Atlantic Richfield Company

Shannon Couch
Project Manager

PO Box 1257
San Ramon, CA 94583
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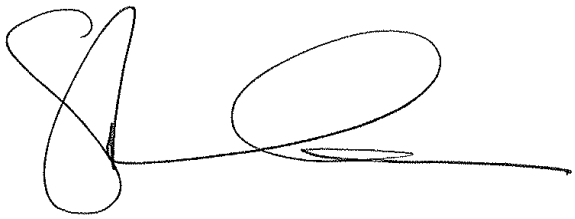
RECEIVED
By Alameda County Environmental Health at 10:03 am, Jan 30, 2013

January 11, 2013

Re: Fourth Quarter 2012 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 2012 SEMI-ANNUAL GROUNDWATER MONITORING REPORT
Atlantic Richfield Company Station #4977
2770 Castro Valley Blvd.
Castro Valley, Alameda County, California

Prepared for:

Ms. Shannon Couch
Atlantic Richfield Company
P.O. Box 1257
San Ramon, CA 94583

Prepared by:

Broadbent & Associates, Inc.
1324 Mangrove Avenue, Suite 212
Chico, California 95926
(530) 566-1400

January 11, 2013

No. 06-82-625

BROADBENT
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broadbentinc.com

Creating Solutions. Building Trust.

January 11, 2013 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 2012 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 2012 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 2012. 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: Ms. Dilan Roe, ACEH (Submitted via ACEH ftp Site)
Electronic Copy Uploaded to Geotracker

FOURTH QUARTER 2012 SEMI-ANNUAL GROUNDWATER MONITORING REPORT
STATION #4977, CASTRO VALLEY, CALIFORNIA

Broadbent & Associates, Inc. (Broadbent) is pleased to present this *Fourth Quarter 2012 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:	Station #4977 / 2770 Castro Valley Boulevard, Castro Valley, CA
Client Project Manager / Title:	Ms. Shannon Couch / Project Manager
Broadbent Contact:	Jason Duda, (530) 566-1400
Broadbent Project No.:	06-82-625
Primary Regulatory Agency / ID No.:	ACEH, Case #RO0002436
Current phase of project:	Monitoring and Site Evaluation
List of Acronyms / Abbreviations:	See end of report text for list of acronyms/abbreviations used in report.

WORK PERFORMED THIS QUARTER (Fourth Quarter 2012):

1. Prepared and submitted the *Third Quarter 2012 Status Report* (Broadbent, 10/26/2012).
2. Conducted groundwater monitoring/sampling for Fourth Quarter 2012 on October 9, 2012.

WORK SCHEDULED FOR NEXT QUARTER (First Quarter 2013):

1. Prepare and submit *Fourth Quarter 2012 Monitoring Report* (contained herein).
2. No environmental field work is currently scheduled to be conducted during First Quarter 2013.

GROUNDWATER MONITORING PLAN SUMMARY:

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

QUARTERLY RESULTS SUMMARY:

LNAPL

LNAPL observed this quarter:	No	(yes\no)
LNAPL recovered this quarter:	None	(gal)
Cumulative LNAPL recovered:	Unknown	(gal)

Groundwater Elevation and Gradient:

Depth to groundwater:	7.54 (MW-2) to 9.36 (MW-1)	(ft below TOC)
Gradient direction:	South	(compass direction)
Gradient magnitude:	0.022	(ft/ft)
Average change in elevation:	-1.59	(ft since last measurement)

Laboratory Analytical Data

Summary: GRO were detected in well MW-2 at a concentration of 4,700 µg/L. Benzene was detected in well MW-2 at a concentration of 160 µg/L. MTBE was detected in two wells at a maximum concentration of 32 µg/L in well MW-2.

ACTIVITIES CONDUCTED & RESULTS:

Fourth Quarter 2012 semi-annual groundwater monitoring was conducted on October 9, 2012 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 not noted to be present in wells during this monitoring event. Depth to water measurements ranged from 7.54 ft at MW-2 to 9.36 ft at MW-1. Resulting groundwater surface elevations ranged from 154.08 ft above datum at MW-1 to 156.75 ft above datum at MW-2. Groundwater elevations are summarized in Table 1. Water level elevations yielded a groundwater gradient to the South at approximately 0.022 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 October 9, 2012 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 TestAmerica Laboratories, Inc. (Irvine, California) for analysis of GRO (C6-C12) by EPA Method 8015M; for BTEX, MTBE, ETBE, TAME, DIPE, EDB, 1,2-DCA, TBA and Ethanol by EPA Method 8260. No 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 4,700 µg/L. BTEX were detected above the laboratory reporting limit in well MW-2 at concentrations of 160 µg/L, 1.9 µg/L, 23 µg/L, and 5.9 µg/L, respectively. MTBE was detected above the laboratory reporting limit in two of the three wells sampled at concentrations up to 32 µg/L in MW-2. 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 AND RECOMMENDATIONS:

Groundwater levels were between historic minimum and maximum elevations for each well gauged this quarter. Groundwater elevations yielded a groundwater gradient to the South at approximately 0.022 ft/ft, generally consistent with the historic gradient data presented in Table 3.

This event's detected analytical concentrations were within historic minimum and maximum ranges recorded for each well with the following exceptions: GRO, Benzene, Toluene, and Ethylbenzene reached historic minimum concentrations in well MW-2 and MTBE reached a historic minimum concentration in well MW-3. The next semi-annual groundwater monitoring and sampling event is scheduled to be conducted during the Second Quarter 2013. It is recommended to continue with the current monitoring and sampling schedule established 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 TestAmerica Laboratories, Inc. (Irvine, 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, Fourth Quarter, 2012
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_3:	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_4:	Sulfate
EPA:	Environmental Protection Agency	TAME:	Tert-Amyl Methyl Ether
ETBE:	Ethyl Tertiary Butyl Ether	TBA:	Tertiary Butyl Ether
Fe^{2+}:	Ferrous Iron	TOC:	Top of Casing
ft/ft:	feet per foot	µg/L:	micrograms per liter
gal:	Gallons		

