Atlantic Richfield Company

Chuck Carmel
Environmental Business Manager

PO Box 1257
San Ramon, CA 94583
Phone: (925) 275-3803
Fax: (925) 275-3815
E-Mail: charles.carmel@bp.com

24 September 2010

Re: Soil & Ground-Water Investigation with Well Abandonment Report
Atlantic Richfield Company Station #2169
889 West Grand Avenue, Oakland, California
ACEH Case #RO0000072

"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
Environmental Business Manager

Attachment

SOIL & GROUND-WATER INVESTIGATION WITH WELL ABANDONMENT REPORT

Atlantic Richfield Company Station No. 2169
889 West Grand Avenue, Oakland, California
ACEH Case No. RO0000072

Prepared for:

Mr. Charles Carmel
Environmental Business Manager
Atlantic Richfield Company
P.O. Box 1257
San Ramon, California 94583

Prepared by:

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

1324 Mangrove Ave., Suite 212
Chico, California 95926
(530) 566-1400
www.broadbentinc.com

24 September 2010

Project No. 06-88-621

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

24 September 2010

Project No. 06-88-621

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

Attn.: Mr. Charles Carmel

Re: Soil & Ground-Water Investigation with Well Abandonment Report,
Atlantic Richfield Company Station No. 2169, 889 W. Grand Ave., Oakland, California;
ACEH Case No. RO0000072

Dear Mr. Carmel:

Broadbent & Associates, Inc. (BAI) is pleased to submit this combined *Soil & Ground-Water Investigation with Well Abandonment Report* for Atlantic Richfield Company Station No. 2169 (herein referred to as Station No. 2169) located at 889 West Grand Avenue, Oakland, Alameda County, California (Site). This report presents a description of the field activities conducted and the results obtained from drilling and sampling of two post-remediation verification soil borings performed following the *Preferential Pathway Evaluation and Soil & Ground-Water Investigation Work Plan* (BAI, 4/6/2009), as approved by Alameda County Environmental Health (ACEH) in their letter dated 1 May 2009. This report also documents the permanent decommissioning of fifteen ground-water monitoring/remediation wells undertaken prior to station raze and rebuild renovation activities that began at the Site in June 2009.

Should you have questions or require additional information, please do not hesitate to contact us at (530) 566-1400.

Sincerely,

BROADBENT & ASSOCIATES, INC.

Thomas A. Venus, P.E.
Senior Engineer

REGISTERED PROFESSIONAL ENGINEER
THOMAS A. VENUS
No. 54698
Expires 12-31-11
CIVIL
STATE OF CALIFORNIA

Attachment

cc: Mr. Paresh Khatri, Alameda County Environmental Health (Submitted via ACEH ftp site)
Mr. Karl Busche, City of San Leandro Environmental Services Division (Electronic copy uploaded to GeoTracker)

SOIL & GROUND-WATER INVESTIGATION WITH WELL ABANDONMENT REPORT

Atlantic Richfield Company Station No.2169
889 West Grand Avenue, Oakland, California
ACEH Case No.RO0000072

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SOIL & GROUND-WATER INVESTIGATION WITH WELL ABANDONMENT REPORT

Atlantic Richfield Company Station No.2169
889 West Grand Avenue, Oakland, California
ACEH Case No.RO0000072

1.0 INTRODUCTION

On behalf of the Atlantic Richfield Company, RM – a BP affiliated company, Broadbent & Associates, Inc. (BAI) has prepared this *Soil & Ground-Water Investigation with Well Abandonment Report* concerning the Atlantic Richfield Company Station No.2169, located at 889 West Grand Avenue, Oakland, California (Site). This report presents a description of the field activities conducted and the results obtained from drilling and sampling of two soil borings performed in general concurrence with the *Preferential Pathway Evaluation and Soil & Ground-Water Investigation Work Plan* (BAI, 4/6/2009), as approved by Alameda County Environmental Health (ACEH) in their letter dated 1 May 2009. This report also documents the permanent decommissioning of fifteen ground-water monitoring/remediation wells undertaken prior to station raze and rebuild activities that began at the Site in June 2009.

2.0 SITE BACKGROUND

The Site is presently an inactive ARCO-brand gasoline retail station undergoing remodeling. The Site is located on the south side of Grand Avenue east of Market Street in Oakland, California (Drawing 1). The land use in the immediate vicinity of the Site is commercial. A written history of the Site can be found within the *Preferential Pathway Evaluation and Soil & Ground-Water Investigation Work Plan* (BAI, 4/6/2009).

3.0 SITE GEOLOGY AND HYDROGEOLOGY

According to the *East Bay Plain Groundwater Basin Beneficial Use Evaluation Report* (California Regional Water Quality Control Board – San Francisco Bay Region/SFRWQCB, June 1999), the Site is located within the Oakland Sub-Area of the East Bay Plain of the San Francisco Basin. The Oakland Sub-Area contains a sequence of alluvial fans. The alluvial fill thickness ranges from 300 to 700 feet deep. There are no well-defined aquitards such as estuarine muds. The largest and deepest wells in this sub-area historically pumped one to two million gallons per day at depths greater than 200 feet. Overall, sustainable yields are low due in part to low recharge potential. The Merritt Sand in West Oakland was an important part of the early water supply for the City of Oakland. It is shallow (up to 60 feet), but before the turn of the last century, septic systems contaminated the water supply wells.

Throughout most of the Alameda County portion of the East Bay Plain, from Hayward north to Albany, water level contours show that the general direction of ground-water flow is from east to west or from the Hayward Fault to the San Francisco Bay. Ground-water flow direction generally correlates to topography. Flow direction and velocity are also influenced by buried stream channels that typically are oriented in an east to west direction. The nearest natural drainage is Glen Echo Creek, located approximately 0.85 miles east of the Site. Glen Echo Creek flows generally north to south near the Site vicinity.

The Site elevation is approximately 18 feet above sea level. The water table fluctuates seasonally. Historically, depth-to-water measurements have ranged from approximately 7 to 13 feet below ground surface (ft bgs). Historically (since 2000), the ground-water flow direction has ranged from a southerly direction moving clockwise to a northwesterly direction with the predominant ground-water flow direction toward the northwest.

According to the *East Bay Plain Groundwater Basin Beneficial Use Evaluation Report*, the City of Oakland does not have "any plans to develop local ground-water resources for drinking water purposes, because of existing or potential saltwater intrusion, contamination, or poor or limited quantity." However, the RWQCB's Basin Plan denotes existing beneficial uses of municipal and domestic supply (MUN), industrial process supply (PROC), industrial service supply (IND), and agricultural supply (AGR) for the East Bay Plain ground-water basin. Soils encountered underlying the Site consisted primarily of silty to sandy clay, silt, and clayey to gravelly sand to the total explored depth of approximately 30 ft bgs. A stratum of silty to sandy clay, which may act as a local aquitard, was encountered in several borings beneath the water bearing zone at depths ranging from approximately 21 to 28 ft bgs.

4.0 FIELD ACTIVITIES PERFORMED

4.1 Preliminary Field Activities

On 7 May 2010, BAI was notified that Station No.2169 was going to undergo a 'raze & rebuild,' or significant remodeling renovation, following its purchase by the station manager, Mr. Chuck Kim. BAI alerted Mr. Paresh Khatri of ACEH of the pending plans later the same day, along with the anticipated need to decommission some number of existing onsite wells that would be in the way of redevelopment plans. Upon subsequent review of the redevelopment plans, BAI proposed the preservation of certain monitoring and former remediation wells existing on the western portion of the Site, while recognizing that other existing wells would need to be properly decommissioned prior to redevelopment of the station. In addition, it was decided that since drilling activities associated with well abandonment needed to occur at the station, that the two onsite borings proposed in the previously-approved work plan (*Preferential Pathway Evaluation and Soil & Ground-Water Investigation Work Plan*, BAI 4/6/2009) be conducted at this time, separately from the four other borings (SB-3 through SB-6) that have not been installed due to denial of offsite property access.

On 24 May 2010, BAI submitted the necessary well drilling permits to the Alameda County Public Works Agency (ACPWA). A copy of the approved drilling permit is contained within Appendix A. On 25 May 2010 BAI notified Mr. Khatri of which wells were proposed for preservation (A-1, A-2, AR-2, ADR-1, and ADR-2) and which wells were in the way of station renovation and were proposed for decommissioning (A-3, A-4, AR-1, AS-1, AS-2, AS-3, AS-4, AS-5, AV-1, AV-2, AV-3, AV-4, AV-5, AV-6, and AV-7). In the same email, BAI also requested a modification to the method of drilling the two onsite exploratory borings from direct-push (the method proposed in the approved work plan) to hollow-stem auger since a hollow-stem auger drilling rig would be present for the onsite well abandonment activities. Later on 25 May

2010, BAI received an email reply implicitly acknowledging the request to decommission certain onsite wells, and approving the modification of the drilling technology for the two soil borings.

Prior to initiating field activities, BAI prepared a site health and safety plan specific to the work scope and had the Site cleared for subsurface utilities. The utility clearance included notifying Underground Service Alert of the work a minimum of 48 hours prior to initiating the field investigation, and additionally securing the services of Cruz Brothers Locators, a private utility locating company to confirm the absence of underground utilities at the locations of the proposed borings and existing wells to be decommissioned by over-drilling.

4.2 Well Decommissioning

Proposed plans for permanent well decommissioning comprised abandoning seven wells by grout injection from the surface, and abandoning eight wells by over-drilling out to the original borehole diameter with a hollow-stem auger drilling rig. The seven wells originally proposed for direct grout injection were A-3, A-4, AS-2, AV-3, AV-4, AV-5, and AV-6. The eight wells originally proposed for over-drilling were AR-1, AS-1, AS-3, AS-4, AS-5, AV-1, and AV-2. Reference to a well AV-8 in the well permit was an error on the part of ACPWA as no well by that identification exists/existed. A table summarizing the well specifications and proposed method of destruction is provided as Table 1.

On 16 June 2010, BAI mobilized to the Site with Cascade Drilling, a licensed drilling contractor (C-57 License No.938110), to permanently decommission the 15 wells in the way of station renovation. Initial measurements of depth-to-ground water were recorded in the onsite wells between approximately 6.5 to 11.9 feet. During air-knifing clearance activities at the wells to be over-drilled however, it was discovered that the well completion vaults had been constructed with a surprisingly large amount of concrete (each estimated to be approximately one-quarter to one-half a cubic yard), too much to be broken out without heavy excavating equipment, and then at risk of not being able to properly abandon the wells in accordance with the California Department of Water Resources (DWR), Water Well Standards Bulletin(s) 74-81/74-90. Upon approval by the ACPWA, the well permit was amended to allow decommissioning of the wells proposed for over-drilling to be abandoned by grout injection. Therefore, on 16-17 June 2010 the 15 wells that required abandonment at Station No.2169 were permanently decommissioned by grout injection through a tremie pipe from the surface, using the weight of the grout for pressure.

Well Completion Reports (DWR Form 188) were prepared afterward by Cascade Drilling for each well abandoned. As required, the original Well Completion Reports were sent to DWR, with copies provided to ACPWA. Copies of the field notes, ACPWA Drilling Permits, and additional copies of the Well Completion Reports are provided within Appendix A.

4.3 Soil Boring Advancement

As mentioned previously, it was decided that since drilling activities associated with well abandonment needed to occur at the station, that the two onsite borings proposed in the previously-approved work plan (*Preferential Pathway Evaluation and Soil & Ground-Water*

Investigation Work Plan, BAI 4/6/2009) be conducted at this time, separately from the four other borings (SB-3 through SB-6) that have been stalled due to denial of offsite property access. The two onsite borings were proposed to collect post-remediation verification sampling data in the area of the former underground storage tanks (USTs). The borings would also be utilized to further define the vertical extent of impacted soil in the former UST area. Boring SB-1 was to be located in soils adjacent to historic UST excavation sidewall sample SW-1. Boring SB-2 was to be located in soils between and adjacent to historic UST excavation sidewall samples SW-6 and SW-7. The locations of borings SB-1 and SB-2 relative to historic UST excavation sidewall samples collected in January 1992 are exhibited in Drawing 2.

