State Water Resources Control Board

UST CASE CLOSURE REVIEW SUMMARY REPORT

Agency Information

Agency Name: Los Angeles Regional Water Quality Control Board (Regional Water Board)	Address: 320 West 4th Street, Suite 200 Los Angeles, CA 90013
Agency Caseworker: Noman Chowdhury	Case No.: I-05838

Case Information

USTCF Claim No.: 6140	Global ID: T0603703115
Site Name: Texaco	Site Address: 10810 La Mirada Blvd., Whittier, CA 90604
Responsible Party: Shell Oil Products US, Attn: Andrea Wing	Address: 20945 S. Wilmington Ave., Carson, CA 90810
USTCF Expenditures to Date: $1,221,309	Number of Years Case Open: 31

URL: http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T060303703115

Summary

The Low-Threat Underground Storage Tank (UST) 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 case 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 Case Information (Conceptual Site Model).** Highlights of the case follow:

The Site is a former Texaco gas station that is now a commercial strip mall in Whittier. An unauthorized release was reported in October 1982, followed by the removal of four gasoline USTs and dispenser lines in November 1982. A separate waste oil tank was removed from the Site in April 1987. Free product removal was conducted between 1982 and 1989, approximately 700 gallons of free product was removed. There has been no free product reported since 2005. Approximately 80 tons of soil were excavated and transported offsite in 1982, followed by a second excavation with an unknown volume of contaminated soil in 1987. Soil vapor extraction and air sparging were conducted between December 1993 and October 1994, which removed 5,275 pounds of total petroleum hydrocarbons as gasoline (TPHg). Additionally, in 2008 a sub-slab vapor barrier was installed by Raycon Environmental at the request of the property owner. Since 1991, 15 monitoring wells have been installed and monitored, though six wells were abandoned in 1996. According to groundwater data, water quality objectives have been achieved or nearly achieved for all constituents in downgradient monitoring wells.

The petroleum release is limited to the soil and shallow groundwater. According to data available in GeoTracker, there are no California Department of Public Health regulated supply wells within 1,000 feet of the defined plume boundary. No other water supply wells have been identified within 1,000 feet of the defined plume boundary in files reviewed. Leffington Creek is 850 feet north-northwest (downgradient) of the Site. Water is provided to water users near the Site by the Whittier Water Department. The affected groundwater is not currently being used as a source of drinking water, and it is highly unlikely that the affected groundwater will be used as a source of drinking water in the foreseeable future. Other designated beneficial uses of impacted groundwater are not threatened and it is highly unlikely that they will be, considering these factors in the context of the site setting. Remaining petroleum hydrocarbon constituents are limited and stable, and concentrations are decreasing. Corrective actions have been implemented and additional corrective actions are not necessary. Any remaining petroleum hydrocarbon constituents do not pose a significant risk to human health, safety or the environment.

Rationale for Closure under the Policy

- General Criteria: The case meets all eight Policy general criteria.
- Groundwater Risk from Residual Petroleum Hydrocarbons: The case meets Policy Criterion 1 by Class 5. The regulatory agency determines, based on an analysis of site specific conditions, which under current and reasonably anticipated near-term future scenarios, the contaminant plume poses a low threat to human health and safety and to the environment and water quality objectives will be achieved within a reasonable time frame. No water supply wells were identified within 1,000 feet of the defined plume boundary. Leffington Creek, a concrete lined storm water control channel, is approximately 850 feet from the defined plume boundary. The concrete lined channel only contains water intermittently following rainfall events. In addition, the average depth to groundwater is approximately 14 feet below ground surface (bgs) so there is minimal potential that groundwater could infiltrate into the channel. Furthermore, the most downgradient well, W-12, which has not contained fuel hydrocarbons since 2009, is located over 700 feet downgradient from the channel. This demonstrates the remaining groundwater plume is stable, decreasing in size, and there is no potential for the remaining onsite contamination to migrate to the storm water control channel.
- Indoor Vapor Risk from Residual Petroleum Hydrocarbons: This case meets Policy Criterion 2b. A site-specific risk assessment of potential exposure to petroleum constituents as a result of vapor intrusion [*Delta Environmental Consultants, 2007*] found that maximum concentrations of petroleum constituents remaining in soil and groundwater will have no significant risk of adversely affecting human health.
- Direct Contact Risk from Residual Petroleum Hydrocarbons: The case meets Policy Criterion 3a. Maximum concentrations in soil are less than those in Policy Table 1 for Commercial/Industrial land use and the concentration limits for a Utility Worker are not exceeded. There are no soil sample 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 percent benzene and 0.25 percent naphthalene. Therefore, benzene can be directly substituted for naphthalene concentrations with a safety factor of eight. Benzene concentrations from the Site are below the naphthalene thresholds in Policy Table 1. Therefore, the 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.

