



Atlantic Richfield Company  
(a BP affiliated company)

P.O. Box 1257  
San Ramon, CA 94583  
Phone: (925) 275-3801  
Fax: (925) 275-3815

July 27, 2009

Re: Second Quarter, 2009 Ground-Water Monitoring Report  
Atlantic Richfield Company Station #4977  
2770 Castro Valley Boulevard  
Castro Valley, California  
ACEH Case No. RO0002436

**RECEIVED**

11:28 am, Aug 10, 2009

Alameda County  
Environmental Health



“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, 2009 Ground-Water Monitoring Report**  
Atlantic Richfield Company Station #4977  
2770 Castro Valley Boulevard  
Castro Valley, 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*

July, 2009

Project No. 06-82-625

July 27, 2009

Project No. 06-82-625

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

Attn.: Mr. Paul Supple

Re: Second Quarter, 2009 Ground-Water Monitoring Report, Atlantic Richfield Company (a BP affiliated company) Station #4977, 2770 Castro Valley Boulevard, Castro Valley, CA. ACEH Case No. RO0002436.

Dear Mr. Supple:

Provided herein is the *Second Quarter, 2009 Ground-Water Monitoring Report* for Atlantic Richfield Company Station #4977 (herein referred to as Station #4977) located at 2770 Castro Valley Boulevard, Castro Valley, CA (Property). This report presents a summary of Second Quarter, 2009 ground-water monitoring results.

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

Sincerely,

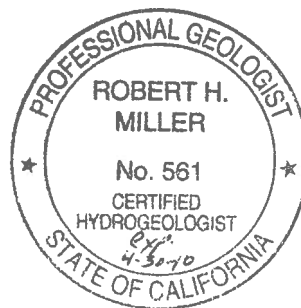
BROADBENT & ASSOCIATES, INC.



Matthew G. Herrick, P.G., C.HG.  
Senior Hydrogeologist



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



Enclosures

cc: Mr. Paresh Khatri, Alameda County Environmental Health (submitted via ACEH ftp site)  
GeoTracker

## STATION #4977 QUARTERLY GROUND-WATER MONITORING REPORT

Facility: #4977 Address: 2770 Castro Valley Boulevard, Castro Valley, CA  
Station #4977 Environmental Business  
Manager: Mr. Paul Supple  
Consulting Co./Contact Persons: Broadbent & Associates, Inc. (BAI) / Rob Miller & Matt Herrick  
Consultant Project No.: 06-82-625  
Facility Permits/Permitting Agency.: NA

### WORK PERFORMED THIS QUARTER (Second Quarter, 2009):

1. Submitted First Quarter, 2009 Ground-Water Monitoring Report. Work performed by BAI.
2. Conducted quarterly ground-water monitoring/sampling for Second Quarter, 2009. Work performed by Stratus Environmental, Inc.

### WORK PROPOSED FOR NEXT QUARTER (Third Quarter, 2009):

1. Submit Second Quarter, 2009 Ground-Water Monitoring Report (contained herein).
2. No environmental work activities are scheduled to be completed during the Third Quarter, 2009.

### QUARTERLY RESULTS SUMMARY:

Current phase of project: Ground-water monitoring/sampling  
Frequency of ground-water sampling: Wells MW-1 through MW-3: Quarterly  
Frequency of ground-water monitoring: Quarterly  
Is free product (FP) present on-site: No  
Current remediation techniques: None  
Depth to ground water (below TOC): 14.51 (MW-2) to 14.91 (MW-1) feet  
General ground-water flow direction: South  
Approximate hydraulic gradient: 0.011 Feet per foot

### DISCUSSION:

Gasoline range organics (GRO) were detected in MW-2 and MW-3 at 11,000 micrograms per liter ( $\mu\text{g/L}$ ) and 490  $\mu\text{g/L}$ , respectively. Benzene was detected in MW-2 and MW-3 at 340  $\mu\text{g/L}$  and 2.1  $\mu\text{g/L}$ , respectively. Ethylbenzene was detected in MW-2 and MW-3 at 490  $\mu\text{g/L}$  and 6.2  $\mu\text{g/L}$ , respectively. Xylenes were detected in MW-2 at 210  $\mu\text{g/L}$ . Methyl tert-butyl ether (MTBE) was detected in MW-1, MW-2, and MW-3 at concentrations ranging from 0.60  $\mu\text{g/L}$  (MW-1) to 34  $\mu\text{g/L}$  (MW-2). Tert-Butyl Alcohol (TBA) was detected in MW-3 at 89  $\mu\text{g/L}$ . No other analytes were detected in ground-water samples collected during Second Quarter, 2009.

Analytes detected during Second Quarter, 2009 were all within the historic minimum and maximum concentration ranges recorded for each well, with the following exceptions: MTBE in wells MW-1 and MW-2 and GRO in well MW-2 are the lowest concentrations historically detected in each well. Ground-water elevations in wells MW-1, MW-2, and MW-3 were at the lowest elevations historically measured in each well.

Drawing 1 depicts a site location map. Drawing 2 shows the ground-water elevation contour and analytical summary map for the Second Quarter, 2009. Table 1 includes a summary of ground-water

monitoring data including relative water elevations and laboratory analyses. Table 2 provides a summary of fuel additives analytical data. Table 3 presents historical ground-water flow direction and gradient.

### **CONSLUSION AND RECOMMENDATION:**

Results of Second Quarter, 2009 ground-water sampling activities indicate a general decrease in dissolved constituent concentrations across the site. The decrease in concentrations is possibly a result of the low water elevations across the site.

The July 9, 2009 ACEH letter approved recommendations included in the Atlantic Richfield Company June 26, 2009 letter to reduce monitoring and sampling to semi-annually to be completed during the second and fourth quarter each year. Therefore, Station #4977 is not scheduled to be sampled during the Third Quarter, 2009.

The ACEH July 9, 2009 letter requested that the sampling frequency of each well and rationale for the proposed sampling schedule be provided in subsequent monitoring reports. It is proposed herein that wells MW-2 and MW-3 be sampled semi-annually and MW-1 be sampled annually. This reflects the following changes from the prior schedule: 1.) wells MW-2 and MW-3 are moved from quarterly sampling interval to semi-annual and 2.) well MW-1 is moved from quarterly sampling interval to annual to be completed during the fourth quarter. The rationale for the proposed sampling frequency is that wells with higher residual dissolved concentrations will be sampled more frequently than those with lower residual dissolved concentrations.

### **CLOSURE:**

The findings presented in this report are based upon: observations of Stratus Environmental, Inc. and/or their subcontractor(s) field personnel (see Appendix A), the points investigated, and results of laboratory tests performed by Calscience Environmental Laboratories, Inc. (Garden Grove, CA). 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.  | Site Location Map, Station #4977, Castro Valley, CA                                                                                                                                                                                      |
| Drawing 2.  | Ground-Water Elevation Contour and Analytical Summary Map, Station #4977, Castro Valley, CA                                                                                                                                              |
| Table 1.    | Summary of Ground-Water Monitoring Data: Relative Water Elevations and Laboratory Analyses, Station #4977, Castro Valley, CA                                                                                                             |
| Table 2.    | Summary of Fuel Additives Analytical Data, Station #4977, Castro Valley, CA                                                                                                                                                              |
| Table 3.    | Historical Ground-Water Flow Direction and Gradient, Station #4977, Castro Valley, CA                                                                                                                                                    |
| Appendix A. | Stratus Environmental, Inc. Ground-Water Sampling Data Package (Includes Field Data Sheets, Non-Hazardous Waste Data Form, Chain of Custody Documentation, Certified Analytical Results, and Field Procedures for Ground-water Sampling) |

