MILLER BROOKS
Environmental, Inc.

September 6, 2002

Alameda County
SEP 25 2002
Environmental Health

Mr. Barney Chan
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 2500
Alameda, California 94502-6577

SITE: SHELL-BRANDED SERVICE STATION
105 5TH STREET
OAKLAND, CALIFORNIA

RE: *THIRD QUARTER 2002 GROUNDWATER MONITORING REPORT AND GROUNDWATER EXTRACTION EVALUATION REPORT*

Dear Mr. Chan:

Miller Brooks Environmental, Inc. (Miller Brooks), on behalf of Equilon Enterprises LLC dba Shell Oil Products US (Shell), submits this report to summarize Third Quarter 2002 groundwater monitoring and sampling activities and to provide a groundwater extraction evaluation for the Shell Service Station located at 105 5th Street, Oakland, California. See Figure 1 for the site location vicinity map.

BACKGROUND

The site is an active Shell-branded service station located at the western corner of the 5th Street and Oak Street intersection in Oakland, California (Figure 1). The site is surrounded by commercial properties. The service station layout consists of an underground gasoline storage tank (UST) complex, two dispenser islands, and a service station kiosk.

The following background information was obtained from Cambria's May 6, 2002, *Subsurface Investigation Report/ Second Quarter 2002 Monitoring Report/ Groundwater Extraction Evaluation Report.* During November and December of 1996, Armer/Norman & Associates of Walnut Creek, California (Armer/Norman) removed five gasoline dispensers, two diesel dispensers, associated piping and inactive piping to a former diesel fuel dispenser. Armer/Norman replaced the gasoline and diesel dispensers and associated piping with additional secondary containment. On November 27, 1996, Cambria Environmental Technology, Inc. (Cambria) collected soil samples 5 feet below grade (bgs) beneath the seven dispenser locations and the inactive diesel fuel piping prior to replacement. Sample locations from all past investigations are shown on Figure 2. After receiving analytical results indicating the presence of hydrocarbons, Shell filed an Underground Storage Tank Unauthorized Release Site Report with the ACHCSA.

In February 1998, Paradiso Mechanical of San Leandro, California installed secondary containment on the turbine sumps. Since secondary containment had previously been added to the dispensers, no additional dispenser upgrade activities were performed. Cambria inspected the

tank pit on February 26, 1998, and no field indications of hydrocarbons, such as staining or odor, were observed.

On July 23, 1998, Cambria advanced three borings in the assumed down gradient direction from existing dispensers and two borings in the assumed up gradient direction from the existing dispensers (SB-1 through SB-5). The soil borings were advanced to depths of 11.0 to 12.0 feet below ground surface (Figure 2).

On May 14, 1999, Cambria installed three groundwater monitoring wells (MW-1, MW-2 and MW-3) to a depth of 25 feet below ground surface (bgs) each(Figure 2).

Monthly mobile dual-phase vapor extraction (DVE), using wells MW-2 and MW-3, was initiated at the site on April 21, 2000 to remediate methyl tert butyl ether (MTBE) in soil and groundwater. In October 2000 abatement of the extracted soil vapors through carbon filtration was determined to be inadequate and therefore mobile DVE was discontinued at that time.

On February 12, 2001, Cambria advanced three soil borings (SB-6 and SB-7) and converted one into a groundwater monitoring well (MW-4) constructed to a depth of 25 bgs (Figure 2).

On March 20, 2001, Cambria performed individual short-term DVE testing of MW-2 and MW-3. For each test, groundwater and vapor samples were collected for laboratory analysis. Vapor extraction data from the DVE pilot test indicated vapor-phase petroleum hydrocarbon recovery is possible, although expected recovery rates are relatively low. GWE data from the DVE pilot test suggested liquid-phase petroleum hydrocarbon recovery is feasible. Based on the test data and conclusions presented, Cambria recommended conducting semi-monthly GWE from backfill well T-1 for a period of 6 months by means of a vacuum truck. Details of the DVE pilot test are presented in Cambria's July 17, 2001 *Dual-Phase Vacuum Extraction Pilot Test Report*.

On March 7 and 8, 2002, Cambria advanced five soil borings (SB-8 through SB-12) and installed one groundwater monitoring well onsite (MW-5) constructed to a depth of 24 bgs (Figure 2).

THIRD QUARTER 2002 GROUNDWATER MONITORING AND SAMPLING ACTIVITIES

Groundwater Monitoring and Sampling

On July 10, 2002, Monitoring Wells MW-1 through MW-5 and T-1 were monitored and sampled by Blaine Tech Services, Inc. (BTS), the groundwater monitoring program contractor for Shell. Groundwater levels in the wells were measured prior to sampling activities using an electronic water-level meter. Using a submersible electric pump, approximately 246 gallons of groundwater were purged from the wells. During purging activities, groundwater was measured for pH, conductivity, turbidity, and temperature to show stabilization prior to sampling. Following purging and stabilization of the measured groundwater parameters, groundwater samples were collected in accordance with standard regulatory protocol. Fluid-level monitoring data are presented in Table 1, and a groundwater elevation contour map is presented on Figure 2. Blaine Tech's field data are presented in Attachment A. A general description of groundwater monitoring and sampling procedures is included with a copy of the field data sheets in Attachment B.

Laboratory Analysis

Groundwater samples collected during the investigation were submitted to Kiff Analytical, a state-certified laboratory, for laboratory analysis. The groundwater samples were analyzed for TPH-G, BTEX, and MTBE, using Environmental Protection Agency (EPA) Method 8260B and TPH-D using EPA Method 8015. Sample MW-3 was also tested for 1,2 Dichloroethane (1,2 DCA) and 1,2 Dibromoethane (1,2 DBA) using EPA method 8260B. Results of laboratory analysis of groundwater samples are presented in Table 1 and Figure 3. Copies of the official laboratory reports and chain of custody records are included in Appendix C.

Findings

Groundwater was measured at depths of 4.75 feet to 6.75 feet bgs in the monitoring wells (groundwater elevations of 7.42 feet to 8.94 feet above mean sea level [North American Vertical Datum, 1988]). The groundwater flow direction beneath the site is generally toward the south-southeast under a hydraulic gradient of approximately 0.008 foot per foot, which is consistent with previous investigation findings.

Results of laboratory analysis of groundwater samples collected during this investigation indicated the following:

- Detectable TPH-G concentrations were found in the groundwater sample collected from Well MW-5 at a concentration of 930 µg/L (micrograms per liter).

- Detectable benzene concentrations were found in groundwater samples collected from Wells MW-5 and T-1 at concentrations of 36 µg/L and 260 µg/L, respectively.

- No detectable toluene concentrations were found in any of the groundwater samples collected during this sampling event.

- Detectable ethylbenzene concentrations were found in groundwater samples collected from Wells MW-2 and MW-5 at concentrations of 14 µg/L and 93 µg/L, respectively.

- Detectable total xylenes were found in the groundwater sample collected from Well MW-5 at a concentration of 8.8 µg/L.

- Detectable MTBE concentrations were found in groundwater samples collected from Wells MW-2, MW-3, MW-5 and T-1 at concentrations ranging from 630 µg/L in Well MW-5 to 69,000 µg/L in Well T-1.

- No concentrations of 1,2 DCA or 1,2 DBA were detected in well MW-3.