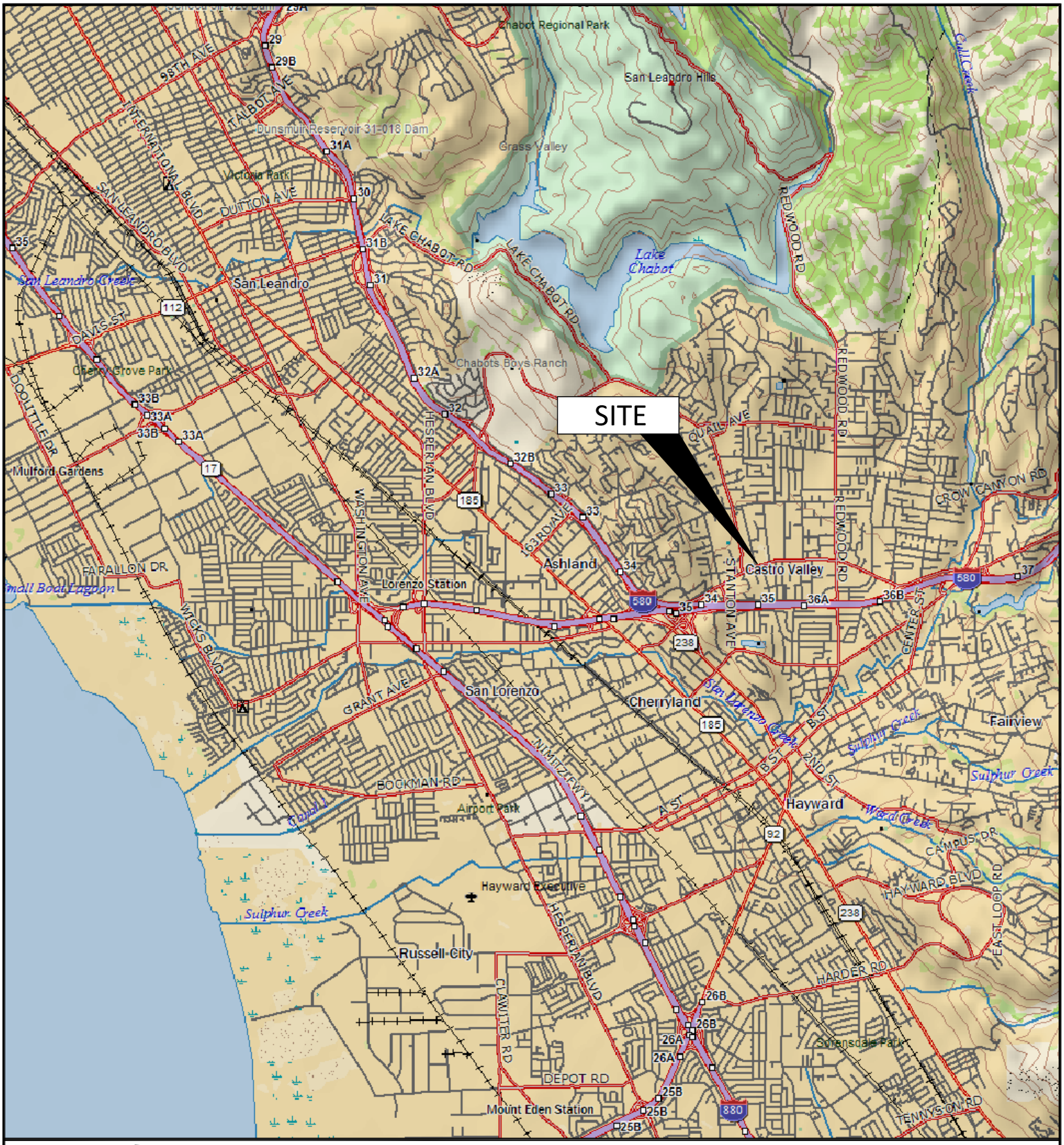
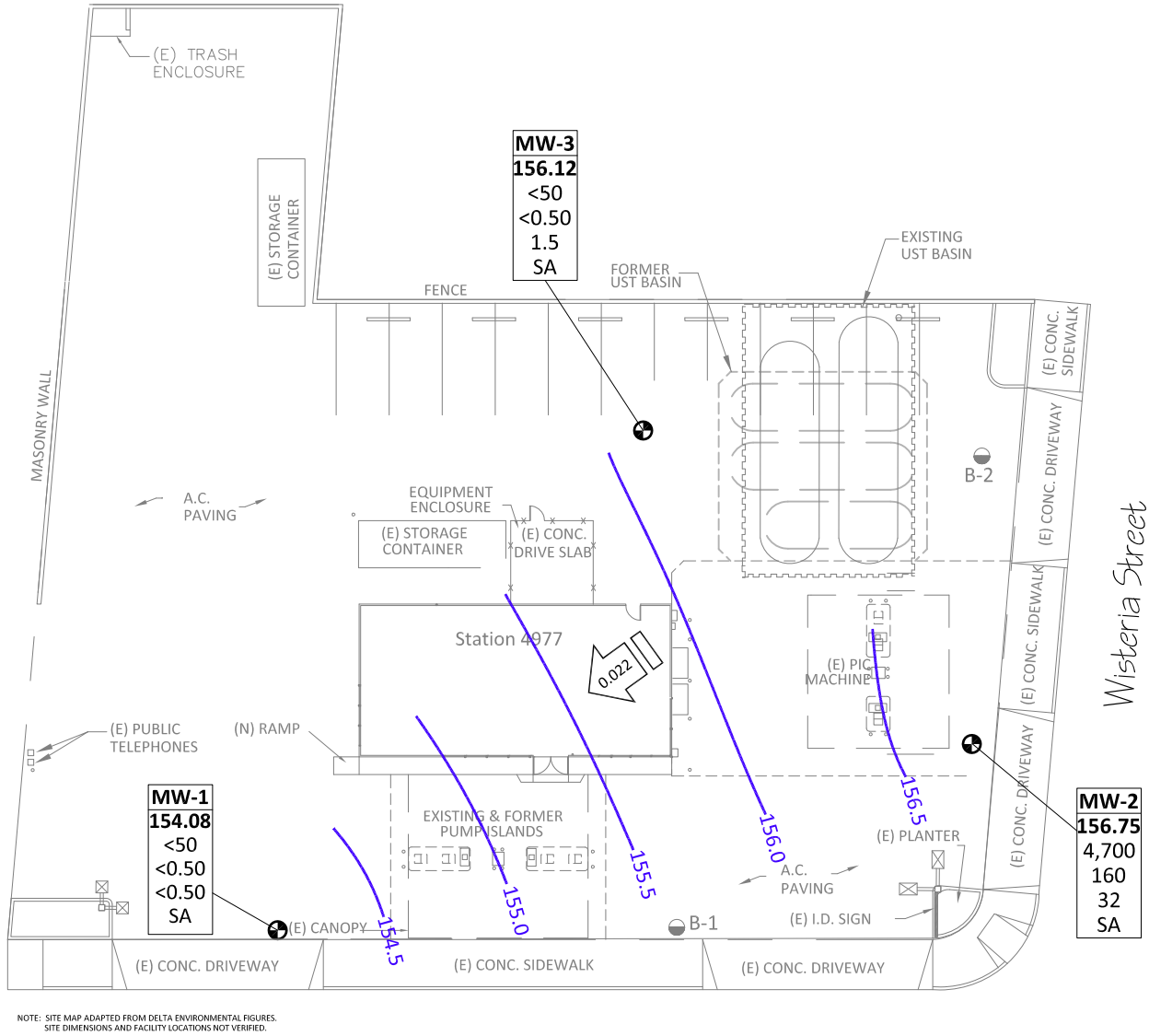


