



R8469

November 26, 2002

Mr. ~~Barney Chan~~ <sup>DH</sup>  
Alameda County Health Care Services Agency  
1131 Harbor Bay Parkway, Suite 2500  
Alameda, California 94502-6577

Alameda County  
DEC 26 2002  
Environmental Health

SITE: SHELL-BRANDED SERVICE STATION  
6039 COLLEGE AVENUE  
OAKLAND, CALIFORNIA

RE: THIRD QUARTER 2002 GROUNDWATER MONITORING REPORT  
AND GROUNDWATER EXTRACTION UPDATE 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 update for the Shell Service Station located at 6039 College Avenue, Oakland, California. See Figure 1 for the site location.

#### THIRD QUARTER 2002 GROUNDWATER MONITORING AND SAMPLING ACTIVITIES

##### Groundwater Monitoring and Sampling

On July 25, 2002, Monitoring Wells MW-3 through MW-6 were monitored and sampled by Blaine Tech Services, Inc. (Blaine Tech), the groundwater monitoring program contractor for Shell. Monitoring Wells MW-1 and MW-2 were not sampled this quarter because they are scheduled for sampling on an annual basis, during the first quarter of each year.

Groundwater levels in the wells were measured prior to sampling activities using an electronic water-level meter. 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 Attachment A, and a groundwater elevation contour map is presented on Figure 2. A general description of Blaine Tech's groundwater monitoring and sampling procedures is included with a copy of the field data sheets in Attachment B.

### Waste Disposal

Groundwater generated during well purging and equipment decontamination activities (approximately 74 gallons) was transported to the Shell refinery in Martinez, California.

### Laboratory Analysis

Groundwater samples collected during the investigation were submitted to Kiff Analytical, a State-certified laboratory, for analysis. The groundwater samples were analyzed for total petroleum hydrocarbons as gasoline (TPH-G), benzene, toluene, ethylbenzene, total xylenes (BTEX), and methyl tertiary butyl ether (MTBE) using Environmental Protection Agency (EPA) Method 8260B. Benzene and MTBE results of laboratory analysis of groundwater samples are presented on Figure 3 and in Attachment A, and copies of Kiff's laboratory report and chain of custody record are included in Attachment C.

### Findings

Groundwater was measured at depths of 13.68 feet to 17.08 feet below ground surface (bgs) in the monitoring wells (groundwater elevations of 178.81 feet to 175.37 feet above mean sea level [North American Vertical Datum, 1988]). The groundwater flow direction beneath the site is generally toward the west-southwest under a hydraulic gradient of approximately 0.016 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 samples collected from Wells MW-3 and MW-4 at concentrations of 2,100 micrograms per liter ( $\mu\text{g/l}$ ) and 3,300  $\mu\text{g/L}$ , respectively.
- Detectable benzene concentrations were found in groundwater samples collected from Wells MW-3 and MW-4 at concentrations of 170  $\mu\text{g/L}$  and 290  $\mu\text{g/L}$ , respectively.
- No detectable toluene concentrations were found in the groundwater samples collected.
- Detectable ethylbenzene concentrations were found in groundwater samples collected from Wells MW-3 and MW-4 at concentrations of 73  $\mu\text{g/L}$  and 98  $\mu\text{g/L}$ , respectively.
- Detectable total xylene concentrations were found in groundwater samples collected from Wells MW-3 and MW-4 at concentrations of 33  $\mu\text{g/L}$  and 74  $\mu\text{g/L}$ , respectively.
- Detectable MTBE concentrations were found in groundwater samples collected from each well sampled at concentrations ranging from 190  $\mu\text{g/L}$  in Well MW-5 to 2,600  $\mu\text{g/L}$  in Wells MW-3 and MW-4.

#### GROUNDWATER EXTRACTION (GWE) UPDATE

Beginning in September 1999, Shell initiated semi-monthly mobile GWE at the site using Monitoring Wells MW-3 and MW-4. 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. Since September, a total of 8,193 gallons have been pumped from Monitoring Well MW-3 and 7,726 gallons from Well MW-4 by GWE. Individual GWE event details and cumulative groundwater extraction data are presented in Table 1.

Miller Brooks estimates that 0.37 gallon of TPH-G, 0.01 gallon of benzene, and 0.37 gallon of MTBE have been removed from the subsurface by GWE since September 1999. These mass calculations are approximate and are based on the volume of groundwater extracted per event and

the concentration in the wells closest in time to the respective extraction events. Table 1 presents GWE data and cumulative mass removal data for TPH-G, benzene, and MTBE. The mass and volume removal formulas are also presented on Table 1. Figure 4 shows the effect of groundwater extraction on the concentration of MTBE over time for Well MW-3, and Figure 5 displays this trend for Well MW-4.

## PROPOSED WORK ACTIVITIES

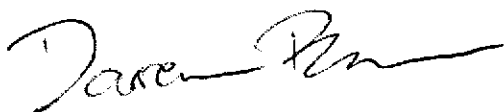
Proposed work activities for the Fourth Quarter of 2002 are as follows:

- Based on the presence of MTBE in wells located downgradient of the station, additional investigation work to further assess the downgradient extent of dissolved-phase MTBE in groundwater is warranted. A work plan outlining the additional site investigation work is currently being prepared for submittal to the County.
- Previous investigations have determined that the utility corridor along Claremont Avenue may act as a preferential pathway for contaminant migration. Therefore, Miller Brooks proposes the collection of soil and groundwater samples from selected locations along the utility corridor on Claremont Avenue. The proposed work will be combined into the work plan noted above.
- Onsite investigation data collected to date indicates that there is a gap in groundwater quality data in the areas directly downgradient of the dispenser islands. Therefore, during the same investigation event described above, Miller Brooks proposes to collect soil and groundwater samples from the areas immediately downgradient from the existing dispenser islands. These proposed tasks will also be detailed in the work plan mentioned above.
- 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 mass of hydrocarbons in the saturated zone.

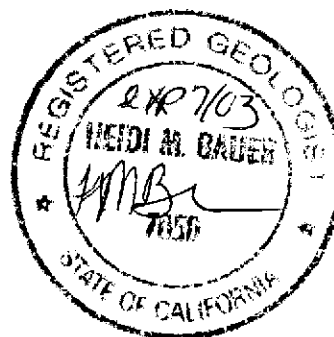
If you have any questions regarding this site, please call us at (510) 891-0092, or Karen Petryna of Shell at (559) 645-9306.

Sincerely,

MILLER BROOKS ENVIRONMENTAL, INC.



Darren W. Butler  
Senior Staff Scientist



Heidi M. Bauer, RG 7050  
Senior Geologist

Table: 1 – Groundwater Extraction – Mass Removal Data

Figures: 1 - Vicinity and Well Survey Map  
2 - Groundwater Elevation Contour Map  
3 – Dissolved-Phase Hydrocarbon Distribution Map  
4 - Groundwater Extraction Effect on MTBE Concentrations in Well MW-3  
5 - Groundwater Extraction Effect on MTBE Concentrations in Well MW-4

Attachments: A – Blaine Tech Services, Inc. - Groundwater Gauging and Analytical Data  
B – Blaine Tech Services, Inc. - General Field Procedures and Field Data Sheets  
C – Kiff Laboratory Report and Chain of Custody Record

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

**Table 1: Groundwater Extraction - Mass Removal Data - Shell-branded Service Station, Incident #98995745, 6039 College Avenue, Oakland, California**

Date Purged	Well ID	Volume Pumped (gal)	Cumulative Volume Pumped (gal)	Date Sampled	<u>TPH-G</u>			<u>Benzene</u>			<u>MTBE</u>		
					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)
09/22/99	MW-3	115	115	08/31/99	1,550	0.00149	0.00149	232	0.00022	0.00022	4,620	0.00443	0.00443
10/06/99	MW-3	40	155	08/31/99	1,550	0.00052	0.00200	232	0.00008	0.00030	4,620	0.00154	0.00598
10/14/99	MW-3	50	205	08/31/99	1,550	0.00065	0.00265	232	0.00010	0.00040	4,620	0.00193	0.00790
10/18/99	MW-3	30	235	08/31/99	1,550	0.00039	0.00304	232	0.00006	0.00045	4,620	0.00116	0.00906
10/29/99	MW-3	30	265	08/31/99	1,550	0.00039	0.00343	232	0.00006	0.00051	4,620	0.00116	0.01022
11/03/99	MW-3	30	295	08/31/99	1,550	0.00039	0.00382	232	0.00006	0.00057	4,620	0.00116	0.01137
11/10/99	MW-3	30	325	08/31/99	1,550	0.00039	0.00420	232	0.00006	0.00063	4,620	0.00116	0.01253
11/19/99	MW-3	169	494	08/31/99	1,550	0.00219	0.00639	232	0.00033	0.00096	4,620	0.00652	0.01904
11/24/99	MW-3	160	654	08/31/99	1,550	0.00207	0.00846	232	0.00031	0.00127	4,620	0.00617	0.02521
12/02/99	MW-3	200	854	08/31/99	1,550	0.00259	0.01105	232	0.00039	0.00165	4,620	0.00771	0.03292
12/10/99	MW-3	60	914	08/31/99	1,550	0.00078	0.01182	232	0.00012	0.00177	4,620	0.00231	0.03524
12/17/99	MW-3	150	1,064	08/31/99	1,550	0.00194	0.01376	232	0.00029	0.00206	4,620	0.00578	0.04102
01/03/00	MW-3	0	1,064	08/31/99	1,550	0.00000	0.01376	232	0.00000	0.00206	4,620	0.00000	0.04102
01/07/00	MW-3	0	1,064	08/31/99	1,550	0.00000	0.01376	232	0.00000	0.00206	4,620	0.00000	0.04102
01/13/00	MW-3	360	1,424	08/31/99	1,550	0.00466	0.01842	232	0.00070	0.00276	4,620	0.01388	0.05490
01/21/00	MW-3	40	1,464	08/31/99	1,550	0.00052	0.01894	232	0.00008	0.00283	4,620	0.00154	0.05644
01/25/00	MW-3	80	1,544	08/31/99	1,550	0.00103	0.01997	232	0.00015	0.00299	4,620	0.00308	0.05952
02/01/00	MW-3	165	1,709	08/31/99	1,550	0.00213	0.02210	232	0.00032	0.00331	4,620	0.00636	0.06588
02/11/00	MW-3	24	1,733	02/11/00	10,900	0.00218	0.02429	1,030	0.00021	0.00351	19,300	0.00387	0.06975
02/15/00	MW-3	150	1,883	02/11/00	10,900	0.01364	0.03793	1,030	0.00129	0.00480	19,300	0.02416	0.09391
02/23/00	MW-3	100	1,983	02/11/00	10,900	0.00910	0.04703	1,030	0.00086	0.00566	19,300	0.01610	0.11001
03/02/00	MW-3	168	2,151	02/11/00	10,900	0.01528	0.06231	1,030	0.00144	0.00711	19,300	0.02706	0.13707
03/10/00	MW-3	270	2,421	02/11/00	10,900	0.02456	0.08686	1,030	0.00232	0.00943	19,300	0.04348	0.18055
03/15/00	MW-3	96	2,517	02/11/00	10,900	0.00873	0.09559	1,030	0.00083	0.01025	19,300	0.01546	0.19601
03/21/00	MW-3	100	2,617	02/11/00	10,900	0.00910	0.10469	1,030	0.00086	0.01111	19,300	0.01610	0.21211
03/27/00	MW-3	100	2,717	02/11/00	10,900	0.00910	0.11378	1,030	0.00086	0.01197	19,300	0.01610	0.22822
04/07/00	MW-3	160	2,877	02/11/00	10,900	0.01455	0.12834	1,030	0.00138	0.01335	19,300	0.02577	0.25399
04/13/00	MW-3	120	2,997	02/11/00	10,900	0.01091	0.13925	1,030	0.00103	0.01438	19,300	0.01933	0.27331

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					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)
04/18/00	MW-3	180	3,177	02/11/00	10,900	0.01637	0.15562	1,030	0.00155	0.01593	19,300	0.02899	0.30230
04/26/00	MW-3	225	3,402	02/11/00	10,900	0.02046	0.17609	1,030	0.00193	0.01786	19,300	0.03624	0.33853
05/04/00	MW-3	160	3,562	02/11/00	10,900	0.01455	0.19064	1,030	0.00138	0.01923	19,300	0.02577	0.36430
05/09/00	MW-3	180	3,742	02/11/00	10,900	0.01637	0.20701	1,030	0.00155	0.02078	19,300	0.02899	0.39329
05/17/00	MW-3	138	3,880	02/11/00	10,900	0.01255	0.21956	1,030	0.00119	0.02197	19,300	0.02222	0.41551
05/22/00	MW-3	200	4,080	02/11/00	10,900	0.01819	0.23775	1,030	0.00172	0.02369	19,300	0.03221	0.44772
06/01/00	MW-3	120	4,200	02/11/00	10,900	0.01091	0.24867	1,030	0.00103	0.02472	19,300	0.01933	0.46705
06/08/00	MW-3	170	4,370	02/11/00	10,900	0.01546	0.26413	1,030	0.00146	0.02618	19,300	0.02738	0.49443
11/05/01	MW-3	100	4,470	07/30/01	2,700	0.00225	0.26638	250	0.00021	0.02639	5,200	0.00434	0.49877
12/05/01	MW-3	500	4,970	07/30/01	2,700	0.01126	0.27765	250	0.00104	0.02743	5,200	0.02170	0.52046
01/25/02	MW-3	500	5,470	12/12/01	<10,000	0.02086	0.29851	720	0.00300	0.03043	6,600	0.02754	0.54800
02/13/02	MW-3	411	5,881	01/31/02	11,000	0.03772	0.33623	750	0.00257	0.03301	5,800	0.01989	0.56789
03/13/02	MW-3	783	6,664	01/31/02	11,000	0.07187	0.40810	750	0.00490	0.03791	5,800	0.03790	0.60578
04/17/02	MW-3	300	6,964	01/31/02	11,000	0.02754	0.43564	750	0.00188	0.03978	5,800	0.01452	0.62030
05/15/02	MW-3	215	7,179	01/31/02	11,000	0.01973	0.45538	750	0.00135	0.04113	5,800	0.01041	0.63071
06/14/02	MW-3	385	7,564	05/31/02	5,100	0.01638	0.47176	410	0.00132	0.04245	3,600	0.01157	0.64227
07/12/02	MW-3	300	7,864	05/31/02	5,100	0.01277	0.48453	410	0.00103	0.04347	3,600	0.00901	0.65129
08/16/02	MW-3	100	7,964	07/25/02	2,100	0.00175	0.48628	170	0.00014	0.04362	2,600	0.00217	0.65346
09/18/02	MW-3	229	8,193	07/25/02	2,100	0.00401	0.49029	170	0.00032	0.04394	2,600	0.00497	0.65842
09/22/99	MW-4	100	100	11/03/97	32,000	0.02670	0.02670	1,100	0.00092	0.00092	78,000	0.06509	0.06509
10/06/99	MW-4	60	160	11/03/97	32,000	0.01602	0.04272	1,100	0.00055	0.00147	78,000	0.03905	0.10414
10/14/99	MW-4	30	190	11/03/97	32,000	0.00801	0.05073	1,100	0.00028	0.00174	78,000	0.01953	0.12366
10/18/99	MW-4	30	220	11/03/97	32,000	0.00801	0.05874	1,100	0.00028	0.00202	78,000	0.01953	0.14319
10/29/99	MW-4	30	250	11/03/97	32,000	0.00801	0.06675	1,100	0.00028	0.00229	78,000	0.01953	0.16271
11/03/99	MW-4	30	280	11/03/97	32,000	0.00801	0.07477	1,100	0.00028	0.00257	78,000	0.01953	0.18224
11/10/99	MW-4	30	310	11/03/97	32,000	0.00801	0.08278	1,100	0.00028	0.00285	78,000	0.01953	0.20177
11/19/99	MW-4	0	310	11/03/97	32,000	0.00000	0.08278	1,100	0.00000	0.00285	78,000	0.00000	0.20177

