

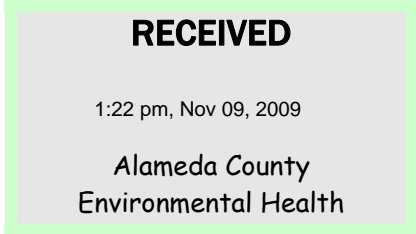


**CONESTOGA-ROVERS
& ASSOCIATES**

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TRANSMITTAL

DATE: October 29, 2009 REFERENCE NO.: 240735
PROJECT NAME: 9750 Golf Links Road, Oakland
TO: Jerry Wickham
Alameda County Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577



Please find enclosed: Draft Final
 Originals Other
 Prints

Sent via: Mail Same Day Courier
 Overnight Courier Other GeoTracker and Alameda County FTP


QUANTITY	DESCRIPTION
1	Closure Request

As Requested For Review and Comment
 For Your Use

COMMENTS:

If you have any questions regarding the contents of this document, please call Peter Schaefer at (510) 420-3319.

Copy to: Denis Brown, Shell Oil Products US, 20945 S. Wilmington Avenue, Carson, CA 90810
SF Data Room (*electronic copy*)

Completed by: Peter Schaefer Signed: 

Filing: Correspondence File



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

Denis L. Brown
Shell Oil Products US
HSE - Environmental Services
20945 S. Wilmington Ave.
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Tel (707) 865 0251
Fax (707) 865 2542
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Re: Shell-branded Service Station
9750 Golf Links Road
Oakland, California
SAP Code 135683
Incident No. 98995744
ACEH Case No. RO0002441

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.

If you have any questions or concerns, please call me at (707) 865-0251.

Sincerely,

A handwritten signature in black ink that reads "Denis L. Brown". The signature is written in a cursive style with a long horizontal flourish extending to the right.

Denis L. Brown
Project Manager



CLOSURE REQUEST

**SHELL-BRANDED SERVICE STATION
9750 GOLF LINKS ROAD
OAKLAND, CALIFORNIA**

**SAP CODE 135683
INCIDENT NO. 98995744
AGENCY NO. RO0002441**

**OCTOBER 29, 2009
REF. NO. 240735 (5)**

This report is printed on recycled paper.

**Prepared by:
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1.0 INTRODUCTION

Conestoga-Rovers & Associates (CRA) prepared this report on behalf of Equilon Enterprises LLC dba Shell Oil Products US to request closure of this case.

The subject site is an active Shell-branded service station located on the northwest corner of the Golf Links Road and Mountain Boulevard intersection in a mixed commercial and residential area of Oakland, California (Figure 1). The site layout (Figure 2) includes one station building with three automobile service bays, two dispenser islands, and three underground storage tanks (USTs).

A summary of previous work performed at the site is contained in Appendix A. Historical soil analytical data are presented in Tables 1 and 2 and historical grab groundwater data are presented in Table 3. Historical groundwater monitoring well analytical data are presented in Appendix B.

2.0 LOW-RISK CLOSURE CRITERIA

CRA believes that the site conditions meet the low-risk groundwater case criteria outlined in the San Francisco Bay Regional Water Quality Control Board's (RWQCB's) January 5, 1996 *Regional Board Supplemental Instructions to State Water Board December 8, 1995, Interim Guidance on Required Cleanup at Low-Risk Fuel Sites*. These criteria are addressed below.

Note that 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, it is unlikely that the first water-bearing zone would be used as a source of drinking water in the foreseeable future. Thus, RWQCB¹ drinking water environmental screening levels (ESLs) do not apply at this site.

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]*

2.1 THE LEAK HAS BEEN STOPPED AND ONGOING SOURCES HAVE BEEN REMOVED OR REMEDIATED

No active leak has been identified. A waste oil tank was removed in 1995, facility upgrades and dispenser modifications were completed in February of 1998 and April of 2004. During the waste oil UST removal, approximately 20 tons of over-excavated soil was generated for disposal and during the 2004 upgrades approximately 41 tons of soil was generated for disposal. As of January 1, 2003, methyl tertiary-butyl ether (MTBE) was no longer included in the formulation of Shell gasoline. Hydrocarbon, MTBE, and tertiary-butyl alcohol (TBA) concentrations in groundwater have decreased significantly, in some cases are not detected, and are adequately defined, indicating that there is no on going source.

2.2 THE SITE HAS BEEN ADEQUATELY CHARACTERIZED

The four groundwater monitoring wells (S-1, S-2, S-4, and S-5) are adequate to monitor groundwater conditions on site.

Data from monitoring wells S-2, S-4, and S-5 adequately define shallow groundwater impacts to below non-drinking water ESLs (Figure 2 and Appendix B). Analysis of one deeper grab groundwater sample (SB-3W), collected at 20 feet below grade (fbg) in 1999 on the down-gradient edge of the site, did not detect total petroleum hydrocarbons as gasoline (TPHg), benzene, toluene, ethylbenzene, or xylenes (BTEX), however MTBE was detected at 5,250 micrograms per liter ($\mu\text{g}/\text{l}$; Table 3). Based on this result, TPHg and BTEX are limited to shallow groundwater. Initial groundwater monitoring well sample analyses in March 2005 detected up to 2,800 $\mu\text{g}/\text{l}$ MTBE (S-5), but current MTBE concentrations in shallow groundwater are over two orders of magnitude lower. This trend indicates that the source of MTBE has been eliminated. Removal of the source and decreasing trends in on-site wells indicate that it is unlikely that deeper groundwater is currently impacted at concentrations above non-drinking water ESLs.

Analyses of vadose zone soil samples have shown that all petroleum hydrocarbon and MTBE detections are below non-drinking water ESLs for shallow soils with the exception of TPHg and xylenes. Vadose zone samples D-4 at 2 fbg, D-4 at 4 fbg, and WO-1 at 7 fbg are not considered because these areas were over-excavated and do not represent residual soil conditions. Three vadose zone soil sample analyses from the area of the northern dispenser island (D-3-4.5, P-1-5, P-2-5 collected in 2004) showed detections of TPHg above the ESLs for shallow soils. It should be noted that the ESL document states that "TPH ESLs must be used in conjunction with ESLs for related

chemicals", in this case BTEX, MTBE, and TBA. Only xylenes were detected above the ESL in one sample from the area of the northern dispenser island (160 mg/kg in P-1-5 collected in 2004). Since constituent of concern (COC) detections above ESLs are limited to the area of the northern dispenser island, vadose zone soil impacts are adequately defined.

2.2.1 POTENTIAL PREFERENTIAL PATHWAYS

Cambria Environmental Technology, Inc.'s (Cambria's) September 13, 2005 *Agency Response and Revised Site Investigation Report* provided current and former locations of potential preferential pathways for groundwater migration and concluded that, since the pathways were cross gradient to the south and southwest of site and wells S-2 and S-4 adequately defined the extent of COCs in groundwater in those directions, there was no indication that the potential preferential pathways would cause the COCs on site to impact Arroyo Viejo Creek, the nearest potential sensitive receptor.

2.3 THE DISSOLVED HYDROCARBON PLUME IS NOT MIGRATING

COCs are not detected above non-drinking water ESLs in wells S-2, S-4, and S-5 which are located along the site boundaries. In recent sampling events, COCs were not detected in S-2 and S-4, and long term trends show COCs are decreasing in S-1 and S-5. Collection of additional data down gradient of well S-5 is not practical due to the on-ramp and roadway of the MacArthur Freeway (I-580) west of the site, and decreasing COC concentrations in wells S-1 and S-5 indicate that the plume is shrinking.

2.4 MINIMAL GROUNDWATER IMPACT CURRENTLY EXISTS, FEW CONTAMINANTS ARE FOUND AT LEVELS ABOVE ESTABLISHED MCLS OR OTHER APPLICABLE WATER-QUALITY OBJECTIVES

As stated above, drinking water ESLs do not apply at this site. Maximum groundwater concentrations from samples collected during the second quarter of 2009 are compared with non-drinking water ESLs in the following table.

TABLE A		
COCs	Current Maximum Concentrations in Site Groundwater [5/09] Units in $\mu\text{g/l}$	ESLs Where Groundwater is not a source of drinking water (Table B) Units in $\mu\text{g/l}$
TPHg	570	210
Benzene	1.1	46
Toluene	<1.0	130
Ethylbenzene	<1.0	43
Xylenes	<1.0	100
MTBE	17	1,800
TBA	200	18,000

During the second quarter of 2009 all groundwater detections were below non-drinking water ESLs with the exception of TPHg in S-1. As stated above, the ESL document states that "TPH ESLs must be used in conjunction with ESLs for related chemicals", in this case BTEX, MTBE, and TBA. Figure 2 shows that the minimal impacts remaining in S-1 are limited and adequately defined in the down-gradient direction. As shown in Figure 3, TPHg and benzene in well S-5 are declining. Figures 4 and 5 show downward trends for MTBE and TBA in wells S-1 and S-5. Current groundwater concentrations of BTEX, MTBE, and TBA are below non-drinking water ESLs and, based on long-term trends, are all projected to reach drinking water ESLs by 2012, a reasonable time frame.

2.5 NO WATER WELLS, DEEPER DRINKING WATER AQUIFERS, SURFACE WATER, OR OTHER SENSITIVE RECEPTORS ARE LIKELY TO BE IMPACTED

Cambria's June 7, 2000 *Subsurface Investigation Report* presented a sensitive receptor survey. California Department of Water Resources files indicated that no public or non-public water systems were located within ¼-mile of the site, so it is unlikely that chemicals originating from the site could impact off-site wells.

As stated above, Arroyo Viejo Creek is located to the south-southwest and cross gradient of the site (Figure 2). No COCs were detected in wells S-2 and S-4 during the first and second quarter 2009 groundwater sampling events, so it is unlikely that COCs originating from the site could impact the creek. Current concentrations of COCs in wells S-2 and S-4 are compared with freshwater surface water ESLs in the following table.

