



Atlantic Richfield Company  
(a BP affiliated company)

P.O. Box 1257  
San Ramon, CA 94583  
Phone: (925) 275-3801  
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15 July 2009

Re: Second Quarter 2009 Ground-Water Monitoring Report  
Former BP Station # 11124  
3315 High Street  
Oakland, California  
ACEH Case # RO0000239

**RECEIVED**

9:31 am, Jul 29, 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 Manger

**Second Quarter 2009 Ground-Water Monitoring Report**

Former BP Station #11124

3315 High Street  
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*

15 July 2009

Project No. 06-88-652

15 July 2009

Project No. 06-88-652

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

Attn.: Mr. Paul Supple

Re: Second Quarter 2009 Ground-Water Monitoring Report, Former BP Station #11124,  
3315 High Street, Oakland, California; ACEH Case # RO0000239

Dear Mr. Supple:

Attached is the *Second Quarter 2009 Ground-Water Monitoring Report* for Former BP Station #11124 located at 3315 High Street, Oakland California (Site). This report presents a summary of results from ground-water monitoring and sampling conducted at the Site during the Second Quarter of 2009.

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

Sincerely,

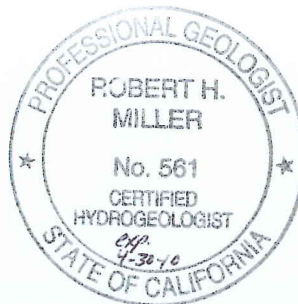
BROADBENT & ASSOCIATES, INC.



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  
Electronic copy uploaded to GeoTracker

## STATION #11124 QUARTERLY GROUND-WATER MONITORING REPORT

Facility: #11124	Address:	3315 High Street, Oakland, California
Environmental Business Manager:		Mr. Paul Supple
Consulting Co./Contact Persons:		Broadbent & Associates, Inc.(BAI)/Rob Miller & Tom Venus (530) 566-1400
Primary Agency/Regulatory ID No.:		Alameda County Environmental Health (ACEH) ACEH Case # RO0000239
Consultant Project No.:		06-88-652
Facility Permits/Permitting Agency:		None

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

1. Submitted First Quarter 2009 Ground-Water Monitoring Report.
2. Conducted ground-water monitoring/sampling for Second Quarter 2009. Work performed by Stratus Environmental, Inc. (Stratus) on 14 May 2009.

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

1. Prepared and submitted Second Quarter 2009 Ground-Water Monitoring Report (contained herein).
2. Negotiate semi-annual ground-water monitoring consistent with the State Water Resources Control Board's Resolution No.2009-0042, adopted 19 May 2009.
3. Conduct quarterly ground-water monitoring/sampling for Third Quarter 2009, if appropriate.

### QUARTERLY RESULTS SUMMARY:

Current phase of project:	<b>Ground-Water Monitoring/Sampling</b>
Frequency of ground-water monitoring:	<b>Quarterly: Wells MW-1, MW-2, MW-4, MW-5 and MW-6</b>
Frequency of ground-water sampling:	<b>Quarterly: Wells MW-1, MW-5 and MW-6</b> <b>Annually (Second Quarter): Wells MW-2 and MW-4</b>
Is free product (FP) present on-site:	<b>No</b>
Current remediation techniques:	<b>NA</b>
Depth to ground water (below TOC):	<b>8.40 ft (MW-4) to 9.77 ft (MW-1)</b>
General ground-water flow direction:	<b>Southwest</b>
Approximate hydraulic gradient:	<b>0.01 ft/ft</b>

### DISCUSSION:

Second quarter 2009 ground-water monitoring/sampling was conducted at Former BP Station #11124 on 14 May 2009 by Stratus personnel. Water levels were gauged in the five wells at the Site. No irregularities were noted during water level gauging. Depth-to-water level measurements ranged from 8.40 ft at MW-4 to 9.77 ft at MW-1. Resulting ground-water surface elevations ranged from 147.57 ft above datum at well MW-1 to 145.83 ft at well MW-2. 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 to the southwest at approximately 0.01 ft/ft, 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. Potentiometric ground-water elevation contours are presented in Drawing 1.

Consistent with the current ground-water sampling schedule, water samples were collected from wells MW-1, MW-2, MW-4, MW-5, and MW-6. No irregularities were reported during sampling. Samples were submitted to Calscience Environmental Laboratories, Inc. (Garden Grove, California)

under chain-of-custody protocol for laboratory analysis of Gasoline Range Organics (GRO, C6-C12) by EPA Method 8015B; Benzene, Toluene, Ethylbenzene, and Total Xylenes (BTEX) by EPA Method 8260B; and Methyl Tert-Butyl Ether (MTBE), Ethyl Tert-Butyl Ether (ETBE), Ethanol, 1,2-Dichloroethane (1,2-DCA), 1,2-Dibromomethane (EDB), Di-Isopropyl Ether (DIPE), Tert-Butyl Alcohol (TBA), and Tert-Amyl Methyl Ether (TAME) by EPA Method 8260B. No significant 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.

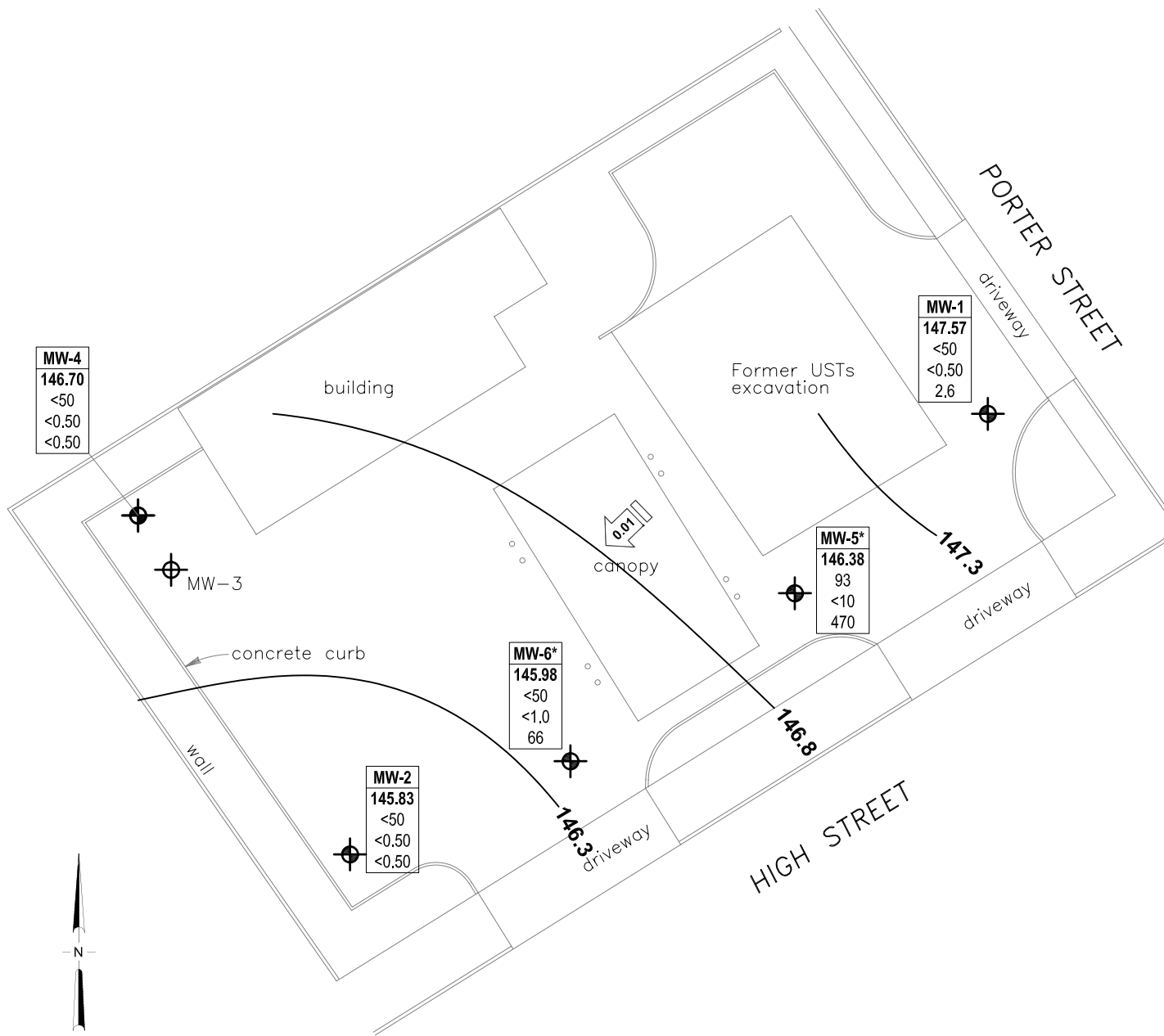
MTBE was detected above the laboratory reporting limit in three of the five wells sampled at concentrations up to 470 micrograms per liter ( $\mu\text{g/L}$ ) in well MW-5. GRO was detected above the laboratory reporting limits in well MW-5 at a concentration of 93  $\mu\text{g/L}$ . Remaining fuel constituents were not detected above their respective laboratory reporting limits in the five wells sampled this quarter. Detected analyte concentrations were within the historic minimum and maximum ranges recorded for each well with the following exception: MTBE reached a historic minimum concentration in well MW-6 (66  $\mu\text{g/L}$ ). 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, 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 Contours and Analytical Summary Map, 5 February 2009, Former BP Service Station #11124, 3315 High Street, Oakland, California
- Table 1. Summary of Ground-Water Monitoring Data: Relative Water Elevations and Laboratory Analyses, Station #11124, 3315 High St., Oakland, California
- Table 2. Summary of Fuel Additives Analytical Data, Station #11124, 3315 High St., Oakland, California
- Table 3. Historical Ground-Water Flow Direction and Gradient, Station #11124, 3315 High St., Oakland, California
- 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 Confirmations



