

State Water Resources Control Board

UST CASE CLOSURE SUMMARY

Agency Information

Agency Name: City of Anaheim	Address: 201 S. Anaheim Blvd. #601 Anaheim, CA 92805
Agency Caseworker: Mr. Richard Wilson	Case No.: None

Case Information

USTCF Claim No.: 12648	Global ID: T0605901854
Site Name: A.C.S. Station R-25	Address: 984 South Beach Boulevard Anaheim, CA 92804 Orange County (Site)
Petitioner: Mr. Brian Decker J.E. Dewitt, Inc.	Address: 1903 Durfee Avenue South El Monte, CA 91733
USTCF Expenditures to Date: \$839,581	Number of Years Case Open: 17

URL: http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0605901854

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 when a former dispenser and three former 4,000 gallon underground storage tanks (UST) were removed in 1997. The Site is currently a gasoline station and operates three 10,000 gallon gasoline USTs. During the 1997 tank removal activities, approximately 114.6 tons of soil was excavated, over-excavated, and disposed. To promote bioremediation, fertilizer and microbes were added to the material used for backfill. Other remediation activities included the injection of 1,470 pounds of oxygen release compound (ORC) during May 1998 and operation of a dual phase extraction (DPE) system between 2002 and 2007. The Site is currently undergoing post-remedial groundwater monitoring.

The petroleum release is limited to the shallow soil and groundwater. The nearest irrigation well is located greater than 1,000 feet southwest (downgradient) of the Site. The nearest public supply well regulated by the California Department of Public Health is located greater than 1,000 feet southwest (downgradient) of the Site. No domestic wells have been identified within 1,500 feet of the Site. Public

water is supplied by the Orange County Water District. The affected groundwater is not currently being used as a source of drinking water or for any other designated beneficial use, and it is highly unlikely that the affected groundwater will be used as a source of drinking water or for any other beneficial use in the foreseeable future. Public supply wells are usually constructed with competent sanitary seals and intake screens that are in deeper more protected aquifers. Other designated beneficial uses of impacted groundwater are not threatened and considering the Site setting, it is highly unlikely that they will be in the foreseeable future. Remaining petroleum constituents are limited, stable and declining. Remedial actions have been implemented and further remediation would be ineffective and expensive. Additional assessment/monitoring will not likely change the conceptual site model. Any 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 5**. Based on an analysis of Site-specific conditions that under current and reasonably anticipated near-term future scenarios, the contaminant plume poses a low-threat to human health and safety to the environment and Water Quality Objectives (WQOs) will be achieved within a reasonable period of time.
- Petroleum Vapor Intrusion to Indoor Air –Site meets the **EXCEPTION**. The Site operates as an active commercial fueling facility and has no release characteristics that can be reasonably believed to pose an unacceptable health risk.
- Direct Contact and Outdoor Air Exposure – Site meets **CLASS a**. Maximum concentrations of petroleum constituents in soil are less than or equal to those listed in Table 1 of the Policy. The estimated naphthalene concentrations in soil are less than the thresholds in Table 1 of the Policy for direct contact. It is unlikely that naphthalene concentrations in the soil, if any, exceed the threshold.

Objections to Closure

City of Anaheim staff objected to UST case closure because:

1. The extent of the tert-Butyl alcohol (TBA) plume in groundwater has not been delineated.

Response: TBA reported in groundwater at the Site has demonstrated stable and decreasing trends over time. TBA in groundwater likely extends offsite. Based on concentration gradient observed between the central portion of the TBA plume (MW-7) and lateral portions of the plume (MW-8 and MW-9), it is likely that the TBA plume terminates beneath South Beach Boulevard.

2. The closure request did not include technical studies or models that are typically provided when requesting case closure when high levels of contamination remain onsite.

Response: The supporting data and analysis used to develop the CSM are provided in multiple reports submitted to the regulatory agency over a period of time.

3. Anaheim is listed as being within the recharge area of the Orange County groundwater basin.

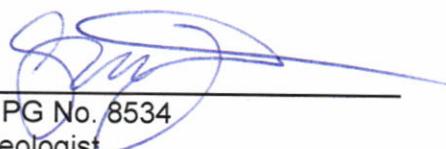
Response: The Site is located in the western part of Anaheim. This part of Anaheim is located in a transition zone between the recharge area (Forebay) and discharge area (Pressure Area) of the

A.C.S. Station R-25
984 South Beach Boulevard, Anaheim

Orange County groundwater basin. Benzene and TBA currently exist in groundwater at the Site above WQOs. However, based on an analysis of Site-specific conditions that 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 WQOs will be achieved within a reasonable time frame.