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Date Purged	Well ID	Cumulative		Date Sampled	TPH-G			Benzene			MTBE		
		Volume Pumped (gal)	Volume Pumped (gal)		TPH-G Concentration (ppb)	TPH-G Removed (lbs)	TPH-G To Date (lbs)	Benzene Concentration (ppb)	Benzene Removed (lbs)	Benzene To Date (lbs)	MTBE Concentration (ppb)	MTBE Removed (lbs)	MTBE To Date (lbs)
11/24/99	MW-4	0	310	11/03/97	32,000	0.00000	0.08278	1,100	0.00000	0.00285	78,000	0.00000	0.20177
12/02/99	MW-4	0	310	11/03/97	32,000	0.00000	0.08278	1,100	0.00000	0.00285	78,000	0.00000	0.20177
12/10/99	MW-4	0	310	11/03/97	32,000	0.00000	0.08278	1,100	0.00000	0.00285	78,000	0.00000	0.20177
12/17/99	MW-4	0	310	11/03/97	32,000	0.00000	0.08278	1,100	0.00000	0.00285	78,000	0.00000	0.20177
01/03/00	MW-4	0	310	11/03/97	32,000	0.00000	0.08278	1,100	0.00000	0.00285	78,000	0.00000	0.20177
01/07/00	MW-4	0	310	11/03/97	32,000	0.00000	0.08278	1,100	0.00000	0.00285	78,000	0.00000	0.20177
01/13/00	MW-4	350	660	11/03/97	32,000	0.09346	0.17623	1,100	0.00321	0.00606	78,000	0.22780	0.42957
01/21/00	MW-4	40	700	11/03/97	32,000	0.01068	0.18691	1,100	0.00037	0.00643	78,000	0.02603	0.45560
01/25/00	MW-4	100	800	11/03/97	32,000	0.02670	0.21362	1,100	0.00092	0.00734	78,000	0.06509	0.52069
02/01/00	MW-4	165	965	11/03/97	32,000	0.04406	0.25767	1,100	0.00151	0.00886	78,000	0.10739	0.62808
02/11/00	MW-4	19	984	02/11/00	47,200	0.00748	0.26516	905	0.00014	0.00900	27,400	0.00434	0.63242
02/15/00	MW-4	100	1,084	02/11/00	47,200	0.03939	0.30454	905	0.00076	0.00976	27,400	0.02286	0.65529
02/23/00	MW-4	100	1,184	02/11/00	47,200	0.03939	0.34393	905	0.00076	0.01051	27,400	0.02286	0.67815
03/02/00	MW-4	270	1,454	02/11/00	47,200	0.10634	0.45027	905	0.00204	0.01255	27,400	0.06173	0.73988
03/10/00	MW-4	220	1,674	02/11/00	47,200	0.08665	0.53692	905	0.00166	0.01421	27,400	0.05030	0.79018
03/15/00	MW-4	96	1,770	02/11/00	47,200	0.03781	0.57473	905	0.00072	0.01494	27,400	0.02195	0.81213
03/21/00	MW-4	100	1,870	02/11/00	47,200	0.03939	0.61411	905	0.00076	0.01569	27,400	0.02286	0.83499
03/27/00	MW-4	100	1,970	02/11/00	47,200	0.03939	0.65350	905	0.00076	0.01645	27,400	0.02286	0.85786
04/07/00	MW-4	113	2,083	02/11/00	47,200	0.04451	0.69800	905	0.00085	0.01730	27,400	0.02584	0.88369
04/13/00	MW-4	110	2,193	02/11/00	47,200	0.04332	0.74133	905	0.00083	0.01813	27,400	0.02515	0.90884
04/18/00	MW-4	225	2,418	02/11/00	47,200	0.08862	0.82994	905	0.00170	0.01983	27,400	0.05144	0.96029
04/26/00	MW-4	315	2,733	02/11/00	47,200	0.12406	0.95401	905	0.00238	0.02221	27,400	0.07202	1.03231
05/04/00	MW-4	150	2,883	02/11/00	47,200	0.05908	1.01308	905	0.00113	0.02334	27,400	0.03430	1.06660
05/09/00	MW-4	315	3,198	02/11/00	47,200	0.12406	1.13715	905	0.00238	0.02572	27,400	0.07202	1.13862
05/17/00	MW-4	270	3,468	02/11/00	47,200	0.10634	1.24349	905	0.00204	0.02776	27,400	0.06173	1.20035
05/22/00	MW-4	200	3,668	02/11/00	47,200	0.07877	1.32226	905	0.00151	0.02927	27,400	0.04573	1.24608
06/05/00	MW-4	125	3,793	02/11/00	47,200	0.04923	1.37149	905	0.00094	0.03021	27,400	0.02858	1.27466
06/08/00	MW-4	170	3,963	02/11/00	47,200	0.06696	1.43845	905	0.00128	0.03150	27,400	0.03887	1.31353



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		Volume Pumped (gal)	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)
11/05/01	MW-4*	0	3,963	07/30/01	6,700	0.00000	1.43845	260	0.00000	0.03150	3,900	0.00000	1.31353
12/05/01	MW-4	850	4,813	07/30/01	6,700	0.04752	1.48597	260	0.00184	0.03334	3,900	0.02766	1.34119
01/25/02	MW-4	578	5,391	12/12/01	15,000	0.07235	1.55831	1,300	0.00627	0.03961	20,000	0.09646	1.43765
02/13/02	MW-4	500	5,891	01/31/02	12,000	0.05007	1.60838	1,500	0.00626	0.04587	12,000	0.05007	1.48772
03/13/02	MW-4	300	6,191	01/31/02	12,000	0.03004	1.63842	1,500	0.00375	0.04962	12,000	0.03004	1.51776
04/17/02	MW-4	309	6,500	01/31/02	12,000	0.03094	1.66936	1,500	0.00387	0.05349	12,000	0.03094	1.54870
05/15/02	MW-4	291	6,791	01/31/02	12,000	0.02914	1.69850	1,500	0.00364	0.05713	12,000	0.02914	1.57784
06/14/02	MW-4	200	6,991	05/31/02	8,200	0.01368	1.71218	1,100	0.00184	0.05897	8,100	0.01352	1.59135
07/12/02	MW-4	263	7,254	05/31/02	8,200	0.01800	1.73018	1,100	0.00241	0.06138	8,100	0.01778	1.60913
08/16/02	MW-4	322	7,576	07/25/02	3,300	0.00887	1.73905	290	0.00078	0.06216	2,600	0.00699	1.61612
09/18/02	MW-4	150	7,726	07/25/02	3,300	0.00413	1.74318	290	0.00036	0.06253	2,600	0.00325	1.61937
<b>Total Gallons Extracted:</b>		<b>15,919</b>			<b>Total Pounds Removed:</b>		<b>2.23347</b>	<b>0.10647</b>		<b>2.27779</b>			
					<b>Total Gallons Removed:</b>		<b>0.36614</b>	<b>0.01458</b>		<b>0.36739</b>			

**Abbreviations & Notes:**

TPH-G = Total petroleum hydrocarbons as gasoline

MTBE = Methyl tertiary butyl ether

ppb = Parts per billion

lbs = Pounds

gal = Gallon

Mass removed based on the formula: volume extracted (gal) x Concentration (µg/L) x (g/10<sup>6</sup>µg) 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 8260B

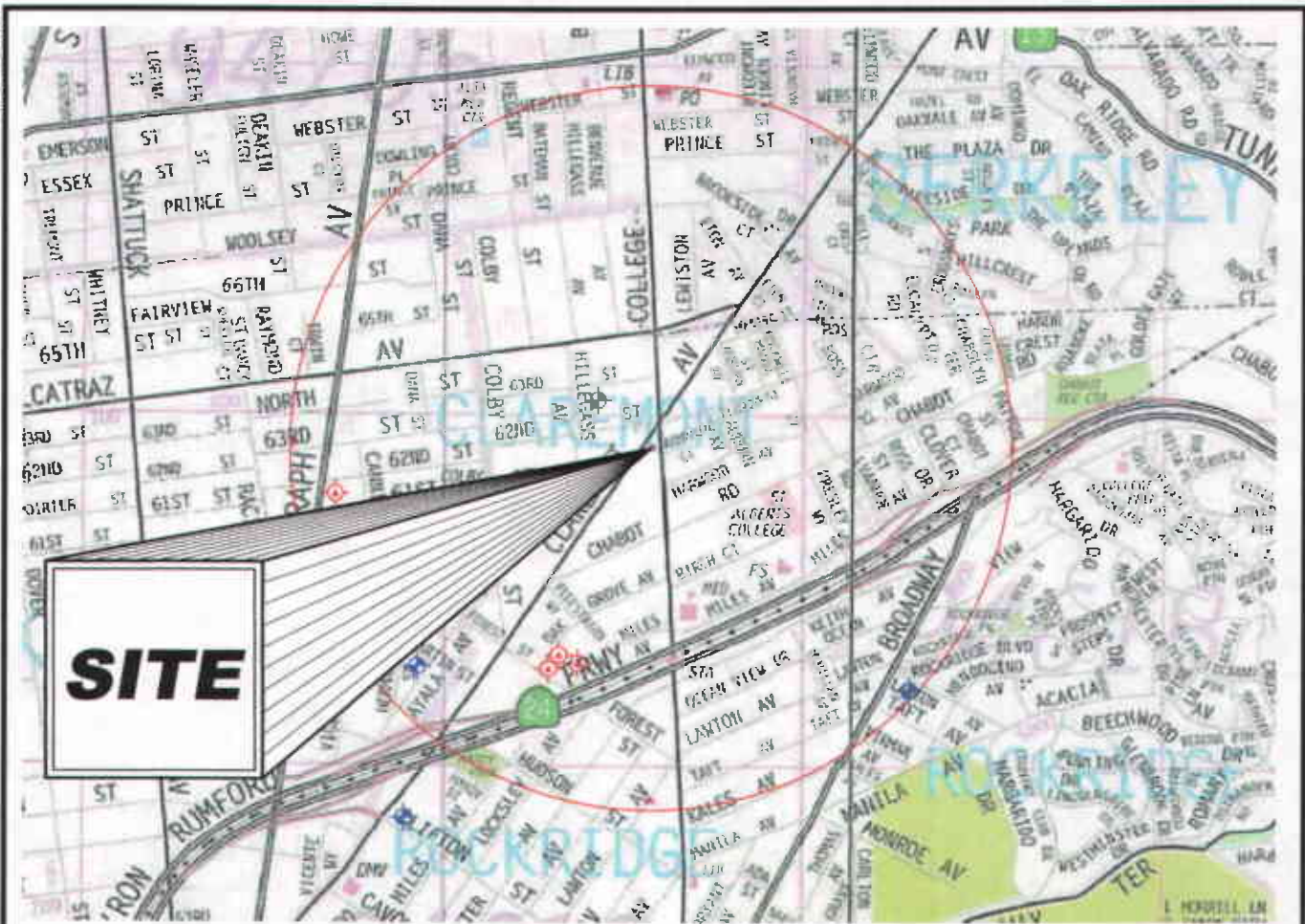
MTBE analyzed by EPA Method 8260B in bold font, all other MTBE analyzed by EPA Method 8020

Concentrations based on most recent groundwater monitoring results

Groundwater extracted by vacuum trucks provided by ACTI between September 22, 1999 and November 10, 1999, and from November 5, 2001 through December 5, 2001, and by Blaine Tech Services from November 19, 1999 to June 8, 2000.

As of January 25, 2002 groundwater has been extracted by vacuum trucks provided by Onyx Industrial. Water disposed of at the Shell Martinez refinery.

\* = Well dry.

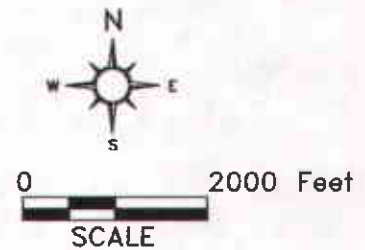



**LEGEND**

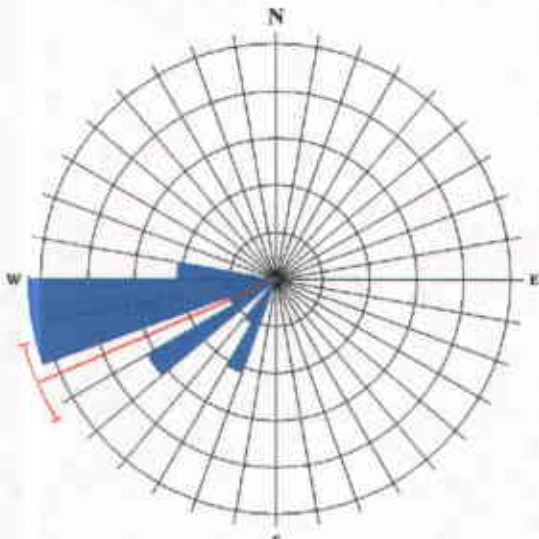
-  CATHODIC PROTECTION WELL
-  STUDY AREA (1/2 MILE RADIUS)
-  UNKNOWN WELL

FROM: U.S. GEOLOGICAL SURVEY, 1967  
 QUADRANGLE: OAKLAND  
 COUNTY: ALAMEDA  
 SERIES: 7.5-MINUTE QUAD

NOTE: ALL BOUNDARIES AND LOCATIONS ARE APPROXIMATE



	DRAWN BY: PEL	<b>VICINITY AND                  WELL SURVEY MAP</b>	<b>FIGURE                  1</b>
	DATE: 2/5/01		
2425 W. 14TH STREET, D-2 OAKLAND, CA. (510) 891-0092	REVISED BY: DWB	<b>SHELL SERVICE STATION                  6039 COLLEGE AVE.                  OAKLAND, CA.</b>	
	REVISED: 10/3/02		
PROJECT NO. 06-155-0305-01	APPROVED BY: DWB		
	DATE: 10/3/02		
		FILE: K:\DWGS\EQUILON\OAKLAND (105 5TH ST.)\VIC. MAP DATE PLOTTED: 10/3/02	

