Atlantic Richfield Company

Chuck Carmel
Remediation Management Project Manager

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RECEIVED

11:41 am, May 02, 2011
Alameda County
Environmental Health

April 29, 2011

Re: First Quarter 2011 Monitoring Report
Former Richfield Oil Company Station #472
6415 International Boulevard, Oakland, California
ACEH Case #RO00002982

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

Submitted by,

Chuck Carmel
Remediation Management Project Manager

Attachment:

Broadbent & Associates, Inc.
1324 Mangrove Ave., Suite 212
Chico, CA 95926
Voice (530) 566-1400
Fax (530) 566-1401

BROADBENT & ASSOCIATES, INC
ENVIRONMENTAL, WATER RESOURCES & ENGINEERING

April 29, 2011

Project No. 09-88-601

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

Attn.: Mr. Chuck Carmel

Re: First Quarter 2011 Monitoring Report, Former Richfield Oil Company Station #472, 6415 International Boulevard, Oakland; ACEH Case #RO0002982

Dear Mr. Carmel:

Attached is the First Quarter 2011 Monitoring Report for the Former Richfield Oil Company Station #472 located at 6415 International Boulevard, Oakland, California. Should you have questions regarding the work performed or results obtained, please do not hesitate to contact me at 530-566-1400.

Sincerely,
BROADBENT & ASSOCIATES, INC.

Thomas A. Venus, PE
Senior Engineer

Enclosures

cc: Mr. Paresh Khatri, Alameda County Environmental Health (submitted via ACEH ftp site)
Mr. Mahmud Ghanem, 6207 International Blvd, Oakland, California 94621
Electronic copy uploaded to GeoTracker

FIRST QUARTER 2011
MONITORING REPORT
FORMER STATION #472, OAKLAND, CALIFORNIA

Broadbent & Associates, Inc. (BAI) is pleased to present this *First Quarter 2011 Monitoring Report* on behalf of Atlantic Richfield Company (a BP affiliated company) for Former Richfield Oil Company Station #472 (also known as Pluckey's Liquors) located in Oakland, Alameda County, California. Quarterly reporting is being submitted to the Alameda County Environmental Health Services Agency (ACEH) consistent with their requirements under the legal authority of the California Regional Water Quality Control Board, as codified by the California Code of Regulations Title 23, Section 2652(d). Details of work performed, discussion of results, and recommendations are provided below.

Facility Name / Address:	Former Station #472 / 6415 International Boulevard, Oakland
Client Project Manager / Title:	Mr. Chuck Carmel / Remediation Management Project Manager
BAI Contact:	Mr. Tom Venus, PE / (530) 566-1400
BAI Project No.:	09-88-601
Primary Regulatory Agency / ID No.:	ACEH, Case #RO00002982
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 2011):

1. Submitted *Fourth Quarter 2010 Status Report* (BAI, 1/5/2011).
2. Conducted groundwater monitoring/sampling for First Quarter 2011 on February 8, 2011.

WORK SCHEDULED FOR NEXT QUARTER (Second Quarter 2011):

1. Submit *First Quarter 2011 Monitoring Report* (contained herein).
2. No environmental field work is presently scheduled at Former Station #472 during Second Quarter 2011.

ADDITIONAL WORK RECOMMENDED FOR NEXT QUARTER (<<Second Quarter 2011>>)

1. None.

GROUNDWATER MONITORING PLAN SUMMARY:

Groundwater level gauging:	MW-1 through MW-3	(1Q & 3Q)
Groundwater sample collection:	MW-1 through MW-3	(1Q & 3Q)
Biodegradation indicator parameter monitoring:	MW-1 through MW-3	(1Q & 3Q)

QUARTERLY RESULTS SUMMARY:

LNAPL

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

Groundwater Elevation and Gradient:

Depth to groundwater:	7.21 (MW-2) to 8.82 (MW-3)	(ft below TOC)
Gradient direction:	South	(compass direction)
Gradient magnitude:	0.006	(ft/ft)
Average change in elevation:	+0.80	(ft since last measurement)

Laboratory Analytical Data

Summary: DRO was detected slightly above the laboratory reporting limit in MW-1. Other petroleum hydrocarbon constituents were below reporting limits. Overall GRO and DRO decreased in MW-1 and MW-3 relative to Third Quarter 2010.

ACTIVITIES CONDUCTED & RESULTS:

First Quarter 2011groundwater monitoring was conducted on February 8, 2011 by BAI personnel in accordance with the monitoring plan summary detailed above. No other irregularities were noted during water level gauging. Light, Non-Aqueous Phase Liquid (LNAPL, or free product) was not noted to be present in the wells monitored during this event. Depth to water measurements ranged from 7.21 ft at MW-2 to 8.82 ft at MW-3. Resulting groundwater surface elevations ranged from 16.48 ft at MW-1 to 15.91 ft at MW-3. Groundwater elevations are summarized in Table 1. Water level elevations yielded a potentiometric groundwater flow direction and horizontal gradient to the South at approximately 0.006 ft/ft. Field methods used during groundwater monitoring are provided in Appendix A. Field data sheets are included in Appendix B. A Site Location Map is presented as Drawing 1. Potentiometric groundwater elevation contours are presented in Drawing 2.

Groundwater samples were collected on February 8, 2011 consistent with the current monitoring schedule. No irregularities were reported during sampling. Samples were submitted under chain-of-custody protocol to Calscience Environmental Laboratories, Inc. (Garden Grove, California) for analysis of Gasoline-Range Organics (GRO, C6-C12) and Diesel-Range Organics (DRO, C10-C28) by EPA Method 8015M; for Benzene, Toluene, Ethylbenzene, Total Xylenes (BTEX), Methyl Tertiary Butyl Ether (MTBE), Ethyl Tertiary Butyl Ether (ETBE), Tert-Amyl Methyl Ether (TAME), Di-Isopropyl Ether (DIPE), 1,2-Dibromomethane (EDB), 1,2-Dichloroethane (1,2-DCA), Tert-Butyl Alcohol (TBA) and Ethanol by EPA Method 8260. No significant irregularities were encountered during analysis of the samples with the following exception: The laboratory noted the concentration reported during the DRO analysis of MW-1 was of an unknown hydrocarbon(s) quantitiated against diesel fuel. The laboratory analytical report, including chain-of-custody documentation, is provided in Appendix C.

Hydrocarbons in the DRO range were detected above the laboratory reporting limit at a concentration of 53 micrograms per liter (µg/L, parts per billion, ppb) in well MW-1 (however with the laboratory flag “LX = Quantitation of unknown hydrocarbon(s) in sample based on Diesel”). The remaining analytes were not detected above their laboratory reporting limits in the wells sampled this last monitoring event. Groundwater monitoring laboratory analytical results are summarized in Table 1 and Table 2. The most recent GRO, Benzene, and MTBE concentrations are also presented in Drawing 2. Groundwater monitoring data (GEO_WELL) and laboratory analytical results (EDF) were uploaded to the GeoTracker AB2886 database. Upload confirmation receipts are provided in Appendix D.

DISCUSSION:

Groundwater levels were between historic minimum and maximum elevations for each well. Groundwater elevations yielded a potentiometric groundwater flow direction and horizontal gradient to the South at approximately 0.006 ft/ft, generally consistent with the historic flow direction and gradient data presented in Table 3.

