

# Atlantic Richfield Company

**Shannon Couch**  
Project Manager

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**RECEIVED**

*2:12 pm, Feb 01, 2012*

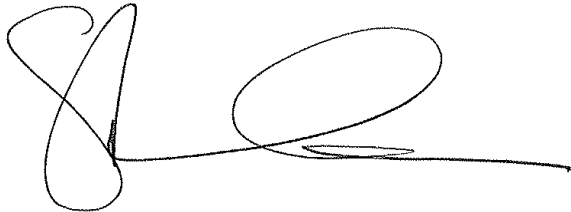
Alameda County  
Environmental Health

January 27, 2012

Re: Fourth Quarter 2011 Semi-Annual Groundwater Monitoring Report  
Atlantic Richfield Company Station #4977  
2770 Castro Valley Boulevard, Castro Valley, California  
ACEH Case #RO0002436

"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,



Shannon Couch  
Project Manager

Attachment

**FOURTH QUARTER 2011 SEMI-ANNUAL  
GROUNDWATER MONITORING REPORT**

Atlantic Richfield Company Station #4977  
2770 Castro Valley Blvd, Castro Valley, California  
ACEH Case #RO0002436

Prepared for

Ms. Shannon Couch  
Project 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*

January 27, 2012

Project No. 06-82-625

January 27, 2012

Project No. 06-82-625

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

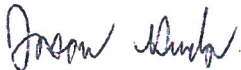
Attn.: Ms. Shannon Couch

Re: Fourth Quarter 2011 Semi-Annual Groundwater Monitoring Report, Atlantic Richfield Company Station #4977, 2770 Castro Valley Blvd., Castro Valley, California;  
ACEH Case #RO0002436

Dear Ms. Couch:

Attached is the *Fourth Quarter 2011 Semi-Annual Groundwater Monitoring Report* for Atlantic Richfield Company (a BP affiliated company) Station #4977 located at 2770 Castro Valley Blvd., Castro Valley, Alameda County, California (Site). This report presents a summary of current developments regarding the Site through the Fourth Quarter 2011. Should you have questions regarding the work performed or results obtained, please do not hesitate to contact us at (530) 566-1400.

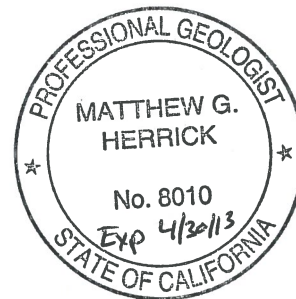
Sincerely,  
BROADBENT & ASSOCIATES, INC.



Jason Duda  
Project Scientist



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



Enclosure

cc: Mr. Paresh Khatri, ACEH (Submitted via ACEH ftp Site)  
Electronic Copy Uploaded to Geotracker

**FOURTH QUARTER 2011 SEMI-ANNUAL  
GROUNDWATER MONITORING REPORT  
STATION #4977, CASTRO VALLEY, CALIFORNIA**

Broadbent & Associates, Inc. (Broadbent) is pleased to present this *Fourth Quarter 2011 Monitoring Report* on behalf of Atlantic Richfield Company (a BP affiliated company) for Station #4977 located in Castro Valley, Alameda County, California. Reporting is being submitted to the Alameda County Environmental Health Services Agency (ACEH) consistent with the requirements under the legal authority of the California Regional Water Quality Control Board as codified by California Code of Regulations Title 23, Section 2652(d). A summary description of current developments regarding the site is provided below.

Facility Name / Address:	<u>Station #4977 / 2770 Castro Valley Boulevard, Castro Valley, CA</u>
Client Project Manager / Title:	<u>Ms. Shannon Couch / Project Manager</u>
Broadbent Contact:	<u>Jason Duda, (530) 566-1400</u>
Broadbent Project No.:	<u>06-82-625</u>
Primary Regulatory Agency / ID No.:	<u>ACEH, Case #RO0002436</u>
Current phase of project:	<u>Monitoring and On-site Assessment</u>
List of Acronyms / Abbreviations:	<u>See end of report text for list of acronyms/abbreviations used in report.</u>

**WORK PERFORMED THIS QUARTER (Fourth Quarter 2011):**

1. Prepared and submitted the *Third Quarter 2011 Status Report* (Broadbent, 10/17/2011).
2. Conducted groundwater monitoring/sampling for Fourth Quarter 2011 on December 16, 2011.

**WORK SCHEDULED FOR NEXT QUARTER (Third Quarter 2011):**

1. Prepare and submit On-Site Soil and Groundwater Investigation Report (Broadbent, 1/16/2012).
2. Prepare and submit *Fourth Quarter 2011 Monitoring Report* (contained herein).

**GROUNDWATER MONITORING PLAN SUMMARY:**

Groundwater level gauging:	<u>MW-1 through MW-3</u>	(2Q and 4Q)
Groundwater sample collection:	<u>MW-1 through MW-3</u>	(2Q and 4Q)
Biodegradation indicator parameter monitoring:	<u>NA</u>	

**QUARTERLY RESULTS SUMMARY:**

**LNAPL**

LNAPL observed this quarter:	<u>Yes (MW-2)</u>	(yes/no)
LNAPL recovered this quarter:	<u>None</u>	(gal)
Cumulative LNAPL recovered:	<u>Unknown</u>	(gal)

**Groundwater Elevation and Gradient:**

Depth to groundwater:	<u>7.16 (MW-2) to 8.67 (MW-1)</u>	(ft below TOC)
Gradient direction:	<u>South</u>	(compass direction)
Gradient magnitude:	<u>0.021</u>	(ft/ft)
Average change in elevation:	<u>-1.89</u>	(ft since last measurement)

**Laboratory Analytical Data**

Summary:	GRO were detected in well MW-2 at a concentration of 6,000 µg/L. Benzene was detected in well MW-2 at a concentration of 180 µg/L. MTBE was detected in each of the three wells sampled at a maximum concentration of 25 µg/L in well MW-2.
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## ACTIVITIES CONDUCTED & RESULTS:

Fourth Quarter 2011 semi-annual groundwater monitoring was conducted on December 16, 2011 by Broadbent personnel in accordance with the monitoring plan summary detailed above. No irregularities were noted during water level gauging. Light, Non-Aqueous Phase Liquid (LNAPL, or free product) was noted to be present in well MW-2 as a sheen. LNAPL was not noted to be present in the remaining wells monitored during this event. Depth to water measurements ranged from 7.16 ft at MW-2 to 8.67 ft at MW-1. Resulting groundwater surface elevations ranged from 154.77 ft at MW-1 to 157.13 ft at MW-3. Groundwater elevations are summarized in Table 1. Water level elevations yielded a horizontal groundwater gradient to the South at approximately 0.021 ft/ft. Field methods used during groundwater monitoring are provided in Appendix A. Field data sheets are included in Appendix B. A Site Location Map is presented as Drawing 1. Potentiometric groundwater elevation contours are presented in Drawing 2.

Groundwater samples were collected on December 16, 2011 from wells MW-1, MW-2 and MW-3 at Station #4977, consistent with the current monitoring schedule. No irregularities were reported during sampling. Samples were submitted under chain-of-custody protocol to Calscience Environmental Laboratories, Inc. (Garden Grove, California) for analysis of Gasoline-Range Organics (GRO, C6-C12) by EPA Method 8015M; for Benzene, Toluene, Ethylbenzene, Total Xylenes (BTEX), Methyl Tertiary Butyl Ether (MTBE), Ethyl Tertiary Butyl Ether (ETBE), Tert-Amyl Methyl Ether (TAME), Di-Isopropyl Ether (DIPE), 1,2-Dibromomethane (EDB), 1,2-Dichloroethane (1,2-DCA), Tert-Butyl Alcohol (TBA) and Ethanol by EPA Method 8260. The GRO concentration in the sample collected from MW-2 was “quantitated against gasoline.” No other significant irregularities were encountered during analysis of the samples. The laboratory analytical report, including chain-of-custody documentation, is provided in Appendix C.

Hydrocarbons in the GRO range were detected above the laboratory reporting limit in well MW-2 at a concentration of 6,000 micrograms per liter ( $\mu\text{g/L}$ ). Benzene was detected above the laboratory reporting limit in well MW-2 at a concentration of 180  $\mu\text{g/L}$ . Ethylbenzene was detected above the laboratory reporting limit in wells MW-2 and MW-3 at concentrations of 87  $\mu\text{g/L}$  and 0.98  $\mu\text{g/L}$ , respectively. MTBE was detected above the laboratory reporting limit in each of the three wells sampled at concentrations up to 25  $\mu\text{g/L}$  in MW-2. TBA was detected above the laboratory reporting limit in well MW-3 at a concentration of 17  $\mu\text{g/L}$ . The remaining analytes were not detected above their laboratory reporting limits in the wells sampled this monitoring event. Groundwater monitoring 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. Groundwater monitoring data (GEO\_WELL) and laboratory analytical results (EDF) were uploaded to the GeoTracker AB2886 database. Upload confirmation receipts are provided in Appendix D.

## DISCUSSION:

Groundwater levels were between historic minimum and maximum elevations for each well gauged this quarter. Groundwater elevations yielded a horizontal groundwater gradient to the South at approximately 0.21 ft/ft, generally consistent with the historic flow direction and gradient data presented in Table 3.

This event’s detected analytical concentrations were within the historic minimum and maximum ranges recorded for each well with the following exceptions: GRO and Benzene reached historic minimum concentrations in well MW-2 and MTBE reached historic minimum concentrations in wells MW-2 and MW-3. The next semi-annual groundwater monitoring and sampling event is scheduled to be conducted during the Second Quarter 2012.

## RECOMMENDATIONS:

Based on the results obtained from the on-Site soil and groundwater investigation conducted in September 2011 and summarized in the January 16, 2012 *On-Site Soil and Groundwater Investigation Report*, it is recommended to complete a Conceptual Site Model in order to determine if case closure is appropriate for the Site.

