State Water Resources Control Board

UST CASE CLOSURE REVIEW SUMMARY REPORT

Agency Information

Agency Name: Sacramento County Environmental Management Department (County)	Address: 10590 Armstrong Avenue Mather, CA 95655-4153
Agency Caseworker: Sue Erickson	Case No.: D510/RO0001188

Case Information

USTCF Claim No.: 12280	Global ID: T0606700692
Site Name: Orbit Gas Service Station	Site Address: 3849 Marysville Boulevard, Sacramento, CA 95838
Responsible Party 1: Karuna and Vijay Bhatia, C/O Tony Bhatia	Address: 221 N. Virginia Street, Reno, NV 89501
Responsible Party 2: S7 Properties, Attn: Javed Siddiqui	Address: 1808 J Street, Sacramento, CA 95814
USTCF Expenditures to Date: $544,868	Number of Years Case Open: 22

URL: http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0606700692

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:

An unauthorized leak was reported in December 1990, following the repair of product piping. In 1998, four gasoline and diesel USTs were removed and contaminated soil was excavated and removed from the Site. No significant active soil or groundwater remediation was conducted. Since 1999, 10 monitoring wells have been installed and monitored regularly. According to groundwater data, water quality objectives have been achieved or nearly achieved for all constituents except total petroleum hydrocarbons as gasoline (TPHg), benzene, methy-tert-butyl ether (MTBE), and 1,2-dichloroethane (1,2 DCA) in one source area well (MW-1).

The petroleum release is limited to the soil or shallow groundwater. According to data available in GeoTracker, there are no California Department of Public Health regulated supply wells or surface water bodies within 250 feet of the defined plume boundary. No other water supply wells have 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 Sacramento, Public Works. 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 Specific Criteria: The case meets Policy Criterion 1 by Class 1. The contaminant plume that exceeds water quality objectives is less than 100 feet in length. There is no free product. The nearest water supply well or surface water body is greater than 250 feet from the defined plume boundary.
- Indoor Vapor Risk from Residual Petroleum Hydrocarbons: The case 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. The petroleum hydrocarbons that were reported in the soil have been naturally attenuating. The depth to groundwater is over 80 feet. Only one source area monitoring well contains benzene; MW-1 at 2.8 µg/L in July 2012.
- Direct Contact Risk from Residual Petroleum Hydrocarbons: The case meets Policy Criterion 3b. Constituents in soil are less than levels that a site-specific risk assessment demonstrates will have no significant risk of adversely affecting human health. Three of the four soil samples collected in 1998 met the Policy Table 1 criteria. The fourth sample only slightly exceeded the benzene concentration. Because petroleum hydrocarbons are biodegradable, and the sample and was collected 15 years ago, it is likely residual soil concentrations have decreased to a point that no longer poses a threat.

Objections to Closure and Responses

The County objects to UST case closure (via e-mail: dated 1/2/2013) because:

- MTBE seems to be persistent in a downgradient well (MW-9).
  RESPONSE: MTBE concentrations reported in well MW-9 have never been above water quality objectives since the well was installed in 2005.
- Soil vapor extraction never occurred on a continuous basis, and high TPH vapors (42,000 ppmv) were recovered in a recently completed air sparging (AS) and soil vapor extraction (SVE) test from wells screened between 30-45 feet.
  RESPONSE: The Policy criteria apply to the risk posed by vapor in shallow soils based on analytical data collected in 1998 immediately after the UST system removal. Benzene concentrations slightly exceeded the Policy criteria in one soil sample, while three shallow soil samples were below Policy Table 1 thresholds. These samples provide sufficient data to demonstrate that an adequate bioattenuation zone exists and therefore meets Policy criteria. Groundwater at the Site is in excess of 80 feet below ground surface and petroleum hydrocarbon impact above water quality objectives is limited to one well in the former source area. Concentrations of vapor located between the shallow zone and above groundwater will naturally attenuate within a reasonable timeframe.

- Cannot rule out vapor intrusion to any building. Although it is now a vacant lot and is located in a redevelopment target area any new buildings are likely to be commercial.
  RESPONSE: The Policy describes criteria including bioattenuation zones which, when met, assure that exposure to petroleum vapors in indoor air will not pose unacceptable health risks. This Site meets those criteria for commercial land use.
- The second water bearing zone, which is used by domestic wells in the area, is not evaluated.
  RESPONSE: No domestic wells have been identified within 250 feet of the defined plume boundary. Water quality objectives have been met in all but one onsite well. The case has been open for 22 years and the deeper water bearing zone has not earned regulatory action during that time and is unlikely to have any significant risk or impacts. Therefore, it is unnecessary to require further assessment.

