CONESTOGA-ROVERS & ASSOCIATES

5900 Hollis Street, Suite A
Emeryville, California 94608
Telephone: (510) 420-0700 Fax: (510) 420-9170
www.CRAworld.com

TRANSMITTAL

DATE: December 22, 2014

REFERENCE NO.: 240483

PROJECT NAME: 5755 Broadway, Oakland

TO: Jerry Wickham
Alameda County Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Please find enclosed:
- ☐ Draft
- ☐ Originals
- ☐ Prints
- ☒ Final
- ☐ Other

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- ☐ Mail
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QUANTITY	DESCRIPTION
1	Site Conceptual Model and Low-Threat Closure Request

- ☐ As Requested
- ☐ For Your Use
- ☒ For Review and Comment
- ☐
- ☐

COMMENTS:
If you have any questions regarding the contents of this document, please call the CRA project manager Peter Schaefer at (510) 420-3319 or the Shell program manager Perry Pineda at (425) 413-1164.

Copy to: Perry Pineda, Shell Oil Products US (electronic copy)
Clint Mercer, SC Fuels (lessee), 1800 West Katella Avenue, Suite 400, Orange, CA 92867
Orkin, Inc. (property owner), PO Box 2128, Santa Fe Springs, CA 90670

Completed by: Peter Schaefer Signed: Peter Schaefer

Filing: Correspondence File

Shell Oil Products US
Soil and Groundwater Focus Delivery Group
20945 S. Wilmington Avenue
Carson, CA 90810
Tel (425) 413 1164
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Email perry.pineda@shell.com
Internet http://www.shell.com

Mr. Jerry Wickham
Alameda County Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Re: 5755 Broadway
Oakland, California
SAP Code 135699
Incident No. 98995756
ACEH Case No. RO0000026

Dear Mr. Wickham:

The attached document is provided for your review and comment. Upon information and belief, I declare, under penalty of perjury, that the information contained in the attached document is true and correct.

As always, please feel free to contact me directly at (425) 413-1164 with any questions or concerns.

Sincerely,
Shell Oil Products US

Perry Pineda
Senior Environmental Program Manager

SITE CONCEPTUAL MODEL AND LOW-THREAT CLOSURE REQUEST

SHELL-BRANDED SERVICE STATION
5755 BROADWAY
OAKLAND, CALIFORNIA

SAP CODE **135699**
INCIDENT NO. **98995756**
AGENCY NO. **RO0000026**

Prepared by:
Conestoga-Rovers & Associates

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U.S.A. 94608

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DECEMBER 22, 2014
REF. NO. 240483 (13)
This report is printed on recycled paper.

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EXECUTIVE SUMMARY

- This SCM is intended to fulfill a requirement for case closure detailed in SWRCB's low-threat closure policy, and the closure evaluation shows that site data satisfy all criteria in the policy.
- In December 1992, gasoline vapors were detected in the storm drain and sanitary sewers south of the site. Although all tanks passed a precision tightness test, the regular unleaded piping failed. Based on tank inventory records, approximately 200 gallons of gasoline may have been released. Shell replaced a pipe fitting and the piping passed a subsequent tightness test. SPHs were found in the tank backfill wells and a remediation trench. The SPHs were removed from the tank backfill wells until only a sheen remained.
- Shell has conducted investigations and remediation from 1985 to the present.
- Historical groundwater monitoring data adequately define TPHg and BTEX impacts in groundwater to below applicable RWQCB ESLs, demonstrating that the plume is not migrating and that COC trends are declining. All site MTBE concentrations are below ESLs and are steadily declining. Groundwater data satisfy the Policy media-specific criteria.
- Due to very shallow groundwater, there is no vadose zone at the site. Soil analytical data meet Policy media-specific direct contact and outdoor air exposure criteria for sites with commercial land use.
- This site meets SWRCB general criteria for a low-threat fuel site, and is exempted from the vapor criteria as it is an active fueling facility.
- Based on the above, on behalf of Shell, we respectfully request closure of this case. CRA requests that ACEH suspend the groundwater monitoring program requirement during the closure review.

1.0 INTRODUCTION

Conestoga-Rovers & Associates (CRA) prepared this request on behalf of Equilon Enterprises LLC dba Shell Oil Products US (Shell) as requested in Alameda County Environmental Health's (ACEH's) September 22, 2014 letter. This evaluation demonstrates that this site meets the requirements of the State Water Resources Control Board's (SWRCB's) *Low-Threat Underground Storage Tank Case Closure Policy* (the Policy).

The subject site is a Shell-branded service station located on the northern corner of the Broadway and Taft Street intersection in a mixed residential and commercial area of Oakland, California (Figure 1). Current site features include three gasoline underground storage tanks (USTs), four dispenser islands, and a station building (Figure 2).

A summary of previous work performed at the site and other background information is presented in Appendix A.

2.0 SITE CONCEPTUAL MODEL (SCM)

ITEM	*EVALUATION CRITERIA*	*COMMENTS/DISCUSSION*
2.1	**Hydrocarbon Source**	
2.1.1	Identify / Describe Release Source and Volume (if known)	In December 1992, gasoline vapors were detected in the storm drain and sanitary sewers south of the site. Although all USTs passed a precision tightness test, the regular unleaded piping failed. Based on tank inventory records, approximately 200 gallons of gasoline may have been released. Separate-phase hydrocarbons (SPHs) were also found in one of the tank backfill wells.
2.1.2	Discuss Steps Taken to Stop Release	Gettler-Ryan of Hayward, California, replaced a pipe fitting and the piping passed a subsequent test. Dispensers were upgraded in March 1998 and in November 2004 the USTs were replaced and the entire fuel system was upgraded.
2.2	**Site Characterization**	
2.2.1	Current Site Use / Status	The site is a Shell-branded service station.
2.2.2	Soil Definition Status	Due to very shallow groundwater (0.45 to

ITEM	EVALUATION CRITERIA	COMMENTS/DISCUSSION
		7.38 feet below grade [fbg]), there is effectively no vadose zone at the site. As discussed below in Section 3.1.7, soil analytical data were compared to the Policy media-specific direct contact and outdoor air exposure criteria for sites with commercial land use and all concentrations are below criteria, therefore, soil impacts have been adequately delineated. Table 1 presents historical soil data.
2.2.3	SPH Definition Status	Following a release from a defective pipe fitting in December 1992, which reportedly released approximately 200 gallons of unleaded gasoline, SPHs were observed in tank backfill wells T-1 and T-2. Mixed water and SPHs were purged from the tank backfill wells on a daily basis from December 24, 1992 through January 7, 1993. Purging was suspended when SPHs originally observed in the wells were reduced to a sheen. No SPHs have been observed since February 1994.
2.2.4	Soil Vapor Definition Status	Soil vapor samples from on-site soil vapor probe VP-1 at 3 fbg contained concentrations of TPHg (210,000,000 micrograms per cubic meter [$\mu g/m^3$]) and benzene (370,000 $\mu g/m^3$) which exceeded commercial San Francisco Bay Regional Water Quality Control Board[1] (RWQCB) environmental screening levels (ESLs) for evaluation of potential vapor intrusion concerns; however, the site is an active fueling facility, and there is no reasonable concern that subsurface contamination poses unacceptable indoor inhalation health risk on the station property. No constituents of concern (COCs) were detected above residential ESLs for evaluation of potential vapor intrusion concerns in soil vapor samples collected from off-site near sub-slab soil vapor probes VP-3

[1] *Screening for Environmental Concerns at Sites With Contaminated Soil and Groundwater*, California Regional Water Quality Control Board, Interim Final – November 2007 [Revised May 2008] – Updated December 2013

ITEM	EVALUATION CRITERIA	COMMENTS/DISCUSSION
		and VP-4 at 0.3 fbg, installed between VP-1 and an adjacent, down-gradient apartment building. Table 2 presents historical soil vapor analytical data, and sample locations are shown on Figure 2.
2.2.5	Groundwater Definition Status (TPHg/BTEX)	Groundwater has been monitored at the site since the third quarter of 1985. During the third quarter 2014 groundwater monitoring event, TPHg and BTEX concentrations were below ESLs for groundwater where groundwater is not a potential source of drinking water with the exception of 3,900 micrograms per liter (mg/L) TPHg and 250 mg/L benzene detected in well S-2. Well H-1 (only sampled in first quarter groundwater monitoring events) contained 580 mg/L TPHg and 53 mg/L benzene during the first quarter 2014, which also exceeded ESLs. The third quarter 2014 groundwater contour and chemical concentration map is included as Figure 3. TPHg and benzene concentrations are defined to below ESLs on site by wells S-1 and S-3 and down gradient by historical grab groundwater samples collected from borings B-1 through B-4 in August 2002. Historical monitoring well groundwater data are included in Table 3, and grab groundwater sampling data are presented in Table 4.
2.2.6	TPHg/BTEX Plume Stability and Concentration Trends	Groundwater monitoring data indicate that COC concentrations are stable to declining. Concentrations in well S-2 are declining and concentrations in well H-2 are fluctuating at or near ESLs. Trend graphs for COCs exceeding ESLs are presented on Figures 4 and 5 and predict that all COCs will reach ESLs by 2030.
2.2.7	Groundwater Definition Status (Oxygenates)	During the third quarter 2014 groundwater monitoring event, fuel oxygenate concentrations in all wells (S-1 through S-3)

ITEM	*EVALUATION CRITERIA*	*COMMENTS/DISCUSSION*
		were below ESLs. They were also below ESLs in H-1 during the first quarter 2014. Third quarter 2014 MTBE groundwater data are presented on Figure 3. Historical monitoring groundwater well data are included in Table 3 and grab groundwater sampling data are presented in Table 4.
2.2.8	Oxygenate Plume Stability and Concentration Trends	Di-isopropyl ether, ethyl tertiary-butyl ether, and tertiary-amyl methyl ether have not been detected in groundwater samples. MTBE and tertiary-butyl alcohol (TBA) detections were below ESLs. Well S-2 has contained the highest levels of MTBE and TBA and the MTBE and TBA concentrations in S-2 have been steadily declining since their peaks in 1996 and 2005, respectively.
2.2.9	Groundwater Flow Direction, Depth Trends and Gradient	Static groundwater depth has ranged from 0.45 to 7.38 fbg. Groundwater flow direction is generally southerly with a variable but generally moderate groundwater gradient. An occasional easterly component of groundwater gradient appears between wells S-1 and H-1. Groundwater depths are presented in the historical groundwater monitoring data table (Table 2).
2.2.10	Stratigraphy and Hydrogeology	Based on 19 soil borings, the site is underlain by up to 5 feet of variable fill generally underlain by clayey silt, sandy silt, sand, clayey sand, and silty sand, with occasional gravels, to the maximum explored depth of 16 fbg. Shale bedrock was encountered in five borings at 5 to 10 fbg. Boring logs are presented in Appendix B.
2.2.11	Preferential Pathways Analysis	Two sanitary sewer mains and a sanitary sewer lateral have been identified within Broadway and at the south end of the site, respectively. Another sewer main was identified within Taft Street. The sanitary sewer pipes are 8 to 21 inches in diameter, and are buried approximately 6.5 fbg. Storm drain conduits were identified within Broadway. The storm drain is 12 inches in diameter and is buried approximately 4 fbg.

ITEM	*EVALUATION CRITERIA*	*COMMENTS/DISCUSSION*
		The sewer and storm drain conduits down gradient from the site flow northeast down Taft Street and southwest down Broadway (Figure 2). Groundwater typically intersects these utility trenches and natural groundwater flow may be altered. Identified utilities are shown on Figure 2.
2.2.12	Other Pertinent Issues	None.
2.3	**Remediation Status**	
2.3.1	Remedial Actions Taken	In December 1992, a vacuum truck purged approximately 40,000 gallons of groundwater and SPHs from tank backfill wells T-1 and T-2. Concurrently, three trenches were excavated around sewer lines and former tank-pit dewatering piping near the south portion of the site. The former tank-pit dewatering piping and 126 yards of impacted soil were removed from the excavation. A grout barrier was installed in the former tank-pit dewatering piping trench to impede hydrocarbon migration. Sections of sanitary sewer piping and mains were replaced with hydrocarbon resistant piping, and a horizontal groundwater extraction (GWE) well was installed at 8 fbg below the sewer main piping. Between February 1993 and February 1994, SPHs were removed from site wells by manual bailing, and from January 1994 to March 1998, mobile GWE removed 422,338 gallons of groundwater from the tank pit area. Between April 2000 and February 2001, approximately 20,038 gallons of groundwater were extracted from wells S-2, T-2, and H-1. From October 2003 to May 2006, Cambria Environmental Technology, Inc. (Cambria) operated a temporary GWE system using well S-2. The temporary GWE system removed approximately 32,043 gallons of water containing an estimated 0.88 pound of TPHg, 0.046 pound of benzene, and 0.62 pound of MTBE.

ITEM	*EVALUATION CRITERIA*	*COMMENTS/DISCUSSION*
		During station upgrades in 2005, approximately 1,522 tons of soil and pea gravel were removed for disposal. In addition, approximately 291,077 gallons of groundwater were removed from the tank excavation containing an estimated 1.1 pounds of TPHg, 0.1 pound of benzene, and 0.85 pound of MTBE.
2.3.2	Area Remediated	Area near the USTs and the sanitary sewer lateral and main piping in the south (down gradient) end of the site.
2.3.3	Remediation Effectiveness	COC concentrations show an overall decreasing trend since GWE and excavation were conducted at the site.
2.4	**Well and Sensitive Receptor Survey**	
2.4.1	Designated Beneficial Water Use	The RWQCB Groundwater Committee's June 1999 *East Bay Plain Groundwater Basin Beneficial Use Evaluation Report for Alameda and Contra Costa Counties, CA* states that the City of Oakland (among other cities) "does not have plans to develop local groundwater resources for drinking water purposes, because of existing or potential saltwater intrusion, contamination, or poor or limited quantity." Although groundwater in this area cannot be precluded from being a potential future source of drinking water, it is not currently a source of drinking water, and given the shallow depth and proximity to San Francisco Bay, it is unlikely that shallow groundwater would be used as a source of drinking water. Thus, RWQCB non-drinking water ESLs are the appropriate screening levels for this site.
2.4.2	Well Survey Results	In September 2013, CRA performed a search of California Department of Water Resources records and the Alameda County Public Works Agency for wells located within one-half mile of the site. No public water-supply wells were identified. There is one domestic well located within one-half mile of the site. The well was located approximately 1,700 feet north of the site across the Interstate 580

ITEM	*EVALUATION CRITERIA*	*COMMENTS/DISCUSSION*
		Freeway on Ivanhoe Road.
2.4.3	Likelihood of Impact to Wells	Due to the distance and up-gradient direction to the identified water-producing well and declining trends observed for COCs, it is unlikely it would be impacted by site activities.
2.4.4	Likelihood of Impact to Surface Water	The Grandview Branch of Vincente Creek is located approximately 1,100 feet north of the site, Claremont Creek is located approximately 1,800 feet west of the site, and the Rockridge branch of Glen Echo Creek is located approximately 2,200 feet north of the site. Impact to surface water is unlikely because of the distance from the site and their cross-gradient locations.
2.5	**Risk Assessment**	
2.5.1	Site Conceptual Exposure Model (current and future uses)	The site is an active Shell-branded service station. The site is surrounded by mixed residential and commercial properties. There is no indication that the land use in the site vicinity will change from commercial and residential land use in the near future.
2.5.2	Exposure Pathways	Potential exposure pathways include ingestion of impacted groundwater, exposure of on-site workers to impacted shallow soils, and intrusion of vapor to indoor air. Groundwater ingestion does not appear to be a completed pathway because there are no down-gradient water-producing wells or surface water in close proximity to the site. As discussed above, impacted soil is limited on site. Any work at this site would require contractors to have appropriate health and safety training. Workers doing trenching or excavating at an active gasoline station would be properly trained and prepared for encountering potentially impacted soil, and would follow appropriate safety procedures. Therefore, the residual impacted soils do not appear to pose a significant threat to construction workers who may occasionally come in contact with any residual impacted

ITEM	*EVALUATION CRITERIA*	*COMMENTS/DISCUSSION*
		soils on site. The site is an active fueling facility, and there is no reasonable concern that subsurface contamination poses unacceptable indoor inhalation health risk. Off-site soil vapor data demonstrate that there is no reasonable risk of soil vapor intrusion into the adjacent, down-gradient apartment building.
2.5.3	Risk Assessment Status	No formal risk assessment has been completed.
2.5.4	Identified Human Exceedances	NA
2.5.5	Identified Ecological Exceedances	NA
2.6	**Additional Recommended Data or Tasks**	
2.6.1	Case Closure	
2.6.2	Well Destructions	

3.0 LOW-THREAT CLOSURE EVALUATION

Data demonstrate that site conditions meet case closure criteria outlined in the Policy. These criteria are addressed below.

3.1 GENERAL CRITERIA

3.1.1 THE UNAUTHORIZED RELEASE IS LOCATED WITHIN THE SERVICE AREA OF A PUBLIC WATER SYSTEM

East Bay Municipal Utility District is the public water system for the site and the surrounding area.

3.1.2 THE UNAUTHORIZED RELEASE CONSISTS ONLY OF PETROLEUM

The site is a service station. Soil and groundwater impacts identified in site investigations since June 1985 consist only of petroleum hydrocarbons and fuel additives.

3.1.3 THE UNAUTHORIZED ("PRIMARY") RELEASE FROM THE UST SYSTEM HAS BEEN STOPPED

As stated above, in December 1992, gasoline vapors were detected in the storm drain and sanitary sewers south of the site. Although all tanks passed a precision tightness test, the regular unleaded piping failed. Based on tank inventory records, approximately 200 gallons of gasoline may have been released. Gettler-Ryan replaced a pipe fitting and the piping passed a subsequent test.

Dispensers were upgraded in March 1998 and, in November 2004, the USTs were replaced and the entire fuel system was upgraded.

3.1.4 FREE PRODUCT HAS BEEN REMOVED TO THE MAXIMUM EXTENT PRACTICABLE

No SPHs have been observed since February 1994.

3.1.5 A CONCEPTUAL SITE MODEL THAT ASSESSES THE NATURE, EXTENT, AND MOBILITY OF THE RELEASE HAS BEEN DEVELOPED

An SCM is provided in Section 2.

3.1.6 SECONDARY SOURCE HAS BEEN REMOVED TO THE EXTENT PRACTICABLE

As stated above, in December 1992, a vacuum truck purged approximately 40,000 gallons of groundwater and SPHs from tank backfill wells T-1 and T-2. Concurrently, three trenches were excavated around sewer lines and former tank-pit dewatering piping near the south portion of the site. The former tank-pit dewatering piping and 126 yards of impacted soil were removed from the excavation. A grout barrier was installed in the former tank-pit dewatering piping trench to impede

hydrocarbon migration. Sections of sanitary sewer piping and mains were replaced with hydrocarbon resistant piping, and a horizontal groundwater extraction well was installed at 8 fbg below the sewer main piping.

Between February 1993 and February 1994, SPHs were removed from site wells by manual bailing, and from January 1994 to March 1998, approximately 422,338 gallons of groundwater were removed from the tank pit area by vacuum truck. Between April 2000 and February 2001, approximately 20,038 gallons of groundwater were extracted from wells S-2, T-2, and H-1.

From October 2003 to May 2006, Cambria operated a temporary GWE system using well S-2. The temporary GWE system removed approximately 32,043 gallons of water containing an estimated 0.88 pound of TPHg, 0.046 pound of benzene, and 0.62 pound of MTBE.

During station upgrades in 2005, approximately 1,522 tons of soil and pea gravel were removed for disposal. In addition, approximately 291,077 gallons of groundwater were removed from the tank excavation containing an estimated 1.1 pounds of TPHg, 0.1 pound of benzene, and 0.85 pound of MTBE.

Vapor and groundwater extraction data tables are presented in Appendix C.

3.1.7 SOIL OR GROUNDWATER HAS BEEN TESTED FOR MTBE

Soil samples have been analyzed for MTBE since March 1998. Groundwater samples have been analyzed for MTBE since August 1996. Analytical data has been reported to ACEH in investigation and periodic groundwater monitoring reports. Soil and groundwater data are presented in Tables 1, 3, and 4.

3.1.8 NUISANCE AS DEFINED BY WATER CODE SECTION 13050 DOES NOT EXIST AT THE SITE

Site conditions do not interfere with enjoyment of life or property, affect an entire community or neighborhood, or present a nuisance during or as a result of, the treatment or disposal of wastes.

3.2 MEDIA-SPECIFIC CRITERIA

3.2.1 GROUNDWATER

The contaminant plume that exceeds water quality objectives is stable or decreasing in areal extent, and this site meets the groundwater requirements specified for class 2 in the Policy:

- *The plume is less than 250 feet long:* Based on grab groundwater data from borings B-1 through B-4 and the COC attenuation from well S-2 to Well H-1, the length of the plume which exceeds ESLs appears to be less than 120 feet long. Figure 3 presents groundwater data from third quarter 2014, and Table 2 presents historical groundwater data. Table 3 presents grab groundwater data.
- *There is no free product:* As stated above, no free product has been detected in site groundwater monitoring wells since February 1994.
- *The nearest existing water supply well or surface water body is greater than 1,000 feet from the defined plume boundary:* The closest well a domestic well located approximately 1,700 feet north (up gradient) of the site. No municipal wells were identified within the one-half-mile survey area. The nearest surface water body is the Grandview Branch of Vincente Creek is located approximately 1,100 feet north of the site.
- *Dissolved benzene is less than 3,000 µg/L and dissolved MTBE is less than 1,000 µg/L:* The highest benzene concentration during the third quarter 2014 groundwater monitoring event was 250 µg/L and the highest MTBE concentration was 96 µg/L, both in well S-2.

3.2.2 VAPOR

The site is exempted from the vapor requirements in the Policy because the site is an active fueling facility and there is no reasonable concern that subsurface contamination poses unacceptable indoor inhalation health risk.

3.2.3 DIRECT CONTACT AND OUTDOOR AIR EXPOSURE

As stated above, this site meets the direct contact and outdoor air requirements for benzene and ethylbenzene in commercial soil specified in scenario 1 in the low-threat document:

- *Benzene and ethylbenzene concentrations at 0 to 5 feet below grade (fbg) are less than 8.2 mg/kg and 89 mg/kg, respectively:* Soil samples collected from 0 to 5 fbg have contained up to 1.8 mg/kg benzene and 13 mg/kg ethylbenzene.
- *Benzene and ethylbenzene concentrations at 5 to 10 fbg are less than 12 mg/kg kg and 134 mg/kg, respectively:* Soil samples collected from 5 to 10 fbg have contained up to 0.99 mg/kg benzene and 13 mg/kg ethylbenzene.

4.0 CLOSURE REQUEST

This site meets the Policy requirements. Therefore, on behalf of Shell, we respectfully request closure of this case. CRA requests that ACEH suspend the groundwater monitoring program during the closure review.