## LIMITATIONS:

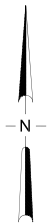
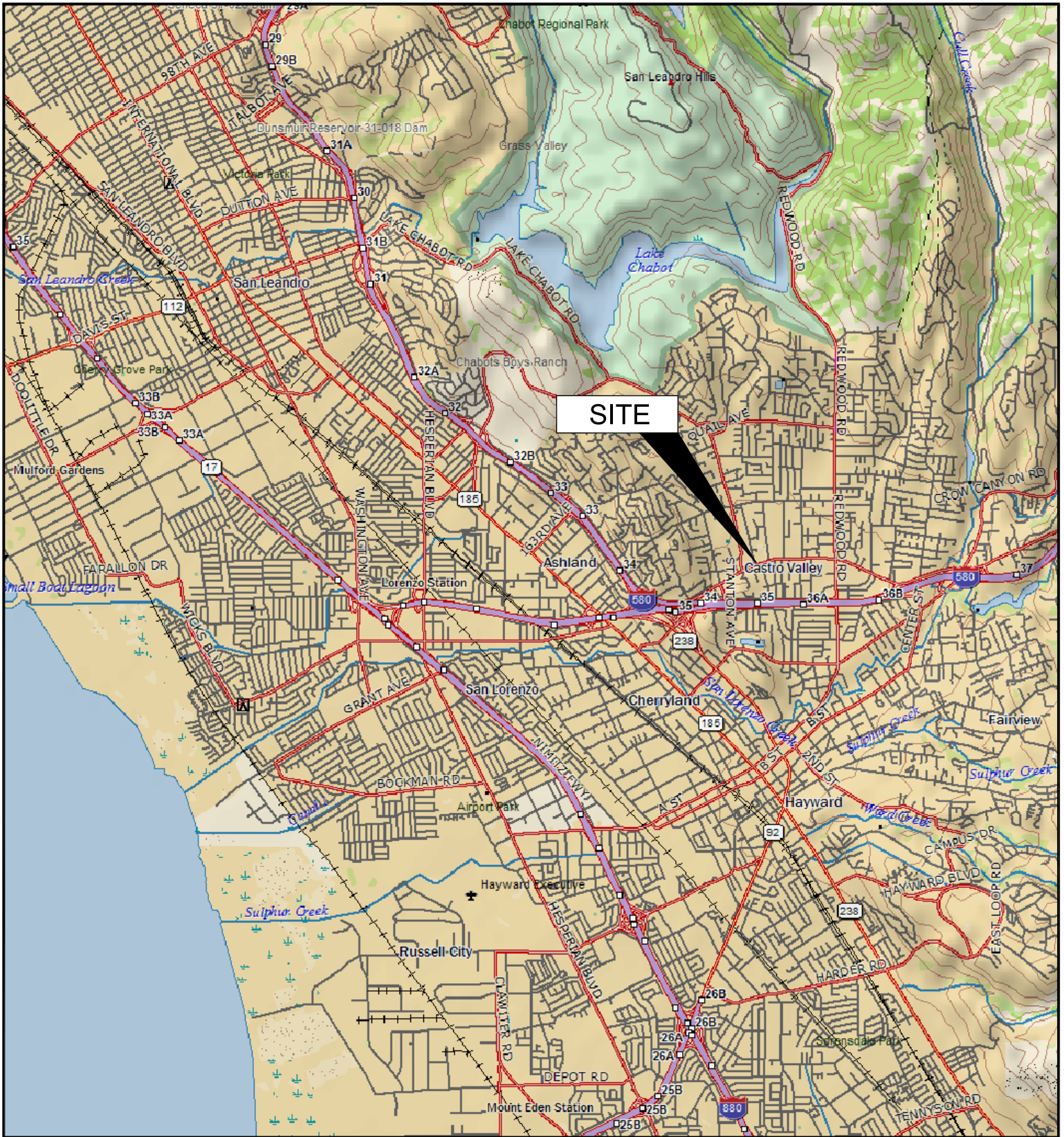
The findings presented in this report are based upon: observations of Broadbent field personnel (see Appendix A), the points investigated, and results of laboratory tests performed by CalScience Environmental Laboratories, Inc. (Garden Grove, California). Our services were performed in accordance with 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 (a BP affiliated company). It is possible that variations in soil or groundwater 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
Drawing 2:	Groundwater Elevation Contour and Analytical Summary Map, December 16, 2011
Table 1:	Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses
Table 2:	Summary of Fuel Additives Analytical Data
Table 3:	Historic Groundwater Gradient – Direction and Magnitude
Appendix A:	Field Methods
Appendix B:	Field Data Sheets and Non-Hazardous Waste Data Form
Appendix C:	Laboratory Report and Chain-of-Custody Documentation
Appendix D:	GeoTracker Upload Confirmation Receipts

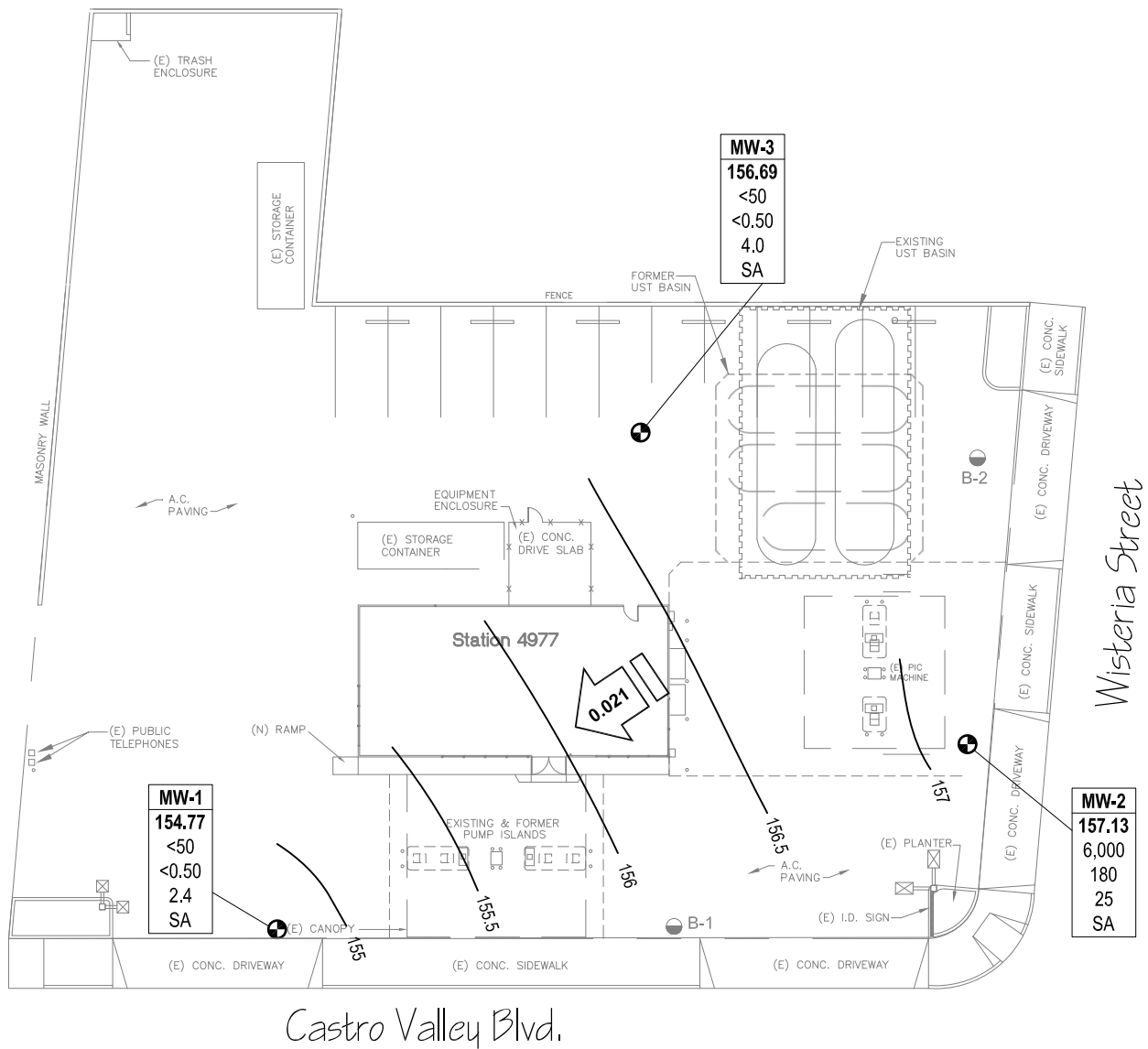
## LIST OF COMMONLY USED ACCRONYMS/ABBREVIATIONS:

BTEX:	Benzene, Toluene, Ethylbenzene, Total Xylenes	GRO:	Gasoline-Range Organics
1,2-DCA:	1,2-Dichloroethane	LNAPL:	Light Non-Aqueous Phase Liquid
DIPE:	Di-Isopropyl Ether	MTBE:	Methyl Tertiary Butyl Ether
DO:	Dissolved Oxygen	NO <sub>3</sub> :	Nitrate as Nitrogen
DRO:	Diesel-Range Organics	ppb:	parts per billion
EDB:	1,2-Dibromomethane	SFBRWQCB:	San Francisco Bay Regional Water Quality Control Board
Eh:	Oxidation Reduction Potential	SO <sub>4</sub> :	Sulfate
EPA:	Environmental Protection Agency	TAME:	Tert-Amyl Methyl Ether
ETBE:	Ethyl Tertiary Butyl Ether	TBA:	Tertiary Butyl Ether
Fe <sup>2+</sup> :	Ferrous Iron	TOC:	Top of Casing
ft/ft:	feet per foot	µg/L:	micrograms per liter
gal:	Gallons		



APPROXIMATE SCALE (mi)

IMAGE SOURCE: DELORME



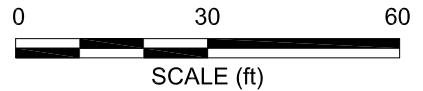
**LEGEND**

- MONITORING WELL
- SOIL BORING

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

- < NOT DETECTED AT OR ABOVE LABORATORY REPORTING LIMITS
- SA SAMPLED SEMI-ANNUALLY (2ND AND 4TH QUARTERS)
- 156 GROUNDWATER ELEVATION CONTOUR (FT)
- GROUNDWATER GRADIENT (FT/FT)

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





**Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses**  
**ARCO Service Station #4977, 2770 Castro Valley Blvd., Castro Valley, CA**

Well ID and Date Monitored	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
							GRO/TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
<b>MW-1</b>															
4/19/2002	--	161.11	5.00	15.00	11.21	149.90	660	12	1.3	4.3	0.8	38	--	--	
9/27/2002	--		5.00	15.00	9.29	151.82	130	7.7	0.87	5.4	0.79	39	1.7	6.9	
12/16/2002	--		5.00	15.00	8.55	152.56	77	1.8	<0.50	0.69	<1.0	42	1.6	6.9	a
3/11/2003	--		5.00	15.00	8.07	153.04	140	9.8	<0.50	5.6	<0.50	20	1.4	7.4	
6/17/2003	--		5.00	15.00	8.31	152.80	510	60	1.4	81	<1.0	23	2.2	7	
9/18/2003	--		5.00	15.00	9.45	151.66	72	2.4	1.4	1.6	1.5	39	2.7	7	b
12/11/2003	P		5.00	15.00	8.80	152.31	79	1.5	<0.50	1.5	4.4	48	2.1	7.0	
03/11/2004	P	163.44	5.00	15.00	7.61	155.83	<50	1.3	<0.50	0.77	1.3	17	1.4	6.8	
06/02/2004	P		5.00	15.00	8.95	154.49	53	1.4	<0.50	0.93	<0.50	39	2.3	7.1	
09/22/2004	P		5.00	15.00	9.42	154.02	70	<0.50	<0.50	<0.50	<0.50	48	1.7	6.8	
12/15/2004	P		5.00	15.00	7.88	155.56	63	<0.50	<0.50	<0.50	<0.50	45	1.8	6.9	
03/07/2005	P		5.00	15.00	7.02	156.42	<50	<0.50	<0.50	<0.50	<0.50	4.0	2.4	6.8	
06/27/2005	P		5.00	15.00	7.53	155.91	52	2.0	<0.50	1.9	0.78	8.1	2.8	7.1	
09/16/2005	P		5.00	15.00	9.20	154.24	<50	<0.50	<0.50	<0.50	0.76	14	1.82	6.9	
12/27/2005	P		5.00	15.00	7.60	155.84	<50	1.3	<0.50	1.5	<0.50	9.4	2.02	7.87	
03/16/2006	P		5.00	15.00	6.97	156.47	71	3.0	<0.50	3.5	<0.50	3.4	1.6	7.1	
6/26/2006	P		5.00	15.00	8.58	154.86	71	0.69	<0.50	1.1	3.5	3.2	2.2	6.9	
9/29/2006	P		5.00	15.00	8.85	154.59	<50	<0.50	<0.50	<0.50	<0.50	5.2	2.35	6.7	
12/19/2006	P		5.00	15.00	8.00	155.44	<50	<0.50	<0.50	<0.50	<0.50	4.3	4.80	7.21	
3/29/2007	P		5.00	15.00	7.70	155.74	<50	<0.50	<0.50	<0.50	<0.50	2.3	3.44	7.18	
6/5/2007	P		5.00	15.00	8.77	154.67	<50	<0.50	<0.50	<0.50	<0.50	3.2	3.45	7.29	
9/25/2007	P		5.00	15.00	9.18	154.26	<50	<0.50	<0.50	<0.50	<0.50	5.3	2.61	7.41	
12/26/2007	P		5.00	15.00	8.45	154.99	<50	<0.50	<0.50	<0.50	<0.50	2.9	5.57	7.43	
3/25/2008	P		5.00	15.00	8.29	155.15	<50	<0.50	<0.50	<0.50	<0.50	0.94	3.52	7.80	
6/10/2008	P		5.00	15.00	9.17	154.27	<50	<0.50	<0.50	<0.50	<0.50	1.3	3.38	7.01	
9/2/2008	P		5.00	15.00	9.15	154.29	<50	<0.50	<0.50	<0.50	<0.50	5.6	2.30	6.81	
12/2/2008	P		5.00	15.00	8.90	154.54	<50	<0.50	<0.50	<0.50	<0.50	2.7	2.41	6.96	
3/5/2009	P		5.00	15.00	8.05	155.39	<50	<0.50	<0.50	<0.50	<0.50	1.3	2.48	7.47	
6/2/2009	P		5.00	15.00	14.91	148.53	<50	<0.50	<0.50	<0.50	<0.50	0.60	0.83	7.01	
11/6/2009	P		5.00	15.00	8.46	154.98	<50	<0.50	<0.50	<0.50	<0.50	1.9	1.15	6.8	

