

Atlantic Richfield Company

Shannon Couch
Operations Project Manager

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April 25, 2013

RECEIVED

By Alameda County Environmental Health at 11:18 am, Apr 26, 2013

Re: First Quarter 2013 Monitoring Report
Former BP Service Station #11104
1716 Webster Street
Alameda, California
ACEH Case #RO0000281

"I declare, that to the best of my knowledge at the present time, that the information and/or recommendations contained in the attached document are true and correct.

Submitted by,



Shannon Couch
Operations Project Manager

Attachment



875 Cotting Ln., Suite G, Vacaville, CA 95688

[T] 707-455-7290 [F] 707-455-7295

broadbentinc.com

CREATING SOLUTIONS, BUILDING TRUST.

April 25, 2013

Project No. 06-88-644

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

Attn.: Ms. Shannon Couch


Re: First Quarter 2013 Monitoring Report, Former BP Service Station #11104, 1716 Webster Street, Alameda, Alameda County, California
ACEH Case #RO0000281

Dear Ms. Couch:

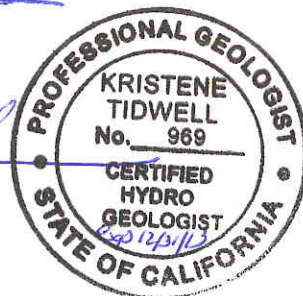
Provided herein is the *First Quarter 2013 Monitoring Report* for Former BP Service Station #11104 located at 1716 Webster Street, Alameda, California (Site). Should you have questions regarding the work performed or results obtained, please do not hesitate to contact me at (707) 455-7290.

Sincerely,

BROADBENT & ASSOCIATES, INC.


Alexander J. Martinez
Senior Staff Geologist


Kristene Tidwell, PG, CHG
Senior Geologist



enclosures

cc: Ms. Dilan Roe, Alameda County Environmental Health (Submitted via ACEH ftp site)
Ms. Shelby Lathrop, ConocoPhillips, 76 Broadway, Sacramento, California 95818
Electronic copy uploaded to GeoTracker

**FIRST QUARTER 2013
MONITORING REPORT
FORMER ARCO STATION #11104, ALAMEDA, CALIFORNIA**

Broadbent & Associates, Inc. (Broadbent) is pleased to present this *First Quarter 2013 Monitoring Report* on behalf of Atlantic Richfield Company (a BP affiliated company) for former BP Station # 11104 (presently a Union 76 Station) located at 1716 Webster Street in Alameda, Alameda County, California. Monitoring activities at the site were performed in accordance with an agency directive issued by the Alameda County Environmental Health (ACEH). Details of work performed, discussion of results, and recommendations are provided below.

Facility Name / Address:	Former BP Station #11104 / 1716 Webster Street, Alameda, CA; Drawing 1
Client Project Manager / Title:	Ms. Shannon Couch / Operations Project Manager
Broadbent Contact:	Ms. Kristene Tidwell, PG, CHG / 707-455-7290
Broadbent Project No.:	06-88-644
Primary Regulatory Agency / ID No.:	ACEH / Case #RO0000281
Current phase of project:	Monitoring
List of Acronyms / Abbreviations:	See end of report text for list of acronyms/abbreviations used in report.

WORK PERFORMED THIS QUARTER (First Quarter 2013):

1. Broadbent submitted a *Fourth Quarter 2012 Status Report* on January 21 2013.
2. Broadbent conducted groundwater monitoring/sampling on February 21, 2013 for First Quarter 2013.

WORK SCHEDULED FOR NEXT QUARTER (Second Quarter 2013):

1. Submit *First Quarter 2013 Monitoring Report* (contained herein).
2. No environmental work activities are scheduled to be conducted at the Site during the Second Quarter 2013.

QUARTERLY MONITORING PLAN SUMMARY:

Groundwater level gauging:	MW-1 through MW-5 and RW-1	(Semi-Annually: 1Q & 3Q)
Groundwater sample collection:	MW-1 and RW-1	(Semi-Annually: 1Q & 3Q)
	MW-2 through MW-5	(Annually: 1Q)
Biodegradation indicator parameter monitoring:	None	

QUARTERLY RESULTS SUMMARY:

LNAPL

LNAPL observed this quarter:	No* (Thin sheen observed in RW-1)	(yes\no)
LNAPL recovered this quarter:	None	(gal)
Cumulative LNAPL recovered:	None	(gal)

Groundwater Elevation and Gradient:

Depth to groundwater:	5.03 ft (RW-1) to 6.20 ft (MW-3)	(ft below TOC)
Gradient direction:	North-Northeast	(compass direction)
Gradient magnitude:	0.005 ft/ft	(ft/ft)
Average change in elevation:	0.65	(ft since last measurement)

Laboratory Analytical Data

Summary:

- GRO was detected in two wells with a concentration of 940 µg/L in MW-1 and 110 µg/L in well RW-1, respectively
 - Benzene was detected in one well with a concentration of 2.9 µg/L in well MW-1
 - Ethylbenzene was detected in one well with a concentration of 13 µg/L in well MW-1
 - Toluene was detected in one well with a concentration of 1.3 µg/L in well MW-1
 - Total Xylenes was detected in one well with a concentration of 30 µg/L in well MW-1
 - MTBE was detected in two wells with a concentration of 14 µg/L in well MW-1 and 7.9 µg/L in RW-1, respectively
 - TBA was detected in two wells with concentrations of 79 µg/L in MW-1 and 28 µg/L in well RW-1, respectively
 - TAME was detected in well MW-1 with a concentration of 1.5 µg/L.
 - The remaining petroleum hydrocarbon constituents were below laboratory detection limits.
-

ACTIVITIES CONDUCTED & RESULTS:

On February 21, 2013 Broadbent conducted the First Quarter 2013 groundwater monitoring and sampling event at Station #11104 in accordance with the quarterly monitoring plan summary detailed above. No irregularities were noted during water level gauging except for MW-5 which was not accessible due to being paved over. Water levels were gauged in the five accessible wells associated with Station #11104. Light non-aqueous phase liquid (LNAPL) was not observed in well RW-1; LNAPL had been observed in well RW-1 dating back to the Third Quarter 2011 monitoring/sampling event. No other irregularities were noted during water level gauging at Station #11104. Depth to water measurements at the Site ranged from 5.03 ft at well RW-1 to 6.20 ft at MW-3. Resulting groundwater surface elevations at the Site ranged from 7.49 ft above datum at well MW-2 to 6.48 ft at well MW-4. Water level elevations yielded a potentiometric groundwater gradient direction and magnitude to the north-northeast at 0.005 ft/ft. Field methods used during groundwater monitoring are provided in Appendix A. Field data sheets are included in Appendix B. Measured depths to groundwater and respective groundwater elevations are summarized in Table 1. Current and historic groundwater gradient directions and magnitudes are provided within Table 3. Drawing 2 is provided as a groundwater elevation contour and analytical summary map for February 21, 2013.

Generally consistent with the current groundwater sampling schedule, water samples were collected from wells MW-1 through MW-4. Due to the presence of LNAPL in previous sampling events, water samples have not recently been collected from well RW-1. However, measurable LNAPL was not observed in well RW-1 during this sampling event, and the well was sampled. No other irregularities were encountered during sampling at the Site. Collected groundwater samples were submitted to TestAmerica Environmental Laboratories, Inc. (TestAmerica) of Irvine, California for analysis of GRO by EPA Method 8015B; BTEX, MTBE, ETBE, TAME, DIPE, TBA, EDB, 1,2-DCA and Ethanol by EPA Method 8260B. No significant irregularities were reported during analysis of the samples.

Laboratory analytical report and chain of custody record for are provided in Appendix C. Groundwater monitoring data (GEO_WELL) and laboratory analytical results (EDF) were uploaded to the GeoTracker AB2886 database. Upload confirmation receipts are provided in Appendix D.

DISCUSSION:

Groundwater levels and gradient data indicate that the gradient measured during First Quarter 2013 monitoring is consistent with predominant measurements observed historic minimum and maximum elevations at the Site. During First Quarter 2013, groundwater elevations increased an average of 0.65 feet across the site relative to measurements collected during Third Quarter 2012.

Results of historical groundwater results indicate that the highest residual hydrocarbons are present in well MW-1 due to its location to the current Underground Storage Tank (UST). Petroleum Concentrations in well MW-1 indicate an overall decrease. Recent and historic analytical results are summarized in Tables 1 and 2.

Detected analytical concentrations were within historic minimum and maximum ranges recorded for each well including RW-1. Well RW-1 indicated a slight increase for MTBE compared to its last sampled event during the First Quarter 2010. From the results obtained by hydrocarbon fingerprint analysis it can be concluded that the measured product is not BP related since diesel storage and distribution was not part of BP's former operations. Current fueling operations include diesel. It is unclear if the product previously recorded is from current fueling operations, a neighboring service station or a surface influence.

RECOMMENDATIONS:

No environmental work activities are scheduled to be conducted at the Site during the Second Quarter 2013. The next quarterly monitoring event is scheduled for the Third Quarter 2013. Unless directed by ACEH, no change to the monitoring program at Station #11104 is presently deemed warranted or recommended. The Site is currently being evaluated for Case Closure under the Low threat UST Policy.

LIMITATIONS:

The findings presented in this report are based upon observations of field personnel, points investigated, results of laboratory tests performed by TestAmerica and our understanding of ACEH guidelines. 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 ARC. 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: First Quarter 2013 Groundwater Elevation Contour and Analytical Summary Map
- Table 1: Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses
Table 2: Summary of Fuel Additive Analytical Data
Table 3: Historic Groundwater Gradient Information
- Appendix A: Field Methods
Appendix B: Field Data Sheet
Appendix C: Laboratory Report and Chain-of-Custody Documentation
Appendix D: GeoTracker Upload Confirmation Receipts

LIST OF COMMONLY USED ACRONYMS/ABBREVIATIONS:

ACEH	Alameda County Environmental Health	gal:	gallons
ARC:	Atlantic Richfield Company	GRO:	gasoline range organics (C6-12)
BAI:	Broadbent & Associates, Inc.	LNAPL:	light non-aqueous phase liquid
BTEX:	benzene, toluene, ethylbenzene, total xylenes	MTBE:	methyl tertiary butyl ether
1,2-DCA:	1,2-dichloroethane	RWQCB:	California Regional Water Quality Control Board-San Francisco Bay Region
DIPE:	di-isopropyl ether	TAME:	tert-amyl methyl ether
DO:	dissolved oxygen	TBA:	tert-butyl alcohol
ESLs:	RWQCB Environmental Screening Levels (revised May 2008)	TOC:	top of casing
EDB:	1,2-dibromomethane	µg/L:	micrograms per liter
ft/ft:	feet per foot		

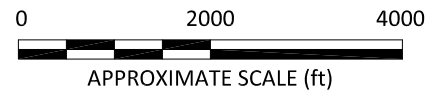
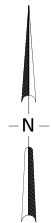
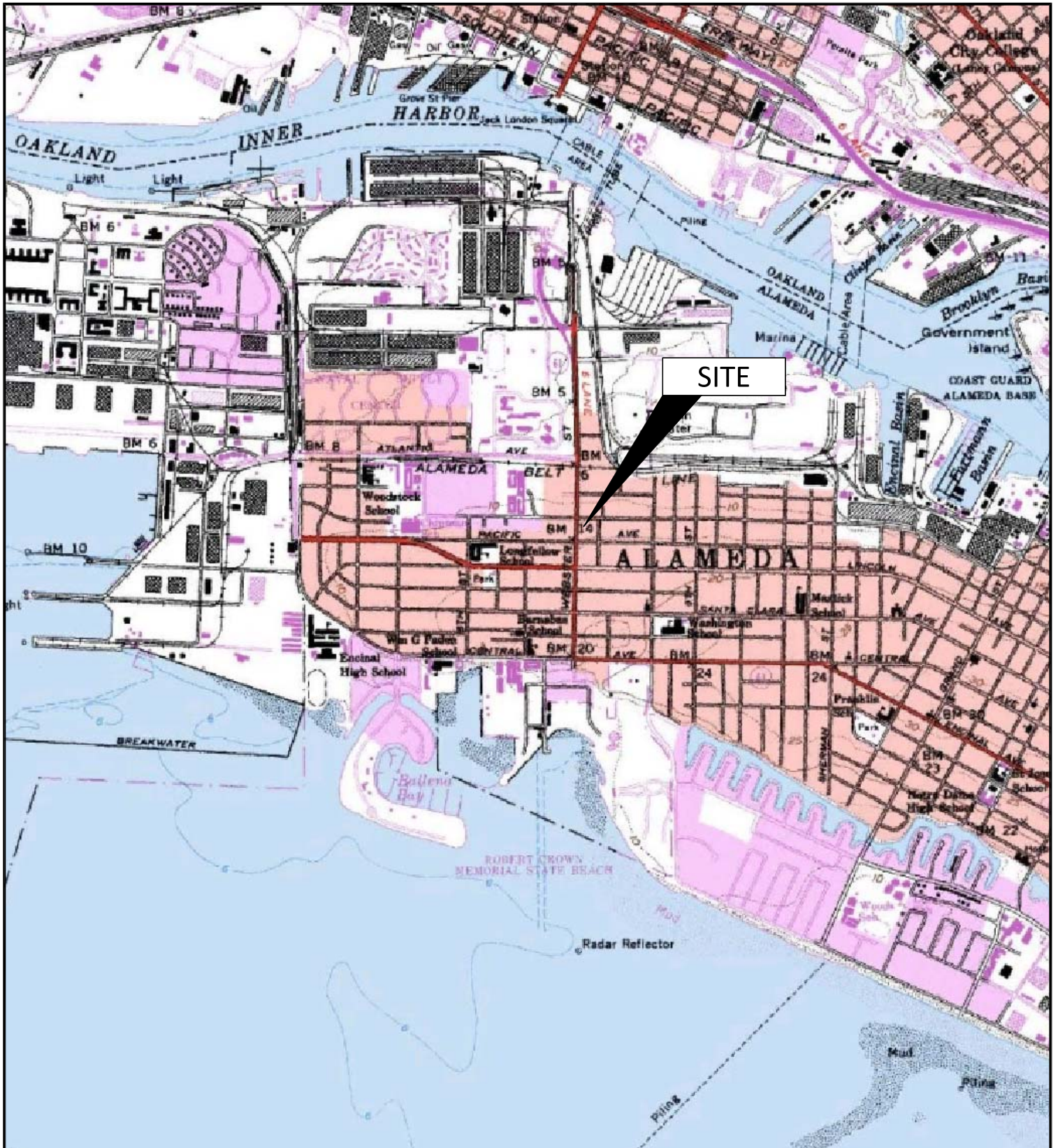