GROUNDWATER EXTRACTION (GWE) EVALUATION

Beginning on November 26, 2001, Shell initiated semi-monthly mobile GWE at the site using tank backfill well T-1. Mobile GWE consists 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 hydrocarbons and oxygenates removed from the subsurface. Water volumes produced from the well ranged from 5,200 to 2,700 gallons per event. After 11 events, a total of 44,184 gallons of water was pumped from tank backfill well T-1 by GWE. Individual GWE-event details and cumulative groundwater-extraction data are presented in Table 3. A table with this information was presented with quarterly monitoring reports submitted during the GWE program.

Miller Brooks Environmental estimates that 1,011 gallons of total purgeable petroleum hydrocarbons (TPPH), 0.022 gallons of benzene, and 9.28 gallons of MTBE were removed from the subsurface by GWE since January 2002. These mass calculations are approximate and are based on the volume of groundwater extracted per event and the concentration in wells T-1 and MW-3 closest in time to the respective extraction events. Table 3 presents GWE event-specific data and cumulative mass-removal data over time for TPPH, benzene and MTBE. The mass and volume removal formulas are also presented on the table.

Data from the last three groundwater-monitoring events using the groundwater extraction well and wells adjacent to the probable source area (UST complex) indicate decreasing MTBE concentration trends (Attachment B). Before the start of GWE from T-1, a concentration of 180,000 micrograms per liter (ug/L) MTBE was detected in well MW-3, located closest to the UST complex. At the end of six months of semi-monthly GWE from T-1, a concentration of 78,000 µg/L MTBE was detected in MW-3, and a concentration of 57,000 µg/L MTBE was detected in T-1. Figure 3 presents the effect of GWE on MTBE concentrations on wells MW-3 and T-1 over time.

PROPOSED WORK ACTIVITIES

Proposed work activities for the Fourth Quarter of 2002 are as follows:

- Shell has directed Miller Brooks to initiate the installation of an active groundwater treatment system at this site. The design of this system is in the conceptual phase only right now and the results of these efforts will be formulated into an Interim Remedial Workplan. The workplan will be forwarded to you upon completion for review and comment.

- Continue the quarterly groundwater monitoring and sampling program to monitor hydrocarbon plume stability and groundwater quality trends over time.

- Continue the GWE events to further reduce the hydrocarbon impacted vadose zone.

If you have any questions regarding this site, please call us at (510) 891-0092.

Sincerely,
MILLER BROOKS ENVIRONMENTAL, INC.

Darren W. Butler
Senior Staff Scientist

Heidi M. Bauer, RG 7050
Senior Geologist

Attachments: Table 1 – Groundwater Gauging and Analytical Data
Table 2 – Groundwater Extraction – Mass Removal Data
Figure 1 – Vicinity and Well Survey Map
Figure 2 – Groundwater Elevation Contour
Figure 3 – Dual-phase Vapor/Groundwater Extraction Effect on MTBE Concentrations

Attachment A – Blaine Tech Services Third Quarter 2002 Groundwater Monitoring Report
Attachment B – Blaine Tech Services General Field Procedures
Attachment C – Official Laboratory Report and Chain of Custody Record

cc: Karen Petryna, Shell Oil Products US, P.O. Box 7869, Burbank, CA 91510-7869

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)	TOC (MSL)	Depth to Water (ft)	GW Elevation (MSL)	DO Reading (ppm)
MW-1	07/20/1999	NA	NA	NA	NA	NA	NA	NA	NA	12.22	17.56	-5.34	NA
MW-1	07/23/1999	<50.0	NA	<0.500	<0.500	<0.500	<0.500	<2.50	<2.00	12.22	6.45	5.77	NA
MW-1	11/01/1999	100	NA	15.6	3.12	4.04	12.6	6.69	NA	12.22	6.59	5.63	0.5/0.7
MW-1	01/05/2000	<50.0	<20.0	<0.500	<0.500	<0.500	<0.500	<2.50	NA	12.22	6.38	5.84	1.2/1.4
MW-1	04/07/2000	<50.0	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	NA	12.22	5.83	6.39	1.6/2.4
MW-1	07/26/2000	<50.0	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	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	12.22	14.08	-1.86	2.2/2.7
MW-1	01/30/2001	<50.0	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	NA	12.22	10.71	1.51	1.2/1.6
MW-1	04/17/2001	<50.0	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	NA	12.22	6.61	5.61	2.4/4.4
MW-1	07/09/2001	<50	<50	<0.50	<0.50	<0.50	<0.50	NA	<5.0	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	12.22	6.24	5.98	2.6/4.1
MW-1	01/07/2002	<50	<50	<0.50	<0.50	<0.50	<0.50	NA	<5.0	12.22	5.25	6.97	NA
MW-1	04/12/2002	<50	<50	<0.50	<0.50	<0.50	<0.50	NA	<5.0	14.92	5.54	9.38	NA
MW-1	**07/10/2002**	**<50**	**74**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**NA**	**<5.0**	**14.92**	**5.98**	**8.94**	**NA**
MW-2	07/20/1999	NA	NA	NA	NA	NA	NA	NA	NA	10.87	18.24	-7.37	NA
MW-2	07/23/1999	13,800	NA	1,790	<100	<100	682	29,900	29,400	10.87	5.98	4.89	NA
MW-2	11/01/1999	2,420	NA	316	10.8	119	44.2	17,000	NA	10.87	6.03	4.84	0.5/0.3
MW-2	01/05/2000	2,120a	687	301a	<5.00a	116a	84.4a	14,700	NA	10.87	5.90	4.97	2.1/2.6
MW-2	04/07/2000	4,940b	1,300	659b	<25.0b	214b	314b	41,800b	NA	10.87	5.37	5.50	0.4/0.2
MW-2	07/26/2000	5,010	1,520	409	<50.0	302	307	54,300	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	10.87	14.59	-3.72	0.7/0.7
MW-2	01/30/2001	1,640	574	14.7	<5.00	40.1	58.1	3,670	NA	10.87	10.31	0.56	1.8/2.0
MW-2	04/17/2001	598	179	21.8	<2.00	16.9	10.8	5,630	NA	10.87	6.08	4.79	1.5/2.6
MW-2	07/09/2001	<1,000	<500	19	<10	33	15	NA	6,200	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	10.87	5.72	5.15	2.0/3.2

