

State Water Resources Control Board

UST CASE CLOSURE SUMMARY

Agency Information

Agency Name: County of Orange Health Care Agency (County)	Address: 1241 East Dyer Road, Suite 120 Santa Ana, CA 92705
Agency Caseworker: Mr. Kevin Lambert	Case No.: 12UT001

Case Information

USTCF Claim No.: 10514	Global ID: TO605900915
Site Name: ARCO #0206	Site Address: 302 W 1 st Street, Santa Ana, CA 92701 (Site)
Petitioner: Ms. Janet Wager, ARCO/BP	Address: 501 Westlake Park Blvd., 28.160A Houston, TX 77079
USTCF Expenditures to Date: \$0	Number of Years Case Open: 24

URL: http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=TO605900915

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 Low-Threat 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 Site Information**. Highlights of the Conceptual Site Model of the Case are as follows:

The release at the Site was discovered in 1992 during the advancement of soil borings beneath a fuel dispenser. In 1993, four 6,000-gallon gasoline underground storage tanks (USTs) were removed and replaced with four 10,000-gallon USTs. The Site is currently an active fueling facility. During the tank removal activities, approximately 1,147 tons of impacted soil were excavated and disposed offsite. A Soil Vapor Extraction (SVE) system operated at the Site for 31,517 hours between 1996 and 2008 and removed approximately 24,710 pounds of petroleum hydrocarbon. The most recent soil data collected in 2010 suggests that residual concentrations remain in the center and eastern parts of the Site between the surface and approximately 35 feet below ground surface (bgs). Groundwater has not been encountered at the Site to a maximum explored depth of 60 feet bgs. The depth-to-water (DTW) at the Site is estimated to be between 70 and 80 feet bgs.

Based on the most recent soil sample results, petroleum in soils are limited to a total depth of 35 feet bgs and is separated from groundwater by approximately 25 vertical feet. Therefore, it is highly likely that the petroleum release is limited to soil only.

Residual petroleum constituents in soil are unlikely to have impacted groundwater quality. Remaining petroleum constituents in soil are limited, stable and declining. Remedial actions have been implemented and further remediation would be expensive and not change the Conceptual Site Model (CSM). 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 – **THE UNAUTHORIZED RELEASE HAS NOT AFFECTED GROUNDWATER.** Groundwater has not been encountered at the Site to a maximum explored depth of 60 feet bgs. The Site does not contain sufficient mobile constituents (leachate, vapors, or light non-aqueous phase liquids [LNAPL]) to cause groundwater to exceed groundwater criteria in the Policy.
- Petroleum Vapor Intrusion to Indoor Air – Site meets the **EXCEPTION.** The Site operates as an active commercial fueling facility and the release does not have characteristics that can be reasonably believed to pose an unacceptable health risk.
- Direct Contact and Outdoor Air Exposure – Site meets **CRITERIA (3) a.** Maximum concentrations of petroleum constituents in soil are less than or equal to those listed in Table 1. The estimated naphthalene concentrations in soil 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

County staff objected to UST case closure because:

1. The horizontal extent of contamination has not been delineated. Based on laboratory data of soil collected from borings CSB-5 and SB-09, significant soil contamination is present in the northern part of the Site. Clean soil has not been identified between these points and the residential development that exists north of the Site.
RESPONSE: The concentration reported in soil samples from CSB-5 and SB-09 at the Site are less than the criteria listed on Table 1 of the Policy for residential land use. Table 1 of the Policy identifies concentrations of petroleum constituents in soil that will have no significant risk of adversely affecting human health under the direct contact and outdoor air exposure scenarios. No transport mechanism has been identified that would suggest an increase in soil concentrations north of the Site being greater than soil samples from borings CSB-5 and SB-09 closer to the release.
2. The Site is located in a transition zone between the Forebay and the Pressure Area of the Orange County Groundwater Basin. The Forebay zone is considered sensitive due because it provides recharge to deep groundwater within the basin. The standard practice for cases in the area is to demonstrate a 30-foot interval of clean soil above the groundwater table for cases within the Orange County Groundwater Basin. Additional investigation should be performed to establish the requisite 30-foot clean interval of soil.
RESPONSE: There is no regulatory statute for requiring that a 30-foot vertical interval of “clean” soil exist between the bottom of contaminated soil and the top of the water table.

