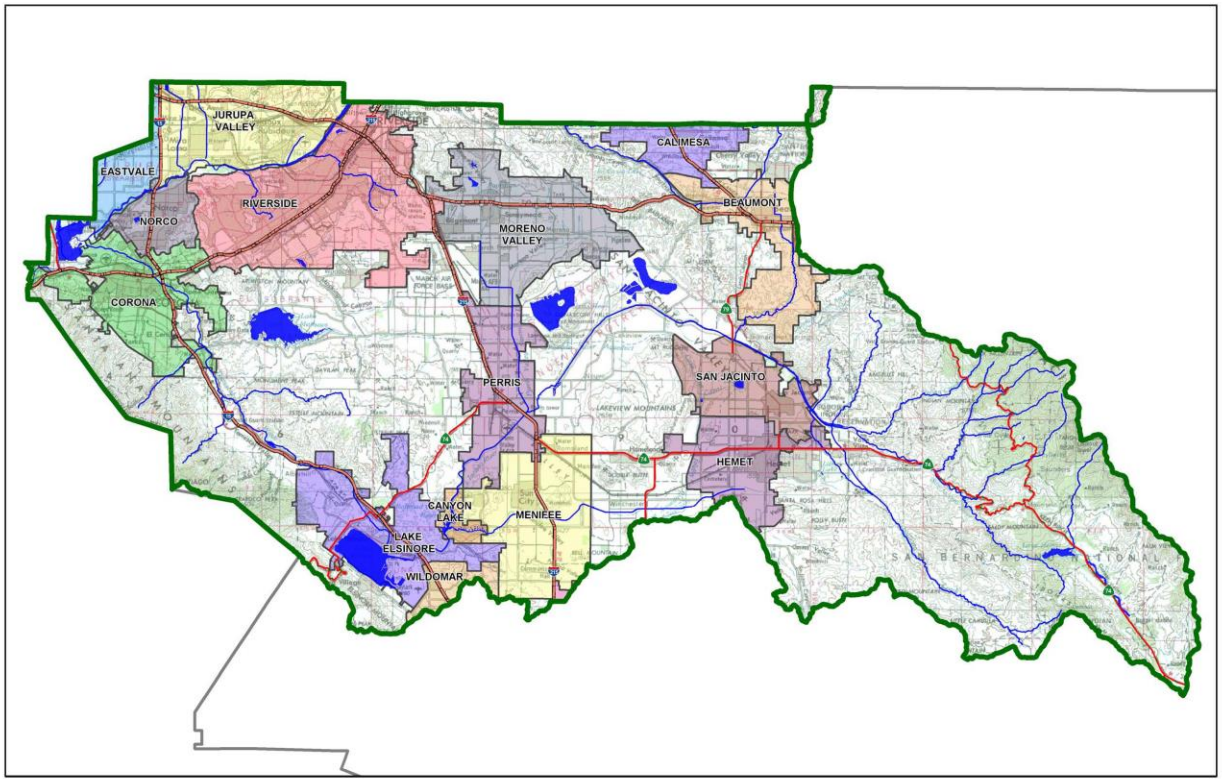
Project Specific Water Quality Management Plan

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

Project Title: JPN

Development No: TPM 37121

Design Review/Case No: Planning Case PM 2016-185



☒ **Preliminary**
☐ **Final**

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Prepared for Compliance with
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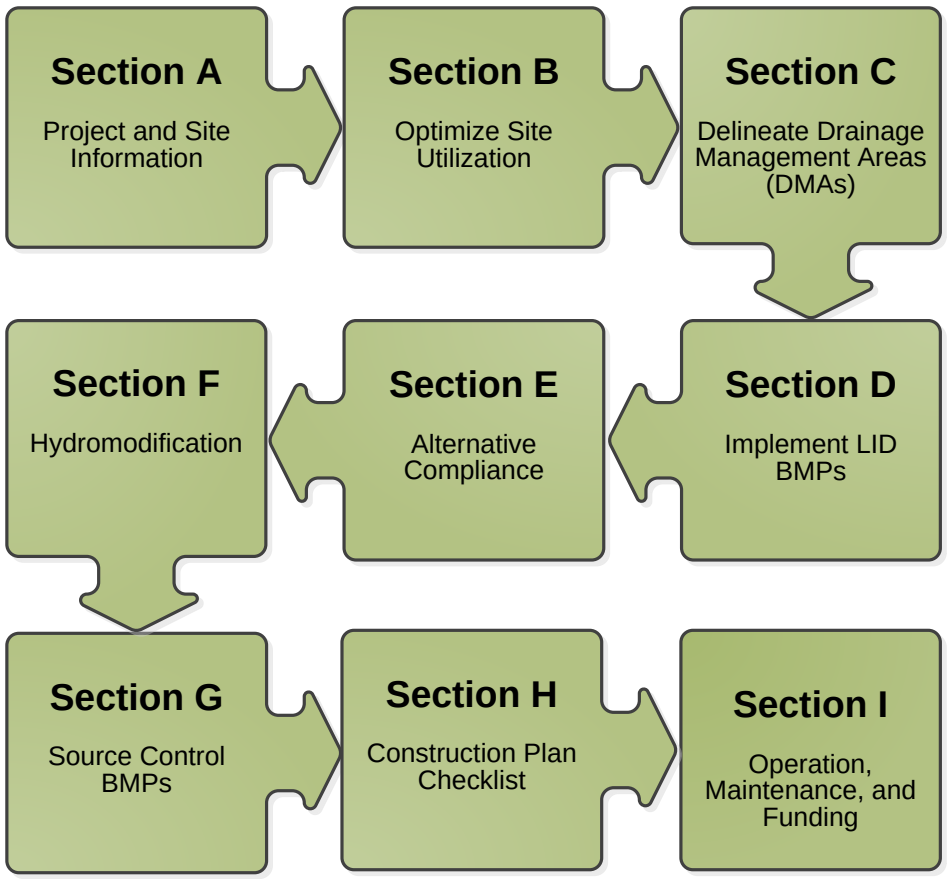
A Brief Introduction

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 JPN CORPORATION, INC. by Albert A. Webb Associates for the JPN TPM 37121 project.

This WQMP is intended to comply with the requirements of City of Menifee for Ordinance 2012-102 which includes the requirement for the preparation and implementation of a Project-Specific WQMP.

The undersigned, while owning the property/project described in the preceding paragraph, shall be responsible for the implementation and funding of this WQMP and will ensure that this WQMP is amended as appropriate to reflect up-to-date conditions on the site. In addition, the property owner accepts responsibility for interim operation and maintenance of Stormwater BMPs until such time as this responsibility is formally transferred to a subsequent owner. This WQMP will be reviewed with the facility operator, facility supervisors, employees, tenants, maintenance and service contractors, or any other party (or parties) having responsibility for implementing portions of this WQMP. At least one copy of this WQMP will be maintained at the project site or project office in perpetuity. The undersigned is authorized to certify and to approve implementation of this WQMP. The undersigned is aware that implementation of this WQMP is enforceable under City of Menifee Water Quality Ordinance 2012-102 (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	Date
Owner's Printed Name	Owner's Title/Position

PREPARER'S CERTIFICATION

"The selection, sizing and design of stormwater treatment and other stormwater quality and quantity control measures in this plan meet the requirements of Regional Water Quality Control Board Order No. **R8-2010-0033** and any subsequent amendments thereto."

Preparer's Signature	Date
Sarah K. Kowalski, P.E. Preparer's Printed Name	Senior Engineer Preparer's Title/Position

Preparer's Licensure:

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Section A: Project and Site Information

PROJECT INFORMATION	
Type of Project:	Commercial
Planning Area:	EDC (Economic Development Corridor)
Community Name:	JPN
Development Name:	JPN
PROJECT LOCATION	
Latitude & Longitude (DMS): 33°40'17.69"N, 117°10'24.26"W	
Project Watershed and Sub-Watershed: Santa Ana Watershed, San Jacinto River Sub-Watershed	
APN(s): 360-130-003	
Map Book and Page No.: Thomas Bros. Map Page 868, Grid E4	
PROJECT CHARACTERISTICS	
Proposed or Potential Land Use(s)	Economic Development Corridor (EDC)
Proposed or Potential SIC Code(s)	n/a
Total Area of Project Footprint (SF)	1,622,096
Total Area of proposed Impervious Surfaces within the Project Footprint (SF)/or Replacement	124,983
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 Footprint (SF)	0
Is the project located within any MSHCP Criteria Cell?	☐ Y ☒ N
If so, identify the Cell number:	N/A
Are there any natural hydrologic features on the project site?	☐ Y ☒ N
Is a Geotechnical Report attached?	☒ Y ☐ N
If no Geotech. Report, list the NRCS soils type(s) present on the site (A, B, C and/or D)	N/A
What is the Water Quality Design Storm Depth for the project?	0.58"

Project Description

The Tentative Parcel Map consists of six private parcels. The net acreage for this TPM is approximately 34.1 acres. This project proposes to widen Haun Road to its ultimate width. The remainder of the project area will be graded in the interim condition to drain to inlets placed at ultimate low points throughout the site. These low points will be collected by proposed storm drain lines, which will be sized for the ultimate condition of a commercial development, which is not proposed per this project. The proposed interim slopes will vary between 0.5% and 1.0% to minimize earthwork while still providing sufficient fall.

The BMPs this project proposes are designed to treat public street flows within Haun Road. In the future, each parcel will have to submit its own water quality analysis. This PWQMP report only pertains to the widening of Haun Road and the interim grading of the proposed parcels. The BMPs being

proposed are only to treat the runoff that is produced by the street. In the event that future development disturbs the function of the proposed BMPs, that particular future project will have to validate that the existing storm water tributary to the modified BMP will be treated by a BMP of equal of greater effectiveness.

Flows generated by the proposed project will surface flow through the roads utilizing curb and gutter, curb cuts, and curb inlets. The project proposes two basins to treat the runoff produces by the project for water quality. Both basins are proposed to treat off-site flows associated with the widening of Haun Road. Each basin will treat the necessary water quality volume and once half a foot of ponding is achieved the flow will continue to be conveyed in its existing drainage pattern.

The project site proposes to extend Lateral Line P. The storm drain has been designed to account for the proposed roadway expansions, with the Haun Road expansion being ultimately drained to the Paloma Channel to the west and the Holland Road improvements being ultimately drained to the drainage ditch to the east.

Basin B is designed to hold its respective water quality volume and then convey the storm water runoff back out during larger storm events. Basin B uses a 2.5 foot section of filter media (1.5’ of engineered soil and 1’ of gravel) to filter storm water runoff. The underdrains will connect to into a proposed outlet structure, which will outlet flows into a new proposed storm drain connection to the Paloma Wash Channel.

Basin C is designed to hold most of its respective water quality volume before entering the proposed outlet structure during larger storm events. Basin C uses a 4’ foot section of filter media (3’ of engineered soil and 1’ of gravel) to filter storm water runoff. This basin also proposes to connect the underdrains into the proposed outlet structure. There will be curb cuts on both sides of the catch basins to collect the QBMP. In larger storm events, some flows will collect in Basin C, but the rest will bypass the basin and flow directly into the catch basin. However, due to the bus turn out on the southwest side of Basin C, the bottom area necessary to treat the runoff was not achievable, because there was a lack of available area. The basin bottom area was short approximately 200 square feet.

A.1 Maps and Site Plans

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

- Drainage Management Areas
- Proposed Structural BMPs
- Drainage Path
- Drainage Infrastructure, Inlets, Overflows
- Source Control BMPs
- Buildings, Roof Lines, Downspouts
- Impervious Surfaces
- Standard Labeling

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

A.2 Identify Receiving Waters

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

Table A.1 Identification of Receiving Waters

Receiving Waters	EPA Approved 303(d) List Impairments	Designated Beneficial Uses	Proximity to RARE Beneficial Use
Salt Creek	N/A	REC1, REC2, WARM, WILD	N/A
Canyon Lake (Railraod Canyon Reservoir)	Nutrients and Pathogens	GWR, REC1, MUN, AGR, WARM, REC2, WILD	N/A
San Jacinto River Reach 1	N/A	AGR, GWR, MUN, REC1, REC2, WARM, WILD	N/A
Lake Elsinore	Nutrients, Organic Enrichment/Low Dissolved Oxygen, PCBs (Polychlorinated biphenyls), Sediment Toxicity	MUN, REC1, REC2, WARM, WILD	N/A

A.3 Additional Permits/Approvals required for the Project:

Table A.2 Other Applicable Permits

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

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

Section B: Optimize Site Utilization (LID Principles)

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

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

Site Optimization

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

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

Yes, existing drainage patterns were identified and preserved.

Existing drainage patterns have the western portion of the site draining towards the Paloma Wash Channel, which parallels Haun Road to the West. The eastern portion of the site drains toward the Caltrans drainage ditch, which parallels Interstate 215 to the East. Both the Paloma Wash Channel and the drainage ditch ultimately drain to the North.

This project proposes to widen Haun Road to its ultimate width. The remainder of the project area will be graded in the interim condition to drain to inlets placed at ultimate low points throughout the site. These low points will be collected by proposed storm drain lines, which will be sized for the ultimate condition of a commercial development, which is not proposed per this project. The proposed storm drain lines will convey all flows into the Paloma Wash Channel via the extension of "Line P" and an additional lateral connection into Paloma Wash Channel.

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

The majority of the present vegetation is infeasible to protect. The majority of the project site is plowed and currently vacant with little or no vegetation. Proposed site improvements include necessary landscaping.

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

The natural infiltration capacity of the soil was determined to be extremely low and was not preserved. Unnecessary compaction of soils will be minimized where feasible. Additionally, the use of bioretention BMPs will allow existing soils to infiltrate soils to their maximum capacity before perforated pipes intercept flows and divert them to the proposed storm drain system.

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

Given the proposed site usage, impervious area was minimized. The proposed site design incorporates minimum required landscaping pervious cover, per code.

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

The project proposes to convey storm water runoff into one of two bioretention facilities, allowing for infiltration, evapotranspiration, evaporation, and biofiltration. All proposed impervious areas drain to these bioretention facilities.

Section C: Delineate Drainage Management Areas (DMAs)

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

Table C.1 DMA Classifications

DMA Name or ID	Surface Type(s)[1]	Area (Sq. Ft.)	DMA Type
L-B	ORNAMENTAL LANDSCAPE	6111	D
ST-B	CONCRETE OR ASPHALT	29223	D
BASIN-B	SELF-TREATING LANDSCAPE	1379	A
L-C	ORNAMENTAL LANDSCAPE	6630	D
ST-C	CONCRETE OR ASPHALT	30625	D
BASIN-C	SELF-TREATING LANDSCAPE	706	A

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

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

DMA Name or ID	Area (Sq. Ft.)	Stabilization Type	Irrigation Type (if any)
DMA-A	1328294	HYDROSEED	*
BASIN-B	1379	ORNAMENTAL LANDSCAPE	*
BASIN-C	706	ORNAMENTAL LANDSCAPE	*
DMA-D	219128	UNDISTURBED / NATURAL	*

***To be determined during final engineering.**

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]
N/A	N/A	N/A	N/A	N/A	N/A	N/A

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

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	Runoff factor	Product	DMA name /ID	Area (square feet)	Ratio
	[A]		[B]	[C] = [A] x [B]		[D]	[C]/[D]
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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

DMA Name or ID	BMP Name or ID
L-B, ST-B	BASIN B
L-C, ST-C	BASIN C

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

Section D: Implement LID BMPs

D.1 Infiltration Applicability

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

If yes has been checked, Infiltration BMPs shall not be used for the site. If no, continue working through this section to implement your LID BMPs. It is recommended that you contact your Co-Permittee to verify whether or not your project discharges to an approved downstream 'Highest and Best Use' feature.

Geotechnical Report

A Geotechnical Report or Phase I Environmental Site Assessment may be required by the 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 DMAS AFFECTED. SEE INFILTRATION REPORT IN APPENDIX 3.*		
…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 neither of the above criteria applies, follow the steps below to assess the feasibility of irrigation use, toilet use and other non-potable uses (e.g., industrial use).

Irrigation Use Feasibility

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

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

Total Area of Irrigated Landscape: 0.34 AC

Type of Landscaping (Conservation Design or Active Turf): Conservative 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: 1.37 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: 1.08 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)
1.08 AC	0.34 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: 0

Project Type: Commercial

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

Total Area of Impervious Surfaces: 1.37 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: 132

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

Minimum number of toilet users: 181

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)
181	0

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: N/A

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: N/A

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

Enter the factor from Table 2-3: N/A

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

Minimum required use: N/A

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

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

If Irrigation, Toilet and Other Use feasibility anticipated demands are less than the applicable minimum values, Harvest and Use BMPs are not required and you should proceed to utilize LID Bioretention and Biotreatment, unless a site-specific analysis has been completed that demonstrates technical infeasibility as noted in D.3 below.

D.3 Bioretention and Biotreatment Assessment

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

Select one of the following:

☒ 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 B	☐	☐	☒	☐	☐
DMA C	☐	☐	☒	☐	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐

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.

Bioretention basins are proposed to treat the site runoff, which will mitigate pollution concentrations through filtration processes in engineered soil media.

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 B

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*BASIN B*		
DMA B	[A]		[B]	[C]	[A] x [C]			
L-B	*6111*	*ORNAMENTAL LANDSCAPE*	*0.1*	*0.11*	*675*	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
ST-B	*29223*	*CONCRETE OR ASPHALT*	*1*	*0.89*	*26067*			
BASIN-B	*1379*	-	-	-	-			
	36713				26742	0.58	1293	1738

[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

Table D.4 DCV Calculations for LID BMPs – DMA C

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*BASIN C*		
DMA C	[A]		[B]	[C]	[A] x [C]			
L-C	*6630*	*ORNAMENTAL LANDSCAPE*	*0.1*	*0.11*	*732*	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
ST-C	*30625*	*CONCRETE OR ASPHALT*	*1*	*0.89*	*27318*			
BASIN-C	*705*	-	-	-	-			
	37961				28050	0.58	1355.7	*1400

[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

***Due to the lack of usable area, Basin C cannot be expanded horizontally to treat the required volume without infringing on private property. However the City does not want to comingle private and public flows. Additionally, the proposed bus stop limits the available land use for water quality. However, by increasing the ponding depth from 0.5' to 0.88', the basin can fully treat the VBMP calculated above. This is shown on the "Post Construction BMP Site Map" exhibit included in Appendix A.**

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.

List DMAs Here.

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	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**		***N/A***		
	[A]		[B]	[C]	[A] x [C]				
N/A	N/A	N/A	N/A	N/A	N/A	*Design Storm Depth (in)*	*Minimum Design Capture Volume or Design Flow Rate (cubic feet or cfs)*	*Total Storm Water Credit % Reduction*	*Proposed Volume or Flow on Plans (cubic feet or cfs)*
	A_T = Σ[A]				Σ= [D]	[E]	$[F] = \frac{[D]x[E]}{[G]}$	[F] X (1-[H])	[I]

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

[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	N/A	N/A	N/A
Volume (Cubic Feet)	N/A	N/A	N/A

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

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

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

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

The project side proposes to drain into Paloma Wash Channel. This discharge point is publically maintained and discharges into the Salt Creek Channel.

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.

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
On-site storm drain 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."
Landscape/Outdoor Pesticide Use	State that all final landscape plans will accomplish all 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 storm water pollution. • Where landscaped areas are used to retain or detain stormwater, specify plans that are tolerant of saturated soil conditions. • Consider using pest-resistant plants, especially adjacent to hardscape. • To insure successful establishment, select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.	• 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.
Plazas, sidewalks, and parking lots		Street sweeping to be performed regularly to prevent accumulation of litter and debris. Collect debris from pressure washing to prevent entry into the storm drain system. Collect wash water containing any cleaning agent or degreaser 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)
BASIN B	Bioretention Basin for northeast portion of Haun Road	*
BASIN C	Bioretention Basin for southeast portion of Haun Road	*

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

***To be finalized during final engineering.**

Section I: Operation, Maintenance and Funding

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

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

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

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

Maintenance Mechanism: WQMP Covenant and Agreement

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

☐ Y ☒ N

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

Maintenance of Bio-retention Basins

Normal maintenance of bio-retention basin includes the maintenance of landscaping, debris, and trash removal from the surface of the basin and tending to problems associated with standing water (vectors, odors, etc.). Significant ponding, especially more than 72 hours after an event, may indicate the possibility of obstructions in the outlet structure or the bottom stage (see Maintenance Plan, and Checklist in Appendix 9).

- Ongoing regular inspections, including just before the annual storm season (October 1 to May 1) and following rainfall events, should include removal of debris and litter, and removal of clippings from landscape maintenance.
- Inspect for sediment build-up and erosion. Remove sediment and re-vegetate eroded areas.
- Inspect for standing water within 72 hours after a significant rainfall event. In addition, check for the presence of odors, insects, and overgrowth. Remove any obstructions within the outlet structure of the detention basin.

Use of pesticides, herbicides, and insecticides within the basin and on the slopes should be avoided, especially before the rainy season.

Table I.2 Funding

All water quality facility funding will be provided by the City of Menifee, these area public roads. If at any time the City of Menifee sells the property, then the operation and maintenance responsibilities will be recorded against the property and will be the responsibility of the new property owner.

			Maintenance Responsibility				Funding Mechanism for Maintenance			Maintenance Costs	
BMP	Used	Not Used	Owner **	City	County	Flood District	Owner	Developer	Public *	1-year $	2-year $
Hydro-seeding & Mulching	☒	☐	☐	☒	☐	☐	☐	☐	☒	200	400
Landscape Public	☒	☐	☐	☒	☐	☐	☐	☐	☒	1,000	2,000
Landscape Private	☐	☒	☐	☐	☐	☐	☐	☐	☐	1,000	2,000
Lawns	☐	☒	☐	☐	☐	☐	☐	☐	☐	N/A	N/A
Impervious permanent cover (concrete/ asphalt) Public	☒	☐	☐	☒	☐	☐	☐	☐	☒	500	1,000
Impervious permanent cover (concrete/ asphalt) Private	☐	☒	☐	☐	☐	☐	☐	☐	☐	500	1,000
Pervious Permanent Cover (decomposed granite)	☐	☒	☐	☐	☐	☐	☐	☐	☐	N/A	N/A
Down Drains	☐	☒	☐	☐	☐	☐	☐	☐	☐	100	200
Ribbon Gutter Public	☐	☒	☐	☐	☐	☐	☐	☐	☐	500	1000
Ribbon Gutter Private	☐	☒	☐	☐	☐	☐	☐	☐	☐	500	1,000
Curb & gutter Public	☒	☐	☐	☒	☐	☐	☐	☐	☒	250	500
Curb & gutter Private	☐	☒	☐	☐	☐	☐	☐	☐	☐	250	500
Storm Drain Public	☒	☐	☐	☒	☐	☐	☐	☐	☒	1,000	2,000
Storm Drain Private	☐	☒	☐	☐	☐	☐	☐	☐	☐	500	1,000
Bioretention Basins, B & C	☒	☐	☐	☒	☐	☐	☐	☐	☒	2,000	4,000
Bioretention Basin Private	☐	☒	☐	☐	☐	☐	☐	☐	☐	2,000	4,000
Education Materials	☒	☐	☐	☒	☐	☐	☐	☐	☒	Free	Free
C.B. Stenciling "No Dumping- Only Rain in the Drain"	☒	☐	☐	☒	☐	☐	☐	☐	☒	100	200

Appendix 1: Maps and Site Plans

Location Map, WQMP Site Plan and Receiving Waters Map

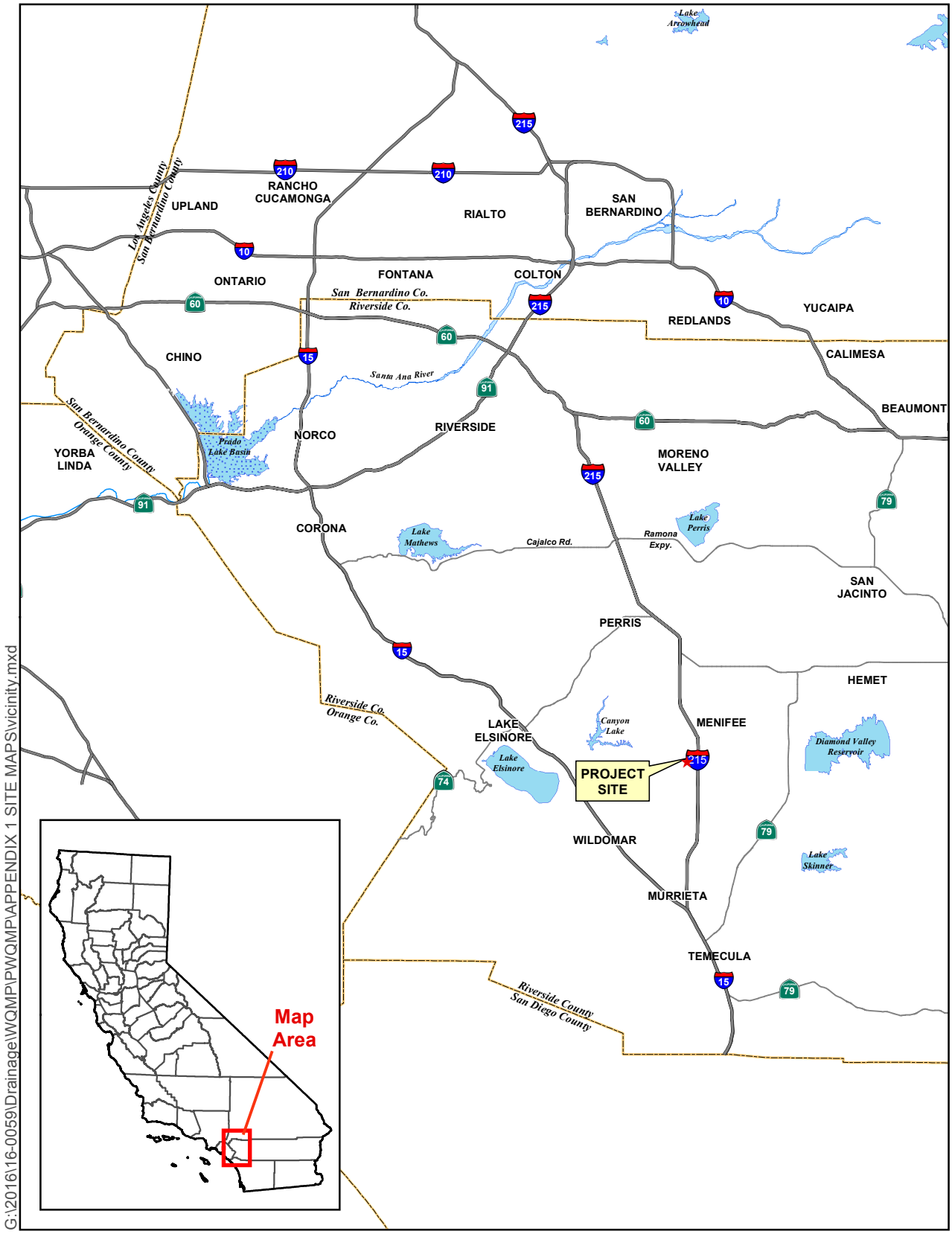
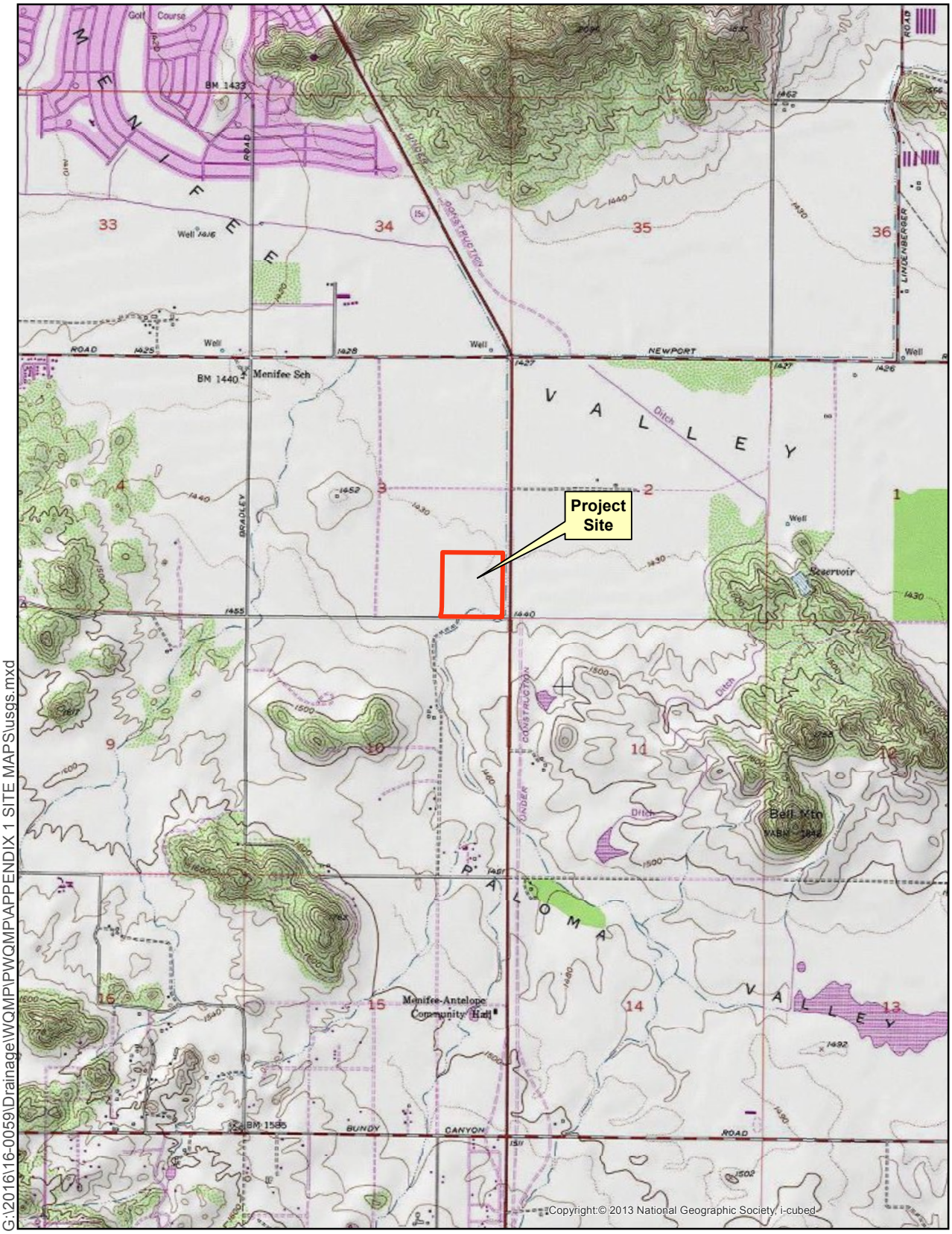


Figure 1. Vicinity Map

Albert A. WEBB Associates

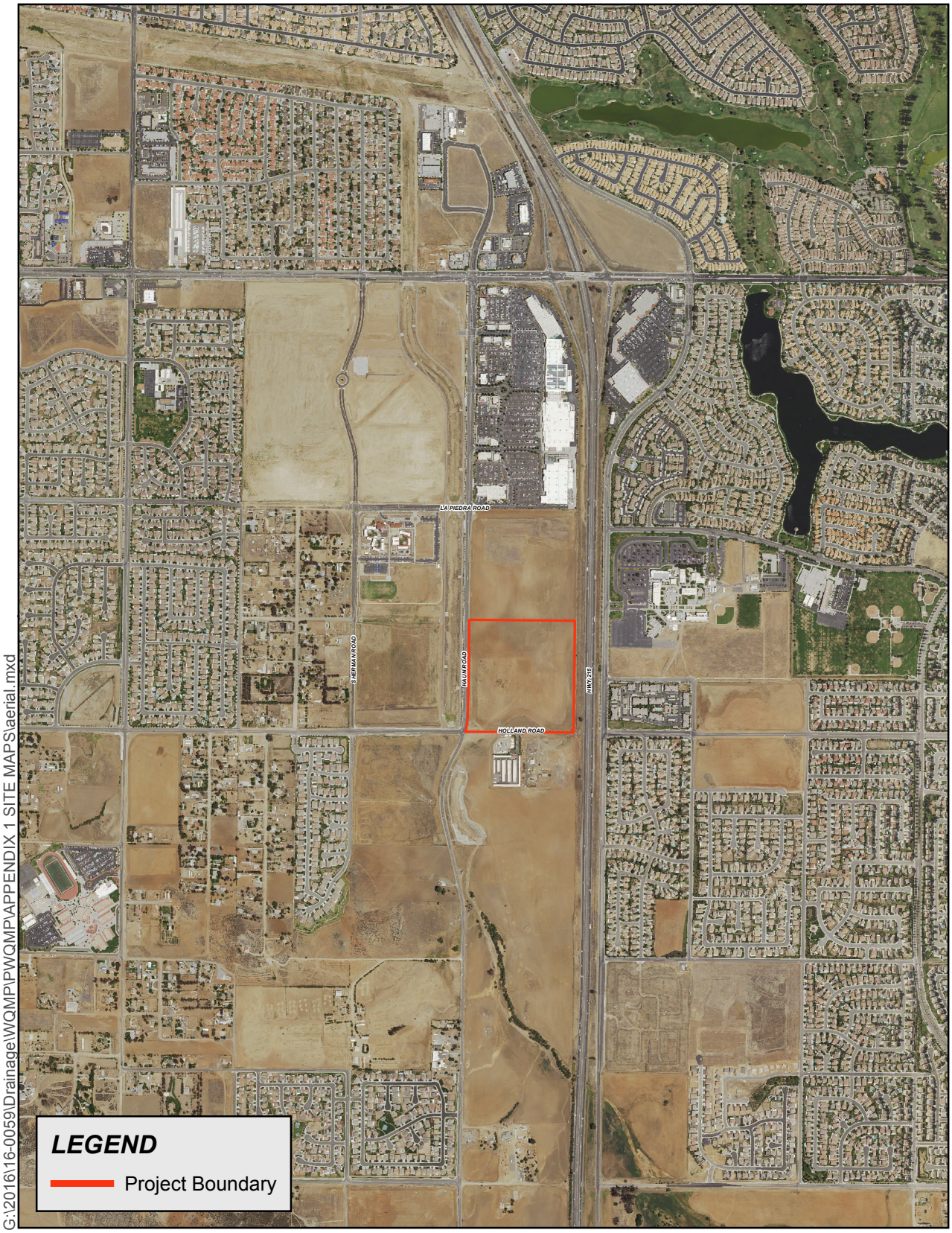


G:\2016\16-0059\Drainage\WQMP\PWQMP\APPENDIX 1 SITE MAPS\usgs.mxd

Sources: ESRI / USGS 7.5min Quad
DRGs: ROMOLAND

Figure 2. USGS Topography Map

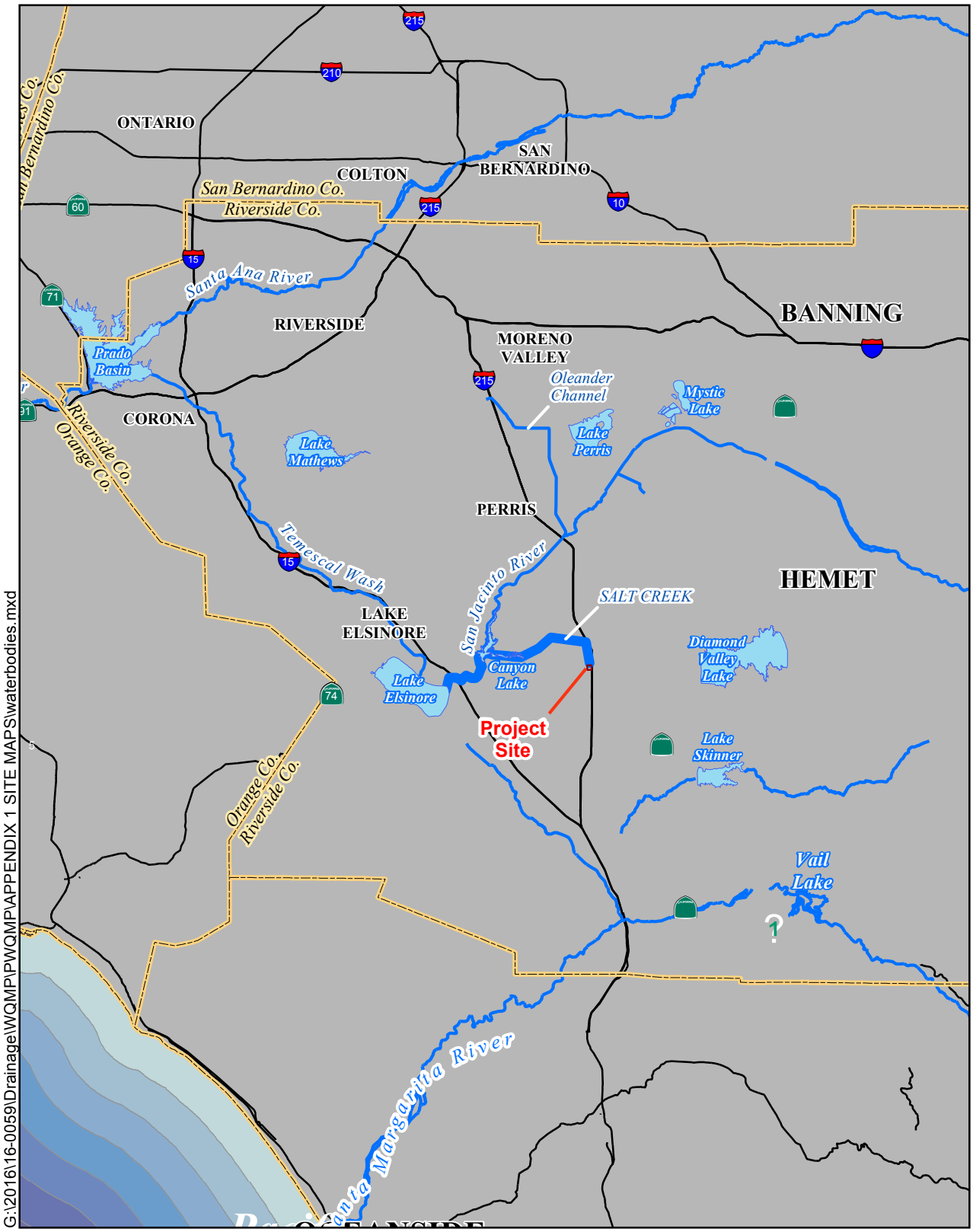
0 1,000 2,000
Feet



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

Figure 3. Aerial Photograph

0 400 800
Feet



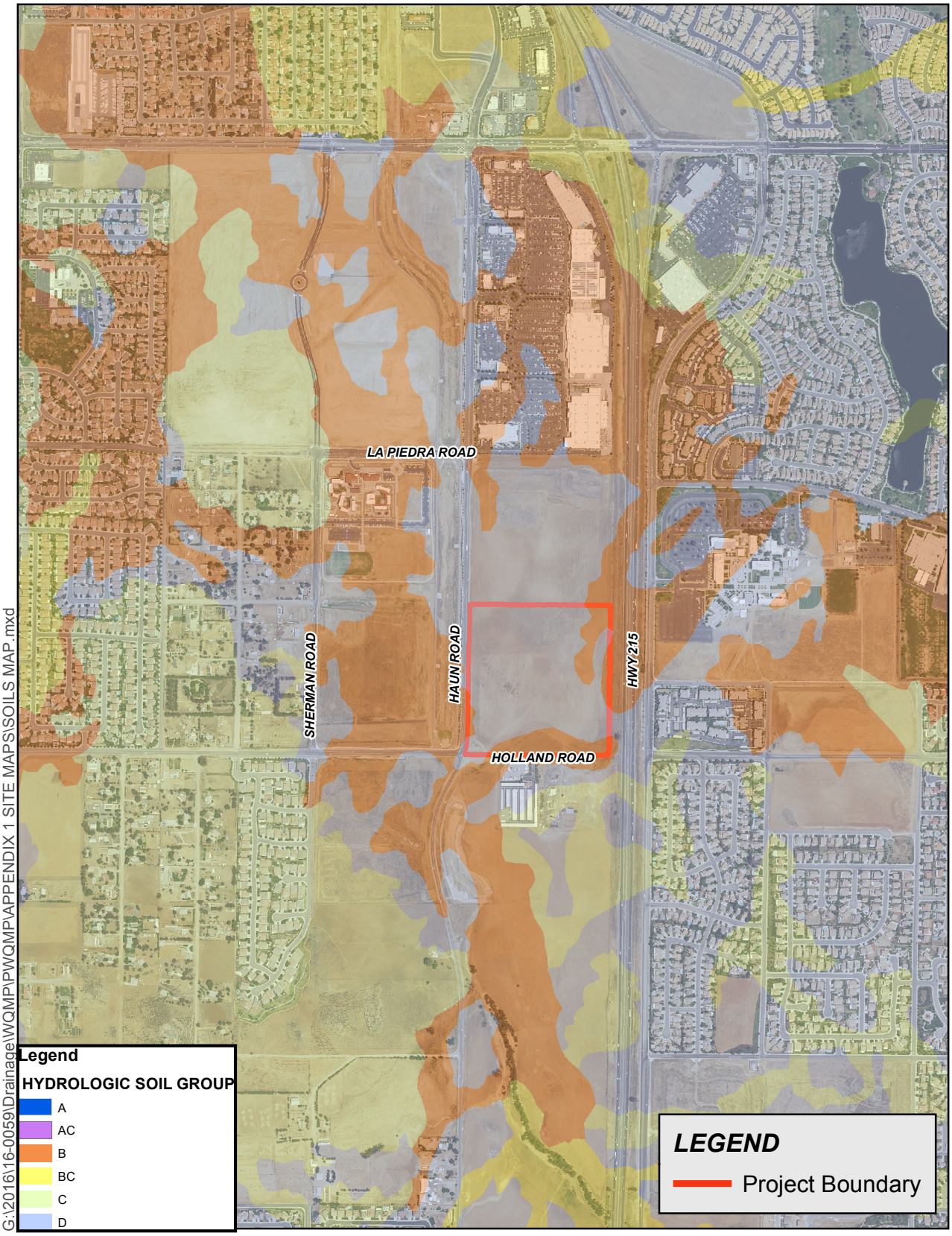
G:\2016\16-0059\Drainage\WQMP\PWQMP\APPENDIX 1 SITE MAPS\waterbodies.mxd

Sources: USGS 30 Meter DEM;
USGS Digital Line Graph

Figure 4. Receiving Waterbodies

0 2 4 6
Miles

Flowpath



G:\2016\16-0059\Drainage\WQMP\PWQMP\APPENDIX 1 SITE MAPS\SOILS MAP.mxd

Eagle Aerial, April 2010;
Riverside County GIS, 2012
RCFC&WCD Hydology Manual Plate C-1.42

N
W E
S

0 500 1,000
Feet

Soils Map

DISCHARGE POINT
Q10=2.2 CFS
Q100=3.3 CFS

DISCHARGE POINT
Q10_INTERIM=38.3 CFS
Q100_INTERIM=54.3 CFS
Q10_ULTIMATE=34.5 CFS
Q100_ULTIMATE=82.3 CFS

DMA-B
0.84 ACRES

DMA-A
30.5 ACRES

DMA-C
0.87 ACRES

DMA-D
5.03 ACRES

BASIN B
BASIN BOTTOM AREA(REQ'D)=458 FT²
BASIN BOTTM AREA(PROP)=1314 FT²
VBMP(REQ'D)=1293 FT³
VBMP(PROP)=1738 FT³

BASIN C
BOTTOM AREA(REQ'D)=644 FT²
BASIN BOTTOM AREA(PROP)=706 FT²
VBMP(REQ'D)=1356 FT³
VBMP(PROP)=1400 FT³

DISCHARGE POINT
Q10=2.6 CFS
Q100=3.9 CFS

DISCHARGE POINT
Q10=5.5 CFS
Q100=8.8 CFS

PROP. PARCEL LINE

PROP. STORM DRAIN LINE

PROP. GRAVEL SPLASH PAD
1 FT² IC/ ON CENTER INTERVAL

PROP. EP. TAPER

FUTURE OVERPASS ESMT

FUTURE OVERPASS R/W

EXIST. CALTRANS R/W

EXIST. CALTRANS DRAINAGE DITCH

EXISTING PALOMA CHANNEL

HAUN ROAD

HOLLAND ROAD

LEGEND

- DRAINAGE MANAGEMENT BOUNDARY
- LANDSCAPING
- CONCRETE OR ASPHALT
- WQ BASIN
- SELF-TREATING AREA
- FLOW DIRECTION
- SD — STORM DRAIN PIPE
- CURB OPENING/CUT OR UNDERSIDEWALK DRAIN
- STORM INLET

DRAINAGE MANAGEMENT AREA - A			
LEGEND	DMA-ID	TYPE	AREA (SF)
	SELF-TREATING	NATURAL	1328294

DRAINAGE MANAGEMENT AREA - B			
LEGEND	DMA-ID	TYPE	AREA (SF)
	L-B	LANDSCAPE	6111
	ST-B	HARDSCAPE	29223
	BASIN-B	SELF-TREATING	1379

DRAINAGE MANAGEMENT AREA - C			
LEGEND	DMA-ID	TYPE	AREA (SF)
	L-C	LANDSCAPE	6630
	ST-C	HARDSCAPE	30625
	BASIN-C	SELF-TREATING	706

DRAINAGE MANAGEMENT AREA - E			
LEGEND	DMA-ID	TYPE	AREA (SF)
	SELF-TREATING	NATURAL	219128

N W WEBB E S

1" = 70'
35 0 70 140 210

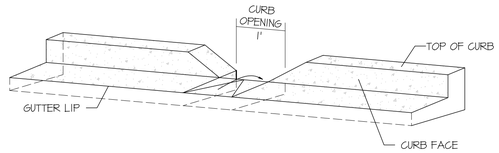
CITY OF MENIFEE

POST CONSTRUCTION BMP SITE MAP
JPN CORPORATION TPM 37121

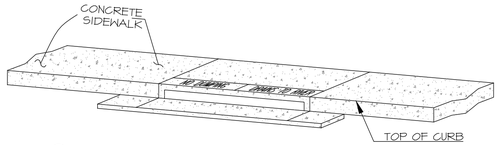
SCALE:	1"=70'	ALBERT A. WEBB ASSOCIATES	ENGINEERING CONSULTANTS 3788 McCRAY STREET RIVERSIDE, CA. 92506 PH. (951) 686-1070 FAX (951) 788-1256
DATE:	10/16/19		
DESIGNED:	ABE		
CHECKED:	SKK		
PLN CK REF:			
F.B.			

W.O. 16-0059
SHEET 1 OF 2 SHEETS
DWG. NO.

G:\2016\16-0059\DRAINAGE\WQMP\PWQMP\AUTOCAD DWG\16-0059-C-PWQMP.DWG 10/16/2019 2:18:30 PM

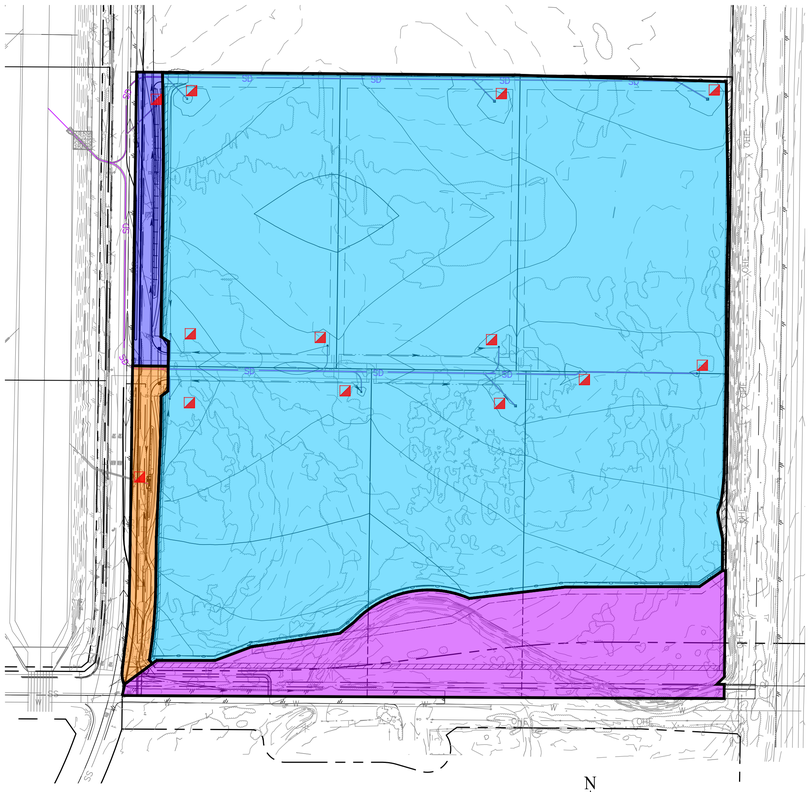


TYPICAL CURB OPENING DETAIL
N.T.S.



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

CATCH BASIN STENCILING DETAIL
NTS


A
B
C
D
50
50
50

Appendix 2: Construction Plans

Grading and Drainage Plans

***To be provided during final engineering**

Appendix 3: Soils Information

Geotechnical Study and Other Infiltration Testing Data

C. W. La Monte Company Inc.

Soil and Foundation Engineers

UPDATED GEOTECHNICAL INVESTIGATION REPORT
Tentative Parcel Map No. 37121
Northeast Corner of Haun Road and Holland Road
Menifee, CA 92584

JOB NO. 16 6754

January 17, 2017

Prepared for:

Jim P. Nelson
JPN CORPORATION, INC.
P.O. Box 27240
San Diego, CA 92198

4400 PALM AVENUE, SUITE B ♦ LA MESA, CALIFORNIA 91941
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January 7, 2017 Job No. 16 6754

TO: Jim P. Nelson
JPN CORPORATION, INC.
P.O. Box 27240
San Diego, CA 92198

SUBJECT: UPDATED GEOTECHNICAL INVESTIGATION REPORT
Tentative Parcel Map No. 37121
Northeast Corner of Haun Road and Holland Road
Menifee, CA 92584

Reference: *Geotechnical Due Diligence Study, 37-Acre Site Located at the Northeast Corner of Haun Road and Holland Road, Menifee Area of Riverside County, California,* by Lawson & Associates, dated September 2002

Preliminary Evaluation Report for Infiltration evaluation infiltration Lid Improvements Tentative Parcel Map No. 37121, Northeast Corner of Haun Road and Holland Road, Menifee, CA 92584, by C.W. La Monte Company, Inc., dated September 28, 2016

In accordance with your request we have performed an updated geotechnical investigation for the proposed restaurant project. A soils report for the development of the site was previously prepared by Lawson & Associates in 2002 and is referenced above. We have reviewed the referenced report by CW Soils. Generally, we concur with the conclusions and recommendations presented in the report. However, based on reinterpretation of the findings we have updated select recommendations based on the current building code and project under review. As of the date of this report C.W. La Monte Company, Inc. is the new Geotechnical Consultant of record and will be providing all necessary geotechnical consultation, plan review, design recommendations, inspection and testing services for this project.

A preliminary infiltration evaluation was conducted at the site by our firm (referenced above). Refer to this document for recommendations regarding stormwater improvements.

The accompanying report presents the findings of our study, and our conclusions and recommendations pertaining to the geotechnical aspects of construction of the proposed development. Based on the results of our investigation, it is our opinion that the development can be constructed as proposed, provided the recommendations of this report are followed and implemented during construction. Remedial grading is required to mitigate the presence of loose, surficial alluvial deposits. The site is underlain at depth with competent older alluvium.

If you should have any questions after reviewing this report, please do not hesitate to contact our office. This opportunity to be of professional service is sincerely appreciated.

Respectfully submitted,

C.W. La Monte Company Inc.

Jerry Redolfi, Project Geologist

Clifford W. La Monte,
R.C.E. 25241, G.E. 0495

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Figure No. 2A	Plot Plan and Geotechnical Map
Figure No. 2B	Site Plan - Proposed Development
Figure No. 3	Test Pit Logs
Figure No. 4A	Regional Geologic Map Excerpt
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Figure No. 5A	Fault Activity Map (2010)
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APPENDICIES

Appendix "A"- Standard Grading Specifications

Appendix "B" - Unified Soil Classification Chart

Appendix "C" - Test Boring Logs by CW Soils

UPDATED GEOTECHNICAL INVESTIGATION REPORT
Tentative Parcel Map No. 37121
Northeast Corner of Haun Road and Holland Road
Menifee, CA 92584

INRODUCTION AND PROJECT DESCRIPTION

The following report presents the results of an updated geotechnical report performed for the above residential project. The project site is a vacant and rectangular-shaped parcel of land, approximately 35 acres in size, and located at the northeast corner of Haun Road and Holland Road, in the City of Menifee, Riverside County, California. Figure Number 1 (attached) provides a vicinity map showing the approximate location of the property and area topography. An oblique aerial photograph is provided below.

Oblique Aerial Photograph of Project Site
View looking northeast.

This report updates the recommendations of the previously referenced report by Lawson & Associates (2002). We accept the findings of their field investigation and laboratory test results. However, the recommendations for site preparation have been somewhat modified, as necessary, based on our additional analysis and interpretation of the data. Recommendations dictated by current building code/s have been updated where appropriate.

The project is still in the planning phase; however, we understand the site will be developed to receive high density residential development with associated parking and street improvements and common area facilities. The proposed attached residential structures will be a maximum of three-stories in height and founded on conventional shallow foundations with slab-on-grade floors. Proposed grading will include cuts and fills of less than 5 feet.

To aid in the preparation of this report, we were provided with an untitled topographic map, by Albert A. Webb Associates, dated July 12, 2016. This plan from was used to prepare our Plot Plan and Geotechnical Map, attached as Figure No. 2A.

This report has been prepared for the exclusive use of the stated client and his design consultants for specific application to the project described herein. Should the project be changed in any way, the modified plans should be submitted to **C. W. La Monte Company, Inc.** for review to determine their conformance with our recommendations and to determine if any additional subsurface investigation, laboratory testing and/or recommendations are necessary. Our professional services have been performed, our findings obtained and our recommendations prepared in accordance with generally accepted engineering principles and practices. This warranty is in lieu of all other warranties, expressed or implied.

SCOPE OF WORK

The scope of this investigation was limited to: surface reconnaissance, research of readily available geotechnical literature pertinent to the site, subsurface exploration, laboratory testing, engineering and geologic analysis of the field and laboratory data and preparation of this report. More specifically, the intent of this investigation was to:

- Review available engineering geotechnical reports and maps pertinent to the subject site.

- Identify the subsurface conditions of the site to the depths influenced by the proposed construction.

- Based on laboratory testing and our experience with similar sites in the area, identify the engineering properties of the various strata that may influence the proposed construction, including the allowable soil bearing pressures, expansive characteristics and settlement potential.

- Describe possible geotechnical factors that could have an effect on the site development.

- Provide mapped spectral acceleration parameters.

- Address potential construction difficulties that may be encountered due to soil conditions and groundwater, and provide recommendations concerning these problems.

- Recommend an appropriate foundation system for the proposed structure and develop soil engineering design criteria for the recommended foundation designs.

- Present our opinions in this written report, which includes in addition to our findings and recommendations, a site plan showing the location of our subsurface explorations, logs of the test trenches and a summary of our laboratory test results.

It was not within our scope of work to evaluate the site for hazardous materials contamination. Further, we did not perform laboratory tests to evaluate the chemical characteristics of the on-site soils in regard to their potentially corrosive impact to on-grade concrete and below grade improvements.

SITE DESCRIPTION

The project site is a nearly rectangular-shaped parcel of land approximately 35 acres in size and located at the northeast corner of Haun Road and Holland Road, Menifee, Riverside County, California. Figure Number 1 (attached) provides a vicinity map showing the approximate location of the property and boundary layout. The property is also bounded by a vacant land to the north, Interstate 215 to the east, and by a commercial storage facility and construction yard to the south. Vegetation on the site consists of a light growth of wild grasses, weeds and shrubs.

Topographically the property is relatively level with generally a northeast slope of less than 1 Percent. Elevations on the site range from a high of 1443 feet above mean sea level near the southwest corner of the property to a low of approximately 1435 at the northeast corner of the site.

An earthen drainage ditch enters the near the northwest portion of the property and forms a "loop" that crosses the southern end of the property. A steep embankment ascends from the north side of the "loop", which is up to 8 feet in height. This portion appears to conform to the original drainage alignment. The drainage alignment turns sharply to the north near the southeast property corner and then drains to the north in a linear direction parallel to the east property line and within the Interstate 215 easement. Based on review of historical topographic maps, it appears the original drainage alignment meandered to the east somewhere within the I-215 easement. The existing linear feature was constructed prior to 1942 (as determined by historic USGS topographic maps) to accommodate road construction. USGS maps older than 1942 do not provide any useful details on the drainage alignment.

FINDINGS

LOCAL GEOLOGY AND SUBSURFACE CONDITIONS

The site is overlain with a veneer recent alluvial valley deposits overlying Quaternary-aged older alluvial fan deposits. The site is underlain at depth with Mesozoic-aged granitic bedrock. Also, localized portions of the site may have been capped with minor amounts of fill soils. The encountered soil types are described individually below in order of increasing age.

Recent subsurface exploration included the placement of 12 backhoe excavated test pits with the logs attached as Figure 3A through 3F. Prior exploration by Lawson & Associates included 3 drilled test borings; logs of these borings are attached as Appendix C. Lawson & Associates advanced the borings on August 30, 2002. A

hollow-stem auger drill rig was utilized to drill the borings to depths ranging from 25 to 50 feet.

The exploratory test pit and boring locations are located on the Plot Plan and Geotechnical Map, attached as Figure No. 2A. A regional geologic map excerpt and local geologic map are is included as Figures No. 4A and 4B respectively.

Young Alluvial Valley Deposits (Qyv): The site is overlain with a veneer Young Alluvial Valley Deposits indicated to be aged Holocene to late Pleistocene. The recent alluvial materials generally consists of dark reddish brown , loose to medium dense, silty sands and soft to firm sandy silt. The alluvium is approximately 2 to 3 feet in thickness. The recent alluvial materials are potential compressible and should be removed and recompacted as discussed in the *Site Preparation* section of this report.

Old Alluvial Fan Deposits (Qof): According to the Preliminary Digital Geologic Map Of The Santa Ana 30' X 60' Quadrangle, Southern California (2004), the site is underlain with old alluvial fan deposits described as "late to middle Pleistocene, sandy alluvium; reddish brown, indurated, surface of most fans slightly dissected".

The encountered Qof underlie the young alluvium and consists primarily of dark reddish brown, medium dense to dense, clayey sands and stiff, clayey silt and sandy clay. The Qof materials are generally considered competent for the support of proposed improvements and/or additional fill. However, the upper portion of this soil profile **at localized areas** can be highly desiccated, which may require additional processing.

Granitic Bedrock: Decomposed granitic bedrock was encountered in Lawson & Associates, Test boring B-1 at a depth of 40 feet below the existing grade. The encountered granitics consisted of gray-black, very dense, poorly sorted sand.

Ground Water: The Lawson & Associates boring exploration encountered groundwater at a depth approximately 47 feet below the existing grade. The stabilized water level in the boring was at 42 feet. No groundwater was encountered in our shallow test pit excavations. However, localized areas of near-surface saturated soils were encountered while traversing the site with the excavating equipment. The saturation is attributed to recent abundant rainfall.

Please note that temporary perched water may develop locally within the low-lying areas of the site if grading is performed during winter months or early spring months and/or after periods of prolonged significant precipitation.

REGIONAL GEOLOGY

Menifee lies in the northern part of the Peninsular Ranges Geomorphic Province, which is characterized by northwest-trending mountains and valleys extending from the Los Angeles Basin on the north southeast into Baja California. The province is bounded by the San Andreas Fault Zone on the east and extends offshore to the west. The northern, onshore part of the province is divided into three major fault-bounded blocks that are, from west to east, the Santa Ana Mountains block, the Perris block, and the San Jacinto Mountains block. The Perris block, where Menifee is located, is bounded by the Elsinore fault zone on the southwest and the San Jacinto fault zone on the northeast. In spite of being surrounded by active fault systems and growing mountain ranges, the Perris block is an area of lower relief that has remained relatively stable and undeformed for thousands of years.

Movements along the San Andreas, San Jacinto, and Elsinore Faults have elevated the San Jacinto and Santa Ana Mountains blocks and down-dropped the Perris block. In response, the uplifted mountains and hills are rapidly eroding (in geologic time), shedding sand, silt, and gravel and forming fans that are filling the valleys. The alluvial fans of the Menifee area have a range of ages coincident with the rise of the nearby mountains (early Pleistocene to Holocene, approximately 1 million years to less than 11,000 years old).' Deposition is still ongoing, with the youngest sediments filling the active drainage channels and floodplains. At depth, this sequence of alluvial sediments is underlain by crystalline rock similar to that exposed in the surrounding hills and mountains.

The City encompasses numerous brush-covered hills and low mountains surrounded by a series of interconnected, broad, nearly flat-bottomed valleys. The steepest slope and largest cluster of hillsides can be found north of Menifee Lakes, traveling northward across McCall Boulevard. Quail Valley also has a significant number of steep hillsides that influence development patterns in the area. Elevations in the City range from about 1,400 feet above mean sea level (amsl) for the valley floor to approximately 2,600 feet amsl for the local hills; Bell Mountain is 1,850 amsl. Menifee includes parts of three valleys: the Perris Valley in the north end of the City, the Menifee Valley in the central part of the City, and the Paloma Valley in the southeast area.

FAULTING AND SEISMICITY

No major faults are known to traverse the subject site but it should be noted that much of Southern California, including the Riverside County area, is characterized by a series of Quaternary-age fault zones, which typically consist of several individual, en echelon faults that generally strike in a south easterly – northwesterly direction. Some of these fault zones (and the individual faults within the zones) are classified as active.

According to the criteria of the California Division of Mines and Geology, active fault zones are those, which have shown conclusive evidence of faulting during the Holocene Epoch (the most recent 11,000 years). An excerpt from the *2010 Fault Activity Map of California* is attached as Figure No. 5A.

Significant ground shaking will likely impact the site within the design life of the proposed project, due to the project being located in a seismically active region. The geologic structure of the entire southern California area is dominated by northwest-trending faults associated with the San Andreas Fault system. The San Andreas Fault system accommodates for most of the right lateral movement associated with the relative motion between the Pacific and North American tectonic plates.

Based on our review of published and unpublished geotechnical maps and literature pertaining to site and regional geology, the closest active fault to the site is the Elsinore fault located approximately 13 kilometers to the southwest. A reproduction of Exhibit S-1 from the City of Menifee Safety Element is attached as Figure No. 5B and shows the location of the site relative to the Elsinore Fault Zone. The San Jacinto fault is located approximately 19 kilometers to the northeast. Both of these faults are capable of producing a large magnitude earthquake. Table 1 below lists most of the major active faults within 30 miles that are likely to affect the project site.

Several short, unnamed and inactive fault breaks are located within a 5 mile radius of the site (as shown Figure No. 5A). The subject property is not located within an Alquist-Priolo Earthquake Fault Zone, established by the State of California to restrict the construction of habitable structures across identifiable traces of known active. No Alquist-Priolo maps cover the project location.

TABLE 1
Summary of Major Active Faults

Fault Name	Approximate Distance From Site miles	Maximum Moment Magnitude
ELSINORE - (TEMECULA)	7	6.8
SAN JACINTO - SAN JACINTO	13	6.9
ELSINORE - (GLEN IVY)	8	6.8
SAN JACINTO—ANZA	14	7.2
ELSINORE—(JULIAN)	20	7.1
SAN JACINTO - SAN BERNARDINO	26	6.7
CHINO—CENTRAL AVE. (Elsinore)	28	6.7
SAN ANDREAS—Whole M-la	29	8.0
SAN ANDREAS - SB-Coach. M-lb-2	29	7.7
SAN ANDREAS - SB-Coach. M-2b	29	7.7

The County of Riverside Environmental Impact Report No. 521 (2014) provides estimates of several key groundshaking parameters near the fault rupture zones for the Riverside MCE, expressed as a percentage of gravity, are presented in their

Table 4.12-A (Probable Earthquake Scenarios for Riverside County. Peak ground acceleration, which is the maximum acceleration achieved at a site, often turns out to be the earthquake effect that predicates the most damage to buildings. Wave periods of *03* second and 1.0 second are the lengths of seismic waves that commonly damage structures. All of these values are well above the threshold for heavy damage. Table 4.12-A is reproduced below:

Table 4.12-A: Probable Earthquake Scenarios for Riverside County

Event		Maximum Magnitude (M_w)	Chance of Occurring in 30 Years	Comments
Fault	Segment			
San Andreas	San Bernardino	7.3	28%	Very high intensity groundshaking throughout the San Bernardino Valley, including north central Riverside County.
San Andreas	Coachella	7.1	22%	Very high intensity groundshaking throughout the Coachella Valley, affecting desert resort communities and agriculture.
San Jacinto	San Jacinto Valley	6.9	43%	Highest probability of occurrence of any Southern California fault. Brought closer to failure as a result of stress field changes caused by the 1992 Landers earthquake.
San Jacinto	Anza Segment	7.2	17%	This event would be very destructive within the communities of Hemet and San Jacinto.
Elsinore	Temecula Segment	6.8	16%	Has not produced any significant earthquakes in historic time.
Elsinore	Glen Ivy Segment	6.8	16%	Would be very destructive in the communities of Lake Elsinore, Murrieta and Temecula.
Whittier	Whittier	6.8	5%	Has not broken in over 1,600 years (WGCEP, 1995). Would cause significant landslide and lifeline damage in the Chino Hills - Corona area.

Notes: Maximum Magnitude: the magnitude of an earthquake event based on the amount of energy released. This measurement is more accurate for large earthquake events.
Source: Riverside County General Plan, Appendix H - Natural Hazard Mapping, Analysis and Mitigation: A Technical Background Report in Support of the Riverside County General Plan, 2000.

SEISMIC DESIGN PARAMETERS

We have re-determined the mapped spectral acceleration values for the site utilizing U.S. Seismic Design Maps, Version 3.1.0 (July 11, 2013) from the USGS website. The seismic design parameters are specific to the site and provide a solution for Section 1613 of the 2012 IBC (which uses USGS hazard data available in 2008).

The analysis included the following input parameters:

Design Code Reference Document: ASCE 7-10 Standard

Site Soil Classification: Site Class D

Risk Category: I or II or III

Site Coordinates: 33.6704°N, 117.17452°W

The values generated by the *Design Map Report* are provided in the following table:

TABLE II
Site Coefficients and Spectral Response Acceleration Parameters

S_s	S_1	F_a	F_v	S_{ms}	S_{m1}	S_{ds}	S_{d1}
1.5	0.60	1.0	1.5	1.5	0.90	1.0	0.60

The values are not significantly different than was provided in the referenced report. Application to the criteria in Table I for seismic design does not constitute any kind of guarantee or assurance that significant structural damage or ground failure will not occur if ever seismic shaking occurs. The primary goal of seismic design is to protect life, not to avoid all damage, since such design may be economically prohibitive.

GEOLOGIC HAZARDS

No geologic hazards of sufficient magnitude to preclude development of the site as we presently contemplate it are known to exist. In our professional opinion and to the best of our knowledge, the site is suitable for the proposed development.

Ground Shaking

A likely geologic hazard to affect the site is ground shaking as a result of movement along one of the major active fault zones mentioned above. Probable ground shaking levels at the site could range from slight to severe, depending on such factors as the magnitude of the seismic event and the distance to the epicenter. It is likely that the site will experience the effects of at least one moderate to large earthquake during the life of the proposed structure. Construction in accordance with the minimum requirements of the California Building Code, the Structural Engineers Association of California lateral force design requirements, and local governing agencies should minimize potential damage due to seismic activity.

Landslide Potential

According to the City of Menifee General Plan, Exhibit S-3 (Liquefaction and Landslides) the site **is not** located in areas where local topographic and geological conditions suggest the potential for earthquake-induced landslides. Due to the sites level topography, landsliding does not present a significant hazard.

Liquefaction

According to Exhibit S-3 from the City of Menifee, Safety Element (Liquefaction and Landslides) the site is not located in an area where local geological and groundwater conditions suggest a potential for liquefaction. Our site specific geotechnical investigation indicates that the materials at the site are not subject to significant liquefaction due to such factors as soil density, grain-size distribution, and groundwater conditions.

Flooding

According to Exhibit S-5 from the City of Menifee, Safety Element (Flood Hazards) the site is located within Flood Zone AE. Zone AE corresponds to the 100-year flood areas, as determined by detailed hydraulic analyses (See FEMA Flood Insurance Rate Maps and FEMA Flood Insurance Study for Riverside County for Base Flood Elevations). In most cases, base flood elevations are shown at selected intervals.

Tsunamis and Seiches

Tsunamis are great sea waves produced by submarine earthquakes or volcanic eruptions. Based on the project's inland and elevated location, the site is considered to possess a very low risk potential from tsunamis.

Seiches are periodic oscillations in large bodies of water such as lakes, harbors, bays or reservoirs. The site is considered to have a very low risk potential for damage caused by seiches.

CONCLUSIONS AND DICUSSIONS

In general, we found the subject property suitable for the proposed construction, provided the recommendations provided herein are followed. The most significant findings and geotechnical conditions that will influence site development are summarized below. Detailed recommendations for precede this section of the report.

- The building site is overlain with about 3 to 5 feet poorly consolidated, young alluvium and surficially desiccated older alluvium. These surficial materials are considered unsuitable in their present condition to support structural fill and/or settlement sensitive improvements. As such, all recent alluvium and any desiccated materials not removed by planned site grading will need to be removed from areas to support fills and/or settlement sensitive improvements and, where necessary to achieve planned site grades, be replaced as properly compacted fill.

- The soils underlying the site are considered to possess a very low to moderate expansive potential as determined by ASTM D4829. The foundation

recommendations provided in this report reflect this potentially expansive condition.

- Since the recommended grading includes a generally uniform compacted fill mat under the proposed structures, transition conditions will not impact the proposed development.

- Please note that the young alluvial soils mantling site can be saturated during periods of prolonged precipitation. Therefore, it would be optimal to avoid performing the remedial grading operations during such wet conditions. Once the surficial material is recompacted by remedial grading, the infiltration characteristics will be reduced sufficiently so as not to recreate such saturated conditions after site development.

RECOMMENDATIONS

Earth Work and Grading

Specification Guidelines
All grading should conform to the guidelines presented in this report, Sections 1804 and Appendix "J" of the current California Building Code, the minimum requirements of the City of Menifee, and the Standard Grading and Construction Specifications, Appendix "A", attached hereto, except where specifically superseded in the text of this report. Prior to grading, a representative of C.W. La Monte Company Inc. should be present at the preconstruction meeting to provide additional grading guidelines, if necessary, and to review the earthwork schedule.

Observation and testing by the soil engineer is essential during the grading operations. This allows the soil engineer to confirm the conditions anticipated by our investigation, to allow adjustments in design criteria to reflect the actual field conditions exposed, and to determine that the grading proceeds in general accordance with the recommendations contained herein

Fill Suitability
On-site excavated materials may be used as compacted fill material or backfill. The on-site materials are anticipated to posses a very low- to low-expansion potential. Any potential import soil sites should be evaluated and approved by the Geotechnical Consultant prior to importation. At least two working days notice of a potential import source should be given to the Geotechnical Consultant so that appropriate testing can be accomplished. The type of material considered most desirable for import is a non-detrimentally expansive granular material with some silt or clay binder.

Site Preparation
Site preparation should begin with the removal of all vegetation and other deleterious materials from the portion of lot that will be graded and that will receive improvements. This should include all root balls from the shrubs removed and all significant root material. The resulting materials should be disposed of off-site.

After clearing and grubbing, site preparation should continue with the removal all existing loose alluvium and desiccated materials from areas that will be graded or that will support settlement-sensitive improvements. As the project is presently planned, topsoil removals are, generally, expected to vary from about 3 to 5 feet. **Please note the estimated removal depths may be thicker in localized areas.** Where possible, the removals should extend laterally a minimum of 5 feet beyond the structure perimeter or to a distance equal to the depth of removals (whichever is greater). Lateral removals shall also comply with attached Figure No. 6. The loose soil shall be removed to expose firm natural ground as determined by our field representative during grading.

Where existing grade is at a slope steeper than five units horizontal to one unit vertical (20-percent slope) and the depth of the fill exceeds 5 feet (1524 mm) benching shall be provided in accordance with Figure J107.3 (reproduced below) of the 2010 California Building Code (A copy is attached to the back of Appendix A). A key shall be provided which is at least 10 feet (3048 mm) in width and 2 feet (610 mm) in depth. All removal areas should be approved by a representative of our office prior to the placement of fill or improvements.

Figure J107.3 from the 2010 California Building Code

Prior to placing any fill soils or constructing any new improvements in areas that have been cleaned out to receive fill, the exposed soils should be scarified to a depth of approximately 6 to 12 inches, be moisture conditioned, and compacted to at least 90 percent relative compaction.

Excavation Characteristics
The on-site topsoil materials will excavate with easy to moderate effort using typical heavy equipment. No significant amounts of oversize materials (greater than 8 inches) are anticipated.

Compaction and Method of Filling
All structural fill placed at the site should be compacted to a relative compaction of at least 90 percent of its maximum dry density as determined by ASTM Laboratory Test D1557-91 guidelines. Fills should be placed at or slightly above optimum moisture content, in lifts six to eight inches thick, with each lift compacted by mechanical means. Fills should consist of approved earth material, free of trash or debris, roots, vegetation, or other materials determined to be unsuitable by our soil technicians or project geologist. All material should be free of rocks or lumps of soil in excess of twelve inches in maximum width. However, in the upper two feet of pad grade, no rocks or lumps of soil in excess of six inches should be allowed.

Utility trench backfill within five feet of the proposed structure and beneath all pavements and concrete flatwork should be compacted to a minimum of 90 percent of its maximum dry density. The upper one-foot of pavement subgrade and base material should be compacted to at least 95 percent relative density. All grading and fill placement should be performed in accordance with the local Grading Ordinance, the 2010 California Building Code, and the *Standard Grading and Construction Specifications,* attached hereto as Appendix A.

Surface Drainage
Per Section 1804 of the California Building Code, in general, the ground immediately adjacent to foundations shall be sloped away from the building at a slope of not less than one unit vertical in 20 units horizontal (5-percent slope) for a minimum distance of 10 feet (3048 mm) measured perpendicular to the face of the wall. If physical obstructions or lot lines prohibit 10 feet (3048 mm) of horizontal distance, a 5-percent slope shall be provided to an approved alternative method of diverting water away from the foundation. Swales used for this purpose shall be sloped a minimum of 2 percent where located within 10 feet (3048 mm) of the building foundation. Impervious surfaces within 10 feet (3048 mm) of the building foundation shall be sloped a minimum of 2 percent away from the building.

Exceptions are allowed where climatic or soil conditions warrant, the slope of the ground away from the building foundation shall be permitted to be reduced to not less than one unit vertical in 48 units horizontal (2-percent slope). The procedure used to establish the final ground level adjacent to the foundation shall account for additional settlement of the backfill.

Erosion Control

In addition, appropriate erosion-control measures shall be taken at all times during construction to prevent surface runoff waters from entering footing excavations, ponding on finished building pad or pavement areas, or running uncontrolled over the tops of newly-constructed cut or fill slopes. Appropriate Best Management Practice (BMP) erosion control devices should be provided in accordance with local and federal governing agencies.

Temporary Cut Slopes

No "long term" temporary excavations over 5 feet in height are anticipated during site grading. However, it should be noted that the contractor is solely responsible for designing and constructing stable, temporary excavations and may need to shore, slope, or bench the sides of trench excavations as required to maintain the stability of the excavation sides where friable sands or loose soils are exposed. The contractor's "responsible person", as defined in the OSHA Construction Standards for Excavations, 29 CFR, Part 1926, should evaluate the soil exposed in the excavations as part of the contractor's safety process. In no case should slope height, slope inclination, or excavation depth, including utility trench excavation depth, exceed those specified in local, state, and federal safety regulations.

Foundations

General

Dimensions and Embedment

Conventional shallow and/or deepened foundations may be utilized in the support of the proposed structures. Foundations should be constructed in accordance with the recommendations of the project structural engineer and the minimum requirements of the California Building Code. The following table provides suggested foundation dimensions:

TABLE II - FOUNDATION DIMENSIONS

Number of Floors Supported by The Foundation	Width of Footing (Inches)	Embedment Depth Below Undisturbed Soil*
1	12	18
2	15	18
3	18	24

* Assumes moderately expansive as-graded condition

Isolated pad footings should have a minimum width of 24 inches. Isolated footings and wide door openings should be provided with a tie beam.

Soil Bearing Value
A bearing capacity of 2000 psf may be assumed for said footings when founded a minimum of 12 inches into properly compacted fill. This bearing capacity may be increased by one-third, when considering wind and/or seismic loading.

Lateral Load Resistance
Lateral loads against foundations may be resisted by friction between the bottom of the footing and the supporting soil, and by the passive pressure against the footing. The coefficient of friction between concrete and soil may be considered to be 0.35. The passive resistance may be considered to be equal to an equivalent fluid weight of 300 pounds per cubic foot. This assumes the footings are poured tight against undisturbed soil. If a combination of the passive pressure and friction is used, the friction value should be reduced by one-third.

Foundation Reinforcement
It is recommended that continuous footings be reinforced with at least four No. 5 steel bar; two reinforcing bars shall be located near the top of the foundation, and two bars near the bottom.

The steel reinforcement will help prevent damage due to normal, post construction settlement or heaving, resulting from variations in the subsurface soil conditions. The minimum reinforcement recommended herein is based on soil characteristics only and is not intended to replace reinforcement required for structural considerations).

Anticipated Settlements
Based on our experience with the soil types on the subject site, the soils should experience settlement in the magnitude of less than 0.5 inch under proposed structural loads.

It should be recognized that minor hairline cracks normally occur in concrete slabs and foundations due to shrinkage during curing and/or redistribution of stresses and some cracks may be anticipated. Such cracks are not necessarily an indication of excessive vertical movements.

Horizontal Distance of Footings from Slopes

According to Section 1808.7 (Foundation on or adjacent to slopes), of the 2013 California Building Code foundations on or adjacent to slope surfaces shall be founded in firm material with an embedment and set back from the slope surface sufficient to provide vertical and lateral support for the foundation without detrimental

settlement. Generally, setbacks should conform to Figure 1808A.7.1, which is reproduced below. Where the slope is steeper than 1 unit vertical in 1 unit horizontal (100-percent slope), the required setback shall be measured from an imaginary plane 45 degrees to the horizontal, projected upward from the toe of the slope.

Figure 1808.7.1 from the 2013 CBC

Foundation Excavation Observation

The general contractor is responsible for implementing the foundation recommendations in this report. All foundation excavations should be observed by the Geotechnical Consultant prior to placing reinforcing steel and formwork in order to verify compliance with the foundation recommendations presented herein. All footing excavations should be excavated neat, level and square. All loose or unsuitable material should be removed prior to the placement of concrete.

Foundation Plans Review

The finalized, foundation plans should be submitted to this office for review to ascertain that the recommendations provided in this report have been followed and that the assumptions utilized in its preparation are still valid. Additional or amended recommendations may be issued based on this review.

Post Tensioned Foundation Systems

In lieu of the proceeding foundation recommendations, post tensioned slabs are also appropriate for the proposed structures. Post tension foundations are generally considered to be a superior foundation system, but may be slightly higher in overall cost. Parameters for the design of a post tensioned foundation system can be provided on request.

CONCRETE SLABS-ON-GRADE

It is our understanding that the floor system of the proposed structure will consist of concrete slab-on-grade floors. We anticipate that the concrete slabs-on-grade will be supported by non-detrimentally expansive, competent formation and/or properly compacted fill material. The following recommendations assume that the subgrade soils have been prepared in accordance with the recommendations presented in the

"Grading and Earthwork" section of this report. In addition, the following recommendations are considered the minimum slab requirements based on the soil conditions and are not intended in lieu of structural considerations.

Interior Floor Slabs
It is our opinion that the minimum floor slab thickness should be five inches (actual). The floor slab should be reinforced with at least No. 4 bars placed at 18 inches on center each way. The slab reinforcing bars should extend at least six inches into the perimeter footings and be integrally tied to the foundation steel. Slab reinforcing should be supported by chairs and be positioned at mid-height in the floor slab.

Exterior Concrete Flatwork
On-grade exterior concrete slabs for walks and patios should have a thickness of four inches and should be reinforced with at least No. 3 reinforcing bars placed at 24 inches on center each way. Exterior slab reinforcement should be placed approximately at mid-height of the slab. Reinforcement and control joints should be constructed in exterior concrete flatwork to reduce the potential for cracking and movement. Joints should be placed in exterior concrete flatwork to help control the location of shrinkage cracks. Spacing of control joints should be in accordance with the American Concrete Institute specifications. Foundations they should be doweled into the footings.

Subgrade Preparation

At least the upper two feet of subgrade soils underlying concrete flatwork should be compacted at near optimum moisture to a minimum of 90 percent of the maximum dry density as determined by ASTM test method D1557-00. Prior to placing concrete, the subgrade soils should be moistened to at least optimum or slightly above optimum moisture content

SLAB MOISTURE BARRIERS

A moisture barrier system is recommended beneath any new interior slab-on-grade floors with moisture sensitive floor coverings or coatings to help reduce the upward migration of moisture vapor from the underlying subgrade soil. A properly selected and installed vapor retarder is essential for long-term moisture resistance and can minimize the potential for flooring problems related to excessive moisture.

Interior floor slabs should be underlain by a minimum 10-mil thick moisture retarder product over a two-inch thick layer of clean sand (Please note, additional moisture reduction and/or prevention measures may be needed, depending on the performance requirements for future floor covering products). The moisture retarder product used should meet or exceed the performance standards dictated by ASTM E

1745 Class A material and be properly installed in accordance with ACI publication 302 (*Guide to Concrete Floor and Slab Construction*) and ASTM E1643 (*Standard Practice for Installation of Water Vapor Retarder Used in Contact with Earth or Granular Fill Under Concrete Slabs).* Ultimately, the design of the moisture retarder system and recommendations for concrete placement and curing are purview of the structural engineer, in consideration of the project requirements provided by the project architect and developer.

Moisture Retarders and Installation

Vapor retarder joints must have at least 6-inch-wide overlaps and be sealed with mastic or the manufacturer's recommended tape or compound. No heavy equipment, stakes or other puncturing instruments should be used on top of the liner before or during concrete placement. In actual practice, stakes are often driven through the retarder material, equipment is dragged or rolled across the retarder, overlapping or jointing is not properly implemented, etc. All these construction deficiencies reduce the retarders' effectiveness. It is the responsibility of the contractor to ensure that the moisture retarder is properly placed in accordance with the project plans and specifications and that the moisture retarder material is free of tears and punctures and is properly sealed prior to the placement of concrete.

Interior Slab Curing Time

Following placement of concrete floor slabs, sufficient drying time must be allowed prior to placement of floor coverings. Premature placement of floor coverings may result in degradation of adhesive materials and loosening of the finish floor materials. Prior to installation, standardized testing (calcium chloride test and/or relative humidity) should be performed to determine if the slab moisture emissions are within the limits recommended by the manufacturer of the specified floor-covering product.

DESIGN PARAMETERS FOR EARTH RETAINING STRUCTURES

Lateral Pressure: Refer to the *FOUNDATIONS* section of this report for lateral pressure values.

Active Pressure for Retaining Walls: Lateral pressures acting against masonry and cast-in-place concrete retaining walls can be calculated using soil equivalent fluid weight. The equivalent fluid weight value used for design depends on allowable wall movement. Walls that are free to rotate at least 0.5 percent of the wall height can be designed for the active equivalent fluid weight. Retaining walls that are restrained at the top (such as basement walls), or are sensitive to movement and tilting should be designed for the at-rest equivalent fluid weight.

Values given in the table below are in terms of equivalent fluid weight and assume a triangular distribution. The provided equivalent fluid weight values assume that either on-site on imported granular soils consisting of sand, or gravel (SP, SW, SM, and GP) will be used as backfill. Clay soils (CL-CH) **may not** be used as retaining wall backfill.

Table III
Equivalent Fluid Weights (efw) For Calculating Lateral Earth Pressures (Using Non-detrimentally Expansive Backfill)

Conditions	Level Backfill (pcf) Backfill-SM/SC Soil
Active	30
At-Rest	60

Vehicular Loads: In the case of vehicular loads coming closer than one-half the height of the wall, we recommend a live load surcharge pressure equal to not less than 2 feet of soil surcharge with an average unit weight of 125 pcf.

Retaining Wall Foundations: Retaining wall foundations shall be designed by the structural engineer based on the appropriate parameters provided in this report.

Waterproofing and Drainage: In general, retaining walls should be provided with a drainage system adequate to prevent the buildup of hydrostatic forces and be waterproofed as specified by the project architect. Also refer to American Concrete Institute ACI 515.R (A Guide to the Use of Waterproofing, Damp Proofing, Protective and Decorative Barriers Systems for Concrete).

Positive drainage for retaining walls should consist of a vertical layer of permeable material positioned between the retaining wall and the soil backfill. Such permeable material may be composed of a composite drainage geosynthetic or a natural permeable material such as crushed rock or clean sand at least 12 inches thick and capped with at least 12 inches of backfill soil. The gravel should be wrapped in a geosynthetic filter fabric. Provisions should be made for the discharge of any accumulated groundwater. The selected drainage system should be provided with a perforated collection and discharge pipe placed along the bottom of the permeable material near the base of the wall. The drain pipe should discharge to a suitable drainage facility. If lateral space (due to property line constraints) is insufficient to allow installation of the gravel-wrapped "burrito" drain, a geocomposite system may be used in lieu of the typical gravel and pipe subdrain system. TenCate's MiraDrain (and similar products) provide a "low-profile" drainage system that requires minimal lateral clearance for installation. MiraDRAIN and similar products may also be incorporated into a waterproofing system and provide a slab drainage system (Please note that supplemental manufacturer's details will be required to provide a

waterproofed system).

Backfill: All backfill soils should be compacted to at least 90% relative compaction. Imported or on-site sands, gravels, silty sand materials are suitable for retaining wall backfill. The wall should not be backfilled until the masonry has reached an adequate strength. Soil with an expansion index (EI) of greater than 50 should not be used as backfill material behind retaining walls, which includes the predominant on-site material.

PAVEMENT RECOMMENDATIONS

Asphalt Pavement Section

Final pavement design should be based upon sampling and testing of post graded conditions. For preliminary design and estimating purposes, the following pavement structural sections can be used for the range of likely Traffic Index wheel loads. The preliminary sections are based on an assumed R-Value of 30, which in our opinion is a conservative estimate for local material.

TABLE IV

Preliminary Pavement Design			
R-Value*	Traffic Index	Asphaltic Concrete Thickness (Inches)	Aggregate Base Thickness (Inches)
35	4	3	4
	6	3.5	8.5
	7	4	10.5

* Estimated value-testing required during site grading.

Site Preparation for Pavement Areas

Prior to receiving the pavement section the upper 8 to 12 inches of existing subgrade should be scarified, moisture conditioned to above optimum moisture requirements and compacted to at least 95 percent of the maximum dry density. The aggregate base material should also be compacted to at least 95 percent of its maximum dry density. All materials and methods of construction should conform to good engineering practices and the minimum standards set forth by the City of Temecula.

FIELD INVESTIGATION

Twelve exploratory test excavations were placed on the site using a tractor-mounted backhoe. Previously three test boring was placed on the site using a small diameter, hollow-stem, flight auger (Lawson & Associates, 2002). The explorations were placed specifically in areas where representative soil conditions were expected and the structure will be located. Our investigation also included a visual site reconnaissance.

The excavation was visually inspected and logged by our field geologist, and samples were taken of the predominant soils throughout the field operation. The logs of the exploratory excavations are presented on Figure Numbers 3A and 3F. The exploratory boring logs are presented in Appendix C. The soils are described in accordance with the Unified Soils Classification (See Appendix D). In addition, a verbal textural description, the wet color, the apparent moisture and the density or consistency are provided. The density of granular soils is given as very loose, loose, medium dense, dense or very dense. The consistency of cohesive soils is described as very soft, soft, firm, stiff and hard.

Bulk samples of disturbed soil were collected in bags from the boring excavation. Representative undisturbed ring samples were obtained by means of a split tube, 2-3/8-inch (interior diameter) sampler driven into the soils ahead of the auger by a 140-pound weight free falling a distance of 30 inches. Standard penetration test are performed by driving a 1-5/8 inch ID split-tube sampler (Standard Pin) ahead of the auger using a 140-pound weight free falling a distance of 30 inches. The number of blows to drive the samplers twelve inches was recorded, and this number is presented on the boring log as "Penetration Resistance". The number of blows to drive the Standard Pin sampler can be correlated to soil density as indicated by the below tables:

STANDARD PENETRATION TEST
Table V

FINE GRAINED SOILS
(predominantly silt or clay)

Apparent Density	Blows per Foot
Very Soft	<2
Soft	2-4
Firm	5-8
Stiff	9-15
Very Stiff	16-30
Hard	>30

COARSE GRAINED SOILS
(predominantly sand)

Apparent Density	Blows per Foot
Very Loose	<4
Loose	4-10
Medium Dense	11-30
Dense	31-50
Very Dense	>50

LABORATORY TESTS AND SOIL INFORMATION

CLASSIFICATION: Field classifications were verified in the laboratory by visual examination. The final soil classifications are in accordance with the Unified Soil Classification System.

MOISTURE-DENSITY: In-place moisture contents and dry densities were determined for representative soil samples. This information was an aid to classification and permitted recognition of variations in material consistency with depth. The dry unit weight is determined in pounds per cubic foot, and the in-place moisture content is determined as a percentage of the soil's dry weight. The results are summarized in the test excavation logs.

MAXIMUM DENSITY/OPTIMUM MOISTURE CONTENT: The maximum dry density and optimum moisture content of a typical on-site soil samples was determined in the laboratory in accordance with ASTM Standard Test D-1557. The results of these tests are presented below:

Sample Location:	Boring B-1 @ 3'
Description	Dark reddish brown, clayey sand (SC)
Maximum Density	114.5 pcf
Optimum Moisture Content	9.0 percent

Sample Location:	Boring TE-3 @ 2-3'
Description	Dark reddish brown, silty sand (SM)
Maximum Density	128 pcf
Optimum Moisture Content	9.0 percent

EXPANSION INDEX: Expansion Index testing was performed in accordance with ASTM D4929 as a guideline. The results of the testing are presented below:

EXPANSION INDEX TEST

Sample Location:	B 1, 3'	TE-6, 2'-3'
Initial Moisture Content:	-	12.3%
Initial Dry Density:	114.0	110.0
Final Moisture Content:	-	23%
Expansion Index:	7	65
CBC Classification:	Very Low	Medium

GRAIN SIZE DISTRUBUTION: Grain size testing was performed by Lawson & Associates. Their representative samples were dried, weighed, and soaked in Water

until individual soil Particles were separated (per ASTM 1)421) and then washed on a No. 200 sieve. The portion retained on the No. 200 sieve was dried and then sieved on a U.S. Standard brass sleeve set in accordance with ASTM D422 (CTM 202). Where an appreciable amount of fines were encountered (greater than 20 percent passing the No. 200 sieve) a hydrorneter analysis was done to determine the distribution of soil particles passing the No. 200 sieve.

Sample Location	Description	% Passing 200 Sieve
B-9, 15'	Clayey SAND	46
B-1 35'	Clayey SAND	46

DIRECT SHEAR TEST: A direct shear test was performed in accordance with ASTM D3080 as a guideline. The results are presented below.

Sample Number:	TE -1 @ 3.5' – 4.5'
Description:	Remold to Natural Density
Angle of Internal Friction:	31 ^{0}
Apparent Cohesion:	150 psf

LIMITATIONS

The recommendations presented in this report are contingent upon our review of final plans and specifications. Such plans and specifications should be made available to the Geotechnical Engineer and Engineering Geologist so that they may review and verify their compliance with this report and with Appendix Chapter 33 of the Uniform Building Code.

It is recommended that C.W. La Monte Company Inc. be retained to provide continuous soil engineering services during the earthwork operations. This is to verify compliance with the design concepts, specifications or recommendations and to allow design changes in the event that subsurface conditions differ from those anticipated prior to start of construction.

The recommendations and opinions expressed in this report reflect our best estimate of the project requirements based on an evaluation of the subsurface soil conditions encountered at the subsurface exploration locations and on the assumption that the soil conditions do not deviate appreciably from those encountered. It should be recognized that the performance of the foundations and/or cut and fill slopes may be influenced by undisclosed or unforeseen variations in the soil conditions that may occur in the intermediate and unexplored areas. Any unusual conditions not covered

in this report that may be encountered during site development should be brought to the attention of the Geotechnical Engineer so that he may make modifications if necessary.

This office should be advised of any changes in the project scope or proposed site grading so that we may determine if the recommendations contained herein are appropriate. It should be verified in writing if the recommendations are found to be appropriate for the proposed changes or our recommendations should be modified by a written addendum.

The findings of this report are valid as of this date. Changes in the condition of a property can, however, occur with the passage of time, whether they are due to natural processes or the work of man on this or adjacent properties. In addition, changes in the Standards-of-Practice and/or Government Codes may occur. Due to such changes, the findings of this report may be invalidated wholly or in part by changes beyond our control. Therefore, this report should not be relied upon after a period of two years without a review by us verifying the suitability of the conclusions and recommendations.

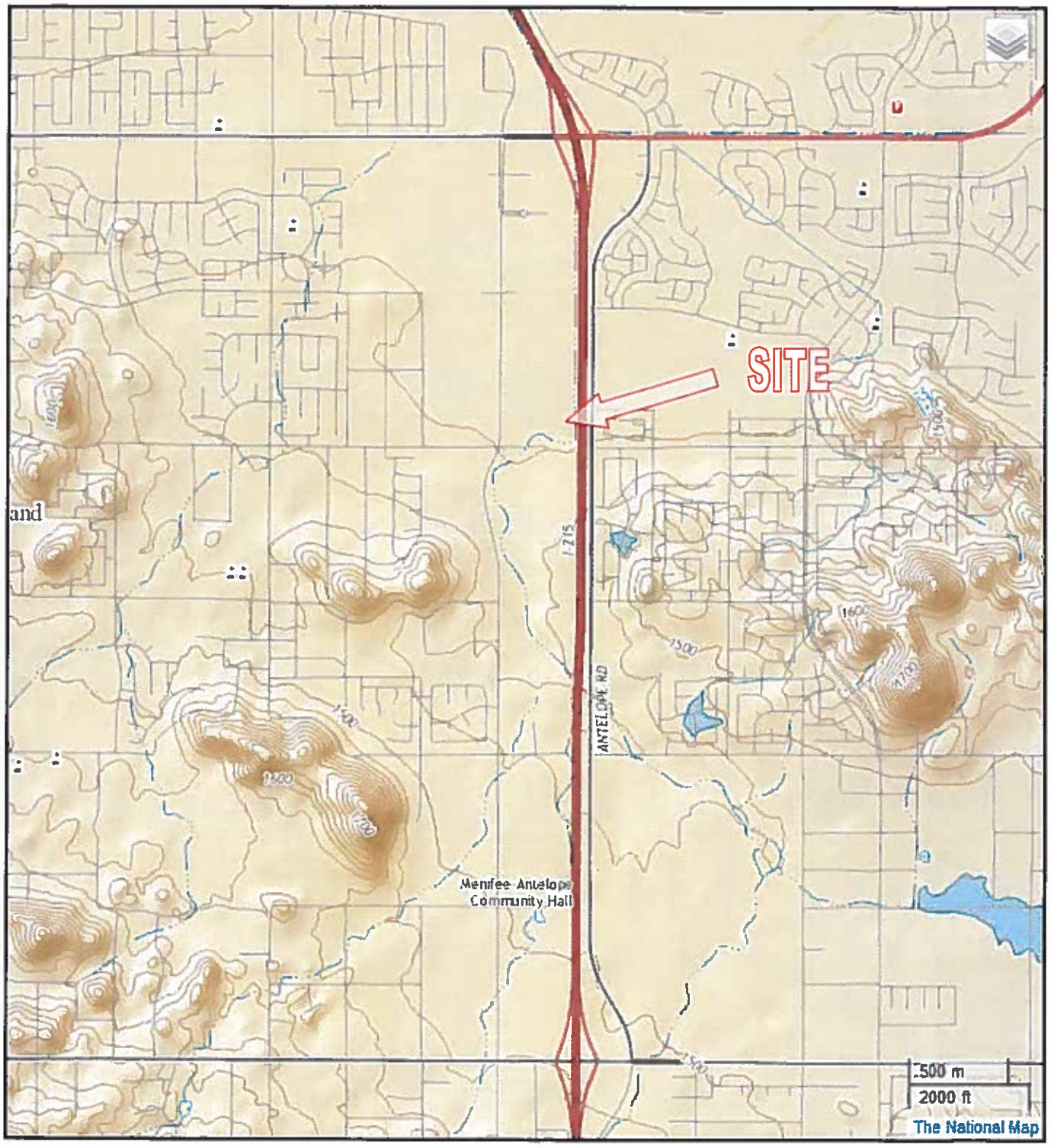
In the performance of our professional services, we comply with that level of care and skill ordinarily exercised by members of our profession currently practicing under similar conditions and in the same locality. The client recognizes that subsurface conditions may vary from those encountered at the locations where our borings, surveys, and explorations are made, and that our data, interpretations, and recommendations are based solely on the information obtained by us. We will be responsible for those data, interpretations, and recommendations, but shall not be responsible for the interpretations by others of the information developed. Our services consist of professional consultation and observation only, and no warranty of any kind whatsoever, express or implied, is made or intended in connection with the work performed or to be performed by us, or by our proposal for consulting or other services, or by our furnishing of oral or written reports or findings.

