Atlantic Richfield Company

Chuck Carmel
Remediation Management Project Manager

PO Box 1257
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January 31, 2014

Re: Fourth Quarter 2013 Groundwater Monitoring Report
Atlantic Richfield Company Station #2162
15135 Hesperian Boulevard, San Leandro, California
ACEH Case #RO0000190

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,

Chuck Carmel
Remediation Management Project Manager

Attachment

BROADBENT
875 Cotting Ln., Suite G, Vacaville, CA 95688
[T] 707-455-7290 [F] 707-455-7295
broadbentinc.com

Creating Solutions, Building Trust.

January 31, 2014

Project No. 06-88-620

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

Attn.: Mr. Chuck Carmel

Re: Fourth Quarter 2013 Semi-Annual Groundwater Monitoring Report,
Atlantic Richfield Company Station No.2162, 15135 Hesperian Boulevard,
San Leandro, California; ACEH LUFT Case #RO0000190

Dear Mr. Carmel:

Attached is the Fourth Quarter 2013 Monitoring Report for Atlantic Richfield Company Station No. 2162 located at 15135 Hesperian Boulevard in San Leandro, Alameda County, California. This report presents the observations and results of semi-annual groundwater monitoring and sampling conducted during the Fourth Quarter of 2013, and a summary of recent developments at the Site.

Should you have questions regarding the work performed or results obtained, please do not hesitate to contact me at 707-455-7290.

Sincerely,
BROADBENT & ASSOCIATES, INC.

PROFESSIONAL GEOLOGIST
KRISTENE TIDWELL
No. 969
CERTIFIED HYDRO GEOLOGIST
STATE OF CALIFORNIA

Kristene Tidwell, PG, CHG
Senior Geologist

Enclosures

cc: Mr. Keith Nowell, Alameda County Environmental Health (submitted via ACEH ftp site)
Electronic copy uploaded to GeoTracker

FOURTH QUARTER 2013
MONITORING REPORT
ARCO STATION #2162, SAN LEANDRO, CALIFORNIA

Broadbent & Associates, Inc. (Broadbent) is pleased to present this *Fourth Quarter 2013 Monitoring Report* on behalf of Atlantic Richfield Company (a BP affiliated company) for ARCO Station No. 2162 located in San Leandro, Alameda County, California. Quarterly reporting is being submitted to the Alameda County Environmental Health Services Agency (ACEH) consistent with their requirements under the legal authority of the California Regional Water Quality Control Board, as codified by the California Code of Regulations Title 23, Section 2652(d). Details of work performed, discussion of results, and recommendations are provided below.

Facility Name / Address:	ARCO Station No. 2162 / 15135 Hesperian Boulevard, San Leandro
Client Project Manager / Title:	Mr. Chuck Carmel / Remediation Management Project Manager
Broadbent Contact:	Ms. Kristene Tidwell, PG, CHG / (707) 455-7290
Broadbent Project No.:	06-88-620
Primary Regulatory Agency / ID No.:	ACEH, Case #RO0000190
Current phase of project:	Monitoring/ Assessment
List of Acronyms / Abbreviations:	See end of report text for list of acronyms/abbreviations used in report.

WORK PERFORMED THIS QUARTER (Fourth Quarter 2013):

1. Submitted *Third Quarter 2013 Status Report* on October 15, 2013.
2. Conducted groundwater monitoring/sampling for Fourth Quarter 2013 on December 2, 2013.
3. Implemented scope of work outlined in Broadbent's *Conceptual Site Model and Addendum to the Revised Work Plan* (Work Plan Addendum) dated September 9, 2013.

WORK SCHEDULED FOR NEXT QUARTER (First Quarter 2014):

1. Submit *Fourth Quarter 2013 Monitoring Report* (contained herein).
2. Submit an offsite assessment report documenting the activities, results, and findings of the recent offsite assessment (noted above).

GROUNDWATER MONITORING PLAN SUMMARY:

Groundwater level gauging:	MW-1 through MW-6	(2Q & 4Q)
Groundwater sample collection:	MW-1, MW-2	(2Q)
	MW-3, MW-4, MW-5, MW-6	(2Q & 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:	N/A	(gal)

Groundwater Elevation and Gradient:

Depth to groundwater:	8.70(MW-2) to 10.10 (MW-4)	(ft below TOC)
Gradient direction:	Southwest	(compass direction)
Gradient magnitude:	0.003	(ft/ft)
Average change in elevation:	-0.55	(ft since last measurement)

Laboratory Analytical Data

Summary:

Analytical results are as follows:

- GRO was detected in MW-6 with a concentration of 1,400 µg/L
- Benzene was detected in MW-6 with a concentration of 1.9 µg/L
- Ethylbenzene was detected in MW-6 with a concentration of 2.3 µg/L
- MTBE was detected in MW-6 with a concentration of 88 µg/L
- TAME was detected in MW-6 with a concentration of 6.2 µg/L
- TBA was detected in MW-6 with a concentration of 11 µg/L
- Toluene was detected in MW-6 with a concentration of 0.5 µg/L
- Naphthalene was detected in MW-6 with a concentration of 6.3 µg/L
- No other petroleum compounds were reported in any groundwater sample collected

ACTIVITIES CONDUCTED & RESULTS:

Fourth Quarter 2013 semi-annual groundwater monitoring was conducted at wells MW-1 through MW-6 on December 2, 2013 by Broadbent personnel. No irregularities were noted during water level gauging. Light, Non-Aqueous Phase Liquid (LNAPL, or free product) was not noted to be present in the wells monitored during this event. Depth to water measurements ranged from 8.70 ft bgs at MW-2 to 10.10 ft bgs at MW-4. Resulting groundwater surface elevations ranged from 23.87 ft above msl at MW-4 to 24.25 ft above msl at well MW-2. Groundwater elevations are summarized in Table 1. Water level elevations yielded a potentiometric horizontal groundwater gradient to the Southwest at approximately 0.003 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.

Consistent with the current program, groundwater samples were collected from wells MW-3 through MW-6 on December 2, 2013. No irregularities were reported during sampling. Samples were submitted under chain-of-custody protocol to TestAmerica Laboratories, Inc. (Irvine, 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. No significant irregularities were encountered during analysis of the groundwater. The laboratory analytical report, including chain-of-custody documentation, is provided in Appendix C.

Results of this sampling event are included in the laboratory analytical data summary presented above. The results indicate the highest overall petroleum hydrocarbon concentrations present in well MW-6, with no analytes being detected in any other well sampled. 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. Further discussion of the results is presented below.

On December 23, 2013, Broadbent implemented the scope of work outlined in the Work Plan Addendum. This scope of work included advancing a total of three direct-push borings, collecting grab-groundwater samples from these borings, and analyzing samples for petroleum hydrocarbons. A report documenting these activities will be submitted during the first quarter 2014 under separate cover.

DISCUSSION:

Review of historic groundwater gradient data indicates that the gradient calculated based on the measurements collected during the Fourth Quarter 2013 monitoring is consistent with historical measurement. Groundwater levels were between historic minimum and maximum elevations for the monitoring wells associated with ARCO Station No. 2162. During the Fourth Quarter 2013, groundwater elevations decreased an average of 0.55 ft above msl across the Site relative to the Second Quarter 2013. Groundwater elevations yielded a horizontal potentiometric groundwater gradient to the Southwest at approximately 0.003 ft/ft, generally consistent with the historic groundwater gradient and magnitude data presented in Table 3.

Review of historical groundwater analytical results indicate that well MW-6 contains the highest and only remaining residual concentrations of petroleum hydrocarbons. Concentrations of GRO, benzene, ethylbenzene, MTBE toluene, TBA and TAME all exhibited a decrease from the Second Quarter 2013. Historically, MW-6 has contained the highest residual concentrations of petroleum hydrocarbons at the Site. Residual petroleum hydrocarbons in well MW-5, which is located approximately 10 feet southwest of the existing Underground Storage Tanks (USTs) were not detected during the Second and Fourth Quarter 2013 relative to the Fourth Quarter 2012. Based on the apparent decreasing petroleum hydrocarbon trends in well MW-6 and the lack of impacts in any other Site well, it appears that the residual hydrocarbon plume at the Site is decreasing and shrinking in size due to natural attenuation.

RECOMMENDATIONS:

Site recommendations will be finalized and presented in the forthcoming report documenting the offsite groundwater investigation.

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. 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 Contours and Analytical Summary Map, December 2, 2013
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
Appendix C:	Laboratory Report and Chain-of-Custody Documentation
Appendix D:	GeoTracker Upload Confirmation Receipts

LIST OF COMMONLY USED ACCRONYMS/ABBREVIATIONS:

ACEH:	Alameda County Environmental Health
ACPWA:	Alameda County Public Works Agency
BGS	Below ground surface
BTEX:	Benzene, Toluene, Ethylbenzene, Total Xylenes
1,2-DCA:	1,2-Dichloroethane
DIPE:	Di-Isopropyl Ether
DO:	Dissolved Oxygen
DRO:	Diesel-Range Organics
EDB:	1,2-Dibromomethane
Eh:	Oxidation Reduction Potential
EPA:	Environmental Protection Agency
ETBE:	Ethyl Tertiary Butyl Ether
Fe^{2+}:	Ferrous Iron
ft/ft:	feet per foot
ft	Feet
gal:	Gallons
GRO:	Gasoline-Range Organics
LNAPL:	Light Non-Aqueous Phase Liquid
MSL	Mean Sea Level
MTBE:	Methyl Tertiary Butyl Ether
NO_3:	Nitrate as Nitrogen
ppb:	parts per billion
SO_4:	Sulfate
TAME:	Tert-Amyl Methyl Ether
TBA:	Tertiary Butyl Ether
TOC:	Top of Casing
μg/L:	micrograms per liter

