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MATTHEW RODRIGUEZ
SECRETARY FOR
ENVIRONMENTAL PROTECTION

State Water Resources Control Board

UST CASE CLOSURE SUMMARY

Agency Information

Agency Name: Los Angeles Regional Water Quality Control Board (Region Water Board)	Address: 320 West 4 th Street, Suite 200-1 st Floor Los Angeles, CA 90013
Agency Caseworker: Mr. Gregg Kwey	Case No.: 908150034

Case Information

USTCF Claim No.: 14679	Global ID: T0603701979
Site Name: Los Altos Car Wash	Address: 5470 Stearns Street Long Beach, CA 90815 Los Angeles County (Site)
Petitioner: Dr. Edward Cruchley	Address: 6121 Mauer Avenue Carmichael, CA 95608
USTCF Expenditures to Date: \$1,253,061	Number of Years Case Open: 25

URL: http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0603701979

Summary

The Low-Threat Underground Storage Tank Case Closure Policy (Policy) contains general and media-specific criteria, and cases that meet those criteria are appropriate for closure pursuant to the Policy. This Site meets all of the required criteria of the Policy. A summary evaluation of compliance with the Policy is shown in **Attachment 1: Compliance with State Water Board Policies and State Law**. The Conceptual Site Model upon which the evaluation of the case has been made is described in **Attachment 2: Summary of Basic Site Information**. Highlights of the Conceptual Site Model are summarized as follows.

The release at the Site was discovered in April 1988. Three underground storage tanks (USTs) were removed in February 1995. The Site currently operates as a commercial car wash with a convenience store. No USTs remain onsite. Remediation by dual phase extraction (DPE) was active from November 2007 to present. DPE removed approximately 5,139 pounds of gasoline in vapor and treated approximately 2,123,189 gallons of groundwater. The Site is currently under verification monitoring.

There are two water-bearing zones at the Site. The groundwater flow direction for both zones is southwesterly. The petroleum release is limited to soil to a depth of approximately 25 feet below ground surface (bgs). The nearest surface water body is the Pacific Ocean located over 13,000 feet south of the Site. The nearest public supply wells regulated by the California Department of Public Health are located over 2,000 feet northwest of the Site. Public water is supplied by the Metropolitan District of Southern California. The affected groundwater is not currently being used as a source of drinking water or any other designated beneficial use, and it is highly unlikely that the affected

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groundwater will be used as a source of drinking water or any other beneficial use in the foreseeable future. Public supply wells are usually constructed with competent sanitary seals. Production intervals are in deeper protected aquifers. Remaining petroleum constituents are limited, stable, and declining. Remedial actions have been implemented and additional corrective action would be ineffective and expensive. Additional assessment/monitoring will not likely change the conceptual model. Remaining petroleum constituents do not pose significant risk to human health, safety, or the environment.

Rationale for Closure under the Policy

- General Criteria – Site **MEETS ALL EIGHT GENERAL CRITERIA** under the Policy.
- Groundwater Media-Specific Criteria – Site meets the criterion in **CLASS 2**. The contaminant plume that exceeds water quality objectives is less than 250 feet in length. There is no free product. The nearest existing water supply well or surface water body is greater than 1,000 feet from the defined plume boundary. The dissolved concentration of benzene is less than 3,000 micrograms per liter ($\mu\text{g/L}$), and the dissolved concentration of MTBE is less than 1,000 $\mu\text{g/L}$.
- Petroleum Vapor Intrusion to Indoor Air – Site meets **CRITERIA (2) b**. A Site-specific risk assessment for the vapor intrusion pathway was conducted and demonstrates that human health is protected.
- Direct Contact and Outdoor Air Exposure – Site meets **CRITERIA (3) b**. A Site-specific risk assessment from exposure shows that maximum concentrations of petroleum constituents in soil will have no significant risk of adversely affecting human health.