It is the responsibility of the stated client or their representatives to ensure that the information and recommendations contained herein are brought to the attention of the structural engineer and architect for the project and incorporated into the project's plans and specifications. It is further their responsibility to take the necessary measures to insure that the contractor and his subcontractors carry out such recommendations during construction. The firm of C.W. La Monte Co. Inc. shall not be held responsible for changes to the physical condition of the property, such as addition of fill soils or changing drainage patterns, which occur subsequent to the issuance of this report.

We do not direct the Contractor's operations, and we cannot be responsible for the safety of Personnel other than our own on the site; the safety of other is the responsibility of the Contractor. The Contractor should notify the Owner if he

considers any of the recommended actions presented herein to be unsafe.

SITE LOCATION AND TOPOGRAPHIC MAP



USGS National Maps Website, 7.5-Minute Series, US Topo Current

C.W. La Monte Company Inc.
Soil and Foundation Engineers

Figure No. 1

PLOT PLAN AND GEOTECHNICAL MAP

LEGEND

Approximate Test Boring Location- (Lawson & Associates (2002)

B-2

Approximate Test Excvation Location

TE-2

Geologic Units
(Surficial deposits not mapped)

Qyv = Young Alluvial Valley Deposits
Qof = Old Alluvial fan deposits

Existing Contours

1442

Proposed Contours

(1442)

Proposed LID Location and Grades

1434.6

N
W WEBB E
S

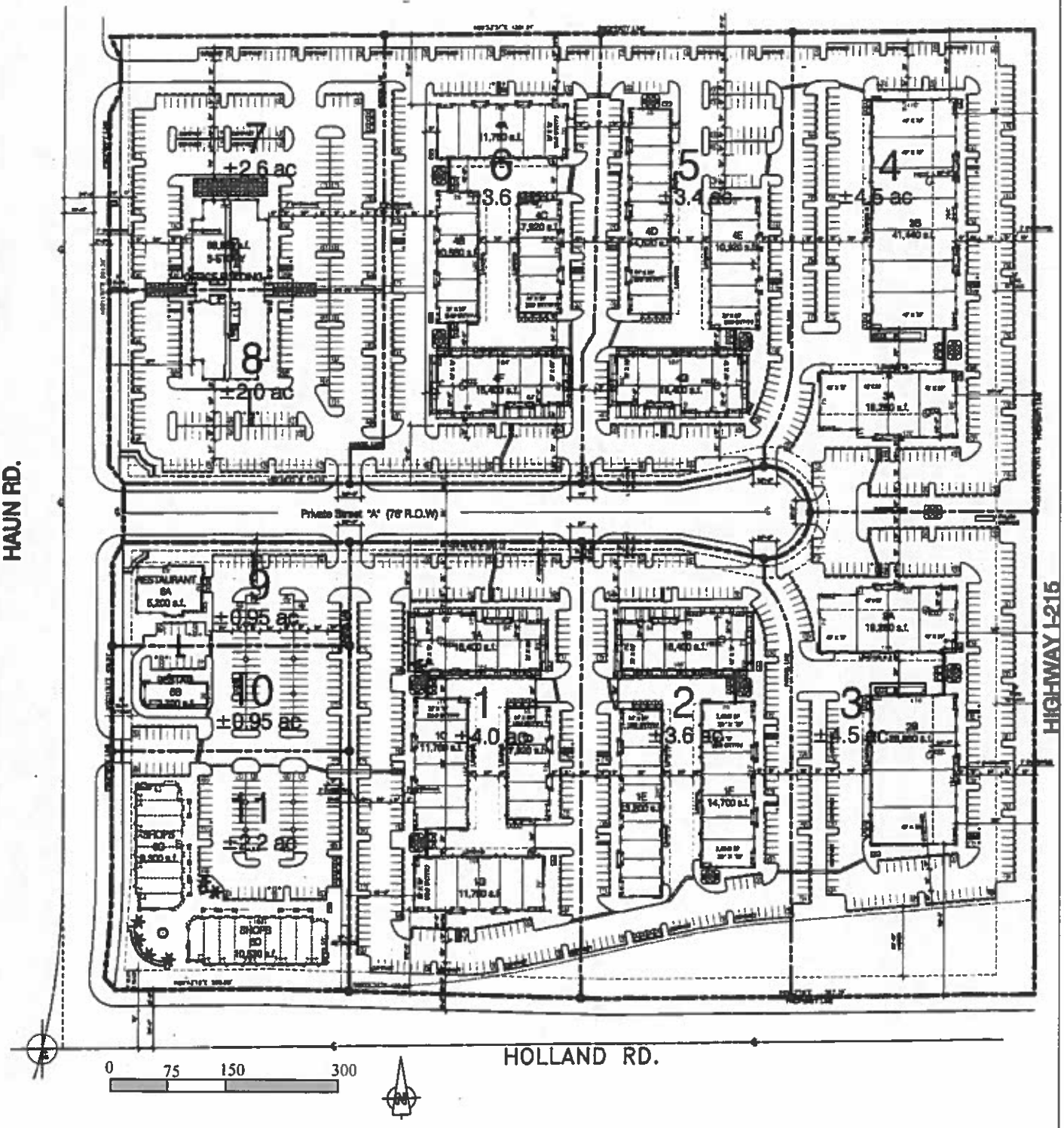
1" = 150'

150 75 0 150 300 450

JPN Corporation
NE Corner Haun & Holland Roads
Menifee, CA

FIGURE NO. 2A

SITE PLAN PROPOSED DEVELOPMENT



C. W. La Monte Company Inc.

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JPN Corporation
NE Corner Haun & Holland Roads
Menifee, CA

FIGURE NO. 2B

TEST EXCAVATION NO. TE-1

Elevation: 172' Date: 01/10/2017 Logged By: JBR Excavation Method: BACKHOE

DEPTH (FEET)	SAMPLE TYPE: BULK	SAMPLE TYPE: UNDISTURBED	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	U.S.C.S.	SOIL DESCRIPTION
1					SM	**Young Alluvial Valley Deposits (Qyv)** Dark reddish brown, very moist, loose to medium dense, silty sand
2					ML	Brown, very moist, firm, sandy silt
3						@ 2.5' becomes slightly moist
4					SC	**Old Alluvial Fan Deposits (Qof)** Dark reddish brown, slightly moist, medium dense, clayey sand
5						
6					CL	Dark reddish brown, slightly moist, stiff, very sandy clay
7						

EXCAVATION BOTTOM

TEST EXCAVATION NO. TE-2

Elevation: Date: 01/10/2017 Logged By: JBR Excavation Method: BACKHOE

DEPTH (FEET)	SAMPLE TYPE: BULK	SAMPLE TYPE: UNDISTURBED	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	U.S.C.S.	SOIL DESCRIPTION
1					ML	**Young Alluvial Valley Deposits (Qyv)** Dark reddish brown, very moist, firm, clayey, sandy silt
2						
3						**Old Alluvial Fan Deposits (Qof)**
4					SC CL	Dark reddish brown, slightly moist, medium dense/ stiff, clayey sand/sandy clay
5						
6						EXCAVATION BOTTOM
7						

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FIGURE NO. 3 A

TEST EXCAVATION NO. TE-3

Elevation: Date: 01/10/2017 Logged By: JBR Excavation Method: BACKHOE

DEPTH (FEET)	SAMPLE TYPE: BULK	SAMPLE TYPE: UNDISTURBED	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	U.S.C.S.	SOIL DESCRIPTION
1					SC CL	**Fill (Qaf)** Dark brown and brown, very moist, loose, clayey sand and sandy clay
2						
3					SM	**Young Alluvial Valley Deposits (Qyv)** Dark brown, very moist, loose to medium dense, silty sand
4						
5					CL	**Old Alluvial Fan Deposits (Qof)** Dark reddish brown, slightly moist, stiff, sandy, silty, clay
6						
7						EXCAVATION BOTTOM

TEST EXCAVATION NO. TE-4

Elevation: Date: 01/10/2017 Logged By: JBR Excavation Method: BACKHOE

DEPTH (FEET)	SAMPLE TYPE: BULK	SAMPLE TYPE: UNDISTURBED	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	U.S.C.S.	SOIL DESCRIPTION
1					ML	**Young Alluvial Valley Deposits (Qyv)** Dark reddish brown, very moist, firm, clayey, sandy silt @ 1' becomes slightly moist
2						
3					CL	**Old Alluvial Fan Deposits (Qof)** Dark reddish brown, dry to slightly moist, stiff to hard, sandy clay
4						
5						EXCAVATION BOTTOM
6						
7						

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Menifee, CA 92584

FIGURE NO. 3B

TEST EXCAVATION NO. TE-5

Elevation: Date: 01/10/2017 Logged By: JBR Excavation Method : BACKHOE

DEPTH (FEET)	SAMPLE TYPE: BULK	SAMPLE TYPE: UNDISTURBED	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	U.S.C.S.	SOIL DESCRIPTION
1					ML	**Young Alluvial Valley Deposits (Qyv)** Dark reddish brown, wet, soft to firm, sandy silt
2						
3					ML	**Old Alluvial Fan Deposits (Qof)** Dark reddish brown, moist, stiff, clayey silt
4						
5						EXCAVATION BOTTOM
6						
7						

TEST EXCAVATION NO. TE-6

Elevation: Date: 01/10/2017 Logged By: JBR Excavation Method : BACKHOE

DEPTH (FEET)	SAMPLE TYPE: BULK	SAMPLE TYPE: UNDISTURBED	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	U.S.C.S.	SOIL DESCRIPTION
1					SM ML	**Young Alluvial Valley Deposits (Qyv)** Dark reddish brown, very moist, loose/firm, silty sand/sandy silt
2						
3					ML	**Old Alluvial Fan Deposits (Qof)** Dark reddish brown, slightly moist, stiff sandy clayey silt (Upper one-foot desiccated)
4						
5						EXCAVATION BOTTOM
6						
7						

C. W. La Monte Company Inc.

Soil and Foundation Engineers

TPM No. 37121
Haun Road and Holland Road
Menifee, CA 92584

FIGURE NO. 3C

TEST EXCAVATION NO. TE-7

Elevation: Date: 01/10/2017 Logged By: JBR Excavation Method : BACKHOE

DEPTH (FEET)	SAMPLE TYPE: BULK	SAMPLE TYPE: UNDISTURBED	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	U.S.C.S.	SOIL DESCRIPTION
1					SM ML	**Young Alluvial Valley Deposits (Qyv)** Dark reddish brown, very moist, loose/firm, silty sand/sandy silt
2						
3						**Old Alluvial Fan Deposits (Qof)** Dark reddish brown, moist, stiff, sandy, clayey silt
4					ML	@1.5' to 3' moderately pourous
5						EXCAVATION BOTTOM
6						
7						

TEST EXCAVATION NO. TE-8

Elevation: Date: 01/10/2017 Logged By: JBR Excavation Method : BACKHOE

DEPTH (FEET)	SAMPLE TYPE: BULK	SAMPLE TYPE: UNDISTURBED	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	U.S.C.S.	SOIL DESCRIPTION
1					SM ML	**Young Alluvial Valley Deposits (Qyv)** Dark reddish brown, very moist, loose/firm, silty sand/sandy silt
2						
3						**Old Alluvial Fan Deposits (Qof)** Dark reddish brown, moist, stiff, sandy, clayey silt
4					ML	@1.5' to 2.5' moderately pourous
5						EXCAVATION BOTTOM
6						
7						

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FIGURE NO. 3 D

TEST EXCAVATION NO. TE-9

Elevation: Date: 01/10/2017 Logged By: JBR Excavation Method : BACKHOE

DEPTH (FEET)	SAMPLE TYPE: BULK	SAMPLE TYPE: UNDISTURBED	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	U.S.C.S.	SOIL DESCRIPTION
1					ML	**Young Alluvial Valley Deposits (Qyv)** Dark reddish brown, very moist, firm, sandy silt
2						
3						
4						**Old Alluvial Fan Deposits (Qof)**
5					ML	Dark reddish brown, moist, stiff, sandy, clayey silt @3.5' to 4' layer of silty sand
6						EXCAVATION BOTTOM
7						

TEST EXCAVATION NO. TE-10

Elevation: Date: 01/10/2017 Logged By: JBR Excavation Method : BACKHOE

DEPTH (FEET)	SAMPLE TYPE: BULK	SAMPLE TYPE: UNDISTURBED	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	U.S.C.S.	SOIL DESCRIPTION
1					ML	**Young Alluvial Valley Deposits (Qyv)** Dark reddish brown, very moist, firm, sandy silt
2						
3					SC	**Old Alluvial Fan Deposits (Qof)** Dark reddish brown, slightly moist, dense, clayey sand
4						
5						EXCAVATION BOTTOM
6						
7						

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TPM No. 37121
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Menifee, CA 92584

FIGURE NO. 3 E

TEST EXCAVATION NO. TE-11

Elevation: Date: 01/10/2017 Logged By: JBR Excavation Method : BACKHOE

DEPTH (FEET)	SAMPLE TYPE: BULK	SAMPLE TYPE: UNDISTURBED	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	U.S.C.S.	SOIL DESCRIPTION
1					ML	**Young Alluvial Valley Deposits (Qyv)** Dark reddish brown, very moist, firm, sandy silt
2						
3						
4						**Old Alluvial Fan Deposits (Qof)**
5					ML	Dark reddish brown, moist, hard, sandy, clayey silt
6						EXCAVATION BOTTOM
7						

TEST EXCAVATION NO. TE-12

Elevation: Date: 01/10/2017 Logged By: JBR Excavation Method : BACKHOE

DEPTH (FEET)	SAMPLE TYPE: BULK	SAMPLE TYPE: UNDISTURBED	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	U.S.C.S.	SOIL DESCRIPTION
1					ML	**Young Alluvial Valley Deposits (Qyv)** Dark reddish brown, very moist, firm, sandy silt
2						
3					ML	**Old Alluvial Fan Deposits (Qof)** Dark reddish brown, moist, hard, sandy, clayey silt
4						
5						EXCAVATION BOTTOM
6						
7						

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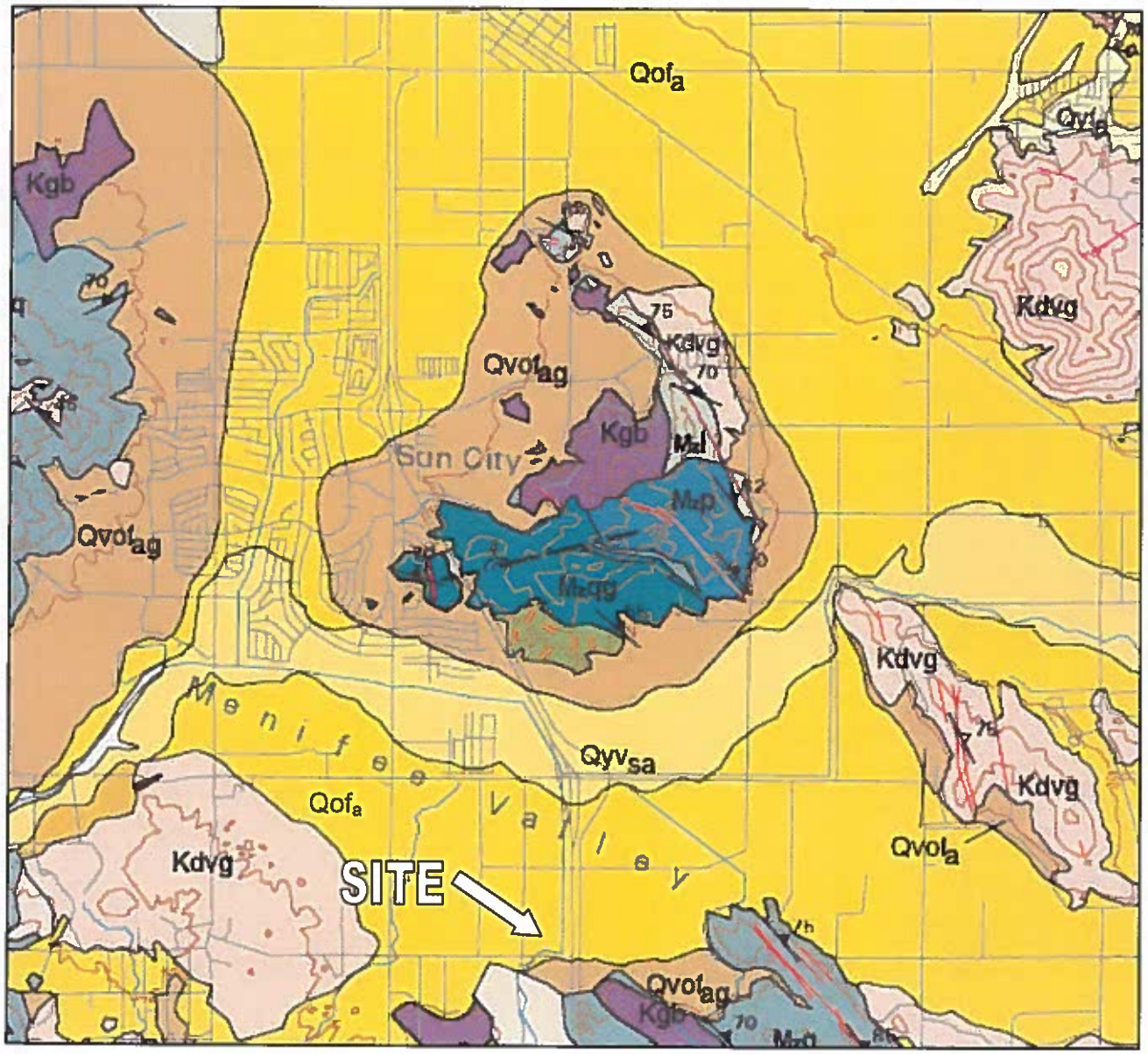
Menifee, CA 92584

FIGURE NO. 3 F

Excerpt from:
PRELIMINARY DIGITAL GEOLOGIC MAP OF THE SANTA ANA 30' X 60' QUADRANGLE, SOUTHERN CALIFORNIA (2004)



SELECT GEOLOGIC LEGEND

Qyv_{sa} = Young Alluvial Valley Deposits (Holocene and late Pleistocene)—Silty to sandy alluvium on valley floors, unconsolidated

Qof_a = Old Alluvial Fan Deposits (late to middle Pleistocene)—Sandy alluvium; reddish brown, indurated, surface of most fans slightly dissected.

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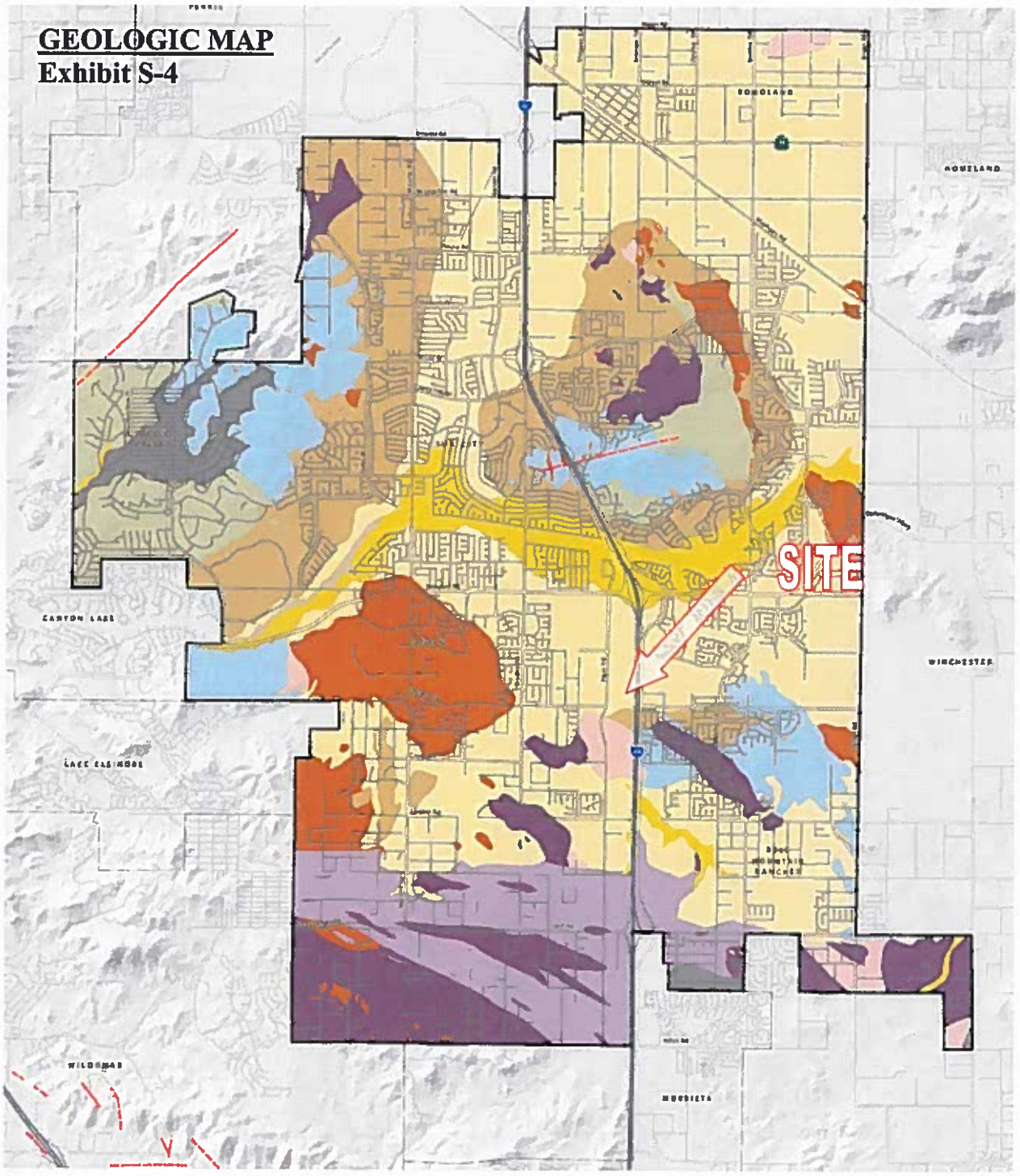
Job No. 16 6754	Figure No. 4A

GEOLOGIC MAP
Exhibit S-4



Source: Earth Consultants International, 2012

GEOLOGIC UNITS

Young Superficial Deposits
- Qw - Very Young Wash Deposits
- Qv - Very Young Alluvial Valley
- Qyf - Young Alluvial Fan
- Qya - Young Alluvial Valley and Channel

Plutonic Rocks
- Kt - Tonalite
- Kg -Granodiorite
- Km - Monzogranite
- Kgb - Gabbro

Old Superficial Deposits
- Qof - Old Alluvial Fan Deposits
- Qvof - Very Old Alluvial Fan Deposits
- Qvoa - Very Old Channel Deposits

Faults
- Known Location
- Approximate Location
- Concealed

Metasedimentary Rocks
- Trq Quartz-rich Rocks
- Trps - Phyllite and Schist

MENIFEE GENERAL PLAN

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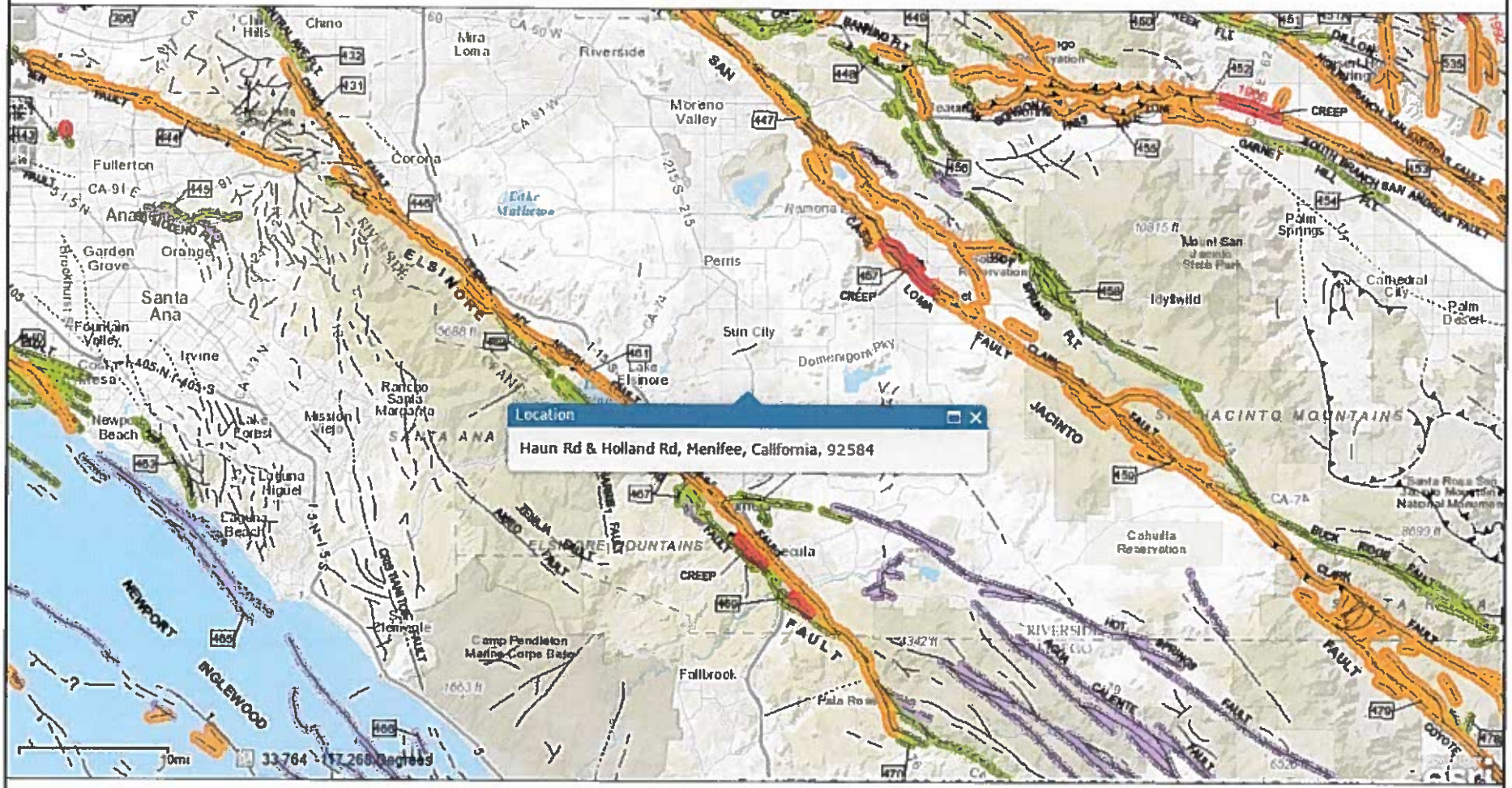
Figure No. 4B

FIGURE 5A - Excerpt from: 2010 Fault Activity Map of California, Geologic Data Map No.



SUMMARY EXPLANATION

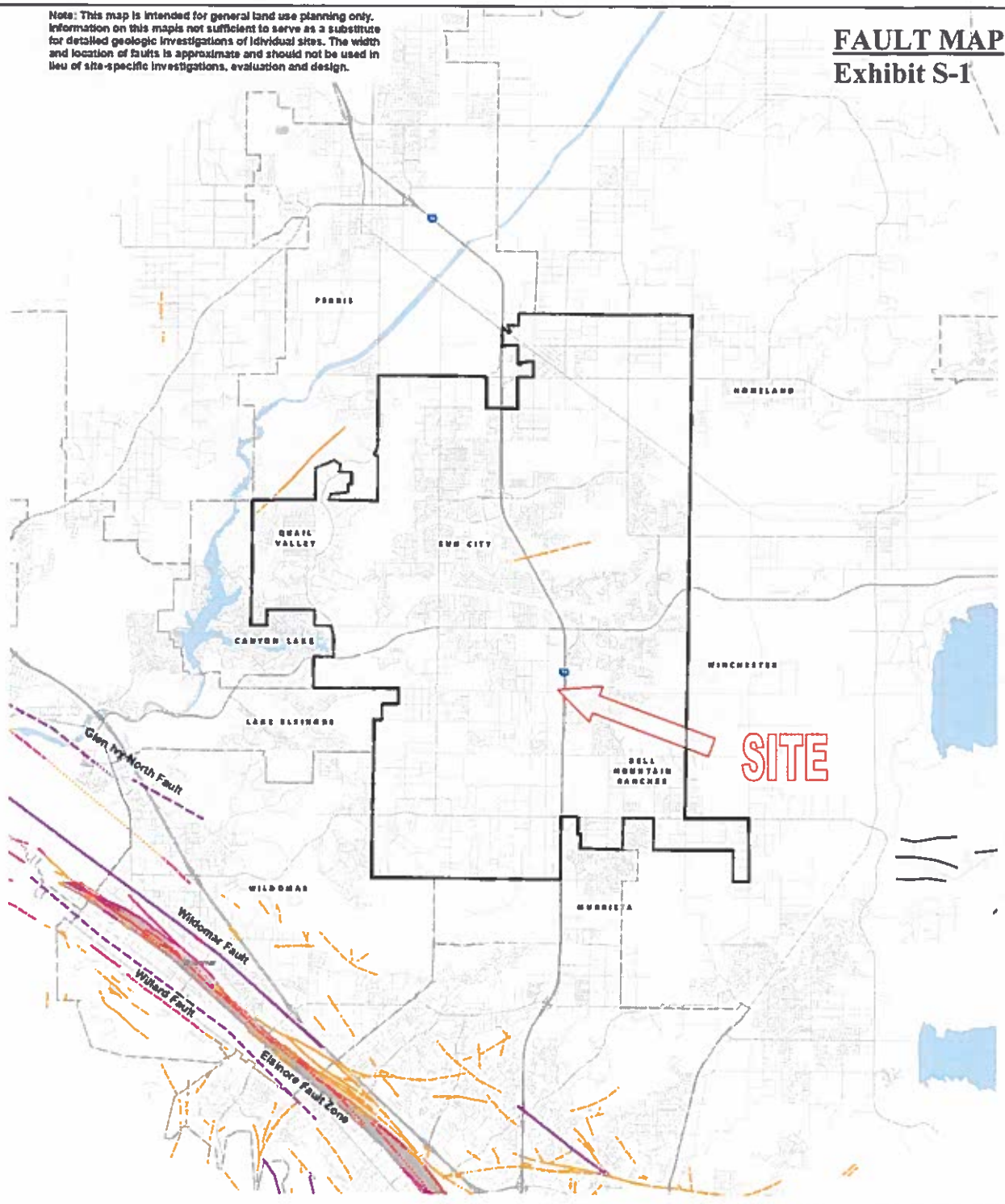
Fault traces on land are indicated by solid lines where well located, by dashed lines where approximately located or inferred, and by dotted lines where concealed by younger rocks or by lakes or bays. Fault traces are queried where continuation or existence is uncertain.

FAULT CLASSIFICATION COLOR CODE (Indicating Recency of Movement)

- Historic Fault (last 200 years)
- Holocene fault (during past 11,700 years) without historic record.
- Quaternary fault (age undifferentiated)
- Late Quaternary fault (during past 700,000 years).
- Pre-Quaternary fault (older that 1.6 million years) or fault without recognized Quaternary displacement.

Note: This map is intended for general land use planning only. Information on this maps not sufficient to serve as a substitute for detailed geologic investigations of individual sites. The width and location of faults is approximate and should not be used in lieu of site-specific investigations, evaluation and design.

FAULT MAP
Exhibit S-1



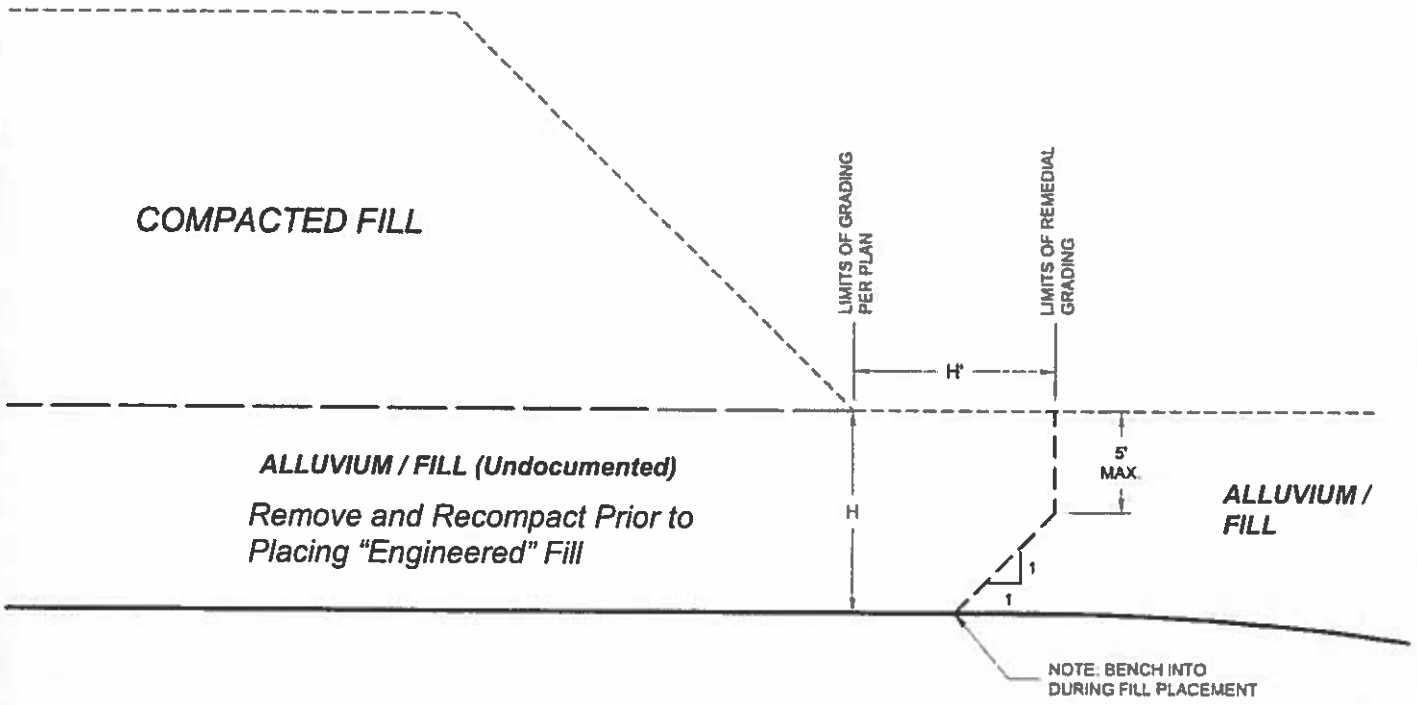
Source: Earth Consultants International, 2012

Active fault zoned under the Alquist-Priolo Earthquake Fault Zone Act. (CGS; 2002)	Fault that has not moved in the Holocene or late Pleistocene. (Morton & Miller; 2006)	Fault that has moved in the Holocene or late Pleistocene. (Morton & Miller; 2006)	Faults that has moved in the Quanternary (Jennings, 1994)	Faults that predates the Quaternary (Jennings,1994)	Alquist-Priolo Earthquake Fault Zone
Inferred Location	Inferred Location	Inferred Location	Inferred Location	Inferred Location	
Approximate Location	Approximate Location	Approximate Location	Approximate Location	Approximate Location	
Known Location	Known Location	Known Location	Known Location	Known Location	

MENIFEE GENERAL PLAN

Figure No. 5B

TYPICAL DETAIL FOR LATERAL LIMITS OF REMEDIAL GRADING



H = THICHNESS OF REMOVAL

H' = HORIZONTAL DISTANCE BEYOND GRADING PER PLAN FOR REMEDIAL GRADING
H = H'

NOTE: Where H' is limited by property boundaries or other restrictions a setback equal to the distance of the restrictions to H' may be required.

Alternately, the setback can be reduced by designing a geogrid reinforced fill. The design of a reinforced fill is not included in our scope of work and would require additional analysis.

Figure No. 6

Appendix "A"

STANDARD GRADING AND CONSTRUCTION SPECIFICATIONS

Appendix "A"

STANDARD GRADING AND CONSTRUCTION SPECIFICATIONS

These specifications present the usual and minimum requirements for projects on which C.W. La Monte Company is the geotechnical consultant. No deviation from these specifications will be allowed, except where specifically superseded in the preliminary geology and soils report or in other written communication signed by the Soils Engineer or Engineering Geologist of record.

GENERAL

A. The Soils Engineer and Engineering Geologist is the Owner's or Builders' representative on the Project. For the purpose of these specifications, participation by the Soils Engineer includes that observation performed by any person or persons employed by, and responsible to, the licensed Civil Engineer signing the soils reports.

B. All clearing, site preparation, or earthwork performed on the project shall be conducted by the Contractor under the supervision of the Soils Engineer.

C. It is the Contractor's responsibility to prepare the ground surface to receive the fills to the satisfaction of the Soils Engineer and to place, spread, mix, water, and compact the fill in accordance with the specifications of the Soils Engineer. The Contractor shall also remove all material considered unsatisfactory by the Soils Engineer.

D. It is also the Contractor's responsibility to have suitable and sufficient compaction equipment on the job site to handle the amount of fill being placed. If necessary, excavation equipment will be shut down to permit completion of compaction. Sufficient watering apparatus will also be provided by the Contractor, with due consideration for the fill material, rate of placement, and time of year.

E. A final report shall be issued by the Soils Engineer attesting to the Contractor's conformance with these specifications.

SITE PREPARATION

A. All vegetation and deleterious material shall be disposed of off site. This removal shall be concluded prior to placing fill.

B. Soil, alluvium, or bedrock materials determined by the Soils Engineer, as being unsuitable for placement in compacted fills shall be removed from the site. The Soils Engineer must approve any material incorporated as a part of a compacted fill.

C. After the ground surface to receive fill has been cleared, it shall be scarified, disced, or bladed by the Contractor until it is uniform and free from ruts, hollows, hummocks, or other uneven features which may prevent uniform compaction.

The scarified ground surface shall then be brought to optimum moisture, mixed as required, and compacted as specified. If the scarified zone is greater than 12 inches in depth, the excess shall be removed and placed in lifts restricted to 6 inches.

Prior to placing fill, the ground surface to receive fill shall be inspected, tested as necessary, and approved by the Soils Engineer.

D. Any underground structures such as cesspools, cisterns, mining shafts, tunnels, septic tanks, wells, pipe lines, or others are to be removed or treated in a manner prescribed by the Soils Engineer and /or governing agency.

E. In order to provide uniform bearing conditions in cut-fill transition lots and where cut lots are partially in soil, colluvium, or un-weathered bedrock materials, the bedrock portion of the lot extending a minimum of 3 feet outside of building lines shall be over excavated a minimum of 3 feet and replaced with compacted fill.

COMPACTED FILLS

A. Any material imported or excavated on the property may be utilized in the fill, provided each material has been determined to be suitable by the Soils Engineer. Roots, tree branches, and other matter missed during clearing shall be removed from the fill as directed by the Soils Engineer.

B. Rock fragments less than 6 inches in diameter may be utilized in the fill, provided:

1. They are not placed in concentrated pockets.
2. There is a sufficient percentage of fine-grained material to surround the rocks.
3. The Soils Engineer shall supervise the distribution of rocks.

C. Rocks greater than 6 inches in diameter shall be taken off site, or placed in accordance with the recommendations of the Soils Engineer in areas designated as suitable for rock disposal.

D. Material that is spongy, subject to decay or otherwise considered unsuitable should not be used in the compacted fill.

E. Representative samples of material to be utilized as compacted fill shall be analyzed by the laboratory of the Soils Engineer to determine their physical properties. If any material other than that previously tested is encountered during grading, the appropriate analysis of this material shall be conducted by the Soils Engineer as soon as possible.

F. Material used in the compaction process shall be evenly spread, watered processed, and compacted in thin lifts not to exceed 6 inches in thickness to obtain a uniformly dense layer. The fill shall be placed and compacted on a horizontal plane, unless otherwise approved by the Soils Engineer.

G. If the moisture content or relative density varies from that required by the Soils Engineer, the Contractor should re-work the fill until the Soils Engineer approves it.

H. Each layer shall be compacted to 90 percent of the maximum density in compliance with the testing method specified by the controlling governmental agency. (In general, ASTM D-1557-91, the five-layer method will be used.)

If compaction to a lesser percentage is authorized by the controlling governmental agency because of a specific land use or expansive soils condition, the area to receive fill compacted to less than 90 percent shall either be delineated on the grading plan or appropriate reference made to the area in the soils report.

H. All fills shall be keyed and benched through all topsoil, colluvium, alluvium or creep material, into sound bedrock or firm material except where the slope receiving fill exceeds a ratio of five horizontal to one vertical, in accordance with the recommendations of the Soils Engineer.

I. The key for hillside fills should be a minimum of 15 feet in width and within bedrock or similar materials, unless otherwise specified in the soil report.

K. Subdrainage devices shall be constructed in compliance with the ordinances of the controlling governmental agency, or with the recommendations of the Soils Engineer or Engineering Geologist.

L. The contractor will be required to obtain a minimum relative compaction of 90 percent out to the finish slope face of fill slopes, buttresses, and stabilization fills. This may be achieved by either overbuilding the slope and cutting back to the compacted core, or by direct compaction of the slope face with suitable equipment, or by any other procedure which produces the required compaction.

M. All fill slopes should be planted or protected from erosion or by other methods specified in the soils report.

N. Fill-over-cut slopes shall be properly keyed through topsoil, colluvium or creep material into rock or firm materials, and the transition shall be stripped of all soil prior to placing fill.

CUT SLOPES

A. The Engineering Geologist shall inspect all cut slopes at vertical intervals not exceeding 10 feet.

B. If any conditions not anticipated in the preliminary report such as perched water, seepage, lenticular or confined strata of a potentially adverse nature, unfavorably inclined bedding, joints or fault planes are encountered during grading, these conditions shall be analyzed by the Engineering Geologist and Soils Engineer, and recommendations shall be made to treat these problems.

C. Cut slopes that face in the same direction as the prevailing drainage shall be protected from slope wash by a non-erodible interceptor swale placed at the top of the slope.

Unless otherwise specified in the soils and geological report, no cut slopes shall be excavated higher or steeper than that allowed by the ordinances of controlling governmental agencies.

Drainage terraces shall be constructed in compliance with the ordinances of controlling governmental agencies, or with the recommendations of the Soils Engineer or Engineering Geologist.

GRADING CONTROL

A. Observation of the fill placement shall be provided by the Soils Engineer during the progress of grading.

B. In general, density tests should be made at intervals not exceeding 2 feet of fill height or every 500 cubic yards of fill placement. This criteria will vary, depending on soil conditions and the size of the job. In any event, an adequate number of field density tests shall be made to verily that the required compaction is being achieved.

C. Density tests may also be conducted on the surface material to receive fills as determined by the Soils Engineer.

D. All clean-outs, processed ground to receive fill, key excavations, subdrains, and rock disposals must be inspected and approved by the Soils Engineer or Engineering Geologist prior to placing any fill. It shall be the Contractor's responsibility to notify the Soils Engineer when such areas are ready for inspection.

CONSTRUCTION CONSIDERATIONS

A. The Contractor shall provide necessary erosion control measures, during grading and prior to the completion and construction of permanent drainage controls.

B. Upon completion of grading and termination of inspections by the Soils Engineer, no further filling or excavating, including that necessary for footings, foundations, large tree wells, retaining walls, or other features shall be performed without the approval of the Soils Engineer or Engineering Geologist.

C. Care shall be taken by the Contractor during final grading to preserve any berms, drainage terraces, interceptor swales, or other devices of permanent nature on or adjacent to the property.

D. In the event that temporary ramps or pads are constructed of uncontrolled fill soils during a future grading operation, the location and extent of the loose fill soils shall be noted by the on-site representative of a qualified soil engineering firm. These materials shall be removed and properly recompacted prior to completion of grading operations.

E. Where not superseded by specific recommendations presented in this report, trenches, excavations, and temporary slopes at the subject site shall be constructed in accordance with section 1541 of Title 8, Construction Safety Orders, issued by OSHA.

APPENDIX " B"
UNIFIED SOIL CLASSIFICATION CHART

SOI L DESC RI PTI ON

I. COARSE GRAINED: More than half of material is larger than No. 200 sieve size.

GRAVELS: More than half of coarse fraction is larger than No. 4 sieve size but smaller than 3".

	GROUP SYMBOL	TYPICAL NAMES
CLEAN GRAVELS	GW	Well graded gravels, gravel-sand mixtures, little or no fines.
	GP	Poorly graded gravels, gravel sand mixtures, little or no fines
GRAVELS WITH FINES (Appreciable amount of fines)	GM	Silty gravels, poorly graded gravel- sand-silt mixtures
	GC	Clayey gravels, poorly graded gravel sand, clay mixtures.

SANDS: More than half of coarse fraction is smaller than No. 4 sieve size

CLEAN SANDS	SW	Well graded sand, gravelly sands, little or no fines
	SP	Poorly graded sands, gravelly sands, little or no fines
SANDS WITH FINES (Appreciable amount of fines	SM	Silty sands, poorly graded sand and silty mixtures.
	SC	Clayey sands, poorly graded sand and clay **mixtures**

II. FINE GRAINED: More than half of material is smaller than No. 200 sieve size

SILTS AND CLAYS	ML	Inorganic silts and very fine sands, rock flour, sandy silt - or clayey-silt with slight plasticity.
Liquid Limit Less than 50	CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
	OL	Organic silts and organic silty clays of low plasticity
SILTS AND CLAYS	MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silt
Liquid Limit greater than 50	CH	Inorganic clays of high plasticity, fat clays.
	OH	Organic clays of medium to high plasticity.
HIGHLY ORGANIC SOILS	PT	Peat and other highly organic soils.

APPENDIX C

Test Borings
Lawson & Associates (2002)

Geotechnical Boring Log B-1

Date:	8/30/02		Page: 1 of 1
Project Name:	Meyer Asset Management	**Project Number:**	PN022113-10
Drilling Company:	2R Drilling	**Type of Rig:**	CME55
Drive Weight:	140	**Drop:** 30	**Hole Dia:** 6"
Elevation of Top of Hole:		**Hole Location:**	

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION Logged By: GU Sampled By: GU	Type of Test
100	0						Qal (SM)	@0' - Silty SAND: Yellow-brown to red-brown, f to med grained; dry in upper 1'	
			R-1	15 18 20	118.4	7.3	(SC)	@2' - Clayey SAND: Reddish-brown, f to med grained. cemented, caliche stringers, medium dense, moist	
95	5		R-2	16 15 26	117.0	6.9	(SC)	@5' - same: cemented, caliche stringers, moist	
90	10		SPT-1	19 28 28			(SC)	@10' - Clayey SAND: Reddish-brown, f to co grained, cemented, w/caliche stringers, dry, dense	
85	15		SPT-2	9 12 20	na	13.4	(SC)	@15' - Clayey SAND: Dark reddish-brown, f to med grained, cemented, very moist, medium dense	
80	20		SPT-3	10 15 28			(SC)	@20' - same: cemented, caliche stringers, damp to moist	
75	25		SPT-4	7 14 22	na	16.2	(SC)	@25' - same: slightly cemented, very moist; medium dense	
70	30								

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GEOTECHNICAL CONSULTING INC.

Geotechnical Boring Log B-1

Date: 8/30/02 **Page:** 2 of 2

Project Name: Meyer Asset Management **Project Number:** PN022113-10

Drilling Company: 2R Drilling **Type of Rig:** CME55

Drive Weight: 140 **Drop:** 30 **Hole Dia:** 6"

Elevation of Top of Hole: **Hole Location:**

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION Logged By: GU Sampled By: GU	Type of Test
70	30		SPT-5	7 14 22			Qal (SC)	@30' - Clayey SAND: Yellow-brown to red-brown mottling; slighty cemented; moist; medium dense	
65	35		SPT-6	11 15 11	na	18.1	(ML)	@35' - Sandy SILT: Grey-black; f to med grained w/interbedded thin sand lenses; very moist, medium dense	
60	40		SPT-7	28 50	na	9.0	Kgr	@40' - Granitic Bedrock: Grey-black, f to med grained w/tr co grained; weathered; moist	
55	45		SPT-8	50			Kgr	@45' - same: saturated	
50	50		SPT-9	50			Kgr	@50' -same: saturated EOB Groundwater encountered @47'; rose to 42'	
45	55								
40	60								

LGC

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GEOTECHNICAL CONSULTING INC.

Geotechnical Boring Log B-2

Date:	8/30/02		**Page:** 1 of 1
Project Name:	Meyer Asset Management	**Project Number:**	PN022113-10
Drilling Company:	2R Drilling	**Type of Rig:**	CME55
Drive Weight:	140	**Drop:** 30	**Hole Dia:** 6"
Elevation of Top of Hole:		**Hole Location:**	

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION Logged By: GU Sampled By: GU	Type of Test
100	0						Qal (SM)	@0' - Silty SAND: Lt. yellow-brown, f to med grained, dry	
			R-3	14 16 22	117.9	11.1	(SC)	@2' - Clayey SAND: Reddish-brown, f to med grained, cemented, moist, medium dense	
95	5		R-4	14 28 28	115.0	12.4	(SC)	@5' - same: cemented, some caliche stringers moist, medium dense	
90	10		SPT-10	8 14 21	na	17.0	(SC)	@10' - same: cemented; some caliche stringers, very moist, medium dense	
85	15		SPT-11	12 14 17	na	6.9	(SP)	@15' - SAND w/Clay: Reddish-brown to grey-brown, f to co grained, moist; medium dense	
80	20		SPT-12	5 11 14	na	17.5	(ML)	@20' - Sandy SILT: Grey-brown, mottled with rust staining; f to med grained; very moist; medium dense	
75	25		SPT-13	5 5 7	na	23.5	(ML)	@25' - same, very moist; medium dense EOB no groundwater encountered	
70	30								

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GEOTECHNICAL CONSULTING INC.

Geotechnical Boring Log B-3

Date: 8/30/02 Page: 1 of 1

Project Name: Meyer Asset Management Project Number: PN022113-10

Drilling Company: 2R Drilling Type of Rig: CME55

Drive Weight: 140 Drop: 30 Hole Dia: 6"

Elevation of Top of Hole: Hole Location:

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION Logged By: GU Sampled By: GU	Type of Test
100	0						Qal (SM)	@0' - Silty SAND: Lt. yellow-brown to red-brown, f to med grained; dry	
			R-5	33 40 50	113.8	12.1	(SC)	@2' - Clayey SAND: Reddish-brown to light brown, mottled, f to med grained; cemented; moist, very dense	
95	5		R-6	12 14 16	101.7	11.7	(SP)	@5' - SAND w/Clay: Reddish-brown, f to med grained w/tr co grained; moist; medium dense	
90	10		SPT-13	17 10 13	na	15.6	(ML)	@10' - Sandy SILT: Grey, f to med grained; w/abundant caliche; very moist; medium dense	
85	15		SPT-14	7 9 9	na	8.2	(ML)	@15' - same: slight color change to grey-brown; v. f. grained; moist; firm	
80	20		SPT-15	5 10 18	na	6.0	(ML)	@20' - same: firm, moist	
75	25		SPT-16	7 13 18	na	17.5	(ML)	@25' - same: very firm; very moist	
70	30								

LGC

LAWSON & ASSOCIATES
GEOTECHNICAL CONSULTING INC.

C. W. La Monte Company Inc.

Preliminary Evaluation Report for Infiltration Lid Improvements
Tentative Parcel Map No. 37121
Northeast Corner of Haun Road and Holland Road
Menifee, CA 92584

JOB NO. 16 6754

September 28, 2016

Prepared for:

Jim P. Nelson
JPN CORPORATION, INC.
P.O. Box 27240
San Diego, CA 9219

4400 PALM AVE., SUITE B ■ LA MESA, CA, 91941
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Soil and Foundation Engineers

4400 PALM AVENUE, SUITE B ♦ LA MESA, CALIFORNIA 91941
Phone: (619) 462-9861 ♦ Email: clamonte@flash.net ♦ Fax: (619) 462-9859

September 28, 2016 Job No. 16 6754

TO: Jim P. Nelson
JPN CORPORATION, INC.
P.O. Box 27240
San Diego, CA 9219

SUBJECT: Preliminary Evaluation Report for Infiltration Lid Improvements Tentative Parcel Map No. 37121, Northeast Corner of Haun Road and Holland Road, Menifee, CA 92584

Reference: *Geotechnical Due Diligence Study, 37-Acre Site Located at the Northeast Corner of Haun Road and Holland Road, Menifee Area of Riverside County, California,* by Lawson & Associates, dated September 2002

In accordance with your request and as required by the County of Riverside, we have prepared this infiltration evaluation report for the preliminary design of LID stormwater improvements. The report is intended for preliminary screening purposes and additional field testing may be necessary as the project progresses and design is finalized. However, our preliminary findings indicate that infiltration LID's will likely not be feasible in most of the areas tested. The project is still in the planning phase; however, we understand the site will be developed to receive multi-unit residential buildings with associated parking and street improvements. Proposed grading will include cuts and fills of less than 5 feet.

SITE DESCRIPTION

The project site is a rectangular-shaped parcel of land approximately 37 acres in size and located at the northeast corner of Haun Road and Holland Road, Menifee area of Riverside County, California. Figure Number 1 (attached) provides a vicinity map showing the approximate location of the property and boundary layout. The property is also bounded by a vacant land to the north, Interstate 215 to the east, and

by a commercial storage facility and construction yard to the south. Vegetation on the site consists of a light growth of wild grasses, weeds; however, much of the site had been recently tilled.

Topographically the property relatively level. Elevations on the site range from a high of 1443 feet above mean sea level near the southwest corner of the property to a low of approximately 1435 at the north end of the site. An earthen drainage ditch enters the near the northwest portion of the property, loops into the southern end of the property and turns to the north near the southeast property corner then drains to the north in a linear direction between the east property line and the Interstate 215 easement. A steep slope ascends from the northerly bank of the "loop", which is up to 8 feet in height.

DESCRIPTION OF SITE GEOLOGY AND SUBSURFACE SOIL CONDITIONS

Our scope of work did not include deep subsurface exploration and was limited to depths necessary to perform percolation/infiltration testing. However, a soils investigation was conducted on the property in 2002 as referenced at the beginning of this report (by Lawson & Associates). The investigation included the placement of three, small diameter test borings ranging from 25 to 50 feet in depth. The approximate location of the borings is shown on the attached Plot Plan and Geotechnical Map attached as Figure No. 2. The boring logs are included as Appendix A to this report. The report did not provide specific geologic classifications for the upper soil profile. However, based on our field reconnaissance, current literature review, and surficial exploration we have updated the geologic descriptions.

The subject site is located in Menifee Valley and is underlain with old alluvial fan deposits overlain with surficial topsoil/alluvium. The site is underlain at depth with Cretaceous-aged granitic bedrock. Also minor, localized fills and dumped debris are scattered across the surface of the property, fills may also form the rim of the drainage "loop" at the south end of the property. The **major** soil types are described individually below in order of increasing age.

> **Topsoil / Slope Wash**: The site is mantled with a thin veneer of undifferentiated, topsoil and alluvium. The topsoil generally ranges from about 2 foot to 3 feet in thickness. The topsoil typically consist of dark reddish brown, loose, silty sand and clayey sand with a little gravel.
>
> **Old Alluvial Fan Deposits (Qof):** According to the *Preliminary Digital Geologic Map of The Santa Ana 30'x 60' Quadrangle, Southern* (California,

California Geological Survey, 2004) the site is underlain with old alluvial fan deposits (late to middle Pleistocene) The material is described in the publication as "sandy alluvium; reddish brown, indurated, surface of most fans slightly dissected". The material encountered in the test borings consisted of interbedded silty sands, clayey sands and sandy silts. Blow count SPT data from the borings indicates a medium dense to very dense consistency.

Granitic Bedrock (Kgb): The site is underlain at depth with Cretaceous-aged granitic bedrock. Weathered granitics were encountered at a depth of 40 feet in Lawson & Associate, Boring 1.

GROUND WATER

Groundwater was encountered in Lawson & Associate, Boring 1 at a depth of 47 feet below the existing grade. Therefore, there should no restrictions on LID improvements related to groundwater.

HYDROLOGIC SOIL GROUPS

The surficial topsoils are generally classifieds as sandy loam with some sandy clay loam and typically range from about to 2 to 3 feet in thickness, which would likely fall within Hydrologic Soil Groups (HSG) "A" or "B" However, the loam is underlain with indurated old alluvium with poor infiltration characteristics, which would likely fall within HSG "C" or "D" classifications.

DISCUSSIONS ON INFILTRATION RATE vs. PERCOLATION RATE

There appears to be much confusion, minimal policy information and apparent misinformation regarding percolation rate versus infiltration rate. The *Riverside County, Design Handbook for Low Impact Development Best Management Practices* (2011), manual states that *"A common misunderstanding exists that the "percolation rate" obtained from a percolation test is equivalent to the "infiltration rate" obtained from a single or double ring infiltrometer test. While the percolation rate is related to the infiltration rate, percolation rates tend to overestimate infiltration rates and can be off by a factor of ten or more. However, the percolation rate can be converted to a reasonable estimate of the infiltration rate using the Porchet Method.* The Riverside manual (Section 2.3 - Percolation Tests) further provides an equation for converting the percolation rate to an infiltration rate, which is assumed to be by the Porchet method as recommended

in the manual. Pages 26 and 27 of Appendix A from the Riverside manual provide a sample conversion using the equation. However, using the equation and sample data provided, the final results **do not** appear to be reasonable or accurate. In the sample problem the unmodified, field percolation rate is 6.7 minutes per inch or about 9 inches per hour. When converted to an infiltration rate using the recommended equation the design infiltration rate is reduced to a dismal 0.37 inches per hour. This conversion value, in our professional opinion, is not a realistic "real world" value for the provided sample condition. Field percolation rates that exceed 6 minutes per inch are characteristic of highly permeable, sandy loam (HSG Type A soils) that would be expected to possess a relatively high infiltration rate by **any approved test method**. The converted value (less than 0.4 of an inch) is a poor rate and not indicative of materials with a 9 inch per hour field percolation rate. Therefore the suitability of the conversion method is highly questionable. Combining the "converted" infiltration rate with the other design factors-of-safety it is possible a site with highly permeable subgrade could be excluded from using infiltration LID's.

"Side by side' infiltration testing by various methods was reported by Philips & Kitch[1]. Infiltration rates were determined by the pilot infiltration test (PIT) Washington State Department of Ecology, 2005); the double-ring infiltrometer test (ASTM D 3385-03); borehole tests (County of San Bernardino, 1992, and California test 750, 1986); and hydraulic conductivity estimated indirectly from correlations with grain-size distribution and cone penetrometer test data. The testing indicated that the "large scale" PIT test was the most accurate test method. However, many logistical constraints can arise that would preclude the use of the PIT (e.g., availability and quantity of water required for testing, extreme depth of the proposed infiltration system, difficulty of access, project scope, timing and budget constraints, etc.) and therefore, other approaches warranted consideration. The report concluded that "*when properly performed, the results of the borehole tests are generally close to the results obtained from double ring infiltrometer testing. In spite of the relative agreement between double-ring infiltrometer data and borehole tests, the double-ring infiltrometer should not be used for the purposes of evaluating infiltration for design of storm water infiltration systems…"(*the reasons are listed in the document). The double-ring infiltrometer test is an accepted method and a reduction/ conversion is not required for this comparable test.

For the reasons discussed above, the percolation tests were converted in accordance with the *County of Los Angeles Administrative Manual, Low Impact Development - Best Management Practice GS200.1 Infiltration Testing Procedures, Boring Percolation Testing*

[1] A Review of Methods for Characterization of Site Infiltration with Design Recommendations, by C. Eric Philips and William A. Kitch (undated)

Method. This procedure was selected because it provides an alternate method to convert the percolation rate to an infiltration rate based on the calculation of a Reduction Factor. As discussed in the previous section, the "Porchet Method" of conversion, (the suggested method in the Riverside County manual), upon initial evaluation, appears to provide an unrealistically stringent conversion value. The County of Los Angeles document provides the procedure and test method to determine a "reduction factor". The infiltration rate is calculated by dividing the field percolation rate by the reduction factor.

The reduction factor is determined by the following equation:

Reduction Factor = $R_f = \left(\frac{2d_1 - \Delta d}{DIA}\right) + 1$

With:
d1 = Initial Water Depth (in.)
Δd = Water Level Drop of Final Period or Stablized Level (in.)
DIA = Diameter of the boring (in.)

PERCOLATION TESTING

Percolation test were conducted at variable depths and locations by the Borehole Percolation Test method (generally per County of Riverside Department of Environmental Health procedure), for preliminary screening purposes. The percolation tests (were 6-inch diameter borings and were manually drilled to approximate depths ranging from 1.5 to 3.5 feet below the existing ground surface. Testing locations are shown on the attached Figure No. 2. The plan is a topographic base map with an overlay of proposed LID locations and finish grade elevations for LID and pad grade. The plan was prepared by Albert A. Webb Associates and is identified as W.O. 16-0059, dated July 12, 2016. The percolation testing was performed September 15, 2016 by our geotechnical personnel.

The results of testing are summarized in the following table. Both the "field" percolation rates and the converted infiltration rate, if applicable (by the Reduction Factor Method) are listed.

TABLE I
PERCOLATION/INFILTRATION TEST INFORMATION

TEST NO.	DEPTH OF TEST HOLE (Feet)	FIELD PERCOLATION RATE (Inches per Hour)	REDUCTION FACTOR	INFILTRATION RATE
P1-1	3.5'	**0**	**-**	**0**
P1-2	1.6′	**3.4**	**3.3**	**1.0***
P-2	1.5′	**0**	**-**	**0**
P-3	3′	**7.5**	**4.5**	**1.7**
P-4	2′	**0**	**-**	**0**
P-5	1.5′	**0**	**-**	**0**

*** Underlying old alluvium @ 3.5′ is impervious**

FACTOR-OF-SAFETY

Appendix A of the Riverside Manual recommends a factor-of-safety of 3 when using the percolation test method.

SUMMARY AND CONCLUSIONS REGARDING LID IMPROVEMENTS

Our conclusions regarding LID improvements are listed below.

- Our preliminary testing indicates that infiltration BMP's are generally not feasible. Typically the site is underlain with dense, relatively impervious old alluvium at depths ranging from approximately 2 to 3.5 feet below the existing grade.

- Two adjacent tests were placed at the P1 location (P-1-1 and P-1-2). The shallow test (1.6 feet) measured an adjusted rate of about one-inch per hour. However, the deeper test (3.5′) did not produce any measurable infiltration. Due to the "failing" test infiltration is likely not feasible for the area.

The P3 area measured 1.7 inch per hour at a depth of 3 feet. If this area is considered for infiltration LID's we recommend additional percolation testing. Four test per pond or trench are required by Riverside County Appendix A for infiltration LID's. Also a deep boring would be required in this area to determine the depth and/or if impervious material is present within the infiltration zone.

- The infiltration characteristics of the overlying topsoil is variable by location as indicated by our testing. However, the surficial topsoil may provide a suitable subgrade for porous pavement, depending on location within the project, product specifications and/or regulatory requirements. Also a suitable subgrade can sometimes be specified and constructed for porous pavement. Infiltration testing at the subgrade level is recommended if porous pavement is considered.

- Due to the underlying dense, old alluvium, deep dry well systems are likely not feasible.

- No groundwater issues were encountered that would preclude infiltration BMP's. Prior exploration encountered groundwater at a depth 47 feet.

The test results indicate only the percolation rates at the specific locations at the recorded times. Evaluation of percolation potential, the suitability of the site for drainage disposal, and design of the drainage basins are the responsibility of others. The LID infiltration system should be designed based upon judgment and experience of the designer, taking into consideration such factors as infiltration rates, size of the test borings in relation to the size of the LID feature, site variability, frequency and effectiveness of system maintenance, and sediment load entering the system.

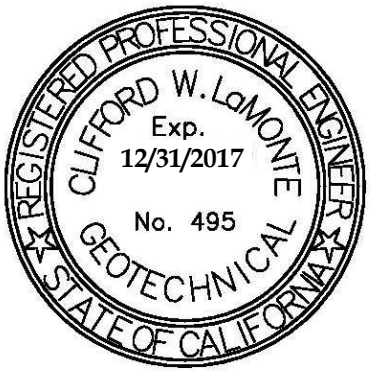
Infiltration rates at the project site are variable with depth and/or location. **The finalized grading/drainage plan should be provided to our firm for review.** Based on the plan review and size of proposed infiltration facilities it may be necessary to conduct supplemental infiltration testing at specific locations based on the final design.

If you should have any questions after reviewing this letter, please do not hesitate to contact our office. This opportunity to be of professional service is sincerely appreciated.

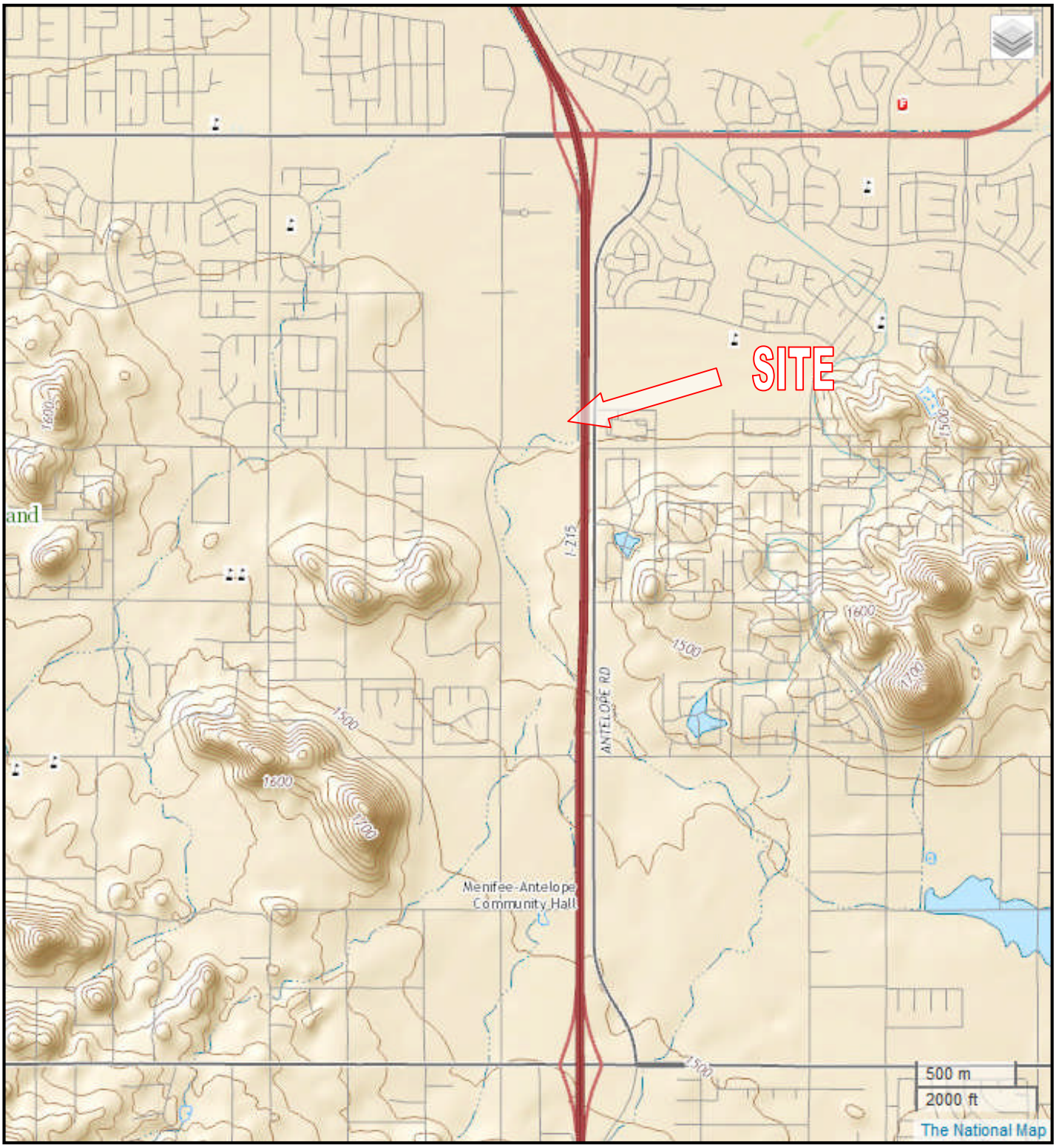
Respectfully submitted,
C.W. La Monte Company Inc.

Jerry Redolfi, Project Geologist

Clifford W. La Monte,
R.C.E. 25241, G.E. 0495



SITE LOCATION AND TOPOGRAPHIC MAP



USGS National Maps Website, 7.5-Minute Series, US Topo Current

C.W. La Monte Company Inc.
Soil and Foundation Engineers

Figure No. 1

PLOT PLAN AND GEOTECHNICAL MAP

LEGEND

Approximate Test Boring Location- (Lawson & Associates (2002)

B-2

Approximate Percolation Test Location

P3

Geologic Units
(Surficial deposits not mapped)

Qof = Old Alluvial fan deposits

Proposed Contours

(1442)

Proposed LID Location and Grades

N
W WEBB E
S

1" = 150'

150 75 0 150 300 450

TRACT BOUNDARY

P2 (1436.9) FG 1433.90 FG

B-3

Qof

P5 (1435.6) FG 1434.30 FG

B-2

P4 (1435.6) FG 1434.30 FG

P1-2 (1437.9) FG

P1-1 1433.80 FG

Qof

B-1

P3 (1438.6) FG 1437.30 FG

HAUN ROAD

STREET ℄

HOLLAND ROAD

NE Corner Haun & Holland Roads
Menifee, CA

FIGURE NO. 2

APPENDIX A

Test Borings
Lawson & Associates (2002)

Geotechnical Boring Log B-1

Date:	8/30/02		**Page:** 1 of
Project Name:	Meyer Asset Management	**Project Number:**	PN022113-10
Drilling Company:	2R Drilling	**Type of Rig:**	CME55
Drive Weight:	140	**Drop:** 30	**Hole Dia:** 6"
Elevation of Top of Hole:		**Hole Location:**	

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION Logged By: GU Sampled By: GU	Type of Test
100	0						Qal (SM)	@0' - Silty SAND: Yellow-brown to red-brown, f to med grained; dry in upper 1'	
			R-1	15 13 20	118.4	7.3	(SC)	@2' - Clayey SAND: Reddish-brown, f to med grained. cemented, caliche stringers, medium dense, moist	
95	5		R-2	16 15 26	117.0	6.9	(SC)	@5' - same: cemented, caliche stringers, moist	
90	10		SPT-1	16 26 26			(SC)	@10' - Clayey SAND: Reddish-brown, f to co grained, cemented, w/caliche stringers, dry, dense	
85	15		SPT-2	9 12 20	na	13.4	(SC)	@15' - Clayey SAND: Dark reddish-brown, f to med grained, cemented, very moist, medium dense	
80	20		SPT-3	10 15 20			(SC)	@20' - same: cemented, caliche stringers, damp to moist	
75	25		SPT-4	7 14 22	na	16.2	(SC)	@25' - same: slightly cemented, very moist; medium dense	
70	30								

LGC

LAWSON & ASSOCIATES
GEOTECHNICAL CONSULTING INC.

Geotechnical Boring Log B-1

Date: 8/30/02 **Page:** 2 of 2

Project Name: Meyer Asset Management **Project Number:** PN022113-10

Drilling Company: 2R Drilling **Type of Rig:** CME55

Drive Weight: 140 **Drop:** 30 **Hole Dia:** 6"

Elevation of Top of Hole: **Hole Location:**

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION Logged By: GU Sampled By: GU	Type of Test
70	30		SPT-5	7 14 22			Qal (SC)	@30' - Clayey SAND: Yellow-brown to red-brown mottling: slighty cemented; moist; medium dense	
65	35		SPT-6	11 15 11	na	18.1	(ML)	@35' - Sandy SILT: Grey-black; f to med grained w/interbedded thin sand lenses; very moist, medium dense	
60	40		SPT-7	26 50	na	9.0	Kgr	@40' - Granitic Bedrock: Grey-black, f to med grained w/tr co grained; weathered; moist	
55	45		SPT-8	50			Kgr	@45' - same: saturated	
50	50		SPT-9	50			Kgr	@50' -same: saturated EOB Groundwater encountered @47'; rose to 42'	
45	55								
40	60								

LGC

LAWSON & ASSOCIATES
GEOTECHNICAL CONSULTING INC.

Geotechnical Boring Log B-2

Date:	8/30/02		**Page:** 1 of 1
Project Name:	Meyer Asset Management	**Project Number:**	PN022113-10
Drilling Company:	2R Drilling	**Type of Rig:**	CME55
Drive Weight:	140	**Drop:** 30	**Hole Dia:** 6"
Elevation of Top of Hole:		**Hole Location:**	

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION Logged By: GU Sampled By: GU	Type of Test
100	0						Qal (SM)	@0' - Silty SAND: Lt. yellow-brown, f to med grained, dry	
			R-3	14 16 22	117.9	11.1	(SC)	@2' - Clayey SAND: Reddish-brown, f to med grained, cemented, moist, medium dense	
95	5		R-4	14 20 25	115.0	12.4	(SC)	@5' - same: cemented, some caliche stringers moist, medium dense	
90	10		SPT-10	8 14 21	na	17.0	(SC)	@10' - same: cemented; some caliche stringers, very moist, medium dense	
85	15		SPT-11	12 14 17	na	6.9	(SP)	@15' - SAND w/Clay: Reddish-brown to grey-brown, f to co grained, moist; medium dense	
80	20		SPT-12	5 11 14	na	17.5	(ML)	@20' - Sandy SILT: Grey-brown, mottled with rust staining; f to med grained; very moist; medium dense	
75	25		SPT-13	5 5 7	na	23.5	(ML)	@25' - same, very moist; medium dense EOB no groundwater encountered	
70	30								

LGC

LAWSON & ASSOCIATES
GEOTECHNICAL CONSULTING INC.

Geotechnical Boring Log B-3

Date:	8/30/02		**Page: 1 of 1**
Project Name:	Meyer Asset Management	**Project Number:**	PN022113-10
Drilling Company:	2R Drilling	**Type of Rig:**	CME55
Drive Weight:	140	**Drop:** 30	**Hole Dia:** 6"
Elevation of Top of Hole:		**Hole Location:**	

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION Logged By: GU Sampled By: GU	Type of Test
100	0						Qal (SM)	@0' - Silty SAND: Lt. yellow-brown to red-brown, f to med grained; dry	
			R-5	22 40 50	113.8	12.1	(SC)	@2' - Clayey SAND: Reddish-brown to light brown, mottled, f to med grained; cemented; moist, very dense	
95	5		R-6	12 14 16	101.7	11.7	(SP)	@5' - SAND w/Clay: Reddish-brown, f to med grained w/tr co grained; moist; medium dense	
90	10		SPT-13	17 10 13	na	15.6	(ML)	@10' - Sandy SILT: Grey, f to med grained; w/abundant caliche; very moist; medium dense	
85	15		SPT-14	7 9 9	na	8.2	(ML)	@15' - same: slight color change to grey-brown; v. f. grained; moist; firm	
80	20		SPT-15	5 10 18	na	6.0	(ML)	@20' - same: firm, moist	
75	25		SPT-16	7 13 18	na	17.5	(ML)	@25' - same: very firm; very moist	
70	30								

LGC

LAWSON & ASSOCIATES
GEOTECHNICAL CONSULTING INC.

Appendix 4: Historical Site Conditions

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

October 12, 2016

PHASE I
ENVIRONMENTAL SITE ASSESSMENT

Property Identification:
I-215 and Holland Road
Northwestern corner of I-215 and Holland Road
Menifee, Riverside County, California 92584

AEI Project No. 363593

Prepared For:
JPN Corporation, Inc.
P.O. Box 27240
San Diego, CA 92198

Prepared By:
AEI Consultants
2233 West 190th Street
Torrance, California 90504
(310) 798-4255

October 12, 2016

JPN Corporation, Inc.
P.O. Box 27240
San Diego, California 92198

Subject: **PHASE I ENVIRONMENTAL SITE ASSESSMENT**
I-215 and Holland Road
Northwestern corner of I-215 and Holland Road, Menifee, California 92584
AEI Project No. 363593

Dear Jim Nelson:

AEI Consultants is pleased to provide the Phase I Environmental Site Assessment (Phase I ESA) report of the above referenced address. This assessment was authorized and performed in accordance with the scope of services outlined in the proposal, the scope and limitations of ASTM Standard Practice E1527-13, and the Environmental Protection Agency Standards and Practices for All Appropriate Inquiries (40 CFR Part 312).

We appreciate the opportunity to provide services to you. If you have any questions concerning this report, or if we may assist you in any other matter, please contact me at (310) 625-1124 or kbachrach@aeiconsultants.com.

Sincerely,

Ken Bachrach
AEI Consultants

PROJECT SUMMARY

I-215 and Holland Road
Northwestern corner of I-215 and Holland Road, Menifee, Riverside County, California 92584

Report Section		No Further Action	REC	CREC	HREC	Other Environmental Considerations	Recommended Action
2.1	Site Location and Description	✔					
2.2	Site and Vicinity Characteristics	✔					
3.1	Historical Summary		✔				Soil Sampling
4.0	Regulatory Agency Records Review		✔				Soil Sampling
5.0	Regulatory Database Records Review	✔					
5.2	Vapor Migration	✔					
6.3	Previous Reports and Other Provided Documentation	✔					
7.1	Subject Property Reconnaissance Findings	✔					
7.2	Adjacent Property Reconnaissance Findings	✔					
8.1	Asbestos-Containing Building Materials	✔					
8.2	Lead-Based Paint	✔					
8.3	Radon	✔					
8.4	Drinking Water Sources and Lead in Drinking Water	✔					
8.5	Mold/Indoor Air Quality Issues	✔					

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APPENDIX G: QUALIFICATIONS

LIST OF COMMONLY USED ACRONYMS

AST	Aboveground Storage Tank
AUL	Activity and Use Limitation
APCD	Air Pollution Control District
AHERA	Asbestos Hazard Emergency Response Act
AQMD	Air Quality Management District
ACM	Asbestos-Containing Material
APN	Assessor's Parcel Number
bgs	Below Ground Surface
BTEX	Benzene, Toluene, Ethylbenzene, and Xylenes
COC	Contaminant of Concern
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CERCLIS	Comprehensive Environmental Response Compensation and Liability Information System
CREC	Controlled Recognized Environmental Condition
EPA	Environmental Protection Agency
ESA	Environmental Site Assessment
HAZNET	Facility and Manifest Data
GPR	Ground-Penetrating Radar
HWS	Hazardous Waste Site
HVAC	Heating, Ventilation and Air Conditioning
HREC	Historical Recognized Environmental Condition
LLP	Landowner Liability Protection
LQG	Large Quantity Generator
LBP	Lead-Based Paint
LCP	Lead Containing Paint
LUST	Leaking Underground Storage Tank
MSDS	Material Safety Data Sheet
MCL	Maximum Contaminant Level
MTBE	Methyl Tertiary Butyl Ether
µg/L	Micrograms per Liter
mg/kg	Milligrams per Kilogram
mg/L	Milligrams per Liter
NESHAP	National Emission Standards for Hazardous Air Pollutants
NPL	National Priorities List
NFA	No Further Action
ND	None Detected
NOV	Notice of Violation
NTC	Notice to Comply
O&M	Operations and Maintenance
OSHA	Occupational Safety and Health Administration
ppb	Parts per Billion
ppm	Parts per Million
PCE	Perchloroethylene, Tetrachloroethylene, Tetrachloroethene, PERC
PTO	Permit to Operate
pCi/L	PicoCuries per Liter
PCB	Polychlorinated Biphenyl
REC	Recognized Environmental Condition
RCRA	Resource Conservation and Recovery Act
RP	Responsible Party
SVOC	Semi-Volatile Organic Compound
SQG	Small Quantity Generator
SLIC	Spills, Leaks, Investigation, and Cleanup
SEMS	Superfund Enterprise Management System
TPH	Total Petroleum Hydrocarbons
TPHd	Total Petroleum Hydrocarbons (diesel range)
TPHg	Total Petroleum Hydrocarbons (gasoline range)
TPHo	Total Petroleum Hydrocarbons (oil range)
TRPH	Total Recoverable Petroleum Hydrocarbons
TCE	Trichloroethylene, Trichloroethene
UST	Underground Storage Tank
USDA	United States Department of Agriculture
USGS	United States Geological Survey
VOC	Volatile Organic Compound

EXECUTIVE SUMMARY

AEI Consultants (AEI) was retained by JPN Corporation, Inc. to conduct a Phase I ESA in conformance with the proposal and the scope and limitations of ASTM Standard Practice E1527-13 and the EPA Standards and Practices for All Appropriate Inquiries (40 CFR Part 312) for the property located at Northwestern corner of I-215 and Holland Road, Menifee, Riverside County, California. Any exceptions to, or deletions from, this practice are described in Sections 1.4, 1.5, and 1.6 of this report.

PROPERTY DESCRIPTION

PROPERTY INFORMATION	
Property Name	I-215 and Holland Road
Street Address(es)	Northwestern corner of I-215 and Holland Road
City	Menifee
State	California
Location	Northwestern corner of I-215 and Holland Road
Vicinity Characteristics	Commercial and vacant
Approximate Site Acreage/Source	37 acres/Client provided
Property Type	Development Site
Subject Property Use(s)	Vacant land
Assessor Parcel Number(s)	360-130-003
SITE AND BUILDING INFORMATION	
Number of Buildings	Zero
Year(s) of Construction	None identified
Number of Floors/Stories	None identified
Basement or Subgrade Area(s)	None identified
Number of Units	None identified
Building Area (SF)/Source	None identified
Building Description(s)	None identified
Building Occupant(s)	None identified
Additional Improvements	None identified
Current On-site Operations	None identified
Current Use of Hazardous Substances	None identified
UTILITY PROVIDER INFORMATION	
Natural Gas Provider	Southern California Gas Company
Electricity Provider	Southern California Edison
Heating System Fuel Source	None identified
Cooling System Power Source	None identified
Potable Water Provider or Source	Eastern Municipal Water District
Sewage Disposal Provider or Treatment System	Eastern Municipal Water District
REGULATORY INFORMATION	
Regulatory Database Listings	None identified
Institutional Controls	None identified
Engineering Controls	None identified
Environmental Liens	None identified

Based on a review of historical sources, the subject property was identified to consist of vacant/ agricultural land from 1938 to present.

No historical addresses were identified to be associated with the subject property.

The immediately surrounding properties consist of the following:

Direction from Site	Tenant/Use (Address)	Regulatory Database Listing(s)
North	Vacant/agricultural land	None identified
West	Haun Road and La Paloma Wash, followed by: • Vacant/agricultural land • Santa Rosa Academy (27587 La Piedra Road)	SLIC, NPDES
South	Holland Road, followed by: • Vacant/agricultural land • Stax Up Storage (27887 Holland Road) • Commercial and parking/storage Lot (27989 Holland Road)	None identified
East	Interstate 215 followed by Antelope Road	None identified

If the surrounding properties are listed in the regulatory database, please refer to Section 5.1 for discussion.

Based on a Preliminary Site Assessment for a nearby site at 27587 La Piedra Road (located approximately 350 feet west northwest of the subject property) obtained from the California State Water Resources Control Board GeoTracker website, groundwater is presumed to be present at an estimated depth of 100.8 feet bgs. Based upon topographic map interpretation, the direction of groundwater flow beneath the subject property is inferred to be to the east-southeast.

FINDINGS

Recognized Environmental Condition (REC) is defined by the ASTM Standard Practice E1527-13 as the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment.

- The subject property was historically used for agricultural purposes. According to the subject property owner, the property was used for hay baling purposes from approximately 2003 to 2013. Hay baling activities reportedly consisted of planting wild oats and harvesting hay; no irrigation or agricultural chemicals were used on the property. The subject property owner stated that the property had been used for similar purposes from the 1950s to 2002 and it was grazing land prior to the 1950s. Although the recent agricultural activity does not appear to be a concern, AEI was unable to verify the historical use of the subject property before 2003 and rule out the use of agricultural chemicals onsite. Based on the similar historical uses of the adjacent school site and sampling data provided, there is a potential that agricultural chemicals, such

as pesticides, herbicides and fertilizers, were used on the subject property. The subject property is planned for commercial development, and the entire area of the subject property will likely either be paved over or covered by improvements that make direct contact with any potential remaining concentrations in the soil unlikely. AEI contacted the local planning department to determine whether sampling relating to the former agricultural use of the subject property is required in preparation for development, The planning department representative indicated that on-site sampling is required prior to the development of an agricultural property the size of the subject property. Consequently, AEI recommends the performance of on-site sampling to determine if the subject property has been significantly impacted in connection with the historical agricultural use for the protection of the construction workers and future occupants of the subject property.

Controlled Recognized Environmental Condition (CREC) is defined by the ASTM Standard Practice E1527-13 as a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority, with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls.

- AEI did not identify evidence of CRECs during the course of this assessment.

Historical Recognized Environmental Condition (HREC) is defined by the ASTM Standard Practice E1527-13 as 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.

- AEI did not identify evidence of HRECs during the course of this assessment.

Other Environmental Considerations warrant discussion, but do not qualify as RECs as defined by the ASTM Standard Practice E1527-13. These include, but are not limited to, de minimis conditions and/or environmental considerations such as the presence of ACMs, LBP, radon, mold, and lead in drinking water, which can affect the liabilities and financial obligations of the client, the health and safety of site occupants, and the value and marketability of the subject property.

- AEI did not identify evidence of Other Environmental Considerations during the course of this assessment.

CONCLUSIONS, OPINIONS, AND RECOMMENDATIONS

We have performed a Phase I ESA in conformance with the scope and limitations of ASTM Standard Practice E1527-13 and the EPA Standards and Practices for All Appropriate Inquiries (40 CFR Part 312) of Northwestern corner of I-215 and Holland Road, Menifee, Riverside County, California, the *subject property*. Any exceptions to, or deletions from, this practice are described in Sections 1.4, 1.5, and 1.6 of this report.

AEI did not identify evidence of RECs or CRECs in connection with the property except for those previously identified in the Findings section. AEI recommends the following:

- Soil Sampling

1.0 INTRODUCTION

This report documents the methods and findings of the Phase I ESA performed in conformance with the proposal and scope and limitations of ASTM Standard Practice E1527-13 and the EPA Standards and Practices for All Appropriate Inquiries (40 CFR Part 312) for the property located at Northwestern corner of I-215 and Holland Road, Menifee, Riverside County, California (Appendix A: Figures and Appendix B: Property Photographs).

1.1 SCOPE OF WORK

The purpose of the Phase I ESA is to assist the client in identifying potential RECs, in accordance with ASTM E1527-13, associated with the presence of any hazardous substances or petroleum products, their use, storage, and disposal at and in the vicinity of the subject property. Property assessment activities focused on: 1) a review of federal, state, tribal, and local databases that identify and describe underground fuel tank sites, leaking underground fuel tank sites, hazardous waste generation sites, and hazardous waste storage and disposal facility sites within the ASTM approximate minimum search distance; 2) a property and surrounding site reconnaissance, and interviews with the past and present owners and current occupants and operators to identify potential environmental contamination; and 3) a review of historical sources to help ascertain previous land use at the site and in the surrounding area.

1.2 ADDITIONAL SERVICES

Other Environmental Considerations such as ACMs, LBP, lead in drinking water, radon, mold, and wetlands can result in business environmental risks for property owners which may disrupt current or planned operations or cash flow and are generally beyond the scope of a Phase I assessment as defined by ASTM E1527-13. Based upon the agreed-on scope of services this ESA did not include subsurface or other invasive assessments, business environmental risks, or other services not specifically identified and discussed herein.

1.3 SIGNIFICANT ASSUMPTIONS

The following assumptions are made by AEI in this report. AEI relied on information derived from secondary sources including governmental agencies, the client, designated representatives of the client, property contact, property owner, property owner representatives, computer databases, and personal interviews. AEI has reviewed and evaluated the thoroughness and reliability of the information derived from secondary sources including government agencies, the client, designated representatives of the client, property contact, property owner, property owner representatives, computer databases, or personal interviews. It appears that all information obtained from outside sources and reviewed for this assessment is thorough and reliable. However, AEI cannot guarantee the thoroughness or reliability of this information.

Groundwater flow, unless otherwise specified by on-site well data or well data from the subject property or nearby sites, is inferred from contour information depicted on the USGS topographic maps. AEI assumes the property has been correctly and accurately identified by the client, designated representative of the client, property contact, property owner, and property owner's representatives.

1.4 LIMITATIONS

Property conditions, as well as local, state, tribal, and federal regulations can change significantly over time. Therefore, the recommendations and conclusions presented as a result of this assessment apply strictly to the environmental regulations and property conditions existing at the time the assessment was performed. Available information has been analyzed using currently accepted assessment techniques and it is believed that the inferences made are reasonably representative of the property. AEI makes no warranty, expressed or implied, except that the services have been performed in accordance with generally accepted environmental property assessment practices applicable at the time and location of the assessment.

Considerations identified by ASTM as beyond the scope of a Phase I ESA that may affect business environmental risk at a given property include the following: ACMs, radon, LBP, lead in drinking water, wetlands, regulatory compliance, cultural and historical resources, industrial hygiene, health and safety, ecological resources, endangered species, indoor air quality, mold, and high voltage lines. These environmental issues or conditions may warrant assessment based on the type of the property transaction; however, they are considered non-scope issues under ASTM Standard Practice E1527-13.

If requested by the client, these non-scope issues are discussed herein. Otherwise, the purpose of this assessment is solely to satisfy one of the requirements for qualification of the innocent landowner defense, contiguous property owner or bona fide prospective purchaser under CERCLA. ASTM Standard Practice E1527-13 and the United States EPA Standards and Practices for All Appropriate Inquiries (40 CFR Part 312) constitute the "all appropriate inquiry into the previous ownership and uses of the property consistent with good commercial or customary practice" as defined in:

1. 42 U.S.C. § 9601(35)(B), referenced in the ASTM Standard Practice E1527-13.
2. Sections 101(35)(B) (ii) and (iii) of CERCLA and referenced in the EPA Standards and Practices for All Appropriate Inquiries (40 CFR Part 312).
3. 42 U.S.C. § 9601(40) and 42 U.S.C. § 9607(q).

The Phase I ESA is not, and should not be construed as, a warranty or guarantee about the presence or absence of environmental contaminants that may affect the property. Neither is the assessment intended to assure clear title to the property in question. The sole purpose of assessment into property title records is to ascertain a historical basis of prior land use. All findings, conclusions, and recommendations stated in this report are based upon facts, circumstances, and industry-accepted procedures for such services as they existed at the time this report was prepared (i.e., federal, state, and local laws, rules, regulations, market conditions, economic conditions, political climate, and other applicable matters). All findings, conclusions, and recommendations stated in this report are based on the data and information provided, and observations and conditions that existed on the date and time of the property reconnaissance.

Responses received from local, state, or federal agencies or other secondary sources of information after the issuance of this report may change certain facts, findings, conclusions, or circumstances to the report. A change in any fact, circumstance, or industry-accepted procedure upon which this report was based may adversely affect the findings, conclusions, and recommendations expressed in this report.

AEI's limited radon screening, if included, is intended to provide a preliminary screening to evaluate the potential presence of elevated radon concentrations at the site. The proposed scope is not intended to define the full extent of the presence of radon at the subject property. As such, the results should be used for lending purposes only. The recommendations and conclusions presented as a result of the limited preliminary radon screening apply strictly to the property conditions existing at the time the sampling was performed. The sample analytical results are only valid for the time, place, and condition of the site at the time of collection and AEI does not warrant that the results will be repeatable or are representative of past or future conditions.

1.5 LIMITING CONDITIONS/DEVIATIONS

The performance of this Phase I ESA was limited by the following:

- Due to the size of the subject property, AEI performed a site inspection of the property utilizing a field technique of traversing the site in an attempt to provide an overlapping field of view. Due to the size of the property and the vegetation present on site, isolated areas of the site may have not been accessible for direct observation during AEI's inspection. Based on vacant nature of the site, this limitation is not expected to significantly alter the Findings of this assessment.
- The User did not complete the ASTM User Questionnaire or provide the User information to AEI. AEI assumes that qualification for the LLPs is being established by the User in documentation outside of this assessment.

1.6 DATA GAPS AND DATA FAILURE

According to ASTM E1527-13, data gaps occur when the Environmental Professional is unable to obtain information required by the Standard, despite good faith efforts to gather such information. Pursuant to ASTM E1527-13, only significant data gaps, defined as those that affect the ability of the Environmental Professional to identify RECs, need to be documented.

Data failure is one type of data gap. According to ASTM E1527-13, data failure occurs when all of the standard historical sources that are reasonably ascertainable and likely to be useful have been reviewed and yet the objectives have not been met. Pursuant to ASTM E1527-13, historical sources are required to document property use back to the property's first developed use or back to 1940, whichever is earlier, or periods of five years or greater.

1.6.1 DATA FAILURE

The following data failure was identified during the course of this assessment:

Data Failure	The earliest historical resource obtained during this assessment was aerial photograph from 1938. The lack of historical sources for the subject property dating back to first developed use represents historical data source failure. In the 1938 aerial photograph, the subject property was developed agriculturally. Thus it is assumed that prior to 1938 the subject property would have been used for agricultural purposes, if not undeveloped. Therefore, this data failure is not expected to significantly alter the Findings of this assessment.
Information/Sources Consulted	City directories, aerial photographs, agency records, interviews

1.6.2 DATA GAPS

AEI did not identify significant data gaps which affected our ability to identify RECs.

1.7 RELIANCE

All reports, both verbal and written, are for the benefit of JPN Corporation, Inc.. This report has no other purpose and may not be relied upon by any other person or entity without the written consent of AEI. Either verbally or in writing, third parties may come into possession of this report or all or part of the information generated as a result of this work. In the absence of a written agreement with AEI granting such rights, no third parties shall have rights of recourse or recovery whatsoever under any course of action against AEI, its officers, employees, vendors, successors, or assigns. Reliance is provided in accordance with AEI's proposal and Standard Terms and Conditions executed by JPN Corporation, Inc. on September 22, 2016. The limitation of liability defined in the Terms and Conditions is the aggregate limit of AEI's liability to the client and all relying parties.

2.0 SITE AND VICINITY DESCRIPTION

2.1 SITE LOCATION AND DESCRIPTION

PROPERTY INFORMATION	
Property Name	I-215 and Holland Road
Street Address(es)	Northwestern corner of I-215 and Holland Road
City	Menifee
State	California
Location	Northwestern corner of I-215 and Holland Road
Vicinity Characteristics	Commercial and vacant
Approximate Site Acreage/Source	37 acres/Client provided
Property Type	Development Site
Subject Property Use(s)	Vacant land
Assessor Parcel Number(s)	360-130-003
SITE AND BUILDING INFORMATION	
Number of Buildings	Zero
Year(s) of Construction	None identified
Number of Floors/Stories	None identified
Basement or Subgrade Area(s)	None identified
Number of Units	None identified
Building Area (SF)/Source	None identified
Building Description(s)	None identified
Building Occupant(s)	None identified
Additional Improvements	None identified
Current On-site Operations	None identified
Current Use of Hazardous Substances	None identified
UTILITY PROVIDER INFORMATION	
Natural Gas Provider	Southern California Gas Company
Electricity Provider	Southern California Edison
Heating System Fuel Source	None identified
Cooling System Power Source	None identified
Potable Water Provider or Source	Eastern Municipal Water District
Sewage Disposal Provider or Treatment System	Eastern Municipal Water District
REGULATORY INFORMATION	
Regulatory Database Listings	None identified
Institutional Controls	None identified
Engineering Controls	None identified
Environmental Liens	None identified

Utility provider information listed in the table above is provided by Jim Nelson, property owner, unless otherwise noted above.