This event’s detected analytical concentrations were within the historic minimum and maximum ranges recorded for each well. The DRO concentration of 53 µg/L in sample MW-1 was slightly above the laboratory reporting limit of 50 µg/L. The laboratory noted that the MW-1 concentration reported was a quantitation of unknown hydrocarbon(s) in sample based on diesel. This is consistent with past analyses. In the past, the laboratory noted the chromatogram did not resemble the laboratory standard for diesel and may be due to significant breakdown of aged fuel. No other constituents analyzed were detected above the laboratory reporting limits.

RECOMMENDATIONS:

Consistent with the revised monitoring schedule, no monitoring or sampling field work is planned for Second Quarter 2011. The next groundwater monitoring event is scheduled to occur during the Third Quarter 2011. In the meantime, ACEH is encouraged to review the case as a candidate for site closure.

LIMITATIONS:

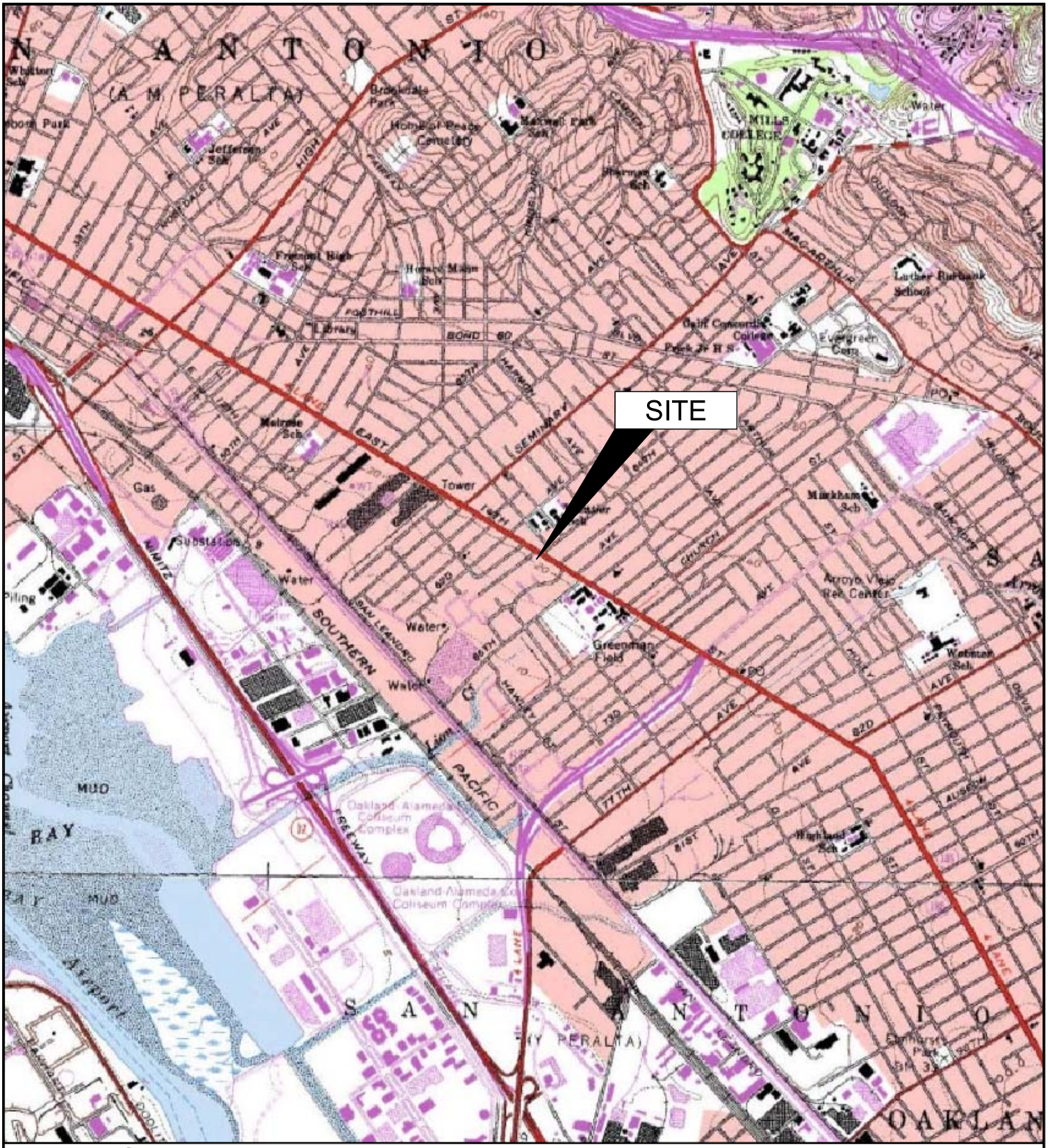
The findings presented in this report are based upon observations of field personnel, points investigated, results of laboratory tests performed by Calscience Environmental Laboratories, Inc. (Garden Grove, California), and our understanding of ACEH requirements. Our services were performed in accordance 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 the Atlantic Richfield Company. It is possible that variations in soil or groundwater conditions could exist beyond points explored in this investigation. Also, changes in site conditions could occur in the future due to variations in rainfall, temperature, regional water usage, or other factors.

ATTACHMENTS:

Drawing 1:	Site Location Map
Drawing 2:	Groundwater Elevation Contours and Analytical Summary Map, 8 February 2011
Table 1:	Summary of Groundwater Monitoring Data: Water Elevations and Laboratory Analyses
Table 2:	Summary of Fuel Additives Analytical Data
Table 3:	Historic Groundwater Flow Direction and Gradient
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	ft/ft:	feet per foot
BAI:	Broadbent & Associates, Inc.	gal:	Gallons
BTEX:	Benzene, Toluene, Ethylbenzene, Total Xylenes	GRO:	Gasoline-Range Organics
1,2-DCA:	1,2-Dichloroethane	LNAPL:	Light Non-Aqueous Phase Liquid
DIPE:	Di-Isopropyl Ether	MTBE:	Methyl Tertiary Butyl Ether
DO:	Dissolved Oxygen	NO_3:	Nitrate as Nitrogen
DRO:	Diesel-Range Organics	ppb:	parts per billion
EDB:	1,2-Dibromomethane	SO_4:	Sulfate
Eh:	Oxidation Reduction Potential	TAME:	Tert-Amyl Methyl Ether
EPA:	Environmental Protection Agency	TBA:	Tertiary Butyl Ether
ETBE:	Ethyl Tertiary Butyl Ether	TOC:	Top of Casing
Fe^{2+}:	Ferrous Iron	µg/L:	micrograms per liter



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0 2000 4000

APPROXIMATE SCALE (ft)