IMAGE SOURCE: USGS



875 Cotting Lane, Suite G
Vacaville, California 95688

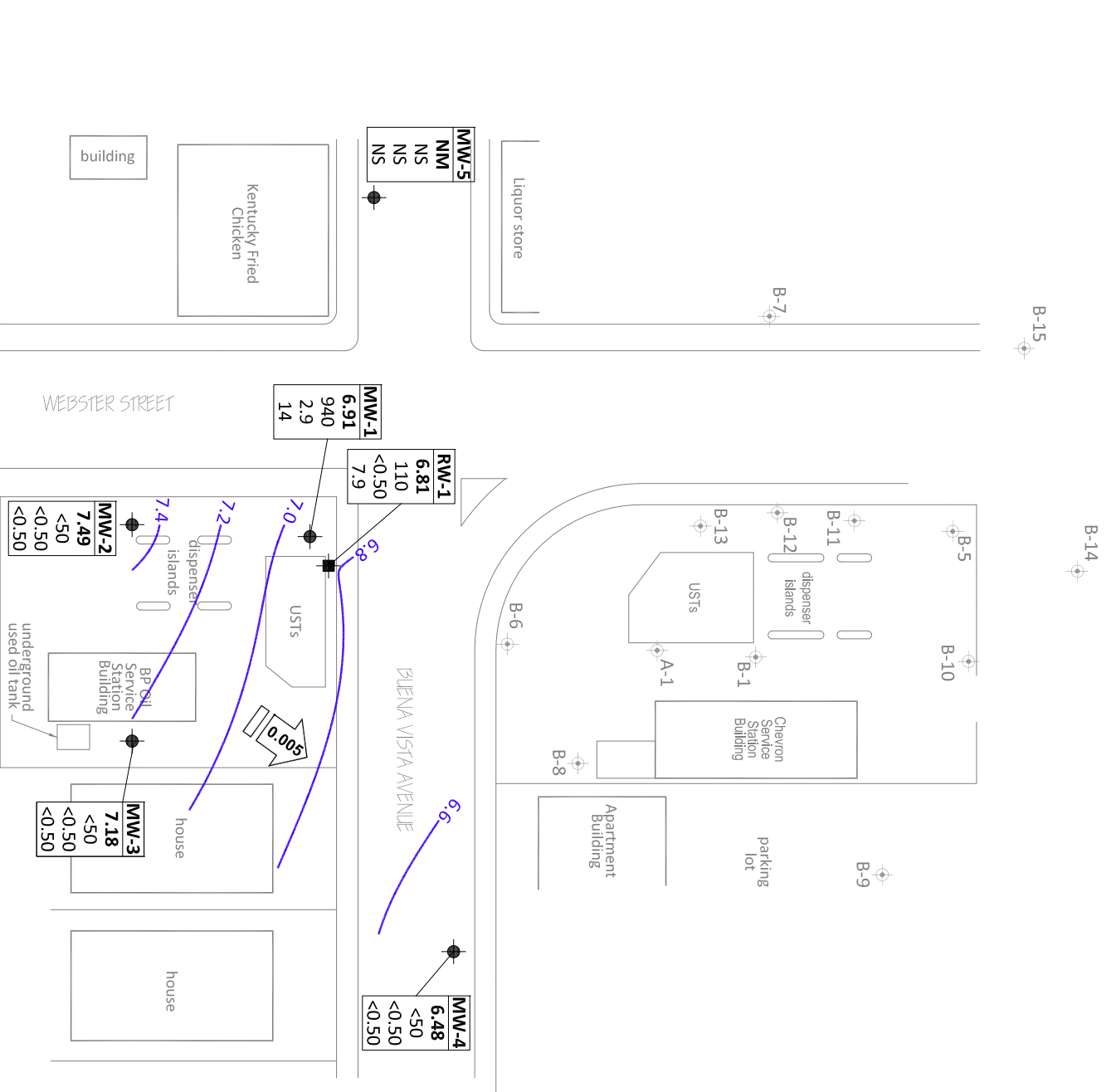
Project No.: 06-88-644 Date: 3/22/2013

Station #11104
1716 Webster Street
Alameda, California

Site Location Map

Drawing

1



LEGEND

- Monitor Well Location
- Groundwater Recovery Well Location
- Chevron Monitor Well Location
- Groundwater Elevation Contour (Feet Above Site Datum)
- Groundwater Gradient (ft/ft)

WELL	Well Designation
ELEV	Groundwater Elevation (ft)
GRO	GRO, Benzene, and MTBE Concentrations (µg/L)
BENZ	
MTBE	

- < Not Detected at or above Laboratory Reporting Limits
- NM/NNS Not Measured/Not Sampled

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



BROADBENT
875 Cotting Lane, Suite G
Vacaville, California 95688
Project No.: 06-88-644 Date: 3/22/2013

Station #11104
1716 Webster Street
Alameda, California

Groundwater Elevation Contour and
Analytical Summary Map
February 21, 2013

Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses
Former BP Station #11104, 1716 Webster St., Alameda, CA

Well ID and Date Monitored	P/NP	TOC Elevation (feet)	Depth to Water (feet)	LNAPL Thickness (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														
7/21/1992	--	11.98	5.91	0.00	6.07	34,000	7,000	1,700	2,500	6,900	--	--	--	
10/20/1992	--		6.66	0.00	5.32	--	--	--	--	--	--	--	--	
3/5/1993	--		4.56	0.00	7.42	--	--	--	--	--	--	--	--	
4/1/1993	--		4.57	0.00	7.41	--	--	--	--	--	--	--	--	
7/9/1993	--		5.25	0.00	6.73	79,000	16,000	1,500	2,200	7,700	12,952	--	--	c, d, k
7/9/1993	--		5.25	0.00	6.73	77,000	15,000	1,400	2,100	7,400	11,919	--	--	c, k
10/8/1993	--		6.01	0.00	5.97	42,000	7,100	270	2,700	4,700	--	--	--	k
1/6/1994	--		6.24	0.00	5.74	45,000	12,000	4,300	3,000	6,700	--	--	--	k
4/26/1994	--		5.26	0.00	6.72	39,000	6,500	500	1,800	1,200	16,663	6.3	--	c, k
7/25/1994	--		5.60	0.00	6.38	38,000	6,300	240	1,500	1,100	26,428	1.7	--	c, k
10/13/1994	--		6.15	0.00	5.83	25,000	7,300	120	1,200	740	--	--	--	d, k
10/13/1994	--		6.15	0.00	5.83	25,000	6,300	130	1,300	830	--	2.3	--	k
1/17/1995	--		4.19	0.00	7.79	8,400	3,100	1,200	470	1,000	--	--	--	d
1/17/1995	--		4.19	0.00	7.79	7,800	3,100	1,100	460	850	--	7.9	--	
3/31/1995	--		4.48	0.00	7.50	40,000	6,900	7,300	1,300	5,000	--	--	--	d
3/31/1995	--		4.48	0.00	7.50	37,000	6,700	6,900	1,200	4,500	--	6.4	--	
5/1/1995	--		4.39	0.00	7.59	--	--	--	--	--	--	--	--	
7/12/1995	--		5.02	0.00	6.96	29,000	6,600	380	1,500	3,900	--	--	--	d
7/12/1995	--		5.02	0.00	6.96	29,000	7,000	300	1,500	3,900	--	7.2	--	
10/12/1995	--		5.68	0.00	6.30	20,000	3,500	310	1,100	3,000	14,000	--	--	d
10/12/1995	--		5.68	0.00	6.30	20,000	3,400	310	1,100	3,000	15,000	6.3	--	
2/27/1996	--		4.18	0.00	7.80	18,000	4,400	2,900	860	2,380	5,500	7.9	--	
5/8/1996	--		4.89	0.00	7.09	--	--	--	--	--	--	--	--	
5/9/1996	--		--	--	--	14,000	2,300	1,900	540	3,340	2,700	6.1	--	
8/9/1996	--		5.13	0.00	6.85	--	--	--	--	--	--	--	--	
8/12/1996	--		--	--	--	13,000	2,800	190	1,300	3,040	1,800	7.1	--	
11/7/1996	--		5.65	0.00	6.33	12,000	2,100	35	<25	<25	2,100	7.2	--	
2/10/1997	--		4.80	0.00	7.18	180,000	2,100	<500	<500	<500	160,000	--	--	d
2/10/1997	--		4.80	0.00	7.18	180,000	1,900	<500	<500	<500	160,000	6.8	--	
8/4/1997	--		5.69	0.00	6.29	<25000	2,600	<50	1,200	1,100	260,000	--	--	d

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Former BP Station #11104, 1716 Webster St., Alameda, CA

Well ID and Date Monitored	P/NP	TOC Elevation (feet)	Depth to Water (feet)	LNAPL Thickness (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.														
8/4/1997	--	11.98	5.69	0.00	6.29	14,000	2,700	<50	1,200	1,220	250,000	7.2	--	
1/27/1998	--		3.96	0.00	8.02	390,000	4,400	4,300	1,600	2,890	490,000	6.4	--	
9/2/1998	--		5.03	0.00	6.95	230,000	3,900	<50	1,900	1,000	230,000	6.3	--	
2/24/1999	--		4.94	0.00	7.04	82,000	3,000	520	2,600	3,200	90,000/200,000	--	--	h
8/30/1999	--		6.31	0.00	5.67	11,000	2,100	<25	1,800	580	48,000	--	--	
2/21/2000	--		4.47	0.00	7.51	12,000 i	1,200	250	930	1,800	31,000	--	--	i
8/8/2000	--		5.59	0.00	6.39	4,500	160	2.8	76	88	60,000	--	--	
2/12/2001	--		6.04	0.00	5.94	14,000	363	<12.5	108	293	18,000	--	--	
8/13/2001	--		6.44	0.00	5.54	14,000	161	17.1	255	545	5,590	--	--	
2/4/2002	--		4.49	0.00	7.49	17,000	176	57.9	538	1,670	2,470	--	--	
8/29/2002	--		5.22	0.00	6.76	4,800 l	180	43	130	540	3,100	--	--	l
2/5/2003	--		5.43	0.00	6.55	770	29	9.8	4.2	47	590 m,n	--	--	m,n
8/14/2003	--		6.34	0.00	5.64	5,400	210	<50	90	200	4,500	--	--	p
02/12/2004	P		4.55	0.00	7.43	2,600	140	20	87	170	1,200	--	6.8	
08/12/2004	P		5.22	0.00	6.76	5,700	500	12	41	1,400	260	--	6.3	
02/10/2005	P		4.48	0.00	7.50	2,400	120	10	72	110	730	--	6.1	
08/11/2005	P		4.60	0.00	7.38	4,600	500	13	44	870	190	--	6.8	
02/09/2006	P		4.47	0.00	7.51	2,600	180	12	96	230	380	--	7.0	
8/10/2006	--		4.77	0.00	7.21	7,000	720	17	62	870	47	--	6.7	
2/8/2007	P		5.13	0.00	6.85	2,200	100	6.3	53	120	130	5.52	6.82	
8/8/2007	P		5.47	0.00	6.51	1,500	78	4.9	43	120	140	4.32	7.04	t (BZ, EBZ, XYLENES, MTBE)
2/22/2008	P		4.40	0.00	7.58	4,400	130	71	390	1,200	59	5.01	7.06	
8/13/2008	P		5.55	0.00	6.43	7,500	220	16	130	1,600	370	0.48	8.13	
2/11/2009	P		5.51	0.00	6.47	1,900	26	<2.0	15	35	68	0.57	6.62	
8/27/2009	P		5.45	0.00	6.53	3,300	37	2.4	9.5	650	20	0.61	7.51	
2/18/2010	P		4.71	0.00	7.27	2,700	32	7.6	42	95	48	0.81	6.80	
8/12/2010	NP		5.48	0.00	6.50	3,200	50	2.4	52	220	76	1.72	6.9	
2/17/2011	P		4.82	0.00	7.16	2,400	44	<2.0	160	230	40	0.75	7.2	
7/5/2011	--		4.86	0.00	7.12	6,900	110	5.5	190	1,900	22	0.41	7.2	
2/28/2012	P		5.63	0.00	6.35	9,600	310	13	560	1,700	610	0.53	6.57	

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Former BP Station #11104, 1716 Webster St., Alameda, CA

Well ID and Date Monitored	P/NP	TOC Elevation (feet)	Depth to Water (feet)	LNAPL Thickness (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.														
8/15/2012	P	11.98	5.68	0.00	6.30	1,800	19	1.1	8.2	340	16	1.62	7.37	
2/21/2013	P		5.07	0.00	6.91	940	2.9	1.3	13	30	14	1.28	7.33	
MW-2														
7/21/1992	--	12.98	6.44	0.00	6.54	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	
10/20/1992	--		7.39	0.00	5.59	--	--	--	--	--	--	--	--	
3/5/1993	--		4.91	0.00	8.07	--	--	--	--	--	--	--	--	
4/1/1993	--		4.92	0.00	8.06	--	--	--	--	--	--	--	--	
7/9/1993	--		5.60	0.00	7.38	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	k
10/8/1993	--		6.50	0.00	6.48	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	d, k
10/8/1993	--		6.50	0.00	6.48	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	k
1/6/1994	--		6.25	0.00	6.73	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	k
4/26/1994	--		5.73	0.00	7.25	<50	<0.5	<0.5	<0.5	<0.5	<5.0	7.5	--	k
7/25/1994	--		6.07	0.00	6.91	<50	<0.5	<0.5	<0.5	<0.5	11.59	2.4	--	k
10/13/1994	--		6.80	0.00	6.18	<50	<0.5	<0.5	<0.5	<0.5	--	2.4	--	k
1/17/1995	--		5.10	0.00	7.88	--	--	--	--	--	--	--	--	
3/31/1995	--		4.69	0.00	8.29	<50	<0.50	<0.50	<0.50	<1.0	--	7.3	--	
5/1/1995	--		5.23	0.00	7.75	--	--	--	--	--	--	--	--	
7/12/1995	--		5.40	0.00	7.58	--	--	--	--	--	--	--	--	
10/12/1995	--		6.06	0.00	6.92	<50	<0.50	<0.50	<0.50	<1.0	<5.0	6.9	--	
2/27/1996	--		4.66	0.00	8.32	<50	<0.5	<1	<1	<1	<10	8.7	--	
5/8/1996	--		5.28	0.00	7.70	--	--	--	--	--	--	--	--	
8/9/1996	--		5.59	0.00	7.39	<50	<0.5	<1.0	<1.0	<1.0	<10	7.8	--	
11/7/1996	--		6.11	0.00	6.87	--	--	--	--	--	--	--	--	
2/10/1997	--		5.26	0.00	7.72	--	--	--	--	--	--	--	--	
8/4/1997	--		6.14	0.00	6.84	<50	<0.5	<1.0	<1.0	<1.0	<10	6.5	--	
1/27/1998	--		4.42	0.00	8.56	--	--	--	--	--	--	--	--	
9/2/1998	--		5.47	0.00	7.51	100	0.56	3.6	<1.0	3	110	6.9	--	
2/24/1999	--		5.12	0.00	7.86	<50	<1.0	<1.0	<1.0	<1.0	8.2	--	--	
8/30/1999	--		6.60	0.00	6.38	--	--	--	--	--	--	--	--	
2/21/2000	--		4.64	0.00	8.34	<50	<0.5	<0.5	<0.5	<0.5	0.72	--	--	

**Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses
Former BP Station #11104, 1716 Webster St., Alameda, CA**

Well ID and Date Monitored	P/NP	TOC Elevation (feet)	Depth to Water (feet)	LNAPL Thickness (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.														
2/12/2001	--	12.98	5.13	0.00	7.85	<50	<0.5	<0.5	<0.5	<0.5	<0.5	--	--	
2/4/2002	--		5.63	0.00	7.35	<50	<0.5	<0.5	<0.5	<1.0	<0.5	--	--	
8/29/2002	--		5.79	0.00	7.19	--	--	--	--	--	--	--	--	
2/5/2003	--		5.61	0.00	7.37	<50	<0.50	<0.50	<0.50	<0.50	<2.5	--	--	n
8/14/2003	--		--	--	--	--	--	--	--	--	--	--	--	o
02/12/2004	P		5.19	0.00	7.79	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	6.4	p
08/12/2004	--		6.17	0.00	6.81	--	--	--	--	--	--	--	--	
02/10/2005	P		5.01	0.00	7.97	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	5.9	
08/11/2005	--		6.39	0.00	6.59	--	--	--	--	--	--	--	--	
02/09/2006	P		4.80	0.00	8.18	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	6.8	
8/10/2006	--		6.18	0.00	6.80	--	--	--	--	--	--	--	--	
2/8/2007	P		5.67	0.00	7.31	<50	<0.50	<0.50	<0.50	<0.50	<0.50	5.94	7.04	
8/8/2007	--		6.00	0.00	6.98	--	--	--	--	--	--	--	--	
2/22/2008	P		5.15	0.00	7.83	52	<0.50	<0.50	<0.50	<0.50	<0.50	5.81	7.12	
8/13/2008	--		6.20	0.00	6.78	--	--	--	--	--	--	--	--	
2/11/2009	P		6.02	0.00	6.96	<50	<0.50	<0.50	<0.50	<0.50	<0.50	0.90	6.73	
8/27/2009	--		6.12	0.00	6.86	--	--	--	--	--	--	--	--	
2/18/2010	P		5.45	0.00	7.53	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.31	6.56	
8/12/2010	--		5.92	0.00	7.06	--	--	--	--	--	--	--	--	
2/17/2011	NP		5.56	0.00	7.42	<50	<0.50	<0.50	<0.50	<0.50	<0.50	2.83	7.6	
7/5/2011	--		5.54	0.00	7.44	--	--	--	--	--	--	--	--	
2/28/2012	P		6.25	0.00	6.73	<50	<0.50	<0.50	<0.50	<0.50	<0.50	2.20	6.24	
8/15/2012	--		6.22	0.00	6.76	--	--	--	--	--	--	--	--	
2/21/2013	P		5.49	0.00	7.49	<50	<0.50	<0.50	<0.50	<1.0	<0.50	2.81	7.14	
MW-3														
7/21/1992	--	13.38	7.07	0.00	6.31	<50	0.95	<0.5	<0.5	<0.5	--	--	--	e
10/20/1992	--		8.06	0.00	5.32	--	--	--	--	--	--	--	--	
3/5/1993	--		5.16	0.00	8.22	--	--	--	--	--	--	--	--	
4/1/1993	--		5.25	0.00	8.13	--	--	--	--	--	--	--	--	
7/9/1993	--		5.80	0.00	7.58	<50	0.6	<0.5	<0.5	<0.5	--	--	--	k

**Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses
Former BP Station #11104, 1716 Webster St., Alameda, CA**

Well ID and Date Monitored	P/NP	TOC Elevation (feet)	Depth to Water (feet)	LNAPL Thickness (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.														
10/8/1993	--	13.38	7.17	0.00	6.21	<50	0.6	<0.5	<0.5	<0.5	--	--	--	k
1/6/1994	--		6.94	0.00	6.44	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	k
4/26/1994	--		6.18	0.00	7.20	<50	<0.5	<0.5	<0.5	<0.5	<5.0	3.1	--	k
7/25/1994	--		6.67	0.00	6.71	<50	<0.5	<0.5	<0.5	<0.5	<5.0	2.2	--	k
10/13/1994	--		7.43	0.00	5.95	<50	<0.5	<0.5	<0.5	<0.5	--	2.1	--	k
1/17/1995	--		5.07	0.00	8.31	--	--	--	--	--	--	--	--	
3/31/1995	--		4.03	0.00	9.35	<50	<0.50	<0.50	<0.50	<1.0	--	6.6	--	
5/1/1995	--		4.94	0.00	8.44	--	--	--	--	--	--	--	--	
7/12/1995	--		5.80	0.00	7.58	--	--	--	--	--	--	--	--	
10/12/1995	--		6.64	0.00	6.74	<50	<0.50	<0.50	<0.50	<1.0	<5.0	6.4	--	
2/27/1996	--		4.75	0.00	8.63	<50	<0.5	<1	<1	<1	<10	8.5	--	
5/8/1996	--		5.86	0.00	7.52	--	--	--	--	--	--	--	--	
8/9/1996	--		5.70	0.00	7.68	<50	<0.5	<1.0	<1.0	<1.0	<10	7.9	--	
11/7/1996	--		6.21	0.00	7.17	--	--	--	--	--	--	--	--	
2/10/1997	--		5.14	0.00	8.24	--	--	--	--	--	--	--	--	
8/4/1997	--		6.01	0.00	7.37	<50	<0.5	<1.0	<1.0	<1.0	<10	6.6	--	
1/27/1998	--		4.30	0.00	9.08	--	--	--	--	--	--	--	--	
9/2/1998	--		5.80	0.00	7.58	<50	<0.5	2.2	<1.0	<1.0	<10	6.6	--	
2/24/1999	--		4.34	0.00	9.04	<50	<1.0	<1.0	<1.0	<1.0	<1.0	--	--	
8/30/1999	--		6.59	0.00	6.79	--	--	--	--	--	--	--	--	
2/21/2000	--		4.56	0.00	8.82	<50	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	--	
2/12/2001	--		4.98	0.00	8.40	--	--	--	--	--	--	--	--	j
2/4/2002	--		6.11	0.00	7.27	--	--	--	--	--	--	--	--	j
8/29/2002	--		6.22	0.00	7.16	--	--	--	--	--	--	--	--	j
2/5/2003	--		--	--	--	--	--	--	--	--	--	--	--	f
8/14/2003	--		--	--	--	--	--	--	--	--	--	--	--	o
02/12/2004	P		4.94	0.00	8.44	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	6.0	p
08/12/2004	--		6.22	0.00	7.16	--	--	--	--	--	--	--	--	
02/10/2005	P		5.45	0.00	7.93	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	5.1	
08/11/2005	--		5.77	0.00	7.61	--	--	--	--	--	--	--	--	r

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Former BP Station #11104, 1716 Webster St., Alameda, CA

Well ID and Date Monitored	P/NP	TOC Elevation (feet)	Depth to Water (feet)	LNAPL Thickness (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.														
02/09/2006	P	13.38	5.17	0.00	8.21	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	6.7	
8/10/2006	--		5.86	0.00	7.52	--	--	--	--	--	--	--	--	
2/8/2007	P		6.00	0.00	7.38	<50	<0.50	<0.50	<0.50	<0.50	<0.50	5.34	7.04	
8/8/2007	--		6.68	0.00	6.70	--	--	--	--	--	--	--	--	
2/22/2008	P		5.38	0.00	8.00	54	<0.50	<0.50	<0.50	<0.50	<0.50	3.81	6.87	
8/13/2008	--		6.37	0.00	7.01	--	--	--	--	--	--	--	--	
2/11/2009	P		6.70	0.00	6.68	<50	<0.50	<0.50	<0.50	<0.50	<0.50	0.79	7.18	
8/27/2009	--		6.78	0.00	6.60	--	--	--	--	--	--	--	--	
2/18/2010	P		5.80	0.00	7.58	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.39	6.12	
8/12/2010	--		6.60	0.00	6.78	--	--	--	--	--	--	--	--	
2/17/2011	NP		5.66	0.00	7.72	<50	<0.50	<0.50	<0.50	<0.50	<0.50	0.92	6.5	
7/5/2011	--		6.20	0.00	7.18	--	--	--	--	--	--	--	--	
2/28/2012	P		6.78	0.00	6.60	<50	<0.50	<0.50	<0.50	<0.50	<0.50	2.56	6.20	
8/15/2012	--		6.90	0.00	6.48	--	--	--	--	--	--	--	--	
2/21/2013	P		6.20	0.00	7.18	<50	<0.50	<0.50	<0.50	<0.50	<0.50	2.89	6.58	
MW-4														
3/5/1993	--	11.80	4.81	0.00	6.99	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	
4/1/1993	--		4.80	0.00	7.00	--	--	--	--	--	--	--	--	
7/9/1993	--		5.54	0.00	6.26	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	k
10/8/1993	--		6.28	0.00	5.52	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	k
1/6/1994	--		5.82	0.00	5.98	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	k
4/26/1994	--		5.50	0.00	6.30	<50	<0.5	<0.5	<0.5	<0.5	<5.0	7.4	--	k
7/25/1994	--		5.83	0.00	5.97	<50	<0.5	<0.5	<0.5	<0.5	<5.0	7.2	--	k
10/13/1994	--		6.26	0.00	5.54	<50	<0.5	<0.5	<0.5	<0.5	--	6.7	--	k
1/17/1995	--		4.19	0.00	7.61	--	--	--	--	--	--	--	--	
3/31/1995	--		3.96	0.00	7.84	<50	<0.50	<0.50	<0.50	<1.0	--	7.1	--	
5/1/1995	--		4.49	0.00	7.31	--	--	--	--	--	--	--	--	
7/12/1995	--		5.16	0.00	6.64	--	--	--	--	--	--	--	--	
10/12/1995	--		5.80	0.00	6.00	<50	<0.50	<0.50	<0.50	<1.0	<5.0	6.9	--	
2/27/1996	--		4.22	0.00	7.58	<50	<0.5	<1	<1	<1	<10	8.9	--	

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Former BP Station #11104, 1716 Webster St., Alameda, CA**

Well ID and Date Monitored	P/NP	TOC Elevation (feet)	Depth to Water (feet)	LNAPL Thickness (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.														
5/8/1996	--	11.80	5.00	0.00	6.80	--	--	--	--	--	--	--	--	
8/9/1996	--		5.13	0.00	6.67	<50	<0.5	<1.0	<1.0	<1.0	<10	8.5	--	
11/7/1996	--		5.65	0.00	6.15	--	--	--	--	--	--	--	--	
2/10/1997	--		4.81	0.00	6.99	--	--	--	--	--	--	--	--	
8/4/1997	--		5.72	0.00	6.08	<50	<0.5	<1.0	<1.0	<1.0	<10	6.4	--	
1/27/1998	--		4.06	0.00	7.74	--	--	--	--	--	--	--	--	
9/2/1998	--		4.89	0.00	6.91	<50	<0.5	<1.0	<1.0	<1.0	<10	5.8	--	
2/24/1999	--		3.89	0.00	7.91	<50	<1.0	<1.0	<1.0	<1.0	<1.0	--	--	
8/30/1999	--		5.62	0.00	6.18	--	--	--	--	--	--	--	--	
2/21/2000	--		4.00	0.00	7.80	<50	<0.5	<0.5	<0.5	<0.5	0.66	--	--	
2/12/2001	--		4.93	0.00	6.87	<50	<0.5	<0.5	<0.5	<0.5	0.982	--	--	
2/4/2002	--		4.49	0.00	7.31	<50	<0.5	<0.5	<0.5	<1.0	<0.5	--	--	
8/29/2002	--		5.38	0.00	6.42	--	--	--	--	--	--	--	--	
2/5/2003	--		4.50	0.00	7.30	<50	<0.50	<0.50	<0.50	<0.50	<2.5	--	--	n
8/14/2003	--		--	--	--	--	--	--	--	--	--	--	--	o
02/12/2004	P		4.41	0.00	7.39	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	6.3	p
08/12/2004	--		5.20	0.00	6.60	--	--	--	--	--	--	--	--	
02/10/2005	P		4.43	0.00	7.37	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	5.5	
08/11/2005	--		5.09	0.00	6.71	--	--	--	--	--	--	--	--	
02/09/2006	P		4.32	0.00	7.48	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	6.8	
7/26/2006	--		--	--	--	--	--	--	--	--	--	--	--	
8/10/2006	--		5.07	0.00	6.73	--	--	--	--	--	--	--	--	
2/8/2007	P		5.10	0.00	6.70	<50	<0.50	<0.50	<0.50	<0.50	<0.50	5.63	7.07	
8/8/2007	--		5.55	0.00	6.25	--	--	--	--	--	--	--	--	
2/22/2008	P		4.35	0.00	7.45	<50	<0.50	<0.50	<0.50	<0.50	<0.50	3.61	6.88	
8/13/2008	--		5.70	0.00	6.10	--	--	--	--	--	--	--	--	
2/11/2009	P		6.58	0.00	5.22	<50	<0.50	<0.50	<0.50	<0.50	<0.50	0.66	6.36	
8/27/2009	--		5.64	0.00	6.16	--	--	--	--	--	--	--	--	
2/18/2010	P		4.69	0.00	7.11	<50	<0.50	<0.50	<0.50	<0.50	<0.50	0.92	6.37	
8/12/2010	--		5.39	0.00	6.41	--	--	--	--	--	--	--	--	

