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TRANSMITTAL

DATE: November 3, 2008

REFERENCE NO.: 240472

PROJECT NAME: 105 Fifth Street, Oakland

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

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RISK EVALUATION AND CLOSURE REQUEST

SHELL-BRANDED SERVICE STATION
105 FIFTH STREET
OAKLAND, CALIFORNIA

SAP CODE	135700
INCIDENT NO.	98995757
AGENCY NO.	RO-0487

Prepared by:
Conestoga-Rovers & Associates

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NOVEMBER 3, 2008
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1.0 INTRODUCTION

Conestoga-Rovers & Associates, Inc. (CRA) prepared this document on behalf of Equilon Enterprises LLC dba Shell Oil Products US (Shell) to present an updated risk evaluation and request closure of the site. The risk evaluation is an update of the December 11, 2006 risk evaluation presented in Cambria Environmental Technology, Inc.'s *Fourth Quarter Groundwater Monitoring Report, Risk Evaluation and Site Conceptual Model*, and incorporates the most recent Environmental Screening Levels (ESLs) based on the November 2007 publication (revised May 2008).

1.1 LOCATION AND CURRENT USE

The site is an active Shell Service Station located on the corner of Fifth Street and Oak Street in Oakland, California (Figure 1). Currently, the site consists of a kiosk, four underground storage tanks (USTs), and two dispenser islands (see Figure 2). The area surrounding the site is of mixed commercial and residential use.

1.2 LOCAL HYDROGEOLOGY

According to the *East Bay Plain Groundwater Basin Beneficial Use Evaluation Report,* (California Regional Water Quality Control Board - San Francisco Bay Region, June 1999), the site is located within the Oakland Sub-Area of the San Francisco Basin of the East Bay Plain. The Oakland Sub-Area contains a sequence of alluvial fans. The alluvial fill in thickness ranges from 300 to 700 feet deep. There are no well-defined aquitards such as the estuarine muds. The largest and deepest wells in this Sub-Area historically pumped 1 to 2 million gallons per day at depths greater than 200 feet. Overall, sustainable yields are low due to low recharge potential. The Merritt Sand in west Oakland was an important part of the early water supply for Oakland. It is shallow (up to 60 feet), and before the turn of the century, septic systems contaminated the water supply wells.

Throughout most of the Alameda County portion of the East Bay Plain, from Hayward north to Albany, water level contours show that the direction of groundwater flow is from east to west or from the Hayward Fault to San Francisco Bay. Groundwater flow direction generally correlates to topography. Flow direction and velocity are also influenced by buried stream channels that typically are oriented in an east-west direction.

The site elevation is approximately 15 feet above mean sea level. Primary surface water bodies in the vicinity of the site are the San Francisco Bay, which is located approximately 3.5 miles west of the site, the Oakland Inner Harbor approximately 1,750 feet south of the site, and Lake Merritt, a tidal lake, approximately 2,300 feet northeast of the site.

1.3 GROUNDWATER DEPTH AND FLOW DIRECTION

Since groundwater monitoring began in July 1999, static depth to groundwater has ranged from approximately 4.5 to 6.5 feet below grade (fbg). Based on quarterly groundwater monitoring data, the local groundwater gradient is generally to the southeast. The third quarter 2008 groundwater gauging data was used to create a groundwater contour and chemical concentration map (Figure 2) which again shows flow to the southeast.

1.4 SOIL LITHOLOGY

United States Geological Survey (USGS) publications and maps indicate that the site area is underlain by Holocene and Pleistocene Era Merritt Sand (symbol Q_{ms}) (*Geologic Map and Map Database of the Oakland Metropolitan Area, Alameda, Contra Costa, and San Francisco Counties, California, USGS,* R.W. Graymer, 2000). USGS describes Merritt Sand (Holocene and Pleistocene) as fine-grained, very well sorted well drained eolian deposits of western Alameda County. The Merritt Sand outcrops in three large areas in Oakland and Alameda. Previously thought to be only of Pleistocene age, the Merritt Sand is probably time-correlative with the dune sand unit (Q_{ds}), based on similar interfingering with Holocene bay mud (Q_{hmb}) and presumably similar depositional environments associated with long-term sea-level fluctuations. The Merritt Sand displays different morphology from unit Q_{ds}, however, forming large sheets up to 15 meters high with yardang morphology.

Based on prior investigation data, the site is underlain primarily by sand, silty sand, and clayey sand to a total explored depth of 25.5 fbg. Minor edits and corrections have been made to several boring logs, including the log of well MW-4, whose graphic representation and USCS designation near the bottom of the boring did not match the lithologic description of the material. Boring logs are included in the Case Closure Summary presented in Appendix B.

2.0 RISK EVALUATION

In order to evaluate potential risks to human health and the environment posed by the residual soil and groundwater impacts at the site, CRA compared the maximum concentrations of COCs in historical soil and current groundwater samples to the Environmental Screening Levels (ESLs) published in San Francisco Bay RWQCB's *Screening For Environmental Concerns At Sites With Contaminated Soil and Groundwater* (Interim Final - November 2007 [revised May 2008]). The nearest receptor offsite has been identified as the marine surface water body, Oakland Inner Harbor, located approximately 1,750 feet south (downgradient) of the site, which flows into the San Francisco Bay (3.5 miles south of the site). The site is a commercial property bounded by commercial businesses immediately adjacent (southwest) and downgradient of the site, along Oak Street. The surrounding areas are a mix of commercial and residential use, and it is unlikely that the subject property use, or local land use, will change from commercial to residential use in the foreseeable future. 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. Given the mostly commercial nature of the local land use, the proximity to Oakland Inner Harbor and San Francisco Bay, and the shallow groundwater depth, it is unlikely that the first water-bearing zone would be used as a source of drinking water in the foreseeable future. Further, in accordance with the June 1999 California Regional Water Quality Control Board, San Francisco Bay Region Groundwater Committee "East Bay Plain Groundwater Basin Beneficial Use Evaluation Report for Alameda and Contra Costa Counties, CA", 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. Because of this, groundwater ingestion is not considered a completed exposure pathway. Thus, the ESLs for sites where groundwater is NOT a current or potential source of drinking water are used to evaluate potential risk. With the elimination of groundwater ingestion, the remaining exposure scenarios include inhalation of vapors to indoor air by commercial workers, dermal contact, ingestion of soil, and inhalation of vapors during construction work, and potential migration to surface water body receptors. Each is discussed below.

2.1 EVALUATION OF RISK TO ONSITE COMMERCIAL WORKERS – INDOOR AIR

Historical soil sample results (Attachment A) indicate that most of the historic impact to soil at this site is near the dispenser islands. Given that the vadose zone is very thin (depth to groundwater ranges from 4.5 to 6.5 fbg), only soil samples collected from 5 to

8 fbg soil samples are used and compared against Table B of the ESL document for shallow soils. Concentrations of TPHg was exceeded the Table B ESL in 7 of 26 of the shallow soil samples including 6 of the 8 soil samples collected from beneath the dispensers in November 1996. Concentrations of benzene, ethylbenzene, xylenes, MTBE and TPHd exceeded the Table B ESLs only in 1 to 3 shallow soil samples each, all of which were from beneath the dispensers. Concentrations of MTBE exceeded the Table B ESL only in three shallow soil samples, one collected from beneath the dispensers and two collected from monitoring well borings MW-2 and MW-3 drilled in 1999. The concentrations directly beneath the dispensers and from the onsite well borings are not uncommon at gasoline service stations. Given the 9 to 12 years since sample collection, these concentrations have likely attenuated, particularly since associated groundwater concentrations show evidence of attenuation and biodegradation. Since the air-exchange from customers entering and exiting the kiosk 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. In addition, remaining benzene concentrations in groundwater are very low (less than 9 µg/l), and MTBE and TBA do not pose vapor intrusion risk because these constituents do not readily volatilize from the aqueous phase. Because the site is an operating service station and is expected to continue to operate into the foreseeable future, additional investigation of subsurface vapor migration to onsite commercial indoor air is not recommended unless site use changes.

2.2 EVALUATION OF RISK TO ONSITE CONSTRUCTION WORKERS

Petroleum impacted soil needs to be evaluated in relation to its potential for risk to construction workers that may come into contact with the impacted soils onsite. Table A, below, presents the maximum concentrations of COCs in the vadose zone soils and the applicable ESLs for protection of the occasional construction worker being exposed to impacted soil at this site.

TABLE A

Constituents of Concern	*Maximum Concentrations in Vadose Zone Soils (Sample ID) Units in mg/kg*	*ESLs for Protection of Construction Worker (Table K-3) Units in mg/kg*
TPHg	3,500 (D-8)	4,200
Benzene	**21** (D-1)	12
Toluene	25 (D-8)	650
Ethylbenzene	42 (D-8)	210
Xylenes	210 (D-2)	420
MTBE	26 (D-1)	2,800
TPHd	**14,000** (D-7)	4,200

Based on the above data, only benzene and TPHd exceed the ESL's for construction worker. Since these samples were collected 12 years ago, natural attenuation has likely reduced the residual concentrations of these constituents. Further, any worker doing trenching or excavating at a gasoline station would be properly trained and prepared for encountering potentially-impacted soil, and would wear personal protective equipment, as necessary. Therefore, so long as the site remains in use as a service station, 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 onsite, and any work at this site would require the use of contractors with the appropriate health and safety training to perform the work. At this time, no further investigation associated with the residual soil impact near the dispensers is proposed.

2.3 EVALUATION OF RISK TO OFFSITE RECEPTORS FROM IMPACTED GROUNDWATER

To evaluate whether current groundwater concentrations leaving the site pose a threat to receptors, Table B, below, presents the current (July 2008) concentrations of detectable COC's in shallow groundwater at MW-6 in comparison to the ESLs presented on Table B of the SFBRWQCB ESL document where groundwater is not a current or potential source of drinking water. MW-6 was selected for evaluation because it is located downgradient of the source area, and represents concentrations leaving the site.

TABLE B

Constituents of Concern	*Maximum Concentrations in Groundwater MW-6/ July 2008 Units in µg/l*	*ESLs Where Groundwater is NOT a Current or Potential Source of Drinking Water (Table B) Units in µg/l*
TPHg	780	5,000
TPHd	<50	2,500
MTBE	680	1,800

Based on the data in Table B, the third quarter 2008 concentrations of COC's reported in downgradient well MW-6 do not exceed the ESLs. Current MTBE concentrations are well below the MTBE ESL and show a declining trend since early 2003. Thus, the groundwater conditions at this site do not appear to pose a threat to offsite receptors.

2.4 EVALUATION OF RISK TO MARINE SURFACE WATER BODY FROM IMPACTED GROUNDWATER

Although the site is located approximately 1,750 feet from the nearest surface water body, the utilities within Oak Street may provide a preferential pathway for contaminant migration. Instead of modeling migration and attenuation of the constituents, we will directly compare the site data to the applicable surface water ESLs. If the site groundwater discharged directly to the marine surface water body, Table C, below, compares the maximum concentrations from the third quarter 2008 sample event to the various ESLs for protection of marine habitat (Table F-2b).

TABLE C

Constituents of Concern	*Maximum Concentrations in Site Groundwater July 2008 Units in µg/l*	*ESLs for Protection of Surface Water Bodies – Marine Habitat (Table F-2b) Units in µg/l*		
		Nuisance Odors	*Marine Aquatic Habitat Goal*	*Bioaccumulation*
TPHg	**980** (MW-2)	5,000	**210**	---
Benzene	3.8 (MW-2)	2,000	350	71
Toluene	<0.50 (all wells)	40	2,500	200,000
Ethylbenzene	3.7 (MW-2)	30	43	29,000
Xylenes	<0.50 (all wells)	530	100	---
MTBE	**680** (MW-6)	**180**	8,000	---
TBA	140 (MW-2)	50,000	18,000	---
TPHd	**1,000** (MW-2)	2,500	**210**	---

Based on the data in Table C, if the maximum concentrations of constituents from the site wells were discharged directly into a marine surface water body, only TPHg, TPHd, and MTBE exceed the final surface water screening thresholds. If the average concentrations from the site are considered instead of the maximum (assuming that the detection limit is the concentration for those samples reported below the detection limit), the average TPHg concentration is 287 µg/l, the average TPHd concentration is 258 µg/l, and the average MTBE concentration is 193 µg/l. These concentrations are close to the ESLs that were exceeded by the individual maximum concentration and do not consider dilution or natural attenuation between the site and surface water. CRA asserts that a hypothetical exceedance of the surface water screening level does not warrant further investigation or remediation, especially given the lack of ecological risk.

2.5 RISK EVALUATION SUMMARY

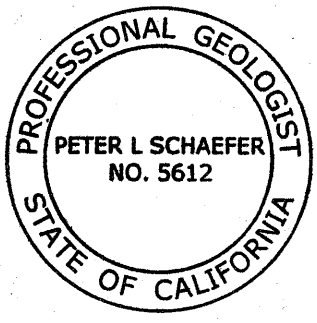
Historical shallow soil data near the dispensers indicates that there may be a potential for subsurface migration of vapors to indoor commercial air. However, the historic soil concentrations have likely attenuated over the past 9 to 12 years (demonstrated by associated declining groundwater concentrations), and so long as the site operates as a gasoline service station, further evaluation does not appear warranted. Similarly, the dispenser soil samples also indicate a potential risk to onsite commercial workers that

may come in contact with the soils. As an operating service station, any commercial workers would be adequately trained for, and expect to encounter petroleum-impacted soils. Since the groundwater in the area is not currently used as drinking water source, nor will it likely be used for drinking water in the future, drinking water ESLs do not apply. Based on the risk evaluation and the discussions presented above, the current groundwater concentrations do not pose a significant risk to onsite or offsite receptors.

3.0 CLOSURE REQUEST

Based on the results of this risk evaluation using current groundwater monitoring data and based on the declining concentrations in groundwater, Shell requests that the ACHCSA grant case closure. Appendix A provides a case closure summary. If the ACHCSA concurs with our request, CRA will destroy the site wells. During case closure review, we request suspension of the groundwater monitoring program as additional data will not provide new information concerning the historic release(s) at the site.

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



Peter Schaefer, CHG, CEG
Project Manager

for: Ana Friel, PG
Professional Geologist

FIGURES

11/03/08

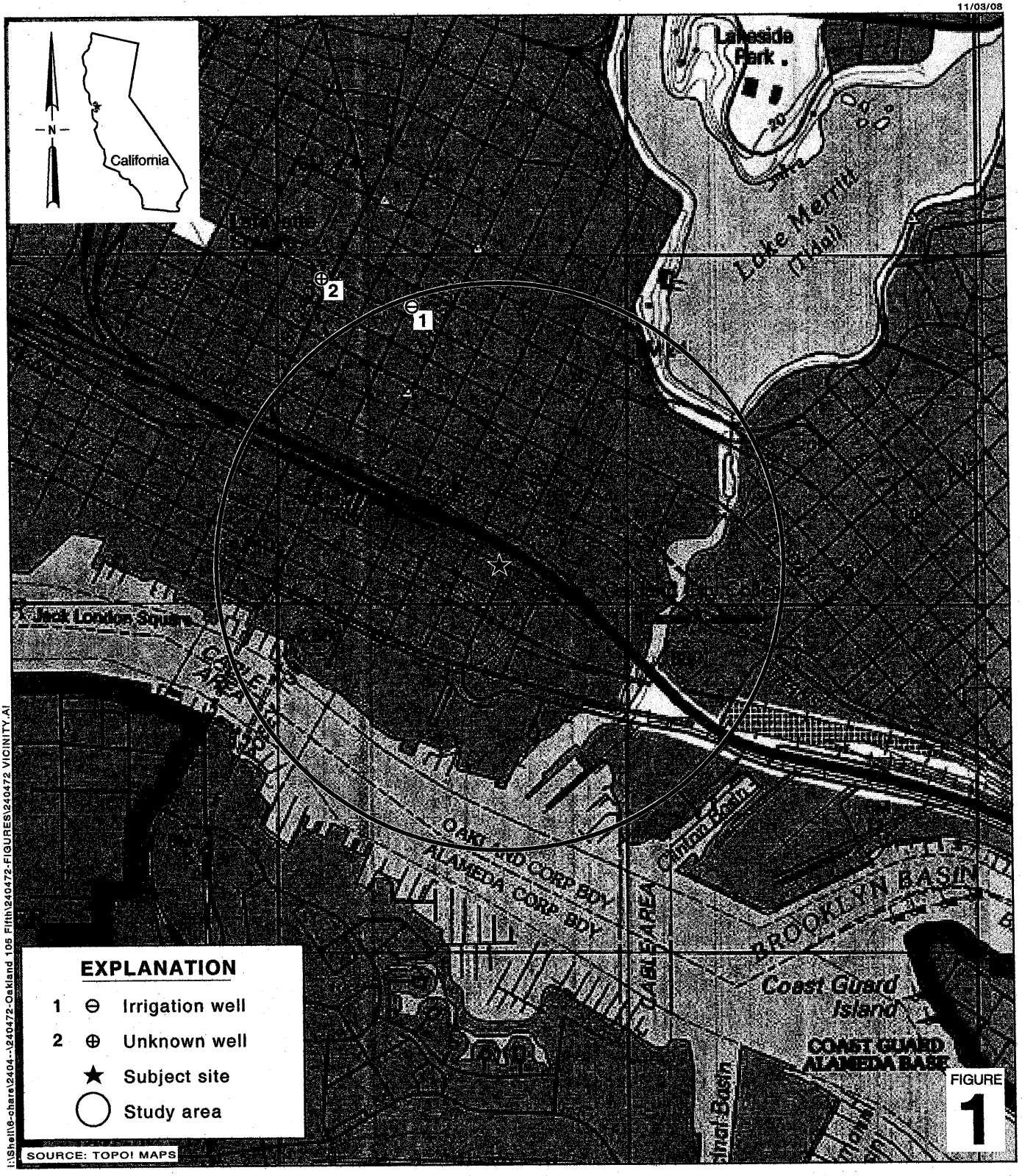


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FIGURE 1

0 1/8 1/4 1/2 1

SCALE : 1" = 1/4 MILE

Shell-branded Service Station
105 Fifth Street
Oakland, California

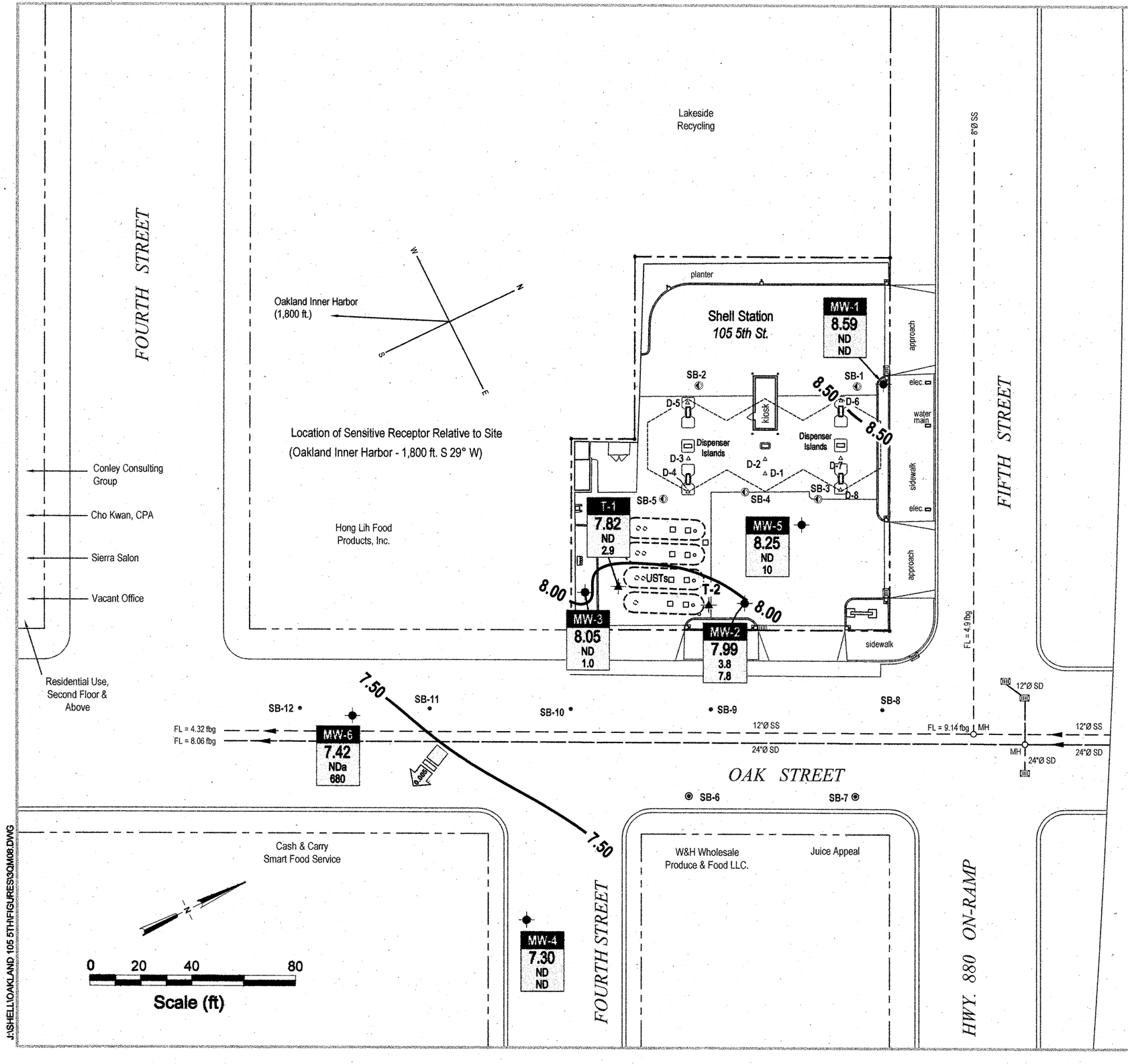
CONESTOGA-ROVERS & ASSOCIATES

Vicinity Map

08/07/08

Groundwater Contour and Chemical Concentration Map

July 8, 2008



EXPLANATION

- MW-1 — Monitoring well location
- T-1 — Tank backfill well location
- SB-8 — Soil boring location (3/02)
- SB-6 — Soil boring location (2/01)
- SB-1 — Soil boring location (7/98)
- D-1 — Soil sample location
- Storm drain line (SD)
- Sanitary sewer line (SS)
- Flow direction
- MH — Manhole
- Storm drain inlet
- fbg — Feet below grade