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MW-2	01/07/2002	<1,000	<200	<10	<10	<10	<10	NA	4,500	10.87	4.87	6.00	NA
MW-2	04/12/2002	<1,000	<100	14	<10	27	13	NA	6,200	13.57	5.14	8.43	NA
MW-2	**07/10/2002**	**<1,000**	**290**	**<10**	**<10**	**14**	**<10**	**NA**	**6,100**	**13.57**	**5.45**	**8.12**	**NA**
MW-3	07/20/1999	NA	NA	NA	NA	NA	NA	NA	NA	11.27	19.07	-7.80	NA
MW-3	07/23/1999	128	NA	<0.500	<0.500	<0.500	<0.500	404,000	324,000	11.27	6.43	4.84	NA
MW-3	11/01/1999	<1,000	NA	<10.0	<10.0	<10.0	<10.0	169,000	224,000	11.27	6.48	4.79	0.5/0.3
MW-3	01/05/2000	137	322	<1.00	<1.00	<1.00	<1.00	165,000	219,000	11.27	6.35	4.92	2.4/2.2
MW-3	04/07/2000	<1,000	264	853	<10.0	<10.0	<10.0	283,000	196,000a	11.27	5.91	5.36	04/0.2
MW-3	07/26/2000	<20,000	585	<200	<200	<200	<200	437,000	320,000	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	11.27	17.51	-6.24	1.1/1.4
MW-3	01/30/2001	<5,000	555	<50.0	<50.0	<50.0	<50.0	248,000	167,000a	11.27	11.43	-0.16	2.0/2.2
MW-3	04/17/2001	<5,000	347	<50.0	<50.0	<50.0	<50.0	134,000	133,000	11.27	6.57	4.70	1.3/1.2
MW-3	07/09/2001	<20,000	250	<200	<200	<200	<200	NA	170,000	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	11.27	6.25	5.02	2.2/1.6
MW-3	01/07/2002	<10,000	160	<100	<100	<100	<100	NA	96,000	11.27	5.29	5.98	NA
MW-3	04/12/2002	<10,000	87	<100	<100	<100	<100	NA	78,000	13.96	5.43	8.53	NA
MW-3	**07/10/2002**	**<20,000**	**150**	**<200**	**<200**	**<200**	**<200**	**NA**	**64,000**	**13.96**	**6.33**	**7.63**	**NA**
MW-4	03/23/2001	NA	NA	NA	NA	NA	NA	NA	NA	9.50	8.21	1.29	NA
MW-4	04/17/2001	<50.0	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	NA	9.50	5.08	4.42	2.4/2.6
MW-4	07/09/2001	<50	<50	<0.50	<0.50	<0.50	<0.50	NA	<5.0	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	9.50	7.90	1.60	2.8/1.8
MW-4	01/07/2002	<50	64	<0.50	<0.50	<0.50	<0.50	NA	<5.0	9.50	5.00	4.50	NA
MW-4	04/12/2002	<50	<50	<0.50	<0.50	<0.50	<0.50	NA	<5.0	12.17	7.49	4.68	NA
MW-4	**07/10/2002**	**<50**	**67**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**NA**	**<5.0**	**12.17**	**4.75**	**7.42**	**NA**

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MW-5	03/29/2002	NA	NA	NA	NA	NA	NA	NA	NA	14.78	5.86	8.92	NA
MW-5	04/12/2002	1,600	<50	25	3.5	44	110	NA	570	14.78	5.96	8.82	NA
MW-5	**07/10/2002**	**930**	**<400**	**36**	**<2.0**	**93**	**8.8**	**NA**	**630**	**14.78**	**6.57**	**8.21**	**NA**
T-1	01/07/2002	<20,000	2,600	310	<200	<200	<200	NA	92,000	NA	4.86	NA	NA
T-1	04/12/2002	<5,000	1,000	230	<50	<50	<50	NA	57,000	NA	5.05	NA	NA
T-1	**07/10/2002**	**<20,000**	**3,700**	**260**	**<200**	**<200**	**<200**	**NA**	**69,000**	**NA**	**5.84**	**NA**	**NA**

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
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

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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)	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.

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, California.

Table 2: 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	TPH-g Concentration (ppb)	TPH-g Removed (lbs)	TPH-g Removed To Date (lbs)	Benzene Concentration (ppb)	Benzene Removed (lbs)	Benzene Removed To Date (lbs)	MTBE Concentration (ppb)	MTBE Removed (lbs)	MTBE Removed To Date (lbs)
					TPH-g			**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
11/26/01	T-1*	2,700	2,700	10/23/01	**<50,000**	0.56324	0.56324	**<250**	0.00282	0.00282	**180,000**	4.05536	10.73113
12/10/01	T-1*	2,750	5,450	10/23/01	**<50,000**	0.57367	1.13692	**<250**	0.00287	0.00568	**180,000**	4.13046	14.86158
12/26/01	T-1*	2,800	8,250	10/23/01	**<50,000**	0.58410	1.72102	**<250**	0.00292	0.00861	**180,000**	4.20556	19.06714
01/09/02	T-1	5,184	13,434	01/07/02	**<20,000**	0.43257	2.15359	**310**	0.01341	0.02201	**92,000**	3.97966	23.04679
01/23/02	T-1	4,250	17,684	01/07/02	**<20,000**	0.35464	2.50823	**310**	0.01099	0.03301	**92,000**	3.26264	26.30944
02/06/02	T-1	4,000	21,684	01/07/02	**<20,000**	0.33377	2.84200	**310**	0.01035	0.04336	**92,000**	3.07072	29.38016
02/20/02	T-1	3,000	24,684	01/07/02	**<20,000**	0.25033	3.09233	**310**	0.00776	0.05112	**92,000**	2.30304	31.68320
03/06/02	T-1	4,500	29,184	01/07/02	**<20,000**	0.37550	3.46783	**310**	0.01164	0.06276	**92,000**	3.45456	35.13777
03/20/02	T-1	5,000	34,184	01/07/02	**<20,000**	0.41722	3.88505	**310**	0.01293	0.07569	**92,000**	3.83840	38.97617
04/03/02	T-1	5,200	39,384	04/12/02	**<5,000**	0.10848	3.99353	**230**	0.00998	0.08567	**57,000**	2.47327	41.44944
04/17/02	T-1	4,800	44,184	04/12/02	**<5,000**	0.10013	4.09366	**230**	0.00921	0.09488	**57,000**	2.28302	43.73245
06/03/02	T-1	3,539	47,723	07/10/02	**<20,000**	0.29531	4.38896	**260**	0.00768	0.10256	**69,000**	2.03762	45.77007
06/17/02	T-1	5,000	52,723	07/10/02	**<20,000**	0.41722	4.80618	**260**	0.01085	0.11341	**69,000**	2.87880	48.64887
06/24/02	T-1	3,550	56,273	07/10/02	**<20,000**	0.29622	5.10241	**260**	0.00770	0.12111	**69,000**	2.04395	50.69282