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							GRO/TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
<b>MW-1 Cont.</b>															
5/20/2010	--	163.44	5.00	15.00	8.02	155.42	--	--	--	--	--	--	--	--	
11/3/2010	P		5.00	15.00	8.85	154.59	<50	<0.50	<0.50	<0.50	<0.50	1.4	0.80	6.3	
5/17/2011	P		5.00	15.00	7.71	155.73	<50	<0.50	<0.50	<0.50	<0.50	0.59	0.97	7.3	
<b>12/16/2011</b>	<b>P</b>		<b>5.00</b>	<b>15.00</b>	<b>8.67</b>	<b>154.77</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>2.4</b>	<b>3.02</b>	<b>7.3</b>	
<b>MW-2</b>															
4/19/2002	--	161.87	5.00	15.00	6.59	155.28	28,000	970	120	860	6,900	760	--	--	
9/27/2002	--		5.00	15.00	7.18	154.69	17,000	1,400	<50	1,200	3,700	1,400	1.5	6.8	
12/16/2002	--		5.00	15.00	7.31	154.56	17,000	1,000	<50	980	3,300	980	1.9	6.8	a
3/11/2003	--		5.00	15.00	6.02	155.85	24,000	1,600	70	1,300	4,300	920	1.7	7.4	
6/17/2003	--		5.00	15.00	6.31	155.56	28,000	1,300	55	1,300	4,500	610	1.4	6.9	
9/18/2003	--		5.00	15.00	7.61	154.26	19,000	960	63	1,100	3,100	580	2.7	6.8	
12/11/2003	P		5.00	15.00	6.50	155.37	29,000	710	53	1,300	3,800	490	2.0	7.0	
03/11/2004	P	164.29	5.00	15.00	6.02	158.27	19,000	830	49	1,500	4,000	410	0.8	6.5	
06/02/2004	P		5.00	15.00	7.14	157.15	25,000	680	<50	1,300	3,900	240	4.3	7.1	
09/22/2004	--		5.00	15.00	7.63	156.66	15,000	980	<25	980	940	390	--	6.7	
12/15/2004	P		5.00	15.00	6.48	157.81	22,000	610	26	1,300	3,200	290	0.3	6.9	c
03/07/2005	P		5.00	15.00	6.08	158.21	25,000	570	33	1,400	3,900	120	2.3	6.8	
06/27/2005	P		5.00	15.00	6.90	157.39	24,000	630	32	1,200	2,900	86	2.5	7.2	
09/16/2005	P		5.00	15.00	7.66	156.63	25,000	550	<25	1,400	3,000	82	1.41	7.0	
12/27/2005	P		5.00	15.00	5.60	158.69	33,000	540	<25	1,300	2,700	100	2.26	7.19	
03/16/2006	P		5.00	15.00	7.25	157.04	29,000	710	<50	1,400	2,600	78	1.4	7.1	c
6/26/2006	P		5.00	15.00	6.60	157.69	20,000	630	<25	1,200	1,100	110	0.64	6.8	c
9/29/2006	P		5.00	15.00	6.85	157.44	24,000	530	<25	1,300	1,800	86	1.36	6.7	
12/19/2006	P		5.00	15.00	6.02	158.27	21,000	500	<25	1,400	1,700	70	1.11	7.42	
3/29/2007	P		5.00	15.00	6.03	158.26	16,000	530	<25	1,100	1,100	80	2.98	7.18	
6/5/2007	P		5.00	15.00	6.85	157.44	21,000	420	<25	1,100	1,100	50	2.09	7.20	
9/25/2007	P		5.00	15.00	7.15	157.14	25,000	620	<25	1,400	1,200	70	3.25	7.59	
12/26/2007	P		5.00	15.00	6.25	158.04	16,000	440	<5.0	760	570	80	1.84	7.66	
3/25/2008	P		5.00	15.00	6.63	157.66	16,000	530	7.8	790	470	96	1.78	7.72	
6/10/2008	P		5.00	15.00	7.04	157.25	14,000	480	<25	730	240	100	1.83	6.96	

**Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses**  
**ARCO Service Station #4977, 2770 Castro Valley Blvd., Castro Valley, CA**

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							GRO/TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
<b>MW-2 Cont.</b>															
9/2/2008	P	164.29	5.00	15.00	7.25	157.04	13,000	440	<25	690	240	91	3.09	6.61	
12/2/2008	P		5.00	15.00	6.42	157.87	31,000	490	<10	670	120	97	3.05	7.00	
3/5/2009	P		5.00	15.00	5.83	158.46	16,000	470	<10	490	130	82	2.99	7.35	
6/2/2009	P		5.00	15.00	14.51	149.78	11,000	340	<10	490	210	34	1.07	6.89	
11/6/2009	P		5.00	15.00	6.52	157.77	14,000	470	<10	400	110	76	0.32	6.8	
5/20/2010	P		5.00	15.00	6.80	157.49	12,000	430	<10	270	55	64	0.74	6.5	
11/3/2010	P		5.00	15.00	7.52	156.77	9,000	300	<10	79	<10	52	0.37	6.3	d
5/17/2011	P		5.00	15.00	5.86	158.43	14,000	230	<5.0	43	7.2	29	1.28	7.3	
<b>12/16/2011</b>	<b>P</b>		<b>5.00</b>	<b>15.00</b>	<b>7.16</b>	<b>157.13</b>	<b>6,000</b>	<b>180</b>	<b>&lt;5.0</b>	<b>87</b>	<b>&lt;5.0</b>	<b>25</b>	<b>0.81</b>	<b>7.3</b>	<b>c, d</b>
<b>MW-3</b>															
4/19/2002	--	162.14	5.00	15.00	6.94	155.20	1,200	29	1.1	43	62	1,700	--	--	
9/27/2002	--		5.00	15.00	8.26	153.88	740	7.8	<2.5	6.8	4.4	1,100	1	6.7	
12/16/2002	--		5.00	15.00	6.76	155.38	1,200	13	<10	170	88	910	2.3	6.8	a
3/11/2003	--		5.00	15.00	6.92	155.22	<2,500	<25	<25	<25	<25	470	1.7	7.5	
6/17/2003	--		5.00	15.00	7.44	154.70	<1,000	<10	<10	14	<10	530	1.9	7	
9/18/2003	--		5.00	15.00	8.43	153.71	470	4.8	<2.5	10	9.2	300	2.9	6.8	
12/11/2003	P		5.00	15.00	6.72	155.42	<500	<5.0	<5.0	7.0	13	180	1.9	6.9	
03/11/2004	P	164.53	5.00	15.00	6.09	158.44	360	1.9	<1.0	5.6	5.0	110	2.6	6.8	
06/02/2004	P		5.00	15.00	7.50	157.03	380	2.8	<0.50	8.0	2.1	43	3.6	7.3	
09/22/2004	P		5.00	15.00	8.00	156.53	270	<0.50	<0.50	0.54	<0.50	50	1.8	6.9	
12/15/2004	P		5.00	15.00	6.43	158.10	390	3.5	<0.50	20	3.7	49	1.1	6.9	
03/07/2005	P		5.00	15.00	6.12	158.41	1,900	13	<1.0	93	29	70	2.3	6.8	
06/27/2005	P		5.00	15.00	7.08	157.45	830	4.0	<0.50	13	2.8	33	3.3	7.3	
09/16/2005	P		5.00	15.00	7.28	157.25	320	2.1	<0.50	5.4	0.60	21	2.11	7.0	
12/27/2005	P		5.00	15.00	6.47	158.06	770	6.0	<0.50	33	2.7	36	2.96	7.42	
03/16/2006	P		5.00	15.00	6.10	158.43	1,600	11	<0.50	59	6.4	45	1.4	7.1	
6/26/2006	P		5.00	15.00	6.92	157.61	400	<0.50	<0.50	1.6	2.1	26	2.41	7.0	
9/29/2006	P		5.00	15.00	7.38	157.15	220	0.86	<0.50	2.2	0.58	14	1.95	7.0	
12/19/2006	P		5.00	15.00	6.65	157.88	450	4.3	<0.50	19	1.4	19	3.68	7.30	
3/29/2007	P		5.00	15.00	6.92	157.61	390	3.0	<0.50	9.1	0.60	27	1.98	7.16	

**Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses**  
**ARCO Service Station #4977, 2770 Castro Valley Blvd., Castro Valley, CA**

Well ID and Date Monitored	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
							GRO/TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
<b>MW-3 Cont.</b>															
6/5/2007	P	164.53	5.00	15.00	7.01	157.52	390	1.9	<0.50	6.9	<0.50	20	1.99	7.34	
9/25/2007	P		5.00	15.00	7.52	157.01	260	1.3	<0.50	2.7	<0.50	12	3.44	7.41	
12/26/2007	P		5.00	15.00	6.65	157.88	460	3.1	<0.50	15	0.89	17	4.05	7.46	
3/25/2008	P		5.00	15.00	6.71	157.82	260	0.91	0.71	2.5	0.54	29	2.40	7.63	
6/10/2008	P		5.00	15.00	7.33	157.20	120	<0.50	<0.50	2.0	<0.50	12	2.29	7.59	
9/2/2008	P		5.00	15.00	7.53	157.00	97	<0.50	<0.50	<0.50	<0.50	9.3	3.28	6.81	
12/2/2008	P		5.00	15.00	7.38	157.15	140	<0.50	<0.50	<0.50	<0.50	8.4	3.18	7.06	
3/5/2009	P		5.00	15.00	5.21	159.32	530	3.3	<0.50	22	0.71	18	3.11	7.46	
6/2/2009	P		5.00	15.00	14.81	149.72	490	2.1	<0.50	6.2	<0.50	13	0.83	7.03	
11/6/2009	P		5.00	15.00	7.38	157.15	99	<0.50	<0.50	<0.50	<0.50	5.8	0.32	6.97	
5/20/2010	P		5.00	15.00	6.78	157.75	300	0.89	<0.50	<0.50	<0.50	14	--	6.48	
11/3/2010	P		5.00	15.00	7.73	156.80	66	<0.50	<0.50	<0.50	<0.50	4.4	1.11	6.0	d
5/17/2011	P		5.00	15.00	4.44	160.09	170	<0.50	<0.50	<0.50	<0.50	4.7	0.41	7.4	d
<b>12/16/2011</b>	<b>P</b>		<b>5.00</b>	<b>15.00</b>	<b>7.84</b>	<b>156.69</b>	<b>&lt;50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>0.98</b>	<b>&lt;0.50</b>	<b>4.0</b>	<b>0.39</b>	<b>7.2</b>	

Symbols & Abbreviations:

< = Not detected at or above specified laboratory reporting limits

-- = Not measured, sampled, analyzed, applicable

ft bgs = Feet below ground surface

DO = Dissolved oxygen

DTW = Depth to water in ft

GRO = Gasoline range organics

GWE = Groundwater elevation in ft

mg/L = Milligrams per liter

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

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

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

TOC = Top of casing measured in ft MSL

µg/L = Micrograms per liter

Footnotes:

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

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

c = Sheen in well

d = Quantitation of unknown hydrocarbon(s) in sample based on gasoline

Notes:

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

Wells were re-surveyed on 3/23/2004

Values for DO and pH were field measurements

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

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

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

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
<b>MW-1</b>									
4/19/2002	--	--	38	--	--	--	--	--	
9/27/2002	--	--	39	--	--	--	--	--	
12/16/2002	<50	<5.0	42	<0.50	<0.50	<0.50	<0.50	<0.50	
3/11/2003	<100	<20	20	<0.50	<0.50	<0.50	<0.50	<0.50	
6/17/2003	<200	<40	23	<1.0	<1.0	<1.0	<1.0	<1.0	
9/18/2003	<100	<20	39	<0.50	<0.50	<0.50	<0.50	<0.50	a
12/11/2003	<100	<20	48	<0.50	<0.50	<0.50	<0.50	<0.50	
03/11/2004	<100	<20	17	<0.50	<0.50	<0.50	<0.50	<0.50	
06/02/2004	<100	<20	39	<0.50	<0.50	<0.50	<0.50	<0.50	
09/22/2004	<100	<20	48	<0.50	<0.50	<0.50	<0.50	<0.50	
12/15/2004	<100	<20	45	<0.50	<0.50	<0.50	<0.50	<0.50	a
03/07/2005	<100	<20	4.0	<0.50	<0.50	<0.50	<0.50	<0.50	
06/27/2005	<100	<20	8.1	<0.50	<0.50	<0.50	<0.50	<0.50	
09/16/2005	<100	<20	14	<0.50	<0.50	<0.50	<0.50	<0.50	
12/27/2005	<100	<20	9.4	<0.50	<0.50	<0.50	<0.50	<0.50	b
03/16/2006	<300	<20	3.4	<0.50	<0.50	<0.50	<0.50	<0.50	c
6/26/2006	<300	<20	3.2	<0.50	<0.50	<0.50	<0.50	<0.50	
9/29/2006	<300	<20	5.2	<0.50	<0.50	<0.50	<0.50	<0.50	
12/19/2006	<300	<20	4.3	<0.50	<0.50	<0.50	<0.50	--	b
3/29/2007	<300	<20	2.3	<0.50	<0.50	<0.50	<0.50	<0.50	
6/5/2007	<300	<20	3.2	<0.50	<0.50	<0.50	<0.50	<0.50	
9/25/2007	<300	<20	5.3	<0.50	<0.50	<0.50	<0.50	<0.50	
12/26/2007	<300	<20	2.9	<0.50	<0.50	<0.50	<0.50	<0.50	
3/25/2008	<300	<10	0.94	<0.50	<0.50	<0.50	<0.50	<0.50	
6/10/2008	<300	<10	1.3	<0.50	<0.50	<0.50	<0.50	<0.50	
9/2/2008	<300	<10	5.6	<0.50	<0.50	<0.50	<0.50	<0.50	
12/2/2008	<300	<10	2.7	<0.50	<0.50	<0.50	<0.50	<0.50	
3/5/2009	<300	<10	1.3	<0.50	<0.50	<0.50	<0.50	<0.50	
6/2/2009	<300	<10	0.60	<0.50	<0.50	<0.50	<0.50	<0.50	
11/6/2009	<300	<10	1.9	<0.50	<0.50	<0.50	<0.50	<0.50	
11/3/2010	<300	<10	1.4	<0.50	<0.50	<0.50	<0.50	<0.50	
5/17/2011	<300	<10	0.59	<0.50	<0.50	<0.50	<0.50	<0.50	

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

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
<b>MW-1 Cont.</b>									
12/16/2011	<300	<10	2.4	<0.50	<0.50	<0.50	<0.50	<0.50	
<b>MW-2</b>									
4/19/2002	--	--	760	--	--	--	--	--	
9/27/2002	--	--	1,400	--	--	--	--	--	
12/16/2002	<5,000	<500	980	<50	<50	<50	<50	<50	
3/11/2003	<10,000	<2,000	920	<50	<50	<50	<50	<50	
6/17/2003	<10,000	<2,000	610	<50	<50	<50	<50	<50	
9/18/2003	<5,000	<1,000	580	<25	<25	<25	<25	<25	
12/11/2003	<5,000	<1,000	490	<25	<25	<25	<25	<25	
03/11/2004	<2,000	<400	410	<10	<10	<10	<10	<10	
06/02/2004	<10,000	<2,000	240	<50	<50	<50	<50	<50	
09/22/2004	<5,000	<1,000	390	<25	<25	<25	<25	<25	
12/15/2004	<2,000	<400	290	<10	<10	<10	<10	<10	a
03/07/2005	<5,000	<1,000	120	<25	<25	<25	<25	<25	
06/27/2005	<5,000	<1,000	86	<25	<25	<25	<25	<25	
09/16/2005	<5,000	<1,000	82	<25	<25	<25	<25	<25	
12/27/2005	<5,000	<1,000	100	<25	<25	<25	<25	<25	b
03/16/2006	<30,000	<2,000	78	<50	<50	<50	<50	<50	c
6/26/2006	<15,000	<1,000	110	<25	<25	<25	<25	<25	
9/29/2006	<15,000	<1,000	86	<25	<25	<25	<25	<25	
12/19/2006	<15,000	<1,000	70	<25	<25	<25	<25	--	b
3/29/2007	<15,000	<1,000	80	<25	<25	<25	<25	<25	
6/5/2007	<15,000	<1,000	50	<25	<25	<25	<25	<25	
9/25/2007	<15,000	<1,000	70	<25	<25	<25	<25	<25	
12/26/2007	<3,000	<200	80	<5.0	<5.0	<5.0	<5.0	<5.0	
3/25/2008	<1,500	<50	96	<2.5	<2.5	<2.5	<2.5	<2.5	
6/10/2008	<15,000	<500	100	<25	<25	<25	<25	<25	
9/2/2008	<15,000	<500	91	<25	<25	<25	<25	<25	
12/2/2008	<6,000	<200	97	<10	<10	<10	<10	<10	
3/5/2009	<6,000	<200	82	<10	<10	<10	<10	<10	
6/2/2009	<6,000	<200	34	<10	<10	<10	<10	<10	

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

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
<b>MW-2 Cont.</b>									
11/6/2009	<6,000	<200	76	<10	<10	<10	<10	<10	
5/20/2010	<6,000	<200	64	<10	<10	<10	<10	<10	
11/3/2010	<6,000	<200	52	<10	<10	<10	11	<10	
5/17/2011	<3,000	<100	29	<5.0	<5.0	<5.0	<5.0	<5.0	
<b>12/16/2011</b>	<b>&lt;3,000</b>	<b>&lt;100</b>	<b>25</b>	<b>&lt;5.0</b>	<b>&lt;5.0</b>	<b>&lt;5.0</b>	<b>&lt;5.0</b>	<b>&lt;5.0</b>	
<b>MW-3</b>									
4/19/2002	--	--	1,700	--	--	--	--	--	
9/27/2002	--	--	1,100	--	--	--	--	--	
12/16/2002	<1,000	<100	910	<10	<10	12	<10	<10	
3/11/2003	<5,000	<1,000	470	<25	<25	<25	<25	<25	
6/17/2003	<2,000	<400	530	<10	<10	<10	<10	<10	
9/18/2003	<500	<100	300	<2.5	<2.5	3.2	<2.5	<2.5	
12/11/2003	<1,000	<200	180	<5.0	<5.0	<5.0	<5.0	<5.0	
03/11/2004	<200	570	110	<1.0	<1.0	<1.0	<1.0	<1.0	
06/02/2004	<100	130	43	<0.50	<0.50	0.56	<0.50	<0.50	
09/22/2004	<100	28	50	<0.50	<0.50	0.51	<0.50	<0.50	
12/15/2004	<100	110	49	<0.50	0.52	0.61	<0.50	<0.50	a
03/07/2005	<200	190	70	<1.0	<1.0	<1.0	<1.0	<1.0	
06/27/2005	<100	130	33	<0.50	<0.50	<0.50	<0.50	<0.50	
09/16/2005	<100	44	21	<0.50	<0.50	<0.50	<0.50	<0.50	
12/27/2005	<100	150	36	<0.50	<0.50	<0.50	<0.50	<0.50	b
03/16/2006	<300	160	45	<0.50	<0.50	0.84	<0.50	<0.50	c
6/26/2006	<300	53	26	<0.50	<0.50	<0.50	<0.50	<0.50	
9/29/2006	<300	55	14	<0.50	<0.50	<0.50	<0.50	<0.50	
12/19/2006	<300	<20	19	<0.50	<0.50	<0.50	<0.50	--	b
3/29/2007	<300	130	27	<0.50	<0.50	<0.50	<0.50	<0.50	
6/5/2007	<300	77	20	<0.50	<0.50	<0.50	<0.50	<0.50	
9/25/2007	<300	30	12	<0.50	<0.50	<0.50	<0.50	<0.50	
12/26/2007	<300	76	17	<0.50	<0.50	<0.50	<0.50	<0.50	
3/25/2008	<300	100	29	<0.50	<0.50	<0.50	<0.50	<0.50	
6/10/2008	<300	25	12	<0.50	<0.50	<0.50	<0.50	<0.50	



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

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
<b>MW-3 Cont.</b>									
9/2/2008	<300	<10	9.3	<0.50	<0.50	<0.50	<0.50	<0.50	
12/2/2008	<300	<10	8.4	<0.50	<0.50	<0.50	<0.50	<0.50	
3/5/2009	<300	98	18	<0.50	<0.50	<0.50	<0.50	<0.50	
6/2/2009	<300	89	13	<0.50	<0.50	<0.50	<0.50	<0.50	
11/6/2009	<300	11	5.8	<0.50	<0.50	<0.50	<0.50	<0.50	
5/20/2010	<300	100	14	<0.50	<0.50	<0.50	<0.50	<0.50	
11/3/2010	<300	<10	4.4	<0.50	<0.50	<0.50	<0.50	<0.50	
5/17/2011	<300	34	4.7	<0.50	<0.50	<0.50	<0.50	<0.50	
<b>12/16/2011</b>	<b>&lt;300</b>	<b>17</b>	<b>4.0</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	<b>&lt;0.50</b>	

Symbols & Abbreviations:

< = Not detected at or above specified laboratory reporting limit

1,2-DCA = 1,2-Dichloroethane

DIPE = Diisopropyl ether

EDB = 1,2-Dibromoethane

ETBE = Ethyl tert-butyl ether

MTBE = Methyl tert-butyl ether

TAME = tert-Amyl methyl ether

TBA = tert-Butyl alcohol

µg/L = Micrograms per liter

Footnotes:

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

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

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

Notes:

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 Groundwater Gradient - Direction and Magnitude**  
**ARCO Service Station #4977, 2770 Castro Valley Blvd., Castro Valley, CA**

<b>Date Measured</b>	<b>Approximate Gradient Direction</b>	<b>Approximate Gradient Magnitude (ft/ft)</b>
4/19/2002	Southwest	0.038
9/27/2002	Southwest	0.021
12/16/2002	Southeast	0.029
3/11/2003	South	0.024
6/17/2003	South-Southwest	0.022
9/18/2003	South-Southwest	0.022
3/11/2004	South-Southwest	0.024
6/2/2004	South	0.025
9/22/2004	South	0.025
12/15/2004	South	0.020
3/7/2005	South	0.02
6/27/2005	South	0.01
9/16/2005	Southeast	0.03
12/27/2005	South-Southeast	0.02
3/16/2006	Southeast	0.02
6/26/2006	South	0.03
9/29/2006	South	0.025
12/19/2006	South	0.024
3/29/2007	South	0.020
6/5/2007	South	0.027
9/25/2007	South	0.023
12/26/2007	South	0.027
3/25/2008	South	0.026
6/10/2008	South	0.026
9/2/2008	South	0.026
12/2/2008	South	0.028
3/5/2009	South	0.037
6/2/2009	South	0.011
11/6/2009	South-Southwest	0.025
5/20/2010	South	0.021
11/3/2010	South	0.021
5/17/2011	South-Southeast	0.042
<b>12/16/2011</b>	<b>South</b>	<b>0.021</b>

Notes:

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**  
**FIELD METHODS**

## **QUALITY ASSURANCE/QUALITY CONTROL FIELD METHODS**

Field methods discussed herein were implemented to provide for accuracy and reliability of field activities, data collection, sample collection, and handling. Discussion of these methods is provided below.

### **1.0 Equipment Calibration**

Equipment calibration was performed per equipment manufacturer specifications before use.

### **2.0 Depth to Groundwater and Light Non-Aqueous Phase Liquid Measurement**

Depth to groundwater was measured in wells identified for gauging in the scope of work using a decontaminated water level indicator. The depth to water measurement was taken from a cut notch or permanent mark at the top of the well casing to which the well head elevation was originally surveyed.