On 17 June 2010, the soil borings SB-1 and SB-2 were advanced by Cascade Drilling, under the observation of BAI. Prior to drilling with the hollow-stem auger rig, the boreholes were physically cleared to 6.5 feet below ground surface (ft bgs) using an air knife rig in accordance with the safety protocols within BP's Ground Disturbance Defined Practice. Following clearance, Cascade Drilling utilized a full-sized CME hollow-stem auger drilling rig to advance soil borings SB-1 and SB-2. As described in the work plan, boring SB-1 was installed near the northeast corner of the former UST pit where the highest concentrations of petroleum hydrocarbons had been detected following removal of the former USTs (sidewall sample SW-1 from 12 ft bgs), while boring SB-2 was installed near the southwest corner of the former UST pit (sidewall samples SW-6 and SW-7, both from 12 ft bgs). Soil samples were collected at periodic intervals and classified according to the Unified Soil Classification System (USCS), and examined using visual and manual methods for parameters including odor, staining, color, grain size and moisture content. Copies of soil boring logs are provided in Appendix A.

Soil boring SB-1 was advanced to a total depth of 29.5 ft bgs. California-modified split-spoon soil samples were collected from boring SB-1 between 8.0-9.5 ft bgs, 12.0-13.5 ft bgs, 16.0-17.5 ft bgs, 20.0-21.5 ft bgs, 24.0-24.5 ft bgs, and 28.0-29.5 ft bgs. Moist to wet silty sand with gravel was reported at 8.0-9.5 ft bgs, along with a strong hydrocarbon odor and photo-ionization detector (PID) measurement up to 72.2 parts per million (ppm). The interval from 12.0-13.5 ft bgs found wet sand with gravel, and PID measurement of 17.0 ppm. Moist silty sand with clay was reported at16.0-17.5 ft bgs, along with a strong hydrocarbon odor and PID measurement up to 576 ppm. Wet gravelly sand was reported at 20.0-21.5 ft bgs, along with strong hydrocarbon odor and PID measurement up to 65.5 ppm. At the bottom of this interval however (~21.5 ft bgs), stiff moist clay with approximately 10 percent sand was reported, having a mild hydrocarbon odor and PID measurement up to 4.2 ppm. Interestingly, the interval from 24.0-24.5 ft bgs contained what appeared to be wet silica sand with little clay, a mild hydrocarbon odor and PID measurement up to 31.0 ppm. The interval from 28.0-29.9 ft bgs found the same as above, but at 29.0 ft bgs to the total depth of 29.5 ft bgs, stiff moist clay was reported, with no hydrocarbon odor and a PID measurement up to 13.7 ppm.

Soil boring SB-2 was advanced to a total depth of 29.5 ft bgs. California-modified split-spoon soil samples were collected from boring SB-2 between 8.0-9.5 ft bgs, 12.0-13.5 ft bgs, 16.0-17.5 ft bgs, 20.0-21.5 ft bgs, 24.0-24.5 ft bgs, and 28.0-29.5 ft bgs. Moist silty clay with gravel was reported at 8.0-9.5 ft bgs, along with hydrocarbon odors and a PID measurement up to 195 ppm. Stiff wet silty clay with sand was recorded at 12.0-13.5 ft bgs, along with hydrocarbon odors and a PID measurement up to 420 ppm. Wet sandy silt with a little clay was reported at

16.0-17.5 ft bgs, with a PID measurement up to 165 ppm. Wet sand with gravel and some clay was observed between 20.0-21.5 ft bgs, with a PID measurement up to 14.4 ppm. Moist poorly graded sand with some clay was observed between 24.0-24.5 ft bgs, but without hydrocarbon odors and PID measurement of 6.5 ppm. Stiff moist to dry clay with some fine sand was reported at 28.0-29.5 ft bgs, along with a mild hydrocarbon odor and PID measurement up to 4.2 ppm. In accordance with the drilling permit, the two borings were abandoned following completion with cement grout. Copies of the boring location map (GEO_MAP), and the two boring logs (GEO_BORE files) were uploaded to GeoTracker AB2886 database. Upload confirmation receipts are provided in Appendix C.

Select soil samples were submitted under chain-of-custody protocol to Calscience Environmental Laboratories of Garden Grove, California (CA-ELAP ID# 1230). Twelve soil samples were analyzed for Gasoline Range Organics (GRO, hydrocarbon chain lengths C6-C12) and Diesel Range Organics (DRO, C10-C28) by EPA Method 8015 Modified, and the following by EPA Method 8260B: Benzene; Toluene; Ethylbenzene; Total Xylenes; Methyl-Tertiary Butyl Ether (MTBE); Ethyl-Tertiary Butyl Ether (ETBE); Di-Isopropyl Ether (DIPE); Tert Amyl Methyl Ether (TAME); Tert Butyl Alcohol (TBA); Ethanol; 1,2-Dichloroethane (1,2-DCA); and 1,2-Dibromoethane (EDB). The laboratory noted that the DRO results for 'SB-1 8-9.5M' and 'SB-2 12-13.5B' included quantitation of an unknown hydrocarbon(s) within the sample range for Diesel. The laboratory also noted that for 'SB-1 28-29.5B,' 'SB-2 8-9.5M,' and 'SB-2 16-17.5M,' the sample chromatographic patterns for the samples matched the chromatographic pattern for GRO but heavier hydrocarbons were also present (or were detected). No other significant irregularities were reported by the laboratory.

Gasoline Range Organics (GRO, C6-C12) were detected above the laboratory reporting limits in five of the six samples from boring SB-1, and in three of the six samples from boring SB-2. The GRO concentrations ranged up to 230 milligrams per kilogram (mg/kg, or ppm) in sample 'SB-1 12-13.5T.' The second highest GRO concentration, 95 mg/kg, was from the next sample below, 'SB-1 16-17.5T.' These two concentrations were above the Environmental Screening Level (ESL) of 83 mg/kg for shallow soil containing Total Petroleum Hydrocarbons (TPH) in the Gasoline Range at a residential or commercial land use scenario where ground water is a current or potential source of drinking water (SFRWQCB, 5/2008). Although not necessarily considered a remedial action goal, the ESLs are considered useful benchmarks for comparison.

Diesel Range Organics (DRO, C10-C28) were detected above the laboratory reporting limits in the upper three of the six samples from boring SB-1, and in the upper three of the six samples from boring SB-2. The DRO concentrations ranged up to 640 mg/kg in sample 'SB-2 8-9.5M.' DRO was also detected at 300 mg/kg in sample 'SB-1 8-9.5M' and at 150 mg/kg in sample 'SB-2 16-17.5M.' These three highest concentrations were above the ESL of 83 mg/kg for shallow soil containing TPH (middle distillates) at a residential or commercial land use scenario where ground water is a current or potential source of drinking water (SFRWQCB, 5/2008).

Benzene was detected above the laboratory reporting limits in the lower three of the six samples from boring SB-1, but not in the six samples from SB-2. The Benzene concentrations ranged up to 0.13 mg/kg in sample 'SB-1 20-21.5M.' This particular concentration was above the ESL of

0.044 mg/kg for shallow soil containing Benzene at a residential or commercial land use scenario where ground water is a current or potential source of drinking water (SFRWQCB, 5/2008).

Toluene was detected above the laboratory reporting limits in the lower two of the six samples from boring SB-1, but not from the six samples from boring SB-2. The Toluene concentrations ranged up to 0.012 mg/kg in sample 'SB-1 24-25.5M,' less than the ESL of 2.9 mg/kg for shallow soil containing Toluene at a residential or commercial land use scenario where ground water is a current or potential source of drinking water (SFRWQCB, 5/2008).

Ethylbenzene was detected above the laboratory reporting limits in the lower three of the six samples from boring SB-1, and in the upper four of the six samples from boring SB-2. The Ethylbenzene concentrations ranged up to 0.63 mg/kg in sample 'SB-1 20-21.5M,' less than the ESL of 2.3 mg/kg for shallow soil containing Ethylbenzene at a residential land use scenario and less than the ESL of 3.3 mg/kg for shallow soil at a commercial land use scenario where ground water is a current or potential source of drinking water (SFRWQCB, 5/2008).

Xylenes were detected above the laboratory reporting limit in the lower three of six samples from boring SB-1, and in three of the six samples from boring SB-2. The concentrations of Total Xylenes ranged up to 2.4 mg/kg in sample 'SB-1 20-21.5M,' slightly above the ESL of 2.3 mg/kg for shallow soil containing Xylenes at a residential or commercial land use scenario where ground water is a current or potential source of drinking water (SFRWQCB, 5/2008).

The remaining analytes (MTBE, ETBE, DIPE, TAME, TBA, Ethanol, 1,2-DCA, and EDB) were not detected above their laboratory reporting limits. A summary of the laboratory analytical results for soil borings SB-1 and SB-2 are provided in Table 2. For comparison purposes, laboratory analytical data for historic soil samples SW-1, SW-6 and SW-7 collected in 1992 during UST removal activities are also provided in Table 2. A copy of the laboratory analytical report, including chain-of-custody documentation is provided in Appendix B. The laboratory analytical report electronic data file (EDF) was uploaded to the GeoTracker AB2886 database. The upload confirmation receipt is provided in Appendix C.

4.4 Investigation-Derived Residuals Management

Residual solids and liquids generated during the Site investigation activities were stored temporarily onsite in Department of Transportation-approved 55-gallon drums pending analytical results and profiling. Following characterization and profiling, Belshire Environmental Services removed the investigation-derived residuals to an Atlantic Richfield Company-approved facility for treatment or disposal. One 55-gallon drum of non-hazardous liquids was transferred to the Demenno Kerdoon facility in Compton, California. Three 55-gallon drums of soil were transferred to the TPST Soil Recyclers of California facility in Adelanto, California. Copies of the Non-Hazardous Waste Data Form for the liquid and Manifest for the soil are provided in Appendix A.

5.0 DISCUSSION OF RESULTS

Abandonment of the 15 former monitoring or remediation wells at the Site was performed successfully. Well abandonment was completed in accordance with the permit requirements of the ACPWA and the DWR Water Well Standards Bulletin(s) 74-81/74-90, regardless of the mid-project modification in the method of destruction for eight of the wells. Five monitoring/ remediation wells that were outside of the areas significantly impacted by the station renovation plans (A-1, A-2, AR-2, ADR-1 and ADR-2) were requested to be preserved. These five wells located on the western and southwestern portions of the station property are well positioned on the downgradient side of the area of the former release of petroleum hydrocarbons.

Post-remediation verification soil boring samples were compared against historic UST excavation sidewall samples (SB-1 vs. SW-1, and SB-2 vs. SW-6 and SW-7). Concentrations of GRO and DRO were less in samples from boring SB-1 (maximums of 230 mg/kg and 300 mg/kg, respectively), than the Total Petroleum Hydrocarbons as Gasoline (TPH-G) and Total Petroleum Hydrocarbons as Diesel (TPH-D) concentrations from historic sidewall sample SW-1 (1200 mg/kg and 620 mg/kg, respectively). Although concentrations of GRO were less in the samples from boring SB-2 (maximum of 31 mg/kg) than the maximum TPH-G concentration in sidewall sample SW-7 (420 mg/kg), the concentrations of DRO were higher in the samples from SB-2 (maximum of 640 mg/kg) than the maximum TPH-D concentration in sample SW-7 (10 mg/kg).

Concentrations of the volatile organic compounds Benzene, Toluene, Ethylbenzene, and Total Xylenes (BTEX) were absent or significantly less in samples from boring SB-1 (maximums of 0.13 mg/kg, 0.012 mg/kg, 0.63 mg/kg, and 2.4 mg/kg, respectively) than the BTEX concentrations from historic sidewall sample SW-1 (6.8 mg/kg, 47 mg/kg, 22 mg/kg, and 140 mg/kg, respectively). Concentrations of BTEX again were absent or significantly less in the samples from boring SB-2 (ND, ND, 0.15 mg/kg, 0.0033 mg/kg, respectively) than the BTEX concentrations from historic sidewall samples SW-6 (0.88 mg/kg, 3.9 mg/kg, 2.1 mg/kg, and 15 mg/kg, respectively) or SW-7 (4.2 mg/kg, 16 mg/kg, 8.0 mg/kg, and 53 mg/kg, respectively).