Refer to Appendix A: Figures and Appendix B: Property Photographs for site location and description.

2.2 SITE AND VICINITY CHARACTERISTICS

The immediately surrounding properties consist of the following:

Direction from Site	Tenant/Use (Address)	Regulatory Database Listing(s)
North	Vacant/agricultural land	None identified
West	Haun Road and La Paloma Wash, followed by: • Vacant/agricultural land • Santa Rosa Academy (27587 La Piedra Road)	SLIC, NPDES
South	Holland Road, followed by: • Vacant/agricultural land • Stax Up Storage (27887 Holland Road) • Commercial and parking/storage Lot (27989 Holland Road)	None identified
East	Interstate 215 followed by Antelope Road	None identified

If the surrounding properties are listed in the regulatory database, please refer to Section 5.1 for discussion.

2.3 PHYSICAL SETTING

Geology: According to information obtained from the USGS, the area surrounding the subject property is underlain by soils of the Yokohl loam and Wyman loam associations. According to information obtained from the GeoTracker website for a nearby site located at 27587 La Piedra Road (approximately 350 feet east northeast of the subject property, surface and shallow soil in the vicinity of the subject property generally consists of brown silty, fine to medium grained sands with varying small amounts of clay.

USGS Topographic Map:	Romoland, California Quadrangle
Nearest surface water to subject property:	Menifee Lakes/0.50 feet east northeast
Gradient Direction/Source:	East-southeast/Preliminary Site Assessment obtained from the GeoTracker website for 27587 La Piedra Road (350 feet east northeast)
Estimated Depth to Groundwater/Source:	100.8 feet bgs/Preliminary Site Assessment obtained from the GeoTracker website for 27587 La Piedra Road (350 feet east northeast)

Note: Groundwater flow direction can be influenced locally and regionally by the presence of local wetland features, surface topography, recharge and discharge areas, horizontal and vertical inconsistencies in the types and location of subsurface soils, and proximity to water pumping wells. Depth and gradient of the water table can change seasonally in response to variation in precipitation and recharge, and over time, in response to urban development such as storm water controls, impervious surfaces, pumping wells, cleanup activities, dewatering, seawater intrusion barrier projects near the coast, and other factors.

3.0 HISTORICAL REVIEW OF SITE AND VICINITY

3.1 HISTORICAL SUMMARY

Reasonably ascertainable standard historical sources as outlined in ASTM Standard E1527-13 were used to determine previous uses and occupancies of the subject property that are likely to have led to RECs in connection with the subject property. A chronological summary of historical data found, including but not limited to aerial photographs, historical city directories, Sanborn fire insurance maps, and agency records, is as follows:

Date Range	Subject Property Description/Use	Source(s)
1938-Present	Vacant/agricultural land	Aerial photographs

Based on a review of historical sources, the subject property was identified to consist of vacant/ agricultural land from 1938 to present.

No historical addresses were identified to be associated with the subject property.

Refer to Section 3.2 for discussion of historical agricultural use.

3.2 AERIAL PHOTOGRAPHS

AEI reviewed aerial photographs of the subject property and surrounding area. A search was made of the EDR collection of aerial photographs. Aerial photographs were reviewed for the following years:

Year(s)	Subject Property Description	Adjacent Site Descriptions
1938 1949 1953 1961 1967	Vacant/agricultural land	NORTH: Vacant/agricultural land EAST: Vacant/agricultural land and a road SOUTH: A road, followed by vacant/ agricultural land WEST: Vacant/agricultural land
1978	No significant changes	NORTH: No significant changes EAST: Vacant land and graded land for future freeway SOUTH: A road, followed by vacant/ agricultural land and several residential structures WEST: A road, followed by vacant/agricultural land
1985	No significant changes	NORTH: No significant changes EAST: Vacant land and a freeway SOUTH: No significant changes WEST: No significant changes
1989 1996	No significant changes	NORTH: No significant changes EAST: No significant changes SOUTH: A road, followed by vacant/ agricultural land and several commercial structures with parking/storage lot WEST: No significant changes

Year(s)	Subject Property Description	Adjacent Site Descriptions
2002 2005 2006	No significant changes	NORTH: No significant changes EAST: No significant changes SOUTH: A road, followed by vacant/ agricultural land, a self storage facility and several commercial structures with parking/ storage lot WEST: No significant changes
2009 2010 2012	No significant changes	NORTH: No significant changes EAST: No significant changes SOUTH: No significant changes WEST: A road, followed by vacant/agricultural land and a storm drain channel

The subject property was historically used for agricultural purposes. According to the subject property owner, the property was used for hay baling purposes from approximately 2003 to 2013. Hay baling activities reportedly consisted of planting wild oats and harvesting hay; no irrigation or agricultural chemicals were used on the property. The subject property owner stated that the property had been used for similar purposes from the 1950s to 2002 and it was grazing land prior to the 1950s. Although the recent agricultural activity does not appear to be a concern, AEI was unable to verify the historical use of the subject property before 2003 and rule out the use of agricultural chemicals onsite. Based on the similar historical uses of the adjacent school site and sampling data provided, there is a potential that agricultural chemicals, such as pesticides, herbicides and fertilizers, were used on the subject property. The subject property is planned for commercial development, and the entire area of the subject property will likely either be paved over or covered by improvements that make direct contact with any potential remaining concentrations in the soil unlikely. AEI contacted the local planning department to determine whether sampling relating to the former agricultural use of the subject property is required in preparation for development, The planning department representative indicated that on-site sampling is required prior to the development of an agricultural property the size of the subject property. Consequently, AEI recommends the performance of on-site sampling to determine if the subject property has been significantly impacted in connection with the historical agricultural use for the protection of the construction workers and future occupants of the subject property.

If available, copies of historical aerial photographs are provided in the report appendices.

3.3 Sanborn Fire Insurance Maps

Sanborn Fire Insurance maps were developed in the late 1800s and early 1900s for use as an assessment tool for fire insurance rates in urbanized areas. A search was made of the EDR collection of Sanborn Fire Insurance maps.

Sanborn map coverage was not available for the subject property.

3.4 City Directories

A search of historical city directories was conducted for the subject property utilizing EDR. No information was on file for the subject property.

3.5 HISTORICAL TOPOGRAPHIC MAPS

In accordance with our approved scope of services, historical topographic maps were not reviewed as a part of this assessment.

3.6 CHAIN OF TITLE

In accordance with our approved scope of services, a chain of title search was not performed as part of this assessment.

4.0 REGULATORY AGENCY RECORDS REVIEW

Local and state agencies, such as environmental health departments, fire prevention bureaus, and building and planning departments are contacted to identify any current or previous reports of hazardous substance use, storage, and/or unauthorized releases that may have impacted the subject property. In addition, information pertaining to AULs, defined as legal or physical restrictions, or limitations on the use of, or access to, a site or facility, is requested.

4.1 LOCAL ENVIRONMENTAL HEALTH DEPARTMENT AND/OR STATE ENVIRONMENTAL AGENCY

On September 23, 2016, AEI contacted the Riverside Department of Environmental Health via telephone for information on the subject property. Files at this agency may contain information regarding hazardous substance storage and use, underground storage tanks, unauthorized releases of petroleum hydrocarbons or other contaminants that may affect the soil or groundwater in the area, wells and/or septic systems.

The Riverside Department of Environmental Health does not have files for parcels without a physical address.

4.2 FIRE DEPARTMENT

The Riverside Department of Environmental Health is the custodian of records for the Riverside County Fire Department; refer to Section 4.1.

4.3 BUILDING DEPARTMENT

On September 23, 2016, AEI contacted the Menifee Building & Safety Department via telephone for information on the subject property in order to identify historical tenants, features of concern and property use. The Menifee Building & Safety Department does not have files for parcels without a physical address.

4.4 PLANNING DEPARTMENT

On September 23, 2016, AEI contacted the Menifee Planning Department via telephone for information on the subject property in order to identify AULs associated with the subject property.

Evidence indicating the existence of AULs was not on file for the subject property with the Menifee Planning Department. However, the planning department representative indicated that on-site sampling is required prior to the development of an agricultural property the size of the subject property; refer to Section 3.2 for further discussion.

4.5 COUNTY ASSESSOR OFFICE

On September 23, 2016, AEI visited the Riverside County assessor's office website for information on the subject property in order to determine the earliest recorded date of development and use.

The Riverside County assessor's office did not have information indicating the presence of buildings on the subject property.

4.6 Oil and Gas Wells/Pipelines

On September 23, 2016, AEI reviewed the California Department of Conservation, Division of Oil, Gas, and Geothermal Resources (DOGGR) maps and the National Pipeline Mapping System (NPMS) Public Map Viewer concerning the subject property and nearby properties. The maps contain information regarding oil and gas development.

According to the DOGGR map, oil or gas wells are not located within 500 feet of the subject property. AEI did not identify evidence of environmental concerns during the map review.

According to the NPMS Public Map Viewer, pipelines are not located within 500 feet of the subject property. AEI did not identify evidence of environmental concerns during the map review.

4.7 Other Agencies Searched

On September 23, 2016, AEI visited the website maintained by the South Coast Air Quality Management District (SCAQMD) for information regarding any records of Permits to Operate (PTO), Notices of Violation (NOV), or Notices to Comply (NTC) issued to occupants of the subject property and associated with air emission equipment primarily related to stationary sources of air pollution, such as dry cleaning machines, boilers, and/or USTs. No information regarding the subject property was found on the SCAQMD website.

On September 23, 2016, AEI visited the Hazardous Waste Tracking System (HWTS) online database maintained by the Department of Toxic Substances Control (DTSC) for information regarding documented hazardous wastes disposed of via manifest from the subject property. No information regarding the subject property was found on the DTSC HWTS website.

On September 23, 2016, AEI accessed the California Department of Toxic Substances Control (DTSC) EnviroStor database, which contains information of investigation, cleanup, permitting, and/or corrective actions that are planned, being conducted or have been completed under DTSC oversight. No information regarding the subject property was found on the Envirostor website.

On September 23, 2016, AEI visited the Regional Water Quality Control Board (RWQCB) GeoTracker website for information on the subject property and/or nearby sites of concern to identify any evidence of unauthorized releases of hazardous materials to the groundwater. Cases typically handled by the RWQCB include releases from underground storage tanks (USTs). No information regarding the subject property was found on the GeoTracker website. The eastern adjacent closed SLIC site is discussed in Section 5.1.

4.8 State Environmental Superliens and Property Transfer Laws

In accordance with our approved scope of services, AEI did not assess whether the subject property is subject to any state environmental superliens and/or property transfer laws.

5.0 REGULATORY DATABASE RECORDS REVIEW

AEI contracted Environmental Data Resources (EDR) to conduct a search of publicly available information from federal, state, tribal, and local databases containing known and suspected sites of environmental contamination and sites of potential environmental significance. Data gathered during the current regulatory database search is compiled by EDR into one regulatory database report. Location information for listed sites is designated using geocoded information provided by federal, state, or local agencies and commonly used mapping databases with the exception of "Orphan" sites. Due to poor or inadequate address information, Orphan sites are identified but not geocoded/mapped by EDR, rather, information is provided based upon vicinity zip codes, city name, and state. The number of listed sites identified within the approximate minimum search distance from the federal and state environmental records database listings specified in ASTM Standard E1527-13 is summarized in Section 5.1, along with the total number of Orphan sites. A copy of the regulatory database report is included in Appendix C of this report.

The subject property was not identified in the databases reviewed.

In determining if a listed site is a potential environmental concern to the subject property, AEI generally applies the following criteria to classify the site as lower potential environmental concern: 1) the site only holds an operating permit (which does not imply a release), 2) the site's distance from, and/or topographic position relative to, the subject property, and/or 3) the site has recently been granted "No Further Action" by the appropriate regulatory agency.

5.1 RECORDS SUMMARY

Database	Search Distance (Miles)	Subject Property Listed	Number of Listings within Search Distance	Recognized Environmental Condition or Other Environmental Consideration (Yes or No)
NPL	1	No	0	
DELISTED NPL	0.5	No	0	
SEMS (former CERCLIS)	0.5	No	0	
SEMS-ARCHIVE (former CERCLIS NFRAP)	0.5	No	0	
RCRA CORRACTS	1	No	0	
RCRA-TSDF	0.5	No	0	
RCRA LQG, SQG, CESQGs, VGN, NLR	SP/ADJ	No	0	
US ENG CONTROLS	SP	No	0	
US INST CONTROLS	SP	No	0	
ERNS	SP	No	0	
STATE/TRIBAL HWS	1	No	1	No, one site is further discussed below
STATE/TRIBAL SWLF	0.5	No	0	
STATE/TRIBAL REGISTERED STORAGE TANKS	SP/ADJ	No	0	
STATE/TRIBAL LUST	0.5	No	0	

Database	Search Distance (Miles)	Subject Property Listed	Number of Listings within Search Distance	Recognized Environmental Condition or Other Environmental Consideration (Yes or No)
STATE/TRIBAL EC and IC	SP	No	0	
STATE/TRIBAL VCP	0.5	No	0	
STATE/TRIBAL BROWNFIELD	0.5	No	0	
ORPHAN	N/A	No	5	No; none of the identified orphan sites are located in the immediate vicinity (500-feet) of the subject property, and/or based upon the distance and relative gradient, the sites are not expected to represent a significant environmental concern.
ADDITIONAL ENVIRONMENTAL RECORD SOURCES	SP/ADJ	No	1	No, one site is further discussed below

Facility Name: Santa Rosa Academy Charter School
Database(s): SLIC, NPDES Address: 27587 La Piedra Road Distance: 370 feet Direction: West northwest (hydrologically up-gradient)
Comments: This facility was listed as a closed SLIC site. AEI reviewed Riverside County Department of Environmental Health files available on the GeoTracker website. A Preliminary Environmental Assessment was performed in 2012 to evaluate the potential agricultural chemicals of concern in soil associated with historic agricultural use of the site for a proposed school. The investigation included 35 soil borings on the site to depth ranging from approximately 0.5 to 3 feet bgs. The nearest soil boring (B16) is located approximately 350 east northeast of the subject property. The contaminant 4,4-dichlorodiphenyldichloroethylene (DDE) was detected at 0.006 mg/kg and all other organochloride pesticides were non-detect. Based on the sampling results, the impact to soil only, regulatory status, depth to groundwater and distance from the subject property, the site is not expected to represent a significant environmental concern to the subject property at this time. However, potential concerns associated with agricultural uses on the subject property are discussed in Section 3.2.

5.2 VAPOR MIGRATION

AEI reviewed reasonably ascertainable information for the subject and nearby properties, including a regulatory database, files for nearby release sites, and/or historical documentation, to determine if potential vapor-phase migration concerns may be present which could impact the subject property.

Based on a review of available resources as documented in this report, AEI did not identify significant on-site concerns and/or regulated listings from nearby sites which suggest that a vapor-phase migration concern currently exists at the subject property.

6.0 INTERVIEWS AND USER PROVIDED INFORMATION

6.1 INTERVIEWS

Pursuant to ASTM E1527-13, the following interviews were performed during this assessment in order to obtain information indicating RECs in connection with the subject property.

6.1.1 INTERVIEW WITH OWNER

The subject property owner, Jim Nelson of the Nelson Family Trust, was contacted via email on September 28, 2016. Jim Nelson has been associated with the subject property for 14 years. Jim Nelson was asked if he was aware of any of the following:

	Yes	No
Any knowledge of USTs, clarifiers or oil/water separators, sumps, or other subsurface features.		✔
Any knowledge of previous environmental investigations conducted on site.		✔
Any knowledge of current or past industrial operations and/or other operations which would involve the use of hazardous substances and/or petroleum products.		✔
Any known plans for site redevelopment or change in site use.	✔	
Any pending, threatened, or past litigation relevant to hazardous substances or petroleum products in, on, or from the property.		✔
Any pending, threatened or past administrative proceedings relevant to hazardous substances or petroleum products in, on, or from the property.		✔
Any notices from any governmental entity regarding any possible violation of environmental laws or possible liability relating to hazardous substances or petroleum products.		✔
Any incidents of flooding, leaks, or other water intrusion, and/or complaints related to indoor air quality.		✔
Comments: The site is planned for redevelopment (unknown type).		

6.1.2 INTERVIEW WITH KEY SITE MANAGER

The property owner, Jim Nelson, is also the key site manager. Refer to Section 6.1.1.

6.1.3 PAST OWNERS, OPERATORS, AND OCCUPANTS

AEI did not attempt to interview past owners, operators, and occupants of the subject property because information from these sources would likely be duplicative of information already obtained from other sources.

6.1.4 INTERVIEW WITH OTHERS

Information obtained during interviews with local government officials is incorporated into the appropriate segments of this section.

6.2 User Provided Information

User provided information is intended to help identify the possibility of RECs in connection with the subject property. According to ASTM E1527-13 and the EPA Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), certain items should be researched by the prospective landowner or grantee, and the results of such inquiries may be provided to the Environmental Professional. The responsibility for qualifying for LLPs by conducting the inquiries ultimately rests with the User, and providing the information to the Environmental Professional would be prudent if such information is available.

The User did not complete the ASTM User Questionnaire or provide the User information to AEI. AEI assumes that qualification for the LLPs is being established by the User in documentation outside of this assessment.

6.3 Previous Reports and Other Provided Documentation

No prior reports or other relevant documentation in association with the subject property was made available to AEI during the course of this assessment.

7.0 SITE RECONNAISSANCE

Site Reconnaissance Date	October 6, 2016
AEI Site Assessor(s)	April McGuire
Property Escort(s)/Relationship(s) to Property	Unaccompanied
Units/Areas Observed	AEI was granted full access to the subject property
Area(s) not accessed and reason(s)	Due to the size of the subject property, AEI performed a site inspection of the property utilizing a field technique of traversing the site in an attempt to provide an overlapping field of view. Due to the size of the property and the vegetation present on site, isolated areas of the site may have not been accessible for direct observation during AEI's inspection. Based on vacant nature of the site, this limitation is not expected to significantly alter the Findings of this assessment.
Weather	Sunny and clear

7.1 SUBJECT PROPERTY RECONNAISSANCE FINDINGS

Yes	No	Observation
	✔	Regulated Hazardous Substances/Wastes and/or Petroleum Products in Connection with Property Use
	✔	Aboveground/Underground Hazardous Substance or Petroleum Product Storage Tanks (ASTs/USTs)
	✔	Hazardous Substance and Petroleum Product Containers Not in Connection with Property Use
	✔	Unidentified Substance Containers
	✔	Electrical or Mechanical Equipment Likely to Contain Fluids
	✔	Interior Stains or Corrosion
	✔	Strong, Pungent, or Noxious Odors
	✔	Pools of Liquid
	✔	Drains, Sumps, and Clarifiers
	✔	Pits, Ponds, and Lagoons
	✔	Stained Soil or Pavement
	✔	Stressed Vegetation
	✔	Solid Waste Disposal or Evidence of Fill Materials
	✔	Waste Water Discharges
	✔	Wells
	✔	Septic Systems
	✔	Biomedical Wastes
	✔	Other

The subject property is currently vacant.

AEI did not observe the above listed items during the subject property reconnaissance.

7.2 ADJACENT PROPERTY RECONNAISSANCE FINDINGS

Yes	No	Observation
	✔	Hazardous Substances/Wastes and/or Petroleum Products in Connection with Property Use
	✔	Aboveground/Underground Hazardous Substance or Petroleum Product Storage Tanks (ASTs/USTs)
	✔	Hazardous Substance and Petroleum Product Containers Not in Connection with Property Use
	✔	Unidentified Substance Containers
	✔	Electrical or Mechanical Equipment Likely to Contain Fluids
	✔	Strong, Pungent, or Noxious Odors
	✔	Pools of Liquid
✔		Drains, Sumps, and Clarifiers
	✔	Pits, Ponds, and Lagoons
	✔	Stained Soil or Pavement
	✔	Stressed Vegetation
	✔	Solid Waste Disposal or Evidence of Fill Materials
	✔	Waste Water Discharges
	✔	Wells
	✔	Septic Systems
	✔	Other

DRAINS, SUMPS, AND CLARIFIERS

A storm drain and storm drain channel (La Paloma Wash) were observed in the parking area of the subject property. AEI did not observe evidence of hazardous substances or petroleum products in the vicinity of the drain or channel. Based on the use of the drain and channel solely for storm water runoff, the presence of the drain and channel is not expected to represent a significant environmental concern.

8.0 OTHER ENVIRONMENTAL CONSIDERATIONS

8.1 ASBESTOS-CONTAINING BUILDING MATERIALS

The subject property is currently vacant land or lacks structures. Consequently, no building components containing suspect asbestos containing materials were identified during the site inspection.

8.2 LEAD-BASED PAINT

The subject property is currently vacant land or lacks structures. Consequently, AEI did not observe building components likely to contain suspect LBP during the site reconnaissance.

8.3 RADON

Radon is a naturally-occurring, odorless, and invisible gas. Natural radon levels vary and are closely related to geologic formations. Radon may enter buildings through basement sumps or other openings.

The United States EPA has prepared a map to assist National, State, and local organizations to target their resources and to implement radon-resistant building codes. The map divides the country into three radon zones, with Zone 1 being those areas with the average predicted indoor radon concentration in residential dwellings exceeding the EPA Action Limit of 4.0 pCi/L. It is important to note that the EPA has found homes with elevated levels of radon in all three zones, and the EPA recommends site specific testing in order to determine radon levels at a specific location. However, the map does give a valuable indication of the propensity of radon gas accumulation in structures.

Radon sampling was not requested as part of this assessment. According to the US EPA, the radon zone level for the area is Zone 2, which has a predicted average indoor screening level between 2 pCi/L and 4 pCi/L, equal to or below the action level of 4 pCi/L set forth by the US EPA.

8.4 DRINKING WATER SOURCES AND LEAD IN DRINKING WATER

The Eastern Municipal Water District supplies potable water to the area subject property. The most recent water quality report (2015) states that the 90th percentile value for lead levels in samples obtained from the area's water supply was less than 5 micrograms per liter (µg/L). Zero samples out of a total of 50 samples had lead levels exceeding the regulatory action level. The samples with lead levels exceeding the action level may be attributed to internal corrosion of household water plumbing systems. Overall, lead levels are well within standards established by the United States EPA.

8.5 MOLD/INDOOR AIR QUALITY ISSUES

The subject property is currently vacant land or lacks structures. Consequently, mold was not addressed as part of this assessment.

9.0 SIGNATURE OF ENVIRONMENTAL PROFESSIONALS

I declare that, to the best of my professional knowledge and belief, I meet the definition of Environmental Professional as defined in §312.10 of 40 CFR Part 312.

I have the specific qualifications based on education, training, and experience to assess a property of the nature, history and setting of the subject property. I have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

Prepared By:

April McGuire
Project Manager

Reviewed By:

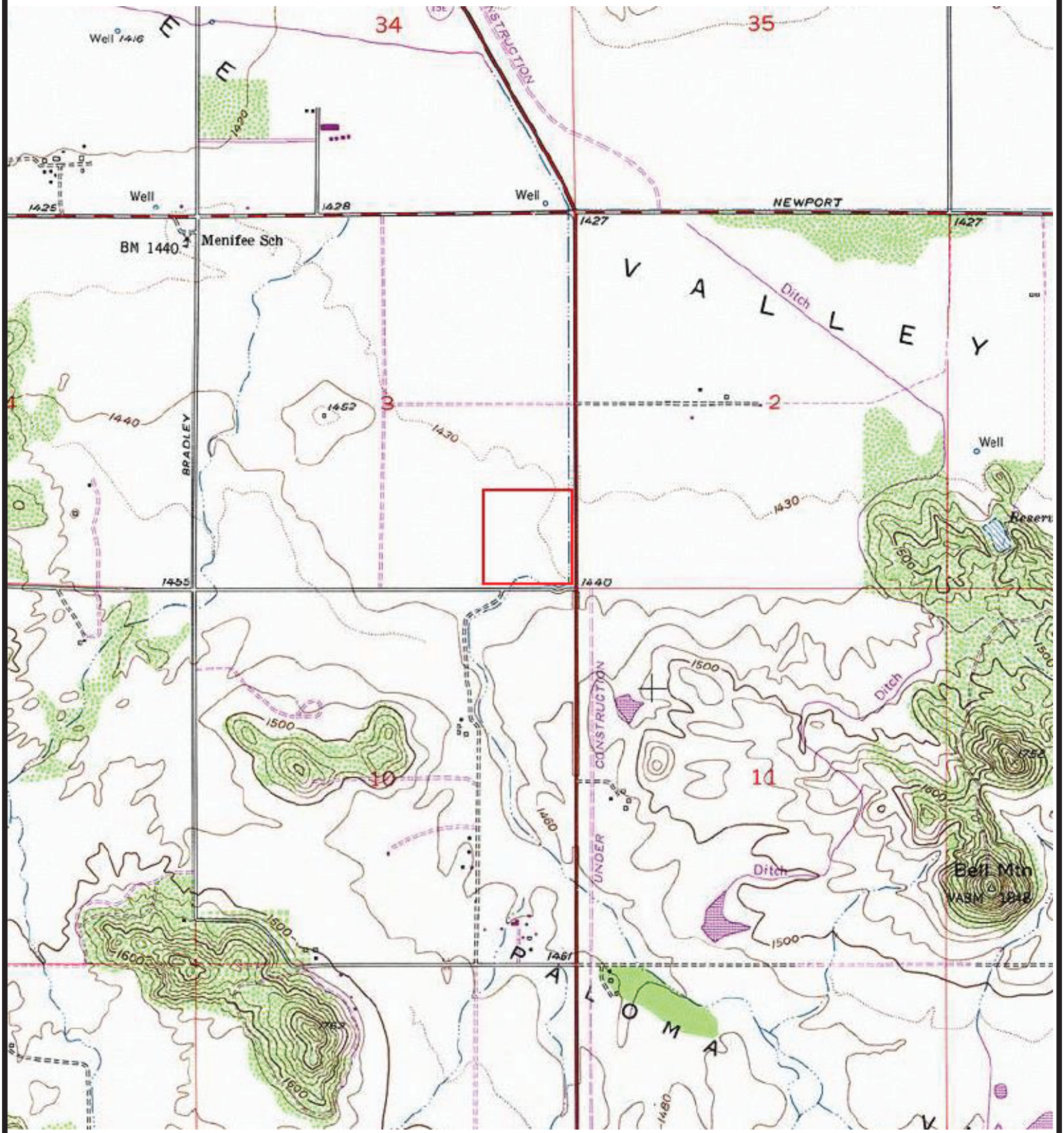
Victor Detroy
Senior Author

10.0 REFERENCES

Item	Date(s)	Source
Soils Information	September 2016	USDA Web Soil Survey http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx
Topographic Map	1979	USGS
Depth to Groundwater Information	September 2016	Regional Water Quality Control Board GeoTracker website
Aerial Photographs	1938, 1949, 1953, 1961, 1967, 1978, 1985, 1989, 1996, 2002, 2005, 2006, 2009, 2010, 2012	EDR
Sanborn Map Report/Search	September 2016	EDR
City Directories	1975-2013 (non-inclusive)	EDR
Environmental Health Department/ State Environmental Agency	September 23, 2016	Riverside Department of Environmental Health
Fire Department	September 23, 2016	Riverside County Fire Department
Building Department	September 23, 2016	Menifee Building & Safety Department
Planning Department	September 23, 2016	Menifee Planning Department
Assessor's Information and Parcel Map	September 23, 2016	Riverside County assessor's office
Oil and Gas Wells/Pipelines	September 23, 2016	DOGGR, NPMS Public Map Viewer
Other Agencies Searched	September 23, 2016	South Coast Air Quality Management District, Department of Toxic Substances Control Hazardous Waste Tracking System and EnviroStor database, Regional Water Quality Control Board GeoTracker website
Regulatory Database Report	September 2016	EDR
Interview with Owner	September 28, 2016	Jim Nelson
Radon Zone Information	1993	United States EPA Map of Radon Zones http://www.epa.gov/radon/zonemap.html
Water Quality Report	2015	Eastern Municipal Water District

APPENDIX A

FIGURES



Legend: Approximate Property Boundary

Source: USGS Topographic Map *Romoland, California* (1979)

N

Figure 1: TOPOGRAPHIC MAP

Northwestern Corner of I-215 and Holland Road
Project Number: 363593

AEI Consultants

Legend

Approximate Property Boundary

Inferred Direction of Groundwater Flow

Listed in the Regulatory Database (*)

Storm Drain

N

Figure 2: SITE MAP

Northwestern Corner of I-215 and Holland Road
Project Number: 363593

AEI Consultants

APPENDIX B

PROPERTY PHOTOGRAPHS

1. Northern portion of the subject property

2. Northwestern portion of the subject property

3. Western portion of the subject property

4. Southern portion of the subject property

5. Eastern portion of the subject property

6. Southern portion of the subject property

7. Northern portion of the subject property

8. View of the subject property from Haun Road

9. View of the subject property from Haun Road

10. View of the subject property from Holland Road

11. View of the subject property from Holland Road

12. Southern portion of the subject property

13. Southwestern portion of the subject property

14. Northern portion of the subject property

15. Western adjacent vacant/agricultural land and storm channel

16. Western adjacent vacant/agricultural land and storm channel

17. Western adjacent vacant/agricultural land, school and storm channel

18. Northern adjacent vacant/agricultural land

19. Northern adjacent vacant/agricultural land

20. Eastern adjacent property

21. Southern adjacent commercial property and storage yard

22. Southern adjacent commercial property

23. Southern adjacent vacant/agricultural land

24. Southern adjacent vacant/agricultural land

APPENDIX C

REGULATORY DATABASE

363593 PM
I-215 & Holland Road
Menifee, CA 92584

Inquiry Number: 4737393.2s
September 26, 2016

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	8
Orphan Summary	13
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 (E 1527-13) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

I-215 & HOLLAND ROAD
MENIFEE, CA 92584

COORDINATES

Latitude (North):	33.6722510 - 33° 40' 20.10''
Longitude (West):	117.1734920 - 117° 10' 24.57''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	483916.8
UTM Y (Meters):	3725637.0
Elevation:	1435 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	5641314 ROMOLAND, CA
Version Date:	2012

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20140530, 20140603
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
I-215 & HOLLAND 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
1	SANTA ROSA ACADEMY C	27587 LA PIEDRA ROAD	SLIC, NPDES	Lower	1678, 0.318, NW

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

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

DATABASES WITH NO MAPPED SITES

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

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

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

Federal Delisted NPL site list

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

Federal CERCLIS list

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

Federal CERCLIS NFRAP site list

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

Federal RCRA CORRACTS facilities list

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

Federal RCRA non-CORRACTS TSD facilities list

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

Federal RCRA generators list

RCRA-LQG ---------- RCRA - Large Quantity Generators
RCRA-SQG ---------- RCRA - Small Quantity Generators
RCRA-CESQG ---------- RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

LUCIS ---------- Land Use Control Information System
US ENG CONTROLS ---------- Engineering Controls Sites List

US INST CONTROL ---------- Sites with Institutional Controls

Federal ERNS list

ERNS ---------- Emergency Response Notification System

State- and tribal - equivalent NPL

RESPONSE ---------- State Response Sites

State- and tribal - equivalent CERCLIS

ENVIROSTOR ---------- EnviroStor Database

State and tribal landfill and/or solid waste disposal site lists

SWF/LF ---------- Solid Waste Information System

State and tribal leaking storage tank lists

LUST ---------- Geotracker's Leaking Underground Fuel Tank Report
INDIAN LUST ---------- Leaking Underground Storage Tanks on Indian Land

State and tribal registered storage tank lists

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

State and tribal voluntary cleanup sites

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

State and tribal Brownfields sites

BROWNFIELDS ---------- Considered Brownfieds Sites Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS ---------- A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

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

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

Local Lists of Registered Storage Tanks

SWEEPS UST ---- SWEEPS UST Listing
HIST UST ---- Hazardous Substance Storage Container Database
CA FID UST ---- Facility Inventory Database

Local Land Records

LIENS ---- Environmental Liens Listing
LIENS 2 ---- CERCLA Lien Information
DEED ---- Deed Restriction Listing

Records of Emergency Release Reports

HMIRS ---- Hazardous Materials Information Reporting System
CHMIRS ---- California Hazardous Material Incident Report System
LDS ---- Land Disposal Sites Listing
MCS ---- Military Cleanup Sites Listing
SPILLS 90 ---- SPILLS 90 data from FirstSearch

Other Ascertainable Records

RCRA NonGen / NLR ---- RCRA - Non Generators / No Longer Regulated
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
FINDS	Facility Index System/Facility Registry System
UXO	Unexploded Ordnance Sites
DOCKET HWC	Hazardous Waste Compliance Docket Listing
CA BOND EXP. PLAN	Bond Expenditure Plan
Cortese	"Cortese" Hazardous Waste & Substances Sites List
CUPA Listings	CUPA Resources List
DRYCLEANERS	Cleaner Facilities
EMI	Emissions Inventory Data
ENF	Enforcement Action Listing
Financial Assurance	Financial Assurance Information Listing
HAZNET	Facility and Manifest Data
HIST CORTESE	Hazardous Waste & Substance Site List
HWP	EnviroStor Permitted Facilities Listing
HWT	Registered Hazardous Waste Transporter Database
MINES	Mines Site Location Listing
MWMP	Medical Waste Management Program Listing
NPDES	NPDES Permits Listing
PEST LIC	Pesticide Regulation Licenses Listing
PROC	Certified Processors Database
Notify 65	Proposition 65 Records
UIC	UIC Listing
WASTEWATER PITS	Oil Wastewater Pits Listing
WDS	Waste Discharge System
WIP	Well Investigation Program Case List
ICE	ICE
ECHO	Enforcement & Compliance History Information
FUELS PROGRAM	EPA Fuels Program Registered Listing

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP	EDR Proprietary Manufactured Gas Plants
EDR Hist Auto	EDR Exclusive Historic Gas Stations
EDR Hist Cleaner	EDR Exclusive Historic Dry Cleaners

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF	Recovered Government Archive Solid Waste Facilities List
RGA LUST	Recovered Government Archive Leaking Underground Storage Tank

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

EXECUTIVE SUMMARY

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

State and tribal leaking storage tank lists

SLIC: SLIC Region comes from the California Regional Water Quality Control Board.

A review of the SLIC list, as provided by EDR, has revealed that there is 1 SLIC site within approximately 0.5 miles of the target property.

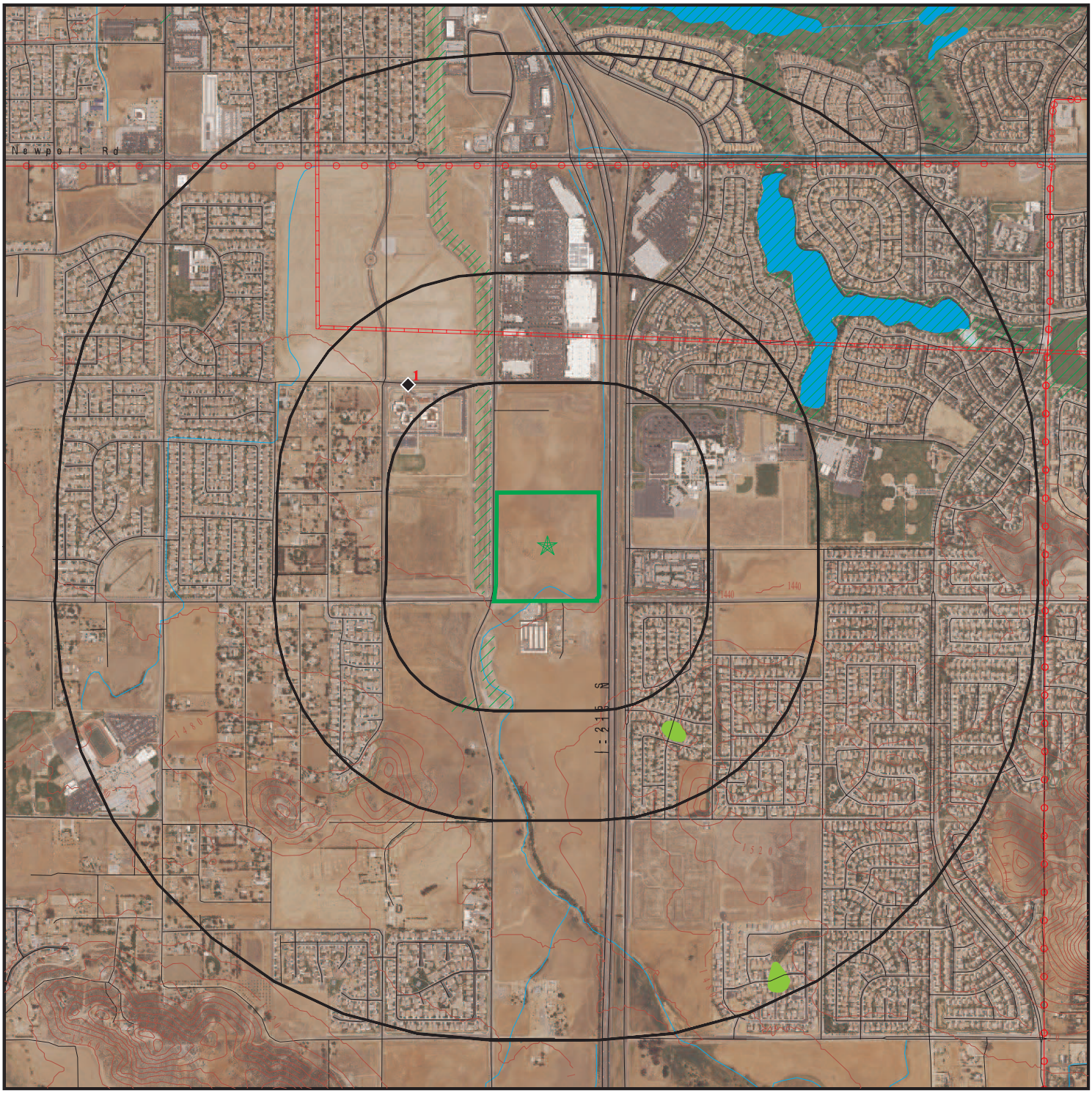
Lower Elevation	Address	Direction / Distance	Map ID	Page
SANTA ROSA ACADEMY C	***27587 LA PIEDRA ROAD***	***NW 1/4 - 1/2 (0.318 mi.)***	***1***	***8***
Database: SLIC, Date of Government Version: 06/13/2016				
Facility Status: Completed - Case Closed				
Global Id: T10000007135				

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 6 records.

Site Name	Database(s)
	CDL
	CDL
	CDL
	CDL
	CDL
	CDL

OVERVIEW MAP - 4737393.2S



- 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
- Pipelines
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- State Wetlands
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: 363593 PM ADDRESS: I-215 & Holland Road Menifee CA 92584 LAT/LONG: 33.672251 / 117.173492	CLIENT: AEI Consultants CONTACT: Kimberly Butler INQUIRY #: 4737393.2s DATE: September 26, 2016 7:45 pm

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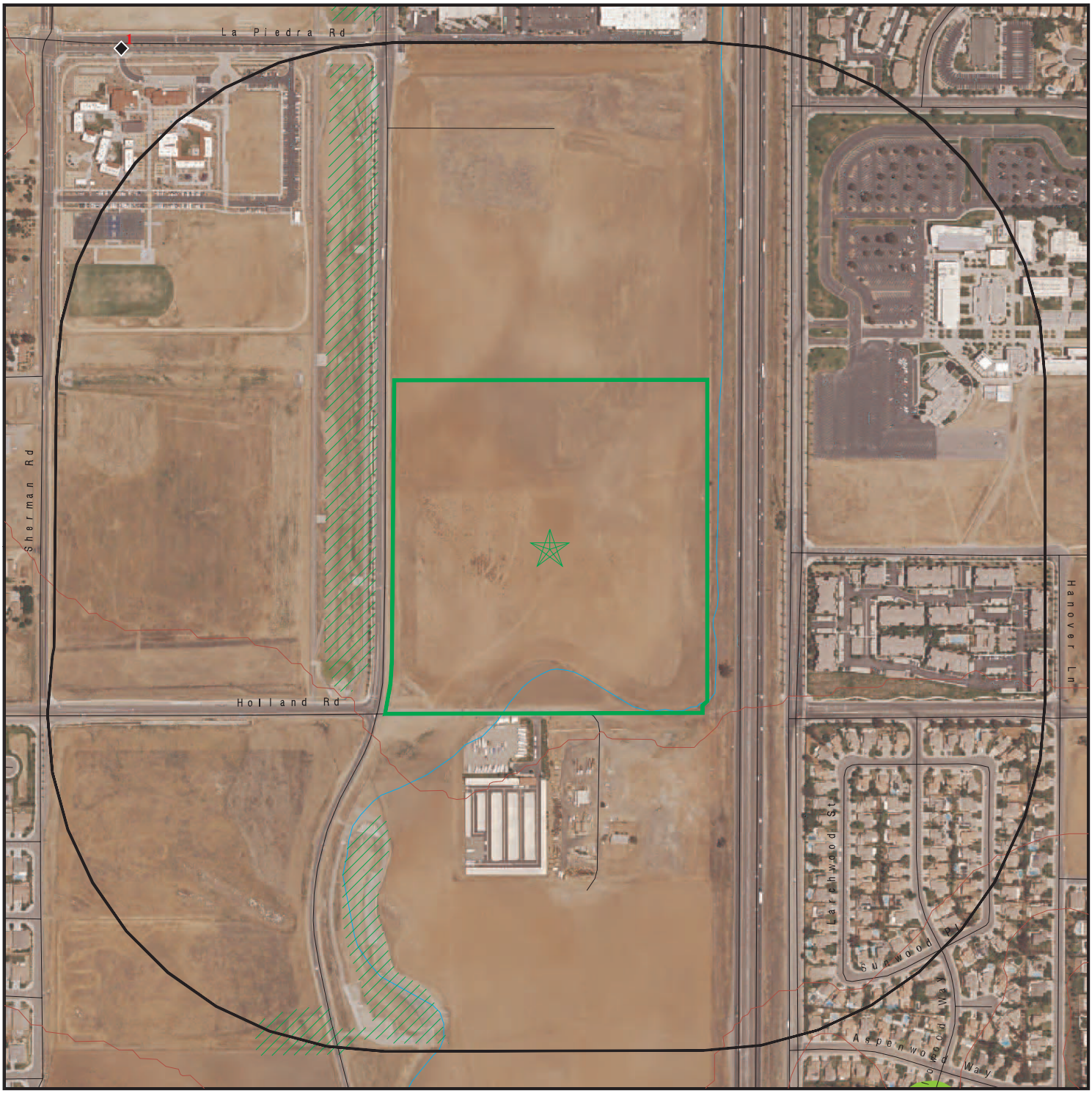
DETAIL MAP - 4737393.2S



- 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
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- State Wetlands
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: 363593 PM	CLIENT: AEI Consultants
ADDRESS: I-215 & Holland Road Menifee CA 92584	CONTACT: Kimberly Butler
LAT/LONG: 33.672251 / 117.173492	INQUIRY #: 4737393.2s DATE: September 26, 2016 7:46 pm

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MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	TP		NR	NR	NR	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Federal CERCLIS NFRAP site list								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-CESQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	TP		NR	NR	NR	NR	NR	0
State- and tribal - equivalent NPL								
RESPONSE	1.000		0	0	0	0	NR	0
State- and tribal - equivalent CERCLIS								
ENVIROSTOR	1.000		0	0	0	0	NR	0
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		0	0	0	NR	NR	0
State and tribal leaking storage tank lists								
LUST	0.500		0	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
INDIAN LUST	0.500		0	0	0	NR	NR	0
SLIC	0.500		0	0	1	NR	NR	1
State and tribal registered storage tank lists								
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
State and tribal voluntary cleanup sites								
VCP	0.500		0	0	0	NR	NR	0
INDIAN VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
WMUDS/SWAT	0.500		0	0	0	NR	NR	0
SWRCY	0.500		0	0	0	NR	NR	0
HAULERS	TP		NR	NR	NR	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	TP		NR	NR	NR	NR	NR	0
HIST Cal-Sites	1.000		0	0	0	0	NR	0
SCH	0.250		0	0	NR	NR	NR	0
CDL	TP		NR	NR	NR	NR	NR	0
Toxic Pits	1.000		0	0	0	0	NR	0
US CDL	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		0	0	NR	NR	NR	0
CA FID UST	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

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
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	0	NR	NR	NR	0
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
FINDS	TP		NR	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0
DOCKET HWC	TP		NR	NR	NR	NR	NR	0
CA BOND EXP. PLAN	1.000		0	0	0	0	NR	0
Cortese	0.500		0	0	0	NR	NR	0
CUPA Listings	0.250		0	0	NR	NR	NR	0
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
HIST CORTESE	0.500		0	0	0	NR	NR	0
HWP	1.000		0	0	0	0	NR	0
HWT	0.250		0	0	NR	NR	NR	0

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
MINES	TP		NR	NR	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
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
ICE	1.000		0	0	0	0	NR	0
ECHO	TP		NR	NR	NR	NR	NR	0
FUELS PROGRAM	0.250		0	0	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	0	0	1	0	0	1

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

1
NW
1/4-1/2
0.318 mi.
1678 ft.

SANTA ROSA ACADEMY CHARTER SCHOOL
27587 LA PIEDRA ROAD
MENIFEE, CA 92586

SLIC **S111828771**
NPDES **N/A**

Relative:
Lower

Actual:
1432 ft.

SLIC:

Region:	STATE
Facility Status:	**Completed - Case Closed**
Status Date:	07/21/2012
Global Id:	T10000007135
Lead Agency:	RIVERSIDE COUNTY LOP
Lead Agency Case Number:	SR0025507
Latitude:	33.67643
Longitude:	-117.17827
Case Type:	Cleanup Program Site
Case Worker:	SCB
Local Agency:	RIVERSIDE COUNTY LOP
RB Case Number:	Not reported
File Location:	Local Agency
Potential Media Affected:	Not reported
Potential Contaminants of Concern:	Not reported
Site History:	Not reported

Click here to access the California GeoTracker records for this facility:

NPDES:

Npdes Number:	Not reported
Facility Status:	Not reported
Agency Id:	Not reported
Region:	8
Regulatory Measure Id:	424183
Order No:	Not reported
Regulatory Measure Type:	Construction
Place Id:	Not reported
WDID:	8 33C363444
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Not reported
Discharge Address:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
RECEIVED DATE:	3/26/2012
PROCESSED DATE:	4/17/2012
STATUS CODE NAME:	Active
STATUS DATE:	4/17/2012
PLACE SIZE:	26.2
PLACE SIZE UNIT:	52
FACILITY CONTACT NAME:	LINDA GORENS
FACILITY CONTACT TITLE:	Managing Director
FACILITY CONTACT PHONE:	414-294-7550
FACILITY CONTACT PHONE EXT:	Not reported
FACILITY CONTACT EMAIL:	lgorens@starkinvestments.com
OPERATOR NAME:	STARK MENIFEE LAND LLC
OPERATOR ADDRESS:	3600 S LAKE DRIVE

SANTA ROSA ACADEMY CHARTER SCHOOL (Continued) **S111828771**

OPERATOR CITY:	ST FRANCIS
OPERATOR STATE:	Wisconsin
OPERATOR ZIP:	53235
OPERATOR CONTACT NAME:	LINDA GORENS
OPERATOR CONTACT TITLE:	Managing Director
OPERATOR CONTACT PHONE:	414-294-7550
OPERATOR CONTACT PHONE EXT:	Not reported
OPERATOR CONTACT EMAIL:	lgorens@starkinvestments.com
OPERATOR TYPE:	Private Business
DEVELOPER NAME:	Regent Properties
DEVELOPER ADDRESS:	11990 San Vicente Blvd
DEVELOPER CITY:	Los Angeles
DEVELOPER STATE:	Wisconsin
DEVELOPER ZIP:	90049
DEVELOPER CONTACT NAME:	Daniel Gryczman
DEVELOPER CONTACT TITLE:	Executive Vice President
CONSTYPE LINEAR UTILITY IND:	N
EMERGENCY PHONE NO:	Not reported
EMERGENCY PHONE EXT:	Not reported
CONSTYPE ABOVE GROUND IND:	Not reported
CONSTYPE BELOW GROUND IND:	Not reported
CONSTYPE CABLE LINE IND:	Not reported
CONSTYPE COMM LINE IND:	Not reported
CONSTYPE COMMERTIAL IND:	Y
CONSTYPE ELECTRICAL LINE IND:	Not reported
CONSTYPE GAS LINE IND:	Not reported
CONSTYPE INDUSTRIAL IND:	Not reported
CONSTYPE OTHER DESRIPTION:	School
CONSTYPE OTHER IND:	Y
CONSTYPE RECONS IND:	Not reported
CONSTYPE RESIDENTIAL IND:	Y
CONSTYPE TRANSPORT IND:	Not reported
CONSTYPE UTILITY DESCRIPTION:	Not reported
CONSTYPE UTILITY IND:	Not reported
CONSTYPE WATER SEWER IND:	Not reported
DIR DISCHARGE USWATER IND:	N
RECEIVING WATER NAME:	Lake Elsinor & Canyon Lake
CERTIFIER NAME:	LINDA GORENS
CERTIFIER TITLE:	Not reported
CERTIFICATION DATE:	26-MAR-12
PRIMARY SIC:	Not reported
SECONDARY SIC:	Not reported
TERTIARY SIC:	Not reported
Npdes Number:	CAS000002
Facility Status:	Active
Agency Id:	0
Region:	8
Regulatory Measure Id:	454213
Order No:	2009-0009-DWQ
Regulatory Measure Type:	Enrollee
Place Id:	Not reported
WDID:	8 33C372784
Program Type:	Construction
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	04/28/2015
Expiration Date Of Regulatory Measure:	Not reported

SANTA ROSA ACADEMY CHARTER SCHOOL (Continued) **S111828771**

Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Santa Rosa Academy
Discharge Address:	28237 La Piedra Road
Discharge City:	Menifee
Discharge State:	California
Discharge Zip:	92584
RECEIVED DATE:	Not reported
PROCESSED DATE:	Not reported
STATUS CODE NAME:	Not reported
STATUS DATE:	Not reported
PLACE SIZE:	Not reported
PLACE SIZE UNIT:	Not reported
FACILITY CONTACT NAME:	Not reported
FACILITY CONTACT TITLE:	Not reported
FACILITY CONTACT PHONE:	Not reported
FACILITY CONTACT PHONE EXT:	Not reported
FACILITY CONTACT EMAIL:	Not reported
OPERATOR NAME:	Not reported
OPERATOR ADDRESS:	Not reported
OPERATOR CITY:	Not reported
OPERATOR STATE:	Not reported
OPERATOR ZIP:	Not reported
OPERATOR CONTACT NAME:	Not reported
OPERATOR CONTACT TITLE:	Not reported
OPERATOR CONTACT PHONE:	Not reported
OPERATOR CONTACT PHONE EXT:	Not reported
OPERATOR CONTACT EMAIL:	Not reported
OPERATOR TYPE:	Not reported
DEVELOPER NAME:	Not reported
DEVELOPER ADDRESS:	Not reported
DEVELOPER CITY:	Not reported
DEVELOPER STATE:	Not reported
DEVELOPER ZIP:	Not reported
DEVELOPER CONTACT NAME:	Not reported
DEVELOPER CONTACT TITLE:	Not reported
CONSTYPE LINEAR UTILITY IND:	Not reported
EMERGENCY PHONE NO:	Not reported
EMERGENCY PHONE EXT:	Not reported
CONSTYPE ABOVE GROUND IND:	Not reported
CONSTYPE BELOW GROUND IND:	Not reported
CONSTYPE CABLE LINE IND:	Not reported
CONSTYPE COMM LINE IND:	Not reported
CONSTYPE COMMERTIAL IND:	Not reported
CONSTYPE ELECTRICAL LINE IND:	Not reported
CONSTYPE GAS LINE IND:	Not reported
CONSTYPE INDUSTRIAL IND:	Not reported
CONSTYPE OTHER DESRIPTION:	Not reported
CONSTYPE OTHER IND:	Not reported
CONSTYPE RECONS IND:	Not reported
CONSTYPE RESIDENTIAL IND:	Not reported
CONSTYPE TRANSPORT IND:	Not reported
CONSTYPE UTILITY DESCRIPTION:	Not reported
CONSTYPE UTILITY IND:	Not reported
CONSTYPE WATER SEWER IND:	Not reported
DIR DISCHARGE USWATER IND:	Not reported
RECEIVING WATER NAME:	Not reported
CERTIFIER NAME:	Not reported

SANTA ROSA ACADEMY CHARTER SCHOOL (Continued) **S111828771**

CERTIFIER TITLE:	Not reported
CERTIFICATION DATE:	Not reported
PRIMARY SIC:	Not reported
SECONDARY SIC:	Not reported
TERTIARY SIC:	Not reported
Npdes Number:	CAS000002
Facility Status:	Terminated
Agency Id:	0
Region:	8
Regulatory Measure Id:	430034
Order No:	2009-0009-DWQ
Regulatory Measure Type:	Enrollee
Place Id:	Not reported
WDID:	8 33C364381
Program Type:	Construction
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	08/16/2012
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	04/21/2014
Discharge Name:	Santa Rosa Academy
Discharge Address:	28237 La Piedra Road
Discharge City:	Menifee
Discharge State:	California
Discharge Zip:	92584
RECEIVED DATE:	Not reported
PROCESSED DATE:	Not reported
STATUS CODE NAME:	Not reported
STATUS DATE:	Not reported
PLACE SIZE:	Not reported
PLACE SIZE UNIT:	Not reported
FACILITY CONTACT NAME:	Not reported
FACILITY CONTACT TITLE:	Not reported
FACILITY CONTACT PHONE:	Not reported
FACILITY CONTACT PHONE EXT:	Not reported
FACILITY CONTACT EMAIL:	Not reported
OPERATOR NAME:	Not reported
OPERATOR ADDRESS:	Not reported
OPERATOR CITY:	Not reported
OPERATOR STATE:	Not reported
OPERATOR ZIP:	Not reported
OPERATOR CONTACT NAME:	Not reported
OPERATOR CONTACT TITLE:	Not reported
OPERATOR CONTACT PHONE:	Not reported
OPERATOR CONTACT PHONE EXT:	Not reported
OPERATOR CONTACT EMAIL:	Not reported
OPERATOR TYPE:	Not reported
DEVELOPER NAME:	Not reported
DEVELOPER ADDRESS:	Not reported
DEVELOPER CITY:	Not reported
DEVELOPER STATE:	Not reported
DEVELOPER ZIP:	Not reported
DEVELOPER CONTACT NAME:	Not reported
DEVELOPER CONTACT TITLE:	Not reported
CONSTYPE LINEAR UTILITY IND:	Not reported
EMERGENCY PHONE NO:	Not reported
EMERGENCY PHONE EXT:	Not reported

SANTA ROSA ACADEMY CHARTER SCHOOL (Continued) **S111828771**

CONSTYPE ABOVE GROUND IND:	Not reported
CONSTYPE BELOW GROUND IND:	Not reported
CONSTYPE CABLE LINE IND:	Not reported
CONSTYPE COMM LINE IND:	Not reported
CONSTYPE COMMERTIAL IND:	Not reported
CONSTYPE ELECTRICAL LINE IND:	Not reported
CONSTYPE GAS LINE IND:	Not reported
CONSTYPE INDUSTRIAL IND:	Not reported
CONSTYPE OTHER DESRIPTION:	Not reported
CONSTYPE OTHER IND:	Not reported
CONSTYPE RECONS IND:	Not reported
CONSTYPE RESIDENTIAL IND:	Not reported
CONSTYPE TRANSPORT IND:	Not reported
CONSTYPE UTILITY DESCRIPTION:	Not reported
CONSTYPE UTILITY IND:	Not reported
CONSTYPE WATER SEWER IND:	Not reported
DIR DISCHARGE USWATER IND:	Not reported
RECEIVING WATER NAME:	Not reported
CERTIFIER NAME:	Not reported
CERTIFIER TITLE:	Not reported
CERTIFICATION DATE:	Not reported
PRIMARY SIC:	Not reported
SECONDARY SIC:	Not reported
TERTIARY SIC:	Not reported

Count: 6 records. ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
RIVERSIDE COUNTY	S107530372		19541 BLUE SKY (NEAR SANTA ROS		CDL
RIVERSIDE COUNTY	S107537885		BOX SPRINGS RD & HWY 215 (SEE		CDL
RIVERSIDE COUNTY	S107538960		INDIO HILLS, DILLON RD & DOLLA		CDL
RIVERSIDE COUNTY	S107537442		@ RAMONA EXPRESSWAY & RIDER ST		CDL
RIVERSIDE COUNTY	S107540860		TEMECULA VEHICLE & TRANSPORT C		CDL
RIVERSIDE COUNTY	S107539457		MT VERNON RD & SERPENTINE		CDL

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 03/07/2016
Date Data Arrived at EDR: 04/05/2016
Date Made Active in Reports: 04/15/2016
Number of Days to Update: 10

Source: EPA
Telephone: N/A
Last EDR Contact: 07/07/2016
Next Scheduled EDR Contact: 10/17/2016
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 03/07/2016
Date Data Arrived at EDR: 04/05/2016
Date Made Active in Reports: 04/15/2016
Number of Days to Update: 10

Source: EPA
Telephone: N/A
Last EDR Contact: 07/07/2016
Next Scheduled EDR Contact: 10/17/2016
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

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Federal Delisted NPL site list

Delisted NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 03/07/2016
Date Data Arrived at EDR: 04/05/2016
Date Made Active in Reports: 04/15/2016
Number of Days to Update: 10

Source: EPA
Telephone: N/A
Last EDR Contact: 07/07/2016
Next Scheduled EDR Contact: 10/17/2016
Data Release Frequency: Quarterly

Federal CERCLIS list

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 11/13/2015
Date Data Arrived at EDR: 01/06/2016
Date Made Active in Reports: 05/20/2016
Number of Days to Update: 135

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 07/06/2016
Next Scheduled EDR Contact: 10/17/2016
Data Release Frequency: Varies

SEMS: Superfund Enterprise Management System

SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly know as CERCLIS, renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 03/07/2016
Date Data Arrived at EDR: 04/05/2016
Date Made Active in Reports: 04/15/2016
Number of Days to Update: 10

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 07/22/2016
Next Scheduled EDR Contact: 10/31/2016
Data Release Frequency: Quarterly

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE: Superfund Enterprise Management System Archive

SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that there is no hazard associated with a given site; it only means that. based upon available information, the location is not judged to be potential NPL site.

Date of Government Version: 03/07/2016
Date Data Arrived at EDR: 04/05/2016
Date Made Active in Reports: 04/15/2016
Number of Days to Update: 10

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 07/22/2016
Next Scheduled EDR Contact: 10/31/2016
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 06/27/2016
Date Data Arrived at EDR: 06/30/2016
Date Made Active in Reports: 09/02/2016
Number of Days to Update: 64

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 06/30/2016
Next Scheduled EDR Contact: 10/10/2016
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 06/21/2016
Date Data Arrived at EDR: 06/30/2016
Date Made Active in Reports: 09/02/2016
Number of Days to Update: 64

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 06/30/2016
Next Scheduled EDR Contact: 10/17/2016
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 06/21/2016
Date Data Arrived at EDR: 06/30/2016
Date Made Active in Reports: 09/02/2016
Number of Days to Update: 64

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 06/30/2016
Next Scheduled EDR Contact: 10/17/2016
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: 06/21/2016
Date Data Arrived at EDR: 06/30/2016
Date Made Active in Reports: 09/02/2016
Number of Days to Update: 64

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 06/30/2016
Next Scheduled EDR Contact: 10/17/2016
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 06/21/2016
Date Data Arrived at EDR: 06/30/2016
Date Made Active in Reports: 09/02/2016
Number of Days to Update: 64

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 06/30/2016
Next Scheduled EDR Contact: 10/17/2016
Data Release Frequency: Varies

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: 05/28/2015
Date Data Arrived at EDR: 05/29/2015
Date Made Active in Reports: 06/11/2015
Number of Days to Update: 13

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 08/12/2016
Next Scheduled EDR Contact: 11/28/2016
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: 05/09/2016
Date Data Arrived at EDR: 06/01/2016
Date Made Active in Reports: 09/02/2016
Number of Days to Update: 93

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 08/31/2016
Next Scheduled EDR Contact: 12/12/2016
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 05/09/2016
Date Data Arrived at EDR: 06/01/2016
Date Made Active in Reports: 09/02/2016
Number of Days to Update: 93

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 08/31/2016
Next Scheduled EDR Contact: 12/12/2016
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: 03/28/2016
Date Data Arrived at EDR: 03/30/2016
Date Made Active in Reports: 05/20/2016
Number of Days to Update: 51

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 06/28/2016
Next Scheduled EDR Contact: 10/10/2016
Data Release Frequency: Annually

State- and tribal - equivalent NPL

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 05/02/2016
Date Data Arrived at EDR: 05/04/2016
Date Made Active in Reports: 06/21/2016
Number of Days to Update: 48

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/02/2016
Next Scheduled EDR Contact: 11/14/2016
Data Release Frequency: Quarterly

State- and tribal - equivalent CERCLIS

ENVIROSTOR: EnviroStor Database

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

Date of Government Version: 05/02/2016
Date Data Arrived at EDR: 05/04/2016
Date Made Active in Reports: 06/21/2016
Number of Days to Update: 48

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/02/2016
Next Scheduled EDR Contact: 11/14/2016
Data Release Frequency: Quarterly

State and tribal landfill and/or solid waste disposal site lists

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 05/16/2016
Date Data Arrived at EDR: 05/18/2016
Date Made Active in Reports: 06/21/2016
Number of Days to Update: 34

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 08/16/2016
Next Scheduled EDR Contact: 11/28/2016
Data Release Frequency: Quarterly

State and tribal leaking storage tank lists

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 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: Varies

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 6V: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 6L: Leaking Underground Storage Tank Case Listing

For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST: Geotracker's Leaking Underground Fuel Tank Report

Leaking Underground Storage Tank Incident Reports. LUST records contain an inventory of reported leaking underground storage tank incidents. Not all states maintain these records, and the information stored varies by state. For more information on a particular leaking underground storage tank sites, please contact the appropriate regulatory agency.

Date of Government Version: 06/13/2016
Date Data Arrived at EDR: 06/14/2016
Date Made Active in Reports: 08/09/2016
Number of Days to Update: 56

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 09/13/2016
Next Scheduled EDR Contact: 12/26/2016
Data Release Frequency: Quarterly

LUST REG 4: Underground Storage Tank Leak List

Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 09/06/2011
Next Scheduled EDR Contact: 12/19/2011
Data Release Frequency: No Update Planned

LUST REG 3: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

LUST REG 2: Fuel Leak List

Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: Quarterly

LUST REG 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

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 12/11/2015
Date Data Arrived at EDR: 02/19/2016
Date Made Active in Reports: 06/03/2016
Number of Days to Update: 105

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 07/27/2016
Next Scheduled EDR Contact: 11/07/2016
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: 10/09/2015
Date Data Arrived at EDR: 02/12/2016
Date Made Active in Reports: 06/03/2016
Number of Days to Update: 112

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 07/27/2016
Next Scheduled EDR Contact: 11/07/2016
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: 10/13/2015
Date Data Arrived at EDR: 10/23/2015
Date Made Active in Reports: 02/18/2016
Number of Days to Update: 118
Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 07/27/2016
Next Scheduled EDR Contact: 11/07/2016
Data Release Frequency: Quarterly

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: 02/25/2016
Date Data Arrived at EDR: 04/27/2016
Date Made Active in Reports: 06/03/2016
Number of Days to Update: 37
Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 07/27/2016
Next Scheduled EDR Contact: 11/07/2016
Data Release Frequency: Quarterly

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 01/07/2016
Date Data Arrived at EDR: 01/08/2016
Date Made Active in Reports: 02/18/2016
Number of Days to Update: 41
Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 07/27/2016
Next Scheduled EDR Contact: 11/07/2016
Data Release Frequency: Quarterly

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: 10/27/2015
Date Data Arrived at EDR: 10/29/2015
Date Made Active in Reports: 01/04/2016
Number of Days to Update: 67
Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 07/29/2016
Next Scheduled EDR Contact: 11/07/2016
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: 02/17/2016
Date Data Arrived at EDR: 04/27/2016
Date Made Active in Reports: 06/03/2016
Number of Days to Update: 37
Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 07/27/2016
Next Scheduled EDR Contact: 11/07/2016
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: 02/05/2016
Date Data Arrived at EDR: 04/29/2016
Date Made Active in Reports: 06/03/2016
Number of Days to Update: 35
Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 07/26/2016
Next Scheduled EDR Contact: 11/07/2016
Data Release Frequency: Semi-Annually

SLIC: Statewide SLIC Cases
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: 06/13/2016
Date Data Arrived at EDR: 06/14/2016
Date Made Active in Reports: 08/09/2016
Number of Days to Update: 56
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/13/2016
Next Scheduled EDR Contact: 12/26/2016
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: Quarterly

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: Semi-Annually

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: Varies

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: Semi-Annually

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: Semi-Annually

SLIC REG 6L: SLIC Sites
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36

Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11

Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: Semi-Annually

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 08/08/2011
Next Scheduled EDR Contact: 11/21/2011
Data Release Frequency: Annually

State and tribal registered storage tank lists

FEMA UST: Underground Storage Tank Listing
A listing of all FEMA owned underground storage tanks.

Date of Government Version: 01/01/2010
Date Data Arrived at EDR: 02/16/2010
Date Made Active in Reports: 04/12/2010
Number of Days to Update: 55

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 07/07/2016
Next Scheduled EDR Contact: 10/24/2016
Data Release Frequency: Varies

UST: Active UST Facilities
Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 06/13/2016
Date Data Arrived at EDR: 06/14/2016
Date Made Active in Reports: 08/08/2016
Number of Days to Update: 55

Source: SWRCB
Telephone: 916-341-5851
Last EDR Contact: 09/14/2016
Next Scheduled EDR Contact: 12/26/2016
Data Release Frequency: Semi-Annually

AST: Aboveground Petroleum Storage Tank Facilities
A listing of aboveground storage tank petroleum storage tank locations.

Date of Government Version: 07/06/2016
Date Data Arrived at EDR: 07/12/2016
Date Made Active in Reports: 09/19/2016
Number of Days to Update: 69

Source: California Environmental Protection Agency
Telephone: 916-327-5092
Last EDR Contact: 07/07/2016
Next Scheduled EDR Contact: 10/10/2016
Data Release Frequency: Quarterly

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: 11/05/2015
Date Data Arrived at EDR: 11/13/2015
Date Made Active in Reports: 01/04/2016
Number of Days to Update: 52

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 07/27/2016
Next Scheduled EDR Contact: 11/07/2016
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: 01/07/2016
Date Data Arrived at EDR: 01/08/2016
Date Made Active in Reports: 02/18/2016
Number of Days to Update: 41

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 07/27/2016
Next Scheduled EDR Contact: 11/07/2016
Data Release Frequency: Quarterly

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: 02/25/2016
Date Data Arrived at EDR: 04/27/2016
Date Made Active in Reports: 06/03/2016
Number of Days to Update: 37

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 07/27/2016
Next Scheduled EDR Contact: 11/07/2016
Data Release Frequency: Quarterly

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: 01/26/2016
Date Data Arrived at EDR: 02/05/2016
Date Made Active in Reports: 06/03/2016
Number of Days to Update: 119

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 07/27/2016
Next Scheduled EDR Contact: 11/07/2016
Data Release Frequency: Quarterly

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: 10/20/2015
Date Data Arrived at EDR: 10/29/2015
Date Made Active in Reports: 01/04/2016
Number of Days to Update: 67

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 07/29/2016
Next Scheduled EDR Contact: 11/07/2016
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: 02/05/2016
Date Data Arrived at EDR: 04/29/2016
Date Made Active in Reports: 06/03/2016
Number of Days to Update: 35

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 07/26/2016
Next Scheduled EDR Contact: 11/07/2016
Data Release Frequency: Semi-Annually

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: 12/03/2015
Date Data Arrived at EDR: 02/04/2016
Date Made Active in Reports: 06/03/2016
Number of Days to Update: 120

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 07/27/2016
Next Scheduled EDR Contact: 11/07/2016
Data Release Frequency: Semi-Annually

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: 09/23/2014
Date Data Arrived at EDR: 11/25/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 65

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 07/27/2016
Next Scheduled EDR Contact: 11/07/2016
Data Release Frequency: Varies

State and tribal voluntary cleanup sites

INDIAN VCP R1: Voluntary Cleanup Priority Listing

A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 07/27/2015
Date Data Arrived at EDR: 09/29/2015
Date Made Active in Reports: 02/18/2016
Number of Days to Update: 142

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 07/01/2016
Next Scheduled EDR Contact: 10/10/2016
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: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

VCP: Voluntary Cleanup Program Properties

Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 05/02/2016
Date Data Arrived at EDR: 05/04/2016
Date Made Active in Reports: 06/21/2016
Number of Days to Update: 48

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/02/2016
Next Scheduled EDR Contact: 11/14/2016
Data Release Frequency: Quarterly

State and tribal Brownfields sites

BROWNFIELDS: Considered Brownfieds Sites Listing
A listing of sites the SWRCB considers to be Brownfields since these are sites have come to them through the MOA Process.

Date of Government Version: 02/29/2016
Date Data Arrived at EDR: 03/07/2016
Date Made Active in Reports: 05/04/2016
Number of Days to Update: 58

Source: State Water Resources Control Board
Telephone: 916-323-7905
Last EDR Contact: 06/15/2016
Next Scheduled EDR Contact: 09/19/2016
Data Release Frequency: Varies

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: 06/21/2016
Date Data Arrived at EDR: 06/22/2016
Date Made Active in Reports: 09/02/2016
Number of Days to Update: 72

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 09/21/2016
Next Scheduled EDR Contact: 01/02/2017
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: 08/03/2016
Next Scheduled EDR Contact: 11/21/2016
Data Release Frequency: No Update Planned

SWRCY: Recycler Database
A listing of recycling facilities in California.

Date of Government Version: 06/13/2016
Date Data Arrived at EDR: 06/14/2016
Date Made Active in Reports: 08/09/2016
Number of Days to Update: 56

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 09/14/2016
Next Scheduled EDR Contact: 12/26/2016
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing
A listing of registered waste tire haulers.

Date of Government Version: 06/16/2016
Date Data Arrived at EDR: 06/16/2016
Date Made Active in Reports: 08/09/2016
Number of Days to Update: 54

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 08/10/2016
Next Scheduled EDR Contact: 11/28/2016
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: 08/05/2016
Next Scheduled EDR Contact: 11/14/2016
Data Release Frequency: Varies

ODI: Open Dump Inventory
An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations
A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 07/20/2016
Next Scheduled EDR Contact: 10/07/2016
Data Release Frequency: No Update Planned

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: 08/31/2016
Date Data Arrived at EDR: 09/06/2016
Date Made Active in Reports: 09/23/2016
Number of Days to Update: 17

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 08/31/2016
Next Scheduled EDR Contact: 10/10/2016
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: 05/02/2016
Date Data Arrived at EDR: 05/04/2016
Date Made Active in Reports: 06/21/2016
Number of Days to Update: 48

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/02/2016
Next Scheduled EDR Contact: 11/14/2016
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: 12/31/2015
Date Data Arrived at EDR: 05/10/2016
Date Made Active in Reports: 06/17/2016
Number of Days to Update: 38

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 08/15/2016
Next Scheduled EDR Contact: 10/24/2016
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

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: 08/30/2016
Date Data Arrived at EDR: 09/06/2016
Date Made Active in Reports: 09/23/2016
Number of Days to Update: 17

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 08/31/2016
Next Scheduled EDR Contact: 12/12/2016
Data Release Frequency: Quarterly

Local Lists of Registered Storage Tanks

SWEEPS UST: SWEEPS UST Listing

Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

UST MENDOCINO: Mendocino County UST Database

A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 06/07/2016
Date Data Arrived at EDR: 06/09/2016
Date Made Active in Reports: 06/23/2016
Number of Days to Update: 14

Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 09/12/2016
Next Scheduled EDR Contact: 12/12/2016
Data Release Frequency: Annually

HIST UST: Hazardous Substance Storage Container Database

The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

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: 06/02/2016
Date Data Arrived at EDR: 06/07/2016
Date Made Active in Reports: 07/20/2016
Number of Days to Update: 43

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 09/02/2016
Next Scheduled EDR Contact: 12/19/2016
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: 02/18/2014
Date Data Arrived at EDR: 03/18/2014
Date Made Active in Reports: 04/24/2014
Number of Days to Update: 37

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 07/29/2016
Next Scheduled EDR Contact: 11/07/2016
Data Release Frequency: Varies

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: 06/06/2016
Date Data Arrived at EDR: 06/07/2016
Date Made Active in Reports: 07/20/2016
Number of Days to Update: 43

Source: DTSC and SWRCB
Telephone: 916-323-3400
Last EDR Contact: 09/07/2016
Next Scheduled EDR Contact: 12/19/2016
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: 06/27/2016
Date Data Arrived at EDR: 06/28/2016
Date Made Active in Reports: 09/23/2016
Number of Days to Update: 87

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 06/28/2016
Next Scheduled EDR Contact: 10/10/2016
Data Release Frequency: Annually

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: 06/03/2016
Date Data Arrived at EDR: 07/26/2016
Date Made Active in Reports: 09/23/2016
Number of Days to Update: 59

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 07/26/2016
Next Scheduled EDR Contact: 11/07/2016
Data Release Frequency: Varies

LDS: Land Disposal Sites Listing
The Land Disposal program regulates of waste discharge to land for treatment, storage and disposal in waste management units.

Date of Government Version: 06/13/2016
Date Data Arrived at EDR: 06/14/2016
Date Made Active in Reports: 08/09/2016
Number of Days to Update: 56

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/13/2016
Next Scheduled EDR Contact: 12/26/2016
Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing
The State Water Resources Control Board and nine Regional Water Quality Control Boards partner with the Department of Defense (DoD) through the Defense and State Memorandum of Agreement (DSMOA) to oversee the investigation and remediation of water quality issues at military facilities.

Date of Government Version: 06/13/2016
Date Data Arrived at EDR: 06/14/2016
Date Made Active in Reports: 08/09/2016
Number of Days to Update: 56

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/13/2016
Next Scheduled EDR Contact: 12/26/2016
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: 06/21/2016
Date Data Arrived at EDR: 06/30/2016
Date Made Active in Reports: 09/02/2016
Number of Days to Update: 64

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 06/30/2016
Next Scheduled EDR Contact: 10/17/2016
Data Release Frequency: Varies

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 01/31/2015
Date Data Arrived at EDR: 07/08/2015
Date Made Active in Reports: 10/13/2015
Number of Days to Update: 97

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 09/09/2016
Next Scheduled EDR Contact: 12/19/2016
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 07/15/2016
Next Scheduled EDR Contact: 10/24/2016
Data Release Frequency: Semi-Annually

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 07/15/2016
Next Scheduled EDR Contact: 10/24/2016
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: 03/07/2011
Date Data Arrived at EDR: 03/09/2011
Date Made Active in Reports: 05/02/2011
Number of Days to Update: 54

Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 08/15/2016
Next Scheduled EDR Contact: 11/28/2016
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: 05/08/2016
Date Data Arrived at EDR: 05/18/2016
Date Made Active in Reports: 09/02/2016
Number of Days to Update: 107

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 08/17/2016
Next Scheduled EDR Contact: 11/28/2016
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: 08/08/2016
Next Scheduled EDR Contact: 11/21/2016
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: 04/22/2013
Date Data Arrived at EDR: 03/03/2015
Date Made Active in Reports: 03/09/2015
Number of Days to Update: 6

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 09/06/2016
Next Scheduled EDR Contact: 11/21/2016
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: 12/31/2012
Date Data Arrived at EDR: 01/15/2015
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 14

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 09/23/2016
Next Scheduled EDR Contact: 01/02/2017
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: 12/31/2014
Date Data Arrived at EDR: 11/24/2015
Date Made Active in Reports: 04/05/2016
Number of Days to Update: 133

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 08/26/2016
Next Scheduled EDR Contact: 12/05/2016
Data Release Frequency: Annually

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/10/2010
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 77

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 07/25/2016
Next Scheduled EDR Contact: 11/07/2016
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: 11/25/2013
Date Data Arrived at EDR: 12/12/2013
Date Made Active in Reports: 02/24/2014
Number of Days to Update: 74

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 09/09/2016
Next Scheduled EDR Contact: 12/19/2016
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: 05/01/2016
Date Data Arrived at EDR: 05/26/2016
Date Made Active in Reports: 09/02/2016
Number of Days to Update: 99

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 07/25/2016
Next Scheduled EDR Contact: 11/07/2016
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: 10/25/2013
Date Data Arrived at EDR: 10/17/2014
Date Made Active in Reports: 10/20/2014
Number of Days to Update: 3

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 08/12/2016
Next Scheduled EDR Contact: 11/21/2016
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: 01/20/2016
Date Data Arrived at EDR: 04/28/2016
Date Made Active in Reports: 09/02/2016
Number of Days to Update: 127

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 07/15/2016
Next Scheduled EDR Contact: 10/24/2016
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: 01/23/2015
Date Data Arrived at EDR: 02/06/2015
Date Made Active in Reports: 03/09/2015
Number of Days to Update: 31

Source: Environmental Protection Agency
Telephone: 202-564-5088
Last EDR Contact: 07/07/2016
Next Scheduled EDR Contact: 10/24/2016
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: 08/17/2016
Next Scheduled EDR Contact: 12/05/2016
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)

A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 08/17/2016
Next Scheduled EDR Contact: 12/05/2016
Data Release Frequency: Quarterly

MLTS: Material Licensing Tracking System

MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 03/07/2016
Date Data Arrived at EDR: 03/18/2016
Date Made Active in Reports: 04/15/2016
Number of Days to Update: 28

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 09/05/2016
Next Scheduled EDR Contact: 11/21/2016
Data Release Frequency: Quarterly

COAL ASH DOE: Steam-Electric Plant Operation Data

A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 08/07/2009
Date Made Active in Reports: 10/22/2009
Number of Days to Update: 76

Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 09/09/2016
Next Scheduled EDR Contact: 12/19/2016
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List

A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 07/01/2014
Date Data Arrived at EDR: 09/10/2014
Date Made Active in Reports: 10/20/2014
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 09/06/2016
Next Scheduled EDR Contact: 12/19/2016
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: 02/01/2011
Date Data Arrived at EDR: 10/19/2011
Date Made Active in Reports: 01/10/2012
Number of Days to Update: 83
Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 07/29/2016
Next Scheduled EDR Contact: 11/07/2016
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: 07/07/2015
Date Data Arrived at EDR: 07/09/2015
Date Made Active in Reports: 09/16/2015
Number of Days to Update: 69
Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 07/07/2016
Next Scheduled EDR Contact: 10/17/2016
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: 07/31/2012
Date Data Arrived at EDR: 08/07/2012
Date Made Active in Reports: 09/18/2012
Number of Days to Update: 42
Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 08/02/2016
Next Scheduled EDR Contact: 11/14/2016
Data Release Frequency: Varies

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: 03/31/2016
Date Data Arrived at EDR: 08/01/2016
Date Made Active in Reports: 09/23/2016
Number of Days to Update: 53

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 07/15/2016
Next Scheduled EDR Contact: 10/10/2016
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: 12/31/2013
Date Data Arrived at EDR: 02/24/2015
Date Made Active in Reports: 09/30/2015
Number of Days to Update: 218

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 08/26/2016
Next Scheduled EDR Contact: 12/05/2016
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: 12/31/2005
Date Data Arrived at EDR: 12/08/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 34

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 07/15/2016
Next Scheduled EDR Contact: 10/24/2016
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: 07/21/2016
Date Data Arrived at EDR: 07/26/2016
Date Made Active in Reports: 09/23/2016
Number of Days to Update: 59

Source: Department of Energy
Telephone: 202-586-3559
Last EDR Contact: 07/26/2016
Next Scheduled EDR Contact: 11/21/2016
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: 09/14/2010
Date Data Arrived at EDR: 10/07/2011
Date Made Active in Reports: 03/01/2012
Number of Days to Update: 146

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 09/09/2016
Next Scheduled EDR Contact: 12/05/2016
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites

A listing of former lead smelter site locations.

Date of Government Version: 03/07/2016
Date Data Arrived at EDR: 04/07/2016
Date Made Active in Reports: 09/02/2016
Number of Days to Update: 148

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 07/08/2016
Next Scheduled EDR Contact: 10/17/2016
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: 10/20/2015
Date Data Arrived at EDR: 10/27/2015
Date Made Active in Reports: 01/04/2016
Number of Days to Update: 69

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 06/22/2016
Next Scheduled EDR Contact: 10/10/2016
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data

A listing of minor source facilities.

Date of Government Version: 10/20/2015
Date Data Arrived at EDR: 10/27/2015
Date Made Active in Reports: 01/04/2016
Number of Days to Update: 69

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 06/22/2016
Next Scheduled EDR Contact: 10/10/2016
Data Release Frequency: Annually

US MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 08/05/2016
Date Data Arrived at EDR: 09/01/2016
Date Made Active in Reports: 09/23/2016
Number of Days to Update: 22

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 09/01/2016
Next Scheduled EDR Contact: 12/12/2016
Data Release Frequency: Semi-Annually

US MINES 2: Ferrous and Nonferrous Metal Mines Database Listing

This map layer includes ferrous (ferrous metal mines are facilities that extract ferrous metals, such as iron ore or molybdenum) and nonferrous (Nonferrous metal mines are facilities that extract nonferrous metals, such as gold, silver, copper, zinc, and lead) metal mines in the United States.

Date of Government Version: 12/05/2005
Date Data Arrived at EDR: 02/29/2008
Date Made Active in Reports: 04/18/2008
Number of Days to Update: 49

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 09/02/2016
Next Scheduled EDR Contact: 12/12/2016
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: 09/02/2016
Next Scheduled EDR Contact: 12/12/2016
Data Release Frequency: Varies

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: 07/20/2015
Date Data Arrived at EDR: 09/09/2015
Date Made Active in Reports: 11/03/2015
Number of Days to Update: 55

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 09/07/2016
Next Scheduled EDR Contact: 12/19/2016
Data Release Frequency: Quarterly

UXO: Unexploded Ordnance Sites

A listing of unexploded ordnance site locations

Date of Government Version: 10/25/2015
Date Data Arrived at EDR: 01/29/2016
Date Made Active in Reports: 04/05/2016
Number of Days to Update: 67

Source: Department of Defense
Telephone: 571-373-0407
Last EDR Contact: 09/19/2016
Next Scheduled EDR Contact: 01/02/2017
Data Release Frequency: Varies

DOCKET HWC: Hazardous Waste Compliance Docket Listing

A complete list of the Federal Agency Hazardous Waste Compliance Docket Facilities.

Date of Government Version: 06/02/2016
Date Data Arrived at EDR: 06/03/2016
Date Made Active in Reports: 09/02/2016
Number of Days to Update: 91

Source: Environmental Protection Agency
Telephone: 202-564-0527
Last EDR Contact: 08/24/2016
Next Scheduled EDR Contact: 12/12/2016
Data Release Frequency: Varies

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: 06/27/2016
Date Data Arrived at EDR: 06/28/2016
Date Made Active in Reports: 08/18/2016
Number of Days to Update: 51

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 06/28/2016
Next Scheduled EDR Contact: 10/10/2016
Data Release Frequency: Quarterly

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: 06/02/2016
Date Data Arrived at EDR: 07/12/2016
Date Made Active in Reports: 08/18/2016
Number of Days to Update: 37

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 09/02/2016
Next Scheduled EDR Contact: 12/19/2016
Data Release Frequency: Annually

EMI: Emissions Inventory Data

Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2015
Date Data Arrived at EDR: 06/22/2016
Date Made Active in Reports: 08/09/2016
Number of Days to Update: 48

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 09/23/2016
Next Scheduled EDR Contact: 01/02/2017
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: 05/25/2016
Date Data Arrived at EDR: 05/27/2016
Date Made Active in Reports: 07/20/2016
Number of Days to Update: 54

Source: State Water Resoruces Control Board
Telephone: 916-445-9379
Last EDR Contact: 08/22/2016
Next Scheduled EDR Contact: 10/07/2016
Data Release Frequency: Varies

Financial Assurance 1: Financial Assurance Information Listing

Financial Assurance information

Date of Government Version: 04/25/2016
Date Data Arrived at EDR: 04/29/2016
Date Made Active in Reports: 06/21/2016
Number of Days to Update: 53

Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 07/20/2016
Next Scheduled EDR Contact: 10/07/2016
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: 05/25/2016
Date Data Arrived at EDR: 06/01/2016
Date Made Active in Reports: 07/20/2016
Number of Days to Update: 49

Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 08/10/2016
Next Scheduled EDR Contact: 11/28/2016
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: 12/31/2014
Date Data Arrived at EDR: 10/14/2015
Date Made Active in Reports: 12/11/2015
Number of Days to Update: 58

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 07/15/2016
Next Scheduled EDR Contact: 10/24/2016
Data Release Frequency: Annually

HIST CORTESE: Hazardous Waste & Substance Site List

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

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 01/22/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/22/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

HWP: EnviroStor Permitted Facilities Listing
Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

Date of Government Version: 05/23/2016
Date Data Arrived at EDR: 05/25/2016
Date Made Active in Reports: 07/20/2016
Number of Days to Update: 56
Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/23/2016
Next Scheduled EDR Contact: 12/05/2016
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: 07/11/2016
Date Data Arrived at EDR: 07/13/2016
Date Made Active in Reports: 08/18/2016
Number of Days to Update: 36
Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 07/13/2016
Next Scheduled EDR Contact: 10/24/2016
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: 06/13/2016
Date Data Arrived at EDR: 06/14/2016
Date Made Active in Reports: 08/09/2016
Number of Days to Update: 56
Source: Department of Conservation
Telephone: 916-322-1080
Last EDR Contact: 09/14/2016
Next Scheduled EDR Contact: 12/26/2016
Data Release Frequency: Varies

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: 05/25/2016
Date Data Arrived at EDR: 06/07/2016
Date Made Active in Reports: 07/20/2016
Number of Days to Update: 43
Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 09/07/2016
Next Scheduled EDR Contact: 12/19/2016
Data Release Frequency: Varies

NPDES: NPDES Permits Listing
A listing of NPDES permits, including stormwater.

Date of Government Version: 05/16/2016
Date Data Arrived at EDR: 05/18/2016
Date Made Active in Reports: 06/23/2016
Number of Days to Update: 36
Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 08/16/2016
Next Scheduled EDR Contact: 11/28/2016
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: 06/06/2016
Date Data Arrived at EDR: 06/07/2016
Date Made Active in Reports: 07/20/2016
Number of Days to Update: 43
Source: Department of Pesticide Regulation
Telephone: 916-445-4038
Last EDR Contact: 09/07/2016
Next Scheduled EDR Contact: 12/19/2016
Data Release Frequency: Quarterly

PROC: Certified Processors Database
A listing of certified processors.

Date of Government Version: 06/13/2016
Date Data Arrived at EDR: 06/14/2016
Date Made Active in Reports: 08/09/2016
Number of Days to Update: 56
Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 09/14/2016
Next Scheduled EDR Contact: 12/26/2016
Data Release Frequency: Quarterly

NOTIFY 65: Proposition 65 Records
Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

Date of Government Version: 09/10/2015
Date Data Arrived at EDR: 01/05/2016
Date Made Active in Reports: 02/12/2016
Number of Days to Update: 38
Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 09/19/2016
Next Scheduled EDR Contact: 01/02/2017
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: 02/12/2016
Date Data Arrived at EDR: 03/16/2016
Date Made Active in Reports: 06/13/2016
Number of Days to Update: 89
Source: Deaprtment of Conservation
Telephone: 916-445-2408
Last EDR Contact: 09/14/2016
Next Scheduled EDR Contact: 12/26/2016
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 board?s review found that more than one-third of the region?s active disposal pits are operating without permission.

Date of Government Version: 04/15/2015
Date Data Arrived at EDR: 04/17/2015
Date Made Active in Reports: 06/23/2015
Number of Days to Update: 67
Source: RWQCB, Central Valley Region
Telephone: 559-445-5577
Last EDR Contact: 07/15/2016
Next Scheduled EDR Contact: 10/24/2016
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: 08/17/2016
Next Scheduled EDR Contact: 12/05/2016
Data Release Frequency: Quarterly

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: 09/23/2016
Next Scheduled EDR Contact: 01/09/2017
Data Release Frequency: Varies

ICE: ICE
Contains data pertaining to the Permitted Facilities with Inspections / Enforcements sites tracked in Envirostor.

Date of Government Version: 05/23/2016
Date Data Arrived at EDR: 05/25/2016
Date Made Active in Reports: 07/20/2016
Number of Days to Update: 56

Source: Department of Toxic Subsances Control
Telephone: 877-786-9427
Last EDR Contact: 08/23/2016
Next Scheduled EDR Contact: 12/05/2016
Data Release Frequency: Quarterly

ECHO: Enforcement & Compliance History Information

ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

Date of Government Version: 09/20/2015
Date Data Arrived at EDR: 09/23/2015
Date Made Active in Reports: 01/04/2016
Number of Days to Update: 103

Source: Environmental Protection Agency
Telephone: 202-564-2280
Last EDR Contact: 09/20/2016
Next Scheduled EDR Contact: 01/02/2017
Data Release Frequency: Quarterly

FUELS PROGRAM: EPA Fuels Program Registered Listing

This listing includes facilities that are registered under the Part 80 (Code of Federal Regulations) EPA Fuels Programs. All companies now are required to submit new and updated registrations.

Date of Government Version: 05/24/2016
Date Data Arrived at EDR: 05/25/2016
Date Made Active in Reports: 07/13/2016
Number of Days to Update: 49

Source: EPA
Telephone: 800-385-6164
Last EDR Contact: 08/23/2016
Next Scheduled EDR Contact: 12/05/2016
Data Release Frequency: Quarterly

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 Historic Gas 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 Historic Dry 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:

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: 07/07/2016
Date Data Arrived at EDR: 07/12/2016
Date Made Active in Reports: 08/18/2016
Number of Days to Update: 37

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 07/07/2016
Next Scheduled EDR Contact: 10/24/2016
Data Release Frequency: Semi-Annually

Underground Tanks

Underground storage tank sites located in Alameda county.

Date of Government Version: 07/07/2016
Date Data Arrived at EDR: 07/12/2016
Date Made Active in Reports: 08/08/2016
Number of Days to Update: 27

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 07/07/2016
Next Scheduled EDR Contact: 10/24/2016
Data Release Frequency: Semi-Annually

AMADOR COUNTY:

CUPA Facility List
Cupa Facility List

Date of Government Version: 06/06/2016
Date Data Arrived at EDR: 06/09/2016
Date Made Active in Reports: 06/21/2016
Number of Days to Update: 12

Source: Amador County Environmental Health
Telephone: 209-223-6439
Last EDR Contact: 09/02/2016
Next Scheduled EDR Contact: 12/19/2016
Data Release Frequency: Varies

BUTTE COUNTY:

CUPA Facility Listing
Cupa facility list.

Date of Government Version: 06/02/2016
Date Data Arrived at EDR: 06/03/2016
Date Made Active in Reports: 06/21/2016
Number of Days to Update: 18

Source: Public Health Department
Telephone: 530-538-7149
Last EDR Contact: 07/07/2016
Next Scheduled EDR Contact: 10/24/2016
Data Release Frequency: No Update Planned

CALVERAS COUNTY:

CUPA Facility Listing
Cupa Facility Listing

Date of Government Version: 07/20/2016
Date Data Arrived at EDR: 07/25/2016
Date Made Active in Reports: 09/23/2016
Number of Days to Update: 60

Source: Calveras County Environmental Health
Telephone: 209-754-6399
Last EDR Contact: 06/27/2016
Next Scheduled EDR Contact: 10/10/2016
Data Release Frequency: Quarterly

COLUSA COUNTY:

CUPA Facility List
Cupa facility list.

Date of Government Version: 05/25/2016
Date Data Arrived at EDR: 05/26/2016
Date Made Active in Reports: 06/17/2016
Number of Days to Update: 22

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 09/06/2016
Next Scheduled EDR Contact: 11/21/2016
Data Release Frequency: Varies

CONTRA COSTA COUNTY:

Site List
List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 05/24/2016
Date Data Arrived at EDR: 05/26/2016
Date Made Active in Reports: 07/20/2016
Number of Days to Update: 55

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 08/01/2016
Next Scheduled EDR Contact: 11/14/2016
Data Release Frequency: Semi-Annually

DEL NORTE COUNTY:

CUPA Facility List
Cupa Facility list

Date of Government Version: 04/08/2016
Date Data Arrived at EDR: 05/03/2016
Date Made Active in Reports: 06/22/2016
Number of Days to Update: 50

Source: Del Norte County Environmental Health Division
Telephone: 707-465-0426
Last EDR Contact: 07/27/2016
Next Scheduled EDR Contact: 11/14/2016
Data Release Frequency: Varies

EL DORADO COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 05/24/2016
Date Data Arrived at EDR: 05/26/2016
Date Made Active in Reports: 08/09/2016
Number of Days to Update: 75

Source: El Dorado County Environmental Management Department
Telephone: 530-621-6623
Last EDR Contact: 07/27/2016
Next Scheduled EDR Contact: 11/14/2016
Data Release Frequency: Varies

FRESNO COUNTY:

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: 07/13/2016
Date Data Arrived at EDR: 07/19/2016
Date Made Active in Reports: 08/09/2016
Number of Days to Update: 21

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 07/13/2016
Next Scheduled EDR Contact: 10/17/2016
Data Release Frequency: Semi-Annually

HUMBOLDT COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 07/06/2016
Date Data Arrived at EDR: 07/08/2016
Date Made Active in Reports: 08/18/2016
Number of Days to Update: 41

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 08/22/2016
Next Scheduled EDR Contact: 12/05/2016
Data Release Frequency: Varies

IMPERIAL COUNTY:

CUPA Facility List
Cupa facility list.

Date of Government Version: 07/25/2016
Date Data Arrived at EDR: 07/26/2016
Date Made Active in Reports: 09/23/2016
Number of Days to Update: 59

Source: San Diego Border Field Office
Telephone: 760-339-2777
Last EDR Contact: 07/20/2016
Next Scheduled EDR Contact: 10/07/2016
Data Release Frequency: Varies

INYO COUNTY:

CUPA Facility List
Cupa facility list.

Date of Government Version: 09/10/2013
Date Data Arrived at EDR: 09/11/2013
Date Made Active in Reports: 10/14/2013
Number of Days to Update: 33

Source: Inyo County Environmental Health Services
Telephone: 760-878-0238
Last EDR Contact: 08/17/2016
Next Scheduled EDR Contact: 12/05/2016
Data Release Frequency: Varies

KERN COUNTY:

Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 05/16/2016
Date Data Arrived at EDR: 05/20/2016
Date Made Active in Reports: 08/08/2016
Number of Days to Update: 80

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 08/03/2016
Next Scheduled EDR Contact: 11/21/2016
Data Release Frequency: Quarterly

KINGS COUNTY:

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: 05/25/2016
Date Data Arrived at EDR: 05/27/2016
Date Made Active in Reports: 06/22/2016
Number of Days to Update: 26

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 09/19/2016
Next Scheduled EDR Contact: 12/05/2016
Data Release Frequency: Varies

LAKE COUNTY:

CUPA Facility List
Cupa facility list

Date of Government Version: 04/26/2016
Date Data Arrived at EDR: 04/27/2016
Date Made Active in Reports: 06/17/2016
Number of Days to Update: 51

Source: Lake County Environmental Health
Telephone: 707-263-1164
Last EDR Contact: 08/19/2016
Next Scheduled EDR Contact: 10/31/2016
Data Release Frequency: Varies

LOS ANGELES COUNTY:

San Gabriel Valley Areas of Concern
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office.