TABLE B		
	<i>Current Maximum Concentrations in Boundary Wells S-2 and S-4</i>	<i>ESLs for Freshwater Surface Water Bodies (Table F)</i>
<i>COCs</i>	<i>Units in µg/l</i>	<i>Units in µg/l</i>
TPHg	<50	100
Benzene	<0.50	46
Toluene	<1.0	40
Ethylbenzene	<1.0	30
Xylenes	<1.0	20
MTBE	<1.0	5.0
TBA	<10	12

Current data from S-2 and S-4 indicate that it is unlikely that Arroyo Viejo Creek would be significantly impacted by COCs from the site.

**2.6 THE SITE PRESENTS NO SIGNIFICANT
RISK TO HUMAN HEALTH OR THE ENVIRONMENT**

No formal risk assessment has been performed for the site. A discussion of potential risks associated with COCs in groundwater, soil vapor, and soil is presented below.

2.6.1 GROUNDWATER

All groundwater concentrations are below the ESLs where groundwater is not a current or potential drinking water source with the exception of TPHg in S-1. As stated above, the ESL document states that "TPH ESLs must be used in conjunction with ESLs for related chemicals", in this case BTEX, MTBE, and TBA, which are all below non-drinking water ESLs.

All groundwater concentrations are below freshwater surface water ESLs with the exception of TPHg, MTBE, and TBA in on-site wells S-1 and S-5. Wells S-2 and S-4, which are located at the site boundary nearest the creek provide adequate definition to concentrations below the freshwater surface water ESLs in the direction of Arroyo Viejo Creek (Table B, above).

2.6.2 SOIL VAPOR

Risk of soil vapor intrusion due to impacted groundwater can be conservatively evaluated by multiplying groundwater concentrations by a partitioning coefficient (Henry's Constant - dimensionless) and comparing the results with relevant ESLs. The resulting estimate is conservative because it does not consider physical or biological attenuation of soil vapor between groundwater and a receptor, and the coefficient is based on thoroughly mixed testing samples that have been allowed to reach equilibrium, which does not occur in the subsurface. As shown in the following table, current groundwater concentrations do not present a risk for soil vapor intrusion.

TABLE C				
<i>Constituents of Concern</i>	<i>Current Groundwater Maximum Concentrations Units in µg/l</i>	<i>Henry's Constant (dimensionless)</i>	<i>Calculated Soil Vapor Concentration Units in µg/m³ (µg/l x 1000)</i>	<i>Soil Vapor Intrusion ESL (Commercial land use: Table E-2) Units in µg/m³</i>
Benzene	1.1 (S-5)	0.25	275	280
MTBE	17 (S-1)	0.31	527	31,000

Vapor migration from vadose zone soils is a potential impact to on-site workers and potential future occupants of the site. Since the air-exchange from customers entering and exiting the station building during all business hours would not allow for significant buildup of vapors from subsurface migration, inhalation risk from vapor intrusion is considered to be low. It is anticipated that the site will remain a service station for the foreseeable future.

2.6.3 SOIL

As shown in the following table only TPHg and xylenes exceeded the commercial land use ESL for shallow soils. As stated above, the ESL guidance "TPH ESLs must be used in conjunction with ESLs for related chemicals", in this case BTEX, MTBE, and TBA. Vadose zone samples D-4 at 2 fbg, D-4 at 4 fbg, and WO-1 at 7 fbg are not considered because these areas were subsequently over-excavated and do not represent residual soil concentrations.

TABLE D		
COCs	Vadose Zone Soil Sample Maximum Concentrations Units in mg/kg	ESLs for Shallow Soils Where Groundwater is Not a Source of Drinking Water, Commercial Land Use (Table B) Units in mg/kg
TPHg	3,200 (P-1-5)	180
Benzene	ND (All)	0.27
Toluene	1.1 (P-1-5)	9.3
Ethylbenzene	0.97 (P-2-5)	4.7
Xylenes	160 (P-1-5)	11
MTBE	0.060 (D-1-4.0)	8.4
TBA	ND (All)	110

Only one of the 19 vadose zone soil samples collected at the site exceeded the ESL for sites with commercial land use for xylenes. The maximum concentration in the other 18 samples was 1.8 mg/kg. Vadose zone soil impacted at levels above the ESLs is limited to the area of the northern pump island. The site is paved, so the only direct exposures would likely occur during construction at the station. Any worker doing trenching or excavating at a current or former gasoline station would be properly trained, prepared for encountering potentially-impacted soil, and would wear personal protective equipment, as necessary. Therefore, the residual impacted soils do not appear to pose a significant threat to construction workers that may occasionally come in contact with the potentially-impacted soils on site, and any work at this site would require contractors to have appropriate health and safety training to perform the work.

3.0 CLOSURE REQUEST

The site is likely to remain in use as a gasoline station for the foreseeable future. Given the concentrations of contaminants in site soil and groundwater compared to the ESLs presented above, and given the decreasing concentration trends, CRA concludes that the residual petroleum and fuel oxygenate impacts at this site pose very little or no risk to human health or the environment.

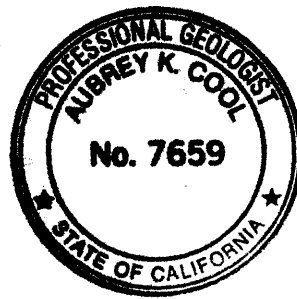
This site meets the RWQCB criteria for a low-risk fuel site and groundwater data indicate the plume is shrinking and COC concentrations will reach ESLs in a reasonable

time frame. Therefore, on behalf of Shell, we respectfully request closure of this case. CRA requests that Alameda County Environmental Health suspend the groundwater monitoring program during the closure review.

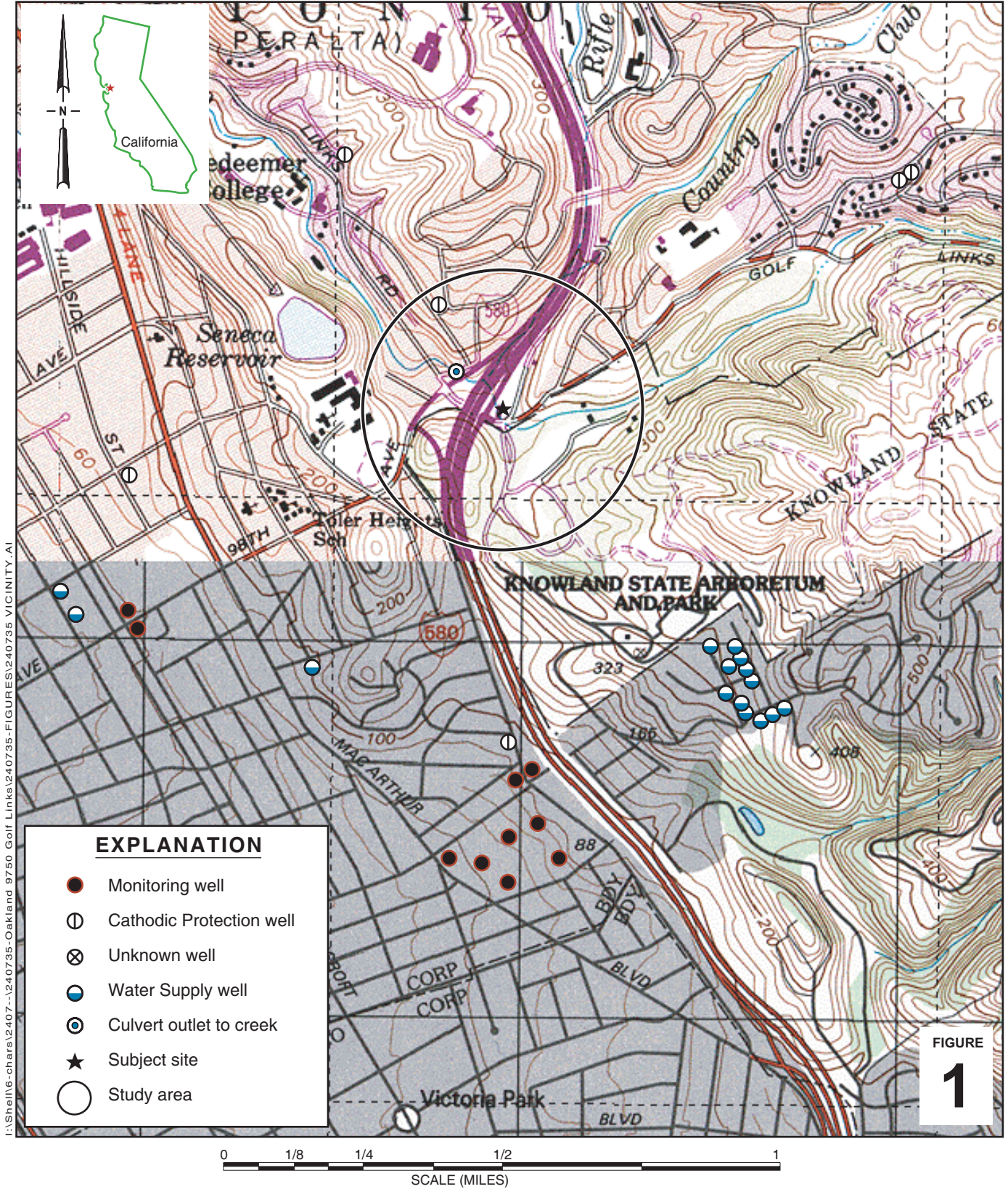
All of Which is Respectfully Submitted,
CONESTOGA-ROVERS & ASSOCIATES

Peter Schaefer
Peter Schaefer, CHG, CEG

Aubrey K. Cool
Aubrey K. Cool, PG



FIGURES



I:\Shell\6-chars\2407--\240735-Oakland 9750 Golf Links\240735-FIGURES\240735 VICINITY.A1

Shell-branded Service Station

9750 Golf Links Road
Oakland, California



**CONESTOGA-ROVERS
& ASSOCIATES**

Vicinity Map



EXPLANATION

- S-1 ● Monitoring well location
- S-3 ⊗ Attempted monitoring well location
- SB-1 ⊙ Soil boring location (1999)
- SB-1 ⊕ Soil boring location (1998)
- B-1 ⊙ Soil boring location (1995)
- D-1 ⊠ Soil sample location (2004)
- D4 ● Soil sample location (1998)
- ESW ⊠ Soil sample location (1995)

