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By Alameda County Environmental Health at 10:45 am, Nov 03, 2014

Atlantic Richfield Company

Chuck Carmel

Remediation Management Project Manager

PO Box 1257
San Ramon, CA 94583
Phone: (925) 275-3804
Mobile: (510) 798-8314
E-Mail: chuck.carmel@bp.com

October 31, 2014

Re: Third Quarter 2014 Groundwater Monitoring Report
Former Richfield Oil Company Station #402
1450 Fruitvale Avenue, Oakland, California
ACEH Case #RO0000307

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

Submitted by,



Chuck Carmel

Remediation Management Project Manager

Attachment:



October 31, 2014

Project No. 08-88-602

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

Attn.: Mr. Chuck Carmel


Re: Third Quarter 2014 Monitoring Report, Atlantic Richfield Company Station No. 402,
1450 Fruitvale Avenue, Oakland, Alameda County, California; ACEH Case #RO0000307


Dear Mr. Carmel:

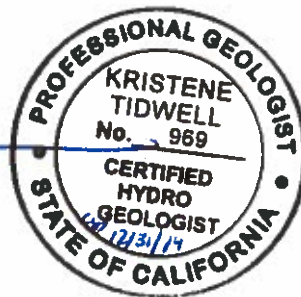
Attached is the *Third Quarter 2014 Monitoring Report* for Atlantic Richfield Company (a BP affiliated company) Station No. 402 located at 1450 Fruitvale Avenue in Oakland, Alameda County, California (the Site). This report presents results of groundwater monitoring conducted at the Site during the Third Quarter 2014.

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

Sincerely,
BROADBENT & ASSOCIATES


for
Alexander J. Martinez
Senior Staff Geologist


Kristene Tidwell, P.G., C.H.G.
Associate Hydrogeologist



Enclosures

cc: Ms. Karol Detterman, Alameda County Environmental Health (Submitted via ACEH ftp site)
Electronic copy uploaded to GeoTracker

**THIRD QUARTER 2014
MONITORING REPORT
ATLANTIC RICHFIELD COMPANY STATION No. 402
OAKLAND, CALIFORNIA**

Broadbent and Associates, Inc. (Broadbent) is pleased to present this *Third Quarter 2014 Monitoring Report* on behalf of Atlantic Richfield Company (ARC, a BP affiliated company) for Station No. 402 located at 1450 Fruitvale Avenue in Oakland, Alameda County, California (the Site). 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:	<u>Station No. 402 / 1450 Fruitvale Ave., Oakland, California; Drawing 1</u>
Client Project Manager / Title:	<u>Mr. Chuck Carmel / Remediation Management Project Manager</u>
Broadbent Contact:	<u>Ms. Kristene Tidwell, (707) 455-7290</u>
Broadbent Project No.:	<u>08-88-602</u>
Primary Regulatory Agency / ID No.:	<u>ACEH / Case # RO0000307</u>
Current phase of project:	<u>Monitoring</u>
List of Acronyms / Abbreviations:	<u>See end of report text for list of acronyms/abbreviations used in report.</u>

WORK PERFORMED THIS QUARTER (Third Quarter 2014):

1. Submit *Second Quarter 2013 Status Report* on July 31, 2014.
2. Conducted groundwater monitoring/sampling for Third Quarter 2014 on September 17, 2014.

WORK SCHEDULED FOR NEXT QUARTER (Fourth Quarter 2014):

1. Submit *Third Quarter 2014 Monitoring Report* (contained herein).
2. No other environmental work activities are scheduled for the Fourth Quarter 2014.

QUARTERLY MONITORING PLAN SUMMARY:

Groundwater level gauging:	<u>MW-4, MW-5, MW-6, MW-7</u>	Quarterly
Groundwater sample collection:	<u>MW-4, MW-5, MW-6, MW-7</u>	Quarterly
Biodegradation indicator parameter monitoring:	<u>None</u>	(Quarterly)

QUARTERLY RESULTS SUMMARY:

LNAPL

LNAPL observed this quarter:	<u>No</u>	(yes\no)
LNAPL recovered this quarter:	<u>None</u>	(gal)
Cumulative LNAPL recovered:	<u>None</u>	(gal)

Groundwater Elevation and Gradient:

Depth to groundwater:	<u>14.44 ft (MW-5) to 16.10 ft (MW-6)</u>	(ft below TOC)
Gradient direction:	<u>East-northeast</u>	(compass direction)
Gradient magnitude:	<u>0.01</u>	(ft/ft)
Average change in elevation:	<u>-2.00</u>	(ft since last measurement)

Laboratory Analytical Data

Summary:

Analytical Results are as follows:

- GRO was detected in three wells at a maximum concentration of 1,100 µg/L in well MW-4.
 - Benzene was detected in two wells at a maximum concentration of 41 µg/L in well MW-4.
 - Ethylbenzene was detected in one well with a concentration of 6.6 µg/L in well MW-4.
 - DIPE was detected in one well with a concentration of 2.3 µg/L in well MW-4
 - MTBE was detected in one well with a concentration of 7.2 µg/L in well MW-4.
-

ACTIVITIES CONDUCTED & RESULTS:

Third Quarter 2014 groundwater monitoring and sampling activities were conducted on September 17, 2014 by Broadbent personnel in accordance with the Third Quarter monitoring plan. No irregularities were noted during gauging. Light Non-Aqueous Phase Liquid (LNAPL) was not present in the wells monitored during this event. Depth to groundwater ranged from 14.44 ft in MW-5 to 16.10 ft in MW-6. As shown on Drawing 2, groundwater gradient on September 17, 2014 was 0.01 ft/ft in an east-northeast direction. Current and historic groundwater elevations and groundwater sample analytical data are provided in Tables 1 and 2. Historical groundwater gradient information is provided in Table 3. Drawing 2 presents a groundwater elevation contours and analytical summary map for September 17, 2014. Field procedures used during groundwater monitoring are provided in Appendix A. Field data sheets are included in Appendix B.

Groundwater samples were collected on September 17, 2014. No irregularities were reported during sampling. Samples were submitted to Test America Laboratories, Inc. (Test America) of Irvine, California for analyses of GRO, by EPA Method 8015B; for BTEX, MTBE, ETBE, TAME, DIPE, TBA, EDB, 1,2-DCA and ethanol by EPA Method 8260B. No irregularities were encountered during analysis of the samples. Laboratory analytical report and chain of custody record 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.

Results of the sampling event are included in the laboratory analytical data summary above. These results indicate that the highest concentrations of petroleum hydrocarbons are present in well MW-4. The remaining analytes detected this quarter are consistent with previous data. Further discussion of these results is presented below.

DISCUSSION:

Review of historical groundwater gradient data indicates that levels were within historical limits for all wells. Groundwater elevations yielded a potentiometric groundwater gradient to the east-northeast at 0.01 ft/ft, consistent with the historic gradient data presented in Table 3.

Review of historical groundwater results indicate that well MW-4 contains the highest residual petroleum compounds at the Site. Comparing analytical results over the last two sampling events indicate that monitoring well MW-4 present residual petroleum constituents and additives have decreased, with exception of DIPE (1.8 µg/L to 2.3 µg/L). Additionally, all residual concentrations of hydrocarbons at the Site have decreased

relative to the Second Quarter 2014, with the exception of MW-5, which had an increase in GRO (<50 µg/L to 58 µg/L). All other petroleum hydrocarbon constituents were detected below laboratory reporting limits during Third Quarter 2014. Petroleum hydrocarbon concentrations from the Third Quarter 2014 monitoring event were within historical ranges. Overall, analytical data indicates the residual petroleum impacts are small and limited primarily to the former source area, near well MW-4 and that concentrations appear to be decreasing across the Site.

RECOMMENDATIONS:

The next quarterly monitoring event is scheduled for the First Quarter 2015. Data collected to date indicates that the site may be eligible for closure under the California state water resources control boards low threat UST closure policy. If data from the Second Quarter 2014 is consistent with previous data, a conceptual site model (CSM) will be prepared to aid in determining the site's closure eligibility.