Objections to Closure

Regional Board staff objected to UST case closure because:

1. The site is currently in active remediation phase and there is insufficient post-remediation monitoring to evaluate the effectiveness of natural attenuation as a means to remediate the residual contamination after the active cleanup at the site. Additional groundwater monitoring is necessary to demonstrate whether natural attenuation is occurring.
RESPONSE: According to GeoTracker, the Site is currently under verification monitoring. Stable to decreasing groundwater concentration trends for MTBE and benzene demonstrates that Water Quality Objectives (WQOs) will be attained through natural attenuation within a reasonable time. Additional groundwater monitoring is not necessary.
2. Groundwater monitoring data do not indicate a strongly decreasing trend or plume stability. There were significant increases of most gasoline constituents in groundwater samples collected from monitoring wells MW-1 to MW-5 during July 2012 monitoring event.
RESPONSE: Groundwater monitoring data collected between 2000 and 2012 in all wells indicate decreasing or stable trends for MTBE and BTEX in all wells. Data collected in the downgradient wells to the southwest of the former USTs indicate concentrations below WQOs since 2006. The plume appears to be stable and less than 210 feet in length.
3. The abovementioned facts of the increasing trends in MW-1 to MW-5 indicate the potential source contributing to the identified groundwater contamination has not been successfully remediated.

Los Altos Car Wash
5470 Stearns Street, Long Beach

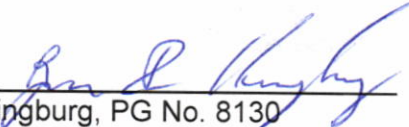
RESPONSE: Soil borings from 2009 to 2011 show the top 10 feet of soil contain low concentrations of gasoline constituents. Residual soil contamination remains between 10 to 30 feet bgs. Remediation by DPE removed approximately 5,139 pounds of gasoline in vapor and treated approximately 2,123,189 gallons of groundwater through February 2013. Remaining soil and groundwater contamination poses low-threat to human health. Therefore, additional remediation is not necessary.

Recommendation for Closure

The corrective action performed at this Site ensures the protection of human health, safety, the environment and is consistent with chapter 6.7 of the Health and Safety Code and implementing regulations, applicable state policies for water quality control and the applicable water quality control plan, and case closure is recommended.

Prepared By: 
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Water Resource Control Engineer

7/12/13
Date

Reviewed By: 
Benjamin Heningburg, PG No. 8130
Senior Engineering Geologist

7/12/13
Date

ATTACHMENT 1: COMPLIANCE WITH STATE WATER BOARD POLICIES AND STATE LAW

The Site complies with State Water Resources Control Board policies and state law. Section 25296.10 of the Health and Safety Code requires that Sites be cleaned up to protect human health, safety, and the environment. Based on available information, any residual petroleum constituents at the Site do not pose significant risk to human health, safety, or the environment.

The Site complies with the requirements of the Low-Threat Underground Storage Tank (UST) Case Closure Policy as described below.¹

<p>Is corrective action consistent with Chapter 6.7 of the Health and Safety Code and implementing regulations? The corrective action provisions contained in Chapter 6.7 of the Health and Safety Code and the implementing regulations govern the entire corrective action process at leaking UST sites. If it is determined, at any stage in the corrective action process, that UST case closure is appropriate, further compliance with corrective action requirements is not necessary. Corrective action at this Site has been consistent with Chapter 6.7 of the Health and Safety Code and implementing regulations and, since this case meets applicable case-closure requirements, further corrective action is not necessary, unless the activity is necessary for case closure.</p>	<p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
<p>Have waste discharge requirements or any other orders issued pursuant to Division 7 of the Water Code been issued at this Site?</p>	<p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>
<p>If so, was the corrective action performed consistent with any order?</p>	<p><input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA</p>
<p><u>General Criteria</u> General criteria that must be satisfied by all candidate sites:</p> <p>Is the unauthorized release located within the service area of a public water system?</p> <p>Does the unauthorized release consist only of petroleum?</p> <p>Has the unauthorized (“primary”) release from the UST system been stopped?</p> <p>Has free product been removed to the maximum extent practicable?</p> <p>Has a conceptual site model that assesses the nature, extent, and mobility of the release been developed?</p> <p>Has secondary source been removed to the extent practicable?</p>	<p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA</p> <p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>

¹ Refer to the Low-Threat Underground Storage Tank Case Closure Policy for closure criteria for low-threat petroleum UST sites.

