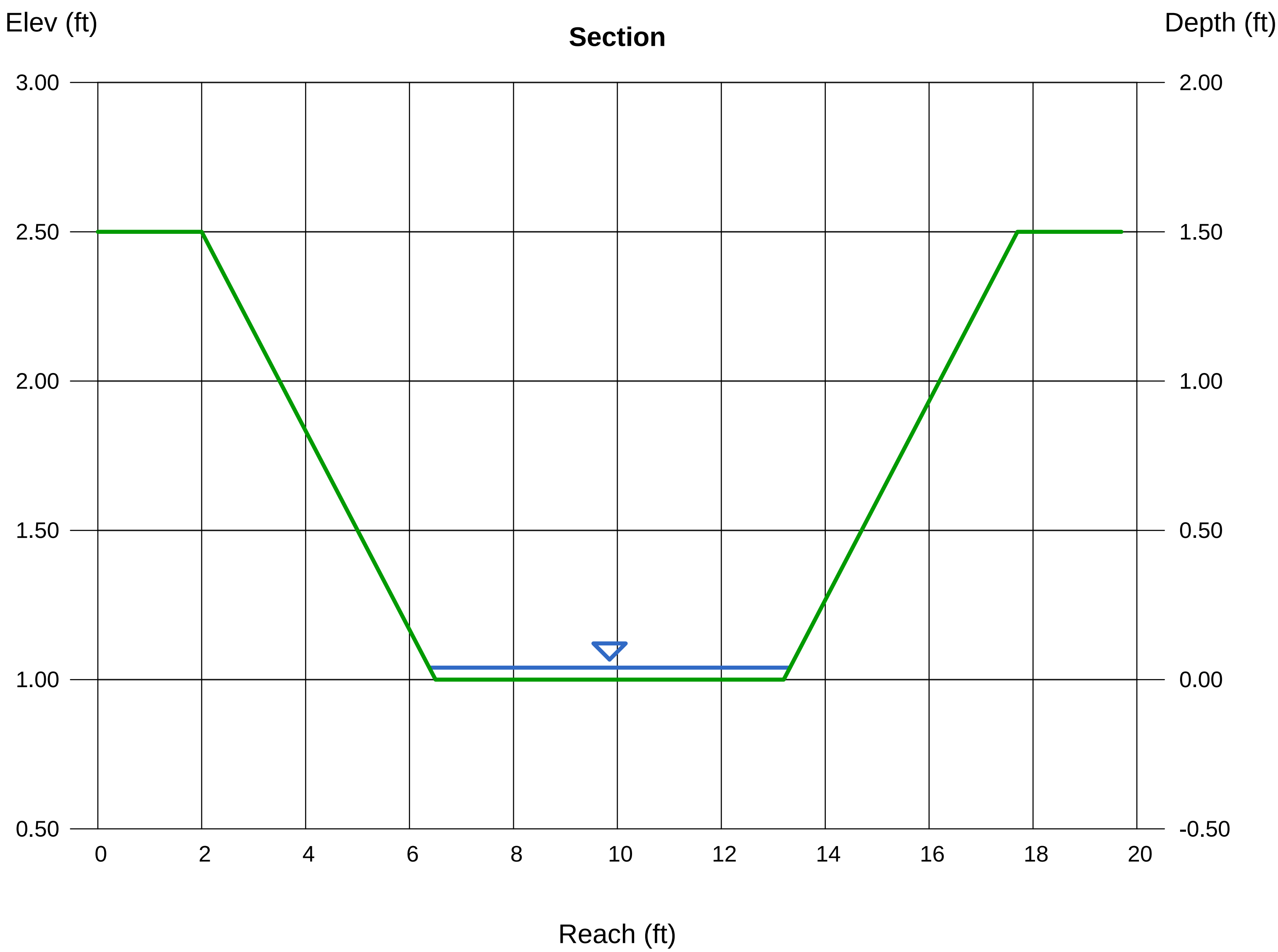
Bottom Width (ft)	= 6.70
Side Slopes (z:1)	= 3.00, 3.00
Total Depth (ft)	= 1.50
Invert Elev (ft)	= 1.00
Slope (%)	= 0.30
N-Value	= 0.020

Calculations

Compute by:	Known Q
Known Q (cfs)	= 0.10

Highlighted

Depth (ft)	= 0.04
Q (cfs)	= 0.100
Area (sqft)	= 0.27
Velocity (ft/s)	= 0.37
Wetted Perim (ft)	= 6.95
Crit Depth, Yc (ft)	= 0.02
Top Width (ft)	= 6.94
EGL (ft)	= 0.04

