

## 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: Tom Mbeke-Ekanem	Case No.: 083303120T

#### Case Information

USTCF Claim No.: 12957	Global ID: T0606500514
Site Name: USA Station #241	Site Address: 3950 Tyler Street, Riverside, CA 92503
Responsible Party: USA Gasoline Corp.	Address: 30101 Agoura Court, Suite 200, Agoura Hills, CA 91301
USTCF Expenditures to Date: \$1,047,225	Number of Years Case Open: 15

URL: [http://geotracker.waterboards.ca.gov/profile\\_report.asp?global\\_id=T0606500514](http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0606500514)

#### 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 case does not meet 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 (CSM) 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:

An unauthorized release was reported in January 1998 after three gasoline USTs had been removed in November 1997. Soil vapor extraction was conducted between December 2003 and December 2006, which removed approximately 8,789 pounds of total petroleum hydrocarbons as gasoline (TPHg). Ozone sparging and hydrogen peroxide injection was conducted between February 2005 and December 2006. Since 1998, twenty-two monitoring wells have been installed and monitored intermittently. According to groundwater data, water quality objectives have been achieved or nearly achieved for all constituents except 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 projected plume boundary. No other water supply wells have been identified within 1,000 feet of the projected plume boundary in files reviewed. Water is provided to water users near the Site by the City of Riverside. 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 5. The contaminant plume that exceeds water quality objectives is less than 1,000 feet in length. There is no free product. The nearest water supply well or surface water body is greater than 1,000 feet from the projected plume boundary. The dissolved concentration of benzene is less than 3,000 µg/L and the dissolved concentration of MTBE is less than 1,000 µg/L. The regulatory agency determines, based on an analysis of site specific conditions, which 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 water quality objectives will be achieved within a reasonable time frame.
- Vapor Intrusion to Indoor Air: The case meets the Policy Active Station Exclusion - Soil vapor evaluation is not required because Site is an active commercial petroleum fueling facility and the release characteristics of the release do not pose an unacceptable health risk.
- Direct Contact and Outdoor Air Exposure: The case meets Policy Criterion 3a. Maximum concentrations in soil are less than those in Table 1 for Commercial/Industrial sites and the concentration limits for a Utility Worker are not exceeded. 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 percent benzene and 0.25 percent naphthalene. Therefore, benzene 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, the 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.

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

Far downgradient well MW-16, which contained 897 µg/L MTBE in June 2006, was abandoned before the plume was defined (Regional Water Board case worker statement on April 5, 2012).

**RESPONSE:** Confirmation grab groundwater collected on September 7, 2012, adjacent to MW-16 contained no petroleum hydrocarbon above laboratory reporting limits. The MTBE plume is rapidly decreasing in aerial extent and the extent is adequately defined by the existing monitoring well network.

#### **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.

USA Station #241  
3950 Tyler Street, Riverside  
Claim No: 12957

July 2013

**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. Riverside 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

*9/29/13*

\_\_\_\_\_  
Date

Prepared by: Kirk Larson, P.G.

**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 type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>
<p><b>If so, was the corrective action performed consistent with any order?</b></p>	<p><input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" 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><b>Has a conceptual site model that assesses the nature, extent, and mobility of the release been developed?</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> <p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</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 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 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><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 type="checkbox"/> 4 <input checked="" 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><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></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>

<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>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 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 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 CASE INFORMATION (Conceptual Site Model)

### Site Location/History

- This Site is a commercial petroleum fueling facility and is bounded by businesses across Hole Avenue to the north, businesses across Tyler Street to the east, and a parking lot to the west and south. The surrounding land use is commercial.
- Since 1998, twenty-two monitoring wells have been installed and monitored regularly.
- Site maps showing the location of the USTs, monitoring wells, confirmation borings, and groundwater level contours are provided at the end of this closure summary (Stratus, 2012 and Environ Strategy Consultants, Inc, 2013).
- Nature of Contaminants of Concern: Petroleum hydrocarbons only.
- Source: UST system.
- Date reported: January 1998.
- Status of Release: USTs replaced.
- Free Product: None reported.

