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Ms. Kit Soo
Alameda County Environmental Health
1131 Harbor Parkway, Suite 250
Alameda, CA 94502-6577

RE: 2703 Martin Luther King Jr. Way, Oakland, California
PlaNet Site ID USF04645
PlaNet Project ID 27482
ACEH Case No. RO0000145

Dear Ms. Soo:

I am informed and believe that, based on a reasonably diligent inquiry undertaken by AECOM on behalf of Equilon Enterprises LLC dba Shell Oil Products US, the information and/or recommendations contained in the attached document is true, and on that ground I declare under penalty of perjury in accordance with Water Code section 13267 that this statement is true and correct.

As always, please feel free to contact me directly at (714) 731-1050 with any questions or concerns.

Sincerely,
Shell Oil Products US

Andrea A. Wing
Principal Program Manager

AECOM
300 Lakeside Drive
Suite 400
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www.aecom.com

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August 15, 2017

Kit Soo
Alameda County Department of Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502

Re: Focused Site Conceptual Model and Data Gap Investigation Work Plan
Former Shell-Branded Service Station
2703 Martin Luther King Jr. Way, Oakland, California
Shell PlaNet Site ID: USF04645
Shell PlaNet Project ID: 27482
Agency No. RO0000145

Dear Ms. Soo:

On behalf of Equilon Enterprises LLC dba Shell Oil Products US, AECOM Technical Services, Inc. is pleased to submit this Focused Site Conceptual Model and Data Gap Investigation Work Plan for the Former Shell-branded service station located at 2703 Martin Luther King Jr. Way in Oakland, California.

If you have any questions regarding this submittal, please contact Shane Olton at (916) 414-5849 or shane.olton@aecom.com.

Sincerely,

Shane Olton, P.G.
Project Manager

Drew Cannon, P.E.
Senior Environmental Engineer

Enclosure: Focused Site Conceptual Model and Data Gap Investigation Work Plan

cc: Andrea Wing, Equilon Enterprises LLC dba Shell Oil Products US
Rodney & Janet Kwan, Auto Tech West (site owner)
2703 Martin Luther King Jr. Way, Oakland, CA 94612
Monique Oatis, 670 27th Street, Oakland CA (off-site property owner)

AECOM

Focused Site Conceptual Model and Data Gap Investigation Work Plan

Former Shell-Branded Service Station
2703 Martin Luther King Jr. Way
Oakland, California

August 2017

AECOM

Focused Site Conceptual Model and Data Gap Investigation Work Plan

Former Shell-branded Service Station
2703 Martin Luther King, Jr. Drive
Oakland, California

PlaNet Site ID	USF04645
PlaNet Project ID	27482
Agency No.	RO0000145

Submitted to:

Dilan Roe
Alameda County Department of Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502

Submitted by:

AECOM Technical Services, Inc.
300 Lakeside Drive, Suite 400
Oakland, California 94612

On Behalf of

Equilon Enterprises LLC dba Shell Oil Products US

August 15, 2017

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Acronyms and Abbreviations

%v	percent by volume
µg/L	micrograms per liter
µg/m^3	micrograms per cubic meter
ACDEH	Alameda County Department of Environmental Health
AST	aboveground storage tank
AECOM	AECOM Technical Services, Inc.
ATW	Auto Tech West
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, total xylenes
Cambria	Cambria Environmental Technology, Inc.
CPT	cone penetrometer test
CRA	Conestoga-Rovers & Associates
COC	constituent of concern
DTSC	Department of Toxic Substances Control
DWR	Department of Water Resources, California State
EPA	United States Environmental Protection Agency
Equilon	Equilon Enterprises LLC dba Shell Oil Products US
ESL	Environmental Screening Level (Regional Water Quality Control Board, San Francisco Bay)
HHRA	Human Health Risk Assessment
LTCP	Low-Threat Underground Storage Tank Case Closure Policy
mg/kg	milligrams per kilogram
MTBE	methyl tertiary-butyl ether
PAHs	polycyclic aromatic hydrocarbons
RWQCB	Regional Water Quality Control Board, San Francisco Bay
SCM	Site Conceptual Model
Site	Former Shell-branded service station, 2703 Martin Luther King Jr. Way, Oakland, California
SPH	separate-phase hydrocarbons
SWRCB	California State Water Resources Control Board
TBA	tertiary-butyl alcohol
TPHd	total petroleum hydrocarbons as diesel
TPHg	total petroleum hydrocarbons as gasoline
TPHmo	total petroleum hydrocarbons as motor oil
USAN	Underground Service Alert North Underground Service Alert North
UST	underground storage tank
WQO	water quality objective

1 Introduction

On behalf of Equilon Enterprises LLC dba Shell Oil Products US (Equilon), AECOM Technical Services, Inc. (AECOM) prepared this Focused Site Conceptual Model (SCM) and Data Gap Investigation Work Plan for the Former Shell-branded service station located at 2703 Martin Luther King Jr. Way in Oakland, California (Figure 1).

The purpose of this report is to provide an updated SCM, as well as to identify data gaps and propose additional work to address those data gaps and thereby enable a path to case closure using the criteria provided in the State Water Resources Control Board (SWRCB) *Low-Threat Underground Storage Tank Case Closure Policy* (LTCP) (SWRCB 2012), This updated SCM includes recent data, including a summary of the impacts to groundwater, soil, and soil vapor. Relevant data gaps have been identified, and additional soil vapor sampling and groundwater investigation work is proposed herein.

This document was prepared to address Alameda County Department of Environmental Health's (ACDEH) request for a Data Gap Investigation Work Plan and Focused Site Conceptual Model, as described in their letter to Equilon dated March 17, 2017. The March 17 letter also requested submittal of resampling results from vapor probes VP-07 and VP-13. The ACDEH approved submittal of both reports under one cover in their extension request approval letter dated April 10, 2017. An additional extension for submittal of this report was requested, and approved on May 31, 2017. Regulatory correspondence is included in Appendix A.

2 Site Background

This section describes the Site and associated environmental history, geology and hydrogeology.

2.1 Site History and Operations

The Site is a former service station located on the northwest corner of Martin Luther King Jr. Way and 27th Street in a commercial and residential area of Oakland, California (Figure 1). A Shell service station operated on the property from approximately 1959 to 1979, with two dispenser islands, three gasoline underground storage tanks (USTs), and a waste oil UST. The fueling equipment was removed after Shell terminated operations at the Site. In 1979, Acme West Ambulance Company purchased the Site and installed a 2,000-gallon gasoline UST in the same approximate location of Shell's former USTs. The property was sold to Auto Tech West (ATW) in 1986, and ATW reportedly never used the UST. Gasoline constituents were detected in soil samples collected following the removal of the 2,000-gallon UST in 1994. The Site is still owned by ATW and is currently used as an automotive repair shop, and a 150-gallon waste oil aboveground storage tank (AST) is in use in the northern-central portion of the property. The Site currently has one building in the northwest corner of the property with open bays. The remaining portion of the Site completely paved with asphalt.

2.2 Site Investigation History

2.2.1 Subsurface Investigation: Gasoline Range Hydrocarbons

This subsection summarizes soil, groundwater, and soil vapor sampling events, which served to delineate and evaluate Site gasoline constituents from the historical UST system release. Sampling locations are presented in Figures 2 and 3. Monitoring well and vapor probe construction and soil boring details are presented in Table 1. Related remediation work including soil excavations is presented in Section 4. A fully-detailed Site history including subsurface investigation work is presented in Appendix B.

Subsurface Investigation Activities

October 1994: Two under-tank soil samples (TP-1-N and TP-2-S) were collected in conjunction with the removal of a 2,000-gallon gasoline UST.

May 1995: Nine soil borings (B-1 through B-9) were advanced in the vicinity of the excavated former UST pit and product dispenser islands, and soil samples were collected from each boring at depths ranging from 5 and 10 feet below ground surface (bgs).

March 1996: Two soil samples (TP-3-W and TP-4-E) were collected from the bottom of an over-excavation of the former gasoline UST location at 11 feet bgs.

July 1996: Six soil borings (B-10, B-11, B-12, B-13, V-1, and V-2) were advanced and soil samples were collected from each boring, with the exception of V-1, at depths ranging from 5.5 and 6 feet bgs. No soil sample was collected from V-1 as it was located in back-fill material within the former UST excavation. Grab-groundwater samples were collected from B-10, B-12, and B-13 at depths ranging from 8 to 11 feet bgs. Borings B-11 and B-12 were completed as groundwater monitoring

wells MW-1 and MW-2, and borings V-1 and V-2 were completed as soil vapor extraction wells extending into groundwater.

November 2000: Three soil borings (B-17, B-18, and B-19) were advanced and soil samples were collected at depths between 5 and 7 feet bgs. Grab-groundwater samples were collected from each boring as well. Three groundwater monitoring wells (MW-3, MW-4, and MW-5) were installed and soil samples were collected from borings of each well location at depths of 5 and 10.5 feet bgs.

April 2002: Three soil borings (B-20 through B-22) were advanced and soil samples were collected at depths ranging from 3 and 8 feet bgs. Grab-groundwater samples were collected from each boring at depths ranging from 8 to 8.8 feet bgs.

August 2005: Ten borings (GP-1 through GP-10) were advanced and soil samples were collected from each boring at depths ranging from 4.5 and 10 feet bgs. Grab-groundwater samples were collected from GP-1, GP-3, GP-6, and GP-7 at depths ranging from 10 and 20 feet bgs. Each boring was converted into a temporary soil vapor well and soil vapor samples were collected from each well at 4 feet bgs.

January 2006: Three monitoring wells (MW-6 through MW-8) were installed, one soil boring (B-23) was advanced, and six soil vapor probe locations (VP-1 through VP-6) were advanced. Soil vapor probes were not installed due to saturated conditions in the vadose zone, and no samples were taken from VP-1 through VP-6. Soil samples were collected from MW-6 through MW-8 and B-23 at depths ranging from 5 and 19.5 feet bgs. Grab-groundwater samples were additionally collected from each of these locations.

February 2006: Two off-Site monitoring wells (MW-12 and MW-14) were installed and soil samples were collected at depths ranging from 5 and 19.5 feet bgs.

October 2006: Five on-Site cone penetrometer test (CPT) borings (CPT-1 through CPT-5) were completed to depths of approximately 40 feet bgs and grab groundwater samples were collected at approximately 31 to 37 feet bgs. Six on-Site vapor probes (VP-1 through VP-6) were installed, but were not sampled due to the presence of water.

May and June 2007: Three off-Site CPT borings (CPT-6, CPT-7, and CPT-10) were completed to depths of approximately 40 feet bgs, and grab-groundwater samples were collected from each boring at depths ranging from 20 to 25 feet bgs. Two off-Site vapor probe pairs (VP-7 and VP-8) were installed and soil samples were collected from CPT-6 at 17 feet bgs, and from VP-7 and VP-8 at 4.5 feet bgs.

June 2008: One off-Site soil vapor probe (VP-9) was installed and a soil sample was collected from the boring at 4.5 feet bgs.

August 2010: Three off-Site groundwater monitoring wells (MW-9 through MW-11) were installed and soil samples were collected from each boring at 5, 9.5, 14.5, and 19.5 feet bgs. One soil vapor probe (VP-10) was installed off Site.

December 2010: Twenty-five on-Site soil borings (B-24 through B-48) were advanced to evaluate soil conditions in the area of the former UST complex and fuel delivery system. Soil samples were collected at depths ranging from 5 and 19.5 feet bgs.

March 2015: One off-Site groundwater monitoring well (MW-13) was installed and soil samples were collected at depths ranging from 5 and 19.5 feet bgs. Two nested off-Site soil vapor probes (VP-12 and VP-13), and one on-Site nested soil vapor probe (VP-14) were also installed.

Groundwater Monitoring 1996 to Present

Groundwater monitoring has been performed at the Site since August 1996. Monitoring events are currently performed semiannually and include on-Site monitoring wells MW-1 through MW-3 (gauging only), MW-4 through MW-8, V-1, and V-2, and off-Site monitoring wells MW-9 through MW-14.

Soil Vapor Sampling 2005 to Present

Soil vapor sampling was performed at on- and off-Site locations between 2005 and 2010 (GP-1 through GP-10, VP-1, VP-3, VP-4, and VP-6 through VP-10). Additional soil vapor sampling was performed at on- and off-Site locations (VP-3, VP-12, VP-13, and VP-14) in April and August 2015. VP-7 was not sampled due to an administrative error. Vapor probes VP-2 and VP-5 have never been sampled due to the presence of water observed in their tubing. Soil vapor sampling activities performed at VP-7 and VP-13 (off-Site locations) in May and July of 2017 are described in Section 3.4.5.

2.2.2 Shallow Soil Investigation: Motor Oil Range Hydrocarbons, Lead, and PAHs

This subsection summarizes shallow soil sampling events, which served to delineate and evaluate the extent of total petroleum hydrocarbons as motor oil (TPHmo), polycyclic aromatic hydrocarbons (PAHs), and lead in the northern portion of the Site and nearby off-Site areas. Sample locations are presented in Figures 2 and 3. A detailed Site history including shallow soil investigation work is presented in Appendix B.

As further discussed in Section 2.6, TPHmo, PAHs, and lead are no longer considered constituents of concern (COCs) for the Site, and ACDEH is not requesting further investigation of these constituents in shallow soil in the northern portion of the Site (ACDEH 2013). TPHmo impacts to shallow soil were addressed with remedial excavation work as described in Section 4. The PAHs are likely from a pyrogenic source, which is consistent with urban soils, soot, storm water runoff, etc. rather than a petrogenic source such as waste oil. Lead in shallow soils is likely a regional issue not associated with the former station operations. ACDEH has acknowledged that PAHs and lead detected on adjacent properties are likely not related to the former service station's operations (ACDEH 2013).

April 2009: Eight on-Site soil borings (HA-1 through HA-8) were advanced and soil samples were collected at depths of 0.7, 1.5, and 5 feet bgs to evaluate soil conditions near the former waste oil AST.

December 2010: Five off-Site soil borings (HA-9 through HA-13) were advanced and soil samples were collected at depths of 0, 1, and 4.5 feet bgs advanced to evaluate soil conditions near the former waste oil AST.

April 2012: Five off-Site soil borings (HA-14 through HA-18) were advanced and soil samples were collected at depths of 0, 1, and 4.5 feet bgs to evaluate soil conditions in the area adjacent to the former waste oil AST.

January and February 2013: Following a remedial excavation behind the former service station building including the area of the former waste oil tank, thirteen soil samples were collected from 2 feet bgs (B-1 through B-5, N-1 through N-3, S-1 through S-3, W-1, and W-2), and 3 samples collected from 3 feet bgs (OX-1 through OX-3).

April 2013: Ten soil borings (HA-9, HA-10, HA-12, HA-13, and HA-19 through HA-24) were advanced and soil samples were collected from the interval of 0 to 0.5 feet bgs (HA-10 was additionally sampled in the interval of 1.0 to 1.5 feet bgs) with the purpose of determining the source of lead and benzo(a)pyrene in the backyards of 663 and 665 28th Street and 2719 through 2723 Martin Luther King Jr. Way.

2.3 Geology and Hydrogeology

2.3.1 Regional

The Site is located within the East Bay Plain basin. Designated beneficial uses of the East Bay Plain basin include municipal and domestic water supply, industrial service supply, industrial process supply, and agricultural water supply. The Site falls within Zone A of the East Bay Plain basin, as defined in the June 1999 *East Bay Plain Groundwater Basin Beneficial Use Evaluation Report for Alameda and Contra Costa Counties, CA* (San Francisco Bay Regional Water Quality Control Board [RWQCB], 1999). Groundwater in Zone A is noted as an existing or potential drinking water resource, with a deep basin ranging from 500 to over 1,000 feet. Shallow groundwater is noted as a potential (not existing) drinking water resource. However, the document also states that the City of Oakland has no plans to "develop local groundwater resources for drinking water purposes because of existing or potential salt water intrusion, contamination, or poor or limited quantity."

2.3.2 Local

The Site is generally underlain by fine-grained soils (clays and silts). A coarser-grained lens may be present at approximately 10 to 25 feet bgs. The coarser-grained lens does not appear to extend beneath the Site to the southeast, nor to the southwest, and appears to thin northwest of the Site. Additional non-continuous coarser-grained lenses are shown on geologic cross-sections for the Site (Appendix C).

Depth to groundwater in Site monitoring wells has ranged historically from approximately 3 to 10 feet bgs. The depth to groundwater in the most recent monitoring event (May 2017) had an approximate range of 6 to 8.5 feet bgs. Groundwater has been first encountered during drilling at depths ranging from approximately 5 to 15 feet bgs. Based on this, groundwater may be semi-confined at the Site. Groundwater flow directions on the Site are historically variable, and have ranged from northwest to southeast, often showing flow radially outward from the west-central portion of the Site. Groundwater flow directions on nearby properties west of the Site are typically west or northwest.

Groundwater has also been encountered in shallow soil vapor probe screen intervals at the Site even when no groundwater is encountered in deeper vapor probe screen intervals in the same locations, and when groundwater in the nearby monitoring wells is deeper. This may be indicative of perched

water along preferential pathways. As described in Section 2.4, subsurface utilities have been identified in the Site vicinity that may have the potential to act as preferential pathways for groundwater flow.

As also described in Section 2.4, a California Department of Water Resources (DWR) records search and door-to-door surveys of nearby properties have not identified any water supply wells within a one-half mile radius of the Site. The nearest surface water body is Lake Merritt, which is over one-half mile southeast of the Site. Based on the absence of water supply wells within one-half mile radius of the Site and the City of Oakland having no plans to develop local groundwater resources, groundwater at the Site is not considered to be a drinking water source.

2.4 Sensitive Receptor Evaluation

Water Supply Wells: In 2000, Cambria Environmental Technology, Inc. (Cambria) obtained well installation and destruction records from the DWR with the purpose of identifying any water supply wells with the potential to be impacted by the Site. DWR records did not identify any existing wells within a ½-mile radius of the Site (Cambria 2001). Cambria additionally conducted door-to-door surveys in 2003, 2005, and 2010, and based on the responses received, the presence of any private water supply wells were not identified (Cambria 2003; Cambria 2006a, and Conestoga-Rover & Associates [CRA], 2010). The 2003 and 2005 Cambria survey covered properties within 500 feet and 300 feet of the Site, respectively. The 2010 CRA survey covered four properties in the immediate vicinity of the Site, which did not respond to the previous door-to-door surveys. Based on this information, it is unlikely that any active supply wells are at risk of impact from subsurface contaminant migration from the Site.

Surface Water Bodies: The nearest surface water body is Lake Merritt, located approximately 0.7 mile southeast of the Site boundary.

Preferential Pathways: The 2003, 2005, and 2010 door-to-door surveys described above also included questions regarding basements and sumps to identify structures that have the potential for preferential soil vapor accumulation. The surveys identified 9 properties with basements in the vicinity of the Site; a tabular summary and location map for these properties is provided in Appendix D. The 9 properties are 620 feet or less from the Site; the closest is located at 665 28th Street, directly adjacent to the Site on the north.

In 2000, Cambria obtained utility conduit maps from the City of Oakland Engineering Department to locate and map underground utility conduits, which are often backfilled with relatively permeable materials and therefore may act as preferential pathways for Site groundwater. Cambria identified the sanitary and storm sewer lines, buried at depths ranging from 3.5 to 9 feet bgs, as the only utility conduits in the Site vicinity with the potential to act as preferential pathways for groundwater flow (Cambria 2001).

In May 2006, Cambria performed a geophysical study the purpose of which, in-part, was to evaluate the presence of subsurface utilities in the northwest portion of the Site that may act as preferential pathways. Additional utility lines were identified in the northwest corner of the property, including a potential sewer line deeper than 4 feet bgs, an electrical line traced from the station building to the western property boundary, and an unknown utility line traced from the northwest corner of the

building to the southwest (Figure 3). The unknown utility line located in this area has the potential to act as a preferential pathway (Cambria 2006b).

2.5 Source and Release Mechanisms

The primary source was the former fuel USTs, dispensers, and associated piping. The primary release mechanisms were leaks and spills associated with the UST systems. In 1994, all remaining USTs, dispensers, and product piping were removed.

To help address the potential secondary source of petroleum constituents sorbed to the soil matrix, the UST pit was overexcavated in 1996 to approximately 11 feet bgs prior to backfilling it with clean, imported fill material. Additionally, to address motor oil hydrocarbons detected in shallow soils in the area of a former waste oil AST located behind (north of) the service station building, a 2- to 3-foot deep excavation was completed in 2013. Additional information regarding these remedial excavations is provided in Section 4. As described in AECOM's Revised Corrective Action Plan (AECOM 2016) and Pilot Test Work Plan (AECOM 2017a), additional remedial action consisting of oxygen injection is proposed to enhance the biodegradation of hydrocarbon constituents remaining in soil and groundwater.

2.6 Constituents of Potential Concern

The constituents of potential concern for this Site are petroleum products.

Historically, there have been intermittent detections of fuel oxygenates methyl-tertiary-butyl-ether (MTBE), tertiary-butyl alcohol (TBA), and di-isopropyl ether in Site groundwater wells. However, Shell ceased operation of the fuel USTs in 1979, prior to the addition of these compounds in their fuel, suggesting these detections were indicative of another source not associated with Site operations (CRA 2008). Additionally, MTBE and TBA have not been detected in Site groundwater wells within the past five years. For these reasons, MTBE and other fuel oxygenates are not COCs for this Site.

Lead and PAHs were initially detected in shallow soil samples collected near the former waste oil AST in the northern portion of the Site. To assess the source of lead and PAHs in shallow soil on properties adjacent to the north of the Site, CRA advanced ten shallow soil borings (HA-9, HA-10, HA-12, HA-13, and HA-19 through HA-24) at 663 and 665 28th Street, and 2719 through 2723 Martin Luther King Jr Way (Figure 3) and the results were evaluated in CRA's *Subsurface Investigation Report* dated June 3, 2013 (CRA 2013a). Based on the distribution of lead, CRA concluded that the lead is a regional issue and not related to the former service station operations. The report cited the most likely sources of lead including the proximity to highways where leaded gasoline was used prior to 1986, as well as chipping and peeling of lead-based paint from old buildings in the area. Review of the chromatograms presented in that report indicates that the PAHs are likely from a pyrogenic (not petrogenic) source consistent with urban soils, soot, and stormwater runoff. In their letter dated October 30, 2013, ACDEH acknowledged that the detections of lead and PAHs in shallow soils do not appear to be related to petroleum releases from the Site, and stated that they were not requesting further investigation of the shallow lead and PAHs (ACDEH 2013). As a result, lead and PAHs are no longer considered COCs for this Site. Historical soil sampling results for PAHs and lead are provided in Table 2; sample locations are shown on Figures 2 and 3.

Previous TPHmo impacts to shallow soil near the former waste oil AST have been addressed with remedial excavation work as described in Section 4. Based on the excavation sampling results and information provided in the subsequent Remedial Action Report (CRA 2013b), ACDEH indicated that they were not requesting further remedial action for shallow soil in the northern portion of the Site (ACDEH 2013). In conjunction with the analyses for TPHmo, analyses for total petroleum hydrocarbons as diesel (TPHd) were performed on many of the shallow soil samples from this area. However, the chromatographic patterns for samples with elevated TPHd results (above 100 milligrams per kilogram [mg/kg]) were noted as not matching the pattern of the diesel standard. There is no history of diesel fuel use at the Site, and the laboratory results do not indicate impact from diesel. For these reasons, TPHmo and TPHd are not considered COCs for this Site. Historical soil sampling results for TPHmo and TPHd are provided in Table 2; sample locations are shown on Figure 3.

Based on the data from Site investigations and related evaluations, the COCs for the Site are limited to total petroleum hydrocarbons as gasoline (TPHg) as well as benzene, toluene, ethylbenzene, and total xylenes (BTEX).

3 Subsurface Petroleum Hydrocarbon Distribution

This section presents Site characterization, including the distributions of hydrocarbons in soil, groundwater, and vapor.

3.1 Separate Phase Hydrocarbons

Separate phase hydrocarbons (SPH) were noted in grab groundwater samples collected from four soil borings (B-1, B-5, B-6, and B-9) drilled during a 1995 investigation (Appendix E). However, SPH has not been observed during any subsequent subsurface investigation, and has not been observed during groundwater monitoring activities, which began in 1996.

3.2 Groundwater

3.2.1 Distribution and Extent

Groundwater monitoring has been performed at the Site since August 1996. Complete historical groundwater monitoring data are presented in Table 3, and groundwater elevation and key analytical data from the most recent sampling event (May 2017) are summarized on Figure 4. Additional documentation of the May 2017 sampling event is provided in AECOM's 2017 *First Semiannual Groundwater Monitoring Report* (AECOM 2017b). Figures 5 and 6 present groundwater isoconcentration maps using the most recent data for TPHg and benzene, respectively. On-Site wells MW-4, MW-5, and V-2 have typically shown the highest concentrations of COCs.

In the most recent event, benzene concentrations exceeded 1,000 micrograms per liter (µg/L) in two Site wells, MW-4 and MW-5, which had concentrations detected at 2,800 and 2,500 µg/L, respectively. Several monitoring wells showed a marked reduction in COC concentrations during the most recent sampling event. In particular, wells MW-6 through MW-8, MW-10, MW-13, and MW-14 showed large decreases in COC concentrations (see Table 3 and Appendix F, concentration trend graphs).

As discussed in Section 2.3.1, the Site is located within Zone A of the East Bay Plain basin, and in this area the City of Oakland has no plans to develop local groundwater resources for drinking water purposes because of existing or potential salt water intrusion, contamination, or poor or limited quantity. Therefore the lowest applicable Tier 2 RWQCB Environmental Screening Levels (ESLs) (RWQCB, 2016) for non-drinking water resources have been selected as Site-specific water quality objectives (WQOs). The selected ESLs assume residential zoning and shallow groundwater (less than or equal to 10 feet bgs). The Site-specific WQOs for COCs are listed below:

Site-Specific Water Quality Objectives		
Groundwater Constituent	**WQOs** (µg/L)	**Tier 2 ESLs Basis**
TPHg	443	Table GW-2: Aquatic Habitat Goals
Benzene	1.1	Table GW-3: Groundwater Vapor Intrusion Human Health Risk Screening Levels
Toluene	130	Table GW-2: Aquatic Habitat Goals
Ethylbenzene	13	Table GW-3: Groundwater Vapor Intrusion Human Health Risk Screening Levels
Xylenes	100	Table GW-2: Aquatic Habitat Goals

Concentrations of COCs have typically been below detection limits in wells MW-1, MW-2, MW-3, MW-11, and MW-12. MW-1, MW-2, MW-3 and MW-12 define the extent to the north, northeast, southeast, and south of the former USTs and dispensers. MW-11, located approximately 280 feet to the west-northwest, provides definition in the primary downgradient direction. Wells MW-4 and MW-14 provide monitoring points to the southwest and west-southwest, respectively. COC concentrations in these wells have typically exceeded the Site-specific WQOs and, therefore, additional groundwater investigation work is proposed to provide complete lateral definition as discussed in Section 3.2.4.

Based on the May 2017 monitoring results, the plume lengths of TPHg and benzene that exceed the Site-specific WQOs are estimated at approximately 190 feet and 170 feet, respectively (Figures 5 and 6). Although the extent of the plume is not fully defined to the southwest, given that this is typically a crossgradient direction, the extent of the plume in the southwest direction is expected to be significantly shorter than in the northwest (downgradient) direction. Note that although some wells have shown concentrations of toluene, ethylbenzene, and total xylenes that exceed the Site-specific WQOs listed above, the areal extent of these other COCs is less than that of TPHg or benzene, based on monitoring data from the last two years. Therefore with respect to WQOs, the groundwater isoconcentration map for benzene (Figure 6) is considered conservatively representative of BTEX concentrations.

Historical grab groundwater samples obtained at on- and off-Site locations indicate strong attenuation of COCs with increasing depth (Appendix E). All grab groundwater samples obtained at depths of greater than 20 feet bgs had benzene concentrations less than 1,000 µg/L. Additionally, the data from soil samples indicates no significant impact of COCs to the deeper subsurface. Of 34 soil samples collected from a depth of 19.5 feet bgs, only two showed TPHg concentrations above 100 mg/kg (350 and 160 mg/kg at B-23 and B-34, respectively). Based on these findings, only the upper portion of the shallow groundwater-bearing zone is significantly impacted, and the vertical extent of COC in groundwater is adequately defined.

3.2.2 Transport and Fate

Based on the historical soil and groundwater data, and hydrocarbon transport patterns seen at similar sites, gasoline from leaks and/or spills at the UST system (tanks, piping, and dispensers), migrated downward through the vadose zone to groundwater. Gasoline constituents then spread laterally via groundwater transport. Gasoline constituents adsorbed to soil in the capillary fringe likely act as a secondary source of COCs. Trend graphs showing TPHg and benzene concentrations versus time for individual groundwater monitoring wells are presented in Appendix F. Site COCs exhibit stable or decreasing concentrations with time. In particular, over the last five years, the concentration of benzene shows a strong decreasing trend in Site wells MW-6, MW-7, MW-8, and V-2. Additionally, during the most recent sampling event, wells MW-6, MW-7, MW-13, and MW-14 showed dramatic decreases in TPHg and benzene concentrations as shown on the trend graphs (Appendix F).

3.2.3 Comparison to LTCP Criteria

Based on available data from monitoring events performed in the last two years, the length of the COC plume that exceeds the applicable WQOs (RWQCB Tier 2 ESLs for TPHg and benzene of 443 µg/L and 1.1 µg/L, respectively) is less than 1,000 feet in length and may be less than 250 feet in length.

There is no free product in the subsurface as documented by ongoing groundwater monitoring records. The closest surface water body (Lake Merritt) is more than 1,000 feet from the estimated plume boundary. Based on records search and door-to-door survey work completed to date, no water supply wells have been identified within 1,000 feet (Cambria 2001, 2003, and 2006a). The maximum dissolved concentration of benzene is greater than 1,000 µg/L (on-Site wells MW-4 and MW-5). However, during the most recent sampling event (May 2017), maximum benzene concentrations did not exceed 3,000 µg/L (wells MW-4 and MW-5 had benzene concentrations of 2,800 and 2,500 µg/L, respectively).

3.2.4 Data Gaps and Proposed Work

To more fully define the lateral extent of COCs in groundwater to the south and southwest of the source area, additional groundwater investigation is proposed within the bicycle lane along the north side of 27th Street. Locations for proposed wells are shown on Figure 7. Based on known location of utilities running along the sidewalk and parking lane on the north side of the street, the bicycle lane appears to be the only potentially feasible location for additional wells for effective plume delineation. The proposed additional groundwater wells and groundwater sampling will address the identified data gaps and will thereby serve as a basis for closure under the LTCP. Procedures for installation and sampling of the proposed wells are provided Section 5.2.

Additionally, well MW-9, located northwest of the source area, appears to be near the distal (downgradient) edge of the COC plume and is therefore a key well for evaluation of plume length. This well could not be located for sampling during the December 2016 and May 2017 events. It may have been covered with soil or construction materials during recent work conducted at this off-Site property. Prior to the next sampling event, efforts will be made to locate and, if needed, repair this well so that it can be sampled and plume length can be more precisely evaluated.

The proposed additional remedial action, oxygen injection, is expected to reduce maximum COC concentrations in groundwater and soil vapor, as well reducing the overall extent and length of the COC plume.

3.3 Soil

3.3.1 Distribution and Extent

Several phases of soil investigation and sampling for Site COCs (TPHg and BTEX) were performed between October 1994 and March 2015. The locations of the historical soil samples are shown on Figures 2 and 3; Table 4 includes the analytical results for COCs in soil samples.

The highest COC concentrations have been detected in soil samples collected in the vicinity of the former USTs (within approximately 20 feet of the former UST excavation).

Historical soil samples with concentrations of TPHg exceeding 10,000 mg/kg include:

- 18,000 mg/kg in TP-1-N, an initial under-tank sample collected during tank removal (soil was subsequently excavated).
- 28,000 mg/kg in B-31-12, collected at 12 feet bgs, and within the UST excavation footprint.
- 17,000 mg/kg in B-42-10, collected at 10 feet bgs, and 20 feet southwest of the UST excavation area.

Historical concentrations of benzene exceeding 10 mg/kg include:

- 100 mg/kg in TP-1-N, an initial under-tank sample collected during tank removal (soil was subsequently excavated).
- 72 mg/kg in B-42-10, collected at 10 feet bgs, and 20 feet southwest of the UST excavation area.
- 33 mg/kg in B-23, collected 15.5 feet bgs, and 20 feet northwest of the UST excavation area.
- 15 mg/kg at GP-3-8.5, collected at 8.5 feet bgs and 20 feet southwest of the UST excavation area.

Elevated TPHg concentrations in shallow soil (5 feet bgs or less) have only been detected at investigative locations in the vicinity of the former UST system. Only one shallow soil sample (5-foot sample from B-42, 3,000 mg/kg) had a concentration above the commercial/industrial ESL for TPHg of 500 mg/kg.

On Site, the highest concentrations of COCs in soils generally occur at depths of 7 to 12 feet bgs, corresponding to the uppermost part of the saturated zone and the capillary fringe. Off Site the highest COC concentrations in soil occurred at depths of 14 to 15 feet, corresponding to the saturated zone. The only off-Site soil samples with TPHg concentrations exceeding 500 mg/kg were the 14.5-foot deep sample from MW-10, and the 14-foot deep sample from MW-14 (1,200 and 970 mg/kg, respectively). For off-Site soil samples collected at depths of 10 feet or less, COCs were only detected at one location; the TPHg concentration in this sample (MW-14-10) was 32 mg/kg, well below the residential ESL of 100 mg/kg. Therefore, the upper 10 feet of soil off Site is free of significant petroleum contamination.

Soil concentrations show strong attenuation with depth; only three soil samples collected at depths greater than 16 feet had TPHg concentrations detected above 100 mg/kg. Specifically, the 16.5-foot sample from boring MW-7, the 19.5-foot sample from Boring B-23, and the 19.5-foot sample from Boring B-34 had detected TPHg concentrations of 340, 350, and 160 mg/kg, respectively. All of these concentrations are below the applicable ESL for TPHg of 500 mg/kg.

In the vadose zone, the horizontal extent of COCs is very limited and is adequately defined. In the saturated zone, soil sample results are more indicative of groundwater conditions, and additional lateral delineation for groundwater is planned as described in Section 5.2. Soil samples from the saturated zone, as well as groundwater samples, show strong attenuation with depth, indicating that the vertical extent of COC impact to soil is limited in depth to the uppermost portions of the shallow groundwater-bearing zone.

3.3.2 Transport and Fate

Based on the historical data, gasoline from leaks and/or spills at the UST system (tanks, piping, and dispensers), migrated downward through the vadose zone to groundwater. Gasoline constituents then spread laterally via groundwater transport and sorbed to soil in the upper saturated zone. The primary zone of COC impact to soil is within the upper saturated zones and capillary fringe; residual COC impact to vadose zone soil is only present in localized areas in the immediate vicinity of the former UST system.

3.3.3 Comparison to LTCP Criteria

To facilitate evaluation of direct contact and outdoor air exposure under the LTCP, the maximum COC concentrations in on-Site soil samples collected at depths of 10 feet or less (excluding areas of soil subsequently excavated) are compared to the commercial LTCP criteria in the table below:

Shallow On-Site Soil Concentrations[1] (0 to 10 feet bgs)					
COC with Applicable LTCP Criteria	**Date**	**Location**	**Depth** (feet bgs)	**Maximum Historical Concentration** 0-5 feet bgs / 5-10 feet bgs (mg/kg)	**LTCP Commercial Criteria** 0-5 feet bgs / 5-10 feet bgs (mg/kg)
Benzene	05/23/95; 12/20/10	B-2 / B-42	5 / 10	0.6 / 72	8.2 / 12
Ethylbenzene	12/20/10	B-42	5 / 10	5.5 / 270	89 / 134
Naphthalene	12/13/10	HA-12 / multiple locations	0 / 5	0.059 / <0.020	45/45

1. Excludes soil samples in areas that were subsequently excavated during remedial actions.
Note: PAHs are assumed to have pyrogenic origin not related to the petrogenic hydrocarbon releases at the Site.

As shown above, the maximum concentrations of benzene, ethylbenzene, and naphthalene in the 0- to 5-foot interval were well below the LTCP criteria. Naphthalene was also below the LTCP criteria in the 5- to 10-foot level. Maximum concentrations of benzene and ethylbenzene detected in 5- to 10-foot interval were above the LTCP criteria. However, only two sample locations had benzene and/or ethylbenzene concentrations exceeding the LTCP criteria; both were at on-Site locations at depths of 8.5 to 10 feet, which is considered within the upper saturated zone or capillary fringe. These two soil sample locations were the 8.5-foot sample at Boring GP-3 (benzene concentration of 15 mg/kg), and the 10-foot sample from Boring B-42 (benzene and ethylbenzene concentrations of 72 mg/kg and 270 mg/kg, respectively).

As stated previously, the upper 10 feet of off-Site soil is free of significant petroleum contamination. Specifically, at depths of 0 to 10 feet, COCs were only detected at one off-Site location (MW-14-10); the benzene and ethylbenzene concentrations in this sample were 0.0083 and 0.028 mg/kg, well below the corresponding residential LTCP criteria.

The additional remedial work (oxygen injection) planned for the Site is expected to address the residual on-Site concentrations that exceed the LTCP criteria.

3.3.4 Data Gaps

As discussed in Section 3.3.1, the extent of COCs in soil is adequately defined. No data gaps in soil have been identified and therefore no additional soil investigation is recommended. Additionally, the Site-specific Human Health Risk Assessment (HHRA) concluded that there appears to be no significant direct contact risk to current or future receptors from COCs in soil (AECOM 2015).

3.4 Soil Vapor

3.4.1 Distribution and Extent

Soil vapor probes were installed in several phases of work between November 2006 and March 2015. As shown on Figure 2, this has included seven on-Site locations (VP-1 through VP-6, and VP-14) and six off-Site locations (VP-7 through VP-10, VP-12, and VP-13). The probe installations included tubing and screens for sampling at 3 feet and 5 feet bgs, except for VP-9 and VP-10 (5 feet bgs only). VP-2 and VP-5 were never sampled due to the presence of water in these probes. The historical soil vapor data is presented in Table 5.

On-Site probes VP-1 and VP-4 were sampled in 2007 only; VP-6 was sampled several times between 2007 and 2009; VP-3 was sampled in 2007 and 2015. VP-14 is a newer probe sampled in 2015. The highest on-Site soil vapor concentrations of COCs are present southwest of the former UST location, at VP-3 and VP-14. Concentrations of COCs at surrounding on-Site locations are generally much lower.

Off-Site locations VP-7, VP-8, and VP-9 were sampled several times between 2007 and 2009 and VP-10 was sampled once in 2010. VP-12 and VP-13 are newer probes initially sampled in 2015. For the most recent sampling events through 2015 at each location, the highest off-Site soil vapor concentrations of TPHg were present at VP-12 and VP-13, approximately 90 to 100 feet west of the former UST location. The most recent available concentrations at the other off-Site vapor probe locations were below or near detection limits.

To address data gaps identified by the Site-specific HHRA (AECOM 2015), VP-13 and VP-7 were re-sampled in 2017 as described Section 3.4.5.

3.4.2 Transport and Fate

Gasoline constituents previously spread laterally via groundwater transport. Vapors are released into vadose zone soil from dissolved COCs in the upper saturated zone and/or residual sorbed COCs in the capillary fringe.

3.4.3 Comparison to LTCP Criteria

To facilitate evaluation of soil vapor intrusion to indoor air under the LTCP, the maximum historical COC concentrations in soil vapor samples (on and off Site) are compared to the associated LTCP criteria (commercial and residential) in the table below:

Soil Vapor Concentrations					
COC with Applicable LTCP Criteria	**Date**	**Location**	**Depth** (feet bgs)	**Maximum Historical Concentration** ($\mu g/m^3$)	**LTCP Criteria[1]** ($\mu g/m^3$)
On-Site Locations					**Commercial**
Benzene	4/16/15	VP-14	5	690,000	<280
Ethylbenzene	4/16/15	VP-14	5	94,000	<3,600
Naphthalene	--	--	--	not detected	<310
Off-Site Locations					**Residential**
Benzene	4/16/15	VP-13	3	770	<85
Ethylbenzene	6/12/07	VP-8	3 and 5	120	<1,100
Naphthalene[2]	--	--	--	not detected	<93

1. LTCP criteria for no bioattenuation zone (i.e. oxygen less than 4%v) are listed. The LTCP criteria for a bioattenuation zone (i.e. oxygen greater than 4%v) assume a1,000-fold bioattenuation of petroleum vapors.

%v = percent by volume

As shown above, on-Site maximum concentrations of benzene and ethylbenzene exceeded the LTCP criteria at some locations. On-Site concentrations of TPHg also exceeded the applicable commercial RWQCB ESL (100,000 micrograms per cubic meter [$\mu g/m^3$] for odor/nuisance).

Off Site, the maximum concentration of benzene (770 $\mu g/m^3$ at VP-13 on 4/16/15) exceeded the LTCP criteria. However, this was the only off-Site exceedance; all other samples met the LTCP criteria. Additionally, benzene was not detected during the subsequent sampling events performed at VP-13 on August 27, 2015 and May 19, 2017. The off-Site concentrations of TPHg exceeded the applicable residential RWQCB ESL (50,000 $\mu g/m^3$ for odor/nuisance) at VP-12 and VP-13 in August 2015; however, TPHg was not detected in the sample collected from VP-13 on May 19, 2017. The concentration of TPHg, 260 $\mu g/m^3$, detected in the sample collected from off-Site location VP-7 on July 7, 2017, was far below the residential RWQCB ESL. The most recent available TPHg concentrations at the other off-Site vapor probe locations were below or near detection limits.

3.4.4 Data Gaps

Soil vapor with COC concentrations exceeding the LTCP criteria were identified in an on-Site area in the vicinity of VP-3 and VP-14 (southwest of the former UST location), as well as in an off-Site area in the vicinity of VP-12 and VP-13. Results of soil vapor sampling performed at probes outside of these two areas indicate that these areas of elevated COC concentrations are limited in lateral extent.

The site-specific HHRA (AECOM 2015) concluded on-Site sources may potentially pose unacceptable risk for vapor intrusion health risks to future commercial/industrial workers (specifically, in the scenario where new buildings are developed in the vicinity of VP-3 and VP-14). Conversely, the HHRA also concluded that there appears to be no significant vapor intrusion risk to current or future off-Site residents or current on-Site commercial/industrial workers. The HHRA evaluated vapor intrusion risks using soil vapor data from April and August 2015, as well as groundwater data from November 2013 through August 2015; older data were deemed outdated and not representative of current Site conditions.

The HHRA concluded that benzene and ethylbenzene likely do not pose an unacceptable risk for off-Site residents, based on the available soil vapor results. However, at that time, VP-13 had most recently been sampled two times in 2015 (April and August), with two substantially different results. Additionally, VP-7, originally sampled in 2007, was not resampled in 2015 as planned due to an administrative error. The HHRA therefore recommended resampling at soil vapor probes VP-7 and VP-13 to address these identified data gaps and more fully evaluate vapor intrusion risks at off-Site locations.

3.4.5 Soil Vapor Data Gap Resampling (May and July 2017)

To address the soil vapor data gaps identified by the HHRA and provide up-to-date information on the current concentrations of COCs and oxygen, resampling of off-Site vapor probes was performed in May and July of 2017 as described in the following sections.

3.4.5.1 Field Procedures

AECOM collected soil vapor samples from the 3-foot and 5-foot depth probes at VP-13 on May 19, 2017, and from the 3-foot depth probe at VP-7 on July 7, 2017. The presence of water in the 5-foot depth probe at VP-7 did not allow collection of a representative sample at that depth.

Prior to sampling, approximately three purge volumes were removed from each vapor point, and soil vapor samples were collected after purging was completed. Soil vapor sampling procedures were in general accordance with the Department of Toxic Substances Control's (DTSC's) Advisory for Active Soil Gas Investigations (DTSC, 2015). Detailed soil vapor sampling procedures are provided in Appendix G, and soil vapor sampling field forms are provided in Appendix H.

For leak testing, a helium shroud was placed to cover the soil vapor probe surface casing and the laboratory-provided sample train, and lab-grade helium gas was introduced into the shroud and controlled to obtain approximately 30 to 70 percent helium for the duration of sampling. Helium meter readings were collected periodically during sampling. As summarized below, the helium leak test results were within acceptable ranges, demonstrating sample integrity.

Helium Leak Test Result Summary

Soil Vapor Probe ID	Date	Field-Measured Helium Concentration in Shroud (%v)	Maximum Allowable Helium Concentration in Vapor Sample* (%v)	Helium Concentration in Laboratory Vapor Sample (%v)
VP-13-3	5/19/17	56.8 – 61.3	2.8	< 0.11
VP-13-5	5/19/17	62.3 -69.2	3.1	< 0.11
VP-7-3	7/7/17	34.0 – 45.8	1.7	< 0.12

* 5% of Minimum Shroud Concentration
%v = percent by volume

3.4.5.2 Laboratory Procedures

The vapor samples were labeled, delivered under chain-of-custody protocol to Eurofins-Air Toxics in Folsom, California (a California-certified laboratory) and analyzed by Modified United States Environmental Protection Agency (EPA) Method TO-3 (M) GC/FID for TPHg, EPA Method TO-15 (M)

for BTEX and naphthalene, and American Society for Testing and Materials Method D-1946 (M) for fixed gases, including helium, oxygen, methane, and carbon dioxide. The laboratory reports are included as Appendix I.

3.4.5.3 Vapor Sampling Results

Vapor sampling results from the May and July 2017 resampling events are included in Table 5. TPHg was detected in sample VP-7-3 at a concentration of 260 ug/m3; TPHg was not detected in VP-13-3 or VP-13-5. BTEX and naphthalene were not detected in any of the three samples. Table 5 lists the reporting limits achieved for TPHg, BTEX, and naphthalene; these limits were well below the applicable LTCP criteria and residential ESLs. Oxygen concentrations in the three samples ranged from 16 to 20 percent by volume, while carbon dioxide concentrations ranged from 1.3 to 3.9 percent by volume. These oxygen and carbon dioxide concentrations are characteristic of a bioattenuation zone with sufficient oxygen available to remain active. Helium and methane were not detected in the samples.

The data gaps for soil vapor characterization identified by the HHRA have been addressed by the resampling of VP-13 and VP-7 conducted in May 2017 and July 2017, respectively. The sample results confirm that off-Site soil vapor concentrations are well below both the applicable residential soil vapor ESLs and the LTCP criteria. The remaining identified area (on Site in the vicinity of VP-3 and VP-14) of soil vapor with COC concentrations exceeding the LTCP criteria is limited in lateral extent. No additional vapor sampling is currently necessary.

The proposed additional remedial action, oxygen injection, is expected to enhance biodegradation of petroleum hydrocarbon constituents in the subsurface, thereby reducing COC concentrations in soil vapor in the remaining impacted area on Site. The 2015 and 2017 off-Site vapor resampling results, combined with the proposed additional remediation, will serve as a basis for closure under the LTCP. After remediation, we anticipate that the reduction in on-Site soil vapor concentrations will allow evaluation of case closure using Scenario 4 of the LCTP's Vapor Intrusion to Indoor Air Criteria (Direct Measurement of Soil Gas Concentrations). Based on measured oxygen concentrations, it may likely be possible to apply the Scenario 4 criteria that are specific to active bioattenuation zones. For future LTCP evaluation, the residential LTCP criteria would be applied to off-Site properties, whereas the commercial LTCP criteria would be applied to on-Site properties. Alternatively, an update of the Site-specific HHRA may be used to evaluate the vapor intrusion pathway and demonstrate that human health is adequately protected.

4 Remedial Action History

A fully-detailed Site history including remedial action work is presented in Appendix B.

March 1996 Overexcavation: Acme's former UST excavation, originally left open to 9 feet bgs, was overexcavated to approximately 11 feet bgs and backfilled with clean imported fill material.

2001 Oxygen Releasing Compound (ORC) Sock Installation: ORC socks were deployed in wells V-1 and V-2 during 2001 and then removed later that year.

2003 ORC Sock Installation: ORC socks were deployed in wells MW-5 and V-2 and replaced on a semiannual basis before being discontinued in 2005.

January 2006 Dual Phase Extraction (DPE) Pilot Test: Cambria conducted a five-day DPE pilot test on wells V-1, V-2, and MW-4 through MW-8. A constant vacuum DPE test was additionally conducted on well MW-6. Cambria's report on this work concluded that variability in extraction flow rates across the Site may reflect heterogeneities in subsurface soils or may suggest preferential pathways. Cambria did not recommend implementing DPE at this Site.

2013 Excavation: CRA excavated shallow soil from the area of the former waste oil AST to remove TPHmo and lead soil impacts. The excavation location is shown on Figure 2. The excavation was 2 feet deep, with a 5-foot by 4-foot subarea near the western end that was overexcavated to a 3-foot depth. A total of approximately 52 tons of soil were excavated. ACDEH indicated that they were not requesting further remedial action for shallow soil in the northern portion of the Site, or further investigation of shallow lead and PAHs in off-Site soil (ACDEH 2013).

Historical remedial excavations removed a substantial portion of soil with sorbed hydrocarbon constituents, and thereby reduced the volume of secondary source material. The former UST excavation was backfilled with clean imported fill material and therefore does not contain residual source material. However, remedial actions performed to date have not reduced COC concentrations in groundwater and on-Site soil vapor to levels below the LTCP criteria. Therefore additional remedial action, oxygen injection, is planned in order to accelerate the biodegradation of petroleum hydrocarbon constituents in the saturated and vadose zones and thereby reduce COC concentrations in groundwater and soil vapor. This additional remedial action is expected to reduce concentrations sufficiently enough to prepare the Site for regulatory closure in accordance with the LTCP.

5 Data Gap Investigation Work Plan

5.1 Purpose and Scope

The objective of this work plan is to address the data gaps identified by the SCM and, together with the proposed additional remedial action (oxygen injection to enhance biodegradation), provide a basis for closure under the LTCP. This work plan is intended to satisfy the ACDEH's request for additional documents as described in their letter dated March 17, 2017 (Appendix A).

To address the remaining data gaps, AECOM proposes two investigative work elements:

- Install and sample three additional off-Site groundwater monitoring wells.
- Locate/uncover/repair and then sample existing off-Site groundwater monitoring well MW-9.

Additionally, AECOM proposes the following ongoing periodic monitoring:

- Semiannual groundwater monitoring according to the schedule established for the Site and incorporating the three proposed wells.

5.2 Groundwater Investigation and Monitoring

To address data gaps, additional groundwater investigation is proposed within the bicycle lane along the north side of 27th Street. The proposed wells are intended to fully define the plume in the south and southwest directions. Either two wells (MW-15, and MW-16) or three wells (MW-15, MW-16, and MW-17) will be installed, based on an evaluation of groundwater sampling results to be made after the next groundwater sampling event scheduled for November or December 2017.

Locations for up to three new wells (MW-15, MW-16, and MW-17) are shown on Figure 7. Based on known location of utilities running along the sidewalk and within the parking lane on the north side of the street, the bicycle lane appears to be the only potentially feasible location to install additional wells for effective plume delineation.

As discussed in Section 3.2.1, several monitoring wells showed a marked reduction in COC concentrations during the most recent sampling event conducted in May 2017. Therefore, results from the next sampling event will be used to help evaluate whether this represents a long-lasting decrease or a short-lived, temporary change. If the evaluation indicates that the recently observed change is long-lasting, then two wells, MW-15 and MW-16 (Figure 7), will be installed to provide adequate definition of the groundwater plume. If the evaluation of sampling results indicates a temporary, short-lived change (for example, concentrations from the next semiannual sampling event are similar to the concentrations present during 2016), then three wells (MW-15, MW-16, and MW-17 (Figure 7), will be installed to provide adequate definition of the groundwater plume.

Additionally, well MW-9, located northwest of the source area, appears to be near the distal (downgradient) edge of the COC plume and is therefore a key well for evaluation of plume length. This well could not be located for sampling during the December 2016 and May 2017 events. It may have been covered with soil or construction materials during recent work conducted at this off-Site property. Prior to the next sampling event, efforts will be made to locate and repair (if needed) this well so that it can be sampled and plume lengths can be more precisely evaluated.

The additional definition provided by the proposed wells, combined with groundwater remediation, will serve as a basis for closure under the LTCP. AECOM anticipates that the data from these wells will allow evaluation of case closure using either Scenario 2 or 4 of the LCTP's Groundwater-Specific Criteria, depending on anticipated reductions of the defined plume length, and reductions of the maximum benzene concentration. As described in AECOM's Revised Corrective Action Plan (AECOM 2016), oxygen injection is proposed to enhance biodegradation of petroleum hydrocarbon constituents in groundwater, and thereby reduce maximum COC concentrations, as well as the overall extent and length of the COC plumes.

5.2.1 Health and Safety

AECOM will update the existing site-specific health and safety plan to include the hazards associated with the proposed well installation work scope. Subcontractors will provide job safety analyses for their tasks. The HASP will be kept on Site during field activities and will be reviewed and signed by each Site worker.

5.2.2 Wells Permitting and Notifications

AECOM will obtain well installation permits from Alameda County Public Works Agency – Water Resources, and an encroachment permit will be obtained from the City of Oakland. Other permits will be obtained as needed, and notifications regarding the field activities will be made to the appropriate agencies, Site property owner/tenant, and nearby residences as appropriate.

5.2.3 Utility Clearance

AECOM will mark the proposed well locations and call Underground Service Alert North (USAN) at least 48 hours prior to mobilization. Existing underground utilities will be cleared by USAN and a private utility locating service. Additionally, the upper five feet of each well borehole will be cleared using a vacuum truck assisted air knife.

5.2.4 Well Installation

The new monitoring wells will be installed with a hollow stem auger drill rig, and soil samples will be collected at 5-foot intervals for lithologic logging. At least one soil sample per boring will be collected and submitted for laboratory analysis. Additional samples may be collected and submitted for analysis based on field observations. Submitted soil samples will be analyzed for TPHg and BTEX by EPA Method 8260B. The proposed well locations are shown on Figure 7.

Wells will be completed with a 2-inch diameter Schedule 40 PVC casing and 15-foot 0.02-inch slotted screen interval. Based on available Site data, the monitoring wells will be installed with a target well screen interval of 5 to 20 feet bgs. The final well screen intervals may be adjusted based on field observations of encountered groundwater and lithology.

The proposed scope of work will be performed by a C-57 licensed driller under the supervision of an AECOM professional geologist. Department of Water Resources completion reports will be submitted following well installation.

5.2.5 Well Development

Well development will be conducted by an AECOM-approved subcontractor. Wells will be developed at least 48 hours after well installation. Development will continue until temperature, pH, oxidation-

reduction potential, and electrical conductivity measurements have stabilized to 10 percent across three consecutive purge volumes, and water is relatively non-turbid. If the well becomes dewatered or is slow to recover before 5 well volumes have been removed, the well may be considered to be adequately developed. Wells will not be sampled until at least 24 hours after well development.

5.2.6 Surveying

The new wells will be surveyed for ground surface and top-of-casing elevation to the nearest 0.01 foot, and for horizontal location to the nearest 0.1 foot. Survey data will be uploaded to GeoTracker.

5.2.7 Waste Disposal

Drill cuttings and any liquids generated during the installation and development of the newly installed wells will be stored in 55-gallon steel drums, labeled, and sealed for temporary on-Site storage pending receipt of analytical data for disposal profiling. Upon approval, the waste will be transported to an appropriate Equilon-approved disposal facility.

5.2.8 Groundwater Sampling and Analyses

Groundwater samples will be collected from the newly installed wells and analyzed by EPA Method 8260B for TPHg and BTEX, and fuel oxygenates including MTBE, TBA, di-isopropyl ether, ethyl tertiary-butyl ether, and tertiary-amyl methyl ether. As part of the groundwater sampling procedure, groundwater depths and field parameters (pH, conductivity, turbidity, dissolved oxygen, and oxidation reduction potential) will be obtained from the groundwater monitoring wells. The initial sampling of the newly installed wells may be combined with the semiannual sampling of other Site wells, depending on timing.

To provide ongoing monitoring of COC concentrations and plume extent, the newly installed wells will be added to the groundwater sampling schedule established for the Site and sampled semiannually for a minimum of two years.

5.3 Reporting

After receipt of laboratory results, AECOM will prepare a Data Gap Investigation Report that will include the following documentation and evaluation of the work:

- Field procedures used for soil boring, monitoring well installation, and well development. Supporting documents will include well and encroachment permits, boring logs, well construction diagrams, development logs, laboratory reports for soil samples, and waste disposal documentation.
- Field procedures used for gauging, purging, and sampling of newly installed groundwater wells. Supporting documents will include field data sheets for gauging, purging, and sampling of groundwater wells, laboratory reports for groundwater samples, and waste disposal documentation.
- Tabulated analytical results for soil and groundwater sampling.
- Site plan and sample location maps, groundwater plume maps with isoconcentration contours showing the lateral extent and plume length, and other figures as warranted by the laboratory data.

- Discussion and summary of the results of the data gap investigation work.
- Conclusions and specific recommendations for any additional investigation work, if warranted by the results.

Semiannual groundwater monitoring sampling events and the associated report submittals will continue in accordance with the established schedule.

5.4 Schedule

AECOM will initiate the scope of fieldwork described in Section 5 upon approval of this work plan by ACDEH, receipt of the required permits, and property owner notifications.

The following is a tentative schedule for the data gap investigation work:

- Six to eight weeks to obtain well installation and encroachment permits, perform preliminary location of utilities (review available subsurface utility maps and order initial USAN marking), and obtain access authorization from off-Site property owners and tenants.
- Four to eight weeks to schedule drilling/well installation contractor, perform final utility location work, and install, develop, and survey two or three new monitoring wells.
- Four weeks to complete groundwater sampling and laboratory analysis.
- Eight weeks to evaluate investigation results and prepare data gap investigation report.