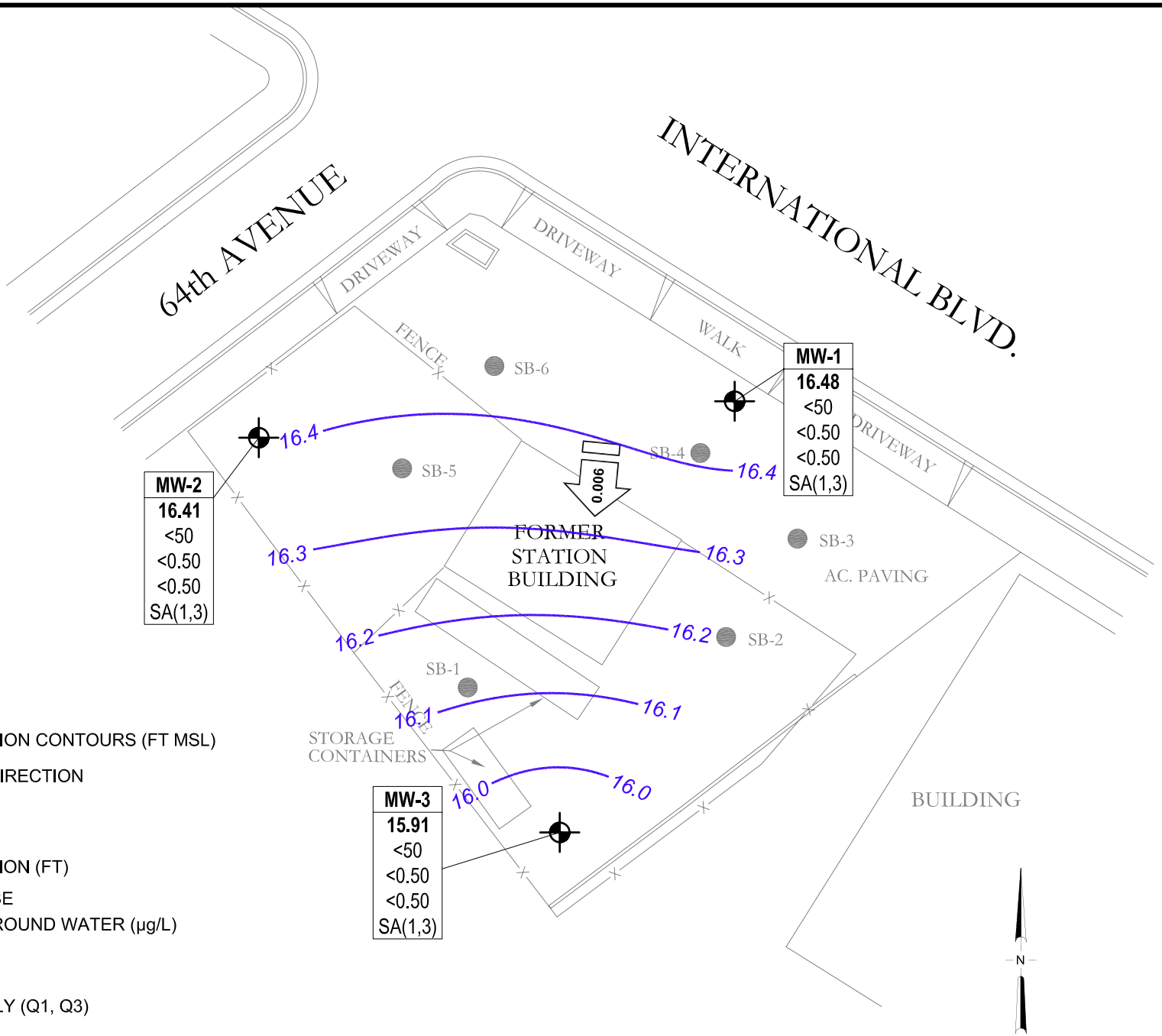
IMAGE SOURCE: USGS

BROADBENT & ASSOCIATES, INC.
ENGINEERING, WATER RESOURCES & ENVIRONMENTAL
1324 Mangrove Ave. Suite 212, Chico, CA 95926
Project No.: 09-88-601 Date: 07/31/09

Former Station #472
6415 International Boulevard
Oakland, California

Site Location Map

Drawing
1



LEGEND

- MONITORING WELL
- SOIL BORING
- 16.0 GROUNDWATER ELEVATION CONTOURS (FT MSL)
- 0.006 GROUNDWATER FLOW DIRECTION AND GRADIENT (FT/FT)

Well	WELL DESIGNATION
ELEV	GROUNDWATER ELEVATION (FT)
GRO	GRO, BENZENE AND MTBE
Benzene	CONCENTRATIONS IN GROUND WATER (µg/L)
MTBE	
Q/SA/A	SAMPLING FREQUENCY

SA(1,3) SAMPLED SEMI-ANNUALLY (Q1, Q3)

0 30 60
SCALE (ft)

BROADBENT & ASSOCIATES, INC.
ENGINEERING, WATER RESOURCES & ENVIRONMENTAL
1324 Mangrove Ave. Suite 212, Chico, California
Project No.: 09-88-601 Date: 4/21/2011

Former Station #472
6415 International Boulevard
Oakland, California

Groundwater Elevation Contours and Analytical Summary Map
8 February 2011

Drawing
2

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

ARCO Service Station #472, 6415 International Boulevard, Oakland, CA

Well and Sample Date	P/NP	TOC Elevation (feet)	DTW (feet)	Product Thickness (feet)	Water Level Elevation (feet)	Concentrations in (µg/L)								DO (mg/L)	pH	Footnote
						GRO/ TPHg	DRO/ TPHd	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MtBE	TOG			
MW-1																
8/25/2009	P	24.17	9.29	0.00	14.88	530	190	<0.50	<0.50	<0.50	<0.50	0.54	--	--	7.21	LX (DRO)
11/11/2009	NP		8.22	0.00	15.95	<50	--	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	
2/17/2010	NP		7.36	0.00	16.81	<50	70	<0.50	<0.50	<0.50	<0.50	<0.50	--	1.69	7.03	LX (DRO)
6/2/2010	NP		7.61	0.00	16.56	110	120	<0.50	<0.50	<0.50	<0.50	<0.50	--	1.21	7.0	LW (GRO), LX (DRO)
9/3/2010	NP		8.99	0.00	15.18	1,000	190	<0.50	<0.50	<0.50	<0.50	<0.50	--	0.74	7.30	LW (GRO), LX (DRO)
2/8/2011	**NP**		**7.69**	**0.00**	**16.48**	**<50**	**53**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**--**	**0.64**	**6.8**	**LX (DRO)**
MW-2																
8/25/2009	P	23.62	9.65	0.00	13.97	<50	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	7.30	
11/11/2009	NP		8.09	0.00	15.53	<50	--	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	
2/17/2010	P		6.80	0.00	16.82	<50	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	2.62	7.15	
6/2/2010	NP		7.11	0.00	16.51	<50	65	<0.50	<0.50	<0.50	<0.50	<0.50	--	2.85	7.3	LX (DRO)
9/3/2010	NP		8.79	0.00	14.83	<50	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	1.19	7.90	
2/8/2011	**NP**		**7.21**	**0.00**	**16.41**	**<50**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**--**	**2.15**	**7.0**	
MW-3																
8/25/2009	P	24.73	11.07	0.00	13.66	63	85	<0.50	1.2	<0.50	<0.50	<0.50	--	--	7.09	
11/11/2009	NP		9.56	0.00	15.17	88	--	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	LW (GRO)
2/17/2010	NP		8.52	0.00	16.21	<50	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	2.04	7.09	
6/2/2010	NP		8.64	0.00	16.09	100	130	<0.50	<0.50	<0.50	<0.50	<0.50	--	1.22	7.1	LW (GRO), LX (DRO)
9/3/2010	NP		8.41	0.00	16.32	200	140	<0.50	<0.50	<0.50	<0.50	<0.50	--	0.87	6.9	LW (GRO), LX (DRO)
2/8/2011	**NP**		**8.82**	**0.00**	**15.91**	**<50**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**--**	**0.88**	**7.0**	

Symbols & Abbreviations:
--- = Not analyzed/applicable/measured/available
< = Not detected at or above specified laboratory reporting limit
DO = Dissolved oxygen
DRO = Diesel range organics
DTW = Depth to water in ft bgs
GRO = Gasoline range organics, range C4-C12
GWE = Groundwater elevation measured in ft
HVOC = Halogenated volatile organic compounds
mg/L = Milligrams per liter
MTBE = Methyl tert-butyl ether
NP = Well not purged prior to sampling
P = Well purged prior to sampling
TOC = Top of casing measured in ft
TOG = Total oil and grease
TPH-d = Total petroleum hydrocarbons as diesel
TPH-g = Total petroleum hydrocarbons as gasoline
µg/L = Micrograms per liter
CEL = CalScience Environmental Laboratories, Inc.