### Tank Information

Tank No.	Size in Gallons	Contents	Closed in Place/ Removed/Active	Date
1-3	15,000	Gasoline	Removed	November 1997
4-6	15,000	Gasoline	Active	-

### Receptors

- GW Basin: Upper Santa Ana Valley - Riverside - Arlington.
- Beneficial Uses: Regional Water Board Basin Plan lists Municipal and Domestic Supply.
- Land Use Designation: Aerial photograph available on GeoTracker suggests commercial land use in the vicinity of the Site.
- Public Water System: City of Riverside.
- 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 projected plume boundary. No other water supply wells were identified within 1,000 feet of the projected plume boundary in the files reviewed.
- Distance to Nearest Surface Water: There is no identified surface water within 1,000 feet of the projected plume boundary.

### Geology/Hydrogeology

- Stratigraphy: The Site is underlain by interbedded and intermixed gravel, sand, silt and clay; underlain by consolidated rock.
- Maximum Sample Depth: 45 feet below ground surface (bgs).
- Minimum Groundwater Depth: 24.95 feet bgs at monitoring well MW-14.
- Maximum Groundwater Depth: 38.41 feet bgs at monitoring well MW-24.
- Current Average Depth to Groundwater: Approximately 35 feet bgs.
- Saturated Zones(s) Studied: Approximately 25 - 42 feet bgs.
- Appropriate Screen Interval: Yes.
- Groundwater Flow Direction: Southwest with an average gradient of 0.01 feet/foot (December 2011).

**Monitoring Well Information**

Well Designation	Date Installed	Screen Interval (feet bgs)	Depth to Water (feet bgs) (12/21/2011)
MW-1	July 1998	17-37	35.84
MW-2	July 1998	20-40	34.28
MW-3	July 1998	20-40	33.78
MW-4	June 1999	10-35	Dry
MW-5	June 1999	15-36	35.00
MW-6	June 1999	15-40	31.90
MW-7	June 1999	15-40	35.74
MW-8	June 1999	15-40	35.55
MW-9	September 2001	10-40	33.51
MW-10	September 2001	10-40	34.20
MW-11R	May 2006	?	33.28
MW-12	July 2003	10-40	31.20
MW-13	July 2003	10-40	33.13
MW-14	November 2004	22-42	37.48
MW-19	May 2006	?-35	34.80
MW-20	May 2006	?-36	35.57
MW-21	May 2006	?-37	NM
MW-22	May 2006	?-38	37.97
MW-23	May 2006	?-37	37.20
MW-24	May 2006	?-38	38.31
EW-1	October 2003	13-38	NM
EW-3	October 2003	13-38	34.93

NM: Not measured

**Remediation Summary**

- Free Product: No free product was documented in GeoTracker.
- Soil Excavation: Unknown.
- In-Situ Soil Remediation: Soil vapor extraction was conducted between December 2003 and December 2006, which removed approximately 8,789 pounds of TPHg.
- Groundwater Remediation: Ozone sparging and hydrogen peroxide injection was conducted between February 2005 and December 2006.

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

Constituent	Maximum 0-5 feet bgs [mg/kg (date)]	Maximum 5-10 feet bgs [mg/kg (date)]
Benzene	<0.002 (01/27/05)	<0.25 in CB 2-6 (02/23/12)
Ethylbenzene	<0.002 (01/27/05)	<0.25 in CB 2-6 (02/23/12)
Naphthalene	NA	0.94 in CB 2-6 (02/23/12)
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)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	TBA (µg/L)
MW-2	12/21/11	<50	<1	<5	<5	<5	1.1	<10
MW-8	12/21/11	<50	<1	<5	<5	<5	<1	<10
MW-9	12/21/11	<50	<1	<5	<5	<5	<1	<10
MW-10	12/21/11	<50	<1	<5	<5	<5	<1	<10
MW-11R	12/21/11	<50	<1	<5	<5	<5	<1	<10
MW-19	12/21/11	<50	<1	<5	<5	<5	<1	<10
MW-20	12/21/11	162	<1	<5	<5	<5	<b>210</b>	62
MW-22	12/21/11	<50	<1	<5	<5	<5	<1	<10
MW-23	12/21/11	209	<1	<5	<5	<5	<b>230</b>	73
MW-24	12/21/11	<50	<1	<5	<5	<5	<1	<10
CB-4 <sup>a</sup>	9/7/12	<50	<1	<5	<5	<5	<1	<1
WQO	-	--	<b>1</b>	<b>150</b>	<b>300</b>	<b>1,750</b>	<b>5</b>	<b>1,200<sup>b</sup></b>