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						GRO/TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
MW-4 Cont.														
2/17/2011	P	11.80	4.75	0.00	7.05	<50	<0.50	<0.50	<0.50	<0.50	<0.50	0.84	6.7	
7/5/2011	--		4.91	0.00	6.89	--	--	--	--	--	--	--	--	
2/28/2012	P		5.81	0.00	5.99	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.86	5.76	
8/15/2012	--		5.83	0.00	5.97	--	--	--	--	--	--	--	--	
2/21/2013	P		5.32	0.00	6.48	<50	<0.50	<0.50	<0.50	<1.0	<0.50	2.00	7.19	
MW-5														
4/1/1993	--	11.62	4.77	0.00	6.85	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	
7/9/1993	--		5.40	0.00	6.22	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	k
10/8/1993	--		5.87	0.00	5.75	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	k
1/6/1994	--		5.75	0.00	5.87	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	k
4/26/1994	--		5.49	0.00	6.13	<50	<0.5	<0.5	<0.5	<0.5	<5.0	7.1	--	k
7/25/1994	--		5.69	0.00	5.93	<50	<0.5	<0.5	<0.5	<0.5	<5.0	6.6	--	k
10/13/1994	--		6.03	0.00	5.59	<50	<0.5	<0.5	<0.5	<0.5	--	3.0	--	k
1/17/1995	--		4.74	0.00	6.88	--	--	--	--	--	--	--	--	
3/31/1995	--		4.58	0.00	7.04	<50	<0.50	<0.50	<0.50	<1.0	--	7.1	--	
5/1/1995	--		4.79	0.00	6.83	--	--	--	--	--	--	--	--	
7/12/1995	--		5.32	0.00	6.30	--	--	--	--	--	--	--	--	
10/12/1995	--		5.70	0.00	5.92	<50	<0.50	<0.50	<0.50	<1.0	<5.0	6.7	--	
2/27/1996	--		--	--	--	--	--	--	--	--	--	--	--	f
5/8/1996	--		4.91	0.00	6.71	--	--	--	--	--	--	--	--	
8/9/1996	--		5.01	0.00	6.61	<50	<0.5	<1.0	<1.0	<1.0	<10	7.7	--	
11/7/1996	--		5.54	0.00	6.08	--	--	--	--	--	--	--	--	
2/10/1997	--		4.66	0.00	6.96	--	--	--	--	--	--	--	--	
8/4/1997	--		5.51	0.00	6.11	<50	<0.5	<1.0	<1.0	<1.0	<10	6.9	--	
1/27/1998	--		4.01	0.00	7.61	--	--	--	--	--	--	--	--	
9/2/1998	--		5.17	0.00	6.45	<50	<0.5	<1.0	<1.0	<1.0	<10	6.4	--	
2/24/1999	--		4.52	0.00	7.10	<50	<1.0	<1.0	<1.0	<1.0	<1.0	--	--	
8/30/1999	--		6.02	0.00	5.60	--	--	--	--	--	--	--	--	
2/21/2000	--		4.62	0.00	7.00	<50	<0.5	<0.5	<0.5	<0.5	<0.5	--	--	
2/12/2001	--		4.80	0.00	6.82	<50	<0.5	<0.5	<0.5	<0.5	<0.5	--	--	

Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses
Former BP Station #11104, 1716 Webster St., Alameda, CA

Well ID and Date Monitored	P/NP	TOC Elevation (feet)	Depth to Water (feet)	LNAPL Thickness (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
						GRO/TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
MW-5 Cont.														
2/4/2002	--	11.62	4.63	0.00	6.99	<50	<0.5	<0.5	<0.5	<1.0	<0.5	--	--	
8/29/2002	--		5.15	0.00	6.47	--	--	--	--	--	--	--	--	
2/5/2003	--		4.36	0.00	7.26	<50	<0.50	<0.50	<0.50	<0.50	<2.5	--	--	
8/14/2003	--		--	--	--	--	--	--	--	--	--	--	--	o
02/12/2004	--		--	--	--	--	--	--	--	--	--	--	--	f
08/12/2004	--		4.91	0.00	6.71	--	--	--	--	--	--	--	--	
02/10/2005	P		4.54	0.00	7.08	<50	<0.50	<0.50	<0.50	<0.50	0.90	--	6.1	
08/11/2005	--		4.92	0.00	6.70	--	--	--	--	--	--	--	--	
02/09/2006	--		--	--	--	--	--	--	--	--	--	--	--	s
8/10/2006	--		5.07	0.00	6.55	--	--	--	--	--	--	--	--	
2/8/2007	P		5.10	0.00	6.52	<50	<0.50	<0.50	<0.50	<0.50	<0.50	6.01	7.20	
8/8/2007	--		5.42	0.00	6.20	--	--	--	--	--	--	--	--	
2/22/2008	P		4.20	0.00	7.42	<50	<0.50	<0.50	<0.50	<0.50	<0.50	5.52	7.25	
8/13/2008	--		5.27	0.00	6.35	--	--	--	--	--	--	--	--	
2/11/2009	P		4.81	0.00	6.81	<50	<0.50	<0.50	<0.50	<0.50	<0.50	0.87	6.71	
8/27/2009	--		4.99	0.00	6.63	--	--	--	--	--	--	--	--	
2/18/2010	P		5.60	0.00	6.02	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.35	6.87	
8/12/2010	--		--	--	--	--	--	--	--	--	--	--	--	f
2/17/2011	--		--	--	--	--	--	--	--	--	--	--	--	f, paved over
QC-2														
7/9/1993	--	NS	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	g,k
10/8/1993	--		--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	g,k
1/6/1994	--		--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	g,k
4/26/1994	--		--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	g,k
7/25/1994	--		--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	g,k
10/13/1994	--		--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	g,k
1/17/1995	--		--	--	--	<50	<0.5	<0.5	<0.5	<1	--	--	--	g
3/31/1995	--		--	--	--	<50	<0.50	<0.50	<0.50	<1.0	--	--	--	g
7/12/1995	--		--	--	--	<50	<0.50	<0.50	<0.50	<1.0	--	--	--	g
10/12/1995	--		--	--	--	<50	<0.50	<0.50	<0.50	<1.0	<5.0	--	--	g

Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses
Former BP Station #11104, 1716 Webster St., Alameda, CA

Well ID and Date Monitored	P/NP	TOC Elevation (feet)	Depth to Water (feet)	LNAPL Thickness (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
						GRO/TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
QC-2 Cont.														
2/27/1996	--	NS	--	--	--	<50	<0.5	<1	<1	<1	<10	--	--	g
5/9/1996	--		--	--	--	<50	<0.5	<1	<1	<1	<10	--	--	g
RW-1														
1/6/1994	--	11.84	5.59	0.00	6.25	24,000	3,700	210	830	2,000	4,562	--	--	c,d,k
1/6/1994	--		5.59	0.00	6.25	23,000	3,800	210	840	2,100	4,663	--	--	c,k
4/26/1994	--		5.21	0.00	6.63	22,000	3,300	110	700	1,700	6,909	--	--	c,d,k
4/26/1994	--		5.21	0.00	6.63	24,000	3,500	120	800	1,700	8,145	6.4	--	c,k
7/25/1994	--		5.52	0.00	6.32	31,000	4,800	290	1,100	1,700	<5.0	5.5	--	c,k
7/25/1994	--		5.52	0.00	6.32	28,000	4,400	240	960	1,400	20,608	--	--	c,d,k
10/13/1994	--		6.05	0.00	5.79	20,000	4,200	46	990	440	--	6.8	--	k
1/17/1995	--		4.02	0.00	7.82	9,600	1,500	65	300	2,700	--	7.7	--	
3/31/1995	--		3.81	0.00	8.03	16,000	1,500	780	370	2,000	--	7.8	--	
5/1/1995	--		4.21	0.00	7.63	--	--	--	--	--	--	--	--	
7/12/1995	--		4.93	0.00	6.91	22,000	3,700	150	950	2,800	--	7.2	--	
10/12/1995	--		5.46	0.00	6.38	30,000	1,600	1,500	1,700	8,500	4,300	7.0	--	
2/27/1996	--		4.00	0.00	7.84	1,600	30	23	38	420	50	--	--	d
2/27/1996	--		4.00	0.00	7.84	1,800	30	24	41	440	52	7.7	--	
5/8/1996	--		4.65	0.00	7.19	--	--	--	--	--	--	--	--	
5/9/1996	--		--	--	--	2,900	15	15	78	700	<50	--	--	d
5/9/1996	--		--	--	--	3,200	19	19	97	800	<50	7.1	--	
8/9/1996	--		4.96	0.00	6.88	--	--	--	--	--	--	--	--	
8/12/1996	--		--	--	--	6,900	210	270	390	1,920	<100	7.9	--	
8/12/1996	--		--	--	--	8,200	270	330	450	2,330	<100	--	--	d
11/7/1996	--		5.50	0.00	6.34	6,800	360	45	<10	<10	500	--	--	d
11/7/1996	--		5.50	0.00	6.34	6,100	320	45	<10	<10	430	6.9	--	
2/10/1997	--		3.85	0.00	7.99	170,000	<120	<250	<250	<250	150,000	6.7	--	
8/4/1997	--		4.72	0.00	7.12	<25000	580	450	630	3,700	230,000	6.9	--	
1/27/1998	--		3.80	0.00	8.04	52,000	380	330	490	2,970	38,000	6.1	--	
1/27/1998	--		3.80	0.00	8.04	51,000	380	300	480	2,980	36,000	--	--	d
9/2/1998	--		4.91	0.00	6.93	280,000	2,400	<50	1,400	3,170	270,000	--	--	d

Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses
Former BP Station #11104, 1716 Webster St., Alameda, CA

Well ID and Date Monitored	P/NP	TOC Elevation (feet)	Depth to Water (feet)	LNAPL Thickness (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
						GRO/TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
RW-1 Cont.														
9/2/1998	--	11.84	4.91	0.00	6.93	260,000	2,500	56	1,400	3,070	250,000	6.6	--	
2/24/1999	--		4.16	0.00	7.68	120	<1.0	<1.0	1.5	13	130/140	--	--	h
8/30/1999	--		5.52	0.00	6.32	3,100	320	<25	120	28	60,000	--	--	
2/21/2000	--		3.68	0.00	8.16	340 i	8.6	1.8	11	66	2,500	--	--	i
8/8/2000	--		4.85	0.00	6.99	1,600	3.2	<0.5	0.82	1.2	19,000	--	--	
2/12/2001	--		4.26	0.00	7.58	1,500	1.33	<0.5	<0.5	5.69	2,420	--	--	
8/13/2001	--		5.34	0.00	6.50	290	<0.5	<0.5	<0.5	<1.5	314	--	--	
2/4/2002	--		4.08	0.00	7.76	570	9.15	0.874	19.2	83.8	97.4	--	--	
8/29/2002	--		5.12	0.00	6.72	<50	0.59	<0.50	<0.50	<0.50	19	--	--	
2/5/2003	--		5.21	0.00	6.63	<50	<0.50	<0.50	0.68	1.7	18	--	--	n
8/14/2003	--		5.07	0.00	6.77	<500	<5.0	<5.0	<5.0	5.4	490	--	--	p
02/12/2004	P		4.19	0.00	7.65	120	1.6	<1.0	3.0	4.1	51	--	5.9	
08/12/2004	P		5.11	0.00	6.73	170	6.9	<0.50	4.5	10	57	--	6.0	
02/10/2005	P		4.15	0.00	7.69	64	1.6	<0.50	0.94	<0.50	39	--	5.9	
08/11/2005	P		4.82	0.00	7.02	480	6.5	<0.50	7.0	14	40	--	6.5	
02/09/2006	P		3.95	0.00	7.89	<50	1.3	<0.50	0.83	0.80	7.8	--	6.9	
8/10/2006	--		4.90	0.00	6.94	780	43	<1.0	150	200	9.9	--	6.5	
2/8/2007	P		5.03	0.00	6.81	140	4.0	<1.0	<1.0	1.8	14	4.17	6.99	
8/8/2007	P		5.40	0.00	6.44	150	4.4	<0.50	<0.50	1.9	3.0	3.92	6.91	
2/22/2008	P		4.13	0.00	7.71	120	0.87	<0.50	<0.50	<0.50	13	3.68	6.78	
8/13/2008	P		5.50	0.00	6.34	1,900	60	2.2	4.1	670	9.0	0.45	8.72	
2/11/2009	P		5.35	0.00	6.49	220	14	<0.50	<0.50	<0.50	6.2	0.54	6.92	
8/27/2009	P		5.40	0.00	6.44	630	11	0.87	<0.50	180	9.9	0.58	7.23	
2/18/2010	NP		4.57	0.00	7.27	<50	<0.50	<0.50	<0.50	<0.50	6.1	1.08	6.73	
8/12/2010	NP		5.38	0.00	6.46	100	<0.50	<0.50	<0.50	<0.50	23	0.65	7.5	
2/17/2011	NP		4.88	0.00	6.96	<50	<0.50	<0.50	<0.50	<0.50	3.2	0.68	6.6	
7/5/2011	--		4.92	0.01	6.93	--	--	--	--	--	--	--	--	
2/28/2012	--		5.82	0.06	6.07	--	--	--	--	--	--	--	--	
8/15/2012	--		5.62	0.01	6.23	--	--	--	--	--	--	--	--	
2/21/2013	P		5.03	0.00	6.81	110	<0.50	<0.50	<0.50	<1.0	7.9	1.39	7.21	

Symbols & Abbreviations:

DO = Dissolved oxygen
ft bgs = Feet below ground surface
ft MSL = Feet above mean sea level
GRO = Gasoline range organics, range C4-C12
mg/L = Milligrams per liter
MTBE = Methyl tert-butyl ether
NP = Well not purged prior to sampling
P = Well purged prior to sampling
TPH-g = Total petroleum hydrocarbons as gasoline
µg/L = Micrograms per liter
--/-- = Not applicable/available/analyzed/measured
< = Not detected at or above specified laboratory reporting limit
PACE = Pace Analytical Services, Inc.
ATI = Analytical Technologies, Inc.
SPL = Southern Petroleum Laboratories
SEQ/SEQM = Sequoia Analytical/Sequoia Morgan Hill (Laboratories)
CEL = CalScience Environmental Laboratories, Inc.
TOC = Top of casing measured in ft MSL
DTW = Depth to water measured in ft bgs
GWE = Groundwater elevation measured in ft MSL