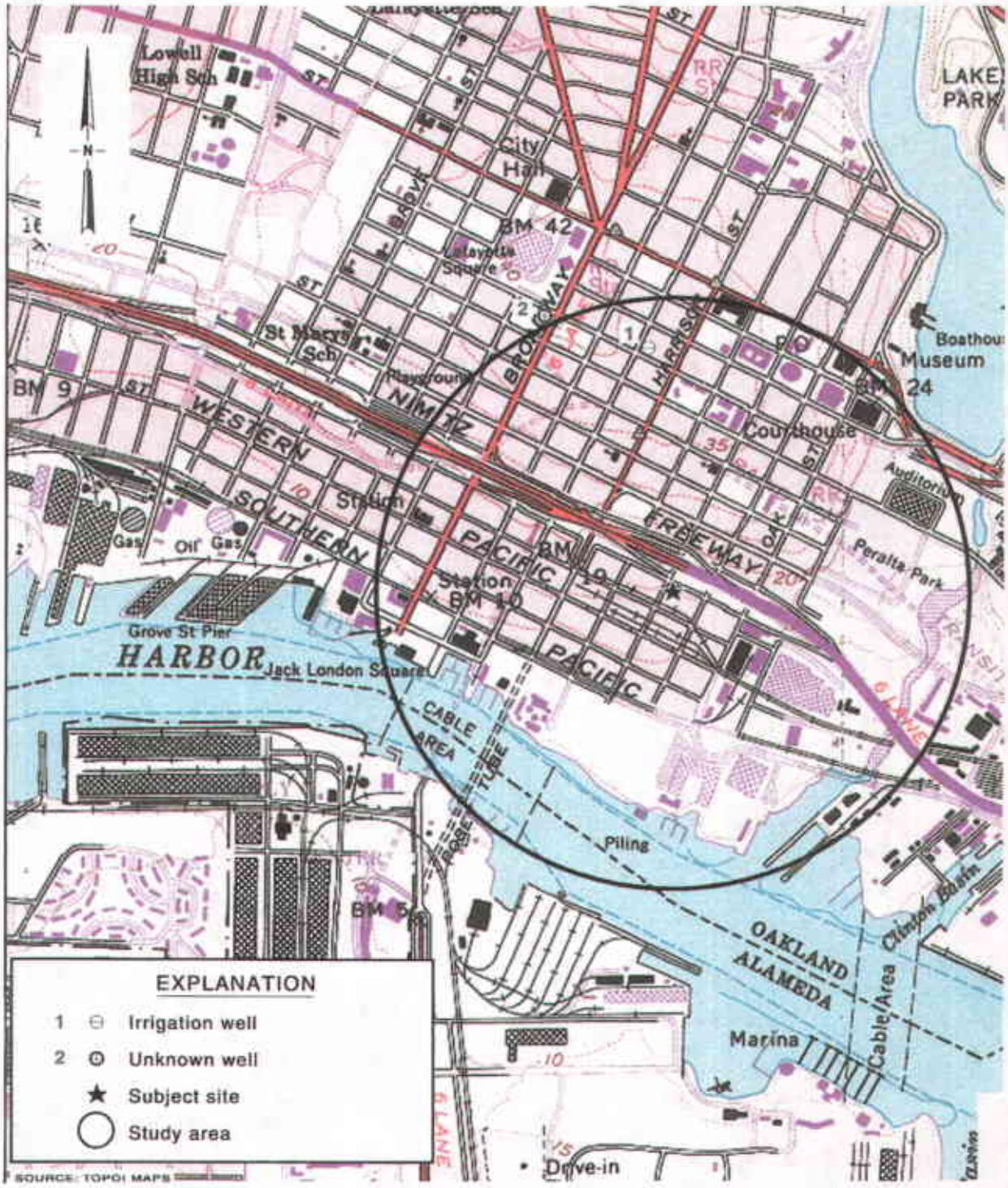
Table 2: Groundwater Extraction - Mass Removal Data - Shell-branded Service Station, Incident #98995757, 105 Fifth Street, Oakland, California

					TPH-g			Benzene			MTBE		
Date Purged	Well ID	Volume Pumped (gal)	Cumulative Volume Pumped (gal)	Date Sampled	TPH-g Concentration (ppb)	TPH-g Removed (lbs)	TPH-g Removed To Date (lbs)	Benzene Concentration (ppb)	Benzene Removed (lbs)	Benzene Removed To Date (lbs)	MTBE Concentration (ppb)	MTBE Removed (lbs)	MTBE Removed To Date (lbs)
07/01/02	T-1	2,873	59,146	07/10/02	**<20,000**	0.23973	5.34214	**260**	0.00623	0.12734	**69,000**	1.65416	52.34698
07/15/02	T-1	4,000	63,146	07/10/02	**<20,000**	0.33377	5.67591	**260**	0.00868	0.13602	**69,000**	2.30304	54.65003
08/12/02	T-1	3,900	67,046	07/10/02	**<20,000**	0.32543	6.00134	**260**	0.00846	0.14448	**69,000**	2.24547	56.89549
Total Gallons Extracted:			**71,586**		**Total Pounds Removed:**		**6.00134**			**0.14448**			**56.89549**
					Total Gallons Removed:		**0.98383**			**0.01979**			**9.17669**

Abbreviations & Notes:

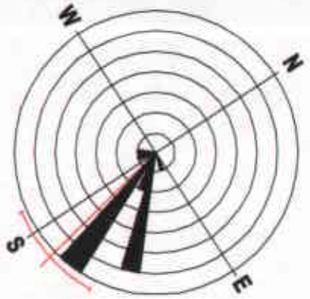
TPH-g = Total petroleum hydrocarbons as gasoline
MTBE = Methyl tert-butyl ether
ppb = Parts per billion
gal = Gallon
lbs = Pounds
* = Concentrations for tank backfill well T-1 estimated from nearest monitoring well MW-3.
Mass removed based on the formula: volume extracted (gal) x Concentration (µg/L) 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)
TPH-g and benzene analyzed by EPA Method 8015/8020
TPH-g, benzene, and MTBE analyzed by EPA Method 8260 are 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. 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.

tb-b1.dwg-09/21/00



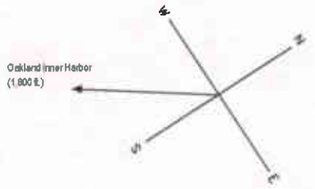
MILLER BROOKS Environmental, Inc.	DRAWN BY: PEL DATE: 09/05/02 REVISED BY: DWB	VICINITY MAP	FIGURE 1
2425 West 14th St, D2, Oakland, CA 94607 510-891-0092	REVISED: 09/13/02 APPROVED BY: HMB	EQUILON ENTERPRISES, L.L.C. dba SHELL OIL PRODUCTS US 105 Fifth St. Oakland, CA	
PROJECT NO. 155-0305-01	DATE: 09/13/02	Original Map by Cambria Environmental Technologies, Inc. DATE PLOTTED: 09/13/02	

fb-plseg--09/21/00



Groundwater Flow Direction
(07/23/99 to 07/10/02)

Location of Sensitive Receptor Relative to Site
(Oakland Inner Harbor - 1,800 ft S 36° W)



LEGEND

- MW-1 — Monitoring well location
- T-1 — Tank backfill well location
- SB-1 — Soil boring location (7/98)
- SB-6 — Soil boring location (2/01)
- SB-8 — Soil boring location (3/02)
- D-1 — Soil sample location
- NS — Not surveyed
- Groundwater flow direction
- xx.xx — Groundwater elevation contour, in feet above mean sea level (msl), approximately located, dashed where inferred
- Well / ELEV / Benzene / MTBE — Well designation; Groundwater elevation, in feet above msl; Benzene and MTBE concentrations are in parts per billion and are analyzed by EPA Method 8260.
- Storm drain line
- Sanitary sewer line
- Flow direction
- MH — Manhole
- SDI — Storm drain inlet
- fbg — Feet below grade

All utility locations are approximate. Utility information was reported by Cambria during June 2001.

0 40
SCALE

MILLER BROOKS Environmental, Inc.