IMAGE SOURCE: DELORME

BROADBENT 1324 Mangrove Ave., Suite 212 Chico, California 95926 Project No.: 06-82-625 Date: 11/29/2012	Station #4977 2770 Castro Valley Blvd. Castro Valley, California	Site Location Map	Drawing 1



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

LEGEND

- Monitor Well Location
- Soil Boring Location
- Well Designation
- Groundwater Elevation (ft.)
- Concentration of GRO, Benzene and MTBE in Groundwater (µg/L)
- Sampling Frequency
- < Not Detected at or Above Laboratory Reporting Limits
- A Sampled Annually
- SA Sampled Semi-Annually
- 155.0 Groundwater Elevation Contour (ft)
- 0.022 Approximate Groundwater Gradient (ft/ft)

Well
ELEV
GRO
BZ
MTBE
SA

N

0 30 60
SCALE (ft)

BROADBENT
1324 Mangrove Ave., Suite 212
Chico, California 95926
Project No.: 06-82-625 Date: 11/29/2012

Station #4977
2770 Castro Valley Blvd.
Castro Valley, California

Groundwater Elevation Contour and Analytical Summary Map
Fourth Quarter, 2012

Drawing
2

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			
MW-1															
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	

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			
MW-1 Cont.															
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	
12/16/2011	P		5.00	15.00	8.67	154.77	<50	<0.50	<0.50	<0.50	<0.50	2.4	3.02	7.3	
4/10/2012	P		5.00	15.00	7.67	155.77	<50	<0.50	<0.50	<0.50	<0.50	0.78	2.45	6.72	
10/9/2012	**P**		**5.00**	**15.00**	**9.36**	**154.08**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<1.0**	**<0.50**	**2.17**	**7.00**	
MW-2															
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	

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			
MW-2 Cont.															
3/25/2008	P	164.29	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	
9/2/2008	P		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	
12/16/2011	P		5.00	15.00	7.16	157.13	6,000	180	<5.0	87	<5.0	25	0.81	7.3	c, d
4/10/2012	P		5.00	15.00	6.08	158.21	5,400	210	<5.0	100	16	40	0.21	6.75	d
10/9/2012	**P**		**5.00**	**15.00**	**7.54**	**156.75**	**4,700**	**160**	**1.9**	**23**	**5.9**	**32**	**1.69**	**7.14**	
MW-3															
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	

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			
MW-3 Cont.															
6/26/2006	P	164.53	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	
6/5/2007	P		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
12/16/2011	P		5.00	15.00	7.84	156.69	<50	<0.50	<0.50	0.98	<0.50	4.0	0.39	7.2	
4/10/2012	P		5.00	15.00	6.69	157.84	95	<0.50	<0.50	<0.50	<0.50	3.5	0.16	6.83	d
10/9/2012	**P**		**5.00**	**15.00**	**8.41**	**156.12**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<1.0**	**1.5**	**1.33**	**7.36**	

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	
MW-1									
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	
MW-1 Cont.									
12/16/2011	<300	<10	2.4	<0.50	<0.50	<0.50	<0.50	<0.50	
4/10/2012	<300	<10	0.78	<0.50	<0.50	<0.50	<0.50	<0.50	
10/9/2012	**<150**	**<10**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	
MW-2									
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	

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	
MW-2 Cont.									
3/5/2009	<6,000	<200	82	<10	<10	<10	<10	<10	
6/2/2009	<6,000	<200	34	<10	<10	<10	<10	<10	
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	
12/16/2011	<3,000	<100	25	<5.0	<5.0	<5.0	<5.0	<5.0	
4/10/2012	<3,000	<100	40	<5.0	<5.0	<5.0	<5.0	<5.0	
10/9/2012	**<380**	**<25**	**32**	**<1.3**	**<1.3**	**<1.3**	**<1.3**	**<1.3**	
MW-3									
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	

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	
MW-3 Cont.									
9/25/2007	<300	30	12	<0.50	<0.50	<0.50	<0.50	<0.50	
12/26/2007	<300	76	17	<0.50	<0.50	<0.50	<0.50	<0.50	
3/25/2008	<300	100	29	<0.50	<0.50	<0.50	<0.50	<0.50	
6/10/2008	<300	25	12	<0.50	<0.50	<0.50	<0.50	<0.50	
9/2/2008	<300	<10	9.3	<0.50	<0.50	<0.50	<0.50	<0.50	
12/2/2008	<300	<10	8.4	<0.50	<0.50	<0.50	<0.50	<0.50	
3/5/2009	<300	98	18	<0.50	<0.50	<0.50	<0.50	<0.50	
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	
12/16/2011	<300	17	4.0	<0.50	<0.50	<0.50	<0.50	<0.50	
4/10/2012	<300	18	3.5	<0.50	<0.50	<0.50	<0.50	<0.50	
10/9/2012	**<150**	**<10**	**1.5**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	

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

Date Measured	Approximate Gradient Direction	Approximate Gradient Magnitude (ft/ft)
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
12/16/2011	South	0.021
4/10/2012	South	0.016
10/9/2012	**South**	**0.022**

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[1]. 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	± 0.2ºC (± 0.36ºF)
pH	± 0.1 standard units
Conductivity	± 3%
Dissolved oxygen	± 10%
Oxidation reduction potential	± 10 mV
Turbidity[1]	± 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

[1] 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.

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.

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)[2], 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[1]. 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

In accordance with 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)[2], 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.