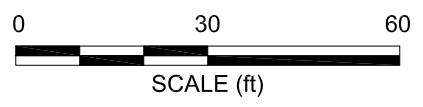
**LEGEND**

- Ground-water monitoring well
- Abandoned monitoring well

Well	Well Designation
ELEV	Ground-water elevation (ft MSL)
GRO	GRO, Benzene & MTBE concentrations (µg/L)
Benzene	
MTBE	

- 146.8 Ground-water elevation (ft MSL)
- \* Elevation not used in contours
- < Not detected at or above laboratory reporting limits
- Ground-water flow direction and gradient (ft/ft)

NOTE: SITE MAP ADAPTED FROM STRATUS ENVIRONMENTAL, INC FIGURES. SITE DIMENSIONS AND FACILITY LOCATIONS NOT VERIFIED.



**BROADBENT & ASSOCIATES, INC.**  
 ENGINEERING, WATER RESOURCES & ENVIRONMENTAL  
 1324 Mangrove Ave., Suite 212 Chico, CA  
 Project No.: 06-88-652 Date: 6/17/09

Former Station #11124  
 3315 High Street  
 Oakland, California

Ground-Water Elevation Contours  
 and Analytical Summary Map  
 14 May 2009

Drawing  
**1**

**Table 1. Summary of Ground-Water Monitoring Data: Relative Water Elevations and Laboratory Analyses**  
**Station #11124, 3315 High St., Oakland, CA**

Well and Sample Date	P/NP	Footnote	TOC Elevation (feet)	DTW (feet bgs)	Product Thickness (feet)	Water Level Elevation (feet)	Concentrations in (µg/L)						DO (mg/L)	Lab	pH	DRO/TPHd (µg/L)	TOG (µg/L)
							GRO/TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MtBE					
<b>MW-1</b>																	
10/19/2004	P		154.99	10.50	--	144.49	<50	<0.50	<0.50	<0.50	<0.50	14	0.96	SEQM	6.9	--	--
01/13/2005	P		154.99	9.00	--	145.99	<50	<0.50	<0.50	<0.50	<0.50	33	2.5	SEQM	6.4	--	--
02/24/2006	P	c	154.99	10.42	--	144.57	55	<0.50	<0.50	<0.50	<0.50	51	--	SEQM	6.8	--	--
5/30/2006	P		154.99	10.94	--	144.05	50	<0.50	<0.50	<0.50	<0.50	58	--	SEQM	6.6	--	--
8/28/2006	P		154.99	10.61	--	144.38	50	<0.50	<0.50	<0.50	<0.50	<0.50	--	TAMC	7.0	--	--
11/2/2006	P		154.99	10.83	--	144.16	<50	<0.50	<0.50	<0.50	<0.50	9.8	1.40	TAMC	6.99	--	--
2/6/2007	P	d	157.34	9.88	--	147.46	<50	<0.50	<0.50	<0.50	<0.50	1.1	2.76	TAMC	7.10	--	--
3/13/2007	P		157.34	9.62	--	147.72	--	--	--	--	--	--	2.63	TAMC	7.30	<48	--
5/8/2007	P		157.34	9.62	--	147.72	<50	<0.50	<0.50	<0.50	<0.50	19	2.65	TAMC	7.01	<49	--
8/7/2007	P		157.34	10.82	--	146.52	<50	<0.50	<0.50	<0.50	<0.50	5.0	3.15	TAMC	7.33	<49	--
11/13/2007	--		157.34	10.52	--	146.82	--	--	--	--	--	--	4.79	TAMC	6.58	<48	--
12/20/2007	NP	e	157.34	10.47	--	146.87	<50	<0.50	<0.50	<0.50	<0.50	10	1.14	TAMC	6.97	--	--
2/29/2008	P		157.34	9.32	--	148.02	<50	<0.50	<0.50	<0.50	<0.50	7.4	3.14	CEL	7.64	<50	--
5/23/2008	P		157.34	10.73	--	146.61	<50	<0.50	<0.50	<0.50	<0.50	1.9	1.76	CEL	6.83	<50	--
8/20/2008	P		157.34	11.35	--	145.99	<50	<0.50	<0.50	<0.50	<0.50	<0.50	4.01	CEL	6.73	<50	--
11/13/2008	P		157.34	10.73	--	146.61	<50	<0.50	<0.50	<0.50	<0.50	0.92	3.96	CEL	7.07	--	--
2/5/2009	P		157.34	10.43	--	146.91	<50	<0.50	<0.50	<0.50	<0.50	<0.50	3.20	CEL	7.10	--	--
<b>5/14/2009</b>	<b>NP</b>		<b>157.34</b>	<b>9.77</b>	<b>--</b>	<b>147.57</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>2.6</b>	<b>1.63</b>	<b>CEL</b>	<b>6.43</b>	<b>--</b>	<b>--</b>
<b>MW-2</b>																	
10/19/2004	--	b	152.02	9.45	--	142.57	--	--	--	--	--	--	--	--	--	--	--
01/13/2005	P		152.02	6.43	--	145.59	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.47	SEQM	6.4	--	--
02/24/2006	P		152.02	7.88	--	144.14	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	SEQM	6.7	--	--
5/30/2006	P		152.02	7.98	--	144.04	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	SEQM	6.7	--	--
8/28/2006	P		152.02	9.38	--	142.64	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	TAMC	6.7	--	--
11/2/2006	--		152.02	9.85	--	142.17	--	--	--	--	--	--	--	--	--	--	--
2/6/2007	P	d	154.35	8.40	--	145.95	<50	<0.50	<0.50	<0.50	<0.50	<0.50	5.10	TAMC	7.02	--	--
3/13/2007	P		154.35	7.55	--	146.80	--	--	--	--	--	--	4.83	TAMC	7.17	52	--
5/8/2007	P		154.35	7.70	--	146.65	<50	<0.50	<0.50	<0.50	<0.50	<0.50	2.40	TAMC	7.12	<48	--
8/7/2007	P		154.35	9.77	--	144.58	<50	<0.50	<0.50	<0.50	<0.50	<0.50	2.47	TAMC	7.19	<47	--
11/13/2007	--		154.35	9.30	--	145.05	--	--	--	--	--	--	4.90	TAMC	7.02	<48	--

**Table 1. Summary of Ground-Water Monitoring Data: Relative Water Elevations and Laboratory Analyses**  
**Station #11124, 3315 High St., Oakland, CA**