Note: All utility locations are approximate

- Groundwater flow direction and gradient
- XX.XX — Groundwater elevation contour, in feet above mean sea level (msl)

Well / ELEV / Benzene / MTBE

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

Notes:
ND = Not detected
NDa = Elevated reporting limit, see laboratory report for details

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Shell-branded Service Station
105 Fifth Street
Oakland, California

FIGURE
2

J:\SHELL\OAKLAND 105 5TH\FIGURES\SGM08.DWG

APPENDIX A

SITE HISTORY

SITE HISTORY

November 1996 Dispenser Soil Sampling: During November and December 1996, contractors Armer/Norman & Associates of Walnut Creek, California (Armer/Norman) removed five gasoline dispensers, two diesel dispensers, associated active piping, and inactive piping to a former diesel fuel dispenser. All dispensers and associated active piping were replaced with additional secondary containment. On November 27, 1996, Cambria collected eight soil samples (Figure 2). Total petroleum hydrocarbons as gasoline (TPHg) was detected in all eight soil samples at a maximum concentration of 3,500 parts per million (ppm) in sample D-8 at 5 fbg. Total petroleum hydrocarbons as diesel (TPHd) was detected in three soil samples at a maximum concentration of 14,000 ppm in sample D-7 at 5 fbg. Benzene was detected in four soil samples at a maximum concentration of 21 ppm in sample D-1 at 5 fbg. Methyl tertiary butyl ether (MTBE) was detected in two soil samples at maximum concentrations of 26 ppm in sample D-1 at 5 fbg. Table 1 presents the soil analytical data. Detailed results are presented in Cambria's August 7, 1997 *Dispenser Soil Sampling and Stockpile Disposal Report*.

Based on the dispenser soil sampling results, Cambria filed a December 5, 1996 *Underground Storage Tank Unauthorized Release Site Report* with the Alameda County Health Care Services Agency (ACHCSA), on Shell's behalf.

February 1998 Upgrade Activities: In February 1998, contractors Paradiso Mechanical of San Leandro, California installed secondary containment around the underground storage tank (UST) turbine sumps. Since the dispensers had previously been upgraded with secondary containment, no additional dispenser upgrade activities were performed. Cambria inspected the UST pit on February 26, 1998, and did not observe any field indications of hydrocarbon impact (such as staining or odors). No soil samples were collected. This information was presented in the site summary section of Cambria's May 26, 1998 *Subsurface Investigation Workplan*.

July 1998 Subsurface Investigation: On July 23, 1998, Cambria advanced two soil borings northwest of the existing dispensers (SB-1 and SB-2) and three borings southeast of the dispensers (SB-3 through SB-5) to depths of between 11 and 12 fbg. TPHg was detected in two soil samples at a maximum concentration of 2.8 ppm in sample SB-3-5.0 at 5 fbg. TPHd was detected in soil samples from all five borings at a maximum concentration of 15 ppm in SB-3-5.0 at 5 fbg. No benzene was detected in any of the soil samples collected from borings SB-1 through SB-5. MTBE was detected in two soil samples at a maximum concentration of 0.48 ppm in SB-5-5.0 at 5 fbg.

Groundwater was first encountered at depths between 6 and 9 fbg. TPHg was detected in grab groundwater samples collected from four of the soil borings at a maximum concentration of 90,000 parts per billion (ppb) in sample SB-3. TPHd was detected in all of the grab groundwater samples at a maximum concentration of 27,000 ppb in SB-4. Benzene was detected in all of the grab groundwater samples at a maximum concentration of 1,300 ppb in SB-3. MTBE was detected in three of the grab groundwater samples at a maximum concentration of 4,100 ppb in SB-4.

Soil and grab groundwater analytical data are summarized in Tables 1 and 2, respectively. Soil boring locations are presented in Figure 2, and boring logs are included in Appendix B. Complete investigation results are presented in Cambria's November 18, 1998 *Subsurface Investigation Report*.

May 1999 Monitoring Well Installations: On May 14, 1999, Cambria installed groundwater monitoring wells MW-1, MW-2, and MW-3 to depths of between 24 and 25 fbg. Soil and groundwater samples were analyzed for TPHg, benzene, ethylbenzene, toluene, and total xylenes (BTEX), and MTBE. Groundwater was encountered at depths of between 12.5 and 15.8 fbg.

Soil samples collected from MW-1 did not contain any TPHg, BTEX, or MTBE. Soil samples collected from MW-3 contained only MTBE at a maximum concentration of 20.4 ppm, by EPA Method 8020, at 11.5 fbg (MW3-11.5'). The result of confirmation analysis by EPA Method 8260 in this sample was 8.83 ppm MTBE. TPHg was detected in only in sample MW2-5.5' at 1,700 ppm. Benzene was detected only in MW2-10.5' at 0.0369 ppm. All soil samples collected from MW-2 contained MTBE by EPA Method 8020, at a maximum concentration of 13.2 ppm in MW2-5.5'. The result of confirmation analysis by EPA Method 8260 in this sample was 21.5 ppb.

Groundwater samples collected from MW-1 were below the laboratory reporting limits for all analytes. Maximum TPHg and benzene concentrations were detected in MW-2 at 13,800 and 1,790 ppb, respectively. A maximum MTBE concentration of 324,000 ppb was detected in MW-3, by EPA Method 8260.

Soil and groundwater analytical data are presented in Tables 1 and 2, respectively. Well locations are shown on Figure 2. Boring logs and well construction details are presented in Appendix B. Site investigation results are presented in Cambria's October 7, 1999 *Monitoring Well Installation Report*.

2000-2001 Periodic Dual-phase Vacuum Extraction (DVE): Periodic DVE was performed at the site from April to October 2000 and once in March 2001. Mobile DVE is the process of applying a high vacuum through and airtight well seal to simultaneously extract soil vapors from the vadose zone and enhance groundwater extraction (GWE) from the saturated zone. Between April 2000 and March 2001, the DVE process removed an estimated 14.59 pounds (lbs) of TPHg, 0.048 lbs of benzene, and 14.50 lbs of MTBE from monitoring wells MW-2 and MW-3. DVE events were discontinued due to limited chemical recovery. Periodic DVE aqueous and vapor phase mass removal data are presented in Tables 3 and 4, respectively.

February 2001 Offsite Investigation: On February 12, 2001, Cambria advanced three soil borings (SB-6, SB-7, and MW-4) to 25 fbg and converted MW-4 to a monitoring well. Soil and grab groundwater samples were analyzed for TPHg, BTEX, and MTBE, and grab groundwater samples were additionally analyzed for TPHd. No analytes were detected in soil samples collected from borings SB-6, SB-7 or MW-4. No TPHg, BTEX or MTBE were detected in grab groundwater samples collected from SB-6, SB-7, or MW-4. 1,400 ppb TPHd was detected in grab groundwater collected from SB-7 at approximately 10 fbg. Soil and groundwater analytical data are summarized in Tables 1 and 2, respectively. Soil boring and monitoring well locations are shown on Figure 2. Boring logs and well construction details are presented in Appendix B. Cambria's June 7, 2001 *Offsite Subsurface Investigation* report presents the results of this investigation.

March 2001 DVE Test: On March 20, 2001, Cambria performed individual shorT-term DVE testing on MW-2 and MW-3. Groundwater was also extracted from tank backfill well T-1, using a vacuum truck, on March 21, 2001. DVE was performed for approximately 3 hours on each well, at two different extraction rates. The total estimated groundwater-phase mass removed from MW-2, MW-3, and T-1 was 0.132 lbs TPHg, 0.001 lbs benzene, and 4.84 lbs MTBE. The total estimated vapor-phase mass removed from MW-2 and MW-3 was 3.24 lbs TPHg, 0.006 lbs benzene, and 0.476 lbs MTBE. Vacuum influence and groundwater influence were monitored, but not detected, in surrounding wells during DVE testing. The groundwater yield during DVE testing was approximately 769 gallons, which equates to an average flow rate of 2.14 gallons per minute (gpm). Based on the DVE test results, Cambria concluded that vapor-phase petroleum hydrocarbon recovery would be possible, but not cost-effective. Cambria also concluded that liquid-phase petroleum hydrocarbon recovery was feasible, and recommended semi-monthly GWE from T-1, using a vacuum truck. Groundwater and vapor extraction mass removal data are presented in Tables 5 and 6, respectively. Cambria's July 17, 2001 *Dual-phase Vacuum Extraction Test Report* documents the test procedures and results.

2001 Area Well Survey: Cambria identified two potential receptor wells through California Department of Water Resources (DWR) records. One well of unknown use is located within a 1/2-mile radius of the subject site, and one irrigation well is located just outside the 1/2-mile study area. Well number 1 is of unknown use, and is located approximately 2,400 feet north (up-gradient) of the site. Although no proposed use was indicated on the well driller's log, the well is labeled "MW-6" by the driller, and it is located next to an automobile dealership. It appears likely that this well is used for groundwater monitoring. Well number 2 is used for irrigation, and is located approximately 3,000 feet northwest (up-gradient) of the site. Given the observed groundwater flow direction and the distance to potential receptor wells, they are highly unlikely to be impacted by the relatively minor petroleum hydrocarbon constituents remaining in soil and groundwater at the site. The well locations are shown on Figure 1, and well information is summarized in Table 7. Cambria's June 7, 2001 report entitled *Offsite Subsurface Investigation* presents the results of the well survey, including the DWR reports.

2001 Conduit Study: Cambria performed a site reconnaissance and reviewed City of Oakland engineering maps to identify utility conduits down-gradient of the site. A 12-inch diameter sanitary sewer main is located beneath Oak Street at approximately 6 fbg, and slopes to the southwest. An 8-inch diameter sanitary sewer main is located beneath Fifth Street, is sloped to the southeast, and joins the 12-inch sanitary sewer main at the intersection of Oak Street and Fifth Street. A 24-inch diameter storm drain conduit is also located beneath Oak Street, at approximately 6 fbg, and is sloped to the southwest. Since static groundwater levels at the site are shallow, permeable backfill material in sewer and storm drain trenches may be acting as preferential pathways for groundwater flow. Storm drain and sanitary sewer locations are shown on Figure 2. Cambria's June 7, 2001 report entitled *Offsite Subsurface Investigation* presents the results of the conduit study.

November 2001 – June 2006 Periodic GWE: Beginning in November 2001, Phillips Services Corporation of Benicia, California conducted semi-monthly mobile GWE events from tank backfill well T-1. Mobile GWE vacuum operations consist of lowering dedicated stingers into selected monitoring wells and extracting fluids using a vacuum truck. The volume of extracted fluid is recorded and used to calculate the quantity of aqueous-phase hydrocarbon removed from the subsurface. These events were temporarily discontinued in April 2002 in anticipation of installing a fixed GWE system, and then resumed in May 2002 using vacuum trucks provided by Onyx Industrial Services of Benicia, California. Well MW-3 was added to the extraction program in June 2003, and well MW-2 was added in July 2003. Cambria obtained an encroachment permit from the City of Oakland and began including off-site well MW-6 in the

extraction program on August 21, 2003. Extraction from well MW-6 was discontinued after the October 2, 2003 event due to low groundwater production. Due to minimal remaining MTBE concentrations, well T-1 was removed from the extraction program after the September 18, 2003 event and well MW-2 was removed after the November 20, 2003 event. Based on the low MTBE concentration in MW-3 during the first quarter 2005 (180 ppb on April 15, 2005), Cambria reduced periodic GWE frequency from semi-monthly to monthly in July 2005. T-1 was added to the program again as of October 17, 2005. Periodic GWE was discontinued in June 2006, with concurrence from the ACHCSA. As of June 6, 2006, a total of 197,294 gallons of water was extracted by periodic GWE, resulting in the removal of an estimated 8.57 lbs of TPHg, 0.23 lbs of benzene, and 66.23 lbs of MTBE. Table 8 presents mass removal data from the periodic GWE events.

March 2002 Subsurface Investigation: On March 7, 2002, Cambria advanced offsite Geoprobe® borings SB-8 through SB-12, to depths ranging from 14 to 22 fbg. On March 8, 2002, Cambria installed onsite groundwater monitoring well MW-5 to a total depth of 24 fbg. Selected soil and groundwater samples were analyzed for TPHg, BTEX, and MTBE.

No analytes were detected in soil samples from offsite borings SB-8, SB-10, SB-11, or SB-12. Only TPHg and MTBE were detected in a soil sample collected from SB-9 at 7.5 fbg (SB-9-7.5), at concentrations of 5.0 and 5.4 ppm, respectively. Two soil samples from MW-5 contained TPHg; the maximum TPHg concentration of 300 ppm was detected in MW-5-5.0 from 5 fbg. Benzene was detected in sample MW-5-5.0 from 5 fbg, at a concentration of 0.039 ppm. MTBE was not detected in any other soil samples.

Grab groundwater samples were collected from all offsite soil borings. TPHg was detected in two samples at a maximum concentration of 170 ppb in SB-8. Benzene was not detected in any of the grab groundwater samples. MTBE was detected in four samples at a maximum concentration of 7,900 in the sample from SB-10.

Based on the results of this investigation, Cambria noted that upgradient definition is provided by non-detection of MTBE and benzene in groundwater at well MW-1 and soil boring SB-8, and downgradient definition is provided by non-detection of MTBE and benzene in groundwater at MW-4, SB-6, and SB-7, and significant lateral attenuation from SB-10 to SB-12. Cambria recommended installing a well (MW-6) near SB-12 to monitor potential migration to the nearest sensitive receptor. Cambria also noted that concentrations of MTBE and benzene in groundwater in MW-5 are significantly lower than in MW-2, MW-3, and T-1, indicating that the dispensers are not acting as a source of these constituents in groundwater.

Soil and groundwater analytical data are summarized in Tables 1 and 2, respectively. Soil boring and monitoring well locations are shown on Figure 2. Boring logs and well construction details are presented in Appendix B. Cambria's May 6, 2002 *Subsurface Investigation Report/Second Quarter 2002 Monitoring Report/Groundwater Extraction Evaluation Report* presents the results of this investigation and the mass transport estimate discussion.

August 2002 Well Installation: On August 1, 2002, Cambria installed groundwater monitoring well MW-6 to a depth of 24 fbg. Soil samples collected from MW-6 did not contain any TPHg, BTEX, or MTBE at concentrations above the laboratory reporting limits. Soil analytical data are presented in Table 1 and the well location is shown on Figure 2. The boring log and well construction details are presented in Appendix B. Site investigation results are presented in Miller Brooks Environmental, Inc.'s (Miller Brooks) September 16, 2002 *Well Installation Report.*

2005 Sensitive Receptor Survey Update: At Shell's request, Delta Environmental Consultants, Inc. (Delta) conducted a sensitive receptor survey in 2005. They did not identify any additional potential receptor wells within a 1/2-mile radius of the site. Delta's study area was larger, however, and they identified a drinking water well and an industrial well approximately 4,488 and 5,546 feet north of the site, respectively. Based on the distance and location relative to the site, these wells are extremely unlikely to be impacted by petroleum hydrocarbon constituents in soil and groundwater originating at the site.

1999 - Present Groundwater Monitoring: Quarterly groundwater monitoring has been conducted at the site since July 1999. Maximum historical groundwater concentrations are 13,800 ppb TPHg (well MW-2/July 23, 1999), 3,700 ppb TPHd (T-1/July 10, 2002), 1,790 ppb benzene (MW-2/July 23, 1999), 324,000 ppb MTBE by EPA Method 8260B (MW-3/July 23, 1999), and 24,000 ppb tert butyl alcohol (TBA) (MW-3/April 30, 2003). In the most recent groundwater monitoring event (October 11, 2006), maximum groundwater concentrations were 1,800 ppb TPHg in MW-2, 1,540 ppb TPHd in T-1, 13.3 ppb benzene in MW-2, and 673 ppb MTBE in MW-6, and 570 ppb TBA in MW-2. Since TBA in well MW-4 are again below the method detection limit of 10 ppb, the third quarter 2006 result of 44.8 ppb was anomalous, and in our opinion, did not represent migration of TBA from the site. The fourth quarter 2006 monitoring data is presented on Figure 2. Isoconcentration contours current concentrations of TPHd, TPHg, benzene, and MTBE are presented on Figures 7 through 10, respectively.

APPENDIX B

CASE CLOSURE SUMMARY

SITE CLOSURE SUMMARY

I. AGENCY INFORMATION

Date: August 18, 2008

Agency Name: Alameda County Health Care Services Agency	Address: 1131 Harbor Bay Parkway, Suite 250
City/State/Zip: Alameda, CA 95402-6577	Phone: (510) 567-6791
Responsible Staff Person: Mr. Jerry Wickham	Title: Hazardous Material Specialist

II. SITE INFORMATION

Site Facility Name: Shell branded Service Station		
Site Facility Address: 105 5th St., Oakland, California		
RB Case Nos.:	Local or LOP Case No.: RO-0487	Priority:
URF Filing Date: 12/5/96	SWEEPS No.	
Responsible Parties (include addresses and phone numbers)		
Shell Oil Products US, 20945 S. Wilmington Avenue, Carson, CA 90810, (707) 865-0251		

Tank No.	Size in Gallons	Contents	Closed In—Place/Removed?	Date
1	10,000	Gasoline		
2	10,000	Gasoline		
3	10,000	Gasoline		
4	10,000	Diesel		

III. RELEASE AND SITE CHARACTERIZATION INFORMATION

Cause and Type of Release: Petroleum Hydrocarbon (Gasoline) release from loss of integrity of dispensers & fuel piping at site.		
Site characterization complete? YES	Date Approved by Oversight Agency:	
Monitoring wells installed? YES	Number: 6	Proper screened interval? YES
Highest GW Depth Below Ground Surface: 4.34 ft	Lowest Depth: 17.51 ft	Flow Direction: Southerly
Most Sensitive Current Use: Commercial		
Drinking water potential = Unlikely. Most Sensitive Potential Use and Probability of Use = Commercial; based on the *Final Report, June 1999 East Bay Plain Groundwater Basin Beneficial Use Evaluation Report* by the California Regional Water Quality Control Board San Francisco Bay Region Groundwater Committee, the City of Oakland does not have "any plans to develop local groundwater resources for drinking water purposes, because of existing or potential saltwater intrusion, contamination, or poor or limited quantity."		
Are drinking water wells affected? NO	Aquifer Name: NA	
Is surface water affected? NO	Nearest surface water name: Oakland Inner Harbor -	

	approximately 1,750 feet south of site.
Off-Site Beneficial Use Impacts (Addresses/Locations): NONE	
Report(s) on file? YES	Where is report(s) filed? ACHCSA & SFBRWQCB

TREATMENT AND DISPOSAL OF AFFECTED MATERIAL

Material	Amount (Include Units)	Action (Treatment or Disposal w/Destination)	Date
Tank	NA		
Dispensers/Piping	From 1996 upgrades	Removed and hauled to Laidlaw Environmental Services landfill in Buttonwillow, California	12/13/96
Free Product	NA		
Soil	28 cubic yards	Hauled to Laidlaw Environmental Services' landfill in Buttonwillow, California	12/13/96
Pea gravel	1 cubic yard	Hauled to Waste Management's Altamont Landfill in Livermore, California	7/13/07
Groundwater	206,800 gallons	Transported to Martinez Refining Company for treatment	4/21/00 – 6/16/06

MAXIMUM DOCUMENTED POLLUTANT CONCENTRATIONS—BEFORE AND AFTER CLEANUP

POLLUTANT	Soil (ppm)		Water (ppb)		POLLUTANT	Soil (ppm)		Water (ppb)	
	Before 1996	After 1998/9	Before 1999	After 2008		Before 1996	After 1998/9	Before 1999	After 2008
TPHg	3,500	1,700	13,800	980	Xylenes	210	5.32	682	<0.50
TPHd	14,000	15	687	1,000	MTBE	26	21.5	404,000	680
Benzene	21	<2.0	1,790	3.8	TBA	na	na	24,000	140
Toluene	25	<2.0	10.8	<0.50					
Ethyl benzene	42	8.52	119	3.7					

na = not analyzed

Comments (Depth of Remediation, etc.):

Dual-phase vacuum extraction (DPE) testing was performed in March 2001. The total estimated groundwater-phase mass removed was 0.132 lbs TPHg, 0.001 lbs benzene, and 4.84 lbs MTBE. The total estimated vapor-phase mass removed 3.24 lbs TPHg, 0.006 lbs benzene, and 0.476 lbs MTBE. Due to diminishing removal of TPHg, benzene, and MTBE during the pilot test, DPE was not implemented.