Footnotes:
LW = Quantitation of unknown hydrocarbon(s) in sample based on gasoline
LX = Quantitation of unknown hydrocarbon(s) in sample based on diesel

Table 2. Summary of Fuel Additives Analytical Data

ARCO Service Station #472, 6415 International Boulevard, Oakland, CA

Well and Sample Date	Concentrations in (µg/L)								Comments
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
MW-1									
8/25/2009	<300	<10	0.54	<0.50	<0.50	<0.50	<0.50	<0.50	
11/11/2009	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
2/17/2010	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
6/2/2010	<50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.72 µg/L sec-Butylbenzene, 1.4 µg/L tert-Butylbenzene
9/3/2010	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
2/8/2011	**<300**	**<10**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	
MW-2									
8/25/2009	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
11/11/2009	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
2/17/2010	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
6/2/2010	<50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
9/3/2010	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
2/8/2011	**<300**	**<10**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	
MW-3									
8/25/2009	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
11/11/2009	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
2/17/2010	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
6/2/2010	<50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
9/3/2010	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
2/8/2011	**<300**	**<10**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	

ABBREVIATIONS & SYMBOLS:
-- = Not analyzed/applicable/measured/available
< = Not detected at or above specified laboratory reporting limit
1,2-DCA = 1,2-Dichloroethane
DIPE = Di-isopropyl ether
EDB = 1,2-Dibromoethane
ETBE = Ethyl tert-butyl ether
MTBE = Methyl tert-butyl ether
TAME = tert-Amyl methyl ether
TBA = tert-Butyl alcohol
µg/L = Micrograms per Liter

NOTES:
All volatile organic compounds were analyzed using EPA Method 8260B.

Table 3. Historical Groundwater Flow Direction and Gradient

ARCO Service Station #472, 6415 International Boulevard, Oakland, CA

Date Measured	Approximate Groundwater Flow Direction	Approximate Hydraulic Gradient (ft/ft)
8/25/2009	Southwest	0.01
11/11/2009	South-Southwest	0.008
2/17/2010	South	0.006
6/2/2010	South	0.003
9/3/2010	North-Northwest	0.015
2/8/2011	**South**	**0.006**

APPENDIX A

FIELD METHODS

BROADBENT & ASSOCIATES INC. FIELD PROCEDURES

A.1 QUALITY ASSURANCE/QUALITY CONTROL FIELD PROTOCOLS

Field protocols have been implemented to enhance the accuracy and reliability of data collection, ground-water sample collection, transportation and laboratory analysis. Discussion of these protocols is provided below.

A.1.1 Water Level & Free-Product Measurement

Prior to ground-water sample collection from each monitoring well, the presence of separate-phase hydrocarbons (SPH or free product, FP) and depth to ground water shall be measured. Depth to ground water will be measured with a standard water level indicator that has been decontaminated prior to its use in accordance with procedures discussed below. Depth to groundwater will be gauged from a saw cut notch at the top of the well casing on each well head. Where FP is suspected, the initial gauging will be done with an oil-water interface probe. Once depth to water has been measured, the first retrieval of a new disposable bailer will be scrutinized for the presence of SPH/FP.

A.1.2 Monitoring Well Purging

Subsequent to measuring depth to ground water and prior to the collection of ground-water samples, purging of standing water within the monitoring will be performed if called for. Consistent with the American Society for Testing and Materials (ASTM) Standard D6452-99, Section 7.1, the well will be purged of approximately three wetted-casing volumes of water, or until the well is dewatered, or until monitored field parameters indicate stabilization. The well will be purged using a pre-cleaned disposable bailer or submersible pump and disposable plastic tubing dedicated to each individual well. The well will be purged at a low flow rate to minimize the possibility of purging the well dry. So that the sample collected is representative of formation water, several field parameters will be monitored during the purging process. The sample will not be collected until these parameters (i.e. temperature, pH, and conductivity) have stabilized to within 10% of the previously measured value. If a well is purged dry, the sample should not be collected until the well has recovered to a minimum 50% of its initial volume.

A.1.3 Ground-Water Sample Collection

Once the wells are satisfactorily purged, water samples will be collected from each well. Water samples for organic analyses will be collected using a pre-cleaned, new, disposable bailer and transferred into the appropriate, new, laboratory-prepared containers such that no head space or air bubbles are present in the sample container (if appropriate to the analysis). The samples will be properly labeled (i.e. sample identification, sampler initials, date/time of collection, site location, requested analyses), placed in an ice chest with bagged ice or ice substitute, and delivered to the contracted analytical laboratory.

A.1.4 Surface Water Sample Collection

Unless specified otherwise, surface water samples will be collected from mid-depth in the central area of the associated surface water body. Water samples will be collected into appropriate, new, laboratory-prepared containers by dipping the container into the surface water unless the container has a preservative present. If a sample preservative is present, a new, cleaned non-preserved surrogate container will be used to obtain the sample which will then be directly transferred into a new, laboratory-provided, preserved container. Samples will be properly labeled and transported as described above.

A.1.5 Decontamination Protocol

Prior to use in each well, re-usable ground-water sampling equipment (e.g., water level indicator, oil-interface probe, purge pump, etc.) will be decontaminated. Decontamination protocol will include thoroughly cleaning with a solution of Liquinox, rinsing with clean water, and final rinsing with control water (potable water of known quality, distilled, or de-ionized water). Pre-cleaned new disposable bailers and disposable plastic tubing will be dedicated to each individual well.

A.1.6 Chain of Custody Procedures

Sample identification documents will be carefully prepared so identification and chain of custody can be maintained and sample disposition can be controlled. The sample identification documents include Chain-of-Custody (COC) records and Daily Field Report forms. Chain of custody procedures are outlined below.

Field Custody Procedures

The field sampler is individually responsible for the care and custody of the samples collected until they are properly transferred.

Samples will have unique labels. The information on these labels will correspond to the COC which shows the identification of individual samples and the contents of the shipping container. The original COC will accompany the shipment and a copy will be retained by the field sampler.

Transfer of Custody and Shipment

A COC will accompany samples during transfer and shipment. When transferring samples, the individual relinquishing and the individual receiving the samples will each sign, date, and note the time on the COC. This documents the sample custody transfer.

Samples will be packaged properly for shipment and dispatched to the appropriate laboratory for analysis, with a separate COC accompanying each shipment. Shipments will be accompanied by the original COC. Samples will be delivered by BAI personnel to the laboratory, or shipped by responsible courier. When a shipping courier is utilized, the sample shipment number will be identified on the COC.

