

STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD

ORDER WQ 2013-0041-UST

In the Matter of Underground Storage Tank Case Closure
Pursuant to Health and Safety Code Section 25296.40 and the Low-Threat
Underground Storage Tank Case Closure Policy

BY THE EXECUTIVE DIRECTOR:¹

By this order, the Executive Director directs closure of the underground storage tank (UST) case at the site listed below, pursuant to subdivision (a) of section 25296.40 of the Health and Safety Code.² The name of the petitioner, the site name, the site address, the Underground Storage Tank Cleanup Fund (Fund) claim number if applicable, the lead agency, and case number are as follows:

Mr. Jeffery Freiberg

BP Gas Station

18017 Sonoma Highway, Sonoma, Sonoma County

Fund Claim No. 336

Sonoma County, Case No. 00002445

I. STATUTORY AND PROCEDURAL BACKGROUND

Upon receipt of a petition from a UST owner, operator, or other responsible party, section 25296.40 authorizes the State Water Resources Control Board (State Water Board) to close or require closure of a UST case where an unauthorized release has occurred, if the State Water Board determines that corrective action at the site is in compliance with all of the requirements of subdivisions (a) and (b) of section 25296.10. The State Water Board, or in certain cases the State Water Board Executive Director, may close a case or require the closure

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 California Health and Safety Code.

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) 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.

State Water Board staff has completed a 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 Summary has been prepared for the case identified above and the basis 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 Summary.

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 uniform closure letter as specified in Health and Safety Code section 25296.10. The uniform 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 uniform closure letter or a letter of commitment, whichever occurs later, shall not be reimbursed unless specified conditions are satisfied.

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:

Mr. Jeffery Freiberg

BP Gas Station

18017 Sonoma Highway, Sonoma, Sonoma County

Fund Claim No. 336

Sonoma County, Case No. 00002445

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.

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 State Water Board in determining that the case should be closed.

The UST case identified above may be the subject of orders issued by the Regional Water Quality Control Water 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 (LOP) 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 Petitioner 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 in section II 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 Petitioner 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 Water Quality shall issue a closure letter consistent with Health and Safety Code, section 25296.10, subdivision (g) and upload the uniform closure letter and UST Case Closure Review Summary Report to GeoTracker.
- E. 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 uniform closure letter in order for the costs to be considered.

F. Any Regional Water Board or LOP 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 LOP agency directive is inconsistent with this Order.

Thomas Howard
Executive Director

7/5/13
Date



State Water Resources Control Board

UST CASE CLOSURE SUMMARY

Agency Information

Agency Name: County of Sonoma	Address: 475 Aviation Blvd., Suite 220 Santa Rosa, CA 95403
Agency Caseworker: Ms. Becky Vermeer	Case No.: 00002445

Case Information

USTCF Claim No.: 336	Global ID: T0609700947
Site Name: BP Gas Station	Site Address: 18017 Sonoma Highway, Sonoma, CA 95476 (Site)
Petitioner: Mr. Jeffrey Freiberg Care of: INCORE Corp.	Address: P.O. Box 254, Sonoma, CA 95476
USTCF Expenditures to Date: \$571,875	Number of Years Case Open: 23

URL: http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0609700947

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 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 Site Information**. Highlights of the Conceptual Site Model of the case follow:

The release at 18017 Sonoma Highway, Sonoma, CA, was discovered when four underground storage tanks (UST) were removed in 1989 and 1999 and replaced with two USTs that were removed in 2003. No known USTs remain at the Site. During the 2003 UST removal, approximately 1,818 tons of soil was excavated, over-excavated, and disposed. An additional approximately 348 tons of soil was removed in 2005. In 2001, air sparge/soil vapor extraction was determined not to be a feasible method for remediation. A pump and treat system operated from 2005 to 2008; approximately 867,000 gallons of impacted water was treated. The system was shut down because of diminishing influent concentrations.

