

## State Water Resources Control Board

### UST CASE CLOSURE REVIEW SUMMARY REPORT

#### Agency Information

Agency Name: Santa Ana Regional Water Quality Control Board (Regional Water Board)	Address: 3737 Main Street, Suite 500, Riverside, CA 92501
Agency Caseworker: Valerie Jahn-Bull	Case No.: 083601236T

#### Case Information

USTCF Claim No.: 6067	GeoTracker Global ID: T0607100142
Site Name: USA Petroleum Station #239	Site Address: 41339 Big Bear Blvd. Big Bear Lake, CA 92315
Responsible Party: USA Petroleum Corp. c/o Moller Investment Group, Inc. Attn: Charles Miller	Address: 6591 Collins Drive, #E-11, Moorpark, CA 93021
USTCF Expenditures to Date: \$1,308,077	Number of Years Case Open: 23

URL: [http://geotracker.waterboards.ca.gov/profile\\_report.asp?global\\_id=T0607100142](http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0607100142)

#### 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:

This case is an active commercial petroleum fueling facility. An unauthorized release was reported in May 1989 during an environmental investigation. Dual phase extraction conducted from 2005 through 2009 removed approximately 383 pounds of petroleum hydrocarbons in soil, and 1,641,378 gallons of contaminated groundwater. An offsite ozone sparging system also operated at the downgradient site in the same period. To date, 27 monitoring wells have been installed and monitored regularly. According to groundwater data, water quality objectives have been achieved for all constituents except for methyl tert-butyl ether (MTBE).

The petroleum release is limited to the soil and shallow groundwater. According to data available in GeoTracker, there are no supply wells regulated by the California Department of Public Health or surface water bodies 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. Water is provided to water users near the Site by the City of Big Bear Lake Department of Water and Power. 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 Specific Criteria: The case meets Policy Criterion 1 by Class 4. The contaminant plume that exceeds water quality objectives is less than 1,000 feet in length. There is no free product. The nearest supply well regulated by the California Department of Public Health or surface water body is greater than 1,000 feet from the defined plume boundary. No other water supply wells have been identified within 1,000 feet of the defined plume boundary. The dissolved concentrations of benzene and MTBE are each less than 1,000 µg/L. The MTBE plume originated from the Site appears detached and is now located at the site across Big Bear Boulevard to the north-northwest. The offsite MTBE plume is stable and is less than 250 feet in length.
- Vapor Intrusion to Indoor Air: The case meets the Policy Exclusion for Active Station. Soil vapor evaluation is not required because the Site is an active commercial petroleum fueling facility. Based on the June 2011 soil assessment, and the groundwater monitoring data, however, the case also meets Policy Criterion 2a by Scenario 3a. The maximum benzene concentration in groundwater is less than 100 µg/L. The minimum depth to groundwater is greater than 5 feet, overlain by soil containing less than 100 mg/kg of TPH.
- Direct Contact and Outdoor Air Exposure: Direct Contact and Outdoor Air Exposure — This case meets Policy Criterion 3b. Although no document titled "Risk Assessment" was found in the files reviewed, a professional assessment of site-specific risk from potential exposure to residual soil contamination found that maximum concentrations of petroleum constituents remaining in soil will have no significant risk of adversely affecting human health. Maximum concentrations in soil from five to ten feet below surface are less than those in Policy Table 1 for Commercial/Industrial or Residential use. Although concentrations in soil from zero to five feet below surface are not available, only MTBE in groundwater has been the concern at the Site. Furthermore, the Site is paved and accidental access to site soils is prevented. As an active gas station, any construction worker working at the Site will be prepared for exposure in their normal daily work.

#### **Objections to Closure and Responses**

Currently the Regional Water Board does not appear to object to UST case closure. However:

- The Regional Water Board requests that the Site closure be delayed to allow the ownership of several offsite monitoring wells to be transferred to the responsible party of the Stock Automotive case.

RESPONSE: While the State Water Board conducts the public notification for closure as required by the Policy, there should be sufficient time to transfer the ownership of the monitoring wells.

**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. San Bernardino County has the regulatory responsibility to supervise the abandonment of monitoring wells.