Semi-monthly mobile groundwater extraction (GWE) events were performed from November 2001 – June 2006. A total of 197,294 gallons of water was extracted by periodic GWE, resulting in the removal of an estimated 8.57 lbs of TPHg, 0.23 lbs of benzene, and 66.23 lbs of MTBE. Periodic GWE was suspended in June 2006 due to declining recovery of TPHg and MTBE.

The total estimated mass removed was 11.94 lbs TPHg, 0.24 lbs benzene, and 71.55 lbs MTBE. Due to diminished recovery of TPHg, benzene, and MTBE, further groundwater remediation does not appear to be feasible. Groundwater remediation data tables are included in Attachment 4.

The vertical and lateral extent of impact at the site has been delineated and does not indicate significant offsite impact. Site investigations have shown that onsite concentrations of petroleum hydrocarbon constituents are continuing to decline through natural attenuation processes. Residual concentrations in soil and groundwater pose no threat to current onsite use or anticipated future uses, to occasional onsite construction worker, or to nearest receptor, therefore pose little or no risk to human health or the environment.

IV. CLOSURE

Does completed corrective action protect existing beneficial uses per the Regional Board Basin Plan? YES		
Does completed corrective action protect potential beneficial uses per the Regional Board Basin Plan? YES		
Does corrective action protect public health for current land use? YES		
Site Management Requirements: Destroy wells upon receipt of Agency approval.		
Monitoring Wells Decommissioned: No	Number Decommissioned: NA	Number Retained: 7
List Enforcement Actions Taken: NA		
List Enforcement Actions Rescinded: NA		

TECHNICAL REPORTS, CORRESPONDENCE, ETC., WHICH THIS CLOSURE RECOMMENDATION WAS BASED UPON: Figures showing the site location and sensitive receptor survey data are presented in Attachment 1, Figure 1and historical sample locations are shown in Attachment 1, Figure 2. Historical soil and groundwater grab sample analytical data are presented in Attachment 2, and historical groundwater monitoring and analytical data are presented in Attachment 3. Groundwater remediation data tables are presented in Attachment 4. Boring logs for wells and soil borings are presented in Attachment 5. A list of known environmental documents is presented below.

Date	Title/Subject	Company
12/5/1996	Underground Storage Tank Unauthorized Release Site Report	Cambria
8/7/1997	Dispenser Soil Sampling and Stockpile Disposal Report	Cambria
5/26/1998	Site Investigation Work plan	Cambria
11/18/1998	Site Investigation Report	Cambria
6/1/1999	East Bay Plain Groundwater Beneficial Use Evaluation Report	SFRWQCB
10/7/1999	Monitoring Well Installation Report	Cambria
10/15/1999	ACHCSA Correspondence	ACHCSA
11/24/1999	Third Quarter 1999 Quarterly Monitoring Report	Cambria
12/14/1999	ACHCSA Correspondence	ACHCSA
2/29/2000	Fourth Quarter 1999 Quarterly Monitoring Report	Cambria
6/7/2001	Offsite Site Investigation	Cambria
7/17/2001	Dual-phase Vacuum Extraction Test Report	Cambria
1/4/2002	ACHCSA Correspondence	ACHCSA
2/7/2002	Fourth Quarter 2001 Quarterly Monitoring Report	Cambria
4/2/2002	First Quarter 2002 Quarterly Monitoring Report	Cambria
5/6/2002	Subsurface Investigation Report/Second Quarter 2002 Monitoring Report/Groundwater Extraction Evaluation Report	Cambria
9/16/2002	Well Installation Report	Cambria
2/10/2003	Interim Remedial Action Work Plan	Cambria
2/24/2003	Fourth Quarter 2002 Quarterly Monitoring Report	Cambria
7/21/2003	Second Quarter 2003 Quarterly Monitoring Report	Cambria
9/25/2003	Third Quarter 2003 Quarterly Monitoring Report	Cambria
10/1/2003	March 28, 2003 through August 31, 2003 Self-Monitoring Report	Cambria
1/8/2004	Fourth Quarter 2003 Quarterly Monitoring Report	Cambria
3/11/2004	First Quarter 2004 Quarterly Monitoring Report	Cambria
7/15/2004	Second Quarter 2004 Quarterly Monitoring Report	Cambria
10/18/2004	Third Quarter 2004 Quarterly Monitoring Report	Cambria
2/18/2005	Fourth Quarter 2004 Quarterly Monitoring Report	Cambria
5/12/2005	First Quarter 2005 Quarterly Monitoring Report	Cambria
7/6/2005	Second Quarter 2005 Quarterly Monitoring Report	Cambria
8/30/2005	Third Quarter 2005 Quarterly Monitoring Report	Cambria
12/5/2005	Fourth Quarter 2005 Quarterly Monitoring Report	Cambria
3/15/2006	First Quarter 2006 Quarterly Monitoring Report	Cambria
6/14/2006	Second Quarter 2006 Quarterly Monitoring Report	Cambria
10/9/2006	Third Quarter 2006 Quarterly Monitoring Report	Cambria
10/11/2006	ACHCSA Correspondence	ACHCSA
12/11/2006	Fourth Quarter Groundwater Monitoring Report, Risk Evaluation, and Site Conceptual Model	Cambria
4/9/2007	First Quarter 2007 Quarterly Monitoring Report	CRA
7/9/2007	Second Quarter 2007 Quarterly Monitoring Report	CRA

Date	Title/Subject	Company
10/3/2007	Third Quarter 2007 Quarterly Monitoring Report	CRA
12/27/2007	Fourth Quarter 2007 Quarterly Monitoring Report	CRA
4/4/2008	First Quarter 2008 Groundwater Monitoring Report	CRA
6/23/2008	Second Quarter 2008 Quarterly Monitoring Report	CRA
8/22/2008	Third Quarter 2008 Quarterly Monitoring Report	CRA

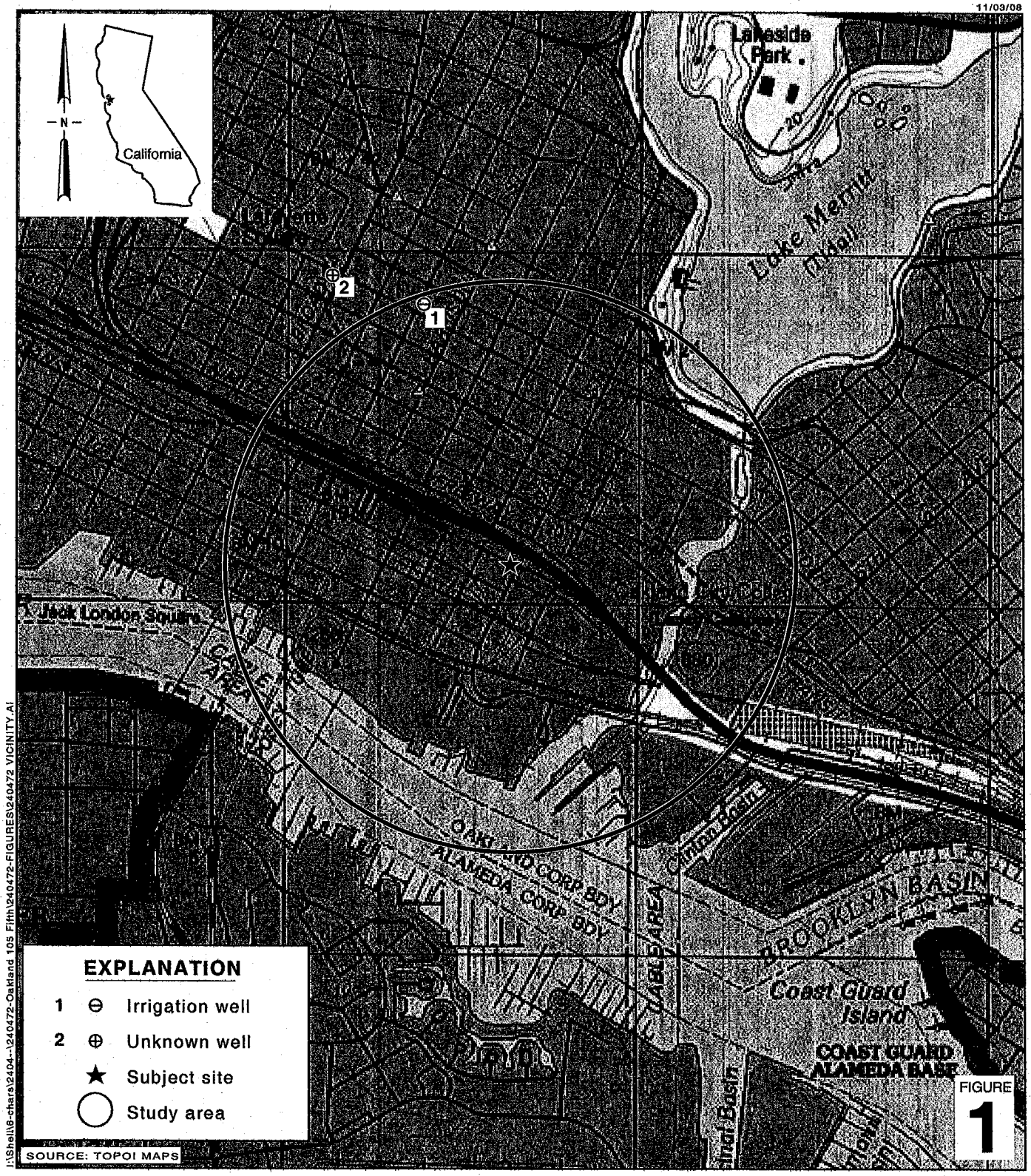
VI. ADDITIONAL COMMENTS, DATA, ETC.

Attachment 1 Historical Figures
Attachment 2 Historical Soil and Grab Groundwater Data Tables
Attachment 3 Historical Groundwater Monitoring Data Table
Attachment 4 Groundwater Remediation Data Tables
Attachment 5 Boring Logs

This document and the related CASE CLOSURE LETTER shall be retained by the lead agency as part of the official site file.

APPENDIX C

HISTORICAL FIGURES



0 1/8 1/4 1/2 1

SCALE : 1" = 1/4 MILE

Shell-branded Service Station
105 Fifth Street
Oakland, California

CONESTOGA-ROVERS & ASSOCIATES

Vicinity Map

Table 7. Well Survey Results - Shell-branded Service Station, Incident #98995757, 105 Fifth Street, Oakland, California

Location	Well ID	Date Installed	Well Use	Total Depth (fbg)	Well Diameter (inches)	Screened Interval (fbg)	Approximate Distance from Site
1	1S4W-35G7	March 1, 1988	UNK	44	4	20-44	2,400
2	1S4W-35F12	September 23, 1990	IRR	470	6	180-470	3,000

Abbreviations & Notes:

Location = Column number refers to map location on Figure 1 - Site Vicinity and Well Survey Map.
Well ID = California State well identification number as recorded by the Department of Water Resources in Sacramento, California.
UNK = Unknown.
IRR = Irrigation
fbg = Feet below grade
Well Locations provided by the State of California Department of Water Resources.

08/07/08

Groundwater Contour and Chemical Concentration Map

July 8, 2008

EXPLANATION

- MW-1 — Monitoring well location
- T-1 — Tank backfill well location
- SB-8 — Soil boring location (3/02)
- SB-6 — Soil boring location (2/01)
- SB-1 — Soil boring location (7/98)
- D-1 — Soil sample location
- Storm drain line (SD)
- Sanitary sewer line (SS)
- Flow direction
- MH — Manhole
- Storm drain inlet
- fbg — Feet below grade

Note: All utility locations are approximate

- Groundwater flow direction and gradient
- XX.XX — Groundwater elevation contour, in feet above mean sea level (msl)

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

Notes:
ND = Not detected
NDa = Elevated reporting limit, see laboratory report for details

FOURTH STREET

Conley Consulting Group

Cho Kwan, CPA

Sierra Salon

Vacant Office

Residential Use, Second Floor & Above

Oakland Inner Harbor (1,800 ft.)

Location of Sensitive Receptor Relative to Site
(Oakland Inner Harbor - 1,800 ft. S 29° W)

Lakeside Recycling

Hong Lih Food Products, Inc.

Shell Station
105 5th St.

planter

approach

elec.

water main

sidewalk

kiosk

Dispenser Islands

Dispenser Islands

D-1 D-2 D-3 D-4 D-5 D-6 D-7 D-8

SB-1 SB-2 SB-3 SB-4 SB-5

8.50

8.50

8.00

8.00

7.50

7.50

MW-1	8.59	ND / ND
MW-2	7.99	3.8 / 7.8
MW-3	8.05	ND / 1.0
MW-4	7.30	ND / ND
MW-5	8.25	ND / 10
MW-6	7.42	NDa / 680
T-1	7.82	ND / 2.9

USTs

T-2

sidewalk

FL = 4.9 fbg

8"Ø SS

12"Ø SD

12"Ø SS

24"Ø SD

MH

FL = 9.14 fbg MH

12"Ø SS

24"Ø SD

24"Ø SD

FL = 4.32 fbg

FL = 8.06 fbg

SB-8 SB-9 SB-10 SB-11 SB-12

OAK STREET

SB-6 SB-7

Cash & Carry
Smart Food Service

W&H Wholesale Produce & Food LLC.

Juice Appeal

FOURTH STREET

HWY. 880 ON-RAMP

FIFTH STREET

HIGHWAY 880 (ELEVATED)

0 20 40 80

Scale (ft)

FIGURE

2

Shell-branded Service Station
105 Fifth Street
Oakland, California

CONESTOGA-ROVERS & ASSOCIATES

J:\SHELL\OAKLAND 105 5TH\FIGURES\3QM08.DWG

APPENDIX D

HISTORICAL SOIL AND GRAB GROUNDWATER DATA TABLES

Table 1. Historical Soil Analytical Data - Shell-branded Service Station, Incident #98995757, 105 Fifth Street, Oakland, California

Sample ID	Depth (fbg)	Date Sampled	TPHg (ppm)	TPHd (ppm)	Benzene (ppm)	Toluene (ppm)	Ethylbenzene (ppm)	Total Xylenes (ppm)	MTBE (ppm)
1996 Dispenser Soil Sampling									
D-1	5	11/27/1996	**2,500**	**1,400**	**21**	**6.7**	**33**	**49**	**(26)**
D-2	5	11/27/1996	**3,200**	---	**6.4**	**22**	**36**	**210**	(<19)
D-3	5	11/27/1996	**23**	**11**	<0.025	**0.064**	**0.15**	**1.6**	**(0.30)**
D-4	5	11/27/1996	**1,900**	---	<2.5	**3.6**	**12**	**85**	(<12)
D-5	5	11/27/1996	**1.0**	---	**0.0064**	<0.0050	<0.0050	<0.0050	(<0.025)
D-6	5	11/27/1996	**1,900**	---	<1.0	**1.6**	**8.7**	**75**	(<5.0)
D-7	5	11/27/1996	**1,600**	**14,000**	<2.5	**11**	**21**	**65**	(<12)
D-8	5	11/27/1996	**3,500**	---	**5.4**	**25**	**42**	**180**	(<19)
1998 Soil Borings									
SB-1-5.0	5	7/23/1998	<1.0	**1.3**	<0.0050	<0.0050	<0.0050	<0.0050	(<0.025)
SB-2-5.0	5	7/23/1998	<1.0	**1.1**	<0.0050	<0.0050	<0.0050	<0.0050	(<0.025)
SB-3-5.0	5	7/23/1998	**2.8**	**15**	<0.0050	<0.0050	**0.0080**	**0.014**	(<0.025)
SB-4-5.0	5	7/23/1998	**1.3**	**2.5**	<0.0050	**0.0063**	**0.012**	**0.038**	**(0.13)**
SB-5-5.0	5	7/23/1998	<1.0	**8.4**	<0.0050	<0.0050	<0.0050	<0.0050	**(0.48)**
1999 Monitoring Well Installation									
MW1-5.5'	5.5	5/14/1999	<0.400	---	<0.00200	<0.00200	<0.00200	<0.00400	(<0.0100)
MW1-10.5'	10.5	5/14/1999	<0.400	---	<0.00200	<0.00200	<0.00200	<0.00400	(<0.0100)
MW1-15.5'	15.5	5/14/1999	<0.400	---	<0.00200	<0.00200	<0.00200	<0.00400	(<0.0100)
MW1-20.5'	20.5	5/14/1999	<0.400	---	<0.00200	<0.00200	<0.00200	<0.00400	(<0.0100)
MW1-25.5'	25.5	5/14/1999	<0.400	---	<0.00200	<0.00200	<0.00200	<0.00400	(<0.0100)
MW2-5.5'	5.5	5/14/1999	**1,700**	---	<2.0	<2.0	**8.52**	**5.32**	**13.2 (21.5)**
MW2-10.5'	10.5	5/14/1999	<2.0	---	**0.0369**	<0.0100	<0.0100	<0.0200	**(2.13)**
MW2-15.5'	15.5	5/14/1999	<0.400	---	<0.00200	<0.00200	<0.00200	<0.00400	**(0.0219)**
MW2-20.5'	20.5	5/14/1999	<0.400	---	<0.00200	<0.00200	<0.00200	<0.00400	**(0.0421)**
MW2-25.5'	25.5	5/14/1999	<0.400	---	<0.00200	<0.00200	<0.00200	<0.00400	**(0.0254)**
MW3-6.5'	6.5	5/14/1999	<20.0	---	<0.100	<0.100	<0.100	<0.200	**(19.2)**
MW3-11.5'	11.5	5/14/1999	<20.0	---	<0.100	<0.100	<0.100	<0.200	**8.83 (20.4)**
MW3-16.5'	16.5	5/14/1999	<20.0	---	<0.100	<0.100	<0.100	<0.200	**(9.14)**
MW3-21.5'	21.5	5/14/1999	<2.0	---	<0.0100	<0.0100	<0.0100	<0.0200	**(1.18)**
MW3-25'	25	5/14/1999	<0.400	---	<0.00200	<0.00200	<0.00200	<0.00400	**(0.201)**
2001 Monitoring Well Installation and Soil Borings									
MW-4-5	5	2/12/2001	<1.0	---	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
MW-4-10.0	10	2/12/2001	<1.0	---	<0.050	<0.0050	<0.0050	<0.0050	<0.0050
MW-4-15.0	15	2/12/2001	<1.0	---	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
MW-4-20.0	20	2/12/2001	<1.0	---	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050

Table 1. Historical Soil Analytical Data - Shell-branded Service Station, Incident #98995757, 105 Fifth Street, Oakland, California

Sample ID	Depth (fbg)	Date Sampled	TPHg (ppm)	TPHd (ppm)	Benzene (ppm)	Toluene (ppm)	Ethylbenzene (ppm)	Total Xylenes (ppm)	MTBE (ppm)
SB-6-5.0	5	2/12/2001	<1.0	---	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SB-6-10.0	10	2/12/2001	<1.0	---	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SB-6-15.0	15	2/12/2001	<1.0	---	<0.0050	<0.0050	<0.0050	<0.05	<0.0050
SB-6-20.0	20	2/12/2001	<1.0	---	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SB-7-5.0	5	2/12/2001	<1.0	---	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SB-7-10.0	10.5	2/12/2001	<1.0	---	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SB-7-15.0	15	2/12/2001	<1.0	---	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
SB-7-20.0	20	2/12/2001	<1.0	---	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
2002 Soil Borings and Monitoring Well Installation									
SB-8-8.0	8	3/7/2002	<1.0	---	<0.005	<0.005	<0.005	<0.005	<0.5
SB-9-7.5	7.5	3/7/2002	**5.0**	---	<0.05	<0.05	<0.05	<0.05	**5.4**
SB-10-8.0	8	3/7/2002	<1.0	---	<0.005	<0.005	<0.005	<0.005	<0.5
SB-11-7.5	7.5	3/7/2002	<1.0	---	<0.005	<0.005	<0.005	<0.005	<0.5
SB-12-8.0	8	3/7/2002	<1.0	---	<0.005	<0.005	<0.005	<0.005	<0.5

MW-5-5.0	5	3/8/2002	**300**	---	**0.039**	**0.039**	**2.9**	**6.0**	<0.5
MW-5-10.0	10	3/8/2002	<1.0	---	<0.005	<0.005	**0.0096**	**0.016**	<0.5
MW-5-15.0	15	3/8/2002	**9.6**	---	<0.005	<0.005	**0.15**	**0.39**	<0.5
MW-5-20.0	20	3/8/2002	<1.0	---	<0.005	<0.005	<0.005	<0.005	<0.5
MW-5-23.5	23.5	3/8/2002	<1.0	---	<0.005	<0.005	<0.005	<0.005	<0.5
MW-6-5.5	5.5	8/1/2002	<1.0	---	<0.005	<0.005	<0.005	<0.005	<0.5
MW-6-10.5	10.5	8/1/2002	<1.0	---	<0.005	<0.005	<0.005	<0.005	<0.5
MW-6-15.5	15.5	8/1/2002	<1.0	---	<0.005	<0.005	<0.005	<0.005	<0.5
MW-6-20.5	20.5	8/1/2002	<1.0	---	<0.005	<0.005	<0.005	<0.005	<0.5
MW-6-23.0	23	8/1/2002	<1.0	---	<0.005	<0.005	<0.005	<0.005	<0.5

Abbreviations and Notes:

TPHg = Total petroleum hydrocarbons as gasoline

TPHd = Total petroleum hydrocarbons as diesel

MTBE = Methyl tertiary butyl ether

fbg = Feet below grade

ppm = Parts per million; equivalent to mg/L

mg/L = Miligrams per liter

<x = Not detected at laboratory reporting limit of x ppm.