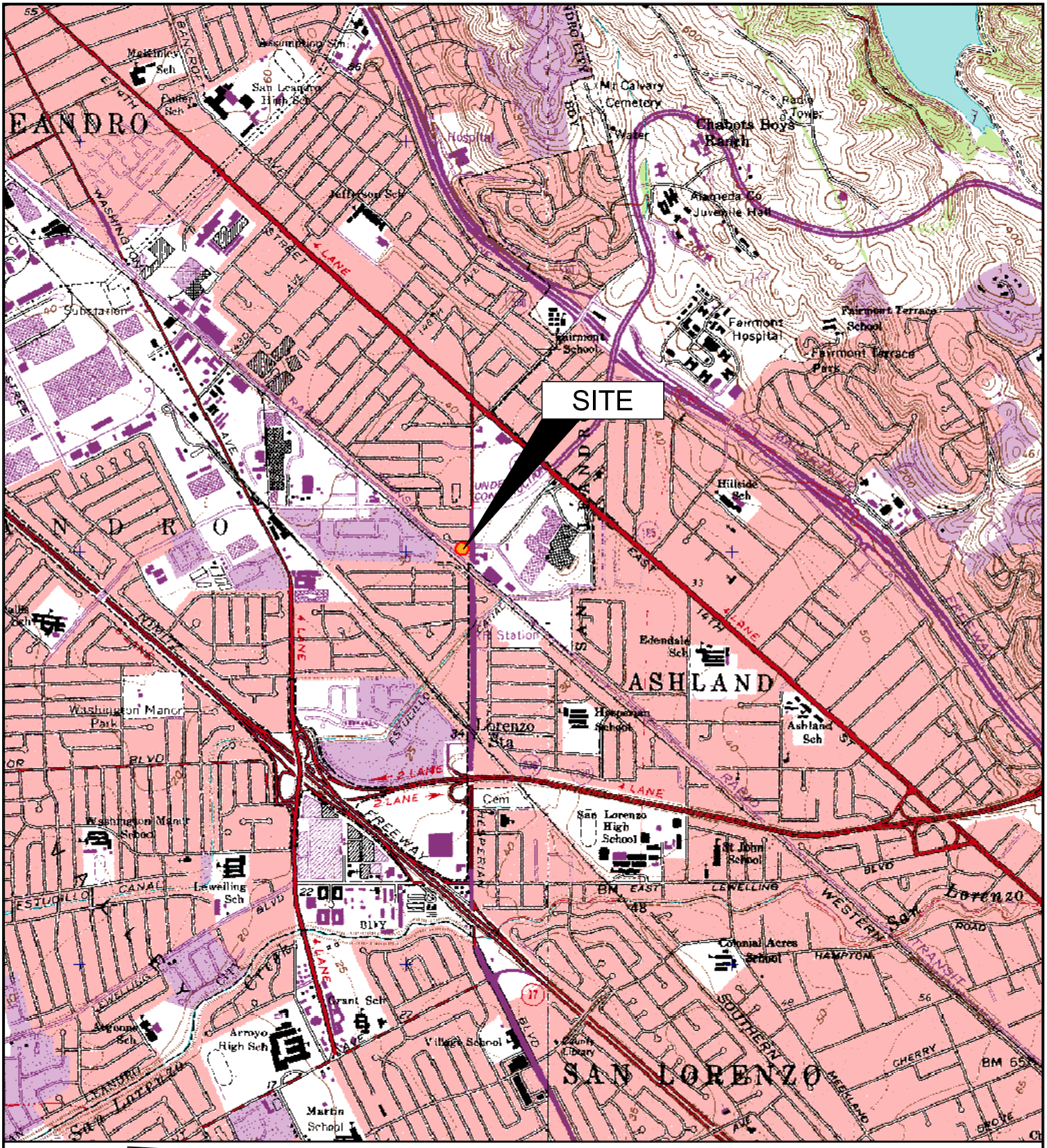


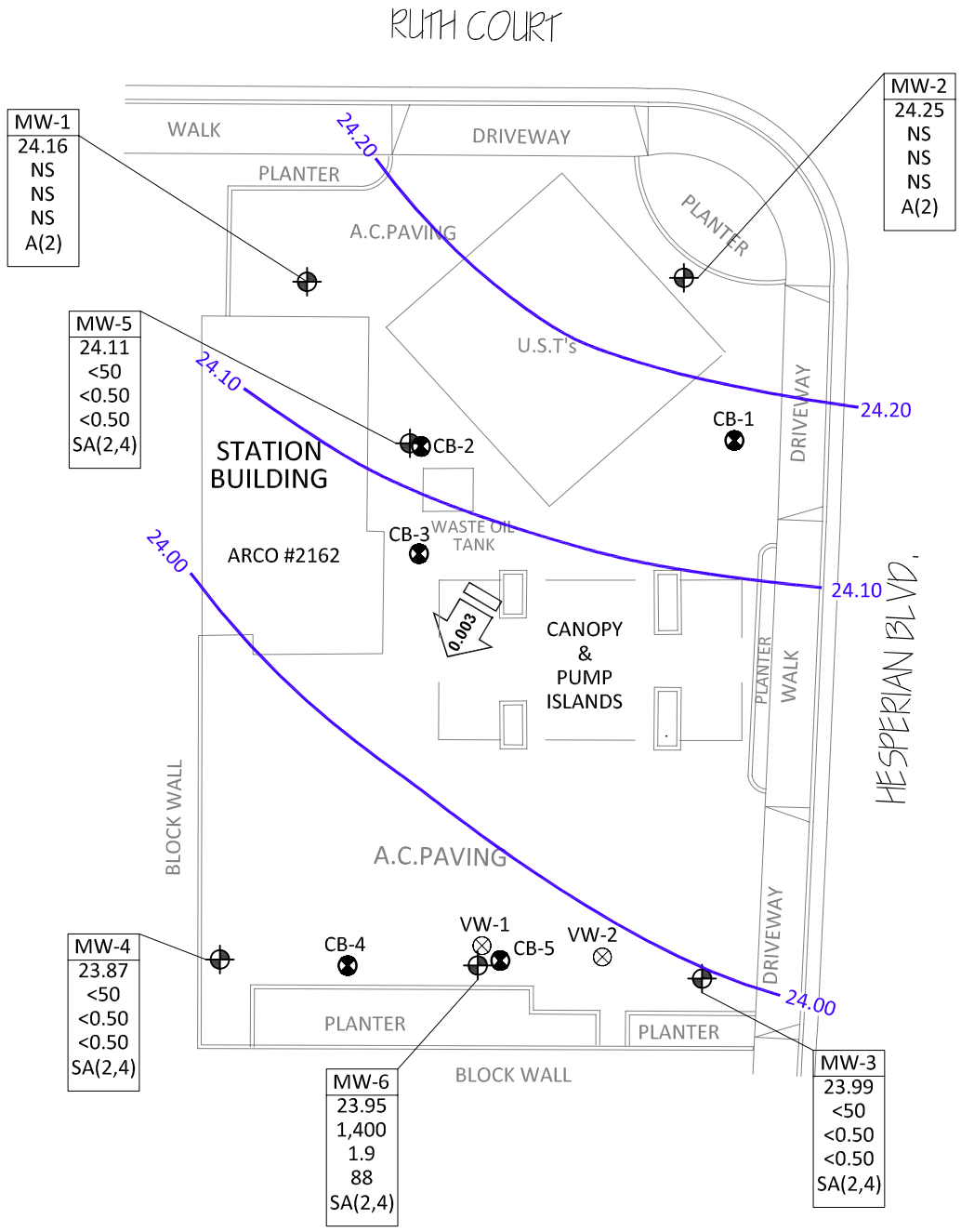
IMAGE SOURCE: USGS

BROADBENT & ASSOCIATES, INC.
ENGINEERING, WATER RESOURCES & ENVIRONMENTAL
1324 Mangrove Ave. Suite 212, Chico, CA 95926
Project No.: 06-88-620 Date: 07/27/09

Station #2162
15135 Hesperian Boulevard
San Leandro, California

Site Location Map

Drawing
1



LEGEND

- Groundwater Monitoring Well Location
- Vapor Extraction Well Location
- Soil Boring Location
- 24.10 — Groundwater Elevation Contour (Feet Above Site Datum)
- 0.003 — Approximate Groundwater Flow Direction and Gradient (ft/ft)

- SA — Sampled Semi-Annually
- * — Data Not Used for Contouring
- < — Not Detected at or above Laboratory Reporting Limits

WELL	Well Designation
ELEV	Groundwater Elevation (ft)
GRO BZ MTBE	GRO, Benzene, and MTBE Concentrations (µg/L)
A/SA/Q	Sampling Frequency

N

0 30 60

SCALE (ft)

NOTE: SITE MAP ADAPTED FROM WOOD RODGERS SURVEYING.

BROADBENT
1370 Ridgewood Dr., Suite 5
Chico, California 95973
Project No.: 06-88-620 Date: 7/3/2013

Station #2162
15135 Hesperian Boulevard
San Leando, California

Groundwater Elevation Contours and Analytical Summary Map
December 2, 2013

Drawing
2

Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses

ARCO Service Station #2162, 15135 Hesperian Blvd., San Leandro, 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															
6/20/2000	--	31.19	8.00	16.00	8.33	22.86	<50	<0.5	0.8	<0.5	<1.0	<10	--	--	
9/29/2000	--		8.00	16.00	9.07	22.12	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
12/17/2000	--		8.00	16.00	8.69	22.50	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
3/23/2001	--		8.00	16.00	8.19	23.00	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
6/20/2001	--		8.00	16.00	8.97	22.22	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
9/22/2001	--		8.00	16.00	9.56	21.63	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
12/28/2001	--		8.00	16.00	8.40	22.79	<50	<0.5	<0.5	<0.5	0.63	<2.5	--	--	
3/14/2002	--		8.00	16.00	8.05	23.14	<50	<0.5	<0.5	<0.5	<0.5	170	--	--	
4/18/2002	--		8.00	16.00	8.27	22.92	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	
7/19/2002	NP		8.00	16.00	8.88	22.31	<50	<0.5	<0.5	<0.5	<0.5	11	1.0	8.2	
10/09/02	NP		8.00	16.00	--	--	--	--	--	--	--	--	--	--	a
03/28/2003	NP		8.00	16.00	--	--	--	--	--	--	--	--	--	--	a, c
4/7/2003	NP		8.00	16.00	8.28	22.91	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.6	6.9	
7/9/2003	NP		8.00	16.00	8.62	22.57	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.1	7.2	
10/08/2003	--	31.13	8.00	16.00	9.19	21.94	--	--	--	--	--	--	--	--	d, e
01/13/2004	--		8.00	16.00	8.35	22.78	--	--	--	--	--	--	--	--	
04/05/2004	--	33.70	8.00	16.00	7.29	26.41	--	--	--	--	--	--	--	--	
07/12/2004	NP		8.00	16.00	9.00	24.70	<50	<0.50	<0.50	<0.50	<0.50	<0.50	0.8	7.0	
10/19/2004	--		8.00	16.00	9.47	24.23	--	--	--	--	--	--	--	--	
01/11/2005	--		8.00	16.00	7.64	26.06	--	--	--	--	--	--	--	--	
04/14/2005	--		8.00	16.00	7.35	26.35	--	--	--	--	--	--	--	--	
08/01/2005	--		8.00	16.00	8.21	25.49	--	--	--	--	--	--	--	--	
7/31/2006	--		8.00	16.00	8.10	25.60	--	--	--	--	--	--	--	--	
6/12/2009	P		8.00	16.00	8.93	24.77	<50	<0.50	<0.50	<0.50	<0.50	<0.50	0.59	7.40	
11/6/2009	--		8.00	16.00	9.18	24.52	--	--	--	--	--	--	--	--	
6/4/2010	P		8.00	16.00	8.13	25.57	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.31	7.2	
11/19/2010	--		8.00	16.00	9.28	24.42	--	--	--	--	--	--	--	--	
5/19/2011	P		8.00	16.00	7.76	25.94	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.36	6.8	
12/1/2011	--		8.00	16.00	8.40	25.30	--	--	--	--	--	--	--	--	
6/21/2012	P		8.00	16.00	8.49	25.21	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.73	7.39	

Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses

ARCO Service Station #2162, 15135 Hesperian Blvd., San Leandro, 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.															
12/20/2012	--	33.70	8.00	16.00	8.09	25.61	--	--	--	--	--	--	--	--	
6/13/2013	P		8.00	16.00	8.94	24.76	<50	<0.50	<0.50	<0.50	<1.0	<0.50	2.08	6.76	
12/2/2013	**--**		**8.00**	**16.00**	**9.54**	**24.16**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	
MW-2															
6/20/2000	--	30.38	8.00	16.00	7.38	23.00	--	--	--	--	--	--	--	--	
9/29/2000	--		8.00	16.00	8.08	22.30	266	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
12/17/2000	--		8.00	16.00	7.80	22.58	175	<0.5	<0.5	0.659	<0.5	<2.5	--	--	
3/23/2001	--		8.00	16.00	7.23	23.15	351	<0.5	<0.5	0.912	<0.5	<2.5	--	--	
6/20/2001	--		8.00	16.00	7.98	22.40	360	<0.5	<0.5	0.74	<0.5	<2.5	--	--	
9/22/2001	--		8.00	16.00	8.55	21.83	190	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
12/28/2001	--		8.00	16.00	7.53	22.85	130	<0.5	0.93	<0.5	0.51	<2.5	--	--	
3/14/2002	--		8.00	16.00	7.17	23.21	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
4/18/2002	--		8.00	16.00	7.31	23.07	74	<0.5	<0.5	<0.5	<0.5	--	--	--	
7/19/2002	P		8.00	16.00	7.93	22.45	<50	<0.5	<0.5	<0.5	<0.5	<2.5	1.1	7.6	
10/9/2002	P		8.00	16.00	8.55	21.83	<50	<0.5	<0.5	<0.5	<0.5	<2.5	0.7	7.3	
03/28/2003	P		8.00	16.00	7.30	23.08	<50	<0.50	0.83	<0.50	<0.50	<0.50	1.48	7.7	c
4/7/2003	P		8.00	16.00	7.36	23.02	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.4	7.0	
7/9/2003	P		8.00	16.00	7.71	22.67	<50	<0.50	<0.50	<0.50	<0.50	<0.50	2.5	7.6	
10/08/2003	--		8.00	16.00	8.25	22.13	--	--	--	--	--	--	--	--	
01/13/2004	--		8.00	16.00	7.55	22.83	--	--	--	--	--	--	--	--	
04/05/2004	--	32.97	8.00	16.00	7.29	25.68	--	--	--	--	--	--	--	--	
07/12/2004	NP		8.00	16.00	8.09	24.88	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.4	7.2	
10/19/2004	--		8.00	16.00	8.29	24.68	--	--	--	--	--	--	--	--	
01/11/2005	--		8.00	16.00	6.81	26.16	--	--	--	--	--	--	--	--	
04/14/2005	--		8.00	16.00	6.69	26.28	--	--	--	--	--	--	--	--	
08/01/2005	--		8.00	16.00	7.40	25.57	--	--	--	--	--	--	--	--	
7/31/2006	--		8.00	16.00	7.22	25.75	--	--	--	--	--	--	--	--	
6/12/2009	P	32.95	8.00	16.00	8.18	24.77	51	<0.50	<0.50	<0.50	<0.50	<0.50	0.60	7.55	
11/6/2009	--		8.00	16.00	8.32	24.63	--	--	--	--	--	--	--	--	
6/4/2010	P		8.00	16.00	7.24	25.71	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	7.33	

Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses

ARCO Service Station #2162, 15135 Hesperian Blvd., San Leandro, 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.															
11/19/2010	--	32.95	8.00	16.00	8.38	24.57	--	--	--	--	--	--	--	--	
5/19/2011	P		8.00	16.00	7.12	25.83	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.24	9.0	
12/1/2011	--		8.00	16.00	7.57	25.38	--	--	--	--	--	--	--	--	
6/21/2012	P		8.00	16.00	7.63	25.32	62	<0.50	<0.50	<0.50	<0.50	<0.50	1.47	7.42	lw
12/20/2012	--		8.00	16.00	7.22	25.73	--	--	--	--	--	--	--	--	
6/13/2013	P		8.00	16.00	8.10	24.85	<50	<0.50	<0.50	<0.50	<1.0	<0.50	1.41	7.0	
12/2/2013	**--**		**8.00**	**16.00**	**8.70**	**24.25**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	
MW-3															
6/20/2000	--	30.30	8.00	15.00	7.75	22.55	--	--	--	--	--	--	--	--	
9/29/2000	--		8.00	15.00	8.46	21.84	<50	<0.5	<0.5	<0.5	<0.5	128	--	--	
12/17/2000	--		8.00	15.00	8.01	22.29	<50	<0.5	<0.5	<0.5	<0.5	46.7	--	--	
3/23/2001	--		8.00	15.00	7.70	22.60	<50	<0.5	<0.5	<0.5	<0.5	26.8	--	--	
6/20/2001	--		8.00	15.00	8.23	22.07	<50	<0.5	<0.5	<0.5	<0.5	30	--	--	
9/22/2001	--		8.00	15.00	8.89	21.41	<50	<0.5	<0.5	<0.5	<0.5	12	--	--	
12/28/2001	--		8.00	15.00	7.83	22.47	<50	<0.5	<0.5	<0.5	<0.5	6.2	--	--	
3/14/2002	--		8.00	15.00	7.48	22.82	<50	<0.5	<0.5	<0.5	<0.5	47	--	--	
4/18/2002	--		8.00	15.00	7.62	22.68	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	
7/19/2002	P		8.00	15.00	8.23	22.07	100	<1.0	<1.0	<1.0	<1.0	330	0.9	7.6	b (TPH-g)
10/9/2002	P		8.00	15.00	8.83	21.47	<50	<0.5	<0.5	<0.5	<0.5	61	0.5	7.4	
03/28/2003	P		8.00	15.00	7.85	22.45	52	<0.50	1.2	<0.50	<0.50	45	1.42	7.6	c
4/7/2003	P		8.00	15.00	7.71	22.59	56	<0.50	<0.50	<0.50	<0.50	56	1.1	6.8	
7/9/2003	P		8.00	15.00	8.00	22.30	<500	<5.0	<5.0	<5.0	<5.0	87	1.6	7.4	
10/08/2003	P		8.00	15.00	8.59	21.71	<50	<0.50	<0.50	<0.50	<0.50	25	0.9	--	
01/15/2004	P		8.00	15.00	7.90	22.40	<50	<0.50	<0.50	<0.50	<0.50	9.8	2.9	7.3	
04/05/2004	P	32.89	8.00	15.00	7.61	25.28	<50	<0.50	<0.50	<0.50	<0.50	15	1.5	7.0	
07/12/2004	P		8.00	15.00	8.45	24.44	<50	<0.50	<0.50	<0.50	<0.50	7.3	1.6	6.9	
10/19/2004	P		8.00	15.00	8.95	23.94	<50	<0.50	<0.50	<0.50	<0.50	5.0	0.96	7.1	
01/11/2005	P		8.00	15.00	7.27	25.62	<50	<0.50	<0.50	<0.50	<0.50	2.3	--	7.2	
04/14/2005	P		8.00	15.00	7.10	25.79	<50	<0.50	<0.50	<0.50	1.5	5.6	2.0	7.2	
08/01/2005	P		8.00	15.00	7.71	25.18	<50	<0.50	<0.50	<0.50	<0.50	5.2	1.18	7.0	

Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses

ARCO Service Station #2162, 15135 Hesperian Blvd., San Leandro, 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.															
7/31/2006	P	32.89	8.00	15.00	7.64	25.25	<50	<0.50	<0.50	<0.50	<0.50	4.3	--	6.8	
6/12/2009	P	32.88	8.00	15.00	8.36	24.52	<50	0.75	<0.50	<0.50	<0.50	0.53	0.61	7.45	
11/6/2009	P		8.00	15.00	8.58	24.30	<50	<0.50	<0.50	<0.50	<0.50	<0.50	0.51	7.17	
6/4/2010	P		8.00	15.00	7.60	25.28	<50	<0.50	<0.50	<0.50	<0.50	1.9	0.69	7.4	
11/19/2010	NP		8.00	15.00	8.63	24.25	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.69	7.0	
5/19/2011	P		8.00	15.00	7.22	25.66	56	<0.50	<0.50	<0.50	<0.50	2.1	0.83	9.2	lw
12/1/2011	P		8.00	15.00	8.00	24.88	<50	<0.50	<0.50	<0.50	<0.50	0.50	3.15	7.8	
6/21/2012	P		8.00	15.00	7.90	24.98	<50	<0.50	<0.50	<0.50	<0.50	1.4	1.24	7.33	
12/20/2012	p		8.00	15.00	7.53	25.35	<50	<0.50	<0.50	<0.50	<1.0	<0.50	3.62	8.17	
6/13/2013	P		8.00	15.00	8.39	24.49	<50	<0.50	<0.50	<0.50	<1.0	<0.50	1.22	7.07	
12/2/2013	**P**		**8.00**	**15.00**	**8.89**	**23.99**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<1.0**	**<0.50**	**1.32**	**6.81**	
MW-4															
6/20/2000	--	30.39	10.00	18.00	8.87	21.52	--	--	--	--	--	--	--	--	
9/29/2000	--		10.00	18.00	9.61	20.78	<50	1.02	<0.5	<0.5	<0.5	12.2	--	--	
12/17/2000	--		10.00	18.00	9.17	21.22	<50	<0.5	<0.5	<0.5	<0.5	5.81	--	--	
3/23/2001	--		10.00	18.00	8.70	21.69	<50	<0.5	<0.5	<0.5	<0.5	3.04	--	--	
6/20/2001	--		10.00	18.00	9.51	20.88	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
9/22/2001	--		10.00	18.00	10.06	20.33	<50	<0.5	<0.5	<0.5	<0.5	5.2	--	--	
12/28/2001	--		10.00	18.00	8.86	21.53	<50	<0.5	<0.5	<0.5	<0.5	4.3	--	--	
3/14/2002	--		10.00	18.00	8.52	21.87	<50	<0.5	<0.5	<0.5	<0.5	5.1	--	--	
4/18/2002	--		10.00	18.00	8.76	21.63	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	
7/19/2002	NP		10.00	18.00	9.39	21.00	<50	<0.5	<0.5	<0.5	<0.5	30	1.8	7.8	
10/9/2002	NP		10.00	18.00	10.08	20.31	<50	<0.5	<0.5	<0.5	<0.5	28	1.0	8.0	
03/28/2003	NP		10.00	18.00	8.88	21.51	<50	<0.50	1.3	<0.50	<0.50	4.4	0.98	7.2	c
4/7/2003	NP		10.00	18.00	8.78	21.61	<50	<0.50	<0.50	<0.50	<0.50	14	1.1	7.0	
7/9/2003	NP		10.00	18.00	9.14	21.25	<50	<0.50	<0.50	<0.50	<0.50	1.8	1.6	7.4	
10/08/2003	NP		10.00	18.00	9.77	20.62	<50	<0.50	<0.50	<0.50	<0.50	3.1	2.6	6.4	
01/15/2004	P		10.00	18.00	8.68	21.71	<50	1.4	0.84	<0.50	1.5	6.6	2.9	7.1	
04/05/2004	NP	33.97	10.00	18.00	8.77	25.20	<50	<0.50	<0.50	<0.50	<0.50	1.3	1.2	7.0	
07/12/2004	NP		10.00	18.00	9.46	24.51	<50	<0.50	<0.50	<0.50	<0.50	1.0	2.5	6.6	

Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses

ARCO Service Station #2162, 15135 Hesperian Blvd., San Leandro, 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-4 Cont.															
10/19/2004	NP	33.97	10.00	18.00	9.91	24.06	<50	<0.50	<0.50	<0.50	<0.50	4.4	1.21	7.9	
01/11/2005	P		10.00	18.00	7.80	26.17	59	2.0	<0.50	<0.50	<0.50	11	0.9	7.1	
04/14/2005	NP		10.00	18.00	8.07	25.90	<50	<0.50	<0.50	<0.50	<0.50	0.64	2.8	7.4	
08/01/2005	NP		10.00	18.00	8.58	25.39	<50	<0.50	<0.50	<0.50	<0.50	<0.50	2.48	5.7	
7/31/2006	P		10.00	18.00	8.75	25.22	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	6.7	
6/12/2009	P		10.00	18.00	9.51	24.46	<50	0.68	<0.50	<0.50	<0.50	<0.50	0.70	7.51	
11/6/2009	P		10.00	18.00	9.74	24.23	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.15	7.15	
6/4/2010	P		10.00	18.00	8.71	25.26	<50	<0.50	<0.50	<0.50	<0.50	<0.50	0.70	7.24	
11/19/2010	P		10.00	18.00	9.83	24.14	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.09	7.1	
5/19/2011	P		10.00	18.00	8.24	25.73	<50	<0.50	<0.50	<0.50	<0.50	<0.50	0.88	7.5	
12/1/2011	P		10.00	18.00	9.11	24.86	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.09	7.6	
6/21/2012	P		10.00	18.00	9.07	24.90	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.64	7.31	
12/20/2012	P		10.00	18.00	8.61	25.36	<50	<0.50	<0.50	<0.50	<1.0	<0.50	3.90	7.99	
6/13/2013	P		10.00	18.00	9.56	24.41	<50	<0.50	<0.50	<0.50	<1.0	<0.50	1.53	6.85	
12/2/2013	**P**		**10.00**	**18.00**	**10.10**	**23.87**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<1.0**	**<0.50**	**2.07**	**6.74**	
MW-5															
6/12/2009	NP	33.96	8.00	16.00	9.25	24.71	85	<0.50	<0.50	<0.50	<0.50	<0.50	0.59	7.50	
11/6/2009	P		8.00	16.00	9.49	24.47	<50	<0.50	<0.50	<0.50	<0.50	<0.50	0.56	7.1	
6/4/2010	NP		8.00	16.00	8.42	25.54	67	<0.50	<0.50	<0.50	<0.50	<0.50	1.24	7.65	
11/19/2010	NP		8.00	16.00	9.58	24.38	<50	<0.50	<0.50	<0.50	<0.50	<0.50	0.72	7.3	
5/19/2011	NP		8.00	16.00	8.02	25.94	52	<0.50	<0.50	<0.50	<0.50	<0.50	2.17	9.1	lw
12/1/2011	P		8.00	16.00	8.87	25.09	<50	<0.50	<0.50	<0.50	<0.50	<0.50	0.76	7.5	
6/21/2012	P		8.00	16.00	8.76	25.20	55	<0.50	<0.50	<0.50	<0.50	<0.50	1.58	7.24	lw
12/20/2012	P		8.00	16.00	8.35	25.61	84	0.52	<0.50	<0.50	<1.0	<0.50	3.74	7.97	
6/13/2013	P		8.00	16.00	9.27	24.69	<50	<0.50	<0.50	<0.50	<1.0	<0.50	1.53	6.83	
12/2/2013	**P**		**8.00**	**16.00**	**9.85**	**24.11**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<1.0**	**<0.50**	**1.86**	**6.71**	
MW-6															
6/12/2009	NP	33.48	8.00	16.00	9.02	24.46	1,800	4.9	<0.50	2.8	<0.50	59	0.68	7.39	
11/6/2009	P		8.00	16.00	9.21	24.27	880	1.7	<0.50	0.77	<0.50	37	0.43	6.9	

Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses

ARCO Service Station #2162, 15135 Hesperian Blvd., San Leandro, 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-6 Cont.															
6/4/2010	NP	33.48	8.00	16.00	8.22	25.26	6,200	15	1.6	8.2	1.2	190	0.87	7.16	
11/19/2010	NP		8.00	16.00	9.30	24.18	5,600	8.0	1.2	9.9	<1.0	130	0.78	6.8	
5/19/2011	P		8.00	16.00	7.77	25.71	7,100	4.0	<2.0	7.9	<2.0	76	1.40	8.2	
12/1/2011	P		8.00	16.00	8.56	24.92	4,100	9.3	1.3	8.5	<1.0	180	0.53	7.3	lw
6/21/2012	P		8.00	16.00	8.56	24.92	5,000	4.6	<2.5	3.6	<2.5	120	1.38	6.97	lw
12/20/2012	P		8.00	16.00	8.13	25.35	2,400	4.1	0.91	5.0	<1.0	110	2.96	7.84	
6/13/2013	P		8.00	16.00	9.03	24.45	2,300	3.1	0.93	4.9	<1.0	94	1.05	6.80	
12/2/2013	**P**		**8.00**	**16.00**	**9.53**	**23.95**	**1,400**	**1.9**	**0.50**	**2.3**	**<1.0**	**88**	**1.46**	**6.55**	

Symbols & Abbreviations:
--- = Not analyzed/applicable/measured/available
< = Not detected at or above laboratory reporting limit
DO = Dissolved oxygen
DTW = Depth to water in feet below ground surface
ft bgs = feet below ground surface
GRO = Gasoline Range Organics, range C4-C12
GWE = Groundwater elevation measured in feet
mg/L = Milligrams per liter
MTBE = Methyl tert butyl ether
NP = Well not purged prior to sampling
P = Well purged prior to sampling
TOC = Top of casing measured in feet above mean sea level
TPH-g = Total petroleum hydrocarbons as gasoline
ug/L = Micrograms per liter

Footnotes:
a = Well not accessable - car parked over.
b = Hydrocarbon pattern is present in the requested fuel quantitation range but does not represent the pattern of the requested fuel
c =TPH-g, BTEX and MTBE analyzed by EPA method 8260 beginning on 1st Quarter 2003 sampling event (3/28/03)
d = Guaged with stinger in well
e = Well casing lowered 0.06 feet during well repairs on 9/17/2003
lw = Quantitate against gasoline

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

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

Wells were originally surveyed to NAVD'88 datum by URS Corporation on February 23, 2004

Wells were resurveyed to NAVD'88 datum by Wood Rodgers Surveying on May 11, 2009

Values for DO and pH were obtained through field measurements

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

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 #2162, 15135 Hesperian Blvd., San Leandro, CA

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
MW-1									
6/20/2000	--	--	<10	--	--	--	--	--	
9/29/2000	--	--	<2.5	--	--	--	--	--	
12/17/2000	--	--	<2.5	--	--	--	--	--	
3/23/2001	--	--	<2.5	--	--	--	--	--	
6/20/2001	--	--	<2.5	--	--	--	--	--	
9/22/2001	--	--	<2.5	--	--	--	--	--	
12/28/2001	--	--	<2.5	--	--	--	--	--	
3/14/2002	--	--	170	--	--	--	--	--	
7/19/2002	--	--	11	--	--	--	--	--	
4/7/2003	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
7/9/2003	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
07/12/2004	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
6/12/2009	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
6/4/2010	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
5/19/2011	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
6/21/2012	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
6/13/2013	<150	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
MW-2									
9/29/2000	--	--	<2.5	--	--	--	--	--	
12/17/2000	--	--	<2.5	--	--	--	--	--	
3/23/2001	--	--	<2.5	--	--	--	--	--	
6/20/2001	--	--	<2.5	--	--	--	--	--	
9/22/2001	--	--	<2.5	--	--	--	--	--	
12/28/2001	--	--	<2.5	--	--	--	--	--	
3/14/2002	--	--	<2.5	--	--	--	--	--	
7/19/2002	--	--	<2.5	--	--	--	--	--	
10/9/2002	--	--	<2.5	--	--	--	--	--	
03/28/2003	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
4/7/2003	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
7/9/2003	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
07/12/2004	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	

Table 2. Summary of Fuel Additives Analytical Data

ARCO Service Station #2162, 15135 Hesperian Blvd., San Leandro, CA

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
MW-2 Cont.									
6/12/2009	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
6/4/2010	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
5/19/2011	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
6/21/2012	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
6/13/2013	<150	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
MW-3									
9/29/2000	--	--	128	--	--	--	--	--	
12/17/2000	--	--	46.7	--	--	--	--	--	
3/23/2001	--	--	26.8	--	--	--	--	--	
6/20/2001	--	--	30	--	--	--	--	--	
9/22/2001	--	--	12	--	--	--	--	--	
12/28/2001	--	--	6.2	--	--	--	--	--	
3/14/2002	--	--	47	--	--	--	--	--	
7/19/2002	--	--	330	--	--	--	--	--	
10/9/2002	--	--	61	--	--	--	--	--	
03/28/2003	<100	<20	45	<0.50	<0.50	0.73	<0.50	<0.50	
4/7/2003	<100	<20	56	<0.50	<0.50	0.72	<0.50	<0.50	
7/9/2003	<1,000	<200	87	<5.0	<5.0	<5.0	<5.0	<5.0	
10/08/2003	<100	<20	25	<0.50	<0.50	<0.50	<0.50	<0.50	
01/15/2004	<100	<20	9.8	<0.50	<0.50	<0.50	<0.50	<0.50	a (TBA and EDB)
04/05/2004	<100	<20	15	<0.50	<0.50	<0.50	<0.50	<0.50	
07/12/2004	<100	<20	7.3	<0.50	<0.50	<0.50	<0.50	<0.50	
10/19/2004	<100	<20	5.0	<0.50	<0.50	<0.50	<0.50	<0.50	
01/11/2005	<100	<20	2.3	<0.50	<0.50	<0.50	<0.50	<0.50	b
04/14/2005	<100	<20	5.6	<0.50	<0.50	<0.50	<0.50	<0.50	
08/01/2005	<100	<20	5.2	<0.50	<0.50	<0.50	<0.50	<0.50	b
7/31/2006	<300	<20	4.3	<0.50	<0.50	<0.50	<0.50	<0.50	c
6/12/2009	<300	<10	0.53	<0.50	<0.50	<0.50	<0.50	<0.50	
11/6/2009	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
6/4/2010	<300	<10	1.9	<0.50	<0.50	<0.50	<0.50	<0.50	
11/19/2010	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	

Table 2. Summary of Fuel Additives Analytical Data

ARCO Service Station #2162, 15135 Hesperian Blvd., San Leandro, CA

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
MW-3 Cont.									
5/19/2011	<300	<10	2.1	<0.50	<0.50	<0.50	<0.50	<0.50	
12/1/2011	<300	<10	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
6/21/2012	<300	<10	1.4	<0.50	<0.50	<0.50	<0.50	<0.50	
12/20/2012	<150	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
6/13/2013	<150	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
12/2/2013	**<150**	**<10**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	
MW-4									
9/29/2000	--	--	12.2	--	--	--	--	--	
12/17/2000	--	--	5.81	--	--	--	--	--	
3/23/2001	--	--	3.04	--	--	--	--	--	
6/20/2001	--	--	<2.5	--	--	--	--	--	
9/22/2001	--	--	5.2	--	--	--	--	--	
12/28/2001	--	--	4.3	--	--	--	--	--	
3/14/2002	--	--	5.1	--	--	--	--	--	
7/19/2002	--	--	30	--	--	--	--	--	
10/9/2002	--	--	28	--	--	--	--	--	
03/28/2003	<100	<20	4.4	<0.50	<0.50	<0.50	<0.50	<0.50	
4/7/2003	<100	<20	14	<0.50	<0.50	<0.50	<0.50	<0.50	
7/9/2003	<100	<20	1.8	<0.50	<0.50	<0.50	<0.50	<0.50	
10/08/2003	<100	<20	3.1	<0.50	<0.50	<0.50	<0.50	<0.50	
01/15/2004	<100	<20	6.6	<0.50	<0.50	<0.50	<0.50	<0.50	a (TBA and EDB)
04/05/2004	<100	<20	1.3	<0.50	<0.50	<0.50	<0.50	<0.50	
07/12/2004	<100	<20	1.0	<0.50	<0.50	<0.50	<0.50	<0.50	
10/19/2004	<100	<20	4.4	<0.50	<0.50	<0.50	<0.50	<0.50	
01/11/2005	<100	<20	11	<0.50	<0.50	<0.50	<0.50	<0.50	b
04/14/2005	<100	<20	0.64	<0.50	<0.50	<0.50	<0.50	<0.50	
08/01/2005	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	b
7/31/2006	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	c
6/12/2009	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
11/6/2009	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
6/4/2010	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	