*Lisa Babcock*

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Lisa Babcock, P.G. 3939, C.E.G. 1235

*8/16/13*

\_\_\_\_\_  
Date

Prepared by: James Young, RCE #60266

**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.<sup>1</sup>**

<p><b>Is corrective action consistent with Chapter 6.7 of the Health and Safety Code and implementing regulations?</b>                  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.</p>	<p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
<p><b>Have waste discharge requirements or any other orders issued pursuant to Division 7 of the Water Code been issued at this case?</b></p>	<p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
<p><b>If so, was the corrective action performed consistent with any order?</b>                  There was an order issued for this case. 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 checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA</p>
<p><b><u>General Criteria</u></b>                  General criteria that must be satisfied by all candidate sites:</p> <p><b>Is the unauthorized release located within the service area of a public water system?</b></p> <p><b>Does the unauthorized release consist only of petroleum?</b></p> <p><b>Has the unauthorized (“primary”) release from the UST system been stopped?</b></p> <p><b>Has free product been removed to the maximum extent practicable?</b></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>

<sup>1</sup> 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](http://www.waterboards.ca.gov/board_decisions/adopted_orders/resolutions/2012/rs2012_0016atta.pdf)

<p><b>Has a conceptual site model that assesses the nature, extent, and mobility of the release been developed?</b></p> <p><b>Has secondary source been removed to the extent practicable?</b></p> <p><b>Has soil or groundwater been tested for MTBE and results reported in accordance with Health and Safety Code Section 25296.15?</b></p> <p><b>Nuisance as defined by Water Code section 13050 does not exist at the Site?</b></p> <p><b>Are there unique site attributes or site-specific conditions that demonstrably increase the risk associated with residual petroleum constituents?</b></p>	<p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>
<p><b><u>Media-Specific Criteria</u></b>        Candidate sites must satisfy all three of these media-specific criteria:</p> <p><b>1. Groundwater:</b>        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><b>Is the contaminant plume that exceeds water quality objectives stable or decreasing in areal extent?</b></p> <p><b>Does the contaminant plume that exceeds water quality objectives meet all of the additional characteristics of one of the five classes of sites?</b></p> <p>If YES, check applicable class: <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input checked="" type="checkbox"/> 4 <input type="checkbox"/> 5</p> <p><b>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?</b></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><b>2. Petroleum Vapor Intrusion to Indoor Air:</b>        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><b>Is the Site an active commercial petroleum fueling facility?</b>        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><b>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?</b>          If YES, check applicable scenarios: <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 4</p> <p><b>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?</b></p> <p><b>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?</b></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>
<p><b>3. Direct Contact and Outdoor Air Exposure:</b>          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><b>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)?</b></p> <p><b>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?</b></p> <p><b>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?</b></p>	<p><input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" 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>

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

**Site Location/History**

- This case is an active commercial petroleum fueling facility.
- The Site is bounded by Georgia Street to the west and Big Bear Boulevard to the north. The surrounding properties are comprised of a residential unit to the south, commercial facilities to the east and north, and Bear Valley Middle School which is located west of the site.
- Site maps showing the locations of the USTs, monitoring wells, offsite ozone sparging wells located at the downgradient site, groundwater level contours, petroleum constituent concentrations in groundwater, the limited MTBE plume that has traveled to the downgradient site, and the larger MTBE plume originated from the Stock Automotive site, are all provided at the end of this closure review summary (Environ Strategy Consultants, Inc., February 2013).
- Nature of Contaminants of Concern: Petroleum hydrocarbons only.
- Source: UST system.
- Date reported: May 1989.
- Status of Release: Release determined stopped after piping upgrade and tank tests passed in 1992 and 1993.
- Free Product: None reported.

**Tank Information**

Tank No.	Size in Gallons	Contents	Closed in Place/ Removed/Active	Date
1	12,000	Gasoline	Active	--
2	12,000	Gasoline	Active	--
3	12,000	Gasoline	Active	--

**Receptors**

- GW Basin: Bear Valley.
- Beneficial Uses: Regional Water Board Basin Plan lists Municipal and Domestic Supply and Industrial Process Supply.
- Land Use Designation: None specified. Aerial photo in GeoTracker shows the Site is commercial surrounded by mixed commercial and residential.
- Public Water System: City of Big Bear Lake, Department of Water and Power.
- Distance to Nearest Supply Well: According to data available in GeoTracker, there are no public supply wells regulated by the California Department of Public Health within 1,000 feet of the defined plume boundary. 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: There is no identified surface water within 1,000 feet of the defined plume boundary.