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

Broadbent & Associates, Inc. performed a soil and ground-water boring investigation and abandoned 15 former monitoring and remediation wells, prior to raze and rebuild renovation activities at ARCO Station No.2169. Based on the observations and findings, BAI concludes the following:

- Fifteen former monitoring and remediation wells on the station property were permanently decommissioned by pressure-grout injection, under approved permit conditions from the ACPWA and in accordance with the DWR Water Well Standards.

- Five pre-existing monitoring wells were directed to be preserved while the station completes renovation. These remaining five onsite wells, A-1, A-2, AR-2, ADR-1, and ADR-2, are positioned in the west and southwestern areas of the property, generally considered the downgradient side of the property.
- Two onsite soil borings were advanced in general accordance with the ACEH approved work plan with the objective of performing post-remediation verification sampling and to further define the vertical extent of impacted soil in the former UST area. The soil borings were advanced near the northeast and southwest corners of the excavation made in 1992 to remove the former USTs. These areas were the locations of the highest concentrations of petroleum hydrocarbons left in the excavation sidewalls.
- Post-remediation soil concentrations of petroleum hydrocarbons near the northeast corner of the former UST excavation, as measured by samples from recent boring SB-1, were absent or less than those left in place in 1992 as represented by historic sidewall sample SW-1. VOCs were in fact absent from the soil samples collected from boring SB-1 above 17.5 ft bgs.
- Post-remediation soil concentrations of petroleum hydrocarbons near the southwest corner of the former UST excavation, as measured by samples from recent boring SB-2, were mostly less than those left in place in 1992 as represented by historic sidewall samples SW-6 and SW-7. Exceptions were the three upper samples from boring SB-2 (between 8.0 and 17.5 ft bgs) which contained DRO concentrations in excess of the TPH-D concentrations reported from historic samples SW-6 and SW-7. VOCs were not detected above the laboratory reporting limits, except several low concentrations of Ethylbenzene and Total Xylenes.
- The concentrations detected in samples from the two post-remediation verification soil borings were less than the ESLs for a scenario with the existing commercial or industrial land use, shallow or deep soils as applicable, and where drinking water is not a current or potential source of drinking water, with the exception of 230 mg/kg GRO in sample ‘SB-1 12-13.5T’ (versus the ESL of 180 mg/kg), and DRO of 300 mg/kg and 640 mg/kg in samples ‘SB-1 8-9.5M’ and ‘SB-2 8-9.5M’, respectively (versus ESL of 180 mg/kg). Concentrations of VOCs in the soil boring samples were less than the ESLs under the existing land use and exposure scenario.
- The post-remediation verification soil boring samples show that past remediation efforts (including operation of a vapor extraction and air-sparge remediation system between 1994 and 2001) were successful in reducing the onsite concentrations of residual petroleum hydrocarbons in soil on the Site property. Furthermore, the vertical delineation of impacted soil has been completed on this portion of the property.

6.2 Recommendations

Based on the information obtained and presented in this report, BAI makes the following recommendations:

- When safe to do so during, or following completion of renovation activities (if simultaneous operations cannot be avoided), BAI recommends resuming semi-annual ground-water monitoring from the five remaining onsite wells at ARCO Station No.2169.
- Following completion of Station renovation activities expected later this year, BAI recommends discussing with ACEH if replacement monitoring wells will be required, and if so where.
- The remaining offsite work proposed in the approved work plan (four borings documented in the *Preferential Pathway Evaluation and Soil & Ground-Water Investigation Work Plan*, BAI 4/6/2009) should be conducted to ascertain the horizontal extent of petroleum hydrocarbon contamination to ground water. However, progress towards conducting this work is presently at a stalemate due to the lack of cooperation regarding access from offsite property owners at 949 West Grand Avenue and 885 22nd Street.

7.0 CLOSURE

This document has been prepared for the exclusive use of Atlantic Richfield Company. The findings presented in this report are based upon the observations of BAI field personnel, points of investigation and results of laboratory tests performed by Calscience Environmental Laboratories, Inc. (Garden Grove, California). Services were performed in accordance with the generally accepted standard of practice at the time this report was written. No warranty, expressed or implied, is intended. It is possible that variations in the soil or ground-water conditions could exist beyond the points explored in this investigation. Also, changes in site conditions could occur at some time in the future due to variations in rainfall, temperature, regional water usage or other factors.

8.0 REFERENCES

Alameda County Environmental Health Services, 1 May 2009. *Fuel Leak Case No. RO0000072 and GeoTracker Global ID T0600100112, ARCO #02169, 889 W. Grand Avenue, Oakland, CA 94608*. Letter from Mr. Paresh Khatri (ACEH) to Mr. Paul Supple (BP).

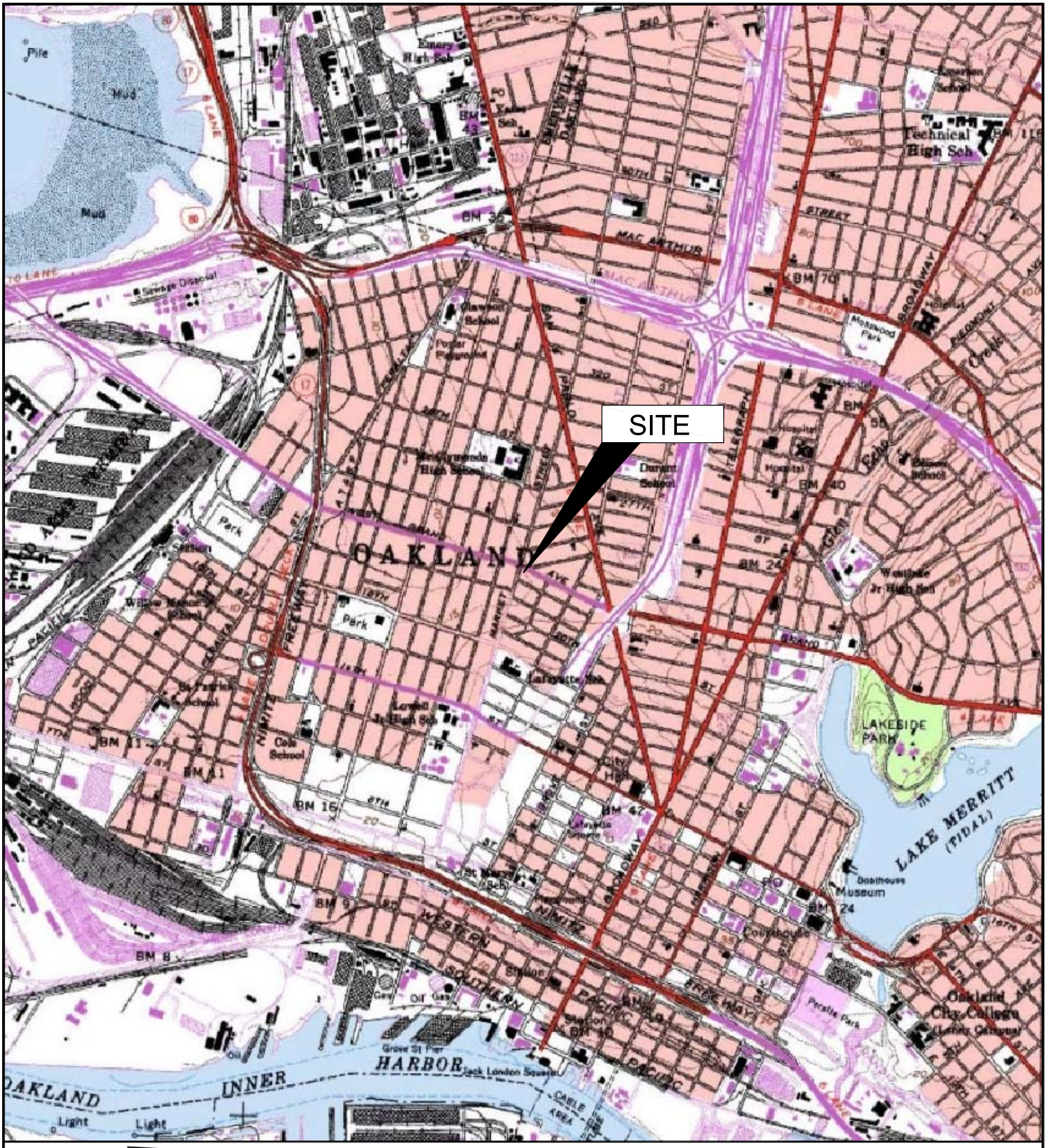
Alameda County Environmental Health Services, 25 May 2010. RE: Raze and Rebuild at ARCO #2169 / ACEH Case #RO72. Email reply from Mr. Paresh Khatri (ACEH) to Mr. Tom Venus (BAI).

Broadbent & Associates, Inc., 6 April 2009. *Preferential Pathway Evaluation and Soil & Ground-Water Investigation Work Plan, Atlantic Richfield Company (A BP affiliated company) Station No. 2169, 889 West Grand Avenue, Oakland, Alameda County California; ACEH Case No.R0000072.* Prepared on behalf of BP for submittal to ACEH.

California Regional Water Quality Control Board, San Francisco Bay Region, Groundwater Committee, June 1999. *East Bay Plain Groundwater Basin Beneficial Use Evaluation Report, Alameda County and Contra Costa Counties, CA.*

California Regional Water Quality Control Board, San Francisco Bay Region, November 2007 (Revised May 2008). *Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater*.

ROUX Associates, 14 July 1992. *Underground Storage Tank Removal and Soil Sampling, ARCO Facility No. 2169, 889 West Grand Avenue, Oakland, California.* Prepared on behalf of ARCO Products Company for submittal to ACEH.



N

0 2000 4000

APPROXIMATE SCALE (ft)

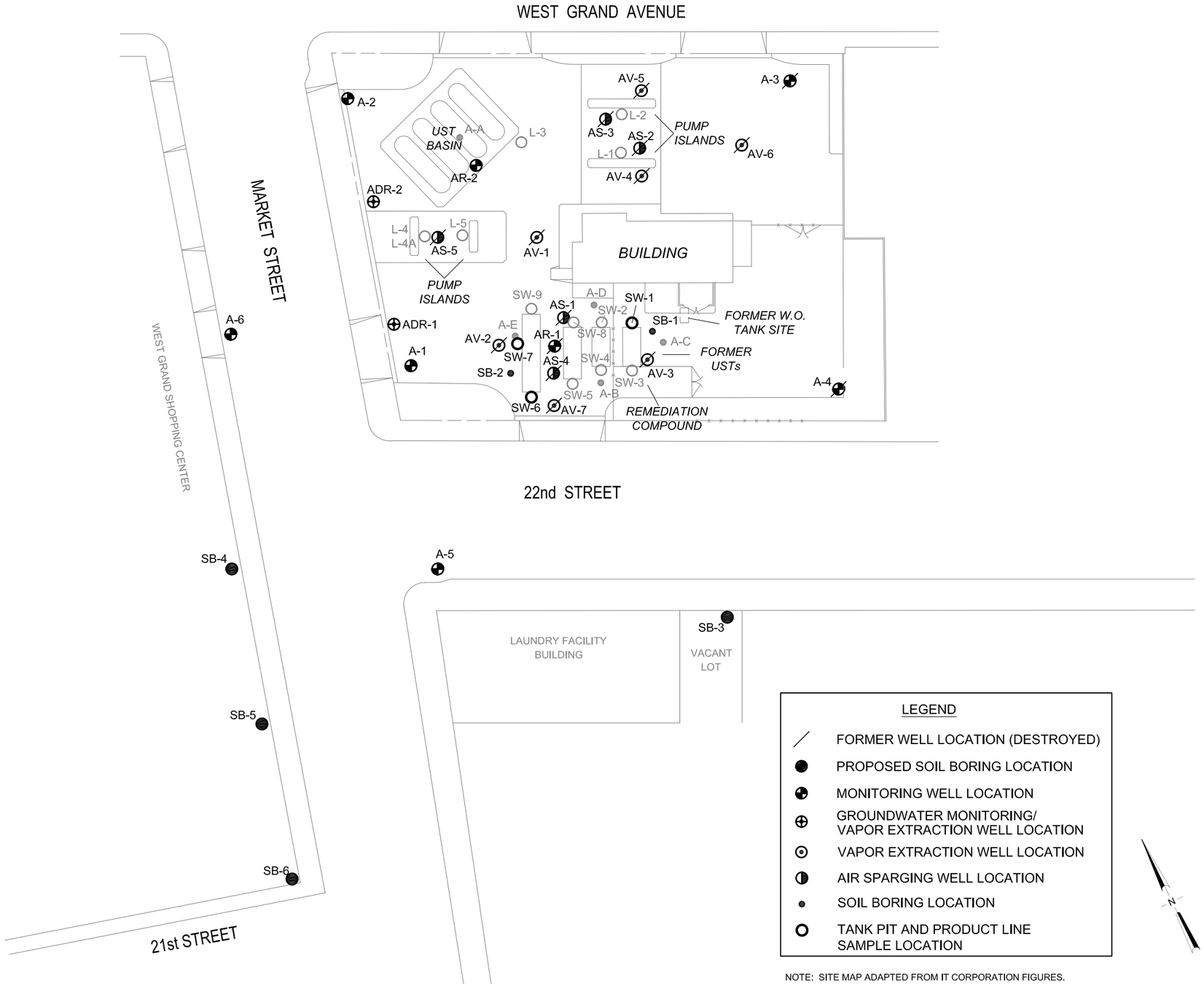
IMAGE SOURCE: USGS

BROADBENT & ASSOCIATES, INC.
ENGINEERING, WATER RESOURCES & ENVIRONMENTAL
1324 Mangrove Ave. Suite 212, Chico, CA 95926
Project No.: 06-88-621 Date: 9/1/09