A.1.7 Field Records

In addition to sample identification numbers and COC records, Daily Field Report records will be maintained by field staff to provide daily records of significant events, observations, and measurements during field investigations. These documents will contain observed information such as: the personnel present, site conditions, sampling procedures, measurement procedures, calibration records, equipment used, supplies used, etc. Field measurements will be recorded on the appropriate forms. Entries on the data forms will be signed and dated. The data forms will be kept as permanent file records.

APPENDIX B

FIELD DATA SHEETS

BROADBENT & ASSOCIATES, INC.
ENGINEERING, WATER RESOURCES & ENVIRONMENTAL

FIELD DATA REPORT

DATE: 11 02 08
PERSONNEL:
WEATHER:

PROJECT NO.: 472
COMMENTS:

Equip:	Geosquirt	Tubing	Bailers	DO	wli	Ec/pH

Well ID	Time	MEASURING POINT	DTW (FT)	PRODUCT THICKNESS	pH	Cond. (X100)	Temp. (C/F)	DO (mg/l)	Redox (mV)	Iron (mg/l)	Alk. (mg/l)	WELL HEAD CONDITION: VAULT, BOLTS, CAP, LOCK, ETC
MW-1	1515		7.69									
mw 2	1550		7.21									
MW 3	1555		8.82									

G:\ADMINISTRATION\BAI FORMS\WATER LVL MEAS FORM

BROADBENT & ASSOCIATES, INC.
ENGINEERING, WATER RESOURCES & ENVIRONMENTAL

Groundwater Sampling Data Sheet

Well I.D.: MW-1

Project Name/Location: 472 Project #: 09-88-001

Sampler's Name: EF AS Date: 11/02/08

Purging Equipment: Bailer

Sampling Equipment: Bailer

Casing Type: PVC

Casing Diameter:		4	inch
Total Well Depth:			feet
Depth to Water:	-	~~15.45~~	feet 7.69
Water Column Thickness:	=		feet
Unit Casing Volume*:	x		gallon / foot
Casing Water Volume:	=		gallons
Casing Volume:	x	3	each
Estimated Purge Volume:	=		gallons

***UNIT CASING VOLUMES**
2" = 0.16 gal/lin ft.
3" = 0.37 gal/lin ft.
4" = 0.65 gal/lin ft.
6" = 1.47 gal/lin ft.

Free product measurement (if present):

Purged (gallons)	Time (24:00)	DO	ORP (mV)	Fe	Conductance (µS)	Temperature (Fahrenheit)	pH	Observations
0	1515	0.64	279		690	65.0	6.8	
		X	X	X				
		X	X	X				
		X	X	X				
		X	X	X				
		X	X	X				
		X	X	X				
		X	X	X				

Total Water Volume Purged: 0 gallons

Depth to Water at Sample Collection: feet

Sample Collection Time: 1515

Purged Dry? (Y / (N))

Comments: NP@ 7

BROADBENT & ASSOCIATES, INC.
ENGINEERING, WATER RESOURCES & ENVIRONMENTAL

Groundwater Sampling Data Sheet

Well I.D.: MW-2
Project Name/Location: 472 Project #: 09-88-607
Sampler's Name: EF AS Date: 11/02/08
Purging Equipment: Bailer
Sampling Equipment: Bailer
Casing Type: PVC

Casing Diameter:			inch
Total Well Depth:			feet
Depth to Water:	-	7.21	feet
Water Column Thickness:	=		feet
Unit Casing Volume*:	x		gallon / foot
Casing Water Volume:	=		gallons
Casing Volume:	x	3	each
Estimated Purge Volume:	=		gallons

***UNIT CASING VOLUMES**
2" = 0.16 gal/lin ft.
3" = 0.37 gal/lin ft.
4" = 0.65 gal/lin ft.
6" = 1.47 gal/lin ft.

Free product measurement (if present): _____

Purged (gallons)	Time (24:00)	DO	ORP (mV)	Fe	Conductance (µS)	Temperature (Fahrenheit)	pH	Observations
C	1550	2.15	350		272	62.2	7.0	
		X	X	X				
		X	X	X				
		X	X	X				
		X	X	X				
		X	X	X				
		X	X	X				
		X	X	X				

Total Water Volume Purged: C gallons
Depth to Water at Sample Collection: - feet
Sample Collection Time: 1550
Purged Dry? (Y / N)

Comments: NP @ 7

BROADBENT & ASSOCIATES, INC.
ENGINEERING, WATER RESOURCES & ENVIRONMENTAL

Groundwater Sampling Data Sheet

Well I.D.: MW-3
Project Name/Location: BP 472 Project #: 09-88-6001
Sampler's Name: EF AJ Date: 1/10/08
Purging Equipment: Bailer
Sampling Equipment: Bailer
Casing Type: PVC

Casing Diameter:		inch	
Total Well Depth:		feet	
Depth to Water:	- 8.82	feet	
Water Column Thickness:	=	feet	
Unit Casing Volume*:	x	gallon / foot	
Casing Water Volume:	=	gallons	
Casing Volume:	x 3	each	
Estimated Purge Volume:	=	gallons	

***UNIT CASING VOLUMES**
2" = 0.16 gal/lin ft.
3" = 0.37 gal/lin ft.
4" = 0.65 gal/lin ft.
6" = 1.47 gal/lin ft.

Free product measurement (if present):

Purged (gallons)	Time (24:00)	DO	ORP (mV)	Fe	Conductance (µS)	Temperature (Fahrenheit)	pH	Observations
~~C 1555~~	1555	0.88	278		1050	61.3	7.0	
		X	X	X				
		X	X	X				
		X	X	X				
		X	X	X				
		X	X	X				
		X	X	X				
		X	X	X				

Total Water Volume Purged: 0 gallons
Depth to Water at Sample Collection: — feet
Sample Collection Time: 1555 Purged Dry? (Y / N)

Comments: NP@ 7

APPENDIX C

LABORATORY REPORT
AND CHAIN-OF-CUSTODY DOCUMENTATION

Calscience
Environmental
Laboratories, Inc.

February 24, 2011

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

Subject: **Calscience Work Order No.: 11-02-0643**
Client Reference: ARCO 472

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 2/10/2011 and analyzed in accordance with the attached chain-of-custody.

Calscience Environmental Laboratories certifies that the test results provided in this report meet all NELAC requirements for parameters for which accreditation is required or available. Any exceptions to NELAC requirements are noted in the case narrative. The original report of subcontracted analysis, if any, is provided herein, and follows the standard Calscience data package. The results in this analytical report are limited to the samples tested and any reproduction thereof must be made in its entirety.

If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Sincerely,

Calscience Environmental
Laboratories, Inc.
Richard Villafania
Project Manager

Calscience Environmental Laboratories, Inc.

Analytical Report

Broadbent & Associates, Inc.	Date Received: 02/10/11
1324 Mangrove Ave, Ste 212	Work Order No: 11-02-0643
Chico , CA 95926-2642	Preparation: EPA 3510C
	Method: EPA 8015B (M)

Project: ARCO 472 Page 1 of 1

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-1	**11-02-0643-1-G**	**02/08/11 15:45**	**Aqueous**	**GC 47**	**02/15/11**	**02/16/11 09:08**	**110215B10**

Comment(s): -LX = Quantitated against diesel fuel.

