

State Water Resources Control Board

UST Case Closure Summary

This Underground Storage Tank (UST) Case Closure Summary has been prepared in support of a recommendation by the Petroleum Underground Storage Tank Cleanup Fund (Fund) to the State Water Resources Control Board (State Water Board) for closure of the UST case at 13222 Brookhurst Street, Garden Grove, CA 92844 (Site).

Agency Information

Agency Name: Orange County Health Care Agency (County)	Address: 1241 East Dyer Road Suite 120 Santa Ana, CA 92705-5611
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Case Information

Case No: 88UT176	Global ID: T0605900855
Site Name: Bowers Company	Site Address: 13222 Brookhurst Street Garden Grove, CA 92844
Responsible Party: BAB Partnership Attn: Robert Bowers	Address: (Private Residence)
USTCF Claim No.: 2680	Number of Years Case Open: 22
USTCF Expenditures to Date: \$1,231,949	

URL: http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0605900855

Tank Information

Tank No.	Size in Gallons	Contents	Closed in Place/ Removed/Active?	Date
1	3,000 ^a	Unleaded Gas	Removed	9/88

a. Fire Department documents list the underground storage tank (UST) as a 3,000-gallon tank. Later documents report the UST as a 1,500-gallon UST.

Summary

A leak was reported in January 1989 following December 1988 UST removal activities. Since 1995, five monitoring wells have been installed, free product removed, an unspecified amount of contaminated soil excavated, and soil vapor extraction conducted for 50,638 hours recovering a calculated 14,978 pounds of petroleum hydrocarbon vapor. According to groundwater data, water quality objectives have been achieved. To date, \$1,231,949 in corrective action costs have been reimbursed by the Fund. The nearest production well is located approximately one mile west southwest (upgradient) of the Site. Impacted groundwater is not currently being used as a source of drinking water. Water is provided to water users near the Site by the City of Garden Grove Public Works. It is highly unlikely that any impacted groundwater will be used as a source of drinking water or other beneficial use in the foreseeable future.

Objections to Closure and Response

The County objects to UST case closure for this case because a soil vapor rebound test report was due in the fourth Quarter 2010, which has not been submitted to date. Based on the findings of such a report the County would then specify how much longer the monitoring would be conducted.

Based on existing data, the Fund Manager does not believe that any potential residual petroleum hydrocarbon remaining at this Site represents a significant risk to human health, safety, or the environment. Reports state that approximately ninety-nine percent (99%) of the original petroleum hydrocarbon mass has been removed. As a result of the removal of impacted soils and 14,978 pounds of petroleum vapor from beneath the Site using soil vapor extraction, there is little residual petroleum hydrocarbon in soil and groundwater at the Site. Any residual petroleum hydrocarbons in groundwater down gradient from the Site that might be present would be at very low concentrations and continue to attenuate. In addition, there are no domestic or public water supply wells within ½ mile of the Site. Water in the vicinity of the Site is provided to water users by City of Garden Grove Public Works.

Release Information

- Source of Release: USTs
- Date of Release: Reported 1/12/1989
- Affected Media: Soil and groundwater

Site Information

- Groundwater Basin: Coastal Plain of Orange County CA
- Beneficial Uses: Municipal
- Land Use Designation: Commercial
- Distance to Nearest Supply Well: According to data available in GeoTracker, there are no California Department of Public Health (CDPH) regulated public supply wells (PSW) within ½ mile of the Site. There is a production well located approximately one mile west southwest (upgradient) of the Site.
- Minimum Groundwater Depth: 7.24 feet below ground surface (bgs) at monitoring well MW-2B.
- Maximum Groundwater Depth: 20.77 feet bgs at monitoring well MW-1B.
- Groundwater Flow Direction: Predominately to the east with an average gradient of 0.002 feet/foot (ft/ft).
- Soil Types: The Site is underlain by sand, silty sand, sandy silt, and clay.
- Maximum Depth Sampled: 40 feet bgs

