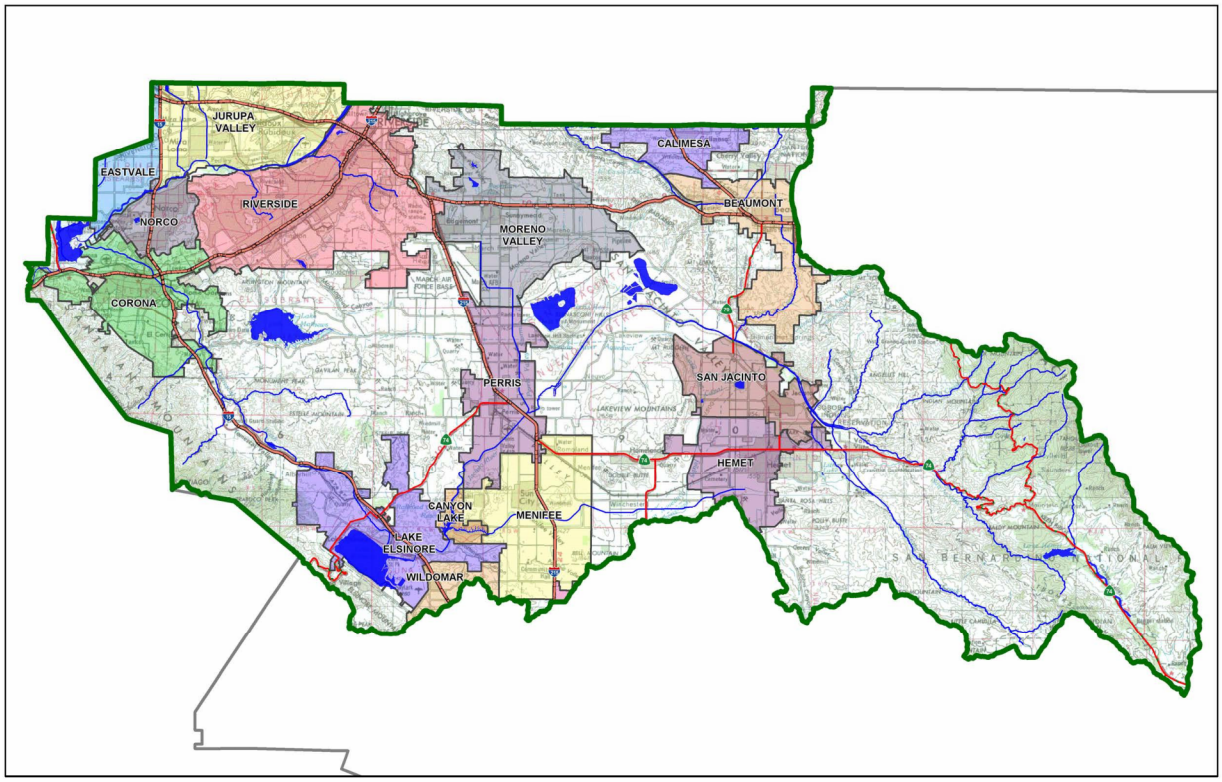
Project Specific Water Quality Management Plan

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

Project Title: 33521 Zeiders Road

Development No: PLN23-0245

Design Review/Case No: WQ-0348



☒ **Preliminary**
☐ **Final**

Original Date Prepared: December 2023

Revision Date(s): March 2024, May 2024, September 2024, October 2024

Prepared for Compliance with
Regional Board Order No. **R8-2010-0033**
Template revised June 30, 2016

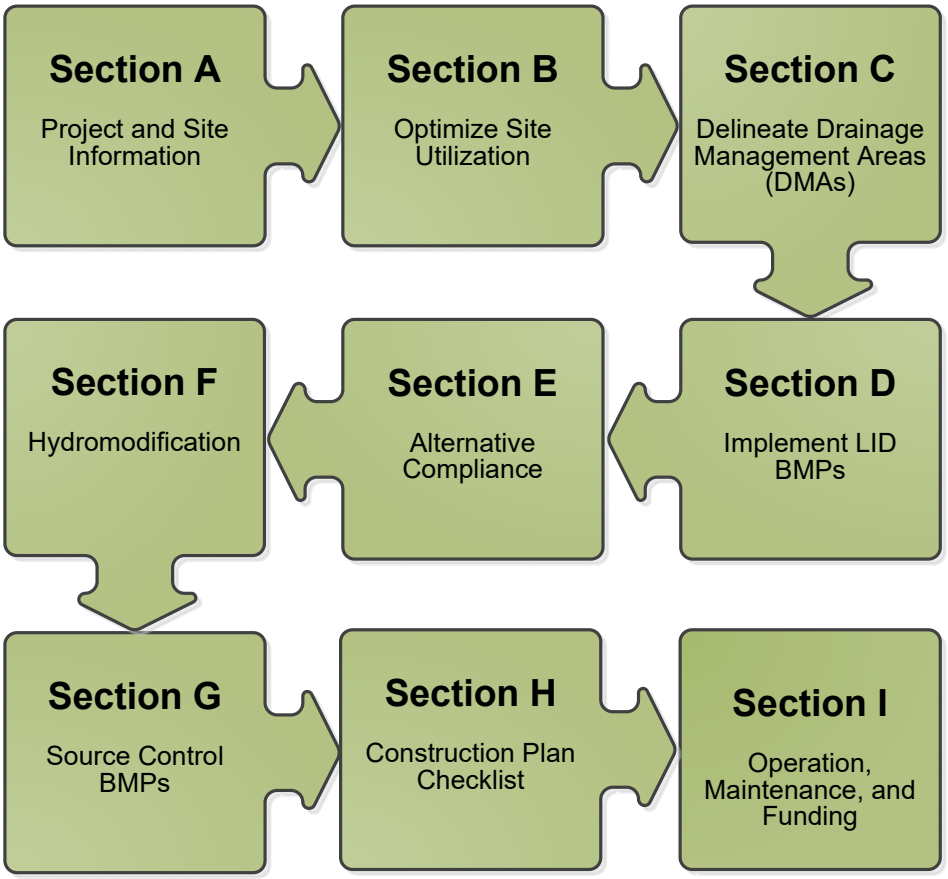
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A Brief Introduction

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



OWNER'S CERTIFICATION

This Project-Specific Water Quality Management Plan (WQMP) has been prepared for Pemcor Development Corporation by Pasco Laret Suiter & Associates for the 33521 Zeiders Road project.

This WQMP is intended to comply with the requirements of the City of Menifee Municipal Code Section 15.01 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 Menifee Water Quality Ordinance (Municipal Code Section 15.01).

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

Owner's Signature

05.21.24
Date

PAUL MAJER
Owner's Printed Name

GENERAL PARTNER
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."

Gregory W. Lang
Preparer's Signature

10/25/2024
Date

Gregory W. Lang
Preparer's Printed Name

Principal
Preparer's Title/Position

Preparer's Licensure:



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Section A: Project and Site Information

PROJECT INFORMATION	
Type of Project:	Industrial
Planning Area:	EDC Southern Gateway
Community Name:	City of Menifee
Development Name:	Menifee Industrial Park
PROJECT LOCATION	
Latitude & Longitude (DMS): 33°37'59.37"N 117°10'40.80"W	
Project Watershed and Sub-Watershed: Santa Ana Watershed, Middle and Lower San Jacinto River Sub-Watershed	
Gross Acres: 20.03 ac APN(s): 384-150-001 Map Book and Page No.: 384-15	
PROJECT CHARACTERISTICS	
Proposed or Potential Land Use(s)	Light Industrial
Proposed or Potential SIC Code(s)	4225 (Warehousing)
Area of Impervious Project Footprint (SF)	738,081
Total Area of proposed Impervious Surfaces within the Project Footprint (SF)/or Replacement	738,081
Does the project consist of offsite road improvements?	☒ Y ☐ N
Does the project propose to construct unpaved roads?	☐ Y ☒ N
Is the project part of a larger common plan of development (phased project)?	☐ Y ☒ N
EXISTING SITE CHARACTERISTICS	
Total area of existing Impervious Surfaces within the Project limits Footprint (SF)	~ 0 sf
Is the project located within any MSHCP Criteria Cell?	☐ Y ☒ N
If so, identify the Cell number:	N/A
Are there any natural hydrologic features on the project site?	☒ Y ☐ N
Is a Geotechnical Report attached?	☒ Y ☐ N
If no Geotech. Report, list the **NRCS soils type(s)** present on the site (A, B, C and/or D)	Soil Groups C and D
What is the Water Quality Design **(85th Percentile 24 hour)** Storm Depth for the project?	0.59 inches

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
- BMP Locations (Lat/Long)

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

A.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
Salt Creek	N/A	REC1, REC2, WARM, WILD	-
Canyon Lake/San Jacinto River Reach 2	Nutrients	MUN, AGR, GWR, REC1, REC2, COMM, WARM, WILD	-
San Jacinto River Reach 1	N/A	MUN, AGR, GWR, REC1, REC2, WARM, WILD, RARE	-
Lake Elsinore	DDT, Nutrients, Organic Enrichment/Low Dissolved Oxygen, PCBs, Toxicity	REC1, REC2, COMM, WARM, WILD, 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)* City of Menifee Grading Permit	☒ Y	☐ N

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

Section B: Optimize Site Utilization (LID Principles)

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

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

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

Site Optimization

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

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

In existing conditions, three offsite tributary drainage courses flow onto the project site along the southern property boundary and flow north. In the proposed condition, the drainage courses will be collected by proposed brow ditches and conveyed to three proposed onsite headwalls and one catch basin and then conveyed in proposed storm drain to POC-1 at the northern property boundary. Stormwater will discharge via a headwall and rip rap.

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

No, the entire site will be re-graded/disturbed.

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

Yes, natural infiltration capacity will be preserved as much as possible.

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

Yes, driveways have been constructed to the minimum width for fire truck access. Hardscape has also been incorporated only as needed to facilitate access to buildings and enhance amenity usage.

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

Yes, runoff from hardscape areas will be discharged onto landscape areas where feasible.

Section C: Delineate Drainage Management Areas (DMAs)

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

Table C.1 DMA Classifications

DMA Name or ID	Surface Type(s)[1][2]	Area (Sq. Ft.)	DMA Type
DMA-1	Roofs/Concrete/Asphalt	313,339	D
DMA-1	Ornamental Landscaping	29,203	D
DMA-2	Roofs/Concrete/Asphalt	370,072	D
DMA-2	Ornamental Landscaping	30,160	D
DMA-3	Ornamental Landscaping	18,536	A
DMA-4	Ornamental Landscaping	35,202	A
DMA-5	Ornamental Landscaping	6,674	A
DMA-6	Asphalt	42,754	D
DMA-6	Ornamental Landscaping	26,407	D
DMA-7	Asphalt	11,916	D
DMA-7	Ornamental Landscaping	13,048	D

[1]*Reference Table 2-1 in the WQMP Guidance Document to populate this column*
[2]*If multi-surface provide back-up*

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

DMA Name or ID	Area (Sq. Ft.)	Stabilization Type	Irrigation Type (if any)
DMA-3	18,536	Landscaping	
DMA-4	35,202	Landscaping	
DMA-5	6,674	Landscaping	

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

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

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

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

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

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

DMA Name or ID	BMP Name or ID
DMA-1	BMP 1 and 2 - Modular Wetland Systems
DMA-2	BMP 3 and 4 - Modular Wetland Systems
DMA-6	BMP 5 - Bioretention
DMA-7	BMP 6 - Bioretention

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

Section D: Implement LID BMPs

D.1 Infiltration Applicability

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

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

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

Geotechnical Report

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

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

Infiltration Feasibility

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

Table D.1 Infiltration Feasibility

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

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

D.2 Harvest and Use Assessment

Please check what applies*:*

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

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

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

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

Irrigation Use Feasibility

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

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

Total Area of Irrigated Landscape: 3.66 ac

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

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: 15.69 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: 12.4 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)
12.4 ac	3.66 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: 1354 (Tenants have not yet been determined therefore the projected number of daily toilet users is based on twice the total number of parking spaces available onsite.)

Project Type: Light Industrial

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: 15.69 ac

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

Enter your TUTIA factor: 172

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: 2699

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)
2699	1354

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:

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:

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

Enter the factor from Table 2-4:

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

Minimum required use:

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

Minimum required non-potable use (Step 4)	**Projected average daily use (Step 1)**

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

D.3 Bioretention and Biotreatment Assessment

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

Select one of the following:

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

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

D.4 Feasibility Assessment Summaries

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

Table D.2 LID Prioritization Summary Matrix

DMA Name/ID	LID BMP Hierarchy				No LID (Alternative Compliance)
	1. Infiltration	2. Harvest and use	3. Bioretention	4. Biotreatment	
DMA-1	☐	☐	☐	☒	☐
DMA-2	☐	☐	☐	☒	☐
DMA-6	☐	☐	☒	☐	☐
DMA-7	☐	☐	☒	☐	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐

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.

N/A

D.5 LID BMP Sizing

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

Table D.3 DCV Calculations for LID BMPs

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Enter BMP Name / Identifier Here*		
	[A]		[B]	[C]	[A] x [C]			
D/1	*313,339*	*Roofs/Asphalt/Concrete*	*1*	*0.89*	*279,498.4*	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
D/1	*29,203*	*Ornamental Landscaping*	*0.1*	*0.11*	*3,225.7*			
	342,542				282,724.1	0.59	13,900.6	See App. 6 for MWS treatment flow calculation

[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	*Enter BMP Name / Identifier Here*		
	[A]		[B]	[C]	[A] x [C]			
D/2	*370,072*	*Roofs/Asphalt/Concrete*	*1*	*0.89*	*330,104.2*	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
D/2	*30,160*	*Ornamental Landscaping*	*0.1*	*0.11*	*3,331.4*			
	400,232				333,435.6	0.59	16,393.9	See App. 6 for MWS treatment flow calculation

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Enter BMP Name / Identifier Here*		
	[A]		[B]	[C]	[A] x [C]			
D/6	*42,754*	*Asphalt/Concrete*	*1*	*0.89*	*38,136.6*	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
D/6	*26,407*	*Ornamental Landscaping*	*0.1*	*0.11*	*2,916.9*			
	69,161				41,053.5	0.59	2,018.5	2,019

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Enter BMP Name / Identifier Here*		
	[A]		[B]	[C]	[A] x [C]			
D/7	*11,916*	*Asphalt/Concrete*	*1*	*0.89*	*10,629.1*	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
D/7	*13,048*	*Ornamental Landscaping*	*0.1*	*0.11*	*1,441.3*			
	24,964				12,070.4	0.59	593.5	594

Section E: Alternative Compliance (LID Waiver Program)

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

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

- *Or* -

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

N/A

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)*

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

E.4 Treatment Control BMP Selection

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

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

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

Table E.4 Treatment Control BMP Selection

Selected Treatment Control BMP Name or ID[1]	Priority Pollutant(s) of Concern to Mitigate[2]	Removal Efficiency Percentage[3]
BMP-1 (MWS)	Bacterial Indicators, Nutrients, Pesticides, and Toxic Organic Compounds	High, Medium, NA, NA
BMP-2 (MWS)	Bacterial Indicators, Nutrients, Pesticides, and Toxic Organic Compounds	High, Medium, NA, NA
BMP-3 (MWS)	Bacterial Indicators, Nutrients, Pesticides, and Toxic Organic Compounds	High, Medium, NA, NA
BMP-4 (MWS)	Bacterial Indicators, Nutrients, Pesticides, and Toxic Organic Compounds	High, Medium, NA, NA

[1] Treatment Control BMPs must not be constructed within Receiving Waters. In addition, a proposed Treatment Control BMP may be listed more than once if they possess more than one qualifying pollutant removal efficiency.
[2] Cross Reference Table E.1 above to populate this column.
[3] As documented in a Co-Permittee Approved Study and provided in Appendix 6.

Section F: Hydromodification

F.1 Hydrologic Conditions of Concern (HCOC) Analysis

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

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

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

If Yes, HCOC criteria do not apply.

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

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

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

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

Table F.1 Hydrologic Conditions of Concern Summary

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

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

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

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

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

F.2 HCOC Mitigation

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

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

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

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

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

Two proposed underground storm water storage facilities have been sized to provide HCOC mitigation for the 2-yr 24-hr storm event such that discharge from the site has been limited to a flow rate no greater than 110% of the pre-development 2-year peak flow. Refer to Appendix 7 for calculations.

Section G: Source Control BMPs

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

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

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

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

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

Table G.1 Permanent and Operational Source Control Measures

Potential Sources of Runoff pollutants	Permanent Structural Source Control BMPs	Operational Source Control BMPs
Onsite storm drain inlets	Mark all inlets with the words "Only Rain Down the Storm Drain" or similar.	Maintain and periodically repaint or replace inlet markings. Provide stormwater pollution prevention information to new site owners, lessees, or operators. See applicable operational BMPs in Fact Sheet SC-44, "Drainage System Maintenance," in the CASQA Stormwater Quality

		Handbooks at www.cabmphandbooks.com Include the following in lease agreements: "Tenant shall not allow anyone to discharge anything to storm drains or to store or deposit materials so as to create a potential discharge to storm drains."
Interior floor drains and elevator shaft pumps	Interior floor drains and elevator shaft sump pumps will be plumbed to sanitary sewer.	Inspect and maintain drains to prevent blockages and overflow.
Need for future indoor & structural pest control	Building shall have design features that discourage entry of pests.	Provide Integrated Pest Management information to owners, lessees, and operators.
Landscape/Outdoor Pesticide Use	Final landscape plans will: Design landscaping to minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to stormwater pollution. Specify plants that are tolerant of saturated soil condition where landscaped areas are used to retain or detain stormwater. Consider using pest-resistant plants, especially adjacent to hardscape. Select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions to ensure successful establishment.	Maintain landscaping using minimum or no pesticides. See applicable operational BMPs in "What you should know for…..Landscape and Gardening" at http://rcflood.org/stormwater Provide IPM information to new owners, lessees and operators.
Refuse Areas	Signs will be posted on or near dumpsters with the words "Do not dump hazardous materials here" or similar.	Provide adequate number of receptacles. Inspect receptacles regularly; repair or replace leaky receptacles. Keep receptacles covered.

		Prohibit/prevent dumping of liquid or hazardous wastes. Post "no hazardous materials" signs. Inspect and pick up litter daily and clean up spills immediately. Keep spill control materials available on-site. See Fact Sheet SC-34, "Waste Handling and Disposal" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com
Loading Docks		Move loaded and unloaded items indoors as soon as possible. See Fact Sheet SC-30, "Outdoor Loading and Unloading," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com
Fire Sprinkler Test Water	Provide a means to drain fire sprinkler test water to the sanitary sewer.	See the note in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com
Miscellaneous Drain or Wash Water or Other Sources: Rooftop Equipment, Roofing, gutters, and trim.	Rooftop equipment with potential to produce pollutants shall be roofed and/or have secondary containment. Avoid roofing, gutters, and trim made of copper or other unprotected metals that may leach into runoff.	
Plazas, sidewalks, and 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)	BMP Location (Lat/Long)
BMP-1	Modular Wetland (Proprietary Biofiltration)	C05 and C06	
BMP-2	Modular Wetland (Proprietary Biofiltration)	C05 and C06	
BMP-3	Modular Wetland (Proprietary Biofiltration)	C05 and C06	
BMP-4	Modular Wetland (Proprietary Biofiltration)	C05 and C06	
BMP-5 (BMP-5A and 5B)	Bioretention	C04 and C05	
BMP-6	Bioretention	C05	
VAULT-1	Underground Detention Vault	C05 and C06	
VAULT-2	Underground Detention Vault	C05 and C06	

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

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

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

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

Maintenance Mechanism: Water Quality Management Plan and Stormwater Best Management Practices Operation, Transfer, Maintenance and Right of Entry Agreement

Will the proposed BMPs be maintained by a Home Owners' Association (HOA) or Property Owners Association (POA)? The property owner shall be responsible for maintenance of the BMPs.

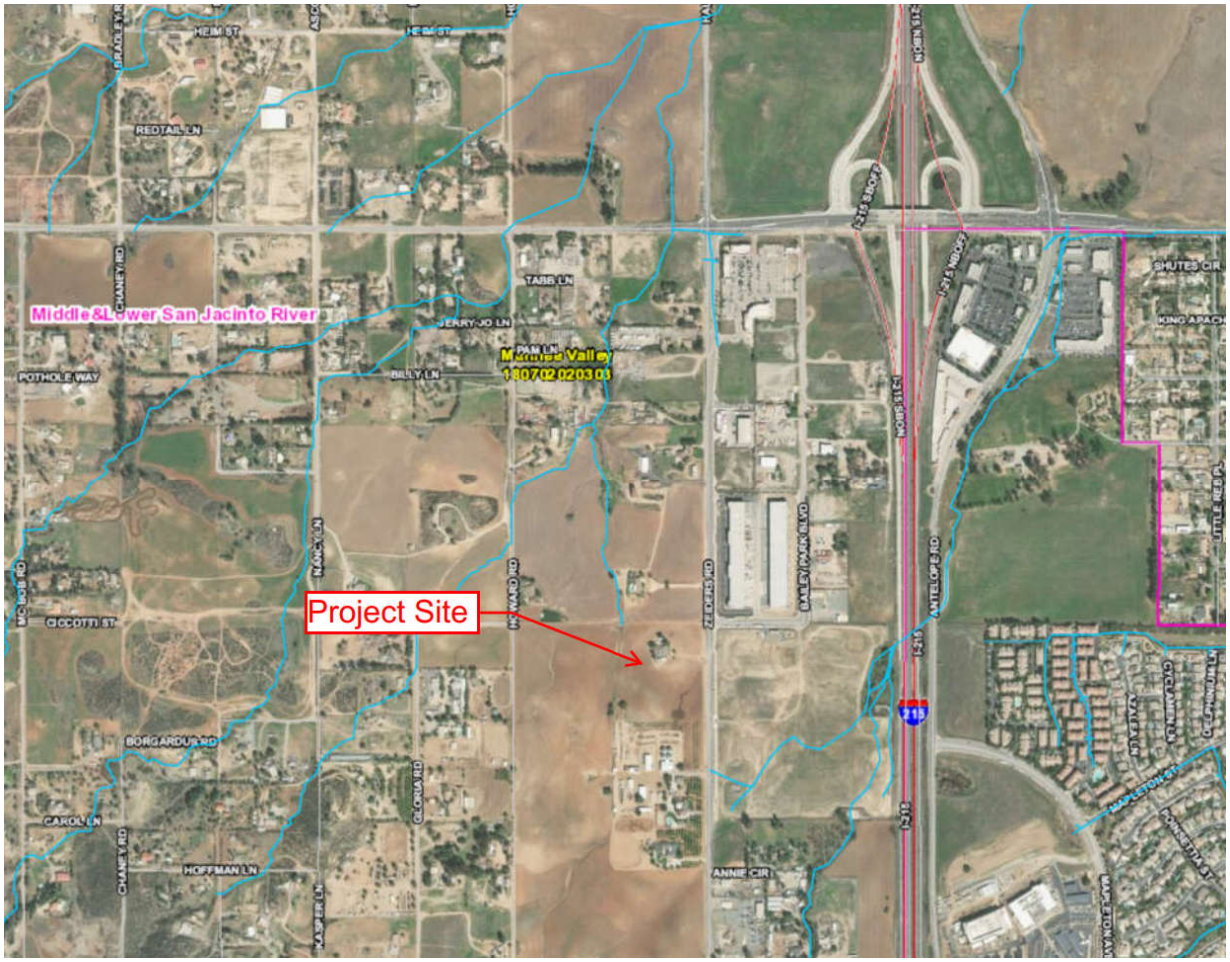
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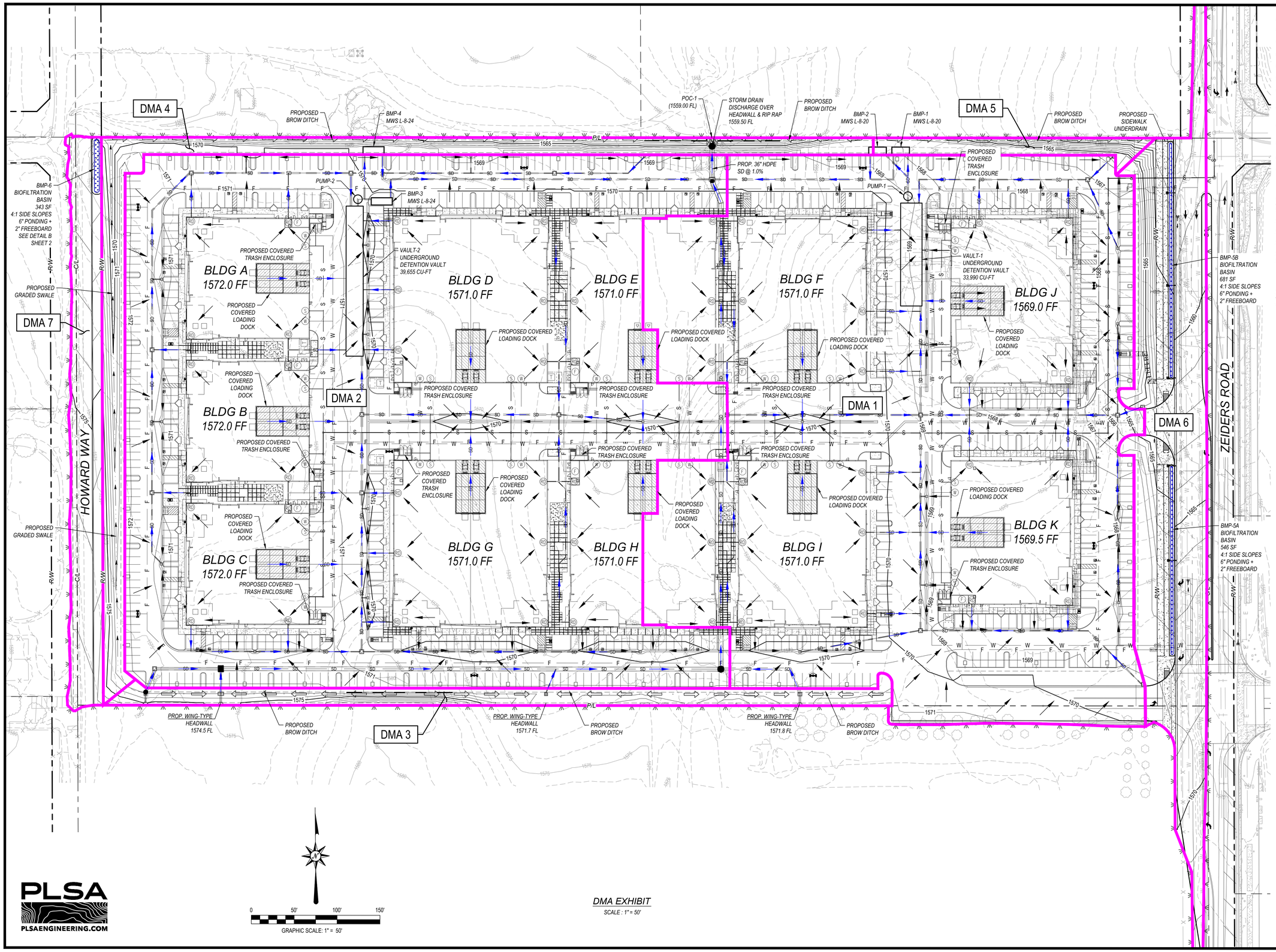
Include your Operation and Maintenance Plan and Maintenance Mechanism in Appendix 9. Additionally, include all pertinent forms of educational materials for those personnel that will be maintaining the proposed BMPs within this Project-Specific WQMP in Appendix 10.

Appendix 1: Maps and Site Plans

Location Map, WQMP Site Plan and Receiving Waters Map

VICINITY MAP





LEGEND

DESCRIPTION	
RIGHT-OF-WAY LINE/PROPERTY LINE	
GRADING LIMIT	
DMA BOUNDARY	
CONCRETE BROW DITCH	
PROPOSED STORM DRAIN	SD
PROPOSED IMPERVIOUS AREA	
PROPOSED DECOMPOSED GRANITE	
PROPOSED BIOFILTRATION BASIN	
DIRECTION OF SURFACE FLOW	
DIRECTION OF PIPE FLOW	

PROJECT CHARACTERISTICS

PARCEL AREA:	20.03 AC
LIMIT OF GRADING:	20.60 AC
PROPOSED IMPERVIOUS AREA:	16.94 AC
PROPOSED PERVIOUS AREA:	3.66 AC

NOTE: PROPOSED IMPERVIOUS AREA + PROPOSED PERVIOUS AREA = LIMIT OF GRADING

SOIL INFORMATION

HYDROLOGIC SOIL: TYPE C & D

PLSA
PLSAENGINEERING.COM

0 50' 100' 150'
GRAPHIC SCALE: 1" = 50'

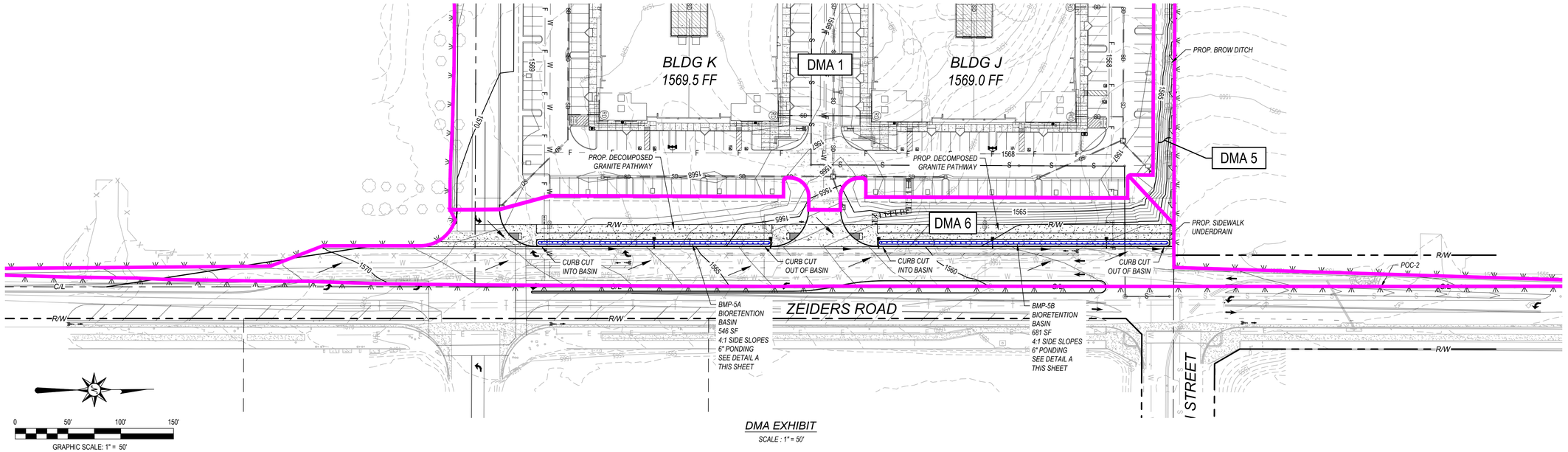
DMA EXHIBIT
SCALE : 1" = 50'

DMA EXHIBIT
33521 ZEIDERS ROAD

PLSA JOB JUMBER : 3983
SCALE : 1" = 50'
DATE : 05/15/2024

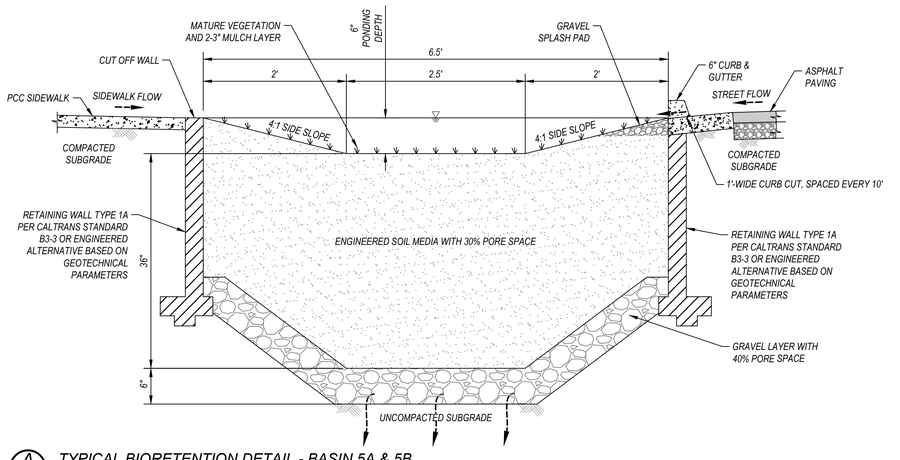
SHEET 1 OF 2

J:\ACTIVE JOBS\3983 PEMCOR ZEIDERS ROAD\CIVIL\REPORTS\WQMP\Civil 3D



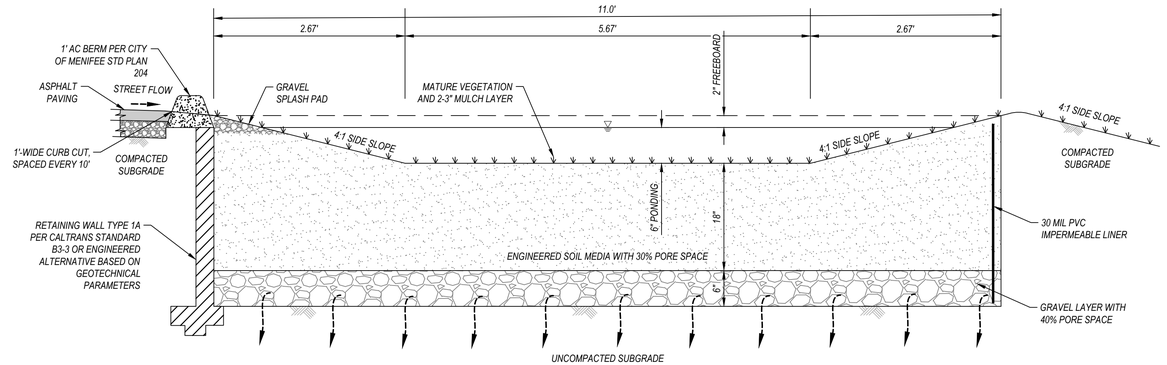
DMA EXHIBIT

SCALE : 1" = 50'



A/2 TYPICAL BIORETENTION DETAIL - BASIN 5A & 5B

NOT TO SCALE



B/2 TYPICAL BIORETENTION DETAIL - BASINS 6

NOT TO SCALE

PLSA

PLSAENGINEERING.COM

DMA EXHIBIT
33521 ZEIDERS ROAD

PLSA JOB JUMBER : 3983

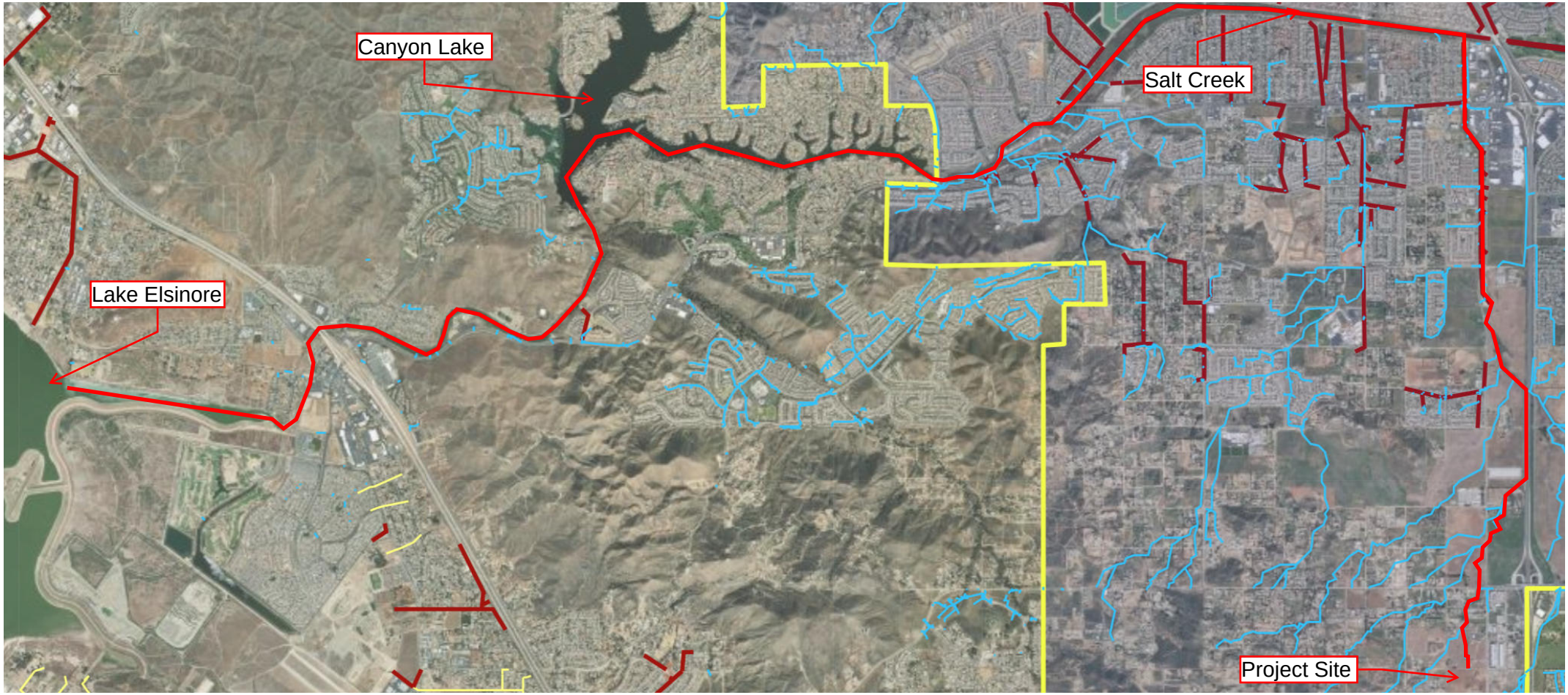
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SHEET 2 OF 2

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RECEIVING WATERS **MAP**



Appendix 2: Construction Plans

Grading and Drainage Plans

PRELIMINARY GRADING AND UTILITY PLANS FOR:

MENIFEE BUSINESS PARK

LEGEND

PROPOSED IMPROVEMENTS

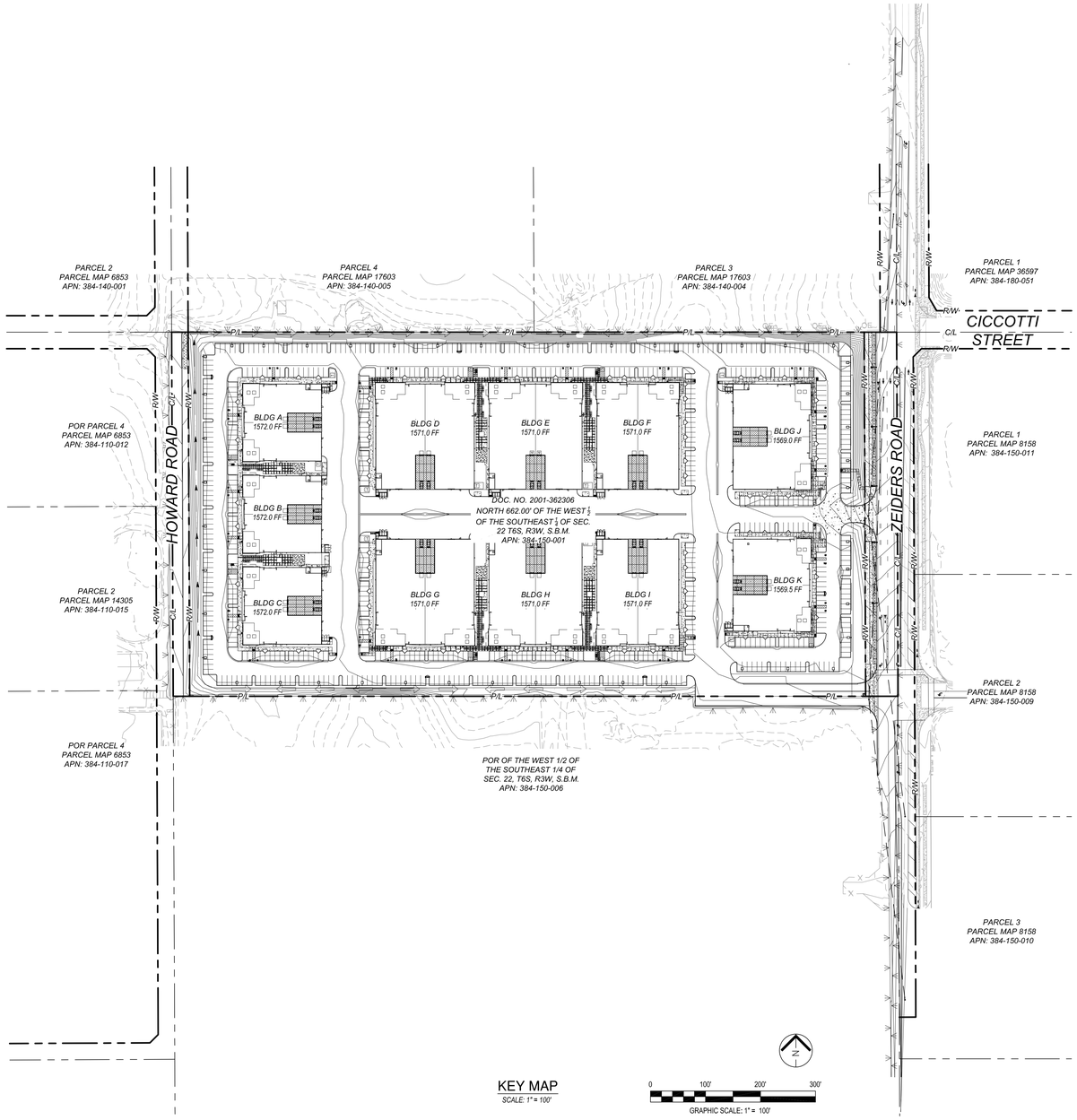
IMPROVEMENT	SYMBOL
RIGHT-OF-WAY	R/W
PROPERTY LINE	P/L
CENTER LINE	C/L
PROPOSED CONTOUR	293
EXISTING CONTOUR	290
SPOT ELEVATION	293.00 TC
FLOW DIRECTION AND SLOPE	2.0%
LIMIT OF GRADING	
SETBACK LINE	
6" CURB AND GUTTER	
6" CURB	
3' RIBBON GUTTER	
CONCRETE BROW DITCH	
RETAINING WALL	
PEDESTRIAN SIDEWALK PAVING	
PEDESTRIAN PERVIOUS SURFACE PAVEMENT	
VEHICULAR CONCRETE PAVING	
VEHICULAR ASPHALT PAVING	
BIOFILTRATION BASIN	
PRIVATE STORM DRAIN PIPE (SIZE & TYPE PER PLAN)	SD
PRIVATE X" PVC WATER	W
PRIVATE X" PVC FIRE	F
PRIVATE X" PVC SEWER	S
PVT. X" SEWER CLEANOUT	S
WATER METER & BACKFLOW	W BF
ROOF DRAIN	RD
BUILDING SEWER POINT OF CONNECTION	S
BUILDING WATER POINT OF CONNECTION	W
FIRE SPRINKLER RISER	F
PRIVATE FIRE HYDRANT	
GATE VALVE	
THRUST BLOCK	
STORM DRAIN CLEANOUT	
BROOKS BOX CATCH BASIN (SIZE PER PLAN)	
CATCH BASIN	
CATCH BASIN	
WING HEADWALL	
RIP RAP	
BACKFLOW PREVENTION ASSEMBLY	
TRUNCATED DOMES	
BIOCLEAN MODULAR WETLAND SYSTEM	
UNDERGROUND DETENTION VAULT	

EXISTING IMPROVEMENTS

ITEM	SYMBOL
EXISTING WATER	W
EXISTING RECYCLED WATER	RW
EXISTING SEWER	S
EXISTING STORM DRAIN	SD
EXISTING TELEPHONE	T
EXISTING UNDERGROUND ELECTRIC	E
EXISTING SEWER MANHOLE	
EXISTING WATER METER	
EXISTING FIRE HYDRANT	
EXISTING WATER VALVE	
EXISTING STREET LIGHT	
EXISTING MONUMENT (PROTECT IN PLACE)	
EXISTING IRRIGATION WATER SERVICE	I

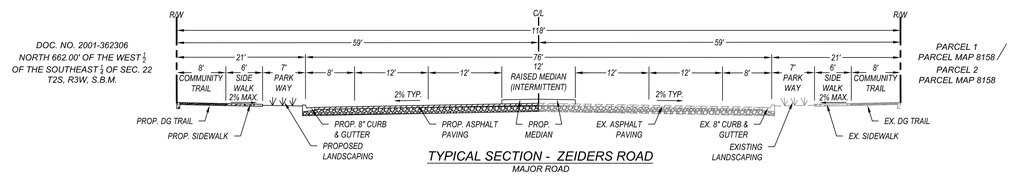
ABBREVIATIONS

AR/AV	AIR-RELEASE & AIR/VACUUM VALVE
BO	BLOW-OFF
BS	BOTTOM OF STAIR
BW	BOTTOM OF WALL
DI	DUCTILE IRON
FF	FINISHED FLOOR ELEVATION
FG	FINISHED GRADE
FS	FINISHED SURFACE
GB	GRADE BREAK
GF	FACE OF GARAGE ELEVATION
GV	GATE VALVE
HP	HIGH POINT
IE	INVERT ELEVATION
LP	LOW POINT
TB	THRUST BLOCK
TC	TOP OF CURB
TG	TOP OF GRATE
TS	TOP OF STAIR
TW	TOP OF WALL
WAS	WATER AGENCIES' STANDARDS

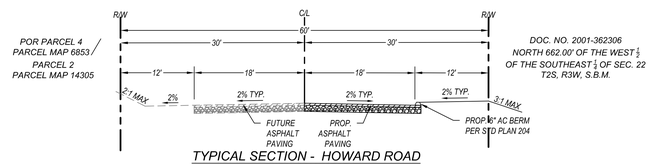


KEY MAP
SCALE: 1" = 100'

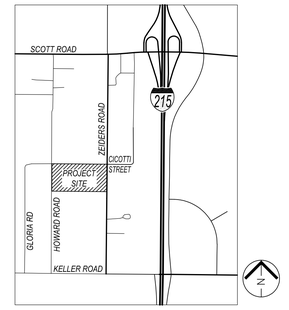
GRAPHIC SCALE: 1" = 100'



TYPICAL SECTION - ZEIDERS ROAD
MAJOR ROAD



TYPICAL SECTION - HOWARD ROAD
RURAL COLLECTOR



VICINITY MAP
NOT TO SCALE

LEGAL DESCRIPTION

THE NORTH 662 FEET OF THE WEST ½ OF THE SOUTHEAST ¼ OF SECTION 22, TOWNSHIP 6 SOUTH, RANGE 3 WEST, SAN BERNARDINO BASE AND MERIDIAN, IN THE CITY OF MENIFEE, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA.

ASSESSORS PARCEL NUMBER

384-150-001

SITE ADDRESS

33521 ZEIDERS ROAD
MENIFEE, CA 92584

DEVELOPER

PEMCOR PROPERTIES
PO BOX 903
RANCHO SANTA FE, CA 92067
(858)-888-2488

TOPOGRAPHY SOURCE

AERIAL TOPOGRAPHY PERFORMED BY INLAND AERIAL SURVEYS, INC. LOCATED AT 7117 ARLINGTON AVE., SUITE A, RIVERSIDE, CA 92503 ON 11/1/2022. SUPPLEMENTAL FIELD TOPOGRAPHY PERFORMED BY PLSA LOCATED AT 119 ABERDEEN DRIVE, CARDIFF, CA 92007 ON 11/29/2023.

BENCHMARK

ELEVATIONS ARE BASED ON BENCHMARK 600-22-68 FROM THE COUNTY OF RIVERSIDE VERTICAL CONTROL BOOK. ELEV=1541.00 NAVD88

TOTAL DISTURBED AREA

TOTAL DISTURBED AREA = 20.60 ACRES

PRELIMINARY GRADING QUANTITIES/EARTHWORK

GRADED AREA	20.6 [ACRES]	MAX. CUT DEPTH	±10' [FT]
CUT QUANTITIES	52,300 [CYD]	MAX CUT SLOPE RATIO	2:1
FILL QUANTITIES	50,300 [CYD]	MAX. FILL DEPTH	±10' [FT]
EXPORT	2,000 [CYD]	MAX FILL SLOPE RATIO	2:1
REMEDIAL GRADING	±75,000 [CYD]	MAX. REMEDIAL DEPTH	±13' [FT]

THIS PROJECT PROPOSES TO EXPORT MATERIAL FROM THIS SITE. ALL EXPORT MATERIAL SHALL BE DISCHARGED TO A LEGAL DISPOSAL SITE. THE APPROVAL OF THIS PROJECT DOES NOT ALLOW PROCESSING AND SALE OF THE MATERIAL. ALL SUCH ACTIVITIES REQUIRE A SEPARATE CONDITIONAL USE PERMIT.

NOTE:
THE GRADING QUANTITIES ABOVE ARE AN ESTIMATE FOR PERMITTING PURPOSES ONLY. THE QUANTITIES ABOVE DO NOT REFLECT SPOILS DUE TO LOSS FROM CLEARING AND GRUBBING, STRIPPING, SHRINKAGE, SWELL, BULKING, UNSUITABLE MATERIALS, REMEDIAL GRADING, UTILITY TRENCH SPOILS, UNDERGROUND STORM WATER VAULTS, RETAINING WALL BACKFILL, BUILDING FOUNDATIONS/FOOTINGS, ETC. SUBGRADE IS ASSUMED TO BE 1-FOOT BELOW PROPOSED FINISH GRADE TO ACCOUNT FOR PAVEMENT AND SLAB THICKNESS.

ENGINEER OF WORK

Gregory W. Lang 10/25/2024
GREGORY W. LANG DATE

REGISTERED PROFESSIONAL ENGINEER
GREGORY W. LANG
No. RCE 68075
EXP. 06-30-25
Civil
STATE OF CALIFORNIA

SHEET INDEX

C01 - TITLE SHEET
C02 - EXISTING CONDITIONS PLAN
C03 - SITE SECTIONS
C04 - PRELIMINARY STREET IMPROVEMENT PLAN
C05 - PLAN PRELIMINARY GRADING PLAN
C06 - PRELIMINARY UTILITY PLAN
C07 - PRELIMINARY FIRE PLAN

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PREAPP. # PR23-0057
DR PROJECT # PLN23-0245
CD PROJECT # -

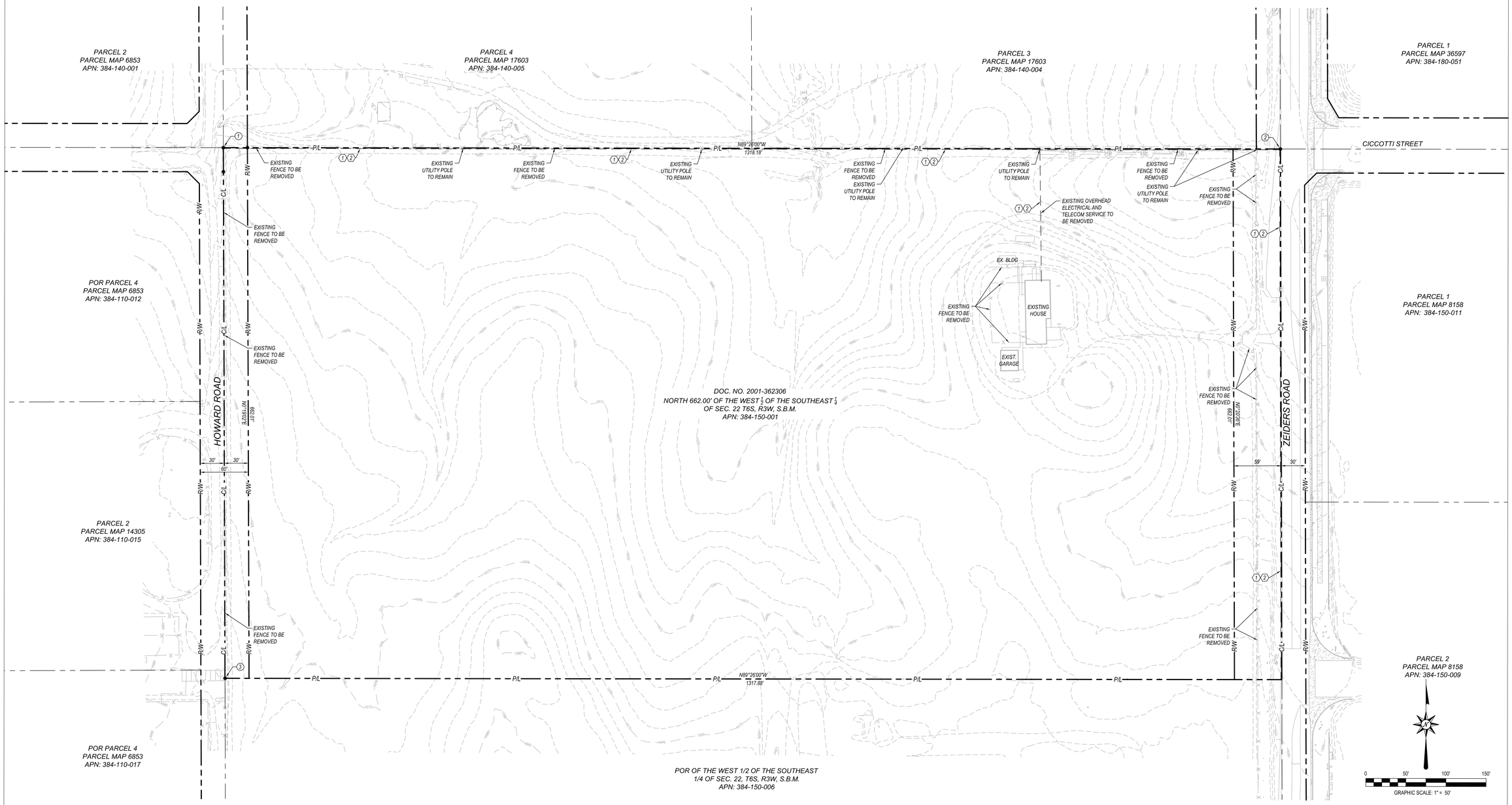
Revision Dates

1	-	-

Issue Dates

1st Design Review	12/18/2023
2nd Design Review	3/15/2024
3rd Design Review	5/21/2024
4th Design Review	9/4/2024
5th Design Review	10/25/2024
Construction Set	-

Drawing Date	10/25/2024
Check By	RMT
Drawn By	MLM
Scale	AS NOTED
Job Number	3983
Sheet Number	C01



POR OF THE WEST 1/2 OF THE SOUTHEAST
1/4 OF SEC. 22, T6S, R3W, S.B.M.
APN: 384-150-006

EXISTING CONDITIONS PLAN

SCALE: 1" = 50'

EASEMENTS

1. CALIFORNIA ELECTRIC POWER COMPANY HOLDER OF AN EASEMENT FOR PUBLIC UTILITY PURPOSES RECORDED NOVEMBER 1, 1945, INSTRUMENT NO 1945-5, OR. NO WIDTH GIVEN.
2. CALIFORNIA ELECTRIC POWER COMPANY HOLDER OF AN EASEMENT FOR PUBLIC UTILITY PURPOSES RECORDED OCTOBER 13, 1960, INSTRUMENT NO 88717, OR. DOES NOT AFFECT, LIES SOUTH OF SUBJECT PROPERTY.

FOUND MONUMENTS

1. FOUND 3/4" IRON PIPE WITH TAG LS 6932 UP 0.5' IN FENCE POST FOOTING, IFTS 30' REFERENCE PIPES PER PM 21/32 & PM 104/89. ACCEPTED AS C 1/4 CORNER SECTION 22.
2. FOUND 1" IRON PIPE WITH TAG LS 6932. ACCEPTED AS THE NE CORNER W 1/2 SE 1/4 SECTION 22
3. FOUND 1" IP WITH TAG LS 3962 FLUSH, NO REFERENCE. S 89°26'00" E 0.18', HELD FOR E/W LINE.

DEMOLITION NOTE:

1. ALL EXISTING STRUCTURES ON SITE ARE TO BE REMOVED PRIOR TO COMMENCEMENT OF GRADING ACTIVITIES.

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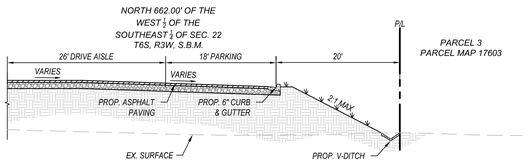
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Issue Dates

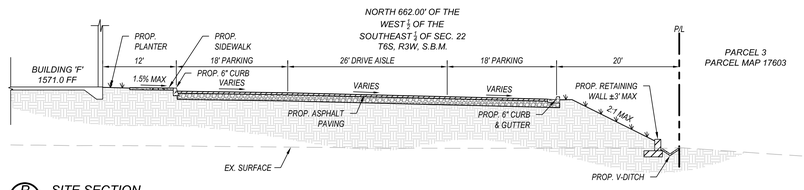
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Construction Set	-
Drawing Date	10/25/2024
Check By	RMT
Drawn By	MLM
Scale	AS NOTED
Job Number	3983

Sheet Number

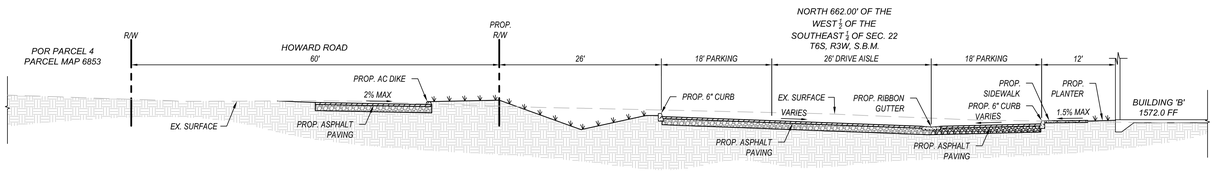
C02



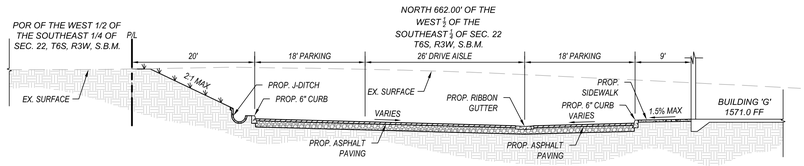
A/3 SITE SECTION
SEE PRELIMINARY GRADING PLAN SHEET C05
NOT TO SCALE



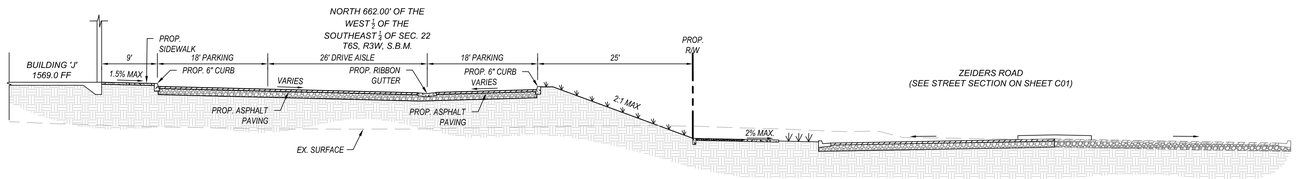
B/3 SITE SECTION
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NOT TO SCALE



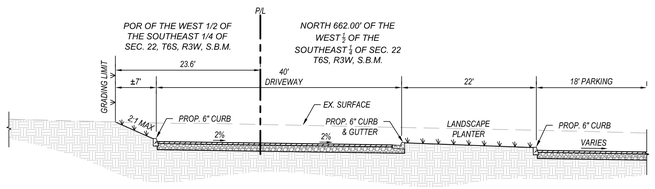
C/3 SITE SECTION
SEE PRELIMINARY GRADING PLAN SHEET C05
NOT TO SCALE



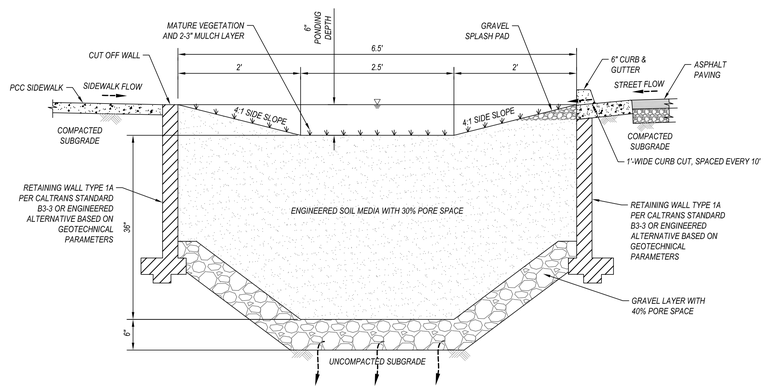
D/3 SITE SECTION
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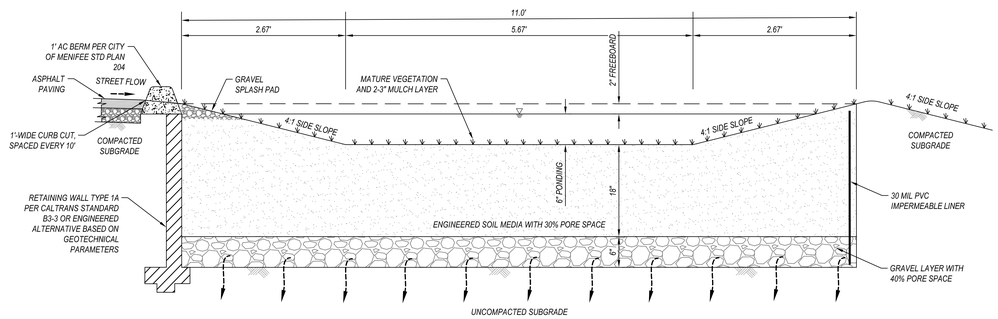
E/3 SITE SECTION
SEE PRELIMINARY GRADING PLAN SHEET C05
NOT TO SCALE



F/3 SITE SECTION
SEE PRELIMINARY GRADING PLAN SHEET C05
NOT TO SCALE



G/3 TYPICAL BIORETENTION DETAIL - BASIN 5A & 5B
SEE PRELIMINARY STREET IMPROVEMENT PLAN SHEET C04
NOT TO SCALE



H/3 BIORETENTION DETAIL - BASIN 6
SEE PRELIMINARY STREET IMPROVEMENT PLAN SHEET C04
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PREAPP. # PR23-0057
DR PROJECT # PLN23-0245
CD PROJECT # -

Revision Dates

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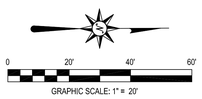
Issue Dates

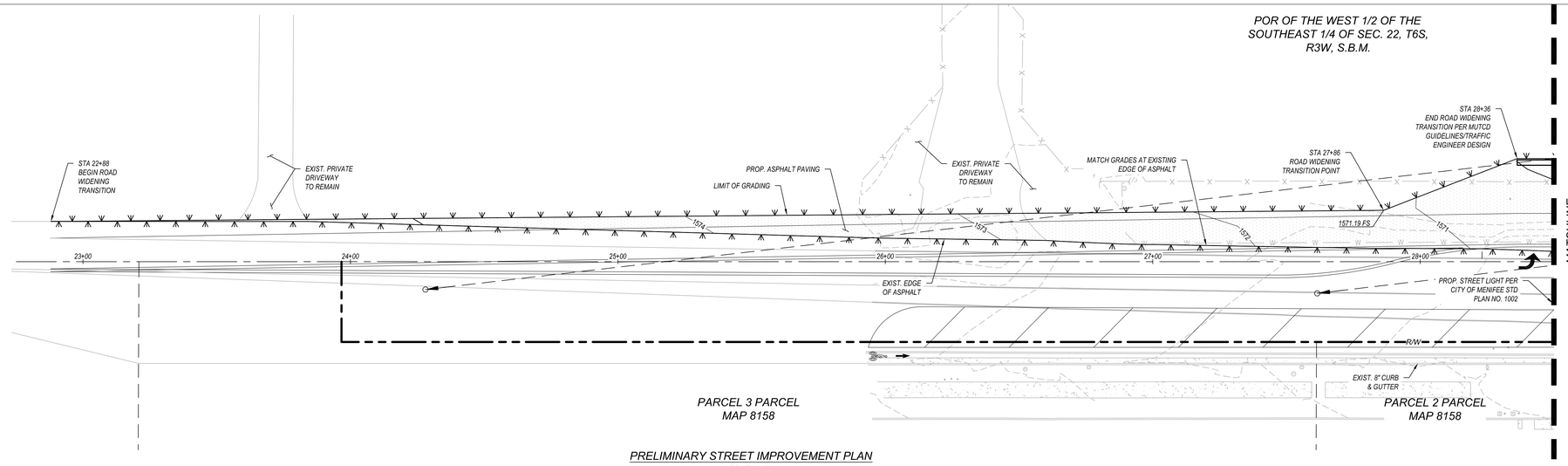
1st Design Review	12/18/2023
2nd Design Review	3/15/2024
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4th Design Review	9/4/2024
5th Design Review	10/25/2024
Construction Set	-

Drawing Date 10/25/2024
Check By RMT
Drawn By MLM
Scale AS NOTED
Job Number 3983
Sheet Number C03

PRELIMINARY IMPROVEMENT PLAN NOTES:

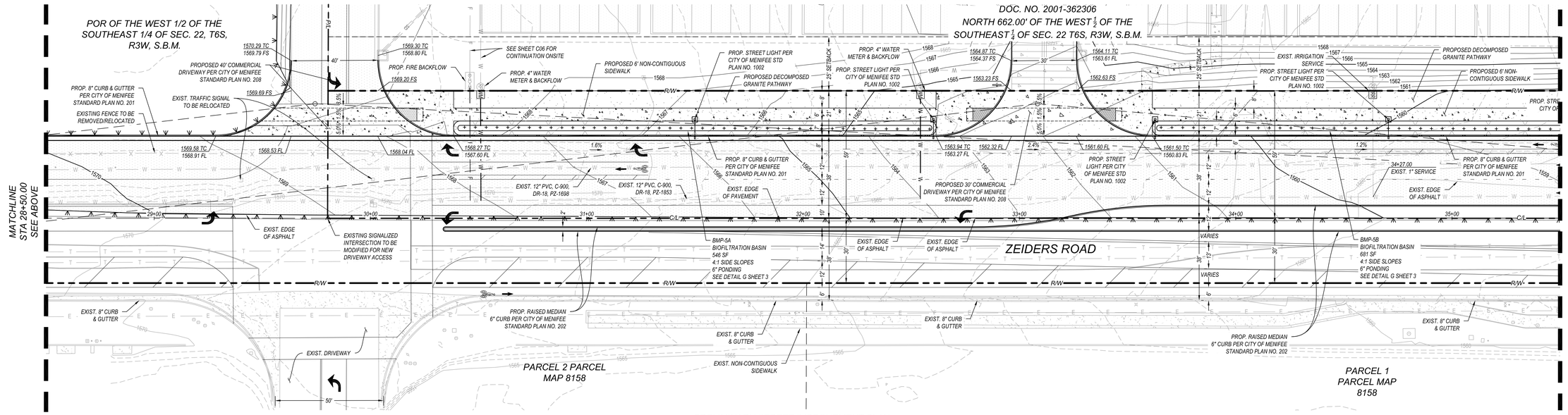
1. ALL EXISTING STRIPING TO BE REMOVED WHERE NEW STRIPING IS PROPOSED ON THIS PLAN.
2. PROPERTY BOUNDARY INFORMATION IS SHOWN TO THE EXTENT AVAILABLE ON THIS PLAN.
3. SOME EXISTING CONDITIONS ARE SHOWN FOR REFERENCE ONLY AND NOT INTENDED FOR REFERENCE TO FINAL CONDITION FOR CONSTRUCTION ACTIVITIES.





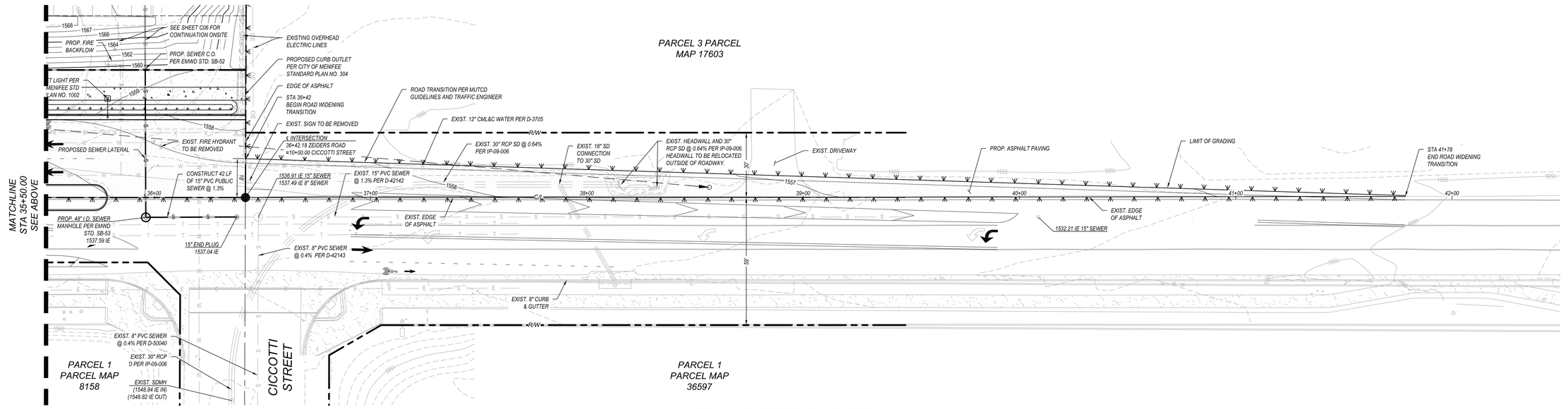
PRELIMINARY STREET IMPROVEMENT PLAN

SCALE 1" = 20'



PRELIMINARY STREET IMPROVEMENT PLAN

SCALE 1" = 20'



PRELIMINARY STREET IMPROVEMENT PLAN

SCALE 1" = 20'

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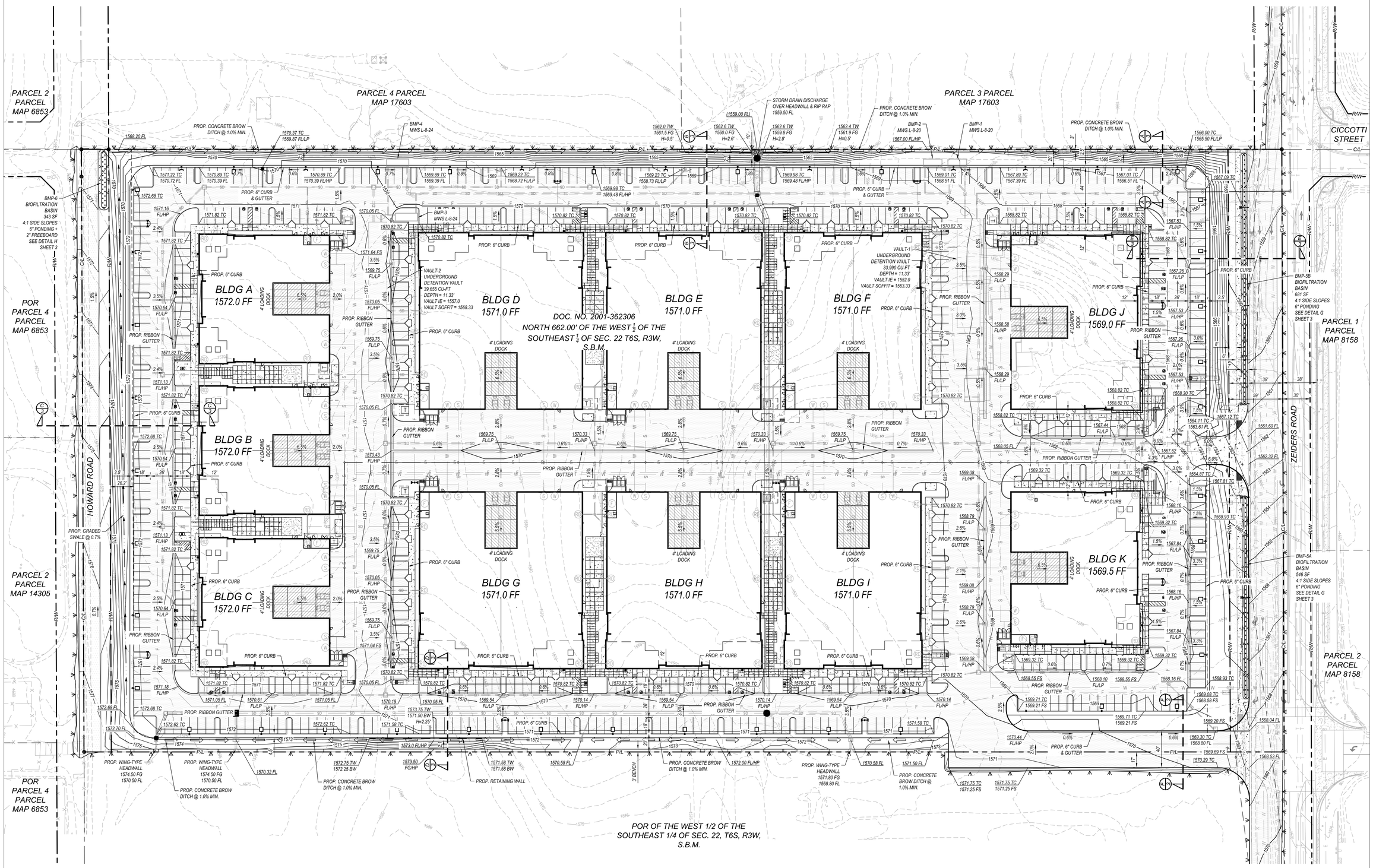
PREAPP. #	PR23-0057
DR PROJECT #	PLN23-0245
CD PROJECT #	-

Revision Dates

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Issue Dates

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Check By	RMT
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PRELIMINARY GRADING PLAN

SCALE 1" = 40'

0 40' 80' 120'

GRAPHIC SCALE: 1" = 40'

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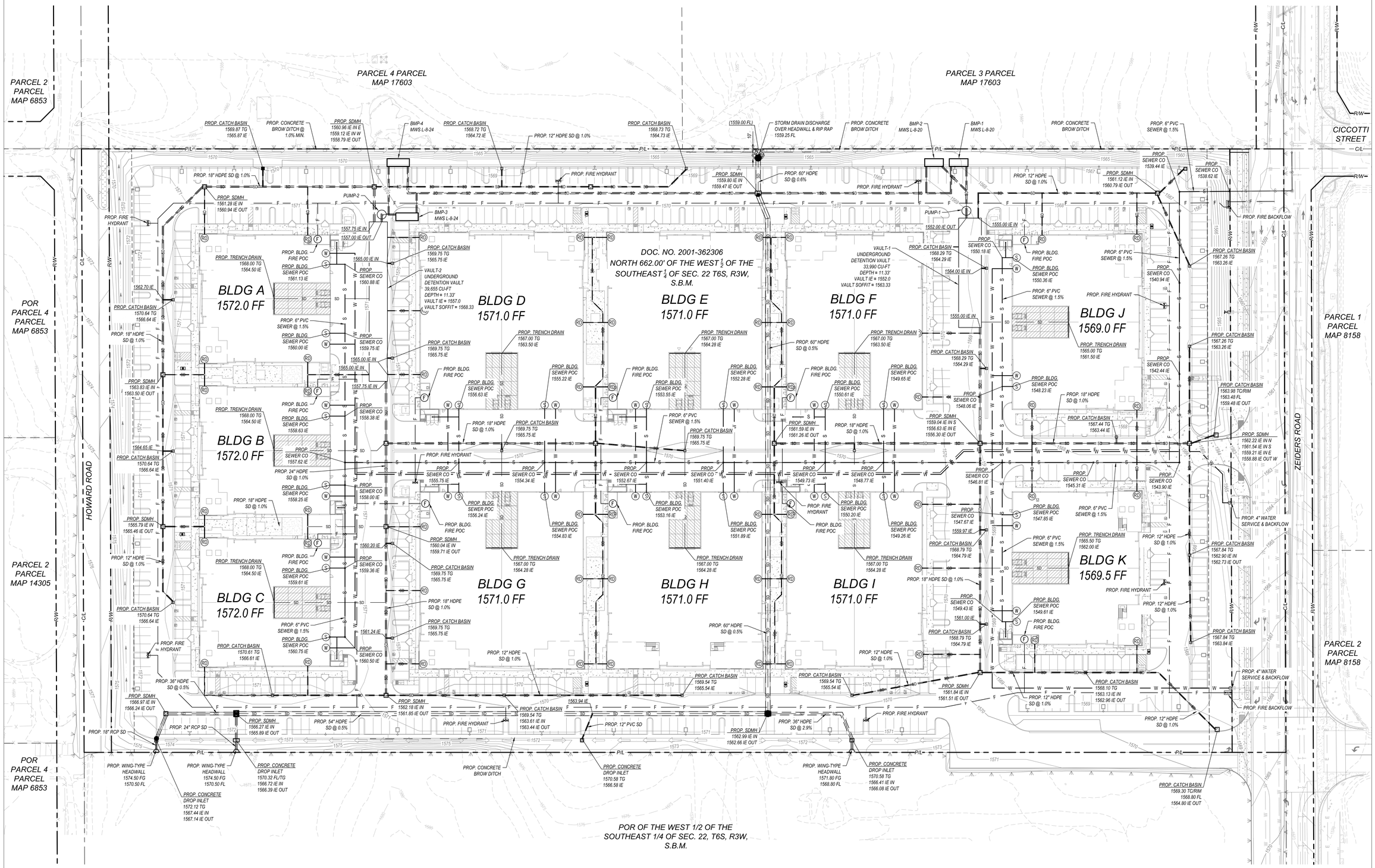
Revision Dates

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Issue Dates

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Check By	RMT
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Job Number	3983
Sheet Number	C05



POR OF THE WEST 1/2 OF THE SOUTHEAST 1/4 OF SEC. 22, T6S, R3W, S.B.M.

PRELIMINARY UTILITY PLAN

SCALE 1" = 40'

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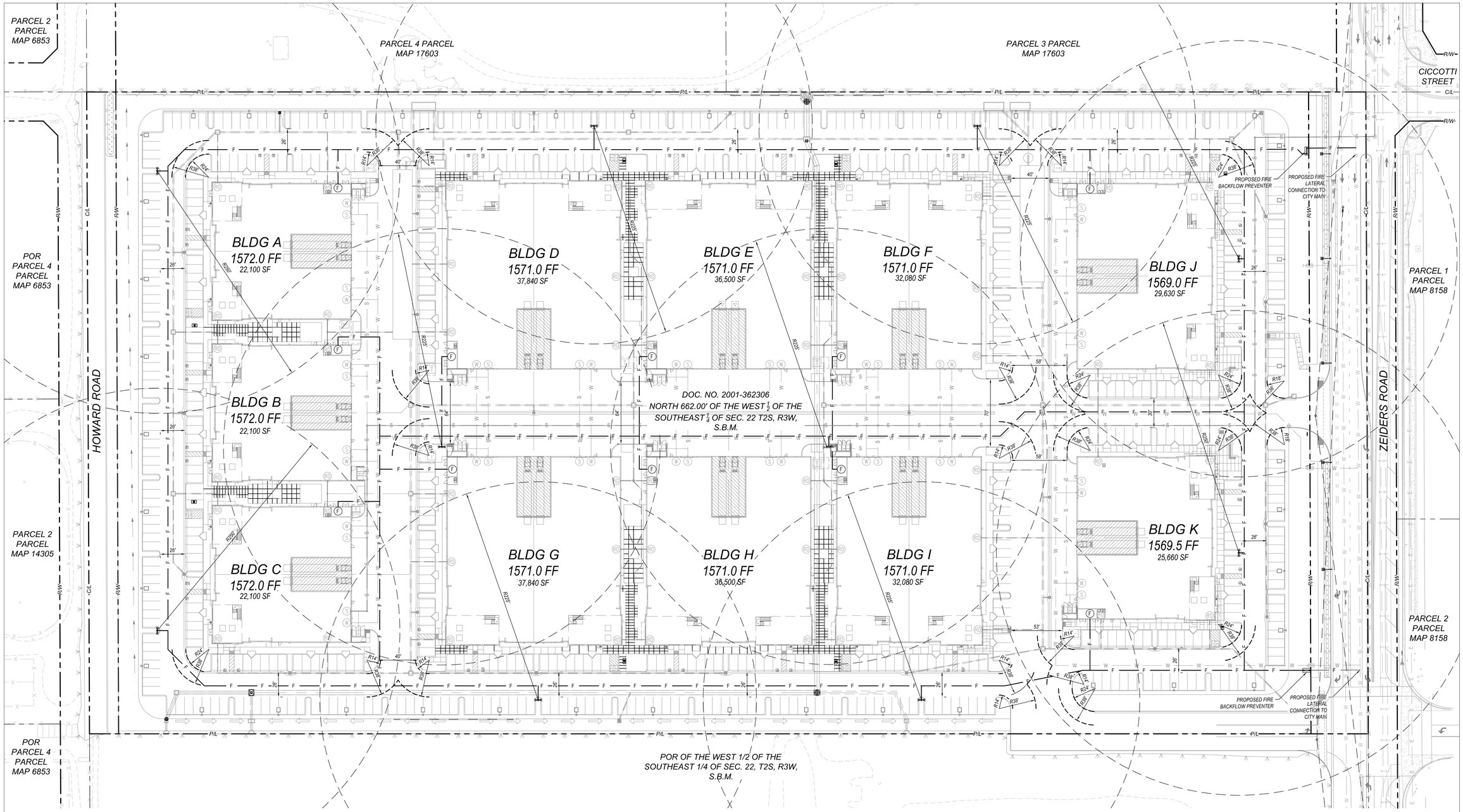
PREAPP. #	PR23-0057
DR PROJECT #	PLN23-0245
CD PROJECT #	-

Revision Dates

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Issue Dates

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4th Design Review	9/4/2024
5th Design Review	10/25/2024
Construction Set	-
Drawing Date	10/25/2024
Check By	RMT
Drawn By	MLM
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Sheet Number	C06



PRELIMINARY FIRE PLAN

SCALE 1" = 40'

0 40' 80' 120'

GRAPHIC SCALE: 1" = 40'

LEGEND

- PROPOSED PRIVATE FIRE LINE ..... F
- PROPOSED FIRE BACKFLOW .....
- PROPOSED FIRE HYDRANT .....
- PROPOSED FIRE HYDRANT SPACING (AS INDICATED) .....
- TURNING RADII (AS INDICATED) PER RIVERSIDE COUNTY FIRE DEPT. TECHNICAL POLICY TP22-002 .....

PAVING NOTE

1. FIRE APPARATUS ACCESS ROADS SHALL BE DESIGNED TO SUPPORT THE IMPOSED LOADS OF FIRE APPARATUS [80,000 POUND LIVE LOAD (GROSS VEHICULAR WEIGHT) DISTRIBUTED OVER TWO AXLES] AND SHALL BE SURFACED SO AS TO PROVIDE ALL-WEATHER DRIVING CAPABILITIES [REAR WHEEL DRIVE APPARATUS] FOR THE LENGTH AND GRADES OF THE FIRE APPARATUS ACCESS ROAD.
2. SEE SHEET C05 FOR PAVING AREAS ON THE SITE.

FIRE FLOW DEMAND TABLE

BUILDING	BUILDING AREA (SF)	CONSTRUCTION TYPE	FIRE FLOW FROM CFC APP. B (GPM)	DISCOUNT FOR FIRE SPRINKLERS	REDUCED FIRE FLOW (GPM)	FLOW DURATION (HRS)	FIRE HYDRANTS REQUIRED	AVG. SPACING BETWEEN HYDRANTS (FT)	MAX DISTANCE FROM STREET/ROAD TO FIRE HYDRANT (FT)
A	22,100	III-B	3,250	50%	1,675	3	1	500	250
B	22,100	III-B	3,250	50%	1,675	3	1	500	250
C	22,100	III-B	3,250	50%	1,675	3	1	500	250
D	37,840	III-B	4,000	50%	2,000	4	2	450	225
E	36,500	III-B	4,000	50%	2,000	4	2	450	225
F	32,080	III-B	3,750	50%	1,875	3	2	450	225
G	37,840	III-B	4,000	50%	2,000	4	2	450	225
H	36,500	III-B	4,000	50%	2,000	4	2	450	225
I	32,080	III-B	3,750	50%	1,875	3	2	450	225
J	29,630	III-B	3,750	50%	1,875	3	2	450	225
K	25,660	III-B	3,250	50%	1,625	3	1	500	250

FIRE FLOW NOTES:

1. REFERENCE 2022 CALIFORNIA FIRE CODE APPENDIX B & C
2. REFERENCE CITY OF MENIFEE MUNICIPAL CODE SECTION 8.20 FOR REFERENCE TO APPLICATION AND ADOPTION OF THE CALIFORNIA FIRE CODE BY THE CITY OF MENIFEE.
3. NUMBER OF FIRE HYDRANTS REQUIRED AND AVERAGE SPACING BETWEEN HYDRANTS IS BASED ON 2022 CALIFORNIA FIRE CODE APPENDIX B AT THE REDUCED FIRE FLOW RATE SHOWN ABOVE.

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△	-	-

Issue Dates

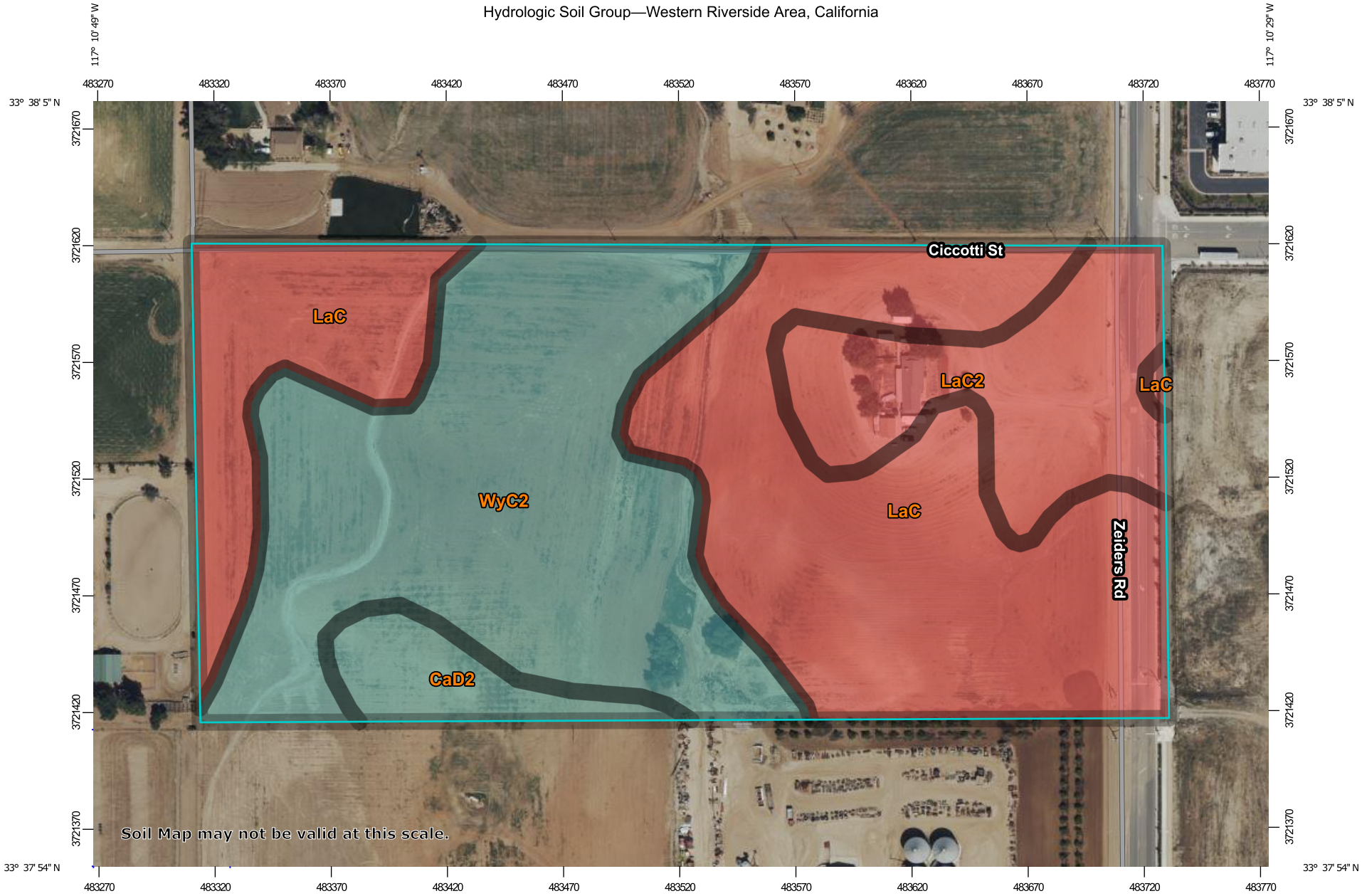
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Drawn By	MLM
Scale	AS NOTED
Job Number	3983

Sheet Number

C07

Appendix 3: Soils Information

Geotechnical Study and Other Infiltration Testing Data



Map Scale: 1:2,310 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 30 60 120 180

Feet
0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Lines

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Points

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Western Riverside Area, California
Survey Area Data: Version 15, Sep 6, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 14, 2022—Mar 17, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
CaD2	Cajalco fine sandy loam, 8 to 15 percent slopes, eroded	C	1.0	4.6%
LaC	Las Posas loam, 2 to 8 percent slopes	D	9.5	44.9%
LaC2	Las Posas loam, 5 to 8 percent slopes, eroded	D	2.8	13.5%
WyC2	Wyman loam, 2 to 8 percent slopes, eroded	C	7.8	37.1%
Totals for Area of Interest			**21.1**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

DUE DILIGENCE
GEOTECHNICAL INVESTIGATION

33521 ZEIDERS ROAD
(APN: 384-150-001)
SUN CITY, CALIFORNIA

GEOCON
INCORPORATED

GEOTECHNICAL
ENVIRONMENTAL
MATERIALS

PREPARED FOR

PEMCOR PROPERTIES INC.
RANCHO SANTA FE, CALIFORNIA

OCTOBER 14, 2022
PROJECT NO. G3028-42-01

GEOCON
INCORPORATED
GEOTECHNICAL ■ ENVIRONMENTAL ■ MATERIALS

Project No. G3028-42-01
October 14, 2022

Pemcor Properties Inc.
P.O. Box 903
Rancho Santa Fe, California 92067

Attention: Mr. Paul Mayer

Subject: DUE DILIGENCE GEOTECHNICAL INVESTIGATION
33521 ZEIDERS ROAD (APN: 384-150-001)
SUN CITY, CALIFORNIA

Dear Mr. Mayer:

In accordance with your request and approval of our proposal (LG-22430, dated September 14, 2022), We herein submit the results of our due diligence geotechnical investigation for the subject site. We performed our investigation to evaluate soil and geologic conditions and potential geologic hazards at the site and to provide preliminary geotechnical design parameters for future development. The accompanying report contains the results of our study with conclusions and recommendations pertinent to geotechnical aspects of the project. The site is suitable for development provided the recommendations of this report are followed.

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

Very truly yours,

GEOCON INCORPORATED

Jake P. Shelton
Senior Staff Geologist

Rupert S. Adams
CEG 2561

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JPS:RSA:RCM:am

(e-mail) Addressee

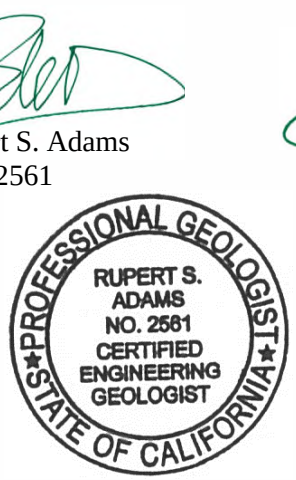




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PRELIMINARY GEOTECHNICAL INVESTIGATION

1. PURPOSE AND SCOPE

This report contains the results of our preliminary geotechnical investigation for the proposed development located at 33521 Zeiders Road (APN: 384-150-001) in the Sun City neighborhood of Menifee, California (see Vicinity Map).



Vicinity Map

The purpose of our investigation was to evaluate subsurface soil and geologic conditions at the site and provide conclusions and recommendations pertaining to geotechnical aspects of developing the property.

Our scope of work included:

- reviewing available published and unpublished geologic literature;
- excavating, logging, and sampling eleven exploratory test pits;
- laboratory testing; and
- preparing this report.

The locations of exploratory test pits are shown on the Geologic Map (*see* Figure 1). We used a Google Earth image as the basis for Figure 1, as a detailed site plan is not yet available. Appendix A contains the exploratory test pit logs and details of the field investigation. Appendix B provides details of the laboratory tests and a summary of test results. Appendix C provides recommended grading specifications.

The conclusions and recommendations presented herein are based on our analysis of the data obtained from the exploratory field investigation, laboratory test results, and our experience with similar soil and geologic conditions on the subject property and adjacent properties.

2. SITE AND PROJECT DESCRIPTION

The approximately 20-acre property is currently undeveloped. The site is bounded by private properties to the north, south, and west; and Zeiders Road to the east. The site is rectangular, approximately 1,300 feet by 650 feet in dimension. Review of historical aerial photographs indicates that portions of the property were used for agricultural purposes. A single-story residential home is present on the northwest corner of the property. Site topography is undulatory. Elevations across the site range from approximately 1,580 feet to 1560 feet above mean sea level (MSL). Two shallow, ephemeral drainage courses cross the central and west portions of the property.

We understand preliminary plans are to construct 11 building industrial/commercial center on the property. We expect the buildings will be single story warehouse structures supported on shallow footings. We also expect access driveways and parking lots will be constructed as part of the development.

The locations and descriptions of the site are based on our recent field investigation, and our understanding of site development. If project details vary significantly from those described, Geocon Incorporated should be contacted to review the changes and provide additional analyses and/or revisions to this report, if warranted.

3. SOIL AND GEOLOGIC CONDITIONS

Based on the results of the field investigation, the site is underlain by Cretaceous-age igneous rock (undivided), mantled by Holocene-age alluvium. Descriptions of the soils encountered are provided below. Mapped geologic conditions are depicted on the *Geologic Map* (Figure 1). Exploratory boring logs are presented in Appendix A.

3.1 Alluvium (Qya)

Alluvium was encountered in each of our test pits at depths between 1 and 13 feet below existing grades. The thickest alluvium occurred in the northwest portion of the site. The alluvium consisted of loose to medium dense, clayey to silty, fine to coarse sand. Laboratory consolidation tests indicate the alluvium generally has a low potential for hydro-compression and collapse when wetted. The alluvium is compressible and unsuitable for the support of settlement sensitive improvements or structural fills and will require removal and recompaction during grading. Remedial grading recommendations are discussed in Section 6.3 of this report.

3.2 Igneous Rock (Undivided; Kiu)

Igneous rock was encountered within each of our test pits below the alluvium. The igneous rock consisted of either gabbro or granodiorite. Where encountered, the igneous rock was weak to moderately strong, and completely to moderately weathered. The igneous rock excavated to fine to coarse sand.

4. GROUNDWATER

We did not encounter groundwater or seepage during our site investigation. However, it is not uncommon for shallow seepage conditions to develop where none previously existed when sites are irrigated or infiltration is implemented. Seepage is dependent on seasonal precipitation, irrigation, land use, among other factors, and varies as a result. Proper surface drainage will be important to future performance of the project. We expect groundwater is deeper than about 50 feet below existing grade. We do not expect groundwater to be encountered during construction of the proposed development.

5. GEOLOGIC HAZARDS

5.1 Ground Rupture

The USGS (2016) shows that there are no mapped Quaternary faults crossing or trending toward the site. The site is not located within a currently established Alquist-Priolo Earthquake Fault Zone (CEG, 2020a). No active faults are known to exist at the site. The risk associated with ground rupture hazard is low.

5.2 Liquefaction

The risk associated with liquefaction is low due to the age and density of the underlying sediments and igneous rock, and the lack of shallow groundwater.

5.3 Landslides

We did not observe evidence of previous or incipient slope instability at the site during our study. Published geologic mapping indicates landslides are not present on or immediately adjacent to the site. Therefore, the risk associated with ground movement hazard due to landsliding is low.

5.4 Tsunamis, and Seiches

The site is not located within a tsunami inundation zone as defined by California Geological Survey (2009). There are no lakes or reservoirs located near the site. The risk associated with inundation hazard due to tsunami or seiche is low.

5.5 Flooding

The site has not been mapped in an area associated with flood risk (FEMA, 2012). The risk associated with flooding is low.

6. CONCLUSIONS AND RECOMMENDATIONS

6.1 General

6.1.1 It is our opinion that the site is suitable for development, provided the recommendations presented herein are implemented during design and construction of the project.

6.1.2 The site is underlain by undifferentiated igneous rock mantled by alluvium. The alluvium encountered during our investigation extended to depths between 1 to 13 feet below existing site grades. Alluvium is not suitable to support structures and improvements and will require removal and recompaction. Igneous rock was encountered below the alluvium in all test pits. The igneous rock is suitable to support settlement sensitive improvements.

6.1.3 We did not encounter groundwater or seepage during our subsurface investigation; however, seepage could be encountered during grading operations in areas not explored, especially during the rainy season.

6.1.4 No geologic hazards were observed or are known to exist on the site that would adversely impact the site. No special seismic design considerations, other than those recommended herein, are required.

6.1.5 The proposed structures can be supported on a shallow foundation system bearing on properly compacted fill.

6.1.6 Proper drainage should be maintained in order to preserve the engineering properties of fills beneath settlement sensitive improvements and slopes. Recommendations for site drainage are provided herein.

6.1.7 Subsurface conditions observed may be extrapolated to reflect general soil/geologic conditions; however, some variation in subsurface conditions between boring locations should be anticipated.

6.1.8 Development plans have not been provided for our review. We should review the plans prior to their submittal to regulatory agencies for approval and prepare an updated geotechnical investigation report based on the planned site usage. Additional field and laboratory analysis may be required once the plans have been provided.

6.2 Excavation and Soil Characteristics

6.2.1 Excavation of the in-situ soil should be possible with moderate to heavy effort using conventional heavy-duty equipment. Excavation of the formational bedrock will require very heavy effort and may generate oversized material using conventional heavy-duty equipment during the grading operations. Oversized rock (rocks greater than 12-inches in dimension) may be generated in the igneous rock that can be incorporated into landscape use or placed in deeper fill areas, if available. The grading and improvement contractors should review this report and evaluate the proper equipment to use for the planned excavations.

6.2.2 Based on our test pits excavated using a rubber-tired backhoe, the igneous rock underlying the site is rippable to a depth of approximately 10 feet. The material generated during test pit excavation contained little or no oversize rock (rocks greater than 12-inches in dimension). We anticipate that deeper excavations up to 15 feet below site grades should be possible with conventional earth moving equipment without the need for rock breaking or blasting. Excavations deeper than 15 feet may require single-shank ripping on using a D-9 Caterpillar Tractor prior to loading. Additional rippability studies may be warranted once development plans are available.

6.2.3 The soil encountered in the field investigation is considered "non-expansive" (expansion index [EI] of 20 or less) as defined by 2019 California Building Code (CBC) Section 1803.5.3. Table 6.2 presents soil classifications based on the expansion index. Based on laboratory testing and our experience in the site vicinity, we expect the onsite soil to possess a "very low" to "low" expansion potential (EI of 50 or less).

TABLE 6.2
EXPANSION CLASSIFICATION BASED ON EXPANSION INDEX

Expansion Index (EI)	ASTM D 4829 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	

6.2.4 We performed a laboratory test on samples of soils encountered onsite to evaluate the percentage of water-soluble sulfate content. Appendix B presents results of the laboratory test. The test result indicates the on-site soils at the location tested possess a "S0" sulfate exposure to concrete structures as defined by 2019 CBC Section 1904 and ACI 318-08 Sections 4.2

and 4.3. 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 (i.e., addition of fertilizers and other soil nutrients) may affect the concentration.

6.2.5 We tested samples for chloride content to aid in evaluating the corrosion potential. Appendix B presents the laboratory test results.

6.2.6 Geocon Incorporated does not practice in the field of corrosion engineering. Therefore, further evaluation by a corrosion engineer may be needed if improvements susceptible to corrosion are planned.

6.3 Preliminary Grading Recommendations

6.3.1 Grading should be performed in accordance with the recommendations provided in this report, the Recommended Grading Specifications contained in Appendix D, and the City of Menifee grading regulations. Geocon should observe grading operations on a full-time basis and provide compaction testing during fill placement.

6.3.2 Prior to commencing grading, a preconstruction conference should be held at the site with the city inspector, owner, grading and underground contractors, civil engineer, and geotechnical engineer in attendance. Special soil handling and/or the grading plans can be discussed at that time.

6.3.3 Site preparation should begin with the removal of deleterious material and vegetation. The depth of vegetation removal should be such that material exposed in cut areas or soil to be used as fill is relatively free of organic matter. Material generated during stripping and/or site demolition should be exported from the site. Concrete or asphalt should not be mixed with the fill soil unless approved by the Geotechnical Engineer.

6.3.4 Abandoned foundations and buried utilities should be removed and the resultant excavations or trenches backfilled with properly compacted material as part of the remedial grading.

6.3.5 Grading plans were not available for our review and proposed site grades are unknown. Alluvium within planned structural areas (building pads, retaining walls, slopes, pavement, concrete flatwork, etc.) should be removed to expose competent igneous rock and replaced with compacted fill. The remedial grading depths and limits should be refined once site usage and building locations are determined.

6.3.6 If grading creates a cut to fill transition, the cut portion of the transition should be undercut to a depth of at least 3 feet below pad grade or 1-foot below the bottom of building footings, whichever is deeper, and replaced as compacted fill. The undercut should extend into the fill side of the pad such that at least 3 feet of compacted fill and minimum of 1-foot below bottom of building footing exists through the building pad. The undercut should extend to a horizontal distance of at least 5 feet beyond the edge of the building pad.

6.3.7 Prior to placing fill, the surface of excavations should be scarified to a depth of at least 12 inches, moisture conditioned as necessary, and compacted. Deeper removals may be required if loose or otherwise unsuitable soils are encountered. A representative of Geocon should be on-site during removals to evaluate the limits of the remedial grading.

6.3.8 Geocon should observe and test all earthwork activities performed during grading and construction at the site.

6.3.9 In general, on-site soils are suitable for use as fill provided they are relatively free from oversized material, vegetation, debris, and other deleterious material. Fill layers, including backfill and scarified ground surfaces, should be placed in typically 6- to 8-inch loose lifts and compacted to a dry density of at least 90 percent of the laboratory maximum dry density near to or slightly above optimum moisture content in accordance with ASTM Test Procedure D 1557. Fill soils placed below optimum moisture content may require additional moisture conditioning prior to placing additional fill.

6.3.10 Imported fill (if necessary) should consist of granular soil with a "very low" to "low" expansion potential (EI≤50) that is free of deleterious material and rock larger than 6 inches. Geocon should be notified of the imported soil source and should perform laboratory testing of import soil prior to its arrival at the site to evaluate its suitability as fill material.

6.4 Temporary Excavation Slopes

6.4.1 The recommendations included herein are provided for stable excavations. It is the contractor's responsibility to ensure all excavations, temporary slopes, and trenches are properly constructed and maintained in accordance with applicable OSHA guidelines in order to maintain safety and the stability of the excavations and adjacent improvements. These excavations should not be allowed to become saturated or to dry out. Surcharge loads should not be permitted to a distance equal to the height of the excavation from the top of the excavation. The top of the excavation should be a minimum of 15 feet from the edge of existing improvements. Excavations steeper than those recommended or closer than 15 feet from an existing surface improvement should be shored in accordance with applicable OSHA

codes and regulations. Geocon Incorporated should be contacted to provide vertical shoring recommendations, if needed.

6.5 Subdrains

6.5.1 With the exception of retaining wall drains, we do not expect subdrains will be required. We should be contacted to provide recommendations for subdrains if field conditions differ from those described herein.

6.6 Seismic Design Criteria

6.6.1 Table 6.6.1 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. We used the computer program *U.S. Seismic Design Maps*, provided by the Structural Engineers Association (SEA) to calculate the seismic design parameters. The short spectral response uses a period of 0.2 seconds. 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. We expect the site possesses a period of less than 0.5 seconds; therefore, the planned improvements can be designed based on the soil conditions (ASCE 7-16, Section 20.3.1). The values presented herein are for the risk-targeted maximum considered earthquake (MCE_R). Sites designated as Site Class D, E and F may require additional analyses if requested by the project structural engineer and client.

TABLE 6.6.1
2019 CBC SEISMIC DESIGN PARAMETERS

Parameter	Value	2019 CBC Reference
Site Class	C	Section 1613.2.2
MCE_R Ground Motion Spectral Response Acceleration – Class B (short), S_S	1.419g	Figure 1613.2.1(1)
MCE_R Ground Motion Spectral Response Acceleration – Class B (1 sec), S_1	0.527g	Figure 1613.2.1(2)
Site Coefficient, F_A	1.200	Table 1613.2.3(1)
Site Coefficient, F_V	1.473	Table 1613.2.3(2)
Site Class Modified MCE_R Spectral Response Acceleration (short), S_{MS}	1.703g	Section 1613.2.3 (Eqn 16-36)
Site Class Modified MCE_R Spectral Response Acceleration – (1 sec), S_{M1}	0.776g	Section 1613.2.3 (Eqn 16-37)
5% Damped Design Spectral Response Acceleration (short), S_{DS}	1.135g	Section 1613.2.4 (Eqn 16-38)
5% Damped Design Spectral Response Acceleration (1 sec), S_{D1}	0.517g	Section 1613.2.4 (Eqn 16-39)

6.6.2 Using the code-based values presented in this Table 6.6.1, in lieu of a performing a ground motion hazard analysis, requires the exceptions outlined in ASCE 7-16 Section 11.4.8 be followed by the project structural engineer. Per Section 11.4.8 of ASCE/SEI 7-16, a ground motion hazard analysis should 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.

6.6.3 Table 6.6.2 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 6.6.2
2019 CBC SITE ACCELERATION DESIGN PARAMETERS

Parameter	Value	ASCE 7-16
Site Class	C	--
Mapped MCE_G Peak Ground Acceleration, PGA	0.607g	Figure 22-9
Site Coefficient, F_{PGA}	1.2	Table 11.8-1
Site Class Modified MCE_G Peak Ground Acceleration, PGA_M	0.729g	Section 11.8.3 (Eqn 11.8-1)

6.6.4 Conformance to the criteria in Tables 6.6.1 and 6.6.2 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.

6.6.5 The project structural engineer and architect should evaluate the appropriate Risk Category and Seismic Design Category for the planned structures. The values presented herein assume a Risk Category of IV and resulting in a Seismic Design Category D. Table 6.6.3 presents a summary of the risk categories.

TABLE 6.6.3
ASCE 7-16 RISK CATEGORIES

Risk Category	Building Use	Examples
I	Low risk to Human Life at Failure	Barn, Storage Shelter
II	Nominal Risk to Human Life at Failure (Buildings Not Designated as I, III or IV)	Residential, Commercial and Industrial Buildings
III	Substantial Risk to Human Life at Failure	Theaters, Lecture Halls, Dining Halls, Schools, Prisons, Small Healthcare Facilities, Infrastructure Plants, Storage for Explosives/Toxins
IV	Essential Facilities	Hazardous Material Facilities, Hospitals, Fire and Rescue, Emergency Shelters, Police Stations, Power Stations, Aviation Control Facilities, National Defense, Water Storage

6.7 Preliminary Foundation Recommendations

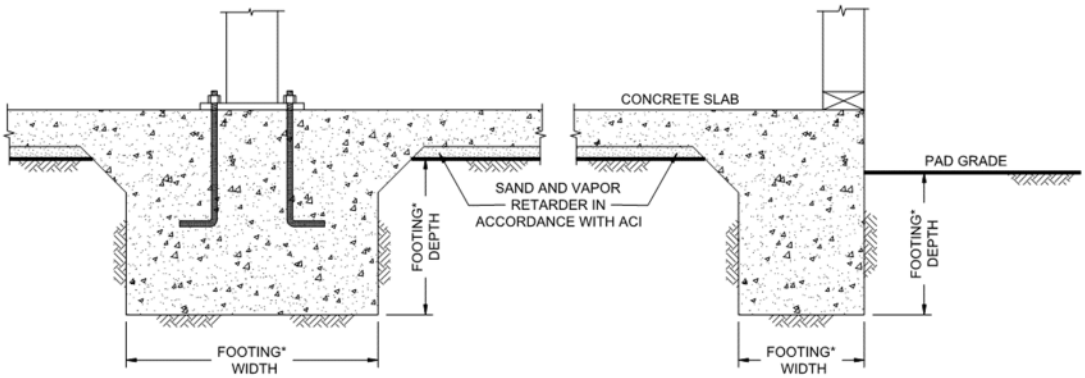
6.7.1 Proposed structures may be supported on shallow foundations founded entirely on properly compacted fill.

6.7.2 Foundations should consist of continuous strip footings and/or isolated spread footings. Table 6.7 provides a summary of the foundation design recommendations.

TABLE 6.7
SUMMARY OF FOUNDATION RECOMMENDATIONS

Parameter	Value
Minimum Continuous Foundation Width, W_C	12 inches
Minimum Isolated Foundation Width, W_I	24 inches
Minimum Foundation Depth, D	24 Inches Below Lowest Adjacent Grade
Minimum Steel Reinforcement	4 No. 5 Bars, 2 at the Top and 2 at the Bottom
Allowable Bearing Capacity	2,500 psf (compacted fill)
Bearing Capacity Increase	500 psf per Foot of Depth
	300 psf per Foot of Width
Maximum Allowable Bearing Capacity	4,000 psf (compacted fill)
Estimated Total Static Settlement	1 inch
Estimated Differential Static Settlement	½ Inch in 40 Feet
Footing Size Used for Settlement	6-Foot Square

6.7.3 The foundations should be embedded in accordance with the recommendations herein and the Wall/Column Footing Dimension Detail. The embedment depths should be measured from the lowest adjacent pad grade for both interior and exterior footings. Footings should be deepened such that the bottom outside edge of the footing is at least 7 feet horizontally from the face of the slope (unless designed with a post-tensioned foundation system as discussed herein).



Wall/Column Footing Dimension Detail

6.7.4 The bearing capacity values presented herein are for dead plus live loads and may be increased by one-third when considering transient loads due to wind or seismic forces.

6.7.5 Where buildings or other improvements are planned near the top of a slope steeper than 3:1 (horizontal:vertical), special foundations and/or design considerations are recommended due to the tendency for lateral soil movement to occur.

- For fill slopes less than 20 feet high or cut slopes regardless of height, footings should be deepened such that the bottom outside edge of the footing is at least 7 feet horizontally from the face of the slope.
- When located next to a descending 3:1 (horizontal:vertical) fill slope or steeper, the foundations should be extended to a depth where the minimum horizontal distance is equal to H/3 (where H equals the vertical distance from the top of the fill slope to the base of the fill soil) with a minimum of 7 feet but need not exceed 40 feet. The horizontal distance is measured from the outer, deepest edge of the footing to the face of the slope. A post-tensioned slab and foundation system or mat foundation system can be used to reduce the potential for distress in the structures associated with strain softening and lateral fill extension. Specific design parameters or recommendations for either of these alternatives can be provided once the building location and fill slope geometry have been determined.
- Although other improvements, which are relatively rigid or brittle, such as concrete flatwork or masonry walls, may experience some distress if located near the top of a slope, it is generally not economical to mitigate this potential. It may be possible, however, to incorporate design measures that would permit some lateral soil movement without causing extensive distress. Geocon Incorporated should be consulted for specific recommendations.

6.7.6 We should observe the foundation excavations prior to the placement of reinforcing steel and concrete to check that the exposed soil conditions are similar to those expected and that they have been extended to the appropriate bearing strata. Foundation modifications may be required if unexpected soil conditions are encountered.

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

6.8 Interior Concrete Slabs-On-Grade

6.8.1 Concrete slabs-on-grade for the structures should be constructed in accordance with Table 6.8.

TABLE 6.8
MINIMUM CONCRETE SLAB-ON-GRADE RECOMMENDATIONS

Parameter	Value
Minimum Concrete Slab Thickness	5 inches
Minimum Concrete Reinforcement	No. 4 Bars 24 Inches on Center, Both Directions
Typical Slab Underlayment	3 to 4 Inches of Sand/Gravel
Design Expansion Index	50 or less

6.8.2 A vapor retarder should underlie slabs that may receive moisture-sensitive floor coverings or may be used to store moisture-sensitive materials. 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 should be installed in a manner that prevents puncture in accordance with manufacturer's recommendations and ASTM requirements. The project architect or developer should specify the vapor retarder used based on the type of floor covering that will be installed and if the structure will possess a humidity-controlled environment.

6.8.3 The project foundation engineer, architect, and/or developer should determine the bedding sand thickness. It is common to have 3 to 4 inches of sand for 5-inch and 4-inch-thick slabs, respectively, in the southern California region. We should be contacted to provide recommendations if the bedding sand is thicker than 6 inches.

6.8.4 The foundation design engineer should provide appropriate concrete mix design criteria and curing measures to assure proper curing of the slab by reducing 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.

6.8.5 Concrete slabs should be provided with adequate crack-control joints, construction joints and/or expansion joints to reduce unsightly shrinkage cracking. The criteria of the American Concrete Institute (ACI) should be considered when establishing crack-control spacing. Crack-control joints should be spaced at intervals no greater than 12 feet. Additional concrete reinforcement, concrete admixtures. or closer crack control joint spacing should be considered where concrete-exposed finished floors are planned.

6.8.6 Subgrade presaturation prior to placing concrete is not deemed necessary; however, the subgrade soil should be moisturized to maintain a moist condition as would be expected in any such concrete placement.

6.8.7 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 slabs for supporting expected loads. Heavy loaded areas may require thicker concrete slabs.

6.8.8 The recommendations of this report are intended to reduce potential cracking of slabs due to expansive soil, differential settlement of existing soil or soil with varying thicknesses. Even with the incorporation of the recommendations presented herein, foundations, stucco walls, and slabs-on-grade placed on such conditions may still exhibit 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 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.

6.9 Exterior Concrete Flatwork

6.9.1 Exterior concrete flatwork not subject to vehicular traffic should be constructed in accordance with the recommendations presented in Table 6.9. The recommended concrete reinforcement would help reduce the potential for cracking.

TABLE 6.9
MINIMUM CONCRETE FLATWORK RECOMMENDATIONS

Expansion Index, EI	Minimum Steel Reinforcement* Options	Minimum Thickness
EI $\leq$ 50	6x6-W2.9/W2.9 (6x6-6/6) welded wire mesh	4 Inches
	No. 3 Bars 24 inches on center, Both Directions	

*In excess of 8 feet square.

6.9.2 The subgrade soil should be properly moisturized and compacted prior to the placement of reinforcing steel and concrete. The subgrade soil should be compacted to a dry density of at least 90 percent of the laboratory maximum dry density near to slightly above optimum moisture content in accordance with ASTM D 1557.

6.9.3 Even with the incorporation of the recommendations presented in this report, the exterior concrete flatwork can experience uplift due to expansive soil beneath grade. Flatwork should be structurally connected to the curbs, where practical, to reduce the potential for offsets between the curbs and the flatwork.

6.9.4 Concrete flatwork should be provided with crack control joints. The project structural engineer should determine the spacing of the crack-control joints based on the slab thickness and intended use. American Concrete Institute (ACI) criteria should be taken into consideration when establishing crack control spacing.

6.9.5 Subgrade soil for exterior slabs that are not subjected to vehicle loads should be compacted in accordance with criteria presented in the grading section prior section of this report. Subgrade soil should be properly compacted and the moisture content of subgrade soil should be verified prior to placing concrete. Base materials is not recommended below concrete improvements.

6.9.6 Where exterior flatwork abuts the structure at entrance or exit points, the exterior slab should be dowelled into the foundation stem wall. This recommendation is intended to reduce potential differential elevations that could result from differential settlement or minor heave of the flatwork. The project structural engineer should provide dowelling details.

6.9.7 The recommendations presented herein are intended to reduce potential cracking of exterior slabs resulting from differential movement; however, even with the incorporation of the recommendations presented herein, slabs-on-grade could still crack. The occurrence of concrete shrinkage cracks is independent of the soil supporting characteristics. Their occurrence may be 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. The Portland Concrete Association (PCA) and American Concrete Institute (ACI) provide recommendations for proper concrete mix, construction, and curing practices, and should be incorporated into project construction.