The petroleum release is limited to the shallow soil and groundwater. The nearest public supply well regulated by the California Department of Public Health is located approximately 975 feet southwest (generally downgradient) of the Site. A domestic well is located approximately 500 feet southwest (apparently used for filling swimming facilities.) Water is provided to water users near the Site by the Valley of the Moon Water District. The affected groundwater is not currently being used as a source of drinking water or for any other designated beneficial use, and it is highly unlikely that the affected groundwater will be used as a source of drinking water or for any other beneficial use in the foreseeable

future. Public supply wells are usually constructed with competent sanitary seals and intake screens that are in deeper more protected aquifers. Remaining petroleum constituents are limited, stable and declining. Remedial actions have been implemented and further remediation would be ineffective and expensive. Additional assessment/monitoring will not likely change the conceptual model. Any remaining petroleum constituents do not pose significant risk to human health, safety or the environment.

Rationale for Closure under the Policy

- **General Criteria – Site Meets All Eight General Criteria Under The Policy.**
- **Groundwater Media-Specific Criteria – Site meets the criterion in CLASS 5.**
Based on an analysis of Site-specific conditions that 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 (WQOs) will be achieved within a reasonable time frame.
- **Petroleum Vapor Intrusion to Indoor Air Criteria – Site meets the criterion in CLASS a. SCENARIO 3.** Site-specific conditions satisfy Scenario 3 as applicable.
- **Direct Contact and Outdoor Air Exposure Criteria – Site meets the criterion in CLASS a.** Maximum concentrations of petroleum constants in soil are less than or equal to those listed in Table 1. The estimated naphthalene concentrations in soil are less than the thresholds in Table 1 of the Policy for direct contact. It is unlikely that naphthalene concentrations in soil, if any, exceed the threshold.

Objections to Closure

Sonoma County staff objected to UST case closure because:

1. Additional work is needed to fully characterize the Site.

Response: The Site has been sufficiently assessed/monitored and additional assessment/monitoring won't likely change the conceptual model. Remedial actions have been implemented and further remediation would be ineffective and expensive. Remaining petroleum constituents are limited; stable and declining. To the extent limited areas of groundwater may exceed water quality objectives for certain petroleum constituents, the impact will not unreasonably impair beneficial uses even if the period of impairment is decades to hundreds of years. Shallow affected groundwater is not currently being used as a source of drinking water or for any other designated beneficial use and it is highly unlikely, in part due to standard supply well construction practices, that the affected groundwater will be used as a source of drinking water or for any other beneficial use in the foreseeable future.

2. Residual soil and groundwater contamination persist at the Site.

Response: Site conditions demonstrate that the residual petroleum constituents in soil and groundwater are protective of human health. (See Attachments 1 and Attachment 2 for further discussion.)

3. Risk of vapor intrusion needs to be determined for the adjacent apartment building located to the north and for workers at the onsite auto repair facility.

Response: Site-specific conditions satisfy the Policy criteria for vapor intrusion to indoor air. Total petroleum hydrocarbons (TPH) as gasoline, benzene, ethylbenzene, xylenes, and methyl tert-butyl ether (MTBE) currently exist in groundwater at the Site above WQOs. However, based on an analysis of Site-specific conditions that under current and reasonably anticipated near-term future scenarios, the residual contaminant plume beneath the onsite auto repair facility and northern property boundary poses a low-threat to human health, safety and the environment and WQOs will be achieved within a reasonable time frame.

Recommendation for Closure

Based on available information, the corrective action performed at this Site ensures the protection of human health, safety, the environment and is consistent with Chapter 6.7 of the Health and Safety Code and implementing regulations, applicable state policies for water quality control and the applicable water quality control plan, and case closure is recommended.