Once depth to water was measured, an oil/water interface meter or a new disposable bailer was utilized to evaluate the presence and, if present, to measure the “apparent” thickness of light non-aqueous phase liquid (LNAPL) in the well. If LNAPL was present in the well, groundwater purging and sampling were not performed, unless sampling procedures in the scope of work specified collection of samples in the presence of LNAPL. Otherwise, time allowing, LNAPL was bailed from the well using either a new disposable bailer, or the disposal bailer previously used for initial LNAPL assessment. Bailing of LNAPL continued until the thickness of LNAPL (or volume) stabilized in each bailer pulled from the well, or LNAPL was no longer present. After LNAPL thickness either stabilized or was eliminated, periodic depth to water and depth to LNAPL measurements were collected as product came back into the well to evaluate product recovery rate and to aid in further assessment of LNAPL in the subsurface. LNAPL thickness measurements were recorded as “apparent.” If a bailer was used for LNAPL thickness measurement, the field sampler noted the bailer entry diameter and chamber diameter to enable correction of thickness measurements. Recovered LNAPL was stored on-site in a labeled steel drum(s) or other appropriate container(s) prior to disposal.

### **3.0 Well Purging and Groundwater Sample Collection**

Well purging and groundwater sampling were performed in wells specified in the scope of work after measuring depth to groundwater and evaluating the presence of LNAPL. Purging and sampling were performed using one of the methods detailed below. The method used was noted in the field records. Purge water was stored on-site in labeled steel drum(s) or other appropriate container(s) prior to disposal or on-site treatment (in cases where treatment using an on-site system is authorized).

#### **3.1 Purging a Predetermined Well Volume**

Purging a predetermined well volume is performed per ASTM International (ASTM) D4448-01. This purging method has the objective of removing a predetermined volume of stagnant water from the well prior to sampling. The volume of stagnant water

is defined as either the volume of water contained within the well casing, or the volume within the well casing and sand/gravel in the annulus if natural flow through these is deemed insufficient to keep them flushed out.

This purging method involves removal of a minimum of three stagnant water volumes from the well using a decontaminated pump with new disposable plastic discharge or suction tubing, dedicated well tubing, or using a new disposable or decontaminated reusable bailer. If a new disposable bailer was used for assessment of LNAPL, that bailer may be used for purging. The withdrawal rate used is one that minimizes drawdown while satisfying time constraints.

To evaluate when purging is complete, one or more groundwater stabilization parameters are monitored and recorded during purging activities until stabilization is achieved. Most commonly, stabilization parameters include temperature, conductivity, and pH, but field procedures detailed in the scope of work may also include monitoring of dissolved oxygen concentrations, oxidation reduction potential, and/or turbidity<sup>1</sup>. Parameters are considered stable when two (2) consecutive readings recorded three (3) minutes apart fall within ranges provided below in Table 1. In the event that the parameters have not stabilized and five (5) well casing volumes have been removed, purging activities will cease and be considered complete. Once the well is purged, a groundwater sample(s) is collected from the well using a new disposable bailer. If a new disposable bailer was used for purging, that bailer may be used to collect the sample(s). A sample is not collected if the well is inadvertently purged dry.

Table 1. Criteria for Defining Stabilization of Water-Quality Indicator Parameters

Parameter	Stabilization Criterion
Temperature	± 0.2°C (± 0.36°F)
pH	± 0.1 standard units
Conductivity	± 3%
Dissolved oxygen	± 10%
Oxidation reduction potential	± 10 mV
Turbidity <sup>1</sup>	± 10% or 1.0 NTU (whichever is greater)

### 3.2 Low-Flow Purging and Sampling

“Low-Flow”, “Minimal Drawdown”, or “Low-Stress” purging is performed per ASTM D6771-02. It is a method of groundwater removal from within a well’s screened interval that is intended to minimize drawdown and mixing of the water column in the well casing. This is accomplished by pumping the well using a decontaminated pump with new disposable plastic discharge or suction tubing or dedicated well tubing at a low flow rate while evaluating the groundwater elevation during pumping.

<sup>1</sup> As stated in ASTM D6771-02, turbidity is not a chemical parameter and not indicative of when formation-quality water is being purged; however, turbidity may be helpful in evaluating stress on the formation during purging. Turbidity measurements are taken at the same time that stabilization parameter measurements are made, or, at a minimum, once when purging is initiated and again just prior to sample collection, after stabilization parameters have stabilized. To avoid artifacts in sample analysis, turbidity should be as low as possible when samples are collected. If turbidity values are persistently high, the withdrawal rate is lowered until turbidity decreases. If high turbidity persists even after lowering the withdrawal rate, the purging is stopped for a period of time until turbidity settles, and the purging process is then restarted. If this fails to solve the problem, the purging/sampling process for the well is ceased, and well maintenance or redevelopment is considered.

The low flow pumping rate is well specific and is generally established at a volume that is less than or equal to the natural recovery rate of the well. A pump with adjustable flow rate control is positioned with the intake at or near the mid-point of the submerged well screen. The pumping rate used during low-flow purging is low enough to minimize mobilization of particulate matter and drawdown (stress) of the water column. Low-flow purging rates will vary based on the individual well characteristics; however, the purge rate should not exceed 1.0 Liter per minute (L/min) or 0.25 gallon per minute (gal/min). Low-flow purging should begin at a rate of approximately 0.1 L/min (0.03 gal/min)<sup>2</sup>, or the lowest rate possible, and be adjusted based on an evaluation of drawdown. Water level measurements should be recorded at approximate one (1) to two (2) minute intervals until the low-flow rate has been established, and drawdown is minimized. As a general rule, drawdown should not exceed 25% of the distance between the top of the water column and the pump in-take.

To evaluate when purging is complete, one or more groundwater stabilization parameters are monitored and recorded during purging activities until stabilization is achieved. Most commonly, stabilization parameters include temperature, conductivity, and pH, but field procedures detailed in the scope of work may also include monitoring of dissolved oxygen concentrations, oxidation reduction potential, and/or turbidity<sup>1</sup>. The frequency between measurements will be at an interval of one (1) to three (3) minutes; however, if a flow cell is used, the frequency will be determined based on the time required to evacuate one cell volume. Stabilization is defined as three (3) consecutive readings recorded several minutes apart falling within ranges provided in Table 1. Samples will be collected by filling appropriate containers from the pump discharge tubing at a rate not to exceed the established pumping rate.

### 3.3 Minimal Purge, Discrete Depth, and Passive Sampling

Per ASTM D4448-01, sampling techniques that do not rely on purging, or require only minimal purging, may be used if a particular zone within a screened interval is to be sampled or if a well is not capable of yielding sufficient groundwater for purging. To properly use these sampling techniques, a water sample is collected within the screened interval with little or no mixing of the water column within the casing. These techniques include minimal purge sampling which uses a dedicated sampling pump capable of pumping rates of less than 0.1 L/min (0.03 gal/min)<sup>2</sup>, discrete depth sampling using a bailer that allows groundwater entry at a controlled depth (e.g. differential pressure bailer), or passive (diffusion) sampling. These techniques are based on certain studies referenced in ASTM D4448-01 that indicate that under certain conditions, natural groundwater flow is laminar and horizontal with little or no mixing within the well screen.

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<sup>2</sup> According to ASTM D4448-01, studies have indicated that at flow rates of 0.1 L/min, low-density polyethylene (LDPE) and plasticized polypropylene tubing materials are prone to sorption. Therefore, TFE-fluorocarbon or other appropriate tubing material is used, particularly when tubing lengths of 50 feet or longer are used.

#### 4.0 Decontamination

Reusable groundwater sampling equipment were cleaned using a solution of Alconox or other acceptable detergent, rinsed with tap water, and finally rinsed with distilled water prior to use in each well. Decontamination water was stored on-site in labeled steel drum(s) or other appropriate container(s) prior to disposal.

#### 5.0 Sample Containers, Labeling, and Storage

Samples were collected in laboratory prepared containers with appropriate preservative (if preservative was required). Samples were properly labeled (site name, sample I.D., sampler initials, date, and time of collection) and stored chilled (refrigerator or ice chest with ice) until delivery to a certified laboratory, under chain of custody procedures.

#### 6.0 Chain of Custody Record and Procedure

The field sampler was personally responsible for care and custody of the samples collected until they were properly transferred to another party. To document custody and transfer of samples, a Chain of Custody Record was prepared. The Chain of Custody Record provided identification of the samples corresponding to sample labels and specified analyses to be performed by the laboratory. The original Chain of Custody Record accompanied the shipment, and a copy of the record was stored in the project file. When the samples were transferred, the individuals relinquishing and receiving them signed, dated, and noted the time of transfer on the record.

#### 7.0 Field Records

Daily Report and data forms were completed by staff personnel to provide daily record of significant events, observations, and measurements. Field records were signed, dated, and stored in the project file.



**APPENDIX B**

FIELD DATA SHEETS AND NON-HAZARDOUS WASTE DATA FORM

Project: RP 4977 Project No.: 06-82-628

Field Representative(s): SB + JR Day: Friday Date: 12/16/11

Time Onsite: From: 0900 To: \_\_\_\_\_; From: \_\_\_\_\_ To: \_\_\_\_\_; From: \_\_\_\_\_ To: \_\_\_\_\_

- Signed HASP
- Safety Glasses
- Hard Hat
- Steel Toe Boots
- Safety Vest
- UST Emergency System Shut-off Switches Located
- Proper Gloves
- Proper Level of Barricading
- \_\_\_ Other PPE (describe) \_\_\_\_\_

Weather: Sunny

Equipment In Use: water level indicator, pH/Cond/Temp meter, interface probe, DO meter

Visitors: \_\_\_\_\_

TIME:	WORK DESCRIPTION:
<u>0900</u>	<u>on-site @ falling out paperwork and conducting safety</u>
	<u>set up on MW-1 Dewatered</u>
<u>1032</u>	<u>fuel truck on-site 1056 off-site</u>
<u>1131</u>	<u>set up on MW-2 Dewatered</u>
<u>1210</u>	<u>set up on MW-3</u>
<u>1240</u>	<u>sampled MW-3</u>
<u>1250</u>	<u>sampled MW-1</u>
<u>1310</u>	<u>sampled MW-2</u>
<u>1335</u>	<u>signed out &amp; left site</u>

Signature: James Ramm

Project: BP 4977

06-82-625

Project No.: ~~06-82-625~~ Date: 12/16/11

Field Representative: JR & SB

Elevation: \_\_\_\_\_

Formation recharge rate is historically: High Low (circle one)

W. L. Indicator ID #: \_\_\_\_\_ Oil/Water Interface ID #: \_\_\_\_\_ (List #s of all equip used.)

WELL ID RECORD					WELL GAUGING RECORD					LAB ANALYSES			
Well ID	Well Sampling Order	As-Built Well Diameter (inches)	As-Built Well Screen Interval (ft)	Previous Depth to Water (ft)	Time (24:00)	Depth to LNAPL (ft)	Apparent LNAPL Thickness (ft)*	Depth to Water (ft)	Well Total Depth (ft)				
MW-1	2				0954	—	—	8.67	15.10				
MW-2	3				1132	—	9wss	7.16	14.65				
MW-3	1				1217	—	—	7.84	14.96				

\* Device used to measure LNAPL thickness: Bailer Oil/Water Interface Meter (circle one) Chamber Diameter

If bailer used, note bailer dimensions (inches): Entry Diameter \_\_\_\_\_ Chamber Diameter \_\_\_\_\_

Signature: Jan Row

Project: BP 4977 Project No.: 06-82-622 Date: 12/14/11  
 Field Representative: SB & JR  
 Well ID: MW-1 Start Time: 0955 End Time: 1250 Total Time (minutes): \_\_\_\_\_