LIMITATIONS:

The findings presented in this report are based upon observations of field personnel, points investigated, results of laboratory tests performed by Test America, 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: Groundwater Elevation Contour and Analytical Summary Map, March 18, 2014

- Table 1: Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses
- Table 2: Summary of Fuel Additives Analytical Data
- Table 3: Historical Groundwater Gradient - Direction and Magnitude

- Appendix A: Field Methods
- Appendix B: Field Data Sheets
- Appendix C: Laboratory Report and Chain-of-Custody Documentation
- Appendix D: GeoTracker Upload Confirmation Receipts

LIST OF COMMONLY USED ACCRONYMS/ABBREVIATIONS:

ACEH	Alameda County Environmental Health	gal:	gallons
ARC:	Atlantic Richfield Company	GRO:	Gasoline Range Organics (C6-12)
Broadbent	Broadbent & Associates	LNAPL:	Light Non-Aqueous Phase Liquid
BTEX:	Benzene, Toluene, Ethylbenzene, Total Xylenes	MTBE:	Methyl Tertiary Butyl Ether
1,2-DCA:	1,2-Dichloroethane	TAME:	Tert-Amyl Methyl Ether
DIPE:	Di-Isopropyl Ether	TBA:	Tert-Butyl Alcohol
EDB:	1,2-Dibromomethane	TOC:	Top of Casing
EPA:	Environmental Protection Agency	µg/L:	Micrograms Per Liter
ETBE:	Ethyl Tert-Butyl Ether	1Q:	First Quarter
ft:	feet	3Q:	Third Quarter
ft/ft:	foot per foot	ft bgs:	Feet Below Ground Surface

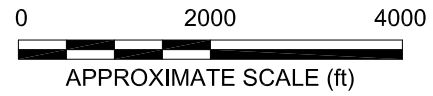
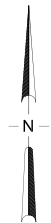
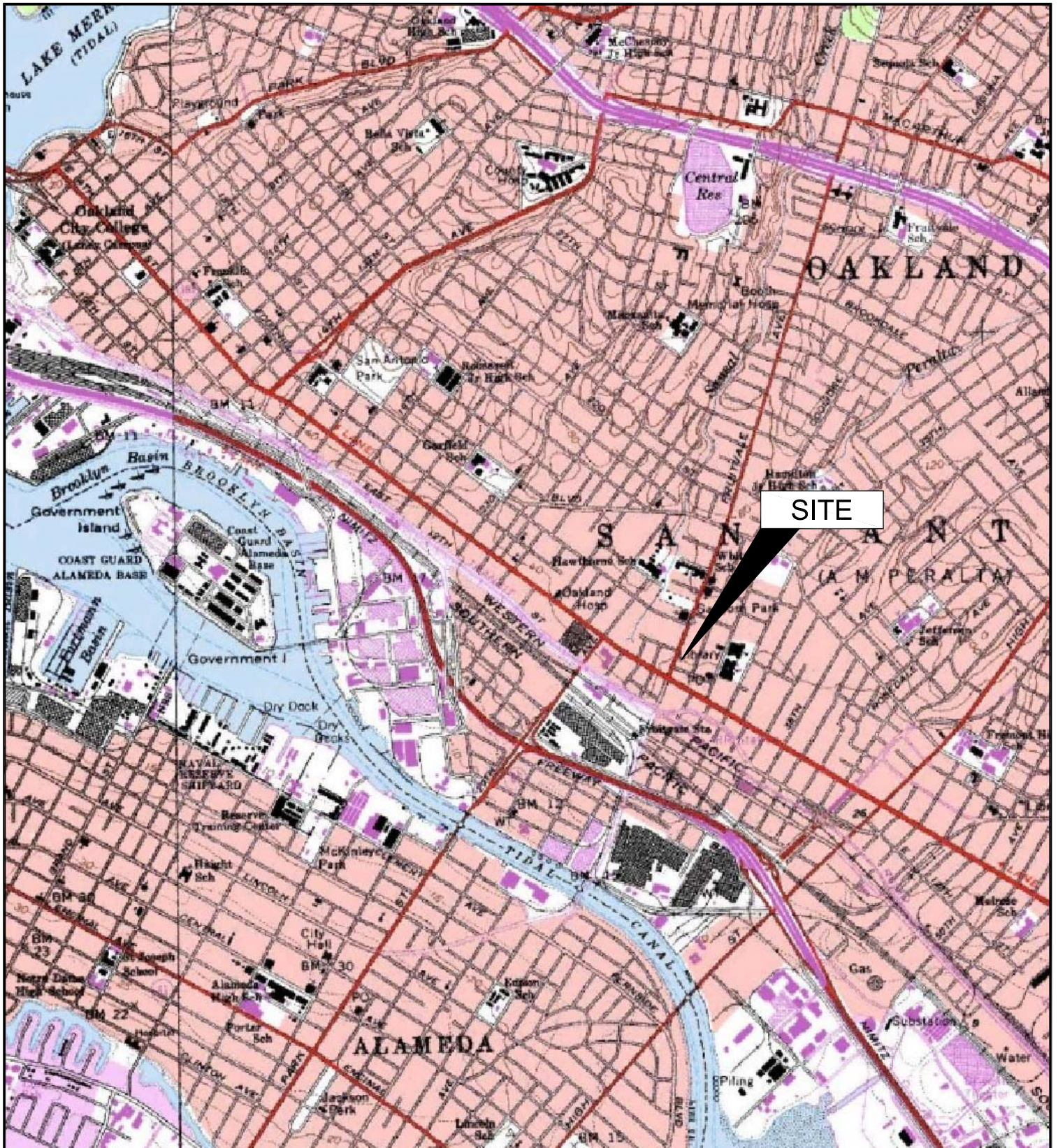
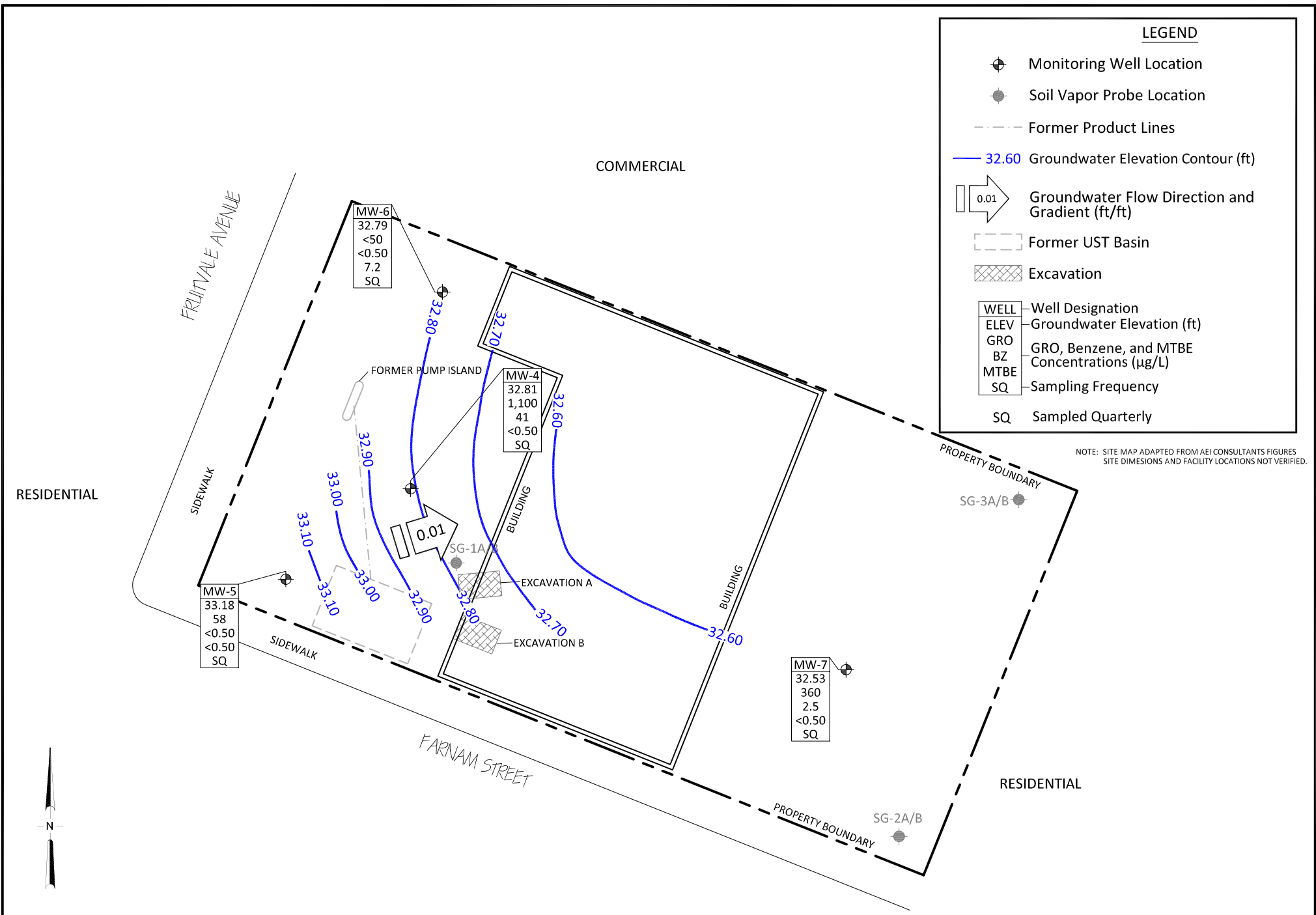


