



Atlantic Richfield Company  
(a BP affiliated company)

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**RECEIVED**

3:27 pm, Jul 30, 2008

Alameda County  
Environmental Health

25 July 2008

Re: Second Quarter 2008 Ground-Water Monitoring Report  
Former BP Service Station # 11102  
100 MacArthur Boulevard  
Oakland, California  
ACEH Case #RO0000456

"I declare, that to the best of my knowledge at the present time, that the information and/or recommendations contained in the attached document are true and correct."

Submitted by:

Paul Supple  
Environmental Business Manager

**Second Quarter 2008 Ground-Water Monitoring Report**

Former BP Service Station #11102

100 MacArthur Boulevard

Oakland, California

Prepared for

Mr. Paul Supple  
Environmental Business Manager  
Atlantic Richfield Company  
P.O. Box 1257  
San Ramon, California 94583

Prepared by



1324 Mangrove Avenue, Suite 212  
Chico, California 95926  
(530) 566-1400  
*www.broadbentinc.com*

25 July 2008

Project No. 06-08-643

25 July 2008

Project No. 06-08-643

Atlantic Richfield Company  
P.O. Box 1257  
San Ramon, CA 94583  
Submitted via ENFOS

Attn.: Mr. Paul Supple

Re: Second Quarter 2008 Ground-Water Monitoring Report, Former BP Service Station  
#11102, 100 MacArthur Boulevard, Alameda County, Oakland, California;  
ACEH Case #RO0000456

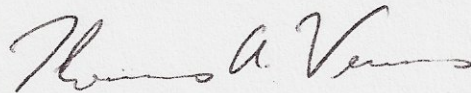
Dear Mr. Supple:

Attached is the *Second Quarter 2008 Ground-Water Monitoring Report* for Former BP Service Station #11102 located at 100 MacArthur Boulevard, Oakland, Alameda County, California. This report presents a summary of results from ground-water monitoring conducted at Station #11102 during the Second Quarter of 2008.

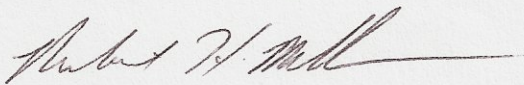
Should you have questions regarding the work performed or results obtained, please do not hesitate to contact us at (530) 566-1400.

Sincerely,

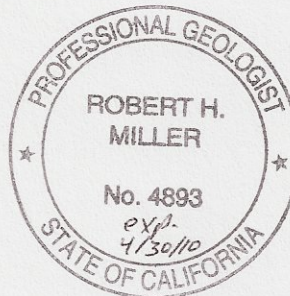
BROADBENT & ASSOCIATES, INC.



Thomas A. Venus, P.E.  
Senior Engineer



Robert H. Miller, P.G., C.HG.  
Principal Hydrogeologist



Enclosures

cc: Mr. Paresh Khatri, Alameda County Environmental Health (Submitted via ACEH ftp site)  
Ms. Shelby Lathrop, ConocoPhillips, 76 Broadway, Sacramento, California 95818  
Mr. Chris Jimmerson, Reimbursement Processor, Delta Environmental Consulting Inc.,  
(Submitted via ENFOS)  
Electronic copy uploaded to GeoTracker

## STATION #11102 QUARTERLY GROUND-WATER MONITORING REPORT

Facility: #11102	Address:	100 MacArthur Boulevard, Oakland, California
Environmental Business Manager:		Mr. Paul Supple
Consulting Co./Contact Persons:		Broadbent & Associates, Inc.(BAI)/Rob Miller & Tom Venus, (530) 566-1400
Consultant Project No.:		06-08-643
Primary Agency/Regulatory ID No.:		Alameda County Environmental Health (ACEH) ACEH Case #RO0000456

### WORK PERFORMED THIS QUARTER (Second Quarter 2008):

1. Prepared and submitted First Quarter 2008 Ground-Water Monitoring Report.
2. Conducted ground-water monitoring/sampling for Second Quarter 2008. Work performed by Stratus Environmental, Inc (Stratus) on 15 April 2008.

### WORK PROPOSED FOR NEXT QUARTER (Third Quarter 2008):

1. Prepared and submitted this Second Quarter 2008 Ground-Water Monitoring Report (contained herein).
2. Conduct quarterly ground-water monitoring/sampling for Third Quarter 2008.

### QUARTERLY RESULTS SUMMARY:

Current phase of project:	<b>Ground-Water Monitoring/Sampling</b>
Frequency of ground-water monitoring:	<b>Quarterly: Wells MW-1 through MW-3</b>
Frequency of ground-water sampling:	<b>Quarterly: Wells MW-1 through MW-3</b>
Is free product (FP) present on-site:	<b>No</b>
Current remediation techniques:	<b>NA</b>
Depth to ground water (below TOC):	<b>10.26 (MW-1) to 15.25 (MW-3)</b>
General ground-water flow direction:	<b>West-southwest</b>
Approximate hydraulic gradient:	<b>0.09 ft/ft</b>

### DISCUSSION:

Second Quarter 2008 ground-water monitoring and sampling was conducted at Station #11102 on 15 April 2008 by Stratus. Water levels were gauged in the three wells at the Site. No irregularities were noted during water level gauging. Depths to water measurements ranged from 10.26 ft at well MW-1 to 15.25 ft at well MW-3. Resulting ground-water surface elevations ranged from 79.94 ft above mean sea level in well MW-1 to 71.77 ft at well MW-3. Water level elevations were between historic minimum and maximum ranges for each well, as summarized in Table 1. Water level elevations yielded a potentiometric ground-water flow direction and gradient of 0.09 ft/ft to the west-southwest, generally consistent with historical data (see Table 3). Ground-water monitoring field data sheets are provided within Appendix A. Measured depths to ground-water and respective ground-water elevations are summarized in Table 1. Current and historic ground-water flow directions and gradients are provided in Table 3. Potentiometric ground-water elevation contours are presented in Drawing 1.

Consistent with the current ground-water sampling schedule, water samples were collected from each of the three wells on the Site. No irregularities were encountered during sampling. Samples were submitted under chain-of-custody protocol to Calscience Environmental Laboratories, Inc. (Garden Grove, California), for analysis of Gasoline Range Organics (GRO, C6-C12) by the EPA Method 8015B;

for Benzene, Toluene, Ethylbenzene, and Total Xylenes (BTEX) by EPA Method 8260B; and tert-Amyl methyl ether (TAME), tert-Butyl alcohol (TBA), Di-isopropyl ether (DIPE), 1,2-Dibromomethane (EDB), 1,2-Dichloroethane (1,2-DCA), Ethanol, Ethyl tert-butyl ether (ETBE), and Methyl tert-butyl ether (MTBE) by EPA Method 8260B. Biodegradation parameters including dissolved oxygen, pH, temperature, conductivity, hydrogen sulfide, ferrous iron, nitrate, and sulfate were also monitored during the sample event this quarter. No irregularities were encountered during laboratory analysis of the samples. Ground-water sampling field data sheets and the laboratory analytical report, including chain-of-custody documentation, are provided in Appendix A.

Gasoline Range Organics (GRO) were detected above the laboratory reporting limit in two of the three wells sampled at concentrations up to 240 micrograms per liter ( $\mu\text{g/L}$ ) in well MW-1. Total xylenes were detected above the laboratory reporting limit in one of the three wells sampled at a concentration of 0.73  $\mu\text{g/L}$  in well MW-1. TAME was detected above the laboratory reporting limit in two of the three wells sampled at concentrations up to 30  $\mu\text{g/L}$  in well MW-2. TBA was detected above the laboratory reporting limit in two of the three wells sampled at concentrations up to 6,800  $\mu\text{g/L}$  in well MW-2. 1,2-DCA was detected above the laboratory reporting limit in one of the three wells sampled at a concentration of 2.8  $\mu\text{g/L}$  in well MW-2. MTBE was detected above the laboratory reporting limit in each of the wells sampled at concentrations up to 2,400  $\mu\text{g/L}$  in well MW-2. The remaining fuel additives and oxygenates were not detected above their laboratory reporting limits in the three wells sampled this quarter. Biodegradation parameters mentioned above will be presented in tabular form in the Third Quarter 2008 ground-water monitoring report.

Detected analyte concentrations were within the historic minimum and maximum ranges recorded for each well sampled this quarter. Historic laboratory analytical results are summarized in Table 1, and Table 2. The most recent GRO, Benzene, and MTBE concentrations are also presented in Drawing 1. A copy of the Laboratory Analytical Report, including chain-of-custody documentation and biodegradation parameter results is provided in Appendix A. Ground-water monitoring data (GEO\_WELL) and laboratory analytical results (EDF) were uploaded to the GeoTracker AB2886 database. Upload confirmation pages are provided in Appendix B.

## **CLOSURE:**

The findings presented in this report are based upon: observations of Stratus field personnel (see Appendix A), the points investigated, and results of laboratory tests performed by Calscience Environmental Laboratories, Inc. (Garden Grove, California). Our services were performed in accordance with the generally accepted standard of practice at the time this report was written. No other warranty, expressed or implied was made. This report has been prepared for the exclusive use of Atlantic Richfield Company. It is possible that variations in soil or ground-water conditions could exist beyond points explored in this investigation. Also, changes in site conditions could occur in the future due to variations in rainfall, temperature, regional water usage, or other factors.

## **ATTACHMENTS:**

Drawing 1. Ground-Water Elevation Contour and Analytical Summary Map, 15 April 2008, Former Station #11102, 100 MacArthur Boulevard, Oakland, California

Table 1. Summary of Ground-Water Monitoring Data: Relative Water Elevations and Laboratory Analyses, Station #11102, 100 MacArthur Blvd., Oakland, CA

- Table 2. Summary of Fuel Additives Analytical Data, Station #11102, 100 MacArthur Blvd., Oakland, CA
- Table 3. Historical Ground-Water Flow Direction and Gradient, Station #11102, 100 MacArthur Blvd., Oakland, CA
- Appendix A. Stratus Ground-Water Sampling Data Package (Includes Field Data Sheets, Laboratory Analytical Report with Chain-of-Custody Documentation, and Field Procedures)
- Appendix B. GeoTracker Upload Confirmation

### LEGEND

● Monitoring Well Location

<b>Well</b>	Well designation
<b>ELEV</b>	Ground-water elevation (ft MSL)
GRO	Concentration of GRO, Benzene and MTBE in ground water (µg/L)
Benzene	
MTBE	
<b>Q</b>	Sampling frequency

< Not detected

Q Sampled quarterly

← 0.09 Approximate ground-water flow direction and gradient (ft/ft)

— 75.5 Ground-water elevation contour (ft MSL)

NOTE: SITE MAP ADAPTED FROM CAMBRIA ENVIRONMENTAL FIGURES.  
SITE DIMENSIONS AND FIGURES FACILITY LOCATIONS NOT VERIFIED.

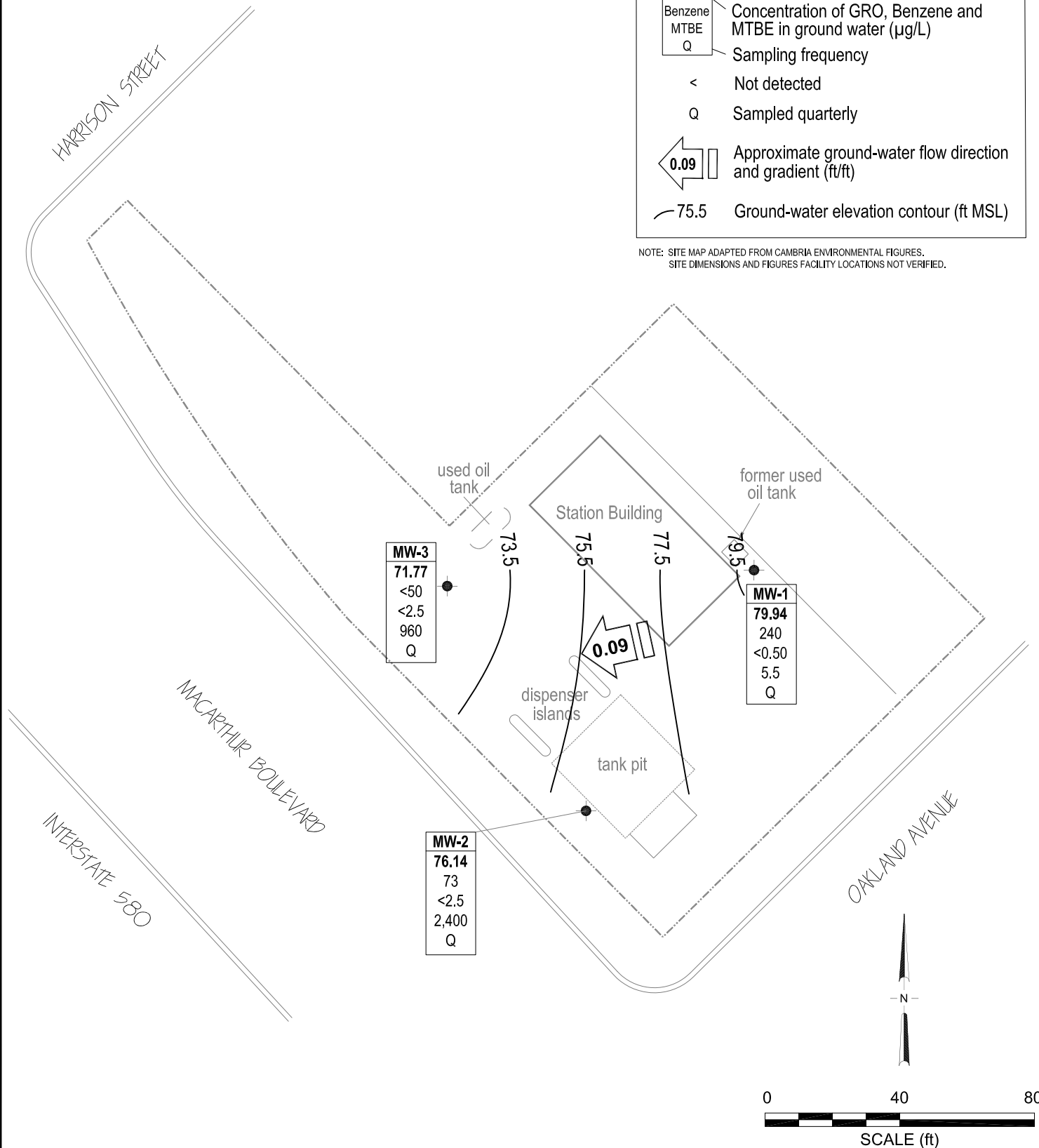


Table 1. Summary of Ground-Water Monitoring Data: Relative Water Elevations and Laboratory Analyses