**PURGE EQUIPMENT**  
 Disp. Bailer  120V Pump  Flow Cell  
 Disp. Tubing  12V Pump  Peristaltic Pump  Other/ID#:

**WELL HEAD INTEGRITY** (cap, lock, haul, etc.) Comments: bolts  
 Good  Improvement Needed  (circle one)

**PURGING/SAMPLING METHOD**  Predetermined Well Volume  Low-Flow  Other: \_\_\_\_\_ (circle one)

PREDETERMINED WELL VOLUME					LOW-FLOW	
Casing Diameter	Unit Volume (gal/ft)	(circle one)			Previous Low-Flow Purge Rate:	(gpm)
1"   (0.04)	1.25"   (0.08)	2"   (0.17)	3"   (0.38)		Total Well Depth (a):	_____ (ft)
<u>4"   (0.66)</u>	6"   (1.50)	8"   (2.60)	12"   (5.81)		Initial Depth to Water (b):	_____ (ft)
Total Well Depth (a):					15.10	(ft)
Initial Depth to Water (b):					8.67	(ft)
Water Column Height (WCH) = (a - b):					6.43	(ft)
Water Column Volume (WCV) = WCH x Unit Volume:				4.24	(gal)	
Three Casing Volumes = WCV x 3:				12.73	(gal)	
Five Casing Volumes = WCV x 5:				21.21	(gal)	
Pump Depth (if pump used):				NA	(ft)	

*\*Low-flow purge rate should be within range of instruments used but should not exceed 0.25 gpm. Drawdown should not exceed Maximum Allowable Drawdown.*

Time (24:00)	Cumulative Volume (gal)	Temperature (°C)	pH	Conductivity (µS)	Other	NOTES
1005	0	17.0	8.0	1152	AC	Odor, color, sheen, turbidity, or other
1015	3	20.3	7.7	1048		
1024	6	20.1	7.4	1179		
1105	9	19.7	7.3	1204		
1118	12					
Previous Stabilized Parameters						

**PURGE COMPLETION RECORD**  Low Flow & Parameters Stable  3 Casing Volumes & Parameters Stable  5 Casing Volumes  
 Other: \_\_\_\_\_

SAMPLE COLLECTION RECORD		GEOCHEMICAL PARAMETERS	
Depth to Water at Sampling: _____ (ft)	<u>6.94</u>	Parameter	Measurement
Sample Collected Via: <input checked="" type="checkbox"/> Disp. Bailer <input type="checkbox"/> Dedicated Pump Tubing		DO (mg/L)	<u>1005</u> <u>3.02</u>
<input type="checkbox"/> Disp. Pump Tubing <input type="checkbox"/> Other: _____		Ferrous Iron (mg/L)	<u>1005</u> <u>154</u>
Sample ID: <u>MW-1</u> Sample Collection Time: <u>1250</u> (24:00)		Redox Potential (mV)	<u>1005</u> <u>154</u>
Containers (#): <u>6</u> VOA ( <input checked="" type="checkbox"/> preserved or <input type="checkbox"/> unpreserved) _____ Liter Amber		Alkalinity (mg/L)	
Other: _____		Other: _____	
Other: _____		Other: _____	

Signature: [Signature]

Project: BP 4977 Project No.: 06-82-625 Date: 12/16/11  
 Field Representative: SB & JR  
 Well ID: MW2 Start Time: 1133 End Time: 1310 Total Time (minutes): \_\_\_\_\_

PURGE EQUIPMENT  Disp. Bailer  120V Pump  Flow Cell  
 Disp. Tubing  12V Pump  Peristaltic Pump Other/ID#: \_\_\_\_\_

WELL HEAD INTEGRITY (cap, lock, vault, etc.) Comments: bolts or hole  
 Good  Improvement Needed  (circle one)

PURGING/SAMPLING METHOD  Predetermined Well Volume  Low-Flow  Other: \_\_\_\_\_ (circle one)

PREDETERMINED WELL VOLUME						LOW-FLOW	
Casing Diameter   Unit Volume (gal/ft) (circle one)						Previous Low-Flow Purge Rate: _____ (gpm)	Total Well Depth (a): _____ (ft)
1"   (0.04)	1.25"   (0.08)	2"   (0.17)	3"   (0.38)	Other: _____	Initial Depth to Water (b): _____ (ft)	Pump In-take Depth = $b + (a-b)/2$ : _____ (ft)	
<u>4"   (0.66)</u>	6"   (1.50)	8"   (2.60)	12"   (5.81)	1"   ( )	Maximum Allowable Drawdown = $(a-b)/8$ : _____ (ft)	Low-Flow Purge Rate: _____ (gpm)*	
Total Well Depth (a): <u>14.65</u> (ft)					Comments: _____		
Initial Depth to Water (b): <u>7.16</u> (ft)					*Low-flow purge rate should be within range of instruments used but should not exceed 0.25 gpm. Drawdown should not exceed Maximum Allowable Drawdown.		
Water Column Height (WCH) = (a - b): <u>7.49</u> (ft)							
Water Column Volume (WCV) = WCH x Unit Volume: <u>41.94</u> (gal)							
Three Casing Volumes = WCV x 3: <u>14.83</u> (gal)							
Five Casing Volumes = WCV x 5: <u>24.71</u> (gal)							
Pump Depth (if pump used): <u>NA</u> (ft)							

**GROUNDWATER STABILIZATION PARAMETER RECORD**

Time (24:00)	Cumulative Volume (gal)	Temperature (°C)	pH	Conductivity (µS)	Other	NOTES Odor, color, sheen, turbidity, or other
1140	0	20.2	7.6	696.9		
1142	3	20.8	7.4	703.7		
1144	6	20.9	7.3	711.6		
1147	9	20.9	7.2	732.3		
1155	12	20.7	7.1	699.3		
1202	15	20.2	7.8	658.8		

Previous Stabilized Parameters \_\_\_\_\_

PURGE COMPLETION RECORD  Low Flow & Parameters Stable  3 Casing Volumes & Parameters Stable  5 Casing Volumes  
 Other: \_\_\_\_\_

SAMPLE COLLECTION RECORD		GEOCHEMICAL PARAMETERS	
Depth to Water at Sampling: _____ (ft) <u>5.73</u>	Sample Collected Via: <input checked="" type="checkbox"/> Disp. Bailer <input type="checkbox"/> Dedicated Pump Tubing	Parameter	Time
Sample ID: <u>MW2</u> Sample Collection Time: <u>1310</u> (24:00)	Containers (#): <u>6</u> VOA ( <input checked="" type="checkbox"/> preserved or <input type="checkbox"/> unpreserved) <input type="checkbox"/> Liter Amber	DO (mg/L)	<u>1140</u>
Other: _____	Other: _____	Ferrous Iron (mg/L)	<u>0.81</u>
Other: _____	Other: _____	Redox Potential (mV)	<u>1140</u>
		Alkalinity (mg/L)	<u>15</u>
		Other:	
		Other:	

Signature: [Handwritten Signature]

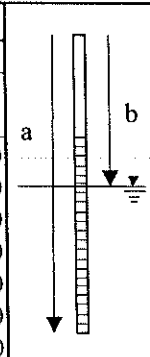
Project: DR 4977 Project No.: CA-82-625 Date: 12/16/11  
 Field Representative: SB JR  
 Well ID: MW-3 Start Time: 1210 End Time: 1245 Total Time (minutes): 35

PURGE EQUIPMENT  Disp. Bailer  120V Pump  Flow Cell  
 Disp. Tubing  12V Pump  Peristaltic Pump Other/ID#:

WELL HEAD INTEGRITY (cap, lock, vault, etc.) Comments: NO belts  
 Good  Improvement Needed  (circle one)

PURGING/SAMPLING METHOD  Predetermined Well Volume  Low-Flow  Other: (circle one)

**PREDETERMINED WELL VOLUME**  
 Casing Diameter | Unit Volume (gal/ft) (circle one)  
 1" | (0.04) 1.25" | (0.08) 2" | (0.17) 3" | (0.38) Other:  
4" | (0.66) 6" | (1.50) 8" | (2.60) 12" | (5.81) \_\_\_\_\_ | (\_\_\_\_)  
 Total Well Depth (a): 14.90 (ft)  
 Initial Depth to Water (b): 7.84 (ft)  
 Water Column Height (WCH) = (a - b): 7.12 (ft)  
 Water Column Volume (WCV) = WCH x Unit Volume: 4.70 (gal)  
 Three Casing Volumes = WCV x 3: 14.10 (gal)  
 Five Casing Volumes = WCV x 5: 23.49 (gal)  
 Pump Depth (if pump used): N/A (ft)



**LOW-FLOW**  
 Previous Low-Flow Purge Rate: \_\_\_\_\_ (gpm)  
 Total Well Depth (a): \_\_\_\_\_ (ft)  
 Initial Depth to Water (b): \_\_\_\_\_ (ft)  
 Pump In-take Depth = b + (a-b)/2: \_\_\_\_\_ (ft)  
 Maximum Allowable Drawdown = (a-b)/8: \_\_\_\_\_ (ft)  
 Low-Flow Purge Rate: \_\_\_\_\_ (gpm)\*  
 Comments: \_\_\_\_\_  
 \*Low-flow purge rate should be within range of instruments used but should not exceed 0.25 gpm. Drawdown should not exceed Maximum Allowable Drawdown.

**GROUNDWATER STABILIZATION PARAMETER RECORD**

Time (24:00)	Cumulative Volume (gal)	Temperature (°C)	pH	Conductivity (µS)	Other	NOTES Odor, color, sheen, turbidity, or other
<u>1222</u>	<u>0</u>	<u>20.0</u>	<u>7.6</u>	<u>678.9</u>		
<u>1225</u>	<u>3</u>	<u>20.4</u>	<u>7.4</u>	<u>696.4</u>		
<u>1227</u>	<u>6</u>	<u>20.7</u>	<u>7.3</u>	<u>684.1</u>		
<u>1231</u>	<u>9</u>	<u>20.1</u>	<u>7.2</u>	<u>732.1</u>		
<u>1235</u>	<u>17</u>	<u>20.6</u>	<u>7.2</u>	<u>713.2</u>		

Previous Stabilized Parameters

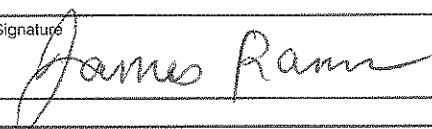
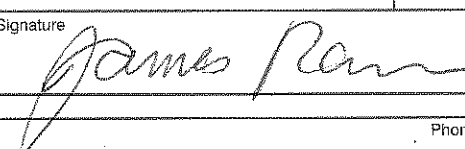
PURGE COMPLETION RECORD  Low Flow & Parameters Stable  3 Casing Volumes & Parameters Stable  5 Casing Volumes  
 Other:

SAMPLE COLLECTION RECORD		GEOCHEMICAL PARAMETERS	
Depth to Water at Sampling: _____ (ft)	Parameter	Time	Measurement
Sample Collected Via: <input checked="" type="checkbox"/> Disp. Bailer <input type="checkbox"/> Dedicated Pump Tubing <input type="checkbox"/> Disp. Pump Tubing Other:	DO (mg/L)	<u>1227</u>	<u>0.39</u>
Sample ID: <u>MW-3</u> Sample Collection Time: <u>1240</u> (24:00)	Ferrous Iron (mg/L)		
Containers (#): <u>6</u> VOA ( <input checked="" type="checkbox"/> preserved or <input type="checkbox"/> unpreserved) <input type="checkbox"/> Liter Amber	Redox Potential (mV)	<u>1222</u>	<u>42</u>
Other: _____ Other: _____	Alkalinity (mg/L)		
Other: _____ Other: _____	Other:		
Other: _____ Other: _____	Other:		