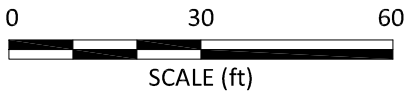
IMAGE SOURCE: USGS



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BROADBENT
4820 Business Center Drive, Suite 110
Fairfield, CA 94534

Project No.: 08-88-602 Date: 10/27/2014

ARCO Former Station No 402
1450 Fruitvale Avenue
Oakland, California

Groundwater Elevation Contour
and Analytical Summary Map,
September 17, 2014

Drawing

2

Table 1. Summary of Groundwater Monitoring Data: Water Elevations and Laboratory Analyses
Former BP Station #402, 1450 Fruitvale Avenue, Oakland, California

Well ID and Date Monitored	P/NP	TOC Elevation (feet)	Depth to Water (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	Footnote
					GRO/TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE		
MW-4												
12/2/2013	P	48.18	14.06	34.12	810	38	0.71	57	15	<0.50	1.60	a
3/18/2014	P		10.72	37.46	600	28	<0.50	20	4.8	<0.50	1.64	
6/26/2014	P		13.54	34.64	1,300	51	0.76	32	1.7	<0.50	1.58	
9/17/2014	P		15.37	32.81	1,100	41	<0.50	6.6	<1.0	<0.50	0.57	
MW-5												
12/2/2013	P	47.62	13.67	33.95	<50	<0.50	<0.50	<0.50	<1.0	0.69	4.70	a
3/18/2014	P		10.91	36.71	<50	<0.50	<0.50	<0.50	<1.0	<0.50	3.03	
6/26/2014	P		12.52	35.10	<50	<0.50	<0.50	<0.50	<1.0	<0.50	0.76	
9/17/2014	P		14.44	33.18	58	<0.50	<0.50	<0.50	<1.0	<0.50	0.66	
MW-6												
12/2/2013	P	48.89	15.07	33.82	<50	<0.50	<0.50	<0.50	<1.0	10	1.25	a
3/18/2014	P		11.72	37.17	<50	<0.50	<0.50	<0.50	<1.0	14	1.94	
6/26/2014	P		14.20	34.69	<50	<0.50	<0.50	<0.50	<1.0	13	0.47	
9/17/2014	P		16.10	32.79	<50	<0.50	<0.50	<0.50	<1.0	7.2	0.71	
MW-7												
12/2/2013	P	48.28	15.35	32.93	96	<0.50	<0.50	1.5	<1.0	<0.50	5.35	a
3/18/2014	P		11.25	37.03	190	2.3	<0.50	2.2	<1.0	<0.50	2.63	
6/26/2014	P		13.44	34.84	530	5.0	0.63	1.9	<1.0	<0.50	1.14	
9/17/2014	P		15.75	32.53	360	2.5	<0.50	<0.50	<1.0	<0.50	0.63	

Symbols & Abbreviations:

-- = Not analyzed/applicable/sampled/measured

< = Not detected at or above specified laboratory reporting limit

TOC = Top of casing measured in ft

NS = Well not surveyed

DO = Dissolved oxygen

GRO = Gasoline range organics

TPHg = Total petroleum hydrocarbons as gasoline

µg/L = Micrograms per liter

mg/L = Milligrams per liter

MTBE = Methyl tert-butyl ether

NP = Not purged before sampling

P = Purged before sampling

Footnotes:

a = Well surveyed 12/17/2013

Table 2. Summary of Fuel Additives Analytical Data
Former BP Station #402, 1450 Fruitvale Avenue, Oakland, California

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
MW-4									
12/2/2013	--	<10	<0.50	1.7	<0.50	<0.50	--	--	
3/18/2014	<150	<10	<0.50	1.8	<0.50	<0.50	<0.50	<0.50	
6/26/2014	<150	<10	<0.50	1.9	<0.50	<0.50	<0.50	<0.50	
9/17/2014	<150	<10	<0.50	2.3	<0.50	<0.50	<0.50	<0.50	
MW-5									
12/2/2013	--	<10	0.69	<0.50	<0.50	<0.50	--	--	
3/18/2014	<150	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
6/26/2014	<150	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
9/17/2014	<150	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
MW-6									
12/2/2013	--	<10	10	<0.50	<0.50	<0.50	--	--	
3/18/2014	<150	<10	14	<0.50	<0.50	<0.50	<0.50	<0.50	
6/26/2014	<150	<10	13	<0.50	<0.50	<0.50	<0.50	<0.50	
9/17/2014	<150	<10	7.2	<0.50	<0.50	<0.50	<0.50	<0.50	
MW-7									
12/2/2013	--	<10	<0.50	<0.50	<0.50	<0.50	--	--	
3/18/2014	<150	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
6/26/2014	<150	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
9/17/2014	<150	<10	<0.50	<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-Dichloroethane

EDB = Ethylene dibromide

ug/L = Micrograms per liter

< = Below given laboratory detection limit

-- = Not measured or analyzed

Table 3. Summary of Groundwater Gradient - Direction and Magnitude
Former BP Station #402, 1450 Fruitvale Avenue, Oakland, California

Date Measured	Approximate Gradient Direction	Approximate Gradient Magnitude (ft/ft)
12/2/2013	East-Southeast	0.01
3/18/2014	Southeast	0.01
6/26/2014	South	0.01
9/17/2014	East-Northeast	0.01

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 402 Project No.: 08-88-602

Field Representative(s): AM/NV Day: Wednesday Date: 9/17/14

Time Onsite: From: 0830 To: 1100 ; From: ; To: ; From: To:

- Checked items: Signed HASP, Safety Glasses, Hard Hat, Steel Toe Boots, Safety Vest, UST Emergency System Shut-off Switches Located, Proper Gloves, Proper Level of Barricading.

Weather: Partly cloudy

Equipment In Use: US2 HORIBA, PERISTALTIC PUMP

Visitors: Saurabh Gogate

Table with 2 columns: TIME and WORK DESCRIPTION. Entries include: 0830 Arrive and conduct tailgate, 0850 Set up @ MW-6, 0930 Set up @ MW-5, 1000 Set up @ MW-7, 1030 Set up @ MW-4, 1100 Complete sampling activities and offsite.