- STM --- Storm drain line (STM)
- Former storm drain line
- SAN --- Sanitary sewer line (SAN)
- E --- Electrical line (E)
- W --- Water line (W)
- ▶ Flow direction
- fbg Feet below grade
- x.xx Groundwater flow direction and gradient
- xx.xx Groundwater elevation contour, in feet above mean sea level (msl)

Well	Well designation
ELEV	Groundwater elevation, in feet above msl
Benzene	Benzene and MTBE concentrations are in micrograms per liter
MTBE	

Notes:
ND = Not detected

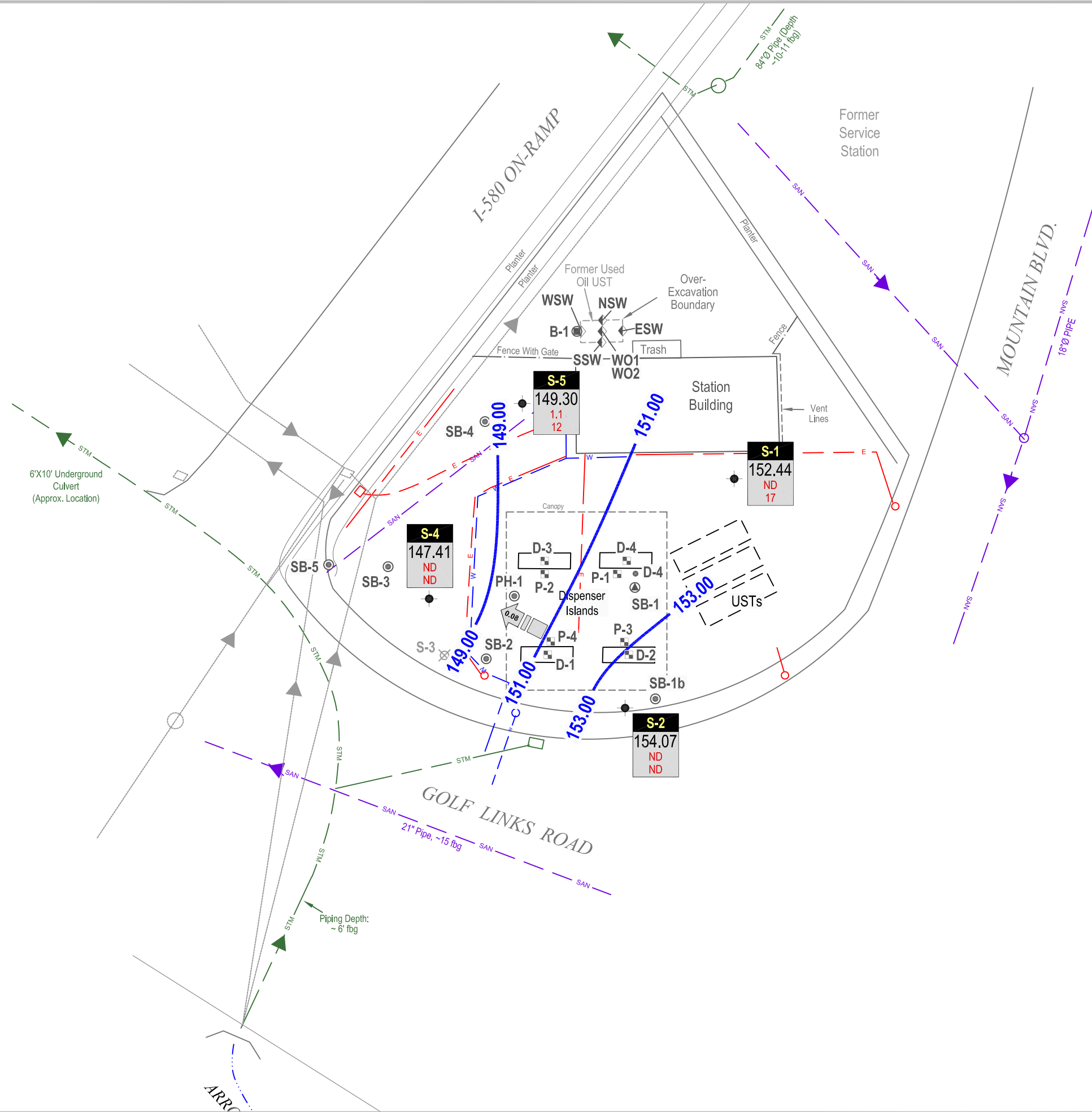
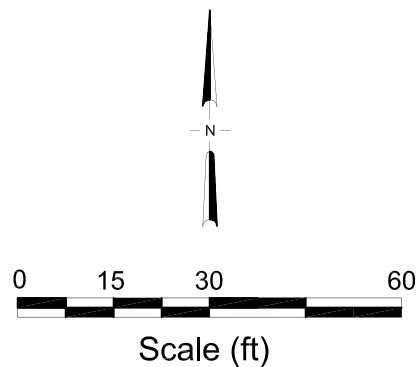