Objections to Closure and Responses
By their 09-42 Case Review page on Geotracker, the Regional Water Board objects to UST case closure because the hydrocarbon concentrations in groundwater exceed water quality objectives.
RESPONSE: Elevated hydrocarbon concentrations are localized on site, and downgradient wells meet water quality objectives. The case meets all Policy criteria. The Policy does not require that water quality objectives are achieved.

Determination
Based on the review performed in accordance with Health & Safety Code Section 25299.39.2 subdivision (a), the Fund Manager has determined that closure of the case is appropriate.

Recommendation for Closure
Based on available information, residual petroleum hydrocarbons at the Site do not pose a significant risk to human health, safety, or the environment, and the case meets the requirements of the Policy. Accordingly, the Fund Manager recommends that the case be closed. The State Water Board is conducting public notification as required by the Policy. Los Angeles County has the regulatory responsibility to supervise the abandonment of monitoring wells.

Lisa Babcock — 9/29/13

Lisa Babcock, P.G. 3939, C.E.G. 1235 — **Date**

Prepared by: Kenyatta Dumisani

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

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

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 site 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.	☒ Yes ☐ No
Have waste discharge requirements or any other orders issued pursuant to Division 7 of the Water Code been issued at this case?	☐ Yes ☒ No
If so, was the corrective action performed consistent with any order?	☐ Yes ☐ No ☒ NA
<u>General Criteria</u> General criteria that must be satisfied by all candidate sites:	
Is the unauthorized release located within the service area of a public water system?	☒ Yes ☐ No
Does the unauthorized release consist only of petroleum?	☒ Yes ☐ No
Has the unauthorized ("primary") release from the UST system been stopped?	☒ Yes ☐ No
Has free product been removed to the maximum extent practicable?	☒ Yes ☐ No ☐ NA

[1] Refer to the Low-Threat Underground Storage Tank Case Closure Policy for closure criteria for low-threat petroleum UST sites.
http://www.waterboards.ca.gov/board_decisions/adopted_orders/resolutions/2012/rs2012_0016atta.pdf

Has a conceptual site model that assesses the nature, extent, and mobility of the release been developed?	☒ Yes ☐ No
Has secondary source been removed to the extent practicable?	☒ Yes ☐ No
Has soil or groundwater been tested for MTBE and results reported in accordance with Health and Safety Code Section 25296.15?	☒ Yes ☐ No
Nuisance as defined by Water Code section 13050 does not exist at the Site?	☒ Yes ☐ No
Are there unique site attributes or site-specific conditions that demonstrably increase the risk associated with residual petroleum constituents?	☐ Yes ☒ No
Media-Specific Criteria Candidate sites must satisfy all three of these media-specific criteria: **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:	
Is the contaminant plume that exceeds water quality objectives stable or decreasing in areal extent?	☒ Yes ☐ No ☐ NA
Does the contaminant plume that exceeds water quality objectives meet all of the additional characteristics of one of the five classes of sites?	☒ Yes ☐ No ☐ NA
If YES, check applicable class: ☐ **1** ☐ **2** ☐ **3** ☐ **4** ☒ **5**	
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?	☐ Yes ☐ No ☒ NA
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.	
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.	☐ Yes ☒ No
a. Do site-specific conditions at the release site satisfy all of the applicable characteristics and criteria of scenarios 1 through 3 or all	☐Yes ☐ No ☒ NA

of the applicable characteristics and criteria of scenario 4? If YES, check applicable scenarios: ☐ **1** ☐ **2** ☐ **3** ☐ **4**	
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?	☒ Yes ☐ No ☐ NA
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?	☒ Yes ☐ No ☐ NA
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).	
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)?	☒ Yes ☐ No ☐ NA
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?	☐ Yes ☐ No ☒ NA
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?	☒ Yes ☐ No ☐ NA

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

Site Location/History

- This Site is a former Texaco fueling station, located on the southeast corner of La Mirada Boulevard and Mulberry Drive in Whittier and is an occupied commercial building.
- The Site is bounded by a commercial petroleum fueling facility across La Mirada Boulevard to the west, an empty lot and parking lot across Mulberry Drive to the north, and residences directly south and east of the Site.
- Site maps showing the location of the former USTs, monitoring wells, groundwater level contours, and benzene concentration contours are provided at the end of this closure review summary (modified from: Conestoga-Rovers & Associates, 2013).
- Nature of Contaminants of Concern: Petroleum hydrocarbons only.
- Source: UST system.
- Date reported: October 1982.
- Status of Release: USTs removed.
- Free Product: First observed in 1982, none reported since 2005.

