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**Alameda County  
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San Francisco  
California 94104  
Tel 415.374.2744  
Fax 415.374.2745  
[www.arcadis-us.com](http://www.arcadis-us.com)

Re: Third Quarter 2009 Ground-Water Monitoring Report  
Former BP Station # 11124  
3315 High Street  
Oakland, California  
ACEH Case # RO0000014

Environmental

"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."

Date:  
10/05/2009

Submitted by:

Hollis E. Phillips, PG  
Senior Geologist

Contact:  
Hollis Phillips

Phone:  
415.374.2744 x13

Email:  
[hollis.phillips@arcadis-us.com](mailto:hollis.phillips@arcadis-us.com)

Our ref:  
GP09BPNA.0000

Imagine the result

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

Former BP Station #11124  
3315 High Street, Oakland, California  
ACEH Case #RO0000239

Prepared for

Ms. Hollis Phillips, PG  
Senior Geologist  
ARCADIS-US, Inc.  
100 Montgomery Street, Ste. 300  
San Francisco, California 94104

On behalf of

Atlantic Richfield Company  
PO Box 1257  
San Ramon, California 94583

Prepared by



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

5 October 2009

Project No. 06-88-652

5 October 2009

Project No. 06-88-652

ARCADIS-US, Inc.  
100 Montgomery Street, Ste. 300  
San Francisco, CA 94104

Attn.: Ms. Hollis Phillips, PG – Senior Geologist

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

Dear Ms. Phillips:

Attached is the *Third 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 Third Quarter of 2009.

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

Sincerely,

BROADBENT & ASSOCIATES, INC.



Thomas A. Venus, P.E.  
Senior Engineer



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 GROUND-WATER MONITORING REPORT

Facility: #11124	Address:	3315 High Street, Oakland, California
ARCADIS Project Manager:		Ms. Hollis Phillips, PG
Consulting Co./Contact Person:		Broadbent & Associates, Inc.(BAI)/Mr. Tom Venus, PE (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 (Third Quarter 2009):

1. Submitted *Second Quarter 2009 Ground-Water Monitoring Report* (BAI, 7/15/2009).
2. Conducted ground-water monitoring/sampling for Third Quarter 2009. Work performed by Stratus Environmental, Inc. (Stratus) on 4 August 2009.
3. Negotiated semi-annual ground-water monitoring consistent with the State Water Resources Control Board's Resolution No.2009-0042, adopted 19 May 2009

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

1. Prepared and submitted Third Quarter 2009 Ground-Water Monitoring Report (contained herein).
2. Conduct semi-annual ground-water monitoring/sampling for Fourth Quarter 2009, as outlined within the discussion below.

### 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 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>9.61 ft (MW-5) to 11.31 ft (MW-1)</b>
General ground-water flow direction:	<b>Southwest</b>
Approximate hydraulic gradient:	<b>0.02 ft/ft</b>

\* Current schedule through Third Quarter 2009. Proposed modifications discussed below.

### DISCUSSION:

Third quarter 2009 ground-water monitoring/sampling was conducted at Former BP Station #11124 on 4 August 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 9.61 ft at MW-5 to 11.31 ft at MW-1. Resulting ground-water surface elevations ranged from 146.03 ft above datum at well MW-1 to 143.77 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 0.02 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. A Site Location Map is provided as Drawing 1. Potentiometric ground-water elevation contours are presented in Drawing 2.

Consistent with the current ground-water sampling schedule, water samples were collected from wells MW-1, 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 two of the three wells sampled at concentrations of 140 micrograms per liter ( $\mu\text{g/L}$ ) in well MW-6 and 890  $\mu\text{g/L}$  in well MW-5. Remaining fuel constituents were not detected above their respective laboratory reporting limits in the three wells sampled this quarter. Detected analyte concentrations were within the historic minimum and maximum ranges recorded for each well. 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 2. 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.

## **CONCLUSIONS AND RECOMMENDATIONS:**

Atlantic Richfield Company (a BP affiliated company) submitted a letter to ACEH on 26 June 2009 in response to the California State Water Quality Control Board Resolution No. 2009-0042, adopted on 19 May 2009, relating to the cleanup of Leaking Underground Storage Tanks. This letter proposed a reduced monitoring and sampling schedule for Station #11124. Specifically, it is proposed to reduce ground-water monitoring from quarterly to semi-annually during the Second and Fourth Quarters of each year and decrease the sampling of wells MW-1, MW-5, and MW-6 from quarterly to semi-annually also to be conducted during the Second and Fourth Quarters of each year. Wells MW-2 and MW-4 would continue to be sampled annually during the Second Quarter of each year. This sampling schedule will be implemented beginning in the Fourth Quarter of 2009.

