

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 9971 Westminster Avenue, Garden Grove, CA (Site).

Agency Information

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

Case No: 87UT208	Global ID: T0605900557
Site Name: Mobil #18-KDB	Site Address: 9972 Westminster, Garden Grove, CA 92844
Responsible Party: ExxonMobil Oil Corp.	Address: 3700 West 190 th Street, TPT-2-7 Torrance, CA 90509-2929
USTCF Claim No.: 3819	Number of Years Case Open: 24
USTCF Expenditures to Date: \$ 893,612	

URL: http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0605900557

Tank Information

Tank No.	Size in Gallons	Contents	Closed in Place/ Removed/Active?	Date
Unknown Number	Unknown	Gasoline & Waste Oil	Removed	1987
1	10,000	Gasoline	Removed	10/2003
2	10,000	Gasoline	Removed	10/2003
3	10,000	Gasoline	Removed	10/2003
4	10,000	Gasoline	Active	
5	10,000	Gasoline	Active	
6	12,000	Gasoline	Active	
7	500	Used Oil	Active	

Summary

A leak was identified in 1987 during UST removal activities. Since 1988, 32 monitoring wells have been installed; 750 cubic yards of contaminated soil removed; approximately 1,155 gallons of petroleum hydrocarbon using soil vapor extraction for approximately four months and dual-phase extraction for three years. An additional groundwater extraction and treatment conducted using various technologies for over seven years removing 5.4 million gallons of impacted groundwater, and a sensitive receptor survey conducted. According to groundwater data, water quality objectives have been achieved or contaminants are below detection limits with the exception of TPHg and MTBE. To date, \$893,612 in corrective action costs have been reimbursed by the Fund. The nearest water supply wells are more than 2,000 feet from the Site. Any impacted groundwater is not currently being used as a source of drinking water or other beneficial use. 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 they are waiting for one final post remediation groundwater monitoring report due in the first quarter of 2012.

The Fund Manager does not believe an additional monitoring report is necessary because there has been at least 10 years of post remedial monitoring reports submitted to the county since remediation ceased at this site in 2002.

Any residual petroleum hydrocarbon in the groundwater downgradient 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 2,000 feet 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: UST
- Date of Release: 11/23/1987 (reported)
- Affected Media: Soil and groundwater

Site Information

- Groundwater Basin: Coastal Plain of Orange County
- Beneficial Uses: Municipal and Domestic supply
- Land Use Designation: Commercial
- Distance to Nearest Supply Well: According to GeoTracker, there are no public supply wells (PSW) regulated by the California Department of Public Health (CDPH) located within a ½-mile radius of the site. According to the County, there are five Orange County Water Agency supply wells within ½ mile of the Site that are not found in the CDPH data in GeoTracker.
- Minimum Groundwater Depth: 11.68 feet below ground surface (bgs) at Site well MW-18.
- Maximum Groundwater Depth: 21.05 feet bgs at monitoring well RW-10S.
- Groundwater Flow Direction: Predominately to the southwest with an average gradient of 0.002 feet/foot (ft/ft).
- Soil Types: The Site is underlain by interbedded clays, silty clays, and poorly graded sand to the maximum depth explored.
- Maximum Depth Sampled: 60 feet bgs

Monitoring Well Information

Well Designation	Date Installed	Screen Interval (feet bgs)	Depth To Water (6/9/2011)
MW-4	4/14/1988	20 – 40	14.91
MW-5A	4/18/2000	19.5 – 39.5	15.75
MW-8	9/27/1988	10 – 30	14.11
MW-11	8/22/1991	25 – 60	13.99
MW-12	9/13/1991	24 – 34	15.25
MW-13	9/13/1991	24 – 34	15.55
MW-14	3/4/1993	20 – 40	16.15
MW-15	3/4/1993	20 – 40	15.13
MW-16	3/4/1993	20 – 40	15.37
MW-17	4/19/2000	20 – 40	16.35
MW-18	4/17/2000	10 – 30	12.95
MW-19	9/21/2001	10 – 20	15.21
MW-20	9/21/2001	10 – 20	14.95
MW-21	9/20/2001	10 – 20	14.28
MW-22	9/20/2001	10 – 20	15.33
MW-23S	4/30/2009	10 – 20	14.18
MW-23D	4/30/2009	25 – 60	15.02
MW-24S	9/2010	10-25	13.64
MW-24M	9/2010	35-40	15.45
MW-24D	9/2010	50-55	18.32
MW-25S	11/2010	10-25	14.14
MW-25M	11/2010	35-40	15.32
MW-25D	11/2010	50-55	18.43
RW-1R	3/21 – 3/22/2006	25 – 35	14.95
RW-1SR	3/21 – 3/22/2006	11.5 – 21.5	14.18
RW-2	4/18/1988	20 – 40	14.51
RW-3	4/18/1988	25 – 35	15.18
RW-3S	4/18/1988	10 – 20	14.81
RW-6	9/27/1988	10 – 30	14.35
RW-7	9/27/1988	10 – 30	14.41
RW-10	11/08/1990	25 – 35	15.25
RW-10S	11/08/1990	10 – 20	14.72