--- = Not analyzed

TPHg analyzed by EPA Method 8015M in 1996-1999; analyzed by EPA Method 8260 in 2001-2002.

TPHd analyzed by EPA Method 8015M.

Benzene, toluene, ethylbenzene, and total xylenes analyzed by EPA Method 8020 in 1996-1999; analyzed by EPA Method 8260 in 2001-2002.

MTBE analyzed by EPA Method 8260; results in parentheses analyzed by EPA Method 8020.

Table 2. Historical Groundwater Analytical Data - Shell-branded Service Station, Incident #98995757, 105 Fifth Street, Oakland, California

Sample ID	Depth (fbg)	Date Sampled	TPHd (ppb)	TPHg (ppb)	Benzene (ppb)	Toluene (ppb)	Ethylbenzene (ppb)	Xylenes (ppb)	MTBE (ppb)
1998 Soil Borings									
SB-1	--	7/23/1998	**99**	**380**	**1.1**	<0.50	**4.4**	**14**	(<2.5)
SB-2	--	7/23/1998	**190**	<50	**0.55**	<0.50	<0.50	**1.4**	(<2.5)
SB-3	--	7/23/1998	**5,500**	**90,000**	**1,300**	**490**	**3,500**	**13,000**	**(1,700)**
SB-4	--	7/23/1998	**27,000**	**24,000**	**830**	<100	**1,000**	**2,700**	**(4,100)**
SB-5	--	7/23/1998	**260**	**96**	**0.62**	<0.50	<0.50	<0.50	**(39)**
1999 Monitoring Well Installations									
MW-1	6.45	7/23/1999	--	<50.0	<0.500	<0.500	<0.500	<0.500	(<2.50)
MW-2	5.98	7/23/1999	--	**13,800**	**1,790**	<100	<100	**682**	**29,400**
MW-3	6.43	7/23/1999	--	**128**	<0.500	<0.500	<0.500	<0.500	**324,000**
2001 Soil Borings and Monitoring Well Installation									
MW-4-10W	10	2/12/2001	<50.0	<50.0	<0.50	<0.50	<0.50	<0.50	<0.50
SB-6-10.0	10	2/12/2001	<50.0	<50.0	<0.50	<0.50	<0.50	<0.50	<0.50
SB-7-10.0	10	2/12/2001	**1,400.0**	<50.0	<0.50	<0.50	<0.50	<0.50	<0.50
2002 Soil Borings									
SB-8-H2O	14	3/7/2002	--	**170**	<0.50	<0.50	<0.50	<0.50	<5.0
SB-9-H2O	16	3/7/2002	--	<500	<5.0	<5.0	<5.0	<5.0	**1.400**
SB-10-H2O	18	3/7/2002	--	<500	<5.0	<5.0	<5.0	<5.0	**7.900**
SB-11-H2O	20	3/7/2002	--	**110**	<0.50	<0.50	<0.50	<0.50	**710**
SB-12-H2O	22	3/7/2002	--	<50	<0.50	<0.50	<0.50	<0.50	**31**

Abbreviations and Notes:

TPHd = Total petroleum hydrocarbons as diesel
TPHg = Total petroleum hydrocarbons as gasoline
MTBE = Methyl tertiary butyl ether
fbg = Feet below grade
ppb = Parts per billion, equivalent to µg/L
µg/L = Micrograms per liter
-- = Not applicable or not analyzed
<x = Not detected at laboratory reporting limit x

TPHd analyzed by EPA Method 8015M.
TPHg analyzed by EPA Method 8015M in 1998-1999; analyzed by EPA Method 8260B in 2001-2002.
Benzene, toluene, ethylbenzene, and total xylenes analyzed by EPA Method 8020 in 1998-1999; analyzed by EPA Method 8260B in 2001-2002.
MTBE analyzed by EPA Method 8060B; results in parentheses analyzed by EPA Method 8020.

APPENDIX E

HISTORICAL GROUNDWATER MONITORING DATA TABLES

WELL CONCENTRATIONS
Shell-branded Service Station
105 5th Street
Oakland, CA

Well ID	Date	TPPH (ug/L)	TEPH (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	MTBE 8020 (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)	TOC (MSL)	Depth to Water (ft.)	GW Elevation (MSL)	DO Reading (ppm)
MW-1	7/20/1999	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	12.22	17.56	-5.34	NA
MW-1	7/23/1999	<50.0	NA	<0.500	<0.500	<0.500	<0.500	<2.50	<2.00	NA	NA	NA	NA	NA	NA	NA	12.22	6.45	5.77	NA
MW-1	11/1/1999	100	NA	15.6	3.12	4.04	12.6	6.69	NA	NA	NA	NA	NA	NA	NA	NA	12.22	6.59	5.63	0.5/0.7
MW-1	1/5/2000	<50.0	<20.0	<0.500	<0.500	<0.500	<0.500	<2.50	NA	NA	NA	NA	NA	NA	NA	NA	12.22	6.38	5.84	1.2/1.4
MW-1	4/7/2000	<50.0	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	NA	NA	NA	NA	NA	NA	NA	NA	12.22	5.83	6.39	1.6/2.4
MW-1	7/26/2000	<50.0	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	NA	NA	NA	NA	NA	NA	NA	NA	12.22	6.10	6.12	1.1/1.4
MW-1	10/28/2000	<50.0	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	NA	NA	NA	NA	NA	NA	NA	NA	12.22	14.08	-1.86	2.2/2.7
MW-1	1/30/2001	<50.0	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	NA	NA	NA	NA	NA	NA	NA	NA	12.22	10.71	1.51	1.2/1.6
MW-1	4/17/2001	<50.0	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	NA	NA	NA	NA	NA	NA	NA	NA	12.22	6.61	5.61	2.4/4.4
MW-1	7/9/2001	<50	<50	<0.50	<0.50	<0.50	<0.50	NA	<5.0	NA	NA	NA	NA	NA	NA	NA	12.22	6.31	5.91	1.4/3.4
MW-1	10/23/2001	<50	<50	<0.50	<0.50	<0.50	<0.50	NA	<5.0	NA	NA	NA	NA	NA	NA	NA	12.22	6.24	5.98	2.6/4.1
MW-1	1/7/2002	<50	<50	<0.50	<0.50	<0.50	<0.50	NA	<5.0	NA	NA	NA	NA	NA	NA	NA	12.22	5.25	6.97	NA
MW-1	4/12/2002	<50	<50	<0.50	<0.50	<0.50	<0.50	NA	<5.0	NA	NA	NA	NA	NA	NA	NA	14.92	5.54	9.38	NA
MW-1	7/10/2002	<50	74	<0.50	<0.50	<0.50	<0.50	NA	<5.0	NA	NA	NA	NA	NA	NA	NA	14.92	5.98	8.94	NA
MW-1	10/15/2002	<50	51	<0.50	<0.50	<0.50	<0.50	NA	<5.0	NA	NA	NA	NA	NA	NA	NA	14.92	5.46	9.46	NA
MW-1	1/29/2003	<50	<50	<0.50	<0.50	<0.50	<0.50	NA	<5.0	NA	NA	NA	NA	NA	NA	NA	14.92	5.03	9.89	NA
MW-1	4/30/2003	<50	110	<0.50	<0.50	<0.50	<1.0	NA	<5.0	NA	NA	NA	NA	NA	NA	NA	14.92	4.70	10.22	NA
MW-1	7/22/2003	<50	<50	<0.50	<0.50	<0.50	<1.0	NA	<0.50	NA	NA	NA	NA	NA	NA	NA	14.92	6.05	8.87	NA
MW-1	10/9/2003	<50	<50	<0.50	<0.50	<0.50	<1.0	NA	<0.50	NA	NA	NA	NA	NA	NA	NA	14.92	6.13	8.79	NA
MW-1	1/5/2004	<50	<50	<0.50	<0.50	<0.50	<1.0	NA	<0.50	NA	NA	NA	NA	NA	NA	NA	14.92	5.44	9.48	NA
MW-1	4/12/2004	<50	1,000 c	<0.50	<0.50	<0.50	<1.0	NA	<0.50	NA	NA	NA	NA	NA	NA	NA	14.92	5.75	9.17	NA
MW-1	7/2/2004	<50	<50	<0.50	<0.50	<0.50	<1.0	NA	<0.50	NA	NA	NA	NA	NA	NA	NA	14.92	5.93	8.99	NA
MW-1	10/8/2004	<50	<50	<0.50	<0.50	<0.50	<1.0	NA	<0.50	NA	NA	NA	NA	NA	NA	NA	14.92	5.94	8.98	NA
MW-1	1/10/2005	<50	<50	<0.50	<0.50	<0.50	<1.0	NA	<0.50	NA	NA	NA	NA	NA	NA	NA	14.92	5.17	9.75	NA
MW-1	4/15/2005	<50	<50	<0.50	<0.50	<0.50	<1.0	NA	<0.50	NA	NA	NA	NA	NA	NA	NA	14.92	5.45	9.47	NA
MW-1	7/15/2005	<50	<50	<0.50	<0.50	<0.50	<1.0	NA	<0.50	NA	NA	NA	NA	NA	NA	NA	14.92	5.93	8.99	NA
MW-1	10/20/2005	<50	<50	<0.50	<0.50	<0.50	<1.0	NA	<0.50	NA	NA	NA	NA	NA	NA	NA	14.92	6.21	8.71	NA
MW-1	1/24/2006	<50.0	<105	<0.500	<0.500	<0.500	<0.500	NA	<0.500	NA	NA	NA	NA	NA	NA	NA	14.92	5.59	9.33	NA
MW-1	4/14/2006	<50.0	<50.0 h	<0.500	<0.500	<0.500	<0.500	NA	<0.500	NA	NA	NA	NA	NA	NA	NA	14.92	5.13	9.79	NA
MW-1	7/25/2006	<50.0	<94.3	<0.500	0.770	<0.500	<0.500	NA	<0.500	NA	NA	NA	NA	NA	NA	NA	14.92	5.85	9.07	NA
MW-1	10/11/2006	<50.0	<46.9 h	<0.500	<0.500	<0.500	<0.500	NA	<0.500	<0.500	<0.500	<0.500	<10.0	NA	NA	NA	14.92	6.00	8.92	NA
MW-1	1/19/2007	<50	<50 h	<0.50	<0.50	<0.50	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<10	NA	NA	NA	14.92	5.95	8.97	NA
MW-1	4/2/2007	<50 l	<50 h	<0.50	<1.0	<1.0	<1.0	NA	<1.0	<2.0	<2.0	<2.0	<10	NA	NA	NA	14.92	5.80	9.12	NA
MW-1	7/19/2007	<50 l	<50 h	<0.50	<1.0	<1.0	<1.0	NA	<1.0	<2.0	<2.0	<2.0	<10	NA	NA	NA	14.92	5.91	9.01	NA

WELL CONCENTRATIONS
Shell-branded Service Station
105 5th Street
Oakland, CA

Well ID	Date	TPPH (ug/L)	TEPH (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	MTBE 8020 (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)	TOC (MSL)	Depth to Water (ft.)	GW Elevation (MSL)	DO Reading (ppm)
MW-1	10/16/2007	<50 l	64 h	<0.50	<1.0	<1.0	<1.0	NA	<1.0	<2.0	<2.0	<2.0	<10	NA	NA	NA	14.92	5.98	8.94	NA
MW-1	1/23/2008	<50 l	<50 h	<0.50	<1.0	<1.0	<1.0	NA	<1.0	<2.0	<2.0	<2.0	<10	NA	NA	NA	14.92	5.59	9.33	NA
MW-1	4/2/2008	<50	<50 h	<0.50	<1.0	<1.0	<1.0	NA	<1.0	<2.0	<2.0	<2.0	<10	NA	NA	NA	14.92	5.75	9.17	NA
MW-1	**7/8/2008**	**<50**	**57 h**	**<0.50**	**<1.0**	**<1.0**	**<1.0**	**NA**	**<1.0**	**<2.0**	**<2.0**	**<2.0**	**<10**	**NA**	**NA**	**NA**	**14.92**	**6.33**	**8.59**	**NA**
MW-2	7/20/1999	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10.87	18.24	-7.37	NA
MW-2	7/23/1999	13,800	NA	1,790	<100	<100	682	29,900	29,400	NA	NA	NA	NA	NA	NA	NA	10.87	5.98	4.89	NA
MW-2	11/1/1999	2,420	NA	316	10.8	119	44.2	17,000	NA	NA	NA	NA	NA	NA	NA	NA	10.87	6.03	4.84	0.5/0.3
MW-2	1/5/2000	2,120a	687	301a	<5.00a	116a	84.4a	14,700	NA	NA	NA	NA	NA	NA	NA	NA	10.87	5.90	4.97	2.1/2.6
MW-2	4/7/2000	4,940b	1,300	659b	<25.0b	214b	314b	41,800b	NA	NA	NA	NA	NA	NA	NA	NA	10.87	5.37	5.50	0.4/0.2
MW-2	7/26/2000	5,010	1,520	409	<50.0	302	307	54,300	NA	NA	NA	NA	NA	NA	NA	NA	10.87	5.81	5.06	2.1/2.2
MW-2	10/28/2000	1,720	412	82.2	<10.0	46.0	102	9,800	NA	NA	NA	NA	NA	NA	NA	NA	10.87	14.59	-3.72	0.7/0.7
MW-2	1/30/2001	1,640	574	14.7	<5.00	40.1	58.1	3,670	NA	NA	NA	NA	NA	NA	NA	NA	10.87	10.31	0.56	1.8/2.0
MW-2	4/17/2001	598	179	21.8	<2.00	16.9	10.8	5,630	NA	NA	NA	NA	NA	NA	NA	NA	10.87	6.08	4.79	1.5/2.6
MW-2	7/9/2001	<1,000	<500	19	<10	33	15	NA	6,200	NA	NA	NA	NA	NA	NA	NA	10.87	5.70	5.17	1.1/2.0
MW-2	10/23/2001	<5,000	<500	50	<25	92	<25	NA	13,000	<25	<25	<25	820	NA	NA	<500	10.87	5.72	5.15	2.0/3.2
MW-2	1/7/2002	<1,000	<200	<10	<10	<10	<10	NA	4,500	NA	NA	NA	NA	NA	NA	NA	10.87	4.87	6.00	NA
MW-2	4/12/2002	<1,000	<100	14	<10	27	13	NA	6,200	NA	NA	NA	NA	NA	NA	NA	13.57	5.14	8.43	NA
MW-2	7/10/2002	<1,000	290	<10	<10	14	<10	NA	6,100	NA	NA	NA	NA	NA	NA	NA	13.57	5.45	8.12	NA
MW-2	10/15/2002	<100	85	1.2	<1.0	<1.0	<1.0	NA	640	NA	NA	NA	NA	NA	NA	NA	13.57	5.38	8.19	NA
MW-2	1/29/2003	<500	<300	10	<5.0	16	6.3	NA	1,700	NA	NA	NA	NA	NA	NA	NA	13.57	5.14	8.43	NA
MW-2	4/30/2003	<5,000	440	<50	<50	58	<100	NA	5,000	NA	NA	NA	NA	NA	NA	NA	13.57	4.83	8.74	NA
MW-2	7/22/2003	2,300	1,000 c	76	<10	140	<20	NA	3,700	NA	NA	NA	NA	NA	NA	NA	13.57	5.61	7.96	NA
MW-2	10/9/2003	150	120 c	3.9	<1.0	6.4	<2.0	NA	210	NA	NA	NA	NA	NA	NA	NA	13.57	5.59	7.98	NA
MW-2	1/5/2004	1,300	450 c	34	<5.0	53	<10	NA	700	NA	NA	NA	NA	NA	NA	NA	13.57	5.04	8.53	NA
MW-2	4/12/2004	820	320 c	25	<5.0	33	<10	NA	560	NA	NA	NA	NA	NA	NA	NA	13.57	5.26	8.31	NA
MW-2	7/2/2004	2,000	850 c	60	<5.0	110	<10	NA	1,800	<20	<20	<20	6,200	NA	NA	NA	13.57	5.43	8.14	NA
MW-2	10/8/2004	540	210 d	5.2	<5.0	<5.0	<10	NA	90	NA	NA	NA	NA	NA	NA	NA	13.57	5.41	8.16	NA
MW-2	1/10/2005	990	400 d	19	<2.0	27	25	NA	<2.0	NA	NA	NA	NA	NA	NA	NA	13.57	4.74	8.83	NA
MW-2	4/15/2005	1,200	650 c	44	<10	45	<20	NA	760	NA	NA	NA	NA	NA	NA	NA	13.57	5.05	8.52	NA
MW-2	7/15/2005	<200	320 d	14	<2.0	7.3	<4.0	NA	110	<8.0	<8.0	<8.0	1,800	NA	NA	NA	13.57	5.35	8.22	NA
MW-2	10/20/2005	430	350 c	14	<2.0	6.7	<4.0	NA	64	NA	NA	NA	NA	NA	NA	NA	13.57	5.70	7.87	NA
MW-2	1/24/2006	1,570	712 g	18.9	<0.500	20.9	<0.500	NA	47.7	NA	NA	NA	NA	NA	NA	NA	13.57	5.15	8.42	NA
MW-2	4/14/2006	1,430	763 h	23.5	2.61	28.3	41.0	NA	61.0	NA	NA	NA	915	NA	NA	NA	13.57	4.72	8.85	NA