## **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 ARCADIS-US, Inc. and 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, Former BP Service Station #11124, 3315 High St., Oakland, California

- Drawing 2. Ground-Water Elevation Contours and Analytical Summary Map, 4 August 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, Former BP Service Station #11124, 3315 High St., Oakland, California
- Table 2. Summary of Fuel Additives Analytical Data, Former BP Service Station #11124, 3315 High St., Oakland, California
- Table 3. Historical Ground-Water Flow Direction and Gradient, Former BP Service 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 Confirmation Receipts

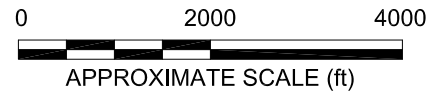
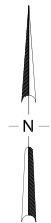
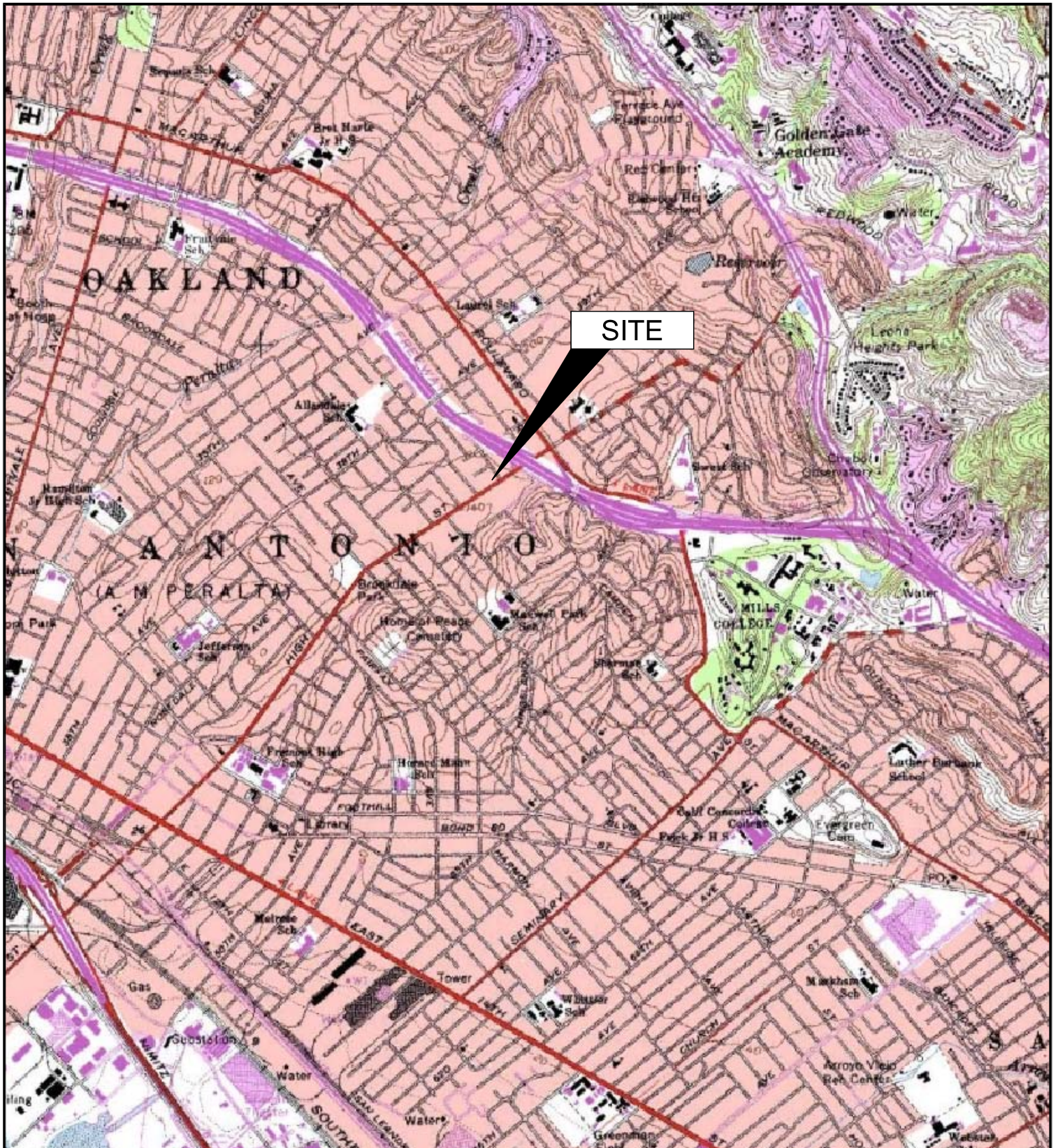
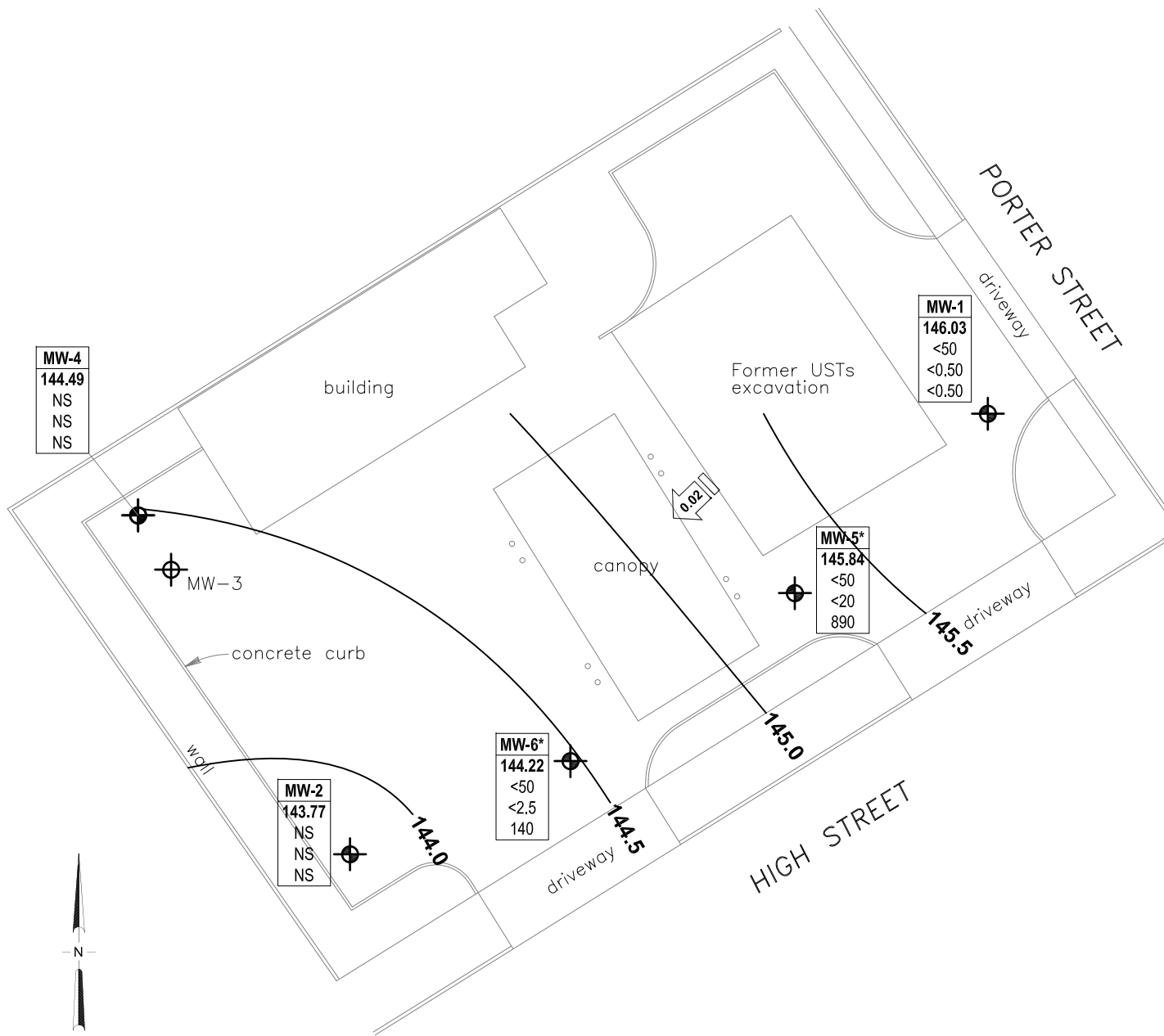