Station #11102, 100 MacArthur Blvd., Oakland, CA

Well and Sample Date	P/NP	Footnote	TOC Elevation (feet msl)	DTW (feet bgs)	Product Thickness (feet)	Water Level Elevation (feet msl)	Concentrations in (µg/L)						DO (mg/L)	Lab	pH	DRO/TPHd (µg/L)	TOG (µg/L)	HVOC (µg/L)
							GRO/TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MtBE						
MW-1																		
11/4/1989	--		90.20	13.21	--	76.99	<500	3.4	0.6	<0.3	<0.3	--	--	SAL	--	<50	<5000	--
11/11/1989	--		90.20	13.32	--	76.88	--	--	--	--	--	--	--	--	--	--	--	--
4/3/1990	--		90.20	12.46	--	77.74	820	64	1.9	23	34	--	--	ANA	--	--	--	--
7/30/1990	--		90.20	12.92	--	77.28	190	11	<5.0	<5.0	<5.0	--	--	ANA	--	<50	<5000	--
11/20/1990	--		90.20	14.08	--	76.12	50	2.4	<0.3	<0.3	<0.3	--	--	SAL	--	79	<5000	--
3/1/1991	--		90.20	13.61	--	76.59	<100	0.9	<0.3	<0.3	0.3	--	--	SAL	--	<1000	14,000	--
8/19/1991	--		90.20	15.74	--	74.46	370	35	0.73	6.4	5.6	--	--	SEQ	--	<50	<5000	--
11/13/1991	--		90.20	14.08	--	76.12	60	0.68	<0.3	<0.3	<0.3	--	--	SEQ	--	<50	<5000	--
2/24/1992	--		90.20	12.52	--	77.68	140	3.9	0.66	1.2	3.8	--	--	SEQ	--	100	<5000	--
5/19/1992	--		90.20	11.80	--	78.40	4,200	440	21	250	37	--	--	SEQ	--	910	<5000	--
6/17/1992	--		90.20	12.01	--	78.19	4,000	350	14	150	17	--	--	SEQ	--	560	<5000	--
7/22/1992	--		90.20	12.42	--	77.78	4,000	<5.0	19	210	61	--	--	ANA	--	--	--	--
8/14/1992	--		90.20	12.75	--	77.45	2,400	330	20	150	47	--	--	SEQ	--	1,700	<5000	--
11/11/1992	--		90.20	13.69	--	76.51	260	30	3.4	7.6	6.8	--	--	ANA	--	92	<5000	--
6/7/1993	--		90.20	10.93	--	79.27	3,400	98	11	21	7.6	--	--	PACE	--	440	--	--
6/7/1993	--	c	90.20	--	--	--	3,700	120	12	26	9.5	--	--	PACE	--	--	--	--
12/2/1993	--		90.20	12.72	--	77.48	1,100	8.3	3.6	0.6	1.5	--	--	PACE	--	120	<5000	--
6/22/1994	--	c, d	90.20	--	--	--	2,100	30	3.2	2	15	2,000	--	PACE	--	--	--	--
6/22/1994	--	d	90.20	11.81	--	78.39	2,100	32	3.8	2.2	17	4,000	3.2	PACE	--	<50	<5000	--
1/10/1995	--	c	90.20	--	--	--	<500	120	<5	5	<10	--	--	ATI	--	--	--	--
1/10/1995	--		90.20	10.97	--	79.23	<500	120	<5	<5	<10	--	3.9	ATI	--	420	--	--
6/21/1995	--	c, e	90.20	--	--	--	3,600	<13	<5.0	<5.0	<10	--	--	ATI	--	--	--	--
6/21/1995	--		90.20	9.38	--	80.82	4,700	16	<5.0	<5.0	<10	--	6.7	ATI	--	1,300	2,900	0.6
12/27/1995	--		90.20	11.55	--	78.65	430	<2.5	<2.5	<2.5	<5.0	1,200	6.3	ATI	--	2,100	640	--
6/13/1996	--		90.20	9.28	--	80.92	3,200	51	<12	<12	<12	4,000	6.3	SPL	--	920	2,000	--
12/4/1996	--	f	90.20	11.91	--	78.29	1,400	6.2	<5	<5	<5	2,600	6.7	SPL	--	280	2,000	6
6/10/1997	--		90.20	8.97	--	81.23	7,900	12	<10	<10	<10	15,000	6	SPL	--	1,700	<5	--
6/10/1997	--	c	90.20	--	--	--	7,700	14	<25	<25	<25	13,000	--	SPL	--	--	--	--
12/12/1997	--		90.20	11.37	--	78.83	440	8.8	<1.0	2.6	9.4	6,700	5.5	SPL	--	760	1,200	--
6/18/1998	--		90.20	8.02	--	82.18	7,500	<2.5	<5.0	<5.0	<5.0	5,600	4.9	SPL	--	2,900	<5	--
3/9/1999	--		90.20	9.80	--	80.40	32,000	100	16	72	110	49,000	--	SPL	--	--	--	--



Table 1. Summary of Ground-Water Monitoring Data: Relative Water Elevations and Laboratory Analyses

Station #11102, 100 MacArthur Blvd., Oakland, CA

Well and Sample Date	P/NP	Footnote	TOC Elevation (feet msl)	DTW (feet bgs)	Product Thickness (feet)	Water Level Elevation (feet msl)	Concentrations in (µg/L)						DO (mg/L)	Lab	pH	DRO/TPHd (µg/L)	TOG (µg/L)	HVOC (µg/L)
							GRO/TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MtBE						
<b>MW-1 Cont.</b>																		
9/28/1999	--		90.20	10.78	--	79.42	1,000	<5.0	<5.0	<5.0	<5.0	730	--	SPL	--	--	--	<1.0
10/14/1999	--		90.20	10.84	--	79.36	--	--	--	--	--	--	--	SPL	--	660	--	--
3/27/2000	--		90.20	9.83	--	80.37	4,300	160	19	37	43	28,000	--	PACE	--	--	--	--
9/28/2000	--		90.20	11.33	--	78.87	2,700	10	2.6	1.1	2.7	28,000	--	PACE	--	--	--	--
3/8/2001	--		90.20	10.96	--	79.24	8,200	23.5	6.09	5.23	8.97	11,600	--	PACE	--	--	--	--
9/21/2001	--		90.20	12.07	--	78.13	6,000	37.9	<0.5	<0.5	<1.5	7,370	--	PACE	--	--	--	--
2/28/2002	--		90.20	10.48	--	79.72	6,400	60.8	<5.0	6.43	<10	7,750	--	PACE	--	--	--	--
9/6/2002	--		90.20	11.20	--	79.00	1,400	<5.0	<5.0	<5.0	<5.0	6,000	--	SEQ	--	--	--	--
2/19/2003	--	h	90.20	11.29	--	78.91	<10000	<100	110	<100	<100	4,500	--	SEQ	--	--	--	--
7/14/2003	--		90.20	11.18	--	79.02	710	11	<10	<10	<10	940	--	SEQ	--	--	--	--
01/14/2004	--		90.20	11.74	--	78.46	<500	<5.0	<5.0	<5.0	<5.0	220	--	SEQM	6.6	--	--	--
04/23/2004	P	l	90.20	11.95	--	78.25	470	3.4	<2.5	<2.5	<2.5	150	--	SEQM	6.7	--	--	--
07/01/2004	P		90.20	11.52	--	78.68	360	<2.5	<2.5	<2.5	<2.5	96	--	SEQM	6.0	--	--	--
10/28/2004	P		90.20	12.56	--	77.64	390	0.94	<0.50	<0.50	<0.50	43	--	SEQM	6.2	--	--	--
01/10/2005	P		90.20	11.85	--	78.35	490	17	<2.5	5.8	5.4	85	--	SEQM	7.6	--	--	--
04/13/2005	P		90.20	10.00	--	80.20	1,000	27	<2.5	<2.5	25	48	--	SEQM	6.6	--	--	--
07/11/2005	P		90.20	9.27	--	80.93	180	<0.50	<0.50	<0.50	<0.50	36	--	SEQM	7.7	--	--	--
10/17/2005	P		90.20	10.96	--	79.24	140	<0.50	<0.50	<0.50	<0.50	20	--	SEQM	8.0	--	--	--
01/17/2006	P		90.20	10.81	--	79.39	120	0.64	<0.50	<0.50	0.56	38	--	SEQM	6.5	--	--	--
04/21/2006	P	m	90.20	9.28	--	80.92	410	1.4	1.0	<0.50	<0.50	17	--	SEQM	6.5	--	--	--
7/17/2006	--		90.20	9.25	--	80.95	<50	<0.50	<0.50	<0.50	<0.50	5.5	--	TAMC	7.7	--	--	--
7/26/2006	--		90.20	8.57	--	81.63	<50	<0.50	<0.50	<0.50	<0.50	4.4	--	TAMC	6.6	--	--	--
10/31/2006	P		90.20	9.80	--	80.40	<50	<0.50	<0.50	<0.50	<0.50	2.8	2.81	TAMC	6.99	--	--	--
1/8/2007	P		90.20	10.36	--	79.84	<50	2.2	<0.50	<0.50	<0.50	6.2	2.51	TAMC	6.97	--	--	--
4/10/2007	P		90.20	10.65	--	79.55	160	1.4	<0.50	<0.50	<0.50	9.0	1.75	TAMC	7.00	--	--	--
7/10/2007	P	p	90.20	10.52	--	79.68	120	<0.50	<0.50	<0.50	<0.50	4.9	2.01	TAMC	6.60	160	--	--
10/24/2007	P		90.20	11.23	--	78.97	100	<0.50	<0.50	<0.50	<0.50	4.9	1.89	TAMC	6.57	--	--	--
1/22/2008	P		90.20	11.22	--	78.98	240	<0.50	<0.50	0.83	1.7	7.2	3.18	TAMC	6.49	--	--	--
<b>4/15/2008</b>	<b>P</b>		<b>90.20</b>	<b>10.26</b>	<b>--</b>	<b>79.94</b>	<b>240</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>0.73</b>	<b>5.5</b>	<b>3.32</b>	<b>CEL</b>	<b>6.45</b>	<b>--</b>	<b>--</b>	<b>--</b>

MW-2

**Table 1. Summary of Ground-Water Monitoring Data: Relative Water Elevations and Laboratory Analyses**  
**Station #11102, 100 MacArthur Blvd., Oakland, CA**

Well and Sample Date	P/NP	Footnote	TOC Elevation (feet msl)	DTW (feet bgs)	Product Thickness (feet)	Water Level Elevation (feet msl)	Concentrations in (µg/L)						DO (mg/L)	Lab	pH	DRO/TPHd (µg/L)	TOG (µg/L)	HVOC (µg/L)
							GRO/TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MtBE						
<b>MW-2 Cont.</b>																		
11/4/1989	--		87.91	15.84	--	72.07	<500	6.5	<0.3	<0.3	<0.3	--	--	SAL	--	--	--	--
11/11/1989	--		87.91	14.75	--	73.16	--	--	--	--	--	--	--	--	--	--	--	--
4/3/1990	--		87.91	15.25	--	72.66	<500	<0.5	<0.5	<0.5	<0.5	--	--	ANA	--	--	--	--
7/30/1990	--		87.91	15.59	--	72.32	61	6.5	<0.5	<0.5	<0.5	--	--	ANA	--	--	--	--
11/20/1990	--		87.91	17.81	--	70.10	<50	0.3	<0.3	<0.3	<0.3	--	--	SAL	--	--	--	--
3/1/1991	--		87.91	17.11	--	70.80	<100	0.4	<0.3	<0.3	<0.3	--	--	SAL	--	--	--	--
8/19/1991	--		87.91	17.97	--	69.94	<30	<0.3	<0.3	<0.3	<0.3	--	--	SEQ	--	--	--	--
11/13/1991	--		87.91	16.76	--	71.15	38	0.32	<0.3	<0.3	<0.3	--	--	SEQ	--	--	--	--
2/24/1992	--		87.91	15.07	--	72.84	<50	<0.5	<0.5	<0.5	0.58	--	--	SEQ	--	--	--	--
5/19/1992	--		87.91	14.70	--	73.21	<50	0.55	<0.5	<0.5	<0.5	--	--	SEQ	--	--	--	--
7/22/1992	--		87.91	15.60	--	72.31	90	1.3	0.6	0.9	1.9	--	--	ANA	--	--	--	--
8/14/1992	--		87.91	15.88	--	72.03	--	--	--	--	--	--	--	--	--	--	--	--
11/11/1992	--		87.91	16.19	--	71.72	52	2.8	<0.5	<0.5	0.9	--	--	ANA	--	--	--	--
11/11/1992	--	c	87.91	--	--	--	65	3.2	<0.5	<0.5	1	--	--	ANA	--	--	--	--
6/7/1993	--		87.91	14.42	--	73.49	1,200	14	2.8	1.9	1.71	--	--	PACE	--	--	--	--
12/2/1993	--	c, d	87.91	--	--	--	2,100	32	3.8	2.2	17	3,700	--	PACE	--	--	--	--
12/2/1993	--	d	87.91	14.94	--	72.97	790	3.4	0.5	10	<0.5	3,700	--	PACE	--	--	--	--
6/22/1994	--	d	87.91	14.25	--	73.66	110	<0.5	<0.5	<0.5	<0.5	120	3.9	PACE	--	--	--	--
1/10/1995	--		87.91	13.64	--	74.27	<50	<0.5	<0.5	0.6	1	--	4.3	ATI	--	--	--	--
6/21/1995	--		87.91	11.66	--	76.25	4,700	<10	<10	<10	<20	--	7.8	ATI	--	--	--	--
12/27/1995	--		87.91	13.11	--	74.80	6,100	<25	<25	<25	<50	20,000	6.7	ATI	--	--	--	--
12/27/1995	--	c	87.91	--	--	--	6,300	<25	<25	<25	<50	19,000	--	ATI	--	--	--	--
6/13/1996	--		87.91	10.86	--	77.05	8,300	<2.5	<2.5	<2.5	<2.5	13,000	6.5	SPL	--	--	--	--
6/13/1996	--	c	87.91	--	--	--	8,700	<5	<5	<5	<5	13,000	--	SPL	--	--	--	--
12/4/1996	--	c	87.91	--	--	--	5,900	<2.5	<5	<5	<5	11,000	--	SPL	--	--	--	--
12/4/1996	--		87.91	13.03	--	74.88	5,900	<2.5	<5	<5	<5	11,000	6.3	SPL	--	--	--	--
6/10/1997	--		87.91	10.04	--	77.87	<50	<0.5	<1.0	<1.0	<1.0	<10	5.8	SPL	--	--	--	--
12/12/1997	--		87.91	12.44	--	75.47	<50	<0.5	<1.0	<1.0	<1.0	<10	5.7	SPL	--	--	--	--
6/18/1998	--	c	87.91	--	--	--	<50	<0.5	<1.0	<1.0	<1.0	<10	--	SPL	--	--	--	--
6/18/1998	--		87.91	8.89	--	79.02	50	<0.5	<1.0	<1.0	<1.0	<10	5.3	SPL	--	--	--	--
3/9/1999	--		87.91	10.20	--	77.71	15,000	<5.0	<5.0	<5.0	<5.0	23,000	--	SPL	--	--	--	--

Table 1. Summary of Ground-Water Monitoring Data: Relative Water Elevations and Laboratory Analyses