Footnotes:

a = TOC elevations surveyed in reference to USGS benchmark 14.108 ft MSL at northwest corner of Webster Street and Pacific Avenue
b = Groundwater elevations in ft MSL
c = A copy of the documentation for this data is included in Appendix C of Alisto report 10-155-07-001
d = Blind duplicate
e = Sample also analyzed for cadmium, nickel, chromium, lead, and zinc. None were detected above the reported detection limit
f = Well inaccessible
g = Travel blank
h = MTBE by EPA Methods 8020/8260
i = Gasoline does not include MTBE
j = Unable to sample
k = A copy of the documentation for this data can be found in Baline Tech Services report 010813-N-2. No chromatograms could be located for MTBE data from wells MW-2, MW-3, MW-4, MW-5, and QC-2, sampled on July 9, 1993; all wells sampled on October 8, 1993; wells MW-1, MW-2, and MW-3, sampled on January 6, 1994; and all wells sampled on October 13, 1994
l = Chromatogram Pattern: Gasoline C6-C10
m = The concentration indicated for this analyte is an estimated value above the calibration range of the instrument
n = The closing calibration was outside acceptance limits by 1% high. This should be considered inevaluating the result. The avg. % difference for all analytes met the 15% requirement and the QC suggests that calibration linearity is not a factor
o = The original scope of work only called for annual gauging of well. This issue has been addressed, and in the future, gauging of this well will be semi-annual 1st and 3rd quarter.
p = Groundwater samples analyzed by EPA Method 8260B for TPH-g, BTEX, and MTBE
q = Beginning in the fourth quarter 2003, the laboratory modified the reported analyte list. TPH-g was changed to GRO. The resulting data may be impacted by the potential inclusion of non-TPH-g analytes within the requested fuel range resulting in a higher concentration being reported
r = Possible obstruction in well
s = Car parked over well
t = Sample > 4x spike concentration

Notes:

During the second quarter of 2002, URS Corporation assumed groundwater monitoring activities for BP

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

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

accuracy of this information

Table 2. Summary of Fuel Additives Analytical Data
Former BP Station #11104, 1716 Webster St., Alameda, CA

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
MW-1									
7/9/1993	--	--	12,952	--	--	--	--	--	
7/9/1993	--	--	11,919	--	--	--	--	--	
4/26/1994	--	--	16,663	--	--	--	--	--	
7/25/1994	--	--	26,428	--	--	--	--	--	
10/12/1995	--	--	14,000	--	--	--	--	--	
10/12/1995	--	--	15,000	--	--	--	--	--	
2/27/1996	--	--	5,500	--	--	--	--	--	
5/9/1996	--	--	2,700	--	--	--	--	--	
8/12/1996	--	--	1,800	--	--	--	--	--	
11/7/1996	--	--	2,100	--	--	--	--	--	
2/10/1997	--	--	160,000	--	--	--	--	--	
2/10/1997	--	--	160,000	--	--	--	--	--	
8/4/1997	--	--	260,000	--	--	--	--	--	
8/4/1997	--	--	250,000	--	--	--	--	--	
1/27/1998	--	--	490,000	--	--	--	--	--	
9/2/1998	--	--	230,000	--	--	--	--	--	
2/24/1999	--	--	90,000/200,000	--	--	--	--	--	
8/30/1999	--	--	48,000	--	--	--	--	--	
2/21/2000	--	--	31,000	--	--	--	--	--	
8/8/2000	--	--	60,000	--	--	--	--	--	
2/12/2001	--	--	18,000	--	--	--	--	--	
8/13/2001	--	--	5,590	--	--	--	--	--	
2/4/2002	--	--	2,470	--	--	--	--	--	
8/29/2002	--	--	3,100	--	--	--	--	--	
2/5/2003	--	--	590 m,n	--	--	--	--	--	
8/14/2003	<10,000	<2,000	4,500	<50	<50	89	<50	<50	a
02/12/2004	<2,000	960	1,200	<10	<10	33	<10	<10	
08/12/2004	<1,000	730	260	<5.0	<5.0	9.3	<5.0	<5.0	
02/10/2005	<1,000	2,300	730	<5.0	<5.0	26	<5.0	<5.0	b
08/11/2005	<1,000	460	190	<5.0	<5.0	10	<5.0	<5.0	
02/09/2006	<3,000	400	380	<5.0	<5.0	18	<5.0	<5.0	b, c
8/10/2006	<3,000	<200	47	<5.0	<5.0	<5.0	<5.0	<5.0	

Table 2. Summary of Fuel Additives Analytical Data
Former BP Station #11104, 1716 Webster St., Alameda, CA

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
MW-1 Cont.									
2/8/2007	<3,000	210	130	<5.0	<5.0	7.8	<5.0	<5.0	
8/8/2007	<300	190	140	<0.50	<0.50	8.7	<0.50	<0.50	d (MTBE)
2/22/2008	<300	51	59	<0.50	<0.50	3.1	<0.50	<0.50	
8/13/2008	<3,000	340	370	<5.0	<5.0	22	<5.0	<5.0	
2/11/2009	<1,200	480	68	<2.0	<2.0	3.4	<2.0	<2.0	
8/27/2009	<1,200	180	20	<2.0	<2.0	<2.0	<2.0	<2.0	
2/18/2010	<1,200	160	48	<2.0	<2.0	2.8	<2.0	<2.0	
8/12/2010	<1,200	140	76	<2.0	<2.0	6.4	<2.0	<2.0	
2/17/2011	<1,200	120	40	<2.0	<2.0	3.1	<2.0	<2.0	
7/5/2011	<1,500	59	22	<2.5	<2.5	<2.5	<2.5	<2.5	
2/28/2012	<6,000	750	610	<10	<10	64	<10	<10	
8/15/2012	<150	180	16	<0.50	<0.50	1.3	<0.50	<0.50	
2/21/2013	<150	79	14	<0.50	<0.50	1.5	<0.50	<0.50	
MW-2									
4/26/1994	--	--	<5.0	--	--	--	--	--	
7/25/1994	--	--	11.59	--	--	--	--	--	
10/12/1995	--	--	<5.0	--	--	--	--	--	
2/27/1996	--	--	<10	--	--	--	--	--	
8/9/1996	--	--	<10	--	--	--	--	--	
8/4/1997	--	--	<10	--	--	--	--	--	
9/2/1998	--	--	110	--	--	--	--	--	
2/24/1999	--	--	8.2	--	--	--	--	--	
2/21/2000	--	--	0.72	--	--	--	--	--	
2/12/2001	--	--	<0.5	--	--	--	--	--	
2/4/2002	--	--	<0.5	--	--	--	--	--	
2/5/2003	--	--	<2.5	--	--	--	--	--	
02/12/2004	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
02/10/2005	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	b
02/09/2006	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	b, c
2/8/2007	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
2/22/2008	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	

Table 2. Summary of Fuel Additives Analytical Data
Former BP Station #11104, 1716 Webster St., Alameda, CA

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
MW-2 Cont.									
2/11/2009	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
2/18/2010	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
2/17/2011	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
2/28/2012	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
2/21/2013	<150	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
MW-3									
4/26/1994	--	--	<5.0	--	--	--	--	--	
7/25/1994	--	--	<5.0	--	--	--	--	--	
10/12/1995	--	--	<5.0	--	--	--	--	--	
2/27/1996	--	--	<10	--	--	--	--	--	
8/9/1996	--	--	<10	--	--	--	--	--	
8/4/1997	--	--	<10	--	--	--	--	--	
9/2/1998	--	--	<10	--	--	--	--	--	
2/24/1999	--	--	<1.0	--	--	--	--	--	
2/21/2000	--	--	<0.5	--	--	--	--	--	
02/12/2004	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
02/10/2005	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	b
02/09/2006	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
2/8/2007	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
2/22/2008	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
2/11/2009	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
2/18/2010	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
2/17/2011	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
2/28/2012	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
2/21/2013	<150	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
MW-4									
1/6/1994	--	--	<5.0	--	--	--	--	--	
4/26/1994	--	--	<5.0	--	--	--	--	--	
7/25/1994	--	--	<5.0	--	--	--	--	--	
10/12/1995	--	--	<5.0	--	--	--	--	--	

Table 2. Summary of Fuel Additives Analytical Data
Former BP Station #11104, 1716 Webster St., Alameda, CA

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
MW-4 Cont.									
2/27/1996	--	--	<10	--	--	--	--	--	
8/9/1996	--	--	<10	--	--	--	--	--	
8/4/1997	--	--	<10	--	--	--	--	--	
9/2/1998	--	--	<10	--	--	--	--	--	
2/24/1999	--	--	<1.0	--	--	--	--	--	
2/21/2000	--	--	0.66	--	--	--	--	--	
2/12/2001	--	--	0.982	--	--	--	--	--	
2/4/2002	--	--	<0.5	--	--	--	--	--	
2/5/2003	--	--	<2.5	--	--	--	--	--	
02/12/2004	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
02/10/2005	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	b, c
02/09/2006	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
2/8/2007	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
2/22/2008	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
2/11/2009	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
2/18/2010	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
2/17/2011	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
2/28/2012	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
2/21/2013	<150	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
MW-5									
1/6/1994	--	--	<5.0	--	--	--	--	--	
4/26/1994	--	--	<5.0	--	--	--	--	--	
7/25/1994	--	--	<5.0	--	--	--	--	--	
10/12/1995	--	--	<5.0	--	--	--	--	--	
8/9/1996	--	--	<10	--	--	--	--	--	
8/4/1997	--	--	<10	--	--	--	--	--	
9/2/1998	--	--	<10	--	--	--	--	--	
2/24/1999	--	--	<1.0	--	--	--	--	--	
2/21/2000	--	--	<0.5	--	--	--	--	--	
2/12/2001	--	--	<0.5	--	--	--	--	--	
2/4/2002	--	--	<0.5	--	--	--	--	--	

Table 2. Summary of Fuel Additives Analytical Data
Former BP Station #11104, 1716 Webster St., Alameda, CA

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
MW-5 Cont.									
2/5/2003	--	--	<2.5	--	--	--	--	--	
02/10/2005	<100	<20	0.90	<0.50	<0.50	<0.50	<0.50	<0.50	b, c
2/8/2007	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
2/22/2008	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
2/11/2009	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
2/18/2010	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
QC-2									
1/6/1994	--	--	<5.0	--	--	--	--	--	
4/26/1994	--	--	<5.0	--	--	--	--	--	
7/25/1994	--	--	<5.0	--	--	--	--	--	
10/12/1995	--	--	<5.0	--	--	--	--	--	
2/27/1996	--	--	<10	--	--	--	--	--	
5/9/1996	--	--	<10	--	--	--	--	--	
RW-1									
1/6/1994	--	--	4,562	--	--	--	--	--	
1/6/1994	--	--	4,663	--	--	--	--	--	
4/26/1994	--	--	6,909	--	--	--	--	--	
4/26/1994	--	--	8,145	--	--	--	--	--	
7/25/1994	--	--	<5.0	--	--	--	--	--	
7/25/1994	--	--	20,608	--	--	--	--	--	
10/12/1995	--	--	4,300	--	--	--	--	--	
2/27/1996	--	--	50	--	--	--	--	--	
2/27/1996	--	--	52	--	--	--	--	--	
5/9/1996	--	--	<50	--	--	--	--	--	
5/9/1996	--	--	<50	--	--	--	--	--	
8/12/1996	--	--	<100	--	--	--	--	--	
8/12/1996	--	--	<100	--	--	--	--	--	
11/7/1996	--	--	500	--	--	--	--	--	
11/7/1996	--	--	430	--	--	--	--	--	
2/10/1997	--	--	150,000	--	--	--	--	--	

Table 2. Summary of Fuel Additives Analytical Data
Former BP Station #11104, 1716 Webster St., Alameda, CA

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
RW-1 Cont.									
8/4/1997	--	--	230,000	--	--	--	--	--	
1/27/1998	--	--	38,000	--	--	--	--	--	
1/27/1998	--	--	36,000	--	--	--	--	--	
9/2/1998	--	--	270,000	--	--	--	--	--	
9/2/1998	--	--	250,000	--	--	--	--	--	
2/24/1999	--	--	130/140	--	--	--	--	--	
8/30/1999	--	--	60,000	--	--	--	--	--	
2/21/2000	--	--	2,500	--	--	--	--	--	
8/8/2000	--	--	19,000	--	--	--	--	--	
2/12/2001	--	--	2,420	--	--	--	--	--	
8/13/2001	--	--	314	--	--	--	--	--	
2/4/2002	--	--	97.4	--	--	--	--	--	
8/29/2002	--	--	19	--	--	--	--	--	
2/5/2003	--	--	18	--	--	--	--	--	
8/14/2003	<1,000	<200	490	<5.0	<5.0	11	<5.0	<5.0	a
02/12/2004	<200	83	51	<1.0	<1.0	1.2	<1.0	<1.0	
08/12/2004	<100	500	57	<0.50	<0.50	1.0	<0.50	<0.50	
02/10/2005	<100	69	39	<0.50	<0.50	0.68	<0.50	<0.50	b, c
08/11/2005	<100	390	40	<0.50	<0.50	1.3	<0.50	<0.50	c
02/09/2006	<300	31	7.8	<0.50	<0.50	<0.50	<0.50	<0.50	
8/10/2006	<600	190	9.9	<1.0	<1.0	<1.0	<1.0	<1.0	
2/8/2007	<600	220	14	<1.0	<1.0	<1.0	<1.0	<1.0	
8/8/2007	<300	170	3.0	<0.50	<0.50	<0.50	<0.50	<0.50	
2/22/2008	<300	56	13	<0.50	<0.50	<0.50	<0.50	<0.50	
8/13/2008	<300	38	9.0	<0.50	<0.50	<0.50	<0.50	<0.50	
2/11/2009	<300	69	6.2	<0.50	<0.50	<0.50	<0.50	<0.50	
8/27/2009	<300	100	9.9	<0.50	<0.50	<0.50	<0.50	<0.50	
2/18/2010	<300	<10	6.1	<0.50	<0.50	<0.50	<0.50	<0.50	
8/12/2010	<300	250	23	<0.50	<0.50	0.81	<0.50	<0.50	
2/17/2011	<300	<10	3.2	<0.50	<0.50	<0.50	<0.50	<0.50	
2/21/2013	<150	28	7.9	<0.50	<0.50	<0.50	<0.50	<0.50	

Symbols & Abbreviations:

TBA = tert-Butyl alcohol

MTBE = Methyl tert-butyl ether

DIPE = Diisopropyl ether

ETBE = Ethyl tert-butyl ether

TAME = tert-Amyl Methyl ether

1,2-DCA = 1,2-Dibromoethane

EDB = 1,2-Dichloroethane

µg/L = Micrograms per liter

< = Not detected at or above specified laboratory reporting limit

-- = Not sampled/analyzed

Footnotes:

a = The continuing calibration was outside of client contractual acceptance limits by 3.4% low. However, it was within the method acceptance limit. The data should still be useful for its intended purpose

b = Possible high bias for 1,2-DCA due to CCV falling outside acceptance criteria

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

d = Sample > 4x spike concentration

Notes:

All fuel oxygenate compounds analyzed using EPA Method 8260B

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

Table 3. Historical Groundwater Gradient - Direction and Magnitude
Former BP Station #11104, 1716 Webster St., Alameda, CA

Date Measured	Approximate Gradient Direction	Approximate Gradient Magnitude (ft/ft)
2/9/2006	North-Northwest	0.007
8/10/2006	North-Northwest	0.007
2/8/2007	North-Northwest	0.007
8/8/2007	North-Northwest	0.004
9/11/2007	East	0.006
2/22/2008	North-Northwest	0.003
8/13/2008	North-Northwest	0.007
2/11/2009	Northeast	0.004
8/27/2009	Northeast	0.004
2/18/2010	North-Northwest	0.008
8/12/2010	North-Northeast	0.005
2/17/2011	North-Northwest	0.008
7/5/2011	North-Northeast	0.003
2/28/2012	North-Northeast	0.005
8/15/2012	North-Northeast	0.003
2/21/2013	North-Northeast	0.005

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 turbidity¹. Parameters are considered stable when two (2) consecutive readings recorded three (3) minutes apart fall within ranges provided below in Table 1. In the event that the parameters have not stabilized and five (5) well casing volumes have been removed, purging activities will cease and be considered complete. Once the well is purged, a groundwater sample(s) is collected from the well using a new disposable bailer. If a new disposable bailer was used for purging, that bailer may be used to collect the sample(s). A sample is not collected if the well is inadvertently purged dry.

