STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

ORDER WQ 2014-0068 – UST

In the Matter of Underground Storage Tank Case Closure

Pursuant to Health and Safety Code Section 25299.39.2 and the Low Threat Underground Storage Tank Case Closure Policy

---

BY THE EXECUTIVE DIRECTOR[1]:

Pursuant to Health and Safety Code section 25299.39.2, the Manager of the Underground Storage Tank Cleanup Fund (Fund) recommends closure of the underground storage tank (UST) case at the site listed below.[2] The name of the Fund claimant, the Fund claim number, the site name and the applicable site address are as follows:

Toms Sierra Company Inc.
Claim No. 10407
Toms Sierra Bulk Plant
335 Railroad Avenue, Grass Valley

Nevada County Department of Environmental Health

I. STATUTORY AND PROCEDURAL BACKGROUND

Section 25299.39.2 directs the Fund manager to review the case history of claims that have been active for five years or more (five-year review), unless there is an objection from the UST owner or operator. This section further authorizes the Fund Manager to make recommendations to the State Water Resources Control Board (State Water Board) for closure of a five-year-review case if the UST owner or operator approves. In response to a recommendation by the Fund Manager, the State Water Board, or in certain cases the State Water Board Executive Director, may close a case or require the closure of a UST case. Closure of a UST case is appropriate where the corrective action ensures the protection of human health, safety, and the environment and where the corrective action is consistent with:

---

[1] State Water Board Resolution No. 2012-0061 delegates to the Executive Director the authority to close or require the closure of any UST case if the case meets the criteria found in the State Water Board's Low Threat Underground Storage Tank Case Closure Policy adopted by State Water Board Resolution No. 2012-0016.

[2] Unless otherwise noted, all references are to the Health and Safety Code.

1) Chapter 6.7 of Division 20 of the Health and Safety Code and implementing regulations; 2) Any applicable waste discharge requirements or other orders issued pursuant to Division 7 of the Water Code; 3) All applicable state policies for water quality control; and 4) All applicable water quality control plans.

The Fund Manager has completed a five-year review of the UST case identified above, and recommends that this case be closed. The recommendation is based upon the facts and circumstances of this particular UST case. A UST Case Closure Review Summary Report has been prepared for the case identified above and the bases for determining compliance with the Water Quality Control Policy for Low-Threat Underground Storage Tank Case Closures (Low-Threat Closure Policy or Policy) are explained in the Case Closure Review Summary Report.

A. Low-Threat Closure Policy

In State Water Board Resolution No. 2012-0016, the State Water Board adopted the Low Threat Closure Policy. The Policy became effective on August 17, 2012. The Policy establishes consistent statewide case closure criteria for certain low-threat petroleum UST sites. In the absence of unique attributes or site-specific conditions that demonstrably increase the risk associated with residual petroleum constituents, cases that meet the general and media-specific criteria in the Low-Threat Closure Policy pose a low threat to human health, safety and the environment and are appropriate for closure under Health and Safety Code section 25296.10. The Policy provides that if a regulatory agency determines that a case meets the general and media-specific criteria of the Policy, then the regulatory agency shall notify responsible parties and other specified interested persons that the case is eligible for case closure. Unless the regulatory agency revises its determination based on comments received on the proposed case closure, the Policy provides that the agency shall issue a closure letter as specified in Health and Safety Code section 25296.10. The closure letter may only be issued after the expiration of the 60-day comment period, proper destruction or maintenance of monitoring wells or borings, and removal of waste associated with investigation and remediation of the site.

Health and Safety Code section 25299.57, subdivision (l)(1) provides that claims for reimbursement of corrective action costs that are received by the Fund more than 365 days after the date of a closure letter or a Letter of Commitment, whichever occurs later, shall not be reimbursed unless specified conditions are satisfied. A Letter of Commitment has already been issued on the claim subject to this order and the respective Fund claimant, so the 365-day timeframe for the submittal of claims for corrective action costs will start upon the issuance of the closure letter.