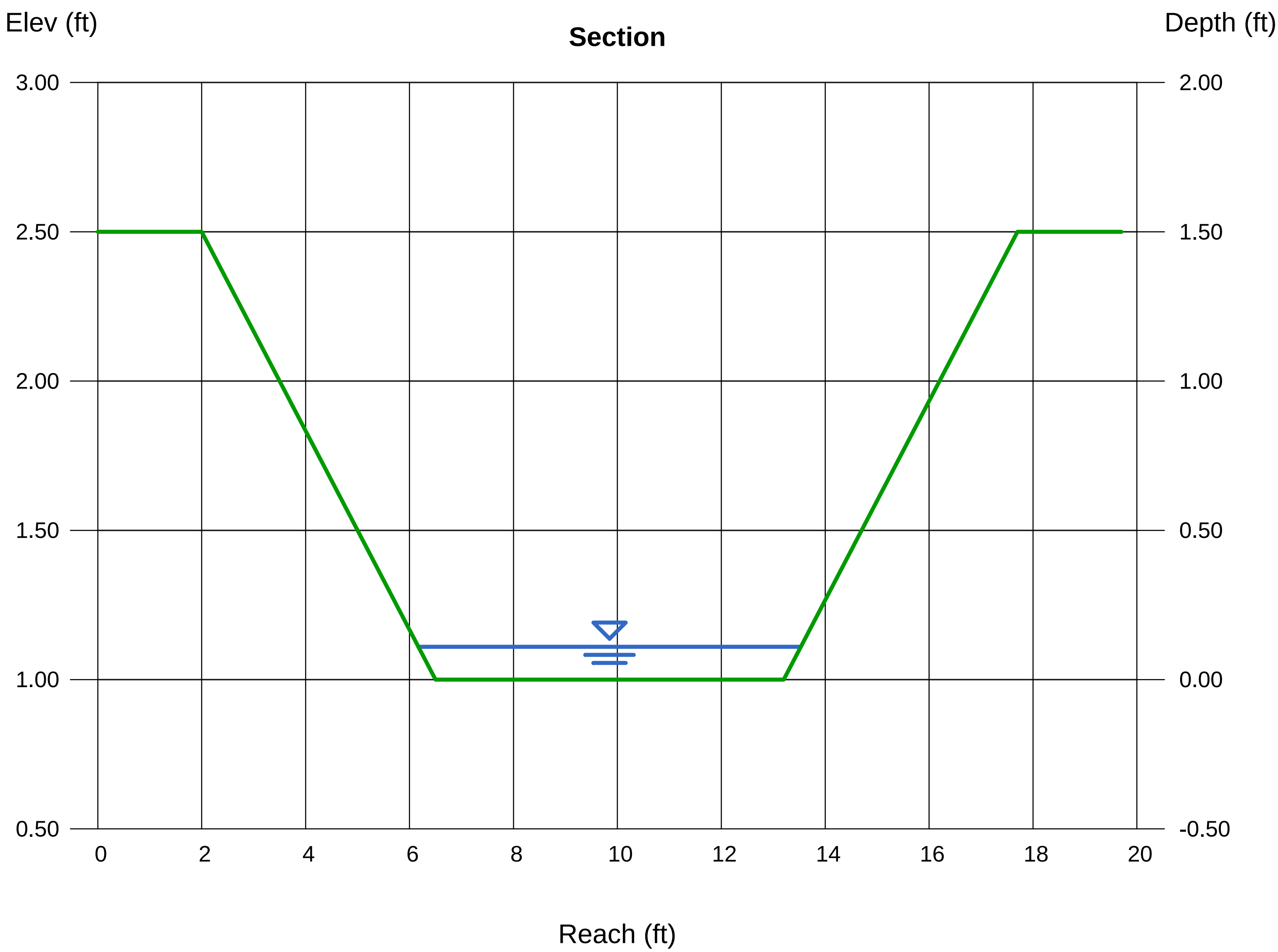


Channel Report

BMP3 - Design Q - Design Length = V*60*7min = 328 ft

*Note: The flow entering this BMP can and will be controlled by the underground systems pumps.