Signature: [Handwritten Signature]



GROUNDWATER SAMPLING DATA SHEET

Page 2 of 5

Project: BP 402 Project No.: 08-88-602 Date: 9/17/14
 Field Representative: AM/NV
 Well ID: MW-4 Start Time: 1028 End Time: 1055 Total Time (minutes): 27

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)						
1" (0.04)	1.25" (0.08)	2" (0.17)	3" (0.38)	Other:	Previous Low-Flow Purge Rate:	(lpm)
4" (0.66)	6" (1.50)	8" (2.60)	12" (5.81)	" ()	Total Well Depth (a):	<u>22.85</u> (ft)
Total Well Depth (a): _____ (ft)					Initial Depth to Water (b): <u>15.37</u> (ft)	
Initial Depth to Water (b): _____ (ft)					Pump In-take Depth = b + (a-b)/2: <u>21.61</u> (ft)	
Water Column Height (WCH) = (a - b): _____ (ft)					Maximum Allowable Drawdown = (a-b)/8: <u>1.56</u> (ft)	
Water Column Volume (WCV) = WCH x Unit Volume: _____ (gal)					Low-Flow Purge Rate: <u>0.25</u> (Lpm)*	
Three Casing Volumes = WCV x 3: _____ (gal)					Comments:	
Five Casing Volumes = WCV x 5: _____ (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	
Pump Depth (if pump used): _____ (ft)						

GROUNDWATER STABILIZATION PARAMETER RECORD

Time (24:00)	Cumulative Vol. gal or L	Temperature °C	pH	Conductivity μS or mS	DO mg/L	ORP mV	Turbidity NTU	NOTES Odor, color, sheen or other
10:39	0	22.67	6.77	1.11	1.33	-160	25.1	Moderate hydrocarbon color
41	0.5	22.76	6.72	1.10	0.83	-168	13.6	
43	1.0	22.69	6.71	1.10	0.69	-166	11.5	
45	1.5	22.80	6.72	1.10	0.60	-166	8.3	
47	2.0	22.19	6.72	1.11	0.57	-167	7.1	

Previous Stabilized Parameters

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

SAMPLE COLLECTION RECORD

SAMPLE COLLECTION RECORD		GEOCHEMICAL PARAMETERS	
Depth to Water at Sampling: <u>15.88</u> (ft)	Parameter	Time	Measurement
Sample Collected Via: <input type="checkbox"/> Disp. Bailer <input type="checkbox"/> Dedicated Pump Tubing	DO (mg/L)		
<input checked="" type="checkbox"/> Disp. Pump Tubing <input type="checkbox"/> Other:	Ferrous Iron (mg/L)		
Sample ID: <u>MW-4</u> Sample Collection Time: <u>1050</u> (24:00)	Redox Potential (mV)		
Containers (#): <u>6</u> VOA (<input checked="" type="checkbox"/> preserved or <input type="checkbox"/> unpreserved) <input type="checkbox"/> Liter Amber	Alkalinity (mg/L)		
Other: _____ Other: _____	Other:		
Other: _____ Other: _____	Other:		

Signature: [Signature]



GROUNDWATER SAMPLING DATA SHEET

Project: BP 402 Project No.: 08-88-602 Date: 9/17/14
 Field Representative: AM/NV
 Well ID: MW-5 Start Time: 0930 End Time: 1000 Total Time (minutes): 30

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>27.80</u> (ft)
4" (0.66)	6" (1.50)	8" (2.60)	12" (5.81)	" ()		Initial Depth to Water (b): <u>14.44</u> (ft)
Total Well Depth (a): _____ (ft)						Pump In-take Depth = b + (a-b)/2: <u>21.12</u> (ft)
Initial Depth to Water (b): _____ (ft)						Maximum Allowable Drawdown = (a-b)/8: <u>1.67</u> (ft)
Water Column Height (WCH) = (a - b): _____ (ft)					Low-Flow Purge Rate: <u>0.25</u> (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 Vol. gal or L	Temperature °C	pH	Conductivity μS/cm	DO mg/L	ORP mV	Turbidity NTU	NOTES Odor, color, sheen or other
0944	0	20.38	6.79	1.11	1.56	-2	30.8	
46	0.5	20.42	6.77	1.11	1.01	-18	33.3	
48	1.0	20.43	6.77	1.12	0.81	-25	32.6	
50	1.5	20.42	6.78	1.12	0.71	-28	33.3	
52	2.0	20.42	6.78	1.12	0.66	-28	32.1	

Previous Stabilized Parameters

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

SAMPLE COLLECTION RECORD

SAMPLE COLLECTION RECORD		GEOCHEMICAL PARAMETERS	
Depth to Water at Sampling: <u>15.81</u> (ft)	Parameter	Time	Measurement
Sample Collected Via: <input type="checkbox"/> Disp. Bailer <input type="checkbox"/> Dedicated Pump Tubing	DO (mg/L)		
<input checked="" type="checkbox"/> Disp. Pump Tubing Other:	Ferrous Iron (mg/L)		
Sample ID: <u>MW-5</u> Sample Collection Time: <u>0955</u> (24:00)	Redox Potential (mV)		
Containers (#): <u>6</u> VOA (<input checked="" type="checkbox"/> preserved or <input type="checkbox"/> unpreserved) <input type="checkbox"/> Liter Amber	Alkalinity (mg/L)		
Other: _____	Other: _____		
Other: _____	Other: _____		

Signature: Ally [Signature]



GROUNDWATER SAMPLING DATA SHEET

Project: BP 402 Project No.: 08-88-602 Date: 9/17/14
 Field Representative: AM/IV
 Well ID: MW-6 Start Time: 0850 End Time: 0920 Total Time (minutes): 30

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>27.88</u> (ft)
4" (0.66)	6" (1.50)	8" (2.60)	12" (5.81)	_____ (_____)		Initial Depth to Water (b): <u>16.10</u> (ft)
Total Well Depth (a): _____ (ft)						Pump In-take Depth = b + (a-b)/2: <u>21.99</u> (ft)
Initial Depth to Water (b): _____ (ft)					Maximum Allowable Drawdown = (a-b)/8: <u>1.47</u> (ft)	Low-Flow Purge Rate: <u>0.25</u> (Lpm)*
Water Column Height (WCH) = (a - b): _____ (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.
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 Vol. gal or L	Temperature °C	pH	Conductivity μS or mS	DO mg/L	ORP mV	Turbidity NTU	NOTES Odor, color, sheen or other
0909	0	20.62	7.43	0.815	1.81	-87	36.8	
11	0.5	20.28	6.92	0.811	1.21	-45	28.1	
13	1.0	20.14	6.85	0.819	0.95	-33	26.1	
15	1.5	20.06	6.81	0.818	0.78	-27	24.7	
17	2.0	20.02	6.79	0.820	0.71	-23	31.0	

Previous Stabilized Parameters

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

SAMPLE COLLECTION RECORD

SAMPLE COLLECTION RECORD		GEOCHEMICAL PARAMETERS	
Depth to Water at Sampling: <u>16.41</u> (ft)	Sample Collected Via: <input type="checkbox"/> Disp. Bailer <input type="checkbox"/> Dedicated Pump Tubing	Parameter	Time
<input checked="" type="checkbox"/> Disp. Pump Tubing Other:	Sample ID: <u>MW-6</u> Sample Collection Time: <u>0920</u> (24:00)	DO (mg/L)	
Containers (#): <u>6</u> VOA (<input checked="" type="checkbox"/> preserved or <input type="checkbox"/> unpreserved) <input type="checkbox"/> Liter Amber	Other: _____	Ferrous Iron (mg/L)	
Other: _____	Other: _____	Redox Potential (mV)	
Other: _____	Other: _____	Alkalinity (mg/L)	
		Other: _____	
		Other: _____	

Signature: [Handwritten Signature]



GROUNDWATER SAMPLING DATA SHEET

Project: BP 402 Project No.: 08-88-602 Date: _____
 Field Representative: AM/NV
 Well ID: MW-7 Start Time: 1000 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>31.86</u> (ft)
4" (0.66)	6" (1.50)	8" (2.60)	12" (5.81)	_____ (____)		Initial Depth to Water (b): <u>15.75</u> (ft)
Total Well Depth (a): _____ (ft)						Pump In-take Depth = b + (a-b)/2: <u>23.90</u> (ft)
Initial Depth to Water (b): _____ (ft)					Maximum Allowable Drawdown = (a-b)/8: <u>2.01</u> (ft)	
Water Column Height (WCH) = (a - b): _____ (ft)					Low-Flow Purge Rate: <u>0.25</u> (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 Vol. gal or L	Temperature °C	pH	Conductivity μS/cm	DO mg/L	ORP mV	Turbidity NTU	NOTES Odor, color, sheen or other
10:12	0	20.98	6.70	1.24	4.65	-141	41.9	
14	0.5	21.19	6.69	1.22	2.01	-147	36.5	
16	1.0	21.31	6.70	1.21	1.00	-154	37.2	
18	1.5	21.46	6.71	1.21	0.77	-156	36.5	
20	2.0	21.56	6.72	1.22	0.63	-156	36.1	

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>16.37</u> (ft)	Parameter	Time	Measurement
Sample Collected Via: <input type="checkbox"/> Disp. Bailer <input type="checkbox"/> Dedicated Pump Tubing	DO (mg/L)		
<input checked="" type="checkbox"/> Disp. Pump Tubing Other: _____	Ferrous Iron (mg/L)		
Sample ID: <u>MW-7</u> Sample Collection Time: <u>1025</u> (24:00)	Redox Potential (mV)		
Containers (#): <u>6</u> VOA (<input checked="" type="checkbox"/> preserved or <input type="checkbox"/> unpreserved) <input type="checkbox"/> Liter Amber	Alkalinity (mg/L)		
Other: _____ Other: _____	Other:		
Other: _____ Other: _____	Other:		

Signature: Alex M...