2425 W. 14TH STREET, D-2
OAKLAND, CA
(510) 891-0092

PROJECT NO. 06-155-0305-01

DRAWN BY:	DWB
DATE:	09/04/02
REVISED BY:	PEL
REVISED:	09/05/02
APPROVED BY:	EF
DATE:	08/28/02

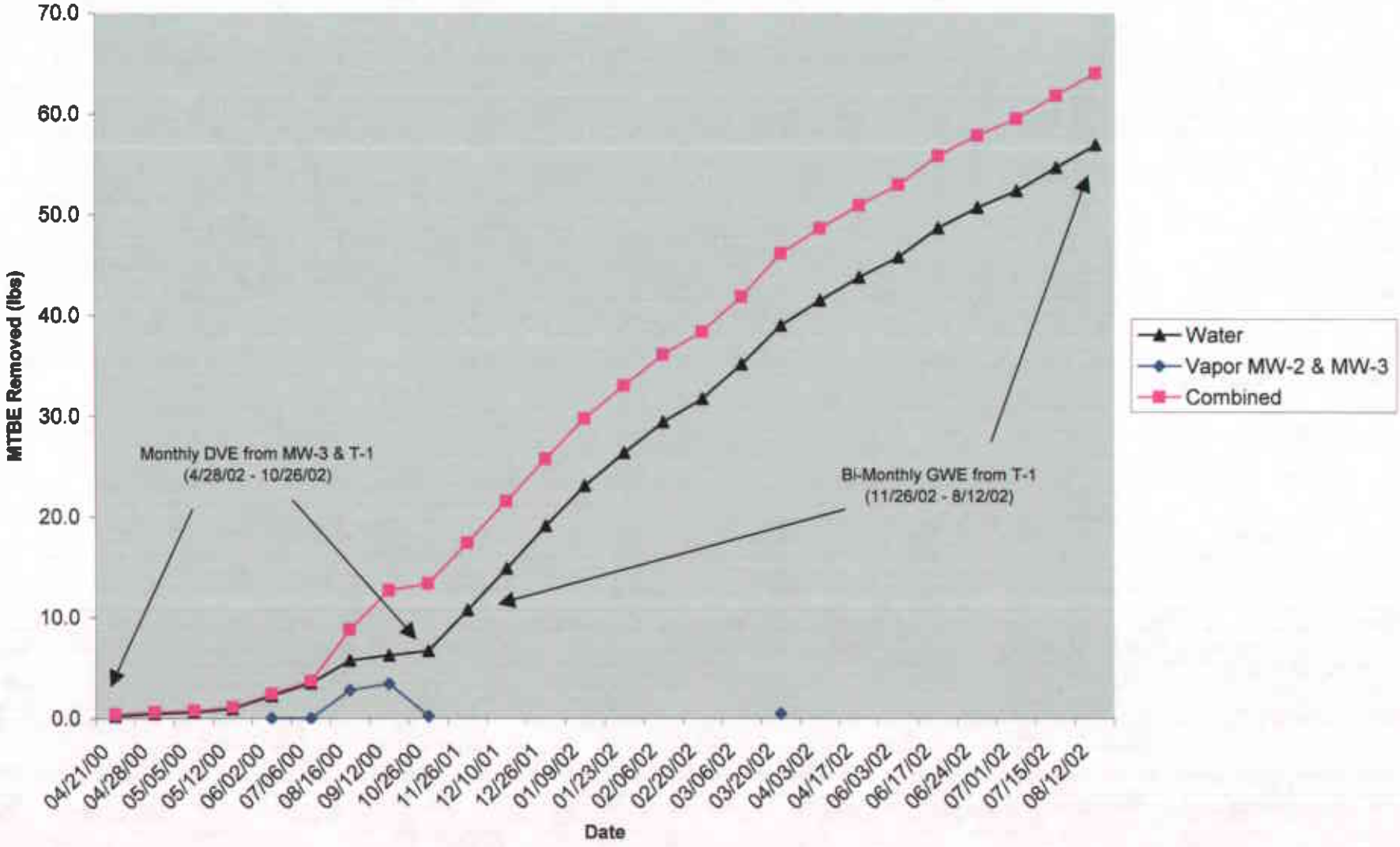
THIRD QUARTER 2002
GROUNDWATER CONTOUR MAP
INCIDENT NO. 98995757

SHELL SERVICE STATION
105 5TH STREET
OAKLAND, CA.

FILE: K:\DWGS\EDUILON\OAKLAND (105 5TH ST.)\SP 03-02
DATE PLOTTED: 09/05/02

FIGURE
2

Figure 3. Dual-phase Vapor/Groundwater Extraction Effect on MTBE Concentration



BLAINE
TECH SERVICES, INC.

1680 ROGERS AVENUE
SAN JOSE, CA 95112-1105
(408) 573-7771 FAX
(408) 573-0555 PHONE
CONTRACTOR'S LICENSE #746684
www.blainetech.com

August 7, 2002

Karen Petryna
Shell Oil Products US
P.O. Box 7869
Burbank, CA 91510-7869

Third Quarter 2002 Groundwater Monitoring at
Shell-branded Service Station
105 5th Street
Oakland, CA

Monitoring performed on July 10, 2002

Groundwater Monitoring Report **020710-AM-2**

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

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

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

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

Please call if you have any questions.

Yours truly,

Leon Gearhart
Project Coordinator

LG/jt

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

cc: Anni Kreml
Cambria Environmental Technology, Inc.
1144 65th Street, Suite C
Oakland, CA 94608-2411

BLAINE TECH SERVICES, INC.
METHODS AND PROCEDURES
FOR THE ROUTINE MONITORING OF
GROUNDWATER WELLS AT EQUIVA SITES

Blaine Tech Services, Inc. performs environmental sampling and documentation as an independent third party. We specialize in groundwater monitoring assignments and intentionally limit the scope of our services to those centered on the generation of objective information.

To avoid conflicts of interest, Blaine Tech Services, Inc. personnel do not evaluate or interpret the information we collect. As a state licensed contractor (C-57 well drilling –water – 746684) performing strictly technical services, we do not make any professional recommendations and perform no consulting of any kind.

SAMPLING PROCEDURES OVERVIEW

SAFETY

All groundwater monitoring assignments performed for Equiva comply with Equiva's safety guidelines, 29 CFR 1910.120 and SB-198 Injury and Illness Prevention Program (IIPP). All Field Technicians receive the full 40 hour 29CFR 1910.120 OSHA SARA HAZWOPER course, medical clearance and on-the-job training prior to commencing any work on any Equiva site.

INSPECTION AND GAUGING

Wells are inspected prior to evacuation and sampling. The condition of the wellhead is checked and noted according to a wellhead inspection checklist.

Standard measurements include the depth to water (DTW) and the total well depth (TD) obtained with industry standard electronic sounders, which are graduated in increments of hundredths of a foot.

The water in each well is inspected for the presence of Immiscibles or sheen and when free product is suspected, it is confirmed using an electronic interface probe (e.g. MMC). No samples are collected from a well containing over two-hundredths of a foot (0.02') of product.

EVACUATION

Depth to water measurements are collected by our personnel prior to purging and minimum purge volumes are calculated anew for each well based on the height of the water column and the diameter of the well. Expected purge volumes are never less than three case volumes and are set at no less than four case volumes in some jurisdictions.

Well purging devices are selected on the basis of the well diameter and the total volume to be evacuated. In most cases the well will be purged using an electric submersible pump (i.e. Grundfos) suspended near (but not touching) the bottom of the well. Small volumes of purgewater are often removed by hand bailing with a disposable bailer.

PARAMETER STABILIZATION

Well purging completion standards include minimum purge volumes, but additionally require stabilization of specific groundwater parameters prior to sample collection. Typical groundwater parameters used to measure stability are electrical conductivity, pH, and temperature. Instrument readings are obtained at regular intervals during the evacuation process (no less than once per case volume).

Stabilization standards for routine quarterly monitoring of fuel sites include the following: Temperature is considered to have stabilized when successive readings do not fluctuate more than +/- 1 degree Celsius. Electrical conductivity is considered stable when successive readings are within 10%. pH is considered to be stable when successive readings remain constant or vary no more than 0.2 of a pH unit.

DEWATERED WELLS

Normal evacuation removes no less than three case volumes of water from the well. However, less water may be removed in cases where the well dewaters and does not recharge.

Wells known to dewater are evacuated as early as possible during each site visit in order to allow for the greatest amount of recovering. Any well that does not recharge to 80% of its original volume will be sampled prior to the departure of our personnel from the site in order to eliminate the need of a return visit.

In jurisdictions where a certain percentage of recovery is included in the local completion standard, our personnel follow the regulatory expectation.