<p>Has soil or groundwater been tested for MTBE and results reported in accordance with Health and Safety Code, Section 25296.15?</p> <p>Does nuisance as defined by Water Code, section 13050 exist at the Site?</p> <p>Are there unique Site attributes or Site-specific conditions that demonstrably increase the risk associated with residual petroleum constituents?</p>	<p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>
<p><u>Media-Specific Criteria</u> Candidate sites must satisfy all three of these media-specific criteria:</p> <p>1. Groundwater: To satisfy the media-specific criteria for groundwater, the contaminant plume that exceeds water quality objectives must be stable or decreasing in areal extent, and meet all of the additional characteristics of one of the five classes of sites:</p> <p>Is the contaminant plume that exceeds water quality objectives stable or decreasing in areal extent?</p> <p>Does the contaminant plume that exceeds water quality objectives meet all of the additional characteristics of one of the five classes of sites? If YES, check applicable class: <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5</p> <p>For sites with releases that have not affected groundwater, do mobile constituents (leachate, vapors, or light non-aqueous phase liquids) contain sufficient mobile constituents to cause groundwater to exceed the groundwater criteria?</p>	<p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA</p> <p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA</p>
<p>2. Petroleum Vapor Intrusion to Indoor Air: The Site is considered low-threat for vapor intrusion to indoor air if Site-specific conditions satisfy all of the characteristics of one of the three classes of sites (a through c) or if the exception for active commercial fueling facilities applies.</p> <p>Is the Site an active commercial petroleum fueling facility? Exception: Satisfaction of the media-specific criteria for petroleum vapor intrusion to indoor air is not required at active commercial petroleum fueling facilities, except in cases where release characteristics can be reasonably believed to pose an unacceptable health risk.</p> <p>a. Do Site-specific conditions at the release Site satisfy all of the applicable characteristics and criteria of scenarios 1 through 3 or all of the applicable characteristics and criteria of scenario 4? If YES, check applicable scenarios: <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4</p> <p>b. Has a Site-specific risk assessment for the vapor intrusion pathway been conducted and demonstrates that human health is protected to the satisfaction of the regulatory agency?</p>	<p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA</p> <p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA</p>

<p>c. As a result of controlling exposure through the use of mitigation measures or through the use of institutional or engineering controls, has the regulatory agency determined that petroleum vapors migrating from soil or groundwater will have no significant risk of adversely affecting human health?</p>	<p><input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA</p>
<p>3. Direct Contact and Outdoor Air Exposure: The Site is considered low-threat for direct contact and outdoor air exposure if Site-specific conditions satisfy one of the three classes of sites (a through c).</p> <p>a. Are maximum concentrations of petroleum constituents in soil less than or equal to those listed in Table 1 for the specified depth below ground surface (bgs)?</p> <p>b. Are maximum concentrations of petroleum constituents in soil less than levels that a Site-specific risk assessment demonstrates will have no significant risk of adversely affecting human health?</p> <p>c. As a result of controlling exposure through the use of mitigation measures or through the use of institutional or engineering controls, has the regulatory agency determined that the concentrations of petroleum constituents in soil will have no significant risk of adversely affecting human health?</p>	<p><input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA</p> <p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA</p>

ATTACHMENT 2: SUMMARY OF BASIC INFORMATION (Conceptual Site Model)

Site Location/History

- Location: The Site is located at the intersection of Stearns Street and Bellflower Boulevard in Long Beach. The Site is operating as a commercial car wash with a convenience store.
- Surrounding Land Usage: The Site is bounded by commercial and residential properties.
- Nature of Contaminants of Concern: Petroleum hydrocarbons only.
- Primary Source of Release: UST system.
- Discovery Date: 1988.
- Release Type: Petroleum².
- Investigation: Twenty monitoring wells have been installed.
- Free Product: None reported.