Groundwater has not been encountered at the Site to a maximum explored depth of 60 feet bgs. Soil data collected in 2010 indicates that approximately 25 vertical feet separates groundwater from petroleum affected soil. Based on this information, it is unlikely that contaminants in soil have leached undetected through 25 vertical feet of soil and affected groundwater. Collecting additional soil data beyond 60 feet bgs would be costly and would not likely change the CSM.

3. The DTW encountered at the Nunez Auto Repair¹ property located ¼-mile east of the Site has been reported as shallow as 52.82 feet bgs. It is unknown if adequate time was allotted for groundwater to recharge into previous borings advanced at the Site. Additional investigation should be performed to determine if groundwater is present within 30 feet of identified soil contamination.

RESPONSE: SVE has occurred at the off-site Nunez Auto Repair property since September 2004. DTW measurements at this property collected before and after the start of SVE have demonstrated that SVE activities influence the water table. The DTW measurement of 52.82 feet bgs previously referenced by County was reported from Nunez Auto Repair monitoring well MW-6 on 6/19/07 when SVE was occurring and therefore is not representative of conditions that might be expected at the Site.

4. The Petition incorrectly identifies the location of the Site as having been defined as non-beneficial use for groundwater.

RESPONSE: The Site is located within the County of Orange Groundwater Basin which has the following designated beneficial uses: Municipal and domestic supply, agricultural supply, industrial service supply, and industrial process supply.

5. The Petition states that “the impacts at the Site present no significant risk to public health or safety”. Based on the lack of definition of the soil contaminant plume, between the Site and residential development to the north of the Site, County does not agree that conclusions can be drawn with respect to the Site’s potential impact to human health. Additional soil and soil vapor sampling should be conducted to determine if risks from soil vapor intrusion are present for occupants of the nearby development.

RESPONSE: The Site is an active fueling facility and meets the Exception for the vapor intrusion to indoor air scenario. However, even if the Site was not an active fueling facility, it would meet Class 2. a. of the Policy and therefore represents a low-threat as it pertains to the petroleum vapor intrusion to indoor air exposure scenario.

¹ Nunez Auto Repair (Global ID T0605999167) is located ~1,000 feet east of the site. Groundwater data collected in March 2012.

ARCO #0206
302 W. 1st Street, Santa Ana

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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7/3/13
Date

Reviewed By: 
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Senior Engineering Geologist

7/3/13
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.²

<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><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>

² Refer to the Low-Threat Underground Storage Tank Case Closure Policy for closure criteria for low-threat petroleum UST sites.

<p>Has secondary source been removed to the extent practicable?</p> <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 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><input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA</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?</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA</p> <p>If YES, check applicable class: <input type="checkbox"/> 1 <input 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 type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input 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><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</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?</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA</p> <p>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 type="checkbox"/> No <input checked="" 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 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><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

- Site Land Use: The Site is currently operated as a commercial fueling facility and mini-mart.
- Surrounding Land Use: The Site is located in an area of mixed commercial and residential land use.
- Adjoining Properties: The Site is adjoined to the north by West First Street (a seven lane street) with apartments across the street, to the east by Broadway (a four lane street) with commercial retail across the street, to the south by an automobile repair business, and to the west by residential.
- Nature of Contaminants of Concern: Petroleum hydrocarbons only.
- Primary Source of Release: UST system.
- Discovery Date: 1992.
- Release Type: Petroleum³.
- Free Product: None reported.