II. FINDINGS

Based upon the UST Case Closure Review Summary Report prepared for the case attached hereto, the State Water Board finds that corrective action taken to address the unauthorized release of petroleum at the UST release site identified as:

Claim No.10407
Toms Sierra Bulk Plant

ensures protection of human health, safety and the environment and is consistent with Chapter 6.7 of Division 20 of the Health and Safety Code and implementing regulations, the Low-Threat Closure Policy and other water quality control policies and applicable water quality control plans.

The unauthorized release from the UST consisted only of petroleum. This order directs closure for the petroleum UST case at the site.

Pursuant to the Low-Threat Closure Policy, notification has been provided to all entities that are required to receive notice of the proposed case closure, a 60-day comment period has been provided to notified parties, and any comments received have been considered by the Board in determining that the case should be closed.

Pursuant to section 21080.5 of the Public Resources Code, environmental impacts associated with the adoption of this Order were analyzed in the substitute environmental document (SED) the State Water Board approved on May 1, 2012. The SED concludes that all environmental effects of adopting and implementing the Low threat Closure Policy are less than significant, and environmental impacts as a result of complying with the Policy are no different from the impacts that are reasonably foreseen as a result of the Policy itself. A Notice of Decision was filed August 17, 2012. No new environmental impacts or any additional reasonably foreseeable impacts beyond those that were not addressed in the SED will result from adopting this Order.

The UST case identified above may be the subject of orders issued by the Regional Water Quality Control Board (Regional Water Board) pursuant to Division 7 of the Water Code. Any orders that have been issued by the Regional Water Board pursuant to Division 7 of the Water Code, or directives issued by a Local Oversight Program agency for this case should be rescinded to the extent they are inconsistent with this Order.

III. ORDER

IT IS THEREFORE ORDERED that:

A. The UST case identified in Section II of this Order, meeting the general and media-specific criteria established in the Low-Threat Closure Policy, be closed in accordance with the following conditions and after the following actions are complete. Prior to the issuance of a closure letter, the Fund claimant is ordered to:

1. Properly destroy monitoring wells and borings unless the owner of real property on which the well or boring is located certifies that the wells or borings will be maintained in accordance with local or state requirements;

2. Properly remove from the site and manage all waste piles, drums, debris, and other investigation and remediation derived materials in accordance with local or state requirements; and

3. Within six months of the date of this Order, submit documentation to the regulatory agency overseeing the UST case identified on page 1 of this Order that the tasks in subparagraphs (1) and (2) have been completed.

B. The tasks in subparagraphs (1) and (2) of paragraph (A) are ordered pursuant to Health and Safety Code section 25296.10 and failure to comply with these requirements may result in the imposition of civil penalties pursuant to Health and Safety Code section 25299, subdivision (d)(1). Penalties may be imposed administratively by the State Water Board or Regional Water Board.

C. Within 30 days of receipt of proper documentation from the Fund claimant that requirements in subparagraphs (1) and (2) of paragraph (A) are complete, the regulatory agency that is responsible for oversight of the UST case identified in Section II of this Order shall notify the State Water Board that the tasks have been satisfactorily completed.

D. Within 30 days of notification from the regulatory agency that the tasks are complete pursuant to paragraph (C), the Deputy Director of the Division of Financial Assistance shall issue a closure letter consistent with Health and Safety Code section 25296.10,

subdivision (g) and upload the closure letter and UST Case Closure Review Summary Report to GeoTracker.

E. As specified in Health and Safety Code section 25299.39.2, subdivision (a) (2), corrective action costs incurred after a recommendation of closure shall be limited to $10,000 per year unless the Board or its delegated representative agrees that corrective action in excess of that amount is necessary to meet closure requirements, or additional corrective actions are necessary pursuant to section 25296.10, subdivisions (a) and (b). Pursuant to section 25299.57, subdivision (l) (1), and except in specified circumstances, all claims for reimbursement of corrective action costs must be received by the Fund within 365 days of issuance of the closure letter in order for the costs to be considered.