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: 440-88377-1

TestAmerica Sample Delivery Group: 08-88-602

Client Project/Site: ARCO 0402, Oakland

For:

Broadbent & Associates, Inc.

4820 Business Center Drive

#110

Fairfield, California 94534

Attn: Kristene Tidwell



Authorized for release by:

10/2/2014 10:51:10 AM

Kathleen Robb, Project Manager II

(949)261-1022

kathleen.robbs@testamericainc.com

LINKS

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www.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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12

13



Table of Contents

Cover Page	1
Table of Contents	2
Sample Summary	3
Case Narrative	4
Client Sample Results	5
Method Summary	8
Lab Chronicle	9
QC Sample Results	10
QC Association Summary	15
Definitions/Glossary	16
Certification Summary	17
Chain of Custody	18
Receipt Checklists	19

Sample Summary

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 0402, Oakland

TestAmerica Job ID: 440-88377-1
SDG: 08-88-602

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
440-88377-1	MW-4	Water	09/17/14 10:50	09/18/14 10:00
440-88377-2	MW-5	Water	09/17/14 09:55	09/18/14 10:00
440-88377-3	MW-6	Water	09/17/14 09:20	09/18/14 10:00
440-88377-4	MW-7	Water	09/17/14 10:25	09/18/14 10:00

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Case Narrative

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 0402, Oakland

TestAmerica Job ID: 440-88377-1
SDG: 08-88-602

Job ID: 440-88377-1

Laboratory: TestAmerica Irvine

Narrative

Job Narrative
440-88377-1

Comments

No additional comments.

Receipt

The samples were received on 9/18/2014 10:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.2° C.

Except:

The following sample (TB-402-09172014) was received at the laboratory without a sample collection date/time documented on the chain of custody: TB-402-09172014 (440-88377-5). The sample was logged in with the same sampling date as the other samples submitted and a sampling time of 12:01AM.

GC/MS VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

GC VOA

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

VOA Prep

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.



Client Sample Results

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 0402, Oakland

TestAmerica Job ID: 440-88377-1
SDG: 08-88-602

Client Sample ID: MW-4
Date Collected: 09/17/14 10:50
Date Received: 09/18/14 10:00

Lab Sample ID: 440-88377-1
Matrix: Water

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromoethane (EDB)	ND		0.50	ug/L			09/20/14 00:03	1
1,2-Dichloroethane	ND		0.50	ug/L			09/20/14 00:03	1
Benzene	41		0.50	ug/L			09/20/14 00:03	1
Ethanol	ND		150	ug/L			09/20/14 00:03	1
Ethylbenzene	6.6		0.50	ug/L			09/20/14 00:03	1
Ethyl-t-butyl ether (ETBE)	ND		0.50	ug/L			09/20/14 00:03	1
Isopropyl Ether (DIPE)	2.3		0.50	ug/L			09/20/14 00:03	1
m,p-Xylene	ND		1.0	ug/L			09/20/14 00:03	1
Methyl-t-Butyl Ether (MTBE)	ND		0.50	ug/L			09/20/14 00:03	1
o-Xylene	ND		0.50	ug/L			09/20/14 00:03	1
Tert-amyl-methyl ether (TAME)	ND		0.50	ug/L			09/20/14 00:03	1
tert-Butyl alcohol (TBA)	ND		10	ug/L			09/20/14 00:03	1
Toluene	ND		0.50	ug/L			09/20/14 00:03	1
Xylenes, Total	ND		1.0	ug/L			09/20/14 00:03	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	102		80 - 120				09/20/14 00:03	1
Dibromofluoromethane (Surr)	99		76 - 132				09/20/14 00:03	1
Toluene-d8 (Surr)	102		80 - 128				09/20/14 00:03	1

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
GRO (C6-C12)	1100		50	ug/L			09/20/14 04:44	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	90		65 - 140				09/20/14 04:44	1

Client Sample ID: MW-5
Date Collected: 09/17/14 09:55
Date Received: 09/18/14 10:00

Lab Sample ID: 440-88377-2
Matrix: Water

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromoethane (EDB)	ND		0.50	ug/L			09/20/14 00:29	1
1,2-Dichloroethane	ND		0.50	ug/L			09/20/14 00:29	1
Benzene	ND		0.50	ug/L			09/20/14 00:29	1
Ethanol	ND		150	ug/L			09/20/14 00:29	1
Ethylbenzene	ND		0.50	ug/L			09/20/14 00:29	1
Ethyl-t-butyl ether (ETBE)	ND		0.50	ug/L			09/20/14 00:29	1
Isopropyl Ether (DIPE)	ND		0.50	ug/L			09/20/14 00:29	1
m,p-Xylene	ND		1.0	ug/L			09/20/14 00:29	1
Methyl-t-Butyl Ether (MTBE)	ND		0.50	ug/L			09/20/14 00:29	1
o-Xylene	ND		0.50	ug/L			09/20/14 00:29	1
Tert-amyl-methyl ether (TAME)	ND		0.50	ug/L			09/20/14 00:29	1
tert-Butyl alcohol (TBA)	ND		10	ug/L			09/20/14 00:29	1
Toluene	ND		0.50	ug/L			09/20/14 00:29	1
Xylenes, Total	ND		1.0	ug/L			09/20/14 00:29	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	102		80 - 120				09/20/14 00:29	1

TestAmerica Irvine

Client Sample Results

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 0402, Oakland

TestAmerica Job ID: 440-88377-1
SDG: 08-88-602

Client Sample ID: MW-5

Lab Sample ID: 440-88377-2

Date Collected: 09/17/14 09:55

Matrix: Water

Date Received: 09/18/14 10:00

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

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	101		76 - 132		09/20/14 00:29	1
Toluene-d8 (Surr)	102		80 - 128		09/20/14 00:29	1

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
GRO (C6-C12)	58		50	ug/L			09/20/14 05:12	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	86		65 - 140		09/20/14 05:12	1

Client Sample ID: MW-6

Lab Sample ID: 440-88377-3

Date Collected: 09/17/14 09:20

Matrix: Water

Date Received: 09/18/14 10:00

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			09/20/14 00:56	1
1,2-Dichloroethane	ND		0.50	ug/L			09/20/14 00:56	1
Benzene	ND		0.50	ug/L			09/20/14 00:56	1
Ethanol	ND		150	ug/L			09/20/14 00:56	1
Ethylbenzene	ND		0.50	ug/L			09/20/14 00:56	1
Ethyl-t-butyl ether (ETBE)	ND		0.50	ug/L			09/20/14 00:56	1
Isopropyl Ether (DIPE)	ND		0.50	ug/L			09/20/14 00:56	1
m,p-Xylene	ND		1.0	ug/L			09/20/14 00:56	1
Methyl-t-Butyl Ether (MTBE)	7.2		0.50	ug/L			09/20/14 00:56	1
o-Xylene	ND		0.50	ug/L			09/20/14 00:56	1
Tert-amyl-methyl ether (TAME)	ND		0.50	ug/L			09/20/14 00:56	1
tert-Butyl alcohol (TBA)	ND		10	ug/L			09/20/14 00:56	1
Toluene	ND		0.50	ug/L			09/20/14 00:56	1
Xylenes, Total	ND		1.0	ug/L			09/20/14 00:56	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	102		80 - 120		09/20/14 00:56	1
Dibromofluoromethane (Surr)	98		76 - 132		09/20/14 00:56	1
Toluene-d8 (Surr)	102		80 - 128		09/20/14 00:56	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			09/20/14 06:35	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	81		65 - 140		09/20/14 06:35	1