Petroleum Hydrocarbon Constituent Concentration

Contaminant	Soil (mg/kg)		Water (µg/L)		WQOs (µg/L) (MCL/Low Risk)
	Maximum	Latest (11/2010)	Maximum	Latest (9/19/2011)	
TPHg	NA	1.3	190,000	86	5 ^a
Benzene	NA	NA	14,000	<1	1/250
Toluene	NA	NA	290	<1	150/300
Ethylbenzene	NA	NA	410	<1	300/680
Xylenes	NA	0.0021	590	<1	1,750/1,750
MTBE	NA	0.056	280,000	54	13 Primary/ 5 Secondary
TBA	NA	0.038	100,000	200	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: CDPH Response Level

WQOs: Water Quality Objectives

MCL: Maximum Contaminant Level for public water supply

Low Risk: WQOs 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

mg/kg: milligrams per kilogram, parts per million

µg/L: micrograms per liter, parts per billion

Site Description

The Site is located on the southwest corner of the intersection of Westminster Avenue and Brookhurst Street. The Site is an active service station and is bounded by commercial and/or retail facilities to the west, the north, the east and the south. The nearest multi-family residential building is approximately 800 feet to the northwest, generally upgradient of the Site

Site History/Assessments

The Site has been an active fuel station since prior to 1987. In October 1987, gasoline and waste oil USTs were replaced and an unauthorized release was reported. To date, 35 monitoring and remediation wells have been installed. Multiple technologies have been employed at the Site including vapor extraction, dual phase extraction, groundwater extraction and treatment, and over purging of wells. A Site map showing the location of the current USTs, wells, and groundwater contours is provided at the end of this case closure summary.

Remediation Summary

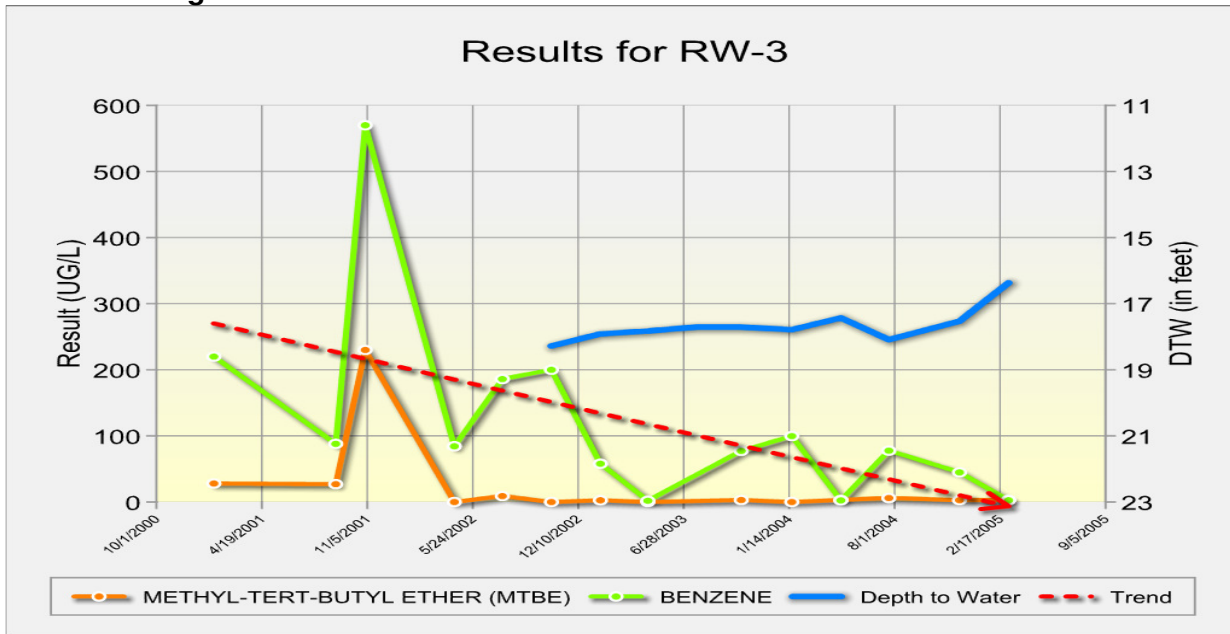
- Free Product: None
- Soil Excavation: Approximately 750 cubic yards of impacted soil was removed in October 1987.
- In-Situ Soil Remediation: A soil vapor extraction (SVE) was operated continuously from September 1991 until July 1993. SVE was re-started in January 1997 after a one-day SVE test in November 1996. The SVE system was operated until April 1997, resulting in the removal of 1,119 gallons of petroleum via soil vapor.
- Groundwater Remediation: Between September 1991 and January 1996, a groundwater pump-and-treat system (GWETS) was operated. The system was re-started in April 1998 and was operated until April 2001. The system was started again in October 1998. It ran until January 2001. The GWETS was responsible for 5,325,963 gallons of groundwater being removed from the shallow saturated zone(s).