Appendix B. GeoTracker Upload Confirmation

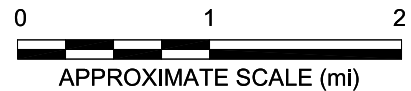
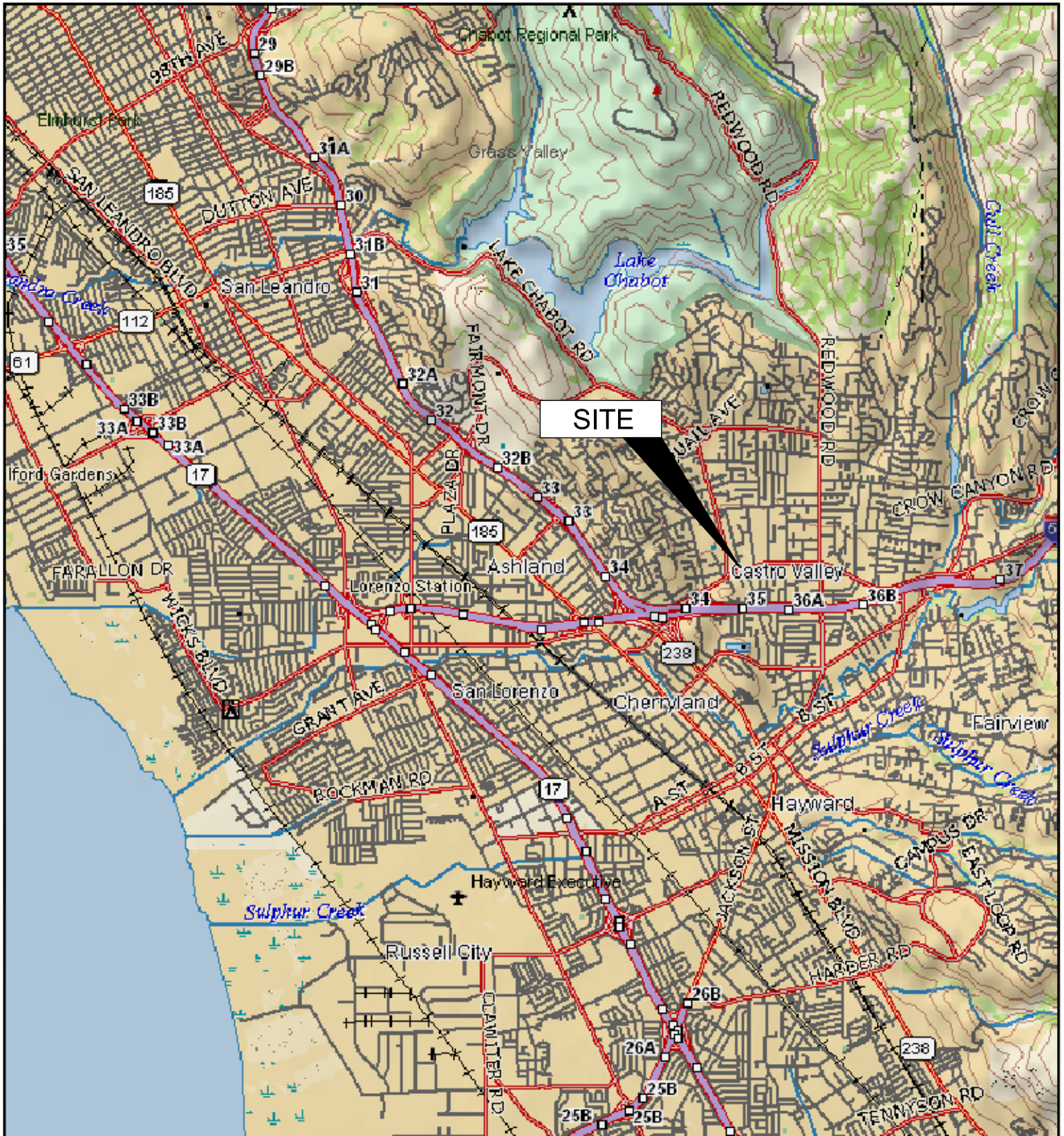
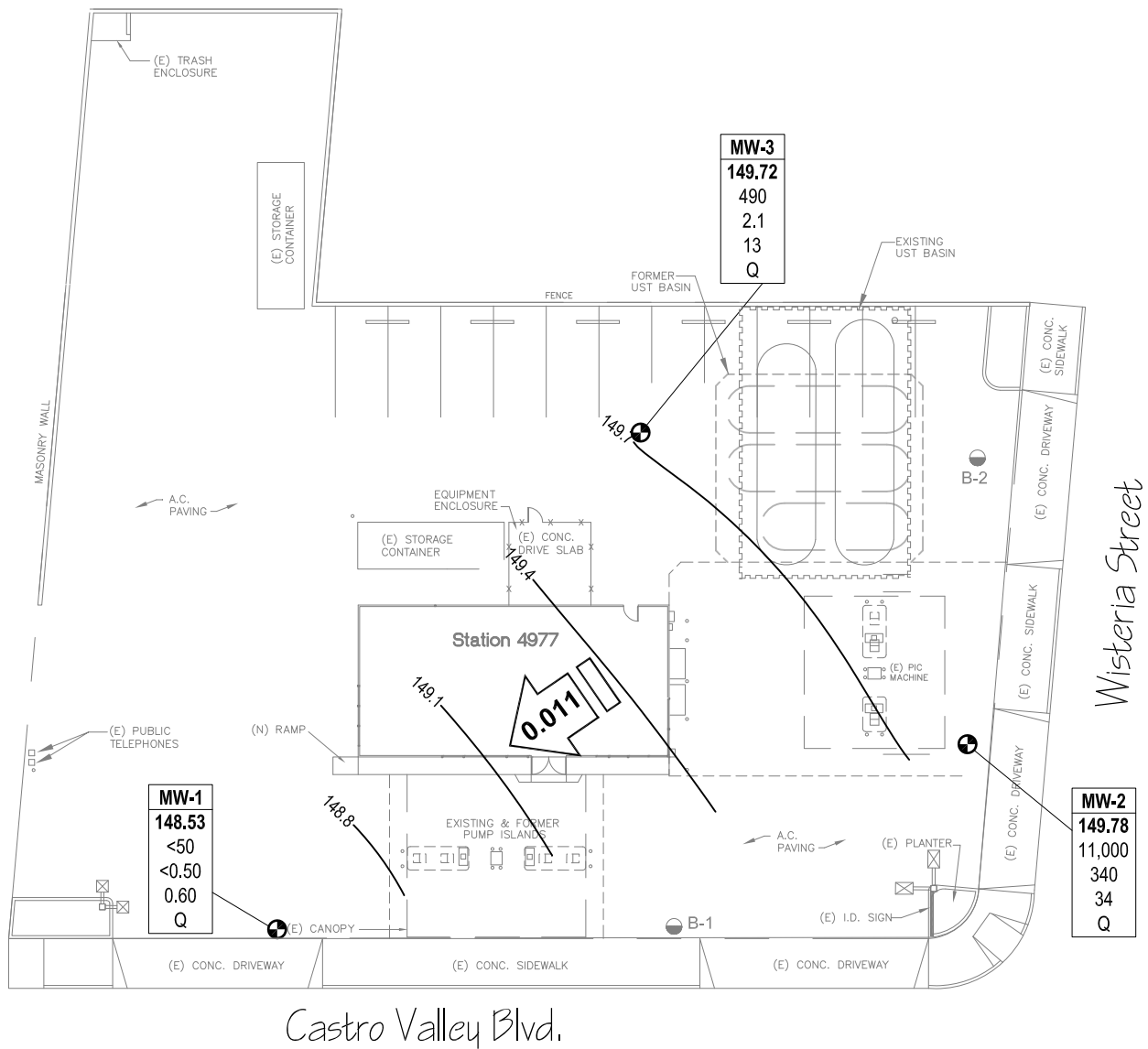


IMAGE SOURCE: DELORME



**LEGEND**

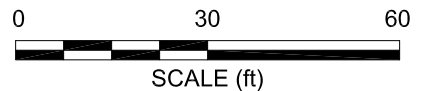
- MONITORING WELL
- SOIL BORING

Well	WELL DESIGNATION
ELEV	GROUND-WATER ELEVATION (FT ABOVE MSL)
GRO	CONCENTRATION OF GRO, BENZENE AND MTBE IN GROUND WATER (µg/L)
BZ	
MTBE	
Q	SAMPLING FREQUENCY

- < NOT DETECTED AT OR ABOVE LABORATORY REPORTING LIMITS
- Q SAMPLED QUARTERLY
- 148.8 GROUND-WATER ELEVATION CONTOUR (FT ABOVE MSL)



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





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

**Station #4977, 2770 Castro Valley Blvd., Castro Valley, CA**

Well and Sample Date	P/NP	Comments	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet bgs)	Water Level Elevation (feet)	Concentrations in (µg/L)						DO (mg/L)	pH
								GRO/TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE		
<b>MW-1</b>															
4/19/2002	--		161.11	5.0	15.0	11.21	149.90	660	12	1.3	4.3	0.8	38	--	--
9/27/2002	--		161.11	5.0	15.0	9.29	151.82	130	7.7	0.87	5.4	0.79	39	1.7	6.9
12/16/2002	--	a	161.11	5.0	15.0	8.55	152.56	77	1.8	<0.50	0.69	<1.0	42	1.6	6.9
3/11/2003	--		161.11	5.0	15.0	8.07	153.04	140	9.8	<0.50	5.6	<0.50	20	1.4	7.4
6/17/2003	--		161.11	5.0	15.0	8.31	152.80	510	60	1.4	81	<1.0	23	2.2	7
9/18/2003	--	b	161.11	5.0	15.0	9.45	151.66	72	2.4	1.4	1.6	1.5	39	2.7	7
12/11/2003	P		161.11	5.0	15.0	8.80	152.31	79	1.5	<0.50	1.5	4.4	48	2.1	7.0
03/11/2004	P		163.44	5.0	15.0	7.61	155.83	<50	1.3	<0.50	0.77	1.3	17	1.4	6.8
06/02/2004	P		163.44	5.0	15.0	8.95	154.49	53	1.4	<0.50	0.93	<0.50	39	2.3	7.1
09/22/2004	P		163.44	5.0	15.0	9.42	154.02	70	<0.50	<0.50	<0.50	<0.50	48	1.7	6.8
12/15/2004	P		163.44	5.0	15.0	7.88	155.56	63	<0.50	<0.50	<0.50	<0.50	45	1.8	6.9
03/07/2005	P		163.44	5.0	15.0	7.02	156.42	<50	<0.50	<0.50	<0.50	<0.50	4.0	2.4	6.8
06/27/2005	P		163.44	5.0	15.0	7.53	155.91	52	2.0	<0.50	1.9	0.78	8.1	2.8	7.1
09/16/2005	P		163.44	5.0	15.0	9.20	154.24	<50	<0.50	<0.50	<0.50	0.76	14	1.82	6.9
12/27/2005	P		163.44	5.0	15.0	7.60	155.84	<50	1.3	<0.50	1.5	<0.50	9.4	2.02	7.87
03/16/2006	P		163.44	5.0	15.0	6.97	156.47	71	3.0	<0.50	3.5	<0.50	3.4	1.6	7.1
6/26/2006	P		163.44	5.0	15.0	8.58	154.86	71	0.69	<0.50	1.1	3.5	3.2	2.2	6.9
9/29/2006	P		163.44	5.0	15.0	8.85	154.59	<50	<0.50	<0.50	<0.50	<0.50	5.2	2.35	6.7
12/19/2006	P		163.44	5.0	15.0	8.00	155.44	<50	<0.50	<0.50	<0.50	<0.50	4.3	4.80	7.21
3/29/2007	P		163.44	5.0	15.0	7.70	155.74	<50	<0.50	<0.50	<0.50	<0.50	2.3	3.44	7.18
6/5/2007	P		163.44	5.0	15.0	8.77	154.67	<50	<0.50	<0.50	<0.50	<0.50	3.2	3.45	7.29
9/25/2007	P		163.44	5.0	15.0	9.18	154.26	<50	<0.50	<0.50	<0.50	<0.50	5.3	2.61	7.41
12/26/2007	P		163.44	5.0	15.0	8.45	154.99	<50	<0.50	<0.50	<0.50	<0.50	2.9	5.57	7.43
3/25/2008	P		163.44	5.0	15.0	8.29	155.15	<50	<0.50	<0.50	<0.50	<0.50	0.94	3.52	7.80
6/10/2008	P		163.44	5.0	15.0	9.17	154.27	<50	<0.50	<0.50	<0.50	<0.50	1.3	3.38	7.01
9/2/2008	P		163.44	5.0	15.0	9.15	154.29	<50	<0.50	<0.50	<0.50	<0.50	5.6	2.30	6.81
12/2/2008	P		163.44	5.0	15.0	8.90	154.54	<50	<0.50	<0.50	<0.50	<0.50	2.7	2.41	6.96
3/5/2009	P		163.44	5.0	15.0	8.05	155.39	<50	<0.50	<0.50	<0.50	<0.50	1.3	2.48	7.47
<b>6/2/2009</b>	<b>P</b>		<b>163.44</b>	<b>5.0</b>	<b>15.0</b>	<b>14.91</b>	<b>148.53</b>	<b>&lt;50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>0.60</b>	<b>0.83</b>	<b>7.01</b>
<b>MW-2</b>															