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

Lisa Babcock — 5/6/13

Lisa Babcock, P.G. 3939, C.E.G. 1235 — **Date**

Prepared by: Pat G. Cullen, 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.[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
General Criteria 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

[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 a conceptual site model that assesses the nature, extent, and mobility of the release been developed?	☒ Yes ☐ No
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

- This Site is an empty lot located at 3849 Marysville Boulevard in Sacramento on the southwest corner of Marysville Boulevard and Harris Avenue.
- The Site is bounded by an asphalt paved parking lot to the west, residences and a vacant (dirt) lot to the north across Harris Avenue, a vacant lot to the east, and commercial retail establishment(s) to the south.
- A Site map showing the location of the former USTs, monitoring wells, groundwater level contours, as well as groundwater analytical data (January 26, 2012) are provided at the end of this closure review summary (adapted from Geocon, 2012).
- Nature of Contaminants of Concern: Petroleum hydrocarbons only.
- Source: UST system.
- Date reported: December 1990.
- Status of Release: USTs removed.
- Free Product: None reported.

Tank Information

Tank No.	Size in Gallons	Contents	Closed in Place/ Removed/Active	Date
1	6,500	Gasoline/Diesel	Removed	February 1998
2	6,500	Gasoline/Diesel	Removed	February 1998
3	10,000	Gasoline/Diesel	Removed	February 1998
4	10,000	Gasoline/Diesel	Removed	February 1998

Receptors

- GW Basin: Sacramento Valley – North American.
- Beneficial Uses: Municipal and Domestic Supply.
- Land Use Designation: Aerial photograph available on GeoTracker shows mixed residential and commercial land use in the vicinity of the Site.
- Public Water System: City of Sacramento, Public Works.
- Distance to Nearest Supply Well: According to data available in GeoTracker, there are no public supply wells regulated by California Department of Public Health within 250 feet of the defined plume. No other water supply wells were identified within 250 feet of the defined plume in the files reviewed.
- Distance to Nearest Surface Water: There is no identified surface water within 250 feet of the defined plume.

Geology/Hydrogeology

- Stratigraphy: The Site is underlain by sand and silty clays.
- Maximum Sample Depth: 110 feet below ground surface (bgs).
- Minimum Groundwater Depth: 84.70 feet bgs at monitoring well MW-4.
- Maximum Groundwater Depth: 97.69 feet bgs at monitoring well MW-7.
- Current Average Depth to Groundwater: Approximately 85 feet bgs.
- Saturated Zones(s) Studied: Approximately 85-109 feet bgs.
- Appropriate Screen Interval: Yes.
- Groundwater Flow Direction: Southeast with an average gradient of 0.001 feet/foot (November 2012).

Monitoring Well Information

Well Designation	Date Installed	Screen Interval (feet bgs)	Depth to Water (feet bgs) (7/19/2012)
MW-1	4/27/1999	90-105	85.50
MW-2	4/26/1999	90-105	85.32
MW-3	4/28/1999	92-107	85.52
MW-4	7/1/2002	87-107	84.70
MW-5	7/1/2002	88-108	85.64
MW-6	7/2/2002	88-108	85.20
MW-7	7/2/2002	88-108	86.37
MW-8	8/1/2005	84-108	85.66
MW-9	8/11/2005	84-109	86.08
MW-10	4/28/2008	81-106	85.94

Remediation Summary

- Free Product: None reported in GeoTracker.
- Soil Excavation: Impacted soil was excavated and evaluated. The excavated soil and imported material (225 tons of pea gravel) were used to backfill the excavation.
- In-Situ Soil/Groundwater Remediation: A soil vapor extraction system was installed but not operated. After several years, when the system was attempted to be started the system components had deteriorated to the point of being unusable and was removed from the Site and sold as scrap. An air sparge/soil vapor extraction test was completed in 2012 and confirmed the technologies were feasible. However, no air sparge/soil vapor extraction was conducted other than testing.

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	16 @ 4' in boring S-3 (3/1998)	1.4 @11' in boring S-2 (3/1998)
Ethylbenzene	130 @ 4' in boring S-3 (3/1998)	8.3 @11' in boring S-2 (3/1998)
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