ARCO Service Station #2169
889 West Grand Avenue
Oakland, California

Site Location Map

Drawing
1



NOTE: SITE MAP ADAPTED FROM IT CORPORATION FIGURES.

Drawing 2

Former Site Layout Plan with Well and Soil Boring Locations

ARCO Service Station #2169
889 West Grand Avenue
Oakland, California

BROADBENT & ASSOCIATES, INC.
ENGINEERING, WATER RESOURCES & ENVIRONMENTAL
1324 Mangrove Avenue, Suite 212 Chico, CA

Project No.: 06-08-621 Date: 9/17/2010

Table 1 - Onsite Environmental Well Specifications and Method of Destruction
ARCO Station No.2169, 889 W. Grand Ave, Oakland, Alameda County, California

Well ID	Original Well Function	Depth Boring (ft.bgs)	Depth Well (ft.bgs)	Screen Interval (ft.bgs)	Sand Filter Pack (ft.bgs)	Boring Diameter (inches)	Well Diameter (inches)	Well Log Available? (Yes/No)	Proposed Destruction Method*	Actual Destruction Method
A-3	monitoring	30	29.5	9-29.5	8-29.5	10	3	Yes	pressure-grout	pressure-grout
A-4	monitoring	30	28	8-28	7-28	10	3	Yes	pressure-grout	pressure-grout
AR-1	GW extr.	30	28	8-28	7-28	12	6	Yes	HSA over-drill	pressure-grout
AS-1	air sparge	30.5	29	27-29	26-29	8	2	No	HSA over-drill	pressure-grout
AS-2	air sparge	24.5	23	21-23	20-23	8	2	No	pressure-grout	pressure-grout
AS-3	air sparge	30.5	29	26-29	25-29	8	2	Yes	HSA over-drill	pressure-grout
AS-4	air sparge	24.5	22	20-22	19.5-22	8	2	Yes	HSA over-drill	pressure-grout
AS-5	air sparge	24.5	22.5	20.5-22.5	20-22.5	8	2	Yes	HSA over-drill	pressure-grout
AV-1	vapor extr.	14.5	14	5-14	4.5-14	8	2	Yes	HSA over-drill	pressure-grout
AV-2	vapor extr.	14.5	14	5-14	4.5-14	8	2	Yes	HSA over-drill	pressure-grout
AV-3	vapor extr.	14.5	14	5-14	4.5-14	8	2	Yes	pressure-grout	pressure-grout
AV-4	vapor extr.	16.5	15	5-15	4-15	10	4	Yes	pressure-grout	pressure-grout
AV-5	vapor extr.	16.5	15	5-15	4-15	10	4	Yes	pressure-grout	pressure-grout
AV-6	vapor extr.	16.5	15	5-15	4-15	10	4	Yes	pressure-grout	pressure-grout
AV-7	vapor extr.	16.5	15	5-15	4-15	10	4	Yes	HSA over-drill	pressure-grout
A-1	monitoring	30	25	9-25	8-25	10	3	Yes		Preserved
A-2	monitoring	26.5	25	10-25	9-25	10	3	Yes		Preserved
AR-2	GW extr.	30.5	28.5	8.5-28.5	7.5-28.5	10	4	Yes		Preserved
A-5	monitoring	30	30	8-30	unknown	8	2	Yes	Offsite - N/A	Preserved
A-6	monitoring	30	28.5	8-28.5	unknown	8	2	Yes	Offsite - N/A	Preserved
ADR-1	dual use	23.5	22	5-22	4-22	10	4	Yes		Preserved
ADR-2	dual use	28	26.5	5-26.5	4-26.5	10	4	Yes		Preserved

* HSA = Hollow Stem Auger

Table 2 - Laboratory Analytical Results for Post-Remediation Verification Soil Boring Samples
ARCO Station No.2169, 889 W. Grand Ave, Oakland, Alameda County, California

Sample ID	Sample Date	GRO (C6-C12) (mg/kg)	DRO (C10-C28) (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Total Xylenes (mg/kg)	MTBE (mg/kg)	ETBE (mg/kg)	DIPE (mg/kg)	TAME (mg/kg)	TBA (mg/kg)	Ethanol (mg/kg)	1,2-DCA (mg/kg)	EDB (mg/kg)
SB-1 8-9.5M	6/17/2010	**0.63**	***300*** (LX)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0020	<0.0020	<0.0020	<0.010	<0.10	<0.0010	<0.0010
SB-1 12-13.5T	6/17/2010	***230***	**30**	<0.10	<0.10	<0.10	<0.10	<0.10	<0.20	<0.20	<0.20	<1.0	<10	<0.10	<0.10
SB-1 16-17.5T	6/17/2010	***95***	**9.1**	<0.10	<0.10	<0.10	<0.10	<0.10	<0.20	<0.20	<0.20	<1.0	<10	<0.10	<0.10
SB-1 20-21.5M	6/17/2010	<0.50	<5.0	***0.13***	<0.10	**0.63**	***2.4***	<0.10	<0.20	<0.20	<0.20	<1.0	<10	<0.10	<0.10
SB-1 24-25.5M	6/17/2010	**5.2**	<5.0	**0.020**	**0.012**	**0.044**	**0.17**	<0.0010	<0.0020	<0.0020	<0.0020	<0.010	<0.10	<0.0010	<0.0010
SB-1 28-29.5B	6/17/2010	**5.2** (N1)	<5.0	**0.0087**	**0.0081**	**0.061**	**0.24**	<0.0010	<0.0020	<0.0020	<0.0020	<0.010	<0.10	<0.0010	<0.0010
SW-1 (12')	1/16/1992	1200	620	6.8	47	22	140	NA	NA	NA	NA	NA	NA	NA	NA
SB-2 8-9.5M	6/17/2010	**18** (N1)	***640***	<0.0010	<0.0010	**0.0025**	**0.0032**	<0.0010	<0.0020	<0.0020	<0.0020	<0.010	<0.10	<0.0010	<0.0010
SB-2 12-13.5B	6/17/2010	**8.8**	**52** (LX)	<0.0010	<0.0010	**0.0023**	**0.0016**	<0.0010	<0.0020	<0.0020	<0.0020	<0.010	<0.10	<0.0010	<0.0010
SB-2 16-17.5M	6/17/2010	**31** (N1)	***150***	<0.10	<0.10	**0.15**	<0.10	<0.10	<0.20	<0.20	<0.20	<1.0	<10	<0.10	<0.10
SB-2 20-21.5M	6/17/2010	<0.50	<5.0	<0.0010	<0.0010	**0.0071**	**0.0033**	<0.0010	<0.0020	<0.0020	<0.0020	<0.010	<0.10	<0.0010	<0.0010
SB-2 24-25.5M	6/17/2010	<0.50	<5.0	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0020	<0.0020	<0.0020	<0.010	<0.10	<0.0010	<0.0010
SB-2 28-29.5T	6/17/2010	<0.50	<5.0	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0020	<0.0020	<0.0020	<0.010	<0.10	<0.0010	<0.0010
SW-6 (12')	1/16/1992	100	2.8	0.88	3.9	2.1	15	NA	NA	NA	NA	NA	NA	NA	NA
SW-7 (12')	1/16/1992	420	10	4.2	16	8.0	53	NA	NA	NA	NA	NA	NA	NA	NA
ESL - Res./Shallow/DW		83	83	0.044	2.9	2.3	2.3	0.023	NE	NE	NE	0.075	NE	0.0045	0.00033
ESL - Res./Deep/DW		83	83	0.044	2.9	3.3	2.3	0.023	NE	NE	NE	0.075	NE	0.0045	0.00033
ESL - Comm./Shallow/DW		83	83	0.044	2.9	3.3	2.3	0.023	NE	NE	NE	0.075	NE	0.0045	0.00033
ESL - Comm./Deep/DW		83	83	0.044	2.9	3.3	2.3	0.023	NE	NE	NE	0.075	NE	0.0045	0.00033
ESL - Res./Shallow/NDW		100	100	0.12	9.3	2.3	11	8.4	NE	NE	NE	100	NE	0.22	0.019
ESL - Res./Deep/NDW		180	180	2.0	9.3	4.7	11	8.4	NE	NE	NE	110	NE	1.8	1.0
ESL - Comm./Shallow/NDW		180	180	0.27	9.3	4.7	11	8.4	NE	NE	NE	110	NE	0.48	0.044
ESL - Comm./Deep/NDW		180	180	2.0	9.3	4.7	11	8.4	NE	NE	NE	110	NE	1.8	1.0

Notes:

SB-1/SB-2 samples collected 6/17/2010 by BAI analyzed for GRO/DRO by EPA Method 8015 Modified with remaining analyses by EPA Method 8260B.

SW-1/SW-6/SW-7 samples collected 1/16/1992 by ROUX for TPH-G/TPH-D by EPA Method 8015 Modified, and BTEX by EPA Method 8020 (ROUX, 7/14/1992).

<X = Not detected above the given laboratory reporting limit (X) in milligrams per kilogram (mg/kg)

(LX) = Quantification of unknown hydrocarbon(s) in sample based on diesel.

(N1) = The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons are also present (or were detected).

NA = Not Analyzed.

ESL - Res./Shallow/DW = Environmental Screening Level (ESL) for a scenario with residential land use, shallow soils (<3m), where ground water is a current or potential source of drinking water (SFBRWQCB, 5/2008).

ESL - Res./Deep/DW = ESL for a scenario with residential land use, deep soils (>3m), where ground water is a current or potential source of drinking water (SFBRWQCB, 5/2008).

ESL - Comm./Shallow/DW = ESL for a scenario with commerical or industrial land use only, shallow soils (<3m), where ground water is a current or potential source of drinking water (SFBRWQCB, 5/2008).

ESL - Comm./Deep/DW = ESL for a scenario with commercial or industrial land use only, deep soils (>3m), where ground water is a current or potential source of drinking water (SFBRWQCB, 5/2008).

ESL - Res./Shallow/NDW = Environmental Screening Level (ESL) for a scenario with residential land use, shallow soils (<3m), where ground water is NOT a current or potential source of drinking water (SFBRWQCB, 5/2008).

ESL - Res./Deep/NDW = ESL for a scenario with residential land use, deep soils (>3m), where ground water is NOT a current or potential source of drinking water (SFBRWQCB, 5/2008).

ESL - Comm./Shallow/NDW = ESL for a scenario with commerical or industrial land use only, shallow soils (<3m), where ground water is NOT a current or potential source of drinking water (SFBRWQCB, 5/2008).