Table A: USTs

Tank No.	Size	Contents	Status	Date
1	5,000-gallon	Gasoline	Removed	1995
2	7,500-gallon	Gasoline	Removed	1995
3	7,500-gallon	Gasoline	Removed	1995

Receptors

- Groundwater Basin: Coastal Plain of Los Angeles.
- Groundwater Beneficial Uses: Municipal and domestic water supply (MUN), agricultural supply (AGR), industrial service supply (IND), and industrial process supply (PROC).
- Designated Land Use: General Commercial (GC).
- Public Water System: Metropolitan Water District of Southern California.
- Distance to Nearest Supply Wells: Supply well is greater than 1,000 feet northwest.
- Distance to Nearest Surface Waters: Pacific Ocean is located greater than 1,000 feet south.

Geology/Hydrogeology

- Average Groundwater Depth: ~15 feet bgs.
- Minimum Groundwater Depth: ~10 feet bgs.
- Groundwater Flow Direction: Southwesterly.
- Geology: The Site is generally underlain by thickly bedded layers of silts and clays beginning three feet bgs. A layer of silty sands at approximately 10 to 20 feet bgs. A second layer of interbedded sands begin at approximately 30 feet bgs and observed to a depth of 50 feet.
- Hydrology: The Site consists of two water-bearing zones. The nearest surface water body is the Pacific Ocean located over 13,000 south of the Site.

² "Petroleum" means crude oil, or any fraction thereof, which is liquid at standard conditions of temperature and pressure, which means at 60 degrees Fahrenheit and 14.7 pounds per square inch absolute.
(Health & Safety Code, § 25299.2)

Corrective Actions

- Five USTs were removed in 1995.
- Dual Phase Extraction (DPE) was active from November 2007 to present and has reached asymptotic limits.

Table B: Concentrations of Petroleum Constituents in Soil

Constituent	Maximum 0-5 ft. bgs (mg/kg)	Maximum 5-10 ft. bgs (mg/kg)
Benzene	<0.143	13.535
Ethylbenzene	<0.282	25.715
Naphthalene	Not Analyzed	Not Analyzed
PAHs*	Not Analyzed	Not Analyzed

*Poly-aromatic hydrocarbons as benzo(a)pyrene toxicity equivalent

Table C: Concentrations of Petroleum Constituents of Concern in Groundwater

Sample	Sample Date	TPHg (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	TBA (µg/L)
MW-1	12/11/12	1,764	311.3	10.8	<0.5	67.2	<1.0	<10.0
MW-2	12/11/12	145	21.0	<0.5	<0.5	1.4	<1.0	<10.0
MW-3	12/11/12	4,793	2,640	13.4	34.1	7.9	<1.0	376.1
MW-4	12/11/12	285	22.1	1.8	10.3	4.8	<1.0	<10.0
MW-5	12/11/12	5,757	194.2	32.2	67.6	74.7	<1.0	<10.0
MW-6	12/11/12	281	28	1.3	<0.5	<0.5	<1.0	<10.0
MW-7D	12/11/12	<100	<0.5	<0.5	<0.5	<0.5	<1.0	<10.0
MW-8S	12/11/12	<100	<0.5	<0.5	<0.5	<0.5	<1.0	<10.0
MW-8D	12/11/12	<100	<0.5	<0.5	<0.5	<0.5	<1.0	<10.0
MW-9S	12/11/12	<100	<0.5	<0.5	<0.5	<0.5	<1.0	<10.0
MW-9D	12/11/12	<100	<0.5	<0.5	<0.5	<0.5	<1.0	<10.0
MW-10S	12/11/12	<100	<0.5	<0.5	<0.5	<0.5	<1.0	<10.0
MW-10D	12/11/12	<100	<0.5	<0.5	<0.5	<0.5	<1.0	<10.0
MW-11S	12/11/12	261	4.5	1.0	1.4	1.1	<1.0	<10.0
MW-11D	12/11/12	1,801	157.4	1.5	<0.5	<0.5	<1.0	<10.0
MW-12	12/11/12	<100	<0.5	<0.5	<0.5	<0.5	<1.0	<10.0
MW-13S	12/11/12	<100	<0.5	<0.5	<0.5	<0.5	<1.0	<10.0
MW-13D	12/11/12	<100	<0.5	<0.5	<0.5	<0.5	<1.0	<10.0
MW-14S	12/11/12	<100	<0.5	<0.5	<0.5	<0.5	<1.0	<10.0
MW-14D	12/11/12	<100	<0.5	<0.5	<0.5	<0.5	<1.0	<10.0
WQOs	-	-	1.0	150	300	1,750	5.0	12*