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

**Station #4977, 2770 Castro Valley Blvd., Castro Valley, CA**

Well and Sample Date	P/NP	Comments	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet bgs)	Water Level Elevation (feet)	Concentrations in (µg/L)						DO (mg/L)	pH
								GRO/TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE		
<b>MW-2 Cont.</b>															
4/19/2002	--		161.87	5.0	15.0	6.59	155.28	28,000	970	120	860	6,900	760	--	--
9/27/2002	--		161.87	5.0	15.0	7.18	154.69	17,000	1,400	<50	1,200	3,700	1,400	1.5	6.8
12/16/2002	--	a	161.87	5.0	15.0	7.31	154.56	17,000	1,000	<50	980	3,300	980	1.9	6.8
3/11/2003	--		161.87	5.0	15.0	6.02	155.85	24,000	1,600	70	1,300	4,300	920	1.7	7.4
6/17/2003	--		161.87	5.0	15.0	6.31	155.56	28,000	1,300	55	1,300	4,500	610	1.4	6.9
9/18/2003	--		161.87	5.0	15.0	7.61	154.26	19,000	960	63	1,100	3,100	580	2.7	6.8
12/11/2003	P		161.87	5.0	15.0	6.50	155.37	29,000	710	53	1,300	3,800	490	2.0	7.0
03/11/2004	P		164.29	5.0	15.0	6.02	158.27	19,000	830	49	1,500	4,000	410	0.8	6.5
06/02/2004	P		164.29	5.0	15.0	7.14	157.15	25,000	680	<50	1,300	3,900	240	4.3	7.1
09/22/2004	--		164.29	5.0	15.0	7.63	156.66	15,000	980	<25	980	940	390	--	6.7
12/15/2004	P	c	164.29	5.0	15.0	6.48	157.81	22,000	610	26	1,300	3,200	290	0.3	6.9
03/07/2005	P		164.29	5.0	15.0	6.08	158.21	25,000	570	33	1,400	3,900	120	2.3	6.8
06/27/2005	P		164.29	5.0	15.0	6.90	157.39	24,000	630	32	1,200	2,900	86	2.5	7.2
09/16/2005	P		164.29	5.0	15.0	7.66	156.63	25,000	550	<25	1,400	3,000	82	1.41	7.0
12/27/2005	P		164.29	5.0	15.0	5.60	158.69	33,000	540	<25	1,300	2,700	100	2.26	7.19
03/16/2006	P	c	164.29	5.0	15.0	7.25	157.04	29,000	710	<50	1,400	2,600	78	1.4	7.1
6/26/2006	P	c	164.29	5.0	15.0	6.60	157.69	20,000	630	<25	1,200	1,100	110	0.64	6.8
9/29/2006	P		164.29	5.0	15.0	6.85	157.44	24,000	530	<25	1,300	1,800	86	1.36	6.7
12/19/2006	P		164.29	5.0	15.0	6.02	158.27	21,000	500	<25	1,400	1,700	70	1.11	7.42
3/29/2007	P		164.29	5.0	15.0	6.03	158.26	16,000	530	<25	1,100	1,100	80	2.98	7.18
6/5/2007	P		164.29	5.0	15.0	6.85	157.44	21,000	420	<25	1,100	1,100	50	2.09	7.20
9/25/2007	P		164.29	5.0	15.0	7.15	157.14	25,000	620	<25	1,400	1,200	70	3.25	7.59
12/26/2007	P		164.29	5.0	15.0	6.25	158.04	16,000	440	<5.0	760	570	80	1.84	7.66
3/25/2008	P		164.29	5.0	15.0	6.63	157.66	16,000	530	7.8	790	470	96	1.78	7.72
6/10/2008	P		164.29	5.0	15.0	7.04	157.25	14,000	480	<25	730	240	100	1.83	6.96
9/2/2008	P		164.29	5.0	15.0	7.25	157.04	13,000	440	<25	690	240	91	3.09	6.61
12/2/2008	P		164.29	5.0	15.0	6.42	157.87	31,000	490	<10	670	120	97	3.05	7.00
3/5/2009	P		164.29	5.0	15.0	5.83	158.46	16,000	470	<10	490	130	82	2.99	7.35
<b>6/2/2009</b>	<b>P</b>		<b>164.29</b>	<b>5.0</b>	<b>15.0</b>	<b>14.51</b>	<b>149.78</b>	<b>11,000</b>	<b>340</b>	<b>&lt;10</b>	<b>490</b>	<b>210</b>	<b>34</b>	<b>1.07</b>	<b>6.89</b>
<b>MW-3</b>															

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

**Station #4977, 2770 Castro Valley Blvd., Castro Valley, CA**

Well and Sample Date	P/NP	Comments	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet bgs)	Water Level Elevation (feet)	Concentrations in (µg/L)						DO (mg/L)	pH
								GRO/TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE		
<b>MW-3 Cont.</b>															
4/19/2002	--		162.14	5.0	15.0	6.94	155.20	1,200	29	1.1	43	62	1,700	--	--
9/27/2002	--		162.14	5.0	15.0	8.26	153.88	740	7.8	<2.5	6.8	4.4	1,100	1	6.7
12/16/2002	--	a	162.14	5.0	15.0	6.76	155.38	1,200	13	<10	170	88	910	2.3	6.8
3/11/2003	--		162.14	5.0	15.0	6.92	155.22	<2,500	<25	<25	<25	<25	470	1.7	7.5
6/17/2003	--		162.14	5.0	15.0	7.44	154.70	<1,000	<10	<10	14	<10	530	1.9	7
9/18/2003	--		162.14	5.0	15.0	8.43	153.71	470	4.8	<2.5	10	9.2	300	2.9	6.8
12/11/2003	P		162.14	5.0	15.0	6.72	155.42	<500	<5.0	<5.0	7.0	13	180	1.9	6.9
03/11/2004	P		164.53	5.0	15.0	6.09	158.44	360	1.9	<1.0	5.6	5.0	110	2.6	6.8
06/02/2004	P		164.53	5.0	15.0	7.50	157.03	380	2.8	<0.50	8.0	2.1	43	3.6	7.3
09/22/2004	P		164.53	5.0	15.0	8.00	156.53	270	<0.50	<0.50	0.54	<0.50	50	1.8	6.9
12/15/2004	P		164.53	5.0	15.0	6.43	158.10	390	3.5	<0.50	20	3.7	49	1.1	6.9
03/07/2005	P		164.53	5.0	15.0	6.12	158.41	1,900	13	<1.0	93	29	70	2.3	6.8
06/27/2005	P		164.53	5.0	15.0	7.08	157.45	830	4.0	<0.50	13	2.8	33	3.3	7.3
09/16/2005	P		164.53	5.0	15.0	7.28	157.25	320	2.1	<0.50	5.4	0.60	21	2.11	7.0
12/27/2005	P		164.53	5.0	15.0	6.47	158.06	770	6.0	<0.50	33	2.7	36	2.96	7.42
03/16/2006	P		164.53	5.0	15.0	6.10	158.43	1,600	11	<0.50	59	6.4	45	1.4	7.1
6/26/2006	P		164.53	5.0	15.0	6.92	157.61	400	<0.50	<0.50	1.6	2.1	26	2.41	7.0
9/29/2006	P		164.53	5.0	15.0	7.38	157.15	220	0.86	<0.50	2.2	0.58	14	1.95	7.0
12/19/2006	P		164.53	5.0	15.0	6.65	157.88	450	4.3	<0.50	19	1.4	19	3.68	7.30
3/29/2007	P		164.53	5.0	15.0	6.92	157.61	390	3.0	<0.50	9.1	0.60	27	1.98	7.16
6/5/2007	P		164.53	5.0	15.0	7.01	157.52	390	1.9	<0.50	6.9	<0.50	20	1.99	7.34
9/25/2007	P		164.53	5.0	15.0	7.52	157.01	260	1.3	<0.50	2.7	<0.50	12	3.44	7.41
12/26/2007	P		164.53	5.0	15.0	6.65	157.88	460	3.1	<0.50	15	0.89	17	4.05	7.46
3/25/2008	P		164.53	5.0	15.0	6.71	157.82	260	0.91	0.71	2.5	0.54	29	2.40	7.63
6/10/2008	P		164.53	5.0	15.0	7.33	157.20	120	<0.50	<0.50	2.0	<0.50	12	2.29	7.59
9/2/2008	P		164.53	5.0	15.0	7.53	157.00	97	<0.50	<0.50	<0.50	<0.50	9.3	3.28	6.81
12/2/2008	P		164.53	5.0	15.0	7.38	157.15	140	<0.50	<0.50	<0.50	<0.50	8.4	3.18	7.06
3/5/2009	P		164.53	5.0	15.0	5.21	159.32	530	3.3	<0.50	22	0.71	18	3.11	7.46
<b>6/2/2009</b>	<b>P</b>		<b>164.53</b>	<b>5.0</b>	<b>15.0</b>	<b>14.81</b>	<b>149.72</b>	<b>490</b>	<b>2.1</b>	<b>&lt;0.50</b>	<b>6.2</b>	<b>&lt;0.50</b>	<b>13</b>	<b>0.83</b>	<b>7.03</b>

SYMBOLS AND ABBREVIATIONS:

< = Not detected at or above specified laboratory reporting limits

-- = Not measured, sampled, analyzed, applicable

ft bgs = Feet below ground surface

DO = Dissolved oxygen

DTW = Depth to water in ft bgs

GRO = Gasoline range organics

GWE = Groundwater elevation in ft MSL

mg/L = Milligrams per liter

ft MSL = Feet above mean sea level

MTBE = Methyl tert-butyl ether analyzed by EPA Method 8021B unless otherwise noted (before 12/16/02)

P/NP = Well was purged/not purged prior to sampling

TPH-g = Total petroleum hydrocarbons as gasoline (C5-C9)

TOC = Top of casing measured in ft MSL

µg/L = Micrograms per liter

FOOTNOTES:

a = TPH, benzene, toluene, ethylbenzene, total xylenes, and MTBE analyzed by EPA Method 8260B beginning on 4th quarter sampling event (12/16/02).

b = This sample was originally analyzed within the EPA recommended hold time. Re-analysis for confirmation or dilution was performed past the recommended hold time. The results may still be used for their intended purpose.

c = Sheen in well.