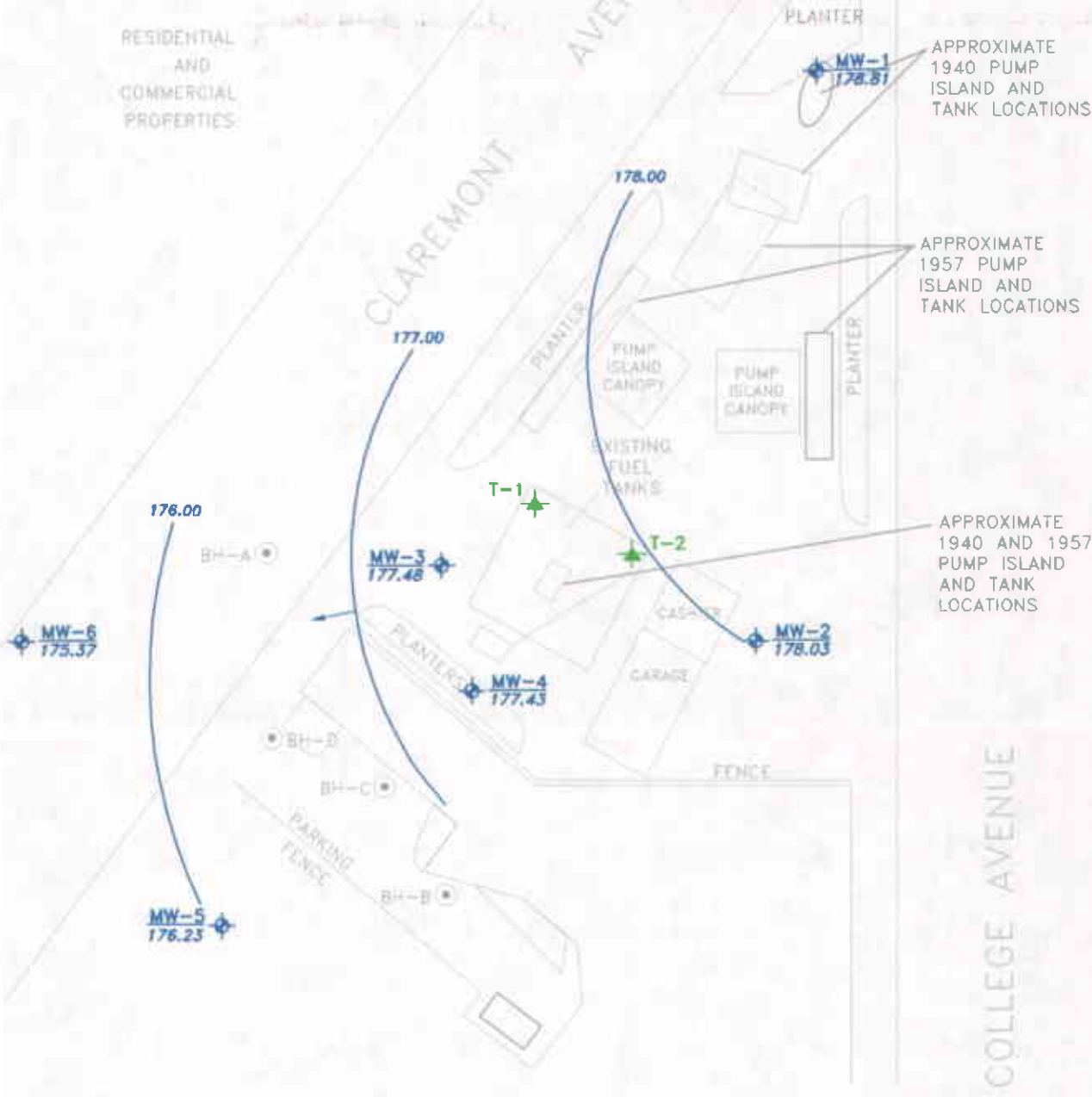


**GROUNDWATER GRADIENT DIRECTION**  
(1Q98-3Q02)

RESIDENTIAL AND COMMERCIAL PROPERTIES

FLORIO STREET

COMMERCIAL PROPERTIES

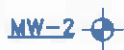


APPROXIMATE 1940 PUMP ISLAND AND TANK LOCATIONS

APPROXIMATE 1957 PUMP ISLAND AND TANK LOCATIONS

APPROXIMATE 1940 AND 1957 PUMP ISLAND AND TANK LOCATIONS

**LEGEND**



GROUNDWATER MONITORING WELL



TANK BACKFILL WELL

358.90

GROUNDWATER ELEVATION IN FEET (RELATIVE TO MEAN SEA LEVEL)



SOIL BORING, INSTALLED 9/93

370.00

GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED)

**NOTES:**

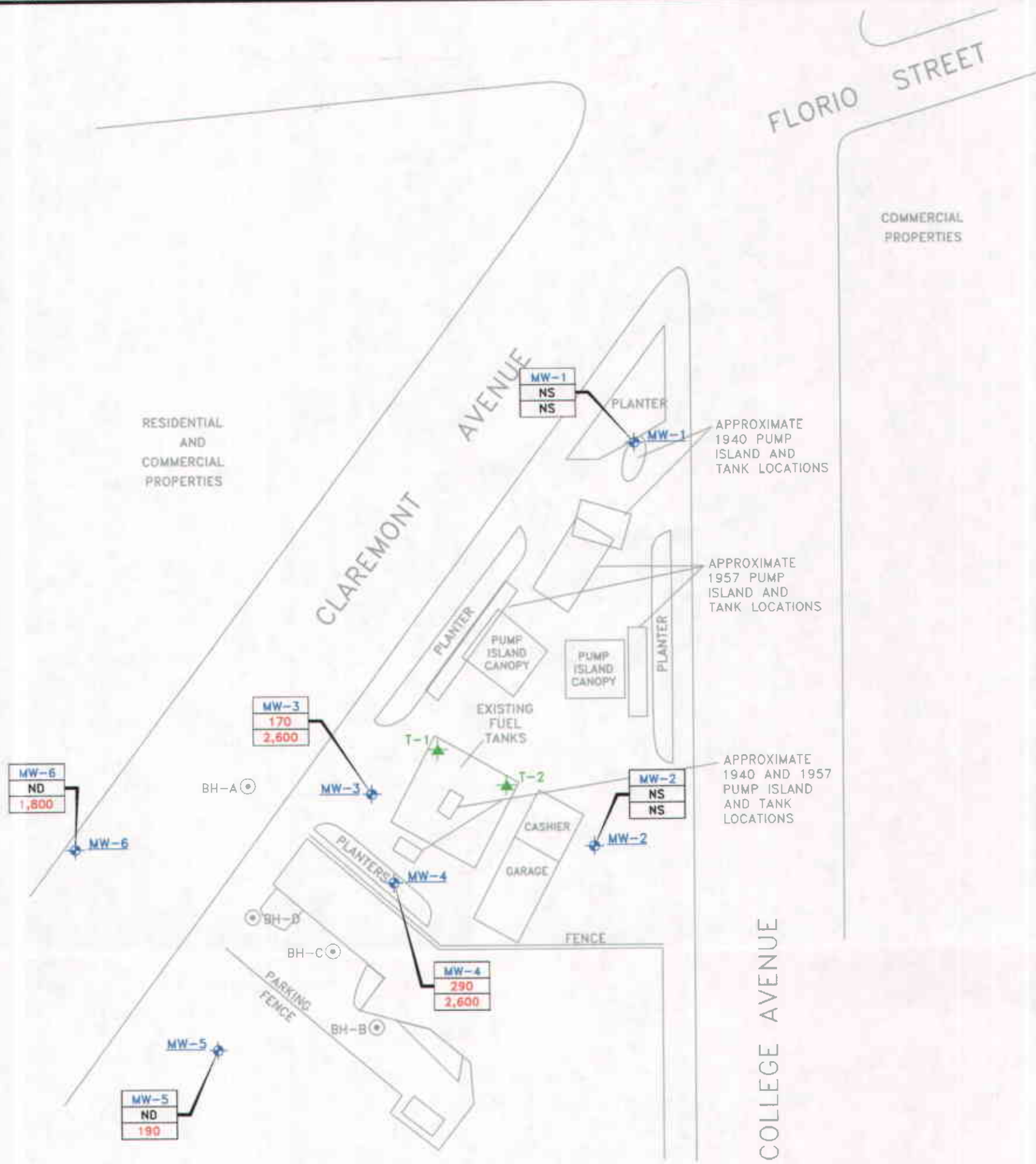
CONTOUR LINES ARE INTERPRETIVE BASED ON GROUNDWATER LEVELS MEASURED ON JULY 25, 2002.



APPROXIMATE DIRECTION OF GROUNDWATER FLOW



	DRAWN BY: <b>AIL</b>	GROUNDWATER ELEVATION CONTOUR MAP JULY 25, 2002	<b>FIGURE</b>  <b>2</b>
	DATE: <b>09/26/02</b>		
2425 W. 14TH STREET, D-2 OAKLAND, CA. (510) 891-0092	REVISED BY: <b>DWB</b>	SHELL SERVICE STATION 6039 COLLEGE AVENUE OAKLAND, CA	
	REVISED: <b>10/23/02</b>		
	APPROVED BY: <b>HMB</b>		
PROJECT NO. 06-155-0304-01	DATE: <b>11/13/02</b>	FILE: K:\DWGS\EQUILON\OAKLAND (6039 COLLEGE	DATE PLOTTED: 11/13/02

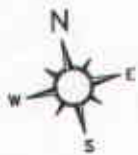


**LEGEND**

- GROUNDWATER MONITORING WELL
- TANK BACKFILL WELL
- SOIL BORING, INSTALLED 9/93
- DISSOLVED-PHASE HYDROCARBON CONCENTRATIONS (IN ug/L)

**NOTES:**

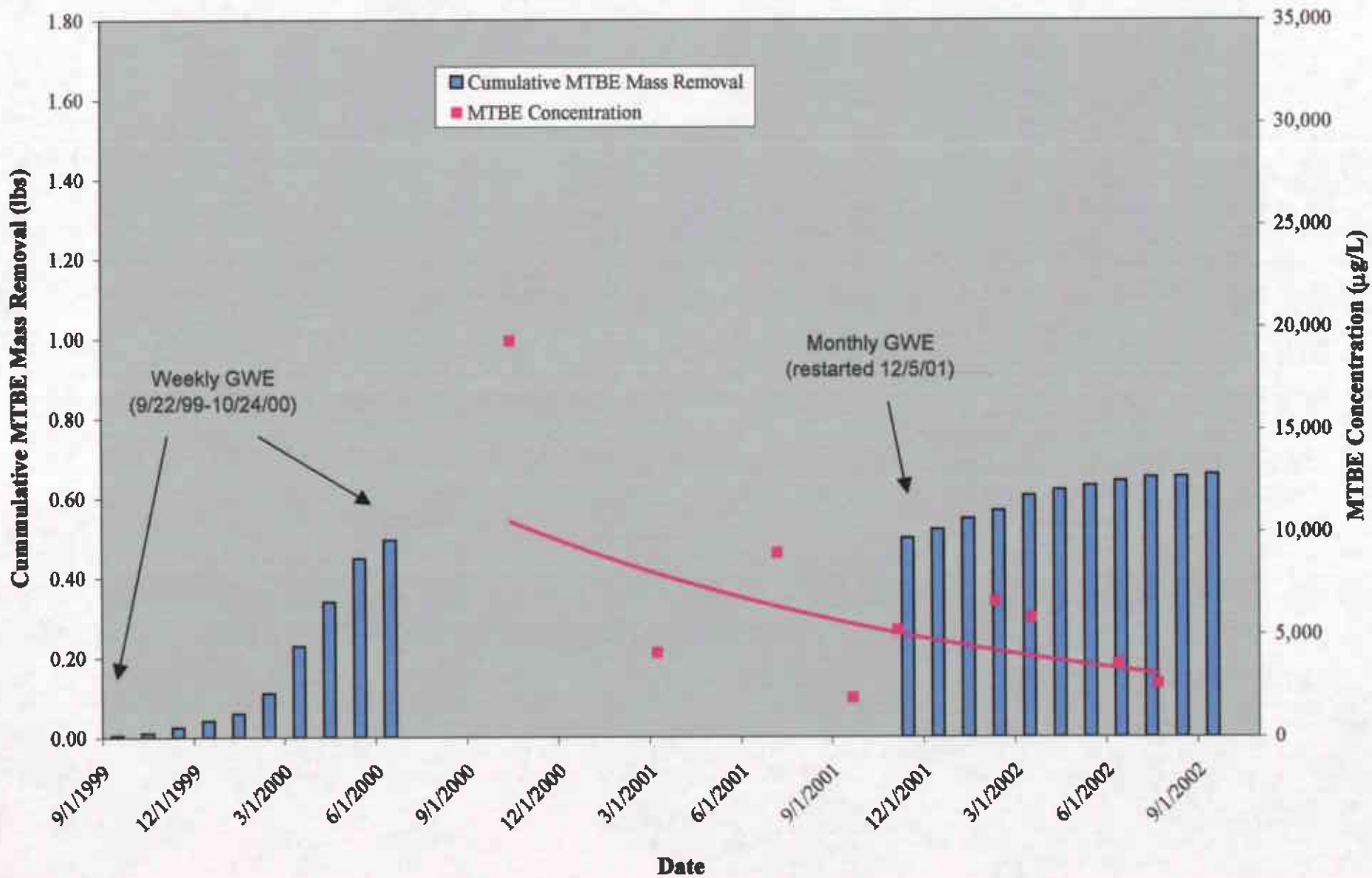
- 1) DISSOLVED-PHASE DATA ARE BASED ON GROUNDWATER SAMPLING CONDUCTED ON JULY 25, 2002.
- 2) BENZENE (EPA METHOD 8260B), MTBE = METHYL TERTIARY BUTYL ETHER (EPA METHOD 8260B), ug/L = MICROGRAMS PER LITER, ND = NOT DETECTED AT LIMIT INDICATED ON OFFICIAL LABORATORY REPORT.
- 3) ND = NOT DETECTED ABOVE LABORATORY DETECTION LIMITS
- 4) NS = NOT SAMPLED



	DRAWN BY: AIL DATE: 09/26/02 REVISED BY: DWB	DISSOLVED-PHASE HYDROCARBON DISTRIBUTION MAP JULY 25, 2002	<b>FIGURE</b> <b>3</b>
	2425 W. 14TH STREET, D-2 OAKLAND, CA. (510) 891-0092		
PROJECT NO. 06-155-0304-01	DATE: 11/13/02	FILE: K:\DWGS\EQUILON\OAKLAND (6039 COLLEGE	DATE PLOTTED: 11/13/02

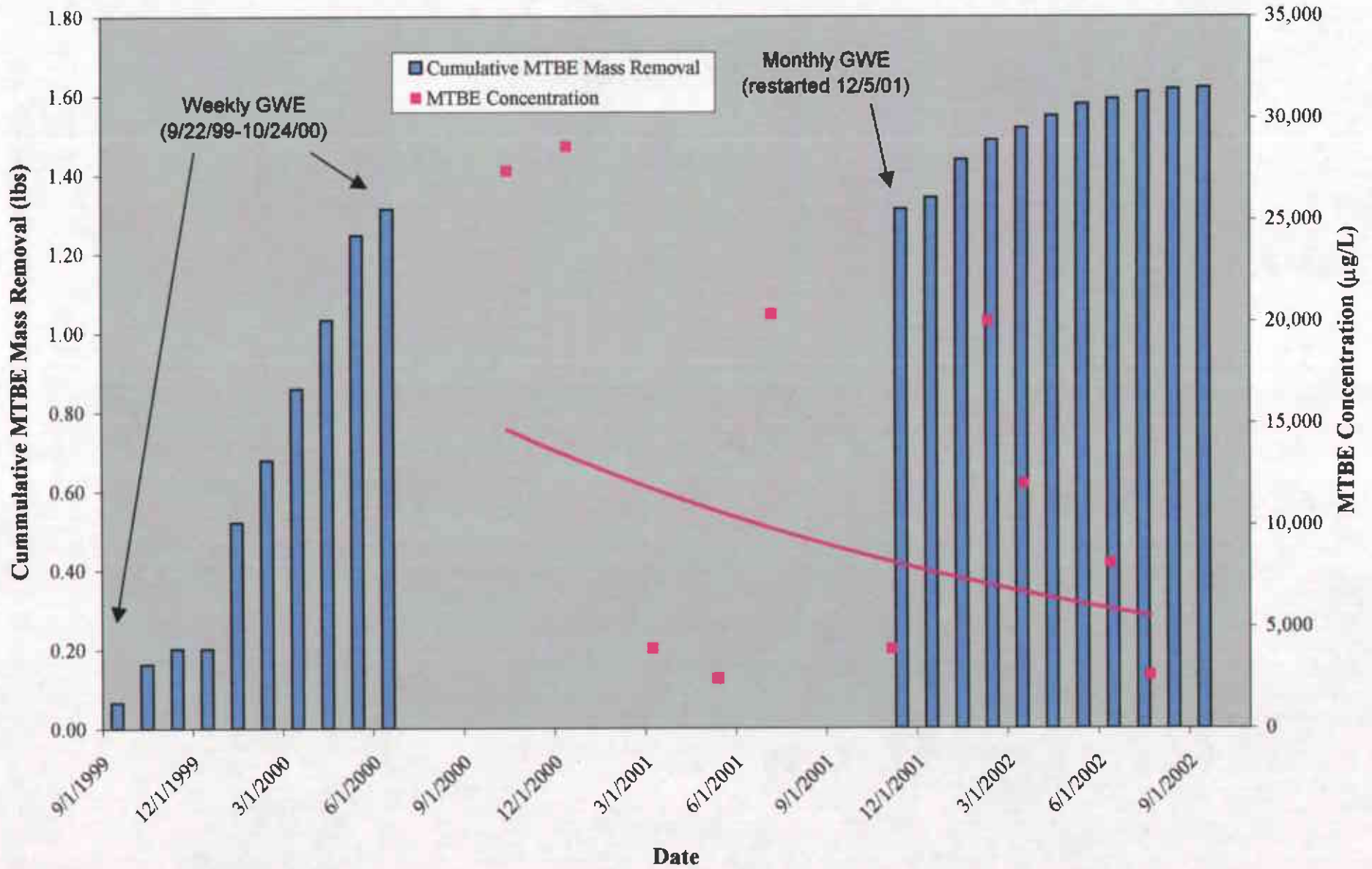
SHELL SERVICE STATION  
6039 COLLEGE AVE  
OAKLAND, CA