[2] 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 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

BROADBENT

DAILY REPORT

Page 1 of 1

Project: BP 4977 Project No.: 06-82-625

Field Representative(s): AM / JR Day: Tuesday Date: 10/9/12

Time Onsite: From: 0845 To: 1100 ; From: _____ To: _____ ; From: _____ To: _____

x Signed HASP x Safety Glasses x Hard Hat x Steel Toe Boots x Safety Vest

x UST Emergency System Shut-off Switches Located x Proper Gloves

x Proper Level of Barricading ___ Other PPE (describe) _____

Weather: Sunny

Equipment In Use: Peristaltic pump, Horiba U53, water level meter

Visitors: None

TIME:	WORK DESCRIPTION:
0845	Arrived onsite / conducted tailgate.
0915	Set up @ MW-1
0950	Set up @ MW-2
1015	Set up @ MW-3. Changed silicone tubing at intake of Horiba prior to sampling.
1100	Completed fieldwork / offsite

Signature: Alex Martin

Revision: 1/24/2012

BROADBENT

GROUNDWATER MONITORING SITE SHEET

Project: BP 4977 Project No.: 06-82-625 Date: 10/9/12

Field Representative: A. Martinez / J. Ramos 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					0920	-	-	9.36	15.18						
MW-2					1001	-	-	7.54	14.70						
MW-3					1018	-	-	8.41	15.01						

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

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

Signature: Alex Martinez

BROADBENT

GROUNDWATER SAMPLING DATA SHEET

Project: BP 4977 Project No.: 06-82-625 Date: 10/9/12

Field Representative: AM/JR

Well ID: MW-1 Start Time: — End Time: — Total Time (minutes): —

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

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

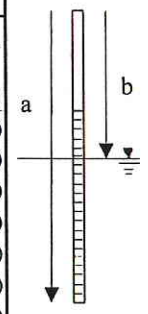
PURGING/SAMPLING METHOD Predetermined Well Volume (Low-Flow) Other: *(circle one)*

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): ___(ft)
Initial Depth to Water (b): ___(ft)
Water Column Height (WCH) = (a - b): ___(ft)
Water Column Volume (WCV) = WCH x Unit Volume: ___(gal)
Three Casing Volumes = WCV x 3: ___(gal)
Five Casing Volumes = WCV x 5: ___(gal)
Pump Depth (if pump used): ___(ft)



LOW-FLOW

Previous Low-Flow Purge Rate: ___(lpm)
Total Well Depth (a): 15.18 (ft)
Initial Depth to Water (b): 9.36 (ft)
Pump In-take Depth = b + (a-b)/2: 12.27 (ft)
Maximum Allowable Drawdown = (a-b)/8: 0.72 (ft)
Low-Flow Purge Rate: 0.25 (Lpm)*
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 (L)	Temperature °C	pH	Conductivity µS or (mS)	DO mg/L	ORP mV	Turbidity NTU	NOTES Odor, color, sheen or other
0928	0.0	18.89	7.94	1.19	3.95	86	119	
0930	0.5	19.87	7.27	1.17	3.26	116	-	
0932	1.0	20.62	7.05	1.16	2.99	124	-	
0934	1.5	20.99	6.99	1.16	2.56	129	-	
0936	2.0	21.20	6.99	1.15	2.36	131	-	
0938	2.5	21.46	7.00	1.14	2.17	134	49.3	
Previous Stabilized Parameters								

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

SAMPLE COLLECTION RECORD

Depth to Water at Sampling: 9.87 (ft)
Sample Collected Via: ___ Disp. Bailer ___ Dedicated Pump Tubing
X Disp. Pump Tubing Other:
Sample ID: MW-1 Sample Collection Time: 0945 (24:00)
Containers (#): 6 VOA (X preserved or ___ unpreserved) ___ Liter Amber
___ Other: ___ Other:
___ Other: ___ Other:

GEOCHEMICAL PARAMETERS

Parameter	Time	Measurement
DO (mg/L)		
Ferrous Iron (mg/L)		
Redox Potential (mV)		
Alkalinity (mg/L)		
Other:		
Other:		

Signature: Alex Martin

BROADBENT

GROUNDWATER SAMPLING DATA SHEET

Project: BP 4977 Project No.: 06-82-625 Date: 10/9/12

Field Representative: AM/JR

Well ID: MW-2 Start Time: – End Time: – Total Time (minutes): –

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

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

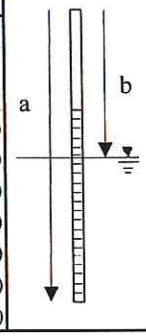
PURGING/SAMPLING METHOD Predetermined Well Volume (Low-Flow) Other: *(circle one)*

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): _____ (ft)
Initial Depth to Water (b): _____ (ft)
Water Column Height (WCH) = (a - b): _____ (ft)
Water Column Volume (WCV) = WCH x Unit Volume: _____ (gal)
Three Casing Volumes = WCV x 3: _____ (gal)
Five Casing Volumes = WCV x 5: _____ (gal)
Pump Depth (if pump used): _____ (ft)



LOW-FLOW

Previous Low-Flow Purge Rate: _____ (lpm)
Total Well Depth (a): 14.78 (ft)
Initial Depth to Water (b): 7.54 (ft)
Pump In-take Depth = b + (a-b)/2: 11.12 (ft)
Maximum Allowable Drawdown = (a-b)/8: 0.89 (ft)
Low-Flow Purge Rate: 0.25 (Lpm)*
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 (L)	Temperature °C	pH	Conductivity µS or (mS)	DO mg/L	ORP mV	Turbidity NTU	NOTES Odor, color, sheen or other
1003	0.0	22.14	7.40	0.734	3.49	-46	0.6	Moderate odor
1005	0.5	22.85	7.09	0.725	2.29	-74	–	
1007	1.0	23.14	7.12	0.719	1.91	-84	–	
1009	1.5	23.52	7.13	0.713	1.76	-89	–	
1011	2.0	23.65	7.14	0.711	1.69	-93	1.3	
Previous Stabilized Parameters								

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

SAMPLE COLLECTION RECORD

Depth to Water at Sampling: 8.05 (ft)
Sample Collected Via: ___ Disp. Bailer ___ Dedicated Pump Tubing
X Disp. Pump Tubing Other:
Sample ID: MW-2 Sample Collection Time: 1013 (24:00)
Containers (#): 6 VOA (X preserved or ___ unpreserved) ___ Liter Amber
___ Other: ___ Other:
___ Other: ___ Other:

GEOCHEMICAL PARAMETERS

Parameter	Time	Measurement
DO (mg/L)		
Ferrous Iron (mg/L)		
Redox Potential (mV)		
Alkalinity (mg/L)		
Other:		
Other:		

Signature: Alex Merker

BROADBENT

GROUNDWATER SAMPLING DATA SHEET

Project: BP 4977 Project No.: 06-82-625 Date: 10/9/12

Field Representative: AM/JR

Well ID: MW-3 Start Time: - End Time: - Total Time (minutes): -

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

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

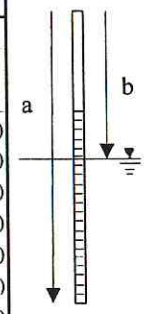
PURGING/SAMPLING METHOD Predetermined Well Volume (Low-Flow) Other: *(circle one)*