Prepared By: Ben Wright
Ben Wright, PG No. 9003
Engineering Geologist

4/10/2013
Date

Reviewed By: Benjamin Heningburg
Benjamin Heningburg, PG No. 8130
Senior Engineering Geologist

4/10/2013
Date

ATTACHMENT 1: COMPLIANCE WITH STATE WATER BOARD POLICIES AND STATE LAW

The Site complies with 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 site 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 case 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 site?</p>	<p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>
<p>If so, was the corrective action performed consistent with any order? There was an order issued for this site. The corrective action performed in the past is consistent with that order. Since this case meets applicable case-closure requirements, further corrective action under the order that is not necessary, unless the activity is necessary for case closure.</p>	<p><input 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?</p> <p>Does the unauthorized release consist only of petroleum?</p> <p>Has the unauthorized ("primary") release from the UST system been stopped?</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>

¹ Refer to the Low-Threat Underground Storage Tank Case Closure Policy for closure criteria for low-threat petroleum UST sites.

<p>Has free product been removed to the maximum extent practicable?</p> <p>Has a conceptual site model that assesses the nature, extent, and mobility of the release been developed?</p> <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 <input checked="" type="checkbox"/> NA</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 checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>
<p>Media-Specific Criteria 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 type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input checked="" 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 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>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><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</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 of the applicable characteristics and criteria of scenario 4? If YES, check applicable scenarios: <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/> 4</p> <p>b. 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 checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> NA</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA</p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA</p>
<p>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).</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 INFORMATION (Conceptual Site Model)

Site Location/ History

- The Site is located at the intersection of Boyes Boulevard and Sonoma Highway in Sonoma. The Site is an operating Auto repair facility.
- The Site is bounded by an apartment complex to the northwest and commercial properties in all other directions.
- Nature of Contaminants of Concern: Petroleum hydrocarbons only.
- Primary Source of Release: UST system
- Discovery Date: 1989
- Release Type: Petroleum²
- Twelve monitoring wells and five remediation wells have been installed.
- Free Product: None reported

Table A: USTs

Tank No.	Size	Contents	Status	Date
1	4,000-gallon	Gasoline	Removed	1989
2	4,000-gallon	Gasoline	Removed	1989
3	4,000-gallon	Gasoline	Removed	1989
4	250-gallon	Waste Oil	Removed	1999
5	6,000-gallon	Gasoline	Removed	2003
6	6,000-gallon	Gasoline	Removed	2003

Receptors

- Groundwater Basin: Sonoma Valley
- Groundwater Beneficial Uses: Municipal and domestic water supply (MUN), industrial service water supply (IND), industrial process water supply (PRO), and agricultural water supply (AGR)
- Designated Land Use: General Commercial (GC)
- Public Water System: Valley of the Moon Water District
- Distance to Nearest Supply Wells: Domestic well ~500 feet southwest (apparently used for filling swimming facilities); Public supply well ~975 feet southwest
- Distance to Nearest Surface Waters: Sonoma Creek ~ 1,600 feet west

Geology/ Hydrogeology

- Average Groundwater Depth: ~15.5 feet (unconfined)
- Minimum Groundwater Depth: ~7.5 feet (unconfined)
- Groundwater Flow Direction: Westerly (unconfined)
- Geology: Weathered, clayey, ash-flow tuffs and lithic tuff to ~28 to ~30 feet bgs. From ~30 to ~36 feet bgs, tuff and gravelly tuff units that contain basalt fragments

² "Petroleum" means crude oil, or any fraction thereof, which is liquid at standard conditions of temperature and pressure, which means at 60 degrees Fahrenheit and 14.7 pounds per square inch absolute. (Health & Safety Code, § 25299.2)

- Hydrology: Confined to semi-confined at ~30 to ~35 feet bgs. Monitoring wells at the Site may be the mechanism for creating a zone of unconfined groundwater above the confined to semi-confined zone.