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Tables

Table 1
Well and Soil Boring Details
Shell-Branded Service Station, 2703 Martin Luther King Jr Way, Oakland, California

Name	Type / Method	Date Installed	Surface Elevation (feet)	Total Depth of Boring (feet)	Boring Diameter (inches)	First Encountered GW Depth (feet)	Filter Pack Interval (feet)	Screen Diameter (inches)	Screen Depth (feet)		Comments
									Top	Bottom	
B-1	Boring/DP	5/23/1995	-	9	-	7.8	-	-	-	-	Hit refusal at 9 feet
B-2	Boring/DP	5/23/1995	-	7	-	7	-	-	-	-	Hit refusal at 7 feet
B-3	Boring/DP	5/23/1995	-	12	-	-	-	-	-	-	
B-4	Boring/DP	5/23/1995	-	12	-	-	-	-	-	-	Hit refusal at 12 feet
B-5	Boring/DP	5/23/1995	-	15	-	14.5	-	-	-	-	
B-6	Boring/DP	5/23/1995	-	15	-	10.5	-	-	-	-	
B-7	Boring/DP	5/23/1995	-	15	-	9.5	-	-	-	-	
B-8	Boring/DP	5/23/1995	-	15	-	13.5	-	-	-	-	
B-9	Boring/DP	5/23/1995	-	14	-	-	-	-	-	-	
V-1	Well / HSA	7/17/1996	-	13	8	10	2.5 - 13	2	3	13	
V-2	Well / HSA	7/19/1996	-	13	8	8	2.5 - 13	2	3	13	
B-10	Boring / HSA	7/19/1996	-	9.5	8	9	-	-	-	-	
B-13	Boring / HSA	7/19/1996	-	16	8	10	-	-	-	-	
MW-1	Well / HSA	7/19/1996	-	21	8	9	5 - 21	2	6	21	Logged as B-11
MW-2	Well / HSA	7/19/1996	-	21	8	11	5 - 21	2	6	21	Logged as B-12
MW-3	Well / HSA	11/22/2000	-	20	10	15.0	3.5 - 20	4	5	3.5-20	
MW-4	Well / HSA	11/21/2000	-	20	10	none	3.5 - 20	4	5	20	
MW-5	Well / HSA	11/21/2000	-	20	10	10.0	3.5 - 20	4	5	20	
B-17	Boring / HSA	11/22/2000	-	15	7	13.0	-	-	-	-	
B-18	Boring / HSA	11/22/2000	-	15	7	14.6	-	-	-	30.1	
B-19	Boring / HSA	11/22/2000	-	20	-	15.0	-	-	-	-	
B-20	Boring/HA	4/11/2002	-	9	4	8.0	-	-	-	-	
B-21	Boring/HA	4/11/2002	-	9	4	8.8	-	-	-	-	
B-22	Boring/HA	4/11/2002	-	9	4	8.8	-	-	-	-	
GP-1	Boring/HP	8/29/2005	-	12	2	10.5	-	-	-	-	
GP-2	Boring/HA	8/29/2005	-	4.5	3	-	-	-	-	-	

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Well and Soil Boring Details
Shell-Branded Service Station, 2703 Martin Luther King Jr Way, Oakland, California

Name	Type / Method	Date Installed	Surface Elevation (feet)	Total Depth of Boring (feet)	Boring Diameter (inches)	First Encountered GW Depth (feet)	Filter Pack Interval (feet)	Screen Diameter (inches)	Screen Depth (feet)		Comments
									Top	Bottom	
GP-3	Boring/HP	8/29/2005	-	12	2	9.0	-	-	-	-	
GP-4	Boring/HA	8/31/2005	-	4.5	3	-	-	-	-	-	
GP-5	Boring/HA	8/30/2005	-	4.5	3	-	-	-	-	-	
GP-6	Boring/HP	8/30/2005	-	20	2	20.0	-	-	-	-	
GP-7	Boring/HA	8/30/2005	-	10	3	10.0	-	-	-	-	
GP-8	Boring/HA	8/30/2005	-	4.5	2	-	-	-	-	-	
GP-9	Boring/HA	8/31/2005	-	4.5	2	-	-	-	-	-	
GP-10	Boring/HA	8/31/2005	-	4.5	3	-	-	-	-	-	
B-23	Boring/HSA	1/3/2006	-	20	8	13.5	-	-	-	-	
MW-6	Well/HSA	1/4/2006	29.24	20	8	13.5	3 - 20	4	5	20	
MW-7	Well/HSA	1/4/2006	30.10	20	8	12.5	3 - 20	4	5	20	
MW-8	Well/HSA	1/3/2006	30.10	20	8	12.0	3 - 20	4	5	20	
MW-12	Well/HSA	2/28/2006	31.60	20	8	14.0	3 - 20	2	5	20	
MW-14	Well/HA	2/28/2006	28.33	14.5	4	11.0	3 - 14.5	1	5	14.5	
CPT-1	Boring/CPT	10/18/2006	-	40.19	-	-	-	-	-	-	
CPT-2	Boring/CPT	10/20/2006	-	40.19	-	-	-	-	-	-	
CPT-3	Boring/CPT	10/20/2006	-	40.19	-	-	-	-	-	-	
CPT-4	Boring/CPT	10/18/2006	-	40.19	-	-	-	-	-	-	
CPT-5	Boring/CPT	10/18/2006	-	40.19	-	-	-	-	-	-	
CPT-9	Boring/CPT	10/16/2006	-	18.04	-	-	-	-	-	-	CPT terminated
VP-1	Vapor Probe/HA	11/1/2006	-	5	-	-	2 - 3	1/4	2.5	2.75	Multi-level probe
						-	4 - 5	1/4	4.5	4.75	
VP-2	Vapor Probe/HA	11/1/2006	-	5	-	-	2 - 3	1/4	2.5	2.75	Multi-level probe
						-	4 - 5	1/4	4.5	4.75	
VP-3	Vapor Probe/HA	11/1/2006	-	5	-	-	2 - 3	1/4	2.5	2.75	Multi-level probe
						-	4 - 5	1/4	4.5	4.75	

Table 1
Well and Soil Boring Details
Shell-Branded Service Station, 2703 Martin Luther King Jr Way, Oakland, California

Name	Type / Method	Date Installed	Surface Elevation (feet)	Total Depth of Boring (feet)	Boring Diameter (inches)	First Encountered GW Depth (feet)	Filter Pack Interval (feet)	Screen Diameter (inches)	Screen Depth (feet)		Comments
									Top	Bottom	
VP-4	Vapor Probe/HA	11/1/2006	-	5	-	-	2 - 3	1/4	2.5	2.75	Multi-level probe
						-	4 - 5	1/4	4.5	4.75	
VP-5	Vapor Probe/HA	11/1/2006	-	5	-	-	2 - 3	1/4	2.5	2.75	Multi-level probe
						-	4 - 5	1/4	4.5	4.75	
VP-6	Vapor Probe/HA	11/1/2006	-	5	-	-	2 - 3	1/4	2.5	2.75	Multi-level probe
						-	4 - 5	1/4	4.5	4.75	
CPT-6	Boring/CPT	5/17/2007	-	40.190	-	-	-	-	-	-	
CPT-7	Boring/CPT	5/17/2007	-	40.190	-	-	-	-	-	-	
CPT-10	Boring/CPT	6/8/2007	-	40.026	-	-	-	-	-	-	
VP-7	Vapor Probe/HA	6/6/2007	-	5	3.5	-	2 - 3	1/4	2.5	2.8	Multi-level probe
						-	4 - 5	1/4	4.5	4.8	
VP-8	Vapor Probe/HA	5/29/2007	-	5	3.5	-	2 - 3	1/4	2.5	2.8	Multi-level probe
						-	4 - 5	1/4	4.5	4.8	
VP-9	Vapor Probe/HA	7/23/2008	-	5.17	3.5	-	4.5 - 5.17	1/4	4.625	4.875	
HA-1	Boring/HA	4/8/2009	-	5	2	-	-	-	-	-	
HA-2	Boring/HA	4/8/2009	-	5	2	-	-	-	-	-	
HA-3	Boring/HA	4/8/2009	-	5	2	-	-	-	-	-	
HA-4	Boring/HA	4/8/2009	-	5	2	-	-	-	-	-	
HA-5	Boring/HA	4/8/2009	-	5	2	-	-	-	-	-	
HA-6	Boring/HA	4/8/2009	-	5	2	-	-	-	-	-	
HA-7	Boring/HA	4/8/2009	-	5	2	-	-	-	-	-	
HA-8	Boring/HA	4/8/2009	-	5	2	-	-	-	-	-	
VP-10	Vapor Probe/AK	8/9/2010	-	5	4	-	4.7 - 5	1/4	4.8	4.9	
MW-9	Well/HSA	8/10/2010	28.95	20	10.25	11.00	4 - 20	4	5	20	
MW-10	Well/HSA	8/10/2010	28.87	20	10.25	7.00	4 - 20	4	5	20	
MW-11	Well/HSA	8/10/2010	27.94	20	10.25	7.00	4 - 20	4	5	20	

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									Top	Bottom	
HA-9	Boring/HA	12/13/2010	-	5	3.5	-	-	-	-	-	
HA-10	Boring/HA	12/13/2010	-	5	3.5	-	-	-	-	-	
HA-11	Boring/HA	12/13/2010	-	5	3.5	-	-	-	-	-	
HA-12	Boring/HA	12/13/2010	-	5	3.5	-	-	-	-	-	
HA-13	Boring/HA	12/13/2010	-	5	3.5	-	-	-	-	-	
B-24	Boring/DP	12/20/2010	-	20	2	12.50	-	-	-	-	
B-25	Boring/DP	12/23/2010	-	20	2	5.00	-	-	-	-	
B-26	Boring/DP	12/20/2010	-	20	2	5.00	-	-	-	-	
B-27	Boring/DP	12/20/2010	-	20	2	10.00	-	-	-	-	
B-28	Boring/DP	12/20/2010	-	20	2	10.00	-	-	-	-	
B-29	Boring/DP	12/20/2010	-	20	2	7.50	-	-	-	-	
B-30	Boring/DP	12/23/2010	-	20	2	7.50	-	-	-	-	
B-31	Boring/DP	12/22/2010	-	20	2	5.00	-	-	-	-	
B-32	Boring/DP	12/22/2010	-	20	2	6.00	-	-	-	-	
B-33	Boring/DP	12/22/2010	-	20	2	5.00	-	-	-	-	
B-34	Boring/DP	12/22/2010	-	20	2	18.50	-	-	-	-	
B-35	Boring/DP	12/22/2010	-	20	2	17.00	-	-	-	-	
B-36	Boring/DP	12/22/2010	-	20	2	11.50	-	-	-	-	
B-37	Boring/DP	12/22/2010	-	20	2	7.00	-	-	-	-	
B-38	Boring/DP	12/21/2010	-	20	2	10.00	-	-	-	-	
B-39	Boring/DP	12/21/2010	-	20	2	5.00	-	-	-	-	
B-40	Boring/DP	12/21/2010	-	20	2	5.00	-	-	-	-	
B-41	Boring/DP	12/20/2010	-	20	2	17.00	-	-	-	-	
B-42	Boring/DP	12/20/2010	-	20	2	13.50	-	-	-	-	
B-43	Boring/DP	12/20/2010	-	20	2	15.00	-	-	-	-	
B-44	Boring/DP	12/20/2010	-	20	2	10.50	-	-	-	-	

Table 1
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Shell-Branded Service Station, 2703 Martin Luther King Jr Way, Oakland, California

Name	Type / Method	Date Installed	Surface Elevation (feet)	Total Depth of Boring (feet)	Boring Diameter (inches)	First Encountered GW Depth (feet)	Filter Pack Interval (feet)	Screen Diameter (inches)	Screen Depth (feet)		Comments
									Top	Bottom	
B-45	Boring/DP	12/21/2010	-	20	2	5.00	-	-	-	-	
B-46	Boring/DP	12/21/2010	-	20	2	5.00	-	-	-	-	
B-47	Boring/DP	12/21/2010	-	20	2	13.00	-	-	-	-	
B-48	Boring/DP	12/21/2010	-	20	2	10.00	-	-	-	-	
HA-14	Boring/HA	4/18/2012	-	5	3.5	-	-	-	-	-	
HA-15	Boring/HA	4/18/2012	-	5	3.5	-	-	-	-	-	
HA-16	Boring/HA	4/18/2012	-	5	3.5	-	-	-	-	-	
HA-17	Boring/HA	4/18/2012	-	5	3.5	-	-	-	-	-	
HA-18	Boring/HA	4/18/2012	-	5	3.5	-	-	-	-	-	
VP-12	Vapor Probe/HA	3/24/2015	30.01	5.5	3.5	-	2.5 - 3.5	1/4	2.9	3	Multi-level probe
						-	4.5 - 5.5	1/4	4.9	5	
VP-13	Vapor Probe/HA	3/24/2015	29.85	5.5	3.5	-	2.5 - 3.5	1/4	2.9	3	Multi-level probe
						-	4.5 - 5.5	1/4	4.9	5	
VP-14	Vapor Probe/HA	3/24/2015	29.14	5.5	3.5	-	2.5 - 3.5	1/4	2.9	3	Multi-level probe
						-	4.5 - 5.5	1/4	4.9	5	
MW-13	Well/HSA	3/25/2015	29.93	20.5	8	10.0	4 - 20.5	2	5	20	

Abbreviations

AK = Air Knife
HSA = Hollow Stem Auger
HA = Hand Auger
DP = Direct Push
HP = Hydraulic Push
none = groundwater not encountered during soil boring.
- = Not available or not applicable.
Note: Table does not include near-surface samples (0 to 1.5 feet bgs), or samples obtained from soil excavation sidewalls/base.

Table 2
Historical Soil Data for TPHmo, TPHd, PAHs, and Lead
Former Shell Service Station, 2703 Martin Luther King Jr. Way, Oakland, California

Sample ID	Date	Depth (feet)	TPHmo (mg/kg)	TPHd (mg/kg)	PAHs																				Lead (mg/kg)
					Naphthalene (mg/kg)	2-Methylnaphthalene (mg/kg)	Acenaphthylene (mg/kg)	Acenaphthene (mg/kg)	Fluorene (mg/kg)	Phenanthrene (mg/kg)	Anthracene (mg/kg)	Bis (2-ethylhexyl) phthalate (mg/kg)	Diethyl Phthalate (mg/kg)	Fluoranthene (mg/kg)	Pyrene (mg/kg)	Benzo(a) Anthracene (mg/kg)	Chrysene (mg/kg)	Benzo(k) Fluoranthene (mg/kg)	Benzo(b) Fluoranthene (mg/kg)	Benzo(a) Pyrene (mg/kg)	Benzo(g,h,i) Perylene (mg/kg)	Indeno(1,2,3-c,d) Pyrene (mg/kg)	Dibenz(a,h) Anthracene (mg/kg)	1-Methylnaphthalene (mg/kg)	
MW-6	01/04/2006	5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**17**
MW-6	01/04/2006	10	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**14**
MW-6	01/04/2006	15.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-6	01/04/2006	19.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-7	01/04/2006	5.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**11**
MW-7	01/04/2006	11.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**8.5**
MW-7	01/04/2006	16.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-7	01/04/2006	19.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-8	01/03/2006	6.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**310**
MW-8	01/03/2006	10.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**5.3**
MW-8	01/03/2006	19.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
B-23	01/03/2006	5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**9.1**
B-23	01/03/2006	10	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**5.4**
B-23	01/03/2006	15.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
B-23	01/03/2006	19.5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
HA-1-0.7'	04/08/2009	0.7	**7,900**	**1,300 a**	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	---	---	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	**0.18**	<0.040	<0.040	<0.040	<0.040	**24.5**
HA-1-1.5'	04/08/2009	1.5	<25	<5.0	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	---	---	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	**7.73**
HA-1-5'	04/08/2009	5	**97**	**19 a**	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	---	---	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	**7.74**
HA-2-0.7'	04/08/2009	0.7	**6,700**	**560 a**	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	---	---	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	**0.19**	<0.040	<0.040	<0.040	<0.040	**44.0**
HA-2-1.5'	04/08/2009	1.5	<25	<5.0	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	---	---	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	**29.5**
HA-2-5'	04/08/2009	5	<25	<5.0	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	---	---	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	**19.4**
HA-3-0.7'	04/08/2009	0.7	**6,300**	**570 a**	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	---	---	<0.040	<0.040	<0.040	**0.070**	<0.040	<0.040	**0.16**	<0.040	<0.040	<0.040	<0.040	**59.9**
HA-3-1.5'	04/08/2009	1.5	**50**	<5.0	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	---	---	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	**20.8**
HA-3-5'	04/08/2009	5	<25	<5.0	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	---	---	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	**6.65**
HA-4-0.7'	04/08/2009	0.7	**7,800**	**4,500 a**	**1.2**	<1.0	<1.0	**1.6**	**1.7**	**8.5**	**2.6**	---	---	**7.9**	**8.1**	**3.6**	**4.0**	**7.1**	<1.0	**4.2**	**1.6**	**2.2**	<1.0	<1.0	**43.5**
HA-4-1.5'	04/08/2009	1.5	<25	<5.0	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	---	---	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	**10.1**
HA-4-5'	04/08/2009	5	<25	<5.0	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	---	---	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	**5.81**
HA-5-0.7'	04/08/2009	0.7	**5,800**	**700 a**	<0.040	<0.040	<0.040	<0.040	<0.040	**0.25**	**0.075**	---	---	**0.39**	**0.98**	**0.29**	**0.48**	**0.61**	**0.56**	**0.51**	**0.18**	**0.16**	**0.048**	<0.040	**46.0**
HA-5-1.5'	04/08/2009	1.5	<25	<5.0	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	---	---	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	**8.14**
HA-5-5'	04/08/2009	5	<25	<5.0	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	---	---	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	**7.85**
HA-6-0.7'	04/08/2009	0.7	**7,400**	**1,800 a**	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	---	---	<0.040	**0.077**	<0.040	**0.12**	<0.040	<0.040	**0.21**	**0.077**	<0.040	<0.040	<0.040	**40.3**

Table 2
Historical Soil Data for TPHmo, TPHd, PAHs, and Lead
Former Shell Service Station, 2703 Martin Luther King Jr. Way, Oakland, California

Sample ID	Date	Depth (feet)	TPHmo (mg/kg)	TPHd (mg/kg)	PAHs																			Lead (mg/kg)
					Naphthalene (mg/kg)	2-Methylnaphthalene (mg/kg)	Acenaphthylene (mg/kg)	Acenaphthene (mg/kg)	Fluorene (mg/kg)	Phenanthrene (mg/kg)	Anthracene (mg/kg)	Bis (2-ethylhexyl) phthalate (mg/kg)	Diethyl Phthalate (mg/kg)	Fluoranthene (mg/kg)	Pyrene (mg/kg)	Benzo(a) Anthracene (mg/kg)	Chrysene (mg/kg)	Benzo(k) Fluoranthene (mg/kg)	Benzo(b) Fluoranthene (mg/kg)	Benzo(a) Pyrene (mg/kg)	Benzo(g,h,i) Perylene (mg/kg)	Indeno(1,2,3-c,d) Pyrene (mg/kg)	Dibenz(a,h) Anthracene (mg/kg)	1-Methylnaphthalene (mg/kg)	
HA-6-1.5'	04/08/2009	1.5	**290**	**110 a**	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	---	---	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	**11.3**
HA-6-5'	04/08/2009	5	**230**	**130 a**	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	---	---	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	**12.1**
HA-7-0.7'	04/08/2009	0.7	**11,000**	**910 a**	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	---	---	<0.040	<0.040	<0.040	**0.091**	<0.040	<0.040	**0.18**	<0.040	<0.040	<0.040	**37.1**
HA-7-1.5'	04/08/2009	1.5	<25	<5.0	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	---	---	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	**8.82**
HA-7-5'	04/08/2009	5	<25	<5.0	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	---	---	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	**7.45**
HA-8-0.7'	04/08/2009	0.7	**9,600**	**810 a**	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	---	---	<0.040	<0.040	<0.040	**0.079**	<0.040	<0.040	**0.17**	<0.040	<0.040	<0.040	**32.8**
HA-8-1.5'	04/08/2009	1.5	**74**	**11 a**	<0.020	<0.020	<0.020	<0.020	<0.020	**0.10**	**0.027**	---	---	**0.29**	**0.31**	**0.17**	**0.18**	**0.18**	**0.15**	**0.20**	**0.045**	**0.061**	<0.020	<0.020	**1,060**
HA-8-5'	04/08/2009	5	**190**	**35 a**	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	---	---	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	**19.7**
HA-9-0	12/13/2010	0	**470**	**140a**	<0.10	<0.10	<0.10	<0.10	<0.10	**0.12**	<0.10	---	---	**0.19**	**0.23**	**0.12**	**0.15**	**0.10**	**0.12**	**0.14**	**0.15**	**0.10**	<0.10	<0.10	**1,410**
HA-9-1	12/13/2010	1	**26**	**11 a**	<0.020	<0.020	<0.020	<0.020	<0.020	**0.091**	**0.027**	---	---	**0.14**	**0.14**	**0.093**	**0.10**	**0.062**	**0.071**	**0.092**	**0.057**	**0.044**	<0.020	<0.020	**357**
HA-9-4.5	12/13/2010	4.5	<25	<5.0	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	---	---	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	**5.53**
HA-10-0	12/13/2010	0	**370a**	**150a**	<0.10	<0.10	<0.10	<0.10	<0.10	**0.11**	<0.10	---	---	**0.17**	**0.22**	**0.11**	**0.17**	**0.11**	**0.15**	**0.14**	**0.22**	**0.14**	<0.10	<0.10	**1,240**
HA-10-1	12/13/2010	1	**1,200**	**430a**	**0.020**	<0.020	<0.020	<0.020	<0.020	**0.098**	**0.030**	---	---	**0.20**	**0.24**	**0.12**	**0.15**	**0.094**	**0.11**	**0.16**	**0.14**	**0.10**	**0.022**	<0.020	**529**
HA-10-4.5	12/13/2010	4.5	<25	<5.0	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	---	---	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	**7.39**
HA-11-0	12/13/2010	0	**340a**	**120a**	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	---	---	**0.19**	**0.27**	**0.11**	**0.17**	**0.10**	**0.14**	**0.16**	**0.18**	**0.12**	<0.10	<0.10	**1,950**
HA-11-1	12/13/2010	1	<25	<5.0	<0.020	<0.020	<0.020	<0.020	<0.020	**0.048**	<0.020	---	---	**0.074**	**0.070**	**0.047**	**0.052**	**0.035**	**0.027**	**0.043**	**0.024**	<0.020	<0.020	<0.020	**166**
HA-11-4.5	12/13/2010	4.5	<25	<5.0	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	---	---	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	**73.2**
HA-12-0	12/13/2010	0	**120**	**39 a**	**0.059**	**0.042**	**0.048**	<0.020	<0.020	**0.26**	**0.055**	---	---	**0.41**	**0.55**	**0.20**	**0.25**	**0.17**	**0.18**	**0.26**	**0.21**	**0.15**	**0.035**	**0.029**	**4,550**
HA-12-1	12/13/2010	1	**130**	**39 a**	<0.020	<0.020	<0.020	<0.020	<0.020	**0.089**	**0.026**	---	---	**0.086**	**0.088**	**0.050**	**0.057**	**0.040**	**0.035**	**0.045**	**0.035**	**0.025**	<0.020	<0.020	**1,150**
HA-12-4.5	12/13/2010	4.5	<25	<5.0	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	---	---	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	**9.25**
HA-13-0	12/13/2010	0	**920**	**210a**	<0.10	<0.10	<0.10	<0.10	<0.10	**0.26**	<0.10	---	---	**0.38**	**0.42**	**0.22**	**0.25**	**0.19**	**0.18**	**0.24**	**0.19**	**0.15**	<0.10	<0.10	**3,940**
HA-13-1	12/13/2010	1	<25	**7.8a**	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	---	---	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	**291**
HA-13-4.5	12/13/2010	4.5	<25	<5.0	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	---	---	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	**498**
HA-14-0	04/18/2012	0	**69**	**47**	<0.18	---	<0.18	<0.18	<0.18	<0.18	<0.18	---	---	<0.18	**0.27**	<0.18	<0.18	<0.18	**0.25**	**0.22**	**0.20**	<0.18	<0.18	---	**1,800**
HA-14-1	04/18/2012	1	<5.0	<5.0	<0.030	---	<0.030	<0.030	<0.030	<0.030	<0.030	---	---	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	---	**87**
HA-14-4.5	04/18/2012	4.5	<5.0	<5.0	<0.030	---	<0.030	<0.030	<0.030	<0.030	<0.030	---	---	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	---	**7.7**
HA-15-0	04/18/2012	0	<10	**23**	<0.45	---	<0.45	<0.45	<0.45	<0.45	<0.45	---	---	**0.054**	**0.080**	<0.45	<0.45	<0.45	**0.058**	<0.45	<0.45	<0.45	<0.45	---	**1,400**
HA-15-1	04/18/2012	1	<10	**11**	<0.045	---	<0.045	<0.045	<0.045	<0.045	<0.045	---	---	<0.045	<0.045	<0.045	<0.045	<0.045	<0.045	<0.045	<0.045	<0.045	<0.045	---	**40**
HA-15-4.5	04/18/2012	4.5	<5.0	<5.0	<0.030	---	<0.030	<0.030	<0.030	<0.030	<0.030	---	---	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	---	**6.4**
HA-16-0	04/18/2012	0	**75**	**89**	<0.18	---	<0.18	<0.18	<0.18	**0.19**	<0.18	---	---	<0.18	**0.26**	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	<0.18	---	**1,100**
HA-16-1	04/18/2012	1	**10**	**7.3**	<0.045	---	<0.045	<0.045	<0.045	<0.045	<0.045	---	---	<0.045	<0.045	<0.045	<0.045	<0.045	<0.045	<0.045	<0.045	<0.045	<0.045	---	**220**

Table 2
Historical Soil Data for TPHmo, TPHd, PAHs, and Lead
Former Shell Service Station, 2703 Martin Luther King Jr. Way, Oakland, California

Sample ID	Date	Depth (feet)	TPHmo (mg/kg)	TPHd (mg/kg)	PAHs																			Lead (mg/kg)
					Naphthalene (mg/kg)	2-Methylnaphthalene (mg/kg)	Acenaphthylene (mg/kg)	Acenaphthene (mg/kg)	Fluorene (mg/kg)	Phenanthrene (mg/kg)	Anthracene (mg/kg)	Bis (2-ethylhexyl) phthalate (mg/kg)	Diethyl Phthalate (mg/kg)	Fluoranthene (mg/kg)	Pyrene (mg/kg)	Benzo(a) Anthracene (mg/kg)	Chrysene (mg/kg)	Benzo(k) Fluoranthene (mg/kg)	Benzo(b) Fluoranthene (mg/kg)	Benzo(a) Pyrene (mg/kg)	Benzo(g,h,i) Perylene (mg/kg)	Indeno(1,2,3-c,d) Pyrene (mg/kg)	Dibenz(a,h) Anthracene (mg/kg)	1-Methylnaphthalene (mg/kg)	
HA-16-4.5	04/18/2012	4.5	<5.0	<5.0	<0.045	---	<0.045	<0.045	<0.045	<0.045	<0.045	---	---	<0.045	<0.045	<0.045	<0.045	<0.045	<0.045	<0.045	<0.045	<0.045	<0.045	---	**150**
HA-17-0	04/18/2012	0	**81**	**50**	<0.45	---	<0.45	<0.45	<0.45	<0.45	<0.45	---	---	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45	---	**4,200**
HA-17-1	04/18/2012	1	<10	<10	<0.030	---	<0.030	<0.030	<0.030	<0.030	<0.030	---	---	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	---	**38**
HA-17-4.5	04/18/2012	4.5	<5.0	<5.0	<0.030	---	<0.030	<0.030	<0.030	<0.030	<0.030	---	---	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	---	**14**
HA-18-0	04/18/2012	0	**61**	**53**	<0.45	---	<0.45	<0.45	<0.45	<0.45	<0.45	---	---	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45	<0.45	---	**1,000**
HA-18-1	04/18/2012	1	**8.3**	**7.3**	<0.045	---	<0.045	<0.045	<0.045	<0.045	<0.045	---	---	<0.045	<0.045	<0.045	<0.045	<0.045	<0.045	<0.045	<0.045	<0.045	<0.045	---	**410**
HA-18-4.5	04/18/2012	4.5	<5.0	<5.0	<0.030	---	<0.030	<0.030	<0.030	<0.030	<0.030	---	---	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	---	**11**
B-1	01/22/2013	2	**109**	**50.6**	<0.31	<0.32	<0.31	<0.29	<0.29	<0.23	<0.21	<0.26	<0.23	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.17	<0.17	<0.16	<0.30	**55.9**
B-2	01/22/2013	2	<4.9	**2.85 b**	<0.077	<0.079	<0.078	<0.073	<0.072	<0.058	<0.053	**0.467**	**0.0788 b**	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	<0.043	<0.043	<0.041	<0.076	**6.8**
B-3	01/22/2013	2	<5.0	**3.74 b**	<0.077	<0.079	<0.078	<0.073	<0.072	<0.058	<0.053	**0.0683 b**	**0.0595 b**	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	<0.043	<0.042	<0.041	<0.076	**7.3**
B-4	01/22/2013	2	<4.9	<2.5	<0.15	<0.16	<0.15	<0.15	<0.14	<0.12	<0.11	<0.13	<0.11	<0.066	<0.066	<0.066	<0.066	<0.066	<0.066	<0.066	<0.086	<0.085	<0.082	<0.15	**97.3**
B-5	01/22/2013	2	**36.9**	**13.8**	<0.15	<0.16	<0.16	<0.15	<0.14	<0.12	<0.11	<0.13	<0.11	**0.151 b**	**0.158 b**	**0.0800 b**	**0.0832 b**	**0.0687 b**	**0.0858 b**	**0.0868 b**	<0.086	<0.085	<0.082	<0.15	**83.8**
N-1	01/22/2013	2	**116**	**28.6 b**	<0.31	<0.32	<0.31	<0.29	<0.29	<0.23	<0.21	<0.27	<0.23	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.17	<0.17	<0.16	<0.30	**306**
N-2	01/22/2013	2	<5.0	**2.63 b**	<0.077	<0.079	<0.078	<0.073	<0.072	<0.058	<0.053	<0.66	**0.0756 b**	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	<0.043	<0.042	<0.041	<0.076	**48.8**
N-3	01/22/2013	2	**184**	**40.2**	<0.15	<0.16	<0.16	<0.15	<0.14	<0.12	<0.11	**0.415 b**	<0.11	**0.113 b**	**0.136 b**	**0.0767 b**	**0.0925 b**	**0.0808 b**	**0.0900 b**	**0.100 b**	<0.086	<0.085	<0.083	<0.15	**721**
S-1	01/22/2013	2	**23.4**	**4.84 b**	<0.077	<0.080	<0.078	<0.073	<0.072	<0.058	<0.054	<0.067	<0.057	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	<0.043	<0.043	<0.041	<0.076	**7.6**
S-2	01/22/2013	2	<4.8	**2.55 b**	<0.077	<0.079	<0.078	<0.073	<0.072	<0.058	<0.053	<0.66	**0.0644 b**	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	<0.043	<0.042	<0.041	<0.076	**13.3**
S-3	01/22/2013	2	<4.9	<2.4	<0.077	<0.079	<0.078	<0.073	<0.072	<0.058	<0.053	<0.66	<0.056	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	<0.033	<0.043	<0.042	<0.041	<0.076	**9.4**
W-1	01/22/2013	2	**23.6**	**8.52 b**	<0.077	<0.16	<0.16	<0.15	<0.14	<0.12	<0.11	<0.13	<0.11	<0.067	<0.067	<0.067	<0.067	<0.067	<0.067	<0.067	<0.087	<0.085	<0.083	<0.15	**41.8**
W-2	01/22/2013	2	**254**	**162**	<0.15	<0.16	<0.16	<0.15	<0.14	<0.12	<0.11	<0.13	<0.11	<0.066	<0.066	<0.066	<0.066	<0.066	<0.066	<0.066	<0.086	<0.085	<0.082	<0.15	**215**
OX-1	02/21/2013	3	**53.0**	**41.9**	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.66	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	**13.0**
OX-2	02/21/2013	3	**54.9**	**13.2**	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.33	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	**11.5**
OX-3	02/21/2013	3	**14.4**	**7.36**	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	**0.0771 b**	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	**6.4**
HA-9-0 d	04/22/2013	0	---	---	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	**3.7 c**	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<1.3	<0.17	---	---
HA-10-0 d	04/22/2013	0	---	---	<0.66	<0.66	<0.66	<0.66	<0.66	<0.66	<0.66	<0.66	<0.66	**1.4**	**1.6**	<0.66	**1.0**	<0.66	**2.0**	**1.7**	**2.4**	**1.7**	<0.84	---	---
HA-10-1 d	04/22/2013	1	---	---	<0.66	<0.66	<0.66	<0.66	<0.66	<0.66	<0.66	**1.3 c**	<0.66	<0.66	<0.66	<0.66	<0.66	<0.66	<0.66	<0.66	<0.66	<0.66	<0.84	---	---
HA-12-0 d	04/22/2013	0	---	---	<3.3	<3.3	<3.3	<3.3	<3.3	<3.3	<3.3	**5.6 c**	<3.3	<3.3	<3.3	<3.3	<3.3	<3.3	<3.3	<3.3	<3.3	<3.3	<4.2	---	---
HA-13-0 d	04/22/2013	0	---	---	<6.6	<6.6	<6.6	<6.6	<6.6	<6.6	<6.6	<6.6	<6.6	<6.6	<6.6	<6.6	<6.6	<6.6	<6.6	<6.6	<6.6	<6.6	<8.4	---	---
HA-19	04/22/2013	0	**120**	**90**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**10,000**
HA-20	04/22/2013	0	<5.0	<5.0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**170**
HA-21	04/22/2013	0	**250**	**100**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**350**

Table 2
Historical Soil Data for TPHmo, TPHd, PAHs, and Lead
Former Shell Service Station, 2703 Martin Luther King Jr. Way, Oakland, California

Sample ID	Date	Depth (feet)	TPHmo (mg/kg)	TPHd (mg/kg)	PAHs																			Lead (mg/kg)
					Naphthalene (mg/kg)	2-Methylnaphthalene (mg/kg)	Acenaphthylene (mg/kg)	Acenaphthene (mg/kg)	Fluorene (mg/kg)	Phenanthrene (mg/kg)	Anthracene (mg/kg)	Bis (2-ethylhexyl) phthalate (mg/kg)	Diethyl Phthalate (mg/kg)	Fluoranthene (mg/kg)	Pyrene (mg/kg)	Benzo(a) Anthracene (mg/kg)	Chrysene (mg/kg)	Benzo(k) Fluoranthene (mg/kg)	Benzo(b) Fluoranthene (mg/kg)	Benzo(a) Pyrene (mg/kg)	Benzo(g,h,i) Perylene (mg/kg)	Indeno(1,2,3-c,d) Pyrene (mg/kg)	Dibenz(a,h) Anthracene (mg/kg)	1-Methylnaphthalene (mg/kg)	
HA-22	04/22/2013	0	**93**	**52**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**1,300**
HA-23	04/22/2013	0	**160**	**97**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**1,200**
HA-24	04/22/2013	0	**99**	**69**	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**1,200**
MW-13	03/24/2015	0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**190**
VP-12	03/24/2015	0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**310**
VP-13	03/24/2015	0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**270**
VP-14	03/24/2015	0	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	**11**

Notes:

Detected concentrations shown in **bold.**

= Soil sample location that was subsequently excavated; results are not representative of residual soil.

TPHmo = Total petroleum hydrocarbons as motor oil analyzed by EPA Method 8015B (M)

TPHd = Total petroleum hydrocarbons as diesel analyzed by EPA Method 8015B

Polycyclic aromatic hydrocarbons (PAHs) analyzed by EPA Method 8270C; before April 22, 2013, analyzed by EPA Method 8270C SIM PAHS. Individual constituents tabulated.

Lead analyzed by EPA Method 6010B.

<x = Not detected at or above reporting limit x

--- = Not analyzed

mg/kg = milligrams per kilogram

a = The sample chromatographic pattern for TPH does not match the chromatographic pattern of the specified standard. Quantitation of the unknown hydrocarbon(s) in the sample was based upon the specified standard.

b = Indicates an estimated value below method reporting limit.

c = Compound found in blank and in sample

d = Boring drilled in same location as December 2010 boring

Table 3
Groundwater Data
Former Shell Service Station, 2703 Martin Luther King Jr. Way, Oakland, California

Well ID	Date	TPHg (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE 8020 (µg/L)	MTBE 8260 (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	TOC (ft MSL)	Depth to Water (ft TOC)	GW Elevation (ft MSL)	DO (mg/L)
MW-1	08/05/1996	<50	<0.50	<0.50	<0.50	<0.50	<2.5	---	---	---	---	---	23.53	8.76	14.77	---
MW-1 (D)	08/05/1996	<50	<0.50	<0.50	<0.50	<0.50	<2.5	---	---	---	---	---	23.53	---	---	---
MW-1	10/17/1996	<50	<0.50	<0.50	<0.50	<0.50	<2.5	---	---	---	---	---	23.53	9.88	13.65	---
MW-1	01/08/1997	<50	<0.50	<0.50	<0.50	<0.50	<2.5	---	---	---	---	---	23.53	6.82	16.71	---
MW-1	04/07/1997	<50	<0.50	<0.50	<0.50	<0.50	<2.5	---	---	---	---	---	23.53	7.89	15.64	---
MW-1	07/02/1997	<50	<0.50	<0.50	<0.50	<0.50	<2.5	---	---	---	---	---	23.53	8.71	14.82	---
MW-1	10/24/1997	<50	<0.50	<0.50	<0.50	<0.50	<2.5	---	---	---	---	---	23.53	9.26	14.27	---
MW-1	01/09/1998	<50	<0.50	<0.50	<0.50	<0.50	<2.5	---	---	---	---	---	23.53	7.94	15.59	---
MW-1	04/02/1998	<50	<0.50	<0.50	<0.50	<0.50	<2.5	---	---	---	---	---	23.53	7.21	16.32	---
MW-1	07/14/1998	<50	<0.50	<0.50	<0.50	<0.50	<2.5	---	---	---	---	---	23.53	7.78	15.75	---
MW-1	10/01/1998	<50	<0.50	<0.50	<0.50	<0.50	<2.5	---	---	---	---	---	23.53	8.39	15.14	---
MW-1	01/18/1999	<50.0	<0.500	0.785	<0.500	<0.500	2.36	---	---	---	---	---	23.53	8.28	15.25	---
MW-1	04/29/1999	<50	<0.50	<0.50	<0.50	<0.50	<2.5	---	---	---	---	---	23.53	8.41	15.12	---
MW-1	08/23/1999	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	---	---	---	---	---	23.53	8.17	15.36	---
MW-1	10/06/1999	<50.0	<0.500	<0.500	<0.500	<0.500	<5.00	---	---	---	---	---	23.53	9.37	14.16	---
MW-1	01/27/2000	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	---	---	---	---	---	23.53	7.52	16.01	---
MW-1	04/18/2000	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	---	---	---	---	---	23.53	7.66	15.87	---
MW-1	07/19/2000	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	---	---	---	---	---	23.53	7.81	15.72	---
MW-1	10/24/2000	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	---	---	---	---	---	23.53	8.33	15.20	---
MW-1	01/04/2001	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	---	---	---	---	---	23.53	8.33	15.20	---
MW-1	05/03/2001	<50	<0.50	<0.50	<0.50	<0.50	---	<5.0	---	---	---	---	23.53	7.83	15.70	---
MW-1	07/09/2001	<50	<0.50	<0.50	<0.50	<0.50	---	<5.0	---	---	---	---	23.53	8.60	14.93	---
MW-1	10/18/2001	<50	<0.50	<0.50	<0.50	<0.50	---	<5.0	---	---	---	---	23.53	9.01	14.52	0.2
MW-1	01/24/2002	<50	<0.50	<0.50	<0.50	<0.50	---	<5.0	---	---	---	---	23.53	7.68	15.85	2.1
MW-1	04/04/2002	<50	<0.50	<0.50	<0.50	<0.50	---	<5.0	---	---	---	---	23.53	7.38	16.15	1.1
MW-1	07/18/2002	<50	<0.50	<0.50	<0.50	<0.50	---	<5.0	---	---	---	---	23.53	7.75	15.78	2.2
MW-1	10/21/2002	<50	<0.50	<0.50	<0.50	<0.50	---	<5.0	---	---	---	---	29.53	8.10	21.43	1.6
MW-1	01/21/2003	<50	<0.50	<0.50	<0.50	<0.50	---	<5.0	---	---	---	---	29.53	7.82	21.71	0.6
MW-1	04/17/2003	<50	<0.50	<0.50	<0.50	<1.0	---	<5.0	---	---	---	---	29.53	7.76	21.77	1.7
MW-1	07/22/2003	<50	<0.50	<0.50	<0.50	<1.0	---	<0.50	---	---	---	---	29.53	7.87	21.66	1.5
MW-1	10/20/2003	<50	<0.50	<0.50	<0.50	<1.0	---	<0.50	---	---	---	---	29.53	8.67	20.86	0.8

Table 3
Groundwater Data
Former Shell Service Station, 2703 Martin Luther King Jr. Way, Oakland, California

Well ID	Date	TPHg (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE 8020 (µg/L)	MTBE 8260 (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	TOC (ft MSL)	Depth to Water (ft TOC)	GW Elevation (ft MSL)	DO (mg/L)
MW-1	01/13/2004	<50	<0.50	<0.50	<0.50	<1.0	---	<0.50	---	---	---	---	29.53	8.28	21.25	---
MW-1	01/22/2004	---	---	---	---	---	---	---	---	---	---	---	29.53	8.50	21.03	1.1
MW-1	04/01/2004	---	---	---	---	---	---	---	---	---	---	---	29.53	7.98	21.55	---
MW-1	07/13/2004	---	---	---	---	---	---	---	---	---	---	---	29.53	8.30	21.23	---
MW-1	10/26/2004	---	---	---	---	---	---	---	---	---	---	---	29.53	8.27	21.26	---
MW-1	01/13/2005	---	---	---	---	---	---	---	---	---	---	---	29.53	6.92	22.61	---
MW-1	04/28/2005	---	---	---	---	---	---	---	---	---	---	---	29.53	7.18	22.35	---
MW-1	08/01/2005	---	---	---	---	---	---	---	---	---	---	---	29.53	7.43	22.10	---
MW-1	10/05/2005	---	---	---	---	---	---	---	---	---	---	---	29.53	7.55	21.98	---
MW-1	01/11/2006	---	---	---	---	---	---	---	---	---	---	---	29.54	5.35	24.19	---
MW-1	05/26/2006	<50.0	<0.500	<0.500	<0.500	<0.500	---	<0.500	<10.0	<0.500	<0.500	<0.500	29.54	6.81	22.73	0.78
MW-1	08/30/2006	---	---	---	---	---	---	---	---	---	---	---	29.54	7.77	21.77	---
MW-1	11/08/2006	---	---	---	---	---	---	---	---	---	---	---	29.54	8.39	21.15	---
MW-1	02/22/2007	---	---	---	---	---	---	---	---	---	---	---	29.54	7.11	22.43	---
MW-1	05/29/2007	---	---	---	---	---	---	---	---	---	---	---	29.54	7.20	22.34	---
MW-1	08/27/2007	---	---	---	---	---	---	---	---	---	---	---	29.54	7.86	21.68	---
MW-1	11/08/2007	---	---	---	---	---	---	---	---	---	---	---	29.54	7.89	21.65	---
MW-1	02/20/2008	---	---	---	---	---	---	---	---	---	---	---	29.54	7.38	22.16	---
MW-1	05/01/2008	---	---	---	---	---	---	---	---	---	---	---	29.54	7.58	21.96	---
MW-1	08/12/2008	---	---	---	---	---	---	---	---	---	---	---	29.54	8.85	20.69	---
MW-1	11/26/2008	---	---	---	---	---	---	---	---	---	---	---	29.54	8.90	20.64	---
MW-1	02/03/2009	---	---	---	---	---	---	---	---	---	---	---	29.54	8.51	21.03	---
MW-1	06/02/2009	---	---	---	---	---	---	---	---	---	---	---	29.54	8.45	21.09	---
MW-1	11/10/2009	---	---	---	---	---	---	---	---	---	---	---	29.54	8.89	20.65	---
MW-1	05/10/2010	---	---	---	---	---	---	---	---	---	---	---	29.54	7.22	22.32	---
MW-1	09/09/2010	---	---	---	---	---	---	---	---	---	---	---	29.54	7.88	21.66	---
MW-1	12/03/2010	---	---	---	---	---	---	---	---	---	---	---	29.54	7.98	21.56	---
MW-1	03/02/2011	---	---	---	---	---	---	---	---	---	---	---	29.54	7.52	22.02	---
MW-1	05/31/2011	---	---	---	---	---	---	---	---	---	---	---	29.54	7.28	22.26	---
MW-1	12/13/2011	---	---	---	---	---	---	---	---	---	---	---	29.54	7.64	21.90	---
MW-1	06/13/2012	---	---	---	---	---	---	---	---	---	---	---	29.54	7.56	21.98	---

Table 3
Groundwater Data
Former Shell Service Station, 2703 Martin Luther King Jr. Way, Oakland, California

Well ID	Date	TPHg (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE 8020 (µg/L)	MTBE 8260 (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	TOC (ft MSL)	Depth to Water (ft TOC)	GW Elevation (ft MSL)	DO (mg/L)
MW-1	11/19/2012	---	---	---	---	---	---	---	---	---	---	---	29.54	8.48	21.06	---
MW-1	05/30/2013	---	---	---	---	---	---	---	---	---	---	---	29.54	7.32	22.22	---
MW-1	11/18/2013	---	---	---	---	---	---	---	---	---	---	---	29.54	9.11	20.43	---
MW-1	06/06/2014	---	---	---	---	---	---	---	---	---	---	---	29.54	8.40	21.14	---
MW-1	12/01/2014	---	---	---	---	---	---	---	---	---	---	---	29.54	9.37	20.17	---
MW-1	05/22/2015	---	---	---	---	---	---	---	---	---	---	---	29.54	7.45	22.09	---
MW-1	12/18/2015	---	---	---	---	---	---	---	---	---	---	---	29.54	9.39	20.15	---
MW-1	05/16/2016	---	---	---	---	---	---	---	---	---	---	---	29.54	7.14	22.40	---
MW-1	12/08/2016	---	---	---	---	---	---	---	---	---	---	---	29.54	8.78	20.76	---
MW-1	**05/30/2017**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**29.54**	**7.36**	**22.18**	**---**
MW-2	08/05/1996	<50	<0.50	<0.50	<0.50	<0.50	<2.5	---	---	---	---	---	22.47	8.35	14.12	---
MW-2	10/17/1996	<50	<0.50	<0.50	<0.50	<0.50	<2.5	---	---	---	---	---	22.47	9.32	13.15	---
MW-2 (D)	10/17/1996	<50	<0.50	<0.50	<0.50	<0.50	<2.5	---	---	---	---	---	22.47	---	---	---
MW-2	01/08/1997	<50	<0.50	<0.50	<0.50	<0.50	<2.5	---	---	---	---	---	22.47	6.80	15.67	---
MW-2 (D)	01/08/1997	<50	<0.50	<0.50	<0.50	<0.50	<2.5	---	---	---	---	---	22.47	---	---	---
MW-2	04/07/1997	<50	<0.50	<0.50	<0.50	<0.50	<2.5	---	---	---	---	---	22.47	7.81	14.66	---
MW-2	07/02/1997	<50	<0.50	<0.50	<0.50	<0.50	<2.5	---	---	---	---	---	22.47	8.27	14.20	---
MW-2	10/24/1997	<50	<0.50	<0.50	<0.50	<0.50	<2.5	---	---	---	---	---	22.47	9.12	13.35	---
MW-2	01/09/1998	<50	<0.50	<0.50	<0.50	<0.50	6.3	---	---	---	---	---	22.47	7.41	15.06	---
MW-2	04/02/1998	<50	<0.50	<0.50	<0.50	<0.50	<2.5	---	---	---	---	---	22.47	6.59	15.88	---
MW-2	07/14/1998	<50	<0.50	<0.50	<0.50	<0.50	<2.5	---	---	---	---	---	22.47	7.49	14.98	---
MW-2	10/01/1998	<50	<0.50	<0.50	<0.50	0.59	<2.5	---	---	---	---	---	22.47	8.58	13.89	---
MW-2	01/18/1999	<50.0	<0.500	0.971	<0.500	<0.500	2.47	---	---	---	---	---	22.47	8.68	13.79	---
MW-2	04/29/1999	<50	<0.50	<0.50	<0.50	<0.50	<2.5	---	---	---	---	---	22.47	8.62	13.85	---
MW-2	08/23/1999	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	---	---	---	---	---	22.47	7.43	15.04	---
MW-2	10/06/1999	<50.0	<0.500	<0.500	<0.500	<0.500	<5.00	---	---	---	---	---	22.47	9.00	13.47	---
MW-2	01/27/2000	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	---	---	---	---	---	22.47	8.15	14.32	---
MW-2	04/18/2000	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	---	---	---	---	---	22.47	7.04	15.43	---
MW-2	07/19/2000	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	---	---	---	---	---	22.47	7.13	15.34	---
MW-2	10/24/2000	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	---	---	---	---	---	22.47	8.78	13.69	---

Table 3
Groundwater Data
Former Shell Service Station, 2703 Martin Luther King Jr. Way, Oakland, California

Well ID	Date	TPHg (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE 8020 (µg/L)	MTBE 8260 (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	TOC (ft MSL)	Depth to Water (ft TOC)	GW Elevation (ft MSL)	DO (mg/L)
MW-2	01/04/2001	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	---	---	---	---	---	22.47	8.33	14.14	---
MW-2	05/03/2001	<50	<0.50	<0.50	<0.50	<0.50	---	<5.0	---	---	---	---	22.47	7.24	15.23	---
MW-2	07/09/2001	<50	<0.50	<0.50	<0.50	<0.50	---	<5.0	---	---	---	---	22.47	8.55	13.92	---
MW-2	10/18/2001	<50	<0.50	<0.50	<0.50	<0.50	---	<5.0	---	---	---	---	22.47	9.42	13.05	---
MW-2	01/24/2002	<50	<0.50	<0.50	<0.50	<0.50	---	<5.0	---	---	---	---	22.47	7.23	15.24	---
MW-2	04/04/2002	<50	<0.50	<0.50	<0.50	<0.50	---	<5.0	---	---	---	---	22.47	6.90	15.57	---
MW-2	07/18/2002	<50	<0.50	<0.50	<0.50	<0.50	---	<5.0	---	---	---	---	22.47	7.97	14.50	---
MW-2	10/21/2002	<50	<0.50	<0.50	<0.50	<0.50	---	<5.0	---	---	---	---	28.47	8.62	19.85	---
MW-2	01/21/2003	<50	<0.50	<0.50	<0.50	<0.50	---	<5.0	---	---	---	---	28.47	7.08	21.39	---
MW-2	04/17/2003	<50	<0.50	<0.50	0.98	2.5	---	<5.0	---	---	---	---	28.47	6.94	21.53	---
MW-2	07/22/2003	<50	<0.50	<0.50	<0.50	<1.0	---	<0.50	---	---	---	---	28.47	8.10	20.37	---
MW-2	10/20/2003	<50	<0.50	<0.50	<0.50	<1.0	---	<0.50	---	---	---	---	28.47	9.09	19.38	---
MW-2	01/13/2004	<50	<0.50	<0.50	<0.50	<1.0	---	<0.50	---	---	---	---	28.47	7.28	21.19	---
MW-2	01/22/2004	---	---	---	---	---	---	---	---	---	---	---	28.47	8.99	19.48	2.8
MW-2	04/01/2004	---	---	---	---	---	---	---	---	---	---	---	28.47	6.88	21.59	---
MW-2	07/13/2004	---	---	---	---	---	---	---	---	---	---	---	28.47	8.28	20.19	---
MW-2	10/26/2004	---	---	---	---	---	---	---	---	---	---	---	28.47	8.43	20.04	---
MW-2	01/13/2005	---	---	---	---	---	---	---	---	---	---	---	28.47	6.52	21.95	---
MW-2	04/28/2005	---	---	---	---	---	---	---	---	---	---	---	28.47	6.38	22.09	---
MW-2	08/01/2005	---	---	---	---	---	---	---	---	---	---	---	28.47	7.73	20.74	---
MW-2	10/05/2005	---	---	---	---	---	---	---	---	---	---	---	28.47	8.47	20.00	---
MW-2	01/11/2006	---	---	---	---	---	---	---	---	---	---	---	28.48	6.30	22.18	---
MW-2	05/26/2006	59.9	<0.500	<0.500	<0.500	<0.500	---	<0.500	<10.0	<0.500	<0.500	<0.500	28.48	6.84	21.64	3.02
MW-2	08/30/2006	---	---	---	---	---	---	---	---	---	---	---	28.48	8.11	20.37	---
MW-2	11/08/2006	---	---	---	---	---	---	---	---	---	---	---	28.48	8.61	19.87	---
MW-2	02/22/2007	---	---	---	---	---	---	---	---	---	---	---	28.48	6.92	21.56	---
MW-2	05/29/2007	---	---	---	---	---	---	---	---	---	---	---	28.48	7.32	21.16	---
MW-2	08/27/2007	---	---	---	---	---	---	---	---	---	---	---	28.48	8.38	20.10	---
MW-2	11/08/2007	---	---	---	---	---	---	---	---	---	---	---	28.48	8.58	19.90	---
MW-2	02/20/2008	---	---	---	---	---	---	---	---	---	---	---	28.48	6.48	22.00	---
MW-2	05/01/2008	---	---	---	---	---	---	---	---	---	---	---	28.48	19.00	9.48	---

Table 3
Groundwater Data
Former Shell Service Station, 2703 Martin Luther King Jr. Way, Oakland, California

Well ID	Date	TPHg (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE 8020 (µg/L)	MTBE 8260 (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	TOC (ft MSL)	Depth to Water (ft TOC)	GW Elevation (ft MSL)	DO (mg/L)
MW-2	08/12/2008	---	---	---	---	---	---	---	---	---	---	---	28.48	8.53	19.95	---
MW-2	11/26/2008	---	---	---	---	---	---	---	---	---	---	---	28.48	8.88	19.60	---
MW-2	02/03/2009	---	---	---	---	---	---	---	---	---	---	---	28.48	8.20	20.28	---
MW-2	06/02/2009	---	---	---	---	---	---	---	---	---	---	---	28.48	7.50	20.98	---
MW-2	11/10/2009	---	---	---	---	---	---	---	---	---	---	---	28.48	8.69	19.79	---
MW-2	05/10/2010	---	---	---	---	---	---	---	---	---	---	---	28.48	7.09	21.39	---
MW-2	09/09/2010	---	---	---	---	---	---	---	---	---	---	---	28.48	8.70	19.78	---
MW-2	12/03/2010	---	---	---	---	---	---	---	---	---	---	---	28.48	8.22	20.26	---
MW-2	03/02/2011	---	---	---	---	---	---	---	---	---	---	---	28.48	6.40	22.08	---
MW-2	05/31/2011	---	---	---	---	---	---	---	---	---	---	---	28.48	7.46	21.02	---
MW-2	12/13/2011	---	---	---	---	---	---	---	---	---	---	---	28.48	8.28	20.20	---
MW-2	06/13/2012	---	---	---	---	---	---	---	---	---	---	---	28.48	7.51	20.97	---
MW-2	11/19/2012	---	---	---	---	---	---	---	---	---	---	---	28.48	8.85	19.63	---
MW-2	05/30/2013	---	---	---	---	---	---	---	---	---	---	---	28.48	7.82	20.66	---
MW-2	11/18/2013	---	---	---	---	---	---	---	---	---	---	---	28.48	9.55	18.93	---
MW-2	06/06/2014	---	---	---	---	---	---	---	---	---	---	---	28.48	7.99	20.49	---
MW-2	12/01/2014	---	---	---	---	---	---	---	---	---	---	---	28.48	9.52	18.96	---
MW-2	05/22/2015	---	---	---	---	---	---	---	---	---	---	---	28.48	8.30	20.18	---
MW-2	12/18/2015	---	---	---	---	---	---	---	---	---	---	---	28.48	10.86	17.62	---
MW-2	05/16/2016	---	---	---	---	---	---	---	---	---	---	---	28.48	7.45	21.03	---
MW-2	12/08/2016	---	---	---	---	---	---	---	---	---	---	---	28.48	9.10	19.38	---
MW-2	**05/30/2017**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**28.48**	**7.35**	**21.13**	**---**
MW-3	04/25/2001	---	---	---	---	---	---	---	---	---	---	---	22.30	7.16	15.14	---
MW-3	05/03/2001	<100	<0.50	<0.50	<0.50	<0.50	---	<5.0	---	---	---	---	22.30	7.28	15.02	---
MW-3	07/09/2001	<50	<0.50	<0.50	<0.50	<0.50	---	<5.0	---	---	---	---	22.30	8.45	13.85	---
MW-3	10/18/2001	<50	<0.50	<0.50	<0.50	<0.50	---	<5.0	---	---	---	---	22.30	9.44	12.86	---
MW-3	01/24/2002	<50	<0.50	<0.50	<0.50	<0.50	---	<5.0	---	---	---	---	22.30	5.88	16.42	---
MW-3	04/04/2002	<50	<0.50	<0.50	<0.50	<0.50	---	<5.0	---	---	---	---	22.30	6.68	15.62	---
MW-3	07/18/2002	<50	<0.50	<0.50	<0.50	<0.50	---	<5.0	---	---	---	---	22.30	7.63	14.67	---
MW-3	10/21/2002	<50	<0.50	<0.50	<0.50	<0.50	---	<5.0	---	---	---	---	28.30	8.56	19.74	---

Table 3
Groundwater Data
Former Shell Service Station, 2703 Martin Luther King Jr. Way, Oakland, California

Well ID	Date	TPHg (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE 8020 (µg/L)	MTBE 8260 (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	TOC (ft MSL)	Depth to Water (ft TOC)	GW Elevation (ft MSL)	DO (mg/L)
MW-3	01/21/2003	<50	<0.50	<0.50	<0.50	<0.50	---	<5.0	---	---	---	---	28.30	6.95	21.35	---
MW-3	04/17/2003	<50	<0.50	<0.50	<0.50	<1.0	---	<5.0	---	---	---	---	28.30	6.77	21.53	---
MW-3	07/22/2003	<50	<0.50	<0.50	<0.50	<1.0	---	<0.50	---	---	---	---	28.30	7.92	20.38	---
MW-3	10/20/2003	<50	<0.50	<0.50	<0.50	<1.0	---	<0.50	---	---	---	---	28.30	9.12	19.18	---
MW-3	01/13/2004	<50	<0.50	<0.50	<0.50	<1.0	---	<0.50	---	---	---	---	28.30	7.21	21.09	---
MW-3	01/22/2004	---	---	---	---	---	---	---	---	---	---	---	28.30	9.00	19.30	0.6
MW-3	04/01/2004	---	---	---	---	---	---	---	---	---	---	---	28.30	6.65	21.65	---
MW-3	07/13/2004	---	---	---	---	---	---	---	---	---	---	---	28.30	8.24	20.06	---
MW-3	10/26/2004	---	---	---	---	---	---	---	---	---	---	---	28.30	8.50	19.80	---
MW-3	01/13/2005	---	---	---	---	---	---	---	---	---	---	---	28.30	6.32	21.98	---
MW-3	04/28/2005	---	---	---	---	---	---	---	---	---	---	---	28.30	6.05	22.25	---
MW-3	08/01/2005	---	---	---	---	---	---	---	---	---	---	---	28.30	7.65	20.65	---
MW-3	10/05/2005	---	---	---	---	---	---	---	---	---	---	---	28.30	8.31	19.99	---
MW-3	01/11/2006	---	---	---	---	---	---	---	---	---	---	---	28.30	6.10	22.20	---
MW-3	05/26/2006	<50.0	<0.500	<0.500	<0.500	<0.500	---	<0.500	<10.0	2.87	<0.500	<0.500	28.30	6.72	21.58	1.46
MW-3	08/30/2006	---	---	---	---	---	---	---	---	---	---	---	28.30	8.12	20.18	---
MW-3	11/08/2006	---	---	---	---	---	---	---	---	---	---	---	28.30	8.71	19.59	---
MW-3	02/22/2007	---	---	---	---	---	---	---	---	---	---	---	28.30	6.78	21.52	---
MW-3	05/29/2007	---	---	---	---	---	---	---	---	---	---	---	28.30	7.20	21.10	---
MW-3	08/27/2007	---	---	---	---	---	---	---	---	---	---	---	28.30	8.18	20.12	---
MW-3	11/08/2007	---	---	---	---	---	---	---	---	---	---	---	28.30	8.41	19.89	---
MW-3	02/20/2008	---	---	---	---	---	---	---	---	---	---	---	28.30	6.31	21.99	---
MW-3	05/01/2008	---	---	---	---	---	---	---	---	---	---	---	28.30	7.52	20.78	---
MW-3	08/12/2008	---	---	---	---	---	---	---	---	---	---	---	28.30	8.32	19.98	---
MW-3	11/26/2008	---	---	---	---	---	---	---	---	---	---	---	28.30	8.71	19.59	---
MW-3	02/03/2009	---	---	---	---	---	---	---	---	---	---	---	28.30	8.08	20.22	---
MW-3	06/02/2009	---	---	---	---	---	---	---	---	---	---	---	28.30	7.28	21.02	---
MW-3	11/10/2009	---	---	---	---	---	---	---	---	---	---	---	28.30	8.72	19.58	---
MW-3	05/10/2010	---	---	---	---	---	---	---	---	---	---	---	28.30	6.71	21.59	---
MW-3	09/09/2010	---	---	---	---	---	---	---	---	---	---	---	28.30	8.59	19.71	---
MW-3	12/03/2010	---	---	---	---	---	---	---	---	---	---	---	28.30	8.26	20.04	---

Table 3
Groundwater Data
Former Shell Service Station, 2703 Martin Luther King Jr. Way, Oakland, California

Well ID	Date	TPHg (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE 8020 (µg/L)	MTBE 8260 (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	TOC (ft MSL)	Depth to Water (ft TOC)	GW Elevation (ft MSL)	DO (mg/L)
MW-3	03/02/2011	---	---	---	---	---	---	---	---	---	---	---	28.30	6.12	22.18	---
MW-3	05/31/2011	---	---	---	---	---	---	---	---	---	---	---	28.30	7.32	20.98	---
MW-3	12/13/2011	---	---	---	---	---	---	---	---	---	---	---	28.30	8.19	20.11	---
MW-3	06/13/2012	---	---	---	---	---	---	---	---	---	---	---	28.30	7.40	20.90	---
MW-3	11/19/2012	---	---	---	---	---	---	---	---	---	---	---	28.30	8.71	19.59	---
MW-3	05/30/2013	---	---	---	---	---	---	---	---	---	---	---	28.30	7.52	20.78	---
MW-3	11/18/2013	---	---	---	---	---	---	---	---	---	---	---	28.30	9.33	18.97	---
MW-3	06/06/2014	---	---	---	---	---	---	---	---	---	---	---	28.30	7.68	20.62	---
MW-3	12/01/2014	---	---	---	---	---	---	---	---	---	---	---	28.30	9.41	18.89	---
MW-3	05/22/2015	---	---	---	---	---	---	---	---	---	---	---	28.30	8.07	20.23	---
MW-3	12/18/2015	---	---	---	---	---	---	---	---	---	---	---	28.30	9.84	18.46	---
MW-3	05/16/2016	---	---	---	---	---	---	---	---	---	---	---	28.30	7.12	21.18	---
MW-3	12/08/2016	---	---	---	---	---	---	---	---	---	---	---	28.30	9.46	18.84	---
MW-3	**05/30/2017**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**28.30**	**7.29**	**21.01**	**---**
MW-4	04/25/2001	---	---	---	---	---	---	---	---	---	---	---	22.51	7.05	15.46	---
MW-4	05/03/2001	8,000	3,500	24	37	350	---	<200	---	---	---	---	22.51	6.66	15.85	---
MW-4	07/09/2001	16,000	4,100	32	890	790	---	<200	---	---	---	---	22.51	8.28	14.23	---
MW-4	10/18/2001	12,000	3,300	<20	430	220	---	<200	---	---	---	---	22.51	9.40	13.11	---
MW-4	01/24/2002	5,500	1,200	<5.0	280	240	---	<50	---	---	---	---	22.51	5.73	16.78	---
MW-4	04/04/2002	2,000	350	1.4	13	7.8	---	<10	---	---	---	---	22.51	5.62	16.89	---
MW-4	07/18/2002	3,400	440	1.3	200	98	---	<5.0	---	---	---	---	22.51	6.94	15.57	---
MW-4	10/21/2002	16,000	3,100	11	1,200	970	---	<5.0	---	---	---	---	28.51	8.04	20.47	---
MW-4	01/21/2003	3,600	720	3.9	110	58	---	<25	---	---	---	---	28.51	6.10	22.41	---
MW-4	04/17/2003	3,700	810	<5.0	140	17	---	<50	---	---	---	---	28.51	5.97	22.54	---
MW-4	07/22/2003	3,700	450	<2.5	110	7.9	---	<2.5	---	---	---	---	28.51	6.37	22.14	---
MW-4	10/20/2003	11,000 b	2,500	<20	550	95	---	<20	---	---	---	---	28.51	8.99	19.52	---
MW-4	01/13/2004	6,600	1,500	<10	41	37	---	<10	---	---	---	---	28.51	6.67	21.84	---
MW-4	01/22/2004	---	---	---	---	---	---	---	---	---	---	---	28.51	8.80	19.71	0.3
MW-4	04/01/2004	9,500	2,100	12	170	30	---	---	---	---	---	---	28.51	6.28	22.23	0.1
MW-4	07/13/2004	12,000	3,600	39	160	58	---	<25	<250	<100	<100	<100	28.51	8.20	20.31	0.1

Table 3
Groundwater Data
Former Shell Service Station, 2703 Martin Luther King Jr. Way, Oakland, California