Well and Sample Date	P/NP	Footnote	TOC Elevation (feet)	DTW (feet bgs)	Product Thickness (feet)	Water Level Elevation (feet)	Concentrations in (µg/L)						DO (mg/L)	Lab	pH	DRO/TPHd (µg/L)	TOG (µg/L)
							GRO/TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MtBE					
<b>MW-2 Cont.</b>																	
12/20/2007	NP	e	154.35	9.34	--	145.01	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.62	TAMC	7.44	--	--
2/29/2008	P	f	154.35	7.35	--	147.00	<50	<0.50	<0.50	<0.50	<0.50	<0.50	4.39	CEL	7.76	64	--
5/23/2008	P		154.35	9.28	--	145.07	<50	<0.50	<0.50	<0.50	<0.50	<0.50	0.93	CEL	7.07	<50	--
8/20/2008	P		154.35	10.74	--	143.61	<50	<0.50	<0.50	<0.50	<0.50	<0.50	4.0	CEL	6.91	<50	--
11/13/2008	P		154.35	10.11	--	144.24	<50	<0.50	<0.50	<0.50	<0.50	<0.50	4.03	CEL	7.00	--	--
2/5/2009	--		154.35	9.41	--	144.94	--	--	--	--	--	--	--	--	--	--	--
<b>5/14/2009</b>	<b>NP</b>		<b>154.35</b>	<b>8.52</b>	--	<b>145.83</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>&lt;0.50</b>	<b>1.69</b>	<b>CEL</b>	<b>6.67</b>	--	--
<b>MW-4</b>																	
10/19/2004	P		152.77	9.55	--	143.22	<50	<0.50	<0.50	<0.50	<0.50	<0.50	0.82	SEQM	7.0	--	--
01/13/2005	--	a	152.77	--	--	--	--	--	--	--	--	--	--	--	--	--	--
02/24/2006	P		152.77	7.86	--	144.91	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	SEQM	7.1	--	--
5/30/2006	P		152.77	8.04	--	144.73	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	SEQM	6.9	--	--
8/28/2006	P		152.77	9.36	--	143.41	<50	<0.50	<0.50	<0.50	<0.50	16	--	TAMC	6.5	--	--
11/2/2006	P		152.77	9.92	--	142.85	<50	<0.50	<0.50	<0.50	<0.50	<0.50	2.23	TAMC	6.79	--	--
2/6/2007	P	d	155.10	8.40	--	146.70	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.43	TAMC	7.10	--	--
3/13/2007	P		155.10	7.56	--	147.54	--	--	--	--	--	--	2.53	TAMC	7.18	<49	--
5/8/2007	P		155.10	7.68	--	147.42	<50	<0.50	<0.50	<0.50	<0.50	<0.50	2.78	TAMC	7.28	<48	--
8/7/2007	P		155.10	9.83	--	145.27	<50	<0.50	<0.50	<0.50	<0.50	<0.50	3.70	TAMC	7.13	<48	--
11/13/2007	--		155.10	9.28	--	145.82	--	--	--	--	--	--	5.71	TAMC	7.11	<48	--
12/20/2007	NP	e	155.10	9.23	--	145.87	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.13	TAMC	7.16	--	--
2/29/2008	P		155.10	7.27	--	147.83	<50	<0.50	<0.50	<0.50	<0.50	1.5	4.26	CEL	8.03	<50	--
5/23/2008	P		155.10	9.32	--	145.78	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.43	CEL	7.11	<50	--
8/20/2008	P		155.10	10.86	--	144.24	<50	<0.50	<0.50	<0.50	<0.50	<0.50	4.01	CEL	7.10	<50	--
11/13/2008	P		155.10	10.23	--	144.87	<50	<0.50	<0.50	<0.50	<0.50	<0.50	3.97	CEL	7.09	--	--
2/5/2009	--		155.10	9.32	--	145.78	--	--	--	--	--	--	--	--	--	--	--
<b>5/14/2009</b>	<b>NP</b>		<b>155.10</b>	<b>8.40</b>	--	<b>146.70</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>&lt;0.50</b>	<b>1.96</b>	<b>CEL</b>	<b>7.02</b>	--	--
<b>MW-5</b>																	
3/13/2007	P	d	155.45	8.72	--	146.73	880	<0.50	<0.50	<0.50	<0.50	1,400	1.84	TAMC	7.36	<48	--
5/8/2007	P	c	155.45	8.42	--	147.03	920	<5.0	<5.0	<5.0	<5.0	1,300	3.26	TAMC	7.50	<48	--



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

**Station #11124, 3315 High St., Oakland, CA**

Well and Sample Date	P/NP	Footnote	TOC Elevation (feet)	DTW (feet bgs)	Product Thickness (feet)	Water Level Elevation (feet)	Concentrations in (µg/L)						DO (mg/L)	Lab	pH	DRO/TPHd (µg/L)	TOG (µg/L)
							GRO/TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MtBE					
<b>MW-5 Cont.</b>																	
8/7/2007	P	c	155.45	9.88	--	145.57	1,300	<10	<10	<10	<10	1,600	3.54	TAMC	7.34	<48	--
11/13/2007	P	c	155.45	9.68	--	145.77	950	<10	<10	<10	<10	1,400	4.68	TAMC	6.99	<48	--
2/29/2008	P		155.45	8.15	--	147.30	<50	<0.50	<0.50	<0.50	<0.50	1,100	4.84	CEL	7.93	<50	--
5/23/2008	P		155.45	9.80	--	145.65	<50	<20	<20	<20	<20	1,200	0.49	CEL	6.89	<50	--
8/20/2008	P		155.45	10.88	--	144.57	<50	<20	<20	<20	<20	1,200	3.11	CEL	6.80	<50	--
11/13/2008	P		155.45	12.10	--	143.35	<50	<20	<20	<20	<20	1,100	2.99	CEL	7.16	--	--
2/5/2009	P		155.45	9.64	--	145.81	<50	<20	<20	<20	<20	270	2.87	CEL	7.07	--	--
<b>5/14/2009</b>	<b>P</b>		<b>155.45</b>	<b>9.07</b>	<b>--</b>	<b>146.38</b>	<b>93</b>	<b>&lt;10</b>	<b>&lt;10</b>	<b>&lt;10</b>	<b>&lt;10</b>	<b>470</b>	<b>1.67</b>	<b>CEL</b>	<b>7.02</b>	<b>--</b>	<b>--</b>
<b>MW-6</b>																	
3/13/2007	P	d	154.59	7.82	--	146.77	86	<0.50	<0.50	<0.50	<0.50	88	1.92	TAMC	7.21	<48	--
5/8/2007	P	c	154.59	7.92	--	146.67	88	<0.50	<0.50	<0.50	<0.50	120	1.87	TAMC	7.50	<48	--
8/7/2007	P	c	154.59	9.85	--	144.74	67	<0.50	<0.50	<0.50	<0.50	85	3.60	TAMC	7.25	<47	--
11/13/2007	P	c	154.59	9.71	--	144.88	67	<1.0	<1.0	<1.0	<1.0	98	4.44	TAMC	7.16	<48	--
2/29/2008	P		154.59	8.86	--	145.73	<50	<0.50	<0.50	<0.50	<0.50	130	4.35	CEL	7.82	<50	--
5/23/2008	P		154.59	9.98	--	144.61	<50	<2.5	<2.5	<2.5	<2.5	150	0.62	CEL	7.12	<50	--
8/20/2008	P		154.59	10.98	--	143.61	<50	<2.5	<2.5	<2.5	<2.5	140	2.20	CEL	6.96	<50	--
11/13/2008	P		154.59	10.70	--	143.89	<50	<2.5	<2.5	<2.5	<2.5	160	2.30	CEL	7.13	--	--
2/5/2009	P		154.59	10.85	--	143.74	<50	<2.5	<2.5	<2.5	<2.5	160	2.34	CEL	7.06	--	--
<b>5/14/2009</b>	<b>P</b>		<b>154.59</b>	<b>8.61</b>	<b>--</b>	<b>145.98</b>	<b>&lt;50</b>	<b>&lt;1.0</b>	<b>&lt;1.0</b>	<b>&lt;1.0</b>	<b>&lt;1.0</b>	<b>66</b>	<b>1.81</b>	<b>CEL</b>	<b>6.98</b>	<b>--</b>	<b>--</b>

ABBREVIATIONS AND SYMBOLS:

--- = Not analyzed/measured/applicable  
< = Not detected at or above laboratory reporting limit  
DO = Dissolved oxygen  
ft bgs = Feet below ground surface  
DTW = Depth to water in ft bgs  
GRO = Gasoline range organics  
GWE = Groundwater elevation in ft  
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 in ft  
TPH-g = Total petroleum hydrocarbons as gasoline  
µg/L = Micrograms per liter  
SEQM = Sequoia Analytical Morgan Hill (Laboratory)

FOOTNOTES:

a = Well inaccessible.  
b = Well is dry.  
c = Hydrocarbon result for GRO partly due to individual peak(s) in quantitative range.  
d = Well survey by Morrow Surveying on 12/27/2006.  
e = Well re-sampled due to insufficient laboratory analysis of previous sampling event on 11/13/2007. The depth to water and resulting water level elevation from 11/13/2007 will be used for reporting purposes for Fourth Quarter 2007.  
f = The hydrocarbon pattern for DRO in the sample does not match that of the diesel standard used to calculate results.