Figure 4 - GWE Effect on MTBE Concentrations in Well MW-3



SHELL SERVICE STATION  
6039 COLLEGE AVE  
OAKLAND, CA

Figure 5 - GWE Effect on MTBE Concentrations in Well MW-4



**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 19, 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  
6039 College Avenue  
Oakland, CA

Monitoring performed on July 25, 2002

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**Groundwater Monitoring Report 020725-DW-1**

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 Technologies, Inc.  
1144 65<sup>th</sup> Street, Suite C  
Oakland, CA 94608



**WELL CONCENTRATIONS**  
**Shell-branded Service Station**  
**6039 College Avenue**  
**Oakland, CA**

Well ID	Date	TPH-G (µg/L)	TEPH (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE 8020 (µg/L)	MTBE 8260 (µg/L)	TOC (MSL)	Depth to Water (ft.)	Depth to SPH (ft.)	GW Elevation (MSL)	SPH Thickness (ft.)	DO (ppm)
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MW-1	2/15/1990	95	650	ND	0.67	0.37	3.2	NA	NA	195.89	17.73	NA	178.16	NA	NA
MW-1	4/19/1990	NA	NA	NA	NA	NA	NA	NA	NA	195.89	18.51	NA	177.38	NA	NA
MW-1	5/14/1990	95	ND	0.7	0.57	0.71	3.5	NA	NA	195.89	18.92	NA	176.97	NA	NA
MW-1	6/21/1990	NA	NA	NA	NA	NA	NA	NA	NA	195.89	18.21	NA	177.68	NA	NA
MW-1	9/12/1990	ND	84	ND	ND	ND	ND	NA	NA	195.89	19.81	NA	176.08	NA	NA
MW-1	11/27/1990	NA	NA	NA	NA	NA	NA	NA	NA	195.89	20.39	NA	175.50	NA	NA
MW-1	3/8/1991	ND	50	ND	ND	ND	ND	NA	NA	195.89	16.85	NA	179.04	NA	NA
MW-1	6/3/1991	ND	ND	ND	ND	ND	ND	NA	NA	195.89	17.82	NA	178.07	NA	NA
MW-1	8/30/1991	16.85	520	ND	ND	ND	ND	NA	NA	195.89	19.87	NA	176.02	NA	NA
MW-1	11/22/1991	<50	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	195.89	20.58	NA	175.31	NA	NA
MW-1	3/18/1992	<30	<50	<0.3	<0.3	<0.3	<0.3	NA	NA	195.89	13.55	NA	182.34	NA	NA
MW-1	5/28/1992	<50	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	195.89	17.08	NA	178.81	NA	NA
MW-1	8/19/1992	<50	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	195.89	19.07	NA	176.82	NA	NA
MW-1	11/17/1992	<50	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	195.89	20.11	NA	175.78	NA	NA
MW-1	2/12/1993	<50	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	195.89	12.10	NA	183.79	NA	NA
MW-1	6/10/1993	<50	NA	<0.5	<0.5	<0.5	<0.5	NA	NA	195.89	14.87	NA	181.02	NA	NA
MW-1	8/18/1993	<50	NA	<0.5	<0.5	<0.5	<0.5	NA	NA	195.89	16.90	NA	178.99	NA	NA
MW-1	11/19/1993	<50	NA	<0.5	<0.5	<0.5	<0.5	NA	NA	195.89	19.72	NA	176.17	NA	NA
MW-1	2/28/1994	<50	NA	<0.5	<0.5	<0.5	1.7	NA	NA	195.89	15.08	NA	180.81	NA	NA
MW-1	5/4/1994	<50	NA	<0.5	<0.5	<0.5	<0.5	NA	NA	195.89	17.20	NA	178.69	NA	NA
MW-1	8/10/1994	<50	NA	<0.5	<0.5	<0.5	<0.5	NA	NA	195.89	18.76	NA	177.13	NA	NA
MW-1	11/8/1994	<50	NA	<0.5	<0.5	<0.5	<0.5	NA	NA	195.89	16.00	NA	179.89	NA	NA
MW-1	2/1/1995	<50	NA	<0.5	<0.5	<0.5	<0.5	NA	NA	195.89	10.18	NA	185.71	NA	NA
MW-1	5/10/1995	<50	NA	<0.5	<0.5	<0.5	<0.5	NA	NA	195.89	11.88	NA	184.01	NA	NA
MW-1	8/24/1995	<50	NA	<0.5	<0.5	<0.5	<0.5	NA	NA	195.89	15.80	NA	180.29	NA	NA
MW-1	11/10/1995	<50	NA	<0.5	<0.5	<0.5	<0.5	NA	NA	195.89	18.24	NA	177.65	NA	NA

**WELL CONCENTRATIONS**  
**Shell-branded Service Station**  
**6039 College Avenue**  
**Oakland, CA**

Well ID	Date	TPH-G (µg/L)	TEPH (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE 8020 (µg/L)	MTBE 8260 (µg/L)	TOC (MSL)	Depth to Water (ft.)	Depth to SPH (ft.)	GW Elevation (MSL)	SPH Thickness (ft.)	DO (ppm)
MW-1	2/24/1996	<50	NA	<0.5	<0.5	<0.5	<0.5	NA	NA	195.89	9.88	NA	186.01	NA	NA
MW-1	5/22/1996	<50	NA	<0.5	<0.5	<0.5	<0.5	<2.5	NA	195.89	12.24	NA	183.65	NA	NA
MW-1	8/19/1996	<50	NA	<0.5	<0.5	<0.5	<0.5	<2.5	NA	195.89	15.86	NA	180.03	NA	NA
MW-1	12/5/1996	160	NA	7.3	8.2	5.5	23	<2.5	NA	195.89	16.21	NA	179.68	NA	NA
MW-1	1/8/1997	<50	NA	<0.50	<0.50	<0.50	<0.50	<2.5	NA	195.89	9.73	NA	186.16	NA	NA
MW-1	2/20/1997	<50	NA	<0.50	<0.50	<0.50	<0.50	<2.5	NA	195.89	11.60	NA	184.29	NA	NA
MW-1	5/30/1997	NA	NA	NA	NA	NA	NA	NA	NA	195.89	15.02	NA	180.87	NA	NA
MW-1	8/18/1997	NA	NA	NA	NA	NA	NA	NA	NA	195.89	17.20	NA	178.69	NA	NA
MW-1	11/3/1997	NA	NA	NA	NA	NA	NA	NA	NA	195.89	16.02	NA	179.87	NA	NA
MW-1	1/20/1998	NA	NA	NA	NA	NA	NA	NA	NA	195.89	9.35	NA	186.54	NA	NA
MW-1	6/5/1998	NA	NA	NA	NA	NA	NA	NA	NA	195.89	11.75	NA	184.14	NA	NA
MW-1	7/23/1998	NA	NA	NA	NA	NA	NA	NA	NA	195.89	13.32	NA	182.57	NA	NA
MW-1	11/19/1998	NA	NA	NA	NA	NA	NA	NA	NA	195.89	14.01	NA	181.88	NA	NA
MW-1	2/3/1999	NA	NA	NA	NA	NA	NA	NA	NA	195.89	15.62	NA	180.27	NA	NA
MW-1	6/4/1999	NA	NA	NA	NA	NA	NA	NA	NA	195.89	14.72	NA	181.17	NA	NA
MW-1	8/31/1999	NA	NA	NA	NA	NA	NA	NA	NA	195.89	17.00	NA	178.89	NA	NA
MW-1	12/10/1999	NA	NA	NA	NA	NA	NA	NA	NA	195.89	18.36	NA	177.53	NA	NA
MW-1	2/11/2000	NA	NA	NA	NA	NA	NA	NA	NA	195.89	15.09	NA	180.80	NA	NA
MW-1	5/4/2000	NA	NA	NA	NA	NA	NA	NA	NA	195.89	12.97	NA	182.92	NA	NA
MW-1	8/31/2000	NA	NA	NA	NA	NA	NA	NA	NA	195.89	15.02	NA	180.87	NA	NA
MW-1	11/30/2000	NA	NA	NA	NA	NA	NA	NA	NA	195.89	12.90	NA	182.99	NA	NA
MW-1	2/13/2001	NA	NA	NA	NA	NA	NA	NA	NA	195.89	14.28	NA	181.61	NA	NA
MW-1	5/29/2001	NA	NA	NA	NA	NA	NA	NA	NA	195.89	16.04	NA	179.85	NA	NA
MW-1	7/30/2001	NA	NA	NA	NA	NA	NA	NA	NA	195.89	17.53	NA	178.36	NA	NA
MW-1	12/12/2001	NA	NA	NA	NA	NA	NA	NA	NA	195.89	14.79	NA	181.10	NA	NA
MW-1	1/31/2002	<50	NA	<0.50	<0.50	<0.50	<0.50	NA	<5.0	195.89	13.71	NA	182.18	NA	NA

**WELL CONCENTRATIONS**  
**Shell-branded Service Station**  
**6039 College Avenue**  
**Oakland, CA**

Well ID	Date	TPH-G (µg/L)	TEPH (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE 8020 (µg/L)	MTBE 8260 (µg/L)	TOC (MSL)	Depth to Water (ft.)	Depth to SPH (ft.)	GW Elevation (MSL)	SPH Thickness (ft.)	DO (ppm)
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MW-1	5/31/2002	NA	NA	NA	NA	NA	NA	NA	NA	195.89	15.63	NA	180.26	NA	NA
MW-1	7/25/2002	NA	NA	NA	NA	NA	NA	NA	NA	195.89	17.08	NA	178.81	NA	NA

MW-2	2/15/1990	ND	560	ND	ND	ND	ND	NA	NA	194.27	16.90	NA	177.37	NA	NA
MW-2	4/19/1990	NA	NA	NA	NA	NA	NA	NA	NA	194.27	17.69	NA	176.58	NA	NA
MW-2	5/14/1990	ND	ND	ND	ND	ND	ND	NA	NA	194.27	18.01	NA	176.26	NA	NA
MW-2	6/21/1990	NA	NA	NA	NA	NA	NA	NA	NA	194.27	17.39	NA	176.88	NA	NA
MW-2	9/12/1990	ND	ND	ND	ND	ND	ND	NA	NA	194.27	19.00	NA	175.27	NA	NA
MW-2	11/27/1990	ND	ND	ND	ND	ND	ND	NA	NA	194.27	19.44	NA	174.83	NA	NA
MW-2	3/8/1991	ND	ND	ND	ND	ND	ND	NA	NA	194.27	15.96	NA	178.31	NA	NA
MW-2	6/3/1991	ND	ND	ND	ND	ND	ND	NA	NA	194.27	17.00	NA	177.27	NA	NA
MW-2	8/30/1991	ND	ND	ND	ND	ND	ND	NA	NA	194.27	18.95	NA	175.32	NA	NA
MW-2	11/22/1991	<50	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	194.27	19.55	NA	174.72	NA	NA
MW-2	3/18/1992	<30	NA	<0.3	<0.3	<0.3	<0.3	NA	NA	194.27	12.91	NA	181.36	NA	NA
MW-2	5/28/1992	<50	NA	<0.5	<0.5	<0.5	<0.5	NA	NA	194.27	16.25	NA	178.02	NA	NA
MW-2	8/19/1992	<50	NA	<0.5	2	1.2	1.9	NA	NA	194.27	18.21	NA	176.06	NA	NA
MW-2	11/17/1992	<50	NA	<0.5	2	1.2	1.9	NA	NA	194.27	19.15	NA	175.12	NA	NA
MW-2	2/12/1993	<50	NA	<0.5	<0.5	<0.5	<0.5	NA	NA	194.27	11.60	NA	182.67	NA	NA
MW-2	6/10/1993	<50	NA	<0.5	<0.5	<0.5	<0.5	NA	NA	194.27	14.14	NA	180.13	NA	NA
MW-2	8/18/1993	<50	NA	<0.5	<0.5	<0.5	<0.5	NA	NA	194.27	16.10	NA	178.17	NA	NA
MW-2	11/19/1993	<50	NA	<0.5	<0.5	<0.5	<0.5	NA	NA	194.27	18.77	NA	175.50	NA	NA
MW-2	2/28/1994	<50	NA	<0.5	<0.5	<0.5	1.6	NA	NA	194.27	14.35	NA	179.92	NA	NA
MW-2	5/4/1994	<50	NA	<0.5	<0.5	<0.5	<0.5	NA	NA	194.27	16.34	NA	177.93	NA	NA
MW-2	8/10/1994	<50	NA	<0.5	<0.5	<0.5	<0.5	NA	NA	194.27	15.79	NA	178.48	NA	NA
MW-2	11/8/1994	<50	NA	<0.5	<0.5	<0.5	<0.5	NA	NA	194.27	15.04	NA	179.23	NA	NA
MW-2	2/1/1995	<50	NA	<0.5	<0.5	<0.5	<0.5	NA	NA	194.27	10.08	NA	184.19	NA	NA