PURGEWATER CONTAINMENT

All non-hazardous purgewater evacuated from each groundwater monitoring well is captured and contained in on-board storage tanks on the Sampling Vehicle and/or special water hauling trailers. Effluent from the decontamination of reusable apparatus (sounders, electric pumps and hoses etc.), consisting of groundwater combined with deionized water and non-phosphate soap, is also captured and pumped into effluent tanks.

Non-hazardous purgewater is transported under standard Bill of Lading documentation to a Blaine Tech Services, Inc. facility before being transported to an Equiva approved disposal facility.

SAMPLE COLLECTION DEVICES

All samples are collected using a stainless steel, teflon or disposable bailers.

SAMPLE CONTAINERS

Sample material is decanted directly from the sampling bailer into sample containers provided by the laboratory that will analyze the samples. The transfer of sample material from the bailer to the sample container conforms to specifications contained in the USEPA T.E.G.D. The type of sample container, material of construction, method of closure and filling requirements are specific to the intended analysis. Chemicals needed to preserve the sample material are commonly placed inside the sample containers by the laboratory or glassware vendor prior to delivery of the bottle to our personnel. The laboratory sets the number of replicate containers.

TRIP BLANKS

Upon request, a Trip Blank is carried to each site and is kept inside the cooler for the duration of the sampling event. It is turned over to the laboratory for analysis with the samples from that site.

DUPLICATES

Upon request, one Duplicate sample is collected at each site. It is up to the Field Technician to choose the well at which the Duplicate is collected. Typically, a duplicate is collected from one of the most contaminated wells. The Duplicate sample is labeled DUP thus rendering the sample blind.

SAMPLE STORAGE

All sample containers are promptly placed in food grade ice chests for storage in the field and transport (direct or via our facility) to the analytical laboratory that will perform the intended analytical procedures. These ice chests contain quantities of restaurant grade ice as a refrigerant material. The samples are maintained in either an ice chest or a refrigerator until relinquished into the custody of the laboratory or laboratory courier.

DOCUMENTATION CONVENTIONS

Each and every sample container has a label affixed to it. In most cases these labels are generated by our office personnel and are partially preprinted. Labels can also be hand written by our field personnel. The site is identified with the store number and site address, as is the particular groundwater well from which the sample is drawn (e.g. MW-1, MW-2, S-1 etc.). The time at which the sample was collected and the initials of the person collecting the sample are handwritten onto the label.

Chain of Custody records are created using client specific preprinted forms following USEPA specifications.

Bill of Lading records are contemporaneous records created in the field at the site where the non-hazardous purgewater is generated. Field Technicians use preprinted Bill of Lading forms.

DECONTAMINATION

All equipment is brought to the site in clean and serviceable condition and is cleaned after use in each well and before subsequent use in any other well. Equipment is decontaminated before leaving the site.

The primary decontamination device is a commercial steam cleaner. The steam cleaner is de-tuned to function as a hot pressure washer, which is then operated with high quality deionized water which is produced at our facility and stored onboard our sampling vehicle. Cleaning is facilitated by the use of proprietary fixtures and devices included in the patented workstation (U.S. Patent 5,535,775) that is incorporated in each sampling vehicle. The steam cleaner is used to decon reels, pumps and bailers.

Any sensitive equipment or parts (i.e. Dissolved Oxygen sensor membrane, sounder etc.) that cannot be washed using the hot high pressure water, will be sprayed with a non-phosphate soap and deionized water solution and rinsed with deionized water.

EXAMPLE: The sounder is cleaned between wells using the non-phosphate soap and deionized water solution followed by deionized water rinses. The sounder is then washed with the steam cleaner between sites or as necessitated by use in a particularly contaminated well.

DISSOLVED OXYGEN READINGS

All Dissolved Oxygen readings are taken using YSI meters (e.g. YSI Model 58 or equivalent YSI meter). These meters are equipped with a YSI stirring device that enables them to collect accurate in-situ readings. The probe/stirring devices are modified to allow downhole measurements to be taken from wells as small as two-inch diameter.

The probe and reel is decontaminated between wells as described above. The meter is calibrated between wells as per the instructions in the operating manual. The probe and stirrer is lowered into the water column allowed to stabilize before use.

OXIDATON REDUCTION POTENTIAL READINGS

All readings are obtained with either Corning or Myron-L meters (e.g. Corning ORP-65 or a Myron-L Ultrameter GP). The meter is cleaned between wells as described above. The meter is calibrated at the start of each day according to the instruction manual. In use the probe is placed in a cup of freshly obtained monitoring well water and allowed to stabilize.

KIFF ANALYTICAL LLC

Report Number : 27430
Date : 8/27/02

Leon Gearhart
Blaine Tech Services
1680 Rogers Avenue
San Jose, CA 95112-1105

Subject : 6 Water Samples
Project Name : 105 5th Street, Oakland
Project Number : 020710-AM2
P.O. Number : 98995757

Dear Mr. Gearhart,

Chemical analysis of the samples referenced above has been completed. Summaries of the data are contained on the following pages. Sample(s) were received under documented chain-of-custody. US EPA protocols for sample storage and preservation were followed.

Kiff Analytical is certified by the State of California (# 2236). If you have any questions regarding procedures or results, please call me at 530-297-4800.

Sincerely,

Joel Kiff

Joel Kiff

KIFF ANALYTICAL LLC

Report Number : 27430
Date : 8/27/02

Subject : 6 Water Samples
Project Name : 105 5th Street, Oakland
Project Number : 020710-AM2
P.O. Number : 98995757

Case Narrative

The Method Reporting Limit for TPH as Diesel is increased due to interference from Gasoline-Range Hydrocarbons for sample MW-5. Hydrocarbons reported as TPH as Diesel do not exhibit a typical Diesel chromatographic pattern for samples MW-2 and MW-4.

Approved By: Joel Kiff

720 Olive Drive, Suite D Davis, CA 95616 916-297-4800

KIFF ANALYTICAL LLC

Report Number : 27430
Date : 8/27/02

Project Name : **105 5th Street, Oakland**
Project Number : **020710-AM2**

Sample : **MW-1** Matrix : Water Lab Number : 27430-01
Sample Date :7/10/02

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**< 0.50**	0.50	ug/L	EPA 8260B	7/14/02
Toluene	**< 0.50**	0.50	ug/L	EPA 8260B	7/14/02
Ethylbenzene	**< 0.50**	0.50	ug/L	EPA 8260B	7/14/02
Total Xylenes	**< 0.50**	0.50	ug/L	EPA 8260B	7/14/02
Methyl-t-butyl ether (MTBE)	**< 5.0**	5.0	ug/L	EPA 8260B	7/14/02
TPH as Gasoline	**< 50**	50	ug/L	EPA 8260B	7/14/02
Toluene - d8 (Surr)	97.5		% Recovery	EPA 8260B	7/14/02
4-Bromofluorobenzene (Surr)	102		% Recovery	EPA 8260B	7/14/02
TPH as Diesel	**74**	50	ug/L	M EPA 8015	7/20/02

Approved By: Joel Kiff

720 Olive Drive, Suite D Davis, CA 95616 530-297-4800

KIFF ANALYTICAL LLC

Report Number : 27430
Date : 8/27/02

Project Name : **105 5th Street, Oakland**
Project Number : **020710-AM2**

Sample : **MW-2** Matrix : Water Lab Number : 27430-02
Sample Date :7/10/02

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**< 10**	10	ug/L	EPA 8260B	7/14/02
Toluene	**< 10**	10	ug/L	EPA 8260B	7/14/02
Ethylbenzene	**14**	10	ug/L	EPA 8260B	7/14/02
Total Xylenes	**< 10**	10	ug/L	EPA 8260B	7/14/02
Methyl-t-butyl ether (MTBE)	**6100**	100	ug/L	EPA 8260B	7/14/02
TPH as Gasoline	**< 1000**	1000	ug/L	EPA 8260B	7/14/02
Toluene - d8 (Surr)	97.1		% Recovery	EPA 8260B	7/14/02
4-Bromofluorobenzene (Surr)	101		% Recovery	EPA 8260B	7/14/02
TPH as Diesel	**290**	50	ug/L	M EPA 8015	7/20/02