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): _____(ft)
Initial Depth to Water (b): _____(ft)
Water Column Height (WCH) = (a - b): _____(ft)
Water Column Volume (WCV) = WCH x Unit Volume: _____(gal)
Three Casing Volumes = WCV x 3: _____(gal)
Five Casing Volumes = WCV x 5: _____(gal)
Pump Depth (if pump used): _____(ft)



LOW-FLOW

Previous Low-Flow Purge Rate: _____(lpm)
Total Well Depth (a): 15.01 (ft)
Initial Depth to Water (b): 8.41 (ft)
Pump In-take Depth = b + (a-b)/2: 11.71 (ft)
Maximum Allowable Drawdown = (a-b)/8: 0.82 (ft)
Low-Flow Purge Rate: 0.25 (Lpm)*
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 (L)	Temperature °C	pH	Conductivity µS or (mS)	DO mg/L	ORP mV	Turbidity NTU	NOTES Odor, color, sheen or other
1022	0.0	24.64	7.40	0.706	2.72	-75	2.7	Mild odor
1024	0.5	24.78	7.31	0.705	2.14	-79	-	
1026	1.0	24.90	7.34	0.702	1.58	-90	-	
1028	1.5	25.08	7.35	0.697	1.36	-97	-	
1030	2.0	25.13	7.36	0.694	1.33	-100	2.2	
Previous Stabilized Parameters								

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

SAMPLE COLLECTION RECORD

Depth to Water at Sampling: _____(ft)
Sample Collected Via: ___ Disp. Bailer ___ Dedicated Pump Tubing
X Disp. Pump Tubing Other:
Sample ID: MW-3 Sample Collection Time: 1035 (24:00)
Containers (#): 6 VOA (X preserved or ___ unpreserved) ___ Liter Amber
___ Other: ___ Other:
___ Other: ___ Other:

GEOCHEMICAL PARAMETERS

Parameter	Time	Measurement
DO (mg/L)		
Ferrous Iron (mg/L)		
Redox Potential (mV)		
Alkalinity (mg/L)		
Other:		
Other:		

Signature: Alex Mo

NO. 689907

NON-HAZARDOUS WASTE DATA FORM

BESI #

GENERATOR

Generator's Name and Mailing Address

BP WEST COAST PRODUCTS, LLC
P.O. BOX 80249
RANCHO SANTA MARGARITA, CA 92688

Generator's Site Address (if different than mailing address)

BP 4977
2770 Castro Valley ~~Blvd~~ Blvd
Castro Valley, CA 94546

Generator's Phone: 949-460-5200

Container type removed from site:

☐ Drums ☐ Vacuum Truck ☐ Roll-off Truck ☐ Dump Truck

☐ Other _____

Quantity 2g

Container type transported to receiving facility:

☐ Drums ☐ Vacuum Truck ☐ Roll-off Truck ☐ Dump Truck

☐ Other _____

Quantity _____ Volume _____

WASTE DESCRIPTION NON-HAZARDOUS WATER

GENERATING PROCESS WELL PURGING / DECON WATER

COMPONENTS OF WASTE	PPM	%
1. WATER		99-100%
2. TPH		<1%
3.		
4.		

Waste Profile _____ PROPERTIES: pH 7-10 ☐ SOLID ☒ LIQUID ☐ SLUDGE ☐ SLURRY ☐ OTHER _____

HANDLING INSTRUCTIONS: WEAR ALL APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT.

Generator Printed/Typed Name: James Ramos | Signature: James Ramos | Month 10 Day 9 Year 12

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: James Ramos | Signature: James Ramos | Month 10 Day 9 Year 12

Transporter Acknowledgment of Receipt of Materials

Transporter 2 Company Name: | Phone#:

Transporter 2 Printed/Typed Name: | Signature: | Month Day Year

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 Year

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

APPENDIX C

LABORATORY REPORT
AND CHAIN-OF-CUSTODY DOCUMENTATION

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Irvine
17461 Derian Ave
Suite 100
Irvine, CA 92614-5817
Tel: (949)261-1022

TestAmerica Job ID: 440-26204-1
Client Project/Site: ARCO 4977, Castro Valley

For:
Broadbent & Associates, Inc.
1324 Mangrove Ave
Suite 212
Chico, California 95926

Attn: Mr. Jason Duda

Authorized for release by:
10/23/2012 9:06:01 PM

Pat Abe
Project Manager I
pat.abe@testamericainc.com

Table of Contents

Sample Summary

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 4977, Castro Valley

TestAmerica Job ID: 440-26204-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-26204-1	MW-1	Water	10/09/12 09:45	10/10/12 10:00
440-26204-2	MW-2	Water	10/09/12 10:13	10/10/12 10:00
440-26204-3	MW-3	Water	10/09/12 10:35	10/10/12 10:00

Job ID: 440-26204-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-26204-1

Comments
No additional comments.

Receipt
The samples were received on 10/10/2012 10:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 5.5º C.

GC/MS VOA
No analytical or quality issues were noted.

GC VOA
Method(s) 8015B: Surrogate recovery for the following sample(s) was outside control limits: (440-26150-1 MS), (440-26150-1 MSD), B-2 (440-26150-1), MW-2 (440-26204-2). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

No other analytical or quality issues were noted.

VOA Prep
No analytical or quality issues were noted.

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 4977, Castro Valley

TestAmerica Job ID: 440-26204-1

Client Sample ID: MW-1
Date Collected: 10/09/12 09:45
Date Received: 10/10/12 10:00

Lab Sample ID: 440-26204-1
Matrix: Water

Method: 8260B/5030B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromoethane (EDB)	ND		0.50		ug/L			10/17/12 03:20	1
1,2-Dichloroethane	ND		0.50		ug/L			10/17/12 03:20	1
Benzene	ND		0.50		ug/L			10/17/12 03:20	1
Ethanol	ND		150		ug/L			10/17/12 03:20	1
Ethylbenzene	ND		0.50		ug/L			10/17/12 03:20	1
Ethyl-t-butyl ether (ETBE)	ND		0.50		ug/L			10/17/12 03:20	1
Isopropyl Ether (DIPE)	ND		0.50		ug/L			10/17/12 03:20	1
m,p-Xylene	ND		1.0		ug/L			10/17/12 03:20	1
Methyl-t-Butyl Ether (MTBE)	ND		0.50		ug/L			10/17/12 03:20	1
o-Xylene	ND		0.50		ug/L			10/17/12 03:20	1
Tert-amyl-methyl ether (TAME)	ND		0.50		ug/L			10/17/12 03:20	1
tert-Butyl alcohol (TBA)	ND		10		ug/L			10/17/12 03:20	1
Toluene	ND		0.50		ug/L			10/17/12 03:20	1
Xylenes, Total	ND		1.0		ug/L			10/17/12 03:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*80 - 120*		*10/17/12 03:20*	*1*
Dibromofluoromethane (Surr)	*107*		*80 - 120*		*10/17/12 03:20*	*1*
Toluene-d8 (Surr)	*99*		*80 - 120*		*10/17/12 03:20*	*1*

