

State Water Resources Control Board

UST CASE CLOSURE REVIEW SUMMARY REPORT

Agency Information

Agency Name: Orange County Environmental Health Department (County)	Address: 1241 East Dyer Road, Suite 120 Santa Ana, CA 92705
Agency Caseworker: Shyamala Sundaram	Case No.: 87UT002

Case Information

USTCF Claim No.: 6231	Global ID: T0605900510
Site Name: Thrifty Oil #384	Site Address: 18975 Magnolia Street, Fountain Valley, CA 92708
Responsible Party (RP): Thrifty Oil Company/ Best California Gas	Address: 13116 Imperial HWY, Santa Fe Springs, CA 90670
USTCF Expenditures to Date: \$409,036	Number of Years Case Open: 15

URL: http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0605900510

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 (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 leak was reported in January 1987 following the removal of three USTs. An estimated 780 tons of impacted soil were removed during UST replacement activities in 1988. Soil vapor extraction was conducted between August 1993 and June 1998 for a total of 15,243 hours, which removed 46,133 pounds of total petroleum hydrocarbons as gasoline (TPHg). Groundwater over-purging was conducted between August 2001 and June 2006, which removed 6,501 gallons of contaminated water. According to groundwater data, water quality objectives (WQO) have been achieved for all constituents except for TPHg.

The petroleum release is limited to the shallow soil and groundwater. The nearest public supply well regulated by the California Department of Public Health (CDPH) and surface water body are greater than 250 feet of the defined plume boundary. No water supply wells within 250 feet of the defined plume boundary were identified in the files reviewed. Water is provided to water users near the Site by the Metropolitan Water District of Southern California. 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 are 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: The case meets Policy Criterion 1 by Class 1. The plume that exceeds WQO is less than 100 feet. No free product is present. The nearest water supply well or surface water is greater than 250 feet from the defined plume boundary.
- Vapor Intrusion to Indoor Air: The case meets the Policy Active Station Exclusion – Soil vapor evaluation is not required because the Site is an active commercial petroleum fueling facility.
- Direct Contact and Outdoor Air Exposure: The case meets the Policy Criterion 3a. The Site is paved preventing direct contact exposure. Thirty-eight soil samples were collected from 0 to 10 feet. All but one sample were either non-detect or below Table 1 thresholds. The remaining sample contained 90 mg/kg, which is slightly higher than the Table 1 threshold of 89 mg/kg for ethyl-benzene. 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.

Objection to Closure and Response

The County objects to UST case closure for this case because there is an increasing tert-butyl alcohol (TBA) trend in MW-2.

RESPONSE: A single sample from MW-2 in 2010 interrupted a decade-long sampling history of non-detect. Concentrations since returned to non-detect since 2010. (See graph page 9 of 12). The case meets the Policy criteria for closure. In addition, Resolution 92-49 does not require requisite level of water quality be met at the time of closure; it specifies compliance with cleanup goals and objectives within a reasonable time frame.

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

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

1/22/13
Date

PREPARED BY: Kirk Larson

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

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

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

<p>Has secondary source been removed to the extent practicable?</p> <p>Has soil or groundwater been tested for MTBE and results reported in accordance with Health and Safety Code Section 25296.15?</p> <p>Nuisance as defined by Water Code section 13050 does not exist at the site?</p> <p>Are there unique site attributes or site-specific conditions that demonstrably increase the risk associated with residual petroleum constituents?</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><u>Media-Specific Criteria</u> Candidate sites must satisfy all three of these media-specific criteria:</p> <p>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:</p> <p>Is the contaminant plume that exceeds water quality objectives stable or decreasing in areal extent?</p> <p>Does the contaminant plume that exceeds water quality objectives meet all of the additional characteristics of one of the five classes of sites?</p> <p>If YES, check applicable class: <input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5</p> <p>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?</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>2. Petroleum Vapor Intrusion to Indoor Air: The case 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>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.</p> <p>a. Do site-specific conditions at the release site satisfy all of the applicable characteristics and criteria of scenarios 1 through 3 or all</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>of the applicable characteristics and criteria of scenario 4? If YES, check applicable scenarios: <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4</p> <p>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?</p> <p>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?</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>3. Direct Contact and Outdoor Air Exposure: The case 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>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)?</p> <p>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?</p> <p>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?</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