NA: Not Analyzed, Not Applicable or Data Not Available

µg/L: Micrograms per liter, parts per billion

<: Not detected at or above stated reporting limit

TPHg: Total petroleum hydrocarbons as gasoline

MTBE: Methyl tert-butyl ether

TBA: Tert-butyl alcohol

WQOs: Water Quality Objectives, Regional Water Board Basin Plan

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

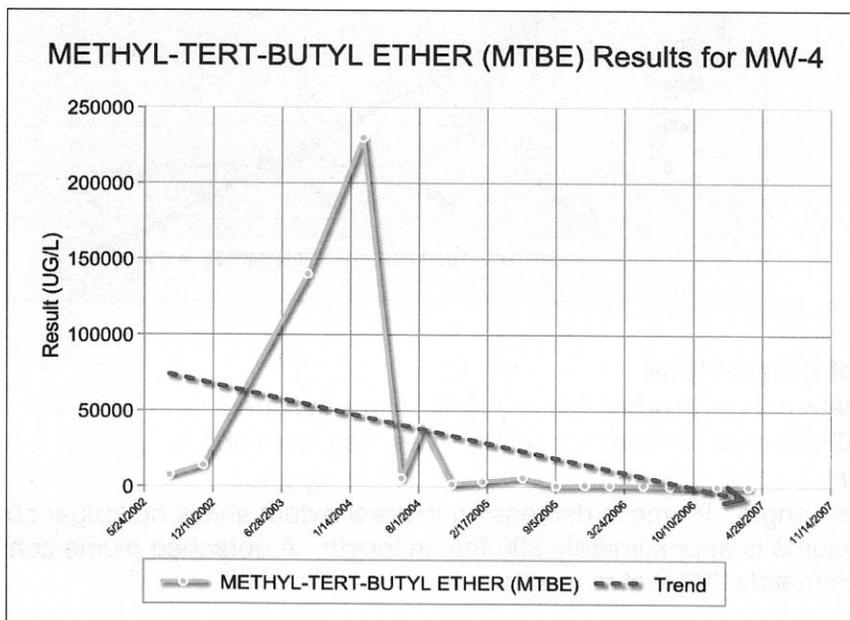
a: Grab groundwater sample to further define plume collected 9/7/2012.

b: California Department of Public Health, Response Level

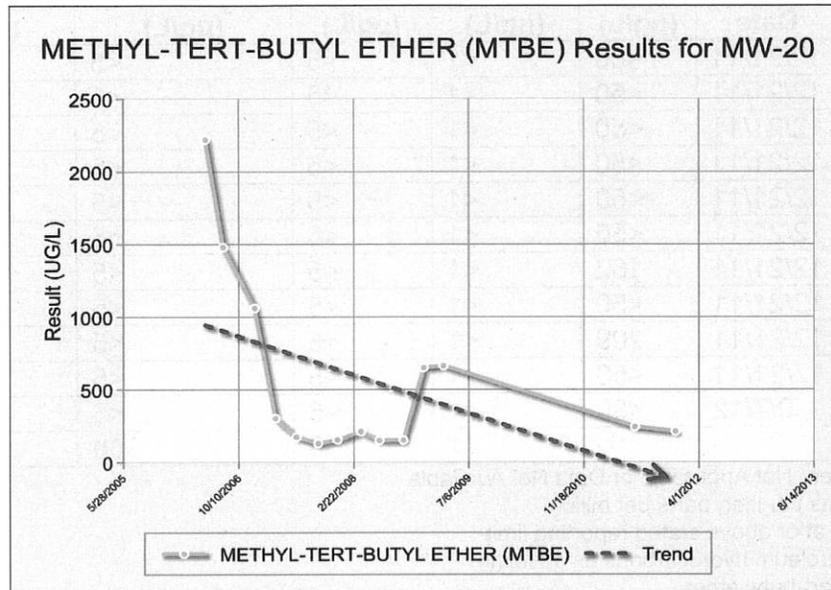
**Groundwater Trends**

There are more than 13 years of groundwater monitoring data for this Site. MTBE trends are shown below: Source area (MW-4), Near downgradient (MW-20), and Far downgradient (MW-22).