ESL - Comm./Deep/NDW = ESL for a scenario with commercial or industrial land use only, deep soils (>3m), where ground water is NOT a current or potential source of drinking water (SFBRWQCB, 5/2008).

NE = Value Not Established.

BOLD = Analyte detected above the laboratory reporting limit.

BOLD/ITALICS = Analyte detected above the depth-specific ESL for residential or commercial land use scenario where ground water is a current or potential source of drinking water.

APPENDIX A

SOIL BORING AND WELL DECOMMISSIONIING DATA PACKAGE
(Includes Drilling Permit, Field Data Sheets, Well Completion Reports, Soil Boring Logs, and Waste Manifests)

Alameda County Public Works Agency - Water Resources Well Permit

399 Elmhurst Street
Hayward, CA 94544-1395
Telephone: (510)670-6633 Fax:(510)782-1939

Application Approved on: 06/02/2010 By jamesy

Permit Numbers: W2010-0363 to W2010-0367
Permits Valid from 06/07/2010 to 06/25/2010

Application Id: 1274744183168 **City of Project Site:** Oakland
Site Location: ARCO Station #2169, 889 W Grand Avenue, Oakland, cA
Project Start Date: 06/07/2010 **Completion Date:** 06/25/2010

Assigned Inspector: Contact Vicky Hamlin at (510) 670-5443 or vickyh@acpwa.org

Applicant: Broadbent & Associates - Tom Venus **Phone:** 530-566-1400
1324 Mangrove Ave, Ste 212, Chico, CA 95926
Property Owner: Atlantic Richfield Co. Attn: Chuck Carmel **Phone:** 925-275-3803
PO Box 1257, San Ramon, CA 94583
Client: ** same as Property Owner **

Total Due: $1589.00
Receipt Number: WR2010-0182 **Total Amount Paid:** $1589.00
Payer Name : Broadbent Paid By: CHECK **PAID IN FULL**

Works Requesting Permits:

Well Destruction-Monitoring - 2 Wells
Driller: CASCADE DRILLING L P - Lic #: 938110 - Method: other **Work Total: $794.00**

Specifications

Permit #	Issued Date	Expire Date	Owner Well Id	Hole Diam.	Casing Diam.	Seal Depth	Max. Depth	State Well #	Orig. Permit #	DWR #
W2010-0363	06/02/2010	09/05/2010	A-3	10.00 in.	0.00 in.	0.00 ft	29.50 ft	1S/4W26E4	92061	No Records
W2010-0364	06/02/2010	09/05/2010	A-4	10.00 in.	0.00 in.	0.00 ft	29.50 ft	1S/4W26E5	92061	No Records

Specific Work Permit Conditions

1. Drilling Permit(s) can be voided/ cancelled only in writing. It is the applicant's responsibility to notify Alameda County Public Works Agency, Water Resources Section in writing for an extension or to cancel the drilling permit application. No drilling permit application(s) shall be extended beyond ninety (90) days from the original start date. Applicants may not cancel a drilling permit application after the completion date of the permit issued has passed.

2. Prior to any drilling activities, it shall be the applicant's responsibility to contact and coordinate an Underground Service Alert (USA), obtain encroachment permit(s), excavation permit(s) or any other permits or agreements required for that Federal, State, County or City, and follow all City or County Ordinances. No work shall begin until all the permits and requirements have been approved or obtained. It shall also be the applicants responsibilities to provide to the Cities or to Alameda County an Traffic Safety Plan for any lane closures or detours planned. No work shall begin until all the permits and requirements have been approved or obtained.

3. Compliance with the well-sealing specifications shall not exempt the well-sealing contractor from complying with appropriate State reporting-requirements related to well construction or destruction (Sections 13750 through 13755 (Division 7, Chapter 10, Article 3) of the California Water Code). Contractor must complete State DWR Form 188 and mail original to the Alameda County Public Works Agency, Water Resources Section, within 60 days. Including permit number and site map.

4. Applicant shall submit the copies of the approved encroachment permit to this office within 60 days.

Alameda County Public Works Agency - Water Resources Well Permit

5. Permittee shall assume entire responsibility for all activities and uses under this permit and shall indemnify, defend and save the Alameda County Public Works Agency, its officers, agents, and employees free and harmless from any and all expense, cost and liability in connection with or resulting from the exercise of this Permit including, but not limited to, property damage, personal injury and wrongful death.

6. Applicant shall contact Vicky Hamlin for an inspection time at 510-670-5443 or email to vickyh@acpwa.org at least five (5) working days prior to starting, once the permit has been approved. Confirm the scheduled date(s) at least 24 hours prior to drilling.

7. Permittee, permittee's contractors, consultants or agents shall be responsible to assure that all material or waters generated during drilling, boring destruction, and/or other activities associated with this Permit will be safely handled, properly managed, and disposed of according to all applicable federal, state, and local statutes regulating such. In no case shall these materials and/or waters be allowed to enter, or potentially enter, on or off-site storm sewers, dry wells, or waterways or be allowed to move off the property where work is being completed.

8. Remove the Christy box or similar structure.

Destroy well by grouting neat cement with a tremie pipe or pressure grouting (25 psi for 5min.) to the bottom of the well and by filling with neat cement to three (3-5) feet below surface grade. Allow the sealing material to spill over the top of the casing to fill any annular space between casing and soil.

After the seal has set, backfill the remaining hole with concrete or compacted material to match existing conditions.

9. Copy of approved drilling permit must be on site at all times. Failure to present or show proof of the approved permit application on site shall result in a fine of $500.00.

Remediation Well Destruction-Injection - 6 Wells
Driller: Cascade - Lic #: 938110 - Method: other **Work Total: $265.00**

Specifications

Permit #	Issued Date	Expire Date	Owner Well Id	Hole Diam.	Casing Diam.	Seal Depth	Max. Depth	State Well #	Orig. Permit #	DWR #
W2010-0365	06/02/2010	09/05/2010	AR-1	8.00 in.	0.00 in.	0.00 ft	30.00 ft	1S/4W26E8	93655	No Records
W2010-0365	06/02/2010	09/05/2010	AS-1	8.00 in.	0.00 in.	0.00 ft	30.50 ft	1S/4W26E	93471	375878
W2010-0365	06/02/2010	09/05/2010	AS-2	8.00 in.	0.00 in.	0.00 ft	24.50 ft	1S/4W26E	93471	375882
W2010-0365	06/02/2010	09/05/2010	AS-3	8.00 in.	0.00 in.	0.00 ft	30.50 ft	1S/4W26E	93471	375879
W2010-0365	06/02/2010	09/05/2010	AS-4	8.00 in.	0.00 in.	0.00 ft	24.50 ft	1S/4W26E	93655	579491
W2010-0365	06/02/2010	09/05/2010	AS-5	8.00 in.	0.00 in.	0.00 ft	24.50 ft	1S/4W26E	93655	579492

Specific Work Permit Conditions

1. Compliance with the well-sealing specifications shall not exempt the well-sealing contractor from complying with appropriate State reporting-requirements related to well destruction (Sections 13750 through 13755 (Division 7, Chapter 10, Article 3) of the California Water Code). Contractor must complete State DWR Form 188 and mail original to the Alameda County Public Works Agency, Water Resources Section, within 60 days. Including permit number and site map.

2. Applicant shall submit the copies of the approved encroachment permit to this office within 60 days.

3. Applicant shall contact Vicky Hamlin for an inspection time at 510-670-5443 or email to vickyh@acpwa.org at least five (5) working days prior to starting, once the permit has been approved. Confirm the scheduled date(s) at least 24 hours prior to drilling.

4. Remove the Christy box or similar structure.

Destroy well by grouting neat cement with a tremie pipe or pressure grouting (25 psi for 5min.) to the bottom of the well and by filling with neat cement to three (3-5) feet below surface grade. Allow the sealing material to spill over the top of the casing to fill any annular space between casing and soil.

After the seal has set, backfill the remaining hole with concrete or compacted material to match existing conditions.

5. Copy of approved drilling permit must be on site at all times. Failure to present or show proof of the approved permit application on site shall result in a fine of $500.00.

6. Prior to any drilling activities onto any public right-of-ways, it shall be the applicants responsibilities to contact and coordinate a Underground Service Alert (USA), obtain encroachment permit(s), excavation permit(s) or any other permits required for that City or to the County and follow all City or County Ordinances. It shall also be the applicants responsibilities to provide to the Cities or to Alameda County a Traffic Safety Plan for any lane closures or detours planned. No work shall begin until all the permits and requirements have been approved or obtained.

Remediation Well Destruction-Vapor Remediation Well - 8 Wells
Driller: Cascade - Lic #: 938110 - Method: other **Work Total: $265.00**

Specifications

Permit #	Issued Date	Expire Date	Owner Well Id	Hole Diam.	Casing Diam.	Seal Depth	Max. Depth	State Well #	Orig. Permit #	DWR #
W2010-0366	06/02/2010	09/05/2010	AV-1	8.00 in.	0.00 in.	0.00 ft	14.50 ft	1S/4W26E9	93655	No Records
W2010-0366	06/02/2010	09/05/2010	AV-2	8.00 in.	0.00 in.	0.00 ft	14.50 ft	1S/4W26E11	93655	No Records
W2010-0366	06/02/2010	09/05/2010	AV-3	8.00 in.	0.00 in.	0.00 ft	14.50 ft	1S/4W26E12	93655	No Records
W2010-0366	06/02/2010	09/05/2010	AV-4	10.00 in.	0.00 in.	0.00 ft	16.50 ft	1S/4W26E	93471	375881
W2010-0366	06/02/2010	09/05/2010	AV-5	10.00 in.	0.00 in.	0.00 ft	16.50 ft	1S/4W26E	93471	375880
W2010-0366	06/02/2010	09/05/2010	AV-6	10.00 in.	0.00 in.	0.00 ft	16.50 ft	1S/4W26E	93655	579489
W2010-0366	06/02/2010	09/05/2010	AV-7	10.00 in.	0.00 in.	0.00 ft	16.50 ft	1S/4W26E	93655	579490
W2010-0366	06/02/2010	09/05/2010	AV-8	10.00 in.	0.00 in.	0.00 ft	16.50 ft	1S/4W26E	No Records	No Records

Specific Work Permit Conditions

1. Permittee shall assume entire responsibility for all activities and uses under this permit and shall indemnify, defend and save the Alameda County Public Works Agency, its officers, agents, and employees free and harmless from any and all expense, cost, liability in connection with or resulting from the exercise of this Permit including, but not limited to, properly damage, personal injury and wrongful death.

2. Permittee, permittee's contractors, consultants or agents shall be responsible to assure that all material or waters generated during drilling, boring destruction, and/or other activities associated with this Permit will be safely handled, properly managed, and disposed of according to all applicable federal, state, and local statutes regulating such. In no case shall these materials and/or waters be allowed to enter, or potentially enter, on or off-site storm sewers, dry wells, or waterways or be allowed to move off the property where work is being completed.

3. Compliance with the well-sealing specifications shall not exempt the well-sealing contractor from complying with appropriate State reporting-requirements related to well destruction (Sections 13750 through 13755 (Division 7, Chapter 10, Article 3) of the California Water Code). Contractor must complete State DWR Form 188 and mail original to the Alameda County Public Works Agency, Water Resources Section, within 60 days. Including permit number and site map.

4. Applicant shall submit the copies of the approved encroachment permit to this office within 60 days.

5. Applicant shall contact Vicky Hamlin for an inspection time at 510-670-5443 or email to vickyh@acpwa.org at least five (5) working days prior to starting, once the permit has been approved. Confirm the scheduled date(s) at least 24 hours prior to drilling.

6. Copy of approved drilling permit must be on site at all times. Failure to present or show proof of the approved permit application on site shall result in a fine of $500.00.

7. Prior to any drilling activities onto any public right-of-ways, it shall be the applicants responsibilities to contact and coordinate a Underground Service Alert (USA), obtain encroachment permit(s), excavation permit(s) or any other permits required for that City or to the County and follow all City or County Ordinances. It shall also be the applicants responsibilities to provide to the Cities or to Alameda County a Traffic Safety Plan for any lane closures or detours planned. No work shall begin until all the permits and requirements have been approved or obtained.