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: EPA Region 9
Telephone: 415-972-3178
Last EDR Contact: 09/19/2016
Next Scheduled EDR Contact: 01/02/2017
Data Release Frequency: No Update Planned

HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 07/05/2016
Date Data Arrived at EDR: 07/12/2016
Date Made Active in Reports: 08/18/2016
Number of Days to Update: 37
Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 07/07/2016
Next Scheduled EDR Contact: 10/24/2016
Data Release Frequency: Semi-Annually

List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 04/18/2016
Date Data Arrived at EDR: 04/20/2016
Date Made Active in Reports: 06/01/2016
Number of Days to Update: 42
Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 07/19/2016
Next Scheduled EDR Contact: 10/31/2016
Data Release Frequency: Varies

City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 01/01/2016
Date Data Arrived at EDR: 01/26/2016
Date Made Active in Reports: 03/22/2016
Number of Days to Update: 56
Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 07/18/2016
Next Scheduled EDR Contact: 10/31/2016
Data Release Frequency: Varies

Site Mitigation List
Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 03/29/2016
Date Data Arrived at EDR: 04/06/2016
Date Made Active in Reports: 06/13/2016
Number of Days to Update: 68
Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 07/13/2016
Next Scheduled EDR Contact: 10/31/2016
Data Release Frequency: Annually

City of El Segundo Underground Storage Tank
Underground storage tank sites located in El Segundo city.

Date of Government Version: 03/30/2015
Date Data Arrived at EDR: 04/02/2015
Date Made Active in Reports: 04/13/2015
Number of Days to Update: 11
Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 07/13/2016
Next Scheduled EDR Contact: 10/31/2016
Data Release Frequency: Semi-Annually

City of Long Beach Underground Storage Tank
Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 11/04/2015
Date Data Arrived at EDR: 11/13/2015
Date Made Active in Reports: 12/17/2015
Number of Days to Update: 34
Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 07/25/2016
Next Scheduled EDR Contact: 11/07/2016
Data Release Frequency: Annually

City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 06/23/2016
Date Data Arrived at EDR: 07/12/2016
Date Made Active in Reports: 08/09/2016
Number of Days to Update: 28
Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 07/07/2016
Next Scheduled EDR Contact: 10/24/2016
Data Release Frequency: Semi-Annually

MADERA COUNTY:

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: 08/18/2016
Date Data Arrived at EDR: 08/22/2016
Date Made Active in Reports: 09/23/2016
Number of Days to Update: 32

Source: Madera County Environmental Health
Telephone: 559-675-7823
Last EDR Contact: 08/17/2016
Next Scheduled EDR Contact: 12/05/2016
Data Release Frequency: Varies

MARIN COUNTY:

Underground Storage Tank Sites

Currently permitted USTs in Marin County.

Date of Government Version: 04/07/2016
Date Data Arrived at EDR: 04/26/2016
Date Made Active in Reports: 06/01/2016
Number of Days to Update: 36

Source: Public Works Department Waste Management
Telephone: 415-499-6647
Last EDR Contact: 06/30/2016
Next Scheduled EDR Contact: 10/17/2016
Data Release Frequency: Semi-Annually

MERCED COUNTY:

CUPA Facility List

CUPA facility list.

Date of Government Version: 08/17/2016
Date Data Arrived at EDR: 08/22/2016
Date Made Active in Reports: 09/23/2016
Number of Days to Update: 32

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 08/17/2016
Next Scheduled EDR Contact: 12/05/2016
Data Release Frequency: Varies

MONO COUNTY:

CUPA Facility List

CUPA Facility List

Date of Government Version: 05/25/2016
Date Data Arrived at EDR: 06/01/2016
Date Made Active in Reports: 06/22/2016
Number of Days to Update: 21

Source: Mono County Health Department
Telephone: 760-932-5580
Last EDR Contact: 08/24/2016
Next Scheduled EDR Contact: 12/12/2016
Data Release Frequency: Varies

MONTEREY COUNTY:

CUPA Facility Listing

CUPA Program listing from the Environmental Health Division.

Date of Government Version: 06/24/2016
Date Data Arrived at EDR: 06/27/2016
Date Made Active in Reports: 08/09/2016
Number of Days to Update: 43

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 08/22/2016
Next Scheduled EDR Contact: 12/05/2016
Data Release Frequency: Varies

NAPA COUNTY:

Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 12/05/2011
Date Data Arrived at EDR: 12/06/2011
Date Made Active in Reports: 02/07/2012
Number of Days to Update: 63

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 08/24/2016
Next Scheduled EDR Contact: 12/12/2016
Data Release Frequency: No Update Planned

Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 01/15/2008
Date Data Arrived at EDR: 01/16/2008
Date Made Active in Reports: 02/08/2008
Number of Days to Update: 23

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 08/24/2016
Next Scheduled EDR Contact: 12/12/2016
Data Release Frequency: No Update Planned

NEVADA COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 07/25/2016
Date Data Arrived at EDR: 08/01/2016
Date Made Active in Reports: 09/23/2016
Number of Days to Update: 53

Source: Community Development Agency
Telephone: 530-265-1467
Last EDR Contact: 07/27/2016
Next Scheduled EDR Contact: 11/14/2016
Data Release Frequency: Varies

ORANGE COUNTY:

List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 05/01/2016
Date Data Arrived at EDR: 05/17/2016
Date Made Active in Reports: 06/21/2016
Number of Days to Update: 35

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 08/08/2016
Next Scheduled EDR Contact: 11/21/2016
Data Release Frequency: Annually

List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 05/01/2016
Date Data Arrived at EDR: 05/17/2016
Date Made Active in Reports: 06/21/2016
Number of Days to Update: 35

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 08/08/2016
Next Scheduled EDR Contact: 11/21/2016
Data Release Frequency: Quarterly

List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 05/01/2016
Date Data Arrived at EDR: 05/11/2016
Date Made Active in Reports: 06/01/2016
Number of Days to Update: 21

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 08/09/2016
Next Scheduled EDR Contact: 11/21/2016
Data Release Frequency: Quarterly

PLACER COUNTY:

Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 06/16/2016
Date Data Arrived at EDR: 06/20/2016
Date Made Active in Reports: 08/09/2016
Number of Days to Update: 50

Source: Placer County Health and Human Services
Telephone: 530-745-2363
Last EDR Contact: 09/02/2016
Next Scheduled EDR Contact: 12/19/2016
Data Release Frequency: Semi-Annually

RIVERSIDE COUNTY:

Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 04/13/2016
Date Data Arrived at EDR: 04/15/2016
Date Made Active in Reports: 05/09/2016
Number of Days to Update: 24

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 09/19/2016
Next Scheduled EDR Contact: 01/02/2017
Data Release Frequency: Quarterly

Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 07/13/2016
Date Data Arrived at EDR: 07/18/2016
Date Made Active in Reports: 08/08/2016
Number of Days to Update: 21

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 09/19/2016
Next Scheduled EDR Contact: 01/02/2017
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

Toxic Site Clean-Up List
List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 05/02/2016
Date Data Arrived at EDR: 07/06/2016
Date Made Active in Reports: 08/18/2016
Number of Days to Update: 43

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 07/06/2016
Next Scheduled EDR Contact: 10/17/2016
Data Release Frequency: Quarterly

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: 05/02/2016
Date Data Arrived at EDR: 07/06/2016
Date Made Active in Reports: 08/18/2016
Number of Days to Update: 43

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 07/05/2016
Next Scheduled EDR Contact: 10/17/2016
Data Release Frequency: Quarterly

SAN BERNARDINO COUNTY:

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: 06/09/2016
Date Data Arrived at EDR: 06/10/2016
Date Made Active in Reports: 07/20/2016
Number of Days to Update: 40

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 08/08/2016
Next Scheduled EDR Contact: 11/21/2016
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

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: 09/23/2013
Date Data Arrived at EDR: 09/24/2013
Date Made Active in Reports: 10/17/2013
Number of Days to Update: 23

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 06/02/2016
Next Scheduled EDR Contact: 09/19/2016
Data Release Frequency: Quarterly

Solid Waste Facilities

San Diego County Solid Waste Facilities.

Date of Government Version: 10/31/2015
Date Data Arrived at EDR: 11/07/2015
Date Made Active in Reports: 01/04/2016
Number of Days to Update: 58

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 07/20/2016
Next Scheduled EDR Contact: 10/07/2016
Data Release Frequency: Varies

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: 09/02/2016
Next Scheduled EDR Contact: 12/19/2016
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

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: 08/03/2016
Next Scheduled EDR Contact: 11/21/2016
Data Release Frequency: Quarterly

Underground Storage Tank Information

Underground storage tank sites located in San Francisco county.

Date of Government Version: 11/29/2010
Date Data Arrived at EDR: 03/10/2011
Date Made Active in Reports: 03/15/2011
Number of Days to Update: 5

Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 08/03/2016
Next Scheduled EDR Contact: 11/21/2016
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

San Joaquin Co. UST
A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 06/16/2016
Date Data Arrived at EDR: 06/20/2016
Date Made Active in Reports: 08/08/2016
Number of Days to Update: 49

Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 09/19/2016
Next Scheduled EDR Contact: 01/02/2017
Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

CUPA Facility List
Cupa Facility List.

Date of Government Version: 05/23/2016
Date Data Arrived at EDR: 05/24/2016
Date Made Active in Reports: 06/21/2016
Number of Days to Update: 28

Source: San Luis Obispo County Public Health Department
Telephone: 805-781-5596
Last EDR Contact: 08/17/2016
Next Scheduled EDR Contact: 12/05/2016
Data Release Frequency: Varies

SAN MATEO COUNTY:

Business Inventory
List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 06/02/2016
Date Data Arrived at EDR: 06/07/2016
Date Made Active in Reports: 06/22/2016
Number of Days to Update: 15

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 09/12/2016
Next Scheduled EDR Contact: 12/26/2016
Data Release Frequency: Annually

Fuel Leak List
A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 06/09/2016
Date Data Arrived at EDR: 06/13/2016
Date Made Active in Reports: 08/09/2016
Number of Days to Update: 57

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 09/12/2016
Next Scheduled EDR Contact: 12/26/2016
Data Release Frequency: Semi-Annually

SANTA BARBARA COUNTY:

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: 08/17/2016
Next Scheduled EDR Contact: 12/05/2016
Data Release Frequency: Varies

SANTA CLARA COUNTY:

Cupa Facility List
Cupa facility list

Date of Government Version: 05/25/2016
Date Data Arrived at EDR: 05/26/2016
Date Made Active in Reports: 06/22/2016
Number of Days to Update: 27

Source: Department of Environmental Health
Telephone: 408-918-1973
Last EDR Contact: 08/17/2016
Next Scheduled EDR Contact: 12/05/2016
Data Release Frequency: Varies

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

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: 08/24/2016
Next Scheduled EDR Contact: 12/12/2016
Data Release Frequency: Annually

Hazardous Material Facilities

Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 05/26/2016
Date Data Arrived at EDR: 06/01/2016
Date Made Active in Reports: 07/20/2016
Number of Days to Update: 49

Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 08/03/2016
Next Scheduled EDR Contact: 11/21/2016
Data Release Frequency: Annually

SANTA CRUZ COUNTY:

CUPA Facility List

CUPA facility listing.

Date of Government Version: 05/31/2016
Date Data Arrived at EDR: 06/02/2016
Date Made Active in Reports: 06/21/2016
Number of Days to Update: 19

Source: Santa Cruz County Environmental Health
Telephone: 831-464-2761
Last EDR Contact: 08/17/2016
Next Scheduled EDR Contact: 12/05/2016
Data Release Frequency: Varies

SHASTA COUNTY:

CUPA Facility List

Cupa Facility List.

Date of Government Version: 06/14/2016
Date Data Arrived at EDR: 06/16/2016
Date Made Active in Reports: 08/09/2016
Number of Days to Update: 54

Source: Shasta County Department of Resource Management
Telephone: 530-225-5789
Last EDR Contact: 08/22/2016
Next Scheduled EDR Contact: 12/05/2016
Data Release Frequency: Varies

SOLANO COUNTY:

Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 06/09/2016
Date Data Arrived at EDR: 06/13/2016
Date Made Active in Reports: 08/09/2016
Number of Days to Update: 57

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 09/12/2016
Next Scheduled EDR Contact: 12/26/2016
Data Release Frequency: Quarterly

Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 06/09/2016
Date Data Arrived at EDR: 06/14/2016
Date Made Active in Reports: 08/08/2016
Number of Days to Update: 55

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 09/12/2016
Next Scheduled EDR Contact: 12/26/2016
Data Release Frequency: Quarterly

SONOMA COUNTY:

Cupa Facility List
Cupa Facility list

Date of Government Version: 07/10/2016
Date Data Arrived at EDR: 07/12/2016
Date Made Active in Reports: 08/09/2016
Number of Days to Update: 28

Source: County of Sonoma Fire & Emergency Services Department
Telephone: 707-565-1174
Last EDR Contact: 07/07/2016
Next Scheduled EDR Contact: 10/10/2016
Data Release Frequency: Varies

Leaking Underground Storage Tank Sites
A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 07/01/2016
Date Data Arrived at EDR: 07/05/2016
Date Made Active in Reports: 08/18/2016
Number of Days to Update: 44

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 06/24/2016
Next Scheduled EDR Contact: 10/10/2016
Data Release Frequency: Quarterly

SUTTER COUNTY:

Underground Storage Tanks
Underground storage tank sites located in Sutter county.

Date of Government Version: 06/02/2016
Date Data Arrived at EDR: 06/07/2016
Date Made Active in Reports: 06/23/2016
Number of Days to Update: 16

Source: Sutter County Department of Agriculture
Telephone: 530-822-7500
Last EDR Contact: 09/02/2016
Next Scheduled EDR Contact: 12/19/2016
Data Release Frequency: Semi-Annually

TUOLUMNE COUNTY:

CUPA Facility List
Cupa facility list

Date of Government Version: 05/03/2016
Date Data Arrived at EDR: 05/10/2016
Date Made Active in Reports: 06/17/2016
Number of Days to Update: 38

Source: Divison of Environmental Health
Telephone: 209-533-5633
Last EDR Contact: 08/03/2016
Next Scheduled EDR Contact: 10/07/2016
Data Release Frequency: Varies

VENTURA COUNTY:

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: 06/28/2016
Date Data Arrived at EDR: 08/01/2016
Date Made Active in Reports: 09/23/2016
Number of Days to Update: 53

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 07/25/2016
Next Scheduled EDR Contact: 11/07/2016
Data Release Frequency: Quarterly

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: 06/28/2016
Next Scheduled EDR Contact: 10/17/2016
Data Release Frequency: Annually

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: 08/10/2016
Next Scheduled EDR Contact: 11/28/2016
Data Release Frequency: Quarterly

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: 03/28/2016
Date Data Arrived at EDR: 04/29/2016
Date Made Active in Reports: 06/22/2016
Number of Days to Update: 54

Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 07/25/2016
Next Scheduled EDR Contact: 11/07/2016
Data Release Frequency: Quarterly

Underground Tank Closed Sites List

Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 05/26/2016
Date Data Arrived at EDR: 06/16/2016
Date Made Active in Reports: 08/09/2016
Number of Days to Update: 54

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 09/14/2016
Next Scheduled EDR Contact: 12/26/2016
Data Release Frequency: Quarterly

YOLO COUNTY:

Underground Storage Tank Comprehensive Facility Report

Underground storage tank sites located in Yolo county.

Date of Government Version: 06/30/2016
Date Data Arrived at EDR: 07/05/2016
Date Made Active in Reports: 08/09/2016
Number of Days to Update: 35

Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 06/30/2016
Next Scheduled EDR Contact: 10/17/2016
Data Release Frequency: Annually

YUBA COUNTY:

CUPA Facility List
CUPA facility listing for Yuba County.

Date of Government Version: 04/29/2016
Date Data Arrived at EDR: 05/03/2016
Date Made Active in Reports: 06/17/2016
Number of Days to Update: 45

Source: Yuba County Environmental Health Department
Telephone: 530-749-7523
Last EDR Contact: 07/27/2016
Next Scheduled EDR Contact: 11/14/2016
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: 07/30/2013
Date Data Arrived at EDR: 08/19/2013
Date Made Active in Reports: 10/03/2013
Number of Days to Update: 45

Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 08/10/2016
Next Scheduled EDR Contact: 11/28/2016
Data Release Frequency: No Update Planned

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2013
Date Data Arrived at EDR: 07/17/2015
Date Made Active in Reports: 08/12/2015
Number of Days to Update: 26

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 07/11/2016
Next Scheduled EDR Contact: 10/24/2016
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: 08/01/2016
Date Data Arrived at EDR: 08/03/2016
Date Made Active in Reports: 09/09/2016
Number of Days to Update: 37

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 08/03/2016
Next Scheduled EDR Contact: 11/14/2016
Data Release Frequency: Annually

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 07/24/2015
Date Made Active in Reports: 08/18/2015
Number of Days to Update: 25

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 07/18/2016
Next Scheduled EDR Contact: 10/31/2016
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 12/31/2013
Date Data Arrived at EDR: 06/19/2015
Date Made Active in Reports: 07/15/2015
Number of Days to Update: 26

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 09/20/2016
Next Scheduled EDR Contact: 12/05/2016
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2015
Date Data Arrived at EDR: 04/14/2016
Date Made Active in Reports: 06/03/2016
Number of Days to Update: 50

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 09/12/2016
Next Scheduled EDR Contact: 12/26/2016
Data Release Frequency: Annually

Oil/Gas Pipelines
Source: PennWell Corporation
Petroleum Bundle (Crude Oil, Refined Products, Petrochemicals, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)) N = Natural Gas Bundle (Natural Gas, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)). This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

Electric Power Transmission Line Data
Source: PennWell Corporation
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Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

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 & Game
Telephone: 916-445-0411

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

STREET AND ADDRESS INFORMATION

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APPENDIX D

HISTORICAL SOURCES

363593 PM

I-215 & Holland Road

Menifee, CA 92584

Inquiry Number: 4737393.5

September 27, 2016

The EDR Aerial Photo Decade Package

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

EDR Aerial Photo Decade Package

09/27/16

Site Name:

363593 PM
I-215 & Holland Road
Menifee, CA 92584
EDR Inquiry # 4737393.5

Client Name:

AEI Consultants
2500 Camino Diablo
Walnut Creek, CA 94597
Contact: Kimberly Butler

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Search Results:

Year	Scale	Details	Source
2012	1"=500'	Flight Year: 2012	USDA/NAIP
2010	1"=500'	Flight Year: 2010	USDA/NAIP
2009	1"=500'	Flight Year: 2009	USDA/NAIP
2006	1"=500'	Flight Year: 2006	USDA/NAIP
2005	1"=500'	Flight Year: 2005	USDA/NAIP
2002	1"=500'	Acquisition Date: May 22, 2002	USGS/DOQQ
1996	1"=500'	Flight Date: January 01, 1996	USGS
1989	1"=500'	Flight Date: August 15, 1989	USDA
1985	1"=500'	Flight Date: July 28, 1985	USDA
1978	1"=500'	Flight Date: September 20, 1978	USDA
1967	1"=500'	Flight Date: May 15, 1967	USDA
1961	1"=500'	Flight Date: August 18, 1961	USDA
1953	1"=500'	Flight Date: August 28, 1953	USDA
1949	1"=500'	Flight Date: May 23, 1949	USDA
1938	1"=500'	Flight Date: June 14, 1938	USDA

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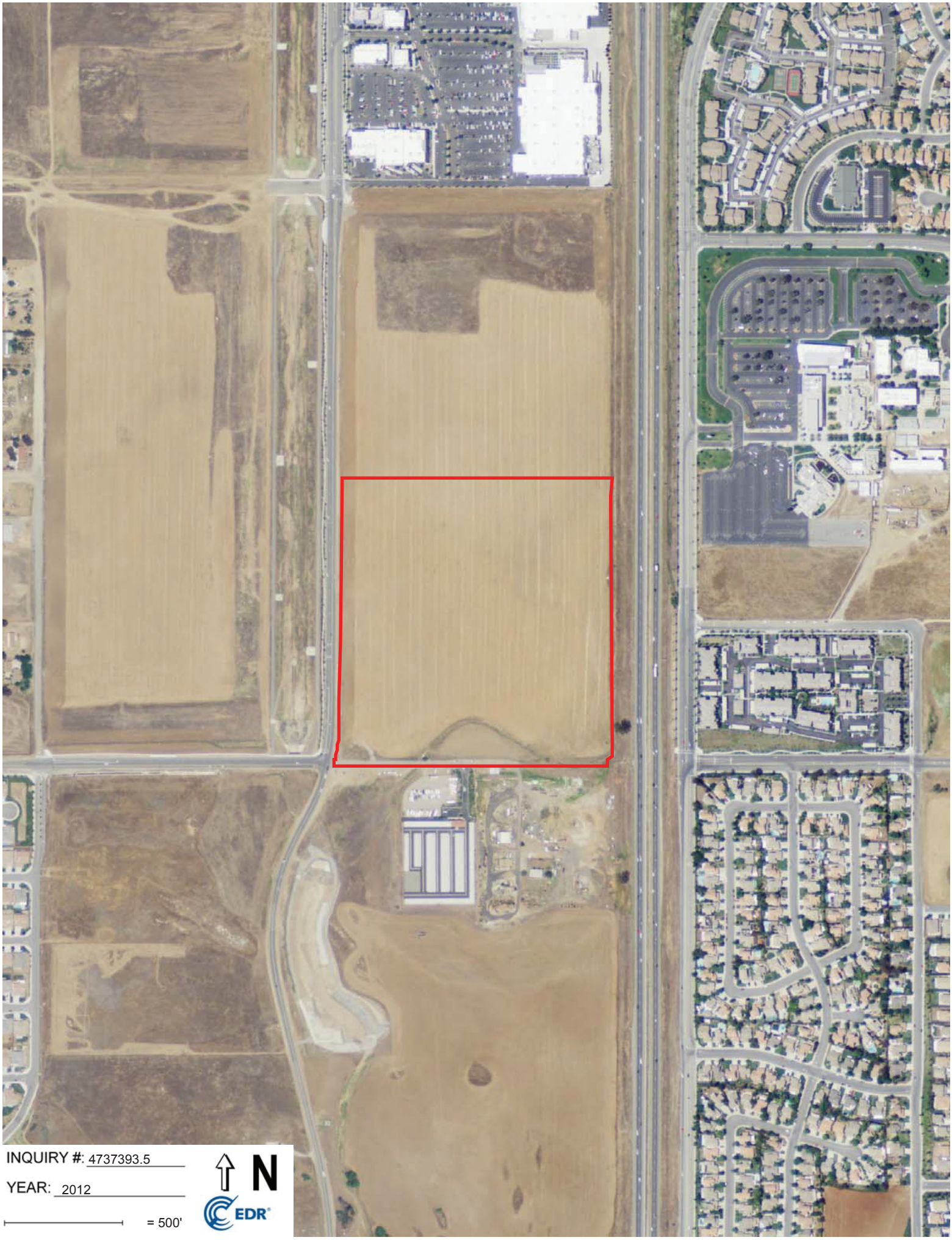
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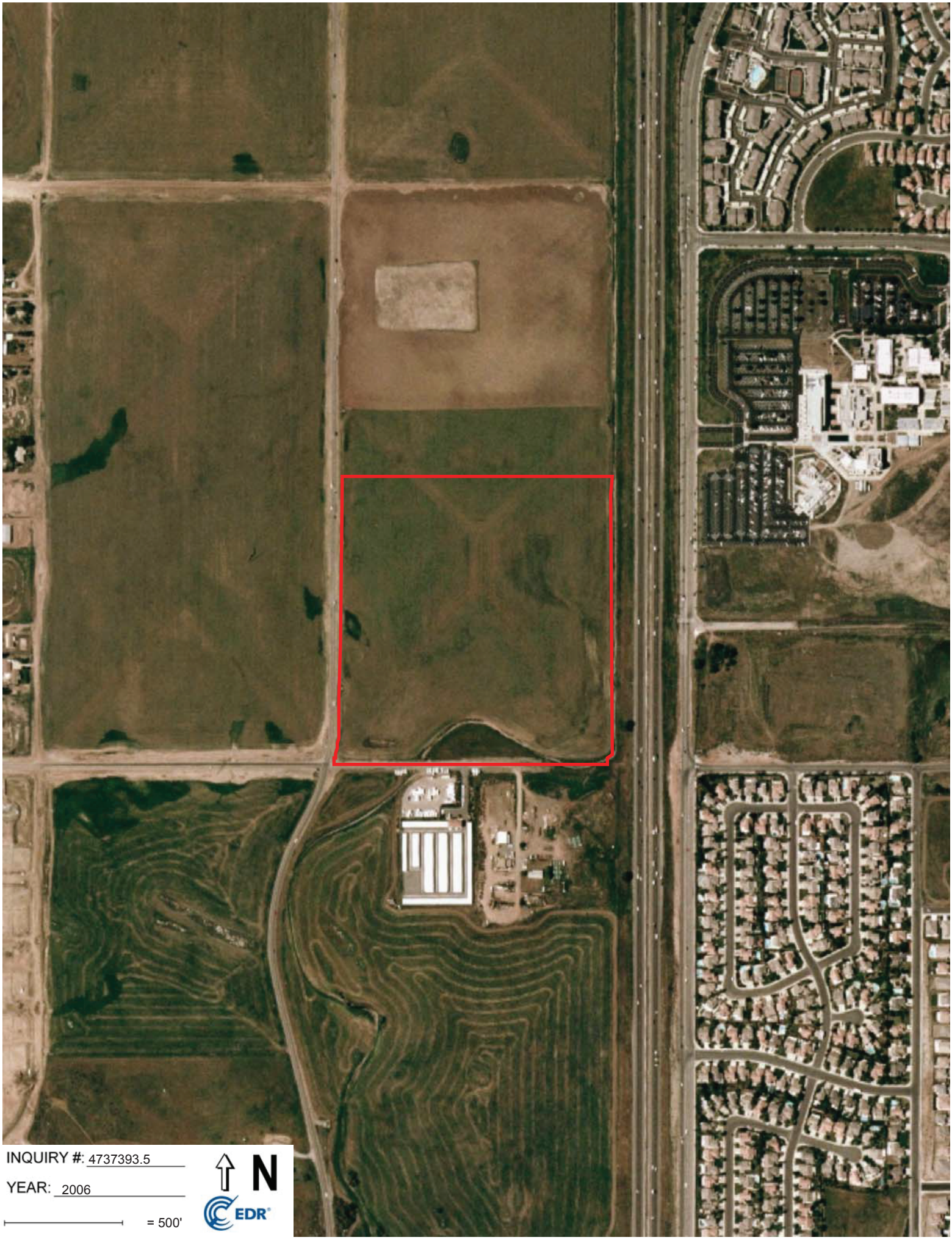
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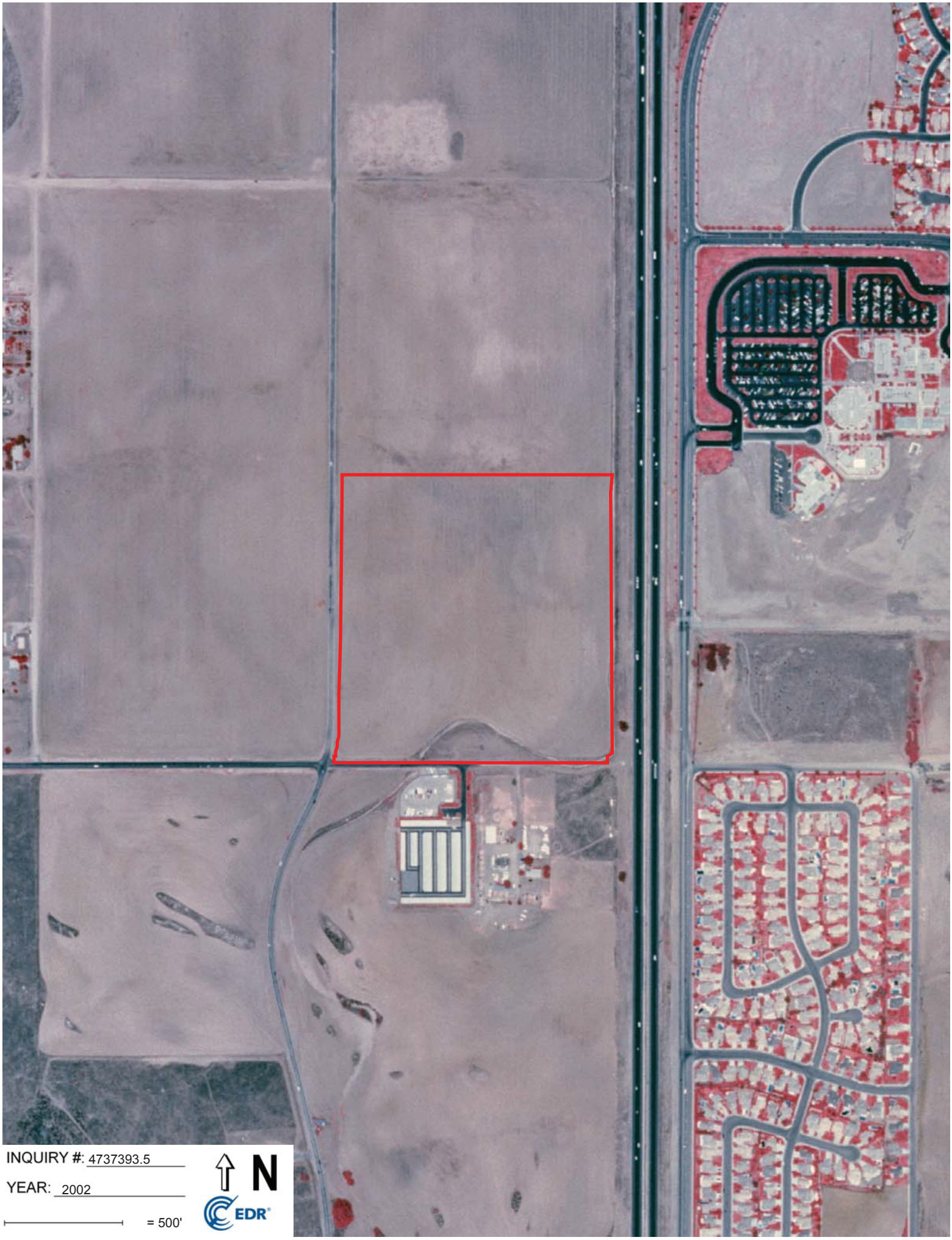
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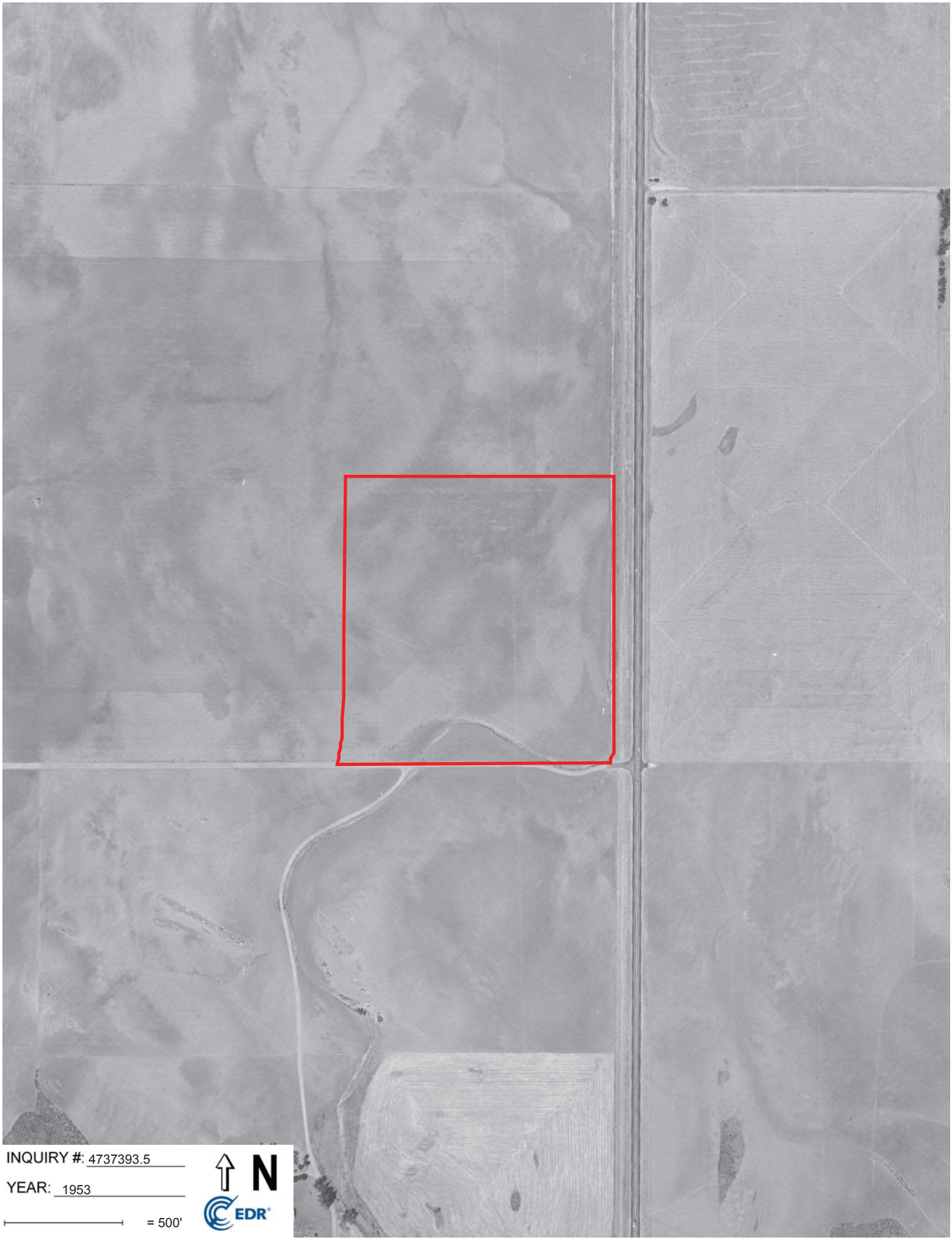
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INQUIRY #: 4737393.5

YEAR: 1938

= 500'

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EDR

363593 PM

I-215 & Holland Road

Menifee, CA 92584

Inquiry Number: 4737393.3

September 26, 2016

Certified Sanborn® Map Report

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

Certified Sanborn® Map Report

09/26/16

Site Name:

363593 PM
I-215 & Holland Road
Menifee, CA 92584
EDR Inquiry # 4737393.3

Client Name:

AEI Consultants
2500 Camino Diablo
Walnut Creek, CA 94597
Contact: Kimberly Butler

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Project 363593 PM

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Sanborn® Library search results

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- ☑ Library of Congress
- ☑ University Publications of America
- ☑ EDR Private Collection

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363593 PM
I-215 & Holland Road
Menifee, CA 92584

Inquiry Number: 4737393.8
September 28, 2016

The EDR-City Directory Image Report

Environmental Data Resources Inc

6 Armstrong Road
Shelton, CT 06484
800.352.0050
www.edrnet.com

TABLE OF CONTENTS

SECTION

Executive Summary

Findings

City Directory Images

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EXECUTIVE SUMMARY

DESCRIPTION

Environmental Data Resources, Inc.'s (EDR) City Directory Report is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's City Directory Report includes a search of available city directory data at 5 year intervals.

RESEARCH SUMMARY

The following research sources were consulted in the preparation of this report. A check mark indicates where information was identified in the source and provided in this report.

Year	*Target Street*	*Cross Street*	*Source*
2013	☑	☐	Cole Information Services
2008	☑	☐	Cole Information Services
2003	☑	☐	Cole Information Services
1999	☑	☐	Cole Information Services
1995	☑	☐	Cole Information Services
1992	☑	☐	Cole Information Services
1990	☑	☐	Haines Criss-Cross Directory
1985	☑	☐	Haines Criss-Cross Directory
1980	☑	☐	Haines Criss-Cross Directory
1975	☑	☐	Haines Criss-Cross Directory

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FINDINGS

TARGET PROPERTY STREET

I-215 & Holland Road
Menifee, CA 92584

Year	*CD Image*	*Source*

HOLLAND RD

2013	pg A1	Cole Information Services
2008	pg A2	Cole Information Services
2003	pg A3	Cole Information Services
1999	pg A4	Cole Information Services
1995	pg A5	Cole Information Services
1992	pg A6	Cole Information Services
1990	pg A7	Haines Criss-Cross Directory
1985	pg A8	Haines Criss-Cross Directory
1980	pg A9	Haines Criss-Cross Directory
1975	pg A10	Haines Criss-Cross Directory

I-215

2013	-	Cole Information Services	Target and Adjoining not listed in Source
2008	-	Cole Information Services	Target and Adjoining not listed in Source
2003	-	Cole Information Services	Target and Adjoining not listed in Source
1999	-	Cole Information Services	Target and Adjoining not listed in Source
1995	-	Cole Information Services	Target and Adjoining not listed in Source
1992	-	Cole Information Services	Target and Adjoining not listed in Source
1990	-	Haines Criss-Cross Directory	Street not listed in Source
1985	-	Haines Criss-Cross Directory	Street not listed in Source
1980	-	Haines Criss-Cross Directory	Street not listed in Source
1975	-	Haines Criss-Cross Directory	Street not listed in Source

FINDINGS

CROSS STREETS

No Cross Streets Identified

City Directory Images

Target Street	Cross Street	Source
✓	-	Cole Information Services

HOLLAND RD 2013

25891	EAGLE RIDGE CHURCH
26011	NORMAN MIDDLETON
26240	OCCUPANT UNKNOWN
27191	YOUNG LEONARD
27200	NICHOLAS CROUCH
27247	OCCUPANT UNKNOWN
27260	CATHY COKE
27350	FREDERICK FIELDING
27400	ADVANTAGE AIR CONDITIONING
	OCCUPANT UNKNOWN
27887	ALLEN AUTO GLASS
	MENIFEE SELF STORAGE
	UHAUL NEIGHBORHOOD DEALER
27989	BEDON CONSTRUCTION
	DONALD PARKER

Target Street	Cross Street	Source
✓	-	Cole Information Services

HOLLAND RD 2008

25891	EGORICH CHURCH
26011	MIDDLETOWN BODY SHOP GARAGE
	NORMAN MIDDLETON
	U HAUL CO
26240	JAYSON YOUNG
27141	LARRY WHITE
27191	OCCUPANT UNKNOWN
27200	NICHOLAS CROUCH
27247	AKS PILOT CAR SERVICE
	SANDRA BARNES
27260	ALL SEASONS HEATING & AIR
	CATHY COKE
27350	FREDERICK FIELDING
27400	PHILLIP HAUSER
27887	MENIFEE SELF STORAGE
	MENIFEE SELF STORAGE & U HAUL CO
27989	BEDON CONSTRUCTION INC
	DONALD PARKER

Target Street	Cross Street	Source
✓	-	Cole Information Services

HOLLAND RD 2003

25891 MENIFEE VALLEY CHURCH
OCCUPANT UNKNOWN
26011 MIDDLETONS BODY SHOP
NORMAN MIDDLETON
26240 OCCUPANT UNKNOWN
27141 ERALDO MAESTAS
27191 OCCUPANT UNKNOWN
27200 GILBERT FLORES
27247 STACEY KAZMARK
27260 LISA CASTRO
27350 FREDERICK FIELDING
27400 PHILLIP HAUSER
27887 JENNIFER ALLEN
MENIFEE SELF STORAGE
U HAUL CO
27989 BARBARA SHIELDS
SHIELDS BD RNCH SP TRLR SLS

Target Street	Cross Street	Source
✓	-	Cole Information Services

HOLLAND RD 1999

25891	MENIFEE VALLEY CHURCH
26011	MIDDLETON NORMAN
	NORMAN MIDDLETON
27200	NICHOLAS CROUCH
27260	CATHY COKE
27350	FREDERICK FIELDING
27400	PHILLIP HAUSER
27989	DONALD PARKER

Target Street	Cross Street	Source
✓	-	Cole Information Services

HOLLAND RD 1995

25891	MENIFEE VALLEY CHURCH
26011	MIDDLETON, NORMAN
	MIDDLETONS BODY SHOP
26240	OCCUPANT UNKNOWNN
27200	GRAY, EARL
27247	TARVIN, CHARLES
27350	KAHLE, ALLISON
27400	OCCUPANT UNKNOWNN
27989	SHIELDS, BUD

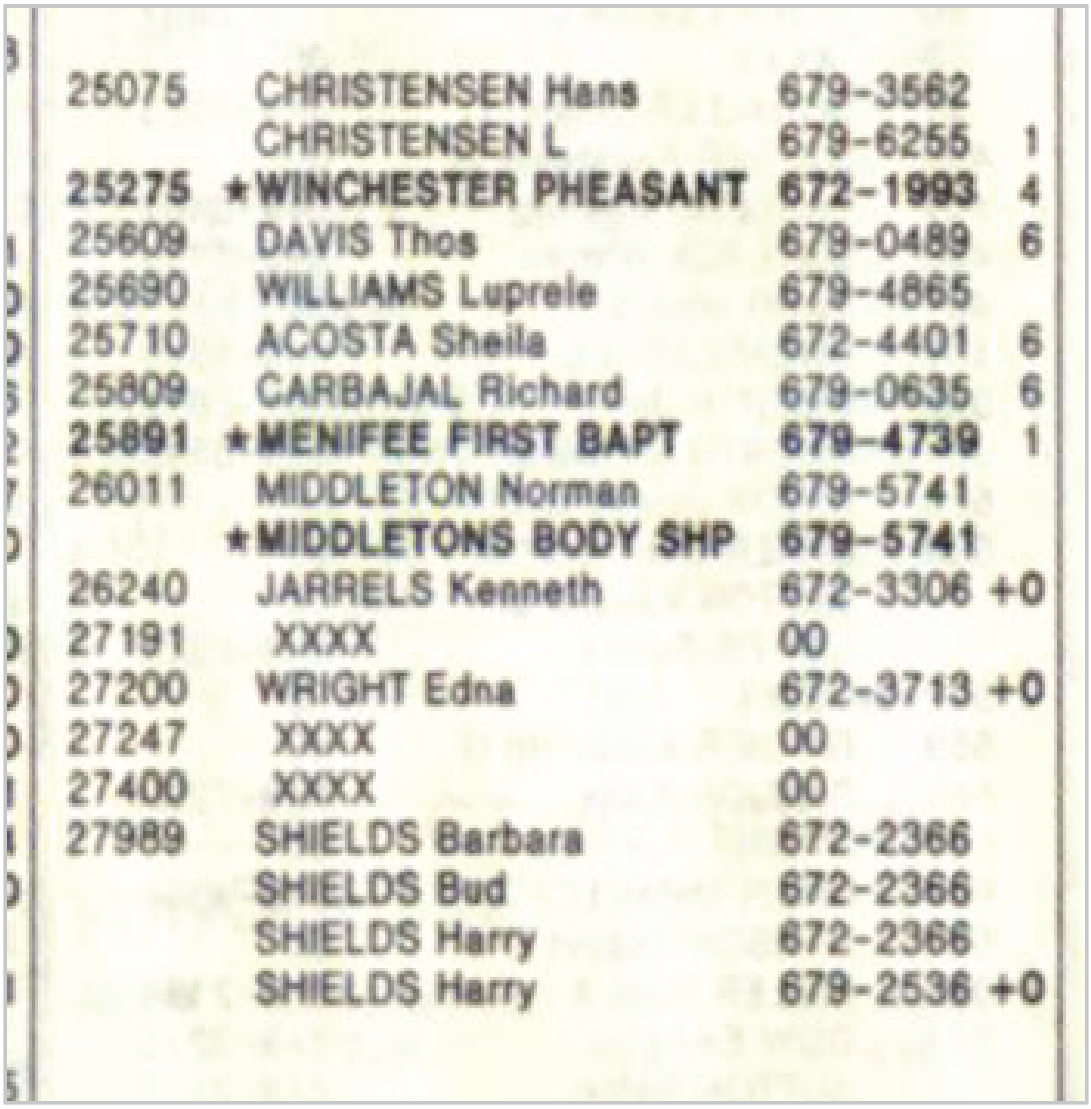
Target Street	Cross Street	Source
✓	-	Cole Information Services

HOLLAND RD 1992

25891	MENIFEE VLY CHURCH
26011	MIDDLETON, NORMAN
	MIDDLETONS BODY SHP
26240	C R PLUMBING
	HANKINS, R
27191	LITTLE STEPS
27200	DEARBORN, JEAN
27350	KAHLE, TOM
27989	SHIELDS, BUD

Target Street	Cross Street	Source
✓	-	Haines Criss-Cross Directory

HOLLAND RD 1990



25075	CHRISTENSEN Hans	679-3562	
	CHRISTENSEN L	679-6255	1
25275	***WINCHESTER PHEASANT**	**672-1993**	4
25609	DAVIS Thos	679-0489	6
25690	WILLIAMS Luprele	679-4865	
25710	ACOSTA Sheila	672-4401	6
25809	CARBAJAL Richard	679-0635	6
25891	***MENIFEE FIRST BAPT**	**679-4739**	1
26011	MIDDLETON Norman	679-5741	
	***MIDDLETONS BODY SHP**	**679-5741**	
26240	JARRELS Kenneth	672-3306	+0
27191	XXXX	00	
27200	WRIGHT Edna	672-3713	+0
27247	XXXX	00	
27400	XXXX	00	
27989	SHIELDS Barbara	672-2366	
	SHIELDS Bud	672-2366	
	SHIELDS Harry	672-2366	
	SHIELDS Harry	679-2536	+0

Target Street	Cross Street	Source
✓	-	Haines Criss-Cross Directory

HOLLAND RD 1985

25075	CHRISTENSEN HANS	679-3562	
	CHRISTENSEN L	679-6255	1
25275	**WINCHESTER PHEASANT**	**672-1993**	4
25401	TIRHEIMER DAVID	679-3723	+5
25509	WADDELL ALFREDA	679-4245	
25609	XXXX	00	
25690	WILLIAMS LUPRELE	679-4865	
25710	XXXX	00	
25809	XXXX	00	
25891	**MENIFEE FIRST BAPT**	**679-4739**	1
26011	MIDDLETON NORMAN	679-5741	
26240	XXXX	00	
26703	WHITCOMB CATHERINE	672-2283	+5
27141	HENNINGS R J	679-7364	2
27191	XXXX	00	
27400	XXXX	00	
27989	SHIELDS BARBARA	672-2366	+5
	SHIELDS BUD	672-2366	+5
	SHIELDS HARRY	672-2366	+5

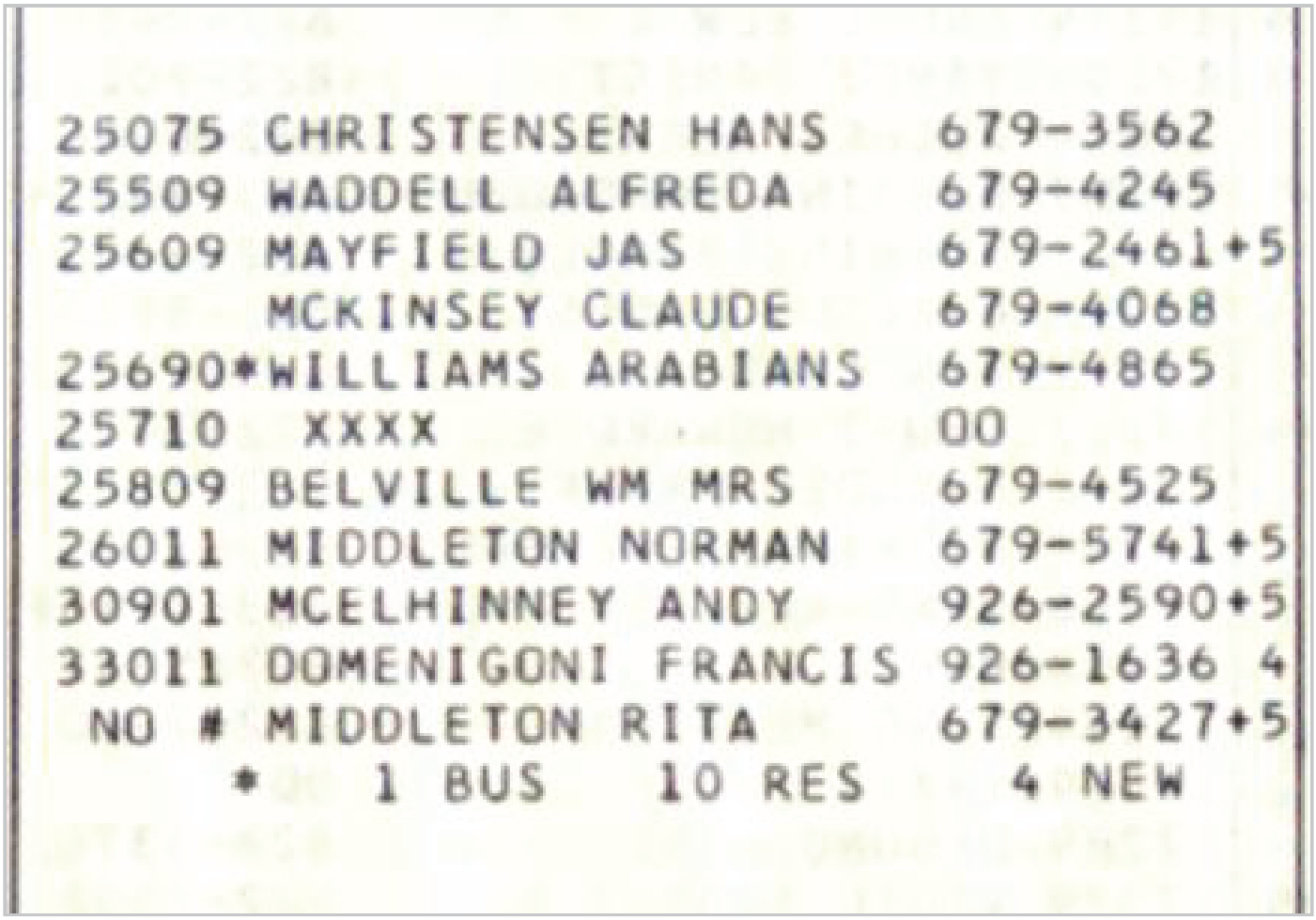
Target Street	Cross Street	Source
✓	-	Haines Criss-Cross Directory

HOLLAND RD 1980

25075	CHRISTENSEN HANS	679-3562	
	GALLAGHER L	679-6255	+0
25401	WEYANDT GEO	679-7836	+0
25509	WADDELL ALFREDA	679-4245	
25609	SHROPSHIRE DANIEL	679-6976	9
25690	WILLIAMS LUPRELE	679-4865	
25710	CUSICK BURDETTE	679-1998	6
	MONTGOMERY BETSY R	679-9393	+0
25809	HAWK B	679-1825	+0
26011	MIDDLETON NORMAN	679-5741	5
26240	BITTNER HAROLD L	679-3254	9
27355	QUILTY PAUL	679-9444	+0
30901	XXXX	00	
30931	THANING STEVE	926-3918	+0
30965	XXXX	00	
30985★	HUNTERS AUTOMOTIVE	926-2567	+0
32490	DNOALD CONRAD C	926-2024	+0
33011	DOMENIGONI FRANCIS	926-1636	4
33555	SMITH FRED	926-2078	8
NO #★	BARNETT CHAS PASTR	679-4739	
★	2 BUS 18 RES	8 NEW	

Target Street	Cross Street	Source
✓	-	Haines Criss-Cross Directory

HOLLAND RD 1975



```
25075 CHRISTENSEN HANS          679-3562
25509 WADDELL ALFREDA           679-4245
25609 MAYFIELD JAS              679-2461+5
      MCKINSEY CLAUDE           679-4068
25690*WILLIAMS ARABIANS         679-4865
25710  XXXX                     OO
25809 BELVILLE WM MRS           679-4525
26011 MIDDLETON NORMAN          679-5741+5
30901 MCELHINNEY ANDY           926-2590+5
33011 DOMENIGONI FRANCIS        926-1636 4
 NO # MIDDLETON RITA            679-3427+5
      *   1 BUS   10 RES    4 NEW
```

APPENDIX E

REGULATORY AGENCY RECORDS

Friday, September 23, 2016

Search Again

Property Information Center

Property Information for the 2014-2015 tax year as of January 1, 2014

Property Information

Parcel Number:	360130003-6
Property Address:	
Legal Description:	N/A
Property Type:	N/A
Assessment Description:	N/A
Year Built	0000
Square Feet:	N/A
Bedroom:	N/A
Bath:	N/A
Pool:	N
Lot Size:	37.04 Acres

Sales Information

Last Recorded Document:	07/2003
Recording Number:	0750779

Related Property Information

City Sphere:	MENIFEE
Supervisorial District:	MARION ASHLEY
Landuse Designation:	CITY
Agriculture Preserve:	NOT IN AN AGRICULTURE PRESERVE
School District:	MENIFEE UNION &PERRIS UNION HIGH
Water District:	EMWD
Fema Flood Plan:	FLOOD ZONE A

Assessed Value Information

Land	2,018,719
Full Value	2,018,719
Total Net	2,018,719

Assessment Information

Assessment Number:	360130003-6
Tax Rate Area:	026-016
Taxability Code:	0-00
Base Year:	2003

Parcel Map

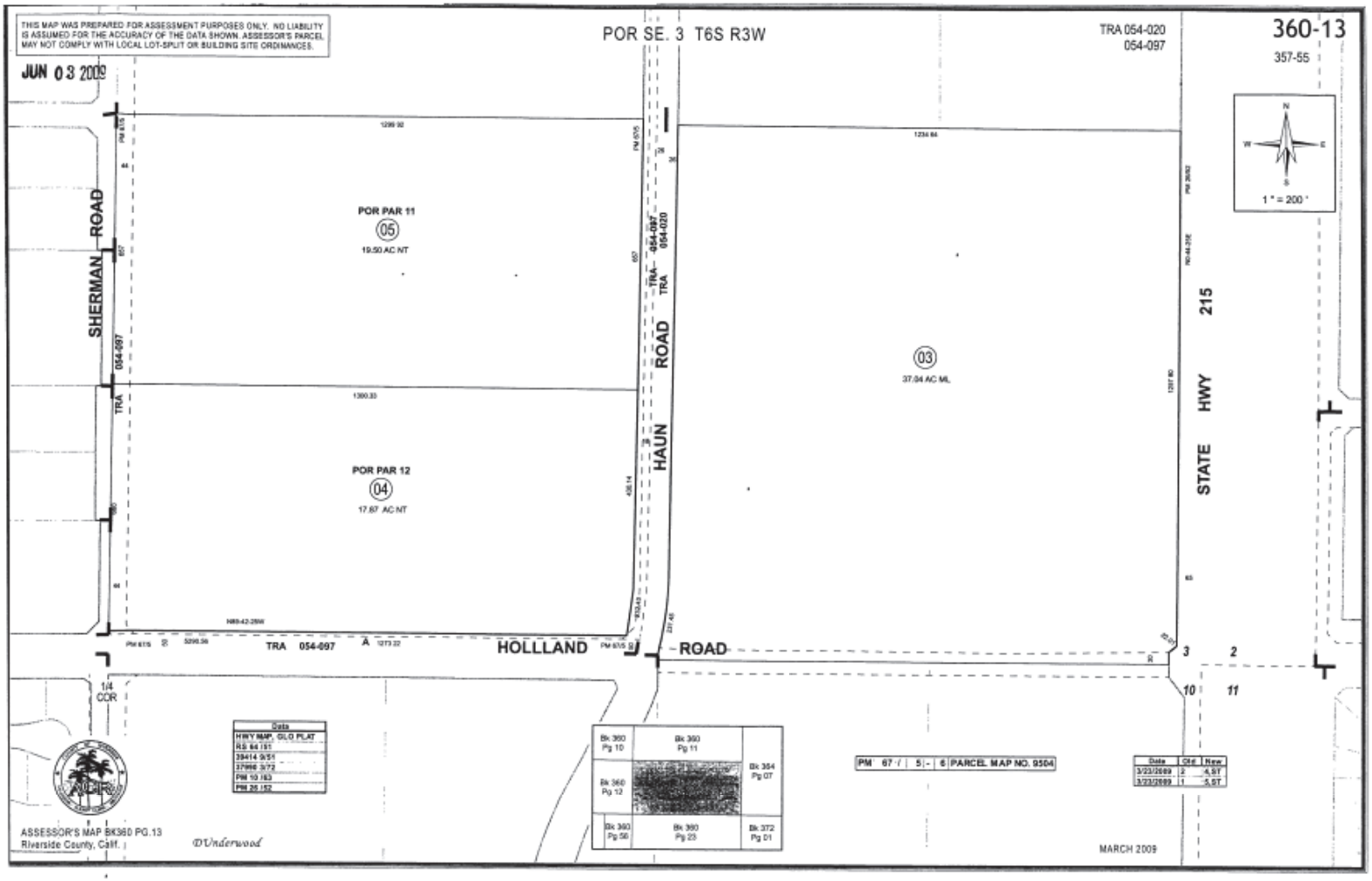
View Parcel Map

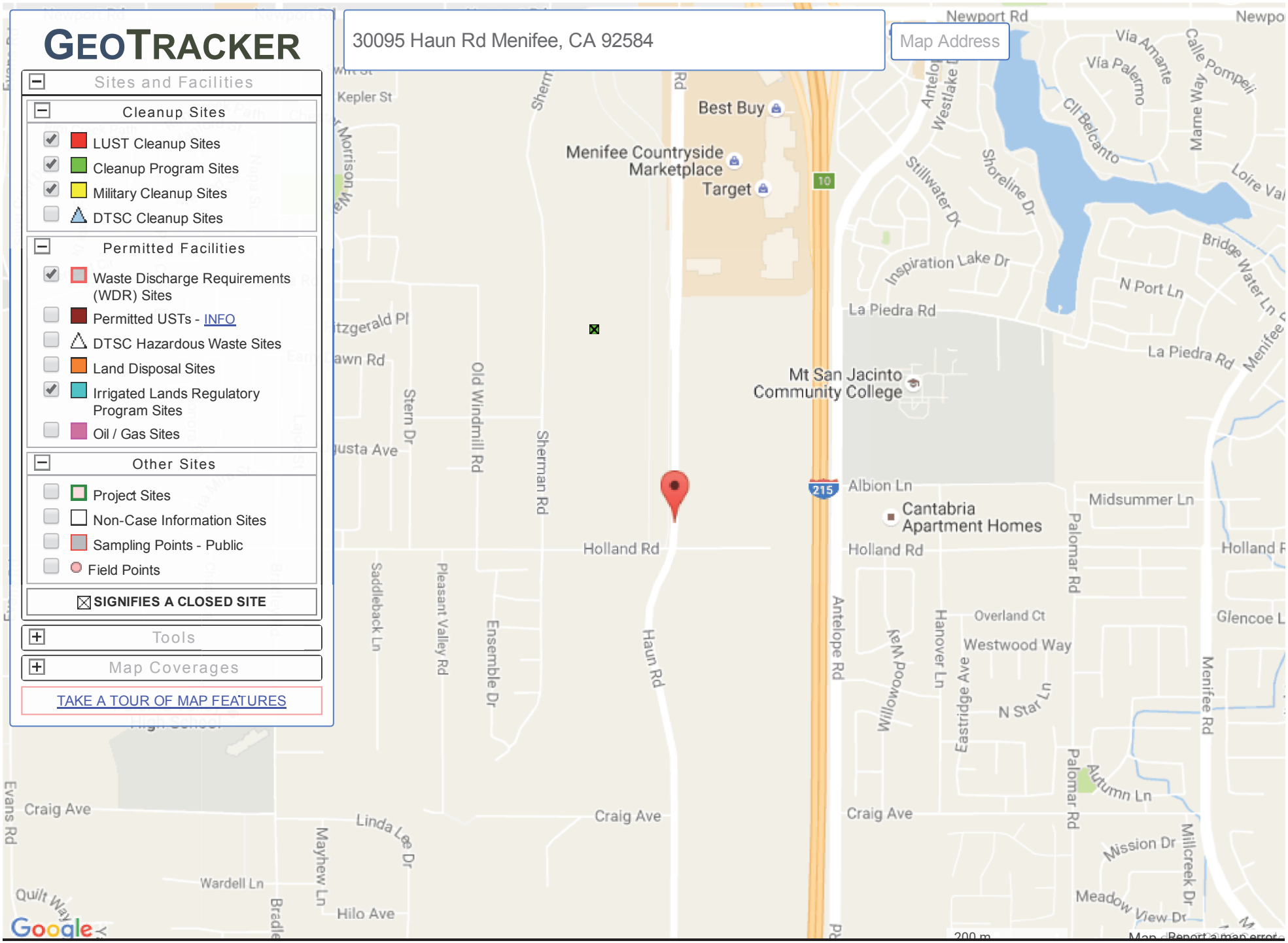
Tax Assessment District N/A

Parcel Number: 360130003-6
Map Book: 360
Page/Block: 130
Parcel: 3
Check Digit: 6

HOW TO READ THE ASSESSOR'S MAP PAGE

The numerical parcel number on a map page consists of three main segments. The first three digits is the map book number. The second set of three numbers is the page/block number, and the third segment identifies the parcel number.


THIS MAP WAS PREPARED FOR ASSESSMENT PURPOSES ONLY. NO LIABILITY IS ASSUMED FOR THE ACCURACY OF THE DATA SHOWN. ASSESSOR'S PARCEL MAY NOT COMPLY WITH LOCAL LOT-SPLIT OR BUILDING SITE ORDINANCES.
JUN 03 2009
POR SE. 3 T6S R3W
TRA 054-020
054-097
360-13
357-55
SHERMAN ROAD
POR PAR 11
05
19.50 AC NT
POR PAR 12
04
17.87 AC NT
HAUN ROAD
03
37.04 AC ML
STATE HWY 215
HOLLLAND ROAD
TRA 054-097
1/4 COR
1" = 200'
ASSESSOR'S MAP BK360 PG.13
Riverside County, Calif.
MARCH 2009
PM 67 / 5 - 6 PARCEL MAP NO. 9504



SITES CURRENTLY VISIBLE ON MAP

STATE WATER RESOURCES CONTROL BOARD
GEOTRACKER

CASE SUMMARY

REPORT DATE | HAZARDOUS MATERIAL INCIDENT REPORT FILED WITH OES?

I. REPORTED BY -
UNKNOWN

CREATED BY
UNKNOWN

III. SITE LOCATION

FACILITY NAME
Santa Rosa Academy Charter School

FACILITY ID

FACILITY ADDRESS
27587 La Piedra Road
Menifee, CA 92586
RIVERSIDE COUNTY

ORIENTATION OF SITE TO STREET

CROSS STREET
Haun Road

V. SUBSTANCES RELEASED / CONTAMINANT(S) OF CONCERN

VI. DISCOVERY/ABATEMENT

DATE DISCHARGE BEGAN

DATE DISCOVERED | HOW DISCOVERED | DESCRIPTION

DATE STOPPED | STOP METHOD | DESCRIPTION

VII. SOURCE/CAUSE

SOURCE OF DISCHARGE | CAUSE OF DISCHARGE

DISCHARGE DESCRIPTION

VIII. CASE TYPE

CASE TYPE

IX. REMEDIAL ACTION

NO REMEDIAL ACTIONS ENTERED

X. GENERAL COMMENTS

XI. CERTIFICATION

I HEREBY CERTIFY THAT THE INFORMATION REPORTED HEREIN IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE.

XII. REGULATORY USE ONLY

LOCAL AGENCY CASE NUMBER
SR0025507

REGIONAL BOARD CASE NUMBER

LOCAL AGENCY

CONTACT NAME	INITIALS	ORGANIZATION_NAME	EMAIL ADDRESS
SHARON BOLTINGHOUSE	SCB	RIVERSIDE COUNTY LOP	sbolting@rivcocha.org

ADDRESS | CONTACT DESCRIPTION

3880 LEMON ST SUITE 200 RIVERSIDE, CA 92501	County of Riverside Department of Environmental Health -- Associate Public Health Professional Geologist

PHONE TYPE	PHONE NUMBER	EXTENSION
Phone	(951)-955-8980	

REGIONAL BOARD

UNKNOWN

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COUNTY OF RIVERSIDE
DEPARTMENT OF ENVIRONMENTAL HEALTH

July 26, 2012

RCDEH-ECP Site: SR0025507

Duncan Walker, PG
Senior Geologist
Converse Consultants
10391 Corporate Dr.
Redlands, CA 92374

RE: Proposed Santa Rosa Academy Charter School located at 27587 La Piedra Road, City of Menifee in Riverside County. City of Menifee Public Use Permit No. 2011-165, APNs 360-110-013 and 360-110-015 (Previously APNs 360-110-010 and 360-110-011).

Dear Mr. Walker:

As stated in your *Response To Rcdeh-Ecp* letter dated July 24, 2012, the "Preliminary Environmental Assessment Report" (PEA) dated June 28, 2012 states that "agricultural/water wells were identified to be historically present on the "Property". No evidence of these wells, if extant, was observed during field activities on the Site". The PEA also states that "A prior Update Phase I ESA by Converse in August 2006 also indicated the Property was historically used for agriculture and also identified the potential presence of agricultural/water wells". Please provide a copy of the Converse Consultants, Update Phase I Environmental Site Assessment dated August, 23, 2006 for our records.

Review of RCDEH records indicate that an agriculture well was installed on APN 360-110-015, formerly APNs 360-110-011 and 360-110-002. A permit to abandon the well was issued on July 31, 2007 but completion of the work was never submitted. The well must but destroyed according to the DWR Well Standards[1] and the California Water Code[2]. Please submit a well completion report to show that the well was properly destroyed or destroy the well according to the well standards. A copy of the well destruction permit is attached for your reference. The permit also includes a map indicating the location of the well.

The City of Menifee can determine if grading can begin on the adjacent parcel as to not interfere with well destruction activities or until documentation of the destruction is submitted to RCDEH.

If you have any further questions, please contact me at (951) 955-8982 or ayreyes@rivcocha.org.

Sincerely,

Yvonne Reyes

Yvonne Reyes, REHS
Environmental Health Specialist IV

cc: Lisa Gordon, Senior Planner, City of Menifee, lgordon@cityofmenifee.us.
Brad Burke, Competitive Edge Development, LLC, bradb@compedgedev.com

---

[1] DWR Well standards: CHAPTER II. STANDARDS, Part III. Destruction of Wells, Section 20. Purpose of Destruction. A well that is no longer useful Note 21 (including exploration and test holes) must be destroyed in order to: 1. Assure that the groundwater supply is protected and preserved for further use. 2. Eliminate the potential physical hazard.

[2] CALIFORNIA WATER CODE: 13751.a) Every person who digs, bores, or drills a water well, cathodic protection well, groundwater monitoring well, or geothermal heat exchange well, abandons or destroys such a well, or deepens or reperforates such a well, shall file with the department a report of completion of that well within 60 days from the date its construction, alteration, abandonment, or destruction is completed.

COUNTY OF RIVERSIDE
DEPARTMENT OF ENVIRONMENTAL HEALTH

July 21, 2012

RCDEH-ECP: SR0025507

Lisa Gordon
Senior Planner
City of Menifee
29714 Haun Road
Menifee, CA 92586

RE: Proposed Santa Rosa Academy Charter School located at 27587 La Piedra Road, City of Menifee in Riverside County. City of Menifee Public Use Permit No. 2011-165, APNs 360-110-013 and 360-110-015 (Previously APNs 360-110-010 and 360-110-011).

Project Proposal: City of Menifee Public Use Permit No. 2011-165 proposes a charter school for grades K-12 including administration buildings, library, classrooms, theater, gym and sports fields within a 27.22 gross acre site located on the southwest corner of Haun Road and La Piedra Road.

Dear Ms. Gordon,

The Riverside County Department of Environmental Health-Environmental Cleanup Programs (RCDEH-ECP) has reviewed the Preliminary Environmental Assessment Report (Converse Consultants, June 12, 2012, Revised June 28, 2012) and other environmental assessment documents related to this Site. The Preliminary Environmental Assessment Report (PEA) was conducted for the Site in general conformance with DTSC guidance documents. The PEA documents the results of the environmental assessment that was performed to evaluate the potential for agricultural chemicals in the soil associated with historic agricultural use and the potential for the past application of sewage sludge as fertilizer.

According to the document the Site does not pose a risk to human health or the environment based on the PEA screening level risk assessment. The PEA recommends No Further Action for the Site.

Based on the information provided in the Preliminary Environmental Assessment Report dated June 12, 2012 (revised June 28, 2012) and site visits conducted by RCDEH-ECP staff, and with the provision that the information provided was accurate and representative of site conditions, RCDEH-ECP concurs with the conclusions of the PEA that No Further Action is necessary and recommends the City of Menifee provide clearance for Public Use Permit No. 2011-165.

As with any real property, if a previously unidentified release or threatened release of a hazardous material or the presence of a naturally occurring hazardous material is discovered during development at the site, construction activities shall cease and RCDEH-ECP notified immediately. Additionally, further assessment and/or cleanup may be required.

Please be advised that RCDEH-ECP's review of the PEA was conducted solely to determine if

the recognized environmental conditions identified at this site pose a threat to human health or the environment. RCDEH-ECP's acceptance of this document does not constitute a determination that "all appropriate inquiry" has been conducted within the meaning of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 U. S. C § 9601(35)(B)).

Additionally, two inactive agriculture water wells were identified in the previous assessment conducted at this property. These wells must be located and destroyed in accordance with State and County guidelines prior to development.

If you have any questions, please contact me at (951) 955-8982 or by email at ayreyes@rivcocha.org.

Sincerely,

Yvonne Reyes

Yvonne Reyes, REHS
Environmental Health Specialist IV

Reviewed by:

Sharon Boltinghouse

Digitally signed by Sharon Boltinghouse
Date: 2012.07.23 20:33:07 -07'00'

Sharon Boltinghouse, P.G.
Associate Public Health Professional Geologist

cc: Brad Burke, Competitive Edge Development, LLC, bradb@compedgedev.com

PRELIMINARY ENVIRONMENTAL ASSESSMENT REPORT PROPOSED SANTA ROSA ACADEMY 27587 LA PIEDRA ROAD MENIFEE, CALIFORNIA 92584

Prepared For:

Santa Rosa Academy
c/o Competitive Edge Development, LLC
27250 Via Industria, Suite B
Temecula, California 92590

Converse Project No. 12-16-115-02

June 12, 2012

Prepared By:

Converse Consultants
10391 Corporate Drive
Redlands, California 92374
(909) 796-0544

Converse Consultants

Geotechnical Engineering, Environmental and Groundwater Science, Inspection and Testing Services

June 12, 2012

Santa Rosa Academy
c/o Mr. Bradley A. Burke, Partner
Competitive Edge Development, LLC
27250 Via Industria, Suite B
Temecula, California 92590

Subject: **PRELIMINARY ENVIRONMENTAL ASSESSMENT REPORT**
Proposed Santa Rosa Academy
27587 La Piedra Road
Menifee, California 92584
APN: 360-110-010
Converse Project No. 12-16-115-02

Mr. Burke:

Converse Consultants (Converse) has prepared this Preliminary Environmental Assessment (PEA) Report documenting the results of a PEA conducted at the subject property (Site). This PEA Report incorporates responses to comments by the Riverside County Department of Environmental Health from its review of advance submittals of PEA Report portions.

We appreciate the opportunity to be of continued service to Santa Rosa Academy. If you should have any questions or comments regarding the contents of this PEA Report, please contact either Duncan Walker or Scott Nunes at (909) 796-0544.

CONVERSE CONSULTANTS

Duncan Walker, PG
Senior Geologist

Scott M. Nunes, CHMM, REA
Senior Manager

Norman S. Eke
Managing Officer

Dist.: 3/Addressee
1/Ms. Sharon Boltinghouse, Riverside County Department of Environmental Health

DW/SMN/NSE

10391 Corporate Drive, Redlands, California 92374
Telephone: (909) 796-0544 ♦ Facsimile: (909) 796-7675 ♦ www.converseconsultants.com

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EXECUTIVE SUMMARY

This Preliminary Environmental Assessment (**PEA**) Report documents the results of a PEA conducted for the Proposed Santa Rosa Academy (**SRA**), a charter school to be located at 27587 La Piedra Road, City of Menifee, Riverside County, California (**Site**). This PEA Report incorporates responses to comments by the Riverside County Department of Environmental Health (**RCDEH**) from its review of advance submittals of PEA Report portions; the comments were contained in an email message dated June 4, 2012. The PEA was conducted by Converse Consultants (**Converse**) on behalf of the SRA.

In December 2004, Converse conducted a Phase I and Limited Phase II Environmental Site Assessment (**ESA**), the results of which are documented in a *Phase I and Limited Phase II ESA Report* dated December 21, 2004. In September 2011, Converse conducted a second Phase I ESA, the results of which are documented in a *Phase I ESA Report* dated September 8, 2011; the 2011 Phase I ESA updated the 2004 Phase I and Limited Phase II ESA. The 2004 Phase I and Limited Phase II ESA involved a larger 236-acre "Property". The 2011 Phase I ESA involved an approximately 168-acre "Property" and did not include a northeastern portion, which was part of the 2004 236-acre "Property". The Site consists of an approximate 25-acre parcel in the south-center of the 2011 168-acre "Property".

In the 2011 *Phase I ESA Report*, Converse identified the following Historical Recognized Environmental Condition (**HREC**) in connection with the Site: the Site, as well as the 2011 "Property" of which it is a part, was historically used for agriculture as early as 1949 until approximately 2005. Due to the findings of the 2004 *Phase I and Limited Phase II ESA Report*, the undocumented soil mound/piles on the "Property", which are not located on the Site, are not a Recognized Environmental Condition (**REC**). The 2011 *Phase I ESA Report* had the following conclusions and recommendations: The 2004 *Phase I and Limited Phase II ESA Report* included an evaluation of the potential presence of agricultural chemicals and to evaluate the undocumented fill mound/piles. Concentrations of agricultural chemicals and constituents in the undocumented fill mound/piles are less than regulatory and guidance levels. Further assessment does not appear warranted.

In March 2012, Converse conducted a second Limited Phase II ESA, the results of which are documented in a *Limited Phase II ESA Report* dated March 27, 2012. The 2012 Limited Phase II ESA involved only the Site, and was an initial assessment of potential past application of sewage sludge to the Site as fertilizer. The shallow soil samples from nine borings (B1 through B9) were composited in groups of three samples each. The resulting three composite soil samples were each analyzed for Total Threshold Limit Concentration (**TTLC**) metals. The TTLC metals analytical results for all metals excluding TTLC arsenic are less than California Human Health Screening Levels for Residential Land Use (**CHHSL-Rs**), and those for TTLC arsenic are less than the Department of Toxic Substances Control (**DTSC)** Soil Screening Level (**SSL**). The

2012 TTLC metals analytical results are part of this PEA and are discussed in subsequent PEA Report sections.

After preparation of the 2012 *Limited Phase II ESA Report*, the soil samples from the nine 2012 Limited Phase II ESA borings were additionally analyzed as an initial assessment of past agricultural use of the Site. Six composite soil samples were additionally analyzed for organochlorine pesticides (**OCPs**), and three discrete soil samples were additionally analyzed for TTLC arsenic. The 2012 OCPs analytical results are generally similar to those for the 2004 soil samples, and are all less than corresponding CHHSL-Rs for OCPs. The 2012 TTLC arsenic analytical results are all less than the DTSC SSL. The 2012 OCPs and TTLC arsenic analytical results are part of this PEA and are discussed in the PEA Report.

The objectives of this PEA are to evaluate the following:

- The HREC consisting of potential agricultural chemicals (OCPs and arsenic) in the soil associated with historic agricultural use of the Site; and
- An additional environmental concern consisting of potential past application of sewage sludge to the Site as fertilizer.

School District: Menifee Union School District

Site Designation: Proposed Santa Rosa Academy

Site Location: Parcel located at 27587 La Piedra Road, City of Menifee, Riverside County, California 92584

Site Description: Approximate 25-acre rectangular parcel
Historical agricultural activity conducted onsite: The Site is unoccupied vacant land.

Type of School Site: Proposed elementary, middle and high school

Type of School Proposed: Grade levels K-12

Intended Use of the Site: Entire Site to be used for proposed charter school.

Summary of Investigation

To evaluate the HREC and the other area of potential environmental concern, 45 soil borings (including three co-located duplicate borings) were advanced on the Site to depths ranging from approximately 0.5 to 3 feet below ground surface (**bgs**) using Geoprobe (direct-push) methods. These 45 soil borings include the following: the nine borings (B1 through B9) from the 2012 Limited Phase II ESA, 26 initial borings (B10 through B35) and ten stepout/stepdown borings. One or two soil samples were collected from each boring at approximately 0.5 foot to 3 feet bgs.

Selected discrete and/or composite soil samples were analyzed for OCPs, TTLC arsenic, TTLC metals and/or coliform bacteria. All soil sample analytical results for all OCPs and TTLC metals are less than corresponding CHHSL-Rs and/or DTSC SSLs,

including CHHSL-Rs and DTSC SSLs that were proportionally reduced for comparison to composite samples. There are no regulatory or guidance levels for coliform bacteria.

The analytical results for Total coliform (**Tc**) are negative or very small and for E. coli (**Ec**) are all negative for the initial 29 soil samples (including three duplicates), with one exception. Significant Tc & Ec analytical results were encountered in one initial soil sample (B24-0.5) from boring B24 in the north-center of the Site. The significant Tc & Ec analytical results in B24-0.5 prompted collection and analysis of a co-located duplicate to B24-0.5, as well as stepout and stepdown samples, to confirm and delineate the area of soil with significant Tc and Ec analytical results. The analytical results for the co-located duplicate to the initial sample, as well as for the stepout and stepdown samples indicate that the shallow soil with significant Tc and Ec analytical results extends approximately 2½ feet laterally from B24 and approximately 1½ feet deep.

The calculated risk index for the Site is 0.950 or 9.50×10^{-7}, based on the Site Maximum Concentrations for one OCP, 4,4'-dichlorodiphenyldichloroethylene (**DDE**), and seven metals, and the proportionally-reduced Method Detection Limits (**MDLs**) for the remaining OCPs and TTLC metals (excluding TTLC arsenic) which are Not Detected (**ND**) in all soil samples analyzed. The total Site risk index, 9.50×10^{-7} (equivalent to 0.950×10^{-6}), is less than the target risk goal of 1×10^{-6}. Accordingly, no further evaluation of the Site risk was conducted.

Conclusions

The objectives of this PEA, to determine whether current or past hazardous material management practices or waste management practices have resulted in a release or threatened release of hazardous materials, or whether naturally occurring hazardous materials are present, which pose a threat to children's health, children's learning abilities, public health or the environment, have been met. The following are conclusions from this PEA.

- A minor release of one OCP (DDE) has apparently occurred on the Site from past application of pesticides. This PEA has satisfactorily assessed this apparent minor release of OCPs.
- There was apparently no past application of sewage sludge on the Site as fertilizer, based on soil sample analytical results for TTLC metals and coliform bacteria.
- No naturally-occurring hazardous material is present on the Site.
- All soil sample analytical results for all analytes are less than corresponding CHHSL-Rs and/or DTSC SSLs, which have been proportionally reduced prior to comparison with composite sample analytical results.
- Significant initial Tc & Ec analytical results were encountered in one initial soil sample (B24-0.5) from boring B24 in the north-center of the Site. There are no regulatory or guidance levels for Tc and Ec.
- The significant Tc & Ec analytical results in B24-0.5 prompted collection and analysis of a co-located duplicate to B24-0.5, as well as stepout and stepdown

samples, to confirm and delineate the area of soil with initial significant Tc and Ec analytical results.

- The co-located duplicate sample to B24-0.5, as well as the stepout and stepdown samples, satisfactorily delineated the shallow soil with significant Tc and Ec analytical results. The sample analytical results indicate that it extends approximately 2½ feet laterally from B24 and approximately 1½ feet deep, and it comprises an estimated 1.1 cubic yards.
- The calculated total Site risk is 9.50×10^{-7}, using the Site Maximum Concentrations for DDE and seven TTLC metals and the MDLs for the other analytes (excluding TTLC arsenic) that are ND in all Site soil samples. TTLC arsenic was not included in the risk calculations because the DTSC SSL is not risk based, unlike the-risk based CHHSL-Rs for the other analytes.
- The total Site risk, 9.50×10^{-7} (equivalent to 0.950×10^{-6}), is less than the target risk goal of 1×10^{-6}. Accordingly, no further evaluation of the Site risk was conducted.
- TTLC arsenic is ND in all Site soil samples, and the MDL for TTLC arsenic is less that the DTSC SSL, including proportionally-reduced DTSC SSLs for composite soil samples.

Recommendations

No Further Action (**NFA**) is recommended for the Site. This NFA recommendation is conditional on removal of the large mound of fill in the eastern portion of the Site, as well as a number of small fill piles in the northeast, prior to or concurrent with school development and construction.

In addition, Converse stated in the 2011 *Phase I ESA Report* that agricultural/water wells were identified to be historically present on the "Property". No evidence of these wells, if extant, was observed during field activities on the Site. If, however, one or more wells are found on the Site during school development and construction, then the well(s) should be properly abandoned in accordance with applicable local and state rules and regulations.

ABBREVIATIONS AND ACRONYMS

APN: Assessor's Parcel Number
bgs: below ground surface
Cal-EPA: California Environmental Protection Agency
CH: chlorinated herbicide
CHHSL-R: California Human Health Screening Level for Residential Soil
COC: Chemical of Concern
COPC: Chemical of Potential Concern
CSM: Conceptual Site Model
CY: cubic yard
DDE: 4,4'-dichlorodiphenyldichloroethylene
DOGGR: Department of Conservation, Division of Oil, Gas and Geothermal Resources
DTSC: Department of Toxic Substances Control
Ec: E. coli
EDR: Environmental Data Resources
EIR: Environmental Impact Report
EMWD: Eastern Municipal Water District
EPA: United States Environmental Protection Agency
EPC: Exposure Point Concentration
ESA: Environmental Site Assessment
ESL: Environmental Screening Level
HASP: Health and Safety Plan
HHSE: Human Health Screening Evaluation
HREC: Historical Recognized Environmental Condition
IDW: investigation-derived waste
LCS: laboratory control spike
LUST: leaking underground storage tank
MDL: Method Detection Limit
mg/kg: milligrams per kilogram
mg/L: milligrams per liter
MPN/g: most probable number per gram
MS: matrix spike
MSD: matrix spike duplicate
MSL: Mean Sea Level
MSSL: Maximum Soil Screening Level
NAAQS: National Ambient Air Quality Standard
ND: not detected
NFA: No Further Action
OCP: organochlorine pesticide
OEHHA: Office of Environmental Health Hazard Assessment
OPP: organophosphorous pesticide
ORNL: Oakridge National Laboratory
OSFM: Office of the State Fire Marshall
PCBs: polychlorinated biphenyls
pCi/L: picocuries per liter of air
PEA: Preliminary Environmental Assessment
PG: California Professional Geologist
PID: photoionization detector
PPE: personal protective equipment
ppm: parts per million
PQL: Practical Quantitation Limit
QA: Quality Assurance
QA/QC: Quality Assurance/Quality Control
QAPP: Quality Assurance Project Plan
QC: Quality Control
RA: Removal Action
RAGS: Risk Assessment Guidance for Superfund
RAIS: Risk Assessment Information System
RAW: Removal Action Workplan
RCRA-LQG: Resource Recovery and Conservation Act large quantity generator
RCRA-SQG: Resource Recovery and Conservation Act small quantity generator
RDL: Reporting Detection Limit
REC: Recognized Environmental Condition
RfC: reference concentration
RfD: reference dose
RPD: Relative Percent Difference
SARWQCB: Santa Ana Regional Water Quality Control Board
SCH: School Property Evaluation Program
SRA: Santa Rosa Academy
SSL: DTSC Soil Screening Level
STLC: Soluble Threshold Limit Concentration
SWRCY: State Wide Recycling Facility
TPH: total petroleum hydrocarbons
Tc: Total coliform
TC: Maximum Concentrations of Contaminants for the Toxicity Characteristic
TTLC: Total Threshold Limit Concentration
UCL: Upper Confidence Level
USA: Underground Service Alert
USDA: United States Department of Agriculture
USGS: United States Geologic Survey
UST: underground storage tank
VOCs: volatile organic compounds
WRCC: Western Regional Climate Center

1.0 INTRODUCTION

1.1 Introduction

This Preliminary Environmental Assessment (**PEA**) Report documents the results of a PEA conducted for the Proposed Santa Rosa Academy, a charter school to be located at 27587 La Piedra Road, City of Menifee, Riverside County, California (**Site**). This PEA Report incorporates responses to comments by the Riverside County Department of Environmental Health (**RCDEH**) from its review of advance submittals of PEA Report portions; the comments were contained in an email message dated June 4, 2012.

The PEA was conducted by Converse Consultants (**Converse**) on behalf of the Santa Rosa Academy (**SRA**) in general accordance with the following:

- *Preliminary Endangerment Assessment Guidance Manual*, Department of Toxic Substances Control (**DTSC**), January 1994, second printing June 1999.
- *Interim Guidance for Sampling Agricultural Properties (Third Revision)*, DTSC, August 7, 2008.
- *Interim Guidance, Evaluation of School Sites with Potential Soil Contamination as a Result of Lead from Lead-Based Paint, Organochlorine Pesticides from Termiticides and Polychlorinated Biphenyls from Electrical Transformers*, DTSC, Revised June 9, 2006.
- *Phase I and Limited Phase II Environmental Site Assessment (**ESA**) Report*, Converse, December 21, 2004.
- *Phase I ESA Report*, Converse, September 8, 2011.
- *Limited Phase II ESA Report*, Converse, March 27, 2012.

School District: Menifee Union School District

Site Designation: Proposed Santa Rosa Academy

SRA Contact: Ms. Laura Badillo
Executive Director/Principal
Santa Rosa Academy
28237 La Piedra Road
Menifee, CA 92584
Phone (951) 672-2400, Fax (951) 672-6060
lbadillo@santarosaacademy.org

Site Location: 27587 La Piedra Road, City of Menifee, Riverside County, California 92584

Type of School Site: Proposed elementary, middle and high school

Type of School Proposed: Grade levels K-12

Intended Use of the Site: Entire Site to be used for proposed charter school.

Disposition of Existing Structures: The Site is vacant.

Water Supply Source: Eastern Municipal Water District (**EMWD**)

1.2 PEA Report Organization

This PEA Report is organized as follows:

- Section 1.0 is the Introduction, including the Purpose and Scope of Work for the PEA.
- Section 2.0 discusses the Site Description, including the Site History and Previous Assessments.
- Section 3.0 discusses RECs and Chemicals of Potential Concern (**COPCs**).
- Section 4.0 discusses the Environmental Setting.
- Section 5.0 presents the Conceptual Site Model (**CSM**).
- Section 6.0 presents Data Gaps.
- Section 7.0 is a Summary of Sampling Activities.
- Section 8.0 discusses Quality Assurance and Quality Control (**QA/QC**) program.
- Section 9.0 discusses Health and Safety.
- Section 10.0 is an Environmental Migration Screening Evaluation.
- Section 11.0 discusses the Human Health Screening Evaluation (**HHSE**).
- Section 12.0 discusses Public Participation.
- Section 13.0 discusses Compliance with Additional Regulatory Requirements.
- Section 14.0 presents Findings.
- Section 15.0 presents Conclusions and Recommendations.
- Section 16.0 lists the References cited in this PEA Report.
- Section 17.0 presents the Signature and Qualifications of the Responsible Professional.

A Quality Assurance Project Plan (**QAPP**) is included in Appendix A. A project Health and Safety Plan (**HASP**) is included in Appendix B. Copies of the 2004 *Phase I and Limited Phase II ESA Report*, 2011 *Phase I ESA Report*, and 2012 *Limited Phase II ESA Report* are included on CD in Appendix C. Laboratory reports and chain of custody documentation for soil sample analyses are included in Appendix D. A Data Validation Memorandum is included in Appendix E.

1.3 Purpose

The RCDEH has required that a PEA be conducted and a PEA Report be prepared for the proposed Site in general accordance with DTSC procedures. The objective of the PEA is to determine whether current or past hazardous material management practices or waste management practices have resulted in a release or threatened release of hazardous materials, or whether naturally occurring hazardous materials are present, which pose a threat to children's health, children's learning abilities, public health or the environment. The objectives of the PEA include:

- Evaluating historical information for indications of the past use, storage, disposal, or release of hazardous wastes/substances at the Site by evaluating existing data and gathering additional data as needed.
- Establishing, through a field sampling and analysis program, the nature of hazardous wastes/substances that may be present in soil, surface water, or groundwater at the Site, their concentration and general extent. The PEA assessment is typically not designed to fully characterize the lateral and vertical extent of contamination at the Site.
- Estimating the potential threat to public health and/or the environment posed by hazardous constituents at the Site using a residential land use scenario.

Based on information developed during the PEA, the RCDEH will make an informed decision regarding potential risks posed by the Site. Possible outcomes of the RCDEH's decision include the potential requirement for further investigation through either one or a combination of the following:

- Initiating the Removal Action (**RA**) process if the Site is found to be significantly impacted by hazardous substances release(s);
- Initiating an expedited response action; or
- Issuing a "No Further Action" (**NFA**) finding if the Site is found not to be significantly impacted and risks to human health and the environment are found to be within acceptable levels based on the PEA screening level risk assessment.

1.4 Summary of Previous Environmental Site Assessments

1.4.1 2004 Phase I and Limited Phase II ESA

In December 2004, Converse conducted a Phase I and Limited Phase II ESA, the results of which are documented in the 2004 *Phase I and Limited Phase II ESA Report* (Converse, December 21, 2004). The "Property" referenced in 2004 Phase I and Limited Phase II ESA consisted of a 236-acre agricultural parcel. The Site occupies the south-center of this "Property". In the 2004 *Phase I and Limited Phase II ESA Report*, Converse identified the following three Recognized Environmental Conditions (**RECs**) in connection with this "Property":

- *Historical information indicates that the "Property" appears to have been occupied primarily by agricultural fields from at least 1949 until the present. Agricultural chemical residues may potentially be found in the soil. Further assessment (soil sampling) has been completed to evaluate subsurface conditions due to potential agricultural runoff as noted below.*
- *The western portion of the "Property" was observed to be covered with several undocumented fill piles and one large fill mound. Further assessment (soil sampling) has been completed to evaluate the undocumented fill piles/mound as noted below.*

- *Due to the historical use of the "Property" for agriculture, there is a potential that asbestos-containing transite irrigation lines may exist underground. Converse has completed exploratory trenching as noted below.*

The 2004 Limited Phase II ESA consisted of advancing and soil sampling 19 borings using Geoprobe (direct push) methods to assess the first two RECs. Sixteen of the borings were advanced and soil sampled to assess the former agricultural use. The remaining three borings were advanced and soil sampled to assess the undocumented fill piles and large fill mound.

The third REC, the potential for subsurface transite (asbestos cement) irrigation pipes, was not part of the 2004 Limited Phase II ESA. Four trenches were excavated across "Property" and the east adjacent property, and the pipes observed in the trenches appeared to be either concrete or metal.

Converse concluded the following in the 2004 *Phase I and Limited Phase II ESA Report*: *Based on the results of the Limited Phase II Environmental Site Assessment, the concentrations of agricultural chemical residues in the soil of the "Property" appear to be below regulatory levels. In addition, the concentrations of petroleum hydrocarbons and metals within the undocumented fill mound also appear to be below regulatory levels. Exploratory trenching activities indicated that the composition of subsurface irrigation pipelines appeared to be either concrete or metal. No asbestos-containing transite irrigation lines were detected. Therefore, Converse concludes that no further assessment of the "Property" is warranted at this time.*

The following is a summary of the 2004 Limited Phase II ESA. The 2004 Limited Phase II ESA consisted of advancing and soil sampling 19 borings using Geoprobe (direct push) methods to assess the first two RECs (Figure 6). The discussion of the soil sample analytical results below and in Tables 5 through 7 provides a comparison of the analytical results of the 2004 soil samples to current regulatory/guidance levels.

Sixteen of the 19 borings (AG-1A through AG-4D) were advanced and soil sampled to assess the former agricultural use across the 2004 236-acre "Property". Two of these 16 borings (AG-3A and AG-3B) were located on the Site. Four of the 16 agricultural borings (AG-4A through AG-4D) were located on northeastern portion of the 2004 236-acre "Property", which is not part of the approximately 168-acre "Property" that was assessed during 2011 Phase I ESA. The remaining three borings (GP-1 through GP-3) were advanced and soil sampled to assess the undocumented fill piles and large fill mound which are located on northwestern portion of the 2011 168-acre "Property" but are not on the Site.

The 32 soil samples collected from the 16 agricultural borings were composited (combined) by the laboratory prior to analysis in groups of four samples each from either approximately 0.5 or 2 feet below ground surface (**bgs**). The resulting eight composite samples were each analyzed for organochlorine pesticides (**OCPs**), organophosphorous pesticides (**OPPs**), chlorinated herbicides (**CHs**), and total

petroleum hydrocarbons (**TPH**) as gasoline, kerosene, diesel and motor oil. The sample analytical results for the eight 2004 composite soil samples from the 16 agricultural borings are summarized below and in Table 5.

- 4,4'-dichlorodiphenyldichloroethylene (**DDE**) concentrations range from 0.001 to 0.015 milligrams per kilogram (**mg/kg**) in six of the eight composite samples. The DDE concentration is 0.002 mg/kg in the AG-3A/3B/3C/3D-0.5, the 0.5-foot composite including the soil samples from the two borings on the Site. DDE is not detected (**ND**) above a 0.001-mg-kg laboratory Practical Quantification Limit (**PQL**) in the AG-3A/3B/3C/3D-2, the 2-foot composite including the soil samples from the two borings on the Site.
- All other OCPs, all OPPs, all CHs and all TPH analytical results are ND above PQLs in all eight composite samples.
- All of the OCPs and CHs analytical results are less than corresponding current California Human Health Screening Levels for Residential Land Use (**CHHSL-Rs**) for all eight composite samples. There are no CHHSL-Rs for OPPs.
- All of the TPH analytical results are less than corresponding current Los Angeles Regional Water Quality Control Board Maximum Soil Screening Levels (**MSSLs**) and San Francisco Bay Regional Water Quality Control Board Environmental Screening Levels (**ESLs**) for all eight composite samples.

Twelve soil samples (four from each boring) were collected from the three fill pile/mound borings at approximately 2, 5, 10 and 15 feet bgs. Each of the 12 soil samples was analyzed for TPH and the 17 Total Threshold Limit Concentration (**TTLC**) metals. The sample analytical results for the 2004 soil samples from the three fill pile/mound borings are summarized below and in Tables 6 and 7.

- The TPH motor oil concentration is 214 mg/kg in one of the 12 samples. All other TPH analytical results are ND above PQLs in all 12 samples. All of these TPH analytical results are less than corresponding current MSSLs and ESLs for all 12 samples.
- TTLC arsenic concentrations range from 0.885 to 8.53 mg/kg in 11 of the 12 samples, and TTLC arsenic is ND above the PQL in the remaining sample. All of these TTLC arsenic analytical results are less than DTSC Soil Screening Level (**SSL**) of 12 mg/kg and are considered background levels.
- Concentrations of ten of the remaining 16 TTLC metals range from 0.783 to 160 mg/kg in the 12 samples, and the remaining six TTLC metals are ND above PQLs. All of these TTLC metals analytical results are less than corresponding current CHHSL-Rs for all 12 samples.

The following are concluded based on the analytical results of the 2004 Limited Phase II ESA soil samples:

- The concentrations of agricultural chemical residues in the soil on the "Property" (including the Site) are less than regulatory/guidance levels.

- The concentrations of TPH and metals within the undocumented fill mound/piles in the northwest (not involving the Site) are also less than regulatory/guidance levels.

1.4.2 2011 Phase I ESA

In 2011, Converse conducted a second Phase I ESA, the results of which are documented in a *Phase I ESA Report* dated September 8, 2011; the 2011 Phase I ESA updated the 2004 Phase I and Limited Phase II ESA. The 2011 Phase I ESA involved a smaller approximately 168-acre "Property" and did not include a northeastern portion, which was part of the 2004 236-acre "Property" (Figure 6). The Site is an approximate 25-acre parcel in the south-center of the 2011 168-acre "Property".

In the 2011 *Phase I ESA Report*, Converse identified no RECs and the following Historical Recognized Environmental Condition (**HREC**) in connection with this "Property": the Site, as well as the 2011 "Property" of which it is a part, was historically used for agriculture as early as 1949 until at least 2005. Due to the findings of the 2004 *Phase I and Limited Phase II ESA Report*, the undocumented soil mound/piles on the "Property", which are not located on the Site, are not a REC. The 2011 *Phase I ESA Report* had the following conclusions and recommendations: The 2004 *Phase I and Limited Phase II ESA Report* included a Limited Phase II ESA to evaluate the potential presence of agricultural chemicals and to evaluate the undocumented fill mound/piles. Concentrations of agricultural chemicals and constituents in the undocumented fill mound/piles are less than regulatory and guidance levels. Further assessment does not appear warranted.