WQOs - Water Quality Objectives

Bold = above WQOs

ppb = parts per billion

TPHg = Total Petroleum Hydrocarbons quantified as gasoline

TPHd = Total Petroleum Hydrocarbons quantified as diesel

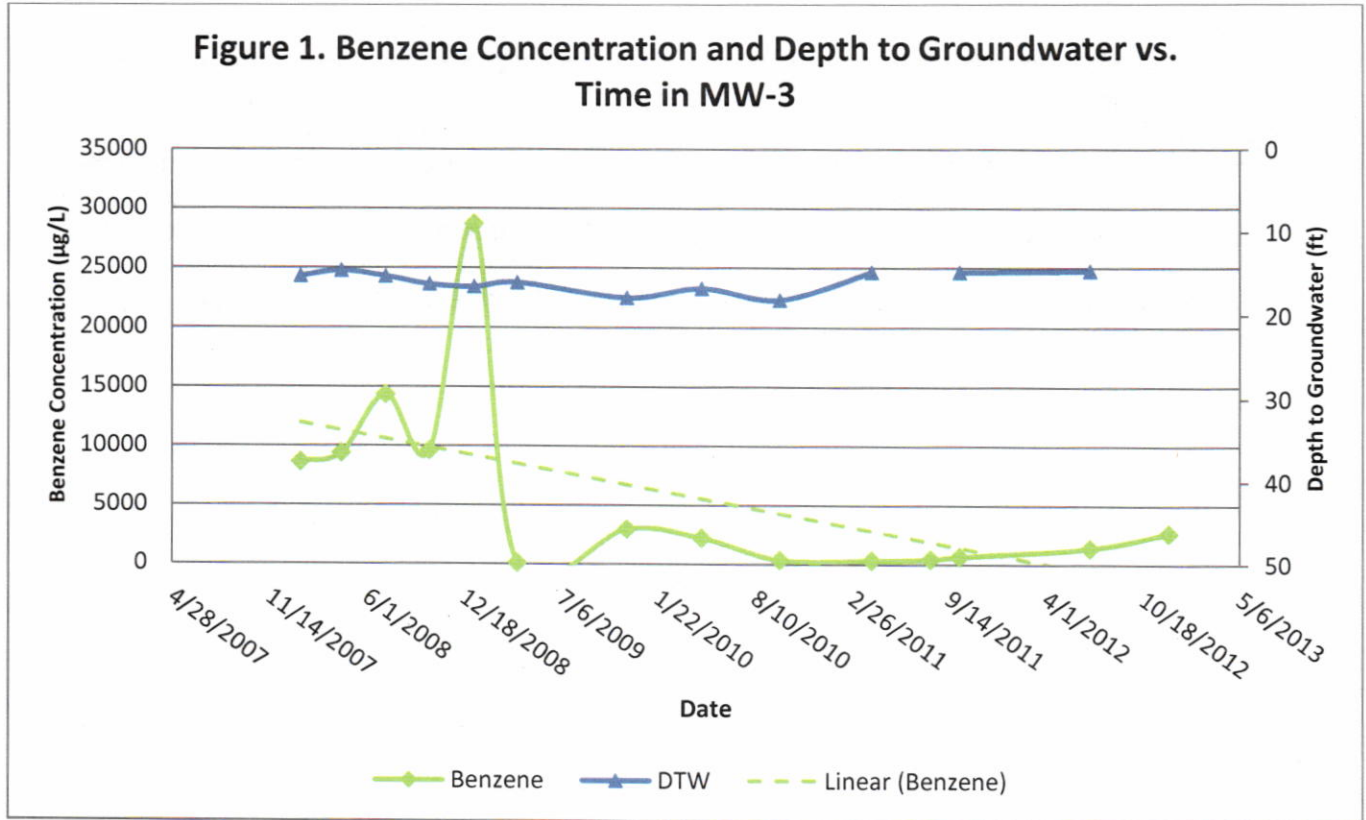
MTBE = methyl tert-Butyl ether

< = less than the indicated reporting limit

* California Department of Public Health Notification Level

Groundwater Trends:

Reported concentrations of benzene at the Site have demonstrated stable or decreasing trends over time since 2008.



Evaluation of Risk Criteria

- Maximum Petroleum Constituent Plume Length above WQOs: Benzene in groundwater plume is ~140 feet in length.
- Petroleum Constituent Plume Determined Stable or Decreasing: Yes.
- Soil/Groundwater Sampled for MTBE: Yes, see Table C above.
- Residual Petroleum Constituents Pose Significant Risk to the Environment: No.
 Residual Petroleum Constituents Pose Significant Vapor Intrusion Risk to Human Health: No - Site meets criteria (2) b. A Site-specific risk assessment for the vapor intrusion pathway was conducted and demonstrates that human health is protected.

Groundwater data collected during 2012 indicates elevated benzene concentration in MW-3. However, MW-3 is not located directly underneath the building at the Site, groundwater concentration trend for benzene is decreasing in this well, and the bioattenuation zone is approximately 15 feet. Therefore, the residual constituents in soil and groundwater are acceptable because Site conditions are protective of human health.