6.10 Preliminary Retaining Wall Recommendations

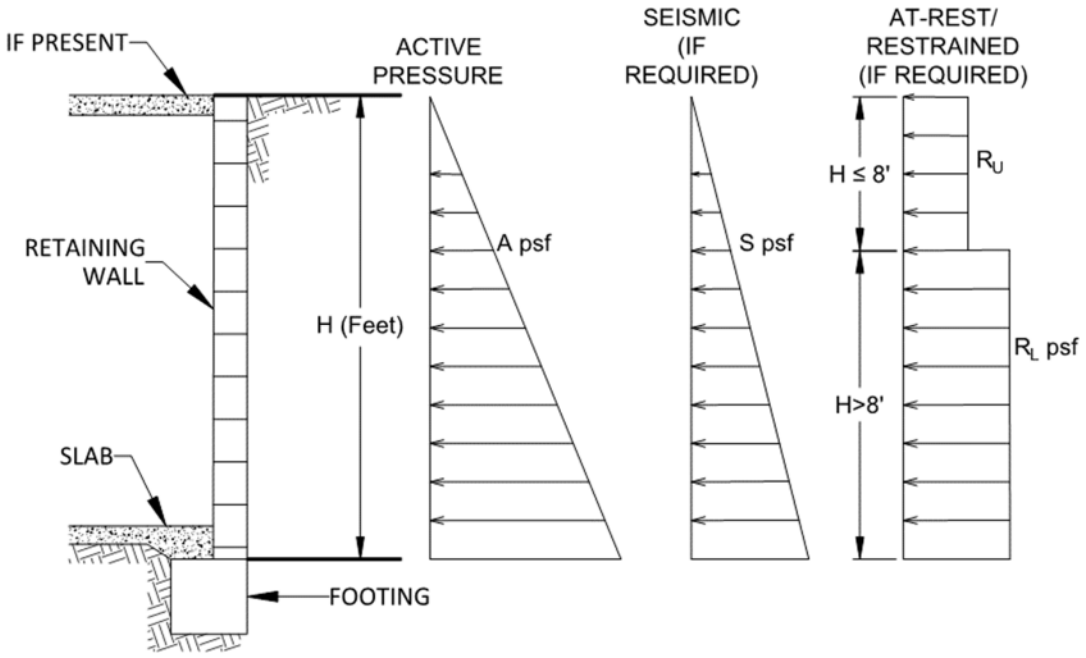
6.10.1 Walls that are allowed to rotate more than 0.001H (where H equals the height of the retaining portion of the wall) at the top of the wall should be designed using the values presented in Table 6.10.1. Soil with an expansion index (EI) greater than 50 should not be used as backfill material behind retaining walls.

TABLE 6.10.1
RETAINING WALL DESIGN RECOMMENDATIONS

Parameter	Value
Active Soil Pressure, A (Level Backfill)	35 pcf EFD* H ft
Active Soil Pressure, A (2:1 max Sloping Backfill)	50 pcf EFD* H ft
Seismic Pressure, S	15H psf
At-Rest/Restrained Walls Additional Uniform Pressure (0 to 8 Feet High)	7H psf
At-Rest/Restrained Walls Additional Uniform Pressure (8+ Feet High)	13H psf
Expected Expansion Index for the Subject Property	EI $\leq$ 50

H equals the height of the retaining portion of the wall in feet. EFD = equivalent fluid density

6.10.2 The project retaining walls should be designed as shown in the Retaining Wall Loading Diagram.



Retaining Wall Loading Diagram

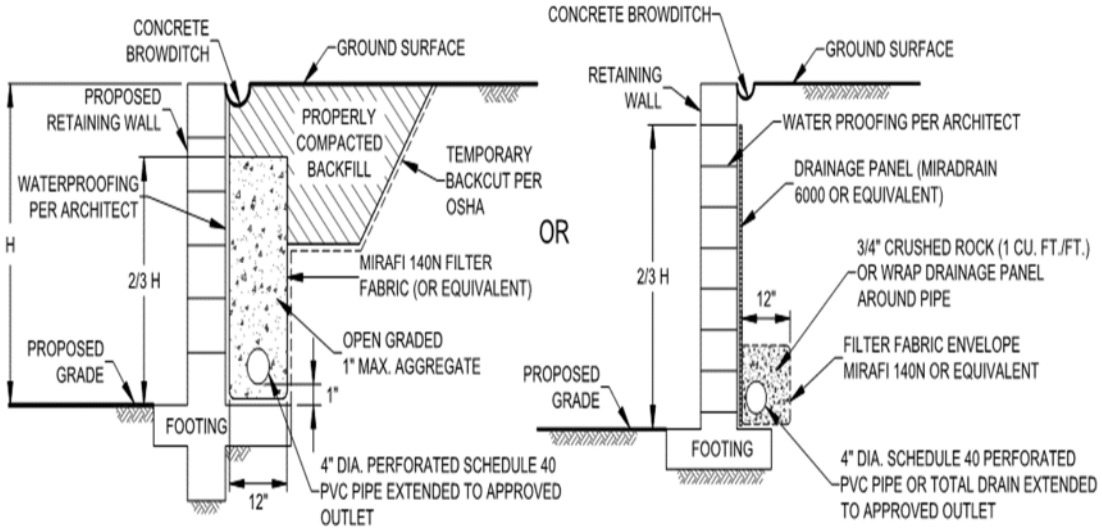
6.10.3 Where walls are restrained from movement at the top (at-rest condition), an additional uniform pressure should be applied to the wall.

6.10.4 The structural engineer should determine the Seismic Design Category for the project in accordance with Section 1613.3.5 of the 2019 CBC or Section 11.6 of ASCE 7-10. For structures assigned to Seismic Design Category of D, E, or F, retaining walls that support more than 6 feet of backfill should be designed with seismic lateral pressure in accordance with Section 1803.5.12 of the 2019 CBC. The seismic load is dependent on the retained height where H is the height of the wall, in feet, and the calculated loads result in pounds per square foot (psf) exerted at the base of the wall and zero at the top of the wall.

6.10.5 Retaining walls should be designed to ensure stability against overturning sliding, and excessive foundation pressure. Where a keyway is extended below the wall base with the intent to engage passive pressure and enhance sliding stability, it is not necessary to consider active pressure on the keyway.

6.10.6 Drainage openings through the base of the wall (weep holes) should not be used where the seepage could be a nuisance or otherwise adversely affect the property adjacent to the base of the wall.

6.10.7 The recommendations herein assume a properly compacted, granular (EI of 50 or less), free-draining backfill soil and that no hydrostatic forces or imposed surcharge load. The retaining wall should be properly drained as shown in the Typical Retaining Wall Drainage Detail. If conditions different than those described are expected, or if specific drainage details are desired, Geocon should be contacted for additional recommendations.



Typical Retaining Wall Drainage Detail

6.10.8 In general, wall foundations should be designed in accordance with Table 6.10.2. The proximity of the foundation to the top of a slope steeper than 3:1 could impact the allowable soil bearing pressure. Therefore, retaining wall foundations should be deepened such that the bottom outside edge of the footing is at least 7 feet horizontally from the face of the slope.

TABLE 6.10.2
SUMMARY OF RETAINING WALL FOUNDATION RECOMMENDATIONS

Parameter	Value
Minimum Retaining Wall Foundation Width	12 inches
Minimum Retaining Wall Foundation Depth	12 Inches
Minimum Steel Reinforcement	Per Structural Engineer
Allowable Bearing Capacity	2,500 psf
Bearing Capacity Increase	500 psf per Foot of Depth
	300 psf per Foot of Width
Maximum Allowable Bearing Capacity	4,000 psf
Estimated Total Settlement	1 Inch
Estimated Differential Settlement	½ Inch in 40 Feet

6.10.9 The recommendations presented herein are generally applicable to the design of rigid concrete or masonry retaining walls.

6.10.10 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.

6.10.11 Soil contemplated for use as retaining wall backfill, including import materials, should be identified in the field prior to backfill. At that time, Geocon Incorporated should obtain samples for laboratory testing to evaluate its suitability. Modified lateral earth pressures may be necessary if the backfill soil does not meet the required expansion index or shear strength.

6.10.12 City or regional standard wall designs, if used, are based on a specific active lateral earth pressure and/or soil friction angle. In this regard, on-site soil to be used as backfill may or may not meet the values for standard wall designs. Geocon Incorporated should be consulted to assess the suitability of the on-site soil for use as wall backfill if standard wall designs will be used.

6.11 Lateral Loading

6.11.1 Table 6.11 should be used to help design the proposed structures and improvements to resist lateral loads for the design of footings or shear keys. 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. Where walls are planned adjacent to and/or on descending slopes, a passive pressure of 150 pcf should be used in design.

TABLE 6.11
SUMMARY OF LATERAL LOAD DESIGN RECOMMENDATIONS

Parameter	Value
Passive Pressure Fluid Density	350 pcf
Passive Pressure Fluid Density Adjacent to and/or on Descending Slopes	150 pcf
Coefficient of Friction (Concrete and Soil)	0.35
Coefficient of Friction (Along Vapor Barrier)	0.2 to 0.25*

*Per manufacturer's recommendations.

6.11.2 The passive and frictional resistant loads can be combined for design purposes. The lateral passive pressures may be increased by one-third when considering transient loads due to wind or seismic forces.

6.12 Slope Maintenance

6.12.1 Slopes that are steeper than 3:1 (horizontal:vertical) may, under conditions which are both difficult to prevent and predict, be susceptible to near surface (surficial) slope instability. The instability is typically limited to the outer three feet of a portion of the slope and usually does not directly impact the improvements on the pad areas above or below the slope. The occurrence of surficial instability is more prevalent on fill slopes and is generally preceded by a period of heavy rainfall, excessive irrigation, or the migration of subsurface seepage. The disturbance and/or loosening of the surficial soils, as might result from root growth, soil expansion, or excavation for irrigation lines and slope planting, may also be a significant contributing factor to surficial instability. It is, therefore, recommended that, to the maximum extent practical: (a) disturbed/loosened surficial soils be either removed or properly recompacted, (b) irrigation systems be periodically inspected and maintained to eliminate leaks and excessive irrigation, and (c) surface drains on and adjacent to slopes be periodically maintained to preclude ponding or erosion. Although the incorporation of the above recommendations should reduce the potential for surficial slope instability, it will not

eliminate the possibility, and, therefore, it may be necessary to rebuild or repair a portion of the project's slopes in the future.

6.13 Storm Water Management

6.13.1 If storm water management devices are not properly designed and constructed, there is a risk for distress to improvements and property located hydrologically down gradient or adjacent to these devices. Factors such as the amount of water being 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 hydrogeological study at the site. If infiltration of storm water runoff into the subsurface occurs, downstream improvements may be subjected to seeps, springs, slope instability, raised groundwater, movement of foundations and slabs, or other undesirable impacts as a result of water infiltration.

6.14 Site Drainage and Moisture Protection

6.14.1 Adequate 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 1803.3 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.

6.14.2 In the case of basement walls or building walls retaining landscaping areas, a water-proofing system should be used on the wall and joints, and a Miradrain drainage panel (or similar) should be placed over the waterproofing. The project architect or civil engineer should provide detailed specifications on the plans for all waterproofing and drainage.

6.14.3 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.

6.14.4 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 subdrains to collect excess irrigation water and transmit it to drainage structures, or impervious above-grade planter boxes be used. In addition, where landscaping is planned adjacent to the pavement, we recommend construction of a cutoff wall along the edge of the pavement that extends at least 6 inches below the bottom of the base material.

6.15 Grading and Foundation Plan Review

6.15.1 Geocon Incorporated should review the grading plans and foundation plans for the project prior to final design submittal to evaluate whether additional analyses and/or recommendations are required.

LIMITATIONS AND UNIFORMITY OF CONDITIONS

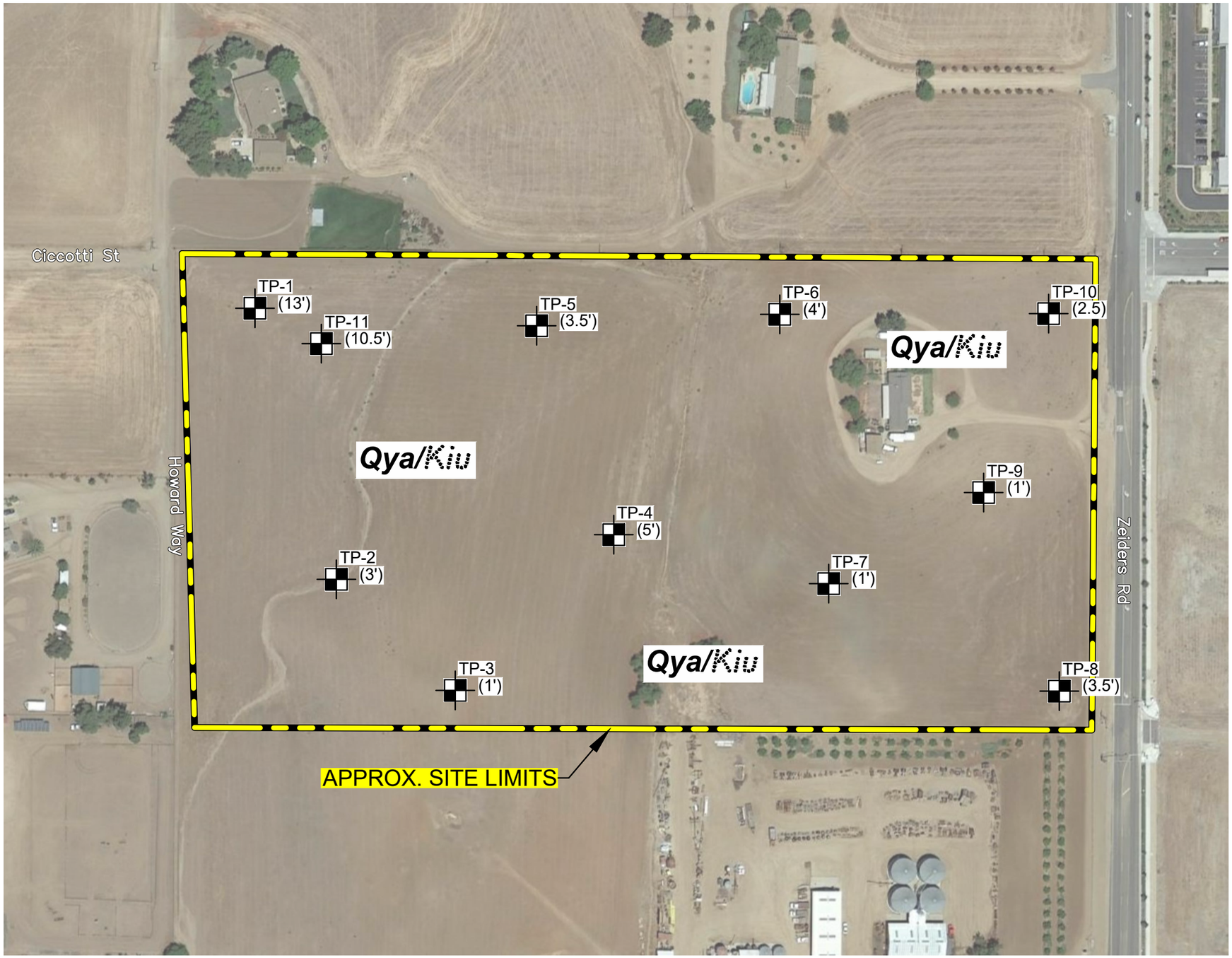
1. The firm that performed the geotechnical investigation for the project should be retained to provide testing and observation services during construction to provide continuity of geotechnical interpretation and to check that the recommendations presented for geotechnical aspects of site development 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.

2. 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 Incorporated 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 Incorporated.

3. This report is issued with the understanding that it is the responsibility of the owner or his representative to ensure that the information and recommendations contained herein are brought to the attention of the architect and engineer 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.

4. The findings of this report are valid as of the present date. However, changes in the conditions of a property can occur with the passage of time, whether they be 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.

33512 ZEIDERS ROAD
SUN CITY, CALIFORNIA



0' 150' 300'
SCALE 1"= 150' (On 11x17)

GEOCON LEGEND

Qya .....ALLUVIUM

Kiu .....IGNEOUS ROCK (Undivided)
(Dotted Where Buried)

TP-11 .....APPROX. LOCATION OF TEST PIT

(5') .....APPROX. DEPTH TO IGNEOUS ROCK
(In Feet)

THE GEOGRAPHICAL INFORMATION MADE AVAILABLE FOR DISPLAY WAS PROVIDED BY GOOGLE EARTH, SUBJECT TO A LICENSING AGREEMENT. THE INFORMATION IS FOR ILLUSTRATIVE PURPOSES ONLY; IT IS NOT INTENDED FOR CLIENT'S USE OR RELIANCE AND SHALL NOT BE REPRODUCED BY CLIENT. CLIENT SHALL INDEMNIFY, DEFEND AND HOLD HARMLESS GEOCON FROM ANY LIABILITY INCURRED AS A RESULT OF SUCH USE OR RELIANCE BY CLIENT.

GEOCON INCORPORATED
GEOTECHNICAL ■ ENVIRONMENTAL ■ MATERIALS
6960 FLANDERS DRIVE - SAN DIEGO, CALIFORNIA 92121 - 2974
PHONE 858 558-6900 - FAX 858 558-6159

PROJECT NO. G3028 - 42 - 01
FIGURE 1
DATE 10 - 14 - 2022

GEOLOGIC MAP

Plotted:10/13/2022 2:24PM | By:JONATHAN WILKINS | File Location:Y:\PROJECTS\G3028-42-01 Zeiders Road\SHEETS\G3028-42-01 GeologicMAP.dwg

APPENDIX A

APPENDIX A

FIELD INVESTIGATION

We performed our field investigation on September 19, 2022. Our investigation consisted of logging eleven exploratory test pits. The test pits were excavated to depths between about 3 and 14 feet using a CAT 430 F backhoe excavator. The approximate locations of the test pits are shown on Figure 1.

The soil conditions encountered in the borings were visually examined, classified, and logged in general conformance with the American Society for Testing and Materials (ASTM) Practice for Description and Identification of Soils (Visual-Manual Procedure D 2488). Exploratory test pit logs are presented in Figures A-1 through A-11. The logs depict the various soil types encountered and indicate the depths at which samples were obtained.

PROJECT NO. G3028-42-01

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	TEST PIT TP 1 ELEV. (MSL.) 1573' DATE COMPLETED 09-19-2022 EQUIPMENT CAT 430 F BY: R. ADAMS MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SM	**ALLUVIUM (Qya)** Loose, dry, brown, Silty, fine SAND; trace clay, abundant rootlets, disturbed (plough pan)			
				SC	Medium dense, dry to damp, brown, Clayey, fine to coarse SAND; trace silt, porous			
2								
4					-Few angular rock fragments upto 6 inches in size			
6								
	TP1-1				-Becomes very porous			
8					-Becomes harder			
10								
12								
	TP1-2				**IGNEOUS ROCK (UNDIVIDED)(Kiu)** Completely weathered, moderately strong, yellowish brown IGNEOUS ROCK ; excavates to a coarse sand, trace rock fragments <4 inches			
14					TOTAL DEPTH AT 14 FEET No groundwater Backfilled 09-19-2022			

Figure A-1,
Log of Test Pit TP 1, Page 1 of 1

G3028-42-01.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. G3028-42-01

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	TEST PIT TP 2 ELEV. (MSL.) **15476'** DATE COMPLETED **09-19-2022** EQUIPMENT **CAT 430 F** BY: **R. ADAMS**	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
					MATERIAL DESCRIPTION			
0				SM	**ALLUVIUM (Qya)** Loose, dry, grayish-brown, Silty, medium to coarse SAND; trace silt			
	TP2-1			SC	Loose, damp to moist, reddish-brown, Clayey, fine to coarse SAND; porous, abundant rootlets			
2								
					IGNEOUS ROCK (UNDIVIDED)(Kiu) Weak, completely weathered, orangish-brown IGNEOUS ROCK ; excavates to a very coarse sand			
4								
6								
8					TOTAL DEPTH AT 8 FEET No groundwater Backfilled 09-19-2022			

Figure A-2,
Log of Test Pit TP 2, Page 1 of 1

G3028-42-01.GPJ

SAMPLE SYMBOLS

... SAMPLING UNSUCCESSFUL | ... STANDARD PENETRATION TEST | ... DRIVE SAMPLE (UNDISTURBED)

... DISTURBED OR BAG SAMPLE | ... CHUNK SAMPLE | ... WATER TABLE OR ... SEEPAGE

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GEOCON

PROJECT NO. G3028-42-01

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	TEST PIT TP 3 ELEV. (MSL.) **1583'** DATE COMPLETED **09-19-2022** EQUIPMENT **CAT 430 F** BY: **R. ADAMS**	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
					MATERIAL DESCRIPTION			
0				SM	**ALLUVIUM (Qya)** Loose, dry, grayish-brown, Silty, fine to medium SAND; disturbed			
2					**IGNEOUS ROCK (UNDIVIDED)(Kiu)** Moderately strong, slightly weathered, grayish-brown to orangish-brown IGNEOUS ROCK ; excavates to fine to coarse SAND			
					PRACTICAL REFUSAL AT 3 FEET No groundwater Backfilled 09-19-2022			

Figure A-3,
Log of Test Pit TP 3, Page 1 of 1

G3028-42-01.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. G3028-42-01

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	TEST PIT TP 4 ELEV. (MSL.) **1572'** DATE COMPLETED **09-19-2022** EQUIPMENT **CAT 430 F** BY: **R. ADAMS** MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0				SM	**ALLUVIUM (Qya)** Loose to medium dense, dry to damp, brown to grayish-brown, Silty, fine to coarse SAND; porous			
2								
4				SC	Medium dense, damp, dark brown, Clayey, medium coarse SAND; porous, few rootlets			
6	TP4-1				**IGNEOUS ROCK (UNDIVIDED)(Kiu)** Moderately weak to moderately strong, moderately weathered, gray to orangish-brown IGNEOUS ROCK ; excavates to coarse SAND			
					TOTAL DEPTH AT 9 FEET PRACTICAL REFUSAL No groundwater Backfilled 09-19-2022			

Figure A-4,
Log of Test Pit TP 4, Page 1 of 1

G3028-42-01.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. G3028-42-01

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	TEST PIT TP 5 ELEV. (MSL.) **1570'** DATE COMPLETED **09-19-2022** EQUIPMENT **CAT 430 F** BY: **R. ADAMS**	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
					MATERIAL DESCRIPTION			
0				SC	**ALLUVIUM (Qya)** Loose, dry, brown to reddish-brown, Clayey, medium coarse SAND; disturbed (plough pan)			
2					-Trace subrounded cobble up to 4 inch diameter			
4					**IGNEOUS ROCK (UNDIVIDED)(Kiu)** Moderately weak to moderately strong, weathered bluish-gray orange-brown IGNEOUS ROCK ; excavates to a silty fine to medium SAND			
					TOTAL DEPTH AT 5 FEET No groundwater Backfilled 09-19-2022			

Figure A-5,
Log of Test Pit TP 5, Page 1 of 1

G3028-42-01.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.

PROJECT NO. G3028-42-01

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	TEST PIT TP 6 ELEV. (MSL.) **1567'** DATE COMPLETED **09-19-2022** EQUIPMENT **CAT 430 F** BY: **R. ADAMS**	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
					MATERIAL DESCRIPTION			
0	TP6-1			SM	**ALLUVIUM (Qya)** Loose, dry, reddish-brown, Silty, fine to medium SAND; porous			
2				SC	Loose to medium dense, damp, dark reddish-brown, Clayey, fine to medium SAND; porous, abundant rootlets			
4					**IGNEOUS ROCK (UNDIVIDED)(Kiu)** moderately weak, completley to moderately weathered, orangish-brown, IGNEOUS ROCK ; excavates to a clayey coarse sand			
					TOTAL DEPTH AT 5 FEET No groundwater Backfilled 09-19-2022			

Figure A-6,
Log of Test Pit TP 6, Page 1 of 1

G3028-42-01.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.

PROJECT NO. G3028-42-01

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	TEST PIT TP 7 ELEV. (MSL.) **1573'** DATE COMPLETED **09-19-2022** EQUIPMENT **CAT 430 F** BY: **R. ADAMS**	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
					MATERIAL DESCRIPTION			
0					**ALLUVIUM (Qya)** Loose, damp, brown, Clayey, fine to medium SAND; disturbed			
2					**IGNEOUS ROCK (UNDIVIDED)(Kiu)** Moderately weak, completely weathered, gray to orangish-brown GABBROIC ROCK; excavates to a coarse SAND; with few angular rock; fragments up to 8 inch diameter			
4					-Becomes moderately strong, less weathered			
6								
8								
10					-Becomes moderately strong to strong, slightly weathered to unweathered			
					PRACTICAL REFUSAL AT 11 FEET No groundwater Backfilled 09-19-2022			

Figure A-7,
Log of Test Pit TP 7, Page 1 of 1

G3028-42-01.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.

PROJECT NO. G3028-42-01

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	TEST PIT TP 8 ELEV. (MSL.) 1575' DATE COMPLETED 09-19-2022 EQUIPMENT CAT 430 F BY: R. ADAMS	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
					MATERIAL DESCRIPTION			
0					**ALLUVIUM (Qya)** Loose, dry to damp, brown to reddish-brown, Clayey, fine to medium SAND; porous, abundant rock fragments			
2					-Abundant caliche veins throughout			
4					**IGNEOUS ROCK (UNDIVIDED)(Kiu)** Weak, completely weathered, orangish-brown IGNEOUS ROCK ; excavates to a Clayey, medium coarse SAND			
6					-Completely to moderately weathered			
8					TOTAL DEPTH AT 8 FEET No groundwater Backfilled 09-19-2022			

Figure A-8,
Log of Test Pit TP 8, Page 1 of 1

G3028-42-01.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. G3028-42-01

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	TEST PIT TP 9 ELEV. (MSL.) **1577'** DATE COMPLETED **09-19-2022** EQUIPMENT **CAT 430 F** BY: **R. ADAMS**	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
					MATERIAL DESCRIPTION			
0					**ALLUVIUM (Qya)** Loose, damp, brown, Clayey, fine to medium SAND; some silt, disturbed			
2					**IGNEOUS ROCK (UNDIVIDED)(Kiu)** Weak, completely weathered, orangish-brown IGNEOUS ROCK ; excavates to a very coarse SAND			
					TOTAL DEPTH AT 3 FEET No groundwater Backfilled 09-19-2022			

Figure A-9,
Log of Test Pit TP 9, Page 1 of 1

G3028-42-01.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. G3028-42-01

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	TEST PIT TP 10 ELEV. (MSL.) **1563'** DATE COMPLETED **09-19-2022** EQUIPMENT **CAT 430 F** BY: **R. ADAMS**	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
					MATERIAL DESCRIPTION			
0	TP10-1				**ALLUVIUM (Qya)** Loose, dry to damp, reddish-brown, Clayey, fine to medium SAND; trace silt, porous, saprolitic soil			
2					**IGNEOUS ROCK (UNDIVIDED)(Kiu)** Weak, completely weathered, grayish-brown to yellowish brown IGNEOUS ROCK ; excavates to a very coarse SAND			
4					TOTAL DEPTH AT 4 FEET No groundwater Backfilled 09-19-2022			

Figure A-10,
Log of Test Pit TP 10, Page 1 of 1

G3028-42-01.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. G3028-42-01

DEPTH IN FEET	SAMPLE NO.	LITHOLOGY	GROUNDWATER	SOIL CLASS (USCS)	TEST PIT TP 11 ELEV. (MSL.) 1573' DATE COMPLETED 09-19-2022 EQUIPMENT CAT 430 F BY: R. ADAMS MATERIAL DESCRIPTION	PENETRATION RESISTANCE (BLOWS/FT.)	DRY DENSITY (P.C.F.)	MOISTURE CONTENT (%)
0	TP11-1				**ALLUVIUM (Qya)** Loose, dry, brown Silty, fine to coarse SAND; trace clay, porous, few rootlets			
2	TP11-2							
4					-Becomes medium dense			
6								
8					-Very porous, spaces up to 1/4 inch diameter			
10								
12					**IGNEOUS ROCK (UNDIVIDED)(Kiu)** Moderately weak to medium strong, moderately weathered GABBROIC ROCK; excavates to fine to coarse SAND			
					TOTAL DEPTH AT 12 FEET No groundwater Backfilled 09-19-2022			

Figure A-11,
Log of Test Pit TP 11, Page 1 of 1

G3028-42-01.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.

APPENDIX B

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 samples were tested for *in-situ* dry density and moisture content, maximum dry density and optimum moisture content, expansion potential, soluble sulfate content, chloride content, pH and resistivity, consolidation potential, gradation, and shear strength. The results of these tests are summarized on the following tables and figures. The in-place dry density and moisture content of the samples tested are presented on the boring logs in Appendix A.

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.)
4-1	Dark gray, Silty, fine to coarse SAND (SM)	139.9	8.5

SUMMARY OF LABORATORY EXPANSION INDEX TEST RESULTS ASTM D 4829

Sample No.	Moisture Content (%)		Dry Density (pcf)	Expansion Index	2019 CBC Expansion Classification	ASTM Soil Expansion Classification
	Before Test	After Test				
2-1	8.4	16.5	117.5	13	Low	Non-Expansive

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

Sample No.	Water-Soluble Sulfate (%)	Sulfate Exposure
2-1	0.0002	S0
4-1	0.0002	S0

SUMMARY OF LABORATORY WATER-SOLUBLE CHLORIDE ION CONTENT TEST RESULTS
AASHTO TEST NO. T 291

Sample No.	Chloride Ion Content ppm (%)	Chloride Ion Content (PPM)
2-1	0.010	97
4-1	0.007	66

SUMMARY OF LABORATORY POTENTIAL OF HYDROGEN (PH) AND RESISTIVITY TEST RESULTS
CALIFORNIA TEST NO. 643

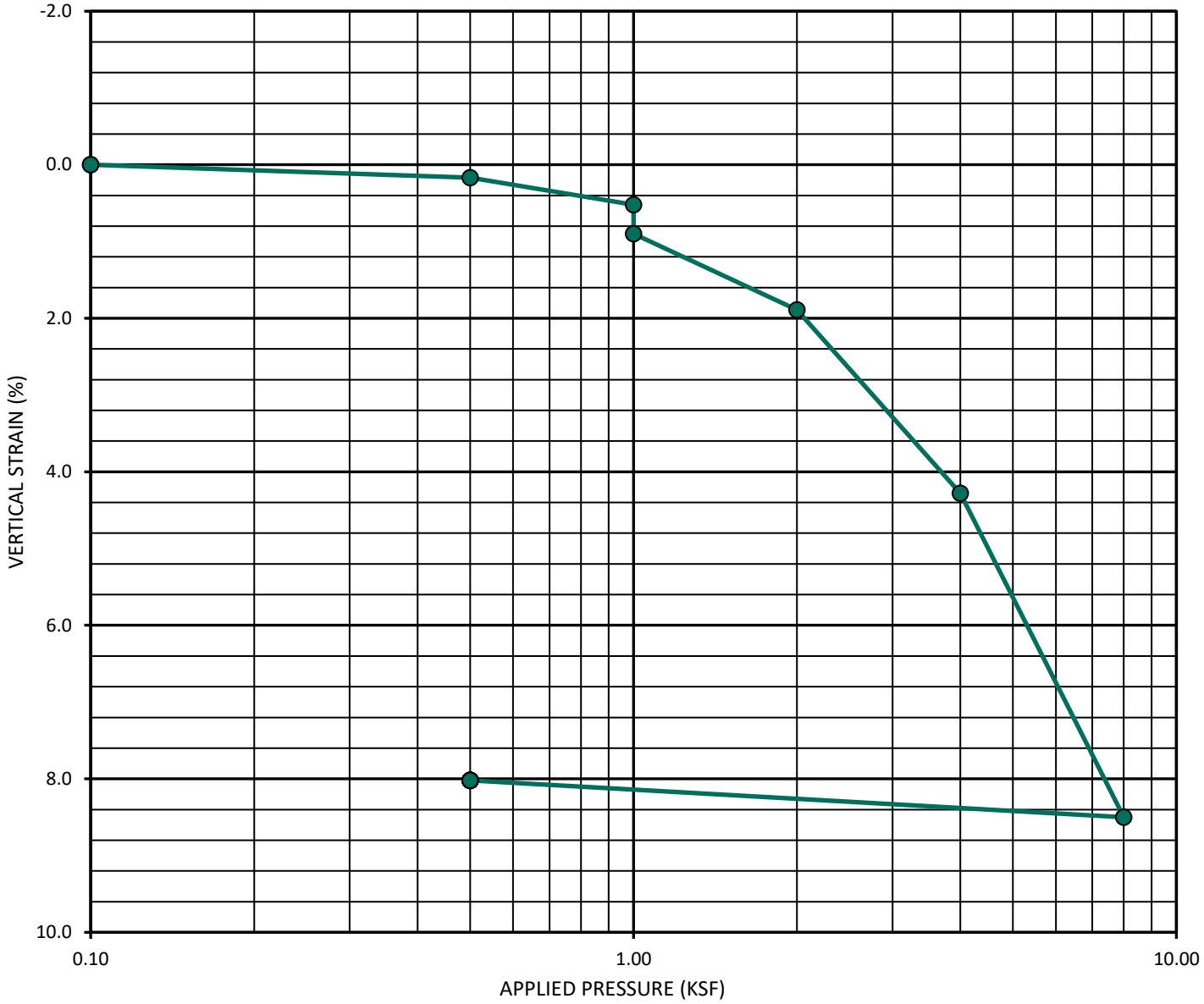
Sample No.	Depth (Feet)	Geologic Unit	pH	Minimum Resistivity (ohm-centimeters)
2-1	1 to 3 Feet	Qya	7.75	2400

SAMPLE NO.: **TP1-1**

SAMPLE DEPTH (FT): **7 to 9 Feet**

GEOLOGIC UNIT: **Qya**

TEST INFORMATION	
INITIAL DRY DENSITY (PCF):	97.8
INITIAL WATER CONTENT (%):	6.3%
SAMPLE SATURATED AT (KSF):	1.0
INITIAL SATURATION (%):	23.8%



CONSOLIDATION CURVE - ASTM D 2435

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ZEIDERS ROAD

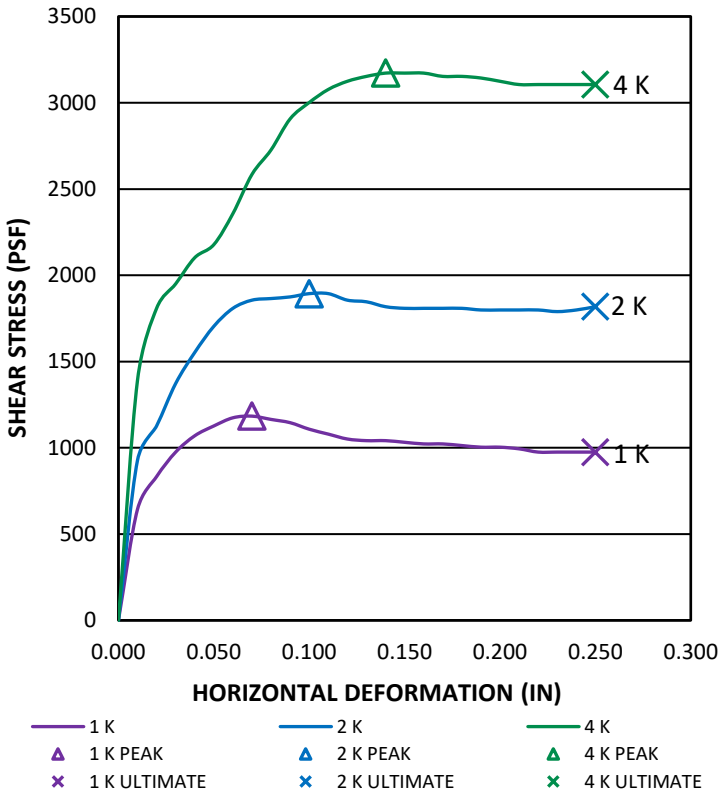
PROJECT NO.: G3028-42-01

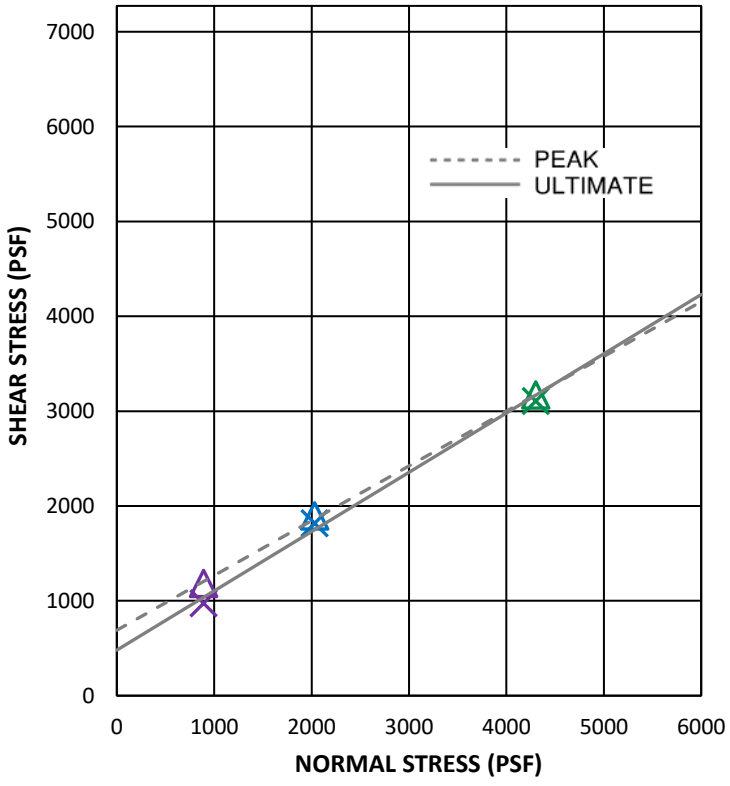
SAMPLE NO.:	**4-1**	GEOLOGIC UNIT:	**Kgr**
SAMPLE DEPTH (FT):	**5 to 7 Feet**	NATURAL/REMOLDED:	**R**

INITIAL CONDITIONS				
NORMAL STRESS TEST LOAD	**1 K**	**2 K**	**4 K**	**AVERAGE**
ACTUAL NORMAL STRESS (PSF):	890	2030	4300	--
WATER CONTENT (%):	8.2	8.7	8.4	8.4
DRY DENSITY (PCF):	126.5	126.1	126.2	126.3

AFTER TEST CONDITIONS				
NORMAL STRESS TEST LOAD	**1 K**	**2 K**	**4 K**	**AVERAGE**
WATER CONTENT (%):	12.0	12.6	12.3	12.3
PEAK SHEAR STRESS (PSF):	1183	1894	3172	--
ULT.-E.O.T. SHEAR STRESS (PSF):	975	1818	3105	--

RESULTS		
PEAK	COHESION, C (PSF)	690
	FRICTION ANGLE (DEGREES)	30
ULTIMATE	COHESION, C (PSF)	480
	FRICTION ANGLE (DEGREES)	32





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DIRECT SHEAR - AASHTO T-236

ZEIDER ROAD

PROJECT NO.: G3028-42-01

APPENDIX C

APPENDIX C
RECOMMENDED PRELIMINARY GRADING SPECIFICATIONS

FOR

33521 ZEIDERS ROAD
SUN CITY, CALIFORNIA

PROJECT NO. G3028-42-01

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

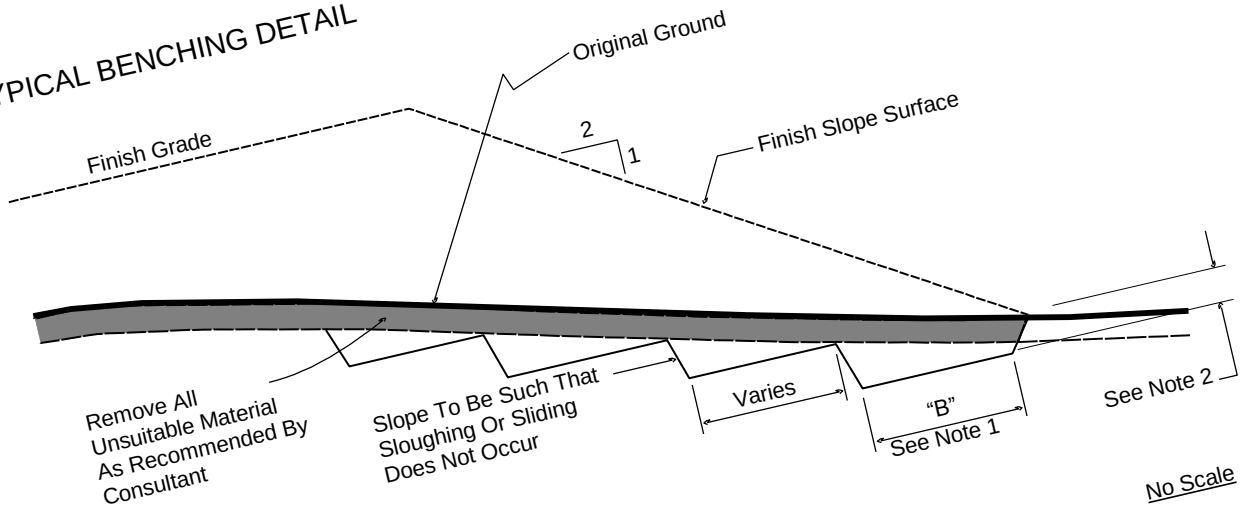
4.1 Areas to be excavated and filled shall be cleared and grubbed. Clearing shall consist of complete removal above the ground surface of trees, stumps, brush, vegetation, man-made structures, and similar debris. Grubbing shall consist of removal of stumps, roots, buried logs and other unsuitable material 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



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.

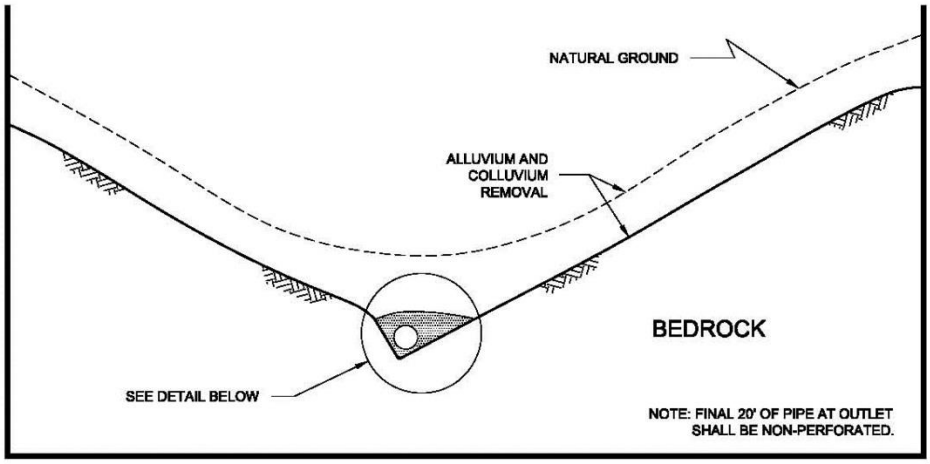
6.3.6 To reduce the potential for "piping" of fines into the *rock* fill from overlying *soil* fill material, a 2-foot layer of graded filter material shall be placed above the uppermost lift of *rock* fill. The need to place graded filter material below the *rock* should be determined by the Consultant 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.

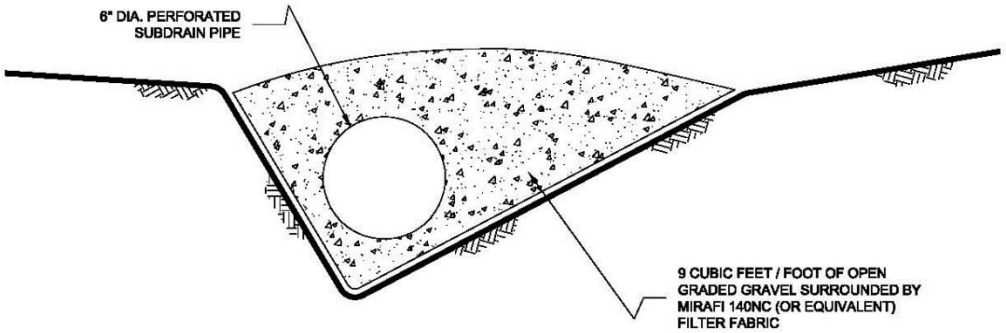
6.3.7 *Rock* fill placement should be continuously observed during placement by the Consultant.

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:

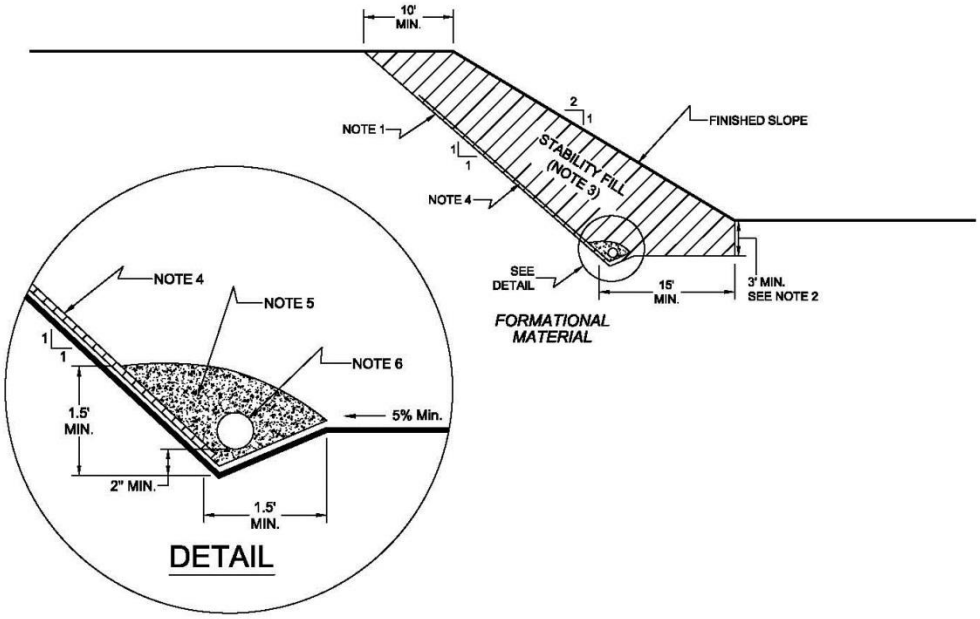
1.....6-INCH DIAMETER, SCHEDULE 80 PVC PERFORATED PIPE FOR FILLS
IN EXCESS OF 100-FEET IN DEPTH OR A PIPE LENGTH OF LONGER THAN 500 FEET.

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

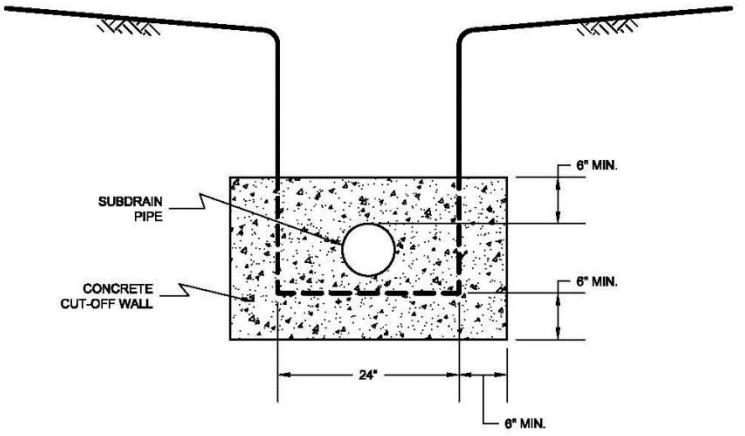
7.3 The actual subdrain locations will be evaluated in the field during the remedial grading operations. Additional drains may be necessary depending on the conditions observed and the requirements of the local regulatory agencies. Appropriate subdrain outlets should be evaluated prior to finalizing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

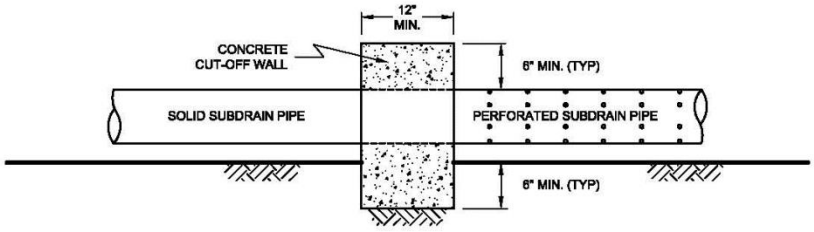
TYPICAL CUT OFF WALL DETAIL

FRONT VIEW



NO SCALE

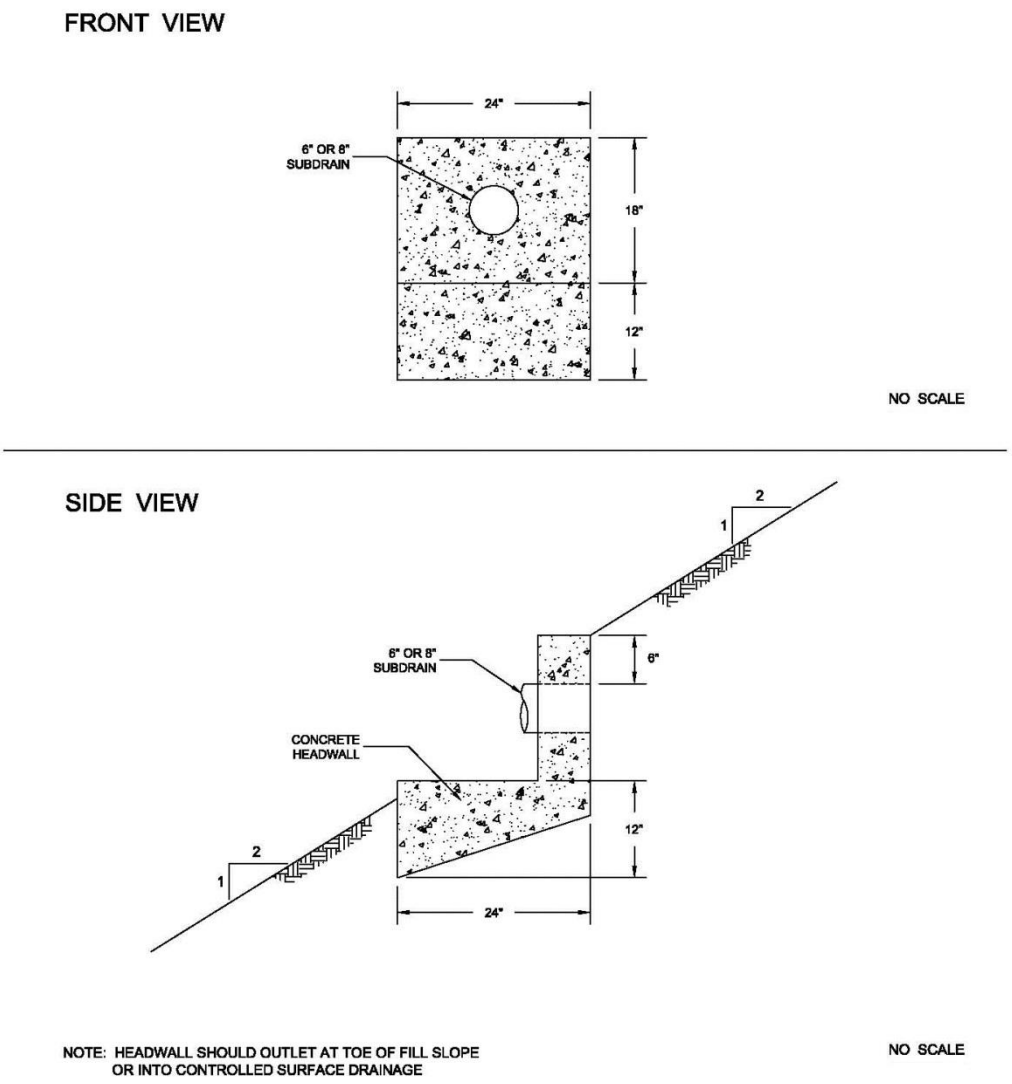
SIDE VIEW



NO SCALE

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.

LIST OF REFERENCES

California Building Code (2019), *California Code of Regulations, Title 24, Part 2, based on the 2018 International Building Code*, prepared by California Building Standards Commission, dated July 2019;

American Concrete Institute, *ACI 318-11, Building Code Requirements for Structural Concrete and Commentary*, dated August, 2011;

American Society of Civil Engineers (ASCE), *ASCE 7-16, Minimum Design Loads and Associated Criteria for Buildings and Other Structures*, 2017;

California Geologic Survey (2021a), *EQ Zapp: California Earthquake Hazards Zone Application*, online map that queries California Geological Survey mapped earthquake hazard zones, https://www.conservation.ca.gov/cgs/geohazards/eq-zapp, accessed October, 2022;

California Geological Survey (2009), California Tsunami Maps and Data, https://www.conservation.ca.gov/cgs/tsunami/, accessed October, 2022

FEMA (2012), *Flood Map Service Center*, FEMA website, https://msc.fema.gov/portal/home, flood map number 06073C1687G, effective May 16, 2012, accessed October, 2022;

Morton, D.M., Bovard, K.R., and Morton, Gregory, 2003, *Geologic Map and Digital Database of the Romoland 7.5' quadrangle*, Riverside County, California, U.S. Geological Survey, Open-File Report OF-2003-102, 1:24,000

SEAOC (2019), *OSHPD Seismic Design Maps:* Structural Engineers Association of California website, http://seismicmaps.org/, accessed October, 2022;

USGS, Unified Hazard Tool, https://earthquake.usgs.gov/hazards/interactive/, accessed October, 2022;

USGS, *Quaternary Fault and Fold Database of the United States*: U.S. Geological Survey website, https://www.usgs.gov/natural-hazards/earthquake-hazards/faults, accessed October, 2022.

Project No. G3028-42-01
March 6, 2024

Pemcor Properties Inc.
P.O. Box 903
Rancho Santa Fe, California 92067

Attention: Mr. Paul Mayer

Subject: INFILTRATION TEST RESULTS
33521 ZEIDERS ROAD
SUN CITY, CALIFORNIA

Dear Mr. Mayer:

In accordance with your request, we have prepared this letter to present the results of infiltration tests performed for the subject project. The approximate locations of the tests are shown on the appended Infiltration Test Location Map (Figure 1). Infiltration test results are shown in the table below.

FIELD-SATURATED HYDRAULIC CONDUCTIVITY TESTS

Test No.	Infiltration Rate, I (in/hr)
A-1	0.030
A-2	0.099
A-3	0.001
A-4	0.019
A-5	0.036
A-6	0.018
A-7	0.039
A-8	0.025
A-9	0.105
A-10	0.148
A-11	0.091
A-12	0.047

Infiltration tests were performed within alluvium at test locations A-9, A-11, and A-12; and within igneous rock at test locations A-1 through A-8, and A-10. Site grading will consist of the removal of alluvium beneath planned structural areas (building pads, retaining walls, slopes, pavement, concrete flatwork, etc) to expose competent igneous rock, and be replaced with compacted fill. As a result, infiltration rates of the proposed biofiltration basin and vault (test locations A-9 through A-12) will differ from the tested infiltration rates at these locations.

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

Very truly yours,

GEOCON INCORPORATED

Jake P. Shelton
Senior Staff Geologist

Rupert S. Adams
CEG 2561

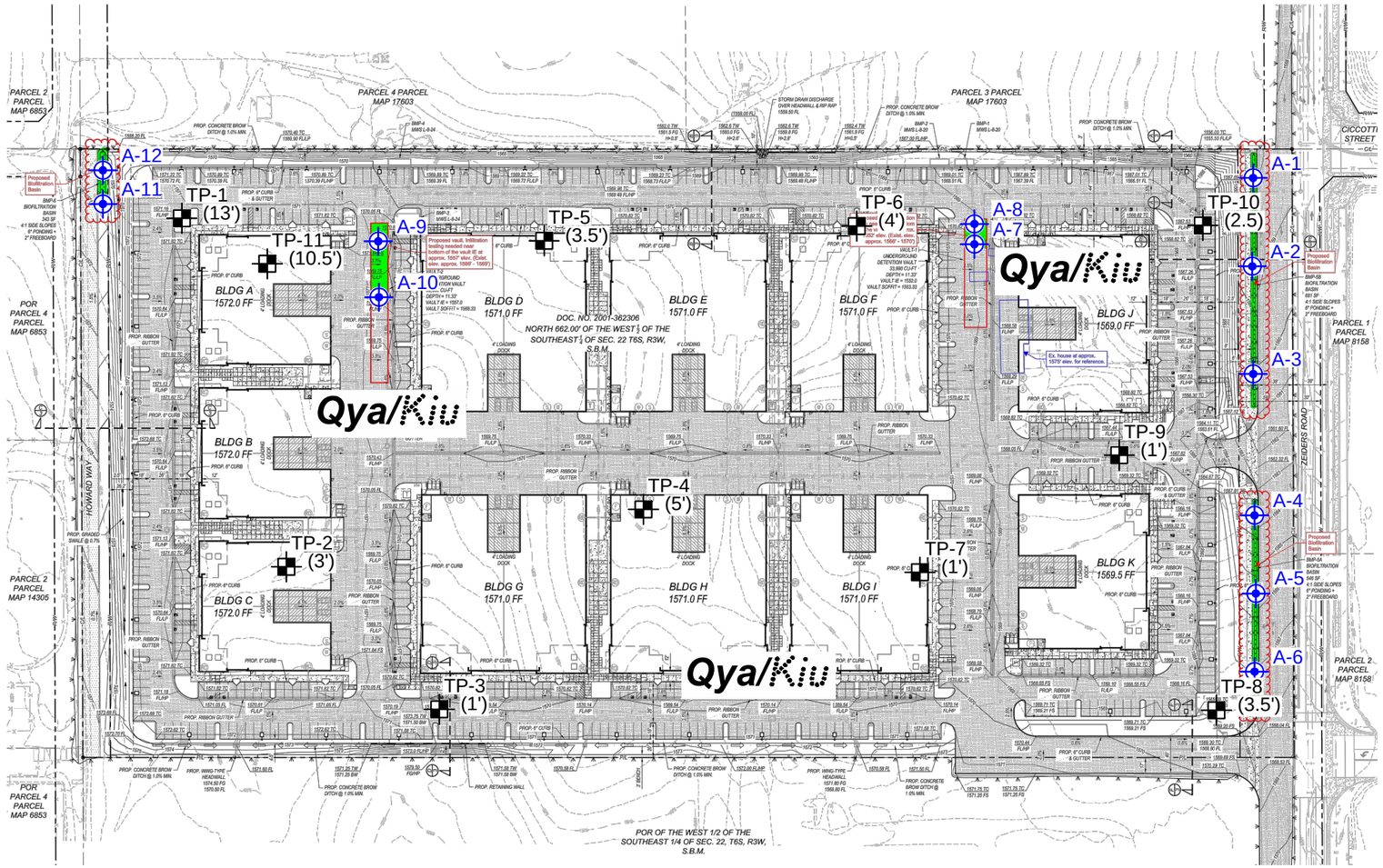
Rodney C. Mikesell
GE 2533

JPS:RSA:RCM:am

Attachments: Figure 1: Infiltration Test Location Map
Infiltration Test Results

(e-mail) Addressee

33512 ZEIDERS ROAD
SUN CITY, CALIFORNIA



GEOCON LEGEND

Qya .....ALLUVIUM

Kiu .....IGNEOUS ROCK (Undivided)
(Dotted Where Buried)

A-12 .....APROX. LOCATION OF INFILTRATION TEST

TP-11 .....APPROX. LOCATION OF TEST PIT

(5') .....APPROX. DEPTH TO IGNEOUS ROCK
(In Feet)

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PHONE 858 558-6900 - FAX 858 558-6159
PROJECT NO. G3028 - 42 - 01
FIGURE 1
DATE 03 - 06 - 2024

INFILTRATION TEST LOCATION MAP

Plotted:03/06/2024 2:37PM | By:ALVIN LADRILLONO | File Location:Y:\PROJECTS\G3028-42-01 Zeiders Road\SHEETS\G3028-42-01 InfiltrationTestLocationMap.dwg

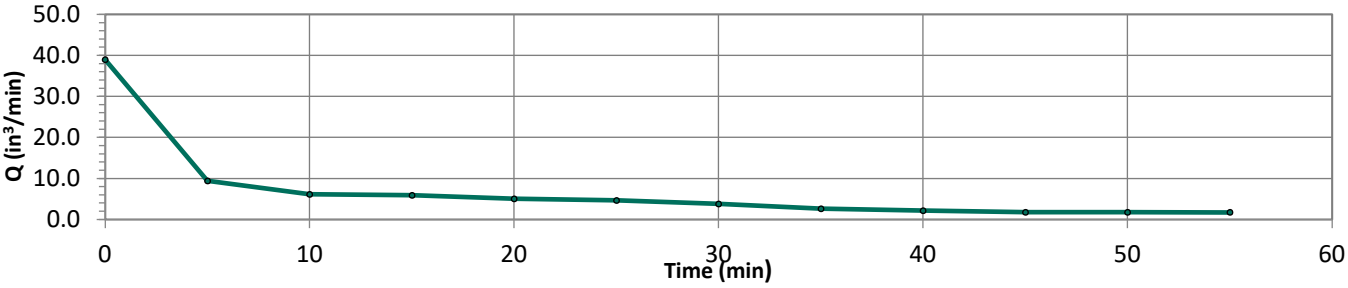
TEST NO.: **A-1**

GEOLOGIC UNIT: **Kiu**

EXCAVATION ELEVATION (MSL, FT): **1562**

TEST INFORMATION	
BOREHOLE DIAMETER (IN):	6
BOREHOLE DEPTH (FT):	5.0
TEST/BOTTOM ELEVATION (MSL, FT):	1557
MEASURED HEAD HEIGHT (IN):	5.0
CALCULATED HEAD HEIGHT (IN):	5.1
FACTOR OF SAFETY:	2.0

TEST RESULTS	
STEADY FLOW RATE (IN^3/MIN):	**1.763**
FIELD-SATURATED INFILTRATION RATE (IN/HR):	**0.060**
FACTORED INFILTRATION RATE (IN/HR):	**0.030**



TEST DATA				
Reading	Time Elapsed (min)	Water Weight Consumed (lbs)	Water Volume Consumed (in^3)	Q (in^3/min)
1	0.00	0.000	0.00	0.00
2	5.00	7.035	194.82	38.963
3	5.00	1.695	46.94	9.388
4	5.00	1.105	30.60	6.120
5	5.00	1.065	29.49	5.898
6	5.00	0.905	25.06	5.012
7	5.00	0.840	23.26	4.652
8	5.00	0.690	19.11	3.822
9	5.00	0.480	13.29	2.658
10	5.00	0.395	10.94	2.188
11	5.00	0.320	8.86	1.772
12	5.00	0.320	8.86	1.772
13	5.00	0.315	8.72	1.745

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BOREHOLE INFILTRATION TEST RESULTS

33521 Zeiders Road

PROJECT NO.: G3028-42-01

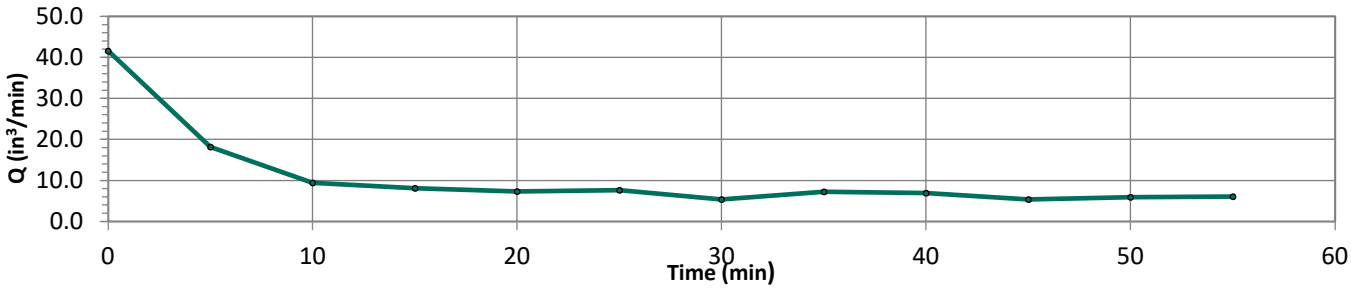
TEST NO.: **A-2**

GEOLOGIC UNIT: **Kiu**

EXCAVATION ELEVATION (MSL, FT): **1562**

TEST INFORMATION	
BOREHOLE DIAMETER (IN):	6
BOREHOLE DEPTH (FT):	5.0
TEST/BOTTOM ELEVATION (MSL, FT):	1557
MEASURED HEAD HEIGHT (IN):	5.0
CALCULATED HEAD HEIGHT (IN):	5.3
FACTOR OF SAFETY:	2.0

TEST RESULTS	
STEADY FLOW RATE (IN^3/MIN):	**5.788**
FIELD-SATURATED INFILTRATION RATE (IN/HR):	**0.198**
FACTORED INFILTRATION RATE (IN/HR):	**0.099**



TEST DATA				
Reading	Time Elapsed (min)	Water Weight Consumed (lbs)	Water Volume Consumed (in^3)	Q (in^3/min)
1	0.00	0.000	0.00	0.00
2	5.00	7.505	207.83	41.566
3	5.00	3.285	90.97	18.194
4	5.00	1.700	47.08	9.415
5	5.00	1.455	40.29	8.058
6	5.00	1.320	36.55	7.311
7	5.00	1.375	38.08	7.615
8	5.00	0.970	26.86	5.372
9	5.00	1.310	36.28	7.255
10	5.00	1.250	34.62	6.923
11	5.00	0.975	27.00	5.400
12	5.00	1.060	29.35	5.871
13	5.00	1.100	30.46	6.092

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BOREHOLE INFILTRATION TEST RESULTS

33521 Zeiders Road

PROJECT NO.: G3028-42-01

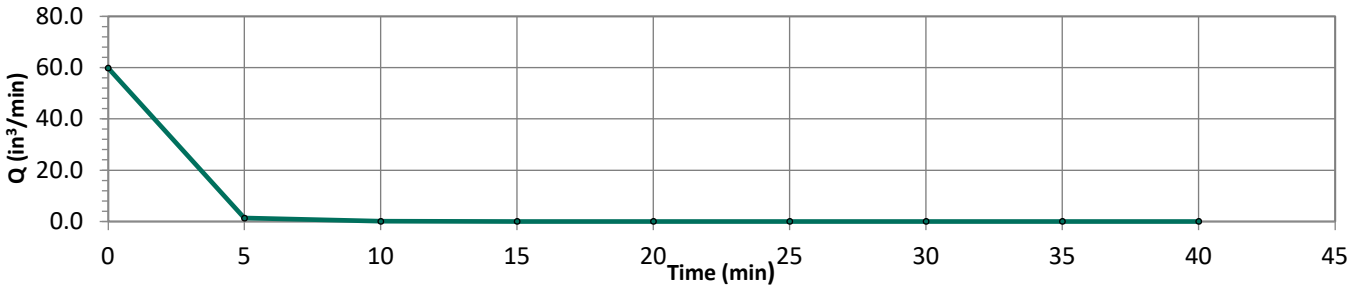
TEST NO.: **A-3**

GEOLOGIC UNIT: **Kiu**

EXCAVATION ELEVATION (MSL, FT): **1562**

TEST INFORMATION	
BOREHOLE DIAMETER (IN):	6
BOREHOLE DEPTH (FT):	5.0
TEST/BOTTOM ELEVATION (MSL, FT):	1557
MEASURED HEAD HEIGHT (IN):	4.0
CALCULATED HEAD HEIGHT (IN):	5.3
FACTOR OF SAFETY:	2.0

TEST RESULTS	
STEADY FLOW RATE (IN^3/MIN):	**0.028**
FIELD-SATURATED INFILTRATION RATE (IN/HR):	**0.001**
FACTORED INFILTRATION RATE (IN/HR):	**0.001**



TEST DATA				
Reading	Time Elapsed (min)	Water Weight Consumed (lbs)	Water Volume Consumed (in^3)	Q (in^3/min)
1	0.00	0.000	0.00	0.00
2	5.00	10.805	299.22	59.843
3	5.00	0.245	6.78	1.357
4	5.00	0.015	0.42	0.083
5	5.00	0.005	0.14	0.028
6	5.00	0.005	0.14	0.028
7	5.00	0.005	0.14	0.028
8	5.00	0.005	0.14	0.028
9	5.00	0.005	0.14	0.028
10	5.00	0.005	0.14	0.028

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BOREHOLE INFILTRATION TEST RESULTS

33521 Zeiders Road

PROJECT NO.: G3028-42-01

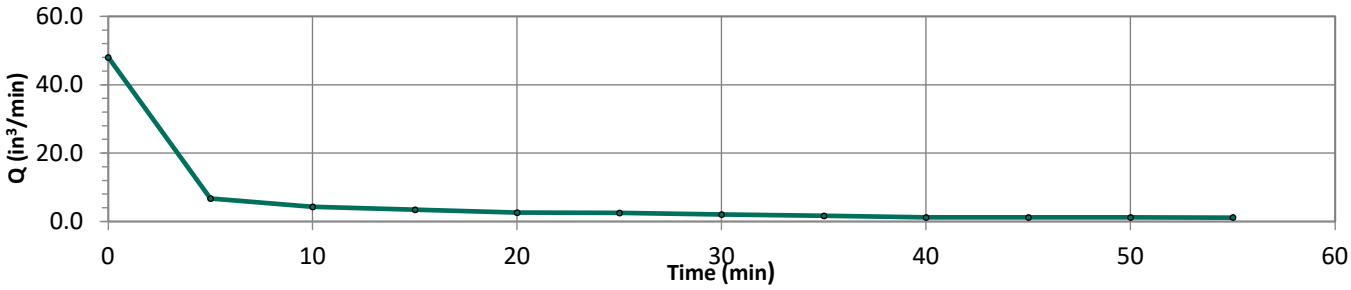
TEST NO.: **A-4**

GEOLOGIC UNIT: **Kiu**

EXCAVATION ELEVATION (MSL, FT): **1566**

TEST INFORMATION	
BOREHOLE DIAMETER (IN):	6
BOREHOLE DEPTH (FT):	4.7
TEST/BOTTOM ELEVATION (MSL, FT):	1561
MEASURED HEAD HEIGHT (IN):	6.0
CALCULATED HEAD HEIGHT (IN):	5.2
FACTOR OF SAFETY:	2.0

TEST RESULTS	
STEADY FLOW RATE (IN^3/MIN):	**1.200**
FIELD-SATURATED INFILTRATION RATE (IN/HR):	**0.038**
FACTORED INFILTRATION RATE (IN/HR):	**0.019**



TEST DATA

Reading	Time Elapsed (min)	Water Weight Consumed (lbs)	Water Volume Consumed (in^3)	Q (in^3/min)
1	0.00	0.000	0.00	0.00
2	5.00	8.670	240.09	48.018
3	5.00	1.210	33.51	6.702
4	5.00	0.775	21.46	4.292
5	5.00	0.620	17.17	3.434
6	5.00	0.465	12.88	2.575
7	5.00	0.445	12.32	2.465
8	5.00	0.370	10.25	2.049
9	5.00	0.300	8.31	1.662
10	5.00	0.220	6.09	1.218
11	5.00	0.220	6.09	1.218
12	5.00	0.220	6.09	1.218
13	5.00	0.210	5.82	1.163

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BOREHOLE INFILTRATION TEST RESULTS

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PROJECT NO.: G3028-42-01

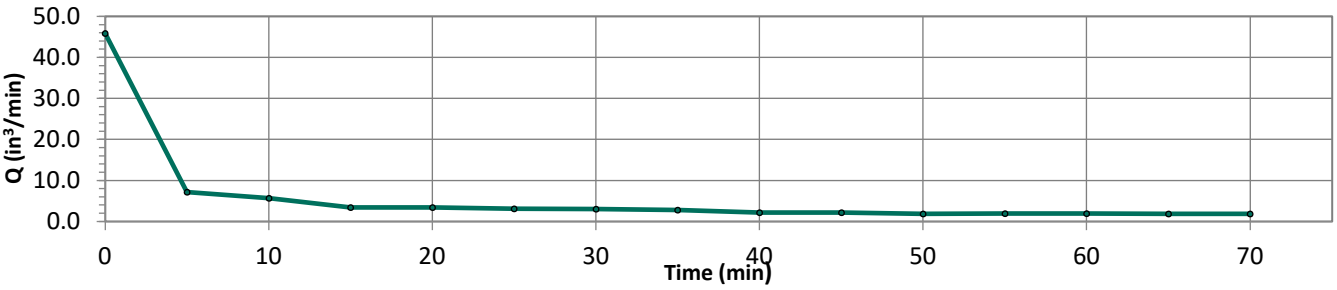
TEST NO.: **A-5**

GEOLOGIC UNIT: **Kiu**

EXCAVATION ELEVATION (MSL, FT): **1569**

TEST INFORMATION	
BOREHOLE DIAMETER (IN):	6
BOREHOLE DEPTH (FT):	4.5
TEST/BOTTOM ELEVATION (MSL, FT):	1565
MEASURED HEAD HEIGHT (IN):	4.0
CALCULATED HEAD HEIGHT (IN):	5.2
FACTOR OF SAFETY:	2.0

TEST RESULTS	
STEADY FLOW RATE (IN^3/MIN):	**1.892**
FIELD-SATURATED INFILTRATION RATE (IN/HR):	**0.072**
FACTORED INFILTRATION RATE (IN/HR):	**0.036**



TEST DATA				
Reading	Time Elapsed (min)	Water Weight Consumed (lbs)	Water Volume Consumed (in^3)	Q (in^3/min)
1	0.00	0.000	0.00	0.00
2	5.00	8.275	229.15	45.831
3	5.00	1.295	35.86	7.172
4	5.00	1.030	28.52	5.705
5	5.00	0.620	17.17	3.434
6	5.00	0.610	16.89	3.378
7	5.00	0.565	15.65	3.129
8	5.00	0.545	15.09	3.018
9	5.00	0.500	13.85	2.769
10	5.00	0.395	10.94	2.188
11	5.00	0.395	10.94	2.188
12	5.00	0.340	9.42	1.883
13	5.00	0.355	9.83	1.966
14	5.00	0.345	9.55	1.911
15	5.00	0.340	9.42	1.883
16	5.00	0.340	9.42	1.883

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BOREHOLE INFILTRATION TEST RESULTS

33521 Zeiders Road

PROJECT NO.: G3028-42-01

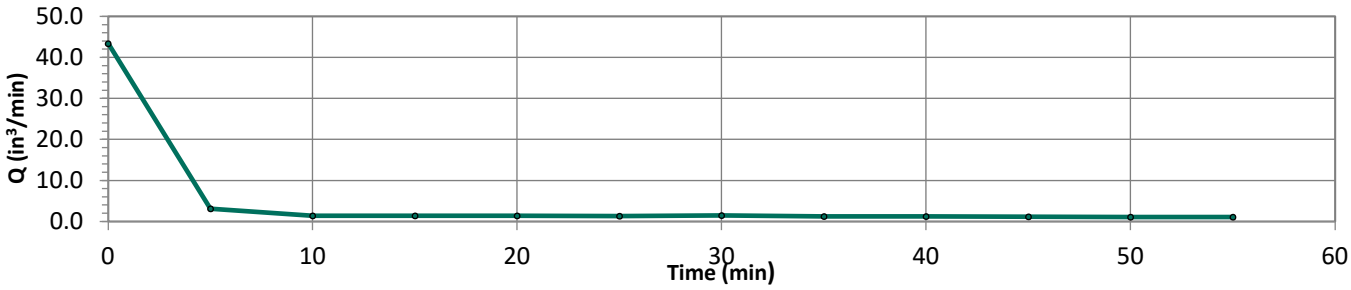
TEST NO.: **A-6**

GEOLOGIC UNIT: **Kiu**

EXCAVATION ELEVATION (MSL, FT): **1571**

TEST INFORMATION	
BOREHOLE DIAMETER (IN):	6
BOREHOLE DEPTH (FT):	5.1
TEST/BOTTOM ELEVATION (MSL, FT):	1566
MEASURED HEAD HEIGHT (IN):	6.0
CALCULATED HEAD HEIGHT (IN):	5.3
FACTOR OF SAFETY:	2.0

TEST RESULTS	
STEADY FLOW RATE (IN^3/MIN):	**1.126**
FIELD-SATURATED INFILTRATION RATE (IN/HR):	**0.035**
FACTORED INFILTRATION RATE (IN/HR):	**0.018**



TEST DATA				
Reading	Time Elapsed (min)	Water Weight Consumed (lbs)	Water Volume Consumed (in^3)	Q (in^3/min)
1	0.00	0.000	0.00	0.00
2	5.00	7.835	216.97	43.394
3	5.00	0.565	15.65	3.129
4	5.00	0.256	7.09	1.418
5	5.00	0.255	7.06	1.412
6	5.00	0.250	6.92	1.385
7	5.00	0.230	6.37	1.274
8	5.00	0.260	7.20	1.440
9	5.00	0.225	6.23	1.246
10	5.00	0.215	5.95	1.191
11	5.00	0.210	5.82	1.163
12	5.00	0.200	5.54	1.108
13	5.00	0.200	5.54	1.108

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BOREHOLE INFILTRATION TEST RESULTS

33521 Zeiders Road

PROJECT NO.: G3028-42-01

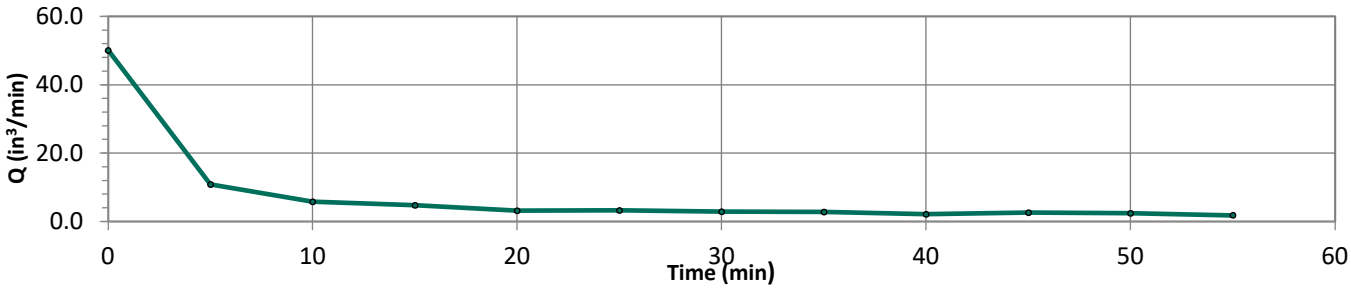
TEST NO.: **A-7**

GEOLOGIC UNIT: **Kiu**

EXCAVATION ELEVATION (MSL, FT): **1570**

TEST INFORMATION	
BOREHOLE DIAMETER (IN):	6
BOREHOLE DEPTH (FT):	5.0
TEST/BOTTOM ELEVATION (MSL, FT):	1565
MEASURED HEAD HEIGHT (IN):	5.0
CALCULATED HEAD HEIGHT (IN):	5.1
FACTOR OF SAFETY:	2.0

TEST RESULTS	
STEADY FLOW RATE (IN^3/MIN):	**2.262**
FIELD-SATURATED INFILTRATION RATE (IN/HR):	**0.078**
FACTORED INFILTRATION RATE (IN/HR):	**0.039**



TEST DATA				
Reading	Time Elapsed (min)	Water Weight Consumed (lbs)	Water Volume Consumed (in^3)	Q (in^3/min)
1	0.00	0.000	0.00	0.00
2	5.00	9.045	250.48	50.095
3	5.00	1.950	54.00	10.800
4	5.00	1.050	29.08	5.815
5	5.00	0.855	23.68	4.735
6	5.00	0.575	15.92	3.185
7	5.00	0.580	16.06	3.212
8	5.00	0.520	14.40	2.880
9	5.00	0.510	14.12	2.825
10	5.00	0.380	10.52	2.105
11	5.00	0.470	13.02	2.603
12	5.00	0.430	11.91	2.382
13	5.00	0.325	9.00	1.800

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BOREHOLE INFILTRATION TEST RESULTS

33521 Zeiders Road

PROJECT NO.: G3028-42-01

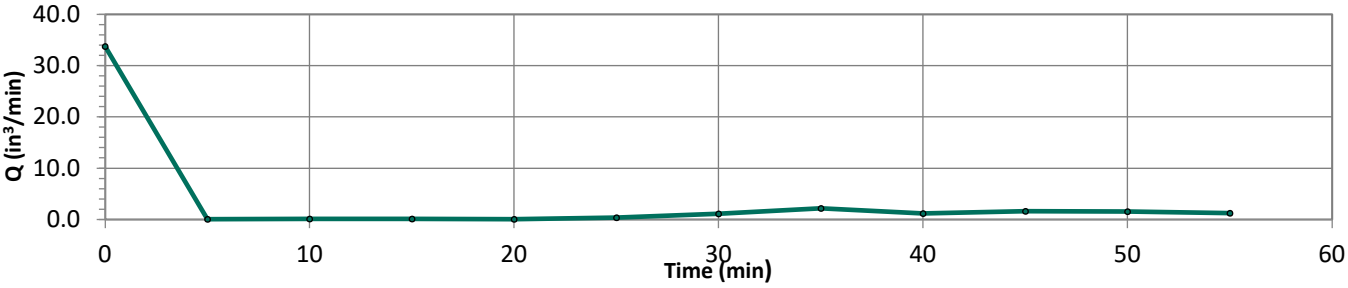
TEST NO.: **A-8**

GEOLOGIC UNIT: **Kiu**

EXCAVATION ELEVATION (MSL, FT): **1566**

TEST INFORMATION	
BOREHOLE DIAMETER (IN):	6
BOREHOLE DEPTH (FT):	5.0
TEST/BOTTOM ELEVATION (MSL, FT):	1561
MEASURED HEAD HEIGHT (IN):	5.0
CALCULATED HEAD HEIGHT (IN):	5.3
FACTOR OF SAFETY:	2.0

TEST RESULTS	
STEADY FLOW RATE (IN^3/MIN):	**1.458**
FIELD-SATURATED INFILTRATION RATE (IN/HR):	**0.050**
FACTORED INFILTRATION RATE (IN/HR):	**0.025**



TEST DATA

Reading	Time Elapsed (min)	Water Weight Consumed (lbs)	Water Volume Consumed (in^3)	Q (in^3/min)
1	0.00	0.000	0.00	0.00
2	5.00	6.090	168.65	33.729
3	5.00	0.010	0.28	0.055
4	5.00	0.015	0.42	0.083
5	5.00	0.015	0.42	0.083
6	5.00	0.010	0.28	0.055
7	5.00	0.070	1.94	0.388
8	5.00	0.200	5.54	1.108
9	5.00	0.390	10.80	2.160
10	5.00	0.215	5.95	1.191
11	5.00	0.295	8.17	1.634
12	5.00	0.275	7.62	1.523
13	5.00	0.220	6.09	1.218

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BOREHOLE INFILTRATION TEST RESULTS

33521 Zeiders Road

PROJECT NO.: G3028-42-01

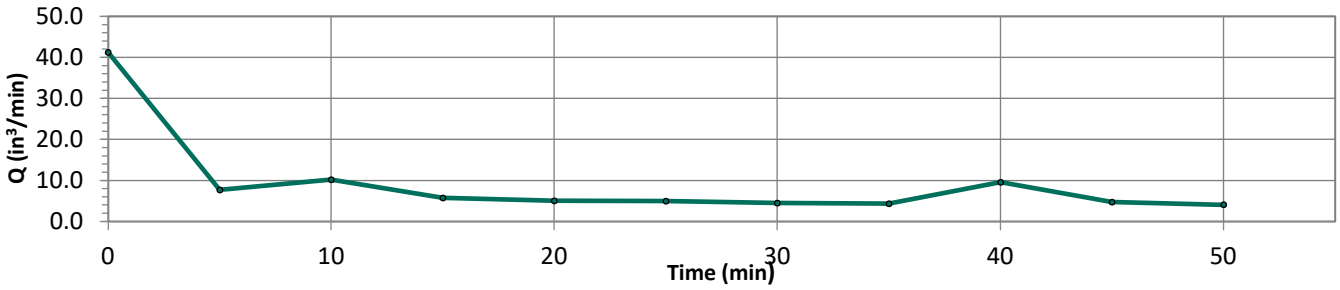
TEST NO.: **A-9**

GEOLOGIC UNIT: **Qal**

EXCAVATION ELEVATION (MSL, FT): **1566**

TEST INFORMATION	
BOREHOLE DIAMETER (IN):	6
BOREHOLE DEPTH (FT):	10.0
TEST/BOTTOM ELEVATION (MSL, FT):	1556
MEASURED HEAD HEIGHT (IN):	5.0
CALCULATED HEAD HEIGHT (IN):	6.3
FACTOR OF SAFETY:	2.0

TEST RESULTS	
STEADY FLOW RATE (IN^3/MIN):	**6.138**
FIELD-SATURATED INFILTRATION RATE (IN/HR):	**0.210**
FACTORED INFILTRATION RATE (IN/HR):	**0.105**



TEST DATA				
Reading	Time Elapsed (min)	Water Weight Consumed (lbs)	Water Volume Consumed (in^3)	Q (in^3/min)
1	0.00	0.000	0.00	0.00
2	5.00	7.445	206.17	41.234
3	5.00	1.385	38.35	7.671
4	5.00	1.835	50.82	10.163
5	5.00	1.035	28.66	5.732
6	5.00	0.915	25.34	5.068
7	5.00	0.895	24.78	4.957
8	5.00	0.815	22.57	4.514
9	5.00	0.790	21.88	4.375
10	5.00	1.735	48.05	9.609
11	5.00	0.850	23.54	4.708
12	5.00	0.740	20.49	4.098

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BOREHOLE INFILTRATION TEST RESULTS

33521 Zeiders Road

PROJECT NO.: G3028-42-01

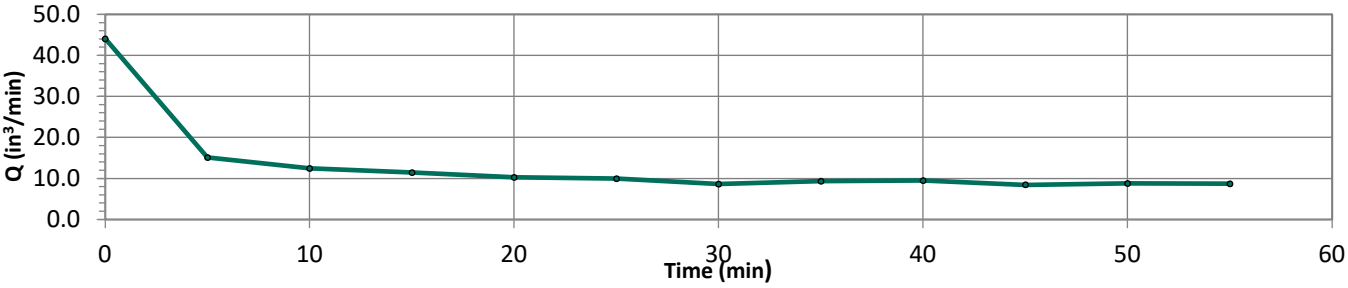
TEST NO.: **A-10**

GEOLOGIC UNIT: **Kiu**

EXCAVATION ELEVATION (MSL, FT): **1568**

TEST INFORMATION	
BOREHOLE DIAMETER (IN):	6
BOREHOLE DEPTH (FT):	10.0
TEST/BOTTOM ELEVATION (MSL, FT):	1558
MEASURED HEAD HEIGHT (IN):	5.0
CALCULATED HEAD HEIGHT (IN):	6.3
FACTOR OF SAFETY:	2.0

TEST RESULTS	
STEADY FLOW RATE (IN^3/MIN):	**8.658**
FIELD-SATURATED INFILTRATION RATE (IN/HR):	**0.297**
FACTORED INFILTRATION RATE (IN/HR):	**0.148**



TEST DATA				
Reading	Time Elapsed (min)	Water Weight Consumed (lbs)	Water Volume Consumed (in^3)	Q (in^3/min)
1	0.00	0.000	0.00	0.00
2	5.00	7.960	220.43	44.086
3	5.00	2.725	75.46	15.092
4	5.00	2.245	62.17	12.434
5	5.00	2.060	57.05	11.409
6	5.00	1.855	51.37	10.274
7	5.00	1.795	49.71	9.942
8	5.00	1.560	43.20	8.640
9	5.00	1.680	46.52	9.305
10	5.00	1.720	47.63	9.526
11	5.00	1.525	42.23	8.446
12	5.00	1.595	44.17	8.834
13	5.00	1.570	43.48	8.695

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BOREHOLE INFILTRATION TEST RESULTS

33521 Zeiders Road

PROJECT NO.: G3028-42-01

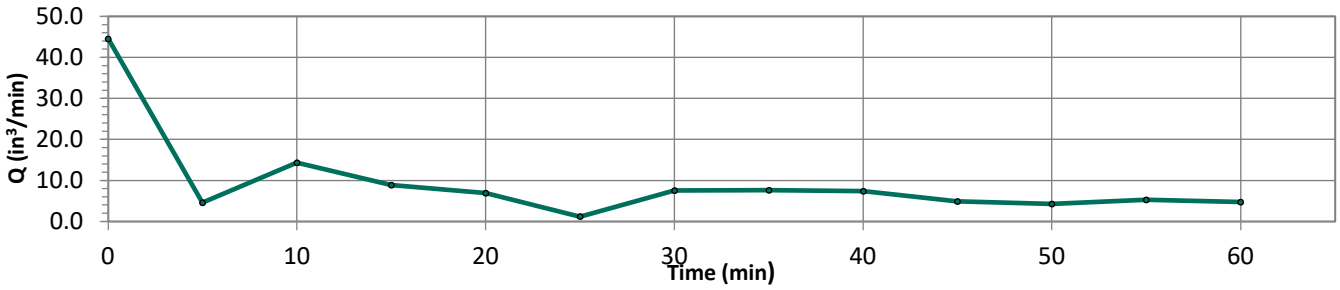
TEST NO.: **A-11**

GEOLOGIC UNIT: **Qal**

EXCAVATION ELEVATION (MSL, FT): **1570**

TEST INFORMATION	
BOREHOLE DIAMETER (IN):	6
BOREHOLE DEPTH (FT):	4.8
TEST/BOTTOM ELEVATION (MSL, FT):	1565
MEASURED HEAD HEIGHT (IN):	4.0
CALCULATED HEAD HEIGHT (IN):	5.3
FACTOR OF SAFETY:	2.0

TEST RESULTS	
STEADY FLOW RATE (IN^3/MIN):	**4.754**
FIELD-SATURATED INFILTRATION RATE (IN/HR):	**0.181**
FACTORED INFILTRATION RATE (IN/HR):	**0.091**



TEST DATA				
Reading	Time Elapsed (min)	Water Weight Consumed (lbs)	Water Volume Consumed (in^3)	Q (in^3/min)
1	0.00	0.000	0.00	0.00
2	5.00	8.045	222.78	44.557
3	5.00	0.830	22.98	4.597
4	5.00	2.595	71.86	14.372
5	5.00	1.605	44.45	8.889
6	5.00	1.250	34.62	6.923
7	5.00	0.215	5.95	1.191
8	5.00	1.360	37.66	7.532
9	5.00	1.380	38.22	7.643
10	5.00	1.330	36.83	7.366
11	5.00	0.880	24.37	4.874
12	5.00	0.765	21.18	4.237
13	5.00	0.955	26.45	5.289
14	5.00	0.855	23.68	4.735

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BOREHOLE INFILTRATION TEST RESULTS

33521 Zeiders Road

PROJECT NO.: G3028-42-01

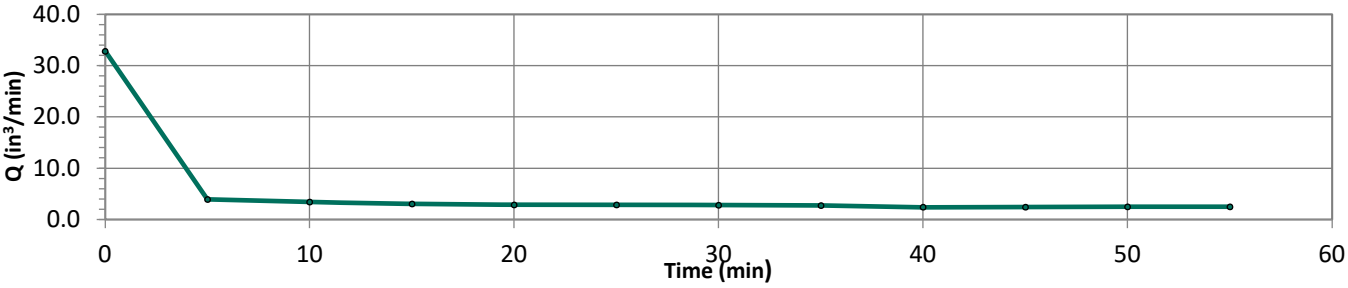
TEST NO.: **A-12**

GEOLOGIC UNIT: **Qal**

EXCAVATION ELEVATION (MSL, FT): **1569**

TEST INFORMATION	
BOREHOLE DIAMETER (IN):	6
BOREHOLE DEPTH (FT):	5.3
TEST/BOTTOM ELEVATION (MSL, FT):	1564
MEASURED HEAD HEIGHT (IN):	4.0
CALCULATED HEAD HEIGHT (IN):	5.4
FACTOR OF SAFETY:	2.0

TEST RESULTS	
STEADY FLOW RATE (IN^3/MIN):	**2.474**
FIELD-SATURATED INFILTRATION RATE (IN/HR):	**0.094**
FACTORED INFILTRATION RATE (IN/HR):	**0.047**



TEST DATA				
Reading	Time Elapsed (min)	Water Weight Consumed (lbs)	Water Volume Consumed (in^3)	Q (in^3/min)
1	0.00	0.000	0.00	0.00
2	5.00	5.925	164.08	32.815
3	5.00	0.710	19.66	3.932
4	5.00	0.620	17.17	3.434
5	5.00	0.550	15.23	3.046
6	5.00	0.520	14.40	2.880
7	5.00	0.520	14.40	2.880
8	5.00	0.500	13.85	2.769
9	5.00	0.495	13.71	2.742
10	5.00	0.435	12.05	2.409
11	5.00	0.440	12.18	2.437
12	5.00	0.450	12.46	2.492
13	5.00	0.450	12.46	2.492

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BOREHOLE INFILTRATION TEST RESULTS

33521 Zeiders Road

PROJECT NO.: G3028-42-01

Appendix 4: Historical Site Conditions

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

Phase I Environmental Site Assessment and Limited Soil Sampling

Assessor's Parcel Number 384-150-001
33521 Zeiders Road, Menifee, California 92584

Pemcor Properties, Inc.
PO Box 903
Rancho Santa Fe, CA 92067

SCS ENGINEERS

01222081.01 | October 31, 2022

8799 Balboa Avenue, Suite 290
San Diego, CA 92123
858-571-5500

October 31, 2022
Project Number: 01222081.01

Mr. Paul Mayer
Pemcor Properties, Inc.
PO Box 903
Rancho Santa Fe, CA 92067

Subject: **Phase I Environmental Site Assessment (Assessment) and Limited Soil Sampling (Sampling)**

Site: **Assessor's Parcel Number (APN) 384-150-001**
33521 Zeiders Road, Menifee, California 92584

Dear Mr. Mayer:

SCS Engineers (SCS) is pleased to present this report (Report) of the Assessment and Sampling of the above-described Site. This Report summarizes the results of the Assessment that was conducted in order to evaluate the Site's current environmental conditions. The work described in this Report was performed by SCS in general accordance with Exhibit 01 to the Agreement for Professional Services (Contract) between SCS and Pemcor Properties, Inc. (Client). Exhibit 01 was fully executed on September 13, 2022. The Contract was fully executed on April 1, 2022.

Because your full understanding of the Assessment and Sampling is important to us, SCS recommends that you read the Report in its entirety. However, if time does not allow you a complete reading, summaries of the Assessment may be found in text boxes at the end of each section (pages 12, 19, and 22), and our conclusions and recommendations may be found on page 22 and 23. Conclusions and recommendation for the Sampling can be found on pages 27 and 28. A glossary of terms commonly used in environmental assessments is also provided in the Appendices to this Report.

SCS enjoyed working with you on this project. Providing economical environmental solutions to meet your needs is more than our goal—it is our mission and the measure of our success. If we may assist you in any way, now or in the future, please call our office at (858) 571-5500.

Sincerely,

Tyler Overton
Project Professional
SCS ENGINEERS

Jennifer Bauer Morton, PG 8617
Project Manager
SCS ENGINEERS

PROFESSIONAL GEOLOGIST
Jennifer Morton No. 8617
STATE OF CALIFORNIA

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Figure 2 Site and Site Vicinity Plan
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Table 2 Soil Sample Analytical Results for Title 22 Metals

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Fire Department Correspondence
Building Department Records
Air Pollution Control District Correspondence

Industrial Wastewater Records Correspondence
Regional Water Quality Control Board Correspondence
Environmental Regulatory Database Report
User Questionnaire
Résumés
Soil Sample Laboratory Analytical Results
State Water Resources Control Board Water Quality Order No. 2004-0012-DWQ

1 BACKGROUND

Based on conversations with Pemcor Properties, Inc. (Client) and a review of in-house databases, SCS Engineers (SCS) understands that 33521 Zeiders Road (Site), consists of one approximately 19.57-acre parcel of land in the Sun City neighborhood of the City of Menifee, California (Figure 1). The Site is developed with one residential building and vacant land that was formerly used for agricultural purposes. The Client is proposing to purchase and potentially develop the Site into a business park with office/industrial uses.

A review of the in-house ParcelQuest database of information from the Riverside County Assessor's Office provided the following information in connection with the Site.

APN	Address	Area	Description
384-150-001	33521 Zeiders Road	19.57 acres	Agricultural

2 STANDARDS BACKGROUND- ASSESSMENT

This Assessment was conducted in general accordance with the following:

- U.S. Environmental Protection Agency (EPA), 40 Code of Federal Regulations (CFR) 312, Standards and Practices for All Appropriate Inquiries; Final Rule (AAI)
- American Society for Testing and Materials (ASTM) Standard Practice for Phase I Environmental Site Assessment Process E1527-13
- The scope, conditions, and limitations of Exhibit 01

The Client understands that the above-referenced EPA and ASTM standards were not developed to identify all environmental risk to property. The standards were developed to allow a user (Client) to qualify for the innocent purchaser defense, bona fide prospective purchaser defense, and contiguous property owner defense to the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA, a.k.a. Superfund) liability. This Assessment is intended to constitute an appropriate inquiry into the previous ownership and uses of the property consistent with good commercial or customary practice, as part of the due diligence process required by CERCLA, the Superfund Amendments and Reauthorization Act of 1986, and the Small Business Liability Relief and Brownfields Revitalization Act of 2002 (collectively, Acts).

While this Assessment may initially qualify the Client for a CERCLA defense, after purchase, there may be continuing obligations that must be implemented in order to preserve this defense through the term of property ownership. There may be additional requirements under state law that also apply. The Client should contact qualified legal counsel regarding matters of liability, interpretation of the Acts, and potential continuing obligations. Although it is outside the scope of this Assessment, SCS would be pleased to work with the Client's legal counsel to develop and implement a strategy to preserve the Client's CERCLA liability defenses through the term of its ownership.

This Assessment focused on potential sources of hazardous substances and petroleum products that could be considered either a recognized environmental condition,[1] controlled recognized environmental condition,[2] or historical recognized environmental condition,[3] and potentially a liability due to their presence in significant concentrations (e.g., above acceptable limits set by the federal, state, or local government) or due to the potential for exposure and risk due to contaminant migration and complete exposure pathways (e.g., soil vapor inhalation or groundwater ingestion). Materials that contain substances that are not currently deemed hazardous by the EPA or the California Environmental Protection Agency were not considered as part of this Assessment.

Unless specifically included in SCS' scope of services, building materials such as asbestos, lead-based paint, urea formaldehyde, and pressure-treated lumber, as well as lead in drinking water, are not considered in this Assessment, nor are building issues such as fire safety, indoor air quality (with the possible exception of vapor intrusion), mold, or similar matters. SCS did not evaluate the Site for compliance with land use, zoning, wetlands, or similar laws. This Assessment also excludes regulatory compliance, cultural and historic resources, industrial hygiene, health and safety, ecological resources, endangered species, and high-voltage power lines. This Assessment is not intended to be an environmental compliance audit.

Hazardous substances occurring naturally in plants, soils, and rocks (e.g., heavy metals, naturally occurring asbestos, and radon) are not typically considered in these investigations. Similarly, construction debris (e.g., discarded concrete, asphalt) is not considered, unless obvious indications suggest that hazardous substances are likely to be present in significant concentrations or likely to migrate.

An evaluation of business environmental risk associated with a parcel of commercial real estate may necessitate investigation beyond that included herein.

3 OBJECTIVES

The objectives of the scope of services were:

---

1 *Recognized environmental conditions*, as defined by ASTM, include 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. However, the term is not intended to include *de minimis* conditions (a condition that generally does not present a threat to human health or the environment and that generally would not be subject to an enforcement action if brought to the attention of appropriate governmental agencies). A condition considered *de minimis* is not a recognized environmental condition.

2 *Controlled recognized environmental condition*, as defined by ASTM, is 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 use limitations, institutional controls, or engineering controls).

3 Historical recognized environmental condition, as defined by ASTM, is 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).

- Assessment - Assess the likelihood that recognized environmental conditions are present at the Site as a result of the current or historical Site land use or from a known and reported off-Site source.

- Sampling - Assess the possible presence of constituents of concern (i.e., organochlorine pesticides (OCPs), metals, fecal coliform) associated with the reported previous application of biosolids/ sewage sludge at the Site.

4 SCOPE OF SERVICES- ASSESSMENT

The scope of services designed and conducted to meet the objective was as follows:

- Site Reconnaissance, Site Research, Interviews, and User Requirements
- Topography, Geology, Hydrogeology, and Water Quality Survey
- Site Vicinity Reconnaissance and Off-Site Source Survey
- Historical Site and Site Vicinity Land Use Review
- Identification of Data Gaps
- Data Evaluation, Figure Preparation, and Assessment Report Preparation

SITE RECONNAISSANCE

On September 14 and October 3, 2022, SCS personnel conducted Site reconnaissance to observe and document existing Site conditions.[i] The general Site location is shown in Figure 1, and a Site and Site Vicinity Plan is shown in Figure 2. Selected color photographs of the Site and Site vicinity are presented as Figures 3a through 3f.

The Site buildings were observed, and the Site grounds and Site perimeter were systematically traversed on foot during the Site reconnaissance. SCS personnel was unaccompanied during the Site reconnaissance.

General Information

The following table summarizes general information in connection with the Site.

APN	384-150-001
Address	33521 Zeiders Road, Sun City, CA 92584
Area	19.57 acres
Site Land Use	Residential
Occupant	Residential tenants
Figure Reference	Figures 3a-1 through 3d-1

Site Buildings

The following table summarizes information in connection with the Site buildings.

Number of Buildings	2
Interpreted Construction Date	Circa late 1960s
Number of Stories	1
Construction Type	Wood frame, stucco-covered exterior walls, concrete slab-on-grade foundations
Figure Reference	Figure 3d-1

The Site buildings were observed to consist of one single-family residence and one free-standing garage. Access to the interiors of these buildings was not available during the time of Site reconnaissance due to tenant privacy concerns; however, based on our observations from the exterior, the Site buildings appear to be used for residential purposes. No hazardous materials storage areas were observed to be stored around the exterior of the Site buildings (Figure 3d-1).

Site Grounds

The Site grounds were observed to consist of empty dirt fields with limited landscaping, mainly near the single-family residence (Figures 3a-1 through 3b-2). No active agriculture was observed within the Site grounds during the time of Site reconnaissance. A water storage tank (Figure 3c-1) was observed to be located adjacent to the north of the on-Site residence and was reported to be used solely for irrigation purposes. A propane tank was observed to be located adjacent to the south of the garage (Figure 3c-2). Barbed-wire fencing was observed at the northern, eastern and western edges of the Site perimeter. No additional exterior hazardous waste storage areas were observed.

Hazardous Materials/Petroleum Products

Hazardous materials and petroleum products observed to be used or stored at the Site are summarized in the table below.

Hazardous Materials / Petroleum Products	Storage Location	Approximate Amount
Propane	Adjacent to the south of the garage	Approximately 500 gallons

The propane was observed to be stored in an appropriate tank with no obvious evidence of spills or releases.

Hazardous Wastes

No obvious indications of the generation of hazardous wastes were observed at the Site during the Site reconnaissance.

Indications of Releases of Hazardous Materials/Wastes or Petroleum Products

No obvious indications were observed that a release of hazardous materials/wastes or petroleum products had occurred at the Site.

On-Site Utilities

Gas and Electricity	Reported to be Southern California Edison
High-power Transmission Lines	None observed at or adjacent to the Site
Storm Drains	None observed to be located at the Site
Source of Heating and Cooling	Reported to be Southern California Edison
Potable Water Source	Reported to be operated by the Eastern Municipal Water District
Wastewater Conveyance	Unknown, either septic system or operated by the Eastern Municipal Water District

With the possible exception of a water irrigation tank and a propane tank, described in the "Site Grounds" section above, no obvious indications of wells, cisterns, pits, sumps, dry wells, or bulk storage tanks were observed at the Site.

SITE RESEARCH

Department of Environmental Health (DEH) File Review

The County of Riverside Department of Environmental Health (DEH) was contacted[ii] regarding regulatory files associated with the Site. The DEH indicated that there are no files associated with the Site. A copy of the DEH records request is included in the Appendices.

City of Menifee Permitted Biosolids/Sludge Application Map

Based upon a review of the City of Menifee's Permitted Biosolids/Sludge Application Map, the Site is shown as an area where Composite Fields (i.e., biosolids/ sewage sludge) were present.

Based on a review of a City of Menifee City Council minutes regarding revisions to the development application process for vacant and undeveloped land within the City dated May 1, 2012, this document indicates that biosolids/sewage sludge were historically applied in the City of Menifee and

County of Riverside as a fertilizer, both legally under permit and illegally. Types of sewage applied included Class A (treated to remove 99.9% of disease-causing bacteria), and Class B (not treated to the extent of Class A sewage). The Menifee City Council minutes recommended that for areas where sludge and/or other biosolid application occurred, soil samples are required to be collected in such areas and analyzed for the following (or the most recent analytical methods thereof):

- Title 22 metals by Environmental Protection Agency (EPA) Methods 6010B/7471A;
- Fecal coliform by SM9221-ABCE; and
- OCPs by EPA Method 8081A

The sampling should be conducted under the oversight of a State of California registered Professional Geologist or registered Civil Engineer, and shall be conducted in conformance with the State of California Department of Toxic Substance Control (DTSC) issued guidance document titled *Interim Guidance for Sampling Agricultural Properties (Third Revision)*, dated August 7, 2008 (DTSC Guidance). Soil sampling depths and frequency shall be determined based on the DTSC Guidance document.

The presence of biosolids/ sewage sludge would be considered a recognized environmental condition if residual concentrations of metals, fecal coliform, and/or OCPs are present in the shallow soil at the Site above applicable regulatory screening levels. SCS recommended that soil testing be conducted at the Site for pesticide residues, fecal coliform, and Title 22 metals (including arsenic) due to the reported historical application of biosolids/sludge at the Site.

SCS completed soil sampling at the Site on October 3, 2022 to follow up on the above recommendations, which is further discussed in the Sampling portion of this report below.

Building and Fire Department Records Review

The City of Menifee was contacted regarding hazardous materials/waste or UST and building records for Site.[iii] The City of Menifee reported that no records were available for the Site. A copy of the City of Menifee correspondence letter is included in the Appendices.

South Coast Air Quality Management District (SCAQMD) Records Review

The SCAQMD was contacted[iv] regarding records for the Site. The SCAQMD responded that no records were available for the Site. A copy of the SCAQMD records request for the Site is included in the Appendices.

Industrial Wastewater Program (IWP) Records Review

The City of Menifee was contacted[v] regarding records for the Site. According to the City of Menifee, no records were available for the Site. A copy of the City of Menifee correspondence letter is included in the Appendices.

Regional Water Quality Control Board (RWQCB) Records Review

The RWQCB was contacted[vi] regarding records for the Site. According to the RWQCB, no records are maintained for the Site. A copy of the RWQCB response for the Site is included in the Appendices.

Riverside County Agricultural Department of Weights and Measures Records Review

The Riverside County Agricultural Department of Weights and Measures was contacted[vii] regarding records for the Site. According to the Department of Weights and Measures, no records are maintained for the Site. A copy of the Department of Weights and Measures records request for the Site is included in the Appendices.

INTERVIEWS

The previously referenced EPA and ASTM standards require that attempts be made to conduct interviews with past and present owners and occupants of the Site to obtain information indicating recognized environmental conditions in connection with the Site. As part of this Assessment, the following contacts were either interviewed or attempts were made to conduct interviews.

Contact	Affiliation to Site	Description	Interview Date
Mr. Paul Mayer	Proposed purchaser of the Site	Discussed below	10/5/2022

Mr. Paul Mayer of Pemcor, the proposed purchaser of the Site and User of this Assessment, stated that, to his knowledge, and with the possible exception of previous agricultural related activities, hazardous materials and petroleum products were not used or stored at the Site and that hazardous wastes were not generated at the Site. Also, to his knowledge, there have been no releases of hazardous materials, petroleum products, and/or hazardous waste at the Site. Mr. Mayer stated that the above-ground water storage tank was used strictly for irrigation purposes.

Mr. Mayer stated that he was not aware of environmental cleanup liens or activity and use limitations (e.g., engineering controls, deed restrictions) that have been recorded for the Site. He was not aware of pending or threatened litigation or administrative proceedings relevant to hazardous substances or petroleum products in, on, or from the Site. He was not aware of notices from governmental entities regarding possible violations of environmental laws or possible liability relating to hazardous substances or petroleum products at the Site.

USER REQUIREMENTS

In order to qualify for one of the landowner liability protections offered by the Small Business Liability Relief and Brownfields Revitalization Act of 2001 (discussed in the "Background" section), 40 CFR 312 requires that the user (Client) provide the following information to the environmental professional. Mr. Paul Mayer, President of Pemcor Properties, Inc., completed the User Questionnaire on September 21, 2022. The following table summarizes the responses by the Client.

Question	Response
Have environmental cleanup liens been filed or recorded against the Site?	No
Are activity or land use limitations in place at the Site, or have they been filed or recorded in the registry?	No

Does the user have specialized knowledge or experience in connection with the Site?	No
Does the purchase price being paid for the Site reasonably reflect the fair market value of the Site?	Yes
Is the Client aware of commonly known or reasonably ascertainable information about the Site that would indicate releases or threatened releases?	No*
Are there obvious indications that point to the presence of contamination at the Site?	No

*Mr. Mayer stated that he has been advised that the previous Site land use was agricultural

DATA GAPS IN CONNECTION WITH CURRENT SITE LAND USE

Based on observations and research, and with the possible exceptions discussed below, there are no obvious indications of data gaps in connection with the current Site land use:

- Mr. Mayer did not have contact information for current or previous owners or tenants of the Site. Therefore, interviews were not conducted with previous Site owners or current or previous tenants. This data gap is not a significant data gap in our opinion based on the availability of other relevant information.

- Access to the interior of the single-family residence and garage were not available during the time of Site reconnaissance. This data gap is not a significant data gap in our opinion based on the interpreted residential use of the Site based on exterior observations and interviews with the Client, and the availability of other relevant information.

Findings and Opinions—Current Site Land Use

Based on observations and research and with the exceptions below, it is our opinion that there are no recognized environmental conditions at the Site as a result of the current Site land use.

City of Menifee Permitted Biosolids/Sludge Application Map

Based upon a review of the City of Menifee's Permitted Biosolids/Sludge Application Map, the Site is shown as an area where Composite Fields (i.e., biosolids/ sewage sludge) were present. Based on a review of a City of Menifee City Council minutes regarding revisions to the development application process for vacant and undeveloped land within the City dated May 1, 2012, this document indicates that biosolids/sewage sludge were historically applied in the City of Menifee and County of Riverside as a fertilizer, both legally under permit and illegally. Types of sewage applied included Class A (treated to remove 99.9% of disease-causing bacteria), and Class B (not treated to the extent of Class A sewage). The Menifee City Council minutes recommended that for areas where sludge and/or other biosolid application occurred, soil samples are required to be collected in such areas and analyzed for the following (or the most recent analytical methods thereof):

- Title 22 metals by Environmental Protection Agency (EPA) Methods 6010B/7471A;
- Fecal coliform by SM9221-ABCE; and
- OCPs by EPA Method 8081A

Findings and Opinions—Current Site Land Use
The sampling should be conducted under the oversight of a State of California registered Professional Geologist or registered Civil Engineer, and shall be conducted in conformance with the State of California Department of Toxic Substance Control (DTSC) issued guidance document titled *Interim Guidance for Sampling Agricultural Properties (Third Revision)*, dated August 7, 2008 (DTSC Guidance). Soil sampling depths and frequency shall be determined based on the DTSC Guidance document. The presence of biosolids/ sewage sludge would be considered a recognized environmental condition if residual concentrations of metals, fecal coliform, and/or OCPs are present in the shallow soil at the Site above applicable regulatory screening levels. SCS recommends that soil testing be conducted at the Site for pesticide residues, fecal coliform, and Title 22 metals (including arsenic) due to the reported historical application of biosolids/ sewage sludge at the Site. SCS completed soil sampling at the Site on October 3, 2022 to follow up on the above recommendations, which is further discussed in the Sampling portion of this report below.

TOPOGRAPHY, GEOLOGY, HYDROGEOLOGY, AND WATER QUALITY SURVEY

Topography

A topographic map for the Site vicinity was reviewed and is summarized in the following table.

Reported Elevation	1,575 to 1,580 feet above mean sea level
Reported Slope Direction	Slopes gently down to the north/northeast
Source	United States Geological Survey 7.5 Minute Topographic Map, Romoland Quadrangle, California – Riverside County, 2018

Geology

A geological map for the Site vicinity was reviewed and is summarized in the following table.

Reported Formation	Monzogranite to granodiorite (Kpvg)
Reported Description	Pale gray, massive, medium-grained hypidiomorphic-granular biotite monzogranite, and less abundant hornblende-biotite granodiorite forming older ring dike. Contains inclusions of small to large stoped blocks of gabbro.
Source	United States Geologic Survey Preliminary Digital Geologic Map of the Santa Ana 30' x 60' Quadrangle, Southern California, 2004, https://pubs.usgs.gov/of/1999/of99-172/sanana2.pdf

Hydrogeology

Data regarding depth to groundwater and flow direction for the Site were not readily available. In the absence of Site-specific data, depth to groundwater and flow direction information was reviewed for properties within the Site vicinity using the State Water Resources Control Board GeoTracker database. The following table summarizes the results of this review.

Property Location	Adjacent to the south of the Site, 33751 Zeiders Road, Sun City, CA
Reported Depth to Groundwater	Estimated to be 18 to 24 feet below grade
Reported Groundwater Flow Direction	Estimated to be northeast
Source	County of Riverside Department of Environmental Health, Hazardous Materials Management Division *Case Closure Summary for Leaking Underground Fuel Storage Tank Program for 33751 Zeiders Road, Sun City*, dated October 18, 1999

Many variables influence depth to groundwater and flow direction and the actual depth to groundwater and flow direction at the Site may be different than presented in this section.

Water Quality Survey

The following table summarizes the reported water quality in the Site vicinity.

Reported Hydrologic Subarea	Menifee (802.12)
Reported Hydrologic Area	Perris (802.1)
Reported Hydrologic Unit	San Jacinto River (802)
Reported Beneficial Use	Municipal, agricultural
Source	https://geotracker.waterboards.ca.gov/

SITE VICINITY RECONNAISSANCE AND OFF-SITE SOURCE SURVEY

Current Site Vicinity Conditions

The following table summarizes land use and observations in the immediate Site vicinity.[viii] For the purpose of this Report, the immediate Site vicinity includes those properties judged to be adjacent[4] to the Site.

Direction	Land Use	Comments
North	Single-family residential (33387 Zeiders Road and 33466 Howard Way) (Figure 3d-2)	No obvious indications of the use, storage, or generation of hazardous materials/wastes or petroleum products were observed.
Northeast	Warehouse (33380 Zeiders Road) (Figure 3e-1)	
East	Vacant graded land (APNs 384-150-009 and -011)(Figure 3e-2)	
South	Single-family residential/**orchard** (33751 Zeiders Road) (Figure 3f-1)	No obvious indications of the use, storage, or generation of hazardous materials/wastes or petroleum products were observed; however, hazardous materials/wastes are judged likely to be present as discussed in the "Additional SCS Research" section below.
West	Single-family residential (33634 Howard Way) and vacant land (APN 384-110-012) (Figure 3f-2)	No obvious indications of the use, storage, or generation of hazardous materials/wastes or petroleum products were observed.

Environmental Regulatory Database Report

An environmental regulatory database report (Radius Map™ report[ix]) was prepared by EDR for the Site. Local, state, and federal regulatory databases were reviewed for the Site and for those facilities within up to 1 mile of the Site. The Radius Map™ report was reported to have been prepared in general accordance with the ASTM standard for the regulatory database review for Phase I Environmental Site Assessments. The locations of the referenced facilities relative to the Site are shown on the overview maps, included in the Radius Map™ report. A description of the various databases, as well as the date each database was most recently updated, is included in the Radius Map™ report. The Radius Map™ report is included in the Appendices to this Report.