IMAGE SOURCE: USGS



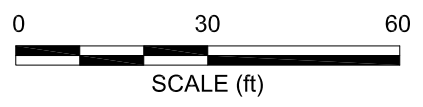
**LEGEND**

- ⊕ Ground-water monitoring well
- ⊖ Abandoned monitoring well

Well	Well Designation
ELEV	Ground-water elevation (ft NAVD88)
GRO	GRO, Benzene & MTBE concentrations (µg/L)
Benzene	
MTBE	

- 145.0 Ground-water elevation (ft above NAVD88)
- \* Elevation not used in contours
- < Not detected at or above laboratory reporting limits
- ← 0.02 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: 9/11/09

Former Station #11124  
 3315 High Street  
 Oakland, California

Ground-Water Elevation Contours  
 and Analytical Summary Map  
 4 August 2009

Drawing  
**2**



**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	--	--
5/14/2009	NP		157.34	9.77	--	147.57	<50	<0.50	<0.50	<0.50	<0.50	2.6	1.63	CEL	6.43	--	--
<b>8/4/2009</b>	<b>P</b>		<b>157.34</b>	<b>11.31</b>	<b>--</b>	<b>146.03</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>1.59</b>	<b>CEL</b>	<b>7.31</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	--

**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>																	
11/13/2007	--		154.35	9.30	--	145.05	--	--	--	--	--	--	4.90	TAMC	7.02	<48	--
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	--	--	--	--	--	--	--	--	--	--	--
5/14/2009	NP		154.35	8.52	--	145.83	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.69	CEL	6.67	--	--
<b>8/4/2009</b>	<b>--</b>		<b>154.35</b>	<b>10.58</b>	<b>--</b>	<b>143.77</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</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	--	--	--	--	--	--	--	--	--	--	--
5/14/2009	NP		155.10	8.40	--	146.70	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.96	CEL	7.02	--	--
<b>8/4/2009</b>	<b>--</b>		<b>155.10</b>	<b>10.61</b>	<b>--</b>	<b>144.49</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>	<b>--</b>

**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</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	--
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	--	--
5/14/2009	P		155.45	9.07	--	146.38	93	<10	<10	<10	<10	470	1.67	CEL	7.02	--	--
<b>8/4/2009</b>	<b>P</b>		<b>155.45</b>	<b>9.61</b>	<b>--</b>	<b>145.84</b>	<b>&lt;50</b>	<b>&lt;20</b>	<b>&lt;20</b>	<b>&lt;20</b>	<b>&lt;20</b>	<b>890</b>	<b>1.60</b>	<b>CEL</b>	<b>7.13</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	--	--
5/14/2009	P		154.59	8.61	--	145.98	<50	<1.0	<1.0	<1.0	<1.0	66	1.81	CEL	6.98	--	--
<b>8/4/2009</b>	<b>P</b>		<b>154.59</b>	<b>10.37</b>	<b>--</b>	<b>144.22</b>	<b>&lt;50</b>	<b>&lt;2.5</b>	<b>&lt;2.5</b>	<b>&lt;2.5</b>	<b>&lt;2.5</b>	<b>140</b>	<b>1.86</b>	<b>CEL</b>	<b>7.27</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	
5/14/2009	<300	<10	2.6	<0.50	<0.50	<0.50	<0.50	<0.50	
<b>8/4/2009</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-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	
5/14/2009	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	