- Additionally, between April 1998 and April 2001, there were several dual-phase extraction (DPE) events conducted. The DPE events resulted in the recovery of 36.5 gallons of petroleum hydrocarbons and 2,250 gallons of groundwater treated.
- Between April 1999 and January 2002, over-purging events were conducted in two wells resulting in the removal of 60,000 gallons of impacted groundwater.

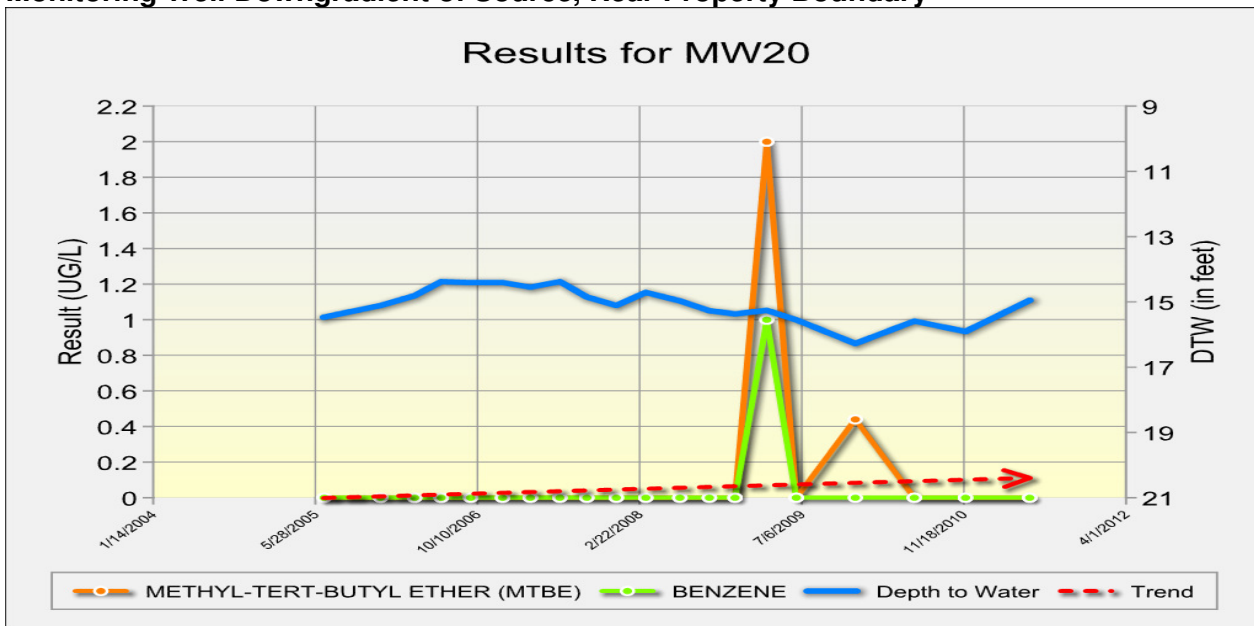
General Site Conditions

- **Geology and Hydrogeology:** The Site is underlain by interbedded clays, silty clays and poorly graded sands to the maximum depth explored. The depth to groundwater varies seasonally between 12 and 20 feet bgs and the groundwater gradient is southwest at approximately 0.002 feet/foot. The closest surface water is the Westminster Channel, a concrete lined storm water channel, located approximately 1,085 feet south of the Site. **Estimate of Hydrocarbon Mass in Soil:** No estimates were found in the documents reviewed; however, a total of 1,155 gallons of petroleum hydrocarbons have been recovered and 5,388,213 gallons of groundwater have been extracted and treated to date.
- **Groundwater Trends:** There are more than 23 years of groundwater monitoring data for this Site. The following graphs present analytical data for the monitoring wells: RW-3 in the source area, and MW-20 near the downgradient property boundary, approximately 50 feet from the source. Note the concentrations in the source area have dropped to nearly non-detectable and the concentrations in the nearby downgradient monitoring well have always been low.
- **Water Quality Objectives:** WQOs have been met, with the exception of TPHg and MTBE. MTBE was detected above the MCL threshold value of 53 µg/L and TPHg 86 µg/L in monitoring well MW-23D (QMR 9/19/2011). Well MW-23D is located approximately 70 feet south of the Site. A first order degradation calculation using a USEPA protocol indicates that the residual concentrations of MTBE should meet WQO's in less than a decade.

Monitoring Well Near Source Area



Monitoring Well Downgradient of Source, Near Property Boundary



Sensitive Receptor Survey

A review of available records in GeoTracker found no public water supply wells regulated by CDPH within a 2,000-foot radius of the Site. One surface water receptor was identified approximately 1,080 feet south of the Site, the Westminster Channel, a concrete-lined storm water channel. Drinking water at and near the Site is currently supplied by the City of Garden Grove Public Works.

Risk Evaluation