Tank Information

Tank No.	Size in Gallons	Contents	Closed in Place/ Removed/Active	Date
1-4	6,000	Gasoline	Removed	November 1982
5	550	Waste Oil	Removed	April 1987

Receptors

- GW Basin: Coastal Plain of Los Angeles - Central.
- Beneficial Uses: The Regional Water Board Basin Plan list municipal and domestic supply.
- Land Use Designation: Aerial photograph available on GeoTracker indicates land use is mixed residential and commercial in the vicinity of the Site.
- Public Water System: Suburban Water Systems-La Mirada.
- Water District: Municipal Water District of Southern California.
- Distance to Nearest Supply Well: According to data available in GeoTracker, there are no public supply wells regulated by California Department of Public Health within 1,000 feet of the defined plume boundary in the files reviewed. No other water supply wells were identified within 1,000 feet of the defined plume boundary in the files reviewed.
- Distance to Nearest Surface Water: Leffingwell Creek is 850 feet north-northwest (downgradient) of the Site.

Geology/Hydrogeology

- Stratigraphy: The Site is underlain by interbedded and intermixed sand and silty clays.
- Maximum Sample Depth: 35 feet below ground surface (bgs).
- Minimum Groundwater Depth: 9.57 feet bgs at monitoring well W-15.
- Maximum Groundwater Depth: 15.78 feet bgs at monitoring well W-13.
- Current Average Depth to Groundwater: Approximately 14 feet bgs.
- Saturated Zones(s) Studied: Approximately 10 – 35 feet bgs.
- Appropriate Screen Interval: Yes.
- Groundwater Flow Direction: North-northwest with an average gradient of 0.016 feet/foot (November 2012).

Monitoring Well Information

Well Designation	Date Installed	Screen Interval (feet bgs)	Depth to Water (feet bgs) (11/30/12)
W-1	November 1991	unknown - 35	Abandoned 1996
W-2	November 1991	unknown - 35	Abandoned 1996
W-3	November 1991	unknown - 35	Abandoned 1996
W-4	November 1991	unknown - 35	Abandoned 1996
W-5	November 1991	unknown - 35	Abandoned 1996
W-6	November 1991	unknown - 35	Abandoned 1996
W-7	November 1991	unknown - 35	14.52
W-9	August 2002	5 - 35	14.82
W-10	August 2002	5 - 35	13.21
W-11	August 2002	5 - 35	12.73
W-12	August 2002	5 - 35	15.32
W-13	August 2002	5 - 35	15.03
W-14	August 2002	unknown - 35	14.28
W-15	March 2005	5 - 25	13.52
W-16	March 2005	5 - 25	14.42

Remediation Summary

- Free Product: Free product was first observed in 1982. Free product removal was conducted between October 1982 and September 1989, which removed 700 gallons of free product. No free product noted since 2005.
- Soil Excavation: Approximately 80 tons of contaminated soil was removed and disposed of offsite in 1982. In addition, an unknown volume was excavated during waste oil tank removal in 1987. The total depth of the excavation was 10 feet bgs.
- In-Situ Soil/Groundwater Remediation: Soil vapor extraction and air sparging were conducted between December 1993 and October 1994, which reportedly removed 5,275 pounds of TPHg.