FIGURE
2



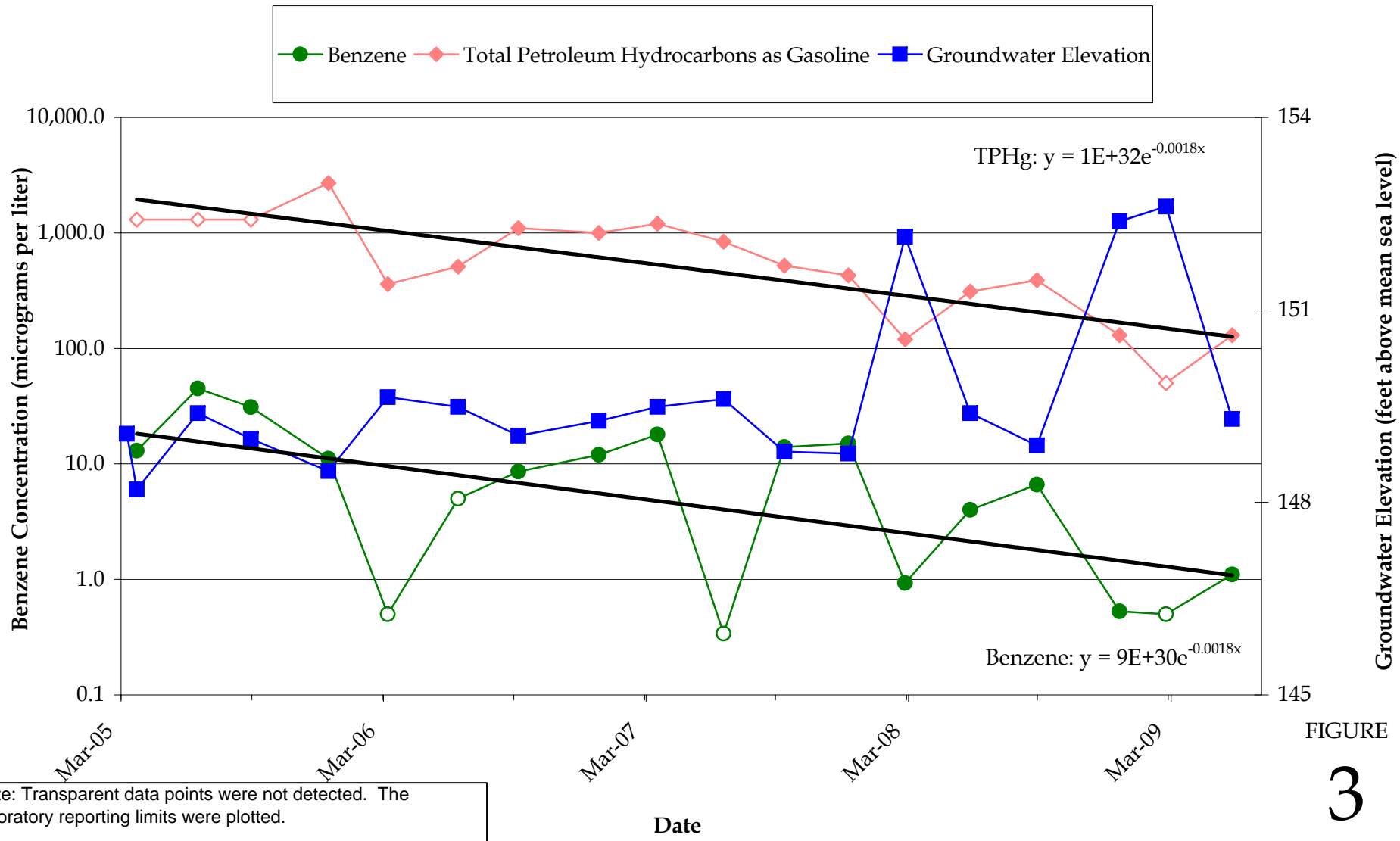


FIGURE
3

Shell-branded Service Station
9750 Golf Links Road
Oakland, California



S-5: TPHg and Benzene
Concentrations and
Groundwater Elevation versus
Time

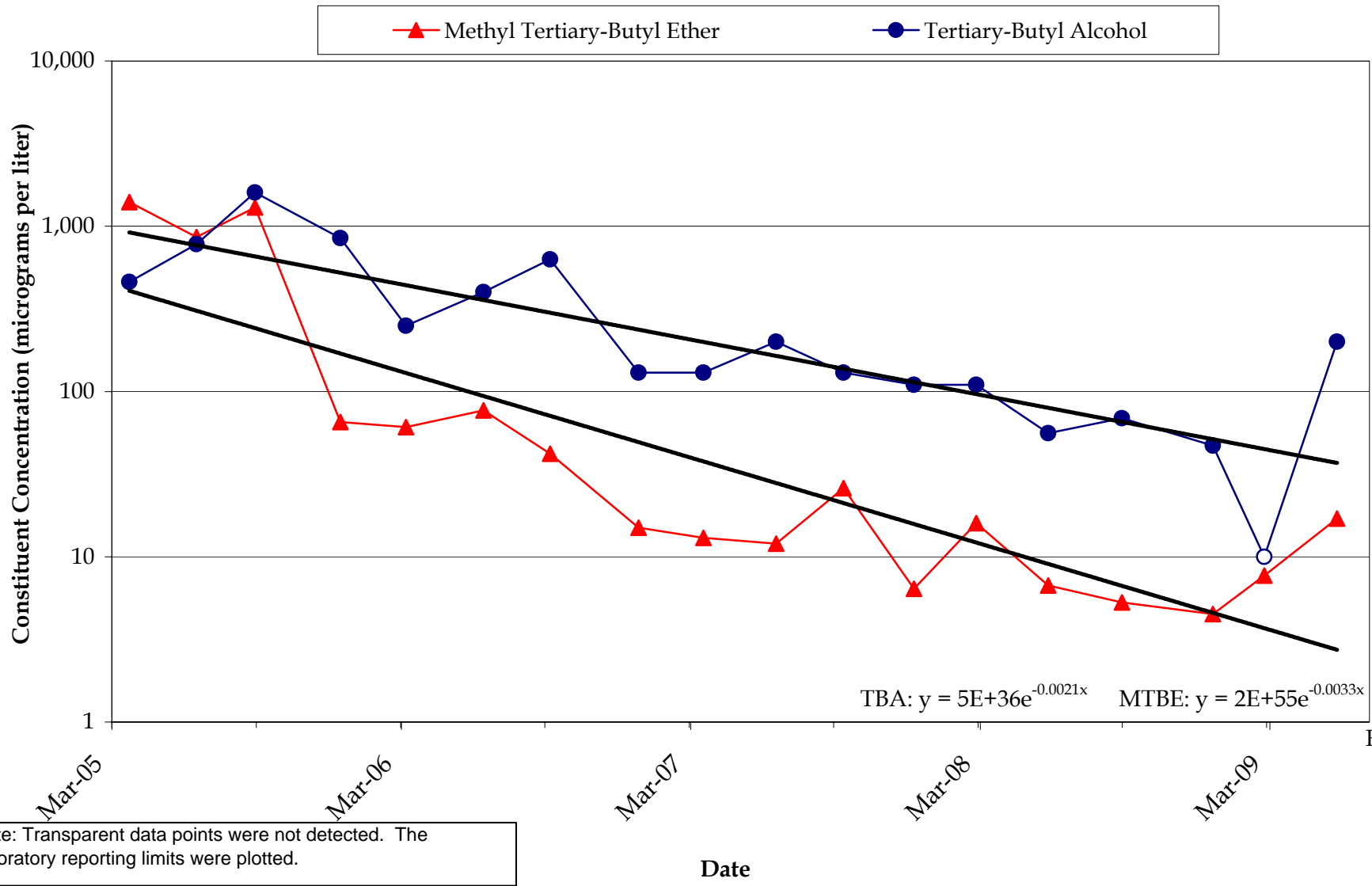


FIGURE
4

Shell-branded Service Station
 9750 Golf Links Road
 Oakland, California



S-1: MTBE and TBA
 Concentrations versus Time

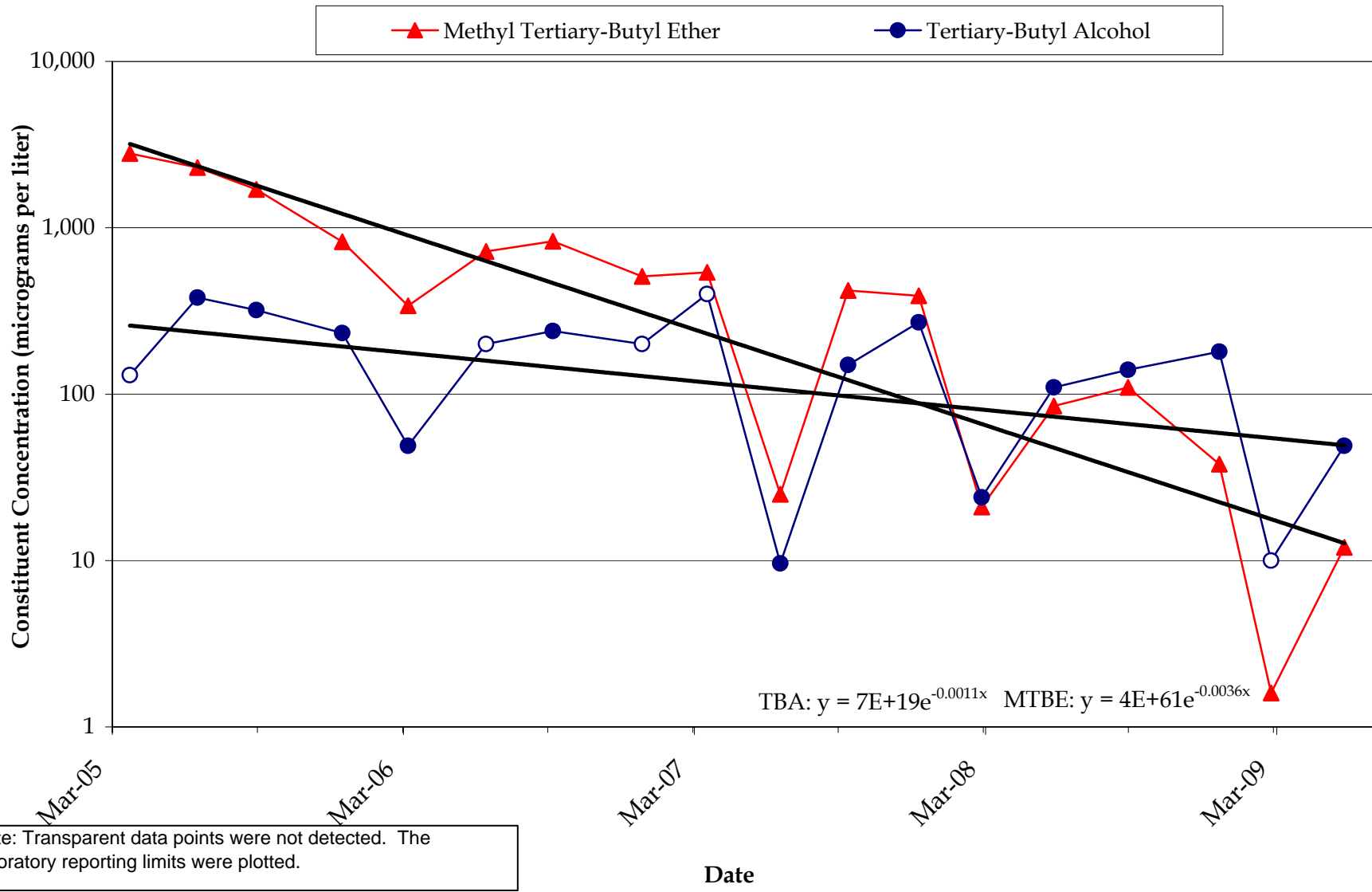


FIGURE
5

Shell-branded Service Station
9750 Golf Links Road
Oakland, California



S-5: MTBE and TBA
Concentrations versus Time

TABLES

TABLE 1

**HISTORICAL SOIL ANALYTICAL DATA FOR TPHG, BTEX, FUEL OXYGENATES, AND TOG
SHELL-BRANDED SERVICE STATION
9750 GOLF LINKS ROAD, OAKLAND, CALIFORNIA**

Sample ID	Date	Depth (fbg)	TPHg	TPHd	Benzene	Toluene	Ethyl- benzene	Total Xylenes	MTBE	TBA	DIPE	ETBE	TAME	TOG
WO1	3/8/1995	7	190	3,900	<0.25	0.13	1.0	2.2	NA	NA	NA	NA	NA	12/000
WO2	3/8/1995	11	<1.0	<1.0	<0.005	0.072	<0.005	<0.005	NA	NA	NA	NA	NA	62
NSW	3/8/1995	7.5	<1.0	<1.0	<0.005	0.10	<0.005	<0.005	NA	NA	NA	NA	NA	<50
SSW	3/8/1995	7	<1.0	<1.0	<0.005	0.19	<0.005	<0.005	NA	NA	NA	NA	NA	<50
ESW	3/8/1995	7	<1.0	<1.0	<0.005	0.18	<0.005	<0.005	NA	NA	NA	NA	NA	<50
WSW	3/8/1995	7.8	<1.0	<1.0	<0.005	0.083	<0.005	<0.005	NA	NA	NA	NA	NA	<50
B1-5.5	12/15/1995	5.5	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	NA	NA	NA	NA	NA	<50
B1-15.5	12/15/1995	15.5	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	NA	NA	NA	NA	NA	<50
B1-20.5	12/15/1995	20.5	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	NA	NA	NA	NA	NA	<50
B1-30.5	12/15/1995	30.5	<1.0	2.8	<0.005	<0.005	<0.005	<0.005	NA	NA	NA	NA	NA	<50
B1-35.5	12/15/1995	35.5	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	NA	NA	NA	NA	NA	<50
B1-40.5	12/15/1995	40.5	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	NA	NA	NA	NA	NA	56
B1-45.5	12/15/1995	45.5	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	NA	NA	NA	NA	NA	<50
D-4	2/4/1998	2	1,000	NA	1.2	230	68	600	65	NA	NA	NA	NA	NA
D-4	2/4/1998	4	7,800	NA	37	440	130	1,000	140	NA	NA	NA	NA	NA
SB-1-9.0'	7/6/1998	9	1,100	NA	6.1	40	143	98	91/23 ^a	NA	NA	NA	NA	NA
SB-1-11.5'	7/6/1998	11.5	3.5	NA	0.019	0.34	0.076	0.55	0.79	NA	NA	NA	NA	NA
SB-1-13.0'	7/6/1998	13	14,000	NA	100	530	190	1,200	66	NA	NA	NA	NA	NA
SB-1-16.0'	7/31/1998	16	1.1	NA	<0.0050	0.029	0.013	0.091	1.4	NA	NA	NA	NA	NA
SB-1-21.0'	7/31/1998	21	<1.0	NA	<0.0050	<0.0050	<0.0050	<0.0050	0.03	NA	NA	NA	NA	NA
SB-1-26.0'	7/31/1998	26	5.6	NA	0.035	0.25	0.062	0.28	0.16	NA	NA	NA	NA	NA

TABLE 1

HISTORICAL SOIL ANALYTICAL DATA FOR TPHG, BTEX, FUEL OXYGENATES, AND TOG
SHELL-BRANDED SERVICE STATION
9750 GOLF LINKS ROAD, OAKLAND, CALIFORNIA