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

Parameter	Stabilization Criterion
Temperature	± 0.2°C (± 0.36°F)
pH	± 0.1 standard units
Conductivity	± 3%
Dissolved oxygen	± 10%
Oxidation reduction potential	± 10 mV
Turbidity 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

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.

minimize drawdown and mixing of the water column in the well casing. This is accomplished by pumping the well using a decontaminated pump with new disposable plastic discharge or suction tubing or dedicated well tubing at a low flow rate while evaluating the groundwater elevation during pumping.

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 turbidity¹. 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.

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



DAILY REPORT

Page 1 of 1

Project: BP 11104 Project No.: 06-88-644

Field Representative(s): A. Martinez / J. Ramos Day: Thursday Date: 2/21/13

Time Onsite: From: 0700 To: ; From: To: ; From: To:

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

Weather: Sunny & cool

Equipment In Use: Peristaltic pump, water level meter, interface probe, water quality meter

Visitors: None

Table with 2 columns: TIME and WORK DESCRIPTION. Includes entries for 0700, 0740, 0810, 0840, 0905, 0935, and 1030.

Signature: [Handwritten Signature]



GROUNDWATER MONITORING SITE SHEET

Project: BP 1104 Project No.: 06-88-644 Date: 2/21/13
 Field Representative: AM/JR 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	6				0930			5.07	15.25				
MW-2	4				0845			5.49	15.25				
MW-3	3				0819			6.20	15.03				
MW-4	2				0750			5.32	14.62				
MW-5	1				Well paved over								
RW-1	5				0908			5.03	22.62				

* 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: [Handwritten Signature]



GROUNDWATER SAMPLING DATA SHEET

Project: BP 211104 Project No.: 06-88-644 Date: 2-21-13
 Field Representative: JR/AM
 Well ID: MW-1 Start Time: _____ End Time: _____ Total Time (minutes): _____

PURGE EQUIPMENT		<input type="checkbox"/> Disp. Bailer	<input type="checkbox"/> 120V Pump	<input checked="" type="checkbox"/> Flow Cell
<input checked="" type="checkbox"/> Disp. Tubing		<input type="checkbox"/> 12V Pump	<input checked="" type="checkbox"/> 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		LOW-FLOW		
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)			Previous Low-Flow Purge Rate: _____ (lpm)	
Initial Depth to Water (b): _____ (ft)			Total Well Depth (a): <u>15.85</u> (ft)	
Water Column Height (WCH) = (a - b): _____ (ft)			Initial Depth to Water (b): <u>5.07</u> (ft)	
Water Column Volume (WCV) = WCH x Unit Volume: _____ (gal)			Pump In-take Depth = b + (a-b)/2: <u>10.21</u> (ft)	
Three Casing Volumes = WCV x 3: _____ (gal)			Maximum Allowable Drawdown = (a-b)/8: <u>1.29</u> (ft)	
Five Casing Volumes = WCV x 5: _____ (gal)		Low-Flow Purge Rate: _____ (Lpm)*		
Pump Depth (if pump used): _____ (ft)		Comments: _____		

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

GROUNDWATER STABILIZATION PARAMETER RECORD

Time (24:00)	Cumulative Volume (L)	Temperature °C	pH	Conductivity µS or (mS)	DO mg/L	ORP mV	Turbidity NTU	NOTES
<u>0945</u>	<u>0</u>	<u>16.10</u>	<u>7.18</u>	<u>0.642</u>	<u>2.74</u>	<u>-78</u>	<u>123</u>	Odor, color, sheen or other
<u>0947</u>	<u>0.5</u>	<u>16.20</u>	<u>7.20</u>	<u>0.649</u>	<u>2.21</u>	<u>-100</u>	<u>-</u>	
<u>0949</u>	<u>1.0</u>	<u>16.33</u>	<u>7.31</u>	<u>0.653</u>	<u>1.75</u>	<u>-114</u>	<u>-</u>	
<u>0951</u>	<u>1.5</u>	<u>16.39</u>	<u>7.33</u>	<u>0.657</u>	<u>1.99</u>	<u>-122</u>	<u>-</u>	
<u>0953</u>	<u>2.0</u>	<u>16.42</u>	<u>7.33</u>	<u>0.658</u>	<u>1.28</u>	<u>-123</u>	<u>123</u>	
Previous Stabilized Parameters								

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

SAMPLE COLLECTION RECORD		GEOCHEMICAL PARAMETERS	
Depth to Water at Sampling: <u>5.31</u> (ft)		Parameter	Time
Sample Collected Via: <input type="checkbox"/> Disp. Bailer <input type="checkbox"/> Dedicated Pump Tubing		Measurement	
<input checked="" type="checkbox"/> Disp. Pump Tubing Other: _____		DO (mg/L)	
Sample ID: <u>MW-1</u> Sample Collection Time: <u>0955</u> (24:00)		Ferrous Iron (mg/L)	
Containers (#): <u>6</u> VOA (<input checked="" type="checkbox"/> preserved or <input type="checkbox"/> unpreserved) _____ Liter Amber		Redox Potential (mV)	
Other: _____ Other: _____		Alkalinity (mg/L)	
Other: _____ Other: _____		Other:	
Other: _____ Other: _____		Other:	

Signature: JR/AM



GROUNDWATER SAMPLING DATA SHEET

Page 3 of 6

Project: BP 11104 Project No.: 06-88-644 Date: 2-21-13

Field Representative: JR/AM

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

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

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

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

PREDETERMINED WELL VOLUME		LOW-FLOW	
Casing Diameter Unit Volume (gal/ft) (circle one)		Previous Low-Flow Purge Rate: _____ (lpm)	
1" (0.04) 1.25" (0.08) 2" (0.17) 3" (0.38) Other: _____		Total Well Depth (a): <u>15.25</u> (ft)	
4" (0.66) 6" (1.50) 8" (2.60) 12" (5.81) _____ (____)		Initial Depth to Water (b): <u>5.49</u> (ft)	
Total Well Depth (a): _____ (ft)		Pump In-take Depth = b + (a-b)/2: <u>10.37</u> (ft)	
Initial Depth to Water (b): _____ (ft)		Maximum Allowable Drawdown = (a-b)/8: <u>1.22</u> (ft)	
Water Column Height (WCH) = (a - b): _____ (ft)		Low-Flow Purge Rate: _____ (lpm)*	
Water Column Volume (WCV) = WCH x Unit Volume: _____ (gal)		Comments: _____	
Three Casing Volumes = WCV x 3: _____ (gal)		*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.	
Five Casing Volumes = WCV x 5: _____ (gal)			
Pump Depth (if pump used): _____ (ft)			

GROUNDWATER STABILIZATION PARAMETER RECORD

Time (24:00)	Cumulative Volume (L)	Temperature °C	pH	Conductivity μS or mS	DO mg/L	ORP mV	Turbidity NTU	NOTES Odor, color, sheen or other
<u>0848</u>	<u>0</u>	<u>17.34</u>	<u>7.08</u>	<u>0.576</u>	<u>3.91</u>	<u>122</u>	<u>183</u>	
<u>0850</u>	<u>0.5</u>	<u>18.14</u>	<u>7.08</u>	<u>0.568</u>	<u>3.41</u>	<u>120</u>		
<u>0852</u>	<u>1.0</u>	<u>18.49</u>	<u>7.09</u>	<u>0.565</u>	<u>3.12</u>	<u>117</u>		
<u>0854</u>	<u>1.5</u>	<u>18.68</u>	<u>7.11</u>	<u>0.564</u>	<u>3.01</u>	<u>114</u>		
<u>0856</u>	<u>2.0</u>	<u>18.86</u>	<u>7.13</u>	<u>0.564</u>	<u>2.88</u>	<u>111</u>		
<u>0858</u>	<u>2.5</u>	<u>18.92</u>	<u>7.14</u>	<u>0.563</u>	<u>2.81</u>	<u>110</u>	<u>123</u>	

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

SAMPLE COLLECTION RECORD		GEOCHEMICAL PARAMETERS	
Depth to Water at Sampling: <u>5.74</u> (ft)		Parameter	Time
Sample Collected Via: <input type="checkbox"/> Disp. Bailer <input type="checkbox"/> Dedicated Pump Tubing <input checked="" type="checkbox"/> Disp. Pump Tubing Other: _____		DO (mg/L)	
Sample ID: <u>MW-2</u> Sample Collection Time: <u>0900</u> (24:00)		Ferrous Iron (mg/L)	
Containers (#): <u>6</u> VOA (<input type="checkbox"/> preserved or <input type="checkbox"/> unpreserved) <input type="checkbox"/> Liter Amber		Redox Potential (mV)	
Other: _____ Other: _____		Alkalinity (mg/L)	
Other: _____ Other: _____		Other:	
Other: _____ Other: _____		Other:	

Signature: JR/AM

Project: BP 1104 Project No.: 06-88-644 Date: 2-21-13

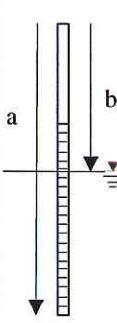
 Field Representative: AM/JP

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

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

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

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

PREDETERMINED WELL VOLUME	a	b	LOW-FLOW
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)			

GROUNDWATER STABILIZATION PARAMETER RECORD

Time (24:00)	Cumulative Volume (L)	Temperature °C	pH	Conductivity μS or (mS)	DO mg/L	ORP mV	Turbidity NTU	NOTES Odor, color, sheen or other
0755	0	12.73	6.82	0.405	4.71	95	349	
0757	0.5	15.83	6.98	0.384	2.80	87	—	
0759	1.0	16.62	67.07	0.378	2.35	84	—	
0801	1.5	17.00	7.14	0.375	2.03	85	—	
0803	2.0	17.09	7.19	0.375	2.00	84	311	
Previous Stabilized Parameters								

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

SAMPLE COLLECTION RECORD	GEOCHEMICAL PARAMETERS		
Depth to Water at Sampling: <u>5.46</u> (ft)	Parameter	Time	Measurement
Sample Collected Via: _____ Disp. Bailer _____ Dedicated Pump Tubing <input checked="" type="checkbox"/> Disp. Pump Tubing Other: _____	DO (mg/L)		
Sample ID: <u>MW-4</u> Sample Collection Time: <u>0805</u> (24:00)	Ferrous Iron (mg/L)		
Containers (#): <u>6</u> VOA (<input checked="" type="checkbox"/> preserved or _____ unpreserved) _____ Liter Amber	Redox Potential (mV)		
Other: _____ Other: _____	Alkalinity (mg/L)		
Other: _____ Other: _____	Other:		
	Other:		

 Signature: James Rann

Project: BP 1104 Project No.: 06-08-644 Date: 2-21-13

Field Representative: JR/AM

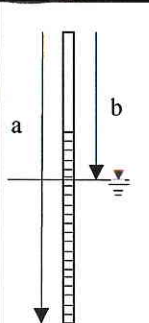
Well ID: Rw-1 Start Time: _____ End Time: _____ Total Time (minutes): _____

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

WELL HEAD INTEGRITY (cap, lock, vault, etc.) _____ Comments: _____
 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): 22.62 (ft)
 Initial Depth to Water (b): 5.03 (ft)
 Pump In-take Depth = b + (a-b)/2: 13.03 (ft)
 Maximum Allowable Drawdown = (a-b)/8: 2.20 (ft)
 Low-Flow Purge Rate: _____ (Lpm)*
 Comments: _____
 *Low-flow purge rate should be within range of instruments used but should not exceed 0.25 gpm. Drawdown should not exceed Maximum Allowable Drawdown.

GROUNDWATER STABILIZATION PARAMETER RECORD

Time (24:00)	Cumulative Volume (L)	Temperature °C	pH	Conductivity $\mu\text{S or mS}$	DO mg/L	ORP mV	Turbidity NTU	NOTES Odor, color, sheen or other
0921	0	16.51	7.41	0.399	3.80	-31	145	
0923	0.5	16.72	7.38	0.397	2.31	-65	---	sheen
0925	1.0	16.78	7.28	0.395	1.69	-67	---	sheen
0927	1.5	16.83	7.23	0.395	1.43	-68	---	- sheen
0929	2.0	16.85	7.21	0.395	1.39	-68	137	PRESENT
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: 5.21 (ft)
 Sample Collected Via: _____ Disp. Bailer _____ Dedicated Pump Tubing
 Disp. Pump Tubing Other: _____
 Sample ID: Rw-1 Sample Collection Time: 0930 (24:00)
 Containers (#): 6 VOA (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:

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: 440-39020-1
Client Project/Site: ARCO 11104, Alameda

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

Attn: Kristene Tidwell



*Authorized for release by:
3/8/2013 3:11:05 PM*

Kathleen Robb
Project Manager II
kathleen.robbs@testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Sample Summary

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 11104, Alameda

TestAmerica Job ID: 440-39020-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-39020-1	MW-1	Water	02/21/13 09:55	02/22/13 09:45
440-39020-2	MW-2	Water	02/21/13 09:00	02/22/13 09:45
440-39020-3	MW-3	Water	02/21/13 08:35	02/22/13 09:45
440-39020-4	MW-4	Water	02/21/13 08:05	02/22/13 09:45
440-39020-6	RW-1	Water	02/21/13 09:30	02/22/13 09:45

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Case Narrative

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 11104, Alameda

TestAmerica Job ID: 440-39020-1

Job ID: 440-39020-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-39020-1

Comments

No additional comments.

Receipt

The samples were received on 2/22/2013 9:45 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.7° 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.