F. Any Regional Water Board or Local Oversight Program Agency directive or order that directs corrective action or other action inconsistent with case closure for the UST case identified in Section II is rescinded, but only to the extent the Regional Water Board order or Local Oversight Program Agency directive is inconsistent with this Order.

Thomas Howard
Executive Director

4/17/14
Date

UST CASE CLOSURE REVIEW SUMMARY REPORT

Agency Information

Agency Name: Nevada County Department of Environmental Health (County)	Address: 950 Madu Lane Nevada City, CA 95959
Agency Caseworker: David Huff	Case No.: 3

Case Information

USTCF Claim No.: 10407	GeoTracker Global ID: T06055700064
Site Name: Toms Sierra Bulk Plant	Site Address: 335 Railroad Avenue Grass Valley, CA 95945
Responsible Party: Toms Sierra Company Inc	Address: PO Box 759, Colfax, CA 95713
USTCF Expenditures to Date: $433,049	Number of Years Case Open: 19

URL: http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T06055700064

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 a bulk fuel distribution plant, with retailing of gasoline and other petroleum products. An unauthorized leak was reported in September 1993 following a 1991 site investigation that concluded that a petroleum hydrocarbon release had occurred. Batch dual phase extraction was conducted in May 2008, January 2009, May 2009 and June 2009 which reportedly removed approximately 2,460 pounds of total petroleum hydrocarbons as gasoline (TPHg) and 225 gallons of contaminated groundwater. Eleven groundwater monitoring wells have been installed and monitored irregularly for more than 18 years. Ten USTs, three Above Ground Storage Tanks (ASTs) and approximately 640 tons of hydrocarbon affected soil were removed in December 2012. The USTs and ASTs were removed to facilitate a comprehensive upgrade of the Site. According to groundwater data, water quality objectives have been achieved or nearly achieved for all constituents except for total petroleum hydrocarbons measured as gasoline and methyl tertiary butyl ether. The dissolved phase plumes generated by both contaminants are not only localized but rapidly shrinking.

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 other types of supply wells within 250 feet of the defined plume boundary. A surface water body, Wolf Creek, has been identified within 250 feet of the defined plume boundary in files reviewed. Water is provided to water users near the Site by the City of Grass Valley Public Works Department. 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, stable and concentrations declining. 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 Risk from Residual Petroleum Hydrocarbons: The case meets Policy Criterion 1 by Class 5. 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. The nearest surface water, Wolf Creek, abuts the Site to the north. In spite of the proximal location of the creek, the Site does not pose a serious threat to the creek for the following reasons. Firstly, the residual hydrocarbon plume at the Site is localized and continues to rapidly shrink. Secondly, routine water sampling of the creek since 2004 has consistently indicated non-detectable levels of hydrocarbons over a nine year period. By remaining non-detectable, the levels of the hydrocarbon contaminants in the creek easily meet various State Water Board water quality goals that include but are not limited to drinking water standards and protection of freshwater aquatic life (State Water Board, 2011). Thirdly, contaminant levels in the Site's underlying groundwater have remained non-detectable or relatively low over time. The low concentrations can be expected to further degrade and attenuate with time.
- Indoor Vapor Risk from Residual Petroleum Hydrocarbons: This case meets Policy Criterion 2b. Although no document titled "Risk Assessment" was found in the files reviewed, a professional assessment of site-specific risk from potential exposure to petroleum constituents as a result of vapor intrusion found there to be no significant risk of petroleum vapors adversely affecting human health. First, benzene the primary driver for vapor inhalation is non-detect in the Site's underlying groundwater. Second, the hydrocarbons remaining in the Site's soils following UST and AST removal and soil excavation are weathered and appear generally depleted of volatile organics such as benzene. The levels of those volatiles in the soil are either non-detectable or are relatively low and the locations where volatiles have been detected in low concentrations are well outside the footprint of any onsite building so as not to warrant any potential indoor vapor concerns. Third, there has been no measurable free product at the Site since 2004, further reducing any potential indoor vapor threats.