Approved By: Joel Kiff

720 Olive Drive, Suite D Davis, CA 95616 530-297-4800

KIFF ANALYTICAL LLC

Report Number : 27430
Date : 8/27/02

Project Name : **105 5th Street, Oakland**
Project Number : **020710-AM2**

Sample : **MW-3** Matrix : Water Lab Number : 27430-03
Sample Date :7/10/02

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**< 200**	200	ug/L	EPA 8260B	7/14/02
Toluene	**< 200**	200	ug/L	EPA 8260B	7/14/02
Ethylbenzene	**< 200**	200	ug/L	EPA 8260B	7/14/02
Total Xylenes	**< 200**	200	ug/L	EPA 8260B	7/14/02
Methyl-t-butyl ether (MTBE)	**64000**	200	ug/L	EPA 8260B	7/14/02
Diisopropyl ether (DIPE)	**< 200**	200	ug/L	EPA 8260B	7/14/02
Ethyl-t-butyl ether (ETBE)	**< 200**	200	ug/L	EPA 8260B	7/14/02
Tert-amyl methyl ether (TAME)	**< 200**	200	ug/L	EPA 8260B	7/14/02
Tert-Butanol	**6700**	2000	ug/L	EPA 8260B	7/14/02
TPH as Gasoline	**< 20000**	20000	ug/L	EPA 8260B	7/14/02
1,2-Dichloroethane	**< 200**	200	ug/L	EPA 8260B	7/14/02
1,2-Dibromoethane	**< 200**	200	ug/L	EPA 8260B	7/14/02
Toluene - d8 (Surr)	97.5		% Recovery	EPA 8260B	7/14/02
4-Bromofluorobenzene (Surr)	96.9		% Recovery	EPA 8260B	7/14/02
Dibromofluoromethane (Surr)	101		% Recovery	EPA 8260B	7/14/02
1,2-Dichloroethane-d4 (Surr)	99.6		% Recovery	EPA 8260B	7/14/02
TPH as Diesel	**150**	50	ug/L	M EPA 8015	7/17/02

Approved By: Joel Kiff

720 Olive Drive, Suite D Davis, CA 95616 530-297-4800

KIFF ANALYTICAL LLC

Report Number : 27430
Date : 8/27/02

Project Name : **105 5th Street, Oakland**
Project Number : **020710-AM2**

Sample : **MW-4** Matrix : Water Lab Number : 27430-04
Sample Date :7/10/02

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**< 0.50**	0.50	ug/L	EPA 8260B	7/14/02
Toluene	**< 0.50**	0.50	ug/L	EPA 8260B	7/14/02
Ethylbenzene	**< 0.50**	0.50	ug/L	EPA 8260B	7/14/02
Total Xylenes	**< 0.50**	0.50	ug/L	EPA 8260B	7/14/02
Methyl-t-butyl ether (MTBE)	**< 5.0**	5.0	ug/L	EPA 8260B	7/14/02
TPH as Gasoline	**< 50**	50	ug/L	EPA 8260B	7/14/02
Toluene - d8 (Surr)	93.5		% Recovery	EPA 8260B	7/14/02
4-Bromofluorobenzene (Surr)	102		% Recovery	EPA 8260B	7/14/02
TPH as Diesel	**67**	50	ug/L	M EPA 8015	7/18/02

Approved By: Joel Kiff

720 Olive Drive, Suite D Davis, CA 95616 530-297-4800

KIFF ANALYTICAL LLC

Report Number : 27430
Date : 8/27/02

Project Name : **105 5th Street, Oakland**
Project Number : **020710-AM2**

Sample : **MW-5** Matrix : Water Lab Number : 27430-05
Sample Date :7/10/02

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**36**	2.0	ug/L	EPA 8260B	7/14/02
Toluene	**< 2.0**	2.0	ug/L	EPA 8260B	7/14/02
Ethylbenzene	**93**	2.0	ug/L	EPA 8260B	7/14/02
Total Xylenes	**8.8**	2.0	ug/L	EPA 8260B	7/14/02
Methyl-t-butyl ether (MTBE)	**630**	20	ug/L	EPA 8260B	7/14/02
TPH as Gasoline	**930**	200	ug/L	EPA 8260B	7/14/02
Toluene - d8 (Surr)	102		% Recovery	EPA 8260B	7/14/02
4-Bromofluorobenzene (Surr)	98.5		% Recovery	EPA 8260B	7/14/02
TPH as Diesel	**< 400**	400	ug/L	M EPA 8015	7/17/02

Approved By: Joel Kiff

720 Olive Drive, Suite D Davis, CA 95616 530-297-4800

KIFF ANALYTICAL LLC

Report Number : 27430
Date : 8/27/02

Project Name : **105 5th Street, Oakland**
Project Number : **020710-AM2**

Sample : **T-1** Matrix : Water Lab Number : 27430-06
Sample Date :7/10/02

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	**260**	200	ug/L	EPA 8260B	7/14/02
Toluene	**< 200**	200	ug/L	EPA 8260B	7/14/02
Ethylbenzene	**< 200**	200	ug/L	EPA 8260B	7/14/02
Total Xylenes	**< 200**	200	ug/L	EPA 8260B	7/14/02
Methyl-t-butyl ether (MTBE)	**69000**	2000	ug/L	EPA 8260B	7/14/02
TPH as Gasoline	**< 20000**	20000	ug/L	EPA 8260B	7/14/02
Toluene - d8 (Surr)	98.0		% Recovery	EPA 8260B	7/14/02
4-Bromofluorobenzene (Surr)	98.2		% Recovery	EPA 8260B	7/14/02
TPH as Diesel	**3700**	50	ug/L	M EPA 8015	7/17/02

Approved By: Joel Kiff

720 Olive Drive, Suite D Davis, CA 95616 530-297-4800

Report Number : 27430

Date : 8/27/02

QC Report : Method Blank Data

Project Name : **105 5th Street, Oakland**

Project Number : **020710-AM2**

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
TPH as Diesel	< 50	50	ug/L	M EPA 8015	7/16/02
TPH as Diesel	63	50	ug/L	M EPA 8015	7/19/02
TPH as Diesel	< 50	50	ug/L	M EPA 8015	7/19/02
Benzene	< 0.50	0.50	ug/L	EPA 8260B	7/14/02
Toluene	< 0.50	0.50	ug/L	EPA 8260B	7/14/02
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	7/14/02
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	7/14/02
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	7/14/02
Diisopropyl ether (DIPE)	< 2.0	2.0	ug/L	EPA 8260B	7/14/02
Ethyl-t-butyl ether (ETBE)	< 2.0	2.0	ug/L	EPA 8260B	7/14/02
Tert-amyl methyl ether (TAME)	< 2.0	2.0	ug/L	EPA 8260B	7/14/02
Tert-Butanol	< 50	50	ug/L	EPA 8260B	7/14/02
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	7/14/02
1,2-Dichloroethane	< 2.0	2.0	ug/L	EPA 8260B	7/14/02
1,2-Dibromoethane	< 2.0	2.0	ug/L	EPA 8260B	7/14/02
Toluene - d8 (Surr)	101		%	EPA 8260B	7/14/02
4-Bromofluorobenzene (Surr)	102		%	EPA 8260B	7/14/02
Dibromofluoromethane (Surr)	106		%	EPA 8260B	7/14/02
1,2-Dichloroethane-d4 (Surr)	103		%	EPA 8260B	7/14/02