All of Which is Respectfully Submitted,
CONESTOGA-ROVERS & ASSOCIATES

Peter Schaefer, CEG, CHG

Aubrey K. Cool, PG

FIGURES

08/31/09

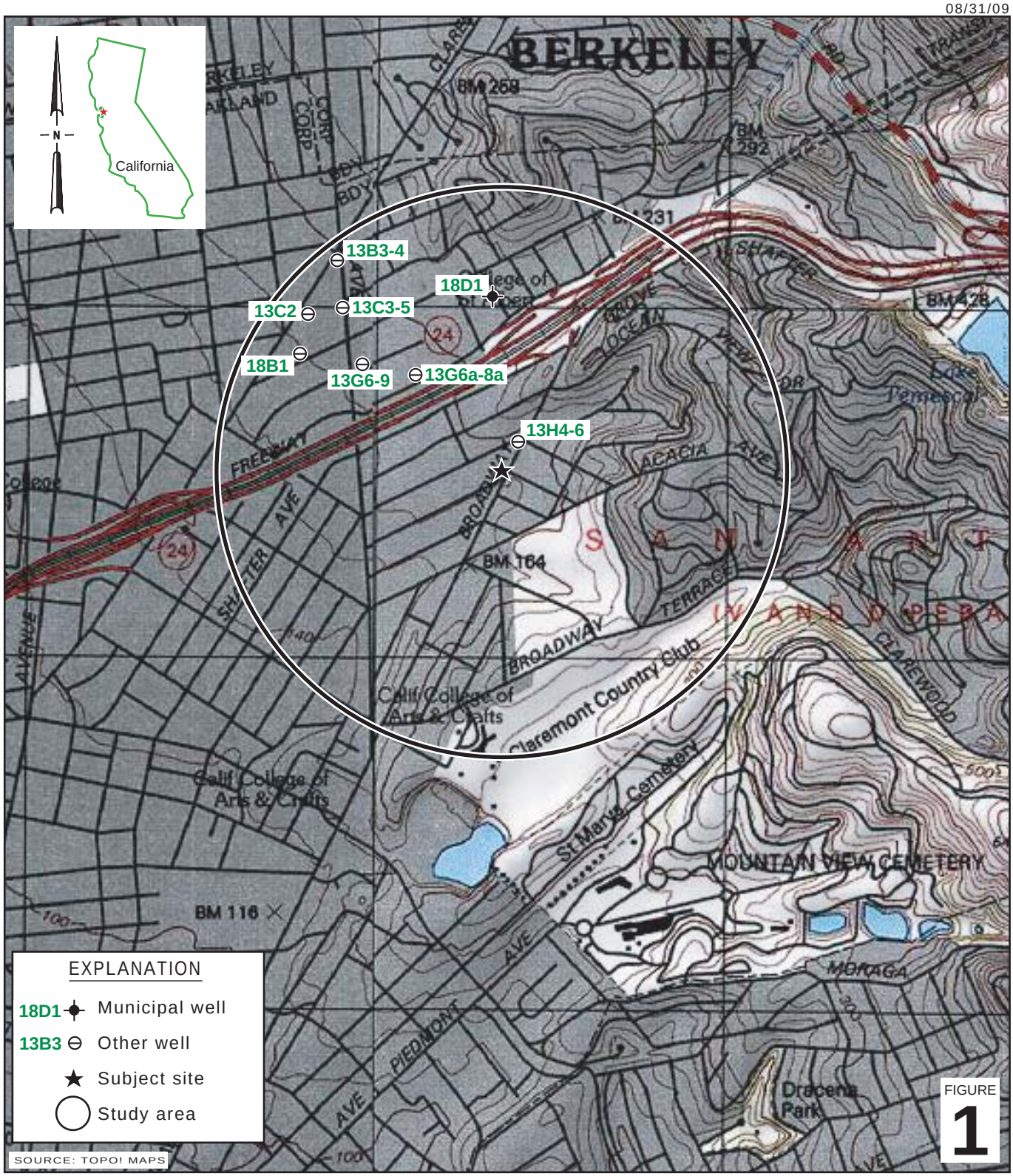

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FIGURE 1

0 1/8 1/4 1/2 1

SCALE : 1" = 1/4 MILE

Shell-branded Service Station
5755 Broadway
Oakland, California

CONESTOGA-ROVERS & ASSOCIATES

Vicinity Map

EXPLANATION

- VP-1 — Soil vapor probe location (CRA, 2013)
- S-1 — Monitoring well location
- S-2 — Groundwater monitoring well previously used for extraction
- T-1 — Destroyed tank backfill well location
- T-3 — Pre-pack monitoring well location
- H-1 — Horizontal extraction well location
- OE — Overhead electrical line (OE)
- E — Electrical line (E)
- T — Telecommunication line (T)
- STM — Storm drain line (STM)
- SAN — Sanitary sewer line (SAN)
- W — Water line (W)
- ? — Unknown utility line (?)
- Flow direction
- Manhole
- SB-12 — Soil boring location (Cambria, 2005)
- B-1 — Soil boring location (Cambria, 2002)
- S-A — Soil boring location (EMCON, 1985)
- DS-1-4' — Soil sample location (Cambria, 2005)
- TP-5-14 — Soil sample location (Cambria, 2005)
- SP-5 — Soil sample location (Cambria, 2005)
- TP-1-14 — Soil sample location (Cambria, 2005)
- D-2 — Soil sample location (Cambria, 1998)
- S-C — Soil sample location (G-R, 1993)
- Approximate soil over-excavation area, ~4-6 fbg

N

0 10 20ft

Water Producing Well 18D1

Location of Nearest Sensitive Receptor Relative to Site (1,320 ft., N4°W)

Shell Station
5755 Broadway

Apartments
5606 Taft Avenue

Station Building

USTs

Dispenser Islands

Gate

Planter

Brick Stairs

Residential

Sidewalk

BROADWAY

TAFT STREET

Concrete Walkway

Crosswalk

Trench

Grout Barrier

Excavation Limits

4" SCH 40 PVC Vertical Access Pipe to Horizontal Well H-1

4" Horizontal Groundwater Well

Air/ Water

SB-14, SB-13, SB-12, S-3, T-1, TP-1-14, TP-2-14, SP-5,-6, TP-3-14, TP-8-14, S-A, TP-4-14, TP-7-14, T-2, TP-6-14, TP-5-14, B-7, B-8, B-9, D-3, D-4, DS-1-2, DS-1-4', B-11, P-1-2, P-1-6', DS-2-2, DS-2-6', D-2, B-10, P-2-2, P-2-4', DS-3-2, DS-3-6', P-3-2, P-3-6', DS-4-2, DS-4-4', S-1, VP-2, VP-4, T-3, H-1, S-F, S-G, VP-1, B-6, B-5, VP-3, S-C, S-E, S-K, S-O, S-H, S-2, S-J, S-I, S-L, S-M, S-N, B-1, B-2, B-3, B-4

Figure 2

Site Plan
Shell-branded Service Station
5755 Broadway
Oakland, California

I:\Shell\6-chars\2404--\240483-Oakland 5755 Broadway\240483-FIGURES\240483 SITE PLAN.DWG (12/16/2014)

EXPLANATION

VP-1 — Soil vapor probe location (CRA, 2013)

S-1 — Monitoring well location

S-2 — Groundwater monitoring well previously used for extraction

T-1 — Destroyed tank backfill well location

T-3 — Pre-pack monitoring well location

H-1 — Horizontal extraction well location

OE — Overhead electrical line (OE)

E — Electrical line (E)

T — Telecommunication line (T)

STM — Storm drain line (STM)

SAN — Sanitary sewer line (SAN)

W — Water line (W)

? — Unknown utility line (?)

Flow direction

Manhole

x.xx — Groundwater flow direction and gradient

XX.XX — Groundwater elevation contour, in feet above mean sea level (ft MSL), approximately located; dashed where inferred

Well — Well designation

ELEV — Groundwater elevation, in ft MSL

Benzene / MTBE — Benzene and MTBE concentrations are in micrograms per liter

Notes:
<X = Not detected at reporting limit X

N

0 10 20ft

Water Producing Well 18D1

N
W E
S

Location of Nearest Sensitive Receptor Relative to Site (1,320 ft., N4°W)

Residential

Shell Station
5755 Broadway

S-3
179.17
<0.50
<0.50

T-1

USTs

178.50

178.50

T-2

Station Building

Dispenser Islands

S-1
177.71
<0.50
4.6

Gate

Planter

Brick Stairs

Apartments
5606 Taft Avenue

VP-4

VP-2

T-3

Grout Barrier

0.05

177.00

177.00

Trench

175.50

175.50

VP-1

VP-3

Planter

Planter

Concrete Walkway

S-2
176.50
250
96

H-1
174.89
NS

4" SCH 40 PVC Vertical Access Pipe to Horizontal Well **H-1**

Residential

Sidewalk

TAFT STREET

Crosswalk

4" Horizontal Groundwater Well

Planter

Air/ Water

Sidewalk

BROADWAY

Figure 3

Groundwater Contour and Chemical Concentration Map
August 29, 2014
Shell-branded Service Station
5755 Broadway
Oakland, California

I:\Shell\6-chars\2404--\240483-Oakland 5755 Broadway\240483-REPORTS\240483-RPT23-3Q14.DWG (12/02/2014)

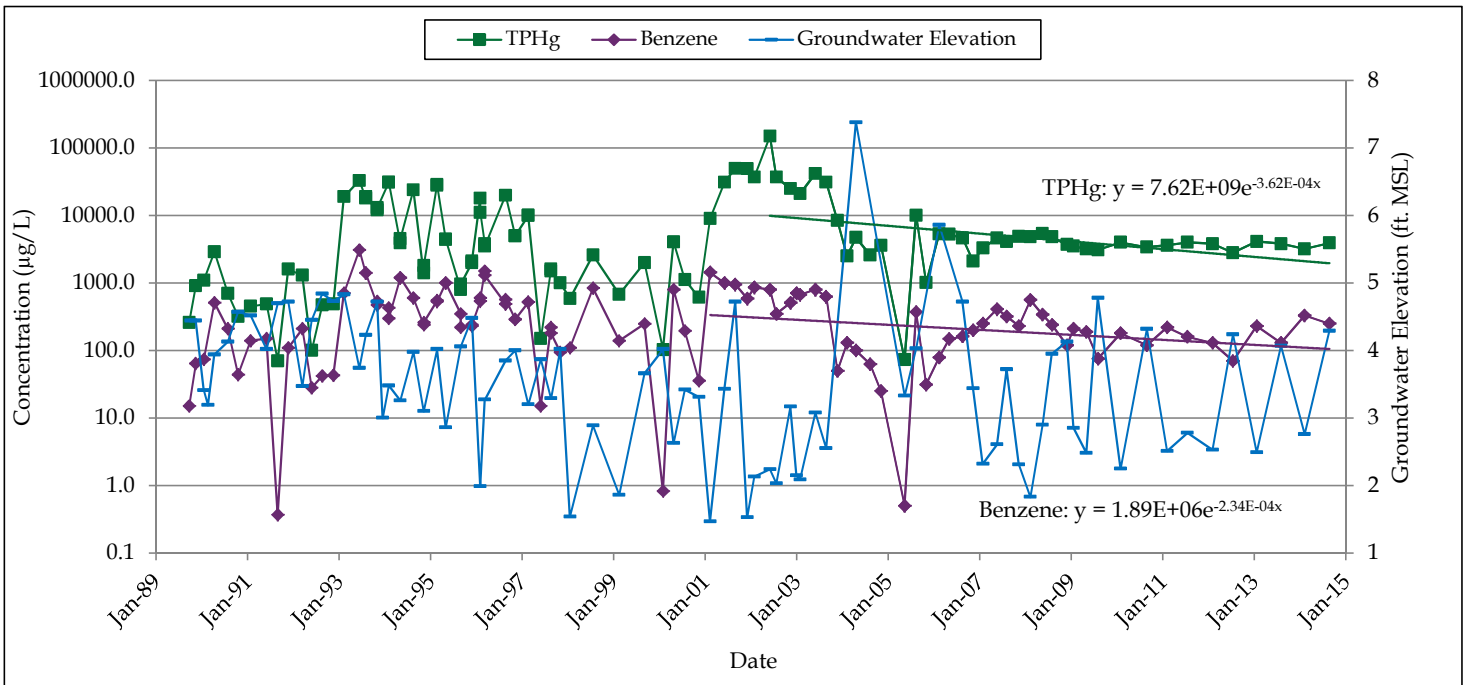
Predicted Time to Reach Water Quality Objective (WQO) in Well S-2

Shell-Branded Service Station, 5755 Broadway, Oakland, California

$y = b\,e^{ax}$ ===> $x = \ln(y/b) / a$

where: y = concentration in µg/L, a = decay constant
b = concentration at time (x), x = time (x) in days

	Consituent	Total Petroleum Hydrocarbons as Gasoline (TPHg)	Benzene
Given			
Water Quality Objective (WQO):	y	500	27
Constant:	b	7.62E+09	1.89E+06
Constant:	a	-3.62E-04	-2.34E-04
Starting date for current trend:		6/4/2002	2/12/2001
Calculate			
Attenuation Half Life (years):	(-ln(2)/a)/365.25	5.24	8.12
Estimated Date to Reach WQO:	(x = ln(y/b) / a)	Dec 2024	Aug 2030



SHELL-BRANDED SERVICE STATION
5755 BROADWAY
OAKLAND, CA

CONESTOGA-ROVERS & ASSOCIATES

FIGURE 4
S-2: TPHG AND BENZENE CONCENTRATIONS AND GROUNDWATER ELEVATIONS

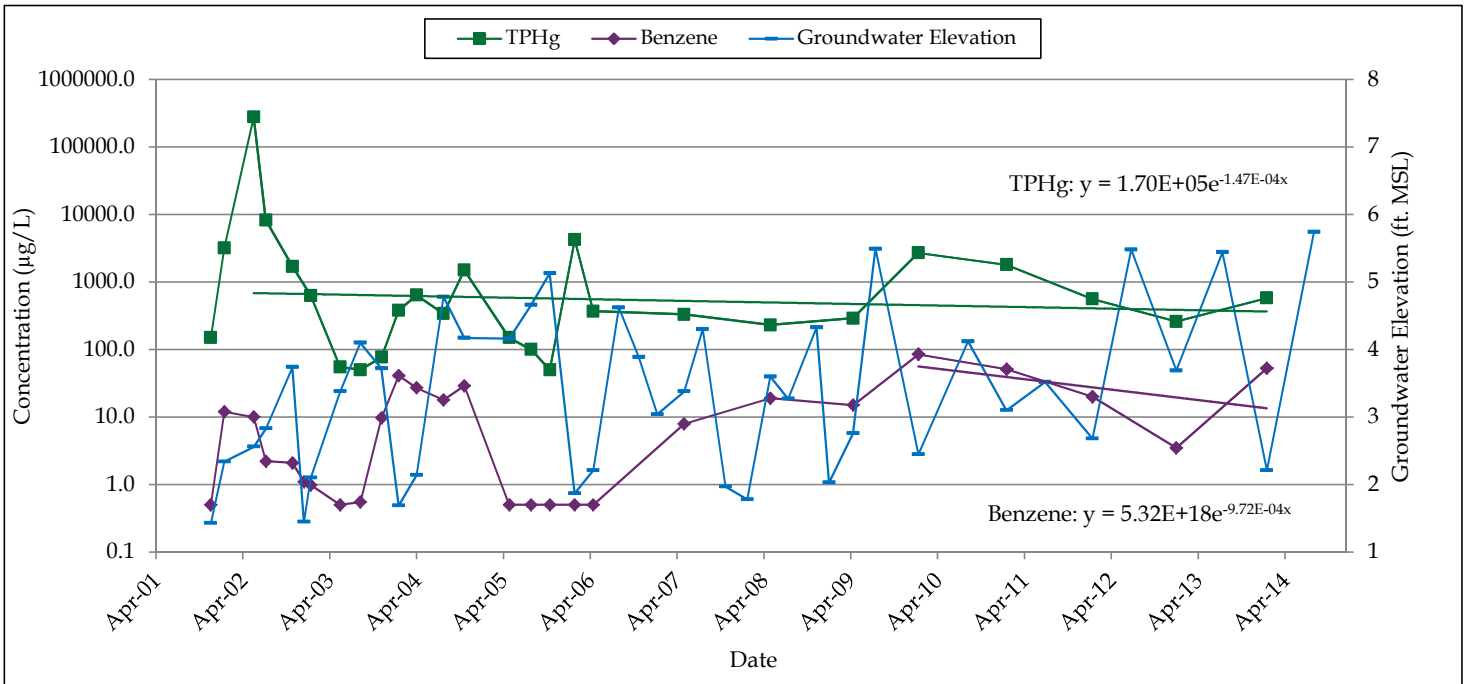
Predicted Time to Reach Water Quality Objective (WQO) in Well H-1

Shell-Branded Service Station, 5755 Broadway, Oakland, California

$y = b\,e^{ax}$ ===> $x = \ln(y/b) / a$

where: y = concentration in µg/L, a = decay constant
b = concentration at time (x), x = time (x) in days

		Consituent	Total Petroleum Hydrocarbons as Gasoline (TPHg)	Benzene
Given				
Water Quality Objective (WQO):		y	500	27
Constant:		b	1.70E+05	5.32E+18
Constant:		a	-1.47E-04	-9.72E-04
Starting date for current trend:			6/4/2002	2/3/2010
Calculate				
Attenuation Half Life (years):	(-ln(2)/a)/365.25		12.88	1.95
Estimated Date to Reach WQO:	(x = ln(y/b) / a)		May 2008	Feb 2012



SHELL-BRANDED SERVICE STATION
5755 BROADWAY
OAKLAND, CA

CONESTOGA-ROVERS & ASSOCIATES

FIGURE 5
H-1: TPHG AND BENZENE CONCENTRATIONS AND GROUNDWATER ELEVATIONS

TABLES

TABLE 1

HISTORICAL SOIL ANALYTICAL DATA
SHELL-BRANDED SERVICE STATION
5755 BROADWAY, OAKLAND, CALIFORNIA

Sample ID	*Date*	*Depth (fbg)*	*Total Oil & Grease (mg/kg)*	*TPHd (mg/kg)*	*TPHg (mg/kg)*	*B (mg/kg)*	*T (mg/kg)*	*E (mg/kg)*	*X (mg/kg)*	*MTBE (mg/kg)*	*TBA (mg/kg)*	*DIPE (mg/kg)*	*ETBE (mg/kg)*	*TAME (mg/kg)*	*1,2-DCA (mg/kg)*	*EDB (mg/kg)*	*Lead (mg/kg)*
S-A	6/12/1985	4	---	---	3 a	---	---	---	---	---	---	---	---	---	---	---	---
S-A	6/12/1985	8.5	---	---	2 a	---	---	---	---	---	---	---	---	---	---	---	---
S-A	6/12/1985	10	---	---	<2.0 a	---	---	---	---	---	---	---	---	---	---	---	---
S-2-1	9/18/1993	3	---	---	92 b	0.12 b	0.80 b	0.58 b	4.2 b	---	---	---	---	---	---	---	---
S-3-1	9/18/1993	3	---	---	<10 b	<0.025 b	0.062 b	<0.025 b	0.12 b	---	---	---	---	---	---	---	---
S-C	2/2/1993	1.5	---	---	7.9	0.094	0.0098	0.12	1.1	---	---	---	---	---	---	---	---
S-E	2/4/1993	3.5	---	---	150	0.90	2.3	1.5	7.7	---	---	---	---	---	---	---	---
S-F	2/4/1993	5	---	---	<1	0.021	<0.0025	<0.0025	<0.0025	---	---	---	---	---	---	---	---
S-G	2/4/1993	2.5	---	---	<1	<0.0025	<0.0025	<0.0025	<0.0025	---	---	---	---	---	---	---	---
S-H	2/4/1993	3.5	---	---	<1	0.024	<0.0025	<0.0025	<0.0025	---	---	---	---	---	---	---	---
S-H	2/4/1993	5	---	---	290	0.55	1.8	1.8	6.5	---	---	---	---	---	---	---	---
S-H	2/12/1993	8	---	---	2	0.074	0.0064	0.0097	0.075	---	---	---	---	---	---	---	---
S-H	2/12/1993	10	---	---	<1	<0.0025	<0.0025	<0.0025	<0.0025	---	---	---	---	---	---	---	---
S-H	2/12/1993	11.5	---	---	<1	<0.0025	<0.0025	<0.0025	<0.0025	---	---	---	---	---	---	---	---
S-I	2/4/1993	5	---	---	1.7	0.074	0.095	0.0038	0.10	---	---	---	---	---	---	---	---
S-I	2/11/1993	8	---	---	<1	0.011	0.0079	<0.0025	0.013	---	---	---	---	---	---	---	---
S-I	2/11/1993	10	---	---	<1	0.021	0.011	<0.0025	0.021	---	---	---	---	---	---	---	---
S-I	2/11/1993	12	---	---	<1	<0.0025	<0.0025	<0.0025	<0.0025	---	---	---	---	---	---	---	---
S-J	2/9/1993	2	---	---	140	0.40	1.1	0.71	4.1	---	---	---	---	---	---	---	---
S-J	2/9/1993	4	---	---	1,300	1.1	9.5	8.1	44	---	---	---	---	---	---	---	---
S-K	2/9/1993	6.5	---	---	1.0	0.35	0.23	0.31	0.64	---	---	---	---	---	---	---	---
S-L	2/10/1993	2	---	---	<1	<0.0025	<0.0025	<0.0025	<0.0025	---	---	---	---	---	---	---	---
S-L	2/10/1993	4	---	---	<1	<0.0025	<0.0025	<0.0025	<0.0025	---	---	---	---	---	---	---	---

TABLE 1

HISTORICAL SOIL ANALYTICAL DATA
SHELL-BRANDED SERVICE STATION
5755 BROADWAY, OAKLAND, CALIFORNIA

Sample ID	*Date*	*Depth (fbg)*	*Total Oil & Grease (mg/kg)*	*TPHd (mg/kg)*	*TPHg (mg/kg)*	*B (mg/kg)*	*T (mg/kg)*	*E (mg/kg)*	*X (mg/kg)*	*MTBE (mg/kg)*	*TBA (mg/kg)*	*DIPE (mg/kg)*	*ETBE (mg/kg)*	*TAME (mg/kg)*	*1,2-DCA (mg/kg)*	*EDB (mg/kg)*	*Lead (mg/kg)*
S-L	2/10/1993	6	---	---	320	0.99	2.0	1.5	5.2	---	---	---	---	---	---	---	---
S-L	2/11/1993	7.5	---	---	<1	0.039	0.042	0.0074	0.045	---	---	---	---	---	---	---	---
S-L	2/11/1993	10	---	---	<1	<0.0025	<0.0025	<0.0025	<0.0025	---	---	---	---	---	---	---	---
S-L	2/11/1993	12	---	---	<1	<0.0025	<0.0025	<0.0025	<0.0025	---	---	---	---	---	---	---	---
S-M	2/10/1993	2	---	---	<1	<0.0025	<0.0025	<0.0025	<0.0025	---	---	---	---	---	---	---	---
S-M	2/10/1993	4	---	---	<1	<0.0025	<0.0025	<0.0025	<0.0025	---	---	---	---	---	---	---	---
S-M	2/10/1993	7.5	---	---	<1	0.020	0.028	0.0072	0.053	---	---	---	---	---	---	---	---
S-M	2/11/1993	10	---	---	5.9	0.020	0.038	0.023	0.17	---	---	---	---	---	---	---	---
S-M	2/11/1993	12	---	---	<1	0.0026	0.0069	0.0028	0.027	---	---	---	---	---	---	---	---
S-N	2/10/1993	2	---	---	<1	<0.0025	<0.0025	<0.0025	<0.0025	---	---	---	---	---	---	---	---
S-N	2/10/1993	4	---	---	<1	<0.0025	<0.0025	<0.0025	<0.0025	---	---	---	---	---	---	---	---
S-N	2/10/1993	7.5	---	---	11	0.067	0.51	0.18	1.1	---	---	---	---	---	---	---	---
S-N	2/10/1993	10	---	---	<1	0.0035	0.0061	0.0033	0.019	---	---	---	---	---	---	---	---
S-N	2/10/1993	12	---	---	1.2	<0.0025	<0.0025	<0.0025	0.025	---	---	---	---	---	---	---	---
S-O	2/12/1993	7.5	---	---	<1	0.021	<0.0025	<0.0025	0.0043	---	---	---	---	---	---	---	---
S-O	2/12/1993	10	---	---	<1	<0.0025	<0.0025	<0.0025	<0.0025	---	---	---	---	---	---	---	---
S-O	2/12/1993	11.5	---	---	1.3	0.013	0.0046	<0.0025	0.032	---	---	---	---	---	---	---	---
S-O	2/12/1993	14	---	---	<1	<0.0025	<0.0025	<0.0025	<0.0025	---	---	---	---	---	---	---	---
D-2	3/12/1998	2	---	---	260	1.7	<0.50	3.3	5.4	<2.5	---	---	---	---	---	---	---
D-3	3/12/1998	2	---	---	750	<0.50	3.4	6.5	41	9.8	---	---	---	---	---	---	---
D-4	3/12/1998	2	---	---	990	1.8	2.3	13	68	25	---	---	---	---	---	---	---
B-1-5.0	8/6/2002	5	---	---	<1.0	<0.005	<0.005	<0.005	<0.010	<0.5	---	---	---	---	---	---	---
B-1-9.0	8/6/2002	9	---	---	<1.0	<0.005	<0.005	<0.005	<0.005	<0.5	---	---	---	---	---	---	---
B-1-15.5	8/6/2002	15.5	---	---	<1.0	<0.005	<0.005	<0.005	<0.005	<0.5	---	---	---	---	---	---	---
B-2-5.0	8/6/2002	5	---	---	<1.0	<0.005	<0.005	<0.005	<0.010	<0.5	---	---	---	---	---	---	---
B-2-10.0	8/6/2002	10	---	---	<1.0	<0.005	<0.005	<0.005	<0.005	<0.5	---	---	---	---	---	---	---