Sample ID	Date	Depth (fbg)	TPHg	TPHd	Benzene	Toluene	Ethyl- benzene	Total Xylenes	MTBE	TBA	DIPE	ETBE	TAME	TOG
SB-1b-6.0-6.5	8/25/1999	6	<1.0	NA	<0.005	<0.005	<0.005	<0.005	<0.05	NA	NA	NA	NA	NA
SB-1b-11.0-11.5	8/25/1999	11	<1.0	NA	<0.005	<0.005	<0.005	<0.005	<0.05	NA	NA	NA	NA	NA
SB-1b-16.0-16.5	8/25/1999	16	<1.0	NA	<0.005	<0.005	<0.005	<0.005	<0.05	NA	NA	NA	NA	NA
SB-1b-20.0-21.0	8/25/1999	20	<1.0	NA	<0.005	<0.005	<0.005	<0.005	<0.05	NA	NA	NA	NA	NA
SB-1b-25.5-26.0	8/25/1999	25.5	<1.0	NA	<0.005	<0.005	<0.005	<0.005	<0.05	NA	NA	NA	NA	NA
SB-2-5.5-6.0	8/25/1999	5.5	<1.0	NA	<0.005	<0.005	<0.005	<0.005	<0.05	NA	NA	NA	NA	NA
SB-2-10.5-11.0	8/25/1999	10.5	243	NA	<0.100	0.248	0.664	1.08	<1.00	NA	NA	NA	NA	NA
SB-3-6.0-6.5	8/25/1999	6	<1.0	NA	<0.005	<0.005	<0.005	<0.005	<0.05	NA	NA	NA	NA	NA
SB-3-11.0-11.5	8/25/1999	11	<1.0	NA	<0.005	<0.005	<0.005	<0.005	<0.05	NA	NA	NA	NA	NA
SB-3-16.0-16.5	8/25/1999	16	<1.0	NA	<0.005	<0.005	<0.005	<0.005	0.449	NA	NA	NA	NA	NA
SB-3-20-21.5	8/25/1999	20	<1.0	NA	<0.005	<0.005	<0.005	<0.005	0.380	NA	NA	NA	NA	NA
SB-3-21.0-21.5	8/25/1999	21	<1.0	NA	<0.005	<0.005	<0.005	<0.005	0.418	NA	NA	NA	NA	NA
SB-3-24-24.5	8/25/1999	24	<1.0	NA	<0.005	<0.005	<0.005	<0.005	0.257	NA	NA	NA	NA	NA
SB-3-24.5-25.5	8/25/1999	24.5	<1.0	NA	<0.005	0.00520	<0.005	0.00830	0.161	NA	NA	NA	NA	NA
SB-4-5.5-6.0	8/25/1999	5.5	<1.0	NA	<0.005	<0.005	<0.005	<0.005	<0.05	NA	NA	NA	NA	NA
SB-4-10.5-11.0	8/25/1999	10.5	74.0	NA	<0.0250	0.0565	0.159	0.0915	2.60/2.23 ^a	NA	NA	NA	NA	NA
SB-4-15.5-16.0	8/25/1999	15.5	<1.0	NA	<0.005	<0.005	<0.005	<0.005	<0.05	NA	NA	NA	NA	NA
SB-4-20.5-21.0	8/25/1999	20.5	<1.0	NA	<0.005	<0.005	<0.005	0.00550	<0.05	NA	NA	NA	NA	NA
SB-4-25.5-26.0	8/25/1999	25.5	<1.0	NA	<0.005	<0.005	<0.005	<0.005	<0.05	NA	NA	NA	NA	NA

TABLE 1

**HISTORICAL SOIL ANALYTICAL DATA FOR TPHG, BTEX, FUEL OXYGENATES, AND TOG
SHELL-BRANDED SERVICE STATION
9750 GOLF LINKS ROAD, OAKLAND, CALIFORNIA**

Sample ID	Date	Depth (ftg)	TPHg	TPHd	Benzene	Toluene	Ethyl- benzene	Total Xylenes	MTBE	TBA	DIPE	ETBE	TAME	TOG
SB-5-5.5-6.0	8/25/1999	5.5	<1.0	NA	<0.005	<0.005	<0.005	<0.005	<0.05	NA	NA	NA	NA	NA
SB-5-10.5-11.0	8/25/1999	10.5	<1.0	NA	<0.005	<0.005	<0.005	<0.005	<0.05	NA	NA	NA	NA	NA
SB-5-16.0-16.5	8/25/1999	16	<1.0	NA	<0.005	<0.005	<0.005	0.0107	0.0726	NA	NA	NA	NA	NA
SB-5-20.5-21.0	8/25/1999	20.5	<1.0	NA	<0.005	0.00930	<0.005	0.0193	<0.05	NA	NA	NA	NA	NA
SB-5-24.0-24.5	8/25/1999	24	<1.0	NA	<0.005	0.0241	0.00890	0.0473	<0.05	NA	NA	NA	NA	NA
SB-5-29.0-29.5	8/25/1999	29	<1.0	NA	<0.005	0.0144	0.00590	0.0323	<0.05	NA	NA	NA	NA	NA
D-1-4.5	4/15/2004	4.5	6.1	NA	<0.0050	<0.0050	<0.0050	<0.0050	0.060	NA	NA	NA	NA	NA
D-2-4.5	4/15/2004	4.5	<1.0	NA	<0.0050	<0.0050	0.021	0.010	0.035	NA	NA	NA	NA	NA
D-3-4.5	4/15/2004	4.5	380	NA	<0.50	<0.50	<0.50	<0.50	<0.50	NA	NA	NA	NA	NA
D-4-4.5	4/15/2004	4.5	4.7	NA	<0.0050	<0.0050	<0.0050	<0.0050	0.013	NA	NA	NA	NA	NA
P-1-5	4/23/2004	5	3,200	NA	<1.0	1.1	<1.0	160	<1.0	NA	NA	NA	NA	NA
P-2-5	4/23/2004	5	710	NA	<0.50	<0.50	0.97	1.8	<0.50	NA	NA	NA	NA	NA
P-3-5	4/23/2004	5	<1.0	NA	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	NA	NA	NA	NA	NA
P-4-5	4/23/2004	5	<1.0	NA	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	NA	NA	NA	NA	NA
PH-1-5.5'	6/7/2004	5.5	<1.0	NA	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	NA	NA	NA	NA	NA
PH-1-10.5'	6/7/2004	10.5	<1.0	NA	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	NA	NA	NA	NA	NA
PH-1-15.5'	6/7/2004	15.5	<1.0	NA	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	NA	NA	NA	NA	NA
PH-1-19.5'	6/7/2004	19.5	<1.0	NA	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	NA	NA	NA	NA	NA
PH-1-24.5'	6/7/2004	24.5	<1.0	NA	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	NA	NA	NA	NA	NA
PH-1-29.5'	6/7/2004	29.5	<1.0	NA	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	NA	NA	NA	NA	NA
PH-1-34.5'	6/7/2004	34.5	<1.0	NA	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	NA	NA	NA	NA	NA

TABLE 1

**HISTORICAL SOIL ANALYTICAL DATA FOR TPHG, BTEX, FUEL OXYGENATES, AND TOG
SHELL-BRANDED SERVICE STATION
9750 GOLF LINKS ROAD, OAKLAND, CALIFORNIA**

Sample ID	Date	Depth (fbg)	TPHg	TPHd	Benzene	Toluene	Ethyl- benzene	Total Xylenes	MTBE	TBA	DIPE	ETBE	TAME	TOG
PH-1-40.5'	6/7/2004	40.5	<1.0	NA	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	NA	NA	NA	NA	NA
PH-1-45.5'	6/7/2004	45.5	<1.0	NA	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	NA	NA	NA	NA	NA
S-1-5.0'	2/23/2005	5.0	<1.0	NA	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<0.0050	<0.0050	NA
S-1-10.0'	2/23/2005	10.0	<4.4	NA	<0.022	<0.022	<0.022	<0.022	0.32	0.14	<0.044	<0.022	<0.022	NA
S-1-15.0'	2/23/2005	15.0	<1.0	NA	<0.0050	<0.0050	<0.0050	<0.0050	0.16	0.014	<0.010	<0.0050	<0.0050	NA
S-1-19.0'	2/23/2005	19.0	3.6	NA	<0.0050	<0.0050	<0.0050	<0.0050	0.054	0.014	<0.010	<0.0050	<0.0050	NA
S-2-6.5'	1/18/2005	6.5	<1.0	NA	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<0.0050	<0.0050	NA
S-2-10'	1/18/2005	10	<1.0	NA	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<0.0050	<0.0050	NA
S-4-5.5'	2/23/2005	5.5	<1.0	NA	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<0.0050	<0.0050	NA
S-4-10.0'	2/23/2005	10.0	<1.0	NA	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<0.0050	<0.0050	NA
S-4-15.0'	2/23/2005	15.0	<1.0	NA	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<0.0050	<0.0050	NA
S-4-20.0'	2/23/2005	20.0	<1.0	NA	<0.0050	<0.0050	<0.0050	<0.0050	0.29	0.029	<0.010	<0.0050	<0.0050	NA
S-5-5.5'	1/18/2005	5.5	<1.0	NA	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<0.0050	<0.0050	NA
S-5-11.5'	1/18/2005	11.5	21	NA	<0.025	<0.025	<0.025	<0.025	0.63	0.40	<0.050	<0.025	<0.025	NA
S-5-15'	1/18/2005	15.0	<1.0	NA	<0.0050	<0.0050	<0.0050	<0.0050	0.38	0.40	<0.010	<0.0050	<0.0050	NA
S-5-20.5'	1/18/2005	20.5	<1.0	NA	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<0.0050	<0.0050	NA
S-5-24.5'	1/18/2005	24.5	<1.0	NA	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<0.0050	<0.0050	NA
Shallow Soil (≤10 fbg) ESL^b:			180	180	0.27	9.3	4.7	11	8.4	110	—	—	—	—
Deep Soil (>10 fbg) ESL^c:			180	180	2.0	9.3	4.7	11	8.4	110	—	—	—	—

TABLE 1

**HISTORICAL SOIL ANALYTICAL DATA FOR TPHG, BTEX, FUEL OXYGENATES, AND TOG
SHELL-BRANDED SERVICE STATION
9750 GOLF LINKS ROAD, OAKLAND, CALIFORNIA**

Sample ID	Date	Depth (fbg)	TPHg	TPHd	Benzene	Toluene	Ethyl- benzene	Total Xylenes	MTBE	TBA	DIPE	ETBE	TAME	TOG
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Notes:

All results in milligrams per kilogram (mg/kg) unless otherwise indicated.

fbg = Feet below grade

TPHg = Total petroleum hydrocarbons as gasoline analyzed by EPA Method 8260B; before April 15, 2004, analyzed by EPA Method 8015.