Station #11102, 100 MacArthur Blvd., Oakland, CA

Well and Sample Date	P/NP	Footnote	TOC Elevation (feet msl)	DTW (feet bgs)	Product Thickness (feet)	Water Level Elevation (feet msl)	Concentrations in (µg/L)						DO (mg/L)	Lab	pH	DRO/TPHd (µg/L)	TOG (µg/L)	HVOC (µg/L)
							GRO/TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MtBE						
<b>MW-2 Cont.</b>																		
9/28/1999	--		87.91	11.81	--	76.10	36,000	<5.0	12	7	26	35,000	--	SPL	--	--	--	<5.0
10/14/1999	--		87.91	10.27	--	77.64	--	--	--	--	--	--	--	SPL	--	100	--	--
3/27/2000	--		87.91	9.98	--	77.93	1,300	<0.5	<0.5	0.51	<0.5	5,800	--	PACE	--	--	--	--
9/28/2000	--		87.91	11.40	--	76.51	1,600	1.8	1.7	0.54	2.2	15,000	--	PACE	--	--	--	--
3/8/2001	--		87.91	11.16	--	76.75	20,000	<0.5	<0.5	<0.5	<0.5	29,100	--	PACE	--	--	--	--
9/21/2001	--		87.91	11.65	--	76.26	5,000	<0.5	<0.5	<0.5	<1.5	6,110	--	PACE	--	--	--	--
2/28/2002	--		87.91	9.86	--	78.05	3,200	35.1	<0.5	<0.5	<1.0	4,620	--	PACE	--	--	--	--
9/6/2002	--		87.91	12.32	--	75.59	1,900	<10	<10	<10	<10	15,000	--	SEQ	--	--	--	--
2/19/2003	--	h	87.91	11.63	--	76.28	45,000	<250	<250	<250	<250	32,000	--	SEQ	--	--	--	--
7/14/2003	--		87.91	12.07	--	75.84	9,300	<500	<500	<500	<500	24,000	--	SEQ	--	--	--	--
01/14/2004	P		87.91	11.45	--	76.46	<50,000	<500	<500	<500	<500	21,000	--	SEQM	6.9	--	--	--
04/23/2004	P	l	87.91	11.45	--	76.46	5,100	<250	<250	<250	<250	22,000	--	SEQM	6.8	--	--	--
07/01/2004	P		87.91	12.32	--	75.59	<5,000	<50	<50	<50	<50	5,200	--	SEQM	5.6	--	--	--
10/28/2004	P		87.91	13.02	--	74.89	8,500	<50	<50	<50	<50	6,800	--	SEQM	6.2	--	--	--
01/10/2005	P		87.91	14.38	--	73.53	<25,000	<250	<250	<250	<250	7,100	--	SEQM	7.6	--	--	--
04/13/2005	P		87.91	14.03	--	73.88	<5,000	<50	<50	<50	<50	5,300	--	SEQM	6.6	--	--	--
07/11/2005	P		87.91	11.25	--	76.66	<5,000	<50	<50	<50	<50	5,300	--	SEQM	7.5	--	--	--
10/17/2005	P		87.91	12.48	--	75.43	<5,000	<50	<50	<50	<50	2,500	--	SEQM	8.2	--	--	--
01/17/2006	P		87.91	10.70	--	77.21	<5,000	<50	<50	<50	<50	2,200	--	SEQM	7.0	--	--	--
04/21/2006	--	n	87.91	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
7/26/2006	--	k	87.91	10.47	--	77.44	2,700	<50	<50	<50	<50	2,900	--	TAMC	6.69	--	--	--
10/31/2006	P		87.91	12.02	--	75.89	2,300	<25	<25	<25	<25	2,300	2.02	TAMC	6.71	--	--	--
1/8/2007	P		87.91	11.68	--	76.23	1500	<12	<12	<12	<12	1700	1.37	TAMC	6.54	--	--	--
4/10/2007	P	k	87.91	11.45	--	76.46	1,300	<50	<50	<50	<50	1,500	1.60	TAMC	6.89	--	--	--
7/10/2007	P	k, p	87.91	11.97	--	75.94	2,300	<25	<25	<25	<25	2,600	1.82	TAMC	6.69	120	--	--
10/24/2007	P	k	87.91	12.91	--	75.00	2,800	<25	<25	<25	<25	2,800	1.55	TAMC	6.77	--	--	--
1/22/2008	P		87.91	12.00	--	75.91	<2,500	<25	<25	<25	<25	1,400	2.08	TAMC	6.55	--	--	--
<b>4/15/2008</b>	<b>P</b>		<b>87.91</b>	<b>11.77</b>	--	<b>76.14</b>	<b>73</b>	<b>&lt;2.5</b>	<b>&lt;2.5</b>	<b>&lt;2.5</b>	<b>&lt;2.5</b>	<b>2,400</b>	<b>3.12</b>	<b>CEL</b>	<b>6.72</b>	--	--	--
<b>MW-3</b>																		
11/4/1989	--		87.02	15.40	--	71.62	<500	<0.3	<0.3	<0.3	<0.3	--	--	SAL	--	--	--	--

Table 1. Summary of Ground-Water Monitoring Data: Relative Water Elevations and Laboratory Analyses

Station #11102, 100 MacArthur Blvd., Oakland, CA

Well and Sample Date	P/NP	Footnote	TOC Elevation (feet msl)	DTW (feet bgs)	Product Thickness (feet)	Water Level Elevation (feet msl)	Concentrations in (µg/L)						DO (mg/L)	Lab	pH	DRO/TPHd (µg/L)	TOG (µg/L)	HVOC (µg/L)
							GRO/TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MtBE						
MW-3 Cont.																		
11/11/1989	--		87.02	14.10	--	72.92	--	--	--	--	--	--	--	--	--	--	--	--
4/3/1990	--		87.02	13.90	--	73.12	<100	<0.5	<0.5	<0.5	<0.5	--	--	ANA	--	--	--	--
7/30/1990	--		87.02	13.77	--	73.25	<50	<0.5	<0.5	<0.5	<0.5	--	--	ANA	--	--	<5000	--
11/20/1990	--		87.02	14.67	--	72.35	<50	0.3	0.8	0.4	1.5	--	--	SAL	--	--	--	--
3/1/1991	--		87.02	15.22	--	71.80	<100	0.4	<0.3	<0.3	<0.3	--	--	SAL	--	--	--	--
8/19/1991	--		87.02	13.15	--	73.87	<30	<0.3	<0.3	<0.3	<0.3	--	--	SEQ	--	--	--	--
11/13/1991	--		87.02	15.66	--	71.36	<30	<0.3	<0.3	<0.3	<0.3	--	--	SEQ	--	--	--	--
2/24/1992	--		87.02	15.01	--	72.01	<50	0.65	1.4	0.66	4.4	--	--	SEQ	--	--	--	--
5/19/1992	--		87.02	15.52	--	71.50	<50	<0.5	<0.5	<0.5	<0.5	--	--	SEQ	--	--	--	--
7/22/1992	--		87.02	15.63	--	71.39	<50	<0.5	<0.5	<0.5	<0.5	--	--	ANA	--	<50	<5000	--
8/14/1992	--		87.02	13.57	--	73.45	--	--	--	--	--	--	--	--	--	--	--	--
11/11/1992	--		87.02	14.13	--	72.89	<50	<0.5	0.7	<0.5	1.3	--	--	ANA	--	--	--	--
6/7/1993	--		87.02	12.13	--	74.89	<50	<0.5	<0.5	<0.5	<0.5	--	--	PACE	--	--	--	--
12/2/1993	--		87.02	13.29	--	73.73	<50	<0.5	<0.5	<0.5	<0.5	--	--	PACE	--	--	--	--
6/22/1994	--		87.02	12.78	--	74.24	<50	<0.5	<0.5	<0.5	<0.5	--	2.9	PACE	--	--	--	--
1/10/1995	--		87.02	12.01	--	75.01	<50	<0.5	<0.5	<0.5	<1	--	3.8	ATI	--	--	--	--
6/21/1995	--		87.02	11.57	--	75.45	<50	<0.50	<0.50	<0.50	<1.0	--	7.4	ATI	--	--	--	--
12/27/1995	--		87.02	13.47	--	73.55	<50	<0.50	<0.50	<0.50	<1.0	5.7	7.3	ATI	--	--	--	--
6/13/1996	--		87.02	11.22	--	75.80	60	<0.5	<0.5	<0.5	<0.5	<10	6.8	SPL	--	--	--	--
12/4/1996	--		87.02	13.28	--	73.74	<50	<0.5	<1	<1	<1	<10	6.7	SPL	--	--	--	--
6/10/1997	--		87.02	10.22	--	76.80	<50	<0.5	<1.0	<1.0	<1.0	<10	6.1	SPL	--	--	--	--
12/12/1997	--	c	87.02	--	--	--	<50	<0.5	<1.0	<1.0	<1.0	<10	--	SPL	--	--	--	--
12/12/1997	--		87.02	12.61	--	74.41	<50	<0.5	<1.0	<1.0	<1.0	<10	5.6	SPL	--	--	--	--
6/18/1998	--		87.02	12.80	--	74.22	--	--	--	--	--	--	--	--	--	--	--	--
6/18/1998	--		87.02	9.07	--	77.95	50	<0.5	<1.0	<1.0	<1.0	<10	5.3	SPL	--	--	--	--
9/28/1999	--		87.02	13.76	--	73.26	--	--	--	--	--	--	--	--	--	--	--	--
3/27/2000	--		87.02	13.77	--	73.25	<50	<0.5	<0.5	<0.5	<0.5	1.6	--	PACE	--	--	--	--
9/28/2000	--		87.02	11.28	--	75.74	<50	<0.5	7.4	<0.5	1.3	2	--	PACE	--	--	--	--
3/8/2001	--		87.02	11.75	--	75.27	<50	<0.5	<0.5	<0.5	<0.5	60.4	--	PACE	--	--	--	--
9/21/2001	--		87.02	11.33	--	75.69	<50	<0.5	<0.5	<0.5	<1.5	8.18	--	PACE	--	--	--	--
2/28/2002	--		87.02	10.86	--	76.16	<50	<0.5	<0.5	<0.5	<1.0	25.5	--	PACE	--	--	--	--

Table 1. Summary of Ground-Water Monitoring Data: Relative Water Elevations and Laboratory Analyses

Station #11102, 100 MacArthur Blvd., Oakland, CA

Well and Sample Date	P/NP	Footnote	TOC Elevation (feet msl)	DTW (feet bgs)	Product Thickness (feet)	Water Level Elevation (feet msl)	Concentrations in (µg/L)						DO (mg/L)	Lab	pH	DRO/TPHd (µg/L)	TOG (µg/L)	HVOC (µg/L)
							GRO/TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MtBE						
<b>MW-3 Cont.</b>																		
9/6/2002	--		87.02	12.73	--	74.29	<50	1.2	<0.5	<0.5	1	16	--	SEQ	--	--	--	--
2/19/2003	--	h	87.02	11.72	--	75.30	<500	<5.0	<5.0	<5.0	<5.0	110	--	SEQ	--	--	--	--
7/14/2003	--		87.02	13.76	--	73.26	<50	<0.50	<0.50	<0.50	0.67	28	--	SEQ	--	--	--	--
01/14/2004	P		87.02	14.83	--	72.19	550	<5.0	<5.0	<5.0	<5.0	380	--	SEQM	8.1	--	--	--
04/23/2004	P	l	87.02	13.17	--	73.85	<200	<25	<25	<25	<25	560	--	SEQM	6.8	--	--	--
07/01/2004	P		87.02	15.19	--	71.83	<50	<0.50	<0.50	<0.50	0.50	48	--	SEQM	6.4	--	--	--
10/28/2004	P		87.02	15.50	--	71.52	<500	<5.0	<5.0	<5.0	<5.0	290	--	SEQM	6.3	--	--	--
01/10/2005	P		87.02	15.00	--	72.02	<50	<0.50	<0.50	<0.50	<0.50	18	--	SEQM	7.6	--	--	--
04/13/2005	P		87.02	14.34	--	72.68	<50	<0.50	<0.50	<0.50	<0.50	9.0	--	SEQM	7.1	--	--	--
07/11/2005	P	k	87.02	10.82	--	76.20	130	<1.0	<1.0	<1.0	<1.0	120	--	SEQM	7.8	--	--	--
10/17/2005	P		87.02	11.84	--	75.18	<250	<2.5	<2.5	<2.5	<2.5	260	--	SEQM	8.5	--	--	--
01/17/2006	P		87.02	11.59	--	75.43	800	<5.0	<5.0	<5.0	<5.0	980	--	SEQM	7.2	--	--	--
04/21/2006	P		87.02	10.00	--	77.02	<500	<5.0	<5.0	<5.0	<5.0	48	--	SEQM	6.7	--	--	--
7/17/2006	P	k	87.02	10.80	--	76.22	910	<5.0	<5.0	<5.0	<5.0	1,400	--	TAMC	7.7	--	--	--
7/26/2006	P		87.02	9.67	--	77.35	810	<10	<10	<10	<10	1,300	--	TAMC	6.56	--	--	--
10/31/2006	P		87.02	10.85	--	76.17	1,600	<10	<10	<10	<10	2,300	2.50	TAMC	6.84	--	--	--
1/8/2007	P		87.02	12.73	--	74.29	520	<5.0	<5.0	<5.0	<5.0	760	3.61	TAMC	7.12	--	--	--
4/10/2007	P	k	87.02	11.93	--	75.09	630	<5.0	<5.0	<5.0	<5.0	750	2.31	TAMC	7.15	--	--	--
7/10/2007	P	k, p	87.02	11.30	--	75.72	1,800	<5.0	<5.0	<5.0	<5.0	2,400	1.56	TAMC	6.72	66	--	--
10/24/2007	P	k	87.02	13.77	--	73.25	2,000	<25	<25	<25	<25	3,500	1.62	TAMC	6.41	--	--	--
1/22/2008	P	k	87.02	12.92	--	74.10	1,600	<12	<12	<12	<12	2,800	2.17	TAMC	6.32	--	--	--
<b>4/15/2008</b>	<b>P</b>		<b>87.02</b>	<b>15.25</b>	<b>--</b>	<b>71.77</b>	<b>&lt;50</b>	<b>&lt;2.5</b>	<b>&lt;2.5</b>	<b>&lt;2.5</b>	<b>&lt;2.5</b>	<b>960</b>	<b>3.44</b>	<b>CEL</b>	<b>6.71</b>	<b>--</b>	<b>--</b>	<b>--</b>
<b>QC-2</b>																		
11/11/1992	--	gc	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	ANA	--	--	--	--
6/7/1993	--	gc	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	PACE	--	--	--	--
12/2/1993	--	gc	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	PACE	--	--	--	--
6/22/1994	--	gc	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	PACE	--	--	--	--
1/10/1995	--	gc	--	--	--	--	<50	<0.5	<0.5	<0.5	<1	--	--	ATI	--	--	--	--
6/21/1995	--	gc	--	--	--	--	<50	<0.50	<0.50	<0.50	<1.0	--	--	ATI	--	--	--	--
12/27/1995	--	gc	--	--	--	--	<50	<0.50	<0.50	<0.50	<1.0	<5.0	--	ATI	--	--	--	--

**Table 1. Summary of Ground-Water Monitoring Data: Relative Water Elevations and Laboratory Analyses**  
**Station #11102, 100 MacArthur Blvd., Oakland, CA**