TABLE 1

HISTORICAL SOIL ANALYTICAL DATA
SHELL-BRANDED SERVICE STATION
5755 BROADWAY, OAKLAND, CALIFORNIA

Sample ID	*Date*	*Depth (fbg)*	*Total Oil & Grease (mg/kg)*	*TPHd (mg/kg)*	*TPHg (mg/kg)*	*B (mg/kg)*	*T (mg/kg)*	*E (mg/kg)*	*X (mg/kg)*	*MTBE (mg/kg)*	*TBA (mg/kg)*	*DIPE (mg/kg)*	*ETBE (mg/kg)*	*TAME (mg/kg)*	*1,2-DCA (mg/kg)*	*EDB (mg/kg)*	*Lead (mg/kg)*
B-2-15.5	8/6/2002	15.5	---	---	<1.0	<0.005	<0.005	<0.005	<0.005	<0.5	---	---	---	---	---	---	---
B-3-5.0	8/6/2002	5	---	---	<1.0	<0.005	<0.005	<0.005	<0.005	<0.5	---	---	---	---	---	---	---
B-3-10.0	8/6/2002	10	---	---	<1.0	<0.005	<0.005	<0.005	<0.005	<0.5	---	---	---	---	---	---	---
B-3-15.5	8/6/2002	15.5	---	---	<1.0	<0.005	<0.005	<0.005	<0.005	<0.5	---	---	---	---	---	---	---
B-4-5.0	8/6/2002	5	---	---	<1.0	<0.005	<0.005	<0.005	<0.005	<0.5	---	---	---	---	---	---	---
B-4-10.0	8/6/2002	10	---	---	<1.0	<0.005	<0.005	<0.005	<0.005	<0.5	---	---	---	---	---	---	---
B-4-15.5	8/6/2002	15.5	---	---	<1.0	<0.005	<0.005	<0.005	<0.005	<0.5	---	---	---	---	---	---	---
B-5-5.5	8/6/2002	5.5	---	---	260	<0.005	<0.005	1.6	6.7	<0.5	---	---	---	---	---	---	---
B-5-10.0	8/6/2002	10	---	---	4.5	<0.005	<0.005	0.018	0.021	<0.5	---	---	---	---	---	---	---
B-5-15.5	8/6/2002	15.5	---	---	<1.0	<0.005	<0.005	<0.005	<0.005	<0.5	---	---	---	---	---	---	---
B-6-5.0	8/7/2002	5	---	---	110	0.039	<0.025	1.5	0.3	<0.5	---	---	---	---	---	---	---
B-6-10.0	8/7/2002	10	---	---	<1.0	<0.005	<0.005	<0.005	<0.005	<0.5	---	---	---	---	---	---	---
B-6-15.5	8/7/2002	15.5	---	---	<1.0	<0.005	<0.005	<0.005	<0.005	<0.5	---	---	---	---	---	---	---
B-7-5.0	8/7/2002	5	---	---	<1.0	<0.005	<0.005	<0.005	<0.005	<0.5	---	---	---	---	---	---	---
B-7-10.5	8/7/2002	10.5	---	---	<1.0	<0.005	<0.005	<0.005	<0.005	<0.5	---	---	---	---	---	---	---
B-8-5.0	8/6/1998	5	---	---	210	<0.025	<0.025	2.2	3.8	<0.5	---	---	---	---	---	---	---
B-8-10.5	8/6/1998	10.5	---	---	<1.0	<0.005	<0.005	<0.005	<0.005	<0.5	---	---	---	---	---	---	---
B-9.5.0	8/7/2002	5	---	---	82	0.096	0.028	0.85	4.3	0.9	---	---	---	---	---	---	---
B-9-10.5	8/7/2002	10.5	---	---	<1.0	<0.005	<0.005	<0.005	<0.005	<0.5	---	---	---	---	---	---	---
B-10-5.0	8/7/2002	5	---	---	29	0.016	<0.005	0.060	0.018	<0.5	---	---	---	---	---	---	---
B-10-10.5	8/7/2002	10.5	---	---	<1.0	<0.005	<0.005	<0.005	0.014	<0.5	---	---	---	---	---	---	---
B-11-5.0	8/7/2002	5	---	---	1.7	0.0063	<0.005	0.019	0.018	<0.5	---	---	---	---	---	---	---
B-11-10.5	8/7/2002	10.5	---	---	<1.0	<0.005	<0.005	<0.005	<0.005	<0.5	---	---	---	---	---	---	---

TABLE 1

HISTORICAL SOIL ANALYTICAL DATA
SHELL-BRANDED SERVICE STATION
5755 BROADWAY, OAKLAND, CALIFORNIA

Sample ID	*Date*	*Depth (fbg)*	*Total Oil & Grease (mg/kg)*	*TPHd (mg/kg)*	*TPHg (mg/kg)*	*B (mg/kg)*	*T (mg/kg)*	*E (mg/kg)*	*X (mg/kg)*	*MTBE (mg/kg)*	*TBA (mg/kg)*	*DIPE (mg/kg)*	*ETBE (mg/kg)*	*TAME (mg/kg)*	*1,2-DCA (mg/kg)*	*EDB (mg/kg)*	*Lead (mg/kg)*
TP-1-14	1/31/2005	14	---	---	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<0.0050	<0.0050	---	---	---
TP-2-14	1/31/2005	14	---	---	1.5	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<0.0050	<0.0050	---	---	---
TP-3-14	1/31/2005	14	---	---	32	<0.023	<0.023	<0.023	<0.023	0.082	<0.047	<0.047	<0.023	<0.023	---	---	---
TP-4-14	1/31/2005	14	---	---	29	<0.024	<0.024	<0.024	<0.024	<0.024	<0.049	<0.049	<0.024	<0.024	---	---	---
TP-5-14	2/9/2005	14	---	---	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<0.0050	<0.0050	---	---	---
TP-6-14	2/9/2005	14	---	---	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<0.0050	<0.0050	---	---	---
TP-7-14	2/9/2005	14	---	---	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<0.0050	<0.0050	---	---	---
TP-8-14	2/9/2005	14	---	---	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<0.0050	<0.0050	---	---	---
DS-1-2	2/17/2005	2	---	---	190	<0.50	<0.50	1.1	1.0	<0.50	<2.5	<1.0	<0.50	<0.50	---	---	6.1
DS-2-2	2/17/2005	2	---	---	150	<0.50	<0.50	0.51	0.55	<0.50	<2.5	<1.0	<0.50	<0.50	---	---	6.5
DS-3-2	2/17/2005	2	---	---	1,100	<0.50	0.63	10	75	<0.50	<2.5	<1.0	<0.50	<0.50	---	---	6.8
DS-4-2	2/17/2005	2	---	---	460	<0.50	<0.50	1.8	3.5	<0.50	<2.5	<1.0	<0.50	<0.50	---	---	7.4
			---	---													
P-1-1	2/17/2005	1	---	---	180	<0.50	<0.50	0.97	1.4	<0.50	<2.5	<1.0	<0.50	<0.50	---	---	5.9
P-2-2	2/17/2005	2	---	---	130	<0.50	<0.50	<0.50	<0.50	<0.50	4.1	<1.0	<0.50	<0.50	---	---	7.3
P-3-2	2/17/2005	2	---	---	420	<0.50	<0.50	6.2	23	0.84	<2.5	<1.0	<0.50	<0.50	---	---	17
DS-1-4'	2/24/2005	4	---	---	26	<0.025	<0.025	<0.025	0.034	0.035	0.060	<0.050	<0.025	<0.025	---	---	6.7
DS-2-6'	2/24/2005	6	---	---	1,000	<0.50	<0.50	13	24	1.7	<2.5	<1.0	<0.50	<0.50	---	---	6.5
DS-3-6'	2/24/2005	6	---	---	1.8	<0.0050	<0.0050	0.0073	0.013	0.13	0.13	<0.010	<0.0050	<0.0050	---	---	5.5
DS-4-4'	2/24/2005	4	---	---	44	<0.025	<0.025	<0.025	0.066	<0.025	0.093	<0.050	<0.025	<0.025	---	---	6.4
P-1-6'	2/24/2005	6	---	---	410	0.66	<0.50	5.2	8.2	1.9	<2.5	<1.0	<0.50	<0.50	---	---	5.6
P-2-4'	2/24/2005	4	---	---	260	<0.50	<0.50	1.5	6.0	<0.50	<2.5	<1.0	<0.50	<0.50	---	---	7.3
P-3-6'	2/24/2005	6	---	---	480	<0.50	<0.50	4.1	3.9	0.61	<2.5	<1.0	<0.50	<0.50	---	---	6.0
SB-12-2	11/18/2005	2	210	8.7 c	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<0.0050	<0.0050	<0.0050	<0.0050	---
SB-12-5	11/18/2005	5	<100	34 d	100	<0.50	<0.50	<0.50	<0.50	<0.50	<2.5	<1.0	<0.50	<0.50	<0.50	<0.50	---

TABLE 1

HISTORICAL SOIL ANALYTICAL DATA
SHELL-BRANDED SERVICE STATION
5755 BROADWAY, OAKLAND, CALIFORNIA

Sample ID	*Date*	*Depth (fbg)*	*Total Oil & Grease (mg/kg)*	*TPHd (mg/kg)*	*TPHg (mg/kg)*	*B (mg/kg)*	*T (mg/kg)*	*E (mg/kg)*	*X (mg/kg)*	*MTBE (mg/kg)*	*TBA (mg/kg)*	*DIPE (mg/kg)*	*ETBE (mg/kg)*	*TAME (mg/kg)*	*1,2-DCA (mg/kg)*	*EDB (mg/kg)*	*Lead (mg/kg)*
SB-13-2	11/18/2005	2	<100	2.2 e	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<0.0050	<0.0050	<0.0050	<0.0050	---
SB-13-5	11/18/2005	5	<100	68 d	180	<0.50	<0.50	0.84	1.9	<0.50	<2.5	<1.0	<0.50	<0.50	<0.50	<0.50	---
SB-13-8	11/18/2005	8	<100	2.2 c	<1.0	<0.0050	0.0072	0.014	<0.0050	<0.0050	<0.010	<0.010	<0.0050	<0.0050	<0.0050	<0.0050	---
SB-14-2	11/18/2005	2	300	9.9 c	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<0.0050	<0.0050	<0.0050	<0.0050	---
SB-14-5	11/18/2005	5	<100	9.2 d	99	<0.50	<0.50	<0.50	<0.50	<0.50	<2.5	<1.0	<0.50	<0.50	<0.50	<0.50	---
SB-14-8	11/18/2005	8	<100	<1.0	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<0.0050	<0.0050	<0.0050	<0.0050	---
VP-1-1.5	9/9/2013	1.5	---	---	<0.11	<0.0022	<0.0022	<0.0022	<0.0022	0.0096	---	---	---	---	---	---	---
VP-1-3	9/9/2013	3	---	---	37 f	0.0072	<0.0016	0.24 f	0.27	0.32	---	---	---	---	---	---	---
VP-2-1.5	9/9/2013	1.5	---	---	<0.11	<0.0022	<0.0022	<0.0022	<0.0022	<0.0055	---	---	---	---	---	---	---
VP-2-3	9/9/2013	3	---	---	0.24	<0.0021	<0.0021	<0.0021	<0.0021	<0.0052	---	---	---	---	---	---	---
Policy Soil Criteria (0-5 fbg)[g]:			NA	NA	NA	8.2	NA	89	NA	NA	NA	NA	NA	NA	NA	NA	NA
Policy Soil Criteria(5-10 fbg)[g]:			NA	NA	NA	12	NA	134	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
Total oil and grease analyzed by EPA Method 9071B
TPHd = Total petroleum hydrocarbons as diesel analyzed by EPA Method 8015
TPHg = Total petroleum hydrocarbons as gasoline analyzed by EPA Method 8260B; before August 6, 2002, analyzed by EPA Method 8015 unless otherwise noted.
BTEX = Benzene, toluene, ethylbenzene, and total xylenes analyzed by EPA Method 8260B; before August 6, 2002, analyzed by EPA Method 8020.
MTBE = Methyl tertiary-butyl ether analyzed by EPA Method 8260B; before August 6, 2002, analyzed by EPA Method 8020.
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
1,2-DCA = 1,2-Dichloroethane analyzed by EPA Method 8260B
EDB = 1,2-Dibromoethane analyzed by EPA Method 8260B
Lead analyzed by EPA Method 6010B
fbg = Feet below grade
mg/kg = Milligrams per kilogram

TABLE 1

HISTORICAL SOIL ANALYTICAL DATA
SHELL-BRANDED SERVICE STATION
5755 BROADWAY, OAKLAND, CALIFORNIA

<x = Not detected at reporting limit x
--- = Not analyzed
NA = No applicable Policy criteria
Shading indicates that soil sample location was subsequently excavated; results are not representative of residual soil.

a = Analyzed by GC/FID
b = Analytical method unknown
c = Hydrocarbon reported is in the late Diesel range, and does not match laboratory Diesel standard
d = Hydrocarbon reported is in the early Diesel range, and does not match laboratory Diesel standard
e = Hydrocarbon reported does not match the pattern of laboratory Diesel standard
f = Result exceeded calibration range
g = California State Water Resources Control Board *Low-Threat Underground Storage Tank Case Closure Policy* media-specific direct contact and outdoor air exposure criteria for sites with commercial land use.

TABLE 2

HISTORICAL SOIL VAPOR ANALYTICAL DATA
SHELL-BRANDED SERVICE STATION
5755 BROADWAY, OAKLAND, CALIFORNIA

Sample ID	*Date*	*Depth (fbg)*	*TPHg ($\mu g/m^3$)*	*B ($\mu g/m^3$)*	*T ($\mu g/m^3$)*	*E ($\mu g/m^3$)*	*X ($\mu g/m^3$)*	*MTBE ($\mu g/m^3$)*	*TBA ($\mu g/m^3$)*	*Naph-thalene ($\mu g/m^3$)*	*Methane (%v)*	*Carbon Dioxide (%v)*	*Oxygen + Argon (%v)*	*Helium (%v)*
VP-1	9/25/2013	3	**210,000,000**	**370,000**	<75,000	<87,000	<87,000	<140,000	<120,000	<210,000	---	8.55	4.66	0.622
VP-2	9/24/2013	3	100,000	180	<75	180	<87	<140	<120	<210	---	3.07	14.8	1.35
VP-3	6/24/2014	0.3	<3,800	<16	<19	<22	<22	<36	1,800	<52	<0.500	<0.500	19.3	7.09
VP-3	7/22/2014	0.3	10,000	<16	<19	<22	<22	<36	460	<52	<0.500	0.608	21.0	0.225
VP-4	6/24/2014	0.3	<3,800	<16	<19	<22	<22	<36	800	<52	<0.500	<0.500	21.6	1.14
Commercial Land Use ESLs [a]			*2,500,000*	*420*	*1,300,000*	*4,900*	*440,000*	*47,000*	*NA*	*360*	*NA*	*NA*	*NA*	*NA*
Residential Land Use ESLs [a]:			*300,000*	*42*	*160,000*	*490*	*52,000*	*4,700*	*NA*	*36*	*NA*	*NA*	*NA*	*NA*

Notes:
TPHg = Total petroleum hydrocarbons as gasoline analyzed by EPA Method TO-3M
BTEX = Benzene, toluene, ethylbenzene, and total xylenes by EPA Method 8260B (M)
MTBE = Methyl tertiary-butyl ether analyzed by EPA Method 8260B (M)
TBA = Tertiary-butyl alcohol analyzed by EPA Method 8260B (M)
Naphthalene analyzed by EPA Method 8260B (M)
Methane, carbon dioxide, and oxygen + argon analyzed by ASTM D-1946
Helium analyzed by ASTM D-1946 (M)
fbg = Feet below grade
$\mu g/m^3$ = Micrograms per cubic meter
%*v* = Percent by volume
<x = Not detected at reporting limit x
ESL = Environmental screening level
NA = No applicable ESL
Results in bold exceed ESL for commercial land use
Shading indicates that the sample is not valid because the helium concentration detected in the sample was greater than 5 percent of the concentration in the sampling shroud.

a = San Francisco Bay Regional Water Quality Control Board (RWQCB) shallow soil gas screening level for evaluation of potential vapor intrusion concerns from RWQCB's *Screening for Environmental Concerns at Sites With Contaminated Soil and Groundwater* , California Regional Water Quality Control Board, Interim Final - November 2007 (Revised May 2008) - Updated December 2013.

TABLE 3

GROUNDWATER DATA
SHELL-BRANDED SERVICE STATION
5755 BROADWAY, 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 Reading (mg/L)*
S-1	07/03/1985	2,400 a	240 a	9.8 a	380 a,b	380 a,b	---	---	---	---	---	---	---	---	---	---
S-1	08/15/1989	170 a	0.6 a	<0.5 a	<1.5 a	<1.5 a	---	---	---	---	---	---	---	---	---	---
S-1	10/05/1989	---	---	---	---	---	---	---	---	---	---	---	100.00 c	3.80	96.20	---
S-1	11/13/1989	90 a	1.2 a	<0.5 a	<1.5 a	<1.5 a	---	---	---	---	---	---	100.00	3.72	96.28	---
S-1	01/18/1990	<50 a	57 a	3.1 a	5.7 a	10 a	---	---	---	---	---	---	100.00	2.87	97.13	---
S-1	02/20/1990	---	---	---	---	---							100.00	2.71	97.29	---
S-1	04/11/1990	520 a	120 a	2.2 a	0.44 a	6.0 a	---	---	---	---	---	---	100.00	3.36	96.64	---
S-1	07/27/1990	<30 a	2.7 a	0.31 a	<0.3 a	0.47 a	---	---	---	---	---	---	100.00	3.60	96.40	---
S-1	10/17/1990	<30 a	0.99 a	<0.3 a	<0.3 a	<0.3 a	---	---	---	---	---	---	100.00	4.09	95.91	---
S-1	01/25/1991	<30	<0.3	<0.3	<0.3	<0.3	---	---	---	---	---	---	100.00	3.88	96.12	---
S-1	06/03/1991	<30	<0.3	<0.3	<0.3	<0.3	---	---	---	---	---	---	100.00	3.51	96.49	---
S-1	08/30/1991	<30	<0.3	<0.3	<0.3	<0.3	---	---	---	---	---	---	100.00	4.24	95.76	---
S-1	11/22/1991	<30	2.3	<0.46	0.3	<0.65	---	---	---	---	---	---	100.00	4.29	95.71	---
S-1	03/13/1992	<30	<0.52	<0.3	<0.3	<0.3	---	---	---	---	---	---	100.00	2.87	97.13	---
S-1	05/28/1992	<50	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---	---	100.00	3.79	96.21	---
S-1	08/19/1992	<50	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---	---	100.00	4.43	95.57	---
S-1	11/18/1992	<50	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---	---	100.00	4.34	95.66	---
S-1	02/10/1993	51	1.4	<0.5	<0.5	<0.5	---	---	---	---	---	---	100.00	4.20	95.80	---
S-1 (D)	02/10/1993	<50	1.2	<0.5	<0.5	<0.5	---	---	---	---	---	---	100.00	---	---	---
S-1	06/11/1993	<50	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---	---	100.00	3.39	96.61	---
S-1	08/03/1993	<50	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---	---	100.00	3.69	96.31	---
S-1	11/02/1993	70 d	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---	---	100.00	4.26	95.74	---
S-1	12/16/1993	---	---	---	---	---	---	---	---	---	---	---	100.00	2.73	97.27	---
S-1	02/01/1994	60 d	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---	---	100.00	3.38	96.62	---
S-1	05/04/1994	<50	1.1	<0.5	<0.5	<0.5	---	---	---	---	---	---	100.00	3.00	97.00	---
S-1	08/18/1994	<50	0.60	<0.5	<0.5	<0.5	---	---	---	---	---	---	100.00	3.70	96.30	---
S-1 (D)	08/18/1994	60 d	0.50	<0.5	<0.5	<0.5	---	---	---	---	---	---	100.00	---	---	---
S-1	11/09/1994	<50	4.0	<0.5	<0.5	<0.5	---	---	---	---	---	---	100.00	2.52	97.48	---
S-1	02/22/1995	50	0.80	0.70	<0.5	1.3	---	---	---	---	---	---	100.00	4.08	95.92	---
S-1	05/02/1995	<50	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---	---	100.00	2.58	97.42	---

TABLE 3

GROUNDWATER DATA
SHELL-BRANDED SERVICE STATION
5755 BROADWAY, 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 Reading (mg/L)*
S-1	08/30/1995	<50	1.7	<0.5	<0.5	<0.5	---	---	---	---	---	---	100.00	3.48	96.52	---
S-1	11/28/1995	<50	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---	---	100.00	3.99	96.01	---
S-1	02/02/1996	<50	11	<0.5	0.9	<0.5	---	---	---	---	---	---	100.00	2.00	98.00	---
S-1	03/09/1996	<50	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---	---	100.00	3.38	96.62	---
S-1	08/22/1996	<50	1.5	<0.5	<0.5	<0.5	130	---	---	---	---	---	100.00	3.43	96.57	---
S-1	11/07/1996	<50	<0.5	<0.5	<0.5	<0.5	57	---	---	---	---	---	100.00	3.70	96.30	4.33
S-1	02/20/1997	<50	0.64	<0.50	<0.50	1.6	6.5	---	---	---	---	---	100.00	3.60	96.40	2
S-1	05/30/1997	<50	<0.50	<0.50	<0.50	<0.50	46	---	---	---	---	---	100.00	3.47	96.53	7
S-1 (D)	05/30/1997	<50	<0.50	<0.50	<0.50	<0.50	47	---	---	---	---	---	100.00	---	---	---
S-1	08/21/1997	<50	<0.50	<0.50	<0.50	0.84	26	---	---	---	---	---	100.00	3.01	96.99	3.1
S-1	11/03/1997	<50	<0.50	1.1	<0.50	1.3	190	---	---	---	---	---	100.00	3.66	96.34	2
S-1	01/20/1998	110	7.9	2.8	4.4	13	53	---	---	---	---	---	100.00	1.84	98.16	4.6
S-1 (D)	01/20/1998	130	9.2	6.9	5.2	15	93	---	---	---	---	---	100.00	---	---	---
S-1	02/16/1999	<50	<0.50	<0.50	<0.50	<0.50	8.6	---	---	---	---	---	100.00	2.43	97.57	2.2
S-1	09/07/1999	---	---	---	---	---	---	---	---	---	---	---	100.00	2.84	97.16	---
S-1	02/02/2000	<50.0	<0.500	<0.500	<0.500	<0.500	202	---	---	---	---	---	100.00	3.10	96.90	2.1
S-1	04/26/2000	---	---	---	---	---	---	---	---	---	---	---	100.00	2.91	97.09	---
S-1	07/25/2000	<50.0	<0.500	<0.500	<0.500	<0.500	811	---	---	---	---	---	100.00	3.21	96.79	1.8
S-1	11/15/2000	---	---	---	---	---	---	---	---	---	---	---	100.00	3.18	96.82	---
S-1	02/12/2001	<50.0	<0.500	<0.500	<0.500	<0.500	209	---	---	---	---	---	100.00	1.34	98.66	2.2
S-1	06/07/2001	---	---	---	---	---	---	---	---	---	---	---	100.00	1.27	98.73	---
S-1	08/31/2001	<50	<0.50	<0.50	<0.50	<0.50	---	<5.0	---	---	---	---	100.00	3.16	96.84	4.0
S-1	12/05/2001	---	---	---	---	---	---	2.6	---	---	---	---	100.00	1.90	98.10	---
S-1	01/31/2002	<50	<0.50	<0.50	<0.50	<0.50	---	<5.0	---	---	---	---	100.00	2.67	97.33	---
S-1	06/04/2002	---	---	---	---	---	---	---	---	---	---	---	100.00	1.87	98.13	---
S-1	07/25/2002	<50	<0.50	<0.50	<0.50	<0.50	---	<5.0	---	---	---	---	100.00	2.01	97.99	---
S-1	11/07/2002	---	---	---	---	---	---	---	---	---	---	---	181.89	3.01	178.88	---
S-1	11/14/2002	---	---	---	---	---	---	---	---	---	---	---	181.89	3.40	178.49	---
S-1	01/30/2003	<50	<0.50	<0.50	<0.50	<0.50	---	27	---	---	---	---	181.89	2.12	179.77	---
S-1	06/03/2003	---	---	---	---	---	---	---	---	---	---	---	181.89	1.83	180.06	---

TABLE 3

GROUNDWATER DATA
SHELL-BRANDED SERVICE STATION
5755 BROADWAY, 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 Reading (mg/L)*
S-1	08/27/2003	<50	0.50	1.5	<0.50	2.0	---	130	---	---	---	---	181.89	3.32	178.57	---
S-1	11/25/2003	---	---	---	---	---	---	---	---	---	---	---	181.89	3.28	178.61	---
S-1	02/05/2004	270	2.4	6.4	5.8	19	---	8.3	---	---	---	---	181.89	2.09	179.80	---
S-1	04/21/2004	---	---	---	---	---	---	---	---	---	---	---	181.89	2.61	179.28	---
S-1	08/12/2004	<500	<5.0	<5.0	<5.0	<10	---	1,100	<50	<20	<20	<20	181.89	3.70	178.19	---
S-1	11/08/2004	---	---	---	---	---	---	---	---	---	---	---	181.89	3.04	178.85	---
S-1	05/16/2005	<50	<0.50	<0.50	<0.50	<1.0	---	4.9	---	---	---	---	181.89	3.10	178.79	---
S-1	08/16/2005	<50	<0.50	<0.50	<0.50	<1.0	---	64	52	<2.0	<2.0	<2.0	181.89	0.73	181.16	---
S-1	11/03/2005	---	---	---	---	---	---	---	---	---	---	---	181.89	3.49	178.40	---
S-1	02/16/2006	<50.0	<0.500	<0.500	<0.500	<0.500	---	22.7	---	---	---	---	181.89	0.73	181.16	---
S-1	05/05/2006	---	---	---	---	---	---	---	---	---	---	---	181.89	0.71	181.18	---
S-1	08/21/2006	<50.0	0.630	<0.500	<0.500	1.71	---	44.6	<10.0	<0.500	<0.500	<0.500	181.89	3.34	178.55	---
S-1	11/13/2006	---	---	---	---	---	---	---	---	---	---	---	181.89	2.55	179.34	---
S-1	01/30/2007	<50	<0.50	<0.50	<0.50	<1.0	---	24	---	---	---	---	181.89	0.91	180.98	---
S-1	05/23/2007	---	---	---	---	---	---	---	---	---	---	---	181.89	2.50	179.39	---
S-1	08/09/2007	<50 i	0.35 j	<1.0	<1.0	<1.0	---	33	<10	<2.0	<2.0	<2.0	181.89	0.81	181.08	---
S-1	11/13/2007	---	---	---	---	---	---	---	---	---	---	---	181.89	0.55	181.34	---
S-1	02/13/2008	<50 i	0.56	<1.0	<1.0	<1.0	---	2.9	---	---	---	---	181.89	0.45	181.44	---
S-1	05/20/2008	---	---	---	---	---	---	---	---	---	---	---	181.89	1.00	180.89	---
S-1	08/04/2008	66	<0.50	<1.0	<1.0	<1.0	---	3.6	<10	<2.0	<2.0	<2.0	181.89	0.72	181.17	---
S-1	12/02/2008	---	---	---	---	---	---	---	---	---	---	---	181.89	0.89	181.00	---
S-1	01/23/2009	<50	<0.50	<1.0	<1.0	2.1	---	4.8	---	---	---	---	181.89	0.81	181.08	---
S-1	05/05/2009	---	---	---	---	---	---	---	---	---	---	---	181.89	0.81	181.08	---
S-1	08/07/2009	53	0.86	<1.0	<1.0	<1.0	---	34	11	<2.0	<2.0	<2.0	181.89	4.33	177.56	---
S-1	02/03/2010	140	15	48	1.6	15	---	2.4	---	---	---	---	181.89	0.62	181.27	---
S-1	08/31/2010	<50	<0.50	<1.0	<1.0	<1.0	---	6.3	<10	<2.0	<2.0	<2.0	181.89	1.00	180.89	---
S-1	02/10/2011	<50	<0.50	<0.50	<0.50	<1.0	---	1.9	---	---	---	---	181.89	0.51	181.38	---
S-1	07/22/2011	<50	<0.50	<0.50	<0.50	<1.0	---	1.0	<10	<1.0	<1.0	<1.0	181.89	0.98	180.91	---
S-1	02/07/2012	<50	<0.50	<0.50	<0.50	<1.0	---	1.3	---	---	---	---	181.89	0.80	181.09	---
S-1	07/19/2012	<50	0.90	<0.50	<0.50	<1.0	---	2.8	<10	<0.50	<0.50	<0.50	181.89	3.49	178.40	---