Table 2. Summary of Fuel Additives Analytical Data

ARCO Service Station #2162, 15135 Hesperian Blvd., San Leandro, CA

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
MW-4 Cont.									
11/19/2010	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
5/19/2011	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
12/1/2011	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
6/21/2012	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
12/20/2012	<150	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
6/13/2013	<150	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
12/2/2013	**<150**	**<10**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	
MW-5									
6/12/2009	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
11/6/2009	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
6/4/2010	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
11/19/2010	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
5/19/2011	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
12/1/2011	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
6/21/2012	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
12/20/2012	<150	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
6/13/2013	<150	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
12/2/2013	**<150**	**<10**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	
MW-6									
6/12/2009	<300	<10	59	<0.50	<0.50	5.2	<0.50	<0.50	
11/6/2009	<300	24	37	<0.50	<0.50	<0.50	<0.50	<0.50	
6/4/2010	<300	17	190	<0.50	<0.50	17	<0.50	<0.50	
11/19/2010	<600	<20	130	<1.0	<1.0	<1.0	<1.0	<1.0	
5/19/2011	<1,200	<40	76	<2.0	<2.0	6.1	<2.0	<2.0	
12/1/2011	<600	31	180	<1.0	<1.0	18	<1.0	<1.0	
6/21/2012	<1,500	<50	120	<2.5	<2.5	9.1	<2.5	<2.5	
12/20/2012	<150	12	110	<0.50	<0.50	9.2	<0.50	<0.50	
6/13/2013	<150	13	94	<0.50	<0.50	7.5	<0.50	<0.50	
12/2/2013	**<150**	**11**	**88**	**<0.50**	**<0.50**	**6.2**	**<0.50**	**<0.50**	

Symbols & Abbreviations:
< = Not detected at or above specified laboratory reporting limit
--- = Not analyzed/applicable/measured/available
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
ug/L = Micrograms per liter

Footnotes:
a = The result was reported with a possible high bias due to the continuing calibration verification falling outside acceptance criteria
b = The calbration verification for ethanol was within method limits but outside contract limits
c = LCS rec. above meth. control limits. Analyte ND. Data not impacted
d = Quantitated against gasoline

Notes:
All fuel oxygenate compounds analyzed using EPA Method 8260B

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. Summary of Groundwater Gradient - Direction and Magnitude

ARCO Service Station #2162, 15135 Hesperian Blvd., San Leandro, CA

Date Measured	Approximate Gradient Direction	Approximate Gradient Magnitude (ft/ft)
3/23/2001	Southwest	0.011
6/20/2001	Southwest	0.013
9/22/2001	Southwest	0.012
12/28/2001	Southwest	0.010
3/14/2002	Southwest	0.011
4/18/2002	Southwest	0.012
7/19/2002	Southwest	0.012
10/9/2002	Southwest	0.013
3/28/2003	Southwest	0.013
4/7/2003	Southwest	0.011
7/9/2003	Southwest	0.010
10/8/2003	Southwest	0.010
1/15/2004	Southwest	0.008
4/5/2004	South-Southwest	0.004
7/12/2004	South and Southwest	0.003 and 0.005
10/19/2004	Southwest	0.004
1/11/2005	Southwest (a) to Southeast (b)	0.005 to 0.004
4/14/2005	Southeast	0.004
8/1/2005	Southwest	0.002
7/31/2006	South-Southwest	0.003
6/12/2009	South	0.003
11/6/2009	South-Southwest	0.003
6/4/2010	South-Southwest	0.004
11/19/2010	South-Southwest	0.003
5/19/2011	South-Southeast	0.003
12/1/2011	South-Southwest	0.001
6/21/2012	South-Southwest	0.003
12/20/2012	South-Southwest	0.003
6/13/2013	South-Southwest	0.003
12/2/2013	**Southwest**	**0.003**

Footnotes:
a = Direction at underground storage tanks
b = Direction at dispensers

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 casing. This is accomplished by pumping the well using a decontaminated pump with new disposable plastic discharge or

[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.

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

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)[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.

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[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 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

BROADBENT

DAILY REPORT

Page ____ of ____

Project: BP 2162 Project No.: 06-66-620

Field Representative(s): JR/KG Day: Monday Date: 12-2-2013

Time Onsite: From: 1100 To: 1320 ; 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: overcast/sunny

Equipment In Use: horiba, peristaltic, WLM, tubing

Visitors: ____

TIME:	WORK DESCRIPTION:
1100	Arrived onsite; proceeded w/ safety meeting & paperwork
1130	Completed safety meeting; setup on MW-4
1152	Setup on MW-3
1217	Setup on MW-5
1250	Setup on MW-6
1310	tag MW-1 & MW-2
1320	Packed up/signed out & left site

Signature: ____

Revision: 1/24/2012

BROADBENT

GROUNDWATER MONITORING SITE SHEET

Page ____ of ____

Project: BP 2162 Project No.: 06-88-620 Date: 12/2/13

Field Representative: JR/KG 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					1310			9.54	15.93						
MW-2					1315			8.70	16.02						
MW-3					1155			8.89	15.03						
MW-4					1132			10.10	17.77						
MW-5					1220			9.85	16.14						
MW-6					1254			9.53	16.15						

* 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: ____

Revision: 1/24/2012

BROADBENT

GROUNDWATER SAMPLING DATA SHEET

Page ____ of ____

Project: BP 2162 Project No.: 06-88-620 Date: 12-2-13

Field Representative: JR/KEG

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

PURGE EQUIPMENT ___ Disp. Bailer ___ 120V Pump ^ 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)*

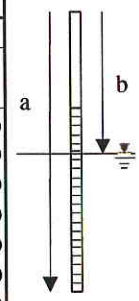
PURGING/SAMPLING METHOD Predetermined Well Volume (Low-Flow) Other: *(circle one)*

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): 15.03 (ft)
Initial Depth to Water (b): 8.89 (ft)
Pump In-take Depth = b + (a-b)/2: 11.96 (ft)
Maximum Allowable Drawdown = (a-b)/8: 0.77 (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 Vol. gal or L	Temperature °F	pH	Conductivity µS or mS	DO mg/L	ORP mV	Turbidity NTU	NOTES Odor, color, sheen or other
1159	0	67.3	7.12	0.667	5.10	161	6.7	
1201	0.5	69.3	6.90	0.651	2.14	172	7.2	
1203	1.0	70.3	6.83	0.649	1.55	176	5.3	
1205	1.5	70.2	6.82	0.648	1.35	176	5.2	
1207	2.0	70.9	6.81	0.647	1.32	175	4.9	
Previous Stabilized Parameters								

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

SAMPLE COLLECTION RECORD

Depth to Water at Sampling: 8.90 (ft)
Sample Collected Via: ___ Disp. Bailer ___ Dedicated Pump Tubing
X Disp. Pump Tubing Other:
Sample ID: MW-3 Sample Collection Time: 1210 (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: _____

Revision: 3/15/2013

BROADBENT

GROUNDWATER SAMPLING DATA SHEET

Page ____ of ____

Project: BP 2162 Project No.: 06-88-620 Date: 12-7-2013

Field Representative: JE/KG

Well ID: MW-4 Start Time: ____ End Time: ____ Total Time (minutes): ____

PURGE EQUIPMENT ___ Disp. Bailer ___ 120V Pump ___ 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)

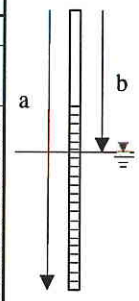
PURGING/SAMPLING METHOD Predetermined Well Volume / Low-Flow / Other: (circle one)

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): 17.72 (ft)
Initial Depth to Water (b): 10.10 (ft)
Pump In-take Depth = b + (a-b)/2: 13.94 (ft)
Maximum Allowable Drawdown = (a-b)/8: 0.96 (ft)
Low-Flow Purge Rate: 0.28 (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 Vol. gal or L	Temperature °C F°	pH	Conductivity µS or mS	DO mg/L	ORP mV	Turbidity NTU	NOTES Odor, color, sheen or other
1135	0	58.5	7.30	0.792	4.97	175	30.8	
1137	0.5	61.8	6.77	0.739	1.86	155	16.0	
1139	1.0	66.4	6.75	0.735	2.39	159	20.6	
1141	1.5	66.0	6.74	0.735	2.17	165	17.3	
1143	2.0	67.1	6.74	0.735	2.02	167	17.0	
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: 10.11 (ft)
Sample Collected Via: ___ Disp. Bailer ___ Dedicated Pump Tubing
X Disp. Pump Tubing Other:
Sample ID: MW-4 Sample Collection Time: 1145 (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: ____

Revision: 3/15/2013

BROADBENT

GROUNDWATER SAMPLING DATA SHEET

Page ____ of ____

Project: BP 2162 Project No.: 06-88-620 Date: 12-2-13

Field Representative: JR/KG

Well ID: MW-5 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)*

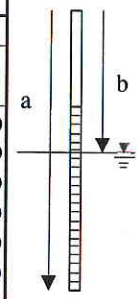
PURGING/SAMPLING METHOD Predetermined Well Volume (Low-Flow) Other: *(circle one)*

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): 16.14 (ft)
Initial Depth to Water (b): 9.85 (ft)
Pump In-take Depth = b + (a-b)/2: 13.00 (ft)
Maximum Allowable Drawdown = (a-b)/8: 0.79 (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 Vol. gal or L	Temperature °C F	pH	Conductivity µS or mS	DO mg/L	ORP mV	Turbidity NTU	NOTES Odor, color, sheen or other
1224	0	67.3	6.92	0.731	4.60	175	16.5	
1226	0.5	67.5	6.83	0.730	3.12	179	16.1	
1228	1.0	67.6	6.77	0.731	2.37	183	14.4	
1230	1.5	67.8	6.73	0.733	1.95	185	11.1	
1232	2.0	67.9	6.71	0.735	1.86	186	11.5	
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: 9.88 (ft)
Sample Collected Via: ___ Disp. Bailer ___ Dedicated Pump Tubing
X Disp. Pump Tubing Other:
Sample ID: MW-5 Sample Collection Time: 1235 (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: ____

Revision: 3/15/2013

BROADBENT

GROUNDWATER SAMPLING DATA SHEET

Page ____ of ____

Project: BP 2162 Project No.: 06-88-620 Date: 12-2-13

Field Representative: JR/KG

Well ID: MW-6 Start Time: ____ End Time: ____ Total Time (minutes): ____

PURGE EQUIPMENT

X Disp. Tubing ____ Disp. Bailer ____ 12V Pump ____ 120V Pump X Peristaltic Pump X Flow Cell 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)

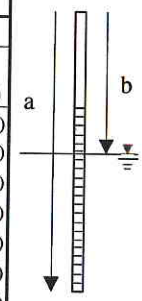
Water Column Height (WCH) = (a - b): ____(ft)

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): 16.15 (ft)

Initial Depth to Water (b): 9.53 (ft)

Pump In-take Depth = b + (a-b)/2: 12.84 (ft)

Maximum Allowable Drawdown = (a-b)/8: 0.83 (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 Vol. gal or L	Temperature °C F	pH	Conductivity µS or mS	DO mg/L	ORP mV	Turbidity NTU	NOTES Odor, color, sheen or other
1257	0	69.6	6.72	0.751	5.62	55	280	
1259	0.5	69.8	6.57	0.744	2.75	-30	85.1	
1301	1.0	70.3	6.56	0.740	1.82	-50	71.9	
1303	1.5	70.6	6.55	0.739	1.62	-53	26.7	moderate
1305	2.0	70.9	6.55	0.738	1.46	-68	19.0	HC odor
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: 4.55 (ft)