1.4.3 2012 Limited Phase II ESA

Converse conducted a second Limited Phase II ESA, the results of which are documented in a *Limited Phase II ESA Report* dated March 27, 2012. The 2012 Limited Phase II ESA involved only the Site, and was an initial assessment of potential past application of sewage sludge to the Site as fertilizer. The shallow (0.5-foot) soil samples from nine borings (B1 through B9) were composited in groups of three samples each. The resulting three composite soil samples were each analyzed for TTLC metals using EPA Methods 6010B/7471A. The TTLC metals analytical results for all metals excluding TTLC arsenic are less than CHHSL-Rs and those for TTLC arsenic less than the DTSC SSL. The 2012 TTLC metals analytical results are part of this PEA and are discussed in Section 7, as well as other PEA Report sections.

After preparation of the 2012 *Limited Phase II ESA Report*, the soil samples from the nine 2012 Limited Phase II ESA borings were additionally analyzed as an initial assessment of past agricultural use of the Site. Six composite soil samples were additionally analyzed for OCPs, and three discrete soil samples were additionally analyzed for TTLC arsenic. The 2012 OCPs analytical results are generally similar to those for the 2004 soil samples, and are all less than corresponding CHHSL-Rs for OCPs. The 2012 TTLC arsenic analytical results are all less than the DTSC SSL. The

2012 OCPs and TTLC arsenic analytical results are part of this PEA and are discussed in subsequent PEA Report sections.

1.5 Objectives and Scope of Work

The objectives and scope of work for the PEA were agreed upon by Converse and the RCDEH during a meeting at its office on May 8, 2012 and confirmed during an email message from Converse to the RCDEH the same day.

The objectives of the PEA are to evaluate the following:

- The HREC consisting of potential agricultural chemicals (OCPs and arsenic) in Site soil associated with historic agricultural use of the Site; and
- An additional environmental concern consisting of potential past application of sewage sludge to the Site as fertilizer.

To evaluate the HREC and the other area of potential environmental concern, the scope of work consisted of advancing and sampling 35 soil borings (B1 through B35) on the Site to depths ranging from approximately 0.5 to 3 feet below ground surface (**bgs**) using Geoprobe (direct-push) methods. These 35 borings include the nine borings from the 2012 Limited Phase II ESA. Two soil samples were collected from each boring at approximately 0.5 and 3 feet bgs. Selected discrete and/or composite soil samples were analyzed for OCPs, TTLC arsenic, TTLC metals and/or coliform bacteria.

The scope of work for the PEA also included additional (stepout/stepdown) soil borings and sampling to delineate significant coliform analytical results associated with one boring location (B24). The delineation consisted of advancing and sampling ten stepout and stepdown soil borings (including three co-located duplicate soil borings) adjacent to B24 to depths of approximately 0.5 or 2 feet bgs using a hand auger. One or two soil samples were collected from each stepout/stepdown boring at depths ranging from approximately 0.5 to 2 feet bgs. Ten stepout/stepdown discrete soil samples (including two co-located field duplicates) were each analyzed for coliform bacteria.

2.0 SITE DESCRIPTION

Site Name

The name for the Site is the proposed Santa Rosa Academy.

Previous Site Names

The Site has no previous names.

U.S. Environmental Protection Agency Identification Number

Review of selected regulatory agency databases did not reveal records of any EPA Identification Numbers for the Site.

ENVIROSTOR Database Number

Review of DTSC records did not reveal any ENVIROSTOR Database Number for the Site.

Site Addresses

The Site address is 27587 La Piedra Road, Menifee, California 92584. The Site is located southeast of the intersection of La Piedra and Sherman Roads, City of Menifee, Riverside County, California (Figure 2).

School District

The Site is in the Menifee Union School District.

Parcel Size

The Site comprises approximately 25 acres.

Assessor's Parcel Numbers and Maps

The Site was formerly comprised of two Assessor's Parcel Numbers (**APNs**), which were: 360-110-010 and Por. 360-110-011 (See Figure 3, Assessor's Parcel Map). The purchase of the Site on June 5, 2012 by SRA, LLC involved a lot line adjustment which consolidated the Site under one APN, 360-110-010. The current legal description of the Site is Parcel A of Lot Line Adjustment 10-002 Menifee, California.

Township, Range, Section and Meridian

Based on a review of the USGS 7½-minute Topographic Series, Romoland, California Quadrangle Map, the Site is located in Section 3, Township 6 South, Range 3 West, San Bernardino Base and Meridian. Figure 1 is based on a portion of the USGS 7½-minute Topographic Series, Romoland, California Quadrangle Map.

Land Use and Zoning

According to the City of Menifee, Planning Department, the current General Plan Land Use is Mixed Use (MU) and the Zoning is Specific Plan (S-P) No. 2009-069 (Menifee Town Center Specific Plan), Planning Area 5.

Geographic Coordinates (Northeast Corner)

Longitude: 117°10' 35" W
Latitude: 33° 40' 39" N

State Senate and Assembly Districts

The Site is in State Senate District 37 and State Assembly District 64.

Current Site Improvements

There are no onsite improvements and apparently never have been any onsite improvements.

2.1 Physical and Environmental Characteristics

2.1.1 Site Topography

Ground surface elevations on the Site range from approximately 1,434 to 1,442 feet above Mean Sea Level (**MSL**), with surface topography sloping gently towards the east (USGS Topographic Map, Romoland, California Quadrangle, 1976, Photorevised 1979).

2.1.2 Site Geology and Soil Types

The Site and vicinity are underlain by alluvium (Quaternary geologic age), which are unconsolidated to semi-consolidated and include lake playa, and stream terrace deposits, (*Geologic Atlas of California Map No. 019, Santa Ana Sheet*, California Geological Survey, 1965).

Soil on the Site is classified as well drained loamy clay from the Yokohl series (United States Department of Agriculture (**USDA**) Soil Conservation Service STATSGO data, 1974, provided by Environmental Data Resources (**EDR**), 2011 in Appendix D of the 2011 *Phase I ESA Report*).

The onsite surface soil, as well as the shallow soil observed in the PEA soil borings, generally consists of brown silty, fine to medium grained sands and fine sandy silts with varying small amounts of clay (SM).

2.1.3 Site Hydrogeological Setting

The Site is located in the southern part of the West San Jacinto Groundwater Basin. The primary producing aquifer of the Chino Groundwater Basin is within the Upper

Pleistocene alluvium. The approximate direction of regional groundwater flow is toward the east-southeast, based on groundwater elevation data in *West San Jacinto Groundwater Basin Management Plan, 2010 Annual Report* (EMWD, 2010).

According to the Western Municipal Water District, Cooperative Well Measuring Program, Fall 2006 Data, the nearest active well to the Site is located approximately 1¼-mile to the east of the Site (Well ID#06S/03W-02A001S). Depth to groundwater at this well was recorded at 100.8 feet bgs in February 2008.

2.1.4 Site Climatologic Setting

Moderate temperatures with comfortable humidity and limited precipitation characterize the climate in Menifee. Temperatures are normally mild, with rare extremes above 100 °F or below freezing. Average annual precipitation is approximately 11.4 inches, of which approximately 9.6 inches occur during December through April.

2.1.5 Regional Radon Information

The Site is located within Riverside County, which has an average indoor radon level of 1 picocurie per liter of air (pCi/L). The California Department of Health Services has records of three indoor radon measurements in Menifee, all of which are less than 4 pCi/L. Indoor radon levels between 4 and 20 pCi/L are considered to be above average.

2.2 Site History

2.2.1 Historic Land Uses

In summary, review of historic topographic maps and aerial photographs during the Phase I ESAs indicate the following:

- By 1949, the "Property", which includes the Site, was an agricultural field.
- By approximately 2005, agriculture had ceased on the "Property", which includes the Site, which was now a fallow field.

Topographic Map Review

Review of the USGS topographic map (1967, photorevised 1976) as part of the 2011 Phase I ESA indicates the following. The "Property" (including the Site) appears to be undeveloped land, and the surrounding area also appears to be primarily undeveloped land. Newport Road is depicted north of the "Property", Holland Road is depicted to the south, and Haun Road is depicted to the east.

Aerial Photograph Review

Review of 1949, 1962, 1980, 1984, 1990, 1995, 2000, and 2005 aerial photographs from EDR for the Site and vicinity as part of the Phase I indicated the following:

1949 and 1962 Aerial Photographs: The "Property" (including the Site) appears to be agricultural fields. To the north is Newport Road, followed by agricultural fields. To the south and west are agricultural fields. To the east is Haun Road, followed by agricultural fields. The surrounding area appears to be agricultural fields with scattered residences.

1980 Aerial Photograph: The "Property" (including the Site) appears to be agricultural fields. Scattered residences are located southwest of the "Property" (southwest of La Piedra and Roads). Residences are under construction across Newport Road north of the "Property". Scattered commercial structures and residences are located across Holland Road south of the "Property". Interstate 215 is visible east of the "Property".

1984 Aerial Photograph: The "Property" (including the Site) appears to be agricultural fields. The surrounding area appears similar to the 1980 aerial photograph, except for increasing residential and commercial land uses and decreasing agricultural land uses and undeveloped land.

1990 Aerial Photograph: The "Property" (including the Site) appears to be agricultural fields. The surrounding area generally appears similar to the 1984 aerial photograph, except for continued increasing residential and commercial land uses and decreasing agricultural land uses and undeveloped land.

1995 Aerial Photograph: The "Property" (including the Site) appears to be agricultural fields. Commercial properties appear to have been developed across Newport Road north of the "Property". Otherwise, the surrounding area appears similar to the 1990 aerial photograph, except for continued increasing residential and commercial land uses and decreasing agricultural land uses and undeveloped land.

2000 Aerial Photograph: The "Property" (including the Site) appears to be agricultural fields. The surrounding area appears similar to the 1995 aerial photograph, except for continued increasing residential and commercial land uses and decreasing agricultural land uses and undeveloped land.

2005 Aerial Photograph: The "Property" (including the Site) appears to be agricultural fields. The surrounding area appears similar to the 2000 aerial photograph, except for continued increasing residential and commercial land uses and decreasing agricultural land uses and undeveloped land.

Sanborn Map Review

Historical Sanborn Fire Insurance (Sanborn) map coverage of the Site was requested from EDR. According to EDR, there is no Sanborn coverage of the "Property", which includes the Site.

2.2.2 Records Review

Building Department Review

According to the City of Menifee Building and Safety Department, there are no building permits for the "Property", which includes the Site.

Agency File Review

Information was requested from the following regulatory agencies as part of the 2011 Phase I ESA.

- Prior to preparation of the 2011 *Phase I ESA Report*, no information was received from the RCDEH regarding the "Property", which includes the Site. No information was received subsequently from the RCDEH regarding the "Property".
- No information was on file with the DTSC regarding the "Property", which includes the Site.
- No information was on file with the Santa Ana Regional Water Quality Control Board (**SARWQCB**) regarding the Site the "Property", which includes the Site.
- No information was on file with the South Coast Air Quality Management District (**SCAQMD**) regarding the "Property", which includes the Site.
- There are no underground pipelines that are within Office of the State Fire Marshall (**OSFM**), Pipeline Safety Division jurisdiction on or adjacent to the "Property", which includes the Site.
- There are no oil or gas wells are located on the "Property" (which includes the Site) or on adjacent properties listed on the California Department of Conservation, Division of Oil, Gas and Geothermal Resources (**DOGGR**) on-line database.

Owner/Operator Records Review

Owner/operator records were not available for review as a part of the 2011 Phase I ESA record review. No documents were obtained from the owner/operators of the "Property" during the PEA process.

2.2.3 Interviews

Property Owners

As part of the 2011 Phase I ESA, Converse provided a *Client/User/Owner Provided Information* form (e.g. owner interview) to the owner, Stark Menifee Land, LLC. Prior to preparation of the 2011 *Phase I ESA Report*, the completed *Client/User/Owner Provided Information* form was not received by Converse, and it has not been received subsequently.

Tenants/Occupants

There are no tenants or occupants at the "Property", which includes the Site.

State or Local Government Officials

As part of the 2011 Phase I ESA, Converse conducted an interview with Ms. August Lucas of the SARWQCB. According to Ms. Lucas, there are no records for "Property", which includes the Site. No SARWQCB records were obtained during the PEA.

2.2.4 Site Ownership

SRA, LLC acquired ownership of the Site from Stark Menifee Land, LLC on June 5, 2012. Stark Menifee Land, LLC remains the owner of the remainder of the 2011 168-acre "Property".

2.2.5 Facility Ownership/Operators

The Site is unoccupied, and there are no facilities on the Site.

2.2.6 Business Type

The Site is unoccupied, there are no business activities on the Site, which is part of a fallow agricultural field.

2.2.7 Years of Operation

The Site, and the "Property" of which it is a part, was a large agricultural field from at least 1949 until approximately 2005; the agricultural field has been fallow subsequently.

2.2.8 Business/Manufacturing Activities

The Site is unoccupied, there are no business/manufacturing activities on the Site. The nearest business activity is a shopping center located along the eastern side of Haun Road, approximately 0.1 mile northeast of the Site.

2.3 Surrounding Land Uses

At the time of the 2011 Phase I ESA site reconnaissance on September 6, 2011, surrounding area was observed to be mixture of residential, commercial and vacant land uses. The surrounding land uses are as follows:

North:	La Piedra Road (unimproved), beyond which is a fallow agricultural field (part of the "Property").
South:	Fallow agricultural field (part of the "Property"), beyond which is .
East:	La Paloma Wash, beyond which is Haun Road, followed by a fallow agricultural field. To the northeast of La Piedra and Haun Roads is a shopping center.
West:	Sherman Road (unimproved), beyond which are single-family residences.

2.4 Site and Adjacent Site Environmental Information

The 2011 Phase I ESA Report contains the following information regarding the Site and adjacent sites. The Site is not identified on the School Property Evaluation Program (**SCH**) and ENVIROSTOR databases. The Site was not identified on any of the other lists in the EDR report (Appendix D of the 2011 *Phase I ESA Report*). The EDR report lists two offsite locations of potential environmental concern, which are across Haun Road to northeast of the larger "Property" for which the Phase I ESA was conducted; these two locations are actually ¼ mile or more from the Site.

One of these two offsite locations is a service station with three registered in-use underground storage tanks (**USTs**), which is not on the leaking UST (**LUST**) database. The other is a Resource Recovery and Conservation Act small and large quantity generator (**RCRA-SQG** and **RCRA-LQG**, respectively) with no reported spills or violations. Two other offsite locations of potential environmental concern identified by EDR within a maximum one-mile radius from the "Property" are a California Environmental Protection Agency (**Cal-EPA**) State Wide Recycling Facility (**SWRCY**) site and a DRYCLEANERS site. The potential for environmental impact to the "Property" from each of these four offsite locations of potential environmental concern appear to be low due to one or more of the following: type of regulatory listing; not listed in the LUST database, no spills or violations reported, location relative to the inferred regional groundwater flow direction, and/or distance from the "Property".

In the 2011 *Phase I ESA Report*, Converse identified one HREC in connection with the Site, past agricultural use of the Site. Converse subsequently identified one other potential environmental concern, potential past application of sewage sludge on the Site as fertilizer. The HREC and other potential environmental concern are discussed further in Sections 1.4 and 3.1.

Site Reconnaissance Results

On September 6, 2011, Converse conducted the Phase I ESA reconnaissance of the Site to observe current "Property" (and Site) use and physical features regarding the "Property" (and the Site), as well as to identify environmental conditions. Site reconnaissance observations, which are generally consistent with observations during the recent PEA fieldwork, of specific physical features identified in Section 2.3.2 of the *PEA Guidance Manual* are summarized in the table below.

Physical Feature	Observations
Site boundaries	The Site is bordered to the north by La Piedra Road (unimproved), to the west by Sherman Road (unimproved), and to the east by La Paloma Wash and south by a fallow agricultural field.
Locations and boundaries of all onsite operations (present and past)	Locations and boundaries of onsite operations (present and past) were generally visible during the site reconnaissance.

Physical Feature	Observations
Foundations of former structures	Not observed during the site reconnaissance.
Storage tanks and storage areas	Not observed during the site reconnaissance.
Odors	Not observed during the site reconnaissance.
Pools of liquid	Not observed during the site reconnaissance.
Electrical or hydraulic equipment known or likely to contain polychlorinated biphenyls (**PCBs**)	Not observed during the site reconnaissance.
Unidentified substance containers (including empty drum storage)	Not observed during the site reconnaissance.
Stained soil and pavement, corrosion, and degradation of floors and walls	Not observed during the site reconnaissance.
Drains and sumps	Not observed during the site reconnaissance.
Pits, ponds, and lagoons	Not observed during the site reconnaissance.
Surface drainage pathways	Not observed during the site reconnaissance.
Stressed vegetation (from other than from insufficient water)	Not observed during the site reconnaissance.
Solid waste and wastewater	Not observed during the site reconnaissance.
Wells (including dry wells, irrigation well, injection wells)	Not observed during the site reconnaissance.
Septic systems	Not observed during the site reconnaissance.

3.0 RECOGNIZED ENVIRONMENTAL CONDITIONS

3.1 Recognized Environmental Conditions

In the 2011 *Phase I ESA Report*, Converse identified no RECs and the following one HREC in connection with the Site: the Site, as well as the larger 2011 "Property" of which it is a part, was historically used for agriculture as early as 1949 until approximately 2000. Due to the findings of the 2004 Phase I and Limited Phase II ESA, the undocumented soil mound/piles on the "Property", which are not located on the Site, are not a REC:

In addition to the above HREC, Converse identified an additional environmental concern consisting of potential past application of sewage sludge to the Site as fertilizer.

3.2 Chemicals of Potential Concern

The available information, including the results of the PEA investigation, indicates that the following are COPCs on the Site:

- OCPs from past agricultural uses,
- Arsenic from past agricultural uses, and
- TTLC metals associated with potential past application of sewage sludge as fertilizer; coliform bacteria (not a COPC) was also evaluated as a possible indicator of potential past sewage sludge application.

4.0 ENVIRONMENTAL SETTING

4.1 Factors Related to Soil Pathways

Topography

The topography of the Site is essentially level, with a very gentle easterly slope. The topography of the surrounding area is nearly level and relatively smooth, with a very gentle northerly to northwesterly regional slope that averages less than one percent). This general topography extends at least one mile in all directions around the Site. The nearest significant topographic features are Bell Mountain (approximately 1.8 miles southeast of the Site), Sedco Hills (approximately 2.9 miles southwest of the Site), and Railroad Canyon Reservoir (approximately 3.3 miles west of the Site).

Evidence of Environmental Impacts

During the 2011 Phase I ESA site reconnaissance on September 6, 2011, no evidence of environmental impacts (e.g., stained soil, stressed vegetation, dead or ill wildlife, etc.) was observed on the "Property" (and the Site). No evidence of environmental impacts was observed on the Site during the recent PEA fieldwork during March through May 2012. The Site vegetation consists of primarily of annual grasses/weeds over most of the Site that are plowed several times a year. There are also some small shrubs/bushes in areas that are not plowed. There are no trees on the Site.

Predominant Soil Groups

The onsite surface soil, as well as the shallow soil observed in the PEA soil borings, generally consists of brown silty, fine to medium grained sands and fine sandy silts with varying small amounts of clay (SM).

There is a large apparent fill mound in the east-center of the Site, and several small soil piles to the northwest of the mound. The fill mound and soil piles will be removed from the Site prior to or concurrent with rough grading of the charter school site. It is also possible that there may have been minor grading incident to the past previous agricultural uses of the Site. It is probable that any fill resulting from past minor grading was derived from other areas of the Site. No evidence of artificial fill was observed in the PEA soil borings.

Surface Slopes

The Site is essentially level, with a very gentle easterly slope. The regional topography of the surrounding area is nearly level and relatively smooth, with a very gentle northerly to northwesterly regional slope that averages less than one percent). This regional topography extends at least one mile in all directions around the Site.

Site Access

There is a chain link fence along the eastern side of the Site, which separates it from La Paloma Wash. The northern, western and southern sides of the Site are unfenced.

Measures to Contain or Prevent Direct Contact with Onsite Impacted Soil

Measures to contain or prevent direct contact with impacted soil on the Site are not an issue because the soil sample analytical results for this PEA indicate that there is no impacted soil on the Site.

Nearby Sensitive Sites

Residences are across Sherman Road to the west of the Site south and east, and a shopping center is northeast of the Site. The surrounding area within 1 mile of the Site is residential, commercial and vacant (fallow) agricultural fields. There are no known parks, hospitals, medical clinics, nursing/convalescent homes or retirement homes within 1 mile of the Site. The nearby sensitive sites surrounding the Site are presented in the table below.

Sensitive Site	Approximate Distance from Site
Menifee State Preschool	0.3 mile west
Tammys Daycare	0.6 mile west
Bennion Family Day Care	0.7 mile north
Oliver Christian School Center	0.7 mile northwest
San Jacinto Child Development & Education Center	0.9 mile east
Good Shepard Lutheran School	0.9 mile north-northwest
Kirkpatrick Elementary School	1.1 miles east-northeast
Valley Wide Recreation and Park	1.1 miles east
Southwest Family YMCA	1.2 miles south-southeast

4.2 Factors Related to Water Pathways

Groundwater

The estimated groundwater depth at the Site is 100 feet bgs, and the inferred direction of regional groundwater flow is toward the east-southeast (Section 2.1.3). Groundwater was not encountered in any of the borings during this PEA or during the 2012 and 2004 Limited Phase II ESAs, which extended to a maximum depth of approximately 20 feet bgs.

Groundwater is not considered a potential pathway of contaminant migration on the Site, based on the approximate 100-foot depth to groundwater and no documented releases to groundwater at the Site.

Surface Water

There is no surface water present on the Site. La Paloma Wash, a lined intermittent stream, adjoins the Site to the west. There is an access road along the Wash between the it and the Site, but the road's pavement surface is several inches above adjoining grade on the Site and therefore Site runoff would apparently only enter the Wash during

floods. The nearest permanent surface water body downslope of the Site is Railroad Canyon Reservoir which is approximately 3.3 miles west of the Site. The topographic slope averages approximately 12 feet/mile (approximately 0.2 percent) between the Site and the Railroad Canyon Reservoir.

Surface water is not considered a potential pathway of contaminant migration on the Site, given the lack of surface water on the Site, together with the 3.3-mile distance and near-level topography between the Site and the Railroad Canyon Reservoir.

4.3 Factors Related to Air Pathways

Release Mechanisms

No atmospheric releases were identified on the Site and no facilities near the Site were identified as a potential source of atmospheric releases.

Prevailing Wind Direction and Velocity

The nearest Western Regional Climate Center (**WRCC**) station having wind direction and velocity data is Santa Rosa Plateau California, which is located approximately 11 miles southwest of the Site (WRRC website). WRCC Wind Rose data this station indicate that the prevailing winds are southwesterly during the day and northerly and southwesterly during the night, and that wind velocities range from 1.3 to 13 mph more than 99 percent of the time. These wind patterns do not have significant monthly or seasonal variations.

Local Climatic Factors

The average seasonal temperatures and precipitation for Menifee are listed in the following table (Weather.com website).

Season	Average Temperatures	Average Precipitation
Winter (December through February)	34 - 37 to 69 °F	7.0 inches
Spring (March through May)	41 - 50 to 72 - 85 °F	2.9 inches
Summer (June through August)	54 - 59 to 92 - 100 °F	0.3 inches
Fall (September through November)	40 - 58 to 76 - 95 °F	1.1 inches

Release Timing and Dispersion

Not applicable. No atmospheric releases were identified on the Site and no facilities near the Site were identified as a potential source of atmospheric releases.

Affected Populations

The Site is vacant and unoccupied, which minimizes direct exposure to the COPCs in soil. The recent visitors to the Site are Converse and its subcontractors, as well as RCDEH personnel, on sporadic visits ranging from a few hours to one day. Potential

exposure to windblown dust, if any, would be limited to the estimated twenty to thirty occupants of the residences adjoining to the west of Sherman Road, as well as walkers/joggers/bicyclists using the paved road along La Paloma Wash adjoining east and infrequent pedestrians and vehicle occupants using the unimproved portion of La Piedra Road adjoining to the north.

Proximity to Site

The nearest residences are across Sherman Road (unimproved) to the west of the Site. The nearest commercial area is a shopping center that is located approximately 0.1 mile to the northeast of the Site.

Sensitive Environments

There are no known coastal wetlands within two miles of the Site and no known freshwater wetlands or habitats for special species within one mile of the Site. The channel of La Paloma Wash is lined with concrete adjoining the Site. La Paloma Wash apparently only flows during and for a short time after prolonged, heavy rains which occur infrequently. There are no known parks within one mile of the Site.

There is a paved one-lane access road along the western side of La Paloma Wash adjoining the Site, which is used by the general public for walking, jogging and bicycling; a chain link fence separates the road and La Paloma Wash from the Site. The general public also uses the unimproved, unpaved part of La Piedra Road along the northern side of the Site as a pedestrian and vehicular shortcut between the residential area to the west of the Site and the shopping center to the northeast.

5.0 CONCEPTUAL SITE MODEL

Because the COPCs discussed above in Section 3.2 are non-volatile and have limited mobility in the subsurface environment, the release mechanisms and pathways leading to potential exposure by students, faculty, or staff at the planned school could include dermal, ingestion and/or inhalation, either by direct contact with the soil or by inhaling volatilized chemicals in an enclosed location. Because the Site is planned for development as an elementary school, faculty and staff are the key receptors, who have the highest potential for exposure, while students are the most susceptible.

Groundwater underlying the Site is estimated to be approximately 100 feet bgs underlying the Site. Therefore, the migration of the COPCs to groundwater is unlikely.

Based on the CSM information presented above, the critical assessment protocols for the Site would be the sampling and analysis of various combinations of the COPCs in soil (see Section 3.2). A CSM diagram is depicted on Figure 4. The following sections describe the rationales for conducting the PEA, including sampling strategies, investigative methods and procedures, sample analytical programs, sample handling, decontamination procedures, and management of investigation-derived wastes (**IDW**). The CSM may be modified by the results of this investigation.

This PEA investigation was conducted to address the risk of exposure to the following:

- OCPs in soil from past agricultural uses,
- arsenic in soil from past agricultural uses, and
- TTLC metals associated with potential past application of sewage sludge as fertilizer; coliform bacteria (not a COPC) was also evaluated as an indicator of potential past sewage sludge application.

The COPCs (metals and OCPs) are nonvolatile, bind strongly to soil and have generally low mobility and water solubility. Due to their generally low mobility and water solubility, leaching of these COPCs is unlikely, and migration to groundwater is unlikely due to the approximate 100-foot depth to groundwater. Exposure to these COPCs via surface water is unlikely because there is no surface water present at the Site and there are no permanent surface water bodies nearby. The primary transport mechanisms and exposure pathways for these COPCs are as dust via air and direct contact. The exposure routes are ingestion, inhalation and/or dermal contact.

The release mechanisms and pathways leading to potential exposure by students, teachers, or staff at the proposed school could include dermal, ingestion and/or inhalation, either by direct contact with the soil or by inhaling dust and/or vapors in an enclosed location.

6.0 DATA GAPS

The following data gaps (COPCs) were identified during the Phase I ESAs, the Limited Phase II ESAs, and/or the CSM developed for this Site:

- OCPs in soil from past agricultural uses,
- arsenic in soil from past agricultural uses, and
- metals in soil associated with potential past application of sewage sludge as fertilizer.

The PEA satisfactorily assessed the above COPCs, and thus closed the identified data gaps.

7.0 FIELD SAMPLING

7.1 Sampling Objectives

The sampling objectives at the Site were based primarily on the results of the Phase I and Limited Phase II ESAs conducted by Converse. Figures 5 and 5A depict the soil boring locations. The following is a summary of the sampling objectives related to the HREC and other environmental issues identified in the 2011 *Phase I ESA Report*:

- Past Agricultural Use: Soil sampling was conducted across the Site to screen for presence of OCPs and arsenic in shallow soil related to the past agricultural use of the Site.
- Potential Sewage Sludge Application as Fertilizer: Soil sampling was conducted across the Site to screen for presence of metals, as well as coliform bacteria, in shallow soil related to the potential past application of sewage sludge to the Site as fertilizer.

In addition to the above two objectives, stepout and stepdown soil borings and soil sampling were conducted at one location (surrounding B24 in the north-center of the Site) to confirm and delineate shallow soil with significant coliform analytical results.

7.2 Sampling Approach

There are typically five assessment phases conducted as a part of the PEA field data collection process. These five sampling phases include:

- Soil;
- Groundwater;
- Surface water;
- Soil gas; and
- Ambient air.

7.2.1 Groundwater Sampling

Based on information from the 2011 *Phase I ESA Report*, the estimated groundwater depth at the Site is 100 feet bgs (Section 2.1.4 in this PEA Report). Groundwater was not encountered in any of the borings during this PEA or during the 2004 and 2012 Limited Phase II ESAs, which extended to a maximum depth of approximately 20 feet bgs. Therefore, groundwater sampling was not conducted during the PEA.

7.2.2 Surface Water Sampling

Surface water sampling at the Site was not conducted during the PEA because there was no surface water present on the Site or nearby downslope.

7.2.3 Air Sampling

Air sampling was not within the scope of the PEA.

7.2.4 Soil Gas Sampling

Soil gas sampling at the Site was not conducted for the PEA because the COPCs (OCPs and metals) are non-volatile.

7.2.5 Soil Sampling Approach

Implementation of soil sampling, the remaining phase of assessment, was based on a site-specific CSM (Section 5.0 and Figure 4). Based on the available information, a CSM has been developed for the Site that identifies the:

- Potential sources of contamination,
- Potential release mechanisms,
- Potential pathways for contaminant movement, and
- Potential receptor exposure routes.

The available information indicates that a variety of compounds may be COPCs in surface and shallow soil, including the following:

- OCPs from past agricultural uses,
- Arsenic from past agricultural uses, and
- TTLC metals associated with potential past application of sewage sludge as fertilizer.

7.3 Sampling Locations and Rationale

The locations of soil borings at the Site were based primarily on the results of the Phase I and Limited Phase II ESAs conducted by Converse, and 2008 DTSC *Interim Guidance*. The borings were generally distributed evenly across the Site because there was no information on which to base biased boring locations. Figures 5 and 5A depict the boring locations. RCDEH was present during the soil borings and soil sampling on May 9 and June 6, 2012.

7.3.1 Past Agricultural Use

A total of 35 soil borings (B1 through B35) were advanced and sampled across the Site and soil samples from each of the borings were analyzed for OCPs and TTLC arsenic to screen for potential presence of agricultural chemicals in shallow Site soil related to the past agricultural use of the Site. These 35 borings include the nine borings (B1 through B9) from the 2012 Limited Phase II ESA.

7.3.2 Potential Past Sewage Sludge Application as Fertilizer

Soil samples from these 35 soil borings (B1 through B35) were also analyzed for TTLC metals to screen shallow Site soil for potential past application of sewage sludge as fertilizer on the Site.

Soil samples from 26 of these 35 soil borings (B10 through B35) were analyzed for coliform bacteria, a secondary indicator of potential past application of sewage sludge as fertilizer on the Site. Subsequently, ten stepout/stepdown borings (B24 DUP, B24 DUP2 and B24A through B24G), including three co-located duplicate borings, were advanced and sampled adjacent to B24 to delineate significant coliform analytical results in one sample (B24-0.5).

7.4 Sample Collection

7.4.1 Utility Clearance

Underground Services Alert (USA) was notified at least 48 hours prior to intrusive fieldwork. USA contacted all utility owners of record within the Site vicinity and notified them of our intention to conduct subsurface investigations in proximity to buried utilities. All utility owners of record, or their designated agents, were expected to clearly mark the position of their utilities on the ground surface throughout the area designated for investigation.

7.4.2 Soil Sample Collection

7.4.2.1 Initial Soil Sample Collection

Initially, 35 soil borings (B1 through B35) were advanced at the Site using the truck-mounted Geoprobe direct-push rig. The total depth of each Geoprobe boring was approximately 3 feet bgs. Two soil samples were collected from each Geoprobe boring (a total of 70 samples plus six co-located duplicate samples) at approximately 0 to 0.5 and 2.5 to 3 feet bgs. The approximate locations of the 35 borings are depicted on Figure 5.

7.4.2.2 StepOut/StepDown Soil Sample Collection

The coliform bacteria analytical results for the initial 29 soil samples (including three field duplicates) from the initial 26 soil borings, which had been advanced and sampled on May 9, 2012, identified significant coliform bacteria analytical results at B24. To delineate the significant coliform bacteria analytical results at B24, an additional ten stepout/stepdown borings (including three co-located duplicate borings) were advanced and sampled at the Site using the hand auger. The approximate locations of the ten stepout/stepdown borings are depicted on Figure 5A; B24 DUP and B24 DUP2 were located a few inches from B24, and B24E D was located a few inches from B24E.

The total depths of the eight stepout borings (B24A through B24G and B24E D) were each approximately 0.5 foot bgs. One sample (a total of eight samples) was collected from each stepout boring at approximately 0.5 foot bgs, including B24E-0.5D (a co-located field duplicate to sample B24E-0.5D). The total depths of the two stepdown borings (B24 DUP and B24 DUP2), which are co-located duplicates to B24, were each approximately 2 feet bgs. Two samples were collected from B24 DUP at approximately 0.5 and 2 feet bgs, including B24-0.5 DUP and (a co-located field duplicate to sample B24-0.5). Only sample B24-2 DUP2 and (a co-located field duplicate to sample B24-2 DUP) was collected from B24 DUP2 at approximately 2 feet bgs; B24-2 DUP2 was provided only to RCDEH.

The RCDEH requested that it witness advancement and sampling of two duplicate stepout/stepdown borings (B24 DUP2 and B24E D) on June 6, 2012. Two duplicate stepout/stepdown samples (B24-2 DUP2 and B24E-0.5D) were provided to the RCDEH; Converse submitted only one duplicate sample, B24E-0.5D, for analysis.

7.4.2.3 Background Soil Sample Collection

Background soil samples were not collected because the TTLC metals analytical results for the three composite soil samples from the nine previous (March 19, 2012) Geoprobe borings, which are a part of the soil sample dataset for this PEA, apparently represent background (naturally-occurring) metals levels. These initial TTLC metals analytical results are very similar to those for the ten composite soil samples from the 26 recent (May 9, 2012) Geoprobe borings. The range of TTLC metals concentrations, mean and median concentrations for all 13 Site composite soil samples (Method Detection Limits (**MDLs**) were used for ND TTLC metals) has been compared to the data presented in *Background Concentrations of Trace and Major Elements in California Soils,* (Kearny Foundation of Soil Science Report March 1996). The statistical comparison indicates that the range of TTLC metals concentrations in Site soil samples are within background concentrations in Kearny (Table 8).

Background sample collection is not necessary for OCPs.

7.4.2.4 Soil Sample Collection Methods

On March 19 and May 9, 2012, the initial 35 borings were advanced and the soil samples were collected using the Geoprobe rig and sampler. After advancing the Geoprobe sampler to the total depth of approximately 3 feet bgs, the sampler was retracted from the boring, and the inner acetate sample sleeve was removed from the sampler. Approximately six inches of the sample sleeve were selected from the appropriate depths (approximately 0.5 or 3 feet bgs). The selected sample sleeve portions were cut off and sealed with Teflon sheeting and plastic end caps. The RCDEH witnessed the soil sampling on May 9, 2012 and placed a custody seal one each of the Geoprobe sleeves after sample collection was completed. Duplicate portions of selected soil sample sleeves were provided to the RCDEH. After completion of sampling, the Geoprobe borings were backfilled with bentonite (hydrated in-place).

During the soil sample collection on March 19, 2012, a portion of the remaining soil sample from each sleeve was extracted into a sealable plastic bag for photoionization detector (**PID**) screening for volatile organic compounds (**VOCs**). All of the PID measurements were ND above the 0.1 part per million (**ppm**) PID detection limit for splits of each of the 18 soil samples. A PID was not available on the extremely short (next day) advance notice for the soil borings and sampling on May 9, 2012, but the lack of a PID is not considered significant, based on: 1) the non-volatile character of all COPCs for the Site, and 2) the ND PID measurements for VOCs for all 18 soil samples collected on March 19, 2012.

On May 16 and 25, 2012, the eight stepout/stepdown borings were advanced and the soil samples were collected using the hand auger. On June 6, 2012, the two co-located duplicate stepout/stepdown borings were advanced and two soil samples were collected using the hand auger. After the hand auger was advanced to the desired sampling depth (approximately 0.5 or 2 feet bgs), the auger was removed and the bottom portion of its soil contents was placed in a laboratory-supplied, pre-cleaned 4-ounce wide-mouth glass jar with a Teflon-sealed lid. The RCDEH witnessed the soil sampling on June 6, 2012 and was provided with two duplicate soil samples. After completion of sampling, the ten hand auger borings were each backfilled with hand auger soil cuttings.

On May 9, 2012, the RCDEH placed a custody seal one each of the Geoprobe sleeves after sample collection was completed. The soil sample sleeves and jars were placed in chilled coolers and delivered under chain of custody documentation to Enviro-Chem, Inc. (**EnviroChem**), California certified laboratory, each day within several hours after collection.

7.4.2.5 Field Instrument Calibration

A MiniRae PID was used for health and safety monitoring and field screening during soil sampling on March 19, 2012. The PID field data were used as a real-time indicator of VOC vapors in subsurface materials.

The MiniRae was calibrated a minimum of once per day in order to display accurate VOCs concentrations in ppm. A span gas, containing a 100-ppm concentration of Isobutylene in air, was used to set the PID sensitivity. The PID was calibrated as follows:

1. Connect the calibration adapter to the gas inlet tube of the PID, and connect the calibration adapter to the span gas cylinder. Hand-tighten the fittings.
2. Turn the flow controller knob counterclockwise about one-half turn to start the span gas flow. The pump noise should change indicated that the gas has started to flow.
3. Wait for the PID reading to stabilize within ±0.1 ppm (usually takes about 30 to 40 seconds). When the last digit of the reading stops changing for a few seconds, depress the [enter] key to complete the procedure.

4. Turn the flow controller knob fully clockwise to turn off the flow of gas. Disconnect the calibration adapter from the PID.

7.4.3 Decontamination Procedures

All equipment which came into contact with potentially-contaminated soil or water, was decontaminated prior each use to prevent cross-contamination of samples. Single-use disposable equipment was not decontaminated but was packaged for appropriate disposal. Decontamination consisted of the following:

- Non-phosphate detergent and tap water wash, using a brush if necessary;
- Tap-water rinse; and
- De-ionized/distilled water rinse.

Equipment was decontaminated in buckets. Cleaned, bulky equipment was stored on plastic sheeting or on clean supporting apparatus that kept the equipment from coming in contact with the ground. Cleaned small equipment was stored on plastic sheets or in plastic bags. If equipment was to be stored more than a few hours, and there was a likelihood of airborne contamination, it was also covered.

7.4.4 Sample Containers and Preservatives

The soil samples were collected in pre-cleaned single-use acrylic sleeves and plastic endcaps or in pre-cleaned 4-ounce wide-mouth glass jars with a Teflon-sealed lids. The acrylic sleeves and plastic endcaps were provided by the Geoprobe subcontractor, and the wide-mouth glass jars were provided by the laboratory. The sample containers were not rinsed prior to sample collection.

Sample analytical methods, containers, storage, preservatives and holding times are discussed further in the QAPP (Appendix A) and are summarized in Table 1 of the QAPP.

7.4.5 Sample Packaging and Shipment

To identify and manage samples obtained in the field, a sample label was affixed to each sample container. The sample labels included the following information:

- Project number;
- Site name;
- Site location;
- Sample identification and;
- Date and time of collection.

Preservation of the soil samples was not necessary. After collection and labeling, sample container lids/end caps were checked for tightness, and the following procedures were followed for soil sample storage and transportation:

1. Samples were placed in the coolers; sample container breakage was not a concern.

2. Ice or blue ice packs were used to keep samples chilled during transportation. When ice was used, the cooler drain plug was taped to prevent melt water leakage.
3. The chain of custody form was completed in the field and accompanied each cooler to EnviroChem. In addition, a *Sample Receipt Form* provided by the RCDEH was transported to EnviroChem with the soil samples collected on May 9 and June 6, 2012. EnviroChem filled out and signed the *Sample Receipt Form*, which is included with the laboratory reports for the May 9 and June 6, 2012 samples.
4. The soil samples were delivered to EnviroChem within several hours after soil sampling was completed each day.
5. EnviroChem prepared splits of the soil samples collected on May 9, 2012, which were delivered by courier with chain of custody to Associated Laboratories (**Associated**) on May 9, 2012. EnviroChem delivered the intact soil samples collected on May 16 and 25 and June 6, 2012 to Associated by courier with chain of custody the same day they were collected.

7.4.6 Documentation

7.4.6.1 Field Logs

Where appropriate, field logs documented where, when, how, and from whom any vital project information was obtained. Field log entries are, in general, complete and accurate enough to permit reconstruction of field activities. Each field log page was dated and the time of entry noted in military time. Entries are generally legible, written in ink, and signed by the individual making the entries. Language is factual, objective, and free of personal opinions or other terminology, which might prove inappropriate. Field log entries include at a minimum the following for each sample date:

- Site name and address;
- Recorder's name;
- Time of Site arrival/entry onsite and time of departure;
- Other personnel onsite;
- A summary of pertinent onsite meetings; and
- Deviations from sampling plans and site-specific HASP.

At a minimum, the following information was recorded during sample collection:

- Sample identifier, location and description;
- Site sketch showing sample location and measured distances;
- Sampler's name;
- Date and time of sample collection; and
- Field observations and details important to integrity and/or analysis of samples;

7.4.6.2 Boring Logs

The field geologist (under the direct supervision of a California Professional Geologist (**PG**)) described the soil encountered in the borings. Soil was classified in accordance

with the Unified Soil Classification System (**USCS**), and descriptions include soil type, particle size and distribution, color, moisture content, and evidence of contamination (discoloration, unusual odors, etc.). Preparation of boring logs was considered unnecessary because the borings were a maximum of approximately 3 feet deep.

7.4.6.3 Chain of Custody Records

Chain of custody records are used to document sample collection and shipment to EnviroChem for analysis. A chain of custody record was completed and sent with each sample shipment to EnviroChem. The chain of custody record identifies the contents of each shipment and maintains the custodial integrity of the samples. In addition, a *Sample Receipt Form* provided by the RCDEH was transported to laboratory with the soil samples collected on May 9 and June 6, 2012. The laboratory reports for the samples collected on May 9 and June 6, 2012 (Appendix D) each contain copies of the chain of custody and the *Sample Receipt Form*. Generally, a sample is considered to be in one's custody if it is either in one's physical possession or view, locked up or kept in a secured area that is restricted to authorized personnel. Chain of custody procedures are further discussed in the QAPP (Appendix A).

7.5 Soil Sample Analytical Methods

The analytical program which was conducted as part of this PEA assessment is summarized below and described further in the QAPP (Appendix A), including Tables 1 through 3.

7.5.1 Initial and StepOut/StepDown Soil Sample Analytical Methods

A total of 70 soil samples (plus six co-located duplicate samples) were collected at approximately 0.5 and 3 feet bgs from the initial 35 Geoprobe borings. Eleven soil samples (including three co-located duplicate samples) were collected at approximately 0.5 and/or 2 feet bgs from the ten stepout/stepdown hand-auger borings. One or two soil samples were collected from each boring.

In addition, portions of selected sample sleeves were provided to RCDEH from the 26 May 9, 2012 borings, and two sample jars were provided to RCDEH from the two June 6, 2012 borings.

All Converse soil samples were transported to EnviroChem, a state-certified laboratory, under chain of custody documentation EnviroChem archived all soil samples that were not analyzed. Selected soil samples were analyzed for one or more of the following:

- OCPs using EPA Method 8081A;
- TTLC arsenic using EPA Method 6010B;
- TTLC metals using EPA Methods 6010B/7471A; and/or
- Coliform bacteria using Methods SM 9221-B and SM 9221-F.

The OCPs and TTLC metals soil sample analyses were performed by EnviroChem, Inc. a state-certified laboratory. The coliform bacteria soil sample analyses were performed by EnviroChem's subcontractor, Associated, also a state-certified laboratory. Co-located duplicate samples, representing approximately 10 percent of the total number of samples analyzed, were also analyzed by EnviroChem or Associated.

EnviroChem first homogenized each of the 35 shallow (0.5-foot) soil samples from each of the 35 Geoprobe borings and the nine deeper (3-foot) soil samples from each of the initial nine (May 19, 2012) Geoprobe borings (a total of 44 samples). After being homogenized, portions of the samples were composited in groups of two or three samples each. EnviroChem also split duplicates from approximately 10 percent of the composite samples. Each of the 15 composite samples and two split-duplicate composite samples was then analyzed by EnviroChem for OCPs using EPA Method 8081A. Each of the 12 shallow (0.5-foot) composite samples and one split duplicate composite sample was then analyzed by EnviroChem for TTLC metals using EPA Methods 6010B/7471A.

One discrete soil sample from each of the 12 shallow (0.5-foot) composite samples (a total of 13 discrete samples including one co-located field duplicate) was also each analyzed by EnviroChem for TTLC arsenic using EPA Method 6010B.

A total of 39 discrete soil samples (including five co-located field duplicates) were each analyzed by Associated for coliform bacteria using Methods SM 9221-B and SM 9221-F. These 39 soil samples consist of the 29 discrete shallow soil samples from the May 9, 2012 borings (including three co-located duplicates) and ten subsequent stepout/stepdown soil samples (including two co-located duplicates). The eleventh stepout/stepdown soil samples, B24-2 DUP2 (a co-located field duplicate of B24 2 DUP) was only provided to RCDEH.

Four of the discrete soil samples provided to RCDEH on May 9, 2012 (B28-1 through B31-1) were each analyzed by E.S. Babcock & Sons, Inc. for the following:

- OCPs using EPA Method 8081A;
- TTLC metals using EPA Methods 6010B/7471A; and/or
- Coliform bacteria using Methods SM 9221-B and SM 9221-E.

7.5.2 Background Soil Sample Analytical Methods

Background soil samples were not collected or analyzed (see section 7.4.2.3 and Table 8). Background sample collection/analysis is not necessary for OCPs.

7.6 Soil Sample Analytical Results

The numbers of soil samples listed below include only those samples analyzed. All soil samples, which were collected but not analyzed, were archived by EnviroChem.

7.6.1 OCPs and TTLC Arsenic Soil Sample Analytical Results

The OCPs analytical results for the 15 composite soil samples and two split-duplicate composite samples are summarized in Table 3. The TTLC arsenic analytical results for the 12 shallow (0.5-foot) discrete soil samples and one co-located field duplicate sample are summarized in Table 2; Table 2 also includes the TTLC arsenic results for the 13 shallow composite samples (including one split-duplicate composite sample) which were analyzed for TTLC metals. Complete laboratory analytical reports are presented in Appendix D. In summary, the OCPs and TTLC arsenic analytical results for these soil samples indicate the following:

- DDE concentrations range from 0.001 to 0.013 mg/kg in the 14 shallow (0.5-foot) composite soil samples (including two split-duplicates).
- DDE is ND above the 0.0001-mg/kg MDL all three deep (3-foot) composite soil samples.
- All of the other OCPs are ND above MDLs ranging from 0.0001 to 0.0020 mg/kg in all 17 composite soil samples (including two split-duplicates).
- TTLC arsenic is ND above the 0.248-mg/kg MDL in all 13 shallow discrete soil samples (including one co-located field duplicate) analyzed for TTLC arsenic.
- TTLC arsenic is also ND above the 0.248-mg/kg MDL in all 13 shallow composite soil samples (including one split-duplicate) analyzed for TTLC metals.

Relevant 2004 Soil Sample Analytical Results

The analytical results for two of the eight 2004 composite soil samples (AG-3A/3B/3C/3D-0.5 and AG-3A/3B/3C/3D-2) are relevant to this PEA because they contain discrete samples from the two 2004 borings (AG-3A and AG-3B) located on the Site. These sample analytical results are summarized in Table 5. Complete laboratory analytical reports are presented in Appendix E of the 2004 *Phase I and Limited Phase II Report*, which is on the CD in Appendix C of this PEA Report. In summary, the OCPs, OPPs and CHs analytical results for these two 2004 composite soil samples indicate the following:

- The DDE concentration is 0.002 mg/kg in AG-3A/3B/3C/3D-0.5, the 2004 shallow (0.5-foot) composite sample from the Site. DDE is ND above the 0.001-mg/kg PQL in AG-3A/3B/3C/3D-2, the 2004 deep (2-foot) composite soil sample from the Site.
- All of the other OCPs are ND above PQLs ranging from 0.001 to 0.020 mg/kg in both 2004 composite samples from the Site.
- All OPPs are ND above PQLs that are 0.50 or 4.0 mg/kg in both 2004 composite samples from the Site.
- All CHs are ND above PQLs ranging from 0.020 to 20.0 mg/kg in both 2004 composite samples from the Site.

RCDEH OCPs Soil Sample Analytical Results

The OCPs analytical results for the four discrete RCDEH soil samples (B28-1 through B31-1) are summarized in Table 3A, which also includes the associated composite soil sample OCPs analytical results. The complete laboratory analytical report is presented in Appendix D. In summary, the OCPs analytical results for these four soil samples indicate the following:

- The DDE concentrations are 0.024 and 0.0048 mg/kg in B28-1 and B30-1, respectively. DDE is ND above the 0.0030-mg/kg Reporting Detection Limit (**RDL**) in B29-1 and B31-1.
- All of the other OCPs are ND above RDLs ranging from 0.0020 to 0.080 mg/kg in all four RCDEH discrete soil samples.

7.6.2 TTLC Metals Soil Sample Analytical Results

The TTLC metals analytical results for the 13 shallow (0.5-foot) composite soil samples (including one split-duplicate composite sample) are summarized in Table 1. Complete laboratory analytical reports are presented in Appendix D. In summary, the TTLC metals analytical results for these 13 composite soil samples indicate the following:

- TTLC barium, chromium, cobalt, copper, vanadium and zinc concentrations range from 5.10 to 131 mg/kg in all 13 shallow composite soil samples (including one split-duplicate) analyzed for TTLC metals.
- TTLC nickel concentrations range from 2.52 to 7.54 mg/kg in ten of the 13 shallow composite soil samples (including one split-duplicate) analyzed for TTLC metals. TTLC nickel is ND above a 0.165-mg/kg MDL in the three remaining shallow composite soil samples.
- The other ten TTLC metals (TTLC antimony, arsenic, beryllium, cadmium, lead, mercury, molybdenum, selenium, silver and thallium) are ND above MDLs ranging from 0.0062 to 0.432 mg/kg in all 13 shallow composite soil samples (including one split-duplicate) analyzed for TTLC metals.

RCDEH Metals Soil Sample Analytical Results

The metals analytical results for the four discrete RCDEH soil samples (B28-1 through B31-1) are summarized in Table 1A, which also includes the associated composite soil sample TTLC metals analytical results. The complete laboratory analytical report is presented in Appendix D. In summary, the metals analytical results for these four soil samples indicate the following:

- Barium, vanadium and zinc concentrations range from 32 to 140 mg/kg in all four discrete soil samples.
- Chromium and copper concentrations range from 12 to 14 mg/kg in B28-1 and B30-1. Chromium and copper are ND above 10-mg/kg RDLs in B29-1 and B31-1.
- The other 12 metals (antimony, arsenic, beryllium, cadmium, cobalt, lead, mercury, molybdenum, nickel, selenium, silver and thallium) are ND above RDLs ranging from 0.20 to 50 mg/kg in all four discrete soil samples.

7.6.3 Coliform Bacteria Soil Sample Analytical Results

The coliform bacteria analytical results for the initial 29 shallow (0.5-foot) discrete soil samples (including three co-located field duplicate samples) are summarized in Table 4, together with those for the ten subsequent stepout/stepdown discrete samples (including two co-located field duplicate samples). Complete laboratory analytical reports are presented in Appendix D. In summary, the coliform bacteria analytical results for these soil samples indicate the following:

- The total coliform (**Tc**) analytical results range from <2 Most Probable Number per gram (**MPN/g**) to 8.00 MPN/g for the 29 initial soil samples, with one exception.
- The E. coli (**Ec**) analytical results are all <2 MPN/g for the 29 initial soil samples, with one exception.
- The Tc and Ec analytical results are both >16,000 MPN/g for B24-05, the remaining initial sample.
- The Tc and Ec analytical results are 7,000 and 4,900 MPN/g, respectively, for B24-05 DUP (co-located duplicate of B24-05), which supersede the indeterminate >16,000 MPN/g analytical results for B24-05.
- The Tc and Ec analytical results are all <2 MPN/g for all ten stepout/stepdown soil samples associated with B24, including two co-located field duplicates.

RCDEH Coliform Bacteria Soil Sample Analytical Results

The coliform bacteria analytical results for the four discrete RCDEH soil samples (B28-1 through B31-1) are summarized in Table 4, which also includes the other coliform bacteria soil sample analytical results. The complete laboratory analytical report is presented in Appendix D. In summary, the coliform bacteria analytical results for these four soil samples indicate the following:

- The Tc analytical result is 4.00 MPN/g in B28-1, and Tc is ND above the 2.0-MPN/g RDL in the other three discrete soil samples.
- Ec is ND above the 2.0-MPN/g RDL in all four discrete soil samples.

7.7 Discussion of Soil Sample Analytical Results

All soil sample analytical results for all OCPs and TTLC metals are less than corresponding CHHSL-Rs and/or DTSC SSLs, which are the appropriate guidance levels. The 2006 DTSC *Interim Guidance* provides proportionally-reduced CHHSL-Rs for eight OCPs and recommends comparison of composite sample OCPs analytical results to the proportionally-reduced CHHSL-Rs. Using the *Interim Guidance* as a guide, proportionally-reduced CHHSL-Rs and DTSC SSLs were created for the 17 TTLC metals and four additional OCPs (a total of 12 OCPs). The proportionally reduced CHHSL-Rs and DTSC SSLs are approximately ⅓ and ½ for 3- and 2-sample composites, respectively, and compensate for effect of compositing of samples. The composite sample analytical results for OCPs and TTLC metals have then been

compared to the proportionally-reduced CHHSL-Rs and DTSC SSLs. There are no regulatory or guidance levels for coliform bacteria in soil.

In summary, the soil sample analytical results indicate the following:

- DDE concentrations (0.001 to 0.013 mg/kg) are much less than the reduced CHHSL-Rs (0.530 or 0.800 mg/kg, for three- or two-sample composites, respectively) for all 15 shallow (0.5-foot) composite soil samples (including two split-duplicates and the 2004 shallow composite sample).
- DDE is ND above the 0.0001-mg/kg MDL, which is much less than the reduced CHHSL-Rs (0.530 or 0.800 mg/kg) for all four deep (3-foot) composite soil samples (including the 2004 deep composite sample).
- All of the other OCPs are ND at MDLs (ranging from 0.0001 to 0.0020 mg/kg), which are less than corresponding proportionally-reduced CHHSL-Rs (ranging from 0.010 to 180 mg/kg) in all 19 composite samples (including two-split duplicates and both 2004 composite samples).
- TTLC arsenic is ND above the 0.248-mg/kg MDL, which is much less than the DTSC SSL (12 mg/kg) in all 13 shallow (0.5-foot) discrete soil samples analyzed (including one co-located field duplicate).
- TTLC is arsenic ND above the 0.248-mg/kg MDL, which is much less than the proportionally-reduced DTSC SSLs (4 or 6 mg/kg) in all 13 shallow (0.5-foot) composite soil samples (including one split-duplicate).
- All other TTLC metals analytical results are less than the proportionally-reduced CHHSL-Rs for all 13 shallow (0.5-foot) composite soil samples (including one split-duplicate).
- All OCPs and TTLC metals analytical results for all composite and discrete soil samples analyzed are less than the corresponding TTLCs and less than ten times corresponding Soluble Threshold Limit Concentration (**STLCs**).
- All OCPs and TTLC metals analytical results for all composite and discrete soil samples analyzed are also less than 20 times corresponding Maximum Concentrations of Contaminants for the Toxicity Characteristic (**TCs**).
- The 39 of the Tc and Ec analytical results all range from negative (<2 MPN/g) to 8.00 MPN/g with only two exceptions each. The analytical results for these 37 samples are not considered significant, although there are no regulatory or guidance levels for Tc or Ec in soil.
- The Tc and Ec analytical results are both >16,000 MPN/g for B24-0.5 (the first exception); these indeterminate results prompted collection and analysis of B24-0.5 DUP (a co-located field duplicate).
- The Tc and Ec analytical results are 7,000 and 4,900 MPN/g, respectively, in B24-0.5 DUP (the second exception) generally confirming the analytical results for B24-0.5 and indicating that the Tc is primarily composed of Ec.
- In general, the OCPs, metals and coliform bacterial analytical results for the four RCDEH discrete soil samples correlate well with corresponding Converse discrete and composite soil sample analytical results. The primary differences are that some

metals and OCPs are detected in the Converse samples due to smaller MDLs, and the same metals and OCPs are reported as ND at larger RDLs in the RCDEH samples. The Tc and Ec analytical results correlate very well between the Converse and RCDEH samples, because the RDLs are the same and all are discrete samples.

7.8 Localized Shallow Soil with Significant Tc and Ec Analytical Results

The significant Tc and Ec analytical results (7,000 and 4,900 MPN/g, respectively) for B24-0.5 and B24-0.5 DUP, together with the analytical results (all <2 MPN/g) for the other nine stepout/stepdown samples, indicate that there is a localized area of significant Tc and Ec analytical results in shallow soil surrounding B24. The analytical results for the ten stepout/stepdown samples associated with B24 indicate that the area of soil with significant Tc and Ec analytical results extends an estimated 2½ feet laterally from B24 and 1½ feet deep (Figure 5A). The volume of soil having significant Tc and Ec analytical results is therefore an estimated 1.1 cubic yards (**CY**).

The Site-wide Tc and Ec analytical results, together with the Site-wide TTLC metals analytical results, indicate that there was apparently no past application of sewage sludge on the Site. The evidence supporting this conclusion is as follows:

- Site-wide, the Tc analytical results range from <2 MPN/g to 8.00 MPN/g for all soil samples, excluding only B24-0.5 and B24-0.5 DUP;
- Site-wide, the Ec analytical results are <2 MPN/g for all soil samples, excluding only B24-0.5 and B24-0.5 DUP;
- Site-wide, the TTLC metals analytical results for all soil samples are within naturally-occurring background levels for California; and
- Michael Bouris, a prior owner of the 2011 "Property" (including the Site), who farmed the "Property" stated that no sewage sludge was applied during his 50-year tenure at the "Property". The January 4, 2011, of the Menifee City Council Meeting Minutes summarize Mr. Bouris testimony as follows: "family is land owners in area since 1922. Expressed support and noted no sludge used on the land in last 50 years." Mr. Bouris' use of the term "land" refers to the larger 2011 "Property" of which the Site is a part.

Additional assessment or any RAs for the localized area of significant Tc and Ec analytical results is considered unnecessary for the following reasons:

- The lack of regulatory or guidance levels for Tc and Ec in soil;
- The lack of any significant TTLC metals concentrations associated with the localized area of significant Tc and Ec analytical results or anywhere else on the Site;
- The small area of shallow soil with significant Tc and Ec analytical results (less than 2½ feet in diameter and less than 1½ feet deep) and small volume of associated soil (an estimated 1.1 CY);

- The probability that the Tc and Ec will attenuate naturally in the small area of affected shallow soil because coliform bacteria are anaerobic and have no source of food or water; and
- Ec is known to survive in soil for up to nine months. The Site has been fallow since 2005, and therefore the localized presence of Ec at boring B24 is not from agricultural operations at the Site, but is instead from another source such as a recent animal spoor.

7.9 Investigation-Derived Waste Management

In the process of collecting environmental samples during the proposed field sampling program, the following types of potentially-contaminated IDW were generated:

- Used personal protective equipment (**PPE**);
- Disposable sampling equipment;
- Excess soil sample material; and
- Decontamination fluids.

Listed below are the procedures for handling the IDW:

- Used PPE and disposable equipment were placed in a municipal refuse dumpster. These wastes are not considered hazardous and can be sent to a municipal landfill. Any PPE and disposable equipment for disposal that could still be reused was rendered inoperable before disposal.
- Decontamination water was properly disposed of by the Geoprobe subcontractor.
- Excess soil sample material from the Geoprobe borings was properly disposed of by the Geoprobe subcontractor.

7.10 Field Conditions

PEA fieldwork was completed during March through May 2012. The average temperature during the work day ranged from approximately 70 to 90 °F. No inclement weather was encountered during the fieldwork.

7.11 Field Variances

The following field variance from the agreed-upon scope of work was implemented during this PEA: stepout and stepdown soil borings and sampling were conducted to confirm and delineate the significant Tc and Ec analytical results encountered in soil sample B24-0.5, which was collected from boring B24, located in the north-center of the Site.

The QAPP envisioned use of a PID for each field day. A PID was not available on the extremely short (next day) advance notice for the soil borings and sampling on May 9, 2012, but the lack of a PID is not considered significant, based on: 1) the non-volatile

character of all COPCs for the Site, and 2) the ND PID measurements for VOCs for all 18 soil samples collected on March 19, 2012.

The QAPP envisioned that co-located field duplicate samples would be collected simultaneously with the associated primary sample and submitted blind to the laboratory. Two primary samples, B24-0.5 and B24E-0.5, were collected on different dates than the corresponding co-located field duplicate samples, B24-0.5 DUP and B24E-0.5D, respectively. B24-0.5 DUP was collected to confirm the significant Tc and Ec analytical results for B24-0.5 and to provide more meaningful results than B24-0.5. B24E-0.5D was collected later than B24E-0.5 during a subsequent site visit requested by RCDEH to witness sample collection. These two duplicates were not submitted blind, but the each primary and its corresponding duplicate were in different sample shipments separated by more than one week.

8.0 QUALITY ASSURANCE/QUALITY CONTROL

An integral part of the PEA investigation sampling and analysis plan is the Quality Assurance/Quality Control (QA/QC) program to ensure the reliability and compatibility of all data generated during this PEA investigations. The QAPP (Appendix A) provides specific descriptions of the field and laboratory procedures to be employed for verifying and maintaining performance quality for collection of environmental samples and subsequent chemical analysis. The QAPP sets forth the policies, procedures, and activities for the identification and documentation of the precision, accuracy, completeness, and representativeness of the data during the performance of this PEA.

8.1 Review of Project Quality Control (QC) Program

An integral part of the PEA sampling and analysis plan is the QA/QC program to ensure the reliability and compatibility of all data generated during this PEA. The QAPP (Appendix A) provides specific descriptions of the field and laboratory procedures employed for verifying and maintaining performance quality for collection of environmental samples and subsequent chemical analysis. The QAPP sets forth the policies, procedures, and activities for the identification and documentation of the precision, accuracy, completeness, and representativeness of the data during this PEA.

During the PEA, a variety of data was collected. Each sample collected may have been analyzed for a number of different chemicals, depending on the rationale for sample collection. However, not all chemicals detected were attributable to an onsite release and not all of the data will be of acceptable quality. Data collected was evaluated to determine which of the chemicals identified are likely to be Site-related and to assess whether the reported concentrations for these chemicals are of acceptable quality for use in the screening evaluation.

This project incorporated certain specified protocols to document the quality of the data collected during this PEA, in general accordance with the DTSC requirements. Soil samples were collected in general compliance with EPA SW-846. The laboratory PQLs, MDLs, CHHSL-Rs and DTSC SSLs, are summarized in Tables 2 and 3 of the appended QAPP. These stringent Data Quality Objectives (**DQOs**) for school study sites, including the Site, are intended to produce data that are suitable for use in a PEA. The laboratory MDLs, which are the basis for ND analytical results for OCPs and TTLC metals, are all less than or equal to the corresponding CHHSL-Rs and/or DTSC SSLs, including proportionally reduced CHHSL-Rs and/or DTSC SSLs for composite soil samples. No samples were diluted prior to analysis.

The data generated for the PEA was of sufficient quantity and quality that they identify the presence and concentrations of chemicals of concern at the areas sampled. Precision, accuracy, completeness, representativeness and comparability typically define the data quality. The mathematical formulas used to compute these parameters are included in the QAPP.

Precision is the degree of agreement between independent measurements. Precision can be evaluated through the use of duplicate samples. Precision between duplicate or co-located soil samples can vary due to the inherent heterogeneity of soil.

Accuracy is the degree of agreement of a measured value with true or expected value. Accuracy can be measured in the laboratory using percent recovery data for spiked (known) concentrations.

Completeness is the percent of measurements made which are judged to be valid. Completeness can be measured by dividing the number of samples that are judged to be valid by the number of total samples.

Representativeness is the degree to which the sample data represent the characteristics of a population. Representativeness is a qualitative parameter that addresses the design of the sampling program. An example of representativeness is to evaluate whether the number and locations of samples are sufficient for the purposes of this assessment.

Comparability is a qualitative parameter that evaluates the confidence with which one data set can be compared to another. Comparability can be enhanced by using standard analytical methods performed by state-certified laboratories.

8.1.1 QC Procedures

EnviroChem analyzed one co-located field duplicate sample for approximately every ten discrete samples analyzed. EnviroChem prepared and analyzed one split-duplicate composite sample for approximately every ten composite samples analyzed. EnviroChem prepared and analyzed appropriate laboratory QC samples at the rate of approximately one for every approximately 20 samples analyzed. More information regarding these duplicate samples is provided in the QAPP (Appendix A).

8.1.1.1 Field Duplicate Samples

During initial soil sampling, six co-located field duplicate samples were collected, and during stepout/stepdown sampling, one co-located field duplicate sample was collected. Four of the seven co-located field duplicate samples were analyzed follows:

Analyte	Primary Samples	Duplicate Samples
TTLC arsenic (discrete samples)	12	1
Tc and Ec (discrete samples)	34	5 [1]

1 Two of the Tc and Ec duplicate samples are B24-0.5 DUP and B24E-0.5D, co-located field duplicates of B24-0.5 and B24E-0.5, respectively.

8.1.1.2 Background Samples

Background soil samples were not collected and analyzed for TTLC metals because the TTLC metals analytical results from the 35 Geoprobe borings apparently represent background (naturally-occurring) metals concentrations (see section 7.4.2.3 and Table 8). Background sampling is not necessary for OCPs.

8.1.1.3 Laboratory Split Duplicate Samples

The soil samples from the borings were homogenized and then composited by the laboratory in general accordance with the 2008 DTSC *Interim Guidance* prior to analyses for OCPs and/or TTLC metals. EnviroChem prepared split two duplicate composite samples in general accordance with the 2008 DTSC *Interim Guidance*, one from each of two of the 15 composite samples analyzed. The two split-duplicate samples were analyzed follows:

Analyte	Primary Samples	Duplicate Samples
TTLC metals (composite samples)	12	1
OCPs (composite samples)	15	2

8.1.1.4 Laboratory QC Samples

Laboratory QC Samples: Laboratory QC sample types included method blanks, laboratory surrogates, laboratory control spike (**LCS**) samples, matrix spike (**MS**) samples, and matrix spike duplicate (**MSD**) samples for soil samples analyzed. Each laboratory QC sample type was analyzed to monitor the precision and accuracy of laboratory analytical procedures, at a rate not less than one laboratory QC sample per type per batch of up to 20 samples (including blanks and duplicates).

8.2 Review of Sampling Procedures

A variety of data were collected during the soil sampling. Soil samples were selected for TTLC arsenic, TTLC metals, OCPs and/or coliform bacteria analysis, depending on the rationale for sample collection. However, not all chemicals detected can be attributable to an onsite release and not all of the data is of equal quality. Data collected has been evaluated to determine which of the chemicals identified are likely to be Site-related and to assess whether the reported analytical results for these chemicals are of acceptable quality for use in the evaluation. Following is a discussion of the evaluations conducted.

Soil samples were collected under the supervision of a California PG. Boring locations were verified prior to collection and confirmed using GPS. All sampling equipment was decontaminated between uses to avoid cross contamination between borings and samples. Once samples were collected, they were immediately containerized and

labeled, and were then placed in chilled coolers and stored in a chilled condition until received by the laboratory.

8.3 Review of Analytical Procedures

All applicable laboratory QC analyses, including calibrations, method blanks, duplicate control samples, and other QC, met acceptance criteria. No matrix-related anomalies were noted in the laboratory reports (certification of laboratory quality control procedures is included).

8.4 Review of Data Quality Objectives

This project has incorporated specified protocols to document the quality of the data collected during this investigation. Soil samples were collected in compliance with EPA SW-846. Laboratory MDLs for OCPs and TTLC metals, which are the basis for ND analytical results, are all less than the corresponding CHHSL-Rs and/or DTSC SSLs; the CHHSL-Rs and/or DTSC SSLs have been proportionally reduced prior to comparison with composite sample analytical results. The laboratory PQLs and MDLs for OCPs and TTLC metals are presented in the QAPP.

The objectives of precision, accuracy, completeness, representativeness and comparability typically define the data quality. The mathematical formulae used to compute these parameters are included in the QAPP. The use of these DQOs for school site studies, including the Site, is to produce data that are suitable for use for a PEA screening risk evaluation.

8.4.1 Precision

Precision is the degree of agreement between independent measurements. Precision can be evaluated through the use of duplicate samples. Precision between primary and co-located field duplicate sample pairs can vary due to the inherent heterogeneity of soil. ND analytical results for both samples in a pair have not been used to calculate RPDs because they yield no usable data for statistical evaluation. In such instances, the MS/MSD sample results are used to evaluate the precision of the analysis.

Both samples in the discrete primary-duplicate soil sample pair are ND for TTLC arsenic, and thus a Relative Percent Difference (**RPD**) was not calculated. The analytical results for the TTLC arsenic discrete sample pair for are acceptable, because the MS/MSD sample results are acceptable.

The analytical results for all six samples comprising three of four the discrete primary-duplicate soil sample pairs are all <2 MPN/g for both Tc and Ec, and thus RPDs were not calculated. The <2 MPN/g Tc and Ec analytical results (which are considered negative and are similar to ND) for both samples in each of the three pairs have not been used to calculate RPDs because they yield no usable data for statistical evaluation. For the fourth pair, the Tc and Ec analytical results are both >16,000 MPN/g

for the primary sample, and the Tc and Ec analytical results are 7,000 and 4,900 MPN/g, respectively, for duplicate. RPDs were not calculated for the fourth pair because the >16,000 MPN/g Tc and Ec analytical results for both samples in fourth pair are not meaningful as regards calculation of a RPD.

Both of the split-duplicate composite sample pairs were analyzed for OCPs. Both of the split-duplicate composite sample pairs have RPDs less than the 30-percent precision goal for DDE, the only OCP detected in all four samples in both split-duplicate composite sample pairs. All other OCPs are ND for all four samples in both split-duplicate composite sample pairs, and thus RPDs were not calculated except for any of the other OCPs. The ND analytical results for both split-duplicate composite sample pairs are acceptable, because the MS/MSD sample results are acceptable.

One of the split-duplicate composite sample pairs was analyzed for TTLC metals. Each of the seven TTLC metals detected in both samples comprising the split-duplicate composite sample pair have RPDs less than the 30-percent precision goal. All of the other ten TTLC metals are ND in both samples in the split-duplicate composite sample pair, and thus RPDs were not calculated for any of these other ten TTLC metals, including TTLC arsenic. The ND analytical results for the split-duplicate composite sample pair are acceptable, because the MS/MSD sample results are acceptable.

8.4.2 Accuracy

Accuracy is the degree of agreement of a measured value with true or expected value. Accuracy can be measured using percent recovery data in the laboratory using spiked concentrations. In cases where the percent recovery exceeds the acceptable range, other QA/QC procedures such as laboratory control spikes and surrogates were used to validate the data. Review of the data indicated that the accuracy is acceptable.

8.4.3 Completeness

Completeness is the percent of measurements made which are judged to be valid. Completeness can be measured by dividing the number of samples that are judged to be valid by the number of total samples. Based upon the data reviewed, all samples were judged to be useable for the intended purpose, and the DQO for completeness has been met.

8.4.4 Representativeness

Representativeness is the degree to which the sample data represent the characteristics of a population. Representativeness is a qualitative parameter that addresses the design of the sampling program. The number and location of the samples are considered sufficient to accurately assess the Site. Based upon the objectives of this investigation, the Site appears to be adequately assessed.

8.4.5 Comparability

Comparability is a qualitative parameter that evaluates the confidence with which one data set can be compared to another. Datasets generated during the PEA are considered comparable due to the use of standard analytical methods by certified laboratories. Evaluation of the data collected during this PEA indicates that the level of confidence of the compared datasets is acceptable.

8.5 Data Validation Memorandum

The Data Validation Memorandum (Appendix E) concludes the following: *Based on this Level II validation, all data collected through implementation of the scope of work satisfy data quality requirements specified for the PEA for the Site. The analyses followed the approved methods and included acceptable QC procedures. The relevant QA/QC results were satisfactory and acceptable. No outstanding issues were identified during the course of the data validation review. Overall, the presented data (including the qualified results) are reliable and useable for project decision making.*

The Data Validation Memorandum recommends the following: *The data should be used to characterize the nature and extent of any contamination, support screening risk evaluation, and/or evaluate the response action need, relative to the Site.*

9.0 HEALTH AND SAFETY

The HASP was prepared for this PEA, based on a plan that was previously used at other school sites. The HASP is contained in Appendix B.

There were no deviations from the HASP.

10.0 ENVIRONMENTAL MIGRATION SCREENING EVALUATION

Converse did not encounter groundwater in the borings from this PEA or the 2004 Limited Phase II ESA, which extended to a maximum depth of approximately 20 feet bgs, and groundwater sampling was not a part this PEA. Based on information from the *Phase I Report*, the estimated groundwater depth at the Site is 100 feet bgs (Section 2.1.4 in this PEA Report).

Surface water sampling was not conducted during this PEA because there was no surface water present at the Site.

11.0 HUMAN HEALTH SCREENING EVALUATION

The PEA HHSE involves identifying COPCs, evaluating exposure pathways and media of concern, assessing chemical toxicity, and subsequently, characterizing risks. Estimated health risks are based on a calculated dose (i.e., amount of chemical intake), that integrates exposure parameters for the receptors of concern (e.g., reference doses and slope factors) and chemical concentrations. The calculated risks are then compared to health-based levels deemed acceptable by the DTSC. For the purpose of the HHSE, even though the future use of the Site is for a school, the potential risks are calculated based on a more conservative residential or unrestricted land-use scenario.

Exposure to chemicals can only occur if there is a complete pathway by which chemicals in soil, water, or air can be contacted by humans. Therefore, the evaluation of exposure pathways is the first step in the HHSE. Exposure pathways are identified in the CSM (Section 5).

Potential dose and risk are then calculated based on an evaluation of potential exposure point concentrations (**EPCs**) to the COPCs, and their toxicities. The findings of the HHSE are summarized in Risk Index (Section 11.2). Uncertainty Analysis (Section 11.4) presents factors in the HHSE that may result in an overestimation or underestimation of risk for risk management consideration.

11.1 Identification of Chemicals of Potential Concern

11.1.1 Comparison Metal Concentrations in Site Soil Against Background Data

Seven TTLC metals were reported in ten or all 13 of the composite soil samples analyzed (including one split-duplicate composite). The numbers of detections and Site Maximum Concentrations for the seven TTLC metals are summarized in the table below:

TTLC Metal	Number of Detections	Site Maximum Concentration	
		3-Sample Composite (mg/kg)	2-Sample Composite (mg/kg)
TTLC barium	13	114	131
TTLC chromium	13	12.7	12.3
TTLC cobalt	13	7.74	7.82
TTLC copper	13	15.1	13.9
TTLC nickel	10	3.38	7.24
TTLC vanadium	13	41.3	43.7
TTLC zinc	13	47.7	48.5

The *PEA Guidance Manual* states that metals present concentrations less than or equal to background concentrations may be eliminated as COPCs. A background TTLC s dataset was, however, not generated during the field activities because the TTLC metals analytical results for the 13 composite soil samples are considered to represent naturally-occurring background levels (see section 7.4.2.3 and Table 8).

Determination of whether a metal is a COPC was addressed on a tiered approach, each with a different degree of confidence. The first tier (tier 1) is achieved if the background maximum concentration exceeds the Site Maximum Concentration. The second tier (tier 2) is achieved if the average background concentration exceeds the Site average concentration. Tier 1 and tier 2 comparisons were not used because background soil samples were not collected and analyzed for TTLC metals (see section 7.4.2.3 and Table 8).

Site Maximum Concentrations for TTLC metals were instead compared with their corresponding CHHSL-Rs, excluding TTLC arsenic, which was compared with the DTSC SSL; the CHHSL-Rs and DTSC SSL for TTLC arsenic, were proportionally reduced prior to comparison with composite sample analytical results. Site Maximum Concentrations for TTLC metals (including MDLs for ND TTLC metals) are less than the corresponding CHHSLs-Rs, or the DTSC SSL for TTLC arsenic, as presented in the table below. Therefore, all 17 TTLC metals were eliminated as COPCs.

COPC	Site Maximum Concentration [1]		CHHSL-R (DTSC SSL)	
	3-Sample Composite (mg/kg)	2-Sample Composite (mg/kg)	3-Sample Composite (mg/kg) [2]	2-Sample Composite (mg/kg) [3]
TTLC antimony	*0.250*	*0.250*	10	15
TTLC arsenic	*0.248*	*0.248*	(4)	(6)
TTLC arsenic	*0.248*		(12) [4]	
TTLC barium	114	131	1,733	2,600
TTLC beryllium	*0.180*	*0.180*	50	75
TTLC cadmium	*0.119*	*0.119*	0.57	0.85
TTLC chromium	12.7	12.3	33,333	50,000
TTLC cobalt	7.74	7.82	220	330
TTLC copper	15.1	13.9	1,000	1,500
TTLC lead	*0.192*	*0.192*	27	40
TTLC mercury	*0.0062*	*0.0062*	6	9
TTLC molybdenum	*0.274*	*0.274*	127	190

COPC	Site Maximum Concentration [1]		CHHSL-R (DTSC SSL)	
	3-Sample Composite (mg/kg)	2-Sample Composite (mg/kg)	3-Sample Composite (mg/kg) [2]	2-Sample Composite (mg/kg) [3]
TTLC nickel	3.38	7.24	533	800
TTLC selenium	*0.234*	*0.234*	127	190
TTLC silver	*0.414*	*0.414*	127	190
TTLC thallium	*0.432*	*0.432*	1.67	2.50
TTLC vanadium	41.3	43.7	177	265
TTLC zinc	47.7	48.5	7,667	11,500

1 MDL (*italics*) used as Site Maximum Concentration when all sample analytical results are ND.
2 CHHSL-Rs and DTSC SSLs reduced to ⅓ for 3-sample composites (2006 DTSC *Interim Guidance*).
3 CHHSL-Rs and DTSC SSLs reduced to ½ for 2-sample composites (2006 DTSC *Interim Guidance*).
4 The discrete-sample TTLC arsenic analytical results are all ND and compared to the unreduced DTSC SSL (12 mg/kg).

11.1.2 OCPs

Per DTSC guidance, all detected OCPs are considered COPCs. DDE is the only OCP detected in any of the 17 composite soil samples analyzed for OCPs using EPA Method 8081A during this PEA. DDE is also the only OCP detected in the two 2004 composite soil samples from the Site. DDE is therefore the only OCP considered a COPC. No other organic analytes were detected in any of the Site soil samples.

The Site Maximum Concentration for DDE is 0.013 mg/kg in B22/23/24-0.5, which is much less than the proportionally-reduced CHHSL-R for DDE of 0.530 mg/kg (reduced to approximately ⅓ for comparison to B22/23/24-0.5, which is three-sample composite).

11.2 Risk Index

The risk index was calculated for the entire Site as an initial screening to determine if further evaluation was needed, because all analytical results for the COPCs identified during this PEA (DDE and seven TTLC metals) are significantly less than corresponding CHHSL-Rs or DTSC SSLs.

The risk index is calculated by dividing the EPC for each OCP and TTLC metal (using the Site Maximum Concentrations for detected analytes and/or MDLs for ND analytes) by the corresponding CHHSL-Rs or DTSC SSLs. For composite samples, the EPC was compared to the proportionally-reduced CHHSL-Rs or DTSC SSLs to account for the compositing effect. The individual risk indices for each analyte are then summed up to arrive at the total Site risk index. The risk index is then multiplied by the target risk level of 1×10^{-6} to arrive at an estimated risk.

The risk index and the associated risk for TTLC metals and OCPs, as well as total Site risk index and total Site risk, were calculated based only on Site Maximum Concentrations for DDE and the seven TTLC metals detected in one or more soil samples as presented in the table below:

	Risk Index	Risk
TTLC metals [1]	0.368	3.68×10^{-7}
OCPs	0.0244	2.44×10^{-8}
Site Total	0.392	3.92×10^{-7}

1 TTLC arsenic was not included in risk calculations consistent with DTSC guidance on another recent school project (see section 11.3 below).

The total Site risk is 3.92×10^{-7} (equivalent to 0.392×10^{-6}), which is less than the target risk goal of 1×10^{-6}.

The risk index and the associated risk for TTLC metals and OCPs, as well as total Site risk index and total Site risk, were calculated was calculated a second time, based on Site Maximum Concentrations for DDE and seven TTLC metals, together with proportionally-reduced MDLs for the other ND TTLC metals (excluding TTLC arsenic, see section 11.3) and OCPs as presented in the table below:

	Risk Index	Risk
TTLC metals [1]	0.880	8.80×10^{-7}
OCPs	0.0703	7.03×10^{-8}
Site Total	0.950	9.50×10^{-7}

1 TTLC arsenic was not included in risk calculations consistent with DTSC guidance on another recent school project (see section 11.3 below).

This more conservative risk calculation results in a total Site risk of 9.50×10^{-7} (equivalent to 0.950×10^{-6}), which is also less than target risk goal of 1×10^{-6}. Accordingly, no further evaluation of the Site risk was conducted.

A copy of the summary tables is provided as Tables 9 and 10.

11.3 TTLC Arsenic

TTLC arsenic was not included in the above risk calculations, consistent with DTSC guidance on another recent school project (Roosevelt II (Dr. Mildred D. Henry) Elementary School). The basis for not including TTLC arsenic in the above risk calculations is that the DTSC SSL (12 mg/kg) for TTLC arsenic is not risk based, but is instead the southern California background level. In this way the DTSC SSL for TTLC

arsenic is fundamentally different from the CHHSL-Rs for the other 16 TTLC metals and all of the OCPs, which are risk based.

TTLC arsenic is ND above a 0.248-mg/kg MDL in all 13 discrete samples and all 13 composite samples analyzed for TTLC arsenic. The Site Maximum Concentration for TTLC arsenic is therefore the 0.248-mg/kg MDL, which is less than the DTSC SSL (12 mg/kg) for all 13 discrete samples and less than the proportionally-reduced DTSC SSLs (4 and 6 mg/kg for 3- and 2-sample composites, respectively) for all 13 composite samples.

11.4 Uncertainty Analysis

The purpose of a HHSE is not to predict the actual risk of exposure to an individual. Rather, it is a management tool for developing conservative estimates of health hazards, which are unlikely to underestimate the true risk for potentially exposed populations.

As a result, the numerical estimates in a risk assessment (risk values) have associated uncertainties reflecting the limitations in available knowledge about Site concentrations, exposure assumptions (e.g., chronic exposure concentrations, intake rates, frequency of time spent at home), and chemical toxicity. Where information is incomplete, conservative (overly-protective) assumptions must be made. In other words, although calculations of exposure often must be simplified to a few pathways or subgroups within a population, the simplifying assumptions should be more likely to overestimate rather than underestimate risk so that public health is protected regardless of other unknown conditions. Even when actual characteristics of a population are known, assumptions on exposure are often biased toward producing over-protective rather than under-protective health risk estimates for the majority of the population.

Consistent with DTSC guidance, this PEA has used Site Maximum Concentrations as EPCs, although the concentrations of DDE and the seven TTLC metals detected in Site soil samples vary across the Site. The DTSC guidance does not allow use of 95 Percent Upper Confidence Level concentrations, which are less conservative than Site Maximum Concentrations but are probably also more representative of actual Site-wide conditions. The use of Site Maximum Concentrations as EPCs conservatively overestimates the total Site risk and risk index.

Consistent with DTSC guidance, the estimates presented in this HHSE are based on a residential exposure scenario of 350 days per year and 24 hours per day for 30 years. This is a conservative estimate since the more realistic scenario is for school-based exposures of staff and students. When the school-based exposure scenario is assumed, all cancer risk estimates would be less than what was estimated for the residential exposure scenario. This decrease is due to school-based exposure being far less intensive (on the order of 190 to 200 days per year and 8 to 10 hours per day) as compared to the residential exposure scenario (350 days per year and 24 hours per day), which was assumed in this HHSE. Exposure to chemicals detected in Site soil is

further reduced taking into account the actual, proposed land-use of the Site as a school (much of the Site soil will be covered with asphalt pavement, buildings, landscape, and hardscape) as compared to the residential exposure scenario (all soil uncovered).

12.0 PUBLIC PARTICIPATION

Public hearings were held by the Menifee City Council and Planning Commission for both the larger 2011 "Property" and specifically for the SRA. The general public and Regent Properties personnel attended the public hearings, and the general public and Regent Properties personnel gave testimony, except at the November 23, 2010 Planning Commission and April 19, 2011 City Council public hearing.

Between November 23, 2010 and April 19 2011, two Menifee Planning Commission public hearings and seven Menifee City Council public hearings were held for Specific Plan Amendment, General Plan Amendment, and Environmental Impact Report (**EIR**) Development Agreement, located at the southwest corner of Newport and Haun Roads, Menifee Town Center (the 2011 "Property"). The Specific and General Plan Amendments and EIR Development Agreement included residences, recreational areas and potential public land uses for the "Property", as well as a generic school.

At the January 4, 2011 Menifee City Council hearing, Michael Bouris (a prior owner/farmer of the 2011 "Property" (including the Site), testified that: "family is land owners in area since 1922. Expressed support and noted no sludge used on the land in last 50 years." Mr. Bouris' use of the term "land" refers to the larger 2011 "Property" of which the Site is a part (see section 7.8).

At the January 18, 2011 hearing, the Menifee City Council approved of Resolution No. 11-195 and EIR 2010-152 regarding the "Property" and adopted a statement of overriding consideration.

At the April 5, 2011 meeting, the Menifee City Council introduced Ordinance No. 2011-89 approving Specific Plan Amendment No. 2009-069 establishing the Town Center Specific Plan and Ordinance No. 2011-90 approving a Development Agreement between the City of Menifee and Regent Properties.

At the April 19, 2011 hearing, the Menifee City Council approved the Consent Agenda which included Ordinance Nos. 2011-89 and 2011-90.

On March 27, 2012 the Menifee Planning Department held a workshop for the SRA 2011-165 Public Use Permit and Addendum to Final EIR 2010-152 (SCH# 2009091022). In addition to Planning Department personnel and Planning Commission members, personnel from the SRA, Competitive Edge Development and Regent Properties attended the workshop. The purpose of the workshop was to acquaint Planning Commission members with the SRA project and discuss project details.

On April 24, 2012 the Menifee Planning Commission held a public hearing for the SRA Public Use Permit 2011-165 and Addendum to Final EIR 2010-152 (SCH# 2009091022). In addition to the Planning Commission members, Menifee Planning Department personnel and the general public, personnel from the SRA, Competitive Edge Development, Regent Properties and Converse attended the hearing and gave

testimony. At the hearing, the Menifee Planning Commission approved the SRA Public Use Permit 2011-165 and Addendum to Final Environmental Impact Report 2010-152 (SCH# 2009091022).

13.0 COMPLIANCE WITH ADDITIONAL REGULATORY REQUIREMENTS

There are no known additional local, state or federal regulatory requirements applicable to this PEA.

14.0 FINDINGS

The following are findings from this PEA.

14.1 Nature and Extent of Contamination

- All soil sample analytical results for all analytes are less than corresponding CHHSL-Rs and/or DTSC SSLs, which have been proportionally reduced prior to comparison with composite soil sample analytical results.
- The concentrations of seven TTLC metals are apparently naturally-occurring background levels, as are the remaining ten TTLC metals (including TTLC arsenic and lead) which are ND in all soil samples.
- The co-located duplicate sample to B24-0.5, as well as the stepout and stepdown samples, satisfactorily delineated the shallow soil with significant Tc and Ec analytical results. There are no regulatory or guidance levels for coliform.
- The sample analytical results indicate that the shallow soil with significant Tc and Ec analytical results extends approximately 2½ feet laterally from B24 and approximately 1½ feet deep, and it comprises an estimated 1.1 CY.
- No COCs were identified during this PEA. Tc and Ec are not COPCs or COCs.

14.2 Fate and Transport

- No COCs were identified during this PEA.
- The COPCs, one OCP (DDE) and seven metals, are persistent in the environment and do not break readily down in soil. OCPs and metals have low solubility in water and bind strongly to soil, and therefore leaching and migration to groundwater are unlikely (Spectrum Laboratories, Inc. website).
- The primary transport mechanisms and exposure pathways for DDE on the Site are the inhalation and ingestion of fugitive dust and direct contact.
- The primary transport mechanisms and exposure pathways for the seven metals on the Site are also the inhalation and ingestion of fugitive dust and direct contact. The seven TTLC metals concentrations (and MDLs for the ten ND TTLC metals), however, are apparently naturally-occurring background levels.

14.3 Human Health Risk

- The calculated total risk index for the Site is 0.950, and the corresponding total Site risk is 9.50×10^{-7}, using the Site Maximum Concentrations for DDE and seven TTLC metals, as well as the MDLs for the other analytes (excluding TTLC arsenic) that are ND in all Site soil samples. TTLC arsenic was not included in the risk calculations because the DTSC SSL is not risk based, unlike the risk based CHHSL-Rs for the other analytes.

- The total Site risk, 9.50×10^{-7} (equivalent to 0.950×10^{-6}), is less than the target risk goal of 1×10^{-6}. Accordingly, no further evaluation of the Site risk was conducted.
- TTLC arsenic is ND, and the MDL for TTLC arsenic (0.248 mg/kg) is less that the DTSC SSL (12 mg/kg) for discrete samples, and is also less than the proportionally-reduced DTSC SSLs (6 and 4 mg/kg) for two- and three-sample composites, respectively.

15.0 CONCLUSIONS AND RECOMMENDATIONS

15.1 Conclusions

The objectives of this PEA, to determine whether current or past hazardous material management practices or waste management practices have resulted in a release or threatened release of hazardous materials, or whether naturally occurring hazardous materials are present, which pose a threat to children's health, children's learning abilities, public health or the environment, have been met. The following are conclusions from this PEA.

- A minor release of one OCP (DDE) has apparently occurred on the Site from past application of pesticides. This PEA has satisfactorily assessed this apparent minor release of OCPs.
- There was apparently no past application of sewage sludge on the Site as fertilizer, based on soil sample analytical results for TTLC metals and coliform bacteria.
- No naturally-occurring hazardous material is present on the Site.
- All soil sample analytical results for all analytes are less than corresponding CHHSL-Rs and/or DTSC SSLs, which have been proportionally reduced prior to comparison with composite sample analytical results.
- Significant initial Tc & Ec analytical results were encountered in one initial soil sample (B24-0.5) from boring B24 in the north-center of the Site. There are no regulatory or guidance levels for Tc and Ec.
- The significant Tc & Ec analytical results in B24-0.5 prompted collection and analysis of a co-located duplicate to B24-0.5, as well as stepout and stepdown samples, to confirm and delineate the area of soil with initial significant Tc and Ec analytical results.
- The co-located duplicate sample to B24-0.5, as well as the stepout and stepdown samples, satisfactorily delineated the shallow soil with significant Tc and Ec analytical results. The sample analytical results indicate that it extends approximately 2½ feet laterally from B24 and approximately 1½ feet deep, and it comprises an estimated 1.1 CY.
- The calculated total Site risk is 9.50×10^{-7}, using the Site Maximum Concentrations for DDE and seven TTLC metals and the MDLs for the other analytes (excluding TTLC arsenic) that are ND in all Site soil samples. TTLC arsenic was not included in the risk calculations because the DTSC SSL is not risk based, unlike the-risk based CHHSL-Rs for the other analytes.
- The total Site risk, 9.50×10^{-7} (equivalent to 0.950×10^{-6}), is less than the target risk goal of 1×10^{-6}. Accordingly, no further evaluation of the Site risk was conducted.
- TTLC arsenic is ND in all Site soil samples, and the MDL for TTLC arsenic is less that the DTSC SSL, including proportionally-reduced DTSC SSLs for composite soil samples.

15.2 Recommendations

NFA is recommended for the Site. This NFA recommendation is conditional on removal of the large mound of fill in the eastern portion of the Site, as well as a number of small fill piles in the northeast, prior to or concurrent with school development and construction.

In addition, Converse stated in the 2011 *Phase I ESA Report* that agricultural/water wells were identified to be historically present on the "Property". No evidence of these wells, if extant, was observed during field activities on the Site. If, however, one or more wells are found on the Site during school development and construction, then the well(s) should be properly abandoned in accordance with applicable local and state rules and regulations.

16.0 REFERENCES

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Spectrum Laboratories, Inc. website: http://www.speclab.com/compound/c72559.htm and http://www.speclab.com/elements/arsenic.htm, /chromium.htm, /cobalt.htm, /copper.htm, /nickel.htm, /vanadium.htm and /zinc.htm.

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Weather.com website: http://www.weather.com/weather/wxclimatology/monthly/graph/USCA0692.

Western Regional Climate Center website: http://www.raws.dri.edu/cgi-bin/rawMAIN.pl?caCSRO.

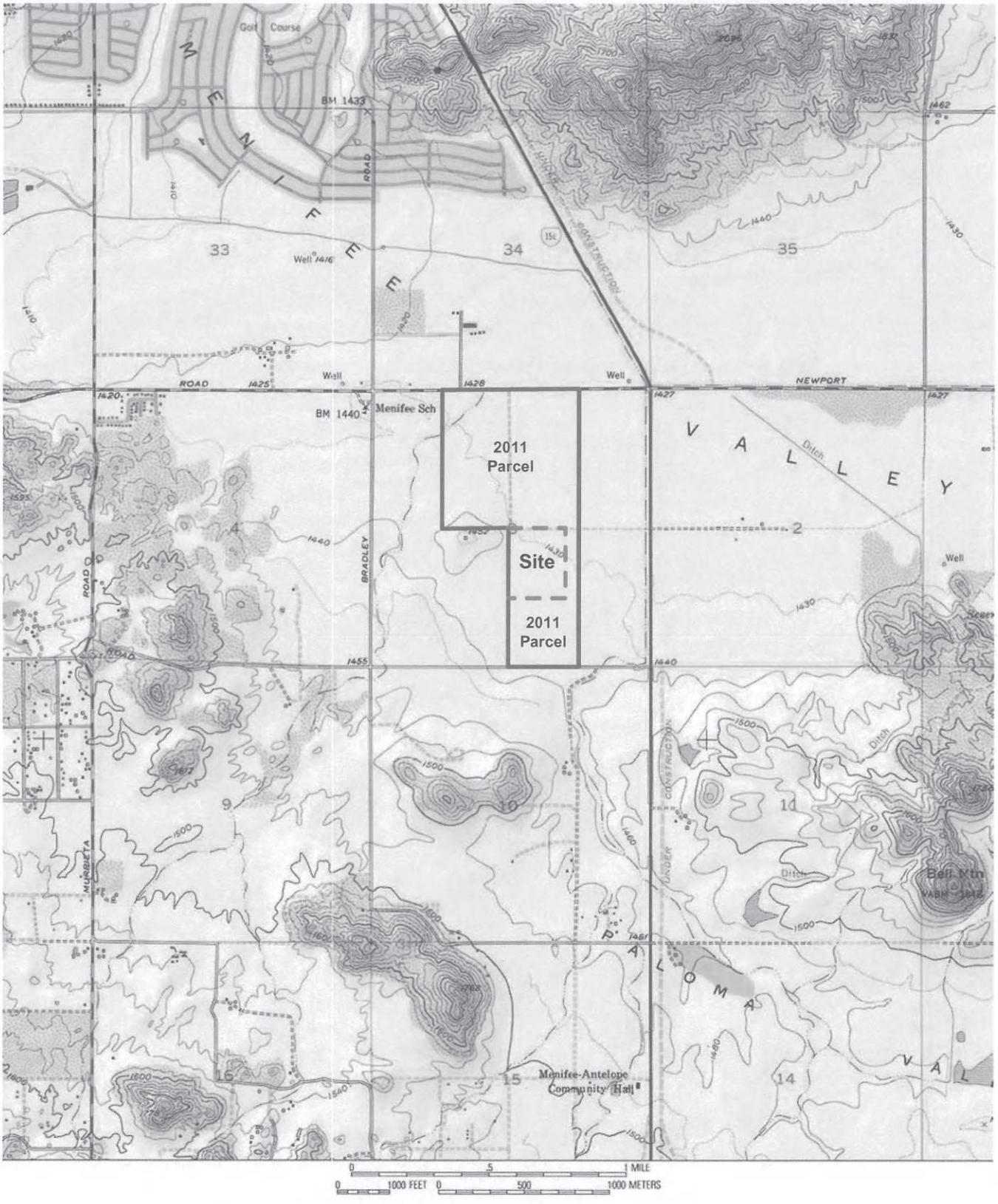
17.0 SIGNATURE AND QUALIFICATIONS OF RESPONSIBLE PROFESSIONAL

I am a Professional Geologist registered by the state of California. In compliance with the *Geologist and Geophysicist Act*, I have the specific qualifications based on education, training and experience to supervise the field activities and report preparation for this PEA.