TABLE 3

GROUNDWATER DATA
SHELL-BRANDED SERVICE STATION
5755 BROADWAY, 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 Reading (mg/L)*
S-1	01/25/2013	<50	<0.50	<0.50	<0.50	<1.0	---	1.5	---	---	---	---	181.89	0.65	181.24	---
S-1	08/08/2013	<50	<0.50	<0.50	<0.50	<1.0	---	2.5	<10	<0.50	<0.50	<0.50	181.89	4.01	177.88	---
S-1	02/11/2014	<50	<0.50	<0.50	<0.50	<1.0	---	<0.50	---	---	---	---	181.89	0.55	181.34	---
S-1	**08/29/2014**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<1.0**	**---**	**4.6**	**<10**	**<0.50**	**<0.50**	**<0.50**	**181.89**	**4.18**	**177.71**	**---**
S-2	09/22/1989	260 a	15 a	2 a	1 a	13 a	---	---	---	---	---	---	---	---	---	---
S-2	10/05/1989	---	---	---	---	---	---	---	---	---	---	---	98.92	4.44	94.48	---
S-2	11/13/1989	910 a	64 a	5.8 a	13 a	84 a	---	---	---	---	---	---	98.92	4.44	94.48	---
S-2	01/18/1990	1,100 a	74 a	5.6 a	13 a	45 a	---	---	---	---	---	---	98.92	3.41	95.51	---
S-2	02/20/1990	---	---	---	---	---	---	---	---	---	---	---	98.92	3.19	95.73	---
S-2	04/11/1990	2,900 a	510 a	6.5 a	29 a	120 a	---	---	---	---	---	---	98.92	3.94	94.98	---
S-2	07/27/1990	700 a	210 a	2.5 a	18 a	33 a	---	---	---	---	---	---	98.92	4.13	94.79	---
S-2	10/17/1990	320 a	44 a	0.75 a	7.9 a	4.6 a	---	---	---	---	---	---	98.92	4.57	94.35	---
S-2	01/25/1991	450	140	1.8	6.2	15	---	---	---	---	---	---	98.92	4.52	94.40	---
S-2	06/03/1991	490	150	2.7	8.2	7.0	---	---	---	---	---	---	98.92	4.02	94.90	---
S-2	08/30/1991	70	0.37	<0.3	<0.3	<0.3	---	---	---	---	---	---	98.92	4.70	94.22	---
S-2	11/22/1991	1,600	110	9.3	29	150	---	---	---	---	---	---	98.92	4.72	94.20	---
S-2	03/13/1992	1,300	210	5.7	34	79	---	---	---	---	---	---	98.92	3.47	95.45	---
S-2	05/28/1992	100	28	<0.5	<0.5	<0.5	---	---	---	---	---	---	98.92	4.45	94.47	---
S-2	08/19/1992	470	42	<0.5	8.3	4.0	---	---	---	---	---	---	98.92	4.84	94.08	---
S-2	11/18/1992	490	43	39	17	29	---	---	---	---	---	---	98.92	4.73	94.19	---
S-2	02/10/1993	19,000	710	760	80	370	---	---	---	---	---	---	98.92	4.83	94.09	---
S-2	06/11/1993	33,000	3,100	1,600	370	1,100	---	---	---	---	---	---	98.92	3.74	95.18	---
S-2	08/03/1993	18,000	1,400	130	81	130	---	---	---	---	---	---	98.92	4.23	94.69	---
S-2 (D)	08/03/1993	19,000	1,400	140	86	150	---	---	---	---	---	---	98.92	---	---	---
S-2	11/02/1993	12,000 d	470	47	31	92	---	---	---	---	---	---	98.92	4.72	94.20	---
S-2 (D)	11/02/1993	13,000 d	530	47	35	96	---	---	---	---	---	---	98.92	---	---	---
S-2	12/16/1993	---	---	---	---	---	---	---	---	---	---	---	98.92	3.00	95.92	---
S-2	02/01/1994	31,000 d	430	46	50	130	---	---	---	---	---	---	98.92	3.48	95.44	---
S-2 (D)	02/01/1994	31,000 d	300	33	30	100	---	---	---	---	---	---	98.92	---	---	---

TABLE 3

GROUNDWATER DATA
SHELL-BRANDED SERVICE STATION
5755 BROADWAY, 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 Reading (mg/L)*
S-2	05/04/1994	3,900	1,200	31	53	71	---	---	---	---	---	---	98.92	3.26	95.66	---
S-2 (D)	05/04/1994	4,500	1,200	37	57	110	---	---	---	---	---	---	98.92	---	---	---
S-2	08/18/1994	24,000	600	8.3	15	27	---	---	---	---	---	---	98.92	3.98	94.94	---
S-2	11/09/1994	1,400 d	240	9.3	13	20	---	---	---	---	---	---	98.92	3.10	95.82	---
S-2 (D)	11/09/1994	1,800	260	8.5	13	21	---	---	---	---	---	---	98.92	---	---	---
S-2	02/22/1995	29,000	550	18	12	63	---	---	---	---	---	---	98.92	4.02	94.90	---
S-2 (D)	02/22/1995	28,000	530	17	10	60	---	---	---	---	---	---	98.92	---	---	---
S-2	05/02/1995	4,400	1,000	25	38	77	---	---	---	---	---	---	98.92	2.86	96.06	---
S-2 (D)	05/02/1995	4,400	1,000	26	41	83	---	---	---	---	---	---	98.92	---	---	---
S-2	08/30/1995	800	350	20	6.7	16	---	---	---	---	---	---	98.92	4.06	94.86	---
S-2 (D)	08/30/1995	960	220	22	12	48	---	---	---	---	---	---	98.92	---	---	---
S-2	11/28/1995	2,000	230	220	50	230	---	---	---	---	---	---	98.92	4.48	94.44	---
S-2 (D)	11/28/1995	2,100	240	230	51	230	---	---	---	---	---	---	98.92	---	---	---
S-2	02/02/1996	18,000	540	18	12	22	---	---	---	---	---	---	98.92	1.99	96.93	---
S-2 (D)	02/02/1996	11,000	600	18	13	28	---	---	---	---	---	---	98.92	---	---	---
S-2	03/09/1996	3,800	1,500	27	30	58	---	---	---	---	---	---	98.92	3.27	95.65	---
S-2 (D)	03/09/1996	3,500	1,300	24	21	53	---	---	---	---	---	---	98.92	---	---	---
S-2	08/22/1996	<20,000	490	<200	<200	<200	43,000	---	---	---	---	---	98.92	3.85	95.07	---
S-2 (D)	08/22/1996	<20,000	570	<200	<200	<200	59,000	51,000	---	---	---	---	98.92	---	---	---
S-2	11/07/1996	<5,000	290	<50	<50	<50	32,000	---	---	---	---	---	98.92	4.00	94.92	3.51
S-2 (D)	11/07/1996	<5,000	290	<50	<50	<50	32,000	---	---	---	---	---	98.92	---	---	---
S-2	02/20/1997	<10,000	520	<100	<100	<100	28,000	---	---	---	---	---	98.92	3.20	95.72	1
S-2 (D)	02/20/1997	<10,000	520	<100	<100	<100	35,000	---	---	---	---	---	98.92	---	---	---
S-2	05/30/1997	150	15	11	3.5	15	11	---	---	---	---	---	98.92	3.87	95.05	6
S-2	08/21/1997	1,600	220	<10	20	<10	18,000	---	---	---	---	---	98.92	3.29	95.63	3.3
S-2 (D)	08/21/1997	1,500	180	<10	16	<10	21,000	---	---	---	---	---	98.92	---	---	---
S-2	11/03/1997	1,000	94	<10	<10	<10	<50	---	---	---	---	---	98.92	4.02	94.90	1.8
S-2	01/20/1998	590	110	8.3	18	23	7,800	---	---	---	---	---	98.92	1.54	97.38	3.2
S-2	07/23/1998	2,600	840	<10	44	22	15,000	---	---	---	---	---	98.92	2.89	96.03	---
S-2	02/16/1999	680	140	6.1	10	18	19,000	---	---	---	---	---	98.92	1.86	97.06	2.0

TABLE 3

GROUNDWATER DATA
SHELL-BRANDED SERVICE STATION
5755 BROADWAY, 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 Reading (mg/L)*
S-2	09/07/1999	<2,000	248	<20.0	<20.0	<20.0	22,800	---	---	---	---	---	98.92	3.66	95.26	1.8
S-2	02/02/2000	103	0.825	<0.500	<0.500	<0.500	11,700	10,500	---	---	---	---	98.92	4.02	94.90	2.0
S-2	04/26/2000	4,040	799	<20.0	40.9	255	19,000	17,100 e	---	---	---	---	98.92	2.63	96.29	2.3
S-2	07/25/2000	1,120	195	5.94	5.62	11.3	26,600	21,100	---	---	---	---	98.92	3.42	95.50	0.6
S-2	11/15/2000	613 e	35.6 e	<5.00 e	<5.00 e	7.36 e	18,100 e	17,800 e	---	---	---	---	98.92	3.31	95.61	1.8
S-2	02/12/2001	9,010	1,430	<20.0	219	848	28,300	17,000	---	---	---	---	98.92	1.47	97.45	2.0
S-2	06/07/2001	31,000	1,000	<25	630	3,200	---	17,000	---	---	---	---	98.92	3.43	95.49	10.4
S-2	08/31/2001	50,000	950	<20	1,500	6,000	---	17,000	---	---	---	---	98.92	4.72	94.20	0.9
S-2	12/05/2001	49,000	590	7.2	1,400	4,900	---	11,000	---	---	---	---	98.92	1.53	97.39	---
S-2	01/31/2002	37,000	860	<25	1,100	4,000	---	14,000	---	---	---	---	98.92	2.13	96.79	---
S-2	06/04/2002	150,000	800	<20	1,200	4,000	---	9,200	---	---	---	---	98.92	2.24	96.68	---
S-2	07/25/2002	37,000	350	<20	660	2,400	---	10,000	---	---	---	---	98.92	2.03	96.89	---
S-2	11/14/2002	25,000	510	<25	590	2,000	---	10,000	---	---	---	---	180.79	3.17	177.62	---
S-2	01/02/2003	---	710	<25	560	2,074	---	---	---	---	---	---	180.79	2.15	178.64	---
S-2	01/30/2003	21,000	670	<20	360	1,200	---	9,300	---	---	---	---	180.79	2.09	178.70	---
S-2	06/03/2003	42,000	800	<50	660	1,500	---	9,600	---	---	---	---	180.79	3.08	177.71	---
S-2	08/27/2003	31,000	630	<100	510	1,200	---	15,000	---	---	---	---	180.79	2.55	178.24	---
S-2	11/25/2003 f	8,400 d	<50	<50	<50	<100	---	4,500	---	---	---	---	180.79	---	---	---
S-2	02/05/2004	Well inaccessible		---	---	---	---	---	---	---	---	---	180.79	---	---	---
S-2	02/10/2004 f	<2,500	130	<25	<25	<50	---	3,800	---	---	---	---	180.79	---	---	---
S-2	04/21/2004	4,700	100	<25	<25	<50	---	2,900	---	---	---	---	180.79	7.38	173.41	---
S-2	08/12/2004	2,600	63	<13	<13	<25	---	1,400	1,200	<50	<50	<50	180.79	g	---	---
S-2	11/08/2004	3,600	<25	<25	<25	<50	---	1,300	---	---	---	---	180.79	g	---	---
S-2	05/16/2005	73 h	<0.50	<0.50	<0.50	<1.0	---	3.3	---	---	---	---	180.79	3.33	177.46	---
S-2	08/16/2005	10,000	370	<13	60	63	---	1,300	2,900	<50	<50	<50	180.79	4.03	176.76	---
S-2	11/03/2005	1,010	31.4	<0.500	2.81	31.4	---	349	880	---	---	---	180.79	---	---	---
S-2	02/16/2006	5,350	79.0	<0.500	2.90	59.5	---	687	690	---	---	---	180.79	5.86	174.93	---
S-2	05/05/2006	5,240	148	<0.500	17.1	48.8	---	815	478	---	---	---	180.79	---	---	---
S-2	08/21/2006	4,640	162	0.910	25.8	27.2	---	519	711	<0.500	<0.500	0.780	180.79	4.72	176.07	---
S-2	11/13/2006	2,100	200	<5.0	58	21	---	820	1,300	---	---	---	180.79	3.44	177.35	---

TABLE 3

GROUNDWATER DATA
SHELL-BRANDED SERVICE STATION
5755 BROADWAY, 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 Reading (mg/L)*
S-2	01/30/2007	3,300	250	<5.0	59	17	---	1,100	1,600	---	---	---	180.79	2.32	178.47	---
S-2	05/23/2007	4,600 i	410	2.3 j	92	24.8 j	---	890	620	---	---	---	180.79	2.61	178.18	---
S-2	08/09/2007	4,100 i	320	<10	30	11	---	650	1,400	<20	<20	<20	180.79	3.72	177.07	---
S-2	11/13/2007	4,900 i	230	<10	33	12	---	540	590	<20	<20	<20	180.79	2.31	178.48	---
S-2	02/13/2008	4,800 i	560	<10	67	37	---	1,500	610	---	---	---	180.79	1.83	178.96	---
S-2	05/20/2008	5,400	340	<10	11	17	---	460	310	---	---	---	180.79	2.90	177.89	---
S-2	08/04/2008	4,800	240	<10	<10	<10	---	390	640	<20	<20	<20	180.79	3.95	176.84	---
S-2	12/02/2008	3,700	120	<5.0	<5.0	<5.0	---	280	810	---	---	---	180.79	4.13	176.66	---
S-2	01/23/2009	3,500	210	<10	26	<10	---	640	650	---	---	---	180.79	2.85	177.94	---
S-2	05/05/2009	3,200	190	<5.0	7.6	5.5	---	340	350	---	---	---	180.79	2.48	178.31	---
S-2	08/07/2009	3,100	76	<1.0	<1.0	2.3	---	81	310	<2.0	<2.0	<2.0	180.79	4.78	176.01	---
S-2	02/03/2010	4,000	180	<1.0	34	9.1	---	420	190	---	---	---	180.79	2.25	178.54	---
S-2	08/31/2010	3,400	120	<1.0	<1.0	1.8	---	83	380	<2.0	<2.0	<2.0	180.79	4.32	176.47	---
S-2	02/10/2011	3,600	220	<2.0	13	<4.0	---	330	450	---	---	---	180.79	2.51	178.28	---
S-2	07/22/2011	4,000	160	<1.2	5.0	6.4	---	200	270	<2.5	<2.5	<2.5	180.79	2.78	178.01	---
S-2	02/07/2012	3,800	130	<2.5	6.3	<5.0	---	200	170	---	---	---	180.79	2.53	178.26	---
S-2	07/19/2012	2,800	70	<1.3	<1.3	<2.5	---	120	170	<1.3	<1.3	<1.3	180.79	4.24	176.55	---
S-2	01/25/2013	4,100	230	<1.0	25	4.6	---	280	370	---	---	---	180.79	2.49	178.30	---
S-2	08/08/2013	3,800	130	<2.5	<2.5	<5.0	---	160	390	<2.5	<2.5	<2.5	180.79	4.07	176.72	---
S-2	02/11/2014	3,200	330	<2.5	4.5	<5.0	---	180	580	---	---	---	180.79	2.76	178.03	---
S-2	**08/29/2014**	**3,900**	**250**	**<2.5**	**<2.5**	**<5.0**	**---**	**96**	**520**	**<2.5**	**<2.5**	**<2.5**	**180.79**	**4.29**	**176.50**	**---**
S-3	09/22/1989	<50 a	<0.5 a	<0.5 a	<1.5 a	<1.5 a	---	---	---	---	---	---	---	---	---	---
S-3	10/05/1989	---	---	---	---	---	---	---	---	---	---	---	101.67	3.97	97.70	---
S-3	11/13/1989	<50 a	<0.5 a	<0.5 a	<1.5 a	<1.5 a	---	---	---	---	---	---	101.67	3.76	97.91	---
S-3	01/18/1990	<50 a	<0.5 a	<0.5 a	<0.5 a	<0.5 a	---	---	---	---	---	---	101.67	2.43	99.24	---
S-3	02/20/1989	---	---	---	---	---	---	---	---	---	---	---	101.67	2.27	99.40	---
S-3	04/11/1990	<50 a	<0.3 a	<0.3 a	<0.3 a	<0.3 a	---	---	---	---	---	---	101.67	2.88	98.79	---
S-3	07/27/1990	<50 a	<0.3 a	<0.3 a	<0.3 a	<0.3 a	---	---	---	---	---	---	101.67	3.55	98.12	---
S-3	10/17/1990	<50 a	<0.3 a	<0.3 a	<0.3 a	<0.3 a	---	---	---	---	---	---	101.67	4.29	97.38	---

TABLE 3

GROUNDWATER DATA
SHELL-BRANDED SERVICE STATION
5755 BROADWAY, 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 Reading (mg/L)*
S-3	01/25/1991	<30	<0.3	<0.3	<0.3	<0.3	---	---	---	---	---	---	101.67	3.84	97.83	---
S-3	06/03/1991	<30	<0.3	0.3	0.3	0.3	---	---	---	---	---	---	101.67	3.25	98.42	---
S-3	08/03/1991	<30	<0.3	<0.3	<0.3	<0.3	---	---	---	---	---	---	101.67	4.73	96.94	---
S-3	11/22/1991	<30	<0.3	<0.3	<0.3	<0.3	---	---	---	---	---	---	101.67	4.81	96.86	---
S-3	03/13/1992	<30	<0.3	0.3	0.3	0.3	---	---	---	---	---	---	101.67	2.29	99.38	---
S-3	05/28/1992	<50	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---	---	101.67	3.62	98.05	---
S-3	08/19/1992	<50	<0.5	<0.5	<0.5	0.5	---	---	---	---	---	---	101.67	4.66	97.01	---
S-3	11/18/1992	<50	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---	---	101.67	4.51	97.16	---
S-3	02/10/1993	30	1.9	3.2	2.4	5.6	---	---	---	---	---	---	101.67	4.36	97.31	---
S-3	06/11/1993	<50	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---	---	101.67	2.91	98.76	---
S-3 (D)	06/11/1993	<50	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---	---	101.67	---	---	---
S-3	08/03/1993	<50	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---	---	101.67	3.70	97.97	---
S-3	11/02/1993	Well inaccessible		---	---	---	---	---	---	---	---	---	101.67	---	---	---
S-3	12/16/1993	---	---	---	---	---	---	---	---	---	---	---	101.67	2.12	99.55	---
S-3	02/01/1994	<50	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---	---	101.67	2.90	98.77	---
S-3	05/04/1994	<50	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---	---	101.67	2.54	99.13	---
S-3	08/18/1994	<50	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---	---	101.67	3.51	98.16	---
S-3	11/09/1994	<50	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---	---	101.67	2.44	99.23	---
S-3	02/22/1995	80	<0.5	0.50	<0.5	0.5	---	---	---	---	---	---	101.67	4.12	97.55	---
S-3	05/02/1995	<50	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---	---	101.67	2.83	98.84	---
S-3	08/30/1995	<50	0.5	<0.5	<0.5	<0.5	---	---	---	---	---	---	101.67	3.16	98.51	---
S-3	11/28/1995	<50	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---	---	101.67	3.87	97.80	---
S-3	02/02/1996	<50	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---	---	101.67	2.24	99.43	---
S-3	03/09/1996	<50	<0.5	<0.5	<0.5	<0.5	---	---	---	---	---	---	101.67	3.05	98.62	---
S-3	08/22/1996	<50	0.8	<0.5	<0.5	<0.5	<2.5	---	---	---	---	---	101.67	2.85	98.82	4.6
S-3	11/07/1996	<50	<0.5	<0.5	<0.5	<0.5	<2.5	---	---	---	---	---	101.67	3.35	98.32	4.6
S-3	02/20/1997	<50	<0.50	<0.50	<0.50	<0.50	<2.5	---	---	---	---	---	101.67	3.00	98.67	1
S-3	05/30/1997	140	14	10	3.3	14	8.6	---	---	---	---	---	101.67	3.00	98.67	8
S-3	08/21/1997	<50	<0.50	<0.50	<0.50	<0.50	<2.5	---	---	---	---	---	101.67	2.94	98.73	3.3
S-3	11/03/1997	<50	<0.50	<0.50	<0.50	<0.50	<2.5	---	---	---	---	---	101.67	3.36	98.31	2.4

TABLE 3

GROUNDWATER DATA
SHELL-BRANDED SERVICE STATION
5755 BROADWAY, 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 Reading (mg/L)*
S-3 (D)	11/03/1997	<50	<0.50	<0.50	<0.50	<0.50	<2.5	---	---	---	---	---	101.67	---	---	---
S-3	01/20/1998	Well inaccessible		---	---	---	---	---	---	---	---	---	101.67	---	---	---
S-3	07/23/1998	---	---	---	---	---	---	---	---	---	---	---	101.67	2.69	98.98	---
S-3	02/16/1999	<50	<0.50	0.92	0.59	3.9	3.7	---	---	---	---	---	101.67	2.20	99.47	2.8
S-3	09/07/1999	---	---	---	---	---	---	---	---	---	---	---	101.67	2.81	98.86	---
S-3	02/02/2000	<50.0	<0.500	<0.500	<0.500	<0.500	<5.00	---	---	---	---	---	101.67	3.97	97.70	2.7
S-3	04/26/2000	---	---	---	---	---	---	---	---	---	---	---	101.67	2.96	98.71	---
S-3	07/25/2000	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	---	---	---	---	---	101.67	3.00	98.67	0.8
S-3	11/15/2000	---	---	---	---	---	---	---	---	---	---	---	101.67	2.86	98.81	---
S-3	02/12/2001	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	---	---	---	---	---	101.67	2.47	99.20	2.3
S-3	06/07/2001	---	---	---	---	---	---	---	---	---	---	---	101.67	2.78	98.89	---
S-3	08/31/2001	<50	<0.50	<0.50	<0.50	<0.50	---	<5.0	---	---	---	---	101.67	3.94	97.73	0.5
S-3	12/05/2001	---	---	---	---	---	---	---	---	---	---	---	101.67	2.05	99.62	---
S-3	01/31/2002	<50	<0.50	<0.50	<0.50	<0.50	---	<5.0	---	---	---	---	101.67	2.29	99.38	---
S-3	06/04/2002	---	---	---	---	---	---	---	---	---	---	---	101.67	2.56	99.11	---
S-3	07/25/2002	<50	<0.50	<0.50	<0.50	<0.50	---	<5.0	---	---	---	---	101.67	2.70	98.97	---
S-3	11/14/2002	---	---	---	---	---	---	---	---	---	---	---	183.54	3.43	180.11	---
S-3	01/30/2003	<50	<0.50	<0.50	<0.50	<0.50	---	<5.0	---	---	---	---	183.54	2.16	181.38	---
S-3	01/30/2003	---	---	---	---	---	---	---	---	---	---	---	183.54	2.65	180.89	---
S-3	08/27/2003	<50	<0.50	<0.50	<0.50	<1.0	---	0.55	---	---	---	---	183.54	2.75	180.79	---
S-3	11/25/2003	---	---	---	---	---	---	---	---	---	---	---	183.54	2.85	180.69	---
S-3	02/05/2004	<50	<0.50	<0.50	<0.50	<1.0	---	<0.50	---	---	---	---	183.54	2.04	181.50	---
S-3	04/21/2004	---	---	---	---	---	---	---	---	---	---	---	183.54	2.50	181.04	---
S-3	08/12/2004	<50	<0.50	<0.50	<0.50	<1.0	---	<0.50	<5.0	<2.0	<2.0	<2.0	183.54	3.91	179.63	---
S-3	11/08/2004	---	---	---	---	---	---	---	---	---	---	---	183.54	2.84	180.70	---
S-3	05/16/2005	<50	<0.50	<0.50	<0.50	<1.0	---	<0.50	---	---	---	---	183.54	3.05	180.49	---
S-3	08/16/2005	<100	<1.0	<1.0	<1.0	<2.0	---	<1.0	<10	<4.0	<4.0	<4.0	183.54	3.42	180.12	---
S-3	11/03/2005	---	---	---	---	---	---	---	---	---	---	---	183.54	4.09	179.45	---
S-3	02/16/2006	<50.0	<0.500	<0.500	<0.500	<0.500	---	<0.500	---	---	---	---	183.54	2.25	181.29	---
S-3	05/05/2006	---	---	---	---	---	---	---	---	---	---	---	183.54	2.27	181.27	---