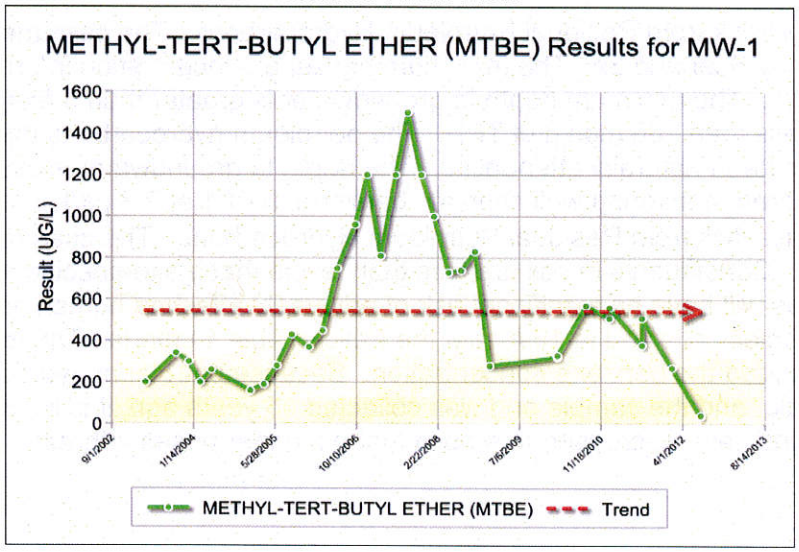
Sample	Sample Date	TPHg (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	TBA (µg/L)	1,2 DCA (µg/L)
MW-1	7/19/2012	**53**	**2.8**	3.3	<0.5	1.5	**42**	15	**1.9**
MW-2	7/19/2012	**<50**	**<0.5**	<0.5	<0.5	<0.5	<0.5	<5	<0.5
MW-3	7/19/2012	**<50**	**<0.5**	<0.5	<0.5	<0.5	<0.5	<5	<0.5
MW-4	7/19/2012	**<50**	**<0.5**	<0.5	<0.5	<0.5	<0.5	<5	<0.5
MW-5	7/19/2012	**<50**	**<0.5**	<0.5	<0.5	<0.5	<0.5	<5	<0.5
MW-6	7/19/2012	**<50**	**<0.5**	<0.5	<0.5	<0.5	<0.5	<5	<0.5
MW-7	7/19/2012	**<50**	**<0.5**	<0.5	<0.5	<0.5	<0.5	<5	<0.5
MW-8	7/19/2012	**<50**	**<0.5**	<0.5	<0.5	<0.5	<0.5	<5	<0.5
MW-9	7/19/2012	**<50**	**<0.5**	<0.5	<0.5	<0.5	1.8	<5	**0.74**
MW-10	7/19/2012	**<50**	**<0.5**	<0.5	<0.5	<0.5	<0.5	<5	<0.5
WQOs	-	**5**	**0.15**	**42**	**29**	**17**	**5**	**1,200[a]**	**0.5**

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
1,2 DCA: 1,2 Dichloroethane
WQOs: Water Quality Objectives, Central Valley Regional Water Quality Control Board Basin Plan
[a]: California Department of Public Health, Response Level

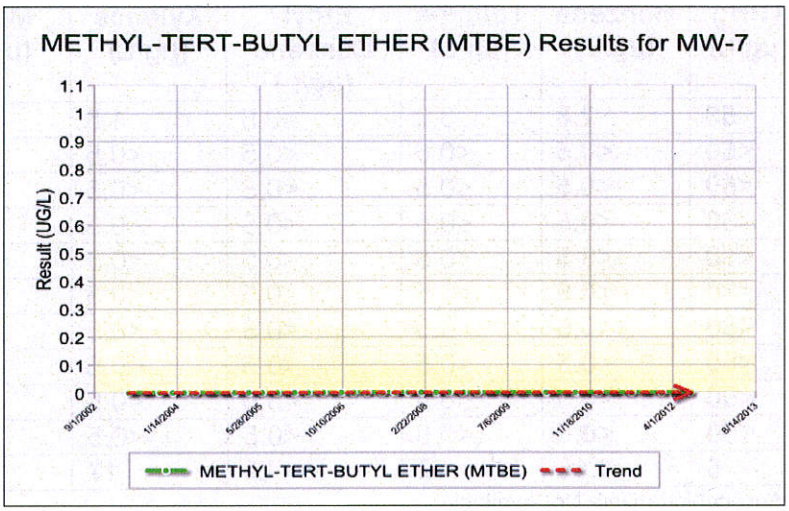
Groundwater Trends

- There are 13 years of regular groundwater monitoring data for this case. MTBE trends are shown below: Source Area (MW-1) and Downgradient (MW-7).