Well ID	Date	TPHg (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE 8020 (µg/L)	MTBE 8260 (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	TOC (ft MSL)	Depth to Water (ft TOC)	GW Elevation (ft MSL)	DO (mg/L)
MW-4	10/26/2004	11,000	2,800	<25	100	<50	---	---	---	---	---	---	28.51	8.00	20.51	0.6
MW-4	01/13/2005	12,000	2,200	14	110	43	---	---	---	---	---	---	28.51	6.03	22.48	0.1
MW-4	04/28/2005	8,600	2,300	27	200	49	---	---	---	---	---	---	28.51	5.93	22.58	3.71
MW-4	08/01/2005	11,000	3,900	57	180	47	---	<10	<100	<40	<40	<40	28.51	6.20	22.31	---
MW-4	10/05/2005	9,400	3,300	45	88	33	---	---	---	---	---	---	28.51	8.22	20.29	2.76
MW-4	01/11/2006	3,900 a	1,700 a	14	95	78	---	<0.50	32	7.4	<0.50	<0.50	28.51	4.25	24.26	0.6
MW-4	05/26/2006	6,730	455	1.90	56.7	44.8	---	<0.500	<10.0	4.36	<0.500	<0.500	28.51	5.90	22.61	0.54
MW-4	08/30/2006	29,600	2,740	30.0	448	237	---	<0.500	<10.0	<0.500	<0.500	<0.500	28.51	7.98	20.53	0.44/0.46
MW-4	11/08/2006	6,300	1,500	13	130	67	---	---	---	---	---	---	28.51	8.52	19.99	0.05/0.22
MW-4	02/22/2007	11,000	2,200	18	620	310	---	---	---	---	---	---	28.51	5.63	22.88	2.96/2.98
MW-4	05/29/2007	14,000 b, f	3,200	27	640	249.0	---	---	---	---	---	---	28.51	6.60	21.91	0.19/0.11
MW-4	08/27/2007	12,000 f	1,900	19 g	250	80.9 g	---	<25	<250	<50	<50	<50	28.51	8.50	20.01	0.85/1.71
MW-4	11/08/2007	6,400 f	1,400	11 g	70	37.9 g	---	---	---	---	---	---	28.51	8.21	20.30	1.09/2.63
MW-4	02/20/2008	12,000 f	2,700	<20	690	396	---	---	---	---	---	---	28.51	4.86	23.65	0.46/0.12
MW-4	05/01/2008	8,500	2,000	<20	260	62	---	---	---	---	---	---	28.51	7.00	21.51	0.2/0.2
MW-4	08/12/2008	8,400	1,800	22	<20	24	---	<20	<200	<40	<40	<40	28.51	8.31	20.20	0.21/0.68
MW-4	11/26/2008	6,900	1,800	<20	120	<20	---	---	---	---	---	---	28.51	8.94	19.57	0.88/2.18
MW-4	02/03/2009	8,800	1,800	<20	160	96	---	---	---	---	---	---	28.51	7.64	20.87	0.15/0.26
MW-4	06/02/2009	15,000	3,000	58	340	55	---	---	---	---	---	---	28.51	6.82	21.69	0.26/0.65
MW-4	11/10/2009	13,000	2,200	37	180	91	---	<20	<200	<40	<40	<40	28.51	8.38	20.13	0.61/0.57
MW-4	05/10/2010	12,000	3,100	37	570	140	---	---	---	---	---	---	28.51	5.42	23.09	0.26/2.84
MW-4	09/09/2010	---	---	---	---	---	---	---	---	---	---	---	28.51	8.31	20.20	---
MW-4	12/03/2010	6,400	1,600	21	96	68	---	<20	<200	<40	<40	<40	28.51	7.75	20.76	0.52/0.45
MW-4	03/02/2011	---	---	---	---	---	---	---	---	---	---	---	28.51	4.25	24.26	---
MW-4	05/31/2011	11,000	3,200	61	520	68	---	---	---	---	---	---	28.51	6.34	22.17	1.46/2.63
MW-4	12/13/2011	4,000	1,120	31.1	83.0	30.3	---	<0.500	<10.0	4.64	<0.500	<0.500	28.51	7.90	20.61	0.59/0.19
MW-4	06/13/2012	12,000	3,500	47	270	<50	---	---	---	---	---	---	28.51	6.90	21.61	1.03/0.96
MW-4	11/19/2012	8,300	1,800	88	120	310	---	<25	<500	<25	<25	<25	28.51	8.34	20.17	0.88/1.02
MW-4	05/30/2013	11,000	3,400	68	220	40	---	---	---	---	---	---	28.51	7.38	21.13	0.10/0.07
MW-4	11/18/2013	10,000	2,400	33	43	<40	---	<20	<400	<20	<20	<20	28.51	9.13	19.38	0.27/0.24
MW-4	06/06/2014	8,900	1,800	<25	110	55	---	---	---	---	---	---	28.51	7.28	21.23	0.46/0.50

Table 3
Groundwater Data
Former Shell Service Station, 2703 Martin Luther King Jr. Way, Oakland, California

Well ID	Date	TPHg (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE 8020 (µg/L)	MTBE 8260 (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	TOC (ft MSL)	Depth to Water (ft TOC)	GW Elevation (ft MSL)	DO (mg/L)
MW-4	12/01/2014	8,500 i	1,400	17	33	91	---	<10	<200	<10	<10	<10	28.51	8.80	19.71	0.48/1.17
MW-4	05/22/2015	7,100	1,500	48	54	<40	---	---	---	---	---	---	28.51	7.50	21.01	1.01/0.73
MW-4	12/18/2015	7,500	1,300	72	75	290	---	<10	<200	<10	<10	<10	28.51	9.28	19.23	1.58/2.35
MW-4	05/16/2016	5,900	2,500	55	110	42	---	---	---	---	---	---	28.51	6.45	22.06	2.70/8.47
MW-4	12/08/2016	7,600	1,700	34	140	71	---	<13	<250	<13	<13	<13	28.51	6.07	22.44	6.39/4.23
MW-4	**05/30/2017**	**11,000**	**2,800**	**150**	**94**	**41**	**---**	**---**	**---**	**---**	**---**	**---**	**28.51**	**6.12**	**22.39**	**5.49/4.11**
MW-5	04/25/2001	---	---	---	---	---	---	---	---	---	---	---	23.54	7.36	16.18	---
MW-5	05/03/2001	160,000	12,000	20,000	3,600	23,000	---	<500	---	---	---	---	23.54	7.77	15.77	---
MW-5	07/09/2001	130,000	11,000	19,000	4,500	22,000	---	<500	---	---	---	---	23.54	9.32	14.22	---
MW-5	10/18/2001	120,000	12,000	23,000	4,200	21,000	---	<500	---	---	---	---	23.54	9.39	14.15	0.5
MW-5	01/24/2002	34,000	3,300	3,300	960	6,000	---	<100	---	---	---	---	23.54	7.05	16.49	4.0
MW-5	04/04/2002	32,000	2,100	2,800	730	6,400	---	<200	---	---	---	---	23.54	6.89	16.65	1.0
MW-5	07/18/2002	75,000	7,500	4,700	2,700	15,000	---	<500	---	---	---	---	23.54	8.48	15.06	1.2
MW-5	10/21/2002	140,000	13,000	18,000	4,000	26,000	---	<500	---	---	---	---	29.54	9.21	20.33	1.1
MW-5	01/21/2003	47,000	6,400	3,500	370	8,300	---	<500	---	---	---	---	29.54	7.23	22.31	0.8
MW-5	04/17/2003	93,000	9,700	16,000	3,200	20,000	---	<500	---	---	---	---	29.54	6.61	22.93	0.8
MW-5	07/22/2003	110,000	9,500	15,000	560	23,000	---	<50	---	---	---	---	29.54	8.68	20.86	1.2
MW-5	10/20/2003	88,000	6,600	12,000	1,900	16,000	---	<50	---	---	---	---	29.54	9.71	19.83	0.1
MW-5	01/13/2004	4,600	460	140	<10	930	---	<10	---	---	---	---	29.54	7.30	22.24	---
MW-5	01/22/2004	---	---	---	---	---	---	---	---	---	---	---	29.54	9.51	20.03	0.3
MW-5	04/01/2004	70,000	7,900	11,000	2,100	17,000	---	---	---	---	---	---	29.54	6.80	22.74	0.1
MW-5	07/13/2004	66,000	5,900	10,000	1,900	16,000	---	<50	<500	<200	<200	<200	29.54	9.28	20.26	0.1
MW-5	10/26/2004	6,600	670	110	7.4	2,000	---	---	---	---	---	---	29.54	8.75	20.79	0.8
MW-5	01/13/2005	9,500	1,300	950	360	1,900	---	---	---	---	---	---	29.54	5.87	23.67	6.3
MW-5	04/28/2005	17,000	2,400	1,200	320	3,400	---	---	---	---	---	---	29.54	6.32	23.22	3.54
MW-5	08/01/2005	70,000	6,600	11,000	3,400	17,000	---	<50	<500	<200	<200	<200	29.54	8.27	21.27	---
MW-5	10/05/2005	93,000	8,600	15,000	4,500	23,000	---	---	---	---	---	---	29.54	9.12	20.42	1.43
MW-5	01/11/2006	12,000	1,900	550	2,400	3,800	---	<25	<250	<25	<25	<25	29.61	5.52	24.09	0.6
MW-5	05/26/2006	112,000	6,600	11,100	3,870	19,900 e	---	<0.500	<10.0	5.37	<0.500	<0.500	29.61	7.02	22.59	0.45
MW-5	08/30/2006	281,000	8,050	15,400	4,770	26,800	---	<0.500	<10.0	<0.500	<0.500	60.6	29.61	8.93	20.68	0.55/0.51

Table 3
Groundwater Data
Former Shell Service Station, 2703 Martin Luther King Jr. Way, Oakland, California

Well ID	Date	TPHg (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE 8020 (µg/L)	MTBE 8260 (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	TOC (ft MSL)	Depth to Water (ft TOC)	GW Elevation (ft MSL)	DO (mg/L)
MW-5	11/08/2006	83,000	7,000	7,400	3,200	16,000	---	---	---	---	---	---	29.61	9.40	20.21	0.08/0.05
MW-5	02/22/2007	35,000	9,500	13,000	5,300	23,000	---	---	---	---	---	---	29.61	6.87	22.74	1.17/3.17
MW-5	05/29/2007	94,000 f	6,400	9,900	4,300	22,000	---	---	---	---	---	---	29.61	7.85	21.76	0.08/0.19
MW-5	08/27/2007	110,000 f	6,900	11,000	4,300	22,000	---	<100	<1000	<200	<200	<200	29.61	9.13	20.48	0.08/0.22
MW-5	11/08/2007	61,000 f	7,500	5,300	4,700	20,400	---	---	---	---	---	---	29.61	9.27	20.34	2.15/0.65
MW-5	02/20/2008	92,000 f	14,000	14,000	5,900	30,800	---	---	---	---	---	---	29.61	6.02	23.59	0.17/0.18
MW-5	05/01/2008	130,000	8,200	12,000	4,600	24,900	---	---	---	---	---	---	29.61	8.20	21.41	0.2/0.1
MW-5	08/12/2008	150,000	7,600	12,000	8,900	24,800	---	<100	<1,000	<200	<200	<200	29.61	9.42	20.19	0.14/0.51
MW-5	11/26/2008	110,000	7,900	12,000	4,500	27,500	---	---	---	---	---	---	29.61	9.86	19.75	1.26/0.95
MW-5	02/03/2009	130,000	8,500	10,000	4,400	24,000	---	---	---	---	---	---	29.61	8.67	20.94	0.30/0.23
MW-5	06/02/2009	150,000	7,000	10,000	4,600	25,000	---	---	---	---	---	---	29.61	8.02	21.59	0.28/0.28
MW-5	11/10/2009	150,000	6,900	10,000	4,600	26,000	---	<100	<1000	<200	<200	<200	29.61	9.41	20.20	0.48/0.49
MW-5	05/10/2010	80,000	5,700	7,100	4,000	22,000	---	---	---	---	---	---	29.61	6.72	22.89	0.22/0.29
MW-5	09/09/2010	---	---	---	---	---	---	---	---	---	---	---	29.61	9.51	20.10	---
MW-5	12/03/2010	73,000	5,400	8,500	4,100	21,000	---	<100	<1,000	<200	<200	<200	29.61	8.70	20.91	0.39/0.38
MW-5	03/02/2011	---	---	---	---	---	---	---	---	---	---	---	29.61	5.04	24.57	---
MW-5	05/31/2011	72,000	5,800	7,000	4,400	23,000	---	---	---	---	---	---	29.61	7.52	22.09	0.92/1.21
MW-5	12/13/2011	130,000	9,070	10,900	7,200	38,000	---	<0.500	<10.0	<0.500	<0.500	<0.500	29.61	8.85	20.76	0.66/0.47
MW-5	06/13/2012	110,000	5,400	7,400	5,700	29,000	---	---	---	---	---	---	29.61	7.97	21.64	1.10/1.15
MW-5	11/19/2012	98,000	6,100	7,600	5,500	30,000	---	<50	<1,000	<50	<50	<50	29.61	9.30	20.31	1.45/1.27
MW-5	05/30/2013	96,000	6,000	7,200	5,700	30,000	---	---	---	---	---	---	29.61	8.43	21.18	0.07/0.10
MW-5	11/18/2013	74,000	5,000	5,300	4,400	24,000	---	<50	<1,000	<50	<50	<50	29.61	10.36	19.25	0.34/0.30
MW-5	06/06/2014	95,000 h	6,200	5,800	5,900	31,000	---	---	---	---	---	---	29.61	8.46	21.15	0.61/0.69
MW-5	12/01/2014	85,000	4,900	4,400	4,700	22,000	---	<50	<1,000	<50	<50	<50	29.61	9.84	19.77	0.47/0.29
MW-5	05/22/2015	99,000	5,300	4,100	5,000	27,000	---	---	---	---	---	---	29.61	8.64	20.97	0.33/0.29
MW-5	12/18/2015	93,000	6,200	4,100	6,000	26,000	---	<100	<2,000	<100	<100	<100	29.61	10.16	19.45	0.70/0.55
MW-5	05/16/2016	80,000	4,700	3,000	5,000	26,000	---	---	---	---	---	---	29.61	7.41	22.20	3.25/1.49
MW-5	12/08/2016	110,000	5,700	2,900	5,900	27,000	---	<130	<2,500	<130	<130	<130	29.61	7.52	22.09	4.66/0.81
MW-5	**05/30/2017**	**71,000**	**2,500**	**2,500**	**5,500**	**24,000**	**---**	**---**	**---**	**---**	**---**	**---**	**29.61**	**7.33**	**22.28**	**4.23/0.78**
MW-6	01/09/2006	---	---	---	---	---	---	---	---	---	---	---	28.60	4.18	24.42	---

Table 3
Groundwater Data
Former Shell Service Station, 2703 Martin Luther King Jr. Way, Oakland, California

Well ID	Date	TPHg (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE 8020 (µg/L)	MTBE 8260 (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	TOC (ft MSL)	Depth to Water (ft TOC)	GW Elevation (ft MSL)	DO (mg/L)
MW-6	01/11/2006	150,000	9,300	1,600	5,100	24,000	---	<2.5 a	51 a	17 a	<2.5 a	<2.5 a	28.60	4.50	24.10	3.6
MW-6	05/26/2006	67,300	6,930	870	2,440	7,590 e	---	<5.00	<100	10.1	<5.00	<5.00	28.60	6.10	22.50	0.49
MW-6	08/30/2006	7,060	6,090	1,180	2,040	7,200	---	<0.500	<10.0	<0.500	<0.500	<0.500	28.60	8.05	20.55	0.39/0.56
MW-6	11/08/2006	8,200	1,900	200	350	890	---	---	---	---	---	---	28.60	8.53	20.07	0.12/0.95
MW-6	02/22/2007	49,000	7,300	2,300	3,600	9,500	---	---	---	---	---	---	28.60	5.94	22.66	1.54/2.03
MW-6	05/29/2007	30,000 b,f	4,100	1,000	1,600	4,900	---	---	---	---	---	---	28.60	6.87	21.73	0.11/0.51
MW-6	08/27/2007	36,000 f	2,000	440	1,000	3,400	---	<25	<250	15 g	<50	<50	28.60	8.22	20.38	0.08/0.15
MW-6	11/08/2007	7,000 f	850	130	270	880	---	---	---	---	---	---	28.60	8.32	20.28	0.94/2.48
MW-6	02/20/2008	28,000 f	6,900	1,300	1,900	7,000	---	---	---	---	---	---	28.60	5.03	23.57	0.14/0.09
MW-6	05/01/2008	24,000	4,400	940	1,000	3,500	---	---	---	---	---	---	28.60	7.15	21.45	0.05/0.04
MW-6	08/12/2008	30,000	1,900	380	1,300	3,600	---	<50	<500	<100	<100	<100	28.60	8.49	20.11	0.49/0.99
MW-6	11/26/2008	15,000	2,400	320	590	2,120	---	---	---	---	---	---	28.60	8.93	19.67	0.79/2.30
MW-6	02/03/2009	25,000	3,000	330	790	3,000	---	---	---	---	---	---	28.60	7.69	20.91	0.24/0.09
MW-6	06/02/2009	Well inaccessible		---	---	---	---	---	---	---	---	---	28.60	---	---	---
MW-6	11/10/2009	19,000	2,500	490	620	2,200	---	<25	<250	<50	<50	<50	28.60	8.47	20.13	2.82/1.98
MW-6	05/10/2010	15,000	4,100	700	790	2,300	---	---	---	---	---	---	28.60	5.64	22.96	0.21/0.35
MW-6	09/09/2010	---	---	---	---	---	---	---	---	---	---	---	28.60	8.54	20.06	---
MW-6	12/03/2010	5,700	1,800	240	250	870	---	<25	<250	<50	<50	<50	28.60	7.88	20.72	0.38/0.53
MW-6	03/02/2011	---	---	---	---	---	---	---	---	---	---	---	28.60	4.08	24.52	---
MW-6	05/31/2011	33,000	6,200	1,900	1,700	5,800	---	---	---	---	---	---	28.60	6.25	22.35	0.80/2.21
MW-6	12/13/2011	12,000	2,700	556	548	1,880	---	<0.500	<10.0	9.68	<0.500	<0.500	28.60	8.01	20.59	0.81/0.99
MW-6	06/13/2012	30,000	6,200	1,400	1,700	6,300	---	---	---	---	---	---	28.60	7.14	21.46	1.00/1.41
MW-6	11/19/2012	3,000	450	67	76	600	---	<2.5	<50	<2.5	<2.5	<2.5	28.60	8.34	20.26	2.04/2.90
MW-6	05/30/2013	<10,000	350	<100	<100	<200	---	---	---	---	---	---	28.60	7.59	21.01	0.38/2.76
MW-6	11/18/2013	3,500	460	15	150	130	---	<5.0	<100	<5.0	<5.0	<5.0	28.60	9.42	19.18	0.22/0.19
MW-6	06/06/2014	2,000	400	53	97	350	---	---	---	---	---	---	28.60	7.44	21.16	0.61/0.58
MW-6	12/01/2014	520 i	110	5.8	7.2	46	---	<1.0	<20	2.3	<1.0	<1.0	28.60	8.54	20.06	0.62/0.71
MW-6	05/22/2015	1,600	360	39	60	240	---	---	---	---	---	---	28.60	7.63	20.97	2.38/3.10
MW-6	12/18/2015	510	110	5.5	11	64	---	<1.3	<25	1.9	<1.3	<1.3	28.60	9.39	19.21	1.72/3.35
MW-6	05/16/2016	1,700	480	56	92	380	---	---	---	---	---	---	28.60	6.47	22.13	1.88/5.13
MW-6	12/08/2016	580	93	5.4	26	110	---	<0.50	<10	<0.50	<0.50	<0.50	28.60	4.76	23.84	2.71/3.84

Table 3
Groundwater Data
Former Shell Service Station, 2703 Martin Luther King Jr. Way, Oakland, California

Well ID	Date	TPHg (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE 8020 (µg/L)	MTBE 8260 (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	TOC (ft MSL)	Depth to Water (ft TOC)	GW Elevation (ft MSL)	DO (mg/L)
MW-6	**05/30/2017**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<1.0**	**---**	**---**	**---**	**---**	**---**	**---**	**28.60**	**6.22**	**22.38**	**3.87/3.11**
MW-7	01/09/2006	---	---	---	---	---	---	---	---	---	---	---	29.71	5.50	24.21	---
MW-7	01/11/2006	79,000	9,800	1,800	1,900	20,000	---	<5.0 a	64 a	28 a	<5.0 a	<5.0 a	29.71	5.70	24.01	1.0
MW-7	05/26/2006	98,200	9,620	1,150	3,490	13,400 e	---	<5.00	885	30.8	<5.00	<5.00	29.71	7.24	22.47	0.30
MW-7	08/30/2006	146,000	8,740	980	3,440	15,400	---	<0.500	<10.0	22.7	<0.500	<0.500	29.71	9.03	20.68	0.51/0.46
MW-7	11/08/2006	61,000	6,600	880	2,800	12,000	---	---	---	---	---	---	29.71	9.49	20.22	0.02/0.13
MW-7	02/22/2007	50,000	3,400	910	2,200	13,000	---	---	---	---	---	---	29.71	7.00	22.71	0.96/2.57
MW-7	05/29/2007	26,000 b,f	2,700	320	850	3,590	---	---	---	---	---	---	29.71	8.01	21.70	0.09/0.15
MW-7	08/27/2007	37,000 f	3,300	240	1,300	4,060	---	<25	<250	20 g	<50	<50	29.71	9.30	20.41	1.23/1.64
MW-7	11/08/2007	26,000 f	3,000	120	1,000	2,810	---	---	---	---	---	---	29.71	9.39	20.32	0.80/1.39
MW-7	02/20/2008	20,000 f	1,400	210	600	4,800	---	---	---	---	---	---	29.71	3.33	26.38	3.72/0.58
MW-7	05/01/2008	16,000	1,700	66	85	1,380	---	---	---	---	---	---	29.71	8.28	21.43	0.2/0.1
MW-7	08/12/2008	27,000	1,700	73	1,100	2,490	---	<20	<200	<40	<40	<40	29.71	9.61	20.10	1.49/1.93
MW-7	11/26/2008	25,000	2,300	61	62	1,400	---	---	---	---	---	---	29.71	9.94	19.77	0.85/1.10
MW-7	02/03/2009	54,000	2,900	170	520	5,800	---	---	---	---	---	---	29.71	8.80	20.91	0.17/0.62
MW-7	06/02/2009	14,000	1,100	43	23	810	---	---	---	---	---	---	29.71	8.16	21.55	0.21/0.18
MW-7	11/10/2009	17,000	900	42	63	1,400	---	<10	<100	<20	<20	<20	29.71	9.56	20.15	0.54/0.33
MW-7	05/10/2010	6,900	650	24	24	610	---	---	---	---	---	---	29.71	6.86	22.85	0.37/0.19
MW-7	09/09/2010	---	---	---	---	---	---	---	---	---	---	---	29.71	9.70	20.01	---
MW-7	12/03/2010	8,100	550	16	20	520	---	<5.0	<50	<10	<10	<10	29.71	8.95	20.76	0.41/0.37
MW-7	03/02/2011	---	---	---	---	---	---	---	---	---	---	---	29.71	4.67	25.04	---
MW-7	05/31/2011	6,200	530	16	8.5	320	---	---	---	---	---	---	29.71	7.54	22.17	0.63/0.87
MW-7	12/13/2011	8,800	689	8.85	9.68	200	---	<0.500	<10.0	1.99	<0.500	<0.500	29.71	8.93	20.78	0.38/0.35
MW-7	06/13/2012	2,300	330	<5.0	<5.0	86	---	---	---	---	---	---	29.71	8.26	21.45	1.35/1.08
MW-7	11/19/2012	5,800	860	14	7.8	300	---	<5.0	<100	<5.0	<5.0	<5.0	29.71	9.51	20.20	0.96/1.10
MW-7	05/30/2013	3,200	420	11	<5.0	140	---	---	---	---	---	---	29.71	8.55	21.16	0.35/0.24
MW-7	11/18/2013	3,700	620	5.4	7.8	130	---	<5.0	<100	<5.0	<5.0	<5.0	29.71	10.41	19.30	0.19/0.17
MW-7	06/06/2014	2,000	140	<2.0	<2.0	16	---	---	---	---	---	---	29.71	8.52	21.19	0.41/0.44
MW-7	12/01/2014	2,900	490	7.1	<5.0	140	---	<5.0	<100	<5.0	<5.0	<5.0	29.71	10.12	19.59	0.41/0.78
MW-7	05/22/2015	2,100	210	3.0	<2.5	48	---	---	---	---	---	---	29.71	8.65	21.06	1.09/1.24

Table 3
Groundwater Data
Former Shell Service Station, 2703 Martin Luther King Jr. Way, Oakland, California

Well ID	Date	TPHg (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE 8020 (µg/L)	MTBE 8260 (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	TOC (ft MSL)	Depth to Water (ft TOC)	GW Elevation (ft MSL)	DO (mg/L)
MW-7	12/18/2015	2,900	520	7.1	5.8	110	---	<5.0	<100	<5.0	<5.0	<5.0	29.71	10.39	19.32	1.12/1.03
MW-7	05/16/2016	2,300	84	2.2	3.2	40	---	---	---	---	---	---	29.71	7.50	22.21	2.90/0.52
MW-7	12/08/2016	640	16	0.85	0.80	56	---	<0.50	<10	<0.50	<0.50	<0.50	29.71	5.06	24.65	3.62/2.25
MW-7	**05/30/2017**	**55**	**<0.50**	**<0.50**	**<0.50**	**<1.0**	**---**	**---**	**---**	**---**	**---**	**---**	**29.71**	**7.44**	**22.27**	**4.08/2.12**
MW-8	01/09/2006	---	---	---	---	---	---	---	---	---	---	---	29.54	5.56	23.98	---
MW-8	01/11/2006	32,000	2,400	180	66	5,500	---	<0.50 a	35 a	15 a	<0.50 a	<0.50 a	29.54	5.53	24.01	0.8
MW-8	05/26/2006	24,800	423	73.0	166	2,820 e	---	<0.500	<10.0	2.18	<0.500	<0.500	29.54	7.02	22.52	0.35
MW-8	08/30/2006	72,100	1,770	114	324	3,140	---	<0.500	<10.0	23.3	<0.500	<0.500	29.54	8.81	20.73	0.51/0.50
MW-8	11/08/2006	24,000	2,000	90	190	3,400	---	---	---	---	---	---	29.54	9.25	20.29	0.11/0.40
MW-8	02/22/2007	26,000	2,100	110	180	4,400	---	---	---	---	---	---	29.54	7.08	22.46	1.37/1.71
MW-8	05/29/2007	31,000 f	2,600	99	250	3,140	---	---	---	---	---	---	29.54	7.81	21.73	0.05/0.49
MW-8	08/27/2007	41,000 f	3,400	110	260	3,880	---	<20	<200	32 g	<40	<40	29.54	9.04	20.50	0.07/0.27
MW-8	11/08/2007	42,000 f	4,900	140	440	4,000	---	---	---	---	---	---	29.54	9.14	20.40	3.20/0.10
MW-8	02/20/2008	19,000 f	760	38	52	1,930	---	---	---	---	---	---	29.54	9.00	20.54	1.72/0.13
MW-8	05/01/2008	18,000	1,000	35	42	1,520	---	---	---	---	---	---	29.54	8.10	21.44	1.10/0.19
MW-8	08/12/2008	33,000	1,600	69	1,100	2,730	---	<10	<100	<20	<20	<20	29.54	9.41	20.13	0.15/0.29
MW-8	11/26/2008	27,000	2,600	77	100	2,930	---	---	---	---	---	---	29.54	9.68	19.86	2.60/0.66
MW-8	02/03/2009	32,000	2,400	70	81	2,700	---	---	---	---	---	---	29.54	8.57	20.97	0.10/0.23
MW-8	06/02/2009	22,000	1,100	39	56	1,600	---	---	---	---	---	---	29.54	8.00	21.54	0.22/0.38
MW-8	11/10/2009	22,000	1,600	46	52	1,600	---	<25	<250	<50	<50	<50	29.54	9.32	20.22	0.45/0.29
MW-8	05/10/2010	9,800	340	15	21	700	---	---	---	---	---	---	29.54	6.74	22.80	0.28/0.54
MW-8	09/09/2010	---	---	---	---	---	---	---	---	---	---	---	29.54	9.52	20.02	---
MW-8	12/03/2010	13,000	720	26	29	870	---	<5.0	<50	<10	<10	<10	29.54	8.67	20.87	0.90/0.27
MW-8	03/02/2011	---	---	---	---	---	---	---	---	---	---	---	29.54	4.97	24.57	---
MW-8	05/31/2011	10,000	260	7.6	9.6	390	---	---	---	---	---	---	29.54	7.51	22.03	0.78/0.81
MW-8	12/13/2011	14,000	703	15.4	25.2	467	---	<0.500	<10.0	4.95	<0.500	<0.500	29.54	8.73	20.81	0.69/0.32
MW-8	06/13/2012	8,200	290	7.9	14	430	---	---	---	---	---	---	29.54	8.01	21.53	1.48/0.94
MW-8	11/19/2012	7,000	180	7.0	13	510	---	<2.5	<50	<2.5	<2.5	<2.5	29.54	9.28	20.26	0.79/0.70
MW-8	05/30/2013	7,900	190	5.7	8.7	270	---	---	---	---	---	---	29.54	8.37	21.17	0.17/0.07
MW-8	11/18/2013	11,000	240	8.2	11	630	---	<2.0	<40	<2.0	<2.0	<2.0	29.54	10.40	19.14	0.26/0.22

Table 3
Groundwater Data
Former Shell Service Station, 2703 Martin Luther King Jr. Way, Oakland, California

Well ID	Date	TPHg (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE 8020 (µg/L)	MTBE 8260 (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	TOC (ft MSL)	Depth to Water (ft TOC)	GW Elevation (ft MSL)	DO (mg/L)
MW-8	06/06/2014	7,000	120	2.5	4.6	170	---	---	---	---	---	---	29.54	8.55	20.99	0.36/0.39
MW-8	12/01/2014	6,600	92	3.2	2.9	180	---	<2.5	<50	<2.5	<2.5	<2.5	29.54	9.69	19.85	0.36/0.42
MW-8	05/22/2015	6,800	80	2.6	4.3	140	---	---	---	---	---	---	29.54	8.59	20.95	0.69/0.50
MW-8	12/18/2015	6,100	95	4.3	5.8	220	---	<1.3	<25	<1.3	<1.3	<1.3	29.54	9.99	19.55	1.52/1.43
MW-8	05/16/2016	5,400	59	2.7	6.5	140	---	---	---	---	---	---	29.54	7.43	22.11	1.79/1.25
MW-8	12/08/2016	1,200	8.9	0.51	2.9	75	---	<0.50	<10	<0.50	<0.50	<0.50	29.54	6.41	23.13	1.18/0.69
MW-8	**05/30/2017**	**470**	**60**	**0.74**	**1.3**	**13**	**---**	**---**	**---**	**---**	**---**	**---**	**29.54**	**7.32**	**22.22**	**1.21/0.73**
MW-9	08/27/2010	---	---	---	---	---	---	---	---	---	---	---	28.52	10.33	18.19	---
MW-9	09/09/2010	13,000	32	13	880	610	---	---	---	---	---	---	28.52	10.60	17.92	0.51/0.73
MW-9	12/03/2010	6,400	33	9.5	540	280	---	---	---	---	---	---	28.52	10.42	18.10	0.22/0.33
MW-9	03/02/2011	11,000	74	11	840	170	---	---	---	---	---	---	28.52	6.45	22.07	0.53/0.48
MW-9	05/31/2011	12,000	49	6.7	570	100	---	---	---	---	---	---	28.52	8.80	19.72	0.19/0.27
MW-9	12/13/2011	13,000	35.8	5.60	470	97.2	---	---	---	---	---	---	28.52	10.24	18.28	0.54/0.51
MW-9	06/13/2012	9,700	49	6.1	420	59	---	---	---	---	---	---	28.52	9.27	19.25	0.68/0.72
MW-9	11/19/2012	9,300	26	<5.0	340	68	---	---	---	---	---	---	28.52	10.55	17.97	1.35/0.76
MW-9	05/30/2013	7,200	19	3.4	160	36	---	---	---	---	---	---	28.52	9.32	19.20	0.41/0.59
MW-9	11/18/2013	760	<5.0	<5.0	19	<10	---	---	---	---	---	---	28.52	10.93	17.59	0.37/0.31
MW-9	06/06/2014	7,600	23	<5.0	190	31	---	---	---	---	---	---	28.52	9.60	18.92	0.16/0.20
MW-9	12/01/2014	7,700	17	<5.0	110	17	---	---	---	---	---	---	28.52	10.96	17.56	0.15/0.19
MW-9	05/22/2015	Well inaccessible		---	---	---	---	---	---	---	---	---	28.52	---	---	---
MW-9	12/18/2015	Well inaccessible		---	---	---	---	---	---	---	---	---	28.52	---	---	---
MW-9	05/16/2016	5,700	20	<5.0	79	16	---	---	---	---	---	---	28.52	8.48	20.04	1.44/0.91
MW-9	12/08/2016	Unable to locate		---	---	---	---	---	---	---	---	---	28.52	---	---	---
MW-9	**05/30/2017**	**Unable to locate**		**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**28.52**	**---**	**---**	**---**
MW-10	08/27/2010	---	---	---	---	---	---	---	---	---	---	---	28.70	10.21	18.49	---
MW-10	09/09/2010	2,600	1.9	1.3	40	170	---	---	---	---	---	---	28.70	10.70	18.00	1.43/1.67
MW-10	12/03/2010	1,600	2.0	<1.0	25	18	---	---	---	---	---	---	28.70	10.06	18.64	0.17/0.30
MW-10	03/02/2011	1,600	2.6	0.55	41	13	---	---	---	---	---	---	28.70	6.85	21.85	0.41/0.40
MW-10	05/31/2011	2,400	2.0	0.51	60	45	---	---	---	---	---	---	28.70	7.23	21.47	0.22/0.43

Table 3
Groundwater Data
Former Shell Service Station, 2703 Martin Luther King Jr. Way, Oakland, California

Well ID	Date	TPHg (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE 8020 (µg/L)	MTBE 8260 (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	TOC (ft MSL)	Depth to Water (ft TOC)	GW Elevation (ft MSL)	DO (mg/L)
MW-10	12/13/2011	2,700	2.43	<0.500	20.2	2.70	---	---	---	---	---	---	28.70	9.50	19.20	0.69/0.62
MW-10	06/13/2012	2,200	2.5	0.53	48	46	---	---	---	---	---	---	28.70	10.41	18.29	0.81/0.92
MW-10	11/19/2012	980	1.6	<0.50	8.8	1.1	---	---	---	---	---	---	28.70	10.12	18.58	1.20/0.66
MW-10	05/30/2013	1,300	2.0	<0.50	34	5.1	---	---	---	---	---	---	28.70	9.02	19.68	1.38/0.44
MW-10	11/18/2013	5,400	9.8	<5.0	150	19	---	---	---	---	---	---	28.70	10.42	18.28	0.50/0.52
MW-10	06/06/2014	1,000	1.7	<0.50	21	2.3	---	---	---	---	---	---	28.70	8.93	19.77	0.18/0.25
MW-10	12/01/2014	890	1.3	<0.50	8.8	<1.0	---	---	---	---	---	---	28.70	11.15	17.55	0.19/0.35
MW-10	05/22/2015	Well inaccessible		---	---	---	---	---	---	---	---	---	28.70	---	---	---
MW-10	12/18/2015	450	1.2	<0.50	4.1	1.1	---	---	---	---	---	---	28.70	14.18	14.52	1.10/1.35
MW-10	05/16/2016	1,500	1.2	<0.50	19	3.7	---	---	---	---	---	---	28.70	8.28	20.42	2.31/0.92
MW-10	12/08/2016	380	0.55	<0.50	0.93	<1.0	---	---	---	---	---	---	28.70	9.52	19.18	0.42/0.31
MW-10	**05/30/2017**	**82**	**<0.50**	**<0.50**	**<0.50**	**<1.0**	**---**	**---**	**---**	**---**	**---**	**---**	**28.70**	**8.16**	**20.54**	**0.33/0.26**
MW-11	08/27/2010	---	---	---	---	---	---	---	---	---	---	---	27.46	9.98	17.48	---
MW-11	09/09/2010	<50	<0.50	<1.0	<1.0	<1.0	---	---	---	---	---	---	27.46	10.32	17.14	1.64/1.69
MW-11	12/03/2010	<50	<0.50	<1.0	<1.0	<1.0	---	---	---	---	---	---	27.46	9.84	17.62	0.29/0.47
MW-11	03/02/2011	<50	<0.50	<0.50	<0.50	<1.0	---	---	---	---	---	---	27.46	6.13	21.33	1.08/0.88
MW-11	05/31/2011	<50	<0.50	<0.50	<0.50	<1.0	---	---	---	---	---	---	27.46	8.42	19.04	0.17/0.30
MW-11	12/13/2011	<50	<0.500	<0.500	<0.500	<0.500	---	---	---	---	---	---	27.46	9.93	17.53	0.36/0.52
MW-11	06/13/2012	<50	<0.50	<0.50	<0.50	<1.0	---	---	---	---	---	---	27.46	9.98	17.48	0.54/0.91
MW-11	11/19/2012	<50	<0.50	<0.50	<0.50	<1.0	---	---	---	---	---	---	27.46	10.16	17.30	0.60/0.88
MW-11	05/30/2013	<50	<0.50	<0.50	<0.50	<1.0	---	---	---	---	---	---	27.46	8.74	18.72	0.74/0.59
MW-11	11/18/2013	<50	<0.50	<0.50	<0.50	<1.0	---	---	---	---	---	---	27.46	10.32	17.14	0.90/0.45
MW-11	06/06/2014	<50	<0.50	<0.50	<0.50	<1.0	---	---	---	---	---	---	27.46	9.25	18.21	0.47/0.27
MW-11	12/01/2014	<50	<0.50	<0.50	<0.50	<1.0	---	---	---	---	---	---	27.46	10.63	16.83	0.45/0.30
MW-11	05/22/2015	Well inaccessible		---	---	---	---	---	---	---	---	---	27.46	---	---	---
MW-11	12/18/2015	<50	<0.50	<0.50	<0.50	<1.0	---	---	---	---	---	---	27.46	10.93	16.53	1.58/2.88
MW-11	05/16/2016	<50	<0.50	<0.50	<0.50	<1.0	---	---	---	---	---	---	27.46	8.50	18.96	2.20/1.79
MW-11	12/08/2016	<50	<0.50	<0.50	<0.50	<1.0	---	---	---	---	---	---	27.46	9.16	18.30	0.37/0.28
MW-11	**05/30/2017**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<1.0**	**---**	**---**	**---**	**---**	**---**	**---**	**27.46**	**8.05**	**19.41**	**0.29/0.18**

Table 3
Groundwater Data
Former Shell Service Station, 2703 Martin Luther King Jr. Way, Oakland, California

Well ID	Date	TPHg (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE 8020 (µg/L)	MTBE 8260 (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	TOC (ft MSL)	Depth to Water (ft TOC)	GW Elevation (ft MSL)	DO (mg/L)
MW-12	05/19/2006	---	---	---	---	---	---	---	---	---	---	---	31.16	8.42	22.74	---
MW-12	05/26/2006	<50.0	<0.500	<0.500	<0.500	<0.500	---	<0.500	<10.0	<0.500	<0.500	<0.500	31.16	8.44	22.72	3.88
MW-12	08/30/2006	746	<0.500	<0.500	<0.500	<0.500	---	---	---	---	---	---	31.16	9.54	21.62	1.75/1.81
MW-12	11/08/2006	<50	<0.50	<0.50	<0.50	<1.0	---	---	---	---	---	---	31.16	8.67	22.49	2.26/3.60
MW-12	02/22/2007	<50	<0.50	<1.0	<0.50	<1.0	---	---	---	---	---	---	31.16	7.72	23.44	1.60/2.91
MW-12	05/29/2007	<50 f	0.49 g	<1.0	0.14 g	0.48 g	---	---	---	---	---	---	31.16	9.00	22.16	0.60/0.61
MW-12	08/27/2007	<50 f	<0.50	<1.0	<1.0	<1.0	---	---	---	---	---	---	31.16	9.90	21.26	0.47/0.24
MW-12	11/08/2007	<50 f	<0.50	<1.0	<1.0	<1.0	---	---	---	---	---	---	31.16	9.90	21.26	3.8/3.1
MW-12	02/20/2008	<50 f	5.4	1.7	3.4	12.4	---	---	---	---	---	---	31.16	7.40	23.76	3.43/1.91
MW-12	05/01/2008	<50	<0.50	<1.0	<1.0	<1.0	---	---	---	---	---	---	31.16	9.20	21.96	0.09/0.13
MW-12	08/12/2008	<50	<0.50	<1.0	<1.0	<1.0	---	---	---	---	---	---	31.16	10.40	20.76	3.6/3.2
MW-12	11/26/2008	<50	<0.50	<1.0	<1.0	<1.0	---	---	---	---	---	---	31.16	10.59	20.57	1.80/1.32
MW-12	02/03/2009	<50	<0.50	<1.0	<1.0	<1.0	---	---	---	---	---	---	31.16	9.39	21.77	1.72/1.75
MW-12	06/02/2009	<50	<0.50	<1.0	<1.0	<1.0	---	---	---	---	---	---	31.16	9.20	21.96	0.77/1.41
MW-12	11/10/2009	<50	<0.50	<1.0	<1.0	<1.0	---	---	---	---	---	---	31.16	10.12	21.04	2.70/1.52
MW-12	05/10/2010	<50	<0.50	<1.0	<1.0	<1.0	---	---	---	---	---	---	31.16	8.41	22.75	2.65/1.42
MW-12	09/09/2010	Unable to locate		---	---	---	---	---	---	---	---	---	31.16	---	---	---
MW-12	12/03/2010	<50	<0.50	<1.0	<1.0	<1.0	---	---	---	---	---	---	31.16	9.32	21.84	0.74/1.29
MW-12	03/02/2011	Unable to locate		---	---	---	---	---	---	---	---	---	31.16	---	---	---
MW-12	05/31/2011	<50	<0.50	<0.50	<0.50	<1.0	---	---	---	---	---	---	31.16	8.80	22.36	0.59/0.91
MW-12	12/13/2011	<50	<0.500	<0.500	<0.500	<0.500	---	---	---	---	---	---	31.16	9.64	21.52	0.75/2.07
MW-12	06/13/2012	<50	<0.50	<0.50	<0.50	<1.0	---	---	---	---	---	---	31.16	9.31	21.85	0.61/1.79
MW-12	11/19/2012	Well inaccessible		---	---	---	---	---	---	---	---	---	31.16	---	---	---
MW-12	05/30/2013	<50	<0.50	<0.50	<0.50	<1.0	---	---	---	---	---	---	31.16	9.40	21.76	0.68/0.72
MW-12	11/18/2013	<50	<0.50	<0.50	<0.50	<1.0	---	---	---	---	---	---	31.16	11.83	19.33	0.29/0.66
MW-12	06/06/2014	Well inaccessible		---	---	---	---	---	---	---	---	---	31.16	---	---	---
MW-12	12/01/2014	Well inaccessible		---	---	---	---	---	---	---	---	---	31.16	---	---	---
MW-12	05/22/2015	Well inaccessible		---	---	---	---	---	---	---	---	---	31.16	---	---	---
MW-12	12/18/2015	Well inaccessible		---	---	---	---	---	---	---	---	---	31.16	---	---	---
MW-12	05/16/2016	Well inaccessible		---	---	---	---	---	---	---	---	---	31.16	---	---	---
MW-12	12/08/2016	Well inaccessible		---	---	---	---	---	---	---	---	---	31.16	---	---	---

Table 3
Groundwater Data
Former Shell Service Station, 2703 Martin Luther King Jr. Way, Oakland, California

Well ID	Date	TPHg (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE 8020 (µg/L)	MTBE 8260 (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	TOC (ft MSL)	Depth to Water (ft TOC)	GW Elevation (ft MSL)	DO (mg/L)
MW-12	**05/30/2017**	**Well inaccessible**		**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**31.16**	**---**	**---**	**---**
MW-13	04/16/2015	---	---	---	---	---	---	---	---	---	---	---	29.70	9.31	20.39	---
MW-13	05/22/2015	4,100	430	5.9	16	<10	---	---	---	---	---	---	29.70	10.12	19.58	0.86/0.59
MW-13	08/14/2015	5,000	550	<5.0	8.5	<10	---	---	---	---	---	---	29.70	11.55	18.15	0.56/0.32
MW-13	12/18/2015	3,800	200	<2.5	3.9	<5.0	---	---	---	---	---	---	29.70	11.41	18.29	1.62/1.97
MW-13	03/17/2016	4,100	170	<5.0	<5.0	<5.0	---	---	---	---	---	---	29.70	5.03	24.67	0.24/0.31
MW-13	05/16/2016	5,400	370	<2.5	6.2	<5.0	---	---	---	---	---	---	29.70	8.91	20.79	0.72/1.01
MW-13	12/08/2016	4,700	450	<5.0	<5.0	<10	---	---	---	---	---	---	29.70	9.60	20.10	0.49/0.41
MW-13	**05/30/2017**	**1,700**	**26**	**<2.5**	**<2.5**	**<5.0**	**---**	**---**	**---**	**---**	**---**	**---**	**29.70**	**8.48**	**21.22**	**0.34/0.28**
MW-14	05/19/2006	---	---	---	---	---	---	---	---	---	---	---	28.09	6.95	21.14	---
MW-14	05/26/2006	103,000	5,280	76.7	3,930	4,800 e	---	<5.00	895	49.7	<5.00	<5.00	28.09	7.05	21.04	3.60
MW-14	08/30/2006	10,200	1,260	12.5	1,310	1,330	---	<0.500	<10.0	<0.500	<0.500	<0.500	28.09	9.19	18.90	3.33/3.49
MW-14	11/08/2006	29,000	4,400 a	34	2,000	1,600	---	---	---	---	---	---	28.09	9.80	18.29	1.16/1.40
MW-14	02/22/2007	31,000	2,600	42	2,200	1,600	---	---	---	---	---	---	28.09	6.70	21.39	0.59/1.11
MW-14	05/29/2007	35,000 f	1,100	14	1,800	767	---	---	---	---	---	---	28.09	7.89	20.20	0.08/0.08
MW-14	08/27/2007	Well inaccessfble			---	---	---	---	---	---	---	---	---	---	---	---
MW-14	08/29/2007	45,000 f	1,000	11	870	367.8 g	---	<10	<100	20	<20	<20	28.09	9.25	18.84	0.09/0.16
MW-14	11/08/2007	32,000 f	1,600	22	1,500	889	---	---	---	---	---	---	28.09	9.21	18.88	0.04/0.35
MW-14	02/20/2008	23,000 f	1,800	32	1,600	1,021	---	---	---	---	---	---	28.09	6.34	21.75	0.09/0.08
MW-14	05/01/2008	16,000	830	15	870	452	---	---	---	---	---	---	28.09	7.95	20.14	0.12/0.09
MW-14	08/12/2008	34,000	1,400	26	550	1,151	---	<10	<100	<20	<20	<20	28.09	14.10	13.99	0.03/0.38
MW-14	11/26/2008	Well inaccessible			---	---	---	---	---	---	---	---	28.09	---	---	---
MW-14	02/03/2009	39,000	1,800	27	1,700	1,400	---	---	---	---	---	---	28.09	8.66	19.43	0.16/0.19
MW-14	06/02/2009	34,000	1,100	<25	1,200	710	---	---	---	---	---	---	28.09	8.21	19.88	0.16/0.26
MW-14	11/10/2009	39,000	2,300	35	2,100	1,200	---	<25	<250	<50	<50	<50	28.09	9.69	18.40	0.45/1.56
MW-14	05/10/2010	5,900	150	2.1	170	54	---	---	---	---	---	---	28.09	6.64	21.45	0.49/1.38
MW-14	09/09/2010	Well inaccessible			---	---	---	---	---	---	---	---	28.09	---	---	---
MW-14	12/03/2010	84,000	1,800	39	1,900	1,100	---	<5.0	<50	27	<10	<10	28.09	9.10	18.99	0.50/0.67
MW-14	03/02/2011	---	---	---	---	---	---	---	---	---	---	---	28.09	5.60	22.49	---

Table 3
Groundwater Data
Former Shell Service Station, 2703 Martin Luther King Jr. Way, Oakland, California

Well ID	Date	TPHg (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE 8020 (µg/L)	MTBE 8260 (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	TOC (ft MSL)	Depth to Water (ft TOC)	GW Elevation (ft MSL)	DO (mg/L)
MW-14	05/31/2011	21,000	460	10	930	460	---	---	---	---	---	---	28.09	8.85	19.24	0.47/0.77
MW-14	12/13/2011	30,000	1,370	23.8	1,590	871	---	<0.500	<10.0	17.8	<0.500	<0.500	28.09	9.35	18.74	0.67/0.65
MW-14	06/13/2012	26,000	1,100	13	1,400	630	---	---	---	---	---	---	28.09	8.34	19.75	0.54/0.75
MW-14	11/19/2012	27,000	1,700	30	2,800	1,200	---	<5.0	<100	23	<5.0	<5.0	28.09	9.78	18.31	2.84/3.10
MW-14	05/30/2013	34,000	1,300	23	2,100	920	---	---	---	---	---	---	28.09	8.78	19.31	0.97/1.02
MW-14	11/18/2013	33,000	1,200	23	2,700	950	---	<10	<200	16	<10	<10	28.09	10.41	17.68	0.21/0.33
MW-14	06/06/2014	68,000	900	<50	2,800	680	---	---	---	---	---	---	28.09	8.77	19.32	0.20/0.27
MW-14	12/01/2014	36,000	1,600	24	2,700	700	---	<20	<400	<20	<20	<20	28.09	9.50	18.59	0.18/0.25
MW-14	05/22/2015	5,200	320	<10	490	120	---	---	---	---	---	---	28.09	9.08	19.01	1.04/0.96
MW-14	12/18/2015	18,000	1,200	<20	2,000	450	---	<20	<400	<20	<20	<20	28.09	10.43	17.66	2.83/3.17
MW-14	05/16/2016	15,000	950	<25	1,100	200	---	---	---	---	---	---	28.09	7.71	20.38	2.18/3.03
MW-14	12/08/2016	28,000	650	11	990	140	---	<10	<200	<10	<10	<10	28.09	8.49	19.60	0.86/0.83
MW-14	**05/30/2017**	**2,400**	**1.9**	**<0.50**	**1.1**	**<1.0**	**---**	**---**	**---**	**---**	**---**	**---**	**28.09**	**7.05**	**21.04**	**0.74/0.65**
V-1	08/02/1996	---	---	---	---	---	---	---	---	---	---	---	23.26	---	---	---
V-1	08/05/1996	---	---	---	---	---	---	---	---	---	---	---	23.26	8.58	14.68	---
V-1	10/17/1996	---	---	---	---	---	---	---	---	---	---	---	23.26	10.02	13.24	---
V-1	01/16/1997	9,500	1,200	250	280	880	<50	---	---	---	---	---	23.26	5.55	17.71	---
V-1	04/07/1997	2,200	42	<5.0	130	15	<25	---	---	---	---	---	23.26	7.40	15.86	---
V-1	07/02/1997	2,600	340	5.8	49	12	74	<4.0	---	---	---	---	23.26	8.94	14.32	---
V-1	10/24/1997	57,000	5,200	2,300	3,600	16,000	1,900	<200	---	---	---	---	23.26	9.43	13.83	---
V-1	01/09/1998	23,000	2,400	1,700	1,300	2,300	310	---	---	---	---	---	23.26	6.81	16.45	---
V-1 (D)	01/09/1998	24,000	2,500	1,800	1,400	2,400	450	---	---	---	---	---	23.26	---	---	---
V-1	04/02/1998	<50	<0.50	<0.50	<0.50	<0.50	<2.5	---	---	---	---	---	23.26	4.58	18.68	---
V-1 (D)	04/02/1998	<50	<0.50	<0.50	<0.50	<0.50	<2.5	---	---	---	---	---	23.26	---	---	---
V-1	07/14/1998	160	1.9	<0.50	4.2	<0.50	6.1	---	---	---	---	---	23.26	7.51	15.75	---
V-1	10/01/1998	440	18	<0.50	11	0.80	7.9	---	---	---	---	---	23.26	8.49	14.77	---
V-1	01/18/1999	697	55.7	0.839	28.2	<0.500	9.35	---	---	---	---	---	23.26	8.59	14.67	---
V-1	04/29/1999	<50	<0.50	<0.50	<0.50	<0.50	<2.5	---	---	---	---	---	23.26	8.69	14.57	---
V-1	08/23/1999	457	33.4	3.59	16.3	<0.500	13.9	---	---	---	---	---	23.26	8.99	14.27	---
V-1	10/06/1999	714	53.7	0.740	8.69	<0.500	9.83	---	---	---	---	---	23.26	9.55	13.71	---

Table 3
Groundwater Data
Former Shell Service Station, 2703 Martin Luther King Jr. Way, Oakland, California

Well ID	Date	TPHg (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE 8020 (µg/L)	MTBE 8260 (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	TOC (ft MSL)	Depth to Water (ft TOC)	GW Elevation (ft MSL)	DO (mg/L)
V-1	01/27/2000	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	---	---	---	---	---	23.26	7.19	16.07	---
V-1	04/18/2000	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	---	---	---	---	---	23.26	7.67	15.59	---
V-1	07/19/2000	255	21.7	<0.500	10.2	<0.500	7.33	<1.00 a	---	---	---	---	23.26	7.53	15.73	---
V-1	10/24/2000	200	4.05	0.566	<0.500	<0.500	7.82	---	---	---	---	---	23.26	7.38	15.88	---
V-1	01/04/2001	128	1.77	<0.500	<0.500	<0.500	6.40	<10.0	---	---	---	---	23.26	8.41	14.85	---
V-1	05/03/2001	<50	<0.50	<0.50	<0.50	<0.50	---	<5.0	---	---	---	---	23.26	7.20	16.06	---
V-1	07/09/2001	110	4.4	<0.50	0.88	1.7	---	<5.0	---	---	---	---	23.26	9.22	14.04	---
V-1	10/18/2001	1,500	180	12	43	46	---	<5.0	---	---	---	---	23.26	10.08	13.18	0.8
V-1	01/24/2002	210	7.1	15	4.6	32	---	<5.0	---	---	---	---	23.26	6.44	16.82	3.5
V-1	04/04/2002	<50	<0.50	<0.50	<0.50	<0.50	---	<5.0	---	---	---	---	23.26	6.18	17.08	1.0
V-1	07/18/2002	100	1.6	1.2	1.2	6.1	---	<5.0	---	---	---	---	23.26	8.08	15.18	1.7
V-1	10/21/2002	210	1.4	<0.50	1.0	1.3	---	<5.0	---	---	---	---	29.26	8.94	20.32	1.2
V-1	01/21/2003	61	5.2	<0.50	<0.50	<0.50	---	<5.0	---	---	---	---	29.26	6.62	22.64	0.6
V-1	04/17/2003	<50	<0.50	<0.50	<0.50	1.2	---	<5.0	---	---	---	---	29.26	6.00	23.26	1.3
V-1	07/22/2003	Well inaccessible		---	---	---	---	---	---	---	---	---	29.26	---	---	---
V-1	10/20/2003	540	11	1.6	6.0	8.9	---	<0.50	---	---	---	---	29.26	9.53	19.73	0.1
V-1	01/13/2004	<50	<0.50	<0.50	<0.50	<1.0	---	<0.50	---	---	---	---	29.26	6.62	22.64	---
V-1	01/22/2004	---	---	---	---	---	---	---	---	---	---	---	29.26	9.08	20.18	0.1
V-1	04/01/2004	<50	<0.50	<0.50	<0.50	<1.0	---	---	---	---	---	---	29.26	6.24	23.02	0.1
V-1	07/13/2004	120	1.8	<0.50	<0.50	<1.0	---	<0.50	<5.0	<2.0	<2.0	<2.0	29.26	8.78	20.48	0.1
V-1	10/26/2004	<50	<0.50	<0.50	<0.50	<1.0	---	---	---	---	---	---	29.26	8.09	21.17	0.6
V-1	01/13/2005	<50	<0.50	<0.50	<0.50	<1.0	---	---	---	---	---	---	29.26	4.30	24.96	0.1
V-1	04/28/2005	<50	<0.50	<0.50	<0.50	<1.0	---	---	---	---	---	---	29.26	5.27	23.99	3.34
V-1	08/01/2005	54	<0.50	<0.50	<0.50	<1.0	---	<0.50	<5.0	<2.0	<2.0	<2.0	29.26	7.77	21.49	---
V-1	10/05/2005	120 c	<0.50	<0.50	<0.50	<1.0	---	---	---	---	---	---	29.26	8.72	20.54	1.67
V-1	01/11/2006	<50	<0.50	<0.50	<0.50	<0.50	---	<0.50	<5.0	<0.50	<0.50	<0.50	29.24	4.78	24.46	0.3
V-1	05/26/2006	<50.0	<0.500	<0.500	<0.500	1.02 e	---	<0.500	<10.0	<0.500	<0.500	<0.500	29.24	6.61	22.63	1.94
V-1	08/30/2006	5,660	6.81	1.39	27.3	21.0	---	<0.500	<10.0	<0.500	<0.500	<0.500	29.24	8.46	20.78	0.33/0.33
V-1	11/08/2006	1,300	3.7	1.5	5.1	6.9	---	---	---	---	---	---	29.24	8.95	20.29	0.05/0.11
V-1	02/22/2007	<50	<0.50	<1.0	<0.50	<1.0	---	---	---	---	---	---	29.24	6.17	23.07	0.76/0.99
V-1	05/29/2007	650 f	0.64	<1.0	1.2	0.95 g	---	---	---	---	---	---	29.24	7.21	22.03	0.69/0.74

Table 3
Groundwater Data
Former Shell Service Station, 2703 Martin Luther King Jr. Way, Oakland, California

Well ID	Date	TPHg (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE 8020 (µg/L)	MTBE 8260 (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	TOC (ft MSL)	Depth to Water (ft TOC)	GW Elevation (ft MSL)	DO (mg/L)
V-1	08/27/2007	510 b, f	0.24	<1.0	<1.0	<1.0	---	<1.0	<10	<2.0	<2.0	<2.0	29.24	8.78	20.46	0.12/0.57
V-1 d	11/08/2007	2,000 f	19	2.9	23	18.5	---	---	---	---	---	---	29.24	8.41	20.83	0.61/1.54
V-1	02/20/2008	54 f	<0.50	<1.0	<1.0	<1.0	---	---	---	---	---	---	29.24	5.11	24.13	0.13/0.22
V-1	05/01/2008	280	0.57	<1.0	<1.0	<1.0	---	---	---	---	---	---	29.24	7.60	21.64	0.08/0.08
V-1	08/12/2008	390	0.80	<1.0	<1.0	1.1	---	<1.0	<10	<2.0	<2.0	<2.0	29.24	9.00	20.24	0.81/1.51
V-1	11/26/2008	3,300	46	8.3	62	44.2	---	---	---	---	---	---	29.24	9.50	19.74	0.76/1.28
V-1	02/03/2009	450	0.98	<1.0	1.7	<1.0	---	---	---	---	---	---	29.24	8.18	21.06	0.13/0.39
V-1	06/02/2009	230	<0.50	<1.0	1.3	<1.0	---	---	---	---	---	---	29.24	7.45	21.79	0.25/0.31
V-1	11/10/2009	900	3.1	<1.0	6.5	2.0	---	<1.0	<10	<2.0	<2.0	<2.0	29.24	8.91	20.33	0.84/0.56
V-1	05/10/2010	81	<0.50	<1.0	<1.0	<1.0	---	---	---	---	---	---	29.24	5.94	23.30	0.17/0.43
V-1	09/09/2010	---	---	---	---	---	---	---	---	---	---	---	29.24	8.95	20.29	---
V-1	12/03/2010	560	1.1	<1.0	3.2	<1.0	---	<1.0	<10	<2.0	<2.0	<2.0	29.24	8.25	20.99	0.47/0.95
V-1	03/02/2011	---	---	---	---	---	---	---	---	---	---	---	29.24	4.18	25.06	---
V-1	05/31/2011	160	<0.50	<0.50	0.57	<1.0	---	---	---	---	---	---	29.24	6.82	22.42	0.69/1.26
V-1	12/13/2011	1,300	1.09	<0.500	5.63	0.980	---	<0.500	<10.0	<0.500	<0.500	<0.500	29.24	8.37	20.87	0.94/0.81
V-1	06/13/2012	410	0.63	<0.50	3.9	<1.0	---	---	---	---	---	---	29.24	7.52	21.72	1.65/1.73
V-1	11/19/2012	57	<0.50	<0.50	<0.50	<1.0	---	<0.50	<10	<0.50	<0.50	<0.50	29.24	8.35	20.89	1.48/1.37
V-1	05/30/2013	710	1.8	<0.50	9.3	<1.0	---	---	---	---	---	---	29.24	7.93	21.31	0.44/0.85
V-1	11/18/2013	610	1.7	<0.50	1.5	<1.0	---	<0.50	<10	<0.50	<0.50	<0.50	29.24	9.33	19.91	0.14/0.13
V-1	06/06/2014	410	1.7	<0.50	5.1	<1.0	---	---	---	---	---	---	29.24	7.85	21.39	0.11/0.65
V-1	12/01/2014	50	<0.50	<0.50	<0.50	<1.0	---	<0.50	<10	<0.50	<0.50	<0.50	29.24	8.45	20.79	0.10/0.60
V-1	05/22/2015	500	1.1	<0.50	2.3	<1.0	---	---	---	---	---	---	29.24	8.10	21.14	0.15/0.61
V-1	12/18/2015	540	2.1	<0.50	9.2	6.9	---	<0.50	<10	<0.50	<0.50	<0.50	29.24	9.53	19.71	1.22/3.49
V-1	05/16/2016	60	<0.50	<0.50	<0.50	<1.0	---	---	---	---	---	---	29.24	6.74	22.50	0.81/0.70
V-1	12/08/2016	<50	<0.50	<0.50	<0.50	<1.0	---	<0.50	<10	<0.50	<0.50	<0.50	29.24	6.31	22.93	1.53/1.63
V-1	**05/30/2017**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<1.0**	**---**	**---**	**---**	**---**	**---**	**---**	**29.24**	**6.91**	**22.33**	**1.26/1.37**
V-2	08/02/1996	---	---	---	---	---	---	---	---	---	---	---	22.80	---	---	---
V-2	08/05/1996	---	---	---	---	---	---	---	---	---	---	---	22.80	7.94	14.86	---
V-2	10/17/1996	---	---	---	---	---	---	---	---	---	---	---	22.80	9.30	13.50	---
V-2	01/08/1997	69,000	4,800	2,800	2,700	13,000	750	---	---	---	---	---	22.80	5.82	16.98	---