TABLE 3

GROUNDWATER DATA
SHELL-BRANDED SERVICE STATION
5755 BROADWAY, 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 Reading (mg/L)*
S-3	08/21/2006	<50.0	<0.500	<0.500	<0.500	<0.500	---	<0.500	36.4	<0.500	<0.500	0.570	183.54	3.17	180.37	---
S-3	11/13/2006	---	---	---	---	---	---	---	---	---	---	---	183.54	3.42	180.12	---
S-3	01/30/2007	<50	<0.50	<0.50	<0.50	<1.0	---	<0.50	---	---	---	---	183.54	2.36	181.18	---
S-3	05/23/2007	---	---	---	---	---	---	---	---	---	---	---	183.54	2.65	180.89	---
S-3	08/09/2007	<50 i	<0.50	<1.0	<1.0	<1.0	---	<1.0	<10	<2.0	<2.0	<2.0	183.54	2.93	180.61	---
S-3	11/13/2007	---	---	---	---	---	---	---	---	---	---	---	183.54	2.04	181.50	---
S-3	02/13/2008	<50 i	<0.50	<1.0	<1.0	<1.0	---	<1.0	---	---	---	---	183.54	2.03	181.51	---
S-3	05/20/2008	---	---	---	---	---	---	---	---	---	---	---	183.54	2.75	180.79	---
S-3	08/04/2008	<50	<0.50	<1.0	<1.0	<1.0	---	<1.0	<10	<2.0	<2.0	<2.0	183.54	3.52	180.02	---
S-3	12/02/2008	---	---	---	---	---	---	---	---	---	---	---	183.54	3.68	179.86	---
S-3	01/23/2009	<50	<0.50	<1.0	<1.0	<1.0	---	<1.0	---	---	---	---	183.54	2.52	181.02	---
S-3	05/05/2009	---	---	---	---	---	---	---	---	---	---	---	183.54	2.02	181.52	---
S-3	08/07/2009	<50	<0.50	<1.0	<1.0	<1.0	---	<1.0	<10	<2.0	<2.0	<2.0	183.54	4.61	178.93	---
S-3	02/03/2010	<50	<0.50	<1.0	<1.0	<1.0	---	<1.0	---	---	---	---	183.54	1.89	181.65	---
S-3	08/31/2010	<50	<0.50	<1.0	<1.0	<1.0	---	<1.0	<10	<2.0	<2.0	<2.0	183.54	3.44	180.10	---
S-3	02/10/2011	<50	<0.50	<0.50	<0.50	<1.0	---	<1.0	---	---	---	---	183.54	1.91	181.63	---
S-3	07/22/2011	<50	<0.50	<0.50	<0.50	<1.0	---	<1.0	<10	<1.0	<1.0	<1.0	183.54	2.42	181.12	---
S-3	02/07/2012	<50	<0.50	<0.50	<0.50	<1.0	---	<1.0	---	---	---	---	183.54	1.97	181.57	---
S-3	07/19/2012	<50	<0.50	<0.50	<0.50	<1.0	---	<0.50	<10	<0.50	<0.50	<0.50	183.54	3.49	180.05	---
S-3	01/25/2013	<50	<0.50	<0.50	<0.50	<1.0	---	<0.50	---	---	---	---	183.54	2.30	181.24	---
S-3	08/08/2013	<50	<0.50	<0.50	<0.50	<1.0	---	<0.50	<10	<0.50	<0.50	<0.50	183.54	4.10	179.44	---
S-3	02/11/2014	<50	7.4	0.67	0.61	2.2	---	<0.50	---	---	---	---	183.54	1.62	181.92	---
S-3	**08/29/2014**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<1.0**	**---**	**<0.50**	**<10**	**<0.50**	**<0.50**	**<0.50**	**183.54**	**4.37**	**179.17**	**---**
H-1	12/05/2001	150	<0.50	8.3	1.6	16	---	52	---	---	---	---	---	1.43	---	---
H-1	01/31/2002	3,200	12	<0.50	5.7	3.7	---	650	---	---	---	---	---	2.34	---	---
H-1	06/04/2002	280,000	<10	150	62	9,500	---	<100	---	---	---	---	---	2.56	---	---
H-1	07/25/2002	8,200	2.2	46	5.3	99	---	<10	---	---	---	---	---	2.83	---	---
H-1	11/14/2002	1,700	2.1	2.6	1.5	14	---	380	---	---	---	---	180.63	3.74	176.89	---
H-1	01/02/2003	---	1.1	<0.50	<0.50	3.6	---	---	---	---	---	---	180.63	1.45	179.18	---

TABLE 3

GROUNDWATER DATA
SHELL-BRANDED SERVICE STATION
5755 BROADWAY, 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 Reading (mg/L)*
H-1	01/30/2003	630	0.99	2.0	1.6	12	---	21	---	---	---	---	180.63	2.10	178.53	---
H-1	06/03/2003	55	<0.50	1.3	<0.50	2.4	---	2.6	---	---	---	---	180.63	3.38	177.25	---
H-1	08/27/2003	<50	0.55	<0.50	<0.50	1.2	---	2.8	---	---	---	---	180.63	4.10	176.53	---
H-1	11/25/2003	77 d	9.7	<0.50	<0.50	<1.0	---	21	---	---	---	---	180.63	3.72	176.91	---
H-1	02/05/2004	380	41	1.2	5.1	8.0	---	21	---	---	---	---	180.63	1.69	178.94	---
H-1	04/21/2004	640	27	0.63	2.0	2.3	---	33	---	---	---	---	180.63	2.14	178.49	---
H-1	08/12/2004	340	18	0.75	<0.50	1.7	---	43	---	---	---	---	180.63	4.78	175.85	---
H-1	11/08/2004	1,500	29	<1.0	1.7	<2.0	---	57	---	---	---	---	180.63	4.17	176.46	---
H-1	05/16/2005	150 h	<0.50	<0.50	<0.50	<1.0	---	48	---	---	---	---	180.63	4.16	176.47	---
H-1	08/16/2005	100 h	<0.50	<0.50	<0.50	<1.0	---	57	---	---	---	---	180.63	4.66	175.97	---
H-1	11/03/2005	<50.0	<0.500	<0.500	<0.500	<0.500	---	12.1	---	---	---	---	180.63	5.13	175.50	---
H-1	02/16/2006	4,230	<0.500	<0.500	37.7	80.5	---	7.12	---	---	---	---	180.63	1.87	178.76	---
H-1	05/05/2006	368	<0.500	<0.500	2.56	<0.500	---	22.2	---	---	---	---	180.63	2.21	178.42	---
H-1	08/21/2006	---	---	---	---	---	---	---	---	---	---	---	180.63	4.62	176.01	---
H-1	11/13/2006	---	---	---	---	---	---	---	---	---	---	---	180.63	3.89	176.74	---
H-1	01/30/2007	---	---	---	---	---	---	---	---	---	---	---	180.63	3.04	177.59	---
H-1	05/23/2007	330 i	7.9	0.32 j	0.48 j	0.61 j	---	74	---	---	---	---	180.63	3.38	177.25	---
H-1	08/09/2007	---	---	---	---	---	---	---	---	---	---	---	180.63	4.30	176.33	---
H-1	11/13/2007	---	---	---	---	---	---	---	---	---	---	---	180.63	1.97	178.66	---
H-1	02/13/2008	---	---	---	---	---	---	---	---	---	---	---	180.63	1.78	178.85	---
H-1	05/20/2008	230	19	<1.0	2.8	2.2	---	23	---	---	---	---	180.63	3.60	177.03	---
H-1	08/04/2008	---	---	---	---	---	---	---	---	---	---	---	180.63	3.27	177.36	---
H-1	12/02/2008	---	---	---	---	---	---	---	---	---	---	---	180.63	4.33	176.30	---
H-1	01/23/2009	---	---	---	---	---	---	---	---	---	---	---	180.63	2.03	178.60	---
H-1	05/05/2009	290	15	<1.0	7.1	4.2	---	36	---	---	---	---	180.63	2.76	177.87	---
H-1	08/07/2009	---	---	---	---	---	---	---	---	---	---	---	180.63	5.49	175.14	---
H-1	02/03/2010	2,700	85	1.5	130	62	---	24	---	---	---	---	180.63	2.45	178.18	---
H-1	08/31/2010	---	---	---	---	---	---	---	---	---	---	---	180.63	4.12	176.51	---
H-1	02/10/2011	1,800	51	1.3	120	65	---	36	---	---	---	---	180.63	3.10	177.53	---
H-1	07/22/2011	---	---	---	---	---	---	---	---	---	---	---	180.63	3.52	177.11	---

TABLE 3

GROUNDWATER DATA
SHELL-BRANDED SERVICE STATION
5755 BROADWAY, 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 Reading (mg/L)*
H-1	02/07/2012	560	20	<0.50	26	6.0	---	23	---	---	---	---	180.63	2.68	177.95	---
H-1	07/19/2012	---	---	---	---	---	---	---	---	---	---	---	180.63	5.48	175.15	---
H-1	01/25/2013	260	3.5	<0.50	1.1	<1.0	---	20	---	---	---	---	180.63	3.69	176.94	---
H-1	08/08/2013	---	---	---	---	---	---	---	---	---	---	---	180.63	5.44	175.19	---
H-1	02/11/2014	580	53	0.72	13	19	---	27	---	---	---	---	180.63	2.21	178.42	---
H-1	**08/29/2014**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**180.63**	**5.74**	**174.89**	**---**
T-1	05/30/1997	---	---	---	---	---	---	---	---	---	---	---	---	2.65	---	---
T-1	08/21/1997	---	---	---	---	---	---	---	---	---	---	---	---	2.69	---	---
T-1	11/03/1997	---	---	---	---	---	---	---	---	---	---	---	---	3.09	---	---
T-1	01/20/1998	---	---	---	---	---	---	---	---	---	---	---	---	0.61	---	---
T-1	07/23/1998	---	---	---	---	---	---	---	---	---	---	---	---	2.32	---	---
T-1	02/16/1999	---	---	---	---	---	---	---	---	---	---	---	---	1.95	---	---
T-1	09/07/1999	---	---	---	---	---	---	---	---	---	---	---	---	2.48	---	---
T-1	02/02/2000	<50.0	<0.500	<0.500	<0.500	<0.500	<5.00	---	---	---	---	---	---	2.66	---	2.5
T-1	04/26/2000	---	---	---	---	---	---	---	---	---	---	---	---	2.56	---	---
T-1	07/25/2000	---	---	---	---	---	---	---	---	---	---	---	---	2.60	---	---
T-1	11/15/2000	---	---	---	---	---	---	---	---	---	---	---	---	2.47	---	---
T-1	02/12/2001	---	---	---	---	---	---	---	---	---	---	---	---	1.20	---	---
T-1	06/07/2001	---	---	---	---	---	---	---	---	---	---	---	---	2.36	---	---
T-1	08/31/2001	---	---	---	---	---	---	---	---	---	---	---	---	3.45	---	---
T-1	01/09/2002	---	---	---	---	---	---	---	---	---	---	---	183.08	---	---	---
T-2	05/30/1997	---	---	---	---	---	---	---	---	---	---	---	---	1.81	---	---
T-2	08/21/1997	---	---	---	---	---	---	---	---	---	---	---	---	1.89	---	---
T-2	11/03/1997	---	---	---	---	---	---	---	---	---	---	---	---	2.25	---	---
T-2	01/20/1998	---	---	---	---	---	---	---	---	---	---	---	---	0.55	---	---
T-2	07/23/1998	---	---	---	---	---	---	---	---	---	---	---	---	1.21	---	---
T-2	02/16/1999	---	---	---	---	---	---	---	---	---	---	---	---	1.08	---	---
T-2	09/07/1999	---	---	---	---	---	---	---	---	---	---	---	---	0.72	---	---

TABLE 3

GROUNDWATER DATA
SHELL-BRANDED SERVICE STATION
5755 BROADWAY, 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 Reading (mg/L)*
T-2	02/02/2000	1,540	53.4	20.8	11.4	21.8	1,330	---	---	---	---	---	---	0.98	---	3.0
T-2	04/26/2000	---	---	---	---	---	---	---	---	---	---	---	---	1.02	---	---
T-2	07/25/2000	815	17.6	10.8	1.63	3.47	133	---	---	---	---	---	---	1.80	---	0.8
T-2	11/15/2000	---	---	---	---	---	---	---	---	---	---	---	---	1.68	---	---
T-2	02/12/2001	310	7.48	7.76	0.693	2.28	301	---	---	---	---	---	---	1.45	---	1.6
T-2	06/07/2001	---	---	---	---	---	---	---	---	---	---	---	---	1.57	---	---
T-2	08/31/2001	720	30	0.67	<0.50	2.3	---	540	---	---	---	---	---	2.69	---	0.8
T-2	12/05/2001	---	---	---	---	---	---	---	---	---	---	---	---	0.58	---	---
T-2	01/31/2002	---	---	---	---	---	---	---	---	---	---	---	---	1.32	---	---
T-2	02/04/2002	1,000	41	30	4.6	20	---	1,200	---	---	---	---	---	1.46	---	---
T-2	06/04/2002	---	---	---	---	---	---	---	---	---	---	---	---	1.50	---	---
T-2	07/25/2002	660	11	0.59	<0.50	2.6	---	97	---	---	---	---	---	1.53	---	---
T-2	11/14/2002	---	---	---	---	---	---	---	---	---	---	---	182.30	2.39	179.91	---
T-2	01/30/2003	560	11	<0.50	<0.50	0.53	---	160	---	---	---	---	182.30	1.01	181.29	---
T-2	06/03/2003	---	---	---	---	---	---	---	---	---	---	---	182.30	1.55	180.75	---
T-2	08/27/2003	180 d	1.6	<0.50	<0.50	<1.0	---	10	---	---	---	---	182.30	1.60	180.70	---
T-2	11/25/2003	---	---	---	---	---	---	---	---	---	---	---	182.30	1.64	180.66	---
T-2	02/05/2004	940	110	10	2.4	14	---	67	---	---	---	---	182.30	0.66	181.64	---
T-2	04/21/2004	---	---	---	---	---	---	---	---	---	---	---	182.30	1.50	180.80	---
T-2	08/12/2004	450	<0.50	<0.50	<0.50	<1.0	---	33	---	---	---	---	182.30	2.72	179.58	---
T-2	11/08/2004	---	---	---	---	---	---	---	---	---	---	---	182.30	1.72	180.58	---
T-3	05/30/1997	---	---	---	---	---	---	---	---	---	---	---	---	2.31	---	---
T-3	08/21/1997	---	---	---	---	---	---	---	---	---	---	---	---	1.57	---	---
T-3	11/03/1997	---	---	---	---	---	---	---	---	---	---	---	---	3.50	---	---
T-3	01/20/1998	---	---	---	---	---	---	---	---	---	---	---	---	0.76	---	---
T-3	07/23/1998	---	---	---	---	---	---	---	---	---	---	---	---	0.82	---	---
T-3	02/16/1999	---	---	---	---	---	---	---	---	---	---	---	---	0.55	---	---
T-3	09/07/1999	---	---	---	---	---	---	---	---	---	---	---	---	2.89	---	---
T-3	02/02/2000	<50.0	<0.500	<0.500	<0.500	<0.500	<5.00	---	---	---	---	---	---	3.02	---	2.9

TABLE 3

GROUNDWATER DATA
SHELL-BRANDED SERVICE STATION
5755 BROADWAY, 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 Reading (mg/L)*
T-3	04/26/2000	---	---	---	---	---	---	---	---	---	---	---	---	2.81	---	---
T-3	07/25/2000	---	---	---	---	---	---	---	---	---	---	---	---	3.00	---	---
T-3	11/15/2000	---	---	---	---	---	---	---	---	---	---	---	---	1.70	---	---
T-3	02/12/2001	---	---	---	---	---	---	---	---	---	---	---	---	2.11	---	---
T-3	06/07/2001	---	---	---	---	---	---	---	---	---	---	---	---	1.68	---	---
T-3	08/31/2001	---	---	---	---	---	---	---	---	---	---	---	---	3.14	---	---
T-3	01/09/2002	---	---	---	---	---	---	---	---	---	---	---	180.95	---	---	---

Notes:
TPHg = Total petroleum hydrocarbons as gasoline analyzed by EPA Method 8260B; prior to June 7, 2001, analyzed by EPA Method 8015 unless otherwise noted.
BTEX = Benzene, toluene, ethylbenzene, and total xylenes analyzed by EPA Method 8260B; prior to June 7, 2001, analyzed by EPA Method 8020 unless otherwise noted.
MTBE = Methyl tertiary-butyl ether analyzed by method noted
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
TOC = Top of casing elevation, in feet relative to mean sea level
SPH = Separate-phase hydrocarbon
GW = Groundwater
DO = Dissolved oxygen
µg/L = Micrograms per liter
ft = Feet
MSL = Mean sea level
mg/L = Milligrams per liter
<x = Not detected at reporting limit x
--- = Not analyzed or not available
(D) = Duplicate sample

a = Analytical method unknown

GROUNDWATER DATA
SHELL-BRANDED SERVICE STATION
5755 BROADWAY, OAKLAND, CALIFORNIA

b = Ethylbenzene and total xylenes combined
c = Temporary datum of 100.00 feet assigned to TOC
d = Chromatogram pattern indicated an unidentified hydrocarbon/Hydrocarbon does not match pattern of laboratory's standard.
e = Sample analyzed outside of EPA recommended hold time.
f= Sampled by client (Cambria Environmental Technology)
g = Unable to gauge depth to water
h = Quantity of unknown hydrocarbon(s) in sample based on gasoline.
i = Analyzed by EPA Method 8015B (M).
j = Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.

Site wells surveyed January 9, 2002 by Virgil Chavez Land Surveying

TABLE 4

HISTORICAL GRAB GROUNDWATER ANALYTICAL DATA
SHELL-BRANDED SERVICE STATION
5755 BROADWAY, OAKLAND, CALIFORNIA

ID	*Date*	*TPHg (µg/L)*	*B (µg/L)*	*T (µg/L)*	*E (µg/L)*	*X (µg/L)*	*MTBE (µg/L)*	*TBA (µg/L)*	*DIPE (µg/L)*	*ETBE (µg/L)*	*TAME (µg/L)*
B-1-W	8/6/2002	<1,000	<10	<10	<10	<10	**3,500**	---	---	---	---
B-2-W	8/6/2002	<50	<0.50	<0.50	<0.50	<0.50	<5.0	---	---	---	---
B-3-W	8/6/2002	<50	<0.50	<0.50	<0.50	<0.50	<5.0	---	---	---	---
B-4-W	8/6/2002	<50	<0.50	<0.50	<0.50	<0.50	<5.0	---	---	---	---
B-5-W	8/6/2002	**12,000**	4.5	<2.0	**350**	**340**	380	---	---	---	---
B-6-W	8/7/2002	**680**	15	<0.50	**49**	18	30	---	---	---	---
B-7-W	8/7/2002	370	<0.50	<0.50	3.4	11	42	---	---	---	---
B-8-W	8/7/2002	**66,000**	**990**	78	**2,600**	**12,000**	930	---	---	---	---
B-9-W	8/7/2002	**21,000**	**1,100**	47	**650**	**3,300**	**7,100**	---	---	---	---
B-10-W	8/7/2002	**31,000**	**1,800**	66	**1,300**	**4,200**	**9,100**	---	---	---	---
B-11-W	8/7/2002	**28,000**	**900**	<10	**980**	**2,500**	1,200	---	---	---	---
TP-GW-1	12/17/2004	**640**	11	3.2	6.1	47	38	8.7	<0.50	<0.50	<0.50
Groundwater ESL [a] :		500	27	130	43	100	1,800	18,000	NA	NA	NA

Notes:
TPHg = Total petroleum hydrocarbons as gasoline analyzed by EPA Method 8260B
BTEX = Benzene, toluene, ethylbenzene, and total xylenes analyzed by EPA Method 8260B
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
µg/L = Micrograms per liter
<x = Not detected at reporting limit x
--- = Not analyzed
ESL = Environmental screening level
NA = No applicable ESL
Results in **bold** equal or exceed applicable ESL

a = San Francisco Bay Regional Water Quality Control Board ESL for groundwater where groundwater is a source of drinking water (Table C of *Screening for Environmental Concerns at Sites With Contaminated Soil and Groundwater* , California Regional Water Quality Control Board, Interim Final - November 2007 [Revised May 2008] - Updated December 2013).

APPENDIX A

SITE HISTORY

SITE HISTORY

Site Background: Prior to 1972, the site was a Thrifty service station. Shell leased the parcel in 1972 and replaced the existing underground storage tanks (USTs) with three 10,000-gallon double-wall fiberglass gasoline USTs in late 1985.

1985 Subsurface Investigation: In June 1985, EMCON Associates (EMCON) drilled one soil boring (S-A) and installed one groundwater monitoring well (S-1). Soil samples from soil boring S-A contained up to 3 milligrams per kilogram (mg/kg) total petroleum hydrocarbons as gasoline (TPHg). No soil analytical data was obtained from S-1. EMCON's August 1, 1985 letter presents investigation details.

1989 Subsurface Investigation: In September 1989, Harding Lawson Associates (HLA) installed two groundwater monitoring wells (S-2 and S-3). Soil samples collected from the well borings contained up to 92 mg/kg TPHg and 0.12 mg/kg benzene. HLA's January 12, 1990 *Quarterly Technical Report- Fourth Quarter of 1989* provides soil and groundwater analytical data.

1992 Product Release and Tank Backfill Well Purging: In December 1992, Gettler-Ryan, Inc. (G-R) replaced a defective pipe fitting reported to have released approximately 200 gallons of unleaded gasoline. Mixed water and separate phase hydrocarbons (SPHs) were purged from the tank backfill wells (T-1 and T-2) on a daily basis from December 24, 1992 through January 7, 1993. Purging was suspended when SPHs originally observed in the wells were reduced to a sheen. According to Shell records, approximately 40,000 gallons of water mixed with SPHs was purged from the tank backfill wells.

1993 Soil Sampling and Sanitary Sewer Upgrade: Concurrent with purging SPHs from the tank backfill wells, G-R excavated three trenches up to 14 feet below grade (fbg) at the site's southeastern corner to identify hydrocarbon-impacted areas near sewer piping. Soil samples collected from the trench excavations contained up to 1,300 mg/kg TPHg and 1.1 mg/kg benzene.

The on-site sanitary sewer piping and portions of the off-site sewer piping were replaced with piping resistant to hydrocarbon penetration. Additionally, G-R installed a horizontal groundwater extraction (GWE) well (H-1) within the excavated sewer trench below a section of sewer piping and constructed a grout barrier in the sewer trench to prevent further off-site migration of residual hydrocarbons. During sewer upgrades, approximately 126 cubic yards of soil were transported by U.S. Services of Oakland, California to Browning Ferris Landfill in Livermore, California for disposal.

Weiss Associates' (WA's) June 18, 1993 *Soil Sampling and Sanitary Sewer Upgrade* report presents details of the soil investigation, sewer replacement, grout barrier installation, and horizontal well installation.

1993-1994 SPH removal: From February 1993 to February 1994, approximately 0.55 gallon of SPHs were removed from tank backfill wells T-1, T-2, and T-3 by hand bailing.

1994-1998 GWE: From January 1994 to March 1998, Crosby and Overton remove approximately 422,338 gallons of groundwater were removed from the UST area using a vacuum truck.

1998 Dispenser Upgrade: In March 1998, Paradiso Mechanical of San Leandro, California upgraded the station's dispensers and UST turbine pumps. Soil samples, collected below each dispenser, contained up to 1.8 mg/kg TPHg, 3.4 mg/kg benzene, and 25 mg/kg methyl tertiary-butyl ether (MTBE). Cambria Environmental Technology, Inc.'s (Cambria's) April 9, 1998 *Dispenser Sampling Report* presents details of the dispenser upgrade activities.