Source Area Well



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: <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 1. The plume that exceeds water quality objectives is less than 100 feet in length. There is no free product. The nearest water supply well or surface water body is greater than 250 feet from the defined plume boundary.
- Indoor Vapor Risk from Residual Petroleum Hydrocarbons: The case 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. The petroleum hydrocarbons that were reported in the soil have been naturally attenuating. The depth to groundwater is over 80 feet. Only one source area monitoring well contains benzene, MW-1 at 2.8 µg/L in July 2012.
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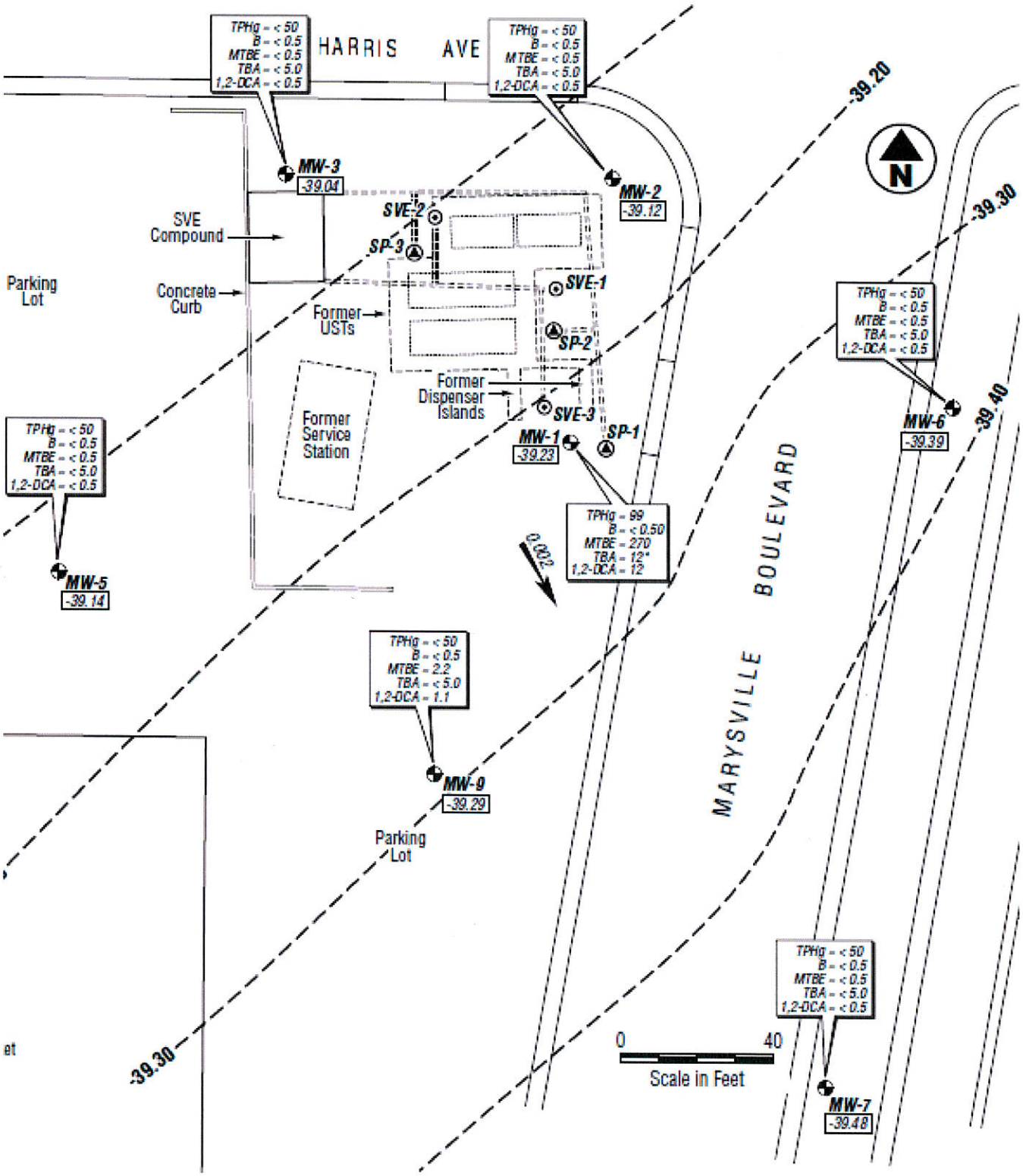
HARRIS AVE
TPHg = < 50
B = < 0.5
MTBE = < 0.5
TBA = < 5.0
1,2-DCA = < 0.5
MW-3
-39.04
MW-2
-39.12
SVE-2
SP-3
SVE-1
SP-2
SVE-3
SP-1
MW-1
-39.23
SVE Compound
Parking Lot
Concrete Curb
Former USTs
Former Dispenser Islands
Former Service Station
TPHg = 99
B = < 0.50
MTBE = 270
TBA = 12*
1,2-DCA = 12
0.002
MW-5
-39.14
MW-6
-39.39
TPHg = 2.2
1,2-DCA = 1.1
MW-9
-39.29
Parking Lot
MARYSVILLE BOULEVARD
MW-7
-39.48
-39.20
-39.30
-39.40
N
0
40
Scale in Feet