WELL CONCENTRATIONS
Shell-branded Service Station
105 5th Street
Oakland, CA

Well ID	Date	TPPH (ug/L)	TEPH (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	MTBE 8020 (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)	TOC (MSL)	Depth to Water (ft.)	GW Elevation (MSL)	DO Reading (ppm)
MW-2	7/25/2006	234	455	6.32 i	<0.500	1.22	<0.500	NA	26.4	<0.500	<0.500	<0.500	591	NA	NA	NA	13.57	5.26	8.31	NA
MW-2	10/11/2006	1,800	585 h	13.3	<0.500	10.1	<0.500	NA	24.2	<0.500	<0.500	<0.500	570	NA	NA	NA	13.57	5.46	8.11	NA
MW-2	1/19/2007	870	250 h	13	0.37 j	13	<1.0	NA	24	<1.0	<1.0	<1.0	620	NA	NA	NA	13.57	5.55	8.02	NA
MW-2	4/2/2007	1,500 l	1,000 h	25	0.71 n	31	0.76 n	NA	21	<2.0	<2.0	<2.0	660	NA	NA	NA	13.57	5.35	8.22	NA
MW-2	7/19/2007	320 l	270 h	3.5	<1.0	2.3	<1.0	NA	14	<2.0	<2.0	<2.0	230	NA	NA	NA	13.57	5.72	7.85	NA
MW-2	10/16/2007	1,300 l,m	910 h	11	0.67 n	13	<1.0	NA	14	<2.0	<2.0	<2.0	460	NA	NA	NA	13.57	6.46	7.11	NA
MW-2	1/23/2008	410 l	<50 h	9.0	0.44 n	8.5	<1.0	NA	17	<2.0	<2.0	<2.0	400	NA	NA	NA	13.57	5.37	8.20	NA
MW-2	4/2/2008	1,000	360 h,m	8.1	<1.0	10	<1.0	NA	13	<2.0	<2.0	<2.0	280	NA	NA	NA	13.57	5.32	8.25	NA
MW-2	**7/8/2008**	**980**	**1,000 h,m**	**3.8**	**<2.0**	**3.7**	**<2.0**	**NA**	**7.8**	**<4.0**	**<4.0**	**<4.0**	**140**	**NA**	**NA**	**NA**	**13.57**	**5.58**	**7.99**	**NA**
MW-3	7/20/1999	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11.27	19.07	-7.80	NA
MW-3	7/23/1999	128	NA	<0.500	<0.500	<0.500	<0.500	404,000	324,000	NA	NA	NA	NA	NA	NA	NA	11.27	6.43	4.84	NA
MW-3	11/1/1999	<1,000	NA	<10.0	<10.0	<10.0	<10.0	169,000	224,000	NA	NA	NA	NA	NA	NA	NA	11.27	6.48	4.79	0.5/0.3
MW-3	1/5/2000	137	322	<1.00	<1.00	<1.00	<1.00	165,000	219,000	NA	NA	NA	NA	NA	NA	NA	11.27	6.35	4.92	2.4/2.2
MW-3	4/7/2000	<1,000	264	853	<10.0	<10.0	<10.0	283,000	196,000a	NA	NA	NA	NA	NA	NA	NA	11.27	5.91	5.36	04/0.2
MW-3	7/26/2000	<20,000	585	<200	<200	<200	<200	437,000	320,000	NA	NA	NA	NA	NA	NA	NA	11.27	5.83	5.44	1.9/1.7
MW-3	10/28/2000	<12,500	441	<125	<125	<125	<125	266,000	308,000	NA	NA	NA	NA	NA	NA	NA	11.27	17.51	-6.24	1.1/1.4
MW-3	1/30/2001	<5,000	555	<50.0	<50.0	<50.0	<50.0	248,000	167,000a	NA	NA	NA	NA	NA	NA	NA	11.27	11.43	-0.16	2.0/2.2
MW-3	4/17/2001	<5,000	347	<50.0	<50.0	<50.0	<50.0	134,000	133,000	NA	NA	NA	NA	NA	NA	NA	11.27	6.57	4.70	1.3/1.2
MW-3	7/9/2001	<20,000	250	<200	<200	<200	<200	NA	170,000	NA	NA	NA	NA	NA	NA	NA	11.27	6.12	5.15	1.2/1.9
MW-3	10/23/2001	<50,000	260	<250	<250	<250	<250	NA	180,000	<250	<250	<250	53,000	NA	NA	<5,000	11.27	6.25	5.02	2.2/1.6
MW-3	1/7/2002	<10,000	160	<100	<100	<100	<100	NA	96,000	NA	NA	NA	NA	NA	NA	NA	11.27	5.29	5.98	NA
MW-3	4/12/2002	<10,000	87	<100	<100	<100	<100	NA	78,000	NA	NA	NA	NA	NA	NA	NA	13.96	5.43	8.53	NA
MW-3	7/10/2002	<20,000	150	<200	<200	<200	<200	NA	64,000	NA	NA	NA	NA	NA	NA	NA	13.96	6.33	7.63	NA
MW-3	10/15/2002	<10,000	120	<100	<100	<100	<100	NA	44,000	<100	NA	<100	9,100	<100	<100	NA	13.96	5.96	8.00	NA
MW-3	1/2/2003	NA	NA	<5.0	<5.0	<5.0	<10	NA	NA	NA	NA	NA	NA	NA	NA	NA	13.96	5.40	8.56	NA
MW-3	1/29/2003	<2,500	96	<25	<25	<25	<25	NA	19,000	<25	NA	<25	14,000	<25	<25	NA	13.96	5.68	8.28	NA
MW-3	4/30/2003	<25,000	360	<250	<250	<250	<500	NA	14,000	<1,000	NA	<1,000	24,000	<250	<250	NA	13.96	5.34	8.62	NA
MW-3	7/22/2003	<5,000	230 c	<50	<50	<50	<100	NA	17,000	<200	NA	<200	21,000	<50	<50	NA	13.96	6.15	7.81	NA
MW-3	10/9/2003	<5,000	150 c	<50	<50	<50	<100	NA	14,000	<200	NA	<200	11,000	<50	<50	NA	13.96	5.98	7.98	NA
MW-3	1/5/2004	<5,000	790 c	<50	<50	<50	<100	NA	4,700	<200	NA	<200	11,000	<50	<50	NA	13.96	5.45	8.51	NA
MW-3	4/12/2004	<25,000	270 c	<250	<250	<250	<500	NA	23,000	<1,000	NA	<1,000	12,000	<250	<250	NA	13.96	5.66	8.30	NA
MW-3	7/2/2004	<10,000	280 c	<100	<100	<100	<200	NA	18,000	<400	NA	<400	4,500	120	<100	NA	13.96	5.85	8.11	NA
MW-3	10/8/2004	<10,000	250 c	<100	<100	<100	<200	NA	29,000	<400	NA	<400	14,000	<100	<100	NA	13.96	5.88	8.08	NA

WELL CONCENTRATIONS
Shell-branded Service Station
105 5th Street
Oakland, CA

Well ID	Date	TPPH (ug/L)	TEPH (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	MTBE 8020 (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)	TOC (MSL)	Depth to Water (ft.)	GW Elevation (MSL)	DO Reading (ppm)
MW-3	1/10/2005	<10,000	220 c	<100	<100	<100	<200	NA	13,000	<400	NA	<400	17,000	<100	<100	NA	13.96	5.20	8.76	NA
MW-3	4/15/2005	510	530 c	140	<5.0	<5.0	<10	NA	180	<20	NA	<20	1,600	<5.0	<5.0	NA	13.96	5.51	8.45	NA
MW-3	7/15/2005	<2,500	100 c	<25	42	<25	62	NA	3,700	<100	<100	<100	5,300	<25	<25	NA	13.96	5.75	8.21	NA
MW-3	10/20/2005	<2,500	250 c	<25	<25	<25	<50	NA	2,600	NA	NA	NA	6,300	NA	NA	NA	13.96	6.22	7.74	NA
MW-3	1/24/2006	3,050	414 f	<0.500	<0.500	<0.500	<0.500	NA	2,150	NA	NA	NA	5,510	NA	NA	NA	13.96	5.63	8.33	NA
MW-3	4/14/2006	2,070	762 h	<0.500	<0.500	<0.500	<0.500	NA	1,720	NA	NA	NA	3,240	NA	NA	NA	13.96	5.20	8.76	NA
MW-3	7/25/2006	403	332	<0.500	<0.500	<0.500	<0.500	NA	318	<0.500	<0.500	<0.500	1,110	<0.500	<0.500	NA	13.96	5.76	8.20	NA
MW-3	10/11/2006	485	620 h	<0.500	<0.500	<0.500	<0.500	NA	269	<0.500	<0.500	<0.500	552	NA	NA	NA	13.96	5.90	8.06	NA
MW-3	1/19/2007	47 j	<50 h	<0.50	<0.50	<0.50	<1.0	NA	5.9	<1.0	<1.0	<1.0	110	NA	NA	NA	13.96	6.00	7.96	NA
MW-3	4/2/2007	100 l,m	300 h	<0.50	<1.0	<1.0	<1.0	NA	140	<2.0	<2.0	<2.0	330	NA	NA	NA	13.96	5.74	8.22	NA
MW-3	7/19/2007	61 l,m	240 h	<0.50	<1.0	<1.0	<1.0	NA	52	<2.0	<2.0	<2.0	93	NA	NA	NA	13.96	5.98	7.98	NA
MW-3	10/16/2007	67 l	120 h	0.45 n	<1.0	<1.0	<1.0	NA	34	<2.0	<2.0	<2.0	38	NA	NA	NA	13.96	5.94	8.02	NA
MW-3	1/23/2008	<50 l	65 h,m	<0.50	<1.0	<1.0	<1.0	NA	15	<2.0	<2.0	<2.0	<10	NA	NA	NA	13.96	5.58	8.38	NA
MW-3	4/2/2008	<50	58 h	<0.50	<1.0	<1.0	<1.0	NA	13	<2.0	<2.0	<2.0	<10	NA	NA	NA	13.96	4.71	9.25	NA
MW-3	**7/8/2008**	**<50**	**290 h**	**<0.50**	**<1.0**	**<1.0**	**<1.0**	**NA**	**1.0**	**<2.0**	**<2.0**	**<2.0**	**<10**	**NA**	**NA**	**NA**	**13.96**	**5.91**	**8.05**	**NA**
MW-4	3/23/2001	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	9.50	8.21	1.29	NA
MW-4	4/17/2001	<50.0	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	NA	NA	NA	NA	NA	NA	NA	NA	9.50	5.08	4.42	2.4/2.6
MW-4	7/9/2001	<50	<50	<0.50	<0.50	<0.50	<0.50	NA	<5.0	NA	NA	NA	NA	NA	NA	NA	9.50	4.64	4.86	2.0/1.5
MW-4	10/23/2001	<50	<50	<0.50	<0.50	<0.50	<0.50	NA	<5.0	NA	NA	NA	NA	NA	NA	NA	9.50	7.90	1.60	2.8/1.8
MW-4	1/7/2002	<50	64	<0.50	<0.50	<0.50	<0.50	NA	<5.0	NA	NA	NA	NA	NA	NA	NA	9.50	5.00	4.50	NA
MW-4	4/12/2002	<50	<50	<0.50	<0.50	<0.50	<0.50	NA	<5.0	NA	NA	NA	NA	NA	NA	NA	12.17	7.49	4.68	NA
MW-4	7/10/2002	<50	67	<0.50	<0.50	<0.50	<0.50	NA	<5.0	NA	NA	NA	NA	NA	NA	NA	12.17	4.75	7.42	NA
MW-4	10/15/2002	<50		<0.50	<0.50	<0.50	<0.50	NA	<5.0	NA	NA	NA	NA	NA	NA	NA	12.17	4.56	7.61	NA
MW-4	1/29/2003	<50	73	<0.50	<0.50	<0.50	<0.50	NA	<5.0	NA	NA	NA	NA	NA	NA	NA	12.17	4.34	7.83	NA
MW-4	4/30/2003	<50	140	<0.50	<0.50	<0.50	<1.0	NA	<5.0	NA	NA	NA	NA	NA	NA	NA	12.17	5.45	6.72	NA
MW-4	7/22/2003	<50	63 c	<0.50	<0.50	<0.50	<1.0	NA	3.1	NA	NA	NA	NA	NA	NA	NA	12.17	6.46	5.71	NA
MW-4	10/9/2003	<50	<50	<0.50	<0.50	<0.50	<1.0	NA	<0.50	NA	NA	NA	NA	NA	NA	NA	12.17	7.11	5.06	NA
MW-4	1/5/2004	<50	66 c	<0.50	<0.50	<0.50	<1.0	NA	<0.50	NA	NA	NA	NA	NA	NA	NA	12.17	7.72	4.45	NA
MW-4	4/12/2004	<50	110 c	<0.50	<0.50	<0.50	<1.0	NA	<0.50	NA	NA	NA	NA	NA	NA	NA	12.17	5.80	6.37	NA
MW-4	7/2/2004	<50	<50	<0.50	<0.50	<0.50	<1.0	NA	<0.50	<2.0	<2.0	<2.0	<5.0	NA	NA	NA	12.17	6.24	5.93	NA
MW-4	10/8/2004	<50	<50	<0.50	<0.50	<0.50	<1.0	NA	<0.50	NA	NA	NA	NA	NA	NA	NA	12.17	7.17	5.00	NA
MW-4	1/10/2005	<50	55 c	<0.50	<0.50	<0.50	<1.0	NA	<0.50	NA	NA	NA	NA	NA	NA	NA	12.17	5.55	6.62	NA
MW-4	4/15/2005	<50	<50	<0.50	<0.50	<0.50	<1.0	NA	<0.50	NA	NA	NA	NA	NA	NA	NA	12.17	5.89	6.28	NA

WELL CONCENTRATIONS
Shell-branded Service Station
105 5th Street
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Well ID	Date	TPPH (ug/L)	TEPH (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	MTBE 8020 (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)	TOC (MSL)	Depth to Water (ft.)	GW Elevation (MSL)	DO Reading (ppm)
MW-4	7/15/2005	<50	<50	<0.50	<0.50	<0.50	<1.0	NA	<0.50	<2.0	<2.0	<2.0	<5.0	NA	NA	NA	12.17	7.27	4.90	NA
MW-4	10/20/2005	<50	<50	<0.50	<0.50	<0.50	<1.0	NA	<0.50	NA	NA	NA	NA	NA	NA	NA	12.17	7.15	5.02	NA
MW-4	1/24/2006	<50.0	<108	<0.500	<0.500	<0.500	<0.500	NA	<0.500	NA	NA	NA	NA	NA	NA	NA	12.17	4.80	7.37	NA
MW-4	4/14/2006	<50.0	127 h	<0.500	<0.500	<0.500	<0.500	NA	<0.500	NA	NA	NA	NA	NA	NA	NA	12.17	6.00	6.17	NA
MW-4	7/25/2006	<50.0	129	<0.500	<0.500	<0.500	<0.500	NA	<0.500	<0.500	<0.500	<0.500	44.8	NA	NA	NA	12.17	7.31	4.86	NA
MW-4	10/11/2006	<50.0	218 h	<0.500	<0.500	<0.500	<0.500	NA	<0.500	<0.500	<0.500	<0.500	<10.0	NA	NA	NA	12.17	7.65	4.52	NA
MW-4	1/19/2007	<50	<50 h	<0.50	<0.50	<0.50	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<10	NA	NA	NA	12.17	4.54	7.63	NA
MW-4	4/2/2007	<50 I	86 h	<0.50	<1.0	<1.0	<1.0	NA	<1.0	<2.0	<2.0	<2.0	<10	NA	NA	NA	12.17	4.43	7.74	NA
MW-4	7/19/2007	<50 I	53 h	<0.50	<1.0	<1.0	<1.0	NA	<1.0	<2.0	<2.0	<2.0	<10	NA	NA	NA	12.17	5.28	6.89	NA
MW-4	10/16/2007	<50 I	<50 h	<0.50	<1.0	<1.0	<1.0	NA	<1.0	<2.0	<2.0	<2.0	<10	NA	NA	NA	12.17	6.27	5.90	NA
MW-4	1/23/2008	<50 I	<50 h	<0.50	<1.0	<1.0	<1.0	NA	<1.0	<2.0	<2.0	<2.0	<10	NA	NA	NA	12.17	7.51	4.66	NA
MW-4	4/2/2008	<50	<50 h	<0.50	<1.0	<1.0	<1.0	NA	<1.0	<2.0	<2.0	<2.0	<10	NA	NA	NA	12.17	6.74	5.43	NA
MW-4	**7/8/2008**	**<50**	**<50 h**	**<0.50**	**<1.0**	**<1.0**	**<1.0**	**NA**	**<1.0**	**<2.0**	**<2.0**	**<2.0**	**<10**	**NA**	**NA**	**NA**	**12.17**	**4.87**	**7.30**	**NA**
MW-5	3/29/2002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	14.78	5.86	8.92	NA
MW-5	4/12/2002	1,600	<50	25	3.5	44	110	NA	570	NA	NA	NA	NA	NA	NA	NA	14.78	5.96	8.82	NA
MW-5	7/10/2002	930	<400	36	<2.0	93	8.8	NA	630	NA	NA	NA	NA	NA	NA	NA	14.78	6.57	8.21	NA
MW-5	10/15/2002	200	90	9.9	<0.50	19	5.5	NA	180	NA	NA	NA	NA	NA	NA	NA	14.78	6.17	8.61	NA
MW-5	1/29/2003	120	85	6.0	<0.50	2.9	2.6	NA	220	NA	NA	NA	NA	NA	NA	NA	14.78	5.85	8.93	NA
MW-5	4/30/2003	<250	160	5.5	<2.5	7.2	7.7	NA	250	NA	NA	NA	NA	NA	NA	NA	14.78	5.53	9.25	NA
MW-5	7/22/2003	520	190 c	63	<5.0	41	14	NA	810	NA	NA	NA	NA	NA	NA	NA	14.78	6.45	8.33	NA
MW-5	10/9/2003	160	86 c	3.2	<1.0	7.0	3.9	NA	250	NA	NA	NA	NA	NA	NA	NA	14.78	6.54	8.24	NA
MW-5	1/5/2004	290	95 c	11	<2.5	8.5	<5.0	NA	380	NA	NA	NA	NA	NA	NA	NA	14.78	5.90	8.88	NA
MW-5	4/12/2004	280	54 c	9.0	<2.5	12	<5.0	NA	400	NA	NA	NA	NA	NA	NA	NA	14.78	6.19	8.59	NA
MW-5	7/2/2004	660	280 c	34	3.6	42	17	NA	550	<10	<10	<10	400	NA	NA	NA	14.78	6.33	8.45	NA
MW-5	10/8/2004	<250	61 d	<2.5	<2.5	2.6	<5.0	NA	260	NA	NA	NA	NA	NA	NA	NA	14.78	6.32	8.46	NA
MW-5	1/10/2005	<100	110 d	2.7	<1.0	6.0	<2.0	NA	240	NA	NA	NA	NA	NA	NA	NA	14.78	5.65	9.13	NA
MW-5	4/15/2005	160	110 d	7.8	<0.50	15	2.5	NA	160	NA	NA	NA	NA	NA	NA	NA	14.78	5.95	8.83	NA
MW-5	7/15/2005	<50	63 d	3.6	<0.50	3.4	<1.0	NA	99	<2.0	<2.0	<2.0	120	NA	NA	NA	14.78	6.31	8.47	NA
MW-5	10/20/2005	160	120 c	5.1	<0.50	17	1.4	NA	79	NA	NA	NA	NA	NA	NA	NA	14.78	6.66	8.12	NA
MW-5	1/24/2006	<50.0	<105	0.840	<0.500	3.53	<0.500	NA	45.2	NA	NA	NA	NA	NA	NA	NA	14.78	6.10	8.68	NA
MW-5	4/14/2006	<50.0	89.2 h	3.00	<0.500	2.70	<0.500	NA	45.8	NA	NA	NA	24.6	NA	NA	NA	14.78	5.63	9.15	NA
MW-5	7/25/2006	59.2	109	1.20	<0.500	3.48	<0.500	NA	37.2	<0.500	<0.500	<0.500	54.2	NA	NA	NA	14.78	6.22	8.56	NA
MW-5	10/11/2006	146	172 h	4.69	<0.500	12.6	<0.500	NA	26.2	<0.500	<0.500	<0.500	22.7	NA	NA	NA	14.78	6.41	8.37	NA