Most Recent Concentrations of Petroleum Constituents in Soil

Constituent	Maximum 0-5 feet bgs [mg/kg (date)] [A]	Maximum 5-10 feet bgs [mg/kg (date)] [A]
Benzene	0.1 (03/09/07)	17 (03/15/05)
Ethylbenzene	0.5 (03/09/07)	18 (03/15/05)
Naphthalene	NA	NA
PAHs	NA	NA

NA: Not Analyzed, Not Applicable or Data Not Available
mg/kg: Milligrams per kilogram, parts per million
<: Not detected at or above stated reporting limit
PAHs: Polycyclic aromatic hydrocarbons
A: September 21, 2009, Delta

Most Recent Concentrations of Petroleum Constituents in Groundwater

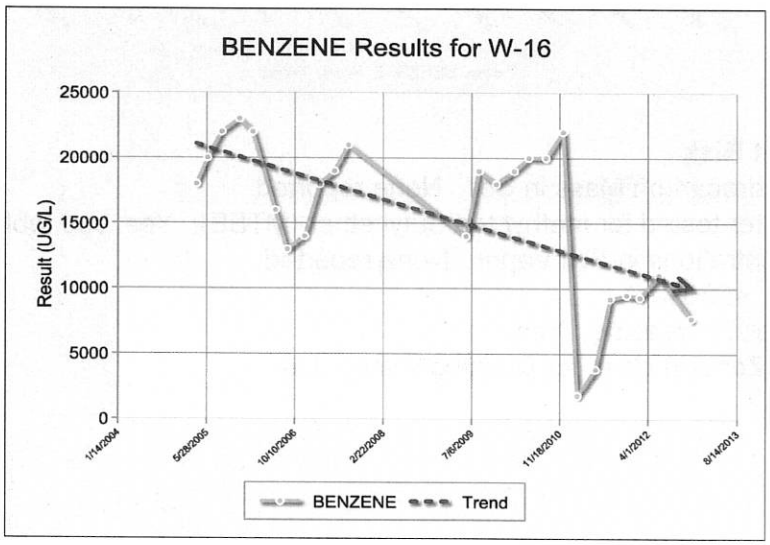
Sample	Sample Date	TPHg (µg/L)	TPHd (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	TBA (µg/L)
W-7	11/30/12	100	<470	**26**	0.53	1.8	2.9	<0.50	<10
W-9	11/30/12	<50	<470	<0.50	<0.50	<0.50	<1.0	<0.50	<10
W-10	11/30/12	<50	<470	<0.50	<0.50	<0.50	1.0	<0.50	<10
W-11	11/30/12	<50	<470	<0.50	<0.50	<0.50	<1.0	<0.50	<10
W-12	11/30/12	<50	<470	<0.50	<0.50	<0.50	<1.0	<0.50	<10
W-13	11/30/12	<50	<470	<0.50	<0.50	<0.50	<1.0	<0.50	<10
W-14	11/30/12	<50	<470	0.73	<0.50	<0.50	<1.0	<0.50	<10
W-15	11/30/12	24,000	4,000	**2,700**	120	**1,700**	**2,100**	<5.0	250
W-16	11/30/12	37,000	3,000	**7,700**	**1,500**	**1,700**	**6,500**	**<50**	<1,000
WQOs	-	--	--	**1**	**150**	**300**	**1,750**	**5**[a]	**1,200**[b]

NA: Not Analyzed, Not Applicable or Data Not Available
µg/L: Micrograms per liter, parts per billion
<: Not detected at or above stated reporting limit
TPHg: Total petroleum hydrocarbons as gasoline
TPHd: Total petroleum hydrocarbons as diesel
MTBE: Methyl tert-butyl ether
TBA: Tert-butyl alcohol
WQOs: Water Quality Objectives, Regional Water Board Basin Plan
--: Regional Water Board Basin Plan does not have a numeric water quality objective for TPHg or TPHd
[a]: Secondary maximum contaminant level (MCL)
[b]: Department of Public Health, Response Level