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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3/21/13
Date

Reviewed By: 
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Senior Engineering Geologist

3/21/13
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? There was an order issued for this site. The corrective action performed in the past is consistent with that order. Since this case meets applicable case-closure requirements, further corrective action under the order that is not necessary, unless the activity is necessary for case closure.</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><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 type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA</p>

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

<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>Has soil or groundwater been tested for MTBE and results reported in accordance with Health and Safety Code Section 25296.15?</p> <p>Nuisance as defined by Water Code section 13050 does not 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><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 (WQOs) 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 WQOs stable or decreasing in areal extent?</p> <p>Does the contaminant plume that exceeds WQOs meet all of the additional characteristics of one of the five classes of sites? If YES, check applicable class: <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input checked="" 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><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? 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>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><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>
<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 of the Policy 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

- The Site is located at the intersection of South Beach Boulevard and West Ball Road in Anaheim. The Site is an operating petroleum fueling facility.
- The Site is bounded by commercial properties. A closed UST site is located to the southwest.
- Nature of Contaminants of Concern: Petroleum hydrocarbons only.
- Primary Source of Release: UST system
- Discovery Date: 1995
- Release Type: Petroleum²
- Six monitoring wells have been installed.
- Free Product: None reported

Table A: USTs

Tank No.	Size	Contents	Status	Date
1	12,000-gallon	Gasoline	Removed	1997
2	12,000-gallon	Gasoline	Removed	1997
3	12,000-gallon	Gasoline	Removed	1997
4	13,000-gallon	Gasoline	Installed	2000
5	13,000-gallon	Gasoline	Installed	2000
6	13,000-gallon	Gasoline	Installed	2000

Receptors

- Groundwater Basin: Orange County
- 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: Orange County Water District
- Distance to Nearest Supply Wells: Irrigation well is located greater than 1,000 feet southwest; Supply well is greater than 1,000 feet southwest
- Distance to Nearest Surface Waters: Carbon Creek Channel is located greater than 1,000 feet west

Geology/Hydrogeology

- Average Groundwater Depth: approximately 14 feet
- Minimum Groundwater Depth: approximately 13 feet
- Groundwater Flow Direction: Southwesterly
- Geology: Asphalt and concrete underlain by interbedded sand and clay to a maximum explored depth of 30 feet below ground surface (bgs).

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)

- Hydrology: Groundwater is unconfined. The Site is located within the Orange County Groundwater Basin in a transition area between the recharge zone known as the Forebay and a discharge zone known as the Pressure Area. Distance to nearest surface water (Carbon Creek Channel) is located greater than 1,000 feet north of the Site.

Corrective Actions

- Three USTs were removed in 1997. During removal activities 114.6 tons of petroleum impacted soil was excavated, over-excavated, and disposed offsite. Fertilizer and microbes were added to the backfill material to promote bioremediation.
- In 1998, 1,470 pounds of Oxygen Release Compound (ORC®) was injected into the subsurface.
- Between 2002 and 2007, a DPE system operated at the site.

Table B: Concentrations of Petroleum Constituents in Soil

Constituent	Maximum 0-5 ft. bgs (mg/kg)	Maximum 5-10 ft. bgs (mg/kg)
Benzene	1.2	1.5
Ethylbenzene	1.0	55
Naphthalene	Not Analyzed	Not Analyzed
Polyaromatic Hydrocarbons (PAHs)	Not Analyzed	Not Analyzed

Table C: Concentrations of Petroleum Constituents of Concern in Groundwater

Sample	Sample Date	TPHg (ppb)	Benzene (ppb)	Toluene (ppb)	Ethylbenzene (ppb)	Xylenes (ppb)	MTBE (ppb)	TBA (ppb)
MW-3	1/30/07	<50	<0.5	<0.5	<0.5	<1.0	<1.0	2,390
MW-4	1/31/07	<50	<0.5	<0.5	<0.5	<1.0	<1.0	<10
MW-5	1/31/07	<50	<0.5	<0.5	<0.5	<1.0	<1.0	<10
MW-6	8/8/12	<50	4.5	<0.5	1.7	3.3	<1.0	<10
MW-7	8/8/12	<50	<0.5	<0.5	<0.5	<1.0	<1.0	568
MW-8	8/8/12	<50	<0.5	<0.5	<0.5	<1.0	<1.0	96.8
MW-9	8/8/12	<50	<0.5	<0.5	<0.5	<1.0	<1.0	232
WQOs	-	50	1	42	29	17	5	12*

WQOs - Water Quality Objectives

* California Notification Level

ppb = parts per billion

TPHg = Total Petroleum Hydrocarbons quantified as gasoline

MTBE = methyl tert-Butyl ether

TAME = tert-Amyl methyl ether

< = less than the indicated reporting limit

Evaluation of Risk Criteria

- Maximum Petroleum Constituent Plume Length above WQOs: Approximately 100 feet long.
- 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 – Petroleum constituents most likely to pose a threat for vapor intrusion were removed during soil excavation and over-excavation. The Site operates as an active fueling facility. Site conditions demonstrate that the residual petroleum constituents in soil and groundwater are protective of human health.
- Residual Petroleum Constituents Pose a Nuisance³ at the Site: No.
- Residual Petroleum Constituents in Soil Pose Significant Risk of Adversely Affecting Human Health: No – Site-specific conditions satisfy all of the applicable characteristics and criteria for petroleum vapor intrusion to indoor-air under class a. scenario 3.
- Residual Petroleum Constituents Pose Significant Direct Contact and Outdoor Air Exposure to Human Health: No – Maximum concentrations of petroleum constituents in soil are less than or equal to those listed in Table 1. 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% 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).

SITE PLAN
A.C.S. Station R-25
984 South Beach Boulevard, Anaheim