2002 Soil Borings: In August 2002, Cambria drilled 11 soil borings (B-1 through B-11) to further define the extent of petroleum hydrocarbons on and off site. Soil samples from the on-site borings (B-5 through B-11) contained up to 260 mg/kg TPHg, 0.096 mg/kg benzene, and 0.9 mg/kg MTBE. Grab groundwater samples collected from the on-site borings contained up to 66,000 micrograms per liter (µg/L) TPHg, 1,800 µg/L benzene, and 9,100 µg/L MTBE. No TPHg, benzene, toluene, ethylbenzene, or total xylenes (BTEX), or MTBE was detected in soil or groundwater samples collected from the off-site borings (B-1 through B-4), with the exception 3,500 µg/L MTBE in the grab groundwater sample collected from boring B-1. Investigation results are presented in Miller Brooks Environmental Inc.'s October 21, 2002 *Subsurface Investigation Report*.

2000-2001 Interim Remediation: From April to October 2000, mobile GWE using a vacuum truck was conducted periodically at the site. A single dual-phase vacuum extraction (DVE) event was performed at the site on February 7, 2001, and monthly mobile DVE was conducted at the site from May to November 2001. GWE and DVE extracted approximately 20,038 gallons of groundwater from wells S-2, H-1, and T-2 containing an estimated 6.2 pounds of TPHg, 0.1 pound of benzene, and 0.45 pound of MTBE. Cambria suspended monthly DVE from wells S-2 and H-1 due to the low influent volume of groundwater from S-2 and the low influent MTBE concentrations from H-1.

2003-2006 Temporary GWE System: From October 2003 to May 2006, Cambria operated a temporary GWE system from well S-2. The temporary GWE system removed approximately total of 32,043 gallons of water containing an estimated 0.88 pound of TPHg, 0.046 pound of benzene, and 0.62 pound of MTBE.

2004-2005 Fuel System Upgrades: In November 2004, Fillner Construction, Inc. (Fillner) of Rocklin, California upgraded the fuel system. A water line was apparently damaged during the construction and caused the uncovered tanks to float in the tank excavation. Shell estimates that less than 0.1 gallon of fuel was lost. Fillner used a bucket to contain the fuel until the sump was repaired and absorbent cloths were used to remove fuel from within the tank backfill.

In December 2004, Fillner removed three 10,000-gallon double-walled fiberglass gasoline USTs. In January 2005, Cambria collected four soil samples from the UST excavation (TP-1 through TP-4) which contained up to 32 mg/kg TPHg and 0.08 mg/kg MTBE. No benzene was detected in the samples. Later in January 2005, Fillner uncovered visibly hydrocarbon-impacted fill material in the northeast corner of the tank excavation. In February 2005, Cambria collected four addition samples (TP-5 through TP-8) from this area. No TPHg, BTEX, or MTBE was detected in these samples. A grab groundwater sample collected from the UST excavation contained 640 mg/L TPHg, 11 mg/L benzene, and 38 mg/L MTBE.

In February 2005, Cambria collected soil samples from beneath the former dispensers (DS-1, through DS-4) and former piping (P-1, P-2 and P-3) from native soil at depths between 1 and 2 fbg. These samples contained up to 1,100 mg/kg TPHg and 0.84 mg/kg MTBE. No benzene was detected in the samples. Based on these results, Filner over-excavated the dispenser and piping areas. Cambria collected seven confirmation samples at 4 to 6 fbg in the same locations where the initial samples were collected. The deeper samples contained up to 1,000 mg/kg TPHg, 0.66 mg/kg benzene, and 1.9 mg/kg MTBE.

In February 2005, Cambria also conducted a geophysical survey in the area northeast of the UST excavation to identify any other potential underground sources using ground-penetrating radar. The survey identified four geophysical anomalies, two of which had features consistent with buried USTs or drums.

From January to June 2005, Manley and Sons Trucking, Inc. transported approximately 1,522 tons of soil and pea gravel to Allied Waste Industries' Forward Landfill in Manteca, California for disposal. In addition, approximately 291,077 gallons of

groundwater were removed from the tank excavation containing an estimated 1.1 pounds of TPHg, 0.1 pound of benzene, and 0.85 pound of MTBE.

Cambria's August 9, 2005 *Fuel System Upgrade Soil Sampling, Soil Excavation, and Geophysical Survey Report* provides details of these activities.

2005 Subsurface Investigation: In November 2005, Cambria drilled three hand auger soil borings (SB-12 through SB-14) to investigate geophysical anomalies identified in the February 2005 geophysical survey. Bedrock was encountered at depths ranging from 5.5 to 8 fbg. No evidence of a buried UST or drum was found. Soil samples contained up to 68 mg/kg total petroleum hydrocarbons as diesel and 180 mg/kg TPHg. No benzene or MTBE was detected in the soil samples. Cambria's February 13, 2006 *Site Investigation Report* details investigation results.

2013 Well Survey: On September 10, 2013, Conestoga-Rovers & Associates (CRA) submitted a *Well Survey* report detailing CRA's review of well records from the California Department of Water Resources and the Alameda County Public Works Agency. CRA found a record for one domestic well located within one-half mile of the site. The well was located approximately 1,700 feet north of the site across the Interstate 580 Freeway on Ivanhoe Road.

2013 Subsurface Investigation: In September 2013, CRA installed and sampled two on-site soil vapor probes (VP-1 and VP-2) and collected soil samples from the vapor probe borings. All TPHg, BTEX, and MTBE concentrations in soil samples collected from the vapor probe borings were below San Francisco Bay Regional Water Quality Control Board's environmental screening levels (ESLs) for residential land use[1]. TPHg and benzene concentrations in the soil vapor sample collected from vapor probe VP-1 exceeded commercial ESLs, and the TPHg concentration in the soil vapor sample collected from vapor probe VP-2 exceeded residential ESLs. CRA's November 22, 2014 *Subsurface Investigation Report* presents investigation details.

2014 Subsurface Investigation: In June and July 2014, CRA installed and sampled two off-site near sub-slab soil vapor probes (VP-3 and VP-4). Up to 10,000 micrograms per cubic meter ($\mu g/m^3$) TPHg and 460 $\mu g/m^3$ tertiary-butyl alcohol (TBA) in VP-3 and 800 $\mu g/m^3$ TBA in VP-4 were detected. BTEX, MTBE, and naphthalene were not detected in the samples. No soil vapor constituent of concern concentrations exceeded

[1] *Screening for Environmental Concerns at Site With Contaminated Soil and Groundwater*, California Regional Water Quality Control Board, Interim Final – November 2007 [Revised May 2008] – Updated December 2013

residential ESLs. CRA's September 2, 2014 *Subsurface Investigation Report* provides investigation results.

Groundwater Monitoring Program: Groundwater monitoring and sampling began in July 1985. Depth to first-encountered groundwater typically ranges between 0.5 to 4.9 fbg. The groundwater gradient is generally to the south.

APPENDIX B

BORING LOGS

Boring/Well Log Legend

KEY TO SYMBOLS/ABBREVIATIONS

- First encountered groundwater
- Static groundwater
- Soils logged by hand-auger or air-knife cuttings
- Soils logged by drill cuttings or disturbed sample
- Undisturbed soil sample interval
- Soil sample retained for submittal to analytical laboratory
- No recovery within interval
- Hydropunch or vapor sample screen interval

PID = Photo-ionization detector or organic vapor meter reading in parts per million (ppm)

fbg = Feet below grade

Blow Counts = Number of blows required to drive a California-modified split-spoon sampler using a 140-pound hammer falling freely 30 inches, recorded per 6-inch interval of a total 18-inch sample interval

(10YR 4/4) = Soil color according to Munsell Soil Color Charts

msl = Mean sea level

Soils logged according to the USCS.

UNIFIED SOILS CLASSIFICATION SYSTEM (USCS) SUMMARY

Major Divisions			Graphic	Group Symbol	Typical Description
Coarse-Grained Soils (>50% Sands and/or Gravels)	Gravel and Gravelly Soils	Clean Gravels (≤5% fines)		GW	Well-graded gravels, gravel-sand mixtures, little or no fines
				GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines
		Gravels with Fines (≥15% fines)		GM	Silty gravels, gravel-sand-silt mixtures
				GC	Clayey gravels, gravel-sand-clay mixtures
	Sand and Sandy Soils	Clean Sands (≤5% fines)		SW	Well-graded sands, gravelly sands, little or no fines
				SP	Poorly-graded sands, gravelly sand, little or no fines
		Sands with Fines (≥15% fines)		SM	Silty sands, sand-silt mixtures
				SC	Clayey sands, sand-clay mixtures
Fine-Grained Soils (>50% Silts and/or Clays)	Silts and Clays			ML	Inorganic silts, very fine sands, silty or clayey fine sands, clayey silts with slight plasticity
				CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
				OL	Organic silts and organic silty clays of low plasticity
	Silts and Clays			MH	Inorganic silts, micaceous or diatomaceous fine sand or silty soils
				CH	Inorganic clays of high plasticity
				OH	Organic clays of medium to high plasticity, organic silts
Highly Organic Soils				PT	Peat, humus, swamp soils with high organic contents

M:\Templates & Forms\Boring Logs\Boring Log Legend

LOG OF EXPLORATORY BORING

PROJECT NUMBER 738-04.01 BORING NO. S-A

PROJECT NAME Gettler-Ryan Shell at Broadway and Taft, Oakland PAGE 1 OF 1

BY JOB DATE 6/11/85 SURFACE ELEV.

TORVANE (TSF)	POCKET PENETROMETER (TSF)	PENETRATION (Blows/Ft.)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHOGRAPHIC COLUMN	DESCRIPTION
			▽			CL	CONCRETE CLAY; Fill; very dark grayish brown (2.5Y, 3/2); trace sand; 25-30% fine to coarse gravel; (60% gravel at 3'); stiff; wet; product odor.
		5		5		SP - GP - GC	SAND; COARSE GRAVEL; CLAYEY GRAVEL,Fill; light olive brown (2.5Y, 5/6); loose; wet; product odor.
		47 75		10		Bed Rock	BEDROCK; SHALE; olive (5Y, 4/3); silty; FeO stained; highly fractured; hard; wet; slight product odor. HOLE TERMINATED AT 11 FEET
				15			

REMARKS Boring was backfilled with cuttings, to a depth of .5 feet, then cement to surface.

EMCON ASSOCIATES

PLATE A

LOG OF EXPLORATORY

PROJECT NUMBER 738-04.01

PROJECT NAME Gettler-Ryan, Shell @ Broadway & Taft, [illegible]

BY JDB DATE 6/11/85

TORVANE (TSF)	POCKET PENETROMETER (TSF)	PENETRATION (Blows/Ft.)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHOGRAPHIC COLUMN	
							CONCRETE
			▽			CL Fill	CLAY; Fill; very [illegible] (2.5Y, 3/2); gr[illegible] no product odor.
				5		CL	GRAVELLY CLAY; dar[illegible] (10YR, 4/6); tr[illegible] product odor.
							@6': becomes o[illegible] slight product [illegible]
	2.5-5	37					@7': becomes dar[illegible] (10YR, 4/6); 30-[illegible] gravel; very s[illegible] no product odor.
	2-4	20		10			@8½': gravel co[illegible] 9½'; no produ[illegible]
		50 for 3"				GW	GRAVEL; olive gray [illegible] coarse angular [illegible] very dense; dam[illegible]
				15			HOLE TERMINATED [illegible]
				20			

REMARKS Boring converted to ground water monitoring [illegible]

on Plate C.

WELL DETAILS

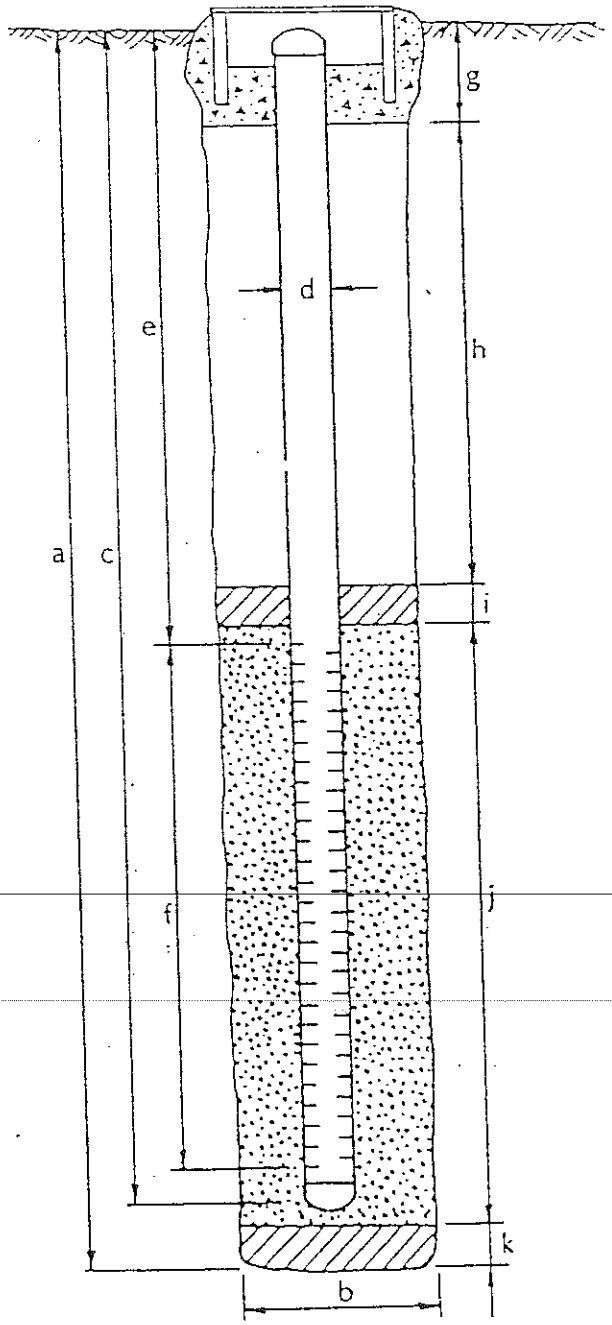
PROJECT NUMBER 738-04.01 BOR

PROJECT NAME Gettler-Ryan, Shell Broadway & Taft TOP O

COUNTY Alameda GROUND

WELL PERMIT NO. DATUM

G-5 vault box (Std.)



EXPLORATORY

a. Total depth

b. Diameter

Drilling method

WELL CONSTR

c. Casing length

Material Schedu

d. Diameter

e. Depth to top perfo

f. Perforated leng

Perforated interval

Perforation type

Perforation size

g. Surface seal

Seal material Cement

h. Backfill

Backfill material

i. Seal

Seal material

j. Gravel pack

Pack material

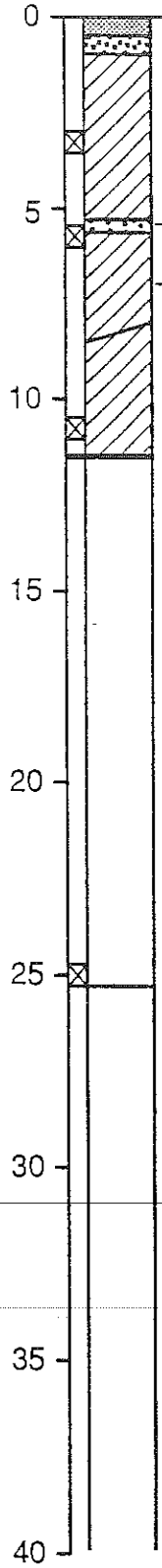
k. Bottom seal

Seal material

Equipment 8 inch Hollow Stem Auger

Elevation ~99.0 feet * Date 9/18/89

Sample	Blows/foot **	Photo Ionization Detector (ppm) HNu	Petroleum Hydrocarbon Odor
grab sample	–	22.5	mild
	32	18.5	mild
	25	n/a	none



Concrete
Baserock

BROWN MOTTLED SANDY CLAY (CL), moist, gravel < 0.5 inches

MOTTLED BROWN GRAY, POORLY GRADED SAND LAYER

MOTTLED GRAY BROWN SANDY LEAN CLAY WITH GRAVEL (CL), very stiff, moist, gravel < 0.5 inches diameter

MOTTLED GRAY BROWN LEAN CLAY WITH SAND (CL), very stiff, moist

Bottom of boring at 11.5 feet

CHECK PRINT
date 12/9/91 drafter Ludi

* Relative to assigned datum

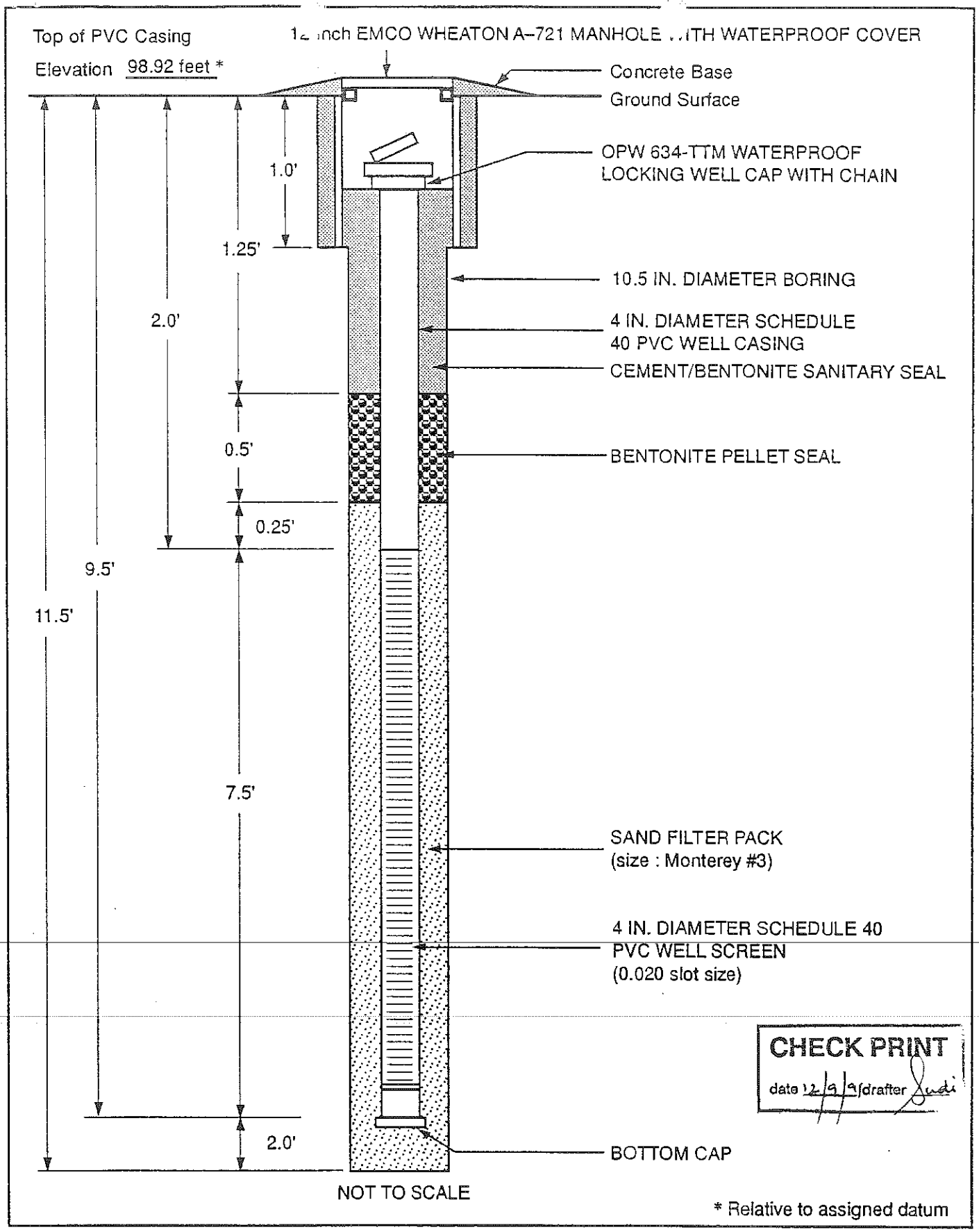
** Converted to SPT N-values

Harding Lawson Associates
Engineering and Environmental Services

Log of Boring S–2
Shell Service Station
5755 Broadway
Oakland, California

PLATE

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
S. Patel	4022,218.03		12/09/91	



Harding Lawson Associates
Engineering and
Environmental Services

Well Completion Diagram S-2
Shell Service Station
5755 Broadway
Oakland, California

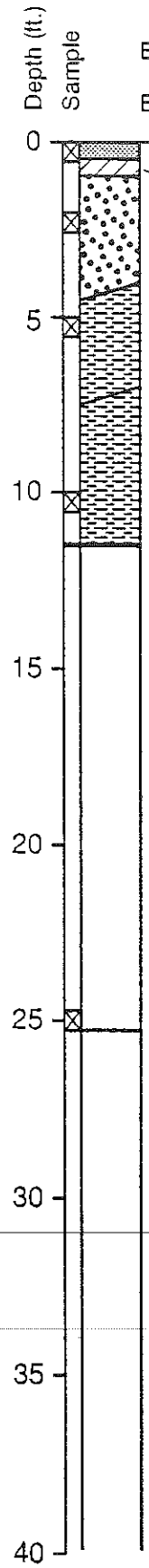
PLATE

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
S. Patel	4022,218.03		12/09/91	

Equipment 8 inch Hollow Stem Auger

Elevation ~ 102.0 feet * Date 9/18/89

Sample	Blows/foot **	Photo Ionization Detector (ppm) HNu	Petroleum Hydrocarbon Odor
grab sample	–	0	none
	–	0	none
	–	0	none



Concrete

BLACK LEAN CLAY (CL), moist

GRAY GREEN WELL GRADED SAND WITH GRAVEL (SW), moist

GRAY GREEN SILTY SHALE, intensely fractured, moderately hard, weak, deeply weathered

BLACK SHALE WITH SOME GREEN SAND, intensely fractured, hard, moderately weathered

Bottom of boring at 11.5 feet

CHECK PRINT
date 12/9/91 drafter

CHECK
date
date

* Relative to assigned datum

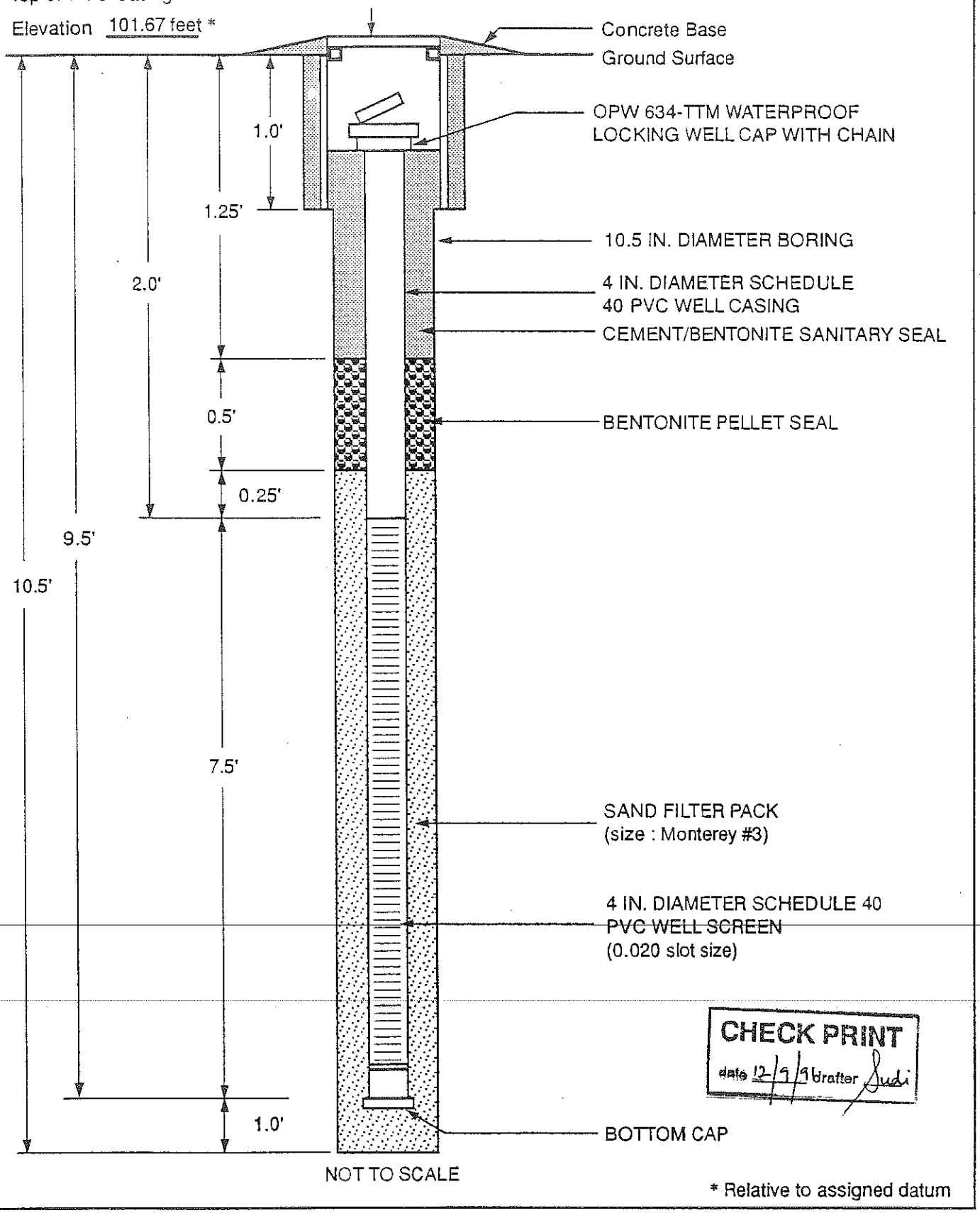
** Converted to SPT N-values

Harding Lawson Associates
Engineering and Environmental Services

Log of Boring S–3
Shell Service Station
5755 Broadway
Oakland, California

PLATE

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
S. Patel	4022,218.03		12/09/91	



Harding Lawson Associates
Engineering and
Environmental Services

Well Completion Diagram S–3
Shell Service Station
5755 Broadway
Oakland, California

PLATE

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED DATE
S. Patel	4022,218.03		12/09/91	

FIELD LOCATION OF BORINGS/ MONITORING WELLS:	CLIENT/LOCATION:	DRILL RIG TYPE:	PLANNED USE:	BORING/WELL NO:
6 feet from Taft Street curb and 36 feet from line of Broadway curb.	Shell Oil Products US	Direct Push	NA	B-1
	DRILLING CONTRACTOR:	DRILL RIG OPERATOR:	BORING DEPTH: 16 ft	WELL/BOREHOLE SEAL:
	Gregg Drilling	Don Pearson	DIAMETER: 2 in	
	DRILL DATE & START TIME:	SAMPLING METHOD:	WELL MATERIAL:	FILTER PACK:
	8/6/2002 @ 8:40 am	Direct Push	NA	NA

MONITORING INSTRUMENT:	WELL DEPTH:
NONE	NA
FIRST ENCOUNTERED WATER DEPTH:	DIAMETER:
8.0 ft	NA
STATIC WATER DEPTH - DATE:	SCREEN SLOT SIZE:
NA	NA

BLOWS/ 6" INTERVAL	INTERVAL/ LAB (A)	H_2O LEVEL	OVM READING	DEPTH (FEET)	
					3-inch concrete surface; hand augered to 5 feet below ground surface.
					SM - SILTY SAND: Olive gray, damp, fine medium sand, (20% clay, 30% silt, 50% sand), low plasticity.
			NM	5	
		▽			
			NM	10	SC - CLAYEY SAND: Light brown/orange, damp, fine-coarse angular sand, (30% clay, 5% silt, 60% sand, 5% gravel), no plasticity.
					Moist.
					Fine sand, (30% clay, 10% silt, 60% sand).
			NM	15	
					Boring terminated at 16 feet below ground surface.
				20	
				25	
				30	
				35	
				40	

NOTES:

▬ = laboratory sample

▽ = groundwater observed

NM = Not Measured

NA = Not Applicable

ppm = parts per million

LOGGED BY: JAMES LOETTERLE OF CAMBRIA ENVIRONMENTAL, INC.