Duncan Walker, PG
Senior Geologist

Various Maps
Figures 1 through 6

Figures



Vicinity Map

Client: Santa Rosa Academy
27587 La Piedra Road, Menifee, CA

Project No:
12-16-115-02

Converse Consultants

FIGURE
1

0 ft. 250 ft. 500 ft. 1,000 ft.

Map distances are approximate

Legend

— Approximate Site boundary

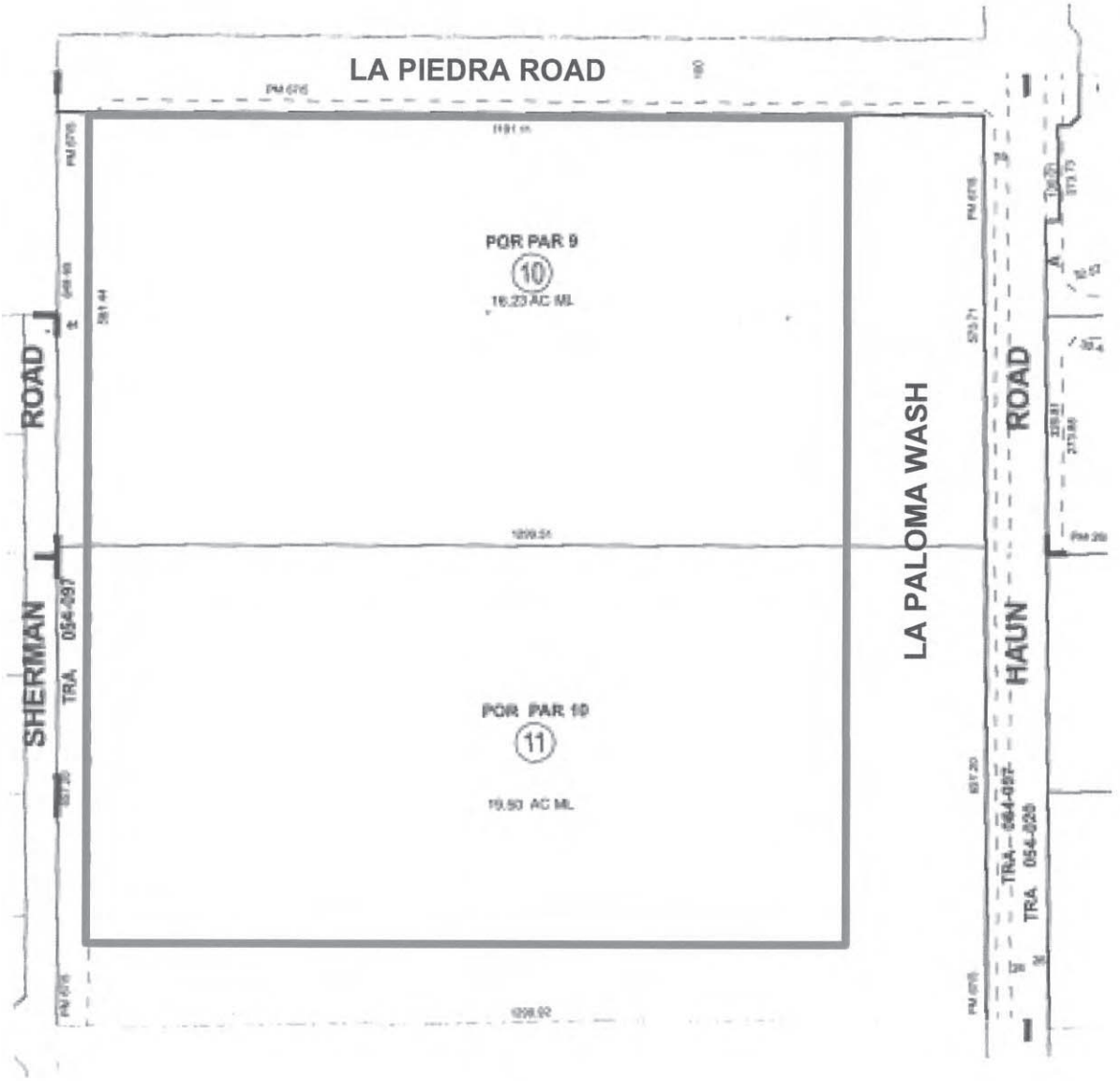
Site Location Map

Client: Santa Rosa Academy
27587 La Piedra Road, Menifee, CA

Project No.
12-16-115-02

Converse Consultants

FIGURE
2



No Scale

Legend

Approximate Site boundary

Assessors Parcel Map

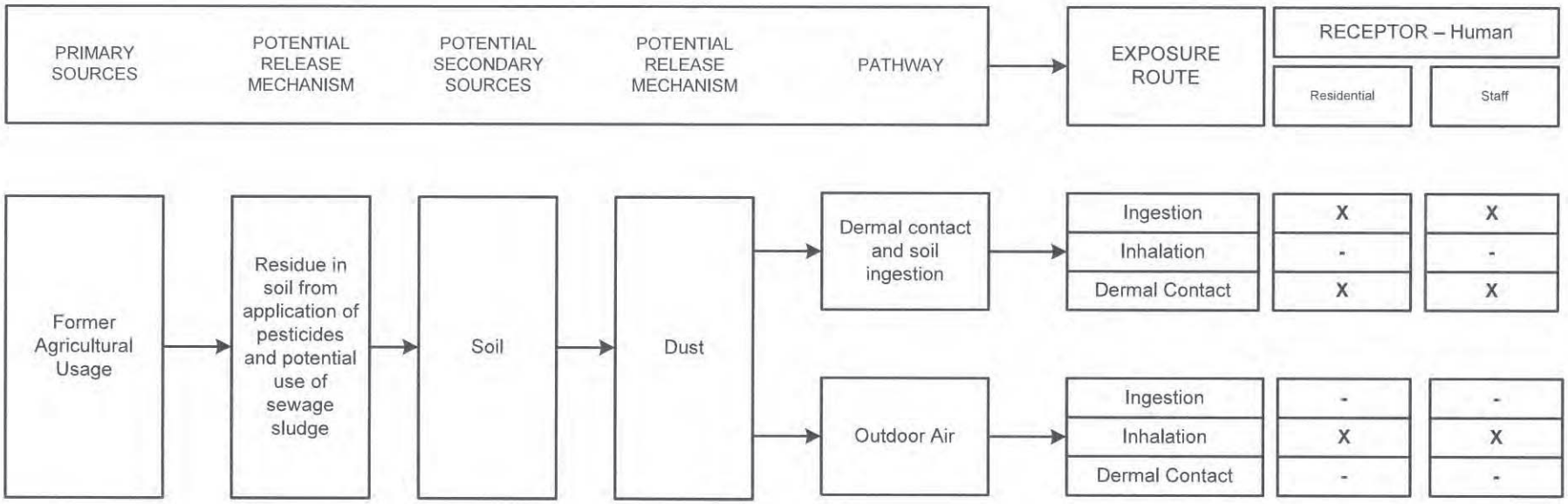
Client: Santa Rosa Academy
27587 La Piedra Road, Menifee, CA

Project No.
12-16-115-02

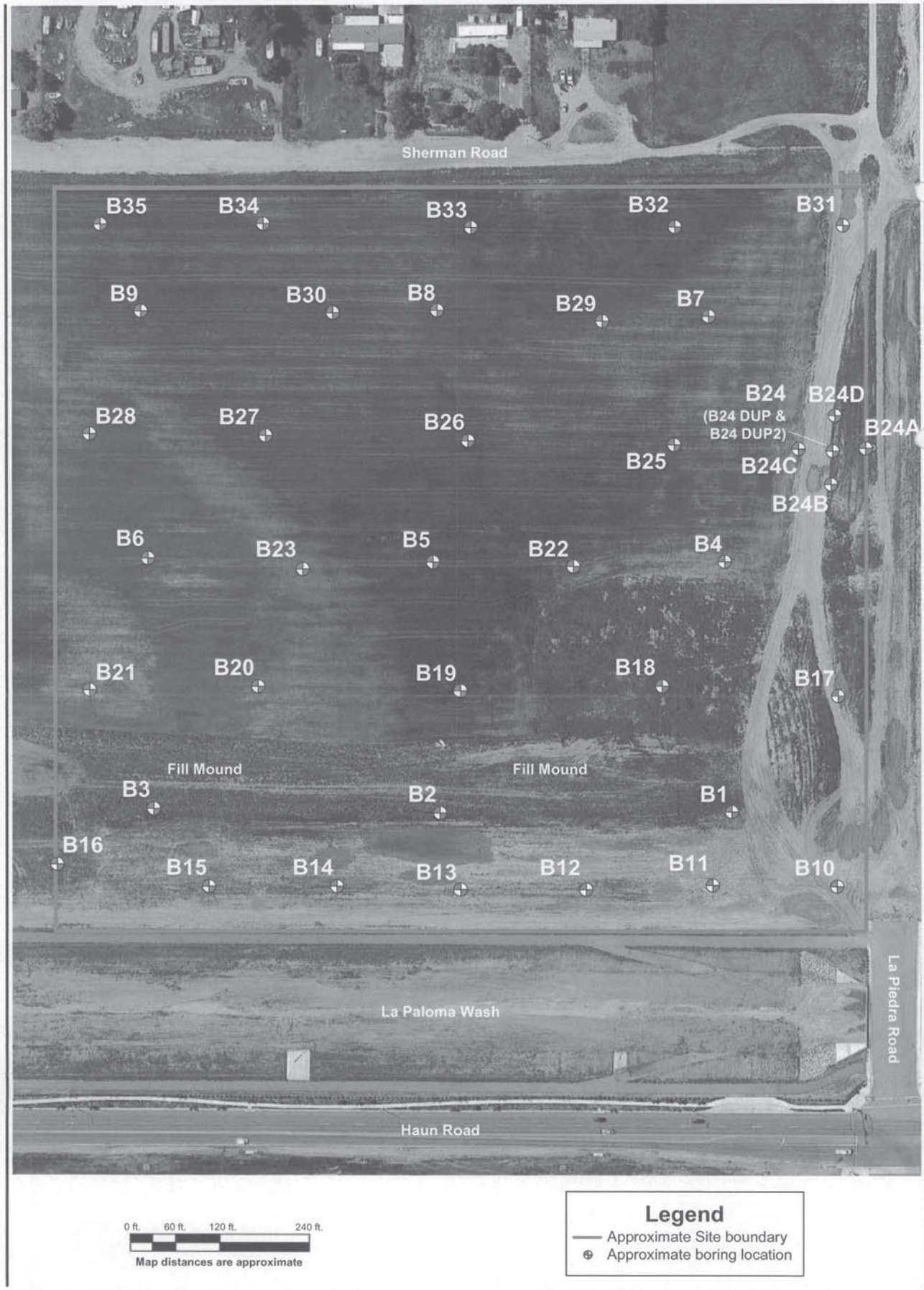
Converse Consultants

FIGURE
3

Figure 4
CONCEPTUAL SITE MODEL
Santa Rosa Academy
Menifee, California



\+ Complete Pathway - Incomplete Pathway



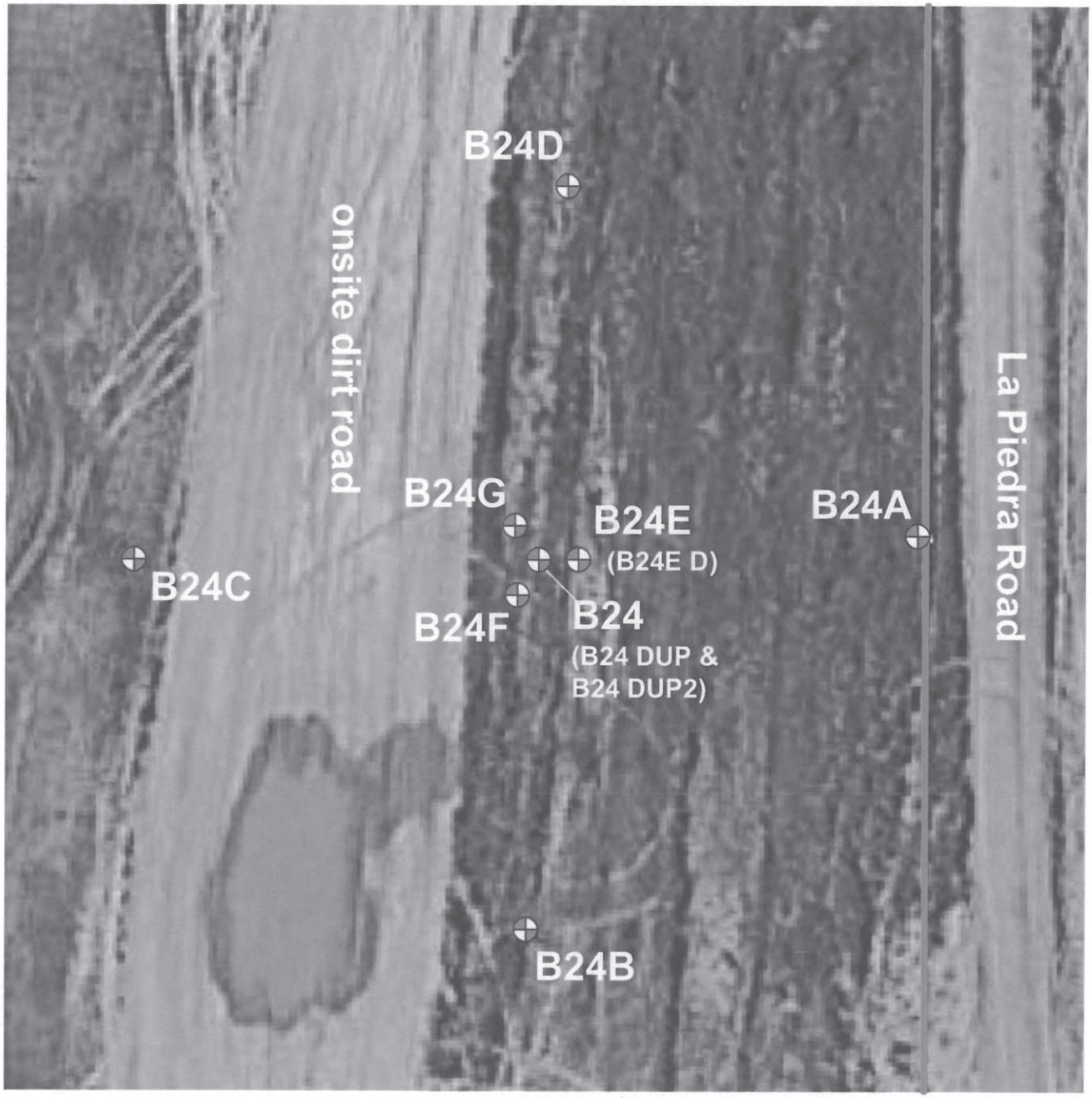
Soil Boring Location Map

Client: Santa Rosa Academy
27587 La Piedra Road, Menifee, CA

Project No.
12-16-115-02

Converse Consultants

FIGURE
5



0 ft. 10 ft. 20 ft. 40 ft.

Map distances are approximate

Legend

- Approximate Site boundary
- Approximate boring location

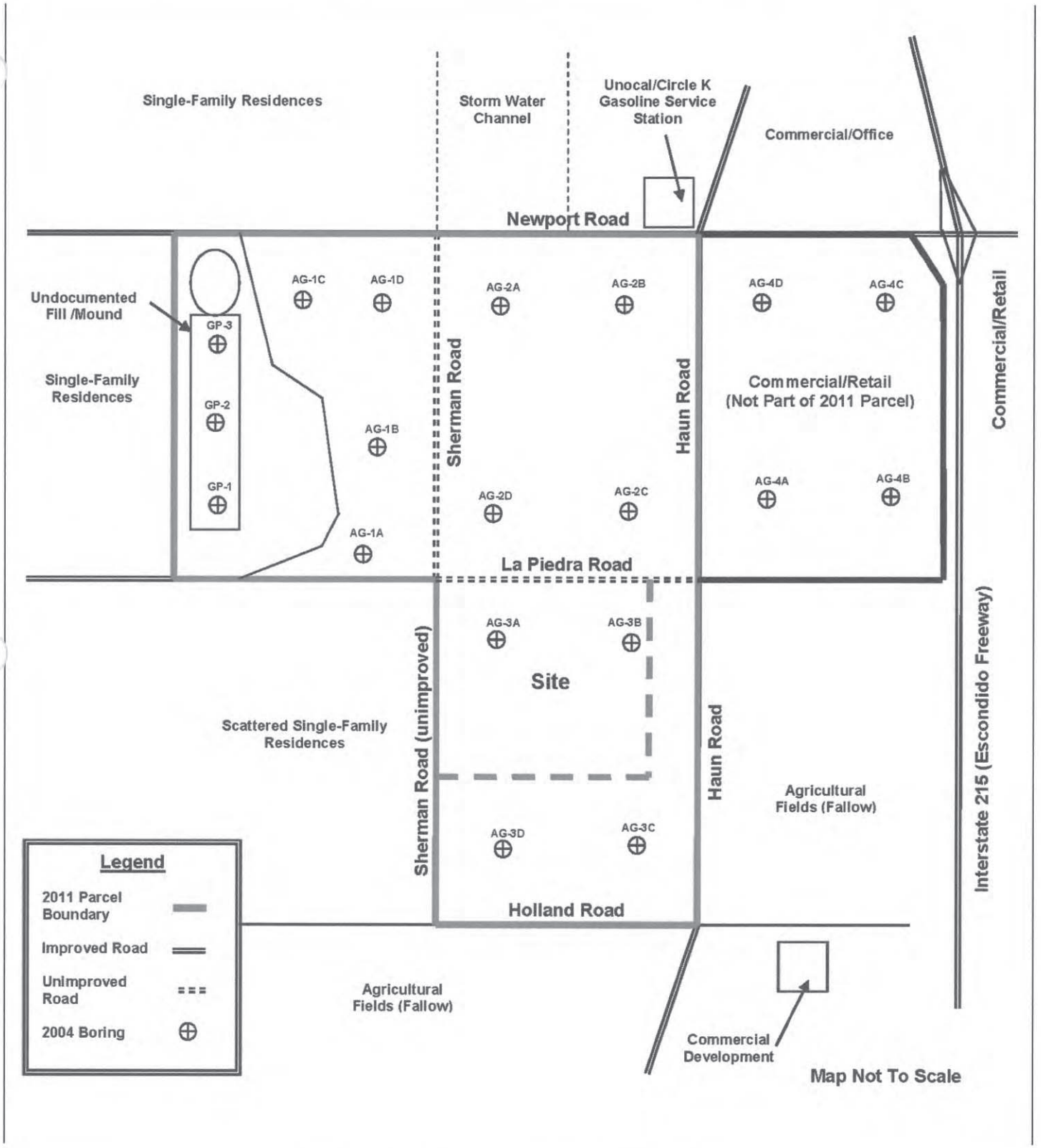
Soil Boring B24 Location Map

Client: Santa Rosa Academy
27587 La Piedra Road, Menifee, CA

Project No.
12-16-115-02

Converse Consultants

FIGURE
5A



2004 Boring Location Map

Client: Santa Rosa Academy
27587 La Piedra Road, Menifee, CA

Project No:
12-16-115-02
(04-16-276-01)

Converse Consultants

FIGURE
6

Various Tables
1 through 10

Tables

Table 1
2012 Composite Soil Sample Analytical Results for Total Threshold Limit Concentration Metals
Proposed Santa Rosa Academy
Menifee, CA

Boring ID	Sample Date	Composite Sample ID	Sample Depth (feet, bgs)	Total Threshold Limit Concentration (TTLC) Metals - EPA Methods 6010B/7471A															
				TTLC Antimony (mg/kg)	TTLC Arsenic (mg/kg)	TTLC Barium (mg/kg)	TTLC Beryllium (mg/kg)	TTLC Cadmium (mg/kg)	TTLC Chromium (mg/kg)	TTLC Cobalt (mg/kg)	TTLC Copper (mg/kg)	TTLC Lead (mg/kg)	TTLC Mercury (mg/kg)	TTLC Molybdenum (mg/kg)	TTLC Nickel (mg/kg)	TTLC Selenium (mg/kg)	TTLC Silver (mg/kg)	TTLC Thallium (mg/kg)	TTLC Vanadium (mg/kg)	TTLC Zinc (mg/kg)
B-1, B-2 & B-3	03/19/2012	B1/2/3-0.5	0.5	ND	ND	**99.0**	ND	ND	**11.9**	**6.47**	**11.6**	ND	ND	ND	ND	ND	ND	ND	**39.9**	**46.7**
B-4, B-5 & B-6	03/19/2012	B4/5/6-0.5	0.5	ND	ND	**107**	ND	ND	**12.7**	**7.14**	**13.4**	ND	ND	ND	**3.56**	ND	ND	ND	**43.7**	**47.0**
B-7, B-8 & B-9	03/19/2012	B7/8/9-0.5	0.5	ND	ND	**89.5**	ND	ND	**8.59**	**5.12**	**9.47**	ND	ND	ND	ND	ND	ND	ND	**30.0**	**39.0**
B-10, B-11 & B-12	05/09/2012	B10/11/12-0.5	0.5	ND	ND	**107**	ND	ND	**11.6**	**6.07**	**10.8**	ND	ND	ND	**6.54**	ND	ND	ND	**38.6**	**36.2**
		B10/11/12-0.5 DUP	0.5	ND	ND	**106**	ND	ND	**10.4**	**5.65**	**10.0**	ND	ND	ND	**7.24**	ND	ND	ND	**33.1**	**34.8**
B-13, B-14 & B-15	05/09/2012	B13/14/15-0.5	0.5	ND	ND	**103**	ND	ND	**11.2**	**6.35**	**10.2**	ND	ND	ND	**5.59**	ND	ND	ND	**39.7**	**35.4**
B-16, B-17 & B-18	05/09/2012	B16/17/18-0.5	0.5	ND	ND	**93.7**	ND	ND	**10.0**	**6.69**	**11.7**	ND	ND	ND	**3.01**	ND	ND	ND	**36.8**	**38.3**
B-19, B-20 & B-21	05/09/2012	B19/20/21-0.5	0.5	ND	ND	**114**	ND	ND	**12.6**	**7.82**	**15.1**	ND	ND	ND	**4.17**	ND	ND	ND	**41.6**	**48.1**
B-22, B-23 & B-24	05/09/2012	B22/23/24-0.5	0.5	ND	ND	**104**	ND	ND	**10.4**	**6.10**	**12.3**	ND	ND	ND	**2.87**	ND	ND	ND	**35.8**	**43.8**
B-25, B-26 & B-27	05/09/2012	B25/26/27-0.5	0.5	ND	ND	**110**	ND	ND	**10.4**	**6.67**	**12.7**	ND	ND	ND	ND	ND	ND	ND	**35.9**	**44.5**
B-28, B-29 & B-30	05/09/2012	B28/29/30-0.5	0.5	ND	ND	**113**	ND	ND	**11.2**	**7.17**	**13.1**	ND	ND	ND	**2.52**	ND	ND	ND	**38.2**	**47.7**
B-31, B-32 & B-33	05/09/2012	B31/32/33-0.5	0.5	ND	ND	**106**	ND	ND	**10.4**	**5.20**	**11.6**	ND	ND	ND	**3.17**	ND	ND	ND	**27.6**	**47.0**
B-34 & B-35	05/09/2012	B34/35-0.5	0.5	ND	ND	**131**	ND	ND	**12.3**	**7.74**	**13.9**	ND	ND	ND	**3.38**	ND	ND	ND	**41.3**	**48.5**
Site Maximum Concentration [1]				*0.250*	*0.248*	**131**	*0.180*	*0.119*	**12.7**	**7.82**	**15.1**	*0.192*	*0.0062*	*0.274*	**7.24**	*0.234*	*0.414*	*0.432*	**43.7**	**48.5**
Practical Quantitation Limit (PQL)				1.0	0.3	5.0	0.5	0.5	0.5	1.0	1.0	0.5	0.01	5.0	2.5	1.0	1.0	1.0	5.0	0.5
Method Detection Limit (MDL)				0.250	0.248	0.143	0.180	0.119	0.138	0.156	0.203	0.192	0.0062	0.274	0.165	0.234	0.414	0.432	0.171	0.131
California Human Health Screening Level for Residential Land Use (CHHSL-R)				10 [2]	4 [2,4]	1,733 [2]	50 [2]	0.57 [2]	33,333 [2]	220 [2]	1,000 [2]	27 [2]	6 [2]	127 [2]	533 [2]	127 [2]	127 [2]	1.67 [2]	177 [2]	7,667 [2]
				15 [3]	6 [3,4]	2,600 [3]	75 [3]	0.85 [3]	50,000 [3]	330 [3]	1,500 [3]	40 [3]	9 [3]	190 [3]	800 [3]	190 [3]	190 [3]	2.5 [3]	265 [3]	11,500 [3]
Background Metals Concentrations in California Soil [5]				0.15-1.95	0.6-11.0	133-1,400	0.25-2.70	0.05-1.70	23-1,579	2.7-46.9	9.1-96.4	12.4-97.1	0.05-0.90	0.1-9.6	9-509	0.015-0.430	0.10-8.30	0.17-1.10	39-288	88-236
Total Threshold Limit Concentration				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
Soluble Threshold Limit Concentration (STLC, mg/L)				15	5.0	100	0.75	1.0	560(5)	80	25	5.0	0.2	350	20	1.0	5	7.0	24	250
Maximum Concentration of Contaminants for the Toxicity Characteristic (TC, mg/L)				-----	5.0	100	-----	1.0	5	-----	-----	5.0	0.2	-----	-----	1.0	5	-----	-----	-----

ND - Not Detected above the MDL.
mg/kg - milligrams per kilogram
mg/L - milligrams per liter
bgs - below ground surface
1 - MDL (*italics*) used for ND TTLC metals.
2 - Reduced to ~½ for Comparison to 3-Sample Composite
3 - Reduced to ~⅓ for Comparison to 2-Sample Composite
4 - Department of Toxic Substances Control Soil Screening Level
5 - *Background Concentrations of Trace and Major Elements in California Soils* (Kearney Foundation of Soil Science, March 1996)

Table 1A
2012 RCDEH Soil Sample Analytical Results for Total Threshold Limit Concentration Metals
Proposed Santa Rosa Academy
Menifee, CA

Boring ID	Sample Date	Composite Sample ID	Discrete Sample ID	Sample Depth (feet, bgs)	Total Threshold Limit Concentration (TTLC) Metals - EPA Methods 6010B/7471A															
					TTLC Antimony (mg/kg)	TTLC Arsenic (mg/kg)	TTLC Barium (mg/kg)	TTLC Beryllium (mg/kg)	TTLC Cadmium (mg/kg)	TTLC Chromium (mg/kg)	TTLC Cobalt (mg/kg)	TTLC Copper (mg/kg)	TTLC Lead (mg/kg)	TTLC Mercury (mg/kg)	TTLC Molybdenum (mg/kg)	TTLC Nickel (mg/kg)	TTLC Selenium (mg/kg)	TTLC Silver (mg/kg)	TTLC Thallium (mg/kg)	TTLC Vanadium (mg/kg)	TTLC Zinc (mg/kg)
B-28, B-29 & B-30	05/09/2012	B28/29/30-0.5		0.5	ND	ND	**113**	ND	ND	**11.2**	**7.17**	**13.1**	ND	ND	ND	**2.52**	ND	ND	ND	**38.2**	**47.7**
			B28-1 [1]	1	ND(10)	ND(10)	**140**	ND(5.0)	ND(5.0)	**14**	ND(10)	**13**	ND(10)	ND(0.20)	ND(10)	ND(10)	ND(10)	ND(50)	ND(10)	**53**	**46**
			B29-1 [1]	1	ND(10)	ND(10)	**88**	ND(5.0)	ND(5.0)	ND(10)	ND(10)	ND(10)	ND(10)	ND(0.20)	ND(10)	ND(10)	ND(10)	ND(50)	ND(10)	**41**	**32**
			B30-1 [1]	1	ND(10)	ND(10)	**130**	ND(5.0)	ND(5.0)	**12**	ND(10)	**12**	ND(10)	ND(0.20)	ND(10)	ND(10)	ND(10)	ND(50)	ND(10)	**51**	**42**
B-31, B-32 & B-33	05/09/2012	B31/32/33-0.5		0.5	ND	ND	**106**	ND	ND	**10.4**	**5.20**	**11.6**	ND	ND	ND	**3.17**	ND	ND	ND	**27.6**	**47.0**
			B31-1 [1]	1	ND(10)	ND(10)	**78**	ND(5.0)	ND(5.0)	ND(10)	ND(10)	ND(10)	ND(10)	ND(0.20)	ND(10)	ND(10)	ND(10)	ND(50)	ND(10)	**34**	**28**
Practical Quantitation Limit (PQL)					1.0	0.3	5.0	0.5	0.5	0.5	1.0	1.0	0.5	0.01	5.0	2.5	1.0	1.0	1.0	5.0	0.5
Method Detection Limit (MDL)					0.250	0.248	0.143	0.180	0.119	0.138	0.156	0.203	0.192	0.0062	0.274	0.165	0.234	0.414	0.432	0.171	0.131
California Human Health Screening Level for Residential Land Use (CHHSL-R)					30 [2]	12 [2,4]	2,600 [2]	150 [2]	1.7 [2]	100,000 [2]	660 [2]	3,000 [2]	80 [2]	18 [2]	380 [2]	1,600 [2]	380 [2]	380 [2]	5 [2]	530 [2]	23,000 [2]
					10 [3]	4 [3,4]	1,733 [2]	50 [3]	0.57 [3]	33,333 [3]	220 [3]	1,000 [3]	27 [3]	6 [3]	127 [3]	533 [3]	127 [3]	127 [3]	1.67 [3]	177 [3]	7,667 [3]
Background Metals Concentrations in California Soil [5]					0.15-1.95	0.6-11.0	133-1,400	0.25-2.70	0.05-1.70	23-1,579	2.7-46.9	9.1-96.4	12.4-97.1	0.05-0.90	0.1-9.6	9-509	0.015-0.430	0.10-8.30	0.17-1.10	39-288	88-236
Total Threshold Limit Concentration					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
Soluble Threshold Limit Concentration (STLC, mg/L)					15	5.0	100	0.75	1.0	560(5)	80	25	5.0	0.2	350	20	1.0	5	7.0	24	250
Maximum Concentration of Contaminants for the Toxicity Characteristic (TC, mg/L)					-----	5.0	100	-----	1.0	5	-----	-----	5.0	0.2	-----	-----	1.0	5	-----	-----	-----

ND - Not Detected above the MDL.
ND(#) - Not Detected above the listed Reporting Detection Limit
mg/kg - milligrams per kilogram
mg/L - milligrams per liter
bgs - below ground surface
1 - Analyzed by Babcock & Sons, Inc. for RCDEH.
2 - Unreduced for Comparison to Discrete Sample
3 - Reduced to ~⅓ for Comparison to 3-Sample Composite
4 - Department of Toxic Substances Control Soil Screening Level
5 - *Background Concentrations of Trace and Major Elements in California Soils* (Kearney Foundation of Soil Science, March 1996)

Table 2
2012 Soil Sample Analytical Results for Total Threshold Limit Concentration Arsenic
Proposed Santa Rosa Academy
Menifee, CA

Boring ID	Sample Date	Composite Sample ID	Discrete Sample ID	Sample Depth (feet, bgs)	TTLC Arsenic EPA Method 6010B (mg/kg)
B-1, B-2 & B-3	03/19/2012	B1/2/3-0.5	-----	0.5	ND
B-1	03/19/2012	-----	B1-0.5	0.5	ND
B-4, B-5 & B-6	03/19/2012	B4/5/6-0.5	-----	0.5	ND
B-4	03/19/2012	-----	B4-0.5	0.5	ND
B-7, B-8 & B-9	03/19/2012	B7/8/9-0.5	-----	0.5	ND
B-7	03/19/2012	-----	B7-0.5	0.5	ND
B-10, B-11 & B-12	05/09/2012	B10/11/12-0.5	-----	0.5	ND
		B10/11/12-0.5 DUP	-----	0.5	ND
B-11	05/09/2012	-----	B11-0.5	0.5	ND
		-----	D1	0.5	ND
B-13, B-14 & B-15	05/09/2012	B13/14/15-0.5	-----	0.5	ND
B-13	05/09/2012	-----	B13-0.5	0.5	ND
B-16, B-17 & B-18	05/09/2012	B16/17/18-0.5	-----	0.5	ND
B-16	05/09/2012	-----	B16-0.5	0.5	ND
B-19, B-20 & B-21	05/09/2012	B19/20/21-0.5	-----	0.5	ND
B-19	05/09/2012	-----	B19-0.5	0.5	ND
B-22, B-23 & B-24	05/09/2012	B22/23/24-0.5	-----	0.5	ND
B-22	05/09/2012	-----	B22-0.5	0.5	ND
B-25, B-26 & B-27	05/09/2012	B25/26/27-0.5	-----	0.5	ND
B-25	05/09/2012	-----	B25-0.5	0.5	ND
B-28, B-29 & B-30	05/09/2012	B28/29/30-0.5	-----	0.5	ND
B-28	05/09/2012	-----	B28-0.5	0.5	ND
B-31, B-32 & B-33	05/09/2012	B31/32/33-0.5	-----	0.5	ND
B-31	05/09/2012	-----	B31-0.5	0.5	ND
B-34 & B-35	05/09/2012	B34/35-0.5	-----	0.5	ND
B-34	05/09/2012	-----	B34-0.5	0.5	ND
Practical Quantitation Limit (PQL)					0.3
Method Detection Limit (MDL)					0.248
Department of Toxic Substances Control Soil Screening Level					12
					4 [1]
					6 [2]
Total Threshold Limit Concentration (TTLC)					500
Soluble Threshold Limit Concentration (STLC, mg/L)					5.0
Maximum Concentration of Contaminants for the Toxicity Characteristic (TC, mg/L)					5.0

ND - Not Detected above the MDL.
mg/kg - milligrams per kilogram
mg/L - milligrams per liter
bgs - below ground surface
1 - Reduced to ⅓ for Comparison to 3-Sample Composite
2 - Reduced to ½ for Comparison to 2-Sample Composite

Table 3
2012 Composite Soil Sample Analytical Results for Organochlorine Pesticides
Proposed Santa Rosa Academy
Menifee, CA

Boring ID	Sample Date	Composite Sample ID	Sample Depth (feet, bgs)	Organochlorine Pesticides (OCPs) EPA Method 8081A	
				DDE (mg/kg)	All Other OCPs (mg/kg)
B-1, B-2 & B-3	03/19/2012	B1/2/3-0.5	0.5	**0.002**	ND
		B1/2/3-3	3	ND	ND
B-4, B-5 & B-6	03/19/2012	B4/5/6-0.5	0.5	**0.005**	ND
		B4/5/6-3	3	ND	ND
B-7, B-8 & B-9	03/19/2012	B7/8/9-0.5	0.5	**0.005**	ND
		B7/8/9-3	3	ND	ND
B-10, B-11 & B-12	05/09/2012	B10/11/12-0.5	0.5	**0.001**	ND
		B10/11/12-0.5 DUP	0.5	**0.001**	ND
B-13, B-14 & B-15	05/09/2012	B13/14/15-0.5	0.5	**0.002**	ND
B-16, B-17 & B-18	05/09/2012	B16/17/18-0.5	0.5	**0.006**	ND
B-19, B-20 & B-21	05/09/2012	B19/20/21-0.5	0.5	**0.005**	ND
B-22, B-23 & B-24	05/09/2012	B22/23/24-0.5	0.5	**0.013**	ND
B-25, B-26 & B-27	05/09/2012	B25/26/27-0.5	0.5	**0.006**	ND
B-28, B-29 & B-30	05/09/2012	B28/29/30-0.5	0.5	**0.006**	ND
B-31, B-32 & B-33	05/09/2012	B31/32/33-0.5	0.5	**0.003**	ND
B-34 & B-35	05/09/2012	B34/35-0.5	0.5	**0.004**	ND
		B34/35-0.5 DUP	0.5	**0.003**	ND
Practical Quantitation Limit (PQL)				0.001	0.001 - 0.020
Method Detection Limit (MDL)				0.0001	0.0001 - 0.0020
California Human Health Screening Level for Residential Land Use (CHHSL-R)				0.530 [1]	0.010 - 120 [1]
				0.800 [2]	0.016 - 180 [2]
Total Threshold Limit Concentration (TTLC)				1.0	0.2 - 100
Soluble Threshold Limit Concentration (STLC, mg/L)				0.1	0.02 - 10
Maximum Concentration of Contaminants for the Toxicity Characteristic (TC, mg/L)				-----	0.008 - 10.0

ND - Not Detected above the MDL.
mg/kg - milligrams per kilogram
mg/L - milligrams per liter
bgs - below ground surface
DDE - 4,4'-dichlorodiphenyldichloroethylene
1 - Reduced to ~⅓ for Comparison to 3-Sample Composite
2 - Reduced to ½ for Comparison to 2-Sample Composite

Table 3A
2012 RCDEH Soil Sample Analytical Results for Organochlorine Pesticides
Proposed Santa Rosa Academy
Menifee, CA

Boring ID	Sample Date	Composite Sample ID	Discrete Sample ID	Sample Depth (feet, bgs)	Organochlorine Pesticides (OCPs) EPA Method 8081A	
					DDE (mg/kg)	All Other OCPs (mg/kg)
B-28, B-29 & B-30	05/09/2012	B28/29/30-0.5		0.5	**0.006**	ND
			B28-1 [1]	1	**0.024**	ND (0.0020 - 0.080)
			B29-1 [1]	1	ND (0.0030)	ND (0.0020 - 0.080)
			B30-1 [1]	1	**0.0048**	ND (0.0020 - 0.080)
B-31, B-32 & B-33	05/09/2012	B31/32/33-0.5		0.5	**0.003**	ND
			B31-1 [1]	1	ND (0.0030)	ND (0.0020 - 0.080)
Practical Quantitation Limit (PQL)					0.001	0.001 - 0.020
Method Detection Limit (MDL)					0.0001	0.0001 - 0.0020
California Human Health Screening Level for Residential Land Use (CHHSL-R)					1.6 [2]	0.033 - 360 [2]
					0.530 [3]	0.010 - 120 [3]
Total Threshold Limit Concentration (TTLC)					1.0	0.2 - 100
Soluble Threshold Limit Concentration (STLC, mg/L)					0.1	0.02 - 10
Maximum Concentration of Contaminants for the Toxicity Characteristic (TC, mg/L)					-----	0.008 - 10.0

ND - Not Detected above the MDL.
ND(##) - Not Detected above the listed Reporting Detection Limit(s).
mg/kg - milligrams per kilogram
mg/L - milligrams per liter
bgs - below ground surface

DDE - 4,4'-dichlorodiphenyldichloroethylene
1 - Analyzed by Babcock & Sons, Inc. for RCDEH; analytical result reported in micrograms per kilogram (µg/kg) equal to 0.001 mg/kg.
2 - Unreduced for Comparison to Discrete Sample
3 - Reduced to ~⅓ for Comparison to 3-Sample Composite

Table 4
2012 Soil Sample Analytical Results for Total and E. Coli Coliform
Proposed Santa Rosa Academy
Menifee, CA

Boring ID	Sample Date	Sample ID	Sample Depth (feet, bgs)	Total Coliform SM 9221-B Method (MPN/g)	E. coli Coliform SM 9221-F Method (MPN/g)
B-10	05/09/2012	B10-0.5	0.5	**8.00**	<2
B-11	05/09/2012	B11-0.5	0.5	<2	<2
		D1	0.5	<2	<2
B-12	05/09/2012	B12-0.5	0.5	<2	<2
B-13	05/09/2012	B13-0.5	0.5	<2	<2
B-14	05/09/2012	B14-0.5	0.5	<2	<2
B-15	05/09/2012	B15-0.5	0.5	<2	<2
B-16	05/09/2012	B16-0.5	0.5	<2	<2
B-17	05/09/2012	B17-0.5	0.5	<2	<2
B-18	05/09/2012	B18-0.5	0.5	<2	<2
B-19	05/09/2012	B19-0.5	0.5	<2	<2
		D3	0.5	<2	<2
B-20	05/09/2012	B20-0.5	0.5	<2	<2
B-21	05/09/2012	B21-0.5	0.5	<2	<2
B-22	05/09/2012	B22-0.5	0.5	<2	<2
B-23	05/09/2012	B23-0.5	0.5	<2	<2
B-24 (B-24 DUP & B-24 DUP2)	05/09/2012	B24-0.5	0.5	>16,000 [1]	>16,000 [1]
	05/16/2012	B24-0.5 DUP	0.5	**7,000**	**4,900**
	05/16/2012	B24-2 DUP	2	<2	<2
B-24A	05/16/2012	B24A-0.5	0.5	<2	<2
B-24B	05/16/2012	B24B-0.5	0.5	<2	<2
B-24C	05/16/2012	B24C-0.5	0.5	<2	<2
B-24D	05/16/2012	B24D-0.5	0.5	<2	<2
B-24E (B-24E D)	05/25/2012	B24E-0.5	0.5	<2	<2
	06/06/2012	B24E-0.5D	0.5	<2	<2
B-24F	05/25/2012	B24F-0.5	0.5	<2	<2
B-24G	05/25/2012	B24G-0.5	0.5	<2	<2
B-25	05/09/2012	B25-0.5	0.5	<2	<2
		D5	0.5	<2	<2
B-26	05/09/2012	B26-0.5	0.5	<2	<2
B-27	05/09/2012	B27-0.5	0.5	<2	<2
B-28	05/09/2012	B28-0.5	0.5	**2.00**	<2
		B28-1 [2]	1	**4.00**	ND (2.0)
B-29	05/09/2012	B29-0.5	0.5	<2	<2
		B29-1 [2]	1	ND (2.0)	ND (2.0)
B-30	05/09/2012	B31-0.5	0.5	<2	<2
		B30-1 [2]	1	ND (2.0)	ND (2.0)
B-31	05/09/2012	B31-0.5	0.5	<2	<2
		B31-1 [2]	1	ND (2.0)	ND (2.0)
B-32	05/09/2012	B32-0.5	0.5	<2	<2
B-33	05/09/2012	B33-0.5	0.5	<2	<2
B-34	05/09/2012	B34-0.5	0.5	<2	<2
B-35	05/09/2012	B35-0.5	0.5	<2	<2
Reporting Detection Limit (RDL)				2	2

<2 - Less than the RDL, negative or Not Detected (ND).
ND(2.0) - Not Detected above 2.0 MPN/g RDL.
MPN/g - Most Probable Number per gram
bgs - below ground surface
1 - Analytical result superseded by B24-0.5 DUP.
2 - Analyzed by Babcock & Sons, Inc. for RCDEH.

Table 5
2004 Agricultural Composite Soil Sample Analytical Results for Total Petroleum Hydrocarbons, Pesticides and Herbicides
Proposed Santa Rosa Academy
Menifee, CA

Boring ID	Sample Date	Composite Sample ID	Sample Depth (feet, bgs)	Total Petroleum Hydrocarbons (TPH) EPA Method 8015M				Organochlorine Pesticides (OCPs) EPA Method 8081A		Organophosphorous Pesticides (OPPs) EPA Method 8141A	Chlorinated Herbicides (CHs) EPA Method 8151A
				C4-C10 (Gasoline) (mg/kg)	C8-C16 (Kerosene) (mg/kg)	C11-C22 (Diesel) (mg/kg)	C23-C35 (Motor Oil) (mg/kg)	DDE (mg/kg)	All Other OCPs (mg/kg)	All OPPs (mg/kg)	All CHs (mg/kg)
AG-1A, AG-1B, AG-1C & AG-1D	12/03/2004	AG-1A/1B/ 1C/1D-0.5	0.5	ND	ND	ND	ND	**0.015**	ND	ND	ND
		AG-1A/1B/ 1C/1D-2	2	ND	ND	ND	ND	**0.014**	ND	ND	ND
AG-2A, AG-2B, AG-2C & AG-2D	12/03/2004	AG-2A/2B/ 2C/-2D-0.5	0.5	ND	ND	ND	ND	**0.002**	ND	ND	ND
		AG-2A/2B/ 2C/-2D-2	2	ND	ND	ND	ND	ND	ND	ND	ND
AG-3A, AG-3B, AG-3C & AG-3D	12/03/2004	AG-3A/3B/ 3C/3D-0.5	0.5	ND	ND	ND	ND	**0.002**	ND	ND	ND
		AG-3A/3B/ 3C/3D-2	2	ND	ND	ND	ND	ND	ND	ND	ND
AG-4A, AG-4B, AG-4C & AG-4D	12/03/2004	AG-4A/4B/ 4C/4D-0.5	0.5	ND	ND	ND	ND	**0.007**	ND	ND	ND
		AG-4A/4B/ 4C/4D-2	2	ND	ND	ND	ND	**0.001**	ND	ND	ND
Practical Quantitation Limit (PQL)				10	10	10	50	0.001	0.001 - 0.020	0.50 or 4.0	0.020 - 20.0
California Human Health Screening Level for Residential Land Use (CHSSL-R)				-----	-----	-----	-----	1.6	0.033 - 360	-----	690 or 550
				-----	-----	-----	-----	0.400 [1]	0.005 - 90 [1]	-----	173 or 128 [1]
Maximum Soil Screening Level (MSSL)				500	1,000	1,000	10,000	-----	-----	-----	-----
Environmental Screening Level (ESL)				100	100	100	500	-----	-----	-----	-----
Total Threshold Limit Concentration (TTLC)				-----	-----	-----	-----	1.0	0.2 - 100	-----	10
Soluble Threshold Limit Concentration (STLC, mg/L)				-----	-----	-----	-----	0.1	0.02 - 10	-----	-----
Maximum Concentration of Contaminants for the Toxicity Characteristic (TC, mg/L)				-----	-----	-----	-----	-----	0.008 - 10.0	-----	1.0

ND - Not Detected above the PQL.
mg/kg - milligrams per kilogram
mg/L - milligrams per liter
bgs - below ground surface
DDE - 4,4'-dichlorodiphenyldichloroethylene

1 - Reduced to ~¼ for Comparison to 4-Sample Composite

Borings AG-3A and AG-3B were located on the Proposed Santa Rosa Academy Site.

MSSL is based on a distance of 20 to 150 feet above groundwater.

ESL is Gross Contamination Shallow Soil Screening Level (≤ 3 m bgs) for Residential Land Use and groundwater as a current or potential drinking resource.

Converse Project No. 12-16-115-02 (04-16-276-01)

Table 6
2004 Offsite Fill Mound/Pile Soil Sample Analytical Results for Total Threshold Limit Concentration Metals
Proposed Santa Rosa Academy
Menifee, CA

Boring ID	Sample Date	Sample ID	Sample Depth (feet, bgs)	Total Threshold Limit Concentration (TTLC) Metals - EPA Methods 6010B/7471A															
				TTLC Antimony (mg/kg)	TTLC Arsenic (mg/kg)	TTLC Barium (mg/kg)	TTLC Beryllium (mg/kg)	TTLC Cadmium (mg/kg)	TTLC Chromium (mg/kg)	TTLC Cobalt (mg/kg)	TTLC Copper (mg/kg)	TTLC Lead (mg/kg)	TTLC Mercury (mg/kg)	TTLC Molybdenum (mg/kg)	TTLC Nickel (mg/kg)	TTLC Selenium (mg/kg)	TTLC Silver (mg/kg)	TTLC Thallium (mg/kg)	TTLC Vanadium (mg/kg)	TTLC Zinc (mg/kg)
GP-1	12/03/2004	GP-01-2'	2	ND	2.35	91.4	ND	0.995	7.76	2.73	4.18	5.78	ND	ND	3.60	ND	ND	ND	41.2	38.3
		GP-01-5'	5	ND	3.10	70.3	ND	0.815	7.62	1.97	3.58	3.58	ND	ND	4.35	ND	ND	ND	25.4	25.8
		GP-01-10'	10	ND	7.32	82.0	ND	0.852	22.0	3.22	11.0	1.33	ND	ND	11.0	ND	ND	ND	49.0	43.2
		GP-01-15'	15	ND	1.31	160	ND	0.865	21.5	4.81	9.65	1.49	ND	ND	11.4	ND	ND	ND	41.7	58.1
GP-2	01/25/2010	GP-02-2'	2	ND	3.59	82.3	ND	0.984	7.94	2.43	5.02	5.92	ND	ND	3.41	ND	ND	ND	41.5	39.0
		GP-02-5'	5	ND	1.52	78.7	ND	0.783	7.68	2.09	3.34	2.76	ND	ND	3.60	ND	ND	ND	30.1	28.7
		GP-02-10'	10	ND	8.53	93.2	ND	0.818	25.8	3.17	12.3	1.11	ND	ND	11.4	1.94	ND	ND	49.5	40.8
		GP-02-15'	15	ND	0.885	121	ND	0.917	15.7	4.83	10.1	1.14	ND	ND	7.24	ND	ND	ND	52.9	46.9
GP-3	01/28/2010	GP-03-2'	2	ND	1.94	99.7	ND	0.948	7.69	2.42	3.35	4.60	ND	ND	3.38	ND	ND	ND	38.7	35.9
		GP-03-5'	5	ND	2.04	92.9	ND	0.843	7.35	2.36	3.32	3.76	ND	ND	3.31	ND	ND	ND	33.9	30.1
		GP-03-10'	10	ND	3.50	83.3	ND	0.860	15.7	5.42	9.61	2.57	ND	ND	5.59	ND	ND	ND	58.9	31.6
		GP-03-15'	15	ND	ND	129	ND	0.818	28.0	4.94	6.98	1.66	ND	ND	9.27	ND	ND	ND	39.6	37.8
Maximum Concentration [1]				*1.0*	8.53	160	*0.5*	0.995	28.0	5.42	12.3	5.92	*0.01*	*5.0*	11.4	1.94	*1.0*	*1.0*	58.9	58.1
Practical Quantitation Limit (PQL)				1.0	0.3	5.0	0.5	0.5	0.5	1.0	1.0	0.5	0.01	5.0	2.5	1.0	1.0	1.0	5.0	0.5
California Human Health Screening Level for Residential Land Use (CHHSL-R)				30	0.07	5,200	150	1.7	100,000	660	3,000	80	18	380	1,600	380	380	5	530	23,000
DTSC Soil Screening Level				-----	12	-----	-----	-----	-----	-----	-----	255	-----	-----	-----	-----	-----	-----	-----	-----
Total Threshold Limit Concentration				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
Soluble Threshold Limit Concentration (STLC, mg/L)				15	5.0	100	0.75	1.0	560(5)	80	25	5.0	0.2	350	20	1.0	5	7.0	24	250
Maximum Concentration of Contaminants for the Toxicity Characteristic (TC, mg/L)				-----	5.0	100	-----	1.0	5	-----	-----	5.0	0.2	-----	-----	1.0	5	-----	-----	-----

ND - Not Detected above the PQL.
mg/kg - milligrams per kilogram
mg/L - milligrams per liter
bgs - below ground surface

DTSC - Department of Toxic Substances Control
1 - PQL (*italics*) used for ND metals.
GP-1 through GP-3 were located on the larger "Property" and northwest of the Proposed Santa Rose Academy Site.
TTLC arsenic concentration exceeds the CHHSL-R, but is considered to be background.

Table 7
2004 Offsite Fill Mound/Pile Soil Sample Analytical Results for
Total Petroleum Hydrocarbons
Proposed Santa Rosa Academy
Menifee, CA

Boring ID	Sample Date	Sample ID	Sample Depth (feet, bgs)	Total Petroleum Hydrocarbons (TPH) EPA Method 8015M			
				C4-C10 (Gasoline) (mg/kg)	C8-C16 (Kerosene) (mg/kg)	C11-C22 (Diesel) (mg/kg)	C23-C35 (Motor Oil) (mg/kg)
GP-1	12/03/2004	GP-01-2'	2	ND	ND	ND	ND
		GP-01-5'	5	ND	ND	ND	**214**
		GP-01-10'	10	ND	ND	ND	ND
		GP-01-15'	15	ND	ND	ND	ND
GP-2	12/03/2004	GP-02-2'	2	ND	ND	ND	ND
		GP-02-5'	5	ND	ND	ND	ND
		GP-02-10'	10	ND	ND	ND	ND
		GP-02-15'	15	ND	ND	ND	ND
GP-3	12/03/2004	GP-03-2'	2	ND	ND	ND	ND
		GP-03-5'	5	ND	ND	ND	ND
		GP-03-10'	10	ND	ND	ND	ND
		GP-03-15'	15	ND	ND	ND	ND
Practical Quantitation Limit (PQL)				10	10	10	50
Maximum Soil Screening Level (MSSL)				500	1,000	1,000	10,000
Environmental Screening Level (ESL)				100	100	100	500

ND - Not Detected above the PQL.
mg/kg - milligrams per kilogram
bgs - below ground surface
MSSL is based on a distance of 20 to 150 feet above groundwater.
ESL is Gross Contamination Shallow Soil Screening Level (≤ 3 m bgs) for Residential Land Use and groundwater as a current or potential drinking resource.
GP-1 through GP-3 were located on the larger "Property" and northwest of the Proposed Santa Rosa Academy Site.

Table 8
Comparative Statistics of Total Threshold Limit Concentration Metals for Site Soil Samples and California Background Levels
Proposed Santa Rosa Academy
Menifee, CA

Composite Sample ID	Sample Date	Total Threshold Limit Concentration (TTLC) Metals - EPA Methods 6010B/7471A																
		TTLC Antimony (mg/kg)	TTLC Arsenic (mg/kg)	TTLC Barium (mg/kg)	TTLC Beryllium (mg/kg)	TTLC Cadmium (mg/kg)	TTLC Chromium (mg/kg)	TTLC Cobalt (mg/kg)	TTLC Copper (mg/kg)	TTLC Lead (mg/kg)	TTLC Mercury (mg/kg)	TTLC Molybdenum (mg/kg)	TTLC Nickel (mg/kg)	TTLC Selenium (mg/kg)	TTLC Silver (mg/kg)	TTLC Thallium (mg/kg)	TTLC Vanadium (mg/kg)	TTLC Zinc (mg/kg)
B1/2/3-0.5	03/19/2012	ND	ND	**99.0**	ND	ND	**11.9**	**6.47**	**11.6**	ND	ND	ND	ND	ND	ND	ND	**39.9**	**46.7**
B4/5/6-0.5	03/19/2012	ND	ND	**107**	ND	ND	**12.7**	**7.14**	**13.4**	ND	ND	ND	**3.56**	ND	ND	ND	**43.7**	**47.0**
B7/8/9-0.5	03/19/2012	ND	ND	**89.5**	ND	ND	**8.59**	**5.12**	**9.47**	ND	ND	ND	ND	ND	ND	ND	**30.0**	**39.0**
B10/11/12-0.5	05/09/2012	ND	ND	**107**	ND	ND	**11.6**	**6.07**	**10.8**	ND	ND	ND	**6.54**	ND	ND	ND	**38.6**	**36.2**
B10/11/12-0.5 DUP	05/09/2012	ND	ND	**106**	ND	ND	**10.4**	**5.65**	**10.0**	ND	ND	ND	**7.24**	ND	ND	ND	**33.1**	**34.8**
B13/14/15-0.5	05/09/2012	ND	ND	**103**	ND	ND	**11.2**	**6.35**	**10.2**	ND	ND	ND	**5.59**	ND	ND	ND	**39.7**	**35.4**
B16/17/18-0.5	05/09/2012	ND	ND	**93.7**	ND	ND	**10.0**	**6.69**	**11.7**	ND	ND	ND	**3.01**	ND	ND	ND	**36.8**	**38.3**
B19/20/21-0.5	05/09/2012	ND	ND	**114**	ND	ND	**12.6**	**7.82**	**15.1**	ND	ND	ND	**4.17**	ND	ND	ND	**41.6**	**48.1**
B22/23/24-0.5	05/09/2012	ND	ND	**104**	ND	ND	**10.4**	**6.10**	**12.3**	ND	ND	ND	**2.87**	ND	ND	ND	**35.8**	**43.8**
B25/26/27-0.5	05/09/2012	ND	ND	**110**	ND	ND	**10.4**	**6.67**	**12.7**	ND	ND	ND	ND	ND	ND	ND	**35.9**	**44.5**
B28/29/30-0.5	05/09/2012	ND	ND	**113**	ND	ND	**11.2**	**7.17**	**13.1**	ND	ND	ND	**2.52**	ND	ND	ND	**38.2**	**47.7**
B31/32/33-0.5	05/09/2012	ND	ND	**106**	ND	ND	**10.4**	**5.20**	**11.6**	ND	ND	ND	**3.17**	ND	ND	ND	**27.6**	**47.0**
B34/25-0.5	05/09/2012	ND	ND	**131**	ND	ND	**12.3**	**7.74**	**13.9**	ND	ND	ND	**3.38**	ND	ND	ND	**41.3**	**48.5**
Practical Quantitation Limit (PQL)		1.0	0.3	5.0	0.5	0.5	0.5	1.0	1.0	0.5	0.01	5.0	2.5	1.0	1.0	1.0	5.0	0.5
Method Detection Limit (MDL)		0.250	0.248	0.143	0.180	0.119	0.138	0.156	0.203	0.192	0.0062	0.274	0.165	0.234	0.414	0.432	0.171	0.131
Site Soil Sample Statistics																		
Detections		*0*	*0*	13	*0*	*0*	13	13	13	*0*	*0*	*0*	10	*0*	*0*	*0*	13	13
Minimum		*0.250*	*0.248*	89.5	*0.180*	*0.119*	8.59	5.12	9.47	*0.192*	*0.0062*	*0.274*	2.52	*0.234*	*0.414*	*0.432*	27.6	34.8
Lower Quartile				103			10.4	6.07	10.8				3.05				35.8	38.3
Median				106			11.2	6.47	11.7				3.47				38.2	44.5
Upper Quartile				110			11.9	7.14	13.1				5.24				39.9	47.0
Maximum				131			12.7	7.82	15.1				7.24				43.7	48.5
Mean				106			11.1	6.48	12.0				4.21				37.1	42.8
California Background Statistics (Kearney)																		
Minimum		0.15	0.6	133	0.25	0.05	23	2.7	9.1	12.4	0.05	0.1	9	0.015	0.10	0.17	39	88
Lower Quartile		0.33	1.4	375	0.92	0.15	45	8.7	16.1	16.0	0.10	0.6	21	0.015	0.22	0.42	75	133
Median		0.47	2.7	520	1.27	0.28	69	11.6	21.6	20.6	0.19	0.9	27	0.015	0.37	0.54	94	153
Upper Quartile		0.73	4.7	625	1.53	0.44	115	18.3	36.6	26.7	0.34	1.4	56	0.050	0.53	0.69	134	170
Maximum		1.95	11.0	1,400	2.70	1.70	1,579	46.9	96.4	97.1	0.90	9.6	509	0.430	8.30	1.10	288	236
Mean		0.60	3.5	509	1.28	0.36	122	14.9	28.7	23.9	0.26	1.3	57	0.058	0.80	0.56	112	149

ND - Not Detected or less than the MDL. mg/kg - milligrams per kilogram
MDLs have been used for all statistics for TTLC metals which are ND for all soil samples.
Background statistics from *Background Concentrations of Trace and Major Elements in California Soils* (Kearny Foundation of Soil Science Report, March 1996).

Table 9
Risk Calculations for Total Threshold Limit Concentration Metals
Proposed Santa Rosa Academy
Menifee, CA

		Total Threshold Limit Concentration (TTLC) Metals - EPA Methods 6010B/7471A															Total Site Risk Index	Total Site Risk
		TTLC Antimony (mg/kg)	TTLC Barium (mg/kg)	TTLC Beryllium (mg/kg)	TTLC Cadmium (mg/kg)	TTLC Chromium (mg/kg)	TTLC Cobalt (mg/kg)	TTLC Copper (mg/kg)	TTLC Lead (mg/kg)	TTLC Mercury (mg/kg)	TTLC Molybdenum (mg/kg)	TTLC Nickel (mg/kg)	TTLC Selenium (mg/kg)	TTLC Silver (mg/kg)	TTLC Thallium (mg/kg)	TTLC Vanadium (mg/kg)	TTLC Zinc (mg/kg)		
Site Maximum Concentrations	**Detections**	0	13	0	0	13	13	13	*0*	*0*	*0*	*10*	*0*	*0*	*0*	13	13		
	EPC [1,2]	*0.250*	**131**	*0.180*	*0.119*	**12.7**	**7.82**	**15.1**	*0.192*	*0.0062*	*0.274*	**7.24**	*0.234*	*0.414*	*0.432*	**43.7**	**48.5**		
	Risk Index	**0.025**	**0.050**	**0.0036**	**0.209**	**0.00038**	**0.036**	**0.015**	**0.0071**	**0.0010**	**0.0022**	**0.014**	**0.0018**	**0.0033**	**0.259**	**0.247**	**0.0063**	**0.880**	**8.80E-07**
Site Maximum Concentrations w/o NDs	**Detections**	0	13	0	0	13	13	13	0	0	0	13	0	0	0	13	13		
	EPC [1]	*ND*	**131**	*ND*	*ND*	**12.7**	**7.82**	**15.1**	*ND*	*ND*	*ND*	**7.24**	*ND*	*ND*	*ND*	**43.7**	**48.5**		
	Risk Index	*0*	**0.050**	*0*	*0*	**0.00038**	**0.036**	**0.015**	*0*	*0*	*0*	**0.014**	*0*	*0*	*0*	**0.247**	**0.0063**	**0.368**	**3.68E-07**
Method Detection Limit (MDL)		0.250	0.143	0.180	0.119	0.138	0.156	0.203	0.192	0.0062	0.274	0.165	0.234	0.414	0.432	0.171	0.131		
Three-Sample CHHSL-R [3]		10	-----	50	0.57	33,333	220	1,000	27	6	127	533	127	127	1.67	177	7,667		
Two-Sample CHHSL-R [4]		-----	2,600	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----		

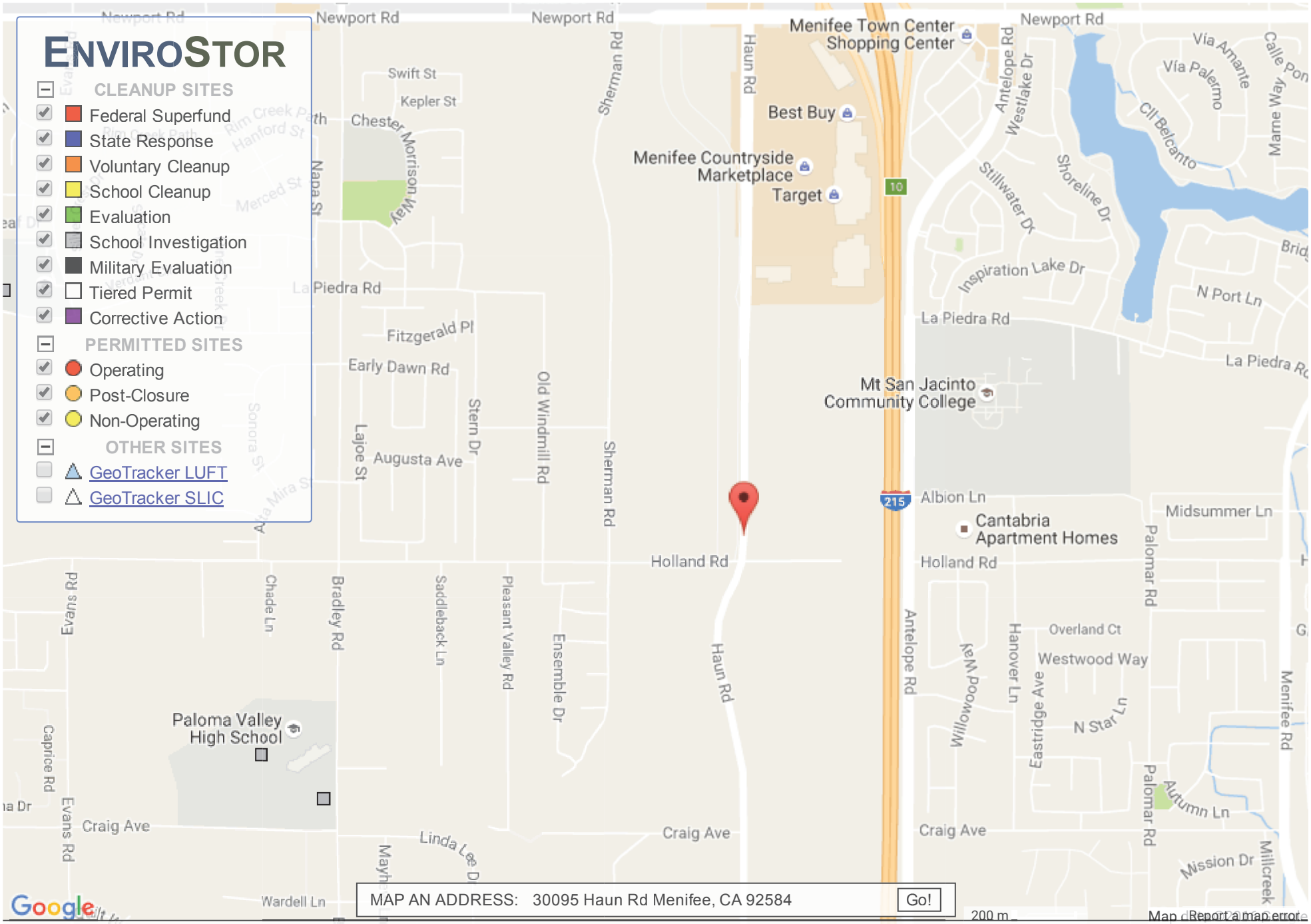
EPC - Exposure Point Concentratioin
ND - Not Detected above the MDL.
mg/kg - milligrams per kilogram
CHHSL-R - California Human Health Screening Level for Residential Land Use
1 - Site Maximum Concentrations used as EPCs for detected TTLC metals.
2 - MDLs (*italics*) used as EPCs for ND TTLC metals.
3 - CHHSL-R reduced to ~⅓ for 3-Sample Composite
4 - CHHSL-R reduced to ~½ for 2-Sample Composite
Site Maximum Concentrations for all TTLC metals (except TTLC barium) are in 3-sample composites.
Site Maximum Concentration for TTLC barium is in a 2-sample composite.

Table 10
Risk Calculations for Organochlorine Pesticides
Proposed Santa Rosa Academy
Menifee, CA

		Organochlorine Pesticides (OCPs) EPA Method 8081A												Total Site Risk Index	Total Site Risk
		DDE (mg/kg)	aldrin (mg/kg)	Technical chlordane (mg/kg)	DDD (mg/kg)	DDT (mg/kg)	dieldrin (mg/kg)	endrin (mg/kg)	heptachlor (mg/kg)	heptachlor epoxide (mg/kg)	lindane (mg/kg)	methoxychlor (mg/kg)	toxaphene (mg/kg)		
Site Maximum Concentrations	**Detections**	14	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*		
	EPC [1,2]	**0.013**	*0.0001*	*0.0005*	*0.0001*	*0.0001*	*0.0001*	*0.0001*	*0.0001*	*0.0001*	*0.0001*	*0.0001*	*0.0020*		
	Risk Index	**0.0245**	*0.010*	*0.0036*	*0.000132*	*0.00019*	*0.010*	*0.0000143*	*0.0025*	*0.0057*	*0.0006*	*0.00000088*	*0.0130*	**0.0703**	**7.03E-08**
Site Maximum Concentrations w/o NDs	**Detections**	14	0	0	0	0	0	0	0	0	0	0	0		
	EPC [1]	**0.013**	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*	*ND*		
	Risk Index	**0.0245**	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	**0.0245**	**2.45E-08**
Method Detection Limit (MDL)		0.0001	0.0001	0.0005	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0020		
Three-Sample CHHSL-R [3]		0.530	0.010	0.140	0.760	0.530	0.010	7.0	0.040	0.018	0.160	113	0.153		

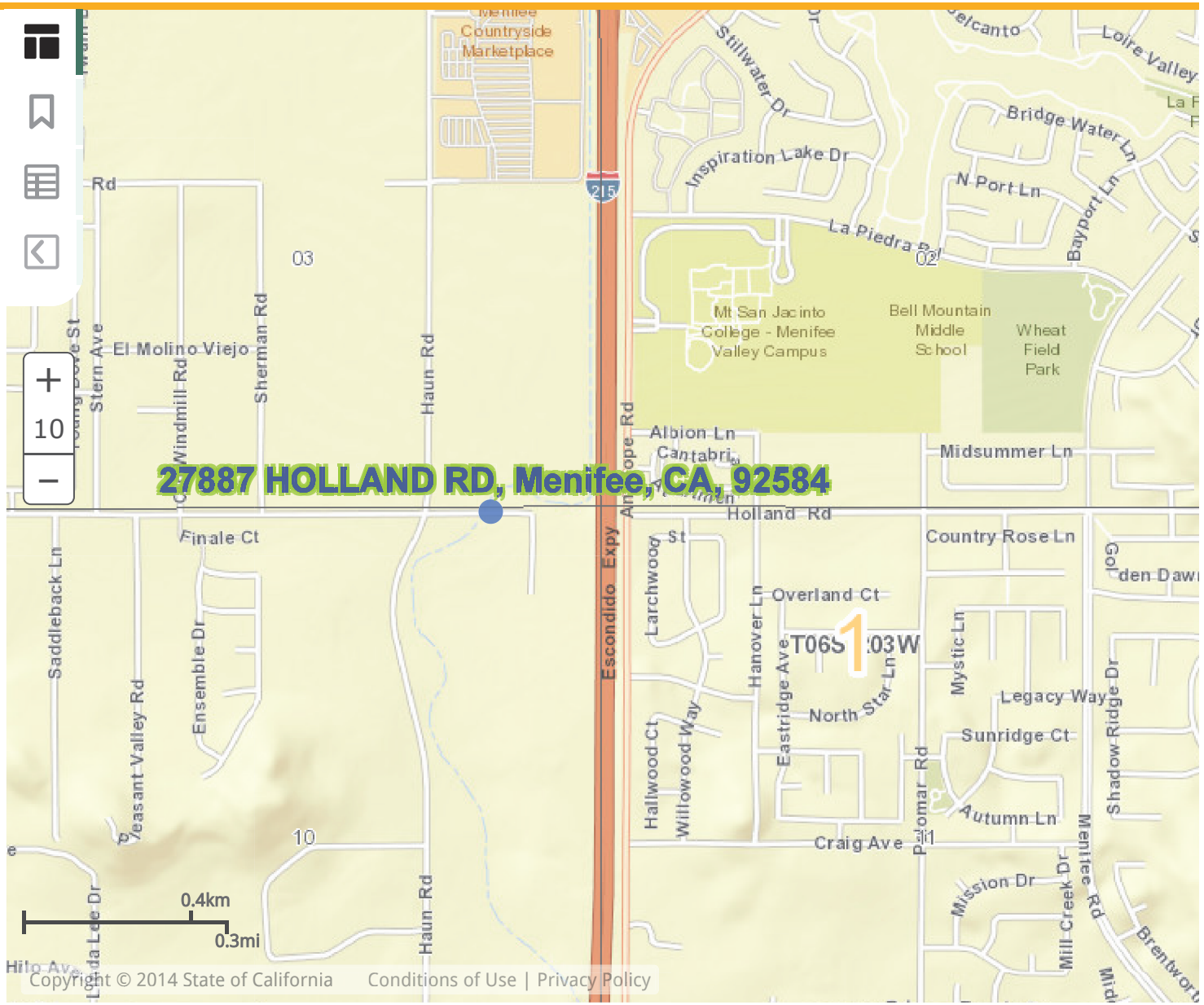
EPC - Exposure Point Concentratioin
ND - Not Detected above the MDL.
mg/kg - milligrams per kilogram
CHHSL-R - California Human Health Screening Level for Residential Land Use
DDD - 4,4'-Dichlorodiphenyldichloroethane
DDE - 4,4'-Dichlorodiphenyldichloroethylene
DDT - 4,4'-Dichlorodiphenyltrichloroethane
1 - Site Maximum Concentration used as EPC for only detected OCP (DDE).
2 - MDLs (*italics*) used as EPCs for ND OCPs.
3 - CHHSL-R reduced to ~⅓ for 3-Sample Composite
Site Maximum Concentration for DDE (the only detected OCP) is in a 3-sample composite.

0.024 / 1-6


ENVIROSTOR
CLEANUP SITES
Federal Superfund
State Response
Voluntary Cleanup
School Cleanup
Evaluation
School Investigation
Military Evaluation
Tiered Permit
Corrective Action
PERMITTED SITES
Operating
Post-Closure
Non-Operating
OTHER SITES
GeoTracker LUFT
GeoTracker SLIC
Newport Rd
Menifee Town Center Shopping Center
Best Buy
Menifee Countryside Marketplace
Target
Haun Rd
Sherman Rd
Antelope Rd
Westlake Dr
Via Amante
Via Palermo
Calle Pontevedra
Calle Belcanto
Marne Way
Shoreline Dr
Stillwater Dr
Inspiration Lake Dr
N Port Ln
La Piedra Rd
Mt San Jacinto Community College
Swift St
Kepler St
Chester Morrison Way
Napa St
Fitzgerald Pl
Early Dawn Rd
Old Windmill Rd
Stern Dr
Lajoe St
Augusta Ave
Albion Ln
Cantabria Apartment Homes
Midsummer Ln
Palomar Rd
Holland Rd
Evans Rd
Chade Ln
Bradley Rd
Saddleback Ln
Pleasant Valley Rd
Ensemble Dr
Overland Ct
Westwood Way
Hanover Ln
Eastridge Ave
N Star Ln
Willowood Way
Menifee Rd
Paloma Valley High School
Caprice Rd
Craig Ave
Linda Lee Dr
Autumn Ln
Mission Dr
Millcreek
Wardell Ln
MAP AN ADDRESS: 30095 Haun Rd Menifee, CA 92584
Go!
200 m
Map data
Report a map error
SHOW SITES WITHIN 1000 FEET OF THE FOLLOWING ADDRESS:
Go
SITES CURRENTLY VISIBLE ON MAP

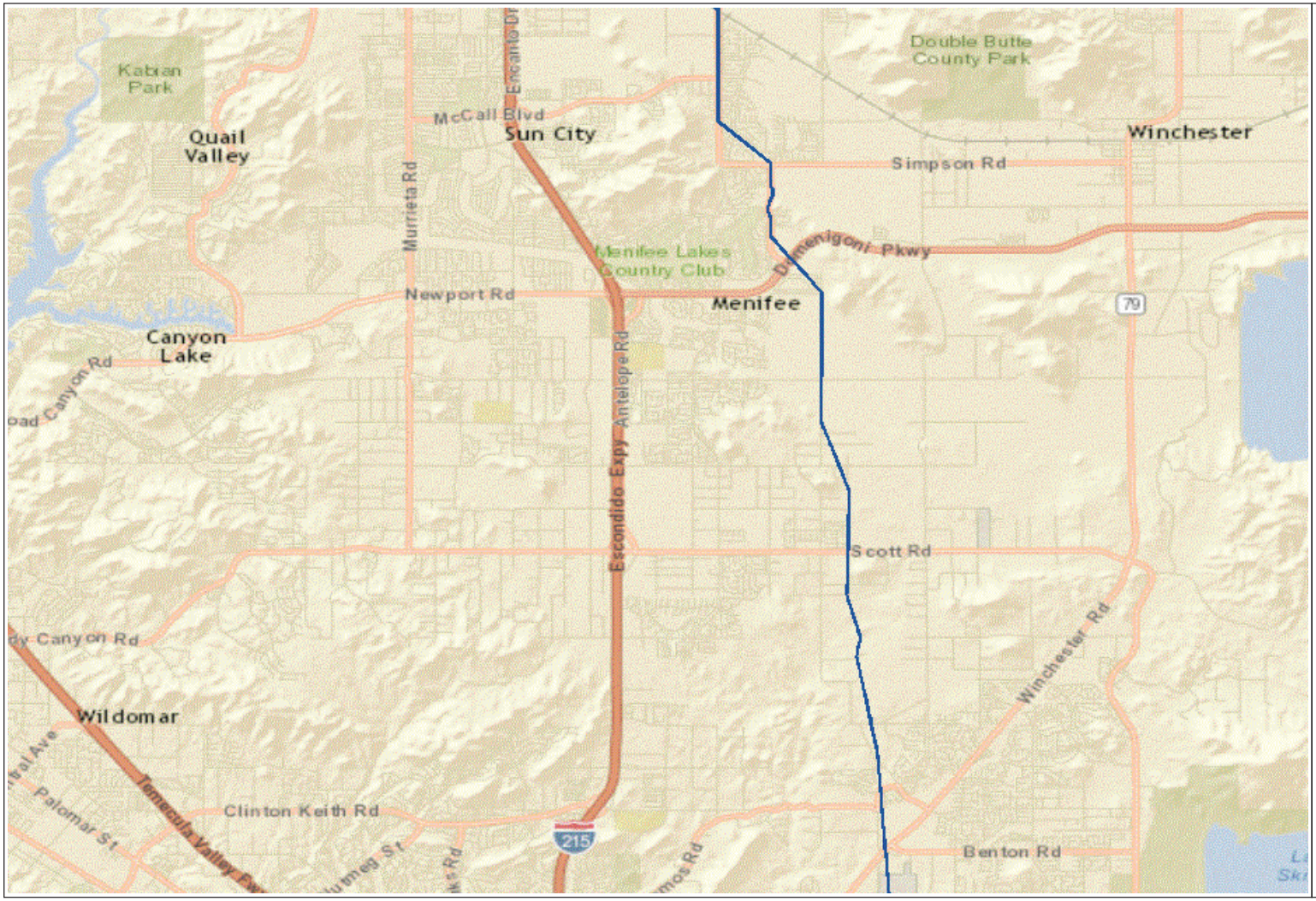
Department of Conservation

Division of Oil, Gas & Geothermal Resources Well Finder



Pipeline and Hazardous Materials Safety Administration

NATIONAL PIPELINE MAPPING SYSTEM



Legend

- Gas Transmission Pipelines
- Hazardous Liquid Pipelines

0 0.9 Miles

Pipelines depicted on this map represent gas transmission and hazardous liquid lines only. Gas gathering and gas distribution systems are not represented.

This map should never be used as a substitute for contacting a one-call center prior to excavation activities. Please call 811 before any digging occurs.

Questions regarding this map or its contents can be directed to npms-nr@mbakercorp.com.

Projection: Geographic

Datum: NAD83

Map produced by the NPMS Public Viewer at www.npms.phmsa.dot.gov

Date Printed: Sep 23, 2016

811 Know what's below. Call before you dig.

www.emwd.org

emwd EASTERN MUNICIPAL WATER DISTRICT

EASTERN MUNICIPAL WATER DISTRICT

Your 2015 Water Quality

CONSUMER CONFIDENCE REPORT

Issued July 2016

Why You Should Read This Report

THIS YEAR'S DRINKING WATER QUALITY REPORT…

Examines how EMWD ensures your drinking water is safe, high quality, and reliable.

•

Provides science-based data and facts about the sources, quality, and safety of your drinking water.

•

Explains how customers can always choose how they wish to receive future water quality reports.

Our Continuing Commitment to You

EMWD AND ITS TRAINED, CERTIFIED WATER QUALITY PROFESSIONALS ARE COMMITTED TO…

Providing high quality, safe drinking water at the lowest price possible.

•

Monitoring and testing the water we serve to optimize quality and ensure it is always safe to drink.

•

Finding and developing new water supply sources to ensure continued reliability for our customers.

•

Providing educated staff to answer any questions from our customers.

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OUR MISSION

To deliver value to our customers and the communities we serve by providing safe, reliable, economical and environmentally sustainable water, wastewater and recycled water services.

OUR VISION

To provide essential services to our community at a level that exceeds the performance of any other public or private agency.

Eastern Municipal Water District (EMWD) wants you, our valued customer, to be confident your drinking water is safe. This annual water quality report provides important information about the source(s) of your water and the tests used to ensure your tap water is safe and healthy to drink.

This report contains important information about the quality of your water. If you would like to obtain this information in Spanish, visit us at ***www.emwd.org*** *and select "Español" or call (951) 928-3777 ext. 4221 for a Spanish copy by mail.*

Este informe contiene información importante con sobre la calidad de su agua. Si usted desea obtener información en español, visitenos en ***www.emwd.org*** *y seleccione "Español" o llame (951) 928-3777, ext. 4221 para solicitar una copia por correo.*

A Message from the General Manager

Dear Valued EMWD Customer,

Once again, it is our pleasure to present Eastern Municipal Water District's (EMWD) annual water quality report. We're happy to report that EMWD continued to provide customers consistently high quality drinking water throughout 2015, and met or surpassed all drinking water quality standards established by the U.S. Environmental Protection Agency (EPA) and regulated by the California State Water Resources Control Board (State Board).

Protecting public health with a high quality water supply is our top priority. EMWD achieves such high quality tap water by managing our water sources, using state-of-the-art water treatment processes, efficiently maintaining and operating our facilities, and conducting rigorous monitoring and testing of the water we serve. Water samples are collected throughout the year from EMWD's 31 drinking water sources to carefully test for 200 contaminants and impurities. In 2015, EMWD's laboratory personnel collected 6,319 water samples and performed 44,333 tests to monitor and ensure quality.

While groundwater or surface waters can have trace measurable contaminants, EMWD protects your health and safety by treating or otherwise ensuring the water we deliver meets or surpasses all regulated drinking water standards. EMWD supports science-based standards that provide health benefits to the public in an economically balanced manner.

The State Board requires that EMWD customers receive a copy of this report which summarizes the results of water quality tests and provides – among other important information such as EMWD's current drought status – specific details about sources and quality of the water served in your community. The guidelines for distributing this report allow for electronic delivery of the report instead of a paper copy in the mail. By delivering these reports electronically, we are able to reduce costs and eliminate unwanted paper waste associated with printing and mailing the full report to our more than 144,000 accounts.

Please note that you may change your delivery preference at any time, and EMWD will gladly furnish customers with a paper copy of this report upon request through our web site at www.emwd.org/ccr or by calling us at (951) 928-3777, extension 4378.

We strongly encourage you to read this report and if you have any water quality questions, please feel free to contact Amy Mora, Senior Environmental Analyst, at (951) 928-3777, extension 6337. We also encourage you to make note of the drought status information and get the latest updates on our website at www.emwd.org/drought.

Thank you for being a customer of EMWD – we're here to serve you.

Paul D. Jones II, P.E.
GENERAL MANAGER
EASTERN MUNICIPAL WATER DISTRICT

This report contains important and useful information about the sources, quality, and safety of your drinking water and describes how EMWD meets all drinking water standards as set by the U.S. Environmental Protection Agency (EPA) and enforced by the California State Water Resources Control Board (State Board).

About Regulations

In order to ensure that tap water is safe to drink, the EPA and the State Board prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. State Board regulations also establish limits for contaminants in bottled water that provide the same protection for public health.

CONTAMINANTS THAT MAY BE PRESENT IN SOURCE WATER INCLUDE:

- MICROBIAL CONTAMINANTS, such as viruses and bacteria, may come from sewage treatment plants, septic systems, agricultural livestock, and wildlife.
- INORGANIC CONTAMINANTS, such as salts and metals, can be naturally occurring or result from urban storm water runoff, industrial or domestic wastewater discharges, oil and gas production, mining or farming.
- ORGANIC CHEMICAL CONTAMINANTS, including synthetic and volatile organic chemicals may be by-products of industrial processes or petroleum production, and can also come from gas stations, urban storm water runoff, agricultural application, and septic systems.
- PESTICIDES AND HERBICIDES may come from a variety of sources such as agriculture, urban storm water runoff, and residential uses.
- RADIOACTIVE CONTAMINANTS can be naturally-occurring or be the result of oil and gas production and mining activities.

ABOUT NITRATE

Nitrate in drinking water at levels above 10 parts per million (ppm) is a health risk for infants of less than six months of age. Such nitrate levels in drinking water can interfere with the capacity of an infant's blood to carry oxygen, resulting in a serious illness; symptoms include shortness of breath and blueness of the skin. Nitrate levels above 10 ppm may also affect the ability of the blood to carry oxygen in other individuals, such as pregnant women and those with certain specific enzyme deficiencies. If you are caring for an infant, or you are pregnant, you should seek advice from your health care provider.

SENSITIVE POPULATIONS

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised individuals such as those with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about their drinking water from their health care providers. EPA and Centers for Disease Control and Prevention (CDC) guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline at **1(800) 426-4791**.

ARSENIC

While your drinking water meets the federal and state standard for arsenic, some of our sources do contain low levels of arsenic. The arsenic standard balances the current understanding of arsenic's possible health effects against the costs of removing arsenic from drinking water. The EPA continues to research the health effects of low levels of arsenic, which is a mineral known to cause cancer in humans at high concentrations and is linked to other health effects such as skin damage and circulatory problems.

UNREGULATED CONTAMINANTS

Unregulated contaminant monitoring helps EPA and the State Board determine where certain contaminants occur and whether the contaminants need to be regulated.

LEAD AND COPPER

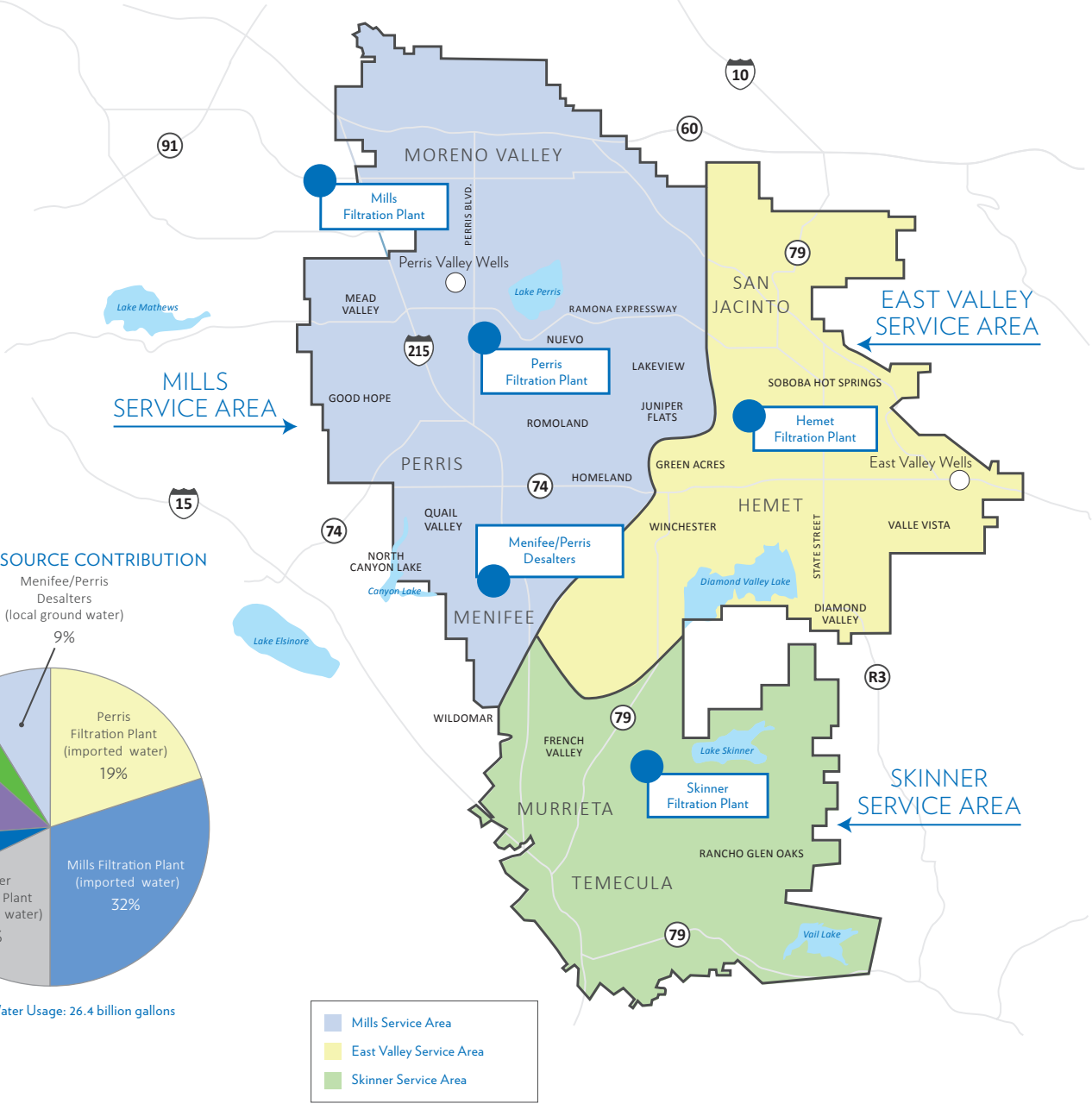
Lead and copper are rarely found in source waters; however, both of these metals can enter drinking water by leaching from household plumbing and fixtures. Water that sits in your pipes for long periods of time may dissolve tiny amounts of lead and/or copper (parts per billion levels) into household water. The EPA has developed a rule to minimize the levels of these metals in drinking water.

The Lead and Copper Rule was developed to protect public health by establishing an action level of 15 parts per billion (ppb) for lead and 1300 ppb for copper at the tap.

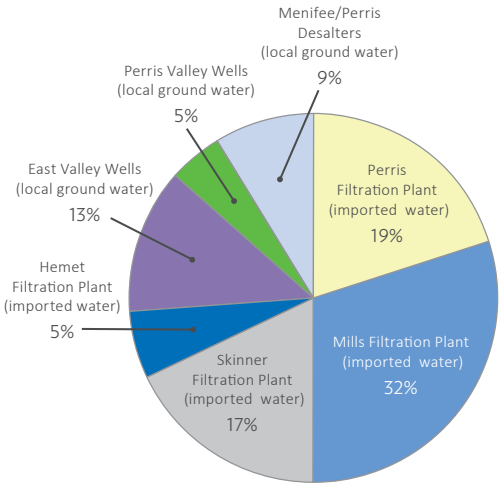
If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. EMWD is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. If your water has been sitting in your household plumbing for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline at 1(800) 426-4791 or at www.epa.gov/safewater/lead.

THE SOURCE OF YOUR TAP WATER

To help you find specific details about your tap water, we have organized this report according to the communities we serve.

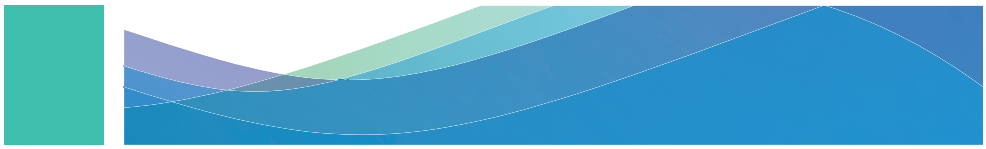


EMWD WATER SOURCE CONTRIBUTION



Total Annual Water Usage: 26.4 billion gallons

The Communities We Serve...



COMMUNITIES SERVED

Good Hope
Homeland
Juniper Flats
Lakeview
Mead Valley
Menifee**
Moreno Valley
North Canyon Lake
Nuevo
Perris
Quail Valley
Romoland
Wildomar

MILLS SERVICE AREA | Water for this service area comes from a combination of sources:

- The Henry J. Mills Filtration Plant* treats imported surface water supplied solely from northern California through the State Water Project (SWP). The Mills Filtration Plant uses chloramine for final disinfection.

WATER FROM THE MILLS FILTRATION PLANT IS BLENDED WITH SEVERAL OTHER EMWD WATER SOURCES:

- Three Perris Valley Wells serve a limited area of Perris – along Perris Boulevard south of the Ramona Expressway.
- The Perris Water Filtration Plant (PWFP) treats both Colorado River and SWP waters. However, due to the drought, the PWFP received only Colorado River water in 2015. This plant uses the latest ultrafiltration technology to remove particulate contaminants to produce quality, potable water. The PWFP serves Lakeview, Nuevo, Romoland, Homeland, and Juniper Flats. This plant uses chloramine for final disinfection.
- The Menifee & Perris Desalters convert salty groundwater into potable water using a reverse osmosis process. Menifee, North Canyon Lake, and Quail Valley are the only communities within the Mills Service Area to receive blended water from this desalination plant. The Menifee & Perris Desalters use chloramine for final disinfection.

COMMUNITIES SERVED WEST

Diamond Valley
Green Acres
Hemet
San Jacinto
Winchester***

COMMUNITIES SERVED EAST

Hemet
San Jacinto
Soboba Hot Springs
Valle Vista

EAST VALLEY SERVICE AREA | This service area is split into two regions:

WEST OF STATE STREET:

- The Hemet Water Filtration Plant (HWFP) treats both Colorado River and SWP waters. Due to the drought, the HWFP received only Colorado River water in 2015. This plant uses the latest ultrafiltration technology to remove particulate contaminants and produce quality, drinking water. This treatment plant uses chloramine for final disinfection. Local groundwater also supplies this area.

EAST OF STATE STREET:

- A system of deep groundwater wells serves these communities. These wells are treated by adding free chlorine for final disinfection.

COMMUNITIES SERVED

French Valley
Menifee**
Murrieta
Rancho Glen Oaks****
Temecula
Winchester***

SKINNER SERVICE AREA | Water for this service area comes from:

- The Robert A. Skinner Filtration Plant* treats water from the Colorado River and from the SWP. The Skinner Plant uses chloramine for final disinfection.

** The Mills and Skinner Filtration Plants are owned and operated by The Metropolitan Water District of Southern California (MWD).*
*** Typically served by Mills Filtration Plant and occasionally served by the Skinner Filtration Plant.*
**** Typically served by Hemet Water Filtration Plant and occasionally served by Skinner Filtration Plant.*
***** This area is served water produced by Rancho California Water District.*

PROTECTING YOUR DRINKING WATER

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline at 1(800) 426-4791.

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity. The land that the water comes into contact with is called the watershed; everything that happens to or in the watershed can affect the quality of your drinking water supply.

EMWD uses several sources of water to serve its customers, including surface water from the Colorado River and the State Water Project (SWP), as well as local groundwater.

An initial assessment of all the watersheds, both surface water and groundwater, was completed in 2002. The Colorado River, a surface water source, was reassessed in 2010 and found to be most vulnerable to recreational activities, urban and storm water runoff, increasing urbanization in the watershed, and wastewater.

Water from the SWP, also a surface water source, was reassessed in 2011 and found to be most vulnerable to urban and storm water runoff, wildlife, agriculture, recreational activities, and wastewater.

An assessment of each of EMWD's wells was completed in 2013. Two sources were considered vulnerable to airports and airplane maintenance associated with a contaminant detected in the water supply. In addition, other EMWD wells were considered most vulnerable to the following due to proximity (not associated with any contaminants): commercial and industrial activities, residential activities, agriculture, and other activities such as recreation and transportation.

You can call EMWD's Water Quality Department at (951) 928-3777, ext. 3327 for a copy of EMWD's vulnerability assessments.

Protecting the sources of drinking water helps protect our health. It's everyone's responsibility, and here are a few ways you can help:

- Eliminate excess use of lawn and garden fertilizers and pesticides – they contain hazardous chemicals that can reach your drinking water source.
- Pick up after your pets.
- Dispose of chemicals properly; take used motor oil to a recycling center.

Facts about Total Coliform Bacteria

Water agencies test for the presence of coliform bacteria as an indicator of drinking water quality.