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 DO and pH were obtained through field measurements.

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 #11124, 3315 High St., 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>									
10/19/2004	<100	<20	14	<0.50	<0.50	<0.50	<0.50	<0.50	
01/13/2005	<100	<20	33	<0.50	<0.50	<0.50	<0.50	<0.50	
02/24/2006	<300	<20	51	<0.50	<0.50	<0.50	<0.50	<0.50	
5/30/2006	<300	<20	58	<0.50	<0.50	<0.50	<0.50	<0.50	
8/28/2006	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
11/2/2006	<300	<20	9.8	<0.50	<0.50	<0.50	<0.50	<0.50	
2/6/2007	<300	<20	1.1	<0.50	<0.50	<0.50	<0.50	<0.50	
5/8/2007	<300	<20	19	<0.50	<0.50	<0.50	<0.50	<0.50	
8/7/2007	<300	<20	5.0	<0.50	<0.50	<0.50	<0.50	<0.50	
12/20/2007	<300	<20	10	<0.50	<0.50	<0.50	<0.50	<0.50	
2/29/2008	<300	<10	7.4	<0.50	<0.50	<0.50	<0.50	<0.50	
5/23/2008	<300	<10	1.9	<0.50	<0.50	<0.50	<0.50	<0.50	
8/20/2008	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
11/13/2008	<300	<10	0.92	<0.50	<0.50	<0.50	<0.50	<0.50	
2/5/2009	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
<b>5/14/2009</b>	<b>&lt;300</b>	<b>&lt;10</b>	<b>2.6</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>									
01/13/2005	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
02/24/2006	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
5/30/2006	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
8/28/2006	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
2/6/2007	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
5/8/2007	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
8/7/2007	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
12/20/2007	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
2/29/2008	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
5/23/2008	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
8/20/2008	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
11/13/2008	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
<b>5/14/2009</b>	<b>&lt;300</b>	<b>&lt;10</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>&lt;0.50</b>	

**Table 2. Summary of Fuel Additives Analytical Data**  
**Station #11124, 3315 High St., Oakland, CA**

Well and Sample Date	Concentrations in (µg/L)								Comments
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
<b>MW-4</b>									
10/19/2004	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
02/24/2006	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
5/30/2006	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
8/28/2006	<300	<20	16	<0.50	<0.50	<0.50	<0.50	<0.50	
11/2/2006	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
2/6/2007	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
5/8/2007	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
8/7/2007	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
12/20/2007	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
2/29/2008	<300	<10	1.5	<0.50	<0.50	<0.50	<0.50	<0.50	
5/23/2008	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
8/20/2008	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
11/13/2008	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
<b>5/14/2009</b>	<b>&lt;300</b>	<b>&lt;10</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>&lt;0.50</b>	
<b>MW-5</b>									
3/13/2007	<3,000	<200	1,400	<5.0	<5.0	6.5	<5.0	<5.0	
5/8/2007	<3,000	<200	1,300	<0.50	<0.50	7.0	<0.50	<0.50	
8/7/2007	<6,000	<400	1,600	<10	<10	<10	<10	<10	
11/13/2007	<6,000	<400	1,400	<10	<10	<10	<10	<10	
2/29/2008	<300	42	1,100	<0.50	<0.50	4.9	<0.50	<0.50	
5/23/2008	<12,000	<400	1,200	<20	<20	<20	<20	<20	
8/20/2008	<12,000	<400	1,200	<20	<20	<20	<20	<20	
11/13/2008	<12,000	<400	1,100	<20	<20	<20	<20	<20	
2/5/2009	<12,000	<400	270	<20	<20	<20	<20	<20	
<b>5/14/2009</b>	<b>&lt;6,000</b>	<b>&lt;200</b>	<b>470</b>	<b>&lt;10</b>	<b>&lt;10</b>	<b>&lt;10</b>	<b>&lt;10</b>	<b>&lt;10</b>	
<b>MW-6</b>									
3/13/2007	<300	<20	88	<0.50	<0.50	<0.50	<0.50	<0.50	
5/8/2007	<300	<20	120	<0.50	<0.50	0.61	<0.50	<0.50	
8/7/2007	<300	<20	85	<0.50	<0.50	<0.50	<0.50	<0.50	
11/13/2007	<600	<40	98	<1.0	<1.0	<1.0	<1.0	<1.0	

**Table 2. Summary of Fuel Additives Analytical Data  
Station #11124, 3315 High St., Oakland, CA**

Well and Sample Date	Concentrations in (µg/L)								Comments
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
<b>MW-6 Cont.</b>									
2/29/2008	<300	<10	130	<0.50	<0.50	0.71	<0.50	<0.50	
5/23/2008	<1,500	<50	150	<2.5	<2.5	<2.5	<2.5	<2.5	
8/20/2008	<1,500	<50	140	<2.5	<2.5	<2.5	<2.5	<2.5	
11/13/2008	<1,500	<50	160	<2.5	<2.5	<2.5	<2.5	<2.5	
2/5/2009	<1,500	<50	160	<2.5	<2.5	<2.5	<2.5	<2.5	
<b>5/14/2009</b>	<b>&lt;600</b>	<b>&lt;20</b>	<b>66</b>	<b>&lt;1.0</b>	<b>&lt;1.0</b>	<b>&lt;1.0</b>	<b>&lt;1.0</b>	<b>&lt;1.0</b>	

ABBREVIATIONS AND SYMBOLS:

TBA = tert-Butyl alcohol

MTBE = Methyl tert-butyl ether

DIPE = Di-isopropyl ether

ETBE = Ethyl tert-butyl ether

TAME = tert-Amyl methyl ether

1,2-DCA = 1,2-Dichloroethane

EDB = 1,2-Dibromomethane

µg/L = micrograms per liter

< = Not detected at or above laboratory reporting limit

NOTES:

All fuel oxygenate compounds are 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 #11124, 3315 High St., Oakland, CA**

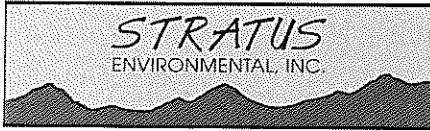
<b>Date Sampled</b>	<b>Approximate Flow Direction</b>	<b>Approximate Hydraulic Gradient</b>
11/12/1990	--	--
7/15/1991	Southwest	0.0174
10/15/1991	Southwest	0.0182
1/15/1992	South-Southwest	0.014
4/17/1992	South	0.014
9/30/1992	South-Southwest	0.018
12/17/1992	North	0.01
3/15/1993	South	0.007
10/19/2004	South-Southwest	0.022
1/13/2005	--	--
2/24/2006	Southeast	0.01
5/30/2006	East-Southeast	0.007
8/28/2006	South	0.012
11/2/2006	South	0.013
3/13/2007	Southwest	0.006
5/8/2007	South-Southwest	0.009
8/7/2007	Southwest	0.01
11/13/2007	Southwest	0.01
12/17/2007	Southwest	0.01
2/29/2008	Southwest	0.009
5/23/2008	Southwest	0.01
8/20/2008	Southwest	0.02
11/13/2008	Southwest	0.02
2/5/2009	Southwest	0.01
<b>5/14/2009</b>	<b>Southwest</b>	<b>0.01</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 20, 2009

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

Re: Groundwater Sampling Data Package, Former BP Service Station No. 11124,  
located at 3315 High Street, Oakland, California

### **General Information**

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

*Phone Number:* (530) 676-6000

*On-Site Supplier Representative:* Jerry Gonzales

*Sampling Date:* May 14, 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.