**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	
5/14/2009	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
<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	
5/14/2009	<6,000	<200	470	<10	<10	<10	<10	<10	
<b>8/4/2009</b>	<b>&lt;12,000</b>	<b>&lt;400</b>	<b>890</b>	<b>&lt;20</b>	<b>&lt;20</b>	<b>&lt;20</b>	<b>&lt;20</b>	<b>&lt;20</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	

**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>									
11/13/2007	<600	<40	98	<1.0	<1.0	<1.0	<1.0	<1.0	
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	
5/14/2009	<600	<20	66	<1.0	<1.0	<1.0	<1.0	<1.0	
<b>8/4/2009</b>	<b>&lt;1,500</b>	<b>&lt;50</b>	<b>140</b>	<b>&lt;2.5</b>	<b>&lt;2.5</b>	<b>&lt;2.5</b>	<b>&lt;2.5</b>	<b>&lt;2.5</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
5/14/2009	Southwest	0.01
<b>8/4/2009</b>	<b>Southwest</b>	<b>0.02</b>

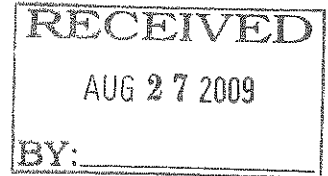
Note: The data within this table collected prior to April 2006 was provided to Broadbent & Associates, Inc. by Atlantic Richfield Company and their previous consultants. Broadbent & Associates, Inc. has not verified the accuracy of this information.

**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



August 14, 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:* Roberto Heimlich

*Sampling Date:* August 4, 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

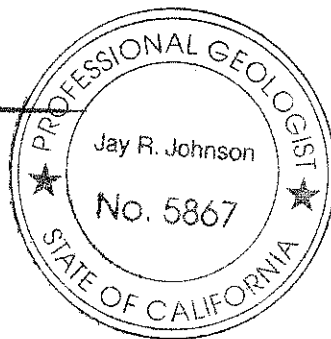
August 14, 2009

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

AT = 9:00

Gauge Date: 8/4/09

Project Name: 3315 High Street, Oakland

Field Technician: ROBERTO

Project Number: 11124

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/baller)	COMMENTS
		TOC	TOS	DTW	DTB	DIA	ELEV			
MW-1	9:15			11.31	31.61	2"		YES		
MW-2	9:29			10.58	28.07	2"				
MW-4	9:33			10.61	30.11	2"				
MW-5	9:19			9.61	29.75	2"		YES		
MW-6	9:24			10.37	29.50	2"		YES		

pH/Conductivity/temperature Meter - YSI Model 63 Calibration Date  
pH 8/4/09  
 DO Meter - YSI 55 Series (DO is always measured before purge) Conductivity 8/4/09  
 Please refer to groundwater sampling field procedures DO 8/4/09

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

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

DATE PURGED 8/4/09 START (2400hr) 9:40 END (2400hr) 9:48  
 DATE SAMPLED 8/4/09 SAMPLE TIME (2400hr) 9:52  
 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) = 3.4  
 DEPTH TO WATER (feet) = 11.31 CALCULATED PURGE (gal) = 10.3  
 WATER COLUMN HEIGHT (feet) = 20.3 ACTUAL PURGE (gal) = 10.5

FIELD MEASUREMENTS

DATE	TIME (2400hr)	VOLUME (gal)	TEMP. (degrees C)	CONDUCTIVITY (umhos/cm)	pH (units)	COLOR (visual)	TURBIDITY (NTU)
<u>8/4/09</u>	<u>9:42</u>	<u>3</u>	<u>19.9</u>	<u>250.1</u>	<u>7.03</u>	<u>clear</u>	
<u>✓</u>	<u>9:44</u>	<u>6</u>	<u>21.1</u>	<u>248.0</u>	<u>7.16</u>	<u>✓</u>	
	<u>9:46</u>	<u>10.5</u>	<u>21.1</u>	<u>250.3</u>	<u>7.31</u>	<u>✓</u>	

SAMPLE INFORMATION

SAMPLE DEPTH TO WATER: 13.07 SAMPLE TURBIDITY: clear

80% RECHARGE:  YES  NO ANALYSES: SWO

ODOR: NO SAMPLE VESSEL / PRESERVATIVE: 6VOCAS/HCL

PURGING EQUIPMENT

SAMPLING EQUIPMENT

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

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

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

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

Pump Depth: 30

WELL INTEGRITY: GOOD LOCK#: MASTER

REMARKS: NO 1.59

SIGNATURE: [Signature]

# BP ALAMEDA PORTFOLIO

## WATER SAMPLE FIELD DATA SHEET

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

DATE PURGED: 8/4/09 START (2400hr): 9:58 END (2400hr): 10:05  
 DATE SAMPLED: 8/4/09 SAMPLE TIME (2400hr): 10:09  
 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) = 3.4  
 DEPTH TO WATER (feet) = 9.61 CALCULATED PURGE (gal) = 10.2  
 WATER COLUMN HEIGHT (feet) = 20.1 ACTUAL PURGE (gal) = 10.5