- Direct Contact Risk from Residual Petroleum Hydrocarbons: The case meets Policy Criterion 3a. Maximum concentrations in soil are less than those in Policy Table 1 for Commercial/Industrial use, 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 Policy Table 1. 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
The County has not formally objected to closure.
RESPONSE: The case at this time meets all Policy criteria and does not pose a significant risk to human health.

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. Nevada County has the regulatory responsibility to supervise the abandonment of monitoring wells.

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

11/14/13
Date

Prepared by: Ramesh Sundareswaran

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.[1]

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 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.	☒ Yes ☐ No
Have waste discharge requirements or any other orders issued pursuant to Division 7 of the Water Code been issued at this case?	☐ Yes ☒ No
If so, was the corrective action performed consistent with any order?	☐ Yes ☐ No ☒ NA
<u>**General Criteria**</u> General criteria that must be satisfied by all candidate sites:	
Is the unauthorized release located within the service area of a public water system?	☒ Yes ☐ No
Does the unauthorized release consist only of petroleum?	☒ Yes ☐ No
Has the unauthorized ("primary") release from the UST system been stopped?	☒ Yes ☐ No
Has free product been removed to the maximum extent practicable?	☒ Yes ☐ No ☐ NA
Has a conceptual site model that assesses the nature, extent, and mobility of the release been developed?	☒ Yes ☐ No

[1] 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

Has secondary source been removed to the extent practicable?	☒ Yes ☐ No
Has soil or groundwater been tested for MTBE and results reported in accordance with Health and Safety Code Section 25296.15?	☒ Yes ☐ No
Nuisance as defined by Water Code section 13050 does not exist at the Site?	☒ Yes ☐ No
Are there unique site attributes or site-specific conditions that demonstrably increase the risk associated with residual petroleum constituents?	☐ Yes ☒ No
<u>Media-Specific Criteria</u> Candidate sites must satisfy all three of these media-specific criteria: **1. Groundwater:** 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:	
Is the contaminant plume that exceeds water quality objectives stable or decreasing in areal extent?	☒ Yes ☐ No ☐ NA
Does the contaminant plume that exceeds water quality objectives meet all of the additional characteristics of one of the five classes of sites?	☒ Yes ☐ No ☐ NA
If YES, check applicable class: ☐ **1** ☐ **2** ☐ **3** ☐ **4** ☒ **5**	
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?	☐ Yes ☐ No ☒ NA
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.	
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.	☐ Yes ☒ No
a. Do site-specific conditions at the release site satisfy all of the applicable characteristics and criteria of scenarios 1 through 3 or all	☐Yes ☐ No ☒ NA

of the applicable characteristics and criteria of scenario 4? If YES, check applicable scenarios: ☐ **1** ☐ **2** ☐ **3** ☐ **4**	
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?	☒ Yes ☐ No ☐ NA
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?	☐ Yes ☐ No ☒ NA
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).	
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)?	☒ Yes ☐ No ☐ NA
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?	☐ Yes ☐ No ☒ NA
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?	☐ Yes ☐ No ☒ NA

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

Site Location/History

- The Site is located at 335 Railroad Avenue in Grass Valley, California and is a card lock and bulk fuel storage plant which is currently being readied for a comprehensive site upgrade. It is bounded by various businesses to the east and west, Wolf Creek to the north and Railroad Avenue to the south. The surrounding land use is commercial.
- In January 1991, soil contamination was identified during an environmental investigation.
- To date, 11 monitoring wells have been installed and monitored regularly.
- A Site map showing the location of the former USTs, monitoring wells and groundwater level contours is provided at the end of this summary report.
- Nature of Contaminants of Concern: Petroleum hydrocarbons only.
- Source: UST system.
- Date reported: September 1993.
- Status of Release: USTs removed (Stratus Environmental Inc., 2012).