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 inclusion of non-TPH-g analytes within the requested fuel range resulting in a higher concentration being reported.

Wells were re-surveyed on 3/23/2004.

Values for DO and pH were field measurements.

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

GRO analysis was completed by EPA method 8260B (C4-C12) for samples collected from the time period April 2006 through February 4, 2008. The analysis for GRO was changed to EPA method 8015B (C6-C12) for samples collected from the time period February 5, 2008 through the present.

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 #4977, 2770 Castro Valley Blvd., Castro Valley, CA**

Well and Sample Date	Concentrations in (µg/L)								Comments
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
<b>MW-1</b>									
12/16/2002	<50	<5.0	42	<0.50	<0.50	<0.50	<0.50	<0.50	
3/11/2003	<100	<20	20	<0.50	<0.50	<0.50	<0.50	<0.50	
6/17/2003	<200	<40	23	<1.0	<1.0	<1.0	<1.0	<1.0	
9/18/2003	<100	<20	39	<0.50	<0.50	<0.50	<0.50	<0.50	a
12/11/2003	<100	<20	48	<0.50	<0.50	<0.50	<0.50	<0.50	
03/11/2004	<100	<20	17	<0.50	<0.50	<0.50	<0.50	<0.50	
06/02/2004	<100	<20	39	<0.50	<0.50	<0.50	<0.50	<0.50	
09/22/2004	<100	<20	48	<0.50	<0.50	<0.50	<0.50	<0.50	
12/15/2004	<100	<20	45	<0.50	<0.50	<0.50	<0.50	<0.50	a
03/07/2005	<100	<20	4.0	<0.50	<0.50	<0.50	<0.50	<0.50	
06/27/2005	<100	<20	8.1	<0.50	<0.50	<0.50	<0.50	<0.50	
09/16/2005	<100	<20	14	<0.50	<0.50	<0.50	<0.50	<0.50	
12/27/2005	<100	<20	9.4	<0.50	<0.50	<0.50	<0.50	<0.50	b
03/16/2006	<300	<20	3.4	<0.50	<0.50	<0.50	<0.50	<0.50	c
6/26/2006	<300	<20	3.2	<0.50	<0.50	<0.50	<0.50	<0.50	
9/29/2006	<300	<20	5.2	<0.50	<0.50	<0.50	<0.50	<0.50	
12/9/2006	<300	<20	4.3	<0.50	<0.50	<0.50	<0.50	--	b
3/29/2007	<300	<20	2.3	<0.50	<0.50	<0.50	<0.50	<0.50	
6/5/2007	<300	<20	3.2	<0.50	<0.50	<0.50	<0.50	<0.50	
9/25/2007	<300	<20	5.3	<0.50	<0.50	<0.50	<0.50	<0.50	
12/26/2007	<300	<20	2.9	<0.50	<0.50	<0.50	<0.50	<0.50	
3/25/2008	<300	<10	0.94	<0.50	<0.50	<0.50	<0.50	<0.50	
6/10/2008	<300	<10	1.3	<0.50	<0.50	<0.50	<0.50	<0.50	
9/2/2008	<300	<10	5.6	<0.50	<0.50	<0.50	<0.50	<0.50	
12/2/2008	<300	<10	2.7	<0.50	<0.50	<0.50	<0.50	<0.50	
3/5/2009	<300	<10	1.3	<0.50	<0.50	<0.50	<0.50	<0.50	
<b>6/2/2009</b>	<b>&lt;300</b>	<b>&lt;10</b>	<b>0.60</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>									
12/16/2002	<5,000	<500	980	<50	<50	<50	<50	<50	
3/11/2003	<10,000	<2,000	920	<50	<50	<50	<50	<50	
6/17/2003	<10,000	<2,000	610	<50	<50	<50	<50	<50	

**Table 2. Summary of Fuel Additives Analytical Data  
Station #4977, 2770 Castro Valley Blvd., Castro Valley, 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>									
9/18/2003	<5,000	<1,000	580	<25	<25	<25	<25	<25	
12/11/2003	<5,000	<1,000	490	<25	<25	<25	<25	<25	
03/11/2004	<2,000	<400	410	<10	<10	<10	<10	<10	
06/02/2004	<10,000	<2,000	240	<50	<50	<50	<50	<50	
09/22/2004	<5,000	<1,000	390	<25	<25	<25	<25	<25	
12/15/2004	<2,000	<400	290	<10	<10	<10	<10	<10	a
03/07/2005	<5,000	<1,000	120	<25	<25	<25	<25	<25	
06/27/2005	<5,000	<1,000	86	<25	<25	<25	<25	<25	
09/16/2005	<5,000	<1,000	82	<25	<25	<25	<25	<25	
12/27/2005	<5,000	<1,000	100	<25	<25	<25	<25	<25	b
03/16/2006	<30,000	<2,000	78	<50	<50	<50	<50	<50	c
6/26/2006	<15,000	<1,000	110	<25	<25	<25	<25	<25	
9/29/2006	<15,000	<1,000	86	<25	<25	<25	<25	<25	
12/9/2006	<15,000	<1,000	70	<25	<25	<25	<25	--	b
3/29/2007	<15,000	<1,000	80	<25	<25	<25	<25	<25	
6/5/2007	<15,000	<1,000	50	<25	<25	<25	<25	<25	
9/25/2007	<15,000	<1,000	70	<25	<25	<25	<25	<25	
12/26/2007	<3,000	<200	80	<5.0	<5.0	<5.0	<5.0	<5.0	
3/25/2008	<1,500	<50	96	<2.5	<2.5	<2.5	<2.5	<2.5	
6/10/2008	<15,000	<500	100	<25	<25	<25	<25	<25	
9/2/2008	<15,000	<500	91	<25	<25	<25	<25	<25	
12/2/2008	<6,000	<200	97	<10	<10	<10	<10	<10	
3/5/2009	<6,000	<200	82	<10	<10	<10	<10	<10	
<b>6/2/2009</b>	<b>&lt;6,000</b>	<b>&lt;200</b>	<b>34</b>	<b>&lt;10</b>	<b>&lt;10</b>	<b>&lt;10</b>	<b>&lt;10</b>	<b>&lt;10</b>	
<b>MW-3</b>									
12/16/2002	<1,000	<100	910	<10	<10	12	<10	<10	
3/11/2003	<5,000	<1,000	470	<25	<25	<25	<25	<25	
6/17/2003	<2,000	<400	530	<10	<10	<10	<10	<10	
9/18/2003	<500	<100	300	<2.5	<2.5	3.2	<2.5	<2.5	
12/11/2003	<1,000	<200	180	<5.0	<5.0	<5.0	<5.0	<5.0	
03/11/2004	<200	570	110	<1.0	<1.0	<1.0	<1.0	<1.0	

**Table 2. Summary of Fuel Additives Analytical Data  
Station #4977, 2770 Castro Valley Blvd., Castro Valley, CA**

Well and Sample Date	Concentrations in (µg/L)								Comments
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
<b>MW-3 Cont.</b>									
06/02/2004	<100	130	43	<0.50	<0.50	0.56	<0.50	<0.50	
09/22/2004	<100	28	50	<0.50	<0.50	0.51	<0.50	<0.50	
12/15/2004	<100	110	49	<0.50	0.52	0.61	<0.50	<0.50	a
03/07/2005	<200	190	70	<1.0	<1.0	<1.0	<1.0	<1.0	
06/27/2005	<100	130	33	<0.50	<0.50	<0.50	<0.50	<0.50	
09/16/2005	<100	44	21	<0.50	<0.50	<0.50	<0.50	<0.50	
12/27/2005	<100	150	36	<0.50	<0.50	<0.50	<0.50	<0.50	b
03/16/2006	<300	160	45	<0.50	<0.50	0.84	<0.50	<0.50	c
6/26/2006	<300	53	26	<0.50	<0.50	<0.50	<0.50	<0.50	
9/29/2006	<300	55	14	<0.50	<0.50	<0.50	<0.50	<0.50	
12/9/2006	<300	<20	19	<0.50	<0.50	<0.50	<0.50	--	b
3/29/2007	<300	130	27	<0.50	<0.50	<0.50	<0.50	<0.50	
6/5/2007	<300	77	20	<0.50	<0.50	<0.50	<0.50	<0.50	
9/25/2007	<300	30	12	<0.50	<0.50	<0.50	<0.50	<0.50	
12/26/2007	<300	76	17	<0.50	<0.50	<0.50	<0.50	<0.50	
3/25/2008	<300	100	29	<0.50	<0.50	<0.50	<0.50	<0.50	
6/10/2008	<300	25	12	<0.50	<0.50	<0.50	<0.50	<0.50	
9/2/2008	<300	<10	9.3	<0.50	<0.50	<0.50	<0.50	<0.50	
12/2/2008	<300	<10	8.4	<0.50	<0.50	<0.50	<0.50	<0.50	
3/5/2009	<300	98	18	<0.50	<0.50	<0.50	<0.50	<0.50	
<b>6/2/2009</b>	<b>&lt;300</b>	<b>89</b>	<b>13</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>	

SYMBOLS AND ABBREVIATIONS:

< = 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 = This sample was originally analyzed within the EPA recommended hold time. Re-analysis for confirmation or dilution was performed past the recommended hold time. The results may still be used for their intended purpose.

b = Calibration verification for ethanol was within method limits but outside contract limits.

c = Possible high bias for DIPE, 1,2-DCA, and ethanol due to CCV falling outside acceptance criteria.