Trapezoidal		**Highlighted**	
Bottom Width (ft)	= 6.70	Depth (ft)	= 0.11
Side Slopes (z:1)	= 3.00, 3.00	Q (cfs)	= 0.600
Total Depth (ft)	= 1.50	Area (sqft)	= 0.77
Invert Elev (ft)	= 1.00	Velocity (ft/s)	= 0.78
Slope (%)	= 0.30	Wetted Perim (ft)	= 7.40
N-Value	= 0.020	Crit Depth, Yc (ft)	= 0.07
		Top Width (ft)	= 7.36
Calculations		EGL (ft)	= 0.12
Compute by:	Known Q		
Known Q (cfs)	= 0.60		



Channel Report

BMP2 - Design Q - Design Length = V*60*7min = 256 ft

Trapezoidal

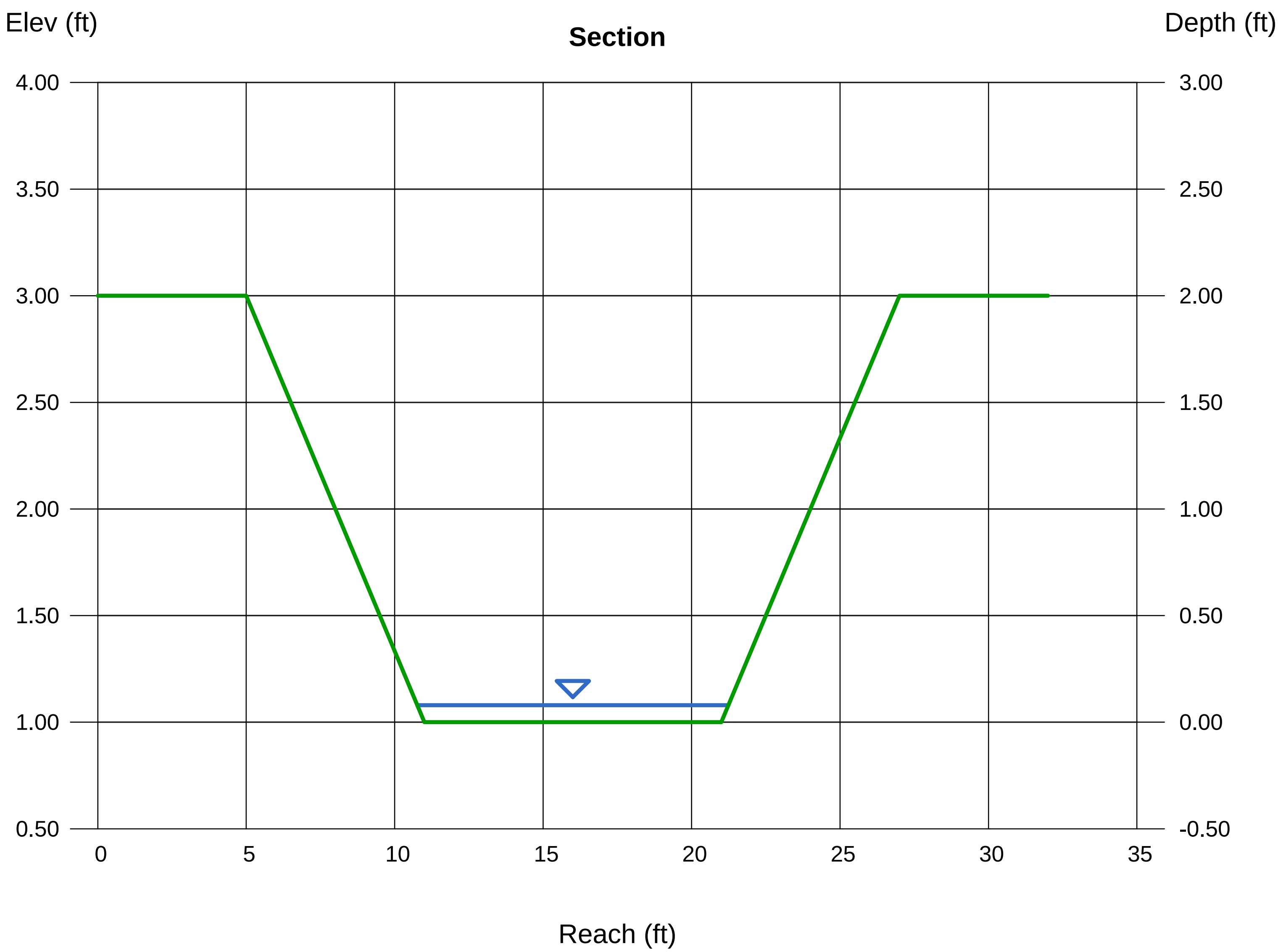
Bottom Width (ft)	=	10.00
Side Slopes (z:1)	=	3.00, 3.00
Total Depth (ft)	=	2.00
Invert Elev (ft)	=	1.00
Slope (%)	=	0.30
N-Value	=	0.020

Calculations

Compute by:		Known Q
Known Q (cfs)	=	0.50

Highlighted

Depth (ft)	=	0.08
Q (cfs)	=	0.500
Area (sqft)	=	0.82
Velocity (ft/s)	=	0.61
Wetted Perim (ft)	=	10.51
Crit Depth, Yc (ft)	=	0.05
Top Width (ft)	=	10.48
EGL (ft)	=	0.09