Coliform bacteria are naturally present in the environment and are generally not harmful. Coliform bacteria may occur in soil, vegetation, animal waste, sewage, and surface waters.

Eastern Municipal Water District routinely tests for the presence of coliform bacteria as an indicator of the sanitary quality of drinking water. EMWD analyzed 3,046 coliform samples in 2015, one of which was total coliform positive. The maximum allowed by EPA for coliforms is no more than 5 percent in any month. The highest monthly coliform result was 0.4 percent, which complies with this standard. EMWD also tests for *E. coli* bacteria, which indicate fecal or sewage contamination. Zero samples tested positive for *E. coli* in 2015.

We are required to monitor your drinking water for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether or not your drinking water meets health standards. On January 13, 2016, we did not complete all required monitoring or testing for coliform bacteria, however subsequent samples taken met health standards.

A positive coliform test result does not necessarily mean a maximum contaminant level (MCL) has been exceeded, or that there is a problem in the water system. More information and general guidelines on ways to lessen the risk of infection by microbes are available from the EPA's Safe Drinking Water Hotline at 1(800) 426-4791 or at http://water.epa.gov/drink/info/.

ABBREVIATIONS

AL	Action Level
CFU/mL	Colony-Forming Units per milliliter
DLR	Detection Limits for purposes of Reporting: State-determined level that a test can detect the chemical
grains/gallon	grains per gallon: a measure of water hardness. One grain/gallon equals 17.1 ppm or mg/L
HPC	Heterotrophic Plate Count: a bacteriological test that counts the number of bacteria per milliliter of sample
LRAA	Locational Running Annual Average
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
MRDL	Maximum Residual Disinfectant Level
MRDLG	Maximum Residual Disinfectant Level Goal
MRL	Minimum Reporting Level: set by EPA for unregulated contaminant monitoring
NA	Not Applicable: no State or Federal standards are established
ND	None Detected: sample was taken and chemical was not detected
NL	Notification Level
NR	No Range: all result(s) were the same value
NTU	Nephelometric Turbidity Units
pCi/L	picoCuries per Liter
PHG	Public Health Goal
ppb	parts per billion or micrograms per liter (µg/L)
ppm	parts per million or milligrams per liter (mg/L)
ppt	parts per trillion or nanograms per liter (ng/L)
RAA	Running Annual Average
TON	Threshold Odor Number
TT	Treatment Technique
µS/cm	microSiemen per centimeter; or micromho per centimeter (µmho/cm)
—	Samples not required
=	Equal
>	Greater than
<	Less than
≤	Less than or equal to
#	Number
%	Percent

DEFINITIONS

90th Percentile: The value in a data set in which 90 percent of the set is less than or equal to this value.

Disinfection By-Product: Compounds which are formed from mixing of organic or mineral precursors in the water with ozone, chlorine or chloramine. Bromate, Total Trihalomethanes, and Haloacetic Acids are disinfection by-products.

Locational Running Annual Average (LRAA): The RAA at one sample location.

Maximum Contaminant Level (MCL): The highest level of a contaminant that is allowed in drinking water. Primary MCLs are set as close to the PHGs (or MCLGs) as is economically and technologically feasible. Secondary MCLs are set to protect the odor, taste, and appearance of drinking water.

Maximum Contaminant Level Goal (MCLG): The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs are set by the EPA.

Maximum Residual Disinfectant Level (MRDL): The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

Maximum Residual Disinfectant Level Goal (MRDLG): The level of a disinfectant added for water treatment below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

Notification Level (NL): Notification levels are health-based advisory levels established by the State Board for chemicals in drinking water that lack maximum contaminant levels (MCLs).

Primary Drinking Water Standard (Primary Standard): MCLs and MRDLs for contaminants that affect health along with their monitoring and reporting requirements, and water treatment requirements.

Public Health Goal (PHG): The level of a contaminant in drinking water below which there is no known or expected risk to health. PHGs are set by the California Environmental Protection Agency.

Regulatory Action Level (AL): The concentration of a contaminant which, if exceeded, triggers treatment or other requirements that a water system must follow.

Running Annual Average (RAA): The yearly average which is calculated every 3 months using the previous 12 months' data.

Secondary Drinking Water Standard (Secondary Standard): MCLs for contaminants that do not affect health but are used to monitor the aesthetics of the water.

Treatment Technique (TT): A required treatment process intended to reduce the level of a contaminant in drinking water.

EASTERN MUNICIPAL WATER DISTRICT DISTRIBUTION SYSTEM DATA FOR 2015

Parameter	Units	State or Federal Maximum Contaminant Level (MCL)	California Public Health Goal (PHG)	State Detection Limit for Reporting (DLR)	Range / Average	SERVICE AREA: EMWD's Entire Distribution System	SERVICE AREA: Mills	SERVICE AREA: East Valley	SERVICE AREA: Skinner
PRIMARY STANDARDS – MANDATORY HEALTH-RELATED STANDARDS									
MICROBIOLOGICAL									
Total Coliform Bacteria	# positive coliforms	A	MCLG = 0	NA	# positives in 2015	1	1	0	0
					Highest monthly %	0.4	---	---	---
Fecal Coliform Bacteria *(E. coli)*	# positive *E. coli*	B	MCLG = 0	NA	# positives in 2015	0	0	0	0
Heterotrophic Plate Count (HPC)	# HPCs > 500 CFU/mL	TT C	NA	NA	# HPC>500 in 2015	7	7	0	0
					Lowest monthly %	99.2	---	---	---
DISINFECTION BY-PRODUCTS AND DISINFECTANT RESIDUALS									
Bromate (Mills & Skinner plants only)	ppb	RAA = 10	0.1	1.0	Range	---	2.2 - 12 D	---	1.1 - 9.9
					Highest RAA	---	4.5	---	4.3
Haloacetic Acids (5) (HAA5s) E	ppb	LRAA = 60	NA	E	Range	<1.0 - 45	<1.0 - 45	<1.0 - 38	<1.0 - 24
					Highest LRAA	29	29	23	19
Total Trihalomethanes (TTHMs) F	ppb	LRAA = 80	NA	1	Range	4.3 - 51	17 - 44	4.3 - 51	6.8 - 31
					Highest LRAA	42	36	42	27
Total Chlorine Residual Chlorine and Chloramines	ppm	MRDL = 4	MRDLG = 4	NA	Range	<0.2 - 4.1	<0.2 - 3.8	<0.2 - 3.6	<0.2 - 4.1
					Average	1.6	1.5	1.8	1.8
METALS AS A BY-PRODUCT OF CORROSION OF CONSUMER'S PLUMBING G									
Copper	ppb	AL = 1300	300	50	NA	90th percentile of 50 samples: 140 ppb | Zero samples exceeded the Action Level			
Lead	ppb	AL = 15	0.2	5	NA	90th percentile of 50 samples: <5 ppb | Zero samples exceeded the Action Level			
SECONDARY STANDARDS – AESTHETIC STANDARDS H									
PHYSICAL PARAMETERS									
Color	Units	15	NA	NA	Range	<1 - 50	<1 - 5	<1 - 50	<1 - 5
					Average	<1	<1	1.6	<1
Odor Threshold	TON	3	NA	1	Range	NR	NR	NR	NR
					Average	1	1	1	1
pH	pH unit	6.5 - 8.5	NA	NA	Range	7.1 - 8.8	7.1 - 8.8	7.7 - 8.5	7.7 - 8.4
					Average	8.1	8.1	8.2	8.1
Turbidity	NTU	5	NA	0.1	Range	0.1 - 7.7	0.1 - 1.3	0.1 - 7.7	0.1 - 0.9
					Average	0.2	0.2	0.4	0.2
UNREGULATED CONTAMINANT MONITORING I									
Chlorate	ppb	NL = 800	NA	MRL = 20	Range	ND - 1800	ND - 1800	37 - 190	34 - 88
					Average	120	150	95	62
Total Chromium	ppb	50	NA	MRL = 0.2	Range	ND - 1.0	ND - 1.0	ND - 0.2	NR
				DLR = 10	Average	0.2	0.3	ND	ND
Chromium-6	ppb	10	0.02	MRL = 0.03	Range	ND - 1.3	ND - 1.3	ND - 0.38	0.06 - 0.12
				DLR = 1	Average	0.35	0.49	0.16	0.08
Molybdenum	ppb	NA	NA	MRL = 1	Range	ND - 9.9	ND - 9.9	3.5 - 7.2	3.4 - 4.5
					Average	4.8	4.5	5.7	3.8
Strontium	ppb	NA	NA	MRL = 0.3	Range	200 - 860	270 - 830	200 - 360	680 - 860
					Average	440	460	290	780
Vanadium	ppb	NL = 50	NA	MRL = 0.2	Range	ND - 18	3.3 - 18	2.6 - 13	ND - 4.6
					Average	7.4	8.4	7.8	1.2

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Unregulated contaminant monitoring helps EPA and the State Board determine where certain contaminants occur and whether the contaminants need to be regulated.

ND – none detected NR – no range

ONE PART PER MILLION (PPM) IS LIKE

- 1 second in 11.6 days
- 1 teaspoon in 1302 gallons
- 1 drop in 13.6 gallons

ONE PART PER BILLION (PPB) IS LIKE

- 1 second in 31.7 years
- 1 teaspoon in 1.3 million gallons
- 1 drop in 13,563 gallons

ONE PART PER TRILLION (PPT) IS LIKE

- 1 second in 31,710 years
- 1 teaspoon in 1.3 billion gallons
- 1 drop in 13,563,368 gallons

EASTERN MUNICIPAL WATER DISTRICT 2015 WATER QUALITY TABLE

We are required to monitor your drinking water for specific contaminants on a regular basis. Results are an indicator of whether or not your drinking water meets health standards.

Parameter	Units	State or Federal Maximum Contaminant Level (MCL)	California Public Health Goal (PHG)	State Detection Limit for Reporting (DLR)	MENIFEE, MORENO VALLEY, NORTH CANYON LAKE, PERRIS & WILDOMAR								Major Sources in Drinking Water
					Mills Filtration Plant		Perris Valley Wells J		Perris Filtration Plant		Menifee & Perris Desalters		
Percent of total water delivered by EMWD	%				32%		5%		19%		9%		
					Range	Average	Range	Average	Range	Average	Range	Average	
PRIMARY STANDARDS–MANDATORY HEALTH-RELATED STANDARDS													
CLARITY					Highest NTU	% ≤ 0.3			Highest NTU	% ≤ 0.1			
Combined Filter Effluent Turbidity	NTU and %	K	NA	NA	0.09	100	---	---	0.06	100	---	---	Soil runoff
ORGANIC CHEMICAL													
Trichloroethylene (TCE)	ppb	5	1.7	0.5	NR	ND	ND - 0.9	ND	NR	ND	NR	ND	Discharge from metal degreasing sites and other factories
INORGANIC CHEMICALS													
Aluminum	ppb	1000 L 200	600	50	64 - 180	115	NR	ND	ND - 86	ND	NR	ND	Residue from water treatment process; natural deposits erosion
Arsenic M	ppb	10	0.004	2	NR	2.2	NR	ND	NR	2.3	NR	ND	Natural deposits erosion; runoff from orchards; glass and electronics production wastes
Barium	ppm	1	2	0.1	NR	ND	0.2 - 0.4	0.3	NR	0.1	NR	ND	Discharges of oil drilling wastes and from metal refineries; natural deposits erosion
Fluoride (Naturally-occurring)	ppm	2.0	1.0	0.1	---	---	0.3 - 0.5	0.4	0.2 - 0.4	0.3	NR	ND	Erosion of natural deposits; discharge from fertilizer and aluminum factories
Fluoride (Treatment related) N	ppm	2.0	1.0	0.1	0.6 - 0.9	0.7	---	---	---	---	---	---	Water additive to promote strong teeth
Nitrate (as N)	ppm	10	10	0.4	ND - 0.9	0.5	3.7 - 5.8	4.9	ND - 0.7	0.4	1.7 - 4.2	3.4	Runoff/leaching from fertilizer use; septic tank and sewage; natural deposits erosion
Perchlorate	ppb	6	1	4	NR	ND	ND - 4.1	ND	NR	ND	NR	ND	Rocket propellant, fireworks, explosives, and industrial discharge; runoff/leaching from fertilizer use
Selenium	ppb	50	30	5	NR	ND	NR	ND	NR	ND	NR	ND	Runoff/leaching from livestock lots (feed additive), discharge from petroleum, glass and metal refineries; discharge from mines and chemical manufacturers; erosion of natural deposits
RADIOLOGICALS													
Gross Alpha Particle Activity	pCi/L	15	MCLG = 0	3	ND - 4	ND	ND - 6	4	NR	ND	NR	ND	Erosion of natural deposits
Gross Beta Particle Activity	pCi/L	50	MCLG = 0	4	NR	ND	NR	ND	NR	ND	NR	ND	Decay of natural and man-made deposits
Uranium	pCi/L	20	0.43	1	ND - 4	2	1 - 4	2	NR	1	NR	1	Erosion of natural deposits
SECONDARY STANDARDS–AESTHETIC STANDARDS													
Chloride	ppm	500	NA	NA	76 - 96	86	220 - 430	320	88 - 110	100	140 - 220	190	Runoff/leaching from natural deposits; seawater influence
Color	Units	15	NA	NA	NR	1	<2.5 - 2.5	<2.5	<2.5 - 2.5	<2.5	NR	<2.5	Naturally-occurring organic materials
Iron	ppb	300	NA	100	NR	ND	NR	ND	NR	ND	NR	ND	Leaching from natural deposits
Manganese	ppb	50	NL = 500	20	NR	ND	NR	ND	NR	ND	NR	ND	Leaching from natural deposits
Odor Threshold	TON	3	NA	1	NR	2	NR	1	NR	1	NR	1	Naturally-occurring organic materials
Specific Conductance	µS/cm	1600	NA	NA	580 - 666	623	1020 - 1540	1320 J	550 - 1580	1030	620 - 950	750	Substances that form ions in water; seawater influence
Sulfate	ppm	500	NA	0.5	81 - 84	83	53 - 62	57	65 - 280	230	16 - 80	26	Runoff/leaching from natural deposits; industrial wastes
Total Dissolved Solids (TDS)	ppm	1000	NA	NA	335 - 364	350	660 - 1100	860 J	330 - 680	630	340 - 610	460	Runoff/leaching from natural deposits; seawater influence
Turbidity O	NTU	5	NA	0.1	NR	ND	0.2 - 1.4	0.6	NR	ND	NR	0.2	Soil runoff
UNREGULATED CONTAMINANT MONITORING I													
Chlorate	ppb	NA	NL = 800	MRL = 20	ND - 33	22	ND - 170	55	110 - 150	120	68 - 620	340	Agricultural defoliant or desiccant; disinfection by-product; used in production of chlorine dioxide
Chromium-6	ppb	10	0.02	MRL = 0.03 DLR = 1	0.18 - 0.57	0.34	0.44 - 1.3	0.97	0.06 - 0.11	0.08	0.12 - 0.16	0.14	Discharge from electroplating factories, leather tanneries, wood preservation, chemical synthesis, refractory production, and textile manufacturing facilities; erosion of natural deposits
Molybdenum	ppb	NA	NA	MRL = 1	2 - 3	2	ND - 11	6	3 - 4	3	ND - 2	1	Naturally-occurring element found in ores and present in plants, animals and bacteria; used in a chemical reagent
Perfluoroheptanoic Acid (PFHpA)	ppt	NA	NA	MRL = 10	NR	ND	ND - 22	ND	NR	ND	NR	ND	Manmade chemical; used in products to make them stain, grease, heat and water resistant
Perfluorohexanesulfonic Acid (PFHxS)	ppt	NA	NA	MRL = 30	NR	ND	ND - 120	38	NR	ND	NR	ND	Manmade chemical; used in products to make them stain, grease, heat and water resistant
Perfluorooctanesulfonic Acid (PFOS)	ppt	NA	NA	MRL = 40	NR	ND	ND - 82	ND	NR	ND	NR	ND	Surfactant or emulsifier; used in fire-fighting foam, circuit board etching acids, alkaline cleaners, floor polish, and as a pesticide
Perfluorooctanoic Acid (PFOA)	ppt	NA	NA	MRL = 20	NR	ND	ND - 53	ND	NR	ND	NR	ND	Used as surfactant or emulsifier in Teflon, fire-fighting foams, cleaners, cosmetics, greases and lubricants, paints, polishes, adhesives and photographic films
Strontium	ppb	NA	NA	MRL = 0.3	190 - 330	260	340 - 820	550	250 - 280	260	240 - 340	290	Naturally-occurring element; historically used in production of cathode-ray tube televisions
Vanadium	ppb	NA	NL = 50	MRL = 0.2	3.6 - 5.4	4.2	4.4 - 16	12	3.3 - 5.3	4.5	2.7 - 4.4	3.6	Naturally-occurring; industrial waste discharge
OTHER PARAMETERS													
Alkalinity (Total)	ppm	NA	NA	NA	77 - 84	81	120 - 190	150	97 - 150	130	38 - 91	51	Naturally-occurring carbonates; measures water's ability to neutralize acid
Boron	ppb	NL = 1000	NA	100	NR	210	390 - 630	500	140 - 190	150	150 - 300	240	Runoff/leaching from natural deposits; industrial wastes
Calcium	ppm	NA	NA	NA	27 - 30	29	86 - 180	130	34 - 85	76	34 - 63	45	Naturally-occurring mineral
Hardness as Calcium Carbonate P	grains/gallon	NA	NA	NA	6.0 - 7.2	6.6	19 - 36	27	7.0 - 19	17	7.0 - 12	9.0	Naturally-occurring; the sum of calcium and magnesium in the water
Magnesium	ppm	NA	NA	NA	6.0 - 12	9.0	25 - 41	32	9.0 - 29	26	7.0 - 15	9.8	Naturally-occurring mineral
Sodium	ppm	NA	NA	NA	77 - 82	80	97 - 140	120	78 - 120	100	62 - 120	91	Naturally-occurring mineral

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EASTERN MUNICIPAL WATER DISTRICT 2015 WATER QUALITY TABLE

We are required to monitor your drinking water for specific contaminants on a regular basis. Results are an indicator of whether or not your drinking water meets health standards.

Parameter	Units	State or Federal Maximum Contaminant Level (MCL)	California Public Health Goal (PHG)	State Detection Limit for Reporting (DLR)	MURRIETA Skinner Filtration Plant		Major Sources in Drinking Water
Percent of total water delivered by EMWD	%				17%		
					Range	Average	
PRIMARY STANDARDS–MANDATORY HEALTH-RELATED STANDARDS							
CLARITY					Highest NTU	% ≤ 0.3	
Combined Filter Effluent Turbidity	NTU and %	K	NA	NA	0.10	100	Soil runoff
ORGANIC CHEMICAL							
Trichloroethylene (TCE)	ppb	5	1.7	0.5	NR	ND	Discharge from metal degreasing sites and other factories
INORGANIC CHEMICALS							
Aluminum	ppb	1000 L 200	600	50	NR	ND	Residue from water treatment process; natural deposits erosion
Arsenic M	ppb	10	0.004	2	NR	ND	Natural deposits erosion; runoff from orchards; glass and electronics production wastes
Barium	ppm	1	2	0.1	NR	0.1	Discharges of oil drilling wastes and from metal refineries; natural deposits erosion
Fluoride (Naturally-occurring)	ppm	2.0	1.0	0.1	---	---	Erosion of natural deposits; discharge from fertilizer and aluminum factories
Fluoride (Treatment related) N	ppm	2.0	1.0	0.1	0.5 - 0.9	0.7	Water additive to promote strong teeth
Nitrate (as N)	ppm	10	10	0.4	NR	ND	Runoff/leaching from fertilizer use; septic tank and sewage; natural deposits erosion
Perchlorate	ppb	6	1	4	NR	ND	Rocket propellant, fireworks, explosives, and industrial discharge; runoff/leaching from fertilizer use
Selenium	ppb	50	30	5	NR	ND	Runoff/leaching from livestock lots (feed additive), discharge from petroleum, glass and metal refineries; discharge from mines and chemical manufacturers; erosion of natural deposits
RADIOLOGICALS							
Gross Alpha Particle Activity	pCi/L	15	MCLG = 0	3	ND - 5	ND	Erosion of natural deposits
Gross Beta Particle Activity	pCi/L	50	MCLG = 0	4	NR	5	Decay of natural and man-made deposits
Uranium	pCi/L	20	0.43	1	1 - 2	2	Erosion of natural deposits
SECONDARY STANDARDS–AESTHETIC STANDARDS							
Chloride	ppm	500	NA	NA	102 - 105	104	Runoff/leaching from natural deposits; seawater influence
Color	Units	15	NA	NA	NR	1	Naturally-occurring organic materials
Iron	ppb	300	NA	100	NR	ND	Leaching from natural deposits
Manganese	ppb	50	NL = 500	20	NR	ND	Leaching from natural deposits
Odor Threshold	TON	3	NA	1	NR	2	Naturally-occurring organic materials
Specific Conductance	µS/cm	1600	NA	NA	1000 - 1050	1020	Substances that form ions in water; seawater influence
Sulfate	ppm	500	NA	0.5	237 - 249	243	Runoff/leaching from natural deposits; industrial wastes
Total Dissolved Solids (TDS)	ppm	1000	NA	NA	639 - 655	647	Runoff/leaching from natural deposits; seawater influence
Turbidity O	NTU	5	NA	0.1	NR	ND	Soil runoff
UNREGULATED CONTAMINANT MONITORING I							
Chlorate	ppb	NA	NL = 800	MRL = 20	34 - 77	48	Agricultural defoliant or desiccant; disinfection by-product; used in production of chlorine dioxide
Chromium-6	ppb	10	0.02	MRL = 0.03 DLR = 1	0.05 - 0.08	0.07	Discharge from electroplating factories, leather tanneries, wood preservation, chemical synthesis, refractory production, and textile manufacturing facilities; erosion of natural deposits
Molybdenum	ppb	NA	NA	MRL = 1	NR	4	Naturally-occurring element found in ores and present in plants, animals and bacteria; used in a chemical reagent
Perfluoroheptanoic Acid (PFHpA)	ppt	NA	NA	MRL = 10	NR	ND	Manmade chemical; used in products to make them stain, grease, heat and water resistant
Perfluorohexanesulfonic Acid (PFHxS)	ppt	NA	NA	MRL = 30	NR	ND	Manmade chemical; used in products to make them stain, grease, heat and water resistant
Perfluorooctanesulfonic Acid (PFOS)	ppt	NA	NA	MRL = 40	NR	ND	Surfactant or emulsifier; used in fire-fighting foam, circuit board etching acids, alkaline cleaners, floor polish, and as a pesticide
Perfluorooctanoic Acid (PFOA)	ppt	NA	NA	MRL = 20	NR	ND	Used as surfactant or emulsifier in Teflon, fire-fighting foams, cleaners, cosmetics, greases and lubricants, paints, polishes, adhesives and photographic films
Strontium	ppb	NA	NA	MRL = 0.3	750 - 1000	840	Naturally-occurring element; historically used in production of cathode-ray tube televisions
Vanadium	ppb	NA	NL = 50	MRL = 0.2	NR	ND	Naturally-occurring; industrial waste discharge
OTHER PARAMETERS							
Alkalinity (Total)	ppm	NA	NA	NA	125 - 130	128	Naturally-occurring carbonates; measures water's ability to neutralize acid
Boron	ppb	NL = 1000	NA	100	NR	130	Runoff/leaching from natural deposits; industrial wastes
Calcium	ppm	NA	NA	NA	75 - 78	77	Naturally-occurring mineral
Hardness as Calcium Carbonate P	grains/gallon	NA	NA	NA	17 - 18	17	Naturally-occurring; the sum of calcium and magnesium in the water
Magnesium	ppm	NA	NA	NA	25 - 27	26	Naturally-occurring mineral
Sodium	ppm	NA	NA	NA	96 - 103	100	Naturally-occurring mineral

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Parameter	Units	State or Federal Maximum Contaminant Level (MCL)	California Public Health Goal (PHG)	State Detection Limit for Reporting (DLR)	HEMET & SAN JACINTO				Major Sources in Drinking Water
					East Valley Wells		Hemet Filtration Plant		
Percent of total water delivered by EMWD	%				13%		5%		
					Range	Average	Range	Average	
PRIMARY STANDARDS–MANDATORY HEALTH-RELATED STANDARDS									
CLARITY							Highest NTU	% ≤ 0.1	
Combined Filter Effluent Turbidity	NTU and %	K	NA	NA	---	---	0.12	99.96	Soil runoff
ORGANIC CHEMICAL									
Trichloroethylene (TCE)	ppb	5	1.7	0.5	NR	ND	NR	ND	Discharge from metal degreasing sites and other factories
INORGANIC CHEMICALS									
Aluminum	ppb	1000 L 200	600	50	NR	ND	ND - 97	54	Residue from water treatment process; natural deposits erosion
Arsenic M	ppb	10	0.004	2	NR	ND	NR	2.7	Natural deposits erosion; runoff from orchards; glass and electronics production wastes
Barium	ppm	1	2	0.1	ND - 0.1	ND	NR	0.1	Discharges of oil drilling wastes and from metal refineries; natural deposits erosion
Fluoride (Naturally-occurring)	ppm	2.0	1.0	0.1	0.2 - 0.9	0.4	0.2 - 0.4	0.3	Erosion of natural deposits; discharge from fertilizer and aluminum factories
Fluoride (Treatment related) N	ppm	2.0	1.0	0.1	---	---	---	---	Water additive to promote strong teeth
Nitrate (as N)	ppm	10	10	0.4	ND - 3.7	0.8	ND - 0.8	ND	Runoff/leaching from fertilizer use; septic tank and sewage; natural deposits erosion
Perchlorate	ppb	6	1	4	NR	ND	NR	ND	Rocket propellant, fireworks, explosives, and industrial discharge; runoff/leaching from fertilizer use
Selenium	ppb	50	30	5	ND - 12	ND	NR	ND	Runoff/leaching from livestock lots (feed additive), discharge from petroleum, glass and metal refineries; discharge from mines and chemical manufacturers; erosion of natural deposits
RADIOLOGICALS									
Gross Alpha Particle Activity	pCi/L	15	MCLG = 0	3	ND - 4	ND	NR	8	Erosion of natural deposits
Gross Beta Particle Activity	pCi/L	50	MCLG = 0	4	ND - 11	ND	NR	ND	Decay of natural and man-made deposits
Uranium	pCi/L	20	0.43	1	ND - 1	ND	NR	1	Erosion of natural deposits
SECONDARY STANDARDS–AESTHETIC STANDARDS									
Chloride	ppm	500	NA	NA	10 - 86	22	91 - 110	100	Runoff/leaching from natural deposits; seawater influence
Color	Units	15	NA	NA	<2.5 - 7.5	<2.5	<2.5 - 2.5	<2.5	Naturally-occurring organic materials
Iron	ppb	300	NA	100	ND - 260	ND	NR	ND	Leaching from natural deposits
Manganese	ppb	50	NL = 500	20	ND - 89	ND	NR	ND	Leaching from natural deposits
Odor Threshold	TON	3	NA	1	NR	1	NR	1	Naturally-occurring organic materials
Specific Conductance	µS/cm	1600	NA	NA	320 - 950	470	560 - 1320	1000	Substances that form ions in water; seawater influence
Sulfate	ppm	500	NA	0.5	13 - 210	53	75 - 280	240	Runoff/leaching from natural deposits; industrial wastes
Total Dissolved Solids (TDS)	ppm	1000	NA	NA	200 - 610	280	340 - 720	630	Runoff/leaching from natural deposits; seawater influence
Turbidity O	NTU	5	NA	0.1	0.1 - 1.7	0.4	0.1 - 0.2	0.1	Soil runoff
UNREGULATED CONTAMINANT MONITORING I									
Chlorate	ppb	NA	NL = 800	MRL = 20	ND - 760	200	82 - 170	140	Agricultural defoliant or desiccant; disinfection by-product; used in production of chlorine dioxide
Chromium-6	ppb	10	0.02	MRL = 0.03 DLR = 1	ND - 1.4	0.23	0.06 - 0.09	0.07	Discharge from electroplating factories, leather tanneries, wood preservation, chemical synthesis, refractory production, and textile manufacturing facilities; erosion of natural deposits
Molybdenum	ppb	NA	NA	MRL = 1	3 - 15	7	2 - 3	2	Naturally-occurring element found in ores and present in plants, animals and bacteria; used in a chemical reagent
Perfluoroheptanoic Acid (PFHpA)	ppt	NA	NA	MRL = 10	NR	ND	NR	ND	Manmade chemical; used in products to make them stain, grease, heat and water resistant
Perfluorohexanesulfonic Acid (PFHxS)	ppt	NA	NA	MRL = 30	NR	ND	NR	ND	Manmade chemical; used in products to make them stain, grease, heat and water resistant
Perfluorooctanesulfonic Acid (PFOS)	ppt	NA	NA	MRL = 40	NR	ND	NR	ND	Surfactant or emulsifier; used in fire-fighting foam, circuit board etching acids, alkaline cleaners, floor polish, and as a pesticide
Perfluorooctanoic Acid (PFOA)	ppt	NA	NA	MRL = 20	NR	ND	NR	ND	Used as surfactant or emulsifier in Teflon, fire-fighting foams, cleaners, cosmetics, greases and lubricants, paints, polishes, adhesives and photographic films
Strontium	ppb	NA	NA	MRL = 0.3	220 - 390	310	240 - 290	260	Naturally-occurring element; historically used in production of cathode-ray tube televisions
Vanadium	ppb	NA	NL = 50	MRL = 0.2	2.7 - 20	7.2	2.1 - 2.9	2.5	Naturally-occurring; industrial waste discharge
OTHER PARAMETERS									
Alkalinity (Total)	ppm	NA	NA	NA	120 - 160	140	78 - 160	130	Naturally-occurring carbonates; measures water's ability to neutralize acid
Boron	ppb	NL = 1000	NA	100	ND - 190	ND	130 - 220	150	Runoff/leaching from natural deposits; industrial wastes
Calcium	ppm	NA	NA	NA	23 - 85	49	28 - 86	75	Naturally-occurring mineral
Hardness as Calcium Carbonate P	grains/gallon	NA	NA	NA	3.8 - 16	8.4	5.8 - 19	17	Naturally-occurring; the sum of calcium and magnesium in the water
Magnesium	ppm	NA	NA	NA	1.9 - 16	5.2	7.9 - 30	26	Naturally-occurring mineral
Sodium	ppm	NA	NA	NA	24 - 91	39	84 - 120	110	Naturally-occurring mineral

The State Board allows EMWD to monitor for some contaminants less than once per year because the concentrations of these contaminants do not change frequently. Some of EMWD's data, though representative, are more than one year old.

EMWD supports science-based standards that provide health benefits to the public in an economically balanced manner. Should more stringent standards be set, EMWD will meet them. EMWD's water has met and will continue to meet all regulations.

Unregulated contaminant monitoring helps EPA and the State Board determine where certain contaminants occur and whether the contaminants need to be regulated.

2014 & 2015 data ND – none detected NR – no range

FOOTNOTES

A Total coliform MCLs: No more than 5.0% of the monthly samples may be total coliform-positive. Compliance is based on distribution system samples. EMWD analyzed 3,046 coliform samples in 2015, one of which was total coliform positive. The highest monthly coliform result was 0.4%. The MCL was not violated in 2015.

B Fecal coliform/*E. coli* MCLs: An MCL violation is the occurrence of two (2) consecutive total coliform-positive samples, one of which contains fecal coliform or *E. coli*. There were zero detected fecal coliforms. The MCL was not violated in 2015.

C HPCs were tested only in distribution system samples which had no detectable chlorine residual. No less than 95% of all distribution system samples in one month may have no detectable chlorine residual and an HPC greater than 500 colony forming units per mL. The HPC results were no less than 99.2% in any month in 2015.

D Bromate is a disinfection by-product resulting from the use of ozone. Currently, Mills and Skinner Filtration plants use ozone. The MCL is based on the Running Annual Average (RAA), so values above the MCL are acceptable, so long as the RAA complies with the MCL.

E DLR = 1.0 ppb for each HAA5 analyte (dichloroacetic acid, trichloroacetic acid, monobromoacetic acid, and dibromoacetic acid) except for monochloroacetic acid which has a DLR = 2.0 ppb. Locational Running Annual Averages (LRAA) and ranges are calculated from 12 samples sites collected quarterly throughout the distribution system. HAA5s are a by-product of drinking water chlorination.

F Total Trihalomethanes are the sum of the following analytes: bromodichloromethane, bromoform, chloroform, and dibromochloromethane. Locational Running Annual Averages (LRAA) and ranges are calculated from 12 sample sites collected quarterly throughout the distribution system. TTHMs are a by-product of drinking water chlorination.

G Lead and copper are regulated as a Treatment Technique under the Lead and Copper Rule, which requires systems to take water samples at the consumers' tap every three years. Results are from 2013. Neither lead nor copper are typically found in the source waters but can get into water by way of internal corrosion of household plumbing.

H Compliance for physical parameters is determined by the average, however all samples are reviewed and any values outside the compliance range are noted and corrected if possible. Values above the MCL may be acceptable so long as the average complies with the MCL.

I Unregulated contaminant monitoring spanned four consecutive quarters from 2013 to 2014.

J Values are from blended Well 57 and raw well values from other wells in area. Well 57 is blended on site with Mills water to improve Total Dissolved Solids.

K The turbidity level of the combined filter effluent at the Mills and Skinner Filtration plants shall be less than or equal to 0.3 NTU in 95% of the measurements taken each month and shall not exceed 1 NTU at any time. For Perris and Hemet Filtration plants, the turbidity level of the combined filter effluent shall be less than or equal to 0.1 NTU in 95% of the measurements taken each month and shall not exceed 1 NTU at any time. Turbidity is a measure of the cloudiness of the water and is an indicator of treatment performance.

L Aluminum has both primary (1,000 ppb) and secondary (200 ppb) standards (MCLs).

M While your drinking water meets the federal and state standard for arsenic, some of our sources do contain low levels of arsenic. The arsenic standard balances the current understanding of arsenic's possible health effects against the costs of removing arsenic from drinking water. The EPA continues to research the health effects of low levels of arsenic, which is a mineral known to cause cancer in humans at high concentrations and is linked to other health effects such as skin damage and circulatory problems.

N MWD began fluoride treatment of water at Mills and Skinner Filtration plants in 2007. Fluoride is not added to the water in the East Valley Area.

O Turbidity is a measure of the cloudiness of the water and is an indicator of treatment performance. Secondary standards were based either on the treatment plant effluent or raw well water.

P Water hardness, measured in grains per gallon as calcium carbonate, is characterized by the following scale: 0 – 4.4 is soft, 4.4 – 8.8 is moderately hard, 8.8 – 17.5 is hard, and greater than 17.5 is very hard.

EASTERN MUNICIPAL WATER DISTRICT

2270 Trumble Road
PO Box 8300
Perris, CA 92572-8300

EASTERN MUNICIPAL WATER DISTRICT

Your 2015 Water Quality

CONSUMER CONFIDENCE REPORT

Issued July 2016

Public Meetings

EMWD's Board of Directors meetings are generally held on the 1st and 3rd Wednesdays of each month beginning at 9:00 a.m.

If you wish to attend a meeting, please call the Board Secretary during normal business hours at **(951) 928-3777, ext. 4235** to confirm meeting dates or check the Board Meeting Calendar online at **www.emwd.org/BoardMeetings**.

For more information on this report, contact: Water Quality **(951) 928-3777, ext. 3327** or visit **www.emwd.org/WaterQuality**.

DO YOU WANT A PAPER OR ELECTRONIC COPY OF THIS REPORT?

The choice is yours! We have made it easy and convenient for you to tell us how you want to receive future water quality reports, or if you would like to change your current delivery method. Just use one of the following options:

1. Submit your preference on-line at **www.emwd.org/ccr**.

2. Call **(951) 928-3777, extension 4378**.

APPENDIX F

OTHER SUPPORTING DOCUMENTATION

AEI Consultants

Environmental & Engineering Services

Instructions: Please complete the following questionnaire to the best of your knowledge.

ENVIRONMENTAL SITE ASSESSMENT QUESTIONNAIRE			
PROJECT/SITE INFORMATION			
Project Street Address(es):Northeast Corner of Holland Rd & Haun Rd			
City: Menifee	County: Riverside	State: CA	Zip:
Parcel Number(s):			
CONTACT INFORMATION			
Contact	*Name*	*Telephone Number*	*Years Associated w/Site*
Owner:	Nelson Family Trust	619-985-8220	14 years
Site Contact:	Jim Nelson	619-985-8220	14 years
Key Site Mgr:			
Previous Owner(s), Operators and/or Occupants:			
PROPERTY USE AND SPECIFICATIONS			
☐ Single-Family Residential		☐ Vacant or undeveloped	
☐ Multi-Family Residential		☒ Agricultural *specify type: Hay*	
☐ Commercial Office		☐ Industrial *specify type:*	
☐ Commercial Retail		☐ Other *specify type:*	
Provide a general site description: A disc vacant flat site with no structures. Used for agricultural hay farming.			
Provide all known current/former addresses and/or parcel numbers: 360-130-003			
Total Property Size: 37 acers		Original Construction Date: N/A	
Total Number of Buildings: None		Was Construction Phased? ☐Yes ☐No ☐Unk	
Total Sq. Ft. of Buildings: N/A		Dates of Renovations/Phases:	
Are there any plans for site redevelopment or change in use? ☒Yes ☐No If yes, please describe: Land Development			
Are there any bodies of water on or immediately adjacent to the site? ☐Yes ☒No If yes, please describe:			
Electricity Provider: Southern California Edison		Gas Provider: Southern California Gas Company	
Heating System Fuel Source(s): N/A		Cooling System Power Source: N/A	
Potable Water Source/Provider: Eastern Municipal Water Distict			
Any waste water discharge at the site? ☐ Septic Tank/Leachfield ☐ Sanitary Sewer ☐ Other		Sanitary Sewer Provider (if applicable): Eastern Municipal Water District	
OCCUPANTS/TENANTS			
Vacant	*Vacant*		

Project Number: 362255
Project Manager: April McGuire

Please return via fax (310-846-5594)
or email (amcguire@aeiconsultants.com)

Current owner Leased to farmers	*14 years*	*Agriculture*

Has the subject site ever been occupied by the following:
☐ Dry Cleaner ☐ Gas Station ☐ Printing Facility ☐ Manufacturing Facility
If yes, provide length of occupancy: No

Have any previous investigations been performed at the subject property? ☐Yes ☒No If Yes, are copies available?

If Yes, note type and describe: ☐ Phase I ESA ☐ Phase II ☐ Asbestos ☐ Lead Paint ☐ Radon

ON-SITE ENVIRONMENTAL CONDITIONS

Are you aware of any of the following environmental conditions, **either current or former**, on the subject site? **NOTE:** If applicable, please provide inventory records, inspection records and material safety data sheets to site inspector during site inspection.

Environmental Condition/Issue	*Response*	*Notes on Yes Responses*
Aboveground Storage Tanks	☐ Yes ☒ No	
Underground Storage Tanks	☐ Yes ☒ No	
Hazardous/Toxic Substances	☐ Yes ☒ No	
Stored Chemicals	☐ Yes ☒ No	
Chemical Spills/Releases	☐ Yes ☒ No	
Dump Areas/Landfills	☐ Yes ☒ No	
Waste Treatment Systems	☐ Yes ☒ No	
Wastewater Discharges	☐ Yes ☒ No	
Floor Drains/Sumps/Clarifiers	☐ Yes ☒ No	
Pits, Ponds, Lagoons	☐ Yes ☒ No	
Stained Soil/Vegetation	☐ Yes ☒ No	
Pesticide/Herbicide Use	☐ Yes ☒ No	
Polychlorinated Biphenyls (PCBs)	☐ Yes ☒ No	
Electrical Transformers	☐ Yes ☒ No	
Hydraulic Lifts	☐ Yes ☒ No	
Elevators	☐ Yes ☒ No	

Asbestos	☐ Yes ☒ No	
Environmental Condition/Issue	*Response*	*Notes on Yes Responses*
Lead-based paint	☐ Yes ☒ No	
Oil/Gas Wells	☐ Yes ☒ No	
Environmental Clean-ups	☐ Yes ☒ No	
Environmental Permits	☐ Yes ☒ No	

OTHER ENVIRONMENTAL CONDITIONS

Are you aware of any pending, threatened, or past litigation relevant to hazardous substances or petroleum products in, on, or from the property?
☐ Yes ☒ No
If yes, provide brief explanation.

Are you aware of any pending, threatened or past administrative proceedings relevant to hazardous substances or petroleum products in, on, or from the property?
☐ Yes ☒ No
If yes, provide brief explanation.

Are you aware of any notices from any governmental entity regarding any possible violation of environmental laws or possible liability relating to hazardous substances or petroleum products?
☐ Yes ☒ No
If yes, provide brief explanation.

Are you aware of any incidents of flooding, leaks, or other water intrusion, and/or complaints related to indoor air quality?
☐ Yes ☒ No
If yes, provide brief explanation.

Are you aware of any cases of extreme water damage or mold throughout the building(s)?
☐ Yes ☒ No
If yes, provide brief explanation.

Person completing questionnaire: Jim Nelson

Title/Affiliation to the subject property: Owner

Number of years associated with the subject property: 14 Years

Date: 9-28-16

Cassidy Turley BRE Commercial

Andy Melzer
760-431-4205
amelzer@breb.com
CA Lic 00865688

Kerry Schimpf
619-462-3100
kschimpf@breb.com
CA Lic 00955075

APPENDIX G

QUALIFICATIONS

April McGuire – Project Manager

B.S. – Chemical Engineering, University of California, Los Angeles

Ms. McGuire provides project management to ensure ASTM compliance and satisfaction of client requirements for Phase I Environmental Assessments, Environmental Transaction Screens, Regulatory Database Review, and Historical Records Review.

Project experience for Ms. McGuire includes:

- Phase I Environmental Site Assessments
- Environmental Transaction Screens
- Historical Records Reviews
- Regulatory Database Reviews

Prior to joining the environmental consulting industry, Ms. McGuire studied environmental and chemical engineering disciplines such as chemical fate and transport in the environment, atmospheric chemistry, thermodynamics and fluid mechanics.

Victor T. DeTroy – National Client Manager, Due Diligence Services

B.A. - Earth and Environmental Science, Columbia University, Cum Laude

OSHA 40-Hour Hazardous Waste Operations
Emergency Response (HAZWOPER) Training
EPA AHERA 24-hour Asbestos Building Inspector

Mr. DeTroy has worked the environmental service industry since 2007 and provides project management to ensure compliance and satisfaction of client requirements for Phase I Environmental Site Assessments, Transaction Screens, limited due diligence assessments, Phase II and Phase III subsurface investigations, and quarterly groundwater monitoring events. He has successfully completed assessments on a variety of residential, commercial, and complex industrial sites. Mr. DeTroy is accustomed to all aspects of Due Diligence Property Assessments and the needs and requirements of a variety of reporting standards, including ASTM, EPA's All Appropriate Inquiry (AAI), Freddie Mac, Fannie Mae, HUD, and customized client formats.

Project experience for Mr. DeTroy includes:

- Phase I Environmental Site Assessments
- Telecommunication Phase I Environmental Site Assessments
- Environmental Transaction Screens
- Environmental Transaction Analyses
- Limited Environmental Site Assessments
- Regulatory Database Reviews
- Historical Records Reviews
- Project Coordination and Setup
- Due Diligence Portfolio Management
- The design and implementation of Phase II soil and groundwater investigations and Phase III subsurface characterizations for a variety of suspected contaminants for due diligence and liability purposes

Subsurface investigations have included extensive soil and groundwater testing, identification of petroleum hydrocarbons and volatile organic compounds contamination in near surface soils, and contaminant plume delineation in soil vapor, soil, and groundwater. Mr. DeTroy's management and technical experience has allowed AEI's projects to be performed in a cost effective and timely manner to the satisfaction of AEI's clients and regulatory agencies.

Appendix 5: LID Infeasibility

LID Technical Infeasibility Analysis

N/A

Appendix 6: BMP Design Details

BMP Sizing, Design Details and other Supporting Documentation

Santa Ana Watershed - BMP Design Volume, V_{BMP}

(Rev. 10-2011)

Legend: Required Entries / Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name	Albert A Webb Associates	Date	1/14/2019
Designed by	ABE	Case No	TPM 37121
Company Project Number/Name	JPN Corporation		

BMP Identification

BMP NAME / ID: Basin B

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E

D_{85} = 0.58 inches

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
L-B	*6111*	*Ornamental Landscaping*	*0.1*	*0.11*	*675*			
ST-B	*29223*	*Concrete or Asphalt*	*1*	*0.89*	*26066.9*			
BASIN-B	*1379*							

Bioretention Facility - Design Procedure	BMP ID: Basin B	Legend:	Required Entries / Calculated Cells

Company Name:	Albert A. Webb Associates	Date:	1/14/2019
Designed by:	ABE	County/City Case No.:	TPM 37121

Design Volume

Enter the area tributary to this feature	A_T=	0.84	acres
Enter V_{BMP} determined from Section 2.1 of this Handbook	V_{BMP}=	1,293	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 =	1.5	ft
Top Width of Bioretention Facility, excluding curb	w_T =	7.6	ft
Total Effective Depth, d_E			
$d_E = [(0.3) \times d_S + (0.4) \times 1] + 0.5$	d_E =	1.35	ft
Minimum Surface Area, A_m			
$A_M\,(ft^2) = \frac{V_{BMP}\,(ft^3)}{d_E\,(ft)}$	A_M =	958	ft^2
Proposed Surface Area	A=	1,379	ft^2
Minimum Required Length of Bioretention Facility, L	L =	126.1	ft

Bioretention Facility Properties

Side Slopes in Bioretention Facility	z =	4	:1
Diameter of Underdrain		6	inches
Longitudinal Slope of Site (3% maximum)		1	%
6" Check Dam Spacing		25	feet
Describe Vegetation:		Natural Grasses	

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	Albert A Webb Associates	Date	1/14/2019
Designed by	ABE	Case No	TPM 37121
Company Project Number/Name	JPN Corporation		

BMP Identification

BMP NAME / ID: Basin C

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E

D_{85}= 0.58 inches

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
L-C	*6630*	*Ornamental Landscaping*	*0.1*	*0.11*	*732.3*			
ST-C	*30625*	*Concrete or Asphalt*	*1*	*0.89*	*27317.5*			
BASIN-C	*706*							

Bioretention Facility - Design Procedure	BMP ID: Basin C	Legend:	Required Entries / Calculated Cells

Company Name: Albert A. Webb Associates | Date: 1/14/2019

Designed by: ABE | County/City Case No.: TPM 37121

Design Volume

Enter the area tributary to this feature — A_T = 0.87 acres

Enter V_{BMP} determined from Section 2.1 of this Handbook — V_{BMP} = 1,356 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 = 9.5 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 = 1.73 ft

Minimum Surface Area, A_m

$$A_M\,(ft^2) = \frac{V_{BMP}\,(ft^3)}{d_E\,(ft)}$$

A_M = 786 ft^2

Proposed Surface Area — A= 706 ft^2

ERROR, the proposed surface area must be equal to or greater than the minimum surface area

Bioretention Facility Properties

Side Slopes in Bioretention Facility — z = 4 :1

Diameter of Underdrain — 6 inches

Longitudinal Slope of Site (3% maximum) — 0 %

6" Check Dam Spacing — 0 feet

Describe Vegetation: Natural Grasses

Notes: This is due to the lack of area that is available to expand the basin. The ponding depth was increased from 0.5' to 0.88' to attempt to treat as much runoff as possible. This creates the need for a bottom area of 644 square feet. The basin is sized appropriately for a ponding depth of 0.88'.

Appendix 7: Hydromodification

Supporting Detail Relating to Hydrologic Conditions of Concern

N/A

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 insure 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.**

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/

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.**

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

BMP TRAINING ACKNOWLEDGEMENT FORM

By signing this form, the undersigned certifies that he/she has received the listed materials and training for the BMP's that he or she is responsible for operation and maintenance or responsible to meet the requirements. The undersigned also acknowledged that punitive actions may be imposed if he or she fails to comply. The punitive actions can be in terms of monetary fine or termination of the contract or the rights that is transferred to the undersigned through contracts. If necessary, the owner or public agencies may complete the corrective actions and billed the undersigned.

Name (Print): _____
Business Name:_____
Title/Position: _____
Signature: _____ Date: _____

Item	Training Description	Related BMP(s)	Handout Materials	Initials	Comments

Bioretention Area Maintenance Plan

Date: ……..

Project Address and Cross Streets_____

Assessor's Parcel No.: _____

Property Owner: _____ Phone No.:_____

Designated Contact: _____ Phone No.:_____

Mailing Address:_____

Rainy Season: October 1 to May 1

The property contains 3 (three) bioretention area, located as described below and as shown in the attached site plan[1].

- **Bioretention Basin B** is located just north of the vertical curve of Haun Road and north of the proposed commercial driveway entrance.
- **Bioretention Basin C** is located just south of the vertical curve of Haun Road and south of the proposed commercial driveway entrance.

I. Routine Maintenance Activities

The principal maintenance objective is to prevent sediment buildup and clogging, which reduces pollutant removal efficiency and may lead to bioretention area failure. Routine maintenance activities, and the frequency at which they will be conducted, are shown in Table 1.

Table 1
Routine Maintenance Activities for Bioretention Areas

No.	Maintenance Task	Frequency of Task
1	Remove obstructions, debris and trash from bioretention area and dispose of properly.	Monthly, or as needed after storm events
2	Inspect bioretention area to ensure that it drains between storms and within five days after rainfall.	Monthly, or as needed after storm events
3	Inspect inlets for channels, soil exposure or other evidence of erosion. Clear obstructions and remove sediment.	Monthly, or as needed after storm events
4	Remove and replace all dead and diseased vegetation.	Twice a year
5	Maintain vegetation and the irrigation system. Prune and weed to keep bioretention area neat and orderly in appearance.	Before wet season begins, or as needed
6	Check that mulch is at appropriate depth (3 inches per soil specifications) and replenish as necessary before wet season begins.	Monthly
7	Inspect bioretention area using the attached inspection checklist.	Monthly, or after large storm events, and after removal of accumulated debris or material

II. Prohibitions

The use of pesticides and quick release fertilizers shall be minimized, and the principles of integrated pest management (IPM) followed:

[1] Attached site plan must match the site plan exhibit to Maintenance Agreement.

1. Employ non-chemical controls (biological, physical and cultural controls) before using chemicals to treat a pest problem.
2. Prune plants properly and at the appropriate time of year.
3. Provide adequate irrigation for landscape plants. Do not over water.
4. Limit fertilizer use unless soil testing indicates a deficiency. Slow-release or organic fertilizer is preferable. Check with municipality for specific requirements.
5. Pest control should avoid harming non-target organisms, or negatively affecting air and water quality and public health. Apply chemical controls only when monitoring indicates that preventative and non-chemical methods are not keeping pests below acceptable levels. When pesticides are required, apply the least toxic and the least persistent pesticide that will provide adequate pest control. Do not apply pesticides on a prescheduled basis.
6. Sweep up spilled fertilizer and pesticides. Do not wash away or bury such spills.
7. Do not over apply pesticide. Spray only where the infestation exists. Follow the manufacturer's instructions for mixing and applying materials.
8. Only licensed, trained pesticide applicators shall apply pesticides.
9. Apply pesticides at the appropriate time to maximize their effectiveness and minimize the likelihood of discharging pesticides into runoff. With the exception of pre-emergent pesticides, avoid application if rain is expected.
10. Unwanted/unused pesticides shall be disposed as hazardous waste.

Standing water shall not remain in the treatment measures for more than 72 hours, to prevent mosquito generation. Should any mosquito issues arise, contact the appropriate office listed below.

III. Vector Control Contacts

Northwest Mosquito & Vector Control District
951.340.9792

Unincorporated areas of Riverside County
Vector Control at Riverside County Environmental Health
951.766.9454

City of Perris
Animal Control ask for Vector Control
951.657.4134

City of Moreno Valley
Partly city and partly Riverside County Environmental Health
951.413.3340 City of Moreno Valley Code Compliance Department
951.766.9454 Vector Control at County Environmental Health

Desert Hot Springs, Cathedral City, Palm Springs and East to Coachella
Vector Control
760.342.8287

City of Temecula Code
Enforcement

951.308.6383

City of Murrieta
Open spaces (parks, creeks, channels) Code Enforcement
951.304.7275
Pools, Code Enforcement
951.461.6630

City of Banning
Vector Control at Riverside County Environmental Health
951.766.9454

City of San Jacinto
Vector Control at Riverside County Environmental Health
951.766.9454

City of Hemet
Vector Control at Riverside County Environmental Health
951.766.9454

IV. Inspections

The attached Bioretention Area Inspection and Maintenance Checklist shall be used to conduct inspections monthly (or as needed), identify needed maintenance, and record maintenance that is conducted.

Bioretention Area
Inspection and Maintenance Checklist

Property Address: _____ Property Owner: _____

Treatment Measure No.: _____ Date of Inspection: _____ Type of Inspection: ☐ Monthly ☐ Pre-Wet Season ☐ After heavy runoff ☐ End of Wet Season

Inspector(s): _____ ☐ Other:_____

Defect	**Conditions When Maintenance Is Needed**	**Maintenance Needed? (Y/N)**	**Comments** (Describe maintenance completed and if needed maintenance was not conducted, note when it will be done)	**Results Expected When Maintenance Is Performed**
1. Standing Water	When water stands in the bioretention area between storms and does not drain within five days after rainfall.			There should be no areas of standing water once inflow has ceased. Any of the following may apply: sediment or trash blockages removed, improved grade from head to foot of bioretention area, or added underdrains.
2. Trash and Debris Accumulation	Trash and debris accumulated in the bioretention area.			Trash and debris removed from bioretention area and disposed of properly.
3. Sediment	Evidence of sedimentation in bioretention area.			Material removed so that there is no clogging or blockage. Material is disposed of properly.
4. Erosion	Channels have formed around inlets, there are areas of bare soil, and/or other evidence of erosion.			Obstructions and sediment removed so that water flows freely and disperses over a wide area. Obstructions and sediment are disposed of properly.
5. Vegetation	Vegetation is dead, diseased and/or overgrown.			Vegetation is healthy and attractive in appearance.
6. Mulch	Mulch is missing or patchy in appearance. Areas of bare earth are exposed, or mulch layer is less than 3 inches in depth.			All bare earth is covered, except mulch is kept 6 inches away from trunks of trees and shrubs. Mulch is even in appearance, at a depth of 3 inches.
7. Miscellaneous	Any condition not covered above that needs attention in order for the bioretention area to function as designed.			Meet the design specifications.

Appendix 10: Educational Materials

BMP Fact Sheets, Maintenance Guidelines and Other End-User BMP Information

For Information:

Local Sewering Agencies in Riverside County:

City of Beaumont	(909) 769-8520
Belair Homeowners Association	(909) 277-1414
City of Banning	(909) 922-3130
City of Blythe	(760) 922-6161
City of Coachella	(760) 391-5008
Coachella Valley Water District	(760) 398-2651
City of Corona	(909) 736-2259
Desert Center, CSA #51	(760) 227-3203
Eastern Municipal Water District	(909) 928-3777
Elsinore Valley MWD	(909) 674-3146
Farm Mutual Water Company	(909) 244-4198
Idyllwild Water District	(909) 659-2143
Jurupa Community Services Dist.	(909) 685-7434
Lake Hemet MWD	(909) 658-3241
Lee Lake Water District	(909) 277-1414
March Air Force Base	(909) 656-7000
Mission Springs Water District	(760) 329-6448
City of Palm Springs	(760) 323-8242
Rancho Caballero	(909) 780-9272
Rancho California Water Dist.	(909) 676-4101
Ripley, CSA #62	(760) 922-4909
Rubidoux Community Services Dist.	(909) 684-7580
City of Riverside	(909) 782-5341
Silent Valley Club, Inc	(909) 849-4501
Valley Sanitary District	(760) 347-2356
Western Municipal Water District	(909) 780-4170

Spill Response Agency:
Haz-Mat: (909) 358-5055
Hazardous Waste Disposal: (909) 358-5055
To Report Illegal Dumping or a Clogged Storm Drain: 1-800-506-2555

StormWater CleanWater
PROTECTION PROGRAM

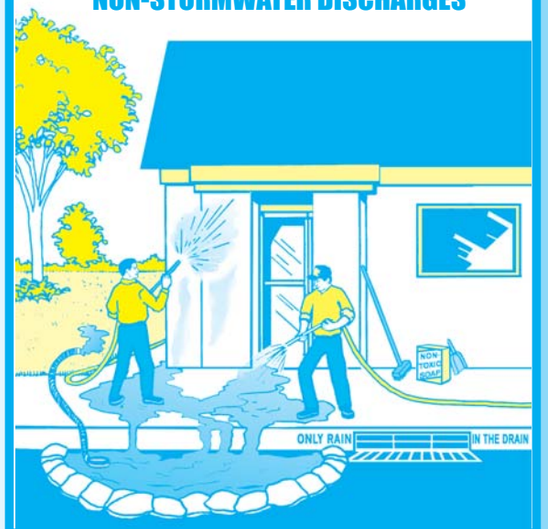
Riverside County gratefully acknowledges the Bay Area Stormwater Management Agencies Association and the Cleaning Equipment Trade Association for information provided in this brochure.

StormWater Pollution

What you should know for...

OUTDOOR CLEANING ACTIVITIES

NON-STORMWATER DISCHARGES



GUIDELINES for disposal of washwater from:

- Sidewalk, plaza or parking lot cleaning
- Vehicle washing or detailing
- Building exterior cleaning
- Waterproofing
- Equipment cleaning or degreasing

Do you know . . . where the water should go?

Riverside County has two drainage systems - sanitary sewers and storm drains. The storm drain system is designed to prevent flooding by carrying excess rainwater away from streets. . . it's not designed to be a waste disposal system. Since the storm drain system does not provide for water treatment, it often serves the unintended function of transporting pollutants directly to our waterways.

Unlike sanitary sewers, storm drains are not connected to a treatment plant - they flow directly to our local streams, rivers and lakes.

Non-stormwater discharges such as washwater generated from outdoor cleaning projects often transport harmful pollutants into storm drains and our local waterways. Polluted runoff contaminates local waterways and poses a threat to groundwater resources.

Soaps, degreasers, automotive fluids, litter, and a host of other materials washed off buildings, sidewalks, plazas, parking areas, vehicles, and equipment can all pollute our waterways.

The Cities and County of Riverside StormWater/CleanWater Protection Program

Since preventing pollution is much easier, and less costly than cleaning up "after the fact," the Cities and County of Riverside StormWater/CleanWater Protection Program informs residents and businesses of pollution prevention activities such as those described in this pamphlet.

The Cities and County of Riverside have adopted ordinances for stormwater management and discharge control. In accordance with state and federal law, these local stormwater ordinances **prohibit** the discharge of wastes into the storm drain system or local surface waters. This includes non-stormwater discharges containing oil, grease, detergents, degreasers, trash, or other waste materials.

PLEASE NOTE: The discharge of pollutants into the street, gutters, storm drain system, or waterways - without a Regional Water Quality Control Board permit or waiver - is ***strictly prohibited*** by local ordinances and state and federal law.

Help Protect Our Waterways!

Use These Guidelines For Outdoor Cleaning Activities and Washwater Disposal

DO . . . Dispose of **small amounts** of **washwater from cleaning building exteriors, sidewalks, or plazas** onto landscaped or unpaved surfaces provided you have the owner's permission and the discharge will not cause flooding or nuisance problems, or flow into a storm drain.

DO NOT . . . Discharge **large amounts** of these types of washwater onto landscaped areas or soil where water may run to a street or storm drain. Wastewater from exterior cleaning may be pumped to a sewer line with specific permission from the local sewering agency.

DO . . . Check with your local sewering agency's policies and requirements concerning waste water disposal. **Water from many outdoor cleaning activities** may be acceptable for disposal to the sewer system. See the list on the back of this flyer for phone numbers of the sewering agencies in your area.

DO NOT . . . Pour **hazardous wastes** or toxic materials into the storm drain or sewer system . . . properly dispose of it instead. When in doubt, contact the local sewering agency! The agency will tell you what types of liquid wastes can be accepted.

DO . . . Understand that **water (without soap) used to remove dust from clean vehicles** may be discharged to a street or storm drain. **Washwater from sidewalk, plaza, and building surface cleaning** may go into a street or storm drain if ALL of the following conditions are met:

1) The surface being washed is free of residual oil stains, debris and similar pollutants by using dry cleanup methods (sweeping, and cleaning any oil or chemical spills with rags or other absorbent materials before using water).
2) Washing is done with water only - no soap or other cleaning materials.
3) You have not used the water to remove paint from surfaces during cleaning.

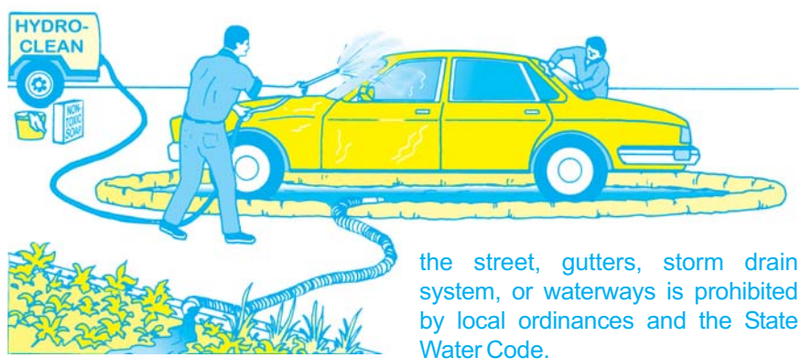
DO NOT . . . Dispose of water containing **soap or any other type of cleaning agent** into a storm drain or water body. This is a direct violation of state and/or local regulations. Because **wastewater from cleaning parking areas or roadways** normally contains metallic brake pad dust, oil and other automotive fluids, it should never be discharged to a street, gutter, or storm drain.

DO . . . Understand that **mobile auto detailers** should divert washwater to landscaped or dirt areas. Note: Be aware that soapy washwater may adversely affect landscaping; consult with the property owner. Residual washwater may remain on paved surfaces to evaporate; sweep up any remaining residue. If there is sufficient water volume to reach the storm drain, collect the runoff and obtain permission to pump it into the sanitary sewer. Follow local sewering agency's requirements for disposal.

DO NOT . . . Dispose of left over cleaning agents into the gutter, storm drain or sanitary sewer.

Regarding Cleaning Agents:

If you must use soap, use biodegradable/phosphate free cleaners. Avoid use of petroleum based cleaning products. Although the use of nontoxic cleaning products is strongly encouraged, ***do*** understand that these products can still degrade water quality and, therefore, the discharge of these products into



the street, gutters, storm drain system, or waterways is prohibited by local ordinances and the State Water Code.

Note: When cleaning surfaces with a high pressure washer or steam cleaning methods, additional precautions should be taken to prevent the discharge of pollutants into the storm drain system. These two methods of surface cleaning, as compared to the use of a low pressure hose, can remove additional materials that can contaminate local waterways.

Other Tips to Help Protect Our Water . . .

Screening Wash Water

A thorough dry cleanup before washing (without soap) surfaces such as building exteriors and decks without loose paint, sidewalks, or plaza areas, *should be sufficient to protect storm drains.* **However**, if any debris (solids) could enter storm drains or remain in the gutter or street after cleaning, washwater should first pass through a "20 mesh" or finer screen to catch the solid material, which should then be disposed of in the trash.

Drain Inlet Protection/ Containing & Collecting Wash Water

- Sand bags can be used to create a barrier around storm drain inlets.
- Plugs or rubber mats can be used to temporarily seal storm drain openings.
- You can also use vacuum booms, containment pads, or temporary berms to keep wash water away from the street, gutter, or storm drain.

Equipment and Supplies

Special materials such as absorbents, storm drain plugs and seals, small sump pumps, and vacuum booms are available from many vendors. For more information check catalogs such as New Pig (800-468-4647), Lab Safety Supply (800-356-0783), C&H (800-558-9966), and W.W. Grainger (800-994-9174); or call the Cleaning Equipment Trade Association (800-441-0111) or the Power Washers of North America (800-393-PWNA).

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.

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.

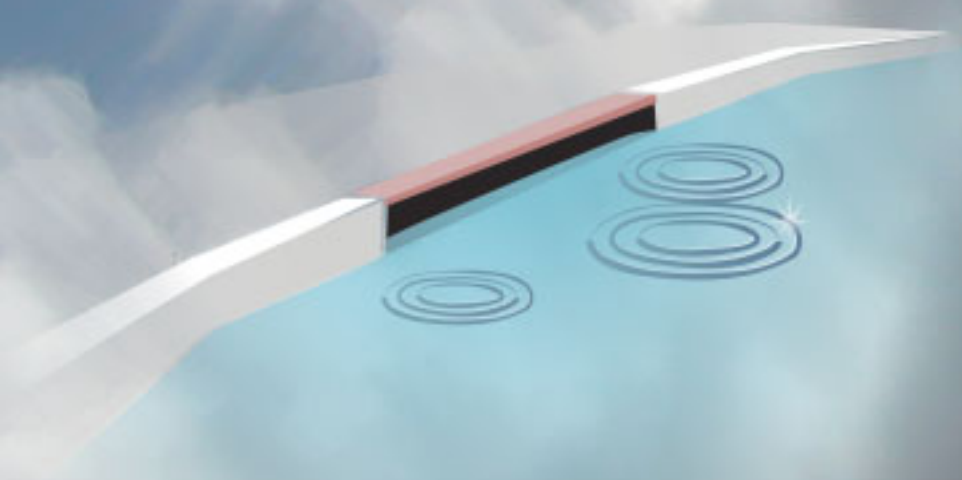
The effects of pollution

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.

After the Storm



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

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THE YEAR OF CLEAN WATER
Celebration & Recommitment

A Citizen's Guide to Understanding Stormwater

WHEN IT RAINS IT DRAINS

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

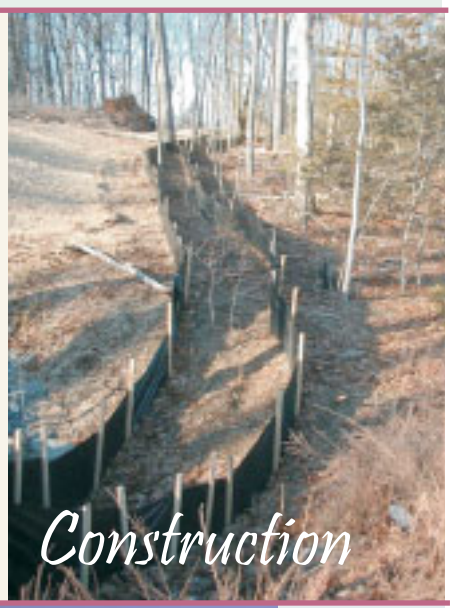
Dirt, oil, and debris that collect in parking lots and paved areas can be washed into the storm sewer system and eventually enter local waterbodies.

- 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

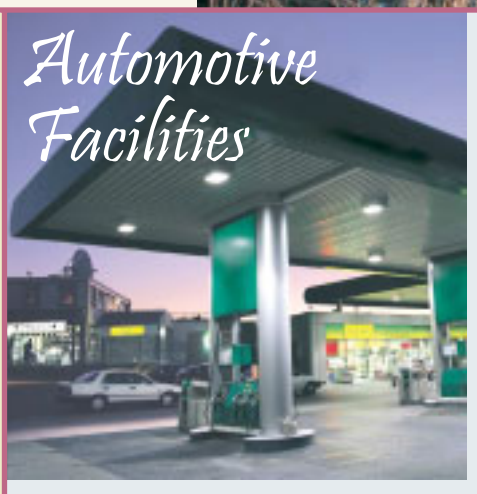
Lack of vegetation on streambanks can lead to erosion. Overgrazed pastures can also contribute excessive amounts of sediment to local waterbodies. Excess fertilizers and pesticides can poison aquatic animals and lead to destructive algae blooms. Livestock in streams can contaminate waterways with bacteria, 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.

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.



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.

Landscaping and garden maintenance activities can be major contributors to water pollution. Soils, yard wastes, over-watering and garden chemicals become part of the urban runoff mix that winds its way through streets, gutters and storm drains before entering lakes, rivers, streams, etc. Urban runoff pollution contaminates water and harms aquatic life!

In Riverside County, report illegal discharges into the storm drain, call
1-800-506-2555
"Only Rain Down the Storm Drain"

Important Links:

Riverside County Household Hazardous Waste Collection Information
1-800-304-2226 or www.rivcowm.org

Riverside County Backyard Composting Program
1-800-366-SAVE

Integrated Pest Management (IPM) Solutions
www.ipm.ucdavis.edu

California Master Gardener Programs
www.mastergardeners.org
www.camastergardeners.ucdavis.edu

California Native Plant Society
www.cnps.org

The Riverside County "Only Rain Down the Storm Drain" Pollution Prevention Program gratefully acknowledges Orange County's Storm Water Program for their contribution to this brochure.

...Only Rain Down ...the Storm Drain

What you should know for... Landscape and Gardening

Best Management tips for:

- Professionals
- Novices
- Landscapers
- Gardeners
- Cultivators

Tips for Landscape & Gardening

This brochure will help you to get the most of your lawn and gardening efforts and keep our waterways clean. Clean waterways provide recreation, establish thriving fish habitats, secure safe sanctuaries for wildlife, and add beauty to our communities. NEVER allow gardening products or waste water to enter the street, gutter or storm drain.

General Landscaping Tips

- Protect stockpiles and materials from wind and rain by storing them under tarps or secured plastic sheeting.
- Prevent erosion of slopes by planting fast-growing, dense ground covering plants. These will shield and bind the soil.

- Plant native vegetation to reduce the amount of water, fertilizers and pesticides applied to the landscape.
- Never apply pesticides or fertilizers when rain is predicted within the next 48 hours.

Garden & Lawn Maintenance

- Do not overwater. Use irrigation practices such as drip irrigation, soaker hoses or micro-spray systems. Periodically inspect and fix leaks and misdirected sprinklers.
- Do not rake or blow leaves, clippings or pruning waste into the street, gutter or storm drain. Instead, dispose of green waste by composting, hauling it to a permitted landfill, or recycling it through your city's program.

- Consider recycling your green waste and adding "nature's own fertilizer" to your lawn or garden.
- Read labels and use only as directed. Do not over-apply pesticides or fertilizers. Apply to spots as needed, rather than blanketing an entire area.
- Store pesticides, fertilizers and other chemicals in a dry covered area to prevent exposure that may result in the deterioration of containers and packaging.
- Rinse empty pesticide containers and re-use rinse water as you would use the product. Do not dump rinse water down storm drains or sewers. Dispose of empty containers in the trash.
- When available, use non-toxic alternatives to traditional pesticides, and use pesticides specifically designed to control the pest you are targeting.
- Try natural long-term common sense solutions first. Integrated Pest Management (IPM) can provide landscaping guidance and solutions, such as:
  - **Physical Controls** - Try hand picking, barriers, traps or caulking holes to control weeds and pests.
  - **Biological Controls** - Use predatory insects to control harmful pests.
  - **Chemical Controls** - Check out www.ipm.ucdavis.edu before using chemicals. Remember, all chemicals should be used cautiously and in moderation.
- If fertilizer is spilled, sweep up the spill before irrigating. If the spill is liquid, apply an absorbent material such as cat litter, and then sweep it up and dispose of it in the trash.
- Take unwanted pesticides to a Household Waste Collection Center to be recycled.
- *Dumping toxics into the street, gutter or storm drain is illegal!*

www.bewaterwise.com Great water conservation tips and drought tolerant garden designs.

www.ourwaterourworld.com Learn how to safely manage home and garden pests.

Additional information can also be found on the back of this brochure.

Stormwater Pollution Found in Your Area!

This is not a citation.

This is to inform you that our staff found the following pollutants in the storm sewer system in your area. This storm sewer system leads directly to

_____ .

- ❑ Motor oil
- ❑ Oil filters
- ❑ Antifreeze/ transmission fluid
- ❑ Paint
- ❑ Solvent/degreaser
- ❑ Cooking grease
- ❑ Detergent
- ❑ Home improvement waste (concrete, mortar)
- ❑ Pet waste
- ❑ Yard waste (leaves, grass, mulch)
- ❑ Excessive dirt and gravel
- ❑ Trash
- ❑ Construction debris
- ❑ Pesticides and fertilizers
- ❑ Other

_____

For more information or to report an illegal discharge of pollutants, please call:

WHEN IT RAINS IT DRAINS

www.epa.gov/npdes/stormwater

EPA
United States Environmental Protection Agency

EPA 833-F-03-002
April 2003

Stormwater runoff is precipitation from rain or snowmelt that flows over the ground. As it flows, it can pick up debris, chemicals, dirt, and other pollutants and deposit them into a storm sewer system or waterbody.

Anything that enters a storm sewer system is discharged *untreated* into the waterbodies we use for swimming, fishing, and providing drinking water.

Remember: Only Rain Down the Drain

To keep the stormwater leaving your home or workplace clean, follow these simple guidelines:

- Use pesticides and fertilizers sparingly.
- Repair auto leaks.
- Dispose of household hazardous waste, used auto fluids (antifreeze, oil, etc.), and batteries at designated collection or recycling locations.
- Clean up after your pet.
- Use a commercial car wash or wash your car on a lawn or other unpaved surface.
- Sweep up yard debris rather than hosing down areas. Compost or recycle yard waste when possible.
- Clean paint brushes in a sink, not outdoors. Properly dispose of excess paints through a household hazardous waste collection program.
- Sweep up and properly dispose of construction debris like concrete and mortar.

EPA · · · · · · Clean Water State Revolving Fund

ACTIVITY *UPDATE*

Innovative use of Clean Water State Revolving Funds for Nonpoint Source Pollution

States are successfully using linked deposit and pass-through loans to fund important nonpoint source pollution remediation projects

Many states are successfully using the USEPA's Office of Water, Clean Water State Revolving Fund (CWSRF) loan program to fund important nonpoint source pollution remediation projects. Nonpoint source pollution is widely viewed as one of the most serious threats to our nation's water quality. State and local governments, local watershed and agricultural organizations, and many others are working to devise solutions that address nonpoint source pollution. The CWSRF program provides very attractive low-interest loans that spread project costs over a repayment period of up to 20 years. Today, CWSRF programs are funding projects that address agriculture runoff, leaking on-site septic systems, and urban nonpoint source pollution, including stormwater runoff and brownfield contamination.

During the initial operating phase of CWSRF programs, states designed loan options and implemented administrative procedures that would best serve municipal wastewater system projects. However, when considering how the CWSRF program could be used to address nonpoint source pollution, a number of states recognized that they would need to go beyond the typical municipal borrower and provide loan assistance to farmers, homeowners, and nonprofit organizations. States also recognized that providing loans to small private borrowers could be challenging. The loans would fund a variety of small projects, there would be more of them to service and manage, and there would be a greater risk of loan defaults.

States have taken different approaches to addressing these challenges. In some states, the CWSRF program has called upon internal expertise and the expertise of other state personnel to help manage loans to private borrowers. Other states have used creative lending approaches that pass loan risks and loan servicing responsibilities to financial institutions, local governments, or other state agencies. These lending methods include linked deposit loan programs with local financial institutions and pass-through loan programs with local government or state agencies. This activity update will highlight these loan structures with three case studies of successful state programs.

What is a linked deposit loan?

Under a linked deposit loan approach, a state works with local private lending institutions to provide assistance for nonpoint source pollution control. The state agrees to accept a reduced rate of return on an investment (e.g., a certificate of deposit) and the lending institution agrees to provide a loan to a borrower at a similarly reduced interest rate. For example, if the typical earnings rate for a certificate of deposit (CD) is five percent, a state might agree to purchase a CD that earns two percent interest, and in exchange, the lending institution agrees to provide a loan to a borrower at an interest rate that is three percentage points lower than the market rate for the borrower. In this program, the CWSRF investment (deposit) is linked to a low-interest loan, thereby earning the description "linked deposit loan."

Linked deposit loan programs provide benefits for CWSRF programs, local financial institutions, and borrowers. The linked-deposit approach benefits CWSRF programs because they support high priority nonpoint source projects and because they place risk and management responsibilities with local financial institutions. Financial institutions earn profits from the linked deposit agreements and add an additional service for their customers. Borrowers find linked deposit programs to be economical and comfortable; they save money with low-interest loans, and they are comfortable working with local financial institutions.

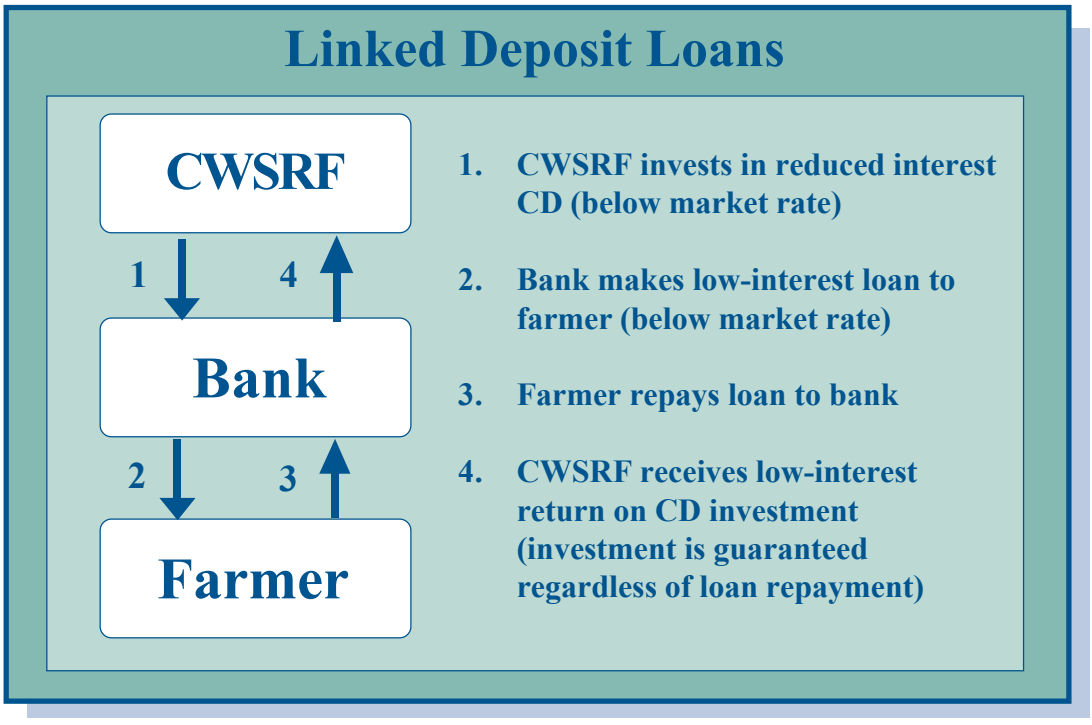


Figure 1. Linked deposit program flow chart

What is a pass-through loan?

In a pass-through loan, a CWSRF program makes a loan to another state or local government agency and that agency then lends the funds to private borrowers to address nonpoint source pollution. The town, county, or state agency reviews the project and the finances of each borrower. CWSRF loan funds are "passed-through" another government agency to private borrowers.

Pass-through loan programs benefit CWSRF programs, pass-through partners (towns, counties, and state agencies), and borrowers. These programs benefit CWSRF programs because they support high-priority nonpoint source projects and because they place risk and management responsibilities with program partners. Towns, counties, and state agencies benefit from pass-through programs because CWSRF funds support their nonpoint source priorities. Pass-through loans can offer two potential benefits to borrowers. First, pass-through loans are not provided by private lenders and, as a result, are likely to have lower interest rates. Second, local government agencies may have greater flexibility to provide loans to borrowers with relatively weak credit conditions if the borrower's nonpoint source project is a high priority for the state or local government agency.

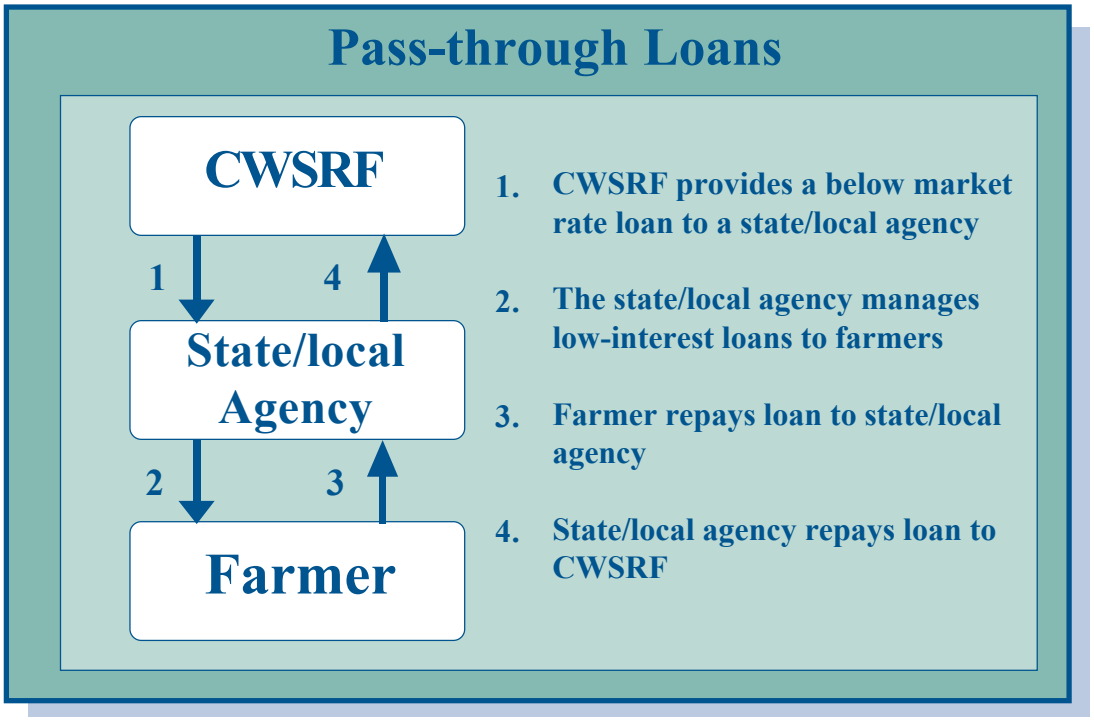


Figure 2. Pass-through program flow chart

Who has benefited from these programs and what have they funded?

CWSRF linked deposit and pass-through loan programs have supported borrowers implementing a variety of nonpoint source projects:

- Homeowners have implemented stormwater runoff best management practices and repaired or replaced failing on-site septic systems.
- Homeowner associations have addressed failing stormwater management facilities.
- Farmers have addressed agricultural runoff with a wide variety of agricultural best management practices including the construction of manure storage facilities, the restoration of filter strips and grassed waterways, and the use of conservation tillage equipment.

Ohio Case Study — Linked Deposit Loan Program

Ohio has used a linked-deposit loan program since 1993 to fund projects that support county watershed management plans. This program has funded more than 300 projects, including the repair of onsite wastewater treatment systems and the implementation of best management practices for agriculture, forestry, stormwater, and land development. The CWSRF program developed this program with the help of county soil and water conservation districts and local banks.

The CWSRF program implements its linked deposit loan program one county at a time. Each county's program is developed with two concurrent steps: the county soil and water conservation district develops a watershed management plan, and the CWSRF program and local financial institutions enter into agreements describing requirements and procedures for linked deposit loans.

Watershed management plans describe a watershed, identify sources of pollution, suggest actions that would address those pollution sources, prioritize water quality problems, identify sources of funding, and establish an implementation schedule. The county soil and water district's draft plan is reviewed by Ohio EPA and by a formal public review process. If Ohio EPA approves a plan after this review, the CWSRF program and the soil and water conservation district sign a memorandum of understanding that describes how these two entities will coordinate their implementation of the management plan.

At the same time that a watershed management plan is developed and reviewed, soil and conservation districts contact local banks to identify institutions that would like to participate in a linked deposit program. Interested banks enter into agreements with the CWSRF program that describe requirements and procedures for linked deposit loans.

Any borrower with a project that helps to implement a watershed management plan is eligible for a linked deposit loan. Participating banks review borrowers' credit using their own credit standards. If a bank approves a linked deposit loan, the CWSRF program purchases a CD of equal value from the bank. The CWSRF program accepts a CD interest rate that is five percentage points lower than the rate of a U.S. Treasury Note or Bond with the same term. The borrower's loan interest rate is also reduced by five percentage points. The bank makes semiannual payments of principal and interest to repay the CWSRF for its investment in the CD, and it makes these payments even if the borrower defaults on the linked deposit loan.

Massachusetts Case Study — Lending through Local Government

Since 1995, Massachusetts' Community Septic Management Program has used pass-through loans with local municipalities to fund the repair and replacement of failing septic systems. The program has funded more than 3,000 projects across the state. The CWSRF has developed this program with the cooperation of local municipalities.

Communities that participate in Massachusetts' Community Septic Management Program can borrow hundreds of thousands of dollars from the CWSRF program, but communities must first develop a septic management plan and procedures for a local betterment loan program (the community uses betterment assessments to secure the loans). Massachusetts provides grants of up to $20,000 to municipalities to support these planning activities and the administration of the program.

Massachusetts law defines a betterment assessment as a charge imposed on real property that receives a benefit from a public improvement. Municipalities have traditionally imposed betterments to pay for improvements such as roads, sidewalks and sewer lines. In the Community Septic Management Program, however, betterment agreements allow individuals to receive community support (a betterment loan) for septic system improvements, and the agreements allow communities to ensure that the loans are repaid as part of a property tax bill. The community can place a municipal lien on property if a homeowner defaults on a betterment loan.

Septic management plans identify and prioritize areas with septic systems that require monitoring, maintaining, and upgrading. As part of the planning process, communities develop maintenance schedules for septic systems, and they develop databases that track the inspection, maintenance, and upgrade of these systems. The Massachusetts Department of Environmental Protection reviews all community septic management plans.

Before a community can receive a CWSRF loan from the state, however, it also develops the framework for a local betterment loan program. Communities create administrative structures to manage the programs, devise a method for selecting priority projects, and work with their tax assessors to ensure that homeowners will repay their betterment loans as part of their local tax assessments.

Communities that develop septic management plans and procedures for a local betterment loan program receive loans from the CWSRF program for 20 years at zero percent interest. Communities typically borrow $200,000 from this program. Homeowners typically receive twenty-year loans from communities at two to five percent interest. Communities can use interest accrued on betterment loans to support the administrative costs of the loan programs. Communities must begin to repay the CWSRF within one year after they have finished dispersing the proceeds of each CWSRF loan.

Missouri Case Study — Lending through State Agencies

Missouri's Nonpoint Source Animal Waste Treatment Facility Loan Program is a pass-through loan program that uses a state agency as a loan intermediary. Since 1995, the Missouri Agriculture and Small Business Development Authority (MASBDA) has borrowed $5 million from the CWSRF program, and MASBDA has used these funds to support the construction of 88 animal waste treatment systems for livestock and poultry producers. The agricultural operation of each borrower in this loan program produces fewer than 1,000 animal units -- concentrated animal feeding operations are ineligible.

Missouri's Nonpoint Source Animal Waste Treatment Facility Loan Program does not require a regional planning effort similar to the soil and water conservation plans required in Ohio' linked deposit program or the septic management plans required in Massachusetts' pass-through loan program. Engineers with Missouri's CWSRF program review each project application to ensure that CWSRF-financed structures and equipment support the goals of the program.

Missouri's CWSRF program provides 10-year loans to MASBDA that have a 1.8 percent interest rate. Individual agricultural producers access these resources by submitting applications to MASBDA. MASBDA reviews the financial component of each application, assessing cash flows and establishing security requirements. Borrowers must provide a dedicated source of repayment and a first or second deed of trust on their property. Agricultural producers typically receive 10-year loans from MASBDA that have interest rates from 5.3-5.8 percent. However, MASBDA does not offer construction financing for animal waste treatment systems. Typically, agricultural producers use loans from the Nonpoint Source Animal Waste Treatment Facility Loan Program to pay off construction loans from a private lender. MASBDA uses the repayments from agricultural producers to repay its loan from the CWSRF.

Case Study Contact Information

More information on the programs outlined in this update can be found on the state program web sites or by contacting the programs themselves.

Ohio Environmental Protection Agency
Div. of Environmental & Financial Assistance
Contact: Bob Monsarrat
Phone: 614-644-3655
Web site:
www.epa.state.oh.us/defa/linkdepo.html

Massachusetts Department of Environmental Protection
Massachusetts' Community Septic Management Program
Contact: Joseph McNealy
Phone: 617-556-1068
Web site: www.state.ma.us/dep/brp

Missouri Department of Agriculture
Animal Waste Facility Loan Program
Contact: Steve Townley
Phone: 573-751-1397
Web site: www.mda.state.mo.us/a2c.htm

For more information about the Clean Water Revolving Fund, or for a program representative in your State, please contact:

Clean Water State Revolving Fund Branch

U.S. Environmental Protection Agency

1201 Constitution Avenue, NW (Mailcode 4204M)

Washington, DC 20004

Phone: (202) 564-0752 **Fax:** (202) 501-2403

Internet: http://www.epa.gov/owm

Clean Water
State Revolving Fund

Clean Water

Everybody's Business

10 Things You Can Do to Prevent Stormwater Runoff Pollution

- Use fertilizers sparingly and sweep up driveways, sidewalks, and roads
- Never dump anything down storm drains
- Vegetate bare spots in your yard
- Compost your yard waste
- Avoid pesticides; learn about Integrated Pest Management (IPM)
- Direct downspouts away from paved surfaces
- Take your car to the car wash instead of washing it in the driveway
- Check car for leaks, and recycle motor oil
- Pick up after your pet
- Have your septic tank pumped and system inspected regularly

EPA United States Environmental Protection Agency

For more information, visit www.epa.gov/nps or www.epa.gov/npdes/stormwater

EPA
United States
Environmental Protection
Agency

EPA 841-F-03-003

Protecting Water Quality *from* URBAN RUNOFF

Clean Water Is Everybody's Business

In urban and suburban areas, much of the land surface is covered by buildings and pavement, which do not allow rain and snowmelt to soak into the ground. Instead, most developed areas rely on storm drains to carry large amounts of runoff from roofs and paved areas to nearby waterways. The stormwater runoff carries pollutants such as oil, dirt, chemicals, and lawn fertilizers directly to streams and rivers, where they seriously harm water quality. To protect surface water quality and groundwater resources, development should be designed and built to minimize increases in runoff.

The most recent National Water Quality Inventory reports that runoff from urbanized areas is the leading source of water quality impairments to surveyed estuaries and the third-largest source of impairments to surveyed lakes.

Did you know that because of impervious surfaces like pavement and rooftops, a typical city block generates more than 5 times more runoff than a woodland area of the same size?

How Urbanized Areas Affect Water Quality

Increased Runoff

The porous and varied terrain of natural landscapes like forests, wetlands, and grasslands traps rainwater and snowmelt and allows them to filter slowly into the ground. In contrast, impervious (nonporous) surfaces like roads, parking lots, and rooftops prevent rain and snowmelt from infiltrating, or soaking, into the ground. Most of the rainfall and snowmelt remains above the surface, where it runs off rapidly in unnaturally large amounts.

Storm sewer systems concentrate runoff into smooth, straight conduits. This runoff gathers speed and erosional power as it travels underground. When this runoff leaves the storm drains and empties into a stream, its excessive volume and power blast out streambanks, damaging streamside vegetation and wiping out aquatic habitat. These increased storm flows carry sediment loads from construction sites and other denuded surfaces and eroded streambanks. They often carry higher water temperatures from streets, roof tops, and parking lots, which are harmful to the health and reproduction of aquatic life.

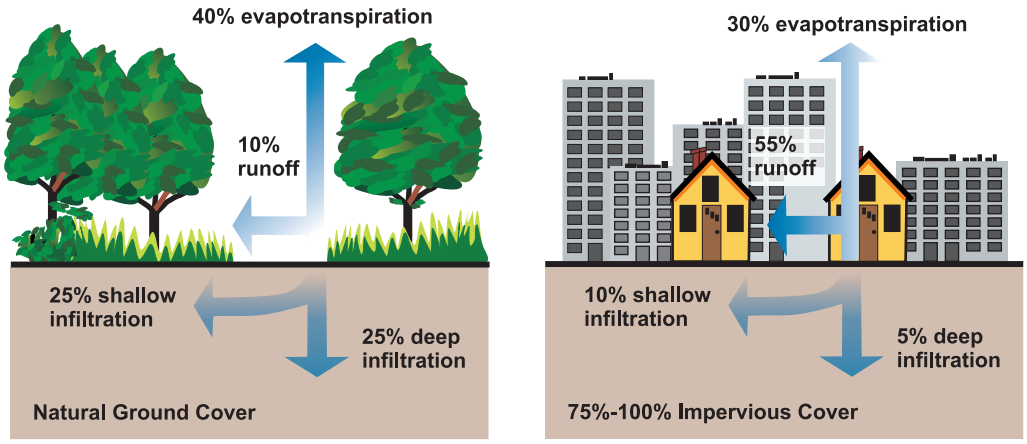
The loss of infiltration from urbanization may also cause profound groundwater changes. Although urbanization leads to great increases in flooding during and immediately after wet weather, in many instances it results in lower stream flows during dry weather. Many native fish and other aquatic life cannot survive when these conditions prevail.

Increased Pollutant Loads

Urbanization increases the variety and amount of pollutants carried into streams, rivers, and lakes. The pollutants include:

- Sediment
- Oil, grease, and toxic chemicals from motor vehicles
- Pesticides and nutrients from lawns and gardens
- Viruses, bacteria, and nutrients from pet waste and failing septic systems
- Road salts
- Heavy metals from roof shingles, motor vehicles, and other sources
- Thermal pollution from dark impervious surfaces such as streets and rooftops

These pollutants can harm fish and wildlife populations, kill native vegetation, foul drinking water supplies, and make recreational areas unsafe and unpleasant.



Relationship between impervious cover and surface runoff. Impervious cover in a watershed results in increased surface ruunoff. As little as 10 percent impervious cover in a watershed can result in stream degradation.

Managing Urban Runoff

What Homeowners Can Do

To decrease polluted runoff from paved surfaces, households can develop alternatives to areas traditionally covered by impervious surfaces. Porous pavement materials are available for driveways and sidewalks, and native vegetation and mulch can replace high maintenance grass lawns. Homeowners can use fertilizers sparingly and sweep driveways, sidewalks, and roads instead of using a hose. Instead of disposing of yard waste, they can use the materials to start a compost pile. And homeowners can learn to use Integrated Pest Management (IPM) to reduce dependence on harmful pesticides.

In addition, households can prevent polluted runoff by picking up after pets and using, storing, and disposing of chemicals properly. Drivers should check their cars for leaks and recycle their motor oil and antifreeze when these fluids are changed. Drivers can also avoid impacts from car wash runoff (e.g., detergents, grime, etc.) by using car wash facilities that do not generate runoff. Households served by septic systems should have them professionally inspected and pumped every 3 to 5 years. They should also practice water conservation measures to extend the life of their septic systems.

Controlling Impacts from New Development

Developers and city planners should attempt to control the volume of runoff from new development by using low impact development, structural controls, and pollution prevention strategies. Low impact development includes measures that conserve natural areas (particularly sensitive hydrologic areas like riparian buffers and infiltrable soils); reduce development impacts; and reduce site runoff rates by maximizing surface roughness, infiltration opportunities, and flow paths.

Controlling Impacts from Existing Development

Controlling runoff from existing urban areas is often more costly than controlling runoff from new developments. Economic efficiencies are often realized through approaches that target "hot spots" of runoff pollution or have multiple benefits, such as high-efficiency street sweeping (which addresses aesthetics, road safety, and water quality). Urban planners and others responsible for managing urban and suburban areas can first identify and implement pollution prevention strategies and examine source control opportunities. They should seek out priority pollutant reduction opportunities, then protect natural areas that help control runoff, and finally begin ecological restoration and retrofit activities to clean up degraded water bodies. Local governments are encouraged to take lead roles in public education efforts through public signage, storm drain marking, pollution prevention outreach campaigns, and partnerships with citizen groups and businesses. Citizens can help prioritize the clean-up strategies, volunteer to become involved in restoration efforts, and mark storm drains with approved "don't dump" messages.

Related Publications

Turn Your Home into a Stormwater Pollution Solution!

www.epa.gov/nps

This web site links to an EPA homeowner's guide to healthy habits for clean water that provides tips for better vehicle and garage care, lawn and garden techniques, home improvement, pet care, and more.