Sample Collected Via: ____ Disp. Bailer ____ Dedicated Pump Tubing

X Disp. Pump Tubing Other:

Sample ID: MW-6 Sample Collection Time: 1305 (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: ____

Revision: 3/15/2013

bp rm

Laboratory Management Program LaMP Chain of Custody Record

BP Site Node Path: BP 2162 | Req Due Date (mm/dd/yy): | Rush T: Yes ___ No ___ | Page ___ of ___

BP Facility No: 2162 | Lab Work Order Number:

Lab Name: Test America	Facility Address: 15135 Hesperian Blvd	Consultant/Contractor: Broadbent & Associates
Lab Address: 17461 Derian Ave, Suite 100, Irvine, CA	City, State, ZIP Code: San Leandro, CA	Consultant/Contractor Project No: 06-8[illegible]-620
Lab PM: Kathleen Robb	Lead Regulatory Agency: ACEH	Address: 875 Cotting Lane, Suite [illegible], Vacaville
Lab Phone: 949-261-1022	California Global ID No.: T0600100084	Consultant/Contractor PM: Kristene [illegible]dwell
Lab Shipping Accnt: 1103-6633-7	Enfos Proposal No: 00604-002/WR-245682	Phone: 707-455-7290 Email: Ktidwell@broadbentinc.com
Lab Bottle Order No:	Accounting Mode: Provision X OOC-BU ___ OOC-RM ___	Email EDD To: Ktidwell@broadbentinc.com and [illegible]ab.enfosdoc@bp.com
Other Info:	Stage: EXECUTE (40) Activity: Project Spend (80)	Invoice To: BP X Contra[illegible]r ___

BP Project Manager (PM): Chuck Carmel

BP PM Phone: 925-275-3803

BP PM Email: charles.carmel@bp.com

Report [illegible]ype & QC Level: [illegible]andard X; Full Data [illegible]ackage ___

Lab No.	Sample Description	Date	Time	Matrix: Soil / Solid	Water / Liquid	Air / Vapor	Is this location a well?	No. Containers / Preservative: Total Number of Container	Unpreserved	H2SO4	HNO3	HCl	Methanol	Requested Analyses: GRO 8015M	BTEX/5FO 8260	EDB/1,2-DCA 8260	ETHANOL 8260	Naphthalene
	MW-3	12/2/13	1210		X		Y	6				X		X	X	X	X	X
	MW-4		1145		X		Y	6				X		X	X	X	X	X
	MW-5		1235		X		Y	6				X		X	X	X	X	X
	MW-6		1305		X		Y	6				X		X	X	X	X	X
	TB-21621202213	—	—		X		N	2				X						

Report [illegible]omments

Note: If sample [illegible] collected, indicate "No Sample" in com[illegible]nts and single-strike out and initial any p[illegible]rinted sample description.

ON [illegible]OLD

Sampler's Name: James Ramos	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Company: Broadbent & Associates	[signature] Broadbent	12/3/13	1700			
Shipment Method: Fed Ex Ship Date: 12/3/13	Kevin Cook Stringer Broadbent	12/3/13	1700			
Shipment Tracking No:						

Special Instructions: Ktidwell@broadbentinc.com

THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes / No | Temp Blank: Yes / No | Cooler Temp on Receipt: _____ °F/C | Trip Blank: Yes / No | MS/MSD Sample S[illegible]mitted: Yes / No

APPENDIX C

LABORATORY REPORT
AND CHAIN-OF-CUSTODY DOCUMENTATION

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

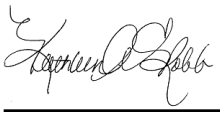
ANALYTICAL REPORT

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

TestAmerica Job ID: 440-64127-1
Client Project/Site: ARCO 2162, San Leandro

For:
Broadbent & Associates, Inc.
875 Cotting Lane
Suite G
Vacaville, California 95688

Attn: Kristene Tidwell



Authorized for release by:
12/17/2013 2:09:58 PM

Kathleen Robb, Project Manager II
(949)261-1022
kathleen.robb@testamericainc.com

Table of Contents

Sample Summary

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 2162, San Leandro

TestAmerica Job ID: 440-64127-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-64127-1	MW-3	Water	12/02/13 12:10	12/04/13 09:50
440-64127-2	MW-4	Water	12/02/13 11:45	12/04/13 09:50
440-64127-3	MW-5	Water	12/02/13 12:35	12/04/13 09:50
440-64127-4	MW-6	Water	12/02/13 13:05	12/04/13 09:50

Job ID: 440-64127-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-64127-1

Comments
No additional comments.

Receipt
The samples were received on 12/4/2013 9:50 AM; the samples arrived in good condition, properly preserved and, where required, on ice.
The temperature of the cooler at receipt was 3.7º C.

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

GC VOA
No analytical or quality issues were noted.

VOA Prep
No analytical or quality issues were noted.

Client Sample ID: MW-3
Date Collected: 12/02/13 12:10
Date Received: 12/04/13 09:50

Lab Sample ID: 440-64127-1
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			12/11/13 05:39	1
1,2-Dichloroethane	ND		0.50		ug/L			12/11/13 05:39	1
Benzene	ND		0.50		ug/L			12/11/13 05:39	1
Ethanol	ND		150		ug/L			12/11/13 05:39	1
Ethylbenzene	ND		0.50		ug/L			12/11/13 05:39	1
Ethyl-t-butyl ether (ETBE)	ND		0.50		ug/L			12/11/13 05:39	1
Isopropyl Ether (DIPE)	ND		0.50		ug/L			12/11/13 05:39	1
m,p-Xylene	ND		1.0		ug/L			12/11/13 05:39	1
Methyl-t-Butyl Ether (MTBE)	ND		0.50		ug/L			12/11/13 05:39	1
o-Xylene	ND		0.50		ug/L			12/11/13 05:39	1
Tert-amyl-methyl ether (TAME)	ND		0.50		ug/L			12/11/13 05:39	1
tert-Butyl alcohol (TBA)	ND		10		ug/L			12/11/13 05:39	1
Toluene	ND		0.50		ug/L			12/11/13 05:39	1
Xylenes, Total	ND		1.0		ug/L			12/11/13 05:39	1
Naphthalene	ND		1.0		ug/L			12/11/13 05:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*102*		*80 - 120*		*12/11/13 05:39*	*1*
Dibromofluoromethane (Surr)	*100*		*76 - 132*		*12/11/13 05:39*	*1*
Toluene-d8 (Surr)	*107*		*80 - 128*		*12/11/13 05:39*	*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			12/06/13 04:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*96*		*65 - 140*		*12/06/13 04:26*	*1*

Client Sample ID: MW-4
Lab Sample ID: 440-64127-2
Date Collected: 12/02/13 11:45
Matrix: Water
Date Received: 12/04/13 09:50

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			12/11/13 06:08	1
1,2-Dichloroethane	ND		0.50		ug/L			12/11/13 06:08	1
Benzene	ND		0.50		ug/L			12/11/13 06:08	1
Ethanol	ND		150		ug/L			12/11/13 06:08	1
Ethylbenzene	ND		0.50		ug/L			12/11/13 06:08	1
Ethyl-t-butyl ether (ETBE)	ND		0.50		ug/L			12/11/13 06:08	1
Isopropyl Ether (DIPE)	ND		0.50		ug/L			12/11/13 06:08	1
m,p-Xylene	ND		1.0		ug/L			12/11/13 06:08	1
Methyl-t-Butyl Ether (MTBE)	ND		0.50		ug/L			12/11/13 06:08	1
o-Xylene	ND		0.50		ug/L			12/11/13 06:08	1
Tert-amyl-methyl ether (TAME)	ND		0.50		ug/L			12/11/13 06:08	1
tert-Butyl alcohol (TBA)	ND		10		ug/L			12/11/13 06:08	1
Toluene	ND		0.50		ug/L			12/11/13 06:08	1
Xylenes, Total	ND		1.0		ug/L			12/11/13 06:08	1
Naphthalene	ND		1.0		ug/L			12/11/13 06:08	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*102*		*80 - 120*		*12/11/13 06:08*	*1*
Dibromofluoromethane (Surr)	*103*		*76 - 132*		*12/11/13 06:08*	*1*
Toluene-d8 (Surr)	*107*		*80 - 128*		*12/11/13 06:08*	*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			12/06/13 04:56	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*65 - 140*		*12/06/13 04:56*	*1*

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 2162, San Leandro

TestAmerica Job ID: 440-64127-1

Client Sample ID: MW-5
Date Collected: 12/02/13 12:35
Date Received: 12/04/13 09:50

Lab Sample ID: 440-64127-3
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			12/12/13 01:55	1
1,2-Dichloroethane	ND		0.50		ug/L			12/12/13 01:55	1
Benzene	ND		0.50		ug/L			12/12/13 01:55	1
Ethanol	ND		150		ug/L			12/12/13 01:55	1
Ethylbenzene	ND		0.50		ug/L			12/12/13 01:55	1
Ethyl-t-butyl ether (ETBE)	ND		0.50		ug/L			12/12/13 01:55	1
Isopropyl Ether (DIPE)	ND		0.50		ug/L			12/12/13 01:55	1
m,p-Xylene	ND		1.0		ug/L			12/12/13 01:55	1
Methyl-t-Butyl Ether (MTBE)	ND		0.50		ug/L			12/12/13 01:55	1
o-Xylene	ND		0.50		ug/L			12/12/13 01:55	1
Tert-amyl-methyl ether (TAME)	ND		0.50		ug/L			12/12/13 01:55	1
tert-Butyl alcohol (TBA)	ND		10		ug/L			12/12/13 01:55	1
Toluene	ND		0.50		ug/L			12/12/13 01:55	1
Xylenes, Total	ND		1.0		ug/L			12/12/13 01:55	1
Naphthalene	ND		1.0		ug/L			12/12/13 01:55	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*103*		*80 - 120*		*12/12/13 01:55*	*1*
Dibromofluoromethane (Surr)	*99*		*76 - 132*		*12/12/13 01:55*	*1*
Toluene-d8 (Surr)	*107*		*80 - 128*		*12/12/13 01:55*	*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			12/06/13 06:25	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*95*		*65 - 140*		*12/06/13 06:25*	*1*

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 2162, San Leandro

TestAmerica Job ID: 440-64127-1

Client Sample ID: MW-6
Date Collected: 12/02/13 13:05
Date Received: 12/04/13 09:50

Lab Sample ID: 440-64127-4
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			12/12/13 02:24	1
1,2-Dichloroethane	ND		0.50		ug/L			12/12/13 02:24	1
Benzene	**1.9**		0.50		ug/L			12/12/13 02:24	1
Ethanol	ND		150		ug/L			12/12/13 02:24	1
Ethylbenzene	**2.3**		0.50		ug/L			12/12/13 02:24	1
Ethyl-t-butyl ether (ETBE)	ND		0.50		ug/L			12/12/13 02:24	1
Isopropyl Ether (DIPE)	ND		0.50		ug/L			12/12/13 02:24	1
m,p-Xylene	ND		1.0		ug/L			12/12/13 02:24	1
Methyl-t-Butyl Ether (MTBE)	**88**		0.50		ug/L			12/12/13 02:24	1
o-Xylene	**0.53**		0.50		ug/L			12/12/13 02:24	1
Tert-amyl-methyl ether (TAME)	**6.2**		0.50		ug/L			12/12/13 02:24	1
tert-Butyl alcohol (TBA)	**11**	**ID**	10		ug/L			12/12/13 02:24	1
Toluene	**0.50**		0.50		ug/L			12/12/13 02:24	1
Xylenes, Total	ND		1.0		ug/L			12/12/13 02:24	1
Naphthalene	**6.3**		1.0		ug/L			12/12/13 02:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*109*		*80 - 120*		*12/12/13 02:24*	*1*
Dibromofluoromethane (Surr)	*102*		*76 - 132*		*12/12/13 02:24*	*1*
Toluene-d8 (Surr)	*106*		*80 - 128*		*12/12/13 02:24*	*1*