Channel Report

BMP1 - Design Q - Design Length = V*60*7min = 332 ft

Trapezoidal

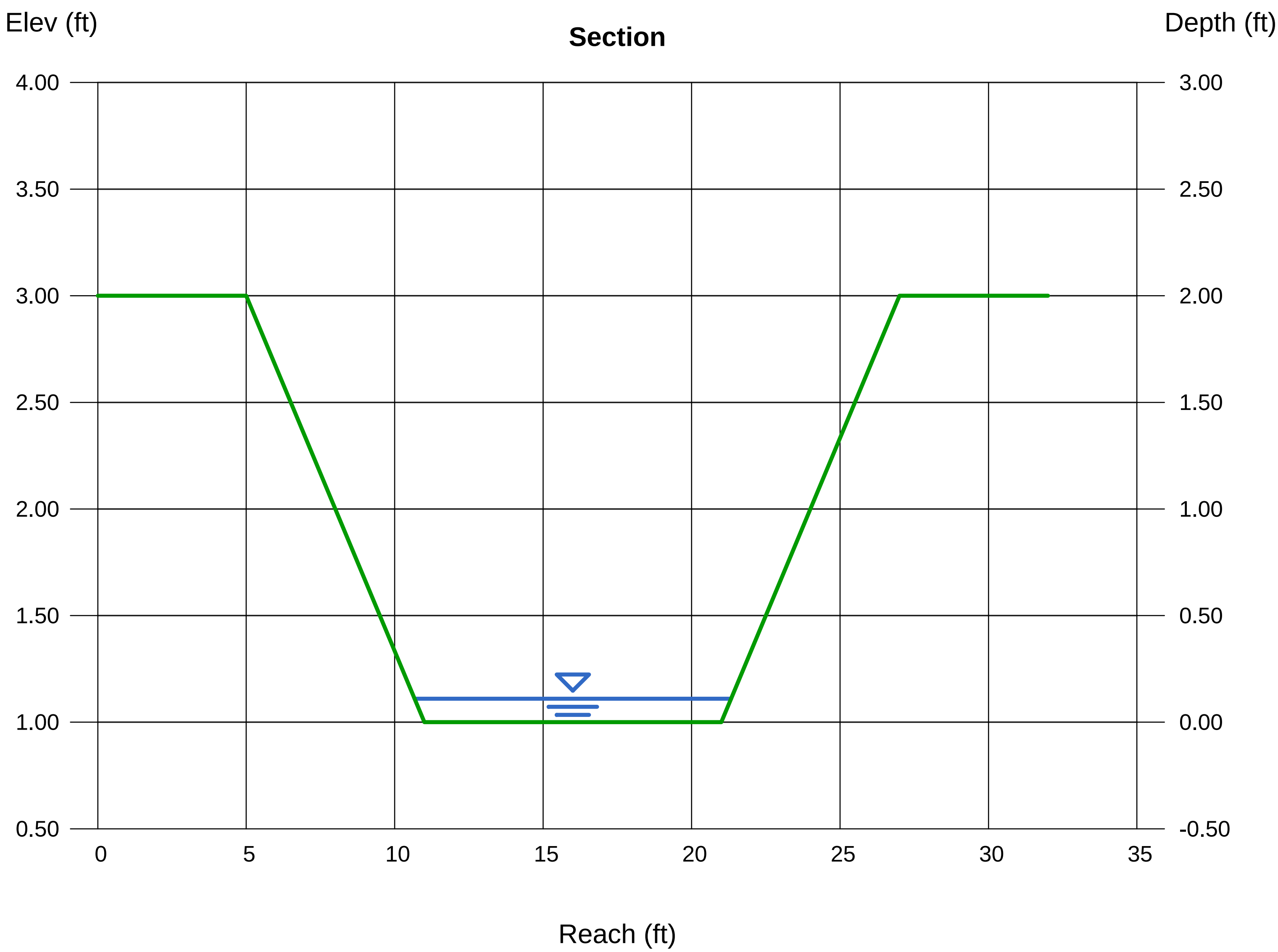
Bottom Width (ft)	= 10.00
Side Slopes (z:1)	= 3.00, 3.00
Total Depth (ft)	= 2.00
Invert Elev (ft)	= 1.00
Slope (%)	= 0.30
N-Value	= 0.020