Parameter	Result	RL	DF	Qual	Units
Diesel Range Organics (C10-C28)	53	50	1		ug/L

Surrogates:	REC (%)	Control Limits	Qual
Decachlorobiphenyl	89	68-140	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-2	**11-02-0643-2-G**	**02/08/11 15:50**	**Aqueous**	**GC 47**	**02/15/11**	**02/16/11 09:23**	**110215B10**

Parameter	Result	RL	DF	Qual	Units
Diesel Range Organics (C10-C28)	ND	50	1		ug/L

Surrogates:	REC (%)	Control Limits	Qual
Decachlorobiphenyl	90	68-140	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-3	**11-02-0643-3-G**	**02/08/11 15:55**	**Aqueous**	**GC 47**	**02/15/11**	**02/16/11 09:38**	**110215B10**

Parameter	Result	RL	DF	Qual	Units
Diesel Range Organics (C10-C28)	ND	50	1		ug/L

Surrogates:	REC (%)	Control Limits	Qual
Decachlorobiphenyl	93	68-140	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-699-253**	**N/A**	**Aqueous**	**GC 47**	**02/15/11**	**02/16/11 08:09**	**110215B10**

Parameter	Result	RL	DF	Qual	Units
Diesel Range Organics (C10-C28)	ND	50	1		ug/L

Surrogates:	REC (%)	Control Limits	Qual
Decachlorobiphenyl	99	68-140	

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

Calscience Environmental Laboratories, Inc.

Analytical Report

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

Date Received: 02/10/11
Work Order No: 11-02-0643
Preparation: EPA 5030C
Method: EPA 8015B (M)

Project: ARCO 472

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-1	**11-02-0643-1-F**	**02/08/11 15:45**	**Aqueous**	**GC 22**	**02/21/11**	**02/21/11 16:01**	**110221B01**

Parameter	Result	RL	DF	Qual	Units
Gasoline Range Organics (C6-C12)	ND	50	1		ug/L

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	78	38-134	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-2	**11-02-0643-2-E**	**02/08/11 15:50**	**Aqueous**	**GC 22**	**02/21/11**	**02/21/11 14:22**	**110221B01**

Parameter	Result	RL	DF	Qual	Units
Gasoline Range Organics (C6-C12)	ND	50	1		ug/L

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	80	38-134	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-3	**11-02-0643-3-E**	**02/08/11 15:55**	**Aqueous**	**GC 22**	**02/21/11**	**02/21/11 16:34**	**110221B01**

Parameter	Result	RL	DF	Qual	Units
Gasoline Range Organics (C6-C12)	ND	50	1		ug/L

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	74	38-134	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-695-1,011**	**N/A**	**Aqueous**	**GC 22**	**02/21/11**	**02/21/11 12:43**	**110221B01**

Parameter	Result	RL	DF	Qual	Units
Gasoline Range Organics (C6-C12)	ND	50	1		ug/L

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	84	38-134	

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

Calscience Environmental Laboratories, Inc.

Analytical Report

Broadbent & Associates, Inc.		Date Received:	02/10/11
1324 Mangrove Ave, Ste 212		Work Order No:	11-02-0643
Chico , CA 95926-2642		Preparation:	EPA 5030C
		Method:	EPA 8260B
		Units:	ug/L

Project: ARCO 472

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-1	**11-02-0643-1-A**	**02/08/11 15:45**	**Aqueous**	**GC/MS BB**	**02/10/11**	**02/11/11 01:55**	**110210L03**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.50	1		Methyl-t-Butyl Ether (MTBE)	ND	0.50	1	
1,2-Dibromoethane	ND	0.50	1		Tert-Butyl Alcohol (TBA)	ND	10	1	
1,2-Dichloroethane	ND	0.50	1		Diisopropyl Ether (DIPE)	ND	0.50	1	
Ethylbenzene	ND	0.50	1		Ethyl-t-Butyl Ether (ETBE)	ND	0.50	1	
Toluene	ND	0.50	1		Tert-Amyl-Methyl Ether (TAME)	ND	0.50	1	
Xylenes (total)	ND	0.50	1		Ethanol	ND	300	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
1,2-Dichloroethane-d4	105	80-128			Dibromofluoromethane	103	80-127		
Toluene-d8	101	80-120			1,4-Bromofluorobenzene	96	68-120		

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-2	**11-02-0643-2-A**	**02/08/11 15:50**	**Aqueous**	**GC/MS BB**	**02/10/11**	**02/11/11 03:46**	**110210L03**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.50	1		Methyl-t-Butyl Ether (MTBE)	ND	0.50	1	
1,2-Dibromoethane	ND	0.50	1		Tert-Butyl Alcohol (TBA)	ND	10	1	
1,2-Dichloroethane	ND	0.50	1		Diisopropyl Ether (DIPE)	ND	0.50	1	
Ethylbenzene	ND	0.50	1		Ethyl-t-Butyl Ether (ETBE)	ND	0.50	1	
Toluene	ND	0.50	1		Tert-Amyl-Methyl Ether (TAME)	ND	0.50	1	
Xylenes (total)	ND	0.50	1		Ethanol	ND	300	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
1,2-Dichloroethane-d4	106	80-128			Dibromofluoromethane	102	80-127		
Toluene-d8	101	80-120			1,4-Bromofluorobenzene	95	68-120		

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
MW-3	**11-02-0643-3-A**	**02/08/11 15:55**	**Aqueous**	**GC/MS BB**	**02/10/11**	**02/11/11 04:14**	**110210L03**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.50	1		Methyl-t-Butyl Ether (MTBE)	ND	0.50	1	
1,2-Dibromoethane	ND	0.50	1		Tert-Butyl Alcohol (TBA)	ND	10	1	
1,2-Dichloroethane	ND	0.50	1		Diisopropyl Ether (DIPE)	ND	0.50	1	
Ethylbenzene	ND	0.50	1		Ethyl-t-Butyl Ether (ETBE)	ND	0.50	1	
Toluene	ND	0.50	1		Tert-Amyl-Methyl Ether (TAME)	ND	0.50	1	
Xylenes (total)	ND	0.50	1		Ethanol	ND	300	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
1,2-Dichloroethane-d4	104	80-128			Dibromofluoromethane	101	80-127		
Toluene-d8	100	80-120			1,4-Bromofluorobenzene	97	68-120		

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

Calscience Environmental Laboratories, Inc.

Analytical Report

Broadbent & Associates, Inc.		Date Received:	02/10/11
1324 Mangrove Ave, Ste 212		Work Order No:	11-02-0643
Chico , CA 95926-2642		Preparation:	EPA 5030C
		Method:	EPA 8260B
		Units:	ug/L

Project: ARCO 472

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-703-1,597**	**N/A**	**Aqueous**	**GC/MS BB**	**02/10/11**	**02/11/11 01:27**	**110210L03**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.50	1		Methyl-t-Butyl Ether (MTBE)	ND	0.50	1	
1,2-Dibromoethane	ND	0.50	1		Tert-Butyl Alcohol (TBA)	ND	10	1	
1,2-Dichloroethane	ND	0.50	1		Diisopropyl Ether (DIPE)	ND	0.50	1	
Ethylbenzene	ND	0.50	1		Ethyl-t-Butyl Ether (ETBE)	ND	0.50	1	
Toluene	ND	0.50	1		Tert-Amyl-Methyl Ether (TAME)	ND	0.50	1	
Xylenes (total)	ND	0.50	1		Ethanol	ND	300	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
1,2-Dichloroethane-d4	103	80-128			Dibromofluoromethane	102	80-127		
Toluene-d8	100	80-120			1,4-Bromofluorobenzene	96	68-120		