- The Site is located at 18975 Magnolia Street in Fountain Valley and is an active gasoline service station and convenience store.
- The Site is bound by residences to the west, a paved parking lot to the north, Magnolia Street to the east and Garfield Avenue to the south.
- Three USTs have been removed and there are currently three 10,000-gallon gasoline UST's, one dispenser island, and a station building at the Site. The expected future land use is to remain as a gasoline service station and convenience store.
- Ten monitoring wells have been installed and monitored regularly since 1987.
- A Site map showing the location of the current USTs, monitoring wells, and site features is provided at the end of this summary.
- Nature of Contaminants of Concern: Petroleum hydrocarbons only.
- Source: UST system.
- Date reported: January 1987.
- Status of Release: USTs replaced.
- Free Product: Historically, none noted since 1991.

Tank Information

Tank No.	Size in Gallons	Contents	Closed in Place/ Removed/Active	Date
1	6,000	Diesel	Removed	May 88
2,3	10,000	Gasoline	Removed	May 88
4-6	10,000	Gasoline	Active	-

Receptors

- GW Basin: Coastal Plain of Orange County.
- Beneficial Uses: Municipal and Domestic Supply.
- Land Use Designation: Commercial.
- Public Water System: Metropolitan Water District of Southern California, P.O. Box 54153 Los Angeles, CA 90054-0153, (213-217-6000).
- Distance to Nearest Supply Well: According to data available in GeoTracker, there are no public supply wells regulated by CDPH within 250 feet of the defined plume boundary. No other water supply wells within 250 feet of the defined plume boundary were identified in files reviewed.
- Distance to Nearest Surface Water: There is no identified surface water within 250 feet of the defined plume boundary.

Geology/Hydrogeology

- Stratigraphy: The Site is underlain by interbedded and intermixed sand, silt and clay.
- Maximum Sample Depth: 50 feet below ground surface (bgs).
- Minimum Groundwater Depth: 5.45 feet bgs at monitoring well MW-11.
- Maximum Groundwater Depth: 23.60 feet bgs at monitoring well MW-12.
- Current Average Depth to Groundwater: 10 feet bgs.
- Saturated Zones(s) Studied: Approximately 5 - 50 feet bgs.

- Groundwater Flow Direction: Southeast with an average gradient of 0.0025 feet/foot (ft/ft).

Monitoring Well Information

Well Designation	Date Installed	Screen Interval (feet bgs)	Depth to Water (feet bgs) (09/17/2012)
MW-1	Aug 91	5-30	10.39
MW-2	Aug 91	5-30	10.37
B-5R	Nov 00	7-27	9.64
B-6	Nov 87	8-38	9.02
B-7	Nov 87	8-38	9.20
RS-8	Nov 88	5-35	9.80
RS-9	Nov 88	5-35	10.05
RS-10	Nov 88	5-35	9.35
MW-11	Mar 06	45-50	8.97
MW-12	Mar 06	45-50	8.87

Remediation Summary

- Free Product (FP): FP was initially observed in monitoring well B-5 (up to 10.2 feet) and RS-8 (up to 0.81 feet). No FP was noted after 1991. Total FP recovered is 310 gallons.
- Soil Excavation: An estimated 780 tons of impacted soil was removed during UST replacement activities in 1988.
- In-Situ Soil Remediation: Soil vapor extraction was conducted between August 1993 and June 1998 for a total of 15,243 hours, which removed 46,133 pounds of TPHg.
- Groundwater Remediation: Groundwater over-purging, conducted between August 2001 and June 2006, removed 6,501 gallons of contaminated water.