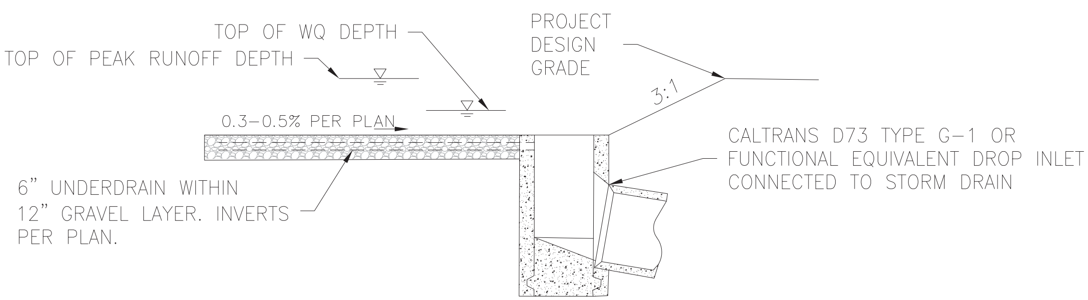
Calculations

Compute by:	Known Q
Known Q (cfs)	= 0.90

Highlighted

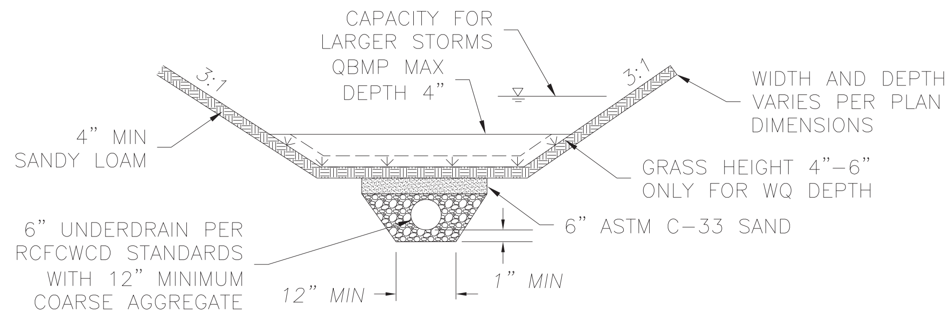
Depth (ft)	= 0.11
Q (cfs)	= 0.900
Area (sqft)	= 1.14
Velocity (ft/s)	= 0.79
Wetted Perim (ft)	= 10.70
Crit Depth, Yc (ft)	= 0.07
Top Width (ft)	= 10.66
EGL (ft)	= 0.12





BIO-SWALE END DRAIN DETAIL

NTS



BIO-SWALE SECTION

NTS

DYODS™
Design Your Own Detention System

CONTECH STORMWATER SOLUTIONS INC.

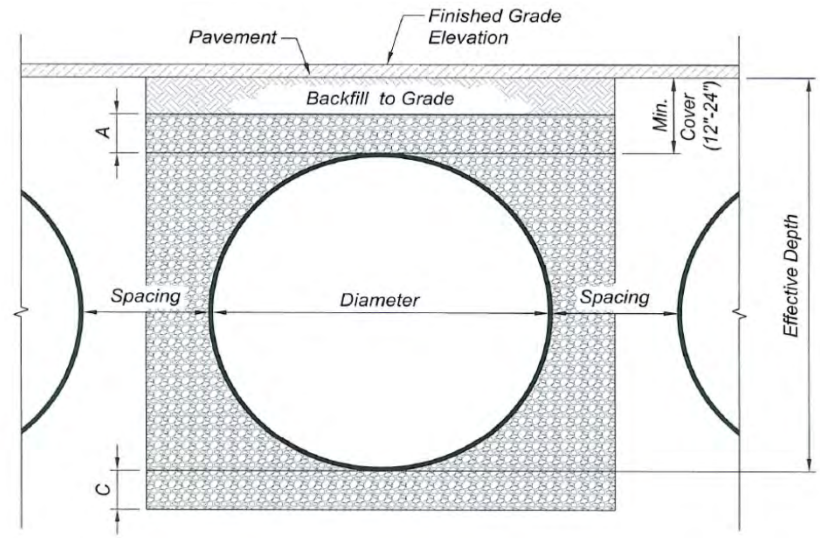
CONTECH CMP DETENTION SYSTEMS

For design assistance, drawings,
and pricing send completed worksheet to:
dyods@contech-cpi.com

Project Summary

Date:	10/30/2020
Project Name:	SWC Ramona & Perris - West Pipes
City / County:	Perris
State:	CA
Designed By:	CM
Company:	United Engineering
Telephone:	