Table 3
Groundwater Data
Former Shell Service Station, 2703 Martin Luther King Jr. Way, Oakland, California

Well ID	Date	TPHg (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE 8020 (µg/L)	MTBE 8260 (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	TOC (ft MSL)	Depth to Water (ft TOC)	GW Elevation (ft MSL)	DO (mg/L)
V-2	04/07/1997	90,000	4,400	1,900	3,300	14,000	<500	---	---	---	---	---	22.80	7.10	15.70	---
V-2 (D)	04/07/1997	77,000	4,400	2,000	3,200	14,000	<250	---	---	---	---	---	22.80	---	---	---
V-2	07/02/1997	82,000	5,500	2,700	3,500	16,000	530	<100	---	---	---	---	22.80	8.35	14.45	---
V-2 (D)	07/02/1997	85,000	5,600	2,800	3,600	17,000	520	<100	---	---	---	---	22.80	---	---	---
V-2	10/24/1997	7,300	1,100	97	230	180	91	<12	---	---	---	---	22.80	10.03	12.77	---
V-2 (D)	10/24/1997	12,000	1,700	340	650	630	120	<20	---	---	---	---	22.80	---	---	---
V-2	01/09/1998	40,000	4,100	1,500	2,500	9,000	280	---	---	---	---	---	22.80	6.94	15.86	---
V-2	04/02/1998	62,000	6,800	2,400	3,400	14,000	<250	---	---	---	---	---	22.80	5.35	17.45	---
V-2	07/14/1998	43,000	4,700	1,100	2,500	6,600	<250	---	---	---	---	---	22.80	6.48	16.32	---
V-2 (D)	07/14/1998	48,000	5,100	1,300	2,600	8,100	<250	---	---	---	---	---	22.80	---	---	---
V-2	10/01/1998	53,000	5,200	1,800	3,200	10,000	83	---	---	---	---	---	22.80	8.41	14.39	---
V-2 (D)	10/01/1998	55,000	5,300	1,900	3,300	11,000	65	---	---	---	---	---	22.80	---	---	---
V-2	01/18/1999	47,100	5,800	1,960	3,450	10,200	<100	---	---	---	---	---	22.80	8.29	14.51	---
V-2	04/29/1999	65,000	6,100	2,800	3,200	12,000	540	---	---	---	---	---	22.80	8.19	14.61	---
V-2	08/23/1999	59,600	6,240	2,190	3,900	14,700	390	---	---	---	---	---	22.80	8.44	14.36	---
V-2	10/06/1999	63,800	4,820	1,860	2,840	11,100	<1000	---	---	---	---	---	22.80	8.96	13.84	---
V-2	01/27/2000	59,600	10,200	2,840	3,450	12,100	<500	---	---	---	---	---	22.80	7.57	15.23	---
V-2	04/18/2000	45,000	6,050	2,700	3,340	12,200	<250	---	---	---	---	---	22.80	8.14	14.66	---
V-2	07/19/2000	31,800	4,440	1,270	2,390	6,820	<500	---	---	---	---	---	22.80	8.21	14.59	---
V-2	10/24/2000	40,100	4,810	1,730	2,960	8,650	734	<10.0	---	---	---	---	22.80	8.53	14.27	---
V-2	01/04/2001	37,500	4,510	1,390	2,710	6,880	375	---	---	---	---	---	22.80	8.03	14.77	---
V-2	05/03/2001	51,000	4,000	1,900	2,800	8,200	---	<200	---	---	---	---	22.80	6.63	16.17	---
V-2	07/09/2001	9,600	710	190	180	1,400	---	<25	---	---	---	---	22.80	8.75	14.05	---
V-2	10/18/2001	20,000	2,000	540	560	6,000	---	<50	---	---	---	---	22.80	9.60	13.20	0.4
V-2	01/24/2002	36,000	2,900	870	1,700	5,900	---	<100	---	---	---	---	22.80	5.93	16.87	4.0
V-2	04/04/2002	49,000	3,900	1,500	2,900	9,300	---	<200	---	---	---	---	22.80	5.78	17.02	0.9
V-2	07/18/2002	50,000	3,600	1,300	2,800	9,300	---	<200	---	---	---	---	22.80	7.58	15.22	1.3
V-2	10/21/2002	86,000	6,000	1,900	4,200	20,000	---	<250	---	---	---	---	28.80	8.40	20.40	1.3
V-2	01/21/2003	13,000	630	200	300	2,400	---	<25	---	---	---	---	28.80	6.52	22.28	1.2
V-2	04/17/2003	26,000	2,000	570	750	6,000	---	<100	---	---	---	---	28.80	5.93	22.87	1.1
V-2	07/22/2003	6,800	130	34	150	440	---	<2.5	---	---	---	---	28.80	7.96	20.84	1.4

Table 3
Groundwater Data
Former Shell Service Station, 2703 Martin Luther King Jr. Way, Oakland, California

Well ID	Date	TPHg (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE 8020 (µg/L)	MTBE 8260 (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	TOC (ft MSL)	Depth to Water (ft TOC)	GW Elevation (ft MSL)	DO (mg/L)
V-2	10/20/2003	14,000	660	160	260	2,400	---	<10	---	---	---	---	28.80	9.21	19.59	0.7
V-2	01/13/2004	20,000	1,400	410	700	4,200	---	<13	---	---	---	---	28.80	6.90	21.90	---
V-2	01/22/2004	---	---	---	---	---	---	---	---	---	---	---	28.80	8.50	20.30	0.1
V-2	04/01/2004	28,000	2,000	520	650	8,700	---	---	---	---	---	---	28.80	6.84	21.96	0.2
V-2	07/13/2004	21,000	1,900	460	1,000	4,300	---	---	---	---	---	---	28.80	8.28	20.52	0.1
V-2	10/26/2004	43,000	2,700	880	2,300	12,000	---	---	---	---	---	---	28.80	8.43	20.37	0.8
V-2	01/13/2005	23,000	1,400	330	1,800	5,800	---	---	---	---	---	---	28.80	6.67	22.13	0.6
V-2	04/28/2005	16,000	970	230	620	3,800	---	---	---	---	---	---	28.80	5.69	23.11	4.55
V-2	08/01/2005	14,000	610	190	450	3,600	---	---	---	---	---	---	28.80	5.25	23.55	---
V-2	10/05/2005	37,000	2,200	680	2,300	8,500	---	---	---	---	---	---	28.80	8.24	20.56	0.75
V-2	01/11/2006	45,000 a	1,900 a	720 a	3,000 a	13,000 a	---	<25 a	<250 a	<25 a	<25 a	<25 a	28.81	6.60	22.21	0.4
V-2	05/26/2006	66,600	1,300	400	2,950	9,700 e	---	<0.500	<10.0	<0.500	<0.500	<0.500	28.81	6.28	22.53	0.28
V-2	08/30/2006	7,290	2,390	750	4,680	17,000	---	---	---	---	---	---	28.81	8.03	20.78	0.37/0.31
V-2	11/08/2006	68,000	1,700	580	3,900	13,000	---	---	---	---	---	---	28.81	8.60	20.21	0.05/0.14
V-2	02/22/2007	57,000	1,300	600	4,000	15,000	---	---	---	---	---	---	28.81	5.88	22.93	1.23/2.50
V-2	05/29/2007	48,000 b,f	2,000	650	3,300	10,000	---	---	---	---	---	---	28.81	6.82	21.99	0.07/0.12
V-2	08/27/2007	55,000 f	1,600	520	2,900	8,000	---	---	---	---	---	---	28.81	8.22	20.59	0.22/0.48
V-2 d	11/08/2007	74,000 f	1,300	500	3,000	9,600	---	---	---	---	---	---	28.81	8.82	19.99	0.87/1.46
V-2	02/20/2008	52,000 f	1,200	560	3,200	12,400	---	---	---	---	---	---	28.81	5.13	23.68	0.16/0.05
V-2	05/01/2008	53,000	960	350	3,000	9,600	---	---	---	---	---	---	28.81	7.25	21.56	0.06/0.05
V-2	08/12/2008	55,000	950	230	2,700	6,030	---	---	---	---	---	---	28.81	8.50	20.31	0.53/1.47
V-2	11/26/2008	71,000	1,400	430	3,900	10,400	---	---	---	---	---	---	28.81	9.08	19.73	0.66/1.62
V-2	02/03/2009	81,000	1,100	340	3,700	11,000	---	---	---	---	---	---	28.81	7.78	21.03	0.48/0.15
V-2	06/02/2009	78,000	920	350	3,500	9,200	---	---	---	---	---	---	28.81	6.90	21.91	0.19/0.26
V-2	11/10/2009	66,000	890	310	3,400	7,900	---	---	---	---	---	---	28.81	8.62	20.19	0.44/0.98
V-2	05/10/2010	28,000	490	160	2,200	4,800	---	---	---	---	---	---	28.81	5.63	23.18	0.18/0.28
V-2	09/09/2010	---	---	---	---	---	---	---	---	---	---	---	28.81	8.49	20.32	---
V-2	12/03/2010	31,000	640	210	2,600	4,300	---	---	---	---	---	---	28.81	7.90	20.91	0.86/1.16
V-2	03/02/2011	---	---	---	---	---	---	---	---	---	---	---	28.81	3.95	24.86	---
V-2	05/31/2011	36,000	510	180	3,600	6,700	---	---	---	---	---	---	28.81	6.55	22.26	0.47/0.92
V-2	12/13/2011	51,000	652	129	3,760	5,040	---	---	---	---	---	---	28.81	7.96	20.85	0.60/1.51

Table 3
Groundwater Data
Former Shell Service Station, 2703 Martin Luther King Jr. Way, Oakland, California

Well ID	Date	TPHg (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE 8020 (µg/L)	MTBE 8260 (µg/L)	TBA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	TOC (ft MSL)	Depth to Water (ft TOC)	GW Elevation (ft MSL)	DO (mg/L)
V-2	06/13/2012	44,000	540	150	4,300	5,000	---	---	---	---	---	---	28.81	7.08	21.73	0.91/1.36
V-2	11/19/2012	43,000	530	170	4,100	5,700	---	---	---	---	---	---	28.81	8.73	20.08	0.99/0.82
V-2	05/30/2013	35,000	480	130	3,900	4,000	---	---	---	---	---	---	28.81	7.49	21.32	0.44/1.21
V-2	11/18/2013	45,000	460	140	4,500	4,400	---	---	---	---	---	---	28.81	9.33	19.48	0.19/1.33
V-2	06/06/2014	65,000	420	130	5,400	4,800	---	---	---	---	---	---	28.81	7.40	21.41	0.89/1.13
V-2	12/01/2014	42,000	470	140	3,900	3,600	---	---	---	---	---	---	28.81	9.42	19.39	0.62/0.74
V-2	12/18/2015	34,000	400	99	4,700	2,100	---	---	---	---	---	---	28.81	9.35	19.46	0.82/1.83
V-2	05/16/2016	29,000	210	53	3,600	2,500	---	---	---	---	---	---	28.81	6.27	22.54	0.86/0.82
V-2	12/08/2016	29,000	270	76	4,500	2,200	---	---	---	---	---	---	28.81	6.88	21.93	0.56/0.73
V-2	**05/30/2017**	**20,000**	**170**	**50**	**2,200**	**940**	**---**	**---**	**---**	**---**	**---**	**---**	**28.81**	**6.19**	**22.62**	**0.41/0.59**

Notes: *See following page.*

Table 3
Groundwater Data
Former Shell Service Station, 2703 Martin Luther King Jr. Way, Oakland, California

Notes:

BTEX = Benzene, toluene, ethylbenzene, and total xylenes analyzed by EPA Method 8260B; prior to May 3, 2001, analyzed by EPA Method 8020.
DIPE = Di-isopropyl ether analyzed by EPA Method 8260B
ETBE = Ethyl tertiary-butyl ether analyzed by EPA Method 8260B
MTBE = Methyl tertiary-butyl ether analyzed as noted
TAME = Tertiary-amyl methyl ether analyzed by EPA Method 8260B
TBA = Tertiary-butyl alcohol analyzed by EPA Method 8260B
TPHg = Total petroleum hydrocarbons as gasoline analyzed by EPA Method 8260B; prior to May 3, 2001, analyzed by EPA Method 8015 unless otherwise noted.

--- = Not analyzed or available
µg/L = Micrograms per liter
<X.XX = Not detected at or above reporting limit X.XX
(D) = Duplicate sample
DO = Dissolved oxygen concentrations in mg/L (Pre-purge/Post-purge)
ft = Feet
GW = Groundwater
mg/L = Milligrams per liter
MSL = Mean sea level
TOC = Top of casing elevation, in feet relative to mean sea level

a = Sample analyzed outside of EPA recommended holding time.
b = Hydrocarbon does not match pattern of laboratory's standard.
c = Quantity of unknown hydrocarbon(s) in sample based on gasoline.
d = Samples were switched in the field for wells V-1 and V-2 due to field error. Data corrected for this table.
e = Analyte was detected in the associated Method Blank.
f = Analyzed by EPA Method 8015B (M).
g = Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
h = Concentration reported is due to the presence of discrete peaks of xylenes.
i = Concentration reported is due to the presence of discrete peak of benzene.

Site wells surveyed June 14, 2001 by Virgil Chavez Land Surveying
Site wells surveyed August 13, 2002 by Virgil Chavez Land Surveying
Wells MW-1 through MW-8, V-1, and V-2 surveyed on February 14, 2006 by Virgil Chavez Land Surveying
Wells MW-12 and MW-14 surveyed on April 19, 2006 by Virgil Chavez Land Surveying
Wells MW-9, MW-10, and MW-11 surveyed on August 18, 2010 by Virgil Chavez Land Surveying

Table 4
Historical Soil Analytical Data for TPHg, BTEX, and Fuel Oxygenates
Former Shell Service Station, 2703 Martin Luther King Jr. Way, Oakland, California

Sample ID	Date	Depth (feet)	TPHg (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Total Xylenes (mg/kg)	MTBE (mg/kg)	TBA (mg/kg)	DIPE (mg/kg)	ETBE (mg/kg)	TAME (mg/kg)
TP-1-N	10/11/1994		**18,000** [a,b]	**100**	**870**	**370**	**2,000**	---	---	---	---	---
TP-2-S	10/11/1994		**870** [a,b]	**2.9**	**2.1**	**19**	**21**	---	---	---	---	---
B-1-5	05/23/1995	5.0	**63**	<0.1	<0.1	**0.4**	**0.1**	---	---	---	---	---
B-2-5	05/23/1995	5.0	**260**	**0.6**	<0.1	**4.7**	**10**	---	---	---	---	---
B-3-6	05/23/1995	6.0	**150**	<0.1	<0.1	**0.9**	**0.4**	---	---	---	---	---
B-4-6	05/23/1995	6.0	**55**	<0.1	<0.1	**0.4**	**0.2**	---	---	---	---	---
B-5-8	05/23/1995	8.0	**830**	**1.8**	**9.2**	**12.0**	**33**	---	---	---	---	---
B-6-5	05/23/1995	5.0	**130**	<0.1	<0.1	**1.0**	**1.1**	---	---	---	---	---
B-6-10	05/23/1995	10.0	**390**	**0.3**	<0.1	**7.3**	**27**	---	---	---	---	---
B-7-5	05/23/1995	5.0	<20	<0.1	<0.1	**1.0**	**1.1**	---	---	---	---	---
B-7-10	05/23/1995	10.0	**53**	<0.1	<0.1	**0.2**	**0.3**	---	---	---	---	---
B-8-10	05/23/1995	10.0	<20	<0.1	<0.1	**0.1**	<0.1	---	---	---	---	---
TP-3-W	07/17/1996	11.0	**560**	**3.1**	**4.1**	**11**	**41**	---	---	---	---	---
TP-4-E	07/17/1996	11.0	**2,700**	<3.00	**44**	**36**	**210**	---	---	---	---	---
B-10	07/17/1996	6.0	**1.7**	<0.0050	<0.0050	<0.0050	**0.0058**	<0.025	---	---	---	---
B-11 (MW-1)	07/17/1996	5.0	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	---	---	---	---
B-12 (MW-2)	07/17/1996	5.5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	---	---	---	---
B-13	07/17/1996	5.5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	---	---	---	---
V-2	07/19/1996	5.5	**110**	**0.29**	<0.12	**1.2**	<0.12	**7.7**	---	---	---	---
MW-3-5.0	11/22/2000	5.0	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---
MW-4-10.5	11/22/2000	10.5	**860**	**1.1**	<0.20	**18**	**66**	<0.20	<2.0	---	---	---
MW-5-5.0	11/22/2000	5.0	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---
MW-5-10.5	11/22/2000	10.5	**1,300**	**3.3**	**13**	**26**	**140**	<0.20	<2.0	---	---	---
B-17-5.0	11/22/2000	5.0	**1.3**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---
B-17-7.0	11/22/2000	7.0	**2,100**	**0.31**	**0.64**	**18**	**140**	<0.050	<0.050	---	---	---
B-18-5.0	11/22/2000	5.0	**1.2**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---
B-18-7.0	11/22/2000	7.0	**42**	<0.0050	<0.0050	**0.094**	<0.0050	**0.0070**	<0.050	---	---	---
B-19-5.0	11/22/2000	5.0	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---
B-19-7.0	11/22/2000	7.0	**2.4**	**0.02**	<0.0050	**0.025**	**0.023**	<0.0050	<0.020	---	---	---
B-20-4.5	04/11/2002	4.5	**1.1**	**0.0075**	<0.005	<0.005	<0.005	<0.5	---	---	---	---

Table 4
Historical Soil Analytical Data for TPHg, BTEX, and Fuel Oxygenates
Former Shell Service Station, 2703 Martin Luther King Jr. Way, Oakland, California

Sample ID	Date	Depth (feet)	TPHg (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Total Xylenes (mg/kg)	MTBE (mg/kg)	TBA (mg/kg)	DIPE (mg/kg)	ETBE (mg/kg)	TAME (mg/kg)
B-20-7.5	04/11/2002	7.5	**22**	<0.005	<0.005	**0.14**	**0.027**	<0.5	---	---	---	---
B-21-3.0	04/11/2002	3.0	<1.0	<0.005	<0.005	<0.005	<0.005	<0.5	---	---	---	---
B-21-8.0	04/11/2002	8.0	<1.0	<0.005	<0.005	<0.005	<0.005	<0.5	---	---	---	---
B-22-3.0	04/11/2002	3.0	<1.0	<0.005	<0.005	<0.005	<0.005	<0.5	---	---	---	---
B-22-8.0	04/11/2002	8.0	**380**	**0.17**	**0.27**	**6.1**	**31**	<0.5	---	---	---	---
GP-1-5.0'	08/29/2005	5.0	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
GP-1-10.0'	08/29/2005	10.0	**190** [c]	<0.50	<0.50	<0.50	<0.50	---	---	---	---	---
GP-2-4.5'	08/29/2005	4.5	**1.5**	**0.035**	<0.0050	**0.0063**	<0.0050	---	---	---	---	---
GP-3-5.0'	08/29/2005	5.0	**7.5**	**0.027**	<0.0050	**0.085**	**0.11**	---	---	---	---	---
GP-3-8.5'	08/29/2005	8.5	**3,300**	**15**	**2.7**	**91**	**230**	---	---	---	---	---
GP-4-4.5'	08/31/2005	4.5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
GP-5-4.5'	08/30/2005	4.5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
GP-6-5.0'	08/29/2005	5.0	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
GP-6-9.5'	08/29/2005	9.5	**260**	<0.50	<0.50	**2.1**	**6.8**	---	---	---	---	---
GP-7-5.0'	08/30/2005	5.0	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
GP-7-9.5'	08/30/2005	9.5	**440**	<0.50	**1.8**	**10**	**59**	---	---	---	---	---
GP-8-4.5'	08/30/2005	4.5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
GP-9-4.5'	08/31/2005	4.5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
GP-10-4.5'	08/31/2005	4.5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
MW-6	01/04/2006	5	<4.9 [d,e]	<0.025 [d]	<0.025 [d]	**0.025** [d]	**0.044** [d]	---	---	---	---	---
MW-6	01/04/2006	10	**290**	<1.2 [f]	<1.2 [f]	**3.1** [f]	**3.2** [f]	---	---	---	---	---
MW-6	01/04/2006	15.5	**36**	<0.62 [f]	<0.62 [f]	**0.65** [f]	**2.1** [f]	---	---	---	---	---
MW-6	01/04/2006	19.5	<1.0 [d,e]	**0.0090** [d]	<0.0050 [d]	**0.010** [d]	**0.022** [d]	---	---	---	---	---
MW-7	01/04/2006	5.5	<1.0 [d,e]	<0.0050 [d]	<0.0050 [d]	<0.0050 [d]	**0.013** [d]	---	---	---	---	---
MW-7	01/04/2006	11.5	**7.1** [d,e,g]	<0.025 [d,g]	<0.025 [d,g]	**0.19** [d,g]	**5.2** [d,g]	---	---	---	---	---
MW-7	01/04/2006	16.5	**340**	<1.2 [f]	<1.2 [f]	**7.2** [f]	<1.2 [f]	---	---	---	---	---
MW-7	01/04/2006	19.5	<1.0 [d,e]	<0.0050 [d]	<0.0050 [d]	<0.0050 [d]	**0.010** [d]	---	---	---	---	---
MW-8	01/03/2006	6.5	<1.0 [d,e]	<0.0050 [d]	<0.0050 [d]	<0.0050 [d]	<0.0050 [d]	---	---	---	---	---
MW-8	01/03/2006	10.5	**880**	<6.2 [f]	<6.2 [f]	**15** [f]	**72** [f]	---	---	---	---	---
MW-8	01/03/2006	19.5	**19**	**0.63** [f]	<0.62 [f]	<0.62 [f]	**0.80** [f]	---	---	---	---	---

Table 4
Historical Soil Analytical Data for TPHg, BTEX, and Fuel Oxygenates
Former Shell Service Station, 2703 Martin Luther King Jr. Way, Oakland, California

Sample ID	Date	Depth (feet)	TPHg (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Total Xylenes (mg/kg)	MTBE (mg/kg)	TBA (mg/kg)	DIPE (mg/kg)	ETBE (mg/kg)	TAME (mg/kg)
B-23	01/03/2006	5	<1.0 [d,e]	<0.0050 [d]	<0.0050 [d]	<0.0050 [d]	<0.0050 [d]	---	---	---	---	---
B-23	01/03/2006	10	**520**	<6.2 [f]	<6.2 [f]	**12** [f]	**62** [f]	---	---	---	---	---
B-23	01/03/2006	15.5	**3,800**	**33** [f]	**50** [f]	**98** [f]	**480** [f]	---	---	---	---	---
B-23	01/03/2006	19.5	**350**	**1.6** [f]	**1.9** [f]	**15** [f]	**35** [f]	---	---	---	---	---
MW-12-5	02/28/2006	5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
MW-12-10	02/28/2006	10	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
MW-12-15	02/28/2006	15	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
MW-12-19.5	02/28/2006	19.5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
MW-14-5	02/28/2006	5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
MW-14-10	02/28/2006	10	**32**	**0.0083**	<0.0050	**0.028**	**0.0055**	<0.0050	<0.025	---	---	---
MW-14-14	02/28/2006	14	**970**	**2.3**	**0.18**	**19**	**27**	<0.15	<0.70	---	---	---
CPT-6-17	05/17/2007	17	<0.50	**0.0020**	**0.0032**	<0.0050	**0.0019**	---	---	---	---	---
VP-7-4.5	06/06/2007	4.5	<0.50	<0.0050	<0.0050	<0.0050	<0.010	---	---	---	---	---
VP-8-4.5	05/29/2007	4.5	<0.50	**0.00096**	**0.00084**	**0.00084**	**0.0015**	---	---	---	---	---
VP-9-4.5	07/23/2008	4.5	<0.50	<0.0050	<0.0050	<0.0050	<0.010	<0.0050	<0.050	<0.010	<0.010	<0.010
MW-9@5 fbg	08/10/2010	5	<0.50	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
MW-9@9.5 fbg	08/10/2010	9.5	<0.50	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
MW-9@14.5 fbg	08/10/2010	14.5	**100**	<0.50	<0.50	**0.62**	<0.50	---	---	---	---	---
MW-9@19.5 fbg	08/10/2010	19.5	<0.50	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
MW-10@5 fbg	08/10/2010	5	<0.50	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
MW-10@9.5 fbg	08/10/2010	9.5	<0.50	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
MW-10@14.5 fbg	08/10/2010	14.5	**1,200**	<2.5	<2.5	**19**	**34**	---	---	---	---	---
MW-10@19.5 fbg	08/10/2010	19.5	<0.50	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
MW-11@5 fbg	08/10/2010	5	<0.50	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
MW-11@9.5 fbg	08/10/2010	9.5	<0.50	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
MW-11@14.5 fbg	08/10/2010	14.5	<0.50	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
MW-11@19.5 fbg	08/10/2010	19.5	<0.50	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
B-24-5	12/20/2010	5	<0.50	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
B-24-10	12/20/2010	10	**550**	<0.50	<0.50	**3.6**	**22**	---	---	---	---	---
B-24-15	12/20/2010	15	**380**	**1.6**	<0.50	**5.0**	**20**	---	---	---	---	---

Table 4
Historical Soil Analytical Data for TPHg, BTEX, and Fuel Oxygenates
Former Shell Service Station, 2703 Martin Luther King Jr. Way, Oakland, California

Sample ID	Date	Depth (feet)	TPHg (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Total Xylenes (mg/kg)	MTBE (mg/kg)	TBA (mg/kg)	DIPE (mg/kg)	ETBE (mg/kg)	TAME (mg/kg)
B-24-19.5	12/20/2010	19.5	<0.50	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
B-25-5	12/23/2010	5	**1.9**	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
B-25-10	12/23/2010	10	**730**	<2.5	<2.5	**12**	**51**	---	---	---	---	---
B-25-15	12/23/2010	15	**290**	**2.2**	<0.50	**5.0**	**7.3**	---	---	---	---	---
B-25-19.5	12/23/2010	19.5	<0.50	<0.0050	<0.0050	<0.0050	**0.016**	---	---	---	---	---
B-26-5	12/20/2010	5	<0.50	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
B-26-10	12/20/2010	10	**1,100**	**3.0**	<0.50	**21**	**110**	---	---	---	---	---
B-26-15	12/20/2010	15	**660**	**5.4**	<0.50	**12**	**32**	---	---	---	---	---
B-26-19.5	12/20/2010	19.5	<0.50	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
B-27-5	12/20/2010	5	<0.50	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
B-27-10	12/20/2010	10	**1,600**	**9.9**	**10**	**28**	**140**	---	---	---	---	---
B-27-15	12/20/2010	15	**490**	**3.5**	**0.62**	**15**	**40**	---	---	---	---	---
B-27-19.5	12/20/2010	19.5	<0.50	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
B-28-5	12/20/2010	5	<0.50	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
B-28-10	12/20/2010	10	**460**	**2.0**	<0.50	**7.4**	**37**	---	---	---	---	---
B-28-15	12/20/2010	15	**57**	**2.6**	**5.4**	**11**	**58**	---	---	---	---	---
B-28-19.5	12/20/2010	19.5	<0.50	<0.0050	<0.0050	<0.0050	**0.012**	---	---	---	---	---
B-29-5	12/20/2010	5	<0.50	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
B-29-10	12/20/2010	10	<0.50	**0.010**	<0.0050	**0.015**	**0.012**	---	---	---	---	---
B-29-15	12/20/2010	15	**97**	**1.3**	<0.50	**1.7**	**7.2**	---	---	---	---	---
B-29-19.5	12/20/2010	19.5	<0.50	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
B-30-5	12/23/2010	5	<50	**0.064**	<0.0050	**0.015**	**0.0087**	---	---	---	---	---
B-30-10	12/23/2010	10	**2,300**	**6.1**	**3.0**	**44**	**240**	---	---	---	---	---
B-30-15	12/23/2010	15	<50	**0.094**	**0.0056**	**0.055**	**0.11**	---	---	---	---	---
B-30-19.5	12/23/2010	19.5	**0.51**	<0.0050	<0.0050	**0.012**	**0.044**	---	---	---	---	---
B-31-5	12/22/2010	5	<0.50	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
B-31-10	12/22/2010	10	**2,300**	<0.50	<0.50	**0.77**	**0.62**	---	---	---	---	---
B-31-12	12/22/2010	12	**28,000**	<50	**89**	**510**	**2,600**	---	---	---	---	---
B-31-15	12/22/2010	15	**190**	<0.50	<0.50	**2.0**	**3.5**	---	---	---	---	---
B-31-19.5	12/22/2010	19.5	**3.2**	**0.039**	<0.0050	**0.024**	**0.0058**	---	---	---	---	---

Table 4
Historical Soil Analytical Data for TPHg, BTEX, and Fuel Oxygenates
Former Shell Service Station, 2703 Martin Luther King Jr. Way, Oakland, California

Sample ID	Date	Depth (feet)	TPHg (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Total Xylenes (mg/kg)	MTBE (mg/kg)	TBA (mg/kg)	DIPE (mg/kg)	ETBE (mg/kg)	TAME (mg/kg)
B-32-5	12/22/2010	5	**130**	<0.50	<0.50	<0.50	<0.50	---	---	---	---	---
B-32-7	12/22/2010	7	**220**	<0.50	<0.50	<0.50	<0.50	---	---	---	---	---
B-32-10	12/22/2010	10	**1,800**	<2.5	<2.5	**4.1**	<2.5	---	---	---	---	---
B-32-12	12/22/2010	12	<50	**0.011**	<0.0050	**0.017**	**0.17**	---	---	---	---	---
B-32-15	12/22/2010	15	**260**	<2.5	<2.5	**5.4**	**3.5**	---	---	---	---	---
B-32-19.5	12/22/2010	19.5	**0.54**	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
B-33-5	12/22/2010	5	**60**	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
B-33-10	12/22/2010	10	**1,800**	**2.8**	<2.5	**36**	**140**	---	---	---	---	---
B-33-15	12/22/2010	15	**240**	**2.2**	<0.50	**4.3**	**5.7**	---	---	---	---	---
B-33-19.5	12/22/2010	19.5	**0.95**	**0.014**	<0.0050	<0.0050	<0.0050	---	---	---	---	---
B-34-5	12/22/2010	5	<0.50	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
B-34-10	12/22/2010	10	**290**	<0.50	<0.50	**1.7**	<0.50	---	---	---	---	---
B-34-15	12/22/2010	15	**170**	**0.91**	<0.50	**3.5**	**4.3**	---	---	---	---	---
B-34-19.5	12/22/2010	19.5	**160**	<0.50	<0.50	<0.50	<0.50	---	---	---	---	---
B-35-5	12/22/2010	5	<0.50	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
B-35-10	12/22/2010	10	**300**	<0.50	<0.50	**4.3**	**2.6**	---	---	---	---	---
B-35-15	12/22/2010	15	<50	**0.93**	<0.50	**0.75**	**0.92**	---	---	---	---	---
B-35-19.5	12/22/2010	19.5	<0.50	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
B-36-5	12/22/2010	5	<0.50	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
B-36-10	12/22/2010	10	**230**	<0.50	<0.50	**4.2**	**5.0**	---	---	---	---	---
B-36-15	12/22/2010	15	**290**	**2.5**	<0.50	**5.8**	**7.7**	---	---	---	---	---
B-36-19.5	12/22/2010	19.5	**2.2**	<0.50	<0.0050	**0.016**	<0.0050	---	---	---	---	---
B-37-5	12/22/2010	5	<50	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
B-37-10	12/22/2010	10	**1,500** [a]	<2.5	<2.5	**30**	**87**	---	---	---	---	---
B-37-15	12/22/2010	15	**67**	**0.64**	<0.50	**1.5**	**2.1**	---	---	---	---	---
B-37-19.5	12/22/2010	19.5	**70**	**0.92**	<0.50	**2.0**	**1.1**	---	---	---	---	---
B-38-5	12/21/2010	5	**1.2**	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
B-38-8.5	12/21/2010	8.2	<50	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
B-38-10	12/21/2010	10	**980**	<2.5	<2.5	<2.5	<2.5	---	---	---	---	---
B-38-15	12/21/2010	15	<50	**0.10**	<0.0050	**1.1**	**0.070**	---	---	---	---	---

Table 4
Historical Soil Analytical Data for TPHg, BTEX, and Fuel Oxygenates
Former Shell Service Station, 2703 Martin Luther King Jr. Way, Oakland, California

Sample ID	Date	Depth (feet)	TPHg (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Total Xylenes (mg/kg)	MTBE (mg/kg)	TBA (mg/kg)	DIPE (mg/kg)	ETBE (mg/kg)	TAME (mg/kg)
B-38-19.5	12/21/2010	19.5	**0.93**	<0.0050	<0.0050	**0.0082**	**0.0065**	---	---	---	---	---
B-39-5	12/21/2010	5	**140**	<0.50	<0.50	<0.50	<0.50	---	---	---	---	---
B-39-8.5	12/21/2010	8.5	**140**	<0.50	<0.50	<0.50	<0.50	---	---	---	---	---
B-39-10	12/21/2010	10	**2,600**	**2.5**	<2.5	**30**	**67**	---	---	---	---	---
B-39-15	12/21/2010	15	**190**	<0.50	<0.50	**1.6**	**0.63**	---	---	---	---	---
B-39-19.5	12/21/2010	19.5	<0.50	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
B-40-5	12/21/2010	5	**68**	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
B-40-10	12/21/2010	10	**4,200**	<10	**63**	**65**	**430**	---	---	---	---	---
B-40-12.5	12/21/2010	12.5	**470**	<2.5	<2.5	**6.6**	**38**	---	---	---	---	---
B-40-15	12/21/2010	15	**200**	**0.74**	<0.50	**2.2**	**2.7**	---	---	---	---	---
B-40-19.5	12/21/2010	19.5	<0.50	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
B-41-5	12/20/2010	5	**470**	<0.50	<0.50	<0.50	<0.50	---	---	---	---	---
B-41-8.5	12/20/2010	8.5	**7,200**	<10	<10	**68**	**56**	---	---	---	---	---
B-41-10	12/20/2010	10	**4,500**	<10	<10	**68**	**290**	---	---	---	---	---
B-41-15	12/20/2010	15	<0.50	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
B-41-19.5	12/20/2010	19.5	<0.50	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
B-42-5	12/20/2010	5	**3,000**	<5.0	<5.0	**5.5**	<5.0	---	---	---	---	---
B-42-10	12/20/2010	10	**17,000**	**72**	**320**	**270**	**1,400**	---	---	---	---	---
B-42-15	12/20/2010	15	**0.95**	<0.0050	**0.019**	**0.0097**	**0.055**	---	---	---	---	---
B-42-19.5	12/20/2010	19.5	<0.50	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
B-43-5	12/21/2010	5	**170**	<0.50	<0.50	<0.50	<0.50	---	---	---	---	---
B-43-10	12/21/2010	10	**1,300**	<2.5	<2.5	**21**	**7.3**	---	---	---	---	---
B-43-15	12/21/2010	15	**1.0**	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
B-43-19.5	12/21/2010	19.5	<0.50	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
B-44-5	12/21/2010	5	**1.3**	**0.0088**	<0.0050	<0.0050	<0.0050	---	---	---	---	---
B-44-10	12/21/2010	10	**570**	<2.5	<2.5	**13**	<2.5	---	---	---	---	---
B-44-15	12/21/2010	15	<0.50	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
B-44-19.5	12/21/2010	19.5	<0.50	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
B-45-5	12/21/2010	5	**1.2**	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
B-45-10	12/21/2010	10	**200**	<0.50	<0.50	<0.50	<0.50	---	---	---	---	---

Table 4
Historical Soil Analytical Data for TPHg, BTEX, and Fuel Oxygenates
Former Shell Service Station, 2703 Martin Luther King Jr. Way, Oakland, California

Sample ID	Date	Depth (feet)	TPHg (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Total Xylenes (mg/kg)	MTBE (mg/kg)	TBA (mg/kg)	DIPE (mg/kg)	ETBE (mg/kg)	TAME (mg/kg)
B-45-15	12/21/2010	15	<0.50	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
B-45-19.5	12/21/2010	19.5	<0.50	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
B-46-5	12/21/2010	5	<50	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
B-46-8.5	12/21/2010	8.5	**210**	<0.50	<0.50	<0.50	<0.50	---	---	---	---	---
B-46-10	12/21/2010	10	**1,000**	<2.5	<2.5	<2.5	**5.8**	---	---	---	---	---
B-46-15	12/21/2010	15	<0.50	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
B-46-19.5	12/21/2010	19.5	<0.50	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
B-47-5	12/21/2010	5	<0.50	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
B-47-10	12/21/2010	10	**130**	<0.50	<0.50	<0.50	<0.50	---	---	---	---	---
B-47-15	12/21/2010	15	<0.50	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
B-47-19.5	12/21/2010	19.5	<0.50	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
B-48-5	12/21/2010	5	**1**	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
B-48-10	12/21/2010	10	**74**	<0.50	<0.50	<0.50	<0.50	---	---	---	---	---
B-48-15	12/21/2010	15	<0.50	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
B-48-19.5	12/21/2010	19.5	<0.50	<0.0050	<0.0050	<0.0050	<0.0050	---	---	---	---	---
MW-13	03/24/2015	5	<0.099	<0.00099	<0.00099	<0.00099	<0.0020	---	---	---	---	---
MW-13	03/24/2015	10	<0.099	<0.00099	<0.00099	<0.00099	<0.0020	---	---	---	---	---
MW-13	03/24/2015	15	**18**	**0.011**	<0.0049	**0.0049**	<0.0097	---	---	---	---	---
MW-13	03/24/2015	19.5	<0.10	<0.0010	<0.0010	<0.0010	<0.0020	---	---	---	---	---

Notes: *See following page.*

Table 4
Historical Soil Analytical Data for TPHg, BTEX, and Fuel Oxygenates
Former Shell Service Station, 2703 Martin Luther King Jr. Way, Oakland, California

Notes:

Detected concentrations shown in **bold**

= soil sample location that was subsequently excavated; results are not representative of residual soil.

TPHg = Total petroleum hydrocarbons as gasoline analyzed by EPA Method 8260; before August 10, 2010 by EPA Method 8015 unless otherwise noted.

Benzene, toluene, ethylbenzene, and total xylenes analyzed by EPA Method 8260B; before November 22, 2000 analyzed by EPA Method 8020 unless otherwise noted.

MTBE = Methyl tertiary-butyl ether analyzed by EPA Method 8260B

TBA = Tertiary-butyl alcohol analyzed by EPA Method 8260B

DIPE = Di-isopropyl ether analyzed by EPA Method 8260B

ETBE = Ethyl tertiary-butyl ether analyzed by EPA Method 8260B

TAME = Tertiary-amyl methyl ether analyzed by EPA Method 8260B

--- = Not analyzed

<x = Not detected at or above reporting limit x

mg/kg = Milligrams per kilogram

a = Heavier gasoline range compounds are significant (aged gasoline?).

b = Gasoline range compounds are significant; no recognizable pattern.

c = Quantity of unknown hydrocarbon(s) in sample based on gasoline.

d = Extracted out of hold time

e = Analyzed by EPA Method 8260

f = Analyzed by EPA Method 8021

g = Internal standard out of range.

Table 5
Historical Soil Vapor Analytical Data
Former Shell Service Station, 2703 Martin Luther King Jr. Way, Oakland, California

Sample ID	Date	Depth (feet)	TPHg ($\mu g/m^3$)	Benzene ($\mu g/m^3$)	Toluene ($\mu g/m^3$)	Ethyl-benzene ($\mu g/m^3$)	Total Xylenes ($\mu g/m^3$)	Naph-thalene ($\mu g/m^3$)	Isobutane ($\mu g/m^3$)	Butane ($\mu g/m^3$)	Propane ($\mu g/m^3$)	Methane (%v)	Carbon Dioxide (%v)	Oxygen & Argon (%v)	Helium (%v)
VP-1-3	05/30/2007	3	**5,500,000**	<510	**690**	<690	<2,090	---	---	---	---	---	---	---	---
VP-1-5	05/30/2007	5	Unable to sample; water in probe												
VP-2-3	05/30/2007	3	Unable to sample; water in probe												
VP-2-3	04/16/2015	3	Unable to sample; water in probe												
VP-2-5	05/30/2007	5	Unable to sample; water in probe												
VP-2-5	04/16/2015	5	Unable to sample; water in probe												
VP-3-3	05/30/2007	3	Unable to sample; water in probe												
VP-3-3	04/16/2015	3	Unable to sample; water in probe												
VP-3-3	08/27/2015	3	**41,000**	**50**	<19	**22**	<22	<52	---	---	---	<0.500	**3.90**	**18.6**	**0.106**
VP-3-5	05/30/2007	5	**31,000,000**	**760**	<75	<86	<256	---	---	---	---	---	---	---	---
VP-3-5	04/16/2015	5	**800,000,000**	<16,000	<19,000	<22,000	<22,000	<52,000	---	---	---	**34.7**	**6.75**	**2.21**	<0.0100
VP-3-5	08/27/2015	5	**270,000,000**	<16,000	<19,000	<22,000	<22,000	<52,000	---	---	---	**21.5**	**5.80**	**11.1**	**0.0265**
VP-4-3	05/30/2007	3	**800,000**	<79	**240**	<110	<320	---	---	---	---	---	---	---	---
VP-4-5	05/30/2007	5	**680,000**	<66	**170**	<90	<270	---	---	---	---	---	---	---	---
VP-5-3	05/30/2007	3	Unable to sample; water in probe												
VP-5-5	05/30/2007	5	Unable to sample; water in probe												
VP-6-3	05/30/2007	3	**3,500,000**	**110**	**320**	<55	**160**	---	---	---	---	---	---	---	---
VP-6-3	04/17/2008	3	<17,000	<2.3	<2.8	<3.2	<9.6	---	ND	ND	ND	---	---	---	---
VP-6-3	03/31/2009	3	Unable to sample; water in probe												
VP-6-3'	11/19/2009	3	---	<1.6	<19	<2.2	<8.7	---	---	---	---	---	---	---	<0.0100

Table 5
Historical Soil Vapor Analytical Data
Former Shell Service Station, 2703 Martin Luther King Jr. Way, Oakland, California

Sample ID	Date	Depth (feet)	TPHg ($\mu g/m^3$)	Benzene ($\mu g/m^3$)	Toluene ($\mu g/m^3$)	Ethyl-benzene ($\mu g/m^3$)	Total Xylenes ($\mu g/m^3$)	Naph-thalene ($\mu g/m^3$)	Isobutane ($\mu g/m^3$)	Butane ($\mu g/m^3$)	Propane ($\mu g/m^3$)	Methane (%v)	Carbon Dioxide (%v)	Oxygen & Argon (%v)	Helium (%v)
VP-6-5	05/30/2007	5	**1,900,000**	<100	**410**	<140	<420	---	---	---	---	---	---	---	---
VP-6-5	04/17/2008	5	**14,000,000**	**3.6**	<2.6	<3.0	<9.0	---	**66.8**	ND	ND	---	---	---	---
Ambient (near VP-6)	05/30/2007		<19,000	**16**	**16**	<3.1	<9.2	---	---	---	---	---	---	---	---
VP-6-5	03/31/2009	5	Unable to sample; water in probe												
VP-6-5'	11/19/2009	5	---	<1.6	<19	<2.2	<8.7	---	---	---	---	---	---	---	<0.0100
VP-7-3	06/12/2007	3	<21,000	**23**	**7,000**	**110**	**241**	---	---	---	---	---	---	---	---
VP-7-3	10/30/2007	3	<19,000	<2.7	**9.6**	<3.6	<17.6	---	**657.3**	**16.6**	ND	---	---	---	---
VP-7-3	01/18/2008	3	**23,000**	**4.3**	**23**	**3.4**	**13.8**	---	ND	ND	ND	---	---	---	---
VP-7-3	04/17/2008	3	<16,000	<2.2	**6.1**	<3.0	<9.1	---	**648.95**	ND	ND	---	---	---	---
VP-7-3-DUP	04/17/2008	3	<16,000	<2.2	**7.1**	<3.0	<9.0	---	**144.53**	ND	ND	---	---	---	---
VP-7-3	07/24/2008	3	<19,000	<2.7	**51**	<3.6	<10.8	---	**601.17**	**10.93**	ND	---	---	---	---
Ambient (near VP-7)	07/24/2008		<16,000	<2.3	<2.7	<3.1	<9.2	---	ND	ND	ND	---	---	---	---
VP-7-3	03/31/2009	3	Unable to sample; water in probe												
VP-7-3'	11/19/2009	3	---	**2.8**	**31**	**3.8**	**18**	---	---	---	---	---	---	---	**0.0100**
VP-7-3'	07/07/2017	3	**260**	<3.7	<4.4	<5.0	<10	<12	---	---	---	<0.00023	**1.3**	**20**	<0.12
VP-7-5	06/12/2007	5	<21,000	**23**	**2,100**	**110**	**230**	---	---	---	---	---	---	---	---
VP-7-5	10/30/2007	5	<18,000	<2.5	**15**	<3.4	<16.4	---	**402.4**	ND	ND	---	---	---	---
VP-7-5	01/18/2008	5	<20,000	<2.8	**7.9**	<3.8	<11.3	---	**105.5**	ND	ND	---	---	---	---
VP-7-5-DUP	01/18/2008	5	<19,000	<2.6	**7.6**	<3.6	<10.8	---	**66.6**	ND	ND	---	---	---	---
VP-7-5	04/17/2008	5	<15,000	<2.2	**7.8**	<2.9	<8.8	---	**220.83**	**25.2**	ND	---	---	---	---
VP-7-5	07/24/2008	5	Unable to sample; water in probe												
VP-7-5	03/31/2009	5	Unable to sample; water in probe												
VP-7-5'	11/19/2009	5	---	<1.6	<19	<2.2	<8.7	---	---	---	---	---	---	---	<0.0100
VP-7-5'	07/07/2017	5	Unable to sample; water in probe												
VP-8-3	06/12/2007	3	<23,000	**20**	**9,300**	**120**	**267**	---	---	---	---	---	---	---	---
VP-8-3	10/30/2007	3	<24,000	<3.4	**34**	<4.6	<22.6	---	**395.1**	**7.8**	ND	---	---	---	---
VP-8-3-DUP	10/30/2007	3	<18,000	<2.6	**6.5**	<3.5	<17.5	---	**366.6**	ND	ND	---	---	---	---
VP-8-3	01/18/2008	3	<18,000	<2.6	**7.2**	<3.5	<10.4	---	**128.6**	ND	ND	---	---	---	---
VP-8-3	04/17/2008	3	<16,000	<2.3	**7.1**	<3.1	<9.3	---	**666.54**	**57.29**	ND	---	---	---	---

Table 5
Historical Soil Vapor Analytical Data
Former Shell Service Station, 2703 Martin Luther King Jr. Way, Oakland, California

Sample ID	Date	Depth (feet)	TPHg ($\mu g/m^3$)	Benzene ($\mu g/m^3$)	Toluene ($\mu g/m^3$)	Ethyl-benzene ($\mu g/m^3$)	Total Xylenes ($\mu g/m^3$)	Naph-thalene ($\mu g/m^3$)	Isobutane ($\mu g/m^3$)	Butane ($\mu g/m^3$)	Propane ($\mu g/m^3$)	Methane (%v)	Carbon Dioxide (%v)	Oxygen & Argon (%v)	Helium (%v)
VP-8-3	07/24/2008	3	<18,000	<2.5	**290**	**14**	**38**	---	ND	ND	ND	---	---	---	---
VP-8-3-DUP	07/24/2008	3	<19,000	<2.6	**210**	**11**	**28.9**	---	**6.42**	ND	ND	---	---	---	---
VP-8-3'	03/31/2009	3	<9,100	<2.5	**5.2**	<3.5	<14	---	<19	<19	<43	---	---	---	---
VP-8-3' DUP	03/31/2009	3	<8,100	<2.3	<2.7	<3.1	<12	---	<17	<17	<38	---	---	---	---
Ambient (near VP-8)	03/31/2009		<13,000	<3.7	**17**	<5.0	<20	---	<27	<27	<62	---	---	---	---
VP-8-3'	11/19/2009	3	---	<1.6	<19	<2.2	<8.7	---	---	---	---	---	---	---	<0.0100
VP-8-5	06/12/2007	5	<22,000	**33**	**11,000**	**120**	**278**	---	---	---	---	---	---	---	---
VP-8-5	10/30/2007	5	<19,000	<2.6	**8.5**	<3.6	<17.6	---	**468.3**	**5.9**	ND	---	---	---	---
VP-8-5	01/18/2008	5	<19,000	<2.6	**5.7**	<3.5	<10.5	---	ND	ND	ND	---	---	---	---
VP-8-5	04/17/2008	5	<17,000	**11**	<1.9	<3.2	<9.6	---	**59.43**	**9.98**	ND	---	---	---	---
VP-8-5	07/24/2008	5	<17,000	<2.4	**630**	**29**	**76**	---	**10.22**	**7.84**	ND	---	---	---	---
VP-8-5	03/31/2009	5	Unable to sample; water in probe												
VP-8-5'	11/19/2009	5	---	<1.6	<19	<2.2	<8.7	---	---	---	---	---	---	---	<0.0100
VP-9-5	08/08/2008	5	**280**	<3.9	**17**	<5.2	<10.4	---	ND	ND	ND	---	---	---	---
Ambient (near VP-9)	08/08/2008		**280**	<3.2	<3.8	<4.4	<8.8	---	ND	ND	ND	---	---	---	---
VP-9-5	12/31/2008	5	Unable to sample; water in probe												
VP-9-5	03/31/2009	5	Unable to sample; water in probe												
VP-9-5'	11/19/2009	5	---	<1.6	<19	<2.2	<8.7	---	---	---	---	---	---	---	<0.0100
VP-10	09/01/2010	5	<5,700	<19	**35**	<26	<52	---	---	---	---	<0.500	**5.02**	**8.96**	<0.0100
VP-12-3	04/16/2015	3	**81,000**	<16	<19	<22	<22	<52	---	---	---	<0.500	**3.40**	**18.4**	<0.0100
VP-12-3	08/27/2015	3	**180,000**	<16	<19	<22	<22	<52	---	---	---	<0.500	**3.02**	**20.3**	**0.0284**
VP-12-5	04/16/2015	5	**130,000**	<16	<19	<22	<22	<52	---	---	---	<0.500	**1.33**	**13.7**	<0.0100
VP-12-5	08/27/2015	5	**210,000**	<16	<19	<22	<22	<52	---	---	---	<0.500	**3.75**	**19.8**	<0.0100
VP-13-3	04/16/2015	3	**320,000**	**770**	<190	<220	<220	<520	---	---	---	<0.500	**1.09**	**21.0**	**0.299**
VP-13-3	08/27/2015	3	**540,000**	<16	<19	<22	<22	<52	---	---	---	<0.500	**1.49**	**21.6**	<0.0100
VP-13-3	05/19/2017	3	<220	<3.5	<4.1	<4.8	<9.6	<11	---	---	---	<0.00022	**3.7**	**16**	<0.11

Table 5
Historical Soil Vapor Analytical Data
Former Shell Service Station, 2703 Martin Luther King Jr. Way, Oakland, California

Sample ID	Date	Depth (feet)	TPHg ($\mu g/m^3$)	Benzene ($\mu g/m^3$)	Toluene ($\mu g/m^3$)	Ethyl-benzene ($\mu g/m^3$)	Total Xylenes ($\mu g/m^3$)	Naph-thalene ($\mu g/m^3$)	Isobutane ($\mu g/m^3$)	Butane ($\mu g/m^3$)	Propane ($\mu g/m^3$)	Methane (%v)	Carbon Dioxide (%v)	Oxygen & Argon (%v)	Helium (%v)
VP-13-5	04/16/2015	5	**35,000**	<16	<19	<22	<22	<52	---	---	---	<0.500	**1.38**	**18.1**	<0.0100
VP-13-5	08/27/2015	5	**140,000**	<16	<19	<22	<22	<52	---	---	---	<0.500	**0.735**	**22.2**	**0.185**
VP-13-5	05/19/2017	5	<220	<3.4	<4.0	<4.6	<9.2	<11	---	---	---	<0.00021	**3.9**	**16**	<0.11
VP-14-3	04/16/2015	3	**290,000,000**	**240,000**	<19,000	<22,000	<22,000	<52,000	---	---	---	**11.3**	**9.97**	**2.49**	<0.0100
VP-14-3	08/27/2015	3	**250,000,000**	**190,000**	<24,000	<27,000	<27,000	<66,000	---	---	---	**7.75**	**12.4**	**3.15**	**0.0144**
VP-14-5	04/16/2015	5	**270,000,000**	**690,000**	<19,000	**94,000**	<22,000	<52,000	---	---	---	**11.8**	**8.11**	**5.50**	**0.0631**
VP-14-5	08/27/2015	5	**330,000,000**	**280,000**	<30,000	**48,000**	<35,000	<84,000	---	---	---	**14.4**	**12.6**	**3.60**	**0.275**

Notes:

Detected concentrations shown in **bold**

TPHg = Total petroleum hydrocarbons as gasoline, analyzed by Modified EPA Method TO-3M GC/FID.

Benzene, toluene, ethylbenzene, and xylenes by EPA Method 8260B (M); prior to September 1, 2010 analyzed by Modified EPA Method TO-15

Naphthalene analyzed by EPA 8260B (M)

Methane, carbon dioxide, and oxygen and argon analyzed by ASTM Method D-1946

Helium analyzed by ASTM Method D-1946 (M)

--- = Not analyzed

$\mu g/m^3$ = Micrograms per cubic meter.

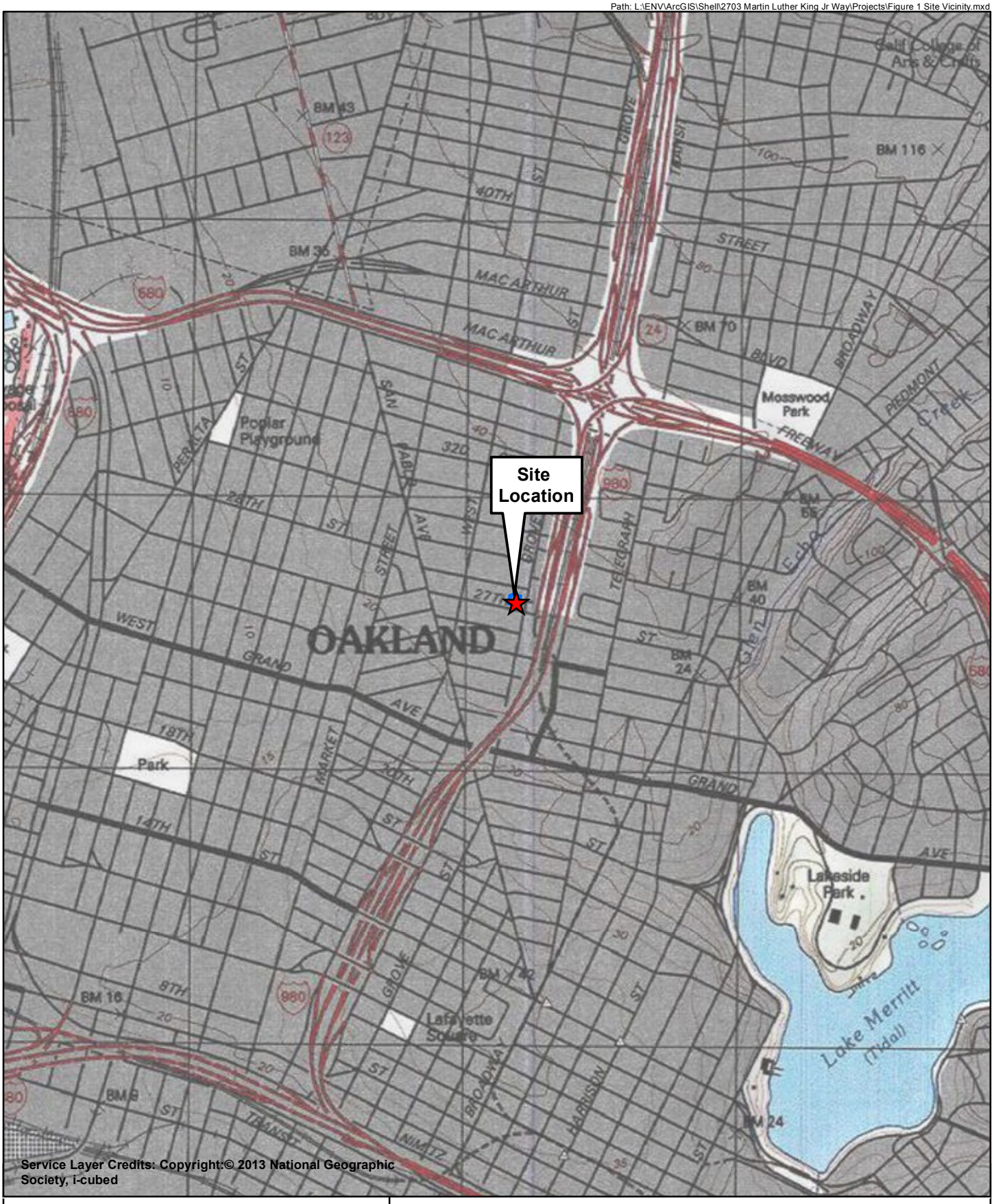
%v = Percent by volume

<x = Not detected at or above reporting limit x

ND = Not detected; see laboratory report for specific detection limits

Figures

Path: L:\ENV\ArcGIS\Shell\2703 Martin Luther King Jr Way\Projects\Figure 1 Site Vicinity.mxd



N

0 2,000 4,000

Feet

Figure 1
Site Vicinity Map

AECOM

Former Shell Service Station
2703 Martin Luther King Jr. Way, Oakland, California

L:\ENV\ARCGIS\SHELL\2703 MARTIN LUTHER KING JR WAY\PROJECTS\CSM\FIGURE 2 SITE PLAN UPDATED.DWG - 15 Aug 2017

Figure 2
Site Plan

Former Shell Service Station
AECOM **2703 Martin Luther King Jr. Way, Oakland, California**

EXPLANATION

- Soil boring or sample location
- Utility lines
- 1996 Excavation
- 2013 Excavation

*1995 borings - naming convention, B-#, was used again in 2013.