4 *Adjacent* is defined by ASTM E1527-13 as any real property or properties the border of which is contiguous or partially contiguous with that of the Site or that would be contiguous or partially contiguous with that of the Site but for a street, road, or other public thoroughfare separating them.

Based on a review of the Radius Map™ report, the following table summarizes the facilities within the selected search radii and whether the Site or a facility that was interpreted to be adjacent to the Site was listed on each database.

Federal or State Government Database	Search Radius	Number of Reported Facilities	On Site	Adjacent to the Site
National Priorities List (NPL)	1.00 mile	0	No	No
NPL Delisted	1.00 mile	0	No	No
Superfund Enterprise Management System (SEMS)	0.50 mile	0	No	No
No Further Remedial Action Planned (NFRAP)	0.50 mile	0	No	No
Resource Conservation and Recovery Act–Corrective Action (RCRA COR ACT)	1.00 mile	0	No	No
RCRA Treatment and Disposal Facilities (RCRA TSD)	0.50 mile	0	No	No
RCRA Generators (RCRA GEN)	0.25 mile	1	No	No
Federal Engineering and Institutional Controls (IC/EC)	0.50 mile	0	No	No
Emergency Response Notification System (ERNS)	0.12 mile	0	No	No
State/Tribal-Equivalent NPL	1.00 mile	0	No	No
State/Tribal-Equivalent CERCLIS (ENVIROSTOR)	1.00 mile	1	No	No
State/Tribal Solid Waste List (SWL)	0.50 mile	0	No	No
State/Tribal Leaking Underground Storage Tanks (LUST)	0.50 mile	3	No	Yes
State/Tribal Underground/Aboveground Storage Tanks (USTs/ASTs)	0.25 mile	0	No	No
State/Tribal Voluntary Cleanup Program (VCP)	0.50 mile	0	No	No
Federal Brownfields	0.50 mile	0	No	No
Local Lists of Landfill / Solid Waste Disposal Sites	Site only to 0.050 mile	0	No	No
Local Lists of Hazardous Waste/Contaminated Sites (CERS Hazwaste)	Site only to 1.00 mile	1	No	No

Federal or State Government Database	Search Radius	Number of Reported Facilities	On Site	Adjacent to the Site
Local Lists of Registered Storage Tanks (Historic UST)	0.25 mile	1	No	Yes
Local Land Records (DEED)	0.50 mile	0	No	No
Records of Emergency Release Reports	Site only	0	No	N/A
Other (RCRA NonGen, Cortese, Historical Cortese)	0.12 mile	5	No	Yes
EDR High Risk Historical Records (Historic Auto, Historic Cleaner, Manufactured Gas Plant [MGP])	0.125 mile	0	No	No
Exclusive Recovered Government Archives	Site only	0	No	N/A

The Site was not listed on any of the regulatory databases reviewed.

Off-Site facilities listed in the Radius Map™ report were evaluated as to their potential to impact the Site. The databases included in the Radius Map™ report can be grouped into two general categories: databases reporting unauthorized releases of hazardous substances or petroleum products (e.g., LUSTs, RCRA COR ACT facilities, National Priorities List [a.k.a. Superfund] sites) and databases reporting permitted hazardous materials users and hazardous waste generators for which a release has not been reported to, and recorded by, the regulatory agency.

SCS evaluated each of the off-Site facilities listed in the Radius Map™ report as to their potential to impact the Site, based on the following factors:

- Reported distance of the facility from the Site[5]
- The nature of the database on which the facility is listed, and/or whether the facility was listed on a database reporting unauthorized releases of hazardous materials, petroleum products, or hazardous wastes
- Reported case type (e.g., soil only, failed UST test only)

[5] Based on "Technical Justification for Groundwater Media-Specific Criteria," (Groundwater Study) (March 2012) developed to support the state of California "Low Threat Closure Policy" (adopted May 2012), "plume length studies recognize that petroleum plumes stabilize in length due to natural attenuation." The Groundwater Study goes on to cite Shih et al., 2004 that a peer-reviewed study of plume lengths at 500 petroleum UST sites in the Los Angeles area is widely accepted as representative of plume lengths at California UST sites. Shih et al. reports methyl tertiary butyl ether (MTBE), with 90th percentile maximum plume lengths of 540 feet. Therefore, the detailed review radius for open groundwater cases has been conservatively established by SCS at 0.20 mile (approximately 1,000 feet). For non-release cases (e.g., permitted facilities), only those facilities that were judged to be immediately adjacent to the Site were interpreted to have the potential to represent a recognized environmental condition.

- Reported substance released (e.g., chlorinated solvents, gasoline, metals)
- Reported regulatory agency status (e.g., case closed, "no further action")
- Location of the facility with respect to the reported groundwater flow direction and depth to groundwater (discussed in the "Hydrogeology" section of this Report)

Based on one or more of the factors listed above, and with possible exceptions discussed in the "Additional SCS Research" section below, there is a low likelihood that the off-Site facilities listed in the Radius Map™ report represent a recognized environmental condition in connection with the Site.

EDR listed three facilities as being "orphans," which are facilities for which EDR does not have sufficient information to accurately locate them on a map. Based on a review of the orphans, it is interpreted that none of the facilities are within the requisite search radii for their reported database listings.

Additional SCS Research

Local Case No: 99-15244, Bouris Ranches, 33751 Zeiders Road, adjacent to the south of the Site

Based on its listing on the LUST, Cortese and CERS databases and its proximity to the Site, the County of Riverside Department of Environmental Health, Hazardous Materials Management Division *Case Closure Summary 33751 Zeiders Road*, was reviewed. The Case Closure summary indicated that three underground storage tanks were removed from this property on April 13, 1999 (one 4,500 gallon diesel tank, one 3,500-gallon gasoline tank, and one 6,500 diesel tank). Initial soil samples collected during the tank removal indicated that diesel was present at approximately 4 feet below the bottom of the tanks at 1,800 ppm. A secondary excavation occurred on July 6, 1999 and extended to 20 feet below ground surface. Approximately 150 tons of contaminated soil were removed during this secondary excavation. Samples collected after the completion of the secondary excavation were found to be non-detect for benzene and MTBE. It was estimated that approximately 45 cubic yards of contaminated soil may still be present at depths of 17 to 20 feet below the location of the former underground storage tanks. No groundwater was encountered during the tank removal or subsequent excavation.

The County of Riverside DEH issued their case closure based on the fact that a majority of the source (diesel contaminated soil) was removed from the facility and that neither benzene nor MTBE were detected in any of the subsequent soil samples collected after the secondary excavation, and that groundwater does not appear to have been impacted.

Based on the fact that a majority of the source (diesel contaminated soil) was removed from this facility, that neither benzene or MTBE were detected in any of the subsequent soil samples collected after the secondary excavation, and that groundwater does not appear to have been impacted, there is a low likelihood that a recognized environmental condition exists at the Site in connection with the listing of this facility on the LUST, Cortese and CERS databases.

California Geological Energy Management Division (CalGEM)

SCS personnel reviewed the CalGEM WellFinder website regarding oil and gas well locations within 1 mile of the Site.[x] There were no wells interpreted to be located within a 1-mile radius of the Site.

DATA GAPS IN CONNECTION WITH OFF-SITE SOURCES

Based on the Site vicinity reconnaissance and off-Site source survey, there are no obvious indications of data gaps in connection with off-Site sources.

Findings and Opinions—Off-Site Source Survey
Based on the off-Site source survey, several facilities in the Site vicinity were reported to have had releases of hazardous materials/waste or petroleum products. However, it is our opinion that there are no recognized environmental conditions at the Site as a result of known and reported releases of hazardous materials/wastes or petroleum products from an off-Site source. This opinion is based on one or more of the following: reported regulatory status (e.g., case closed), media affected (e.g., soil contamination only), distance from the Site, direction from the Site with respect to reported groundwater flow direction, and information obtained through a review of County of Riverside Department of Environmental Health files.

HISTORICAL LAND USE REVIEW

In accordance with the ASTM Standard and AAI rule, numerous reasonably ascertainable standard historical information sources were reviewed, and an attempt was made to interpret the historical Site and Site vicinity land use back to the obvious first developed use of the Site. Historical information was reviewed for the Site and the following table summarizes the historical resources reviewed as part of this Assessment.

Resource	Source	Years Available
Aerial Photographs	NETR Online http://www.historicaerials.com/ Google Earth	1938, 1967, 1978, 1985, 1996, 2002, 2005, 2009, 2010, 2012, 2014, 2016, 2018
Sanborn Fire Insurance Maps	EDR	No coverage
Topographic Maps	NETR Online http://www.historicaerials.com/	1943, 1954, 1962, 1968, 1975, 1979, 1985, 1998, 2001, 2012, 2015, 2018
Interviews	Not applicable	Discussed in the "Interviews" section above

Historical Site Land Use

The following table provides a chronology of the apparent historical Site land uses, as interpreted from a review of information from the sources referenced.

Year	Interpreted Site Tenants	Interpreted Site Use
1938	None	Vacant land, possibly used for **dry farming**
1943-1962	None	Land use not depicted on topographic map reviewed, although interpreted to consist of vacant land, possibly used for **dry farming.** A small seasonal stream is shown bisecting the central portion of the Site
1967-2018	Various residential tenants	Single-family residence located in its current location within the northeastern quadrant of the Site surrounded by vacant land, possibly used for **dry farming.** A small seasonal stream is present within the western portion of the Site
2019-2022	Various residential tenants	Single-family residence, with a small seasonal stream present within the western portion of the Site

Because many of the dates listed above are based on a limited selection of historical resources, they are considered to be approximations only; the actual beginning/ending dates for many of the Site uses listed above may have been earlier or later than indicated.

With the possible exceptions described below, no obvious historical facilities, features of concern, or land uses indicative of the use, storage, or generation of hazardous materials/wastes or petroleum products were found in the historical resources reviewed.

With the exception of the possible use of the Site for dry farming uses between approximately 1938 and 2018, which is further discussed below, no obvious historical facilities, features of concern, or land uses indicative of the use, storage, or generation of hazardous materials/wastes or petroleum products were found in the historical resources reviewed.

Based on a review of historical aerial photographs, the Site and the Site vicinity appeared to be either vacant land or utilized for dry-land farming in aerial photographs dated 1966 to 1986. According to the Interim Guide for Sampling Agricultural Properties issued by the Department of Toxic Substances Control (DTSC) and dated August 7, 2008, the DTSC states that land used for grazing or pasture does not require agricultural sampling, and that land used for dry-land farming does not need further investigation for pesticides or metals. Based on the possible use of the Site and Site vicinity for grazing land and/or dry-land farming, and the current regulatory guidance regarding these types of land uses, there is a low likelihood of a recognized environmental condition at the Site relating to this possible historical Site land use.

Historical Site Vicinity Land Use

The following table provides a chronology of the apparent historical Site vicinity land uses as interpreted from a review of information from the sources referenced.

Years	Interpreted Site Vicinity Tenants	Interpreted Site Vicinity Use
33387 Zeiders Road and 33466 Howard Way (North)		
1938-1968	None	Vacant land, possibly used for **dry farming.** Two small streams are shown bisecting the western and central portions of the property
1975-2022	Various residential tenants	Single-family residence located in its current location within the eastern portion of the property and surrounded by vacant land, possibly used for **dry farming.** Two small streams are present in the eastern portion of the property
APNs 384-150-009 and -011 (East)		
1938-2010	None	Vacant land, possibly used for **dry farming**
2012-2022	None	Vacant, graded land
33380 Zeiders Road (Northeast)		
1938-2010	None	Vacant land, possibly used for **dry farming**
2012-2016	None	Vacant, graded land
2018-2022	Commercial tenant	Warehouse
33751 Zeiders Road (South)		
1938-1979	Various residential tenants	Farm buildings and vacant land located in the southeastern portion of the property with a small stream bisecting the property, possibly used for **dry farming**
1985-2022	None	Expanded farm buildings and vacant land with a small stream bisecting the property, possibly used for **dry farming**
33634 Howard Way (West)		
1938-1996	None	Vacant land, possibly used for **dry farming**
2002-2022	Various residential tenants	Single-family residential

Years	Interpreted Site Vicinity Tenants	Interpreted Site Vicinity Use
APN 384-110-012 (West)		
1938-2022	None	Vacant land, possibly used for **dry farming**

Because many of the dates listed above are based on a limited selection of historical resources, they are considered to be approximations only; the actual beginning/ending dates for many of the Site vicinity uses/development described above may have been earlier or later than indicated.

With the possible exceptions described below, no obvious historical facilities, features of concern, or land uses indicative of the use, storage, or generation of hazardous materials/wastes or petroleum products were found in the historical resources reviewed.

A review of aerial photographs and topographic maps revealed that dry farming agricultural activities took place within the Site vicinity between 1938 and 2022. Please see "Historical Site Land Use" section above for further discussion on historic dry farming activities.

DATA GAPS IN CONNECTION WITH THE HISTORICAL SITE LAND USE

Readily available historical information was limited, and information was not available that would provide 5-year data intervals between the following years: 1943 and 1954, 1954 and 1962, 1968 and 1975, 1979 and 1985, 1985 and 1996. Based on the corroborating data from the historical information reviewed (i.e., the Site was interpreted to have been used for residential or agricultural purposes in each of these years), SCS judged it likely that the historical Site land use during this time period was not significantly different from the interpretation presented in the table above. Based on SCS' experience and available historical information, the Site was interpreted to have possibly first been developed for residential or agricultural use.

Findings and Opinions—Historical Site and Site Vicinity Land Use

Based on a review of historical resources, and with the possible exception of historic biosolids/sewage sludge application at the Site that is further discussed in the "Site Research" section above, it is our opinion that there are no recognized environmental conditions at the Site as a result of a release of hazardous materials/wastes or petroleum products from a known or interpreted historical Site or Site vicinity land use.

5 CONCLUSIONS AND RECOMMENDATION - ASSESSMENT

SCS has performed an Assessment of 33521 Zeiders Road, Menifee, California 92584 (Site), in general conformance with the ASTM Standard Practice for Phase I Environmental Site Assessment Process E 1527-13 and the EPA, 40 CFR 312, Standards and Practices for All Appropriate Inquiries, Final Rule (AAI). Any exceptions to, or deletions from, the ASTM and AAI Scope of Work were previously described in this Report where applicable.

With the possible exception below, this Assessment has revealed no evidence of a recognized environmental condition in connection with the Site.

City of Menifee Permitted Biosolids/Sludge Application Map

Based upon a review of the City of Menifee's Permitted Biosolids/Sludge Application Map, the Site is shown as an area where Composite Fields (i.e., biosolids/ sewage sludge) were present. Based on a review of a City of Menifee City Council minutes regarding revisions to the development application process for vacant and undeveloped land within the City dated May 1, 2012, this document indicates that biosolids/sewage sludge were historically applied in the City of Menifee and County of Riverside as a fertilizer, both legally under permit and illegally. Types of sewage applied included Class A (treated to remove 99.9% of disease-causing bacteria), and Class B (not treated to the extent of Class A sewage). The Menifee City Council minutes recommended that for areas where sludge and/or other biosolid application occurred, soil samples are required to be collected in such areas and analyzed for the following (or the most recent analytical methods thereof):

- Title 22 metals by Environmental Protection Agency (EPA) Methods 6010B/7471A;
- Fecal coliform by SM9221-ABCE; and
- OCPs by EPA Method 8081A

The City Council minutes further indicated that sampling should be conducted under the oversight of a State of California registered Professional Geologist or registered Civil Engineer, and shall be conducted in conformance with the State of California Department of Toxic Substance Control (DTSC)-issued guidance document titled *Interim Guidance for Sampling Agricultural Properties (Third Revision),* dated August 7, 2008 (DTSC Guidance). Soil sampling depths and frequency shall be determined based on the DTSC Guidance document.

The presence of biosolids/ sewage sludge would be considered a recognized environmental condition if residual concentrations of metals, fecal coliform, and/or OCPs were present in the shallow soil at the Site above applicable regulatory screening levels. SCS recommends that soil testing be conducted at the Site for pesticide residues, fecal coliform, and Title 22 metals (including arsenic) due to the reported historical application of biosolids/ sewage sludge at the Site.

SCS completed soil sampling at the Site on October 3, 2022 to follow up on the above recommendations, which is further discussed in the Sampling portion of this report below.

This Assessment has been conducted by an environmental professional whose qualifications[6] were made known to the Client. The conclusions and recommendations presented above are based on the review of readily available data obtained as part of this Assessment, current regulatory guidelines, the Site and Site vicinity reconnaissance, and SCS' experience.

[6] SCS declares that, to the best of its professional knowledge and belief, the reviewer meets the definition of Environmental Professional as defined in section 312.10 of 40 CFR 312 and has the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. SCS has developed and performed All Appropriate Inquiries in conformance with the standards and practices set forth in 40 CFR 312. The qualifications of the report preparers are included in the Appendices.

6 SCOPE OF SERVICES- LIMITED PHASE II SOIL SAMPLING (SAMPLING)

The Sampling activities described herein were conducted based on the recommendations made in the Assessment above regarding the possible presence of metals, OCPs and/or elevated levels of fecal coliform at the Site in connection with the historical reported application of biosolids/ sewage sludge at the Site, and considering the proposed development of the Site into a business park with office/industrial uses.

PREPARATION FOR FIELDWORK

Preparation of Health and Safety Plan

A health and safety plan for work conducted at the Site and for workers within the "exclusion zone" is required pursuant to the regulations found in 29 Code of Federal Regulations Part 1910.120 and California Code of Regulations, Title 8, Section 5192. Therefore, a health and safety plan was prepared for the proposed work scope, which outlined the potential chemical and physical hazards that may be encountered during soil sampling activities. The appropriate personal protective equipment and emergency response procedures for the anticipated Site-specific chemical and physical hazards were detailed in this plan. SCS personnel involved with the field work were required to read and sign this document in order to encourage proper health and safety practices.

FIELD ACTIVITIES - SOIL SAMPLING AND ANALYSIS

On October 3, 2022, SCS collected soil samples from depths of approximately ground surface to 6-inches below grade from representative areas of the Site at 32 locations (sample locations B1 through B32) within a grid pattern at the Site. The soil sampling procedures were scoped in general accordance with the guidance document issued by the DTSC titled "Interim Guidance for Sampling Agricultural Properties (Third Revision)," dated August 7, 2008 for the recommended number of sample analyses, with fecal coliform and Title 22 metals (including the metal arsenic) added to the selected soil sample analyses.

The 32 soil samples were composited by the laboratory into 8 composite soil samples (Comp 1 through Comp 8) (Figure 4) for laboratory analysis. The table below summarizes the information on sample identification numbers and depths in feet bgs for the Site.

Composite Sample Identification	Individual Sample Identifications	Sampling Rational
B1-B4 Composite	B1, B2, B3, B4	Assess the possible presence of metals, OCPs and/or elevated levels of fecal coliform at the Site in connection with the reported historical sewage sludge/ biosolids application at the Site
B5-B8 Composite	B5, B6, B7, B8	
B9-B12 Composite	B9, B10, B11, B12	
B13-B16 Composite	B13, B14, B15, B16	
B17-B20 Composite	B17, B18, B19, B20	

Composite Sample Identification	Individual Sample Identifications	Sampling Rational
B21-B24 Composite	B21, B22, B23, B24	
B25-B28 Composite	B25, B26, B27, B28	
B29-B32 Composite	B29, B30, B31, B32	

The soil samples were collected by use of a shovel. The samples were placed into 4-ounce glass jars, capped, labeled, and placed in an ice-filled cooler for shipment to the laboratory. Chain-of-custody procedures were implemented for sample tracking.

Pursuant to SCS's standard operating procedures, the sampling equipment/shovel was decontaminated on Site between soil sample locations to minimize the likelihood of cross-contaminating the samples and to minimize the potential for a false positive in the soil samples analyzed.

Soil samples were submitted to Enthalpy Analytical, a fixed-base, State-accredited laboratory. The 8 composited soil samples were analyzed for metals in general accordance with EPA Method 6010B, OCPs in general accordance with EPA Method 8081A, and fecal coliform in general accordance with EPA Method SM 9221E.

SOIL SCREENING REGULATORY CRITERIA FOR SOIL

Soil screening criteria are used in this Report for comparison of the reported soil sample results to applicable health risk-based and hazardous waste-based soil screening criteria for the detected constituents. The applicable soil screening applied in the "Findings" section below includes the following:

Screening Criteria

For health risk-based and hazardous waste screening purposes, the reported results were compared to the following regulatory screening levels to assess for possible risks to residential land use to be conservative (Screening Criteria), although SCS understands that the Client is proposing a commercial/industrial land use:

Health Risk-Based Criteria

- For OCPs and Title 22 metals - DTSC Human and Ecological Risk Office (HERO) Human Health Risk Assessment (HHRA) Note Number 3, June 2020, recommended Screening Levels for residential users (SLs), May 2022 update. The Environmental Protection Agency (EPA) Regional Screening Levels (RSLs) for residential users, dated May 2022, was used if DTSC-SLs were not available.

- Although arsenic was detected at concentrations exceeding the DTSC-SL of 0.11 mg/kg in all but one sample, arsenic was not detected at concentrations exceeding the typical background concentration for soil in southern California of 12 mg/kg. In an abstract

presented by DTSC staff at the 2008 Society of Toxicology Annual Meeting,[7] it was reported that the upper-bound background concentration for arsenic in southern California soil is 12 mg/kg.

- For fecal coliform – from the State Water Resources Control Board Water Quality Order No. 2004-0012-DWQ, General Waste Discharge Requirements for the Discharge of Biosolids to Land for Use as a Soil Amendment in Agricultural, Silvicultural, Horticultural, and Land Reclamation Activities (General Order) (2004)

Hazardous Waste Criteria

- For OCPs and Title 22 metals - from CA code of regulations, Title 22 Article 3, July 20, 2005 regarding characteristics of hazardous waste. Exceedances of the Total Threshold Limit Concentration (TTLC) would be considered a California hazardous waste at a minimum.

7 SAMPLING – FINDINGS AND DISCUSSION

A summary of the laboratory results for the soil samples analyzed is presented below, as well as within Tables 1 and 2. A complete listing of the results is presented in the laboratory report included in the Appendices.

METALS

The 32 soil samples were composited into 8 total samples and analyzed for Title 22 metals by EPA Method 6010. Although metals were reported in each of the samples analyzed, all metals were reported to be below the Health Risk-Based Criteria and Hazardous Waste Criteria (Table 2).

ORGANOCHLORINE PESTICIDES

A total of 8 composite soil samples collected at the Site were also analyzed for OCPs in accordance with EPA Method 8081A. None of the composite samples analyzed were reported with detectable concentrations of OCPs above laboratory reporting limits.

[7] *Determination of a Southern California Regional Background Arsenic Concentration in Soil, Chernoff, G., Bosan, W., Oudiz, D., and California Department of Toxic Substances Control, 2008 Society of Toxicology Annual Meeting.*

FECAL COLIFORM

A total of 8 composite soil samples were analyzed for fecal coliform in general accordance with EPA Method SM 9221E. One of the composite soil samples analyzed, B9-B12 Composite, was reported with a concentration of fecal coliform of 0.68 most probably number per gram (MPN/g).

According to the State Water Resources Control Board Water Quality Order No. 2004-0012-DWQ, General Waste Discharge Requirements for the Discharge of Biosolids to Land for use as a Soil Amendment in Agricultural, Silvicultural, Horticultural, and Land Reclamation Activities (General Order), "all biosolids subject to this General Order shall comply with the applicable pathogen reduction standards listed in 40 CFR Part 503.32. In addition to those standards, all biosolids meeting Class A standards shall not have a maximum fecal coliform concentration greater than 1,000 most probable number (MPN) per gram of biosolids; or the density of salmonella, sp. shall not be greater than three MPN per four grams."

Since sample B9-B12 Composite was reported with detectable concentrations of fecal coliform below three MPN per four grams, this detection would not be considered to represent a health risk to future residential or commercial users of the Site, and therefore is not considered to represent a recognized environmental condition at the Site.

TITLE 22 METALS

Although metals such as arsenic and lead were reported in each of the samples analyzed, all metals were reported to be below the Health Risk-Based Criteria and Hazardous Waste Criteria (Table 2). Therefore, the reported Title 22 metals concentrations are not considered to represent a health risk to future residential or commercial users of the Site, and therefore is not considered to represent a recognized environmental condition at the Site.

8 CONCLUSIONS AND RECOMMENDATION

Based on the samples collected and data obtained and reviewed as part of this Subsurface Assessment, laboratory results, current regulatory guidelines, and our experience and professional judgment, SCS concludes the following:

- In order to assess the possible presence of constituents of concern (CoCs) associated with the former reported biosolids/ sewage sludge application at the Site, soil samples were collected and analyzed for the possible presence of metals, OCPs and/or elevated levels of fecal coliform.

- On October 3, 2022, SCS collected soil samples from depths of approximately ground surface to 6-inches below grade from representative areas of the Site at 32 locations (sample locations B1 through B32) within a grid pattern at the Site. The 32 soil samples were composited by the laboratory into 8 composite soil samples (Figure 4) for laboratory analysis.

- The 32 soil samples were composited by the laboratory into 8 total samples and analyzed for Title 22 metals (including the metal arsenic) by EPA Method 6010. Although metals such as arsenic and lead were reported in each of the samples analyzed, all metals were reported to

be below the Health Risk-Based Criteria (i.e., DTSC SLs) and Hazardous Waste Criteria (i.e., California Title 22).

- A total of 8 composite soil samples collected at the Site were also analyzed for OCPs in accordance with EPA Method 8081A. None of the composite samples analyzed were reported with detectable concentrations of OCPs above laboratory reporting limits.

- A total of 8 composite soil samples were analyzed for fecal coliform in general accordance with EPA Method SM 9221E. One of the composite soil samples analyzed, B9-B12 Composite, was reported with a concentration of fecal coliform of 0.68 MPN/g.

  According to the State Water Resources Control Board Water Quality Order No. 2004-0012-DWQ, General Waste Discharge Requirements for the Discharge of Biosolids to Land for use as a Soil Amendment in Agricultural, Silvicultural, Horticultural, and Land Reclamation Activities (General Order), "all biosolids subject to this General Order shall comply with the applicable pathogen reduction standards listed in 40 CFR Part 503.32. In addition to those standards, all biosolids meeting Class A standards shall not have a maximum fecal coliform concentration greater than 1,000 most probable number (MPN) per gram of biosolids; or the density of salmonella, sp. shall not be greater than three MPN per four grams."

  Since sample B9-B12 Composite was reported with detectable concentrations of fecal coliform below three MPN per four grams, which is below the Health Risk-Based Criteria, this detection would not be considered a recognized environmental condition at the Site.

- Overall, although one soil sample was reported with a detectable concentration of fecal coliform, and metals were reported in each of the samples analyzed, the reported fecal coliform concentration was below Health Risk Based-Criteria (Table 1), and all metals were reported to be below the Health Risk-Based Criteria and Hazardous Waste Criteria (Table 2). None of the composite samples analyzed were reported with detectable concentrations of OCPs above laboratory reporting limits.

  Based on the soil samples that were collected and analyzed, our experience, and applicable regulatory criteria, since the reported concentrations of the various constituents of concern analyzed were either non-detect above laboratory reporting limits or below the applicable Screening Criteria, there is not a risk to future residential or commercial/industrial users of the Site, which is not considered to represent a recognized environmental condition to the Site. Therefore, no further action is recommended at this time.

9 REPORT USAGE AND FUTURE SITE CONDITIONS

This Report is intended for the sole usage of the Client and other parties designated by SCS. The methodology used during this Assessment was in general conformance with the requirements of the Client and the specifications and limitations presented in the Consulting Agreement (Contract) between the Client and SCS. This Report contains information from a variety of public and other sources, and SCS makes no representation or warranty about the accuracy, reliability, suitability, or completeness of the information. Any use of this Report, whether by the Client or by a third party, shall be subject to the provisions of the Contract between the Client and SCS. Any misuse of or reliance upon the Report shall be without risk or liability to SCS.

Assessments are qualitative, not comprehensive, in nature and may not identify all environmental problems or eliminate all risk. For every property, but especially for properties in older downtown or urban areas, it is possible for there to be unknown, unreported recognized environmental conditions, USTs, or other features of concern that might become apparent through demolition, construction, or excavation activities, etc. In addition, the scope of services for this project was limited to those items specifically named in the scope of services for this Report. Environmental issues not specifically addressed in the scope of services for this project are not included in this Report.

Land use, condition of the properties within the Site, and other factors may change over time. The information and conclusions of this Report are judged to have been relevant at the time the work described in this Report was conducted. This Report should not be relied upon to represent future Site conditions unless a qualified consultant familiar with the practice of Phase I Environmental Site Assessments in the County of Riverside is consulted to assess the necessity of updating this Report.

The property owners at the Site are solely responsible for notifying all governmental agencies and the public of the existence, release, or disposal of any hazardous materials/wastes or petroleum products at the Site, whether before, during, or after the performance of SCS' services. SCS assumes no responsibility or liability for any claim, loss of property value, damage, or injury that results from hazardous materials/wastes or petroleum products being present or encountered within the Site.

Although this Assessment has attempted to assess the likelihood that the Site has been impacted by a hazardous material/waste release, potential sources of impact may have escaped detection for reasons that include, but are not limited to, (1) inadequate or inaccurate information rightfully provided to SCS by third parties, such as public agencies and other outside sources; (2) the limited scope of this Assessment; and (3) the presence of undetected, unknown, or unreported environmental releases.

10 LIKELIHOOD STATEMENTS

Statements of "likelihood" have been made in this report. Likelihood statements are based on professional judgments of SCS. The term "likelihood," as used herein, pertains to the probability of a match between the prediction for an event and its actual occurrence. The likelihood statement assigns a measure for a "degree of belief" for the match between the prediction for the event and the actual occurrence of the event.

The likelihood statements in this Report are made qualitatively (expressed in words). The qualitative terms can be approximately related to quantitative percentages. The term "low likelihood" is used by SCS to approximate a range of 10 to 20 percent; the term "moderate likelihood" refers to an approximate range of 40 to 60 percent; and the term "high likelihood" refers to an approximate range of 80 to 90 percent.

11 SPECIAL CONTRACTUAL CONDITIONS BETWEEN USER AND ENVIRONMENTAL PROFESSIONAL

There were no special contractual conditions between the user of this Assessment, the environmental professional, and SCS.

12 ENDNOTES

[i] Site reconnaissance conducted by Tyler Overton (SCS) on October 3, 2022.

[ii] Records request—County of Riverside Department of Environmental Health by Tyler Overton (SCS) on September 9, 2022.

[iii] Records request—City of Menifee Building and Fire Departments by Tyler Overton (SCS) on September 9, 2022.

[iv] Records request—South Coast Air Quality Management District (SCAQMD) by Tyler Overton (SCS) on September 9, 2022.

[v] Records request—City of Menifee Industrial Waste Program by September 9, 2022.

[vi] Records request—Santa Ana Regional Water Quality Control Board (RWQCB) by Tyler Overton (SCS) on September 12, 2022.

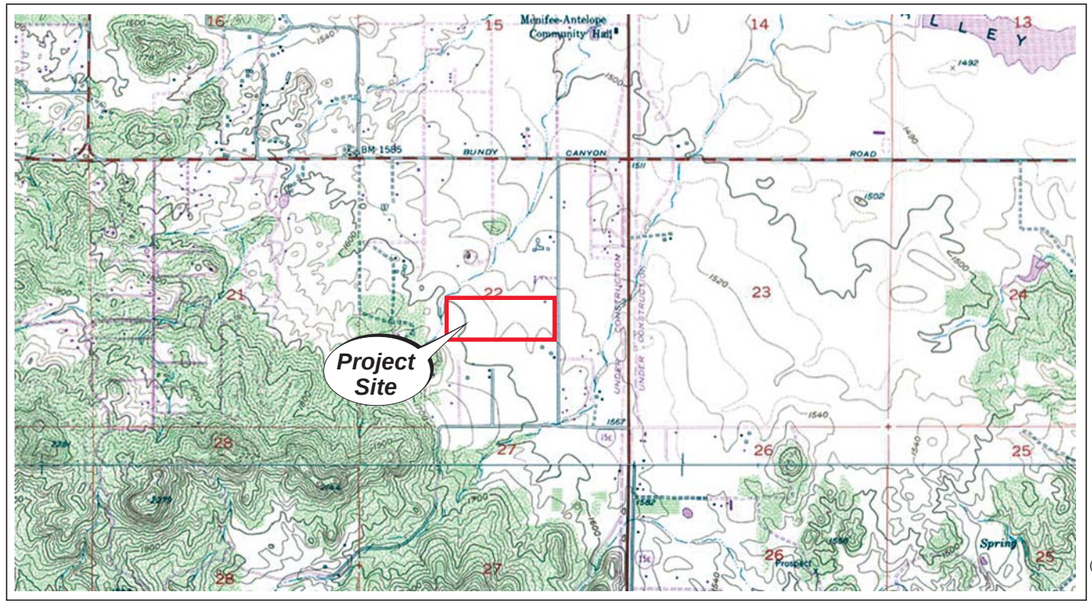
[vii] Records request—Riverside County Agricultural Department of Weights and Measures Records Review (RWQCB) by Tyler Overton (SCS) on September 12, 2022.

[viii] Site vicinity reconnaissance conducted by Tyler Overton (SCS) on October 3, 2022.

[ix] EDR, "Radius Map™ Report," unpublished report prepared for 33521 Zeiders Road, Menifee, CA, 92584, dated September 12, 2012.

[x] California Geological Energy Management Division WellFinder website, https://maps.conservation.ca.gov/doggr/wellfinder/#openModal/-117.15244/33.63356/12

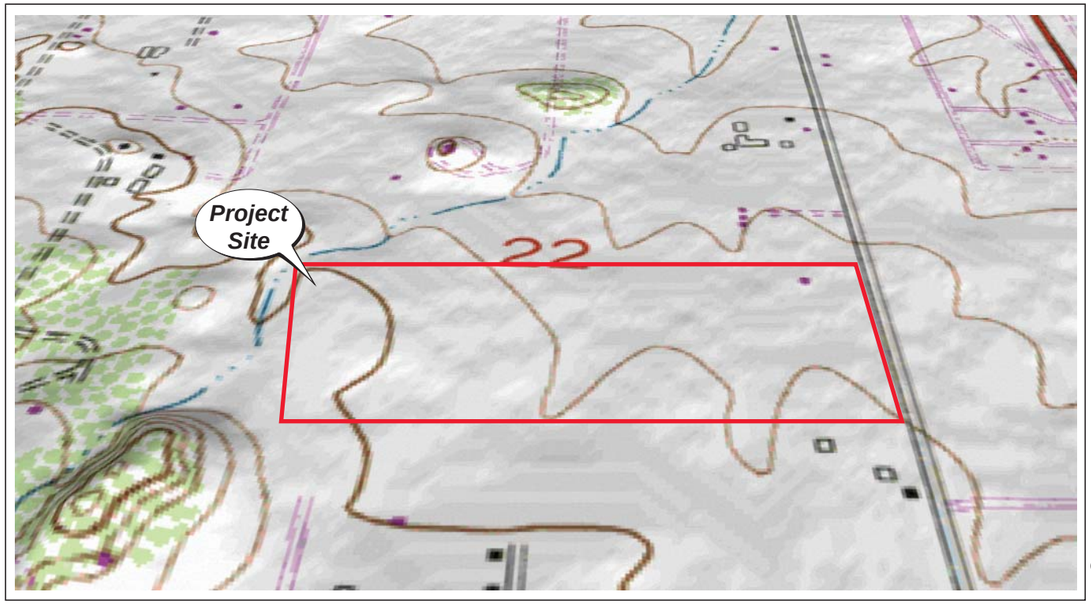
FIGURES



North (No Scale)

Reference:
U.S.G.S. 7.5 Minute Quadrangle Map
Romoland, California

2-DIMENSIONAL SITE LOCATION



North (No Scale)

Reference:
U.S.G.S. 7.5 Minute Quadrangle Map
Romoland, California

3-DIMENSIONAL SITE LOCATION



North (No Scale)

Reference:
Google Earth Aerial Photograph
Menifee, California - August 2021

SITE AERIAL PHOTOGRAPH

Disclaimer: This figure is based on available data. Actual conditions may differ. All locations and dimensions are approximate.

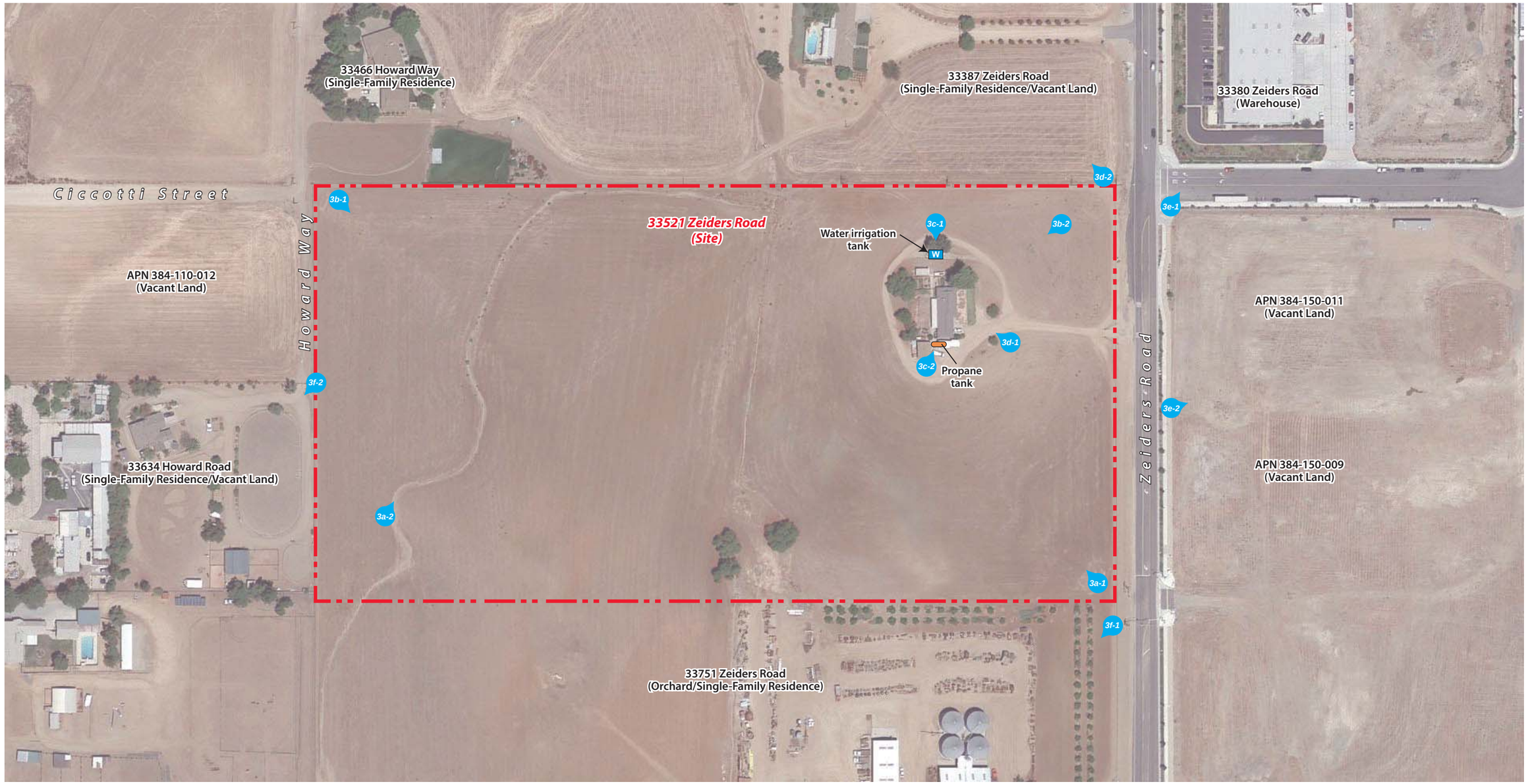
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THREE-WAY SITE LOCATION MAP
Pemcor Properties, Inc.
33521 Zeiders Road
Menifee, California

Project No.:
01222081.01

Figure 1

Date Drafted:
10/10/22



LEGEND

Approximate Site boundary

Location and direction of Site photograph (3c-2)

0 80 160 240
Approximate Graphic Scale in Feet
1 inch = 160 feet

North

Disclaimer: This figure is based on available data. Actual conditions may differ. All locations and dimensions are approximate.

Reference: Google Earth Aerial Photograph
Menifee, California - August 2021

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SITE AND SITE VICINITY PLAN

Pemcor Properties, Inc.
33521 Zeiders Road
Menifee, California

Project No.: 01222081.01

Figure 2

Date Drafted: 10/10/22



1) View of the Site looking northwest.



2) View of the Site looking northeast.

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PHOTOGRAPHIC PLATE
Pemcor Properties, Inc.
33521 Zeiders Road
Menifee, California

Project No.:
01222081.01

Figure 3a

Date Drafted:
10/10/22



1) View of the Site looking southeast.



2) View of the Site looking southwest.

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PHOTOGRAPHIC PLATE
Pemcor Properties, Inc.
33521 Zeiders Road
Menifee, California

Project No.: 01222081.01

Figure 3b

Date Drafted: 10/10/22



1) View of a water tank used for irrigation observed to be located at the Site.



2) View of a propane tank observed to be located at the Site.

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PHOTOGRAPHIC PLATE
Pemcor Properties, Inc.
33521 Zeiders Road
Menifee, California

Project No.: 01222081.01

Figure 3c

Date Drafted: 10/10/22



1) View of the single-family residence observed to be located at the Site.



2) View of the single-family residence located to the north of the Site.

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San Diego, California 92123

PHOTOGRAPHIC PLATE
Pemcor Properties, Inc.
33521 Zeiders Road
Menifee, California

Project No.:
01222081.01

Figure 3d

Date Drafted:
10/10/22



1) View of the warehouse located to the northeast of the Site.



2) View of the vacant land located to the east of the Site.

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PHOTOGRAPHIC PLATE
Pemcor Properties, Inc.
33521 Zeiders Road
Menifee, California

Project No.:
01222081.01

Figure 3e

Date Drafted:
10/10/22



1) View of the orchard located to the south of the Site.



2) View of the single-family residence located to the west of the Site.

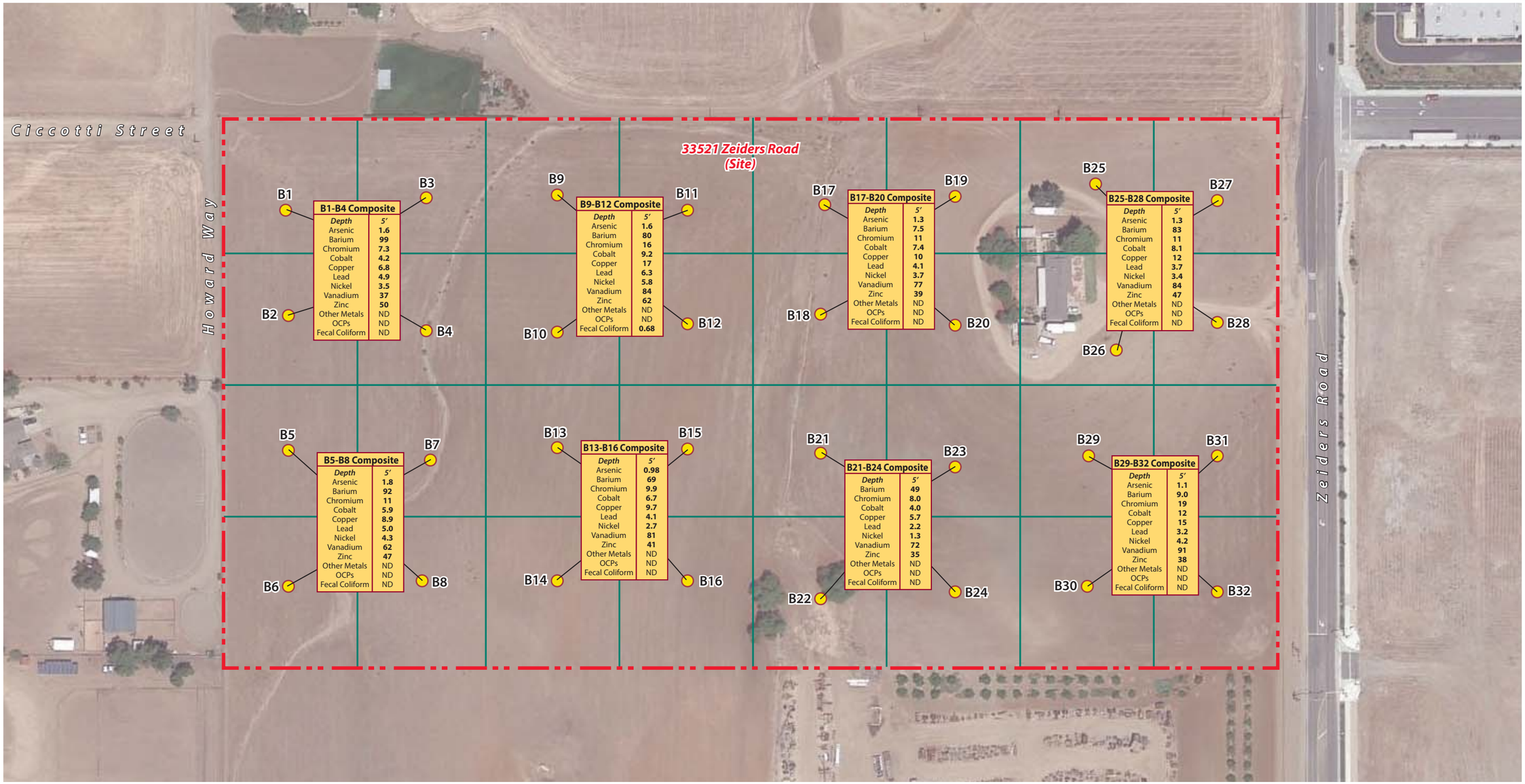
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PHOTOGRAPHIC PLATE
Pemcor Properties, Inc.
33521 Zeiders Road
Menifee, California

Project No.:
01222081.01

Figure 3f

Date Drafted:
10/10/22



LEGEND

Approximate Site boundary

Approximate soil sample location collected by SCS Engineers on October 2, 2022

Grid

Disclaimer: This figure is based on available data. Actual conditions may differ. All locations and dimensions are approximate.

B13-B16 Composite	
Depth	*5′*
Arsenic	**0.98**
Barium	**69**
Chromium	**9.9**
Cobalt	**6.7**
Copper	**9.7**
Lead	**4.1**
Nickel	**2.7**
Vanadium	**81**
Zinc	**41**
Other Metals	ND
OCPs	ND
Fecal Coliform	ND

Soil samples, with depth in feet below grade, analyzed for Title 22 Metals by EPA Method 6010B. Results reported milligrams per kilogram (mg/kg) with the exception of fecal coliform, which is reported in Most Probable Number per gram (MPN/g). **Bold** font indicates sample results above the laboratory reporting limit. ND indicates concentration not detected above laboratory detection limits.

Reference: Google Earth Aerial Photograph
Menifee, California - August 2021

0 60 120 180
Approximate Graphic Scale in Feet
1 inch = 120 feet

North

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SOIL SAMPLE LOCATION MAP WITH ANALYTICAL RESULTS

Pemcor Properties, Inc.
33521 Zeiders Road
Menifee, California

Project No.: 01222081.01

Figure 4

Date Drafted: 10/31/22

TABLES

Table 1
Soil Sample Analytical Results for Fecal Coliform and OCPs
33521 Zeiders Road
Menifee, California

Sample	Depth	Date	Fecal Coliform	OCPs
	feet bgs		MPN/g	µg/kg
B1-B4 Composite	0.5	10/3/2022	<0.18	ND
B5-B8 Composite	0.5	10/3/2022	<0.18	ND
B9-B12 Composite	0.5	10/3/2022	**0.68**	ND
B13-B16 Composite	0.5	10/3/2022	<0.18	ND
B17-B20 Composite	0.5	10/3/2022	<0.18	ND
B21-B24 Composite	0.5	10/3/2022	<0.18	ND
B25-B28 Composite	0.5	10/3/2022	<0.18	ND
B29-B32 Composite	0.5	10/3/2022	<0.18	ND
Health Risk-Based Criteria [1]			**1,000**	**--**

Notes :

Soil samples collected by SCS Engineers on 10/3/2022 and analyzed for Fecal Coliform by EPA Method SM 9221E and for OCPs by EPA Method 8081A

OCPs: organochlorine pesticides

feet bgs: feet below ground surface.

µg/kg: micrograms per kilogram.

MPN/g: most probable number per gram

< : less than the laboratory reporting limit.

-- : not established

1) Health Risk-Based Criteria - OCPs DTSC Human and Ecological Risk Office (HERO) Human Health Risk Assessment (HHRA) Note Number 3, June 2020, recommended Screening Levels for residential users (SLs), May 2022 update. The Environmental Protection Agency (EPA) Regional Screening Levels (RSLs) for residential users, dated May 2022, was used if DTSC SLs were not available.

Fecal Coliform - State Water Resources Control Board Water Quality Order No. 2004-0012-DWQ, General Waste Discharge Requirements for the Discharge of Biosolids to Land for use as a Soil Amendment in Agricultural, Silvicultural, Horticultural, and Land Reclamation Activities (General Order) (2004)

Bold = detection above the laboratory limits.

Table 2
Soil Sample Analytical Results for Title 22 Metals
33521 Zeiders Road
Menifee, California

Sample	Depth	Date	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc
	feet bgs		mg/kg																
B1-B4 Composite	0.5	10/3/2022	<2.9	**1.6**	**99**	<0.49	<0.49	**7.3**	**4.2**	**6.8**	**4.9**	<0.15	<0.98	**3.5**	<2.9	<0.49	<2.9	**37**	**50**
B5-B8 Composite	0.5	10/3/2022	<2.9	**1.8**	**92**	<0.49	<0.49	**11**	**5.9**	**8.9**	**5.0**	<0.15	<0.98	**4.3**	<2.9	<0.49	<2.9	**62**	**47**
B9-B12 Composite	0.5	10/3/2022	<2.9	**1.6**	**80**	<0.48	<0.48	**16**	**9.2**	**17**	**6.3**	<0.15	<0.96	**5.8**	<2.9	<0.48	<2.9	**84**	**62**
B13-B16 Composite	0.5	10/3/2022	<2.9	**0.98**	**69**	<0.48	<0.48	**9.9**	**6.7**	**9.7**	**4.1**	<0.15	<0.95	**2.7**	<2.9	<0.48	<2.9	**81**	**41**
B17-B20 Composite	0.5	10/3/2022	<2.9	**1.3**	**7.5**	<0.48	<0.48	**11**	**7.4**	**10**	**4.1**	<0.15	<0.96	**3.7**	<2.9	<0.48	<2.9	**77**	**39**
B21-B24 Composite	0.5	10/3/2022	<2.9	<0.98	**49**	<0.49	<0.49	**8.0**	**4.0**	**5.7**	**2.2**	<0.15	<0.98	**1.3**	<2.9	<0.49	<2.9	**72**	**35**
B25-B28 Composite	0.5	10/3/2022	<2.9	**1.3**	**83**	<0.48	<0.48	**11**	**8.1**	**12**	**3.7**	<0.14	<0.96	**3.4**	<2.9	<0.48	<2.9	**84**	**47**
B29-B32 Composite	0.5	10/3/2022	<2.9	**1.1**	**90**	<0.49	<0.49	**19**	**12**	**15**	**3.2**	<0.15	<0.97	**4.2**	<2.9	<0.49	<2.9	**91**	**38**
Health Risk-Based Criteria [1]			**31**	**12**	**15,000**	**1,600**	**910**	**NE**	**23**	**47,000**	**80**	**1.0**	**390**	**15,000**	**390**	**390**	**78**	**390**	**23,000**
Hazardous Waste Criteria[2]			**500**	**500**	**10,000**	**75**	**100**	**2,500**	**8,000**	**2,500**	**1,000**	**20**	**3,500**	**2,000**	**100**	**500**	**700**	**2,400**	**5,000**

Notes :
Soil samples collected by SCS Engineers on 10/3/22 and analyzed for Title 22 metals by EPA Method 6010B.
feet bgs: feet below ground surface.
mg/kg : milligrams per kilogram.
< : less than the laboratory reporting limit.
-- : not analyzed.
1) Health Risk-Based Criteria - the Department of Toxic Substances Control (DTSC) Human and Ecological Risk Office (HERO) Human Health Risk Assessment (HHRA) Note Number: 3, June 2020, revised May 2022, using the Recommended Screening Levels (DTSC-SLs) for residential soil and cancer endpoint, or, for other metals not listed in HHRA Note 3, the Regional Screening Levels (RSLs) for residential soil, provided by the United States Environmental Protection Agency (EPA) and updated as of May 2022 were used. For arsenic, although the DTSC-SL is 0.11 mg/kg, naturally occuring arsenic typically exceeds human health risk screening criteria. Therefore, the DTSC upper-bound background concentration for arsenic of 12 mg/kg was used.
2) Hazardous Waste Criteria: Values shown from CA code of regulations, Title 22 Article 3, July 20, 2005 regarding characteristics of hazardous waste.
Exceedances of the Total Threshold Limit Concentration (TTLC) would be considered a California hazardous waste, at a minimum.
Bold = detection above the laboratory limits.
NA: Not analyzed
NE : Screening criteria not established.

APPENDICES

GLOSSARY

adjacent property. Any real property or properties the border of which is contiguous or partially contiguous with that of the Site or that would be contiguous or partially contiguous with that of the Site but for a street, road, or other public thoroughfare separating them.

aerial photographs. Photographs taken from an airplane or helicopter of areas encompassing the Site.

asbestos. Six naturally occurring fibrous minerals found in certain types of rock formations. Of the six, the minerals chrysotile, amosite, and crocidolite have been the most commonly used in building products. When inhaled in sufficient quantities, asbestos fibers can cause serious health problems.

asbestos-containing material (ACM). Any material or product that contains more than 1% asbestos.

construction debris. Any concrete, brick, asphalt, and other building materials discarded in the construction of a building or other improvement to property.

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drum. A container (typically, but not necessarily, holding 55 gallons of liquid) that may be used to store hazardous substances or petroleum products.

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fill dirt. Dirt, soil, sand, or other earth that is obtained off site and that is used to fill holes or depressions, create mounds, or otherwise artificially change the grade or elevation of real property. It does not include material that is used in limited quantities for normal landscaping activities.

fire insurance map. Maps produced for private fire insurance map companies that indicate uses of properties at specified dates and that encompass the property.

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PCE. Perchloroethene/perchloroethylene, or "Perc"; also tetrachloroethene/tetrachloroethylene; commonly used as a solvent for dry-cleaning.

petroleum products. Petroleum, including crude oil, natural gas, natural gas liquids, liquefied natural gas, synthetic gas usable for fuel, kerosene, diesel oil, jet fuels, motor oil, hydraulic oil, gear oils, and fuel oil.

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WMUDS	Waste Management Unit Database System

GLOSSARY

adjacent property. Any real property or properties the border of which is contiguous or partially contiguous with that of the Site or that would be contiguous or partially contiguous with that of the Site but for a street, road, or other public thoroughfare separating them.

aerial photographs. Photographs taken from an airplane or helicopter of areas encompassing the Site.

asbestos. Six naturally occurring fibrous minerals found in certain types of rock formations. Of the six, the minerals chrysotile, amosite, and crocidolite have been the most commonly used in building products. When inhaled in sufficient quantities, asbestos fibers can cause serious health problems.

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DEPARTMENT OF ENVIRONMENTAL HEALTH CORRESPONDENCE

County of Riverside

DEPARTMENT OF ENVIRONMENTAL HEALTH

www.rivcoeh.org

Environmental Protection & Oversight Division
Hazardous Materials Management Branch

REQUEST FOR RECORDS

Requests for review of records are processed on a first come, first serve basis and the processing time is approximately 2-4 weeks. As required by California Public Records Act Section 6250 et seq., a response will be given within ten (10) business days to confirm receipt of your request.

Pursuant to California Government Code, Section 6254 (f), records of pending investigations and informant's names, addresses, and telephone numbers, will not be released.

For access to electronic records available online, visit the Public Information section at www.rivcoeh.org for more details.

REQUESTOR INFORMATION		
NAME: Tyler Overton	DATE OF REQUEST: 9/9/2022	
BUSINESS NAME (IF ANY): SCS Engineers		
RETURN LEGAL MAILING ADDRESS: 8799 Balboa Ave #290		
CITY: San Diego	STATE: CA	ZIP: 92123
PHONE: 619-458-2799		

The following information is required. **List each street address separately.**

	SITE STREET ADDRESS (NO APNs)	CITY
1.	33521 ZEIDERS ROAD, MENIFEE, CA 92584	Menifee/Sun City
2.	33751 ZEIDERS RDSUN CITY, CA 92381	Sun City
3.		
4.		
5.		
6.		
7.		

Requests must be made in writing and submitted by mail, email, or in person to the following office:

4065 County Circle Drive, Room 104, Riverside, CA 92503
Phone: (951) 358-5055
Email: DEHRecordsMgmt@rivco.org
Mailing Address: P.O. Box 7909, Riverside, CA 92513-7909

For our office locations call us at (888) 722-4234 or visit our website at www.rivcoeh.org

County of Riverside

DEPARTMENT OF ENVIRONMENTAL HEALTH

JEFF JOHNSON, DIRECTOR

Records Request Acknowledgement Letter

September 9, 2022

Request No: **55849**

Request Date: **9/9/2022**

SCS Engineers
Attn: Tyler Overton
8799 Balboa Ave #290
San Diego, CA. 92123

Re: **33521 ZEIDERS ROAD, MENIFEE**

We have received your request for records and a search of our files is being processed.

Once the research is completed, you will be notified regarding the outcome.

Note: Riverside County Environmental Health began storing records for the Hazardous Materials Management Division in 1986. Records for disclosure information in the cities of Corona and Riverside may need to be directed to the local City Fire Department. They can be reached at 951-736-2220 (Corona) and 951-826-5737 (Riverside).

Please feel free to use the following contact information to reach out to us with any questions:

Riverside County Department of Environmental Health
Hazardous Materials Management Division
4065 County Circle Dr., Rm. 104
Riverside, CA 92503
Telephone: 951-358-5055 Fax: 951-358-5017

Additional information can be found on our website at **www.rivcoeh.org**

County of Riverside

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Re: **33751 ZEIDERS ROAD, SUN CITY**

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CASE CLOSURE SUMMARY
LEAKING UNDERGROUND FUEL STORAGE TANK PROGRAM

SITE NAME: Bouris Ranches SITE NO: **99-15244**

I. Agency Information

Date: 10/18/99

AGENCY NAME: County of Riverside, Department of Environmental Health
Hazardous Materials Management Division
ADDRESS: 4065 County Circle Dr. P.O. Box 7600 Riverside CA 92513-7600 (909) 358-5055
STAFF PERSON: Dori Malloy -- Hazardous Materials Management Specialist

II. Case Information

SITE NAME: Bouris Ranches
SITE ADDRESS: 33751 Zeiders Road, Sun City
RB LUSTIS CASE NO: **LOP/LOCAL CASE NO**: 99-15244
URR FILING DATE: **SWEEPS NO**:

RESPONSIBLE PARTIES	ADDRESS	PHONE NUMBER
H.G. & Betty Bouris	33751 Zeider Rd., Sun City	

TANK #	SIZE	CONTENTS	REMOVED/CLOSED IN-PLACE?	DATE
1	4.5K	Diesel	removed	04/13/99
2	3.5K	Gasoline	removed	04/13/99
3	6.5K	Diesel	removed	04/13/99

III. Release and Site Characterization Information

CAUSE & TYPE OF RELEASE: UST release of unknown cause
SITE CHARACTERIZATION COMPLETE? Yes [X] No [ ]
DATE APPROVED BY OVERSIGHT AGENCY: 10/08/99

MONITORING WELLS INSTALLED? Yes [ ] No [X] NUMBER:
PROPER SCREEN INTERVAL? Yes [ ] No [ ] N/A [X]
HIGHEST GW DEPTH BELOW GROUND SURFACE: 18' bgs **LOWEST DEPTH**: 24' bgs
FLOW DIRECTION: estimated to the northeast

MOST SENSITIVE CURRENT GW USE: beneficial
ARE DRINKING WATER WELLS AFFECTED? Yes[ ] No [X]
AQUIFER NAME:

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
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III. Release and Site Characterization Information (cont.)

TREATMENT & DISPOSAL OF AFFECTED MATERIAL

MATERIAL	AMOUNT	ACTION (Treatment or disposal & destination)	DATE
TANK	3	recycled at AMR	04/13/99
PIPING	3	recycled at AMR	04/13/99
RINSEATE	yes	Demenno Kerdoon	04/13/99
SOIL			
GROUNDWATER			
OTHER			

MAXIMUM DOCUMENTED CONTAMINANT CONCENTRATIONS -- Before & After Cleanup

CONTAMINANT	SOIL ppm				GROUNDWATER ppb	
	BEFORE	DEPTH	AFTER	DEPTH	BEFORE	AFTER
TPH (GAS)	4.2	15' bgs	ND	20' bgs		
TPH (DIESEL)	8,588	15' bgs	ND	20' bgs		
TRPH (418.1)						
BENZENE	ND	ALL	ND	ALL		
TOLUENE	.039	13' bgs	ND	20' bgs		
XYLENE	4.503	13' bgs	ND	20' bgs		
ETHYLBENZENE	2.238	15' bgs	ND	20' bgs		
MTBE	ND	ALL	ND	ALL		
OTHER						

COMMENTS (soil types, depth of remediation, etc.): Soils in the vicinity of the excavated area consisted of silty fine to coarse sands to a depth of approximately 4' bgs and decomposed granite at depths greater than 4' bgs.

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 [X]
NUMBER DECOMMISSIONED: **NUMBER RETAINED**:

LIST ENFORCEMENT ACTIONS TAKEN: none
LIST ENFORCEMENT ACTIONS RESCINDED: none

CASE CLOSURE SUMMARY
LEAKING UNDERGROUND FUEL STORAGE TANK PROGRAM

SITE NAME: Bouris Ranches SITE NO: 99-15244

V. Local Agency Representative Data

NAME: Earl Tuntland TITLE: Hazardous Materials Program Manager
SIGNATURE: [signature] DATE: 1/29/00

VI. RWQCB Notification

DATE SUBMITTED TO RWQCB: RWQCB RESPONSE: Concurs w/ Closure
RWQCB STAFF NAME: TITLE: Chief, UST Section
SIGNATURE: Kenneth R. Williams DATE: 1-19-2000

VII. Additional Comments, Data, Etc.

Three USTs (4.5K diesel, 3.5K gas, 6.5K diesel) were removed from the site on 04/13/99. The samples collected from beneath the tanks at the time of removal indicated that there was some diesel contamination (1,600 ppm) present at 4' beneath the bottom of the tanks at the east end of the former tank pit.

A remedial excavation was conducted on July 6, 1999. The excavation was extended to a maximum depth of 20' bgs in the vicinity of samples S2, S7, and S8 (hot spot). At 20' bgs, the samples were all ND, indicating that the vertical limit of the contamination had been identified. The majority of the excavation was extended to approximately 17' bgs, due to cost constraints. The lateral limits of the excavation were limited to the west by the wall of a garage structure and to the south by a subsurface electrical line; however, a trench was extended to approximately 15' bgs, south of the subsurface electrical line. The trench provided an opportunity to pursue the lateral edge of the contamination.

A total of 150 tons of contaminated soil was removed from the excavation and is being temporarily stored on site pending our approval to use it as road base.

The consultants have estimated that approximately 45 cubic yards of diesel contaminated soil remain in place at depths between 17' bgs to 20' bgs beneath the former USTs. There is also the possibility that small volumes (less than 5 cubic yards each) may be present beneath the subsurace electrical line and beneath the garage wall.

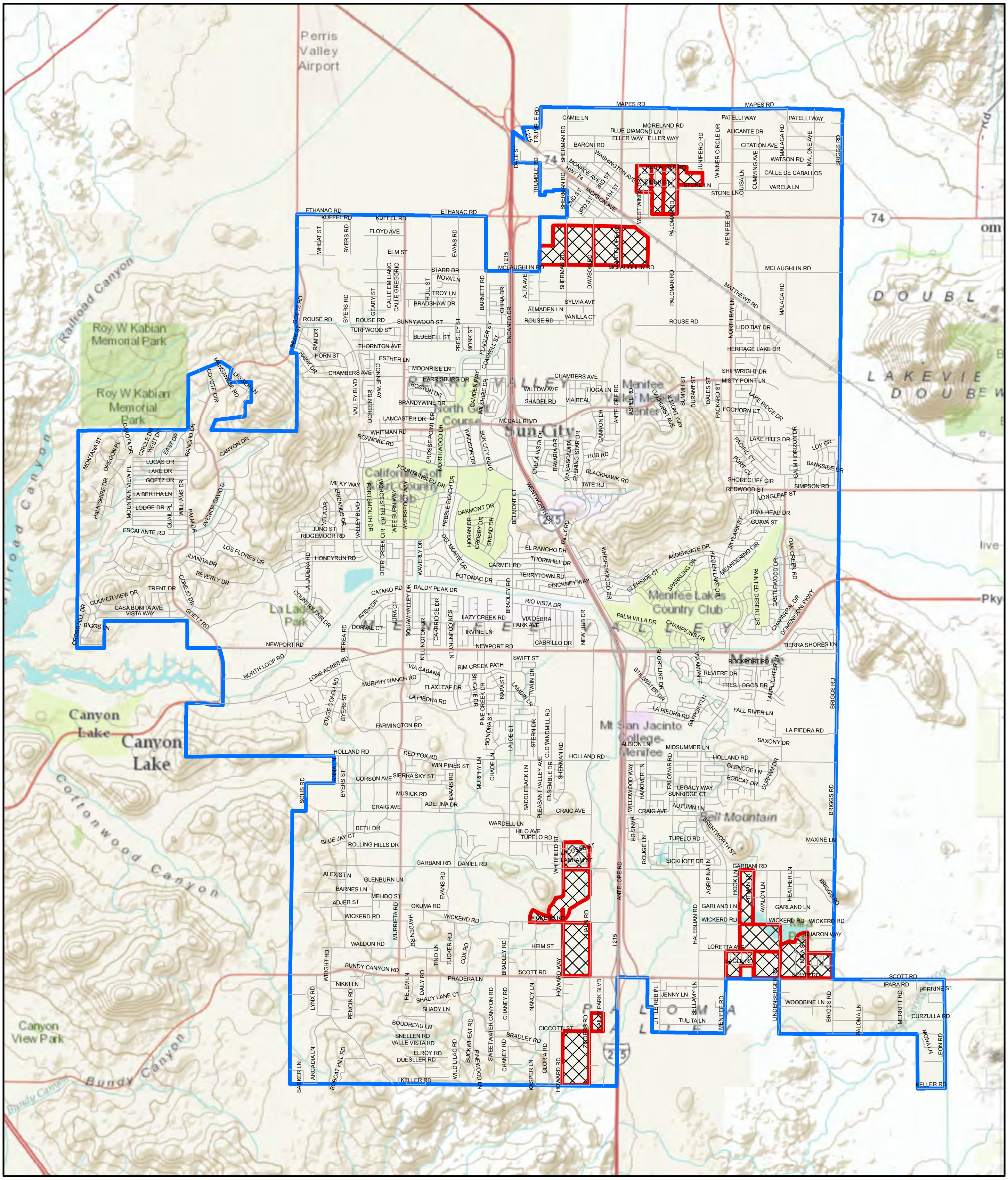
No groundwater was encountered during the remedial excavation, however groundwater exists at the site at depths ranging from 18'-24' bgs. There are two groundwater production wells in the vicinity of the former Ust cavity. Well #1 is located approximately 100' west-southwest of the former Usts and is currently operational (produces water for irrigation on the property). The total depth of the well is approximately 100' bgs. Well #2 is located approximately 110' east-southeast of the former USTs. The total well depth is approximately 35' bgs, and the well is not currently used for production. Both wells were monitored and sampled. The results were ND for both wells for TPH-g, TPH-d, BTEX, and MTBE. Although neither well is in the preferred downgradient direction, they are nearby.

The consultants are requesting closure based upon the facts that: (1) the majority of the source (diesel contaminated soil) has been removed; (2) neither Benzene nor MTBE was detected in any of the soil samples; (3) the groundwater at the site does not appear to have been impacted.

rev. 9/95

Post-it® Fax Note 7671 | Date 1/19 | # of pages ▶ 1
To Dori Mulloy | From Ken Williams
Co./Dept. RIV. Co. EHD | Co. RWQCB #8
Phone # | Phone # 1-909-782-4496
Fax # 1-909-358-5017 | Fax #

PERMITTED BIOSOLIDS/SLUDGE APPLICATION MAP



Legend

City of Menifee Boundary

Composite Fields

0 0.5 1 2 3 4 Miles

N

BUILDING AND FIRE DEPARTMENT RECORDS

REQUEST

Skip to main content

Public Record Requests

City of Menifee

Request 22-554 Open

Dates

Received

September 9, 2022 via web

Staff Assigned

Departments

Building

Point of contact

Cristina Hernandez

Request

Hello,

I am seeking any permits or records for 33521 Zeiders Road, Menifee, California 92584.

Please include:

-Fire Department records (incident reports, permits, hazardous materials/waste records, violations, tank permits, etc.)

-Building Department records (permits, building records, etc.)

-Waste water department records (permits, records, etc.)

Thank you,

Tyler Overton

Project Professional

SCS Engineers

(619) 458-2799

toverton@scsengineers.com

Timeline Documents

Department Assignment Public

Building

September 9, 2022, 11:44am (auto-assigned)

Request Opened Public

Request received via web

September 9, 2022, 11:44am by Tyler Overton

AIR POLLUTION CONTROL DISTRICT CORRESPONDENCE

From: Overton, Tyler
To: PublicRecordsRequests@aqmd.gov
Subject: Records request - Menifee/Sun City
Date: Friday, September 9, 2022 12:00:00 PM

Hello,

I am requesting all records for the property located at 33521 Zeiders Road, Menifee, California 92584, APN 384-150-001.

Thank you,

Tyler Overton

Project Professional

SCS Engineers

(619) 458-2799

toverton@scsengineers.com

Overton, Tyler

From: PublicRecordsRequests@aqmd.gov
Sent: Friday, September 9, 2022 5:05 PM
To: Overton, Tyler
Subject: SCAQMD Public Records Request Submittal Acknowledgement

This email originated from outside of SCS Engineers. Do not click links or open attachments unless you recognize the sender and know the content is safe.



Tyler Overton
Scs Engineers
8799 Balboa Ave, Ste 290
San Diego, California 92123

RE: Request for Records
Request: Hello,

I am requesting all records for the property located at 33521 Zeiders Road, Menifee, California 92584, APN 384-150-001.

Thank you,

Tyler Overton
Project Professional
SCS Engineers
(619) 458-2799
toverton@scsengineers.com

Facility ID:

Facility Name:

Address: 33521 ZEIDERS ROAD

City: MENIFEE

Your request for records has been received by the Public Records Unit and will be assigned for processing. A Control Number will be issued for your request and should be referenced in all future communications and correspondence. **Within 10 days of our receipt of your request, we will send you an email letting you know if we have the requested records, and how long it will take to provide them. Please send any follow up emails to the staff member that sends this email, and reference the request number.**

Should you have any questions or need additional information, please do not hesitate to contact me at (909) 396-3700, Tuesday through Friday, between the hours of 8:00 a.m. 4:30 p.m.

Sincerely,

COLLEEN PAINE

For Colleen Paine
Public Records Coordinator

1414896

Overton, Tyler

From: mcard@aqmd.gov
Sent: Thursday, September 15, 2022 10:26 AM
To: Overton, Tyler
Cc: ob_pr_support_docs@aqmd.gov
Subject: SCAQMD Public Records Request# 1414896, -- Completion Letter

This email originated from outside of SCS Engineers. Do not click links or open attachments unless you recognize the sender and know the content is safe.



Tyler Overton
Scs Engineers
8799 Balboa Ave, Ste 290
San Diego, California 92123

Ref: Request for Records; Control No. **1414896**, Received 9/13/2022
RE: P/O'S, NOV'S & I/R'S FOR 33521 ZEIDERS RD, MENIFEE, CA, FROM 9/22/1922-9/9/2022.

After a thorough search of this agency's records:

NO REQUESTED RECORDS WERE FOUND FOR THE ABOVE REFERENCED FACILITY OR FACILITY SITE.

Should you have any questions or need additional information, please do not hesitate to contact me at (909) 396-3700, Tuesday through Friday, between the hours of **8:00 a.m.** and **4:30 p.m.**

Sincerely,

Michelle Card
For Colleen Paine
Public Records Coordinator
Information Management

REGIONAL WATER QUALITY CONTROL BOARD CORRESPONDENCE

Overton, Tyler

From: Overton, Tyler
Sent: Monday, September 12, 2022 8:33 AM
To: 'FileReview8@waterboards.ca.gov'
Subject: Records request - Menifee, CA

Hello,

Please let this email serve as a records request for 33521 Zeiders Road Menifee, California 92584.

Thank you,

Tyler Overton
Project Professional
SCS Engineers
(619) 458-2799
toverton@scsengineers.com

Overton, Tyler

From: WB-RB8-FileReview8 <FileReview8@waterboards.ca.gov>
Sent: Friday, September 16, 2022 7:18 AM
To: Overton, Tyler
Subject: RE: Records request - Menifee, CA

This email originated from outside of SCS Engineers. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Good morning,

After careful review of our records, we show we have no files for the following site(s):
33521 Zeiders Road Menifee, California 92584

If we can be of further assistance, please do not hesitate to contact us again.

Thank you,
File Review Desk
3737 Main St. Suite 500
Riverside, CA 92501

From: Overton, Tyler <TOverton@scsengineers.com>
Sent: Monday, September 12, 2022 8:33 AM
To: WB-RB8-FileReview8 <FileReview8@waterboards.ca.gov>
Subject: Records request - Menifee, CA

EXTERNAL:

Hello,

Please let this email serve as a records request for 33521 Zeiders Road Menifee, California 92584.

Thank you,

Tyler Overton
Project Professional
SCS Engineers
(619) 458-2799
toverton@scsengineers.com

ENVIRONMENTAL DATABASE REPORT

33521 Zeiders Road
33521 Zeiders Road
Menifee, CA 92584

Inquiry Number: 7114227.2s
September 12, 2022

The EDR Radius Map™ Report

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

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Detail Map	3
Map Findings Summary	4
Map Findings	9
Orphan Summary	33
Government Records Searched/Data Currency Tracking	GR-1

GEOCHECK ADDENDUM

GeoCheck - Not Requested

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

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E1527-21), 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

33521 ZEIDERS ROAD
MENIFEE, CA 92584

COORDINATES

Latitude (North):	33.6333860 - 33ˆ 38' 0.18''
Longitude (West):	117.1778130 - 117ˆ 10' 40.12''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	483508.8
UTM Y (Meters):	3721328.8
Elevation:	1575 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	12015913 ROMOLAND, CA
Version Date:	2018
South Map:	12014848 MURRIETA, CA
Version Date:	2018

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20140603
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
33521 ZEIDERS ROAD
MENIFEE, CA 92584

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
A1	BOURIS RANCH	33751 ZEIDER RD	LUST	Higher	241, 0.046, SE
A2	BOURIS RANCHES	33751 ZEIDERS RD	HIST UST	Higher	507, 0.096, SE
3	PRIVATE RESIDENCE	PRIVATE RESIDENCE	LUST, Cortese, CERS	Higher	586, 0.111, SSE
4	UNIVERSAL PIPELINE I	33490 BAILEY PARK BL	RCRA NonGen / NLR	Lower	758, 0.144, ENE
5	MACKENZIE LANDSCAPE	33380 BAILEY PARK BL	RCRA NonGen / NLR	Lower	936, 0.177, ENE
6	INLAND EROSION CONTR	33325 BAILY PARK BLV	RCRA-LQG	Lower	1133, 0.215, NE
B7	CHANNELL CORP	33380 ZEIDERS RD	RCRA NonGen / NLR	Lower	1308, 0.248, NNE
B8	CHANNELL COMMERCIAL	33380 ZEIDERS RD	CERS HAZ WASTE, CERS	Lower	1308, 0.248, NNE
9	BOURIS RANCH	33751 ZEIDERS	LUST, SWEEPS UST, CA FID UST, HIST CORTESE	Higher	1522, 0.288, South
10	MURIETTA HIGHLANDS P	I-215/ANTELOPE ROAD/	ENVIROSTOR, SCH	Lower	2448, 0.464, SE

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

Lists of Federal NPL (Superfund) sites

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

Lists of Federal Delisted NPL sites

Delisted NPL ---------- National Priority List Deletions

Lists of Federal sites subject to CERCLA removals and CERCLA orders

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

Lists of Federal CERCLA sites with NFRAP

SEMS-ARCHIVE ---------- Superfund Enterprise Management System Archive

Lists of Federal RCRA facilities undergoing Corrective Action

CORRACTS ---------- Corrective Action Report

Lists of Federal RCRA TSD facilities

RCRA-TSDF ---------- RCRA - Treatment, Storage and Disposal

Lists of Federal RCRA generators

RCRA-SQG ---------- RCRA - Small Quantity Generators
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 CONTROLS ..... Institutional Controls Sites List

Federal ERNS list

ERNS ..... Emergency Response Notification System

Lists of state- and tribal (Superfund) equivalent sites

RESPONSE ..... State Response Sites

Lists of state and tribal landfills and solid waste disposal facilities

SWF/LF ..... Solid Waste Information System

Lists of state and tribal leaking storage tanks

INDIAN LUST ..... Leaking Underground Storage Tanks on Indian Land
CPS-SLIC ..... Statewide SLIC Cases

Lists of state and tribal registered storage tanks

FEMA UST ..... Underground Storage Tank Listing
UST ..... Active UST Facilities
AST ..... Aboveground Petroleum Storage Tank Facilities
INDIAN UST ..... Underground Storage Tanks on Indian Land

Lists of state and tribal voluntary cleanup sites

INDIAN VCP ..... Voluntary Cleanup Priority Listing
VCP ..... Voluntary Cleanup Program Properties

Lists of state and tribal brownfield sites

BROWNFIELDS ..... Considered Brownfieds Sites Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS ..... A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT ..... Waste Management Unit Database
SWRCY ..... Recycler Database
HAULERS ..... Registered Waste Tire Haulers Listing
INDIAN ODI ..... Report on the Status of Open Dumps on Indian Lands
DEBRIS REGION 9 ..... Torres Martinez Reservation Illegal Dump Site Locations
ODI ..... Open Dump Inventory
IHS OPEN DUMPS ..... Open Dumps on Indian Land

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL ..... Delisted National Clandestine Laboratory Register

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
AQUEOUS FOAM ---- Former Fire Training Facility Assessments Listing

Local Lists of Registered Storage Tanks

SWEEPS UST ---- SWEEPS UST Listing
CA FID UST ---- Facility Inventory Database
CERS TANKS ---- California Environmental Reporting System (CERS) Tanks

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
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
DOCKET HWC - Hazardous Waste Compliance Docket Listing
UXO - Unexploded Ordnance Sites
ECHO - Enforcement & Compliance History Information
FUELS PROGRAM - EPA Fuels Program Registered Listing
CA BOND EXP. PLAN - Bond Expenditure Plan
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
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)
HWTS - Hazardous Waste Tracking System
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

Lists of Federal RCRA generators

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 06/20/2022 has revealed that there is 1 RCRA-LQG site within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
INLAND EROSION CONTR EPA ID:: CAL000269879	33325 BAILY PARK BLV	NE 1/8 - 1/4 (0.215 mi.)	6	18

Lists of state- and tribal hazardous waste facilities

ENVIROSTOR: The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

A review of the ENVIROSTOR list, as provided by EDR, and dated 04/25/2022 has revealed that there is 1 ENVIROSTOR site within approximately 1 mile of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
MURIETTA HIGHLANDS P	***I-215/ANTELOPE ROAD/***	***SE 1/4 - 1/2 (0.464 mi.)***	***10***	***29***

Facility Id: 33010043
Status: No Action Required

Lists of state and tribal leaking storage tanks

LUST: Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

A review of the LUST list, as provided by EDR, has revealed that there are 3 LUST sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
BOURIS RANCH	33751 ZEIDER RD	SE 0 - 1/8 (0.046 mi.)	A1	9
Database: RIVERSIDE CO. LUST, Date of Government Version: 03/31/2022 Facility Status: 9 Facility Id: 9915244				
PRIVATE RESIDENCE	***PRIVATE RESIDENCE***	***SSE 0 - 1/8 (0.111 mi.)***	***3***	***10***
Database: LUST, Date of Government Version: 05/23/2022 Global Id: T0606500609 Status: Completed - Case Closed				
BOURIS RANCH	***33751 ZEIDERS***	***S 1/4 - 1/2 (0.288 mi.)***	***9***	***26***
Database: LUST REG 8, Date of Government Version: 02/14/2005 Facility Status: Case Closed Global ID: T0606500609				

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 04/18/2022 has revealed that there is 1 CERS HAZ WASTE site within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
CHANNELL COMMERCIAL	***33380 ZEIDERS RD***	***NNE 1/8 - 1/4 (0.248 mi.)***	***B8***	***23***

Local Lists of Registered Storage Tanks

HIST UST: Historical UST Registered Database.

A review of the HIST UST list, as provided by EDR, and dated 10/15/1990 has revealed that there is 1

HIST UST site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
BOURIS RANCHES Facility Id: 00000015248	33751 ZEIDERS RD	SE 0 - 1/8 (0.096 mi.)	A2	9

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 06/20/2022 has revealed that there are 3 RCRA NonGen / NLR sites within approximately 0.25 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
UNIVERSAL PIPELINE I EPA ID:: CAL000386418	33490 BAILEY PARK BL	ENE 1/8 - 1/4 (0.144 mi.)	4	13
MACKENZIE LANDSCAPE EPA ID:: CAL000283381	33380 BAILEY PARK BL	ENE 1/8 - 1/4 (0.177 mi.)	5	16
CHANNELL CORP EPA ID:: CAL000444898	33380 ZEIDERS RD	NNE 1/8 - 1/4 (0.248 mi.)	B7	21

Cortese: The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites).

A review of the Cortese list, as provided by EDR, and dated 06/21/2022 has revealed that there is 1 Cortese site within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
PRIVATE RESIDENCE Cleanup Status: COMPLETED - CASE CLOSED	***PRIVATE RESIDENCE***	***SSE 0 - 1/8 (0.111 mi.)***	***3***	***10***

HIST CORTESE: The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

A review of the HIST CORTESE list, as provided by EDR, and dated 04/01/2001 has revealed that there is 1 HIST CORTESE site within approximately 0.5 miles of the target property.

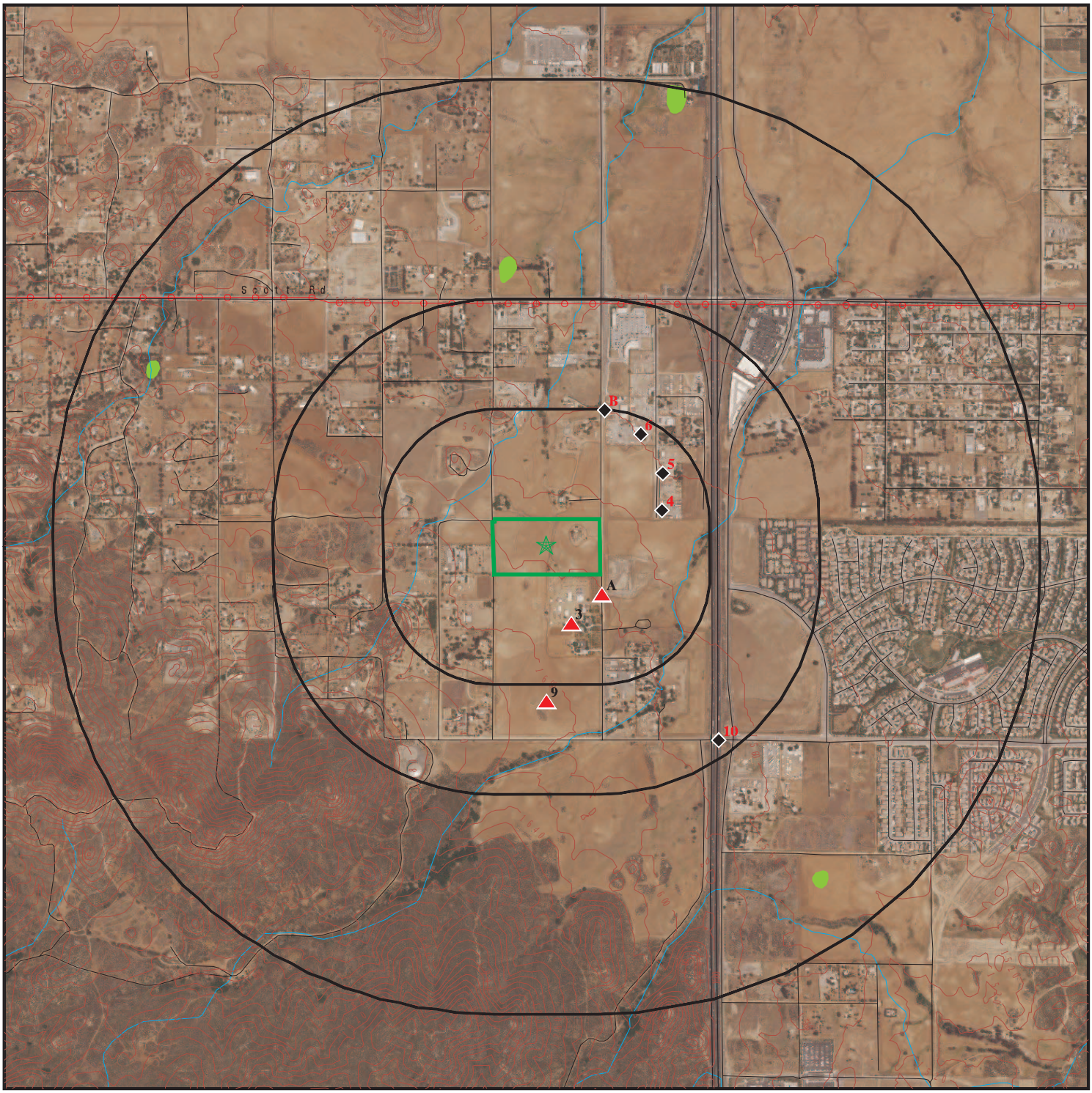
Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
BOURIS RANCH Reg Id: 083303550T	***33751 ZEIDERS***	***S 1/4 - 1/2 (0.288 mi.)***	***9***	***26***

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 3 records.

Site Name	Database(s)
ZEIDERS ROAD IMPROVEMENTS FOR COMM	CDL
PROPOSED ELEMENTARY SCHOOL NO. 15	FINDS, ECHO
	ENVIROSTOR, SCH

OVERVIEW MAP - 7114227.2S



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

0 1/4 1/2 1 Miles

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

N

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:	33521 Zeiders Road	CLIENT:	SCS Engineers
ADDRESS:	33521 Zeiders Road Menifee CA 92584	CONTACT:	Tyler Overton
		INQUIRY #:	7114227.2s
LAT/LONG:	33.633386 / 117.177813	DATE:	September 12, 2022 12:31 pm

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DETAIL MAP - 7114227.2S



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

0 1/16 1/8 1/4 Miles

Indian Reservations BIA

Special Flood Hazard Area (1%)

0.2% Annual Chance Flood Hazard

Areas of Concern

N

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:	33521 Zeiders Road	CLIENT:	SCS Engineers
ADDRESS:	33521 Zeiders Road Menifee CA 92584	CONTACT:	Tyler Overton
		INQUIRY #:	7114227.2s
LAT/LONG:	33.633386 / 117.177813	DATE:	September 12, 2022 12:32 pm

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MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Lists of Federal NPL (Superfund) sites								
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
Lists of Federal Delisted NPL sites								
Delisted NPL	1.000		0	0	0	0	NR	0
Lists of Federal sites subject to CERCLA removals and CERCLA orders								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Lists of Federal CERCLA sites with NFRAP								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Lists of Federal RCRA facilities undergoing Corrective Action								
CORRACTS	1.000		0	0	0	0	NR	0
Lists of Federal RCRA TSD facilities								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Lists of Federal RCRA generators								
RCRA-LQG	0.250		0	1	NR	NR	NR	1
RCRA-SQG	0.250		0	0	NR	NR	NR	0
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 CONTROLS	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	TP		NR	NR	NR	NR	NR	0
Lists of state- and tribal (Superfund) equivalent sites								
RESPONSE	1.000		0	0	0	0	NR	0
Lists of state- and tribal hazardous waste facilities								
ENVIROSTOR	1.000		0	0	1	0	NR	1
Lists of state and tribal landfills and solid waste disposal facilities								
SWF/LF	0.500		0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
Lists of state and tribal leaking storage tanks								
LUST	0.500		2	0	1	NR	NR	3
INDIAN LUST	0.500		0	0	0	NR	NR	0
CPS-SLIC	0.500		0	0	0	NR	NR	0
Lists of state and tribal registered storage tanks								
FEMA UST	0.250		0	0	NR	NR	NR	0
UST	0.250		0	0	NR	NR	NR	0
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
Lists of state and tribal voluntary cleanup sites								
INDIAN VCP	0.500		0	0	0	NR	NR	0
VCP	0.500		0	0	0	NR	NR	0
Lists of state and tribal brownfield 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
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
ODI	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
CERS HAZ WASTE	0.250		0	1	NR	NR	NR	1
Toxic Pits	1.000		0	0	0	0	NR	0
US CDL	TP		NR	NR	NR	NR	NR	0
PFAS	0.500		0	0	0	NR	NR	0
AQUEOUS FOAM	TP		NR	NR	NR	NR	NR	0
Local Lists of Registered Storage Tanks								
SWEEPS UST	0.250		0	0	NR	NR	NR	0
HIST UST	0.250		1	0	NR	NR	NR	1
CA FID UST	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
CERS TANKS	0.250		0	0	NR	NR	NR	0
Local Land Records								
LIENS	TP		NR	NR	NR	NR	NR	0
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		0	3	NR	NR	NR	3
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
DOCKET HWC	TP		NR	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0
ECHO	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
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		1	0	0	NR	NR	1
CUPA Listings	0.250		0	0	NR	NR	NR	0
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	1	NR	NR	1
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
HWTS	TP		NR	NR	NR	NR	NR	0
MINES MRDS	TP		NR	NR	NR	NR	NR	0
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	4	5	3	0	0	12

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

A1 **BOURIS RANCH** **LUST** **S105033590**
SE **33751 ZEIDER RD** **N/A**
< 1/8 **SUN CITY, CA**
0.046 mi.
241 ft. **Site 1 of 2 in cluster A**

Relative: RIVERSIDE CO. LUST:
Higher

Name:	BOURIS RANCH
Address:	33751 ZEIDER RD
City,State,Zip:	SUN CITY, CA
Region:	RIVERSIDE
Facility ID:	9915244
Employee:	Malloy
Site Closed:	Yes
Case Type:	Soil only
Facility Status:	closed/action completed
Casetype Decode:	Soil only is impacted
Fstatus Decode:	Closed/Action completed

Actual:
1581 ft.

A2 **BOURIS RANCHES** **HIST UST** **U001575607**
SE **33751 ZEIDERS RD** **N/A**
< 1/8 **SUN CITY, CA 92381**
0.096 mi.
507 ft. **Site 2 of 2 in cluster A**

Relative: HIST UST:
Higher

Name:	BOURIS RANCHES
Address:	33751 ZEIDERS RD
City,State,Zip:	SUN CITY, CA 92381
File Number:	0001F449
URL:	http://geotracker.waterboards.ca.gov/ustpdfs/pdf/0001F449.pdf
Region:	STATE
Facility ID:	00000015248
Facility Type:	Other
Other Type:	FARM
Contact Name:	FARM
Telephone:	7146791009
Owner Name:	BOURIS RANCHES
Owner Address:	33751 ZEIDERS RD
Owner City,St,Zip:	SUN CITY, CA 92381
Total Tanks:	0004
Tank Num:	001
Container Num:	1
Year Installed:	1978
Tank Capacity:	00004500
Tank Used for:	PRODUCT
Type of Fuel:	DIESEL
Container Construction Thickness:	Not reported
Leak Detection:	Visual
Tank Num:	002
Container Num:	2
Year Installed:	1974
Tank Capacity:	00003000
Tank Used for:	PRODUCT
Type of Fuel:	UNLEADED
Container Construction Thickness:	Not reported
Leak Detection:	Visual

Actual:
1585 ft.

BOURIS RANCHES (Continued) **U001575607**

Tank Num: 003
Container Num: 3
Year Installed: 1974
Tank Capacity: 00006500
Tank Used for: PRODUCT
Type of Fuel: DIESEL
Container Construction Thickness: Not reported
Leak Detection: Visual

Tank Num: 004
Container Num: 4
Year Installed: 1982
Tank Capacity: 00000500
Tank Used for: WASTE
Type of Fuel: WASTE OIL
Container Construction Thickness: Not reported
Leak Detection: Visual

Click here for Geo Tracker PDF:

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3 **PRIVATE RESIDENCE** **LUST** **S110654927**
SSE **PRIVATE RESIDENCE** **Cortese** **N/A**
< 1/8 **SUN CITY, CA 92584** **CERS**
0.111 mi.
586 ft.

Relative:
Higher

Actual:
1589 ft.

LUST:
Name: PRIVATE RESIDENCE
Address: PRIVATE RESIDENCE
City,State,Zip: SUN CITY, CA 92584
Lead Agency: RIVERSIDE COUNTY LOP
Case Type: LUST Cleanup Site
Geo Track: http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0606500609
Global Id: T0606500609
Latitude: 33.6308588792708
Longitude: -117.176815040337
Status: Completed - Case Closed
Status Date: 01/28/2000
Case Worker: SCB
RB Case Number: 083303550T
Local Agency: RIVERSIDE COUNTY LOP
File Location: Local Agency Warehouse
Local Case Number: 9915244
Potential Media Affect: Soil
Potential Contaminants of Concern: Diesel
Site History: Not reported

LUST:
Global Id: T0606500609
Contact Type: Regional Board Caseworker
Contact Name: MIGUEL OVIEDO
Organization Name: SANTA ANA RWQCB (REGION 8)
Address: 3737 Main Street, Suite 500
City: RIVERSIDE
Email: miguel.oviedo@waterboards.ca.gov
Phone Number: 9517823238

Global Id: T0606500609

PRIVATE RESIDENCE (Continued) **S110654927**

Contact Type: Local Agency Caseworker
Contact Name: SHARON BOLTINGHOUSE
Organization Name: RIVERSIDE COUNTY LOP
Address: 3880 LEMON ST SUITE 200
City: RIVERSIDE
Email: sbolting@rivco.org
Phone Number: 9519558980

LUST:
Global Id: T0606500609
Action Type: ENFORCEMENT
Date: 01/27/2000
Action: File review - #RCDEH Upload Site File 7/10/2015

Global Id: T0606500609
Action Type: Other
Date: 05/21/1999
Action: Leak Reported

Global Id: T0606500609
Action Type: REMEDIATION
Date: 07/06/1999
Action: Excavation

Global Id: T0606500609
Action Type: Other
Date: 04/13/1999
Action: Leak Stopped

Global Id: T0606500609
Action Type: ENFORCEMENT
Date: 01/28/2000
Action: Closure/No Further Action Letter - #RCDEH0128

Global Id: T0606500609
Action Type: Other
Date: 05/21/1999
Action: Leak Discovery

LUST:
Global Id: T0606500609
Status: Open - Case Begin Date
Status Date: 04/13/1999

Global Id: T0606500609
Status: Open - Site Assessment
Status Date: 05/21/1999

Global Id: T0606500609
Status: Open - Remediation
Status Date: 07/06/1999

Global Id: T0606500609
Status: Completed - Case Closed
Status Date: 01/28/2000

PRIVATE RESIDENCE (Continued) **S110654927**

CORTESE:

Name:	PRIVATE RESIDENCE
Address:	PRIVATE RESIDENCE
City,State,Zip:	SUN CITY, CA 92584
Region:	CORTESE
Envirostor Id:	Not reported
Global ID:	T0606500609
Site/Facility Type:	LUST CLEANUP SITE
Cleanup Status:	COMPLETED - CASE CLOSED
Status Date:	Not reported
Site Code:	Not reported
Latitude:	Not reported
Longitude:	Not reported
Owner:	Not reported
Enf Type:	Not reported
Swat R:	Not reported
Flag:	active
Order No:	Not reported
Waste Discharge System No:	Not reported
Effective Date:	Not reported
Region 2:	Not reported
WID Id:	Not reported
Solid Waste Id No:	Not reported
Waste Management Uit Name:	Not reported
File Name:	Active Open

CERS:

Name:	PRIVATE RESIDENCE
Address:	PRIVATE RESIDENCE
City,State,Zip:	SUN CITY, CA 92584
Site ID:	223877
CERS ID:	T0606500609
CERS Description:	Leaking Underground Storage Tank Cleanup Site

Affiliation:

Affiliation Type Desc:	Regional Board Caseworker
Entity Name:	MIGUEL OVIEDO - SANTA ANA RWQCB (REGION 8)
Entity Title:	Not reported
Affiliation Address:	3737 Main Street, Suite 500
Affiliation City:	RIVERSIDE
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	9517823238,

Affiliation Type Desc:	Local Agency Caseworker
Entity Name:	SHARON BOLTINGHOUSE - RIVERSIDE COUNTY LOP
Entity Title:	Not reported
Affiliation Address:	3880 LEMON ST SUITE 200
Affiliation City:	RIVERSIDE
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	9519558980,

4
ENE
1/8-1/4
0.144 mi.
758 ft.

UNIVERSAL PIPELINE INC
33490 BAILEY PARK BLVD
MENIFEE, CA 92584

RCRA NonGen / NLR

1024838940
CAL000386418

Relative:
Lower

Actual:
1548 ft.

RCRA NonGen / NLR:

Date Form Received by Agency:		20200417
Handler Name:	UNIVERSAL PIPELINE INC	
Handler Address:		33490 BAILEY PARK BLVD
Handler City,State,Zip:		MENIFEE, CA 92584
EPA ID:		CAL000386418
Contact Name:		MARK WILSON
Contact Address:		HWY 74
Contact City,State,Zip:		PERRIS, CA 92570
Contact Telephone:		951-461-9318
Contact Fax:		951-461-9328
Contact Email:		UNPIPELINE@VERIZON.NET
Contact Title:		OWNER
EPA Region:		09
Land Type:		Private
Federal Waste Generator Description:		Not a generator, verified
Non-Notifier:		Not reported
Biennial Report Cycle:		Not reported
Accessibility:		Not reported
Active Site Indicator:		Not reported
State District Owner:		Not reported
State District:		Not reported
Mailing Address:		HWY 74
Mailing City,State,Zip:		PERRIS, CA 92570
Owner Name:	Not reported	
Owner Type:		Not reported
Operator Name:	UNIVERSAL PIPELINE INC	
Operator Type:		Private
Short-Term Generator Activity:		No
Importer Activity:		No
Mixed Waste Generator:		No
Transporter Activity:		No
Transfer Facility Activity:		No
Recycler Activity with Storage:		No
Small Quantity On-Site Burner Exemption:		No
Smelting Melting and Refining Furnace Exemption:		No
Underground Injection Control:		No
Off-Site Waste Receipt:		No
Universal Waste Indicator:		No
Universal Waste Destination Facility:		No
Federal Universal Waste:		No
Active Site Fed-Reg Treatment Storage and Disposal Facility:		Not reported
Active Site Converter Treatment storage and Disposal Facility:		Not reported
Active Site State-Reg Treatment Storage and Disposal Facility:		Not reported
Active Site State-Reg Handler:		---
Federal Facility Indicator:		Not reported
Hazardous Secondary Material Indicator:		N
Sub-Part K Indicator:		Not reported
Commercial TSD Indicator:		No
Treatment Storage and Disposal Type:		Not reported
2018 GPRA Permit Baseline:		Not on the Baseline
2018 GPRA Renewals Baseline:		Not on the Baseline
Permit Renewals Workload Universe:		Not reported

UNIVERSAL PIPELINE INC (Continued) **1024838940**

Permit Workload Universe:	Not reported
Permit Progress Universe:	Not reported
Post-Closure Workload Universe:	Not reported
Closure Workload Universe:	Not reported
202 GPRA Corrective Action Baseline:	No
Corrective Action Workload Universe:	No
Subject to Corrective Action Universe:	No
Non-TSDFs Where RCRA CA has Been Imposed Universe:	No
TSDFs Potentially Subject to CA Under 3004 (u)/(v) Universe:	No
TSDFs Only Subject to CA under Discretionary Auth Universe:	No
Corrective Action Priority Ranking:	No NCAPS ranking
Environmental Control Indicator:	No
Institutional Control Indicator:	No
Human Exposure Controls Indicator:	N/A
Groundwater Controls Indicator:	N/A
Operating TSDF Universe:	Not reported
Full Enforcement Universe:	Not reported
Significant Non-Complier Universe:	No
Unaddressed Significant Non-Complier Universe:	No
Addressed Significant Non-Complier Universe:	No
Significant Non-Complier With a Compliance Schedule Universe:	No
Financial Assurance Required:	Not reported
Handler Date of Last Change:	20200422
Recognized Trader-Importer:	No
Recognized Trader-Exporter:	No
Importer of Spent Lead Acid Batteries:	No
Exporter of Spent Lead Acid Batteries:	No
Recycler Activity Without Storage:	No
Manifest Broker:	No
Sub-Part P Indicator:	No

Handler - Owner Operator:

Owner/Operator Indicator:	Operator
Owner/Operator Name: UNIVERSAL PIPELINE INC	
Legal Status:	Private
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	24791 HWY 74
Owner/Operator City,State,Zip:	PERRIS, CA 92570
Owner/Operator Telephone:	951-461-9318
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	951-461-9328
Owner/Operator Email:	UPIPELINE@VERIZON.NET

Owner/Operator Indicator:	Operator
Owner/Operator Name: MARK WILSON	
Legal Status:	Other
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	33490 BAILEY PARK BLVD
Owner/Operator City,State,Zip:	MENIFEE, CA 92584
Owner/Operator Telephone:	951-461-9318
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

UNIVERSAL PIPELINE INC (Continued) **1024838940**

Owner/Operator Indicator: Owner
Owner/Operator Name: UNIVERSAL PIPELINE INC
Legal Status: Other
Date Became Current: Not reported
Date Ended Current: Not reported
Owner/Operator Address: 33490 BAILEY PARK BLVD
Owner/Operator City,State,Zip: MENIFEE, CA 92584
Owner/Operator Telephone: 951-461-9318
Owner/Operator Telephone Ext: Not reported
Owner/Operator Fax: Not reported
Owner/Operator Email: Not reported

Historic Generators:
Receive Date: 20200417
Handler Name: UNIVERSAL PIPELINE INC
Federal Waste Generator Description: Not a generator, verified
State District Owner: Not reported
Large Quantity Handler of Universal Waste: No
Recognized Trader Importer: No
Recognized Trader Exporter: No
Spent Lead Acid Battery Importer: No
Spent Lead Acid Battery Exporter: No
Current Record: Yes
Non Storage Recycler Activity: No
Electronic Manifest Broker: No

Receive Date: 20130620
Handler Name: UNIVERSAL PIPELINE INC
Federal Waste Generator Description: Not a generator, verified
State District Owner: Not reported
Large Quantity Handler of Universal Waste: No
Recognized Trader Importer: No
Recognized Trader Exporter: No
Spent Lead Acid Battery Importer: No
Spent Lead Acid Battery Exporter: No
Current Record: No
Non Storage Recycler Activity: Not reported
Electronic Manifest Broker: Not reported

List of NAICS Codes and Descriptions:
NAICS Code: 23492
NAICS Description: POWER AND COMMUNICATION TRANSMISSION LINE CONSTRUCTION

NAICS Code: 237130
NAICS Description: POWER AND COMMUNICATION LINE AND RELATED STRUCTURES CONSTRUCTION

Facility Has Received Notices of Violations:
Violations: No Violations Found

Evaluation Action Summary:
Evaluations: No Evaluations Found

5
ENE
1/8-1/4
0.177 mi.
936 ft.

MACKENZIE LANDSCAPE INC
33380 BAILEY PARK BLVD
MENIFEE, CA 92584

RCRA NonGen / NLR

1024809190
CAL000283381

Relative:
Lower

Actual:
1540 ft.

RCRA NonGen / NLR:

Date Form Received by Agency:	20040624
Handler Name:	MACKENZIE LANDSCAPE INC
Handler Address:	33380 BAILEY PARK BLVD
Handler City,State,Zip:	MENIFEE, CA 92584-9585
EPA ID:	CAL000283381
Contact Name:	MICHAEL MACKENZIE
Contact Address:	33380 BAILEY PARK BLVD
Contact City,State,Zip:	MENIFEE, CA 92584
Contact Telephone:	951-679-5477
Contact Fax:	951-679-1687
Contact Email:	GUDRUN@MACKENZIELANDSCAPE.COM
Contact Title:	Not reported
EPA Region:	09
Land Type:	Not reported
Federal Waste Generator Description:	Not a generator, verified
Non-Notifier:	Not reported
Biennial Report Cycle:	Not reported
Accessibility:	Not reported
Active Site Indicator:	Handler Activities
State District Owner:	Not reported
State District:	Not reported
Mailing Address:	33380 BAILEY PARK BLVD
Mailing City,State,Zip:	MENIFEE, CA 92584-9585
Owner Name:	MAC KENZIE LANDSCAPES INC
Owner Type:	Other
Operator Name:	MICHAEL MACKENZIE
Operator Type:	Other
Short-Term Generator Activity:	No
Importer Activity:	No
Mixed Waste Generator:	No
Transporter Activity:	No
Transfer Facility Activity:	No
Recycler Activity with Storage:	No
Small Quantity On-Site Burner Exemption:	No
Smelting Melting and Refining Furnace Exemption:	No
Underground Injection Control:	No
Off-Site Waste Receipt:	No
Universal Waste Indicator:	Yes
Universal Waste Destination Facility:	Yes
Federal Universal Waste:	No
Active Site Fed-Reg Treatment Storage and Disposal Facility:	Not reported
Active Site Converter Treatment storage and Disposal Facility:	Not reported
Active Site State-Reg Treatment Storage and Disposal Facility:	Not reported
Active Site State-Reg Handler:	---
Federal Facility Indicator:	Not reported
Hazardous Secondary Material Indicator:	N
Sub-Part K Indicator:	Not reported
Commercial TSD Indicator:	No
Treatment Storage and Disposal Type:	Not reported
2018 GPRA Permit Baseline:	Not on the Baseline
2018 GPRA Renewals Baseline:	Not on the Baseline
Permit Renewals Workload Universe:	Not reported

MACKENZIE LANDSCAPE INC (Continued) **1024809190**

Permit Workload Universe:	Not reported
Permit Progress Universe:	Not reported
Post-Closure Workload Universe:	Not reported
Closure Workload Universe:	Not reported
202 GPRA Corrective Action Baseline:	No
Corrective Action Workload Universe:	No
Subject to Corrective Action Universe:	No
Non-TSDFs Where RCRA CA has Been Imposed Universe:	No
TSDFs Potentially Subject to CA Under 3004 (u)/(v) Universe:	No
TSDFs Only Subject to CA under Discretionary Auth Universe:	No
Corrective Action Priority Ranking:	No NCAPS ranking
Environmental Control Indicator:	No
Institutional Control Indicator:	No
Human Exposure Controls Indicator:	N/A
Groundwater Controls Indicator:	N/A
Operating TSDF Universe:	Not reported
Full Enforcement Universe:	Not reported
Significant Non-Complier Universe:	No
Unaddressed Significant Non-Complier Universe:	No
Addressed Significant Non-Complier Universe:	No
Significant Non-Complier With a Compliance Schedule Universe:	No
Financial Assurance Required:	Not reported
Handler Date of Last Change:	20180905
Recognized Trader-Importer:	No
Recognized Trader-Exporter:	No
Importer of Spent Lead Acid Batteries:	No
Exporter of Spent Lead Acid Batteries:	No
Recycler Activity Without Storage:	No
Manifest Broker:	No
Sub-Part P Indicator:	No

Handler - Owner Operator:

Owner/Operator Indicator:	Operator
Owner/Operator Name: MICHAEL MACKENZIE	
Legal Status:	Other
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	33380 BAILEY PARK BLVD
Owner/Operator City,State,Zip:	MENIFEE, CA 92584
Owner/Operator Telephone:	951-679-5477
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Owner/Operator Indicator:	Owner
Owner/Operator Name: MAC KENZIE LANDSCAPES INC	
Legal Status:	Other
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	33380 BAILEY PARK BLVD
Owner/Operator City,State,Zip:	MENIFEE, CA 92584-9585
Owner/Operator Telephone:	951-679-5477
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

MACKENZIE LANDSCAPE INC (Continued) **1024809190**

Historic Generators:
- Receive Date: 20040624
- Handler Name: MACKENZIE LANDSCAPE INC
- Federal Waste Generator Description: Not a generator, verified
- State District Owner: Not reported
- Large Quantity Handler of Universal Waste: No
- Recognized Trader Importer: No
- Recognized Trader Exporter: No
- Spent Lead Acid Battery Importer: No
- Spent Lead Acid Battery Exporter: No
- Current Record: Yes
- Non Storage Recycler Activity: Not reported
- Electronic Manifest Broker: Not reported

List of NAICS Codes and Descriptions:
- NAICS Code: 54132
- NAICS Description: LANDSCAPE ARCHITECTURAL SERVICES

Facility Has Received Notices of Violations:
- Violations: No Violations Found

Evaluation Action Summary:
- Evaluations: No Evaluations Found

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6 **INLAND EROSION CONTROL SERVICES INC** **RCRA-LQG** **1012175691**
NE **33325 BAILY PARK BLVD** **CAL000269879**
1/8-1/4 **MENIFEE, CA 92584**
0.215 mi.
1133 ft.

Relative: **Lower**

Actual: **1538 ft.**

RCRA-LQG:
- Date Form Received by Agency: 20080630
- Handler Name: INLAND EROSION CONTROL SERVICES INC
- Handler Address: 33325 BAILY PARK BLVD
- Handler City,State,Zip: MENIFEE, CA 92584
- EPA ID: CAL000269879
- Contact Name: JAMES D WILSON
- Contact Address: Not reported
- Contact City,State,Zip: Not reported
- Contact Telephone: 951-301-8334
- Contact Fax: Not reported
- Contact Email: NAMES@INLANDEROSION.COM
- Contact Title: Not reported
- EPA Region: 09
- Land Type: Private
- Federal Waste Generator Description: Large Quantity Generator
- Non-Notifier: Not reported
- Biennial Report Cycle: 2007
- Accessibility: Not reported
- Active Site Indicator: Handler Activities
- State District Owner: Not reported
- State District: Not reported
- Mailing Address: P.O. BOX 2340
- Mailing City,State,Zip: SUN CITY, CA 92586
- Owner Name: CARLOS GARCIA

INLAND EROSION CONTROL SERVICES INC (Continued) **1012175691**

Owner Type:	Private
Operator Name:	INLAND EROSION CONTROL
Operator Type:	Private
Short-Term Generator Activity:	No
Importer Activity:	No
Mixed Waste Generator:	No
Transporter Activity:	No
Transfer Facility Activity:	No
Recycler Activity with Storage:	No
Small Quantity On-Site Burner Exemption:	No
Smelting Melting and Refining Furnace Exemption:	No
Underground Injection Control:	No
Off-Site Waste Receipt:	No
Universal Waste Indicator:	No
Universal Waste Destination Facility:	No
Federal Universal Waste:	No
Active Site Fed-Reg Treatment Storage and Disposal Facility:	Not reported
Active Site Converter Treatment storage and Disposal Facility:	Not reported
Active Site State-Reg Treatment Storage and Disposal Facility:	Not reported
Active Site State-Reg Handler:	---
Federal Facility Indicator:	Not reported
Hazardous Secondary Material Indicator:	NN
Sub-Part K Indicator:	Not reported
Commercial TSD Indicator:	No
Treatment Storage and Disposal Type:	Not reported
2018 GPRA Permit Baseline:	Not on the Baseline
2018 GPRA Renewals Baseline:	Not on the Baseline
Permit Renewals Workload Universe:	Not reported
Permit Workload Universe:	Not reported
Permit Progress Universe:	Not reported
Post-Closure Workload Universe:	Not reported
Closure Workload Universe:	Not reported
202 GPRA Corrective Action Baseline:	No
Corrective Action Workload Universe:	No
Subject to Corrective Action Universe:	No
Non-TSDFs Where RCRA CA has Been Imposed Universe:	No
TSDFs Potentially Subject to CA Under 3004 (u)/(v) Universe:	No
TSDFs Only Subject to CA under Discretionary Auth Universe:	No
Corrective Action Priority Ranking:	No NCAPS ranking
Environmental Control Indicator:	No
Institutional Control Indicator:	No
Human Exposure Controls Indicator:	N/A
Groundwater Controls Indicator:	N/A
Operating TSDF Universe:	Not reported
Full Enforcement Universe:	Not reported
Significant Non-Complier Universe:	No
Unaddressed Significant Non-Complier Universe:	No
Addressed Significant Non-Complier Universe:	No
Significant Non-Complier With a Compliance Schedule Universe:	No
Financial Assurance Required:	Not reported
Handler Date of Last Change:	20081015
Recognized Trader-Importer:	No
Recognized Trader-Exporter:	No
Importer of Spent Lead Acid Batteries:	No
Exporter of Spent Lead Acid Batteries:	No
Recycler Activity Without Storage:	Not reported
Manifest Broker:	Not reported

INLAND EROSION CONTROL SERVICES INC (Continued) **1012175691**

Sub-Part P Indicator: No

Biennial: List of Years
Year: 2007

Click Here for Biennial Reporting System Data:

Hazardous Waste Summary:
Waste Code: D002
Waste Description: CORROSIVE WASTE

Handler - Owner Operator:
Owner/Operator Indicator: Owner
Owner/Operator Name: CARLOS GARCIA
Legal Status: Private
Date Became Current: 20030501
Date Ended Current: Not reported
Owner/Operator Address: 33325 BAILY PARK BLVD
Owner/Operator City,State,Zip: MENIFEE, CA 92584
Owner/Operator Telephone: Not reported
Owner/Operator Telephone Ext: Not reported
Owner/Operator Fax: Not reported
Owner/Operator Email: Not reported

Owner/Operator Indicator: Operator
Owner/Operator Name: INLAND EROSION CONTROL
Legal Status: Private
Date Became Current: 20030501
Date Ended Current: Not reported
Owner/Operator Address: Not reported
Owner/Operator City,State,Zip: Not reported
Owner/Operator Telephone: Not reported
Owner/Operator Telephone Ext: Not reported
Owner/Operator Fax: Not reported
Owner/Operator Email: Not reported

Historic Generators:
Receive Date: 20080630
Handler Name: INLAND EROSION CONTROL SERVICES INC
Federal Waste Generator Description: Large Quantity Generator
State District Owner: Not reported
Large Quantity Handler of Universal Waste: No
Recognized Trader Importer: No
Recognized Trader Exporter: No
Spent Lead Acid Battery Importer: No
Spent Lead Acid Battery Exporter: No
Current Record: Yes
Non Storage Recycler Activity: Not reported
Electronic Manifest Broker: Not reported

List of NAICS Codes and Descriptions:
NAICS Code: 56173
NAICS Description: LANDSCAPING SERVICES

INLAND EROSION CONTROL SERVICES INC (Continued) **1012175691**

Facility Has Received Notices of Violations:
Violations: No Violations Found

Evaluation Action Summary:
Evaluations: No Evaluations Found

B7 **CHANNELL CORP** **RCRA NonGen / NLR** **1025871781**
NNE **33380 ZEIDERS RD** **CAL000444898**
1/8-1/4 **MENIFEE, CA 92584**
0.248 mi.
1308 ft. **Site 1 of 2 in cluster B**

Relative: **Lower**
Actual: **1540 ft.**

RCRA NonGen / NLR:

Date Form Received by Agency:		20190328
Handler Name:	CHANNELL CORP	
Handler Address:		33380 ZEIDERS RD
Handler City,State,Zip:		MENIFEE, CA 92584
EPA ID:		CAL000444898
Contact Name:		DAVID HARDWICK
Contact Address:		33380 ZEIDERS RD
Contact City,State,Zip:		MENIFEE, CA 92584
Contact Telephone:		951-265-5576
Contact Fax:		951-296-2333
Contact Email:		DHARDWICK@CHANNELL.COM
Contact Title:		Not reported
EPA Region:		09
Land Type:		Not reported
Federal Waste Generator Description:		Not a generator, verified
Non-Notifier:		Not reported
Biennial Report Cycle:		Not reported
Accessibility:		Not reported
Active Site Indicator:		Handler Activities
State District Owner:		Not reported
State District:		Not reported
Mailing Address:		PO BOX 9022
Mailing City,State,Zip:		TEMECULA, CA 92589
Owner Name:	WILLIAM H CHANNELL	
Owner Type:		Other
Operator Name:	DAVID HARDWICK	
Operator Type:		Other
Short-Term Generator Activity:		No
Importer Activity:		No
Mixed Waste Generator:		No
Transporter Activity:		No
Transfer Facility Activity:		No
Recycler Activity with Storage:		Yes
Small Quantity On-Site Burner Exemption:		No
Smelting Melting and Refining Furnace Exemption:		No
Underground Injection Control:		No
Off-Site Waste Receipt:		No
Universal Waste Indicator:		Yes
Universal Waste Destination Facility:		Yes
Federal Universal Waste:		No
Active Site Fed-Reg Treatment Storage and Disposal Facility:		Not reported
Active Site Converter Treatment storage and Disposal Facility:		Not reported
Active Site State-Reg Treatment Storage and Disposal Facility:		Not reported

CHANNELL CORP (Continued) **1025871781**

Active Site State-Reg Handler:	---
Federal Facility Indicator:	Not reported
Hazardous Secondary Material Indicator:	N
Sub-Part K Indicator:	Not reported
Commercial TSD Indicator:	No
Treatment Storage and Disposal Type:	Not reported
2018 GPRA Permit Baseline:	Not on the Baseline
2018 GPRA Renewals Baseline:	Not on the Baseline
Permit Renewals Workload Universe:	Not reported
Permit Workload Universe:	Not reported
Permit Progress Universe:	Not reported
Post-Closure Workload Universe:	Not reported
Closure Workload Universe:	Not reported
202 GPRA Corrective Action Baseline:	No
Corrective Action Workload Universe:	No
Subject to Corrective Action Universe:	No
Non-TSDFs Where RCRA CA has Been Imposed Universe:	No
TSDFs Potentially Subject to CA Under 3004 (u)/(v) Universe:	No
TSDFs Only Subject to CA under Discretionary Auth Universe:	No
Corrective Action Priority Ranking:	No NCAPS ranking
Environmental Control Indicator:	No
Institutional Control Indicator:	No
Human Exposure Controls Indicator:	N/A
Groundwater Controls Indicator:	N/A
Operating TSDF Universe:	Not reported
Full Enforcement Universe:	Not reported
Significant Non-Complier Universe:	No
Unaddressed Significant Non-Complier Universe:	No
Addressed Significant Non-Complier Universe:	No
Significant Non-Complier With a Compliance Schedule Universe:	No
Financial Assurance Required:	Not reported
Handler Date of Last Change:	20190628
Recognized Trader-Importer:	No
Recognized Trader-Exporter:	No
Importer of Spent Lead Acid Batteries:	No
Exporter of Spent Lead Acid Batteries:	No
Recycler Activity Without Storage:	No
Manifest Broker:	No
Sub-Part P Indicator:	No

Handler - Owner Operator:

Owner/Operator Indicator:	Owner
Owner/Operator Name: WILLIAM H CHANNELL	
Legal Status:	Other
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	33380 ZEIDERS RD
Owner/Operator City,State,Zip:	MENIFEE, CA 92584
Owner/Operator Telephone:	951-719-2600
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported
Owner/Operator Indicator:	Operator
Owner/Operator Name: DAVID HARDWICK	
Legal Status:	Other

CHANNELL CORP (Continued) **1025871781**

Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	33380 ZEIDERS RD
Owner/Operator City,State,Zip:	MENIFEE, CA 92584
Owner/Operator Telephone:	951-265-5576
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Historic Generators:

Receive Date:	20190328
Handler Name: CHANNELL CORP	
Federal Waste Generator Description:	Not a generator, verified
State District Owner:	Not reported
Large Quantity Handler of Universal Waste:	No
Recognized Trader Importer:	No
Recognized Trader Exporter:	No
Spent Lead Acid Battery Importer:	No
Spent Lead Acid Battery Exporter:	No
Current Record:	Yes
Non Storage Recycler Activity:	Not reported
Electronic Manifest Broker:	Not reported

List of NAICS Codes and Descriptions:

NAICS Code:	334418
NAICS Description:	PRINTED CIRCUIT ASSEMBLY (ELECTRONIC ASSEMBLY) MANUFACTURING

Facility Has Received Notices of Violations:

Violations:	No Violations Found

Evaluation Action Summary:

Evaluations:	No Evaluations Found

B8 **CHANNELL COMMERCIAL CORP** **CERS HAZ WASTE** **S124438554**
NNE **33380 ZEIDERS RD** **CERS** **N/A**
1/8-1/4 **MENIFEE, CA 92584**
0.248 mi.
1308 ft. **Site 2 of 2 in cluster B**

Relative:
Lower

Actual:
1540 ft.