Enter Information in Blue Cells



Corrugated Metal Pipe Calculator

Storage Volume Required (cf):	20,505	
Limiting Width (ft):	40.00	
Invert Depth Below Asphalt (ft):	10.50	
Solid or Perforated Pipe:	Perforated	
Shape Or Diameter (in):	96	50.27 ft^2 Pipe Area
Number Of Headers:	1	
Spacing between Barrels (ft):	3.00	
Stone Width Around Perimeter of System (ft):	2	
Depth A: Porous Stone Above Pipe (in):	6	
Depth C: Porous Stone Below Pipe (in):	6	
Stone Porosity (0 to 40%):	40	

System Sizing

Pipe Storage:	14,627	cf	
Porous Stone Storage:	6,267	cf	
Total Storage Provided:	20,894	cf	101.9% Of Required Storage
Number of Barrels:	3	barrels	
Length per Barrel:	87.0	ft	
Length Per Header:	30.0	ft	
Rectangular Footprint (W x L):	34. ft x 99. ft		

CONTECH Materials

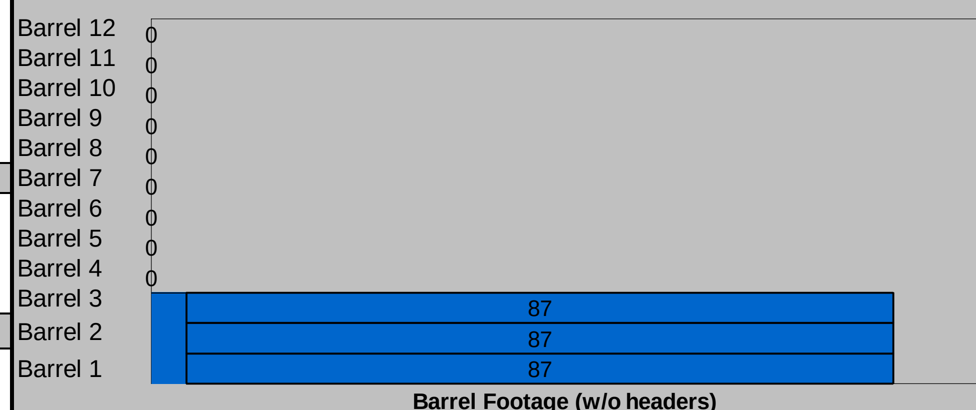
Total CMP Footage:	291	ft
Approximate Total Pieces:	14	pcs
Approximate Coupling Bands:	13	bands
Approximate Truckloads:	7	trucks

Construction Quantities**

Total Excavation:	1309	cy
Porous Stone Backfill For Storage:	580	cy stone
Backfill to Grade Excluding Stone:	187	cy fill

***Construction quantities are approximate and should be verified upon final design*

System Layout



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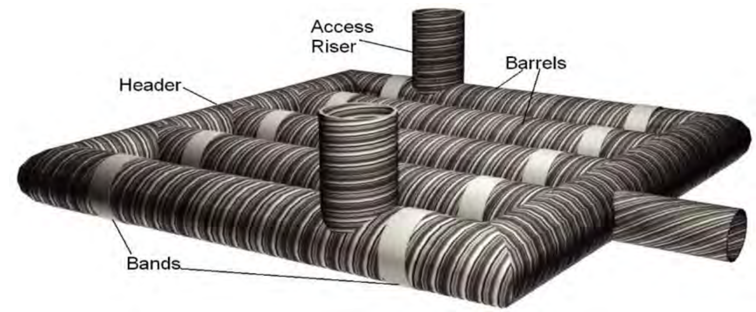
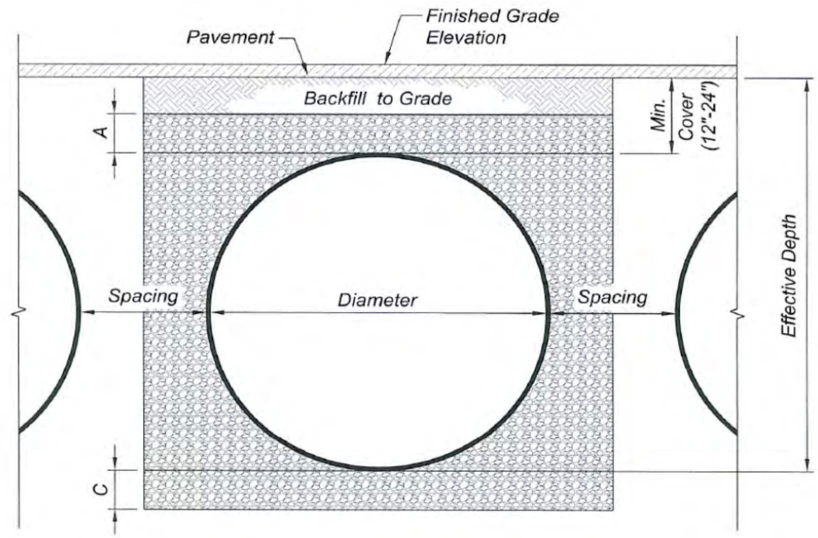
dyods@contech-cpi.com