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

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
GRO (C6-C12)	**1400**		500		ug/L			12/09/13 15:45	10

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*108*		*65 - 140*		*12/09/13 15:45*	*10*

Method Summary

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 2162, San Leandro

TestAmerica Job ID: 440-64127-1

Method	Method Description	Protocol	Laboratory
8260B/5030B	Volatile Organic Compounds (GC/MS)	SW846	TAL IRV
8015B/5030B	Gasoline Range Organics (GC)	SW846	TAL IRV

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

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

Lab Chronicle

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 2162, San Leandro

TestAmerica Job ID: 440-64127-1

Client Sample ID: MW-3

Lab Sample ID: 440-64127-1

Date Collected: 12/02/13 12:10

Matrix: Water

Date Received: 12/04/13 09:50

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	149788	12/11/13 05:39	WC	TAL IRV
Total/NA	Analysis	8015B/5030B		1	10 mL	10 mL	148935	12/06/13 04:26	AK	TAL IRV

Client Sample ID: MW-4

Lab Sample ID: 440-64127-2

Date Collected: 12/02/13 11:45

Matrix: Water

Date Received: 12/04/13 09:50

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	149788	12/11/13 06:08	WC	TAL IRV
Total/NA	Analysis	8015B/5030B		1	10 mL	10 mL	148935	12/06/13 04:56	AK	TAL IRV

Client Sample ID: MW-5

Lab Sample ID: 440-64127-3

Date Collected: 12/02/13 12:35

Matrix: Water

Date Received: 12/04/13 09:50

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	150039	12/12/13 01:55	AT	TAL IRV
Total/NA	Analysis	8015B/5030B		1	10 mL	10 mL	148935	12/06/13 06:25	AK	TAL IRV

Client Sample ID: MW-6

Lab Sample ID: 440-64127-4

Date Collected: 12/02/13 13:05

Matrix: Water

Date Received: 12/04/13 09:50

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	150039	12/12/13 02:24	AT	TAL IRV
Total/NA	Analysis	8015B/5030B		10	10 mL	10 mL	149284	12/09/13 15:45	IM	TAL IRV

Laboratory References:

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

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

Lab Sample ID: MB 440-149788/3
Matrix: Water
Analysis Batch: 149788

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			12/10/13 19:30	1
1,2-Dichloroethane	ND		0.50		ug/L			12/10/13 19:30	1
Benzene	ND		0.50		ug/L			12/10/13 19:30	1
Ethanol	ND		150		ug/L			12/10/13 19:30	1
Ethylbenzene	ND		0.50		ug/L			12/10/13 19:30	1
Ethyl-t-butyl ether (ETBE)	ND		0.50		ug/L			12/10/13 19:30	1
Isopropyl Ether (DIPE)	ND		0.50		ug/L			12/10/13 19:30	1
m,p-Xylene	ND		1.0		ug/L			12/10/13 19:30	1
Methyl-t-Butyl Ether (MTBE)	ND		0.50		ug/L			12/10/13 19:30	1
o-Xylene	ND		0.50		ug/L			12/10/13 19:30	1
Tert-amyl-methyl ether (TAME)	ND		0.50		ug/L			12/10/13 19:30	1
tert-Butyl alcohol (TBA)	ND		10		ug/L			12/10/13 19:30	1
Toluene	ND		0.50		ug/L			12/10/13 19:30	1
Xylenes, Total	ND		1.0		ug/L			12/10/13 19:30	1
Naphthalene	ND		1.0		ug/L			12/10/13 19:30	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*102*		*80 - 120*		*12/10/13 19:30*	*1*
Dibromofluoromethane (Surr)	*96*		*76 - 132*		*12/10/13 19:30*	*1*
Toluene-d8 (Surr)	*107*		*80 - 128*		*12/10/13 19:30*	*1*

Lab Sample ID: LCS 440-149788/4
Matrix: Water
Analysis Batch: 149788

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	25.7		ug/L		103	70 - 130		
1,2-Dichloroethane			25.0	25.5		ug/L		102	57 - 138		
Benzene			25.0	23.3		ug/L		93	68 - 130		
Ethanol			250	228		ug/L		91	50 - 149		
Ethylbenzene			25.0	25.0		ug/L		100	70 - 130		
Ethyl-t-butyl ether (ETBE)			25.0	22.9		ug/L		92	60 - 136		
Isopropyl Ether (DIPE)			25.0	22.5		ug/L		90	58 - 139		
m,p-Xylene			50.0	47.3		ug/L		95	70 - 130		
Methyl-t-Butyl Ether (MTBE)			25.0	24.4		ug/L		97	63 - 131		
o-Xylene			25.0	23.5		ug/L		94	70 - 130		
Tert-amyl-methyl ether (TAME)			25.0	23.7		ug/L		95	57 - 139		
tert-Butyl alcohol (TBA)			125	124		ug/L		99	70 - 130		
Toluene			25.0	23.9		ug/L		96	70 - 130		
Naphthalene			25.0	23.3		ug/L		93	60 - 140		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*101*		*80 - 120*
Dibromofluoromethane (Surr)	*102*		*76 - 132*
Toluene-d8 (Surr)	*107*		*80 - 128*

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

Lab Sample ID: 440-64253-A-1 MS
Matrix: Water
Analysis Batch: 149788

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	25.0		ug/L		100	70 - 131
1,2-Dichloroethane	ND		25.0	24.6		ug/L		99	56 - 146
Benzene	ND		25.0	23.3		ug/L		93	66 - 130
Ethanol	ND		250	232		ug/L		93	54 - 150
Ethylbenzene	ND		25.0	25.4		ug/L		102	70 - 130
Ethyl-t-butyl ether (ETBE)	ND		25.0	21.8		ug/L		87	70 - 130
Isopropyl Ether (DIPE)	ND		25.0	21.6		ug/L		86	64 - 138
m,p-Xylene	ND		50.0	47.7		ug/L		95	70 - 133
Methyl-t-Butyl Ether (MTBE)	ND		25.0	23.3		ug/L		93	70 - 130
o-Xylene	ND		25.0	23.8		ug/L		95	70 - 133
Tert-amyl-methyl ether (TAME)	ND		25.0	22.5		ug/L		90	68 - 133
tert-Butyl alcohol (TBA)	ND		125	138		ug/L		110	70 - 130
Toluene	ND		25.0	24.1		ug/L		96	70 - 130
Naphthalene	ND		25.0	22.5		ug/L		90	60 - 140

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*100*		*80 - 120*
Dibromofluoromethane (Surr)	*99*		*76 - 132*
Toluene-d8 (Surr)	*107*		*80 - 128*

Lab Sample ID: 440-64253-A-1 MSD
Matrix: Water
Analysis Batch: 149788

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	26.6		ug/L		106	70 - 131	6	25
1,2-Dichloroethane	ND		25.0	25.3		ug/L		101	56 - 146	3	20
Benzene	ND		25.0	23.3		ug/L		93	66 - 130	0	20
Ethanol	ND		250	226		ug/L		91	54 - 150	3	30
Ethylbenzene	ND		25.0	25.1		ug/L		101	70 - 130	1	20
Ethyl-t-butyl ether (ETBE)	ND		25.0	22.8		ug/L		91	70 - 130	5	25
Isopropyl Ether (DIPE)	ND		25.0	22.3		ug/L		89	64 - 138	3	25
m,p-Xylene	ND		50.0	47.5		ug/L		95	70 - 133	0	25
Methyl-t-Butyl Ether (MTBE)	ND		25.0	24.9		ug/L		100	70 - 130	7	25
o-Xylene	ND		25.0	23.8		ug/L		95	70 - 133	0	20
Tert-amyl-methyl ether (TAME)	ND		25.0	23.9		ug/L		96	68 - 133	6	30
tert-Butyl alcohol (TBA)	ND		125	129		ug/L		103	70 - 130	6	25
Toluene	ND		25.0	23.8		ug/L		95	70 - 130	1	20
Naphthalene	ND		25.0	24.4		ug/L		98	60 - 140	8	30

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*103*		*80 - 120*
Dibromofluoromethane (Surr)	*99*		*76 - 132*
Toluene-d8 (Surr)	*108*		*80 - 128*

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

Lab Sample ID: MB 440-150039/3
Matrix: Water
Analysis Batch: 150039

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			12/11/13 18:37	1
1,2-Dichloroethane	ND		0.50		ug/L			12/11/13 18:37	1
Benzene	ND		0.50		ug/L			12/11/13 18:37	1
Ethanol	ND		150		ug/L			12/11/13 18:37	1
Ethylbenzene	ND		0.50		ug/L			12/11/13 18:37	1
Ethyl-t-butyl ether (ETBE)	ND		0.50		ug/L			12/11/13 18:37	1
Isopropyl Ether (DIPE)	ND		0.50		ug/L			12/11/13 18:37	1
m,p-Xylene	ND		1.0		ug/L			12/11/13 18:37	1
Methyl-t-Butyl Ether (MTBE)	ND		0.50		ug/L			12/11/13 18:37	1
o-Xylene	ND		0.50		ug/L			12/11/13 18:37	1
Tert-amyl-methyl ether (TAME)	ND		0.50		ug/L			12/11/13 18:37	1
tert-Butyl alcohol (TBA)	ND		10		ug/L			12/11/13 18:37	1
Toluene	ND		0.50		ug/L			12/11/13 18:37	1
Xylenes, Total	ND		1.0		ug/L			12/11/13 18:37	1
Naphthalene	ND		1.0		ug/L			12/11/13 18:37	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*104*		*80 - 120*		*12/11/13 18:37*	*1*
Dibromofluoromethane (Surr)	*96*		*76 - 132*		*12/11/13 18:37*	*1*
Toluene-d8 (Surr)	*106*		*80 - 128*		*12/11/13 18:37*	*1*

Lab Sample ID: LCS 440-150039/4
Matrix: Water
Analysis Batch: 150039

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	24.4		ug/L		97	70 - 130		
1,2-Dichloroethane			25.0	24.4		ug/L		98	57 - 138		
Benzene			25.0	22.3		ug/L		89	68 - 130		
Ethanol			250	220		ug/L		88	50 - 149		
Ethylbenzene			25.0	23.8		ug/L		95	70 - 130		
Ethyl-t-butyl ether (ETBE)			25.0	21.5		ug/L		86	60 - 136		
Isopropyl Ether (DIPE)			25.0	20.9		ug/L		84	58 - 139		
m,p-Xylene			50.0	45.5		ug/L		91	70 - 130		
Methyl-t-Butyl Ether (MTBE)			25.0	22.5		ug/L		90	63 - 131		
o-Xylene			25.0	22.6		ug/L		91	70 - 130		
Tert-amyl-methyl ether (TAME)			25.0	22.6		ug/L		90	57 - 139		
tert-Butyl alcohol (TBA)			125	130		ug/L		104	70 - 130		
Toluene			25.0	23.0		ug/L		92	70 - 130		
Naphthalene			25.0	22.9		ug/L		92	60 - 140		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*100*		*80 - 120*
Dibromofluoromethane (Surr)	*100*		*76 - 132*
Toluene-d8 (Surr)	*107*		*80 - 128*