Method: 8015B/5030B - Gasoline Range Organics (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
GRO (C6-C12)	ND		50		ug/L			10/16/12 18:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*125*		*65 - 140*		*10/16/12 18:43*	*1*

Client Sample ID: MW-2
Date Collected: 10/09/12 10:13
Date Received: 10/10/12 10:00

Lab Sample ID: 440-26204-2
Matrix: Water

Method: 8260B/5030B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromoethane (EDB)	ND		1.3		ug/L			10/17/12 03:50	2.5
1,2-Dichloroethane	ND		1.3		ug/L			10/17/12 03:50	2.5
Benzene	**160**		1.3		ug/L			10/17/12 03:50	2.5
Ethanol	ND		380		ug/L			10/17/12 03:50	2.5
Ethylbenzene	**23**		1.3		ug/L			10/17/12 03:50	2.5
Ethyl-t-butyl ether (ETBE)	ND		1.3		ug/L			10/17/12 03:50	2.5
Isopropyl Ether (DIPE)	ND		1.3		ug/L			10/17/12 03:50	2.5
m,p-Xylene	**5.9**		2.5		ug/L			10/17/12 03:50	2.5
Methyl-t-Butyl Ether (MTBE)	**32**		1.3		ug/L			10/17/12 03:50	2.5
o-Xylene	ND		1.3		ug/L			10/17/12 03:50	2.5
Tert-amyl-methyl ether (TAME)	ND		1.3		ug/L			10/17/12 03:50	2.5
tert-Butyl alcohol (TBA)	ND		25		ug/L			10/17/12 03:50	2.5
Toluene	**1.9**		1.3		ug/L			10/17/12 03:50	2.5
Xylenes, Total	**5.9**		2.5		ug/L			10/17/12 03:50	2.5

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*80 - 120*		*10/17/12 03:50*	*2.5*
Dibromofluoromethane (Surr)	*102*		*80 - 120*		*10/17/12 03:50*	*2.5*
Toluene-d8 (Surr)	*105*		*80 - 120*		*10/17/12 03:50*	*2.5*

Method: 8015B/5030B - Gasoline Range Organics (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
GRO (C6-C12)	**4700**		500		ug/L			10/16/12 19:11	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*221*	*LH*	*65 - 140*		*10/16/12 19:11*	*10*

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 4977, Castro Valley

TestAmerica Job ID: 440-26204-1

Client Sample ID: MW-3
Date Collected: 10/09/12 10:35
Date Received: 10/10/12 10:00

Lab Sample ID: 440-26204-3
Matrix: Water

Method: 8260B/5030B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromoethane (EDB)	ND		0.50		ug/L			10/17/12 04:20	1
1,2-Dichloroethane	ND		0.50		ug/L			10/17/12 04:20	1
Benzene	ND		0.50		ug/L			10/17/12 04:20	1
Ethanol	ND		150		ug/L			10/17/12 04:20	1
Ethylbenzene	ND		0.50		ug/L			10/17/12 04:20	1
Ethyl-t-butyl ether (ETBE)	ND		0.50		ug/L			10/17/12 04:20	1
Isopropyl Ether (DIPE)	ND		0.50		ug/L			10/17/12 04:20	1
m,p-Xylene	ND		1.0		ug/L			10/17/12 04:20	1
Methyl-t-Butyl Ether (MTBE)	**1.5**		0.50		ug/L			10/17/12 04:20	1
o-Xylene	ND		0.50		ug/L			10/17/12 04:20	1
Tert-amyl-methyl ether (TAME)	ND		0.50		ug/L			10/17/12 04:20	1
tert-Butyl alcohol (TBA)	ND		10		ug/L			10/17/12 04:20	1
Toluene	ND		0.50		ug/L			10/17/12 04:20	1
Xylenes, Total	ND		1.0		ug/L			10/17/12 04:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*92*		*80 - 120*		*10/17/12 04:20*	*1*
Dibromofluoromethane (Surr)	*103*		*80 - 120*		*10/17/12 04:20*	*1*
Toluene-d8 (Surr)	*101*		*80 - 120*		*10/17/12 04:20*	*1*

Method: 8015B/5030B - Gasoline Range Organics (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
GRO (C6-C12)	ND		50		ug/L			10/16/12 19:38	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*117*		*65 - 140*		*10/16/12 19:38*	*1*

Lab Chronicle

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 4977, Castro Valley

TestAmerica Job ID: 440-26204-1

Client Sample ID: MW-1

Lab Sample ID: 440-26204-1

Date Collected: 10/09/12 09:45

Matrix: Water

Date Received: 10/10/12 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B/5030B		1	10 mL	10 mL	59593	10/17/12 03:20	RM	TAL IRV
Total/NA	Analysis	8015B/5030B		1	10 mL	10 mL	59401	10/16/12 18:43	SC	TAL IRV

Client Sample ID: MW-2

Lab Sample ID: 440-26204-2

Date Collected: 10/09/12 10:13

Matrix: Water

Date Received: 10/10/12 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B/5030B		2.5	10 mL	10 mL	59593	10/17/12 03:50	RM	TAL IRV
Total/NA	Analysis	8015B/5030B		10	10 mL	10 mL	59401	10/16/12 19:11	SC	TAL IRV

Client Sample ID: MW-3

Lab Sample ID: 440-26204-3

Date Collected: 10/09/12 10:35

Matrix: Water

Date Received: 10/10/12 10:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B/5030B		1	10 mL	10 mL	59593	10/17/12 04:20	RM	TAL IRV
Total/NA	Analysis	8015B/5030B		1	10 mL	10 mL	59401	10/16/12 19:38	SC	TAL IRV

Laboratory References:

TAL IRV = TestAmerica Irvine, 17461 Derian Ave, Suite 100, Irvine, CA 92614-5817, TEL (949)261-1022

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 4977, Castro Valley

TestAmerica Job ID: 440-26204-1

Method: 8260B/5030B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 440-59593/4
Matrix: Water
Analysis Batch: 59593