Project Summary

Date:	10/30/2020
Project Name:	SWC Ramona & Perris - East Pipes
City / County:	Perris
State:	CA
Designed By:	CM
Company:	United Engineering
Telephone:	

Enter Information in Blue Cells

Corrugated Metal Pipe Calculator

Storage Volume Required (cf):	25,594	
Limiting Width (ft):	40.00	
Invert Depth Below Asphalt (ft):	10.50	
Solid or Perforated Pipe:	Perforated	
Shape Or Diameter (in):	96	50.27 ft^2 Pipe Area
Number Of Headers:	1	
Spacing between Barrels (ft):	3.00	
Stone Width Around Perimeter of System (ft):	2	
Depth A: Porous Stone Above Pipe (in):	6	
Depth C: Porous Stone Below Pipe (in):	6	
Stone Porosity (0 to 40%):	40	

System Sizing

Pipe Storage:	18,246	cf	
Porous Stone Storage:	7,757	cf	
Total Storage Provided:	26,003	cf	101.6% Of Required Storage
Number of Barrels:	3	barrels	
Length per Barrel:	111.0	ft	
Length Per Header:	30.0	ft	
Rectangular Footprint (W x L):	34. ft x 123. ft		

CONTECH Materials

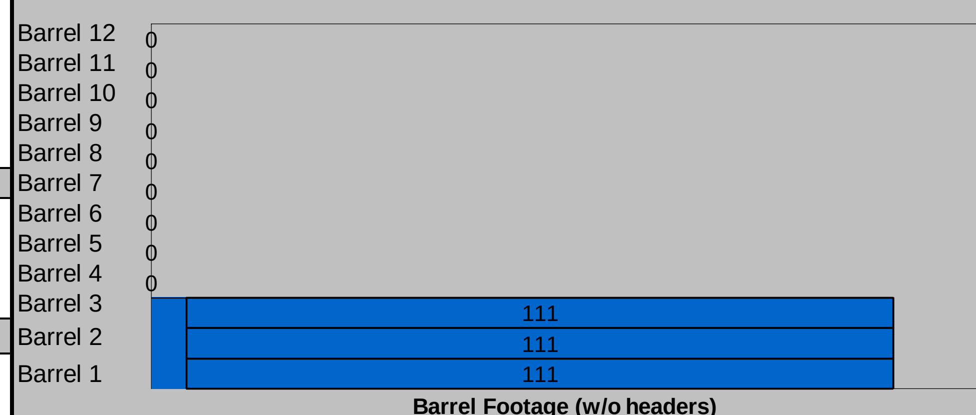
Total CMP Footage:	363	ft
Approximate Total Pieces:	17	pcs
Approximate Coupling Bands:	16	bands
Approximate Truckloads:	9	trucks

Construction Quantities**

Total Excavation:	1627	cy
Porous Stone Backfill For Storage:	718	cy stone
Backfill to Grade Excluding Stone:	233	cy fill

***Construction quantities are approximate and should be verified upon final design*

System Layout



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CONTECH CMP DETENTION SYSTEMS

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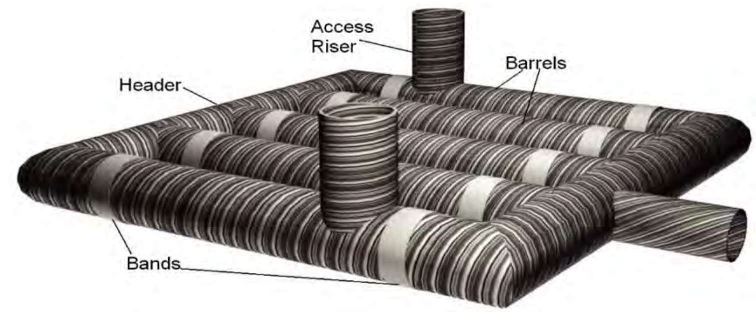
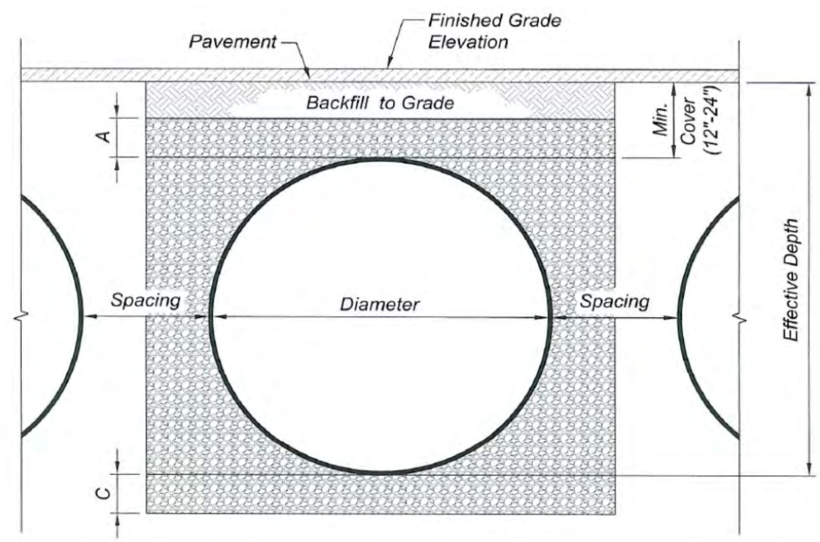
dyods@contech-cpi.com