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	1.1 (07/17/97)	4.64 (11/07/88)
Ethylbenzene	90 (10/30/02)*	21.7 (11/07/88)
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
 *One of 38 samples exceeded LTCP Table 1 limits

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-1	10/01/2012	<50	NA	<1	<5	<5	<5	<1	<10
MW-2	10/01/2012	<50	NA	<1	1	<5	<5	<1	<10
B-5R	09/22/2012	55.5	NA	<1	<5	<5	<5	<1	460
B-6	09/22/2012	<50	NA	<1	<5	<5	<5	1.7	160
B-7	09/22/2012	<50	NA	<1	<5	<5	<5	1.6	480
RS-8	10/01/2012	<50	NA	<1	<5	<5	<5	<1	<10
RS-9	10/01/2012	<50	NA	<1	<5	<5	<5	<1	<10
RS-10	10/01/2012	<50	NA	<1	<5	<5	<5	<1	<10
MW-11	09/22/2012	<50	NA	<1	<5	<5	<5	<1	<10
MW-12	09/22/2012	<50	NA	<1	<5	<5	<5	1.9	<10
WQOs	-	50^a	100^b	1	150	300	1,750	5	1,200^c

NA: Not Analyzed, Not Applicable or Data Not Available, NL: Not Listed

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

MTBE: Methyl tert-butyl ether

TBA: Tert-butyl alcohol

WQOs: Water Quality Objectives, Region 8 Basin Plan

^a: Typical Laboratory Detection Limits

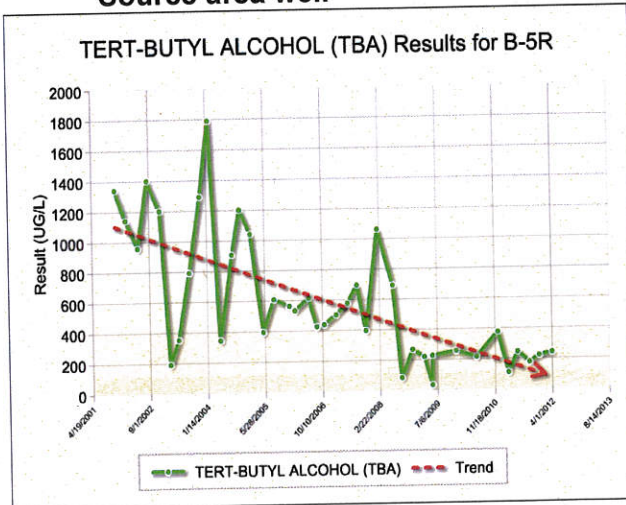
^b: Taste and odor threshold

^c: California Department of Public Health, Response Level

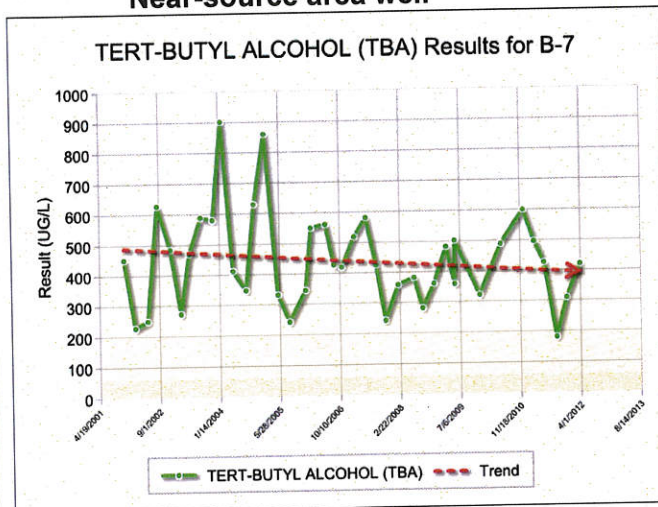
Groundwater Trends:

Groundwater monitoring has been conducted regularly since 1987. TBA trends are shown below: Source Area (B-5R), Near Source Area (B-7) and Downgradient (MW-12). Crossgradient well MW-2 had a single elevated TBA concentration after more than a decade of non-detect results. TBA concentrations have since returned to non-detect.