CERS HAZ WASTE:

Name:	CHANNELL COMMERCIAL CORP
Address:	33380 ZEIDERS RD
City,State,Zip:	MENIFEE, CA 92584
Site ID:	523434
CERS ID:	10804780
CERS Description:	Hazardous Waste Generator

CERS:

Name:	CHANNELL COMMERCIAL CORP
Address:	33380 ZEIDERS RD
City,State,Zip:	MENIFEE, CA 92584
Site ID:	523434
CERS ID:	10804780
CERS Description:	Chemical Storage Facilities

CHANNELL COMMERCIAL CORP (Continued) **S124438554**

Violations:

Site ID:	523434
Site Name:	Channell Commercial Corp
Violation Date:	08-13-2020
Citation:	22 CCR 12 66262.40(a) - California Code of Regulations, Title 22, Chapter 12, Section(s) 66262.40(a)
Violation Description:	Failure to keep a copy of each properly signed manifest for at least three years from the date the waste was accepted by the initial transporter. The manifest signed at the time the waste was accepted for transport shall be kept until receiving a signed copy from the designated facility which received the waste.
Violation Notes:	Returned to compliance on 09/11/2020. OBSERVATION: Waste manifests were not able to be located at the time of the inspection and were therefore unable to be reviewed. CORRECTIVE ACTION: Owner/operator shall obtain all manifests for hazardous waste shipments which occurred in the past 3 years. Manifests shall be made available for inspection. *Send waste manifests to kgill@rivco.org to correct this violation.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HW
Violation Source:	CERS,

Site ID:	523434
Site Name:	Channell Commercial Corp
Violation Date:	08-13-2020
Citation:	Un-Specified
Violation Description:	Business Plan Program - Operations/Maintenance - General Local Ordinance
Violation Notes:	Returned to compliance on 09/11/2020. OBSERVATION: The facility is missing NFPA-704 signs on the entrance to the maintenance building/warehouse and on the cage where propane cylinders are stored. CORRECTIVE ACTION: Owner/operator shall research chemical safety data sheets and post proper NFPA-704 signs. Signs shall be posted on the entrance to the maintenance/warehouse building and on the propane cage. The sign on the propane cage shall contain only the ratings for propane (1 in blue, 4 in red, 0 in yellow, blank in the white section), and the sign for the maintenance/warehouse building shall contain the ratings which show the hazards of each material stored inside. Review the SDS for each material and use the highest rating in each category for the sign. *Send pictures of the posted signs to kgill@rivco.org to correct this violation.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HMRRP
Violation Source:	CERS,

Evaluation:

Eval General Type:	Compliance Evaluation Inspection
Eval Date:	08-13-2020
Violations Found:	Yes
Eval Type:	Routine done by local agency
Eval Notes:	Facility manufactures telecommunications equipment. Hazardous materials onsite consist of compressed gases (oxygen, carbon dioxide, acetylene, argon, and nitrogen), oil, and propane.
Eval Division:	Riverside County Department of Env Health
Eval Program:	HMRRP
Eval Source:	CERS,

CHANNELL COMMERCIAL CORP (Continued) **S124438554**

Eval General Type: Compliance Evaluation Inspection
Eval Date: 08-13-2020
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Facility manufactures telecommunications equipment. Hazardous wastes generated onsite consist of waste oil, solid waste (spent absorbent and pads), and soiled rags. NOTE: Because waste manifests were not able to be reviewed at the time of inspection, items on this report related to use of a licensed hauler, disposal of waste at an authorized location, etc. are marked as "N/A", as they cannot be determined at this time. When manifests are received and reviewed, compliance with these items will be verified. NOTE: #48 - Ensure that a copy of each waste manifest is sent to The Department of Toxic Substances Control (DTSC). Their hazardous waste tracking system currently shows zero waste manifests for this facility, but it cannot be determined if that is because manifests are not being sent to DTSC or if DTSC is simply behind on entering manifests into the system.
Eval Division: Riverside County Department of Env Health
Eval Program: HW
Eval Source: CERS,

Affiliation:
Affiliation Type Desc: CUPA District
Entity Name: Riverside Cnty Env Health
Entity Title: Not reported
Affiliation Address: 4065 County Circle Drive, Room 104
Affiliation City: Riverside
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 92503
Affiliation Phone: (951) 358-5055,

Affiliation Type Desc: Document Preparer
Entity Name: Kolby Williams
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: ,

Affiliation Type Desc: Legal Owner
Entity Name: Williams H Channell Jr
Entity Title: Not reported
Affiliation Address: PO Box 9022
Affiliation City: Temecula
Affiliation State: CA
Affiliation Country: United States
Affiliation Zip: 92589
Affiliation Phone: (951) 719-2600,

Affiliation Type Desc: Operator
Entity Name: William H Channell Jr
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported

CHANNELL COMMERCIAL CORP (Continued) **S124438554**

Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: (951) 719-2600,

Affiliation Type Desc: Parent Corporation
Entity Name: Channell Commercial Corp
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: ,

Affiliation Type Desc: Facility Mailing Address
Entity Name: Mailing Address
Entity Title: Not reported
Affiliation Address: PO Box 9022
Affiliation City: Temecula
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 92589
Affiliation Phone: ,

Affiliation Type Desc: Environmental Contact
Entity Name: Kolby Williams
Entity Title: Not reported
Affiliation Address: 1700 Justin Road
Affiliation City: Rockwall
Affiliation State: TX
Affiliation Country: Not reported
Affiliation Zip: 75087
Affiliation Phone: ,

Affiliation Type Desc: Identification Signer
Entity Name: Ed Burke
Entity Title: Chief Technical Officer
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: ,

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9 **BOURIS RANCH** **LUST** **S101619416**
South **33751 ZEIDERS** **SWEEPS UST** **N/A**
1/4-1/2 **SUN CITY, CA 92584** **CA FID UST**
0.288 mi. **HIST CORTESE**
1522 ft.

Relative: LUST REG 8:
Higher
Name: BOURIS RANCH
Actual: Address: 33751 ZEIDERS
1605 ft. City: SUN CITY
Region: 8
County: Riverside

BOURIS RANCH (Continued) **S101619416**

Regional Board:	Santa Ana Region
Facility Status:	Case Closed
Case Number:	083303550T
Local Case Num:	99-15244
Case Type:	Soil only
Substance:	Diesel
Qty Leaked:	Not reported
Abate Method:	Not reported
Cross Street:	Not reported
Enf Type:	CLOS
Funding:	Not reported
How Discovered:	Tank Closure
How Stopped:	Not reported
Leak Cause:	UNK
Leak Source:	UNK
Global ID:	T0606500609
How Stopped Date:	Not reported
Enter Date:	9/17/1999
Date Confirmation of Leak Began:	5/21/1999
Date Preliminary Assessment Began:	Not reported
Discover Date:	5/21/1999
Enforcement Date:	Not reported
Close Date:	2/1/2000
Date Prelim Assessment Workplan Submitted:	Not reported
Date Pollution Characterization Began:	Not reported
Date Remediation Plan Submitted:	Not reported
Date Remedial Action Underway:	Not reported
Date Post Remedial Action Monitoring:	Not reported
Enter Date:	9/17/1999
GW Qualifies:	Not reported
Soil Qualifies:	Not reported
Operator:	Not reported
Facility Contact:	Not reported
Interim:	Not reported
Oversite Program:	LUST
Latitude:	33.6312175
Longitude:	-117.1756064
MTBE Date:	Not reported
Max MTBE GW:	Not reported
MTBE Concentration:	2
Max MTBE Soil:	Not reported
MTBE Fuel:	0
MTBE Tested:	MTBE Detected. Site tested for MTBE & MTBE detected
MTBE Class:	*
Staff:	TME
Staff Initials:	Not reported
Lead Agency:	Local Agency
Local Agency:	33000L
Hydr Basin #:	SAN JACINTO (8-5)
Beneficial:	Not reported
Priority:	Not reported
Cleanup Fund Id:	Not reported
Work Suspended:	No

Summary: Case closed on February 1, 2000.

SWEEPS UST:
Name: BOURIS RANCHES

BOURIS RANCH (Continued) **S101619416**

Address:	33751 ZEIDERS RD
City:	SUN CITY
Status:	Active
Comp Number:	15248
Number:	2
Board Of Equalization:	Not reported
Referral Date:	10-21-92
Action Date:	10-21-92
Created Date:	02-29-88
Owner Tank Id:	001394
SWRCB Tank Id:	33-000-015248-000001
Tank Status:	A
Capacity:	6500
Active Date:	10-21-92
Tank Use:	M.V. FUEL
STG:	P
Content:	DIESEL
Number Of Tanks:	3

Name:	BOURIS RANCHES
Address:	33751 ZEIDERS RD
City:	SUN CITY
Status:	Active
Comp Number:	15248
Number:	2
Board Of Equalization:	Not reported
Referral Date:	10-21-92
Action Date:	10-21-92
Created Date:	02-29-88
Owner Tank Id:	001394
SWRCB Tank Id:	33-000-015248-000002
Tank Status:	A
Capacity:	3500
Active Date:	10-21-92
Tank Use:	M.V. FUEL
STG:	P
Content:	REG UNLEADED
Number Of Tanks:	Not reported

Name:	BOURIS RANCHES
Address:	33751 ZEIDERS RD
City:	SUN CITY
Status:	Active
Comp Number:	15248
Number:	2
Board Of Equalization:	Not reported
Referral Date:	10-21-92
Action Date:	10-21-92
Created Date:	02-29-88
Owner Tank Id:	001394
SWRCB Tank Id:	33-000-015248-000003
Tank Status:	A
Capacity:	4500
Active Date:	10-21-92
Tank Use:	M.V. FUEL
STG:	P
Content:	DIESEL

BOURIS RANCH (Continued) **S101619416**

Number Of Tanks: Not reported

CA FID UST:
Facility ID: 33006906
Regulated By: UTNKA
Regulated ID: 00015248
Cortese Code: Not reported
SIC Code: Not reported
Facility Phone: 7146791009
Mail To: Not reported
Mailing Address: P O BOX 62
Mailing Address 2: Not reported
Mailing City,St,Zip: SUN CITY 92381
Contact: Not reported
Contact Phone: Not reported
DUNs Number: Not reported
NPDES Number: Not reported
EPA ID: Not reported
Comments: Not reported
Status: Active

HIST CORTESE:
edr_fname: BOURIS RANCH
edr_fadd1: 33751
City,State,Zip: SUN CITY, CA 92584
Region: CORTESE
Facility County Code: 33
Reg By: LTNKA
Reg Id: 083303550T

10
SE
1/4-1/2
0.464 mi.
2448 ft.

MURIETTA HIGHLANDS PROJECT **ENVIROSTOR** **S118756700**
I-215/ANTELOPE ROAD/KELLER ROAD **SCH** **N/A**
MURRIETA, CA 92584

Relative:
Lower

Actual:
1568 ft.

ENVIROSTOR:
Name: MURIETTA HIGHLANDS PROJECT
Address: I-215/ANTELOPE ROAD/KELLER ROAD
City,State,Zip: MURRIETA, CA 92584
Facility ID: 33010043
Status: No Action Required
Status Date: 01/25/2002
Site Code: 404273
Site Type: School Investigation
Site Type Detailed: School
Acres: 11.4
NPL: NO
Regulatory Agencies: SMBRP
Lead Agency: SMBRP
Program Manager: Kamili Siglowide
Supervisor: Charles Ridenour
Division Branch: Southern California Schools & Brownfields Outreach
Assembly: 67
Senate: 28
Special Program: Not reported
Restricted Use: NO

MURIETTA HIGHLANDS PROJECT (Continued) **S118756700**

Site Mgmt Req: NONE SPECIFIED
Funding: School District
Latitude: 33.627
Longitude: -117.1710
APN: NONE SPECIFIED
Past Use: AGRICULTURAL - ROW CROPS
Potential COC: NONE SPECIFIED No Contaminants found
Confirmed COC: NONE SPECIFIED
Potential Description: NMA
Alias Name: MENIFEE UNION ELEMENTARY SCHOOL DISTRICT
Alias Type: Alternate Name
Alias Name: MENIFEE USD-MURRIETA HIGHLANDS PROJECT
Alias Type: Alternate Name
Alias Name: MURIETTA HIGHLANDS PROJECT
Alias Type: Alternate Name
Alias Name: 404273
Alias Type: Project Code (Site Code)
Alias Name: 33010043
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Phase 1
Completed Date: 01/25/2002
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Site Inspections/Visit (Non LUR)
Completed Date: 01/22/2002
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Cost Recovery Closeout Memo
Completed Date: 01/25/2002
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Environmental Oversight Agreement
Completed Date: 10/01/2001
Comments: Not reported

Future Area Name: Not reported
Future Sub Area Name: Not reported
Future Document Type: Not reported
Future Due Date: Not reported
Schedule Area Name: Not reported
Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

SCH:

MURIETTA HIGHLANDS PROJECT (Continued) **S118756700**

Name:	MURIETTA HIGHLANDS PROJECT
Address:	I-215/ANTELOPE ROAD/KELLER ROAD
City,State,Zip:	MURRIETA, CA 92584
Facility ID:	33010043
Site Type:	School Investigation
Site Type Detail:	School
Site Mgmt. Req.:	NONE SPECIFIED
Acres:	11.4
National Priorities List:	NO
Cleanup Oversight Agencies:	SMBRP
Lead Agency:	SMBRP
Lead Agency Description:	DTSC - Site Cleanup Program
Project Manager:	Kamili Siglowide
Supervisor:	Charles Ridenour
Division Branch:	Southern California Schools & Brownfields Outreach
Site Code:	404273
Assembly:	67
Senate:	28
Special Program Status:	Not reported
Status:	No Action Required
Status Date:	01/25/2002
Restricted Use:	NO
Funding:	School District
Latitude:	33.627
Longitude:	-117.1710
APN:	NONE SPECIFIED
Past Use:	AGRICULTURAL - ROW CROPS
Potential COC:	NONE SPECIFIED, No Contaminants found
Confirmed COC:	NONE SPECIFIED
Potential Description:	NMA
Alias Name:	MENIFEE UNION ELEMENTARY SCHOOL DISTRICT
Alias Type:	Alternate Name
Alias Name:	MENIFEE USD-MURRIETA HIGHLANDS PROJECT
Alias Type:	Alternate Name
Alias Name:	MURIETTA HIGHLANDS PROJECT
Alias Type:	Alternate Name
Alias Name:	404273
Alias Type:	Project Code (Site Code)
Alias Name:	33010043
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Phase 1
Completed Date:	01/25/2002
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Site Inspections/Visit (Non LUR)
Completed Date:	01/22/2002
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Cost Recovery Closeout Memo
Completed Date:	01/25/2002

MURIETTA HIGHLANDS PROJECT (Continued) **S118756700**

Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Environmental Oversight Agreement
Completed Date:	10/01/2001
Comments:	Not reported
Future Area Name:	Not reported
Future Sub Area Name:	Not reported
Future Document Type:	Not reported
Future Due Date:	Not reported
Schedule Area Name:	Not reported
Schedule Sub Area Name:	Not reported
Schedule Document Type:	Not reported
Schedule Due Date:	Not reported
Schedule Revised Date:	Not reported

Count: 3 records. ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
MENIFEE	S126330261	PROPOSED ELEMENTARY SCHOOL NO. 15	BRIGGS ROAD/WICKERD ROAD	92584	ENVIROSTOR, SCH
MENIFEE	S107539902		ON KELLER ST AND ZEIDERS RD	92584	CDL
MENIFEE	1023696398	ZEIDERS ROAD IMPROVEMENTS FOR COMM	ZEIDERS RD 2800 FT SECTION BET	92584	FINDS, ECHO

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Lists of Federal NPL (Superfund) sites

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 07/26/2022
Date Data Arrived at EDR: 08/02/2022
Date Made Active in Reports: 08/22/2022
Number of Days to Update: 20

Source: EPA
Telephone: N/A
Last EDR Contact: 09/01/2022
Next Scheduled EDR Contact: 10/10/2022
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 07/26/2022
Date Data Arrived at EDR: 08/02/2022
Date Made Active in Reports: 08/22/2022
Number of Days to Update: 20

Source: EPA
Telephone: N/A
Last EDR Contact: 09/01/2022
Next Scheduled EDR Contact: 10/10/2022
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

Lists of Federal Delisted NPL sites

Delisted NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 07/26/2022
Date Data Arrived at EDR: 08/02/2022
Date Made Active in Reports: 08/22/2022
Number of Days to Update: 20

Source: EPA
Telephone: N/A
Last EDR Contact: 09/01/2022
Next Scheduled EDR Contact: 10/10/2022
Data Release Frequency: Quarterly

Lists of Federal sites subject to CERCLA removals and CERCLA orders

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 05/25/2021
Date Data Arrived at EDR: 06/24/2021
Date Made Active in Reports: 09/20/2021
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 09/06/2022
Next Scheduled EDR Contact: 10/10/2022
Data Release Frequency: Varies

SEMS: Superfund Enterprise Management System

SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly know as CERCLIS, renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 07/26/2022
Date Data Arrived at EDR: 08/02/2022
Date Made Active in Reports: 08/22/2022
Number of Days to Update: 20

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 09/01/2022
Next Scheduled EDR Contact: 10/24/2022
Data Release Frequency: Quarterly

Lists of Federal CERCLA sites with NFRAP

SEMS-ARCHIVE: Superfund Enterprise Management System Archive

SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that there is no hazard associated with a given site; it only means that. based upon available information, the location is not judged to be potential NPL site.

Date of Government Version: 07/26/2022
Date Data Arrived at EDR: 08/02/2022
Date Made Active in Reports: 08/22/2022
Number of Days to Update: 20

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 09/01/2022
Next Scheduled EDR Contact: 10/24/2022
Data Release Frequency: Quarterly

Lists of Federal RCRA facilities undergoing Corrective Action

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 06/20/2022
Date Data Arrived at EDR: 06/21/2022
Date Made Active in Reports: 06/28/2022
Number of Days to Update: 7

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 06/21/2022
Next Scheduled EDR Contact: 10/03/2022
Data Release Frequency: Quarterly

Lists of Federal RCRA TSD facilities

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 06/20/2022
Date Data Arrived at EDR: 06/21/2022
Date Made Active in Reports: 06/28/2022
Number of Days to Update: 7

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 06/21/2022
Next Scheduled EDR Contact: 10/03/2022
Data Release Frequency: Quarterly

Lists of Federal RCRA generators

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 06/20/2022
Date Data Arrived at EDR: 06/21/2022
Date Made Active in Reports: 06/28/2022
Number of Days to Update: 7

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 06/21/2022
Next Scheduled EDR Contact: 10/03/2022
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 06/20/2022
Date Data Arrived at EDR: 06/21/2022
Date Made Active in Reports: 06/28/2022
Number of Days to Update: 7

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 06/21/2022
Next Scheduled EDR Contact: 10/03/2022
Data Release Frequency: Quarterly

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

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Very small quantity generators (VSQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 06/20/2022
Date Data Arrived at EDR: 06/21/2022
Date Made Active in Reports: 06/28/2022
Number of Days to Update: 7

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 06/21/2022
Next Scheduled EDR Contact: 10/03/2022
Data Release Frequency: Quarterly

Federal institutional controls / engineering controls registries

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 05/16/2022
Date Data Arrived at EDR: 05/19/2022
Date Made Active in Reports: 07/29/2022
Number of Days to Update: 71

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 08/03/2022
Next Scheduled EDR Contact: 11/21/2022
Data Release Frequency: Varies

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 05/16/2022
Date Data Arrived at EDR: 05/24/2022
Date Made Active in Reports: 07/29/2022
Number of Days to Update: 66

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 08/17/2022
Next Scheduled EDR Contact: 12/05/2022
Data Release Frequency: Varies

US INST CONTROLS: Institutional Controls Sites List

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 05/16/2022
Date Data Arrived at EDR: 05/24/2022
Date Made Active in Reports: 07/29/2022
Number of Days to Update: 66

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 08/17/2022
Next Scheduled EDR Contact: 12/05/2022
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 06/14/2022
Date Data Arrived at EDR: 06/15/2022
Date Made Active in Reports: 06/21/2022
Number of Days to Update: 6

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 06/15/2022
Next Scheduled EDR Contact: 10/03/2022
Data Release Frequency: Quarterly

Lists of state- and tribal (Superfund) equivalent sites

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 04/25/2022
Date Data Arrived at EDR: 04/26/2022
Date Made Active in Reports: 07/15/2022
Number of Days to Update: 80

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 07/25/2022
Next Scheduled EDR Contact: 11/07/2022
Data Release Frequency: Quarterly

Lists of state- and tribal hazardous waste facilities

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 04/25/2022
Date Data Arrived at EDR: 04/26/2022
Date Made Active in Reports: 07/15/2022
Number of Days to Update: 80

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 07/25/2022
Next Scheduled EDR Contact: 11/07/2022
Data Release Frequency: Quarterly

Lists of state and tribal landfills and solid waste disposal facilities

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 05/09/2022
Date Data Arrived at EDR: 05/09/2022
Date Made Active in Reports: 07/29/2022
Number of Days to Update: 81

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 08/08/2022
Next Scheduled EDR Contact: 11/21/2022
Data Release Frequency: Quarterly

Lists of state and tribal leaking storage tanks

LUST REG 2: Fuel Leak List

Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: No Update Planned

LUST REG 3: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

LUST: Leaking Underground Fuel Tank Report (GEOTRACKER)

Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 05/23/2022
Date Data Arrived at EDR: 05/23/2022
Date Made Active in Reports: 05/24/2022
Number of Days to Update: 1

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 08/31/2022
Next Scheduled EDR Contact: 12/19/2022
Data Release Frequency: Quarterly

LUST REG 6V: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 1: Active Toxic Site Investigation

Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST REG 6L: Leaking Underground Storage Tank Case Listing

For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 9: Leaking Underground Storage Tank Report

Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 09/26/2011
Next Scheduled EDR Contact: 01/09/2012
Data Release Frequency: No Update Planned

LUST REG 8: Leaking Underground Storage Tanks

California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

LUST REG 7: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-776-8943
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 07/22/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 9

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned

LUST REG 4: Underground Storage Tank Leak List

Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 09/06/2011
Next Scheduled EDR Contact: 12/19/2011
Data Release Frequency: No Update Planned

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 04/08/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 06/13/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 04/20/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 06/13/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land
Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 04/11/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64
Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 06/13/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 06/02/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/31/2022
Number of Days to Update: 79
Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 06/13/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 04/20/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64
Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 06/13/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 04/28/2021
Date Data Arrived at EDR: 06/11/2021
Date Made Active in Reports: 09/07/2021
Number of Days to Update: 88
Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 06/13/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 04/28/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64
Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 06/13/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 04/14/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64
Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 06/13/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

CPS-SLIC: Statewide SLIC Cases (GEOTRACKER)
Cleanup Program Sites (CPS; also known as Site Cleanups [SC] and formerly known as Spills, Leaks, Investigations, and Cleanups [SLIC] sites) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 05/23/2022
Date Data Arrived at EDR: 05/23/2022
Date Made Active in Reports: 05/24/2022
Number of Days to Update: 1
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 08/31/2022
Next Scheduled EDR Contact: 12/19/2022
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: No Update Planned

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

SLIC REG 6L: SLIC Sites
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35
Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36
Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11
Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17
Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 08/08/2011
Next Scheduled EDR Contact: 11/21/2011
Data Release Frequency: No Update Planned

Lists of state and tribal registered storage tanks

FEMA UST: Underground Storage Tank Listing
A listing of all FEMA owned underground storage tanks.

Date of Government Version: 10/14/2021
Date Data Arrived at EDR: 11/05/2021
Date Made Active in Reports: 02/01/2022
Number of Days to Update: 88
Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 06/29/2022
Next Scheduled EDR Contact: 10/17/2022
Data Release Frequency: Varies

UST: Active UST Facilities
Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 06/06/2022
Date Data Arrived at EDR: 06/07/2022
Date Made Active in Reports: 08/24/2022
Number of Days to Update: 78
Source: SWRCB
Telephone: 916-341-5851
Last EDR Contact: 08/31/2022
Next Scheduled EDR Contact: 12/19/2022
Data Release Frequency: Semi-Annually

UST CLOSURE: Proposed Closure of Underground Storage Tank (UST) Cases

UST cases that are being considered for closure by either the State Water Resources Control Board or the Executive Director have been posted for a 60-day public comment period. UST Case Closures being proposed for consideration by the State Water Resources Control Board. These are primarily UST cases that meet closure criteria under the decisional framework in State Water Board Resolution No. 92-49 and other Board orders. UST Case Closures proposed for consideration by the Executive Director pursuant to State Water Board Resolution No. 2012-0061. These are cases that meet the criteria of the Low-Threat UST Case Closure Policy. UST Case Closure Review Denials and Approved Orders.

Date of Government Version: 06/01/2022
Date Data Arrived at EDR: 06/09/2022
Date Made Active in Reports: 08/26/2022
Number of Days to Update: 78

Source: State Water Resources Control Board
Telephone: 916-327-7844
Last EDR Contact: 08/31/2022
Next Scheduled EDR Contact: 12/19/2022
Data Release Frequency: Varies

MILITARY UST SITES: Military UST Sites (GEOTRACKER)

Military ust sites

Date of Government Version: 05/23/2022
Date Data Arrived at EDR: 05/23/2022
Date Made Active in Reports: 06/02/2022
Number of Days to Update: 10

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 08/31/2022
Next Scheduled EDR Contact: 12/19/2022
Data Release Frequency: Varies

AST: Aboveground Petroleum Storage Tank Facilities

A listing of aboveground storage tank petroleum storage tank locations.

Date of Government Version: 07/06/2016
Date Data Arrived at EDR: 07/12/2016
Date Made Active in Reports: 09/19/2016
Number of Days to Update: 69

Source: California Environmental Protection Agency
Telephone: 916-327-5092
Last EDR Contact: 09/07/2022
Next Scheduled EDR Contact: 12/26/2022
Data Release Frequency: Varies

INDIAN UST R10: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 04/20/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 06/13/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 06/02/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/31/2022
Number of Days to Update: 79

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 06/13/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 04/28/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 06/13/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

INDIAN UST R7: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 04/14/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 06/13/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

INDIAN UST R8: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 04/20/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 06/13/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

INDIAN UST R9: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 04/08/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 06/13/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 04/11/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 06/13/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 04/07/2022
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/16/2022
Number of Days to Update: 64

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 06/13/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

Lists of state and tribal voluntary cleanup sites

VCP: Voluntary Cleanup Program Properties

Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 04/25/2022
Date Data Arrived at EDR: 04/26/2022
Date Made Active in Reports: 07/15/2022
Number of Days to Update: 80

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 07/25/2022
Next Scheduled EDR Contact: 11/07/2022
Data Release Frequency: Quarterly

INDIAN VCP R1: Voluntary Cleanup Priority Listing
A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 07/27/2015
Date Data Arrived at EDR: 09/29/2015
Date Made Active in Reports: 02/18/2016
Number of Days to Update: 142

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 06/15/2022
Next Scheduled EDR Contact: 10/03/2022
Data Release Frequency: Varies

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng
A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 07/08/2021
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

Lists of state and tribal brownfield sites

BROWNFIELDS: Considered Brownfieds Sites Listing
A listing of sites the SWRCB considers to be Brownfields since these are sites have come to them through the MOA Process.

Date of Government Version: 06/21/2022
Date Data Arrived at EDR: 06/21/2022
Date Made Active in Reports: 09/08/2022
Number of Days to Update: 79

Source: State Water Resources Control Board
Telephone: 916-323-7905
Last EDR Contact: 06/21/2022
Next Scheduled EDR Contact: 10/03/2022
Data Release Frequency: Quarterly

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites
Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 02/23/2022
Date Data Arrived at EDR: 03/10/2022
Date Made Active in Reports: 03/10/2022
Number of Days to Update: 0

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 09/09/2022
Next Scheduled EDR Contact: 12/26/2022
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT: Waste Management Unit Database
Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 07/19/2022
Next Scheduled EDR Contact: 11/07/2022
Data Release Frequency: No Update Planned

SWRCY: Recycler Database
A listing of recycling facilities in California.

Date of Government Version: 06/06/2022
Date Data Arrived at EDR: 06/07/2022
Date Made Active in Reports: 08/23/2022
Number of Days to Update: 77

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 08/31/2022
Next Scheduled EDR Contact: 12/19/2022
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing
A listing of registered waste tire haulers.

Date of Government Version: 08/12/2022
Date Data Arrived at EDR: 08/16/2022
Date Made Active in Reports: 08/26/2022
Number of Days to Update: 10

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 08/16/2022
Next Scheduled EDR Contact: 11/21/2022
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands
Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 07/21/2022
Next Scheduled EDR Contact: 11/07/2022
Data Release Frequency: Varies

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations
A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 07/12/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: No Update Planned

ODI: Open Dump Inventory
An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

IHS OPEN DUMPS: Open Dumps on Indian Land
A listing of all open dumps located on Indian Land in the United States.

Date of Government Version: 04/01/2014
Date Data Arrived at EDR: 08/06/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 176

Source: Department of Health & Human Serivces, Indian Health Service
Telephone: 301-443-1452
Last EDR Contact: 07/21/2022
Next Scheduled EDR Contact: 11/07/2022
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL: National Clandestine Laboratory Register

A listing of clandestine drug lab locations that have been removed from the DEAs National Clandestine Laboratory Register.

Date of Government Version: 04/30/2022
Date Data Arrived at EDR: 05/24/2022
Date Made Active in Reports: 07/29/2022
Number of Days to Update: 66

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 08/18/2022
Next Scheduled EDR Contact: 12/05/2022
Data Release Frequency: No Update Planned

HIST CAL-SITES: Calsites Database

The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21

Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program

This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 04/25/2022
Date Data Arrived at EDR: 04/26/2022
Date Made Active in Reports: 07/15/2022
Number of Days to Update: 80

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 07/25/2022
Next Scheduled EDR Contact: 11/07/2022
Data Release Frequency: Quarterly

CDL: Clandestine Drug Labs

A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 12/31/2019
Date Data Arrived at EDR: 01/20/2021
Date Made Active in Reports: 04/08/2021
Number of Days to Update: 78

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 08/23/2022
Next Scheduled EDR Contact: 10/17/2022
Data Release Frequency: Varies

TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

CERS HAZ WASTE: CERS HAZ WASTE

List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Hazardous Chemical Management, Hazardous Waste Onsite Treatment, Household Hazardous Waste Collection, Hazardous Waste Generator, and RCRA LQ HW Generator programs.

Date of Government Version: 04/18/2022
Date Data Arrived at EDR: 04/19/2022
Date Made Active in Reports: 07/12/2022
Number of Days to Update: 84

Source: CalEPA
Telephone: 916-323-2514
Last EDR Contact: 07/18/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Quarterly

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 04/30/2022
Date Data Arrived at EDR: 05/24/2022
Date Made Active in Reports: 07/29/2022
Number of Days to Update: 66

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 08/18/2022
Next Scheduled EDR Contact: 12/05/2022
Data Release Frequency: Quarterly

PFAS: PFAS Contamination Site Location Listing

A listing of PFAS contaminated sites included in the GeoTracker database.

Date of Government Version: 06/06/2022
Date Data Arrived at EDR: 06/07/2022
Date Made Active in Reports: 08/24/2022
Number of Days to Update: 78

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 08/31/2022
Next Scheduled EDR Contact: 12/19/2022
Data Release Frequency: Varies

AQUEOUS FOAM: Former Fire Training Facility Assessments Listing

Airports shown on this list are those believed to use Aqueous Film Forming Foam (AFFF), and certified by the Federal Aviation Administration (FAA) under Title 14, Code of Federal Regulations (CFR), Part 139 (14 CFR Part 139). This list was created by SWRCB using information available from the FAA. Location points shown are from the latitude and longitude listed on the FAA airport master record.

Date of Government Version: 02/20/2020
Date Data Arrived at EDR: 12/10/2021
Date Made Active in Reports: 02/25/2022
Number of Days to Update: 77

Source: State Water Resources Control Board
Telephone: 916-341-5455
Last EDR Contact: 09/06/2022
Next Scheduled EDR Contact: 12/19/2022
Data Release Frequency: Varies

Local Lists of Registered Storage Tanks

SWEEPS UST: SWEEPS UST Listing

Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

HIST UST: Hazardous Substance Storage Container Database

The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SAN FRANCISCO AST: Aboveground Storage Tank Site Listing
Aboveground storage tank sites

Date of Government Version: 05/05/2022
Date Data Arrived at EDR: 05/06/2022
Date Made Active in Reports: 07/21/2022
Number of Days to Update: 76

Source: San Francisco County Department of Public Health
Telephone: 415-252-3896
Last EDR Contact: 07/26/2022
Next Scheduled EDR Contact: 11/14/2022
Data Release Frequency: Varies

CERS TANKS: California Environmental Reporting System (CERS) Tanks
List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Aboveground Petroleum Storage and Underground Storage Tank regulatory programs.

Date of Government Version: 04/18/2022
Date Data Arrived at EDR: 04/19/2022
Date Made Active in Reports: 07/12/2022
Number of Days to Update: 84

Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 07/18/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Quarterly

CA FID UST: Facility Inventory Database
The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Local Land Records

LIENS: Environmental Liens Listing
A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 05/25/2022
Date Data Arrived at EDR: 05/26/2022
Date Made Active in Reports: 08/11/2022
Number of Days to Update: 77

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/23/2022
Next Scheduled EDR Contact: 12/12/2022
Data Release Frequency: Varies

LIENS 2: CERCLA Lien Information
A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 07/26/2022
Date Data Arrived at EDR: 08/02/2022
Date Made Active in Reports: 08/22/2022
Number of Days to Update: 20

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 09/01/2022
Next Scheduled EDR Contact: 10/10/2022
Data Release Frequency: Semi-Annually

DEED: Deed Restriction Listing

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 05/31/2022
Date Data Arrived at EDR: 05/31/2022
Date Made Active in Reports: 08/18/2022
Number of Days to Update: 79

Source: DTSC and SWRCB
Telephone: 916-323-3400
Last EDR Contact: 08/25/2022
Next Scheduled EDR Contact: 12/12/2022
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 03/21/2022
Date Data Arrived at EDR: 03/21/2022
Date Made Active in Reports: 06/14/2022
Number of Days to Update: 85

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 06/21/2022
Next Scheduled EDR Contact: 10/03/2022
Data Release Frequency: Quarterly

CHMIRS: California Hazardous Material Incident Report System

California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 04/03/2022
Date Data Arrived at EDR: 04/19/2022
Date Made Active in Reports: 07/12/2022
Number of Days to Update: 84

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 07/18/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Semi-Annually

LDS: Land Disposal Sites Listing (GEOTRACKER)

Land Disposal sites (Landfills) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 05/23/2022
Date Data Arrived at EDR: 05/23/2022
Date Made Active in Reports: 05/24/2022
Number of Days to Update: 1

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 08/31/2022
Next Scheduled EDR Contact: 12/19/2022
Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing (GEOTRACKER)

Military sites (consisting of: Military UST sites; Military Privatized sites; and Military Cleanup sites [formerly known as DoD non UST]) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 05/23/2022
Date Data Arrived at EDR: 05/23/2022
Date Made Active in Reports: 05/24/2022
Number of Days to Update: 1

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 08/31/2022
Next Scheduled EDR Contact: 12/19/2022
Data Release Frequency: Quarterly

SPILLS 90: SPILLS90 data from FirstSearch

Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

Date of Government Version: 06/06/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 02/22/2013
Number of Days to Update: 50

Source: FirstSearch
Telephone: N/A
Last EDR Contact: 01/03/2013
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Other Ascertainable Records

RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 06/20/2022
Date Data Arrived at EDR: 06/21/2022
Date Made Active in Reports: 06/28/2022
Number of Days to Update: 7

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 06/21/2022
Next Scheduled EDR Contact: 10/03/2022
Data Release Frequency: Quarterly

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 05/11/2022
Date Data Arrived at EDR: 05/17/2022
Date Made Active in Reports: 07/29/2022
Number of Days to Update: 73

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 08/11/2022
Next Scheduled EDR Contact: 11/28/2022
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 06/07/2021
Date Data Arrived at EDR: 07/13/2021
Date Made Active in Reports: 03/09/2022
Number of Days to Update: 239

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 07/13/2022
Next Scheduled EDR Contact: 10/24/2022
Data Release Frequency: Varies

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 04/11/2018
Date Made Active in Reports: 11/06/2019
Number of Days to Update: 574

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 07/08/2022
Next Scheduled EDR Contact: 10/17/2022
Data Release Frequency: N/A

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 01/01/2017
Date Data Arrived at EDR: 02/03/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 63

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 08/03/2022
Next Scheduled EDR Contact: 11/21/2022
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 06/20/2022
Date Data Arrived at EDR: 06/21/2022
Date Made Active in Reports: 08/31/2022
Number of Days to Update: 71

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 06/21/2022
Next Scheduled EDR Contact: 10/03/2022
Data Release Frequency: Quarterly

EPA WATCH LIST: EPA WATCH LIST

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013
Date Data Arrived at EDR: 03/21/2014
Date Made Active in Reports: 06/17/2014
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 07/29/2022
Next Scheduled EDR Contact: 11/14/2022
Data Release Frequency: Quarterly

2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 09/30/2017
Date Data Arrived at EDR: 05/08/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 73

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 08/04/2022
Next Scheduled EDR Contact: 11/14/2022
Data Release Frequency: Varies

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 06/17/2020
Date Made Active in Reports: 09/10/2020
Number of Days to Update: 85

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 06/14/2022
Next Scheduled EDR Contact: 09/26/2022
Data Release Frequency: Every 4 Years

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 08/14/2020
Date Made Active in Reports: 11/04/2020
Number of Days to Update: 82

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 08/11/2022
Next Scheduled EDR Contact: 11/28/2022
Data Release Frequency: Annually

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 07/18/2022
Date Data Arrived at EDR: 07/18/2022
Date Made Active in Reports: 07/29/2022
Number of Days to Update: 11

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 07/18/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Annually

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 07/26/2022
Date Data Arrived at EDR: 08/02/2022
Date Made Active in Reports: 08/22/2022
Number of Days to Update: 20

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 09/01/2022
Next Scheduled EDR Contact: 12/12/2022
Data Release Frequency: Annually

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 04/27/2022
Date Data Arrived at EDR: 05/04/2022
Date Made Active in Reports: 05/10/2022
Number of Days to Update: 6

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 07/14/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

PRP: Potentially Responsible Parties
A listing of verified Potentially Responsible Parties

Date of Government Version: 07/26/2022
Date Data Arrived at EDR: 08/02/2022
Date Made Active in Reports: 08/31/2022
Number of Days to Update: 29
Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 09/01/2022
Next Scheduled EDR Contact: 11/14/2022
Data Release Frequency: Quarterly

PADS: PCB Activity Database System
PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 01/20/2022
Date Data Arrived at EDR: 01/20/2022
Date Made Active in Reports: 03/25/2022
Number of Days to Update: 64
Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 07/08/2022
Next Scheduled EDR Contact: 10/17/2022
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System
The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 11/18/2016
Date Data Arrived at EDR: 11/23/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 79
Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 06/28/2022
Next Scheduled EDR Contact: 10/17/2022
Data Release Frequency: Quarterly

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25
Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: No Update Planned

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25
Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: No Update Planned

MLTS: Material Licensing Tracking System
MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 06/10/2022
Date Data Arrived at EDR: 06/14/2022
Date Made Active in Reports: 08/22/2022
Number of Days to Update: 69
Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 07/13/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Quarterly

COAL ASH DOE: Steam-Electric Plant Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2020
Date Data Arrived at EDR: 11/30/2021
Date Made Active in Reports: 02/22/2022
Number of Days to Update: 84
Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 08/25/2022
Next Scheduled EDR Contact: 12/12/2022
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 01/12/2017
Date Data Arrived at EDR: 03/05/2019
Date Made Active in Reports: 11/11/2019
Number of Days to Update: 251
Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 08/25/2022
Next Scheduled EDR Contact: 12/12/2022
Data Release Frequency: Varies

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 09/13/2019
Date Data Arrived at EDR: 11/06/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 96
Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 08/04/2022
Next Scheduled EDR Contact: 11/14/2022
Data Release Frequency: Varies

RADINFO: Radiation Information Database
The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 07/01/2019
Date Data Arrived at EDR: 07/01/2019
Date Made Active in Reports: 09/23/2019
Number of Days to Update: 84
Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 06/23/2022
Next Scheduled EDR Contact: 10/10/2022
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing
A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing
A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 01/02/2020
Date Data Arrived at EDR: 01/28/2020
Date Made Active in Reports: 04/17/2020
Number of Days to Update: 80

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 07/21/2022
Next Scheduled EDR Contact: 11/07/2022
Data Release Frequency: Quarterly

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 03/31/2022
Date Data Arrived at EDR: 04/14/2022
Date Made Active in Reports: 07/12/2022
Number of Days to Update: 89

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 06/29/2022
Next Scheduled EDR Contact: 10/17/2022
Data Release Frequency: Varies

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2019
Date Data Arrived at EDR: 03/02/2022
Date Made Active in Reports: 03/25/2022
Number of Days to Update: 23

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 06/21/2022
Next Scheduled EDR Contact: 10/03/2022
Data Release Frequency: Biennially

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 07/14/2015
Date Made Active in Reports: 01/10/2017
Number of Days to Update: 546

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 07/08/2022
Next Scheduled EDR Contact: 10/17/2022
Data Release Frequency: Semi-Annually

FUSRAP: Formerly Utilized Sites Remedial Action Program

DOE established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations.

Date of Government Version: 07/26/2021
Date Data Arrived at EDR: 07/27/2021
Date Made Active in Reports: 10/22/2021
Number of Days to Update: 87

Source: Department of Energy
Telephone: 202-586-3559
Last EDR Contact: 07/26/2022
Next Scheduled EDR Contact: 11/14/2022
Data Release Frequency: Varies

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 08/30/2019
Date Data Arrived at EDR: 11/15/2019
Date Made Active in Reports: 01/28/2020
Number of Days to Update: 74

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 08/24/2022
Next Scheduled EDR Contact: 11/28/2022
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites

A listing of former lead smelter site locations.

Date of Government Version: 07/26/2022
Date Data Arrived at EDR: 08/02/2022
Date Made Active in Reports: 08/22/2022
Number of Days to Update: 20

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 09/01/2022
Next Scheduled EDR Contact: 10/10/2022
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites

A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)

The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data

A listing of minor source facilities.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

MINES VIOLATIONS: MSHA Violation Assessment Data

Mines violation and assessment information. Department of Labor, Mine Safety & Health Administration.

Date of Government Version: 03/21/2022
Date Data Arrived at EDR: 03/22/2022
Date Made Active in Reports: 03/25/2022
Number of Days to Update: 3

Source: DOL, Mine Safety & Health Admi
Telephone: 202-693-9424
Last EDR Contact: 08/02/2022
Next Scheduled EDR Contact: 12/12/2022
Data Release Frequency: Quarterly

US MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 08/03/2022
Date Data Arrived at EDR: 08/17/2022
Date Made Active in Reports: 08/31/2022
Number of Days to Update: 14

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 08/17/2022
Next Scheduled EDR Contact: 12/05/2022
Data Release Frequency: Semi-Annually

US MINES 2: Ferrous and Nonferrous Metal Mines Database Listing

This map layer includes ferrous (ferrous metal mines are facilities that extract ferrous metals, such as iron ore or molybdenum) and nonferrous (Nonferrous metal mines are facilities that extract nonferrous metals, such as gold, silver, copper, zinc, and lead) metal mines in the United States.

Date of Government Version: 05/06/2020
Date Data Arrived at EDR: 05/27/2020
Date Made Active in Reports: 08/13/2020
Number of Days to Update: 78

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 08/17/2022
Next Scheduled EDR Contact: 12/05/2022
Data Release Frequency: Varies

US MINES 3: Active Mines & Mineral Plants Database Listing

Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 08/17/2022
Next Scheduled EDR Contact: 12/05/2022
Data Release Frequency: Varies

ABANDONED MINES: Abandoned Mines

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

Date of Government Version: 06/14/2022
Date Data Arrived at EDR: 06/15/2022
Date Made Active in Reports: 08/22/2022
Number of Days to Update: 68

Source: Department of Interior
Telephone: 202-208-2609
Last EDR Contact: 08/30/2022
Next Scheduled EDR Contact: 12/19/2022
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 05/13/2022
Date Data Arrived at EDR: 05/18/2022
Date Made Active in Reports: 05/31/2022
Number of Days to Update: 13

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 08/25/2022
Next Scheduled EDR Contact: 12/12/2022
Data Release Frequency: Quarterly

UXO: Unexploded Ordnance Sites

A listing of unexploded ordnance site locations

Date of Government Version: 12/31/2020
Date Data Arrived at EDR: 01/11/2022
Date Made Active in Reports: 02/14/2022
Number of Days to Update: 34

Source: Department of Defense
Telephone: 703-704-1564
Last EDR Contact: 07/07/2022
Next Scheduled EDR Contact: 10/24/2022
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

ECHO: Enforcement & Compliance History Information

ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

Date of Government Version: 04/02/2022
Date Data Arrived at EDR: 04/05/2022
Date Made Active in Reports: 06/28/2022
Number of Days to Update: 84

Source: Environmental Protection Agency
Telephone: 202-564-2280
Last EDR Contact: 07/01/2022
Next Scheduled EDR Contact: 10/17/2022
Data Release Frequency: Quarterly

DOCKET HWC: Hazardous Waste Compliance Docket Listing

A complete list of the Federal Agency Hazardous Waste Compliance Docket Facilities.

Date of Government Version: 05/06/2021
Date Data Arrived at EDR: 05/21/2021
Date Made Active in Reports: 08/11/2021
Number of Days to Update: 82

Source: Environmental Protection Agency
Telephone: 202-564-0527
Last EDR Contact: 08/22/2022
Next Scheduled EDR Contact: 12/05/2022
Data Release Frequency: Varies

FUELS PROGRAM: EPA Fuels Program Registered Listing

This listing includes facilities that are registered under the Part 80 (Code of Federal Regulations) EPA Fuels Programs. All companies now are required to submit new and updated registrations.

Date of Government Version: 05/16/2022
Date Data Arrived at EDR: 05/17/2022
Date Made Active in Reports: 07/29/2022
Number of Days to Update: 73

Source: EPA
Telephone: 800-385-6164
Last EDR Contact: 08/11/2022
Next Scheduled EDR Contact: 11/28/2022
Data Release Frequency: Quarterly

CA BOND EXP. PLAN: Bond Expenditure Plan

Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6

Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CORTESE: "Cortese" Hazardous Waste & Substances Sites List

The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites).

Date of Government Version: 06/21/2022
Date Data Arrived at EDR: 06/21/2022
Date Made Active in Reports: 09/08/2022
Number of Days to Update: 79

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 06/21/2022
Next Scheduled EDR Contact: 10/03/2022
Data Release Frequency: Quarterly

CUPA LIVERMORE-PLEASANTON: CUPA Facility Listing

list of facilities associated with the various CUPA programs in Livermore-Pleasanton

Date of Government Version: 12/07/2021
Date Data Arrived at EDR: 05/09/2022
Date Made Active in Reports: 05/17/2022
Number of Days to Update: 8

Source: Livermore-Pleasanton Fire Department
Telephone: 925-454-2361
Last EDR Contact: 08/11/2022
Next Scheduled EDR Contact: 11/21/2022
Data Release Frequency: Varies

DRYCLEAN SOUTH COAST: South Coast Air Quality Management District Drycleaner Listing

A listing of dry cleaners in the South Coast Air Quality Management District

Date of Government Version: 05/20/2022
Date Data Arrived at EDR: 05/20/2022
Date Made Active in Reports: 08/09/2022
Number of Days to Update: 81

Source: South Coast Air Quality Management District
Telephone: 909-396-3211
Last EDR Contact: 08/16/2022
Next Scheduled EDR Contact: 12/05/2022
Data Release Frequency: Varies

DRYCLEANERS: Cleaner Facilities

A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 08/27/2021
Date Data Arrived at EDR: 09/01/2021
Date Made Active in Reports: 11/19/2021
Number of Days to Update: 79

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 09/07/2022
Next Scheduled EDR Contact: 12/12/2022
Data Release Frequency: Annually

DRYCLEAN AVAQMD: Antelope Valley Air Quality Management District Drycleaner Listing

A listing of dry cleaners in the Antelope Valley Air Quality Management District.

Date of Government Version: 05/25/2022
Date Data Arrived at EDR: 05/26/2022
Date Made Active in Reports: 08/11/2022
Number of Days to Update: 77

Source: Antelope Valley Air Quality Management District
Telephone: 661-723-8070
Last EDR Contact: 08/23/2022
Next Scheduled EDR Contact: 12/12/2022
Data Release Frequency: Varies

EMI: Emissions Inventory Data

Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2020
Date Data Arrived at EDR: 06/13/2022
Date Made Active in Reports: 08/30/2022
Number of Days to Update: 78

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 06/13/2022
Next Scheduled EDR Contact: 09/26/2022
Data Release Frequency: Varies

ENF: Enforcement Action Listing

A listing of Water Board Enforcement Actions. Formal is everything except Oral/Verbal Communication, Notice of Violation, Expedited Payment Letter, and Staff Enforcement Letter.

Date of Government Version: 04/12/2022
Date Data Arrived at EDR: 04/19/2022
Date Made Active in Reports: 05/31/2022
Number of Days to Update: 42

Source: State Water Resoruces Control Board
Telephone: 916-445-9379
Last EDR Contact: 07/18/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

Financial Assurance 1: Financial Assurance Information Listing

Financial Assurance information

Date of Government Version: 04/19/2022
Date Data Arrived at EDR: 04/29/2022
Date Made Active in Reports: 07/15/2022
Number of Days to Update: 77

Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 07/21/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

Financial Assurance 2: Financial Assurance Information Listing

A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 08/09/2022
Date Data Arrived at EDR: 08/10/2022
Date Made Active in Reports: 08/30/2022
Number of Days to Update: 20

Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 08/02/2022
Next Scheduled EDR Contact: 11/21/2022
Data Release Frequency: Varies

HAZNET: Facility and Manifest Data

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method. This database begins with calendar year 1993.

Date of Government Version: 12/31/2019
Date Data Arrived at EDR: 04/15/2020
Date Made Active in Reports: 07/02/2020
Number of Days to Update: 78

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 07/05/2022
Next Scheduled EDR Contact: 10/17/2022
Data Release Frequency: Annually

ICE: ICE

Contains data pertaining to the Permitted Facilities with Inspections / Enforcements sites tracked in Envirostor.

Date of Government Version: 05/16/2022
Date Data Arrived at EDR: 05/17/2022
Date Made Active in Reports: 08/03/2022
Number of Days to Update: 78

Source: Department of Toxic Subsances Control
Telephone: 877-786-9427
Last EDR Contact: 08/11/2022
Next Scheduled EDR Contact: 11/28/2022
Data Release Frequency: Quarterly

HIST CORTESE: Hazardous Waste & Substance Site List

The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 01/22/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/22/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

HWP: EnviroStor Permitted Facilities Listing

Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

Date of Government Version: 05/16/2022
Date Data Arrived at EDR: 05/17/2022
Date Made Active in Reports: 08/03/2022
Number of Days to Update: 78

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/11/2022
Next Scheduled EDR Contact: 11/28/2022
Data Release Frequency: Quarterly

HWT: Registered Hazardous Waste Transporter Database

A listing of hazardous waste transporters. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC. A hazardous waste transporter registration is valid for one year and is assigned a unique registration number.

Date of Government Version: 04/05/2022
Date Data Arrived at EDR: 04/05/2022
Date Made Active in Reports: 06/27/2022
Number of Days to Update: 83

Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 07/05/2022
Next Scheduled EDR Contact: 10/17/2022
Data Release Frequency: Quarterly

MINES: Mines Site Location Listing
A listing of mine site locations from the Office of Mine Reclamation.

Date of Government Version: 06/06/2022
Date Data Arrived at EDR: 06/07/2022
Date Made Active in Reports: 08/23/2022
Number of Days to Update: 77
Source: Department of Conservation
Telephone: 916-322-1080
Last EDR Contact: 08/31/2022
Next Scheduled EDR Contact: 12/19/2022
Data Release Frequency: Quarterly

MWMP: Medical Waste Management Program Listing
The Medical Waste Management Program (MWMP) ensures the proper handling and disposal of medical waste by permitting and inspecting medical waste Offsite Treatment Facilities (PDF) and Transfer Stations (PDF) throughout the state. MWMP also oversees all Medical Waste Transporters.

Date of Government Version: 05/06/2022
Date Data Arrived at EDR: 05/31/2022
Date Made Active in Reports: 08/18/2022
Number of Days to Update: 79
Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 08/25/2022
Next Scheduled EDR Contact: 12/12/2022
Data Release Frequency: Varies

NPDES: NPDES Permits Listing
A listing of NPDES permits, including stormwater.

Date of Government Version: 05/09/2022
Date Data Arrived at EDR: 05/09/2022
Date Made Active in Reports: 07/29/2022
Number of Days to Update: 81
Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 08/08/2022
Next Scheduled EDR Contact: 11/21/2022
Data Release Frequency: Quarterly

PEST LIC: Pesticide Regulation Licenses Listing
A listing of licenses and certificates issued by the Department of Pesticide Regulation. The DPR issues licenses and/or certificates to: Persons and businesses that apply or sell pesticides; Pest control dealers and brokers; Persons who advise on agricultural pesticide applications.

Date of Government Version: 05/31/2022
Date Data Arrived at EDR: 05/31/2022
Date Made Active in Reports: 08/18/2022
Number of Days to Update: 79
Source: Department of Pesticide Regulation
Telephone: 916-445-4038
Last EDR Contact: 08/25/2022
Next Scheduled EDR Contact: 12/12/2022
Data Release Frequency: Quarterly

PROC: Certified Processors Database
A listing of certified processors.

Date of Government Version: 06/06/2022
Date Data Arrived at EDR: 06/07/2022
Date Made Active in Reports: 08/23/2022
Number of Days to Update: 77
Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 08/31/2022
Next Scheduled EDR Contact: 12/19/2022
Data Release Frequency: Quarterly

NOTIFY 65: Proposition 65 Records
Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

Date of Government Version: 06/10/2022
Date Data Arrived at EDR: 06/10/2022
Date Made Active in Reports: 08/26/2022
Number of Days to Update: 77
Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 09/07/2022
Next Scheduled EDR Contact: 12/26/2022
Data Release Frequency: No Update Planned

UIC: UIC Listing
A listing of wells identified as underground injection wells, in the California Oil and Gas Wells database.

Date of Government Version: 06/06/2022
Date Data Arrived at EDR: 06/07/2022
Date Made Active in Reports: 08/23/2022
Number of Days to Update: 77
Source: Deaprtment of Conservation
Telephone: 916-445-2408
Last EDR Contact: 08/31/2022
Next Scheduled EDR Contact: 12/19/2022
Data Release Frequency: Varies

UIC GEO: Underground Injection Control Sites (GEOTRACKER)
Underground control injection sites

Date of Government Version: 05/23/2022
Date Data Arrived at EDR: 05/23/2022
Date Made Active in Reports: 06/02/2022
Number of Days to Update: 10
Source: State Water Resource Control Board
Telephone: 866-480-1028
Last EDR Contact: 08/31/2022
Next Scheduled EDR Contact: 12/19/2022
Data Release Frequency: Varies

WASTEWATER PITS: Oil Wastewater Pits Listing
Water officials discovered that oil producers have been dumping chemical-laden wastewater into hundreds of unlined pits that are operating without proper permits. Inspections completed by the Central Valley Regional Water Quality Control Board revealed the existence of previously unidentified waste sites. The water boards review found that more than one-third of the region's active disposal pits are operating without permission.

Date of Government Version: 02/11/2021
Date Data Arrived at EDR: 07/01/2021
Date Made Active in Reports: 09/29/2021
Number of Days to Update: 90
Source: RWQCB, Central Valley Region
Telephone: 559-445-5577
Last EDR Contact: 07/08/2022
Next Scheduled EDR Contact: 10/17/2022
Data Release Frequency: Varies

WDS: Waste Discharge System
Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9
Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 08/09/2022
Next Scheduled EDR Contact: 11/28/2022
Data Release Frequency: No Update Planned

WIP: Well Investigation Program Case List
Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 07/03/2009
Date Data Arrived at EDR: 07/21/2009
Date Made Active in Reports: 08/03/2009
Number of Days to Update: 13
Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 06/14/2022
Next Scheduled EDR Contact: 10/03/2022
Data Release Frequency: No Update Planned

MILITARY PRIV SITES: Military Privatized Sites (GEOTRACKER)
Military privatized sites

Date of Government Version: 05/23/2022
Date Data Arrived at EDR: 05/23/2022
Date Made Active in Reports: 06/02/2022
Number of Days to Update: 10
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 08/31/2022
Next Scheduled EDR Contact: 12/19/2022
Data Release Frequency: Varies

PROJECT: Project Sites (GEOTRACKER)
Projects sites

Date of Government Version: 05/23/2022
Date Data Arrived at EDR: 05/23/2022
Date Made Active in Reports: 06/02/2022
Number of Days to Update: 10

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 08/31/2022
Next Scheduled EDR Contact: 12/19/2022
Data Release Frequency: Varies

WDR: Waste Discharge Requirements Listing

In general, the Waste Discharge Requirements (WDRs) Program (sometimes also referred to as the "Non Chapter 15 (Non 15) Program") regulates point discharges that are exempt pursuant to Subsection 20090 of Title 27 and not subject to the Federal Water Pollution Control Act. Exemptions from Title 27 may be granted for nine categories of discharges (e.g., sewage, wastewater, etc.) that meet, and continue to meet, the preconditions listed for each specific exemption. The scope of the WDRs Program also includes the discharge of wastes classified as inert, pursuant to section 20230 of Title 27.

Date of Government Version: 06/06/2022
Date Data Arrived at EDR: 06/07/2022
Date Made Active in Reports: 08/24/2022
Number of Days to Update: 78

Source: State Water Resources Control Board
Telephone: 916-341-5810
Last EDR Contact: 08/31/2022
Next Scheduled EDR Contact: 12/19/2022
Data Release Frequency: Quarterly

CIWQS: California Integrated Water Quality System

The California Integrated Water Quality System (CIWQS) is a computer system used by the State and Regional Water Quality Control Boards to track information about places of environmental interest, manage permits and other orders, track inspections, and manage violations and enforcement activities.

Date of Government Version: 08/16/2022
Date Data Arrived at EDR: 08/17/2022
Date Made Active in Reports: 08/18/2022
Number of Days to Update: 1

Source: State Water Resources Control Board
Telephone: 866-794-4977
Last EDR Contact: 08/17/2022
Next Scheduled EDR Contact: 12/12/2022
Data Release Frequency: Varies

CERS: CalEPA Regulated Site Portal Data

The CalEPA Regulated Site Portal database combines data about environmentally regulated sites and facilities in California into a single database. It combines data from a variety of state and federal databases, and provides an overview of regulated activities across the spectrum of environmental programs for any given location in California. These activities include hazardous materials and waste, state and federal cleanups, impacted ground and surface waters, and toxic materials

Date of Government Version: 04/18/2022
Date Data Arrived at EDR: 04/19/2022
Date Made Active in Reports: 07/12/2022
Number of Days to Update: 84

Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 07/18/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

NON-CASE INFO: Non-Case Information Sites (GEOTRACKER)

Non-Case Information sites

Date of Government Version: 05/23/2022
Date Data Arrived at EDR: 05/23/2022
Date Made Active in Reports: 06/02/2022
Number of Days to Update: 10

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 08/31/2022
Next Scheduled EDR Contact: 12/19/2022
Data Release Frequency: Varies

OTHER OIL GAS: Other Oil & Gas Projects Sites (GEOTRACKER)

Other Oil & Gas Projects sites

Date of Government Version: 05/23/2022
Date Data Arrived at EDR: 05/23/2022
Date Made Active in Reports: 06/02/2022
Number of Days to Update: 10

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 08/31/2022
Next Scheduled EDR Contact: 12/19/2022
Data Release Frequency: Varies

PROD WATER PONDS: Produced Water Ponds Sites (GEOTRACKER)
Produced water ponds sites

Date of Government Version: 05/23/2022
Date Data Arrived at EDR: 05/23/2022
Date Made Active in Reports: 06/02/2022
Number of Days to Update: 10

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 08/31/2022
Next Scheduled EDR Contact: 12/19/2022
Data Release Frequency: Varies

SAMPLING POINT: Sampling Point ? Public Sites (GEOTRACKER)
Sampling point - public sites

Date of Government Version: 05/23/2022
Date Data Arrived at EDR: 05/23/2022
Date Made Active in Reports: 06/02/2022
Number of Days to Update: 10

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 08/31/2022
Next Scheduled EDR Contact: 12/19/2022
Data Release Frequency: Varies

WELL STIM PROJ: Well Stimulation Project (GEOTRACKER)
Includes areas of groundwater monitoring plans, a depiction of the monitoring network, and the facilities, boundaries, and subsurface characteristics of the oilfield and the features (oil and gas wells, produced water ponds, UIC wells, water supply wells, etc?) being monitored

Date of Government Version: 05/23/2022
Date Data Arrived at EDR: 05/23/2022
Date Made Active in Reports: 06/02/2022
Number of Days to Update: 10

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 08/31/2022
Next Scheduled EDR Contact: 12/19/2022
Data Release Frequency: Varies

HWTS: Hazardous Waste Tracking System
DTSC maintains the Hazardous Waste Tracking System that stores ID number information since the early 1980s and manifest data since 1993. The system collects both manifest copies from the generator and destination facility.

Date of Government Version: 04/05/2022
Date Data Arrived at EDR: 04/05/2022
Date Made Active in Reports: 04/26/2022
Number of Days to Update: 21

Source: Department of Toxic Substances Control
Telephone: 916-324-2444
Last EDR Contact: 07/06/2022
Next Scheduled EDR Contact: 10/17/2022
Data Release Frequency: Varies

PCS ENF: Enforcement data
No description is available for this data

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 02/05/2015
Date Made Active in Reports: 03/06/2015
Number of Days to Update: 29

Source: EPA
Telephone: 202-564-2497
Last EDR Contact: 06/28/2022
Next Scheduled EDR Contact: 10/17/2022
Data Release Frequency: Varies

PCS: Permit Compliance System
PCS is a computerized management information system that contains data on National Pollutant Discharge Elimination System (NPDES) permit holding facilities. PCS tracks the permit, compliance, and enforcement status of NPDES facilities.

Date of Government Version: 07/14/2011
Date Data Arrived at EDR: 08/05/2011
Date Made Active in Reports: 09/29/2011
Number of Days to Update: 55

Source: EPA, Office of Water
Telephone: 202-564-2496
Last EDR Contact: 06/28/2022
Next Scheduled EDR Contact: 10/17/2022
Data Release Frequency: Semi-Annually

PCS INACTIVE: Listing of Inactive PCS Permits
An inactive permit is a facility that has shut down or is no longer discharging.

Date of Government Version: 11/05/2014
Date Data Arrived at EDR: 01/06/2015
Date Made Active in Reports: 05/06/2015
Number of Days to Update: 120
Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 06/28/2022
Next Scheduled EDR Contact: 10/17/2022
Data Release Frequency: Semi-Annually

MINES MRDS: Mineral Resources Data System
Mineral Resources Data System

Date of Government Version: 04/06/2018
Date Data Arrived at EDR: 10/21/2019
Date Made Active in Reports: 10/24/2019
Number of Days to Update: 3
Source: USGS
Telephone: 703-648-6533
Last EDR Contact: 08/17/2022
Next Scheduled EDR Contact: 12/05/2022
Data Release Frequency: Varies

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: EDR Proprietary Manufactured Gas Plants
The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A
Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Hist Auto: EDR Exclusive Historical Auto Stations
EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A
Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Hist Cleaner: EDR Exclusive Historical Cleaners
EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF: Recovered Government Archive Solid Waste Facilities List

The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Resources Recycling and Recovery in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/13/2014
Number of Days to Update: 196

Source: Department of Resources Recycling and Recovery
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LUST: Recovered Government Archive Leaking Underground Storage Tank

The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the State Water Resources Control Board in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 12/30/2013
Number of Days to Update: 182

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

COUNTY RECORDS

ALAMEDA COUNTY:

CS ALAMEDA: Contaminated Sites

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 01/09/2019
Date Data Arrived at EDR: 01/11/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 53

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 06/28/2022
Next Scheduled EDR Contact: 10/17/2022
Data Release Frequency: Semi-Annually

UST ALAMEDA: Underground Tanks

Underground storage tank sites located in Alameda county.

Date of Government Version: 06/29/2022
Date Data Arrived at EDR: 06/29/2022
Date Made Active in Reports: 07/21/2022
Number of Days to Update: 22

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 06/29/2022
Next Scheduled EDR Contact: 10/17/2022
Data Release Frequency: Semi-Annually

AMADOR COUNTY:

CUPA AMADOR: CUPA Facility List
Cupa Facility List

Date of Government Version: 07/22/2022
Date Data Arrived at EDR: 07/27/2022
Date Made Active in Reports: 08/01/2022
Number of Days to Update: 5

Source: Amador County Environmental Health
Telephone: 209-223-6439
Last EDR Contact: 07/26/2022
Next Scheduled EDR Contact: 11/14/2022
Data Release Frequency: Varies

BUTTE COUNTY:

CUPA BUTTE: CUPA Facility Listing
Cupa facility list.

Date of Government Version: 04/21/2017
Date Data Arrived at EDR: 04/25/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 106

Source: Public Health Department
Telephone: 530-538-7149
Last EDR Contact: 06/28/2022
Next Scheduled EDR Contact: 10/17/2022
Data Release Frequency: No Update Planned

CALVERAS COUNTY:

CUPA CALVERAS: CUPA Facility Listing
Cupa Facility Listing

Date of Government Version: 06/14/2022
Date Data Arrived at EDR: 06/15/2022
Date Made Active in Reports: 09/02/2022
Number of Days to Update: 79

Source: Calveras County Environmental Health
Telephone: 209-754-6399
Last EDR Contact: 06/14/2022
Next Scheduled EDR Contact: 10/03/2022
Data Release Frequency: Quarterly

COLUSA COUNTY:

CUPA COLUSA: CUPA Facility List
Cupa facility list.

Date of Government Version: 04/06/2020
Date Data Arrived at EDR: 04/23/2020
Date Made Active in Reports: 07/10/2020
Number of Days to Update: 78

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 07/26/2022
Next Scheduled EDR Contact: 11/14/2022
Data Release Frequency: Semi-Annually

CONTRA COSTA COUNTY:

SL CONTRA COSTA: Site List
List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 04/21/2022
Date Data Arrived at EDR: 04/22/2022
Date Made Active in Reports: 07/12/2022
Number of Days to Update: 81

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 07/19/2022
Next Scheduled EDR Contact: 11/07/2022
Data Release Frequency: Semi-Annually

DEL NORTE COUNTY:

CUPA DEL NORTE: CUPA Facility List
Cupa Facility list

Date of Government Version: 05/04/2022
Date Data Arrived at EDR: 05/06/2022
Date Made Active in Reports: 07/28/2022
Number of Days to Update: 83

Source: Del Norte County Environmental Health Division
Telephone: 707-465-0426
Last EDR Contact: 07/19/2022
Next Scheduled EDR Contact: 11/07/2022
Data Release Frequency: Varies

EL DORADO COUNTY:

CUPA EL DORADO: CUPA Facility List
CUPA facility list.

Date of Government Version: 08/08/2022
Date Data Arrived at EDR: 08/09/2022
Date Made Active in Reports: 09/01/2022
Number of Days to Update: 23

Source: El Dorado County Environmental Management Department
Telephone: 530-621-6623
Last EDR Contact: 07/20/2022
Next Scheduled EDR Contact: 11/07/2022
Data Release Frequency: Varies

FRESNO COUNTY:

CUPA FRESNO: CUPA Resources List
Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 06/28/2021
Date Data Arrived at EDR: 12/21/2021
Date Made Active in Reports: 03/03/2022
Number of Days to Update: 72

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 07/01/2022
Next Scheduled EDR Contact: 10/10/2022
Data Release Frequency: Semi-Annually

GLENN COUNTY:

CUPA GLENN: CUPA Facility List
Cupa facility list

Date of Government Version: 01/22/2018
Date Data Arrived at EDR: 01/24/2018
Date Made Active in Reports: 03/14/2018
Number of Days to Update: 49

Source: Glenn County Air Pollution Control District
Telephone: 830-934-6500
Last EDR Contact: 07/12/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: No Update Planned

HUMBOLDT COUNTY:

CUPA HUMBOLDT: CUPA Facility List
CUPA facility list.

Date of Government Version: 08/12/2021
Date Data Arrived at EDR: 08/12/2021
Date Made Active in Reports: 11/08/2021
Number of Days to Update: 88

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 08/09/2022
Next Scheduled EDR Contact: 11/28/2022
Data Release Frequency: Semi-Annually

IMPERIAL COUNTY:

CUPA IMPERIAL: CUPA Facility List
Cupa facility list.

Date of Government Version: 04/18/2022
Date Data Arrived at EDR: 04/19/2022
Date Made Active in Reports: 07/12/2022
Number of Days to Update: 84

Source: San Diego Border Field Office
Telephone: 760-339-2777
Last EDR Contact: 07/13/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

INYO COUNTY:

CUPA INYO: CUPA Facility List
Cupa facility list.

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 04/03/2018
Date Made Active in Reports: 06/14/2018
Number of Days to Update: 72

Source: Inyo County Environmental Health Services
Telephone: 760-878-0238
Last EDR Contact: 08/09/2022
Next Scheduled EDR Contact: 11/28/2022
Data Release Frequency: Varies

KERN COUNTY:

CUPA KERN: CUPA Facility List
A listing of sites included in the Kern County Hazardous Material Business Plan.

Date of Government Version: 05/06/2022
Date Data Arrived at EDR: 05/12/2022
Date Made Active in Reports: 08/01/2022
Number of Days to Update: 81

Source: Kern County Public Health
Telephone: 661-321-3000
Last EDR Contact: 09/07/2022
Next Scheduled EDR Contact: 11/14/2022
Data Release Frequency: Varies

UST KERN: Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 05/06/2022
Date Data Arrived at EDR: 05/12/2022
Date Made Active in Reports: 08/01/2022
Number of Days to Update: 81

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 09/07/2022
Next Scheduled EDR Contact: 11/14/2022
Data Release Frequency: Quarterly

KINGS COUNTY:

CUPA KINGS: CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 12/03/2020
Date Data Arrived at EDR: 01/26/2021
Date Made Active in Reports: 04/14/2021
Number of Days to Update: 78

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 08/09/2022
Next Scheduled EDR Contact: 11/28/2022
Data Release Frequency: Varies

LAKE COUNTY:

CUPA LAKE: CUPA Facility List
Cupa facility list

Date of Government Version: 02/10/2022
Date Data Arrived at EDR: 02/11/2022
Date Made Active in Reports: 05/04/2022
Number of Days to Update: 82

Source: Lake County Environmental Health
Telephone: 707-263-1164
Last EDR Contact: 07/07/2022
Next Scheduled EDR Contact: 10/24/2022
Data Release Frequency: Varies

LASSEN COUNTY:

CUPA LASSEN: CUPA Facility List
Cupa facility list

Date of Government Version: 07/31/2020
Date Data Arrived at EDR: 08/21/2020
Date Made Active in Reports: 11/09/2020
Number of Days to Update: 80

Source: Lassen County Environmental Health
Telephone: 530-251-8528
Last EDR Contact: 07/12/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

LOS ANGELES COUNTY:

AOCONCERN: Key Areas of Concerns in Los Angeles County
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office. Date of Government Version: 3/30/2009 Exide Site area is a cleanup plan of lead-impacted soil surrounding the former Exide Facility as designated by the DTSC. Date of Government Version: 7/17/2017

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 10/23/2009
Number of Days to Update: 206

Source: N/A
Telephone: N/A
Last EDR Contact: 09/07/2022
Next Scheduled EDR Contact: 12/26/2022
Data Release Frequency: No Update Planned

HMS LOS ANGELES: HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 04/04/2022
Date Data Arrived at EDR: 04/05/2022
Date Made Active in Reports: 04/13/2022
Number of Days to Update: 8

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 06/29/2022
Next Scheduled EDR Contact: 10/17/2022
Data Release Frequency: Semi-Annually

LF LOS ANGELES: List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 04/11/2022
Date Data Arrived at EDR: 04/12/2022
Date Made Active in Reports: 07/05/2022
Number of Days to Update: 84

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 07/11/2022
Next Scheduled EDR Contact: 10/24/2022
Data Release Frequency: Varies

LF LOS ANGELES CITY: City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 01/01/2022
Date Data Arrived at EDR: 01/21/2022
Date Made Active in Reports: 04/11/2022
Number of Days to Update: 80

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 07/06/2022
Next Scheduled EDR Contact: 10/24/2022
Data Release Frequency: Varies

LOS ANGELES AST: Active & Inactive AST Inventory
A listing of active & inactive above ground petroleum storage tank site locations, located in the City of Los Angeles.

Date of Government Version: 06/01/2019
Date Data Arrived at EDR: 06/25/2019
Date Made Active in Reports: 08/22/2019
Number of Days to Update: 58
Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 06/14/2022
Next Scheduled EDR Contact: 10/03/2022
Data Release Frequency: Varies

LOS ANGELES CO LF METHANE: Methane Producing Landfills
This data was created on April 30, 2012 to represent known disposal sites in Los Angeles County that may produce and emanate methane gas. The shapefile contains disposal sites within Los Angeles County that once accepted degradable refuse material. Information used to create this data was extracted from a landfill survey performed by County Engineers (Major Waste System Map, 1973) as well as historical records from CalRecycle, Regional Water Quality Control Board, and Los Angeles County Department of Public Health

Date of Government Version: 01/10/2022
Date Data Arrived at EDR: 01/12/2022
Date Made Active in Reports: 04/04/2022
Number of Days to Update: 82
Source: Los Angeles County Department of Public Works
Telephone: 626-458-6973
Last EDR Contact: 07/06/2022
Next Scheduled EDR Contact: 10/24/2022
Data Release Frequency: No Update Planned

LOS ANGELES HM: Active & Inactive Hazardous Materials Inventory
A listing of active & inactive hazardous materials facility locations, located in the City of Los Angeles.

Date of Government Version: 01/13/2022
Date Data Arrived at EDR: 03/21/2022
Date Made Active in Reports: 06/15/2022
Number of Days to Update: 86
Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 06/24/2022
Next Scheduled EDR Contact: 10/03/2022
Data Release Frequency: Varies

LOS ANGELES UST: Active & Inactive UST Inventory
A listing of active & inactive underground storage tank site locations and underground storage tank historical sites, located in the City of Los Angeles.

Date of Government Version: 03/22/2022
Date Data Arrived at EDR: 06/24/2022
Date Made Active in Reports: 09/08/2022
Number of Days to Update: 76
Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 06/24/2022
Next Scheduled EDR Contact: 10/03/2022
Data Release Frequency: Varies

SITE MIT LOS ANGELES: Site Mitigation List
Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 05/26/2021
Date Data Arrived at EDR: 07/09/2021
Date Made Active in Reports: 09/29/2021
Number of Days to Update: 82
Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 07/14/2022
Next Scheduled EDR Contact: 10/24/2022
Data Release Frequency: Annually

UST EL SEGUNDO: City of El Segundo Underground Storage Tank
Underground storage tank sites located in El Segundo city.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 04/19/2017
Date Made Active in Reports: 05/10/2017
Number of Days to Update: 21
Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 07/06/2022
Next Scheduled EDR Contact: 10/24/2022
Data Release Frequency: No Update Planned

UST LONG BEACH: City of Long Beach Underground Storage Tank
Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 04/22/2019
Date Data Arrived at EDR: 04/23/2019
Date Made Active in Reports: 06/27/2019
Number of Days to Update: 65

Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 07/12/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

UST TORRANCE: City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 04/20/2022
Date Data Arrived at EDR: 04/21/2022
Date Made Active in Reports: 07/12/2022
Number of Days to Update: 82

Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 07/13/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Semi-Annually

MADERA COUNTY:

CUPA MADERA: CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 08/10/2020
Date Data Arrived at EDR: 08/12/2020
Date Made Active in Reports: 10/23/2020
Number of Days to Update: 72

Source: Madera County Environmental Health
Telephone: 559-675-7823
Last EDR Contact: 08/09/2022
Next Scheduled EDR Contact: 11/28/2022
Data Release Frequency: Varies

MARIN COUNTY:

UST MARIN: Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 09/26/2018
Date Data Arrived at EDR: 10/04/2018
Date Made Active in Reports: 11/02/2018
Number of Days to Update: 29

Source: Public Works Department Waste Management
Telephone: 415-473-6647
Last EDR Contact: 06/22/2022
Next Scheduled EDR Contact: 10/10/2022
Data Release Frequency: Semi-Annually

MENDOCINO COUNTY:

UST MENDOCINO: Mendocino County UST Database
A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 09/22/2021
Date Data Arrived at EDR: 11/18/2021
Date Made Active in Reports: 11/22/2021
Number of Days to Update: 4

Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 08/16/2022
Next Scheduled EDR Contact: 12/05/2022
Data Release Frequency: Annually

MERCED COUNTY:

CUPA MERCED: CUPA Facility List
CUPA facility list.

Date of Government Version: 02/15/2022
Date Data Arrived at EDR: 02/17/2022
Date Made Active in Reports: 05/11/2022
Number of Days to Update: 83

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 08/09/2022
Next Scheduled EDR Contact: 11/28/2022
Data Release Frequency: Varies

MONO COUNTY:

CUPA MONO: CUPA Facility List
CUPA Facility List

Date of Government Version: 02/22/2021
Date Data Arrived at EDR: 03/02/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 78

Source: Mono County Health Department
Telephone: 760-932-5580
Last EDR Contact: 08/15/2022
Next Scheduled EDR Contact: 12/05/2022
Data Release Frequency: Varies

MONTEREY COUNTY:

CUPA MONTEREY: CUPA Facility Listing
CUPA Program listing from the Environmental Health Division.

Date of Government Version: 10/04/2021
Date Data Arrived at EDR: 10/06/2021
Date Made Active in Reports: 12/29/2021
Number of Days to Update: 84

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 08/16/2022
Next Scheduled EDR Contact: 10/10/2022
Data Release Frequency: Varies

NAPA COUNTY:

LUST NAPA: Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 01/09/2017
Date Data Arrived at EDR: 01/11/2017
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 50

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 08/15/2022
Next Scheduled EDR Contact: 12/05/2022
Data Release Frequency: No Update Planned

UST NAPA: Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 09/05/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 10/31/2019
Number of Days to Update: 52

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 08/15/2022
Next Scheduled EDR Contact: 12/05/2022
Data Release Frequency: No Update Planned

NEVADA COUNTY:

CUPA NEVADA: CUPA Facility List
CUPA facility list.

Date of Government Version: 07/21/2022
Date Data Arrived at EDR: 07/25/2022
Date Made Active in Reports: 07/28/2022
Number of Days to Update: 3

Source: Community Development Agency
Telephone: 530-265-1467
Last EDR Contact: 07/19/2022
Next Scheduled EDR Contact: 11/07/2022
Data Release Frequency: Varies

ORANGE COUNTY:

IND_SITE ORANGE: List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 04/08/2022
Date Data Arrived at EDR: 05/09/2022
Date Made Active in Reports: 07/28/2022
Number of Days to Update: 80

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 07/29/2022
Next Scheduled EDR Contact: 11/14/2022
Data Release Frequency: Annually

LUST ORANGE: List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 04/08/2022
Date Data Arrived at EDR: 05/18/2022
Date Made Active in Reports: 08/03/2022
Number of Days to Update: 77

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 07/29/2022
Next Scheduled EDR Contact: 11/14/2022
Data Release Frequency: Quarterly

UST ORANGE: List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 04/08/2022
Date Data Arrived at EDR: 05/03/2022
Date Made Active in Reports: 07/20/2022
Number of Days to Update: 78

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 08/01/2022
Next Scheduled EDR Contact: 11/14/2022
Data Release Frequency: Quarterly

PLACER COUNTY:

MS PLACER: Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 05/25/2022
Date Data Arrived at EDR: 05/26/2022
Date Made Active in Reports: 06/01/2022
Number of Days to Update: 6

Source: Placer County Health and Human Services
Telephone: 530-745-2363
Last EDR Contact: 08/23/2022
Next Scheduled EDR Contact: 12/12/2022
Data Release Frequency: Semi-Annually

PLUMAS COUNTY:

CUPA PLUMAS: CUPA Facility List
Plumas County CUPA Program facilities.

Date of Government Version: 03/31/2019
Date Data Arrived at EDR: 04/23/2019
Date Made Active in Reports: 06/26/2019
Number of Days to Update: 64

Source: Plumas County Environmental Health
Telephone: 530-283-6355
Last EDR Contact: 07/12/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

RIVERSIDE COUNTY:

LUST RIVERSIDE: Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 03/31/2022
Date Data Arrived at EDR: 03/31/2022
Date Made Active in Reports: 04/08/2022
Number of Days to Update: 8

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 09/07/2022
Next Scheduled EDR Contact: 12/26/2022
Data Release Frequency: Quarterly

UST RIVERSIDE: Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 03/31/2022
Date Data Arrived at EDR: 03/31/2022
Date Made Active in Reports: 04/08/2022
Number of Days to Update: 8

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 09/07/2022
Next Scheduled EDR Contact: 12/26/2022
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

CS SACRAMENTO: Toxic Site Clean-Up List
List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 06/18/2021
Date Data Arrived at EDR: 09/28/2021
Date Made Active in Reports: 12/14/2021
Number of Days to Update: 77

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 06/30/2022
Next Scheduled EDR Contact: 10/10/2022
Data Release Frequency: Quarterly

ML SACRAMENTO: Master Hazardous Materials Facility List
Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 05/04/2022
Date Data Arrived at EDR: 06/30/2022
Date Made Active in Reports: 07/05/2022
Number of Days to Update: 5

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 06/30/2022
Next Scheduled EDR Contact: 10/10/2022
Data Release Frequency: Quarterly

SAN BENITO COUNTY:

CUPA SAN BENITO: CUPA Facility List
Cupa facility list

Date of Government Version: 04/29/2022
Date Data Arrived at EDR: 04/29/2022
Date Made Active in Reports: 05/05/2022
Number of Days to Update: 6

Source: San Benito County Environmental Health
Telephone: N/A
Last EDR Contact: 07/26/2022
Next Scheduled EDR Contact: 11/14/2022
Data Release Frequency: Varies

SAN BERNARDINO COUNTY:

PERMITS SAN BERNARDINO: Hazardous Material Permits
This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 05/12/2022
Date Data Arrived at EDR: 05/12/2022
Date Made Active in Reports: 05/18/2022
Number of Days to Update: 6

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 07/26/2022
Next Scheduled EDR Contact: 11/14/2022
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

HMMD SAN DIEGO: Hazardous Materials Management Division Database

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 05/31/2022
Date Data Arrived at EDR: 05/31/2022
Date Made Active in Reports: 08/18/2022
Number of Days to Update: 79

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 08/25/2022
Next Scheduled EDR Contact: 12/12/2022
Data Release Frequency: Quarterly

LF SAN DIEGO: Solid Waste Facilities

San Diego County Solid Waste Facilities.

Date of Government Version: 10/27/2021
Date Data Arrived at EDR: 03/04/2022
Date Made Active in Reports: 05/31/2022
Number of Days to Update: 88

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 07/12/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

SAN DIEGO CO LOP: Local Oversight Program Listing

A listing of all LOP release sites that are or were under the County of San Diego's jurisdiction. Included are closed or transferred cases, open cases, and cases that did not have a case type indicated. The cases without a case type are mostly complaints; however, some of them could be LOP cases.

Date of Government Version: 07/22/2021
Date Data Arrived at EDR: 10/19/2021
Date Made Active in Reports: 01/13/2022
Number of Days to Update: 86

Source: Department of Environmental Health
Telephone: 858-505-6874
Last EDR Contact: 07/13/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

SAN DIEGO CO SAM: Environmental Case Listing

The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 03/23/2010
Date Data Arrived at EDR: 06/15/2010
Date Made Active in Reports: 07/09/2010
Number of Days to Update: 24

Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 08/23/2022
Next Scheduled EDR Contact: 12/12/2022
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

CUPA SAN FRANCISCO CO: CUPA Facility Listing

Cupa facilities

Date of Government Version: 05/05/2022
Date Data Arrived at EDR: 05/06/2022
Date Made Active in Reports: 07/28/2022
Number of Days to Update: 83

Source: San Francisco County Department of Environmental Health
Telephone: 415-252-3896
Last EDR Contact: 07/26/2022
Next Scheduled EDR Contact: 11/14/2022
Data Release Frequency: Varies

LUST SAN FRANCISCO: Local Oversite Facilities
A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10

Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 07/26/2022
Next Scheduled EDR Contact: 11/14/2022
Data Release Frequency: No Update Planned

UST SAN FRANCISCO: Underground Storage Tank Information
Underground storage tank sites located in San Francisco county.

Date of Government Version: 05/05/2022
Date Data Arrived at EDR: 05/06/2022
Date Made Active in Reports: 07/20/2022
Number of Days to Update: 75

Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 07/26/2022
Next Scheduled EDR Contact: 11/14/2022
Data Release Frequency: Quarterly

SAN FRANCISO COUNTY:

SAN FRANCISCO MAHER: Maher Ordinance Property Listing
a listing of properties that fall within a Maher Ordinance, for all of San Francisco

Date of Government Version: 01/18/2022
Date Data Arrived at EDR: 01/20/2022
Date Made Active in Reports: 04/27/2022
Number of Days to Update: 97

Source: San Francisco Planning
Telephone: 628-652-7483
Last EDR Contact: 07/05/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

SAN JOAQUIN COUNTY:

UST SAN JOAQUIN: San Joaquin Co. UST
A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 06/22/2018
Date Data Arrived at EDR: 06/26/2018
Date Made Active in Reports: 07/11/2018
Number of Days to Update: 15

Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 09/07/2022
Next Scheduled EDR Contact: 12/26/2022
Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

CUPA SAN LUIS OBISPO: CUPA Facility List
Cupa Facility List.

Date of Government Version: 05/16/2022
Date Data Arrived at EDR: 05/18/2022
Date Made Active in Reports: 08/04/2022
Number of Days to Update: 78

Source: San Luis Obispo County Public Health Department
Telephone: 805-781-5596
Last EDR Contact: 08/09/2022
Next Scheduled EDR Contact: 11/28/2022
Data Release Frequency: Varies

SAN MATEO COUNTY:

BI SAN MATEO: Business Inventory
List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 02/20/2020
Date Data Arrived at EDR: 02/20/2020
Date Made Active in Reports: 04/24/2020
Number of Days to Update: 64
Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 09/09/2022
Next Scheduled EDR Contact: 12/19/2022
Data Release Frequency: Annually

LUST SAN MATEO: Fuel Leak List
A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 03/29/2019
Date Data Arrived at EDR: 03/29/2019
Date Made Active in Reports: 05/29/2019
Number of Days to Update: 61
Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 08/29/2022
Next Scheduled EDR Contact: 12/19/2022
Data Release Frequency: Semi-Annually

SANTA BARBARA COUNTY:

CUPA SANTA BARBARA: CUPA Facility Listing
CUPA Program Listing from the Environmental Health Services division.

Date of Government Version: 09/08/2011
Date Data Arrived at EDR: 09/09/2011
Date Made Active in Reports: 10/07/2011
Number of Days to Update: 28
Source: Santa Barbara County Public Health Department
Telephone: 805-686-8167
Last EDR Contact: 08/09/2022
Next Scheduled EDR Contact: 11/28/2022
Data Release Frequency: No Update Planned

SANTA CLARA COUNTY:

CUPA SANTA CLARA: Cupa Facility List
Cupa facility list

Date of Government Version: 05/16/2022
Date Data Arrived at EDR: 05/18/2022
Date Made Active in Reports: 08/04/2022
Number of Days to Update: 78
Source: Department of Environmental Health
Telephone: 408-918-1973
Last EDR Contact: 08/09/2022
Next Scheduled EDR Contact: 11/28/2022
Data Release Frequency: Varies

HIST LUST SANTA CLARA: HIST LUST - Fuel Leak Site Activity Report
A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22
Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

LUST SANTA CLARA: LOP Listing
A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 03/03/2014
Date Data Arrived at EDR: 03/05/2014
Date Made Active in Reports: 03/18/2014
Number of Days to Update: 13
Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 08/15/2022
Next Scheduled EDR Contact: 12/05/2022
Data Release Frequency: No Update Planned

SAN JOSE HAZMAT: Hazardous Material Facilities
Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 11/03/2020
Date Data Arrived at EDR: 11/05/2020
Date Made Active in Reports: 01/26/2021
Number of Days to Update: 82

Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 07/26/2022
Next Scheduled EDR Contact: 11/14/2022
Data Release Frequency: Annually

SANTA CRUZ COUNTY:

CUPA SANTA CRUZ: CUPA Facility List
CUPA facility listing.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 05/23/2017
Number of Days to Update: 90

Source: Santa Cruz County Environmental Health
Telephone: 831-464-2761
Last EDR Contact: 08/09/2022
Next Scheduled EDR Contact: 11/28/2022
Data Release Frequency: Varies

SHASTA COUNTY:

CUPA SHASTA: CUPA Facility List
Cupa Facility List.

Date of Government Version: 06/15/2017
Date Data Arrived at EDR: 06/19/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 51

Source: Shasta County Department of Resource Management
Telephone: 530-225-5789
Last EDR Contact: 08/09/2022
Next Scheduled EDR Contact: 11/28/2022
Data Release Frequency: Varies

SOLANO COUNTY:

LUST SOLANO: Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 06/04/2019
Date Data Arrived at EDR: 06/06/2019
Date Made Active in Reports: 08/13/2019
Number of Days to Update: 68

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 08/23/2022
Next Scheduled EDR Contact: 12/12/2022
Data Release Frequency: Quarterly

UST SOLANO: Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 09/15/2021
Date Data Arrived at EDR: 09/16/2021
Date Made Active in Reports: 12/09/2021
Number of Days to Update: 84

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 08/23/2022
Next Scheduled EDR Contact: 12/12/2022
Data Release Frequency: Quarterly

SONOMA COUNTY:

CUPA SONOMA: Cupa Facility List
Cupa Facility list

Date of Government Version: 07/02/2021
Date Data Arrived at EDR: 07/06/2021
Date Made Active in Reports: 07/14/2021
Number of Days to Update: 8

Source: County of Sonoma Fire & Emergency Services Department
Telephone: 707-565-1174
Last EDR Contact: 06/14/2022
Next Scheduled EDR Contact: 10/03/2022
Data Release Frequency: Varies

LUST SONOMA: Leaking Underground Storage Tank Sites
A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 06/30/2021
Date Data Arrived at EDR: 06/30/2021
Date Made Active in Reports: 09/24/2021
Number of Days to Update: 86

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 06/14/2022
Next Scheduled EDR Contact: 10/04/2021
Data Release Frequency: Quarterly

STANISLAUS COUNTY:

CUPA STANISLAUS: CUPA Facility List
Cupa facility list

Date of Government Version: 02/08/2022
Date Data Arrived at EDR: 02/10/2022
Date Made Active in Reports: 05/04/2022
Number of Days to Update: 83

Source: Stanislaus County Department of Ennvironmental Protection
Telephone: 209-525-6751
Last EDR Contact: 07/11/2022
Next Scheduled EDR Contact: 10/24/2022
Data Release Frequency: Varies

SUTTER COUNTY:

UST SUTTER: Underground Storage Tanks
Underground storage tank sites located in Sutter county.

Date of Government Version: 05/03/2022
Date Data Arrived at EDR: 05/27/2022
Date Made Active in Reports: 08/11/2022
Number of Days to Update: 76

Source: Sutter County Environmental Health Services
Telephone: 530-822-7500
Last EDR Contact: 08/23/2022
Next Scheduled EDR Contact: 12/12/2022
Data Release Frequency: Semi-Annually

TEHAMA COUNTY:

CUPA TEHAMA: CUPA Facility List
Cupa facilities

Date of Government Version: 01/13/2021
Date Data Arrived at EDR: 01/14/2021
Date Made Active in Reports: 04/06/2021
Number of Days to Update: 82

Source: Tehama County Department of Environmental Health
Telephone: 530-527-8020
Last EDR Contact: 07/26/2022
Next Scheduled EDR Contact: 11/14/2022
Data Release Frequency: Varies

TRINITY COUNTY:

CUPA TRINITY: CUPA Facility List
Cupa facility list

Date of Government Version: 04/18/2022
Date Data Arrived at EDR: 04/19/2022
Date Made Active in Reports: 07/12/2022
Number of Days to Update: 84

Source: Department of Toxic Substances Control
Telephone: 760-352-0381
Last EDR Contact: 07/13/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

TULARE COUNTY:

CUPA TULARE: CUPA Facility List
Cupa program facilities

Date of Government Version: 04/26/2021
Date Data Arrived at EDR: 04/28/2021
Date Made Active in Reports: 07/13/2021
Number of Days to Update: 76

Source: Tulare County Environmental Health Services Division
Telephone: 559-624-7400
Last EDR Contact: 07/12/2022
Next Scheduled EDR Contact: 11/14/2022
Data Release Frequency: Varies

TUOLUMNE COUNTY:

CUPA TUOLUMNE: CUPA Facility List
Cupa facility list

Date of Government Version: 04/23/2018
Date Data Arrived at EDR: 04/25/2018
Date Made Active in Reports: 06/25/2018
Number of Days to Update: 61

Source: Divison of Environmental Health
Telephone: 209-533-5633
Last EDR Contact: 07/12/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Varies

VENTURA COUNTY:

BWT VENTURA: Business Plan, Hazardous Waste Producers, and Operating Underground Tanks
The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 03/28/2022
Date Data Arrived at EDR: 04/28/2022
Date Made Active in Reports: 07/15/2022
Number of Days to Update: 78

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 07/18/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Quarterly

LF VENTURA: Inventory of Illegal Abandoned and Inactive Sites
Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 12/01/2011
Date Data Arrived at EDR: 12/01/2011
Date Made Active in Reports: 01/19/2012
Number of Days to Update: 49

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 06/22/2022
Next Scheduled EDR Contact: 10/10/2022
Data Release Frequency: No Update Planned

LUST VENTURA: Listing of Underground Tank Cleanup Sites
Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 08/02/2022
Next Scheduled EDR Contact: 11/21/2022
Data Release Frequency: No Update Planned

MED WASTE VENTURA: Medical Waste Program List
To protect public health and safety and the environment from potential exposure to disease causing agents, the Environmental Health Division Medical Waste Program regulates the generation, handling, storage, treatment and disposal of medical waste throughout the County.

Date of Government Version: 03/28/2022
Date Data Arrived at EDR: 04/28/2022
Date Made Active in Reports: 07/15/2022
Number of Days to Update: 78

Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 07/18/2022
Next Scheduled EDR Contact: 10/31/2022
Data Release Frequency: Quarterly

UST VENTURA: Underground Tank Closed Sites List
Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 05/26/2022
Date Data Arrived at EDR: 06/07/2022
Date Made Active in Reports: 08/24/2022
Number of Days to Update: 78
Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 08/31/2022
Next Scheduled EDR Contact: 12/19/2022
Data Release Frequency: Quarterly

YOLO COUNTY:

UST YOLO: Underground Storage Tank Comprehensive Facility Report
Underground storage tank sites located in Yolo county.

Date of Government Version: 03/24/2022
Date Data Arrived at EDR: 03/31/2022
Date Made Active in Reports: 06/27/2022
Number of Days to Update: 88
Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 06/22/2022
Next Scheduled EDR Contact: 10/10/2022
Data Release Frequency: Annually

YUBA COUNTY:

CUPA YUBA: CUPA Facility List
CUPA facility listing for Yuba County.

Date of Government Version: 05/03/2022
Date Data Arrived at EDR: 05/05/2022
Date Made Active in Reports: 07/28/2022
Number of Days to Update: 84
Source: Yuba County Environmental Health Department
Telephone: 530-749-7523
Last EDR Contact: 08/02/2022
Next Scheduled EDR Contact: 11/07/2022
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data
Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 05/08/2022
Date Data Arrived at EDR: 05/09/2022
Date Made Active in Reports: 07/28/2022
Number of Days to Update: 80
Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 08/08/2022
Next Scheduled EDR Contact: 11/21/2022
Data Release Frequency: No Update Planned

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 04/10/2019
Date Made Active in Reports: 05/16/2019
Number of Days to Update: 36
Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 06/28/2022
Next Scheduled EDR Contact: 10/17/2022
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data

Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 01/01/2019
Date Data Arrived at EDR: 10/29/2021
Date Made Active in Reports: 01/19/2022
Number of Days to Update: 82

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 07/29/2022
Next Scheduled EDR Contact: 11/07/2022
Data Release Frequency: Quarterly

PA MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 06/30/2018
Date Data Arrived at EDR: 07/19/2019
Date Made Active in Reports: 09/10/2019
Number of Days to Update: 53

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 07/06/2022
Next Scheduled EDR Contact: 10/24/2022
Data Release Frequency: Annually

RI MANIFEST: Manifest information

Hazardous waste manifest information

Date of Government Version: 12/31/2020
Date Data Arrived at EDR: 11/30/2021
Date Made Active in Reports: 02/18/2022
Number of Days to Update: 80

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 08/10/2022
Next Scheduled EDR Contact: 11/28/2022
Data Release Frequency: Annually

WI MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 05/31/2018
Date Data Arrived at EDR: 06/19/2019
Date Made Active in Reports: 09/03/2019
Number of Days to Update: 76

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 08/29/2022
Next Scheduled EDR Contact: 12/19/2022
Data Release Frequency: Annually

Oil/Gas Pipelines

Source: Endeavor Business Media

Petroleum Bundle (Crude Oil, Refined Products, Petrochemicals, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)) N = Natural Gas Bundle (Natural Gas, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)). This map includes information copyrighted by Endeavor Business Media. This information is provided on a best effort basis and Endeavor Business Media does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of Endeavor Business Media.

Electric Power Transmission Line Data

Source: Endeavor Business Media

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Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:

Source: American Hospital Association, Inc.
Telephone: 312-280-5991

The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing

Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000

A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.
Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.
Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.
Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish and Wildlife
Telephone: 916-445-0411

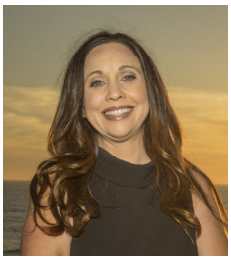
Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

STREET AND ADDRESS INFORMATION

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RÉSUMÉS

JENNIFER BAUER MORTON, PG


Jennifer Morton, PG

Education

BS – Earth Sciences, University of California, San Diego La Jolla, CA 2001

Professional Licenses

State of California Professional Geologist, License No. 8617

Specialty Certifications

OSHA 40-Hour HAZWOPER Training

Professional Affiliations

San Diego Association of Geologists (Past President, 2015)
Commercial Real Estate Women (CREW)
San Diego Environmental Professionals

Professional Experience

Ms. Morton has worked as an environmental consultant since 2001. As a staff and project geologist Ms. Morton conducted site assessments for numerous leaking underground storage tank projects, installing groundwater monitoring wells, collecting soil and groundwater samples, writing workplans and reports, assisting with remediation, and evaluating data. After several years primarily conducting Phase II site assessments for open environmental cases, Ms. Morton moved into the due diligence area of environmental consulting, initially conducting Phase I/Phase II assessments for gas stations, and later for a wide variety of properties throughout California, as well as in Las Vegas, Nevada and Tucson, Arizona. As a Project Manager, Ms. Morton has overseen numerous Phase I and Phase II site assessments and remediation projects, developing work plans, managing staff and field work, writing and reviewing Phase I and Phase II site assessment reports, developing remediation plans, and interfacing with clients, property owners, and regulatory agencies.

Phase I ESA, cold storage facility, Downtown Los Angeles, California. Ms. Morton conducted a Phase I ESA at a cold storage facility constructed in the 1880's in downtown Los Angeles slated for redevelopment. The facility was located adjacent to railroad tracks and in close proximity to a large remedial excavation for multiple leaking underground storage tanks. The cold storage facility included heavy equipment and stored used oil. Historical fire insurance maps revealed that a large transformer had previously been located at the site during the time period when PCBs were likely used. Ms. Morton also identified the former presence of machine shops and spray paint booths, and provided recommendations for soil and soil vapor sampling prior to redevelopment of the site.

Phase I, Phase II, and Remedial Excavation, auto salvage yard, Chula Vista, California. Ms. Morton conducted a Phase I ESA at an auto salvage yard slated for redevelopment as an office building complex. Ms. Morton identified historical use of the property as a dairy farm. Due to the potential presence of petroleum hydrocarbons associated with auto dismantling activities, Ms. Morton

recommended and conducted soil sampling throughout the property. During grading activities, a large, 20-foot deep illegal landfill was uncovered. Ms. Morton developed a plan for a remedial excavation and confirmation sampling in conjunction with the local oversight agency, leading to case closure and allowing for redevelopment of the property.

Phase I, Phase II, and Soil Vapor Extraction, vacant land/former commercial property, Long Beach, California. Ms. Morton oversaw Phase I, Phase II, health risk assessment, and remediation activities for a property in Long Beach slated for redevelopment as mixed-use commercial and low-income housing. A former dry cleaner and automotive repair facility were identified onsite. Adjoining properties included automotive repair facilities and an upgradient leaking underground storage tank site. Petroleum hydrocarbons and tetrachloroethylene were identified in soil and groundwater at the site. Ms. Morton oversaw the installation of groundwater monitoring wells, permanent soil vapor probes, soil vapor extraction wells, and a soil vapor extraction system. Ms. Morton developed a Removal Action Workplan and worked with the Department of Toxic Substances Control to achieve approval in a short time period to accommodate construction schedules.

Phase I site reconnaissance at a large apartment complex, Los Angeles, California. Ms. Morton was part of a team conducting a site reconnaissance for a Phase I ESA at a large apartment complex in the La Brea neighborhood of Los Angeles. The complex included high-rise apartment towers and garden apartment homes constructed in the 1940s above a shallow oil field. Ms. Morton implemented a radon survey during the site reconnaissance. Ms. Morton identified locations of oil collection sumps and methane monitoring equipment, and discovered that USTs used for fueling resident's vehicles were historically located on the subject property.

Phase I ESA, Historic Inn, Rancho Santa Fe, California. Ms. Morton conducted a Phase I ESA at a hotel and associated residential properties. Ms. Morton identified former agricultural land using historical aerial photographs at the location of the residences located on the hotel property and provided a recommendation for soil sampling prior to redevelopment of the properties.

Phase I and Phase II ESA, palm tree farm, Carlsbad, California. Ms. Morton conducted a Phase I ESA on a property that had been used as a palm tree farm and residence. Ms. Morton discovered regulatory records indicating a UST had also been located at the property. Based on the historical site usage, Ms. Morton recommended soil sampling to determine if the site had been impacted by organochlorine pesticides as well as by petroleum hydrocarbons from the UST. Ms. Morton collected shallow soil samples using a hand auger for pesticide analysis and oversaw direct push drilling in the location of the former UST identified by the property owner to collect soil samples for petroleum hydrocarbon and VOC analysis.

Leaking Underground Storage Tank Investigations, throughout Southern California. Ms. Morton worked on a portfolio of leaking UST projects at gas stations for a major oil company. Ms. Morton conducted groundwater monitoring well installations, soil, and groundwater sampling, and workplan, site assessment, and groundwater monitoring report preparation.

Apartment Complex, San Diego, California. Ms. Morton conducted a Phase I ESA at a 448 unit apartment complex per Freddie Mac guidelines. Although the subject property did not appear on any regulatory databases, Ms. Morton determined that the complex was constructed within the footprint of a former missile manufacturing facility impacted by chlorinated solvents. Ms. Morton completed an extensive file review at the San Diego County Department of Environmental Health, as well as a limited health risk assessment. Ms. Morton determined that the continued presence of volatile organic compounds in soil vapor beneath the subject property at concentrations representing a potential human health risk could not be ruled out, and was therefore considered a recognized environmental condition.

Los Angeles Unified School District, Los Angeles, California. Ms. Morton conducted a Phase I ESA in conformance with California Department of Education requirements at an LAUSD elementary school. Ms. Morton prepared Phase II workplans in conformance with DTSC and LAUSD requirements for several school projects slated for redevelopment, and oversaw soil sampling at one LAUSD property.

Oxnard School District, Oxnard, California. Ms. Morton oversaw Phase I and Phase II ESAs for a portfolio of projects in the Oxnard School District. Soil sampling was conducted in accordance with DTSC requirements. Ms. Morton further oversaw the disposal of contaminated soil encountered during the Phase II assessment at several schools where playgrounds were to be reconstructed.

Encinitas, CA, Terramar Environmental Consulting. As the Owner and Principle Geologist, Ms. Morton provided Phase I and Phase II environmental consulting services. Projects included industrial facilities, gas stations, dry cleaners, schools, agricultural land, multi-family residential properties, office buildings, medical facilities, and shopping centers. Services included Phase I environmental site assessment site reconnaissance and reporting; Phase II soil, groundwater, and soil vapor sampling, data analysis, reporting, and interfacing with regulatory agencies; and remedial excavation oversight, waste disposal coordination, confirmation sampling, data analysis, and reporting.

Carlsbad, CA, Rincon Consultants, Inc. Senior Project Manager responsible for managing Phase I, Phase II, and remediation projects throughout California. Duties included preparing proposals; managing budgets; invoicing; writing and reviewing workplans, Phase I and Phase II environmental site assessment reports, and remediation plans and reports; overseeing soil, soil vapor, and groundwater sampling; writing hazards and geology sections for CEQA documents; managing a soil vapor extraction remediation project; technical input and oversight; and interfacing with regulatory agencies, clients, land owners, city governments, and developers. Projects included drycleaners, former gas stations, agricultural land, auto repair facilities, former industrial facilities with multiple recognized environmental conditions; peer review of site assessment documents and remedial action plan for a State Response site; and a geohazards study on a 120-mile oil pipeline.

San Marcos, CA, Palomar College. Instructor of Oceanography and Geology responsible for teaching Oceanography and Geology courses to majors and non-majors for fulfillment of general physical science requirement. Served as Assistant Advisor to the Geosciences Connection, the campus geosciences club.

Irvine, CA, Conestoga-Rovers and Associates. Project Manager overseeing all aspects of environmental site assessment and remediation projects. Duties included budgeting; invoicing; interfacing with clients and regulatory agencies; writing and reviewing work plans, quarterly status reports, site assessment reports, remediation system optimization reviews, sensitive receptor surveys, and site conceptual models; managing field work, including groundwater monitoring and remediation well installations, groundwater sampling, remediation system installation and monitoring; evaluating laboratory analytical data; and reviewing historic and current geologic and environmental information.

Vista, CA, GeoTek, Inc. Environmental Geologist and Project Manager responsible for managing environmental Phase I and Phase II site assessment projects and remediation projects. Duties included writing proposals, property mitigation plans, Phase I, Phase II and remediation reports; managing and conducting field work including drilling, soil vapor surveys, soil sampling, and a large remedial excavation; evaluating laboratory data; reviewing historic and current geologic and environmental information; communicating with clients and regulatory agencies; managing budgets.

San Diego, CA, SECOR International, Inc. Project Geologist responsible for conducting all aspects of environmental assessments for gasoline service stations. Duties included review of historic and

current geologic and environmental data; preparing proposals, work plans, Phase I/Phase II site assessment reports, and groundwater monitoring reports; communicating with clients and government agencies; overseeing drilling and groundwater monitoring well installations; generating soil boring logs, geologic cross-sections, and groundwater gradient maps; evaluating laboratory analytical data.

Irvine, CA, MACTEC, Inc. Staff Geologist who conducted environmental assessments for leaking underground storage tank sites. Duties included review of historic geologic and environmental information; writing interim remedial action plans, corrective action plans, and work plans for excavations, soil and groundwater sampling, and monitoring well installations; communicating with regulatory agencies; obtaining drilling and encroachment permits; coordinating field activities for soil and groundwater sampling and well installations; monitoring drilling projects, well installations, well development, and well abandonment; performing groundwater gauging and sampling; generating soil boring logs and geologic cross-sections; coordinating waste handling; assisting with preparation of site conceptual models; preparing site assessment and groundwater monitoring reports, groundwater gradient maps, and hydrocarbon isoconcentration maps.

Publications and Presentations

Kuhn J, Legg M, Shleman R, Bauer J. "Neotectonics and Coastal Instability: Orange and Northern San Diego Counties, California." Neotectonics in the North Coastal Area, San Diego County, California. Vol. 1.

Morton, Jennifer, Editor, "Coast to Cactus: Geology and Tectonics, San Diego to Salton Trough." San Diego: Sunbelt Publications 2014.



TYLER OVERTON

Education

BA – Environmental Studies/Geography, University of Colorado, 2002

Specialty Certifications

40-Hour OSHA EPA-Approved Hazardous Waste Operations and Emergency Response Training
Co-chair of the Industrial Environmental Association's Hazardous Materials Committee

Professional Experience

Mr. Overton is an environmental professional specializing in the application of due diligence, including Phase I and Phase II Environmental Site Assessments (ESAs). His experience includes subsurface investigations, remediation, soil management, landfill evaluations, health risk assessments (HRAs), ambient air monitoring, groundwater sampling and monitoring, watershed analysis, land use studies, litigation support, and property assessments. In working with developers, investors, lending institutions, and municipalities in performing Phase I ESAs, Mr. Overton has completed site reconnaissance, regulatory agency record reviews, historical record reviews, historical land use interpretations, data collection, data evaluation, and site assessment reports. Mr. Overton can accurately assess sites and provide valuable information for reports that meet regulatory agency requirements.

Mr. Overton has experience managing drilling operations, soil vapor surveys, remediation projects, and construction oversight. He has implemented remedial action work plans that include source zone excavation, dual phase extraction, soil vapor extraction, in situ chemical oxidation, and bio-augmentation. He has provided construction quality assurance (CQA) at landfill facilities and managed Brownfields redevelopment excavation and grading projects.

Mr. Overton's project experience is summarized below:

Housing Development Partners, Villa de Vida Contaminated Soil Excavation. Mr. Overton provided excavation oversight for contaminated soil that was deemed a hazardous waste and exported to a licensed facility under signed manifest.

Community Housing Works, Excavation Monitoring, San Diego, CA. Mr. Overton provided oversight for the excavation monitoring of lead-bearing soil placed below the footprint of a new LGBT senior-housing facility. Work was conducted under the oversight of the County of San Diego Department of Environmental Health (DEH), and consisted of the implementation of a Soil Management Plan.

Community Housing Works, Excavation Monitoring of Contaminated Soils, Vista, CA. Mr. Overton served as a soil technician for the excavation monitoring of gasoline-, diesel-, and motor oil-impacted soils that were removed prior to construction of a new subterranean parking structure. Approximately 2,000 cubic yards of soils were classified as hazardous and removed from the project site as a part of the mitigation.

Bank of Hawaii Information Systems and Communications Office (ISCO), Remediation, Chino Hills, CA. Mr. Overton performed remediation activities at a former retail fueling facility with four

USTs containing gasoline and diesel. He was directly involved in the implementation of a groundwater remediation system to inject hydrogen peroxide into the subsurface to remediate impacts from petroleum hydrocarbons (PHCs).

Iwashita Development, Phase II Subsurface Investigation, San Diego, CA. Mr. Overton managed the subsurface sampling for a former dry cleaning plant and former automobile fueling and service station before redevelopment.

Manchester Pacific Gateway, Soil Classification and Excavation Monitoring, San Diego, CA. Mr. Overton played an integral role in the assessment, consisting of oversight, segregation, and export of contaminated soils from a large former Navy complex for future property redeveloped with new commercial, business, and retail buildings.

Waste Management, Gas Collection System Installation for El Sobrante Landfill, Corona, CA. Mr. Overton served as the Project Coordinator for the installation of numerous gas collection wells at the El Sobrante Landfill. Installation included drilling and construction of wells up to 250 feet deep, which allowed for the collection of landfill gas (LFG).

Lowe's, Excavation Monitoring, San Diego, CA. Mr. Overton served as a soil technician for the excavation monitoring of contaminated soil below the footprint of a new building, including the removal of underground storage tanks (USTs). Work and tank removal were conducted under the oversight of the County of San Diego DEH, and consisted of Phase II ESAs and preparation and implementation of a Property Mitigation Plan.

Republic Services, Inc., Gas Monitoring Probe Installation for Sycamore Landfill, Santee, CA. Mr. Overton served as the Project Coordinator for the installation of six new perimeter monitoring probes at the Sycamore Landfill. Installation included drilling and construction of probes up to 470 feet deep, which allowed for the detection of migrating LFG.

Pacific Steel, Resource Conservation and Recovery Act (RCRA) Soil Shipping, San Diego, CA. Mr. Overton served as the point of contact for the removal and disposal of a hazardous waste soil stockpile. SCS monitored dust emissions and the loading and shipping of hazardous soil to ensure that safe handling practices were followed.

Excavation Monitoring of Contaminated Soils for SDG-Left Field and Cistera Building, San Diego, CA. Mr. Overton served as a soil technician for the excavation monitoring of lead-, diesel-, and gasoline-contaminated soils removed as a part of the new building's below-ground parking structure. Work was conducted under the oversight of the County of San Diego DEH, and consisted of Phase II ESAs and preparation and implementation of a Property Mitigation Plan.