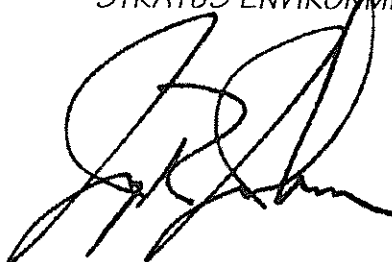
Mr. Rob Miller, Broadbent & Associates, Inc.  
Groundwater Sampling Data Package  
Former BP Service Station No. 11124, Oakland, Ca  
Page 2

May 20, 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**  
**WATER SAMPLE FIELD DATA SHEET**

PROJECT #: 11124 PURGED BY: JS WELL I.D.: MW-1  
 CLIENT NAME: \_\_\_\_\_ SAMPLED BY: JS SAMPLE I.D.: MW-1  
 LOCATION: Oakland - 3315 High Street QA SAMPLES: \_\_\_\_\_

DATE PURGED 5/14/09 START (2400hr) 13:56 END (2400hr) 1358  
 DATE SAMPLED 5/19/09 SAMPLE TIME (2400hr) 1357  
 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) = 31.61 CASING VOLUME (gal) = 3.6  
 DEPTH TO WATER (feet) = 9.77 CALCULATED PURGE (gal) = 11.0  
 WATER COLUMN HEIGHT (feet) = 21.8 ACTUAL PURGE (gal) = No purg

FIELD MEASUREMENTS

DATE	TIME (2400hr)	VOLUME (gal)	TEMP. (degrees C)	CONDUCTIVITY (umhos/cm)	pH (units)	COLOR (visual)	TURBIDITY (NTU)
<u>5/14/09</u>	<u>1358</u>	<u>CE</u>	<u>22.8</u>	<u>301.7</u>	<u>6.43</u>	<u>clear</u>	

SAMPLE DEPTH TO WATER: 9.77 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: \_\_\_\_\_

**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#: none  
 REMARKS: DO-1.63

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

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

PROJECT #: 11124 PURGED BY: JS WELL I.D.: MW-2  
 CLIENT NAME: \_\_\_\_\_ SAMPLED BY: JS SAMPLE I.D.: MW-2  
 LOCATION: Oakland - 3315 High Street QA SAMPLES: \_\_\_\_\_

DATE PURGED 5/19/09 START (2400hr) 14:14 END (2400hr) 14:16  
 DATE SAMPLED 5/19/09 SAMPLE TIME (2400hr) 14:15  
 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) = 28.7 CASING VOLUME (gal) = 3.4  
 DEPTH TO WATER (feet) = 8.52 CALCULATED PURGE (gal) = 10.2  
 WATER COLUMN HEIGHT (feet) = 20.1 ACTUAL PURGE (gal) = Np.

FIELD MEASUREMENTS

DATE	TIME (2400hr)	VOLUME (gal)	TEMP. (degrees C)	CONDUCTIVITY (umhos/cm)	pH (units)	COLOR (visual)	TURBIDITY (NTU)
<u>5/19/09</u>	<u>14:16</u>	<u>0</u>	<u>19.4</u>	<u>583</u>	<u>6.67</u>	<u>Yellow</u>	

SAMPLE INFORMATION

SAMPLE DEPTH TO WATER: 8.52 SAMPLE TURBIDITY: Yellow

80% RECHARGE:  YES  NO ANALYSES: SWO  
 ODOR: NO SAMPLE VESSEL / PRESERVATIVE: 6.0cc-HCL

PURGING EQUIPMENT

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

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#: 11057  
 REMARKS: DO 1.69

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

# BP ALAMEDA PORTFOLIO

## WATER SAMPLE FIELD DATA SHEET

PROJECT #: 11124 PURGED BY: JS WELL I.D.: MW. 4  
 CLIENT NAME: \_\_\_\_\_ SAMPLED BY: SS SAMPLE I.D.: MW. 4  
 LOCATION: Oakland - 3315 High Street QA SAMPLES: \_\_\_\_\_

DATE PURGED 5/14/09 START (2400hr) 19:04 END (2400hr) 14:06  
 DATE SAMPLED 5/14/09 SAMPLE TIME (2400hr) 14:05  
 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) = 30.11 CASING VOLUME (gal) = 3.6  
 DEPTH TO WATER (feet) = 8.40 CALCULATED PURGE (gal) = 11.0  
 WATER COLUMN HEIGHT (feet) = 21.7 ACTUAL PURGE (gal) = NP-0

### FIELD MEASUREMENTS

DATE	TIME (2400hr)	VOLUME (gal)	TEMP. (degrees C)	CONDUCTIVITY (umhos/cm)	pH (units)	COLOR (visual)	TURBIDITY (NTU)
<u>5/14/09</u>	<u>14:06</u>	<u>0</u>	<u>20.1</u>	<u>435.8</u>	<u>7.02</u>	<u>clear</u>	
<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>	<u> </u>
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SAMPLE DEPTH TO WATER: 8.40 SAMPLE INFORMATION SAMPLE TURBIDITY: clear

80% RECHARGE:  YES  NO ANALYSES: SW-0  
 ODOR: NO SAMPLE VESSEL / PRESERVATIVE: 6 Vaatte

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

**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#: 11089  
 REMARKS: Do 196

SIGNATURE: \_\_\_\_\_ Page    of

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

PROJECT #: 11124 PURGED BY: JS WELL ID.: MW-5  
 CLIENT NAME: \_\_\_\_\_ SAMPLED BY: JS SAMPLE ID.: MW-5  
 LOCATION: Oakland - 3315 High Street QA SAMPLES: \_\_\_\_\_

DATE PURGED 5/14/09 START (2400hr) 1445 END (2400hr) 1448  
 DATE SAMPLED 5/14/09 SAMPLE TIME (2400hr) 1455  
 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) = 29.75 CASING VOLUME (gal) = 3.5  
 DEPTH TO WATER (feet) = 9.07 CALCULATED PURGE (gal) = 10.5  
 WATER COLUMN HEIGHT (feet) = 20.6 ACTUAL PURGE (gal) = 11.0

FIELD MEASUREMENTS

DATE	TIME (2400hr)	VOLUME (gal)	TEMP. (degrees C)	CONDUCTIVITY (umhos/cm)	pH (units)	COLOR (visual)	TURBIDITY (NTU)
<u>5/14/09</u>	<u>1446</u>	<u>3.5</u>	<u>24.3</u>	<u>546</u>	<u>7.05</u>	<u>clear</u>	
<u>/</u>	<u>1447</u>	<u>7.2</u>	<u>23.5</u>	<u>521</u>	<u>7.03</u>	<u>/</u>	
<u>/</u>	<u>1448</u>	<u>11.0</u>	<u>23.6</u>	<u>510</u>	<u>7.02</u>	<u>/</u>	

SAMPLE INFORMATION

SAMPLE DEPTH TO WATER: 9.81 SAMPLE TURBIDITY: clear  
 80% RECHARGE:  YES  NO ANALYSES: SWO  
 ODOR: no SAMPLE VESSEL / PRESERVATIVE: 6 Voorta

PURGING EQUIPMENT

Bladder Pump \_\_\_\_\_ Bailer (Teflon) \_\_\_\_\_  
 Centrifugal Pump \_\_\_\_\_ Bailer (PVC) \_\_\_\_\_  
 Submersible Pump \_\_\_\_\_ Bailer (Stainless Steel) \_\_\_\_\_  
 Peristaltic Pump \_\_\_\_\_ Dedicated \_\_\_\_\_  
 Other: \_\_\_\_\_  
 Pump Depth: 25

SAMPLING EQUIPMENT

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

WELL INTEGRITY: \_\_\_\_\_ LOCK#: Master  
 REMARKS: DO 1.62

SIGNATURE: \_\_\_\_\_ Page    of

# BP ALAMEDA PORTFOLIO

## WATER SAMPLE FIELD DATA SHEET

PROJECT #: 11124 PURGED BY: JS WELL I.D.: NW-6  
 CLIENT NAME: \_\_\_\_\_ SAMPLED BY: JS SAMPLE I.D.: NW-6  
 LOCATION: Oakland - 3315 High Street QA SAMPLES: \_\_\_\_\_

DATE PURGED 5/14/09 START (2400hr) 14:22 END (2400hr) 19:25  
 DATE SAMPLED 5/14/09 SAMPLE TIME (2400hr) 14:32  
 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) = 29.50 CASING VOLUME (gal) = 3.5  
 DEPTH TO WATER (feet) = 8.61 CALCULATED PURGE (gal) = 10.6  
 WATER COLUMN HEIGHT (feet) = 20.8 ACTUAL PURGE (gal) = 11.0