Well and Sample Date	P/NP	Footnote	TOC Elevation (feet msl)	DTW (feet bgs)	Product Thickness (feet)	Water Level Elevation (feet msl)	Concentrations in (µg/L)						DO (mg/L)	Lab	pH	DRO/TPHd (µg/L)	TOG (µg/L)	HVOC (µg/L)
							GRO/TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MtBE						
QC-2 Cont.																		
6/13/1996	--	g	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<10	--	SPL	--	--	--	--

ABBREVIATIONS & SYMBOLS:

--/-- = Not analyzed/applicable/measured/available  
< = Not detected at or above specified laboratory reporting limit  
DO = Dissolved oxygen  
DRO = Diesel range organics  
DTW = Depth to water in ft bgs  
ft bgs = feet below ground surface  
ft MSL = feet above mean sea level  
GRO = Gasoline range organics, range C4-C12  
GWE = Groundwater elevation measured in ft MSL  
HVOC = Halogenated volatile organic compounds  
mg/L = Milligrams per liter  
MTBE = Methyl tert-butyl ether  
NP = Well not purged prior to sampling  
P = Well purged prior to sampling  
TOC = Top of casing measured in ft MSL  
TOG = Total oil and grease  
TPH-d = Total petroleum hydrocarbons as diesel  
TPH-g = Total petroleum hydrocarbons as gasoline  
µg/L = Micrograms per liter  
ANA = Anamatrix, Inc.  
PACE = Pace, Inc.  
ATI = Analytical Technologies, Inc.  
SAL = Superior Analytical Laboratory  
SPL = Southern Petroleum Laboratories  
SEQ/SEQM = Sequoia Analytical/Sequoia Analytical - Morgan Hill (Laboratories)

FOOTNOTES:

c = Blind duplicate.  
d = A copy of the documentation for this data is included in Appendix C of Alisto report 10-076-06-002.  
e = Tetrachloroethene  
f = trans-1,2-Dichloroethene  
g = Travel blank.  
h = TPH-g, benzene, toluene, ethylbenzene, and total xylenes (BTEX), and MTBE analyzed by EPA Method 8260B beginning on 1st quarter sampling event (2/19/03).  
k = The hydrocarbon result was partly due to individual peaks in the quantification range (GRO).  
l = GRO analyzed by EPA Method 8015B.  
m = Confirmatory analysis for total xylenes was past holding time.  
n = Well inaccessible.  
p = Hydrocarbon in req. fuel range, but doesn't resemble req. fuel (DRO).

NOTES:

Beginning in the fourth quarter 2003, the laboratory modified the reported analyte list. TPH-g was changed to GRO. The resulting data may be impacted by the potential of non-TPH-g analytes within the requested fuel range resulting in a higher concentration being reported.

Beginning in the second quarter 2004, the carbon range for GRO was changed from C6-C10 to C4-C12.

Values for pH and DO were obtained through field measurements.

Note: The data within this table collected prior to April 2006 was provided to Broadbent & Associates, Inc. by Atlantic Richfield Company and their previous consultants. Broadbent & Associates, Inc. has not verified the accuracy of this information.

**Table 2. Summary of Fuel Additives Analytical Data  
Station #11102, 100 MacArthur Blvd., Oakland, CA**

Well and Sample Date	Concentrations in (µg/L)								Comments
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
<b>MW-1</b>									
7/14/2003	<2000	2,700	940	<20	<20	<20	--	--	
01/14/2004	<1,000	2,500	220	<5.0	<5.0	<5.0	<5.0	<5.0	
04/23/2004	<500	2,500	150	<2.5	<2.5	<2.5	<2.5	<2.5	
07/01/2004	<500	2,000	96	<2.5	<2.5	<2.5	<2.5	<2.5	
10/28/2004	<5.0	1,500	43	<0.50	<0.50	0.58	<0.50	<0.50	
01/10/2005	<500	1,900	85	<2.5	<2.5	<2.5	<2.5	<2.5	
04/13/2005	<500	1,400	48	<2.5	<2.5	<2.5	<2.5	<2.5	
07/11/2005	<100	550	36	<0.50	<0.50	<0.50	<0.50	<0.50	
10/17/2005	<100	450	20	<0.50	<0.50	<0.50	<0.50	<0.50	a
01/17/2006	<300	260	38	<0.50	<0.50	0.54	<0.50	<0.50	
04/21/2006	<300	320	17	<0.50	<0.50	<0.50	<0.50	<0.50	
7/17/2006	<300	32	5.5	<0.50	<0.50	<0.50	<0.50	<0.50	
7/26/2006	<300	22	4.4	<0.50	<0.50	<0.50	<0.50	<0.50	
10/31/2006	<300	<20	2.8	<0.50	<0.50	<0.50	<0.50	<0.50	a
1/8/2007	<300	110	6.2	<0.50	<0.50	<0.50	<0.50	<0.50	
4/10/2007	<300	210	9.0	<0.50	<0.50	<0.50	<0.50	<0.50	
7/10/2007	<300	110	4.9	<0.50	<0.50	<0.50	<0.50	<0.50	
10/24/2007	<300	94	4.9	<0.50	<0.50	<0.50	<0.50	<0.50	
1/22/2008	<300	110	7.2	<0.50	<0.50	<0.50	<0.50	<0.50	
<b>4/15/2008</b>	<b>&lt;300</b>	<b>84</b>	<b>5.5</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	
<b>MW-2</b>									
7/14/2003	<100000	<20000	24,000	<1000	<1000	<1000	--	--	
01/14/2004	<100,000	<20,000	21,000	<500	<500	<500	<500	<500	
04/23/2004	<50,000	11,000	22,000	<250	<250	420	<250	<250	
07/01/2004	<10,000	2,900	5,200	<50	<50	110	<50	<50	
10/28/2004	<5.0	6,700	6,800	<50	<50	120	<50	<50	
01/10/2005	<50,000	<10,000	7,100	<250	<250	<250	<250	<250	
04/13/2005	<10,000	5,300	5,300	<50	<50	95	<50	<50	
07/11/2005	<10,000	9,000	5,300	<50	<50	99	<50	<50	
10/17/2005	<10,000	5,200	2,500	<50	<50	<50	<50	<50	a
01/17/2006	<30,000	8,400	2,200	<50	<50	<50	<50	<50	



**Table 2. Summary of Fuel Additives Analytical Data  
Station #11102, 100 MacArthur Blvd., Oakland, CA**

Well and Sample Date	Concentrations in (µg/L)								Comments
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
<b>MW-2 Cont.</b>									
04/21/2006	--	--	--	--	--	--	--	--	Well inaccessible
7/26/2006	<30,000	4,500	2,900	<50	<50	<50	<50	<50	
10/31/2006	<15,000	9,300	2,300	<25	<25	41	<25	<25	a
1/8/2007	<7,500	7700	1700	<12	<12	38	<12	<12	
4/10/2007	<30,000	6,400	1,500	<50	<50	<50	<50	<50	
7/10/2007	<15,000	8,700	2,600	<25	<25	42	<25	<25	
10/24/2007	<15,000	9,500	2,800	<25	<25	52	<25	<25	
1/22/2008	<15,000	6,000	1,400	<25	<25	<25	<25	<25	
<b>4/15/2008</b>	<b>&lt;1,500</b>	<b>6,800</b>	<b>2,400</b>	<b>&lt;2.5</b>	<b>&lt;2.5</b>	<b>30</b>	<b>2.8</b>	<b>&lt;2.5</b>	
<b>MW-3</b>									
7/14/2003	<100	<20	28	<1.0	<1.0	<1.0	--	--	
01/14/2004	<1,000	<200	380	<5.0	<5.0	<5.0	<5.0	<5.0	
04/23/2004	<5,000	<1,000	560	<25	<25	<25	<25	<25	
07/01/2004	<100	<20	48	<0.50	<0.50	0.52	<0.50	<0.50	
10/28/2004	<5.0	<200	290	<5.0	<5.0	<5.0	<5.0	<5.0	
01/10/2005	<100	<20	18	<0.50	<0.50	<0.50	<0.50	<0.50	
04/13/2005	<100	<20	9.0	<0.50	<0.50	<0.50	<0.50	<0.50	
07/11/2005	<200	<40	120	<1.0	<1.0	1.4	<1.0	<1.0	a
10/17/2005	<500	<100	260	<2.5	<2.5	4.2	<2.5	<2.5	a
01/17/2006	<3,000	200	980	<5.0	<5.0	13	<5.0	<5.0	
04/21/2006	<3,000	<200	48	<5.0	<5.0	<5.0	<5.0	<5.0	
7/17/2006	<3,000	<200	1,400	<5.0	<5.0	15	<5.0	<5.0	
7/26/2006	<6,000	<400	1,400	<10	<10	18	<10	<10	
10/31/2006	<6,000	<400	2,300	<10	<10	39	<10	<10	a
1/8/2007	<3000	<200	760	<5.0	<5.0	9.7	<5.0	<5.0	
4/10/2007	<3,000	<200	750	<5.0	<5.0	<5.0	<5.0	<5.0	
7/10/2007	<3,000	<200	2,400	<5.0	<5.0	39	<5.0	--	
10/24/2007	<15,000	<1,000	3,500	<25	<25	58	<25	<25	
1/22/2008	<7,500	<500	2,800	<12	<12	34	<12	<12	
<b>4/15/2008</b>	<b>&lt;1,500</b>	<b>&lt;50</b>	<b>960</b>	<b>&lt;2.5</b>	<b>&lt;2.5</b>	<b>9.2</b>	<b>&lt;2.5</b>	<b>&lt;2.5</b>	

SYMBOLS & ABBREVIATIONS:

-- = Not analyzed/applicable/measured/available

< = Not detected at or above specified laboratory reporting limit

1,2-DCA = 1,2-Dichloroethane

DIPE = Di-isopropyl ether

EDB = 1,2-Dibromoethane

ETBE = Ethyl tert-butyl ether

MTBE = Methyl tert-butyl ether

TAME = tert-Amyl methyl ether

TBA = tert-Butyl alcohol

µg/L = Micrograms per Liter

FOOTNOTES:

a = The calibration verification for ethanol was within the method limits but outside the contract limits.

NOTES:

All volatile organic compounds were analyzed using EPA Method 8260B.

Note: The data within this table collected prior to April 2006 was provided to Broadbent & Associates, Inc. by Atlantic Richfield Company and their previous consultants. Broadbent & Associates, Inc. has not verified the accuracy of this information.

**Table 3. Historical Ground-Water Flow Direction and Gradient  
Station #11102, 100 MacArthur Blvd., Oakland, CA**

<b>Date Sampled</b>	<b>Approximate Flow Direction</b>	<b>Approximate Hydraulic Gradient</b>
4/21/2006	--	--
7/17/2006	Southwest	0.05
10/31/2006	Southwest	0.04
1/8/2007	West	0.06
4/10/2007	West	0.05
7/10/2007	Southwest	0.04
10/24/2007	West-Southwest	0.06
1/22/2008	West	0.05
<b>4/15/2008</b>	<b>West-Southwest</b>	<b>0.09</b>

Note: The data within this table collected prior to April 2006 was provided to Broadbent & Associates, Inc. by Atlantic Richfield Company and their previous consultants. Broadbent & Associates, Inc. has not verified the accuracy of this information.

**APPENDIX A**

**STRATUS GROUND-WATER SAMPLING DATA PACKAGE  
(INCLUDES FIELD DATA SHEETS, LABORATORY ANALYTICAL REPORT WITH  
CHAIN-OF-CUSTODY DOCUMENTATION, AND FIELD PROCEDURES)**



3330 Cameron Park Drive, Ste 550  
Cameron Park, California 95682  
(530) 676-6004 ~ Fax: (530) 676-6005

May 2, 2008

Mr. Rob Miller  
Broadbent & Associates, Inc.  
2000 Kirman Avenue  
Reno, NV 89502

Re: Groundwater Sampling Data Package, BP Service Station No. 11102, located at  
100 MacArthur Boulevard, Oakland, California.

### **General Information**

*Data Submittal Prepared / Reviewed by:* Becky Carroll / Jay Johnson

*Phone Number:* (530) 676-6000

*On-Site Supplier Representative:* Roberto Heimlich

*Sampling Date:* April 15, 2008

*Arrival:* 10:40      *Departure:* 12:20

*Weather Conditions:* Clear

*Unusual Field Conditions:* None noted.

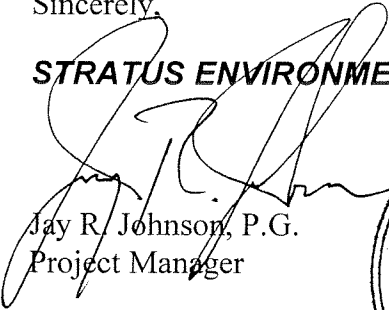
*Scope of Work Performed:* Quarterly monitoring and sampling.

*Variations from Work Scope:* None noted.

This submittal presents the tabulation of data collected in association with routine groundwater monitoring. The attachments included field data sheets, non-hazardous waste data form, chain of custody documentation, certified analytical results, and field procedures for groundwater sampling documentation. The information is being provided to BP-ARCO's Scoping Supplier for use in preparing a report for regulatory submittal. This submittal is limited to presentation of collected data and does not include data interpretation or conclusions or recommendations. Any questions concerning this submittal should be addressed to the Preparer/Reviewer identified above.