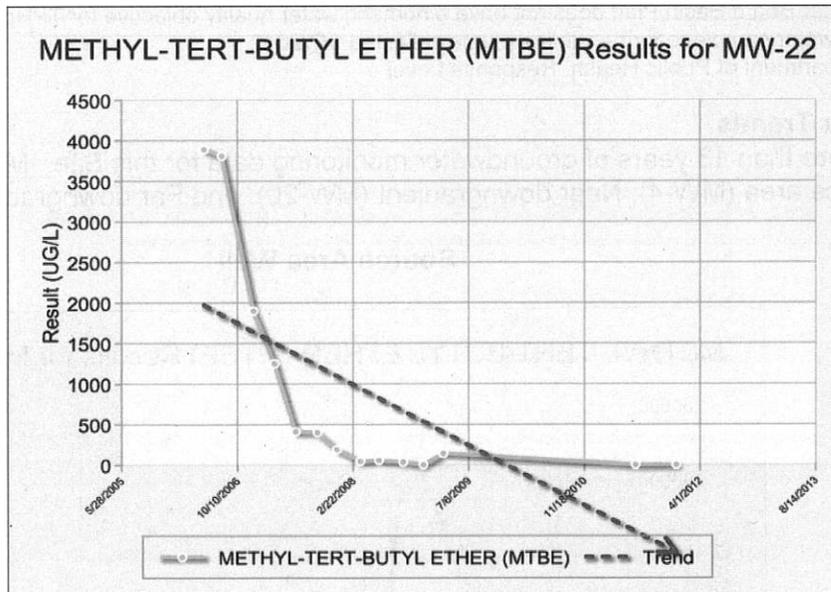
**Source Area Well**



### Near Downgradient Well



### Far Downgradient Well



### Evaluation of Current Risk

- Estimate of Hydrocarbon Mass in Soil: None reported.
- Soil/ Groundwater tested for MTBE: Yes, see table above.
- Oxygen Concentrations in Soil Vapor: None reported.
- Plume Length: Plume is decreasing in areal extent and is no longer contiguous. The source area plume is approximately 200 feet in length. A detached plume centered on MW-23 is approximately 200 feet in length.

- Plume Stable or Decreasing: The plume has reduced in aerial extent by more than half in the last ten years.
- Contaminated Zone(s) Used for Drinking Water: No.
- Groundwater Risk from Residual Petroleum Hydrocarbons: The case meets Policy Criterion 1 by Class 5. The contaminant plume that exceeds water quality objectives is less than 1,000 feet in length. There is no free product. The nearest water supply well or surface water body is greater than 1,000 feet from the projected plume boundary. The dissolved concentration of benzene is less than 3,000 µg/L and the dissolved concentration of MTBE is less than 1,000 µg/L. The regulatory agency determines, based on an analysis of site specific conditions, which 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 water quality objectives will be achieved within a reasonable time frame.
- Indoor Vapor Risk from Residual Petroleum Hydrocarbons: The case meets the Policy Active Station Exclusion - Soil vapor evaluation is not required because site is an active commercial petroleum fueling facility and the release characteristics of the release do not pose an unacceptable health risk.
- Direct Contact Risk from Residual Petroleum Hydrocarbons: The case meets Policy Criterion 3a. Maximum concentrations in soil are less than those in Table 1 for Commercial/Industrial sites and the concentration limits for a Utility Worker are not exceeded. 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 percent benzene and 0.25 percent naphthalene. Therefore, benzene 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, the 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.