**Geology/Hydrogeology**

- Stratigraphy: The Site is underlain by interbedded and intermixed gravel, sand, silt and clay, predominantly coarse grained sediments.
- Maximum Sample Depth: 20 feet below ground surface (bgs).
- Minimum Groundwater Depth: 0.96 feet bgs at monitoring well PMW-2.
- Maximum Groundwater Depth: 21.32 feet bgs at monitoring well PMW-4.
- Current Average Depth to Groundwater: Approximately 10.53 feet bgs.
- Saturated Zones(s) Studied: Approximately 8 to 20 feet bgs.

- Appropriate Screen Interval: Unknown.
- Groundwater Flow Direction: Northwest with an average gradient of 0.05 feet/foot (November 2012).

**Monitoring Well Information**

Well Designation	Date Installed	Screen Interval (feet bgs)	Depth to Water (feet bgs) (11/2012)
PMW-1	July 1997	NA	6.53
PMW-2	July 1997	NA	7.10
PMW-3	July 1997	NA	10.84
PMW-4	July 1997	NA	7.78
PMW-5	July 1997	NA	7.93
PMW-6	July 1997	NA	10.02
PMW-7	December 1998	NA	8.44
PMW-8	December 1998	NA	8.36
PMW-9	December 1998	NA	7.69
PMW-10	December 1998	NA	11.16
PMW-11	December 1998	NA	14.88
PMW-12	December 1998	NA	10.38
PMW-13	December 1998	NA	10.37
PMW-14	December 1998	NA	11.36
PMW-15	September 1999	NA	15.06
PMW-16	September 1999	NA	12.31
PMW-17	September 1999	NA	12.15
PMW-18	September 1999	NA	8.15
PMW-19	September 1999	NA	6.24
PMW-20	September 1999	NA	8.69
MW-21-W	September 2003	NA	Not measured
MW-22-W	September 2003	NA	Dry
MW-25-W	October 2005	NA	8.84
MW-26-W	October 2005	NA	8.80
MW-27-W	October 2005	NA	9.17
OS-1s	October 2005	NA	Not measured
OS-1d	October 2005	NA	Not measured
OS-2s	October 2005	NA	Not measured
OS-2d	October 2005	NA	Not measured
OS-3s	October 2005	NA	Not measured
OS-3d	October 2005	NA	Not measured
OS-4s	October 2005	NA	Not measured
OS-4d	October 2005	NA	Not measured
OS-5d	October 2005	NA	Dry
OS-6s	December 2006	NA	Not measured
OS-6d	December 2006	NA	Not measured
OS-7s	December 2006	NA	Not measured
OS-7d	December 2006	NA	Not measured
OS-8s	December 2006	NA	Dry
OS-9s	May 2008	NA	Dry
OS-9d	May 2008	NA	Dry

**Remediation Summary**

- Free Product: None reported in GeoTracker.
- Soil Excavation: None reported in GeoTracker.
- In-Situ Soil Remediation: An offsite ozone sparging system operated at the downgradient site from 2005 to 2009. A dual phase extraction system operated at the subject Site from 2000 to 2004. Approximately 383 pounds of petroleum hydrocarbons were removed from the subsurface.
- Groundwater Remediation: The offsite ozone sparging system operated at the downgradient site from 2005 to 2009. During the groundwater extraction system operation from 2000 to 2009, approximately 1,641,378 gallons of groundwater were removed.

**Most Recent Concentrations of Petroleum Constituents in Soil**

Constituent	Maximum 0-5 feet bgs [mg/kg and (date)]	Maximum 5-10 feet bgs [mg/kg and (date)]
Benzene	NA	<0.005 (06/09/11)
Ethylbenzene	NA	<0.005 (06/09/11)
Naphthalene	NA	<0.005 (06/09/11)
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