HA-21, HA-20, HA-22, HA-19, HA-24, HA-23, HA-13, HA-11, HA-14, HA-12, HA-10, HA-9, N-1, N-2, HA-3, N-3, HA-15, HA-17, HA-4, B-3, HA-2, HA-1, OX-1, B-5, B-1, W-2, OX-2, S-3, HA-7, HA-8, HA-16, HA-18, HA-5, B-4, S-2, W-1, B-24, B-22, B-2, HA-6, OX-3, S-1, GP-6, GP-7, B-21, Auto Tech West Building, GP-5, B-25, Former Vent Lines, B-26, GP-8, B-23, B-13, B-27, B-5*, GP-9, Former UST Excavation, GP-10, B-8, Former Dispenser Island, CPT-3, B-28, B-30, TP1-N, B-29, B-33, B-34, B-6, TP3-W, B-17, B-31, TP4-E, B-32, B-40, B-9, B-35, B-20, GP-4, B-1*, B-3*, B-19, B-36, CPT-2, B-41, CPT-4, TP2-S, CPT-5, B-7, B-37, B-38, B-39, Former Dispensers, B-18, GP-3, B-42, B-43, B-44, B-46, GP-2, B-2*, B-4*, CPT-1, B-48, B-45, B-47, B-10, GP-1, Former Dispensers

N

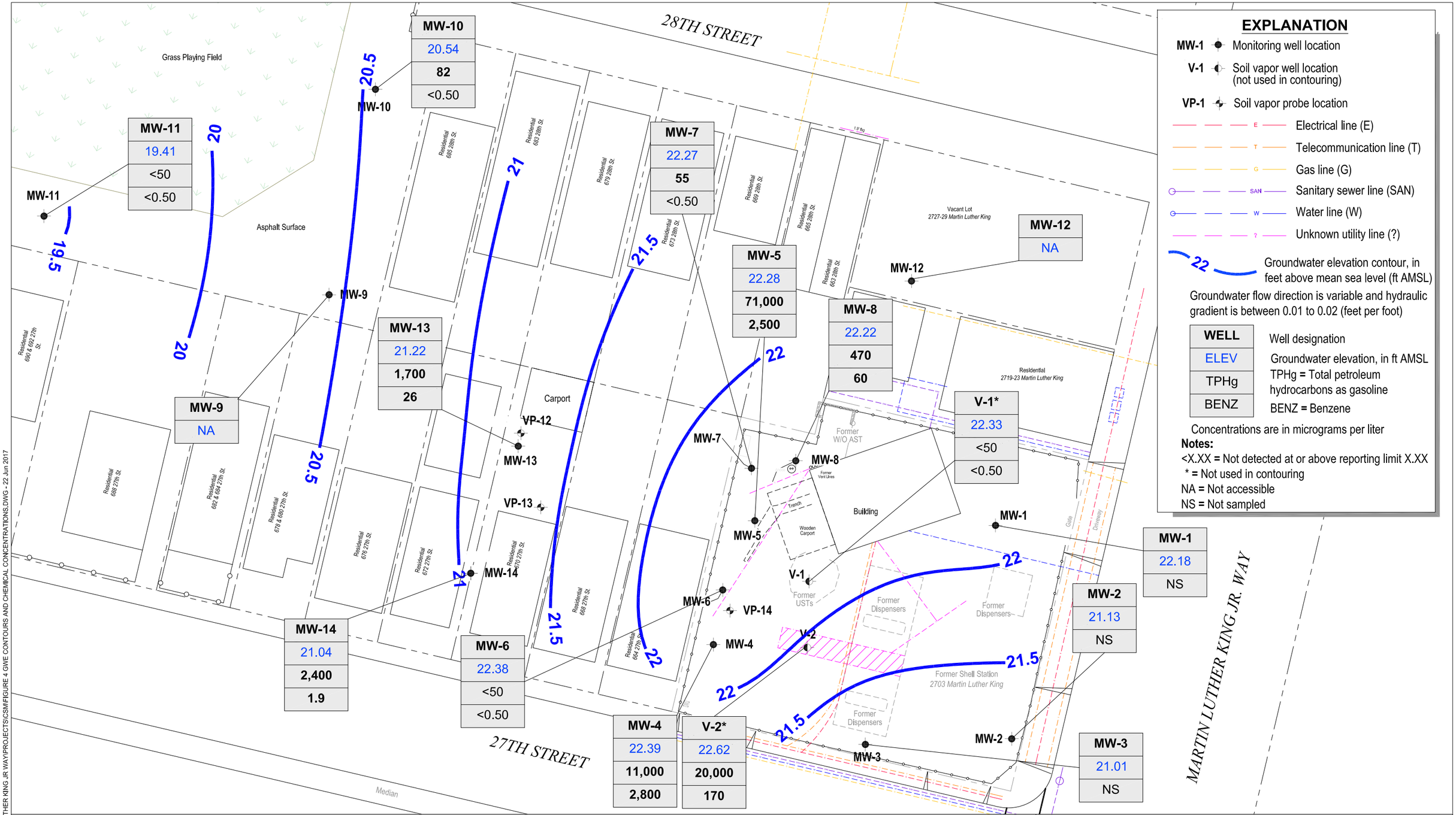
0 7.5 15

Feet

Figure 3
Soil Boring/Sample Locations

Former Shell Service Station
2703 Martin Luther King Jr. Way, Oakland, California

AECOM



EXPLANATION

- MW-1 — Monitoring well location
- V-1 — Soil vapor well location (not used in contouring)
- VP-1 — Soil vapor probe location
- E — Electrical line (E)
- T — Telecommunication line (T)
- G — Gas line (G)
- SAN — Sanitary sewer line (SAN)
- W — Water line (W)
- ? — Unknown utility line (?)
- 22 — Groundwater elevation contour, in feet above mean sea level (ft AMSL)

Groundwater flow direction is variable and hydraulic gradient is between 0.01 to 0.02 (feet per foot)

WELL	Well designation
ELEV	Groundwater elevation, in ft AMSL
TPHg	TPHg = Total petroleum hydrocarbons as gasoline
BENZ	BENZ = Benzene

Concentrations are in micrograms per liter

Notes:

<X.XX = Not detected at or above reporting limit X.XX
* = Not used in contouring
NA = Not accessible
NS = Not sampled

N

0 15 30
Feet

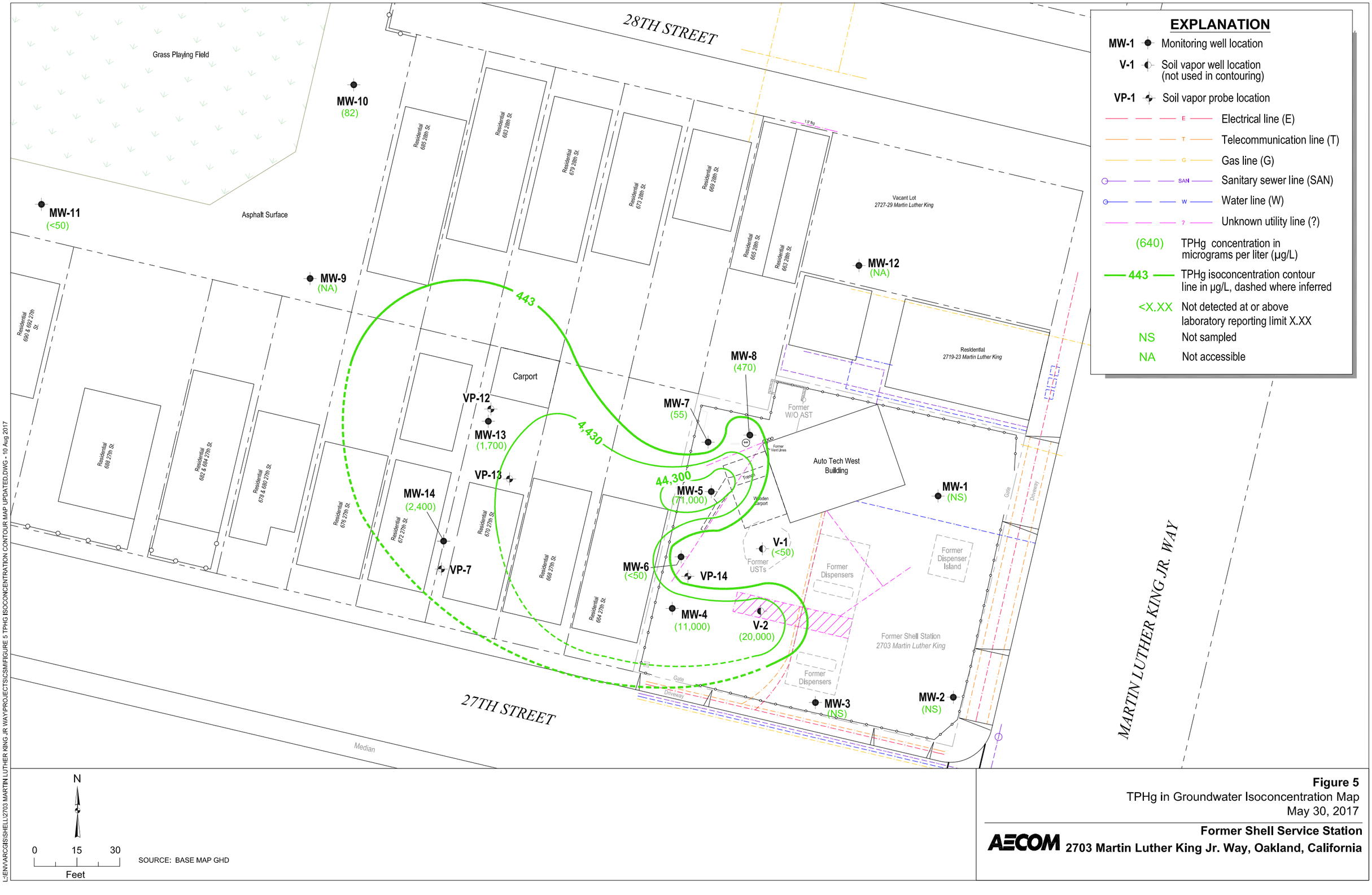
SOURCE: BASE MAP GHD

Figure 4
Groundwater Contour and Chemical Concentration Map
May 30, 2017

Former Shell Service Station
2703 Martin Luther King Jr. Way, Oakland, California

AECOM

L:\ENV\ARCGIS\SHELL\2703 MARTIN LUTHER KING JR WAY\PROJECTS\CSM\FIGURE 4 GWE CONTOURS AND CHEMICAL CONCENTRATIONS.DWG - 22 Jun 2017



L:\ENVARCGIS\SHELL\2703 MARTIN LUTHER KING JR WAY\PROJECTS\CSM\FIGURE 5 TPHG ISOCONCENTRATION CONTOUR MAP UPDATED.DWG - 10 Aug 2017

Figure 5
TPHg in Groundwater Isoconcentration Map
May 30, 2017

Former Shell Service Station
AECOM **2703 Martin Luther King Jr. Way, Oakland, California**

EXPLANATION

- MW-1 — Monitoring well location
- V-1 — Soil vapor well location (not used in contouring)
- VP-1 — Soil vapor probe location
- E — Electrical line (E)
- T — Telecommunication line (T)
- G — Gas line (G)
- SAN — Sanitary sewer line (SAN)
- W — Water line (W)
- ? — Unknown utility line (?)
- (16) — Benzene concentration in micrograms per liter (µg/L)
- 110 — Benzene isoconcentration contour line in µg/L, dashed where inferred
- <X.XX — Not detected at or above laboratory reporting limit X.XX
- NS — Not sampled
- NA — Not accessible

28TH STREET

27TH STREET

MARTIN LUTHER KING JR. WAY

Grass Playing Field

Asphalt Surface

Carport

Median

Residential 690 & 692 27th St.

Residential 682 27th St.

Residential 684 & 686 27th St.

Residential 678 & 680 27th St.

Residential 676 27th St.

Residential 672 27th St.

Residential 670 27th St.

Residential 668 27th St.

Residential 684 27th St.

Residential 685 28th St.

Residential 683 28th St.

Residential 679 28th St.

Residential 673 28th St.

Residential 669 28th St.

Residential 665 28th St.

Residential 663 28th St.

Vacant Lot 2727-29 Martin Luther King

Residential 2719-23 Martin Luther King

Former W/O AST

Former Shell Station 2703 Martin Luther King

Auto Tech West Building

Former USTs

Former Dispenser Island

Former Dispensers

Trench

Wooden Carport

Former Oil Lines

Gate

Driveway

MW-10 (<0.50)

MW-11 (<0.50)

MW-9 (NA)

MW-12 (NA)

MW-13 (26)

MW-14 (1.9)

MW-7 (<0.50)

MW-8 (60)

MW-5 (2,500)

MW-6 (<0.50)

MW-4 (2,800)

V-1 (<0.50)

V-2 (170)

MW-1 (NS)

MW-2 (NS)

MW-3 (NS)

VP-12

VP-13

VP-7

VP-14

1.1

110

1,100

N

0 15 30

Feet

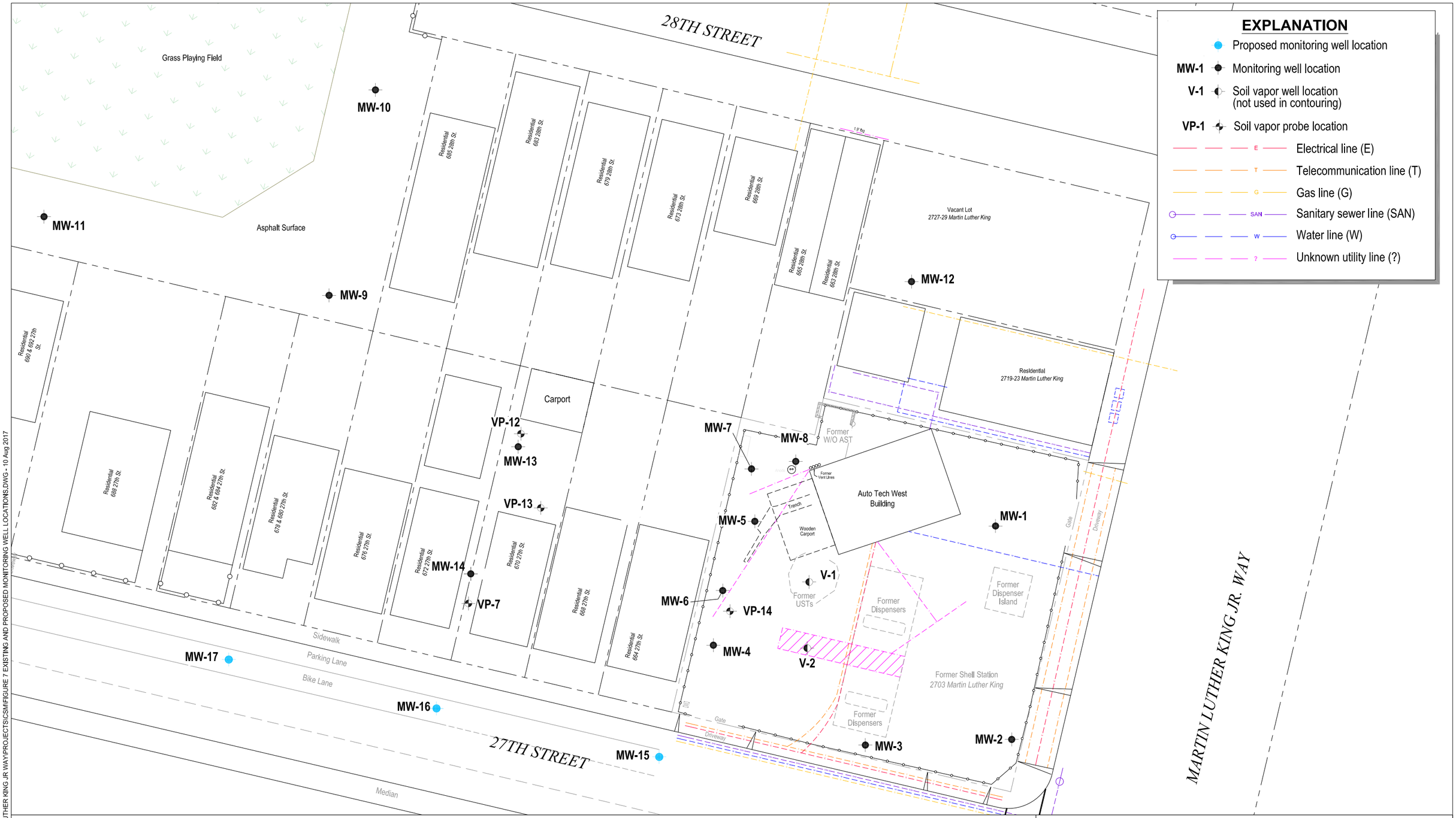
SOURCE: BASE MAP GHD

Figure 6
Benzene in Groundwater Isoconcentration Map
May 30, 2017

Former Shell Service Station
2703 Martin Luther King Jr. Way, Oakland, California

AECOM

L:\ENV\ARCGIS\SHELL\2703 MARTIN LUTHER KING JR WAY\PROJECTS\CSM\FIGURE 6 BENZENE ISOCONCENTRATION CONTOUR MAP UPDATED.DWG - 10 Aug 2017



L:\ENVARCGIS\SHELL\2703 MARTIN LUTHER KING JR WAY\PROJECTS\CSM\FIGURE 7 EXISTING AND PROPOSED MONITORING WELL LOCATIONS.DWG - 10 Aug 2017

Figure 7
Existing and Proposed Monitoring Well Locations

Former Shell Service Station
AECOM **2703 Martin Luther King Jr. Way, Oakland, California**

Appendix A
Regulatory Correspondence

Olton, Shane

From:	Soo, Kit, Env. Health <Kit.Soo@acgov.org>
Sent:	Monday, April 10, 2017 8:59 AM
To:	Olton, Shane
Cc:	andrea.wing@shell.com; Heikkila, Sara; Roe, Dilan, Env. Health
Subject:	RE: 2703 Martin Luther King Jr Way, Oakland, CA (PlaNet Site ID 60482419 & ACEH RO145): Deliverable Extension Request

Shane,

Based on your email request below, the request to combine the resampling results of vapor probes VP-07 and VP-13 with the Data Gap Investigation Work Plan, and Focused Site Conceptual Model Document is acceptable and is granted. This report is now due on June 16, 2017.

Please let me know if you have further questions.

Kit Soo, PG
Senior Hazardous Materials Specialist
Alameda County Department of Environmental Health (ACDEH)
1131 Harbor Bay Pkwy
Alameda, CA 94502
Direct - 510-567-6791
kit.soo@acgov.org

From: Olton, Shane [mailto:Shane.Olton@aecom.com]
Sent: Tuesday, April 04, 2017 6:47 PM
To: Soo, Kit, Env. Health <Kit.Soo@acgov.org>
Cc: andrea.wing@shell.com; Heikkila, Sara <Sara.Heikkila@aecom.com>
Subject: 2703 Martin Luther King Jr Way, Oakland, CA (PlaNet Site ID 60482419 & ACEH RO145): Deliverable Extension Request

Dear Ms. Soo,

On behalf of Equilon Enterprises LLC dba Shell Oil Products US, AECOM Technical Services, Inc., is requesting an extension for submittal of the resampling results from vapor probes VP-07 and VP-13, and the *Data Gap Investigation Work Plan, and Focused Site Conceptual Model* (SCM), both due May 17, 2017. Both deliverables were requested in the Alameda County Environmental Health Department letter, dated March 17, 2017 (agency letter). In order to provide a complete evaluation of site conditions and fully evaluate data gaps with respect to the LTCP, the resampling results of vapor probes VP-07 and VP-13 should be included. We propose submitting one document, the SCM, to also include the vapor probe resampling results rather than two separate documents. Additionally, due to potential delays in vapor sampling from the intermittent rain that has occurred this season we request a one month extension to submittal of the proposed report. The new report deadline would be June 16, 2017. We hope you find our proposal of one encompassing report and the extension request reasonable and look forward to your response. Please feel free to contact me with any questions or comments.

Sincerely,

Shane Olton, P.G.
Project Manager, Site Assessment and Remediation Department
D +1-916-414-5849
M +1-530-908-4404
shane.olton@aecom.com

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T +1-916-414-5800
aecom.com

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LinkedIn Twitter Facebook Instagram

Olton, Shane

From: Soo, Kit, Env. Health <Kit.Soo@acgov.org>
Sent: Wednesday, May 31, 2017 10:29 AM
To: Olton, Shane
Cc: andrea.wing@shell.com; Heikkila, Sara; Roe, Dilan, Env. Health
Subject: RE: 2703 Martin Luther King Jr Way, Oakland, CA (PlaNet Site ID 60482419 & ACEH RO145): Deliverable Extension Request

Hi Shane,

Based on your request below, the schedule for the submittal of the Results from Vapor Probes VP-07 and VP-13, Data Gap Investigation Work Plan, and Focused Site Conceptual Model has been extended to a final date of August 15, 2017 (please also see below for a history of due dates and extension requests). Please note that no further extension will be provided after this because this deadline has been extended twice already.

- NEW FINAL SUBMITTAL DATE: August 15, 2017
- ~~1ST EXTENSION SUBMITTAL DATE: June 16, 2017~~
- ~~INITIAL SUBMITTAL DATE: May 17, 2017~~

Please let me know if you have further questions.

Thanks,

Kit Soo, PG
Senior Hazardous Materials Specialist
Alameda County Department of Environmental Health (ACDEH)
1131 Harbor Bay Pkwy
Alameda, CA 94502
Direct - 510-567-6791
kit.soo@acgov.org

From: Olton, Shane [mailto:Shane.Olton@aecom.com]
Sent: Tuesday, May 30, 2017 2:16 PM
To: Soo, Kit, Env. Health <Kit.Soo@acgov.org>
Cc: andrea.wing@shell.com; Heikkila, Sara <Sara.Heikkila@aecom.com>; Roe, Dilan, Env. Health <Dilan.Roe@acgov.org>
Subject: 2703 Martin Luther King Jr Way, Oakland, CA (PlaNet Site ID 60482419 & ACEH RO145): Deliverable Extension Request

Dear Ms. Soo,,

On behalf of Equilon Enterprises LLC dba Shell Oil Products US, AECOM Technical Services, Inc., is requesting an additional extension for submittal of the resampling results from vapor probes VP-07 and VP-13, and the *Data Gap Investigation Work Plan, and Focused Site Conceptual Model* (SCM), currently due June 16, 2017. The deliverables were requested in the Alameda County Environmental Health Department letter, dated March 17, 2017 (agency letter). The extension is required due to issues with access causing delays in sampling the soil vapor wells which are located in the backyard of a residential property. We were able to sample one (VP-13) of the two wells, however, the second well was not able to be sampled due to not having the standard sample tubing size. We will need to return to the site with the proper equipment to sample the second vapor well. We are requesting a 60 day extension to the current due date. The

new report deadline would be August 15, 2017. We hope you find the extension request reasonable and look forward to your response. Please feel free to contact me with any questions or comments.

Sincerely,

Shane Olton, P.G.
Project Manager, Site Assessment and Remediation Department
D +1-916-414-5849
M +1-530-908-4404
shane.olton@aecom.com

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Sacramento, CA 95811, USA
T +1-916-414-5800
aecom.com

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From: Soo, Kit, Env. Health [mailto:Kit.Soo@acgov.org]
Sent: Monday, April 10, 2017 8:59 AM
To: Olton, Shane
Cc: andrea.wing@shell.com; Heikkila, Sara; Roe, Dilan, Env. Health
Subject: RE: 2703 Martin Luther King Jr Way, Oakland, CA (PlaNet Site ID 60482419 & ACEH RO145): Deliverable Extension Request

Shane,

Based on your email request below, the request to combine the resampling results of vapor probes VP-07 and VP-13 with the Data Gap Investigation Work Plan, and Focused Site Conceptual Model Document is acceptable and is granted. This report is now due on June 16, 2017.

Please let me know if you have further questions.

Kit Soo, PG
Senior Hazardous Materials Specialist
Alameda County Department of Environmental Health (ACDEH)
1131 Harbor Bay Pkwy
Alameda, CA 94502
Direct - 510-567-6791
kit.soo@acgov.org

From: Olton, Shane [mailto:Shane.Olton@aecom.com]
Sent: Tuesday, April 04, 2017 6:47 PM
To: Soo, Kit, Env. Health <Kit.Soo@acgov.org>
Cc: andrea.wing@shell.com; Heikkila, Sara <Sara.Heikkila@aecom.com>
Subject: 2703 Martin Luther King Jr Way, Oakland, CA (PlaNet Site ID 60482419 & ACEH RO145): Deliverable Extension Request

Dear Ms. Soo,

On behalf of Equilon Enterprises LLC dba Shell Oil Products US, AECOM Technical Services, Inc., is requesting an extension for submittal of the resampling results from vapor probes VP-07 and VP-13, and the *Data Gap Investigation Work Plan, and Focused Site Conceptual Model* (SCM), both due May 17, 2017. Both deliverables were requested in the Alameda County Environmental Health Department letter, dated March 17, 2017 (agency letter). In order to provide a complete evaluation of site conditions and fully evaluate data gaps with respect to the LTCP, the resampling results of vapor probes VP-07 and VP-13 should be included. We propose submitting one document, the SCM, to also include the vapor probe resampling results rather than two separate documents. Additionally, due to potential delays in vapor sampling from the intermittent rain that has occurred this season we request a one month extension to submittal of the proposed report. The new report deadline would be June 16, 2017. We hope you find our proposal of one encompassing report and the extension request reasonable and look forward to your response. Please feel free to contact me with any questions or comments.

Sincerely,

Shane Olton, P.G.
Project Manager, Site Assessment and Remediation Department
D +1-916-414-5849
M +1-530-908-4404
shane.olton@aecom.com

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ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
REBECCA GEBHART, Interim Director

DEPARTMENT OF ENVIRONMENTAL HEALTH
LOCAL OVERSIGHT PROGRAM (LOP)
For Hazardous Materials Releases
1131 HARBOR BAY PARKWAY, SUITE 250
ALAMEDA, CA 94502
(510) 567-6700
FAX (510) 337-9335

March 17, 2017

Ms. Andrea Wing
Shell Oil Products US
20945 S. Wilmington Ave.
Carson, CA 90810
(*Sent via E-mail to:* mailto:andrea.wing@shell.com)

Rodney and Janet Kwan
1834 Alameda Ave.
Alameda, CA

Subject: Approval to prepare a Pilot Study Work Plan, and Request for Additional Documents - Fuel Leak Case No. RO0000145 and GeoTracker Global ID T06000101876, Shell/Auto Tech West, 2703 Martin Luther King Jr., Oakland, CA 94612

Dear Responsible Parties:

Alameda County Department of Environmental Health (ACEH) staff has reviewed the fuel leak case files for the above referenced sites including the *Revised Corrective Action Plan* (Revised CAP), dated May 27, 2016; the *Second Quarter 2016 Groundwater Monitoring Report*, dated July 18, 2016; and the *Second Semiannual 2016 Groundwater Monitoring Report,* dated January 17, 2017, prepared by AECOM on behalf of Equilon Enterprises LLC dba Shell Oil Products US (Equilon). The Revised CAP summarizes the site conditions and evaluated five currently applicable remedial approaches (no action, monitored natural attenuation [MNA], excavation, bio-sparge system, and pulsed oxygen injection) for addressing the petroleum hydrocarbon and oxygenate impacts identified beneath the site. Note that in the previous Site Conceptual Model and Feasibility Study/Corrective Action Plan (SCM/FS/CAP), dated February 5, 2008, prepared by CRA, excavation was recommended with a bio-sparge component. Based on the comparative analysis of the five remedial alternatives, AECOM recommends a pilot study to evaluate pulsed oxygen injection to remediate the impacted capillary fringe and groundwater. The pilot study data will be used to characterize the oxygen generation and determine design parameters including radium of influence (ROI), injection pressure and oxygen injection interval. The proposed pilot study location will be in the vicinity of MW-4 and MW-5 where one of the highest concentrations of benzene and TPH-gasoline and benzene reside. The proposal to prepare a Pilot Study Work Plan is acceptable.

Additionally, ACDEH has evaluated the data and recommendations presented in the above-mentioned reports, in conjunction with the case files, to determine if the site is eligible for closure as a low risk site under the State Water Resources Control Board's (SWRCBs) Low Threat Underground Storage Tank Case Closure Policy (LTCP). Based on ACDEH staff review, we have determined that the site fails to meet the LTCP General Criteria e (Site Conceptual Model); and the Media-Specific Criteria for Groundwater and the Media-Specific Criteria for Vapor Intrusion to Indoor Air.

Additional data may be available that ACDEH is not aware of, or may not have been submitted, and therefore has not been incorporated in to ACDEH's review. If additional data is made available, the data can be incorporated in future LTCP reviews. The evaluation of the site under the LTCP that is presented below is intended to initiate further discussions, submittal of other available documents, or the collection of additional data in order to determine if or when the site can be closed under the LTCP and to document current LTCP data gaps.

Therefore, at this juncture ACEH requests that you perform additional activities as presented in the Technical Comments Section provided below.

TECHNICAL COMMENTS

1. **LTCP General Criteria (e) (Site Conceptual Model) –** According to the LTCP, the SCM is a fundamental element of a comprehensive site investigation. The SCM establishes the source and attributes of the unauthorized release, describes all affected media (including soil, groundwater, and soil vapor as appropriate), describes local geology, hydrogeology and other physical site characteristics that affect contaminant environmental transport and fate, and identifies all confirmed and potential contaminant receptors (including water supply wells, surface water bodies, structures and their inhabitants). The SCM is relied upon by practitioners as a guide for investigative design and data collection. All relevant site characteristics identified by the SCM shall be assessed and supported by data so that the nature, extent and mobility of the release have been established to determine conformance with applicable criteria in this policy.

   Our review of the case files indicates that a conceptual model was submitted in February 2008 (*Site Conceptual Model and Feasibility Study/Corrective Action Plan*, dated February 5, 2008, prepared by Conestoga-Rovers and Associates). Since 2008, several investigation have been performed and this data has not been included in the February 2008 site conceptual model. As referenced in the ACDEH directive dated January 19, 2016, ACDEH concur with the *Human Health Risk Assessment (HHRA),* dated November 30, 2015, and prepared by AECOM, where resampling of soil vapor proves VP-07 and VP-13 are recommended to confirm the results from the August 27, 2015 soil vapor sampling event. In addition, insufficient data collection and analysis exists and additional data has not been presented to assess the nature, extent, and mobility of the release and to support compliance with General Criteria e as discussed in Technical Comment 1; and Media Specific Criteria for Vapor Intrusion to Indoor Air and Groundwater as discussed in Technical Comments 2 and 3, respectively. Please submit a revised site conceptual model (SCM) to include all new data once the additional data have been collected and compiled, as requested in the Technical Report Request Section below. In order to expedite review, ACDEH requests the focused SCM be presented in a tabular format that highlights the major SCM elements and associated data gaps, which need to be addressed to progress the site to case closure under the LTCP. Please see Attachment A "Site Conceptual Model Requisite Elements".

2. **LTCP Media Specific Criteria for 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 listed in the policy.

   Our review of the case files indicates that insufficient data collection and analysis has been presented to support the requisite characteristics of plume stability or plume classification as follows:

   The Revised CAP, as referenced in Section 3.2.1 indicates that the criteria "contaminant plume exceeds water quality objectives and is less than 1,000 feet long" is satisfied. ACDEH does not agree with the evaluation. This criteria is not satisfied because the groundwater plume is not delineated offsite to the west/southwest and south. Although we understand that it is not practical to install a well on a busy street such as 27th Street, borings or monitoring wells can still be installed on the north and south sides of 27th Street, along the sidewalk or curb to satisfy delineation activities. ACDEH requests that additional borings and/or monitoring wells be advanced as appropriate to delineate the plume to the southwest and south and assess the off-site extent of contamination in this area. Please consider using a transect of borings on approximately thirty foot centers to determine appropriate locations for future monitoring wells and provide adequate coverage of the downgradient extent of contamination.

Therefore, please present a strategy in a Data Gap Investigation Work Plan, as requested in the Technical Report Request Section below. Please support the scope of work in the Additional Offsite Investigation Work Plan with a focused SCM and Data Quality Objectives (DQOs) that relate the data collection to each LTCP criteria, as mentioned in item no. 1. For example please clarify which scenario within each Media-Specific Criteria a sampling strategy is intended to apply to. Please sequence activities in the proposed data gap investigation scope of work, including the work proposed in item no. 3 below to enable efficient data collection in the fewest mobilizations possible.

3. **LTCP Media Specific Criteria for Vapor Intrusion to Indoor Air –** The LTCP describes conditions, including bio-attenuation zones, which if met will assure that exposure to petroleum vapors in indoor air will not pose unacceptable health risks to human occupants of existing or future site buildings, and adjacent parcels. Appendices 1 through 4 of the LTCP criteria illustrate four potential exposure scenarios and describe characteristics and criteria associated with each scenario.

   Our review of the case files indicates that the site data collection and analysis fail to support the requisite characteristics of one of the four scenarios presented in the LTCP which has been chosen for the site (Appendix 4 – Scenario 4 – Direct Measurement of Soil Gas Concentrations.) Specifically, the soil gas criteria with no bio-attenuation zone was used for comparing measured benzene, ethylbenzene and naphthalene soil gas concentrations due to lack of measured oxygen concentrations at each soil vapor collection location. Based on the comparison of the latest measurements collected in 2015, two onsite locations, VP-3-5 and VP-14-3 and VP-14-5 (at two depths) had elevated detection limits or above the residential and commercial soil gas criteria. A site-specific risk assessment for the vapor intrusion pathway was also performed for this site and the November 30, 2015 HHRA concluded that on-site sources may potentially pose unacceptable risk for vapor intrusion health risks to future commercial/industrial workers, and there appears to be no significant direct contact risk to current or future receptors. There also appears to be no significant vapor intrusion risk to current or future off-site residents or current on-site commercial/industrial workers. As referenced in the ACDEH directive dated January 19, 2016, ACDEH concur with the *Human Health Risk Assessment (HHRA),* dated November 30, 2015, and prepared by AECOM, where resampling of offsite soil vapor probes VP-07 and VP-13 are recommended for further confirmation of its historical results. Please submit a report summarizing the results of the resampling of the vapor probes, as requested in the Technical Report Request Section below.

SUBMITTAL ACKNOWLEDGEMENT STATEMENT

Please note that ACDEH has updated its Attachment 1 with regards to report submittals to ACDEH. ACDEH will now be requiring a Submittal Acknowledgement Statement, replacing the Perjury Statement, as a cover letter signed by the Responsible Party (RP). The language for the Submittal Acknowledgement Statement is as follows:

"I have read and acknowledge the content, recommendations and/or conclusions contained in the attached document or report submitted on my behalf to ACDEH's FTP server and the State Water Resources Control Board's GeoTracker website."

Please note this change to your submittals to ACDEH.

TECHNICAL REPORT REQUEST

Please upload technical reports to the ACDEH ftp site (Attention: Kit Soo), and to the State Water Resources Control Board's Geotracker website, in accordance with the specified file naming convention below, according to the following schedule:

- **May 17, 2017** – Resampling Results from Vapor Probes VP-07 and VP-13

  File to be named: RO145 SWI_R_yyyy-mm-dd

- **May 17, 2017** – Data Gap Investigation Work Plan, and Focused Site Conceptual Model

  File to be named: RO145 WP_R_yyyy-mm-dd

- **June 19, 2017** – Pilot Test Design and Work Plan

  File to be named: RO145 WP_R_yyyy-mm-dd

These reports are being requested pursuant to California Health and Safety Code Section 25296.10. 23 CCR Sections 2652 through 2654, and 2721 through 2728 outline the responsibilities of a responsible party in response to an unauthorized release from a petroleum UST system, and require your compliance with this request.

Online case files are available for review at the following website: http://www.acgov.org/aceh/index.htm.

Thank you for your cooperation. If you have any questions, please call me at (510) 567-6791 or send me an electronic mail message at kit.soo@acgov.org.

Sincerely,

Kit Soo

Digitally signed by Kit Soo
DN: cn=Kit Soo, o=ACDEH, ou, email=Kit.Soo@acgov.org, c=US
Date: 2017.03.17 13:11:31 -07'00'

Kit Soo, PG 8957
Senior Hazardous Materials Specialist

Enclosures: Attachment 1 – Responsible Party (ies) Legal Requirements / Obligations
Electronic Report Upload (ftp) Instructions

Attachment A – Site Conceptual Model Requisite Elements

cc: Shane Olton, AECOM, 300 Broadway, Suite 400, Oakland, CA 94612 (*Sent via E-mail to: Shane.Olton@aecom.com*)

Sara Heikkila, AECOM, 300 South Grand Avenue, Suite 200, Los Angeles, CA 90071 (*Sent via E-mail to: Sara.Heikkila@aecom.com*)

Scott Merillat, 664 27th Street, Oakland, CA 94612 (Parcel #9-691-7)

Jack Chang, 559 9th Avenue, San Francisco, CA 94118-3716

Frank Bailey, 672 27th Street, Oakland, CA 94612 (Parcel #9-691-10)

Rafael Catapang, 668 27th Street, Oakland, CA 94612 (Parcel #9-691-8)

Monique Oatis, 670 27th Street, Oakland, CA 94612 (Parcel #9-691-9)

Wilfrid Kintonouza, 721 31st Street, Oakland, CA 94598 (Parcel #9-691-1-1)

Solomon Tesfa, 484 Lake Park Avenue #288, Oakland, CA 94610 (Parcel #9-691-2)

Novella Carpenter, 6645 28th Street, Oakland, CA 94609 (Parcel #9-691-1-2)

Teresa Miller, 673 28th Street, Oakland, CA 94609 (Parcel #9-691-42)

Thanh and Pham Phung, 2535 East 24th Street, Oakland, CA 94601 (Parcel #9-691-43)

Resident, 663 28th Street, Oakland, CA 94609 (Parcel #9-691-1)

Resident, 669 28th Street, Oakland, CA 94609 (Parcel #9-691-43)

Dilan Roe, ACDEH, (Sent via electronic mail to: *dilan.roe@acgov.org*)
Paresh Khatri, ACDEH, (Sent via electronic mail to: *paresh.khatri@acgov.org*)
Kit Soo, ACDEH, (Sent via electronic mail to: *kit.soo@acgov.org*)

Electronic File, GeoTracker

Attachment 1

Responsible Party(ies) Legal Requirements / Obligations

REPORT REQUESTS

These reports are being requested pursuant to California Health and Safety Code Section 25296.10. 23 CCR Sections 2652 through 2654, and 2721 through 2728 outline the responsibilities of a responsible party in response to an unauthorized release from a petroleum UST system, and require your compliance with this request.

ELECTRONIC SUBMITTAL OF REPORTS

Alameda County Department of Environmental Health's (ACDEH) Environmental Cleanup Oversight Programs, Local Oversight Program (LOP) and Site Cleanup Program (SCP) require submission of reports in electronic form. The electronic copy replaces paper copies and is expected to be used for all public information requests, regulatory review, and compliance/enforcement activities. Instructions for submission of electronic documents to the Alameda County Environmental Cleanup Oversight Program File Transfer Protocol (FTP) site are provided on the attached "Electronic Report Upload Instructions." Submission of reports to the Alameda County FTP site is an addition to existing requirements for electronic submittal of information to the State Water Resources Control Board (SWRCB) GeoTracker website. In September 2004, the SWRCB adopted regulations that require electronic submittal of information for all groundwater cleanup programs. For several years, responsible parties for cleanup of leaks from underground storage tanks (USTs) have been required to submit groundwater analytical data, surveyed locations of monitoring wells, and other data to the GeoTracker database over the Internet. Beginning July 1, 2005, these same reporting requirements were added to SCP sites. Beginning July 1, 2005, electronic submittal of a complete copy of all reports for all sites is required in GeoTracker (in PDF format). Please visit the SWRCB website (http://www.waterboards.ca.gov/water_issues/programs/ust/electronic_submittal/) for more information on these requirements.

ACKNOWLEDGEMENT STATEMENT

All work plans, technical reports, or technical documents submitted to ACDEH must be accompanied by a cover letter from the responsible party that states, at a minimum, the following: "I have read and acknowledge the content, recommendations and/or conclusions contained in the attached document or report submitted on my behalf to ACDEH's FTP server and the SWRCB's GeoTracker website." This letter must be signed by an officer or legally authorized representative of your company. Please include a cover letter satisfying these requirements with all future reports and technical documents submitted for this fuel leak case.

PROFESSIONAL CERTIFICATION & CONCLUSIONS/RECOMMENDATIONS

The California Business and Professions Code (Sections 6731, 6735, and 7835) requires that work plans and technical or implementation reports containing geologic or engineering evaluations and/or judgments be performed under the direction of an appropriately licensed or certified professional. For your submittal to be considered a valid technical report, you are to present site-specific data, data interpretations, and recommendations prepared by an appropriately licensed professional and include the professional registration stamp, signature, and statement of professional certification. Please ensure all that all technical reports submitted for this case meet this requirement. Additional information is available on the Board of Professional Engineers, Land Surveyors, and Geologists website at: http://www.bpelsg.ca.gov/laws/index.shtml.

UNDERGROUND STORAGE TANK CLEANUP FUND

Please note that delays in investigation, late reports, or enforcement actions may result in your becoming ineligible to receive grant money from the state's Underground Storage Tank Cleanup Fund (Senate Bill 2004) to reimburse you for the cost of cleanup.

AGENCY OVERSIGHT

If it appears as though significant delays are occurring or reports are not submitted as requested, we will consider referring your case to the Regional Board or other appropriate agency, including the County District Attorney, for possible enforcement actions. California Health and Safety Code, Section 25299.76 authorizes enforcement including administrative action or monetary penalties of up to $10,000 per day for each day of violation.

Alameda County Environmental Cleanup Oversight Programs (LOP and SCP)	**REVISION DATE:** December 1, 2016
	ISSUE DATE: July 5, 2005
	PREVIOUS REVISIONS: October 31, 2005; December 16, 2005; March 27, 2009; July 8, 2010, July 25, 2010; May 15, 2014, November 29, 2016
SECTION: Miscellaneous Administrative Topics & Procedures	**SUBJECT:** Electronic Report Upload (ftp) Instructions

The Alameda County Environmental Cleanup Oversight Programs (LOP and SCP) require submission of all reports in electronic form to the county's ftp site. Paper copies of reports will no longer be accepted. The electronic copy replaces the paper copy and will be used for all public information requests, regulatory review, and compliance/enforcement activities.

REQUIREMENTS

- **Please do not submit reports as attachments to electronic mail.**
- Entire report including cover letter must be submitted to the ftp site as **a single portable document format (PDF) with no password protection**.
- It is **preferable** that reports be converted to PDF format from their original format, (e.g., Microsoft Word) rather than scanned.
- **Signature pages and perjury statements must be included and have either original or electronic signature.**
- **Do not password protect the document**. Once indexed and inserted into the correct electronic case file, the document will be secured in compliance with the County's current security standards and a password. **Documents with password protection will not be accepted**.
- Each page in the PDF document should be rotated in the direction that will make it easiest to read on a computer monitor.
- Reports must be named and saved using the following naming convention:

  RO#_Report Name_Year-Month-Date (e.g., RO#5555_WorkPlan_2005-06-14)

Submission Instructions

1) Obtain User Name and Password
   a) Contact the Alameda County Environmental Health Department to obtain a User Name and Password to upload files to the ftp site.
      i) Send an e-mail to deh.loptoxic@acgov.org.
   b) In the subject line of your request, be sure to include **"ftp PASSWORD REQUEST"** and in the body of your request, include the **Contact Information, Site Addresses**, and the **Case Numbers (RO# available in Geotracker) you will be posting for**.

2) Upload Files to the ftp Site
   a) Open File Explorer using the Windows  key + E keyboard shortcut.
      i) Note: Netscape, Safari, and Firefox browsers will not open the FTP site as they are NOT being supported at this time.
   b) On the address bar, type in ftp://alcoftp1.acgov.org.
   c) Enter your User Name and Password. (Note: Both are Case Sensitive)
   d) Click Log On.
   e) Open "My Computer" on your computer and navigate to the file(s) you wish to upload to the ftp site.
   f) With both "My Computer" and the ftp site open in separate windows, drag and drop the file(s) from "My Computer" to the ftp window.

3) Send E-mail Notifications to the Environmental Cleanup Oversight Programs
   a) Send email to deh.loptoxic@acgov.org notify us that you have placed a report on our ftp site.
   b) Copy your Caseworker on the e-mail. Your Caseworker's e-mail address is the entire first name then a period and entire last name @acgov.org. (e.g., firstname.lastname@acgov.org)
   c) The subject line of the e-mail must start with the RO# followed by **Report Upload**. (e.g., Subject: RO1234 Report Upload) If site is a new case without an RO#, use the street address instead.
   d) If your document meets the above requirements and you follow the submission instructions, you will receive a notification by email indicating that your document was successfully uploaded to the ftp site.

ATTACHMENT A

Site Conceptual Model Requisite Elements

ATTACHMENT A

Site Conceptual Model

The site conceptual model (SCM) is an essential decision-making and communication tool for all interested parties during the site characterization, remediation planning and implementation, and closure process. A SCM is a set of working hypotheses pertaining to all aspects of the contaminant release, including site geology, hydrogeology, release history, residual and dissolved contamination, attenuation mechanisms, pathways to nearby receptors, and likely magnitude of potential impacts to receptors.

The SCM is initially used to characterize the site and identify data gaps. As the investigation proceeds and the data gaps are filled, the working hypotheses are modified, and the overall SCM is refined and strengthened until it is said to be "validated". At this point, the focus of the SCM shifts from site characterization towards remedial technology evaluation and selection, and later remedy optimization, and forms the foundation for developing the most cost-effective corrective action plan to protect existing and potential receptors.

For ease of review, Alameda County Environmental Health (ACEH) requests utilization of tabular formats to (1) highlight the major SCM elements and their associated data gaps which need to be addressed to progress the site to case closure (see Table 1 of attached example), and (2) highlight the identified data gaps and proposed investigation activities (see Table 2 of the attached example). ACEH requests that the tables presenting the SCM elements, data gaps, and proposed investigation activities be updated as appropriate at each stage of the project and submitted with work plans, feasibility studies, corrective action plans, and requests for closures to support proposed work, conclusions, and/or recommendations.

The SCM should incorporate, but is not limited to, the topics listed below. Please support the SCM with the use of large-scaled maps and graphics, tables, and conceptual diagrams to illustrate key points. Please include an extended site map(s) utilizing an aerial photographic base map with sufficient resolution to show the facility, delineation of streets and property boundaries within the adjacent neighborhood, downgradient irrigation wells, and proposed locations of transects, monitoring wells, and soil vapor probes.

a. Regional and local (on-site and off-site) geology and hydrogeology. Include a discussion of the surface geology (e.g., soil types, soil parameters, outcrops, faulting), subsurface geology (e.g., stratigraphy, continuity, and connectivity), and hydrogeology (e.g., water-bearing zones, hydrologic parameters, impermeable strata). Please include a structural contour map (top of unit) and isopach map for the aquitard that is presumed to separate your release from the deeper aquifer(s), cross sections, soil boring and monitoring well logs and locations, and copies of regional geologic maps.

b. Analysis of the hydraulic flow system in the vicinity of the site. Include rose diagrams for depicting groundwater gradients. The rose diagram shall be plotted on groundwater elevation contour maps and updated in all future reports submitted for your site. Please address changes due to seasonal precipitation and groundwater pumping, and evaluate the potential interconnection between shallow and deep aquifers. Please include an analysis of vertical hydraulic gradients, and effects of pumping rates on hydraulic head from nearby water supply wells, if appropriate. Include hydraulic head in the different water bearing zones and hydrographs of all monitoring wells.

c. Release history, including potential source(s) of releases, potential contaminants of concern (COC) associated with each potential release, confirmed source locations, confirmed release locations, and existing delineation of release areas. Address primary leak source(s) (e.g., a tank, sump, pipeline, etc.) and secondary sources (e.g., high-

concentration contaminants in low-permeability lithologic soil units that sustain groundwater or vapor plumes). Include local and regional plan view maps that illustrate the location of sources (former facilities, piping, tanks, etc.).

d. Plume (soil gas and groundwater) development and dynamics including aging of source(s), phase distribution (NAPL, dissolved, vapor, residual), diving plumes, attenuation mechanisms, migration routes, preferential pathways (geologic and anthropogenic), magnitude of chemicals of concern and spatial and temporal changes in concentrations, and contaminant fate and transport. Please include three-dimensional plume maps for groundwater and two-dimensional soil vapor plume plan view maps to provide an accurate depiction of the contaminant distribution of each COC.

e. Summary tables of chemical concentrations in different media (i.e., soil, groundwater, and soil vapor). Please include applicable environmental screening levels on all tables. Include graphs of contaminant concentrations versus time.

f. Current and historic facility structures (e.g., buildings, drain systems, sewer systems, underground utilities, etc.) and physical features including topographical features (e.g., hills, gradients, surface vegetation, or pavement) and surface water features (e.g. routes of drainage ditches, links to water bodies). Please include current and historic site maps.

g. Current and historic site operations/processes (e.g., parts cleaning, chemical storage areas, manufacturing, etc.).

h. Other contaminant release sites in the vicinity of the site. Hydrogeologic and contaminant data from those sites may prove helpful in testing certain hypotheses for the SCM. Include a summary of work and technical findings from nearby release sites, including the two adjacent closed LUFT sites, (i.e., Montgomery Ward site and the Quest Laboratory site).

i. Land uses and exposure scenarios on the facility and adjacent properties. Include beneficial resources (e.g., groundwater classification, wetlands, natural resources, etc.), resource use locations (e.g., water supply wells, surface water intakes), subpopulation types and locations (e.g., schools, hospitals, day care centers, etc.), exposure scenarios (e.g. residential, industrial, recreational, farming), and exposure pathways, and potential threat to sensitive receptors. Include an analysis of the contaminant volatilization from the subsurface to indoor/outdoor air exposure route (i.e., vapor pathway). Please include copies of Sanborn maps and aerial photographs, as appropriate.

j. Identification and listing of specific data gaps that require further investigation during subsequent phases of work. Proposed activities to investigate and fill data gaps identified.

TABLE 1

INITIAL SITE CONCEPTUAL MODEL

CSM Element	CSM Sub-Element	Description	Data Gap	How to Address
Geology and Hydrogeology	Regional	The site is in the northwest portion of the Livermore Valley, which consists of a structural trough within the Diablo Range and contains the Livermore Valley Groundwater Basin (referred to as "the Basin") (DWR, 2006). Several faults traverse the Basin, which act as barriers to groundwater flow, as evidenced by large differences in water levels between the upgradient and downgradient sides of these faults (DWR, 2006). The Basin is divided into 12 groundwater basins, which are defined by faults and non-water-bearing geologic units (DWR, 1974). The hydrogeology of the Basin consists of a thick sequence of fresh-water-bearing continental deposits from alluvial fans, outwash plains, and lacustrine environments to up to approximately 5,000 feet bgs (DWR, 2006). Three defined fresh-water bearing geologic units exist within the Basin: Holocene Valley Fill (up to approximately 400 feet bgs in the central portion of the Basin), the Plio-Pleistocene Livermore Formation (generally between approximately 400 and 4,000 feet bgs in the central portion of the Basin), and the Pliocene Tassajara Formation (generally between approximately 250 and 5,000 or more feet bgs) (DWR, 1974). The Valley Fill units in the western portion of the Basin are capped by up to 40 feet of clay (DWR, 2006).	None	NA
	Site	***Geology:*** Borings advanced at the site indicate that subsurface materials consist primarily of finer-grained deposits (clay, sandy clay, silt and sandy silt) with interbedded sand lenses to 20 feet below ground surface (bgs), the approximate depth to which these borings were advanced. The documented lithology for one on-site boring that was logged to approximately 45 feet bgs indicates that beyond approximately 20 feet bgs, fine-grained soils are present to approximately 45 feet bgs. A cone penetrometer technology test indicated the presence of sandier lenses from approximately 45 to 58 feet bgs and even coarser materials (interbedded with finer-grained materials) from approximately 58 feet to 75 feet bgs, the total depth drilled. The lithology documented at the site is similar to that reported at other nearby sites, specifically the Montgomery Ward site (7575 Dublin Boulevard), the Quest laboratory site (6511 Golden Gate Drive), the Shell-branded Service Station site (11989 Dublin Boulevard), and the Chevron site (7007 San Ramon Road). ***Hydrogeology:*** Shallow groundwater has been encountered at depths of approximately 9 to 15 feet bgs. The hydraulic gradient and groundwater flow direction have not been specifically evaluated at the site.	As noted, most borings at the site have been advanced to approximately 20 feet bgs, and one boring has been advanced and logged to 45 feet bgs; CPT data was collected to 75 feet bgs at one location. Lithologic data will be obtained from additional borings that will be advanced on site to further the understanding of the subsurface, especially with respect to deeper lithology. The on-site shallow groundwater horizontal gradient has not been confirmed. Additionally, it is not known if there may be a vertical component to the hydraulic gradient.	Two direct push borings and four multi-port wells will be advanced to depth (up to approximately 75 feet bgs) and soil lithology will be logged. See items 4 and 5 on Table 2. Shallow and deeper groundwater monitoring wells will be installed to provide information on lateral and vertical gradients. See Items 2 and 5 on Table 2.
Surface Water Bodies		The closest surface water bodies are culverted creeks. Martin Canyon Creek flows from a gully west of the site, enters a culvert north of the site, and then bends to the south, passing approximately 1,000 feet east of the site before flowing into the Alamo Canal. Dublin Creek flows from a gully west of the site, enters a culvert approximately 750 feet south of the site, and then joins Martin Canyon Creek approximately 750 feet southeast of the site.	None	NA
Nearby Wells		The State Water Resources Control Board's GeoTracker GAMA website includes information regarding the approximate locations of water supply wells in California. In the vicinity of the site, the closest water supply wells presented on this website are depicted approximately 2 miles southeast of the site; the locations shown are approximate (within 1 mile of actual location for California Department of Public Health supply wells and 0.5 mile for other supply wells). No water-producing wells were identified within 1/4 mile of the site in the well survey conducted for the Quest Laboratory site (6511 Golden Gate Drive; documented in 2009); information documented in a 2005 report for the Chevron site at 7007 San Ramon Road indicates that a water-producing well may exist within 1/2 mile of the site.	A formal well survey is needed to identify water-producing, monitoring, cathodic protection, and dewatering wells.	Obtain data regarding nearby, permitted wells from the California Department of Water Resources and Zone 7 Water Agency (Item 11 on Table 2).

TABLE 2

DATA GAPS AND PROPOSED INVESTIGATION

Item	Data Gap	Proposed Investigation	Rationale	Analysis
5	Evaluate the possible presence of impacts to deeper groundwater. Evaluate deeper groundwater concentration trends over time. Obtain data regarding the vertical groundwater gradient. Obtain more lithological data below 20 feet bgs.	Install four continuous multichannel tubing (CMT) groundwater monitoring wells (aka multi-port wells) to approximately 65 feet bgs in the northern parking lot with ports at three depths (monitoring well locations may be adjusted pending results of shallow grab groundwater samples; we will discuss any potential changes with ACEH before proceeding). Groundwater monitoring frequency to be determined. Soil samples will be collected only if there are field indications of impacts. Soil lithology will be logged. However, information regarding the moisture content of soil may not be reliable using sonic drilling technology (two borings will be logged using direct push technology; see Item 4, above).	One well is proposed at the western (upgradient) property boundary to confirm that there are no deeper groundwater impacts from upgradient. Two wells are proposed near the center of the northern parking lot to evaluate potential impacts in an area where deeper impacts, if any, would most likely to be found. One well is proposed at the eastern (downgradient) property boundary to confirm that there are no impacts extending off-site. Port depths will be chosen based on the locations of saturated soils (as logged in direct push borings; see Item 4, above), but are expected at approximately 15, 45, and 60 feet bgs.	*Groundwater:* VOCs by EPA Method 8260, dissolved oxygen, oxidation/reduction potential, temperature, pH, and specific conductance.
6	Evaluate possible off-site migration of impacted soil vapor in the downgradient direction (east). Evaluate concentration trends over time.	Install 4 temporary nested soil vapor probes at approximately 4 and 8 feet bgs along the eastern property boundary. Based on the results of the sampling, two sets of nested probes will be converted to vapor monitoring wells to allow for evaluation of VOC concentration trends over time.	Available data indicate that PCE and TCE are present in soil vapor in the eastern portion of the northern parking lot. Samples are proposed on approximately 50-foot intervals along the eastern property boundary to provide a transect of concentrations through the vapor plume. The depths of 4 and 8 feet bgs are chosen to provide data closest to the source (i.e., groundwater) while avoiding saturated soil, and also provide shallower data to help evaluate potential attenuation within the soil column. Two sets of nested vapor probes will be converted into vapor monitoring wells (by installing well boxes at ground surface); the locations of the permanent wells will be chosen based on the results of samples from the temporary probes.	*Soil vapor* : VOCs by EPA Method TO-15.
7	Evaluate potential for off-site migration of impacted groundwater in the downgradient direction (east).	Advance two borings to approximately 20 feet bgs in the parking lot of the property east of the Crown site for collection of grab groundwater samples.	Two borings are proposed off-site, on the property east of the Crown site, just east of the building in the expected area of highest potential VOC concentrations.	*Groundwater:* VOCs by EPA Method 8260, dissolved oxygen, oxidation/reduction potential, temperature, pH, and specific conductance.
8	Evaluate VOC concentrations just north of the highest concentration area.	Advance two borings to approximately 20 feet bgs north of Building A for collection of soil and grab groundwater samples. Soil samples will be collected at two depths in the vadose zone. Soil samples will be collected based on field indications of impacts (PID readings, odor, staining) or, in the absence of field indications of impacts, at 5 and 10 feet bgs.	The highest concentrations of PCE in groundwater were detected at boring NM-B-32, just north of Building A. The nearest available data to the north are approximately 75 feet away. One of the borings will be advanced approximately 20 feet north of NM-B-32 to provide data close to the highest concentration area. A second boring will be advanced approximately halfway between the first boring and former boring NM-B-33 to provide additional spatial data for contouring purposes. These borings will be part of a transect in the highest concentration area.	*Groundwater:* VOCs by EPA Method 8260, dissolved oxygen, oxidation/reduction potential, temperature, pH, and specific conductance. *Soil:* VOCs by EPA Method 8260 (soil samples to be collected using field preservation in accordance with EPA Method 5035).
9	Evaluate VOC concentrations in soil vapor in the south parcel of the site.	Install four temporary soil vapor probes at approximately 5 feet bgs around boring SV-25, where PCE was detected in soil vapor at a low concentration.	PCE was detected in soil vapor sample SV-25 in the southern parcel, although was not detected in groundwater in that area. Three probes will be installed approximately 30 feet from of boring SV-25 to attempt to delineate the extent of impacts. A fourth probe is proposed west of the original sample, close to the property boundary and the location of mapped utility lines, which may be a potential conduit, to evaluate potential impacts from the west.	*Soil vapor* : VOCs by EPA Method TO-15.
10	Obtain additional information regarding subsurface structures and utilities to further evaluate migration pathways and sources.	Ground penetrating radar (GPR) and other utility locating methodologies will be used, as appropriate, to further evaluate the presence of unknown utilities and structures at the site.	Utilities have been identified at the site that include an on-site sewer lateral and drain line, and shallow water, electric, and gas lines. Given the current understanding of the distribution of PCE in groundwater at the site, it is possible that other subsurface utilities, and specifically sewer laterals, exist that may act as a source or migration pathway for distribution of VOCs in the subsurface.	NA

Appendix B
Detailed Chronological Site History

October 1994 Underground Storage Tank (UST) Removal

KTW & Associates on behalf of ATW removed a 2,000-gallon UST. Two soil samples (TP-1-N and TP-2-S) were collected from beneath the tank. Chemical analysis of the soil samples identified the presence of total petroleum hydrocarbons as gasoline (TPHg) at concentrations ranging from 870 mg/kg to 18,000 mg/kg. Benzene concentrations in these samples ranged from 2.9 to 100 mg/kg. The tank pit remained open until March 19, 1996 when the excavation was backfilled subsequent to over-excavation by a Shell contractor.

August and September1995 Phase I Environmental Site Assessment (ESA)

Enviros Inc. (Enviros) performed a Phase I ESA for the Site. Available information collected during the ESA indicates that the subject property was occupied by residential housing prior to approximately 1959. A building permit to erect a building was obtained for Shell Oil Company in February 1959. A building permit to "close lube bays with sheet metal panels" was secured for Shell Oil Company in July 1976. In 1979, several building permits were secured for Acme to modify existing Site structures. Two building permits were secured in 1979 related to the installation of a fuel pump at the Site. During a Site survey in conjunction with the Phase I ESA, an excavation was observed near the southwest corner of the service building. The excavation was covered by a blue tarp. This excavation's location is consistent with that of the 2,000-gallon UST removed in 1994 by ATW, and with a large concrete slab observed in aerial photographs taken in 1971 and 1973, and a smaller concrete slab observed in aerial photographs taken in 1981 and 1985. The larger concrete slab observed in the aerial photographs was likely covering the USTs operated by Shell, and the smaller slab was likely covering the UST operated by Acme, confirming that the same location was used for both UST complexes.

May 1995 Subsurface Investigation

ACC Environmental Consultants advanced nine soil borings (B-1 through B-9) using a pneumatic sampling tool in the vicinity of the excavation (which formerly housed both Shell's and Acme's USTs) and the product dispenser islands, and collected soil and grab-groundwater samples. TPHg concentrations in soil samples ranged from <20.0 to 830 mg/kg. Benzene concentrations ranged from <1.0 to 1.8 mg/kg. Separate phase hydrocarbons (SPH) were identified in water samples collected from four of the soil borings (B-1, B-5, B-6, and B-9). TPHg concentrations in the non-SPH grab groundwater samples submitted for chemical analysis ranged from <50 to 89,000 micrograms per liter (µg/L). Benzene concentrations in the grab groundwater samples ranged from <0.5 to 21,000 µg/L.

March 1996 Over-Excavation

Acme's former UST excavation was over-excavated and back-filled. The excavation, originally left open to 9 feet below ground surface (bgs), was over-excavated to approximately 11 feet bgs. Two soil samples (TP-3-W and TP-4-E) were collected from the bottom of the over-excavated former UST area. Soil sample TP-3-W, collected from the western end of the excavation, contained 560 mg/kg TPHg, and 3.1 mg/kg benzene. Soil sample TP-4-E, collected from the eastern end of the excavation, contained 2,700 mg/kg TPHg and <3.0 mg/kg benzene. The excavation was back-filled with clean imported fill material. Soil sampling and back-filling activities are documented in Enviros' May 10, 1996, correspondence.

July 1996 Subsurface Investigation

Enviros advanced six borings (B-10, B-11, B-12, B-13, V-1, and V-2) B-11 and B-12 were completed as groundwater monitoring wells MW-1 and MW-2, and borings V-1 and V-2 were completed as soil vapor extraction wells V-1 and V-2, respectively. Soil sampling was not performed in boring V-1 due to the fact that it was installed into the back-fill material within the former UST excavation. A soil sample from below the saturated zone in boring V-2 was submitted for physical parameter analyses (porosity, permeability, fractional organic carbon content, and dry bulk density).

TPHg and benzene were not detected in soil samples collected from MW-1 (B-11), MW-2 (B-12), and B-13. TPHg was detected in soil samples collected from B-10 and V-2 at concentrations of 1.7 and 110 mg/kg, respectively. Benzene concentrations in soil samples from B-10 and V-2 were <0.0050 and 0.29 mg/kg, respectively.

Grab groundwater samples were collected from borings B-10, B-12 (MW-2), and B-13 at the depth of first encountered groundwater (approximately 8 to 11 feet bgs) for chemical analysis. Boring B-11 (MW-1) did not yield sufficient groundwater for grab groundwater sample collection. Monitoring wells MW-1 and MW-2 were developed and sampled on August 2, 1999 by Blaine Tech Services (Blaine Tech) of San Jose, California. TPHg concentrations in the groundwater samples ranged from <50 to 290,000 µg/L. Benzene concentrations ranged from <0.50 to 34,000 µg/L.

February 1997 Modified Phase I ESA

Enviros performed a modified Phase I ESA for the subject facility. A review of aerial photographs (1952 to 1994), city directories (1967 to 1993) and Sanborn maps (1912 to 1970) did not reveal evidence of an off-site source of petroleum hydrocarbons, which would have impacted groundwater on Site. The properties located north and west of the subject facility appear to have been occupied by residential houses from at least 1912 to the present. The nearest gasoline stations identified in the vicinity of the subject facility were a former Chevron station (740 27th Street at West) approximately 450 feet to the west, a former station (26th Street and Martin Luther King, Jr. Way) approximately 300 feet to the south, and a former Mobil station (554 27th Street) approximately 950 feet to the east.

2000 Sensitive Receptor Survey

Cambria Environmental Technology, Inc. (Cambria) performed a sensitive receptor survey, which attempted to identify wells and underground utility conduits. Cambria obtained utility conduit maps from the City of Oakland Engineering Department to locate and map underground utility conduits, which may act as preferential pathways for contaminant migration from the Site. These conduit trenches are typically back-filled with materials that are more permeable than the surrounding native soils, therefore providing a path of least resistance for petroleum hydrocarbon migration within the local groundwater.

Using these maps, Cambria identified the sanitary and storm sewer systems as the only utility conduits in the Site vicinity that may act as preferential pathways. All other utilities are typically buried at depths that are shallower than those of the sewer systems. Conduits identified in the area are located at depths of approximately 3.5 to 9 feet bgs. Therefore, the potential does exist for groundwater to flow within these conduit trenches. Groundwater depth on-site historically ranges from approximately 4.5 to 10 feet bgs. However, since the typical groundwater flow direction on Site

has generally been to the south, it is likely that any contaminant migration within the utility conduits would be limited, since the utility conduits located to the south of the Site are the shallowest of all the conduits identified adjacent to the Site at depths of 3.5 to 5.5 feet bgs.