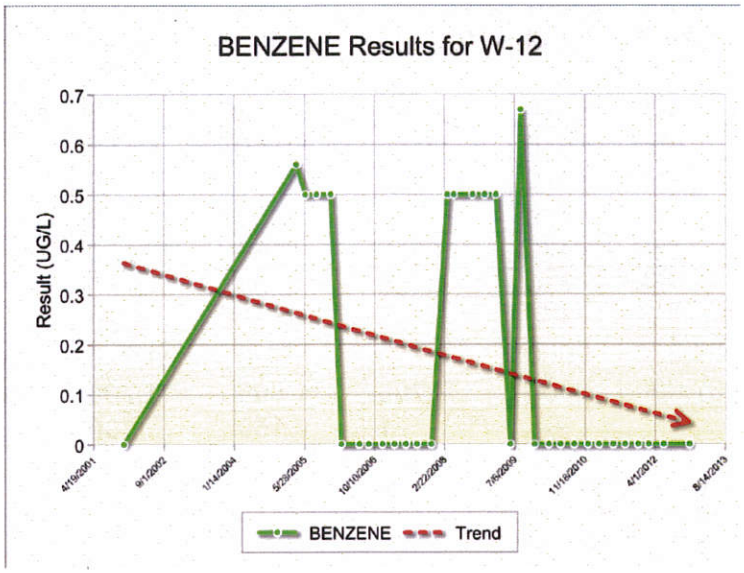
Groundwater Trends

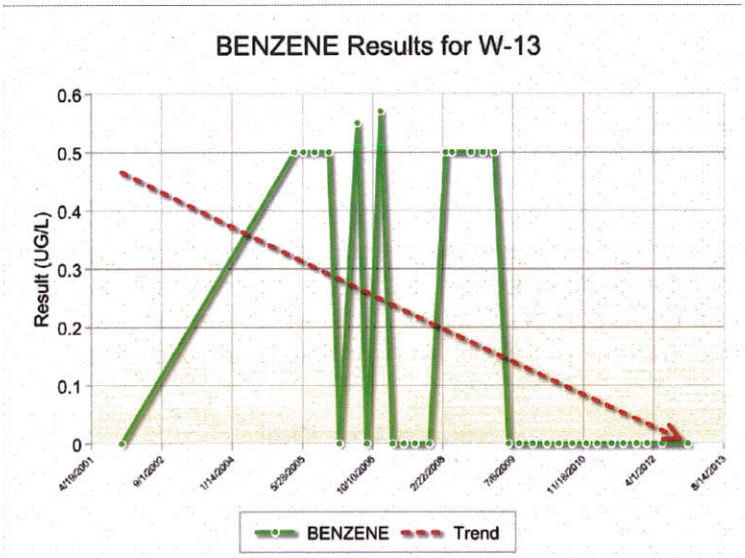
- There are 21 years of regular groundwater monitoring data for this case. A benzene trend for source area well W-16 is shown below. No fuel hydrocarbons have been detected in downgradient wells W-12 and W-13 since 2009, which demonstrates the plume is stable, defined, and concentrations of petroleum hydrocarbons are decreasing.