Sincerely,

**STRATUS ENVIRONMENTAL, INC.**



Jay R. Johnson, P.G.  
Project Manager



**Attachments:**

- Field Data Sheets
- Non-Hazardous Waste Data form
- Chain of Custody Documentation
- Certified Analytical Results
- Field Procedures for Groundwater Sampling

CC: Mr. Paul Supple, BP/ARCO

**BP Alameda Portfolio**  
HYDROLOGIC DATA SHEET

AT 10:40

Gauge Date: 4/15/08

Project Name: 100 MacArthur Blvd. Oakland

Field Technician: ROBERTO

Project Number: 11102

TOC = Top of Well Casing Elevation  
TOS = Depth to Top of Screen  
DTW = Depth to Groundwater Below TOC  
DTB = Depth to Bottom of Well Casing Below TOC

DIA = Well Casing Diameter  
ELEV = Groundwater Elevation  
DUP = Duplicate

WELL OR LOCATION	TIME	MEASUREMENT						PURGE & SAMPLE	SHEEN CONFIRMATION (w/bailer)	COMMENTS
		TOC	TOS	DTW	DTB	DIA	ELEV			
MW-1	10:58			10.26	31.90	4"		YES		
MW-2	10:52			11.77	32.20	4"		YES		
MW-3	10:46			15.25	32.30	5"		YES	PRESURIZED	

pH/Conductivity/temperature Meter - YSI Model 63 Calibration Date  
 DO Meter - YSI 55 Series (DO is always measured before purge) pH 4/15/08  
 Please refer to groundwater sampling field procedures Conductivity 4/15/08  
DO 4/15/08

**BP ALAMEDA PORTFOLIO**  
**WATER SAMPLE FIELD DATA SHEET**

PROJECT #: 11102 PURGED BY: RH WELL I.D.: MW-1  
 CLIENT NAME: \_\_\_\_\_ SAMPLED BY: RH SAMPLE I.D.: MW-1  
 LOCATION: Oakland - 100 MacArthur Blvd. QA SAMPLES: \_\_\_\_\_

DATE PURGED 4/15/08 START (2400hr) 11:47 END (2400hr) 12:05  
 DATE SAMPLED 4/15/08 SAMPLE TIME (2400hr) 12:03  
 SAMPLE TYPE: Groundwater x Surface Water \_\_\_\_\_ Treatment Effluent \_\_\_\_\_ Other \_\_\_\_\_

CASING DIAMETER: 2" \_\_\_\_\_ 3" \_\_\_\_\_ 4" ✓ 5" \_\_\_\_\_ 6" \_\_\_\_\_ 8" \_\_\_\_\_ Other \_\_\_\_\_  
 Casing Volume: (gallons per foot) (0.17) (0.38) (0.67) (1.02) (1.50) (2.60) ( )

DEPTH TO BOTTOM (feet) = 31.90 CASING VOLUME (gal) = 14.4  
 DEPTH TO WATER (feet) = 10.26 CALCULATED PURGE (gal) = 43.4  
 WATER COLUMN HEIGHT (feet) = 21.6 ACTUAL PURGE (gal) = 44

FIELD MEASUREMENTS

DATE	TIME (2400hr)	VOLUME (gal)	TEMP. (degrees F)	CONDUCTIVITY (umhos/cm)	pH (units)	COLOR (visual)	TURBIDITY (NTU)
<u>4/15/08</u>	<u>11:50</u>	<u>15</u>	<u>21.3</u>	<u>643</u>	<u>6.82</u>	<u>clear</u>	
<u>✓</u>	<u>11:53</u>	<u>30</u>	<u>21.9</u>	<u>661</u>	<u>6.93</u>	<u>✓</u>	
<u>✓</u>	<u>11:56</u>	<u>44</u>	<u>22.1</u>	<u>758</u>	<u>6.95</u>	<u>✓</u>	

SAMPLE INFORMATION

SAMPLE DEPTH TO WATER: 12.01 SAMPLE TURBIDITY: clear  
 80% RECHARGE: ✓ YES   NO ANALYSES: SWO  
 ODOR: NO SAMPLE VESSEL / PRESERVATIVE: 6 VOAS / HCL - 1 POLY

PURGING EQUIPMENT

  Bladder Pump   Bailer (Teflon)  
✓ Centrifugal Pump   Bailer (PVC)  
  Submersible Pump   Bailer (Stainless Steel)  
  Peristaltic Pump   Dedicated \_\_\_\_\_

Other: \_\_\_\_\_

Pump Depth: 21.50

SAMPLING EQUIPMENT

  Bladder Pump   Bailer (Teflon)  
  Centrifugal Pump   Bailer (   PVC or   disposable)  
  Submersible Pump   Bailer (Stainless Steel)  
  Peristaltic Pump   Dedicated \_\_\_\_\_

Other: \_\_\_\_\_

WELL INTEGRITY: GOOD LOCK#: MASTER  
 REMARKS: NO 3-32

SIGNATURE: [Signature] Page \_\_\_\_\_ of \_\_\_\_\_



**BP ALAMEDA PORTFOLIO**  
**WATER SAMPLE FIELD DATA SHEET**

PROJECT #: 11102 PURGED BY: RH WELL ID.: MW-2  
 CLIENT NAME: \_\_\_\_\_ SAMPLED BY: RH SAMPLE I.D.: MW-2  
 LOCATION: Oakland - 100 MacArthur Blvd. QA SAMPLES: \_\_\_\_\_

DATE PURGED 4/15/08 START (2400hr) 11:25 END (2400hr) 11:42  
 DATE SAMPLED 4/15/08 SAMPLE TIME (2400hr) 11:40  
 SAMPLE TYPE: Groundwater  Surface Water \_\_\_\_\_ Treatment Effluent \_\_\_\_\_ Other \_\_\_\_\_

CASING DIAMETER: 2" \_\_\_\_\_ 3" \_\_\_\_\_ 4"  5" \_\_\_\_\_ 6" \_\_\_\_\_ 8" \_\_\_\_\_ Other \_\_\_\_\_  
 Casing Volume: (gallons per foot) (0.17) (0.38) (0.67) (1.02) (1.50) (2.60) ( )

DEPTH TO BOTTOM (feet) = 32.20 CASING VOLUME (gal) = 13.6  
 DEPTH TO WATER (feet) = 11.77 CALCULATED PURGE (gal) = 41.0  
 WATER COLUMN HEIGHT (feet) = 20.4 ACTUAL PURGE (gal) = 41.5

FIELD MEASUREMENTS

DATE	TIME (2400hr)	VOLUME (gal)	TEMP. (degrees F)	CONDUCTIVITY (umhos/cm)	pH (units)	COLOR (visual)	TURBIDITY (NTU)
<u>4/15/08</u>	<u>11:28</u>	<u>15</u>	<u>23.5</u>	<u>834</u>	<u>7.09</u>	<u>clear</u>	
<u>✓</u>	<u>11:31</u>	<u>30</u>	<u>22.4</u>	<u>805</u>	<u>6.77</u>	<u>✓</u>	
<u>✓</u>	<u>11:34</u>	<u>41.5</u>	<u>22.2</u>	<u>799</u>	<u>6.72</u>	<u>✓</u>	

SAMPLE INFORMATION

SAMPLE DEPTH TO WATER: 13.02 SAMPLE TURBIDITY: clear

80% RECHARGE:  YES  NO ANALYSES: SWO  
 ODOR: NO SAMPLE VESSEL / PRESERVATIVE: 6 VOAS/ACL - 1 POLY

PURGING EQUIPMENT

Bladder Pump  Bailor (Teflon)  
 Centrifugal Pump  Bailor (PVC)  
 Submersible Pump  Bailor (Stainless Steel)  
 Peristaltic Pump  Dedicated \_\_\_\_\_

Other: \_\_\_\_\_  
 Pump Depth: 32

SAMPLING EQUIPMENT

Bladder Pump  Bailor (Teflon)  
 Centrifugal Pump  Bailor (  PVC or  disposable)  
 Submersible Pump  Bailor (Stainless Steel)  
 Peristaltic Pump  Dedicated \_\_\_\_\_

Other: \_\_\_\_\_

WELL INTEGRITY: GOOD LOCK#: MASTER

REMARKS: DO 3.12

SIGNATURE: [Signature] Page    of

**BP ALAMEDA PORTFOLIO**  
**WATER SAMPLE FIELD DATA SHEET**

PROJECT #: 11102 PURGED BY: RH WELL I.D.: MW-3  
 CLIENT NAME: \_\_\_\_\_ SAMPLED BY: RH SAMPLE I.D.: MW-3  
 LOCATION: Oakland - 100 MacArthur Blvd. QA SAMPLES: \_\_\_\_\_

DATE PURGED 4/15/08 START (2400hr) 11:03 END (2400hr) 11:20  
 DATE SAMPLED 4/15/08 SAMPLE TIME (2400hr) 11:18  
 SAMPLE TYPE: Groundwater x Surface Water \_\_\_\_\_ Treatment Effluent \_\_\_\_\_ Other \_\_\_\_\_

CASING DIAMETER: 2" \_\_\_\_\_ 3" \_\_\_\_\_ 4" X 5" \_\_\_\_\_ 6" \_\_\_\_\_ 8" \_\_\_\_\_ Other \_\_\_\_\_  
 Casing Volume: (gallons per foot) (0.17) (0.38) (0.67) (1.02) (1.30) (2.60) ( )

DEPTH TO BOTTOM (feet) = 32.30 CASING VOLUME (gal) = 11.4  
 DEPTH TO WATER (feet) = 16.25 CALCULATED PURGE (gal) = 34.2  
 WATER COLUMN HEIGHT (feet) = 17.05 ACTUAL PURGE (gal) = 34.5

FIELD MEASUREMENTS

DATE	TIME (2400hr)	VOLUME (gal)	TEMP. (degrees F)	CONDUCTIVITY (umhos/cm)	pH (units)	COLOR (visual)	TURBIDITY (NTU)
<u>4/15/08</u>	<u>11:06</u>	<u>12</u>	<u>22.9</u>	<u>648</u>	<u>7.17</u>	<u>clear</u>	
<u>✓</u>	<u>11:09</u>	<u>24</u>	<u>24.6</u>	<u>643</u>	<u>6.86</u>	<u>✓</u>	
<u>✓</u>	<u>11:12</u>	<u>34.5</u>	<u>27.7</u>	<u>638</u>	<u>6.71</u>	<u>✓</u>	

SAMPLE INFORMATION

SAMPLE DEPTH TO WATER: 16.50 SAMPLE TURBIDITY: clear

80% RECHARGE: ✓ YES   NO ANALYSES: SWD  
 ODOR: NO SAMPLE VESSEL / PRESERVATIVE: 6 VOIDS / HCL - 1 POLY

PURGING EQUIPMENT

Bladder Pump \_\_\_\_\_ Bailer (Teflon) \_\_\_\_\_  
~~Centrifugal Pump~~ \_\_\_\_\_ Bailer (PVC) \_\_\_\_\_  
 Submersible Pump \_\_\_\_\_ Bailer (Stainless Steel) \_\_\_\_\_  
 Peristaltic Pump \_\_\_\_\_ Dedicated \_\_\_\_\_  
 Other: \_\_\_\_\_  
 Pump Depth: 32

SAMPLING EQUIPMENT

Bladder Pump \_\_\_\_\_ Bailer (Teflon) \_\_\_\_\_  
 Centrifugal Pump \_\_\_\_\_ Bailer (   PVC or ✓ disposable) \_\_\_\_\_  
 Submersible Pump \_\_\_\_\_ Bailer (Stainless Steel) \_\_\_\_\_  
 Peristaltic Pump \_\_\_\_\_ Dedicated \_\_\_\_\_  
 Other: \_\_\_\_\_

WELL INTEGRITY: GOOD LOCK#: MASTER

REMARKS: DO 3.44

SIGNATURE: [Signature] Page   of

# WELLHEAD OBSERVATION FORM



Site Name/Number: 11102

Date: 4/15/08 Technician: ROBERTO

Well I.D.	Box in Good Condition?	Lock Missing?	Water in Wellbox?	Water Level Relative to Cap?	Well Cap?	Bolts Missing?	Bolts Stripped?	Bolt Holes Stripped?	Cracked or Broken Lid?	Cracked or Broken Box?	Grout Level more than 1ft below TOC?	Additional Comments <small>(such as missing lid, excessive weeds, vegetation, or other - explain)</small>
	X = Yes Blank = No	X = Yes (explain) Blank = No	X = Yes Blank = No	A = Above cap B = Below cap L = Level of top	I = Intact M = Missing or Compromised (explain)	X = Yes Blank = No	X = Yes Blank = No	X = Yes Blank = No	X = Yes Blank = No	X = Yes Blank = No	X = Yes Blank = No	
MW-1	X	—	X	B	I	—	—	—	—	—	—	
PW-2	X	—	X	B	I	—	—	—	—	—	—	
MW-3	X	—	X	B	I	—	—	—	—	—	—	

### DRUM INVENTORY

Drums on site? Yes  No (circle)  
 Type and # Steel: \_\_\_\_\_ Plastic: \_\_\_\_\_

Note whether drums are full or empty, solids or liquids:

\_\_\_\_\_

Drum label info (description, date, contact info):

\_\_\_\_\_

\_\_\_\_\_

### GENERAL SITE CONDITIONS

Make notes on housekeeping conditions (such as trash around remediation system enclosure/compound, bent or missing bollards, signs missing from compound fences, graffiti on compound, etc.)

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

NO. 666714

# NON-HAZARDOUS WASTE DATA FORM

TO BE COMPLETED BY GENERATOR

SITE:

EPA I.D. NO. NOT REQUIRED

NAME BP WEST COAST PRODUCTS LLC ACCO # 1102

ADDRESS P.O. BOX 90249 100 MACARTHUR BLVD. PROFILE NO.

CARLAND

CITY, STATE, ZIP CA 90280 PHONE NO. ( ) ( ) ( ) ( ) ( ) ( )

CONTAINERS: No. \_\_\_\_\_ VOLUME 120 WEIGHT \_\_\_\_\_

TYPE:  TANK TRUCK  DUMP TRUCK  DRUMS  CARTONS  OTHER \_\_\_\_\_

WASTE DESCRIPTION - NON-HAZARDOUS WATER			GENERATING PROCESS - BLENDING/DECON WATER		
COMPONENTS OF WASTE	PPM	%	COMPONENTS OF WASTE	PPM	%
1. <u>WATER</u>	<u>50-100%</u>		5. _____		
2. <u>TIN</u>	<u>&lt; 1%</u>		6. _____		
3. _____			7. <u>STEEL</u>		
4. _____			8. _____		

PROPERTIES: 7-30  SOLID  LIQUID  SLUDGE  SLURRY  OTHER \_\_\_\_\_

HANDLING INSTRUCTIONS: WEAR ALL APPROPRIATE PROTECTIVE CLOTHING

THE GENERATOR CERTIFIES THAT THE WASTE AS DESCRIBED IS 100% NON-HAZARDOUS.

I, Robert Heimlich BP 9/15/08  
 TYPED OR PRINTED FULL NAME & SIGNATURE DATE

TRANSPORTER

EPA I.D. NO.

NAME Transporter #1 Transporter #2

NAME STRATIS ENVIRONMENTAL

ADDRESS 3330 CAMERON PARK DR SERVICE ORDER NO. \_\_\_\_\_

CITY, STATE, ZIP CAMERON PARK, CA 95682 PICK UP DATE \_\_\_\_\_

PHONE NO. 520-676-2031

TRUCK, UNIT, I.D. NO. \_\_\_\_\_

ROBERTO HEIMLICH 9/15/08  
 TYPED OR PRINTED FULL NAME & SIGNATURE DATE

TSD FACILITY

EPA I.D. NO.