### FIELD MEASUREMENTS

DATE	TIME (2400hr)	VOLUME (gal)	TEMP. (degrees C)	CONDUCTIVITY (umhos/cm)	pH (units)	COLOR (visual)	TURBIDITY (NTU)
<u>5/14/09</u>	<u>1423</u>	<u>30.5</u>	<u>23.9</u>	<u>609</u>	<u>6.97</u>	<u>clear</u>	
<u>/</u>	<u>1424</u>	<u>7.5</u>	<u>23.2</u>	<u>557</u>	<u>6.97</u>	<u>/</u>	
	<u>1425</u>	<u>11.0</u>	<u>23.0</u>	<u>546</u>	<u>6.98</u>	<u>/</u>	

### SAMPLE INFORMATION

SAMPLE DEPTH TO WATER: 9.91 SAMPLE TURBIDITY: clear

80% RECHARGE:  YES  NO ANALYSES: SWO  
 ODOR: no SAMPLE VESSEL / PRESERVATIVE: G. Von HCL

#### PURGING EQUIPMENT

Bladder Pump  Bailer (Teflon)  
 Centrifugal Pump  Bailer (PVC)  
 Submersible Pump  Bailer (Stainless Steel)  
 Peristaltic Pump  Dedicated \_\_\_\_\_  
 Other: \_\_\_\_\_  
 Pump Depth: 25

#### 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 1.81

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



# WELLHEAD OBSERVATION FORM



Site Name/Number: BP 11124

Date: 5/14/88

Technician: J. Lee

Well I.D.	Box in Good Condition? <small>X = 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>
<u>HW 1</u>	<u>X</u>				<u>I</u>							
<u>HW 2</u>	<u>X</u>				<u>I</u>							
<u>HW 3</u>	<u>X</u>				<u>I</u>							
<u>HW 4</u>	<u>X</u>				<u>I</u>							
<u>HW 5</u>	<u>X</u>											

**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.)

Trash around LOT Buildings Broken in To

Homeless Living inside Buildings

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

(updated 3-28-08, SS)

NO. 853786

# NON-HAZARDOUS WASTE DATA FORM

1. PEST #

2. Generator's Name and Mailing Address  
 87 WEST COAST PRODUCTS, LLC  
 P.O. BOX 30229  
 RANCHO SANTA MARGARITA, CA 92683

Generator's Site Address (if different than mailing address)  
 #111 24  
 3315 HORN ST  
 OAKLAND

Generator's Phone: (949) 493-4200 | 24-HOUR EMERGENCY PHONE: (949) 496-4146

3. Transporter 1 Company Name: *Hydra Environmental, Inc.* | Phone #: (510) 471-4100

4. Transporter 2 Company Name: *Genes Exports, Inc.* | Phone #: (707) 871-3531

5. Designated Facility Name and Site Address: *TRAF, INC.* | Phone #: (925) 753-1500  
 1700 AIRPORT RD #C  
 RIO VISTA, CA 94571

6. Waste Shipping Name and Description	7. Containers		8. Total Quantity	9. Unk. Wt/Vol	10. Pallet No.
	No.	Type			
A. NON-HAZARDOUS WATER	1	TT	22.0	0	
B.					
C.					
D.					

11. Special Handling Instructions and Additional Information  
 WEAR ALL APPROPRIATE PROTECTIVE CLOTHING  
 WELL PURGING KOSOLON WATER

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

Generator's/Operator's Printed/Typed Name: *Jerry Gonzalez* | Signature: *[Signature]* | Month: 5 | Day: 14 | Year: 09

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

FACILITY TRANSPORTER

GENERATOR



# Laboratory Management Program LaMP Chain of Custody Record

BP/ARC Project Name: BP/ARCO 11124

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

BP/ARC Facility No: 11124

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

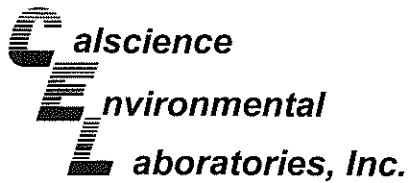
Lab Name: CalScience	BP/ARC Facility Address: 3315 High Street	Consultant/Contractor: Stratus Environmental Inc
Lab Address: 7440 Lincoln Way, Garden Grove, CA 92841	City, State, ZIP Code: Oakland, CA	Consultant/Contractor Project No:
Lab PM: Richard Villafania	Lead Regulatory Agency: Alameda County	Address: 3330 Cameron Park Drive, #550, Cameron Park, CA 95682
Lab Phone: 714-895-5494 Fax: 714-895-7501	California Global ID No.: T06001001919	Consultant/Contractor PM: Jay Johnson
Lab Shipping Acctn:	Enfos Proposal No: 000M6-0004	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) 725-3815				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 8260	Ethanol by 8260	EDB by 8260	1,2-DCA by 8260	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															Comments	
	MW-1	5/14/09	1357	X			6			X		X	X	X	X	X			
	MW-2		1415	X			6			X		X	X	X	X	X			
	MW-4		1405	X			6			X		X	X	X	X	X			
	MW-5		1455	X			6			X		X	X	X	X	X			
	MW-6		1432	X			6			X		X	X	X	X	X			
	TB-11124-05142009		500	X			2			X									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.								
Shipment Method:	Ship Date:							
Shipment Tracking No:								

Special Instructions: TB Sample ON HOLD! Cc results to [bpedf@broadbentinc.com](mailto: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
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May 29, 2009

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

Subject: **Calscience Work Order No.: 09-05-1549**  
**Client Reference: BP / ARCO 11124**

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 5/16/2009 and analyzed in accordance with the attached chain-of-custody.

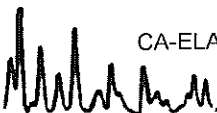
Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Systems Manual, applicable standard operating procedures, and other related documentation. The original report of subcontracted analysis, if any, is provided herein, and follows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

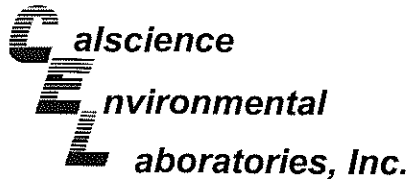
If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

A handwritten signature in black ink, which appears to read "Richard Villafania".

Calscience Environmental  
Laboratories, Inc.  
Richard Villafania  
Project Manager





## Analytical Report

09-05-1549  
MW-1

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

Date Received: 05/16/09  
Work Order No: 09-05-1549  
Preparation: EPA 5030B  
Method: EPA 8015B (M)

Project: BP / ARCO 11124

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	09-05-1549-1-D	05/14/09 13:57	Aqueous	GC 4	05/26/09	05/26/09 20:53	090526B01

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	94	38-134			

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-2	09-05-1549-2-D	05/14/09 14:15	Aqueous	GC 4	05/26/09	05/26/09 21:26	090526B01

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	103	38-134			

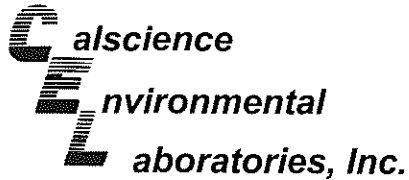
Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-4	09-05-1549-3-D	05/14/09 14:05	Aqueous	GC 4	05/26/09	05/26/09 21:59	090526B01

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	92	38-134			

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-5	09-05-1549-4-D	05/14/09 14:55	Aqueous	GC 4	05/26/09	05/26/09 22:31	090526B01

Parameter	Result	RL	DF	Qual	Units
Gasoline Range Organics (C6-C12)	93	50	1		ug/L
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>	
1,4-Bromofluorobenzene	94	38-134			

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



## Analytical Report

Method

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

Date Received: 05/16/09  
Work Order No: 09-05-1549  
Preparation: EPA 5030B  
Method: EPA 8015B (M)

Project: BP / ARCO 11124

Page 2 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-6	09-05-1549-5-D	05/14/09 14:32	Aqueous	GC 4	05/26/09	05/26/09 23:04	090526B01

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			

Method Blank	099-12-695-550	N/A	Aqueous	GC 4	05/26/09	05/26/09 11:03	090526B01
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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	107	38-134			