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 #4977, 2770 Castro Valley Blvd., Castro Valley, CA**

<b>Date Sampled</b>	<b>Approximate Flow Direction</b>	<b>Approximate Hydraulic Gradient</b>
4/19/2002	Southwest	0.038
9/27/2002	Southwest	0.021
12/16/2002	Southeast	0.029
3/11/2003	South	0.024
6/17/2003	South-Southwest	0.022
9/18/2003	South-Southwest	0.022
3/11/2004	South-Southwest	0.024
6/2/2004	South	0.025
9/22/2004	South	0.025
12/15/2004	South	0.020
3/7/2005	South	0.02
6/27/2005	South	0.01
9/16/2005	Southeast	0.03
12/27/2005	South-Southeast	0.02
3/16/2006	Southeast	0.02
6/26/2006	South	0.03
9/29/2006	South	0.025
12/19/2006	South	0.024
3/29/2007	South	0.020
6/5/2007	South	0.027
9/25/2007	South	0.023
12/26/2007	South	0.027
3/25/2008	South	0.026
6/10/2008	South	0.026
9/2/2008	South	0.026
12/2/2008	South	0.028
3/5/2009	South	0.037
<b>6/2/2009</b>	<b>South</b>	<b>0.011</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 ENVIRONMENTAL, INC. GROUND-WATER SAMPLING DATA PACKAGE  
(INCLUDES FIELD DATA SHEETS, NON-HAZARDOUS WASTE DATA FORM, CHAIN  
OF CUSTODY DOCUMENTATION, CERTIFIED ANALYTICAL RESULTS, AND  
FIELD PROCEDURES FOR GROUND-WATER SAMPLING)**



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

June 22, 2009

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

Re: Groundwater Sampling Data Package, ARCO Service Station No. 4977, located at  
2770 Castro Valley Road, Castro Valley, California.

### **General Information**

*Data Submittal Prepared / Reviewed by:* Carol Huff / Jay Johnson

*Phone Number:* (530) 676-6004

*On-Site Supplier Representative:* Jerry Gonzales and Arturo Heimlich

*Sampling Date:* June 2, 2009

*Unusual Field Conditions:* None noted.

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

*Variations from Work Scope:* None noted.

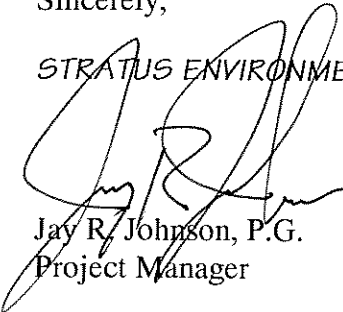
This submittal presents the data collected in association with routine groundwater monitoring. The attachments include field data sheets, non-hazardous waste data form, chain of custody documentation, certified analytical results, and field procedures for groundwater sampling documentation. The information 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.

June 22, 2009

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

AR 1206 DP 19-15

Gauge Date: 6/2/09

Project Name: 2770 Castro Valley Blvd, Castro Valley

Field Technician: Jersey

Project Number: 4977

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	12:10		895	14.91		4"		yes		FW
MW 2	12:28		597	14.51		4"		yes		FW
MW 3	12:19		7.55	14.81		4"		yes		FW

FW = Arturo Heimlich  
 pH/Conductivity/temperature Meter - YSI Model 63  
 DO Meter - YSI 55 Series  
 Please refer to groundwater sampling field procedures

Calibration Date  
 pH 6/2/09  
 Conductivity 6/2/09  
 DO 6/2/09

# BP ALAMEDA PORTFOLIO

## WATER SAMPLE FIELD DATA SHEET

PROJECT #: 4977 PURGED BY: JS WELL ID.: MW-1  
 CLIENT NAME: \_\_\_\_\_ SAMPLED BY: JS SAMPLE ID.: MW-1  
 LOCATION: Castro Valley - 2770 Castro Valley Road QA SAMPLES: \_\_\_\_\_

DATE PURGED 6/2/09 START (2400hr) 1256 END (2400hr) 1259  
 DATE SAMPLED 6/2/09 SAMPLE TIME (2400hr) 1400  
 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) = 14.91 CASING VOLUME (gal) = 3.9  
 DEPTH TO WATER (feet) = 8.95 CALCULATED PURGE (gal) = 11.9  
 WATER COLUMN HEIGHT (feet) = 5.9 ACTUAL PURGE (gal) = 12.0

### FIELD MEASUREMENTS

DATE	TIME (2400hr)	VOLUME (gal)	TEMP. (degrees C)	CONDUCTIVITY (umhos/cm)	pH (units)	COLOR (visual)	TURBIDITY (NTU)
<u>6/2/09</u>	<u>1259</u>	<u>4</u>	<u>22.0</u>	<u>1062</u>	<u>7.00</u>	<u>clear</u>	
<u>/</u>	<u>1258</u>	<u>8</u>	<u>21.4</u>	<u>1086</u>	<u>7.00</u>	<u>/</u>	
<u>/</u>	<u>1259</u>	<u>12</u>	<u>21.3</u>	<u>1116</u>	<u>7.01</u>	<u>/</u>	

SAMPLE DEPTH TO WATER: 9.04 SAMPLE INFORMATION SAMPLE TURBIDITY: clear

80% RECHARGE:  YES  NO ANALYSES: SWO  
 ODOR: no SAMPLE VESSEL / PRESERVATIVE: 6 Vol. HCl

**PURGING EQUIPMENT**

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

Other: \_\_\_\_\_  
 Pump Depth: 14

**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 - 0.83

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

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

PROJECT #: 4977 PURGED BY: JS WELL I.D.: MW 2  
 CLIENT NAME: \_\_\_\_\_ SAMPLED BY: JS SAMPLE I.D.: MW 2  
 LOCATION: Castro Valley - 2770 Castro Valley Road QA SAMPLES: \_\_\_\_\_

DATE PURGED 6/2/09 START (2400hr) 1235 END (2400hr) 1239  
 DATE SAMPLED 6/2/09 SAMPLE TIME (2400hr) 1215  
 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) = 14.51 CASING VOLUME (gal) = 5.7  
 DEPTH TO WATER (feet) = 5.97 CALCULATED PURGE (gal) = 19.1  
 WATER COLUMN HEIGHT (feet) = 8.5 ACTUAL PURGE (gal) = 18.0

FIELD MEASUREMENTS

DATE	TIME (2400hr)	VOLUME (gal)	TEMP. (degrees C)	CONDUCTIVITY (umhos/cm)	pH (units)	COLOR (visual)	TURBIDITY (NTU)
<u>6/2/09</u>	<u>1237</u>	<u>6</u>	<u>21.5</u>	<u>763</u>	<u>7.18</u>	<u>Clear</u>	_____
<u>/</u>	<u>1238</u>	<u>12</u>	<u>22.1</u>	<u>729</u>	<u>6.96</u>	<u> </u>	_____
<u>/</u>	<u>1239</u>	<u>18</u>	<u>21.5</u>	<u>757</u>	<u>6.87</u>	<u> </u>	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____	_____

SAMPLE DEPTH TO WATER: 5.08 SAMPLE INFORMATION SAMPLE TURBIDITY: Clear

80% RECHARGE:  YES \_\_\_\_\_ NO ANALYSES: SLWA  
 ODOR: Yes SAMPLE VESSEL / PRESERVATIVE: 6 Vol. HCC

**PURGING EQUIPMENT**  
 Bladder Pump  Bailer (Teflon)  
 Centrifugal Pump  Bailer (PVC)  
 Submersible Pump  Bailer (Stainless Steel)  
 Peristaltic Pump  Dedicated \_\_\_\_\_  
 Other: \_\_\_\_\_  
 Pump Depth: 19

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

WELL INTEGRITY: Do. 107 LOCK#: MW2

REMARKS \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

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

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

PROJECT #: 4977 PURGED BY: JS WELL I.D.: MW-3  
 CLIENT NAME: \_\_\_\_\_ SAMPLED BY: JS SAMPLE I.D.: MW-3  
 LOCATION: Castro Valley - 2770 Castro Valley Road QA SAMPLES: \_\_\_\_\_

DATE PURGED 6/2/09 START (2400hr) 1245 END (2400hr) 1248  
 DATE SAMPLED 6/2/09 SAMPLE TIME (2400hr) 1325  
 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) = 14.81 CASING VOLUME (gal) = 4.8  
 DEPTH TO WATER (feet) = 7.55 CALCULATED PURGE (gal) = 14.5  
 WATER COLUMN HEIGHT (feet) = 7.26 ACTUAL PURGE (gal) = 15.0

FIELD MEASUREMENTS

DATE	TIME (2400hr)	VOLUME (gal)	TEMP. (degrees C)	CONDUCTIVITY (umhos/cm)	pH (units)	COLOR (visual)	TURBIDITY (NTU)
<u>6/2/09</u>	<u>1246</u>	<u>5</u>	<u>21.1</u>	<u>710</u>	<u>7.00</u>	<u>clear</u>	
<u>/</u>	<u>1247</u>	<u>10</u>	<u>21.0</u>	<u>697</u>	<u>7.01</u>	<u>/</u>	
<u>/</u>	<u>1248</u>	<u>15</u>	<u>20.6</u>	<u>904</u>	<u>7.03</u>	<u>/</u>	