**WELL CONCENTRATIONS**  
**Shell-branded Service Station**  
**6039 College Avenue**  
**Oakland, CA**

Well ID	Date	TPH-G (µg/L)	TEPH (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE 8020 (µg/L)	MTBE 8260 (µg/L)	TOC (MSL)	Depth to Water (ft.)	Depth to SPH (ft.)	GW Elevation (MSL)	SPH Thickness (ft.)	DO (ppm)
MW-2	5/10/1995	<50	NA	<0.5	<0.5	<0.5	<0.5	NA	NA	194.27	11.68	NA	182.59	NA	NA
MW-2	8/24/1995	<50	NA	<0.5	<0.5	<0.5	<0.5	NA	NA	194.27	14.94	NA	179.33	NA	NA
MW-2	11/10/1995	<50	NA	1.7	0.8	1.4	4.9	NA	NA	194.27	13.36	NA	180.91	NA	NA
MW-2	2/24/1996	<50	NA	<0.5	<0.5	<0.5	<0.5	NA	NA	194.27	9.90	NA	184.37	NA	NA
MW-2	5/22/1996	<50	NA	<0.5	<0.5	<0.5	<0.5	<2.5	NA	194.27	11.80	NA	182.47	NA	NA
MW-2	8/19/1996	<50	NA	<0.5	<0.5	<0.5	<0.5	<2.5	NA	194.27	15.08	NA	179.19	NA	NA
MW-2	12/5/1996	<50	NA	1.5	1.6	1.2	5.2	<2.5	NA	194.27	15.16	NA	179.11	NA	NA
MW-2	1/8/1997	<50	NA	<0.50	<0.50	<0.50	<0.50	<2.5	NA	194.27	9.76	NA	184.51	NA	NA
MW-2	2/20/1997	<50	NA	<0.50	<0.50	<0.50	<0.50	<2.5	NA	194.27	11.47	NA	182.80	NA	NA
MW-2	5/30/1997	NA	NA	NA	NA	NA	NA	NA	NA	194.27	14.30	NA	179.97	NA	NA
MW-2	8/18/1997	NA	NA	NA	NA	NA	NA	NA	NA	194.27	16.33	NA	177.94	NA	NA
MW-2	11/3/1997	NA	NA	NA	NA	NA	NA	NA	NA	194.27	15.54	NA	178.73	NA	NA
MW-2	1/20/1998	NA	NA	NA	NA	NA	NA	NA	NA	194.27	9.43	NA	184.84	NA	NA
MW-2	6/5/1998	NA	NA	NA	NA	NA	NA	NA	NA	194.27	11.45	NA	182.82	NA	NA
MW-2	7/23/1998	NA	NA	NA	NA	NA	NA	NA	NA	194.27	12.71	NA	181.56	NA	NA
MW-2	11/19/1998	NA	NA	NA	NA	NA	NA	NA	NA	194.27	13.98	NA	180.29	NA	NA
MW-2	2/3/1999	NA	NA	NA	NA	NA	NA	NA	NA	194.27	15.01	NA	179.26	NA	NA
MW-2	6/4/1999	NA	NA	NA	NA	NA	NA	NA	NA	194.27	13.93	NA	180.34	NA	NA
MW-2	8/31/1999	NA	NA	NA	NA	NA	NA	NA	NA	194.27	16.22	NA	178.05	NA	NA
MW-2	12/10/1999	NA	NA	NA	NA	NA	NA	NA	NA	194.27	17.58	NA	176.69	NA	NA
MW-2	2/11/2000	NA	NA	NA	NA	NA	NA	NA	NA	194.27	14.10	NA	180.17	NA	NA
MW-2	5/4/2000	NA	NA	NA	NA	NA	NA	NA	NA	194.27	12.72	NA	181.55	NA	NA
MW-2	8/31/2000	NA	NA	NA	NA	NA	NA	NA	NA	194.27	14.39	NA	179.88	NA	NA
MW-2	11/30/2000	NA	NA	NA	NA	NA	NA	NA	NA	194.27	17.00	NA	177.27	NA	NA
MW-2	2/13/2001	NA	NA	NA	NA	NA	NA	NA	NA	194.27	13.58	NA	180.69	NA	NA
MW-2	5/29/2001	NA	NA	NA	NA	NA	NA	NA	NA	194.27	15.26	NA	179.01	NA	NA

**WELL CONCENTRATIONS**  
**Shell-branded Service Station**  
**6039 College Avenue**  
**Oakland, CA**

Well ID	Date	TPH-G (µg/L)	TEPH (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE 8020 (µg/L)	MTBE 8260 (µg/L)	TOC (MSL)	Depth to Water (ft.)	Depth to SPH (ft.)	GW Elevation (MSL)	SPH Thickness (ft.)	DO (ppm)
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MW-2	7/30/2001	NA	NA	NA	NA	NA	NA	NA	NA	194.27	16.67	NA	177.60	NA	NA
MW-2	12/12/2001	NA	NA	NA	NA	NA	NA	NA	NA	194.27	13.91	NA	180.36	NA	NA
MW-2	1/31/2002	<50	NA	<0.50	<0.50	<0.50	<0.50	NA	<5.0	194.27	12.96	NA	181.31	NA	NA
MW-2	5/31/2002	NA	NA	NA	NA	NA	NA	NA	NA	194.27	14.85	NA	179.42	NA	NA
MW-2	7/25/2002	NA	NA	NA	NA	NA	NA	NA	NA	194.27	16.24	NA	178.03	NA	NA

MW-3	2/15/1990	4,700	3,100	320	29	110	33	NA	NA	192.52	15.81	NA	176.71	NA	NA
MW-3	4/19/1990	NA	NA	NA	NA	NA	NA	NA	NA	192.52	16.57	NA	175.95	NA	NA
MW-3	5/14/1990	1,400	60	130	8.6	40	17	NA	NA	192.52	16.97	NA	175.55	NA	NA
MW-3	6/21/1990	NA	NA	NA	NA	NA	NA	NA	NA	192.52	16.27	NA	176.25	NA	NA
MW-3	9/12/1990	2,000	1,500	58	5.8	16	15	NA	NA	192.52	18.78	NA	173.74	NA	NA
MW-3	11/27/1990	540	240	18	1.5	8.7	2.5	NA	NA	192.52	18.27	NA	174.25	NA	NA
MW-3	3/8/1991	3,400	2,100	630	33	270	18	NA	NA	192.52	14.86	NA	177.66	NA	NA
MW-3	6/3/1991	1,700	690a	260	13	98	24	NA	NA	192.52	15.84	NA	176.68	NA	NA
MW-3	8/30/1991	870	370a	44	6.1	10	2.9	NA	NA	192.52	17.79	NA	174.73	NA	NA
MW-3	11/22/1991	310	140	18	1.2	3.3	2.9	NA	NA	192.52	18.40	NA	174.12	NA	NA
MW-3	3/18/1992	67,100	1,900	620	28	220	38	NA	NA	192.52	12.03	NA	180.49	NA	NA
MW-3	5/28/1992	2,300	1,100a	200	9	71	17	NA	NA	192.52	15.16	NA	177.36	NA	NA
MW-3	8/19/1992	5,700	1,000a	71	77	52	130	NA	NA	192.52	17.03	NA	175.49	NA	NA
MW-3	11/17/1992	3,600	160a	16	8.6	24	50	NA	NA	192.52	17.94	NA	174.58	NA	NA
MW-3	2/12/1993	4,700	560a	820	58	130	77	NA	NA	192.52	9.16	NA	183.36	NA	NA
MW-3	6/10/1993	2,200	NA	310	23	89	23	NA	NA	192.52	13.20	NA	179.32	NA	NA
MW-3	8/18/1993	260	NA	27	2	7	2.2	NA	NA	192.52	14.93	NA	177.59	NA	NA
MW-3	11/19/1993	1,500a	NA	24	54	37	17	NA	NA	192.52	17.58	NA	174.94	NA	NA
MW-3	2/28/1994	2,700	NA	65	5.2	16	6.3	NA	NA	192.52	13.30	NA	179.22	NA	NA
MW-3	5/4/1994	780	NA	120	7.5	21	6.9	NA	NA	192.52	15.25	NA	177.27	NA	NA

**WELL CONCENTRATIONS**  
**Shell-branded Service Station**  
**6039 College Avenue**  
**Oakland, CA**

Well ID	Date	TPH-G (µg/L)	TEPH (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE 8020 (µg/L)	MTBE 8260 (µg/L)	TOC (MSL)	Depth to Water (ft.)	Depth to SPH (ft.)	GW Elevation (MSL)	SPH Thickness (ft.)	DO (ppm)
MW-3	8/10/1994	920	NA	20	2.3	3	2.2	NA	NA	192.52	16.63	NA	175.89	NA	NA
MW-3	11/8/1994	1,300	NA	180	16	7	12	NA	NA	192.52	13.88	NA	178.64	NA	NA
MW-3	2/1/1995	1,400	NA	210	8.5	11	8.7	NA	NA	192.52	9.25	NA	183.27	NA	NA
MW-3	5/10/1995	460	NA	97	10	1	19	NA	NA	192.52	10.76	NA	181.74	NA	NA
MW-3	8/24/1995	640	NA	68	21	14	19	NA	NA	192.52	13.90	NA	178.62	NA	NA
MW-3	11/10/1995	350	NA	15	2.3	1.2	2.5	NA	NA	192.52	16.20	NA	176.32	NA	NA
MW-3	2/24/1996	3,300	NA	240	53	38	55	NA	NA	192.52	8.93	NA	183.59	NA	NA
MW-3	5/22/1996	1,300	NA	110	15	<10	<10	3,500	NA	192.52	10.86	NA	181.66	NA	NA
MW-3	8/19/1996	350	NA	15	3.3	3.4	3.3	340	NA	192.52	13.97	NA	178.55	NA	NA
MW-3	12/5/1996	290	NA	12	7.6	5.4	16	370	NA	192.52	14.06	NA	178.46	NA	NA
MW-3	2/20/1997	980	NA	69	7.9	14	15	3,200	NA	192.52	10.60	NA	181.92	NA	NA
MW-3	5/30/1997	NA	NA	NA	NA	NA	NA	NA	NA	192.52	13.26	NA	179.26	NA	NA
MW-3	8/18/1997	NA	NA	NA	NA	NA	NA	NA	NA	192.52	15.21	NA	177.31	NA	NA
MW-3	11/3/1997	NA	NA	NA	NA	NA	NA	NA	NA	192.52	14.49	NA	178.03	NA	NA
MW-3	1/20/1998	3,100	NA	360	1,000	73	420	59,000	NA	192.52	8.43	NA	184.09	NA	NA
MW-3	6/5/1998	NA	NA	NA	NA	NA	NA	NA	NA	192.52	10.55	NA	181.97	NA	NA
MW-3	7/23/1998	NA	NA	NA	NA	NA	NA	NA	NA	192.52	11.80	NA	180.72	NA	NA
MW-3	11/19/1998	NA	NA	NA	NA	NA	NA	NA	NA	192.52	11.97	NA	180.55	NA	NA
MW-3	2/3/1999	<10,000	NA	840	131	<100	316	27,600	NA	192.52	13.55	NA	178.97	NA	2.3
MW-3	6/4/1999	NA	NA	NA	NA	NA	NA	NA	NA	192.52	12.90	NA	179.62	NA	NA
MW-3	8/31/1999	1,550	NA	232	<10.0	125	293	4,620	2,460b	192.52	14.99	NA	177.53	NA	3.4
MW-3	12/10/1999	NA	NA	NA	NA	NA	NA	NA	NA	192.52	16.35	NA	176.17	NA	NA
MW-3	2/11/2000	10,900	NA	1,030	<50.0	308	1,000	19,300	NA	192.52	12.85	NA	179.67	NA	1.0
MW-3	5/4/2000	NA	NA	NA	NA	NA	NA	NA	NA	192.52	17.05	NA	175.47	NA	NA
MW-3	8/31/2000	2,560	NA	165	7.19	77.6	183	4,090	NA	192.52	14.26	NA	178.26	NA	c
MW-3	11/30/2000	NA	NA	NA	NA	NA	NA	NA	NA	192.52	15.75	NA	176.77	NA	NA

**WELL CONCENTRATIONS**  
**Shell-branded Service Station**  
**6039 College Avenue**  
**Oakland, CA**

Well ID	Date	TPH-G (µg/L)	TEPH (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE 8020 (µg/L)	MTBE 8260 (µg/L)	TOC (MSL)	Depth to Water (ft.)	Depth to SPH (ft.)	GW Elevation (MSL)	SPH Thickness (ft.)	DO (ppm)
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MW-3	2/13/2001	5,880	NA	563	<50.0	282	472	8,960	NA	192.52	13.05	NA	179.47	NA	3.6
MW-3	5/29/2001	1,800	NA	130	<5.0	84	100	NA	1,900	192.52	13.84	NA	178.68	NA	NA
MW-3	7/30/2001	2,700	NA	250	8.8	130	120	NA	5,200	192.52	15.46	NA	177.06	NA	NA
MW-3	12/12/2001	<10,000	NA	720	<100	260	260	NA	6,600	192.52	12.93	NA	179.59	NA	NA
MW-3	1/31/2002	11,000	NA	750	14	570	510	NA	5,800	192.52	11.88	NA	180.64	NA	NA
MW-3	5/31/2002	5,100	NA	410	8.6	300	190	NA	3,600	192.52	13.65	NA	178.87	NA	NA
MW-3	7/25/2002	2,100	NA	170	<10	73	33	NA	2,600	192.52	15.04	NA	177.48	NA	NA

MW-4	2/15/1990	ND	1,200	ND	ND	ND	ND	NA	NA	193.37	16.73	NA	176.65	NA	NA
MW-4	4/19/1990	NA	NA	NA	NA	NA	NA	NA	NA	193.37	17.48	NA	175.89	NA	NA
MW-4	5/14/1990	650	350	160	7	1.9	3.1	NA	NA	193.37	17.88	NA	175.49	NA	NA
MW-4	6/21/1990	NA	NA	NA	NA	NA	NA	NA	NA	193.37	17.18	NA	176.19	NA	NA
MW-4	9/12/1990	440	260	91	1.1	0.75	0.79	NA	NA	193.37	17.85	NA	175.52	NA	NA
MW-4	11/27/1990	470	2,400	64	1.2	0.8	2.7	NA	NA	193.37	19.16	NA	174.21	NA	NA
MW-4	3/8/1991	1,100	2,600	330	3.5	88	5.8	NA	NA	193.37	15.77	NA	177.60	NA	NA
MW-4	6/3/1991	670	1,100	240	2.3	1.6	2.3	NA	NA	193.37	16.77	NA	176.60	NA	NA
MW-4	8/30/1991	570	280	64	1.8	0.9	0.9	NA	NA	193.37	18.71	NA	174.66	NA	NA
MW-4	11/22/1991	NA	NA	NA	NA	NA	NA	NA	NA	193.37	NA	NA	NA	NA	NA
MW-4	1/15/1992	NA	NA	NA	NA	NA	NA	NA	NA	193.37	NA	NA	NA	NA	NA
MW-4	2/15/1992	NA	NA	NA	NA	NA	NA	NA	NA	193.37	NA	NA	NA	NA	NA
MW-4	3/18/1992	NA	NA	NA	NA	NA	NA	NA	NA	193.37	13.15	NA	180.41	0.24	NA
MW-4	4/29/1992	NA	NA	NA	NA	NA	NA	NA	NA	193.37	NA	NA	NA	NA	NA
MW-4	5/28/1992	NA	NA	NA	NA	NA	NA	NA	NA	193.37	16.22	NA	177.25	0.12	NA
MW-4	8/19/1992	NA	NA	NA	NA	NA	NA	NA	NA	193.37	18.05	NA	175.39	0.09	NA
MW-4	11/17/1992	NA	NA	NA	NA	NA	NA	NA	NA	193.37	18.89	NA	174.48	NA	NA
MW-4	2/12/1993	NA	NA	NA	NA	NA	NA	NA	NA	193.37	11.78	NA	181.59	<0.01	NA