Table A. USTs:

Tank No.	Size	Contents	Status	Date
1	6,000 gallon	Gasoline	Removed	1993
2	6,000 gallon	Gasoline	Removed	1993
3	6,000 gallon	Gasoline	Removed	1993
4	6,000 gallon	Gasoline	Removed	1993
5	10,000 gallon	Gasoline	Installed	1993
6	10,000 gallon	Gasoline	Installed	1993
7	10,000 gallon	Gasoline	Installed	1993
8	10,000 gallon	Gasoline	Installed	1993
9	Estimated 500	Waste Oil	Installed	Unknown

Receptors

- Groundwater Basin: Coastal Plain of Orange County Groundwater Basin (8-1).
- Groundwater Beneficial Uses: Municipal and domestic supply (MUN), agricultural supply (AGR), industrial service supply (IND), and industrial process supply (PRO).
- Designated Land Use: General Commercial (GC).
- Public Water System: City of Santa Ana.
- Distance to Nearest Surface Waters: Santa Ana River (a concrete lined channel) is approximately 2.3 miles to the west. The nearest unlined surface water body is greater than 2.3 miles away.
- Distance to Nearest Supply Wells: State Well no. 3010038-015 is located approximately 1,600 feet west of the Site.

Geology/ Hydrogeology

- Average Groundwater Depth: Not applicable. Groundwater has not been encountered at the Site to a maximum explored depth of 60 feet bgs. Groundwater is estimated to exist at approximately 70-80 feet bgs.
- Minimum Groundwater Depth: Not applicable. Groundwater has not been encountered at the Site.

³ "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 & Saf. Code, § 25299.2.)

- Groundwater Flow Direction: Not applicable. Groundwater has not been encountered at the Site. Regional groundwater flow at surrounding sites is to the south.
- Geology: The Site is characterized by fine- to coarse grained sands with interbedded silts and clays. Coarse-grained sand predominates from ground surface to a depth of approximately 11 feet bgs and is underlain by silt and clay from 11 to 40 feet bgs, sand and gravel from 40 to 50 feet bgs, and silt and clay from 50 to 60 feet bgs, the maximum depth explored.
- Hydrogeology: Regionally, the Site is located in a transition zone between the Forebay (a recharge zone) and the Pressure Area (a discharge zone) of the Orange County Groundwater Basin. Groundwater has not been encountered at the Site but is estimated to be between 70 and 80 feet bgs.

Corrective Actions

- Four USTs and fuel dispenser were removed from facility in 1993.
- SVE operated at the Site for a total of 31,517 hours between 1996 and 2008 and removed approximately 24,710 pounds of petroleum hydrocarbon.

Table B. Concentrations of Petroleum Constituents in Soil

Constituent	Maximum 0-5 feet bgs (mg/kg)	Maximum 5-10 feet bgs (mg/kg)
Benzene	<0.0020*	0.0056*
Ethylbenzene	<0.0020*	0.0038*
MTBE	<0.0050*	<0.0050*
Naphthalene	Not Analyzed	Not Analyzed
PAHs**	Not Analyzed	Not Analyzed

*Maximum concentrations reported since SVE was discontinued in 2009.

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

Evaluation of Risk Criteria

- Maximum Petroleum Constituent Plume Length above WQOs: Not applicable. The unauthorized release has not affected groundwater at the Site.
- Petroleum Constituent Plume Determined Stable or Decreasing: Not applicable.
- Soil Sampled for MTBE: Yes, see Table B above.
- Residual Petroleum Constituents Pose Significant Risk to the Environment: No.
- Residual Petroleum Constituents Pose Significant Vapor Intrusion Risk to Human Health: No – Petroleum constituents most likely to pose a threat for vapor intrusion were removed during soil excavation and over-excavation and SVE operation between 1996 and 2008. Site conditions demonstrate that the residual petroleum constituents in soil are protective of human health.
- Residual Petroleum Constituents Pose a Nuisance⁴ 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 – 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.

⁴ Nuisance as defined in California Water Code, section 13050, subdivision (m).