Monitoring Well Information

Well Designation	Date Installed	Screen Interval (feet bgs)	Depth To Water (feet bgs) (5/5/2011)
MW-1B	1995	4 – 24	8.78
MW-2B	1995	4 – 24	8.36
MW-3B ^a	1995	4 – 24	NM
MW-4B	1995	7 – 37	8.68
MW-5B	1997	7 – 37	8.70

^a: Storage trailer placed atop well box in 2001

NM: Not measured

Petroleum Hydrocarbon Constituent Concentration

Contaminant	Soil (mg/kg)		Water (µg/L)		WQOs (µg/L) (MCL/Low Risk)
	Maximum	Latest 10/24/2011	Maximum	Latest 8/11/2011	
TPHg	NA	1,500	5,600	200	5 ^a
Benzene	NA	6.50	1,900	<1.0	1/250
Toluene	NA	0.085	100	<1.0	150/300
Ethylbenzene	NA	28	300	<1.0	300/680
Xylenes	NA	0.73	650	<1.0	1,750/ 1,750
MTBE	NA	0.160	2	3	13 primary/ 5 secondary
TBA	NA	0.220	<10	<10.0	1,200 ^b

a: Region 8 does not have a WQO for TPH gasoline; therefore, the Fund has used the most conservative value used in California.

b: California Department of Public Health Response Level.

WQOs: Water Quality Objectives

MCL: Maximum Contaminant Level for public water supply

Low Risk: WQOs as presented in the Santa Ana Regional Board Supplemental Guidance Clarification of Low-Risk Designation of Fuel Contaminated Sites, September, 1996 (Region 8 Guidance)

NA: Not Analyzed, Not Applicable or Data Not Available

NL: Not listed in the WQO's

mg/kg: milligrams per kilogram, parts per million

µg/L: micrograms per liter, parts per billion

Note: All soil detections were collected between 15 and 30 feet bgs.

Site Description

The Site is located on the northeast corner of Brookhurst Street and Central Avenue. The address of the Site is 13222 Brookhurst Street in Garden Grove. The Site is comprised of one building and a parking lot. The Site is bounded by Brookhurst Street to the west, the former Jet Service Station to the north, a multi-family residence to the east, and Central Avenue to the south. Across Brookhurst Street to the west is Andy's Unocal Service Station. A map showing the location of the Site is provided at the end of this review. The land use in the area is mixed commercial and residential.

Site Assessment

The Site was operated as an independent ambulance service. There was one UST on site which was removed in 1988. In 1994, a settlement was reached between the claimant and the two adjacent retail service stations (Jet and Unocal) to share costs.

Assessment of this Site has been ongoing since the early 1990's. A combined (multi Site) remediation system was installed on adjacent property. The remediation technologies used include soil vapor extraction and groundwater extraction and treatment which have operated together from 2007 through present.