**WELL CONCENTRATIONS**  
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**6039 College Avenue**  
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Well ID	Date	TPH-G (µg/L)	TEPH (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE 8020 (µg/L)	MTBE 8260 (µg/L)	TOC (MSL)	Depth to Water (ft.)	Depth to SPH (ft.)	GW Elevation (MSL)	SPH Thickness (ft.)	DO (ppm)
MW-4	6/10/1993	NA	NA	NA	NA	NA	NA	NA	NA	193.37	14.20	NA	179.17	0.02	NA
MW-4	8/18/1993	NA	NA	NA	NA	NA	NA	NA	NA	193.37	15.95	NA	177.43	0.01	NA
MW-4	11/19/1993	NA	NA	NA	NA	NA	NA	NA	NA	193.37	18.48	NA	174.90	0.01	NA
MW-4	2/28/1994	NA	NA	NA	NA	NA	NA	NA	NA	193.37	14.60	NA	178.77	0.01	NA
MW-4	5/4/1994	NA	NA	NA	NA	NA	NA	NA	NA	193.37	16.15	NA	177.22	<0.01	NA
MW-4	8/10/1994	NA	NA	NA	NA	NA	NA	NA	NA	193.37	17.58	NA	175.81	0.02	NA
MW-4	11/10/1994	NA	NA	NA	NA	NA	NA	NA	NA	193.37	15.05	NA	178.36	0.05	NA
MW-4	2/1/1995	NA	NA	NA	NA	NA	NA	NA	NA	193.37	10.71	NA	182.69	0.04	NA
MW-4	5/10/1995	NA	NA	NA	NA	NA	NA	NA	NA	193.37	11.90	NA	181.52	0.06	NA
MW-4	8/24/1995	NA	NA	NA	NA	NA	NA	NA	NA	193.37	14.97	NA	178.42	0.02	NA
MW-4	11/10/1995	4,700	NA	100	22	23	38	NA	NA	193.37	17.27	NA	176.10	<0.01	NA
MW-4	2/24/1996	NA	NA	NA	NA	NA	NA	NA	NA	193.37	10.44	NA	182.95	0.03	NA
MW-4	5/22/1996	NA	NA	NA	NA	NA	NA	NA	NA	193.37	11.88	NA	181.51	0.03	NA
MW-4	8/19/1996	NA	NA	NA	NA	NA	NA	NA	NA	193.37	15.23	NA	178.16	0.02	NA
MW-4	12/5/1996	NA	NA	NA	NA	NA	NA	NA	NA	193.37	14.70	NA	178.69	0.02	NA
MW-4	1/8/1997	<10,000	NA	<100	<100	<100	<100	24,000	NA	193.37	11.60	NA	181.79	0.02	NA
MW-4	2/20/1997	<10,000	NA	490	<100	<100	<100	59,000	NA	193.37	11.91	NA	181.46	NA	NA
MW-4	5/30/1997	<2,000	NA	72	<20	<20	<20	6,100	NA	193.37	14.68	NA	178.69	NA	NA
MW-4	8/18/1997	<5,000	NA	150	570	<50	130	31,000	NA	193.37	15.07	NA	178.30	NA	NA
MW-4	11/3/1997	32,000	NA	1,100	6,100	640	3,600	78,000	NA	193.37	15.87	NA	177.50	NA	NA
MW-4	1/20/1998	NA	NA	NA	NA	NA	NA	NA	NA	193.37	10.25	NA	183.62	0.62	NA
MW-4	6/5/1998	NA	NA	NA	NA	NA	NA	NA	NA	193.37	11.62	NA	181.80	0.06	NA
MW-4	7/23/1998	NA	NA	NA	NA	NA	NA	NA	NA	193.37	13.93	NA	179.51	0.09	NA
MW-4	11/19/1998	NA	NA	NA	NA	NA	NA	NA	NA	193.37	14.07	14.03	179.33	0.04	NA
MW-4	12/9/1998	NA	NA	NA	NA	NA	NA	NA	NA	193.37	15.84	15.81	177.55	0.03	NA
MW-4	2/3/1999	NA	NA	NA	NA	NA	NA	NA	NA	193.37	15.58	15.55	177.81	0.03	NA



**WELL CONCENTRATIONS**  
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Well ID	Date	TPH-G (µg/L)	TEPH (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE 8020 (µg/L)	MTBE 8260 (µg/L)	TOC (MSL)	Depth to Water (ft.)	Depth to SPH (ft.)	GW Elevation (MSL)	SPH Thickness (ft.)	DO (ppm)
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MW-4	6/4/1999	NA	NA	NA	NA	NA	NA	NA	NA	193.37	14.04	14.02	179.35	0.02	NA
MW-4	8/31/1999	NA	NA	NA	NA	NA	NA	NA	NA	193.37	16.15	16.12	177.24	0.03	NA
MW-4	12/10/1999	NA	NA	NA	NA	NA	NA	NA	NA	193.37	17.41	17.31	176.04	0.10	NA
MW-4	2/11/2000	47,200	NA	905	<200	479	3,690	27,400	30,300b	193.37	14.82	NA	178.55	NA	0.6
MW-4	5/4/2000	30,800	NA	1,650	<100	574	3,310	28,600	31,200b	193.37	12.64	NA	180.73	NA	2.1
MW-4	8/31/2000	5,470	NA	366	<10.0	296	834	3,950	NA	193.37	16.47	NA	176.90	NA	c
MW-4	11/30/2000	20,700	NA	525	<50.0	447	1,570	2,440	4,280b	193.37	17.67	NA	175.70	NA	3.3
MW-4	2/13/2001	16,200	NA	909	<50.0	514	2,390	21,300	20,300	193.37	13.30	NA	180.07	NA	2.4
MW-4	5/29/2001	Well Inaccessible		NA	NA	NA	NA	NA	NA	193.37	NA	NA	NA	NA	NA
MW-4	5/31/2001	NA	NA	NA	NA	NA	NA	NA	NA	193.37	15.08	15.03	178.33	0.05	NA
MW-4	7/30/2001	6,700	NA	260	5.7	190	280	NA	3,900	193.37	16.29	16.28	177.09	0.01	NA
MW-4	12/12/2001	15,000	NA	1,300	<50	520	990	NA	20,000	193.37	13.81	NA	179.56	NA	NA
MW-4	1/31/2002	12,000	NA	1,500	<25	570	800	NA	12,000	193.37	12.80	NA	180.57	NA	NA
MW-4	5/31/2002	8,200	NA	1,100	<20	380	340	NA	8,100	193.37	14.59	NA	178.78	NA	NA
MW-4	7/25/2002	3,300	NA	290	<10	98	74	NA	2,600	193.37	15.94	NA	177.43	NA	NA

MW-5	8/30/1991	ND	80	ND	ND	ND	ND	NA	NA	190.35	16.74	NA	173.61	NA	NA
MW-5	11/22/1991	<50	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	190.35	17.27	NA	173.08	NA	NA
MW-5	3/18/1992	<30	<50	<0.3	<0.3	<0.3	<0.3	NA	NA	190.35	11.28	NA	179.07	NA	NA
MW-5	5/28/1992	Well Inaccessible		NA	NA	NA	NA	NA	NA	190.35	NA	NA	NA	NA	NA
MW-5	8/19/1992	<50	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	190.35	15.99	NA	174.36	NA	NA
MW-5	11/17/1992	<50	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	190.35	16.84	NA	173.51	NA	NA
MW-5	2/12/1993	<50	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	190.35	10.30	NA	180.05	NA	NA
MW-5	6/10/1993	<50	NA	<0.5	<0.5	<0.5	<0.5	NA	NA	190.35	12.36	NA	177.99	NA	NA
MW-5	8/18/1993	<50	NA	<0.5	<0.5	<0.5	<0.5	NA	NA	190.35	14.02	NA	176.33	NA	NA
MW-5	11/19/1993	<50	NA	<0.5	<0.5	<0.5	<0.5	NA	NA	190.35	16.50	NA	173.85	NA	NA

**WELL CONCENTRATIONS**  
**Shell-branded Service Station**  
**6039 College Avenue**  
**Oakland, CA**

Well ID	Date	TPH-G (µg/L)	TEPH (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE 8020 (µg/L)	MTBE 8260 (µg/L)	TOC (MSL)	Depth to Water (ft.)	Depth to SPH (ft.)	GW Elevation (MSL)	SPH Thickness (ft.)	DO (ppm)
MW-5	2/28/1994	<50	NA	<0.5	<0.5	<0.5	<0.5	NA	NA	190.35	12.55	NA	177.80	NA	NA
MW-5	5/4/1994	<50	NA	<0.5	<0.5	<0.5	<0.5	NA	NA	190.35	14.27	NA	176.08	NA	NA
MW-5	8/10/1994	70a	NA	<0.5	<0.5	<0.5	<0.5	NA	NA	190.35	15.60	NA	174.75	NA	NA
MW-5	11/8/1994	<50	NA	<0.5	<0.5	<0.5	<0.5	NA	NA	190.35	12.85	NA	177.50	NA	NA
MW-5	2/1/1995	<50	NA	<0.5	<0.5	<0.5	<0.5	NA	NA	190.35	8.98	NA	181.37	NA	NA
MW-5	5/10/1995	<50	NA	<0.5	<0.5	<0.5	<0.5	NA	NA	190.35	10.16	NA	180.19	NA	NA
MW-5	8/24/1995	<50	NA	<0.5	<0.5	<0.5	<0.5	NA	NA	190.35	12.98	NA	177.37	NA	NA
MW-5	11/10/1995	<50	NA	<0.5	<0.5	<0.5	<0.5	NA	NA	190.35	15.12	NA	175.23	NA	NA
MW-5	2/24/1996	NA	NA	NA	NA	NA	NA	NA	NA	190.35	NA	NA	NA	NA	NA
MW-5	5/22/1996	<2,000	NA	<20	<20	<20	<20	NA	NA	190.35	10.10	NA	180.25	NA	NA
MW-5	8/19/1996	<2,500	NA	<25	<25	<25	<25	NA	NA	190.35	13.09	NA	177.26	NA	NA
MW-5	12/5/1996	<500	NA	<5.0	<5.0	<5.0	<5.0	NA	NA	190.35	13.31	NA	177.04	NA	NA
MW-5	2/20/1997	<1,000	NA	<10	<10	<10	<10	NA	NA	190.35	9.55	NA	180.80	NA	NA
MW-5	5/30/1997	NA	NA	NA	NA	NA	NA	NA	NA	190.35	12.40	NA	177.95	NA	NA
MW-5	8/18/1997	NA	NA	NA	NA	NA	NA	NA	NA	190.35	14.19	NA	176.16	NA	NA
MW-5	11/3/1997	NA	NA	NA	NA	NA	NA	NA	NA	190.35	13.66	NA	176.69	NA	NA
MW-5	1/20/1998	<50	NA	<0.50	<0.50	<0.50	<0.50	1,600	NA	190.35	8.06	NA	182.29	NA	NA
MW-5	6/5/1998	NA	NA	NA	NA	NA	NA	NA	NA	190.35	9.95	NA	180.40	NA	NA
MW-5	7/23/1998	NA	NA	NA	NA	NA	NA	NA	NA	190.35	11.10	NA	179.25	NA	NA
MW-5	11/19/1998	NA	NA	NA	NA	NA	NA	NA	NA	190.35	12.21	NA	178.14	NA	NA
MW-5	2/3/1999	<500	NA	<5.00	<5.00	<5.00	<5.00	2850	NA	190.35	12.99	NA	177.36	NA	2.4
MW-5	6/4/1999	NA	NA	NA	NA	NA	NA	NA	NA	190.35	12.08	NA	178.27	NA	NA
MW-5	8/31/1999	<50.0	NA	<0.500	<0.500	<0.500	<0.500	4,260	NA	190.35	14.05	NA	176.30	NA	2.7
MW-5	12/10/1999	NA	NA	NA	NA	NA	NA	NA	NA	190.35	15.41	NA	174.94	NA	NA
MW-5	2/11/2000	<50.0	NA	<0.500	<0.500	<0.500	<0.500	<2.50	NA	190.35	12.42	NA	177.93	NA	1.7
MW-5	5/4/2000	NA	NA	NA	NA	NA	NA	NA	NA	190.35	11.13	NA	179.22	NA	NA

**WELL CONCENTRATIONS**  
**Shell-branded Service Station**  
**6039 College Avenue**  
**Oakland, CA**

Well ID	Date	TPH-G (µg/L)	TEPH (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE 8020 (µg/L)	MTBE 8260 (µg/L)	TOC (MSL)	Depth to Water (ft.)	Depth to SPH (ft.)	GW Elevation (MSL)	SPH Thickness (ft.)	DO (ppm)
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MW-5	8/31/2000	<500	NA	<5.00	<5.00	<5.00	<5.00	13,000	15,700b	190.35	13.53	NA	176.82	NA	c
MW-5	11/30/2000	NA	NA	NA	NA	NA	NA	NA	NA	190.35	14.65	NA	175.70	NA	NA
MW-5	2/13/2001	<50.0	NA	<0.500	<0.500	<0.500	<0.500	2,440	NA	190.35	12.05	NA	178.30	NA	4.1
MW-5	5/29/2001	<500	NA	<5.0	<5.0	<5.0	<5.0	NA	1,300	190.35	13.26	NA	177.09	NA	NA
MW-5	7/30/2001	<50	NA	<0.50	<0.50	<0.50	<0.50	NA	310	190.35	14.49	NA	175.86	NA	NA
MW-5	12/12/2001	<200	NA	<2.0	<2.0	<2.0	<2.0	NA	350	190.35	12.08	NA	178.27	NA	NA
MW-5	1/31/2002	61	NA	<0.50	<0.50	<0.50	<0.50	NA	280	190.35	11.29	NA	179.06	NA	NA
MW-5	5/31/2002	<50	NA	<0.50	<0.50	<0.50	<0.50	NA	130	190.35	12.75	NA	177.60	NA	NA
<b>MW-5</b>	<b>7/25/2002</b>	<b>&lt;50</b>	<b>NA</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>NA</b>	<b>190</b>	<b>190.35</b>	<b>14.12</b>	<b>NA</b>	<b>176.23</b>	<b>NA</b>	<b>NA</b>

MW-6	9/21/1993	<50	<50	<0.5	<0.5	<0.5	<0.5	NA	NA	189.05	14.64	NA	174.41	NA	NA
MW-6	11/19/1993	NA	NA	NA	NA	NA	NA	NA	NA	189.05	NA	NA	NA	NA	NA
MW-6	2/28/1994	98a	NA	<0.5	<0.5	<0.5	<0.5	NA	NA	189.05	12.18	NA	176.87	NA	NA
MW-6	5/4/1994	<50	NA	<0.5	<0.5	<0.5	<0.5	NA	NA	189.05	13.62	NA	175.43	NA	NA
MW-6	8/10/1994	80a	NA	<0.5	<0.5	<0.5	<0.5	NA	NA	189.05	14.98	NA	174.07	NA	NA
MW-6	11/8/1994	NA	NA	NA	NA	NA	NA	NA	NA	189.05	12.20	NA	176.85	NA	NA
MW-6	2/1/1995	120	NA	3.5	21	3.4	22	NA	NA	189.05	8.70	NA	180.35	NA	NA
MW-6	5/10/1995	NA	NA	NA	NA	NA	NA	NA	NA	189.05	9.86	NA	179.19	NA	NA
MW-6	8/24/1995	80	NA	<0.5	<0.5	1.8	2.4	NA	NA	189.05	12.46	NA	176.59	NA	NA
MW-6	11/10/1995	<50	NA	<0.5	<0.5	<0.5	<0.5	NA	NA	189.05	14.56	NA	174.49	NA	NA
MW-6	11/10/1995	60	NA	<0.5	<0.5	<0.5	<0.5	NA	NA	189.05	14.56	NA	174.49	NA	NA
MW-6	2/24/1996	NA	NA	NA	NA	NA	NA	NA	NA	189.05	NA	NA	NA	NA	NA
MW-6	5/22/1996	<50	NA	<0.5	<0.5	<0.5	<0.5	290	NA	189.05	10.23	NA	178.82	NA	NA
MW-6	8/19/1996	<1,250	NA	<12	<12	<12	<12	1,100	NA	189.05	12.61	NA	176.44	NA	NA
MW-8	12/5/1996	<125	NA	<1.2	<1.2	<1.2	<1.2	440	NA	189.05	12.47	NA	176.58	NA	NA
MW-6	2/20/1997	<100	NA	<1.0	<1.0	<1.0	<1.0	480	NA	189.05	9.85	NA	179.20	NA	NA