### FIELD MEASUREMENTS

DATE	TIME (2400hr)	VOLUME (gal)	TEMP. (degrees C)	CONDUCTIVITY (umhos/cm)	pH (units)	COLOR (visual)	TURBIDITY (NTU)
<u>8/4/09</u>	<u>10:00</u>	<u>4</u>	<u>20.1</u>	<u>497.3</u>	<u>7.09</u>	<u>clear</u>	
<u>✓</u>	<u>10:02</u>	<u>8</u>	<u>20.7</u>	<u>511</u>	<u>7.09</u>		
	<u>10:03</u>	<u>10.5</u>	<u>20.7</u>	<u>522</u>	<u>7.13</u>	<u>✓</u>	

### SAMPLE INFORMATION

SAMPLE DEPTH TO WATER: 11.12 SAMPLE TURBIDITY: clear  
 80% RECHARGE:  YES  NO ANALYSES: ~~SWO~~ SWO  
 ODOR: NO SAMPLE VESSEL / PRESERVATIVE: 6 VOAS/INCL

#### PURGING EQUIPMENT

Bladder Pump \_\_\_\_\_ Bailer (Teflon) \_\_\_\_\_  
 Centrifugal Pump \_\_\_\_\_ Bailer (PVC) \_\_\_\_\_  
 Submersible Pump \_\_\_\_\_ Bailer (Stainless Steel) \_\_\_\_\_  
 Peristaltic Pump \_\_\_\_\_ Dedicated \_\_\_\_\_  
 Other: \_\_\_\_\_  
 Pump Depth: 29

#### 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 1.60

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

# BP ALAMEDA PORTFOLIO

## WATER SAMPLE FIELD DATA SHEET

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

DATE PURGED 8/4/09 START (2400hr) 10:15 END (2400hr) 10:22  
 DATE SAMPLED 8/4/09 SAMPLE TIME (2400hr) 10:28  
 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) = 3.2  
 DEPTH TO WATER (feet) = 10.37 CALCULATED PURGE (gal) = 9.7  
 WATER COLUMN HEIGHT (feet) = 19.1 ACTUAL PURGE (gal) = 10

### FIELD MEASUREMENTS

DATE	TIME (2400hr)	VOLUME (gal)	TEMP. (degrees C)	CONDUCTIVITY (umhos/cm)	pH (units)	COLOR (visual)	TURBIDITY (NTU)
<u>8/4/09</u>	<u>10:17</u>	<u>3</u>	<u>21.0</u>	<u>540</u>	<u>7.09</u>	<u>clear</u>	
<u>✓</u>	<u>10:19</u>	<u>6</u>	<u>21.6</u>	<u>549</u>	<u>7.09</u>		
<u>✓</u>	<u>10:21</u>	<u>10</u>	<u>21.3</u>	<u>558</u>	<u>7.27</u>	<u>✓</u>	

### SAMPLE INFORMATION

SAMPLE DEPTH TO WATER: 11.98 SAMPLE TURBIDITY: clear  
 80% RECHARGE:  YES  NO ANALYSES: SWS  
 ODOR: NO SAMPLE VESSEL / PRESERVATIVE: 6VCS / HCL

#### PURGING EQUIPMENT

Bladder Pump \_\_\_\_\_ Bailer (Teflon) \_\_\_\_\_  
 Centrifugal Pump \_\_\_\_\_ Bailer (PVC) \_\_\_\_\_  
 Submersible Pump \_\_\_\_\_ Bailer (Stainless Steel) \_\_\_\_\_  
 Peristaltic Pump \_\_\_\_\_ Dedicated \_\_\_\_\_  
 Other: \_\_\_\_\_  
 Pump Depth: 28.50

#### SAMPLING EQUIPMENT

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

WELL INTEGRITY: GOOD LOCK#: MASTER  
 REMARKS: DO 1.86

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



# WELLHEAD OBSERVATION FORM



Site Name/Number: BP 11124

Date: 8/4/09 Technician: ROBERTO

Well I.D.	Box in Good Condition? <small>X = Yes Blank = No</small>	Lock Missing? <small>X = Yes (implies) Blank = No</small>	Water in Wellbox? <small>X = Yes Blank = No</small>	Water Level Relative to Cap? <small>X = Above cap B = Below cap L = Level w/cap</small>	Well Cap? <small>I = Intact M = Missing or Compromised (rotten)</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	NA	NA	NA	—	—	—	} NO BOLTS TYPE LIDS
MW-2	X	—	—	—	I	NA	NA	NA	—	—	—	
MW-4	X	—	—	—	I	✓	—	—	—	—	—	
MW-5	X	—	—	—	I	—	—	—	—	—	—	
MW-6	X	—	—	—	I	—	—	—	—	—	—	

### DRUM INVENTORY

Drums on site?  Yes  No (circle)  
 Type and # 3 Steel:  Plastic:

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

Drum label info (description, date, contact info):  
NONE

### 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.)

HOMELESS PEOPLE LIVING INSIDE BUILDING. TRASH ON CORNERS OF LOT AND SOME WINDOWS HAVE BEEN BROKEN!