Cambria obtained well installation and destruction records from the California Department of Water Resources (DWR) in order to identify any active water producing wells in the vicinity of the Site, which may be at risk to petroleum hydrocarbon impact due to contaminant migration from the subsurface of the Site. DWR records did not identify any existing wells within a ½-mile radius of the Site.

November 2000 Subsurface Investigation

Cambria installed three soil borings (B-17, B-18 and B-19) and three groundwater monitoring wells (MW-3, MW-4 and MW-5). Up to 2,100 mg/kg TPHg and 3.3 mg/kg benzene were reported in soil samples collected. No TPHg or benzene was detected in soil samples collected from well MW-3. Except for 0.0070 mg/kg detected in soil sample B-18-7.0, no methyl tertiary-butyl ether (MTBE) was detected in any of the analyzed soil samples. Tertiary-butyl alcohol (TBA) was detected in soil samples MW-4-5.0 and B-19-5.0 at concentrations of 0.0079 and 0.0059 mg/kg, respectively.

Grab groundwater samples were collected from borings B-17 through B-19 at first encountered groundwater. TPHg concentrations in grab water samples collected from the borings ranged from 58,000 to 190,000 µg/L. Benzene concentrations ranged from 4,400 to 13,000 µg/L. MTBE was detected in groundwater at concentrations of 16 and 300 µg/L from B-19 and B-17, respectively, and TBA was detected at 240 µg/L in B-19 only. No SPH was observed during the investigation.

May 2001 Oxygen Releasing Compound (ORC) Sock Installation

Blaine Tech installed ORC socks in wells V-1 and V-2 during the second quarter monitoring event. ORCs were removed during the fourth quarter 2001 monitoring event. MTBE has not been detected in these two wells since the ORCs were installed.

April 2002 Site Investigation

Cambria advanced borings B-20 through B-22 and soil samples were collected at depths ranging from 3 and 8 feet bgs. Grab-groundwater samples were collected from each boring at depths ranging from 8 and 8.8 feet bgs. The maximum TPHg and benzene concentrations detected in soil were 380 and 0.17 mg/kg, respectively, in the soil sample collected from 8.0 feet bgs in boring B-22, located behind the station building. No TPHg was detected in soil samples collected from boring B-21. No MTBE was detected in any of the analyzed soil samples collected from borings B-20, B-21, or B-22. Up to 160,000 µg/L TPHg and 18,000 µg/L benzene were reported in grab groundwater samples collected from borings B-20, B-21, and B-22. No MTBE was detected in grab groundwater samples collected from the borings.

2003 Door-to-Door Survey

Cambria conducted a door-to-door survey of properties within 500 feet of the Site. No wells were identified, but seven structures with basements were identified.

2003 to 2005 ORC Sock Installation

Blaine Tech installed ORC in wells MW-5 and V-2 during first quarter of 2003. The ORCs were replaced on a semi-annual basis. The use of ORC was discontinued during the first quarter 2005, at Shell's request.

August 2005 Subsurface Investigation

Cambria advanced ten soil borings (GP-1 through GP-10) and soil samples were collected from each boring at depths ranging from 4.6 to 10 feet bgs. Grab-groundwater samples were collected from GP-1, GP-3, GP-6, and GP-7. In soil, TPHg was detected from borings GP-1 at 10.0 feet bgs, GP-2 at 4.5 feet bgs, GP-3 at 5.0 and 8.5 feet bgs, GP-6 at 9.5 feet bgs, and GP-7 at 9.5 feet bgs at concentrations ranging from 1.5 to 3,300 mg/kg and benzene was detected from borings GP-2 at 4.5 feet bgs, and GP-3 at 5.0 and 8.5 feet bgs at concentrations ranging from 0.027 to 15 mg/kg. In groundwater, TPHg was detected in all four borings (GP-1, GP-3, GP-6, and GP-7) at concentrations ranging from 9,100 to 140,000 µg/L and benzene was also detected in all four groundwater samples at concentrations ranging from 320 to 17,000 µg/L. Each boring was converted into a temporary soil vapor well and soil vapor samples were collected from each well. TPHg was detected in GP-1 through GP-10 at concentrations ranging from 350 to 71,000,000 micrograms per cubic meter (µg/m^3). Benzene was detected in soil samples collected from borings GP-1 through GP-3 and GP-5 through GP-10 at concentrations ranging from <4.1 to 170,000 µg/m^3

December 2005 Door-to-Door Survey

Cambria conducted a door-to-door survey within 300-feet of the subject Site for wells, basements, and foundation type to identify building construction and potential vapor receptors. Questionnaires were sent to 110 properties and responses for 25 properties were received. Of the 25 responses received, none of the properties had basements. Three properties were denoted as vacant; nine properties contained buildings constructed with slab-on-grade foundations; three contained buildings constructed with perimeter foundations. Responses for the other 10 properties were either left blank, marked as unknown, or the response was contradictory or unclear. Regarding USTs, 17 responses were negative, four responses were marked as "unknown", and four responses were left blank. With the exception of the monitoring wells at the subject Site, no wells were identified through the survey activities.

January 2006 Subsurface Investigation

Cambria advanced three monitoring wells (MW-6 through MW-8), one soil boring (B-23), and six soil vapor probes (VP-1 through VP-6). In soil, TPHg was detected from borings MW-6 at 10.0 and 15.5 feet bgs, MW-7 at 11.5 and 16.5 feet bgs, MW-8 at 10.5 and 19 feet bgs, and B-23 at 10, 15.5, and 19.5 feet bgs at concentrations ranging from 7.1 to 3,800 mg/kg. Benzene was detected from borings MW-6 at 19.5 feet bgs, MW-8 at 19.5 feet bgs, and B-23 at 15.5 and 19.5 feet bgs at concentrations ranging from 0.0090 to 33 mg/kg. The vapor probes were not installed due to saturated soil conditions.

January 2006 DPE Pilot Test

Cambria conducted a five-day dual-phase extraction pilot test and concluded the following:

1) The absence of vapor phase concentrations (and groundwater concentrations) from well V-1 indicates that the former UST excavation does not contain residual source material;
2) High sustained and increasing vapor concentrations suggest source material is present in the vicinity of wells V-2, MW-5, and MW-8;
3) Variability in extraction flow rates across the Site may reflect heterogeneities in subsurface soils or may suggest preferential pathways; and
4) The extremely high effective radius of influence calculated for wells MW-5 and MW-8 during DPE testing on well MW-7 supports the presence of a preferential pathway in the vicinity of these wells.

The data from the DPE pilot test suggests that DPE is feasible at this Site. The groundwater table was effectively drawn down by DPE and moderate vapor extraction flow rates were yielded from some of the extraction points. Although DPE is deemed feasible, Cambria did not recommend implementing DPE at this Site. The extraction points that yielded the highest vapor concentrations did not yield an effective vapor extraction flow rate. Conversely, low vapor concentrations were yielded from the extraction point that did yield an effective vapor extraction flow rate. Therefore, DPE is not considered feasible in the target areas at this Site.

February 2006 Off-Site Well Installations

Cambria installed two off-Site monitoring wells (MW-12 and MW-14) to 20 and 14.5 feet bgs, respectively. Groundwater was first encountered during drilling activities in borings MW-12 and MW-14 at 14.0 and 11.0 feet bgs, respectively. None of the soil samples from well MW-12 indicated the presence of any TPHg or BTEX. The 5 foot bgs sample from MW-14 also did not contain any reportable concentrations. TPHg was reported in the 10 and 14 feet bgs samples from MW-14 at concentrations of 32 and 970 mg/kg, respectively. Benzene was reported in the same two samples at concentrations of 0.0083 and 2.3 mg/kg, respectively. Fuel oxygenates were requested on the 10 feet bgs and 14 feet bgs soil samples from MW-14, and none were reported above the detection limits.

April 2006 Site Visit

Cambria identified historical boring locations from patches on the ground surface, historical excavation edges, trenches, and other Site features. An inspection inside the building identified two bathrooms. A floor drain was observed in the northernmost bathroom. Standing liquid was present in the floor drain and automotive parts and cleaners were stored in this area. Thus, a sample from the floor drain was collected and submitted for analyses of volatile organic compounds (VOCs) by EPA Method 8260 and semi-volatile organic compounds (SVOCs) by EPA Method 8270. The floor drain sample was analyzed for VOCs and SVOCs. The results indicated the presence of carbon disulfide (3.69 µg/L), ethylbenzene (0.610 µg/L) and toluene (0.770 µg/L).

May 2006 Geophysical Survey

Cambria performed a geophysical study with the objectives of determining whether or not a waste oil UST was in the ground in the northwest portion of the property, and to evaluate the presence of subsurface utilities in this area that may act as preferential pathways, including the mapping of the sewer line from the floor drain found inside the northwest corner of the building during the April 19, 2006 Site inspection. The results did not identify the presence of a UST on the northwest corner of the Site, but did find another vent line located behind the northeast comer of the station building. A subsurface electric line was traced from the station building to the western property boundary, and an unidentified subsurface utility was traced from the northwest corner of the station building to the southwest, near MW-5 and toward MW-6. The presence of the unknown utility line in the northwest corner confirms the observations of a possible preferential pathway in this area based on the dual-phase extraction pilot test performed in January 2006.

October 2006 CPT-1 through CPT-5 and VP-1 through VP-6

Cambria conducted five on-Site CPTs (CPT-1 through CPT-5) to approximately 40 feet bgs and installed six on-Site vapor wells VP-1 through VP-6. Off-site borings were not successful due to concerns about property damage (CPT-8 and CPT-9), and utility conflicts (CPT-6 and CPT-7), and lack of access agreement (CPT-10). There was a lack of adequate groundwater recharge for many of the groundwater samples attempted between 15 and 29 feet bgs. Groundwater sample results from between 31-37 feet bgs confirmed significant attenuation of contaminants of at least one order of magnitude from the interval monitored by the Site wells (5-20 feet bgs).The six on-Site vapor probes could not be sampled due to the presence of water in some of the probes. A Site inspection at the neighboring property was performed and revealed that due to significant ventilation and air exchange with outdoor ambient air, vapor sampling within the aboveground basement was no longer warranted.

May and June 2007 CPT-6, CPT-7, and CPT-10 and VP-7 and VP-8

CRA advanced off-Site borings CPT-6, CPT-7, and CPT-10 and installed off-Site vapor probe pairs VP-7 and VP-8. No TPHg or benzene was detected in soil samples collected from VP-7 and VP-8, or from boring CPT-6. There was a lack of adequate groundwater recharge in the shallow groundwater sampling interval in boring CPT-6, and in both the shallow and deeper attempted intervals in boring CPT-7. Grab groundwater samples from boring CPT-10 contained 38,000 µg/L TPHg and 1,600 µg/L benzene at 13-17 feet bgs, and 640 µg/L TPHg and 3.8 µg/L benzene at 20-23 feet bgs. Soil vapor samples collected from both sampling intervals (approximately 2.5 and 4.5 feet bgs) in off-Site probes VP-7 and VP-8 did not contain TPHg or benzene concentrations above the residential ESLs.

February 2008 Site Conceptual Model (SCM) and Feasibility Study/Corrective Action Plan (FS/CAP)

CRA submitted a SCM and FS/CAP for the Site. Excavation of source material followed by installation of a bio-sparge curtain to assist biodegradation was the recommended remedial action for the Site.

July 2008 Subsurface Investigation

CRA installed one off-Site soil vapor probe (VP-9) at 2721 Martin Luther King Jr. Way. No TPHg, benzene, or MTBE was detected in a soil sample from the probe boring at 4.5 feet bgs.

April 2009 Subsurface Investigation

CRA drilled eight hand-auger borings (HA-1 through HA-8) to assess the extent of hydrocarbon and lead concentrations in the vicinity of a former waste oil AST. Up to 11,000 mg/kg total petroleum hydrocarbons as motor oil (TPHmo) and 1,060 mg/kg total lead, 4,500 mg/kg total petroleum hydrocarbons as diesel (TPHd) were detected in soil samples from the hand-auger borings. Maximum concentrations were all detected in samples from less than 2 feet bgs.

2010 Door-to-Door Survey Addendum

CRA conducted a door-to-door survey of four properties near the Site, which did not respond to the previous door-to-door surveys for wells, basements, or sumps. Questionnaires were sent to the four properties, and CRA received responses for three of the properties. Of the three responses received, two of the properties had basements. None reported wells or sumps.

August 2010 Subsurface Investigation

CRA installed three off-Site groundwater monitoring wells (MW-9 through MW-11) and one soil vapor probe (VP-10) down gradient of the Site. No benzene was detected in any soil samples. Soil samples contained up to 1,200 mg/kg TPHg.

December 2010 Subsurface Investigations and Revised RAP

CRA drilled 25 soil borings (B-24 through B-48) on Site to evaluate soil conditions in the area of the former UST complex and fuel delivery system. Five soil borings (HA-9 through HA-13) were drilled off site to evaluate soil conditions near the former waste oil AST. Soil samples from the on-Site soil borings contained up to 28,000 mg/kg TPHg and 72 mg/kg benzene. Soil samples from the off-Site borings contained up to 1,200 mg/kg TPHmo, 430 mg/kg TPHd, 4,550 mg/kg total lead, and 0.26 mg/kg benzo(a)pyrene. No other polycyclic aromatic hydrocarbons (PAHs) were detected at concentrations exceeding ESLs for soil where groundwater is not a drinking water source with residential land use. Additionally, CRA recommended a shallow excavation to remove residual petroleum hydrocarbon and lead impacts in soils in the northern portion of the subject Site and the adjacent property to the north.

April 2012 Subsurface Investigation

CRA drilled five soil borings (HA-14 through HA-18) to evaluate soil conditions in the area adjacent to the former waste oil AST. Soil samples from the borings contained up to 81 mg/kg TPHmo, 89 mg/kg TPHd, 0.22 mg/kg benzo(a)pyrene, and 4,200 mg/kg total lead. No other PAHs were detected at concentrations exceeding ESLs.

January-March 2013 Remedial Excavation

CRA excavated shallow soil behind the former service station building to remove petroleum hydrocarbon and lead soil impacts. All constituents of concern detections in soil samples collected from the excavation were below RWQCB ESLs for commercial land use, with the exception of a lead detection in one sidewall sample from the north edge of the excavation, which was likely related to the off-Site lead impacts detected during previous investigations.

April 2013 Subsurface Investigation

CRA drilled ten soil borings (HA-9, HA-10, HA-12, HA-13, and HA-19 through HA-24) to determine the source of lead impacts and benzo(a)pyrene in the backyards of 663 and 665 28th Street and 2719 through 2723 Martin Luther King Jr. Way, Oakland All detections of lead in surface soil samples collected during this investigation exceeded RWQCB ESLs. All concentrations of PAHs were below RWQCB ESLs for residential soils, with the exception of one surface soil sample containing benzo(a)pyrene, benzo(b)fluoranthene, and ideno(1,2,3-c,d)pyrene concentrations exceeding ESLs. Shell reviewed the PAH chromatogram for the surface soil sample and concluded that these detections are from a pyrogenic source consistent with urban soils, soot, storm water runoff, etc. and have no connection to waste oil. The lead and PAHs detected in backyards adjacent to the former service station building did not appear to be associated with the former service station operations.

June 2015 Subsurface Investigation

CRA installed one off-Site groundwater monitoring well (MW-13), two nested off-Site soil vapor probes (VP-12 and VP-13), and one on-Site nested soil vapor probe (VP-14). On-Site soil vapor probe VP-3 at 5 feet bgs was also sampled. One well and two soil vapor probes proposed in CRA's July 19, 2012, work plan were not installed because the off-Site property owners would not allow access. One off-Site probe (VP-13) was moved to an adjacent property. On-Site soil vapor probes VP-2 at 3 and 5 feet bgs and VP-3 at 3 feet bgs could not be sampled due to water in the probes.

All TPHg and BTEX concentrations in soil samples collected from the well boring were below RWQCB ESLs. As requested, CRA collected surface soil samples from each of the soil vapor probe locations and the well boring for lead analyses. All lead concentrations were below the RWQCB ESL. COC concentrations in soil vapor samples exceeded the RWQCB ESLs in VP-3 at 5 feet bgs, VP-13 at 3 feet bgs, and VP-14 at 3 and 5 feet bgs.

October 2015 Soil Vapor Sampling

GHD sampled on-Site soil vapor probes VP-3 and VP-14 and off-Site soil vapor probes VP-12 and VP-13 at 3 and 5 feet bgs. On-Site soil vapor probe VP-2 at 3 and 5 feet bgs could not be sampled because the location was inaccessible, and off-Site soil vapor probe VP-7 was not sampled due to an administrative error. TPHg soil vapor sample concentrations in VP-3 at 5 feet bgs and VP-14 at 3 and 5 feet bgs exceeded RWQCB ESLs for residential and commercial land use in the April 16, 2015 and August 27, 2015, sampling events. Benzene concentrations in VP-14 at 3 and 5 feet bgs and ethylbenzene in VP-14 at 5 feet bgs also exceeded RWQCB ESLs for residential and commercial land use in both sampling events.

December 2015 Human Health Risk Assessment

AECOM conducted a Human Health Risk Assessment (HHRA) to assess soil vapor concentrations for Site characterization and estimate potential health risks to current and future commercial/industrial workers, future excavation workers, hypothetical future on-Site residents, and current off-Site residents. Based on the results of the risk assessment, on-Site sources may potentially pose unacceptable risk for vapor intrusion health risks to future commercial/industrial workers. There appeared to be no significant direct contact risk to current or future receptors. There also appeared to be no significant vapor intrusion risk to current or future off-Site residents, or current on-Site commercial/industrial workers.

AECOM recommended further confirmation of off-Site vapor concentrations by resampling soil vapor probes VP-7 and VP-13.

May 2016 Revised Corrective Action Plan

AECOM prepared a revised Corrective Action Plan (CAP) proposing pulsed oxygen injection to remediate the impacted capillary fringe and groundwater.

2005 to Present Soil Vapor Sampling

Soil vapor probe installation and vapor sampling/monitoring was conducted initially in 2005, then in 2007, 2008, 2009, 2010, 2015, and most recently in 2017. The vapor probes have included VP-1 through VP-10, and VP-12 through VP-14 (no probe was assigned the designation VP-11). On-Site probes VP-1 through VP-6, and off-Site probes VP-8 through VP-10 have apparently been destroyed. Probes available for sampling include VP-3 and VP-14 located on-Site, as well as VP-7, VP-12, and VP-13 located on residential properties west of the Site. As recommended in the 2016 HHRA, AECOM resampled soil vapor probes VP-7 and VP-13 in 2017 to provide up to date information about off-Site vapor concentrations and enable confirmation of the HHRA's conclusions.

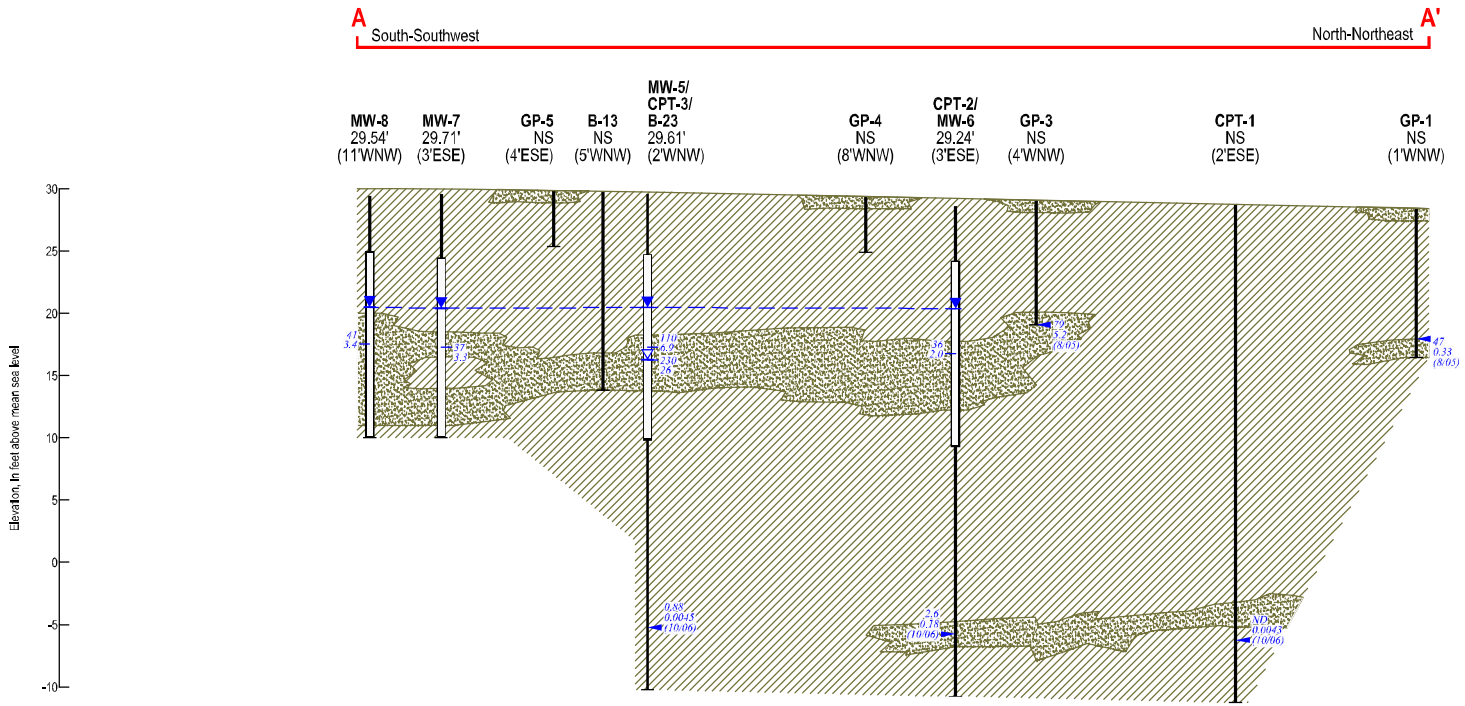
1996 to Present Ongoing Groundwater Monitoring

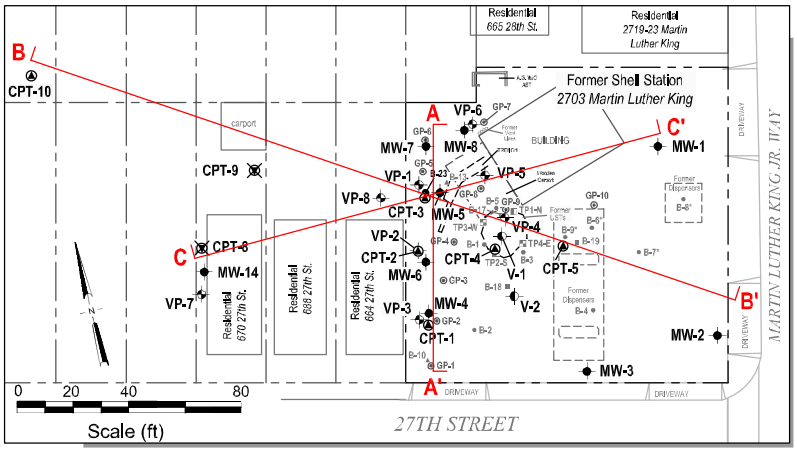
Quarterly groundwater monitoring has been ongoing at the Site since August 1996 and currently includes on-Site monitoring wells MW-1 through MW-8, VP-1, and VP-2, and off-Site monitoring wells MW-12 and MW-14. Fuel oxygenates are not a significant component of the groundwater plumes, although some detections of di-isopropyl ether and TBA have been observed. Overall, the groundwater flow direction is primarily to the west, with some radial components on Site to the northwest and southwest. Historically, monitoring wells MW-1, MW-2, MW-3, and MW-12 have shown little or no impact from petroleum hydrocarbons. Maximum historical concentrations of TPHg and benzene have been observed in on-Site monitoring well MW-5.

Appendix C
Geologic Cross Sections

12/18/07

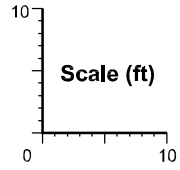
Geologic Cross Section A-A'
- Grab and QM Groundwater Results





EXPLANATION

- = Fine-Grained Soils
- = Coarse-Grained Soils
- TPHg / Benzene — Concentrations in Groundwater, in ppm (08/27/07)
- Depth of Groundwater (08/27/07)
- Inferred Groundwater Depth
- TPHg / Benzene (DATE) — Grab Groundwater Sample Depth
- Well ID / Elev. — Well Designation; TOC Elevation, in feet above msl (NS = Not Surveyed)
- (offset) — Offset distance and direction to cross-section line
- Groundwater Monitoring Well or Soil Boring
- Well Screen Interval
- Bottom of boring



FIGURE

3A

Former Shell Service Station

2703 Martin Luther King Jr. Way

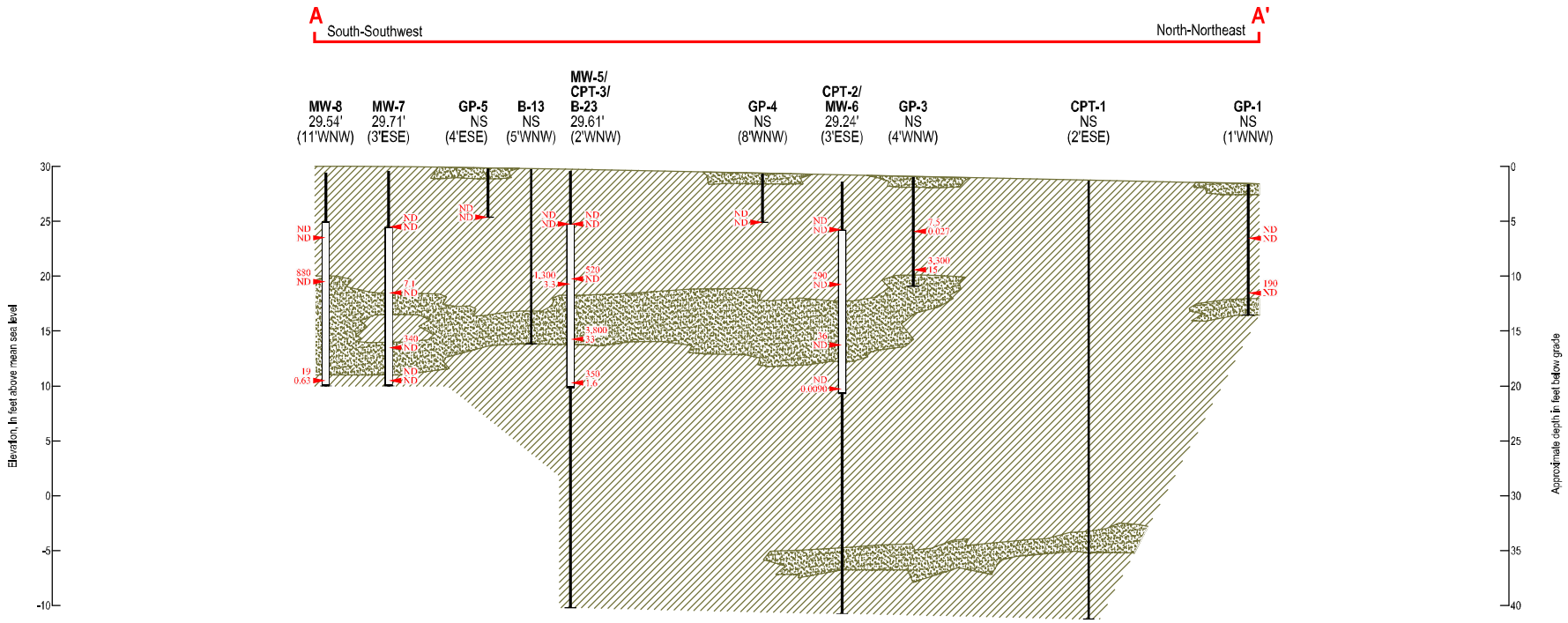
Oakland, California

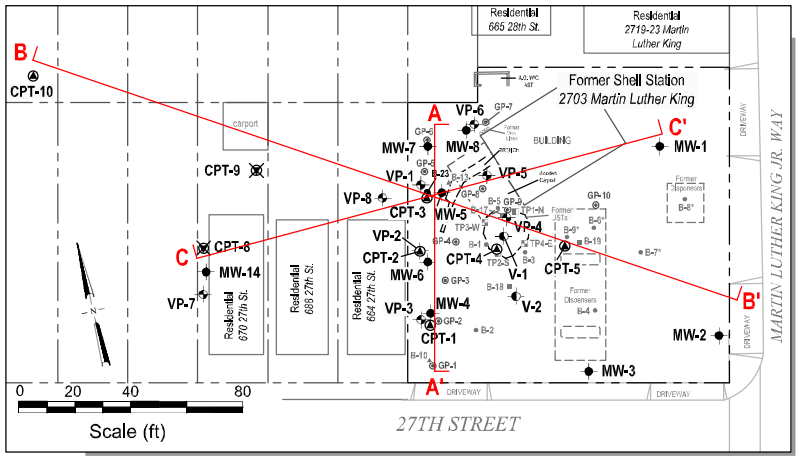
CONESTOGA-ROVERS & ASSOCIATES

I:\SONOMA\SHELL\OAKLAND 2703 MLK JR WAY\FIGURES\X-SECT A-A'.DWG

12/18/07

Geologic Cross Section A-A' - Soil Results





EXPLANATION

= Fine-Grained Soils

= Coarse-Grained Soils

Approximate Soil Sample Location

NA Not Analyzed

ND Not Detected

TPHg / Benzene — Concentrations in Soil, in mg/kg; (MTBE analyzed by EPA Method 8020 in parentheses, all others by EPA Method 8260 or NA)

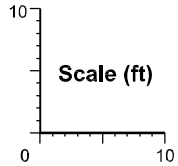
Well ID / Elev. — Well Designation / TOC Elevation, in feet above msl (NS = Not Surveyed)

(offset) — Offset distance and direction to cross-section line

Groundwater Monitoring Well or Soil Boring

Well Screen Interval

Bottom of boring



FIGURE

3B

Former Shell Service Station

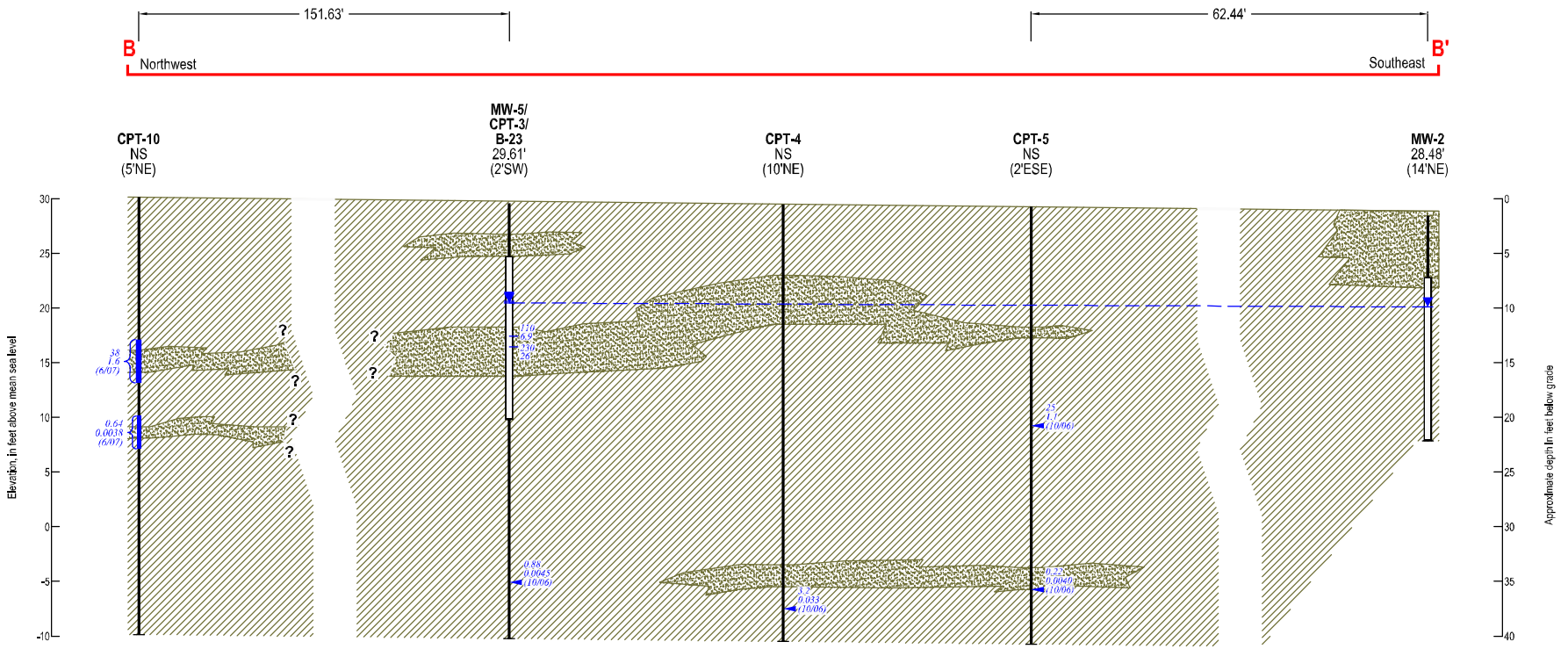
2703 Martin Luther King Jr. Way

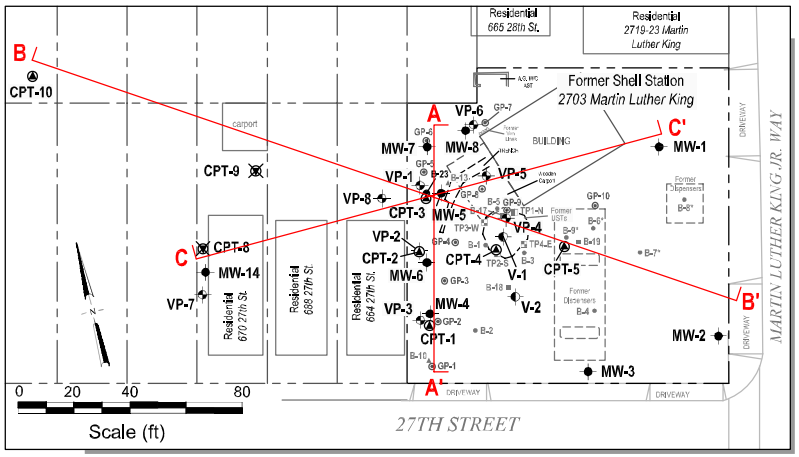
Oakland, California

CONESTOGA-ROVERS & ASSOCIATES

I:\SONOMA\SHELL\OAKLAND 2703 MLK JR WAY\FIGURES\X-SECT A-A'.DWG

12/18/07





EXPLANATION

- = Fine-Grained Soils
- = Coarse-Grained Soils
- TPHg / Benzene — Concentrations in Groundwater, in ppm (08/27/07)
- Depth of Groundwater (08/27/07)
- Inferred Groundwater Depth
- TPHg / Benzene (DATE) — Grab Groundwater Sample Depth
- TPHg / Benzene (DATE) — CPT Groundwater Sampling Interval and Concentrations, in ppm (DATE)

Well ID — Well Designation
Elev. — TOC Elevation, in feet above msl (NS = Not Surveyed)
(offset) — Offset distance and direction to cross-section line
Groundwater Monitoring Well or Soil Boring
Well Screen Interval
Bottom of boring

10
Scale (ft)
0
10

FIGURE
4A

Geologic Cross Section B-B'
- Grab and QM Groundwater Results

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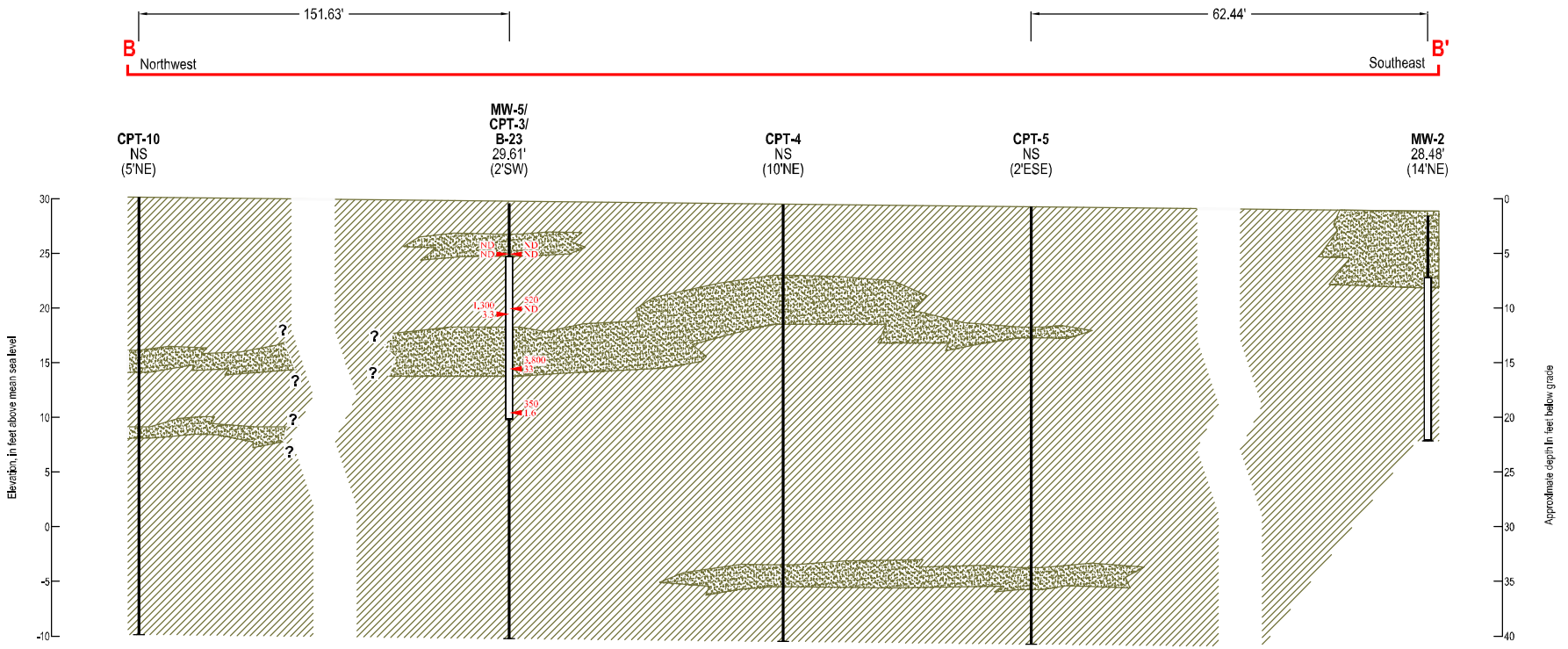
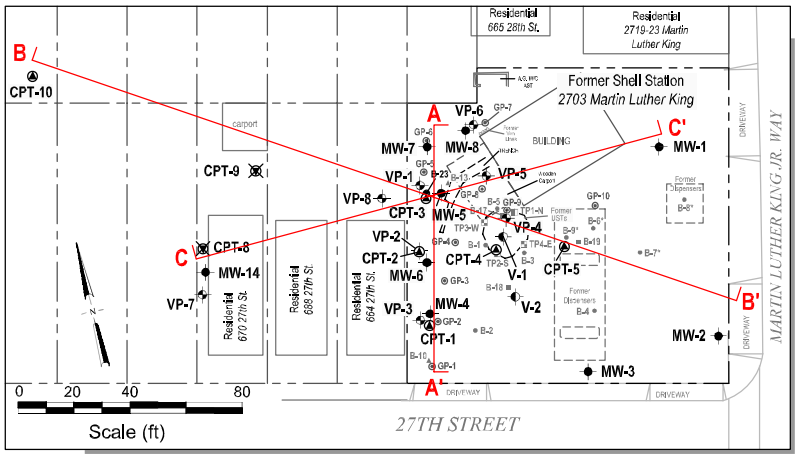
Former Shell Service Station
2703 Martin Luther King Jr. Way
Oakland, California

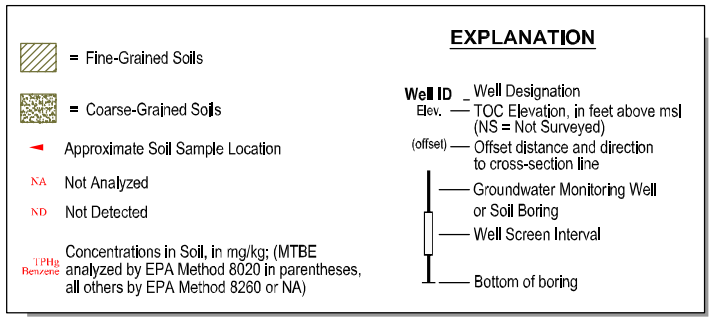
I:\SONOMA\SHELL\OAKLAND 2703 MLK JR WAY\FIGURES\X-SECT B-B'.DWG

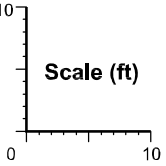
12/18/07

Geologic Cross Section B-B' - Soil Results









FIGURE

4B

Former Shell Service Station

2703 Martin Luther King Jr. Way

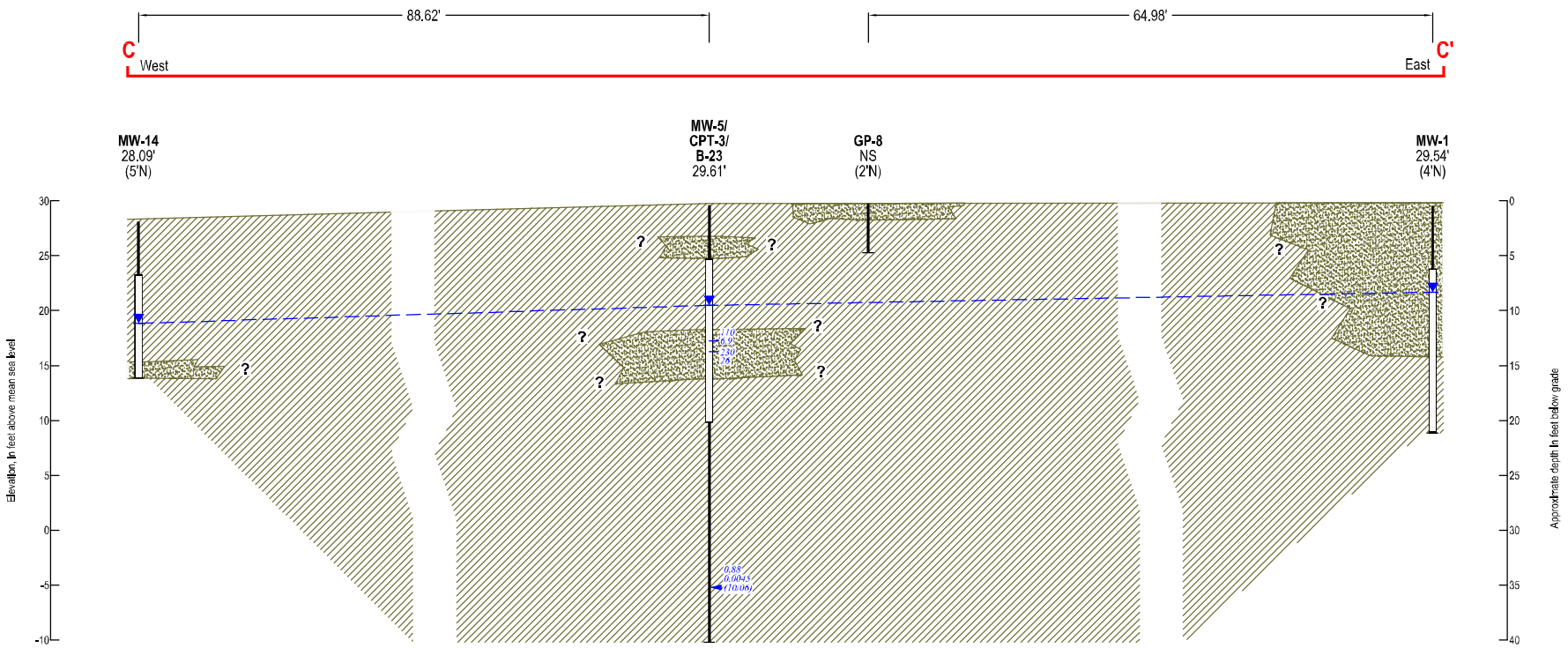
Oakland, California

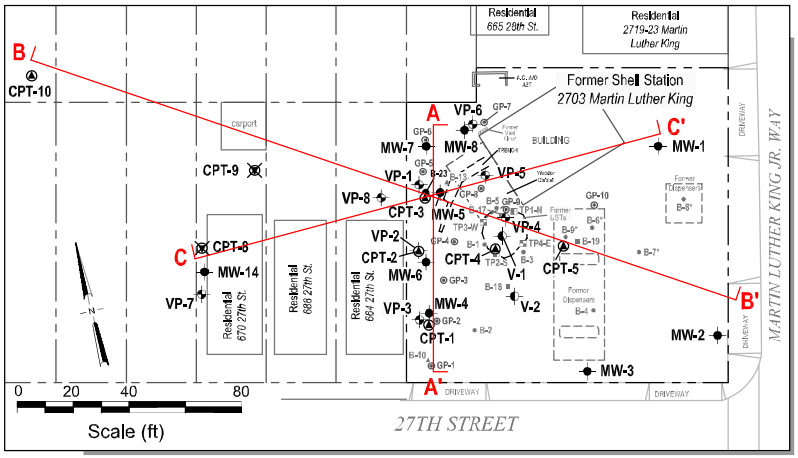
CONESTOGA-ROVERS & ASSOCIATES

I:\SONOMA\SHELL\OAKLAND 2703 MLK JR WAY\FIGURES\X-SECT B-B'.DWG

12/19/07

Geologic Cross Section C-C'
- Grab and QM Groundwater Results





EXPLANATION

= Fine-Grained Soils

= Coarse-Grained Soils

TPHg / Benzene — Concentrations in Groundwater, in ppm (08/27/07)

Depth of Groundwater (08/27/07)

Inferred Groundwater Depth

TPHg / Benzene / (DATE) — Grab Groundwater Sample Depth

Well ID / Elev. — Well Designation; TOC Elevation, in feet above msl (NS = Not Surveyed)

(offset) — Offset distance and direction to cross-section line

Groundwater Monitoring Well or Soil Boring

Well Screen Interval

Bottom of boring

10
Scale (ft)
0
10

FIGURE

5A

CONESTOGA-ROVERS & ASSOCIATES

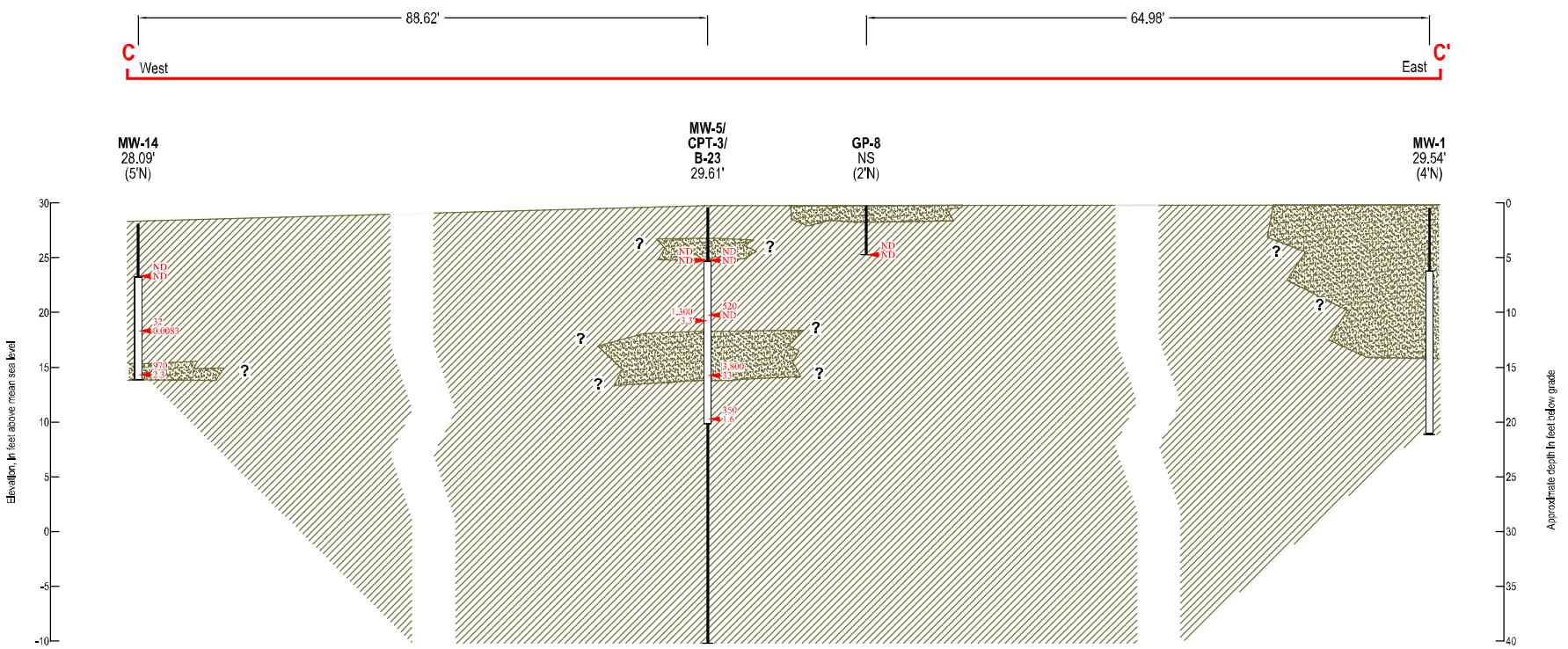
Former Shell Service Station

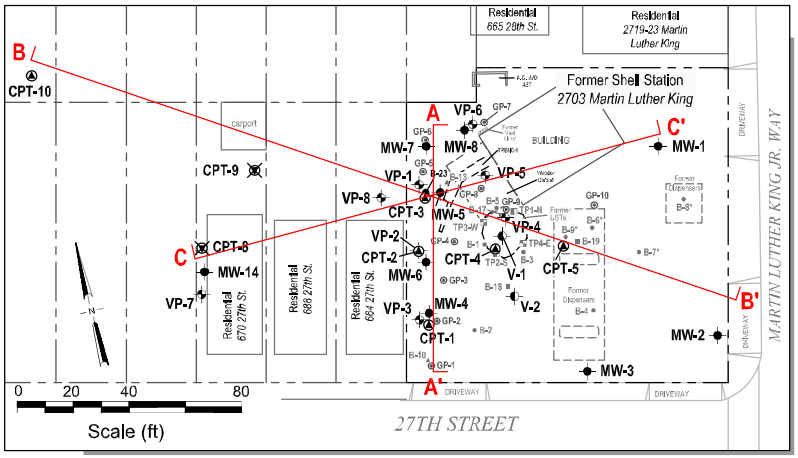
2703 Martin Luther King Jr. Way

Oakland, California

I:\SONOMA\SHELL\OAKLAND 2703 MLK JR WAY\FIGURES\X-SECT C-C'.DWG

12/19/07

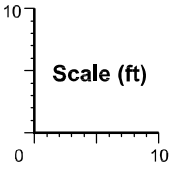




EXPLANATION

- = Fine-Grained Soils
- = Coarse-Grained Soils
- Approximate Soil Sample Location
- NA Not Analyzed
- ND Not Detected
- TPHg / Benzene — Concentrations in Soil, in mg/kg; (MTBE analyzed by EPA Method 8020 in parentheses, all others by EPA Method 8260 or NA)

Well ID _ Well Designation
Elev. — TOC Elevation, in feet above msl (NS = Not Surveyed)
(offset) — Offset distance and direction to cross-section line
— Groundwater Monitoring Well or Soil Boring
— Well Screen Interval
— Bottom of boring



FIGURE

5B

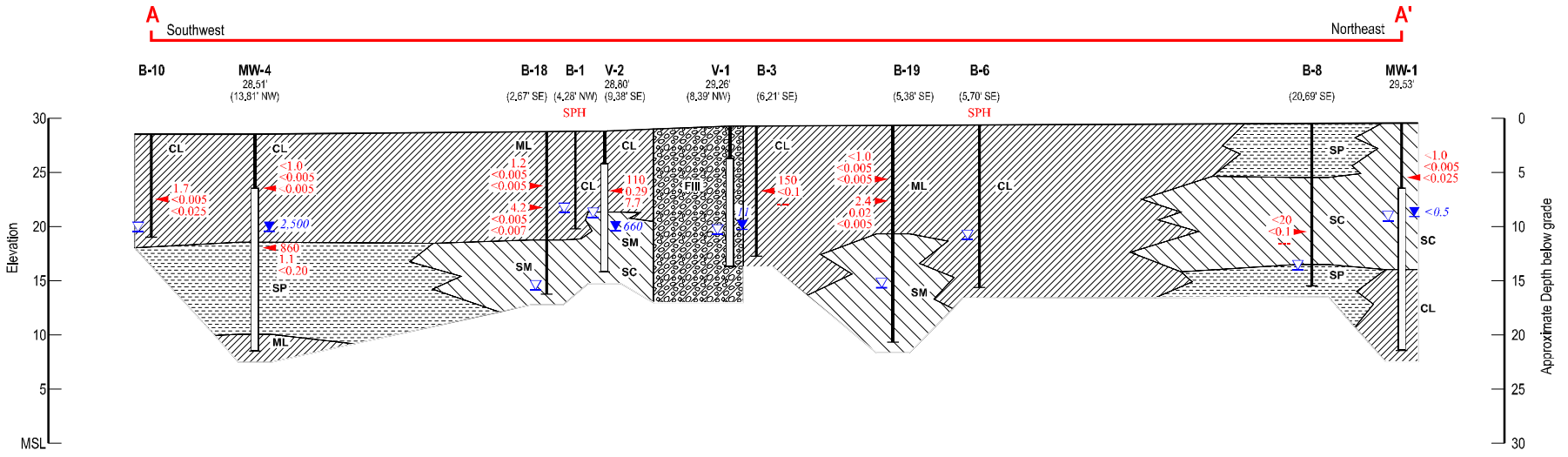
Geologic Cross Section C-C'
- Grab and QM Groundwater Results

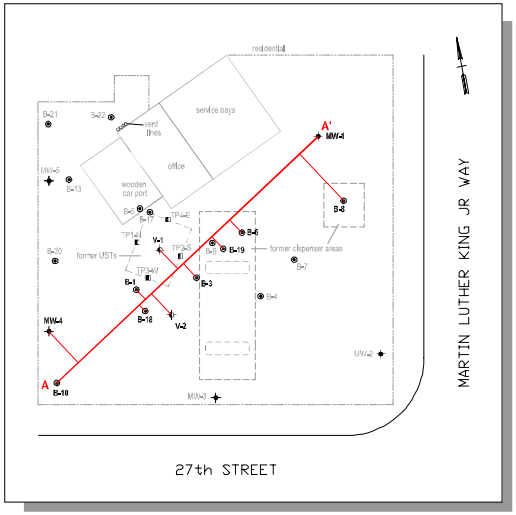
CONESTOGA-ROVERS & ASSOCIATES

Former Shell Service Station
2703 Martin Luther King Jr. Way
Oakland, California

I:\SONOMA\SHELL\OAKLAND 2703 M.L.K.JR WAY\FIGURES\X-SECT C-C'.DWG

12/12/03





EXPLANATION

- = Low Estimated Permeability Soils — CL, ML
- = Moderate Estimated Permeability Soils — SC, SM
- = High Estimated Permeability Soils — SP
- = Fill (Tank Pit)

CL = Clay
ML = Clayey Silt
SC = Clayey Sand
SM = Silty Sand
SP = Poorly Graded Sand

▼ Groundwater Elevation on 10/20/03

▽ Initial Groundwater level

Well ID / ELEV (projection) — Well Designation, GW Elevation, Projected distance from A-A'

Groundwater Monitoring Well

Well Screen Interval

Bottom of boring

TPHg / Benzene / MTBE — Hydrocarbon concentrations in soil, in mg/kg (ppm)

SPH — Seperate Phase Hydrocarbons detected during installation

Benzene — Benzene concentrations in groundwater in micrograms per liter (ppb) Sample taken on 10/20/03

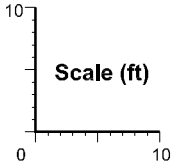


FIGURE
3

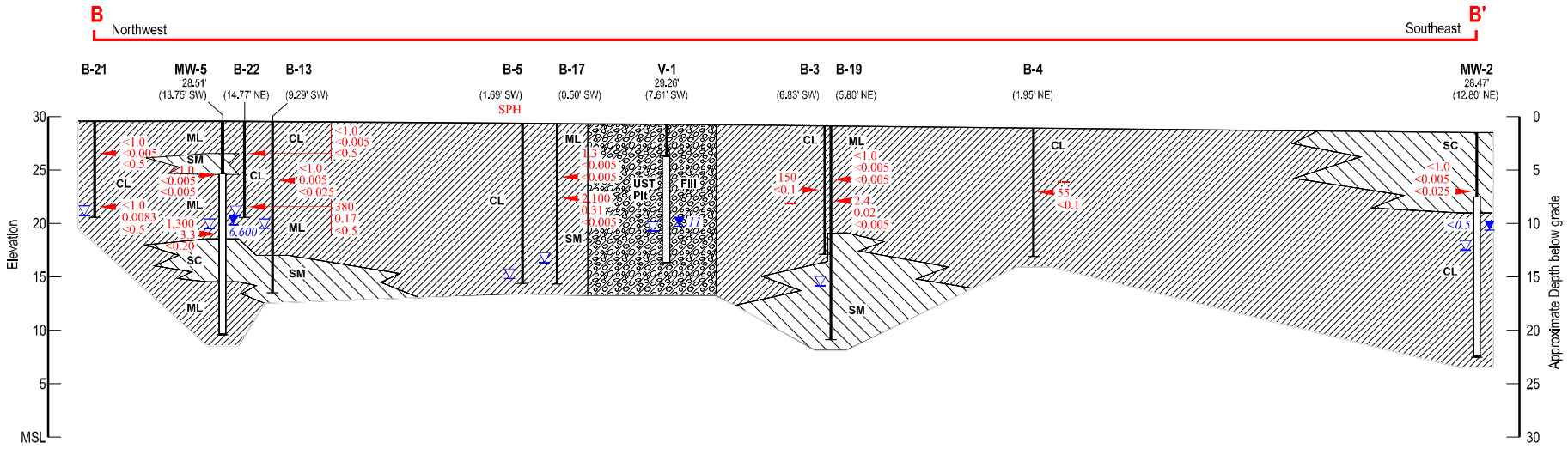
Geologic Cross Section A - A'

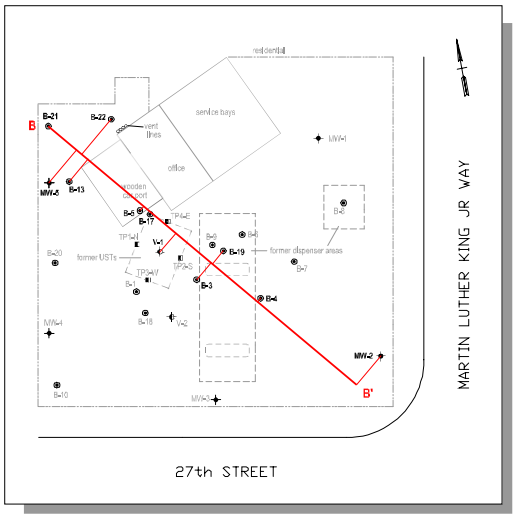
Former Shell Service Station
2703 Martin Luther King Jr. Way
Oakland, California

CAMBRIA

G:\OAKLAND 2703 MLK\FIGURES\<SECTION>-A.DWG

12/12/03





EXPLANATION

- = Low Estimated Permeability Soils — CL, ML
- = Moderate Estimated Permeability Soils — SC, SM
- = Fill (Tank Pit)

- CL = Clay
- SC = Clayey Sand
- SM = Silty Sand
- ML = Clayey Silt

- ▼ Depth of Groundwater on 10/20/03
- ▽ Initial Groundwater level

Well ID
ELEV
(projection)
Well Designation
GW Elevation
Projected distance from A-A'

Groundwater Monitoring Well

Well Screen Interval

Bottom of boring

TPHg
Benzene
MTBE
Hydrocarbon concentrations in soil, in mg/kg (ppm)

SPH
Seperate Phase Hydrocarbons detected during installation

Benzene
Benzene concentrations in groundwater in micrograms per liter (ppb)
Sample taken on 10/20/03

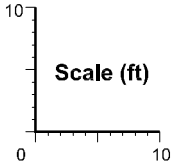


FIGURE
4

Geologic Cross Section B - B'

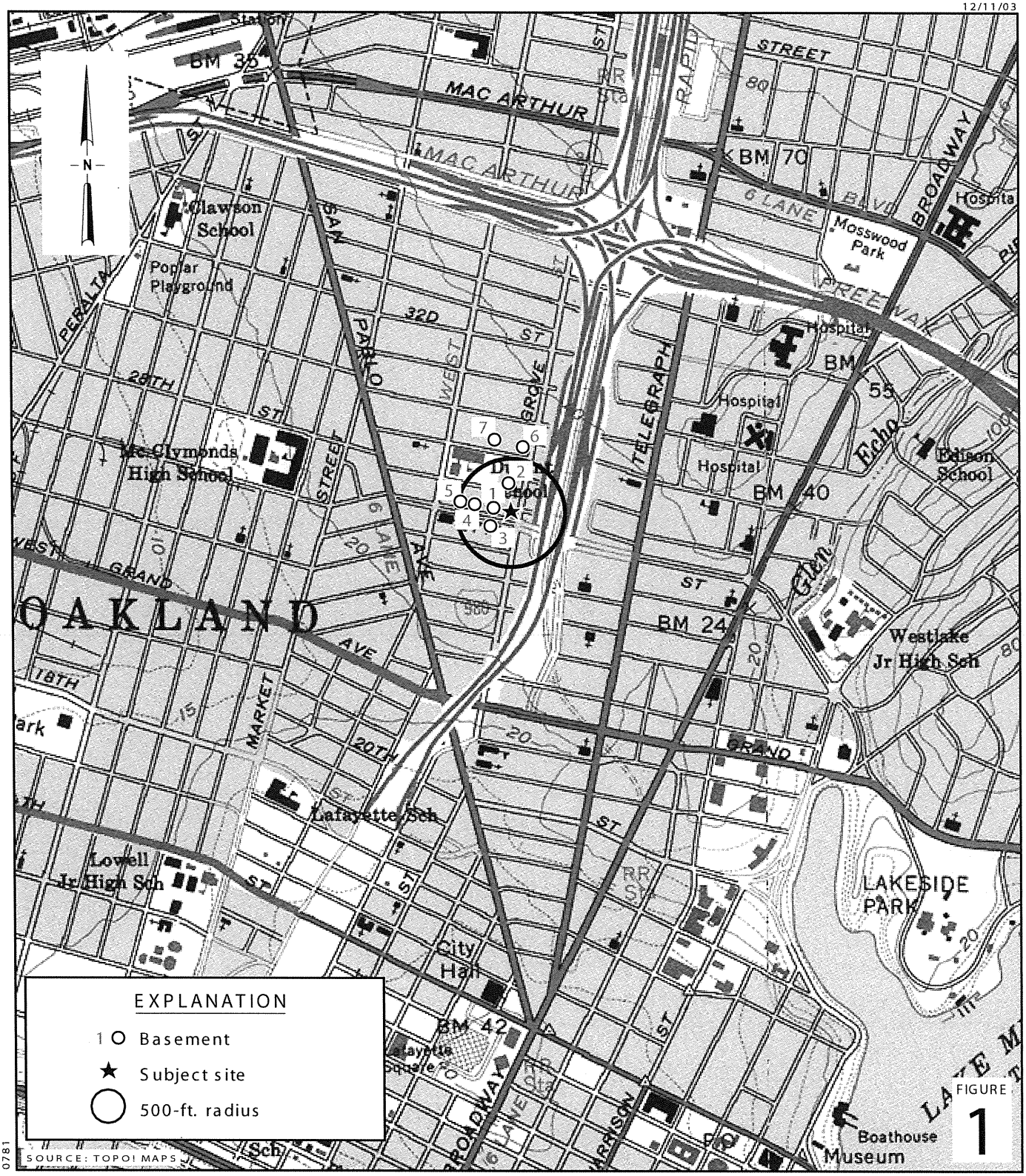
Former Shell Service Station
2703 Martin Luther King Jr. Way
Oakland, California

CAMBRIA

G:\OAKLAND\2703 MLK\FIGURES\XSECTION-A.DWG

Appendix D
Historical Basement Survey Data

12/11/03



0781

FIGURE 1

0 1/8 1/4 1/2 1

SCALE (MILES)

Former Shell Service Station
2703 Martin Luther King Jr. Way
Oakland, California

CAMBRIA

Site Vicinity/Receptor Survey Map

TABLE 1

HISTORICAL BASEMENT SURVEY DATA
FORMER SHELL SERVICE STATION
2703 MARTIN LUTHER KING JR. WAY
OAKLAND, CALIFORNIA

Map Number	*Address*	*Basement Floor Material*	*Sump Pump?*	*Approximate Distance from Site (feet)*	*Direction of Basement from Site*
1	665 28th Street	Concrete	No	10	North
2	670 27th Street	Concrete	No	50	West
3	676 27th Street	Concrete	Unknown	180	West
4	674 28th Street	Earth	Unknown	240	North
5	683 27th Street	Concrete	Yes	260	Southwest
6	696 27th Street	Unknown	No	370	West
7	700 27th Street	Earth	Unknown	450	West
8	2903 Martin Luther King Jr. Way	Earth	Unknown	580	North
9	696 29th Street	Concrete/Earth	Yes	620	North

Map number corresponds to Vicinity Map (Figure 1)

Appendix E
Historical Grab Groundwater Data

Table 1. CPT Groundwater Analytical Data, Former Shell Service Station, 2703 Martin Luther King Jr. Way, Oakland, California

Boring ID	Sample Name	Sample Interval (fbg)	Date Sampled	TPHg (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	Comments
CPT-1	No Sample	16-20		Sample attempted - no recharge					near MW-4
CPT-1	No Sample	25-29		Sample attempted - no recharge					
CPT-1	CPT-1-35-W	31-35	18-Oct-06	<50	**4.3**	<0.50	**6.1**	**3.0**	
CPT-2	No Sample	15-19		Sample attempted - no recharge					near MW-6
CPT-2	No Sample	25-29		Sample attempted - no recharge					
CPT-2	CPT-2-35-W	33-37	20-Oct-06	**2,600**	**180**	**69**	**55**	**290**	
CPT-3	No Sample	16-20		Sample attempted - no recharge					near MW-5
CPT-3	No Sample	21-25		Sample attempted - no recharge					
CPT-3	CPT-3-35-W	33-37	20-Oct-06	**880**	**45**	**15**	**45**	**310**	
CPT-4	No Sample	18-22		Sample attempted - no recharge					near V-1
CPT-4	No Sample	25-29		Sample attempted - no recharge					
CPT-4	CPT-4-37-W	33-37	18-Oct-06	**3,200**	**33**	**150**	**140**	**570**	
CPT-5	No Sample	10-14		Sample attempted - no recharge					near borings B-6, B-9, and B-19
CPT-5	CPT-5-20-W	16-20	18-Oct-06	**25,000**	**1,100**	**200**	**5,300**	**4,100**	
CPT-5	CPT-5-35-W	32-36	18-Oct-06	**220**	**4.0**	**2.6**	**11**	**44**	

Abbreviations and Notes:

TPHg = Total petroleum hydrocarbons as gasoline, analyzed by EPA Method 8260B

BTEX = Benzene, toluene, ethylbenzene, and xylenes analyzed by EPA Method 8260B

fbg = feet below grade

µg/l = micrograms per liter = parts per billion

Table 2. Grab Groundwater Analytical Data, Former Shell Service Station, 2703 Martin Luther King Jr. Way, Oakland, California

Boring ID	Depth (feet)	Date Sampled	TPHg (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)
CPT-6	13-17	17-May-07	Attempted sample - No groundwater recovery				
CPT-6-23-W	21-25	17-May-07	86	<0.50	2.4	0.38 a	1.44 a
CPT-7	10-14	17-May-07	Attempted sample - No groundwater recovery				
CPT-7	18-22	17-May-07	Attempted sample - No groundwater recovery				
CPT-10A	13-17	08-Jun-07	38,000	1,600	1,100	2,600	7,700
CPT-10B	20-23	08-Jun-07	640	3.8	4.9	23	110

Abbreviations and Notes:

TPHg = Total petroleum hydrocarbons as gasoline, analyzed by EPA Method 8015B (M)

BTEX = Benzene, toluene, ethylbenzene, and xylenes analyzed by EPA Method 8260B

µg/l = micrograms per liter = parts per billion

<x = Not detected at reporting limit x

a = Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.