National Management Measures to Control Nonpoint Source Pollution from Urban Areas

www.epa.gov/owow/nps/urbanmm

This technical guidance and reference document is useful to local, state, and tribal managers in implementing management programs for polluted runoff. Contains information on the best available, economically achievable means of reducing pollution of surface waters and groundwater from urban areas.

Onsite Wastewater Treatment System Resources

www.epa.gov/owm/onsite

This web site contains the latest brochures and other resources from EPA for managing onsite wastewater treatment systems (OWTS) such as conventional septic systems and alternative decentralized systems. These resources provide basic information to help individual homeowners, as well as detailed, up-to-date technical guidance of interest to local and state health departments.

Low Impact Development Center

www.lowimpactdevelopment.org

This center provides information on protecting the environment and water resources through integrated site design techniques that are intended to replicate preexisting hydrologic site conditions.

Stormwater Manager's Resource Center (SMRC)

www.stormwatercenter.net

Created and maintained by the Center for Watershed Protection, this resource center is designed specifically for stormwater practitioners, local government officials, and others that need technical assistance on stormwater management issues.

Strategies: Community Responses to Runoff Pollution

www.nrdc.org/water/pollution/storm/stoinx.asp

The Natural Resources Defense Council developed this interactive web document to explore some of the most effective strategies that communities are using around the nation to control urban runoff pollution. The document is also available in print form and as an interactive CD-ROM.

For More Information

U.S. Environmental Protection Agency
Nonpoint Source Control Branch (4503T)
1200 Pennsylvania Avenue, NW
Washington, DC 20460

www.epa.gov/nps

February 2003

Stormwater Management

A Guide for Auto Recycler Owners and Operators

Only Rain in the Drain

Stormwater Protection
Starts With You

The facility operator's attitude toward stormwater management can make all the difference. It's your responsibility to communicate to your employees that stormwater management is a priority. Make sure your employees understand why stormwater management is important, both to your business and to the environment. Start by having them review the enclosed video and fact sheet.

Protecting stormwater can benefit your business in several important ways:

- **Professionalism and pride in your business** – Both workers and customers appreciate a clean and responsible facility.
- **It's the law** – Not complying with stormwater rules can put your business in jeopardy. Regulators and environmental groups across the country are increasingly targeting auto dismantlers for stormwater violations.
- **Environmental protection** – We all want clean streams, rivers, lakes, bays, and oceans for our families and for our future. Your business can protect the environment by following some straightforward and commonsense practices.

Protect the environment to protect your business

The following practices describe options that your facility can implement to help address its stormwater issues. Although following all of the practices described below may help improve performance with regard to stormwater management, it does not guarantee that your facility will be in compliance with all applicable stormwater rules. Check with your state regulatory agency or EPA for more information.

The Stormwater Permit

All vehicle dismantling facilities in the United States (except those in a combined sewer service area or facilities that do not discharge stormwater from their property) are required by the Clean Water Act to obtain a stormwater permit either from the U.S. Environmental Protection Agency or from an appropriate state agency. You must first file a Notice of Intent (NOI) with the appropriate state agency. You must also prepare a Storm Water Pollution Prevention Plan (SWPPP) to describe how you will address your facility's stormwater issues.

The practices below are organized by facility area or activity. Links and contact information to obtain additional information about stormwater and other environmental issues related to auto dismantling are listed at the end of this document.

What are Best Management Practices (BMPs)?

The term "BMP" is used to describe management practices that many different industries use to address a range of environmental issues. We'll use BMP to describe the practices that you can implement to address your auto dismantling facility's stormwater issues.

› Training

Employee training is critical! Train appropriate employees on relevant stormwater management procedures, especially during the wet season and prior to rain or snow events. All employees must be trained upon their initial hire and at least once per year thereafter. Be sure to document employee training. Also, place signs around activity areas as reminders to your workers; for example, "No fluids in the drain" or "Sweep up loose absorbent daily." Make up your own signs that make sense for your operation.

› Incoming Vehicles

Inspect all incoming vehicles for leaking fluids and unwanted materials as they enter your facility. Promptly contain leaks with drip pans or absorbent materials.

› Fluid Removal

Establish a procedure for processing vehicles and stick to it. First, before any vehicle is placed in the yard for long-term storage or crushed, and before fluid-containing parts are dismantled, drain the following fluids from the vehicle in the order that best fits your operation:

- Fuel
- Motor oil
- Transmission fluid
- Brake fluid
- Antifreeze
- Freon

Draining these fluids before placing the vehicle in the yard reduces 1) the possibility of spills when parts are removed later, and 2) time and cost to your business of cleaning up leaks and spills.

› Fluid Draining and Vehicle Dismantling Area

Ideally, these activities should be conducted in the same area, which should be covered with a roof. Your fluid draining and vehicle dismantling areas have more potential to contaminate stormwater than any other areas of your facility. Properly covering this area can eliminate contact with rainfall and is a great way to get a big bang for your buck in preventing stormwater pollution. Rain or snow can carry harmful materials like oil or gasoline into the soil and nearby streams, rivers, and lakes. Roofs not only keep out rain and snow, but also make the work area more comfortable for your workers.

If you don't currently dismantle fluid-containing parts and drain fluids under cover, you don't necessarily have to put up an entirely new and expensive building. One low-cost roofing option available is the "VersaTube" offered by Tuff Shed. (See http://www.tuffshed.com/versatube.htm or call (800) BUY-TUFF for more information.)

Another option includes building your own temporary cover using low-cost materials. Plans and materials for such temporary roofs can be obtained from vendors like South Bay Canopy (408) 998-8280.

You should also have a concrete pad in the draining and dismantling area, and you should drain all vehicles on this surface. Draining over concrete makes spills and leaks easier to clean up and minimizes the chance of environmental harm. Use appropriate fluid removal and handling equipment, such as suction systems, drain racks, and funnels for the containers.

Prevent stormwater pollution by minimizing the exposure of dismantling and fluid removal activities to stormwater. In addition to overhead cover, possible options include installing intercept trenches, berming the perimeter of the area, or using channels, swales, or grade breaks to divert the flow of stormwater around these areas.

› Fluid Storage

Storing fluids properly helps cut down on the amount of contaminants that end up in stormwater. When you remove fluids, transfer them to the proper container. Confine fluid storage to designated areas that are covered and have adequate secondary containment. Keep drums containing fluids away from storm drains; consider storing fluids near the location where fluids are drained. Maintain good integrity of all storage containers. Do not leave open drain pans that contain fluids around the shop.

You are responsible for ensuring that your fluids are handled by an authorized processor, transporter, and treatment/disposal facility.

› Spill Cleanup

Clean up spills promptly and thoroughly. Keep appropriately sized and stocked "spill kits" available in the areas where you conduct the following activities:

- Dismantling and fluid removal
- Fluid storage
- Battery and parts storage
- Fueling
- Equipment maintenance

For smaller spills, use shop rags and oil dry. Used absorbents should be placed in a designated container for proper disposal.

What should be in your spill kit?

- Absorbent socks or booms
- Absorbent pillows and pads
- Oil dry
- Broom and shovel
- Disposal bags or other containers
- Safety goggles
- Plastic gloves

- **Never use vehicle fluids for dust control!**
- **Don't mix your used oil with solvents, brake cleaner, or antifreeze.**
  This creates a hazardous waste, which can't be recycled and is very expensive to get rid of.
- **Don't pour fluids into your septic system, sanitary sewer, dry well, on the ground, or in the trash.**

› Parts Storage

Store engines, transmissions, and other oily parts (resale, core, or scrap) in a way that avoids exposure to rain or snowfall. This can include:

1) Storing parts indoors
2) Storing parts under a permanent roof on impervious surface
3) Storing parts in weather-proof, leak-proof, covered containers
4) Placing parts in vehicle bodies
5) Providing temporary cover (like tarps) for these parts as an interim measure

Lead acid battery components are toxic and corrosive and can contaminate the soil and water if handled improperly. Store batteries inside a building or outside in covered, non-leaking containers. Separate batteries from other wastes like paper, rags, garbage and flammable or hazardous chemicals. Monitor your battery storage area for leaks or deterioration, and take quick action to address any spills or leaks. Lime can be used to neutralize spilled battery acid. *Never pour battery acid on the ground or into a storm drain!*

Radiators removed from vehicles should be stored under a roof, tarp, or other cover, and raised up off the ground such that there is no contact with rainfall and surface drainage.

› Crushing

Never crush a vehicle without draining all the fluids and removing gas tanks, tires, and batteries. Capture and properly dispose of residual fluids released during crushing. You're responsible for ensuring fluids are captured and don't run off your property, even if you use a contractor to crush your vehicles.

› Vehicle Storage

If engines or fluid-containing parts remain in the vehicle when it is placed in the yard, place a hood or other cover, such as a well-secured tarp, over the vehicle engine. Use drip pans under stored vehicles with leaks.

Don't place vehicles on the ground where there is a heavy stormwater flow or close to a storm drain.

After vehicles are moved, scrape up dirt or gravel that was stained from leaks and drips. Manage the contaminated material in accordance with applicable regulations.

- Never wash spills into storm drains!
- Sweep up absorbent material and properly dispose at least daily.

› Equipment Maintenance

Schedule and perform periodic inspections of equipment. Regular maintenance of equipment such as forklifts reduces risk of breakdown and fluid release. Check for leaks and spills and for malfunctioning, worn, or corroded parts. Equipment maintenance should be done indoors or, where practical, on an impervious surface. If maintenance can't be done under cover, take adequate spill control and/or cleanup measures.

› Fueling

Pave refueling areas with concrete to prevent contamination of the soil and to enable cleanup. Don't leave vehicles unattended while fueling.

› Housekeeping

Sweep and clean paved surfaces daily to reduce sediment and contaminant buildup. Routine housekeeping is important. Catchments, inlets, oil-water separators, oil booms, waddles, tarps, and other pollutant-collecting materials need to be maintained regularly or they can become ineffective. Clean out drain inlets periodically, especially before the wet season, during the wet season, and after the wet season ends.

› Erosion Control

Tackle TSS! You may have heard of TSS or total suspended solids – in other words, dirt. Controlling the amount of dirt that runs off your property is important because metals and other harmful pollutants can attach themselves to the dirt particles and end up flowing off the property with stormwater. Eroded soil can also smother aquatic life.

Implement appropriate vegetative, structural, or stabilization measures such as basins, sediment traps, geotextiles, buffer strips, or filter berms in areas without much vegetation where soil erosion is evident.

› Non-Stormwater Discharges

Wash water from equipment, work areas, or shop floors cannot come into contact or mix with rainfall or surface drainage, or drain offsite. Vehicle and hand wash water is OK to be discharged to the sanitary sewer where allowed (be sure to check with your local sanitary sewer district). Most states prohibit all non-stormwater discharges from your property, including, but not limited to, discharges of wash water, rinse water and spilled fluids. If you are permitted to use sewers, make sure your drain is connected to the sanitary sewer. If this is not possible in your area, the wash water must be managed on-site. Management options include recycling, re-use, or off-site disposal. If you let the water soak into the ground (infiltration), take appropriate steps to prevent groundwater contamination and infestation by mosquitoes or other pests. For additional information consult your local regulatory agency.

- Residues from dried wash water cannot come into contact with rainfall or surface drainage.

- **Know where your drains go. Plug any floor drains that would let a spill run into septic systems or storm drains.**
  Automotive fluids and solvents can contaminate drinking water if they end up in drains that discharge to soil.

- Following washing, collect and clean up any accumulated sediments, oil deposits, debris, and paint particles.
- Do not steam clean or pressure wash parts without proper wash water management.
- Do not hose down the shop floor if water will run into a storm drain or off the property.

› Stormwater Filter Systems

Inexpensive filter systems or absorbents can provide an extra level of defense against stormwater pollution. Examples include: absorbent socks or booms, silt fences, straw bales, rock filters, and inlet filters. Regular maintenance of these products is essential – if they're not maintained, they won't work. Further, these measures are not a substitute for good stormwater management practices.

› Inspection

Inspect your site regularly to ensure all appropriate BMPs are being implemented. Increase inspections during periods of rainy weather. Based on permit or management needs, maintain a record of visual inspections.

Inspect oil containers, fresh water systems, irrigation lines, fueling areas, and other piping systems for leaks. If evidence of leaks is found, promptly repair or replace damaged parts to prevent polluted runoff and non-stormwater discharges.

› Customer Education

Inform customers who remove parts to do so properly and to appropriately dispose of fluids. For example, make fluid receptacles readily available, post signs that require the use of drip pans for parts removal, and prohibit waste generating activities like vehicle maintenance in parking lots.

Mercury Switches

Mercury switches are an important issue. Many older vehicles contain mercury, which is highly toxic and can cause learning disabilities and mental retardation in newborn children. When vehicles are crushed and mercury remains inside, it can get onto the ground and into waterways. Also, mercury can be released into the air and water bodies after scrapped vehicles go to the shredder.

What to do about mercury

Mercury switches are commonly found under vehicle hoods and trunks and less frequently in automatic braking systems (ABS). These switches can easily be removed to prevent contamination of the environment and human health problems.

Information on removing mercury from vehicles is available online at:

epa.gov/glnpo/bnsdocs/hgsbook/auto.pdf

epa.gov/region5/air/mercury/autoswitch.htm

switchout.ca

Some states require mercury switches to be removed before vehicles are crushed. Some auto dismantlers remove the switches even if they are not required to do so. If you choose to address this important environmental issue and remove mercury switches before your vehicles are crushed, store the switches in a leak-proof, clearly marked, closed container. Also take care to ensure that the switches do not break during handling or storage. A licensed metals recycler that reclaims mercury can dispose of the switches. Contact your state environmental agency for more information.

You
>> CAN <<
Make a Difference!

Auto recyclers do their part to conserve natural resources by recycling valuable materials. Build on this good work and protect the environment from polluted runoff by implementing the BMPs described in this fact sheet. Make sure that your employees understand that stormwater management is important and are trained to implement your BMPs.

Remember,
stormwater protection
starts with YOU!

"It's critical for owners to set an example and be actively involved in implementing BMPs." – Brian Werth, Select Auto & Truck Recyclers

Where to find more information

Check out the following sources for additional information on BMPs for auto recyclers:

Manuals

- An Environmental Compliance Workbook for Automotive Recyclers, Florida DEP
  www.dep.state.fl.us/central/home/ps/asyca/fl_gyb.pdf
- Environmental Compliance Guide for Motor Vehicle Salvage Yards, OH Small Bus. Assistance Office
  www.epa.state.oh.us/other/sbao/salvageguide.pdf
- Vehicle Recycling Manual: A Guide for Vehicle Recyclers, Washington State Department of Ecology
  www.ecy.wa.gov/pubs/97433.pdf
- Automotive Recyclers Guide to a Cleaner Environment, New York DEC
  www.dec.state.ny.us/website/reg8/press/autorec/autorec0.pdf
- Certified Auto Recycler (CAR) Guidance Manual, Automotive Recyclers Association
  www.autorecyc.org (Available to members only)

Other Sources

- The National Compliance Assistance Clearinghouse is your guide to compliance information on the Internet. It provides quick access to compliance tools and contacts from EPA and other compliance assistance providers. The clearinghouse has an entire section devoted to the auto salvage industry.
  cfpub.epa.gov/clearinghouse
- A list of state and local environmental contacts can be found on the internet at:
  www.epa.gov/epapages/statelocal/envrolst.htm
- The EPA Small Business Ombudsman can help you understand environmental regulations, or refer you to local contacts. Their toll-free small business hotline provides regulatory and technical assistance information: (800) 368-5888

Vendors

Call for catalogs or more information

Low-Cost Roofs:		**Fluid Removal and Storage Equipment**:		**Spill Kits and Absorbent Materials**:	
Tuff Shed	(800) BUY-TUFF	Hy-Tec Environmental	(800) 336-4499	Stormtech	(888) 549-5374
South Bay Canopy	(408) 998-8280	Spill Cleanup Direct	(800) 356-0783	New Pig	(800) 468-4647

Note: Sustainable Conservation and U.S. EPA do not endorse any of these products.
This list is not complete: other vendors may provide similar or identical products and services.

Developed by

Sustainable Conservation
www.suscon.org

Supervisión de la Precipitación Pluvial

Una Guía para los Dueños y Operadores de Recicladoras de Autos

La Protección de la Precipitación Pluvial Comienza Con Usted

La actitud del operador de la compañía hacia la supervisión de la precipitación pluvial puede hacer la diferencia. Es su responsabilidad comunicar a sus empleados que la supervisión de la precipitación pluvial es una prioridad. Asegúrese que sus empleados entiendan por qué es importante la supervisión de la precipitación pluvial tanto para su negocio como para el medio ambiente. Comienze mostrándoles el video y hoja informativa que aquí se adjuntan.

Proteger la precipitación pluvial puede beneficiar a su negocio de varias maneras importantes:

- **Profesionalismo y orgullo en su negocio** - Tanto los trabajadores como sus clientes aprecian una compañía limpia y responsable.
- **Es la ley** - El no cumplir con las normas de precipitación pluvial puede poner su negocio en juego. Los grupos reguladores y ambientalistas en todo el país estan enfocándose cada vez más en las desmanteladoras de autos por violaciones en cuanto a la precipitación pluvial.
- **Protección ambiental** - Todos queremos arroyos, ríos, lagos, bahías, y oceanos limpios para nuestras familias y nuestro futuro. Su compañía puede proteger el medio ambiente siguiendo algunas prácticas directas y de sentido común.

Proteja el medio ambiente para proteger a su negocio

Las siguientes prácticas describen opciones que su compañía puede aplicar para ayudarse a administrar lo relativo a la precipitación pluvial. Aunque el seguir todas las prácticas descritas abajo puede ayudar a mejorar el desempeño respecto a la supervición de la precipitación pluvial, ello no garantiza que su compañía estará en cumplimiento con todas las normas aplicables de la precipitación pluvial. Comuníquese con una agencia reguladora del estado o la EPA si desea más información.

El Permiso de precipitación pluvial

Todas las instalaciones desmanteladoras de vehículos en los Estados Unidos (excepto aquellas en una área de servicio de desagüe combinado o instalaciones que no desechen precipitación pluvial de su propiedad) están obligadas por la Ley de Agua Limpia (Clean Water Act) a obtener un permiso de precipitación pluvial, ya sea de la Agencia de Protección del Medio Ambiente de los EE.UU. o de una agencia estatal correspondiente. Usted primero debe archivar un Aviso de Intención (Notice of Intent, o N.O.I.) ante la agencia estatal correspondiente. También debe preparar un Plan de Prevención de Contaminación de la precipitación pluvial (SWPPP) para describir cómo es que su compañía administrará lo referente a la precipitación pluvial.

Las siguientes prácticas están organizadas por área o actividad de la compañía. Para referencias y contactos para obtener información adicional acerca de la precipitación pluvial y otros asuntos ambientales relacionados la desmantelación de vehículos, vea el final de este documento.

¿Cuáles son las prácticas de mejor manejo (BMPs)?

El término “BMP” es utilizado para describir prácticas de manejo que muchas diferentes industrias usan para dirigir un gran número de asuntos ambientales. Nosotros utilizaremos BMP para describir las prácticas que usted puede aplicar para administrar lo referente a la precipitación pluvial en su desmanteladora de autos.

Supervisión de la Precipitación Pluvial

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› La capacitación

¡La capacitación de los empleados es fundamental! Capacite a sus empleados en procedimientos referentes al manejo de la precipitación pluvial, especialmente durante la temporada de lluvia y nieve y antes de que éstas lleguen. Todos los empleados deben ser capacitados al inicio de su contratación y al menos una vez al año después de ella. Asegúrese de documentar la capacitación de sus empleados. También debe colocar letreros alrededor de las áreas de actividad con recordatorios para sus trabajadores. Por ejemplo, "Evite los fluidos en el drenaje" o "Barra diariamente el absorbente." Diseñe sus propios letreros que den sentido a su operación.

› Ingreso de vehículos

Inspeccione todos los vehículos de reciente ingreso por posibles fugas de fluidos y materiales no deseados, cuando vayan entrando a las instalaciones. Contenga rápidamente las fugas con charolas o materiales absorbentes.

› Extracción de fluidos

Establezca un procedimiento para procesar vehículos y apéguese a él. Primero, antes de que cualquier vehículo sea colocado en la yarda por un término largo de almacenamiento o para compactarse, y antes que se desmantelen las partes que contengan fluidos, extraiga los siguientes fluidos del vehículo, en el orden que mejor funcione para su operación:

- Combustible
- Aceite de motor
- Líquido de transmisión
- Líquido de frenos
- Anticongelante
- Gas freón

Extraer estos fluidos antes de colocar el vehículo en la yarda disminuye 1) la posibilidad de derrames cuando las partes son removidas posteriormente, y 2) el tiempo y costo requerido en su negocio para limpiar fugas y derrames.

› Área de extracción de fluidos y de desmantelamiento de vehículos

Lo ideal es que estas actividades se realicen en la misma área, la cual debe estar cubierta con un techo. Sus áreas de extracción de fluidos y de desmantelación de vehículos tienen mayor potencial de contaminar la precipitación pluvial que cualquier otra área de su compañía. El cubrir apropiadamente esta área puede eliminar el contacto con la caída de la lluvia y es una gran forma de economizar, al prevenir la contaminación de la precipitación pluvial. La lluvia y la nieve pueden acarrear materiales dañinos como aceite o gasolina al suelo y cerca de arroyos, ríos, y lagos. Los techos no solo

detienen la lluvia y la nieve, sino que también hacen el área de trabajo más cómoda para sus trabajadores.

Si usted no desmantela actualmente partes que contengan fluidos y extrae fluidos debajo de un techo, usted no necesariamente tiene que construir un edificio nuevo y costoso. Una opción disponible es el techo de bajo costo "Versa Tube" ofrecido por Tuff Shed. (Vea http://www.tuffshed.com/versatube.htm o llame (800) BUY TUFF para más información.) Otra opción incluye construir su propio techo temporal utilizando materiales de bajo costo. Puede obtener planos y materiales de dichos techos temporales de vendedores como South Bay Canopy (408) 998-8280.

Usted también debe tener una plataforma de concreto en el área de extracción y desmantelamiento, y dee drenar todos los vehículos sobre la superficie. El drenar sobre concreto hace que los derrames y fugas sean más fáciles de limpiar y minimiza la posibilidad de daño ambiental. Utilice equipo apropiado para la extracción y manejo de fluidos, tales como sistemas de succión, racas de drenaje y embudos para contenedores.

Prevenga la contaminación de la precipitación pluvial minimizando la exposición de las actividades de desmantelamiento y de extracción de fluidos a la precipitación pluvial. Además de un techo, otras opciones posibles incluyen instalar zanjas interceptoras, bordear el perímetro del área, o utilizar canales, o cortes para desviar el flujo de la precipitación pluvial fuera del alcance de estas áreas.

› Almacenamiento de fluidos

El almacenar los fluidos apropiadamente ayuda a reducir la cantidad de contaminantes que terminan en la precipitación pluvial. Cuando extraiga fluidos, colóquelos en el contenedor apropiado. Destine el almacenamiento de fluidos a áreas designadas que estén cubiertas y que tengan un adecuado contenimiento secundario. Mantenga los barriles que contengan fluidos alejados de los drenajes de agua; considere almacenar los fluidos cerca del área donde los fluidos son extraidos. Mantenga en buenas condiciones todos los contenedores de almacenamiento. No deje charolas abiertas que contengan fluidos alrededor del taller.

Usted es responsable de asegurarse que sus fluidos sean manejados por procesadores, transportistas, y compañías de tratamiento/desechos autorizados.

› Limpieza de derrames

Limpie los derrames rápida y completamente. Guarde kits para derrames, del tamaño apropiado, en todas las áreas donde realice las siguientes actividades:

- Desmantelamiento y extracción de fluidos
- Almacenamiento de fluidos
- Almacenamiento de baterías y partes
- Abastecimiento de combustible
- Mantenimiento de equipo

Para derrames menores utilice trapos y "oil dry". Los materiales absorbentes usados deberán colocarse en un contenedor designado para su desecho.

¿Qué debería haber en su kit para derrames?

- Tubos ("socks") absorbentes
- Cojines y almohadas absorbentes
- "Oil dry"
- Escoba y pala
- Lentes de seguridad
- Guantes de plástico
- Bolsas para desecho y otros contenedores

- **¡Nunca utilice fluidos de vehículo para controlar el polvo!**
- **No mezcle su aceite usado con solventes, limpiador de frenos, ni anticongelante.** Esto crea un desperdicio peligroso el cual no puede ser reciclado y es muy costoso deshacerse de él.
- **No vierta fluidos dentro del sistema séptico, el drenaje sanitario, los pozos, en la tierra, ni en la basura.**

› Almacenamiento de partes

Almacene motores, transmisiones, y otras partes grasosas (reventa, core, o chatarra) de forma que se evite la exposición a la lluvia o caída de nieve. Esto puede incluir:

1) Almacenar partes a puerta cerrada
2) Almacenar partes bajo un techo permanente sobre una superficie impenetrable
3) Almacenar partes en contenedores cubiertos a prueba del clima y de fugas
4) Colocar partes en las carrocerías de los vehículos
5) Proveer cobertura temporal (como lonas) para estas partes como medida alterna

Los componentes de la batería de acido de plomo son tóxicos y corrosivos y pueden contaminar el suelo y agua si son manejados incorrectamente. Almacene las baterías dentro o fuera de un edificio en contenedores cubiertos y sin fugas. Separe las baterías de otros desperdicios como el papel, trapos, basura y químicos inflamables o peligrosos. Monitoree su área de almacenamiento de baterías por posibles fugas o deterioraciones, y tome acción rapida para evitar cualquier derrame o fuga. La cal puede utilizarse para neutralizar el acido de batería derramado. *¡Nunca vierta acido de batería en la tierra o dentro del drenaje de agua!*

Los radiadores extraidos de los vehículos deben almacenarse bajo techo, lona, u otro cobertizo, y a cierta altura del suelo de tal manera que no haya contacto con la lluvia o el drenaje de la superficie.

› Compactación

Nunca compacte un vehículo sin haber extraido todos los fluidos y quitado los tanques de gasolina, las llantas y las baterías. Contenga y deseche apropiadamente los residuos de fluidos que escurran mientras se está compactando. Usted es responsable de asegurarse que se contangan todos los fluidos y que no escurran fuera de su propiedad, aún si compacta sus vehículos a través de un contratista.

› Almacenamiento de vehículos

En caso de que haya motores o partes que contengan fluidos dentro del vehículo cuando éste se coloque en la yarda, coloque un cofre u otro cobertor tal como una lona bien asegurada sobre el motor del vehículo. Coloque charolas debajo de los vehículos que tengan fugas. No ponga vehículos en la tierra donde haya una corriente fuerte de precipitación pluvial o cerca de un drenaje. Después de que los vehículos sean retirados, levante la tierra o grava que ha sido manchada por fugas y goteos. Maneje el material contaminado de acuerdo con las regulaciones correspondientes.

- **¡Nunca dirija derrames hacia los drenajes!**
- **Barra el material absorbente y deséchelo apropiadamente al menos una vez al día.**

› Mantenimiento del equipo

Programe y realice inspecciones periódicas del equipo. El mantenimiento regular del equipo, tal como los montacargas, reduce el riesgo de que se descomponga y que tire fluidos. Revise por posibles fugas y derrames, el mal funcionamiento, desgaste, o partes corroídas. El mantenimiento del equipo debe hacerse en un lugar cerrado o, cuando sea práctico, en una superficie impenetrable. Si el mantenimiento no puede hacerse bajo techo, tome medidas adecuadas de control de derrames y/o limpieza.

› Abastecimiento de combustible

Pavimente las áreas de abastecimiento de combustible con concreto para prevenir la contaminación del suelo y facilitar la limpieza. No deje los vehículos sin atender mientras se estén cargando de combustible.

› Mantenimiento

Barra y limpie las superficies pavimentadas diariamente para reducir la sedimentación y acumulación de contaminantes. El mantenimiento como rutina es importante. Recipientes, zanjas, separadores de agua/aceite, repelentes de aceite, lonas, y demas materiales para retener contaminantes deben recibir mantenimiento regular o pueden llegar a ser ineficaces. Limpie las zanjas de drenaje periódicamente, antes, durante y después de la temporada de lluvias.

› Control de la erosión

¡Elimine los TSS! Quizás haya oído hablar de los TSS o sólidos totalmente suspendidos: en otras palabras, la tierra. Controlar la cantidad de tierra que se escurre fuera de su propiedad es importante porque los metales y otros contaminantes dañinos pueden adherirse a las particulas de tierra y terminar escurriéndose fuera de la propiedad hacia la precipitación pluvial. El suelo erosionado puede también extinguir la vida acuática.

Tome medidas adecuadas en cuanto a la vegetación, estructuración o estabilización, tales como desagües, retenedores de sedimentación, geotextiles, o bordos de filtración en áreas sin mucha vegetación, donde la erosión del suelo es evidente.

› Los escurrimientos que no provienen de la precipitación pluvial

El agua para lavar equipo, áreas de trabajo, o pisos del taller no puede entrar en contacto o mezclarse con la lluvia o el drenaje superficial ni el drenaje común. El agua para lavarse las manos o lavar vehículos puede descargarse en el drenaje sanitario donde sea permitido (asegúrese de contactar a su distrito local de drenaje sanitario). La mayoría de los estados prohiben los escurrimientos de su propiedad que no provengan de la precipitación pluvial, incluyendo, pero sin limitarse a, los escurrimientos de agua para lavar, para enjuagar y de fluidos derramados. Si usted tiene permiso para usar drenajes, asegúrese que su drenaje esté conectado al drenaje sanitario. Si esto no es posible en su área, el agua para lavar debe ser manejada dentro de su propiedad. Las opciones de manejo incluyen el reciclaje, el reuso o su desecho fuera de la propiedad. Si usted deja que el agua se acumule en la tierra (filtración), tome los pasos adecuados para prevenir contaminación en la tierra o que se infeste con mosquitos u otras plagas. Para información adicional consulte su agencia reguladora local.

- Los residuos secos del agua para lavar no pueden entrar en contacto con la lluvia o drenaje de la superficie.

- **Usted debe saber hacia dónde están dirigidos sus drenajes. Tape cualquier drenaje en el suelo que pudiera dejar escurrir un derrame hacia un sistema séptico o drenaje de agua.**
  Los fluidos y solventes de los autómoviles pueden contaminar el agua potable si caen en drenajes que se descargan sobre el suelo.

- Después de lavar, recoja y limpie cualquier sedimentación acumulada, depósitos de aceite, chatarra, y partículas de pintura.
- No lave partes a vapor o a presión sin el manejo apropiado del agua para lavar.
- No lave el piso del taller con manguera si el agua va a escurrir hacia el drenaje o fuera de la propiedad.

› Sistemas de filtración de la precipitación pluvial

Los sistemas de filtración no costosos o absorbentes pueden ofrecer un nivel de defensa adicional contra la contaminación de la precipitación pluvial. Algunos ejemplos incluyen: tubos absorbentes, cercos, pacas de paja, filtros de roca, y zanjas para filtrar. El mantenimiento regular de estos productos es esencial: si no reciben mantenimiento, no van a funcionar. Además, estas medidas no sustituyen a las prácticas del buen manejo de la precipitación pluvial.

› Inspección

Inspeccione sus instalaciones con regularidad para asegurarse que se estén aplicando todas las BMPs correctas. Aumente las inspecciones durante los periodos de clima lluvioso. Basándose en el permiso o necesidades de supervisión, mantenga un registro de las inspecciones visuales. Inspeccione los contenedores de aceite, los sistemas de agua fresca, las líneas de irrigación, las áreas de abastecimiento de combustible, y demás sistemas de tuberías por posibles fugas. Si existe evidencia de alguna fuga, repárela rápidamente o reemplace las partes dañadas para prevenir escurrimientos contaminados y descargas de agua que no provengan de la precipitación pluvial.

› Educación de los clientes

Notifique a sus clientes que sustraen partes que lo hagan correctamente y que desechen los fluidos debidamente. Por ejemplo, coloque recipientes para fluidos a disposición de los clientes, coloque letreros que requieran el uso de charolas para quitar partes, y prohiba actividades que generen desperdicios, como el dar mantenimiento a vehículos en el estacionamiento.

Switches de mercurio

Los switches o interrruptores de mercurio son un aspecto importante. Muchos vehículos viejos contienen mercurio, el cual es altamente tóxico y puede causar discapacidades del aprendizaje y el retardo mental en niños recién nacidos. Cuando los vehículos son compactados y el mercurio se mantiene adentro, éste puede caer en el suelo y en las corrientes de agua. El mercurio también puede esparcirse en el aire y en los mantos acuíferos después de que los vehículos compactados van a la cortadora.

Puede obtener información acerca de como remover el mercurio de los vehículos por el internet en:

epa.gov/glnpo/bnsdocs/hgsbook/auto.pdf

epa.gov/region5/air/mercury/autoswitch.htm

switchout.ca

Qué hacer acerca del mercurio

Los switches de mercurio se hayan normalmente debajo de los cofres y cajuelas de los vehículos y menos frecuentemente en sistemas de frenado automático (ABS). Estos switches se pueden extraer antes de compactar los vehículos. Algunas desmanteladoras de autos quitan los switches aunque no se les requiera. Si usted decidiera participar en este importante aspecto ambiental y removiera los switches de mercurio antes de compactar sus vehículos, debe almacenar los switches en un contenedor cerrado claramente marcado y a prueba de fugas. También asegúrese de que los switches no se quiebren cuando se manejen o almacenen. Una recicladora de metales con licencia que recolecte mercurio puede desechar los switches. Contacte a su agencia ambiental del estado si desea más información.

¡Usted
>> PUEDE <<
Hacer la Diferencia!

Las recicladoras de autos hacen su labor para conservar los recursos naturales al reciclar materiales valiosos. Coopere en esta buena labor y proteja al medio ambiente de los escurrimientos contaminados, aplicando las BMPs descritas en este documento. Asegúrese que sus empleados entiendan que el manejo de la precipitación pluvial es importante y que se les capacite para aplicar las BMPs.

Recuerde, ¡la protección de la precipitación pluvial

Comienza con USTED!

"Es fundamental para los propietarios poner el ejemplo y participar activamente en la aplicación de las BMPs."

— Brian Werth, Select Auto & Truck Recyclers

Dónde puede encontrar más información

Consulte las siguientes fuentes si desea más información acerca de las BMPs para recicladoras de autos:

Manuales

- An Environmental Compliance Workbook for Automotive Recyclers, Florida DEP
  www.dep.state.fl.us/central/home/ps/asyca/fl_gyb.pdf
- Environmental Compliance Guide for Motor Vehicle Salvage Yards, OH Small Bus. Assistance Office
  www.epa.state.oh.us/other/sbao/salvageguide.pdf
- Vehicle Recycling Manual: A Guide for Vehicle Recyclers, Washington State Department of Ecology
  www.ecy.wa.gov/pubs/97433.pdf
- Automotive Recyclers Guide to a Cleaner Environment, New York DEC
  www.dec.state.ny.us/website/reg8/press/autorec/autorec0.pdf
- Certified Auto Recycler (CAR) Guidance Manual, Automotive Recyclers Association
  www.autorecyc.org (Disponible para miembros solamente)

Otras fuentes

- La National Compliance Assistance Clearinghouse es su guía sobre cómo obtener información acerca de los requerimientos por el internet. Ésta le proporciona al rápido acceso a las herramientas requeridas y los contactos de la EPA y de otros proveedores de asistencia en cuanto a los requerimientos. Dicha agencia tiene una sección entera dedicada a la industria del salvamento de autos. http://cfpub.epa.gov/clearinghouse
- Puede hallar una lista de contactos ambientalistas del estado y locales por el internet en:
  epa.gov/epapages/statelocal/envrolst.htm
- El EPA Small Business Ombudsman le puede ayudar a comprender las regulaciones ambientales, o proporcionarle contactos locales. La línea libre de cobro para pequeños empresarios provee información sobre asistencia regulatoria y técnica: (800) 368 5888.

Información sobre vendedores

Techos de bajo costo:

Tuff Shed	(800) BUY-TUFF
South Bay Canopy	(408) 998-8280

Extracción de fluidos y equipo de almacenamiento:

Hy-Tec Environmental	(800) 336-4499
Spill Cleanup Direct	(800) 356-0783

Kits para derrames y materiales absorbentes:

Stormtech	(888) 549-5374
New Pig	(800) 468-4647

Nota: Sustainable Conservation y U.S. EPA no endosa ninguno de estos productos.
Esta lista no esta completa: otros vendedores pueden proveer productos y servicios similares o idénticos.

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Sustainable Conservation
www.suscon.org

Clean Water State Revolving Fund

FACT SHEET

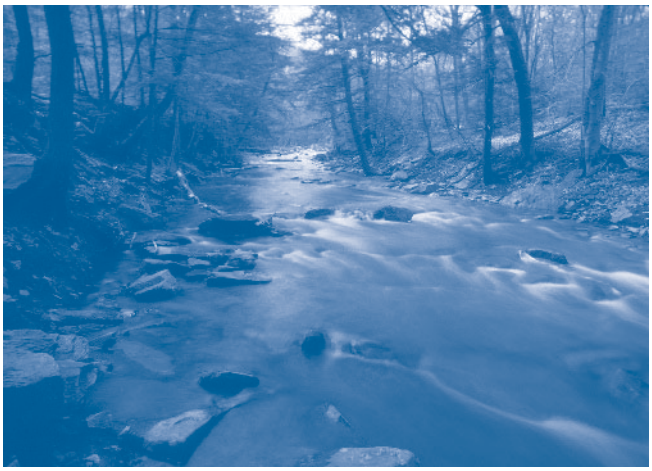
Cleaning Up Polluted Runoff with the Clean Water State Revolving Fund

What's In It For You?

The Clean Water State Revolving Fund (CWSRF) program has become a major source of funding to address polluted runoff. To date, 30 of the 51 CWSRF programs have provided funding for nonpoint source and estuary protection projects. Today annual funding to address polluted runoff exceeds $200 million. CWSRF loans are issued at below market rates (zero percent to less than market), offering borrowers significant savings over the life of the loan.

History

In creating the CWSRF program, Congress ensured that it would be able to fund most types of water quality projects, including nonpoint source, wetlands, estuary, and other types of watershed projects, as well as more traditional municipal wastewater treatment systems. The CWSRF program provisions in the Clean Water Act give no more preference to one category or type of project than any other.



Capacity of the CWSRF

The 51 CWSRF programs work like banks (each state and Puerto Rico has one). Federal and state contributions are used to capitalize or set-up the programs. These assets are used to make low-interest loans for important water quality projects. Repaid funds are then recycled to fund other important water quality projects.

The CWSRF programs have in excess of $42 billion in assets and average funding for the past three years exceedes $4 billion annually. The funding of polluted runoff projects with the CWSRF is gaining momentum. Since 1989, the CWSRF program has funded 3,400 projects, investing more than $1.6 billion in polluted runoff projects.

Who May Qualify?

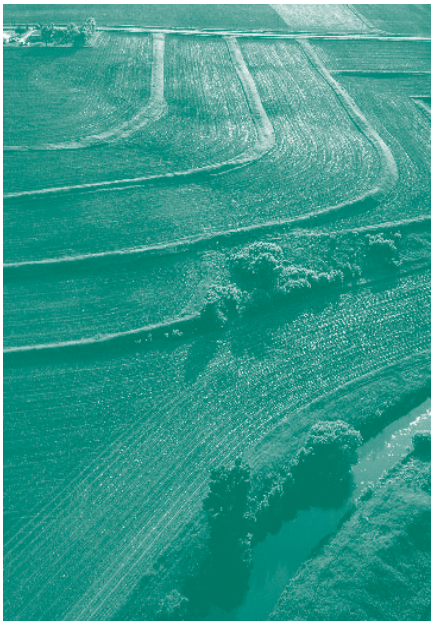
Included in a long list of eligible loan recipients are communities, citizens groups, businesses, farmers, homeowners, watershed groups, and nonprofit organizations. Since the program is managed largely by the states, project eligibility may vary according to the priorities within each state. Contact your state's CWSRF program for details.

Polluted Runoff and the CWSRF

The CWSRF can fund virtually any type or category of polluted runoff that is included in a state approved nonpoint source (NPS) management plan.

Polluted runoff occurs when rainfall, snowmelt, or irrigation runs over land or through the ground, picks up pollutants, and deposits them into surface or ground

water. For instance, polluted runoff from agricultural sources is the leading contributor to water quality impairments in rivers, degrading over 60% of impaired river miles.



Terraces, conservation tillage and conservation buffers save soil and improve water quality

Here are a few actual project examples from states that demonstrate what the CWSRF can do:

- **California -** Stormwater management facilities, including sediment basins and constructed wetlands. Purchasing easements for wetland protection
- **Delaware -** Animal waste management facilities, including manure storage facilities and dead chicken composters
- **Massachusetts -** Septic system improvements and replacement
- **Minnesota -** Agricultural best management practices (BMPs) to prevent and reduce runoff. Purchasing conservation tillage equipment and implementing soil erosion controls
- **New York** - Purchasing land and easements for source water protection projects
- **Washington -** Rehabilitation of streambanks, riparian corridors and buffers
- **Wisconsin** - Water protection and improvement projects on brownfield redevelopment sites
- **Wyoming -** Removal of leaking underground storage tanks and remediation of contaminated ground water and soil

State of the art lagoon animal waste management system

These are just a sample of the projects that have been funded. Contact your state or visit the CWSRF web site for more examples and information **(www.epa.gov/owm/cwfinance/index.htm)**

Benefits of Loans

First, Funds are Available. CWSRF loans can usually be obtained much faster than grants and each year over $200 million is spent on nonpoint source projects.

Second, No Cash Up-Front. Most grant programs require significant cost shares (as much as 40 percent or more). A CWSRF loan can cover 100 percent of project costs with no cash up-front.

Third, Significant Cost Savings. CWSRF loans provide significant cost savings over the life of the loan. The total cost of a zero percent CWSRF loan will be approximately 50 percent less than the same project financed by a commercial loan at 7.5 percent.

Fourth, Loans can Complement other Funding Sources. It may be possible to combine a CWSRF loan with grant dollars from other sources. Check with your state.

Sources of Repayment

Many users of the CWSRF program have demonstrated a high level of creativity in developing sources of repayments. The source of repayment need not come from the project itself. Some possible sources include:

- Fees paid by property owner or homeowner
- Fees paid by a developer
- Dedicated portion of local, county, or state taxes or fees
- Recreational fees (fishing license, park entrance fees)
- Stormwater management fees
- Wastewater user charges
- Donations or dues made to nonprofit groups
- Business revenues

Making Funding Accessible - Ohio Examples

The state of Ohio employs several innovative funding methods to ensure a variety of watershed projects receive funding. Two unique funding methods used in Ohio are the Linked-Deposit Loan Program and the Watershed Resource Restoration Sponsorship Program (WRRSP). In both examples the state shows creativity by taking existing institutional arrangements and modifying them to achieve the state's goals and meet the needs of loan recipents.

Linked Deposit Lending Program

In Ohio's linked-deposit program, the state makes arrangements with local banks to provide loans for agricultural BMPs and on-site wastewater treatment projects. Under a linked-deposit arrangement the state agrees to buy a bank's investment (CD) and receive a lower than market rate of return on the investment. The bank agrees to provide reduced interest rate loans for eligible projects. The linked-deposit loan interest rate reflects the difference between the state's reduced rate of return on the investment and the market rate of return.

The linked-deposit approach benefits CWSRF programs because they support high priority nonpoint source projects and because they place risk and management responsibilities with local financial institutions. Financial institutions earn profits from the linked deposit agreements and add an additional service for their customers. Borrowers find linked deposit programs to be economical and comfortable; they save money with low-interest loans, and they are comfortable working with local financial institutions.

For more information on linked-deposit loans see EPA's Activity Update ***"Innovative Use of Clean Water State Revolving Funds for Nonpoint Source Pollution"*** (EPA 832-F-02-004) found on the CWSRF web site.

Watershed Resource Restoration Sponsorship Program (WRRSP)

The WRRSP offers communities very low interest rates on loans for wastewater treatment plant improvements if the communities also sponsor projects that protect or restore water resources. The end payment for the wastewater treatment plant project is the same because of the lower interest rate and the simultaneous funding for the restoration project by the wastewater treatment plant. The benefit of this program is water restoration projects that normally would not receive funding are completed with the help of the wastewater treatment plants.

To date, the WRRSP program has supported projects that have acquired wetlands and riparian lands, acquired conservation easements, restored habitat, and removed dams.

Over the past two years under the WRRSP, communities in Ohio have used $24 million of CWSRF loan funds to protect and restore 1850 acres of riparian lands and wetlands and 38 miles of Ohio's stream corridors.

For more information on Ohio's WRRSP see EPA's Activity Update ***"Ohio's Restoration Sponsor Program Integrates Point Source and Nonpoint Source Projects"*** (EPA 832-F-02-001) found on the CWSRF web site.

Challenges Ahead

With increasing emphasis on watershed-based program management and implementation of Total Maximum Daily Loads (TMDLs) in impaired water bodies, it will be even more important to take advantage of the tremendous buying power of the CWSRF program.

How to Get More From the CWSRF

- Share information on polluted runoff priorities with CWSRF managers
- Work to enhance CWSRF programs to include funding of polluted runoff projects
- Become involved in the annual CWSRF planning and priority setting process
- Help market the program and encourage loan applications

The water quality community needs to work together to increase understanding of polluted runoff issues and facilitate the use of the powerful resources of the CWSRF to address these significant problems. EPA has been encouraging the states to open their CWSRFs to the widest variety of water quality projects and to use their CWSRFs to fund the highest priority projects in targeted watersheds. Those interested in cleaning up polluted runoff must seek out their CWSRF programs, gain an understanding of how their state program works, and participate in the annual process that determines which projects are funded.

For more information about the Clean Water Revolving Fund, or for a program representative in your State, please contact:

Clean Water State Revolving Fund Branch

U.S. Environmental Protection Agency

1200 Pennsylvania Avenue, NW (Mailcode 4204M)

Washington, DC 20460

Phone: (202) 564-0752 **Fax:** (202) 501-2403

Internet: www.epa.gov/owm/cwfinance/index.htm

Clean Water
State Revolving Fund

What is WaterSense?

WaterSense is a voluntary public-private partnership program sponsored by the U.S. Environmental Protection Agency. Its mission is to protect the future of our nation's water supply by promoting and enhancing the market for water-efficient products and services.

www.epa.gov/watersense

U.S. EPA WaterSense

5 Simple Ways to Save Water

United States Environmental Protection Agency
(4204M)

EPA-832-F-06-007
May 2006
www.epa.gov/watersense

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Saving water is simple and smart.

1 Be smart when irrigating your lawn or landscape.

- Water the lawn or garden during the coolest part of the day. Early morning is best.
- Water plants according to their water needs; you'll have healthier plants and a lower water bill.
- Set sprinklers to water lawns and gardens only—not the street or sidewalk.
- Use soaker hoses or trickle irrigation systems for trees and shrubs.

2 Use your appliances wisely.

- Wash only full loads or set small loads to the appropriate water level.
- Scrape rather than rinse dishes before loading them into the dishwasher.
- Replace old clothes washers with ENERGY STAR qualified appliances that use less water.

3 Don't flush your money down the drain/Toilets.

- A leaky toilet can waste 200 gallons of water per day. Check your toilet for leaks by adding food coloring to the tank. If the toilet is leaking, color will appear in the bowl within 15 minutes. Look for worn out, corroded or bent parts in the leaky toilet. Most replacement parts are inexpensive, readily available and easily installed. (Flush as soon as test is done, since food coloring may stain the tank.)
- When replacing your toilet, look for high-efficiency models that use less than 1.3 gallons per flush.

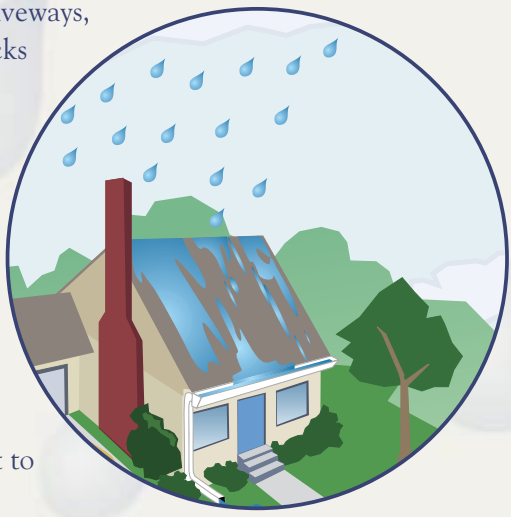
4 Conserve around the house.

- Keep drinking water in the refrigerator instead of letting the faucet run until cool. A running tap can use about 2 gallons of water per minute.
- Try not to leave the tap running while you brush your teeth or shave.
- Don't pour water down the drain if you can use it for other projects such as watering a plant or cleaning.

5 Stop those leaks.

- Verify that your home is leak-free. Many homes have hidden water leaks that can waste more than 10 percent, costing both you and the environment. Read your water meter before and after a two-hour period where no water is being used. If the meter does not read exactly the same, you probably have a leak.
- Repair dripping faucets and showers. If your faucet is dripping at the rate of one drop per second, you can expect to waste 2,700 gallons per year. This waste will add to the cost of water and sewer utilities or strain your septic system.

As stormwater flows over driveways, lawns, and sidewalks, it picks up debris, chemicals, dirt, and other pollutants. Stormwater can 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. Polluted runoff is the nation's greatest threat to clean water.



By practicing healthy household habits, homeowners can keep common pollutants like pesticides, pet waste, grass clippings, and automotive fluids off the ground and out of stormwater. Adopt these healthy household habits and help protect lakes, streams, rivers, wetlands, and coastal waters. Remember to share the habits with your neighbors!

Healthy Household Habits for Clean Water

Vehicle and Garage

- Use a commercial car wash or wash your car on a lawn or other unpaved surface to **minimize** the amount of dirty, soapy water flowing into the storm drain and eventually into your local waterbody.

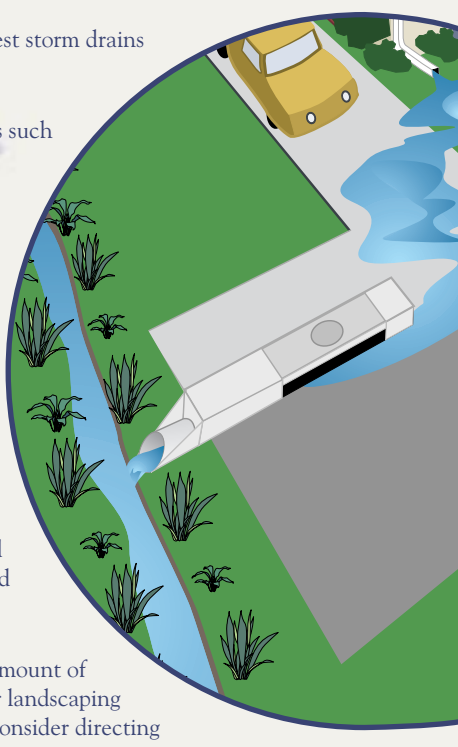
- Check your car, boat, motorcycle, and other machinery and equipment for leaks and spills. Make repairs as soon as possible. Clean up **spilled fluids** with an absorbent material like kitty litter or sand, and don't rinse the spills into a nearby storm drain. Remember to properly dispose of the absorbent material.
- **Recycle** used oil and other automotive fluids at participating service stations. Don't dump these chemicals down the storm drain or dispose of them in your trash.

Lawn and Garden

- Use pesticides and fertilizers **sparingly**. When use is necessary, use these chemicals in the recommended amounts. Avoid application if the forecast calls for rain; otherwise, chemicals will be washed into your local stream.
- Select **native** plants and grasses that are drought- and pest-resistant. Native plants require less water, fertilizer, and pesticides.
- **Sweep up** yard debris, rather than hosing down areas. Compost or recycle yard waste when possible.
- Don't overwater your lawn. Water during the **cool** times of the day, and don't let water run off into the storm drain.
- Cover piles of dirt and mulch being used in landscaping projects to prevent these pollutants from blowing or washing off your yard and into local waterbodies. **Vegetate** bare spots in your yard to prevent soil erosion.

Home Repair and Improvement

- Before beginning an outdoor project, locate the nearest storm drains and **protect** them from debris and other materials.
- **Sweep up** and properly dispose of construction debris such as concrete and mortar.
- Use hazardous substances like paints, solvents, and cleaners in the **smallest amounts possible**, and follow the directions on the label. Clean up spills **immediately**, and dispose of the waste safely. Store substances properly to avoid leaks and spills.
- Purchase and use **nontoxic**, **biodegradable**, **recycled**, and **recyclable** products whenever possible.
- **Clean** paint brushes in a sink, not outdoors. Filter and reuse paint thinner when using oil-based paints. Properly dispose of excess paints through a household hazardous waste collection program, or donate unused paint to local organizations.



- **Reduce** the amount of paved area and increase the amount of vegetated area in your yard. Use native plants in your landscaping to reduce the need for watering during dry periods. Consider directing downspouts away from paved surfaces onto lawns and other measures to increase infiltration and reduce polluted runoff.

Pet Care

- 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.

Swimming Pool and Spa

- **Drain** your swimming pool only when a test kit does not detect chlorine levels.
- Whenever possible, drain your pool or spa into the **sanitary** sewer system.
- Properly store pool and spa chemicals to **prevent** leaks and spills, preferably in a covered area to avoid exposure to stormwater.

Septic System Use and Maintenance

- Have your septic system **inspected** by a professional at least every 3 years, and have the septic tank **pumped** as necessary (usually every 3 to 5 years).
- Care for the septic system drainfield by **not** driving or parking vehicles on it. Plant only grass over and near the drainfield to avoid damage from roots.
- Flush responsibly. Flushing household chemicals like paint, pesticides, oil, and antifreeze can **destroy** the biological treatment taking place in the system. Other items, such as diapers, paper towels, and cat litter, can **clog** the septic system and potentially damage components.

Storm drains connect to waterbodies!

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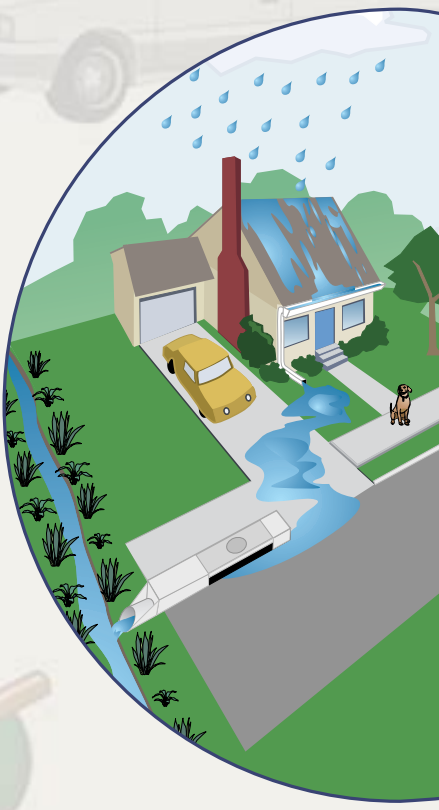

Make your home

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SOLUTION TO STORMWATER POLLUTION!

A homeowner's guide to healthy habits for clean water

EPA United States Environmental Protection Agency

Water-Efficient Landscaping:

Preventing Pollution & Using Resources Wisely

A Message from the Administrator

Christine Todd Whitman

I believe water is the biggest environmental issue we face in the 21st Century in terms of both quality and quantity. In the 30 years since its passage, the Clean Water Act has dramatically increased the number of waterways that are once again safe for fishing and swimming. Despite this great progress in reducing water pollution, many of the nation's waters still do not meet water quality goals. I challenge you to join with me to finish the business of restoring and protecting our nation's waters for present and future generations.

United States Environmental Protection Agency
Office of Water (4204M)
EPA832-F-02-002
September 2002
www.epa.gov/owm/water-efficiency/index.htm

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What is Water-efficient Landscaping?

Water, many agree, is our most precious natural resource; without it, life ceases. Yet judging by our water use and consumption practices, many of us in the United States seem to take it for granted. A typical household uses approximately 260 gallons of water per day. "Water conscious" individuals often install high-efficiency shower heads and toilets and wash only full loads of clothes and dishes to reduce consumption. But in the summer, the amount of water used outdoors by a household can exceed the amount used for all other purposes in the entire year. This is especially true in hot, dry climates.

Gardening and lawn care account for the majority of this seasonal increase, but other outdoor activities, such as washing cars and filling swimming pools, also contribute. According to the U.S. Geological Survey, of the 26 billion gallons of water consumed daily in the United States[1], approximately 7.8 billion gallons, or 30 percent[2], is devoted to outdoor uses. The majority of this is used for landscaping. In fact, it is estimated that the typical suburban lawn consumes 10,000 gallons of water above and beyond rainwater each year (Vickers, p 140).

Many mistakenly believe that stunning gardens and beautiful lawns are only possible through extensive watering, fertilization, and pesticide application. As this booklet will demonstrate, eye-catching gardens and landscapes that save water, prevent pollution, and protect the environment are, in fact, easily achieved by employing water-efficient landscaping. Water-efficient landscaping produces attractive landscapes because it utilizes designs and plants suited to local conditions.

This booklet describes the benefits of water-efficient landscaping. It includes several examples of successful projects and programs, as well as contacts, references, and a short bibliography. For specific information about how to best apply water-efficient landscaping principles to your geographical area, consult with your county extension service and local garden and nursery centers. Local governments and water utilities also possess a wealth of information and suggestions for using water more efficiently in all aspects of your life, including landscaping.

Xeriscape garden at Denver Water

1 W.B. Solley, R.R. Pierce, and H.A. Perlman. 1998. *Estimated Use of Water in the United States in 1995* (USGS Circular 1200). USGS. Reston, VA. p.27.

2 Amy Vickers. 2001. *Handbook of Water Use and Conservation*. WaterPlow Press. Amherst, MA. p. 140.

Xeriscaped front yard in Colorado Springs

Many terms and schools of thought have been used to describe approaches to water-efficient landscaping. Some examples include "water-wise," "water-smart," "low-water," and "natural landscaping." While each of these terms varies in philosophy and approach, they are all based on the same principles and are commonly used interchangeably. One of the first conceptual approaches developed to formalize these principles is known as "Xeriscape[3] landscaping." Xeriscape landscaping is defined as "quality landscaping that conserves water and protects the environment." The word "Xeriscape" was coined and copyrighted by Denver Water Department in 1981 to help make water conserving landscaping an easily recognized concept. The word is a combination of the Greek word "*xeros*," which means "dry," and "landscape."

The seven principles upon which Xeriscape landscaping is based are:

- Proper planning and design
- Soil analysis and improvement
- Appropriate plant selection
- Practical turf areas
- Efficient irrigation
- Use of mulches
- Appropriate maintenance

The eight fundamentals of water-wise landscaping, below, illustrate the similarities in the underlaying concepts and principles of Xeriscape landscaping and other water-efficient approaches.

- Group plants according to their water needs.
- Use native and low-water-use plants.
- Limit turf areas to those needed for practical uses.
- Use efficient irrigation systems.
- Schedule irrigation wisely.
- Make sure soil is healthy.
- Remember to mulch.
- Provide regular maintenance.

In short, plan and maintain your landscape with these principles of water efficiency in mind and it will continue to conserve water and be attractive.

3 Denver Water welcomes the use of the term Xeriscape in books, articles, and speeches promoting water conserving landscape. EPA is using this term with permission from Denver Water. For permission to use "Xeriscape" in your publications, call Denver Water at 303 628-6330.

Why Use Water-efficient Landscaping?

Proper landscaping techniques not only create beautiful landscapes, but also benefit the environment and save water. In addition, attractive, water-efficient, low-maintenance landscapes can increase home values.

Water-efficient landscaping offers many economic and environmental benefits, including:

- Lower water bills from reduced water use.
- Conservation of natural resources and preservation of habitat for plants and wildlife such as fish and waterfowl.
- Decreased energy use (and air pollution associated with its generation) because less pumping and treatment of water is required.
- Reduced home or office heating and cooling costs through the careful placement of trees and plants.
- Reduced runoff of stormwater and irrigation water that carries top soils, fertilizers, and pesticides into lakes, rivers, and streams.
- Fewer yard trimmings to be managed or landfilled.
- Reduced landscaping labor and maintenance costs.
- Extended life for water resources infrastructure (e.g., reservoirs, treatment plants, groundwater aquifers), thus reduced taxpayer costs.

Meadow Sage (Salvia pratensis) *is the background for New Mexico Evening Primrose* (Oenothera berlandieri 'siskiyou')

How is Water-efficient Landscaping Applied?

Landscaping that conserves water and protects the environment is not limited to arid landscapes with only rocks and cacti. Through careful planning, landscapes can be designed to be both pleasing to the senses and kind to the environment. One simple approach to achieving this is applying and adopting the basic principles of water-efficient landscaping to suit your climatic region. The seven principles of Xeriscape landscaping are used below to describe these basic concepts in greater detail.

Dragon's Blood Sedum (Sedum spurium) *under Honeylocust Trees* (Gleditsia triaconthos)

Proper planning and design

Developing a landscape plan is the first and most important step in creating a water-efficient landscape. Your plan should take into account the regional and microclimatic conditions of the site, existing vegetation, topography, intended uses of the property, and most importantly, the grouping of plants by their water needs. Also consider the plants' sun or shade requirements and preferred soil conditions. A well-thought-out landscape plan can serve as your roadmap in creating beautiful, water-efficient landscapes and allow you to continually improve your landscape over time.

Soil analysis and improvements

Because soils vary from site to site, test your soil before beginning your landscape improvements. Your county extension service can analyze the pH levels; nutrient levels (e.g., nitrogen, phosphorus, potassium); and the sand, silt, clay, and organic matter content of your soil. It can also suggest ways to improve your soil's ability to support plants and retain water (e.g., through aeration or the addition of soil amendments or fertilizers).

Appropriate plant selection

Your landscape design should take into account your local climate as well as soil conditions. Focus on preserving as many existing trees and shrubs as possible because established plants usually require less water and maintenance. Choose plants native to your region. Native plants, once established, require very little to no additional water beyond normal rainfall. Also, because they are adapted to local soils and climatic conditions, native plants commonly do not require the addition of fertilizers and are more resistant to pests and disease.

When selecting plants, avoid those labeled "hard to establish," "susceptible to disease," or "needs frequent attention," as these types of plants frequently require large amounts of supplemental water, fertilizers, and pesticides. Be careful when selecting non-indigenous species as some of them may become invasive. An invasive plant might be a water guzzler and will surely choke out native species. Your state or county extension service or local nursery can help you select appropriate plants for your area.

The key to successful planting and transplanting is getting the roots to grow into the surrounding soil as quickly as possible. Knowing when and where to plant is crucial to speeding the establishment of new plants. The best time to plant will vary from species to species. Some plants will thrive when planted in a dormant or inactive state. Others succeed when planted during the season when root generation is highest and sufficient moisture is available to support new growth (generally, spring is the best season, but check plant tags or consult with your local nursery for specific species).

Wine Cup (Callirhoe involucrata) *and Sunset Hyssop* (Agastache rupestris) *in the Denver Water Xeriscape Garden*

Practical turf areas

How and where turf is placed in the landscape can significantly reduce the amount of irrigation water needed to support the landscape. Lawns require a large amount of supplemental water and generally greater maintenance than other vegetation. Use turf where it aesthetically highlights the house or buildings and where it has practical function, such as in play or recreation areas. Grouping turf areas can increase watering efficiency and significantly reduce evaporative and runoff losses. Select a type of grass that can withstand drought periods and become dormant during hot, dry seasons. Reducing or eliminating turf areas altogether further reduces water use.

Efficient irrigation

Efficient irrigation is a very important part of using water efficiently outdoors, and applies in any landscape—whether Xeriscape or conventional. For this reason, an entire section of this booklet addresses efficient irrigation; it can be found on page 6.

Use of mulches

Mulches aid in greater retention of water by minimizing evaporation, reducing weed growth, moderating soil temperatures, and preventing erosion. Organic mulches also improve the condition of your soil as they decompose. Mulches are typically composed of wood bark chips, wood grindings, pine straws, nut shells, small gravel, or shredded landscape clippings. Avoid using rock mulches in sunny areas or around non-arid climate plants, as they radiate large amounts of heat and promote water loss that can lead to scorching. Too much mulch can restrict water flow to plant roots and should be avoided.

Appropriate maintenance

Water and fertilize plants only as needed. Too much water promotes weak growth and increases pruning and mowing requirements. Like any landscape, a water-efficient yard will require regular pruning, weeding, fertilization, pest control, and irrigation. As your water-efficient landscape matures, however, it will require less maintenance and less water. Cutting turf grass only when it reaches two to three inches promotes deeper root growth and a more drought-resistant lawn. As a rule of thumb, mow your turf grass before it requires more than one inch to be removed. The proper cutting height varies, however, with the type of grass, so you should contact your county extension service or local nursery to find out the ideal cutting height for your lawn. Avoid shearing plants or giving them high nitrogen fertilizers during dry periods because these practices encourage water-demanding new growth.

Water-efficient Landscape Irrigation Methods

With common watering practices, a large portion of the water applied to lawns and gardens is not absorbed by the plants. It is lost through evaporation, runoff, or being pushed beyond the root zone because it is applied too quickly or in excess of the plants' needs. The goal of efficient irrigation is to reduce these losses by applying only as much water as is needed to keep your plants healthy. This goal is applicable whether you have a Xeriscape or a conventional landscape.

To promote the strong root growth that supports a plant during drought, water deeply and only when the plant needs water. For clay soils, watering less deeply and more often is recommended. Irrigating with consideration to soil type, the condition of your plants, the season, and weather conditions—rather than on a fixed schedule—significantly increases your watering efficiency. Grouping plants according to similar water needs also makes watering easier and more efficient.

Purple Fountain Grass (Pennisetum setaceum "Rubrum") *and Marigolds* (Calendula officinalis) *in planter bed*

Irrigating lawns, gardens, and landscapes can be accomplished either manually or with an automatic irrigation system. Manual watering with a hand-held hose tends to be the most water-efficient method. According to the AWWA Research Foundation's outdoor end use study, households that manually water with a hose typically use 33 percent less water outdoors than the average household. The study also showed that households with in-ground sprinkler systems used 35 percent more water, those with automatic timers used 47 percent more water, and those with drip irrigation systems used 16 percent more water than households without these types of systems. These results show that in-ground sprinkler and drip irrigation systems must be operated properly to be water-efficient.

You can use a hand-held hose or a sprinkler for manual irrigation. To reduce water losses from evaporation and wind, avoid sprinklers that produce a fine mist or spray high into the air. Soaker hoses can also be very efficient and effective when used properly. Use a hand-held soil moisture probe to determine when irrigation is needed.

To make automatic irrigation systems more efficient, install system controllers such as rain sensors that prevent sprinkler systems from turning on during and immediately after rainfall, or soil moisture sensors that activate sprinklers only when soil moisture levels drop below pre-programmed levels. You can also use a weather-

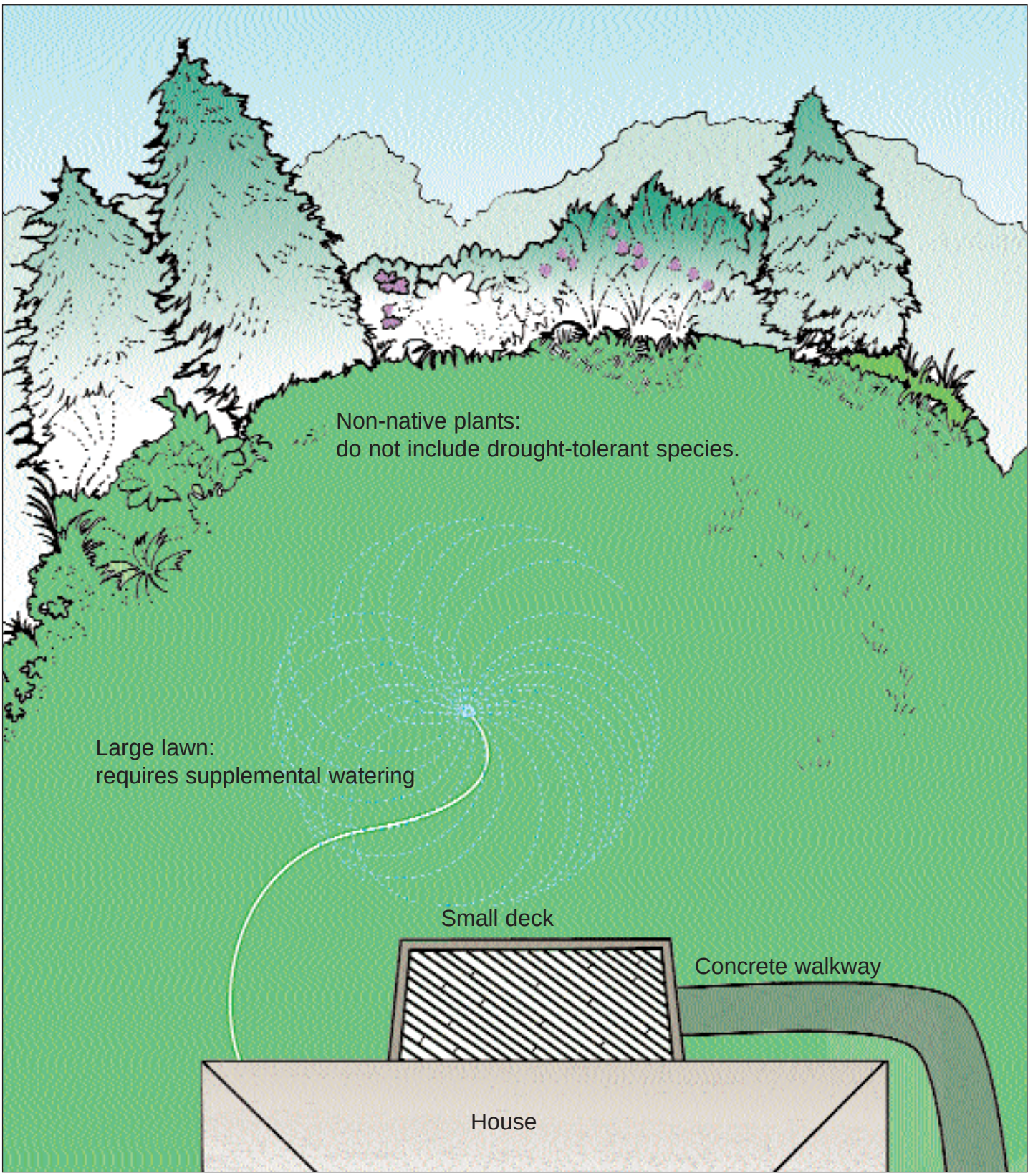
driven programming system. Drip-type irrigation systems are considered the most efficient of the automated irrigation methods because they deliver water directly to the plants' roots. It is also important to revise your watering schedule as the seasons change. Over-watering is most common during the fall when summer irrigation schedules have not been adjusted to the cooler temperatures.

To further reduce your water consumption, consider using alternative sources of irrigation water, such as gray water, reclaimed water, and collected rainwater. According to the AWWA Research Foundation, homes with access to alternative sources of irrigation reduce their water bills by as much as 25 percent.[4] Graywater is untreated household waste water from bathroom sinks, showers, bathtubs, and clothes washing machines. Graywater systems pipe this used water to a storage tank for later outdoor watering use. State and local graywater laws and policies vary, so you should investigate what qualifies as gray water and if any limitations or restrictions apply. Reclaimed water is waste water that has been treated to levels suitable for nonpotable uses. Check with local water officials to determine if it is available in your area. Collected rainwater is rainwater collected in cisterns, barrels, or storage tanks. Commercial rooftop collection systems are available, but simply diverting your downspout into a covered barrel is an easy, low-cost approach. When collecting rainwater, cover all collection vessels to prevent animals and children from entering and to prevent mosquito breeding. Some states might have laws which do not allow collection of rainwater, so be sure to check with your state's water resource agency before implementing a rainwater collection system.

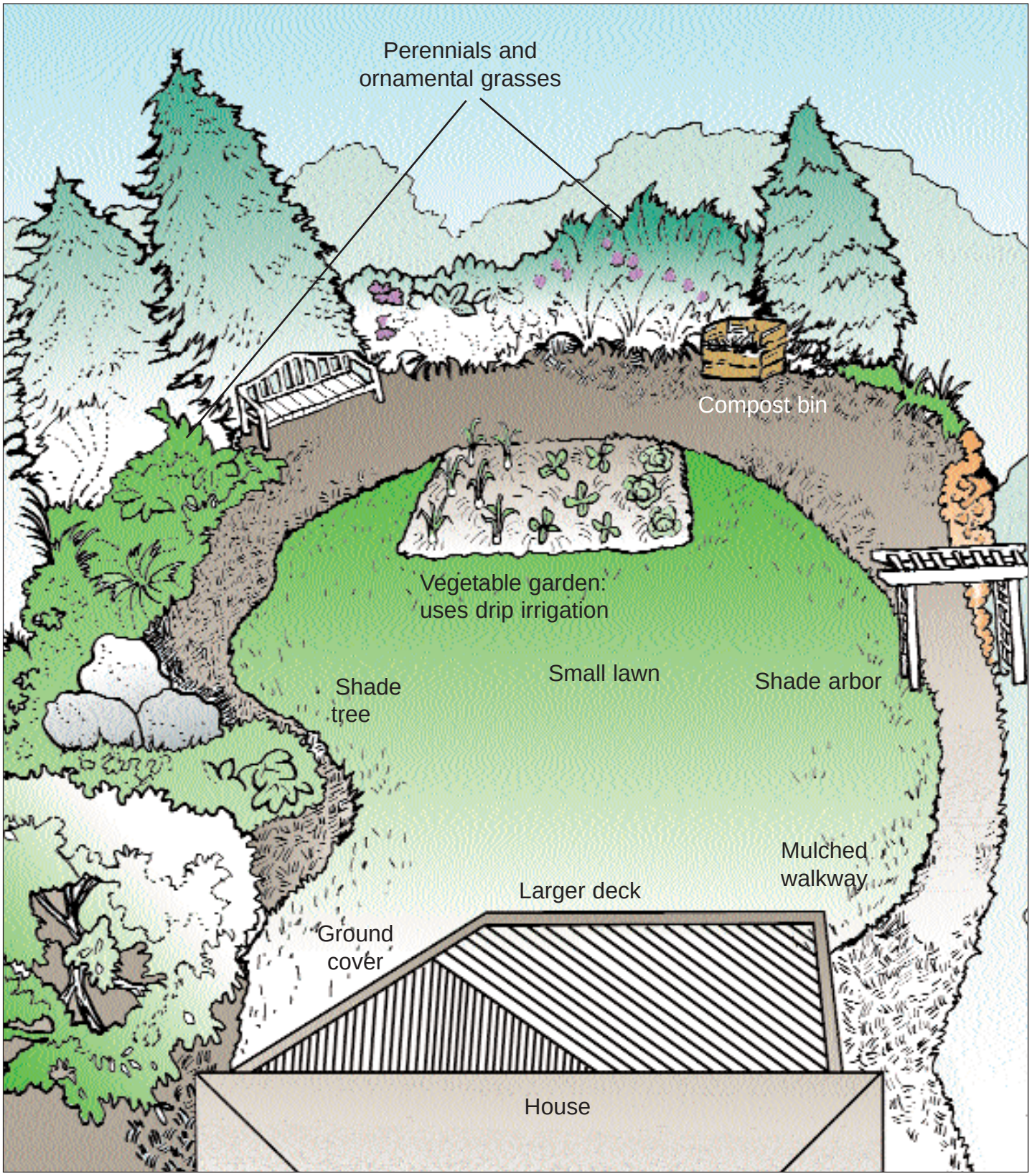
Red Valerian (Centranthus ruber)

4 AWWA Research Foundation. 1999. *Residential End Uses of Water*. <www.waterwiser.org>

Non-xeriscaping



Xeriscaping



Examples of Successful Water-efficient Landscaping Projects

Water-efficient landscaping techniques can be used by individuals, companies, state, tribal, and local governments, and businesses to physically enhance their properties, reduce long-term maintenance costs, and create environmentally conscious landscapes. The following examples illustrate how water-efficient landscapes can be used in various situations.

Oriental Poppies (Paparer orientale)

Homeowner–public/private partnership

- The South Florida Water Management District, the Florida Nurserymen and Growers Association, the Florida Irrigation Society, and local businesses worked together to produce a television video called "Plant It Smart with Xeriscape." The video shows how a typical Florida residential yard can be retrofitted with Xeriscape landscaping to save energy, time, and money. The showcase yard (selected from 70 applicants) had a history of heavy water use—more than 90,000 gallons per month. After the retrofit, the yard's aesthetic value was enhanced; plus it now uses 75 percent less water and relies on yard trimmings for mulch and compost.
- The Southwest Florida Water Management District (SWFWMD), the City of St. Petersburg, and Pinellas County, Florida, produced a video called "Xeriscape It!" It shows a landscape being installed using the seven Xeriscape principles. The SWFWMD also funded several Xeriscape demonstration sites and maintains a Xeriscape demonstration garden at its Brooksville, Florida, headquarters. The garden features a variety of native and non-native plants and is available for public viewing, along with a landscape plant identification guide.
- Residents of Glendale, Arizona, can receive a $100 cash rebate for installing or converting more than half of their landscapable area to non-grass vegetation. The Glendale Water Conservation Office conducts an inspection of the converted lawn to ensure compliance with rebate requirements and then issues a rebate check to the homeowner. The purpose of the Landscape Rebate Program is to permanently reduce the amount of water used to irrigate grass throughout Glendale.

State government

- Although perceived as a water-rich state, Florida became the first to enact a statewide Xeriscape law. Florida's legislature recognized that its growing population and vulnerable environment necessitated legal safeguards for its water resources. The Xeriscape law requires Florida's Departments of Management Ser-

vices and Transportation to use Xeriscape landscaping on all new public properties and to develop a 5-year program to phase in Xeriscape on properties constructed before July 1992. All local governments must also consider requiring the use of Xeriscape and offering incentives to install Xeriscaping.

- Texas also developed legislation requiring Xeriscape landscaping on new construction projects on state property beginning on or after January 1994. Additional legislation, enacted in 1995, requires the Department of Transportation to use Xeriscape practices in the construction and maintenance of roadside parks. All municipalities may consider enacting ordinances requiring Xeriscape to conserve water.

City government

In Las Vegas, Nevada, homeowners can receive up to $1,000 for converting their lawn to Xeriscape, while commercial landowners can receive up to a $50,000 credit on their water bill. The city and several other surrounding communities hope these eye-catching figures will help Las Vegas meet its goal of saving 25 percent of the water it would otherwise have used by the year 2010; to date, it has saved 17 percent. Local officials plan to reach the target with the assistance of incentive programs encouraging Xeriscape, a city ordinance limiting turf to no more than 50 percent of new landscapes, grassroots information programs, and a landscape awards program specifically for Xeriscaped properties. Preliminary results of a five-year study show that residents who converted a portion of their lawns to Xeriscape reduced total water consumption by an average of 33 percent. The xeric vegetation required less than a quarter of the water typically used and one-third the maintenance (both in labor and expenditures) compared to traditional turf.

Yellow Ice Plant (Delosperma nubigenum) *close-up*

Developers

Howard Hughes Properties (HHP), a developer and manager of more than 25,000 acres of residential, commercial, and office development property, has enthusiastically used drought tolerant landscaping on all of its properties since 1990. Most of the company's properties are located in Las Vegas, one of the country's fastest growing metropolitan areas. To conserve resources, the city and county have implemented regulations requiring developers to employ certain Xeriscape principles in new projects. Specifically, a limited percentage of grass can be used on projects, and it must be kept away from streets. As the area's first large-scale developer to recognize the need and value in incorporating drought tolerant landscaping in parks, streetscapes, and open spaces, HHP uses native and desert-adaptive plants that survive and thrive in the Las Vegas climate with minimal to moderate amounts of water.

Drip system irrigation controllers are linked to weather stations that monitor the evapotranspiration rate. This allows HHP to determine the correct amount of water to be applied to plants at any given time. HHP tests the irrigation systems regularly and adds appropriate soil amendments to promote healthy plant growth. The maintenance program also includes pest management, the use of mulching mowers, and the use of rock mulch top dressing on all non-turf planting areas. These measures combine to ensure a beautiful, healthy, and responsible landscape.

Public/private partnerships

Even the most water-conscious homeowners in Southern California are over-watering by 50 to 70 gallons per day. The excess water washes away fertilizers and pesticides, which pollute natural waterways. The quantity of water wasted (and the dollars that pay for it) are even more substantial for large-scale commercial properties and developments.

An innovative partnership in Orange County links landscape water management, green material management, and non-point source pollution prevention goals into one program—the Landscape Performance Certification Program. This program emphasizes efficient landscape irrigation and features a "landscape irrigation budget" based on a property's landscape area, type, and the daily weather. The Municipal Water District monitors actual water use through a system of 12,000 dedicated water meters installed by participating landscape managers.

Participants, including landscapers, property managers, and homeowner associations, can compare the actual cost of water used on their property with the calculated budget. Those staying within budget are awarded certification, a proven marketing tool. This new voluntary program is implemented by the Municipal Water District with input from the California Landscape Contractors' Association, the Orange County Integrated Management Department, the Metropolitan Water District of Southern California, and local nurseries and has the support of 32 retailing water suppliers. The program is already credited with increasing the use of arid-climate shrubs and landscaping to accommodate drip irrigation, and has resulted in cost savings to water customers.

Miscanthus sinensis (Miscanthus grass, also called Maiden grass) *variety with leaves turning yellow for fall.*

For More Information

The following list of organizations can provide more information on water-efficient landscaping. This is not meant to be an exhaustive list, rather it is intended to help you locate local information sources and possible technical assistance.

Turkish Speedwell (Veronica liwanensis) *in background and tulips in foreground.*

Water Management Districts or Utilities

Your local water management district often can provide information on water conservation, including water efficient landscaping practices. Your city, town, or county water management district can be found in the Blue Pages section of your local phone book or through your city, town, or county's Web site if it has one. If you do not know your city, town, or county's Web site, check for a link on your state's Web site. URLs for state Web sites typically follow this format: <www.state.(two letter state abbreviation).us>.

State/County Extension Services

Your state or county extension service is also an excellent source of information. Many extension services provide free publications and advice on home landscaping issues including tips on plant selection and soil improvement. Some also offer a soil analysis service for a nominal fee. Your county extension service can be found in the Blue Pages section of your local phone book under the county government section or through your county's Web site if it has one. The U.S. Department of Agriculture's Cooperative State Research, Education, and Extension Service (www.reeusda.gov/statepartners/usa.htm) provides an online directory of land-grant universities which can help you locate your state extension service. Government Guide (www.governmentguide.com) is yet another online resource that might prove helpful in locating state or local agencies.

Organizations

The following is a partial list of organizations located across the United States that provide helpful information on water-efficient landscaping.

American Water Works Association (AWWA)
6666 West Quincy Avenue
Denver, CO 80235
Telephone: 303 794-7711
and
1401 New York Avenue, NW, Suite 640
Washington, DC 20005
Telephone: 202 628-8303
Web: <www.awwa.org>

Arizona Municipal Water Users Association (AMWUA)
Web: <www.amwua.org/program-xeriscape.htm>

BASIN
City of Boulder Environmental Affairs
P.O. Box 791
Boulder, CO 80306
Phone: 303 441-1964
E-mail: basin@bcn.boulder.co. us
Web: <bcn.boulder.co.us/basin/local/seven.html>

Denver Water
1600 West 12th Avenue
Denver, CO 80204
Phone: 303 628-6000
Fax: 303 628-6199
TDDY: 303 534-4116
Office of Water Conservation hotline:
303 628-6343
E-mail: jane.earle@denverwater.org
Web: <www.water.denver.co.gov/conservation/conservframe.html>

New Mexico Water Conservation Program/Water Conservation Clearinghouse
P. O. Box 25102
Santa Fe, NM 87504
Phone: 800 WATER-NM
E-mail: waternm@ose.state.nm.us
Fax: 505 827-3813
Web: <www.ose.state.nm.us/water-info/conservation/index.html>

Project WET - Water Education for Teachers
201 Culbertson Hall
Montana State University
Bozeman, MT 59717
Phone: 406 994-5392
Web: <www.montana.edu/wwwwet>

Rocky Mountain Institute
1739 Snowmass Creek Road
Snowmass, CO 81654-9199
Phone: 970 927-3851
Web: <www.rmi.org>

Southern Nevada Water Authority
1001 S. Valley View Boulevard, Mailstop #440
Las Vegas, NV 89153
Phone: 702 258-3930
Web: <www.snwa.com>

Southwest Florida Water Management District
2379 Broad Street
Brooksville, FL 34604-6899
Phone: 352 796-7211 or 800 423-1476 (Florida only)
Web: <www.swfwmd.state.fl.us/watercon/xeris/swfxeris.html>

Sustainable Sources Green Building Program: Sustainable Building Source Book
E-mail: info@greenbuilder.com
Web: <www.greenbuilder.com/sourcebook/xeriscape.html>

Water Conservation Garden – San Diego County
12122 Cuyamaca College Drive West
El Cajon, CA 92019
Phone: 619 660-0614
Fax: 619 660-1687
E-mail: info@thegarden.org
Web: <www.thegarden.org/garden/xeriscape/index.html> and <www.sdcwa.org/manage/conservation-xeriscape.phtml>\

WaterWiser: The Water Efficiency Clearing House
(Operated by AWWA in cooperation with the U.S. Bureau of Reclamation)
6666 West Quincy Avenue
Denver, CO 80235
Phone: 800 559-9855
Fax: 303 794-6303
E-mail: bewiser@waterwiser.org
Web: <www.waterwiser.org>

Xeriscape Colorado!, Inc.
P.O. Box 40202
Denver, CO 80204-0202
Web: <www.xeriscape.org>

Resources

The following is a partial list of publications on resource efficient landscaping. For even more information, particularly on plants suited to your locale, consult your local library, county extension service, nursery, garden clubs, or water utility.

Ball, Ken and American Water Works Association Water Conservation Committee. *Xeriscape Programs for Water Utilities*. Denver: American Water Works Association, 1990.

Bennett, Jennifer. *Dry-Land Gardening: A Xeriscaping Guide for Dry-Summer, Cold-Winter Climates*. Buffalo: Firefly, 1998.

Bennett, Richard E. and Michael S. Hazinski. *Water-Efficient Landscape Guidelines*. Denver: American Water Works Association, 1993.

Brenzel, Kathleen N., ed. *Western Garden Book*, 2001 Edition. Menlo Park: Sunset Publishing Corporation, 2001.

City of Aurora, Colorado Utilities Department. *Landscaping for Water Conservation: Xeriscape!* Aurora: Colorado Utilities Department, 1989.

Johnson, Eric and Scott Millard. *The Low-Water Flower Gardener: 270 Unthirsty Plants for Color, Including Perennials, Ground Covers, Grasses & Shrubs*. Tucson: Ironwood Press, 1993.

Knopf, James M. *The Xeriscape Flower Gardener*. Boulder: Johnson Books, 1991.

Knopf, James M., ed. *Waterwise Landscaping with Trees, Shrubs, and Vines: A Xeriscape Guide for the Rocky Mountain Region, California, and the Desert Southwest*. Boulder: Chamisa Books, 1999.

Knox, Kim, ed. *Landscaping for Water Conservation: Xeriscape*. Denver: City of Aurora and Denver Water, 1989.

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Site Design & Landscape Planning SD-10

Design Objectives

- ☑ Maximize Infiltration
- ☑ Provide Retention
- ☑ Slow Runoff
- ☑ Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Each project site possesses unique topographic, hydrologic, and vegetative features, some of which are more suitable for development than others. Integrating and incorporating appropriate landscape planning methodologies into the project design is the most effective action that can be done to minimize surface and groundwater contamination from stormwater.

Approach

Landscape planning should couple consideration of land suitability for urban uses with consideration of community goals and projected growth. Project plan designs should conserve natural areas to the extent possible, maximize natural water storage and infiltration opportunities, and protect slopes and channels.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment.

Design Considerations

Design requirements for site design and landscapes planning should conform to applicable standards and specifications of agencies with jurisdiction and be consistent with applicable General Plan and Local Area Plan policies.

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Designing New Installations

Begin the development of a plan for the landscape unit with attention to the following general principles:

- Formulate the plan on the basis of clearly articulated community goals. Carefully identify conflicts and choices between retaining and protecting desired resources and community growth.
- Map and assess land suitability for urban uses. Include the following landscape features in the assessment: wooded land, open unwooded land, steep slopes, erosion-prone soils, foundation suitability, soil suitability for waste disposal, aquifers, aquifer recharge areas, wetlands, floodplains, surface waters, agricultural lands, and various categories of urban land use. When appropriate, the assessment can highlight outstanding local or regional resources that the community determines should be protected (e.g., a scenic area, recreational area, threatened species habitat, farmland, fish run). Mapping and assessment should recognize not only these resources but also additional areas needed for their sustenance.

Project plan designs should conserve natural areas to the extent possible, maximize natural water storage and infiltration opportunities, and protect slopes and channels.

Conserve Natural Areas during Landscape Planning

If applicable, the following items are required and must be implemented in the site layout during the subdivision design and approval process, consistent with applicable General Plan and Local Area Plan policies:

- Cluster development on least-sensitive portions of a site while leaving the remaining land in a natural undisturbed condition.
- Limit clearing and grading of native vegetation at a site to the minimum amount needed to build lots, allow access, and provide fire protection.
- Maximize trees and other vegetation at each site by planting additional vegetation, clustering tree areas, and promoting the use of native and/or drought tolerant plants.
- Promote natural vegetation by using parking lot islands and other landscaped areas.
- Preserve riparian areas and wetlands.

Maximize Natural Water Storage and Infiltration Opportunities Within the Landscape Unit

- Promote the conservation of forest cover. Building on land that is already deforested affects basin hydrology to a lesser extent than converting forested land. Loss of forest cover reduces interception storage, detention in the organic forest floor layer, and water losses by evapotranspiration, resulting in large peak runoff increases and either their negative effects or the expense of countering them with structural solutions.
- Maintain natural storage reservoirs and drainage corridors, including depressions, areas of permeable soils, swales, and intermittent streams. Develop and implement policies and

regulations to discourage the clearing, filling, and channelization of these features. Utilize them in drainage networks in preference to pipes, culverts, and engineered ditches.

- Evaluating infiltration opportunities by referring to the stormwater management manual for the jurisdiction and pay particular attention to the selection criteria for avoiding groundwater contamination, poor soils, and hydrogeological conditions that cause these facilities to fail. If necessary, locate developments with large amounts of impervious surfaces or a potential to produce relatively contaminated runoff away from groundwater recharge areas.

Protection of Slopes and Channels during Landscape Design

- Convey runoff safely from the tops of slopes.
- Avoid disturbing steep or unstable slopes.
- Avoid disturbing natural channels.
- Stabilize disturbed slopes as quickly as possible.
- Vegetate slopes with native or drought tolerant vegetation.
- Control and treat flows in landscaping and/or other controls prior to reaching existing natural drainage systems.
- Stabilize temporary and permanent channel crossings as quickly as possible, and ensure that increases in run-off velocity and frequency caused by the project do not erode the channel.
- Install energy dissipaters, such as riprap, at the outlets of new storm drains, culverts, conduits, or channels that enter unlined channels in accordance with applicable specifications to minimize erosion. Energy dissipaters shall be installed in such a way as to minimize impacts to receiving waters.
- Line on-site conveyance channels where appropriate, to reduce erosion caused by increased flow velocity due to increases in tributary impervious area. The first choice for linings should be grass or some other vegetative surface, since these materials not only reduce runoff velocities, but also provide water quality benefits from filtration and infiltration. If velocities in the channel are high enough to erode grass or other vegetative linings, riprap, concrete, soil cement, or geo-grid stabilization are other alternatives.
- Consider other design principles that are comparable and equally effective.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Redevelopment may present significant opportunity to add features which had not previously been implemented. Examples include incorporation of depressions, areas of permeable soils, and swales in newly redeveloped areas. While some site constraints may exist due to the status of already existing infrastructure, opportunities should not be missed to maximize infiltration, slow runoff, reduce impervious areas, disconnect directly connected impervious areas.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Stormwater Management Manual for Western Washington, Washington State Department of Ecology, August 2001.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Efficient Irrigation SD-12

Design Objectives

- ☑ Maximize Infiltration
- ☑ Provide Retention
- ☑ Slow Runoff
- Minimize Impervious Land Coverage
- Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Irrigation water provided to landscaped areas may result in excess irrigation water being conveyed into stormwater drainage systems.

Approach

Project plan designs for development and redevelopment should include application methods of irrigation water that minimize runoff of excess irrigation water into the stormwater conveyance system.

Suitable Applications

Appropriate applications include residential, commercial and industrial areas planned for development or redevelopment. (Detached residential single-family homes are typically excluded from this requirement.)

Design Considerations

Designing New Installations

The following methods to reduce excessive irrigation runoff should be considered, and incorporated and implemented where determined applicable and feasible by the Permittee:

- Employ rain-triggered shutoff devices to prevent irrigation after precipitation.
- Design irrigation systems to each landscape area's specific water requirements.
- Include design featuring flow reducers or shutoff valves triggered by a pressure drop to control water loss in the event of broken sprinkler heads or lines.
- Implement landscape plans consistent with County or City water conservation resolutions, which may include provision of water sensors, programmable irrigation times (for short cycles), etc.

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- Design timing and application methods of irrigation water to minimize the runoff of excess irrigation water into the storm water drainage system.
- Group plants with similar water requirements in order to reduce excess irrigation runoff and promote surface filtration. Choose plants with low irrigation requirements (for example, native or drought tolerant species). Consider design features such as:
  - Using mulches (such as wood chips or bar) in planter areas without ground cover to minimize sediment in runoff
  - Installing appropriate plant materials for the location, in accordance with amount of sunlight and climate, and use native plant materials where possible and/or as recommended by the landscape architect
  - Leaving a vegetative barrier along the property boundary and interior watercourses, to act as a pollutant filter, where appropriate and feasible
  - Choosing plants that minimize or eliminate the use of fertilizer or pesticides to sustain growth
- Employ other comparable, equally effective methods to reduce irrigation water runoff.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. The definition of " redevelopment" must be consulted to determine whether or not the requirements for new development apply to areas intended for redevelopment. If the definition applies, the steps outlined under "designing new installations" above should be followed.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

Storm Drain Signage SD-13

Design Objectives

- Maximize Infiltration
- Provide Retention
- Slow Runoff
- Minimize Impervious Land Coverage
- ☑ Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Waste materials dumped into storm drain inlets can have severe impacts on receiving and ground waters. Posting notices regarding discharge prohibitions at storm drain inlets can prevent waste dumping. Storm drain signs and stencils are highly visible source controls that are typically placed directly adjacent to storm drain inlets.

Approach

The stencil or affixed sign contains a brief statement that prohibits dumping of improper materials into the urban runoff conveyance system. Storm drain messages have become a popular method of alerting the public about the effects of and the prohibitions against waste disposal.

Suitable Applications

Stencils and signs alert the public to the destination of pollutants discharged to the storm drain. Signs are appropriate in residential, commercial, and industrial areas, as well as any other area where contributions or dumping to storm drains is likely.

Design Considerations

Storm drain message markers or placards are recommended at all storm drain inlets within the boundary of a development project. The marker should be placed in clear sight facing toward anyone approaching the inlet from either side. All storm drain inlet locations should be identified on the development site map.

Designing New Installations

The following methods should be considered for inclusion in the project design and show on project plans:

- Provide stenciling or labeling of all storm drain inlets and catch basins, constructed or modified, within the project area with prohibitive language. Examples include "NO DUMPING

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– DRAINS TO OCEAN" and/or other graphical icons to discourage illegal dumping.

- Post signs with prohibitive language and/or graphical icons, which prohibit illegal dumping at public access points along channels and creeks within the project area.

Note - Some local agencies have approved specific signage and/or storm drain message placards for use. Consult local agency stormwater staff to determine specific requirements for placard types and methods of application.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. If the project meets the definition of "redevelopment", then the requirements stated under " designing new installations" above should be included in all project design plans.

Additional Information

Maintenance Considerations

- Legibility of markers and signs should be maintained. If required by the agency with jurisdiction over the project, the owner/operator or homeowner's association should enter into a maintenance agreement with the agency or record a deed restriction upon the property title to maintain the legibility of placards or signs.

Placement

- Signage on top of curbs tends to weather and fade.

- Signage on face of curbs tends to be worn by contact with vehicle tires and sweeper brooms.

Supplemental Information

Examples

- Most MS4 programs have storm drain signage programs. Some MS4 programs will provide stencils, or arrange for volunteers to stencil storm drains as part of their outreach program.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

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