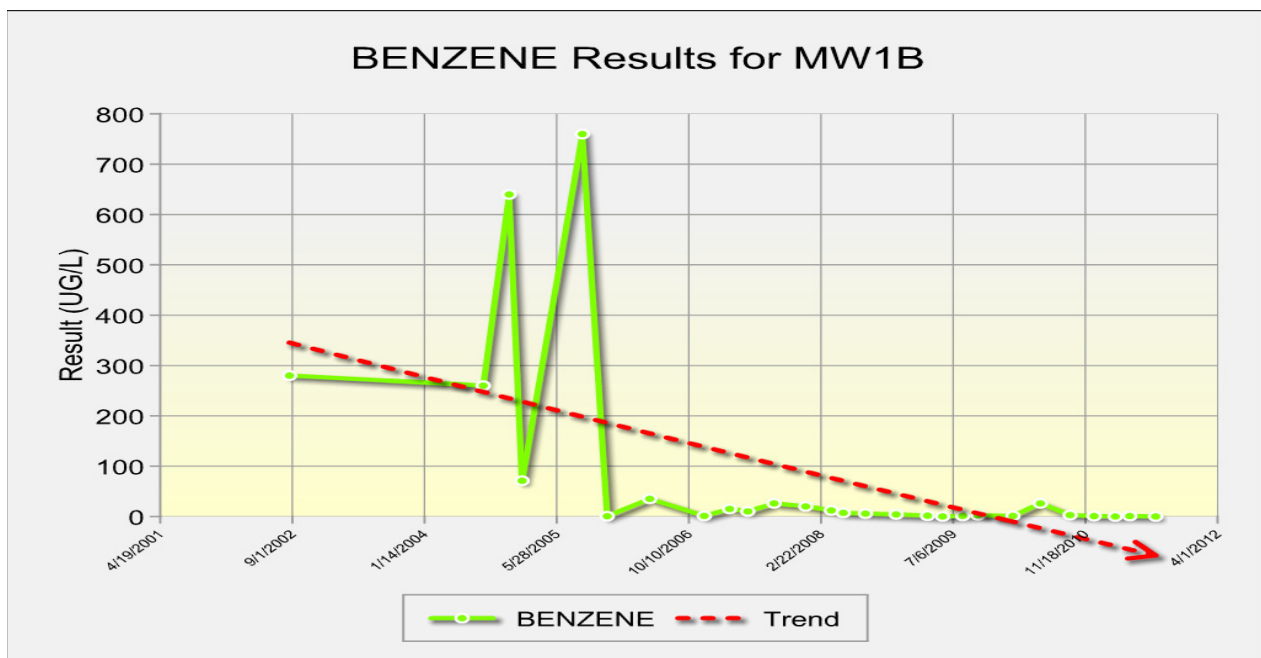
Remediation Summary

- Free Product: An unknown amount of free product was recovered prior to 1993; however, since then only a sheen of free product has been detected in monitoring wells MW-1B and MW-3B located near the former USTs.

- Soil Excavation: Fund files indicate that between December 1989 and February 1990 impacted soil was excavated from the Site and disposed off-site. The quantity of soil disposed was not provided in reports.
- In-Situ Soil Remediation: The multi-site soil vapor extraction began in November 2000. As of August 2010, the system had operated for 50,638 hours. It is estimated that 14,978 pounds of hydrocarbon has been removed from the soil and groundwater. The influent vapor concentrations reported since 2004 indicate the Site has reached low concentrations that are no longer efficient to mitigate using mechanical means.
- Groundwater Remediation: In 2004, a groundwater extraction and treatment system was installed and began operation. The files available for review did not include the length of operation or pounds of petroleum hydrocarbons removed. An air sparge system has been operated in conjunction with the soil vapor extraction system since April 2007.

General Site Conditions

- Geology and Hydrogeology: The Site is underlain by sand, silty sand, sandy silt, and clay. The depth to groundwater varies seasonally between 7 and 21 feet bgs and the groundwater gradient is easterly at approximately 0.002 ft/ft. There are no surface water bodies within 2,000 feet of the Site.
- Estimate of Hydrocarbon Mass in Soil: In December 2011, Frey Environmental, Inc. reported that approximately ninety-nine percent (99%) of the original petroleum hydrocarbon mass has been removed.
- Groundwater Trends: There are more than 15 years of groundwater monitoring data for this Site. The following graph shows analytical data for the most impacted groundwater monitoring well, MW-1B. For the last seven years the concentrations have been at or below benzene WQO's in this well.



- **Water Quality Objectives:** The WQOs have been met for all compounds of concern except for TPHg. Region 8 does not have a WQO for TPHg. However, using the most restrictive WQO for TPHg in California of 5ug/L, the WQO is calculated to be met within two to three decades.

Sensitive Receptor Survey

No sensitive receptor survey was found in the files reviewed. Drinking water in the area is currently supplied by the City of Garden Grove Public Works.

Risk Evaluation

As the result of removal of an unknown amount of affected soil, 14,978 pounds of petroleum hydrocarbon vapor, and an unknown amount of affected groundwater, there is little residual petroleum hydrocarbons in soil and groundwater that would pose a threat to groundwater resources, human health or the environment. There is little potential for petroleum hydrocarbon vapors to migrate or pose a threat to human health or the environment because;

- 1) Residual concentrations are low;
- 2) There are no PSWs or surface water receptors within 2,000 feet of the Site;
- 3) The Site and public areas are paved with concrete and asphalt; and
- 4) The Site is currently used as an automotive repair facility,

Closure

Will corrective action performed ensure the protection of human health, safety and the environment? Yes.