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

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

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

Date Received: 02/10/11
Work Order No: 11-02-0643
Preparation: EPA 5030C
Method: EPA 8015B (M)

Project ARCO 472

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
MW-2	**Aqueous**	**GC 22**	**02/21/11**	**02/21/11**	**110221S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Gasoline Range Organics (C6-C12)	98	94	38-134	4	0-25	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

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

Date Received: 02/10/11
Work Order No: 11-02-0643
Preparation: EPA 5030C
Method: EPA 8260B

Project ARCO 472

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
MW-1	**Aqueous**	**GC/MS BB**	**02/10/11**	**02/11/11**	**110210S02**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	105	105	76-124	0	0-20	
Carbon Tetrachloride	86	88	74-134	2	0-20	
Chlorobenzene	100	101	80-120	1	0-20	
1,2-Dibromoethane	96	97	80-120	2	0-20	
1,2-Dichlorobenzene	99	98	80-120	1	0-20	
1,2-Dichloroethane	111	111	80-120	1	0-20	
Ethylbenzene	98	97	78-126	0	0-20	
Toluene	103	103	80-120	0	0-20	
Trichloroethene	101	100	77-120	1	0-20	
Methyl-t-Butyl Ether (MTBE)	95	97	67-121	2	0-49	
Tert-Butyl Alcohol (TBA)	102	100	36-162	2	0-30	
Diisopropyl Ether (DIPE)	91	93	60-138	3	0-45	
Ethyl-t-Butyl Ether (ETBE)	90	92	69-123	2	0-30	
Tert-Amyl-Methyl Ether (TAME)	92	91	65-120	0	0-20	
Ethanol	102	111	30-180	8	0-72	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

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

Date Received: N/A
Work Order No: 11-02-0643
Preparation: EPA 3510C
Method: EPA 8015B (M)

Project: ARCO 472

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-699-253	**Aqueous**	**GC 47**	**02/15/11**	**02/16/11**	**110215B10**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Diesel Range Organics (C10-C28)	85	86	75-117	1	0-20	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

Broadbent & Associates, Inc.	Date Received:	N/A
1324 Mangrove Ave, Ste 212	Work Order No:	11-02-0643
Chico , CA 95926-2642	Preparation:	EPA 5030C
	Method:	EPA 8015B (M)

Project: ARCO 472

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-695-1,011	**Aqueous**	**GC 22**	**02/21/11**	**02/21/11**	**110221B01**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Gasoline Range Organics (C6-C12)	101	104	78-120	3	0-20	

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Quality Control - LCS/LCS Duplicate

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

Date Received: N/A
Work Order No: 11-02-0643
Preparation: EPA 5030C
Method: EPA 8260B

Project: ARCO 472

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-703-1,597	**Aqueous**	**GC/MS BB**	**02/10/11**	**02/11/11**	**110210L03**

Parameter	LCS %REC	LCSD %REC	%REC CL	ME_CL	RPD	RPD CL	Qualifiers
Benzene	105	105	80-120	73-127	0	0-20	
Carbon Tetrachloride	91	91	74-134	64-144	0	0-20	
Chlorobenzene	101	103	80-120	73-127	2	0-20	
1,2-Dibromoethane	96	98	79-121	72-128	2	0-20	
1,2-Dichlorobenzene	96	95	80-120	73-127	1	0-20	
1,2-Dichloroethane	108	108	80-120	73-127	0	0-20	
Ethylbenzene	100	101	80-120	73-127	1	0-20	
Toluene	104	105	80-120	73-127	1	0-20	
Trichloroethene	107	102	79-127	71-135	5	0-20	
Methyl-t-Butyl Ether (MTBE)	94	93	69-123	60-132	2	0-20	
Tert-Butyl Alcohol (TBA)	88	92	63-123	53-133	4	0-20	
Diisopropyl Ether (DIPE)	93	91	59-137	46-150	2	0-37	
Ethyl-t-Butyl Ether (ETBE)	91	90	69-123	60-132	0	0-20	
Tert-Amyl-Methyl Ether (TAME)	90	90	70-120	62-128	0	0-20	
Ethanol	93	107	28-160	6-182	13	0-57	

Total number of LCS compounds : 15
Total number of ME compounds : 0
Total number of ME compounds allowed : 1
LCS ME CL validation result : Pass

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

Glossary of Terms and Qualifiers

Work Order Number: 11-02-0643

Qualifier	Definition
AX	Sample too dilute to quantify surrogate.
BA	Relative percent difference out of control.
BA,AY	BA = Relative percent difference out of control. AY = Matrix interference suspected.
BB	Sample > 4x spike concentration.
BF	Reporting limits raised due to high hydrocarbon background.
BH	Reporting limits raised due to high level of non-target analytes.
BU	Sample analyzed after holding time expired.
BV	Sample received after holding time expired.
BY	Sample received at improper temperature.
BZ	Sample preserved improperly.
CL	Initial analysis within holding time but required dilution.
CQ	Analyte concentration greater than 10 times the blank concentration.
CU	Surrogate concentration diluted to not detectable during analysis.
DF	Reporting limits elevated due to matrix interferences.
DU	Insufficient sample quantity for matrix spike/dup matrix spike.
ET	Sample was extracted past end of recommended max. holding time.
ET	Sample was extracted past end of recommended maximum holding time.
EY	Result exceeds normal dynamic range; reported as a min est.
GR	Internal standard recovery is outside method recovery limit.
IB	CCV recovery abovelimit; analyte not detected.
IH	Calibrtn. verif. recov. below method CL for this analyte.
IJ	Calibrtn. verif. recov. above method CL for this analyte.
J,DX	J=EPA Flag -Estimated value; DX= Value < lowest standard (MQL), but > than MDL.
LA	Confirmatory analysis was past holding time.
LG,AY	LG= Surrogate recovery below the acceptance limit. AY= Matrix interference suspected.
LH,AY	LH= Surrogate recovery above the acceptance limit. AY= Matrix interference suspected.
LM,AY	LM= MS and/or MSD above acceptance limits. See Blank Spike (LCS). AY= Matrix interference suspected.
LN,AY	LN= MS and/or MSD below acceptance limits. See Blank Spike (LCS). AY= Matrix interference suspected.
LQ	LCS recovery above method control limits.
LR	LCS recovery below method control limits.
LW	Quantitation of unknown hydrocarbon(s) in sample based on gasoline.
LX	Quantitation of unknown hydrocarbon(s) in sample based on diesel.
MB	Analyte present in the method blank.
ME	LCS Recovery Percentage is within LCS ME Control Limit range.
PC	Sample taken from VOA vial with air bubble > 6mm diameter.
PI	Primary and confirm results varied by > than 40% RPD.
RB	RPD exceeded method control limit; % recoveries within limits.
SG	A silica gel cleanup procedure was performed.