SAMPLE DEPTH TO WATER: 8.78 SAMPLE INFORMATION SAMPLE TURBIDITY: clear

80% RECHARGE: YES \_\_\_\_\_ NO \_\_\_\_\_ ANALYSES: SWO  
 ODOR: no SAMPLE VESSEL / PRESERVATIVE: 6 Via HCC

PURGING EQUIPMENT

- Bladder Pump
- Centrifugal Pump
- Submersible Pump
- Peristaltic Pump
- Other: \_\_\_\_\_

- Bailer (Teflon)
- Bailer (PVC)
- Bailer (Stainless Steel)
- Dedicated \_\_\_\_\_

Pump Depth: 14

SAMPLING EQUIPMENT

- Bladder Pump
- Centrifugal Pump
- Submersible Pump
- Peristaltic Pump
- Other: \_\_\_\_\_

- Bailer (Teflon)
- Bailer (  PVC or  disposable)
- Bailer (Stainless Steel)
- Dedicated \_\_\_\_\_

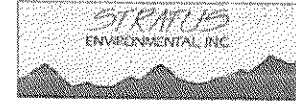
WELL INTEGRITY: good LOCK#: Masta

REMARKS: DO - 0.83

SIGNATURE: \_\_\_\_\_ Page \_\_\_\_ of \_\_\_\_



# WELLHEAD OBSERVATION FORM



Site Name/Number: 4977

Date: 6/2/07

Technician: Jerry

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

**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.)

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

(updated 3-28-08, 58)

NO. 853790

# NON-HAZARDOUS WASTE DATA FORM

1. BESE #

2. Generator's Name and Mailing Address: **INVEST COAST PRODUCTS, LLC**  
 P.O. BOX 5000  
 MARINO SANTA MARGARITA, CA 94962

Generator's Site Address (if different than mailing address):  
 25 JIMMY CROWLEY CT FORTY MARINO, CA 94962

Generator's Phone: (415) 440-0200

3. Transporter 1 Company Name: **WANA Environmental** Phone #: (415) 440-0200

4. Transporter 2 Company Name: **WANA Environmental** Phone #: (415) 440-0200

5. Designated Facility Name and Site Address: **WTRAVI, INC**  
 100 WILSON RD  
 MARINO, CA 94962

Phone #: (415) 440-0200

6. Waste Shipping Name and Description	7. Containers		8. Total Quantity	9. Unit Wt/Vol	10. Protec No.
	No.	Type			
A. <b>NON-HAZARDOUS WATER</b>		TT			
B.					
C.					
D.					

11. Special Handling Instructions and Additional Information:  
 WEAR ALL APPROPRIATE PROTECTIVE CLOTHING  
 WASH PLUNGERS / DECON WATER

12. GENERATOR'S CERTIFICATION: I certify the materials described above on this data form are non-hazardous.

Generator's/Officer's Printed/Typed Name: \_\_\_\_\_ Signature: \_\_\_\_\_ Month: \_\_\_\_\_ Day: \_\_\_\_\_ Year: \_\_\_\_\_

13. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: \_\_\_\_\_ Signature: \_\_\_\_\_ Month: \_\_\_\_\_ Day: \_\_\_\_\_ Year: \_\_\_\_\_

Transporter 2 Printed/Typed Name: \_\_\_\_\_ Signature: \_\_\_\_\_ Month: \_\_\_\_\_ Day: \_\_\_\_\_ Year: \_\_\_\_\_

14. Designated Facility Owner or Operator: Certification of receipt of materials covered by this data form.

Printed/Typed Name: \_\_\_\_\_ Signature: \_\_\_\_\_ Month: \_\_\_\_\_ Day: \_\_\_\_\_ Year: \_\_\_\_\_

GENERATOR

TRANSPORTER

FACILITY

GENERATOR



# Laboratory Management Program LaMP Chain of Custody Record

BP/ARC Project Name: BP 4977

Req Due Date (mm/dd/yy): 14 Day TAT Rush TAT: Yes  No

BP/ARC Facility No: 4977

Lab Work Order Number: \_\_\_\_\_

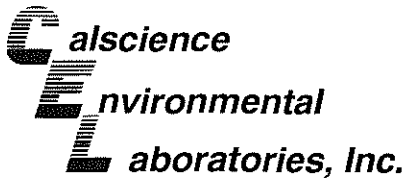
Lab Name: CalScience	BP/ARC Facility Address: 2770 Castro Valley Rd	Consultant/Contractor: Stratus Environmental Inc
Lab Address: 7440 Lincoln Way, Garden Grove, CA 92841	City, State, ZIP Code: Castro Valley, CA	Consultant/Contractor Project No.
Lab PM: Richard Villafania	Lead Regulatory Agency: Alameda	Address: 3330 Cameron Park Drive, #550, Cameron Park, CA 95682
Lab Phone: 714-895-5494 Fax: 714-895-7501	California Global ID No: T0600100089	Consultant/Contractor PM: Jay Johnson
Lab Shipping Acct:	Enfos Proposal No: 000QV-0002	Phone: 530-676-6000 Fax: 530-676-6005
Lab Bottle Order No:	Accounting Mode: Provision <input checked="" type="checkbox"/> OOC-BU <input type="checkbox"/> OOC-RM <input type="checkbox"/>	Email EDD To: <a href="mailto:chuff@stratusinc.net">chuff@stratusinc.net</a>
Other Info:	Stage: Operate Activity: Monitor	Invoice To: BP/ARC <input checked="" type="checkbox"/> Contractor <input type="checkbox"/>

BP/ARC EBM: Paul Supple				Matrix		No. Containers / Preservative					Requested Analyses					Report Type & QC Level		
EBM Phone: (925) 275-3801 FAX (925) 275-3815				Soil / Solid	Water / Liquid	Air / Vapor	Total Number of Containers	Unpreserved	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	HCl	Methanol	GRO by 8015M	BTEX/5 FC* by 8260B	Ethanol by 8260B	EDB by 8260B	1,2-DCA by 8260B	Standard <input checked="" type="checkbox"/>
EBM Email: <a href="mailto:paul.supple@bp.com">paul.supple@bp.com</a>																		Full Data Package <input type="checkbox"/>
Lab No.	Sample Description	Date	Time															
	MW-1	6/2/09	1400	X			6				X	X	X	X	X			
	MW-2	/	1315	X			6			X								
	MW-3	/	1325	X			6			X								
	TB-4977-0602-2009	/	500	X			2			X							ON HOLD	

Sampler's Name: <u>JERRY GONZALES</u>	Relinquished By / Affiliation:	Date: <u>6/2</u>	Time:	Accepted By / Affiliation:	Date:	Time:
Sampler's Company: Stratus Environmental Inc.						
Shipment Method:	Ship Date:					
Shipment Tracking No:						

Special Instructions: TB Sample ON HOLD! Cc results to bpedf@broadbentinc.com

THIS LINE - LAB USE ONLY	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
--------------------------	----------------------------------	----------------------	------------------------------------	----------------------	-----------------------------------



June 16, 2009

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

Subject: **Calscience Work Order No.: 09-06-0351**  
Client Reference: **BP 4977**

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 6/4/2009 and analyzed in accordance with the attached chain-of-custody.

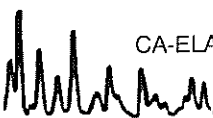
Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Systems Manual, applicable standard operating procedures, and other related documentation. The original report of subcontracted analysis, if any, is provided herein, and follows 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.

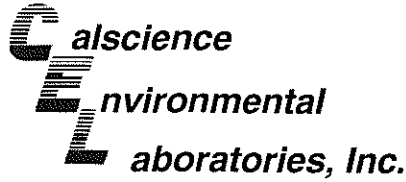
If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

A handwritten signature in black ink, appearing to read 'Richard Villafania', is positioned above the typed name.

Calscience Environmental  
Laboratories, Inc.  
Richard Villafania  
Project Manager





Analytical Report

net c

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

Date Received: 06/04/09  
Work Order No: 09-06-0351  
Preparation: EPA 5030B  
Method: EPA 8015B (M)

Project: BP 4977

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	09-06-0351-1-E	06/02/09 14:00	Aqueous	GC 4	06/10/09	06/10/09 06:34	090609B02

Parameter	Result	RL	DF	Qual	Units
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	113	38-134			

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-2	09-06-0351-2-E	06/02/09 13:15	Aqueous	GC 4	06/10/09	06/11/09 01:04	090610B01

Parameter	Result	RL	DF	Qual	Units
Gasoline Range Organics (C6-C12)	11000	1200	25		ug/L
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>	
1,4-Bromofluorobenzene	113	38-134			

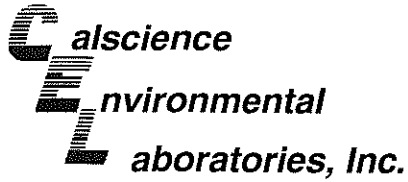
Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-3	09-06-0351-3-E	06/02/09 13:25	Aqueous	GC 4	06/10/09	06/10/09 07:41	090609B02

Parameter	Result	RL	DF	Qual	Units
Gasoline Range Organics (C6-C12)	490	50	1		ug/L
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>	
1,4-Bromofluorobenzene	109	38-134			

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	099-12-695-569	N/A	Aqueous	GC 4	06/09/09	06/09/09 19:33	090609B02

Parameter	Result	RL	DF	Qual	Units
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	116	38-134			

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



Analytical Report

06/10/09  
net c

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

Date Received: 06/04/09  
Work Order No: 09-06-0351  
Preparation: EPA 5030B  
Method: EPA 8015B (M)

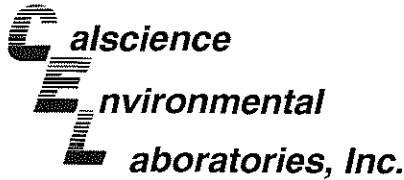
Project: BP 4977

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	099-12-695-570	N/A	Aqueous	GC 4	06/10/09	06/10/09 12:05	090610B01

Parameter	Result	RL	DF	Qual	Units
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	105	38-134			

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



Analytical Report

net c

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

Date Received: 06/04/09  
Work Order No: 09-06-0351  
Preparation: EPA 5030B  
Method: EPA 8260B  
Units: ug/L