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Client Sample Results

Client: Broadbent & Associates, Inc.
 Project/Site: ARCO 11104, Alameda

TestAmerica Job ID: 440-39020-1

Client Sample ID: MW-1

Lab Sample ID: 440-39020-1

Date Collected: 02/21/13 09:55

Matrix: Water

Date Received: 02/22/13 09:45

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			02/28/13 01:06	1
1,2-Dichloroethane	ND		0.50	ug/L			02/28/13 01:06	1
Benzene	2.9		0.50	ug/L			02/28/13 01:06	1
Ethanol	ND		150	ug/L			02/28/13 01:06	1
Ethylbenzene	13		0.50	ug/L			02/28/13 01:06	1
Ethyl-t-butyl ether (ETBE)	ND		0.50	ug/L			02/28/13 01:06	1
Isopropyl Ether (DIPE)	ND		0.50	ug/L			02/28/13 01:06	1
m,p-Xylene	30		1.0	ug/L			02/28/13 01:06	1
Methyl-t-Butyl Ether (MTBE)	14		0.50	ug/L			02/28/13 01:06	1
o-Xylene	ND		0.50	ug/L			02/28/13 01:06	1
Tert-amyl-methyl ether (TAME)	1.5		0.50	ug/L			02/28/13 01:06	1
tert-Butyl alcohol (TBA)	79		10	ug/L			02/28/13 01:06	1
Toluene	1.3		0.50	ug/L			02/28/13 01:06	1
Xylenes, Total	30		1.0	ug/L			02/28/13 01:06	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	107		80 - 120		02/28/13 01:06	1
Dibromofluoromethane (Surr)	100		80 - 120		02/28/13 01:06	1
Toluene-d8 (Surr)	110		80 - 120		02/28/13 01:06	1

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
GRO (C6-C12)	940		250	ug/L			03/02/13 11:17	5

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	99		65 - 140		03/02/13 11:17	5

Client Sample Results

Client: Broadbent & Associates, Inc.
 Project/Site: ARCO 11104, Alameda

TestAmerica Job ID: 440-39020-1

Client Sample ID: MW-2

Lab Sample ID: 440-39020-2

Date Collected: 02/21/13 09:00

Matrix: Water

Date Received: 02/22/13 09:45

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			02/28/13 01:35	1
1,2-Dichloroethane	ND		0.50	ug/L			02/28/13 01:35	1
Benzene	ND		0.50	ug/L			02/28/13 01:35	1
Ethanol	ND		150	ug/L			02/28/13 01:35	1
Ethylbenzene	ND		0.50	ug/L			02/28/13 01:35	1
Ethyl-t-butyl ether (ETBE)	ND		0.50	ug/L			02/28/13 01:35	1
Isopropyl Ether (DIPE)	ND		0.50	ug/L			02/28/13 01:35	1
m,p-Xylene	ND		1.0	ug/L			02/28/13 01:35	1
Methyl-t-Butyl Ether (MTBE)	ND		0.50	ug/L			02/28/13 01:35	1
o-Xylene	ND		0.50	ug/L			02/28/13 01:35	1
Tert-amyl-methyl ether (TAME)	ND		0.50	ug/L			02/28/13 01:35	1
tert-Butyl alcohol (TBA)	ND		10	ug/L			02/28/13 01:35	1
Toluene	ND		0.50	ug/L			02/28/13 01:35	1
Xylenes, Total	ND		1.0	ug/L			02/28/13 01:35	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	101		80 - 120		02/28/13 01:35	1
Dibromofluoromethane (Surr)	104		80 - 120		02/28/13 01:35	1
Toluene-d8 (Surr)	105		80 - 120		02/28/13 01:35	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			03/01/13 17:52	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	90		65 - 140		03/01/13 17:52	1

Client Sample Results

Client: Broadbent & Associates, Inc.
 Project/Site: ARCO 11104, Alameda

TestAmerica Job ID: 440-39020-1

Client Sample ID: MW-3

Lab Sample ID: 440-39020-3

Date Collected: 02/21/13 08:35

Matrix: Water

Date Received: 02/22/13 09:45

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			02/28/13 02:04	1
1,2-Dichloroethane	ND		0.50	ug/L			02/28/13 02:04	1
Benzene	ND		0.50	ug/L			02/28/13 02:04	1
Ethanol	ND		150	ug/L			02/28/13 02:04	1
Ethylbenzene	ND		0.50	ug/L			02/28/13 02:04	1
Ethyl-t-butyl ether (ETBE)	ND		0.50	ug/L			02/28/13 02:04	1
Isopropyl Ether (DIPE)	ND		0.50	ug/L			02/28/13 02:04	1
m,p-Xylene	ND		1.0	ug/L			02/28/13 02:04	1
Methyl-t-Butyl Ether (MTBE)	ND		0.50	ug/L			02/28/13 02:04	1
o-Xylene	ND		0.50	ug/L			02/28/13 02:04	1
Tert-amyl-methyl ether (TAME)	ND		0.50	ug/L			02/28/13 02:04	1
tert-Butyl alcohol (TBA)	ND		10	ug/L			02/28/13 02:04	1
Toluene	ND		0.50	ug/L			02/28/13 02:04	1
Xylenes, Total	ND		1.0	ug/L			02/28/13 02:04	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	101		80 - 120		02/28/13 02:04	1
Dibromofluoromethane (Surr)	106		80 - 120		02/28/13 02:04	1
Toluene-d8 (Surr)	107		80 - 120		02/28/13 02:04	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			03/01/13 18:19	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	91		65 - 140		03/01/13 18:19	1

Client Sample Results

Client: Broadbent & Associates, Inc.
 Project/Site: ARCO 11104, Alameda

TestAmerica Job ID: 440-39020-1

Client Sample ID: MW-4

Lab Sample ID: 440-39020-4

Date Collected: 02/21/13 08:05

Matrix: Water

Date Received: 02/22/13 09:45

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			02/28/13 02:33	1
1,2-Dichloroethane	ND		0.50	ug/L			02/28/13 02:33	1
Benzene	ND		0.50	ug/L			02/28/13 02:33	1
Ethanol	ND		150	ug/L			02/28/13 02:33	1
Ethylbenzene	ND		0.50	ug/L			02/28/13 02:33	1
Ethyl-t-butyl ether (ETBE)	ND		0.50	ug/L			02/28/13 02:33	1
Isopropyl Ether (DIPE)	ND		0.50	ug/L			02/28/13 02:33	1
m,p-Xylene	ND		1.0	ug/L			02/28/13 02:33	1
Methyl-t-Butyl Ether (MTBE)	ND		0.50	ug/L			02/28/13 02:33	1
o-Xylene	ND		0.50	ug/L			02/28/13 02:33	1
Tert-amyl-methyl ether (TAME)	ND		0.50	ug/L			02/28/13 02:33	1
tert-Butyl alcohol (TBA)	ND		10	ug/L			02/28/13 02:33	1
Toluene	ND		0.50	ug/L			02/28/13 02:33	1
Xylenes, Total	ND		1.0	ug/L			02/28/13 02:33	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	100		80 - 120		02/28/13 02:33	1
Dibromofluoromethane (Surr)	106		80 - 120		02/28/13 02:33	1
Toluene-d8 (Surr)	105		80 - 120		02/28/13 02:33	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			03/01/13 01:46	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	90		65 - 140		03/01/13 01:46	1

Client Sample Results

Client: Broadbent & Associates, Inc.
 Project/Site: ARCO 11104, Alameda

TestAmerica Job ID: 440-39020-1

Client Sample ID: RW-1

Lab Sample ID: 440-39020-6

Date Collected: 02/21/13 09:30

Matrix: Water

Date Received: 02/22/13 09:45

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			02/28/13 03:02	1
1,2-Dichloroethane	ND		0.50	ug/L			02/28/13 03:02	1
Benzene	ND		0.50	ug/L			02/28/13 03:02	1
Ethanol	ND		150	ug/L			02/28/13 03:02	1
Ethylbenzene	ND		0.50	ug/L			02/28/13 03:02	1
Ethyl-t-butyl ether (ETBE)	ND		0.50	ug/L			02/28/13 03:02	1
Isopropyl Ether (DIPE)	ND		0.50	ug/L			02/28/13 03:02	1
m,p-Xylene	ND		1.0	ug/L			02/28/13 03:02	1
Methyl-t-Butyl Ether (MTBE)	7.9		0.50	ug/L			02/28/13 03:02	1
o-Xylene	ND		0.50	ug/L			02/28/13 03:02	1
Tert-amyl-methyl ether (TAME)	ND		0.50	ug/L			02/28/13 03:02	1
tert-Butyl alcohol (TBA)	28		10	ug/L			02/28/13 03:02	1
Toluene	ND		0.50	ug/L			02/28/13 03:02	1
Xylenes, Total	ND		1.0	ug/L			02/28/13 03:02	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	103		80 - 120		02/28/13 03:02	1
Dibromofluoromethane (Surr)	104		80 - 120		02/28/13 03:02	1
Toluene-d8 (Surr)	104		80 - 120		02/28/13 03:02	1

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
GRO (C6-C12)	110		50	ug/L			03/01/13 18:47	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	118		65 - 140		03/01/13 18:47	1

Lab Chronicle

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 11104, Alameda

TestAmerica Job ID: 440-39020-1

Client Sample ID: MW-1

Date Collected: 02/21/13 09:55

Date Received: 02/22/13 09:45

Lab Sample ID: 440-39020-1

Matrix: Water

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	88377	02/28/13 01:06	WC	TAL IRV
Total/NA	Analysis	8015B/5030B		5	10 mL	10 mL	88998	03/02/13 11:17	IM	TAL IRV

Client Sample ID: MW-2

Date Collected: 02/21/13 09:00

Date Received: 02/22/13 09:45

Lab Sample ID: 440-39020-2

Matrix: Water

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	88377	02/28/13 01:35	WC	TAL IRV
Total/NA	Analysis	8015B/5030B		1	10 mL	10 mL	89145	03/01/13 17:52	SC	TAL IRV

Client Sample ID: MW-3

Date Collected: 02/21/13 08:35

Date Received: 02/22/13 09:45

Lab Sample ID: 440-39020-3

Matrix: Water

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	88377	02/28/13 02:04	WC	TAL IRV
Total/NA	Analysis	8015B/5030B		1	10 mL	10 mL	89145	03/01/13 18:19	SC	TAL IRV

Client Sample ID: MW-4

Date Collected: 02/21/13 08:05

Date Received: 02/22/13 09:45

Lab Sample ID: 440-39020-4

Matrix: Water

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	88377	02/28/13 02:33	WC	TAL IRV
Total/NA	Analysis	8015B/5030B		1	10 mL	10 mL	88875	03/01/13 01:46	IM	TAL IRV

Client Sample ID: RW-1

Date Collected: 02/21/13 09:30

Date Received: 02/22/13 09:45

Lab Sample ID: 440-39020-6

Matrix: Water

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	88377	02/28/13 03:02	WC	TAL IRV
Total/NA	Analysis	8015B/5030B		1	10 mL	10 mL	89145	03/01/13 18:47	SC	TAL IRV

Laboratory References:

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

QC Sample Results

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 11104, Alameda

TestAmerica Job ID: 440-39020-1

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

Lab Sample ID: MB 440-88377/4

Matrix: Water

Analysis Batch: 88377

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			02/27/13 20:43	1
1,2-Dichloroethane	ND		0.50	ug/L			02/27/13 20:43	1
Benzene	ND		0.50	ug/L			02/27/13 20:43	1
Ethanol	ND		150	ug/L			02/27/13 20:43	1
Ethylbenzene	ND		0.50	ug/L			02/27/13 20:43	1
Ethyl-t-butyl ether (ETBE)	ND		0.50	ug/L			02/27/13 20:43	1
Isopropyl Ether (DIPE)	ND		0.50	ug/L			02/27/13 20:43	1
m,p-Xylene	ND		1.0	ug/L			02/27/13 20:43	1
Methyl-t-Butyl Ether (MTBE)	ND		0.50	ug/L			02/27/13 20:43	1
o-Xylene	ND		0.50	ug/L			02/27/13 20:43	1
Tert-amyl-methyl ether (TAME)	ND		0.50	ug/L			02/27/13 20:43	1
tert-Butyl alcohol (TBA)	ND		10	ug/L			02/27/13 20:43	1
Toluene	ND		0.50	ug/L			02/27/13 20:43	1
Xylenes, Total	ND		1.0	ug/L			02/27/13 20:43	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	101		80 - 120		02/27/13 20:43	1
Dibromofluoromethane (Surr)	101		80 - 120		02/27/13 20:43	1
Toluene-d8 (Surr)	104		80 - 120		02/27/13 20:43	1

Lab Sample ID: LCS 440-88377/5

Matrix: Water

Analysis Batch: 88377

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	25.5		ug/L		102	75 - 125
1,2-Dichloroethane	25.0	23.1		ug/L		93	60 - 140
Benzene	25.0	22.9		ug/L		92	70 - 120
Ethanol	250	232		ug/L		93	40 - 155
Ethylbenzene	25.0	22.6		ug/L		90	75 - 125
Ethyl-t-butyl ether (ETBE)	25.0	24.8		ug/L		99	65 - 135
Isopropyl Ether (DIPE)	25.0	26.3		ug/L		105	60 - 135
m,p-Xylene	50.0	48.7		ug/L		97	75 - 125
Methyl-t-Butyl Ether (MTBE)	25.0	24.0		ug/L		96	60 - 135
o-Xylene	25.0	24.1		ug/L		96	75 - 125
Tert-amyl-methyl ether (TAME)	25.0	27.2		ug/L		109	60 - 135
tert-Butyl alcohol (TBA)	125	110		ug/L		88	70 - 135
Toluene	25.0	24.4		ug/L		98	70 - 120

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	98		80 - 120
Dibromofluoromethane (Surr)	100		80 - 120
Toluene-d8 (Surr)	105		80 - 120