Phase I and Phase II ESAs for Carlsbad Desalination Project, Carlsbad, CA. Mr. Overton completed several Phase I and Phase II ESAs for easements on many locations, including former agricultural lands. Locations included previous soil sampling conducted to determine the presence of pesticides, which were evaluated using the waste export criteria, based on pesticide concentrations found.

Republic Services, Inc., Stage 3B Cell Development for Sycamore Landfill, Santee, CA. Mr. Overton served as Project Manager for the construction of a new waste disposal cell at Sycamore Landfill. Construction included managing the excavation of soils, grading of the cell, identifying the correct location of the leachate collection system, and installation of a composite liner system. The construction of this disposal cell prolonged the life and increased capacity of the landfill by approximately 1 million cubic yards.

Stormwater Sampling for Lake San Marcos Study, San Marcos, CA. Mr. Overton was part of the SCS team investigating Lake San Marcos and San Marcos Creek, both listed as EPA Clean Water Act 303(d) Category 5 Impaired Water Bodies. He conducted stormwater sampling and provided insight on laboratory analysis.

RD Brown Company, Leaking Underground Storage Tank (LUST) Case Assessment and Remediation, City of Imperial, CA. As Project Manager, Mr. Overton participated in several on- and off-site soil, soil vapor, and groundwater assessments, and is currently involved with ongoing remediation and monitoring of a proposed senior living facility at a former gasoline service station.

ANALYTICAL DATA
AND CHAIN-OF-CUSTODY DOCUMENTATION

Enthalpy Analytical
931 West Barkley Ave
Orange, CA 92868
(714) 771-6900

enthalpy.com

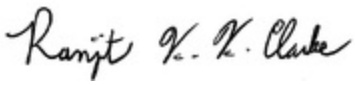
Lab Job Number: 470098
Report Level: II
Report Date: 10/13/2022

Analytical Report *prepared for:*

Jen Morton
SCS Engineers
8799 Balboa #290
San Diego, CA 92123

Location: Pemcor

Authorized for release by:



Ranjit K Clarke, Client Services Manager
(714) 771-9906
Ranjit.Clarke@enthalpy.com

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the Laboratory Manager or the Manager's designee, as verified by the above signature which applies to this PDF file as well as any associated electronic data deliverable files. The results contained in this report meet all requirements of NELAP and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

CA ELAP# 1338, NELAP# 4038, SCAQMD LAP# 18LA0518, LACSD ID# 10105

ENTHALPY ANALYTICAL

Sample Summary

Jen Morton
SCS Engineers
8799 Balboa #290
San Diego, CA 92123

Lab Job #: 470098
Location: Pemcor
Date Received: 10/04/22

Sample ID	Lab ID	Collected	Matrix
B1	470098-001	10/03/22 08:36	Soil
B2	470098-002	10/03/22 08:43	Soil
B3	470098-003	10/03/22 08:51	Soil
B4	470098-004	10/03/22 08:58	Soil
B1-B4 COMPOSITE	470098-005	10/03/22 00:00	Soil
B5	470098-006	10/03/22 09:06	Soil
B6	470098-007	10/03/22 09:09	Soil
B7	470098-008	10/03/22 09:18	Soil
B8	470098-009	10/03/22 09:24	Soil
B5-B8 COMPOSITE	470098-010	10/03/22 00:00	Soil
B9	470098-011	10/03/22 09:36	Soil
B10	470098-012	10/03/22 09:41	Soil
B11	470098-013	10/03/22 09:55	Soil
B12	470098-014	10/03/22 10:06	Soil
B9-B12 COMPOSITE	470098-015	10/03/22 00:00	Soil
B13	470098-016	10/03/22 10:11	Soil
B14	470098-017	10/03/22 10:20	Soil
B15	470098-018	10/03/22 10:28	Soil
B16	470098-019	10/03/22 10:37	Soil
B13-B16 COMPOSITE	470098-020	10/03/22 00:00	Soil
B17	470098-021	10/03/22 10:50	Soil
B18	470098-022	10/03/22 10:58	Soil
B19	470098-023	10/03/22 11:09	Soil
B20	470098-024	10/03/22 11:24	Soil
B17-B20 COMPOSITE	470098-025	10/03/22 00:00	Soil
B21	470098-026	10/03/22 11:31	Soil

ENTHALPY ANALYTICAL

Sample Summary

Jen Morton
SCS Engineers
8799 Balboa #290
San Diego, CA 92123

Lab Job #: 470098
Location: Pemcor
Date Received: 10/04/22

Sample ID	Lab ID	Collected	Matrix
B22	470098-027	10/03/22 11:47	Soil
B23	470098-028	10/03/22 11:56	Soil
B24	470098-029	10/03/22 12:08	Soil
B21-B24 COMPOSITE	470098-030	10/03/22 00:00	Soil
B25	470098-031	10/03/22 12:19	Soil
B26	470098-032	10/03/22 12:31	Soil
B27	470098-033	10/03/22 12:36	Soil
B28	470098-034	10/03/22 12:47	Soil
B25-B28 COMPOSITE	470098-035	10/03/22 00:00	Soil
B31	470098-036	10/03/22 13:08	Soil
B32	470098-037	10/03/22 13:21	Soil
B29	470098-038	10/03/22 13:48	Soil
B30	470098-039	10/03/22 13:56	Soil
B29-B32 COMPOSITE	470098-040	10/03/22 00:00	Soil

ENTHALPY ANALYTICAL

Chain of Custody Record Lab No: 470098 Page: 1 of 4

Turn Around Time (rush by advanced notice only)

Standard:	✓	5 Day:		3 Day:	
2 Day:		1 Day:		Custom TAT:	

<<< Select a Laboratory >>>

#N/A

#N/A

Matrix: A = Air S = Soil/Solid W = Water DW = Drinking Wate SD = Sediment PP = Pure Product SEA = Sea Water SW = Swab T = Tissue WP = Wipe O = Other

Preservatives: 1 = $Na_2S_2O_3$ 2 = HCl 3 = HNO_3 4 = H_2SO_4 5 = NaOH 6 = Other

Sample Receipt Temp: (lab use only)

CUSTOMER INFORMATION		PROJECT INFORMATION	
Company:	SCS Engineers	Name:	Pemcor
Report To:	Jen Morton / Tyler Overton	Number:	01222081.01
Email:	~~jmorton~~ jmorton@scsengineers.com tovertun@scsengineers.com	P.O. #:	01222081.01
Address:	8799 Balboa Ave. ~~56~~ 260	Address:	33521 Zeiders Rd.
			Menifee, CA 92584
Phone:	858-571-5500	Global ID:	—
Fax:	—	Sampled By:	Tyler Overton

	Sample ID	Sampling Date	Sampling Time	Matrix	Container No. / Size	Pres.	OCPs (EPA 8081A)	Title 22 (EPA 6010)	Fecal Coliform (9221E)	Test Instructions / Comments
1	B1	10/3/22	8:36	soil	4oz glass jar	none	X	X	X	10.5/3.6
2	B2		8:43							composite
3	B3		8:51							
4	B4		8:58							
5	B5		9:06							
6	B6		9:09							composite
7	B7		9:18							
8	B8		9:24							
9	B9		9:36							composite with B11 & B12
10	B10	↓	9:41	↓	↓	↓	↓	↓	↓	

	Signature	Print Name	Company / Title	Date / Time
1 Relinquished By:		~~W~~ Tyler Overton	SCS Engineers	~~10/3/22~~ 10/4/22 1001
1 Received By:		~~W~~ T. Nash	EA - SD	10/4/22 1001
2 Relinquished By:		T. Nash	EA - SD	10/4/22 1215
2 Received By:			EA	10-4-22 1220
3 Relinquished By:			EA	10-4-22 1640
3 Received By:		Elizabeth Ramirez	EA	10-4-22 16:40

ENTHALPY ANALYTICAL

Chain of Custody Record Lab No: 470098 Page: 2 of 4

Turn Around Time (rush by advanced notice only)

Standard:	✓	5 Day:		3 Day:	
2 Day:		1 Day:		Custom TAT:	

<<< Select a Laboratory >>>
#N/A
#N/A

Matrix: A = Air S = Soil/Solid W = Water DW = Drinking Wate SD = Sediment PP = Pure Product SEA = Sea Water SW = Swab T = Tissue WP = Wipe O = Other

Preservatives: 1 = $Na_2S_2O_3$ 2 = HCl 3 = HNO_3 4 = H_2SO_4 5 = NaOH 6 = Other

Sample Receipt Temp: (lab use only)

CUSTOMER INFORMATION		PROJECT INFORMATION	
Company:	← same as pg 1-7	Name:	
Report To:		Number:	
Email:		P.O. #:	
Address:		Address:	
Phone:		Global ID:	
Fax:		Sampled By:	

	Sample ID	Sampling Date	Sampling Time	Matrix	Container No. / Size	Pres.	OCPs (EPA 8081A)	Title 22 (EPA 6010)	Fecal Coliform (9221E)	Test Instructions / Comments
										0.5 / 3.6
1	B11	10/3/22	955	SO:1	4 oz glass jar	none	X	X	X	composite with B9 : B10
2	B12		1006							
3	B13		1011							composite
4	B14		1020							
5	B15		1028							
6	B16		1037							
7	B17		1050							composite
8	B18		1058							
9	B19		1109							
10	B20		1124							

	Signature	Print Name	Company / Title	Date / Time
[1] Relinquished By:		W Tyler Overton	SCS Engineers	10/4/22 1001
[1] Received By:		T. NASH	EA-SD	10/4/22 1001
[2] Relinquished By:		T. NASH	EA-SD	10/4/22 1215
[2] Received By:		NT CVLG	EA	10-4-22 1223
[3] Relinquished By:		NT CVLG	EA	10-4-22 1600
[3] Received By:		Elizabeth Ramirez	EA	10-4-22 16:40

ENTHALPY ANALYTICAL

Chain of Custody Record

Lab No: 470098

Page: 3 of 4

Turn Around Time (rush by advanced notice only)

Standard:	✓	5 Day:		3 Day:	
2 Day:		1 Day:		Custom TAT:	

<<< Select a Laboratory >>>

#N/A

#N/A

Matrix: A = Air S = Soil/Solid W = Water DW = Drinking Wate SD = Sediment PP = Pure Product SEA = Sea Water SW = Swab T = Tissue WP = Wipe O = Other

Preservatives: 1 = $Na_2S_2O_3$ 2 = HCl 3 = HNO_3 4 = H_2SO_4 5 = NaOH 6 = Other

Sample Receipt Temp: (lab use only)

CUSTOMER INFORMATION		PROJECT INFORMATION	
Company:	← same as pg. 1 →	Name:	
Report To:		Number:	
Email:		P.O. #:	
Address:		Address:	
Phone:		Global ID:	
Fax:		Sampled By:	

	Sample ID	Sampling Date	Sampling Time	Matrix	Container No. / Size	Pres.	Analysis Request: OCPs (EPA 8081A)	Analysis Request: Title 22 (EPA 6010)	Analysis Request: Fecal Coliform (9221E)	Test Instructions / Comments
1	B 21	10/3/22	1131	Soil	402 glass jar	none	X	X	X	6 F / 3.6
2	B 22		1147							composite
3	B 23		1156							
4	B 24		1208							
5	B 25		1219							
6	B 26		1231							composite
7	B 27		1236							
8	B 28		1247							
9	~~B 29~~									
10	~~B 30~~									

	Signature	Print Name	Company / Title	Date / Time
[1] Relinquished By:		N Tyler Overton	SCS Engineers	10/4/22 1001
[1] Received By:		T. NASH	EA-SD	10/4/22 1001
[2] Relinquished By:		T. NASH	EA-SD	10/4/22 1215
[2] Received By:				10-4-22 1520
[3] Relinquished By:				10-4-22 1640
[3] Received By:		Elizabeth Ramm	EA	10-4-22 16:40

ENTHALPY ANALYTICAL

Chain of Custody Record

Lab No: 470098

Page: 4 of 4

Turn Around Time (rush by advanced notice only)

Standard:	✓	5 Day:		3 Day:	
2 Day:		1 Day:		Custom TAT:	

<<< Select a Laboratory >>>

#N/A

#N/A

Matrix: A = Air S = Soil/Solid W = Water DW = Drinking Wate SD = Sediment PP = Pure Product SEA = Sea Water SW = Swab T = Tissue WP = Wipe O = Other

Preservatives: 1 = $Na_2S_2O_3$ 2 = HCl 3 = HNO_3 4 = H_2SO_4 5 = NaOH 6 = Other

Sample Receipt Temp: (lab use only)

CUSTOMER INFORMATION		PROJECT INFORMATION	
Company:	← same as pg 1–7	Name:	
Report To:		Number:	
Email:		P.O. #:	
Address:		Address:	
Phone:		Global ID:	
Fax:		Sampled By:	

	Sample ID	Sampling Date	Sampling Time	Matrix	Container No. / Size	Pres.	Analysis Request: OCPs (8081A)	Tphc 22 (8015D)	Total Coliform (9221E)	Test Instructions / Comments
1	B31	10/3/22	1308	Soil	4oz glass jar	none	X	X	X	10.5 3.6
2	B32	↓	1321	↓	↓	↓	↓	↓	↓	composite
3	B29		1348							
4	B30	↓	1356	↓	↓	↓	↓	↓	↓	
5										
6										
7										
8										
9										
10										

	Signature	Print Name	Company / Title	Date / Time
[1] Relinquished By:		Whitney Overton	SCS Engineers	10/4/22 1001
[1] Received By:		T. NASH	EA-SD	10/4/22 1001
[2] Relinquished By:		T. NASH	EA-SD	10/4/22 1215
[2] Received By:			EA	10-4-22 17:20
[3] Relinquished By:			EA	10-4-22 1640
[3] Received By:		Elizabeth Ramirez	EA	10-4-22 16:40

ENTHALPY ANALYTICAL

SAMPLE ACCEPTANCE CHECKLIST

Section 1

Client: SCS Engineers Project: Pemcor

Date Received: 10/4/22 Sampler's Name Present: ☑ Yes ☐ No

Section 2

Sample(s) received in a cooler? ☑ Yes, How many? 1 ☐ No (skip section 2) Sample Temp (°C) (No Cooler): _____

Sample Temp (°C), One from each cooler: #1: 10.5 #2: _____ #3: _____ #4: _____

(Acceptance range is < 6°C but not frozen (for Microbiology samples, acceptance range is < 10°C but not frozen). It is acceptable for samples collected the same day as sample receipt to have a higher temperature as long as there is evidence that cooling has begun.)

Shipping Information: _____

Section 3

Was the cooler packed with: ☑ Ice ☐ Ice Packs ☐ Bubble Wrap ☐ Styrofoam ☐ Paper ☐ None ☐ Other _____

Cooler Temp (°C): #1: 3.6 #2: _____ #3: _____ #4: _____

Section 4	YES	NO	N/A
Was a COC received?	✓		
Are sample IDs present?	✓		
Are sampling dates & times present?	✓		
Is a relinquished signature present?	✓		
Are the tests required clearly indicated on the COC?	✓		
Are custody seals present?		✓	
If custody seals are present, were they intact?			✓
Are all samples sealed in plastic bags? (Recommended for Microbiology samples)			✓
Did all samples arrive intact? If no, indicate in Section 4 below.	✓		
Did all bottle labels agree with COC? (ID, dates and times)	✓		
Were the samples collected in the correct containers for the required tests?	✓		
Are the containers labeled with the correct preservatives?			✓
Is there headspace in the VOA vials greater than 5-6 mm in diameter?			✓
Was a sufficient amount of sample submitted for the requested tests?	✓		

Section 5 Explanations/Comments

Section 6

For discrepancies, how was the Project Manager notified? ☐ Verbal PM Initials: _____ Date/Time _____ ☐ Email (email sent to/on): _____ / _____

Project Manager's response:

Completed By: _____ Date: 10/4/22

ENTHALPY ANALYTICAL

Analysis Results for 470098

Jen Morton
SCS Engineers
8799 Balboa #290
San Diego, CA 92123

Lab Job #: 470098
Location: Pemcor
Date Received: 10/04/22

Sample ID: B1-B4 COMPOSITE **Lab ID: 470098-005** **Collected: 10/03/22**
Matrix: Soil

470098-005 Analyte	Result	Qual	Units	RL	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA 6010B Prep Method: EPA 3050B									
Antimony	ND		mg/Kg	2.9	0.98	298573	10/10/22	10/11/22	SBW
Arsenic	**1.6**		mg/Kg	0.98	0.98	298573	10/10/22	10/11/22	SBW
Barium	**99**		mg/Kg	0.98	0.98	298573	10/10/22	10/11/22	SBW
Beryllium	ND		mg/Kg	0.49	0.98	298573	10/10/22	10/11/22	SBW
Cadmium	ND		mg/Kg	0.49	0.98	298573	10/10/22	10/11/22	SBW
Chromium	**7.3**		mg/Kg	0.98	0.98	298573	10/10/22	10/11/22	SBW
Cobalt	**4.2**		mg/Kg	0.49	0.98	298573	10/10/22	10/11/22	SBW
Copper	**6.8**		mg/Kg	0.98	0.98	298573	10/10/22	10/11/22	SBW
Lead	**4.9**		mg/Kg	0.98	0.98	298573	10/10/22	10/11/22	SBW
Molybdenum	ND		mg/Kg	0.98	0.98	298573	10/10/22	10/11/22	SBW
Nickel	**3.5**		mg/Kg	0.98	0.98	298573	10/10/22	10/11/22	SBW
Selenium	ND		mg/Kg	2.9	0.98	298573	10/10/22	10/11/22	SBW
Silver	ND		mg/Kg	0.49	0.98	298573	10/10/22	10/11/22	SBW
Thallium	ND		mg/Kg	2.9	0.98	298573	10/10/22	10/11/22	SBW
Vanadium	**37**		mg/Kg	0.98	0.98	298573	10/10/22	10/11/22	SBW
Zinc	**50**		mg/Kg	4.9	0.98	298573	10/10/22	10/11/22	SBW
Method: EPA 7471A Prep Method: METHOD									
Mercury	ND		mg/Kg	0.15	1.1	298719	10/11/22	10/12/22	SBW
Method: EPA 8081A Prep Method: EPA 3546									
alpha-BHC	ND		ug/Kg	4.9	0.99	298548	10/10/22	10/11/22	TJW
beta-BHC	ND		ug/Kg	4.9	0.99	298548	10/10/22	10/11/22	TJW
gamma-BHC	ND		ug/Kg	4.9	0.99	298548	10/10/22	10/11/22	TJW
delta-BHC	ND		ug/Kg	4.9	0.99	298548	10/10/22	10/11/22	TJW
Heptachlor	ND		ug/Kg	4.9	0.99	298548	10/10/22	10/11/22	TJW
Aldrin	ND		ug/Kg	4.9	0.99	298548	10/10/22	10/11/22	TJW
Heptachlor epoxide	ND		ug/Kg	4.9	0.99	298548	10/10/22	10/11/22	TJW
Endosulfan I	ND		ug/Kg	4.9	0.99	298548	10/10/22	10/11/22	TJW
Dieldrin	ND		ug/Kg	4.9	0.99	298548	10/10/22	10/11/22	TJW
4,4'-DDE	ND		ug/Kg	4.9	0.99	298548	10/10/22	10/11/22	TJW
Endrin	ND		ug/Kg	4.9	0.99	298548	10/10/22	10/11/22	TJW
Endosulfan II	ND		ug/Kg	4.9	0.99	298548	10/10/22	10/11/22	TJW
Endosulfan sulfate	ND		ug/Kg	4.9	0.99	298548	10/10/22	10/11/22	TJW
4,4'-DDD	ND		ug/Kg	4.9	0.99	298548	10/10/22	10/11/22	TJW

Results for any subcontracted analyses are not included in this section.

ENTHALPY ANALYTICAL

Analysis Results for 470098

470098-005 Analyte	Result	Qual	Units	RL	DF	Batch	Prepared	Analyzed	Chemist
Endrin aldehyde	ND		ug/Kg	4.9	0.99	298548	10/10/22	10/11/22	TJW
Endrin ketone	ND		ug/Kg	4.9	0.99	298548	10/10/22	10/11/22	TJW
4,4'-DDT	ND		ug/Kg	4.9	0.99	298548	10/10/22	10/11/22	TJW
Methoxychlor	ND		ug/Kg	9.9	0.99	298548	10/10/22	10/11/22	TJW
Toxaphene	ND		ug/Kg	99	0.99	298548	10/10/22	10/11/22	TJW
Chlordane (Technical)	ND		ug/Kg	49	0.99	298548	10/10/22	10/11/22	TJW
Surrogates				**Limits**					
TCMX	50%		%REC	23-120	0.99	298548	10/10/22	10/11/22	TJW
Decachlorobiphenyl	35%		%REC	24-120	0.99	298548	10/10/22	10/11/22	TJW
Method: SM 9221E Prep Method: METHOD									
Fecal Coliform	<0.18	H	MPN/g	0.18	1	298365	10/05/22 11:52	10/07/22 12:39	PAS

Results for any subcontracted analyses are not included in this section.

ENTHALPY ANALYTICAL

Analysis Results for 470098

Sample ID: B5-B8 COMPOSITE	Lab ID: 470098-010	Collected: 10/03/22
	Matrix: Soil	

470098-010 Analyte	Result	Qual	Units	RL	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA 6010B Prep Method: EPA 3050B									
Antimony	ND		mg/Kg	2.9	0.98	298573	10/10/22	10/11/22	SBW
Arsenic	**1.8**		mg/Kg	0.98	0.98	298573	10/10/22	10/11/22	SBW
Barium	**92**		mg/Kg	0.98	0.98	298573	10/10/22	10/11/22	SBW
Beryllium	ND		mg/Kg	0.49	0.98	298573	10/10/22	10/11/22	SBW
Cadmium	ND		mg/Kg	0.49	0.98	298573	10/10/22	10/11/22	SBW
Chromium	**11**		mg/Kg	0.98	0.98	298573	10/10/22	10/11/22	SBW
Cobalt	**5.9**		mg/Kg	0.49	0.98	298573	10/10/22	10/11/22	SBW
Copper	**8.9**		mg/Kg	0.98	0.98	298573	10/10/22	10/11/22	SBW
Lead	**5.0**		mg/Kg	0.98	0.98	298573	10/10/22	10/11/22	SBW
Molybdenum	ND		mg/Kg	0.98	0.98	298573	10/10/22	10/11/22	SBW
Nickel	**4.3**		mg/Kg	0.98	0.98	298573	10/10/22	10/11/22	SBW
Selenium	ND		mg/Kg	2.9	0.98	298573	10/10/22	10/11/22	SBW
Silver	ND		mg/Kg	0.49	0.98	298573	10/10/22	10/11/22	SBW
Thallium	ND		mg/Kg	2.9	0.98	298573	10/10/22	10/11/22	SBW
Vanadium	**62**		mg/Kg	0.98	0.98	298573	10/10/22	10/11/22	SBW
Zinc	**47**		mg/Kg	4.9	0.98	298573	10/10/22	10/11/22	SBW
Method: EPA 7471A Prep Method: METHOD									
Mercury	ND		mg/Kg	0.16	1.2	298719	10/11/22	10/12/22	SBW
Method: EPA 8081A Prep Method: EPA 3546									
alpha-BHC	ND		ug/Kg	5.0	0.99	298548	10/10/22	10/11/22	TJW
beta-BHC	ND		ug/Kg	5.0	0.99	298548	10/10/22	10/11/22	TJW
gamma-BHC	ND		ug/Kg	5.0	0.99	298548	10/10/22	10/11/22	TJW
delta-BHC	ND		ug/Kg	5.0	0.99	298548	10/10/22	10/11/22	TJW
Heptachlor	ND		ug/Kg	5.0	0.99	298548	10/10/22	10/11/22	TJW
Aldrin	ND		ug/Kg	5.0	0.99	298548	10/10/22	10/11/22	TJW
Heptachlor epoxide	ND		ug/Kg	5.0	0.99	298548	10/10/22	10/11/22	TJW
Endosulfan I	ND		ug/Kg	5.0	0.99	298548	10/10/22	10/11/22	TJW
Dieldrin	ND		ug/Kg	5.0	0.99	298548	10/10/22	10/11/22	TJW
4,4'-DDE	ND		ug/Kg	5.0	0.99	298548	10/10/22	10/11/22	TJW
Endrin	ND		ug/Kg	5.0	0.99	298548	10/10/22	10/11/22	TJW
Endosulfan II	ND		ug/Kg	5.0	0.99	298548	10/10/22	10/11/22	TJW
Endosulfan sulfate	ND		ug/Kg	5.0	0.99	298548	10/10/22	10/11/22	TJW
4,4'-DDD	ND		ug/Kg	5.0	0.99	298548	10/10/22	10/11/22	TJW
Endrin aldehyde	ND		ug/Kg	5.0	0.99	298548	10/10/22	10/11/22	TJW
Endrin ketone	ND		ug/Kg	5.0	0.99	298548	10/10/22	10/11/22	TJW
4,4'-DDT	ND		ug/Kg	5.0	0.99	298548	10/10/22	10/11/22	TJW
Methoxychlor	ND		ug/Kg	9.9	0.99	298548	10/10/22	10/11/22	TJW
Toxaphene	ND		ug/Kg	99	0.99	298548	10/10/22	10/11/22	TJW

Results for any subcontracted analyses are not included in this section.

ENTHALPY ANALYTICAL

Analysis Results for 470098

470098-010 Analyte	Result	Qual	Units	RL	DF	Batch	Prepared	Analyzed	Chemist
Chlordane (Technical)	ND		ug/Kg	50	0.99	298548	10/10/22	10/11/22	TJW
Surrogates				**Limits**					
TCMX	52%		%REC	23-120	0.99	298548	10/10/22	10/11/22	TJW
Decachlorobiphenyl	44%		%REC	24-120	0.99	298548	10/10/22	10/11/22	TJW
Method: SM 9221E Prep Method: METHOD									
Fecal Coliform	<0.18	H	MPN/g	0.18	1	298365	10/05/22 11:52	10/07/22 12:39	PAS

Results for any subcontracted analyses are not included in this section.

ENTHALPY ANALYTICAL

Analysis Results for 470098

Sample ID: B9-B12 COMPOSITE	Lab ID: 470098-015	Collected: 10/03/22
	Matrix: Soil	

470098-015 Analyte	Result	Qual	Units	RL	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA 6010B Prep Method: EPA 3050B									
Antimony	ND		mg/Kg	2.9	0.96	298573	10/10/22	10/11/22	SBW
Arsenic	**1.6**		mg/Kg	0.96	0.96	298573	10/10/22	10/11/22	SBW
Barium	**80**		mg/Kg	0.96	0.96	298573	10/10/22	10/11/22	SBW
Beryllium	ND		mg/Kg	0.48	0.96	298573	10/10/22	10/11/22	SBW
Cadmium	ND		mg/Kg	0.48	0.96	298573	10/10/22	10/11/22	SBW
Chromium	**16**		mg/Kg	0.96	0.96	298573	10/10/22	10/11/22	SBW
Cobalt	**9.2**		mg/Kg	0.48	0.96	298573	10/10/22	10/11/22	SBW
Copper	**17**		mg/Kg	0.96	0.96	298573	10/10/22	10/11/22	SBW
Lead	**6.3**		mg/Kg	0.96	0.96	298573	10/10/22	10/11/22	SBW
Molybdenum	ND		mg/Kg	0.96	0.96	298573	10/10/22	10/11/22	SBW
Nickel	**5.8**		mg/Kg	0.96	0.96	298573	10/10/22	10/11/22	SBW
Selenium	ND		mg/Kg	2.9	0.96	298573	10/10/22	10/11/22	SBW
Silver	ND		mg/Kg	0.48	0.96	298573	10/10/22	10/11/22	SBW
Thallium	ND		mg/Kg	2.9	0.96	298573	10/10/22	10/11/22	SBW
Vanadium	**84**		mg/Kg	0.96	0.96	298573	10/10/22	10/11/22	SBW
Zinc	**62**		mg/Kg	4.8	0.96	298573	10/10/22	10/11/22	SBW
Method: EPA 7471A Prep Method: METHOD									
Mercury	ND		mg/Kg	0.15	1.1	298719	10/11/22	10/12/22	SBW
Method: EPA 8081A Prep Method: EPA 3546									
alpha-BHC	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
beta-BHC	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
gamma-BHC	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
delta-BHC	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
Heptachlor	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
Aldrin	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
Heptachlor epoxide	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
Endosulfan I	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
Dieldrin	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
4,4'-DDE	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
Endrin	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
Endosulfan II	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
Endosulfan sulfate	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
4,4'-DDD	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
Endrin aldehyde	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
Endrin ketone	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
4,4'-DDT	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
Methoxychlor	ND		ug/Kg	10	1	298548	10/10/22	10/11/22	TJW
Toxaphene	ND		ug/Kg	100	1	298548	10/10/22	10/11/22	TJW

Results for any subcontracted analyses are not included in this section.

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Analysis Results for 470098

470098-015 Analyte	Result	Qual	Units	RL	DF	Batch	Prepared	Analyzed	Chemist
Chlordane (Technical)	ND		ug/Kg	50	1	298548	10/10/22	10/11/22	TJW
Surrogates				**Limits**					
TCMX	52%		%REC	23-120	1	298548	10/10/22	10/11/22	TJW
Decachlorobiphenyl	37%		%REC	24-120	1	298548	10/10/22	10/11/22	TJW
Method: SM 9221E Prep Method: METHOD									
Fecal Coliform	**0.68**	H	MPN/g	0.18	1	298365	10/05/22 11:52	10/08/22 12:47	PAS

Results for any subcontracted analyses are not included in this section.

ENTHALPY ANALYTICAL

Analysis Results for 470098

Sample ID: B13-B16 COMPOSITE	Lab ID: 470098-020	Collected: 10/03/22
	Matrix: Soil	

470098-020 Analyte	Result	Qual	Units	RL	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA 6010B Prep Method: EPA 3050B									
Antimony	ND		mg/Kg	2.9	0.95	298573	10/10/22	10/11/22	SBW
Arsenic	**0.98**		mg/Kg	0.95	0.95	298573	10/10/22	10/12/22	SBW
Barium	**69**		mg/Kg	0.95	0.95	298573	10/10/22	10/11/22	SBW
Beryllium	ND		mg/Kg	0.48	0.95	298573	10/10/22	10/11/22	SBW
Cadmium	ND		mg/Kg	0.48	0.95	298573	10/10/22	10/11/22	SBW
Chromium	**9.9**		mg/Kg	0.95	0.95	298573	10/10/22	10/11/22	SBW
Cobalt	**6.7**		mg/Kg	0.48	0.95	298573	10/10/22	10/11/22	SBW
Copper	**9.7**		mg/Kg	0.95	0.95	298573	10/10/22	10/11/22	SBW
Lead	**4.1**		mg/Kg	0.95	0.95	298573	10/10/22	10/11/22	SBW
Molybdenum	ND		mg/Kg	0.95	0.95	298573	10/10/22	10/11/22	SBW
Nickel	**2.7**		mg/Kg	0.95	0.95	298573	10/10/22	10/11/22	SBW
Selenium	ND		mg/Kg	2.9	0.95	298573	10/10/22	10/11/22	SBW
Silver	ND		mg/Kg	0.48	0.95	298573	10/10/22	10/11/22	SBW
Thallium	ND		mg/Kg	2.9	0.95	298573	10/10/22	10/11/22	SBW
Vanadium	**81**		mg/Kg	0.95	0.95	298573	10/10/22	10/11/22	SBW
Zinc	**41**		mg/Kg	4.8	0.95	298573	10/10/22	10/11/22	SBW
Method: EPA 7471A Prep Method: METHOD									
Mercury	ND		mg/Kg	0.15	1.1	298719	10/11/22	10/12/22	SBW
Method: EPA 8081A Prep Method: EPA 3546									
alpha-BHC	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
beta-BHC	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
gamma-BHC	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
delta-BHC	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
Heptachlor	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
Aldrin	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
Heptachlor epoxide	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
Endosulfan I	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
Dieldrin	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
4,4'-DDE	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
Endrin	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
Endosulfan II	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
Endosulfan sulfate	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
4,4'-DDD	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
Endrin aldehyde	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
Endrin ketone	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
4,4'-DDT	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
Methoxychlor	ND		ug/Kg	10	1	298548	10/10/22	10/11/22	TJW
Toxaphene	ND		ug/Kg	100	1	298548	10/10/22	10/11/22	TJW

Results for any subcontracted analyses are not included in this section.

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Analysis Results for 470098

470098-020 Analyte	Result	Qual	Units	RL	DF	Batch	Prepared	Analyzed	Chemist
Chlordane (Technical)	ND		ug/Kg	50	1	298548	10/10/22	10/11/22	TJW
Surrogates				**Limits**					
TCMX	58%		%REC	23-120	1	298548	10/10/22	10/11/22	TJW
Decachlorobiphenyl	52%		%REC	24-120	1	298548	10/10/22	10/11/22	TJW
Method: SM 9221E Prep Method: METHOD									
Fecal Coliform	<0.18	H	MPN/g	0.18	1	298365	10/05/22 11:52	10/08/22 12:47	PAS

Results for any subcontracted analyses are not included in this section.

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Analysis Results for 470098

Sample ID: B17-B20 COMPOSITE	Lab ID: 470098-025	Collected: 10/03/22
	Matrix: Soil	

470098-025 Analyte	Result	Qual	Units	RL	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA 6010B Prep Method: EPA 3050B									
Antimony	ND		mg/Kg	2.9	0.96	298573	10/10/22	10/11/22	SBW
Arsenic	**1.3**		mg/Kg	0.96	0.96	298573	10/10/22	10/11/22	SBW
Barium	**75**		mg/Kg	0.96	0.96	298573	10/10/22	10/11/22	SBW
Beryllium	ND		mg/Kg	0.48	0.96	298573	10/10/22	10/11/22	SBW
Cadmium	ND		mg/Kg	0.48	0.96	298573	10/10/22	10/11/22	SBW
Chromium	**11**		mg/Kg	0.96	0.96	298573	10/10/22	10/11/22	SBW
Cobalt	**7.4**		mg/Kg	0.48	0.96	298573	10/10/22	10/11/22	SBW
Copper	**10**		mg/Kg	0.96	0.96	298573	10/10/22	10/11/22	SBW
Lead	**4.1**		mg/Kg	0.96	0.96	298573	10/10/22	10/11/22	SBW
Molybdenum	ND		mg/Kg	0.96	0.96	298573	10/10/22	10/11/22	SBW
Nickel	**3.7**		mg/Kg	0.96	0.96	298573	10/10/22	10/11/22	SBW
Selenium	ND		mg/Kg	2.9	0.96	298573	10/10/22	10/11/22	SBW
Silver	ND		mg/Kg	0.48	0.96	298573	10/10/22	10/11/22	SBW
Thallium	ND		mg/Kg	2.9	0.96	298573	10/10/22	10/11/22	SBW
Vanadium	**77**		mg/Kg	0.96	0.96	298573	10/10/22	10/11/22	SBW
Zinc	**39**		mg/Kg	4.8	0.96	298573	10/10/22	10/11/22	SBW
Method: EPA 7471A Prep Method: METHOD									
Mercury	ND		mg/Kg	0.15	1.1	298719	10/11/22	10/12/22	SBW
Method: EPA 8081A Prep Method: EPA 3546									
alpha-BHC	ND		ug/Kg	5.0	0.99	298548	10/10/22	10/11/22	TJW
beta-BHC	ND		ug/Kg	5.0	0.99	298548	10/10/22	10/11/22	TJW
gamma-BHC	ND		ug/Kg	5.0	0.99	298548	10/10/22	10/11/22	TJW
delta-BHC	ND		ug/Kg	5.0	0.99	298548	10/10/22	10/11/22	TJW
Heptachlor	ND		ug/Kg	5.0	0.99	298548	10/10/22	10/11/22	TJW
Aldrin	ND		ug/Kg	5.0	0.99	298548	10/10/22	10/11/22	TJW
Heptachlor epoxide	ND		ug/Kg	5.0	0.99	298548	10/10/22	10/11/22	TJW
Endosulfan I	ND		ug/Kg	5.0	0.99	298548	10/10/22	10/11/22	TJW
Dieldrin	ND		ug/Kg	5.0	0.99	298548	10/10/22	10/11/22	TJW
4,4'-DDE	ND		ug/Kg	5.0	0.99	298548	10/10/22	10/11/22	TJW
Endrin	ND		ug/Kg	5.0	0.99	298548	10/10/22	10/11/22	TJW
Endosulfan II	ND		ug/Kg	5.0	0.99	298548	10/10/22	10/11/22	TJW
Endosulfan sulfate	ND		ug/Kg	5.0	0.99	298548	10/10/22	10/11/22	TJW
4,4'-DDD	ND		ug/Kg	5.0	0.99	298548	10/10/22	10/11/22	TJW
Endrin aldehyde	ND		ug/Kg	5.0	0.99	298548	10/10/22	10/11/22	TJW
Endrin ketone	ND		ug/Kg	5.0	0.99	298548	10/10/22	10/11/22	TJW
4,4'-DDT	ND		ug/Kg	5.0	0.99	298548	10/10/22	10/11/22	TJW
Methoxychlor	ND		ug/Kg	9.9	0.99	298548	10/10/22	10/11/22	TJW
Toxaphene	ND		ug/Kg	99	0.99	298548	10/10/22	10/11/22	TJW

Results for any subcontracted analyses are not included in this section.

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Analysis Results for 470098

470098-025 Analyte	Result	Qual	Units	RL	DF	Batch	Prepared	Analyzed	Chemist
Chlordane (Technical)	ND		ug/Kg	50	0.99	298548	10/10/22	10/11/22	TJW
Surrogates				**Limits**					
TCMX	49%		%REC	23-120	0.99	298548	10/10/22	10/11/22	TJW
Decachlorobiphenyl	39%		%REC	24-120	0.99	298548	10/10/22	10/11/22	TJW
Method: SM 9221E Prep Method: METHOD									
Fecal Coliform	<0.18	H	MPN/g	0.18	1	298365	10/05/22 11:52	10/07/22 12:39	PAS

Results for any subcontracted analyses are not included in this section.

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Analysis Results for 470098

Sample ID: B21-B24 COMPOSITE	Lab ID: 470098-030	Collected: 10/03/22
	Matrix: Soil	

470098-030 Analyte	Result	Qual	Units	RL	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA 6010B Prep Method: EPA 3050B									
Antimony	ND		mg/Kg	2.9	0.98	298573	10/10/22	10/11/22	SBW
Arsenic	ND		mg/Kg	0.98	0.98	298573	10/10/22	10/11/22	SBW
Barium	**49**		mg/Kg	0.98	0.98	298573	10/10/22	10/11/22	SBW
Beryllium	ND		mg/Kg	0.49	0.98	298573	10/10/22	10/11/22	SBW
Cadmium	ND		mg/Kg	0.49	0.98	298573	10/10/22	10/11/22	SBW
Chromium	**8.0**		mg/Kg	0.98	0.98	298573	10/10/22	10/11/22	SBW
Cobalt	**4.0**		mg/Kg	0.49	0.98	298573	10/10/22	10/11/22	SBW
Copper	**5.7**		mg/Kg	0.98	0.98	298573	10/10/22	10/11/22	SBW
Lead	**2.2**		mg/Kg	0.98	0.98	298573	10/10/22	10/11/22	SBW
Molybdenum	ND		mg/Kg	0.98	0.98	298573	10/10/22	10/11/22	SBW
Nickel	**1.3**		mg/Kg	0.98	0.98	298573	10/10/22	10/11/22	SBW
Selenium	ND		mg/Kg	2.9	0.98	298573	10/10/22	10/11/22	SBW
Silver	ND		mg/Kg	0.49	0.98	298573	10/10/22	10/11/22	SBW
Thallium	ND		mg/Kg	2.9	0.98	298573	10/10/22	10/11/22	SBW
Vanadium	**72**		mg/Kg	0.98	0.98	298573	10/10/22	10/11/22	SBW
Zinc	**35**		mg/Kg	4.9	0.98	298573	10/10/22	10/11/22	SBW
Method: EPA 7471A Prep Method: METHOD									
Mercury	ND		mg/Kg	0.15	1.1	298719	10/11/22	10/12/22	SBW
Method: EPA 8081A Prep Method: EPA 3546									
alpha-BHC	ND		ug/Kg	5.0	0.99	298548	10/10/22	10/11/22	TJW
beta-BHC	ND		ug/Kg	5.0	0.99	298548	10/10/22	10/11/22	TJW
gamma-BHC	ND		ug/Kg	5.0	0.99	298548	10/10/22	10/11/22	TJW
delta-BHC	ND		ug/Kg	5.0	0.99	298548	10/10/22	10/11/22	TJW
Heptachlor	ND		ug/Kg	5.0	0.99	298548	10/10/22	10/11/22	TJW
Aldrin	ND		ug/Kg	5.0	0.99	298548	10/10/22	10/11/22	TJW
Heptachlor epoxide	ND		ug/Kg	5.0	0.99	298548	10/10/22	10/11/22	TJW
Endosulfan I	ND		ug/Kg	5.0	0.99	298548	10/10/22	10/11/22	TJW
Dieldrin	ND		ug/Kg	5.0	0.99	298548	10/10/22	10/11/22	TJW
4,4'-DDE	ND		ug/Kg	5.0	0.99	298548	10/10/22	10/11/22	TJW
Endrin	ND		ug/Kg	5.0	0.99	298548	10/10/22	10/11/22	TJW
Endosulfan II	ND		ug/Kg	5.0	0.99	298548	10/10/22	10/11/22	TJW
Endosulfan sulfate	ND		ug/Kg	5.0	0.99	298548	10/10/22	10/11/22	TJW
4,4'-DDD	ND		ug/Kg	5.0	0.99	298548	10/10/22	10/11/22	TJW
Endrin aldehyde	ND		ug/Kg	5.0	0.99	298548	10/10/22	10/11/22	TJW
Endrin ketone	ND		ug/Kg	5.0	0.99	298548	10/10/22	10/11/22	TJW
4,4'-DDT	ND		ug/Kg	5.0	0.99	298548	10/10/22	10/11/22	TJW
Methoxychlor	ND		ug/Kg	9.9	0.99	298548	10/10/22	10/11/22	TJW
Toxaphene	ND		ug/Kg	99	0.99	298548	10/10/22	10/11/22	TJW

Results for any subcontracted analyses are not included in this section.

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Analysis Results for 470098

470098-030 Analyte	Result	Qual	Units	RL	DF	Batch	Prepared	Analyzed	Chemist
Chlordane (Technical)	ND		ug/Kg	50	0.99	298548	10/10/22	10/11/22	TJW
Surrogates				**Limits**					
TCMX	38%		%REC	23-120	0.99	298548	10/10/22	10/11/22	TJW
Decachlorobiphenyl	24%		%REC	24-120	0.99	298548	10/10/22	10/11/22	TJW
Method: SM 9221E Prep Method: METHOD									
Fecal Coliform	<0.18	H	MPN/g	0.18	1	298365	10/05/22 11:52	10/08/22 12:47	PAS

Results for any subcontracted analyses are not included in this section.

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Analysis Results for 470098

Sample ID: B25-B28 COMPOSITE	Lab ID: 470098-035	Collected: 10/03/22
	Matrix: Soil	

470098-035 Analyte	Result	Qual	Units	RL	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA 6010B Prep Method: EPA 3050B									
Antimony	ND		mg/Kg	2.9	0.96	298573	10/10/22	10/11/22	SBW
Arsenic	**1.3**		mg/Kg	0.96	0.96	298573	10/10/22	10/11/22	SBW
Barium	**83**		mg/Kg	0.96	0.96	298573	10/10/22	10/11/22	SBW
Beryllium	ND		mg/Kg	0.48	0.96	298573	10/10/22	10/11/22	SBW
Cadmium	ND		mg/Kg	0.48	0.96	298573	10/10/22	10/11/22	SBW
Chromium	**11**		mg/Kg	0.96	0.96	298573	10/10/22	10/11/22	SBW
Cobalt	**8.1**		mg/Kg	0.48	0.96	298573	10/10/22	10/11/22	SBW
Copper	**12**		mg/Kg	0.96	0.96	298573	10/10/22	10/11/22	SBW
Lead	**3.7**		mg/Kg	0.96	0.96	298573	10/10/22	10/11/22	SBW
Molybdenum	ND		mg/Kg	0.96	0.96	298573	10/10/22	10/11/22	SBW
Nickel	**3.4**		mg/Kg	0.96	0.96	298573	10/10/22	10/11/22	SBW
Selenium	ND		mg/Kg	2.9	0.96	298573	10/10/22	10/11/22	SBW
Silver	ND		mg/Kg	0.48	0.96	298573	10/10/22	10/11/22	SBW
Thallium	ND		mg/Kg	2.9	0.96	298573	10/10/22	10/11/22	SBW
Vanadium	**84**		mg/Kg	0.96	0.96	298573	10/10/22	10/11/22	SBW
Zinc	**47**		mg/Kg	4.8	0.96	298573	10/10/22	10/11/22	SBW
Method: EPA 7471A Prep Method: METHOD									
Mercury	ND		mg/Kg	0.14	1	298719	10/11/22	10/12/22	SBW
Method: EPA 8081A Prep Method: EPA 3546									
alpha-BHC	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
beta-BHC	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
gamma-BHC	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
delta-BHC	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
Heptachlor	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
Aldrin	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
Heptachlor epoxide	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
Endosulfan I	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
Dieldrin	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
4,4'-DDE	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
Endrin	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
Endosulfan II	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
Endosulfan sulfate	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
4,4'-DDD	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
Endrin aldehyde	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
Endrin ketone	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
4,4'-DDT	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
Methoxychlor	ND		ug/Kg	10	1	298548	10/10/22	10/11/22	TJW
Toxaphene	ND		ug/Kg	100	1	298548	10/10/22	10/11/22	TJW

Results for any subcontracted analyses are not included in this section.

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Analysis Results for 470098

470098-035 Analyte	Result	Qual	Units	RL	DF	Batch	Prepared	Analyzed	Chemist
Chlordane (Technical)	ND		ug/Kg	50	1	298548	10/10/22	10/11/22	TJW
Surrogates				**Limits**					
TCMX	52%		%REC	23-120	1	298548	10/10/22	10/11/22	TJW
Decachlorobiphenyl	35%		%REC	24-120	1	298548	10/10/22	10/11/22	TJW
Method: SM 9221E Prep Method: METHOD									
Fecal Coliform	<0.18	H	MPN/g	0.18	1	298365	10/05/22 11:52	10/08/22 12:47	PAS

Results for any subcontracted analyses are not included in this section.

ENTHALPY ANALYTICAL

Analysis Results for 470098

Sample ID: B29-B32 COMPOSITE	Lab ID: 470098-040	Collected: 10/03/22
	Matrix: Soil	

470098-040 Analyte	Result	Qual	Units	RL	DF	Batch	Prepared	Analyzed	Chemist
Method: EPA 6010B Prep Method: EPA 3050B									
Antimony	ND		mg/Kg	2.9	0.97	298567	10/10/22	10/11/22	SBW
Arsenic	**1.1**		mg/Kg	0.97	0.97	298567	10/10/22	10/11/22	SBW
Barium	**90**		mg/Kg	0.97	0.97	298567	10/10/22	10/11/22	SBW
Beryllium	ND		mg/Kg	0.49	0.97	298567	10/10/22	10/11/22	SBW
Cadmium	ND		mg/Kg	0.49	0.97	298567	10/10/22	10/11/22	SBW
Chromium	**19**		mg/Kg	0.97	0.97	298567	10/10/22	10/11/22	SBW
Cobalt	**12**		mg/Kg	0.49	0.97	298567	10/10/22	10/11/22	SBW
Copper	**15**		mg/Kg	0.97	0.97	298567	10/10/22	10/11/22	SBW
Lead	**3.2**		mg/Kg	0.97	0.97	298567	10/10/22	10/11/22	SBW
Molybdenum	ND		mg/Kg	0.97	0.97	298567	10/10/22	10/11/22	SBW
Nickel	**4.2**		mg/Kg	0.97	0.97	298567	10/10/22	10/11/22	SBW
Selenium	ND		mg/Kg	2.9	0.97	298567	10/10/22	10/11/22	SBW
Silver	ND		mg/Kg	0.49	0.97	298567	10/10/22	10/11/22	SBW
Thallium	ND		mg/Kg	2.9	0.97	298567	10/10/22	10/11/22	SBW
Vanadium	**91**		mg/Kg	0.97	0.97	298567	10/10/22	10/11/22	SBW
Zinc	**38**		mg/Kg	4.9	0.97	298567	10/10/22	10/11/22	SBW
Method: EPA 7471A Prep Method: METHOD									
Mercury	ND		mg/Kg	0.15	1.1	298719	10/11/22	10/12/22	SBW
Method: EPA 8081A Prep Method: EPA 3546									
alpha-BHC	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
beta-BHC	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
gamma-BHC	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
delta-BHC	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
Heptachlor	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
Aldrin	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
Heptachlor epoxide	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
Endosulfan I	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
Dieldrin	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
4,4'-DDE	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
Endrin	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
Endosulfan II	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
Endosulfan sulfate	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
4,4'-DDD	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
Endrin aldehyde	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
Endrin ketone	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
4,4'-DDT	ND		ug/Kg	5.0	1	298548	10/10/22	10/11/22	TJW
Methoxychlor	ND		ug/Kg	10	1	298548	10/10/22	10/11/22	TJW
Toxaphene	ND		ug/Kg	100	1	298548	10/10/22	10/11/22	TJW

Results for any subcontracted analyses are not included in this section.

Analysis Results for 470098

470098-040 Analyte	Result	Qual	Units	RL	DF	Batch	Prepared	Analyzed	Chemist
Chlordane (Technical)	ND		ug/Kg	50	1	298548	10/10/22	10/11/22	TJW
Surrogates				**Limits**					
TCMX	51%		%REC	23-120	1	298548	10/10/22	10/11/22	TJW
Decachlorobiphenyl	43%		%REC	24-120	1	298548	10/10/22	10/11/22	TJW
Method: SM 9221E Prep Method: METHOD									
Fecal Coliform	<0.18	H	MPN/g	0.18	1	298365	10/05/22 11:52	10/08/22 12:47	PAS

< Value is less than indicated concentration
H Holding time was exceeded
ND Not Detected

Results for any subcontracted analyses are not included in this section.

ENTHALPY ANALYTICAL

Batch QC

Type: Blank	**Lab ID: QC1017820**	**Batch: 298567**
Matrix: Soil	**Method: EPA 6010B**	**Prep Method: EPA 3050B**

QC1017820 Analyte	Result	Qual	Units	RL	Prepared	Analyzed
Antimony	ND		mg/Kg	3.0	10/10/22	10/11/22
Arsenic	ND		mg/Kg	1.0	10/10/22	10/11/22
Barium	ND		mg/Kg	1.0	10/10/22	10/11/22
Beryllium	ND		mg/Kg	0.50	10/10/22	10/11/22
Cadmium	ND		mg/Kg	0.50	10/10/22	10/11/22
Chromium	ND		mg/Kg	1.0	10/10/22	10/11/22
Cobalt	ND		mg/Kg	0.50	10/10/22	10/11/22
Copper	ND		mg/Kg	1.0	10/10/22	10/11/22
Lead	ND		mg/Kg	1.0	10/10/22	10/11/22
Molybdenum	ND		mg/Kg	1.0	10/10/22	10/11/22
Nickel	ND		mg/Kg	1.0	10/10/22	10/11/22
Selenium	ND		mg/Kg	3.0	10/10/22	10/11/22
Silver	ND		mg/Kg	0.50	10/10/22	10/11/22
Thallium	ND		mg/Kg	3.0	10/10/22	10/11/22
Vanadium	ND		mg/Kg	1.0	10/10/22	10/11/22
Zinc	ND		mg/Kg	5.0	10/10/22	10/11/22

Type: Lab Control Sample	**Lab ID: QC1017821**	**Batch: 298567**
Matrix: Soil	**Method: EPA 6010B**	**Prep Method: EPA 3050B**

QC1017821 Analyte	Result	Spiked	Units	Recovery	Qual	Limits
Antimony	95.65	100.0	mg/Kg	96%		80-120
Arsenic	99.48	100.0	mg/Kg	99%		80-120
Barium	102.4	100.0	mg/Kg	102%		80-120
Beryllium	105.1	100.0	mg/Kg	105%		80-120
Cadmium	98.56	100.0	mg/Kg	99%		80-120
Chromium	102.3	100.0	mg/Kg	102%		80-120
Cobalt	107.0	100.0	mg/Kg	107%		80-120
Copper	102.0	100.0	mg/Kg	102%		80-120
Lead	103.4	100.0	mg/Kg	103%		80-120
Molybdenum	102.6	100.0	mg/Kg	103%		80-120
Nickel	103.1	100.0	mg/Kg	103%		80-120
Selenium	86.74	100.0	mg/Kg	87%		80-120
Silver	47.50	50.00	mg/Kg	95%		80-120
Thallium	104.3	100.0	mg/Kg	104%		80-120
Vanadium	102.9	100.0	mg/Kg	103%		80-120
Zinc	101.4	100.0	mg/Kg	101%		80-120

ENTHALPY ANALYTICAL

Batch QC

Type:	Matrix Spike	Lab ID:	QC1017822	Batch:	298567
Matrix (Source ID):	Soil (470175-001)	Method:	EPA 6010B	Prep Method:	EPA 3050B

QC1017822 Analyte	Result	Source Sample Result	Spiked	Units	Recovery	Qual	Limits	DF
Antimony	35.73	1.366	96.15	mg/Kg	36%	*	75-125	0.96
Arsenic	100.9	3.828	96.15	mg/Kg	101%		75-125	0.96
Barium	165.8	84.87	96.15	mg/Kg	84%		75-125	0.96
Beryllium	101.5	0.2106	96.15	mg/Kg	105%		75-125	0.96
Cadmium	95.25	ND	96.15	mg/Kg	99%		75-125	0.96
Chromium	118.2	23.01	96.15	mg/Kg	99%		75-125	0.96
Cobalt	105.2	9.025	96.15	mg/Kg	100%		75-125	0.96
Copper	118.4	18.38	96.15	mg/Kg	104%		75-125	0.96
Lead	119.3	14.02	96.15	mg/Kg	109%		75-125	0.96
Molybdenum	96.62	0.2512	96.15	mg/Kg	100%		75-125	0.96
Nickel	108.0	15.92	96.15	mg/Kg	96%		75-125	0.96
Selenium	85.37	ND	96.15	mg/Kg	89%		75-125	0.96
Silver	45.87	ND	48.08	mg/Kg	95%		75-125	0.96
Thallium	95.58	1.147	96.15	mg/Kg	98%		75-125	0.96
Vanadium	142.3	43.26	96.15	mg/Kg	103%		75-125	0.96
Zinc	145.7	53.06	96.15	mg/Kg	96%		75-125	0.96

Type:	Matrix Spike Duplicate	Lab ID:	QC1017823	Batch:	298567
Matrix (Source ID):	Soil (470175-001)	Method:	EPA 6010B	Prep Method:	EPA 3050B

QC1017823 Analyte	Result	Source Sample Result	Spiked	Units	Recovery	Qual	Limits	RPD	RPD Lim	DF
Antimony	34.70	1.366	96.15	mg/Kg	35%	*	75-125	3	41	0.96
Arsenic	100.3	3.828	96.15	mg/Kg	100%		75-125	1	35	0.96
Barium	168.1	84.87	96.15	mg/Kg	87%		75-125	1	20	0.96
Beryllium	99.75	0.2106	96.15	mg/Kg	104%		75-125	2	20	0.96
Cadmium	94.17	ND	96.15	mg/Kg	98%		75-125	1	20	0.96
Chromium	118.2	23.01	96.15	mg/Kg	99%		75-125	0	20	0.96
Cobalt	104.3	9.025	96.15	mg/Kg	99%		75-125	1	20	0.96
Copper	117.8	18.38	96.15	mg/Kg	103%		75-125	1	20	0.96
Lead	123.4	14.02	96.15	mg/Kg	114%		75-125	3	20	0.96
Molybdenum	96.47	0.2512	96.15	mg/Kg	100%		75-125	0	20	0.96
Nickel	107.4	15.92	96.15	mg/Kg	95%		75-125	1	20	0.96
Selenium	84.26	ND	96.15	mg/Kg	88%		75-125	1	20	0.96
Silver	45.32	ND	48.08	mg/Kg	94%		75-125	1	20	0.96
Thallium	94.37	1.147	96.15	mg/Kg	97%		75-125	1	20	0.96
Vanadium	143.1	43.26	96.15	mg/Kg	104%		75-125	1	20	0.96
Zinc	146.8	53.06	96.15	mg/Kg	98%		75-125	1	20	0.96

ENTHALPY ANALYTICAL

Batch QC

Type: Blank	**Lab ID: QC1017849**	**Batch: 298573**
Matrix: Soil	**Method: EPA 6010B**	**Prep Method: EPA 3050B**

QC1017849 Analyte	Result	Qual	Units	RL	Prepared	Analyzed
Antimony	ND		mg/Kg	3.0	10/10/22	10/11/22
Arsenic	ND		mg/Kg	1.0	10/10/22	10/11/22
Barium	ND		mg/Kg	1.0	10/10/22	10/11/22
Beryllium	ND		mg/Kg	0.50	10/10/22	10/11/22
Cadmium	ND		mg/Kg	0.50	10/10/22	10/11/22
Chromium	ND		mg/Kg	1.0	10/10/22	10/11/22
Cobalt	ND		mg/Kg	0.50	10/10/22	10/11/22
Copper	ND		mg/Kg	1.0	10/10/22	10/11/22
Lead	ND		mg/Kg	1.0	10/10/22	10/11/22
Molybdenum	ND		mg/Kg	1.0	10/10/22	10/11/22
Nickel	ND		mg/Kg	1.0	10/10/22	10/11/22
Selenium	ND		mg/Kg	3.0	10/10/22	10/11/22
Silver	ND		mg/Kg	0.50	10/10/22	10/11/22
Thallium	ND		mg/Kg	3.0	10/10/22	10/11/22
Vanadium	ND		mg/Kg	1.0	10/10/22	10/11/22
Zinc	ND		mg/Kg	5.0	10/10/22	10/11/22

Type: Lab Control Sample	**Lab ID: QC1017850**	**Batch: 298573**
Matrix: Soil	**Method: EPA 6010B**	**Prep Method: EPA 3050B**

QC1017850 Analyte	Result	Spiked	Units	Recovery	Qual	Limits
Antimony	100.9	100.0	mg/Kg	101%		80-120
Arsenic	105.9	100.0	mg/Kg	106%		80-120
Barium	108.6	100.0	mg/Kg	109%		80-120
Beryllium	105.2	100.0	mg/Kg	105%		80-120
Cadmium	104.1	100.0	mg/Kg	104%		80-120
Chromium	108.1	100.0	mg/Kg	108%		80-120
Cobalt	113.6	100.0	mg/Kg	114%		80-120
Copper	103.3	100.0	mg/Kg	103%		80-120
Lead	110.2	100.0	mg/Kg	110%		80-120
Molybdenum	107.9	100.0	mg/Kg	108%		80-120
Nickel	109.7	100.0	mg/Kg	110%		80-120
Selenium	92.83	100.0	mg/Kg	93%		80-120
Silver	48.69	50.00	mg/Kg	97%		80-120
Thallium	110.1	100.0	mg/Kg	110%		80-120
Vanadium	104.6	100.0	mg/Kg	105%		80-120
Zinc	109.8	100.0	mg/Kg	110%		80-120

ENTHALPY ANALYTICAL

Batch QC

Type:	Matrix Spike	Lab ID:	QC1017851	Batch:	298573
Matrix (Source ID):	Soil (470226-003)	Method:	EPA 6010B	Prep Method:	EPA 3050B

QC1017851 Analyte	Result	Source Sample Result	Spiked	Units	Recovery	Qual	Limits	DF
Antimony	34.70	0.7640	97.09	mg/Kg	35%	*	75-125	0.97
Arsenic	105.8	4.954	97.09	mg/Kg	104%		75-125	0.97
Barium	210.5	99.31	97.09	mg/Kg	115%		75-125	0.97
Beryllium	100.8	ND	97.09	mg/Kg	104%		75-125	0.97
Cadmium	97.23	0.5946	97.09	mg/Kg	100%		75-125	0.97
Chromium	123.3	21.93	97.09	mg/Kg	104%		75-125	0.97
Cobalt	102.4	4.989	97.09	mg/Kg	100%		75-125	0.97
Copper	113.1	13.66	97.09	mg/Kg	102%		75-125	0.97
Lead	108.5	12.59	97.09	mg/Kg	99%		75-125	0.97
Molybdenum	98.18	2.075	97.09	mg/Kg	99%		75-125	0.97
Nickel	109.8	15.69	97.09	mg/Kg	97%		75-125	0.97
Selenium	88.22	ND	97.09	mg/Kg	91%		75-125	0.97
Silver	46.23	ND	48.54	mg/Kg	95%		75-125	0.97
Thallium	94.41	0.6199	97.09	mg/Kg	97%		75-125	0.97
Vanadium	147.9	36.31	97.09	mg/Kg	115%		75-125	0.97
Zinc	142.7	43.96	97.09	mg/Kg	102%		75-125	0.97

Type:	Matrix Spike Duplicate	Lab ID:	QC1017852	Batch:	298573
Matrix (Source ID):	Soil (470226-003)	Method:	EPA 6010B	Prep Method:	EPA 3050B

QC1017852 Analyte	Result	Source Sample Result	Spiked	Units	Recovery	Qual	Limits	RPD	RPD Lim	DF
Antimony	35.05	0.7640	97.09	mg/Kg	35%	*	75-125	1	41	0.97
Arsenic	100.2	4.954	97.09	mg/Kg	98%		75-125	5	35	0.97
Barium	199.9	99.31	97.09	mg/Kg	104%		75-125	5	20	0.97
Beryllium	95.51	ND	97.09	mg/Kg	98%		75-125	5	20	0.97
Cadmium	92.27	0.5946	97.09	mg/Kg	94%		75-125	5	20	0.97
Chromium	116.4	21.93	97.09	mg/Kg	97%		75-125	6	20	0.97
Cobalt	97.27	4.989	97.09	mg/Kg	95%		75-125	5	20	0.97
Copper	107.8	13.66	97.09	mg/Kg	97%		75-125	5	20	0.97
Lead	102.5	12.59	97.09	mg/Kg	93%		75-125	6	20	0.97
Molybdenum	93.90	2.075	97.09	mg/Kg	95%		75-125	4	20	0.97
Nickel	104.4	15.69	97.09	mg/Kg	91%		75-125	5	20	0.97
Selenium	83.97	ND	97.09	mg/Kg	86%		75-125	5	20	0.97
Silver	44.25	ND	48.54	mg/Kg	91%		75-125	4	20	0.97
Thallium	91.02	0.6199	97.09	mg/Kg	93%		75-125	4	20	0.97
Vanadium	139.7	36.31	97.09	mg/Kg	107%		75-125	6	20	0.97
Zinc	134.5	43.96	97.09	mg/Kg	93%		75-125	6	20	0.97

ENTHALPY ANALYTICAL

Batch QC

Type: Blank	**Lab ID:** QC1018309	**Batch:** 298719
Matrix: Soil	**Method:** EPA 7471A	**Prep Method:** METHOD

QC1018309 Analyte	Result	Qual	Units	RL	Prepared	Analyzed
Mercury	ND		mg/Kg	0.14	10/11/22	10/12/22

Type: Lab Control Sample	**Lab ID:** QC1018310	**Batch:** 298719
Matrix: Soil	**Method:** EPA 7471A	**Prep Method:** METHOD

QC1018310 Analyte	Result	Spiked	Units	Recovery	Qual	Limits
Mercury	0.8588	0.8333	mg/Kg	103%		80-120

Type: Matrix Spike	**Lab ID:** QC1018311	**Batch:** 298719
Matrix (Source ID): Soil (470098-005)	**Method:** EPA 7471A	**Prep Method:** METHOD

QC1018311 Analyte	Result	Source Sample Result	Spiked	Units	Recovery	Qual	Limits	DF
Mercury	0.8347	ND	0.8475	mg/Kg	98%		75-125	1

Type: Matrix Spike Duplicate	**Lab ID:** QC1018312	**Batch:** 298719
Matrix (Source ID): Soil (470098-005)	**Method:** EPA 7471A	**Prep Method:** METHOD

QC1018312 Analyte	Result	Source Sample Result	Spiked	Units	Recovery	Qual	Limits	RPD	RPD Lim	DF
Mercury	0.8599	ND	0.8475	mg/Kg	101%		75-125	3	20	1

ENTHALPY ANALYTICAL

Batch QC

Type: Blank	**Lab ID: QC1017750**	**Batch: 298548**
Matrix: Soil	**Method: EPA 8081A**	**Prep Method: EPA 3546**

QC1017750 Analyte	Result	Qual	Units	RL	Prepared	Analyzed
alpha-BHC	ND		ug/Kg	5.0	10/10/22	10/11/22
beta-BHC	ND		ug/Kg	5.0	10/10/22	10/11/22
gamma-BHC	ND		ug/Kg	5.0	10/10/22	10/11/22
delta-BHC	ND		ug/Kg	5.0	10/10/22	10/11/22
Heptachlor	ND		ug/Kg	5.0	10/10/22	10/11/22
Aldrin	ND		ug/Kg	5.0	10/10/22	10/11/22
Heptachlor epoxide	ND		ug/Kg	5.0	10/10/22	10/11/22
Endosulfan I	ND		ug/Kg	5.0	10/10/22	10/11/22
Dieldrin	ND		ug/Kg	5.0	10/10/22	10/11/22
4,4'-DDE	ND		ug/Kg	5.0	10/10/22	10/11/22
Endrin	ND		ug/Kg	5.0	10/10/22	10/11/22
Endosulfan II	ND		ug/Kg	5.0	10/10/22	10/11/22
Endosulfan sulfate	ND		ug/Kg	5.0	10/10/22	10/11/22
4,4'-DDD	ND		ug/Kg	5.0	10/10/22	10/11/22
Endrin aldehyde	ND		ug/Kg	5.0	10/10/22	10/11/22
Endrin ketone	ND		ug/Kg	5.0	10/10/22	10/11/22
4,4'-DDT	ND		ug/Kg	5.0	10/10/22	10/11/22
Methoxychlor	ND		ug/Kg	10	10/10/22	10/11/22
Toxaphene	ND		ug/Kg	100	10/10/22	10/11/22
Chlordane (Technical)	ND		ug/Kg	50	10/10/22	10/11/22
Surrogates				**Limits**		
TCMX	42%		%REC	23-120	10/10/22	10/11/22
Decachlorobiphenyl	35%		%REC	24-120	10/10/22	10/11/22

ENTHALPY ANALYTICAL

Batch QC

Type: Lab Control Sample	**Lab ID: QC1017751**	**Batch: 298548**
Matrix: Soil	**Method: EPA 8081A**	**Prep Method: EPA 3546**

QC1017751 Analyte	Result	Spiked	Units	Recovery	Qual	Limits
alpha-BHC	26.03	49.70	ug/Kg	52%		22-129
beta-BHC	27.82	49.70	ug/Kg	56%		28-125
gamma-BHC	25.97	49.70	ug/Kg	52%		22-128
delta-BHC	26.35	49.70	ug/Kg	53%		24-131
Heptachlor	29.17	49.70	ug/Kg	59%		18-124
Aldrin	24.31	49.70	ug/Kg	49%		23-120
Heptachlor epoxide	27.19	49.70	ug/Kg	55%		26-120
Endosulfan I	29.27	49.70	ug/Kg	59%		25-126
Dieldrin	26.86	49.70	ug/Kg	54%		23-124
4,4'-DDE	27.83	49.70	ug/Kg	56%		28-121
Endrin	30.98	49.70	ug/Kg	62%		25-127
Endosulfan II	26.59	49.70	ug/Kg	54%		29-121
Endosulfan sulfate	26.38	49.70	ug/Kg	53%		30-121
4,4'-DDD	25.82	49.70	ug/Kg	52%		26-120
Endrin aldehyde	16.33	49.70	ug/Kg	33%		10-120
Endrin ketone	23.07	49.70	ug/Kg	46%		28-125
4,4'-DDT	29.76	49.70	ug/Kg	60%		22-125
Methoxychlor	29.71	49.70	ug/Kg	60%		28-130
Surrogates						
TCMX	21.89	49.70	ug/Kg	44%		23-120
Decachlorobiphenyl	21.25	49.70	ug/Kg	43%		24-120

ENTHALPY ANALYTICAL

Batch QC

Type:	**Matrix Spike**	**Lab ID:**	**QC1018551**	**Batch:**	**298548**
Matrix (Source ID):	**Soil (470727-001)**	**Method:**	**EPA 8081A**	**Prep Method:**	**EPA 3546**

QC1018551 Analyte	Result	Source Sample Result	Spiked	Units	Recovery	Qual	Limits	DF
alpha-BHC	42.68	ND	49.36	ug/Kg	86%		46-120	9.9
beta-BHC	45.99	ND	49.36	ug/Kg	93%		41-120	9.9
gamma-BHC	42.16	ND	49.36	ug/Kg	85%		41-120	9.9
delta-BHC	36.48	ND	49.36	ug/Kg	74%		38-123	9.9
Heptachlor	44.94	ND	49.36	ug/Kg	91%		39-120	9.9
Aldrin	36.15	ND	49.36	ug/Kg	73%		34-120	9.9
Heptachlor epoxide	227.5	ND	49.36	ug/Kg	461%	*	43-120	9.9
Endosulfan I	71.99	ND	49.36	ug/Kg	146%	*	45-120	9.9
Dieldrin	139.3	ND	49.36	ug/Kg	282%	*	45-120	9.9
4,4'-DDE	374.1	ND	49.36	ug/Kg	758%	*	34-120	9.9
Endrin	252.3	ND	49.36	ug/Kg	511%	*	40-120	9.9
Endosulfan II	486.3	ND	49.36	ug/Kg	985%	*	41-120	9.9
Endosulfan sulfate	68.14	ND	49.36	ug/Kg	138%	*	42-120	9.9
4,4'-DDD	811.9	ND	49.36	ug/Kg	1645%	*	41-120	9.9
Endrin aldehyde	121.1	ND	49.36	ug/Kg	245%	*	30-120	9.9
Endrin ketone	16.95	ND	49.36	ug/Kg	34%	#,*	45-120	9.9
4,4'-DDT	1,778	ND	49.36	ug/Kg	3603%	*	35-127	9.9
Methoxychlor	53.96	ND	49.36	ug/Kg		DO	42-136	9.9
Surrogates								
TCMX	39.50		49.36	ug/Kg		DO	23-120	9.9
Decachlorobiphenyl	-16.05		49.36	ug/Kg		DO	24-120	9.9

ENTHALPY ANALYTICAL

Batch QC

Type:	**Matrix Spike Duplicate**	**Lab ID:**	**QC1018552**	**Batch:**	**298548**
Matrix (Source ID):	**Soil (470727-001)**	**Method:**	**EPA 8081A**	**Prep Method:**	**EPA 3546**

QC1018552 Analyte	Result	Source Sample Result	Spiked	Units	Recovery	Qual	Limits	RPD	RPD Lim	DF
alpha-BHC	38.15	ND	49.90	ug/Kg	76%		46-120	12	30	10
beta-BHC	38.89	ND	49.90	ug/Kg	78%		41-120	18	30	10
gamma-BHC	37.12	ND	49.90	ug/Kg	74%		41-120	14	30	10
delta-BHC	31.16	ND	49.90	ug/Kg		DO	38-123		30	10
Heptachlor	40.53	ND	49.90	ug/Kg	81%		39-120	11	30	10
Aldrin	33.58	ND	49.90	ug/Kg	67%		34-120	8	30	10
Heptachlor epoxide	258.0	ND	49.90	ug/Kg	517%	*	43-120	12	30	10
Endosulfan I	67.53	ND	49.90	ug/Kg	135%	*	45-120	7	30	10
Dieldrin	115.6	ND	49.90	ug/Kg	232%	*	45-120	20	30	10
4,4'-DDE	339.5	ND	49.90	ug/Kg	680%	*	34-120	11	30	10
Endrin	238.5	ND	49.90	ug/Kg	478%	*	40-120	7	30	10
Endosulfan II	1,012	ND	49.90	ug/Kg	2029%	*	41-120	69*	30	10
Endosulfan sulfate	65.06	ND	49.90	ug/Kg	130%	*	42-120	6	30	10
4,4'-DDD	775.3	ND	49.90	ug/Kg	1554%	*	41-120	6	30	10
Endrin aldehyde	124.7	ND	49.90	ug/Kg	250%	*	30-120	2	30	10
Endrin ketone	11.72	ND	49.90	ug/Kg	23%	#,*	45-120	38*	30	10
4,4'-DDT	1,709	ND	49.90	ug/Kg	3425%	*	35-127	5	30	10
Methoxychlor	633.1	ND	49.90	ug/Kg		DO	42-136		30	10
Surrogates										
TCMX	36.78		49.90	ug/Kg		DO	23-120			10
Decachlorobiphenyl	-21.31		49.90	ug/Kg		DO	24-120			10

\# CCV drift outside limits; average CCV drift within limits per method requirements
* Value is outside QC limits
DO Diluted Out
ND Not Detected

State Water Resources Control Board Water Quality Order No. 2004-0012-DWQ

STATE WATER RESOURCES CONTROL BOARD
WATER QUALITY ORDER NO. 2004 - 0012 - DWQ

GENERAL WASTE DISCHARGE REQUIREMENTS FOR THE DISCHARGE OF BIOSOLIDS TO LAND FOR USE AS A SOIL AMENDMENT IN AGRICULTURAL, SILVICULTURAL, HORTICULTURAL, AND LAND RECLAMATION ACTIVITIES (GENERAL ORDER)

The State Water Resources Control Board (hereinafter referred to as the SWRCB) finds that:

a. All Class A biosolids not meeting the requirements contained in Table 3 of 40 CFR Part 503.13 and Class B biosolids that are land applied for agricultural, silvicultural, horticultural, and land reclamation activities;

b. All Exceptional Quality (EQ) biosolids-derived mixtures consisting of more

c. All EQ biosolids-derived mixtures consisting of 50 percent biosolids or less (dry weight) applied at more than 20 dry-tons per acre per year for use as a soil

2. EQ biosolids may not necessitate regulation in the future. However, it is believed that large scale uses currently require oversight regarding best management practices. Accordingly, this General Order can be applied to such sites to ensure that biosolids are being properly used and are not used in an activity of unregulated

ulture: The practice, science, or art of using the soil for the production of crops and/or raising livestock for human use.

b. Agricultural Mineral: Any material containing nitrogen, available phosphoric acid, or soluble potash, singly or in combination, in amounts less than 5 percent or any substance containing essential secondary nutrients or micronutrients that is distributed for use in agriculture, silviculture, horticulture, and land reclamation activities for the purpose of promoting plant growth.

c. Agronomic Rate: The nitrogen requirements of a plant needed for optimal growth and production, as cited in professional publications for California or recommended by the County Agricultural Commissioner, a Certified Agronomist or Certified Soil Scientist.

d. Applier: Person, group of persons, or company that applies biosolids for use as a soil amendment.

e. Arid: Arid lands are those areas where the long term annual average rainfall is below 250 millimeters (less than 10 inches).

f. Biosolids: Sewage sludge that has been treated and tested and shown to be capable of being beneficially and legally used as a soil amendment for agriculture, silviculture, horticulture, and land reclamation activities as specified under 40 CFR Part 503.

g. Buffer Zones: An area of land that provides a separation distance between the land application site and an area of concern.

h. Class A Biosolids: Biosolids meeting the vector attraction, and meeting pollution concentration limits specified in 40 CFR Part 503 and pathogen reduction standards specified in 40 CFR Part 503.32(a).

i. Class B Biosolids: Biosolids meeting the vector attraction and meeting pollution concentration limits specified in 40 CFR Part 503 and pathogen reduction standards specified in 40 CFR Part 503.32(b).

j. Depth to Ground Water: The distance from the land surface elevation to the seasonal high water table.

k. Domestic Water Supply Well: A well that provides water used for human consumption.

l. EQ Biosolids: Biosolids which meet metals standards, Class A pathogen reduction standards, and vector attraction reduction standards contained in

Gully erosion: Erosion cut by a concentrated but intermittent flow of water usually during and immediately following heavy rains or after ice/snow melt. A gully generally is an obstacle to wheeled vehicles and too deep (e.g., > 0.5 meter) to be obliterated by ordinary tillage.

r. High Potential for Public Exposure Areas: Land located within one-half mile of educational facilities, facilities designated for recreational activities other than hunting, fishing, or wildlife conservation, places of public assembly, hospitals, or similar sensitive receptors.

s. Horticulture: The practice, science, or art of cultivating the soil to produce fruit, vegetables, or ornamental plants for human use.

t. Key Operating Personnel: Those individuals responsible for the oversight of daily operations, management decisions, and planning of biosolids land application projects.

u. Low Potential for Public Exposure Areas: Land not meeting the definition of High Potential for Public Exposure Areas.

v. Label: The display of all written, printed, or graphic matter on the immediate container of, or a statement including the guaranteed analysis, accompanying fertilizing material as required by the California Department of Food and Agriculture.

w. Land Reclamation: The practice of revitalizing or restoring lands that are damaged from past or present human land use practices.

x. Long-Term Storage Facility: Site which holds biosolids for more than seven days consecutively.

y. Micronutrients: Refers to boron, chloride, cobalt, copper, iron, manganese, molybdenum, sodium, or zinc.

ious to health, or is indecent and offensive to the sense, or is an obstruction to the free use of property so as to interfere with the comfortable enjoyment of life and property.

(2) Affects at the same time an entire community or neighborhood or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal.

(3) Occurs during, or as a result of, the treatment or disposal of wastes.

for beneficial uses.

(2) Facilities which serve these beneficial uses.

anitation device, or similar wastewater handling device that

ent.

nt

of ammonia, nitrates, and organic nitrogen at concentrations from two to 10 percent by weight on a dry weight basis. The ammonia and nitrate forms of nitrogen are available for plant usage. Organic nitrogen is release slowly (mineralized) over many months, providing a continuous supply of nitrogen for crops and minimizing the potential for movement of nitrogen to the ground water. Ammonium and nitrate (and some nitrite) are the available forms of nitrogen that are taken up by the plants and some form salt reserves and mineralized organic nitrogen in the soil. Total nitrogen available to the plant at any given time is less than the total of these mineral forms due to the dynamic cycling of nitrogen in the soil.

b. Phosphorus is a basic nutrient for plant growth and is present in all biosolids in varying concentrations.

c. Micronutrients, including a variety of salts and metals, are necessary for plant growth and are present in biosolids in varying amounts.

d. The addition of biosolids to soils can also be beneficial by enhancing soil structure, increasing water retention capability, promoting soil aggregation, and reducing the bulk density. Organic matter assists in maintaining soil pores which allow water and air to pass through the soil medium. Such pores can be lost at sites under continuous cultivation and they are critical in maintaining an aerobic environment within the plant root zone.

e. Organic matter helps soils retain water. Additional water retention can reduce the need for frequent water applications and can facilitate water conservation in the soil column.

f. Liming agents are available when the biosolids have been chemically stabilized with lime. Liming agents increase soil pH and can improve the permeability of the soils. Higher pH soils have a greater propensity to bind most heavy metals, decreasing the chance of the metals migrating to the ground water.

human health and water quality protection. The requirements of 40 CFR Part 503 are based on a risk-based evaluation using 14 different pathways.

10The National Rese and the Council established a committee to review t

e National Research Council's members are drawn from the National Academy

s Congress established a regulatory system to manage biosolids in a

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[illegible] owner

te whether the proposed discharge will occur within an area designated as having existing nitrate contamination problems and

b. evaluate whether the proposed discharge will pose an imminent threat of contributing to or causing exceedances of water quality standards for nitrate.

19. [illegible]

qualified professional such that the RWQCB staff could make a finding that the proposed discharge will be in compliance with provisions of the GO. If the RWQCB staff finds that modifications to the proposed discharge are necessary for compliance with provisions of the GO, such modifications will consider, but will not be limited to, the following:

a. requirements for the discharger to use the services of a certified agronomist, crop advisor, or agricultural engineer to develop additional management practices related to: 1) determining the agronomic rate for biosolids application projects that include all sources of nitrogen applied to the application site; 2) developing overall farm water, cropping, and fertility management practices; and 3) evaluating the potential for nitrate leaching or impairment of offsite groundwater use;

b. requirements of the discharger to provide additional groundwater monitoring in areas where groundwater is found at depths greater than 25 feet or there exist other identified local hydrogeologic conditions that could make the groundwater susceptible to contamination;

c. requirements of the discharger to identify whether the proposed biosolids application site is within an area where Drinking Water Source Water Assessment and Protection (DWSWAP) Program setback requirements are implemented for municipal and domestic wells; and

d. requirements of the discharger to consider the unique local site and hydrogeologic conditions in the design of the project and/or other groundwater quality management or regulatory programs that are currently active in the area.

20. This [illegible] agricultural,

e Tahoe Basin.

b. The Santa Monica Mountains Zone as defined by section 33105 of the Government Code.

c. The California Coastal Zone, as defined in and mapped pursuant to Public Resources Code (PRC) section 30103.

d. An area within one quarter mile of a wild and scenic river, as defined by PRC section 5093.5.

e. The Sacramento-San Joaquin Delta, as defined in CWC section 12220.

f. The Suisun Marsh, as defined in (PRC) section 29101.

g. The jurisdiction of the San Francisco Bay Conservation and Development Commission, as defined in Government Code section 66610.

h. The following pro [illegible] Control Plan [1]
B:

(1) Glenshire and Devonshire Subdivisions, Town of Truckee

(2) Areas southwest of Piute Creek and north of Susan River and included in Sections 21, 25, 26, 27, 28, 33, 34, 35, and 36, T30N, R11E, MDB&M

(3) Eagle Lake Basin-Spaulding Tract, Stones-Bengard Subdivision, and Eagle's Nest Summer Home Tract

(4) Mono-Owens Planning Area

(a) Rush Creek Watershed above the outlet of Grant Lake

(b) Mammoth Creek Watershed, including the drainage area of the community of Mammoth Lake, and the Sherwin Creek Watershed upstream of the confluence of Sherwin and Mammoth Creeks

(c) Inyo County Service Area No. 1

i. Assessment District No. 1
ii. Assessment District No. 2
iii. Rocking K Subdivision
iv. City of Bishop

(5) Antelope Valley Planning Area

(a) The Antelope Hydrologic Unit above an elevation of 3,500 feet

(6) Mojave River Planning Area

(a) The Silverwood Lake Watershed

(b) The Deep Creek Watershed above an elevation of 3,200 feet

(c) The Grass Valley Creek Watershed above an elevation of 3,200 feet

[1] [illegible]

ed beneficial uses of surface waters within the State are:

(1) Municipal Supply (MUN)
(2) Agricultural Supply (AGR)
(3) Aquaculture (AQUA)
(4) Fresh Water Replenishment of Salton Sea (FRSH)
(5) Industrial Service Supply (IND)
(6) Ground Water Recharge (GWR)
(7) Water Contact Recreation (REC I)
(8) Noncontact Water Recreation (REC II)
(9) Warm Water Habitat (WARM)
(10) Cold Freshwater Habitat (COLD)
(11) Wildlife Habitat (WILD)
(12) Hydropower Generation (POW)
(13) Preservation of Rare, Endangered, or Threatened Species (RARE)

b. The designated beneficial uses of ground waters in California are:

(1) MUN
(2) IND
(3) AGR
(4) AQUA
(5) WILD

2014, in accordance RC, Section 21000, et seq.), he
adopted a Mitigated Environmental

. The

that all dischargers that file an NOI indicating their intention to be regulated under provisions of this General Order, and all heirs, successors, or designees, in order to meet the provisions contained in Division 7 of CWC and regulations adopted thereunder, shall comply with the following:

A. PROHIBITIONS

1. The discharge of biosolids is prohibited unless the discharger has submitted an NOI, filing fee, and a pre-application report and in response to these submittals, the RWQCB has issued a Notice of Applicability, individual WDRs, or a waiver of WDRs for the discharge.

2. Applications of biosolids shall be confined to the designated use areas stated and shown in the NOI and pre-application report.

3. The discharge shall not cause or threaten to cause pollution, as defined in CWC section 13050.

4. The application of any material that results in a violation of the Safe Drinking Water and Toxic Enforcement Act (Health and Safety Code section 25249.5) is prohibited.

5. The storage, transport, or application of biosolids shall not cause a nuisance, as defined in CWC section 13050.

6. There shall be no discharge of biosolids from the storage or application areas to adjacent land areas not regulated by this General Order, to surface waters, or to surface water drainage courses.

7. From the permitted site, irrigation water runoff is prohibited for 30 days after application of biosolids if vegetation in the application area and along the path of runoff does not provide 33 feet of unmowed grass or similar vegetation to prevent the movement of biosolids from the application site.

8. Application of biosolids at rates in excess of the nitrogen requirements of the vegetation or at rates that would degrade ground water is prohibited except as allowed by Prohibition A.9.

9. Application of biosolids at rates in excess of the nitrogen requirements of
ation projects (as defined by

scharge of biosolids except as allowed for authorized storage, processing, and application sites is prohibited.

11. The application of "hazardous waste," as defined in Chapter 11, Division 4.5, Title 22 of the CCR, is prohibited.

12. Discharge of biosolids with pollutant concentrations greater than those shown below is prohibited.

	Ceiling Concentration
Constituent	mg/kg dry weight
Arsenic	75
Cadmium	85
Copper	4300
Lead	840
Mercury	57
Molybdenum	75
Nickel	420
Selenium	100
Zinc	7,500

13. The application of biosolids to water-saturated or frozen ground or during periods of precipitation that induces runoff from the permitted site is prohibited.

14. The application of Class B biosolids containing a moisture content of less than 50 percent is prohibited.

15. The application of biosolids is prohibited where biosolids are subject to gully

16. The application of biosolids to slopes exceeding 25 percent is prohibited.

B. DISCHARGE SPECIFICATIONS

2. All biosolids subject to this order shall comply with one of the applicable

s for RP on a pollutant specific basis are given below:

Pollutant	Cumulative Pollutant Loading Rate (CPLR) (Lbs./Acre)
Arsenic	36
Cadmium	34
Copper	1336
Lead	267

Mercury	15
Molybdenum[3]	16
Nickel	374
Selenium	89
Zinc	2,494

6. Ibiosolids rapplidlids

ischarge of tail water or field runoff is prohibited within 30 days after application of biosolids for areas where biosolids have not been incorporated into the soil and where there is not a minimum of 33 feet[4] of unmowed grass or similar vegetation bordering the application area and along the path of runoff to prevent movement of biosolids particles from the application site.

b. After an application of biosolids in any field, the discharger shall ensure the following:

[3] sh

[4] Fosed

(1) For at least 30 days:

(a) Food, feed, and fiber crops are not harvested.

(2) For at least 60 days after application of biosolids in areas with average daily (daytime) air temperatures exceeding 50ºF or for at least 90 days after land application where such conditions are not met:

(a) Domesticated Animals are not grazed.

(3) For at least 12 months:

(a) Public access to the site is restricted for sites with a high potential for public exposure;
(b) Turf is not to be harvested if the harvested turf is placed on land with a high potential for contact by the public as defined in 40 CFR Part 503.11; and
(c) Grazing of milking animals used for producing unpasteurized milk for human consumption is prevented if the field is used as pasture.

(4) For at least 14 months:

Food crops with harvested parts that touch the biosolids/soil mixture and are totally above the land surface are not harvested.

(5) For at least 20 months:

Food crops with harvested parts below the land surface are not harvested when the biosolids remain exposed on the surface for four months or longer prior to incorporation.

(6) For at least 38 months:

Food crops with harvested parts below the land surface are not harvested when the biosolids remained exposed on the ground surface for less than four months prior to incorporation into the soil.

11 Siting [illegible] application

0 fee

t from property lines[5],

b. 500 feet from domestic water supply wells[6],
c. 100 feet from non-domestic water supply wells[7],

[5] This requirement may be waived when property lines are adjacent to properties also using biosolids as a soil amendment.

[6] A lesser setback distance from domestic water supply wells (not to be less than 100 feet) may be used if the discharger can demonstrate to the Executive Officer that the ground water, geologic, topographic, and well construction conditions at the specific site are adequate to protect the health of individuals using the supply well.

[7] A [illegible]

d. 50 feet from public roads and occupied onsite residences,
e. 100 feet from surface waters, including wetlands, creeks, ponds, lakes, underground aqueducts, and marshes,
f. 33 feet from primary agricultural drainage ways,
g. 500 feet from occupied non-agricultural buildings and off-site residences[8],
h. 400 feet from a domestic water supply reservoir,
i. 200 feet from a primary tributary to a domestic water supply,
j. 2,500 feet from any domestic surface water supply intake, and
k. 500 feet from enclosed water bodies that could be occupied by pupfish.

12. Operators ... applied ... dust ...
locations

STORAGE AND TRANSPORT SPECIFICATIONS

shall be considered to be "stored" if they are placed on the ground or in non-mobile containers (i.e., not in a transport vehicle) ... application
...ssing

1. Biosolids shall not be stored for more than seven (7) consecutive days prior to application.

2. Biosolids containing free liquids shall not be placed on the ground prior to application on approved sites, excluding equipment cleaning operations.

3. Biosolids shall not be stored directly on the ground at any one location for more than seven (7) consecutive days.

4. Sites for the storage of Class B biosolids shall be located, designed, and maintained to restrict public access to the biosolids.

5. [illegible]

6. Biosolids placed on site for more than 24 hours shall be covered.

7. Biosolids storage facilities shall be designed, maintained, and operated to minimize the generation of leachate and the effects of erosion.

[8] [illegible]

ete NOI form and filing fee must be filed by the discharger for each proposed application site covered by these General WDRs. The NOI form may be modified by the RWQCB Executive Officer as the need arises. An NOI form is attached (Attachment A) to this General Order. Coverage does not begin until a Notice of Applicability has been issued by the applicable RWQCB's Executive Officer. No discharge shall occur until 15 days after submission of the Pre-Application Report as required in the Monitoring and Reporting Program.

b.Coverage Te rmination:

(1) A bio solids application project covered by these General WDRs may be terminated by submittal of the Final Monitoring and Reporting Program technical report and a NOT, as shown on

ounty coroner has been informed of the discovery and has determined that no investigation of the cause of death is required; and

b. if the remains are of Native American origin,

of this General Order to a specific project.

upon the discharger's premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of this General Order;

b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this General Order;

ss otherwise permitted by the RWQCB Executive Officer, all analyses shall be conducted at a laboratory certified for such analyses by the California Department of Health Services. The RWQCB Executive Officer may allow use of any uncertified laboratory under exceptional circumstances, such as when the closest laboratory to the monitoring location is outside the State boundaries and therefore is not subject to certification. All analyses shall be conducted in accordance with those methods specified in 40 CFR Part 503.8(1) through 40 CFR Part 503.8(4), 40 CFR Part 503.8(6), and 40 CFR Part 503.8(7).

reports submitted to the RWQCB

a corporation--by a principal executive officer or at least the level of vice president.

b. For a partnership or sole proprietorship--by a general partner or the proprietor, respectively.
c. For a municipality, State, federal, or other public agency--by either a principal executive officer or ranking elected official.

22Audy authorized representative of a person designated in Provision No. 21

ABSENT: None.

ABSTAIN: None.

Debbie Irvin
Clerk to the Board

STATE WATER RESOURCES CONTROL BOARD

WASTE DISCHARGE REQUIREMENTS (WDRs) FOR THE DISCHARGE OF BIOSOLIDS TO LAND FOR USE IN AGRICULTURAL, SILVICULTURAL, HORTICULTURAL, AND LAND RECLAMATION ACTIVITIES

PRE-APPLICATION REPORT

As required in Provision 1.a. of the General Order, a Pre-Application Report shall be submitted for each field or distinct application area prior to the application of biosolids in accordance with the WDRs. Where biosolids are applied on a continuing basis to a single area, the Pre-Application Report may cover ongoing operations and may not need to be submitted for each load applied. A pre-application report shall be submitted 30 days prior to the date of the proposed application. The Pre-Application Report shall be signed by the owner/operator of the biosolids application operation and by the property owner. The property owner may submit written authorization to allow a representative of the property owner, such as a tenant or land management company, to sign the Pre-Application Report.

Information in the Pre-Application Report found in **bold type** is a required field to be submitted in the Pre-Application Report. Otherwise, information that was submitted in the Notice of Intent (NOI) and has not changed or will not change is not required. The following items shall be included in the Pre-Application Report and shall be submitted to the appropriate Regional Water Quality Control Board (RWQCB):

Waste Discharge Identification Number _____

This number is established at the time the initial Notice of Intent (NOI) is submitted to the RWQCB and can be obtained at the RWQCB.

1. Owner, Field Operator, and Site Information

Owner:	
Address:	
Contact:	**Phone:**
Site Location (including address, if any):	
Nearest Cross Street(s):	
County:	**Total Size of Site:**
Section(s)/Township/Range/Meridian:	
Latitude (from field center):	**Longitude (from field center):**

Applier:	
Address:	
Contact:	**Phone:**

Attach a U.S. Geological Survey 7.5 Minute map or similar map (1:24000 or larger) showing the proposed application site and surrounding properties within 2,500 feet from site boundaries. The map should show:

a. Site topography
b. Run-on/runoff controls
c. Storage areas
d. Nearby surface waters, wells, residences, and public roads
e. Application area(s) including buffer zones (setbacks)
f. Ground water monitoring wells (if required)
g. Elevation

2. **Biosolids** **urce--**The tobe complet ed
. lasplyfoh.

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8 7	

6		7	8
Quantity of Biosolids to be Applied			
Land Use Zone			
Adjacent Land Use Zones			
Application Area Size		Acres	
Proposed Nitrogen Loading		Lb. plant available nitrogen/acre	
Residual Nitrogen from Previous Fertilizer and Biosolids Applications[10]		Lb. per acre	
Proposed Crop, Use			
Crop Nitrogen Useage			
Nitrogen Usage Reference			
Anticipated Avg. Appl. Rate			
Avg. Annual precipitation			
Plant tissue testing for Molydenum(Mo)			
Plant tissue testing for Copper(Cu)[3]			
Plant tissue testing for Selenium(Se)[3]			

Attach an anticipated annual time schedule for the field operations including anticipated biosolids applications windows, seeding operations, supplemental fertilization, and cultivation/harvest.

5. [illegible]

) R U E L R V R S O O L G F W D W L R Q R S H U D W L R Q V Z H U H P L Q L P P G H
Z D W H U O H V V W D Q I H H W R U D V V S H F L I L H G E W H
Z H U H V S H F L D O F L U F P V W D Q F H V Z R O G Z D U U D Q W U

7 L [illegible]

[illegible]

11 7

[illegible]

[illegible]

Results [illegible]

Biosolids [illegible]

Static Water	feet (MSL)	
Total Dissolved Solids	mg/L	
Sodium	mg/L	
Chloride	mg/L	
Nitrate	mg/L as N	
Total Nitrogen	mg/L as N	
pH	pH units	

Initial testing shall also include the following parameters:

Arsenic	mg/L
Cadmium	mg/L
Copper	mg/L
Lead	mg/L
Mercury	mg/L
Molybdenum	mg/L
Nickel	mg/L
enium	mg/L
	mg/L

[illegible] Transportation

W R U D H S O D Q P V W E H D W W D F K H G Biosolids storage will **H Y H Q L I Q R** be provided). The biosolids storage plan should include at a minimum:

If on-site storage will be provided:

a. Size of biosolids storage area
b. How frequently it will be used (emergency basis only or routine use)
c. Leachate controls
d. Erosion controls
e. Run-on/runoff controls

If no on-site storage will be provided:

a. Location of off-site storage facilities
b. Emergency storage plans

7. Loss of Productivity and Mitigation

DS SOLHG WR UR QG V UIDFHV DYLQ D SHUFH
DQ (URVLRQ RQWURO 3ODQ 7 H 3ODQ V R OG R WO
RI ELRVROLGV WR W H SHUFHQW RU UHDWHU VORS
PDQD HPHQW SUDFWLFHV WR EH VHG WR DVV UH FR
DSSOLFDWLRQ VLWH

D 7 H 6SLOO 5HVSRQVH 3ODQ V R OG LQFO GH DW D

(PHU HQF FRQWDFWV DQG QRWLILFDWLRQ SUH
3HUVRQDO SURWHFWLYH HT LSPHQW UHT LUH
5HVSRQVH LQVWU FWLRQV IRU VSLOO G ULQ
5HVSRQVH LQVWU FWLRQV IRU VWRUD H IDFL
5HVSRQVH LQVWU FWLRQV LI D DUGR V RU R
IR QG

E 7 H 7UDIILF 3ODQ V R OG LQFO GH DW D PLQLP P

7 H SURSRVHG UR WH IRU DOO YH LFOHV DQ
7 H DQWLFLSDWHG PD LP P YH LFOH ZHL W

9. Adverse Weather and Alternative Plan

6 EPLW DQ GY HUVH :HDW HU DQG OWHUQDWLYH 3ODQ W D
WLPHV Z HQ ELRVROLGV FDQQRW EH DSSOLHG WR W
RW HU FRQGLWLRQV ZLQG SUHFLSLWDWLRQ ILHOG
OLPLWDWLRQV HWF

10. Land Productivity

"Attach a report from a certified soil scientist or a certified agronomist which evaluates the potential effects including potential nutrient imbalances, metals phytotoxicity, and excessive salinity on land productivity. The soil scientist and/or agronomist shall make recommendations, as deemed necessary, after considering the nature of the application site soils and biosolids characterization data and the need to preserve short term and long term land productivity. Those recommendations shall be reflected in the Pre-Application report regarding the proper rate of biosolids applications, any soil management

Sa[illegible]ted [illegible]ally and _____

ameters:

_____ Units _____

[illegible]te level	feet (MSL)
Total Diss[illegible]d Solids	mg/l
Sodium	mg/l
Chloride	mg/l
Nitrate	mg/l as N
Total Nitrogen	mg/l as N
pH	pH Units
Arsenic (As)	mg/l
Selenium (Se)	mg/l
Molybdenum (Cu)	mg/l

Quantity of Biosolids Applied		Dry tons
Application Area Size		Acres
Total Nitrogen Concentration in Biosolids		mg/kg
Nitrogen Loading		Lb. plant avail. Nitrogen per acre
Residual Nitrogen[14]		Lbs. per acre
Crop		
Amount of Crop Produced		Specify units
Plant tissue testing for Molybdenum (mo)[6]		
Plant tissue testing for Copper (cu),[6]		
Plant tissue testing for Selenium (Se)[15]		

[14] [illegible]termine [illegible]th.

[illegible]

Pollutant	Total Loadings from Previous Years (kg/ha)	Loading This Year (kg/ha)	Background Soils Conc. (kg/ha) (6" depth)	Cumulative Metal Load to Date (kg/ha)	Percent Cumulative Limit to Date
Arsenic					
Cadmium					
Copper					
Lead					
Mercury					
Molybdenum					
Nickel					
Selenium					
Zinc					

4.

onstitu

ent	Concentration in Biosolids, (mg/kg, dry weight)
Arsenic	
Cadmium	
Copper	
Lead	
Mercury	
Molybdenum	
Nickel	
Selenium	
Zinc	
Total Solids Content	%
Total Nitrogen	
Fecal Coliform	MPN/gram
Ammonia Nitrogen, as N	
Total Phosphorus, as P	
Total Potassium	
SW 846[16] Method 8080 for PCB Aroclors, Aldrin/Dieldrin	
EPA Method 8270 Semi-Volatile Organics	

Provide a site map identifying the area(s) of application clearly showing each field to which biosolids have been applied and crop planted.

16 The discharger shall use the most recent version of SW 486 methods for detecting PCB constituents and list all Aroclor concentrations with the summation of total PCBs.

1. Pre-Application Reports shall be submitted for RWQCB staff review and approval at least 30 days prior to application of biosolids. Annual Reports covering the period between January 1 to December 31 shall be submitted by February 15 of the following year. If no applications occurred during the year, the discharger shall submit a report indicating that no discharge occurred during the year.

2. The collection, preservation and holding times of all samples shall be in accordance with U.S. Environmental Protection Agency approved procedures. A laboratory certified by the California Department of Health Services to perform the required analyses shall conduct all analyses, except soil nitrogen and plant tissue samples for selenium, copper and molybdenum. Analysis for soil nitrogen and plant tissue concentrations of selenium and molybdenum shall participate in a program similar to the North American Proficiency Testing Program (NAPT) operated by the Soil Science of America. The RWQCB Executive Officer may allow use of an uncertified laboratory in accordance with Provision 18.

3. If there is no discharge during a required reporting period, the discharger shall submit a letter report to the RWQCB indicating that there has been no activity during the required reporting period.

4. Each report shall be signed and contain the following certification:

   "I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment"

5. A duly authorized representative of the discharger may sign the documents if:

   a. The authorization is made in writing by the person described above;

   b. The authorization specified an individual or person having responsibility for the overall operation of the regulated disposal system; and

   c. The written authorization is submitted to the RWQCB Executive Officer.

6. The discharger shall arrange the data in tabular form so that the specified information is readily discernible. The data shall be summarized in such a manner as to clearly illustrate whether the facility is operating in compliance with waste discharge requirements.

7. Report immediately in the RWQCB Executive

State of California

State Water Resources Control Board

NOTICE OF INTENT

-DWQ

w Discharge Under MODEL Permit
2. ☐ Change of Information-WDID # _____

I.

Name					
Mailing Address					
City	County	State	Zip	Phone	
Contact Person	Owner	(check one)	_____ _____ Operator _____ Owner/operator _____		

II. Generat

ddress				
City	County	State	Zip	Phone
Contact Person				

Name				
Mailing Address				
City	County	State	Zip	Phone
Contact Person				

IV. Billing Address

Name				
Mailing Address				
City	County	State	Zip	Phone
Contact Person				

STATE USE ONLY

WDID: ☐☐☐☐☐☐☐☐☐☐☐	Regional Board Office: ☐☐	Date NOI Received: _____	Date NOI Processed: _____
	Fee Amount Received: $ _____	Check #: _____	

V. Site Operator

Name				
Mailing Address				
City	County	State	Zip	Phone
Contact Person				

VI. Hauler Information

Name				
Mailing Address				
City	County	State	Zip	Phone
Contact Person				
Type of Transportation				

VII. Site Location

Street (including address, if any)	
Nearest Cross Street(s)	
County:	Total Size of Site (acres):
Township/Range/Section _____ _ __ _____, Section _____, ___ ___	
Latitude _____ _ Deg. _____ _____ Sec _____ Deg. _____ _____ Sec.	
Attach a site location map. e.g., USGS topographic	

VIII Application Area Information

Subject	Value	Applicable Unit/ Type of Measure
Quantity of Biosolids to be Applied		dry tons per year
Total Biosolids Application Proposed		dry tons
Land Use Zone		
Adjacent Land Use Zones		
Application Area Size		acres
Proposed Nitrogen Loading		lb. Plant Available Nitrogen/acre
Proposed Crop, Use		crop type, human/animal/neither
Crop Nitrogen Usage		1b. Nitrogen/year
Nitrogen Usage Reference		
Depth of Root Zone for Crop Being Planted		inches
Will Setback Limits Be Met?		Yes or No
Distance to Nearest Inhabited Dwelling		feet/miles
Public Access Controls		Specify Type
Runoff Controls		Attach plans
Prevailing Wind Direction		
Minimum Depth to Ground Water		feet
How Minimum Depth to Ground Water is Determined		

Anticipated Average Daily Application Rate		dry tons/day
Source of Water for Crop		
Average Annual Precipitation		inches/year

Attach an anticipated annual time schedule for the field operations including anticipated biosolids applications windows, seeding operations, supplemental fertilization, and cultivation/harvest.

I . Soil Constituent Concentrations (Each Source)

Constituent	Concentration in Soil, mg/kg , dry weight
Arsenic	
Cadmium	
Copper	
Lead	
Mercury	
Molybdenum	
Nickel	
Selenium	
Zinc	
pH	
Estimated Permeability	cm/sec
Cation Exchange Capacity	meq/100g
Total Nitrogen	
Ammonia Nitrogen, as N	
Total Phosphorus, as P	
Total Potassium	

Have any proposed biosolids application sites been fallow for more than one year? ☐ YES ☐ NO

I Are there existing agricultural, silvicultural, or horticultural operations at all the proposed application sites? ☐ YES ☐ NO

II Is it known whether any locations within the proposed land application site contain biologically unique or sensitive natural communities? ☐ YES ☐ NO

If natural terrestrial habitats are present on the project site, a biological site assessment must be conducted to determine whether biologically unique or sensitive natural communities occur and whether they could be disturbed by the application of biosolids; this report must be forwarded to the appropriate regional office of DFG and the Endangered Species Unit of the USFWS in Sacramento for review and approval of the mitigation strategy, as necessary. If biologically unique or sensitive natural communities are present and more than 10% or 10 acres will be disturbed, whichever is less, the project will not be authorized under the GO unless the applicant submits a plan to mitigate for any significant impacts on biologically unique or sensitive natural communities and agrees to implement the mitigation.

III Biosolids Storage Plan (as required by Biosolids Storage and Transportations Spec. No, 8)

A biosolids storage plan must be attached (if no *on-site* biosolids storage will be provided, a contingency plan for inclement weather operation must be provided). The biosolids' storage plan should include at a minimum:

If on-site storage will be provided:

a. Size of biosolids storage area
b. How frequently it will be used (emergency basis only or routine use)
c. Leachate controls
d. Erosion controls
e. Run-on/runoff controls

If [illegible] ded:

a. Location of off-site storage facilities

b. Emergency storage plans

XIV [illegible] (applicable) [illegible]

biosolids applied to ground surfaces having a 10 percent or greater slope requires an Erosion Control Plan. The Plan should outline conditions that justify application of biosolids to the 10 percent or greater slopes and specify the application and management practices to be used to assure containment of the biosolids on the application site.

V. Spill Response and Traffic Plan (as required by Biosolids Storage and Transportation Spec. No. 14)

a. The Spill Response Plan should include at a minimum:

1. Emergency and notification procedures
2. Required personal protective equipment requirement
3. Response instructions for spill during biosolids transport
4. Response instructions for storage facility failure
5. Response instructions if hazardous or other unauthorized material is found

b. The Traffic Plan should include at a minimum:

1. The proposed route for all vehicles handling biosolids
2. Describe the anticipated maximum vehicle weight

XVI. Adverse Weather and Alternative Plan: (as required by Biosolids Storage and Transportation Spec. No. 8)

Submit an Adverse Weather and Alternative Plan that details procedures to address times when biosolids cannot be applied to the site(s) due to adverse weather or other conditions (wind, precipitation, field preparation delays, access road limitations, etc.).

XVII. CERTIFICATION

"I certify under penalty of law that this document and all attachments were prepared under my direction and supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment." In addition, I certify that the provisions of the permit, including the criteria for eligibility, will be complied with.

Signature of Owner/Operator of Spreading Operations	Title
Printed or Typed Name	Date
Signature of Property Owner	Title
Printed or Typed Name	Date
Signature of Site Operator/Manager (if any)	Title
Printed or Typed Name	Date

State of California
State Water Resources Control Board

NOTICE OF TERMINATION

TO ___-DWQ

RGE OF BIOSOLIDS

_____

I. Property Owner

Name				
Mailing Address				
City	County	State	Zip	Phone
Contact Person				

II. Generator

Name				
Mailing Address				
City	County	State	Zip	Phone
Contact Person				

Owner/Operator of spreading operations

Name				
Mailing Address				
City	County	State	Zip	Phone
Contact Person	Own	(check one) er _____ Owner/operator _____		_____

IV. Site Operator/Property Manager (if any)

Name				
Mailing Address		Contact Person		
City	County	State	Zip	Phone

V. Billing Address

Name				
Mailing Address		Contact Person		
City	County	State	Zip	Phone

VI. Hauler Information

Name	
Mailing Address	

City	County	State	Zip	Phone

VII. Site Location

Street (including address, if any)	
Nearest Cross Street(s)	
County:	Total Size of Site (acres):

Township/Range/Section _____,R _____, Section _____, ___ ___

_____ _____ Min. _____ Yes _____ Deg. _____ Min.

___Sec. ___

Attach a map of at least 1:24000 (1" = 2000") showing the proposed application site (e.g., USGS 7.5" topographic map). The map should also show r un-on/runoff controls, storage areas, nearby surface waters, wells and residences, the application areas including setback and buffer zones .

VIII. Application Ar ea Information

Subject	Value	Applicable Unit/ Type of Measure
Quantity of Biosolids Applied		dry tons per year
Application Area Size		acres
Nitrogen Loading		lb. Plant Available Nitrogen/acre
Crop, Use		crop type, human/animal/neither
Crop Nitrogen Usage		1b. Nitrogen/year
Nitrogen Usage Reference		
Last Date of Class B Biosolids Application		Date
Public Access Controls		Specify Type

I . Attached i s the Annual Monitoring and Reporting Report for th current ear ☐

. CERTIFICATION

"I certify under penalty of law that this document and all attachments were prepared under my direction and supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment." In addition, I certify that the provisions of the permit, including the criteria for eligibility, will be complied with.

Signature of Generator	Title
Printed or Typed Name	Date
Signature of Property Owner	Title
Printed or Typed Name	Date
Signature of Site Operator/Manager (if any)	Title
Printed or Typed Name	Date

STATE USE ONLY

WDID: ☐☐☐☐☐☐☐☐☐☐☐	Regional Board Office: ☐☐	Date NOI Received: _____	Date NOI Processed: _____ ___
	Fee Amount Received: $ _____	Check #: _____	

Appendix 5: LID Infeasibility

LID Technical Infeasibility Analysis

Appendix 6: BMP Design Details

BMP Sizing, Design Details and other Supporting Documentation

R 07 W | R 06 W | R 05 W | R 04 W | R 03 W | R 02 W | R 01 W | R 01 E | R 02 E | R 03 E | R 04 E | R 05 E

T 01 S
T 02 S
T 03 S
T 04 S
T 05 S
T 06 S
T 07 S
T 08 S

0.85 MiraLoma
0.61 RiversideNorth
0.54 RiversideSouth
0.68 PigeonPass
0.66 MorenoEast
0.85 Beaumont
0.88 PradoDam
0.51 Woodcrest
0.50 LakeMathews
0.68 PerrisReservoir
0.87 VistaGrandeGS
0.70 SanJacintoNWS
1.18 Idyllwild
0.58 SunCity
0.68 Winchester
0.70 ElsinoreNWS
1.11 ElCarisoStation
0.90 HurkeyCreek
0.77 WildomarLaCresta
0.52 SkinnerLake
0.65 Anza
0.77 SantaRosaPlateau
1.00 TemeculaNWS
0.64 AguangaValley

Santa Ana River Watershed
Santa Margarita Watershed

PROJECT SITE
d=0.59 in

JURUPA VALLEY | EASTVALE | NORCO | CORONA | RIVERSIDE | MORENO VALLEY | CALIMESA | BEAUMONT | SAN JACINTO | PERRIS | HEMET | CANYON LAKE | LAKE ELSINORE | WILDOMAR | MENIFEE | MURRIETA | TEMECULA

06	05	04	03	02	01
07	08	09	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

N

Rain Gage Locations

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

Isohyetal Map for the 85th Percentile 24 hour Storm Event

July 2011

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 PLSA — Date 12/12/2023

Designed by SL — Case No

Company Project Number/Name 3983 Zeiders

BMP Identification

BMP NAME / ID BMP-1 and 2 (MWS)

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}= 0.59 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)*
D/1	*313339*	*Roofs*	*1*	*0.89*	*279498.4*			
D/1	*29203*	*Ornamental Landscaping*	*0.1*	*0.11*	*3225.7*			
	342542	***Total***			**282724.1**	**0.59**	***13900.6***	***33990***

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	PLSA	Date	12/12/2023
Designed by	SL	Case No	
Company Project Number/Name	3983 Zeiders		

BMP Identification

BMP NAME / ID BMP-1 and 2 (MWS) (DMA-1)

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	*D/1*	*313339*	*Roofs*	*1*	*0.89*	*279498.4*			
	D/1	*29203*	*Ornamental Landscaping*	*0.1*	*0.11046*	*3225.7*			
		342542		***Total***		**282724.1**	**0.20**	***1.3***	***1.3***

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: PLSA — Date: 12/12/2023
Designed by: SL — Case No:
Company Project Number/Name: 3983 Zeiders

BMP Identification

BMP NAME / ID: BMP-3 and 4 (MWS)

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}= 0.59 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)*
D/2	*370072*	*Roofs*	*1*	*0.89*	*330104.2*			
D/2	*30160*	*Ornamental Landscaping*	*0.1*	*0.11*	*3331.4*			
	400232	**Total**			**333435.6**	**0.59**	**16393.9**	**39655**

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	PLSA	Date	12/12/2023
Designed by	SL	Case No	
Company Project Number/Name	3983 Zeiders		

BMP Identification

BMP NAME / ID BMP-3 and 4 (MWS) (DMA-2)

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	*D/2*	*370072*	*Roofs*	*1*	*0.89*	*330104.2*			
	D/2	*30160*	*Ornamental Landscaping*	*0.1*	*0.11046*	*3331.4*			
		400232		***Total***		**333435.6**	**0.20**	***1.5***	***1.5***

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	PLSA	Date	12/12/2023
Designed by	SL	Case No	
Company Project Number/Name	3983 Zeiders		

BMP Identification

BMP NAME / ID BMP-5 (DMA-6)

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}= 0.59 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)*
D/6	*42754*	*Concrete or Asphalt*	*1*	*0.89*	*38136.6*			
D/6	*26407*	*Ornamental Landscaping*	*0.1*	*0.11*	*2916.9*			
	69161		***Total***		**41053.5**	**0.59**	***2018.5***	***2019***

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	PLSA	Date	12/12/2023
Designed by	SL	Case No	
Company Project Number/Name	3983 Zeiders		

BMP Identification

BMP NAME / ID BMP-6 (DMA-7)

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}= 0.59 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)*
D/7	*11916*	*Concrete or Asphalt*	*1*	*0.89*	*10629.1*			
D/7	*13048*	*Ornamental Landscaping*	*0.1*	*0.11*	*1441.3*			
	24964	***Total***			**12070.4**	**0.59**	***593.5***	***594***

Notes:

Bioretention Facility - Design Procedure	BMP ID	Legend:	Required Entries	
	BMP-5/DMA-6		Calculated Cells	

Company Name:	PLSA	Date:	5/17/2024
Designed by:	SL	County/City Case No.:	

Design Volume

Enter the area tributary to this feature	A_T=	1.59	acres
Enter V_{BMP} determined from Section 2.1 of this Handbook	V_{BMP}=	2,019	ft^3

Type of Bioretention Facility Design

- (●) Side slopes required (parallel to parking spaces or adjacent to walkways)
- ( ) No side slopes required (perpendicular to parking space or Planter Boxes)

Bioretention Facility Surface Area

Depth of Soil Filter Media Layer	d_S =	3.0	ft
Top Width of Bioretention Facility, excluding curb	w_T =	6.5	ft
Total Effective Depth, d_E $d_E = (0.3) \times d_S + (0.4) \times 1 - (0.7/w_T) + 0.5$	d_E =	1.69	ft
Minimum Surface Area, A_m $A_M\ (ft^2) = \frac{V_{BMP}\ (ft^3)}{d_E\ (ft)}$	A_M =	1,194	ft^2
Proposed Surface Area	A=	1,227	ft^2

Bioretention Facility Properties

Side Slopes in Bioretention Facility	z =	4	:1
Diameter of Underdrain			inches
Longitudinal Slope of Site (3% maximum)		1	%
6" Check Dam Spacing		25	feet
Describe Vegetation:			

Notes:

Bioretention Facility - Design Procedure	BMP ID	Legend:	Required Entries	
	BMP-6/DMA-7		Calculated Cells	

Company Name:	PLSA	Date:	5/17/2024
Designed by:	SL	County/City Case No.:	

Design Volume

Enter the area tributary to this feature	A_T=	0.57	acres
Enter V_{BMP} determined from Section 2.1 of this Handbook	V_{BMP}=	594	ft^3

Type of Bioretention Facility Design

- (●) Side slopes required (parallel to parking spaces or adjacent to walkways)
- ( ) No side slopes required (perpendicular to parking space or Planter Boxes)

Bioretention Facility Surface Area

Depth of Soil Filter Media Layer	d_S =	3.0	ft
Top Width of Bioretention Facility, excluding curb	w_T =	11.0	ft
Total Effective Depth, d_E $d_E = (0.3) \times d_S + (0.4) \times 1 - (0.7/w_T) + 0.5$	d_E =	1.74	ft
Minimum Surface Area, A_m $A_M\ (ft^2) = \frac{V_{BMP}\ (ft^3)}{d_E\ (ft)}$	A_M =	343	ft^2
Proposed Surface Area	A=	343	ft^2

Bioretention Facility Properties

Side Slopes in Bioretention Facility	z =	4	:1
Diameter of Underdrain			inches
Longitudinal Slope of Site (3% maximum)		1.5	%
6" Check Dam Spacing		25	feet
Describe Vegetation:			

Notes:

CONTECH®
ENGINEERED SOLUTIONS

Modular Wetlands® Linear Stormwater Biofiltration



The experts you need to solve your stormwater challenges



Contech is the leader in stormwater solutions, helping engineers, contractors and owners with infrastructure and land development projects throughout North America.