Corrective Actions

- Four USTs were removed in 1989 and 1999 and replaced with two USTs that were removed in 2003. No known USTs remain at the Site.
- During the 2003 UST removal, approximately 1,818 tons of soil was excavated, over-excavated, and disposed. An additional approximately 348 tons of soil was removed in 2005.
- In 2001, air sparge/soil vapor extraction was determined not to be a feasible method for remediation.
- A pump and treat system operated from 2005 to 2008; approximately 867,000 gallons of impacted water was treated. The system was shut down because of diminishing influent concentrations.

Table B: Concentrations of Petroleum Constituents in Soil

Constituent	Maximum 0-5 ft. bgs (mg/kg)	Maximum 5-10 ft. bgs (mg/kg)
Benzene	<0.005	0.17
Ethylbenzene	<0.005	5.8
Naphthalene	Not Analyzed	Not Analyzed
Polyaromatic Hydrocarbons (PAHs)	Not Analyzed	Not Analyzed

mg/kg – milligram per kilogram

Table C: Concentrations of Petroleum Constituents of Concern in Groundwater

Sample	Sample Date	TPHg (ppb)	Benzene (ppb)	Toluene (ppb)	Ethylbenzene (ppb)	Xylenes (ppb)	MTBE (ppb)	TBA (ppb)
P1	4/16/08	6,900	6.3	46	200	850	<120	19
P2	4/16/08	<50	<0.5	<0.5	<0.5	0.68	<5	<2.5
P3	4/16/08	<50	<0.5	<0.5	<0.5	<0.5	<5	<2.5
P4	6/27/11	2,600	3.7	1.9	69	47	42	25
P5	4/16/08	1,000	44	21	640	950	280	39
MW-1	6/27/11	<50	<0.5	<0.5	<0.5	<0.5	120	<10
MW-4	6/27/11	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0
MW-5	4/15/08	<50	<0.5	<0.5	<0.5	<0.5	7.5	11
MW-6	6/27/11	<50	<0.5	<0.5	<0.5	<0.5	8.3	<2.0
MW-7	6/27/11	350	<0.5	5.2	<0.5	<0.5	16	4.9
MW-8	4/16/09	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5
MW-9	4/16/09	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5
MW-10	4/16/09	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5
MW-11	4/16/09	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<5
WQO	-	50	1	42	29	17	5	12*