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

## Analytical Report

ref c

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

Date Received: 05/16/09  
Work Order No: 09-05-1549  
Preparation: EPA 5030B  
Method: EPA 8260B  
Units: ug/L

Project: BP / ARCO 11124

Page 1 of 3

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-1	09-05-1549-1-A	05/14/09 13:57	Aqueous	GC/MS BB	05/23/09	05/24/09 01:59	090523L02

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.50	1		Methyl-t-Butyl Ether (MTBE)	2.6	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	103	73-145			Dibromofluoromethane	102	81-135		
Toluene-d8	100	83-119			1,4-Bromofluorobenzene	98	74-110		

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-2	09-05-1549-2-A	05/14/09 14:15	Aqueous	GC/MS BB	05/23/09	05/24/09 02:31	090523L02

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	103	73-145			Dibromofluoromethane	102	81-135		
Toluene-d8	100	83-119			1,4-Bromofluorobenzene	100	74-110		

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-4	09-05-1549-3-A	05/14/09 14:05	Aqueous	GC/MS BB	05/23/09	05/24/09 03:03	090523L02

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	107	73-145			Dibromofluoromethane	106	81-135		
Toluene-d8	99	83-119			1,4-Bromofluorobenzene	100	74-110		

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: 05/16/09  
Work Order No: 09-05-1549  
Preparation: EPA 5030B  
Method: EPA 8260B  
Units: ug/L

Project: BP / ARCO 11124

Page 2 of 3

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-5	09-05-1549-4-A	05/14/09 14:55	Aqueous	GC/MS BB	05/23/09	05/24/09 09:24	090523L02

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	10	20		Methyl-t-Butyl Ether (MTBE)	470	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	ND	10	20		Ethyl-t-Butyl Ether (ETBE)	ND	10	20	
Toluene	ND	10	20		Tert-Amyl-Methyl Ether (TAME)	ND	10	20	
Xylenes (total)	ND	10	20		Ethanol	ND	6000	20	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
1,2-Dichloroethane-d4	107	73-145			Dibromofluoromethane	106	81-135		
Toluene-d8	100	83-119			1,4-Bromofluorobenzene	100	74-110		

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-6	09-05-1549-5-B	05/14/09 14:32	Aqueous	GC/MS BB	05/27/09	05/27/09 14:27	090527L01

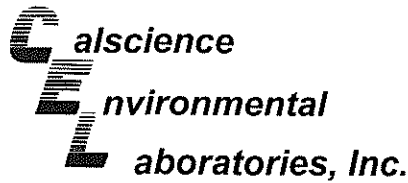
Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	1.0	2		Methyl-t-Butyl Ether (MTBE)	66	1.0	2	
1,2-Dibromoethane	ND	1.0	2		Tert-Butyl Alcohol (TBA)	ND	20	2	
1,2-Dichloroethane	ND	1.0	2		Diisopropyl Ether (DIPE)	ND	1.0	2	
Ethylbenzene	ND	1.0	2		Ethyl-t-Butyl Ether (ETBE)	ND	1.0	2	
Toluene	ND	1.0	2		Tert-Amyl-Methyl Ether (TAME)	ND	1.0	2	
Xylenes (total)	ND	1.0	2		Ethanol	ND	600	2	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
1,2-Dichloroethane-d4	118	73-145			Dibromofluoromethane	105	81-135		
Toluene-d8	100	83-119			1,4-Bromofluorobenzene	101	74-110		

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	099-12-703-895	N/A	Aqueous	GC/MS BB	05/23/09	05/24/09 01:28	090523L02

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	101	73-145			Dibromofluoromethane	98	81-135		
Toluene-d8	99	83-119			1,4-Bromofluorobenzene	100	74-110		

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





Analytical Report

09-05-1549  
net c

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

Date Received: 05/16/09  
Work Order No: 09-05-1549  
Preparation: EPA 5030B  
Method: EPA 8260B  
Units: ug/L

Project: BP / ARCO 11124

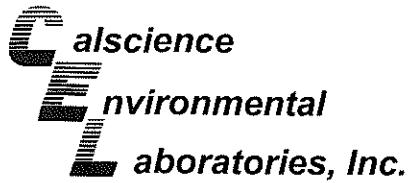
Page 3 of 3

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	099-12-703-897	N/A	Aqueous	GC/MS BB	05/27/09	05/27/09 13:22	090527L01

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	105	73-145			Dibromofluoromethane	99	81-135		
Toluene-d8	100	83-119			1,4-Bromofluorobenzene	95	74-110		

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





**Quality Control - Spike/Spike Duplicate**

09-05-1246-6

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

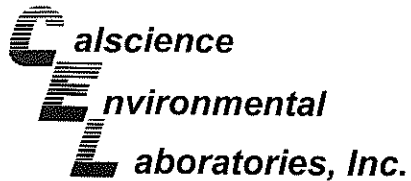
Date Received: 05/16/09  
Work Order No: 09-05-1549  
Preparation: EPA 5030B  
Method: EPA 8015B (M)

Project BP / ARCO 11124

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
09-05-1246-6	Aqueous	GC 4	05/26/09	05/26/09	090526S01

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Gasoline Range Organics (C6-C12)	105	98	38-134	7	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

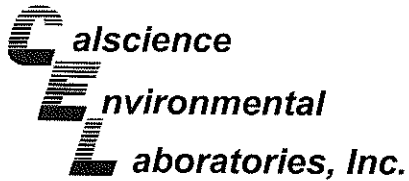
Date Received: 05/16/09  
Work Order No: 09-05-1549  
Preparation: EPA 5030B  
Method: EPA 8260B

Project BP / ARCO 11124

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
MW-1	Aqueous	GC/MS BB	05/23/09	05/24/09	090523S02

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	102	100	86-122	2	0-8	
Carbon Tetrachloride	105	105	78-138	0	0-9	
Chlorobenzene	99	102	90-120	2	0-9	
1,2-Dibromoethane	99	99	70-130	0	0-30	
1,2-Dichlorobenzene	103	104	89-119	1	0-10	
1,1-Dichloroethene	96	91	52-142	6	0-23	
Ethylbenzene	92	89	70-130	4	0-30	
Toluene	100	93	85-127	8	0-12	
Trichloroethene	99	98	78-126	1	0-10	
Vinyl Chloride	78	78	56-140	0	0-21	
Methyl-t-Butyl Ether (MTBE)	99	101	64-136	2	0-28	
Tert-Butyl Alcohol (TBA)	104	112	27-183	8	0-60	
Diisopropyl Ether (DIPE)	103	108	78-126	5	0-16	
Ethyl-t-Butyl Ether (ETBE)	101	105	67-133	4	0-21	
Tert-Amyl-Methyl Ether (TAME)	100	98	63-141	2	0-21	
Ethanol	104	107	11-167	3	0-64	

RPD - Relative Percent Difference, CL - Control Limit



## Quality Control - Spike/Spike Duplicate

05/16/09  
09-05-1549  
EPA 5030B  
EPA 8260B

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

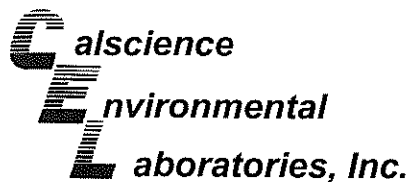
Date Received: 05/16/09  
Work Order No: 09-05-1549  
Preparation: EPA 5030B  
Method: EPA 8260B

Project BP / ARCO 11124

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
09-05-1849-15	Aqueous	GC/MS BB	05/27/09	05/27/09	090527S01

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	104	108	86-122	4	0-8	
Carbon Tetrachloride	105	108	78-138	3	0-9	
Chlorobenzene	103	106	90-120	3	0-9	
1,2-Dibromoethane	104	102	70-130	1	0-30	
1,2-Dichlorobenzene	105	108	89-119	3	0-10	
1,1-Dichloroethene	110	113	52-142	3	0-23	
Ethylbenzene	103	106	70-130	3	0-30	
Toluene	105	107	85-127	2	0-12	
Trichloroethene	103	105	78-126	2	0-10	
Vinyl Chloride	82	82	56-140	0	0-21	
Methyl-t-Butyl Ether (MTBE)	139	163	64-136	4	0-28	LM,AY
Tert-Butyl Alcohol (TBA)	114	137	27-183	6	0-60	
Diisopropyl Ether (DIPE)	107	109	78-126	2	0-16	
Ethyl-t-Butyl Ether (ETBE)	109	108	67-133	1	0-21	
Tert-Amyl-Methyl Ether (TAME)	104	104	63-141	0	0-21	
Ethanol	97	111	11-167	14	0-64	