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MW-5	1/19/2007	120	<50 h	3.5	<0.50	2.6	<1.0	NA	28	<1.0	<1.0	<1.0	13	NA	NA	NA	14.78	6.45	8.33	NA
MW-5	4/2/2007	180 l	270 h	4.3	<1.0	8.5	0.49 n	NA	23	<2.0	<2.0	<2.0	22	NA	NA	NA	14.78	6.28	8.50	NA
MW-5	7/19/2007	94 l	62 h	0.87	<1.0	1.8	<1.0	NA	12	<2.0	<2.0	<2.0	6.8 n	NA	NA	NA	14.78	6.45	8.33	NA
MW-5	10/16/2007	<50 l	<50 h	0.22 n	<1.0	<1.0	<1.0	NA	11	<2.0	<2.0	<2.0	<10	NA	NA	NA	14.78	6.46	8.32	NA
MW-5	1/23/2008	87 l	<50 h	1.4	<1.0	4.0	<1.0	NA	15	<2.0	<2.0	<2.0	<10	NA	NA	NA	14.78	6.15	8.63	NA
MW-5	4/2/2008	100	<50 h	5.1	<1.0	1.2	<1.0	NA	12	<2.0	<2.0	<2.0	<10	NA	NA	NA	14.78	6.29	8.49	NA
MW-5	**7/8/2008**	**<50**	**<50 h**	**<0.50**	**<1.0**	**<1.0**	**<1.0**	**NA**	**10**	**<2.0**	**<2.0**	**<2.0**	**<10**	**NA**	**NA**	**NA**	**14.78**	**6.53**	**8.25**	**NA**
MW-6	9/25/2002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	12.91	5.50	7.41	NA
MW-6	10/15/2002	<500	72	<5.0	<5.0	<5.0	<5.0	NA	2,600	NA	NA	NA	NA	NA	NA	NA	12.91	5.45	7.46	NA
MW-6	1/29/2003	<250	350	<2.5	<2.5	<2.5	<2.5	NA	1,600	NA	NA	NA	NA	NA	NA	NA	12.91	5.20	7.71	NA
MW-6	4/30/2003	<2,500	220	<25	<25	<25	<50	NA	5,900	NA	NA	NA	NA	NA	NA	NA	12.91	5.11	7.80	NA
MW-6	7/22/2003	<500	<50	<5.0	<5.0	<5.0	<10	NA	1,300	NA	NA	NA	NA	NA	NA	NA	12.91	5.46	7.45	NA
MW-6	10/9/2003	<1,000	<50	<10	<10	<10	<20	NA	3,000	NA	NA	NA	NA	NA	NA	NA	12.91	5.51	7.40	NA
MW-6	1/5/2004	<2,500	78 c	<25	<25	<25	<50	NA	3,600	NA	NA	NA	NA	NA	NA	NA	12.91	5.11	7.80	NA
MW-6	4/12/2004	<2,500	<50	<25	<25	<25	<50	NA	4,300	NA	NA	NA	NA	NA	NA	NA	12.91	5.30	7.61	NA
MW-6	7/2/2004	<2,500	<50	<25	<25	<25	<50	NA	2,900	<100	<100	<100	<250	NA	NA	NA	12.91	5.36	7.55	NA
MW-6	10/8/2004	<2,500	<50	<25	<25	<25	<50	NA	3,100	NA	NA	NA	NA	NA	NA	NA	12.91	5.43	7.48	NA
MW-6	1/10/2005	<1,000	<50	<10	<10	<10	<20	NA	2,600	NA	NA	NA	NA	NA	NA	NA	12.91	5.00	7.91	NA
MW-6	4/15/2005	210	100 d	11	<0.50	19	3.4	NA	180	NA	NA	NA	NA	NA	NA	NA	12.91	5.29	7.62	NA
MW-6	7/15/2005	<1,000	<50	<10	<10	<10	<20	NA	1,200	<20	<40	<40	<100	NA	NA	NA	12.91	5.47	7.44	NA
MW-6	10/20/2005	<1,000	<50	<10	<10	<10	<20	NA	1,800	NA	NA	NA	NA	NA	NA	NA	12.91	5.65	7.26	NA
MW-6	1/24/2006	1,690	<111	<0.500	<0.500	<0.500	<0.500	NA	1,270	NA	NA	NA	NA	NA	NA	NA	12.91	5.27	7.64	NA
MW-6	4/14/2006	1,200	<50.0 h	<0.500	<0.500	<0.500	<0.500	NA	1,300	NA	NA	NA	NA	NA	NA	NA	12.91	4.93	7.98	NA
MW-6	7/25/2006	<50.0	<94.3	<0.500	<0.500	<0.500	<0.500	NA	916	<0.500	<0.500	<0.500	<10.0	NA	NA	NA	12.91	5.38	7.53	NA
MW-6	10/11/2006	785	54.8 h	<0.500	<0.500	<0.500	<0.500	NA	673	<0.500	<0.500	<0.500	<10.0	NA	NA	NA	12.91	5.52	7.39	NA
MW-6	1/19/2007	600 k	<50 h	<5.0	<5.0	<5.0	<10	NA	920	<10	<10	<10	<100	NA	NA	NA	12.91	5.43	7.48	NA
MW-6	4/2/2007	240 l,m	110 h	<0.50	<1.0	<1.0	<1.0	NA	1,200	<2.0	<2.0	<2.0	68	NA	NA	NA	12.91	5.34	7.57	NA
MW-6	7/19/2007	570 l,m	<50 h	<0.50	<1.0	<1.0	<1.0	NA	900	<2.0	<2.0	<2.0	93	NA	NA	NA	12.91	5.40	7.51	NA
MW-6	10/16/2007	340 l,m	<50 h	1.3 n	<5.0	<5.0	<5.0	NA	990	<10	<10	<10	<50	NA	NA	NA	12.91	5.38	7.53	NA
MW-6	1/23/2008	<50 l	<50 h	<5.0	<10	<10	<10	NA	1,300	<20	<20	<20	<100	NA	NA	NA	12.91	5.10	7.81	NA
MW-6	4/2/2008	1,000	<50 h	<5.0	<10	<10	<10	NA	820	<20	<20	<20	150	NA	NA	NA	12.91	5.40	7.51	NA
MW-6	**7/8/2008**	**780**	**<50 h**	**<5.0**	**<10**	**<10**	**<10**	**NA**	**680**	**<20**	**<20**	**<20**	**<100**	**NA**	**NA**	**NA**	**12.91**	**5.49**	**7.42**	**NA**

WELL CONCENTRATIONS
Shell-branded Service Station
105 5th Street
Oakland, CA

Well ID	Date	TPPH (ug/L)	TEPH (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	MTBE 8020 (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)	TOC (MSL)	Depth to Water (ft.)	GW Elevation (MSL)	DO Reading (ppm)
T-1	1/7/2002	<20,000	2,600	310	<200	<200	<200	NA	92,000	NA	NA	NA	NA	NA	NA	NA	NA	4.86	NA	NA
T-1	4/12/2002	<5,000	1,000	230	<50	<50	<50	NA	57,000	NA	NA	NA	NA	NA	NA	NA	NA	5.05	NA	NA
T-1	7/10/2002	<20,000	3,700	260	<200	<200	<200	NA	69,000	NA	NA	NA	NA	NA	NA	NA	NA	5.84	NA	NA
T-1	10/15/2002	<5,000	2,100	150	62	<50	75	NA	29,000	NA	NA	NA	NA	NA	NA	NA	NA	5.77	NA	NA
T-1	1/2/2003	NA	NA	1.5	<0.50	<0.50	<1.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5.10	NA	NA
T-1	1/29/2003	1,300	1,200	67	6.5	<2.0	5.2	NA	820	NA	NA	NA	NA	NA	NA	NA	NA	5.49	NA	NA
T-1	4/30/2003	360	1,000	45	0.60	<0.50	2.3	NA	89	NA	NA	NA	NA	NA	NA	NA	NA	4.91	NA	NA
T-1	7/22/2003	1,200	940 c	170	4.8	<2.5	18	NA	150	NA	NA	NA	NA	NA	NA	NA	NA	5.70	NA	NA
T-1	10/9/2003	700	880 c	32	2.0	<1.0	9.8	NA	140	NA	NA	NA	NA	NA	NA	NA	NA	5.79	NA	NA
T-1	1/5/2004	450	790 c	24	2.1	<1.0	3.2	NA	29	NA	NA	NA	NA	NA	NA	NA	NA	5.16	NA	NA
T-1	4/12/2004	210	530 c	6.4	<1.0	<1.0	<2.0	NA	9.0	NA	NA	NA	NA	NA	NA	NA	NA	5.40	NA	NA
T-1	7/2/2004	1,400	2,800 c	160	300	6.7	180	NA	28	NA	NA	NA	NA	NA	NA	NA	NA	5.62	NA	NA
T-1	10/8/2004	1,800	1,100 c	390	68	5.6	330	NA	59	NA	NA	NA	NA	NA	NA	NA	NA	5.67	NA	NA
T-1	1/10/2005	3,000	1,300 c	480	150	30	270	NA	52	NA	NA	NA	NA	NA	NA	NA	NA	4.92	NA	NA
T-1	4/15/2005	1,100	1,100 c	93	2.9	3.3	8.3	NA	26	NA	NA	NA	NA	NA	NA	NA	NA	5.22	NA	NA
T-1	7/15/2005	490	430 c	1.7	1.3	<0.50	2.4	NA	9.7	NA	NA	NA	NA	NA	NA	NA	NA	5.55	NA	NA
T-1	10/20/2005	300 e	770 c	<0.50	<0.50	<0.50	1.3	NA	11	NA	NA	NA	NA	NA	NA	NA	13.85	6.16	7.69	NA
T-1	1/24/2006	<50.0	2,610 f	<0.500	<0.500	<0.500	<0.500	NA	18.5	NA	NA	NA	NA	NA	NA	NA	13.85	5.45	8.40	NA
T-1	4/14/2006	<50.0	2,550 h	<0.500	<0.500	<0.500	<0.500	NA	5.29	NA	NA	NA	NA	NA	NA	NA	13.85	5.11	8.74	NA
T-1	7/25/2006	<50.0	544	<0.500	<0.500	<0.500	<0.500	NA	9.73	NA	NA	NA	248	NA	NA	NA	13.85	5.53	8.32	NA
T-1	10/11/2006	<50.0	1,540 h	<0.500	<0.500	<0.500	<0.500	NA	4.28	1.22	1.93	2.30	91.6	NA	NA	NA	13.85	5.65	8.20	NA
T-1	1/19/2007	<50	83 h	<0.50	<0.50	<0.50	<1.0	NA	0.58 j	<1.0	<1.0	<1.0	6.0 j	NA	NA	NA	13.85	5.77	8.08	NA
T-1	4/2/2007	79 l	680 h	<0.50	<1.0	<1.0	<1.0	NA	2.2	<2.0	<2.0	<2.0	51	NA	NA	NA	13.85	5.51	8.34	NA
T-1	7/19/2007	<50 l	330 h	<0.50	<1.0	<1.0	<1.0	NA	2.9	<2.0	<2.0	<2.0	34	NA	NA	NA	13.85	5.67	8.18	NA
T-1	10/16/2007	65 l	230 h	<0.50	<1.0	<1.0	<1.0	NA	2.5	<2.0	<2.0	<2.0	21	NA	NA	NA	13.85	6.34	7.51	NA
T-1	1/23/2008	<50 l	140 h,m	<0.50	<1.0	<1.0	<1.0	NA	2.0	<2.0	<2.0	<2.0	<10	NA	NA	NA	13.85	5.31	8.54	NA
T-1	4/2/2008	<50	170 h,m	<0.50	<1.0	<1.0	<1.0	NA	<1.0	<2.0	<2.0	<2.0	<10	NA	NA	NA	13.85	5.48	8.37	NA
T-1	**7/8/2008**	**<50**	**310 h**	**<0.50**	**<1.0**	**<1.0**	**<1.0**	**NA**	**2.9**	**<2.0**	**<2.0**	**<2.0**	**<10**	**NA**	**NA**	**NA**	**13.85**	**6.03**	**7.82**	**NA**

WELL CONCENTRATIONS
Shell-branded Service Station
105 5th Street
Oakland, CA

Well ID	Date	TPPH (ug/L)	TEPH (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	MTBE 8020 (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)	TOC (MSL)	Depth to Water (ft.)	GW Elevation (MSL)	DO Reading (ppm)

Abbreviations:
TPPH = Total petroleum hydrocarbons as gasoline by EPA Method 8260B; prior to July 9, 2001, analyzed by EPA Method 8015.
TEPH = Total petroleum hydrocarbons as diesel by modified EPA Method 8015.
BTEX = Benzene, toluene, ethylbenzene, xylenes by EPA Method 8260B; prior to July 9, 2001, analyzed by EPA Method 8020.
MTBE = Methyl tertiary butyl ether
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
TBA = Tertiary butyl alcohol, analyzed by EPA Method 8260B
1,2-DCA = 1,2-dichloroethane, analyzed by EPA Method 8260B
EDB = 1,2-dibromomethane or ethlyene dibromide, analyzed by EPA Method 8260B
TOC = Top of Casing Elevation
GW = Groundwater
DO = Dissolved Oxygen
ug/L = Parts per billion
ppm = Parts per million
MSL = Mean sea level
ft. = Feet
<n = Below detection limit
NA = Not applicable
n/n = Pre-purge/Post-purge

WELL CONCENTRATIONS
Shell-branded Service Station
105 5th Street
Oakland, CA

Well ID	Date	TPPH (ug/L)	TEPH (ug/L)	B (ug/L)	T (ug/L)	E (ug/L)	X (ug/L)	MTBE 8020 (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)	TOC (MSL)	Depth to Water (ft.)	GW Elevation (MSL)	DO Reading (ppm)

Notes:

a = Sample was analyzed outside of the EPA recommended holding time.

b = Result was generated out of hold time.

c = Hydrocarbon does not match pattern of laboratory's standard.

d = Hydrocarbon reported is in the early Diesel range and does not match the laboratory's Diesel standard.

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

f = TPH pattern is characteristic of diesel fuel.

g = TPH pattern is characteristic of gasoline.

h = TEPH with Silica Gel clean-up

i = Analyte reported with failing QC due to insufficient sample and hold time requirements.

j = Estimated value. Analyte detected at a level less than the Reporting Limit (RL) and greater than or equal to the Method Detection Limit (MDL). The user of this data should be aware that this data is of limited reliability.

k = Hydrocarbon result partly due to individual peak(s) in quantitation range.

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 analyzed by EPA Method 8260B.

Top of casing for well MW-4 provided by Cambria Environmental Technology, Inc.

Wells MW-1 through MW-5 surveyed April 12, 2002 by Virgil Chavez Land Surveying of Vallejo, CA.

Site surveyed September 26, 2002 by Virgil Chavez Land Surveying of Vallejo, CA.

Well T-1 surveyed on September 27, 2005. Survey data provided by Cambria Environmental.

APPENDIX F

GROUNDWATER REMEDIATION DATA TABLES

Table 3: Periodic DVE - Aqueous-phase Mass Removal Data - Shell-branded Service Station, Incident #98995757, 105 Fifth Street, Oakland, California

Date Purged	Well ID	Volume Pumped (gal)	Cumulative Volume Pumped (gal)	Date Sampled	TPHg Concentration (ppb)	TPHg Removed (pounds)	TPHg 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)
					TPHg			**Benzene**			**MTBE**		
04/21/00	MW-2	150	150	04/07/00	4,940	0.00618	0.00618	659	0.00082	0.00082	41,800	0.05232	0.05232
04/28/00	MW-2	100	250	04/07/00	4,940	0.00412	0.01031	659	0.00055	0.00137	41,800	0.03488	0.08720
05/05/00	MW-2	310	560	04/07/00	4,940	0.01278	0.02308	659	0.00170	0.00308	41,800	0.10813	0.19532
05/12/00	MW-2	350	910	04/07/00	4,940	0.01443	0.03751	659	0.00192	0.00500	41,800	0.12208	0.31740
06/02/00	MW-2	257	1,167	04/07/00	4,940	0.01059	0.04811	659	0.00141	0.00642	41,800	0.08964	0.40704
07/06/00	MW-2	334	1,501	04/07/00	4,940	0.01377	0.06187	659	0.00184	0.00825	41,800	0.11650	0.52354
09/12/00	MW-2	312	1,813	07/26/00	5,010	0.01304	0.07492	409	0.00106	0.00932	54,300	0.14137	0.66491
10/26/00	MW-2	56	1,869	07/26/00	5,010	0.00234	0.07726	409	0.00019	0.00951	54,300	0.02537	0.69028
04/21/00	MW-3	100	100	04/07/00	<1,000	0.00042	0.00042	853	0.00071	0.00071	283,000	0.23615	0.23615
04/28/00	MW-3	100	200	04/07/00	<1,000	0.00042	0.00083	853	0.00071	0.00142	283,000	0.23615	0.47229
05/05/00	MW-3	50	250	04/07/00	<1,000	0.00021	0.00104	853	0.00036	0.00178	283,000	0.11807	0.59036
05/12/00	MW-3	150	400	04/07/00	<1,000	0.00063	0.00167	853	0.00107	0.00285	283,000	0.35422	0.94458
06/02/00	MW-3	550	950	04/07/00	<1,000	0.00229	0.00396	853	0.00391	0.00676	283,000	1.29880	2.24338
07/06/00	MW-3	528	1,478	04/07/00	<1,000	0.00220	0.00617	853	0.00376	0.01052	283,000	1.24685	3.49023
08/16/00	MW-3	849	2,327	07/26/00	<20,000	0.07084	0.07701	<200	0.00071	0.01123	**320,000**	2.26699	5.75722
09/12/00	MW-3	188	2,515	07/26/00	<20,000	0.01569	0.09270	<200	0.00016	0.01139	**320,000**	0.50200	6.25922
10/26/00	MW-3	156	2,671	07/26/00	<20,000	0.01302	0.10571	<200	0.00013	0.01152	**320,000**	0.41655	6.67577
Total Gallons Extracted:			**4,540**		**Total Pounds Removed:**		**0.18297**			**0.02103**			**7.36605**
					Total Gallons Removed:		**0.03000**			**0.00288**			**1.18807**

Abbreviations & Notes:

TPHg = Total petroleum hydrocarbons as gasoline
MTBE = Methyl tertiary butyl ether
ppb = Parts per billion
gal = Gallon
a = Concentrations for tank backfill well T-1 estimated from nearest monitoring well MW-3.
b = Tank backfill well T-1 sampled for BTEX (including benzene) on 1/2/03.

Table 3: Periodic DVE - Aqueous-phase Mass Removal Data - Shell-branded Service Station, Incident #98995757, 105 Fifth Street, Oakland, California

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)
TPHg and benzene analyzed by EPA Method 8015/8020 or equivalent.
MTBE analyzed by EPA Method 8260 in bold font, all other results analyzed by EPA Method 8020.
Concentrations based on most recent groundwater monitoring results
Groundwater extracted by vacuum trucks provided by Phillips Services Corporation and/or Onyx Industrial Services. Water disposed of at a Martinez Refinery.
If concentration is less than the laboratory detection limit, one half of the detection limit concentration is used in the mass removal calculation.

Table 4: Periodic DVE - Vapor-phase Mass Removal Data - Shell-branded Service Station, Incident #98995757, 105 Fifth Street, Oakland, California

Date	Well ID	Interval Hours of Operation (hours)	System Flow Rate (CFM)	Hydrocarbon Concentrations (Concentrations in ppmv) TPHg	Benzene	MTBE	TPPH TPHg Removal Rate (#/hour)	TPPH Cumulative TPHg Removed (#)	Benzene Benzene Removal Rate (#/hour)	Benzene Cumulative Benzene Removed (#)	MTBE MTBE Removal Rate (#/hour)	MTBE Cumulative MTBE Removed (#)
04/21/00	MW-2	1.00	9.0	1,949	52	836	0.234	0.234	0.006	0.006	0.103	0.103
06/02/00	MW-2	3.50	0.4	30	6.51	108	0.000	0.235	0.000	0.006	0.001	0.105
07/06/00	MW-2	4.00	0.7	<567	<6.3	647	0.003	0.246	0.000	0.006	0.006	0.130
08/16/00	MW-2	3.00	8.6	13,654	<39	1,861	1.570	4.955	0.002	0.012	0.219	0.787
09/12/00	MW-2	4.00	7.6	12,100	<31.4	6,410	1.229	9.872	0.001	0.018	0.666	3.452
10/26/00	MW-2	1.50	5.5	35.1	0.562	41.0	0.003	9.876	0.000	0.018	0.003	3.457
03/20/01	MW-2	2.75	15.8	4,800	11.4	375	0.822	12.136	0.002	0.023	0.075	3.664
04/21/00	MW-3	1.00	7.0	<28	<0.31	594	0.001	0.001	0.000	0.000	0.057	0.057
06/02/00	MW-3	4.25	0.3	<14.2	0.36	608	0.000	0.001	0.000	0.000	0.002	0.067
07/06/00	MW-3	4.00	0.7	38	4.4	133	0.000	0.003	0.000	0.000	0.001	0.073
08/16/00	MW-3	6.75	7.0	<1,416	<15.7	3,333	0.066	0.450	0.001	0.005	0.319	2.227
09/12/00	MW-3	4.00	7.6	<1,420	<15.7	1,850	0.072	0.739	0.001	0.008	0.192	2.996
10/26/00	MW-3	4.00	7.2	<2,840	<31.4	531	0.137	1.285	0.001	0.013	0.052	3.205
03/20/01	MW-3	2.83	10.6	2,400	1.75	640	0.347	2.268	0.000	0.014	0.095	3.474
Total Pounds Removed:							**TPHg = 14.404**		**Benzene = 0.037**		**MTBE = 7.138**	

Table 4: Periodic DVE - Vapor-phase Mass Removal Data - Shell-branded Service Station, Incident #98995757, 105 Fifth Street, Oakland, California

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

If concentration is less than the laboratory detection limit, one half of the detection limit concentration is used in the mass removal calculation.