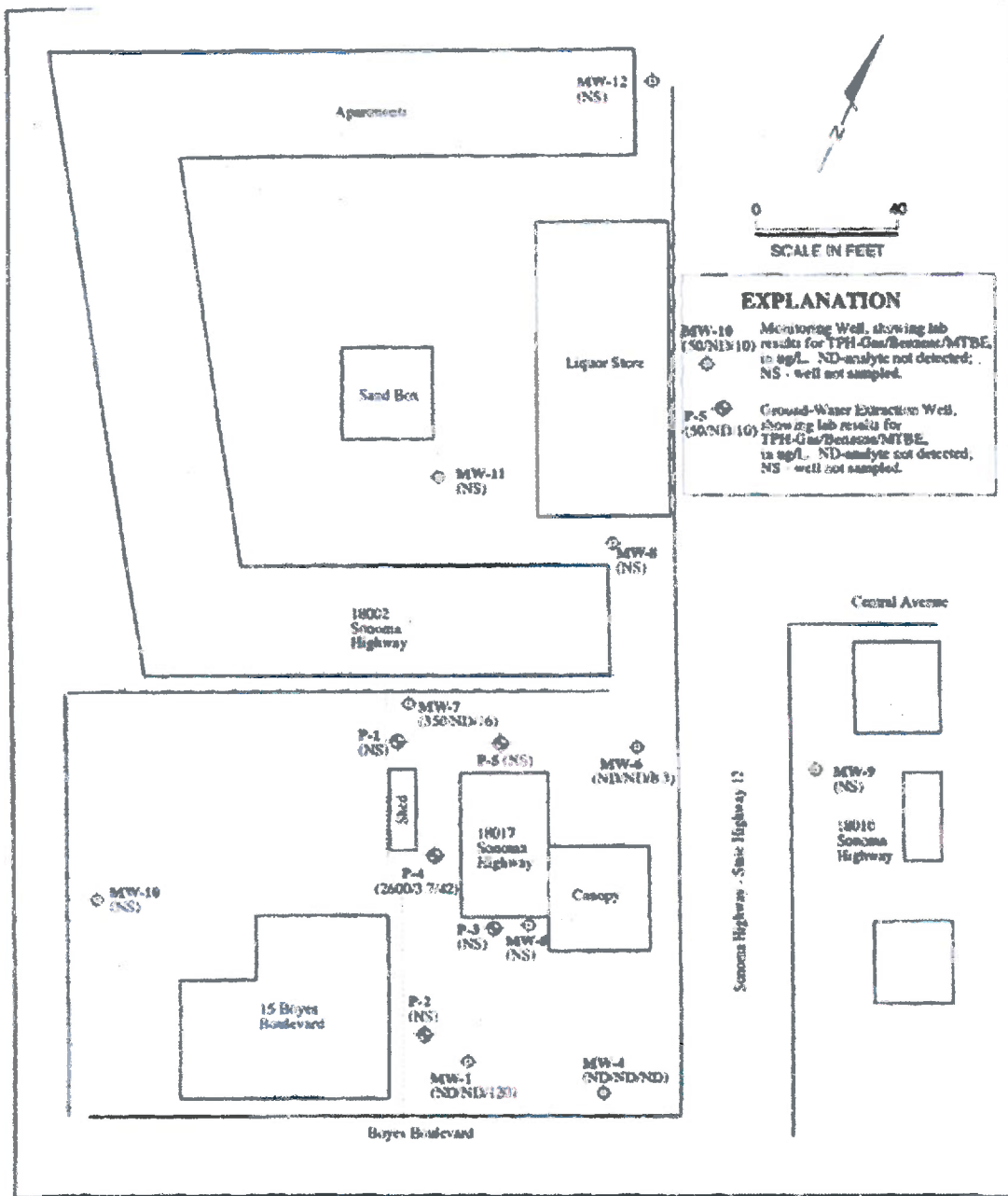
* - California Notification Level
WQO - water quality objective
ppb - parts per billion

TPHg - total petroleum hydrocarbons as gasoline
MTBE - methyl tert-butyl ether
TBA - tert-butyl alcohol

Evaluation of Risk Criteria

- Maximum Petroleum Constituent Plume Length above WQOs: MTBE plume is ~225 feet in length.
- Petroleum Constituent Plume Determined Stable or Decreasing: Yes
- Soil/Groundwater Sampled for MTBE: Yes, see Table C above.
- Residual Petroleum Constituents Pose Significant Risk to the Environment: No
- Residual Petroleum Constituents Pose Significant Vapor Intrusion Risk to Human Health: No – Site-specific conditions satisfy the Policy criteria for vapor intrusion to indoor air. Petroleum constituents most likely to pose a threat for vapor intrusion were removed during soil excavation and over-excavation. Site conditions demonstrate that the residual petroleum constituents in soil and groundwater are protective of human health.
- Residual Petroleum Constituents Pose a Nuisance³ at the Site: No
- Residual Petroleum Constituents in Soil Pose Significant Risk of Adversely Affecting Human Health: No – A Site-specific risk assessment from exposure shows that maximum concentrations of petroleum constituents in soil will have no significant risk of adversely affecting human health.
- Residual Petroleum Constituents Pose Significant Direct Contact and Outdoor Air Exposure to Human Health: No – Maximum concentrations of petroleum constituents in soil are less than or equal to those listed in Table 1 of the Policy. 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 concentrations 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, 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.

³ Nuisance as defined in California Water Code, section 13050, subdivision (m).



Groundwater Sampling Summary
 18017 Sonoma Highway
 Boyes Hot Springs, California

PLATE
4

Job Number 178 01 10

Drawn DP

Approved

Date 7/11