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
Benzene	< 0.50	0.50	ug/L	EPA 8260B	7/14/02
Toluene	< 0.50	0.50	ug/L	EPA 8260B	7/14/02
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	7/14/02
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	7/14/02
Methyl-t-butyl ether (MTBE)	< 0.50	0.50	ug/L	EPA 8260B	7/14/02
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	7/14/02
Toluene - d8 (Surr)	106		%	EPA 8260B	7/14/02
4-Bromofluorobenzene (Surr)	102		%	EPA 8260B	7/14/02

Approved By: Joel Kiff

KIFF ANALYTICAL, LLC

720 Olive Drive, Suite D Davis, CA 95616 530-297-4800

Report Number : 27430

QC Report : Matrix Spike/ Matrix Spike Duplicate

Date : 8/27/02

Project Name : **105 5th Street, Oakland**

Project Number : **020710-AM2**

Parameter	Spiked Sample	Sample Value	Spike Level	Spike Dup. Level	Spiked Sample Value	Duplicate Spiked Sample Value	Units	Analysis Method	Date Analyzed	Spiked Sample Percent Recov.	Duplicate Spiked Sample Percent Recov.	Relative Percent Diff.	Spiked Sample Percent Recov. Limit	Relative Percent Diff. Limit
TPH as Diesel	Blank	<50	1000	1000	952	1020	ug/L	M EPA 8015	7/16/02	95.2	102	6.67	70-130	25
TPH as Diesel	Blank	<50	1000	1000	937	1130	ug/L	M EPA 8015	7/19/02	93.7	113	18.8	70-130	25
Benzene	27459-01	<0.50	19.5	19.9	20.9	21.3	ug/L	EPA 8260B	7/14/02	107	107	0.280	70-130	25
Toluene	27459-01	<0.50	19.5	19.9	20.7	20.9	ug/L	EPA 8260B	7/14/02	106	105	1.04	70-130	25
Tert-Butanol	27459-01	<5.0	97.6	99.7	103	104	ug/L	EPA 8260B	7/14/02	105	104	1.42	70-130	25
Methyl-t-Butyl Ether	27459-01	<0.50	19.5	19.9	20.0	20.9	ug/L	EPA 8260B	7/14/02	102	105	2.03	70-130	25
Benzene	27432-01	<0.50	40.0	40.0	42.0	41.7	ug/L	EPA 8260B	7/14/02	105	104	0.694	70-130	25
Toluene	27432-01	<0.50	40.0	40.0	39.4	39.6	ug/L	EPA 8260B	7/14/02	98.4	99.0	0.532	70-130	25
Tert-Butanol	27432-01	<5.0	200	200	204	202	ug/L	EPA 8260B	7/14/02	102	101	0.984	70-130	25
Methyl-t-Butyl Ether	27432-01	2.6	40.0	40.0	39.0	37.8	ug/L	EPA 8260B	7/14/02	91.0	88.0	3.38	70-130	25

Approved By: Joel Kiff

KIFF ANALYTICAL, LLC

720 Olive Drive, Suite D Davis, CA 95616 530-297-4800

Report Number : 27430

QC Report : Laboratory Control Sample (LCS)

Date : 8/27/02

Project Name : **105 5th Street, Oakland**

Project Number : **020710-AM2**

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
Benzene	40.0	ug/L	EPA 8260B	7/14/02	109	70-130
Toluene	40.0	ug/L	EPA 8260B	7/14/02	106	70-130
Tert-Butanol	200	ug/L	EPA 8260B	7/14/02	105	70-130
Methyl-t-Butyl Ether	40.0	ug/L	EPA 8260B	7/14/02	105	70-130
Benzene	40.0	ug/L	EPA 8260B	7/14/02	99.5	70-130
Toluene	40.0	ug/L	EPA 8260B	7/14/02	101	70-130
Tert-Butanol	200	ug/L	EPA 8260B	7/14/02	96.0	70-130
Methyl-t-Butyl Ether	40.0	ug/L	EPA 8260B	7/14/02	95.1	70-130

Approved By: Joel Kiff

KIFF ANALYTICAL, LLC

720 Olive Drive, Suite D Davis, CA 95616 530-297-4800

LAB: Kiff

SHELL Chain Of Custody Record

Lab Identification (If necessary):

Address:

City, State, Zip:

Shell Project Manager to be invoiced:

☑ SCIENCE & ENGINEERING ☐ TECHNICAL SERVICES ☐ GRMT HOUSTON

Karen Petryna

27430

INCIDENT NUMBER (S&E ONLY): 98995757

SAP or GRMT NUMBER (TS/GRMT):

DATE: 7-10-02

PAGE: 1 of 1

SAMPLING COMPANY:	LOG CODE:	SITE ADDRESS (Street and City):	GLOBAL ID NO.:
Blaine Tech Services	BTSS	105 5th Street, Oakland	T0600102116

ADDRESS:	EDF DELIVERABLE TO (Responsible Party or Designee):	PHONE NO.:	E-MAIL:	CONSULTANT PROJECT NO.:
1680 Rogers Avenue, San Jose, CA 95112	Anni Kremi	510-420-3335	SheliOaklandEDF@cambria-env.com	BTS # 0207 (0-MW

PROJECT CONTACT (Hardcopy or PDF Report to):	TELEPHONE	FAX	E-MAIL:	SAMPLER NAME(S) (Print):
Leon Gearhart	408-573-0555	408-573-7771	lgearhart@blainetech.com	Albert MADRIGAL

LAB USE ONLY

TURNAROUND TIME (BUSINESS DAYS): ☑ 10 DAYS ☐ 5 DAYS ☐ 72 HOURS ☐ 48 HOURS ☐ 24 HOURS ☐ LESS THAN 24 HOURS

☐ LA - RWQCB REPORT FORMAT ☐ UST AGENCY:

GC/MS MTBE CONFIRMATION: HIGHEST _____ HIGHEST per BORING _____ ALL _____

SPECIAL INSTRUCTIONS OR NOTES: CHECK BOX IF EDD IS NOT NEEDED ☐

REQUESTED ANALYSIS

LAB USE ONLY	Field Sample Identification	SAMPLING DATE	SAMPLING TIME	MATRIX	NO. OF CONT.	TPH - Gas, Purgeable	BTEX	MTBE (8021B - 5ppb RL)	MTBE (8260B - 0.5ppb RL)	Oxygenates (5) by (8260B)	Ethanol (8260B)	Methanol	1,2-DCA (8260B)	EDB (8260B)	TPH - Diesel, Extractable (8015m)	TEMPERATURE ON RECEIPT C°
	MW-1	7/10/02	12:55	W	5	X	X	X							X	-01
	MW-2		13:20			X	X	X							X	-02
	MW-3		13:45			X	X	X					X	X	X	-03
	MW-4		12:35			X	X	X							X	-04
	MW-5		14:05			X	X	X							X	-05
	T-1		14:40			X	X	X							X	-06

FIELD NOTES:

Container/Preservative or PID Readings or Laboratory Notes

Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
		7/11/02	1056
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
	John Cuttle / Kiff Analytical	071102	1056

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10/18/00 Revision

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