**WELL CONCENTRATIONS**  
**Shell-branded Service Station**  
**6039 College Avenue**  
**Oakland, CA**

Well ID	Date	TPH-G (µg/L)	TEPH (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE 8020 (µg/L)	MTBE 8260 (µg/L)	TOC (MSL)	Depth to Water (ft.)	Depth to SPH (ft.)	GW Elevation (MSL)	SPH Thickness (ft.)	DO (ppm)
MW-6	5/30/1997	NA	NA	NA	NA	NA	NA	NA	NA	189.05	11.96	NA	177.09	NA	NA
MW-6	8/18/1997	NA	NA	NA	NA	NA	NA	NA	NA	189.05	13.65	NA	175.40	NA	NA
MW-6	11/3/1997	NA	NA	NA	NA	NA	NA	NA	NA	189.05	NA	NA	NA	NA	NA
MW-6	1/20/1998	<50	NA	<0.50	<0.50	<0.50	<0.50	340	NA	189.05	7.76	NA	181.29	NA	NA
MW-6	6/5/1998	NA	NA	NA	NA	NA	NA	NA	NA	189.05	9.85	NA	179.20	NA	NA
MW-6	7/23/1998	NA	NA	NA	NA	NA	NA	NA	NA	189.05	10.99	NA	178.06	NA	NA
MW-6	11/19/1998	NA	NA	NA	NA	NA	NA	NA	NA	189.05	11.36	NA	177.69	NA	NA
MW-6	2/3/1999	Well Inaccessible		NA	NA	NA	NA	NA	NA	189.05	NA	NA	NA	NA	NA
MW-6	6/4/1999	Well Inaccessible		NA	NA	NA	NA	NA	NA	189.05	NA	NA	NA	NA	NA
MW-6	6/22/1999	<5,000	NA	<50.0	<50.0	<50.0	<50.0	2,800	NA	189.05	12.15	NA	176.90	NA	2.1
MW-6	8/31/1999	<50.0	NA	<0.500	<0.500	<0.500	<0.500	3,390	NA	189.05	13.62	NA	175.43	NA	2.5
MW-6	12/10/1999	NA	NA	NA	NA	NA	NA	NA	NA	189.05	14.98	NA	174.07	NA	NA
MW-6	2/11/2000	<50.0	NA	<0.500	<0.500	<0.500	<0.500	<2.50	NA	189.05	12.00	NA	177.05	NA	1.1
MW-6	5/4/2000	NA	NA	NA	NA	NA	NA	NA	NA	189.05	10.94	NA	178.11	NA	NA
MW-6	8/31/2000	<250	NA	<2.50	<2.50	<2.50	<2.50	4,460	NA	189.05	13.19	NA	175.86	NA	c
MW-6	11/30/2000	NA	NA	NA	NA	NA	NA	NA	NA	189.05	14.28	NA	174.77	NA	NA
MW-6	2/13/2001	Well Inaccessible		NA	NA	NA	NA	NA	NA	189.05	NA	NA	NA	NA	NA
MW-6	2/16/2001	<500	NA	<5.00	<5.00	<5.00	<5.00	3,910	NA	189.05	12.10	NA	176.95	NA	3.8
MW-6	5/28/2001	<500	NA	<5.0	<5.0	<5.0	<5.0	NA	2,000	189.05	12.94	NA	176.11	NA	NA
MW-6	7/30/2001	<500	NA	<5.0	<5.0	<5.0	<5.0	NA	2,700	189.05	14.10	NA	174.95	NA	NA
MW-6	12/12/2001	<500	NA	<5.0	<5.0	<5.0	<5.0	NA	2,100	189.05	12.11	NA	176.94	NA	NA
MW-6	1/31/2002	<500	NA	<5.0	<5.0	<5.0	<5.0	NA	2,000	189.05	11.16	NA	177.89	NA	NA
MW-6	5/31/2002	<500	NA	<5.0	<5.0	<5.0	<5.0	NA	1,800	189.05	12.52	NA	176.53	NA	NA
MW-6	7/25/2002	<500	NA	<5.0	<5.0	<5.0	<5.0	NA	1,800	189.05	13.68	NA	175.37	NA	NA
T-1	5/30/1997	NA	NA	NA	NA	NA	NA	NA	NA	NA	Dry	NA	NA	NA	NA

**WELL CONCENTRATIONS**  
**Shell-branded Service Station**  
**6039 College Avenue**  
**Oakland, CA**

Well ID	Date	TPH-G (µg/L)	TEPH (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE 8020 (µg/L)	MTBE 8260 (µg/L)	TOC (MSL)	Depth to Water (ft.)	Depth to SPH (ft.)	GW Elevation (MSL)	SPH Thickness (ft.)	DO (ppm)
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T-1	8/18/1997	NA	NA	NA	NA	NA	NA	NA	NA	NA	Dry	NA	NA	NA	NA
T-1	11/3/1997	NA	NA	NA	NA	NA	NA	NA	NA	NA	Dry	NA	NA	NA	NA
T-1	1/20/1998	NA	NA	NA	NA	NA	NA	NA	NA	NA	Dry	NA	NA	NA	NA
T-1	6/5/1998	NA	NA	NA	NA	NA	NA	NA	NA	NA	Dry	NA	NA	NA	NA
T-1	7/23/1998	NA	NA	NA	NA	NA	NA	NA	NA	NA	Dry	NA	NA	NA	NA
T-1	11/19/1998	NA	NA	NA	NA	NA	NA	NA	NA	NA	Dry	NA	NA	NA	NA
T-1	2/3/1999	NA	NA	NA	NA	NA	NA	NA	NA	NA	Dry	NA	NA	NA	NA
T-1	6/4/1999	NA	NA	NA	NA	NA	NA	NA	NA	NA	Dry	NA	NA	NA	NA
T-1	8/31/1999	NA	NA	NA	NA	NA	NA	NA	NA	NA	Dry	NA	NA	NA	NA
T-1	12/10/1999	NA	NA	NA	NA	NA	NA	NA	NA	NA	Dry	NA	NA	NA	NA
T-1	2/11/2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	Dry	NA	NA	NA	NA
T-1	5/4/2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	Dry	NA	NA	NA	NA
T-1	8/31/2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	Dry	NA	NA	NA	NA
T-1	11/30/2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	Dry	NA	NA	NA	NA
T-1	2/13/2001	NA	NA	NA	NA	NA	NA	NA	NA	NA	Dry	NA	NA	NA	NA
T-1	5/29/2001	NA	NA	NA	NA	NA	NA	NA	NA	NA	Dry	NA	NA	NA	NA
T-1	7/30/2001	NA	NA	NA	NA	NA	NA	NA	NA	NA	Dry	NA	NA	NA	NA
T-1	12/12/2001	NA	NA	NA	NA	NA	NA	NA	NA	NA	Dry	NA	NA	NA	NA
T-1	1/31/2002	NA	NA	NA	NA	NA	NA	NA	NA	NA	Dry	NA	NA	NA	NA

T-2	5/30/1997	NA	NA	NA	NA	NA	NA	NA	NA	NA	Dry	NA	NA	NA	NA
T-2	8/18/1997	NA	NA	NA	NA	NA	NA	NA	NA	NA	Dry	NA	NA	NA	NA
T-2	11/3/1997	NA	NA	NA	NA	NA	NA	NA	NA	NA	Dry	NA	NA	NA	NA
T-2	1/20/1998	NA	NA	NA	NA	NA	NA	NA	NA	NA	Dry	NA	NA	NA	NA
T-2	6/5/1998	NA	NA	NA	NA	NA	NA	NA	NA	NA	Dry	NA	NA	NA	NA
T-2	7/23/1998	NA	NA	NA	NA	NA	NA	NA	NA	NA	Dry	NA	NA	NA	NA

**WELL CONCENTRATIONS**  
**Shell-branded Service Station**  
**6039 College Avenue**  
**Oakland, CA**

Well ID	Date	TPH-G (µg/L)	TEPH (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE 8020 (µg/L)	MTBE 8260 (µg/L)	TOC (MSL)	Depth to Water (ft.)	Depth to SPH (ft.)	GW Elevation (MSL)	SPH Thickness (ft.)	DO (ppm)
T-2	11/19/1998	NA	NA	NA	NA	NA	NA	NA	NA	NA	Dry	NA	NA	NA	NA
T-2	2/3/1999	NA	NA	NA	NA	NA	NA	NA	NA	NA	Dry	NA	NA	NA	NA
T-2	6/4/1999	NA	NA	NA	NA	NA	NA	NA	NA	NA	Dry	NA	NA	NA	NA
T-2	8/31/1999	NA	NA	NA	NA	NA	NA	NA	NA	NA	Dry	NA	NA	NA	NA
T-2	12/10/1999	NA	NA	NA	NA	NA	NA	NA	NA	NA	Dry	NA	NA	NA	NA
T-2	2/11/2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	Dry	NA	NA	NA	NA
T-2	5/4/2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	Dry	NA	NA	NA	NA
T-2	8/31/2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	Dry	NA	NA	NA	NA
T-2	11/30/2000	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.50	NA	NA	NA	NA
T-2	2/13/2001	NA	NA	NA	NA	NA	NA	NA	NA	NA	Dry	NA	NA	NA	NA
T-2	5/29/2001	NA	NA	NA	NA	NA	NA	NA	NA	NA	Dry	NA	NA	NA	NA
T-2	7/30/2001	NA	NA	NA	NA	NA	NA	NA	NA	NA	Dry	NA	NA	NA	NA
T-2	12/12/2001	NA	NA	NA	NA	NA	NA	NA	NA	NA	Dry	NA	NA	NA	NA
T-2	1/31/2002	NA	NA	NA	NA	NA	NA	NA	NA	NA	Dry	NA	NA	NA	NA

**Abbreviations:**

TPH-G = Total petroleum hydrocarbons as gasoline by EPA Method 8260B; prior to May 29, 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 May 29, 2001, analyzed by EPA Method 8020.

MTBE = Methyl-tertiary-butyl ether

TOC = Top of Casing Elevation

SPH = Separate-Phase Hydrocarbons

GW = Groundwater

DO = Dissolved Oxygen

µg/L = Parts per billion

**WELL CONCENTRATIONS**  
**Shell-branded Service Station**  
**6039 College Avenue**  
**Oakland, CA**

Well ID	Date	TPH-G (µg/L)	TEPH (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE 8020 (µg/L)	MTBE 8260 (µg/L)	TOC (MSL)	Depth to Water (ft.)	Depth to SPH (ft.)	GW Elevation (MSL)	SPH Thickness (ft.)	DO (ppm)
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ppm = Parts per million

MSL = Mean sea level

ft = Feet

<n = Below detection limit

NA = Not applicable

ND = Not detected at or above the minimum quantitation limits.

**Notes:**

a = Chromatogram patterns indicate an unidentified hydrocarbon.

b = Sample was analyzed outside the EPA recommended holding time.

c = DO Readings not taken this event.

When separate-phase hydrocarbons are present, ground water elevation is adjusted using the relation:

Corrected ground water elevation = Top-of-casing elevation - depth to water + (0.8 x hydrocarbon thickness).

# 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.

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## 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 dewateres 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.

## OXIDATION 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.



# WELL GAUGING DATA

Project # 020725-DW-1 Date 7-25-02 Client Shell

Site 6039 College Ave Oakland

Well ID	Well Size (in.)	Sheen / Odor	Depth to Immiscible Liquid (ft.)	Thickness of Immiscible Liquid (ft.)	Volume of Immiscibles Removed (ml)	Depth to water (ft.)	Depth to well bottom (ft.)	Survey Point: TOB or TOC	
MW-1	4					17.08	24.35	↓	G
MW-2	4					16.24	24.20		G
MW-3	4	* gauged w/ stinger in well				15.04	24.73		S
MW-4	4	* gauged w/ stinger in well				15.94	24.31		↓
MW-5	4	*				14.12	28.49		↓
MW-6	2					13.68	24.11		↓

## SHELL WELL MONITORING DATA SHEET

BTS #: 020725-DW-1	Site: 6039 College Ave Oakland
Sampler: Dave Walter	Date: 7-25-02
Well I.D.: MW-3	Well Diameter: 2 3 ④ 6 8
Total Well Depth: 24.73	Depth to Water: 15.04
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	D.O. Meter (if req'd): YSI HACH

Purge Method: Bailer Disposable Bailer Middleburg X Electric Submersible	Waterra Peristaltic Extraction Pump Other _____	Sampling Method: X Bailer Disposable Bailer Extraction Port Dedicated Tubing Other: _____
---	--	---

6.3 (Gals.) X 3 = 18.9 Gals.  
 Case Volume      Specified Volumes      Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius <sup>2</sup> * 0.163

Time	Temp (°F)	pH	Cond. (mS or μS)	Turbidity (NTUs)	Gals. Removed	Observations
10:22	64.9	6.4	498	25	7	
10:24	64.8	6.4	588	17	14	
10:25	64.7	6.5	582	17	21	odor

Did well dewater? Yes  No  Gallons actually evacuated: 21

Sampling Time: 10:30 Sampling Date: 7-25-02

Sample I.D.: MW-3 Laboratory: Kiff SPL Other \_\_\_\_\_

Analyzed for: TPH-G BTEX MTBE TPH-D Other: \_\_\_\_\_

EB I.D. (if applicable): \_\_\_\_\_ Time Duplicate I.D. (if applicable): \_\_\_\_\_

Analyzed for: TPH-G BTEX MTBE TPH-D Other: \_\_\_\_\_

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
D.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

## SHELL WELL MONITORING DATA SHEET

BTS #: 020725-DW-1	Site: 6039 College Ave Oakland
Sampler: Dave Walter	Date: 7-25-02
Well I.D.: MW-4	Well Diameter: 2 3 (4) 6 8
Total Well Depth: 24.31	Depth to Water: 15.94
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): YSI HACH

Purge Method: Bailer Disposable Bailer Middleburg Electric Submersible	Water Peristaltic Extraction Pump Other _____	Sampling Method: <input checked="" type="checkbox"/> Bailer Disposable Bailer Extraction Port Dedicated Tubing Other: _____
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$5.4 \text{ (Gals.)} \times 3 = 16.2 \text{ Gals.}$ Case Volume      Specified Volumes      Calculated Volume	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Well Diameter</th> <th>Multiplier</th> <th>Well Diameter</th> <th>Multiplier</th> </tr> </thead> <tbody> <tr> <td>1"</td> <td>0.04</td> <td>3"</td> <td>0.65</td> </tr> <tr> <td>2"</td> <td>0.16</td> <td>6"</td> <td>1.47</td> </tr> <tr> <td>3"</td> <td>0.37</td> <td>Other</td> <td>radius<sup>2</sup> * 0.163</td> </tr> </tbody> </table>	Well Diameter	Multiplier	Well Diameter	Multiplier	1"	0.04	3"	0.65	2"	0.16	6"	1.47	3"	0.37	Other	radius <sup>2</sup> * 0.163
Well Diameter	Multiplier	Well Diameter	Multiplier														
1"	0.04	3"	0.65														
2"	0.16	6"	1.47														
3"	0.37	Other	radius <sup>2</sup> * 0.163														

Time	Temp (°F)	pH	Cond. (mS or μS)	Turbidity (NTUs)	Gals. Removed	Observations
10:39	64.2	6.6	515	14	6	odor
10:41	64.1	6.5	542	35	12	
10:42	64.1	6.5	549	4.2	18	

Did well dewater? Yes  No  Gallons actually evacuated: 18

Sampling Time: 10:47      Sampling Date: 7-25-02

Sample I.D.: MW-4      Laboratory: (Kiff) SPL Other \_\_\_\_\_

Analyzed for: (TPH-G BTEX MTBE) TPH-D Other: \_\_\_\_\_

EB I.D. (if applicable): \_\_\_\_\_ @ \_\_\_\_\_ Time      Duplicate I.D. (if applicable): \_\_\_\_\_

Analyzed for: TPH-G BTEX MTBE TPH-D Other: \_\_\_\_\_

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
ORP (if req'd):	Pre-purge:	mV	Post-purge:	mV

## SHELL WELL MONITORING DATA SHEET

BTS #: 020725-DW-1	Site: 6039 College Ave Oakland
Sampler: Dave Walter	Date: 7-25-02
Well I.D.: MW-5	Well Diameter: 2 3 <u>4</u> 6 8
Total Well Depth: 28.49	Depth to Water: 14.12
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: <u>PVC</u> Grade	D.O. Meter (if req'd): YSI HACH