Table 3. Grab Groundwater Analytical Data, Former Shell Service Station, 2703 Martin Luther King Jr. Way, Oakland, California

Sample	Depth (fbg)	Date Sampled	TPHg (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE (µg/L)	TBA (µg/L)
Groundwater samples by 8015M/8020, sampled January 3 and 4, 2006									
MW-6-W [a]	NA	04-Jan-06	59,000	6,400 [b]	890 [b]	2,200 [b]	8,100 [b]	NA	NA
MW-7-W [a]	NA	04-Jan-06	83,000	4,400 [b]	930 [b]	3,200 [b]	16,000 [b]	NA	NA
MW-8-W [a]	NA	03-Jan-06	49,000	1,100 [b]	92 [b]	480 [b]	2,700 [b]	NA	NA
B-23-W [a]	NA	03-Jan-06	230,000	26,000 [b]	700 [b]	920 [b]	110,000 [b,c]	NA	NA
Groundwater samples by 8260B, sampled August 29 and 30, 2005									
GP-1-10.5'W	10.5	29-Aug-05	47,000	330	<50	680	140	NA	NA
GP-3-10'W	10.0	29-Aug-05	79,000	5,200	13,000	1,400	7,800	NA	NA
GP-6-20'W	20.0	29-Aug-05	9,100	320	34	380	750	NA	NA
GP-7-10'W	10.0	30-Aug-05	140,000	17,000	4,600	7,600	45,000	NA	NA
Groundwater samples by 8260B, sampled April 11, 2002									
B-20	NA	11-Apr-02	58,000	5,000	200	3,800	4,500	<200	NA
B-21	NA	11-Apr-02	160,000	18,000	9,200	5,500	29,000	<500	NA
B-22	NA	11-Apr-02	110,000	6,700	1,200	4,700	23,000	<250	NA
Groundwater samples by 8260B, sampled November 22, 2000									
B-17	NA	22-Nov-00	190,000	13,000	24,000	5,500	30,000	300	<2,000
B-18	NA	22-Nov-00	90,000	3,500	370	5,000	18,000	<20	<200
B-19	NA	22-Nov-00	58,000	4,400	740	2,200	7,300	16	240

Table 3. Grab Groundwater Analytical Data, Former Shell Service Station, 2703 Martin Luther King Jr. Way, Oakland, California

Sample	Depth (fbg)	Date Sampled	TPHg (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE (µg/L)	TBA (µg/L)
Groundwater samples by 8015/8021, sampled May 23, 1995									
B-1	NA	23-May-95	Approximately 0.5-0.75 inches of Non-aqueous phase product						
B-2	NA	23-May-95	**6,600**	**340**	**24**	**160**	**27**	NA	NA
B-5	NA	23-May-95	Approximately 0.25-0.50 inches of Non-aqueous phase product:						
B-6	NA	23-May-95	Approximately 1 -2 inches of Non-aqueous phase product						
B-7	NA	23-May-95	**89,000**	**21,000**	**11,000**	**3,800**	**16,000**	NA	NA
B-8	NA	23-May-95	**<250**	**<2.5**	**<2.5**	**<2.5**	**<2.5**	NA	NA
B-9	NA	23-May-95	Approximately 0.5-1.0 inches of Non-aqueous phase product						

Abbreviations and Notes:

TPHg = Total petroleum hydrocarbons as gasoline

BTEX = Benzene, toluene, ethylbenzene, and xylenes

MTBE = Methyl tertiary butyl ether

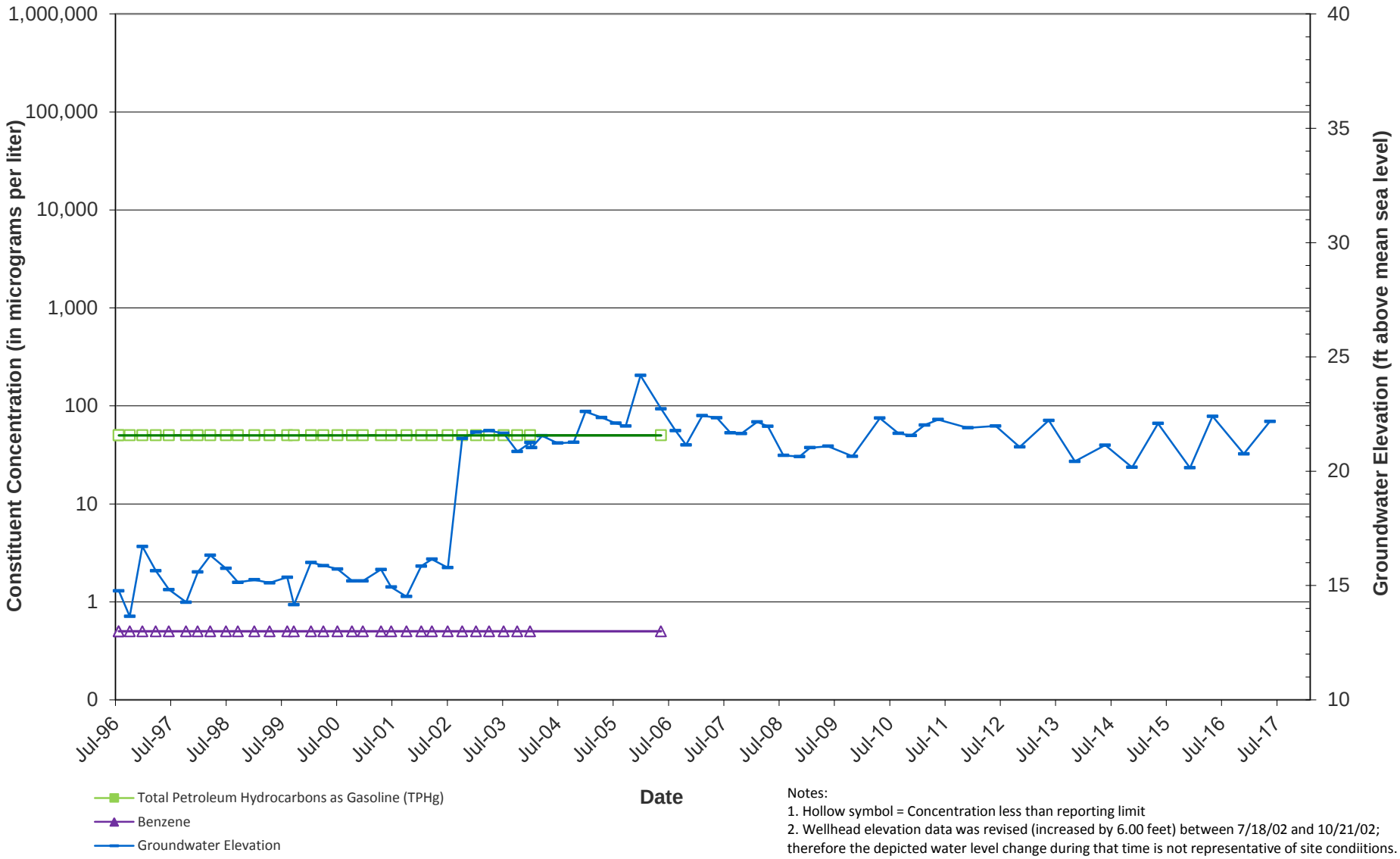
TBA = Tertiary butyl alcohol

a- Reporting limits were raised due to high level of analyte present in the sample

b - Analyzed outside of holding time

c - Estimated value; the concentraion exceeded the calibration of analysis.

Appendix F
Trend Graphs for Groundwater Wells



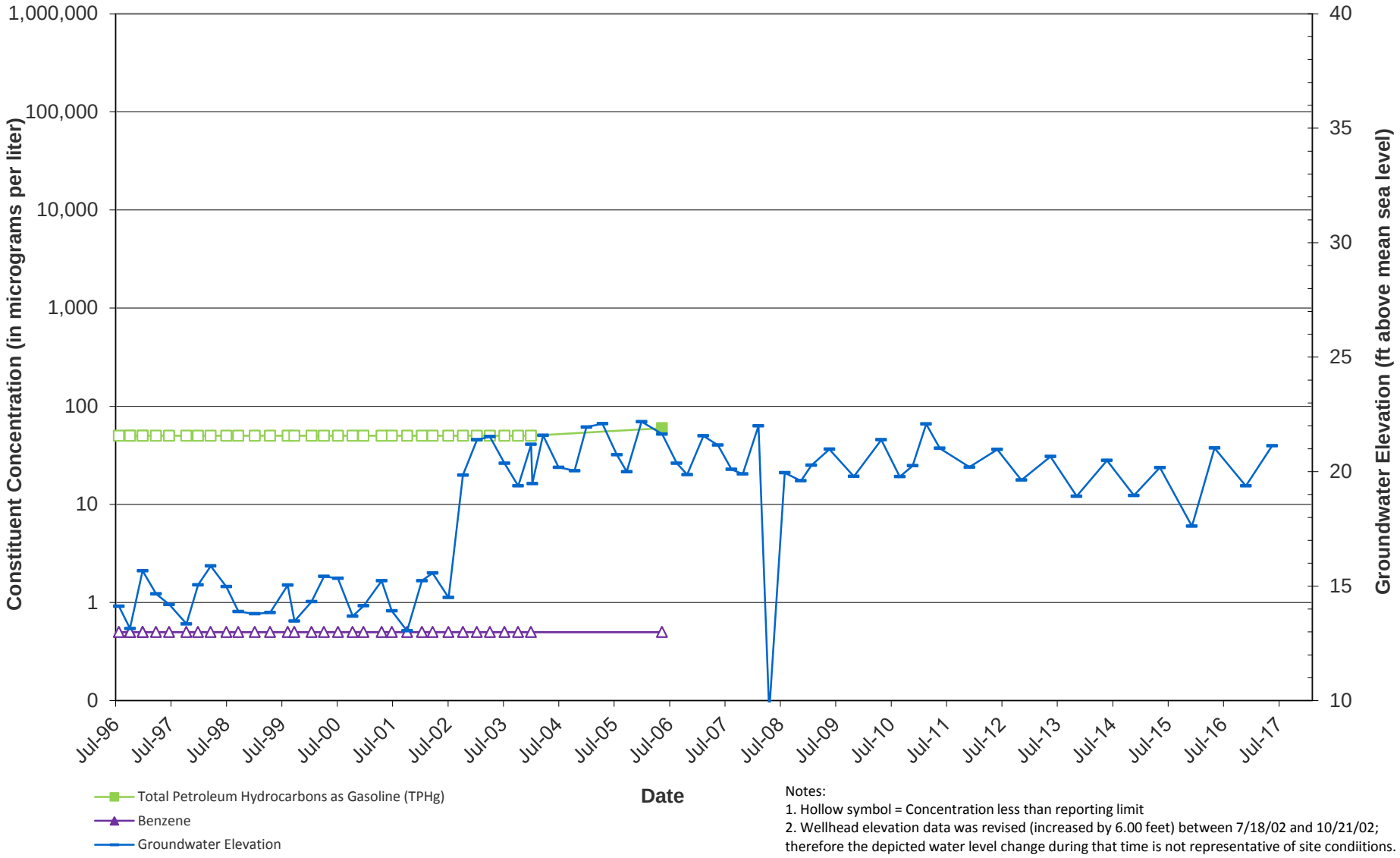
Notes:
1. Hollow symbol = Concentration less than reporting limit
2. Wellhead elevation data was revised (increased by 6.00 feet) between 7/18/02 and 10/21/02; therefore the depicted water level change during that time is not representative of site condiitions.

Figure F-1

MW-1: Chemical Concentrations and Groundwater Elevations Versus Time

AECOM

Former Shell Service Station
2703 MLK Jr Way, Oakland, California



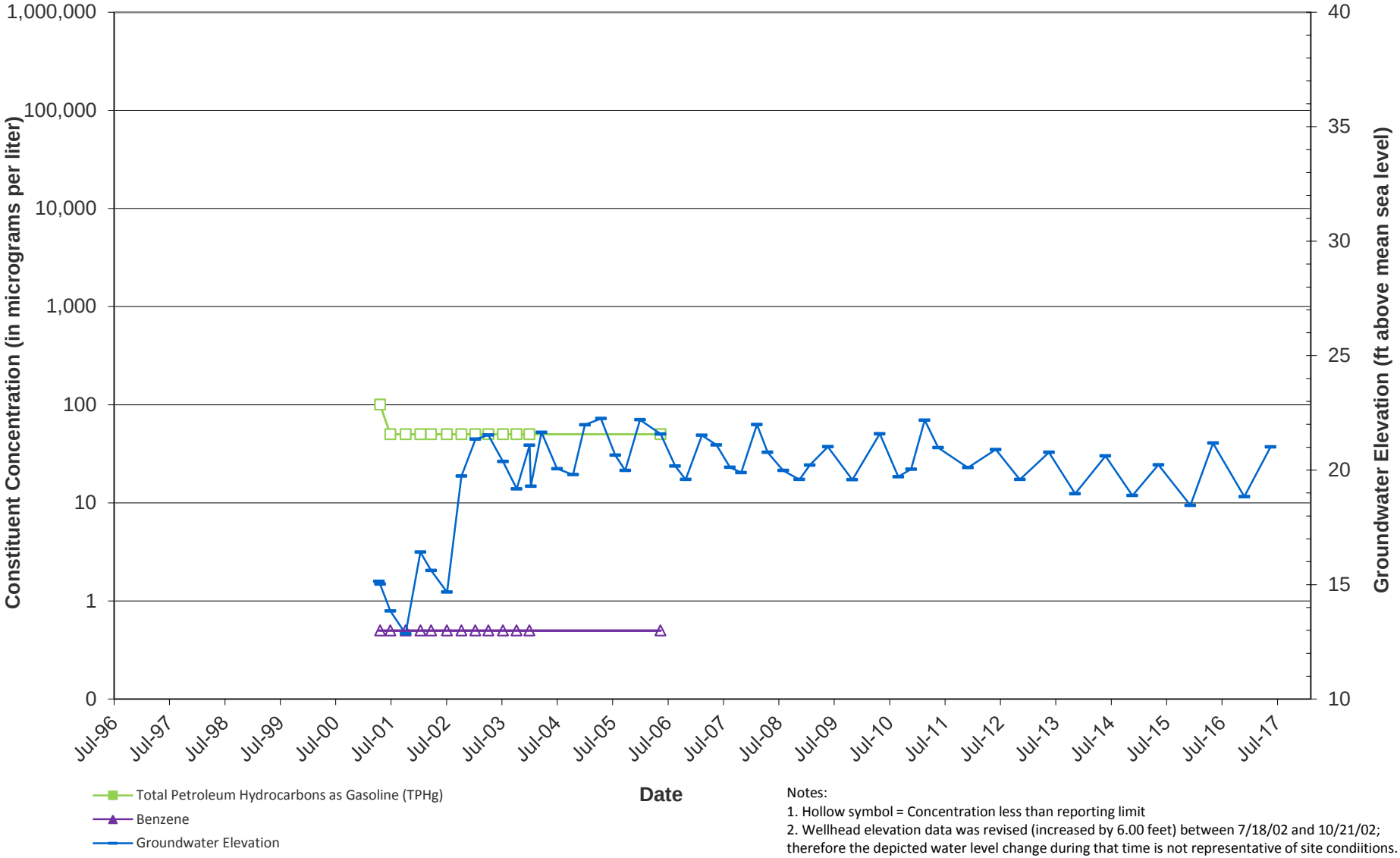
Notes:
1. Hollow symbol = Concentration less than reporting limit
2. Wellhead elevation data was revised (increased by 6.00 feet) between 7/18/02 and 10/21/02; therefore the depicted water level change during that time is not representative of site condiitions.

Figure F-2

MW-2: Chemical Concentrations and Groundwater Elevations Versus Time

AECOM

Former Shell Service Station
2703 MLK Jr Way, Oakland, California



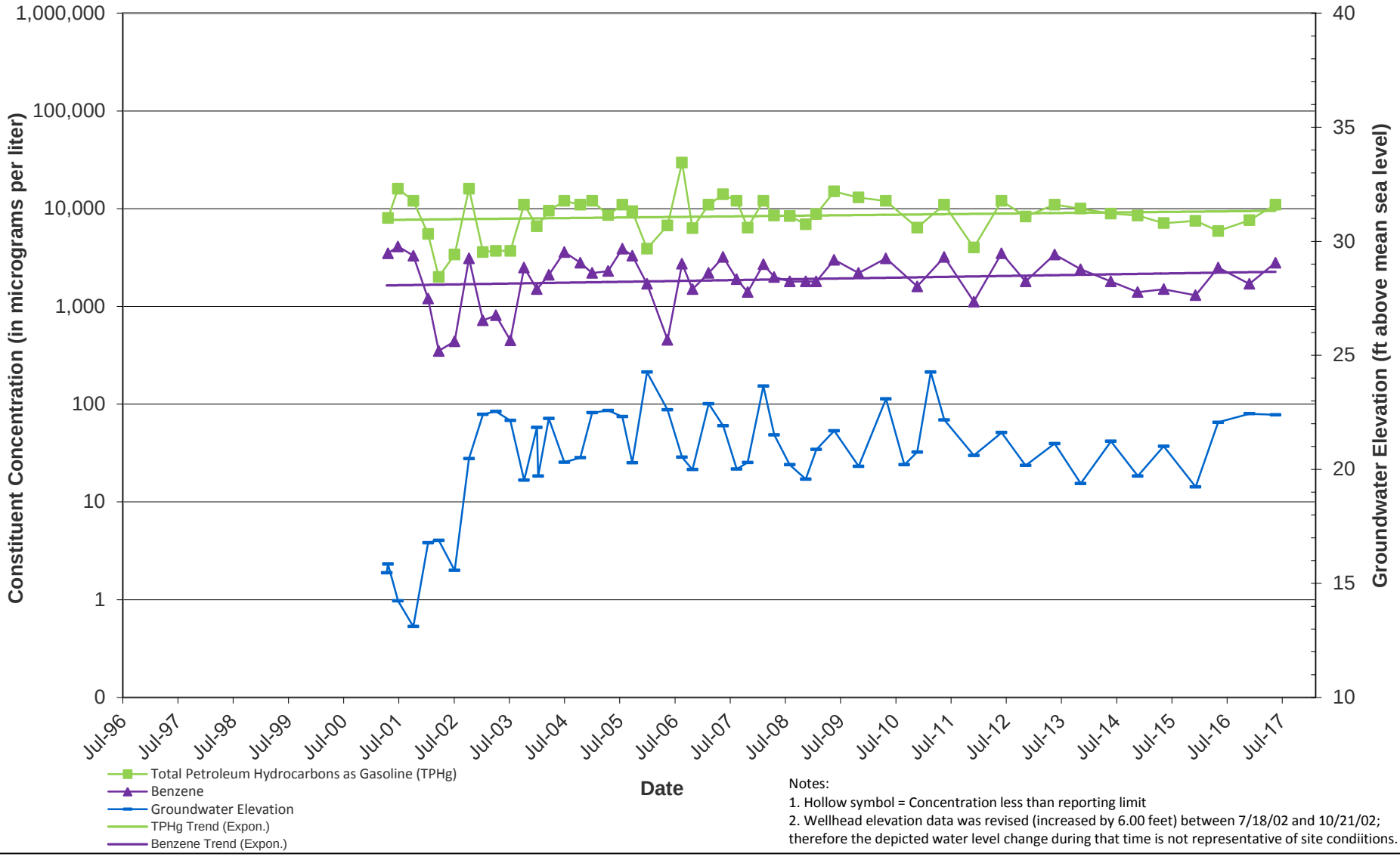
Notes:
1. Hollow symbol = Concentration less than reporting limit
2. Wellhead elevation data was revised (increased by 6.00 feet) between 7/18/02 and 10/21/02; therefore the depicted water level change during that time is not representative of site condiitions.

Figure F-3

MW-3: Chemical Concentrations and Groundwater Elevations Versus Time

AECOM

Former Shell Service Station
2703 MLK Jr Way, Oakland, California



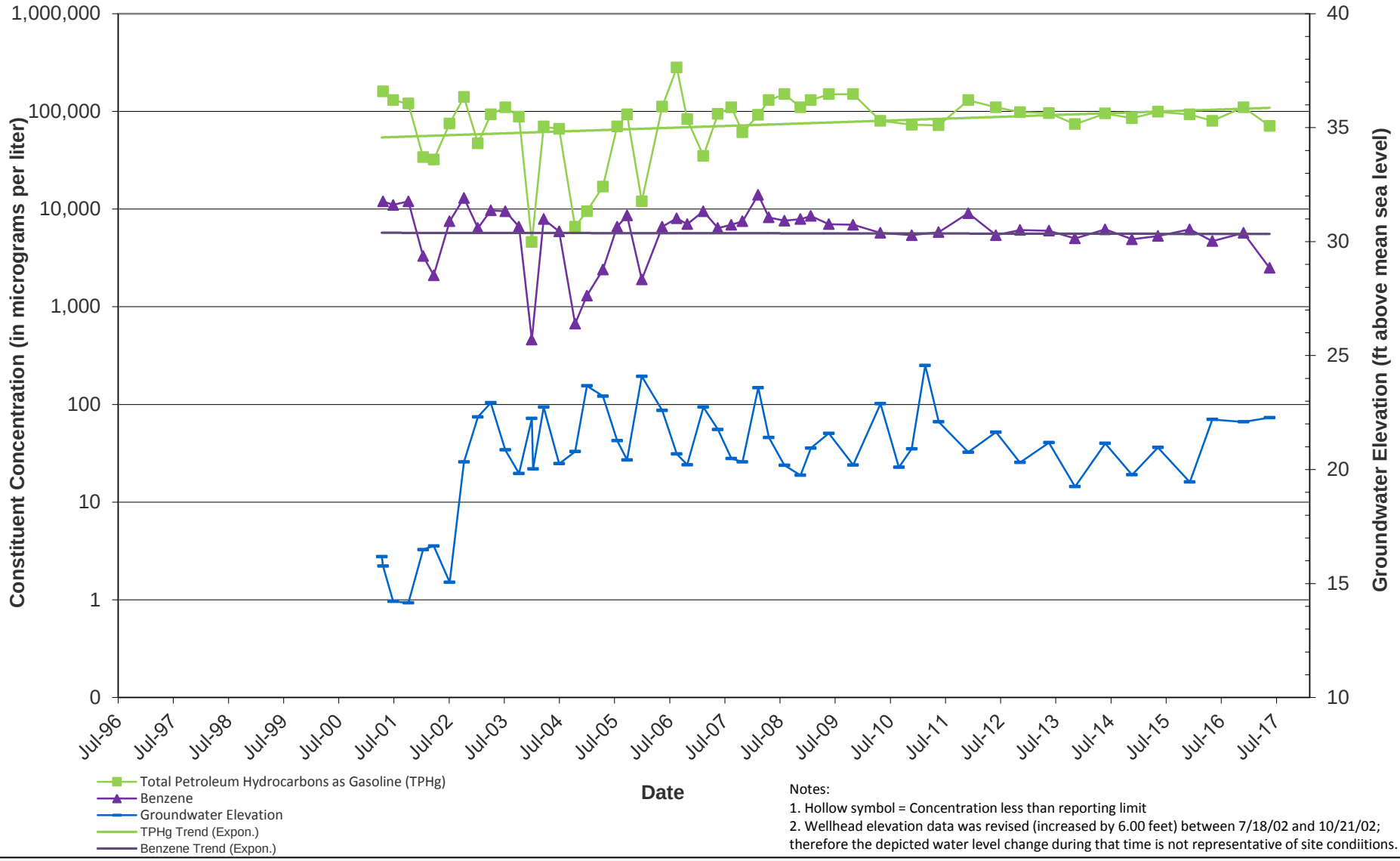
Notes:
1. Hollow symbol = Concentration less than reporting limit
2. Wellhead elevation data was revised (increased by 6.00 feet) between 7/18/02 and 10/21/02; therefore the depicted water level change during that time is not representative of site condiitions.

Figure F-4

MW-4: Chemical Concentrations and Groundwater Elevations Versus Time

AECOM

Former Shell Service Station
2703 MLK Jr Way, Oakland, California



Notes:
1. Hollow symbol = Concentration less than reporting limit
2. Wellhead elevation data was revised (increased by 6.00 feet) between 7/18/02 and 10/21/02; therefore the depicted water level change during that time is not representative of site condiitions.