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

Lab Sample ID: 440-64784-A-3 MS
Matrix: Water
Analysis Batch: 150039

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	24.7		ug/L		99	70 - 131
1,2-Dichloroethane	ND		25.0	24.5		ug/L		98	56 - 146
Benzene	0.61		25.0	24.0		ug/L		94	66 - 130
Ethanol	ND		250	354		ug/L		142	54 - 150
Ethylbenzene	ND		25.0	24.9		ug/L		98	70 - 130
Ethyl-t-butyl ether (ETBE)	ND		25.0	21.9		ug/L		88	70 - 130
Isopropyl Ether (DIPE)	ND		25.0	21.4		ug/L		86	64 - 138
m,p-Xylene	ND		50.0	47.2		ug/L		94	70 - 133
Methyl-t-Butyl Ether (MTBE)	ND		25.0	23.1		ug/L		92	70 - 130
o-Xylene	ND		25.0	23.1		ug/L		93	70 - 133
Tert-amyl-methyl ether (TAME)	ND		25.0	22.9		ug/L		92	68 - 133
tert-Butyl alcohol (TBA)	ND		125	132		ug/L		101	70 - 130
Toluene	0.80		25.0	24.4		ug/L		94	70 - 130
Naphthalene	ND		25.0	23.5		ug/L		94	60 - 140

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*99*		*80 - 120*
Dibromofluoromethane (Surr)	*99*		*76 - 132*
Toluene-d8 (Surr)	*109*		*80 - 128*

Lab Sample ID: 440-64784-A-3 MSD
Matrix: Water
Analysis Batch: 150039

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	25.6		ug/L		102	70 - 131	4	25
1,2-Dichloroethane	ND		25.0	25.1		ug/L		101	56 - 146	3	20
Benzene	0.61		25.0	23.2		ug/L		90	66 - 130	3	20
Ethanol	ND		250	352		ug/L		141	54 - 150	0	30
Ethylbenzene	ND		25.0	24.9		ug/L		98	70 - 130	0	20
Ethyl-t-butyl ether (ETBE)	ND		25.0	21.7		ug/L		87	70 - 130	1	25
Isopropyl Ether (DIPE)	ND		25.0	21.0		ug/L		84	64 - 138	2	25
m,p-Xylene	ND		50.0	47.4		ug/L		95	70 - 133	1	25
Methyl-t-Butyl Ether (MTBE)	ND		25.0	22.9		ug/L		92	70 - 130	1	25
o-Xylene	ND		25.0	23.4		ug/L		94	70 - 133	1	20
Tert-amyl-methyl ether (TAME)	ND		25.0	22.1		ug/L		89	68 - 133	4	30
tert-Butyl alcohol (TBA)	ND		125	131		ug/L		100	70 - 130	1	25
Toluene	0.80		25.0	23.8		ug/L		92	70 - 130	2	20
Naphthalene	ND		25.0	24.2		ug/L		97	60 - 140	3	30

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*102*		*80 - 120*
Dibromofluoromethane (Surr)	*101*		*76 - 132*
Toluene-d8 (Surr)	*109*		*80 - 128*

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

Lab Sample ID: MB 440-148935/12
Matrix: Water
Analysis Batch: 148935

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			12/05/13 23:58	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*65 - 140*		*12/05/13 23:58*	*1*

Lab Sample ID: LCS 440-148935/11
Matrix: Water
Analysis Batch: 148935

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	809		ug/L		101	80 - 120		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*98*		*65 - 140*

Lab Sample ID: 440-63932-B-18 MS
Matrix: Water
Analysis Batch: 148935

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)	350		800	1090		ug/L		92	65 - 140		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*126*		*65 - 140*

Lab Sample ID: 440-63932-B-18 MSD
Matrix: Water
Analysis Batch: 148935

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)	350		800	1060		ug/L		88	65 - 140	3	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*121*		*65 - 140*

Lab Sample ID: MB 440-149284/3
Matrix: Water
Analysis Batch: 149284

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			12/09/13 08:32	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*65 - 140*		*12/09/13 08:32*	*1*

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

Lab Sample ID: LCS 440-149284/2
Matrix: Water
Analysis Batch: 149284

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	857		ug/L		107	80 - 120		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*102*		*65 - 140*

Lab Sample ID: 440-64455-A-1 MS
Matrix: Water
Analysis Batch: 149284

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)	ND		800	882		ug/L		105	65 - 140		

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*108*		*65 - 140*

Lab Sample ID: 440-64455-A-1 MSD
Matrix: Water
Analysis Batch: 149284

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)	ND		800	860		ug/L		102	65 - 140	3	20

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

GC/MS VOA

Analysis Batch: 149788

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-64127-1	MW-3	Total/NA	Water	8260B/5030B	
440-64127-2	MW-4	Total/NA	Water	8260B/5030B	
440-64253-A-1 MS	Matrix Spike	Total/NA	Water	8260B/5030B	
440-64253-A-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B/5030B	
LCS 440-149788/4	Lab Control Sample	Total/NA	Water	8260B/5030B	
MB 440-149788/3	Method Blank	Total/NA	Water	8260B/5030B	

Analysis Batch: 150039

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-64127-3	MW-5	Total/NA	Water	8260B/5030B	
440-64127-4	MW-6	Total/NA	Water	8260B/5030B	
440-64784-A-3 MS	Matrix Spike	Total/NA	Water	8260B/5030B	
440-64784-A-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B/5030B	
LCS 440-150039/4	Lab Control Sample	Total/NA	Water	8260B/5030B	
MB 440-150039/3	Method Blank	Total/NA	Water	8260B/5030B	

GC VOA

Analysis Batch: 148935

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-63932-B-18 MS	Matrix Spike	Total/NA	Water	8015B/5030B	
440-63932-B-18 MSD	Matrix Spike Duplicate	Total/NA	Water	8015B/5030B	
440-64127-1	MW-3	Total/NA	Water	8015B/5030B	
440-64127-2	MW-4	Total/NA	Water	8015B/5030B	
440-64127-3	MW-5	Total/NA	Water	8015B/5030B	
LCS 440-148935/11	Lab Control Sample	Total/NA	Water	8015B/5030B	
MB 440-148935/12	Method Blank	Total/NA	Water	8015B/5030B	

Analysis Batch: 149284

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-64127-4	MW-6	Total/NA	Water	8015B/5030B	
440-64455-A-1 MS	Matrix Spike	Total/NA	Water	8015B/5030B	
440-64455-A-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8015B/5030B	
LCS 440-149284/2	Lab Control Sample	Total/NA	Water	8015B/5030B	
MB 440-149284/3	Method Blank	Total/NA	Water	8015B/5030B	

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
ID	Analyte identified by RT & presence of single mass ion

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
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
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 2162, San Leandro

TestAmerica Job ID: 440-64127-1

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
Alaska	State Program	10	CA01531	06-30-14
Arizona	State Program	9	AZ0671	10-13-14
California	LA Cty Sanitation Districts	9	10256	01-31-14
California	NELAP	9	1108CA	01-31-14
California	State Program	9	2706	06-30-14
Guam	State Program	9	Cert. No. 12.002r	01-23-14 *
Hawaii	State Program	9	N/A	01-31-14
Nevada	State Program	9	CA015312007A	07-31-14
New Mexico	State Program	6	N/A	01-31-14
Northern Mariana Islands	State Program	9	MP0002	01-31-14
Oregon	NELAP	10	4005	09-12-14
USDA	Federal		P330-09-00080	06-06-14
USEPA UCMR	Federal	1	CA01531	01-31-15

* Expired certification is currently pending renewal and is considered valid.

bp rm

Laboratory Management Program LaMP Chain of Custody Record

Page ____ of ____

BP Site Node Path: BP 2162 | Req Due Date (mm/dd/yy): ____ | Rush TAT: Yes ____ No ____

BP Facility No: 2162 | Lab Work Order Number: ____

Lab Name: Test America	Facility Address: 15135 Hesperian Blvd	Consultant/Contractor: Broadbent & Associates
Lab Address: 17461 Derian Ave, Suite 100, Irvine, CA	City, State, ZIP Code: San Leandro, CA	Consultant/Contractor Project No: 06-88-620
Lab PM: Kathleen Robb	Lead Regulatory Agency: ACEH	Address: 875 Cotting Lane, Suite G, Vacaville
Lab Phone: 949-261-1022	California Global ID No.: T0600100084	Consultant/Contractor PM: Kristene Tidwell
Lab Shipping Accnt: 1103-6633-7	Enfos Proposal No: 00604-002/WR-245682	Phone: 707-455-7290 Email: ktidwell@broadbentinc.com
Lab Bottle Order No:	Accounting Mode: Provision X OOC-BU ___ OOC-RM ___	Email EDD To: ktidwell@broadbentinc.com and to lab.enfosdoc@bp.com
Other Info:	Stage: EXECUTE (40) Activity: Project Spend (80)	Invoice To: BP X Contractor ___
BP Project Manager (PM): Chuck Carmel		
BP PM Phone: 925-275-3803		
BP PM Email: charles.carmel@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 8015M	BTEX/5FO 8260	EDB/1,2-DCA 8260	ETHANOL 8260	Naphthalene						Report Type & QC Level / Comments
	MW-3	12/4/13	1210		X		Y	6				X		X	X	X	X	X						
	MW-4		1145		X		Y	6				X		X	X	X	X	X						
	MW-5		1235		X		Y	6				X		X	X	X	X	X						
	MW-6		1305		X		Y	6				X		X	X	X	X	X						
	TB-2162120213	—	—		X		N	2				X												ON HOLD
																		1,4-D						

440-64127 Chain of Custody

12-04-13

	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Name: James Ramos						
Sampler's Company: Broadbent & Associates	[signature] Broadbent	12/3/13	1700	[signature] TAI	12/4/13	9:50
Shipment Method: Fed Ex Ship Date: 12/3/13	Kevin Cook Cotting Broadbent	12/3/13	1700			
Shipment Tracking No:						

Special Instructions: ktidwell@broadbentinc.com IR-53 Fed: 8025 2344 4982

THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes / No | Temp Blank: Yes / No | Cooler Temp on Receipt: 4.2/3.7 °F/C | Trip Blank: Yes / No | MS/MSD Sample Submitted: Yes / No

12/17/2013

BP Remediation Management COC - Effective Dates: August 23, 2011 - June 30, 2012

BP LaMP COC Rev. 7, Aug 23, 2011

Login Sample Receipt Checklist

Client: Broadbent & Associates, Inc.

Job Number: 440-64127-1

Login Number: 64127

List Source: TestAmerica Irvine

List Number: 1

Creator: Kim, Guerry

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
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	
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.	True	
Residual Chlorine Checked.	N/A	

APPENDIX D

GEOTRACKER UPLOAD CONFIRMATION RECEIPTS

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:	**4Q13 QMR**
Report Type:	**Monitoring Report - Semi-Annually**
Facility Global ID:	**T0600100084**
Facility Name:	**ARCO #2162**
File Name:	**440-64127-1_17 Dec 13 1413_EDF.zip**
Organization Name:	**Broadbent & Associates, Inc.**
Username:	**BROADBENT-C**
IP Address:	**69.170.11.178**
Submittal Date/Time:	**1/27/2014 2:17:17 PM**
Confirmation Number:	**2031485855**

VIEW QC REPORT

VIEW DETECTIONS REPORT

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:	**4Q13 QMR**
Facility Global ID:	**T0600100084**
Facility Name:	**ARCO #2162**
File Name:	**geo_well.zip**
Organization Name:	**Broadbent & Associates, Inc.**
Username:	**BROADBENT-C**
IP Address:	**69.170.11.178**
Submittal Date/Time:	**1/27/2014 2:31:34 PM**
Confirmation Number:	**7181535840**