Tank Information

Tank No.	Size in Gallons	Contents	Closed in Place/ Removed/Active	Date
1-3	10,000	Gasoline	Removed	December 2012
4-6	10,000	Diesel	Removed	December 2012
7	10,000	Gasoline	Removed	December 2012
8	5,000	Gasoline	Removed	December 2012
9-10	12,000	Gasoline	Removed	December 2012

Receptors

- GW Basin: Undefined.
- Watershed: Bear River – Upper Bear – Wolf Creek.
- Beneficial Uses: The Central Valley Regional Water Quality Control Board (Regional Water Board) Basin Plan lists domestic and municipal supply, agricultural supply, industrial process supply and industrial service supply.
- Land Use Designation: Aerial photograph available on GeoTracker indicates commercial land use in the vicinity of the Site.
- Public Water System: City of Grass Valley, Public Works Department.
- 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 250 feet of the defined plume boundary. No other water supply wells were identified within 250 feet of the defined plume boundary in the files reviewed.
- Distance to Nearest Surface Water: Wolf Creek is identified as being within 250 feet of the defined plume boundary. The creek passes through the City of Grass Valley, where it receives wastewater treatment effluent and storm water runoff. A number of mines, with acid mine runoff, also drain into the creek.

Geology/Hydrogeology

- Stratigraphy: The Site is underlain by shallow crystalline rocks.
- Maximum Sample Depth: 16 feet below ground surface (bgs).
- Minimum Groundwater Depth: 2.30 feet bgs at monitoring well MW-5.
- Maximum Groundwater Depth: 15.20 feet bgs at monitoring well MW-5.

- Current Average Depth to Groundwater: Approximately 9 feet bgs.
- Saturated Zones(s) Studied: Approximately 4 - 25 feet bgs.
- Appropriate Screen Interval: Yes.
- Groundwater Flow Direction: West by southwest with an average gradient of 0.05 feet/foot (October 2012).

Monitoring Well Information

Well Designation	Date Installed	Screen Interval (feet bgs)	Depth to Water (feet bgs) (10/25/12)
MW-2	May 1993	4 - 20	10.14
MW-3	May 1993	4 - 21	11.75
MW-4	October 1995	4 - 17	7.31
MW-5	October 1995	4 - 17	NM
MW-6	October 1995	4 - 17	10.41
MW-7	October 1995	4 - 17	7.79
MW-8	October 1995	4 - 17	7.29
MW-9	October 1995	4 - 17	7.89
MW-10	October 1995	4 - 17	6.83
MW-11	October 1996	NA	NM
MW-12	October 2000	13 - 33	13.89

NA: Not available
NM: Not measured

Remediation Summary

- Free Product: Historically, free product was reported in MW-5 (up to 0.37 feet). None measured since 2004.
- Soil Excavation: Approximately 640 tons of soil were removed and managed offsite (Stratus Environmental Inc., 2012).
- In-Situ Soil/ Groundwater Remediation: Batch dual phase extraction was conducted in May 2008, January 2009, May 2009, and June 2009 resulting in the removal of approximately 2,460 pounds of TPHg and 225 gallons of contaminated groundwater.