8. Remove the Christy box or similar structure. Destroy well by grouting neat cement with a tremie pipe or pressure grouting (25 psi for 5min.) to the bottom of the well and by filling with neat cement to three (3-5) feet below surface grade. Allow the sealing material to spill over the top of the casing to fill any annular space between casing and soil. After the seal has set, backfill the remaining hole with concrete or compacted material to match existing conditions.

Borehole(s) for Investigation-Geotechnical Study/CPT's - 2 Boreholes
Driller: Cascade (SB-1 and SB-2) - Lic #: 938110 - Method: other **Work Total: $265.00**

Specifications

Permit Number	Issued Dt	Expire Dt	# Boreholes	Hole Diam	Max Depth
W2010-0367	06/02/2010	09/05/2010	2	6.00 in.	28.00 ft

Specific Work Permit Conditions

1. Backfill bore hole by tremie with cement grout or cement grout/sand mixture. Upper two-three feet replaced in kind or with compacted cuttings. All cuttings remaining or unused shall be containerized and hauled off site.

2. Boreholes shall not be left open for a period of more than 24 hours. All boreholes left open more than 24 hours will need approval from Alameda County Public Works Agency, Water Resources Section. All boreholes shall be backfilled according to permit destruction requirements and all concrete material and asphalt material shall be to Caltrans Spec or County/City Codes. No borehole(s) shall be left in a manner to act as a conduit at any time.

3. Permittee shall assume entire responsibility for all activities and uses under this permit and shall indemnify, defend and save the Alameda County Public Works Agency, its officers, agents, and employees free and harmless from any and all expense, cost, liability in connection with or resulting from the exercise of this Permit including, but not limited to, properly damage, personal injury and wrongful death.

4. Prior to any drilling activities, it shall be the applicant's responsibility to contact and coordinate an Underground Service Alert (USA), obtain encroachment permit(s), excavation permit(s) or any other permits or agreements required for that Federal, State, County or City, and follow all City or County Ordinances. No work shall begin until all the permits and requirements have been approved or obtained. It shall also be the applicants responsibilities to provide to the Cities or to Alameda County an Traffic Safety Plan for any lane closures or detours planned. No work shall begin until all the permits and requirements have been approved or obtained.

5. Applicant shall contact Vicky Hamlin for an inspection time at 510-670-5443 or email to vickyh@acpwa.org at least five (5) working days prior to starting, once the permit has been approved. Confirm the scheduled date(s) at least 24 hours prior to drilling.

6. Permittee, permittee's contractors, consultants or agents shall be responsible to assure that all material or waters generated during drilling, boring destruction, and/or other activities associated with this Permit will be safely handled, properly managed, and disposed of according to all applicable federal, state, and local statutes regulating such. In no case shall these materials and/or waters be allowed to enter, or potentially enter, on or off-site storm sewers, dry wells, or waterways or be allowed to move off the property where work is being completed.

7. Copy of approved drilling permit must be on site at all times. Failure to present or show proof of the approved permit application on site shall result in a fine of $500.00.

8. Permit is valid only for the purpose specified herein. No changes in construction procedures, as described on this permit application. Boreholes shall not be converted to monitoring wells, without a permit application process.

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

DAILY REPORT
Page ____ of ____

Project: BP 2169 Project No.: 06-58-621

Field Representative(s): E. Farr Day: _____ Date: 6/16/10

Time Onsite: From: _____ To: _____; From: _____ To: _____; From: _____ To: _____

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

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

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

Weather: _____

Equipment In Use: _____

Visitors: _____

TIME:	WORK DESCRIPTION:
0700	Depart office
0815	ARR onsite, meet Cascade Air Knife crew
	H&S
0900	Cascade begins air knifing SB-2
	Vichy Manhole cell 510 385 0737
	office 676 5443
1006	Vichy Manhole air
1143	A-3 Fracturing
1200	AV-6 - Casing collapsed @ 6.5', tremie pipe-c
	able to push through to TD
1640	Depart site
1800	@ office

Signature: _____

FIELD DATA REPORT

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

DATE: 6/16/10
PERSONNEL:
WEATHER:

PROJECT NO.: BP 2169
COMMENTS:

	Equip:	Geosquirt	Tubing	Bailers	DO	wli	Ec/pH

Well ID	Time	MEASURING POINT	DTW (FT)	~~PRODUCT THICKNESS~~ DTB	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
A-3	1130	6/16	11.60	28.38								well obstructed @ 6.5' cas. 4 or 6
AV-6	1154											
AS-2	1226		11.90	21.85								Well collapsed @ 9.5'
AV-5	1230											
AS-3	1231		11.58	27.40								Well collapsed @ 10.64
AV-4	1235											
AV-1	1422		11.54	21.60								
AS-5	1425		11.25	21.30								
AR-1			11.40	27.65								
AS-4			10.90	21.67								well obstruct. @ 4.5'
AS-4			11.48	28.25								
AV-7	1502											
AV-2			6.53	11.60								NM/ casing broken off
AV-3	1527		9.23	13.15								
A-4												

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

DAILY REPORT
Page 1 of 3

Project: BA 2169 Project No.: _____
Field Representative(s): E. Farr Day: _____ Date: 6/17/10
Time Onsite: From: _____ To: _____; From: _____ To: _____; From: _____ To: _____

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

Weather: _____

Equipment In Use: _____

Visitors: _____

WORK DESCRIPTION:

TIME:

0750 Onsite, HSS
0820 Tour up on SB-2
Brown and tan silty clay, moist, little gravel to 1/2" - no recovery
0835 8-9.5 BC 7-9-10 Silty Clay, Brown w/ Gray, gravel to 1/2" HC odor, stiff, some iron oxide staining PID 195
0837 12-13.5 BC 8-10-12 silty Clay w/ some sand, fine Brown and gray, HC odor, stiff PID 420 Wet
0840 8-9-9 16-17.5 Sandy Silt w/ little clay, WG w/ some gravel, Gray, wet PID 165
0843 SS -20.21.5 Sand w/ gravel, some clay, WG, Gray to black w/ Brown inclusions, Wet, loose, PID 141.1 @ 21.5 transition to PG Black/gray sand, fine, loose
0848 8-9-10 24-25.5 PG Sand w/ some Clay, Black to gray, moist, some gravel to 1/2", no oder, PID 6.5

Signature: _____

8-9.5M 20-21.5M
12-13.5B 24-24.6M
16-17.5M 26-29.5T

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

DAILY REPORT

Project: BP 2169 Project No.: _____

Field Representative(s): _____ Day: _____ Date: 6/17/10

Time Onsite: From: _____ To: _____; From: _____ To: _____; From: _____ To: _____

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

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

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

Weather: _____

Equipment In Use: _____

Visitors: _____

TIME:	WORK DESCRIPTION:
0855	9910 28-29.5 Clay w/some Sand, stiff, moist to dry, fine, no odor
0930	Tom up on SB-1, Steve Miller from Alameda Co arrives
0941	8-9.5 899 Silty Sand w/gravel to 1", Gray Moist to wet, Strong HC odor PID 722, WG most
0945	990 12-13.5 Sand w/ Some Gravel to 1", Wet Dark grey PID 17.0 PG, fine
0958	9911 16-17.5 Silty sand w/ Clay, Some-loose, Moist, Strong HC odor, PID 576, Iron oxide staining WG
0951	9811 20-21.5 Gravelly Sand, WG, Wet, loose, Strong HC odor, PID 65.5, Gray, Gravel to 1/2" @21.5 Clay w/10% Sand, Stiff, moist, green to tan, mild HC odor, PID 41.2

Signature: _____

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

DAILY REPORT
Page 3 of 3

Project: BA 2169 Project No.: _____

Field Representative(s): _____ Day: _____ Date: 6/17/10

Time Onsite: From: _____ To: _____; From: _____ To: _____; From: _____ To: _____

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

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

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

Weather: _____

Equipment In Use: _____

Visitors: _____

TIME:	WORK DESCRIPTION:
0857	10-10-10 24-25.5 Silica Sand w/ little Clay, brown, wet, mild HC odor, PID 31.0, Clay inclusions
1000	10-10-12 28-29.5 SAA to 29' @ 29 Stiff Gray Clay, moist, no HC odor, 13.7 PID

Signature: _____

SB-1 16-17.5 T

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

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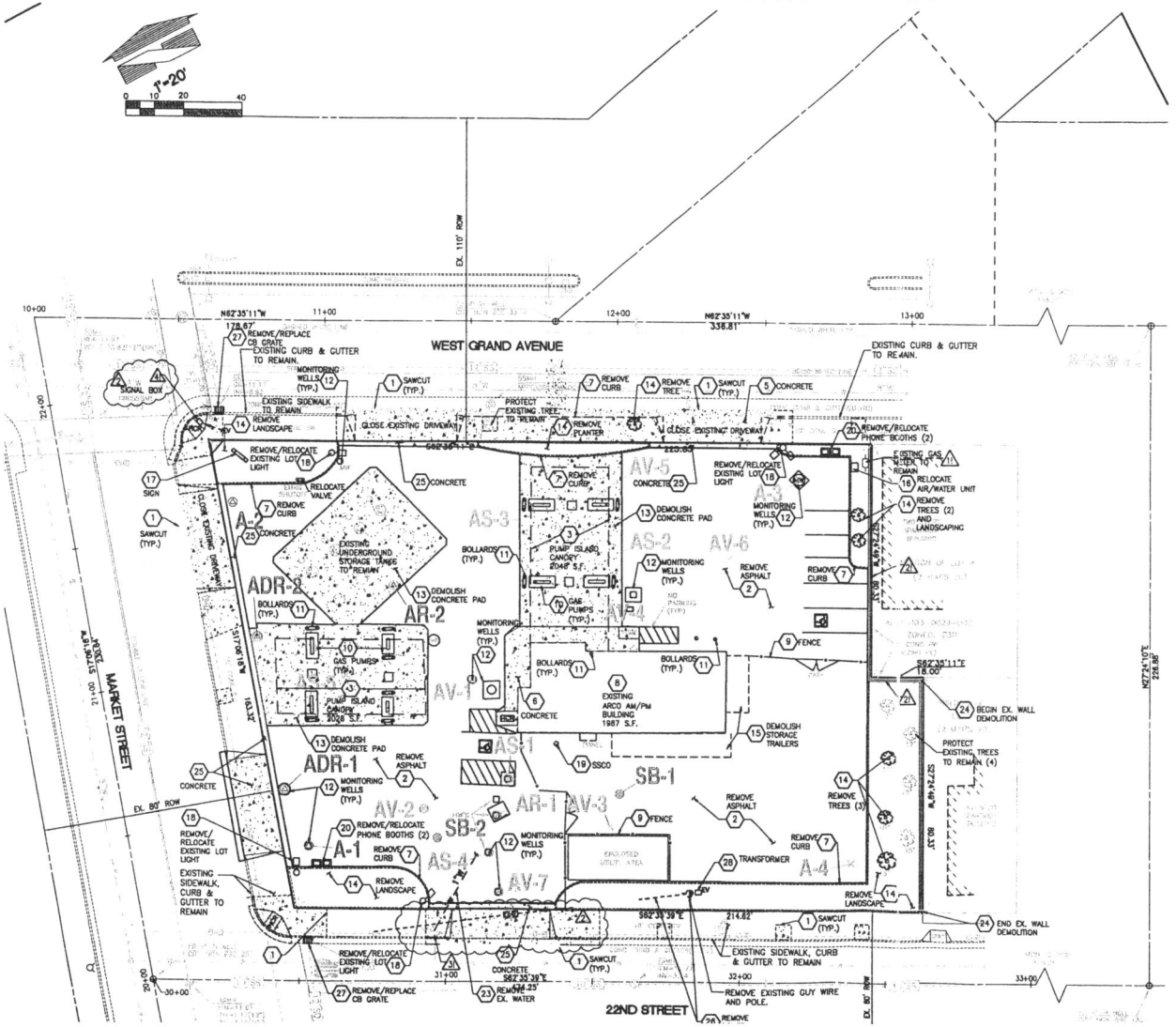
CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