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

Atlantic Richfield Company
A BP affiliated company

Laboratory Management Program LaMP Chain of Custody Record

0643

Page 1 of 1

BP/ARC Project Name: ARCO 472
BP/ARC Facility No: 472
Req Due Date (mm/dd/yy): STD-TAT
Rush TAT: Yes ___ No X
Lab Work Order Number:

Lab Name: Cal Science	BP/ARC Facility Address: 6415 International Boulevard	Consultant/Contractor: Broadbent & Associates, Inc.
Lab Address: 7440 Lincoln Way	City, State, ZIP Code: Oakland, CA 94621	Consultant/Contractor Project No: 09-88-601-401-880
Lab PM: Richard Villafania	Lead Regulatory Agency: ACEH	Address: 1324 Mangrove Ave. Ste. 212, Chico, CA 95926
Lab Phone: 714-895-5494 / 714-895-7501 (fax)	California Global ID No.: T10000000417	Consultant/Contractor PM: Tom Venus
Lab Shipping Accnt: 9255	Enfos Proposal No: 005XP-0001	Phone: 530-566-1400 / 530-566-1401 (fax)
Lab Bottle Order No:	Accounting Mode: Provision X OOC-BU ___ OOC-RM ___	Email EDD To: tvenus@broadbentinc.com
Other Info:	Stage: Execute (4) Activity: Project Spend (80)	Invoice To: BP/ARC X Contractor ___
BP/ARC EBM: Chuck Carmel		
EBM Phone: 925-275-3803		
EBM Email: charles.carmel@bp.com		

Lab No.	Sample Description	Date	Time	Matrix: Soil / Solid	Matrix: Water / Liquid	Matrix: Air / Vapor	Matrix:	No. Containers / Preservative: Total Number of Containers	Unpreserved	H_2SO_4	HNO_3	HCl	Methanol		Requested Analyses: GRO / DRO (8015M)	BTEX, 5 Oxys, EDB, 1,2-DCA, and Ethanol								Report Type & QC Level: Comments
1	MW-1	110208	1545		X			6	X			X			X	X								
2	MW-2	110208	1550		X			6	X			X			X	X								
3	MW-3	110208	1555		X			7	X			X			X	X								Amber broken on arrival
4	TB - 472 - 110208	110208			X			2				X												ON HOLD

Sampler's Name: Eric Farr
Sampler's Company: BAI
Shipment Method: CSO Ship Date: 110209
Shipment Tracking No: 106840351

Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
	110209	0800		2/10/11	0930

Special Instructions: Please cc results to bpedf@broadbentinc.com

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

0643

DATE 11/02/09

COMPANY BAI

ADDRESS 875 Cotting Lane

ADDRESS

STE/ROOM G

CITY Vacaville

ZIP CODE 95688

SENDERS NAME Eric F[illegible]

PHONE NUMBER 773-[illegible]

COMPANY [illegible]

NAME

PHONE NUMBER [illegible]

ADDRESS 74[illegible] LINCOLN WAY

ADDRESS

STE/ROOM

CITY GARDEN GROVE

ZIP CODE [illegible]

YOUR INTERNAL BILLING REFERENCE WILL APPEAR ON YOUR INVOICE

ECIAL
STRUCTIONS

GSO
GOLDEN STATE OVERNIGHT

1-800-322-5555

WWW.GSO.COM

SHIPPING AIR BILL

GSO COPY

4 PACKAGE INFORMATION

☐ LETTER (MAX 8 OZ)

☒ PACKAGE (WT) 50

☒ DECLARED VALUE $

☐ COD AMOUNT $
(CASH NOT ACCEPTED)

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

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

6 RELEASE SIGNATURE

SIGN TO AUTHORIZE DELIVERY WITHOUT OBTAINING SIGNATURE

7

EXP. DAT

8 PICK UP INFORMATION

TIME DRIVER # ROUTE #

106840351

PEEL OFF HERE

106840351

9 GSO TRACKING NUMBER

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 11-02-0643

SAMPLE RECEIPT FORM

Cooler 1 of 1

CLIENT: Broadbent

DATE: 02/10/11

TEMPERATURE: Thermometer ID: SC1 (Criteria: 0.0 °C – 6.0 °C, not frozen)

Temperature 3.2 °C + 0.5 °C (CF) = 3.7 °C ☑ Blank ☐ Sample

☐ Sample(s) outside temperature criteria (PM/APM contacted by: _____).

☐ Sample(s) outside temperature criteria but received on ice/chilled on same day of sampling.

☐ **Received at ambient temperature, placed on ice for transport by Courier.**

Ambient Temperature: ☐ Air ☐ Filter Initial: gp

CUSTODY SEALS INTACT:

☑ Cooler ☐_____ ☐ No (Not Intact) ☐ Not Present ☐ N/A Initial: gp

☐ Sample ☐_____ ☐ No (Not Intact) ☑ Not Present Initial: LN

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

CONTAINER TYPE:

Solid: ☐4ozCGJ ☐8ozCGJ ☐16ozCGJ ☐Sleeve (_____) ☐EnCores® ☐TerraCores® ☐_____

Water: ☐VOA ☑VOA**h** ☐VOA**na$_2$** ☐125AGB ☐125AGB**h** ☐125AGB**p** ☐1AGB ☐1AGB**na$_2$** ☐1AGB**s** ☐500AGB ☑500AGJ ☐500AGJ**s** ☐250AGB ☐250CGB ☐250CGB**s** ☐1PB ☐500PB ☐500PB**na** ☐250PB ☐250PB**n** ☐125PB ☐125PB**znna** ☐100PJ ☐100PJ**na$_2$** ☐_____ ☐_____ ☐_____

Air: ☐Tedlar® ☐Summa® **Other:** ☐_____ **Trip Blank Lot#:** 110121A **Labeled/Checked by:** LN

Container: **C:** Clear **A:** Amber **P:** Plastic **G:** Glass **J:** Jar **B:** Bottle **Z:** Ziploc/Resealable Bag **E:** Envelope **Reviewed by:** DL

Preservative: **h:** HCL **n:** HNO_3 **na$_2$:** $Na_2S_2O_3$ **na:** NaOH **p:** H_3PO_4 **s:** H_2SO_4 **znna:** $ZnAc_2$+NaOH **f:** Field-filtered **Scanned by:** DL

APPENDIX D

GEOTRACKER UPLOAD CONFIRMATION RECEIPTS

STATE WATER RESOURCES CONTROL BOARD

GEOTRACKER ESI

UPLOADING A GEO_WELL FILE

SUCCESS

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

Submittal Type:	**GEO_WELL**
Submittal Title:	**1Q11 GEO_WELL 472**
Facility Global ID:	**T10000000417**
Facility Name:	**ARCO # / PLUCKY LIQUORS**
File Name:	**GEO_WELL.zip**
Organization Name:	**Broadbent & Associates, Inc.**
Username:	**BROADBENT-C**
IP Address:	**67.118.40.90**
Submittal Date/Time:	**4/22/2011 10:23:00 AM**
Confirmation Number:	**9040629088**

STATE WATER RESOURCES CONTROL BOARD

GEOTRACKER ESI

UPLOADING A EDF FILE

SUCCESS

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

Submittal Type:	**EDF - Monitoring Report - Semi-Annually**
Submittal Title:	**1Q11 GW Monitoring**
Facility Global ID:	**T10000000417**
Facility Name:	**ARCO # / PLUCKY LIQUORS**
File Name:	**11020643.zip**
Organization Name:	**Broadbent & Associates, Inc.**
Username:	**BROADBENT-C**
IP Address:	**67.118.40.90**
Submittal Date/Time:	**3/2/2011 1:04:29 PM**
Confirmation Number:	**3536267876**

VIEW QC REPORT

VIEW DETECTIONS REPORT