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	<0.5(12/19/12)	<5(12/19/12)
Ethylbenzene	<0.5(12/19/12)	1.3(12/20/12)
Naphthalene	NA	NA
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

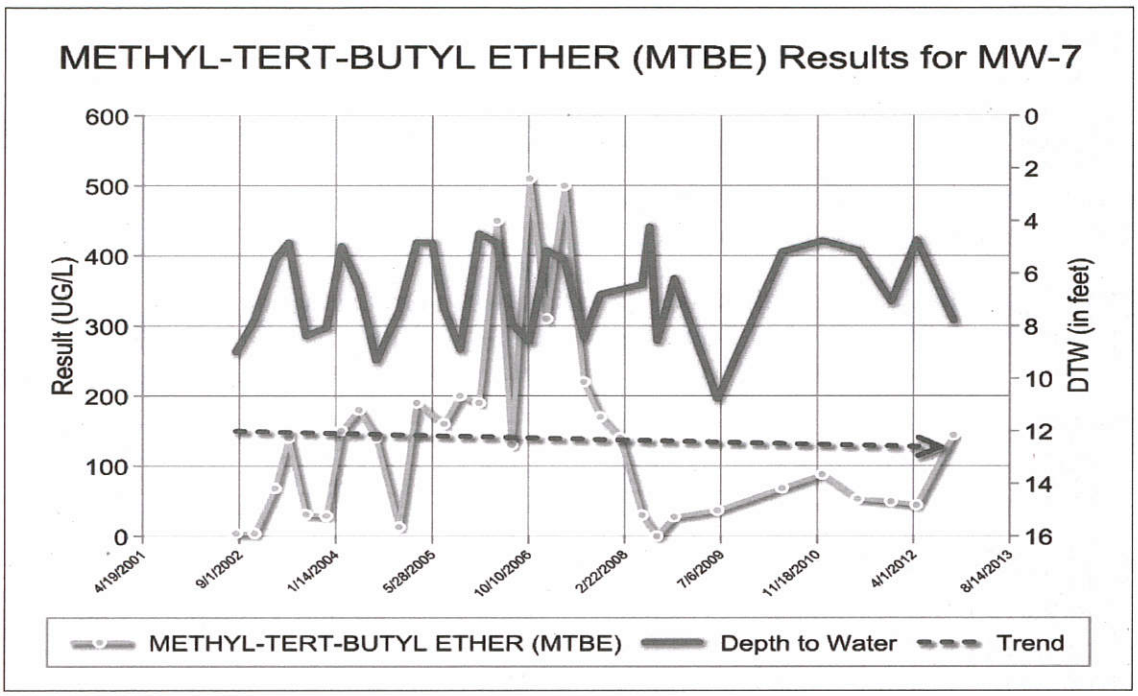
Most Recent Concentrations of Petroleum Constituents in Groundwater

Sample	Sample Date	TPHg (µg/L)	TPHd (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	TBA (µg/L)
MW-2	10/25/12	<0.5	<0.5	**<0.5**	<0.5	<0.5	<0.5	3.02	<2.5
MW-3	10/25/12	<0.5	<0.5	**<0.5**	<0.5	<0.5	<0.5	<0.5	<2.5
MW-4	10/25/12	**438**	<0.5	**<0.5**	<0.5	<0.5	<0.5	3.42	<2.5
MW-6	10/25/12	<0.5	<0.5	**<0.5**	<0.5	<0.5	<0.5	1.95	<2.5
MW-7	10/25/12	<0.5	<0.5	**<0.5**	<0.5	<0.5	<0.5	**144**	<2.5
MW-8	10/25/12	<0.5	<0.5	**<0.5**	<0.5	<0.5	<0.5	1.86	<2.5
MW-9	10/25/12	<0.5	<0.5	**<0.5**	<0.5	<0.5	<0.5	<0.5	<2.5
MW-10	10/25/12	<0.5	<0.5	**<0.5**	<0.5	<0.5	<0.5	<0.5	<2.5
MW-11	10/25/12	<0.5	<0.5	**<0.5**	<0.5	<0.5	<0.5	<0.5	<2.5
MW-12	10/25/12	<0.5	<0.5	**<0.5**	<0.5	<0.5	<0.5	<0.5	<2.5
WQOs		**5**	**56**	**0.15**	**42**	**29**	**17**	**5**	**1,200[a]**