FIELD LOCATION OF BORINGS/ MONITORING WELLS:	CLIENT/LOCATION:	DRILL RIG TYPE:	PLANNED USE:	BORING/WELL NO:
6 feet from Taft Street curb and 64 feet from line of Broadway curb.	Shell Oil Products US	Direct Push	NA	B-2
	DRILLING CONTRACTOR:	DRILL RIG OPERATOR:	BORING DEPTH: 16 ft	WELL/BOREHOLE SEAL:
	Gregg Drilling	Don Pearson	DIAMETER: 2 in	
	DRILL DATE & START TIME:	SAMPLING METHOD:	WELL MATERIAL:	FILTER PACK:
	8/6/2002 @ 10:51 am	Direct Push	NA	NA

					MONITORING INSTRUMENT:	WELL DEPTH:
					NONE	NA
					FIRST ENCOUNTERED WATER DEPTH:	DIAMETER:
					12.5 ft	NA
					STATIC WATER DEPTH - DATE:	SCREEN SLOT SIZE:
					NA	NA

BLOWS/ 6" INTERVAL	INTERVAL/ LAB (A)	H_2O LEVEL	OVM READING	DEPTH (FEET)	
					3-inch concrete surface; hand augered to 5 feet below ground surface.
					FILL
					SC - CLAYEY SAND: Olive brown, moist, fine sand, (20% clay, 30% silt, 50% sand), low plasticity.
				5	
			NM		Damp, fine-coarse angular sand, (20% clay, 10% silt, 70% sand), rust stains.
					Orange-brown.
					Fine sand, (30% clay, 20% silt, 50% sand), medium plasticity.
				10	
			NM		Fine-coarse subangular sand, (20% clay, 10% silt, 70% sand), low plasticity.
		▽			
					Orange/gray, moist, fine sand, (30% clay, 10% silt, 50% sand), medium plasticity.
				15	
			NM		
					Boring terminated at 16 feet below ground surface.
				20	
				25	
				30	
				35	
				40	

NOTES:

= laboratory sample

▽ = groundwater observed

NM = Not Measured

NA = Not Applicable

ppm = parts per million

LOGGED BY: JAMES LOETTERLE OF CAMBRIA ENVIRONMENTAL, INC.

PROJECT NUMBER 06-155-0303-01

FIELD LOCATION OF BORINGS/ MONITORING WELLS:	CLIENT/LOCATION:	DRILL RIG TYPE:	PLANNED USE:	BORING/WELL NO:
6 feet from Taft Street curb and 96 feet from line of Broadway curb.	Shell Oil Products US	Direct Push	NA	B-3
	DRILLING CONTRACTOR:	DRILL RIG OPERATOR:	BORING DEPTH: 16 ft	WELL/BOREHOLE SEAL:
	Gregg Drilling	Don Pearson	DIAMETER: 2 in	
	DRILL DATE & START TIME:	SAMPLING METHOD:	WELL MATERIAL:	FILTER PACK:
	8/6/2002 @ 9:53 am	Direct Push	NA	NA

BLOWS/ 6" INTERVAL	INTERVAL/ LAB (A)	H_2O LEVEL	OVM READING	DEPTH (FEET)	MONITORING INSTRUMENT:	WELL DEPTH:
					NONE	NA
					FIRST ENCOUNTERED WATER DEPTH:	DIAMETER:
					12.0 ft	NA
					STATIC WATER DEPTH - DATE:	SCREEN SLOT SIZE:
					NA	NA

DEPTH (FEET)	
	3-inch concrete surface; hand augered to 5 feet below ground surface.
	FILL
	SC - CLAYEY SAND: Orange/light brown, damp, fine-coarse subangular sand, (20% clay, 10% silt, 70% sand), low plasticity.
5	NM
	Fine gravel, (20% clay, 10% silt, 65% sand, 5% gravel).
10	NM
	Orange/gray, moist, fine sand, (20% clay, 10% silt, 70% sand), medium plasticity. ▽
	SM - SILTY SAND: Gray/orange/brown, fine-med sand, (20% clay, 30% silt, 50% sand), low plasticity.
15	NM
	SC - CLAYEY SAND:
	Boring terminated at 16 feet below ground surface.
20	
25	
30	
35	
40	

NOTES:

▬ = laboratory sample

▽ = groundwater observed

NM = Not Measured

NA = Not Applicable

ppm = parts per million

LOGGED BY: JAMES LOETTERLE OF CAMBRIA ENVIRONMENTAL, INC.

PROJECT NUMBER 06-155-0303-01

FIELD LOCATION OF BORINGS/ MONITORING WELLS:	CLIENT/LOCATION:	DRILL RIG TYPE:	PLANNED USE:	BORING/WELL NO:
6 feet from Taft Street curb and 134 feet from line of Broadway curb.	Shell Oil Products US	Direct Push	NA	B-4
	DRILLING CONTRACTOR:	DRILL RIG OPERATOR:	BORING DEPTH: 16 ft	WELL/BOREHOLE SEAL:
	Gregg Drilling	Don Pearson	DIAMETER: 2 in	
	DRILL DATE & START TIME:	SAMPLING METHOD:	WELL MATERIAL:	FILTER PACK:
	8/6/2002 @ 11:53 am	Direct Push	NA	NA

					MONITORING INSTRUMENT:	WELL DEPTH:
					NONE	NA
				DEPTH (FEET)	FIRST ENCOUNTERED WATER DEPTH:	DIAMETER:
					10.5 ft	NA
					STATIC WATER DEPTH - DATE:	SCREEN SLOT SIZE:
BLOWS/ 6" INTERVAL	INTERVAL/ LAB (A)	H_2O LEVEL	OVM READING		NA	NA
					3-inch concrete surface; hand augered to 5 feet below ground surface.	
					FILL	
					ML - FINE SAND: Dark brown, damp, fine sand, (15% silt, 50% sand, 35% gravel), low plasticity, rootlets.	
				5	SC - CLAYEY SAND: Orange/brown, damp, fine-coarse angular sand, (20% clay, 10% silt, 70% sand), rust stains, rootlets.	
			NM			
					Fine sand, (30% clay, 20% silt, 50% sand), medium plasticity, rust stains.	
		▽		10		
			NM			
					Orange/qray/brown, fine-coarse angular sand, (20% clay, 10% silt, 70% sand), no plasticity.	
					Moist, orange/brown, fine sand, (30% clay, 10% silt, 50% sand), medium plasticity.	
				15		
			NM			
					Boring terminated at 16 feet below ground surface.	
				20		
				25		
				30		
				35		
				40		

NOTES:

= laboratory sample

▽ = groundwater observed

NM = Not Measured

NA = Not Applicable

ppm = parts per million

LOGGED BY: JAMES LOETTERLE OF CAMBRIA ENVIRONMENTAL, INC.

PROJECT NUMBER 06-155-0303-01

FIELD LOCATION OF BORINGS/ MONITORING WELLS:	CLIENT/LOCATION:	DRILL RIG TYPE:	PLANNED USE:	BORING/WELL NO:
39 feet from Broadway curb and 12 feet from southern dispenser.	Shell Oil Products US	Direct Push	NA	B-5
	DRILLING CONTRACTOR:	DRILL RIG OPERATOR:	BORING DEPTH: 16 ft	WELL/BOREHOLE SEAL:
	Gregg Drilling	Don Pearson	DIAMETER: 2 in	
	DRILL DATE & START TIME:	SAMPLING METHOD:	WELL MATERIAL:	FILTER PACK:
	8/5/2002 @ 3:41 pm	Direct Push	NA	NA
	MONITORING INSTRUMENT:		WELL DEPTH:	
	NONE		NA	
	FIRST ENCOUNTERED WATER DEPTH:		DIAMETER:	
	4.6 ft		NA	
	STATIC WATER DEPTH - DATE:		SCREEN SLOT SIZE:	
	NA		NA	

BLOWS/ 6" INTERVAL	INTERVAL/ LAB (A)	H_2O LEVEL	OVM READING	DEPTH (FEET)	
					3-inch concrete surface; hand augered to 5 feet below ground surface.
					FILL
		▽			Strong MTBE odor at 3 feet.
			NM	5	SC - CLAYEY SAND: Olive brown, fine-coarse subangular sand, (20% clay, 10% silt, 70% sand), low plasticity.
				10	Orange/brown, fine sand, (30% clay, 20% silt, 50% sand), medium plasticity.
			NM		Orange/gray/brown, fine-coarse subangular sand, (20% clay, 10% silt, 65% sand, 5% gravel), no plasticity, fine subangular gravel.
					Olive gray.
				15	
			NM		Orange/brown.
					Boring terminated at 16 feet below ground surface.
				20	
				25	
				30	
				35	
				40	

NOTES:

▬ = laboratory sample

▽ = groundwater observed

NM = Not Measured

NA = Not Applicable

ppm = parts per million

LOGGED BY: JAMES LOETTERLE OF CAMBRIA ENVIRONMENTAL, INC.

FIELD LOCATION OF BORINGS/ MONITORING WELLS:	CLIENT/LOCATION:	DRILL RIG TYPE:	PLANNED USE:	BORING/WELL NO:
5 feet from southeast of the corner wall of site and 51 feet from Taft Avenue curb.	Shell Oil Products US	Direct Push	NA	B-6
	DRILLING CONTRACTOR:	DRILL RIG OPERATOR:	BORING DEPTH: 16 ft	WELL/BOREHOLE SEAL:
	Gregg Drilling	Don Pearson	DIAMETER: 2 in	
	DRILL DATE & START TIME:	SAMPLING METHOD:	WELL MATERIAL:	FILTER PACK:
	8/7/2002 @ 8:33 am	Direct Push	NA	NA

					MONITORING INSTRUMENT:	WELL DEPTH:
					NONE	NA
				DEPTH (FEET)	FIRST ENCOUNTERED WATER DEPTH:	DIAMETER:
					13.8 ft	NA
					STATIC WATER DEPTH - DATE:	SCREEN SLOT SIZE:
BLOWS/ 6" INTERVAL	INTERVAL/ LAB (A)	H_2O LEVEL	OVM READING		NA	NA
					3-inch concrete surface; hand augered to 5 feet below ground surface.	
					FILL	
				5	SC - CLAYEY SAND: Olive brown, damp, fine sand, (30% clay, 20% silt, 50% sand), low plasticity	
			NM		green stains, MTBE odor.	
					Orange/brown/olive, fine-coarse subrounded sand, (20% clay, 10% silt, 70% sand), no plasticity.	
				10	Orange/brown, fine medium sand, (30% clay, 20% silt, 50% sand), low plasticity.	
			NM			
		▽		15		
			NM		Dark brown, (20% clay, 10% silt, 70% sand), oxidation.	
					Boring terminated at 16 feet below ground surface.	
				20		
				25		
				30		
				35		
				40		

NOTES:

= laboratory sample

▽ = groundwater observed

NM = Not Measured

NA = Not Applicable

ppm = parts per million

LOGGED BY: JAMES LOETTERLE OF CAMBRIA ENVIRONMENTAL, INC.

PROJECT NUMBER 06-155-0303-01

FIELD LOCATION OF BORINGS/ MONITORING WELLS:	CLIENT/LOCATION:	DRILL RIG TYPE:	PLANNED USE:	BORING/WELL NO:
NM	Shell Oil Products US	Direct Push	NA	B-7
	DRILLING CONTRACTOR:	DRILL RIG OPERATOR:	BORING DEPTH: 11 ft	WELL/BOREHOLE SEAL:
	Gregg Drilling	Don Pearson	DIAMETER: 2 in	
	DRILL DATE & START TIME:	SAMPLING METHOD:	WELL MATERIAL:	FILTER PACK:
	8/7/2002 @ 9:56 am	Direct Push	NA	NA

BLOWS/ 6" INTERVAL	INTERVAL/ LAB (A)	H_2O LEVEL	OVM READING	DEPTH (FEET)	MONITORING INSTRUMENT:	WELL DEPTH:
					NONE	NA
					FIRST ENCOUNTERED WATER DEPTH:	DIAMETER:
					10.8 ft	NA
					STATIC WATER DEPTH - DATE:	SCREEN SLOT SIZE:
					NA	NA

DEPTH (FEET)	
	3-inch concrete surface; hand augered to 5 feet below ground surface.
	FILL
5	SC - CLAYEY SAND: Light brown/olive, damp, fine-medium sand, (30% clay, 20% silt, 50% sand), low plasticity sheen.
	Orange brown/olive, fine-coarse subrounded sand, (20% clay, 10% silt, 70% sand), no plasticity.
10	
	Boring terminated at 11 feet due to refusal.
15	
20	
25	
30	
35	
40	

NOTES:

= laboratory sample

▽ = groundwater observed

NM = Not Measured

NA = Not Applicable

ppm = parts per million

LOGGED BY: JAMES LOETTERLE OF CAMBRIA ENVIRONMENTAL, INC.

PROJECT NUMBER 06-155-0303-01

FIELD LOCATION OF BORINGS/ MONITORING WELLS:	CLIENT/LOCATION:	DRILL RIG TYPE:	PLANNED USE:	BORING/WELL NO:
NM	Shell Oil Products US	Direct Push	NA	B-8
	DRILLING CONTRACTOR:	DRILL RIG OPERATOR:	BORING DEPTH: 11 ft	WELL/BOREHOLE SEAL:
	Gregg Drilling	Don Pearson	DIAMETER: 2 in	
	DRILL DATE & START TIME:	SAMPLING METHOD:	WELL MATERIAL:	FILTER PACK:
	8/7/2002 @ 10:49 am	Direct Push	NA	NA

BLOWS/ 6" INTERVAL	INTERVAL/ LAB (A)	H_2O LEVEL	OVM READING	DEPTH (FEET)	MONITORING INSTRUMENT:	WELL DEPTH:
					NONE	NA
					FIRST ENCOUNTERED WATER DEPTH:	DIAMETER:
					8.1 ft	NA
					STATIC WATER DEPTH - DATE:	SCREEN SLOT SIZE:
					NA	NA

					3-inch concrete surface; hand augered to 5 feet below ground surface.
					FILL
				5	SC - CLAYEY SAND: Olive brown, damp, fine-coarse sand, (25% clay, 20% silt, 55% sand), low plasticity, HC odor present.
			NM		
		▽			Reddish olive/brown, coarse angular sand, (20% clay, 15% silt, 65% sand), no plasticity.
				10	
			NM		
					Boring terminated at 11 feet due to refusal.
				15	
				20	
				25	
				30	
				35	
				40	

NOTES:

= laboratory sample

▽ = groundwater observed

NM = Not Measured

NA = Not Applicable

ppm = parts per million

LOGGED BY: JAMES LOETTERLE OF CAMBRIA ENVIRONMENTAL, INC.

PROJECT NUMBER 06-155-0303-01

FIELD LOCATION OF BORINGS/ MONITORING WELLS:	CLIENT/LOCATION:	DRILL RIG TYPE:	PLANNED USE:	BORING/WELL NO:
NM	Shell Oil Products US	Direct Push	NA	B-9
	DRILLING CONTRACTOR:	DRILL RIG OPERATOR:	BORING DEPTH: 11 ft	WELL/BOREHOLE SEAL:
	Gregg Drilling	Don Pearson	DIAMETER: 2 in	
	DRILL DATE & START TIME:	SAMPLING METHOD:	WELL MATERIAL:	FILTER PACK:
	8/7/2002 @ 11:58 am	Direct Push	NA	NA

BLOWS/ 6" INTERVAL	INTERVAL/ LAB (A)	H_2O LEVEL	OVM READING	DEPTH (FEET)	MONITORING INSTRUMENT:	WELL DEPTH:
					NONE	NA
					FIRST ENCOUNTERED WATER DEPTH:	DIAMETER:
					10.7 ft	NA
					STATIC WATER DEPTH - DATE:	SCREEN SLOT SIZE:
					NA	NA

DEPTH (FEET)	
	FILL — 3-inch concrete surface; hand augered to 5 feet below ground surface.
	SC - CLAYEY SAND: Reddish brown, damp, fine-coarse sand, (30% clay, 20% silt, 50% sand), low plasticity.
	Some olive staining, slight MTBE odor.
5	Olive brown, (20% clay, 10% silt, 65% sand, 5% gravel), fine subrounded gravel, strong gas & MTBE odor. NM
	Reddish brown, moist, fine-coarse angular sand, (10% clay, 5% silt, 80% sand, 5% gravel), fine angular gravel, no plasticity.
10	SP - POORLY GRADED SAND w/ GRAVEL: Light brown, damp, silty sand, (5% clay, 5% silt, 70% sand, 20% gravel), fine angular gravel, no plasticity. ▽ NM
	Boring terminated at 11 feet due to refusal.
15	
20	
25	
30	
35	
40	

NOTES:

= laboratory sample

▽ = groundwater observed

NM = Not Measured

NA = Not Applicable

ppm = parts per million

LOGGED BY: JAMES LOETTERLE OF CAMBRIA ENVIRONMENTAL, INC.

PROJECT NUMBER 06-155-0303-01

FIELD LOCATION OF BORINGS/ MONITORING WELLS:	CLIENT/LOCATION:	DRILL RIG TYPE:	PLANNED USE:	BORING/WELL NO:
8 feet from dispenser island and 36 feet from Broadway curb.	Shell Oil Products US	Direct Push	NA	B-10
	DRILLING CONTRACTOR:	DRILL RIG OPERATOR:	BORING DEPTH: 11 ft	WELL/BOREHOLE SEAL:
	Gregg Drilling	Don Pearson	DIAMETER: 2 in	
	DRILL DATE & START TIME:	SAMPLING METHOD:	WELL MATERIAL:	FILTER PACK:
	8/7/2002 @ 2:09 pm	Direct Push	NA	NA

MONITORING INSTRUMENT:	WELL DEPTH:
NONE	NA
FIRST ENCOUNTERED WATER DEPTH:	DIAMETER:
8.2 ft	NA
STATIC WATER DEPTH - DATE:	SCREEN SLOT SIZE:
NA	NA

BLOWS/ 6" INTERVAL	INTERVAL/ LAB (A)	H_2O LEVEL	OVM READING	DEPTH (FEET)	
					FILL — 3-inch concrete surface; hand augered to 5 feet below ground surface.
					SC - CLAYEY SAND: Olive/gray/brown, damp, fine-medium sand, (25% clay, 20% silt, 55% sand), low plasticity, slight MTBE odor.
					Olive brown, fine-coarse sand, (20% clay, 10% silt, 65% sand, 5% gravel), fine gravel, low plasticity.
				5	Strong MTBE & gas odor.
	▓		NM		
		▽			Reddish brown, damp, fine-coarse angular sand, (10% clay, 5% silt, 80% sand, 5% gravel), fine angular gravel, no plasticity.
				10	SP - POORLY GRADED SAND w/ GRAVEL: Light brown, damp, silty sand, (5% clay, 5% silt, 70% sand, 20% gravel), fine angular gravel, no plasticity.
	▓		NM		
					Boring terminated at 11 feet due to refusal.
				15	
				20	
				25	
				30	
				35	
				40	

NOTES:

▓ = laboratory sample

▽ = groundwater observed

NM = Not Measured

NA = Not Applicable

ppm = parts per million

LOGGED BY: JAMES LOETTERLE OF CAMBRIA ENVIRONMENTAL, INC.

FIELD LOCATION OF BORINGS/ MONITORING WELLS:	CLIENT/LOCATION:	DRILL RIG TYPE:	PLANNED USE:	BORING/WELL NO:
8 feet from dispenser island and 37 feet from Broadway curb.	Shell Oil Products US	Direct Push	NA	B-11
	DRILLING CONTRACTOR:	DRILL RIG OPERATOR:	BORING DEPTH: 11 ft	WELL/BOREHOLE SEAL:
	Gregg Drilling	Don Pearson	DIAMETER: 2 in	
	DRILL DATE & START TIME:	SAMPLING METHOD:	WELL MATERIAL:	FILTER PACK:
	8/7/2002 @ 2:59 pm	Direct Push	NA	NA

					MONITORING INSTRUMENT:	WELL DEPTH:
					NONE	NA
					FIRST ENCOUNTERED WATER DEPTH:	DIAMETER:
					NM	NA
					STATIC WATER DEPTH - DATE:	SCREEN SLOT SIZE:
					NA	NA

BLOWS/ 6" INTERVAL	INTERVAL/ LAB (A)	H_2O LEVEL	OVM READING	DEPTH (FEET)	
					FILL 3-inch concrete surface; hand augered to 5 feet below ground surface.
					SC - CLAYEY SAND: Dark brown, fine-coarse subrounded sand, (30% clay, 15% silt, 50% sand, 5%), low plasticity.
				5	Olive brown, moist, fine-medium sand, (15% clay, 5% silt, 80% sand), medium plasticity, gas odor.
			NM		
					Reddish brown, damp, fine-coarse sand, (10% clay, 5% silt, 80% sand, 5% gravel), fine gravel, no plasticity.
				10	Moist
			NM		SP - POORLY GRADED SAND w/ GRAVEL: Light brown, damp, fine-coarse sand, (5% clay, 5% silt, 70% sand, 20% gravel), fine gravel, no plasticity.
					Boring terminated at 11 feet due to refusal.
				15	
				20	
				25	
				30	
				35	
				40	

NOTES:

= laboratory sample

▽ = groundwater observed

NM = Not Measured

NA = Not Applicable

ppm = parts per million

LOGGED BY: JAMES LOETTERLE OF CAMBRIA ENVIRONMENTAL, INC.

PROJECT NUMBER 06-155-0303-01

Cambria Environmental Technology, Inc.
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BORING/WELL LOG

CLIENT NAME	Shell Oil Products Company (US)	**BORING/WELL NAME**	SB-12
JOB/SITE NAME	5755 Broadway	**DRILLING STARTED**	18-Nov-05
LOCATION	Oakland, California	**DRILLING COMPLETED**	18-Nov-05
PROJECT NUMBER	247-0483-008	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Gregg Drilling	**GROUND SURFACE ELEVATION**	0 ft above msl
DRILLING METHOD	Hand auger	**TOP OF CASING ELEVATION**	Not Surveyed
BORING DIAMETER	3"	**SCREENED INTERVALS**	NA
LOGGED BY	S. Dalie	**DEPTH TO WATER (First Encountered)**	NA ▽
REVIEWED BY	A. Cool, PG	**DEPTH TO WATER (Static)**	NA ▼
REMARKS	Hand augered to 5'.		