Source Area Well



Downgradient Wells

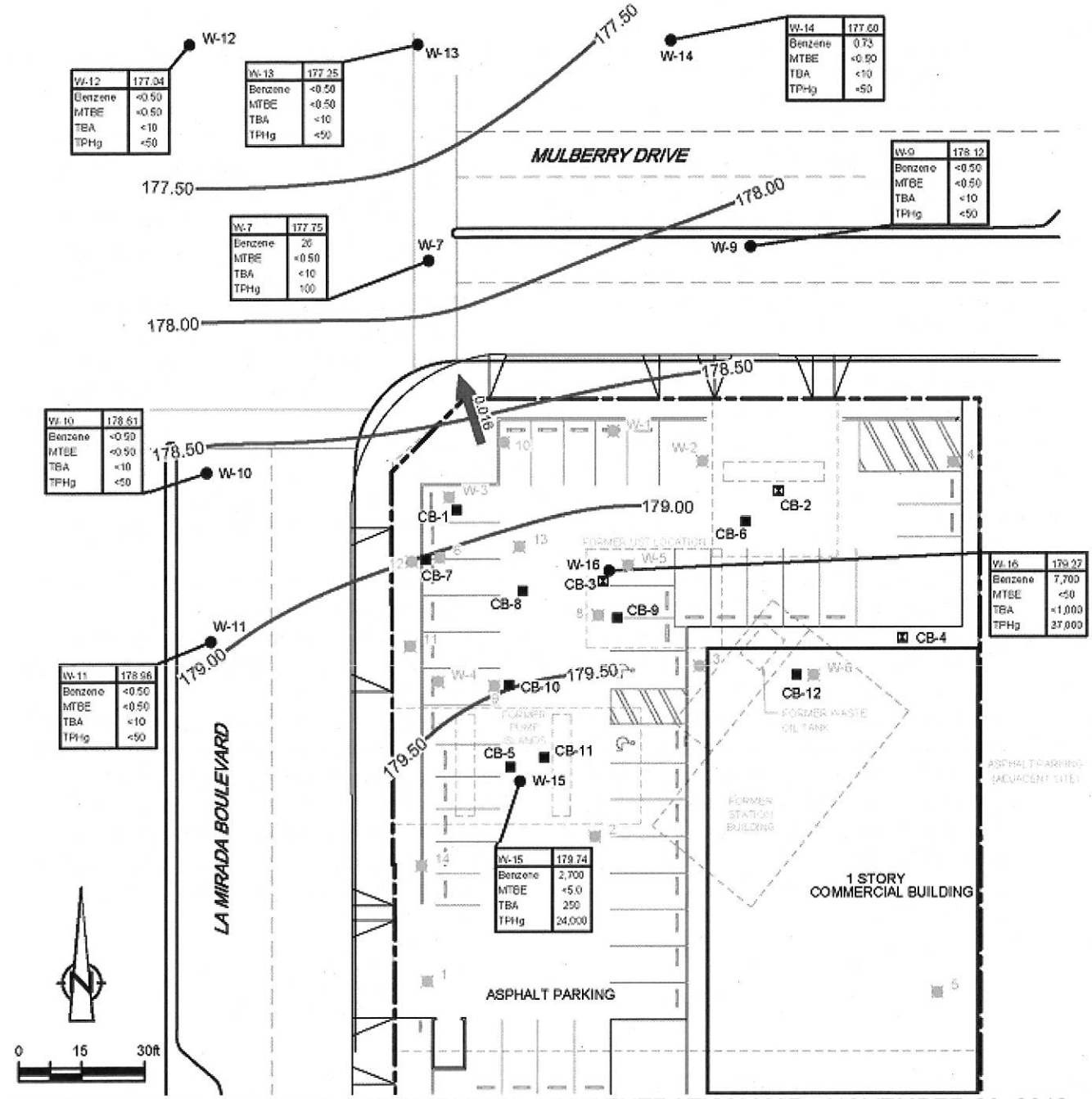




Evaluation of Current Risk

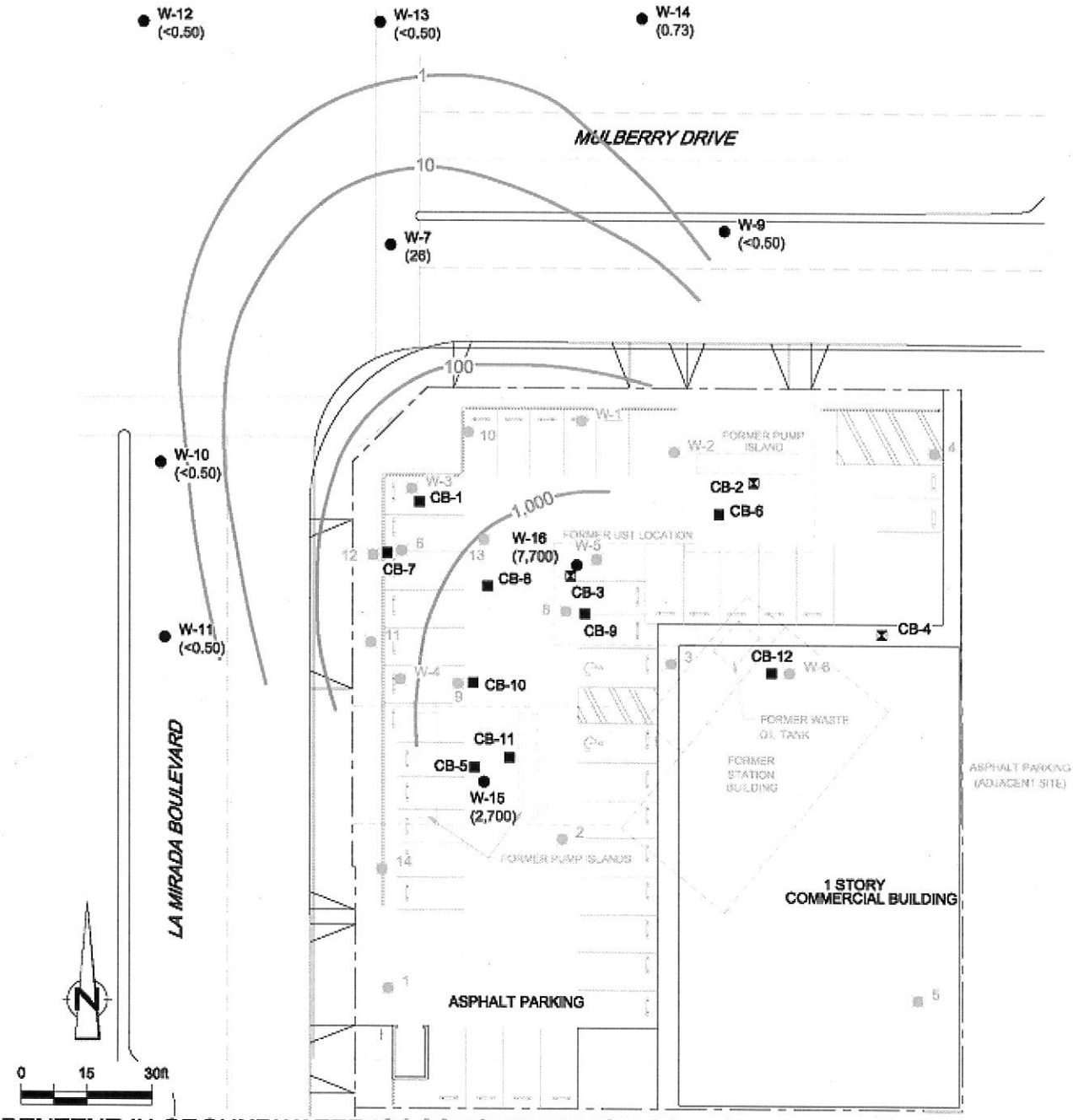
- Estimate of Hydrocarbon Mass in Soil: None reported.
- Soil/Groundwater tested for methyl tert-butyl ether (MTBE): Yes, see table above.
- Oxygen Concentrations in Soil Vapor: None reported.
- Plume Length: <250 feet.
- Plume Stable or Decreasing: Yes.
- Contaminated Zone(s) Used for Drinking Water: No.