CIVIL - DEMOLITION PLAN



LEGEND:

ASPHALT PAVEMENT TO BE REMOVED

CONCRETE PAVEMENT TO BE REMOVED

EXISTING BARRIER CURB

EXISTING GAS

EXISTING SAN. SEWER

EXISTING WATER

EXISTING OH POWER

EXISTING STORM DRAIN

EXISTING UG POWER

EXIST. LOT LIGHT

DEMOLITION CALLOUTS:

1. SAWCUT IN SMOOTH, CONTINUOUS LINE AND REMOVE AS NECESSARY FOR NEW IMPROVEMENTS.
2. DEMOLISH EXISTING ASPHALT PAVEMENT AND DISPOSE OF OFF-SITE.
3. DEMOLISH EXISTING CANOPY AND ALL ASSOCIATED EQUIPMENT. DISPOSE OF OFF-SITE IN ACCORDANCE WITH EPA STANDARDS.
4. 6' CHAIN LINK CONSTRUCTION FENCE AND GATE. FIELD VERIFY AND CONFIRM LOCATION WITH ARCHITECT/OWNER.
5. DEMOLISH EXISTING SIDEWALK (INCLUDING EXISTING DRIVEWAYS) BETWEEN SAWCUT LINES AND REBUILD PER SITE IMPROVEMENT PLAN.
6. DEMOLISH EXISTING CONCRETE AND DISPOSE OF OFF-SITE.
7. DEMOLISH EXISTING CONCRETE CURB AND DISPOSE OF OFF-SITE.
8. DEMOLISH EXISTING BUILDING AND APPURTENANCES AND DISPOSE OF OFF-SITE.
9. DEMOLISH EXISTING FENCE AND GATE AND DISPOSE OF OFF-SITE.
10. DEMOLISH EXISTING GAS PUMPS AND APPURTENANCES AND DISPOSE OF OFF-SITE PER EPA STANDARDS.
11. REMOVE BOLLARDS AND DISPOSE OF OFF-SITE
12. EXISTING MONITORING WELL TO BE DECOMMISSIONED. COORDINATE WITH BP ENVIRONMENTAL/GEOTECHNICAL CONSULTANT IN CONFORMANCE W/ BP EPA AND CA STATE REQUIREMENTS.
13. DEMOLISH EXISTING CONCRETE PAD AND DISPOSE OF OFF-SITE.
14. DEMOLISH EXISTING PLANTER AREAS INCLUDING TREES, ROOTS, GROUND COVER, TOPSOIL, ETC. SEE IRRIGATION PLAN FOR REMOVAL AND/OR SALVAGE OF EXISITNG IRRIGATION PIPING VALVES, ETC. SEE LANDSCAPE PLAN FOR REPLANTING OF DISTURBED AREAS ALONG PERIMETER OF WORK.
15. DEMOLISH EXISTING STORAGE TRAILER AND DISPOSE OF OFF-SITE.
16. REMOVE / RELOCATE EXISTING AIR/WATER UNIT AND APPURTENANCES. SEE SHEET C2.
17. DEMOLISH EXISTING SIGN AND DISPOSE OF OFF-SITE.
18. REMOVE/RELOCATE EXISTING LOT LIGHT AND FOUNDATION. SEE SITE IMPROVEMENT PLAN.
19. REMOVE EXISTING SEWER AND CLEANOUTS AS REQUIRED FOR CONSTRUCTION AND NEW CONNECTIONS. SEE UTILITY PLAN FOR NEW SEWER CONNECTIONS.
20. REMOVE/RELOCATE EXISTING PHONE BOOTHS.
21. REMOVE EXISTING GUARD POSTS AND DISPOSE OF OFF-SITE.
22. REMOVE EXISTING SEWER AND CLEANOUTS SEE UTILITY PLAN FOR NEW SEWER CONNECTIONS.
23. REMOVE EXISTING ONSITE WATER SERVICE. CONNECT EXISTING METER TO PROPOSED IRRIGATION SYSTEM.
24. REMOVE AND RECONSTRUCT EXISTING WALL TO 8' HEIGHT PER STRUCTURAL PLAN DETAIL 15/S2.1
25. DEMOLISH EXISTING CONCRETE AND DISPOSE OF OFF-SITE.

CLIENT:

ARC

BP WEST COAST PROD

BARGHA + CONSULTING ENG

18215 72ND AVEN
KENT, WA 98032
(425)251-6222
(425)251-8782 FA
CIVIL ENGINEERING, LAN
SURVEYING, ENVIRONMEN

NO.	DATE	REVISIO
1	3/10/09	PLAN CH
2	5/1/09	PLAN CH
3		
4		
5		
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7		
8		
9		
10		
11		
12		

SEAL:

LICENSED PROFESSIO
HAL P. GRU
67814
6/30/
CIVIL
STATE OF CAL

DEVELOPMENT INFORMATION

Raze and R

Arco am/pm 2
8 MPD Domino
& 24x48 Carwa

DATE:

SITE ADDRESS:

889 W. GRA

OAKLAND, C

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

LITHOLOGIC AND MONITOR WELL CONSTRUCTION LOG

PROJECT NAME: ARCO 2169 | SITE ADDRESS: 889 W. Grand Ave., Oakland, CA

PROJECT NUMBER: 06-88-621 | LEGAL DESC: | APN: 003-0029-001

LOGGED BY: Eric Farrar | FACILITY ID OR WAIVER: | NOI NUMBER:

DATE: 6/17/2010 | START: 0930 | DRILLING COMPANY: Cascade | DRILLER:

WELL ID: SB-1 | STOP: 1000 | DRILLING METHOD: Hollow Stem Auger | SAMPLE METHOD: Split Spoon

DEPTH (FEET)	SOIL BORING	SAMPLE ID	PID	MOISTURE	COLOR	CONSISTENCY	GRAIN SIZE	CLASSIFICATION	REMARKS & ODORS
2	GROUT								
4									
6									
8		SB-1 8-9.5M	72.2 ppm	Moist to Wet	Gray		Well graded silty sand with gravel to 1"	SM	Strong Hydrocarbon odor
10									
12		SB-1 12-13.5T	17 ppm	Wet	Dark Gray		Poorly graded fine sand with some gravel to 1"	SP	
14									
16		SB-1 16-17.5T	576 ppm	Moist	Gray	Semi-Loose	Well graded silty sand with clay, iron oxide staining	SM	Strong Hydrocarbon odor
18									
20		SB-1 20-21.5M	65.5 ppm	Wet	Gray	Loose	Well graded gravelly sand, gravel to ½"; at 21.5'	SW	Strong Hydrocarbon odor
22			4.2 ppm	Moist	Gray to Tan	Stiff	clay with 10% sand	CL	Mild Hydrocarbon odor
24		SB-1 24-25.5M	31 ppm	Wet	Brown		Sand with little clay inclusions	SC	Mild Hydrocarbon odor
26									
28		SB-1 28-29.5B	13.7 ppm	Wet Moist	Brown Gray	Stiff	Sand with little clay inclusions; at 29' clay	SC CL	Mild Hydrocarbon odor No Hydrocarbon odor
30									
32									
34									
36									
38									
40									

TOTAL BORING DEPTH: 29.5' | PAGE NO: 1 OF 1 | ESTIMATED GROUND WATER DEPTH:

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

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

LITHOLOGIC AND MONITOR WELL CONSTRUCTION LOG

PROJECT NAME: ARCO 2169 | SITE ADDRESS: 889 W. Grand Ave., Oakland, CA

PROJECT NUMBER: 06-88-621 | LEGAL DESC: | APN: 003-0029-001

LOGGED BY: Eric Farrar | FACILITY ID OR WAIVER: | NOI NUMBER:

DATE: 6/17/2010 | START: 0820 | DRILLING COMPANY: Cascade | DRILLER:

WELL ID: SB-2 | STOP: 0855 | DRILLING METHOD: Hollow Stem Auger | SAMPLE METHOD: Split Spoon

DEPTH (FEET)	SOIL BORING	SAMPLE ID	PID	MOISTURE	COLOR	CONSISTENCY	GRAIN SIZE	CLASSIFICATION	REMARKS & ODORS
2	GROUT	No recovery		Moist	Brown and Tan		Silty clay with little gravel to ½"	CL	
8		SB-2 8-9.5M	195 ppm		Brown with Gray	Stiff	Silty clay with gravel to ½", some iron oxide staining	CL	Hydrocarbon odor
12		SB-2 12-13.5B	420 ppm	Wet	Brown and Gray	Stiff	Silty clay with some fine sand	CL	Hydrocarbon odor
16		SB-2 16-17.5M	165 ppm	Wet	Gray		Well-graded sandy silt with little clay and some gravel	ML	
20		SB-2 20-21.5M	14.4 ppm	Wet	Gray to Black with Brown	Loose	Well-graded sand with gravel and some clay; at	SC	
22					Black/ Gray	Loose	21.5' transition to poorly graded fine sand	SP	
24		SB-2 24-25.5M	6.5 ppm	Moist	Black to Gray		Poorly graded sand with some clay and some gravel to ½"	SC	No Hydrocarbon odor
28		SB-2 28-29.5T		Moist to Dry		Stiff	Clay with some fine sand	CL	No Hydrocarbon odor
40									

TOTAL BORING DEPTH: 29.5' | PAGE NO: 1 OF 1 | ESTIMATED GROUND WATER DEPTH:

THIS SUMMARY APPLIES ONLY AT THIS LOCATION AND AT THE TIME OF LOGGING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF ACTUAL CONDITIONS ENCOUNTERED.

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NO. 687266

NON-HAZARDOUS WASTE DATA FORM

34

BESI # 182161

GENERATOR

Generator's Name and Mailing Address
BP WEST COAST PRODUCTS, LLC
P.O. BOX 80249
RANCHO SANTA MARGARITA, CA 92688

Generator's Site Address (if different than mailing address)
06188
4421 FLORIN ROAD
SACRAMENTO, CA 95823

Generator's Phone: 949-460-5200

Container type removed from site:
☒ Drums ☐ Vacuum Truck ☐ Roll-off Truck ☐ Dump Truck
☐ Other _____
Quantity 1

Container type transported to receiving facility:
☐ Drums ☒ Vacuum Truck ☐ Roll-off Truck ☐ Dump Truck
☐ Other _____
Quantity 1 Volume 55 gallons

WASTE DESCRIPTION NON-HAZARDOUS WATER
GENERATING PROCESS WELL PURGING / DECON WATER

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

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

HANDLING INSTRUCTIONS: WEAR ALL APPROPRIATE PERSONAL PROTECTIVE EQUIPMENT.