**Most Recent Concentrations of Petroleum Constituents in Groundwater**

Sample	Sample Date	TPHg (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	TBA (µg/L)
PMW-1	9/13/12	<50	<1	<5	<5	<5	<1	<10
PMW-2	9/13/12	<50	<1	<5	<5	<5	<1	<10
PMW-3	11/14/12	67.4	<1	<5	<5	<5	<b>54</b>	130
PMW-4	9/13/12	<50	<1	<5	<5	<5	<b>7.6</b>	<10
PMW-5	9/13/12	<50	<1	<5	<5	<5	<1	<10
PMW-6	11/14/12	<50	<1	<5	<5	<5	<b>86</b>	<10
PMW-7	9/13/12	<50	<1	<5	<5	<5	<1	<10
PMW-8	9/13/12	<50	<1	<5	<5	<5	1.2	<10
PMW-9	9/13/12	<50	<1	<5	<5	<5	<1	<10
PMW-10	11/14/12	192	<5	<25	<25	<25	<b>320</b>	<50
PMW-11	11/14/12	<50	<1	<5	<5	<5	<1	<10
PMW-12	11/15/12	<50	<1	<5	<5	<5	<1	<10
PMW-13	11/14/12	<50	<1	<5	<5	<5	<1	<10
PMW-14	11/14/12	<50	<1	<5	<5	<5	<1	<10
PMW-15	11/14/12	<50	<1	<5	<5	<5	<1	<10
PMW-16	11/14/12	<50	<1	<5	<5	<5	<1	<10
PMW-17	11/15/12	<50	<1	<5	<5	<5	<1	<10
PMW-18	11/14/12	265	<1	<5	<5	<5	<b>80</b>	<10
PMW-19	11/14/12	<50	<1	<5	<5	<5	<1	<10
PMW-20	11/15/12	<50	<1	<5	<5	<5	<1	<10
MW-25-W	11/14/12	<50	<1	<5	<5	<5	<b>23</b>	<10
MW-26-W	11/14/12	87.8	<1	<5	<5	<5	<b>140</b>	<10
MW-27-W	11/14/12	<50	<1	<5	<5	<5	<1	<10
OS-1s	11/13/12	<50	<1	<5	<5	<5	<b>40</b>	10
OS-1d	11/13/12	<50	<1	<5	<5	<5	<b>37</b>	32
OS-2s	11/13/12	<50	<1	<5	<5	<5	<b>32</b>	<10
OS-2d	11/13/12	<50	<1	<5	<5	<5	<b>47</b>	230
OS-3s	11/13/12	80.0	<1	<5	<5	<5	<b>130</b>	140
OS-3d	11/13/12	53.6	<1	<5	<5	<5	<b>81</b>	240
OS-4s	11/13/12	<50	<1	<5	<5	<5	<b>52</b>	<10
OS-4d	11/13/12	57.1	<1	<5	<5	<5	<b>85</b>	160
OS-5d	9/12/12	144	<1	<5	<5	<5	<b>170</b>	270
OS-6s	11/13/12	308	<5	<25	<25	<25	<b>410</b>	<50
OS-6d	11/13/12	287	<5	<25	<25	<25	<b>430</b>	<50
OS-7s	11/13/12	256	<5	<25	<25	<25	<b>420</b>	<50
OS-7d	11/13/12	<50	<1	<5	<5	<5	<b>6.1</b>	<10
OS-8s	3/12/12	<50	<1	<5	<5	<5	1.3	<10
OS-9s	6/4/12	414	<1	<5	<5	<5	<b>250</b>	200
OS-9d	9/12/12	164	<1	<5	<5	<5	<b>160</b>	70
<b>WQOs</b>		--	<b>1</b>	<b>150</b>	<b>300</b>	<b>1,750</b>	<b>5<sup>a</sup></b>	<b>1,200<sup>b</sup></b>

NA: Not Analyzed, Not Applicable or Data Not Available  
 <: Not detected at or above stated reporting limit  
 TPHg: Total petroleum hydrocarbons as gasoline  
 TPHd: Total petroleum hydrocarbons as diesel  
 TBA: Tert-butyl alcohol

µg/L: Micrograms per liter, parts per billion  
 TPHg: Total petroleum hydrocarbons as gasoline  
 MTBE: Methyl tert-butyl ether  
 WQOs: Water Quality Objectives, Regional Water Board Basin Plan

<sup>a</sup>: Secondary maximum contaminant level (MCL)