Project: BP 4977

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	09-06-0351-1-A	06/02/09 14:00	Aqueous	GC/MS BB	06/09/09	06/10/09 05:03	090609L02

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.50	1		Methyl-t-Butyl Ether (MTBE)	0.60	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	
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>	<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>
1,2-Dichloroethane-d4	93	73-145			Dibromofluoromethane	94	81-135		
Toluene-d8	96	83-119			1,4-Bromofluorobenzene	94	74-110		

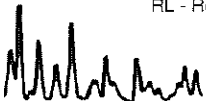
Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-2	09-06-0351-2-A	06/02/09 13:15	Aqueous	GC/MS BB	06/09/09	06/10/09 05:35	090609L02

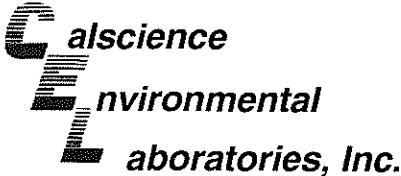
Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	340	10	20		Methyl-t-Butyl Ether (MTBE)	34	10	20	
1,2-Dibromoethane	ND	10	20		Tert-Butyl Alcohol (TBA)	ND	200	20	
1,2-Dichloroethane	ND	10	20		Diisopropyl Ether (DIPE)	ND	10	20	
Ethylbenzene	490	10	20		Ethyl-t-Butyl Ether (ETBE)	ND	10	20	
Toluene	ND	10	20		Tert-Amyl-Methyl Ether (TAME)	ND	10	20	
Xylenes (total)	210	10	20		Ethanol	ND	6000	20	
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>	<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>
1,2-Dichloroethane-d4	98	73-145			Dibromofluoromethane	98	81-135		
Toluene-d8	98	83-119			1,4-Bromofluorobenzene	95	74-110		

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-3	09-06-0351-3-A	06/02/09 13:25	Aqueous	GC/MS BB	06/09/09	06/10/09 06:07	090609L02

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	2.1	0.50	1		Methyl-t-Butyl Ether (MTBE)	13	0.50	1	
1,2-Dibromoethane	ND	0.50	1		Tert-Butyl Alcohol (TBA)	89	10	1	
1,2-Dichloroethane	ND	0.50	1		Diisopropyl Ether (DIPE)	ND	0.50	1	
Ethylbenzene	6.2	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	
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>	<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>
1,2-Dichloroethane-d4	89	73-145			Dibromofluoromethane	94	81-135		
Toluene-d8	96	83-119			1,4-Bromofluorobenzene	100	74-110		

RL - Reporting Limit    DF - Dilution Factor    Qual - Qualifiers





Analytical Report

net c

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

Date Received: 06/04/09  
Work Order No: 09-06-0351  
Preparation: EPA 5030B  
Method: EPA 8260B  
Units: ug/L

Project: BP 4977

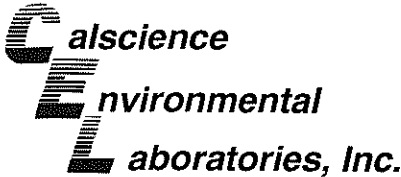
Page 2 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	099-12-703-929	N/A	Aqueous	GC/MS BB	06/09/09	06/10/09 03:27	090609L02

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	
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>	<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>
1,2-Dichloroethane-d4	97	73-145			Dibromofluoromethane	93	81-135		
Toluene-d8	97	83-119			1,4-Bromofluorobenzene	95	74-110		

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





Quality Control - Spike/Spike Duplicate

net c

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

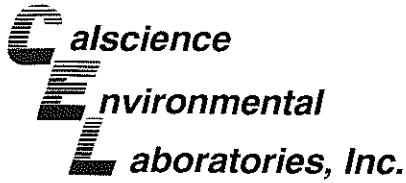
Date Received: 06/04/09  
Work Order No: 09-06-0351  
Preparation: EPA 5030B  
Method: EPA 8015B (M)

Project BP 4977

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
09-06-0208-1	Aqueous	GC 4	06/09/09	06/09/09	090609S02

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Gasoline Range Organics (C6-C12)	101	99	38-134	2	0-25	

RPD - Relative Percent Difference , CL - Control Limit



**Quality Control - Spike/Spike Duplicate**

09-06-0328-1

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

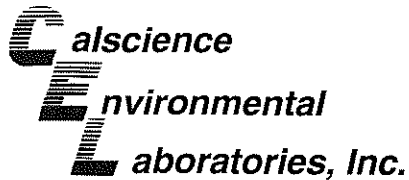
Date Received: 06/04/09  
Work Order No: 09-06-0351  
Preparation: EPA 5030B  
Method: EPA 8015B (M)

Project BP 4977

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
09-06-0328-1	Aqueous	GC 4	06/10/09	06/10/09	090610S01

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Gasoline Range Organics (C6-C12)	91	90	38-134	1	0-25	

RPD - Relative Percent Difference , CL - Control Limit



## Quality Control - Spike/Spike Duplicate

09-06-0353-3  
net c

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

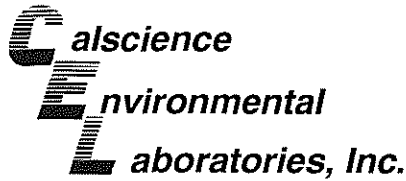
Date Received: 06/04/09  
Work Order No: 09-06-0351  
Preparation: EPA 5030B  
Method: EPA 8260B

Project BP 4977

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
09-06-0353-3	Aqueous	GC/MS BB	06/09/09	06/10/09	090609S02

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	95	96	86-122	1	0-8	
Carbon Tetrachloride	84	87	78-138	3	0-9	
Chlorobenzene	95	97	90-120	2	0-9	
1,2-Dibromoethane	92	94	70-130	2	0-30	
1,2-Dichlorobenzene	96	98	89-119	3	0-10	
1,1-Dichloroethene	94	95	52-142	1	0-23	
Ethylbenzene	87	88	70-130	1	0-30	
Toluene	91	94	85-127	2	0-12	
Trichloroethene	92	95	78-126	3	0-10	
Vinyl Chloride	96	94	56-140	2	0-21	
Methyl-t-Butyl Ether (MTBE)	83	85	64-136	3	0-28	
Tert-Butyl Alcohol (TBA)	79	96	27-183	6	0-60	
Diisopropyl Ether (DIPE)	86	88	78-126	2	0-16	
Ethyl-t-Butyl Ether (ETBE)	82	83	67-133	2	0-21	
Tert-Amyl-Methyl Ether (TAME)	80	82	63-141	3	0-21	
Ethanol	92	111	11-167	18	0-64	

RPD - Relative Percent Difference, CL - Control Limit



Quality Control - LCS/LCS Duplicate

Stratus Environmental, Inc.

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

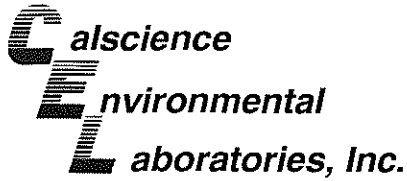
Date Received: N/A  
Work Order No: 09-06-0351  
Preparation: EPA 5030B  
Method: EPA 8015B (M)

Project: BP 4977

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-695-569	Aqueous	GC 4	06/09/09	06/09/09	090609B02

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Gasoline Range Organics (C6-C12)	102	103	78-120	1	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

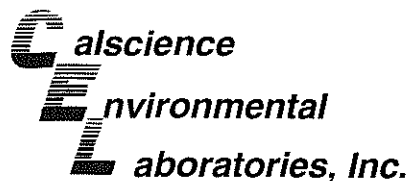
Date Received: N/A  
Work Order No: 09-06-0351  
Preparation: EPA 5030B  
Method: EPA 8015B (M)

Project: BP 4977

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-695-570	Aqueous	GC 4	06/10/09	06/10/09	090610B01

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Gasoline Range Organics (C6-C12)	103	101	78-120	1	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: 09-06-0351  
Preparation: EPA 5030B  
Method: EPA 8260B

Project: BP 4977

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number		
099-12-703-929	Aqueous	GC/MS BB	06/09/09	06/10/09	090609L02		
Parameter	LCS %REC	LCSD %REC	%REC CL	ME CL	RPD	RPD CL	Qualifiers
Benzene	96	93	87-117	82-122	3	0-7	
Carbon Tetrachloride	86	82	78-132	69-141	5	0-8	
Chlorobenzene	99	94	88-118	83-123	5	0-8	
1,2-Dibromoethane	98	97	80-120	73-127	1	0-20	
1,2-Dichlorobenzene	99	97	88-118	83-123	2	0-8	
1,1-Dichloroethene	96	92	71-131	61-141	4	0-14	
Ethylbenzene	92	87	80-120	73-127	5	0-20	
Toluene	95	91	85-127	78-134	5	0-7	
Trichloroethene	101	101	85-121	79-127	0	0-11	
Vinyl Chloride	94	91	64-136	52-148	4	0-10	
Methyl-t-Butyl Ether (MTBE)	89	88	67-133	56-144	1	0-16	
Tert-Butyl Alcohol (TBA)	94	94	34-154	14-174	0	0-19	
Diisopropyl Ether (DIPE)	87	87	80-122	73-129	1	0-8	
Ethyl-t-Butyl Ether (ETBE)	85	85	73-127	64-136	0	0-11	
Tert-Amyl-Methyl Ether (TAME)	86	87	69-135	58-146	1	0-12	
Ethanol	97	108	34-124	19-139	11	0-44	