Purge Method: Bailer Disposable Bailer Middleburg <input checked="" type="checkbox"/> Electric Submersible	Waterra Peristaltic Extraction Pump Other _____	Sampling Method: <input checked="" type="checkbox"/> Bailer Disposable Bailer Extraction Port Dedicated Tubing Other: _____
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$9.3 \text{ (Gals.)} \times 3 = 27.9 \text{ Gals.}$ I Case Volume      Specified Volumes      Calculated Volume	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Well Diameter</th> <th>Multiplier</th> <th>Well Diameter</th> <th>Multiplier</th> </tr> </thead> <tbody> <tr> <td>1"</td> <td>0.04</td> <td>4"</td> <td>0.65</td> </tr> <tr> <td>2"</td> <td>0.16</td> <td>6"</td> <td>1.47</td> </tr> <tr> <td>3"</td> <td>0.37</td> <td>Other</td> <td>radius<sup>2</sup> * 0.163</td> </tr> </tbody> </table>	Well Diameter	Multiplier	Well Diameter	Multiplier	1"	0.04	4"	0.65	2"	0.16	6"	1.47	3"	0.37	Other	radius <sup>2</sup> * 0.163
Well Diameter	Multiplier	Well Diameter	Multiplier														
1"	0.04	4"	0.65														
2"	0.16	6"	1.47														
3"	0.37	Other	radius <sup>2</sup> * 0.163														

Time	Temp (°F)	pH	Cond. (mS or <u>µS</u> )	Turbidity (NTUs)	Gals. Removed	Observations
9:35	64.7	6.0	475	<del>475</del> 65	10	
9:37	64.6	6.0	457	200	20	getting turbid
9:39	64.5	6.1	459	67	30	clearer

Did well dewater? Yes  No      Gallons actually evacuated: 30

Sampling Time: 9:44      Sampling Date: 7-25-02

Sample I.D.: MW-5      Laboratory: Kiff SPL Other \_\_\_\_\_

Analyzed for: TPH-G BTEX MTBE TPH-D Other: \_\_\_\_\_

EB I.D. (if applicable): \_\_\_\_\_ @ \_\_\_\_\_      Duplicate I.D. (if applicable): \_\_\_\_\_

Analyzed for: TPH-G BTEX MTBE TPH-D Other: \_\_\_\_\_

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV



## SHELL WELL MONITORING DATA SHEET

BTS #: 020725-DW-1	Site: 6039 College Ave Oakland
Sampler: Dave Walter	Date: 7-25-02
Well I.D.: MW-6	Well Diameter: (2) 3 4 6 8
Total Well Depth: 24.11	Depth to Water: 13.68
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	D.O. Meter (if req'd): YSI HACH

Purge Method: Bailer Disposable Bailer <input checked="" type="checkbox"/> Middleburg Electric Submersible	Water Peristaltic Extraction Pump Other:	Sampling Method: <input checked="" type="checkbox"/> Bailer Disposable Bailer Extraction Port Dedicated Tubing Other:
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1.7 (Gals.) X 3 = 5.1 Gals. Case Volume      Specified Volumes      Calculated Volume	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Well Diameter</th> <th>Multiplier</th> <th>Well Diameter</th> <th>Multiplier</th> </tr> </thead> <tbody> <tr> <td>1"</td> <td>0.04</td> <td>4"</td> <td>0.65</td> </tr> <tr> <td>2"</td> <td>0.16</td> <td>6"</td> <td>1.47</td> </tr> <tr> <td>3"</td> <td>0.37</td> <td>Other</td> <td>radius<sup>2</sup> * 0.163</td> </tr> </tbody> </table>	Well Diameter	Multiplier	Well Diameter	Multiplier	1"	0.04	4"	0.65	2"	0.16	6"	1.47	3"	0.37	Other	radius <sup>2</sup> * 0.163
Well Diameter	Multiplier	Well Diameter	Multiplier														
1"	0.04	4"	0.65														
2"	0.16	6"	1.47														
3"	0.37	Other	radius <sup>2</sup> * 0.163														

Time	Temp (°F)	pH	Cond. (mS or μS)	Turbidity (NTUs)	Gals. Removed	Observations
9:55	64.9	6.5	605	7200	1.7	Brownish/red
9:57	65.2	6.5	609	7200	3.4	
10:00	65.2	6.5	600	7200	5.1	clearing up

Did well dewater? Yes  No  Gallons actually evacuated: 5.1

Sampling Time: 10:05      Sampling Date: 7-25-02

Sample I.D.: MW-6      Laboratory: (Kitt) SPL Other: \_\_\_\_\_

Analyzed for: TPH-G BTEX MTBE TPH-D Other: \_\_\_\_\_

EB I.D. (if applicable): \_\_\_\_\_ @ \_\_\_\_\_      Duplicate I.D. (if applicable): \_\_\_\_\_

Analyzed for: TPH-G BTEX MTBE TPH-D Other: \_\_\_\_\_

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
D.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV



Report Number : 27698

Date : 8/2/2002

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

Subject : 4 Water Samples  
Project Name : 6039 College Avenue, Oakland  
Project Number : 020725-DW-1  
P.O. Number : 98995745

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

Report Number : 27698

Date : 8/2/2002

**QC Report : Method Blank Data**

Project Name : **6039 College Avenue, Oakland**

Project Number : **020725-DW-1**

<u>Parameter</u>	<u>Measured Value</u>	<u>Method Reporting Limit</u>	<u>Units</u>	<u>Analysis Method</u>	<u>Date Analyzed</u>
Benzene	< 0.50	0.50	ug/L	EPA 8260B	7/30/2002
Toluene	< 0.50	0.50	ug/L	EPA 8260B	7/30/2002
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	7/30/2002
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	7/30/2002
Methyl-t-butyl ether (MTBE)	< 5.0	5.0	ug/L	EPA 8260B	7/30/2002
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	7/30/2002
Toluene - d8 (Surr)	99.2		%	EPA 8260B	7/30/2002
4-Bromofluorobenzene (Surr)	104		%	EPA 8260B	7/30/2002
Benzene	< 0.50	0.50	ug/L	EPA 8260B	7/30/2002
Toluene	< 0.50	0.50	ug/L	EPA 8260B	7/30/2002
Ethylbenzene	< 0.50	0.50	ug/L	EPA 8260B	7/30/2002
Total Xylenes	< 0.50	0.50	ug/L	EPA 8260B	7/30/2002
Methyl-t-butyl ether (MTBE)	< 5.0	5.0	ug/L	EPA 8260B	7/30/2002
TPH as Gasoline	< 50	50	ug/L	EPA 8260B	7/30/2002
Toluene - d8 (Surr)	89.3		%	EPA 8260B	7/30/2002
4-Bromofluorobenzene (Surr)	98.7		%	EPA 8260B	7/30/2002

<u>Parameter</u>	<u>Measured Value</u>	<u>Method Reporting Limit</u>	<u>Units</u>	<u>Analysis Method</u>	<u>Date Analyzed</u>
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KIFF ANALYTICAL, LLC

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

Approved By: Joel Kiff



Report Number : 27698

Date : 8/2/2002

**QC Report : Matrix Spike/ Matrix Spike Duplicate**

Project Name : **6039 College Avenue,**

Project Number : **020725-DW-1**

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
Benzene	27641-04	<0.50	19.9	19.9	19.5	18.7	ug/L	EPA 8260B	7/29/02	97.8	93.6	4.39	70-130	25
Toluene	27641-04	<0.50	19.9	19.9	19.4	18.5	ug/L	EPA 8260B	7/29/02	97.6	92.8	5.02	70-130	25
Tert-Butanol	27641-04	<5.0	99.6	99.7	105	102	ug/L	EPA 8260B	7/29/02	105	102	2.93	70-130	25
Methyl-t-Butyl Ether	27641-04	8.1	19.9	19.9	31.2	30.7	ug/L	EPA 8260B	7/29/02	116	114	2.14	70-130	25
Benzene	27705-03	<0.50	40.0	40.0	42.7	41.7	ug/L	EPA 8260B	7/30/02	107	104	2.37	70-130	25
Toluene	27705-03	<0.50	40.0	40.0	39.7	39.3	ug/L	EPA 8260B	7/30/02	99.3	98.3	0.987	70-130	25
Tert-Butanol	27705-03	13	200	200	211	212	ug/L	EPA 8260B	7/30/02	98.7	99.3	0.651	70-130	25
Methyl-t-Butyl Ether	27705-03	290	40.0	40.0	331	328	ug/L	EPA 8260B	7/30/02	95.2	88.2	7.64	70-130	25

KIFF ANALYTICAL, LLC

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

Approved By: Joel Kiff



Report Number : 27698

Date : 8/2/2002

**QC Report : Laboratory Control Sample (LCS)**

Project Name : **6039 College Avenue,**

Project Number : **020725-DW-1**

Parameter	Spike Level	Units	Analysis Method	Date Analyzed	LCS Percent Recov.	LCS Percent Recov. Limit
Benzene	20.0	ug/L	EPA 8260B	7/29/02	89.2	70-130
Toluene	20.0	ug/L	EPA 8260B	7/29/02	89.3	70-130
Tert-Butanol	100	ug/L	EPA 8260B	7/29/02	99.3	70-130
Methyl-t-Butyl Ether	20.0	ug/L	EPA 8260B	7/29/02	100	70-130
Benzene	40.0	ug/L	EPA 8260B	7/30/02	102	70-130
Toluene	40.0	ug/L	EPA 8260B	7/30/02	96.5	70-130
Tert-Butanol	200	ug/L	EPA 8260B	7/30/02	98.8	70-130
Methyl-t-Butyl Ether	40.0	ug/L	EPA 8260B	7/30/02	102	70-130

KIFF ANALYTICAL, LLC

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

Approved By:  Joel Kiff

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
- CRIT. INDUSTRY

**Karen Petryna**  
27698

INCIDENT NUMBER (S&E ONLY)							
9	8	9	9	5	7	4	5
SAP or CRMT NUMBER (T/S/CRMT)							

DATE: 7-25-02  
 PAGE: 1 of 1

SAMPLING COMPANY: <b>Blaine Tech Services</b>	LOG CODE: <b>BTSS</b>	SITE ADDRESS (Street and City): <b>6039 College Avenue, Oakland</b>	GLOBAL ID NO.: <b>T0600101272</b>
ADDRESS: <b>1680 Rogers Avenue, San Jose, CA 95112</b>		EDF DELIVERABLE TO (Responsible Party or Designee): <b>Anni Kreami</b>	PHONE NO.: <b>510-420-3335</b>
PROJECT CONTACT (Hardcopy or PDF Report to): <b>Leon Gearhart</b>		E-MAIL: <b>ShellOaklandEDF@cambria-env.com</b>	
TELEPHONE: <b>408-573-0555</b>	FAX: <b>408-573-7771</b>	E-MAIL: <b>lgearhart@blainetech.com</b>	CONSULTANT PROJECT NO.: <b>020725-DW-1</b>
SAMPLER NAME(S) (Print): <span style="font-size: 1.5em;">Dave Walter</span>			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										FIELD NOTES: Container/Preservative or PID Readings or Laboratory Notes		
TPH - Gas, Purgeable	BTX	MTBE (8021B - 5ppb RL)	MTBE (8200B - 0.5ppb RL)	Oxygenates (5) by (8200B)	Ethanol (8200B)	Methanol	1,2-DCA (8260B)	EDB (8260B)	EPA 8270		Oil & Grease (5520B(F))	TPH - Diesel, Extractable (8015m)
												TEMPERATURE ON RECEIPT °C
												-01
												-02
												-03
												-04

Relinquished by: (Signature) <i>Ward C. Salt</i>	Received by: (Signature)	Date: <u>7/26/02</u>	Time: <u>1018</u>
Relinquished by: (Signature)	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Received by: (Signature) <i>John Cutler / Kiff Analytical</i>	Date: <u>072602</u>	Time: <u>1018</u>

DISTRIBUTION: White with final report, Green to File, Yellow and Pink to Client.

C&G Graphic (714) 898-9702



Report Number : 27698

Date : 8/2/2002

Project Name : 6039 College Avenue, Oakland

Project Number : 020725-DW-1

Sample : MW-3

Matrix : Water

Lab Number : 27698-01

Sample Date : 7/25/2002

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
<b>Benzene</b>	<b>170</b>	10	ug/L	EPA 8260B	8/2/2002
<b>Toluene</b>	<b>&lt; 10</b>	10	ug/L	EPA 8260B	8/2/2002
<b>Ethylbenzene</b>	<b>73</b>	10	ug/L	EPA 8260B	8/2/2002
<b>Total Xylenes</b>	<b>33</b>	10	ug/L	EPA 8260B	8/2/2002
<b>Methyl-t-butyl ether (MTBE)</b>	<b>2600</b>	100	ug/L	EPA 8260B	8/2/2002
<b>TPH as Gasoline</b>	<b>2100</b>	1000	ug/L	EPA 8260B	8/2/2002
Toluene - d8 (Surr)	106		% Recovery	EPA 8260B	8/2/2002
4-Bromofluorobenzene (Surr)	88.6		% Recovery	EPA 8260B	8/2/2002

Sample : MW-4

Matrix : Water

Lab Number : 27698-02

Sample Date : 7/25/2002

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
<b>Benzene</b>	<b>290</b>	10	ug/L	EPA 8260B	8/1/2002
<b>Toluene</b>	<b>&lt; 10</b>	10	ug/L	EPA 8260B	8/1/2002
<b>Ethylbenzene</b>	<b>98</b>	10	ug/L	EPA 8260B	8/1/2002
<b>Total Xylenes</b>	<b>74</b>	10	ug/L	EPA 8260B	8/1/2002
<b>Methyl-t-butyl ether (MTBE)</b>	<b>2600</b>	100	ug/L	EPA 8260B	8/1/2002
<b>TPH as Gasoline</b>	<b>3300</b>	1000	ug/L	EPA 8260B	8/1/2002
Toluene - d8 (Surr)	104		% Recovery	EPA 8260B	8/1/2002
4-Bromofluorobenzene (Surr)	88.2		% Recovery	EPA 8260B	8/1/2002

Approved By:  Joel Kiff

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



Report Number : 27698

Date : 8/2/2002

Project Name : 6039 College Avenue, Oakland

Project Number : 020725-DW-1

Sample : MW-5

Matrix : Water

Lab Number : 27698-03

Sample Date :7/25/2002

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
<b>Benzene</b>	< 0.50	0.50	ug/L	EPA 8260B	7/31/2002
<b>Toluene</b>	< 0.50	0.50	ug/L	EPA 8260B	7/31/2002
<b>Ethylbenzene</b>	< 0.50	0.50	ug/L	EPA 8260B	7/31/2002
<b>Total Xylenes</b>	< 0.50	0.50	ug/L	EPA 8260B	7/31/2002
<b>Methyl-t-butyl ether (MTBE)</b>	190	5.0	ug/L	EPA 8260B	7/31/2002
<b>TPH as Gasoline</b>	< 50	50	ug/L	EPA 8260B	7/31/2002
Toluene - d8 (Surr)	91.5		% Recovery	EPA 8260B	7/31/2002
4-Bromofluorobenzene (Surr)	99.3		% Recovery	EPA 8260B	7/31/2002

Sample : MW-6

Matrix : Water

Lab Number : 27698-04

Sample Date :7/25/2002

Parameter	Measured Value	Method Reporting Limit	Units	Analysis Method	Date Analyzed
<b>Benzene</b>	< 5.0	5.0	ug/L	EPA 8260B	8/2/2002
<b>Toluene</b>	< 5.0	5.0	ug/L	EPA 8260B	8/2/2002
<b>Ethylbenzene</b>	< 5.0	5.0	ug/L	EPA 8260B	8/2/2002
<b>Total Xylenes</b>	< 5.0	5.0	ug/L	EPA 8260B	8/2/2002
<b>Methyl-t-butyl ether (MTBE)</b>	1800	50	ug/L	EPA 8260B	8/2/2002
<b>TPH as Gasoline</b>	< 500	500	ug/L	EPA 8260B	8/2/2002
Toluene - d8 (Surr)	106		% Recovery	EPA 8260B	8/2/2002
4-Bromofluorobenzene (Surr)	84.2		% Recovery	EPA 8260B	8/2/2002

Approved By:  Joel Kiff

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