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

Benzene, toluene, ethylbenzene, and xylenes analyzed by EPA Method 8260B; before April 15, 2004, analyzed by EPA Method 8020.

MTBE = Methyl tertiary-butyl ether analyzed by EPA Method 8260B; before April 15, 2004, analyzed by EPA Method 8020 unless otherwise 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

TOG = Total oil and grease by APHA Standard Method 5520E&F

<x = Not detected at reporting limit x

NA = Not analyzed

ESL = Environmental screening level

--- = No ESL available

Results in **bold** meet or exceed ESL

a = Analyzed by EPA Method 8260

b = San Francisco Bay Regional Water Quality Control Board (SFBRWQCB) commercial/industrial ESL for shallow soil (≤ 3 meters below ground surface) where groundwater is not a source of drinking water (Table B 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]).

c = SFBRWQCB commercial/industrial ESL for deep soil (> 3 meters below ground surface) where groundwater is not a source of drinking water (Table D 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]).

d = Sample location subsequently over-excavated, results are not representative of residual soil.

TABLE 2

**HISTORICAL SOIL ANALYTICAL DATA FOR CHROMIUM
SHELL-BRANDED SERVICE STATION
9750 GOLF LINKS ROAD, OAKLAND, CALIFORNIA**

<i>Sample ID</i>	<i>Date</i>	<i>Depth (fbg)</i>	<i>Chromium STLC</i>	<i>Chromium TCLP</i>
B1-5.5	12/15/1995	5.5	<0.010	<0.010
B1-15.5	12/15/1995	15.5	0.032	<0.010
B1-20.5	12/15/1995	20.5	<0.010	<0.010
B1-30.5	12/15/1995	30.5	1.4	0.046
B1-35.5	12/15/1995	35.5	<0.010	<0.010
B1-40.5	12/15/1995	40.5	1.0	0.038
B1-45.5	12/15/1995	45.5	0.31	0.020

Notes:

All results in milligrams per kilogram (mg/kg) unless otherwise indicated.

fbg = Feet below grade

STLC = Soluble threshold limit concentration

TCLP = Toxicity characteristic leaching procedure

<x = Not detected at reporting limit x

TABLE 3

**HISTORICAL GRAB GROUNDWATER ANALYTICAL DATA
SHELL BRANDED SERVICE STATION
9750 GOLF LINKS ROAD, OAKLAND, CALIFORNIA**

<i>Sample ID</i>	<i>Date</i>	<i>Depth (fbg)</i>	<i>TPHg</i>	<i>Benzene</i>	<i>Toluene</i>	<i>Ethyl- benzene</i>	<i>Total Xylenes</i>	<i>MTBE</i>
SB-2W	8/25/1999	12.0	256	2.42	<0.500	1.07	0.697	11,800
SB-3W	8/25/1999	20	<50.0	<0.500	<0.500	<0.500	<0.500	4,680 ^a /5,250
<i>Groundwater ESL^b:</i>			210	46	130	43	100	1,800

Notes:

All results in micrograms per liter ($\mu\text{g}/\text{l}$) unless otherwise indicated.

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

Benzene, toluene, ethylbenzene, and xylenes analyzed by EPA Method 8020

MTBE = Methyl tertiary-butyl ether analyzed by EPA Method 8260 unless otherwise noted

fbg = Feet below grade

<x = Not detected at reporting limit x

ESL = Environmental screening level

Results in bold meet or exceed ESL

a = Analyzed by EPA Method 8020

b = San Francisco Bay Regional Water Quality Control Board ESL for groundwater where groundwater is not a source of drinking water (Tables B and D 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]).

APPENDIX A

SITE HISTORY

SITE HISTORY

1995 Waste Oil Underground Storage Tank (UST) Removal: On March 7, 1995, Paradiso Mechanical, Inc. removed a 550-gallon, single-walled, steel waste oil UST. Following the UST removal, Weiss Associate (Weiss) collected soil samples from the tank excavation floor and sidewalls. Up to 12,000 milligrams per kilogram (mg/kg) total oil and grease (TOG), 190 mg/kg total petroleum hydrocarbons as gasoline (TPHg) and 3,900 mg/kg total petroleum hydrocarbons as diesel (TPHd) were detected in the initial soil samples collected at 7 feet below grade (fbg) in the bottom of the excavation. After over excavation, confirmation soil samples from a depth of 11 fbg contained up to 62 mg/kg TOG, and no TPHg or TPHd. No benzene was detected in any of the excavation samples. No TOG, TPHd, TPHg, or benzene was detected in sidewall confirmation samples from 7 to 8 fbg. Details of the UST removal are presented in Weiss's July 6, 1995 *Tank Removal Closure Report*.

1995 Subsurface Investigation: On December 15, 1995, Weiss advanced one soil boring (B-1) to 48 fbg in the vicinity of the former waste oil UST. Up to 2.8 mg/kg TPHd at 30.5 fbg and 56 mg/kg TOG at 40.5 fbg were detected in soil samples. No groundwater was encountered. Details of this investigation are presented in Weiss's January 15, 2006 *Subsurface Investigation and Site Closure Report*.

1998 Dispenser Upgrade: On February 4, 1998, Cambria Environmental Technology, Inc. (Cambria) observed station upgrade activities and collected soil samples from beneath one dispenser (D-4). Up to 7,800 mg/kg TPHg and 37 mg/kg benzene were detected in soil samples from beneath dispenser D-4 at 4.0 fbg. No field indications of hydrocarbons were observed beneath the other dispensers, and soil sampling was not required by the regulator. Details of this investigation are presented in Cambria's March 20, 1998 *Dispenser Soil Sampling Report*.

1998 Subsurface Investigation: On July 6 and 31, 1998, Cambria installed one soil boring (SB-1) to a depth of 30 fbg in the vicinity of dispenser sample D-4. Up to 14,000 mg/kg TPHg, 100 mg/kg benzene, 23 mg/kg of methyl tertiary-butyl ether (MTBE) were reported. No groundwater samples were collected. Details of this investigation are presented in Cambria's November 24, 1998 *Subsurface Investigation Report*.

1999 Subsurface Investigation: On August 25, 1999, Cambria installed five soil borings (SB-1b and SB-2 through SB-5) to depths ranging from 16 to 30 fbg. Up to 243 mg/kg TPHg and 2.23 mg/kg MTBE were detected. No benzene was reported in any of the analyzed soil samples collected. Grab water samples collected from borings SB-2 and SB-3 contained up to 256 micrograms per liter ($\mu\text{g}/\text{l}$) TPHg, 2.42 $\mu\text{g}/\text{l}$ benzene, and 11,800 $\mu\text{g}/\text{l}$ MTBE. Details of this investigation are presented in Cambria's June 7, 2000 *Subsurface Investigation Report*.

2000 Sensitive Receptor Survey: In 2000, Cambria conducted a sensitive receptor survey for a $\frac{1}{4}$ -mile radius of the site. Results of the survey are shown on Figure 1. The only well identified within the $\frac{1}{4}$ -mile survey radius was a cathodic protection well located approximately 1,150 feet north-northwest of the site. Arroyo Viejo Creek was the only identified surface water body within the survey radius. The Arroyo Viejo Creek is located both above-ground and below ground in culverts in this area. From south-southeast of the site, the Arroyo Viejo is aboveground and flowing to the west. It flows underground at a culvert inlet approximately 60 feet south-southwest of the site, and flows beneath Golf Links Road. Ultimately, the Arroyo Viejo Creek daylights again over 500 feet to the northwest, near Encina Avenue and Golf Links Road. Details of the sensitive receptor survey are presented in Cambria's June 7, 2000 *Subsurface Investigation Report*.

2000 Conduit Study: In 2000, Cambria reviewed storm drain and sanitary sewer maps from the City of Oakland Public Works Department and the California Department of Transportation. Locations, depths, and pipe diameters for the sanitary sewer and storm drain lines in the site vicinity are shown on Figure 2. These locations were reviewed and updated during a site visit in January 2005. Details of the conduit study are presented in Cambria's June 7, 2000 *Subsurface Investigation Report*.

2004 Dispenser Upgrades: During upgrades of the dispensers and piping at this site in April 2004, Cambria collected eight soil samples from depths between 4.5 to 5 fbg. Up to 3,200 mg/kg TPHg and 0.060 mg/kg MTBE were detected in soil samples. Details of this investigation are presented in Cambria's July 16, 2004 *Product Dispenser and Piping Replacement Report*.

2004 Subsurface Investigation: On June 14, 2004 Cambria installed one pilot hole soil boring (PH-1) to a depth of 68.5 fbg in the vicinity of northwestern dispenser sample D-3. No TPHg, benzene, toluene, ethylbenzene, xylenes, or MTBE were

detected in the soil samples collected from boring PH-1. Details of this investigation are presented in Cambria's July 19, 2004 *Site Investigation Report and Well Installation Work Plan*.

2005 Monitoring Well Installation: In January and February, 2005, Cambria installed four groundwater monitoring wells (S-1, S-2, S-4, and S-5) at the site. TPHg was reported in two soil samples at a maximum concentration of 21 mg/kg. Benzene was not detected in any soil samples. MTBE was reported in six of the 15 soil samples, at a maximum concentration of 0.63 mg/kg. All of the soil samples with reportable concentrations of constituents of concern were obtained below groundwater, and represent saturated soil conditions. Details of this investigation are presented in Cambria's May 5, 2005 *Site Investigation Report*.

2005-Present Groundwater Monitoring: Quarterly groundwater monitoring began at the site in March 2005. Depths to water have ranged from 4.86 to 11.49 feet below the top of well casings. During the May 2009 sample event, well S-1 contained 570 µg/l TPHg, 17 µg/l MTBE, and 200 µg/l TBA. Well S-5 contained 130 µg/l TPHg, 1.1 µg/l benzene, 12 µg/l MTBE, and 49 µg/l TBA. No constituents of concern were detected in wells S-2 and S-3.