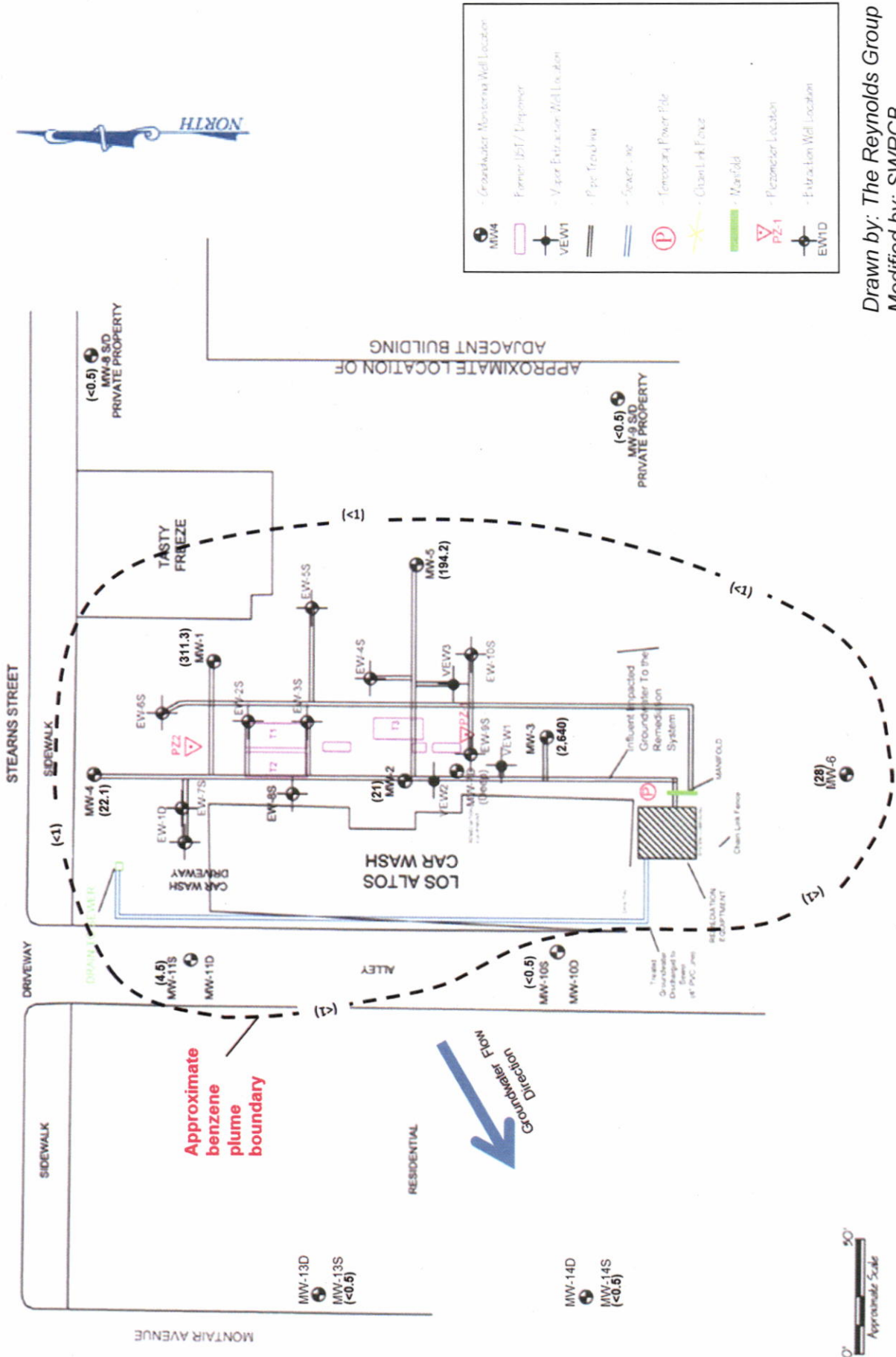
Los Altos Car Wash
5470 Stearns Street, Long Beach

- Residual Petroleum Constituents Pose a Nuisance³ at the Site: No.
- Residual Petroleum Constituents in Soil Pose Significant Risk of Adversely Affecting Human Health: No.
- Residual Petroleum Constituents Pose Significant Direct Contact and Outdoor Air Exposure to Human Health: No – Site meets criteria (3) b. A Site-specific risk assessment from exposure shows that maximum concentrations of petroleum constituents in soil will have no significant risk of adversely affecting human health. There are no soil samples results in the case record for naphthalene. However, the relative concentration of naphthalene in soil can be conservatively estimated using the published relative concentrations of naphthalene and benzene in gasoline. Taken from Potter and Simmons (1998), gasoline mixtures contain approximately 2% benzene and 0.25% naphthalene. Therefore, benzene concentrations can be directly substituted for naphthalene concentrations with a safety factor of eight. Benzene concentrations from the Site are below the naphthalene thresholds in Table 1 of the Policy. Therefore, estimated naphthalene concentrations meet the thresholds in Table 1 and the Policy criteria for direct contact by a factor of eight. It is highly unlikely that naphthalene concentrations in the soil, if any, exceed the threshold.

³ Nuisance as defined in California Water Code, section 13050, subdivision (m).

Los Altos Car Wash
5470 Stearns Street, Long Beach

Figure 2. Site Map



Drawn by: The Reynolds Group
Modified by: SWRCB