Client Sample ID: MW-7

Lab Sample ID: 440-88377-4

Date Collected: 09/17/14 10:25

Matrix: Water

Date Received: 09/18/14 10:00

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			09/20/14 12:18	1
1,2-Dichloroethane	ND		0.50	ug/L			09/20/14 12:18	1

TestAmerica Irvine

Client Sample Results

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 0402, Oakland

TestAmerica Job ID: 440-88377-1
SDG: 08-88-602

Client Sample ID: MW-7

Lab Sample ID: 440-88377-4

Date Collected: 09/17/14 10:25

Matrix: Water

Date Received: 09/18/14 10:00

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	2.5		0.50	ug/L			09/20/14 12:18	1
Ethanol	ND		150	ug/L			09/20/14 12:18	1
Ethylbenzene	ND		0.50	ug/L			09/20/14 12:18	1
Ethyl-t-butyl ether (ETBE)	ND		0.50	ug/L			09/20/14 12:18	1
Isopropyl Ether (DIPE)	ND		0.50	ug/L			09/20/14 12:18	1
m,p-Xylene	ND		1.0	ug/L			09/20/14 12:18	1
Methyl-t-Butyl Ether (MTBE)	ND		0.50	ug/L			09/20/14 12:18	1
o-Xylene	ND		0.50	ug/L			09/20/14 12:18	1
Tert-amyl-methyl ether (TAME)	ND		0.50	ug/L			09/20/14 12:18	1
tert-Butyl alcohol (TBA)	ND		10	ug/L			09/20/14 12:18	1
Toluene	ND		0.50	ug/L			09/20/14 12:18	1
Xylenes, Total	ND		1.0	ug/L			09/20/14 12:18	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	101		80 - 120				09/20/14 12:18	1
Dibromofluoromethane (Surr)	106		76 - 132				09/20/14 12:18	1
Toluene-d8 (Surr)	103		80 - 128				09/20/14 12:18	1

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

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
GRO (C6-C12)	360		50	ug/L			09/20/14 07:03	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	85		65 - 140				09/20/14 07:03	1

Method Summary

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 0402, Oakland

TestAmerica Job ID: 440-88377-1
SDG: 08-88-602

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

Protocol References:

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

Laboratory References:

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



Lab Chronicle

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 0402, Oakland

TestAmerica Job ID: 440-88377-1
SDG: 08-88-602

Client Sample ID: MW-4

Date Collected: 09/17/14 10:50

Date Received: 09/18/14 10:00

Lab Sample ID: 440-88377-1

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	206990	09/20/14 00:03	TN	TAL IRV
Total/NA	Analysis	8015B/5030B		1	10 mL	10 mL	206933	09/20/14 04:44	AK	TAL IRV

Client Sample ID: MW-5

Date Collected: 09/17/14 09:55

Date Received: 09/18/14 10:00

Lab Sample ID: 440-88377-2

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	206990	09/20/14 00:29	TN	TAL IRV
Total/NA	Analysis	8015B/5030B		1	10 mL	10 mL	206933	09/20/14 05:12	AK	TAL IRV

Client Sample ID: MW-6

Date Collected: 09/17/14 09:20

Date Received: 09/18/14 10:00

Lab Sample ID: 440-88377-3

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	206990	09/20/14 00:56	TN	TAL IRV
Total/NA	Analysis	8015B/5030B		1	10 mL	10 mL	206933	09/20/14 06:35	AK	TAL IRV

Client Sample ID: MW-7

Date Collected: 09/17/14 10:25

Date Received: 09/18/14 10:00

Lab Sample ID: 440-88377-4

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	207062	09/20/14 12:18	AA	TAL IRV
Total/NA	Analysis	8015B/5030B		1	10 mL	10 mL	206933	09/20/14 07:03	AK	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 0402, Oakland

TestAmerica Job ID: 440-88377-1
SDG: 08-88-602

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

Lab Sample ID: MB 440-206990/4

Matrix: Water

Analysis Batch: 206990

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			09/19/14 17:53	1
1,2-Dichloroethane	ND		0.50	ug/L			09/19/14 17:53	1
Benzene	ND		0.50	ug/L			09/19/14 17:53	1
Ethanol	ND		150	ug/L			09/19/14 17:53	1
Ethylbenzene	ND		0.50	ug/L			09/19/14 17:53	1
Ethyl-t-butyl ether (ETBE)	ND		0.50	ug/L			09/19/14 17:53	1
Isopropyl Ether (DIPE)	ND		0.50	ug/L			09/19/14 17:53	1
m,p-Xylene	ND		1.0	ug/L			09/19/14 17:53	1
Methyl-t-Butyl Ether (MTBE)	ND		0.50	ug/L			09/19/14 17:53	1
o-Xylene	ND		0.50	ug/L			09/19/14 17:53	1
Tert-amyl-methyl ether (TAME)	ND		0.50	ug/L			09/19/14 17:53	1
tert-Butyl alcohol (TBA)	ND		10	ug/L			09/19/14 17:53	1
Toluene	ND		0.50	ug/L			09/19/14 17:53	1
Xylenes, Total	ND		1.0	ug/L			09/19/14 17:53	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	102		80 - 120		09/19/14 17:53	1
Dibromofluoromethane (Surr)	97		76 - 132		09/19/14 17:53	1
Toluene-d8 (Surr)	101		80 - 128		09/19/14 17:53	1

Lab Sample ID: LCS 440-206990/5

Matrix: Water

Analysis Batch: 206990

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	25.4		ug/L		102	70 - 130
1,2-Dichloroethane	25.0	23.2		ug/L		93	57 - 138
Benzene	25.0	24.7		ug/L		99	68 - 130
Ethanol	250	240		ug/L		96	50 - 149
Ethylbenzene	25.0	23.0		ug/L		92	70 - 130
Ethyl-t-butyl ether (ETBE)	25.0	25.4		ug/L		101	60 - 136
Isopropyl Ether (DIPE)	25.0	26.8		ug/L		107	58 - 139
m,p-Xylene	50.0	46.8		ug/L		94	70 - 130
Methyl-t-Butyl Ether (MTBE)	25.0	23.8		ug/L		95	63 - 131
o-Xylene	25.0	24.5		ug/L		98	70 - 130
Tert-amyl-methyl ether (TAME)	25.0	24.1		ug/L		96	57 - 139
tert-Butyl alcohol (TBA)	125	120		ug/L		96	70 - 130
Toluene	25.0	23.9		ug/L		96	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	102		80 - 120
Dibromofluoromethane (Surr)	100		76 - 132
Toluene-d8 (Surr)	103		80 - 128

QC Sample Results

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 0402, Oakland

TestAmerica Job ID: 440-88377-1
SDG: 08-88-602

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

Lab Sample ID: 440-88401-C-1 MS

Matrix: Water

Analysis Batch: 206990

Client Sample ID: Matrix Spike

Prep Type: Total/NA

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec	%Rec.	Limits
	Result	Qualifier		Result	Qualifier					
1,2-Dibromoethane (EDB)	ND		25.0	25.7		ug/L		103	70 - 131	
1,2-Dichloroethane	ND		25.0	23.6		ug/L		94	56 - 146	
Benzene	ND		25.0	24.6		ug/L		98	66 - 130	
Ethanol	ND		250	244		ug/L		98	54 - 150	
Ethylbenzene	ND		25.0	23.3		ug/L		93	70 - 130	
Ethyl-t-butyl ether (ETBE)	ND		25.0	25.6		ug/L		102	70 - 130	
Isopropyl Ether (DIPE)	ND		25.0	26.7		ug/L		107	64 - 138	
m,p-Xylene	ND		50.0	47.5		ug/L		95	70 - 133	
Methyl-t-Butyl Ether (MTBE)	ND		25.0	24.2		ug/L		97	70 - 130	
o-Xylene	ND		25.0	24.8		ug/L		99	70 - 133	
Tert-amyl-methyl ether (TAME)	ND		25.0	24.8		ug/L		99	68 - 133	
tert-Butyl alcohol (TBA)	ND		125	122		ug/L		97	70 - 130	
Toluene	ND		25.0	23.9		ug/L		95	70 - 130	