Total number of LCS compounds : 16

Total number of ME compounds : 0

Total number of ME compounds allowed : 1

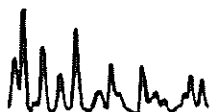
LCS ME CL validation result : Pass

RPD - Relative Percent Difference , CL - Control Limit

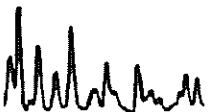
## Glossary of Terms and Qualifiers

Work Order Number: 09-06-0351

<u>Qualifier</u>	<u>Definition</u>
AX	Sample too dilute to quantify surrogate.
BA	Relative percent difference out of control.
BA,AY	BA = Relative percent difference out of control. AY = Matrix interference suspected.
BB	Sample > 4x spike concentration.
BF	Reporting limits raised due to high hydrocarbon background.
BH	Reporting limits raised due to high level of non-target analytes.
BU	Sample analyzed after holding time expired.
BV	Sample received after holding time expired.
BY	Sample received at improper temperature.
BZ	Sample preserved improperly.
CL	Initial analysis within holding time but required dilution.
CQ	Analyte concentration greater than 10 times the blank concentration.
CU	Surrogate concentration diluted to not detectable during analysis.
DF	Reporting limits elevated due to matrix interferences.
DU	Insufficient sample quantity for matrix spike/dup matrix spike.
ET	Sample was extracted past end of recommended max. holding time.
EY	Result exceeds normal dynamic range; reported as a min est.
GR	Internal standard recovery is outside method recovery limit.
IB	CCV recovery above limit; analyte not detected.
IH	Calibrtn. verif. recov. below method CL for this analyte.
IJ	Calibrtn. verif. recov. above method CL for this analyte.
J,DX	J=EPA Flag -Estimated value; DX= Value < lowest standard (MQL), but > than MDL.
LA	Confirmatory analysis was past holding time.
LG,AY	LG= Surrogate recovery below the acceptance limit. AY= Matrix interference suspected.
LH,AY	LH= Surrogate recovery above the acceptance limit. AY= Matrix interference suspected.
LM,AY	LM= MS and/or MSD above acceptance limits. See Blank Spike (LCS). AY= Matrix interference suspected.
LN,AY	LN= MS and/or MSD below acceptance limits. See Blank Spike (LCS). AY= Matrix interference suspected.
LQ	LCS recovery above method control limits.



<u>Qualifier</u>	<u>Definition</u>
LR	LCS recovery below method control limits.
LW	Quantitation of unknown hydrocarbon(s) in sample based on gasoline.
LX	Quantitation of unknown hydrocarbon(s) in sample based on diesel.
MB	Analyte present in the method blank.
PC	Sample taken from VOA vial with air bubble > 6mm diameter.
PI	Primary and confirm results varied by > than 40% RPD.
RB	RPD exceeded method control limit; % recoveries within limits.
SG	A silica gel cleanup procedure was performed. Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture.







# Laboratory Management Program LaMP Chain of Custody Record

BP/ARC Project Name: BP 4977  
 BP/ARC Facility No: 4977

Req Due Date (mm/dd/yy): 14 Day TAT Rush TAT: Yes  No   
 Lab Work Order Number: 09-06-0851

Lab Name: CalScience	BP/ARC Facility Address: 2770 Castro Valley Rd	Consultant/Contractor: Stratus Environmental Inc.
Lab Address: 7440 Lincoln Way, Garden Grove, CA 92841	City, State, ZIP Code: Castro Valley, CA	Consultant/Contractor Project No:
Lab PM: Richard Villafania	Lead Regulatory Agency: Alameda	Address: 3330 Cameron Park Drive, #550, Cameron Park, CA 95682
Lab Phone: 714-895-5494 Fax: 714-895-7501	California Global ID No.: T0600100089	Consultant/Contractor PM: Jay Johnson
Lab Shipping Acctn:	Enfos Proposal No: 000QV-0002	Phone: 530-676-6000 Fax: 530-676-6005
Lab Bottle Order No:	Accounting Mode: Provision <input checked="" type="checkbox"/> OOC-BU <input type="checkbox"/> OOC-RM <input type="checkbox"/>	Email EDD To: <u>chuff@stratusinc.net</u>
Other Info:	Stage: Operate Activity: Monitor	Invoice To: BP/ARC <input checked="" type="checkbox"/> Contractor <input type="checkbox"/>

BP/ARC EBM: Paul Supple				Matrix		No. Containers / Preservative							Requested Analyses					Report Type & QC Level	
EBM Phone: (925) 275-3801 FAX: (925) 275-3815				Soil / Solid	Water / Liquid	Air / Vapor	Total Number of Containers	Unpreserved	H <sub>2</sub> SO <sub>4</sub>	HNO <sub>3</sub>	HCl	Methanol	GRO by 8015M	BTEX/5 FO* by 8260B	Ethanol by 8260B	EDB by 8260B	1,2-DCA by 8260B	Standard <input checked="" type="checkbox"/>	
EBM Email: <u>paul.supple@bp.com</u>																		Full Data Package <input type="checkbox"/>	
Lab No.	Sample Description	Date	Time															Comments	
1	MW-1	6/2/09	1400	X			6				X	X	X	X	X				
2	MW-2	/	1315	X			6				X	X	X	X	X				
3	MW-3	/	1325	X			6				X	X	X	X	X				
4	TB-4977-06022009	/	500	X			2												ON HOLD

Sampler's Name: <u>Jerry Gonzalez</u>	Relinquished By / Affiliation		Date	Time	Accepted By / Affiliation		Date	Time
Sampler's Company: Stratus Environmental Inc.			6/2				6/2/09	1030
Shipment Method: <u>GSU</u> Ship Date:								
Shipment Tracking No: <u>106280017</u>								

Special Instructions: TB Sample ON HOLD! Cc results to bpedf@broadbentinc.com

THIS LINE - LAB USE ONLY: 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

Page 1 of 15

**SAMPLE RECEIPT FORM**

Cooler 1 of 1

CLIENT: Stratus

DATE: 6/14/09

**TEMPERATURE:** (Criteria: 0.0°C – 6.0°C, not frozen)

Temperature 3.6 °C - 0.2°C (CF) = 3.4 °C  Blank  Sample

Sample(s) outside temperature criteria (PM/APM contacted by: \_\_\_\_\_).

Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling.

Received at ambient temperature, placed on ice for transport by Courier.

Ambient Temperature:  Air  Filter  Metals Only  PCBs Only Initial: JR

**CUSTODY SEALS INTACT:**

Cooler  \_\_\_\_\_  No (Not Intact)  Not Present  N/A Initial: JR

Sample  \_\_\_\_\_  No (Not Intact)  Not Present Initial: DL

**SAMPLE CONDITION:**

	Yes	No	N/A
Chain-Of-Custody (COC) document(s) received with samples.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
COC document(s) received complete.....	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Collection date/time, matrix, and/or # of containers logged in based on sample labels.			
<input type="checkbox"/> COC not relinquished. <input type="checkbox"/> No date relinquished. <input checked="" type="checkbox"/> No time relinquished.			
Sampler's name indicated on COC.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample container label(s) consistent with COC.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample container(s) intact and good condition.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Correct containers and volume for analyses requested.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Analyses received within holding time.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Proper preservation noted on COC or sample container.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Unpreserved vials received for Volatiles analysis			
Volatile analysis container(s) free of headspace.....	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tedlar bag(s) free of condensation.....	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

**CONTAINER TYPE:**

Solid:  4ozCGJ  8ozCGJ  16ozCGJ  Sleeve  EnCores®  TerraCores®  \_\_\_\_\_

Water:  VOA  VOAh  VOAna<sub>2</sub>  125AGB  125AGBh  125AGBp  1AGB  1AGBna<sub>2</sub>  1AGBs

500AGB  500AGJ  500AGJs  250AGB  250CGB  250CGBs  1PB  500PB  500PBna

250PB  250PBn  125PB  125PBz<sub>nna</sub>  100PB  100PBna<sub>2</sub>  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_

Air:  Tedlar®  Summa®  \_\_\_\_\_ Other:  \_\_\_\_\_

Container: C: Clear A: Amber P: Plastic G: Glass J: Jar (Wide-mouth) B: Bottle (Narrow-mouth) Checked/Labeled by: DL

Preservative: h: HCL n: HNO<sub>3</sub> na<sub>2</sub>: Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub> Na: NaOH p: H<sub>3</sub>PO<sub>4</sub> s: H<sub>2</sub>SO<sub>4</sub> z<sub>nna</sub>: ZnAc<sub>2</sub>+NaOH f: Field-filtered Reviewed by: DL

Scanned by: DL

## ATTACHMENT

### FIELD PROCEDURES FOR GROUNDWATER SAMPLING

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

#### **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<sup>®</sup> 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**

---

STATE WATER RESOURCES CONTROL BOARD  
**GEOTRACKER ESI**

UPLOADING A GEO\_WELL FILE

**SUCCESS**

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

<b><u>Submittal Type:</u></b>	<b>GEO_WELL</b>
<b><u>Submittal Title:</u></b>	<b>2Q09 GEO_WELL 4977</b>
<b><u>Facility Global ID:</u></b>	<b>T0600100089</b>
<b><u>Facility Name:</u></b>	<b>ARCO #4977</b>
<b><u>File Name:</u></b>	<b>GEO_WELL.zip</b>
<b><u>Organization Name:</u></b>	<b>Broadbent &amp; Associates, Inc.</b>
<b><u>Username:</u></b>	<b>BROADBENT-C</b>
<b><u>IP Address:</u></b>	<b>67.118.40.90</b>
<b><u>Submittal Date/Time:</u></b>	<b>7/9/2009 9:42:52 AM</b>
<b><u>Confirmation Number:</u></b>	<b>1059084236</b>

STATE WATER RESOURCES CONTROL BOARD  
**GEOTRACKER ESI**

UPLOADING A EDF FILE

**SUCCESS**

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

<b><u>Submittal Type:</u></b>	EDF - Monitoring Report - Quarterly
<b><u>Submittal Title:</u></b>	2Q09 GW Monitoring
<b><u>Facility Global ID:</u></b>	T0600100089
<b><u>Facility Name:</u></b>	ARCO #4977
<b><u>File Name:</u></b>	09060351.zip
<b><u>Organization Name:</u></b>	Broadbent & Associates, Inc.
<b><u>Username:</u></b>	BROADBENT-C
<b><u>IP Address:</u></b>	67.118.40.90
<b><u>Submittal Date/Time:</u></b>	7/9/2009 9:43:57 AM
<b><u>Confirmation Number:</u></b>	<b>6642996549</b>

[VIEW QC REPORT](#)

[VIEW DETECTIONS REPORT](#)