Table 5: Groundwater Extraction - Mass Removal Data - Shell-branded Service Station, Incident #98995757, 105 Fifth Street, 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**		
03/20/01	MW-2	**Dual-phase Vacuum Extraction (DVE) Pilot Test using a RSI V3 Internal Combustion Engine with Bioslurp Tank**											
13:15	RPM=2000	12	12	GPM	**2,300**	0.000	0.000	**49**	0.000	0.000	**12,000**	0.001	0.000
13:20					2,300			49			12,000		
13:25					2,300			49			12,000		
14:45					2,300			49			12,000		
15:00	RPM=1500	138	150	3.07	2,300	0.003	0.003	49	0.000	0.000	12,000	0.014	0.014
15:05					2,300			49			12,000		
15:10					2,300			49			12,000		
15:15					2,300			49			12,000		
15:30		82	232	2.73	2,300	0.002	0.004	49	0.000	0.000	12,000	0.008	0.022
15:45		33	265	2.20	2,300	0.001	0.005	49	0.000	0.000	12,000	0.003	0.025
16:00		16	281	1.07	2,300	0.000	0.005	49	0.000	0.000	12,000	0.002	0.027
03/20/01	MW-3	**Dual-phase Vacuum Extraction (DVE) Pilot Test using a RSI V3 Internal Combustion Engine with Bioslurp Tank**											
9:10	RPM=2000			GPM	<10,000			<100			190,000		
9:15					<10,000			<100			190,000		
9:20		350	350	35.0	**<10,000***	0.015	0.000	**<100***	0.000	0.000	**190,000**	0.555	0.00
9:50					<10,000			<100			190,000		
10:00		30	380	0.75	<10,000*	0.001	0.001	<100*	0.000	0.000	190,000	0.048	0.05
10:15		32	412	2.13	<10,000*	0.001	0.003	<100*	0.000	0.000	190,000	0.051	0.10
10:30	RPM=1500				<10,000			<100			190,000		
10:35					<10,000			<100			190,000		
10:40					<10,000			<100			190,000		
10:45					<10,000			<100			190,000		
11:15		36	448	0.60	<10,000*	0.002	0.004	<100*	0.000	0.000	190,000	0.057	0.16
11:30					<10,000			<100			190,000		
11:45		18	466	0.60	<10,000*	0.001	0.005	<100*	0.000	0.000	190,000	0.029	0.18
12:00		22	488	1.47	<10,000*	0.001	0.006	<100*	0.000	0.000	190,000	0.035	0.22
03/21/01	T-1	2,900	2,900	03/20/01	**<10,000***	0.121	0.121	<100*	0.001	0.001	190,000	4.60	4.60
Total Gallons Extracted		3,069			Total Pounds Removed	0.132			0.001			4.834	
					Total Gallons Removed	3,069			0.000			0.781	

Table 5: Groundwater Extraction - Mass Removal Data - Shell-branded Service Station, Incident #98995757, 105 Fifth Street, Oakland, California

Abbreviations & Notes:

TPPH = Total purgeable hydrocarbons as gasoline
MTBE = Methyl tert-butyl ether
µg/L = Micrograms per liter
ppb = Parts per billion, equivalent to µg/L
L = Liter
gal = Gallon
g = Gram
<n = Detection limit provided by analytical method
* = 1/2 the detection limit concentration is used for mass removal calculation.
Mass removed based on the formula: volume extracted (gal) x Concentration (µg/L) x ($g/10^6 \mu g$) 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 6: Vapor Extraction - Mass Removal Data - Shell-branded Service Station, Incident #98995757, 105 Fifth Street, Oakland, California

Date	Well ID	Interval Hours of Operation (hours)	System Flow Rate (CFM)	Hydrocarbon Concentrations (Concentrations in ppmv) TPHg	Benzene	MTBE	TPPH TPHg Removal Rate (#/hour)	TPPH Cumulative TPHg Removed (#)	Benzene Benzene Removal Rate (#/hour)	Benzene Cumulative Benzene Removed (#)	MTBE MTBE Removal Rate (#/hour)	MTBE Cumulative MTBE Removed (#)
03/20/01	MW-2	**Dual-phase Vacuum Extraction (DVE) Pilot Test using a RSI V3 Internal Combustion Engine with Bioslurp Tank**										
13:15	RPM=2000	0.000	10	10,770			0.575	0.000	0.001	0.000	0.030	0.000
13:20		0.083	13	**4,300**	**9.8**	**220**	0.747	0.062	0.002	0.000	0.039	0.003
13:25		0.083	7	32,400			0.402	0.095	0.001	0.000	0.021	0.005
14:45		1.33	5	13,530			0.287	0.478	0.001	0.001	0.015	0.025
15:00	RPM=1500	0.250	7	26,300			0.496	0.602	0.001	0.001	0.051	0.038
15:05		0.083	9	22,000			0.638	0.655	0.001	0.001	0.065	0.043
15:10		0.083	19	12,000			1.35	0.766	0.003	0.002	0.138	0.055
15:15		0.003	20	9,940			1.42	0.771	0.003	0.002	0.145	0.055
15:30		0.250	20	13,770			1.42	1.13	0.003	0.002	0.145	0.091
15:45		0.250	28	33,400			1.98	1.62	0.004	0.004	0.203	0.142
16:00		0.250	36	**5,300**	**13**	**530**	2.55	2.26	0.006	0.005	0.261	0.207
03/20/01	MW-3	**Dual-phase Vacuum Extraction (DVE) Pilot Test using a RSI V3 Internal Combustion Engine with Bioslurp Tank**										
9:10	RPM=2000	0.000	0				0.000	0.000	0.000	0.000	0.000	0.000
9:15		0.083	0	**2,600**	**1.2**	**690**	0.000	0.000	0.000	0.000	0.000	0.000
9:20		0.083	0				0.000	0.000	0.000	0.000	0.000	0.000
9:50		0.500	5				0.174	0.087	0.000	0.000	0.047	0.024
10:00		0.167	13	4,340			0.452	0.162	0.000	0.000	0.123	0.044
10:15		0.250	11	4,670			0.382	0.258	0.000	0.000	0.104	0.070
10:30	RPM=1500	0.250	10	23,300			0.294	0.331	0.000	0.000	0.081	0.090
10:35		0.083	13	20,570			0.382	0.363	0.000	0.000	0.105	0.099
10:40		0.083	14	22,000			0.412	0.397	0.000	0.000	0.113	0.108
10:45		0.083	17	23,000			0.500	0.439	0.000	0.000	0.137	0.120
11:15		0.500	8	20,000			0.235	0.556	0.000	0.000	0.065	0.152
11:30		0.250	16	18,700			0.471	0.674	0.000	0.001	0.129	0.184
11:45		0.250	21	20,370			0.618	0.829	0.001	0.001	0.169	0.227
12:00		0.250	21	**2,200**	**2.3**	**590**	0.618	0.983	0.001	0.001	0.169	0.269
Total Pounds Removed =							TPHg =	3.24	Benzene =	0.006	MTBE =	0.476

Table 6: Vapor Extraction - Mass Removal Data - Shell-branded Service Station, Incident #98995757, 105 Fifth Street, Oakland, California

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

Bold = Lab Analytical Concentration, Grayscale = Horiba Organic Vapor Analyzer (OVA) Concentration

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

APPENDIX G

BORING LOGS

Cambria Environmental Technology, Inc.
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BORING/WELL LOG

CLIENT NAME	Equiva Services LLC	**BORING/WELL NAME**	MW-1
JOB/SITE NAME	oak105	**DRILLING STARTED**	14-May-99
LOCATION	105 Fifth Street, Oakland, California	**DRILLING COMPLETED**	14-May-99
PROJECT NUMBER	244-0472	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Gregg Drilling	**GROUND SURFACE ELEVATION**	15.49' ft above msl
DRILLING METHOD	Hollow-stem auger		
BORING DIAMETER	10"	**SCREENED INTERVALS**	4 to 24 fbg
LOGGED BY	T. Buggle	**DEPTH TO WATER (First Encountered)**	15.8 fbgNA ▽
REVIEWED BY	Darryk Ataide	**DEPTH TO WATER (Static)**	NA ▼
REMARKS	Hand augered to 5' bgs.		

PID (ppm)	BLOW COUNTS	SAMPLE ID	DEPTH (fbg)	U.S.C.S.	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (fbg)	WELL DIAGRAM
					SAND, (SAND); brown; soft; 5% silt, 90% sand, 5% gravel; low plasticity; high estimated permeability.		Portland Type I/II
							Bentonite Seal
	2						Monterey Sand #3
	3				2 4' - 5% silt, 95% sand.		
0	6	MW-1@ 5.5	5				
					2 4' - 5% clay, 5% silt, 90% sand.		
	13						
	15						
3.5	20	MW-1 @10.5	10				
				SP			
	N/A						
	N/A				@ 14' - color brown, orange, rust		4"-diam., 0.010" Slotted Schedule 40 PVC
	N/A	MW-1 @15.5	15		▽		
	7						
	10						
0	20	MW-1 @20.5	20				
	3/18						
0		MW-1 @25.5	25			25.5	Bottom of Boring @ 25.5 fbg

WELL LOG (PID) \\10CAMENVDC\SONOMA.SHELL\OAKLAND 105 FIFTH\GINT\OAK105.GPJ DEFAULT.GDT 11/21/06

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BORING/WELL LOG

CLIENT NAME	Equiva Services LLC	**BORING/WELL NAME**	MW-2
JOB/SITE NAME	oak105	**DRILLING STARTED**	14-May-99
LOCATION	105 Fifth Street, Oakland, California	**DRILLING COMPLETED**	14-May-99
PROJECT NUMBER	244-0472	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Gregg Drilling	**GROUND SURFACE ELEVATION**	13.92' ft above msl
DRILLING METHOD	Hollow-stem auger		
BORING DIAMETER	10"	**SCREENED INTERVALS**	4 to 24 fbg
LOGGED BY	T. Buggle	**DEPTH TO WATER (First Encountered)**	14.0 fbgNA
REVIEWED BY	Darryk Ataide	**DEPTH TO WATER (Static)**	NA
REMARKS	Hand augered to 5' bgs.		

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (fbg)	WELL DIAGRAM
							ASPHLAT	0.8	Portland Type I/II
402	4 4 6	MW-2 @5.5		5	ML		**Sandy SILT** (ML); black; soft; 60% silt, 40% sand; low plasiticity; high estimated permeability.		Bentonite Seal Monterey Sand #3
								7.5	
279	10 15 28	MW-2 @10.5		10	SP		**Silty SAND** (SP); grey-black; soft; moist, 30% silt, 70% sand; high plasiticity; high estimated permeability.		
								12.5	
134	17 30 50	MW-2 @15.5		15	SP		**SAND** (SP); brown, rust, grey; soft; wet; 5% silt, 95% sand; low plasiticity; high estimated permeability. ▽		4"-diam., 0.010" Slotted Schedule 40 PVC
9.4	8 8 10	MW-2 @20.5		20					
								22.5	
1.2	2 2 3	MW-2 @25.5		25	GM		**Silty SAND** (ML); brown, rust; soft; wet; 5% clay, 15% silt, 80% sand; low plasiticity; high estimated permeability.	25.5	Bottom of Boring @ 25.5 fbg

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BORING/WELL LOG

CLIENT NAME	Equiva Services LLC	**BORING/WELL NAME**	MW-3
JOB/SITE NAME	oak105	**DRILLING STARTED**	14-May-99
LOCATION	105 Fifth Street, Oakland, California	**DRILLING COMPLETED**	14-May-99
PROJECT NUMBER	244-0472	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Gregg Drilling	**GROUND SURFACE ELEVATION**	14.46' ft above msl
DRILLING METHOD	Hollow-stem auger (Limited Access Rig)		
BORING DIAMETER	10"	**SCREENED INTERVALS**	5 to 25 fbg
LOGGED BY	T. Buggle	**DEPTH TO WATER (First Encountered)**	12.5 fbgNA
REVIEWED BY	Darryk Ataide	**DEPTH TO WATER (Static)**	NA
REMARKS	Hand augered to 5' bgs.		

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (fbg)	WELL DIAGRAM
	N/A						**ASPHALT**	0.8	Portland Type I/II
							Silty SAND (SM); black; soft; moist; 30% silt, 70% sand; low plasticity; high estimated permeability.		Bentonite Seal
					SP				Monterey Sand #3
	N/A			5					
	N/A								
28.7	N/A	MW-3 @6.5							
								7.5	
							SAND (SP); brown rust; soft; moist; 5% silt, 95% sand; low plasticity; high estimated permeability.		
	N/A			10					
	N/A								
71.1	N/A	MW-3 @11.5							
							▽		
	N/A			15					4"-diam., 0.010" Slotted Schedule 40 PVC
	N/A						@ 15' - brown, grey, rust; soft-medium; wet.		
	N/A	MW-3 @16.5			SP				
							@ 17.5 - brown, grey, rust; medium; wet; 10% clay,10% silt, 80% sand; medium-high estimated permeability.		
	N/A			20					
	N/A								
57.1	N/A	MW-3 @21.5							
	N/A								
	N/A								
21.1	N/A	MW-3 @25.0		25				25.0	Bottom of Boring @ 25 fbg

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BORING/WELL LOG

CLIENT NAME	Equiva Services LLC	**BORING/WELL NAME**	MW-4
JOB/SITE NAME	oak105	**DRILLING STARTED**	12-Feb-01
LOCATION	105 Fifth Street, Oakland, California	**DRILLING COMPLETED**	12-Feb-01
PROJECT NUMBER	244-0472	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Gregg Drilling	**GROUND SURFACE ELEVATION**	12.31' ft above msl
DRILLING METHOD	Hollow-stem auger		
BORING DIAMETER	8"	**SCREENED INTERVALS**	10 to 25 fbg
LOGGED BY	S. Couch	**DEPTH TO WATER (First Encountered)**	10.0 fbg (12-Feb-01)
REVIEWED BY	S. Bork, RG# 5626	**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	0.5	Portland Type I/II
							FILL; brown; damp; 10% silt, 90% fine to medium grained sand.		
		MW-4-5.0		5	SP		**SAND** (SP); black; damp; 10% silt, 90% fine grained sand; no plasticity.	5.0	Bentonite Seal
		MW-4-10.0		10	SM		▽ **Silty SAND**(SM); dark reddish brown; moist; 25% silt, 75% fine grained sand; oxidation; low plasticity.	10.0	Monterey Sand #2/12
		MW-4-15.0		15	SC		**Clayey SAND**(SC); greyish brown; wet; 20% clay, 80% fine grained sand; low to medium plasticity.	15.0	2"-diam., 0.020" Slotted Schedule 40 PVC
		MW-4-20.0		20	SM		**Silty SAND**(SM); grey; saturated; 5% clay, 15% silt, 80% fine grained sand; low plasticity.	20.0	
				25				25.0	Bottom of Boring @ 25 fbg

WELL LOG (PID) W:\CAMENV\DCS\SONOMA.SHELL\OAKLAND 105 FIFTH\GINT\OAK105.GPJ DEFAULT.GDT 11/21/06

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BORING/WELL LOG

CLIENT NAME	Equiva Services LLC	**BORING/WELL NAME**	MW-5
JOB/SITE NAME	oak105	**DRILLING STARTED**	08-Mar-02
LOCATION	105 Fifth Street, Oakland, California	**DRILLING COMPLETED**	08-Mar-02
PROJECT NUMBER	244-0472	**WELL DEVELOPMENT DATE (YIELD)**	29-Mar-02
DRILLER	Gregg Drilling	**GROUND SURFACE ELEVATION**	15.05 ft above msl
DRILLING METHOD	Hollow-stem auger		
BORING DIAMETER	4"	**SCREENED INTERVALS**	4 to 24 fbg
LOGGED BY	S. Couch	**DEPTH TO WATER (First Encountered)**	10.0 fbg (08-Mar-02) ▽
REVIEWED BY	D. Lundquist, PE	**DEPTH TO WATER (Static)**	5.96 fbg (12-Apr-02) ▼
REMARKS	Hand augered to 5 fbg. Located approximately 50' north of the UST complex.		

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (fbg)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (fbg)	WELL DIAGRAM
							ASPHALT	0.5	Portland Type I/II Cement
							SAND (SP); black; soft; damp; 5% silt, 95% fine sand; strong odor; no plasticity.		Bentonite Seal
									Monterey Sand #2/12
		MW-5- 5.0		5	SP		@ 5 fbg- greenish black; damp; 15% silt, 85% fine sand; strong odor; no plasticity. ▼		
								10.0	
		MW-5- 10.0		10			**Silty SAND** (SM); grayish brown; wet; 20% silt, 80% fine sand; odor; low plasticity.		
									4"-diam., 0.010" Slotted Schedule 40 PVC
		MW-5- 15.0		15			@ 15 fbg- reddish brown; wet; 5% clay, 20% silt, 75% fine sand; odor; low plasticity.		
					SM				
		MW-5- 20.0		20			@ 20 fbg- reddish dark brown.		
		MW-5- 23.5					@ 23.5 fbg- stiff; 20% silt, 80% sand; weathered sandstone fragments.	24.0	Bottom of Boring @ 24 fbg

WELL LOG (PID) \\10CAMENVDC\SONOMA.SHELL\OAKLAND 105 FIFTH\GINT\OAK105.GPJ DEFAULT.GDT 11/21/08

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BORING/WELL LOG

CLIENT NAME	Equiva Services LLC	**BORING/WELL NAME**	SB-1
JOB/SITE NAME	oak105	**DRILLING STARTED**	23-Jul-98
LOCATION	105 Fifth Street, Oakland, California	**DRILLING COMPLETED**	23-Jul-98
PROJECT NUMBER	244-0472	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Gregg Drilling	**GROUND SURFACE ELEVATION**	Not Surveyed
DRILLING METHOD		**TOP OF CASING ELEVATION**	NA
BORING DIAMETER		**SCREENED INTERVAL**	NA
LOGGED BY	C. Empedocles	**DEPTH TO WATER (First Encountered)**	6.0 ft ▽
REVIEWED BY		**DEPTH TO WATER (Static)**	NA ▼
REMARKS	5 ft north of northern dispenser.		

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (ft bgs)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (ft bgs)	WELL DIAGRAM
							ASPHALT	0.5	
					SM		**Silty SAND** (SM); brown; medium dense; moist; 5% clay, 15% silt, 80% clay; high estimated permeability.	5.0	Water encountered @ 6 ft.
				5					
					SM		dense, 5% clay, 20% silt, 75% sand.	10.0	
				10	SM			11.0	Bottom of Boring @ 11 ft

WELL LOG (PID) \\10CAMENVDC\SONOMA SHELL\OAKLAND 105 FIFTH\GINT\OAK105.GPJ DEFAULT.GDT 12/6/06

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BORING/WELL LOG

CLIENT NAME	Equiva Services LLC	**BORING/WELL NAME**	SB-2
JOB/SITE NAME	oak105	**DRILLING STARTED**	23-Jul-98
LOCATION	105 Fifth Street, Oakland, California	**DRILLING COMPLETED**	23-Jul-98
PROJECT NUMBER	244-0472	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Gregg Drilling	**GROUND SURFACE ELEVATION**	Not Surveyed
DRILLING METHOD		**TOP OF CASING ELEVATION**	NA
BORING DIAMETER		**SCREENED INTERVAL**	NA
LOGGED BY	C. Empedocles	**DEPTH TO WATER (First Encountered)**	9.0 ft ▽
REVIEWED BY		**DEPTH TO WATER (Static)**	NA ▼
REMARKS	5 ft north of western dispenser.		