With our responsive team of stormwater experts, local regulatory expertise and flexible solutions, Contech is the trusted partner you can count on for stormwater management solutions.

Your Contech Team



STORMWATER CONSULTANT

It's my job to recommend the best solution to meet permitting requirements.



STORMWATER DESIGN ENGINEER

I work with consultants to design the best approved solution to meet your project's needs.



REGULATORY MANAGER

I understand the local stormwater regulations and what solutions will be approved.



SALES ENGINEER

I make sure our solutions meet the needs of the contractor during construction.

Contech is your partner in stormwater management solutions



Restoring Nature's Presence in Urban Areas – Modular Wetlands® Linear

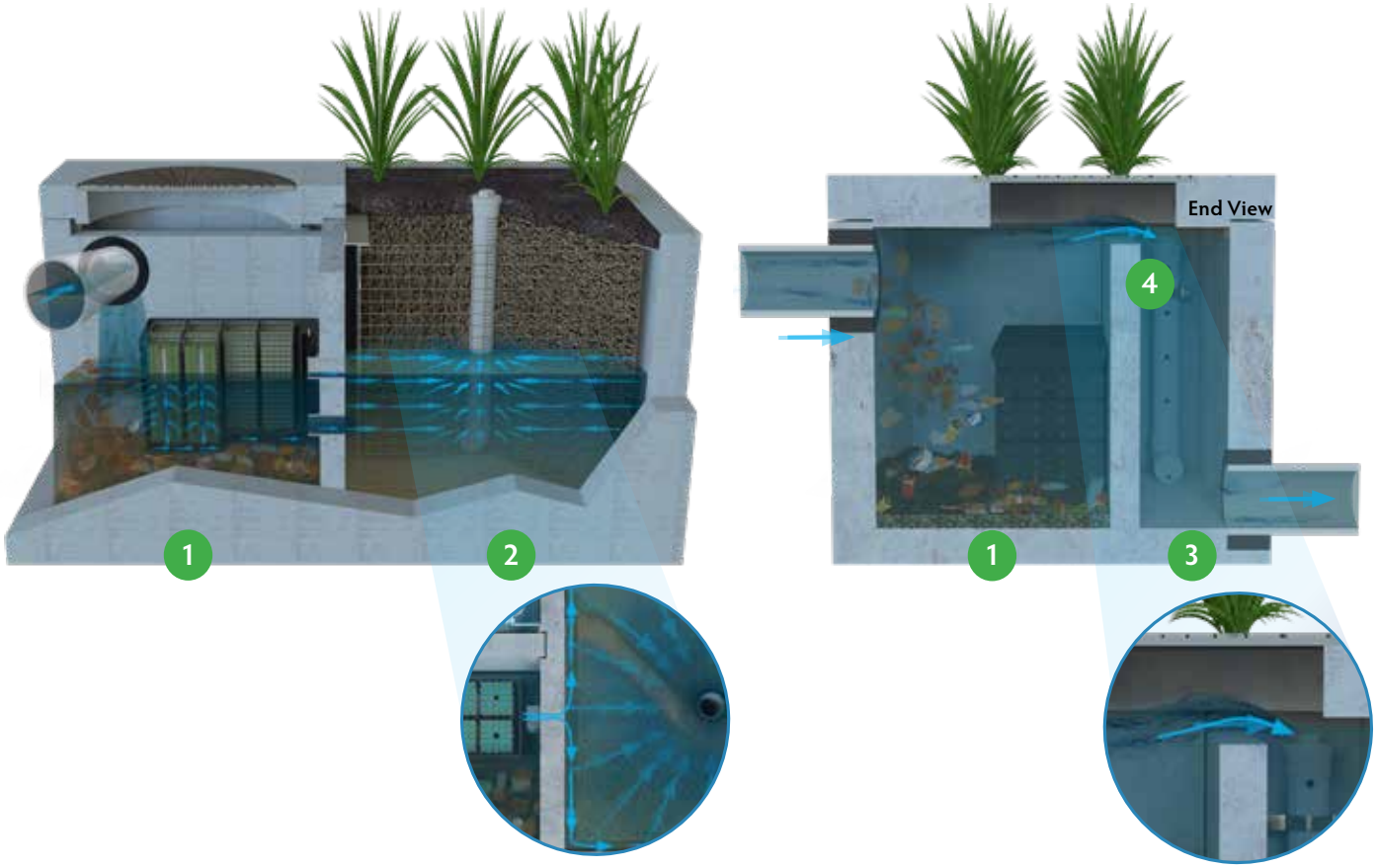
As cities grow, there is less space for natural solutions to treat stormwater. Contech understands this and is committed to providing compact, Low Impact Development (LID) solutions like the Modular Wetlands Linear to protect our nation's waterways.

The Modular Wetlands® Linear is the only biofiltration system to utilize patented horizontal flow, allowing for a small footprint, high treatment capacity, and design versatility. It is also the only biofiltration system that can be routinely installed downstream of storage for additional volume control and treatment.

With numerous regulatory approvals, the system's aesthetic appeal and superior pollutant removal make it the ideal solution for a wide range of stormwater applications, including urban development projects, commercial parking lots, residential streets, mixed-use developments, streetscapes, and more.

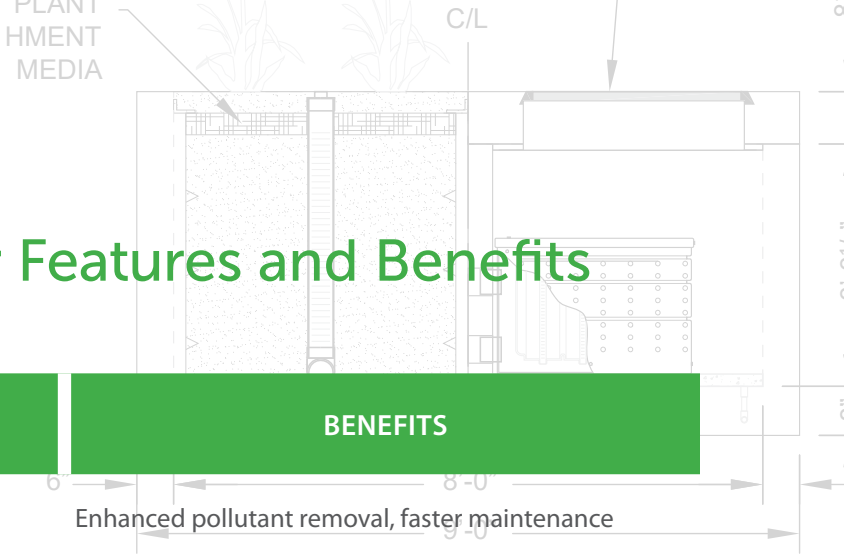
MODULAR WETLANDS®

How the Modular Wetlands® Linear Works



1. **PRETREATMENT** | Stormwater enters the pretreatment chamber where total suspended solids settle, and trash and debris are contained within the chamber. Stormwater then travels through the pretreatment filter boxes that provide additional treatment.
2. **BIOFILTRATION** | As water enters the biofiltration chamber, it fills the void space in the chamber's perimeter. Horizontal forces push the water inward through the biofiltration media, where nutrients and metals are captured. The water then enters the drain pipe to be discharged.
3. **DISCHARGE** | The specially designed vertical drain pipe and orifice control plate control the flow of water through the media to a level lower than the media's capacity, ensuring media effectiveness. The water then enters the horizontal drain pipe to be discharged.
4. **BYPASS** | During peak flows, an internal weir in the side-by-side configuration allows high flows to bypass treatment, eliminating flooding and the need for a separate bypass structure. Bypass is not provided in the end-to end configuration.

Using horizontal flow to improve performance



Modular Wetlands® Linear Features and Benefits

FEATURE	BENEFITS
Pretreatment chamber	Enhanced pollutant removal, faster maintenance
Horizontal flow biofiltration	Greater filter surface area
Performance verified by both the WA DOE and NJ DEP	Superior pollutant capture with confidence
Built-in high flow bypass	Eliminates flooding and the need for a separate bypass structure
Available in multiple configurations and sizes	Flexibility to meet site-specific needs

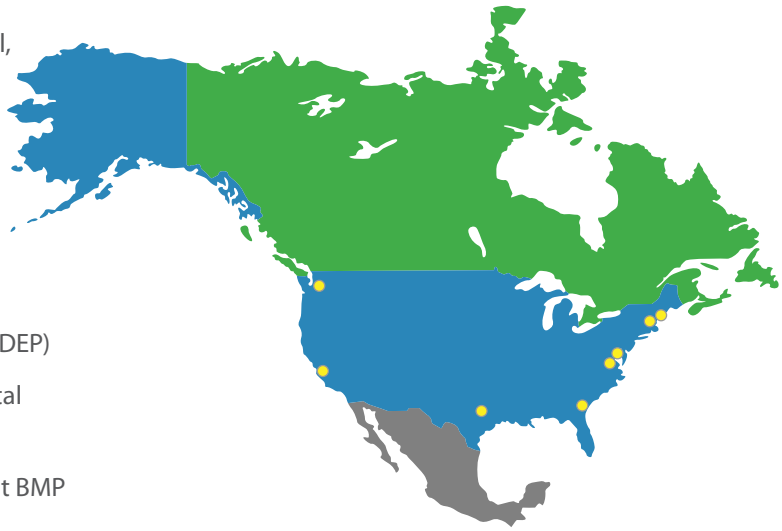


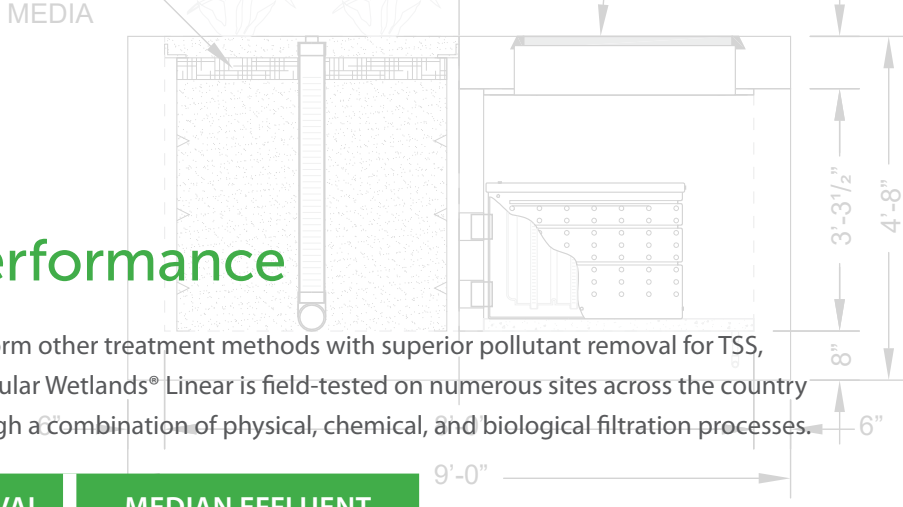
The Modular Wetlands system offers many different configurations.

Select Modular Wetlands® Linear Approvals

Modular Wetlands Linear is approved through numerous local, state and federal programs, including but not limited to:

- Washington State Department of Ecology TAPE
- California Water Resources Control Board, Full Capture Certification
- Virginia Department of Environmental Quality (VA DEQ)
- New Jersey Department of Environmental Protection (NJDEP)
- Maryland Department of the Environment - Environmental Site Design (ESD)
- Rhode Island Department of Environmental Management BMP
- Texas Commission on Environmental Quality (TCEQ)
- Atlanta Regional Commission Certification





Modular Wetlands® Performance

The Modular Wetlands® Linear continues to outperform other treatment methods with superior pollutant removal for TSS, heavy metals, nutrients, and hydrocarbons. The Modular Wetlands® Linear is field-tested on numerous sites across the country and is proven to effectively remove pollutants through a combination of physical, chemical, and biological filtration processes.

POLLUTANT OF CONCERN	MEDIAN REMOVAL EFFICIENCY	MEDIAN EFFLUENT CONCENTRATION (MG/L)
Total Suspended Solids (TSS)	89%	12
Total Phosphorus - TAPE (TP)	61%	0.041
Nitrogen (TN)	23%	1
Total Copper (TCu)	50%	0.006
Total Dissolved Copper	37%	0.006
Total Zinc (TZn)	66%	0.019
Dissolved Zinc	60%	0.0148
Motor Oil	79%	0.8

Sources:
TAPE Field Study - 2012
TAPE Field Study - 2013

Note: Some jurisdictions recognize higher removal rates. Contact your Contech Stormwater Consultant for performance expectations.

Modular Wetlands® Linear Maintenance

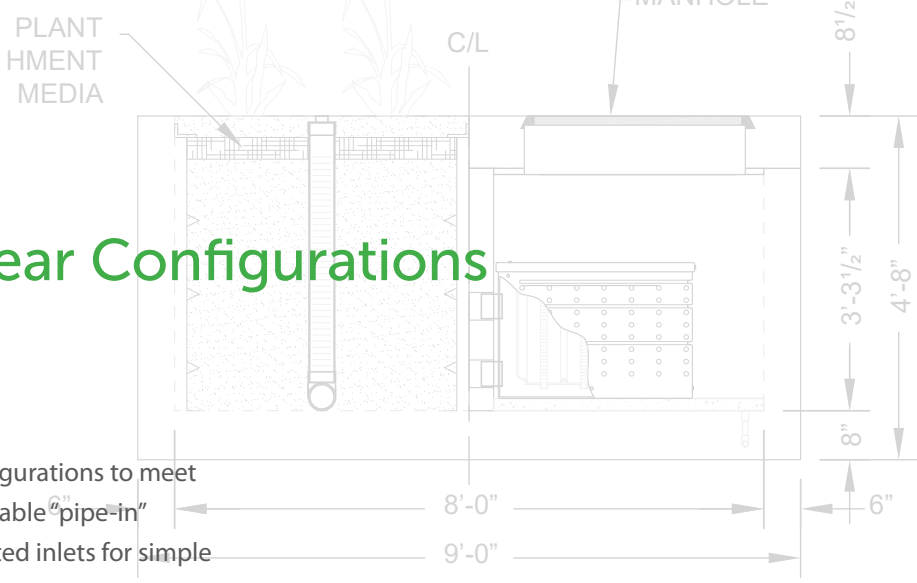
The Modular Wetlands® Linear is a self-contained treatment train. Maintenance requirements for the unit consist of five simple steps that can be completed using a vacuum truck. The system can also be cleaned by hand.

- Remove trash from the screening device
- Remove sediment from the separation chamber
- Periodically replace the pretreatment cartridge filter media
- Replace the drain down filter media
- Trim vegetation



Most Modular Wetland Linear systems can be cleaned in about thirty minutes.

Multiple configurations allow for easy site integration



Modular Wetlands® Linear Configurations

Multiple system configurations integrate with site hydraulic design and layout ...

The Modular Wetlands Linear is offered in multiple configurations to meet site specific needs. This highly versatile system has available "pipe-in" options on most models, along with built-in curb or grated inlets for simple integration into your storm drain design.



Curb Inlet

The Curb Inlet configuration accepts sheet flow through a curb opening and is commonly used along roadways and parking lots. It can be used in sump or flow-by conditions.



Vault

The Vault configuration can be used in end-of-the-line installations. Another benefit of the "pipe-in" design is the ability to install the system downstream of underground detention systems to meet water quality volume requirements, or for traffic-rated designs (no plants).



Downspout

The Downspout configuration is designed to accept a vertical downspout pipe from rooftop and podium areas. Some models have the option of utilizing an internal bypass, simplifying the overall design. The system can be installed as a raised planter, and the exterior can be stuccoed or covered with other finishes to match the look of adjacent buildings.

A partner you can rely on



STORMWATER SOLUTIONS

PIPE SOLUTIONS

STRUCTURES SOLUTIONS

Few companies offer the wide range of high-quality stormwater resources you can find with us — state-of-the-art products, decades of expertise, and all the maintenance support you need to operate your system cost-effectively.

THE CONTECH WAY

Contech® Engineered Solutions provides innovative, cost-effective site solutions to engineers, contractors, and developers on projects across North America. Our portfolio includes bridges, drainage, erosion control, retaining wall, sanitary sewer and stormwater management products.

TAKE THE NEXT STEP

For more information: www.ContechES.com

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Appendix 7: Hydromodification

Supporting Detail Relating to Hydrologic Conditions of Concern

3983 Zeiders
9/13/2024

Summary of On and Offsite 2-yr 24-hr Storm Event Peak Flows
POC-1

DMA ID	Existing Q (cfs)	Proposed Q (cfs)	Mitigated Q (cfs)
DMA 1	3.99	1.579	0.47
DMA 2	2.92	1.874	0.5
DMA 3	N/A	0.026	0.026
DMA 4	N/A	0.049	0.049
DMA 7	N/A	0.035	0.035
DMA OFF-1	N/A	3.99	3.99
DMA OFF-2	N/A	2.1	2.1
Total	**6.91**	**9.653**	**7.17**
		Mitigated vs Existing Q =	**104%**

is less than 110%, therefore ok

Summary of On and Offsite 2-yr 24-hr Storm Event Peak Flows
POC-2

DMA ID	Existing Q (cfs)	Proposed Q (cfs)	Mitigated Q (cfs)
DMA 3	0.55	N/A	N/A
DMA 5	N/A	0.009	0.009
DMA 6	N/A	0.083	0.083
Total	**0.55**	**0.092**	**0.092**
		Mitigated vs Existing Q =	**17%**

is less than 110%, therefore ok

Existing Condition
2-yr Storm Event

DMA 1

Total Area		%Imp	Fp (infiltration rate based on RI, Plate E-6.2)
65.4		0.20	0.69

Constant Loss Rate

F= Fp(1-0.9Ai)
F= 0.5658

For 24-hr storms, Ft is variable loss rate

Ft= C[24-(T/60)]^1.55+Fm
Ft= 0.9991

C= (F-Fm)/54
C= 0.0052

Fm= 0.5F
Fm= 0.2829

T= 7.5

RCFC & WCD HYDROLOGY MANUAL	SYNTHETIC UNIT HYDROGRAPH METHOD UNIT HYDROGRAPH AND EFFECTIVE RAIN CALCULATION FORM	PROJECT: Zeiders JOB #: 3983 DMA 1

[1] CONCENTRATION POINT						[2] AREA DESIGNATION					
[3] DRAINAGE AREA - ACRES			65.4	ACRES		[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])					
[5] UNIT TIME - MINUTES			15	MIN PER E-1.2		[6] LAG TIME-MINUTES					MIN
[7] UNIT TIME-PERCENT OF LAG			N/A			[8] S-CURVE				N/A	
[9] STORM FREQUENCY & DURATION			2 YEAR	24 HOUR		[10] TOTAL ADJUSTED STORM RAIN-INCHES				2.24	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR			0.9991			[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR					
[13] CONSTANT LOSS RATE-IN/HR					IN/HR	[14] LOW LOSS RATE-PERCENT				0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.00	0	0.000	0.000
15					0.2	0.018	0.994	0.01434	0.004	0.234
30					0.3	0.027	0.982	0.0215	0.005	0.352
45					0.3	0.027	0.971	0.0215	0.005	0.352
60					0.4	0.036	0.959	0.02867	0.007	0.469
75					0.3	0.027	0.948	0.0215	0.005	0.352
90					0.3	0.027	0.937	0.0215	0.005	0.352
105					0.3	0.027	0.926	0.0215	0.005	0.352
120					0.4	0.036	0.915	0.02867	0.007	0.469
135					0.4	0.036	0.904	0.02867	0.007	0.469
150					0.4	0.036	0.893	0.02867	0.007	0.469
165					0.5	0.045	0.882	0.03584	0.009	0.586
180					0.5	0.045	0.871	0.03584	0.009	0.586
195					0.5	0.045	0.860	0.03584	0.009	0.586
210					0.5	0.045	0.850	0.03584	0.009	0.586
225					0.5	0.045	0.839	0.03584	0.009	0.586
240					0.6	0.054	0.828	0.04301	0.011	0.703
255					0.6	0.054	0.818	0.04301	0.011	0.703
270					0.7	0.063	0.808	0.05018	0.013	0.820
285					0.7	0.063	0.797	0.05018	0.013	0.820
300					0.8	0.072	0.787	0.05734	0.014	0.938
315					0.6	0.054	0.777	0.04301	0.011	0.703
330					0.7	0.063	0.767	0.05018	0.013	0.820
345					0.8	0.072	0.757	0.05734	0.014	0.938
360					0.8	0.072	0.747	0.05734	0.014	0.938
375					0.9	0.081	0.737	0.06451	0.016	1.055
390					0.9	0.081	0.727	0.06451	0.016	1.055
405					1	0.090	0.717	0.07168	0.018	1.172
420					1	0.090	0.708	0.07168	0.018	1.172
435					1	0.090	0.698	0.07168	0.018	1.172
450					1.1	0.099	0.689	0.07885	0.020	1.289
465					1.2	0.108	0.679	0.08602	0.022	1.406
480					1.3	0.116	0.670	0.09318	0.023	1.524
495					1.5	0.134	0.661	0.10752	0.027	1.758
510					1.5	0.134	0.651	0.10752	0.027	1.758
525					1.6	0.143	0.642	0.11469	0.029	1.875
540					1.7	0.152	0.633	0.12186	0.030	1.992
555					1.9	0.170	0.624	0.13619	0.034	2.227
570					2	0.179	0.615	0.14336	0.036	2.344
585					2.1	0.188	0.607	0.15053	0.038	2.461
600					2.2	0.197	0.598	0.1577	0.039	2.578

615					1.5	0.134	0.589	0.10752	0.027	1.758
630					1.5	0.134	0.581	0.10752	0.027	1.758
645					2	0.179	0.572	0.14336	0.036	2.344
660					2	0.179	0.564	0.14336	0.036	2.344
675					1.9	0.170	0.556	0.13619	0.034	2.227
690					1.9	0.170	0.548	0.13619	0.034	2.227
705					1.7	0.152	0.540	0.12186	0.030	1.992
720					1.8	0.161	0.532	0.12902	0.032	2.110
735					2.5	0.224	0.524	0.1792	0.045	2.930
750					2.6	0.233	0.516	0.18637	0.047	3.047
765					2.8	0.251	0.508	0.2007	0.050	3.282
780					2.9	0.260	0.501	0.20787	0.052	3.399
795					3.4	0.305	0.493	0.24371	0.061	3.985
810					3.4	0.305	0.486	0.24371	0.061	3.985
825					2.3	0.206	0.478	0.16486	0.041	2.696
840					2.3	0.206	0.471	0.16486	0.041	2.696
855					2.7	0.242	0.464	0.19354	0.048	3.164
870					2.6	0.233	0.457	0.18637	0.047	3.047
885					2.6	0.233	0.450	0.18637	0.047	3.047
900					2.5	0.224	0.443	0.1792	0.045	2.930
915					2.4	0.215	0.436	0.17203	0.043	2.813
930					2.3	0.206	0.430	0.16486	0.041	2.696
945					1.9	0.170	0.423	0.13619	0.034	2.227
960					1.9	0.170	0.417	0.13619	0.034	2.227
975					0.4	0.036	0.410	0.02867	0.007	0.469
990					0.4	0.036	0.404	0.02867	0.007	0.469
1005					0.3	0.027	0.398	0.0215	0.005	0.352
1020					0.3	0.027	0.392	0.0215	0.005	0.352
1035					0.5	0.045	0.386	0.03584	0.009	0.586
1050					0.5	0.045	0.380	0.03584	0.009	0.586
1065					0.5	0.045	0.375	0.03584	0.009	0.586
1080					0.4	0.036	0.369	0.02867	0.007	0.469
1095					0.4	0.036	0.364	0.02867	0.007	0.469
1110					0.4	0.036	0.359	0.02867	0.007	0.469
1125					0.3	0.027	0.353	0.0215	0.005	0.352
1140					0.2	0.018	0.348	0.01434	0.004	0.234
1155					0.3	0.027	0.343	0.0215	0.005	0.352
1170					0.4	0.036	0.339	0.02867	0.007	0.469
1185					0.3	0.027	0.334	0.0215	0.005	0.352
1200					0.2	0.018	0.330	0.01434	0.004	0.234
1215					0.3	0.027	0.325	0.0215	0.005	0.352
1230					0.3	0.027	0.321	0.0215	0.005	0.352
1245					0.3	0.027	0.317	0.0215	0.005	0.352
1260					0.2	0.018	0.313	0.01434	0.004	0.234
1275					0.3	0.027	0.310	0.0215	0.005	0.352
1290					0.2	0.018	0.306	0.01434	0.004	0.234
1305					0.3	0.027	0.303	0.0215	0.005	0.352
1320					0.2	0.018	0.300	0.01434	0.004	0.234
1335					0.3	0.027	0.297	0.0215	0.005	0.352
1350					0.2	0.018	0.294	0.01434	0.004	0.234
1365					0.2	0.018	0.291	0.01434	0.004	0.234
1380					0.2	0.018	0.289	0.01434	0.004	0.234
1395					0.2	0.018	0.287	0.01434	0.004	0.234
1410					0.2	0.018	0.285	0.01434	0.004	0.234
1425					0.2	0.018	0.284	0.01434	0.004	0.234
1440					0.2	0.018	0.283	0.01434	0.004	0.234
				Σ[20] -	100			7.168	1.792	117.197

Existing Condition
2-yr Storm Event

DMA 2

Total Area		%Imp	Fp (infiltration rate based on RI, Plate E-6.2)
47.9		0.025	0.71

Constant Loss Rate

F= Fp(1-0.9Ai)
F= 0.6940

For 24-hr storms, Ft is variable loss rate

Ft= C[24-(T/60)]^1.55+Fm
Ft= 1.2256

C= (F-Fm)/54
C= 0.0064

Fm= 0.5F
Fm= 0.3470

T= 7.5

RCFC & WCD HYDROLOGY MANUAL	SYNTHETIC UNIT HYDROGRAPH METHOD UNIT HYDROGRAPH AND EFFECTIVE RAIN CALCULATION FORM	PROJECT: Zeiders JOB #: 3983 DMA 2

[1] CONCENTRATION POINT			[2] AREA DESIGNATION				
[3] DRAINAGE AREA - ACRES	47.9	ACRES	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])				
[5] UNIT TIME - MINUTES	15	MIN PER E-1.2	[6] LAG TIME-MINUTES				MIN
[7] UNIT TIME-PERCENT OF LAG	N/A		[8] S-CURVE			N/A	
[9] STORM FREQUENCY & DURATION	2 YEAR	24 HOUR	[10] TOTAL ADJUSTED STORM RAIN-INCHES			2.24	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR	1.2256		[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR				
[13] CONSTANT LOSS RATE-IN/HR		IN/HR	[14] LOW LOSS RATE-PERCENT			0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.00	0	0.000	0.000
15					0.2	0.018	1.222	0.01434	0.004	0.172
30					0.3	0.027	1.208	0.0215	0.005	0.258
45					0.3	0.027	1.194	0.0215	0.005	0.258
60					0.4	0.036	1.180	0.02867	0.007	0.343
75					0.3	0.027	1.166	0.0215	0.005	0.258
90					0.3	0.027	1.152	0.0215	0.005	0.258
105					0.3	0.027	1.138	0.0215	0.005	0.258
120					0.4	0.036	1.125	0.02867	0.007	0.343
135					0.4	0.036	1.111	0.02867	0.007	0.343
150					0.4	0.036	1.098	0.02867	0.007	0.343
165					0.5	0.045	1.084	0.03584	0.009	0.429
180					0.5	0.045	1.071	0.03584	0.009	0.429
195					0.5	0.045	1.058	0.03584	0.009	0.429
210					0.5	0.045	1.044	0.03584	0.009	0.429
225					0.5	0.045	1.031	0.03584	0.009	0.429
240					0.6	0.054	1.018	0.04301	0.011	0.515
255					0.6	0.054	1.006	0.04301	0.011	0.515
270					0.7	0.063	0.993	0.05018	0.013	0.601
285					0.7	0.063	0.980	0.05018	0.013	0.601
300					0.8	0.072	0.967	0.05734	0.014	0.687
315					0.6	0.054	0.955	0.04301	0.011	0.515
330					0.7	0.063	0.942	0.05018	0.013	0.601
345					0.8	0.072	0.930	0.05734	0.014	0.687
360					0.8	0.072	0.918	0.05734	0.014	0.687
375					0.9	0.081	0.906	0.06451	0.016	0.773
390					0.9	0.081	0.894	0.06451	0.016	0.773
405					1	0.090	0.882	0.07168	0.018	0.858
420					1	0.090	0.870	0.07168	0.018	0.858
435					1	0.090	0.858	0.07168	0.018	0.858
450					1.1	0.099	0.846	0.07885	0.020	0.944
465					1.2	0.108	0.835	0.08602	0.022	1.030
480					1.3	0.116	0.823	0.09318	0.023	1.116
495					1.5	0.134	0.812	0.10752	0.027	1.288
510					1.5	0.134	0.801	0.10752	0.027	1.288
525					1.6	0.143	0.789	0.11469	0.029	1.373
540					1.7	0.152	0.778	0.12186	0.030	1.459
555					1.9	0.170	0.767	0.13619	0.034	1.631
570					2	0.179	0.756	0.14336	0.036	1.717
585					2.1	0.188	0.746	0.15053	0.038	1.803
600					2.2	0.197	0.735	0.1577	0.039	1.888

615					1.5	0.134	0.724	0.10752	0.027	1.288
630					1.5	0.134	0.714	0.10752	0.027	1.288
645					2	0.179	0.703	0.14336	0.036	1.717
660					2	0.179	0.693	0.14336	0.036	1.717
675					1.9	0.170	0.683	0.13619	0.034	1.631
690					1.9	0.170	0.673	0.13619	0.034	1.631
705					1.7	0.152	0.663	0.12186	0.030	1.459
720					1.8	0.161	0.653	0.12902	0.032	1.545
735					2.5	0.224	0.643	0.1792	0.045	2.146
750					2.6	0.233	0.634	0.18637	0.047	2.232
765					2.8	0.251	0.624	0.2007	0.050	2.403
780					2.9	0.260	0.615	0.20787	0.052	2.489
795					3.4	0.305	0.606	0.24371	0.061	2.918
810					3.4	0.305	0.596	0.24371	0.061	2.918
825					2.3	0.206	0.587	0.16486	0.041	1.974
840					2.3	0.206	0.578	0.16486	0.041	1.974
855					2.7	0.242	0.570	0.19354	0.048	2.318
870					2.6	0.233	0.561	0.18637	0.047	2.232
885					2.6	0.233	0.552	0.18637	0.047	2.232
900					2.5	0.224	0.544	0.1792	0.045	2.146
915					2.4	0.215	0.536	0.17203	0.043	2.060
930					2.3	0.206	0.528	0.16486	0.041	1.974
945					1.9	0.170	0.520	0.13619	0.034	1.631
960					1.9	0.170	0.512	0.13619	0.034	1.631
975					0.4	0.036	0.504	0.02867	0.007	0.343
990					0.4	0.036	0.496	0.02867	0.007	0.343
1005					0.3	0.027	0.489	0.0215	0.005	0.258
1020					0.3	0.027	0.481	0.0215	0.005	0.258
1035					0.5	0.045	0.474	0.03584	0.009	0.429
1050					0.5	0.045	0.467	0.03584	0.009	0.429
1065					0.5	0.045	0.460	0.03584	0.009	0.429
1080					0.4	0.036	0.453	0.02867	0.007	0.343
1095					0.4	0.036	0.447	0.02867	0.007	0.343
1110					0.4	0.036	0.440	0.02867	0.007	0.343
1125					0.3	0.027	0.434	0.0215	0.005	0.258
1140					0.2	0.018	0.428	0.01434	0.004	0.172
1155					0.3	0.027	0.422	0.0215	0.005	0.258
1170					0.4	0.036	0.416	0.02867	0.007	0.343
1185					0.3	0.027	0.410	0.0215	0.005	0.258
1200					0.2	0.018	0.405	0.01434	0.004	0.172
1215					0.3	0.027	0.399	0.0215	0.005	0.258
1230					0.3	0.027	0.394	0.0215	0.005	0.258
1245					0.3	0.027	0.389	0.0215	0.005	0.258
1260					0.2	0.018	0.384	0.01434	0.004	0.172
1275					0.3	0.027	0.380	0.0215	0.005	0.258
1290					0.2	0.018	0.376	0.01434	0.004	0.172
1305					0.3	0.027	0.371	0.0215	0.005	0.258
1320					0.2	0.018	0.368	0.01434	0.004	0.172
1335					0.3	0.027	0.364	0.0215	0.005	0.258
1350					0.2	0.018	0.361	0.01434	0.004	0.172
1365					0.2	0.018	0.357	0.01434	0.004	0.172
1380					0.2	0.018	0.355	0.01434	0.004	0.172
1395					0.2	0.018	0.352	0.01434	0.004	0.172
1410					0.2	0.018	0.350	0.01434	0.004	0.172
1425					0.2	0.018	0.348	0.01434	0.004	0.172
1440					0.2	0.018	0.347	0.01434	0.004	0.172
				Σ[20] -	100			7.168	1.792	85.837

Existing Condition
2-yr Storm Event

DMA 3

Total Area		%Imp	Fp (infiltration rate based on RI, Plate E-6.2)
8.94		0.103	0.71

Constant Loss Rate

F= Fp(1-0.9Ai)
F= 0.6442

For 24-hr storms, Ft is variable loss rate

Ft= C[24-(T/60)]^1.55+Fm
Ft= 1.1375

C= (F-Fm)/54
C= 0.0060

Fm= 0.5F
Fm= 0.3221

T= 7.5

RCFC & WCD HYDROLOGY MANUAL	SYNTHETIC UNIT HYDROGRAPH METHOD UNIT HYDROGRAPH AND EFFECTIVE RAIN CALCULATION FORM	PROJECT: Zeiders JOB #: 3983 DMA 3

[1] CONCENTRATION POINT						[2] AREA DESIGNATION					
[3] DRAINAGE AREA - ACRES			8.94	ACRES		[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])					
[5] UNIT TIME - MINUTES			15	MIN PER E-1.2		[6] LAG TIME-MINUTES					MIN
[7] UNIT TIME-PERCENT OF LAG			N/A			[8] S-CURVE				N/A	
[9] STORM FREQUENCY & DURATION			2 YEAR	24 HOUR		[10] TOTAL ADJUSTED STORM RAIN-INCHES				2.24	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR			1.1375			[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR					
[13] CONSTANT LOSS RATE-IN/HR					IN/HR	[14] LOW LOSS RATE-PERCENT				0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.00	0	0.000	0.000
15					0.2	0.018	1.142	0.01434	0.004	0.032
30					0.3	0.027	1.129	0.0215	0.005	0.048
45					0.3	0.027	1.116	0.0215	0.005	0.048
60					0.4	0.036	1.103	0.02867	0.007	0.064
75					0.3	0.027	1.090	0.0215	0.005	0.048
90					0.3	0.027	1.077	0.0215	0.005	0.048
105					0.3	0.027	1.064	0.0215	0.005	0.048
120					0.4	0.036	1.051	0.02867	0.007	0.064
135					0.4	0.036	1.038	0.02867	0.007	0.064
150					0.4	0.036	1.026	0.02867	0.007	0.064
165					0.5	0.045	1.013	0.03584	0.009	0.080
180					0.5	0.045	1.001	0.03584	0.009	0.080
195					0.5	0.045	0.988	0.03584	0.009	0.080
210					0.5	0.045	0.976	0.03584	0.009	0.080
225					0.5	0.045	0.964	0.03584	0.009	0.080
240					0.6	0.054	0.952	0.04301	0.011	0.096
255					0.6	0.054	0.939	0.04301	0.011	0.096
270					0.7	0.063	0.927	0.05018	0.013	0.112
285					0.7	0.063	0.916	0.05018	0.013	0.112
300					0.8	0.072	0.904	0.05734	0.014	0.128
315					0.6	0.054	0.892	0.04301	0.011	0.096
330					0.7	0.063	0.880	0.05018	0.013	0.112
345					0.8	0.072	0.869	0.05734	0.014	0.128
360					0.8	0.072	0.857	0.05734	0.014	0.128
375					0.9	0.081	0.846	0.06451	0.016	0.144
390					0.9	0.081	0.835	0.06451	0.016	0.144
405					1	0.090	0.823	0.07168	0.018	0.160
420					1	0.090	0.812	0.07168	0.018	0.160
435					1	0.090	0.801	0.07168	0.018	0.160
450					1.1	0.099	0.790	0.07885	0.020	0.176
465					1.2	0.108	0.779	0.08602	0.022	0.192
480					1.3	0.116	0.769	0.09318	0.023	0.208
495					1.5	0.134	0.758	0.10752	0.027	0.240
510					1.5	0.134	0.747	0.10752	0.027	0.240
525					1.6	0.143	0.737	0.11469	0.029	0.256
540					1.7	0.152	0.726	0.12186	0.030	0.272
555					1.9	0.170	0.716	0.13619	0.034	0.304
570					2	0.179	0.706	0.14336	0.036	0.320
585					2.1	0.188	0.696	0.15053	0.038	0.336
600					2.2	0.197	0.686	0.1577	0.039	0.352

615					1.5	0.134	0.676	0.10752	0.027	0.240
630					1.5	0.134	0.666	0.10752	0.027	0.240
645					2	0.179	0.656	0.14336	0.036	0.320
660					2	0.179	0.647	0.14336	0.036	0.320
675					1.9	0.170	0.637	0.13619	0.034	0.304
690					1.9	0.170	0.628	0.13619	0.034	0.304
705					1.7	0.152	0.618	0.12186	0.030	0.272
720					1.8	0.161	0.609	0.12902	0.032	0.288
735					2.5	0.224	0.600	0.1792	0.045	0.401
750					2.6	0.233	0.591	0.18637	0.047	0.417
765					2.8	0.251	0.582	0.2007	0.050	0.449
780					2.9	0.260	0.573	0.20787	0.052	0.465
795					3.4	0.305	0.565	0.24371	0.061	0.545
810					3.4	0.305	0.556	0.24371	0.061	0.545
825					2.3	0.206	0.547	0.16486	0.041	0.368
840					2.3	0.206	0.539	0.16486	0.041	0.368
855					2.7	0.242	0.531	0.19354	0.048	0.433
870					2.6	0.233	0.523	0.18637	0.047	0.417
885					2.6	0.233	0.515	0.18637	0.047	0.417
900					2.5	0.224	0.507	0.1792	0.045	0.401
915					2.4	0.215	0.499	0.17203	0.043	0.384
930					2.3	0.206	0.491	0.16486	0.041	0.368
945					1.9	0.170	0.484	0.13619	0.034	0.304
960					1.9	0.170	0.476	0.13619	0.034	0.304
975					0.4	0.036	0.469	0.02867	0.007	0.064
990					0.4	0.036	0.462	0.02867	0.007	0.064
1005					0.3	0.027	0.455	0.0215	0.005	0.048
1020					0.3	0.027	0.448	0.0215	0.005	0.048
1035					0.5	0.045	0.441	0.03584	0.009	0.080
1050					0.5	0.045	0.435	0.03584	0.009	0.080
1065					0.5	0.045	0.428	0.03584	0.009	0.080
1080					0.4	0.036	0.422	0.02867	0.007	0.064
1095					0.4	0.036	0.415	0.02867	0.007	0.064
1110					0.4	0.036	0.409	0.02867	0.007	0.064
1125					0.3	0.027	0.403	0.0215	0.005	0.048
1140					0.2	0.018	0.398	0.01434	0.004	0.032
1155					0.3	0.027	0.392	0.0215	0.005	0.048
1170					0.4	0.036	0.387	0.02867	0.007	0.064
1185					0.3	0.027	0.381	0.0215	0.005	0.048
1200					0.2	0.018	0.376	0.01434	0.004	0.032
1215					0.3	0.027	0.371	0.0215	0.005	0.048
1230					0.3	0.027	0.366	0.0215	0.005	0.048
1245					0.3	0.027	0.362	0.0215	0.005	0.048
1260					0.2	0.018	0.357	0.01434	0.004	0.032
1275					0.3	0.027	0.353	0.0215	0.005	0.048
1290					0.2	0.018	0.349	0.01434	0.004	0.032
1305					0.3	0.027	0.345	0.0215	0.005	0.048
1320					0.2	0.018	0.341	0.01434	0.004	0.032
1335					0.3	0.027	0.338	0.0215	0.005	0.048
1350					0.2	0.018	0.335	0.01434	0.004	0.032
1365					0.2	0.018	0.332	0.01434	0.004	0.032
1380					0.2	0.018	0.329	0.01434	0.004	0.032
1395					0.2	0.018	0.327	0.01434	0.004	0.032
1410					0.2	0.018	0.325	0.01434	0.004	0.032
1425					0.2	0.018	0.323	0.01434	0.004	0.032
1440					0.2	0.018	0.322	0.01434	0.004	0.032
				Σ[20] -	100			7.168	1.792	16.020

Proposed Condition
2-yr Storm Event

DMA 1

Total Area		%Imp	Fp (infiltration rate based on RI, Plate E-6.2)
7.86		0.92	0.69

Constant Loss Rate

F= Fp(1-0.9Ai)
F= 0.1218

For 24-hr storms, Ft is variable loss rate

Ft= C[24-(T/60)]^1.55+Fm
Ft= 0.2151

C= (F-Fm)/54
C= 0.0011

Fm= 0.5F
Fm= 0.0609

T= 7.5

RCFC & WCD HYDROLOGY MANUAL	SYNTHETIC UNIT HYDROGRAPH METHOD UNIT HYDROGRAPH AND EFFECTIVE RAIN CALCULATION FORM	PROJECT: JOB #:	Zeiders 3983 DMA 1

[1] CONCENTRATION POINT						[2] AREA DESIGNATION					
[3] DRAINAGE AREA - ACRES			7.86	ACRES		[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])					
[5] UNIT TIME - MINUTES			15	MIN PER E-1.2		[6] LAG TIME-MINUTES					MIN
[7] UNIT TIME-PERCENT OF LAG			N/A			[8] S-CURVE				N/A	
[9] STORM FREQUENCY & DURATION			2 YEAR	24 HOUR		[10] TOTAL ADJUSTED STORM RAIN-INCHES				2.24	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR			0.2151			[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR					
[13] CONSTANT LOSS RATE-IN/HR					IN/HR	[14] LOW LOSS RATE-PERCENT				0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.00	0	0.000	0.000
15					0.2	0.018	0.211	0.01434	0.004	0.028
30					0.3	0.027	0.209	0.0215	0.005	0.042
45					0.3	0.027	0.206	0.0215	0.005	0.042
60					0.4	0.036	0.204	0.02867	0.007	0.056
75					0.3	0.027	0.202	0.0215	0.005	0.042
90					0.3	0.027	0.199	0.0215	0.005	0.042
105					0.3	0.027	0.197	0.0215	0.005	0.042
120					0.4	0.036	0.195	0.02867	0.007	0.056
135					0.4	0.036	0.192	0.02867	0.007	0.056
150					0.4	0.036	0.190	0.02867	0.007	0.056
165					0.5	0.045	0.188	0.03584	0.009	0.070
180					0.5	0.045	0.185	0.03584	0.009	0.070
195					0.5	0.045	0.183	0.03584	0.009	0.070
210					0.5	0.045	0.181	0.03584	0.009	0.070
225					0.5	0.045	0.179	0.03584	0.009	0.070
240					0.6	0.054	0.176	0.04301	0.011	0.085
255					0.6	0.054	0.174	0.04301	0.011	0.085
270					0.7	0.063	0.172	0.05018	0.013	0.099
285					0.7	0.063	0.170	0.05018	0.013	0.099
300					0.8	0.072	0.168	0.05734	0.014	0.113
315					0.6	0.054	0.165	0.04301	0.011	0.085
330					0.7	0.063	0.163	0.05018	0.013	0.099
345					0.8	0.072	0.161	0.05734	0.014	0.113
360					0.8	0.072	0.159	0.05734	0.014	0.113
375					0.9	0.081	0.157	0.06451	0.016	0.127
390					0.9	0.081	0.155	0.06451	0.016	0.127
405					1	0.090	0.153	0.07168	0.018	0.141
420					1	0.090	0.151	0.07168	0.018	0.141
435					1	0.090	0.149	0.07168	0.018	0.141
450					1.1	0.099	0.147	0.07885	0.020	0.155
465					1.2	0.108	0.145	0.08602	0.022	0.169
480					1.3	0.116	0.143	0.09318	0.023	0.183
495					1.5	0.134	0.141	0.10752	0.027	0.211
510					1.5	0.134	0.139	0.10752	0.027	0.211
525					1.6	0.143	0.137	0.11469	0.006	0.051
540					1.7	0.152	0.135	0.12186	0.017	0.136
555					1.9	0.170	0.133	0.13619	0.037	0.292
570					2	0.179	0.131	0.14336	0.048	0.377
585					2.1	0.188	0.129	0.15053	0.059	0.462
600					2.2	0.197	0.128	0.1577	0.070	0.547

615					1.5	0.134	0.126	0.10752	0.009	0.068
630					1.5	0.134	0.124	0.10752	0.010	0.082
645					2	0.179	0.122	0.14336	0.057	0.448
660					2	0.179	0.120	0.14336	0.059	0.462
675					1.9	0.170	0.119	0.13619	0.052	0.406
690					1.9	0.170	0.117	0.13619	0.053	0.419
705					1.7	0.152	0.115	0.12186	0.037	0.292
720					1.8	0.161	0.114	0.12902	0.048	0.375
735					2.5	0.224	0.112	0.1792	0.112	0.882
750					2.6	0.233	0.110	0.18637	0.123	0.965
765					2.8	0.251	0.109	0.2007	0.142	1.119
780					2.9	0.260	0.107	0.20787	0.153	1.202
795					3.4	0.305	0.105	0.24371	0.199	1.566
810					3.4	0.305	0.104	0.24371	0.201	1.579
825					2.3	0.206	0.102	0.16486	0.104	0.816
840					2.3	0.206	0.101	0.16486	0.105	0.828
855					2.7	0.242	0.099	0.19354	0.143	1.122
870					2.6	0.233	0.098	0.18637	0.135	1.063
885					2.6	0.233	0.096	0.18637	0.137	1.075
900					2.5	0.224	0.095	0.1792	0.129	1.016
915					2.4	0.215	0.093	0.17203	0.122	0.957
930					2.3	0.206	0.092	0.16486	0.114	0.897
945					1.9	0.170	0.091	0.13619	0.080	0.626
960					1.9	0.170	0.089	0.13619	0.081	0.637
975					0.4	0.036	0.088	0.02867	0.007	0.056
990					0.4	0.036	0.087	0.02867	0.007	0.056
1005					0.3	0.027	0.085	0.0215	0.005	0.042
1020					0.3	0.027	0.084	0.0215	0.005	0.042
1035					0.5	0.045	0.083	0.03584	0.009	0.070
1050					0.5	0.045	0.082	0.03584	0.009	0.070
1065					0.5	0.045	0.080	0.03584	0.009	0.070
1080					0.4	0.036	0.079	0.02867	0.007	0.056
1095					0.4	0.036	0.078	0.02867	0.007	0.056
1110					0.4	0.036	0.077	0.02867	0.007	0.056
1125					0.3	0.027	0.076	0.0215	0.005	0.042
1140					0.2	0.018	0.075	0.01434	0.004	0.028
1155					0.3	0.027	0.074	0.0215	0.005	0.042
1170					0.4	0.036	0.073	0.02867	0.007	0.056
1185					0.3	0.027	0.072	0.0215	0.005	0.042
1200					0.2	0.018	0.071	0.01434	0.004	0.028
1215					0.3	0.027	0.070	0.0215	0.005	0.042
1230					0.3	0.027	0.069	0.0215	0.005	0.042
1245					0.3	0.027	0.068	0.0215	0.005	0.042
1260					0.2	0.018	0.067	0.01434	0.004	0.028
1275					0.3	0.027	0.067	0.0215	0.005	0.042
1290					0.2	0.018	0.066	0.01434	0.004	0.028
1305					0.3	0.027	0.065	0.0215	0.005	0.042
1320					0.2	0.018	0.064	0.01434	0.004	0.028
1335					0.3	0.027	0.064	0.0215	0.005	0.042
1350					0.2	0.018	0.063	0.01434	0.004	0.028
1365					0.2	0.018	0.063	0.01434	0.004	0.028
1380					0.2	0.018	0.062	0.01434	0.004	0.028
1395					0.2	0.018	0.062	0.01434	0.004	0.028
1410					0.2	0.018	0.061	0.01434	0.004	0.028
1425					0.2	0.018	0.061	0.01434	0.004	0.028
1440					0.2	0.018	0.061	0.01434	0.004	0.028
				Σ[20] -	100			7.168	3.235	25.429

Proposed Condition
2-yr Storm Event

DMA 2

Total Area		%Imp	Fp (infiltration rate based on RI, Plate E-6.2)
9.19		0.93	0.69

Constant Loss Rate

F= Fp(1-0.9Ai)
F= 0.1156

For 24-hr storms, Ft is variable loss rate

Ft= C[24-(T/60)]^1.55+Fm
Ft= 0.2041

C= (F-Fm)/54
C= 0.0011

Fm= 0.5F
Fm= 0.0578

T= 7.5

RCFC & WCD HYDROLOGY MANUAL	SYNTHETIC UNIT HYDROGRAPH METHOD UNIT HYDROGRAPH AND EFFECTIVE RAIN CALCULATION FORM	PROJECT: JOB #:	Zeiders 3983 DMA 2

[1] CONCENTRATION POINT						[2] AREA DESIGNATION					
[3] DRAINAGE AREA - ACRES			9.19	ACRES		[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])					
[5] UNIT TIME - MINUTES			15	MIN PER E-1.2		[6] LAG TIME-MINUTES					MIN
[7] UNIT TIME-PERCENT OF LAG			N/A			[8] S-CURVE				N/A	
[9] STORM FREQUENCY & DURATION			2 YEAR	24 HOUR		[10] TOTAL ADJUSTED STORM RAIN-INCHES				2.24	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR			0.2041			[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR					
[13] CONSTANT LOSS RATE-IN/HR					IN/HR	[14] LOW LOSS RATE-PERCENT				0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.00	0	0.000	0.000
15					0.2	0.018	0.208	0.01434	0.004	0.033
30					0.3	0.027	0.206	0.0215	0.005	0.049
45					0.3	0.027	0.203	0.0215	0.005	0.049
60					0.4	0.036	0.201	0.02867	0.007	0.066
75					0.3	0.027	0.199	0.0215	0.005	0.049
90					0.3	0.027	0.196	0.0215	0.005	0.049
105					0.3	0.027	0.194	0.0215	0.005	0.049
120					0.4	0.036	0.191	0.02867	0.007	0.066
135					0.4	0.036	0.189	0.02867	0.007	0.066
150					0.4	0.036	0.187	0.02867	0.007	0.066
165					0.5	0.045	0.184	0.03584	0.009	0.082
180					0.5	0.045	0.182	0.03584	0.009	0.082
195					0.5	0.045	0.180	0.03584	0.009	0.082
210					0.5	0.045	0.178	0.03584	0.009	0.082
225					0.5	0.045	0.175	0.03584	0.009	0.082
240					0.6	0.054	0.173	0.04301	0.011	0.099
255					0.6	0.054	0.171	0.04301	0.011	0.099
270					0.7	0.063	0.169	0.05018	0.013	0.115
285					0.7	0.063	0.167	0.05018	0.013	0.115
300					0.8	0.072	0.164	0.05734	0.014	0.132
315					0.6	0.054	0.162	0.04301	0.011	0.099
330					0.7	0.063	0.160	0.05018	0.013	0.115
345					0.8	0.072	0.158	0.05734	0.014	0.132
360					0.8	0.072	0.156	0.05734	0.014	0.132
375					0.9	0.081	0.154	0.06451	0.016	0.148
390					0.9	0.081	0.152	0.06451	0.016	0.148
405					1	0.090	0.150	0.07168	0.018	0.165
420					1	0.090	0.148	0.07168	0.018	0.165
435					1	0.090	0.146	0.07168	0.018	0.165
450					1.1	0.099	0.144	0.07885	0.020	0.181
465					1.2	0.108	0.142	0.08602	0.022	0.198
480					1.3	0.116	0.140	0.09318	0.023	0.214
495					1.5	0.134	0.138	0.10752	0.027	0.247
510					1.5	0.134	0.136	0.10752	0.027	0.247
525					1.6	0.143	0.134	0.11469	0.010	0.088
540					1.7	0.152	0.132	0.12186	0.020	0.187
555					1.9	0.170	0.130	0.13619	0.040	0.370
570					2	0.179	0.128	0.14336	0.051	0.469
585					2.1	0.188	0.126	0.15053	0.062	0.569
600					2.2	0.197	0.124	0.1577	0.073	0.668
615					1.5	0.134	0.123	0.10752	0.012	0.108
630					1.5	0.134	0.121	0.10752	0.014	0.125

645					2	0.179	0.119	0.14336	0.060	0.553
660					2	0.179	0.117	0.14336	0.062	0.569
675					1.9	0.170	0.116	0.13619	0.055	0.503
690					1.9	0.170	0.114	0.13619	0.056	0.519
705					1.7	0.152	0.112	0.12186	0.040	0.370
720					1.8	0.161	0.110	0.12902	0.051	0.467
735					2.5	0.224	0.109	0.1792	0.115	1.059
750					2.6	0.233	0.107	0.18637	0.126	1.157
765					2.8	0.251	0.105	0.2007	0.145	1.336
780					2.9	0.260	0.104	0.20787	0.156	1.434
795					3.4	0.305	0.102	0.24371	0.202	1.860
810					3.4	0.305	0.101	0.24371	0.204	1.874
825					2.3	0.206	0.099	0.16486	0.107	0.983
840					2.3	0.206	0.098	0.16486	0.108	0.997
855					2.7	0.242	0.096	0.19354	0.146	1.340
870					2.6	0.233	0.095	0.18637	0.138	1.272
885					2.6	0.233	0.093	0.18637	0.140	1.285
900					2.5	0.224	0.092	0.1792	0.132	1.216
915					2.4	0.215	0.090	0.17203	0.125	1.147
930					2.3	0.206	0.089	0.16486	0.117	1.078
945					1.9	0.170	0.087	0.13619	0.083	0.761
960					1.9	0.170	0.086	0.13619	0.084	0.773
975					0.4	0.036	0.085	0.02867	0.007	0.066
990					0.4	0.036	0.083	0.02867	0.007	0.066
1005					0.3	0.027	0.082	0.0215	0.005	0.049
1020					0.3	0.027	0.081	0.0215	0.005	0.049
1035					0.5	0.045	0.080	0.03584	0.009	0.082
1050					0.5	0.045	0.078	0.03584	0.009	0.082
1065					0.5	0.045	0.077	0.03584	0.009	0.082
1080					0.4	0.036	0.076	0.02867	0.007	0.066
1095					0.4	0.036	0.075	0.02867	0.007	0.066
1110					0.4	0.036	0.074	0.02867	0.007	0.066
1125					0.3	0.027	0.073	0.0215	0.005	0.049
1140					0.2	0.018	0.072	0.01434	0.004	0.033
1155					0.3	0.027	0.071	0.0215	0.005	0.049
1170					0.4	0.036	0.070	0.02867	0.007	0.066
1185					0.3	0.027	0.069	0.0215	0.005	0.049
1200					0.2	0.018	0.068	0.01434	0.004	0.033
1215					0.3	0.027	0.067	0.0215	0.005	0.049
1230					0.3	0.027	0.066	0.0215	0.005	0.049
1245					0.3	0.027	0.065	0.0215	0.005	0.049
1260					0.2	0.018	0.064	0.01434	0.004	0.033
1275					0.3	0.027	0.063	0.0215	0.005	0.049
1290					0.2	0.018	0.063	0.01434	0.004	0.033
1305					0.3	0.027	0.062	0.0215	0.005	0.049
1320					0.2	0.018	0.061	0.01434	0.004	0.033
1335					0.3	0.027	0.061	0.0215	0.005	0.049
1350					0.2	0.018	0.060	0.01434	0.004	0.033
1365					0.2	0.018	0.060	0.01434	0.004	0.033
1380					0.2	0.018	0.059	0.01434	0.004	0.033
1395					0.2	0.018	0.059	0.01434	0.004	0.033
1410					0.2	0.018	0.058	0.01434	0.004	0.033
1425					0.2	0.018	0.058	0.01434	0.004	0.033
1440					0.2	0.018	0.058	0.01434	0.004	0.033
				Σ[20] -	100			7.168	3.328	30.586

Proposed Condition
2-yr Storm Event

DMA-3

Total Area		%Imp	Fp (infiltration rate based on RI, Plate E-6.2)
0.43		0.00	0.69

Constant Loss Rate

F= Fp(1-0.9Ai)
F= 0.6900

For 24-hr storms, Ft is variable loss rate

Ft= C[24-(T/60)]^1.55+Fm
Ft= 1.2184

C= (F-Fm)/54
C= 0.0064

Fm= 0.5F
Fm= 0.3450

T= 7.5

RCFC & WCD HYDROLOGY MANUAL	SYNTHETIC UNIT HYDROGRAPH METHOD UNIT HYDROGRAPH AND EFFECTIVE RAIN CALCULATION FORM	PROJECT: JOB #:	Zeiders 3983 DMA-3

[1] CONCENTRATION POINT			[2] AREA DESIGNATION				
[3] DRAINAGE AREA - ACRES	0.43	ACRES	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])				
[5] UNIT TIME - MINUTES	15	MIN PER E-1.2	[6] LAG TIME-MINUTES				MIN
[7] UNIT TIME-PERCENT OF LAG	N/A		[8] S-CURVE			N/A	
[9] STORM FREQUENCY & DURATION	2 YEAR	24 HOUR	[10] TOTAL ADJUSTED STORM RAIN-INCHES			2.24	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR	1.2184		[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR				
[13] CONSTANT LOSS RATE-IN/HR		IN/HR	[14] LOW LOSS RATE-PERCENT			0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.00	0	0.000	0.0000
15					0.2	0.018	1.220	0.01434	0.004	0.0015
30					0.3	0.027	1.206	0.0215	0.005	0.0023
45					0.3	0.027	1.192	0.0215	0.005	0.0023
60					0.4	0.036	1.178	0.02867	0.007	0.0031
75					0.3	0.027	1.164	0.0215	0.005	0.0023
90					0.3	0.027	1.150	0.0215	0.005	0.0023
105					0.3	0.027	1.136	0.0215	0.005	0.0023
120					0.4	0.036	1.123	0.02867	0.007	0.0031
135					0.4	0.036	1.109	0.02867	0.007	0.0031
150					0.4	0.036	1.096	0.02867	0.007	0.0031
165					0.5	0.045	1.082	0.03584	0.009	0.0039
180					0.5	0.045	1.069	0.03584	0.009	0.0039
195					0.5	0.045	1.056	0.03584	0.009	0.0039
210					0.5	0.045	1.042	0.03584	0.009	0.0039
225					0.5	0.045	1.029	0.03584	0.009	0.0039
240					0.6	0.054	1.016	0.04301	0.011	0.0046
255					0.6	0.054	1.004	0.04301	0.011	0.0046
270					0.7	0.063	0.991	0.05018	0.013	0.0054
285					0.7	0.063	0.978	0.05018	0.013	0.0054
300					0.8	0.072	0.965	0.05734	0.014	0.0062
315					0.6	0.054	0.953	0.04301	0.011	0.0046
330					0.7	0.063	0.940	0.05018	0.013	0.0054
345					0.8	0.072	0.928	0.05734	0.014	0.0062
360					0.8	0.072	0.916	0.05734	0.014	0.0062
375					0.9	0.081	0.904	0.06451	0.016	0.0069
390					0.9	0.081	0.892	0.06451	0.016	0.0069
405					1	0.090	0.880	0.07168	0.018	0.0077
420					1	0.090	0.868	0.07168	0.018	0.0077
435					1	0.090	0.856	0.07168	0.018	0.0077
450					1.1	0.099	0.844	0.07885	0.020	0.0085
465					1.2	0.108	0.833	0.08602	0.022	0.0092
480					1.3	0.116	0.821	0.09318	0.023	0.0100
495					1.5	0.134	0.810	0.10752	0.027	0.0116
510					1.5	0.134	0.799	0.10752	0.027	0.0116
525					1.6	0.143	0.787	0.11469	0.029	0.0123
540					1.7	0.152	0.776	0.12186	0.030	0.0131
555					1.9	0.170	0.765	0.13619	0.034	0.0146
570					2	0.179	0.754	0.14336	0.036	0.0154
585					2.1	0.188	0.744	0.15053	0.038	0.0162
600					2.2	0.197	0.733	0.1577	0.039	0.0170

615					1.5	0.134	0.722	0.10752	0.027	0.0116
630					1.5	0.134	0.712	0.10752	0.027	0.0116
645					2	0.179	0.701	0.14336	0.036	0.0154
660					2	0.179	0.691	0.14336	0.036	0.0154
675					1.9	0.170	0.681	0.13619	0.034	0.0146
690					1.9	0.170	0.671	0.13619	0.034	0.0146
705					1.7	0.152	0.661	0.12186	0.030	0.0131
720					1.8	0.161	0.651	0.12902	0.032	0.0139
735					2.5	0.224	0.641	0.1792	0.045	0.0193
750					2.6	0.233	0.632	0.18637	0.047	0.0200
765					2.8	0.251	0.622	0.2007	0.050	0.0216
780					2.9	0.260	0.613	0.20787	0.052	0.0223
795					3.4	0.305	0.604	0.24371	0.061	0.0262
810					3.4	0.305	0.594	0.24371	0.061	0.0262
825					2.3	0.206	0.585	0.16486	0.041	0.0177
840					2.3	0.206	0.576	0.16486	0.041	0.0177
855					2.7	0.242	0.568	0.19354	0.048	0.0208
870					2.6	0.233	0.559	0.18637	0.047	0.0200
885					2.6	0.233	0.550	0.18637	0.047	0.0200
900					2.5	0.224	0.542	0.1792	0.045	0.0193
915					2.4	0.215	0.534	0.17203	0.043	0.0185
930					2.3	0.206	0.526	0.16486	0.041	0.0177
945					1.9	0.170	0.518	0.13619	0.034	0.0146
960					1.9	0.170	0.510	0.13619	0.034	0.0146
975					0.4	0.036	0.502	0.02867	0.007	0.0031
990					0.4	0.036	0.494	0.02867	0.007	0.0031
1005					0.3	0.027	0.487	0.0215	0.005	0.0023
1020					0.3	0.027	0.479	0.0215	0.005	0.0023
1035					0.5	0.045	0.472	0.03584	0.009	0.0039
1050					0.5	0.045	0.465	0.03584	0.009	0.0039
1065					0.5	0.045	0.458	0.03584	0.009	0.0039
1080					0.4	0.036	0.451	0.02867	0.007	0.0031
1095					0.4	0.036	0.445	0.02867	0.007	0.0031
1110					0.4	0.036	0.438	0.02867	0.007	0.0031
1125					0.3	0.027	0.432	0.0215	0.005	0.0023
1140					0.2	0.018	0.426	0.01434	0.004	0.0015
1155					0.3	0.027	0.420	0.0215	0.005	0.0023
1170					0.4	0.036	0.414	0.02867	0.007	0.0031
1185					0.3	0.027	0.408	0.0215	0.005	0.0023
1200					0.2	0.018	0.403	0.01434	0.004	0.0015
1215					0.3	0.027	0.397	0.0215	0.005	0.0023
1230					0.3	0.027	0.392	0.0215	0.005	0.0023
1245					0.3	0.027	0.387	0.0215	0.005	0.0023
1260					0.2	0.018	0.382	0.01434	0.004	0.0015
1275					0.3	0.027	0.378	0.0215	0.005	0.0023
1290					0.2	0.018	0.374	0.01434	0.004	0.0015
1305					0.3	0.027	0.369	0.0215	0.005	0.0023
1320					0.2	0.018	0.366	0.01434	0.004	0.0015
1335					0.3	0.027	0.362	0.0215	0.005	0.0023
1350					0.2	0.018	0.359	0.01434	0.004	0.0015
1365					0.2	0.018	0.355	0.01434	0.004	0.0015
1380					0.2	0.018	0.353	0.01434	0.004	0.0015
1395					0.2	0.018	0.350	0.01434	0.004	0.0015
1410					0.2	0.018	0.348	0.01434	0.004	0.0015
1425					0.2	0.018	0.346	0.01434	0.004	0.0015
1440					0.2	0.018	0.345	0.01434	0.004	0.0015
				Σ[20] -	100			7.168	1.792	0.771

Proposed Condition
2-yr Storm Event

DMA-4

Total Area		%Imp	Fp (infiltration rate based on RI, Plate E-6.2)
0.81		0.00	0.69

Constant Loss Rate

F= Fp(1-0.9Ai)
F= 0.6900

For 24-hr storms, Ft is variable loss rate

Ft= C[24-(T/60)]^1.55+Fm
Ft= 1.2184

C= (F-Fm)/54
C= 0.0064

Fm= 0.5F
Fm= 0.3450

T= 7.5

RCFC & WCD HYDROLOGY MANUAL	SYNTHETIC UNIT HYDROGRAPH METHOD UNIT HYDROGRAPH AND EFFECTIVE RAIN CALCULATION FORM	PROJECT: JOB #:	Zeiders 3983 DMA-4

[1] CONCENTRATION POINT			[2] AREA DESIGNATION				
[3] DRAINAGE AREA - ACRES	0.81	ACRES	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])				
[5] UNIT TIME - MINUTES	15	MIN PER E-1.2	[6] LAG TIME-MINUTES				MIN
[7] UNIT TIME-PERCENT OF LAG	N/A		[8] S-CURVE			N/A	
[9] STORM FREQUENCY & DURATION	2 YEAR	24 HOUR	[10] TOTAL ADJUSTED STORM RAIN-INCHES			2.24	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR	1.2184		[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR				
[13] CONSTANT LOSS RATE-IN/HR		IN/HR	[14] LOW LOSS RATE-PERCENT			0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.00	0	0.000	0.0000
15					0.2	0.018	1.220	0.01434	0.004	0.0029
30					0.3	0.027	1.206	0.0215	0.005	0.0044
45					0.3	0.027	1.192	0.0215	0.005	0.0044
60					0.4	0.036	1.178	0.02867	0.007	0.0058
75					0.3	0.027	1.164	0.0215	0.005	0.0044
90					0.3	0.027	1.150	0.0215	0.005	0.0044
105					0.3	0.027	1.136	0.0215	0.005	0.0044
120					0.4	0.036	1.123	0.02867	0.007	0.0058
135					0.4	0.036	1.109	0.02867	0.007	0.0058
150					0.4	0.036	1.096	0.02867	0.007	0.0058
165					0.5	0.045	1.082	0.03584	0.009	0.0073
180					0.5	0.045	1.069	0.03584	0.009	0.0073
195					0.5	0.045	1.056	0.03584	0.009	0.0073
210					0.5	0.045	1.042	0.03584	0.009	0.0073
225					0.5	0.045	1.029	0.03584	0.009	0.0073
240					0.6	0.054	1.016	0.04301	0.011	0.0087
255					0.6	0.054	1.004	0.04301	0.011	0.0087
270					0.7	0.063	0.991	0.05018	0.013	0.0102
285					0.7	0.063	0.978	0.05018	0.013	0.0102
300					0.8	0.072	0.965	0.05734	0.014	0.0116
315					0.6	0.054	0.953	0.04301	0.011	0.0087
330					0.7	0.063	0.940	0.05018	0.013	0.0102
345					0.8	0.072	0.928	0.05734	0.014	0.0116
360					0.8	0.072	0.916	0.05734	0.014	0.0116
375					0.9	0.081	0.904	0.06451	0.016	0.0131
390					0.9	0.081	0.892	0.06451	0.016	0.0131
405					1	0.090	0.880	0.07168	0.018	0.0145
420					1	0.090	0.868	0.07168	0.018	0.0145
435					1	0.090	0.856	0.07168	0.018	0.0145
450					1.1	0.099	0.844	0.07885	0.020	0.0160
465					1.2	0.108	0.833	0.08602	0.022	0.0174
480					1.3	0.116	0.821	0.09318	0.023	0.0189
495					1.5	0.134	0.810	0.10752	0.027	0.0218
510					1.5	0.134	0.799	0.10752	0.027	0.0218
525					1.6	0.143	0.787	0.11469	0.029	0.0232
540					1.7	0.152	0.776	0.12186	0.030	0.0247
555					1.9	0.170	0.765	0.13619	0.034	0.0276
570					2	0.179	0.754	0.14336	0.036	0.0290
585					2.1	0.188	0.744	0.15053	0.038	0.0305
600					2.2	0.197	0.733	0.1577	0.039	0.0319
615					1.5	0.134	0.722	0.10752	0.027	0.0218

630					1.5	0.134	0.712	0.10752	0.027	0.0218
645					2	0.179	0.701	0.14336	0.036	0.0290
660					2	0.179	0.691	0.14336	0.036	0.0290
675					1.9	0.170	0.681	0.13619	0.034	0.0276
690					1.9	0.170	0.671	0.13619	0.034	0.0276
705					1.7	0.152	0.661	0.12186	0.030	0.0247
720					1.8	0.161	0.651	0.12902	0.032	0.0261
735					2.5	0.224	0.641	0.1792	0.045	0.0363
750					2.6	0.233	0.632	0.18637	0.047	0.0377
765					2.8	0.251	0.622	0.2007	0.050	0.0406
780					2.9	0.260	0.613	0.20787	0.052	0.0421
795					3.4	0.305	0.604	0.24371	0.061	0.0494
810					3.4	0.305	0.594	0.24371	0.061	0.0494
825					2.3	0.206	0.585	0.16486	0.041	0.0334
840					2.3	0.206	0.576	0.16486	0.041	0.0334
855					2.7	0.242	0.568	0.19354	0.048	0.0392
870					2.6	0.233	0.559	0.18637	0.047	0.0377
885					2.6	0.233	0.550	0.18637	0.047	0.0377
900					2.5	0.224	0.542	0.1792	0.045	0.0363
915					2.4	0.215	0.534	0.17203	0.043	0.0348
930					2.3	0.206	0.526	0.16486	0.041	0.0334
945					1.9	0.170	0.518	0.13619	0.034	0.0276
960					1.9	0.170	0.510	0.13619	0.034	0.0276
975					0.4	0.036	0.502	0.02867	0.007	0.0058
990					0.4	0.036	0.494	0.02867	0.007	0.0058
1005					0.3	0.027	0.487	0.0215	0.005	0.0044
1020					0.3	0.027	0.479	0.0215	0.005	0.0044
1035					0.5	0.045	0.472	0.03584	0.009	0.0073
1050					0.5	0.045	0.465	0.03584	0.009	0.0073
1065					0.5	0.045	0.458	0.03584	0.009	0.0073
1080					0.4	0.036	0.451	0.02867	0.007	0.0058
1095					0.4	0.036	0.445	0.02867	0.007	0.0058
1110					0.4	0.036	0.438	0.02867	0.007	0.0058
1125					0.3	0.027	0.432	0.0215	0.005	0.0044
1140					0.2	0.018	0.426	0.01434	0.004	0.0029
1155					0.3	0.027	0.420	0.0215	0.005	0.0044
1170					0.4	0.036	0.414	0.02867	0.007	0.0058
1185					0.3	0.027	0.408	0.0215	0.005	0.0044
1200					0.2	0.018	0.403	0.01434	0.004	0.0029
1215					0.3	0.027	0.397	0.0215	0.005	0.0044
1230					0.3	0.027	0.392	0.0215	0.005	0.0044
1245					0.3	0.027	0.387	0.0215	0.005	0.0044
1260					0.2	0.018	0.382	0.01434	0.004	0.0029
1275					0.3	0.027	0.378	0.0215	0.005	0.0044
1290					0.2	0.018	0.374	0.01434	0.004	0.0029
1305					0.3	0.027	0.369	0.0215	0.005	0.0044
1320					0.2	0.018	0.366	0.01434	0.004	0.0029
1335					0.3	0.027	0.362	0.0215	0.005	0.0044
1350					0.2	0.018	0.359	0.01434	0.004	0.0029
1365					0.2	0.018	0.355	0.01434	0.004	0.0029
1380					0.2	0.018	0.353	0.01434	0.004	0.0029
1395					0.2	0.018	0.350	0.01434	0.004	0.0029
1410					0.2	0.018	0.348	0.01434	0.004	0.0029
1425					0.2	0.018	0.346	0.01434	0.004	0.0029
1440					0.2	0.018	0.345	0.01434	0.004	0.0029
				Σ[20] -	100			7.168	1.792	1.452

Proposed Condition
2-yr Storm Event

DMA-5

Total Area		%Imp	Fp (infiltration rate based on RI, Plate E-6.2)
0.15		0.00	0.69

Constant Loss Rate

F= Fp(1-0.9Ai)
F= 0.6900

For 24-hr storms, Ft is variable loss rate

Ft= C[24-(T/60)]^1.55+Fm
Ft= 1.2184

C= (F-Fm)/54
C= 0.0064

Fm= 0.5F
Fm= 0.3450

T= 7.5

RCFC & WCD HYDROLOGY MANUAL	SYNTHETIC UNIT HYDROGRAPH METHOD UNIT HYDROGRAPH AND EFFECTIVE RAIN CALCULATION FORM	PROJECT: JOB #:	Zeiders 3983 DMA-5

[1] CONCENTRATION POINT			[2] AREA DESIGNATION				
[3] DRAINAGE AREA - ACRES	0.15	ACRES	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])				
[5] UNIT TIME - MINUTES	15	MIN PER E-1.2	[6] LAG TIME-MINUTES				MIN
[7] UNIT TIME-PERCENT OF LAG	N/A		[8] S-CURVE			N/A	
[9] STORM FREQUENCY & DURATION	2 YEAR	24 HOUR	[10] TOTAL ADJUSTED STORM RAIN-INCHES			2.24	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR	1.2184		[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR				
[13] CONSTANT LOSS RATE-IN/HR		IN/HR	[14] LOW LOSS RATE-PERCENT			0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.00	0	0.000	0.0000
15					0.2	0.018	1.220	0.01434	0.004	0.0005
30					0.3	0.027	1.206	0.0215	0.005	0.0008
45					0.3	0.027	1.192	0.0215	0.005	0.0008
60					0.4	0.036	1.178	0.02867	0.007	0.0011
75					0.3	0.027	1.164	0.0215	0.005	0.0008
90					0.3	0.027	1.150	0.0215	0.005	0.0008
105					0.3	0.027	1.136	0.0215	0.005	0.0008
120					0.4	0.036	1.123	0.02867	0.007	0.0011
135					0.4	0.036	1.109	0.02867	0.007	0.0011
150					0.4	0.036	1.096	0.02867	0.007	0.0011
165					0.5	0.045	1.082	0.03584	0.009	0.0013
180					0.5	0.045	1.069	0.03584	0.009	0.0013
195					0.5	0.045	1.056	0.03584	0.009	0.0013
210					0.5	0.045	1.042	0.03584	0.009	0.0013
225					0.5	0.045	1.029	0.03584	0.009	0.0013
240					0.6	0.054	1.016	0.04301	0.011	0.0016
255					0.6	0.054	1.004	0.04301	0.011	0.0016
270					0.7	0.063	0.991	0.05018	0.013	0.0019
285					0.7	0.063	0.978	0.05018	0.013	0.0019
300					0.8	0.072	0.965	0.05734	0.014	0.0022
315					0.6	0.054	0.953	0.04301	0.011	0.0016
330					0.7	0.063	0.940	0.05018	0.013	0.0019
345					0.8	0.072	0.928	0.05734	0.014	0.0022
360					0.8	0.072	0.916	0.05734	0.014	0.0022
375					0.9	0.081	0.904	0.06451	0.016	0.0024
390					0.9	0.081	0.892	0.06451	0.016	0.0024
405					1	0.090	0.880	0.07168	0.018	0.0027
420					1	0.090	0.868	0.07168	0.018	0.0027
435					1	0.090	0.856	0.07168	0.018	0.0027
450					1.1	0.099	0.844	0.07885	0.020	0.0030
465					1.2	0.108	0.833	0.08602	0.022	0.0032
480					1.3	0.116	0.821	0.09318	0.023	0.0035
495					1.5	0.134	0.810	0.10752	0.027	0.0040
510					1.5	0.134	0.799	0.10752	0.027	0.0040
525					1.6	0.143	0.787	0.11469	0.029	0.0043
540					1.7	0.152	0.776	0.12186	0.030	0.0046
555					1.9	0.170	0.765	0.13619	0.034	0.0051
570					2	0.179	0.754	0.14336	0.036	0.0054
585					2.1	0.188	0.744	0.15053	0.038	0.0056
600					2.2	0.197	0.733	0.1577	0.039	0.0059
615					1.5	0.134	0.722	0.10752	0.027	0.0040
630					1.5	0.134	0.712	0.10752	0.027	0.0040

645					2	0.179	0.701	0.14336	0.036	0.0054
660					2	0.179	0.691	0.14336	0.036	0.0054
675					1.9	0.170	0.681	0.13619	0.034	0.0051
690					1.9	0.170	0.671	0.13619	0.034	0.0051
705					1.7	0.152	0.661	0.12186	0.030	0.0046
720					1.8	0.161	0.651	0.12902	0.032	0.0048
735					2.5	0.224	0.641	0.1792	0.045	0.0067
750					2.6	0.233	0.632	0.18637	0.047	0.0070
765					2.8	0.251	0.622	0.2007	0.050	0.0075
780					2.9	0.260	0.613	0.20787	0.052	0.0078
795					3.4	0.305	0.604	0.24371	0.061	0.0091
810					3.4	0.305	0.594	0.24371	0.061	0.0091
825					2.3	0.206	0.585	0.16486	0.041	0.0062
840					2.3	0.206	0.576	0.16486	0.041	0.0062
855					2.7	0.242	0.568	0.19354	0.048	0.0073
870					2.6	0.233	0.559	0.18637	0.047	0.0070
885					2.6	0.233	0.550	0.18637	0.047	0.0070
900					2.5	0.224	0.542	0.1792	0.045	0.0067
915					2.4	0.215	0.534	0.17203	0.043	0.0065
930					2.3	0.206	0.526	0.16486	0.041	0.0062
945					1.9	0.170	0.518	0.13619	0.034	0.0051
960					1.9	0.170	0.510	0.13619	0.034	0.0051
975					0.4	0.036	0.502	0.02867	0.007	0.0011
990					0.4	0.036	0.494	0.02867	0.007	0.0011
1005					0.3	0.027	0.487	0.0215	0.005	0.0008
1020					0.3	0.027	0.479	0.0215	0.005	0.0008
1035					0.5	0.045	0.472	0.03584	0.009	0.0013
1050					0.5	0.045	0.465	0.03584	0.009	0.0013
1065					0.5	0.045	0.458	0.03584	0.009	0.0013
1080					0.4	0.036	0.451	0.02867	0.007	0.0011
1095					0.4	0.036	0.445	0.02867	0.007	0.0011
1110					0.4	0.036	0.438	0.02867	0.007	0.0011
1125					0.3	0.027	0.432	0.0215	0.005	0.0008
1140					0.2	0.018	0.426	0.01434	0.004	0.0005
1155					0.3	0.027	0.420	0.0215	0.005	0.0008
1170					0.4	0.036	0.414	0.02867	0.007	0.0011
1185					0.3	0.027	0.408	0.0215	0.005	0.0008
1200					0.2	0.018	0.403	0.01434	0.004	0.0005
1215					0.3	0.027	0.397	0.0215	0.005	0.0008
1230					0.3	0.027	0.392	0.0215	0.005	0.0008
1245					0.3	0.027	0.387	0.0215	0.005	0.0008
1260					0.2	0.018	0.382	0.01434	0.004	0.0005
1275					0.3	0.027	0.378	0.0215	0.005	0.0008
1290					0.2	0.018	0.374	0.01434	0.004	0.0005
1305					0.3	0.027	0.369	0.0215	0.005	0.0008
1320					0.2	0.018	0.366	0.01434	0.004	0.0005
1335					0.3	0.027	0.362	0.0215	0.005	0.0008
1350					0.2	0.018	0.359	0.01434	0.004	0.0005
1365					0.2	0.018	0.355	0.01434	0.004	0.0005
1380					0.2	0.018	0.353	0.01434	0.004	0.0005
1395					0.2	0.018	0.350	0.01434	0.004	0.0005
1410					0.2	0.018	0.348	0.01434	0.004	0.0005
1425					0.2	0.018	0.346	0.01434	0.004	0.0005
1440					0.2	0.018	0.345	0.01434	0.004	0.0005
				Σ[20] -	100			7.168	1.792	0.269

Proposed Condition
2-yr Storm Event

DMA-6

Total Area		%Imp	Fp (infiltration rate based on RI, Plate E-6.2)
1.59		0.62	0.69

Constant Loss Rate

F= Fp(1-0.9Ai)
F= 0.3062

For 24-hr storms, Ft is variable loss rate

Ft= C[24-(T/60)]^1.55+Fm
Ft= 0.5407

C= (F-Fm)/54
C= 0.0028

Fm= 0.5F
Fm= 0.1531

T= 7.5

RCFC & WCD HYDROLOGY MANUAL	SYNTHETIC UNIT HYDROGRAPH METHOD UNIT HYDROGRAPH AND EFFECTIVE RAIN CALCULATION FORM	PROJECT: Zeiders JOB #: 3983 DMA-6

[1] CONCENTRATION POINT				[2] AREA DESIGNATION			
[3] DRAINAGE AREA - ACRES	1.59	ACRES		[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])			
[5] UNIT TIME - MINUTES	15	MIN PER E-1.2		[6] LAG TIME-MINUTES			MIN
[7] UNIT TIME-PERCENT OF LAG	N/A			[8] S-CURVE		N/A	
[9] STORM FREQUENCY & DURATION	2 YEAR	24 HOUR		[10] TOTAL ADJUSTED STORM RAIN-INCHES		2.24	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR	0.5407			[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR			
[13] CONSTANT LOSS RATE-IN/HR			IN/HR	[14] LOW LOSS RATE-PERCENT		0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.00	0	0.000	0.0000
15					0.2	0.018	0.536	0.01434	0.004	0.0057
30					0.3	0.027	0.530	0.0215	0.005	0.0085
45					0.3	0.027	0.524	0.0215	0.005	0.0085
60					0.4	0.036	0.517	0.02867	0.007	0.0114
75					0.3	0.027	0.511	0.0215	0.005	0.0085
90					0.3	0.027	0.505	0.0215	0.005	0.0085
105					0.3	0.027	0.499	0.0215	0.005	0.0085
120					0.4	0.036	0.493	0.02867	0.007	0.0114
135					0.4	0.036	0.487	0.02867	0.007	0.0114
150					0.4	0.036	0.481	0.02867	0.007	0.0114
165					0.5	0.045	0.476	0.03584	0.009	0.0142
180					0.5	0.045	0.470	0.03584	0.009	0.0142
195					0.5	0.045	0.464	0.03584	0.009	0.0142
210					0.5	0.045	0.458	0.03584	0.009	0.0142
225					0.5	0.045	0.453	0.03584	0.009	0.0142
240					0.6	0.054	0.447	0.04301	0.011	0.0171
255					0.6	0.054	0.441	0.04301	0.011	0.0171
270					0.7	0.063	0.436	0.05018	0.013	0.0199
285					0.7	0.063	0.430	0.05018	0.013	0.0199
300					0.8	0.072	0.425	0.05734	0.014	0.0228
315					0.6	0.054	0.419	0.04301	0.011	0.0171
330					0.7	0.063	0.414	0.05018	0.013	0.0199
345					0.8	0.072	0.408	0.05734	0.014	0.0228
360					0.8	0.072	0.403	0.05734	0.014	0.0228
375					0.9	0.081	0.398	0.06451	0.016	0.0256
390					0.9	0.081	0.392	0.06451	0.016	0.0256
405					1	0.090	0.387	0.07168	0.018	0.0285
420					1	0.090	0.382	0.07168	0.018	0.0285
435					1	0.090	0.377	0.07168	0.018	0.0285
450					1.1	0.099	0.372	0.07885	0.020	0.0313
465					1.2	0.108	0.366	0.08602	0.022	0.0342
480					1.3	0.116	0.361	0.09318	0.023	0.0370
495					1.5	0.134	0.356	0.10752	0.027	0.0427
510					1.5	0.134	0.352	0.10752	0.027	0.0427
525					1.6	0.143	0.347	0.11469	0.029	0.0456
540					1.7	0.152	0.342	0.12186	0.030	0.0484
555					1.9	0.170	0.337	0.13619	0.034	0.0541
570					2	0.179	0.332	0.14336	0.036	0.0570
585					2.1	0.188	0.327	0.15053	0.038	0.0598
600					2.2	0.197	0.323	0.1577	0.039	0.0627
615					1.5	0.134	0.318	0.10752	0.027	0.0427

630					1.5	0.134	0.314	0.10752	0.027	0.0427
645					2	0.179	0.309	0.14336	0.036	0.0570
660					2	0.179	0.305	0.14336	0.036	0.0570
675					1.9	0.170	0.300	0.13619	0.034	0.0541
690					1.9	0.170	0.296	0.13619	0.034	0.0541
705					1.7	0.152	0.291	0.12186	0.030	0.0484
720					1.8	0.161	0.287	0.12902	0.032	0.0513
735					2.5	0.224	0.283	0.1792	0.045	0.0712
750					2.6	0.233	0.279	0.18637	0.047	0.0741
765					2.8	0.251	0.274	0.2007	0.050	0.0798
780					2.9	0.260	0.270	0.20787	0.052	0.0826
795					3.4	0.305	0.266	0.24371	0.038	0.0611
810					3.4	0.305	0.262	0.24371	0.042	0.0674
825					2.3	0.206	0.258	0.16486	0.041	0.0655
840					2.3	0.206	0.254	0.16486	0.041	0.0655
855					2.7	0.242	0.251	0.19354	0.048	0.0769
870					2.6	0.233	0.247	0.18637	0.047	0.0741
885					2.6	0.233	0.243	0.18637	0.047	0.0741
900					2.5	0.224	0.239	0.1792	0.045	0.0712
915					2.4	0.215	0.236	0.17203	0.043	0.0684
930					2.3	0.206	0.232	0.16486	0.041	0.0655
945					1.9	0.170	0.229	0.13619	0.034	0.0541
960					1.9	0.170	0.225	0.13619	0.034	0.0541
975					0.4	0.036	0.222	0.02867	0.007	0.0114
990					0.4	0.036	0.218	0.02867	0.007	0.0114
1005					0.3	0.027	0.215	0.0215	0.005	0.0085
1020					0.3	0.027	0.212	0.0215	0.005	0.0085
1035					0.5	0.045	0.209	0.03584	0.009	0.0142
1050					0.5	0.045	0.206	0.03584	0.009	0.0142
1065					0.5	0.045	0.203	0.03584	0.009	0.0142
1080					0.4	0.036	0.200	0.02867	0.007	0.0114
1095					0.4	0.036	0.197	0.02867	0.007	0.0114
1110					0.4	0.036	0.194	0.02867	0.007	0.0114
1125					0.3	0.027	0.191	0.0215	0.005	0.0085
1140					0.2	0.018	0.188	0.01434	0.004	0.0057
1155					0.3	0.027	0.186	0.0215	0.005	0.0085
1170					0.4	0.036	0.183	0.02867	0.007	0.0114
1185					0.3	0.027	0.181	0.0215	0.005	0.0085
1200					0.2	0.018	0.178	0.01434	0.004	0.0057
1215					0.3	0.027	0.176	0.0215	0.005	0.0085
1230					0.3	0.027	0.174	0.0215	0.005	0.0085
1245					0.3	0.027	0.172	0.0215	0.005	0.0085
1260					0.2	0.018	0.169	0.01434	0.004	0.0057
1275					0.3	0.027	0.167	0.0215	0.005	0.0085
1290					0.2	0.018	0.166	0.01434	0.004	0.0057
1305					0.3	0.027	0.164	0.0215	0.005	0.0085
1320					0.2	0.018	0.162	0.01434	0.004	0.0057
1335					0.3	0.027	0.161	0.0215	0.005	0.0085
1350					0.2	0.018	0.159	0.01434	0.004	0.0057
1365					0.2	0.018	0.158	0.01434	0.004	0.0057
1380					0.2	0.018	0.156	0.01434	0.004	0.0057
1395					0.2	0.018	0.155	0.01434	0.004	0.0057
1410					0.2	0.018	0.154	0.01434	0.004	0.0057
1425					0.2	0.018	0.154	0.01434	0.004	0.0057
1440					0.2	0.018	0.153	0.01434	0.004	0.0057
				Σ[20] -	100			7.168	1.751	2.784

Proposed Condition
2-yr Storm Event

DMA-7

Total Area		%Imp	Fp (infiltration rate based on RI, Plate E-6.2)
0.57		0.48	0.69

Constant Loss Rate

F= Fp(1-0.9Ai)
F= 0.3919

For 24-hr storms, Ft is variable loss rate

Ft= C[24-(T/60)]^1.55+Fm
Ft= 0.6921

C= (F-Fm)/54
C= 0.0036

Fm= 0.5F
Fm= 0.1960

T= 7.5

RCFC & WCD HYDROLOGY MANUAL	SYNTHETIC UNIT HYDROGRAPH METHOD UNIT HYDROGRAPH AND EFFECTIVE RAIN CALCULATION FORM	PROJECT: JOB #:	Zeiders 3983 DMA-7

[1] CONCENTRATION POINT			[2] AREA DESIGNATION				
[3] DRAINAGE AREA - ACRES	0.57	ACRES	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])				
[5] UNIT TIME - MINUTES	15	MIN PER E-1.2	[6] LAG TIME-MINUTES				MIN
[7] UNIT TIME-PERCENT OF LAG	N/A		[8] S-CURVE			N/A	
[9] STORM FREQUENCY & DURATION	2 YEAR	24 HOUR	[10] TOTAL ADJUSTED STORM RAIN-INCHES			2.24	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR	0.6921		[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR				
[13] CONSTANT LOSS RATE-IN/HR		IN/HR	[14] LOW LOSS RATE-PERCENT			0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.00	0	0.000	0.0000
15					0.2	0.018	0.688	0.01434	0.004	0.0020
30					0.3	0.027	0.680	0.0215	0.005	0.0031
45					0.3	0.027	0.672	0.0215	0.005	0.0031
60					0.4	0.036	0.664	0.02867	0.007	0.0041
75					0.3	0.027	0.657	0.0215	0.005	0.0031
90					0.3	0.027	0.649	0.0215	0.005	0.0031
105					0.3	0.027	0.641	0.0215	0.005	0.0031
120					0.4	0.036	0.633	0.02867	0.007	0.0041
135					0.4	0.036	0.626	0.02867	0.007	0.0041
150					0.4	0.036	0.618	0.02867	0.007	0.0041
165					0.5	0.045	0.611	0.03584	0.009	0.0051
180					0.5	0.045	0.603	0.03584	0.009	0.0051
195					0.5	0.045	0.596	0.03584	0.009	0.0051
210					0.5	0.045	0.588	0.03584	0.009	0.0051
225					0.5	0.045	0.581	0.03584	0.009	0.0051
240					0.6	0.054	0.574	0.04301	0.011	0.0061
255					0.6	0.054	0.566	0.04301	0.011	0.0061
270					0.7	0.063	0.559	0.05018	0.013	0.0072
285					0.7	0.063	0.552	0.05018	0.013	0.0072
300					0.8	0.072	0.545	0.05734	0.014	0.0082
315					0.6	0.054	0.538	0.04301	0.011	0.0061
330					0.7	0.063	0.531	0.05018	0.013	0.0072
345					0.8	0.072	0.524	0.05734	0.014	0.0082
360					0.8	0.072	0.517	0.05734	0.014	0.0082
375					0.9	0.081	0.510	0.06451	0.016	0.0092
390					0.9	0.081	0.503	0.06451	0.016	0.0092
405					1	0.090	0.497	0.07168	0.018	0.0102
420					1	0.090	0.490	0.07168	0.018	0.0102
435					1	0.090	0.483	0.07168	0.018	0.0102
450					1.1	0.099	0.477	0.07885	0.020	0.0112
465					1.2	0.108	0.470	0.08602	0.022	0.0123
480					1.3	0.116	0.464	0.09318	0.023	0.0133
495					1.5	0.134	0.457	0.10752	0.027	0.0153
510					1.5	0.134	0.451	0.10752	0.027	0.0153
525					1.6	0.143	0.445	0.11469	0.029	0.0163
540					1.7	0.152	0.439	0.12186	0.030	0.0174
555					1.9	0.170	0.432	0.13619	0.034	0.0194
570					2	0.179	0.426	0.14336	0.036	0.0204
585					2.1	0.188	0.420	0.15053	0.038	0.0215
600					2.2	0.197	0.414	0.1577	0.039	0.0225
615					1.5	0.134	0.408	0.10752	0.027	0.0153
630					1.5	0.134	0.402	0.10752	0.027	0.0153
645					2	0.179	0.396	0.14336	0.036	0.0204

660					2	0.179	0.391	0.14336	0.036	0.0204
675					1.9	0.170	0.385	0.13619	0.034	0.0194
690					1.9	0.170	0.379	0.13619	0.034	0.0194
705					1.7	0.152	0.374	0.12186	0.030	0.0174
720					1.8	0.161	0.368	0.12902	0.032	0.0184
735					2.5	0.224	0.363	0.1792	0.045	0.0255
750					2.6	0.233	0.357	0.18637	0.047	0.0266
765					2.8	0.251	0.352	0.2007	0.050	0.0286
780					2.9	0.260	0.347	0.20787	0.052	0.0296
795					3.4	0.305	0.341	0.24371	0.061	0.0347
810					3.4	0.305	0.336	0.24371	0.061	0.0347
825					2.3	0.206	0.331	0.16486	0.041	0.0235
840					2.3	0.206	0.326	0.16486	0.041	0.0235
855					2.7	0.242	0.321	0.19354	0.048	0.0276
870					2.6	0.233	0.316	0.18637	0.047	0.0266
885					2.6	0.233	0.312	0.18637	0.047	0.0266
900					2.5	0.224	0.307	0.1792	0.045	0.0255
915					2.4	0.215	0.302	0.17203	0.043	0.0245
930					2.3	0.206	0.298	0.16486	0.041	0.0235
945					1.9	0.170	0.293	0.13619	0.034	0.0194
960					1.9	0.170	0.289	0.13619	0.034	0.0194
975					0.4	0.036	0.284	0.02867	0.007	0.0041
990					0.4	0.036	0.280	0.02867	0.007	0.0041
1005					0.3	0.027	0.276	0.0215	0.005	0.0031
1020					0.3	0.027	0.272	0.0215	0.005	0.0031
1035					0.5	0.045	0.267	0.03584	0.009	0.0051
1050					0.5	0.045	0.263	0.03584	0.009	0.0051
1065					0.5	0.045	0.260	0.03584	0.009	0.0051
1080					0.4	0.036	0.256	0.02867	0.007	0.0041
1095					0.4	0.036	0.252	0.02867	0.007	0.0041
1110					0.4	0.036	0.248	0.02867	0.007	0.0041
1125					0.3	0.027	0.245	0.0215	0.005	0.0031
1140					0.2	0.018	0.241	0.01434	0.004	0.0020
1155					0.3	0.027	0.238	0.0215	0.005	0.0031
1170					0.4	0.036	0.235	0.02867	0.007	0.0041
1185					0.3	0.027	0.231	0.0215	0.005	0.0031
1200					0.2	0.018	0.228	0.01434	0.004	0.0020
1215					0.3	0.027	0.225	0.0215	0.005	0.0031
1230					0.3	0.027	0.222	0.0215	0.005	0.0031
1245					0.3	0.027	0.220	0.0215	0.005	0.0031
1260					0.2	0.018	0.217	0.01434	0.004	0.0020
1275					0.3	0.027	0.215	0.0215	0.005	0.0031
1290					0.2	0.018	0.212	0.01434	0.004	0.0020
1305					0.3	0.027	0.210	0.0215	0.005	0.0031
1320					0.2	0.018	0.208	0.01434	0.004	0.0020
1335					0.3	0.027	0.206	0.0215	0.005	0.0031
1350					0.2	0.018	0.204	0.01434	0.004	0.0020
1365					0.2	0.018	0.202	0.01434	0.004	0.0020
1380					0.2	0.018	0.200	0.01434	0.004	0.0020
1395					0.2	0.018	0.199	0.01434	0.004	0.0020
1410					0.2	0.018	0.198	0.01434	0.004	0.0020
1425					0.2	0.018	0.197	0.01434	0.004	0.0020
1440					0.2	0.018	0.196	0.01434	0.004	0.0020
				Σ[20] -	100			7.168	1.792	1.021

Proposed Condition Offsite
2-yr Storm Event

DMA OFF-1

Total Area		%Imp	Fp (infiltration rate based on RI, Plate E-6.2)
65.4		0.20	0.69

Constant Loss Rate

F= Fp(1-0.9Ai)
F= 0.5658

For 24-hr storms, Ft is variable loss rate

Ft= C[24-(T/60)]^1.55+Fm
Ft= 0.9991

C= (F-Fm)/54
C= 0.0052

Fm= 0.5F
Fm= 0.2829

T= 7.5

RCFC & WCD HYDROLOGY MANUAL	SYNTHETIC UNIT HYDROGRAPH METHOD UNIT HYDROGRAPH AND EFFECTIVE RAIN CALCULATION FORM	PROJECT: Zeiders JOB #: 3983 DMA 1

[1] CONCENTRATION POINT						[2] AREA DESIGNATION					
[3] DRAINAGE AREA - ACRES			65.4	ACRES		[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])					
[5] UNIT TIME - MINUTES			15	MIN PER E-1.2		[6] LAG TIME-MINUTES					MIN
[7] UNIT TIME-PERCENT OF LAG			N/A			[8] S-CURVE				N/A	
[9] STORM FREQUENCY & DURATION			2 YEAR	24 HOUR		[10] TOTAL ADJUSTED STORM RAIN-INCHES				2.24	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR			0.9991			[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR					
[13] CONSTANT LOSS RATE-IN/HR					IN/HR	[14] LOW LOSS RATE-PERCENT				0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.00	0	0.000	0.000
15					0.2	0.018	0.994	0.01434	0.004	0.234
30					0.3	0.027	0.982	0.0215	0.005	0.352
45					0.3	0.027	0.971	0.0215	0.005	0.352
60					0.4	0.036	0.959	0.02867	0.007	0.469
75					0.3	0.027	0.948	0.0215	0.005	0.352
90					0.3	0.027	0.937	0.0215	0.005	0.352
105					0.3	0.027	0.926	0.0215	0.005	0.352
120					0.4	0.036	0.915	0.02867	0.007	0.469
135					0.4	0.036	0.904	0.02867	0.007	0.469
150					0.4	0.036	0.893	0.02867	0.007	0.469
165					0.5	0.045	0.882	0.03584	0.009	0.586
180					0.5	0.045	0.871	0.03584	0.009	0.586
195					0.5	0.045	0.860	0.03584	0.009	0.586
210					0.5	0.045	0.850	0.03584	0.009	0.586
225					0.5	0.045	0.839	0.03584	0.009	0.586
240					0.6	0.054	0.828	0.04301	0.011	0.703
255					0.6	0.054	0.818	0.04301	0.011	0.703
270					0.7	0.063	0.808	0.05018	0.013	0.820
285					0.7	0.063	0.797	0.05018	0.013	0.820
300					0.8	0.072	0.787	0.05734	0.014	0.938
315					0.6	0.054	0.777	0.04301	0.011	0.703
330					0.7	0.063	0.767	0.05018	0.013	0.820
345					0.8	0.072	0.757	0.05734	0.014	0.938
360					0.8	0.072	0.747	0.05734	0.014	0.938
375					0.9	0.081	0.737	0.06451	0.016	1.055
390					0.9	0.081	0.727	0.06451	0.016	1.055
405					1	0.090	0.717	0.07168	0.018	1.172
420					1	0.090	0.708	0.07168	0.018	1.172
435					1	0.090	0.698	0.07168	0.018	1.172
450					1.1	0.099	0.689	0.07885	0.020	1.289
465					1.2	0.108	0.679	0.08602	0.022	1.406
480					1.3	0.116	0.670	0.09318	0.023	1.524
495					1.5	0.134	0.661	0.10752	0.027	1.758
510					1.5	0.134	0.651	0.10752	0.027	1.758
525					1.6	0.143	0.642	0.11469	0.029	1.875
540					1.7	0.152	0.633	0.12186	0.030	1.992
555					1.9	0.170	0.624	0.13619	0.034	2.227
570					2	0.179	0.615	0.14336	0.036	2.344
585					2.1	0.188	0.607	0.15053	0.038	2.461
600					2.2	0.197	0.598	0.1577	0.039	2.578

615					1.5	0.134	0.589	0.10752	0.027	1.758
630					1.5	0.134	0.581	0.10752	0.027	1.758
645					2	0.179	0.572	0.14336	0.036	2.344
660					2	0.179	0.564	0.14336	0.036	2.344
675					1.9	0.170	0.556	0.13619	0.034	2.227
690					1.9	0.170	0.548	0.13619	0.034	2.227
705					1.7	0.152	0.540	0.12186	0.030	1.992
720					1.8	0.161	0.532	0.12902	0.032	2.110
735					2.5	0.224	0.524	0.1792	0.045	2.930
750					2.6	0.233	0.516	0.18637	0.047	3.047
765					2.8	0.251	0.508	0.2007	0.050	3.282
780					2.9	0.260	0.501	0.20787	0.052	3.399
795					3.4	0.305	0.493	0.24371	0.061	3.985
810					3.4	0.305	0.486	0.24371	0.061	3.985
825					2.3	0.206	0.478	0.16486	0.041	2.696
840					2.3	0.206	0.471	0.16486	0.041	2.696
855					2.7	0.242	0.464	0.19354	0.048	3.164
870					2.6	0.233	0.457	0.18637	0.047	3.047
885					2.6	0.233	0.450	0.18637	0.047	3.047
900					2.5	0.224	0.443	0.1792	0.045	2.930
915					2.4	0.215	0.436	0.17203	0.043	2.813
930					2.3	0.206	0.430	0.16486	0.041	2.696
945					1.9	0.170	0.423	0.13619	0.034	2.227
960					1.9	0.170	0.417	0.13619	0.034	2.227
975					0.4	0.036	0.410	0.02867	0.007	0.469
990					0.4	0.036	0.404	0.02867	0.007	0.469
1005					0.3	0.027	0.398	0.0215	0.005	0.352
1020					0.3	0.027	0.392	0.0215	0.005	0.352
1035					0.5	0.045	0.386	0.03584	0.009	0.586
1050					0.5	0.045	0.380	0.03584	0.009	0.586
1065					0.5	0.045	0.375	0.03584	0.009	0.586
1080					0.4	0.036	0.369	0.02867	0.007	0.469
1095					0.4	0.036	0.364	0.02867	0.007	0.469
1110					0.4	0.036	0.359	0.02867	0.007	0.469
1125					0.3	0.027	0.353	0.0215	0.005	0.352
1140					0.2	0.018	0.348	0.01434	0.004	0.234
1155					0.3	0.027	0.343	0.0215	0.005	0.352
1170					0.4	0.036	0.339	0.02867	0.007	0.469
1185					0.3	0.027	0.334	0.0215	0.005	0.352
1200					0.2	0.018	0.330	0.01434	0.004	0.234
1215					0.3	0.027	0.325	0.0215	0.005	0.352
1230					0.3	0.027	0.321	0.0215	0.005	0.352
1245					0.3	0.027	0.317	0.0215	0.005	0.352
1260					0.2	0.018	0.313	0.01434	0.004	0.234
1275					0.3	0.027	0.310	0.0215	0.005	0.352
1290					0.2	0.018	0.306	0.01434	0.004	0.234
1305					0.3	0.027	0.303	0.0215	0.005	0.352
1320					0.2	0.018	0.300	0.01434	0.004	0.234
1335					0.3	0.027	0.297	0.0215	0.005	0.352
1350					0.2	0.018	0.294	0.01434	0.004	0.234
1365					0.2	0.018	0.291	0.01434	0.004	0.234
1380					0.2	0.018	0.289	0.01434	0.004	0.234
1395					0.2	0.018	0.287	0.01434	0.004	0.234
1410					0.2	0.018	0.285	0.01434	0.004	0.234
1425					0.2	0.018	0.284	0.01434	0.004	0.234
1440					0.2	0.018	0.283	0.01434	0.004	0.234
				Σ[20] -	100			7.168	1.792	117.197

Proposed Condition Offsite
2-yr Storm Event

DMA OFF-2

Total Area		%Imp	Fp (infiltration rate based on RI, Plate E-6.2)
36.2		0.053	0.71

Constant Loss Rate

F= Fp(1-0.9Ai)
F= 0.6761

For 24-hr storms, Ft is variable loss rate

Ft= C[24-(T/60)]^1.55+Fm
Ft= 1.1940

C= (F-Fm)/54
C= 0.0063

Fm= 0.5F
Fm= 0.3381

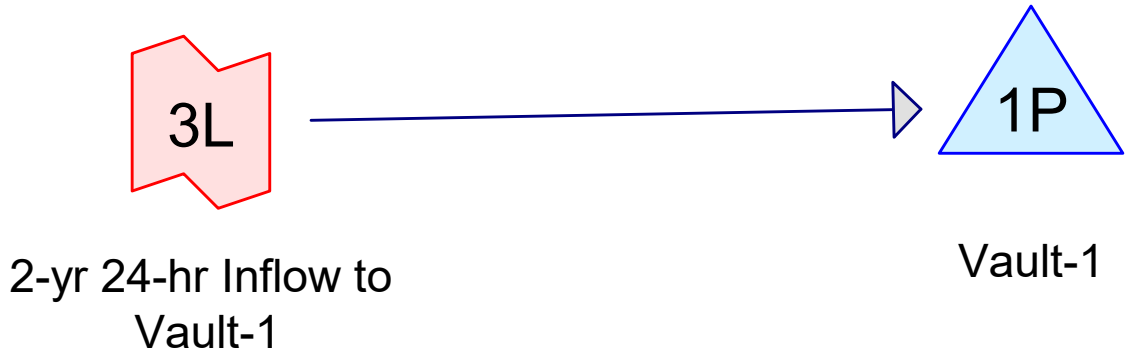
T= 7.5

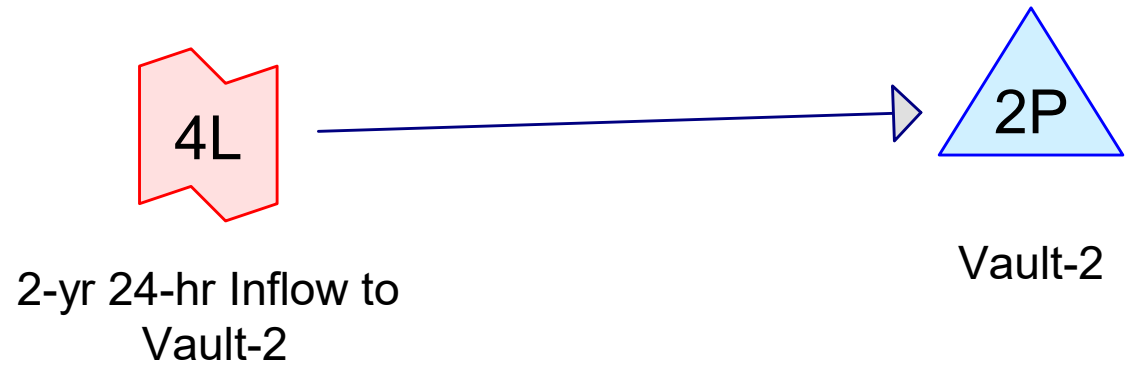
RCFC & WCD HYDROLOGY MANUAL	SYNTHETIC UNIT HYDROGRAPH METHOD UNIT HYDROGRAPH AND EFFECTIVE RAIN CALCULATION FORM	PROJECT: Zeiders JOB #: 3983 DMA 2

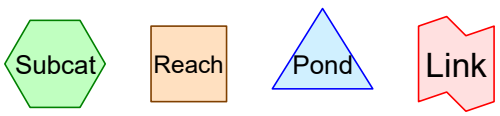
[1] CONCENTRATION POINT			[2] AREA DESIGNATION					
[3] DRAINAGE AREA - ACRES	36.2	ACRES	[4] ULTIMATE DISCHARGE-CFS-HRS/IN (645*[3])					
[5] UNIT TIME - MINUTES	15	MIN PER E-1.2	[6] LAG TIME-MINUTES					MIN
[7] UNIT TIME-PERCENT OF LAG	N/A		[8] S-CURVE				N/A	
[9] STORM FREQUENCY & DURATION	2 YEAR	24 HOUR	[10] TOTAL ADJUSTED STORM RAIN-INCHES				2.24	IN
[11] VARIABLE LOSS RATE (AVG) -IN/HR	1.194		[12] MINIMUM LOSS RATE (FOR VAR. LOSS)-IN/HR					
[13] CONSTANT LOSS RATE-IN/HR		IN/HR	[14] LOW LOSS RATE-PERCENT				0.8	

[15]	[16]	[17]	[18]	[19]	[20]	[21]	[22]		[23]	[24]
UNIT TIME PERIOD m	TIME PERCENT OF LAG [7]*[15]	CUMULATIVE AVERAGE PERCENT OF ULTIMATE DISCHARGE (S-GRAPH)	DISTRIB GRAPH PERCENT [17]m-[17]m-1	UNIT HYDROGRAPH CFS-HRS/IN [4]*[18]/100	PATTERN PERCENT (PL E-5.9)	STORM RAIN IN/HR 60[10][20]/100[5]	LOSS RATE IN/HR		EFFECTIVE RAIN IN/HR [21] - [22]	FLOW CFS [3]*[23]
							MAX	LOW		
0					0	0	0.00	0	0.000	0.000
15					0.2	0.018	1.199	0.01434	0.004	0.130
30					0.3	0.027	1.185	0.0215	0.005	0.195
45					0.3	0.027	1.172	0.0215	0.005	0.195
60					0.4	0.036	1.158	0.02867	0.007	0.259
75					0.3	0.027	1.144	0.0215	0.005	0.195
90					0.3	0.027	1.131	0.0215	0.005	0.195
105					0.3	0.027	1.117	0.0215	0.005	0.195
120					0.4	0.036	1.104	0.02867	0.007	0.259
135					0.4	0.036	1.090	0.02867	0.007	0.259
150					0.4	0.036	1.077	0.02867	0.007	0.259
165					0.5	0.045	1.064	0.03584	0.009	0.324
180					0.5	0.045	1.051	0.03584	0.009	0.324
195					0.5	0.045	1.038	0.03584	0.009	0.324
210					0.5	0.045	1.025	0.03584	0.009	0.324
225					0.5	0.045	1.012	0.03584	0.009	0.324
240					0.6	0.054	0.999	0.04301	0.011	0.389
255					0.6	0.054	0.986	0.04301	0.011	0.389
270					0.7	0.063	0.974	0.05018	0.013	0.454
285					0.7	0.063	0.961	0.05018	0.013	0.454
300					0.8	0.072	0.949	0.05734	0.014	0.519
315					0.6	0.054	0.936	0.04301	0.011	0.389
330					0.7	0.063	0.924	0.05018	0.013	0.454
345					0.8	0.072	0.912	0.05734	0.014	0.519
360					0.8	0.072	0.900	0.05734	0.014	0.519
375					0.9	0.081	0.888	0.06451	0.016	0.584
390					0.9	0.081	0.876	0.06451	0.016	0.584
405					1	0.090	0.864	0.07168	0.018	0.649
420					1	0.090	0.853	0.07168	0.018	0.649
435					1	0.090	0.841	0.07168	0.018	0.649
450					1.1	0.099	0.830	0.07885	0.020	0.714
465					1.2	0.108	0.818	0.08602	0.022	0.778
480					1.3	0.116	0.807	0.09318	0.023	0.843
495					1.5	0.134	0.796	0.10752	0.027	0.973
510					1.5	0.134	0.785	0.10752	0.027	0.973
525					1.6	0.143	0.774	0.11469	0.029	1.038
540					1.7	0.152	0.763	0.12186	0.030	1.103
555					1.9	0.170	0.752	0.13619	0.034	1.233
570					2	0.179	0.741	0.14336	0.036	1.297
585					2.1	0.188	0.730	0.15053	0.038	1.362
600					2.2	0.197	0.720	0.1577	0.039	1.427

615					1.5	0.134	0.709	0.10752	0.027	0.973
630					1.5	0.134	0.699	0.10752	0.027	0.973
645					2	0.179	0.689	0.14336	0.036	1.297
660					2	0.179	0.679	0.14336	0.036	1.297
675					1.9	0.170	0.669	0.13619	0.034	1.233
690					1.9	0.170	0.659	0.13619	0.034	1.233
705					1.7	0.152	0.649	0.12186	0.030	1.103
720					1.8	0.161	0.639	0.12902	0.032	1.168
735					2.5	0.224	0.630	0.1792	0.045	1.622
750					2.6	0.233	0.620	0.18637	0.047	1.687
765					2.8	0.251	0.611	0.2007	0.050	1.816
780					2.9	0.260	0.602	0.20787	0.052	1.881
795					3.4	0.305	0.593	0.24371	0.061	2.206
810					3.4	0.305	0.584	0.24371	0.061	2.206
825					2.3	0.206	0.575	0.16486	0.041	1.492
840					2.3	0.206	0.566	0.16486	0.041	1.492
855					2.7	0.242	0.557	0.19354	0.048	1.752
870					2.6	0.233	0.549	0.18637	0.047	1.687
885					2.6	0.233	0.540	0.18637	0.047	1.687
900					2.5	0.224	0.532	0.1792	0.045	1.622
915					2.4	0.215	0.524	0.17203	0.043	1.557
930					2.3	0.206	0.516	0.16486	0.041	1.492
945					1.9	0.170	0.508	0.13619	0.034	1.233
960					1.9	0.170	0.500	0.13619	0.034	1.233
975					0.4	0.036	0.492	0.02867	0.007	0.259
990					0.4	0.036	0.485	0.02867	0.007	0.259
1005					0.3	0.027	0.478	0.0215	0.005	0.195
1020					0.3	0.027	0.470	0.0215	0.005	0.195
1035					0.5	0.045	0.463	0.03584	0.009	0.324
1050					0.5	0.045	0.456	0.03584	0.009	0.324
1065					0.5	0.045	0.449	0.03584	0.009	0.324
1080					0.4	0.036	0.443	0.02867	0.007	0.259
1095					0.4	0.036	0.436	0.02867	0.007	0.259
1110					0.4	0.036	0.430	0.02867	0.007	0.259
1125					0.3	0.027	0.423	0.0215	0.005	0.195
1140					0.2	0.018	0.417	0.01434	0.004	0.130
1155					0.3	0.027	0.412	0.0215	0.005	0.195
1170					0.4	0.036	0.406	0.02867	0.007	0.259
1185					0.3	0.027	0.400	0.0215	0.005	0.195
1200					0.2	0.018	0.395	0.01434	0.004	0.130
1215					0.3	0.027	0.390	0.0215	0.005	0.195
1230					0.3	0.027	0.384	0.0215	0.005	0.195
1245					0.3	0.027	0.380	0.0215	0.005	0.195
1260					0.2	0.018	0.375	0.01434	0.004	0.130
1275					0.3	0.027	0.370	0.0215	0.005	0.195
1290					0.2	0.018	0.366	0.01434	0.004	0.130
1305					0.3	0.027	0.362	0.0215	0.005	0.195
1320					0.2	0.018	0.358	0.01434	0.004	0.130
1335					0.3	0.027	0.355	0.0215	0.005	0.195
1350					0.2	0.018	0.351	0.01434	0.004	0.130
1365					0.2	0.018	0.348	0.01434	0.004	0.130
1380					0.2	0.018	0.346	0.01434	0.004	0.130
1395					0.2	0.018	0.343	0.01434	0.004	0.130
1410					0.2	0.018	0.341	0.01434	0.004	0.130
1425					0.2	0.018	0.339	0.01434	0.004	0.130
1440					0.2	0.018	0.338	0.01434	0.004	0.130
				Σ[20] -	100			7.168	1.792	64.870







Routing Diagram for 3983
Prepared by Pasco Laret Suiter & Assoc, Printed 12/12/2023
HydroCAD® 10.20-3g s/n 10097 © 2023 HydroCAD Software Solutions LLC