Is corrective action and UST case closure consistent with State Water Board Resolution 92-49? Yes.

Is achieving background water quality feasible? No.

To remove all traces of residual petroleum constituents at the Site would require significant effort and cost. Removal of all traces of residual petroleum hydrocarbon constituents that contribute to detectable concentrations in shallow groundwater can be accomplished, but would require excavation of additional soil as well as remediation of shallow groundwater. If complete removal of detectable traces of petroleum constituents becomes the standard for UST corrective actions, the statewide technical and economic implications will be enormous. Because of the high costs involved and minimal benefit of attaining further reductions in concentrations of MTBE at this Site, and the fact that beneficial uses are not threatened, attaining background water quality at this Site is not feasible.

If achieving background water quality is not feasible:

Is the alternative cleanup level consistent with the maximum benefit to the people of the State? Yes.

It is impossible to determine the precise level of water quality that will be attained given the limited residual petroleum hydrocarbons that remain at the Site. In light of all the factors discussed above and the fact that the residual petroleum constituents will not unreasonably affect present and anticipated beneficial uses of groundwater, a level of water quality will be attained that is consistent with the maximum benefit to the people of the state.

Will the alternative cleanup level unreasonably affect present and anticipated beneficial uses of water? No.

Impacted groundwater is not used as a source of drinking water or any other beneficial use currently. It is highly unlikely that the impacted groundwater will be used as a source of drinking water or any other beneficial use in the foreseeable future.

Will the alternative level of water quality exceed water quality prescribed in applicable Basin Plan? No.

The final step in determining whether cleanup to a level of water quality less stringent than background is appropriate for this Site requires a determination that the alternative level of water quality will not result in water quality less than that prescribed in the relevant basin plan. Pursuant to State Water Board Resolution 92-49, a Site may be closed if the basin plan requirements will be met within a reasonable time frame.

Have factors contained in Title 23 of the California Code of Regulations, Section 2550.4 been considered? Yes.

In approving an alternative level of water quality less stringent than background, the State Water Board considers the factors contained in California Code of Regulations, title 23, section 2550.4, subdivision (d). As discussed earlier, the adverse effect on shallow groundwater will be minimal and localized, and there will be no adverse effect on the groundwater contained in deeper aquifers, given the physical and chemical characteristics of petroleum constituents, the hydrogeological characteristics of the Site and surrounding land, and the quantity of the groundwater and direction of the groundwater flow. In addition, the potential for adverse effects on beneficial uses of groundwater is low, in light of the proximity of the groundwater supply wells, the current and potential future uses of groundwater in the area, the existing quality of groundwater, the potential for health risks caused by human exposure, the potential damage to wildlife, crops, vegetation, and physical structures, and the persistence and permanence of potential effects.

Finally, a level of water quality less stringent than background is unlikely to have any impact on surface water quality, in light of the volume and physical and chemical characteristics of petroleum constituents; the hydrogeological characteristics of the Site and surrounding land; the quantity and quality of groundwater and direction of groundwater flow, the patterns of precipitation in the region, and the proximity of residual petroleum to surface waters.

Has the requisite level of water quality been met? No

The WQO with respect to fuel hydrocarbons appear to have been achieved with the exception of TPHg. Although there is no numeric water quality objective listed in Region 8 Basin Plan, using the conservative Region 5 Basin Plan WQO for TPHg of 5 ug/L, WQO should be met within two to three decades.

Conclusion

Based on available information, any residual petroleum hydrocarbons at the Site do not pose significant risks to human health, safety, or the environment, and the Fund Manager recommends that the case be closed. The Fund is conducting public notification. The County has the regulatory responsibility to supervise the abandonment of monitoring wells.

ORIGINAL SIGNED BY

February 28, 2012

Lisa Babcock PG 3939, CEG 1235

Date