Signature: [Handwritten Signature] Revision: 8/19/11

NON-HAZARDOUS WASTE DATA FORM

BESI # \_\_\_\_\_

GENERATOR	Generator's Name and Mailing Address BP WEST COAST PRODUCTS, LLC P.O. BOX 80248 RANCHO SANTA MARGARITA, CA 92688		Generator's Site Address (if different than mailing address) BP 4977 2770 Castro Valley Blvd Castro Valley, Ca 94546															
	Generator's Phone: 949-460-5200																	
	Container type removed from site: <input type="checkbox"/> Drums <input type="checkbox"/> Vacuum Truck <input type="checkbox"/> Roll-off Truck <input type="checkbox"/> Dump Truck <input type="checkbox"/> Other _____		Container type transported to receiving facility: <input type="checkbox"/> Drums <input type="checkbox"/> Vacuum Truck <input type="checkbox"/> Roll-off Truck <input type="checkbox"/> Dump Truck <input type="checkbox"/> Other _____															
	Quantity <u>36</u>		Quantity _____ Volume _____															
	WASTE DESCRIPTION <u>NON-HAZARDOUS WATER</u>		GENERATING PROCESS <u>WELL PURGING / DECON WATE</u>															
<table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="width:40%;">COMPONENTS OF WASTE</th> <th style="width:10%;">PPM</th> <th style="width:10%;">%</th> <th style="width:40%;">COMPONENTS OF WASTE</th> <th style="width:10%;">PPM</th> </tr> </thead> <tbody> <tr> <td>1. WATER</td> <td></td> <td>99-100%</td> <td>3. _____</td> <td></td> </tr> <tr> <td>2. TPH</td> <td></td> <td>&lt;1%</td> <td>4. _____</td> <td></td> </tr> </tbody> </table>		COMPONENTS OF WASTE	PPM	%	COMPONENTS OF WASTE	PPM	1. WATER		99-100%	3. _____		2. TPH		<1%	4. _____			
COMPONENTS OF WASTE	PPM	%	COMPONENTS OF WASTE	PPM														
1. WATER		99-100%	3. _____															
2. TPH		<1%	4. _____															
Waste Profile _____ PROPERTIES: pH <u>7-10</u> <input type="checkbox"/> SOLID <input checked="" type="checkbox"/> LIQUID <input type="checkbox"/> SLUDGE <input type="checkbox"/> SLURRY <input type="checkbox"/> OTHER _____																		
HANDLING INSTRUCTIONS: <u>WEAR ALL APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT.</u>																		
Generator Printed/Typed Name <u>James Ramos</u>		Signature 		Month Day <u>12</u>   <u>16</u>														
The Generator certifies that the waste as described is 100% non-hazardous																		
TRANSPORTER	Transporter 1 Company Name BROADBENT & ASSOCIATES, INC>		Phone# 530-566-1400															
	Transporter 1 Printed/Typed Name <u>James Ramos</u>		Signature 		Month Day <u>12</u>   <u>16</u>													
	Transporter Acknowledgment of Receipt of Materials																	
	Transporter 2 Company Name		Phone#															
	Transporter 2 Printed/Typed Name		Signature		Month Day													
Transporter Acknowledgment of Receipt of Materials																		
RECEIVING FACILITY	Designated Facility Name and Site Address INSTRAT, INC. 1105 AIRPORT RD. RIO VISTA, CA 94571		Phone# 530-753-1829															
	Printed/Typed Name		Signature		Month Day													
	Designated Facility Owner or Operator: Certification of receipt of materials covered by this data form.																	

**APPENDIX C**

**LABORATORY REPORT  
AND CHAIN-OF-CUSTODY DOCUMENTATION**





# CALSCIENCE

WORK ORDER NUMBER: 11-12-1511

*The difference is service*



AIR | SOIL | WATER | MARINE CHEMISTRY

### Analytical Report For

**Client:** Broadbent & Associates, Inc.

**Client Project Name:** BP 4977

**Attention:** Jason Duda  
1324 Mangrove Ave, Ste 212  
Chico, CA 95926-2642

Approved for release on 01/6/2012 by:  
Richard Villafania  
Project Manager

ResultLink ▶

Email your PM ▶



Calscience Environmental Laboratories certifies that the test results provided in this report meet all NELAC requirements for parameters for which accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The original report of subcontracted analyses, 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. Note that the Chain-of-Custody Record and Sample Receipt Form are integral parts of this report.



**Analytical Report**



Broadbent & Associates, Inc.  
1324 Mangrove Ave, Ste 212  
Chico, CA 95926-2642

Date Received: 12/20/11  
Work Order No: 11-12-1511  
Preparation: EPA 5030C  
Method: EPA 8015B (M)

Project: BP 4977

Page 1 of 1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
<b>MW-1</b>	<b>11-12-1511-1-D</b>	<b>12/16/11 12:50</b>	<b>Aqueous</b>	<b>GC 57</b>	<b>12/22/11</b>	<b>12/22/11 12:36</b>	<b>111222B01</b>

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	<u>Units</u>
Gasoline Range Organics (C6-C12)	ND	50	1		ug/L
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>	
1,4-Bromofluorobenzene	113	38-134			

<b>MW-2</b>	<b>11-12-1511-2-D</b>	<b>12/16/11 13:10</b>	<b>Aqueous</b>	<b>GC 57</b>	<b>12/22/11</b>	<b>12/22/11 14:41</b>	<b>111222B01</b>
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Comment(s): -LW Quantitated against gasoline.

<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	<u>Units</u>
Gasoline Range Organics (C6-C12)	6000	500	10		ug/L
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>	
1,4-Bromofluorobenzene	122	38-134			

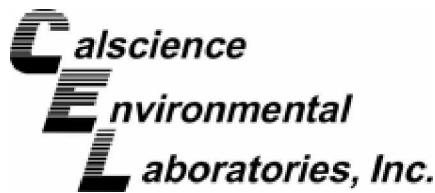
<b>MW-3</b>	<b>11-12-1511-3-D</b>	<b>12/16/11 12:40</b>	<b>Aqueous</b>	<b>GC 57</b>	<b>12/22/11</b>	<b>12/22/11 14:10</b>	<b>111222B01</b>
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<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	<u>Units</u>
Gasoline Range Organics (C6-C12)	ND	50	1		ug/L
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>	
1,4-Bromofluorobenzene	98	38-134			

<b>Method Blank</b>	<b>099-12-695-1,226</b>	<b>N/A</b>	<b>Aqueous</b>	<b>GC 57</b>	<b>12/22/11</b>	<b>12/22/11 11:02</b>	<b>111222B01</b>
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<u>Parameter</u>	<u>Result</u>	<u>RL</u>	<u>DF</u>	<u>Qual</u>	<u>Units</u>
Gasoline Range Organics (C6-C12)	ND	50	1		ug/L
<u>Surrogates:</u>	<u>REC (%)</u>	<u>Control Limits</u>		<u>Qual</u>	
1,4-Bromofluorobenzene	65	38-134			

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



Analytical Report



Broadbent & Associates, Inc.  
1324 Mangrove Ave, Ste 212  
Chico, CA 95926-2642

Date Received: 12/20/11  
Work Order No: 11-12-1511  
Preparation: EPA 5030C  
Method: EPA 8260B  
Units: ug/L

Project: BP 4977

Page 1 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-1	11-12-1511-1-A	12/16/11 12:50	Aqueous	GC/MS L	12/21/11	12/22/11 07:33	111221L02

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.50	1		Methyl-t-Butyl Ether (MTBE)	2.4	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>	
1,4-Bromofluorobenzene	97	68-120			Dibromofluoromethane	89	80-127		
1,2-Dichloroethane-d4	93	80-128			Toluene-d8	100	80-120		

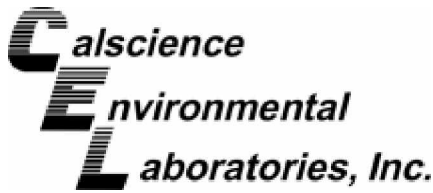
Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-2	11-12-1511-2-A	12/16/11 13:10	Aqueous	GC/MS L	12/21/11	12/22/11 08:01	111221L02

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	180	5.0	10		Methyl-t-Butyl Ether (MTBE)	25	5.0	10	
1,2-Dibromoethane	ND	5.0	10		Tert-Butyl Alcohol (TBA)	ND	100	10	
1,2-Dichloroethane	ND	5.0	10		Diisopropyl Ether (DIPE)	ND	5.0	10	
Ethylbenzene	87	5.0	10		Ethyl-t-Butyl Ether (ETBE)	ND	5.0	10	
Toluene	ND	5.0	10		Tert-Amyl-Methyl Ether (TAME)	ND	5.0	10	
Xylenes (total)	ND	5.0	10		Ethanol	ND	3000	10	
<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>	
1,4-Bromofluorobenzene	101	68-120			Dibromofluoromethane	90	80-127		
1,2-Dichloroethane-d4	92	80-128			Toluene-d8	97	80-120		

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-3	11-12-1511-3-A	12/16/11 12:40	Aqueous	GC/MS L	12/21/11	12/22/11 08:29	111221L02

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.50	1		Methyl-t-Butyl Ether (MTBE)	4.0	0.50	1	
1,2-Dibromoethane	ND	0.50	1		Tert-Butyl Alcohol (TBA)	17	10	1	
1,2-Dichloroethane	ND	0.50	1		Diisopropyl Ether (DIPE)	ND	0.50	1	
Ethylbenzene	0.98	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>	
1,4-Bromofluorobenzene	97	68-120			Dibromofluoromethane	90	80-127		
1,2-Dichloroethane-d4	92	80-128			Toluene-d8	100	80-120		

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



Analytical Report



Broadbent & Associates, Inc.  
 1324 Mangrove Ave, Ste 212  
 Chico, CA 95926-2642

Date Received: 12/20/11  
 Work Order No: 11-12-1511  
 Preparation: EPA 5030C  
 Method: EPA 8260B  
 Units: ug/L

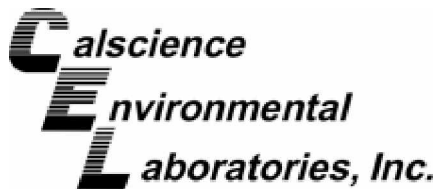
Project: BP 4977

Page 2 of 2

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	099-12-703-1,978	N/A	Aqueous	GC/MS L	12/21/11	12/22/11 01:02	111221L02

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>	
1,4-Bromofluorobenzene	97	68-120			Dibromofluoromethane	93	80-127		
1,2-Dichloroethane-d4	96	80-128			Toluene-d8	102	80-120		

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



Quality Control - Spike/Spike Duplicate



Broadbent & Associates, Inc.  
 1324 Mangrove Ave, Ste 212  
 Chico, CA 95926-2642

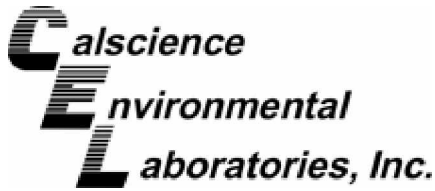
Date Received: 12/20/11  
 Work Order No: 11-12-1511  
 Preparation: EPA 5030C  
 Method: EPA 8015B (M)

Project BP 4977

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
MW-1	Aqueous	GC 57	12/22/11	12/22/11	111222S01

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Gasoline Range Organics (C6-C12)	2000	102	99	38-134	3	0-25	

RPD - Relative Percent Difference , CL - Control Limit



Quality Control - Spike/Spike Duplicate



Broadbent & Associates, Inc.  
 1324 Mangrove Ave, Ste 212  
 Chico, CA 95926-2642

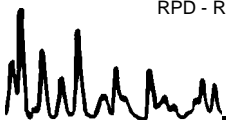
Date Received: 12/20/11  
 Work Order No: 11-12-1511  
 Preparation: EPA 5030C  
 Method: EPA 8260B

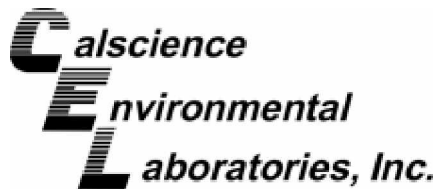
Project BP 4977

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
11-12-1509-8	Aqueous	GC/MS L	12/21/11	12/22/11	111221S02

Parameter	SPIKE ADDED	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	10.00	100	99	76-124	1	0-20	
Carbon Tetrachloride	10.00	93	93	74-134	1	0-20	
Chlorobenzene	10.00	102	98	80-120	4	0-20	
1,2-Dibromoethane	10.00	99	96	80-120	4	0-20	
1,2-Dichlorobenzene	10.00	99	94	80-120	5	0-20	
1,2-Dichloroethane	10.00	98	96	80-120	3	0-20	
Ethylbenzene	10.00	99	94	78-126	5	0-20	
Toluene	10.00	99	94	80-120	5	0-20	
Trichloroethene	10.00	96	95	77-120	1	0-20	
Methyl-t-Butyl Ether (MTBE)	10.00	96	90	67-121	6	0-49	
Tert-Butyl Alcohol (TBA)	50.00	134	114	36-162	16	0-30	
Diisopropyl Ether (DIPE)	10.00	99	94	60-138	5	0-45	
Ethyl-t-Butyl Ether (ETBE)	10.00	98	92	69-123	6	0-30	
Tert-Amyl-Methyl Ether (TAME)	10.00	97	92	65-120	5	0-20	
Ethanol	100.0	103	107	30-180	4	0-72	