NO. 855158

NON-HAZARDOUS WASTE DATA FORM

1. BESI #

2. Generator's Name and Mailing Address: **BP WEST COAST PRODUCTS, LLC**  
 P.O. BOX 80240  
 RANCHO SANTA MARGARITA, CA 92688

Generator's Site Address (if different than mailing address):  
**BP # 11124**  
**3315 HIGH STREET**  
**OAKLAND**

Generator's Phone: **(949) 490-5200**

24-HOUR EMERGENCY PHONE: **(949) 690-3706**

3. Transporter 1 Company Name: **Stratus Environmental, Inc.** Phone #: **(530) 876-8000**

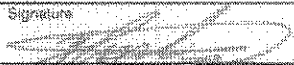
4. Transporter 2 Company Name: **Genex Excavating** Phone #: **(707) 874-2681**

5. Designated Facility Name and Site Address: **INTRAT, INC.** Phone #: **(930) 785-1822**  
**1105 AIRPORT RD MC**  
**RIO VISTA, CA 94071**

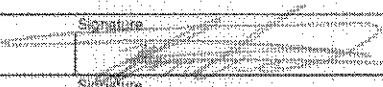
6. Waste Shipping Name and Description	7. Containers		8. Total Quantity	9. UHS (W/Vol)	10. Pallet No.
	No.	Type			
A. <b>NON-HAZARDOUS WATER</b>	<b>1</b>	<b>TT</b>	<b>31</b>	<b>0</b>	
B.					
C.					
D.					

11. Special Handling Instructions and Additional Information:  
**WEAR ALL APPROPRIATE PROTECTIVE CLOTHING**  
**WELL FLURGING / 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: **Ronald Ramirez** Signature:  Month: **8** Day: **4** Year: **07**

13. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: **Ronald Ramirez** Signature:  Month: **8** Day: **04** Year: **07**

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

TRANSPORTER #1



Laboratory Management Program LaMP Chain of Custody Record

BP/ARC Project Name: BP/ARCO 11124

Req Due Date (mm/dd/yyyy): 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 Vitafania	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 Acct:	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 _____

BP/ARC EBM: Paul Supple				Matrix			No. Containers / Preservative					Requested Analyses					Report Type & QC Level		
EBM Phone: 925-275-3801 Fax: _____				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		8/4/09	9:52	X			6			X		X	X	X	X				
MW-5			10:09	X			6			X		X	X	X	X				
MW-6			10:28	X			6			X		X	X	X	X				
TB11124	08/04/09		9:00	X			2			X								ON HOLD	

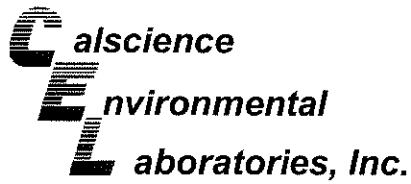
Note: If sample not collected, indicate "No Sample" in comments and single-strike out and initial any preprinted sample description.

\*Oxy = MTBE, TAME, ETBE, DIPE, TBA

Sampler's Name: <u>ROBERTO HERRERA</u> / Doulos Env.	Reinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Company: Stratus Environmental Inc.	<u>[Signature]</u> / DOULOS ENV. / Doulos Env.	8/4/09	12:00			
Shipment Method:	Shipment Date:					
Shipment Tracking No:						

Special Instructions: TB Sample ON HOLD! Cc results to [rmiller@broadbentinc.com](mailto:rmiller@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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August 17, 2009

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

Subject: **Calscience Work Order No.: 09-08-0456**  
**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 8/6/2009 and analyzed in accordance with the attached chain-of-custody.

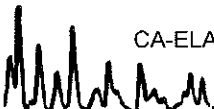
Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Systems Manual, applicable standard operating procedures, and other related documentation. The original report of subcontracted analysis, if any, is provided herein, and follows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

Calscience Environmental  
Laboratories, Inc.  
Richard Villafania  
Project Manager



## Analytical Report



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

Date Received: 08/06/09  
Work Order No: 09-08-0456  
Preparation: EPA 5030B  
Method: EPA 8015B (M)

Project: BP / ARCO 11124

Page 1 of 1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-1	09-08-0456-1-E	08/04/09 09:52	Aqueous	GC 11	08/08/09	08/08/09 19:29	090808B01

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	80	38-134			

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-5	09-08-0456-2-E	08/04/09 10:09	Aqueous	GC 11	08/08/09	08/08/09 21:44	090808B01

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	78	38-134			

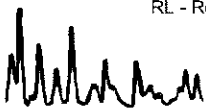
Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-6	09-08-0456-3-E	08/04/09 10:28	Aqueous	GC 11	08/08/09	08/08/09 22:18	090808B01

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	78	38-134			

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	099-12-695-634	N/A	Aqueous	GC 11	08/08/09	08/08/09 18:22	090808B01

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	77	38-134			

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



## Analytical Report



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

Date Received: 08/06/09  
Work Order No: 09-08-0456  
Preparation: EPA 5030B  
Method: EPA 8260B  
Units: ug/L

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
<b>MW-1</b>	<b>09-08-0456-1-C</b>	<b>08/04/09 09:52</b>	<b>Aqueous</b>	<b>GC/MS BB</b>	<b>08/13/09</b>	<b>08/13/09 16:15</b>	<b>090813L01</b>

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	
<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control Limits</b>		<b>Qual</b>	<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control Limits</b>		<b>Qual</b>
1,2-Dichloroethane-d4	104	80-128			Dibromofluoromethane	108	80-127		
Toluene-d8	97	80-120			1,4-Bromofluorobenzene	88	68-120		