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

Lab Sample ID: 440-88401-C-1 MSD

Matrix: Water

Analysis Batch: 206990

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		Result	Qualifier						RPD	Limit
1,2-Dibromoethane (EDB)	ND		25.0	25.8		ug/L		103	70 - 131	0	25	
1,2-Dichloroethane	ND		25.0	23.3		ug/L		93	56 - 146	1	20	
Benzene	ND		25.0	24.2		ug/L		97	66 - 130	2	20	
Ethanol	ND		250	239		ug/L		95	54 - 150	2	30	
Ethylbenzene	ND		25.0	22.8		ug/L		91	70 - 130	2	20	
Ethyl-t-butyl ether (ETBE)	ND		25.0	25.2		ug/L		101	70 - 130	2	25	
Isopropyl Ether (DIPE)	ND		25.0	26.2		ug/L		105	64 - 138	2	25	
m,p-Xylene	ND		50.0	46.4		ug/L		93	70 - 133	2	25	
Methyl-t-Butyl Ether (MTBE)	ND		25.0	23.8		ug/L		95	70 - 130	2	25	
o-Xylene	ND		25.0	24.0		ug/L		96	70 - 133	3	20	
Tert-amyl-methyl ether (TAME)	ND		25.0	24.6		ug/L		98	68 - 133	1	30	
tert-Butyl alcohol (TBA)	ND		125	121		ug/L		97	70 - 130	1	25	
Toluene	ND		25.0	23.5		ug/L		94	70 - 130	2	20	

Surrogate	MSD	MSD	Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	102		80 - 120
Dibromofluoromethane (Surr)	102		76 - 132
Toluene-d8 (Surr)	103		80 - 128

QC Sample Results

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 0402, Oakland

TestAmerica Job ID: 440-88377-1
SDG: 08-88-602

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

Lab Sample ID: MB 440-207062/4

Matrix: Water

Analysis Batch: 207062

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			09/20/14 09:14	1
1,2-Dichloroethane	ND		0.50	ug/L			09/20/14 09:14	1
Benzene	ND		0.50	ug/L			09/20/14 09:14	1
Ethanol	ND		150	ug/L			09/20/14 09:14	1
Ethylbenzene	ND		0.50	ug/L			09/20/14 09:14	1
Ethyl-t-butyl ether (ETBE)	ND		0.50	ug/L			09/20/14 09:14	1
Isopropyl Ether (DIPE)	ND		0.50	ug/L			09/20/14 09:14	1
m,p-Xylene	ND		1.0	ug/L			09/20/14 09:14	1
Methyl-t-Butyl Ether (MTBE)	ND		0.50	ug/L			09/20/14 09:14	1
o-Xylene	ND		0.50	ug/L			09/20/14 09:14	1
Tert-amyl-methyl ether (TAME)	ND		0.50	ug/L			09/20/14 09:14	1
tert-Butyl alcohol (TBA)	ND		10	ug/L			09/20/14 09:14	1
Toluene	ND		0.50	ug/L			09/20/14 09:14	1
Xylenes, Total	ND		1.0	ug/L			09/20/14 09:14	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	101		80 - 120		09/20/14 09:14	1
Dibromofluoromethane (Surr)	98		76 - 132		09/20/14 09:14	1
Toluene-d8 (Surr)	101		80 - 128		09/20/14 09:14	1

Lab Sample ID: LCS 440-207062/5

Matrix: Water

Analysis Batch: 207062

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
1,2-Dibromoethane (EDB)	25.0	24.1		ug/L		96	70 - 130
1,2-Dichloroethane	25.0	22.6		ug/L		90	57 - 138
Benzene	25.0	24.6		ug/L		98	68 - 130
Ethanol	250	256		ug/L		102	50 - 149
Ethylbenzene	25.0	23.4		ug/L		94	70 - 130
Ethyl-t-butyl ether (ETBE)	25.0	24.5		ug/L		98	60 - 136
Isopropyl Ether (DIPE)	25.0	26.6		ug/L		106	58 - 139
m,p-Xylene	50.0	47.7		ug/L		95	70 - 130
Methyl-t-Butyl Ether (MTBE)	25.0	22.4		ug/L		90	63 - 131
o-Xylene	25.0	24.8		ug/L		99	70 - 130
Tert-amyl-methyl ether (TAME)	25.0	22.9		ug/L		91	57 - 139
tert-Butyl alcohol (TBA)	125	121		ug/L		97	70 - 130
Toluene	25.0	23.8		ug/L		95	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene (Surr)	100		80 - 120
Dibromofluoromethane (Surr)	101		76 - 132
Toluene-d8 (Surr)	102		80 - 128

QC Sample Results

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 0402, Oakland

TestAmerica Job ID: 440-88377-1
SDG: 08-88-602

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

Lab Sample ID: 440-88537-E-3 MS

Matrix: Water

Analysis Batch: 207062

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	25.0		ug/L		100	70 - 131	
1,2-Dichloroethane	ND		25.0	23.4		ug/L		94	56 - 146	
Benzene	ND		25.0	24.7		ug/L		99	66 - 130	
Ethanol	ND		250	248		ug/L		99	54 - 150	
Ethylbenzene	ND		25.0	23.2		ug/L		93	70 - 130	
Ethyl-t-butyl ether (ETBE)	ND		25.0	25.1		ug/L		100	70 - 130	
Isopropyl Ether (DIPE)	ND		25.0	26.2		ug/L		105	64 - 138	
m,p-Xylene	ND		50.0	47.2		ug/L		94	70 - 133	
Methyl-t-Butyl Ether (MTBE)	ND		25.0	23.4		ug/L		94	70 - 130	
o-Xylene	ND		25.0	24.6		ug/L		98	70 - 133	
Tert-amyl-methyl ether (TAME)	ND		25.0	24.2		ug/L		97	68 - 133	
tert-Butyl alcohol (TBA)	ND		125	124		ug/L		99	70 - 130	
Toluene	ND		25.0	24.0		ug/L		96	70 - 130	

Surrogate	MS	MS	Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	100		80 - 120
Dibromofluoromethane (Surr)	101		76 - 132
Toluene-d8 (Surr)	103		80 - 128

Lab Sample ID: 440-88537-E-3 MSD

Matrix: Water

Analysis Batch: 207062

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	23.8		ug/L		95	70 - 131	5	25	
1,2-Dichloroethane	ND		25.0	22.2		ug/L		89	56 - 146	5	20	
Benzene	ND		25.0	25.0		ug/L		100	66 - 130	1	20	
Ethanol	ND		250	265		ug/L		106	54 - 150	6	30	
Ethylbenzene	ND		25.0	24.0		ug/L		96	70 - 130	3	20	
Ethyl-t-butyl ether (ETBE)	ND		25.0	24.2		ug/L		97	70 - 130	4	25	
Isopropyl Ether (DIPE)	ND		25.0	26.4		ug/L		106	64 - 138	1	25	
m,p-Xylene	ND		50.0	49.1		ug/L		98	70 - 133	4	25	
Methyl-t-Butyl Ether (MTBE)	ND		25.0	21.8		ug/L		87	70 - 130	7	25	
o-Xylene	ND		25.0	25.2		ug/L		101	70 - 133	3	20	
Tert-amyl-methyl ether (TAME)	ND		25.0	23.0		ug/L		92	68 - 133	5	30	
tert-Butyl alcohol (TBA)	ND		125	126		ug/L		101	70 - 130	1	25	
Toluene	ND		25.0	24.3		ug/L		97	70 - 130	1	20	

Surrogate	MSD	MSD	Limits
	%Recovery	Qualifier	
4-Bromofluorobenzene (Surr)	101		80 - 120
Dibromofluoromethane (Surr)	100		76 - 132
Toluene-d8 (Surr)	102		80 - 128

QC Sample Results

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 0402, Oakland

TestAmerica Job ID: 440-88377-1
SDG: 08-88-602

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

Lab Sample ID: MB 440-206933/37
Matrix: Water
Analysis Batch: 206933

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			09/20/14 00:34	1
Surrogate	%Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac		
4-Bromofluorobenzene (Surr)	92		65 - 140		09/20/14 00:34	1		

Lab Sample ID: LCS 440-206933/36
Matrix: Water
Analysis Batch: 206933

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	816		ug/L		102	80 - 120
Surrogate	%Recovery	LCS Qualifier	Limits				
4-Bromofluorobenzene (Surr)	98		65 - 140				