TestAmerica Irvine

QC Sample Results

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 11104, Alameda

TestAmerica Job ID: 440-39020-1

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

Lab Sample ID: 440-38770-D-1 MS

Matrix: Water

Analysis Batch: 88377

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec.	Limits
	Result	Qualifier	Added	Result	Qualifier					
1,2-Dibromoethane (EDB)	ND		25.0	29.5		ug/L		118	70 - 130	
1,2-Dichloroethane	ND		25.0	24.5		ug/L		98	60 - 140	
Benzene	ND		25.0	23.7		ug/L		95	65 - 125	
Ethanol	ND		250	236		ug/L		95	40 - 155	
Ethylbenzene	ND		25.0	24.7		ug/L		99	65 - 130	
Ethyl-t-butyl ether (ETBE)	ND		25.0	26.5		ug/L		106	60 - 135	
Isopropyl Ether (DIPE)	ND		25.0	28.4		ug/L		114	60 - 140	
m,p-Xylene	ND		50.0	52.3		ug/L		105	65 - 130	
Methyl-t-Butyl Ether (MTBE)	ND		25.0	27.3		ug/L		109	55 - 145	
o-Xylene	ND		25.0	26.6		ug/L		107	65 - 125	
Tert-amyl-methyl ether (TAME)	ND		25.0	29.2		ug/L		117	60 - 140	
tert-Butyl alcohol (TBA)	ND		125	115		ug/L		92	65 - 140	
Toluene	ND		25.0	25.1		ug/L		100	70 - 125	

Surrogate	MS	MS	Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	104		80 - 120
Dibromofluoromethane (Surr)	102		80 - 120
Toluene-d8 (Surr)	106		80 - 120

Lab Sample ID: 440-38770-D-1 MSD

Matrix: Water

Analysis Batch: 88377

Client Sample ID: Matrix Spike Duplicate

Prep Type: Total/NA

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec.	Limits	RPD	RPD
	Result	Qualifier	Added	Result	Qualifier						RPD	Limit
1,2-Dibromoethane (EDB)	ND		25.0	25.4		ug/L		102	70 - 130	15	25	
1,2-Dichloroethane	ND		25.0	22.3		ug/L		89	60 - 140	9	20	
Benzene	ND		25.0	22.0		ug/L		88	65 - 125	7	20	
Ethanol	ND		250	230		ug/L		92	40 - 155	3	30	
Ethylbenzene	ND		25.0	21.1		ug/L		85	65 - 130	15	20	
Ethyl-t-butyl ether (ETBE)	ND		25.0	24.9		ug/L		100	60 - 135	6	25	
Isopropyl Ether (DIPE)	ND		25.0	26.2		ug/L		105	60 - 140	8	25	
m,p-Xylene	ND		50.0	45.0		ug/L		90	65 - 130	15	25	
Methyl-t-Butyl Ether (MTBE)	ND		25.0	24.8		ug/L		99	55 - 145	9	25	
o-Xylene	ND		25.0	23.3		ug/L		93	65 - 125	13	20	
Tert-amyl-methyl ether (TAME)	ND		25.0	26.8		ug/L		107	60 - 140	9	30	
tert-Butyl alcohol (TBA)	ND		125	105		ug/L		84	65 - 140	9	25	
Toluene	ND		25.0	23.0		ug/L		92	70 - 125	9	20	

Surrogate	MSD	MSD	Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	101		80 - 120
Dibromofluoromethane (Surr)	103		80 - 120
Toluene-d8 (Surr)	105		80 - 120

TestAmerica Irvine

QC Sample Results

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 11104, Alameda

TestAmerica Job ID: 440-39020-1

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

Lab Sample ID: MB 440-88875/31

Matrix: Water

Analysis Batch: 88875

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			03/01/13 00:51	1
Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac		
4-Bromofluorobenzene (Surr)	89		65 - 140		03/01/13 00:51	1		

Lab Sample ID: LCS 440-88875/30

Matrix: Water

Analysis Batch: 88875

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	803		ug/L		100	80 - 120
Surrogate	LCS %Recovery	LCS Qualifier	Limits				
4-Bromofluorobenzene (Surr)	101		65 - 140				

Lab Sample ID: 440-38987-B-11 MS

Matrix: Water

Analysis Batch: 88875

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)	3000		16000	18300		ug/L		95	65 - 140
Surrogate	MS %Recovery	MS Qualifier	Limits						
4-Bromofluorobenzene (Surr)	132		65 - 140						

Lab Sample ID: 440-38987-B-11 MSD

Matrix: Water

Analysis Batch: 88875

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)	3000		16000	17800		ug/L		92	65 - 140	3	20
Surrogate	MSD %Recovery	MSD Qualifier	Limits								
4-Bromofluorobenzene (Surr)	131		65 - 140								

Lab Sample ID: MB 440-88998/3

Matrix: Water

Analysis Batch: 88998

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			03/02/13 08:55	1
Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac		
4-Bromofluorobenzene (Surr)	96		65 - 140		03/02/13 08:55	1		

TestAmerica Irvine

QC Sample Results

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 11104, Alameda

TestAmerica Job ID: 440-39020-1

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

Lab Sample ID: LCS 440-88998/2

Matrix: Water

Analysis Batch: 88998

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	871		ug/L		109	80 - 120
Surrogate		LCS %Recovery	LCS Qualifier				Limits
4-Bromofluorobenzene (Surr)		87					65 - 140

Lab Sample ID: 440-39226-B-4 MS

Matrix: Water

Analysis Batch: 88998

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	832		ug/L		104	65 - 140
Surrogate		MS %Recovery		MS Qualifier					Limits
4-Bromofluorobenzene (Surr)		80							65 - 140

Lab Sample ID: 440-39226-B-4 MSD

Matrix: Water

Analysis Batch: 88998

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	880		ug/L		110	65 - 140	6	20
Surrogate		MSD %Recovery		MSD Qualifier					Limits		
4-Bromofluorobenzene (Surr)		71							65 - 140		

Lab Sample ID: MB 440-89145/31

Matrix: Water

Analysis Batch: 89145

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			03/01/13 00:51	1
Surrogate		MB %Recovery				Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)		89					03/01/13 00:51	1

Lab Sample ID: LCS 440-89145/30

Matrix: Water

Analysis Batch: 89145

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	803		ug/L		100	80 - 120
Surrogate		LCS %Recovery	LCS Qualifier				Limits
4-Bromofluorobenzene (Surr)		101					65 - 140

TestAmerica Irvine

QC Sample Results

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 11104, Alameda

TestAmerica Job ID: 440-39020-1

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

Lab Sample ID: 440-38987-B-11 MS

Matrix: Water

Analysis Batch: 89145

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)	3000		16000	18300		ug/L		95	65 - 140
<i>MS MS</i>									
Surrogate	%Recovery	Qualifier	Limits						
4-Bromofluorobenzene (Surr)	132		65 - 140						

Lab Sample ID: 440-38987-B-11 MSD

Matrix: Water

Analysis Batch: 89145

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)	3000		16000	17800		ug/L		92	65 - 140	3	20
<i>MSD MSD</i>											
Surrogate	%Recovery	Qualifier	Limits								
4-Bromofluorobenzene (Surr)	131		65 - 140								

QC Association Summary

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 11104, Alameda

TestAmerica Job ID: 440-39020-1

GC/MS VOA

Analysis Batch: 88377

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-38770-D-1 MS	Matrix Spike	Total/NA	Water	8260B/5030B	
440-38770-D-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B/5030B	
440-39020-1	MW-1	Total/NA	Water	8260B/5030B	
440-39020-2	MW-2	Total/NA	Water	8260B/5030B	
440-39020-3	MW-3	Total/NA	Water	8260B/5030B	
440-39020-4	MW-4	Total/NA	Water	8260B/5030B	
440-39020-6	RW-1	Total/NA	Water	8260B/5030B	
LCS 440-88377/5	Lab Control Sample	Total/NA	Water	8260B/5030B	
MB 440-88377/4	Method Blank	Total/NA	Water	8260B/5030B	

GC VOA

Analysis Batch: 88875

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-38987-B-11 MS	Matrix Spike	Total/NA	Water	8015B/5030B	
440-38987-B-11 MSD	Matrix Spike Duplicate	Total/NA	Water	8015B/5030B	
440-39020-4	MW-4	Total/NA	Water	8015B/5030B	
LCS 440-88875/30	Lab Control Sample	Total/NA	Water	8015B/5030B	
MB 440-88875/31	Method Blank	Total/NA	Water	8015B/5030B	

Analysis Batch: 88998

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-39020-1	MW-1	Total/NA	Water	8015B/5030B	
440-39226-B-4 MS	Matrix Spike	Total/NA	Water	8015B/5030B	
440-39226-B-4 MSD	Matrix Spike Duplicate	Total/NA	Water	8015B/5030B	
LCS 440-88998/2	Lab Control Sample	Total/NA	Water	8015B/5030B	
MB 440-88998/3	Method Blank	Total/NA	Water	8015B/5030B	

Analysis Batch: 89145

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-38987-B-11 MS	Matrix Spike	Total/NA	Water	8015B/5030B	
440-38987-B-11 MSD	Matrix Spike Duplicate	Total/NA	Water	8015B/5030B	
440-39020-2	MW-2	Total/NA	Water	8015B/5030B	
440-39020-3	MW-3	Total/NA	Water	8015B/5030B	
440-39020-6	RW-1	Total/NA	Water	8015B/5030B	
LCS 440-89145/30	Lab Control Sample	Total/NA	Water	8015B/5030B	
MB 440-89145/31	Method Blank	Total/NA	Water	8015B/5030B	

Definitions/Glossary

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 11104, Alameda

TestAmerica Job ID: 440-39020-1

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)
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)
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 11104, Alameda

TestAmerica Job ID: 440-39020-1

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	06-30-13
Arizona	State Program	9	AZ0671	10-13-13
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	03-28-13
Hawaii	State Program	9	N/A	01-31-14
Nevada	State Program	9	CA015312007A	07-31-13
New Mexico	State Program	6	N/A	03-28-13
Northern Mariana Islands	State Program	9	MP0002	03-28-13
Oregon	NELAP	10	4005	09-12-13
USDA	Federal		P330-09-00080	06-06-14
USEPA UCMR	Federal	1	CA01531	01-31-15



Laboratory Management Program LaMP Chain of Custody Record

BP Site Node Path: 06-88-644
 BP Facility No: 11104

Req Due Date (mm/dd/yy): _____
 Lab Work Order Number: 440-39020

Rush TAT: Yes ___ No X

Lab Name: Test America				Facility Address: 1716 Webster Street					Consultant/Contractor: Broadbent and Associates																	
Lab Address: 17461 Derian Suite #100, Irvine, CA 92641				City, State, ZIP Code: Alameda, CA					Consultant/Contractor Project No: 06-88-644																	
Lab PM: Kathleen Robb				Lead Regulatory Agency: ACEH					Address: 875 Cotting Lane, Suite G, Vacaville, CA 95688																	
Lab Phone: 949-261-1022				California Global ID No.: T0600101651					Consultant/Contractor PM: Kristene Tidwell																	
Lab Shipping Acct: 1103-6633-7				Enfos Proposal No: 005G6-0001					Phone: 707-455-7290 Fax: 707-455-7295																	
Lab Bottle Order No:				Accounting Mode: Provision <u>X</u> OOC-BU ___ OOC-RM ___					Email EDD To: krtidwell@broadbent.com and to lab.enfos@bp.com																	
Other Info:				Stage: (GWM) 401 Activity: (GWM) 1080					Invoice To: BP <u>X</u> Contractor ___																	
BP Project Manager (PM): Shannon Couch				Matrix		No. Containers / Preservative			Requested Analyses				Report Type & QC Level													
BP PM Phone: 925-275-3804													Standard ___													
BP PM Email: shannon.couch@bp.com													Full Data Package ___													
Lab No.	Sample Description	Date	Time	Soil / Solid	Water / Liquid	Air / Vapor	Is this location a well?	Total Number of Container	Unpreserved	H2SO4	HNO3	HCl	Methanol	GRO by 8015M	BTEX/5 FO + EDB by 8260	1,2-DCA by 8260	Ethanol by 8260								Comments	
																										Note: If sample not collected, indicate "No Sample" in comments and single-strike out and initial any preprinted sample description.
	MW-1	2/21/2013	0955		X			6						X	X	X	X									
	MW-2	2/21/2013	0900		X			6						X	X	X	X									
	MW-3	2/21/2013	0835		X			6						X	X	X	X									
	MW-4	2/21/2013	0305		X			6						X	X	X	X									
	TB-11104-02212013	-	-		X			1																		On Hold
	Rw-1	2/21/13	0930		X			6						X	X	X	X									
Sampler's Name: Alex Martinez / James Ramos				Relinquished By / Affiliation					Date	Time	Accepted By / Affiliation					Date	Time									
Sampler's Company: Broadbent and Associates				<i>Alex Martinez</i> / BAI					2/21/13	1700	<i>James Ramos</i> / BAI															
Shipment Method: FedEx Ship Date:				<i>[Signature]</i> / BAI					2/21/13	1700	<i>[Signature]</i> / BAI					2/21/13	1700									
Shipment Tracking No: 8017 9017 8304											<i>[Signature]</i>					2/21/13	1700									
Special Instructions:																										
THIS LINE - LAB USE ONLY: Custody Seals In Place: Yes / No ___ Temp Blank: Yes / No ___ Cooler Temp on Receipt: <u>26</u> °F/C Trip Blank: Yes / No ___ MS/MSD Sample Submitted: Yes / No ___																										

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3/8/2013



Login Sample Receipt Checklist

Client: Broadbent & Associates, Inc.

Job Number: 440-39020-1

Login Number: 39020

List Number: 1

Creator: Perez, Angel

List Source: TestAmerica Irvine

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



APPENDIX D

GEOTRACKER UPLOAD AND 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!**

<u>Submittal Type:</u>	EDF
<u>Report Title:</u>	1Q13 GW Monitoring
<u>Report Type:</u>	Monitoring Report - Semi-Annually
<u>Facility Global ID:</u>	T0600101651
<u>Facility Name:</u>	BP #11104
<u>File Name:</u>	440-39020-1_08 Mar 13 1611_EDF.zip
<u>Organization Name:</u>	Broadbent & Associates, Inc.
<u>Username:</u>	BROADBENT-C
<u>IP Address:</u>	67.118.40.90
<u>Submittal Date/Time:</u>	4/4/2013 2:11:18 PM
<u>Confirmation Number:</u>	7677549242

[VIEW QC REPORT](#)

[VIEW DETECTIONS REPORT](#)

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STATE WATER RESOURCES CONTROL BOARD
GEOTRACKER ESI

UPLOADING A GEO_WELL FILE

SUCCESS

**Processing is complete. No errors were found!
Your file has been successfully submitted!**

<u>Submittal Type:</u>	GEO_WELL
<u>Report Title:</u>	1Q13 GEO_WELL 11104
<u>Facility Global ID:</u>	T0600101651
<u>Facility Name:</u>	BP #11104
<u>File Name:</u>	GEO_WELL.zip
<u>Organization Name:</u>	Broadbent & Associates, Inc.
<u>Username:</u>	BROADBENT-C
<u>IP Address:</u>	67.118.40.90
<u>Submittal Date/Time:</u>	4/4/2013 2:14:13 PM
<u>Confirmation Number:</u>	6143212497

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