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
TPHd: Total petroleum hydrocarbons as diesel
BTEX: Benzene, toluene, ethylbenzene and xylenes
MTBE: Methyl tert-butyl ether
TBA: Tert-butyl alcohol
WQOs: Water Quality Objectives, Regional Water Board Basin Plan
[a]: California Department of Public Health, Response Level

Groundwater Trends

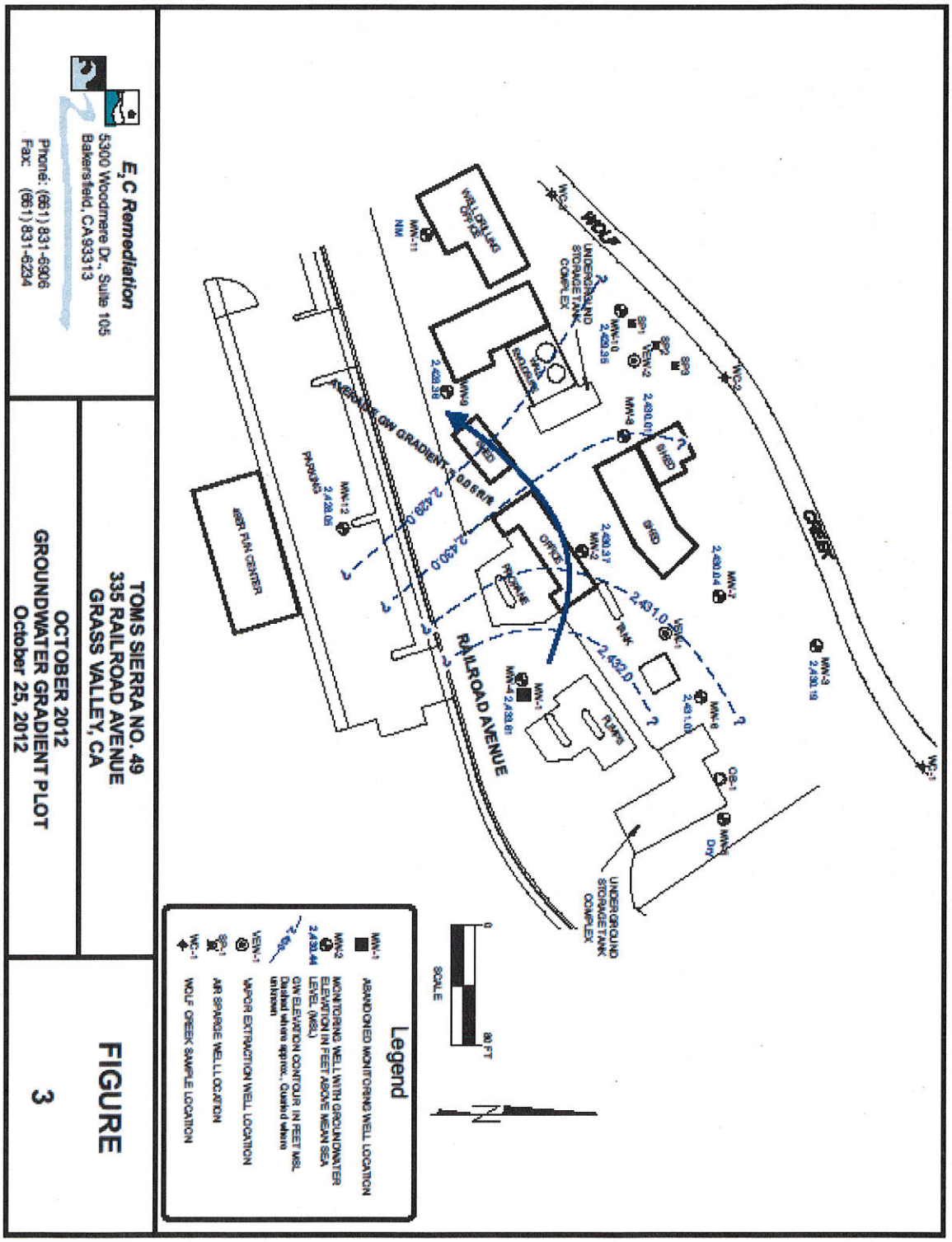
There are 19 years of irregular groundwater monitoring data for this case. MTBE trends are shown below for monitoring well, MW-7.