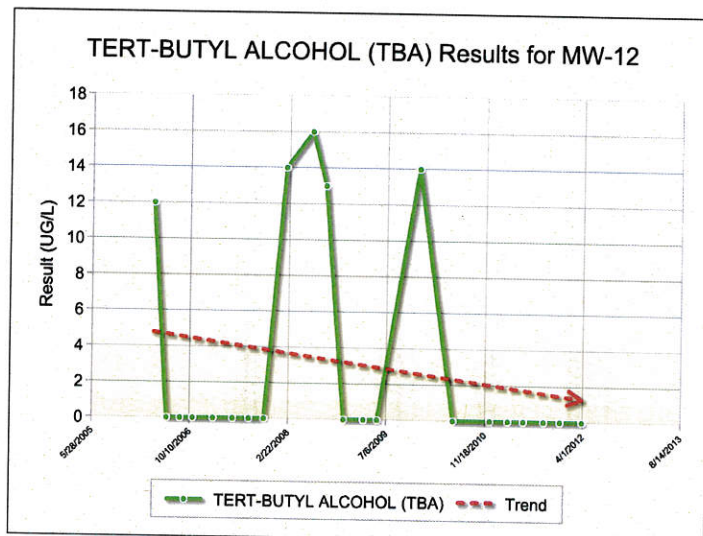
Source area well



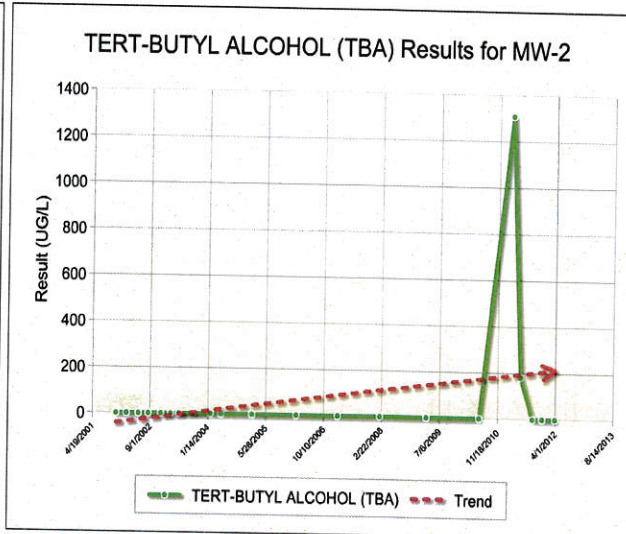
Near-source area well



Downgradient well



MW-2



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.
- Plume Length: <100 feet long.
- Plume Stable or Degrading: Yes.
- Contaminated Zone(s) Used for Drinking Water: No.
- Oxygen Concentrations in Soil Vapor: None reported.
- Groundwater Risk from Residual Petroleum Hydrocarbons: The case meets Policy Criterion 1 by Class 1. The plume that exceeds WQO is less than 100 feet. No free product is present. The nearest water supply well or surface water is greater than 250 feet from the defined plume boundary.
- 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.
- Direct Contact Risk from Residual Petroleum Hydrocarbons: The case meets the Policy Criterion 3a. The Site is paved preventing direct exposure. Thirty-eight soil samples were collected from depths between 0 to 10 feet. All but one sample were either non-detect or below Table 1 thresholds. The remaining sample contained 90 mg/kg which is slightly higher than the Table 1 threshold of 89 mg/kg for ethyl-benzene. 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.