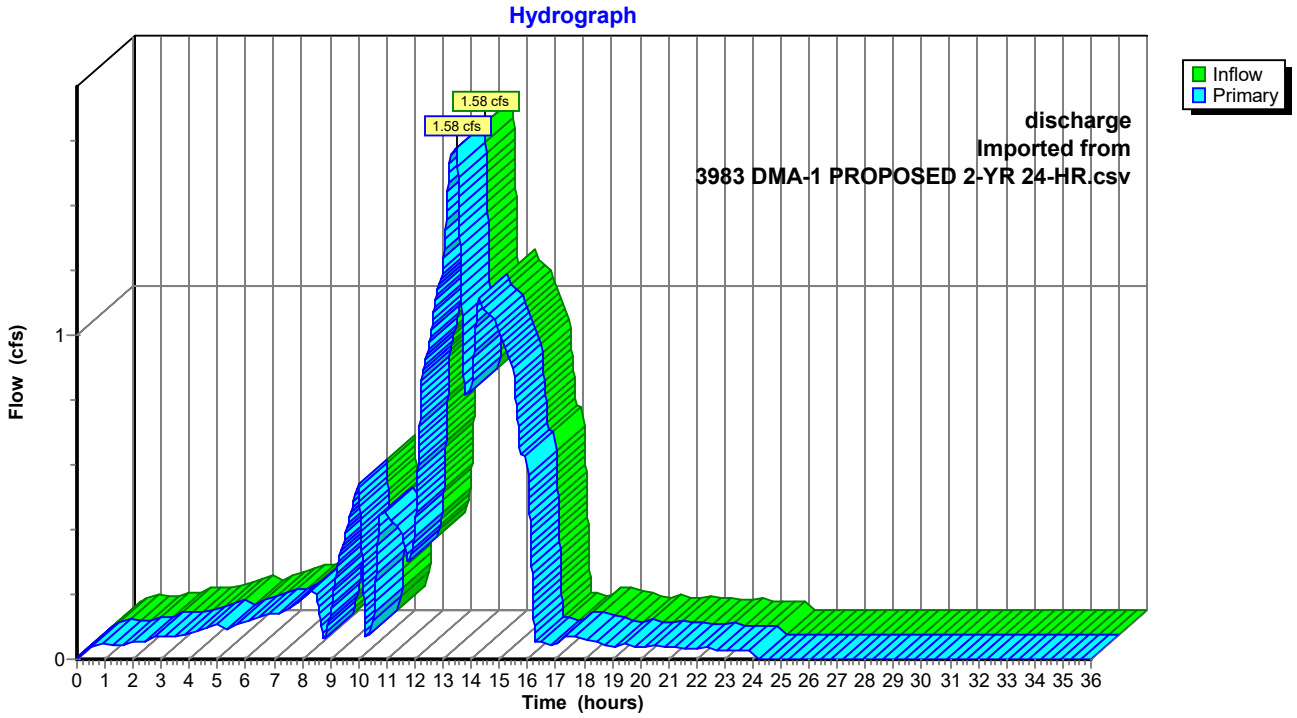
Summary for Link 3L: 2-yr 24-hr Inflow to Vault-1

Inflow = 1.58 cfs @ 13.50 hrs, Volume= 0.525 af
Primary = 1.58 cfs @ 13.50 hrs, Volume= 0.525 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 1P : Vault-1

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

discharge Imported from 3983 DMA-1 PROPOSED 2-YR 24-HR.csv

Link 3L: 2-yr 24-hr Inflow to Vault-1



Summary for Pond 1P: Vault-1

Inflow = 1.58 cfs @ 13.50 hrs, Volume= 0.525 af
Outflow = 0.47 cfs @ 16.07 hrs, Volume= 0.522 af, Atten= 70%, Lag= 154.3 min
Primary = 0.47 cfs @ 16.07 hrs, Volume= 0.522 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 104.07' @ 16.07 hrs Surf.Area= 3,000.00 sf Storage= 12,222.96 cf

Plug-Flow detention time= 298.3 min calculated for 0.522 af (99% of inflow)
Center-of-Mass det. time= 294.4 min (1,049.5 - 755.1)

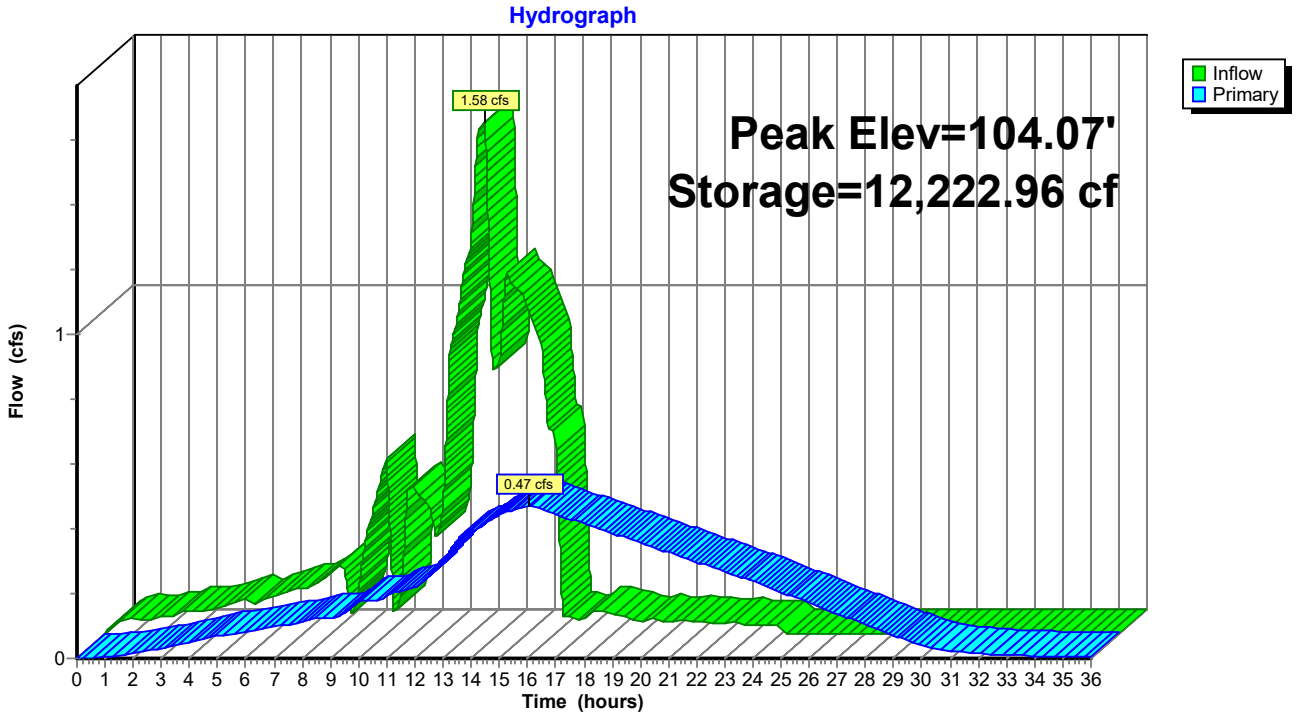
Volume	Invert	Avail.Storage	Storage Description
#1	100.00'	33,990.00 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
100.00	3,000.00	0.0	0.00	0.00	3,000.00
101.00	3,000.00	100.0	3,000.00	3,000.00	3,194.16
102.00	3,000.00	100.0	3,000.00	6,000.00	3,388.33
103.00	3,000.00	100.0	3,000.00	9,000.00	3,582.49
104.00	3,000.00	100.0	3,000.00	12,000.00	3,776.65
105.00	3,000.00	100.0	3,000.00	15,000.00	3,970.81
106.00	3,000.00	100.0	3,000.00	18,000.00	4,164.98
107.00	3,000.00	100.0	3,000.00	21,000.00	4,359.14
108.00	3,000.00	100.0	3,000.00	24,000.00	4,553.30
109.00	3,000.00	100.0	3,000.00	27,000.00	4,747.46
110.00	3,000.00	100.0	3,000.00	30,000.00	4,941.63
110.83	3,000.00	100.0	2,490.00	32,490.00	5,102.78
111.33	3,000.00	100.0	1,500.00	33,990.00	5,199.86

Device	Routing	Invert	Outlet Devices
#1	Primary	100.00'	**24.00" Round Culvert** L= 10.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 100.00' / 99.90' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	100.00'	**3.00" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	105.00'	**20.00" W x 6.00" H Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	110.83'	**Custom Weir, Cv= 3.10 (C= 3.88)** Head (feet) 0.00 0.50 0.50 Width (feet) 22.00 22.00 0.00

Primary OutFlow Max=0.47 cfs @ 16.07 hrs HW=104.07' (Free Discharge)
└**1=Culvert** (Passes 0.47 cfs of 26.52 cfs potential flow)
  ├**2=Orifice** (Orifice Controls 0.47 cfs @ 9.57 fps)
  ├**3=Orifice** (Controls 0.00 cfs)
  └**4=Custom Weir** (Controls 0.00 cfs)

Pond 1P: Vault-1



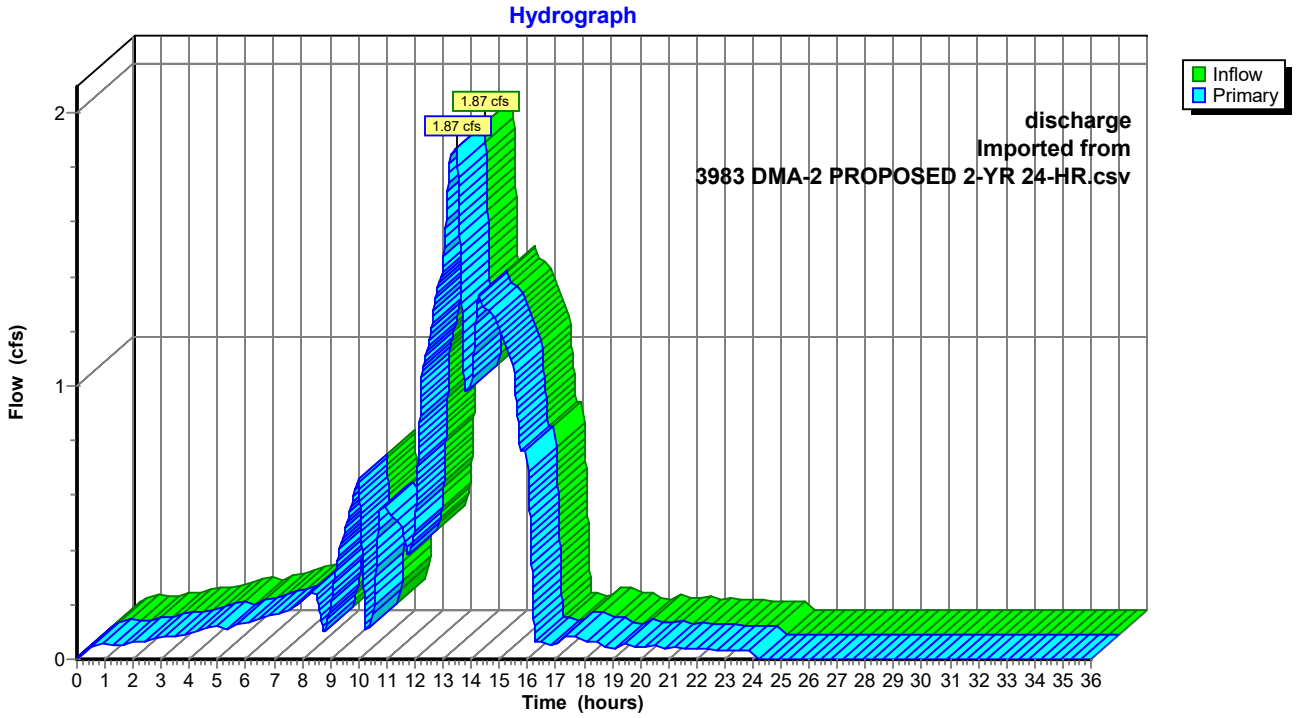
Summary for Link 4L: 2-yr 24-hr Inflow to Vault-2

Inflow = 1.87 cfs @ 13.50 hrs, Volume= 0.632 af
Primary = 1.87 cfs @ 13.50 hrs, Volume= 0.632 af, Atten= 0%, Lag= 0.0 min
Routed to Pond 2P : Vault-2

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

discharge Imported from 3983 DMA-2 PROPOSED 2-YR 24-HR.csv

Link 4L: 2-yr 24-hr Inflow to Vault-2



Summary for Pond 2P: Vault-2

Inflow = 1.87 cfs @ 13.50 hrs, Volume= 0.632 af
Outflow = 0.50 cfs @ 16.10 hrs, Volume= 0.625 af, Atten= 73%, Lag= 155.8 min
Primary = 0.50 cfs @ 16.10 hrs, Volume= 0.625 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 104.56' @ 16.10 hrs Surf.Area= 3,500.00 sf Storage= 15,951.54 cf

Plug-Flow detention time= 363.5 min calculated for 0.625 af (99% of inflow)
Center-of-Mass det. time= 357.3 min (1,112.1 - 754.8)

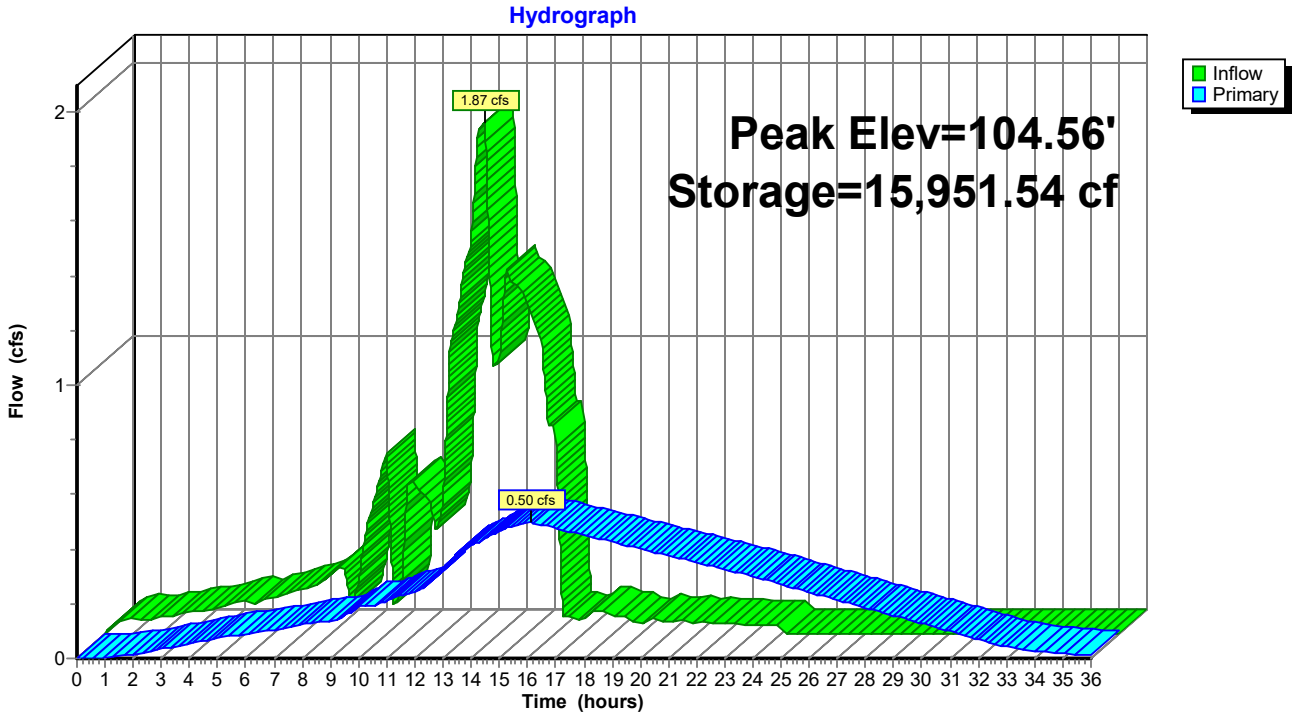
Volume	Invert	Avail.Storage	Storage Description
#1	100.00'	39,655.00 cf	**Custom Stage Data (Conic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
100.00	3,500.00	0.0	0.00	0.00	3,500.00
101.00	3,500.00	100.0	3,500.00	3,500.00	3,709.72
102.00	3,500.00	100.0	3,500.00	7,000.00	3,919.44
103.00	3,500.00	100.0	3,500.00	10,500.00	4,129.16
104.00	3,500.00	100.0	3,500.00	14,000.00	4,338.88
105.00	3,500.00	100.0	3,500.00	17,500.00	4,548.60
106.00	3,500.00	100.0	3,500.00	21,000.00	4,758.32
107.00	3,500.00	100.0	3,500.00	24,500.00	4,968.04
108.00	3,500.00	100.0	3,500.00	28,000.00	5,177.76
109.00	3,500.00	100.0	3,500.00	31,500.00	5,387.48
110.00	3,500.00	100.0	3,500.00	35,000.00	5,597.20
110.83	3,500.00	100.0	2,905.00	37,905.00	5,771.26
111.00	3,500.00	100.0	595.00	38,500.00	5,806.92
111.33	3,500.00	100.0	1,155.00	39,655.00	5,876.12

Device	Routing	Invert	Outlet Devices
#1	Primary	100.00'	**24.00" Round Culvert** L= 10.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 100.00' / 99.90' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	100.00'	**3.00" Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#3	Device 1	105.00'	**20.00" W x 6.00" H Vert. Orifice** C= 0.600 Limited to weir flow at low heads
#4	Device 1	110.83'	**Custom Weir, Cv= 3.10 (C= 3.88)** Head (feet) 0.00 0.50 0.50 Width (feet) 27.00 27.00 0.00

Primary OutFlow Max=0.50 cfs @ 16.10 hrs HW=104.56' (Free Discharge)
└**1=Culvert** (Passes 0.50 cfs of 28.53 cfs potential flow)
  ├**2=Orifice** (Orifice Controls 0.50 cfs @ 10.14 fps)
  ├**3=Orifice** (Controls 0.00 cfs)
  └**4=Custom Weir** (Controls 0.00 cfs)

Pond 2P: Vault-2



RUNOFF INDEX NUMBERS OF HYDROLOGIC SOIL-COVER COMPLEXES FOR PERVIOUS AREAS-AMC II

Cover Type (3)	Quality of Cover (2)	Soil Group A	B	C	D
NATURAL COVERS -					
Barren (Rockland, eroded and graded land)		78	86	91	93
Chaparrel, Broadleaf (Manzonita, ceanothus and scrub oak)	Poor	53	70	80	85
	Fair	40	63	75	81
	Good	31	57	71	78
Chaparrel, Narrowleaf (Chamise and redshank)	Poor	71	82	88	91
	Fair	55	72	81	86
Grass, Annual or Perennial	Poor	67	78	86	89
	Fair	50	69	79	84
	Good	38	61	74	80
Meadows or Cienegas (Areas with seasonally high water table, principal vegetation is sod forming grass)	Poor	63	77	85	88
	Fair	51	70	80	84
	Good	30	58	72	78
Open Brush (Soft wood shrubs - buckwheat, sage, etc.)	Poor	62	76	84	88
	Fair	46	66	77	83
	Good	41	63	75	81
Woodland (Coniferous or broadleaf trees predominate. Canopy density is at least 50 percent)	Poor	45	66	77	83
	Fair	36	60	73	79
	Good	28	55	70	77
Woodland, Grass (Coniferous or broadleaf trees with canopy density from 20 to 50 percent)	Poor	57	73	82	86
	Fair	44	65	77	82
	Good	33	58	72	79
URBAN COVERS -					
Residential or Commercial Landscaping (Lawn, shrubs, etc.)		32	56	69	75
Turf (Irrigated and mowed grass)	Poor	58	74	83	87
	Fair	44	65	77	82
	Good	33	58	72	79
AGRICULTURAL COVERS -					
Fallow (Land plowed but not tilled or seeded)		76	85	90	92

* Existing/Undeveloped Condition (On and Offsite)

* Proposed Condition (Onsite) Developed Condition (Offsite)

* The site is underlain with both C and D soils. To be conservative, C soils were used for the existing condition and D soils were used for the proposed condition.

RCFC & WCD
HYDROLOGY MANUAL

RUNOFF INDEX NUMBERS FOR PERVIOUS AREAS

PLATE E-6.1 (1 of 2)

RUNOFF INDEX NUMBERS OF HYDROLOGIC SOIL-COVER COMPLEXES FOR PERVIOUS AREAS-AMC II

Cover Type (3)	Quality of Cover (2)	Soil Group A	B	C	D
AGRICULTURAL COVERS (cont.) -					
Legumes, Close Seeded (Alfalfa, sweetclover, timothy, etc.)	Poor	66	77	85	89
	Good	58	72	81	85
Orchards, Deciduous (Apples, apricots, pears, walnuts, etc.)		See Note 4			
Orchards, Evergreen (Citrus, avocados, etc.)	Poor	57	73	82	86
	Fair	44	65	77	82
	Good	33	58	72	79
Pasture, Dryland (Annual grasses)	Poor	67	78	86	89
	Fair	50	69	79	84
	Good	38	61	74	80
Pasture, Irrigated (Legumes and perennial grass)	Poor	58	74	83	87
	Fair	44	65	77	82
	Good	33	58	72	79
Row Crops (Field crops - tomatoes, sugar beets, etc.)	Poor	72	81	88	91
	Good	67	78	85	89
Small Grain (Wheat, oats, barley, etc.)	Poor	65	76	84	88
	Good	63	75	83	87
Vineyard		See Note 4			

Notes:

1. All runoff index (RI) numbers are for Antecedent Moisture Condition (AMC) II.

2. Quality of cover definitions:
   Poor-Heavily grazed or regularly burned areas. Less than 50 percent of the ground surface is protected by plant cover or brush and tree canopy.
   Fair-Moderate cover with 50 percent to 75 percent of the ground surface protected.
   Good-Heavy or dense cover with more than 75 percent of the ground surface protected.

3. See Plate C-2 for a detailed description of cover types.

4. Use runoff index numbers based on ground cover type. See discussion under "Cover Type Descriptions" on Plate C-2.

5. Reference Bibliography item 17.

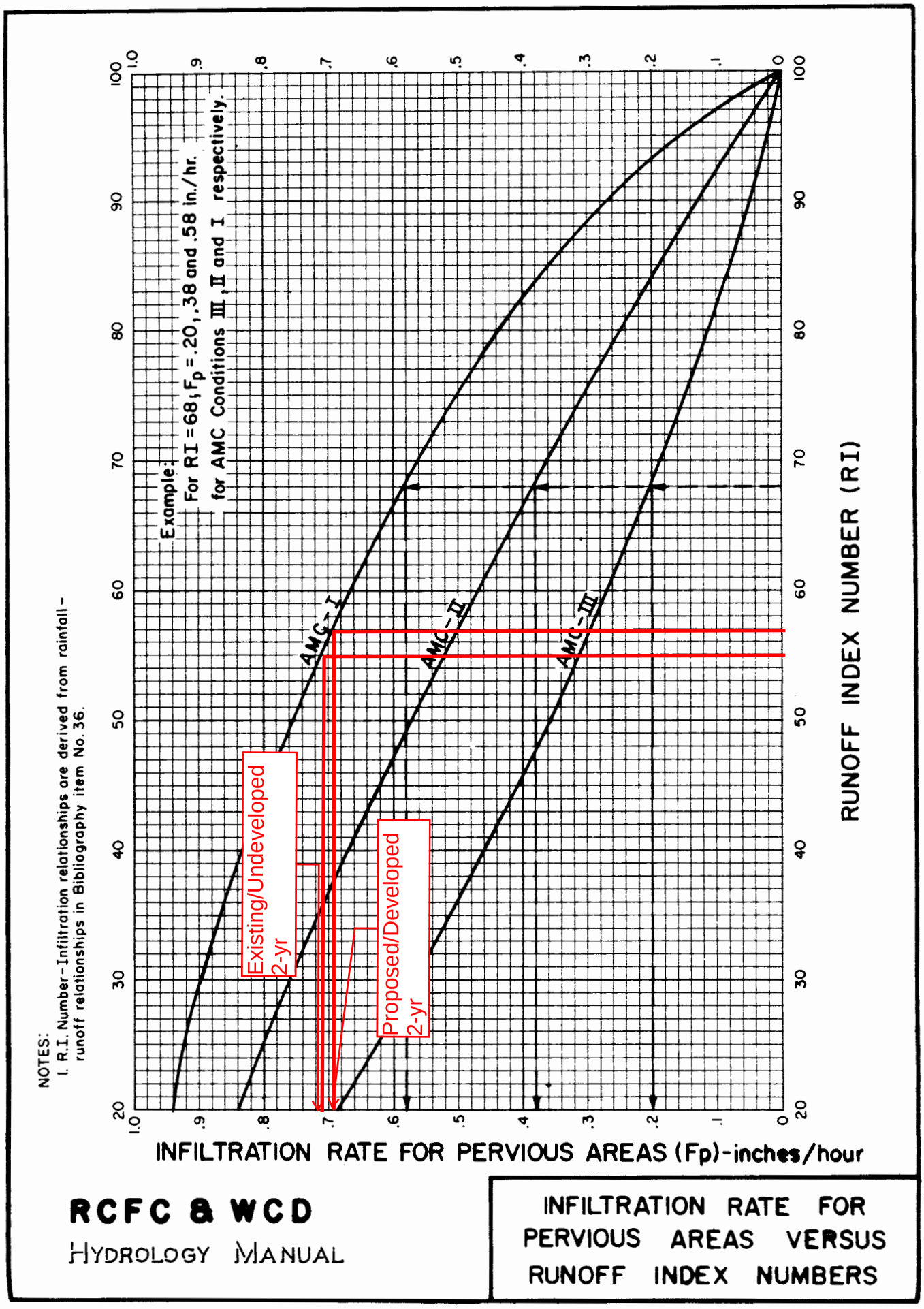
RUNOFF COEFFICIENT CURVE DATA

The data in the following tables may be used to develop runoff coefficient (C) curves for any combination of runoff index (RI) number and antecedent mositure condition (AMC). For an RI number with an AMC of II (from Plate D-5.5) enter the tables on the following pages and plot the "C" curve data directly on Plate D-5.8. "C" curve data is given for even RI numbers only, but values may easily be interpolated for odd RI numbers.

For an AMC of I or III enter the tabulation on this page with the RI for AMC II, and read the appropriate RI for AMC I or III. Use this revised RI to enter the tables on the following pages to determine "C". For example if RI = 40 for AMC II, then RI = 22 for AMC I and RI = 60 for AMC III.

AMC ADJUSTMENT RELATIONSHIPS

RI FOR AMC II	RI FOR OTHER AMC CONDITIONS: AMC I	AMC III	RI FOR AMC II	RI FOR OTHER AMC CONDITIONS: AMC I	AMC III
10	--	22	55	35	74
11	--	24	56	36	75
12	--	25	57	37	75
13	--	27	58	38	76
14	--	28	59	39	77
15	--	30	60	40	78
16	--	31	61	41	78
17	--	33	62	42	79
18	--	34	63	43	80
19	--	36	64	44	81
20	--	37	65	45	82
21	10	38	66	46	82
22	10	39	67	47	83
23	11	41	68	48	84
24	11	42	69	50	84
25	12	43	70	51	85
26	12	44	71	52	86
27	13	46	72	53	86
28	14	47	73	54	87
29	14	49	74	55	88
30	15	50	75	57	88
31	16	51	76	58	89
32	16	52	77	59	89
33	17	53	78	60	90
34	18	54	79	62	91
35	18	55	80	63	91
36	19	56	81	64	92
37	20	57	82	66	92
38	21	58	83	67	93
39	21	59	84	68	93
40	22	60	85	70	94
41	23	61	86	72	94
42	24	62	87	73	95
43	25	63	88	75	95
44	25	64	89	76	96
45	26	65	90	78	96
46	27	66	91	80	97
47	28	67	92	81	97
48	29	68	93	83	98
49	30	69	94	85	98
50	31	70	95	87	98
51	31	70	96	89	99
52	32	71	97	91	99
53	33	72	98	94	99
54	34	73	99	97	--



RCFC & WCD

HYDROLOGY MANUAL

INFILTRATION RATE FOR PERVIOUS AREAS VERSUS RUNOFF INDEX NUMBERS

PLATE E-6.2

NOAA Atlas 14, Volume 6, Version 2
Location name: Menifee, California, USA*
Latitude: 33.6333°, Longitude: -117.1776°
Elevation: 1570 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.090 (0.076-0.109)	0.126 (0.105-0.152)	0.174 (0.145-0.210)	0.215 (0.178-0.262)	0.272 (0.217-0.344)	0.318 (0.249-0.411)	0.366 (0.279-0.486)	0.418 (0.309-0.571)	0.490 (0.347-0.700)	0.548 (0.374-0.812)
10-min	0.129 (0.109-0.156)	0.180 (0.151-0.217)	0.249 (0.208-0.301)	0.307 (0.255-0.375)	0.390 (0.312-0.493)	0.456 (0.356-0.589)	0.525 (0.400-0.697)	0.599 (0.443-0.818)	0.703 (0.497-1.00)	0.786 (0.536-1.16)
15-min	0.157 (0.131-0.189)	0.218 (0.182-0.263)	0.301 (0.252-0.365)	0.372 (0.308-0.454)	0.472 (0.377-0.596)	0.551 (0.431-0.713)	0.635 (0.484-0.842)	0.724 (0.535-0.989)	0.850 (0.601-1.21)	0.951 (0.649-1.41)
30-min	0.249 (0.209-0.300)	0.346 (0.290-0.418)	0.479 (0.400-0.579)	0.591 (0.489-0.721)	0.749 (0.599-0.947)	0.876 (0.685-1.13)	1.01 (0.769-1.34)	1.15 (0.851-1.57)	1.35 (0.956-1.93)	1.51 (1.03-2.24)
60-min	0.375 (0.315-0.452)	0.522 (0.437-0.630)	0.723 (0.603-0.874)	0.892 (0.738-1.09)	1.13 (0.903-1.43)	1.32 (1.03-1.71)	1.52 (1.16-2.02)	1.74 (1.28-2.37)	2.04 (1.44-2.91)	2.28 (1.56-3.38)
2-hr	0.554 (0.465-0.668)	0.743 (0.622-0.897)	0.996 (0.832-1.21)	1.21 (0.999-1.47)	1.50 (1.20-1.90)	1.73 (1.35-2.24)	1.97 (1.50-2.61)	2.22 (1.64-3.03)	2.57 (1.82-3.66)	2.84 (1.94-4.21)
3-hr	0.684 (0.573-0.823)	0.905 (0.758-1.09)	1.20 (1.00-1.45)	1.44 (1.20-1.76)	1.78 (1.42-2.25)	2.05 (1.60-2.64)	2.32 (1.76-3.07)	2.60 (1.92-3.56)	2.99 (2.12-4.27)	3.30 (2.25-4.88)
6-hr	0.971 (0.814-1.17)	1.27 (1.07-1.54)	1.68 (1.40-2.03)	2.00 (1.66-2.44)	2.46 (1.96-3.10)	2.80 (2.19-3.62)	3.16 (2.41-4.20)	3.53 (2.61-4.83)	4.04 (2.86-5.77)	4.44 (3.03-6.57)
12-hr	1.28 (1.07-1.54)	1.69 (1.41-2.04)	2.23 (1.86-2.70)	2.68 (2.22-3.27)	3.29 (2.63-4.16)	3.76 (2.94-4.86)	4.23 (3.22-5.62)	4.73 (3.50-6.46)	5.40 (3.82-7.70)	5.92 (4.04-8.76)
24-hr	1.66 (1.46-1.91)	2.24 (1.98-2.59)	3.01 (2.65-3.49)	3.64 (3.18-4.25)	4.50 (3.81-5.42)	5.16 (4.28-6.35)	5.84 (4.74-7.36)	6.55 (5.16-8.47)	7.51 (5.69-10.1)	8.26 (6.06-11.5)
2-day	1.97 (1.74-2.28)	2.72 (2.41-3.15)	3.73 (3.28-4.32)	4.56 (3.99-5.33)	5.71 (4.83-6.88)	6.61 (5.48-8.13)	7.54 (6.11-9.49)	8.51 (6.71-11.0)	9.85 (7.47-13.3)	10.9 (8.00-15.2)
3-day	2.10 (1.85-2.42)	2.94 (2.60-3.40)	4.07 (3.59-4.72)	5.02 (4.39-5.86)	6.34 (5.37-7.65)	7.39 (6.13-9.09)	8.47 (6.87-10.7)	9.62 (7.59-12.4)	11.2 (8.51-15.1)	12.5 (9.18-17.4)
4-day	2.25 (1.99-2.60)	3.19 (2.81-3.68)	4.45 (3.92-5.16)	5.52 (4.82-6.44)	7.01 (5.93-8.45)	8.20 (6.80-10.1)	9.44 (7.65-11.9)	10.8 (8.49-13.9)	12.6 (9.57-17.0)	14.1 (10.4-19.7)
7-day	2.55 (2.25-2.94)	3.65 (3.22-4.22)	5.16 (4.55-5.98)	6.44 (5.63-7.53)	8.26 (6.99-9.96)	9.72 (8.07-12.0)	11.3 (9.13-14.2)	12.9 (10.2-16.7)	15.3 (11.6-20.6)	17.2 (12.6-23.9)
10-day	2.70 (2.39-3.12)	3.90 (3.45-4.51)	5.56 (4.90-6.44)	6.97 (6.09-8.14)	8.99 (7.61-10.8)	10.6 (8.81-13.1)	12.4 (10.0-15.6)	14.2 (11.2-18.4)	16.9 (12.8-22.8)	19.1 (14.0-26.6)
20-day	3.22 (2.85-3.72)	4.71 (4.16-5.44)	6.79 (5.98-7.87)	8.59 (7.50-10.0)	11.2 (9.48-13.5)	13.4 (11.1-16.4)	15.7 (12.7-19.7)	18.2 (14.4-23.5)	21.8 (16.6-29.4)	24.9 (18.2-34.6)
30-day	3.81 (3.36-4.39)	5.55 (4.90-6.42)	8.02 (7.06-9.30)	10.2 (8.90-11.9)	13.4 (11.3-16.1)	16.0 (13.3-19.7)	18.8 (15.3-23.7)	22.0 (17.3-28.4)	26.6 (20.1-35.8)	30.4 (22.3-42.3)
45-day	4.47 (3.96-5.16)	6.46 (5.70-7.46)	9.30 (8.19-10.8)	11.8 (10.3-13.8)	15.5 (13.2-18.7)	18.7 (15.5-23.0)	22.1 (17.9-27.8)	25.9 (20.4-33.5)	31.5 (23.9-42.4)	36.2 (26.6-50.4)
60-day	5.20 (4.59-6.00)	7.40 (6.53-8.55)	10.6 (9.31-12.2)	13.4 (11.7-15.6)	17.6 (14.9-21.2)	21.2 (17.6-26.1)	25.1 (20.4-31.6)	29.5 (23.3-38.2)	36.1 (27.3-48.6)	41.7 (30.6-58.0)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

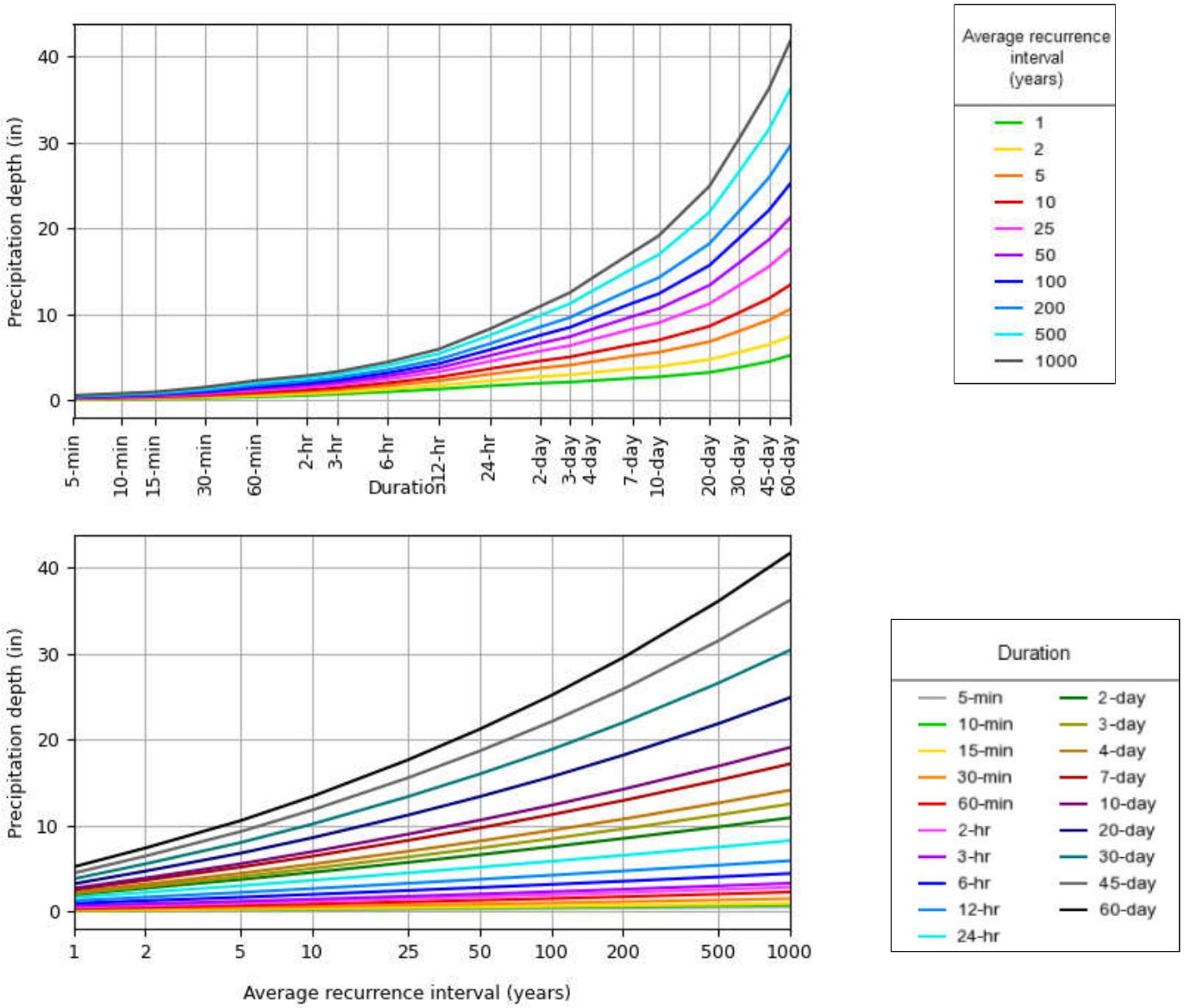
Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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PF graphical

PDS-based depth-duration-frequency (DDF) curves
Latitude: 33.6333°, Longitude: -117.1776°



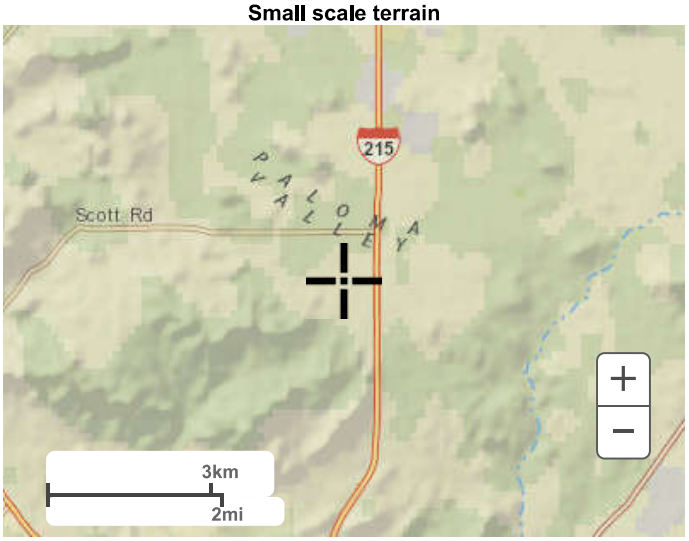
NOAA Atlas 14, Volume 6, Version 2

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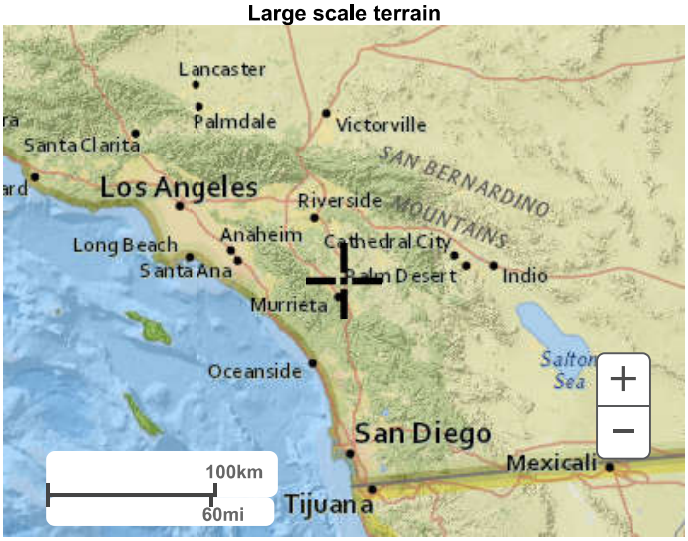
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Maps & aerials

Small scale terrain



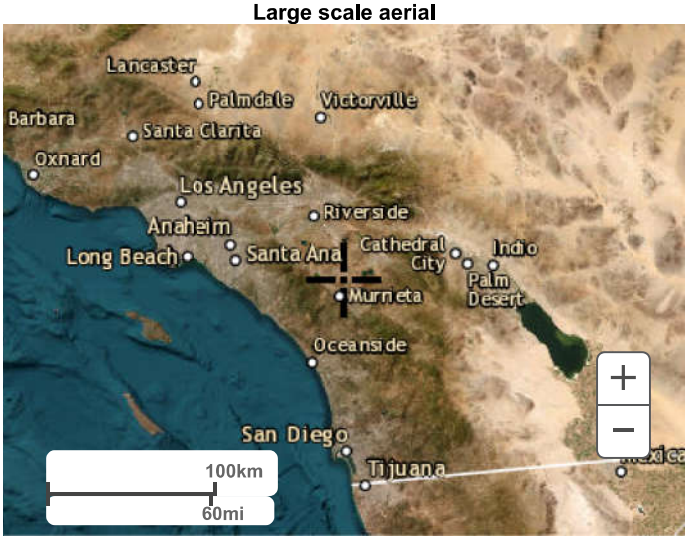
Large scale terrain



Large scale map

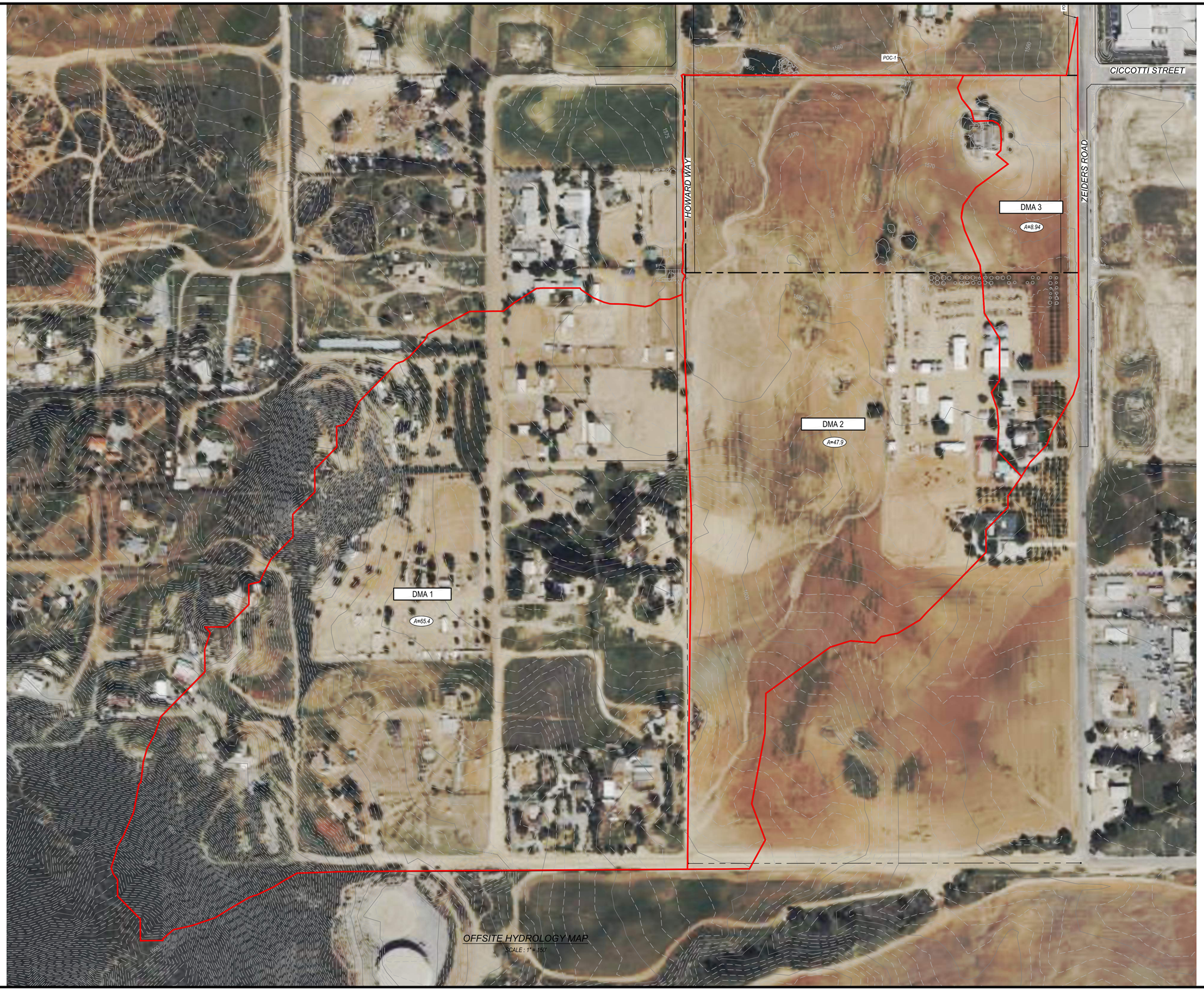


Large scale aerial



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US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov



OFFSITE HYDROLOGY MAP
SCALE : 1"= 150'

LEGEND

DESCRIPTION	SYMBOL
DMA ID	DMA 3
BASIN AREA	A=0.10
RIGHT-OF-WAY	R/W
PROPERTY LINE	P/L
BASIN BOUNDARY	

HYDROLOGIC SOIL GROUP

HYDROLOGIC SOIL TYPE: C & D

0 150' 300' 450'

GRAPHIC SCALE: 1" = 150'

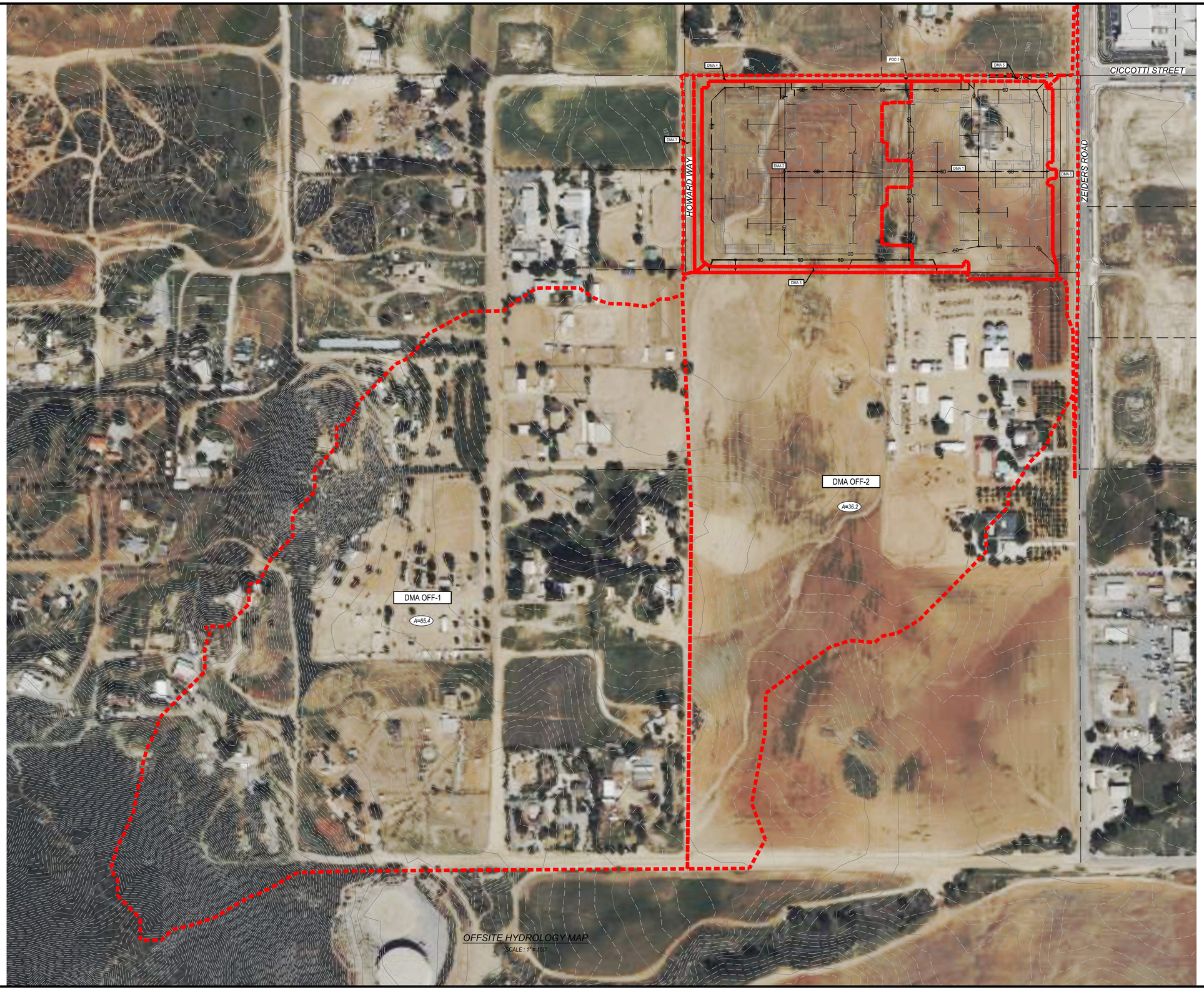
EXISTING CONDITION HYDROMODIFICATION EXHIBIT
33521 ZEIDERS ROAD

PLSA JOB JUMBER : 3983
SCALE : 1" = 150'
DATE : 9/13/2024

SHEET 1 OF 1

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OFFSITE HYDROLOGY MAP
SCALE : 1" = 150'

LEGEND

DESCRIPTION	SYMBOL
OFFSITE DMA ID	DMA OFF-2
ONSITE DMA ID	DMA 5
BASIN AREA	A=0.10
RIGHT-OF-WAY	R/W
PROPERTY LINE	P/L
BASIN BOUNDARY	
PROPOSED STORM DRAIN	SD

HYDROLOGIC SOIL GROUP

HYDROLOGIC SOIL TYPE: C & D

0 150' 300' 450'

GRAPHIC SCALE: 1" = 150'

PROPOSED CONDITION HYDROMODIFICATION EXHIBIT 33521 ZEIDERS ROAD

PLSA JOB JUMBER : 3983
SCALE : 1" = 150'
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Appendix 8: Source Control

Pollutant Sources/Source Control Checklist

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

How to use this worksheet (also see instructions in Section G of the WQMP Template):

1. Review Column 1 and identify which of these potential sources of stormwater pollutants apply to your site. Check each box that applies.
2. Review Column 2 and incorporate all of the corresponding applicable BMPs in your WQMP Exhibit.
3. Review Columns 3 and 4 and incorporate all of the corresponding applicable permanent controls and operational BMPs in your WQMP. Use the format shown in Table G.1on page 23 of this WQMP Template. Describe your specific BMPs in an accompanying narrative, and explain any special conditions or situations that required omitting BMPs or substituting alternative BMPs for those shown here.

IF THESE SOURCES WILL BE ON THE PROJECT SITE …	… THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	**2** **Permanent Controls—Show on WQMP Drawings**	**3** **Permanent Controls—List in WQMP Table and Narrative**	**4** **Operational BMPs—Include in WQMP Table and Narrative**
☒ **A.** On-site storm drain inlets	☒ Locations of inlets.	☒ Mark all inlets with the words "Only Rain Down the Storm Drain" or similar. Catch Basin Markers may be available from the Riverside County Flood Control and Water Conservation District, call 951.955.1200 to verify.	☒ Maintain and periodically repaint or replace inlet markings. ☒ Provide stormwater pollution prevention information to new site owners, lessees, or operators. ☒ See applicable operational BMPs in Fact Sheet SC-44, "Drainage System Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com ☒ Include the following in lease agreements: "Tenant shall not allow anyone to discharge anything to storm drains or to store or deposit materials so as to create a potential discharge to storm drains."
☒ **B.** Interior floor drains and elevator shaft sump pumps		☒ State that interior floor drains and elevator shaft sump pumps will be plumbed to sanitary sewer.	☒ Inspect and maintain drains to prevent blockages and overflow.
☐ **C.** Interior parking garages		☐ State that parking garage floor drains will be plumbed to the sanitary sewer.	☐ Inspect and maintain drains to prevent blockages and overflow.

IF THESE SOURCES WILL BE ON THE PROJECT SITE …	… THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	2 **Permanent Controls—Show on WQMP Drawings**	3 **Permanent Controls—List in WQMP Table and Narrative**	4 **Operational BMPs—Include in WQMP Table and Narrative**
☒ **D1.** Need for future indoor & structural pest control		☒ Note building design features that discourage entry of pests.	☒ Provide Integrated Pest Management information to owners, lessees, and operators.
☒ **D2.** Landscape/ Outdoor Pesticide Use	❑ Show locations of native trees or areas of shrubs and ground cover to be undisturbed and retained. ❑ Show self-retaining landscape areas, if any. ☒ Show stormwater treatment and hydrograph modification management BMPs. (See instructions in Chapter 3, Step 5 and guidance in Chapter 5.)	State that final landscape plans will accomplish all of the following. ❑ Preserve existing native trees, shrubs, and ground cover to the maximum extent possible. ☒ Design landscaping to minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to 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 ensure successful establishment, select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.	☒ Maintain landscaping using minimum or no pesticides. ☒ See applicable operational BMPs in **"What you should know for…..Landscape and Gardening"** at http://rcflood.org/stormwater/**Error! Hyperlink reference not valid.** ☒ Provide IPM information to new owners, lessees and operators.

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE …	… THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	**2** **Permanent Controls—Show on WQMP Drawings**	**3** **Permanent Controls—List in WQMP Table and Narrative**	**4** **Operational BMPs—Include in WQMP Table and Narrative**
❑ **E.** Pools, spas, ponds, decorative fountains, and other water features.	❑ Show location of water feature and a sanitary sewer cleanout in an accessible area within 10 feet. (Exception: Public pools must be plumbed according to County Department of Environmental Health Guidelines.)	If the Co-Permittee requires pools to be plumbed to the sanitary sewer, place a note on the plans and state in the narrative that this connection will be made according to local requirements.	❑ See applicable operational BMPs in "Guidelines for Maintaining Your Swimming Pool, Jacuzzi and Garden Fountain" at http://rcflood.org/stormwater/
❑ **F.** Food service	❑ For restaurants, grocery stores, and other food service operations, show location (indoors or in a covered area outdoors) of a floor sink or other area for cleaning floor mats, containers, and equipment. ❑ On the drawing, show a note that this drain will be connected to a grease interceptor before discharging to the sanitary sewer.	❑ Describe the location and features of the designated cleaning area. ❑ Describe the items to be cleaned in this facility and how it has been sized to insure that the largest items can be accommodated.	❑ See the brochure, "The Food Service Industry Best Management Practices for: Restaurants, Grocery Stores, Delicatessens and Bakeries" at http://rcflood.org/stormwater/ Provide this brochure to new site owners, lessees, and operators.
☒ **G.** Refuse areas	☒ Show where site refuse and recycled materials will be handled and stored for pickup. See local municipal requirements for sizes and other details of refuse areas. ☒ If dumpsters or other receptacles are outdoors, show how the designated area will be covered, graded, and paved to prevent run-on and show locations of berms to prevent runoff from the area. ❑ Any drains from dumpsters, compactors, and tallow bin areas shall be connected to a grease removal device before discharge to sanitary sewer.	☒ State how site refuse will be handled and provide supporting detail to what is shown on plans. ☒ State that signs will be posted on or near dumpsters with the words "Do not dump hazardous materials here" or similar.	☒ State how the following will be implemented: Provide adequate number of receptacles. Inspect receptacles regularly; repair or replace leaky receptacles. Keep receptacles covered. Prohibit/prevent dumping of liquid or hazardous wastes. Post "no hazardous materials" signs. Inspect and pick up litter daily and clean up spills immediately. Keep spill control materials available on-site. See Fact Sheet SC-34, "Waste Handling and Disposal" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	2 **Permanent Controls—Show on WQMP Drawings**	3 **Permanent Controls—List in WQMP Table and Narrative**	4 **Operational BMPs—Include in WQMP Table and Narrative**
❑ **H.** Industrial processes.	❑ Show process area.	❑ **If industrial processes are to be located on site, state: "All process activities to be performed indoors. No processes to drain to exterior or to storm drain system."**	❑ **See Fact Sheet SC-10, "Non-Stormwater Discharges" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com** See the brochure "Industrial & Commercial Facilities Best Management Practices for: Industrial, Commercial Facilities" at http://rcflood.org/stormwater/

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	**2** **Permanent Controls—Show on WQMP Drawings**	**3** **Permanent Controls—List in WQMP Table and Narrative**	**4** **Operational BMPs—Include in WQMP Table and Narrative**
❑ **I.** Outdoor storage of equipment or materials. (See rows J and K for source control measures for vehicle cleaning, repair, and maintenance.)	❑ Show any outdoor storage areas, including how materials will be covered. Show how areas will be graded and bermed to prevent run-on or run-off from area. ❑ Storage of non-hazardous liquids shall be covered by a roof and/or drain to the sanitary sewer system, and be contained by berms, dikes, liners, or vaults. ❑ Storage of hazardous materials and wastes must be in compliance with the local hazardous materials ordinance and a Hazardous Materials Management Plan for the site.	Include a detailed description of materials to be stored, storage areas, and structural features to prevent pollutants from entering storm drains. Where appropriate, reference documentation of compliance with the requirements of Hazardous Materials Programs for: ▪ Hazardous Waste Generation ▪ Hazardous Materials Release Response and Inventory ▪ California Accidental Release (CalARP) ▪ Aboveground Storage Tank ▪ Uniform Fire Code Article 80 Section 103(b) & (c) 1991 ▪ Underground Storage Tank www.cchealth.org/groups/hazmat/	❑ See the Fact Sheets SC-31, "Outdoor Liquid Container Storage" and SC-33, "Outdoor Storage of Raw Materials " in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	2 **Permanent Controls—Show on WQMP Drawings**	3 **Permanent Controls—List in WQMP Table and Narrative**	4 **Operational BMPs—Include in WQMP Table and Narrative**
❑ **J.** Vehicle and Equipment Cleaning	❑ Show on drawings as appropriate: **(1) Commercial/industrial facilities having vehicle/equipment cleaning needs shall either provide a covered, bermed area for washing activities or discourage vehicle/equipment washing by removing hose bibs and installing signs prohibiting such uses.** **(2) Multi-dwelling complexes shall have a paved, bermed, and covered car wash area (unless car washing is prohibited on-site and hoses are provided with an automatic shut-off to discourage such use).** **(3) Washing areas for cars, vehicles, and equipment shall be paved, designed to prevent run-on to or runoff from the area, and plumbed to drain to the sanitary sewer.** **(4) Commercial car wash facilities shall be designed such that no runoff from the facility is discharged to the storm drain system. Wastewater from the facility shall discharge to the sanitary sewer, or a wastewater reclamation system shall be installed.**	❑ **If a car wash area is not provided, describe any measures taken to discourage on-site car washing and explain how these will be enforced.**	**Describe operational measures to implement the following (if applicable):** ❑ **Washwater from vehicle and equipment washing operations shall not be discharged to the storm drain system.** Refer to "Outdoor Cleaning Activities and Professional Mobile Service Providers" for many of the Potential Sources of Runoff Pollutants categories below. Brochure can be found at http://rcflood.org/stormwater/ ❑**Car dealerships and similar may rinse cars with water only.**

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE …	… THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 **Potential Sources of Runoff Pollutants**	**2** **Permanent Controls—Show on WQMP Drawings**	**3** **Permanent Controls—List in WQMP Table and Narrative**	**4** **Operational BMPs—Include in WQMP Table and Narrative**
❑ **K.** Vehicle/Equipment Repair and Maintenance	❑ **Accommodate all vehicle equipment repair and maintenance indoors. Or designate an outdoor work area and design the area to prevent run-on and runoff of stormwater.** ❑ **Show secondary containment for exterior work areas where motor oil, brake fluid, gasoline, diesel fuel, radiator fluid, acid-containing batteries or other hazardous materials or hazardous wastes are used or stored. Drains shall not be installed within the secondary containment areas.** ❑ **Add a note on the plans that states either (1) there are no floor drains, or (2) floor drains are connected to wastewater pretreatment systems prior to discharge to the sanitary sewer and an industrial waste discharge permit will be obtained.**	❑ **State that no vehicle repair or maintenance will be done outdoors, or else describe the required features of the outdoor work area.** ❑ **State that there are no floor drains or if there are floor drains, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements.** ❑ **State that there are no tanks, containers or sinks to be used for parts cleaning or rinsing or, if there are, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements.**	**In the Stormwater Control Plan, note that all of the following restrictions apply to use the site:** ❑ **No person shall dispose of, nor permit the disposal, directly or indirectly of vehicle fluids, hazardous materials, or rinsewater from parts cleaning into storm drains.** ❑ **No vehicle fluid removal shall be performed outside a building, nor on asphalt or ground surfaces, whether inside or outside a building, except in such a manner as to ensure that any spilled fluid will be in an area of secondary containment. Leaking vehicle fluids shall be contained or drained from the vehicle immediately.** ❑ **No person shall leave unattended drip parts or other open containers containing vehicle fluid, unless such containers are in use or in an area of secondary containment.** Refer to "Automotive Maintenance & Car Care Best Management Practices for Auto Body Shops, Auto Repair Shops, Car Dealerships, Gas Stations and Fleet Service Operations". Brochure can be found at http://rcflood.org/stormwater/ Refer to Outdoor Cleaning Activities and Professional Mobile Service Providers for many of the Potential Sources of Runoff Pollutants categories below. Brochure can be found at http://rcflood.org/stormwater/

IF THESE SOURCES WILL BE ON THE PROJECT SITE …	… THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
❑ **L.** Fuel Dispensing Areas	❑ Fueling areas[6] shall have impermeable floors (i.e., portland cement concrete or equivalent smooth impervious surface) that are: a) graded at the minimum slope necessary to prevent ponding; and b) separated from the rest of the site by a grade break that prevents run-on of stormwater to the maximum extent practicable. ❑ Fueling areas shall be covered by a canopy that extends a minimum of ten feet in each direction from each pump. [Alternative: The fueling area must be covered and the cover's minimum dimensions must be equal to or greater than the area within the grade break or fuel dispensing area[1].] The canopy [or cover] shall not drain onto the fueling area.		❑ The property owner shall dry sweep the fueling area routinely. ❑ See the Fact Sheet SD-30 , "Fueling Areas" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com

[6] The fueling area shall be defined as the area extending a minimum of 6.5 feet from the corner of each fuel dispenser or the length at which the hose and nozzle assembly may be operated plus a minimum of one foot, whichever is greater.

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
☒ **M.** Loading Docks	☒ Show a preliminary design for the loading dock area, including roofing and drainage. Loading docks shall be covered and/or graded to minimize run-on to and runoff from the loading area. Roof downspouts shall be positioned to direct stormwater away from the loading area. Water from loading dock areas shall be drained to the sanitary sewer, or diverted and collected for ultimate discharge to the sanitary sewer. ❑ Loading dock areas draining directly to the sanitary sewer shall be equipped with a spill control valve or equivalent device, which shall be kept closed during periods of operation. ❑ Provide a roof overhang over the loading area or install door skirts (cowling) at each bay that enclose the end of the trailer.		☒ Move loaded and unloaded items indoors as soon as possible. ☒ See Fact Sheet SC-30, "Outdoor Loading and Unloading," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com

IF THESE SOURCES WILL BE ON THE PROJECT SITE …	… THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
☒ **N.** Fire Sprinkler Test Water		☒ Provide a means to drain fire sprinkler test water to the sanitary sewer.	☒ See the note in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com
O. Miscellaneous Drain or Wash Water or Other Sources ❑ Boiler drain lines ❑ Condensate drain lines ☒ Rooftop equipment ❑ Drainage sumps ☒ Roofing, gutters, and trim. ❑ Other sources		❑ Boiler drain lines shall be directly or indirectly connected to the sanitary sewer system and may not discharge to the storm drain system. ❑ Condensate drain lines may discharge to landscaped areas if the flow is small enough that runoff will not occur. Condensate drain lines may not discharge to the storm drain system. ☒ Rooftop equipment with potential to produce pollutants shall be roofed and/or have secondary containment. ❑ Any drainage sumps on-site shall feature a sediment sump to reduce the quantity of sediment in pumped water. ☒ Avoid roofing, gutters, and trim made of copper or other unprotected metals that may leach into runoff. Include controls for other sources as specified by local reviewer.	

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
☒ **P.** Plazas, sidewalks, and 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.

Appendix 9: O&M

Operation and Maintenance Plan and Documentation of Finance, Maintenance and Recording Mechanisms

Zeiders Road Development

33521 Zeiders Road, Menifee, CA 92584
Preliminary Cost Estimate
Storm Water BMP Install and O&M Cost Estimate

Prepared By: RMT
Date: 5/20/2024
PLSA Project # 3983

Item	Quantity	Unit	Unit Price*		Total
Storm Water BMP Installation Cost					
StromTrap Vault 1	1	LS	$ 379,467.00	$	379,467.00
StormTrap Vault 2	1	LS	$ 446,774.00	$	446,774.00
Pump 1	1	LS	$ 200,000.00	$	200,000.00
Pump 2	1	LS	$ 200,000.00	$	200,000.00
MWS BMP 1 (L-8-20)	1	EA	$ 102,000.00	$	102,000.00
MWS BMP 2 (L-8-20)	1	EA	$ 102,000.00	$	102,000.00
MWS BMP 3 (L-8-24)	1	EA	$ 115,000.00	$	115,000.00
MWS BMP 4 (L-8-24)	1	EA	$ 115,000.00	$	115,000.00
	Subtotal-Installation Cost			**$**	**1,660,241.00**
Storm Water BMP Annual Maintenance Cost					
Underground Detention (x2) - Annually	1	LS	$ 976.00	$	976.00
Pumps (x2) - Annually	1	LS	$ 950.00	$	950.00
MWS BMP (x4) - Annually	1	EA	$ 1,952.00	$	1,952.00
Biofiltration BMP (x3) - Annually (Not including Landscape Maintenance)	1	EA	$ 444.00	$	444.00
	Subtotal-Maintenance Cost			**$**	**4,322.00**

PLSA Civil Engineering Land Planning Surveying + Mapping

Storm Water BMP Operation and Maintenance

The project's storm water BMPs include four (4) Modular Wetland Systems, two (2) underground detention vaults and three (3) biofiltration basins.

1.0 Responsible Party

The property owner is the responsible party for operation and maintenance of the BMPs from the time the BMPs are constructed until the responsibilities are legally transferred.

2.0 Maintenance Mechanism

Implementation and financing of the long-term operation and maintenance of the BMPs including replacement cost is the responsibility of the property owner.

3.0 Maintenance Requirements and Frequency

BMP	Frequency	Maintenance Requirements	Responsibility
Underground Detention Vaults	Refer to the Manufacturer Operation and Maintenance Manual	Refer to the Manufacturer Operation and Maintenance Manual	Property Owner
	Bi-Weekly	Remove accumulation of trash debris and/or sediment at/or around the tributary inlets.	
	Semi-Annually	Inspections of the system should be completed before and after the wet season to ensure system is in working order.	
	As Needed	Systems should be unclogged when inspection finds that accumulated sediment or trash is clogging the discharge.	
Biofiltration Basins	Ongoing including just before annual storm seasons and following rainfall events.	Maintain vegetation as needed. Use of fertilizers, pesticides and herbicides should be strongly avoided to ensure they don't contribute to water pollution.	Property Owner
	Annually, before the beginning of the rain season to allow for any repairs to occur.	Remove debris and litter from the entire basin. Inspect hydraulic and structural facilities. Examine the outlet for clogging, the embankment and spillway integrity, as well as damage to any structural element. Check for erosion, slumping and overgrowth. Repair as needed. Check the underdrains if applicable (via the cleanout) for damage or clogging. Repair as needed.	

	Whenever substantial sediment accumulation has occurred.	Remove accumulated sediment from the bottom of the basin. Removal should extend to original basin depth.	
Modular Wetland Systems	Refer to Modular Wetland System Operation and Maintenance Manual	Refer to Modular Wetland System Operation and Maintenance Manual	Property Owner

CONTECH®
ENGINEERED SOLUTIONS

Modular Wetlands® Linear
Operation & Maintenance Manual



MODULAR WETLANDS®

MODULAR WETLANDS® LINEAR OPERATION & MAINTENANCE MANUAL

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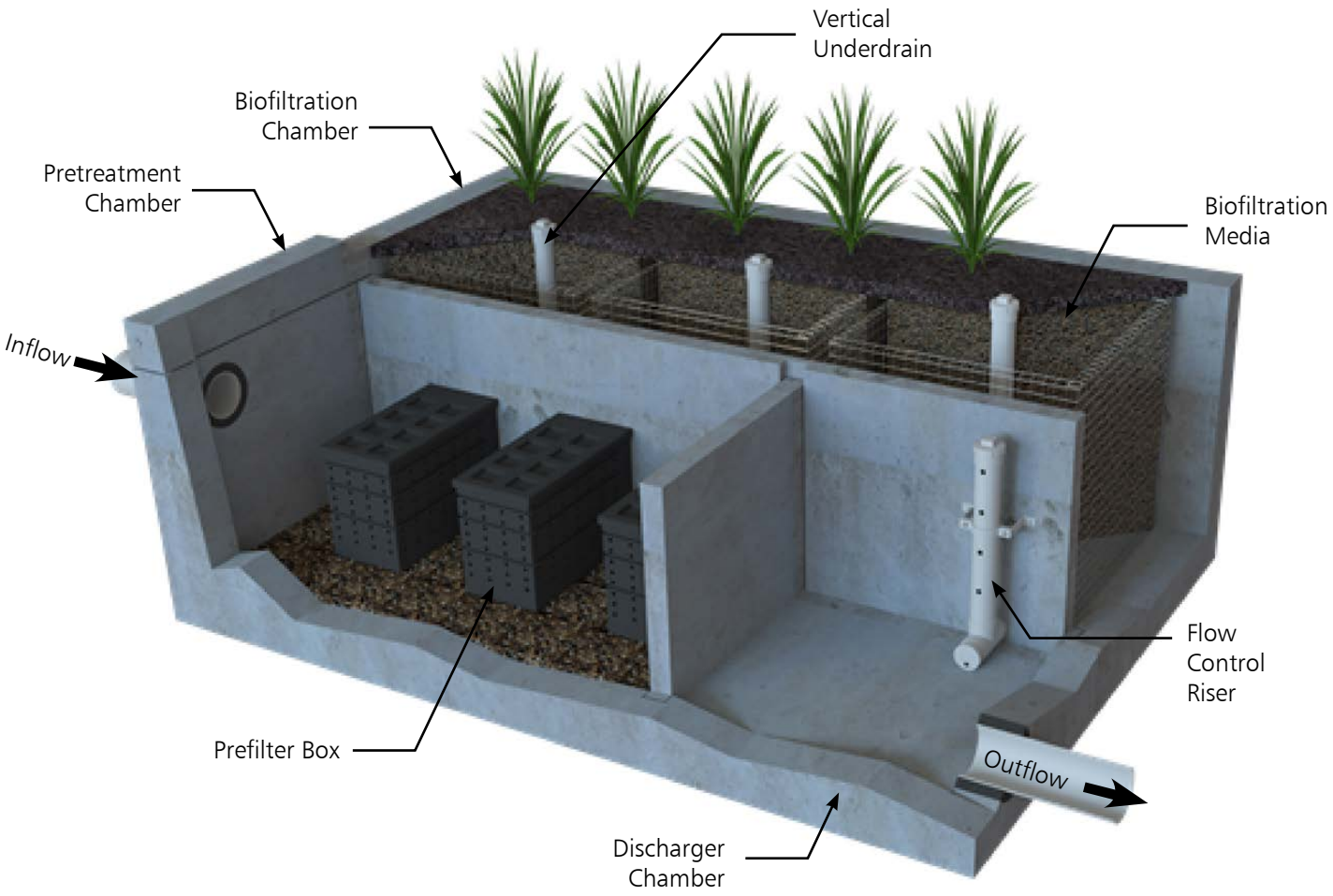
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OVERVIEW

The Modular Wetlands® Linear Biofilter is designed to remove high levels of trash, debris, sediments, nutrients, metals, and hydrocarbons. Its simple design allows for quick and easy installation. The system is housed in a standard precast structure and can be installed at various depths to meet site-specific conditions.

INTRODUCTION

This is the Modular Wetlands Linear Biofilter operation and maintenance manual. Before starting, read the instructions and equipment lists closely. It is important to follow all necessary safety procedures associated with state and local regulations. Some steps required confined space entry. Please contact Contech for more information on pre-authorized third party contractors who can provide installation services in your area. For a list of service providers in your area please visit: www.conteches.com/maintenance.



INSTRUCTIONS

INSPECTION SUMMARY

Stormwater regulations require BMPs be inspected and maintained to ensure they are operating as designed to allow for effective pollutant removal and provide protection to receiving water bodies. It is recommended that inspections be performed multiple times during the first year to assess the site specific loading conditions. The first year of inspections can be used to set inspection and maintenance intervals for subsequent years to ensure appropriate maintenance is provided.

- Inspect pre-treatment, biofiltration, and discharge chambers an average of once every six to twelve months. Varies based on site specific and local conditions.
- Average inspection time is approximately 15 minutes. Always ensure appropriate safety protocol and procedures are followed.

The following is a list of equipment required to allow for simple and effective inspection of the Modular Wetlands Linear:

- Modular Wetlands Linear Inspection Form
- Flashlight
- Manhole hook or appropriate tools to remove access hatches and covers
- Appropriate traffic control signage and procedures
- Measuring pole and/or tape measure
- Protective clothing and eye protection
- 7/16" open or closed ended wrench
- Large permanent black marker (initial inspections only - first year)

Note: entering a confined space requires appropriate safety and certification. It is generally not required for routine inspections of the system

INSPECTION AND MAINTENANCE NOTES

1. Following maintenance and/or inspection, it is recommended that the maintenance operator prepare a maintenance/inspection record. The record should include any maintenance activities performed, amount and description of debris collected, and condition of the system and its various filter mechanisms.
2. The owner should keep maintenance/inspection record(s) for a minimum of five years from the date of maintenance. These records should be made available to the governing municipality for inspection upon request at any time.
3. Transport all debris, trash, organics, and sediments to approved facility for disposal in accordance with local and state requirements.
4. Entry into chambers may require confined space training based on state and local regulations.
5. No fertilizer shall be used in the biofiltration chamber.
6. Irrigation should be provided as recommended by manufacturer and/or landscape architect. Amount of irrigation required is dependent on plant species. Some plants may not require irrigation after initial establishment.

INSPECTION PROCESS

1. Prepare the inspection form by writing in the necessary information including project name, location, date & time, unit number and other information (see inspection form).
2. Observe the inside of the system through the access covers. If minimal light is available and vision into the unit is impaired, utilize a flashlight to see inside the system and all of its chambers.
3. Look for any out of the ordinary obstructions in the inflow pipe, pre-treatment chamber, biofiltration chamber, discharge chamber or outflow pipe. Write down any observations on the inspection form.
4. Through observation and/or digital photographs, estimate the amount of trash, debris accumulated in the pre-treatment chamber. Utilizing a tape measure or measuring stick, estimate the amount of sediment in this chamber. Record this depth on the inspection form.
5. Through visual observation, inspect the condition of the pre-filter cartridges. Look for excessive build-up of sediment on the cartridges, any build-up on the tops of the cartridges, or clogging of the holes. Record this information on the inspection form. The prefilter cartridges can be further inspected by removing the cartridge tops and assessing the color of the BioMediaGREEN filter cubes (requires entry into pre-treatment chamber - see notes previous notes regarding confined space entry). Record the color of the material. New material is a light green color. As the media becomes clogged, it will turn darker in color, eventually becoming dark brown or black. The closer to black the media is the higher percentage that the media is exhausted and is in need of replacement.

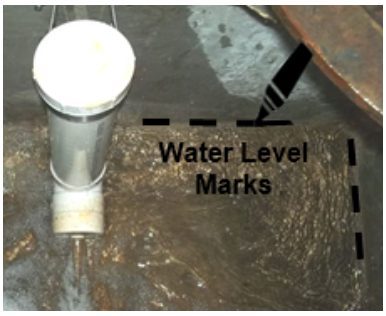


6. The biofiltration chamber is generally maintenance-free due to the system's advanced pre-treatment chamber. For units which have open planters with vegetation, it is recommended that the vegetation be inspected. Look for any plants that are dead or showing signs of disease or other negative stressors. Record the general health of the plants on the inspection form and indicate through visual observation or digital photographs if trimming of the vegetation is required.
7. The discharge chamber houses the orifice control structure, drain down filter (only in California - older models), and is connected to the outflow pipe. It is important to check to ensure the orifice is in proper operating conditions and free of any obstructions. It is also important to assess the condition of the drain down filter media which utilizes a block form of the BioMediaGREEN. Assess in the same manner as the cubes in the pre-filter cartridge as mentioned above. Generally, the discharge chamber will be clean and free of debris. Inspect the water marks on the side walls. If possible, inspect the discharge chamber during a rain event to assess the amount of flow leaving the system while it is at 100% capacity (pre-treatment chamber water level at peak HGL - top of bypass weir). The water level of the flowing water should be compared to the watermark level on the side walls, which is an indicator of the highest discharge rate the system achieved when initially installed. Record on the form if there is any difference in level from the watermark in inches.

NOTE: During the first few storms, the water level in the outflow chamber should be observed and a 6" long horizontal watermark line drawn (using a large permanent marker) at the water level in the discharge chamber while the system is operating at 100% capacity. The diagram below illustrates where the line should be drawn. This line is a reference point for future inspections of the system.

Water level in the discharge chamber is a function of flow rate and pipe size. Observation of the water level during the first few months of operation can be used as a benchmark level for future inspections. The initial mark and all future observations shall be made when the system is at 100% capacity (water level at maximum level in the pre-treatment chamber). If future water levels are below this mark when the system is at 100% capacity, this is an indicator that maintenance to the pre-filter cartridges may be needed.

8. Finalize the inspection report for analysis by the maintenance manager to determine if maintenance is required.





MAINTENANCE INDICATORS

Based upon the observations made during inspection, maintenance of the system may be required based on the following indicators:

- Missing or damaged internal components or cartridges
- Obstructions in the system or its inlet and/or outlet pipes
- Excessive accumulation of floatables in the pretreatment chamber in which the length and width of the chamber is fully impacted more than 18". See photo below.
- Excessive accumulation of sediment in the pretreatment chamber of more than 6" in depth.
- Excessive accumulation of sediment on the BioMediaGREEN media housed within the pretreatment cartridges. The following chart shows photos of the condition of the BioMediaGREEN contained within the pre-filter cartridges. When media is more than 85% clogged, replacement is required.
- Excessive accumulation of sediment on the BioMediaGREEN media housed within the pretreatment cartridges. When media is more than 85% clogged, replacement is required. The darker the BioMediaGREEN, the more clogged it is and in need of replacement.





INSPECTION PROCESS

- Excessive accumulation of sediment on the BioMediaGREEN media housed within the drain down filter (California only - older models). The following photos show the condition of the BioMediaGREEN contained within the drain down filter. When media is more than 85% clogged, replacement is required.





- Overgrown vegetation.



- Water level in the discharge chamber during 100% operating capacity (pretreatment chamber water level at max height) is lower than the water mark by 20%.

MAINTENANCE SUMMARY

The time has come to maintain your Modular Wetlands® Linear. All necessary pre-maintenance steps must be carried out before maintenance occurs. Once traffic control has been set up per local and state regulations and access covers have been safely opened, the maintenance process can begin. It should be noted that some maintenance activities require confined space entry. All confined space requirements must be strictly followed before entry into the system. In addition, the following is recommended:

- Prepare the maintenance form by writing in the necessary information including project name, location, date & time, unit number and other info (see maintenance form).
- Set up all appropriate safety and cleaning equipment.
- Ensure traffic control is set up and properly positioned.
- Prepared pre-checks (OSHA, safety, confined space entry) are performed.

The following is a list of equipment to required for maintenance of the Modular Wetlands® Linear:

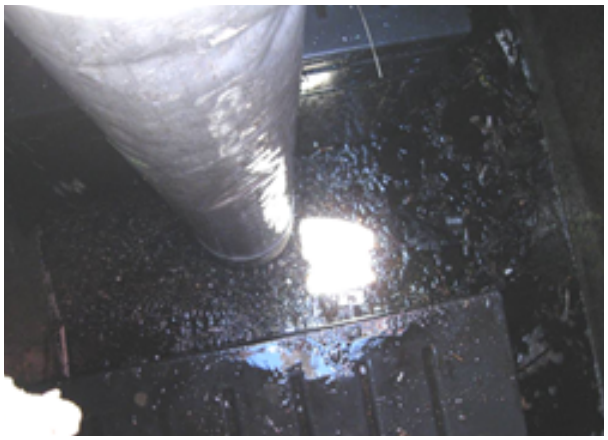
- Modular Wetlands Linear Maintenance Form
- Manhole hook or appropriate tools to access hatches and covers
- Protective clothing, flashlight, and eye protection
- 7/16" open or closed ended wrench
- Vacuum assisted truck with pressure washer
- Replacement BioMediaGREEN for pre-filter cartridges if required (order from one of Contech's Maintenance Team members at https://www.conteches.com/maintenance).

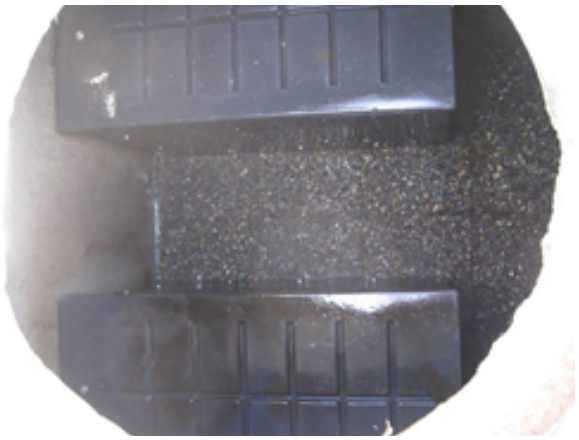
MAINTENANCE | PRETREATMENT CHAMBER

1. Remove access cover over pre-treatment chamber and position vacuum truck accordingly.
2. With a pressure washer, spray down pollutants accumulated on walls and pre-filter cartridges.
3. Vacuum out pre-treatment chamber and remove all accumulated pollutants including trash, debris, and sediments. Be sure to vacuum the floor until the pervious pavers are visible and clean.
4. If pre-filter cartridges require media replacement, continue to step 5. If not, replace access cover and move to step 11.





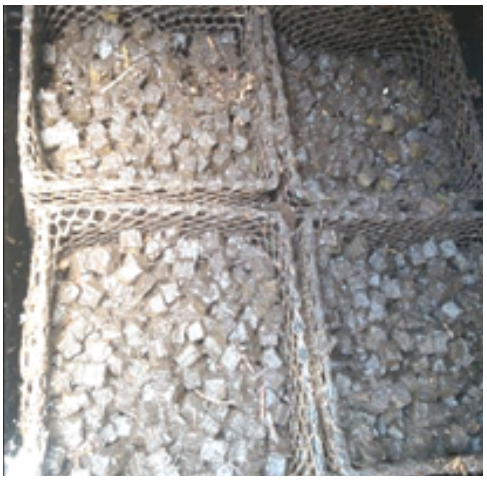




MAINTENANCE | PREFILTER CARTRIDGES

5. After successfully cleaning out the pre-treatment chamber (previous page) enter the pre-treatment chamber.
6. Unscrew the two bolts (circles shown below) holding the lid on each cartridge filter and remove lid.

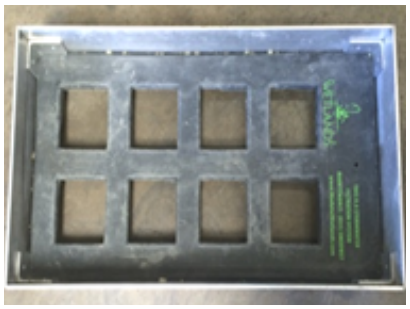


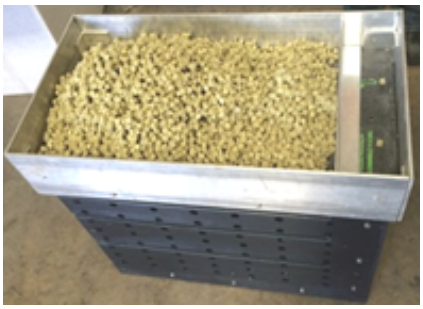


7. Place the vacuum hose over each individual media filter to suck out filter media.



8. Once filter media has been sucked out, use a pressure washer to spray down the inside of the cartridge and it's media cages. Remove cleaned media cages and place to the side. Once removed, the vacuum hose can be inserted into the cartridge to vacuum out any remaining material near the bottom of the cartridge.
9. Reinstall media cages and fill with new media from the manufacturer or outside supplier. Manufacturer will provide specification of media and sources to purchase. Utilize the manufacture-provided refilling tray and place on top of the cartridge. Fill the tray with new bulk media and shake down into place. Using your hands, lightly compact the media into each filter cage. Once the cages are full, remove the refilling tray and replace the cartridge top, ensuring bolts are properly tightened.







10. Exit the pre-treatment chamber. Replace access hatch or manhole cover.

MAINTENANCE | BIOFILTRATION CHAMBER

11. In general, the biofiltration chamber is maintenance-free with the exception of maintaining the vegetation. The Modular Wetlands Linear utilizes vegetation similar to surrounding landscape areas, therefore trim vegetation to match surrounding vegetation. If any plants have died, replace them with new ones.



12. Each vertical under drain on the biofiltration chamber has a removable (threaded cap) that can be taken off to check any blockages or root growth. Once removed, a jetting attachment can be used to clean out the under drain and orifice riser.
13. As with all biofilter systems, at some point the biofiltration media (WetlandMedia) will need to be replaced. Either because of physical clogging of sorptive exhaustion of the media ion exchange capacity (to remove dissolved metals and phosphorous). The general life of this media is 10 to 20 years based on site specific conditions and pollutant loading. Utilize the vacuum truck to vacuum out the media by placing the hose into the chamber. Once all the media is removed use the power washer to spray down all the netting on the outer metal cage. Inspect the netting for any damage or holes. If the netting is damaged it can be repaired or replaced with guidance by the manufacturer.
14. Contact one of Contech's Maintenance Team members at https://www.conteches.com/maintenance to order new WetlandMedia. The quantity of media needed can be determined by providing the model number and unit depth. Media will be provided in super sacks for easy installation. Each sack will weigh between 1000 and 2000 lbs. A lifting apparatus (backhoe, boom truck, or other) is recommended to position the super sack over the biofiltration chamber. Fill the media cages up to the same level as the old media. Replant with vegetation.





MAINTENANCE | DISCHARGE CHAMBER

15. Remove access hatch or manhole cover over discharge chamber.
16. Enter chamber to gain access to the drain down filter. Unlock the locking mechanism and lift up drain down filter housing to remove used BioMediaGREEN filter block as shown below. *NOTE: Drain down filter is only found on units installed in California prior to 2023. If no drain down filter is present, skip steps 16 and 17.*





17. Insert a new BioMediaGREEN filter block and lock drain down filter housing back in place.
18. Replace access hatch or manhole cover over discharge chamber.

NOTES

CONTECH® ENGINEERED SOLUTIONS

Inspection Report
Modular Wetlands Linear

Project Name _____

Project Address _____
(city) (Zip Code)

Owner / Management Company _____

Contact _____ Phone ( ) –

For Office Use Only
(Reviewed By)
(Date)
Office personnel to complete section to the left.

Inspector Name _____ Date ____/____/____ Time _____ AM / PM

Type of Inspection ☐ Routine ☐ Follow Up ☐ Complaint ☐ Storm Storm Event in Last 72-hours? ☐ No ☐ Yes

Weather Condition _____ Additional Notes _____

Inspection Checklist

Modular Wetland System Type (Curb, Grate or UG Vault): _____ Size (22', 14' or etc.): _____

Structural Integrity:	**Yes**	**No**	**Comments**
Damage to pre-treatment access cover (manhole cover/grate) or cannot be opened using normal lifting pressure?			
Damage to discharge chamber access cover (manhole cover/grate) or cannot be opened using normal lifting pressure?			
Does the MWS unit show signs of structural deterioration (cracks in the wall, damage to frame)?			
Is the inlet/outlet pipe or drain down pipe damaged or otherwise not functioning properly?			
Working Condition:			
Is there evidence of illicit discharge or excessive oil, grease, or other automobile fluids entering and clogging the unit?			
Is there standing water in inappropriate areas after a dry period?			
Is the filter insert (if applicable) at capacity and/or is there an accumulation of debris/trash on the shelf system?			
Does the depth of sediment/trash/debris suggest a blockage of the inflow pipe, bypass or cartridge filter? If yes, specify which one in the comments section. Note depth of accumulation in in pre-treatment chamber.			Depth:
Does the cartridge filter media need replacement in pre-treatment chamber and/or discharge chamber?			Chamber:
Any signs of improper functioning in the discharge chamber? Note issues in comments section.			
Other Inspection Items:			
Is there an accumulation of sediment/trash/debris in the wetland media (if applicable)?			
Is it evident that the plants are alive and healthy (if applicable)? Please note Plant Information below.			
Is there a septic or foul odor coming from inside the system?			

Waste:	**Yes**	**No**
Sediment / Silt / Clay		
Trash / Bags / Bottles		
Green Waste / Leaves / Foliage		

Recommended Maintenance	
No Cleaning Needed	
Schedule Maintenance as Planned	
Needs Immediate Maintenance	

Plant Information	
Damage to Plants	
Plant Replacement	
Plant Trimming	

Additional Notes: _____

CONTECH®
ENGINEERED SOLUTIONS

Cleaning and Maintenance Report
Modular Wetlands Linear

Project Name _____

Project Address _____
(city) (Zip Code)

Owner / Management Company _____

Contact _____ Phone ( ) –

For Office Use Only
(Reviewed By)
(Date)
Office personnel to complete section to the left.

Inspector Name _____ Date ____/____/____ Time _____AM / PM

Type of Inspection ☐ Routine ☐ Follow Up ☐ Complaint ☐ Storm Storm Event in Last 72-hours? ☐ No ☐ Yes

Weather Condition _____ Additional Notes _____

Site Map #	GPS Coordinates of Insert	Manufacturer / Description / Sizing	Trash Accumulation	Foliage Accumulation	Sediment Accumulation	Total Debris Accumulation	Condition of Media 25/50/75/100 (will be changed @ 75%)	Operational Per Manufactures' Specifications (If not, why?)
	Lat: Long:	MWS Catch Basins						
		MWS Sedimentation Basin						
		Media Filter Condition						
		Plant Condition						
		Drain Down Media Condition						
		Discharge Chamber Condition						
		Drain Down Pipe Condition						
		Inlet and Outlet Pipe Condition						

Comments:



CONTECH®
ENGINEERED SOLUTIONS

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800-338-1122

WWW.CONTECHES.COM

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SUPPORT

DRAWINGS AND SPECIFICATIONS ARE AVAILABLE AT WWW.CONTECHES.COM

Modular Wetlands Maintenance Guide 1/2023

StormTrap Maintenance Manual

1. Introduction

   Regular inspections are recommended to ensure that the system is functioning as designed. Please call your Authorized StormTrap Representative if you have questions in regards to the inspection and maintenance of the StormTrap system. Prior to entry into any underground storm sewer or underground detention systems, appropriate OSHA and local safety regulations and guidelines should be followed.

2. Inspection Schedules for Municipalities

   StormTrap Stormwater Management Systems are recommended for inspection whenever the upstream and downstream catch basins and stormwater pipes of the stormwater collection system are inspected or maintained. This will economize the cost of the inspection if it is done at the same time the Municipal crews are visiting the area.

3. Inspection Schedules for Private Development

   StormTrap Stormwater Management Systems, for a private development, are recommended for inspection after each major storm water event. At a minimum, until a cleaning schedule can be established, an annual inspection is recommended. If inspected on an annual basis, the inspection should be conducted before the stormwater season begins to be sure that everything is functioning properly for the upcoming storm season.

4. Inspection Process

   Inspections should be done such that at least 2-3 days has lapsed since the most recent rain event to allow for draining. Visually inspect the system at all manhole locations. Utilizing a sediment pole, measure and document the amount of silt at each manhole location. Inspect each pipe opening to ensure that the silt level or any foreign objects are not blocking the pipes. Be sure to inspect the outlet pipe(s) because this is typically the smallest pipe in the system. It is common that most of the larger materials will be collected upstream of the system in catch basins, and it is therefore important at time of inspections to check these structures for large trash or blockages.

   Remove any blockages if you can during the inspection process only if you can do so safely from the top of the system without entering into the system**. Do not go into the system under any circumstances** without proper ventilation equipment and training. Pass any information requiring action onto the appropriate maintenance personnel if you cannot remove the blockages from above during the inspection process. Be sure to describe the location of each manhole and the type of material that needs to be removed.

   The sediment level of the system should also be measured and recorded during the inspection process. Recording the sediment level at each manhole is very important in order get a history of sediment that can be graphed over time (i.e. years) in order to estimate when the system will

need to be maintained next. It is also important to keep these records to verify that the inspection process was actually performed if anyone asks for your records in the future.

The sediment level in the underground detention system can be determined from the outside of the system by opening up all the manholes and using a sediment pole to measure the amount of sediment at each location. Force the stick to the bottom of the system and then remove it and measure the amount of sediment at that location. Again, do not go into the system under any circumstances without proper ventilation equipment and training.

5. When to Clean the System

Any blockages should be safely removed as soon as practical so that the Stormwater detention system will fill and drain properly before the next stormwater event.

The Dry Detention System should be completely cleaned whenever the sediment occupies more than 10% to 15% of the originally designed system's volume. The Wet Detention System should be cleaned when the sediment occupies more than 30% or 1/3rd of the originally designed system's volume. NOTE: Check with your municipality in regards to cleaning criteria, as the allowable sediment before cleaning may be more or less then described above.

6. How to Clean the StormTrap

The system should be completely cleaned back to 100% of the originally designed storage volume whenever the above sediment levels have been reached. Be sure to wait at least 3 days after a stormwater event to be sure that the system is completely drained (if it is a Dry Detention System), and all of the sediments have settled to the bottom of the system (if it is a Wet Detention System).

Do not enter the System unless you are properly trained, equipped, and qualified to enter a confined space as identified by local occupational safety and health regulations.

There are many maintenance companies that are in business to help you clean your underground stormwater detention systems and water quality units. Please call your StormTrap representative for referrals in your area.

A. Dry Detention System Cleaning

Maintenance is typically performed using a vacuum truck. Sediment should be flushed towards a vacuum hose for thorough removal. For a Dry Detention System, remove the manhole cover at the top of the system and lower a vacuum hose into one of the rows of the StormTrap system. Open up the manhole at the opposite end of the StormTrap and use sewer jetting equipment to force water in the same row from one end of the StormTrap row to the opposite side. The rows of the StormTrap are completely open in one contiguous channel from one end to the other for easy cleaning.

Place the vacuum hose and the sewer jetting equipment in the next row and repeat the process until all of the rows have been cleaned.

When finished, replace all covers that were removed and dispose of the collected material properly.

B. Wet Detention System Cleaning

If the system was designed to maintain a permanent pool of water, floatables and any oil should be removed in a separate procedure prior to the removal of all sediment.

The floatable trash is removed first by using a bucket strainer to capture and remove any floating debris.

The floatable oils are then removed off the top of the water by using the vacuum truck to suck off any floatable fluids and liquids.

The next step is to use the vacuum truck to gently remove the clarified water above the sediment layer.

The final step is to clean the sediment for each row as described above in the paragraph "A. Dry Detention System Cleaning". For smaller systems, the vacuum truck can remove all of the sediment in the basin without using the sewer jetting equipment because of the smaller space.

8. Proof of these inspections is the responsibility of the property owner. All inspection reports and data should be kept on site or at a location where they will be accessible for years in the future. Some municipalities require these inspection and cleaning reports to be forwarded to the proper governmental permitting agency on an annual basis.

Refer to your local and national regulations for any additional maintenance requirements and schedules not contained herein. Inspections should be a part of your standard operating procedure.

SAMPLE INSPECTION AND MAINTENANCE LOG

Date	Depth of Sediment	Accumulated Trash	Maintenance Performed	Maintenance Personnel	Comments
	3”	None	Sediment Removal/Vac	B. Johnson	

RECORDING REQUESTED BY:

CITY OF MENIFEE

AND WHEN RECORDED MAIL TO:

CITY OF MENIFEE
CITY CLERK
29844 HAUN ROAD
MENIFEE, CA 92586-6540

SPACE ABOVE THIS LINE FOR RECORDER'S USE

WATER QUALITY MANAGEMENT PLAN AND STORMWATER BEST MANAGEMENT PRACTICES OPERATION, TRANSFER, MAINTENANCE AND RIGHT OF ENTRY AGREEMENT

PROJECT NAME: _____

PROPERTY OWNER NAME: _____

PROPERTY ADDRESS: _____

_____

APN: _____

THIS AGREEMENT is made and entered into in

_____, California, this_____day of

_____, 201___, by and between

_____, herein after

referred to as "Owner", and the CITY OF MENIFEE, a municipal corporation, located in the County of Riverside, State of California hereinafter referred to as "CITY";

WHEREAS, the City is a Co-Permittee for discharging stormwater from its MS4 facilities pursuant to the Santa Ana Regional Water Quality Control Board Order No. R8-2010-0033, MS4 NPDES Permit No. CAS 618033. Under the terms of the permit the City is required to enforce the provisions of the permit within its jurisdiction. The requirements contained in this agreement are intended to achieve the goals of the MS4 permit;

WHEREAS, the Owner owns real property ("Property) in the City of Menifee, County of Riverside, State of California, more specifically described in Exhibit "A" and depicted in Exhibit "B", each of which exhibits is attached hereto and incorporated herein by this reference;

WHEREAS, at the time of initial approval of development project known as:

_____ within the Property described herein, the City required the project to employ Best Management Practices, hereinafter referred to as "BMPs," to minimize pollutants in urban runoff;

WHEREAS, the Owner has chosen to install and/or implement BMPs as described in the Water Quality Management Plan, on file with the City, hereinafter referred to as "WQMP," to minimize pollutants in urban runoff and to minimize other adverse impacts of urban runoff;

WHEREAS, said WQMP has been certified by the Owner and reviewed and accepted by the City;

WHEREAS, said BMPs, with installation and/or implementation on private property and draining only private property, are part of a private facility with all maintenance or replacement, therefore, the sole responsibility of the Owner in accordance with the terms of this Agreement;

WHEREAS, the Owner is aware that periodic and continuous maintenance, including, but not necessarily limited to, filter material replacement and sediment removal, is required to assure peak performance of all BMPs in the WQMP and that, furthermore, such maintenance activity will require compliance with all Local, State, or Federal laws and regulations, including those pertaining to confined space and waste disposal methods, in effect at the time such maintenance occurs;

NOW THEREFORE, it is mutually stipulated and agreed as follows:

1. Right of Access: Owner hereby provides the City of Menifee designee complete access, of any duration, to the BMPs and their immediate vicinity at any time, upon reasonable notice, or in the event of emergency, as determined by the City's Engineer, no advance notice, for the purpose of inspection, sampling, testing of the Device, and in case of emergency to direct all necessary repairs or other preventative measures at owner's expense in accordance with the procedures set forth in paragraph 3 below. City shall make every effort at all times to minimize or avoid interference with Owner's use of the Property.

2. Responsibility for Operation and Maintenance of BMPs: Owner shall use its best efforts diligently to maintain all BMPs in a manner assuring peak performance at all times. All reasonable precautions shall be exercised by Owner and Owner's representative or contractor in the removal and extraction of any material(s) from the BMPs and the ultimate disposal of the material(s) in a manner consistent with all relevant laws and regulations in effect at the time. As may be requested from time to time by the City, the Owner shall provide the City with documentation identifying the material(s) removed, the quantity, and disposal destination.

3. City Maintenance at Owner's Expense: In the event Owner, or its successors or assigns, fails to accomplish the necessary maintenance contemplated by this

Agreement, the City may cause such maintenance to be conducted on Owner's Property at Owner's expense if Owner does not commence and diligently work to perform the maintenance within five (5) days of receiving written notice from the City, in accordance with paragraph 10 below, of Owner's failure to comply with the terms of this Agreement. The City may charge the entire cost and expense of any maintenance undertaken by the City, whether performed as a response to an emergency situation or following five (5) day written notice by the City, to the Owner or Owner's successors or assigns, including administrative costs, attorney's fees and interest thereon at the maximum rate authorized by the Civil Code from the Date of the notice of expense until paid in full. The City, at its sole election, may take these costs to be a lien upon the property that may be collected at the same time and in the same manner as ordinary municipal taxes as provided in Government Code section 38773.5. Nothing in this section or this Agreement creates an obligation by the City to maintain or repair any BMP, nor does this section prohibit the City from pursuing other legal recourse against Owner.

4. Surety Bond: The City may require the owner to post security in form and for a time period satisfactory to the City to guarantee the performance of the obligations stated herein. Should the Owner fail to perform the obligations under the Agreement, the City may, in the case of a cash bond, act for the Owner using the proceeds from it, or in the case of a surety bond, require the sureties to perform the obligations of the Agreement. As an additional remedy, the City's Engineer may withdraw any previous stormwater-related approval with respect to the property on which BMPs have been installed and/or implemented until such time as Owner repays to City its reasonable costs incurred in accordance with paragraph 3 above.

5. Recording: This agreement shall be recorded in the Office of the Recorder of Riverside County, California, at the expense of the Owner and shall constitute notice to all successors and assigns of the title to said Property of the obligation herein set forth, and also a lien in such amount as will fully reimburse the City, including interest as herein above set forth, subject to foreclosure in event of default in payment.

6. Attorney's Fees: In event of legal action occasioned by any default or action of the Owner, or its successors or assigns, then the Owner and its successors or assigns agree(s) to pay all costs incurred by the City in enforcing the terms of this Agreement, including reasonable attorney's fees and costs, and that the same shall become a part of the lien against said Property.

7. Covenant: It is the intent of the parties hereto that burdens and benefits herein undertaken shall constitute covenants that run with said Property and constitute a lien there against.

8. Binding on Successors: The obligations herein undertaken shall be binding upon the heirs, successors, executors, administrators and assigns of the parties hereto. The term "Owner" shall include not only the present Owner, but also its heirs, successors, executors, administrators, and assigns. Owner shall notify any successor to title of all or part of the Property about the existence of this Agreement. Owner shall provide such notice prior to such successor obtaining an interest in all or part of the Property. Owner shall provide a copy of such notice to the City at the same time such notice is provided to the successor.

9. Time of the Essence: Time is of the essence in the performance of this Agreement.

10. Notice: Any notice to a party required or called for in this Agreement shall be served in person, or by deposit in the U.S. Mail, first class postage prepaid, to the address set forth below. Notice(s) shall be deemed effective upon receipt, or seventy-two (72) hours after deposit in the U.S. Mail, whichever is earlier. A party may change a notice address only by providing written notice thereof to the other party.

IN WITNESS THEREOF, the parties hereto have affixed their signatures as of the date first written above.

IF TO CITY:

City of Menifee

29844 Haun Road

Menifee, CA 92586-6540

IF TO OWNER:

_____

_____

_____

_____

CITY:

By:_____
Armando G. Villa,
City Manager

APPROVED AS TO FORM:

_____
Jeffery T. Melching, City Attorney

ATTEST:

_____
Sarah A. Manwaring, City Clerk

OWNER:

By:_____
NAME

Title:_____

OWNER:

By:_____

NAME

Title:_____

NOTARY ACKNOWLEDGEMENTS ON FOLLOWING PAGE

EXHIBIT A
(Legal Description)

EXHIBIT B
(Map/Illustration)

Appendix 10: Educational Materials

BMP Fact Sheets, Maintenance Guidelines and Other End-User BMP Information

3.5 Bioretention Facility

Type of BMP	LID – Bioretention
Treatment Mechanisms	Infiltration, Evapotranspiration, Evaporation, Biofiltration
Maximum Drainage Area	This BMP is intended to be integrated into a project's landscaped area in a distributed manner. Typically, contributing drainage areas to Bioretention Facilities range from less than 1 acre to a maximum of around 10 acres.
Other Names	Rain Garden, Bioretention Cell, Bioretention Basin, Biofiltration Basin, Landscaped Filter Basin, Porous Landscape Detention

Description

Bioretention Facilities are shallow, vegetated basins underlain by an engineered soil media. Healthy plant and biological activity in the root zone maintain and renew the macro-pore space in the soil and maximize plant uptake of pollutants and runoff. This keeps the Best Management Practice (BMP) from becoming clogged and allows more of the soil column to function as both a sponge (retaining water) and a highly effective and self-maintaining biofilter. In most cases, the bottom of a Bioretention Facility is unlined, which also provides an opportunity for infiltration to the extent the underlying onsite soil can accommodate. When the infiltration rate of the underlying soil is exceeded, fully biotreated flows are discharged via underdrains. Bioretention Facilities therefore will inherently achieve the maximum feasible level of infiltration and evapotranspiration and achieve the minimum feasible (but highly biotreated) discharge to the storm drain system.

Siting Considerations

These facilities work best when they are designed in a relatively level area. Unlike other BMPs, Bioretention Facilities can be used in smaller landscaped spaces on the site, such as:

- ✓ Parking islands
- ✓ Medians
- ✓ Site entrances

Landscaped areas on the site (such as may otherwise be required through minimum landscaping ordinances), can often be designed as Bioretention Facilities. This can be accomplished by:

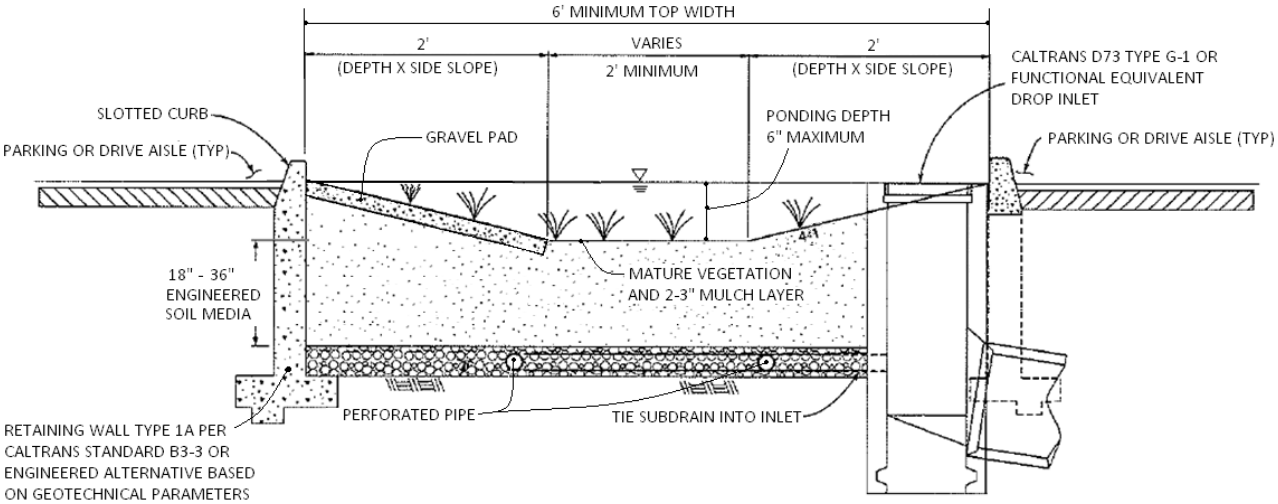
- *Depressing* landscaped areas below adjacent impervious surfaces, rather than elevating those areas
- Grading the site to direct runoff from those impervious surfaces *into* the Bioretention Facility, rather than away from the landscaping
- Sizing and designing the depressed landscaped area as a Bioretention Facility as described in this Fact Sheet

Bioretention Facilities should however not be used downstream of areas where large amounts of sediment can clog the system. Placing a Bioretention Facility at the toe of a steep slope should also be avoided due to the potential for clogging the engineered soil media with erosion from the slope, as well as the potential for damaging the vegetation.

Design and Sizing Criteria

The recommended cross section necessary for a Bioretention Facility includes:

- Vegetated area
- 18' minimum depth of engineered soil media
- 12' minimum gravel layer depth with 6' perforated pipes (added flow control features such as orifice plates may be required to mitigate for HCOC conditions)



While the 18-inch minimum engineered soil media depth can be used in some cases, it is recommended to use 24 inches or a preferred 36 inches to provide an adequate root zone for the chosen plant palate. Such a design also provides for improved removal effectiveness for nutrients. The recommended ponding depth inside of a Bioretention Facility is 6 inches; measured from the flat bottom surface to the top of the water surface as shown in Figure 1.

Because this BMP is filled with an engineered soil media, pore space in the soil and gravel layer is assumed to provide storage volume. However, several considerations must be noted:

- Surcharge storage above the soil surface (6 inches) is important to assure that design flows do not bypass the BMP when runoff exceeds the soil's absorption rate.
- In cases where the Bioretention Facility contains engineered soil media deeper than 36 inches, the pore space within the engineered soil media can only be counted to the 36-inch depth.
- A maximum of 30 percent pore space can be used for the soil media whereas a maximum of 40 percent pore space can be use for the gravel layer.

Figure 1: Standard Layout for a Bioretention Facility

Engineered Soil Media Requirements

The engineered soil media shall be comprised of 85 percent mineral component and 15 percent organic component, by volume, drum mixed prior to placement. The mineral component shall be a Class A sandy loam topsoil that meets the range specified in Table 1 below. The organic component shall be nitrogen stabilized compost[1], such that nitrogen does not leach from the media.

Table 1: Mineral Component Range Requirements

Percent Range	Component
70-80	Sand
15-20	Silt
5-10	Clay

The trip ticket, or certificate of compliance, shall be made available to the inspector to prove the engineered mix meets this specification.

Vegetation Requirements

Vegetative cover is important to minimize erosion and ensure that treatment occurs in the Bioretention Facility. The area should be designed for at least 70 percent mature coverage throughout the Bioretention Facility. To prevent the BMP from being used as walkways, Bioretention Facilities shall be planted with a combination of small trees, densely planted shrubs, and natural grasses. Grasses shall be native or ornamental; preferably ones that do not need to be mowed. The application of fertilizers and pesticides should be minimal. To maintain oxygen levels for the vegetation and promote biodegradation, it is important that vegetation not be completely submerged for any extended period of time. Therefore, a maximum of 6 inches of ponded water shall be used in the design to ensure that plants within the Bioretention Facility remain healthy.

A 2 to 3-inch layer of standard shredded aged hardwood mulch shall be placed as the top layer inside the Bioretention Facility. The 6-inch ponding depth shown in Figure 1 above shall be measured from the top surface of the 2 to 3-inch mulch layer.

Curb Cuts

To allow water to flow into the Bioretention Facility, 1-foot-wide (minimum) curb cuts should be placed approximately every 10 feet around the perimeter of the Bioretention Facility. Figure 2 shows a curb cut in a Bioretention Facility. Curb cut flow lines must be at or above the V_{BMP} water surface level.

[1] For more information on compost, visit the US Composting Council website at: http://compostingcouncil.org/



Figure 2: Curb Cut located in a Bioretention Facility

To reduce erosion, a gravel pad shall be placed at each inlet point to the Bioretention Facility. The gravel should be 1- to 1.5-inch diameter in size. The gravel should overlap the curb cut opening a minimum of 6 inches. The gravel pad inside the Bioretention Facility should be flush with the finished surface at the curb cut and extend to the bottom of the slope.

In addition, place an apron of stone or concrete, a foot square or larger, inside each inlet to prevent vegetation from growing up and blocking the inlet. See Figure 3.

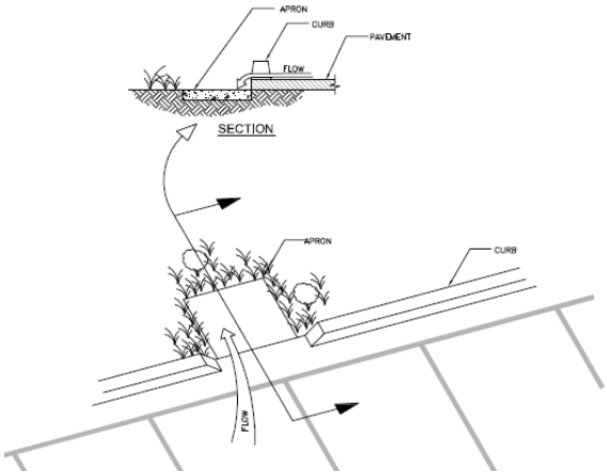


Figure 3: Apron located in a Bioretention Facility

Terracing the Landscaped Filter Basin

It is recommended that Bioretention Facilities be level. In the event the facility site slopes and lacks proper design, water would fill the lowest point of the BMP and then discharge from the basin without being treated. To ensure that the water will be held within the Bioretention Facility on sloped sites, the BMP must be terraced with nonporous check dams to provide the required storage and treatment capacity.

The terraced version of this BMP shall be used on non-flat sites with no more than a 3 percent slope. The surcharge depth cannot exceed 0.5 feet, and side slopes shall not exceed 4:1. Table 2 below shows the spacing of the check dams, and slopes shall be rounded up (i.e., 2.5 percent slope shall use 10' spacing for check dams).

Table 2: Check Dam Spacing

6" Check Dam Spacing	
Slope	**Spacing**
1%	*25'*
2%	*15'*
3%	*10'*

Roof Runoff

Roof downspouts may be directed towards Bioretention Facilities. However, the downspouts must discharge onto a concrete splash block to protect the Bioretention Facility from erosion.

Retaining Walls

It is recommended that Retaining Wall Type 1A, per Caltrans Standard B3-3 or equivalent, be constructed around the entire perimeter of the Bioretention Facility. This practice will protect the sides of the Bioretention Facility from collapsing during construction and maintenance or from high service loads adjacent to the BMP. Where such service loads would not exist adjacent to the BMP, an engineered alternative may be used if signed by a licensed civil engineer.

Side Slope Requirements

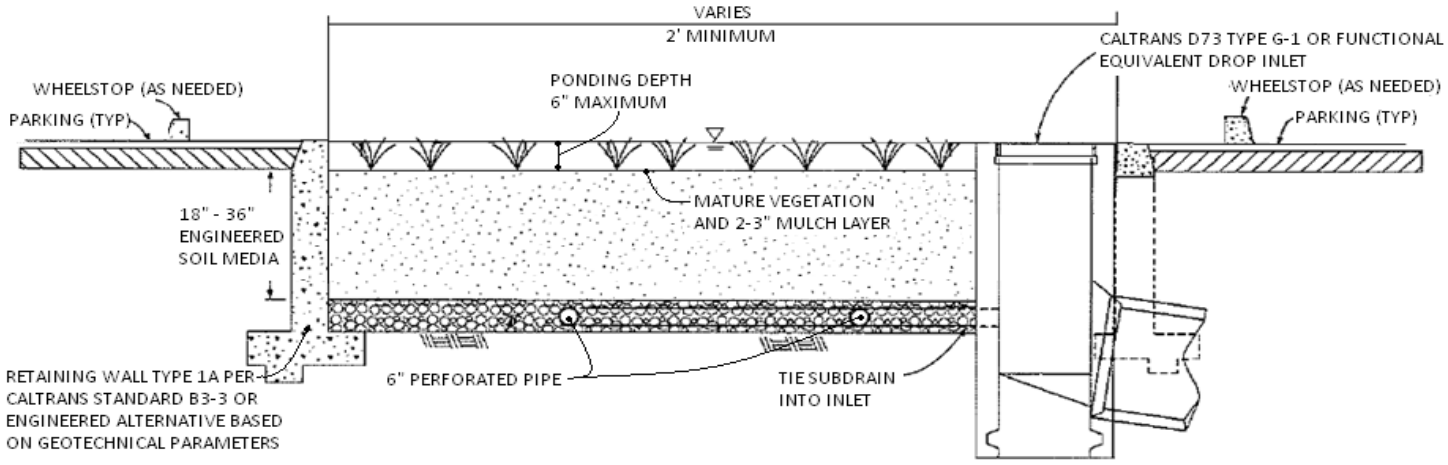
Bioretention Facilities Requiring Side Slopes

The design should assure that the Bioretention Facility does not present a tripping hazard. Bioretention Facilities proposed near pedestrian areas, such as areas parallel to parking spaces or along a walkway, must have a gentle slope to the bottom of the facility. Side slopes inside of a Bioretention Facility shall be 4:1. A typical cross section for the Bioretention Facility is shown in Figure 1.

Bioretention Facilities Not Requiring Side Slopes

Where cars park perpendicular to the Bioretention Facility, side slopes are not required. A 6-inch maximum drop may be used, and the Bioretention Facility must be planted with trees and shrubs to prevent pedestrian access. In this case, a curb is not placed around the Bioretention Facility,

but wheel stops shall be used to prevent vehicles from entering the Bioretention Facility, as shown in Figure 4.