RPD - Relative Percent Difference , CL - Control Limit



Quality Control - LCS/LCS Duplicate

net c

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

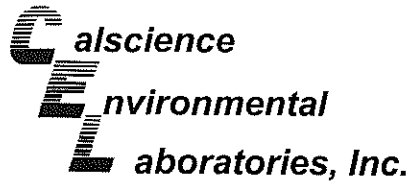
Date Received: N/A  
Work Order No: 09-05-1549  
Preparation: EPA 5030B  
Method: EPA 8015B (M)

Project: BP / ARCO 11124

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-695-550	Aqueous	GC 4	05/26/09	05/26/09	090526B01

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Gasoline Range Organics (C6-C12)	105	108	78-120	3	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

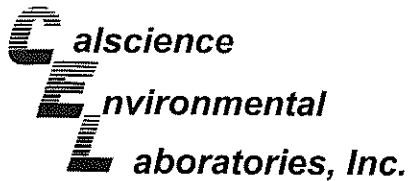
Date Received: N/A  
Work Order No: 09-05-1549  
Preparation: EPA 5030B  
Method: EPA 8260B

Project: BP / ARCO 11124

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number		
099-12-703-895	Aqueous	GC/MS BB	05/23/09	05/23/09	090523L02		
Parameter	LCS %REC	LCSD %REC	%REC CL	ME CL	RPD	RPD CL	Qualifiers
Benzene	102	102	87-117	82-122	1	0-7	
Carbon Tetrachloride	103	103	78-132	69-141	0	0-8	
Chlorobenzene	101	101	88-118	83-123	0	0-8	
1,2-Dibromoethane	104	102	80-120	73-127	2	0-20	
1,2-Dichlorobenzene	105	103	88-118	83-123	2	0-8	
1,1-Dichloroethene	107	107	71-131	61-141	0	0-14	
Ethylbenzene	102	100	80-120	73-127	2	0-20	
Toluene	104	103	85-127	78-134	1	0-7	
Trichloroethene	125	112	85-121	79-127	11	0-11	LQ
Vinyl Chloride	80	82	64-136	52-148	2	0-10	
Methyl-t-Butyl Ether (MTBE)	112	110	67-133	56-144	2	0-16	
Tert-Butyl Alcohol (TBA)	100	96	34-154	14-174	4	0-19	
Diisopropyl Ether (DIPE)	109	109	80-122	73-129	1	0-8	
Ethyl-t-Butyl Ether (ETBE)	111	110	73-127	64-136	1	0-11	
Tert-Amyl-Methyl Ether (TAME)	109	107	69-135	58-146	2	0-12	
Ethanol	102	100	34-124	19-139	2	0-44	

Total number of LCS compounds : 16  
Total number of ME compounds : 1  
Total number of ME compounds allowed : 1  
LCS ME CL validation result : Pass

RPD - Relative Percent Difference , CL - Control Limit

**Quality Control - LCS/LCS Duplicate**

09-05-1549

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

Date Received: N/A  
Work Order No: 09-05-1549  
Preparation: EPA 5030B  
Method: EPA 8260B

Project: BP / ARCO 11124

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number		
099-12-703-897	Aqueous	GC/MS BB	05/27/09	05/27/09	090527L01		
Parameter	LCS %REC	LCSD %REC	%REC CL	ME CL	RPD	RPD CL	Qualifiers
Benzene	102	104	87-117	82-122	2	0-7	
Carbon Tetrachloride	105	109	78-132	69-141	3	0-8	
Chlorobenzene	103	105	88-118	83-123	2	0-8	
1,2-Dibromoethane	97	106	80-120	73-127	8	0-20	
1,2-Dichlorobenzene	104	107	88-118	83-123	3	0-8	
1,1-Dichloroethene	106	110	71-131	61-141	3	0-14	
Ethylbenzene	102	103	80-120	73-127	1	0-20	
Toluene	104	107	85-127	78-134	4	0-7	
Trichloroethene	103	107	85-121	79-127	3	0-11	
Vinyl Chloride	84	83	64-136	52-148	1	0-10	
Methyl-t-Butyl Ether (MTBE)	100	112	67-133	56-144	12	0-16	
Tert-Butyl Alcohol (TBA)	104	101	34-154	14-174	3	0-19	
Diisopropyl Ether (DIPE)	103	108	80-122	73-129	4	0-8	
Ethyl-t-Butyl Ether (ETBE)	101	110	73-127	64-136	8	0-11	
Tert-Amyl-Methyl Ether (TAME)	98	109	69-135	58-146	11	0-12	
Ethanol	101	101	34-124	19-139	0	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

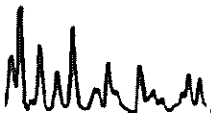
Work Order Number: 09-05-1549

<u>Qualifier</u>	<u>Definition</u>
AX	Sample too dilute to quantify surrogate.
AZ	Surrogate recovery outside of acceptance limits due to matrix interference.
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.
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

1547

BP/ARC Project Name: BP/ARCO 11124  
 BP/ARC Facility No: 11124

Req Due Date (mm/dd/yy): 14 Day TAT Rush TAT: Yes  No   
 Lab Work Order Number: \_\_\_\_\_

Lab Name: CalScience	BP/ARC Facility Address: 3315 High Street	Consultant/Contractor: Stratus Environmental Inc.
Lab Address: 7440 Lincoln Way, Garden Grove, CA 92841	City, State, ZIP Code: Oakland, CA	Consultant/Contractor Project No:
Lab PM: Richard Villafania	Lead Regulatory Agency: Alameda County	Address: 3330 Cameron Park Drive, #550, Cameron Park, CA 95682
Lab Phone: 714-895-5494 Fax: 714-895-7501	California Global ID No.: T06001001919	Consultant/Contractor PM: Jay Johnson
Lab Shipping Acctn:	Enfos Proposal No: 000M6-0004	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) 725-3815				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	BTEX45 FO* by 8260	Ethanol by 8260	EDB by 8260	1,2-DCA by 8260									Standard <input checked="" type="checkbox"/>	Full Data Package <input type="checkbox"/>		
EBM Email: <a href="mailto:paul.supple@bp.com">paul.supple@bp.com</a>																												Note: If sample not collected, indicate "No Sample" in comments and single-strike out and initial any preprinted sample description. <b>Comments</b> *Oxy = MTBE, TAME, ETBE, DIPE, TBA	
Lab No.	Sample Description	Date	Time																										
1	MW-1	5/14/09	1357	X			6				X	X	X	X	X														
2	MW-2		1415	X			6				X	X	X	X	X														
3	MW-4		1405	X			6				X	X	X	X	X														
4	MW-5		1455	X			6				X	X	X	X	X														
5	MW-6		1432	X			6				X	X	X	X	X														
6	TB-11124-05142009		500	X			2				X															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.										5/16/09	0948
Shipment Method: <u>USO</u> Ship Date:											
Shipment Tracking No: <u>106279990</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 15 of 16

**SAMPLE RECEIPT FORM**

Cooler 7 of 1

CLIENT: Saratog

DATE: 05/16/09

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

Temperature 2.6 °C – 0.2 °C (CF) = 2.4 °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: MS

**CUSTODY SEALS INTACT:**

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

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

**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 checked="" type="checkbox"/> <u>MH</u>	<input checked="" type="checkbox"/> <u>5-16-09</u>	<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 checked="" 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     125PBzanna     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)

Preservative:    h: HCL    n: HNO3    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>    zanna: ZnAc<sub>2</sub>+NaOH    f: Field-filtered

Checked/Labeled by: MH  
 Reviewed by: MS  
 Scanned by: MH

## 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 CONFIRMATIONS**

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 11124</b>
<b><u>Facility Global ID:</u></b>	<b>T0600100919</b>
<b><u>Facility Name:</u></b>	<b>BP #11124</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>6/18/2009 3:52:58 PM</b>
<b><u>Confirmation Number:</u></b>	<b>8013979256</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>	T0600100919
<b><u>Facility Name:</u></b>	BP #11124
<b><u>File Name:</u></b>	09051549.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>	6/18/2009 3:54:14 PM
<b><u>Confirmation Number:</u></b>	<b>3618212044</b>

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