NAME INSTRAT, INC

ADDRESS 1108 AIRPORT RD #C DISPOSAL METHOD  LANDFILL  OTHER \_\_\_\_\_

CITY, STATE, ZIP SIO VISTA, CA 94511

PHONE NO. 620-752-1800

\_\_\_\_\_  
 TYPED OR PRINTED FULL NAME & SIGNATURE DATE

GEN	OLD/NEW	L	A	TONS
TRANS		S	B	
D/D		RT/D		HWDF
				NONE

DISCREPANCY



A BP affiliated company

### Chain of Custody Record

Project Name: ARCO 11102  
 BP BU/AR Region/Enfos Segment: BP > Americas > West > Retail > Alameda >  
 State or Lead Regulatory Agency: \_\_\_\_\_  
 Requested Due Date (mm/dd/yyyy): \_\_\_\_\_

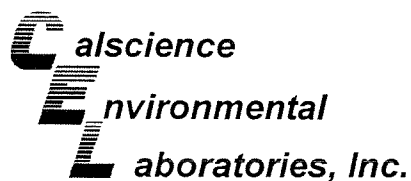
On-site Time:	<u>10:40</u>	Temp:	<u>59</u>
Off-site Time:	<u>12:20</u>	Temp:	<u>59</u>
Sky Conditions:	<u>clear</u>		
Meteorological Events:	<u>N/A</u>		
Wind Speed:	<u>0</u>	Direction:	<u>N/A</u>

Lab Name: <u>Calscience</u>	BP/AR Facility No.: <u>11102</u>	Consultant/Contractor: <u>Stratus Environmental, Inc.</u>
Address: <u>7440 Lincoln Way Garden Grove, CA 92841</u>	BP/AR Facility Address: <u>100 MacArthur Blvd., Oakland</u>	Address: <u>3330 Cameron Park Drive, Suite 550 Cameron Park, CA 95682</u>
Lab PM: <u>Linda Scharpenberg</u>	California Global ID No.: <u>T0600100908</u>	Consultant/Contractor Project No.: <u>E11102-04</u>
Tele/Fax: <u>714-895-5494 714-895-7501(fax)</u>	Enfos Project No.: <u>G07T9-0036</u>	Consultant/Contractor PM: <u>Jay Johnson</u>
BP/AR PM Contact: <u>Paul Supple</u>	Provision or OOC (circle one) <u>Provision</u>	Tele/Fax: <u>(530) 676-6000 / (530) 676-6005</u>
Address: <u>2010 Crow Canyon Place, Suite 150 San Ramon, CA</u>	Phase/WBS: <u>04-Monitoring</u>	Report Type & QC Level: <u>Level 1 with EDF</u>
Tele/Fax: <u>925-275-3506</u>	Sub Phase/Task: <u>03-Analytical</u>	E-mail EDD To: <u>shaves@stratusinc.net</u>
	Cost Element: <u>01-Contractor labor</u>	Invoice to: <u>Atlantic Richfield Co.</u>

Item No.	Sample Description	Time	Date	Matrix			Laboratory No.	No. of Containers	Preservative					Requested Analysis								Sample Point Lat/Long and Comments		
				Soil/Solid	Water/Liquid	Air			Unpreserved	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	HCl	Methanol	ETEX/Oxy*	1,2-DCA	Ethanol	EDB	12S	Pervous Fe	NO3	NO4		GRO by 801 Site	
1	MW-1	<u>12:03</u>	<u>4/15/08</u>	X				<u>7</u>						X	X	X	X	X	X	X	X	X	X	
2	MW-2	<u>11:40</u>	<u>4/15/08</u>	X				<u>7</u>						X	X	X	X	X	X	X	X	X	X	
3	MW-3	<u>11:18</u>	<u>4/15/08</u>	X				<u>7</u>						X	X	X	X	X	X	X	X	X	X	
4	IB-11102 <u>4/15/08-5:00</u>	<u>5:00</u>	<u>4/15/08</u>	X				<u>3</u>						X	X	X	X	X	X	X	X	X	X	HOLD
5																								
6																								
7																								
8																								
9																								
10																								

Sampler's Name: <u>ROBERTO HEIMLICH</u>	Relinquished By / Affiliation: _____	Date: _____	Time: _____	Accepted By / Affiliation: _____	Date: _____	Time: _____
Sampler's Company: <u>DOUGLOS ENV.</u>						
Shipment Date: _____						
Shipment Method: _____						
Shipment Tracking No: _____						
Special Instructions: <u>Please cc results to rmliller@broadbentline.com</u>	<u>**don hold**</u>					

Custody Seals In Place: Yes / No | Temp Blank: Yes / No | Cooler Temp on Receipt: °F/C | Trip Blank: Yes / No | MS/MSD Sample Submitted: Yes / No



April 29, 2008

Jay Johnson  
Stratus Environmental, inc.  
3330 Cameron Park Drive, Suite 550  
Cameron Park, CA 95682-8861

Subject: **Calscience Work Order No.:** 08-04-1385  
**Client Reference:** ARCO 11102

Dear Client:

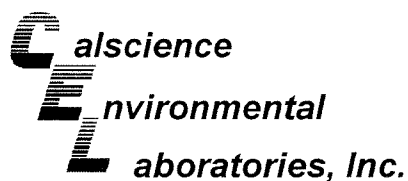
Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 4/16/2008 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Systems Manual, applicable standard operating procedures, and other related documentation. The original report of subcontracted analysis, if any, is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

Calscience Environmental  
Laboratories, Inc.  
Linda Scharpenberg  
Project Manager

**Analytical Report**

Stratus Environmental, inc.  
3330 Cameron Park Drive, Suite 550  
Cameron Park, CA 95682-8861

Date Received: 04/16/08  
Work Order No: 08-04-1385  
Preparation: EPA 5030B  
Method: EPA 8015B (M)

Project: ARCO 11102

Page 1 of 1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>MW-1</b>	<b>08-04-1385-1-D</b>	<b>04/15/08 12:03</b>	<b>Aqueous</b>	<b>GC 4</b>	<b>04/16/08</b>	<b>04/17/08 09:43</b>	<b>080416B02</b>

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	<u>Units</u>
Gasoline Range Organics (C6-C12)	240	50	1		ug/L
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>	
1,4-Bromofluorobenzene	101	38-134			

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>MW-2</b>	<b>08-04-1385-2-D</b>	<b>04/15/08 11:40</b>	<b>Aqueous</b>	<b>GC 4</b>	<b>04/16/08</b>	<b>04/17/08 10:16</b>	<b>080416B02</b>

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	<u>Units</u>
Gasoline Range Organics (C6-C12)	73	50	1		ug/L
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>	
1,4-Bromofluorobenzene	110	38-134			

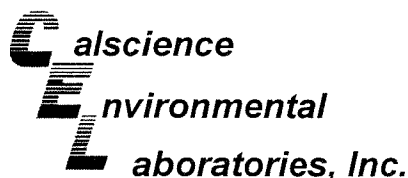
Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>MW-3</b>	<b>08-04-1385-3-D</b>	<b>04/15/08 11:18</b>	<b>Aqueous</b>	<b>GC 4</b>	<b>04/16/08</b>	<b>04/17/08 10:49</b>	<b>080416B02</b>

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	<u>Units</u>
Gasoline Range Organics (C6-C12)	ND	50	1		ug/L
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>	
1,4-Bromofluorobenzene	108	38-134			

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>Method Blank</b>	<b>099-12-695-109</b>	<b>N/A</b>	<b>Aqueous</b>	<b>GC 4</b>	<b>04/16/08</b>	<b>04/17/08 00:03</b>	<b>080416B02</b>

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	<u>Units</u>
Gasoline Range Organics (C6-C12)	ND	50	1		ug/L
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>	
1,4-Bromofluorobenzene	89	38-134			

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers



## Analytical Report

Stratus Environmental, inc.  
3330 Cameron Park Drive, Suite 550  
Cameron Park, CA 95682-8861

Date Received: 04/16/08  
Work Order No: 08-04-1385  
Preparation: EPA 5030B  
Method: EPA 8260B  
Units: ug/L

Project: ARCO 11102

Page 1 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-1	08-04-1385-1-A	04/15/08 12:03	Aqueous	GC/MS Z	04/21/08	04/22/08 02:04	080421L02

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.50	1		Methyl-t-Butyl Ether (MTBE)	5.5	0.50	1	
1,2-Dibromoethane	ND	0.50	1		Tert-Butyl Alcohol (TBA)	84	10	1	
1,2-Dichloroethane	ND	0.50	1		Diisopropyl Ether (DIPE)	ND	0.50	1	
Ethylbenzene	ND	0.50	1		Ethyl-t-Butyl Ether (ETBE)	ND	0.50	1	
Toluene	ND	0.50	1		Tert-Amyl-Methyl Ether (TAME)	ND	0.50	1	
Xylenes (total)	0.73	0.50	1		Ethanol	ND	300	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
1,2-Dichloroethane-d4	104	73-157			Dibromofluoromethane	106	82-142		
Toluene-d8	103	82-112			1,4-Bromofluorobenzene	93	75-105		

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-2	08-04-1385-2-A	04/15/08 11:40	Aqueous	GC/MS Z	04/21/08	04/22/08 02:34	080421L02

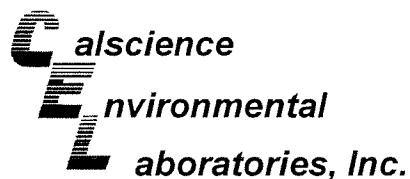
Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	2.5	5		Methyl-t-Butyl Ether (MTBE)	2400	50	100	
1,2-Dibromoethane	ND	2.5	5		Tert-Butyl Alcohol (TBA)	6800	1000	100	
1,2-Dichloroethane	2.8	2.5	5		Diisopropyl Ether (DIPE)	ND	2.5	5	
Ethylbenzene	ND	2.5	5		Ethyl-t-Butyl Ether (ETBE)	ND	2.5	5	
Toluene	ND	2.5	5		Tert-Amyl-Methyl Ether (TAME)	30	2.5	5	
Xylenes (total)	ND	2.5	5		Ethanol	ND	1500	5	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
1,2-Dichloroethane-d4	117	73-157			Dibromofluoromethane	118	82-142		
Toluene-d8	95	82-112			1,4-Bromofluorobenzene	89	75-105		

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-3	08-04-1385-3-A	04/15/08 11:18	Aqueous	GC/MS Z	04/21/08	04/22/08 03:04	080421L02

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	2.5	5		Methyl-t-Butyl Ether (MTBE)	960	25	50	
1,2-Dibromoethane	ND	2.5	5		Tert-Butyl Alcohol (TBA)	ND	50	5	
1,2-Dichloroethane	ND	2.5	5		Diisopropyl Ether (DIPE)	ND	2.5	5	
Ethylbenzene	ND	2.5	5		Ethyl-t-Butyl Ether (ETBE)	ND	2.5	5	
Toluene	ND	2.5	5		Tert-Amyl-Methyl Ether (TAME)	9.2	2.5	5	
Xylenes (total)	ND	2.5	5		Ethanol	ND	1500	5	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
1,2-Dichloroethane-d4	121	73-157			Dibromofluoromethane	119	82-142		
Toluene-d8	94	82-112			1,4-Bromofluorobenzene	88	75-105		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers





## Analytical Report

Stratus Environmental, inc.  
3330 Cameron Park Drive, Suite 550  
Cameron Park, CA 95682-8861

Date Received: 04/16/08  
Work Order No: 08-04-1385  
Preparation: EPA 5030B  
Method: EPA 8260B  
Units: ug/L

Project: ARCO 11102

Page 2 of 2

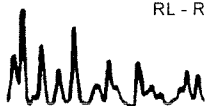
Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	099-12-703-184	N/A	Aqueous	GC/MS Z	04/21/08	04/22/08 00:04	080421L02

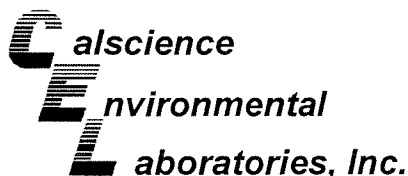
Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.50	1		Methyl-t-Butyl Ether (MTBE)	ND	0.50	1	
1,2-Dibromoethane	ND	0.50	1		Tert-Butyl Alcohol (TBA)	ND	10	1	
1,2-Dichloroethane	ND	0.50	1		Diisopropyl Ether (DIPE)	ND	0.50	1	
Ethylbenzene	ND	0.50	1		Ethyl-t-Butyl Ether (ETBE)	ND	0.50	1	
Toluene	ND	0.50	1		Tert-Amyl-Methyl Ether (TAME)	ND	0.50	1	
Xylenes (total)	ND	0.50	1		Ethanol	ND	300	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
1,2-Dichloroethane-d4	119	73-157			Dibromofluoromethane	113	82-142		
Toluene-d8	97	82-112			1,4-Bromofluorobenzene	91	75-105		

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	099-12-703-185	N/A	Aqueous	GC/MS Z	04/22/08	04/22/08 11:34	080422L01

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.50	1		Methyl-t-Butyl Ether (MTBE)	ND	0.50	1	
1,2-Dibromoethane	ND	0.50	1		Tert-Butyl Alcohol (TBA)	ND	10	1	
1,2-Dichloroethane	ND	0.50	1		Diisopropyl Ether (DIPE)	ND	0.50	1	
Ethylbenzene	ND	0.50	1		Ethyl-t-Butyl Ether (ETBE)	ND	0.50	1	
Toluene	ND	0.50	1		Tert-Amyl-Methyl Ether (TAME)	ND	0.50	1	
Xylenes (total)	ND	0.50	1		Ethanol	ND	300	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
1,2-Dichloroethane-d4	111	73-157			Dibromofluoromethane	113	82-142		
Toluene-d8	98	82-112			1,4-Bromofluorobenzene	88	75-105		

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers





## Analytical Report

Stratus Environmental, inc.  
3330 Cameron Park Drive, Suite 550  
Cameron Park, CA 95682-8861

Date Received: 04/16/08  
Work Order No: 08-04-1385

Project: ARCO 11102

Page 1 of 1

Client Sample Number	Lab Sample Number	Date Collected	Matrix
MW-1	08-04-1385-1	04/15/08	Aqueous

Parameter	Result	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Nitrate (as N)	240	100	1		ug/L	N/A	04/16/08	EPA 300.0
Sulfate	9900	2000	2		ug/L	N/A	04/16/08	EPA 300.0
Hydrogen Sulfide	ND	100	1		ug/L	N/A	04/16/08	HACH Model HS-C
Iron (II)	260	100	1		ug/L	04/16/08	04/16/08	SM3500-FeB

Client Sample Number	Lab Sample Number	Date Collected	Matrix
MW-2	08-04-1385-2	04/15/08	Aqueous

Parameter	Result	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Nitrate (as N)	ND	100	1		ug/L	N/A	04/16/08	EPA 300.0
Sulfate	28000	5000	5		ug/L	N/A	04/16/08	EPA 300.0
Hydrogen Sulfide	ND	100	1		ug/L	N/A	04/16/08	HACH Model HS-C
Iron (II)	ND	100	1		ug/L	04/16/08	04/16/08	SM3500-FeB

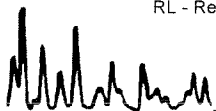
Client Sample Number	Lab Sample Number	Date Collected	Matrix
MW-3	08-04-1385-3	04/15/08	Aqueous

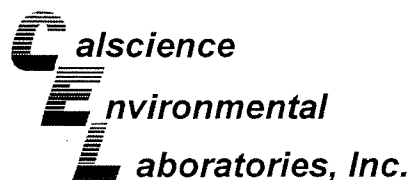
Parameter	Result	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Nitrate (as N)	1600	100	1		ug/L	N/A	04/16/08	EPA 300.0
Sulfate	21000	5000	5		ug/L	N/A	04/16/08	EPA 300.0
Hydrogen Sulfide	ND	100	1		ug/L	N/A	04/16/08	HACH Model HS-C
Iron (II)	ND	100	1		ug/L	04/16/08	04/16/08	SM3500-FeB

Client Sample Number	Lab Sample Number	Date Collected	Matrix
Method Blank			N/A Aqueous