As a result of removal of approximately 750 cubic yards of affected soil, 5,388,213 gallons of groundwater extracted and treated, and 1,155 gallons of petroleum hydrocarbons removed via soil vapor, there is little residual petroleum hydrocarbon in soil or groundwater at the Site that would pose a threat to groundwater resources, human health, or the environment. Constituents of concern are below applicable WQOs or detection limits with the exception of TPHg and MTBE. There is little potential for hydrocarbon vapors to migrate or pose a threat to human health or the environment because: (1) residual concentrations are low; (2) the Site and public areas are paved with thick concrete; and (3) the Site is currently an active service station. There are no public water supply wells present within 2,000 feet of the Site. No information was available regarding the possible existence of domestic wells in the area.

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 water quality objectives 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 additional remediation of shallow groundwater. The soil excavation could also require the potential relocation of existing utilities, demolition of existing buildings, temporary closure of existing businesses and road closures. 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 residual petroleum hydrocarbons at this Site, and the fact that beneficial uses are not threatened, attaining water quality objectives 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. The water quality at the Site should meet basin plan Region 8 Guidance within a reasonable time frame, in this case, about ten years. 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 WQOs with respect to fuel hydrocarbons appear to have been achieved with the exception of TPHg and MTBE. Based on the historic rate of degradation, the WQO for MTBE of 5ug/L should be met within 5 years. Although there is no numeric water quality objective listed in Region 8 Basin Plan, using the most restrictive WQO in California for TPHg of 5 ug/L, WQO should be met within a decade.

This is a reasonable period in which to meet the requisite water quality because the impacted groundwater is not currently being used as a source of drinking water and it is highly unlikely that impacted groundwater will be used as a source of drinking water in the future. Residential and commercial water users are connected to a municipal drinking water supply. Other designated beneficial uses of the impacted groundwater are not threatened and it is highly unlikely that they will be. Considering the factors in the context of the Site setting, Site conditions do not represent a substantial threat to human health and safety and the environment, and case closure is appropriate.

Conclusion

Based on available information, the residual petroleum hydrocarbons at the Site do not pose significant risks to human health, safety, or the environment. Any impacted groundwater is not currently being used as a source of drinking water or other beneficial use. 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. Therefore, 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