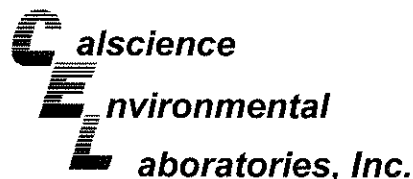
Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>MW-5</b>	<b>09-08-0456-2-C</b>	<b>08/04/09 10:09</b>	<b>Aqueous</b>	<b>GC/MS BB</b>	<b>08/13/09</b>	<b>08/13/09 16:47</b>	<b>090813L01</b>

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	20	40		Methyl-t-Butyl Ether (MTBE)	890	20	40	
1,2-Dibromoethane	ND	20	40		Tert-Butyl Alcohol (TBA)	ND	400	40	
1,2-Dichloroethane	ND	20	40		Diisopropyl Ether (DIPE)	ND	20	40	
Ethylbenzene	ND	20	40		Ethyl-t-Butyl Ether (ETBE)	ND	20	40	
Toluene	ND	20	40		Tert-Amyl-Methyl Ether (TAME)	ND	20	40	
Xylenes (total)	ND	20	40		Ethanol	ND	12000	40	
<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control Limits</b>		<b>Qual</b>	<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control Limits</b>		<b>Qual</b>
1,2-Dichloroethane-d4	113	80-128			Dibromofluoromethane	116	80-127		
Toluene-d8	101	80-120			1,4-Bromofluorobenzene	90	68-120		

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>MW-6</b>	<b>09-08-0456-3-C</b>	<b>08/04/09 10:28</b>	<b>Aqueous</b>	<b>GC/MS BB</b>	<b>08/13/09</b>	<b>08/13/09 17:18</b>	<b>090813L01</b>

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	2.5	5		Methyl-t-Butyl Ether (MTBE)	140	2.5	5	
1,2-Dibromoethane	ND	2.5	5		Tert-Butyl Alcohol (TBA)	ND	50	5	
1,2-Dichloroethane	ND	2.5	5		Diisopropyl Ether (DIPE)	ND	2.5	5	
Ethylbenzene	ND	2.5	5		Ethyl-t-Butyl Ether (ETBE)	ND	2.5	5	
Toluene	ND	2.5	5		Tert-Amyl-Methyl Ether (TAME)	ND	2.5	5	
Xylenes (total)	ND	2.5	5		Ethanol	ND	1500	5	
<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control Limits</b>		<b>Qual</b>	<b>Surrogates:</b>	<b>REC (%)</b>	<b>Control Limits</b>		<b>Qual</b>
1,2-Dichloroethane-d4	112	80-128			Dibromofluoromethane	115	80-127		
Toluene-d8	95	80-120			1,4-Bromofluorobenzene	88	68-120		

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: 08/06/09  
Work Order No: 09-08-0456  
Preparation: EPA 5030B  
Method: EPA 8260B  
Units: ug/L

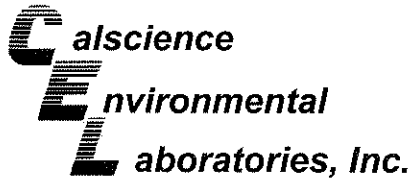
Project: BP / ARCO 11124

Page 2 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	099-12-703-1,037	N/A	Aqueous	GC/MS BB	08/13/09	08/13/09 13:36	090813L01

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	80-128			Dibromofluoromethane	110	80-127		
Toluene-d8	92	80-120			1,4-Bromofluorobenzene	89	68-120		

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



**Quality Control - Spike/Spike Duplicate**



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

Date Received: 08/06/09  
 Work Order No: 09-08-0456  
 Preparation: EPA 5030B  
 Method: EPA 8015B (M)

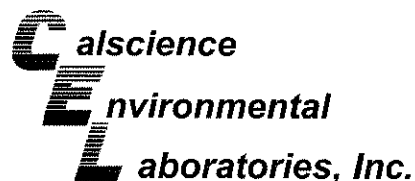
Project BP / ARCO 11124

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
MW-1	Aqueous	GC 11	08/08/09	08/08/09	090808S01

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Gasoline Range Organics (C6-C12)	93	95	38-134	3	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

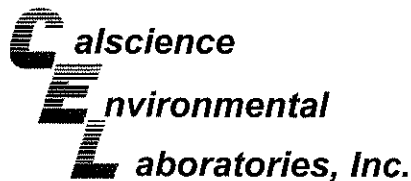
Date Received: 08/06/09  
Work Order No: 09-08-0456  
Preparation: EPA 5030B  
Method: EPA 8260B

Project BP / ARCO 11124

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
09-08-0454-2	Aqueous	GC/MS BB	08/13/09	08/13/09	090813S01