Parameter	Result	RL	DF	Qual	Units	Date Prepared	Date Analyzed	Method
Nitrate (as N)	ND	100	1		ug/L	N/A	04/16/08	EPA 300.0
Sulfate	ND	1000	1		ug/L	N/A	04/16/08	EPA 300.0
Hydrogen Sulfide	ND	100	1		ug/L	N/A	04/16/08	HACH Model HS-C
Iron (II)	ND	100	1		ug/L	04/16/08	04/16/08	SM3500-FeB

RL - Reporting Limit , DF - Dilution Factor , Qual - Qualifiers





## Quality Control - Spike/Spike Duplicate

Stratus Environmental, inc.  
3330 Cameron Park Drive, Suite 550  
Cameron Park, CA 95682-8861

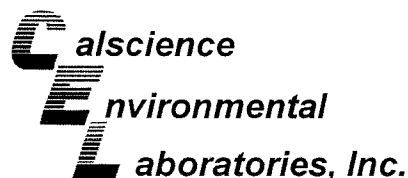
Date Received: 04/16/08  
Work Order No: 08-04-1385  
Preparation: EPA 5030B  
Method: EPA 8015B (M)

Project ARCO 11102

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
08-04-1384-1	Aqueous	GC 4	04/16/08	04/17/08	080416S02

<u>Parameter</u>	<u>MS %REC</u>	<u>MSD %REC</u>	<u>%REC CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Gasoline Range Organics (C6-C12)	102	99	38-134	2	0-25	

RPD - Relative Percent Difference, CL - Control Limit



## Quality Control - Spike/Spike Duplicate

Stratus Environmental, inc.  
3330 Cameron Park Drive, Suite 550  
Cameron Park, CA 95682-8861

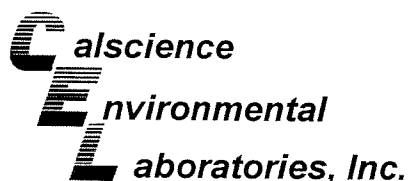
Date Received: 04/16/08  
Work Order No: 08-04-1385  
Preparation: EPA 5030B  
Method: EPA 8260B

Project ARCO 11102

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
08-04-1510-4	Aqueous	GC/MS Z	04/21/08	04/22/08	080421S02

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	105	102	86-122	3	0-8	
Carbon Tetrachloride	103	99	78-138	4	0-9	
Chlorobenzene	105	102	90-120	3	0-9	
1,2-Dibromoethane	107	106	70-130	1	0-30	
1,2-Dichlorobenzene	107	105	89-119	2	0-10	
1,1-Dichloroethene	103	98	52-142	5	0-23	
Ethylbenzene	108	106	70-130	2	0-30	
Toluene	107	104	85-127	3	0-12	
Trichloroethene	100	97	78-126	2	0-10	
Vinyl Chloride	102	93	56-140	10	0-21	
Methyl-t-Butyl Ether (MTBE)	109	108	64-136	1	0-28	
Tert-Butyl Alcohol (TBA)	105	101	27-183	3	0-60	
Diisopropyl Ether (DIPE)	110	108	78-126	2	0-16	
Ethyl-t-Butyl Ether (ETBE)	103	102	67-133	1	0-21	
Tert-Amyl-Methyl Ether (TAME)	100	100	63-141	1	0-21	
Ethanol	108	119	11-167	10	0-64	

RPD - Relative Percent Difference, CL - Control Limit



## Quality Control - Spike/Spike Duplicate

Stratus Environmental, inc.  
3330 Cameron Park Drive, Suite 550  
Cameron Park, CA 95682-8861

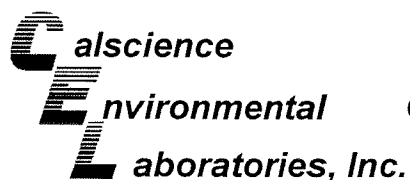
Date Received: 04/16/08  
Work Order No: 08-04-1385  
Preparation: EPA 5030B  
Method: EPA 8260B

Project ARCO 11102

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
08-04-1384-7	Aqueous	GC/MS Z	04/22/08	04/22/08	080422S01

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	95	103	86-122	8	0-8	
Carbon Tetrachloride	89	98	78-138	10	0-9	4
Chlorobenzene	97	104	90-120	7	0-9	
1,2-Dibromoethane	103	109	70-130	6	0-30	
1,2-Dichlorobenzene	99	104	89-119	6	0-10	
1,1-Dichloroethene	89	97	52-142	9	0-23	
Ethylbenzene	100	108	70-130	8	0-30	
Toluene	95	103	85-127	8	0-12	
Trichloroethene	90	98	78-126	9	0-10	
Vinyl Chloride	91	97	56-140	6	0-21	
Methyl-t-Butyl Ether (MTBE)	92	97	64-136	6	0-28	
Tert-Butyl Alcohol (TBA)	98	105	27-183	7	0-60	
Diisopropyl Ether (DIPE)	95	102	78-126	7	0-16	
Ethyl-t-Butyl Ether (ETBE)	89	96	67-133	8	0-21	
Tert-Amyl-Methyl Ether (TAME)	92	99	63-141	8	0-21	
Ethanol	105	114	11-167	8	0-64	

RPD - Relative Percent Difference, CL - Control Limit



Quality Control - Spike/Spike Duplicate

Stratus Environmental, inc.  
 3330 Cameron Park Drive, Suite 550  
 Cameron Park, CA 95682-8861

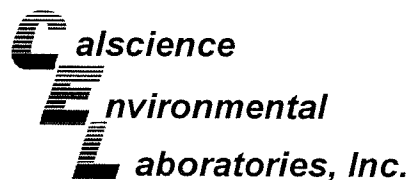
Date Received: N/A  
 Work Order No: 08-04-1385

Project: ARCO 11102

Matrix: Aqueous

Parameter	Method	Quality Control Sample ID	Date Analyzed	Date Extracted	MS% REC	MSD % REC	%REC CL	RPD	RPD CL	Qualifiers
Nitrate (as N)	EPA 300.0	MW-1	04/16/08	N/A	89	89	58-142	0	0-6	
Sulfate	EPA 300.0	MW-1	04/16/08	N/A	107	107	49-133	1	0-3	
Iron (II)	SM3500-FeB	MW-3	04/16/08	4/16/08	98	100	70-130	2	0-25	

RPD - Relative Percent Difference , CL - Control Limit



## Quality Control - Duplicate

Stratus Environmental, inc.  
3330 Cameron Park Drive, Suite 550  
Cameron Park, CA 95682-8861

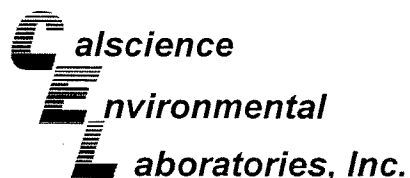
Date Received: N/A  
Work Order No: 08-04-1385

Project: ARCO 11102

Matrix: Aqueous

<u>Parameter</u>	<u>Method</u>	<u>QC Sample ID</u>	<u>Date Analyzed</u>	<u>Sample Conc.</u>	<u>DUP Conc.</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qualifiers</u>
Hydrogen Sulfide	HACH Model HS-C	MW-1	04/16/08	ND	ND	NA	0-25	

RPD - Relative Percent Difference , CL - Control Limit



Quality Control - LCS/LCS Duplicate

Stratus Environmental, inc.  
 3330 Cameron Park Drive, Suite 550  
 Cameron Park, CA 95682-8861

Date Received: N/A  
 Work Order No: 08-04-1385  
 Preparation: EPA 5030B  
 Method: EPA 8015B (M)

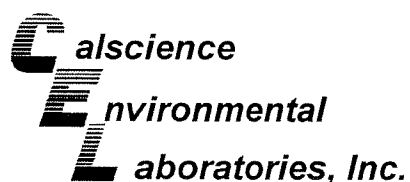
Project: ARCO 11102

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-695-109	Aqueous	GC 4	04/16/08	04/17/08	080416B02

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Gasoline Range Organics (C6-C12)	107	114	78-120	7	0-20	

RPD - Relative Percent Difference , CL - Control Limit





## Quality Control - LCS/LCS Duplicate

Stratus Environmental, inc.  
3330 Cameron Park Drive, Suite 550  
Cameron Park, CA 95682-8861

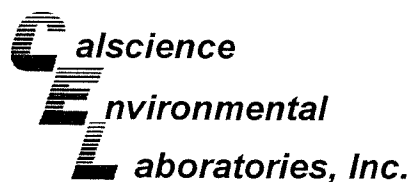
Date Received: N/A  
Work Order No: 08-04-1385  
Preparation: EPA 5030B  
Method: EPA 8260B

Project: ARCO 11102

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-703-184	Aqueous	GC/MS Z	04/21/08	04/21/08	080421L02

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	101	102	87-117	1	0-7	
Carbon Tetrachloride	94	96	78-132	2	0-8	
Chlorobenzene	99	100	88-118	1	0-8	
1,2-Dibromoethane	103	106	80-120	2	0-20	
1,2-Dichlorobenzene	103	104	88-118	1	0-8	
1,1-Dichloroethene	94	97	71-131	2	0-14	
Ethylbenzene	103	103	80-120	1	0-20	
Toluene	100	101	85-127	1	0-7	
Trichloroethene	98	105	85-121	6	0-11	
Vinyl Chloride	93	96	64-136	3	0-10	
Methyl-t-Butyl Ether (MTBE)	106	111	67-133	4	0-16	
Tert-Butyl Alcohol (TBA)	96	98	34-154	2	0-19	
Diisopropyl Ether (DIPE)	103	106	80-122	3	0-8	
Ethyl-t-Butyl Ether (ETBE)	104	106	73-127	3	0-11	
Tert-Amyl-Methyl Ether (TAME)	107	107	69-135	1	0-12	
Ethanol	95	84	34-124	12	0-44	

RPD - Relative Percent Difference , CL - Control Limit



## Quality Control - LCS/LCS Duplicate

Stratus Environmental, inc.  
3330 Cameron Park Drive, Suite 550  
Cameron Park, CA 95682-8861

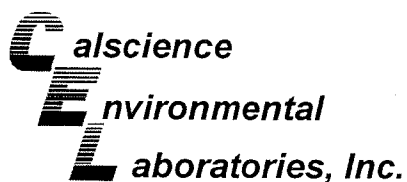
Date Received: N/A  
Work Order No: 08-04-1385  
Preparation: EPA 5030B  
Method: EPA 8260B

Project: ARCO 11102

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-703-185	Aqueous	GC/MS Z	04/22/08	04/22/08	080422L01

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	98	100	87-117	2	0-7	
Carbon Tetrachloride	94	95	78-132	1	0-8	
Chlorobenzene	98	101	88-118	3	0-8	
1,2-Dibromoethane	100	103	80-120	2	0-20	
1,2-Dichlorobenzene	100	104	88-118	4	0-8	
1,1-Dichloroethene	94	94	71-131	0	0-14	
Ethylbenzene	103	105	80-120	1	0-20	
Toluene	98	100	85-127	2	0-7	
Trichloroethene	97	99	85-121	2	0-11	
Vinyl Chloride	95	95	64-136	0	0-10	
Methyl-t-Butyl Ether (MTBE)	92	93	67-133	2	0-16	
Tert-Butyl Alcohol (TBA)	104	97	34-154	8	0-19	
Diisopropyl Ether (DIPE)	96	99	80-122	3	0-8	
Ethyl-t-Butyl Ether (ETBE)	91	94	73-127	4	0-11	
Tert-Amyl-Methyl Ether (TAME)	93	96	69-135	3	0-12	
Ethanol	123	110	34-124	12	0-44	

RPD - Relative Percent Difference , CL - Control Limit



Quality Control - LCS/LCS Duplicate

Stratus Environmental, inc.  
 3330 Cameron Park Drive, Suite 550  
 Cameron Park, CA 95682-8861

Date Received: N/A  
 Work Order No: 08-04-1385

Project: ARCO 11102

Matrix: Aqueous

<u>Parameter</u>	<u>Method</u>	<u>Quality Control Sample ID</u>	<u>Date Extracted</u>	<u>Date Analyzed</u>	<u>LCS % REC</u>	<u>LCSD % REC</u>	<u>%REC CL</u>	<u>RPD</u>	<u>RPD CL</u>	<u>Qual</u>
Nitrate (as N)	EPA 300.0	099-05-118-4,461	N/A	04/16/08	93	88	87-111	5	0-12	
Sulfate	EPA 300.0	099-05-118-4,461	N/A	04/16/08	98	106	89-107	8	0-13	

RPD - Relative Percent Difference , CL - Control Limit

**Calscience**  
**Environmental Laboratories, Inc.**      **Quality Control - Laboratory Control Sample**

Stratus Environmental, inc.  
 3330 Cameron Park Drive, Suite 550  
 Cameron Park, CA 95682-8861

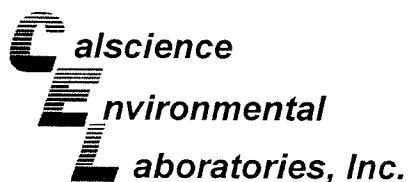
Date Received: N/A  
 Work Order No: 08-04-1385

Project: ARCO 11102

Matrix : Aqueous

<u>Parameter</u>	<u>Method</u>	<u>Quality Control</u> <u>Sample ID</u>	<u>Date</u> <u>Analyzed</u>	<u>Date</u> <u>Extracted</u>	<u>Conc</u> <u>Added</u>	<u>Conc</u> <u>Recovered</u>	<u>LCS</u> <u>%Rec</u>	<u>%Rec</u> <u>CL</u>	<u>Qualifiers</u>
Iron (II)	SM3500-FeB	099-05-111-2,832	04/16/08	04/16/08	1.00	1.03	103	80-120	

RPD - Relative Percent Difference ,      CL - Control Limit



## Glossary of Terms and Qualifiers

Work Order Number: 08-04-1385

<u>Qualifier</u>	<u>Definition</u>
*	See applicable analysis comment.
1	Surrogate compound recovery was out of control due to a required sample dilution, therefore, the sample data was reported without further clarification.
2	Surrogate compound recovery was out of control due to matrix interference. The associated method blank surrogate spike compound was in control and, therefore, the sample data was reported without further clarification.
3	Recovery of the Matrix Spike (MS) or Matrix Spike Duplicate (MSD) compound was out of control due to matrix interference. The associated LCS and/or LCSD was in control and, therefore, the sample data was reported without further clarification.
4	The MS/MSD RPD was out of control due to matrix interference. The LCS/LCSD RPD was in control and, therefore, the sample data was reported without further clarification.
5	The PDS/PDSD associated with this batch of samples was out of control due to a matrix interference effect. The associated batch LCS/LCSD was in control and, hence, the associated sample data was reported with no further corrective action required.
A	Result is the average of all dilutions, as defined by the method.
B	Analyte was present in the associated method blank.
C	Analyte presence was not confirmed on primary column.
E	Concentration exceeds the calibration range.
H	Sample received and/or analyzed past the recommended holding time.
J	Analyte was detected at a concentration below the reporting limit and above the laboratory method detection limit. Reported value is estimated.
N	Nontarget Analyte.
ND	Parameter not detected at the indicated reporting limit.
Q	Spike recovery and RPD control limits do not apply resulting from the parameter concentration in the sample exceeding the spike concentration by a factor of four or greater.
U	Undetected at the laboratory method detection limit.
X	% Recovery and/or RPD out-of-range.
Z	Analyte presence was not confirmed by second column or GC/MS analysis.