Lab Sample ID: 440-88289-I-2 MS
Matrix: Water
Analysis Batch: 206933

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	717		ug/L		90	65 - 140
Surrogate	%Recovery	MS Qualifier	Limits						
4-Bromofluorobenzene (Surr)	93		65 - 140						

Lab Sample ID: 440-88289-I-2 MSD
Matrix: Water
Analysis Batch: 206933

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	709		ug/L		89	65 - 140	1	20
Surrogate	%Recovery	MSD Qualifier	Limits								
4-Bromofluorobenzene (Surr)	88		65 - 140								

QC Association Summary

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 0402, Oakland

TestAmerica Job ID: 440-88377-1
SDG: 08-88-602

GC/MS VOA

Analysis Batch: 206990

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-88377-1	MW-4	Total/NA	Water	8260B/5030B	
440-88377-2	MW-5	Total/NA	Water	8260B/5030B	
440-88377-3	MW-6	Total/NA	Water	8260B/5030B	
440-88401-C-1 MS	Matrix Spike	Total/NA	Water	8260B/5030B	
440-88401-C-1 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B/5030B	
LCS 440-206990/5	Lab Control Sample	Total/NA	Water	8260B/5030B	
MB 440-206990/4	Method Blank	Total/NA	Water	8260B/5030B	

Analysis Batch: 207062

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-88377-4	MW-7	Total/NA	Water	8260B/5030B	
440-88537-E-3 MS	Matrix Spike	Total/NA	Water	8260B/5030B	
440-88537-E-3 MSD	Matrix Spike Duplicate	Total/NA	Water	8260B/5030B	
LCS 440-207062/5	Lab Control Sample	Total/NA	Water	8260B/5030B	
MB 440-207062/4	Method Blank	Total/NA	Water	8260B/5030B	

GC VOA

Analysis Batch: 206933

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
440-88289-I-2 MS	Matrix Spike	Total/NA	Water	8015B/5030B	
440-88289-I-2 MSD	Matrix Spike Duplicate	Total/NA	Water	8015B/5030B	
440-88377-1	MW-4	Total/NA	Water	8015B/5030B	
440-88377-2	MW-5	Total/NA	Water	8015B/5030B	
440-88377-3	MW-6	Total/NA	Water	8015B/5030B	
440-88377-4	MW-7	Total/NA	Water	8015B/5030B	
LCS 440-206933/36	Lab Control Sample	Total/NA	Water	8015B/5030B	
MB 440-206933/37	Method Blank	Total/NA	Water	8015B/5030B	

Definitions/Glossary

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 0402, Oakland

TestAmerica Job ID: 440-88377-1
SDG: 08-88-602

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
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Certification Summary

Client: Broadbent & Associates, Inc.
Project/Site: ARCO 0402, Oakland

TestAmerica Job ID: 440-88377-1
SDG: 08-88-602

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	06-30-15
Arizona	State Program	9	AZ0671	10-13-14 *
California	LA Cty Sanitation Districts	9	10256	01-31-15
California	State Program	9	2706	06-30-16
Guam	State Program	9	Cert. No. 12.002r	01-23-15
Hawaii	State Program	9	N/A	01-29-15 *
Nevada	State Program	9	CA015312007A	07-31-15
New Mexico	State Program	6	N/A	01-29-15
Northern Mariana Islands	State Program	9	MP0002	01-29-15
Oregon	NELAP	10	4005	01-29-15
USDA	Federal		P330-09-00080	06-06-15
USEPA UCMR	Federal	1	CA01531	01-31-15

* Certification renewal pending - certification considered valid.

TestAmerica Irvine



Laboratory Management Program LaMP Chain of Custody Record

BP Site Node Path: 08-88-602

Req Due Date (mm/dd/yy):

Rush TAT: Yes No

BP Facility No: 402

Lab Work Order Number:

Lab Name: Test America	Facility Address: 1450 Fruitvale Ave.	Consultant/Contractor: Broadbent and Associates, Inc.
Lab Address: 17461 Derian Avenue Suite #100, Irvine, CA 92614	City, State, ZIP Code: Oakland, CA	Consultant/Contractor Project No: 08-88-602
Lab PM: Kathleen Robb	Lead Regulatory Agency: ACEH	Address: 4820 Business Center Drive, Suite 110, Fairfield, CA 94534
Lab Phone: 949-261-1022	California Global ID No.: T06019734265	Consultant/Contractor PM: Kristene Tidwell
Lab Shipping Acct: 1103-6633-7	Enfos Proposal No: 0064V-0009 / WR273481	Phone: 707-455-7290 Fax: 707-863-9046
Lab Bottle Order No:	Accounting Mode: Provision <input checked="" type="checkbox"/> OOC-BU <input type="checkbox"/> OOC-RM <input type="checkbox"/>	Email EDD To: ktidwell@broadbentinc.com and to lab.enfosdoc@bp.com
Other Info:	Stage: Execute (40) Activity: GWM (401)	Invoice To: BP <input checked="" type="checkbox"/> Contractor <input type="checkbox"/>

Lab No.	Sample Description	Date	Time	Matrix				No. Containers / Preservative							Requested Analyses						Report Type & QC Level		Comments			
				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 & Ethanol by 8260								Standard <input checked="" type="checkbox"/>	Full Data Package <input type="checkbox"/>	
	MW-4	9/17/2014	1050	x		y	6											x	x	x						
	MW-5	9/17/2014	0955	x		y	6											x	x	x						
	MW-6	9/17/2014	0920	x		y	6											x	x	x						
	MW-7	9/17/2014	1025	x		y	6											x	x	x						
	TB-402-09172014					n	2																			On Hold



440-88377 Chain of Custody

Sampler's Name: Alex Martinez	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Company:	<i>Alex Martinez</i> BAI	9/17/14	1520	<i>J. Gull TAP</i> Z.1°C	9/17/14	1520
Shipment Method:	<i>for bulk TAP</i>	9/17/14	16:35	<i>Selvin Lauer</i>	9/18/14	10:00
Shipment Tracking No:						

Special Instructions: THIS LINE - LAB USE ONLY: Custody Seals in Place: Yes No Temp Blank: Yes No Cooler Temp on Receipt: 3.5°C °F/C Trip Blank: Yes No MS/MSD Sample Submitted: Yes No

1R-64 3.2°C # 6118 5642 0104

Page 16 of 19

10/21/2014



Login Sample Receipt Checklist

Client: Broadbent & Associates, Inc.

Job Number: 440-88377-1

SDG Number: 08-88-602

Login Number: 88377

List Number: 1

Creator: Freitag, Kevin R

List Source: TestAmerica Irvine

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



APPENDIX D

GEOTRACKER UPLOAD CONFIRMATION RECEIPTS

STATE WATER RESOURCES CONTROL BOARD
GEOTRACKER ESI

UPLOADING A EDF FILE

SUCCESS

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

<u>Submittal Type:</u>	EDF
<u>Report Title:</u>	Third Quarter 2014 Monitoring Report
<u>Report Type:</u>	Monitoring Report - Quarterly
<u>Facility Global ID:</u>	T06019734265
<u>Facility Name:</u>	ARCO #0402 / PARKING LOT
<u>File Name:</u>	440-88377-1_02 Oct 14 1149_EDF.zip
<u>Organization Name:</u>	Broadbent & Associates, Inc.
<u>Username:</u>	BROADBENT-C
<u>IP Address:</u>	69.170.11.178
<u>Submittal Date/Time:</u>	10/29/2014 9:52:29 AM
<u>Confirmation Number:</u>	6295457363

[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>Submission Type:</u>	GEO_WELL
<u>Report Title:</u>	Third Quarter 2014 Monitoring Report
<u>Facility Global ID:</u>	T06019734265
<u>Facility Name:</u>	ARCO #0402 / PARKING LOT
<u>File Name:</u>	GEO_WELL.zip
<u>Organization Name:</u>	Broadbent & Associates, Inc.
<u>Username:</u>	BROADBENT-C
<u>IP Address:</u>	69.170.11.178
<u>Submission Date/Time:</u>	10/31/2014 12:21:55 PM
<u>Confirmation Number:</u>	5148581802

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