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (fbg)	WELL DIAGRAM
							ASPHALT	0.8	
					CL		**CLAY**; Brown 10YR4/3; stiff; dry; 80% clay, 10% silt, 10% small gravel; high plasticity.	2.0	
31		SB-12-2			ML		**SILT**; Olive gray 5Y4/2; firm; dry; 5% clay, 85% silt, 10% small gravel; low to medium plasticity.	5.0	Portland Type I/II
701		SB-12-5		5	GM		**Silty GRAVEL**; Olive gray 5Y4/2; loose; damp; 20% silt, 80% medium gravel (shale fragments).	5.5	
							BEDROCK; Olive gray; hard; damp; highly fractured angular shale.	6.5	Bottom of Boring @ 6.5 fbg

WELL LOG (PID) G:\OAKLAND 5755 BROADWAY\GINT\5755.GPJ DEFAULT.GDT 12/21/05

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BORING/WELL LOG

CLIENT NAME	Shell Oil Products Company (US)	**BORING/WELL NAME**	SB-13
JOB/SITE NAME	5755 Broadway	**DRILLING STARTED**	18-Nov-05
LOCATION	Oakland, California	**DRILLING COMPLETED**	18-Nov-05
PROJECT NUMBER	247-0483-008	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Gregg Drilling	**GROUND SURFACE ELEVATION**	0 ft above msl
DRILLING METHOD	Hand auger	**TOP OF CASING ELEVATION**	Not Surveyed
BORING DIAMETER	3"	**SCREENED INTERVALS**	NA
LOGGED BY	S. Dalie	**DEPTH TO WATER (First Encountered)**	NA
REVIEWED BY	A. Cool, PG	**DEPTH TO WATER (Static)**	NA
REMARKS	Hand augered to 5'.		

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (fbg)	WELL DIAGRAM
							ASPHALT	0.8	
40		SB-13-2			ML		**SILT**; Olive gray 5Y4/2; stiff; dry; 5% clay, 90% silt, 5% very fine sand.		
							- With clay, 15% clay, 85% silt; low plasticity.	5.0	Portland Type I/II
747		SB-13-5		5	GM		**Silty GRAVEL**; Olive gray 5Y4/2; loose; damp; 35% silt, 65% medium gravel (shale fragments).	7.0	
4.5		SB-13-8					**BEDROCK**; Olive gray; hard; damp; highly fractured angular shale.	8.5	Bottom of Boring @ 8 fbg

WELL LOG (PID) G:\OAKLAND 5755 BROADWAY\GINT\5755.GPJ DEFAULT.GDT 12/21/05

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BORING/WELL LOG

CLIENT NAME	Shell Oil Products Company (US)	**BORING/WELL NAME**	SB-14
JOB/SITE NAME	5755 Broadway	**DRILLING STARTED**	18-Nov-05
LOCATION	Oakland, California	**DRILLING COMPLETED**	18-Nov-05
PROJECT NUMBER	247-0483-008	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Gregg Drilling	**GROUND SURFACE ELEVATION**	0 ft above msl
DRILLING METHOD	Hand auger	**TOP OF CASING ELEVATION**	Not Surveyed
BORING DIAMETER	3"	**SCREENED INTERVALS**	NA
LOGGED BY	S. Dalie	**DEPTH TO WATER (First Encountered)**	NA
REVIEWED BY	A. Cool, PG	**DEPTH TO WATER (Static)**	NA
REMARKS	Hand augered to 5'.		

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (fbg)	WELL DIAGRAM
							ASPHALT	0.8	Portland Type I/II
45		SB-14-2			CL		**CLAY**; Dark gray 5YR4/1; hard; dry; 80% clay, 10% silt, 10% very fine sand; high plasticity.	2.5	
450		SB-14-5		5	ML		**SILT**; Black 10YR5/1; firm; dry; 25% clay, 75% silt; low plasticity.	7.0	
8.2		SB-14-8			GM		**Silty GRAVEL**; Olive brown 2.5Y4/3; loose; damp; 25% silt, 75% medium gravel (shale fragments).	8.0	
							BEDROCK; Olive brown 2.5Y4/3; hard; dry; highly fractured angular shale.	8.5	Bottom of Boring @ 8.5 fbg

WELL LOG (PID) G:\OAKLAND 5755 BROADWAY\GINT\5755.GPJ DEFAULT.GDT 12/21/05

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BORING/WELL LOG

CLIENT NAME	Shell Oil Products US	**BORING/WELL NAME**	VP-1
JOB/SITE NAME	Shell-branded Service Station	**DRILLING STARTED**	09-Sep-13
LOCATION	5755 Broadway, Oakland, California	**DRILLING COMPLETED**	09-Sep-13
PROJECT NUMBER	240483	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Gregg Drilling	**GROUND SURFACE ELEVATION**	NA
DRILLING METHOD	Airknife	**TOP OF CASING ELEVATION**	NA
BORING DIAMETER	1"	**SCREENED INTERVAL**	3 to 3.1 fbg
LOGGED BY	C. Arganbright	**DEPTH TO WATER (First Encountered)**	NA
REVIEWED BY	P. Schaefer, PG 5612	**DEPTH TO WATER (Static)**	NA
REMARKS			

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	SOIL DESCRIPTION	CONTACT DEPTH (fbg)	WELL DIAGRAM
					ASPHAL		**ASPHALT**	0.4	
1012		VP-1-1.5			SM		**Fill: Silty SAND with Gravel (SM)**; very dark gray (7.5YR 3/1); 30% silt, 50% fine to coarse sand, 20% fine to coarse gravel; dry.	2.0	Bentonite Slurry 1/4" diam. Teflon Tubing Dry Bentonite
619		VP-1-3			ML		**Sandy SILT with Gravel (ML)**; very dark gray (7.5YR 3/1); 5% clay, 60% silt, 20% fine to coarse sand, 15% fine to coarse gravel; dry; low plasticity.	3.5	1" - Polyethylene Vapor Implant Monterey Sand #2/12 Bottom of Boring @ 3.5 ft
				5					
				10					
				15					

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BORING/WELL LOG

CLIENT NAME	Shell Oil Products US	**BORING/WELL NAME**	VP-2
JOB/SITE NAME	Shell-branded Service Station	**DRILLING STARTED**	09-Sep-13
LOCATION	5755 Broadway, Oakland, California	**DRILLING COMPLETED**	09-Sep-13
PROJECT NUMBER	240483	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Gregg Drilling	**GROUND SURFACE ELEVATION**	NA
DRILLING METHOD	Airknife	**TOP OF CASING ELEVATION**	NA
BORING DIAMETER	1"	**SCREENED INTERVAL**	3 to 3.1 fbg
LOGGED BY	C. Arganbright	**DEPTH TO WATER (First Encountered)**	NA ▽
REVIEWED BY	P. Schaefer, PG 5612	**DEPTH TO WATER (Static)**	NA ▼
REMARKS			

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	SOIL DESCRIPTION	CONTACT DEPTH (fbg)	WELL DIAGRAM
					ASPHAL		**ASPHALT**	0.4	Bentonite Slurry
					GM		**Silty GRAVEL with Sand (GM)**; dark brown (7.5YR 3/2); 25% silt, 35% medium to coarse sand, 40% fine to coarse gravel; dry.	1.0	1/4" diam. Teflon Tubing
1311		VP-2-1.5			ML		**Gravelly SILT (ML)**; dark brown (7.5YR 3/2); 60% silt, 10% fine to coarse sand, 30% fine to coarse gravel; dry; low plasticity. @2' - brown (7.5YR 4/3); 70% silt, 10% fine to medium sand, 20% fine to coarse gravel.		Dry Bentonite
50.3		VP-2-3						3.5	1" - Polyethylene Vapor Implant Monterey Sand #2/12
				5					Bottom of Boring @ 3.5 ft
				10					
				15					

WELL LOG (PID) I:\SONOMA~1.PUB\0-USERS\MDUTRA\DRAFTR~1\240483-5755-GINT.GPJ DEFAULT.GDT 11/18/13

APPENDIX C

VAPOR AND GROUNDWATER EXTRACTION MASS REMOVAL DATA TABLES

Table 3: Vapor Extraction - Mass Removal Data - Shell-branded Service Station, Incident #98995756, 5755 Broadway, Oakland, CA

Date	Well ID	Interval Hours of Operation (hours)	System Flow Rate (CFM)	Hydrocarbon Concentrations (Concentrations in ppmv) TPHg	Benzene	MTBE	TPHg Removal Rate (#/hour)	TPHg Cumulative TPHg Removed (#)	Benzene Removal Rate (#/hour)	Benzene Cumulative Benzene Removed (#)	MTBE Removal Rate (#/hour)	MTBE Cumulative MTBE Removed (#)
							TPHg		**Benzene**		**MTBE**	
02/07/01	S-2	8.00	4.3	136	2.82	8.56	0.008	0.063	0.000	0.001	0.001	0.004
05/31/01	S-2	6.00	1.0	73	7.7	56	0.001	0.068	0.000	0.002	0.001	0.009
06/13/01	S-2	6.00	7.4	360	7.2	9.0	0.036	0.282	0.001	0.006	0.001	0.014
07/20/01	S-2	4.50	5.3	<5.0	<0.050	1.9	0.000	0.283	0.000	0.006	0.000	0.015
08/21/01	S-2	6.00	1.9	1,200	11	9.7	0.030	0.466	0.000	0.007	0.000	0.016
09/14/01	S-2	6.00	5.4	500	9.2	8.0	0.036	0.682	0.001	0.011	0.001	0.020
10/24/01	S-2	6.00	13.6	4,500	60	41	0.818	5.591	0.010	0.070	0.008	0.066
05/31/01	H-1	1.80	1.2	420	1.4	5.3	0.007	0.012	0.000	0.000	0.000	0.000
06/13/01	H-1	2.00	1.8	170	0.31	10	0.004	0.020	0.000	0.000	0.000	0.001
07/20/01	H-1	3.50	NA	260	0.37	11	0.000	0.020	0.000	0.000	0.000	0.001
08/21/01	H-1	2.75	3.3	240	2.7	110	0.011	0.049	0.000	0.000	0.005	0.014
09/14/01	H-1	1.50	6.1	190	0.94	21	0.015	0.073	0.000	0.000	0.002	0.017
10/24/01	H-1	2.00	7.8	800	2.1	13	0.083	0.239	0.000	0.001	0.001	0.020
Total Pounds Removed:							**TPHg =**	**5.830**	**Benzene =**	**0.071**	**MTBE =**	**0.085**

Abbreviations and Notes:

CFM = Cubic feet per minute

TPHg = Total petroleum hydrocarbons as gasoline (C6-C12) by modified EPA Method 8015 in 1 liter tedlar bag samples

ppmv = Parts per million by volume

= Pounds

TPHG, Benzene, and MTBE analyzed by EPA Method 8015/8020 in 1 liter tedlar bag samples

TPHg / Benzene / MTBE removal rate = Rate based on Bay Area Air Quality Management District's Manual of Procedures for Soil Vapor Extraction dated July 17, 1991.
(Rate = Concentration (ppmv) x system flow rate (cfm) x (1lb-mole/386ft3) x molecular weight (86 lb/lb-mole for TPHg, 78 lb/lb-mole for benzene, 88 lb/lb-mole for MTBE) x 60 min/hour x 1/1,000,000)

Cumulative TPHg / Benzene / MTBE removal = Previous removal rate multiplied by the hour-interval of operation plus the previous total

Table 2: Groundwater Extraction - Mass Removal Data - Shell-branded Service Station, Incident #98995756, 5755 Broadway, Oakland, California

					TPPH			Benzene			MTBE		
Date Purged	Well ID	Volume Pumped (gal)	Cumulative Volume Pumped (gal)	Date Sampled	TPPH Concentration (ppb)	TPPH Removed (pounds)	TPPH Removed To Date (pounds)	Benzene Concentration (ppb)	Benzene Removed (pounds)	Benzene Removed To Date (pounds)	MTBE Concentration (ppb)	MTBE Removed (pounds)	MTBE Removed To Date (pounds)
04/21/00	S-2	30	30	02/02/00	103	0.00003	0.00003	0.825	0.00000	0.00000	**10,500**	0.00263	0.00263
05/23/00	S-2	50	80	04/26/00	4,040	0.00169	0.00171	799	0.00033	0.00033	19,000	0.00793	0.01056
07/12/00	S-2	1,007	1,087	04/26/00	4,040	0.03395	0.03566	799	0.00671	0.00705	19,000	0.15965	0.17021
08/12/00	S-2	50	1,137	07/25/00	1,120	0.00047	0.03613	195	0.00008	0.00713	**21,100**	0.00880	0.17901
09/14/00	S-2	0	1,137	07/25/00	1,120	0.00000	0.03613	195	0.00000	0.00713	**21,100**	0.00000	0.17901
10/11/00	S-2	0	1,137	07/25/00	1,120	0.00000	0.03613	195	0.00000	0.00713	**21,100**	0.00000	0.17901
10/30/00	S-2	32	1,169	07/25/00	1,120	0.00030	0.03642	195	0.00005	0.00718	**21,100**	0.00563	0.18465
11/06/00	S-2	35	1,204	07/25/00	1,120	0.00033	0.03675	195	0.00006	0.00724	**21,100**	0.00616	0.19081
11/15/00	S-2	12	1,216	11/15/00	613	0.00006	0.03681	35.6	0.00000	0.00724	**17,800**	0.00178	0.19259
02/07/01	S-2	35	1,251	11/15/00	613	0.00018	0.03699	35.6	0.00001	0.00725	**17,800**	0.00520	0.19779
05/31/01	S-2	200	1,451	02/12/01	9,010	0.01504	0.05203	1,430	0.00239	0.00964	**17,000**	0.02837	0.22616
06/13/01	S-2	200	1,651	06/07/01	31,000	0.05174	0.10376	1,000	0.00167	0.01131	**17,000**	0.02837	0.25453
07/20/01	S-2	200	1,851	06/07/01	31,000	0.05174	0.15550	1,000	0.00167	0.01298	**17,000**	0.02837	0.28290
08/21/01	S-2	100	1,951	06/07/01	31,000	0.02587	0.18137	1,000	0.00083	0.01381	**17,000**	0.01419	0.29709
09/14/01	S-2	50	2,001	06/07/01	31,000	0.01293	0.19430	1,000	0.00042	0.01423	**17,000**	0.00709	0.30418
10/24/01	S-2	100	2,101	08/31/01	50,000	0.04172	0.23602	950	0.00079	0.01502	**17,000**	0.01419	0.31836
04/21/00	Horizontal	700	700	NA	NA	0.00000	0.00000	NA	0.00000	0.00000	NA	0.00000	0.00000
05/23/00	Horizontal	2,155	2,855	05/23/00	750	0.01349	0.01349	72.8	0.00131	0.00131	**406**	0.00730	0.00730
07/12/00	Horizontal	44	2,899	05/23/00	750	0.00028	0.01376	72.8	0.00003	0.00134	**406**	0.00015	0.00745
08/12/00*	Horizontal	2,000	4,899	05/23/00	750	0.01252	0.02628	72.8	0.00121	0.00255	**406**	0.00678	0.01423
09/14/00	Horizontal	1,044	5,943	05/23/00	750	0.00653	0.03281	72.8	0.00063	0.00318	**406**	0.00354	0.01776
10/11/00	Horizontal	800	6,743	05/23/00	750	0.00501	0.03782	72.8	0.00049	0.00367	**406**	0.00271	0.02047
05/31/01	Horizontal	1,500	8,243	05/23/00	750	0.00939	0.04721	72.8	0.00091	0.00458	**406**	0.00508	0.02555
06/13/01	Horizontal	1,104	9,347	05/23/00	750	0.00691	0.05412	72.8	0.00067	0.00525	**406**	0.00374	0.02929
07/20/01	Horizontal	1,800	11,147	05/23/00	750	0.01126	0.06538	72.8	0.00109	0.00635	**406**	0.00610	0.03539
08/21/01	Horizontal	1,400	12,547	05/23/00	750	0.00876	0.07414	72.8	0.00085	0.00720	**406**	0.00474	0.04014
10/24/01	Horizontal	1,350	13,897	05/23/00	750	0.00845	0.08259	72.8	0.00082	0.00802	**406**	0.00457	0.04471
02/07/01	T-2	2,890	2,890	07/25/00	815	0.01965	0.01965	17.6	0.00042	0.00042	133	0.00321	0.00321
07/20/01	T-2	0	2,890	02/12/01	310	0.00000	0.01965	7.48	0.00000	0.00042	301	0.00000	0.00321

Table 2: Groundwater Extraction - Mass Removal Data - Shell-branded Service Station, Incident #98995756, 5755 Broadway, Oakland, California

Date Purged	Well ID	Volume Pumped (gal)	Cumulative Volume Pumped (gal)	Date Sampled	TPPH Concentration (ppb)	TPPH Removed (pounds)	TPPH Removed To Date (pounds)	Benzene Concentration (ppb)	Benzene Removed (pounds)	Benzene Removed To Date (pounds)	MTBE Concentration (ppb)	MTBE Removed (pounds)	MTBE Removed To Date (pounds)
					TPPH			**Benzene**			**MTBE**		
08/21/01	T-2	0	2,890	02/12/01	310	0.00000	0.01965	7.48	0.00000	0.00042	301	0.00000	0.00321
09/14/01	T-2	1,150	2,890	02/12/01	310	0.00297	0.02263	7.48	0.00007	0.00050	301	0.00289	0.00610
10/24/01	T-2	0	2,890	08/31/01	720	0.00000	0.02263	30	0.00000	0.00050	**540**	0.00000	0.00610
Total Gallons Extracted:			**20,038**		**Total Pounds Removed:**		**0.34124**			**0.02353**			**0.36917**
					Total Gallons Removed:		**0.05594**			**0.00322**			**0.05954**

Abbreviations & Notes:

TPPH = Total purgeable hydrocarbons as gasoline
MtBE = Methyl tert-butyl ether
ppb = Parts per billion
gal = Gallon
* = Purge volume estimated
Mass removed based on the formula: volume extracted (gal) x Concentration (µg/L) x (g/10^6µg) x (pound/453.6g) x (3.785 L/gal)
Volume removal data based on the formula: density (in gms/cc) x 9.339 (ccxlbs/gmsxgals)
TPPH, benzene analyzed by EPA Method 8015/8020
MTBE analyzed by EPA Method 8260 in bold font, all other MTBE analyzed by EPA Method 8020
Concentrations based on most recent groundwater monitoring results
Groundwater extracted by vacuum trucks provided by ACTI. Water disposed of at a Martinez Refinery.

Table 1. Groundwater Extraction System Mass Removal Data, Shell-branded Service Station, Incident #98995756, 5755 Broadway, California

Date Baker Tank Purged	Period Volume (gal)	Cumulative Volume Pumped (gal)	Estimated System Flow Rate (gpm)	Sample Date	TPHg Concentration (ppb)	TPHg Removed (pounds)	Cumulative TPHg Removed (pounds)	Benzene Concentration (ppb)	Benzene Removed (pounds)	Cumulative Benzene Removed (pounds)	MTBE Concentration (ppb)	MTBE Removed (pounds)	Cumulative MTBE Removed (pounds)
Water Removed by Temporary GWE System. [1]													
10/28/03	0	0	0.00	08/27/03	31,000	0.000	0.000	630	0.000	0.000	15,000	0.000	0.000
11/25/03	2,701	2,701	0.07	11/25/03	8,400	0.189	0.189	<50	0.001	0.001	4,500	0.101	0.101
12/19/03	963	3,664	0.03	12/19/03	<5,000	0.020	0.209	<50	0.000	0.001	2,600	0.021	0.122
Not Purged	0	3,664	NM	01/08/04	<2,500	0.000	0.209	180	0.000	0.001	3,000	0.000	0.122
Not Purged	0	3,664	NM	02/03/04	<2,500	0.000	0.209	80	0.000	0.001	3,200	0.000	0.122
02/04/04	3,727	7,391	0.06	02/03/04	<2,500	0.039	0.248	80	0.002	0.003	3,200	0.100	0.222
Not Purged	0	7,391	NM	02/10/04	<2,500	0.000	0.248	130	0.000	0.003	3,800	0.000	0.222
Not Purged	0	7,391	NM	04/13/04	4,400	0.000	0.248	520	0.000	0.003	6,500	0.000	0.222
04/14/04	3,693	11,084	0.04	04/13/04	4,400	0.136	0.384	520	0.016	0.019	6,500	0.200	0.422
Not Purged	0	11,084	NM	05/14/04	<2,500	0.000	0.384	38	0.000	0.019	2,900	0.000	0.422
Not Purged	0	11,084	NM	06/08/04	<2,500	0.000	0.384	82	0.000	0.019	2,400	0.000	0.422
Not Purged	0	11,084	NM	07/06/04	<1,000	0.000	0.384	110	0.000	0.019	1,500	0.000	0.422
Not Purged	0	11,084	NM	08/04/04	1,200	0.000	0.384	82	0.000	0.019	1,400	0.000	0.422
08/07/04	3,983	15,067	0.02	08/04/04	1,200	0.040	0.424	82	0.003	0.022	1,400	0.047	0.469
Not Purged	0	15,067	NM	09/03/04	<1,000	0.000	0.424	25	0.000	0.022	1,200	0.000	0.469
Not Purged	0	15,067	NM	10/07/04	7,200	0.000	0.424	170	0.000	0.022	940	0.000	0.469
11/10/04	3,288	18,355	0.02	11/10/04	4,400	0.121	0.544	71	0.002	0.024	880	0.024	0.493
Not Purged	0	18,355	NM	10/27/05	3,200	0.000	0.544	62	0.000	0.024	500	0.000	0.493
Not Purged	0	18,355	NM	11/08/05	2,600	0.000	0.544	26	0.000	0.024	340	0.000	0.493
Not Purged	0	18,355	NM	12/15/05	4,600	0.000	0.544	410	0.000	0.024	920	0.000	0.493
01/14/06	5,066	23,421	0.01	01/16/06	2,000	0.085	0.629	110	0.005	0.029	1,000	0.042	0.535
Not Purged	0	23,421	NM	02/13/06	2,400	0.000	0.629	180	0.000	0.029	730	0.000	0.535
03/10/06	4,781	28,202	0.06	03/06/06	3,500	0.140	0.769	290	0.012	0.040	1,500	0.060	0.595
Not Purged	0	28,202	NM	04/03/06	2,100	0.000	0.769	78	0.000	0.040	580	0.000	0.595
05/12/06	3,841	32,043	0.04	05/01/06	3,400	0.109	0.878	190	0.006	0.046	660	0.021	0.616
Not Purged	0	32,043	NM	06/15/06	2,600	0.000	0.878	82	0.000	0.046	710	0.000	0.616
Water removed during 2004-2005 Fuel System Upgrade Project. [2]													
11/17/04 - 2/14/05	154,430	154,430	1.20	08/12/04	450	0.580	0.580	<0.50	0.000	0.000	33	0.043	0.043
3/2/05 - 4/19/05	111,646	266,076	1.62	08/12/04	450	0.419	0.999	<0.50	0.000	0.001	33	0.031	0.073

Table 1. Groundwater Extraction System Mass Removal Data, Shell-branded Service Station, Incident #98995756, 5755 Broadway, California

5/31/05 - 6/1/05	25,001	291,077	17.36	08/12/04	450	0.094	1.093	<0.50	0.000	0.001	33	0.007	0.080
Total Gallons Extracted:	**323,120**				**Total Pounds Removed:**	**1.97**				**0.047**			**0.696**
Average GWE System Flow Rate:	**0.04**				**Total Gallons Removed:**	**0.323**				**0.006**			**0.113**

Abbreviations & Notes:

TPHg = Total purgeable hydrocarbons as gasoline

MTBE = Methyl tertiary butyl ether

ppb = Parts per billion, equivalent to µg/L

Not Purged = The baker tank is emptied as needed when full. Volume is measured based on periodic baker tank pumpouts. Tank is not pumped during every sampling event.

NM = If baker tank is not emptied, no new period volume is calculated. Therefore, period flow rate is not calculated for every sampling event.

µg = Micrograms

L = Liter

gal = Gallon

g = Gram

TPHg and benzene analyzed by EPA Method 8015/8020 or equivalent.

MTBE analyzed by EPA Method 8260.

As of February 1, 2006, gasoline range organics reported as TPHg include methyl tertiary-butyl ether, tertiary-butyl alcohol, and di-isopropyl ether concentrations. TPHg concentrations reported prior to February 1, 2006 may not include one or more of these constituents.

When constituents are not detected, the concentration is assumed to be equal to half the detection limit in subsequent calculations.

Mass removed (pounds) based on the formula: volume(gal) x concentration(µg/L) x ($g/10^6$µg) x (pound/453.6g) x (3.785 L/gal)

Volume removed (gallons) based on the formula: [mass(pounds) x 453.6(g/pound) x (gal/3.785L) x ($L/1000cm^3$)] / density(g/cm^3)

Density inputs: TPHg = 0.73 g/cm^3, benzene = 0.88 g/cm^3, MTBE = 0.74 g/cm^3

1. Groundwater is extracted from well S-2 using a submersible groundater pump, and contained in a 6,500 gallon baker tank. The baker tank is periodically emptied using vacuum trucks provided by Onyx Industrial. The water is disposed of at Shell's Martinez facility. Concentrations based on most recent groundwater monitoring results for well S-2.

2. Groundwater was removed from former tank backfill well and/or open tank pit excavation, as part of dewatering operations to facilitate fuel system upgrades. At times, one or more baker tanks were used to temporarily store groundwater, before transport to Shell's Martinez refinery using vacuum trucks. Concentrations based on last sample collected from backfill well T-2.