bp  
A BP affiliated company

### Chain of Custody Record

Project Name: ARCO 11102  
 BP BU/AR Region/Enfos Segment: BP > Americas > West > Retail > Alameda >  
 State or Lead Regulatory Agency: \_\_\_\_\_  
 Requested Due Date (mm/dd/yy): \_\_\_\_\_

1385

On-site Time: <u>10:40</u>	Temp: <u>59</u>
Off-site Time: <u>12:20</u>	Temp: <u>59</u>
Sky Conditions: <u>clear</u>	
Meteorological Events: <u>N/A</u>	
Wind Speed: <u>0</u>	Direction: <u>N/A</u>

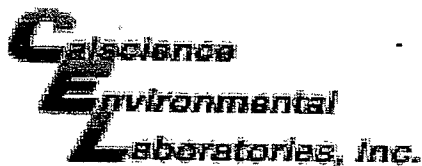
Lab Name: <u>Calscience</u>	BP/AR Facility No.: <u>11102</u>	Consultant/Contractor: <u>Stratus Environmental, Inc.</u>
Address: <u>7440 Lincoln Way</u> <u>Garden Grove, CA 92841</u>	BP/AR Facility Address: <u>100 MacArthur Blvd., Oakland</u>	Address: <u>3330 Cameron Park Drive, Suite 550</u> <u>Cameron Park, CA 95682</u>
Lab PM: <u>Linda Scharpenberg</u>	Site Lat/Long: _____	Consultant/Contractor Project No.: <u>E11102-04</u>
Tele/Fax: <u>714-895-5494 714-895-7501(fax)</u>	California Global ID No.: <u>T0600100908</u>	Consultant/Contractor PM: <u>Jay Johnson</u>
BP/AR PM Contact: <u>Paul Supple</u>	Enfos Project No.: <u>G07T9-0036</u>	Tele/Fax: <u>(530) 676-6000 / (530) 676-6005</u>
Address: <u>2010 Crow Canyon Place, Suite 150</u> <u>San Ramon, CA</u>	Provision or OOC (circle one) <u>Provision</u>	Report Type & QC Level: <u>Level 1 with EDF</u>
Tele/Fax: <u>925-275-3506</u>	Phase/WBS: <u>04-Monitoring</u>	E-mail EDD To: <u>shayes@stratusinc.net</u>
	Sub Phase/Task: <u>03-Analytical</u>	Invoice to: <u>Atlantic Richfield Co.</u>
	Cost Element: <u>01-Contractor labor</u>	

Lab Bottle Order No:				Matrix			Laboratory No.	No. of Containers	Preservative					Requested Analysis										Sample Point Lat/Long and Comments  *Oxy= MTBE,TAME,ETBE,DIPE,TBA
Item No.	Sample Description	Time	Date	Soil/Solid	Water/Liquid	Air			Unpreserved	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	HCl	Methanol	BTEX/Oxy*	1,2-DCA	Ethanol	EDB	H <sub>2</sub> S	Ferrous Fe	NO <sub>3</sub>	SO <sub>4</sub>	GRO by 8015m		
1	MW-1	12:03	4/15/08	X			7			X		X	X	X	X	X	X	X	X	X	X			
2	MW-2	11:40		X			7			X		X	X	X	X	X	X	X	X	X	X			
3	MW-3	11:18		X			7			X		X	X	X	X	X	X	X	X	X	X			
4	TB-11102 4/15/08-5:00	5:00		X			3			X													HOLD	
5																								
6																								
7																								
8																								
9																								
10																								

Sampler's Name: <u>ROBERTO HEIMLICH</u>	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Company: <u>DOULOS ENV.</u>						
Shipment Date:						
Shipment Method:						
Shipment Tracking No: <u>105723805</u>						

Special Instructions: Please cc results to rmillar@broadbentinc.com \*\*short hold\*\*

Custody Seals In Place: Yes / No | Temp Blank: Yes / No | Cooler Temp on Receipt: \_\_\_\_\_ °F/C | Trip Blank: Yes / No | MS/MSD Sample Submitted: Yes / No



WORK ORDER #: 08 - 04 - 1385

Cooler 1 of 1

SAMPLE RECEIPT FORM

CLIENT: Stratus

DATE: 9/16/08

TEMPERATURE - SAMPLES RECEIVED BY:

CALSCIENCE COURIER:

- Chilled, cooler with temperature blank provided.
Chilled, cooler without temperature blank.
Chilled and placed in cooler with wet ice.
Ambient and placed in cooler with wet ice.
Ambient temperature.
C Temperature blank.

LABORATORY (Other than Calscience Courier):

- 4.1 C Temperature blank.
C IR thermometer.
Ambient temperature.

Initial: [Signature]

CUSTODY SEAL INTACT:

Sample(s): Cooler: [checked] No (Not Intact): Not Present:

Initial: [Signature]

SAMPLE CONDITION:

Table with 4 columns: Description, Yes, No, N/A. Rows include Chain-Of-Custody document(s), Sampler's name, Sample container label(s), Sample container(s) intact, Correct containers and volume, Proper preservation, VOA vial(s) free of headspace, Tedlar bag(s) free of condensation.

Initial: [Signature]

COMMENTS:

Blank lines for handwritten comments.

## ATTACHMENT

### FIELD PROCEDURES FOR GROUNDWATER SAMPLING

---

The sampling procedures for groundwater monitoring events are contained in this appendix.

#### Equipment Calibration

Standard groundwater sampling equipment – pH/Conductivity/Temperature meter, and dissolved oxygen (DO) meters are calibrated prior to all field work. All calibration is conducted in accordance with equipment manufacturer's recommended procedure and buffer solutions. MSDS for all buffer solutions are maintained in Stratus vehicles. Calibration is completed everyday prior to field work and also once a week. The pH probe is calibrated for a pH of 7.0 daily and for 4.0, 7.0 and 10.0 weekly. The conductivity probe is calibrated for 1413  $\mu\text{s}$  daily and 1413  $\mu\text{s}$  and 447  $\mu\text{s}$  weekly. The temperature probe is calibrated weekly with a NIST-traceable thermometer. The DO probe is calibrated for 100% oxygen daily and 0% and 100% oxygen weekly. All calibration logs are maintained in the Stratus office.

#### Groundwater and Liquid-Phase Petroleum Hydrocarbon Depth Assessment

Prior to measuring the depth to liquid in the well, the well caps are removed and the liquid level allowed to stabilize. A water/hydrocarbon interface probe is used to assess the liquid-phase petroleum hydrocarbon (LPH) thickness, if present, and a water level indicator is used to measure the groundwater depth in monitoring wells that do not contain LPH. Depth to groundwater or LPH is measured from a datum point at the top of each monitoring well casing. The datum point is typically a notch cut in the north side of the casing edge. If a water level indicator is used, the tip is subjectively analyzed for hydrocarbon sheen.

#### Subjective Analysis of Groundwater

Prior to purging, a water sample is collected from the monitoring well for subjective assessment. The sample is retrieved by gently lowering a clean, disposable bailer to approximately one-half the bailer length past the air/liquid interface. The bailer is then retrieved, and the sample contained within the bailer is examined for floating LPH and the appearance of a LPH sheen.

#### Monitoring Well Sampling

In many cases, determining whether to purge or not to purge wells prior to sample collection is made in the field and is often based on depth to water relative to the screen interval of the well. Site-specific field data sheets present details associated with the purge method and equipment used.



Monitoring wells, when purged, use a pump or bailer until pH, temperature, and conductivity of the purge water has stabilized and a minimum of three well volumes of water has been removed. Field measuring equipment is calibrated and maintained according to the manufacturer's instructions. If three well volumes cannot be removed in one half hour's time the well is allowed to recharge to 80% of original level. After recharging, a groundwater sample is then collected from each of the wells using disposable bailers.

A Teflon bailer, electric submersible or bladder pump will be the only equipment used for well sampling. When samples for volatile organic analysis are being collected, the pump flow will be regulated at approximately 100 milliliters per minute to minimize pump effluent turbulence and aeration. Glass bottles of at least 40-milliliters volume and fitted with Teflon-lined septa will be used in sampling for volatile organics. These bottles will be filled completely to prevent air accumulation in the bottle. A positive meniscus forms when the bottle is completely full. A convex Teflon septum will be placed over the positive meniscus to eliminate air. After the bottle is capped, it is inverted and tapped to verify that it contains no air bubbles. The sample containers for other parameters will be filled, filtered as required, and capped. Glass and plastic bottles used by Stratus to collect groundwater samples are supplied by the laboratory.

### **Groundwater Sample Labeling and Preservation**

Samples are collected in appropriate containers supplied by the laboratory. All required chemical preservation is added to the bottles prior to delivery to Stratus. Sample label information includes a unique sample identification number, job identification number, date, and time. After labeling, all groundwater samples are placed in a Ziploc® type bag and placed in an ice chest cooled to approximately 4° Celsius. Upon arriving at Stratus' office the samples are transferred to a locked refrigerator cooled to approximately 4° Celsius. Chemical preservation is controlled by the required analysis and is noted on the chain-of-custody form. Trip and temperature blanks supplied by the laboratory accompany the groundwater sample containers and groundwater samples.

### **Sample Identification and Chain-of-Custody Procedures**

Sample identification and chain-of-custody procedures document sample possession from the time of collection to ultimate disposal. Each sample container submitted for analysis has a label affixed to identify the job number, sampler, date and time of sample collection, and a sample number unique to that sample. This information, in addition to a description of the sample, field measurements made, sampling methodology, names of on-site personnel, and any other pertinent field observations, is recorded in the field records. The samples are analyzed by a California-certified laboratory.

A chain-of-custody form is used to record possession of the sample from time of collection to its arrival at the laboratory. When the samples are shipped, the person in custody of them relinquishes the samples by signing the chain-of-custody form and noting the time. The sample-control officer at the laboratory verifies sample integrity and confirms that the samples are collected in the proper containers, preserved correctly, and

contain adequate volumes for analysis. These conditions are noted on a Laboratory Sample Receipt Checklist that becomes part of the laboratory report upon request.

If these conditions are met, each sample is assigned a unique log number for identification throughout analysis and reporting. The log number is recorded on the chain-of-custody form and in the legally-required log book maintained by the laboratory. The sample description, date received, client's name, and other relevant information is also recorded.

### **Equipment Cleaning**

All reusable sampling equipments are cleaned using phosphate-free detergents and rinsed with de-ionized water.

**APPENDIX B**

**GEOTRACKER UPLOAD CONFIRMATION**

# Electronic Submittal Information

[Main Menu](#) | [View/Add Facilities](#) | [Upload EDD](#) | [Check EDD](#)

## UPLOADING A GEO\_WELL FILE

Processing is complete. No errors were found!  
Your file has been successfully submitted!

<b>Submittal Title:</b>	2Q08 GEO_WELL 11102
<b>Facility Global ID:</b>	T0600100908
<b>Facility Name:</b>	BP #11102
<b>Submittal Date/Time:</b>	6/16/2008 12:21:59 PM
<b>Confirmation Number:</b>	<b>1497881829</b>

[Back to Main Menu](#)

Logged in as BROADBENT-C  
(CONTRACTOR)

CONTACT SITE [ADMINISTRATOR](#).

# Electronic Submittal Information

[Main Menu](#) | [View/Add Facilities](#) | [Upload EDD](#) | [Check EDD](#)

Your EDF file has been successfully uploaded!

**Confirmation Number:** 3863163173

**Date/Time of Submittal:** 6/16/2008 12:30:17 PM

**Facility Global ID:** T0600100908

**Facility Name:** BP #11102

**Submittal Title:** 2Q08 GW Monitoring

**Submittal Type:** GW Monitoring Report

[Click here](#) to view the detections report for this upload.

<b>BP #11102</b> 100 MACARTHUR OAKLAND, CA 94610	<b>Regional Board - Case #: 01-0985</b> SAN FRANCISCO BAY RWQCB (REGION 2) <b>Local Agency (lead agency) - Case #: RO0000456</b> ALAMEDA COUNTY LOP - (PK)
--	---

<u>CONF #</u>	<u>TITLE</u>	<u>QUARTER</u>
3863163173	2Q08 GW Monitoring	Q2 2008
<u>SUBMITTED BY</u> Broadbent & Associates, Inc.	<u>SUBMIT DATE</u> 6/16/2008	<u>STATUS</u> PENDING REVIEW

## **SAMPLE DETECTIONS REPORT**

# FIELD POINTS SAMPLED	3
# FIELD POINTS WITH DETECTIONS	3
# FIELD POINTS WITH WATER SAMPLE DETECTIONS ABOVE MCL	3
SAMPLE MATRIX TYPES	WATER

## **METHOD QA/QC REPORT**

METHODS USED	A4500SF,E300.0,LPFE3,M8015,SW8260B
TESTED FOR REQUIRED ANALYTES?	Y
LAB NOTE DATA QUALIFIERS	N

## **QA/QC FOR 8021/8260 SERIES SAMPLES**

TECHNICAL HOLDING TIME VIOLATIONS	0
METHOD HOLDING TIME VIOLATIONS	0
LAB BLANK DETECTIONS ABOVE REPORTING DETECTION LIMIT	0
LAB BLANK DETECTIONS	0
DO ALL BATCHES WITH THE 8021/8260 SERIES INCLUDE THE FOLLOWING?	
- LAB METHOD BLANK	Y
- MATRIX SPIKE	Y
- MATRIX SPIKE DUPLICATE	Y
- BLANK SPIKE	Y
- SURROGATE SPIKE	Y

## **WATER SAMPLES FOR 8021/8260 SERIES**

MATRIX SPIKE / MATRIX SPIKE DUPLICATE(S) % RECOVERY BETWEEN 65-135%	Y
MATRIX SPIKE / MATRIX SPIKE DUPLICATE(S) RPD LESS THAN 30%	Y
<b>SURROGATE SPIKES % RECOVERY BETWEEN 85-115%</b>	<b>N</b>
BLANK SPIKE / BLANK SPIKE DUPLICATES % RECOVERY BETWEEN 70-130%	Y

## **SOIL SAMPLES FOR 8021/8260 SERIES**

MATRIX SPIKE / MATRIX SPIKE DUPLICATE(S) % RECOVERY BETWEEN 65-135%	n/a
MATRIX SPIKE / MATRIX SPIKE DUPLICATE(S) RPD LESS THAN 30%	n/a

SURROGATE SPIKES % RECOVERY BETWEEN 70-125% n/a  
BLANK SPIKE / BLANK SPIKE DUPLICATES % RECOVERY BETWEEN 70-130% n/a

---

**FIELD QC SAMPLES**

<u>SAMPLE</u>	<u>COLLECTED</u>	<u>DETECTIONS &gt; REPD</u>
QCTB SAMPLES	N	0
QCEB SAMPLES	N	0
QCAB SAMPLES	N	0

Logged in as BROADBENT-C (CONTRACTOR)

CONTACT SITE [ADMINISTRATOR](#).