RPD - Relative Percent Difference , CL - Control Limit





Quality Control - LCS/LCS Duplicate



Broadbent & Associates, Inc.  
 1324 Mangrove Ave, Ste 212  
 Chico, CA 95926-2642

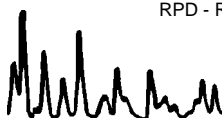
Date Received: N/A  
 Work Order No: 11-12-1511  
 Preparation: EPA 5030C  
 Method: EPA 8015B (M)

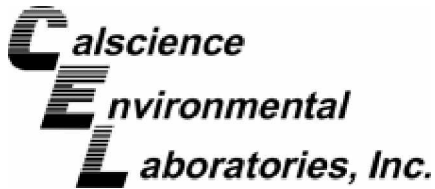
Project: BP 4977

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-695-1,226	Aqueous	GC 57	12/22/11	12/22/11	111222B01

Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Gasoline Range Organics (C6-C12)	2000	98	94	78-120	3	0-20	

RPD - Relative Percent Difference , CL - Control Limit





## Quality Control - LCS/LCS Duplicate



Broadbent & Associates, Inc.  
1324 Mangrove Ave, Ste 212  
Chico, CA 95926-2642

Date Received: N/A  
Work Order No: 11-12-1511  
Preparation: EPA 5030C  
Method: EPA 8260B

Project: BP 4977

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number			
099-12-703-1,978	Aqueous	GC/MS L	12/21/11	12/21/11	111221L02			
Parameter	SPIKE ADDED	LCS %REC	LCSD %REC	%REC CL	ME CL	RPD	RPD CL	Qualifiers
Benzene	10.00	98	97	80-120	73-127	1	0-20	
Carbon Tetrachloride	10.00	90	91	74-134	64-144	2	0-20	
Chlorobenzene	10.00	99	97	80-120	73-127	2	0-20	
1,2-Dibromoethane	10.00	99	97	79-121	72-128	2	0-20	
1,2-Dichlorobenzene	10.00	94	96	80-120	73-127	3	0-20	
1,2-Dichloroethane	10.00	97	96	80-120	73-127	1	0-20	
Ethylbenzene	10.00	96	95	80-120	73-127	2	0-20	
Toluene	10.00	97	95	80-120	73-127	2	0-20	
Trichloroethene	10.00	96	96	79-127	71-135	1	0-20	
Methyl-t-Butyl Ether (MTBE)	10.00	93	94	69-123	60-132	1	0-20	
Tert-Butyl Alcohol (TBA)	50.00	103	105	63-123	53-133	2	0-20	
Diisopropyl Ether (DIPE)	10.00	94	94	59-137	46-150	1	0-37	
Ethyl-t-Butyl Ether (ETBE)	10.00	92	94	69-123	60-132	2	0-20	
Tert-Amyl-Methyl Ether (TAME)	10.00	93	95	70-120	62-128	2	0-20	
Ethanol	100.0	101	107	28-160	6-182	6	0-57	

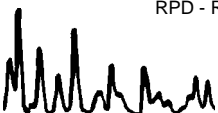
Total number of LCS compounds : 15

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





Work Order Number: 11-12-1511

<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.
ET	Sample was extracted past end of recommended maximum 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.
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.
ME	LCS/LCSD Recovery Percentage is within Marginal Exceedance (ME) Control Limit range.
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.



Qualifier

Definition

Solid - Unless otherwise indicated, solid sample data is reported on a wet weight basis, not corrected for % moisture. All QC results are reported on a wet weight basis.  
MPN - Most Probable Number





# Laboratory Management Program LaMP Chain of Custody Record

BP/ARC Project Name: BP 4977

Req Due Date (mm/dd/yy): \_\_\_\_\_ Rush TAT: Yes \_\_\_ No X

BP/ARC Facility No: \_\_\_\_\_ 4977

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

Lab Name: Calscience	BP/ARC Facility Address: 2770 Castro Valley Road	Consultant/Contractor: Broadbent & Associates, Inc.
Lab Address: 7440 Lincoln Way	City, State, ZIP Code: Castro Valley, CA	Consultant/Contractor Project No: 06-88-625-401-1080
Lab PM: Richard Villafania	Lead Regulatory Agency: ACEH	Address: 1324 Mangrove Ave. Ste. 212, Chico, CA 95926
Lab Phone: 714-895-5494	California Global ID No.: T0600100089	Consultant/Contractor PM: Jason Duda
Lab Shipping Acct: 9225	Enfos Proposal No: 005X0-0001	Phone: 530-566-1400 <b>11-12-1511</b>
Lab Bottle Order No:	Accounting Mode: Provision <u>X</u> OOC-BU ___ OOC-RM ___	Email EDD To: jduda@broadbentinc.com
Other Info:	Stage: Execute (4) Activity: Project Spend (80)	Invoice To: BP/ARC <u>X</u> Contractor ___

BP/ARC EBM: Chuck Carmel				Matrix		No. Containers / Preservative						Requested Analyses						Report Type & QC Level		
EBM Phone:				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 (8015)	BTEX (8260)	5 Oxys (8260)	EDB (8260)	1,2-DCA (8260)	Ethanol (8260)	Standard <u>X</u>	
EBM Email:																			Full Data Package ___	
Lab No.	Sample Description	Date	Time																Comments	
1	MW-1	12-16-11	1250	X			6				X	X	X	X	X	X				
2	MW-2	↓	1310	X			6				X	X	X	X	X	X				
3	MW-3	↓	1240	X			6				X	X	X	X	X	X				
BP-4977-101				X			1													Hold 101

Sampler's Name: <u>James Ramon</u>	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Company: <u>BAI</u>	<u>James Ramon</u>	12-19-11	1700	<u>[Signature]</u>	12/20/11	1100
Shipment Method: <u>GSC</u> Ship Date: <u>12/19/11</u>						
Shipment Tracking No: <u>106840505</u>						

**Special Instructions:**

THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes / No    Temp Blank: Yes / No    Cooler Temp on Receipt: \_\_\_\_\_ °F/C    Trip Blank: Yes / No    MS/MSD Sample Submitted: Yes / No

Page 1 of 13

1571

# ORC



STATE OVERNIGHT  
1-800-322-5555  
www.gso.com

## PDS

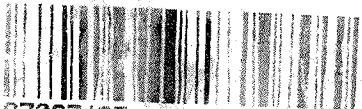
# A

GARDEN GROVE

92841

17 lb

29/JKD



97067497

1112191027

### D92841A

EGGS FAMILY



106840505

ROUTE # DRIVER #

9 GSO TRACKING NUMBER

106840505

PICK UP INFORMATION

9 RELEASE SIGNATURE

DELIVERY TIMES MAY BE LATER IN SOME AREAS • CONSULT YOUR SERVICE GUIDE OR CALL GOLDEN STATE OVERNIGHT

9 DELIVERY SERVICE  PRIORITY OVERNIGHT BY 10:30 AM  PRIORITY EARLY BY 8:00 AM  SATURDAY DELIVERY

COD AMOUNT \$ (CASH NOT ACCEPTED)

SHIPPING AIR BILL

PACKAGE INFORMATION

LETTER (MAX 2)

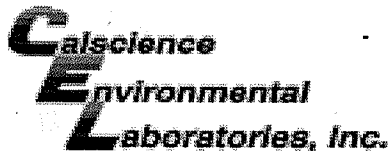
PACKAGE WEIGHT

PACKAGE LABEL

9 GSO TRACKING NUMBER  
106840505  
PICK UP INFORMATION  
9 RELEASE SIGNATURE  
DELIVERY TIMES MAY BE LATER IN SOME AREAS • CONSULT YOUR SERVICE GUIDE OR CALL GOLDEN STATE OVERNIGHT  
9 DELIVERY SERVICE  PRIORITY OVERNIGHT BY 10:30 AM  PRIORITY EARLY BY 8:00 AM  SATURDAY DELIVERY  
 COD AMOUNT \$ (CASH NOT ACCEPTED)

YOUR INTERNAL BILLING REFERENCE WILL APPEAR ON YOUR INVOICE  
GARDEN GROVE  
CITY  
7440 LINCOLN WAY  
ADDRESS  
ST/ ROOM  
ZIP CODE 92841  
NAME  
PHONE NUMBER (714) 895-5491  
NAME  
PHONE NUMBER 707-455-7290  
CODE 1560  
ZIP

ME  
COMPANY  
VAL SCIENCE  
Vocalike  
James James  
12/19/11  
Broadway  
8000 Colton



WORK ORDER #: 11-12-1511

SAMPLE RECEIPT FORM

Cooler 1 of 1

CLIENT: Broadbent

DATE: 12/20/11

TEMPERATURE: Thermometer ID: SC3 (Criteria: 0.0 °C - 6.0 °C, not frozen)
Temperature 2.9 °C - 0.3 °C (CF) = 2.6 °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 Initial: [Signature]

CUSTODY SEALS INTACT:
Cooler No (Not Intact) Not Present N/A Initial: [Signature]
Sample No (Not Intact) Not Present Initial: [Signature]

SAMPLE CONDITION:
Chain-Of-Custody (COC) document(s) received with samples. Yes No N/A
COC document(s) received complete.
Collection date/time, matrix, and/or # of containers logged in based on sample labels.
No analysis requested. Not relinquished. No date/time relinquished.
Sampler's name indicated on COC.
Sample container label(s) consistent with COC.
Sample container(s) intact and good condition.
Proper containers and sufficient volume for analyses requested.
Analyses received within holding time.
pH / Res. Chlorine / Diss. Sulfide / Diss. Oxygen received within 24 hours.
Proper preservation noted on COC or sample container.
Unpreserved vials received for Volatiles analysis
Volatile analysis container(s) free of headspace.
Tedlar bag(s) free of condensation.

CONTAINER TYPE:
Solid: 4ozCGJ 8ozCGJ 16ozCGJ Sleeve ( ) EnCores TerraCores
Water: VOA VOAh VOAna2 125AGB 125AGBh 125AGBp 1AGB 1AGBna2 1AGBs
500AGB 500AGJ 500AGJs 250AGB 250CGB 250CGBs 1PB 1PBna 500PB
250PB 250PBn 125PB 125PBzanna 100PJ 100PJna2
Air: Tedlar Summa Other: Trip Blank Lot#: Labeled/Checked by: [Signature]
Container: C: Clear A: Amber P: Plastic G: Glass J: Jar B: Bottle Z: Ziploc/Resealable Bag E: Envelope Reviewed by: [Signature]
Preservative: h: HCL n: HNO3 na2: Na2S2O3 na: NaOH p: H3PO4 s: H2SO4 u: Ultra-pure zanna: ZnAc2+NaOH f: Filtered Scanned by: [Signature]

**APPENDIX D**

**GEOTRACKER UPLOAD CONFIRMATION RECEIPTS**

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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>4Q11 GEO_WELL 4977</b>
<b><u>Facility Global ID:</u></b>	<b>T0600100089</b>
<b><u>Facility Name:</u></b>	<b>ARCO #4977</b>
<b><u>File Name:</u></b>	<b>GEO_WELL.zip</b>
<b><u>Organization Name:</u></b>	<b>Broadbent &amp; Associates, Inc.</b>
<b><u>Username:</u></b>	<b>BROADBENT-C</b>
<b><u>IP Address:</u></b>	<b>67.118.40.90</b>
<b><u>Submittal Date/Time:</u></b>	<b>1/27/2012 9:49:27 AM</b>
<b><u>Confirmation Number:</u></b>	<b>5193006157</b>

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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 - Semi-Annually
<b><u>Submittal Title:</u></b>	4Q11 GW Monitoring
<b><u>Facility Global ID:</u></b>	T0600100089
<b><u>Facility Name:</u></b>	ARCO #4977
<b><u>File Name:</u></b>	11121511.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>	1/12/2012 9:52:03 AM
<b><u>Confirmation Number:</u></b>	9357099175

[VIEW QC REPORT](#)

[VIEW DETECTIONS REPORT](#)