- Groundwater Risk from Residual Petroleum Hydrocarbons: The case meets Policy Criterion 1 by Class 5. The regulatory agency determines, based on an analysis of site specific conditions, which under current and reasonably anticipated near-term future scenarios, the contaminant plume poses a low threat to human health and safety and to the environment and water quality objectives will be achieved within a reasonable time frame. No water supply wells were identified within 1,000 feet of the defined plume boundary. Leffington Creek, a concrete lined storm water control channel, is approximately 850 feet from the defined plume boundary. The concrete lined channel only contains water intermittently following rainfall events. In addition, the average depth to groundwater is approximately 14 feet bgs so there is minimal potential that groundwater could infiltrate into the channel. Furthermore, the most downgradient well, W-12, which has not contained fuel hydrocarbons since 2009, is located over 700 feet from channel. This demonstrates the remaining groundwater plume is stable, decreasing in size, and there is no potential for the remaining onsite contamination to migrate to the storm water control channel.
- Indoor Vapor Risk from Residual Petroleum Hydrocarbons: This case meets Policy Criterion 2b. A site-specific risk assessment of potential exposure to petroleum constituents as a result of vapor intrusion [*Delta Environmental Consultants, 2007*] found that maximum concentrations of petroleum constituents remaining in soil and groundwater will have no significant risk of adversely affecting human health.
- Direct Contact Risk from Residual Petroleum Hydrocarbons: The case meets Policy Criterion 3a. Maximum concentrations in soil are less than those in Policy Table 1 for Commercial/Industrial land use and the concentration limits for a Utility Worker are not exceeded. There are no soil sample 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 percent benzene and 0.25 percent naphthalene. Therefore, benzene can be directly substituted for naphthalene concentrations with a safety factor of eight. Benzene concentrations from the Site are below the naphthalene thresholds in Policy Table 1. Therefore, the 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.



GROUNDWATER CONTOUR AND CHEMICAL CONCENTRATION MAP - NOVEMBER 30, 2012
FORMER TEXACO SERVICE STATION
10810 LA MIRADA BOULEVARD
Whittier, California

SOURCE: DELTA CONSULTANTS, FIGURE 2, GROUNDWATER ELEVATION CONTOUR MAP 9/1/2010, DATED 9/28/2010.



BENZENE IN GROUNDWATER ISOCONCENTRATION CONTOUR MAP - NOVEMBER 30, 2012
FORMER TEXACO SERVICE STATION
10810 LA MIRADA BOULEVARD
Whittier, California

SOURCE: DELTA CONSULTANTS, FIGURE 2, GROUNDWATER ELEVATION CONTOUR MAP 9/1/2010, DATED 9/28/2010.