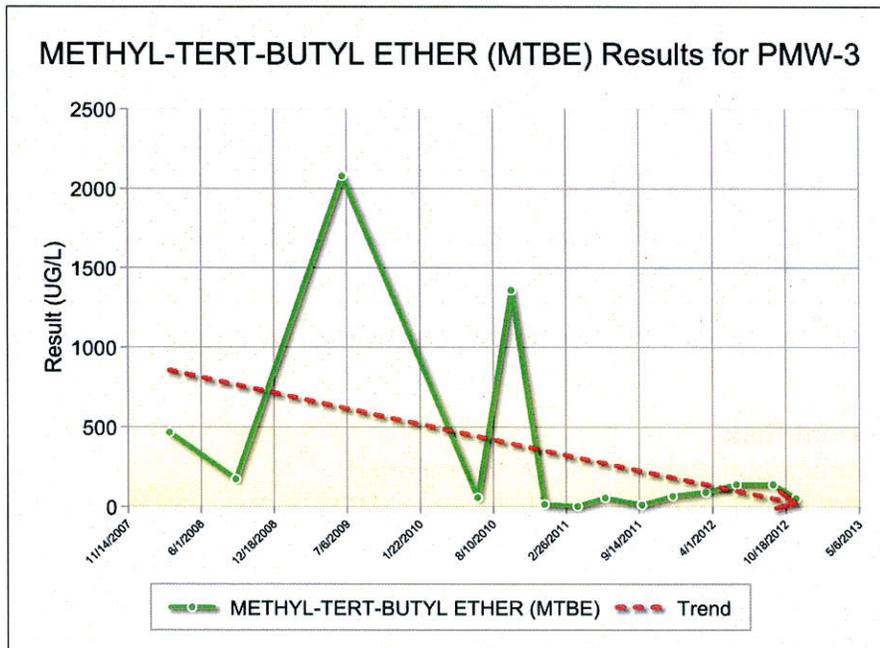
<sup>b</sup>: California Department of Public Health, Response Level

--: Regional Water Board Basin Plan does not have a numeric water quality objective for TPHg