APPENDIX B

BLAINE TECH SERVICES, INC. -
GROUNDWATER MONITORING REPORT

BLAINE
TECH SERVICES INC.

GROUNDWATER SAMPLING SPECIALISTS
SINCE 1985

June 18, 2009

Denis Brown
Shell Oil Products US
20945 South Wilmington Avenue
Carson, CA 90810

Second Quarter 2009 Groundwater Monitoring at
Shell-branded Service Station
9750 Golf Links Road
Oakland, CA

Monitoring performed on May 28, 2009

Groundwater Monitoring Report **090528-MT-2**

This report covers the routine monitoring of groundwater wells at this Shell-branded facility. In accordance with standard procedures that conform to Regional Water Quality Control Board requirements, routine field data collection includes depth to water, total well depth, thickness of any separate immiscible layer, water column volume, calculated purge volume (if applicable), elapsed evacuation time (if applicable), total volume of water removed (if applicable), and standard water parameter instrument readings. Sample material is collected, contained, stored, and transported to the laboratory in conformance with EPA standards. Purgewater (if applicable) is, likewise, collected and transported to the Martinez Refining Company.

Basic field information is presented alongside analytical values excerpted from the laboratory report in the cumulative table of **WELL CONCENTRATIONS**. The full analytical report for the most recent samples and the field data sheets are attached to this report.

At a minimum, Blaine Tech Services, Inc. field personnel are certified on completion of a forty-hour Hazardous Materials and Emergency Response training course per 29 CFR 1910.120. Field personnel are also enrolled in annual eight-hour refresher courses.

SAN JOSE

SACRAMENTO

LOS ANGELES

SAN DIEGO

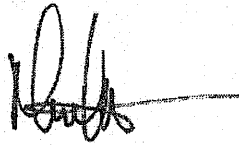
SEATTLE

1680 ROGERS AVENUE SAN JOSE, CA (408) 573-0555 FAX (408) 573-7771 LIC. 746684 www.blainetech.com

Blaine Tech Services, Inc. conducts sampling and documentation assignments of this type as an independent third party. Our activities at this site consisted of objective data and sample collection only. No interpretation of analytical results, defining of hydrological conditions or formulation of recommendations was performed.

Please call if you have any questions.

Yours truly,



Mike Ninokata
Project Manager

MN/tm

attachments: Cumulative Table of WELL CONCENTRATIONS
Certified Analytical Report
Field Data Sheets

cc: Anni Kreml
Conestoga-Rovers & Associates
5900 Hollis Street, Suite A
Emeryville, CA 94608

SAN JOSE

SACRAMENTO

LOS ANGELES

SAN DIEGO

SEATTLE

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WELL CONCENTRATIONS
Shell-branded Service Station
9750 Golf Links Road
Oakland, CA

Well ID	Date	TPPH (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	MTBE 8260 (ug/L)	DIPE (ug/L)	ETBE (ug/L)	TAME (ug/L)	TBA (ug/L)	1,2- DCA (ug/L)	EDB (ug/L)	Ethanol (ug/L)	Methanol (ug/L)	TOC (MSL)	Depth to Water (ft.)	GW Elevation (MSL)
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S-1	3/9/2005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	160.54	7.65	152.89
S-1	3/23/2005	13,000	<13	<13	89	70	1,400	<50	<50	<50	460	<13	<13	<1,300	<500	160.54	7.62	152.92
S-1	6/16/2005	9,500	<5.0	<5.0	130	66	860	<20	<20	<20	780	<5.0	<5.0	<500	2,800	160.54	7.91	152.63
S-1	8/2/2005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<500	160.54	8.44	152.10
S-1	8/29/2005	1,300 a	<5.0	<5.0	<5.0	<10	1,300	<20	<20	<20	1,600	<5.0	<5.0	<500	<500	160.54	8.88	151.66
S-1	12/15/2005	3,710	<0.500	<0.500	8.28	<0.500	65.4	<0.500	<0.500	<0.500	847	<0.500	<0.500	<50.0	<10,000	160.54	8.55	151.99
S-1	3/8/2006	2,400 h	1.3	<0.50	6.9	3.8	61 f	<0.50	<0.50 i	<0.50 i	250	<0.50 i	<0.50	<100	<250 d	160.54	7.25	153.29
S-1	6/14/2006	1,300	1.5	<1.0	2.3	<1.0	77	NA	NA	<1.0	400	NA	NA	NA	NA	160.54	8.29	152.25
S-1	9/6/2006	700 k	<1.0 k	<1.0 k	1.7 k	<1.0 k	42 k	<1.0 k	<1.0 k	<1.0 k	630 k	NA	NA	NA	<400 j	160.54	8.92	151.62
S-1	12/27/2006	1,500	<0.50	<0.50	2.2	0.60	15	NA	NA	<0.50	130	NA	NA	NA	NA	160.54	7.40	153.14
S-1	3/19/2007	2,300	<0.50	<0.50	1.4	0.81	13	NA	NA	<0.50	130	NA	NA	NA	NA	160.54	7.91	152.63
S-1	6/19/2007	1,900 l,m	0.20 n	<1.0	0.86 n	0.19 n	12	NA	NA	<2.0	200	NA	NA	NA	NA	160.54	8.30	152.24
S-1	9/12/2007	720 l,m	0.19 n	<1.0	<1.0	<1.0	26	<2.0	<2.0	<2.0	130	NA	NA	NA	<100 l	160.54	8.80	151.74
S-1	12/10/2007	1,100 l	<0.50	<1.0	0.33 n	0.22 n	6.4	NA	NA	<2.0	110	NA	NA	NA	NA	160.54	8.07	152.47
S-1	2/27/2008	2,800 l,m	<0.50	<1.0	<1.0	<1.0	16	NA	NA	<2.0	110	NA	NA	NA	NA	160.54	7.58	152.96
S-1	5/28/2008	680	<0.50	<1.0	<1.0	<1.0	6.7	NA	NA	<2.0	56	NA	NA	NA	NA	160.54	8.60	151.94
S-1	8/29/2008	110	<0.50	<1.0	<1.0	<1.0	5.3	<2.0	<2.0	<2.0	69	NA	NA	NA	<100 l	160.54	11.04	149.50
S-1	12/22/2008	1,100	<0.50	<1.0	<1.0	<1.0	4.5	NA	NA	<2.0	47	NA	NA	NA	NA	160.54	7.51	153.03
S-1	2/25/2009	630	<0.50	<1.0	<1.0	<1.0	7.7	NA	NA	<2.0	<10	NA	NA	NA	NA	160.54	6.90	153.64
S-1	5/28/2009	570	<0.50	<1.0	<1.0	<1.0	17	NA	NA	<2.0	200	NA	NA	NA	NA	160.54	8.10	152.44

S-2	3/9/2005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	160.23	5.64	154.59
S-2	3/23/2005	<50	<0.50	<0.50	<0.50	<1.0	5.3	<2.0	<2.0	<2.0	<5.0	<0.50	<0.50	<50	<500	160.23	5.20	155.03
S-2	6/16/2005	<50	<0.50	<0.50	<0.50	<1.0	2.2	<2.0	<2.0	<2.0	<5.0	<0.50	<0.50	<50	<500	160.23	5.94	154.29
S-2	8/29/2005	<50	<0.50	<0.50	<0.50	<1.0	2.7	<2.0	<2.0	<2.0	<5.0	<0.50	<0.50	<50	<500	160.23	6.56	153.67
S-2	12/15/2005	<50.0	<0.500	<0.500 c	<0.500	<0.500	17.9	<0.500	<0.500	<0.500	58.4	<0.500	<0.500	<50.0	<10,000	160.03 b	5.77	154.26
S-2	3/8/2006	<50 f	<0.50	<0.50	<0.50	<0.50	2.5 f	<0.50	<0.50 i	<0.50 i	20	<0.50 i	<0.50	<100	<100	160.03 b	5.10	154.93
S-2	6/14/2006	<50	<0.50	<0.50	<0.50	<0.50	2.8	NA	NA	<0.50	<20	NA	NA	NA	NA	160.03 b	6.00	154.03

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Well ID	Date	TPPH (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	MTBE 8260 (ug/L)	DIPE (ug/L)	ETBE (ug/L)	TAME (ug/L)	TBA (ug/L)	1,2- DCA (ug/L)	EDB (ug/L)	Ethanol (ug/L)	Methanol (ug/L)	TOC (MSL)	Depth to Water (ft.)	GW Elevation (MSL)
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S-2	9/6/2006	<50 k	<0.50 k	<0.50 k	<0.50 k	<0.50 k	4.9 k	<0.50 k	<0.50 k	<0.50 k	<20 k	NA	NA	NA	<100	160.03 b	6.49	153.54
S-2	12/27/2006	<50	<0.50	<0.50	<0.50	<0.50	2.0	NA	NA	<0.50	<20	NA	NA	NA	NA	160.03 b	5.50	154.53
S-2	3/19/2007	<50	<0.50	<0.50	<0.50	<0.50	2.3	NA	NA	<0.50	<20	NA	NA	NA	NA	160.03 b	5.70	154.33
S-2	6/19/2007	<50 l	<0.50	<1.0	<1.0	<1.0	1.1	NA	NA	<2.0	<10	NA	NA	NA	NA	160.03 b	6.19	153.84
S-2	9/12/2007	<50 l	<0.50	<1.0	<1.0	<1.0	2.7	<2.0	<2.0	<2.0	<10	NA	NA	NA	<100 l	160.03 b	6.57	153.46
S-2	12/10/2007	<50 l	<0.50	<1.0	<1.0	<1.0	3.3	NA	NA	<2.0	<10	NA	NA	NA	NA	160.03 b	5.70	154.33
S-2	2/27/2008	<50 l	<0.50	<1.0	<1.0	<1.0	<1.0	NA	NA	<2.0	<10	NA	NA	NA	NA	160.03 b	5.48	154.55
S-2	5/28/2008	<50	<0.50	<1.0	<1.0	<1.0	<1.0	NA	NA	<2.0	<10	NA	NA	NA	NA	160.03 b	6.30	153.73
S-2	8/29/2008	<50	<0.50	<1.0	<1.0	<1.0	3.4	<2.0	<2.0	<2.0	<10	NA	NA	NA	<100 l	160.03 b	8.58	151.45
S-2	12/22/2008	<50	<0.50	<1.0	<1.0	<1.0	1.4	NA	NA	<2.0	<10	NA	NA	NA	NA	160.03 b	5.41	154.62
S-2	2/25/2009	<50	<0.50	<1.0	<1.0	<1.0	<1.0	NA	NA	<2.0	<10	NA	NA	NA	NA	160.03 b	4.86	155.17
S-2	5/28/2009	<50	<0.50	<1.0	<1.0	<1.0	<1.0	NA	NA	<2.0	<10	NA	NA	NA	NA	160.03 b	5.96	154.07