Project Summary

Date:	10/30/2020
Project Name:	SWC Ramona & Perris - Central Pipes
City / County:	Perris
State:	CA
Designed By:	CM
Company:	United Engineering
Telephone:	

Enter Information in Blue Cells



Corrugated Metal Pipe Calculator

Storage Volume Required (cf):	103,573	
Limiting Width (ft):	75.00	
Invert Depth Below Asphalt (ft):	10.50	
Solid or Perforated Pipe:	Perforated	
Shape Or Diameter (in):	96	50.27 ft^2 Pipe Area
Number Of Headers:	1	
Spacing between Barrels (ft):	3.00	
Stone Width Around Perimeter of System (ft):	2	
Depth A: Porous Stone Above Pipe (in):	6	
Depth C: Porous Stone Below Pipe (in):	6	
Stone Porosity (0 to 40%):	40	

System Sizing

Pipe Storage:	74,343	cf	
Porous Stone Storage:	30,081	cf	
Total Storage Provided:	104,423	cf	100.8% Of Required Storage
Number of Barrels:	6	barrels	
Length per Barrel:	236.0	ft	
Length Per Header:	63.0	ft	
Rectangular Footprint (W x L):	67. ft x 248. ft		

CONTECH Materials

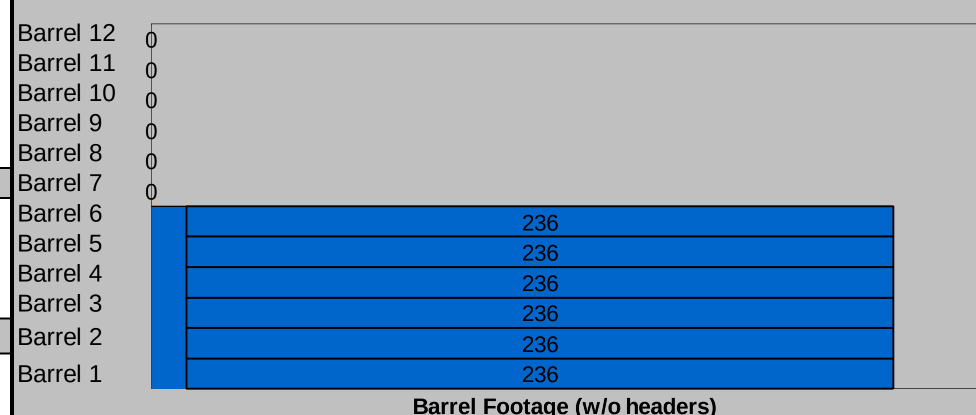
Total CMP Footage:	1,479	ft
Approximate Total Pieces:	63	pcs
Approximate Coupling Bands:	62	bands
Approximate Truckloads:	32	trucks

Construction Quantities**

Total Excavation:	6462	cy
Porous Stone Backfill For Storage:	2785	cy stone
Backfill to Grade Excluding Stone:	923	cy fill

***Construction quantities are approximate and should be verified upon final design*

System Layout



Appendix 7: Hydromodification

Supporting Detail Relating to Hydrologic Conditions of Concern

NOT REQUIRED: SITE IS IN HCOC EXEMPTION AREA

Appendix 8: Source Control

Pollutant Sources/Source Control Checklist

To be provide with FWQMP

Appendix 9: O&M

Operation and Maintenance Plan and Documentation of Finance, Maintenance and Recording Mechanisms

To be provide with FWQMP

Appendix 10: Educational Materials

BMP Fact Sheets, Maintenance Guidelines and Other End-User BMP Information

To be provide with FWQMP