Planter Boxes

Bioretention Facilities can also be placed above ground as planter boxes. Planter boxes must have a minimum width of 2 feet, a maximum surcharge depth of 6 inches, and no side slopes are necessary. Planter boxes must be constructed so as to ensure that the top surface of the engineered soil media will remain level. This option may be constructed of concrete, brick, stone or other stable materials that will not warp or bend. Chemically treated wood or galvanized steel, which has the ability to contaminate stormwater, should not be used. Planter boxes must be lined with an impermeable liner on all sides, including the bottom. Due to the impermeable liner, the inside bottom of the planter box shall be designed and constructed with a cross fall, directing treated flows within the subdrain layer toward the point where subdrain exits the planter box, and subdrains shall be oriented with drain holes oriented down. These provisions will help avoid excessive stagnant water within the gravel underdrain layer. Similar to the in-ground Bioretention Facility versions, this BMP benefits from healthy plants and biological activity in the root zone. Planter boxes should be planted with appropriately selected vegetation.



Figure 5: Planter Box
Source: LA Team Effort

Overflow

An overflow route is needed in the Bioretention Facility design to bypass stored runoff from storm events larger than V_{BMP} or in the event of facility or subdrain clogging. Overflow systems must connect to an acceptable discharge point, such as a downstream conveyance system as shown in Figure 1 and Figure 4. The inlet to the overflow structure shall be elevated inside the Bioretention Facility to be flush with the ponding surface for the design capture volume (V_{BMP}) as shown in Figure 4. This will allow the design capture volume to be fully treated by the Bioretention Facility, and for larger events to safely be conveyed to downstream systems. The overflow inlet shall **not** be located in the entrance of a Bioretention Facility, as shown in Figure 6.

Underdrain Gravel and Pipes

An underdrain gravel layer and pipes shall be provided in accordance with Appendix B – Underdrains.



Figure 6: Incorrect Placement of an Overflow Inlet.

Inspection and Maintenance Schedule

The Bioretention Facility area shall be inspected for erosion, dead vegetation, soggy soils, or standing water. The use of fertilizers and pesticides on the plants inside the Bioretention Facility should be minimized.

Schedule	Activity
Ongoing	• Keep adjacent landscape areas maintained. Remove clippings from landscape maintenance activities. • Remove trash and debris • Replace damaged grass and/or plants • Replace surface mulch layer as needed to maintain a 2-3 inch soil cover.
After storm events	• Inspect areas for ponding
Annually	• Inspect/clean inlets and outlets

Bioretention Facility Design Procedure

1) Enter the area tributary, A_T, to the Bioretention Facility.

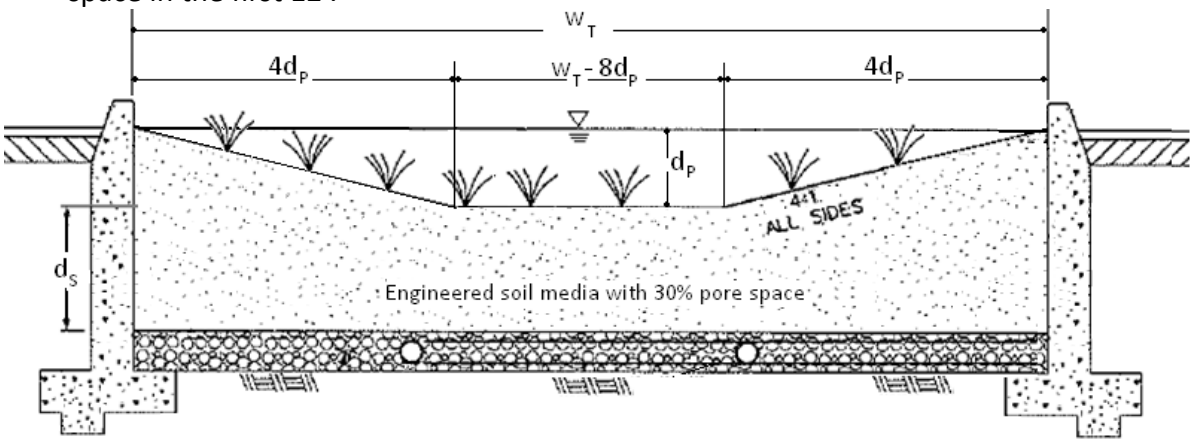
2) Enter the Design Volume, $V_{BMP,}$ determined from Section 2.1 of this Handbook.

3) Select the type of design used. There are two types of Bioretention Facility designs: the standard design used for most project sites that include side slopes, and the modified design used when the BMP is located perpendicular to the parking spaces or with planter boxes that do not use side slopes.

4) Enter the depth of the engineered soil media, d_S. The minimum depth for the engineered soil media can be 18' in limited cases, but it is recommended to use 24' or a preferred 36' to provide an adequate root zone for the chosen plant palette. Engineered soil media deeper than 36' will only get credit for the pore space in the first 36'.

5) Enter the top width of the Bioretention Facility.

6) Calculate the total effective depth, d_E, within the Bioretention Facility. The maximum allowable pore space of the soil media is 30% while the maximum allowable pore space for the gravel layer is 40%. Gravel layer deeper than 12' will only get credit for the pore space in the first 12'.



a. For the design with side slopes the following equation shall be used to determine the total effective depth. Where, d_P is the depth of ponding within the basin.

$$d_E(\text{ft}) = \frac{0.3 \times \left[\left(w_T(\text{ft}) \times d_S(\text{ft})\right) + 4\left(d_P(\text{ft})\right)^2\right] + 0.4 \times 1(\text{ft}) + d_P(\text{ft})\left[4d_P(\text{ft}) + \left(w_T(\text{ft}) - 8d_P(\text{ft})\right)\right]}{w_T(\text{ft})}$$

This above equation can be simplified if the maximum ponding depth of 0.5' is used. The equation below is used on the worksheet to find the minimum area required for the Bioretention Facility:

$$d_E(\text{ft}) = (0.3 \times d_S(\text{ft}) + 0.4 \text{ x } 1(\text{ft})) - \left(\frac{0.7\ (\text{ft}^2)}{w_T(\text{ft})}\right) + 0.5(\text{ft})$$

b. For the design without side slopes the following equation shall be used to determine the total effective depth:

$$d_E(\text{ft}) = d_P(\text{ft}) + [(0.3) \times d_S(\text{ft}) + (0.4) \times 1(\text{ft})]$$

The equation below, using the maximum ponding depth of 0.5', is used on the worksheet to find the minimum area required for the Bioretention Facility:

$$d_E(\text{ft}) = 0.5\ (\text{ft}) + [(0.3) \times d_S(\text{ft}) + (0.4) \times 1(\text{ft})]$$

7) Calculate the minimum surface area, A_M, required for the Bioretention Facility. This does not include the curb surrounding the Bioretention Facility or side slopes.

$$A_M(\text{ft}^2) = \frac{V_{BMP}(\text{ft}^3)}{d_E\ (\text{ft})}$$

8) Enter the proposed surface area. This area shall not be less than the minimum required surface area.

9) Verify that side slopes are no steeper than 4:1 in the standard design, and are not required in the modified design.

10) Provide the diameter, minimum 6 inches, of the perforated underdrain used in the Bioretention Facility. See Appendix B for specific information regarding perforated pipes.

11) Provide the slope of the site around the Bioretention Facility, if used. The maximum slope is 3 percent for a standard design.

12) Provide the check dam spacing, if the site around the Bioretention Facility is sloped.

13) Describe the vegetation used within the Bioretention Facility.

References Used to Develop this Fact Sheet

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Urbonas, Ben R. Stormwater Sand Filter Sizing and Design: A Unit Operations Approach. Denver: Urban Drainage and Flood Control District, 2002.

StormTrap Guide Specification

StormTrap 2
DoubleTrap on Stone
Groundwater BELOW Invert
Revised 11/21/18

This product guide specification is written according to the Construction Specifications Institute (CSI) 3-Part Format, including *MasterFormat, SectionFormat,* and *PageFormat,* contained in the CSI *Manual of Practice.*

The section must be carefully reviewed and edited by the Engineer to meet the requirements of the project and local building code. Coordinate this section with other specification sections and the Drawings. Delete all "Specifier Notes" when editing this section.

Section numbers are from *MasterFormat 2016 Edition*. Update section numbers to versions if required.

Specifier Notes: This section covers "StormTrap®" precast concrete, modular, storm water detention. StormTrap is custom designed to meet the specific requirements of the project.

Consult StormTrap for assistance in editing this section for the specific application.

SECTION 33 46 23 – MODULAR BURIED STORMWATER STORAGE UNITS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. StormTrap Precast concrete, modular stormwater detention.

1.02 RELATED SECTIONS

A. Section 31 00 00 – Earthwork

B. Section 03 40 00 – Precast Concrete

1.03 REFERENCE STANDARDS

A. AASHTO – Standard Specifications for Highway Bridges – Seventh (7th) Edition

B. ACI 318 - Building Code Requirements for Structural Concrete.

C. ASTM A 615/A 615M - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.

D. ASTM C 857 - Standard Practice for Minimum Structural Design Loading for Underground Precast Concrete Utility Structures.

E. ASTM C 858 - Standard Specification for Underground Precast Concrete Utility Structures.

F. ASTM C 891 - Standard Practice for Installation of Underground Precast Concrete Utility Structures.

G. ASTM C 990 - Standard Specification for Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants.

H. ASTM A 1064 – Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete.

1.04 DESIGN REQUIREMENTS

A. Precast Concrete Modular Stormwater Detention shall comply with ASTM C858.

B. Underground precast concrete stormwater management system shall be sized in accordance with the design requirements provided by the Engineer of Record (EOR) and approved by the reviewing agency.

C. The system shall be designed so modules are aligned and have channels that extend to the bottom of the modules allowing for relatively unrestricted fluid flow in both directions.

D. Minimum Structural Design Loading: ASTM C 857.

1. Total Cover:

a. Minimum: As indicated on the drawings.

b. Maximum: As indicated on the drawings.

2. Concrete chamber shall be designed for AASHTO HS-20 wheel load.

3. Minimum Soil Pressure:

    a. DoubleTrap Modules: As indicated on the drawings.

4. Vertical and lateral soil pressures shall be determined using:

    a. Groundwater: At or below invert of system.

    b. Lateral soil pressures to be based on Active earth pressure

        1) Lateral soil pressure = 35 pcf for 120 pcf backfill unit weight

    c. Vertical soil pressures

        1) Live load = HS-20-44 and Dead load = 120 pcf cover fill unit weight

    d. Engineer to verify geotechnical requirements

1.05 QUALITY ASSURANCE

A. The manufacture of the concrete modules shall be performed at a precast production facility certified by the NPCA or PCI.

1.06 SUBMITTALS

A. Comply with Section 01 33 00 - Submittal Procedures, except shop drawings shall be eleven inches (11”) by seventeen inches (17”).

B. Product Data: Submit manufacturer’s product data and installation instructions.

C. Record Documents:

1. Shop Drawings:

    a. Submit manufacturer’s shop drawings, including plans, elevations, sections, and details indicating layout, dimensions, foundation, cover, and joints.

    b. Indicate size and location of roof openings and inlet and outlet pipe openings.

    c. Indicate sealing of joints.

D. Operation and Maintenance Data: Submit manufacturer’s operation and maintenance instructions

1.07 DELIVERY, STORAGE AND HANDLING

A. Delivery of Accessories: Deliver to site in manufacturer’s original, unopened containers and packaging, with labels clearly identifying product name and manufacturer.

B. Storage of Accessories:

1. Store in accordance with manufacturer’s instructions.

2. Store in clean, dry area, out of direct sunlight.

C. Handling: Protect materials during handling and installation to prevent damage.

1.08 WARRANTY

A. The Manufacturer shall provide a minimum five (5) year limited warranty.

PART 2 - PRODUCTS

2.01 MANUFACTURER

A. StormTrap, LLC, 1287 Windham Parkway, Romeoville, Illinois 60446. Phone (877) 867-6872. Fax (331) 318-5347. Website www.stormtrap.com.

2.02 STORMWATER DETENTION

A. All material shall meet or exceed all applicable referenced standards, federal, state and local requirements, and conform to codes and ordinances of authorities having jurisdiction.

B. Stormwater Detention Modules:

1. Description: Engineered, precast concrete, modular stormwater detention.

2. Module Type: StormTrap DoubleTrap

3. Size: As indicated on the drawings.

4. Concrete: Manufacturer's Approved Mix design providing a minimum compressive strength of 6,000 psi at 28 days.

5. Reinforcing Bars: ASTM A 615, Grade 60.

6. Reinforcing Mesh: ASTM A 1064, Grade 80.

7. Cover for Reinforcing Bars: ACI 318

2.03 ACCESSORIES

A. Joint Tape:

1. ASTM C 990.

2. Seven eights inch (7/8") diameter, preformed butyl mastic joint sealer.

3. Approved by manufacturer.

B. Joint Wrap:

1. Eight inch (8") wide self-adhesive elastomeric resin bonded woven puncture resistant polymer wrap.

2. Approved by manufacturer.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine area to receive stormwater detention modules. Notify Engineer if area is not acceptable. Do not begin installation until unacceptable conditions have been corrected.

B. Verify in field before installation, dimensions and soils conditions, including groundwater and soil bearing capacity.

3.02 INSTALLATION

A. Install stormwater detention modules in accordance with manufacturer's instructions and ASTM C 891.

B. Install modules plumb, on line, and to proper elevation.

C. Install modules with a maximum space of three quarters inch (3/4") between adjacent modules. If the space exceeds three quarters inch (3/4"), the modules shall be reset with appropriate adjustment made to line and grade to bring the space into compliance.

D. DoubleTrap:

1. Place modules on level, six-inch (6") pad of three quarters inch (3/4") stone that extends two feet (2'-0") past the outside of the system as indication on the drawings.

E. Joint Tape:

1. Seal perimeter horizontal joint between modules with joint tape in accordance with ASTM C 891, 8.8 and 8.12.

2. Prepare surfaces and install joint tape in accordance with manufacturer's instructions.

F. Joint Wrap:

1. Seal exterior joints between adjacent modules with joint wrap in accordance with ASTM C 891.

2. Prepare surfaces and install joint wrap in accordance with manufacturer's instructions.

G. Field Modifications to the modules is strictly prohibited without prior written consent of StormTrap.

H. Excavation and fill shall be as specified in Sections 31 00 00.

I. Fill:

1. Backfill material shall consist of a GW, GP, SW, or SP material as defined by the Unified Soil Classification System and that meets the gradation requirements as indicated on the drawings.

2. Native materials shall be separated from backfill materials with a geotextile filter fabric unless the drawings indicate separation is not required.

3. Deposit fill on both sides of modules at same time and to approximate same elevation.

4. Prevent wedging action against structure by stepping or serrating slopes bounding or within area to be backfilled.

5. Do not disrupt or damage joint wrap during backfilling.

J. Do not use stormwater detention modules that are damaged, as determined by manufacturer.

K. Contractor is responsible for installation in accordance with project plans, specifications, and all federal, state, and local regulations.

END OF SECTION 33 46 23

After the Storm



A Citizen's Guide to Understanding Stormwater

For more information contact:

or visit
www.epa.gov/npdes/stormwater
www.epa.gov/nps

EPA United States Environmental Protection Agency

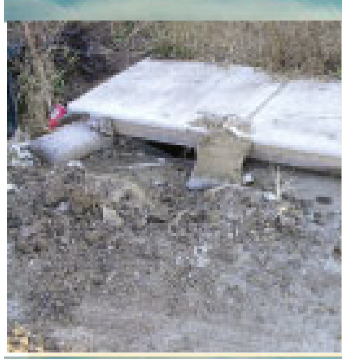
EPA 833-B-03-002

January 2003

THE YEAR OF CLEAN WATER
Celebration & Recommitment

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What is stormwater runoff?



Stormwater runoff occurs when precipitation from rain or snowmelt flows over the ground. Impervious surfaces like driveways, sidewalks, and streets prevent stormwater from naturally soaking into the ground.

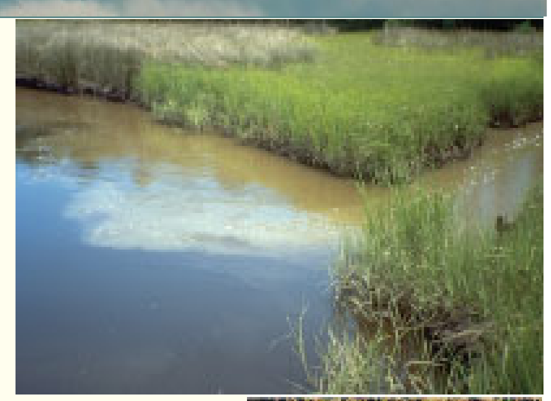
Why is stormwater runoff a problem?



Stormwater can pick up debris, chemicals, dirt, and other pollutants and flow into a storm sewer system or directly to a lake, stream, river, wetland, or coastal water. Anything that enters a storm sewer system is discharged untreated into the waterbodies we use for swimming, fishing, and providing drinking water.

The effects of pollution

Polluted stormwater runoff can have many adverse effects on plants, fish, animals, and people.



- ♦ Sediment can cloud the water and make it difficult or impossible for aquatic plants to grow. Sediment also can destroy aquatic habitats.
- ♦ Excess nutrients can cause algae blooms. When algae die, they sink to the bottom and decompose in a process that removes oxygen from the water. Fish and other aquatic organisms can't exist in water with low dissolved oxygen levels.
- ♦ Bacteria and other pathogens can wash into swimming areas and create health hazards, often making beach closures necessary.



- ♦ Debris—plastic bags, six-pack rings, bottles, and cigarette butts—washed into waterbodies can choke, suffocate, or disable aquatic life like ducks, fish, turtles, and birds.
- ♦ Household hazardous wastes like insecticides, pesticides, paint, solvents, used motor oil, and other auto fluids can poison aquatic life. Land animals and people can become sick or die from eating diseased fish and shellfish or ingesting polluted water.
- ♦ Polluted stormwater often affects drinking water sources. This, in turn, can affect human health and increase drinking water treatment costs.



Stormwater Pollution Solutions



Residential

Recycle or properly dispose of household products that contain chemicals, such as insecticides, pesticides, paint, solvents, and used motor oil and other auto fluids. Don't pour them onto the ground or into storm drains.

Lawn care



Excess fertilizers and pesticides applied to lawns and gardens wash off and pollute streams. In addition, yard clippings and leaves can wash into storm drains and contribute nutrients and organic matter to streams.

- Don't overwater your lawn. Consider using a soaker hose instead of a sprinkler.
- Use pesticides and fertilizers sparingly. When use is necessary, use these chemicals in the recommended amounts. Use organic mulch or safer pest control methods whenever possible.
- Compost or mulch yard waste. Don't leave it in the street or sweep it into storm drains or streams.
- Cover piles of dirt or mulch being used in landscaping projects.

Septic systems



Leaking and poorly maintained septic systems release nutrients and pathogens (bacteria and viruses) that can be picked up by stormwater and discharged into nearby waterbodies. Pathogens can cause public health problems and environmental concerns.

- Inspect your system every 3 years and pump your tank as necessary (every 3 to 5 years).
- Don't dispose of household hazardous waste in sinks or toilets.

Auto care



Washing your car and degreasing auto parts at home can send detergents and other contaminants through the storm sewer system. Dumping automotive fluids into storm drains has the same result as dumping the materials directly into a waterbody.

- Use a commercial car wash that treats or recycles its wastewater, or wash your car on your yard so the water infiltrates into the ground.
- Repair leaks and dispose of used auto fluids and batteries at designated drop-off or recycling locations.

Pet waste



Pet waste can be a major source of bacteria and excess nutrients in local waters.

- When walking your pet, remember to pick up the waste and dispose of it properly. Flushing pet waste is the best disposal method. Leaving pet waste on the ground increases public health risks by allowing harmful bacteria and nutrients to wash into the storm drain and eventually into local waterbodies.



Education is essential to changing people's behavior. Signs and markers near storm drains warn residents that pollutants entering the drains will be carried untreated into a local waterbody.

Residential landscaping

Permeable Pavement—Traditional concrete and asphalt don't allow water to soak into the ground. Instead these surfaces rely on storm drains to divert unwanted water. Permeable pavement systems allow rain and snowmelt to soak through, decreasing stormwater runoff.



Rain Barrels—You can collect rainwater from rooftops in mosquito-proof containers. The water can be used later on lawn or garden areas.

Rain Gardens and Grassy Swales—Specially designed areas planted with native plants can provide natural places for rainwater to collect and soak into the ground. Rain from rooftop areas or paved areas can be diverted into these areas rather than into storm drains.



Vegetated Filter Strips—Filter strips are areas of native grass or plants created along roadways or streams. They trap the pollutants stormwater picks up as it flows across driveways and streets.



Commercial

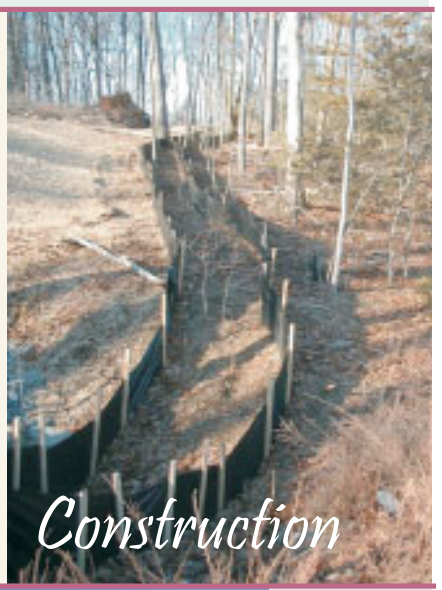
Dirt, oil, and debris that collect in parking lots and paved areas can be washed into the storm sewer system and eventually enter local waterbodies.

- Sweep up litter and debris from sidewalks, driveways and parking lots, especially around storm drains.
- Cover grease storage and dumpsters and keep them clean to avoid leaks.
- Report any chemical spill to the local hazardous waste cleanup team. They'll know the best way to keep spills from harming the environment.

Construction

Erosion controls that aren't maintained can cause excessive amounts of sediment and debris to be carried into the stormwater system. Construction vehicles can leak fuel, oil, and other harmful fluids that can be picked up by stormwater and deposited into local waterbodies.

- Divert stormwater away from disturbed or exposed areas of the construction site.
- Install silt fences, vehicle mud removal areas, vegetative cover, and other sediment and erosion controls and properly maintain them, especially after rainstorms.
- Prevent soil erosion by minimizing disturbed areas during construction projects, and seed and mulch bare areas as soon as possible.



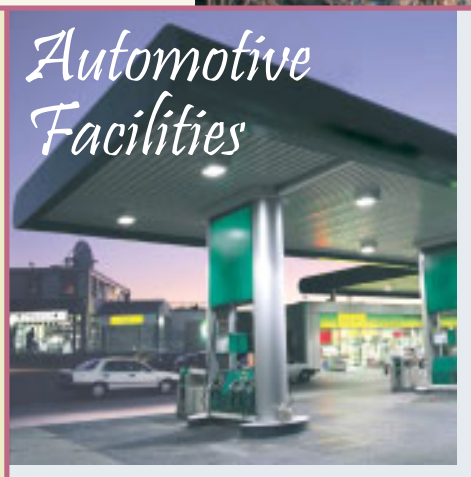


Agriculture

Lack of vegetation on streambanks can lead to erosion. Overgrazed pastures can also contribute excessive amounts of sediment to local waterbodies. Excess fertilizers and pesticides can poison aquatic animals and lead to destructive algae blooms. Livestock in streams can contaminate waterways with bacteria, making them unsafe for human contact.



- Keep livestock away from streambanks and provide them a water source away from waterbodies.
- Store and apply manure away from waterbodies and in accordance with a nutrient management plan.
- Vegetate riparian areas along waterways.
- Rotate animal grazing to prevent soil erosion in fields.
- Apply fertilizers and pesticides according to label instructions to save money and minimize pollution.



Automotive Facilities

Uncovered fueling stations allow spills to be washed into storm drains. Cars waiting to be repaired can leak fuel, oil, and other harmful fluids that can be picked up by stormwater.

- Clean up spills immediately and properly dispose of cleanup materials.
- Provide cover over fueling stations and design or retrofit facilities for spill containment.
- Properly maintain fleet vehicles to prevent oil, gas, and other discharges from being washed into local waterbodies.
- Install and maintain oil/water separators.



Forestry

Improperly managed logging operations can result in erosion and sedimentation.

- Conduct preharvest planning to prevent erosion and lower costs.
- Use logging methods and equipment that minimize soil disturbance.
- Plan and design skid trails, yard areas, and truck access roads to minimize stream crossings and avoid disturbing the forest floor.
- Construct stream crossings so that they minimize erosion and physical changes to streams.
- Expedite revegetation of cleared areas.

Helpful telephone numbers and links:

Riverside County Stormwater Protection Partners

Flood Control District	(951) 955-1200
County of Riverside	(951) 955-1000
City of Banning	(951) 922-3105
City of Beaumont	(951) 769-8520
City of Calimesa	(909) 795-9801
City of Canyon Lake	(951) 244-2955
Cathedral City	(760) 770-0327
City of Coachella	(760) 398-4978
City of Corona	(951) 736-2447
City of Desert Hot Springs	(760) 329-6411
City of Eastvale	(951) 361-0900
City of Hemet	(951) 765-2300
City of Indian Wells	(760) 346-2489
City of Indio	(760) 391-4000
City of Lake Elsinore	(951) 674-3124
City of La Quinta	(760) 777-7000
City of Menifee	(951) 672-6777
City of Moreno Valley	(951) 413-3000
City of Murrieta	(951) 304-2489
City of Norco	(951) 270-5607
City of Palm Desert	(760) 346-0611
City of Palm Springs	(760) 323-8299
City of Perris	(951) 943-6100
City of Rancho Mirage	(760) 324-4511
City of Riverside	(951) 361-0900
City of San Jacinto	(951) 654-7337
City of Temecula	(951) 694-6444
City of Wildomar	(951) 677-7751

REPORT ILLEGAL STORM DRAIN DISPOSAL
1-800-506-2555 or e-mail us at
fcnpdes@rcflood.org

- Riverside County Flood Control and Water Conservation District
  www.rcflood.org

Online resources include:

- California Storm Water Quality Association
  www.casqa.org
- State Water Resources Control Board
  www.waterboards.ca.gov
- Power Washers of North America
  www.thepwna.org

Stormwater Pollution

What you should know for...

Outdoor Cleaning Activities and Professional Mobile Service Providers



Storm drain pollution prevention information for:

- Car Washing / Mobile Detailers
- Window and Carpet Cleaners
- Power Washers
- Waterproofers / Street Sweepers
- Equipment cleaners or degreasers and all mobile service providers

Do you know where street flows actually go?

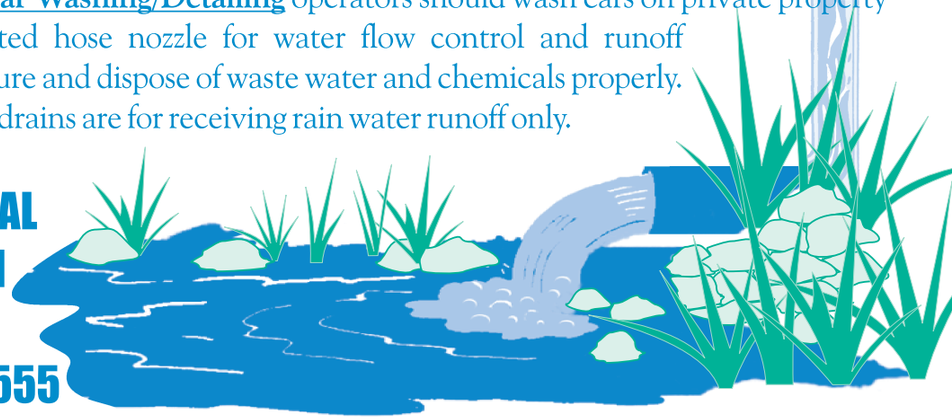
Storm drains are NOT connected to sanitary sewer systems and treatment plants!



The primary purpose of storm drains is to carry *rain* water away from developed areas to prevent flooding. Pollutants discharged to storm drains are transported directly into rivers, lakes and streams. Soaps, degreasers, automotive fluids, litter and a host of materials are washed off buildings, sidewalks, plazas and parking areas. Vehicles and equipment must be properly managed to prevent the pollution of local waterways.

Unintentional spills by mobile service operators can flow into storm drains and pollute our waterways. **Avoid mishaps.** *Always* have a **Spill Response Kit** on hand to clean up unintentional spills. Only emergency **Mechanical** repairs should be done in City streets, using drip pans for spills. **Plumbing** should be done on private property. Always store chemicals in a leak-proof container and keep covered when not in use. **Window/Power Washing** waste water shouldn't be released into the streets, but should be disposed of in a sanitary sewer, landscaped area or in the soil. Soiled **Carpet Cleaning** wash water should be filtered before being discharged into the sanitary sewer. Dispose of all filter debris properly. **Car Washing/Detailing** operators should wash cars on private property and use a regulated hose nozzle for water flow control and runoff prevention. Capture and dispose of waste water and chemicals properly. Remember, storm drains are for receiving rain water runoff only.

REPORT ILLEGAL STORM DRAIN DISPOSAL 1-800-506-2555



Help Protect Our Waterways!

Use these guidelines for Outdoor Cleaning Activities and Wash Water Disposal

Did you know that disposing of pollutants into the street, gutter, storm drain or body of water is *PROHIBITED* by law and can result in stiff penalties?

Best Management Practices

Waste wash water from Mechanics, Plumbers, Window/Power Washers, Carpet Cleaners, Car Washing and Mobile Detailing activities may contain significant quantities of motor oil, grease, chemicals, dirt, detergents, brake pad dust, litter and other materials.

Best Management Practices, or BMPs as they are known, are guides to prevent pollutants from entering the storm drains. ***Each of us*** can do our part to keep stormwater clean by using the suggested BMPs below:

Simple solutions for both light and heavy duty jobs:

Do...consider dry cleaning methods first such as a mop, broom, rag or wire brush. Always keep a spill response kit on site.

Do...prepare the work area before power cleaning by using sand bags, rubber mats, vacuum booms, containment pads or temporary berms to keep wash water away from the gutters and storm drains.

Do...use vacuums or other machines to remove and collect loose debris or litter before applying water.

Do...obtain the property owner's permission to dispose of ***small amounts*** of power washing waste water on to landscaped, gravel or unpaved surfaces.

Do...check your local sanitary sewer agency's policies on wash water disposal regulations before disposing of wash water into the sewer. (See list on reverse side)

Do...be aware that if discharging to landscape areas, soapy wash water may damage landscaping. Residual wash water may remain on paved surfaces to evaporate. Sweep up solid residuals and dispose of properly. Vacuum booms are another option for capturing and collecting wash water.

Do...check to see if local ordinances prevent certain activities.

Do not let...wash or waste water from sidewalk, plaza or building cleaning go into a street or storm drain.



Report illegal storm drain disposal
Call Toll Free
1-800-506-2555

Using Cleaning Agents

Try using biodegradable/phosphate-free products. They are easier on the environment, but don't confuse them with being toxic free. Soapy water entering the storm drain system can impact the delicate aquatic environment.



When cleaning surfaces with a ***high-pressure washer*** or ***steam cleaner***, additional precautions should be taken to prevent the discharge of pollutants into the storm drain system. These two methods of surface cleaning can loosen additional material that can contaminate local waterways.

Think Water Conservation

Minimize water use by using high pressure, low volume nozzles. Be sure to check all hoses for leaks. Water is a precious resource, don't let it flow freely and be sure to shut it off in between uses.

Screening Wash Water

Conduct thorough dry cleanup before washing exterior surfaces, such as buildings and decks ***with loose paint***, sidewalks or plaza areas. Keep debris from entering the storm drain after cleaning by first passing the wash water through a "20 mesh" or finer screen to catch the solid materials, then dispose of the mesh in a refuse container. Do not let the remaining wash water enter a street, gutter or storm drain.

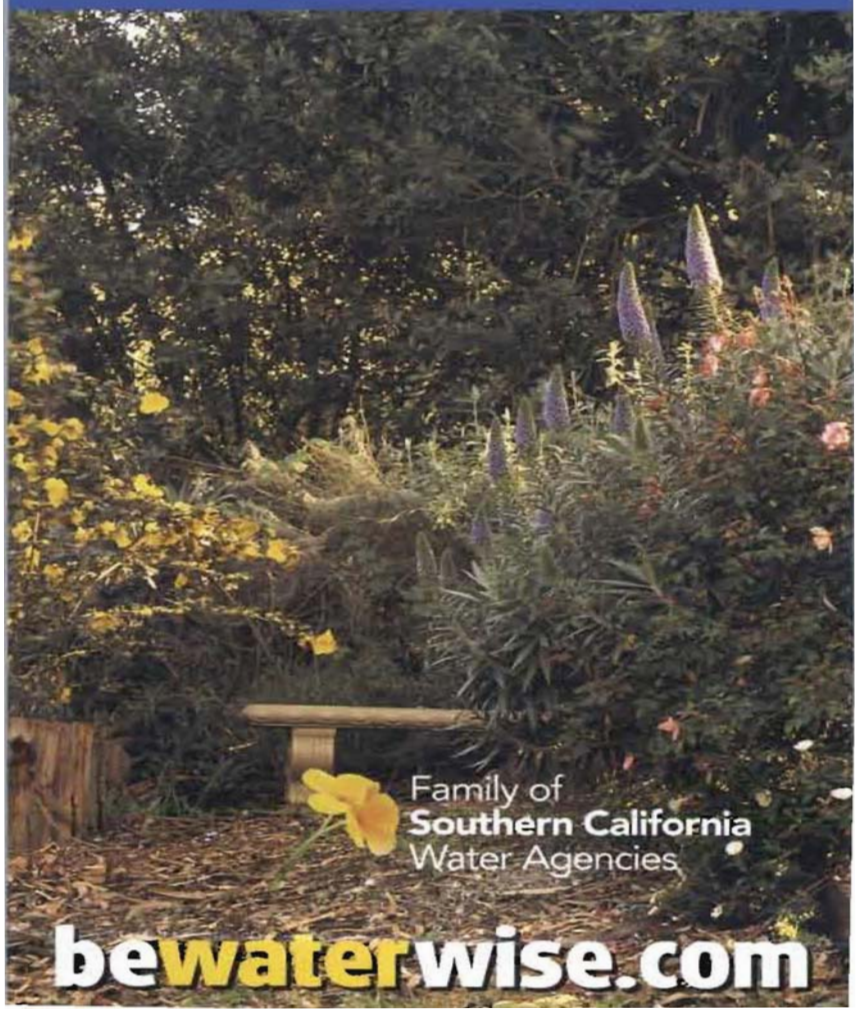
Drain Inlet Protection & Collection of Wash Water

- Prior to any washing, block all storm drains with an impervious barrier such as sandbags or berms, or seal the storm drain with plugs or other appropriate materials.
- Create a containment area with berms and traps or take advantage of a low spot to keep wash water contained.
- Wash vehicles and equipment on grassy or gravel areas so that the wash water can seep into the ground.
- Pump or vacuum up all wash water in the contained area.

Concrete/Coring/Saw Cutting and Drilling Projects

Protect any down-gradient inlets by using dry activity techniques whenever possible. If water is used, minimize the amount of water used during the coring/drilling or saw cutting process. Place a barrier of sandbags and/or absorbent berms to protect the storm drain inlet or watercourse. Use a shovel or wet vacuum to remove the residue from the pavement. Do not wash residue or particulate matter into a storm drain inlet or watercourse.

10 Ways to Save Water Outdoors



TIP #1 The average homeowner uses twice the amount of water needed to keep plants healthy. Use the watering calculator and index at **bewaterwise.com** to know exactly how much water your plants need.

TIP #2 Check your sprinkler system for leaks, overspray and broken sprinkler heads. Update with drip or other more water-efficient sprinklers where appropriate.

TIP #3 This fall, plant a portion of your garden with beautiful native and California Friendly plants. Browse the plant database at **bewaterwise.com** to find just the right look for your outdoor spaces.

TIP #4 Reduce the amount of water-thirsty grass. Keep only what you need and replace the rest with less-thirsty plants or permeable paving.

TIP #5 For the grass you keep, set your lawnmower blade higher.

TIP #6 Adjust your sprinkler timer downward in September. Plants need less water when days are shorter.

TIP #7 Use a broom instead of the hose for cleaning sidewalks and patios.

TIP #8 Mulch! A layer of bark, gravel, compost, sawdust or low-growing groundcover evens out soil temperature and allows better water retention.

TIP #9 Check the list of invasive plants that hurt our environment at **caleppc.org** and remove any from your garden.

TIP #10 Share these tips with your gardener, neighbors and friends. Water conservation should be a part of every Southern Californian's lifestyle, but that doesn't mean we can't have lush and beautiful outdoor spaces.

bewaterwise.com

Drainage System Maintenance SC-74



Photo Credit: Geoff Brosseau

Objectives

- Contain
- Educate
- Reduce/Minimize

Description

As a consequence of its function, the stormwater conveyance system collects and transports urban runoff that may contain certain pollutants. Maintaining catch basins, stormwater inlets, and other stormwater conveyance structures on a regular basis will remove pollutants, prevent clogging of the downstream conveyance system, restore catch basins' sediment trapping capacity, and ensure the system functions properly hydraulically to avoid flooding.

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	☑
Oil and Grease	☑
Organics	☑
Oxygen Demanding	☑

Approach

Suggested Protocols

Catch Basins/Inlet Structures

- Municipal staff should regularly inspect facilities to ensure the following:
  - Immediate repair of any deterioration threatening structural integrity.
  - Cleaning before the sump is 40% full. Catch basins should be cleaned as frequently as needed to meet this standard.
  - Stenciling of catch basins and inlets (see SC-75 Waste Handling and Disposal).
- Clean catch basins, storm drain inlets, and other conveyance structures in high pollutant load areas just before the wet season to remove sediments and debris accumulated during the summer.

CASQA
CALIFORNIA STORMWATER QUALITY ASSOCIATION

- Conduct inspections more frequently during the wet season for problem areas where sediment or trash accumulates more often. Clean and repair as needed.
- Keep accurate logs of the number of catch basins cleaned.
- Record the amount of waste collected.
- Store wastes collected from cleaning activities of the drainage system in appropriate containers or temporary storage sites in a manner that prevents discharge to the storm drain.
- Dewater the wastes with outflow into the sanitary sewer if permitted. Water should be treated with an appropriate filtering device prior to discharge to the sanitary sewer. If discharge to the sanitary sewer is not allowed, water should be pumped or vacuumed to a tank and properly disposed of. Do not dewater near a storm drain or stream.
- Except for small communities with relatively few catch basins that may be cleaned manually, most municipalities will require mechanical cleaners such as eductors, vacuums, or bucket loaders.

Storm Drain Conveyance System

- Locate reaches of storm drain with deposit problems and develop a flushing schedule that keeps the pipe clear of excessive buildup.
- Collect flushed effluent and pump to the sanitary sewer for treatment.

Pump Stations

- Clean all storm drain pump stations prior to the wet season to remove silt and trash.
- Do not allow discharge from cleaning a storm drain pump station or other facility to reach the storm drain system.
- Conduct quarterly routine maintenance at each pump station.
- Inspect, clean, and repair as necessary all outlet structures prior to the wet season.
- Sample collected sediments to determine if landfill disposal is possible, or illegal discharges in the watershed are occurring.

Open Channel

- Consider modification of storm channel characteristics to improve channel hydraulics, to increase pollutant removals, and to enhance channel/creek aesthetic and habitat value.
- Conduct channel modification/improvement in accordance with existing laws. Any person, government agency, or public utility proposing an activity that will change the natural (emphasis added) state of any river, stream, or lake in California, must enter into a steam or Lake Alteration Agreement with the Department of Fish and Game. The developer-applicant should also contact local governments (city, county, special districts), other state agencies

(SWRCB, RWQCB, Department of Forestry, Department of Water Resources), and Federal Corps of Engineers and USFWS

Illicit Connections and Discharges

- During routine maintenance of conveyance system and drainage structures field staff should look for evidence of illegal discharges or illicit connections:
  - Is there evidence of spills such as paints, discoloring, etc.
  - Are there any odors associated with the drainage system
  - Record locations of apparent illegal discharges/illicit connections
  - Track flows back to potential dischargers and conduct aboveground inspections. This can be done through visual inspection of up gradient manholes or alternate techniques including zinc chloride smoke testing, fluorometric dye testing, physical inspection testing, or television camera inspection.
  - Once the origin of flow is established, require illicit discharger to eliminate the discharge.
- Stencil storm drains, where applicable, to prevent illegal disposal of pollutants. Storm drain inlets should have messages such as "Dump No Waste Drains to Stream" stenciled next to them to warn against ignorant or intentional dumping of pollutants into the storm drainage system.
- Refer to fact sheet SC-10 Non-Stormwater Discharges.

Illegal Dumping

- Regularly inspect and clean up hot spots and other storm drainage areas where illegal dumping and disposal occurs.
- Establish a system for tracking incidents. The system should be designed to identify the following:
  - Illegal dumping hot spots
  - Types and quantities (in some cases) of wastes
  - Patterns in time of occurrence (time of day/night, month, or year)
  - Mode of dumping (abandoned containers, "midnight dumping" from moving vehicles, direct dumping of materials, accidents/spills)
  - Responsible parties
- Post "No Dumping" signs in problem areas with a phone number for reporting dumping and disposal. Signs should also indicate fines and penalties for illegal dumping.
- Refer to fact sheet SC-10 Non-Stormwater Discharges.

- The State Department of Fish and Game has a hotline for reporting violations called Cal TIP (1-800-952-5400). The phone number may be used to report any violation of a Fish and Game code (illegal dumping, poaching, etc.).
- The California Department of Toxic Substances Control's Waste Alert Hotline, 1-800-69TOXIC, can be used to report hazardous waste violations.

Training

- Train crews in proper maintenance activities, including record keeping and disposal.
- Only properly trained individuals are allowed to handle hazardous materials/wastes.
- Train municipal employees from all departments (public works, utilities, street cleaning, parks and recreation, industrial waste inspection, hazardous waste inspection, sewer maintenance) to recognize and report illegal dumping.
- Train municipal employees and educate businesses, contractors, and the general public in proper and consistent methods for disposal.
- Train municipal staff regarding non-stormwater discharges (See SC-10 Non-Stormwater Discharges).

Spill Response and Prevention

- Refer to SC-11, Prevention, Control & Cleanup
- Have spill cleanup materials readily available and in a known location.
- Cleanup spills immediately and use dry methods if possible.
- Properly dispose of spill cleanup material.

Other Considerations

- Cleanup activities may create a slight disturbance for local aquatic species. Access to items and material on private property may be limited. Trade-offs may exist between channel hydraulics and water quality/riparian habitat. If storm channels or basins are recognized as wetlands, many activities, including maintenance, may be subject to regulation and permitting.
- Storm drain flushing is most effective in small diameter pipes (36-inch diameter pipe or less, depending on water supply and sediment collection capacity). Other considerations associated with storm drain flushing may include the availability of a water source, finding a downstream area to collect sediments, liquid/sediment disposal, and disposal of flushed effluent to sanitary sewer may be prohibited in some areas.
- Regulations may include adoption of substantial penalties for illegal dumping and disposal.
- Municipal codes should include sections prohibiting the discharge of soil, debris, refuse, hazardous wastes, and other pollutants into the storm drain system.
- Private property access rights may be needed to track illegal discharges up gradient.

- Requirements of municipal ordinance authority for suspected source verification testing for illicit connections necessary for guaranteed rights of entry.

Requirements

Costs

- An aggressive catch basin cleaning program could require a significant capital and O&M budget. A careful study of cleaning effectiveness should be undertaken before increased cleaning is implemented. Catch basin cleaning costs are less expensive if vacuum street sweepers are available; cleaning catch basins manually can cost approximately twice as much as cleaning the basins with a vacuum attached to a sweeper.

- Methods used for illicit connection detection (smoke testing, dye testing, visual inspection, and flow monitoring) can be costly and time-consuming. Site-specific factors, such as the level of impervious area, the density and ages of buildings, and type of land use will determine the level of investigation necessary. Encouraging reporting of illicit discharges by employees can offset costs by saving expense on inspectors and directing resources more efficiently. Some programs have used funds available from "environmental fees" or special assessment districts to fund their illicit connection elimination programs.

Maintenance

- Two-person teams may be required to clean catch basins with vactor trucks.

- Identifying illicit discharges requires teams of at least two people (volunteers can be used), plus administrative personnel, depending on the complexity of the storm sewer system.

- Arrangements must be made for proper disposal of collected wastes.

- Requires technical staff to detect and investigate illegal dumping violations, and to coordinate public education.

Supplemental Information

Further Detail of the BMP

Storm Drain flushing

Sanitary sewer flushing is a common maintenance activity used to improve pipe hydraulics and to remove pollutants in sanitary sewer systems. The same principles that make sanitary sewer flushing effective can be used to flush storm drains. Flushing may be designed to hydraulically convey accumulated material to strategic locations, such as to an open channel, to another point where flushing will be initiated, or over to the sanitary sewer and on to the treatment facilities, thus preventing re-suspension and overflow of a portion of the solids during storm events. Flushing prevents "plug flow" discharges of concentrated pollutant loadings and sediments. The deposits can hinder the designed conveyance capacity of the storm drain system and potentially cause backwater conditions in severe cases of clogging.

Storm drain flushing usually takes place along segments of pipe with grades that are too flat to maintain adequate velocity to keep particles in suspension. An upstream manhole is selected to place an inflatable device that temporarily plugs the pipe. Further upstream, water is pumped into the line to create a flushing wave. When the upstream reach of pipe is sufficiently full to

cause a flushing wave, the inflated device is rapidly deflated with the assistance of a vacuum pump, releasing the backed up water and resulting in the cleaning of the storm drain segment.

To further reduce the impacts of stormwater pollution, a second inflatable device, placed well downstream, may be used to re-collect the water after the force of the flushing wave has dissipated. A pump may then be used to transfer the water and accumulated material to the sanitary sewer for treatment. In some cases, an interceptor structure may be more practical or required to re-collect the flushed waters.

It has been found that cleansing efficiency of periodic flush waves is dependent upon flush volume, flush discharge rate, sewer slope, sewer length, sewer flow rate, sewer diameter, and population density. As a rule of thumb, the length of line to be flushed should not exceed 700 feet. At this maximum recommended length, the percent removal efficiency ranges between 65-75 percent for organics and 55-65 percent for dry weather grit/inorganic material. The percent removal efficiency drops rapidly beyond that. Water is commonly supplied by a water truck, but fire hydrants can also supply water. To make the best use of water, it is recommended that reclaimed water be used or that fire hydrant line flushing coincide with storm drain flushing.

Flow Management

Flow management has been one of the principal motivations for designing urban stream corridors in the past. Such needs may or may not be compatible with the stormwater quality goals in the stream corridor.

Downstream flood peaks can be suppressed by reducing through flow velocity. This can be accomplished by reducing gradient with grade control structures or increasing roughness with boulders, dense vegetation, or complex banks forms. Reducing velocity correspondingly increases flood height, so all such measures have a natural association with floodplain open space. Flood elevations laterally adjacent to the stream can be lowered by increasing through flow velocity.

However, increasing velocity increases flooding downstream and inherently conflicts with channel stability and human safety. Where topography permits, another way to lower flood elevation is to lower the level of the floodway with drop structures into a large but subtly excavated bowl where flood flows we allowed to spread out.

Stream Corridor Planning

Urban streams receive and convey stormwater flows from developed or developing watersheds. Planning of stream corridors thus interacts with urban stormwater management programs. If local programs are intended to control or protect downstream environments by managing flows delivered to the channels, then it is logical that such programs should be supplemented by management of the materials, forms, and uses of the downstream riparian corridor. Any proposal for steam alteration or management should be investigated for its potential flow and stability effects on upstream, downstream, and laterally adjacent areas. The timing and rate of flow from various tributaries can combine in complex ways to alter flood hazards. Each section of channel is unique, influenced by its own distribution of roughness elements, management activities, and stream responses.

Flexibility to adapt to stream features and behaviors as they evolve must be included in stream reclamation planning. The amenity and ecology of streams may be enhanced through the landscape design options of 1) corridor reservation, 2) bank treatment, 3) geomorphic restoration, and 4) grade control.

Corridor reservation - Reserving stream corridors and valleys to accommodate natural stream meandering, aggradation, degradation, and over bank flows allows streams to find their own form and generate less ongoing erosion. In California, open stream corridors in recent urban developments have produced recreational open space, irrigation of streamside plantings, and the aesthetic amenity of flowing water.

Bank treatment - The use of armoring, vegetative cover, and flow deflection may be used to influence a channel's form, stability, and biotic habitat. To prevent bank erosion, armoring can be done with rigid construction materials, such as concrete, masonry, wood planks and logs, riprap, and gabions. Concrete linings have been criticized because of their lack of provision of biotic habitat. In contrast, riprap and gabions make relatively porous and flexible linings. Boulders, placed in the bed reduce velocity and erosive power.

Riparian vegetation can stabilize the banks of streams that are at or near a condition of equilibrium. Binding networks of roots increase bank shear strength. During flood flows, resilient vegetation is forced into erosion-inhibiting mats. The roughness of vegetation leads to lower velocity, further reducing erosive effects. Structural flow deflection can protect banks from erosion or alter fish habitat. By concentrating flow, a deflector causes a pool to be scoured in the bed.

Geomorphic restoration – Restoration refers to alteration of disturbed streams so their form and behavior emulate those of undisturbed streams. Natural meanders are retained, with grading to gentle slopes on the inside of curves to allow point bars and riffle-pool sequences to develop. Trees are retained to provide scenic quality, biotic productivity, and roots for bank stabilization, supplemented by plantings where necessary.

A restorative approach can be successful where the stream is already approaching equilibrium. However, if upstream urbanization continues new flow regimes will be generated that could disrupt the equilibrium of the treated system.

Grade Control - A grade control structure is a level shelf of a permanent material, such as stone, masonry, or concrete, over which stream water flows. A grade control structure is called a sill, weir, or drop structure, depending on the relation of its invert elevation to upstream and downstream channels.

A sill is installed at the preexisting channel bed elevation to prevent upstream migration of nick points. It establishes a firm base level below which the upstream channel can not erode.

A weir or check dam is installed with invert above the preexisting bed elevation. A weir raises the local base level of the stream and causes aggradation upstream. The gradient, velocity, and erosive potential of the stream channel are reduced. A drop structure lowers the downstream invert below its preexisting elevation, reducing downstream gradient and velocity. Weirs and drop structure control erosion by dissipating energy and reducing slope velocity.

When carefully applied, grade control structures can be highly versatile in establishing human and environmental benefits in stabilized channels. To be successful, application of grade control structures should be guided by analysis of the stream system both upstream and downstream from the area to he reclaimed.

Examples

The California Department of Water Resources began the Urban Stream Restoration Program in 1985. The program provides grant funds to municipalities and community groups to implement stream restoration projects. The projects reduce damages from streambank aid watershed instability arid floods while restoring streams' aesthetic, recreational, and fish and wildlife values.

In Buena Vista Park, upper floodway slopes are gentle and grassed to achieve continuity of usable park land across the channel of small boulders at the base of the slopes.

The San Diego River is a large, vegetative lined channel, which was planted in a variety of species to support riparian wildlife while stabilizing the steep banks of the floodway.

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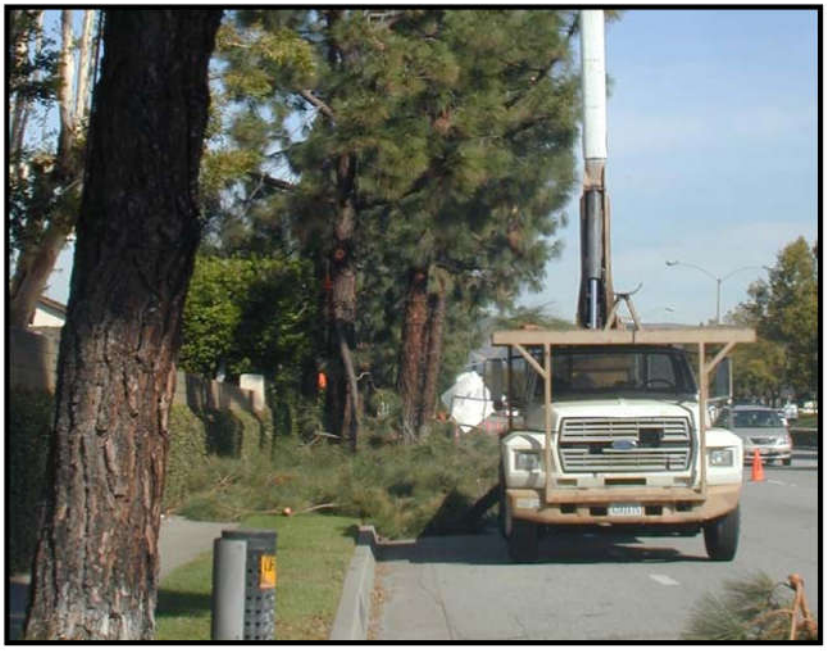
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Landscape Maintenance SC-73



Objectives

- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	☑
Metals	
Bacteria	
Oil and Grease	
Organics	
Oxygen Demanding	☑

Description

Landscape maintenance activities include vegetation removal; herbicide and insecticide application; fertilizer application; watering; and other gardening and lawn care practices. Vegetation control typically involves a combination of chemical (herbicide) application and mechanical methods. All of these maintenance practices have the potential to contribute pollutants to the storm drain system. The major objectives of this BMP are to minimize the discharge of pesticides, herbicides and fertilizers to the storm drain system and receiving waters; prevent the disposal of landscape waste into the storm drain system by collecting and properly disposing of clippings and cuttings, and educating employees and the public.

Approach

Pollution Prevention

- Implement an integrated pest management (IPM) program. IPM is a sustainable approach to managing pests by combining biological, cultural, physical, and chemical tools.
- Choose low water using flowers, trees, shrubs, and groundcover.
- Consider alternative landscaping techniques such as naturescaping and xeriscaping.
- Conduct appropriate maintenance (i.e. properly timed fertilizing, weeding, pest control, and pruning) to help preserve the landscapes water efficiency.

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- Consider grass cycling (grass cycling is the natural recycling of grass by leaving the clippings on the lawn when mowing. Grass clippings decompose quickly and release valuable nutrients back into the lawn).

Suggested Protocols

Mowing, Trimming, and Weeding

- Whenever possible use mechanical methods of vegetation removal (e.g mowing with tractor-type or push mowers, hand cutting with gas or electric powered weed trimmers) rather than applying herbicides. Use hand weeding where practical.
- Avoid loosening the soil when conducting mechanical or manual weed control, this could lead to erosion. Use mulch or other erosion control measures when soils are exposed.
- Performing mowing at optimal times. Mowing should not be performed if significant rain events are predicted.
- Mulching mowers may be recommended for certain flat areas. Other techniques may be employed to minimize mowing such as selective vegetative planting using low maintenance grasses and shrubs.
- Collect lawn and garden clippings, pruning waste, tree trimmings, and weeds. Chip if necessary, and compost or dispose of at a landfill (see waste management section of this fact sheet).
- Place temporarily stockpiled material away from watercourses, and berm or cover stockpiles to prevent material releases to storm drains.

Planting

- Determine existing native vegetation features (location, species, size, function, importance) and consider the feasibility of protecting them. Consider elements such as their effect on drainage and erosion, hardiness, maintenance requirements, and possible conflicts between preserving vegetation and the resulting maintenance needs.
- Retain and/or plant selected native vegetation whose features are determined to be beneficial, where feasible. Native vegetation usually requires less maintenance (e.g., irrigation, fertilizer) than planting new vegetation.
- Consider using low water use groundcovers when planting or replanting.

Waste Management

- Compost leaves, sticks, or other collected vegetation or dispose of at a permitted landfill. Do not dispose of collected vegetation into waterways or storm drainage systems.
- Place temporarily stockpiled material away from watercourses and storm drain inlets, and berm or cover stockpiles to prevent material releases to the storm drain system.
- Reduce the use of high nitrogen fertilizers that produce excess growth requiring more frequent mowing or trimming.

- Avoid landscape wastes in and around storm drain inlets by either using bagging equipment or by manually picking up the material.

Irrigation

- Where practical, use automatic timers to minimize runoff.
- Use popup sprinkler heads in areas with a lot of activity or where there is a chance the pipes may be broken. Consider the use of mechanisms that reduce water flow to sprinkler heads if broken.
- Ensure that there is no runoff from the landscaped area(s) if re-claimed water is used for irrigation.
- If bailing of muddy water is required (e.g. when repairing a water line leak), do not put it in the storm drain; pour over landscaped areas.
- Irrigate slowly or pulse irrigate to prevent runoff and then only irrigate as much as is needed.
- Apply water at rates that do not exceed the infiltration rate of the soil.

Fertilizer and Pesticide Management

- Utilize a comprehensive management system that incorporates integrated pest management (IPM) techniques. There are many methods and types of IPM, including the following:
  - Mulching can be used to prevent weeds where turf is absent, fencing installed to keep rodents out, and netting used to keep birds and insects away from leaves and fruit.
  - Visible insects can be removed by hand (with gloves or tweezers) and placed in soapy water or vegetable oil. Alternatively, insects can be sprayed off the plant with water or in some cases vacuumed off of larger plants.
  - Store-bought traps, such as species-specific, pheromone-based traps or colored sticky cards, can be used.
  - Slugs can be trapped in small cups filled with beer that are set in the ground so the slugs can get in easily.
  - In cases where microscopic parasites, such as bacteria and fungi, are causing damage to plants, the affected plant material can be removed and disposed of (pruning equipment should be disinfected with bleach to prevent spreading the disease organism).
  - Small mammals and birds can be excluded using fences, netting, tree trunk guards.
  - Beneficial organisms, such as bats, birds, green lacewings, ladybugs, praying mantis, ground beetles, parasitic nematodes, trichogramma wasps, seed head weevils, and spiders that prey on detrimental pest species can be promoted.
- Follow all federal, state, and local laws and regulations governing the use, storage, and disposal of fertilizers and pesticides and training of applicators and pest control advisors.

- Use pesticides only if there is an actual pest problem (not on a regular preventative schedule).
- Do not use pesticides if rain is expected. Apply pesticides only when wind speeds are low (less than 5 mph).
- Do not mix or prepare pesticides for application near storm drains.
- Prepare the minimum amount of pesticide needed for the job and use the lowest rate that will effectively control the pest.
- Employ techniques to minimize off-target application (e.g. spray drift) of pesticides, including consideration of alternative application techniques.
- Fertilizers should be worked into the soil rather than dumped or broadcast onto the surface.
- Calibrate fertilizer and pesticide application equipment to avoid excessive application.
- Periodically test soils for determining proper fertilizer use.
- Sweep pavement and sidewalk if fertilizer is spilled on these surfaces before applying irrigation water.
- Purchase only the amount of pesticide that you can reasonably use in a given time period (month or year depending on the product).
- Triple rinse containers, and use rinse water as product. Dispose of unused pesticide as hazardous waste.
- Dispose of empty pesticide containers according to the instructions on the container label.

Inspection

- Inspect irrigation system periodically to ensure that the right amount of water is being applied and that excessive runoff is not occurring. Minimize excess watering, and repair leaks in the irrigation system as soon as they are observed.
- Inspect pesticide/fertilizer equipment and transportation vehicles daily.

Training

- Educate and train employees on use of pesticides and in pesticide application techniques to prevent pollution. Pesticide application must be under the supervision of a California qualified pesticide applicator.
- Train/encourage municipal maintenance crews to use IPM techniques for managing public green areas.
- Annually train employees within departments responsible for pesticide application on the appropriate portions of the agency's IPM Policy, SOPs, and BMPs, and the latest IPM techniques.

- Employees who are not authorized and trained to apply pesticides should be periodically (at least annually) informed that they cannot use over-the-counter pesticides in or around the workplace.
- Use a training log or similar method to document training.

Spill Response and Prevention

- Refer to SC-11, Spill Prevention, Control & Cleanup
- Have spill cleanup materials readily available and in a know in location
- Cleanup spills immediately and use dry methods if possible.
- Properly dispose of spill cleanup material.

Other Considerations

- The Federal Pesticide, Fungicide, and Rodenticide Act and California Title 3, Division 6, Pesticides and Pest Control Operations place strict controls over pesticide application and handling and specify training, annual refresher, and testing requirements. The regulations generally cover: a list of approved pesticides and selected uses, updated regularly; general application information; equipment use and maintenance procedures; and record keeping. The California Department of Pesticide Regulations and the County Agricultural Commission coordinate and maintain the licensing and certification programs. All public agency employees who apply pesticides and herbicides in "agricultural use" areas such as parks, golf courses, rights-of-way and recreation areas should be properly certified in accordance with state regulations. Contracts for landscape maintenance should include similar requirements.
- All employees who handle pesticides should be familiar with the most recent material safety data sheet (MSDS) files.
- Municipalities do not have the authority to regulate the use of pesticides by school districts, however the California Healthy Schools Act of 2000 (AB 2260) has imposed requirements on California school districts regarding pesticide use in schools. Posting of notification prior to the application of pesticides is now required, and IPM is stated as the preferred approach to pest management in schools.

Requirements

Costs

Additional training of municipal employees will be required to address IPM techniques and BMPs. IPM methods will likely increase labor cost for pest control which may be offset by lower chemical costs.

Maintenance

Not applicable

Supplemental Information

Further Detail of the BMP

Waste Management

Composting is one of the better disposal alternatives if locally available. Most municipalities either have or are planning yard waste composting facilities as a means of reducing the amount of waste going to the landfill. Lawn clippings from municipal maintenance programs as well as private sources would probably be compatible with most composting facilities

Contractors and Other Pesticide Users

Municipal agencies should develop and implement a process to ensure that any contractor employed to conduct pest control and pesticide application on municipal property engages in pest control methods consistent with the IPM Policy adopted by the agency. Specifically, municipalities should require contractors to follow the agency's IPM policy, SOPs, and BMPs; provide evidence to the agency of having received training on current IPM techniques when feasible; provide documentation of pesticide use on agency property to the agency in a timely manner.

References and Resources

King County Stormwater Pollution Control Manual. Best Management Practices for Businesses. 1995. King County Surface Water Management. July. On-line: http://dnr.metrokc.gov/wlr/dss/spcm.htm

Los Angeles County Stormwater Quality Model Programs. Public Agency Activities http://ladpw.org/wmd/npdes/model_links.cfm

Model Urban Runoff Program: A How-To Guide for Developing Urban Runoff Programs for Small Municipalities. Prepared by City of Monterey, City of Santa Cruz, California Coastal Commission, Monterey Bay National Marine Sanctuary, Association of Monterey Bay Area Governments, Woodward-Clyde, Central Coast Regional Water Quality Control Board. July. 1998.

Orange County Stormwater Program http://www.ocwatersheds.com/StormWater/swp_introduction.asp

Santa Clara Valley Urban Runoff Pollution Prevention Program. 1997 Urban Runoff Management Plan. September 1997, updated October 2000.

United States Environmental Protection Agency (USEPA). 2002. Pollution Prevention/Good Housekeeping for Municipal Operations Landscaping and Lawn Care. Office of Water. Office of Wastewater Management. On-line: http://www.epa.gov/npdes/menuofbmps/poll_8.htm

Building & Grounds Maintenance SC-41



Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Targeted Constituents

Sediment	✓
Nutrients	✓
Trash	✓
Metals	✓
Bacteria	✓
Oil and Grease	✓
Organics	✓
Oxygen Demanding	✓

Description

Stormwater runoff from building and grounds maintenance activities can be contaminated with toxic hydrocarbons in solvents, fertilizers and pesticides, suspended solids, heavy metals, and abnormal pH. Utilizing the following protocols will prevent or reduce the discharge of pollutants to stormwater from building and grounds maintenance activities by washing and cleaning up with as little water as possible, following good landscape management practices, preventing and cleaning up spills immediately, keeping debris from entering the storm drains, and maintaining the stormwater collection system.

Approach

Pollution Prevention

- Switch to non-toxic chemicals for maintenance when possible.
- Choose cleaning agents that can be recycled.
- Encourage proper lawn management and landscaping, including use of native vegetation.
- Encourage use of Integrated Pest Management techniques for pest control.
- Encourage proper onsite recycling of yard trimmings.
- Recycle residual paints, solvents, lumber, and other material as much as possible.

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Suggested Protocols

Pressure Washing of Buildings, Rooftops, and Other Large Objects

- In situations where soaps or detergents are used and the surrounding area is paved, pressure washers must use a waste water collection device that enables collection of wash water and associated solids. A sump pump, wet vacuum or similarly effective device must be used to collect the runoff and loose materials. The collected runoff and solids must be disposed of properly.

- If soaps or detergents are not used, and the surrounding area is paved, wash water runoff does not have to be collected but must be screened. Pressure washers must use filter fabric or some other type of screen on the ground and/or in he catch basin to trap the particles in wash water runoff.

- If you are pressure washing on a grassed area (with or without soap), runoff must be dispersed as sheet flow as much as possible, rather than as a concentrated stream. The wash runoff must remain on the grass and not drain to pavement. Ensure that this practice does not kill grass.

Landscaping Activities

- Do not apply any chemicals (insecticide, herbicide, or fertilizer) directly to surface waters, unless the application is approved and permitted by the state.

- Dispose of grass clippings, leaves, sticks, or other collected vegetation as garbage, or by composting. Do not dispose of collected vegetation into waterways or storm drainage systems.

- Use mulch or other erosion control measures on exposed soils.

- Check irrigation schedules so pesticides will not be washed away and to minimize non-stormwater discharge.

Building Repair, Remodeling, and Construction

- Do not dump any toxic substance or liquid waste on the pavement, the ground, or toward a storm drain.

- Use ground or drop cloths underneath outdoor painting, scraping, and sandblasting work, and properly dispose of collected material daily.

- Use a ground cloth or oversized tub for activities such as paint mixing and tool cleaning.

- Clean paint brushes and tools covered with water-based paints in sinks connected to sanitary sewers or in portable containers that can be dumped into a sanitary sewer drain. Brushes and tools covered with non-water-based paints, finishes, or other materials must be cleaned in a manner that enables collection of used solvents (e.g., paint thinner, turpentine, etc.) for recycling or proper disposal.

- Use a storm drain cover, filter fabric, or similarly effective runoff control mechanism if dust, grit, wash water, or other pollutants may escape the work area and enter a catch basin. The containment device(s) must be in place at the beginning of the work day, and accumulated dirty runoff and solids must be collected and disposed of before removing the containment device(s) at the end of the work day.
- If you need to de-water an excavation site, you may need to filter the water before discharging to a catch basin or off-site. In which case you should direct the water through hay bales and filter fabric or use other sediment filters or traps.
- Store toxic material under cover with secondary containment during precipitation events and when not in use. A cover would include tarps or other temporary cover material.

Mowing, Trimming, and Planting

- Dispose of leaves, sticks, or other collected vegetation as garbage, by composting or at a permitted landfill. Do not dispose of collected vegetation into waterways or storm drainage systems.
- Use mulch or other erosion control measures when soils are exposed.
- Place temporarily stockpiled material away from watercourses and drain inlets, and berm or cover stockpiles to prevent material releases to the storm drain system.
- Consider an alternative approach when bailing out muddy water; do not put it in the storm drain, pour over landscaped areas.
- Use hand or mechanical weeding where practical.

Fertilizer and Pesticide Management

- Follow all federal, state, and local laws and regulations governing the use, storage, and disposal of fertilizers and pesticides and training of applicators and pest control advisors.
- Follow manufacturers' recommendations and label directions. Pesticides must never be applied if precipitation is occuring or predicted. Do not apply insecticides within 100 feet of surface waters such as lakes, ponds, wetlands, and streams.
- Use less toxic pesticides that will do the job, whenever possible. Avoid use of copper-based pesticides if possible.
- Do not use pesticides if rain is expected.
- Do not mix or prepare pesticides for application near storm drains.
- Use the minimum amount needed for the job.
- Calibrate fertilizer distributors to avoid excessive application.
- Employ techniques to minimize off-target application (e.g. spray drift) of pesticides, including consideration of alternative application techniques.

- Apply pesticides only when wind speeds are low.
- Work fertilizers into the soil rather than dumping or broadcasting them onto the surface.
- Irrigate slowly to prevent runoff and then only as much as is needed.
- Clean pavement and sidewalk if fertilizer is spilled on these surfaces before applying irrigation water.
- Dispose of empty pesticide containers according to the instructions on the container label.
- Use up the pesticides. Rinse containers, and use rinse water as product. Dispose of unused pesticide as hazardous waste.
- Implement storage requirements for pesticide products with guidance from the local fire department and County Agricultural Commissioner. Provide secondary containment for pesticides.

Inspection

- Inspect irrigation system periodically to ensure that the right amount of water is being applied and that excessive runoff is not occurring. Minimize excess watering, and repair leaks in the irrigation system as soon as they are observed.

Training

- Educate and train employees on use of pesticides and in pesticide application techniques to prevent pollution.
- Train employees and contractors in proper techniques for spill containment and cleanup.
- Be sure the frequency of training takes into account the complexity of the operations and the nature of the staff.

Spill Response and Prevention

- Refer to SC-11, Spill Prevention, Control & Cleanup
- Keep your Spill Prevention Control and countermeasure (SPCC) plan up-to-date, and implement accordingly.
- Have spill cleanup materials readily available and in a known location.
- Cleanup spills immediately and use dry methods if possible.
- Properly dispose of spill cleanup material.

Other Considerations

- Alternative pest/weed controls may not be available, suitable, or effective in many cases.

Requirements

Costs

- Overall costs should be low in comparison to other BMPs.

Maintenance

- Sweep paved areas regularly to collect loose particles, and wipe up spills with rags and other absorbent material immediately, do not hose down the area to a storm drain.

Supplemental Information

Further Detail of the BMP

Fire Sprinkler Line Flushing

Building fire sprinkler line flushing may be a source of non-stormwater runoff pollution. The water entering the system is usually potable water though in some areas it may be non-potable reclaimed wastewater. There are subsequent factors that may drastically reduce the quality of the water in such systems. Black iron pipe is usually used since it is cheaper than potable piping but it is subject to rusting and results in lower quality water. Initially the black iron pipe has an oil coating to protect it from rusting between manufacture and installation; this will contaminate the water from the first flush but not from subsequent flushes. Nitrates, poly-phosphates and other corrosion inhibitors, as well as fire suppressants and antifreeze may be added to the sprinkler water system. Water generally remains in the sprinkler system a long time, typically a year, between flushes and may accumulate iron, manganese, lead, copper, nickel and zinc. The water generally becomes anoxic and contains living and dead bacteria and breakdown products from chlorination. This may result in a significant BOD problem and the water often smells. Consequently dispose fire sprinkler line flush water into the sanitary sewer. Do not allow discharge to storm drain or infiltration due to potential high levels of pollutants in fire sprinkler line water.

References and Resources

California's Nonpoint Source Program Plan http://www.swrcb.ca.gov/nps/index.html

King County - ftp://dnr.metrokc.gov/wlr/dss/spcm/Chapter%203.PDF

Orange County Stormwater Program
http://www.ocwatersheds.com/StormWater/swp_introduction.asp

Mobile Cleaners Pilot Program: Final Report. 1997. Bay Area Stormwater Management Agencies Association (BASSMA) http://www.basmaa.org/

Pollution from Surface Cleaning Folder. 1996. Bay Area Stormwater Management Agencies Association (BASMAA) http://www.basmaa.org/

San Diego Stormwater Co-permittees Jurisdictional Urban Runoff Management Program (URMP) -
http://www.projectcleanwater.org/pdf/Model%20Program%20Municipal%20Facilities.pdf

Waste Handling & Disposal SC-34



Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Description

Improper storage and handling of solid wastes can allow toxic compounds, oils and greases, heavy metals, nutrients, suspended solids, and other pollutants to enter stormwater runoff. The discharge of pollutants to stormwater from waste handling and disposal can be prevented and reduced by tracking waste generation, storage, and disposal; reducing waste generation and disposal through source reduction, re-use, and recycling; and preventing runon and runoff.

Targeted Constituents

Sediment	✓
Nutrients	✓
Trash	✓
Metals	✓
Bacteria	✓
Oil and Grease	✓
Organics	✓
Oxygen Demanding	✓

Approach

Pollution Prevention

- Reduction in the amount of waste generated can be accomplished using the following source controls such as:
  - Production planning and sequencing
  - Process or equipment modification
  - Raw material substitution or elimination
  - Loss prevention and housekeeping
  - Waste segregation and separation
  - Close loop recycling
- Establish a material tracking system to increase awareness about material usage. This may reduce spills and minimize contamination, thus reducing the amount of waste produced.
- Recycle materials whenever possible.

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Suggested Protocols

General

- Cover storage containers with leak proof lids or some other means. If waste is not in containers, cover all waste piles (plastic tarps are acceptable coverage) and prevent stormwater runon and runoff with a berm. The waste containers or piles must be covered except when in use.
- Use drip pans or absorbent materials whenever grease containers are emptied by vacuum trucks or other means. Grease cannot be left on the ground. Collected grease must be properly disposed of as garbage.
- Check storage containers weekly for leaks and to ensure that lids are on tightly. Replace any that are leaking, corroded, or otherwise deteriorating.
- Sweep and clean the storage area regularly. If it is paved, do not hose down the area to a storm drain.
- Dispose of rinse and wash water from cleaning waste containers into a sanitary sewer if allowed by the local sewer authority. Do not discharge wash water to the street or storm drain.
- Transfer waste from damaged containers into safe containers.
- Take special care when loading or unloading wastes to minimize losses. Loading systems can be used to minimize spills and fugitive emission losses such as dust or mist. Vacuum transfer systems can minimize waste loss.

Controlling Litter

- Post "No Littering" signs and enforce anti-litter laws.
- Provide a sufficient number of litter receptacles for the facility.
- Clean out and cover litter receptacles frequently to prevent spillage.

Waste Collection

- Keep waste collection areas clean.
- Inspect solid waste containers for structural damage or leaks regularly. Repair or replace damaged containers as necessary.
- Secure solid waste containers; containers must be closed tightly when not in use.
- Place waste containers under cover if possible.
- Do not fill waste containers with washout water or any other liquid.
- Ensure that only appropriate solid wastes are added to the solid waste container. Certain wastes such as hazardous wastes, appliances, fluorescent lamps, pesticides, etc. may not be

disposed of in solid waste containers (see chemical/ hazardous waste collection section below).

- Do not mix wastes; this can cause chemical reactions, make recycling impossible, and complicate disposal.

Good Housekeeping

- Use all of the product before disposing of the container.
- Keep the waste management area clean at all times by sweeping and cleaning up spills immediately.
- Use dry methods when possible (e.g. sweeping, use of absorbents) when cleaning around restaurant/food handling dumpster areas. If water must be used after sweeping/using absorbents, collect water and discharge through grease interceptor to the sewer.
- Stencil storm drains on the facility's property with prohibitive message regarding waste disposal.

Chemical/Hazardous Wastes

- Select designated hazardous waste collection areas on-site.
- Store hazardous materials and wastes in covered containers protected from vandalism, and in compliance with fire and hazardous waste codes.
- Place hazardous waste containers in secondary containment.
- Make sure that hazardous waste is collected, removed, and disposed of only at authorized disposal areas.

Runon/Runoff Prevention

- Prevent stormwater runon from entering the waste management area by enclosing the area or building a berm around the area.
- Prevent the waste materials from directly contacting rain.
- Cover waste piles with temporary covering material such as reinforced tarpaulin, polyethylene, polyurethane, polypropyleneor hypalon.
- Cover the area with a permanent roof if feasible.
- Cover dumpsters to prevent rain from washing waste out of holes or cracks in the bottom of the dumpster.
- Move the activity indoor after ensuring all safety concerns such as fire hazard and ventilation are addressed.

Inspection

- Inspect and replace faulty pumps or hoses regularly to minimize the potential of releases and spills.
- Check waste management areas for leaking containers or spills.
- Repair leaking equipment including valves, lines, seals, or pumps promptly.

Training

- Train staff pollution prevention measures and proper disposal methods.
- Train employees and contractors proper spill containment and cleanup. The employee should have the tools and knowledge to immediately begin cleaning up a spill if one should occur.
- Train employees and subcontractors in proper hazardous waste management.

Spill Response and Prevention

- Refer to SC-11, Spill Prevention, Control & Cleanup.
- Keep your Spill Prevention Control and countermeasure (SPCC) plan up-to-date, and implement accordingly.
- Have spill cleanup materials readily available and in a known location.
- Cleanup spills immediately and use dry methods if possible.
- Properly dispose of spill cleanup material.
- Vehicles transporting waste should have spill prevention equipment that can prevent spills during transport. The spill prevention equipment includes:
  - Vehicles equipped with baffles for liquid waste
  - Trucks with sealed gates and spill guards for solid waste

Other Considerations

- Hazardous waste cannot be re-used or recycled; it must be disposed of by a licensed hazardous waste hauler.

Requirements

Costs

- Capital and operation and maintenance costs will vary substantially depending on the size of the facility and the types of waste handled. Costs should be low if there is an inventory program in place.

Maintenance

- None except for maintaining equipment for material tracking program.

Supplemental Information

Further Detail of the BMP

Land Treatment System

- Minimize the runoff of polluted stormwater from land application of municipal waste on-site by:
  - Choosing a site where slopes are under 6%, the soil is permeable, there is a low water table, it is located away from wetlands or marshes, there is a closed drainage system.
  - Avoiding application of waste to the site when it is raining or when the ground is saturated with water.
  - Growing vegetation on land disposal areas to stabilize soils and reduce the volume of surface water runoff from the site.
  - Maintaining adequate barriers between the land application site and the receiving waters. Planted strips are particularly good.
  - Using erosion control techniques such as mulching and matting, filter fences, straw bales, diversion terracing, and sediment basins.
  - Performing routine maintenance to ensure the erosion control or site stabilization measures are working.

References and Resources

King County Stormwater Pollution Control Manual - http://dnr.metrokc.gov/wlr/dss/spcm.htm

Orange County Stormwater Program
http://www.ocwatersheds.com/StormWater/swp_introduction.asp

Pollution from Surface Cleaning Folder. 1996. Bay Area Stormwater Management Agencies Associations (BASMAA). On-line: http://www.basmaa.org

Waste Handling and Disposal SC-75



Objectives

- Cover
- Contain
- Educate
- Reduce/Reuse

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	☑
Oil and Grease	☑
Organics	☑
Oxygen Demanding	☑

Description

It is important to control litter to eliminate trash and other materials in stormwater runoff. Waste reduction is a major component of waste management and should be encouraged through training and public outreach. Management of waste once it is collected may involve reuse, recycling, or proper disposal.

Approach

Pollution Prevention

- Reuse products when possible.
- Encourage recycling programs with recycling bins, used oil collection, etc.

Suggested Protocols

Solid Waste Collection

- Implement procedures, where applicable, to collect, transport, and dispose of solid waste at appropriate disposal facilities in accordance with applicable federal, state, and local laws and regulations.
- Include properly designed trash storage areas. If feasible provide cover over trash storage areas.
- Regularly inspect solid waste containers for structural damage. Repair or replace damaged containers as necessary.

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- Secure solid waste containers; containers must be closed tightly when not in use.
- Do not fill waste containers with washout water or any other liquid.
- Ensure that only appropriate solid wastes are added to the solid waste container. Certain wastes such as hazardous wastes, appliances, fluorescent lamps, pesticides, etc. may not be disposed of in solid waste containers (see chemical/ hazardous waste collection section below).
- Do not mix wastes; this can cause chemical reactions, make recycling impossible, and complicate disposal.
- Refer to SC-34 Waste Handling and Disposal for more information regarding solid waste facilities.

Waste Reduction and Recycling

- Recycle wastes whenever possible. Many types of waste can be recycled, recycling options for each waste type are limited. All gasoline, antifreeze, waste oil, and lead-acid batteries can be recycled. Latex and oil-based paint can be reused, as well as recycled. Materials that cannot be reused or recycled should either be incinerated or disposed of at a properly permitted landfill.
- Recycling is always preferable to disposal of unwanted materials.
- Recycling bins for glass, metal, newspaper, plastic bottles and other recyclable household solid wastes should be provided at public facilities and/or for residential curbside collection.

Controlling Litter

- Post “No Littering” signs and enforce anti-litter laws.
- Provide litter receptacles in busy, high pedestrian traffic areas of the community, at recreational facilities, and at community events.
- Clean out and cover litter receptacles frequently to prevent spillage.

Illegal Dumping

Substances illegally dumped on streets and into the storm drain system and creeks include paints, used oil and other automotive fluids, construction debris, chemicals, fresh concrete, leaves, grass clipping, and pet wastes.

- Post “No Dumping” signs with a phone number for reporting dumping and disposal. Signs should also indicate fines and penalties for illegal dumping.
- Landscaping and beautification efforts of hot spots might also discourage future dumping.
- See SC-74 Drainage System Maintenance, and SC-10 Non-Stormwater Discharges.

Requirements

Costs

- The costs for a solid waste source control program vary depending on the type of method. The cost of a community education program or a plan to increase the number of trash receptacles can be very minimal. Costs for structural controls such as trash racks, bar screens, and silt traps can be quite costly ranging from $250,000 to $900,000.

- A collection facility or curbside collection for used oil may result in significant costs. Commercial locations (automobile service stations, quick oil change centers, etc.) as collection points eliminate hauling and recycling costs.

- Collection and disposal of hazardous waste can be very expensive and requires trained operators; laboratory and detection equipment; and extensive record keeping including dates, types, and quantities.

- Use of volunteer work forces can lower storm drain stenciling program costs. Stenciling kits require procurement of durable/disposable items. The stenciling program can aid in the cataloging of the storm drain system. One municipality from the state of Washington has estimated that stenciling kits cost approximately $50 each. Stencils may cost about $8 each including the die cost on an order of 1,000. Re-orders cost about $1/stencil. Stencil designs may be available from other communities. Stencil kits should be provided on a loan basis to volunteer groups free of charge with the understanding that kit remnants are to be returned.

Maintenance

- The primary staff demand for stenciling programs is for program setup to provide marketing and training. Ongoing/follow-up staff time is minimal because of volunteer services.

- Staffing requirements are minimal for oil recycling programs if collection/recycling is contracted out to a used oil hauler/recycler or required at commercial locations.

- Staff requirements for maintaining good housekeeping BMPs at waste handling sites is minimal.

Supplemental Information

Further Detail of the BMP

Waste Reduction

An approach to reduce stormwater pollution from waste handling and disposal is to assess activities and reduce waste generation. The assessment is designed to find situations where waste can be eliminated or reduced and emissions and environmental damage can be minimized. The assessment involves collecting process specific information, setting pollution prevention targets, and developing, screening and selecting waste reduction options for further study. Starting a waste reduction program is economically beneficial because of reduced raw material purchases and lower waste disposal fees.

References and Resources

Best Management Practices Program for Pollution Prevention, City and County of San Francisco, Uribe & Associates, Oakland, California, 1990.

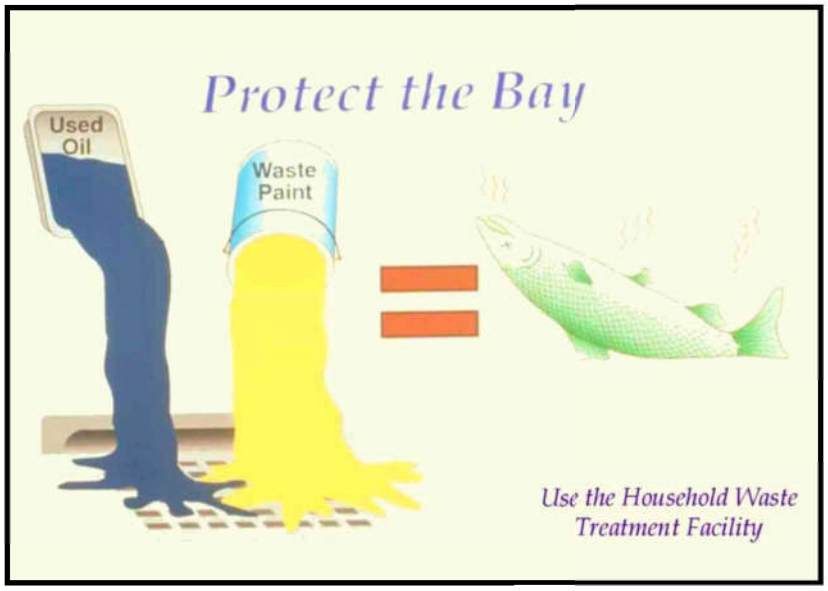
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Orange County Stormwater Program
http://www.ocwatersheds.com/StormWater/swp_introduction.asp.

Santa Clara Valley Urban Runoff Pollution Prevention Program. 1997 Urban Runoff Management Plan. September 1997, updated October 2000.

Non-Stormwater Discharges SC-10



Graphic by: Margie Winter

Objectives

- Contain
- Educate
- Reduce/Minimize

Targeted Constituents

Sediment	✓
Nutrients	✓
Trash	✓
Metals	✓
Bacteria	✓
Oil and Grease	✓
Organics	✓
Oxygen Demanding	✓

Description

Non-stormwater discharges are those flows that do not consist entirely of stormwater. For municipalities non-stormwater discharges present themselves in two situations. One is from fixed facilities owned and/or operated by the municipality. The other situation is non-stormwater discharges that are discovered during the normal operation of a field program. Some non-stormwater discharges do not include pollutants and may be discharged to the storm drain. These include uncontaminated groundwater and natural springs. There are also some non-stormwater discharges that typically do not contain pollutants and may be discharged to the storm drain with conditions. These include car washing, and surface cleaning. However, there are certain non-stormwater discharges that pose environmental concern. These discharges may originate from illegal dumping or from internal floor drains, appliances, industrial processes, sinks, and toilets that are connected to the nearby storm drainage system. These discharges (which may include: process waste waters, cooling waters, wash waters, and sanitary wastewater) can carry substances (such as paint, oil, fuel and other automotive fluids, chemicals and other pollutants) into storm drains. The ultimate goal is to effectively eliminate non-stormwater discharges to the stormwater drainage system through implementation of measures to detect, correct, and enforce against illicit connections and illegal discharges.

Approach

The municipality must address non-stormwater discharges from its fixed facilities by assessing the types of non-stormwater discharges and implementing BMPs for the discharges determined to pose environmental concern. For field programs the field staff must be

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trained to now what to look for regarding non-stormwater discharges and the procedures to follow in investigating the detected discharges.

Suggested Protocols

Fixed Facility

General

- Post "No Dumping" signs with a phone number for reporting dumping and disposal. Signs should also indicate fines and penalties for illegal dumping.
- Stencil storm drains, where applicable, to prevent illegal disposal of pollutants. Storm drain inlets should have messages such as "Dump No Waste Drains to Stream" stenciled next to them to warn against ignorant or intentional dumping of pollutants into the storm drainage system.
- Landscaping and beautification efforts of hot spots might also discourage future dumping, as well as provide open space and increase property values.
- Lighting or barriers may also be needed to discourage future dumping.

Illicit Connections

- Locate discharges from the fixed facility drainage system to the municipal storm drain system through review of "as-built" piping schematics.
- Use techniques such as smoke testing, dye testing and television camera inspection (as noted below) to verify physical connections.
- Isolate problem areas and plug illicit discharge points.

Visual Inspection and Inventory

- Inventory and inspect each discharge point during dry weather.
- Keep in mind that drainage from a storm event can continue for several days following the end of a storm and groundwater may infiltrate the underground stormwater collection system. Also, non-stormwater discharges are often intermittent and may require periodic inspections.

Review Infield Piping

- Review the "as-built" piping schematic as a way to determine if there are any connections to the stormwater collection system.
- Inspect the path of floor drains in older buildings.

Smoke Testing

- Smoke testing of wastewater and stormwater collection systems is used to detect connections between the two systems.

- During dry weather the stormwater collection system is filled with smoke and then traced to sources. The appearance of smoke at the base of a toilet indicates that there may be a connection between the sanitary and the stormwater system.

Dye Testing

- A dye test can be performed by simply releasing a dye into either your sanitary or process wastewater system and examining the discharge points from the stormwater collection system for discoloration.

TV Inspection of Storm Sewer

- TV Cameras can be employed to visually identify illicit connections to the fixed facility storm drain system.

Illegal Dumping

- Regularly inspect and clean up hot spots and other storm drainage areas where illegal dumping and disposal occurs.
- Clean up spills on paved surfaces with as little water as possible. Use a rag for small spills, a damp mop for general cleanup, and absorbent material for larger spills. If the spilled material is hazardous, then the used cleanup materials are also hazardous and must be sent to a certified laundry (rags) or disposed of as hazardous waste.
- Never hose down or bury dry material spills. Sweep up the material and dispose of properly.
- Use adsorbent materials on small spills rather than hosing down the spill. Remove the adsorbent materials promptly and dispose of properly.
- For larger spills, a private spill cleanup company or Hazmat team may be necessary.
- See fact sheet SC-11 Spill Prevention, Control, and Clean Up.

Field Program

General

- Develop clear protocols and lines of communication for effectively prohibiting non-stormwater discharges, especially ones that involve more than one jurisdiction and those that are not classified as hazardous, which are often not responded to as effectively as they need to be.
- Stencil storm drains, where applicable, to prevent illegal disposal of pollutants. Storm drain inlets should have messages such as “Dump No Waste Drains to Stream” stenciled next to them to warn against ignorant or intentional dumping of pollutants into the storm drainage system.
- See SC-74 Stormwater Drainage System Maintenance for additional information.

Field Inspection

- Regularly inspect and clean up hot spots and other storm drainage areas where illegal dumping and disposal occurs.
- During routine field program maintenance field staff should look for evidence of illegal discharges or illicit connection:
  - Is there evidence of spills such as paints, discoloring, etc.
  - Are there any odors associated with the drainage system
  - Record locations of apparent illegal discharges/illicit connections and notify appropriate investigating agency.
- If trained, conduct field investigation of non-stormwater discharges to determine whether they pose a threat to water quality.

Recommended Complaint Investigation Equipment

- Field Screening Analysis
  - pH paper or meter
  - Commercial stormwater pollutant screening kit that can detect for reactive phosphorus, nitrate nitrogen, ammonium nitrogen, specific conductance, and turbidity
  - Sample jars
  - Sample collection pole
  - A tool to remove access hole covers
- Laboratory Analysis
  - Sample cooler
  - Ice
  - Sample jars and labels
  - Chain of custody forms.
- Documentation
  - Camera
  - Notebook
  - Pens
  - Notice of Violation forms

- Educational materials

Reporting

- A database is useful for defining and tracking the magnitude and location of the problem.
- Report prohibited non-stormwater discharges observed during the course of normal daily activities so they can be investigated, contained and cleaned up or eliminated.
- Document that non-stormwater discharges have been eliminated by recording tests performed, methods used, dates of testing, and any onsite drainage points observed.
- Maintain documentation of illicit connection and illegal dumping incidents, including significant conditionally exempt discharges that are not properly managed.

Enforcement

- Educate the responsible party if identified on the impacts of their actions, explain the stormwater requirements, and provide information regarding Best Management Practices (BMP), as appropriate. Initiate follow-up and/or enforcement procedures.
- If an illegal discharge is traced to a commercial, residential or industrial source, conduct the following activities or coordinate the following activities with the appropriate agency:
  - Contact the responsible party to discuss methods of eliminating the non-stormwater discharge, including disposal options, recycling, and possible discharge to the sanitary sewer (if within POTW limits).
  - Provide information regarding BMPs to the responsible party, where appropriate.
  - Begin enforcement procedures, if appropriate.
  - Continue inspection and follow-up activities until the illicit discharge activity has ceased.
- If an illegal discharge is traced to a commercial or industrial activity, coordinate information on the discharge with the jurisdiction's commercial and industrial facility inspection program.

Training

- Train technical staff to identify and document illegal dumping incidents.
- Well-trained employees can reduce human errors that lead to accidental releases or spills. The employee should have the tools and knowledge to immediately begin cleaning up a spill if one should occur. Employees should be familiar with the Spill Prevention Control and Countermeasure Plan.
- Train employees to identify non-stormwater discharges and report them to the appropriate departments.
- Train staff who have the authority to conduct surveillance and inspections, and write citations for those caught illegally dumping.

- Train municipal staff responsible for surveillance and inspection in the following:
  - OSHA-required Health and Safety Training (29 CFR 1910.120) plus annual refresher training (as needed).
  - OSHA Confined Space Entry training (Cal-OSHA Confined Space, Title 8 and federal OSHA 29 CFR 1910.146).
  - Procedural training (field screening, sampling, smoke/dye testing, TV inspection).
- Educate the identified responsible party on the impacts of his or her actions.

Spill Response and Prevention

- See SC-11 Spill Prevention Control and Clean Up

Other Considerations

- The elimination of illegal dumping is dependent on the availability, convenience, and cost of alternative means of disposal. The cost of fees for dumping at a proper waste disposal facility are often more than the fine for an illegal dumping offense, thereby discouraging people from complying with the law. The absence of routine or affordable pickup service for trash and recyclables in some communities also encourages illegal dumping. A lack of understanding regarding applicable laws or the inadequacy of existing laws may also contribute to the problem.
- Municipal codes should include sections prohibiting the discharge of soil, debris, refuse, hazardous wastes, and other pollutants into the storm drain system.
- Many facilities do not have accurate, up-to-date schematic drawings.
- Can be difficult to locate illicit connections especially if there is groundwater infiltration.

Requirements

Costs

- Eliminating illicit connections can be expensive especially if structural modifications are required such re-plumbing cross connections under an existing slab.
- Minor cost to train field crews regarding the identification of non-stormwater discharges. The primary cost is for a fully integrated program to identify and eliminate illicit connections and illegal dumping. However, by combining with other municipal programs (i.e. pretreatment program) cost may be lowered.
- Municipal cost for containment and disposal may be borne by the discharger.

Maintenance

Not applicable

Supplemental Information

Further Detail of the BMP

What constitutes a "non-stormwater" discharge?

- Non-stormwater discharges are discharges not made up entirely of stormwater and include water used directly in the manufacturing process (process wastewater), air conditioning condensate and coolant, non-contact cooling water, cooling equipment condensate, outdoor secondary containment water, vehicle and equipment wash water, landscape irrigation, sink and drinking fountain wastewater, sanitary wastes, or other wastewaters.

Permit Requirements

- Current municipal NPDES permits require municipalities to effectively prohibit non-stormwater discharges unless authorized by a separate NPDES permit or allowed in accordance with the current NPDES permit conditions. Typically the current permits allow certain non-stormwater discharges in the storm drain system as long as the discharges are not significant sources of pollutants. In this context the following non-stormwater discharges are typically allowed:
  - Diverted stream flows;
  - Rising found waters;
  - Uncontaminated ground water infiltration (as defined at 40 CFR 35.2005(20));
  - Uncontaminated pumped ground water;
  - Foundation drains;
  - Springs;
  - Water from crawl space pumps;
  - Footing drains;
  - Air conditioning condensation;
  - Flows from riparian habitats and wetlands;
  - Water line and hydrant flushing ;
  - Landscape irrigation;
  - Planned and unplanned discharges from potable water sources;
  - Irrigation water;
  - Individual residential car washing; and
  - Lawn watering.

Municipal facilities subject to industrial general permit requirements must include a certification that the stormwater collection system has been tested or evaluated for the presence of non-stormwater discharges. The state's General Industrial Stormwater Permit requires that non-stormwater discharges be eliminated prior to implementation of the facility's SWPPP.

Illegal Dumping

- Establish a system for tracking incidents. The system should be designed to identify the following:
  - Illegal dumping hot spots
  - Types and quantities (in some cases) of wastes
  - Patterns in time of occurrence (time of day/night, month, or year)
  - Mode of dumping (abandoned containers, "midnight dumping" from moving vehicles, direct dumping of materials, accidents/spills)
  - Responsible parties

Outreach

One of the keys to success of reducing or eliminating illegal dumping is increasing the number of people on the street who are aware of the problem and who have the tools to at least identify the incident, if not correct it. There we a number of ways of accomplishing this:

- Train municipal staff from all departments (public works, utilities, street cleaning, parks and recreation, industrial waste inspection, hazardous waste inspection, sewer maintenance) to recognize and report the incidents.
- Deputize municipal staff who may come into contact with illegal dumping with the authority to write illegal dumping tickets for offenders caught in the act (see below).
- Educate the public. As many as 3 out of 4 people do not understand that in most communities the storm drain does not go to the wastewater treatment plant. Unfortunately, with the heavy emphasis in recent years on public education about solid waste management, including recycling and household hazardous waste, the sewer system (both storm and sanitary) has been the likely recipient of cross-media transfers of waste.
- Provide the public with a mechanism for reporting incidents such as a hot line and/or door hanger (see below).
- Help areas where incidents occur more frequently set up environmental watch programs (like crime watch programs).
- Train volunteers to notice and report the presence and suspected source of an observed pollutant to the appropriate public agency.

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- Non-stormwater discharges are discharges not made up entirely of stormwater and include water used directly in the manufacturing process (process wastewater), air conditioning condensate and coolant, non-contact cooling water, cooling equipment condensate, outdoor secondary containment water, vehicle and equipment wash water, landscape irrigation, sink and drinking fountain wastewater, sanitary wastes, or other wastewaters.

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  - Uncontaminated pumped ground water;
  - Foundation drains;
  - Springs;
  - Water from crawl space pumps;
  - Footing drains;
  - Air conditioning condensation;
  - Flows from riparian habitats and wetlands;
  - Water line and hydrant flushing ;
  - Landscape irrigation;
  - Planned and unplanned discharges from potable water sources;
  - Irrigation water;
  - Individual residential car washing; and
  - Lawn watering.

Municipal facilities subject to industrial general permit requirements must include a certification that the stormwater collection system has been tested or evaluated for the presence of non-stormwater discharges. The state's General Industrial Stormwater Permit requires that non-stormwater discharges be eliminated prior to implementation of the facility's SWPPP.

Storm Drain Stenciling

- Stencil storm drain inlets with a message to prohibit illegal dumpings, especially in areas with waste handling facilities.
- Encourage public reporting of improper waste disposal by a HOTLINE number stenciled onto the storm drain inlet.
- See Supplemental Information section of this fact sheet for further detail on stenciling program approach.

Oil Recycling

- Contract collection and hauling of used oil to a private licensed used oil hauler/recycler.
- Comply with all applicable state and federal regulations regarding storage, handling, and transport of petroleum products.
- Create procedures for collection such as; collection locations and schedule, acceptable containers, and maximum amounts accepted.
- The California Integrated Waste Management Board has a Recycling Hotline, (800) 553-2962, that provides information and recycling locations for used oil.

Household Hazardous Waste

- Provide household hazardous waste (HHW) collection facilities. Several types of collection approaches are available including permanent, periodic, or mobile centers, curbside collection, or a combination of these systems.

Training

- Train municipal employees and contractors in proper and consistent methods for waste disposal.
- Train municipal employees to recognize and report illegal dumping.
- Train employees and subcontractors in proper hazardous waste management.

Spill Response and Prevention

- Refer to SC-11, Spill Prevention, Control & Cleanup
- Have spill cleanup materials readily available and in a known location.
- Cleanup spills immediately and use dry methods if possible.
- Properly dispose of spill cleanup material.

Other Considerations

- Federal Regulations (RCRA, SARA, CERCLA) and state regulations exist regarding the disposal of hazardous waste.
- Municipalities are required to have a used oil recycling and a HHW element within their integrate waste management plan.
- Significant liability issues are involved with the collection, handling, and disposal of HHW.

Examples

The City of Palo Alto has developed a public participation program for reporting dumping violations. When a concerned citizen or public employee encounters evidence of illegal dumping, a door hanger (similar in format to hotel "Do Not Disturb" signs) is placed on the front doors in the neighborhood. The door hanger notes that a violation has occurred in the neighborhood, informs the reader why illegal dumping is a problem, and notes that illegal dumping carries a significant financial penalty. Information is also provided on what citizens can do as well as contact numbers for more information or to report a violation.

The Port of Long Beach has a state of the art database incorporating storm drain infrastructure, potential pollutant sources, facility management practices, and a pollutant tracking system.

The State Department of Fish and Game has a hotline for reporting violations called CalTIP (1-800-952-5400). The phone number may be used to report any violation of a Fish and Game code (illegal dumping, poaching, etc.).

The California Department of Toxic Substances Control's Waste Alert Hotline, 1-800-69TOXIC, can be used to report hazardous waste violations.

References and Resources

http://www.stormwatercenter.net/

California's Nonpoint Source Program Plan http://www.co.clark.wa.us/pubworks/bmpman.pdf

King County Stormwater Pollution Control Manual - http://dnr.metrokc.gov/wlr/dss/spcm.htm

Orange County Stormwater Program,
http://www.ocwatersheds.com/stormwater/swp_introduction.asp

San Diego Stormwater Co-permittees Jurisdictional Urban Runoff Management Program
(http://www.projectcleanwater.org)

Santa Clara Valley Urban Runoff Pollution Prevention Program
http://www.scvurppp-w2k.com/pdf%20documents/PS_ICID.PDF

Outdoor Loading/Unloading SC-30



Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Description

The loading/unloading of materials usually takes place outside on docks or terminals; therefore, materials spilled, leaked, or lost during loading/unloading may collect in the soil or on other surfaces and have the potential to be carried away by stormwater runoff or when the area is cleaned. Additionally, rainfall may wash pollutants from machinery used to unload or move materials. Loading and unloading of material may include package products, barrels, and bulk products. Implementation of the following protocols will prevent or reduce the discharge of pollutants to stormwater from outdoor loading/unloading of materials.

Targeted Constituents

Sediment	✓
Nutrients	✓
Trash	
Metals	✓
Bacteria	
Oil and Grease	✓
Organics	✓
Oxygen Demanding	✓

Approach

Pollution Prevention

- Keep accurate maintenance logs to evaluate materials removed and improvements made.
- Park tank trucks or delivery vehicles in designated areas so that spills or leaks can be contained.
- Limit exposure of materials with the potential to contaminate stormwater.
- Prevent stormwater runon.
- Regularly check equipment for leaks.

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Suggested Protocols

Loading and Unloading – General Guidelines

- Develop an operations plan that describes procedures for loading and/or unloading.
- Do not conduct loading and unloading during wet weather, whenever possible.
- Cover designated loading/unloading areas to reduce exposure of materials to rain.
- A seal or door skirt between delivery vehicles and building can reduce or prevent exposure to rain.
- Design loading/unloading area to prevent stormwater runon which would include grading or berming the area, and positioning roof downspouts so they direct stormwater away from the loading/unloading areas.
- If feasible, load and unload all materials and equipment in covered areas such as building overhangs at loading docks.
- Load/unload only at designated loading areas.
- Use drip pans underneath hose and pipe connections and other leak-prone spots during liquid transfer operations, and when making and breaking connections. Several drip pans should be stored in a covered location near the liquid transfer area so that they are always available, yet protected from precipitation when not in use. Drip pans can be made specifically for railroad tracks. Drip pans must be cleaned periodically, and drip collected materials must be disposed of properly.
- Pave loading areas with concrete instead of asphalt.
- Avoid placing storm drains in the area.
- Grade and/or berm he loading/ unloading area to a drain that is connected to a dead-end sump.

Inspection

- Check loading and unloading equipment regularly for leaks, including valves, pumps, flanges and connections.
- Look for dust or fumes during loading or unloading operations.

Training

- Train employees (e.g. fork lift operators) and contractors on proper spill containment and cleanup.
- Employees trained in spill containment and cleanup should be present during the loading/unloading.
- Train employees in proper handling techniques during liquid transfers to avoid spills.

- Make sure forklift operators are properly trained on loading and unloading procedures.

Spill Response and Prevention

- Refer to SC-11, Spill Prevention, Control & Cleanup
- Keep your spill prevention Control and countermeasure (SPCC) Plan up-to-date, and implement accordingly.
- Have spill cleanup materials readily available and in a known location.
- Cleanup spills immediately and use dry methods if possible.
- Properly dispose of spill cleanup material.

Other Considerations

- Space, material characteristics and/or time limitations may preclude all transfers from being performed indoors or under cover.

Requirements

Costs

- Should be low except when covering a large loading/unloading area.

Maintenance

- Conduct regular inspections and make repairs as necessary. The frequency of repairs will depend on the age of the facility.
- Check loading and unloading equipment regularly for leaks.
- Regular broom dry-sweeping of area.
- Conduct major clean-out of loading and unloading area and sump prior to October 1 of each year.

Supplemental Information

Further Detail of the BMP

Special Circumstances for Indoor Loading/Unloading of Materials

As appropriate loading or unloading of liquids should occur indoors so that any spills that are not completely retained can be discharged to the sanitary sewer, treatment plant, or treated in a manner consistent with local sewer authorities and permit requirements.

- For loading and unloading tank trucks to above and below ground storage tanks, the following procedures should be used:
  - The area where the transfer takes place should be paved. If the liquid is reactive with the asphalt, Portland cement should be used to pave the area.
  - Transfer area should be designed to prevent runon of stormwater from adjacent areas. Sloping the pad and using a curb, like a speed bump, around the uphill side of the transfer area should reduce run-on.

- Transfer area should be designed to prevent runoff of spilled liquids from the area. Sloping the area to a drain should prevent runoff. The drain should be connected to a dead-end sump or to the sanitary sewer (if allowed). A positive control valve should be installed on the drain.

- For transfer from rail cars to storage tanks that must occur outside, use the following procedures:

  - Drip pans should be placed at locations where spillage may occur, such as hose connections, hose reels, and filler nozzles, Use drip pans when making and breaking connections.

  - Drip pan systems should be installed between the rails to collect spillage from tank cars.

References and Resources

http://www.stormwatercenter.net/

King County - ftp://dnr.metrokc.gov/wlr/dss/spcm/Chapter%203.PDF

Orange County Stormwater Program
http://www.ocwatersheds.com/StormWater/swp_introduction.asp

San Diego Stormwater Co-permittees Jurisdictional Urban Runoff Management Program (URMP) -
http://www.projectcleanwater.org/pdf/Model%20Program%20Municipal%20Facilities.pdf

Parking/Storage Area Maintenance SC-43



Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Targeted Constituents

Sediment	✓
Nutrients	✓
Trash	✓
Metals	✓
Bacteria	✓
Oil and Grease	✓
Organics	✓
Oxygen Demanding	✓

Description

Parking lots and storage areas can contribute a number of substances, such as trash, suspended solids, hydrocarbons, oil and grease, and heavy metals that can enter receiving waters through stormwater runoff or non-stormwater discharges. The following protocols are intended to prevent or reduce the discharge of pollutants from parking/storage areas and include using good housekeeping practices, following appropriate cleaning BMPs, and training employees.

Approach

Pollution Prevention

- Encourage alternative designs and maintenance strategies for impervious parking lots. (See New Development and Redevelopment BMP Handbook).
- Keep accurate maintenance logs to evaluate BMP implementation.

Suggested Protocols

General

- Keep the parking and storage areas clean and orderly. Remove debris in a timely fashion.
- Allow sheet runoff to flow into biofilters (vegetated strip and swale) and/or infiltration devices.
- Utilize sand filters or oleophilic collectors for oily waste in low concentrations.

- Arrange rooftop drains to prevent drainage directly onto paved surfaces.
- Design lot to include semi-permeable hardscape.

Controlling Litter

- Post "No Littering" signs and enforce anti-litter laws.
- Provide an adequate number of litter receptacles.
- Clean out and cover litter receptacles frequently to prevent spillage.
- Provide trash receptacles in parking lots to discourage litter.
- Routinely sweep, shovel and dispose of litter in the trash.

Surface cleaning

- Use dry cleaning methods (e.g. sweeping or vacuuming) to prevent the discharge of pollutants into the stormwater conveyance system.
- Establish frequency of public parking lot sweeping based on usage and field observations of waste accumulation.
- Sweep all parking lots at least once before the onset of the wet season.
- If water is used follow the procedures below:
  - Block the storm drain or contain runoff.
  - Wash water should be collected and pumped to the sanitary sewer or discharged to a pervious surface, do not allow wash water to enter storm drains.
  - Dispose of parking lot sweeping debris and dirt at a landfill.
- When cleaning heavy oily deposits:
  - Use absorbent materials on oily spots prior to sweeping or washing.
  - Dispose of used absorbents appropriately.

Surface Repair

- Pre-heat, transfer or load hot bituminous material away from storm drain inlets.
- Apply concrete, asphalt, and seal coat during dry weather to prevent contamination form contacting stormwater runoff.
- Cover and seal nearby storm drain inlets (with waterproof material or mesh) and manholes before applying seal coat, slurry seal, etc., where applicable. Leave covers in place until job is complete and until all water from emulsified oil sealants has drained or evaporated. Clean any debris from these covered manholes and drains for proper disposal.

- Use only as much water as necessary for dust control, to avoid runoff.
- Catch drips from paving equipment that is not in use with pans or absorbent material placed under the machines. Dispose of collected material and absorbents properly.

Inspection

- Have designated personnel conduct inspections of the parking facilities and stormwater conveyance systems associated with them on a regular basis.
- Inspect cleaning equipment/sweepers for leaks on a regular basis.

Training

- Provide regular training to field employees and/or contractors regarding cleaning of paved areas and proper operation of equipment.
- Train employees and contractors in proper techniques for spill containment and cleanup.

Spill Response and Prevention

- Refer to SC-11, Spill Prevention, Control & Cleanup.
- Keep your Spill Prevention Control and countermeasure (SPCC) plan up-to-date, nad implement accordingly.
- Have spill cleanup materials readily available and in a known location.
- Cleanup spills immediately and use dry methods if possible.
- Properly dispose of spill cleanup material.

Other Considerations

- Limitations related to sweeping activities at large parking facilities may include high equipment costs, the need for sweeper operator training, and the inability of current sweeper technology to remove oil and grease.

Requirements

Costs

Cleaning/sweeping costs can be quite large, construction and maintenance of stormwater structural controls can be quite expensive as well.

Maintenance

- Sweep parking lot to minimize cleaning with water.
- Clean out oil/water/sand separators regularly, especially after heavy storms.
- Clean parking facilities on a regular basis to prevent accumulated wastes and pollutants from being discharged into conveyance systems during rainy conditions.

SC-43 Parking/Storage Area Maintenance

Supplemental Information

Further Detail of the BMP

Surface Repair

Apply concrete, asphalt, and seal coat during dry weather to prevent contamination form contacting stormwater runoff. Where applicable, cover and seal nearby storm drain inlets (with waterproof material or mesh) and manholes before applying seal coat, slurry seal, etc. Leave covers in place until job is complete and until all water from emulsified oil sealants has drained or evaporated. Clean any debris from these covered manholes and drains for proper disposal. Use only as much water as necessary for dust control, to avoid runoff.

References and Resources

http://www.stormwatercenter.net/

California's Nonpoint Source Program Plan http://www.swrcb.ca.gov/nps/index.html

Model Urban Runoff Program: A How-To Guide for Developing Urban Runoff Programs for Small Municipalities. Prepared by City of Monterey, City of Santa Cruz, California Coastal Commission, Monterey Bay National Marine Sanctuary, Association of Monterey Bay Area Governments, Woodward-Clyde, Central Coast Regional Water Quality control Board. July 1998 (Revised February 2002 by the California Coastal Commission).

Orange County Stormwater Program
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Oregon Association of Clean Water Agencies. Oregon Municipal Stormwater Toolbox for Maintenance Practices. June 1998.

Pollution from Surface Cleaning Folder. 1996. Bay Area Stormwater Management Agencies Association (BASMAA) http://www.basma.org

San Diego Stormwater Co-permittees Jurisdictional Urban Runoff Management Program (URMP)
http://www.projectcleanwater.org/pdf/Model%20Program%20Municipal%20Facilities.pdf

Plaza and Sidewalk Cleaning SC-71



Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	☑
Oil and Grease	☑
Organics	☑
Oxygen Demanding	☑

Description

Pollutants on sidewalks and other pedestrian traffic areas and plazas are typically due to littering and vehicle use. This fact sheet describes good housekeeping practices that can be incorporated into the municipality's existing cleaning and maintenance program.

Approach

Pollution Prevention

- Use dry cleaning methods whenever practical for surface cleaning activities.
- Use the least toxic materials available (e.g. water based paints, gels or sprays for graffiti removal).

Suggested Protocols

Surface Cleaning

- Regularly broom (dry) sweep sidewalk, plaza and parking lot areas to minimize cleaning with water.
- Dry cleanup first (sweep, collect, and dispose of debris and trash) when cleaning sidewalks or plazas, then wash with or without soap.
- Block the storm drain or contain runoff when cleaning with water. Discharge wash water to landscaping or collect water and pump to a tank or discharge to sanitary sewer if allowed. (Permission may be required from local sanitation district.)

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- Block the storm drain or contain runoff when washing parking areas, driveways or drive-throughs. Use absorbents to pick up oil; then dry sweep. Clean with or without soap. Collect water and pump to a tank or discharge to sanitary sewer if allowed. Street Repair and Maintenance.

Graffiti Removal

- Avoid graffiti abatement activities during rain events.
- Implement the procedures under Painting and Paint Removal in SC-70 Roads, Streets, and Highway Operation and Maintenance fact sheet when graffiti is removed by painting over.
- Direct runoff from sand blasting and high pressure washing (with no cleaning agents) into a dirt or landscaped area after treating with an appropriate filtering device.
- Plug nearby storm drain inlets and vacuum/pump wash water to the sanitary sewer if authorized to do so if a graffiti abatement method generates wash water containing a cleaning compound (such as high pressure washing with a cleaning compound). Ensure that a non-hazardous cleaning compound is used or dispose as hazardous waste, as appropriate.

Surface Removal and Repair

- Schedule surface removal activities for dry weather if possible.
- Avoid creating excess dust when breaking asphalt or concrete.
- Take measures to protect nearby storm drain inlets prior to breaking up asphalt or concrete (e.g. place hay bales or sand bags around inlets). Clean afterwards by sweeping up as much material as possible.
- Designate an area for clean up and proper disposal of excess materials.
- Remove and recycle as much of the broken pavement as possible to avoid contact with rainfall and stormwater runoff.
- When making saw cuts in pavement, use as little water as possible. Cover each storm drain inlet completely with filter fabric during the sawing operation and contain the slurry by placing straw bales, sandbags, or gravel dams around the inlets. After the liquid drains or evaporates, shovel or vacuum the slurry residue from the pavement or gutter and remove from site.
- Always dry sweep first to clean up tracked dirt. Use a street sweeper or vacuum truck. Do not dump vacuumed liquid in storm drains. Once dry sweeping is complete, the area may be hosed down if needed. Wash water should be directed to landscaping or collected and pumped to the sanitary sewer if allowed.

Concrete Installation and Repair

- Schedule asphalt and concrete activities for dry weather.

- Take measures to protect any nearby storm drain inlets and adjacent watercourses, prior to breaking up asphalt or concrete (e.g. place san bags around inlets or work areas).
- Limit the amount of fresh concrete or cement mortar mixed, mix only what is needed for the job.
- Store concrete materials under cover, away from drainage areas. Secure bags of cement after they are open. Be sure to keep wind-blown cement powder away from streets, gutters, storm drains, rainfall, and runoff.
- Return leftover materials to the transit mixer. Dispose of small amounts of hardened excess concrete, grout, and mortar in the trash.
- Do not wash sweepings from exposed aggregate concrete into the street or storm drain. Collect and return sweepings to aggregate base stockpile, or dispose in the trash.
- Protect applications of fresh concrete from rainfall and runoff until the material has dried.
- Do not allow excess concrete to be dumped onsite, except in designated areas.
- Wash concrete trucks off site or in designated areas on site designed to preclude discharge of wash water to drainage system.

Controlling Litter

- Post "No Littering" signs and enforce anti-litter laws.
- Provide litter receptacles in busy, high pedestrian traffic areas of the community, at recreational facilities, and at community events.
- Cover litter receptacles and clean out frequently to prevent leaking/spillage or overflow.
- Clean parking lots on a regular basis with a street sweeper.

Training

- Provide regular training to field employees and/or contractors regarding surface cleaning and proper operation of equipment.
- Train employee and contractors in proper techniques for spill containment and cleanup.
- Use a training log or similar method to document training.

Spill Response and Prevention

- Refer to SC-11, Spill Prevention, Control & Cleanup.
- Have spill cleanup materials readily available and in a known location.
- Cleanup spills immediately and use dry methods if possible.
- Properly dispose of spill cleanup material.

Other Considerations

- Limitations related to sweeping activities at large parking facilities may include current sweeper technology to remove oil and grease.
- Surface cleaning activities that require discharges to the local sewering agency will require coordination with the agency.
- Arrangements for disposal of the swept material collected must be made, as well as accurate tracking of the areas swept and the frequency of sweeping.

Requirements

Costs

- The largest expenditures for sweeping and cleaning of sidewalks, plazas, and parking lots are in staffing and equipment. Sweeping of these areas should be incorporated into street sweeping programs to reduce costs.

Maintenance

Not applicable

Supplemental Information

Further Detail of the BMP

Community education, such as informing residents about their options for recycling and waste disposal, as well as the consequences of littering, can instill a sense of citizen responsibility and potentially reduce the amount of maintenance required by the municipality.

Additional BMPs that should be considered for parking lot areas include:

- Allow sheet runoff to flow into biofilters (vegetated strip and swale) and infiltration devices.
- Utilize sand filters or oleophilic collectors for oily waste in low concentrations.
- Arrange rooftop drains to prevent drainage directly onto paved surfaces.
- Design lot to include semi-permeable hardscape.
- Structural BMPs such as storm drain inlet filters can be very effective in reducing the amount of pollutants discharged from parking facilities during periods of rain.

References and Resources

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Santa Clara Valley Urban Runoff Pollution Prevention Program. 1997 Urban Runoff Management Plan. September 1997, updated October 2000.

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