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromoethane (EDB)	ND		0.50		ug/L			10/16/12 21:50	1
1,2-Dichloroethane	ND		0.50		ug/L			10/16/12 21:50	1
Benzene	ND		0.50		ug/L			10/16/12 21:50	1
Ethanol	ND		150		ug/L			10/16/12 21:50	1
Ethylbenzene	ND		0.50		ug/L			10/16/12 21:50	1
Ethyl-t-butyl ether (ETBE)	ND		0.50		ug/L			10/16/12 21:50	1
Isopropyl Ether (DIPE)	ND		0.50		ug/L			10/16/12 21:50	1
m,p-Xylene	ND		1.0		ug/L			10/16/12 21:50	1
Methyl-t-Butyl Ether (MTBE)	ND		0.50		ug/L			10/16/12 21:50	1
o-Xylene	ND		0.50		ug/L			10/16/12 21:50	1
Tert-amyl-methyl ether (TAME)	ND		0.50		ug/L			10/16/12 21:50	1
tert-Butyl alcohol (TBA)	ND		10		ug/L			10/16/12 21:50	1
Toluene	ND		0.50		ug/L			10/16/12 21:50	1
Xylenes, Total	ND		1.0		ug/L			10/16/12 21:50	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*80 - 120*		*10/16/12 21:50*	*1*
Dibromofluoromethane (Surr)	*102*		*80 - 120*		*10/16/12 21:50*	*1*
Toluene-d8 (Surr)	*99*		*80 - 120*		*10/16/12 21:50*	*1*

Lab Sample ID: LCS 440-59593/5
Matrix: Water
Analysis Batch: 59593

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
1,2-Dibromoethane (EDB)			25.0	28.7		ug/L		115	75 - 125		
1,2-Dichloroethane			25.0	27.8		ug/L		111	60 - 140		
Benzene			25.0	23.9		ug/L		95	70 - 120		
Ethanol			250	266		ug/L		107	40 - 155		
Ethylbenzene			25.0	25.6		ug/L		103	75 - 125		
Ethyl-t-butyl ether (ETBE)			25.0	24.5		ug/L		98	65 - 135		
Isopropyl Ether (DIPE)			25.0	25.7		ug/L		103	60 - 135		
m,p-Xylene			50.0	54.1		ug/L		108	75 - 125		
Methyl-t-Butyl Ether (MTBE)			25.0	24.7		ug/L		99	60 - 135		
o-Xylene			25.0	27.8		ug/L		111	75 - 125		
Tert-amyl-methyl ether (TAME)			25.0	25.2		ug/L		101	60 - 135		
tert-Butyl alcohol (TBA)			125	141		ug/L		113	70 - 135		
Toluene			25.0	25.9		ug/L		104	70 - 120		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*99*		*80 - 120*
Dibromofluoromethane (Surr)	*109*		*80 - 120*
Toluene-d8 (Surr)	*102*		*80 - 120*

Method: 8260B/5030B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 440-26150-D-8 MS
Matrix: Water
Analysis Batch: 59593

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2-Dibromoethane (EDB)	ND		25.0	26.5		ug/L		106	70 - 130
1,2-Dichloroethane	ND		25.0	26.1		ug/L		104	60 - 140
Benzene	ND		25.0	22.5		ug/L		90	65 - 125
Ethanol	ND		250	252		ug/L		101	40 - 155
Ethylbenzene	ND		25.0	24.8		ug/L		99	65 - 130
Ethyl-t-butyl ether (ETBE)	ND		25.0	21.5		ug/L		86	60 - 135
Isopropyl Ether (DIPE)	ND		25.0	23.0		ug/L		92	60 - 140
m,p-Xylene	ND		50.0	52.7		ug/L		105	65 - 130
Methyl-t-Butyl Ether (MTBE)	ND		25.0	21.8		ug/L		85	55 - 145
o-Xylene	ND		25.0	26.1		ug/L		104	65 - 125
Tert-amyl-methyl ether (TAME)	ND		25.0	22.4		ug/L		89	60 - 140
tert-Butyl alcohol (TBA)	100		125	246		ug/L		113	65 - 140
Toluene	ND		25.0	24.7		ug/L		99	70 - 125

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*98*		*80 - 120*
Dibromofluoromethane (Surr)	*102*		*80 - 120*
Toluene-d8 (Surr)	*100*		*80 - 120*

Lab Sample ID: 440-26150-D-8 MSD
Matrix: Water
Analysis Batch: 59593

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,2-Dibromoethane (EDB)	ND		25.0	27.6		ug/L		110	70 - 130	4	25
1,2-Dichloroethane	ND		25.0	25.7		ug/L		103	60 - 140	2	20
Benzene	ND		25.0	23.4		ug/L		94	65 - 125	4	20
Ethanol	ND		250	283		ug/L		113	40 - 155	11	30
Ethylbenzene	ND		25.0	25.6		ug/L		103	65 - 130	3	20
Ethyl-t-butyl ether (ETBE)	ND		25.0	22.7		ug/L		91	60 - 135	5	25
Isopropyl Ether (DIPE)	ND		25.0	24.1		ug/L		97	60 - 140	5	25
m,p-Xylene	ND		50.0	54.2		ug/L		108	65 - 130	3	25
Methyl-t-Butyl Ether (MTBE)	ND		25.0	22.8		ug/L		90	55 - 145	5	25
o-Xylene	ND		25.0	27.4		ug/L		110	65 - 125	5	20
Tert-amyl-methyl ether (TAME)	ND		25.0	23.4		ug/L		94	60 - 140	5	30
tert-Butyl alcohol (TBA)	100		125	241		ug/L		109	65 - 140	2	25
Toluene	ND		25.0	24.8		ug/L		99	70 - 125	0	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*98*		*80 - 120*
Dibromofluoromethane (Surr)	*102*		*80 - 120*
Toluene-d8 (Surr)	*100*		*80 - 120*

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 4977, Castro Valley

TestAmerica Job ID: 440-26204-1

Method: 8015B/5030B - Gasoline Range Organics (GC)

Lab Sample ID: MB 440-59401/3
Matrix: Water
Analysis Batch: 59401

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
GRO (C6-C12)	ND		50		ug/L			10/16/12 09:26	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*118*		*65 - 140*		*10/16/12 09:26*	*1*

Lab Sample ID: LCS 440-59401/2
Matrix: Water
Analysis Batch: 59401

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
GRO (C4-C12)			800	778		ug/L		97	80 - 120		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*106*		*65 - 140*

Lab Sample ID: 440-26150-A-1 MS
Matrix: Water
Analysis Batch: 59401

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
GRO (C4-C12)	1300		800	1900		ug/L		80	65 - 140		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*874*	*LH*	*65 - 140*

Lab Sample ID: 440-26150-A-1 MSD
Matrix: Water
Analysis Batch: 59401

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
GRO (C4-C12)	1300		800	1870		ug/L		76	65 - 140	2	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*843*	*LH*	*65 - 140*