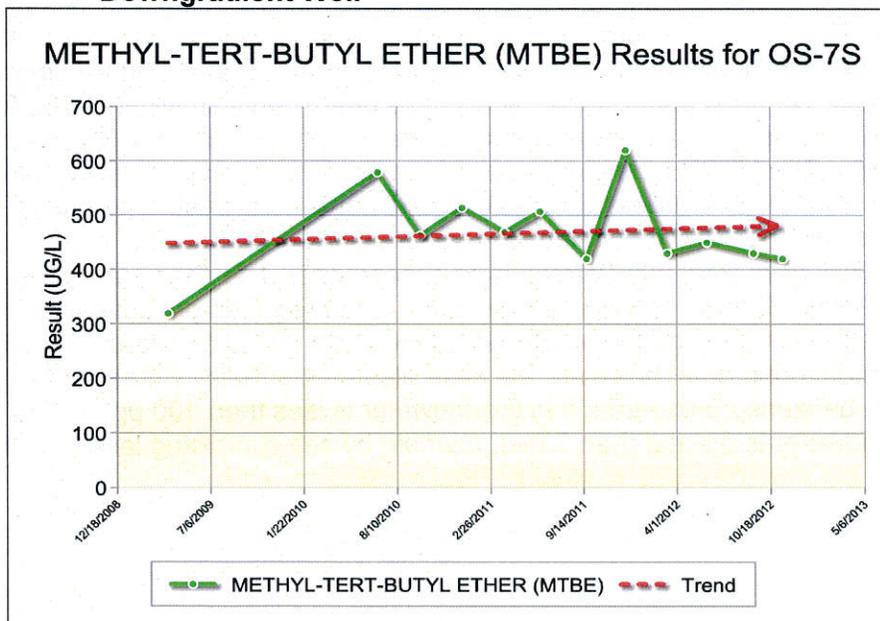
**Groundwater Trends**

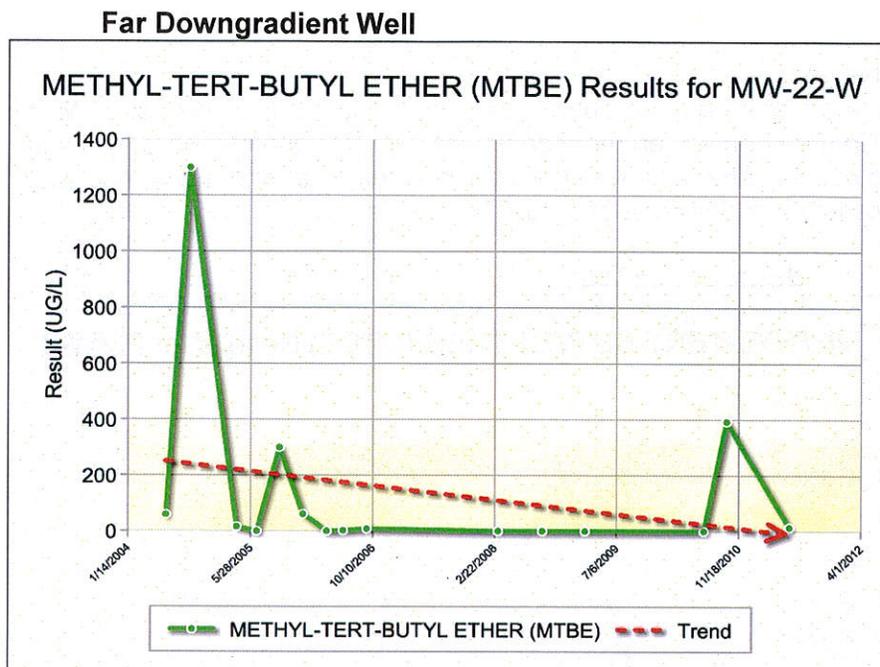
- There are 15 years of irregular groundwater monitoring data for this case. MTBE trends are shown below in the source area monitoring well, PMW-3, the downgradient well, OS-7s, located at the center of the plume at the downgradient site, and monitoring well, MW-22-W, further downgradient at the edge of the MTBE plume:

**Source Area Well**



**Downgradient Well**



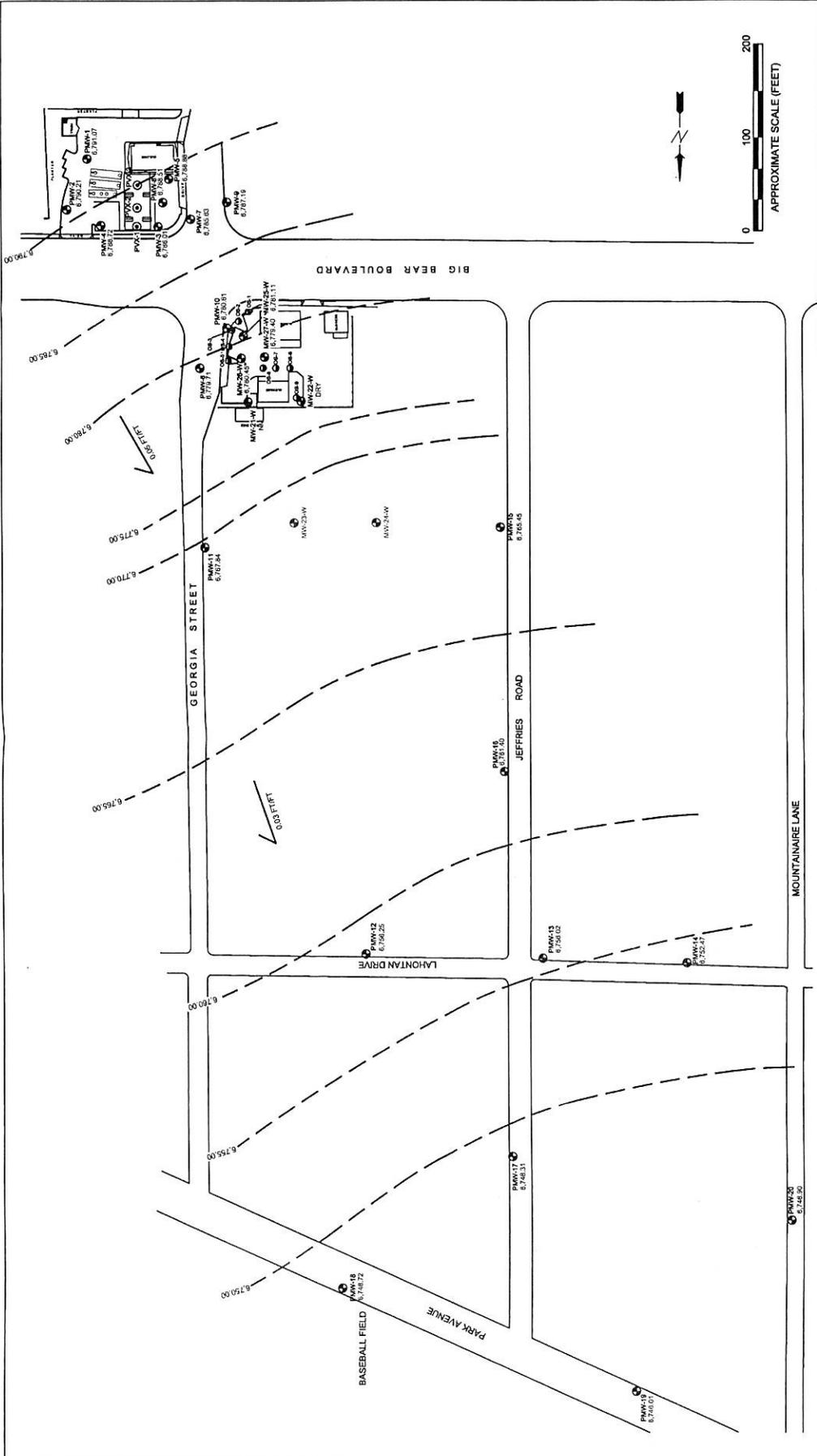


#### Evaluation of Current Risk

- 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: <1,000 feet long.
- 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 4. The contaminant plume that exceeds water quality objectives is less than 1,000 feet in length. There is no free product. The nearest supply well regulated by the California Department of Public Health or surface water body is greater than 1,000 feet from the defined plume boundary. No other water supply wells have been identified within 1,000 feet of the defined plume boundary. The dissolved concentrations of benzene and MTBE are each less than 1,000  $\mu\text{g/L}$ . The MTBE plume originated from the Site appears detached and is now located at the site across Big Bear Boulevard to the north-northwest. The offsite MTBE plume is stable and is less than 250 feet in length.
- Indoor Vapor Risk from Residual Petroleum Hydrocarbons: The case meets the Policy Exclusion for Active Station. Soil vapor evaluation is not required because the Site is an active commercial petroleum fueling facility. Based on the June 2011 soil assessment, and the groundwater monitoring data; however, the case also meets Policy Criterion 2a by Scenario 3a. The maximum benzene concentration in groundwater is less than 100  $\mu\text{g/L}$ . The minimum depth to groundwater is greater than 5 feet, overlain by soil containing less than 100 mg/kg of TPH.

- Direct Contact and Outdoor Air Exposure: Direct Contact and Outdoor Air Exposure — This case meets Policy Criterion 3b. Although no document titled “Risk Assessment” was found in the files reviewed, a professional assessment of site-specific risk from potential exposure to residual soil contamination found that maximum concentrations of petroleum constituents remaining in soil will have no significant risk of adversely affecting human health. Maximum concentrations in soil from five to ten feet below surface are less than those in Policy Table 1 for Commercial/Industrial or Residential use. Although concentrations in soil from zero to five feet below surface are not available, only MTBE in groundwater has been the concern at the Site. Furthermore, the Site is paved and accidental access to site soils is prevented. As an active gas station, any construction worker working at the Site will be prepared for exposure in their normal daily work.





<p><b>environ strategy consultants, inc.</b></p> <p>1036 W. Taft Avenue, Suite 200 Orange, California 92665</p>	<p><b>FIGURE 4</b></p> <p><b>GROUNDWATER CONTOUR MAP</b></p>	
	<p>DATE 12/27/2012</p>	<p>PROJECT NO. 754</p>
<p>Former USA Service Station No. 239 41339 Big Bear Boulevard Big Bear Lake, California</p>		
<p>FILE NO. 754F4-GCM</p>		

**LEGEND:**

- PMK-1 LOCATION OF MONITORING WELL BY PARK
- PXX-1 LOCATION OF DUAL PHASE EXTRACTION WELL
- MW-21-W LOCATION OF MONITORING WELL BY WATERSTONE
- OS-1 LOCATION OF OZONE SPARGE WELL
- MW-23-W LOCATION OF ABANDONED MONITORING WELL
- NM NOT MEASURED

6.752.53 GROUNDWATER ELEVATION IN FEET AMSL  
 --- APPROXIMATE GROUNDWATER CONTOUR IN FEET AMSL  
 0.06 F/FT APPROXIMATE GROUNDWATER FLOW DIRECTION AND MAGNITUDE  
 - - - NOT USED IN CONTOURING

SOURCES: STRATUS JULY 2010  
 WATERSTONE ENVIRONMENTAL APRIL 2006

WELLS MEASURED ON 11/15/2012, 11/14/2012, & 11/15/2012