S-4	3/9/2005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	158.23	9.83	148.40
S-4	3/23/2005	<100	<1.0	<1.0	<1.0	<2.0	260	<4.0	<4.0	<4.0	<10	<1.0	<1.0	<100	<500	158.23	9.55	148.68
S-4	6/16/2005	<50	<0.50	<0.50	<0.50	<1.0	8.0	<2.0	<2.0	<2.0	<5.0	<0.50	<0.50	<50	<500	158.23	10.25	147.98
S-4	8/29/2005	<50	<0.50	<0.50	<0.50	<1.0	71	<2.0	<2.0	<2.0	5.6	<0.50	<0.50	<50	<500	158.23	10.60	147.63
S-4	12/15/2005	345	<0.500	<0.500 c	<0.500	<0.500	296	<0.500	<0.500	<0.500	<10.0	<0.500	<0.500	<50.0	<10,000	158.23	10.38	147.85
S-4	3/8/2006	73 g	<0.50	<0.50	<0.50	<0.50	0.72 f	<0.50	<0.50 i	<0.50 i	<20	<0.50 i	<0.50	<100	<100	158.23	9.60	148.63
S-4	6/14/2006	<50	<0.50	<0.50	<0.50	0.51	0.50	NA	NA	<0.50	<20	NA	NA	NA	NA	158.23	10.30	147.93
S-4	9/6/2006	<50 k	<0.50 k	<0.50 k	<0.50 k	<0.50 k	3.6 k	<0.50 k	<0.50 k	<0.50 k	<20 k	NA	NA	NA	<100	158.23	10.57	147.66
S-4	12/27/2006	<50	<0.50	<0.50	<0.50	<0.50	4.7	NA	NA	<0.50	<20	NA	NA	NA	NA	158.23	10.40	147.83
S-4	3/19/2007	<50	<0.50	<0.50	<0.50	<0.50	<0.50	NA	NA	<0.50	<20	NA	NA	NA	NA	158.23	10.43	147.80
S-4	6/19/2007	93 l,m	<0.50	<1.0	<1.0	<1.0	8.4	NA	NA	<2.0	<10	NA	NA	NA	NA	158.23	10.52	147.71
S-4	9/12/2007	<50 l	<0.50	<1.0	<1.0	<1.0	3.7	<2.0	<2.0	<2.0	<10	NA	NA	NA	<100 l	158.23	10.71	147.52
S-4	12/10/2007	<50 l	<0.50	<1.0	<1.0	<1.0	1.7	NA	NA	<2.0	<10	NA	NA	NA	NA	158.23	10.66	147.57
S-4	2/27/2008	<50 l	<0.50	<1.0	<1.0	<1.0	<1.0	NA	NA	<2.0	<10	NA	NA	NA	NA	158.23	10.12	148.11
S-4	5/28/2008	<50	<0.50	<1.0	<1.0	<1.0	<1.0	NA	NA	<2.0	<10	NA	NA	NA	NA	158.23	10.99	147.24

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S-4	8/29/2008	<50	<0.50	<1.0	<1.0	<1.0	5.4	<2.0	<2.0	<2.0	<10	NA	NA	NA	<100 l	158.23	11.13	147.10
S-4	12/22/2008	<50	<0.50	<1.0	<1.0	<1.0	4.3	NA	NA	<2.0	<10	NA	NA	NA	NA	158.23	10.38	147.85
S-4	2/25/2009	<50	<0.50	<1.0	<1.0	<1.0	<1.0	NA	NA	<2.0	<10	NA	NA	NA	NA	158.23	9.73	148.50
S-4	5/28/2009	<50	<0.50	<1.0	<1.0	<1.0	<1.0	NA	NA	<2.0	<10	NA	NA	NA	NA	158.23	10.82	147.41
S-5	3/9/2005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	159.69	10.62	149.07
S-5	3/23/2005	<1,300	13	<13	26	60	2,800	<50	<50	<50	<130	<13	<13	<1,300	<500	159.69	11.49	148.20
S-5	6/16/2005	<1,300	45	<13	53	<25	2,300	<50	<50	<50	380	<13	<13	<1,300	<500	159.69	10.30	149.39
S-5	8/29/2005	<1,300	31	<13	60	<25	1,700	<50	<50	<50	320	<13	<13	<1,300	<500	159.69	10.70	148.99
S-5	12/15/2005	2,700	11.1	2.31 c	80.2	6.62	823	<0.500	<0.500	<0.500	233	<0.500	<0.500	<50.0	<10,000	159.69	11.20	148.49
S-5	3/8/2006	360 g	<0.50	<0.50	<0.50	<0.50	340 e	<0.50	<0.50 i	1.2 i	49	<0.50 i	<0.50	<100	<250 d	159.69	10.05	149.64
S-5	6/14/2006	510	<5.0	<5.0	<5.0	<5.0	720	NA	NA	<5.0	<200	NA	NA	NA	NA	159.69	10.20	149.49
S-5	9/6/2006	1,100 k	8.6 k	<5.0 k	35 k	<5.0 k	830 k	<5.0 k	<5.0 k	<5.0 k	240 k	NA	NA	NA	<200 j	159.69	10.65	149.04
S-5	12/27/2006	1,000	12	<5.0	38	6.2	510.0	NA	NA	<5.0	<200	NA	NA	NA	NA	159.69	10.42	149.27
S-5	3/19/2007	1,200	18	<10	31	<10	540	NA	NA	<10	<400	NA	NA	NA	NA	159.69	10.20	149.49
S-5	6/19/2007	840 l	0.34 n	<1.0	0.78 n	<1.0	25	NA	NA	<2.0	9.6 n	NA	NA	NA	NA	159.69	10.08	149.61
S-5	9/12/2007	520 l	14	0.46 n	4.7	<1.0	420	<2.0	<2.0	1.1 n	150	NA	NA	NA	<100 l	159.69	10.90	148.79
S-5	12/10/2007	430 l	15	<5.0	9.2	<5.0	390	NA	NA	<10	270	NA	NA	NA	NA	159.69	10.93	148.76
S-5	2/27/2008	120 l	0.93	<1.0	4.6	<1.0	21	NA	NA	<2.0	24	NA	NA	NA	NA	159.69	7.55	152.14
S-5	5/28/2008	310	4.0	1.0	7.4	1.0	85	NA	NA	<2.0	110	NA	NA	NA	NA	159.69	10.30	149.39
S-5	8/29/2008	390	6.6	<1.0	3.2	<1.0	110	<2.0	<2.0	<2.0	140	NA	NA	NA	<100 l	159.69	10.80	148.89
S-5	12/22/2008	130	0.53	<1.0	<1.0	<1.0	38	NA	NA	<2.0	180	NA	NA	NA	NA	159.69	7.31	152.38
S-5	2/25/2009	<50	<0.50	<1.0	<1.0	<1.0	1.6	NA	NA	<2.0	<10	NA	NA	NA	NA	159.69	7.08	152.61
S-5	5/28/2009	130	1.1	<1.0	<1.0	<1.0	12	NA	NA	<2.0	49	NA	NA	NA	NA	159.69	10.39	149.30

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Abbreviations:

TPPH = Total petroleum hydrocarbons as gasoline by EPA Method 8260B.

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

MTBE = Methyl tertiary butyl ether

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

ETBE = Ethyl tertiary butyl ether, analyzed by EPA Method 8260

TAME = Tertiary amyl methyl ether, analyzed by EPA Method 8260

TBA = Tertiary butyl alcohol, analyzed by EPA Method 8260

1,2-DCA = 1,2-Dichloroethane, analyzed by EPA Method 8260B

EDB = Ethylene dibromide, analyzed by EPA Method 8260B

TOC = Top of Casing Elevation

GW = Groundwater

ug/L = Parts per billion

MSL = Mean sea level

ft. = Feet

<n = Below detection limit

NA = Not applicable

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Notes:

- a = Quantity of unknown hydrocarbon(s) in sample based on gasoline.
 - b = Top of casing altered -0.20 ft. due to wellhead maintenance on September 27, 2005.
 - c = Analyte was detected in the associated Method Blank.
 - d = The reporting limit for this analyte has been raised to account for interference from coeluting organic compounds present in the sample.
 - e = Sample was originally analyzed within the EPA recommended hold time. Re-analysis for dilution was performed past the recommended hold time.
 - f = Sample was originally analyzed within the EPA recommended hold time. Re-analysis for confirmation was performed past the recommended hold time.
 - g = Result for this hydrocarbon is elevated due to the presence of single analyte peak(s) in the quantitation range.
 - h = Concentration indicated for this analyte is an estimated value above the calibration range of the instrument.
 - i = Result was reported with a possible high bias due to the continuing calibration verification falling outside acceptance criteria.
 - j = The reporting limit for this analyte has been raised to account for matrix interference.
 - k = There was insufficient preservative to reduce the sample pH to less than 2. The sample was analyzed within 14 days of sampling but beyond the 7 days recommended for Benzene, Toluene, and Ethylbenzene.
 - l = Analyzed by EPA Method 8015B (M).
 - m = The sample chromatographic pattern for TPH does not match the chromatographic pattern of the specified standard. Quantitation of the unknown hydrocarbon(s) in the sample was based upon the specified standard.
 - n = Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
- Ethanol and Methanol analyzed by EPA Method 8260B.
 Site surveyed March 23, 2005 by Virgil Chavez Land Surveying of Vallejo, CA.