Figure F-5

MW-5: Chemical Concentrations and Groundwater Elevations Versus Time

AECOM

Former Shell Service Station
2703 MLK Jr Way, Oakland, California

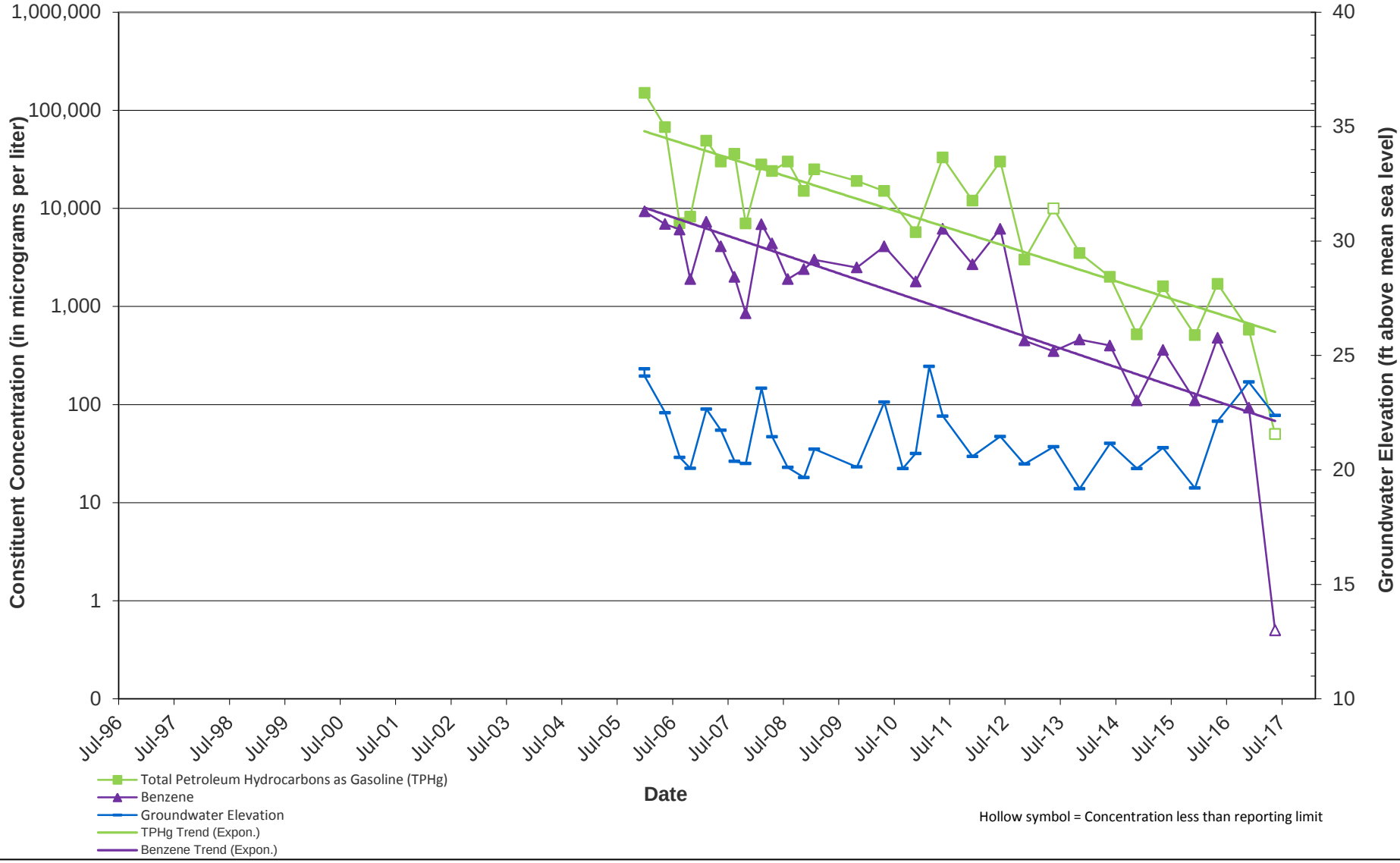


Figure F-6

MW-6: Chemical Concentrations and Groundwater Elevations Versus Time

AECOM

Former Shell Service Station
2703 MLK Jr Way, Oakland, California

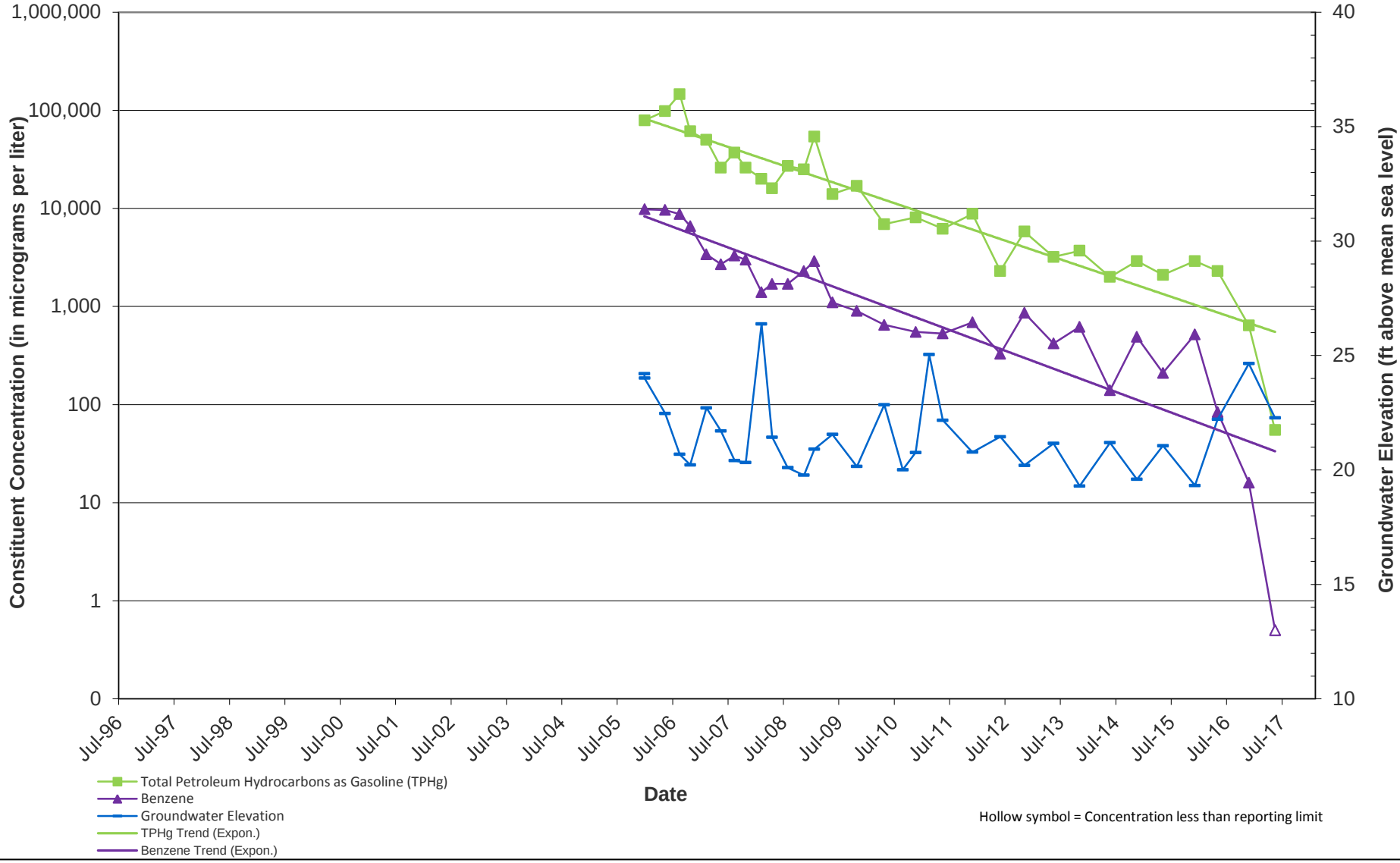


Figure F-7

MW-7: Chemical Concentrations and Groundwater Elevations Versus Time

AECOM

Former Shell Service Station
2703 MLK Jr Way, Oakland, California

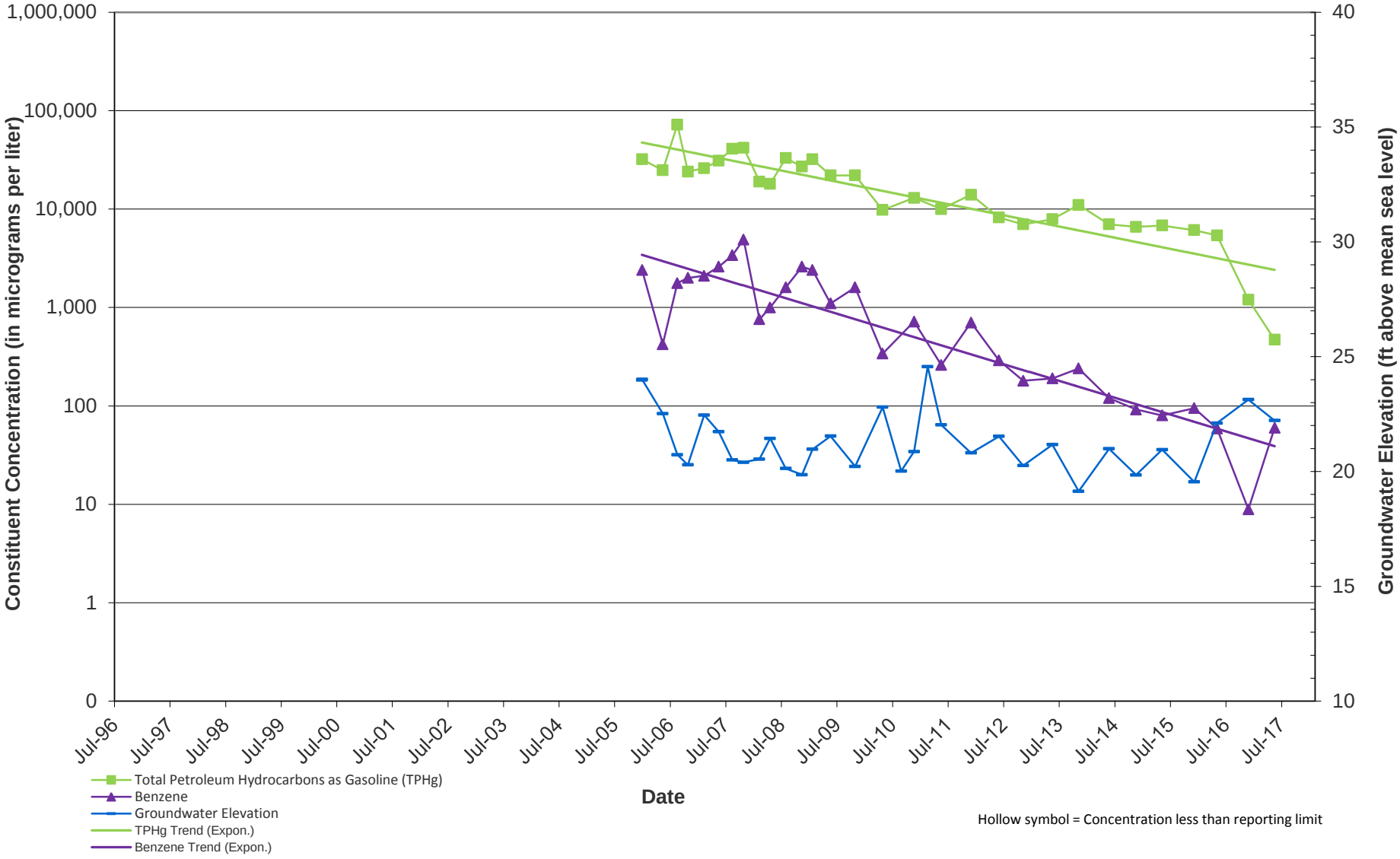


Figure F-8

MW-8: Chemical Concentrations and Groundwater Elevations Versus Time

AECOM

Former Shell Service Station
2703 MLK Jr Way, Oakland, California

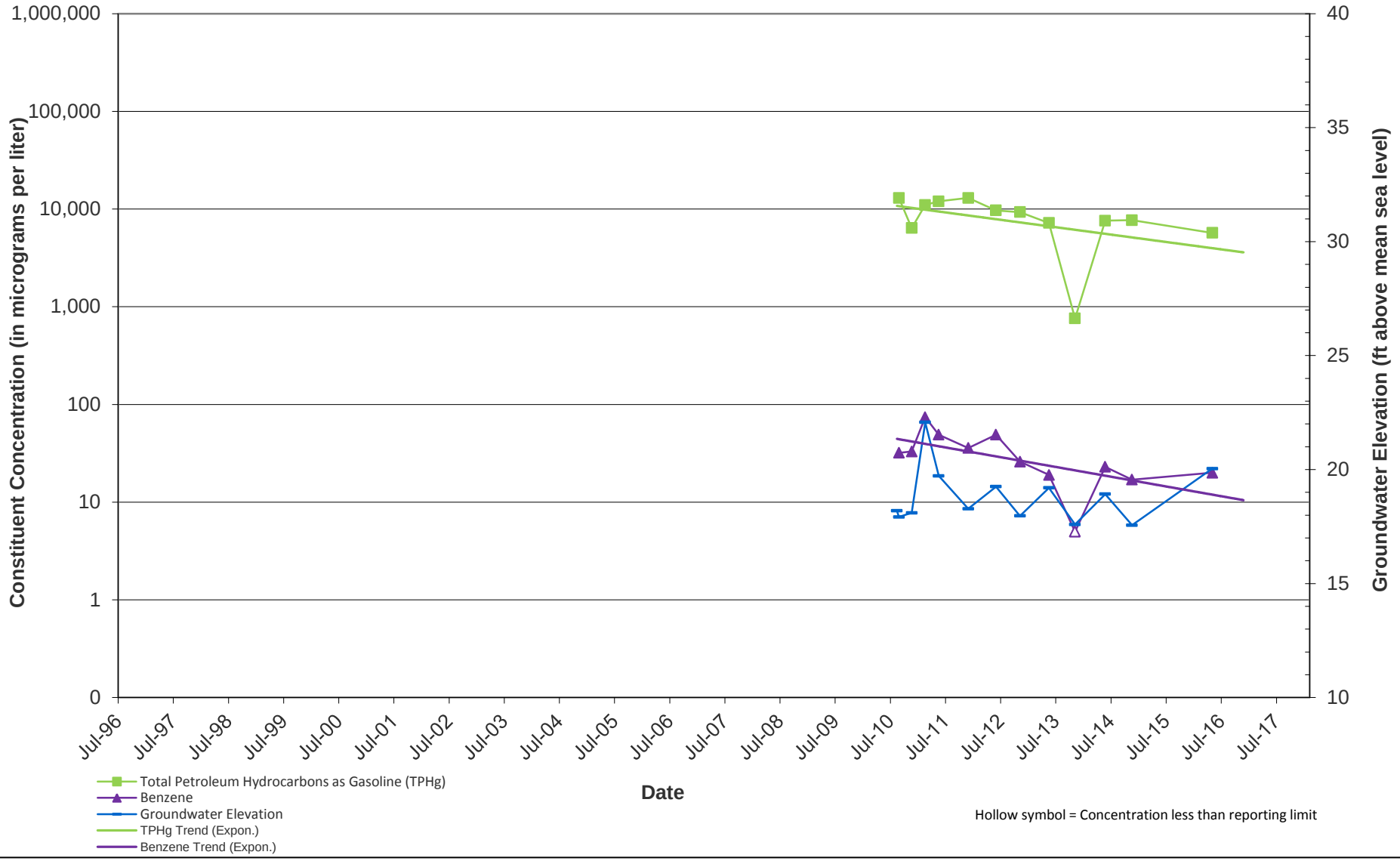


Figure F-9

MW-9: Chemical Concentrations and Groundwater Elevations Versus Time

AECOM

Former Shell Service Station
2703 MLK Jr Way, Oakland, California

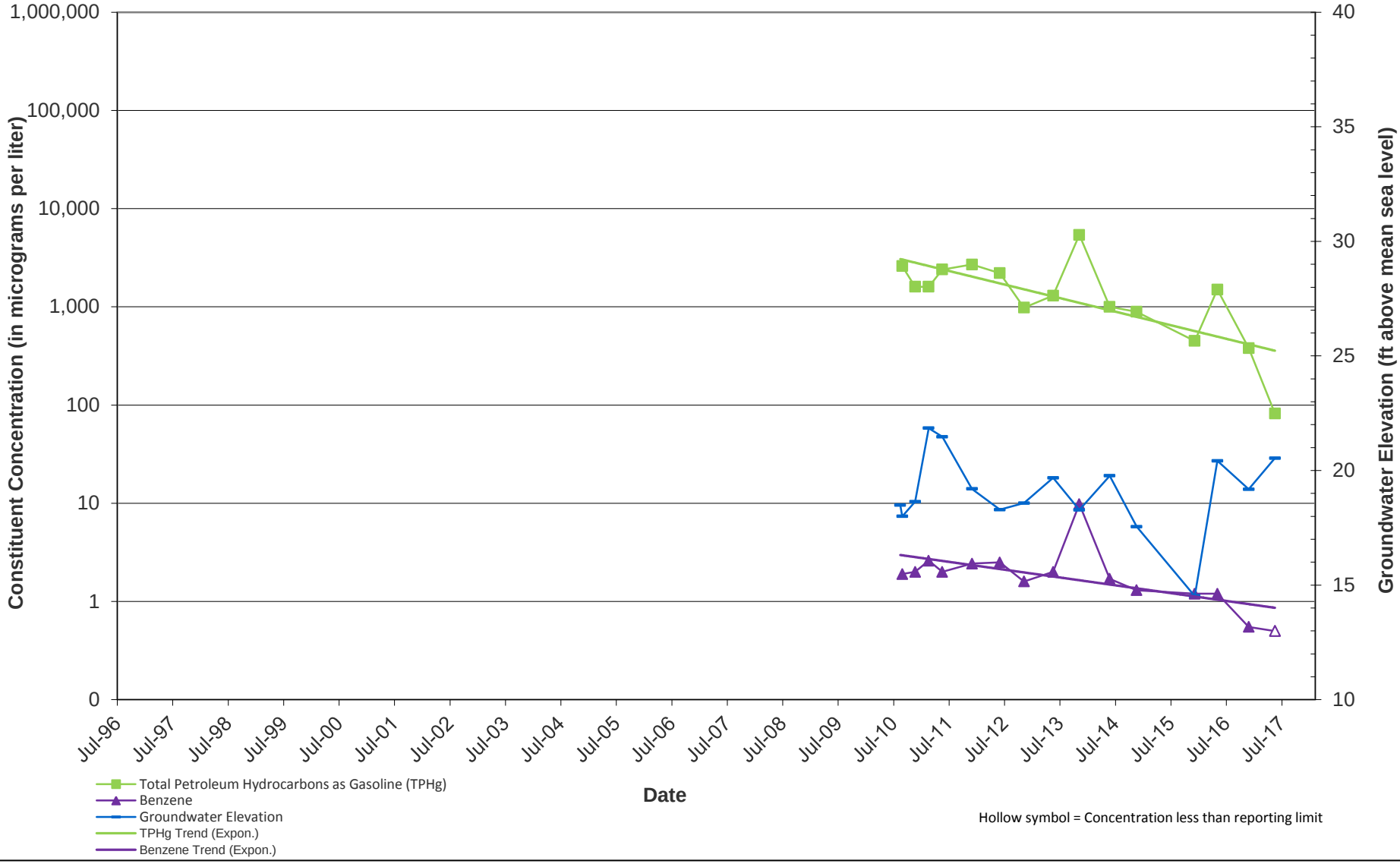


Figure F-10

MW-10: Chemical Concentrations and Groundwater Elevations Versus Time

AECOM

Former Shell Service Station
2703 MLK Jr Way, Oakland, California

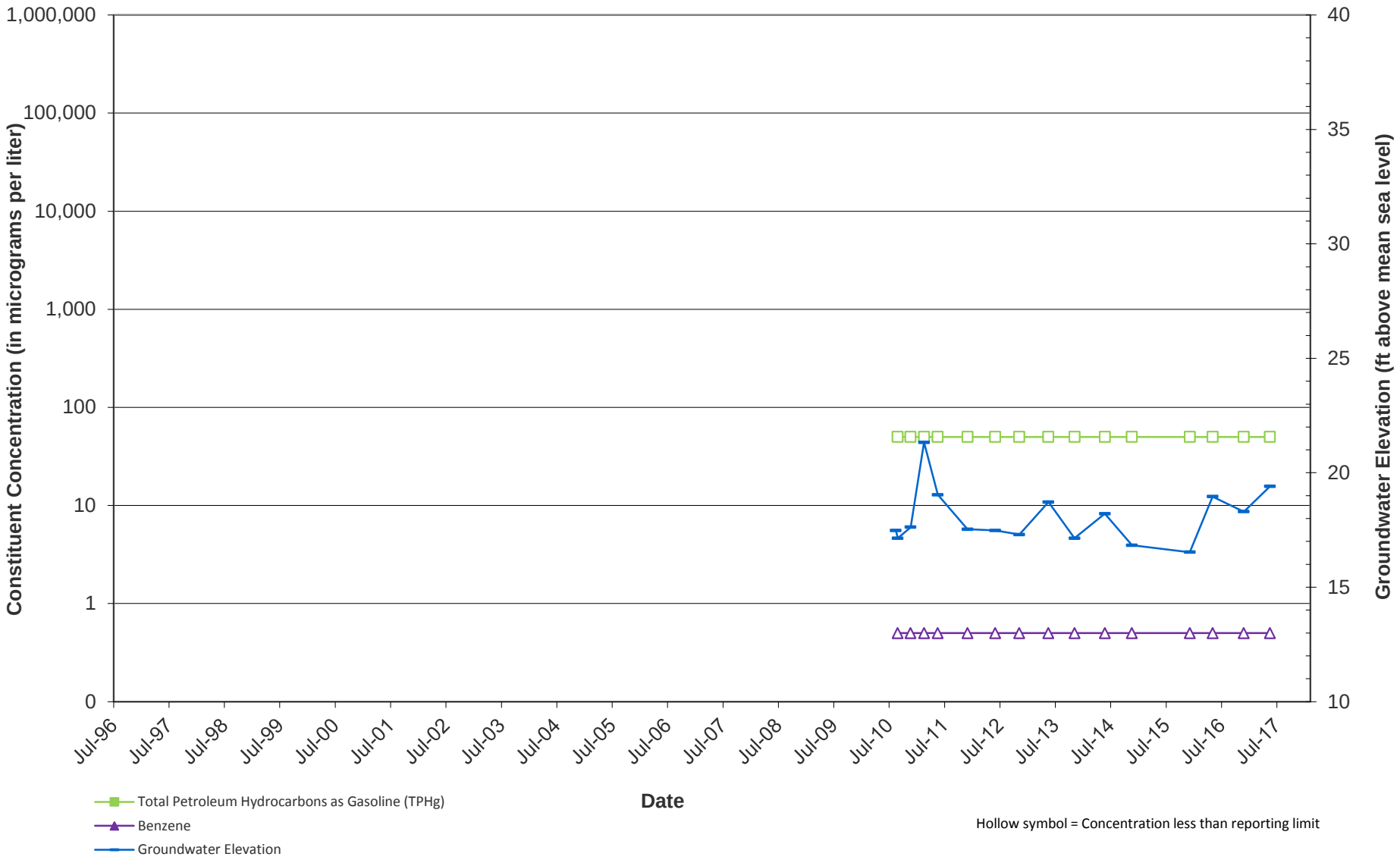


Figure F-11

MW-11: Chemical Concentrations and Groundwater Elevations Versus Time

AECOM

Former Shell Service Station
2703 MLK Jr Way, Oakland, California

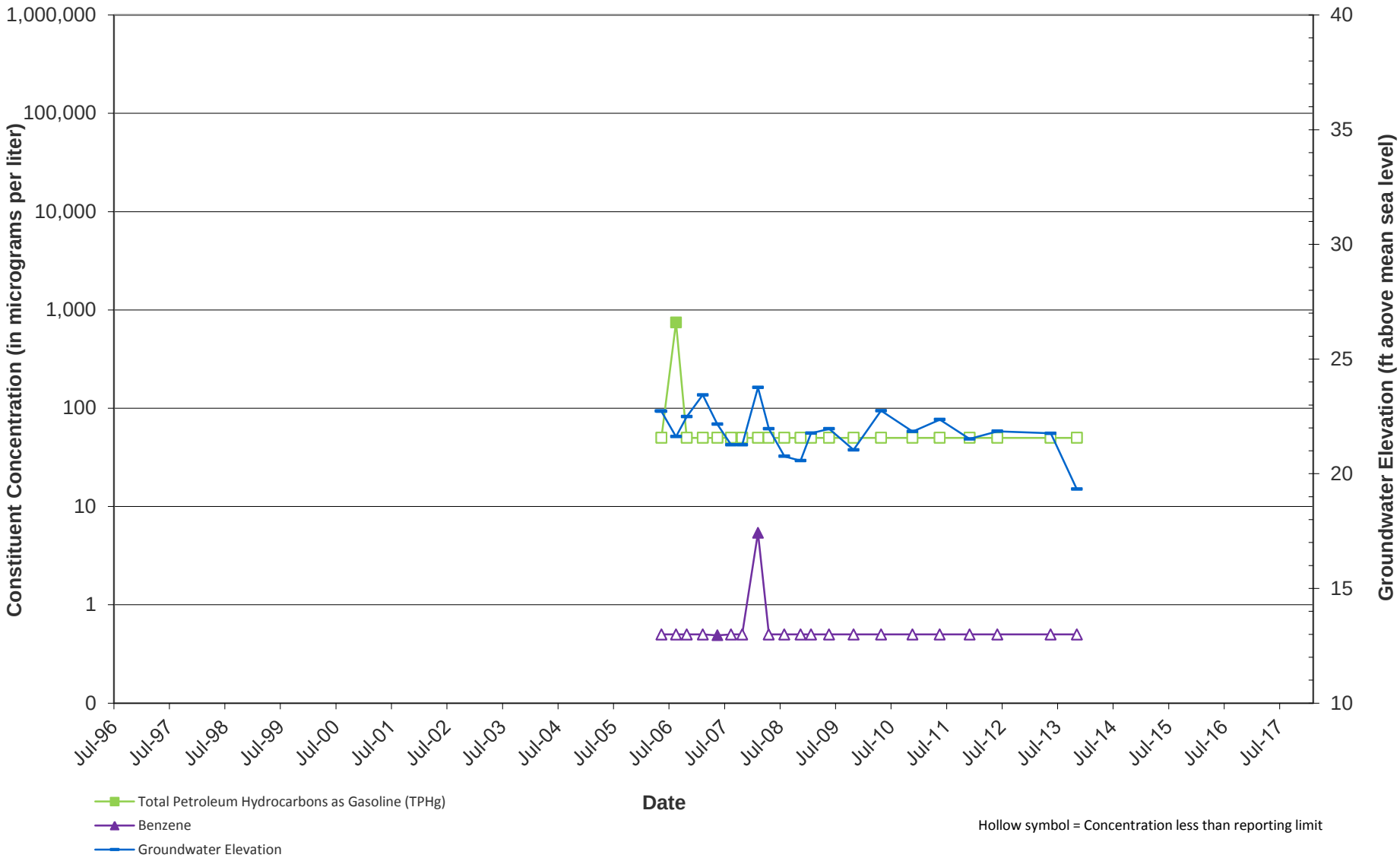


Figure F-12

MW-12: Chemical Concentrations and Groundwater Elevations Versus Time

AECOM

Former Shell Service Station
2703 MLK Jr Way, Oakland, California

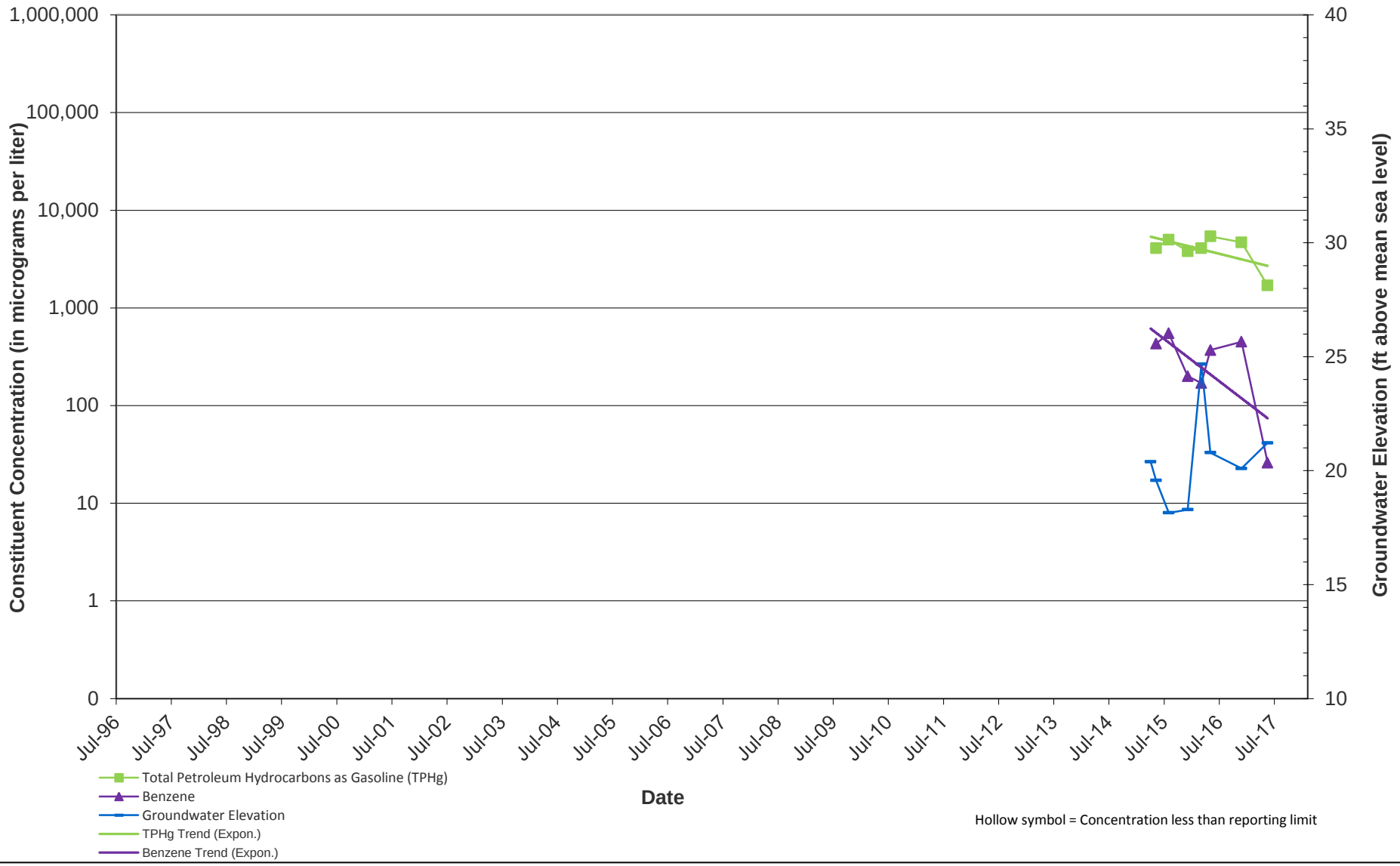


Figure F-13

MW-13: Chemical Concentrations and Groundwater Elevations Versus Time

AECOM

Former Shell Service Station
2703 MLK Jr Way, Oakland, California

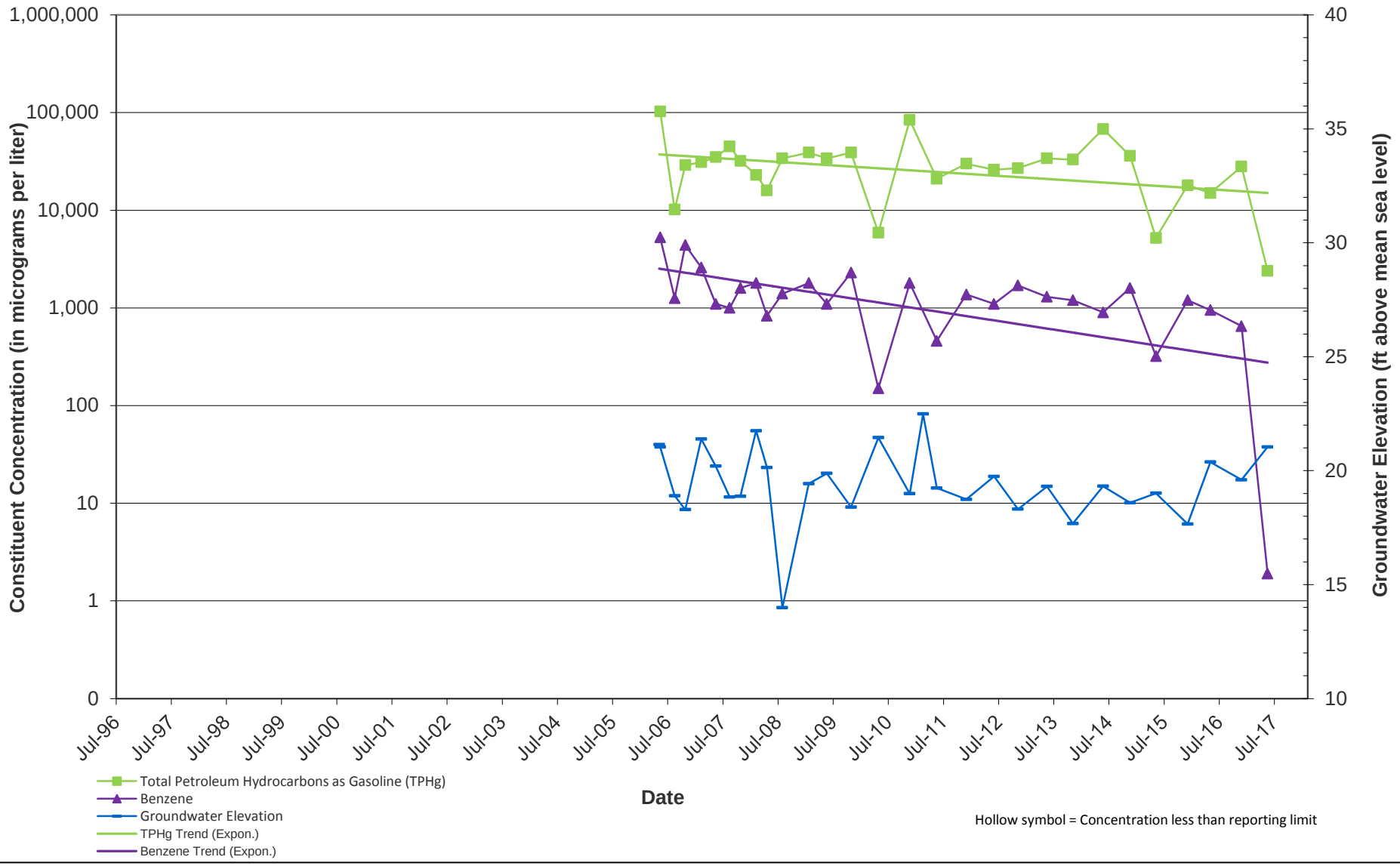


Figure F-14

MW-14: Chemical Concentrations and Groundwater Elevations Versus Time

AECOM

Former Shell Service Station
2703 MLK Jr Way, Oakland, California

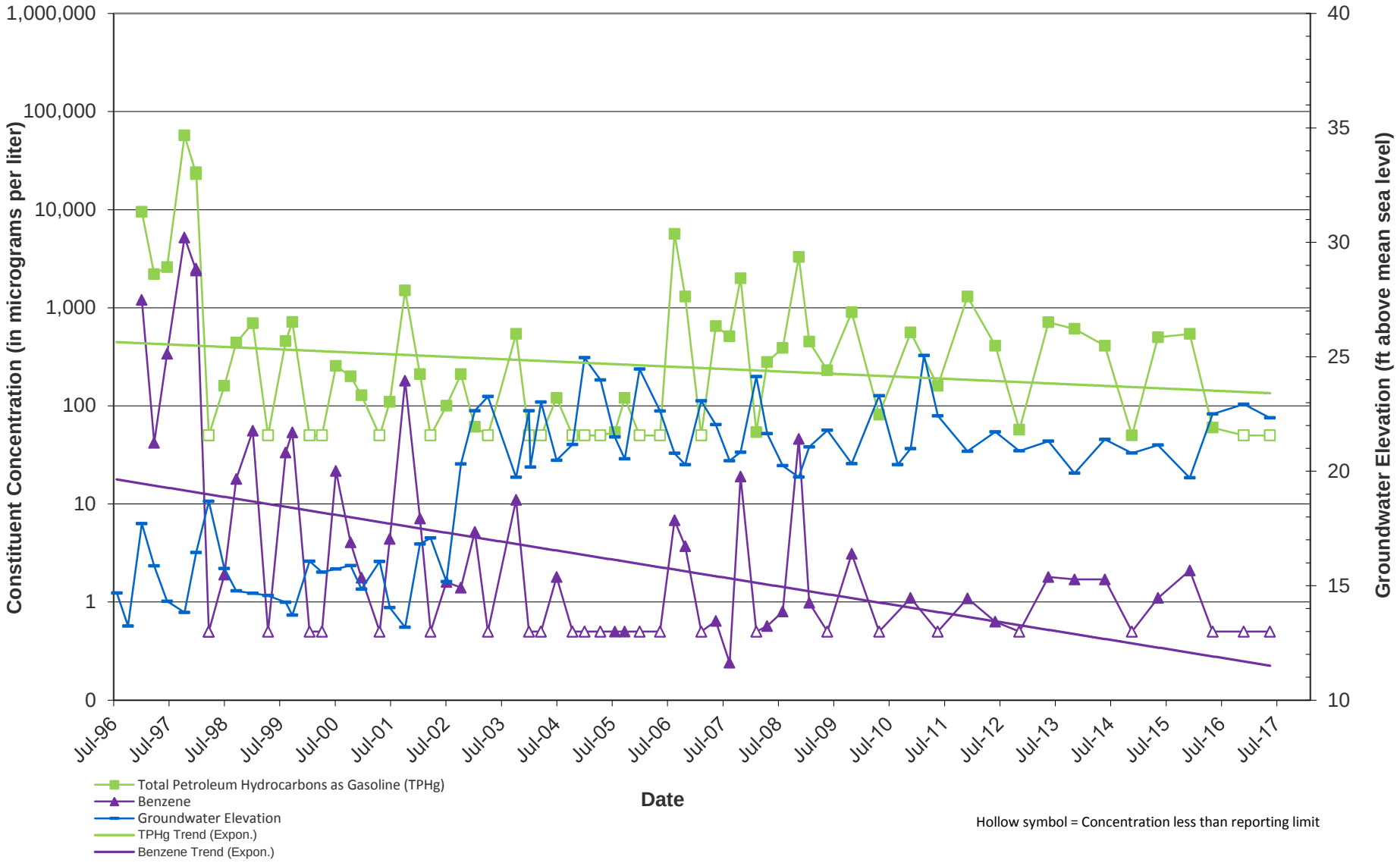


Figure F-15

V-1: Chemical Concentrations and Groundwater Elevations Versus Time

AECOM

Former Shell Service Station
2703 MLK Jr Way, Oakland, California

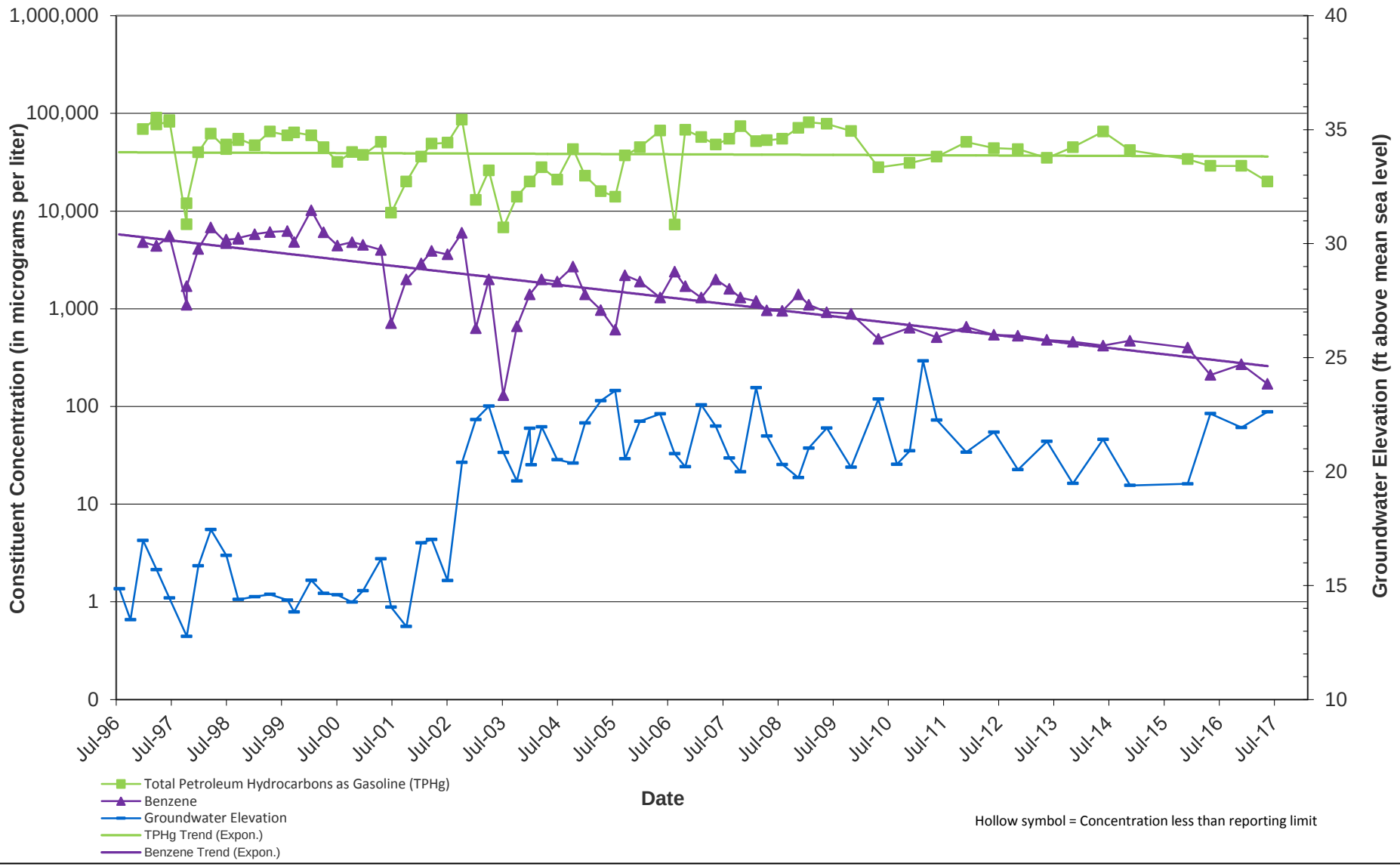


Figure F-16

V-2: Chemical Concentrations and Groundwater Elevations Versus Time

AECOM

Former Shell Service Station
2703 MLK Jr Way, Oakland, California

Appendix G
Soil Vapor Sampling Procedures

Appendix G

Soil Vapor Sampling Procedures, May and July 2017
2703 Martin Luther King, Jr. Drive, Oakland, California

Vapor wells were sampled in general accordance with the *Advisory—Active Soil Gas Investigations* (Department of Toxic Substances Control, 2015). No significant rain events (greater than 0.5 inch during a 24-hour period) occurred within five days prior to the sampling event, and no standing or ponded water was present.

To collect a soil vapor sample, the installed soil vapor probe's tubing was attached to the laboratory-provided sample train which consisted of a three-way assembly of ¼-inch Teflon® tubing, providing a sample inlet and connection to the sample summa canister and the purge line. The sample summa canisters were equipped with a laboratory-provided flow controller and vacuum gauge. Samples were collected in laboratory-provided 1.2-liter Summa™ canisters evacuated to at least 25 inches of mercury (inHg) vacuum. The initial vacuum in each canister was verified prior to sampling and recorded on the sampling log sheet using a laboratory-provided pressure gauge. Any canisters with pressure greater than -25 inHg were not used.

Prior to sampling, three purge volumes were removed from each vapor well at a rate less than 200 milliliters per minute by hand using new disposable 60-milliliter syringes. This was accomplished by keeping the summa canister valve closed, opening the purge valve, and drawing three 60-mL syringe volumes per minute until the total purge volume had been achieved. The purge valve was closed between syringe draws in order to prevent potential backflow of ambient atmosphere into the subsurface. At one and three well volume intervals, the purge volume was recorded.

Leak tests were conducted at every soil vapor sampling location by introducing helium into a shroud covering the sampling train. The samples were analyzed for helium to evaluate ambient air leakage into the sample. The percentage of helium within the shroud was monitored using a helium detector inserted near the base of the shroud and controlled at approximately 30 to 50 percent of atmosphere. Helium percentage was recorded on the sampling log throughout sampling.

Once the sample train was assembled and all pre-sampling procedures and tests were verified, the samples were collected as follows:

1. Staff worker confirmed that the canister valve was closed.
2. The helium level within the shroud was raised to 30 to 50%.
3. The canister valve and sample manifold valve were opened to allow air flow into the sample canister.
4. Canister pressure was monitored and helium atmosphere percentage was maintained; both values were recorded periodically throughout sampling.
5. The canister valve was closed when approximately -5 inHg of vacuum remained.
6. The final vacuum of the sample canister was verified and recorded from the gauge on the sample manifold.
7. The sample was disconnected and the canister's brass cap was replaced.
8. Sample information was recorded on the canister tag and chain-of-custody form.
9. The samples were shipped to the analytical laboratory within the analyses' required holding times under chain-of-custody procedures.

Appendix H
Soil Vapor Field Sampling Forms

AECOM

Soil Vapor Sampling Field Data Sheet

Site: 1790 MLK, Oakland	Date: 05/19/2017
Sample ID: VP-13-3	Samplers: Jeremy Quick
Summa Canister ID: 1L1772	Sample Manifold ID: 100503

Shut-In Test

	Time	Vacuum (inHg)	Must hold vacuum for a minimum of 1 minute
Shut-In Start			Well not equipped with a shut-off valve - purge test
Shut-In End			

Pre-Sample Purge with tracer gas (50% + He)

	Time	Syringe Vacuum (inHg)	He	Flow Rate (mL/min)	Volume Purged	PID
Purge Start	1140	—		~~200~~ 180	0	
1 Purge Volume 13 x 60mL	1158	~~5 6 7~~ 13 / 0		~~2~~ 180	780 mL	3.5
3 Purge Volumes 39 x 60mL	1210	~~18 18 21~~ / 0		180	2340 mL	2.1

Sample Collection

	Time	Vacuum (inHg)	% Helium in Shroud
Sample Start	1210	29	58.3
	1212	23	57.8
	1213	19	56.8
	1214	15	61.3
	1216	10	60.2
Sample End	1221	3	58.4

Canister Vacuum Went to Ambient Pressure? YES / (NO)

Associated Outdoor Air Sample ID/Summa Canister ID: N/A

Field Duplicate? YES / (NO) If Yes, Sample ID/Summa Canister ID:

Helium Monitor Make/Model: Dielectric MGD-2002

General Comments: Downwell gauge never rose from "zero" bar; good flow.

Purge Method: 60-mL disposable syringe

Notes: Purge count: 39 x 60mL

AECOM

Soil Vapor Sampling Field Data Sheet

Site: 1790 MLK, Oakland	Date: 05/19/2017
Sample ID: VP-13-5	Samplers: Jeremy Quick
Summa Canister ID: 1L2384	Sample Manifold ID: ~~20475~~ ~~30995~~ 30535 (clogged) — used to sample

Shut-In Test — gauge "zero" at ~20 inHg

	Time	Vacuum (inHg)	Must hold vacuum for a minimum of 1 minute
Shut-In Start			Well not equipped with a shut-off valve - purge test with tracer gas (50%+ He)
Shut-In End			

Pre-Sample Purge

	Time	~~Vacuum (inHg)~~ He	Flow Rate (mL/min)	Volume Purged
Purge Start	1246/1325	water in probe (removed) 1355	~~180~~ 180	0
1 Purge Volume	1411	~20 peak (can)	180 ~~180~~	~~780 mL~~ 780 mL
3 Purge Volumes	1432	0	180 ~~180~~	~~2340 mL~~ 2340 mL

Sample Collection — Peak PID during purge: 1.3

	Time	Vacuum (inHg)	% Helium in Shroud	
Sample Start	1439	30+	69.2	
	1440	25	68.8	
	1442	20	68.0	
	1443	15	62.3	
	1445	10	68.1	Down well gauge = 0
Sample End	1451	3	63.0	

Canister Vacuum Went to Ambient Pressure? YES / (NO) — N/A

Associated Outdoor Air Sample ID/Summa Canister ID:

Field Duplicate? YES / (NO) If Yes, Sample ID/Summa Canister ID:

Helium Monitor Make/Model: Dielectric MGD-2002

General Comments: Water in probe - ~~vapor well cannot be sampled~~. Purge water & continue purge/sample attempt

Purge Method: 60-mL syringe

Notes: Downhole ~~gauge~~ gauge vacuum climbed to ~5-10 in Hg, and water pulled up into tubing/manifold. Sample canister (1L2384) remained closed. Sampling aborted. Disconnected & removed canister/manifold & attempt water removal, ~1255-1305 produce ~40 mL and still getting regular droplets. By 1320, water removed and no regular water droplets observed. Reconnect manifold/canister and continue purge/sample.

Purge count: 1 ||| ||| ||| ||| ||| ||| ||| ||| ||| || || || || = 39 x 60 mL

will not purge (manifold clogged?) - replace manifold, continue 1355

1416 - 3rd purge attempt/2nd manifold - manifold flow restricted again - slows purge considerably.

AECOM	URS CORPORATION & SUBSIDIARIES SOIL GAS SAMPLING FORM	08/09	Rev. 2	1 of 1
		SOP 017		

Site Name and Address	Job Number	Date	Location ID
2703 Martin Luther King Jr Way	60528876	7/7/2017	VP-7-3

PERSONNEL CONDUCTING SAMPLING	WEATHER CONDITIONS		
	WEATHER	WIND SPEED	WIND DIR
Ryan Brinigar	Clear	2-5 ~~MPH~~	From NW

Soil Gas Probe Construction

Diameter	3.5	in		
Begin FilterPack	2	ft		
End Filterpack	3	ft	Filterpack Length	1
Tubing Diameter (ID)	0.250	in	Filter Pack Porosity	0.3
Tubing Length (total)	4	ft	Purge Flow (ml/min)	167
Total Depth	3	ft	***Conversion Factors***	
include all tubing length up to canister				

PURGE Volumes

	1	3	10
Filter Pack	0.57 L	1.70 L	5.68 L
Tubing	0.04 L	0.12 L	0.39 L
Total	0.61 L	1.82 L	6.06 L
Purge Time	0:03:38 min	0:10:53 min	0:36:18 mir

1/4 in. OD = .177 in ID

1/8 in. OD = .078 in ID

1 in = 2.54 cm, 1 ft = 30.48 cm

Filter Pack

$$\frac{\pi\left(\frac{diameter*2.54}{2}\right)^2 \times (length*30.48)}{1000} \times porosity$$

Tubing

$$\frac{\pi\left(\frac{diameter*2.54}{2}\right)^2 \times (length*30.48)}{1000}$$

Purging		Shut In Test		Leak Detection	
Purge Start Time	1743	Canister Serial Number	IL1843	Helium Monitor Model	MGD-2002
Purge End Time	1754	Initial Canister Pressure	-30	Serial	MGD-2002.16
Purge Minutes	11	Shut In Begin Time	1734	Helium Concentration in Shroud	
Purge Flow	0.167	Shut In End Time	1735	Time Checked	
Purge Volume	1.82L	Final Pressure	-30		
Sampling		Sampling Start Time	1802	Sample ID	
		Sampling End Time	1810	QC Type	☐ Field Duplicate
		Final Pressure	-5		

Notes

Time	He %		Time	He %
1802	35.8		1810	39.7
1803	34.0			
1804	42.1			
1805	36.5			
1806	35.0			
1807	45.8			
1808	44.6			
1809	41.5			

AECOM	URS CORPORATION & SUBSIDIARIES SOIL GAS SAMPLING FORM	08/09	Rev. 2	1 of 1
		SOP 017		

Site Name and Address	Job Number	Date	Location ID
2703 Martin Luther King Jr Way	60528876	7/7/2017	VP-7-5

PERSONNEL CONDUCTING SAMPLING	WEATHER CONDITIONS		
	WEATHER	WIND SPEED	WIND DIR
Ryan Brinigar	clear	2-5MPH	From NW

Soil Gas Probe Construction

Diameter	3.5	in		
Begin FilterPack	4	ft		
End Filterpack	5	ft	Filterpack Length	1
Tubing Diameter (ID)	0.250	in	Filter Pack Porosity	0.3
Tubing Length (total)	6	ft	Purge Flow (ml/min)	167
Total Depth	5	ft	***Conversion Factors***	
include all tubing length up to canister				

PURGE Volumes

	1	3	10
Filter Pack	0.57 L	1.70 L	5.68 L
Tubing	0.06 L	0.17 L	0.58 L
Total	0.63 L	1.88 L	6.25 L
Purge Time	0:03:45 min	0:11:14 min	0:37:27 mir

1/4 in. OD = .177 in ID *1/8 in. OD = .078 in ID*

1 in = 2.54 cm, 1 ft = 30.48 cm

Filter Pack

$$\frac{\pi\left(\frac{diameter*2.54}{2}\right)^2 \times (length*30.48)}{1000} \times porosity$$

Tubing

$$\frac{\pi\left(\frac{diameter*2.54}{2}\right)^2 \times (length*30.48)}{1000}$$

Purging		Shut In Test		Leak Detection	
Purge Start Time		Canister Serial Number		Helium Monitor Model	
Purge End Time		Initial Canister Pressure		Serial	
Purge Minutes		Shut In Begin Time		Helium Concentration in Shroud	
Purge Flow	0.167	Shut In End Time		Time Checked	
Purge Volume		Final Pressure			
Sampling		Sampling Start Time		Sample ID	
		Sampling End Time		QC Type ☐ Field Duplicate	
		Final Pressure			

Notes

Time	He %		Time	He %

Checked Probe before start,
-Steady stream of water, unable to sample

Appendix I
Soil Vapor Sampling Laboratory Analytical Reports

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6/2/2017

Mr. Jeremy Quick
AECOM
300 Lakeside Drive
Suite 400
Oakland CA 94612

Project Name:
Project #: 60528876.04F
Workorder #: 1705410A

Dear Mr. Jeremy Quick

The following report includes the data for the above referenced project for sample(s) received on 5/20/2017 at Air Toxics Ltd.

The data and associated QC analyzed by TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Rachel Selenis at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Rachel Selenis

Project Manager

eurofins | Air Toxics

WORK ORDER #: 1705410A

Work Order Summary

CLIENT:	Mr. Jeremy Quick AECOM 300 Lakeside Drive Suite 400 Oakland, CA 94612	**BILL TO:**	Accounts Payable Austin AECOM PO Box 203970 Austin, TX 78720
PHONE:	510-893-3600	**P.O. #**	89548
FAX:	510-874-3268	**PROJECT #**	60528876.04F
DATE RECEIVED:	05/20/2017	**CONTACT:**	Rachel Selenis
DATE COMPLETED:	06/02/2017		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	VP-13-3	TO-15	2.2 "Hg	15.1 psi
02A	VP-13-5	TO-15	1.6 "Hg	14.9 psi
03A	Lab Blank	TO-15	NA	NA
04A	CCV	TO-15	NA	NA
05A	LCS	TO-15	NA	NA
05AA	LCSD	TO-15	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 06/02/17

Technical Director

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704434-16-11, UT NELAP CA0093332016-7, VA NELAP - 8113, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2016, Expiration date: 10/17/2017.
Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

LABORATORY NARRATIVE
EPA Method TO-15
AECOM
Workorder# 1705410A

Two 1 Liter Summa Canister samples were received on May 20, 2017. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

There were no analytical discrepancies.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

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Summary of Detected Compounds
EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: VP-13-3

Lab ID#: 1705410A-01A

No Detections Were Found.

Client Sample ID: VP-13-5

Lab ID#: 1705410A-02A

No Detections Were Found.

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Client Sample ID: VP-13-3

Lab ID#: 1705410A-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17052412**	**Date of Collection: 5/19/17 12:21:00 PM**	
Dil. Factor:	**2.19**	**Date of Analysis: 5/24/17 05:05 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	1.1	Not Detected	3.5	Not Detected
Toluene	1.1	Not Detected	4.1	Not Detected
Ethyl Benzene	1.1	Not Detected	4.8	Not Detected
m,p-Xylene	1.1	Not Detected	4.8	Not Detected
o-Xylene	1.1	Not Detected	4.8	Not Detected
Naphthalene	2.2	Not Detected	11	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	91	70-130
4-Bromofluorobenzene	94	70-130

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Client Sample ID: VP-13-5

Lab ID#: 1705410A-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17052413**	**Date of Collection: 5/19/17 2:51:00 PM**	
Dil. Factor:	**2.13**	**Date of Analysis: 5/24/17 05:33 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	1.1	Not Detected	3.4	Not Detected
Toluene	1.1	Not Detected	4.0	Not Detected
Ethyl Benzene	1.1	Not Detected	4.6	Not Detected
m,p-Xylene	1.1	Not Detected	4.6	Not Detected
o-Xylene	1.1	Not Detected	4.6	Not Detected
Naphthalene	2.1	Not Detected	11	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	93	70-130
4-Bromofluorobenzene	94	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1705410A-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17052406**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/24/17 01:03 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	0.50	Not Detected	1.6	Not Detected
Toluene	0.50	Not Detected	1.9	Not Detected
Ethyl Benzene	0.50	Not Detected	2.2	Not Detected
m,p-Xylene	0.50	Not Detected	2.2	Not Detected
o-Xylene	0.50	Not Detected	2.2	Not Detected
Naphthalene	1.0	Not Detected	5.2	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	95	70-130
4-Bromofluorobenzene	95	70-130

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Client Sample ID: CCV

Lab ID#: 1705410A-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17052402**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/24/17 09:45 AM**	

Compound	%Recovery
Benzene	93
Toluene	94
Ethyl Benzene	104
m,p-Xylene	107
o-Xylene	103
Naphthalene	77

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	96	70-130
4-Bromofluorobenzene	103	70-130

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Client Sample ID: LCS

Lab ID#: 1705410A-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17052403**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/24/17 10:12 AM**	

Compound	%Recovery	Method Limits
Benzene	96	70-130
Toluene	99	70-130
Ethyl Benzene	114	70-130
m,p-Xylene	115	70-130
o-Xylene	114	70-130
Naphthalene	90	60-140

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	94	70-130
4-Bromofluorobenzene	105	70-130

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Client Sample ID: LCSD

Lab ID#: 1705410A-05AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17052404**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/24/17 10:39 AM**	

Compound	%Recovery	Method Limits
Benzene	95	70-130
Toluene	99	70-130
Ethyl Benzene	115	70-130
m,p-Xylene	115	70-130
o-Xylene	116	70-130
Naphthalene	96	60-140

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	92	70-130
4-Bromofluorobenzene	103	70-130

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6/3/2017
Mr. Jeremy Quick
AECOM
300 Lakeside Drive
Suite 400
Oakland CA 94612

Project Name:
Project #: 60528876.04F
Workorder #: 1705410B

Dear Mr. Jeremy Quick

The following report includes the data for the above referenced project for sample(s) received on 5/20/2017 at Air Toxics Ltd.

The data and associated QC analyzed by Modified ASTM D-1946 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Rachel Selenis at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Rachel Selenis

Project Manager

eurofins | Air Toxics

WORK ORDER #: 1705410B

Work Order Summary

CLIENT:	Mr. Jeremy Quick AECOM 300 Lakeside Drive Suite 400 Oakland, CA 94612	**BILL TO:**	Accounts Payable Austin AECOM PO Box 203970 Austin, TX 78720
PHONE:	510-893-3600	**P.O. #**	89548
FAX:	510-874-3268	**PROJECT #**	60528876.04F
DATE RECEIVED:	05/20/2017	**CONTACT:**	Rachel Selenis
DATE COMPLETED:	06/03/2017		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	VP-13-3	Modified ASTM D-1946	2.2 "Hg	15.1 psi
02A	VP-13-5	Modified ASTM D-1946	1.6 "Hg	14.9 psi
03A	Lab Blank	Modified ASTM D-1946	NA	NA
03B	Lab Blank	Modified ASTM D-1946	NA	NA
04A	LCS	Modified ASTM D-1946	NA	NA
04AA	LCSD	Modified ASTM D-1946	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 06/03/17

Technical Director

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704434-16-11, UT NELAP CA0093332016-7, VA NELAP - 8113, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2016, Expiration date: 10/17/2017.
Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

LABORATORY NARRATIVE
Modified ASTM D-1946
AECOM
Workorder# 1705410B

Two 1 Liter Summa Canister samples were received on May 20, 2017. The laboratory performed analysis via Modified ASTM Method D-1946 for Methane and fixed gases in air using GC/FID or GC/TCD. The method involves direct injection of 1.0 mL of sample.

On the analytical column employed for this analysis, Oxygen coelutes with Argon. The corresponding peak is quantitated as Oxygen.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the ATL modifications.

Requirement	***ASTM D-1946***	***ATL Modifications***
Calibration	A single point calibration is performed using a reference standard closely matching the composition of the unknown.	A minimum of 5-point calibration curve is performed. Quantitation is based on average Response Factor.
Reference Standard	The composition of any reference standard must be known to within 0.01 mol % for any component.	The standards used by ATL are blended to a >/= 95% accuracy.
Sample Injection Volume	Components whose concentrations are in excess of 5 % should not be analyzed by using sample volumes greater than 0.5 mL.	The sample container is connected directly to a fixed volume sample loop of 1.0 mL on the GC. Linear range is defined by the calibration curve. Bags are loaded by vacuum.
Normalization	Normalize the mole percent values by multiplying each value by 100 and dividing by the sum of the original values. The sum of the original values should not differ from 100% by more than 1.0%.	Results are not normalized. The sum of the reported values can differ from 100% by as much as 15%, either due to analytical variability or an unusual sample matrix.
Precision	Precision requirements established at each concentration level.	Duplicates should agree within 25% RPD for detections > 5 X's the RL.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

There were no analytical discrepancies.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:
B - Compound present in laboratory blank greater than reporting limit.
J - Estimated value.
E - Exceeds instrument calibration range.
S - Saturated peak.
Q - Exceeds quality control limits.
U - Compound analyzed for but not detected above the detection limit.
M - Reported value may be biased due to apparent matrix interferences.
File extensions may have been used on the data analysis sheets and indicates as follows:
a-File was requantified
b-File was quantified by a second column and detector
r1-File was requantified for the purpose of reissue

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Summary of Detected Compounds
NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

Client Sample ID: VP-13-3

Lab ID#: 1705410B-01A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.22	16
Carbon Dioxide	0.022	3.7

Client Sample ID: VP-13-5

Lab ID#: 1705410B-02A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.21	16
Carbon Dioxide	0.021	3.9

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Client Sample ID: VP-13-3

Lab ID#: 1705410B-01A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10052305**	**Date of Collection: 5/19/17 12:21:00 PM**	
Dil. Factor:	**2.19**	**Date of Analysis: 5/23/17 09:35 AM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.22	16
Methane	0.00022	Not Detected
Carbon Dioxide	0.022	3.7
Helium	0.11	Not Detected

Container Type: 1 Liter Summa Canister

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Client Sample ID: VP-13-5

Lab ID#: 1705410B-02A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10052306**	**Date of Collection: 5/19/17 2:51:00 PM**	
Dil. Factor:	**2.13**	**Date of Analysis: 5/23/17 10:04 AM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.21	16
Methane	0.00021	Not Detected
Carbon Dioxide	0.021	3.9
Helium	0.11	Not Detected

Container Type: 1 Liter Summa Canister

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Client Sample ID: Lab Blank

Lab ID#: 1705410B-03A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10052303**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/23/17 08:40 AM**	

Compound	**Rpt. Limit (%)**	**Amount (%)**
Oxygen	0.10	Not Detected
Methane	0.00010	Not Detected
Carbon Dioxide	0.010	Not Detected

Container Type: NA - Not Applicable

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Client Sample ID: Lab Blank

Lab ID#: 1705410B-03B

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10052304c**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/23/17 09:05 AM**	

Compound	**Rpt. Limit (%)**	**Amount (%)**
Helium	0.050	Not Detected

Container Type: NA - Not Applicable

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Client Sample ID: LCS

Lab ID#: 1705410B-04A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10052302**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/23/17 08:13 AM**	

Compound	%Recovery	Method Limits
Oxygen	100	85-115
Methane	100	85-115
Carbon Dioxide	99	85-115
Helium	101	85-115

Container Type: NA - Not Applicable

eurofins | Air Toxics

Client Sample ID: LCSD

Lab ID#: 1705410B-04AA

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10052315**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/23/17 02:50 PM**	

Compound	%Recovery	Method Limits
Oxygen	98	85-115
Methane	99	85-115
Carbon Dioxide	99	85-115
Helium	101	85-115

Container Type: NA - Not Applicable

eurofins | Air Toxics

6/23/2017
Mr. Jeremy Quick
AECOM
300 Lakeside Drive
Suite 400
Oakland CA 94612

Project Name:
Project #: 60528876.04F
Workorder #: 1705410CR1

Dear Mr. Jeremy Quick

The following report includes the data for the above referenced project for sample(s) received on 5/20/2017 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-3 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Rachel Selenis at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Rachel Selenis

Project Manager

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WORK ORDER #: 1705410CR1

Work Order Summary

CLIENT:	Mr. Jeremy Quick AECOM 300 Lakeside Drive Suite 400 Oakland, CA 94612	**BILL TO:**	Accounts Payable Austin AECOM PO Box 203970 Austin, TX 78720
PHONE:	510-893-3600	**P.O. #**	89548
FAX:	510-874-3268	**PROJECT #**	60528876.04F
DATE RECEIVED:	05/20/2017	**CONTACT:**	Rachel Selenis
DATE COMPLETED:	06/05/2017		
DATE REISSUED:	06/23/2017		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	VP-13-3	Modified TO-3	2.2 "Hg	15.1 psi
02A	VP-13-5	Modified TO-3	1.6 "Hg	14.9 psi
03A	Lab Blank	Modified TO-3	NA	NA
04A	LCS	Modified TO-3	NA	NA
04AA	LCSD	Modified TO-3	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 06/23/17

Technical Director

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704434-16-11, UT NELAP CA0093332016-7, VA NELAP - 8113, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2016, Expiration date: 10/17/2017.
Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

LABORATORY NARRATIVE
Modified TO-3
AECOM
Workorder# 1705410CR1

Two 1 Liter Summa Canister samples were received on May 20, 2017. The laboratory performed analysis for volatile organic compounds in air via modified EPA Method TO-3 using gas chromatography with flame ionization detection. The TPH results are calculated using the response of Gasoline. A molecular weight of 100 is used to convert the TPH ppmv result to ug/L. The method involves concentrating up to 200 mL of sample. The concentrated aliquot is then dry purged to remove water vapor prior to entering the chromatographic system.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the ATL modifications.

Requirement	***TO-3***	***ATL Modifications***
Daily Calibration Standard Frequency	Prior to sample analysis and every 4 - 6 hrs	Prior to sample analysis and after the analytical batch </= 20 samples.
Initial Calibration Calculation	4-point calibration using a linear regression model	5-point calibration using average Response Factor
Initial Calibration Frequency	Weekly	When daily calibration standard recovery is outside 75 - 125 %, or upon significant changes to procedure or instrumentation
Moisture Control	Nafion system	Sorbent system
Minimum Detection Limit (MDL)	Calculated using the equation DL = A+3.3S, where A is intercept of calibration line and S is the standard deviation of at least 3 reps of low level standard	40 CFR Pt. 136 App. B
Preparation of Standards	Levels achieved through dilution of gas mixture	Levels achieved through loading various volumes of the gas mixture

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

There were no analytical discrepancies.

The workorder was reissued on 06/23/2017 to report results in ppmv and ug/m3 per client's request.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:
B - Compound present in laboratory blank greater than reporting limit.
J - Estimated value.
E - Exceeds instrument calibration range.
S - Saturated peak.
Q - Exceeds quality control limits.
U - Compound analyzed for but not detected above the detection limit.
M - Reported value may be biased due to apparent matrix interferences.

File extensions may have been used on the data analysis sheets and indicates as follows:
a-File was requantified
b-File was quantified by a second column and detector
r1-File was requantified for the purpose of reissue

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Summary of Detected Compounds
MODIFIED EPA METHOD TO-3 GC/FID

Client Sample ID: VP-13-3

Lab ID#: 1705410CR1-01A

No Detections Were Found.

Client Sample ID: VP-13-5

Lab ID#: 1705410CR1-02A

No Detections Were Found.

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Client Sample ID: VP-13-3

Lab ID#: 1705410CR1-01A

MODIFIED EPA METHOD TO-3 GC/FID

File Name:	**d052310**	**Date of Collection: 5/19/17 12:21:00 PM**	
Dil. Factor:	**2.19**	**Date of Analysis: 5/23/17 12:15 PM**	

Compound	Rpt. Limit (ppmv)	Amount (ppmv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	0.055	Not Detected	220	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Fluorobenzene (FID)	103	75-150

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Client Sample ID: VP-13-5

Lab ID#: 1705410CR1-02A

MODIFIED EPA METHOD TO-3 GC/FID

File Name:	**d052311**	**Date of Collection: 5/19/17 2:51:00 PM**	
Dil. Factor:	**2.13**	**Date of Analysis: 5/23/17 12:54 PM**	

Compound	Rpt. Limit (ppmv)	Amount (ppmv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	0.053	Not Detected	220	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Fluorobenzene (FID)	105	75-150

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Client Sample ID: Lab Blank

Lab ID#: 1705410CR1-03A

MODIFIED EPA METHOD TO-3 GC/FID

File Name:	**d052303**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/23/17 08:12 AM**	

Compound	Rpt. Limit (ppmv)	Amount (ppmv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
TPH (Gasoline Range)	0.025	Not Detected	100	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Fluorobenzene (FID)	106	75-150

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Client Sample ID: LCS

Lab ID#: 1705410CR1-04A

MODIFIED EPA METHOD TO-3 GC/FID

File Name:	**d052302**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/23/17 07:37 AM**	

Compound	%Recovery	Method Limits
TPH (Gasoline Range)	80	75-125

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Fluorobenzene (FID)	108	75-150

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Client Sample ID: LCSD

Lab ID#: 1705410CR1-04AA

MODIFIED EPA METHOD TO-3 GC/FID

File Name:	**d052312**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 5/23/17 01:29 PM**	

Compound	%Recovery	Method Limits
TPH (Gasoline Range)	84	75-125

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Fluorobenzene (FID)	114	75-150

Equilon Enterprises LLC dba Shell Oil Products US Chain Of Custody Record

AECOM

LAB (LOCATION)
☐ ACCUTEST (_____)
☐ CALSCIENCE (_____)
☐ TESTAMERICA (_____)
☑ Other (Eurofins)
Lab Vendor # Dropdown

Please Check Appropriate Box:
☐ SGW FDG ☐ PIPELINE ☐ RETAIL
☐ CHEMICALS ☑ CONSULTANT ☐ LUBES
☐ TRANSPORTATION ☐ OTHER _____

Print Bill To Contact Name: Shane Olton
PO #:
PlaNet Site or Project ID: 27482
GSAP Project ID: USR/00227, USRT/01252
☐ CHECK IF NO INCIDENT # APPLIES
DATE: 05/19/2017
PAGE: 1 of 1

SAMPLING COMPANY: AECOM
LOG CODE:
ADDRESS: 300 Lakeside Drive Suite 400, Oakland, CA
PROJECT CONTACT (Hardcopy or PDF Report to): Shane Olton
TELEPHONE: 916-414-5849
FAX:
Bill To Contact E-MAIL: shane.olton@aecom.com

SITE ADDRESS: Street and City: 2703 MLK Jr. Way, Oakland
State: CA
AECOM Project / Task Number: 60528876.04F
EDF DELIVERABLE TO (Name, Company, Office Location): Shane Olton
PHONE NO.: 916-414-5849
E-MAIL: shane.olton@aecom.com
AECOM Other ID:
SAMPLER NAME(S) (Print): Jeremy Quick
LAB USE ONLY

TURNAROUND TIME (CALENDAR DAYS):
☑ STANDARD (14 DAY) ☐ 5 DAYS ☐ 3 DAYS ☐ 2 DAYS ☐ 24 HOURS ☑ RESULTS NEEDED ON WEEKEND
☐ LA - RWQCB REPORT FORMAT ☐ UST AGENCY:
DELIVERABLES: ☐ LEVEL 1 ☑ LEVEL 2 ☐ LEVEL 3 ☐ LEVEL 4 ☐ OTHER (SPECIFY) _____
TEMPERATURE ON RECEIPT C°: Cooler #1 | Cooler #2 | Cooler #3

SPECIAL INSTRUCTIONS OR NOTES :
☐ CONTRACT RATE APPLIES
☐ STATE REIMBURSEMENT RATE APPLIES
☐ EDD NOT NEEDED
☐ RECEIPT VERIFICATION REQUESTED
☐ PROVIDE EDD DISK

REQUESTED ANALYSIS
UNIT COST / NON-UNIT COST

LAB USE ONLY	Field Sample Identification	SAMPLING DATE	SAMPLING TIME	Sample Type (Ambient, Soil Gas, Indoor, Ambient, Landfill)	Time Start	Time Stop	Canister Vacuum in Field, 'Hg (Start)'	Canister Vacuum in Field, 'Hg (Stop)'	Flow Controller ID	Canister ID	TPHg C6-C12 (EPA Method TO-3)	BTEX & Naphthalene (EPA Method TO-1)	Carbon dioxide, oxygen, & methane (ASTM Method D1946)	Helium (ASTM D1946M)	FIELD NOTES: Purge PID Readings or Laboratory Notes
	~~VP-7-8~~									~~L11772~~					
	~~VP-7-5~~														
01A	VP-13-3	5/19	1221	Soil Gas	1210	1221	29	3	100503	L11772	X	X	X	X	3.5 ppm
02A	VP-13-5	5/19	1451	Soil Gas	1439	1451	30+	3	30535	L12384	X	X	X	X	1.3 ppm

TEMPERATURE ON RECEIPT C°

Relinquished by: (Signature) Jeremy Quick	Received by: (Signature) FEDEX	Date: 05/19/2017	Time: 1730
Relinquished by: (Signature) FEDEX	Received by: (Signature) Debra Augustin EAL	Date: 5/20/17	Time: 1050
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:

Custody Seal Intact?
Y N (None) Temp NA
Fed Ex

1705410

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7/12/2017

Mr. Shane Olton
AECOM
300 Lakeside Drive
Suite 400
Oakland CA 94612

Project Name: 2703 Martin Luther King Way, Oakland CA
Project #: 60528876.04F
Workorder #: 1707116A

Dear Mr. Shane Olton

The following report includes the data for the above referenced project for sample(s) received on 7/10/2017 at Air Toxics Ltd.

The data and associated QC analyzed by TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Rachel Selenis at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Rachel Selenis

Project Manager

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WORK ORDER #: 1707116A

Work Order Summary

CLIENT:	Mr. Shane Olton AECOM 300 Lakeside Drive Suite 400 Oakland, CA 94612	**BILL TO:**	Accounts Payable Austin AECOM PO Box 203970 Austin, TX 78720
PHONE:	510-893-3600	**P.O. #**	89548
FAX:	510-874-3268	**PROJECT #**	60528876.04F 2703 Martin Luther King Way, Oakland CA
DATE RECEIVED:	07/10/2017	**CONTACT:**	Rachel Selenis
DATE COMPLETED:	07/12/2017		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	VP-7-3	TO-15	4.0 "Hg	15 psi
02A	Lab Blank	TO-15	NA	NA
03A	CCV	TO-15	NA	NA
04A	LCS	TO-15	NA	NA
04AA	LCSD	TO-15	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 07/12/17

Technical Director

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704434-16-11, UT NELAP CA0093332016-7, VA NELAP - 8113, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2016, Expiration date: 10/17/2017.
Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

LABORATORY NARRATIVE
EPA Method TO-15
AECOM
Workorder# 1707116A

One 1 Liter Summa Canister sample was received on July 10, 2017. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

There were no analytical discrepancies.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

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Summary of Detected Compounds
EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: VP-7-3

Lab ID#: 1707116A-01A

No Detections Were Found.

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Client Sample ID: VP-7-3

Lab ID#: 1707116A-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p071119**	**Date of Collection: 7/7/17 6:10:00 PM**	
Dil. Factor:	**2.33**	**Date of Analysis: 7/11/17 09:30 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	1.2	Not Detected	3.7	Not Detected
Toluene	1.2	Not Detected	4.4	Not Detected
Ethyl Benzene	1.2	Not Detected	5.0	Not Detected
m,p-Xylene	1.2	Not Detected	5.0	Not Detected
o-Xylene	1.2	Not Detected	5.0	Not Detected
Naphthalene	2.3	Not Detected	12	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	96	70-130
1,2-Dichloroethane-d4	99	70-130
4-Bromofluorobenzene	97	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1707116A-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p071109**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 7/11/17 02:10 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	0.50	Not Detected	1.6	Not Detected
Toluene	0.50	Not Detected	1.9	Not Detected
Ethyl Benzene	0.50	Not Detected	2.2	Not Detected
m,p-Xylene	0.50	Not Detected	2.2	Not Detected
o-Xylene	0.50	Not Detected	2.2	Not Detected
Naphthalene	1.0	Not Detected	5.2	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	97	70-130
1,2-Dichloroethane-d4	99	70-130
4-Bromofluorobenzene	94	70-130

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Client Sample ID: CCV

Lab ID#: 1707116A-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p071102**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 7/11/17 09:47 AM**	

Compound	%Recovery
Benzene	90
Toluene	90
Ethyl Benzene	107
m,p-Xylene	106
o-Xylene	108
Naphthalene	94

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	99	70-130
4-Bromofluorobenzene	106	70-130

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Client Sample ID: LCS

Lab ID#: 1707116A-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p071103**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 7/11/17 10:12 AM**	

Compound	%Recovery	Method Limits
Benzene	88	70-130
Toluene	91	70-130
Ethyl Benzene	108	70-130
m,p-Xylene	106	70-130
o-Xylene	110	70-130
Naphthalene	79	60-140

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	97	70-130
1,2-Dichloroethane-d4	102	70-130
4-Bromofluorobenzene	102	70-130

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Client Sample ID: LCSD

Lab ID#: 1707116A-04AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p071104**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 7/11/17 10:36 AM**	

Compound	%Recovery	Method Limits
Benzene	86	70-130
Toluene	88	70-130
Ethyl Benzene	104	70-130
m,p-Xylene	104	70-130
o-Xylene	106	70-130
Naphthalene	76	60-140

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	97	70-130
1,2-Dichloroethane-d4	101	70-130
4-Bromofluorobenzene	103	70-130

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7/21/2017
Mr. Shane Olton
AECOM
300 Lakeside Drive
Suite 400
Oakland CA 94612

Project Name: 2703 Martin Luther King Way, Oakland CA
Project #: 60528876.04F
Workorder #: 1707116B

Dear Mr. Shane Olton

The following report includes the data for the above referenced project for sample(s) received on 7/10/2017 at Air Toxics Ltd.

The data and associated QC analyzed by Modified ASTM D-1946 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Rachel Selenis at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Rachel Selenis

Project Manager

eurofins | Air Toxics

WORK ORDER #: 1707116B

Work Order Summary

CLIENT:	Mr. Shane Olton AECOM 300 Lakeside Drive Suite 400 Oakland, CA 94612	**BILL TO:**	Accounts Payable Austin AECOM PO Box 203970 Austin, TX 78720
PHONE:	510-893-3600	**P.O. #**	89548
FAX:	510-874-3268	**PROJECT #**	60528876.04F 2703 Martin Luther King Way, Oakland CA
DATE RECEIVED:	07/10/2017	**CONTACT:**	Rachel Selenis
DATE COMPLETED:	07/21/2017		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	VP-7-3	Modified ASTM D-1946	4.0 "Hg	15 psi
02A	Lab Blank	Modified ASTM D-1946	NA	NA
02B	Lab Blank	Modified ASTM D-1946	NA	NA
03A	LCS	Modified ASTM D-1946	NA	NA
03AA	LCSD	Modified ASTM D-1946	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 07/21/17

Technical Director

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704434-16-11, UT NELAP CA0093332016-7, VA NELAP - 8113, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2016, Expiration date: 10/17/2017.
Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

LABORATORY NARRATIVE
Modified ASTM D-1946
AECOM
Workorder# 1707116B

One 1 Liter Summa Canister sample was received on July 10, 2017. The laboratory performed analysis via Modified ASTM Method D-1946 for Methane and fixed gases in air using GC/FID or GC/TCD. The method involves direct injection of 1.0 mL of sample.

On the analytical column employed for this analysis, Oxygen coelutes with Argon. The corresponding peak is quantitated as Oxygen.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the ATL modifications.

Requirement	***ASTM D-1946***	***ATL Modifications***
Calibration	A single point calibration is performed using a reference standard closely matching the composition of the unknown.	A minimum of 5-point calibration curve is performed. Quantitation is based on average Response Factor.
Reference Standard	The composition of any reference standard must be known to within 0.01 mol % for any component.	The standards used by ATL are blended to a >/= 95% accuracy.
Sample Injection Volume	Components whose concentrations are in excess of 5 % should not be analyzed by using sample volumes greater than 0.5 mL.	The sample container is connected directly to a fixed volume sample loop of 1.0 mL on the GC. Linear range is defined by the calibration curve. Bags are loaded by vacuum.
Normalization	Normalize the mole percent values by multiplying each value by 100 and dividing by the sum of the original values. The sum of the original values should not differ from 100% by more than 1.0%.	Results are not normalized. The sum of the reported values can differ from 100% by as much as 15%, either due to analytical variability or an unusual sample matrix.
Precision	Precision requirements established at each concentration level.	Duplicates should agree within 25% RPD for detections > 5 X's the RL.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

There were no analytical discrepancies.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:
B - Compound present in laboratory blank greater than reporting limit.
J - Estimated value.
E - Exceeds instrument calibration range.
S - Saturated peak.
Q - Exceeds quality control limits.
U - Compound analyzed for but not detected above the detection limit.
M - Reported value may be biased due to apparent matrix interferences.
File extensions may have been used on the data analysis sheets and indicates as follows:
a-File was requantified
b-File was quantified by a second column and detector
r1-File was requantified for the purpose of reissue

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Summary of Detected Compounds
NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

Client Sample ID: VP-7-3

Lab ID#: 1707116B-01A

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.23	20
Carbon Dioxide	0.023	1.3

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Client Sample ID: VP-7-3

Lab ID#: 1707116B-01A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10071406**	**Date of Collection: 7/7/17 6:10:00 PM**	
Dil. Factor:	**2.33**	**Date of Analysis: 7/14/17 10:22 AM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.23	20
Methane	0.00023	Not Detected
Carbon Dioxide	0.023	1.3
Helium	0.12	Not Detected

Container Type: 1 Liter Summa Canister

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Client Sample ID: Lab Blank

Lab ID#: 1707116B-02A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10071404**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 7/14/17 09:27 AM**	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.10	Not Detected
Methane	0.00010	Not Detected
Carbon Dioxide	0.010	Not Detected

Container Type: NA - Not Applicable

eurofins | Air Toxics

Client Sample ID: Lab Blank

Lab ID#: 1707116B-02B

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10071405c**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 7/14/17 09:53 AM**	

Compound	**Rpt. Limit (%)**	**Amount (%)**
Helium	0.050	Not Detected

Container Type: NA - Not Applicable

eurofins | Air Toxics

Client Sample ID: LCS

Lab ID#: 1707116B-03A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10071402**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 7/14/17 08:33 AM**	

Compound	%Recovery	Method Limits
Oxygen	100	85-115
Methane	101	85-115
Carbon Dioxide	100	85-115
Helium	100	85-115

Container Type: NA - Not Applicable

eurofins | Air Toxics

Client Sample ID: LCSD

Lab ID#: 1707116B-03AA

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1946

File Name:	**10071416**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 7/14/17 03:57 PM**	

Compound	%Recovery	Method Limits
Oxygen	100	85-115
Methane	99	85-115
Carbon Dioxide	100	85-115
Helium	98	85-115

Container Type: NA - Not Applicable

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7/20/2017
Mr. Shane Olton
AECOM
300 Lakeside Drive
Suite 400
Oakland CA 94612

Project Name: 2703 Martin Luther King Way, Oakland CA
Project #: 60528876.04F
Workorder #: 1707116C

Dear Mr. Shane Olton

The following report includes the data for the above referenced project for sample(s) received on 7/10/2017 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-3 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Rachel Selenis at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Rachel Selenis

Project Manager

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WORK ORDER #: 1707116C

Work Order Summary

CLIENT:	Mr. Shane Olton AECOM 300 Lakeside Drive Suite 400 Oakland, CA 94612	**BILL TO:**	Accounts Payable Austin AECOM PO Box 203970 Austin, TX 78720
PHONE:	510-893-3600	**P.O. #**	89548
FAX:	510-874-3268	**PROJECT #**	60528876.04F 2703 Martin Luther King Way, Oakland CA
DATE RECEIVED:	07/10/2017	**CONTACT:**	Rachel Selenis
DATE COMPLETED:	07/20/2017		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	VP-7-3	Modified TO-3	4.0 "Hg	15 psi
02A	Lab Blank	Modified TO-3	NA	NA
03A	LCS	Modified TO-3	NA	NA
03AA	LCSD	Modified TO-3	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 07/20/17

Technical Director

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704434-16-11, UT NELAP CA0093332016-7, VA NELAP - 8113, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2016, Expiration date: 10/17/2017.
Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

LABORATORY NARRATIVE
Modified TO-3
AECOM
Workorder# 1707116C

One 1 Liter Summa Canister sample was received on July 10, 2017. The laboratory performed analysis for volatile organic compounds in air via modified EPA Method TO-3 using gas chromatography with flame ionization detection. The TPH results are calculated using the response of Gasoline. A molecular weight of 100 is used to convert the TPH ppmv result to ug/L. The method involves concentrating up to 200 mL of sample. The concentrated aliquot is then dry purged to remove water vapor prior to entering the chromatographic system.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the ATL modifications.

Requirement	***TO-3***	***ATL Modifications***
Daily Calibration Standard Frequency	Prior to sample analysis and every 4 - 6 hrs	Prior to sample analysis and after the analytical batch </= 20 samples.
Initial Calibration Calculation	4-point calibration using a linear regression model	5-point calibration using average Response Factor
Initial Calibration Frequency	Weekly	When daily calibration standard recovery is outside 75 - 125 %, or upon significant changes to procedure or instrumentation
Moisture Control	Nafion system	Sorbent system
Minimum Detection Limit (MDL)	Calculated using the equation DL = A+3.3S, where A is intercept of calibration line and S is the standard deviation of at least 3 reps of low level standard	40 CFR Pt. 136 App. B
Preparation of Standards	Levels achieved through dilution of gas mixture	Levels achieved through loading various volumes of the gas mixture

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

There were no analytical discrepancies.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:
B - Compound present in laboratory blank greater than reporting limit.

J - Estimated value.
E - Exceeds instrument calibration range.
S - Saturated peak.
Q - Exceeds quality control limits.
U - Compound analyzed for but not detected above the detection limit.
M - Reported value may be biased due to apparent matrix interferences.

File extensions may have been used on the data analysis sheets and indicates as follows:
a-File was requantified
b-File was quantified by a second column and detector
r1-File was requantified for the purpose of reissue

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Summary of Detected Compounds
MODIFIED EPA METHOD TO-3 GC/FID

Client Sample ID: VP-7-3

Lab ID#: 1707116C-01A

Compound	Rpt. Limit (ppmv)	Rpt. Limit (ug/L)	Amount (ppmv)	Amount (ug/L)
TPH (Gasoline Range)	0.058	0.24	0.064	0.26

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Client Sample ID: VP-7-3

Lab ID#: 1707116C-01A

MODIFIED EPA METHOD TO-3 GC/FID

File Name:	**d072005**	**Date of Collection: 7/7/17 6:10:00 PM**	
Dil. Factor:	**2.33**	**Date of Analysis: 7/20/17 02:06 PM**	

Compound	Rpt. Limit (ppmv)	Rpt. Limit (ug/L)	Amount (ppmv)	Amount (ug/L)
TPH (Gasoline Range)	0.058	0.24	0.064	0.26

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Fluorobenzene (FID)	94	75-150

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Client Sample ID: Lab Blank

Lab ID#: 1707116C-02A

MODIFIED EPA METHOD TO-3 GC/FID

File Name:	**d072004**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 7/20/17 12:14 PM**	

Compound	Rpt. Limit (ppmv)	Rpt. Limit (ug/L)	Amount (ppmv)	Amount (ug/L)
TPH (Gasoline Range)	0.025	0.10	Not Detected	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Fluorobenzene (FID)	92	75-150

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Client Sample ID: LCS

Lab ID#: 1707116C-03A

MODIFIED EPA METHOD TO-3 GC/FID

File Name:	**d072002**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 7/20/17 10:19 AM**	

Compound	%Recovery	Method Limits
TPH (Gasoline Range)	90	75-125

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Fluorobenzene (FID)	94	75-150

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Client Sample ID: LCSD

Lab ID#: 1707116C-03AA

MODIFIED EPA METHOD TO-3 GC/FID

File Name:	**d072006**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 7/20/17 02:48 PM**	

Compound	%Recovery	Method Limits
TPH (Gasoline Range)	88	75-125

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Fluorobenzene (FID)	97	75-150

Equilon Enterprises LLC dba Shell Oil Products US Chain Of Custody Record

AECOM

LAB (LOCATION)
- ☐ ACCUTEST (_____)
- ☐ CALSCIENCE (_____)
- ☐ TESTAMERICA (_____)
- ☑ Other (Eurofins Air Toxics)

Lab Vendor #

Please Check Appropriate Box:
- ☐ SGW FDG
- ☐ PIPELINE
- ☐ RETAIL
- ☐ CHEMICALS
- ☑ CONSULTANT
- ☐ LUBES
- ☐ TRANSPORTATION
- ☐ OTHER

Print Bill To Contact Name:	PlaNet Site or Project ID	☐ CHECK IF NO INCIDENT # APPLIES
Shane Olton	27482	DATE: 7/7/17
PO #	GSAP Project ID	PAGE: 1 of 1
89548	USPC/00227, USRT/01252	

SAMPLING COMPANY: AECOM
LOG CODE:
SITE ADDRESS: Street and City: 2703 Martin Luther King Way, Oakland
State: CA
AECOM Project / Task Number: 60528876.04F
ADDRESS: 300 Lakeside Drive Suite 400, Oakland, CA
EDF DELIVERABLE TO (Name, Company, Office Location):
PHONE NO: 510-874-3095
E-MAIL: Shane.Olton@aecom.com
AECOM Other ID:
PROJECT CONTACT (Hardcopy or PDF Report to): Shane Olton
SAMPLER NAME(S) (Print):
LAB USE ONLY
TELEPHONE: 916-414-5849
FAX:
Bill To Contact E-MAIL: Shane.Olton@aecom.com

TURNAROUND TIME (CALENDAR DAYS):
- ☑ STANDARD (14 DAY)
- ☐ 5 DAYS
- ☐ 3 DAYS
- ☐ 2 DAYS
- ☐ 24 HOURS
- ☑ RESULTS NEEDED ON WEEKEND
- ☐ 1A - RWQCB REPORT FORMAT
- ☐ UST AGENCY:

DELIVERABLES: ☐ LEVEL 1 ☑ LEVEL 2 ☐ LEVEL 3 ☐ LEVEL 4 ☐ OTHER (SPECIFY)

TEMPERATURE ON RECEIPT C°: Cooler #1 | Cooler #2 | Cooler #3

SPECIAL INSTRUCTIONS OR NOTES :
- ☐ CONTRACT RATE APPLIES
- ☐ STATE REIMBURSEMENT RATE APPLIES
- ☐ EDD NOT NEEDED
- ☐ RECEIPT VERIFICATION REQUESTED
- ☐ PROVIDE LEDD DISK

REQUESTED ANALYSIS

LAB USE ONLY	Field Sample Identification	SAMPLING DATE	SAMPLING TIME	Sample Type (Ambient, Soil Gas, Indoor, Ambient, Landfill)	Time Start	Time Stop	Canister Vacuum in Field, 'Hg (Start)'	Canister Vacuum in Field, 'Hg (Stop)'	Flow Controller ID	Canister ID	UNIT COST: Carbon dioxide, oxygen, methane (ASTM Method D1946)	UNIT COST: TPHg (GC-FID) (USEPA Method TO-3)	UNIT COST: Helium (ASTM D1946M)	UNIT COST: BTEX, Naphthalene (US EPA TO-15)	NON-UNIT COST	FIELD NOTES:
01A	VP-7-3	7/7/17	1810	SG	1802	1810	-30	-5	21412	111843	X	X	X	X		PID - 0.0

TEMPERATURE ON RECEIPT C°

Purge PID Readings or Laboratory Notes

		Date	Time
Relinquished by (Signature)	Received by (Signature)	7/10/17	1035
Relinquished by (Signature)	Received by (Signature)	7-10-17	1138
Relinquished by (Signature)	Received by (Signature)		

Custody Seal Intact?
Y N None Temp NA EAIL 17/0

1707116