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (ft bgs)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (ft bgs)	WELL DIAGRAM
							ASPHALT	0.5	
					SM		**Silty SAND** (SM); dark brown; medium dense; moist; 5% clay, 25% silt, 70% medium grained sand; high estimated permeability.	5.0	
				5					
					SM			▽	Water encountered @ 9 ft.
				10			wet.	10.0	
					SM			11.0	Bottom of Boring @ 11 ft

WELL LOG (PID) I:\10CAMENVDC\SONOMA-SHELL\OAKLAND 105 FIFTH\GINT\OAK105.GPJ DEFAULT.GDT 12/6/06

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BORING/WELL LOG

CLIENT NAME	Equiva Services LLC	**BORING/WELL NAME**	SB-3
JOB/SITE NAME	oak105	**DRILLING STARTED**	23-Jul-98
LOCATION	105 Fifth Street, Oakland, California	**DRILLING COMPLETED**	23-Jul-98
PROJECT NUMBER	244-0472	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Gregg Drilling	**GROUND SURFACE ELEVATION**	Not Surveyed
DRILLING METHOD		**TOP OF CASING ELEVATION**	NA
BORING DIAMETER		**SCREENED INTERVAL**	NA
LOGGED BY	C. Empedocles	**DEPTH TO WATER (First Encountered)**	9.0 ft
REVIEWED BY		**DEPTH TO WATER (Static)**	NA
REMARKS	5 ft south of northeast dispenser.		

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (ft bgs)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (ft bgs)	WELL DIAGRAM
							ASPHALT	0.5	
					SM		**Silty SAND** (SM); dark brown with green; medium dense; moist; 5% clay, 20% silt, 75% sand; high estimated permeability.	5.0	
				5					
					SM		light brown with green; wet.	10.0	Water encountered @ 9 ft.
				10	SM			12.0	Bottom of Boring @ 12 ft

WELL LOG (PID) \\10CAMEN\DCSSONOMA.SHELL\OAKLAND 105 FIFTH\GINT\OAK105.GPJ DEFAULT.GDT 12/6/05

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BORING/WELL LOG

CLIENT NAME	Equiva Services LLC	**BORING/WELL NAME**	SB-4
JOB/SITE NAME	oak105	**DRILLING STARTED**	23-Jul-98
LOCATION	105 Fifth Street, Oakland, California	**DRILLING COMPLETED**	23-Jul-98
PROJECT NUMBER	244-0472	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Gregg Drilling	**GROUND SURFACE ELEVATION**	Not Surveyed
DRILLING METHOD		**TOP OF CASING ELEVATION**	NA
BORING DIAMETER		**SCREENED INTERVAL**	NA
LOGGED BY	C. Empedocles	**DEPTH TO WATER (First Encountered)**	9.0 ft
REVIEWED BY		**DEPTH TO WATER (Static)**	NA
REMARKS	15 ft northeast of southern dispenser.		

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (ft bgs)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (ft bgs)	WELL DIAGRAM
							ASPHALT	0.5	
					SM		**Silty SAND** (SM); dark brown; moist; 5% clay, 20% silt, 70% sand, 5% gravel; high estimated permeability.	5.0	
				5					
					SM		brown; wet.	10.0	Water encountered @ 9 ft.
				10					
					SM			12.0	Bottom of Boring @ 12 ft

WELL LOG (PID) W:\OCAMEN\DCS\SONOMA.SHELL\OAKLAND 105 FIFTH\GINT\OAK105.GPJ DEFAULT.GDT 12/6/06

Cambria Environmental Technology, Inc.
5900 Hollis Street, Suite A
Emeryville, CA 94608
Telephone: 510-420-0700
Fax: 510-420-9170

BORING/WELL LOG

CLIENT NAME	Equiva Services LLC	**BORING/WELL NAME**	SB-5
JOB/SITE NAME	oak105	**DRILLING STARTED**	23-Jul-98
LOCATION	105 Fifth Street, Oakland, California	**DRILLING COMPLETED**	23-Jul-98
PROJECT NUMBER	244-0472	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Gregg Drilling	**GROUND SURFACE ELEVATION**	Not Surveyed
DRILLING METHOD		**TOP OF CASING ELEVATION**	NA
BORING DIAMETER		**SCREENED INTERVAL**	NA
LOGGED BY	C. Empedocles	**DEPTH TO WATER (First Encountered)**	8.0 ft ▽
REVIEWED BY		**DEPTH TO WATER (Static)**	NA ▼
REMARKS	5 ft south of southern dispenser.		

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (ft bgs)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (ft bgs)	WELL DIAGRAM
							ASPHALT	0.5	
					SM		**Silty SAND** (SM); dark brown; medium dense; moist; 5% clay, 20% silt, 70% sand, 5% gravel; high estimated permeability.	5.0	
				5					
					SM		▽		Water encountered @ 8 ft.
				10			brown; wet; 5% clay, 15% silt, 80% medium grained sand.	10.0	
					SM			12.0	Bottom of Boring @ 12 ft

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BORING/WELL LOG

CLIENT NAME	Equiva Services LLC	**BORING/WELL NAME**	SB-6
JOB/SITE NAME	oak105	**DRILLING STARTED**	12-Feb-01
LOCATION	105 Fifth Street, Oakland, California	**DRILLING COMPLETED**	12-Feb-01
PROJECT NUMBER	244-0472	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Gregg Drilling	**GROUND SURFACE ELEVATION**	Not Surveyed
DRILLING METHOD	Hydraulic push	**TOP OF CASING ELEVATION**	NA
BORING DIAMETER	2"	**SCREENED INTERVAL**	NA
LOGGED BY	S. Couch	**DEPTH TO WATER (First Encountered)**	10.0 ft (12-Feb-01) ▽
REVIEWED BY	S. Bork, RG# 5626	**DEPTH TO WATER (Static)**	NA ▼
REMARKS	Hand augered to 5',		

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (ft bgs)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (ft bgs)	WELL DIAGRAM
							ASPHALT	0.3	
							FILL; dark brown; damp; 20% silt, 80% fine to medium grained sand; low plasticity.		
		SB-6-5.0		5	SP		**SAND** (SP); reddish brown; damp; 10% silt, 90% fine to medium grained sand; no plasticity.	5.0	
		SB-6-10.0		10	SM		▽ **Silty SAND** (SM); brown; moist; 25% silt, 75% fine grained sand; low plasticity.	10.0	◄ Portland Type I/II
		SB-6-15.0		15	SC		**Clayey SAND** (SC); brown; wet; 20% clay, 80% fine grained sand; low to medium plasticity.	15.0	
		SB-6-20.0		20			@ 20 fbg - greyish brown; saturated; 25% clay, 10% silt, 65% fine grained sand.		
				25				25.0	Bottom of Boring @ 25 ft

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BORING/WELL LOG

CLIENT NAME	Equiva Services LLC	**BORING/WELL NAME**	SB-7
JOB/SITE NAME	oak105	**DRILLING STARTED**	12-Feb-01
LOCATION	105 Fifth Street, Oakland, California	**DRILLING COMPLETED**	12-Feb-01
PROJECT NUMBER	244-0472	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Gregg Drilling	**GROUND SURFACE ELEVATION**	Not Surveyed
DRILLING METHOD	Hydraulic push	**TOP OF CASING ELEVATION**	NA
BORING DIAMETER	2"	**SCREENED INTERVAL**	NA
LOGGED BY	S. Couch	**DEPTH TO WATER (First Encountered)**	10.0 ft (12-Feb-01) ▽
REVIEWED BY	S. Bork, RG# 5626	**DEPTH TO WATER (Static)**	NA ▼
REMARKS	Hand augered to 5'.		

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (ft bgs)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (ft bgs)	WELL DIAGRAM
							ASPHALT	0.3	
							FILL: brown; damp; 20% silt, 80% fine to medium grained sand; low plasticity.		
		SB-7-5.0		5	SP		**SAND** (SP); reddish brown; damp; 10% silt, 90% fine to medium grained sand; no plasticity.	5.0	
		SB-7-10.0		10	SM		▽ **Silty SAND** (SM); brown; moist; 25% silt, 75% fine grained sand; low plasticity.	10.0	◄ Portland Type I/II
							@ 14 fbg - yellowish grey brown.		
		SB-7-15.0		15	SC		**Clayey SAND** (SC); grey brown; moist; 20% clay, 80% fine grained sand; low to medium plasticity.	15.0	
		SB-7-20.0		20			@ 20 fbg - saturated; 20% clay, 15% silt, 65% fine grained sand.		
				25				25.0	Bottom of Boring @ 25 ft

WELL LOG (PID) \\10CAMENVDC\SONOMA-SHELL\OAKLAND 105 FIFTH\GINT\OAK105.GPJ DEFAULT.GDT 12/6/05

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BORING/WELL LOG

CLIENT NAME	Equiva Services LLC	**BORING/WELL NAME**	SB-8
JOB/SITE NAME	oak105	**DRILLING STARTED**	07-Mar-02
LOCATION	105 Fifth Street, Oakland, California	**DRILLING COMPLETED**	07-Mar-02
PROJECT NUMBER	244-0472	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Gregg Drilling	**GROUND SURFACE ELEVATION**	Not Surveyed
DRILLING METHOD	Hydraulic push	**TOP OF CASING ELEVATION**	NA
BORING DIAMETER	2"	**SCREENED INTERVAL**	NA
LOGGED BY	S. Couch	**DEPTH TO WATER (First Encountered)**	9.0 ft (07-Mar-02) ▽
REVIEWED BY	S. Bork, RG# 5626	**DEPTH TO WATER (Static)**	NA ▼
REMARKS	Hand augered to 5'.		

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (ft bgs)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (ft bgs)	WELL DIAGRAM
							ASPHALT	1.0	Portland Type I/II Cement
					ML		**Gravelly SILT**(ML); grayish brown; damp; 70% silt, 10% fine sand, 20% fine subangular gravel; very strong odor; low plasticity.	3.0	
					SM		**Silty SAND**(SM); greenish brown; damp; 30% silt, 70% fine to medium sand; staining; strong odor; low plasticity.	5.0	
				5	SP		**SAND** (SP); grayish brown; damp to moist; 10% silt, 90% fine sand; odor; no plasticity.		
		SB-8-8.0					▽	9.0	
				10	SM		**Silty SAND**(SM); grayish brown; wet; 20% silt, 80% fine sand; odor; low plasticity.		
							@ 13 fbg- gray; stiff.	14.0	Bottom of Boring @ 14 ft

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BORING/WELL LOG

CLIENT NAME	Equiva Services LLC	**BORING/WELL NAME**	SB-9
JOB/SITE NAME	oak105	**DRILLING STARTED**	07-Mar-02
LOCATION	105 Fifth Street, Oakland, California	**DRILLING COMPLETED**	07-Mar-02
PROJECT NUMBER	244-0472	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Gregg Drilling	**GROUND SURFACE ELEVATION**	Not Surveyed
DRILLING METHOD	Hydraulic push	**TOP OF CASING ELEVATION**	NA
BORING DIAMETER	2"	**SCREENED INTERVAL**	NA
LOGGED BY	S. Couch	**DEPTH TO WATER (First Encountered)**	10.0 ft (07-Mar-02) ▽
REVIEWED BY	S. Bork, RG# 5626	**DEPTH TO WATER (Static)**	NA ▼
REMARKS	Hand augered to 5'.		

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (ft bgs)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (ft bgs)	WELL DIAGRAM
							ASPHALT	1.0	
					ML		**Gravelly SILT**(ML); grayish brown; damp; 65% silt, 15% fine sand, 20% fine subangular gravel; strong odor; low plasticity.	3.0	
					SM		**Silty SAND**(SM); light grayish brown; damp; 20% silt, 80% fine to medium sand; odor; low plasticity.	5.0	
				5					
		SB-9-7.5			SP		**SAND**(SP); grayish brown; damp to moist; 5% silt, 95% fine sand; no plasticity. @ 7 fbg- 10% silt, 90% fine sand.		Portland Type I/II Cement
				10			▽	10.0	
					SM		**Silty SAND**(SM); grayish brown; wet; 25% silt, 75% fine sand; low plasticity. @ 12 fbg- brownish gray; 20% silt, 80% fine sand.	14.0	
				15	SP		**SAND**(SP); dark gray; wet; 90% sand, 10% silt; no plasticity.	16.0	Bottom of Boring @ 16 ft

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BORING/WELL LOG

CLIENT NAME	Equiva Services LLC	**BORING/WELL NAME**	SB-10
JOB/SITE NAME	oak105	**DRILLING STARTED**	07-Mar-02
LOCATION	105 Fifth Street, Oakland, California	**DRILLING COMPLETED**	07-Mar-02
PROJECT NUMBER	244-0472	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Gregg Drilling	**GROUND SURFACE ELEVATION**	Not Surveyed
DRILLING METHOD	Hydraulic push	**TOP OF CASING ELEVATION**	NA
BORING DIAMETER	2"	**SCREENED INTERVAL**	NA
LOGGED BY	S. Couch	**DEPTH TO WATER (First Encountered)**	10.0 ft (07-Mar-02) ▽
REVIEWED BY	S. Bork, RG# 5626	**DEPTH TO WATER (Static)**	NA ▼
REMARKS	Hand augered to 5'.		

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (ft bgs)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (ft bgs)	WELL DIAGRAM
							ASPHALT	1.0	
					ML		**Gravelly SILT**(ML); grayish brown; damp; 65% silt, 15% fine sand, 20% fine subangular gravel; low plasticity.	3.0	
					SM		**Silty SAND**(SM); light grayish brown; damp; 20% silt, 80% fine to medium sand; low plasticity.	5.0	
				5	SP		**SAND** (SP); grayish brown; damp; 5% silt, 95% fine sand; no plasticity.		
		SB-10-8.0					@ 8 fbg- 10% silt, 90% fine sand.		Portland Type I/II Cement
				10	SM		▽ **Silty SAND**(SM); grayish brown; moist to wet; 20% silt, 80% fine sand; low plasticity.	10.0	
							@ 12 fbg- gray; 15% silt, 85% fine sand.	14.0	
				15	SP		**SAND** (SP); dark gray; wet; 90% sand, 10% silt; no plasticity.		
							@ 17 fbg- 100% sand.	18.0	Bottom of Boring @ 18 ft

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BORING/WELL LOG

CLIENT NAME	Equiva Services LLC	**BORING/WELL NAME**	SB-11
JOB/SITE NAME	oak105	**DRILLING STARTED**	07-Mar-02
LOCATION	105 Fifth Street, Oakland, California	**DRILLING COMPLETED**	07-Mar-02
PROJECT NUMBER	244-0472	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Gregg Drilling	**GROUND SURFACE ELEVATION**	Not Surveyed
DRILLING METHOD	Hydraulic push	**TOP OF CASING ELEVATION**	NA
BORING DIAMETER	2"	**SCREENED INTERVAL**	NA
LOGGED BY	S. Couch	**DEPTH TO WATER (First Encountered)**	10.0 ft (07-Mar-02) ▽
REVIEWED BY	S. Bork, RG# 5626	**DEPTH TO WATER (Static)**	NA ▼
REMARKS	Hand augered to 5'.		

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (ft bgs)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (ft bgs)	WELL DIAGRAM
							ASPHALT	1.0	
					ML		**Gravelly SILT**(ML); grayish brown; damp; 65% silt, 15% fine sand, 20% fine subangular gravel; low plasticity.	3.0	
					SM		**Silty SAND**(SM); grayish brown; damp; 25% silt, 75% fine to medium sand; low plasticity.	5.0	
		SB-11-7.5		5	SP		**SAND** (SP); grayish brown; damp; 5% silt, 95% fine sand; no plasticity. @ 7 fbg- 10% silt, 90% fine sand.		
				10	SM		▽ **Silty SAND**(SM); grayish brown; moist to wet; 20% silt, 80% fine sand; low plasticity. @ 12 fbg- gray; 15% silt, 85% fine sand.	10.0 14.0	◄ Portland Type I/II Cement
				15	SP		**SAND** (SP); dark gray; wet; 95% sand, 5% silt; no plasticity. @ 16.5 fbg- 100% sand.		
				20				20.0	Bottom of Boring @ 20 ft

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BORING/WELL LOG

CLIENT NAME	Equiva Services LLC	**BORING/WELL NAME**	SB-12
JOB/SITE NAME	oak105	**DRILLING STARTED**	07-Mar-02
LOCATION	105 Fifth Street, Oakland, California	**DRILLING COMPLETED**	07-Mar-02
PROJECT NUMBER	244-0472	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Gregg Drilling	**GROUND SURFACE ELEVATION**	Not Surveyed
DRILLING METHOD	Hydraulic push	**TOP OF CASING ELEVATION**	NA
BORING DIAMETER	2"	**SCREENED INTERVAL**	NA
LOGGED BY	S. Couch	**DEPTH TO WATER (First Encountered)**	10.0 ft (07-Mar-02) ▽
REVIEWED BY	S. Bork, RG# 5626	**DEPTH TO WATER (Static)**	NA ▼
REMARKS	Hand augered to 5'.		

PID (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (ft bgs)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (ft bgs)	WELL DIAGRAM
							ASPHALT	1.0	
					ML		**Gravelly SILT**(ML); grayish brown; damp; 70% silt, 10% fine sand, 20% fine subangular gravel; low plasticity.	3.0	
					SM		**Silty SAND**(SM); grayish brown; damp; 25% silt, 75% fine to medium sand; low plasticity.	5.0	
		SB-12-8.0		5	SP		**SAND** (SP); grayish brown; damp; 5% silt, 95% fine sand; no plasticity.	10.0 ▽	◄ Portland Type I/II Cement
				10	SM		**Silty SAND**(SM); grayish brown; moist to wet; 20% silt, 80% fine sand; low plasticity. @ 13 fbg- gray; stiff.	14.0	
				15	SP		**SAND** (SP); dark gray; wet; 95% sand, 5% silt; no plasticity. @ 17 fbg- 100% sand.	22.0	Bottom of Boring @ 22 ft
				20					

WELL LOG (PID) W:\0CAMENV\DCSONOMA.SHELL\OAKLAND 105 FIFTHGINT\OAK105.GPJ DEFAULT.GDT 12/6/06

PROJECT NAME		SITE LOCATION	
SHELL SERVICE STATION		1057 5TH STREET, OAKLAND, CALIFORNIA	
DRILLING COMPANY	DRILLING	DRILL CREW	DATE DRILLED
GREGG DRILLING		BOBBY, JOSE	AUGUST 6, 2002
DRILLING METHOD	BORING DIAMETER (IN)	TOTAL DEPTH OF BORING (FT)	LOGGED BY
HOLLOW STEM AUGER	8	24.0	JAMES LOETTERLE
SAMPLING METHOD	HAMMER WEIGHT (LB)	HAMMER DROP (IN)	REVIEWED BY
SPLIT SPOON	140	18	S. GAUER

DEPTH (FEET)	CASING BLOWS	SAMPLE RECOVERY	SAMPLE ID	BLOWS PER 6 IN	PID (PPM)	GRAPHIC LOG	USCS CODE	DESCRIPTION OF SUBSURFACE MATERIALS
0								5 inch asphalt surface, hand augered to 5 feet below ground surface.
5			MW-8-5.5	NM	NM		SW	WELL GRADED SAND with SILT, black, brown, moist, fines to coarse grained, (6% clay, 15% silt, 75% sand, 6% gravel, with angular fragments of rock and wood)
10			MW-8-10.5	NM	NM		SM	SILTY SAND, light brown, wet, fine grained, (6% clay 20% silt, 75% sand)
15			MW-8-15.5	NM	NM			Brown, (5% clay, 35% silt, 60% sand)
20			MW-8-20.5	NM	NM			SILTY SAND with CLAY, brown, wet, fine grained, (15% clay, 40% silt, 45% sand)
			MW-8-24	NM	NM			Light brown
25								Boring terminated at 24 feet below ground surface.
30								
35								
40								

NOTES: ▼ Groundwater encountered; not encountered. PID = photoionization detector. NM = not measured. Sample ID: MW-8-5.5 = Monitoring well 8, 5.5 feet.

Mark Detterman R.G. #6769

LOG OF BORING MW-8

PROJECT NUMBER 01155.0001.01 PAGE 1 OF 1