QC Association Summary

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 4977, Castro Valley

TestAmerica Job ID: 440-26204-1

GC/MS VOA

Analysis Batch: 59593

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-26150-D-8 MS	Matrix Spike	Total/NA	Water	8260B/5030B	
440-26150-D-8 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B/5030B	
440-26204-1	MW-1	Total/NA	Water	8260B/5030B	
440-26204-2	MW-2	Total/NA	Water	8260B/5030B	
440-26204-3	MW-3	Total/NA	Water	8260B/5030B	
LCS 440-59593/5	Lab Control Sample	Total/NA	Water	8260B/5030B	
MB 440-59593/4	Method Blank	Total/NA	Water	8260B/5030B	

GC VOA

Analysis Batch: 59401

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-26150-A-1 MS	Matrix Spike	Total/NA	Water	8015B/5030B	
440-26150-A-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8015B/5030B	
440-26204-1	MW-1	Total/NA	Water	8015B/5030B	
440-26204-2	MW-2	Total/NA	Water	8015B/5030B	
440-26204-3	MW-3	Total/NA	Water	8015B/5030B	
LCS 440-59401/2	Lab Control Sample	Total/NA	Water	8015B/5030B	
MB 440-59401/3	Method Blank	Total/NA	Water	8015B/5030B	

Definitions/Glossary

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 4977, Castro Valley

TestAmerica Job ID: 440-26204-1

Qualifiers

GC VOA

Qualifier	Qualifier Description
LH	Surrogate Recoveries were higher than QC limits

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CNF	Contains no Free Liquid
DL, RA, RE, IN	Indicates a Dilution, Reanalysis, Re-extraction, or additional Initial metals/anion analysis of the sample
EDL	Estimated Detection Limit
EPA	United States Environmental Protection Agency
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RL	Reporting Limit
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 4977, Castro Valley

TestAmerica Job ID: 440-26204-1

Laboratory: TestAmerica Irvine

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
California	LA Cty Sanitation Districts	9	10256	01-31-13
California	NELAC	9	1108CA	01-31-13
California	State Program	9	2706	06-30-14
Guam	State Program	9	Cert. No. 12.002r	01-23-13
Hawaii	State Program	9	N/A	01-31-13
Nevada	State Program	9	CA015312007A	07-31-13
New Mexico	State Program	6	N/A	01-31-13
Northern Mariana Islands	State Program	9	MP0002	01-31-13
Oregon	NELAC	10	4005	09-12-13
USDA	Federal		P330-09-00080	06-06-14
USEPA UCMR	Federal	1	CA01531	01-31-13

Laboratory Management Program LaMP Chain of Custody Record

Page _____ of _____

BP Site Node Path: BP 4977 **Req Due Date (mm/dd/yy):** _____ **Rush TAT:** Yes ___ No ___

BP Facility No: 4977 **Lab Work Order Number:** 440-26204

Lab Name: Test America	Facility Address: 2770 Castro Valley Rd	Consultant/Contractor: Broadbent & Associates Inc.
Lab Address: 17461 Derian Avenue, Suite 100, Irvine, CA	City, State, ZIP Code: Castro Valley, California	Consultant/Contractor Project No: 06-82-625
Lab PM: Pat Abe	Lead Regulatory Agency: ACEH	Address: 1324 Mangrove Ave., Suite 212, Chico, California
Lab Phone: 949-261-1022	California Global ID No.: T0600100089	Consultant/Contractor PM: Jason Duda
Lab Shipping Accnt: Fed ex#: 11103-6633-7	Enfos Proposal No/ WR#: 005X0 - 0002 / WR245701	Phone: 530-566-1400 / 530-566-1401 (f) Email: jduda@broadbentinc.com
Lab Bottle Order No:	Accounting Mode: Provision x OOC-BU ___ OOC-RM ___	Email EDD To: jduda@broadbentinc.com and to lab.enfosdoc@bp.com
Other Info:	Stage: Execute (4) Activity: GWM (401)	Invoice To: BP x Contractor ___

BP Project Manager (PM): Shannon Couch
BP PM Phone: 925-275-3804
BP PM Email: shannon.couch@bp.com

Lab No.	Sample Description	Date	Time	Matrix: Soil / Solid	Matrix: Water / Liquid	Matrix: Air / Vapor	Matrix: Is this location a well?	No. Containers / Preservative: Total Number of Container	Unpreserved	H2SO4	HNO3	HCl	Methanol	Requested Analyses: GRO by 8015M	BTEX/5 FO/EDB by 8260	1,2-DCA and Ethanol by 8260	Report Type & QC Level
	MW-1	10/9/12	0945		x		y	6				x		x	x	x	Standard x
	MW-2		1013		x		y	6				x		x	x	x	Full Data Package ___
	MW-3		1035		x		y	6				x		x	x	x	
	TB-4977-10092012		1040		x		n	2				x					On Hold

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

	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Name: James Ramos						
Sampler's Company: Broadbent & Associates		10/9/12	1700	VanBrunt TAI	10/10/12	10:00
Shipment Method: Fed ex Ship Date: 10-9-12						
Shipment Tracking No: 8015 6245 5560						

Special Instructions:

THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes / No | Temp Blank: Yes / No | Cooler Temp on Receipt: 5.7 °F/C | Trip Blank: Yes / No | MS/MSD Sample Submitted: Yes / No

Login Sample Receipt Checklist

Client: Broadbent & Associates, Inc.

Job Number: 440-26204-1

Login Number: 26204

List Source: TestAmerica Irvine

List Number: 1

Creator: Perez, Angel

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	James Ramos
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	N/A	
Residual Chlorine Checked.	N/A	

APPENDIX D

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!

Submittal Type:	**GEO_WELL**
Report Title:	**4Q12 GEO_WELL 4977**
Facility Global ID:	**T0600100089**
Facility Name:	**ARCO #4977**
File Name:	**GEO_WELL.zip**
Organization Name:	**Broadbent & Associates, Inc.**
Username:	**BROADBENT-C**
IP Address:	**67.118.40.90**
Submittal Date/Time:	**12/4/2012 10:02:18 AM**
Confirmation Number:	**6137938737**

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!

Submittal Type:	**EDF**
Report Title:	**4Q12 GW Monitoring**
Report Type:	**Monitoring Report - Semi-Annually**
Facility Global ID:	**T0600100089**
Facility Name:	**ARCO #4977**
File Name:	**440-26204-1_23 Oct 12 2203_EDF.zip**
Organization Name:	**Broadbent & Associates, Inc.**
Username:	**BROADBENT-C**
IP Address:	**67.118.40.90**
Submittal Date/Time:	**12/4/2012 10:00:04 AM**
Confirmation Number:	**3106673479**

VIEW QC REPORT

VIEW DETECTIONS REPORT