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	109	111	76-124	1	0-20	
Carbon Tetrachloride	112	117	74-134	4	0-20	
Chlorobenzene	105	102	80-120	3	0-20	
1,2-Dibromoethane	100	105	80-120	5	0-20	
1,2-Dichlorobenzene	99	101	80-120	2	0-20	
1,1-Dichloroethene	102	109	73-127	7	0-20	
Ethylbenzene	92	92	78-126	1	0-20	
Toluene	97	103	80-120	6	0-20	
Trichloroethene	104	107	77-120	3	0-20	
Vinyl Chloride	91	95	72-126	4	0-20	
Methyl-t-Butyl Ether (MTBE)	84	95	67-121	12	0-49	
Tert-Butyl Alcohol (TBA)	105	101	36-162	4	0-30	
Diisopropyl Ether (DIPE)	89	95	60-138	6	0-45	
Ethyl-t-Butyl Ether (ETBE)	86	92	69-123	7	0-30	
Tert-Amyl-Methyl Ether (TAME)	81	88	65-120	8	0-20	
Ethanol	111	119	30-180	7	0-72	

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

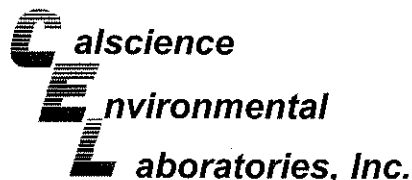
Date Received: N/A  
 Work Order No: 09-08-0456  
 Preparation: EPA 5030B  
 Method: EPA 8015B (M)

Project: BP / ARCO 11124

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-695-634	Aqueous	GC 11	08/08/09	08/08/09	090808B01

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Gasoline Range Organics (C6-C12)	97	98	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: 09-08-0456  
Preparation: EPA 5030B  
Method: EPA 8260B

Project: BP / ARCO 11124

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number		
099-12-703-1.037	Aqueous	GC/MS BB	08/13/09	08/13/09	090813L01		
Parameter	LCS %REC	LCSD %REC	%REC CL	ME_CL	RPD	RPD CL	Qualifiers
Benzene	109	110	80-120	73-127	1	0-20	
Carbon Tetrachloride	112	113	74-134	64-144	1	0-20	
Chlorobenzene	103	103	80-120	73-127	0	0-20	
1,2-Dibromoethane	99	105	79-121	72-128	6	0-20	
1,2-Dichlorobenzene	100	102	80-120	73-127	2	0-20	
1,1-Dichloroethene	109	111	78-126	70-134	2	0-28	
Ethylbenzene	97	98	80-120	73-127	1	0-20	
Toluene	100	102	80-120	73-127	2	0-20	
Trichloroethene	109	111	79-127	71-135	2	0-20	
Vinyl Chloride	99	103	72-132	62-142	4	0-20	
Methyl-t-Butyl Ether (MTBE)	86	89	69-123	60-132	3	0-20	
Tert-Butyl Alcohol (TBA)	104	103	63-123	53-133	1	0-20	
Diisopropyl Ether (DIPE)	90	101	59-137	46-150	11	0-37	
Ethyl-t-Butyl Ether (ETBE)	86	95	69-123	60-132	10	0-20	
Tert-Amyl-Methyl Ether (TAME)	84	86	70-120	62-128	2	0-20	
Ethanol	113	126	28-160	6-182	11	0-57	

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: 09-08-0456

---

<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 abovelimit; 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

0456

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 Acct:	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: _____				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
1	MW-1	8/4/09	9:52	X			6				X	X	X	X	X					
2	MW-5		10:09	X			6			X		X	X	X	X					
3	MW-6		10:28	X			6			X		X	X	X	X					
4	TB11124 08/04/09		9:00	X			2			X										ON HOLD

Sampler's Name: <u>ROBERTO HEIMLICH</u> / Doulos Env.	Relinquished By / Affiliation: <u>[Signature]</u> / DOULOS ENV. / Doulos Env.	Date: <u>8/4/09</u>	Time: <u>12:00</u>	Accepted By / Affiliation: <u>[Signature]</u>	Date: <u>8/6/09</u>	Time: <u>10:30</u>
Sampler's Company: Stratus Environmental Inc.	Shipment Method:	Shipment Date:	Shipment Tracking No: <u>105528631</u>			

Special Instructions: TB Sample ON HOLD! Cc results to [miller@broadbentinc.com](mailto:miller@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

**SAMPLE RECEIPT FORM**

Cooler 1 of 1

CLIENT: Stratus

DATE: 08/06/09

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

Temperature 2.3 °C - 0.2°C (CF) = 2.1 °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: JP

**CUSTODY SEALS INTACT:**

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

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

**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"/>	<input 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 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>  100PJ  100PJna<sub>2</sub>  \_\_\_\_\_  \_\_\_\_\_  \_\_\_\_\_

**Air:**  Tedlar®  Summa®  \_\_\_\_\_ **Other:**  \_\_\_\_\_ **Checked/Labeled by:** SO

**Container:** C: Clear A: Amber P: Plastic G: Glass J: Jar B: Bottle Z: Ziploc/Resealable Bag E: Envelop **Reviewed by:** W.S.K

**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 **Scanned by:** SO

## ATTACHMENT

### FIELD PROCEDURES FOR GROUNDWATER SAMPLING

---

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 RECEIPTS**

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>3Q09 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>9/16/2009 10:32:40 AM</b>
<b><u>Confirmation Number:</u></b>	<b>5223626255</b>

Copyright © 2008 State of California

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>	3Q09 GW Monitoring
<b><u>Facility Global ID:</u></b>	T0600100919
<b><u>Facility Name:</u></b>	BP #11124
<b><u>File Name:</u></b>	09080456.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>	9/16/2009 10:34:49 AM
<b><u>Confirmation Number:</u></b>	<b>6062035977</b>

[VIEW QC REPORT](#)

[VIEW DETECTIONS REPORT](#)