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: <100 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 5. 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. The nearest surface water, Wolf Creek, abuts the Site to the north. In spite of the proximal location of the creek, the Site does not pose a serious threat to the creek for the following reasons. Firstly, the residual hydrocarbon plume at the Site is localized and continues to rapidly shrink. Secondly, routine water sampling of the creek since 2004 has consistently indicated non-detectable levels of hydrocarbons over a nine year period. By remaining non-detectable, the levels of the hydrocarbon contaminants in the creek easily meet various State Water Board water quality goals that include but are not limited to drinking water standards or protection of freshwater aquatic life (State Water Board, 2011). Thirdly, contaminant levels in the Site's underlying groundwater have remained non-detectable or relatively low over time. The low concentrations can be expected to further degrade and attenuate with time.

- Indoor Vapor Risk from Residual Petroleum Hydrocarbons: This case meets Policy Criterion 2b. Although no document titled "Risk Assessment" was found in the files reviewed, a professional assessment of site-specific risk from potential exposure to petroleum constituents as a result of vapor intrusion found there to be no significant risk of petroleum vapors adversely affecting human health. First, benzene the primary driver for vapor inhalation is non-detect in the Site's underlying groundwater. Second, the hydrocarbons remaining in the Site's soils following UST and AST removal and soil excavation are weathered and appear generally depleted of volatile organics such as benzene. The levels of those volatiles in the soil are either non-detectable or are relatively low and the locations where volatiles have been detected in low concentrations are well outside the footprint of any onsite building so as not to warrant any potential indoor vapor concerns. Third, there has been no measurable free product since 2004, at the Site further reducing any potential indoor vapor threats.
- Direct Contact Risk from Residual Petroleum Hydrocarbons: The case meets Policy Criterion 3a. Maximum concentrations in soil are less than those in Policy Table 1 for Commercial/Industrial use, 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 Policy Table 1. 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.


E2C Remediation
5300 Woodmere Dr., Suite 105
Bakersfield, CA 93313
Phone: (661) 831-6906
Fax: (661) 831-6234
TOMS SIERRA NO. 49
335 RAILROAD AVENUE
GRASS VALLEY, CA
OCTOBER 2012
GROUNDWATER GRADIENT PLOT
October 25, 2012
FIGURE
3
Legend
MW-1 ABANDONED MONITORING WELL LOCATION
MW-2 MONITORING WELL WITH GROUNDWATER ELEVATION IN FEET ABOVE MEAN SEA LEVEL (MSL)
2,430.44 GW ELEVATION CONTOUR IN FEET MSL Dashed where approx., Queried where unknown
VEW-1 VAPOR EXTRACTION WELL LOCATION
SP-1 AIR SPARGE WELL LOCATION
WC-1 WOLF CREEK SAMPLE LOCATION
SCALE
0
80 FT
RAILROAD AVENUE
WOLF
CREEK
UNDERGROUND STORAGE TANK COMPLEX
AVERAGE GW GRADIENT = 0.05 ft/ft
2,430.0
2,431.0
2,432.0
2,428.0
MW-1
MW-2
MW-3
MW-4
MW-5
MW-6
MW-7
MW-8
MW-9
MW-10
MW-11
MW-12
VEW-1
VEW-2
SP1
SP2
SP3
WC-1
WC-2
WC-3
OB-1
PARKING
PUMPS
TANK
SHED
OFFICE
PROPANE
WELL DRILLING OFFICE
49ER FUN CENTER