Generator Printed/Typed Name: Larry Moothart of BESI on behalf of generator — Signature — Month 6 Day 30 Year 10

The Generator certifies that the waste as described is 100% non-hazardous

TRANSPORTER

Transporter 1 Company Name: BELSHIRE — Phone#: 949-460-5200

Transporter 1 Printed/Typed Name: Larry Moothart — Signature — Month 6 Day 30 Year 10

Transporter Acknowledgment of Receipt of Materials

Transporter 2 Company Name: NIETO & SONS TRUCKING, INC. — Phone#: 714-990-6855

Transporter 2 Printed/Typed Name: Miguel Conde — Signature — Month 7 Day 9 Year 10

Transporter Acknowledgment of Receipt of Materials

RECEIVING FACILITY

Designated Facility Name and Site Address
DEMENNO KERDOON
2000 N. ALAMEDA ST.
COMPTON, CA 90222

Phone#: 310-537-7100

Printed/Typed Name: Matthew Brady — Signature — Month 07 Day 09 Year 10

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

Manifest

TPST Soil Recyclers of CA
Non-Hazardous Soils

↓ Manifest # ↓

Date of Shipment:	Responsible for Payment:	Transporter Truck #:	Facility #:	Given by TPST:	Load #
/ /		394732	A07	35584	001

Generator and/or Consultant

Generator's Name and Billing Address:	Generator's Phone #:	Generator's US EPA ID No.
BP WEST COAST PRODUCTS, LLC P.O. BOX 80249 RANCHO SANTA MARGARITA, CA 92688	949-460-5200	CAL000244244
	Person to Contact:	
	FAX#:	Customer Account Number with TPST:

Consultant's Name and Billing Address:	Consultant's Phone #:	
	Person to Contact:	
	FAX#:	Customer Account Number with TPST:

Generation Site (Transport from): *(name & address)*	Site Phone #:	BTEX Levels
02169 889 W GRAND AVENUE OAKLAND, CA 94607	Person to Contact:	TPH Levels
	FAX#:	AVG. Levels

Designated Facility (Transport to): *(name & address)*	Facility Phone #:	Facility Permit Numbers
TPST SOIL RECYCLERS OF CALIFORNIA 12328 HIBISCUS AVENUE ADELANTO, CA 92301	(800) 862-8001	
	Person to Contact: DELLENA JEFFREY	
	FAX#: (760) 246-8004	

Transporter Name and Mailing Address:	Transporter's Phone #:	Transporter's US EPA ID No.:
BELSHIRE 25971 TOWNE CENTRE DRIVE FOOTHILL RANCH, CA 92610 BESI: 181933	949-460-5200	CAR000183913
	Person to Contact: LARRY MOOTHART	Transporter's DOT No.: 450847
	FAX#: 949-460-5210	Customer Account Number with TPST:

Description of Soil	Moisture Content	Contaminated by:	Approx. Qty:	Description of Delivery	Gross Weight	Tare Weight	Net Weight
Sand ☐ Organic ☐ Clay ☐ Other ☐	0 - 10% ☐ 10 - 20% ☐ 20% - over ☐	Gas ☐ Diesel ☐ Other ☐	3 yds		38960	37140	1820
Sand ☐ Organic ☐ Clay ☐ Other ☐	0 - 10% ☐ 10 - 20% ☐ 20% - over ☐	Gas ☐ Diesel ☐ Other ☐					.91

List any exception to items listed above: Scale Ticket# 82324

Generator's and/or consultant's certification: I/We certify that the soil referenced herein is taken entirely from those soils described in the Soil Data Sheet completed and certified by me/us for the Generation Site shown above and nothing has been added or done to such soil that would alter it in any way.

Print or Type Name: Generator ☐ Consultant ☐	Signature and date:	Month	Day	Year
Larry Moothart of BESI on behalf of generator		10	23	10

Transporter

Transporter's certification: I/We acknowledge receipt of the soil described above and certify that such soil is being delivered in exactly the same condition as when received. I/We further certify that this soil is being directly transported from the Generation Site to the Designated Facility without off-loading, adding to, subtracting from or in any way delaying delivery to such site.

Print or Type Name:	Signature and date:	Month	Day	Year
Kevin Dunlop		10	23	10

Recycling Facility

Discrepancies:
02169
596339

Recycling Facility certifies the receipt of the soil covered by this manifest except as noted above:

Print or Type Name:	Signature and date:
D. JEFFREY/J. PROVANSAL	7-9-10

Please print or type.

TRANSPORTER COPY

APPENDIX B

LABORATORY ANALYTICAL REPORT WITH CHAIN-OF-CUSTODY DOCUMENTATION FOR SOIL BORING SAMPLES

Calscience Environmental Laboratories, Inc.

July 01, 2010

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

Subject: **Calscience Work Order No.: 10-06-1618**
Client Reference: ARCO 2169

Dear Client:

Enclosed is an analytical report for the above-referenced project. The samples included in this report were received 6/19/2010 and analyzed in accordance with the attached chain-of-custody.

Unless otherwise noted, all analytical testing was accomplished in accordance with the guidelines established in our Quality Systems Manual, applicable standard operating procedures, and other related documentation. 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: 06/19/10
1324 Mangrove Ave, Ste 212	Work Order No: 10-06-1618
Chico, CA 95926-2642	Preparation: EPA 3550B
	Method: EPA 8015B (M)

Project: ARCO 2169

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SB-2 8-9.5M	**10-06-1618-1-A**	**06/17/10 08:35**	**Solid**	**GC 46**	**06/22/10**	**06/23/10 17:11**	**100622B21**

Parameter	Result	RL	DF	Qual	Units
Diesel Range Organics (C10-C28)	640	5.0	1		mg/kg
Surrogates:	**REC (%)**	**Control Limits**		**Qual**	
Decachlorobiphenyl	94	61-145			

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SB-2 12-13.5B	**10-06-1618-2-A**	**06/17/10 08:37**	**Solid**	**GC 46**	**06/22/10**	**06/23/10 17:27**	**100622B21**

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

Parameter	Result	RL	DF	Qual	Units
Diesel Range Organics (C10-C28)	52	5.0	1		mg/kg
Surrogates:	**REC (%)**	**Control Limits**		**Qual**	
Decachlorobiphenyl	90	61-145			

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SB-2 16-17.5M	**10-06-1618-3-A**	**06/17/10 08:40**	**Solid**	**GC 46**	**06/22/10**	**06/23/10 17:42**	**100622B21**

Parameter	Result	RL	DF	Qual	Units
Diesel Range Organics (C10-C28)	150	5.0	1		mg/kg
Surrogates:	**REC (%)**	**Control Limits**		**Qual**	
Decachlorobiphenyl	94	61-145			

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SB-2 20-21.5M	**10-06-1618-4-A**	**06/17/10 08:43**	**Solid**	**GC 46**	**06/22/10**	**06/23/10 17:58**	**100622B21**

Parameter	Result	RL	DF	Qual	Units
Diesel Range Organics (C10-C28)	ND	5.0	1		mg/kg
Surrogates:	**REC (%)**	**Control Limits**		**Qual**	
Decachlorobiphenyl	94	61-145			

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: 06/19/10
Work Order No: 10-06-1618
Preparation: EPA 3550B
Method: EPA 8015B (M)

Project: ARCO 2169

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SB-2 24-25.5M	**10-06-1618-5-A**	**06/17/10 08:48**	**Solid**	**GC 46**	**06/22/10**	**06/23/10 18:13**	**100622B21**

Parameter	Result	RL	DF	Qual	Units
Diesel Range Organics (C10-C28)	ND	5.0	1		mg/kg
Surrogates:	**REC (%)**	**Control Limits**		**Qual**	
Decachlorobiphenyl	92	61-145			

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SB-2 28-29.5T	**10-06-1618-6-A**	**06/17/10 08:55**	**Solid**	**GC 46**	**06/22/10**	**06/23/10 18:29**	**100622B21**

Parameter	Result	RL	DF	Qual	Units
Diesel Range Organics (C10-C28)	ND	5.0	1		mg/kg
Surrogates:	**REC (%)**	**Control Limits**		**Qual**	
Decachlorobiphenyl	97	61-145			

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SB-1 8-9.5M	**10-06-1618-7-A**	**06/17/10 09:41**	**Solid**	**GC 46**	**06/22/10**	**06/24/10 10:20**	**100622B21**

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

Parameter	Result	RL	DF	Qual	Units
Diesel Range Organics (C10-C28)	300	10	2		mg/kg
Surrogates:	**REC (%)**	**Control Limits**		**Qual**	
Decachlorobiphenyl	82	61-145			

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SB-1 12-13.5T	**10-06-1618-8-A**	**06/17/10 09:45**	**Solid**	**GC 46**	**06/22/10**	**06/23/10 19:00**	**100622B21**

Parameter	Result	RL	DF	Qual	Units
Diesel Range Organics (C10-C28)	30	5.0	1		mg/kg
Surrogates:	**REC (%)**	**Control Limits**		**Qual**	
Decachlorobiphenyl	94	61-145			

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: 06/19/10
Work Order No: 10-06-1618
Preparation: EPA 3550B
Method: EPA 8015B (M)

Project: ARCO 2169

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SB-1 16-17.5T	**10-06-1618-9-A**	**06/17/10 09:48**	**Solid**	**GC 46**	**06/22/10**	**06/23/10 19:15**	**100622B21**

Parameter	Result	RL	DF	Qual	Units
Diesel Range Organics (C10-C28)	9.1	5.0	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
Decachlorobiphenyl	93	61-145	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SB-1 20-21.5M	**10-06-1618-10-A**	**06/17/10 09:51**	**Solid**	**GC 46**	**06/22/10**	**06/23/10 19:31**	**100622B21**

Parameter	Result	RL	DF	Qual	Units
Diesel Range Organics (C10-C28)	ND	5.0	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
Decachlorobiphenyl	93	61-145	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SB-1 24-25.5M	**10-06-1618-11-A**	**06/17/10 09:57**	**Solid**	**GC 46**	**06/22/10**	**06/23/10 20:17**	**100622B21**

Parameter	Result	RL	DF	Qual	Units
Diesel Range Organics (C10-C28)	ND	5.0	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
Decachlorobiphenyl	87	61-145	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SB-1 28-29.5B	**10-06-1618-12-A**	**06/17/10 10:00**	**Solid**	**GC 46**	**06/22/10**	**06/23/10 20:33**	**100622B21**

Parameter	Result	RL	DF	Qual	Units
Diesel Range Organics (C10-C28)	ND	5.0	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
Decachlorobiphenyl	94	61-145	

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: 06/19/10
Work Order No: 10-06-1618
Preparation: EPA 3550B
Method: EPA 8015B (M)

Project: ARCO 2169

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-701-41**	**N/A**	**Solid**	**GC 46**	**06/22/10**	**06/23/10 13:51**	**100622B21**

Parameter	Result	RL	DF	Qual	Units
Diesel Range Organics (C10-C28)	ND	5.0	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
Decachlorobiphenyl	87	61-145	

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

Calscience Environmental Laboratories, Inc.

Analytical Report

Broadbent & Associates, Inc.	Date Received:	06/19/10
1324 Mangrove Ave, Ste 212	Work Order No:	10-06-1618
Chico, CA 95926-2642	Preparation:	EPA 5030B
	Method:	EPA 8015B (M)

Project: ARCO 2169

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SB-2 8-9.5M	**10-06-1618-1-A**	**06/17/10 08:35**	**Solid**	**GC 11**	**06/19/10**	**06/21/10 16:55**	**100621B01**

Comment(s): -The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons are also present (or were detected).

Parameter	Result	RL	DF	Qual	Units
Gasoline Range Organics (C6-C12)	18	0.50	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	127	42-126	LH,AY

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SB-2 12-13.5B	**10-06-1618-2-A**	**06/17/10 08:37**	**Solid**	**GC 11**	**06/19/10**	**06/21/10 19:44**	**100621B01**

Parameter	Result	RL	DF	Qual	Units
Gasoline Range Organics (C6-C12)	8.8	0.50	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	115	42-126	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SB-2 16-17.5M	**10-06-1618-3-A**	**06/17/10 08:40**	**Solid**	**GC 11**	**06/19/10**	**06/22/10 01:55**	**100621B01**

Comment(s): -The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons are also present (or were detected).

Parameter	Result	RL	DF	Qual	Units
Gasoline Range Organics (C6-C12)	31	0.50	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	106	42-126	

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

Calscience Environmental Laboratories, Inc.

Analytical Report

Broadbent & Associates, Inc.	Date Received: 06/19/10
1324 Mangrove Ave, Ste 212	Work Order No: 10-06-1618
Chico, CA 95926-2642	Preparation: EPA 5030B
	Method: EPA 8015B (M)

Project: ARCO 2169

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SB-2 20-21.5M	**10-06-1618-4-A**	**06/17/10 08:43**	**Solid**	**GC 11**	**06/19/10**	**06/23/10 08:54**	**100622B01**

Parameter	Result	RL	DF	Qual	Units
Gasoline Range Organics (C6-C12)	ND	0.50	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	97	42-126	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SB-2 24-25.5M	**10-06-1618-5-A**	**06/17/10 08:48**	**Solid**	**GC 11**	**06/19/10**	**06/23/10 11:09**	**100622B01**

Parameter	Result	RL	DF	Qual	Units
Gasoline Range Organics (C6-C12)	ND	0.50	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	98	42-126	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SB-2 28-29.5T	**10-06-1618-6-A**	**06/17/10 08:55**	**Solid**	**GC 11**	**06/19/10**	**06/23/10 11:42**	**100622B01**

Parameter	Result	RL	DF	Qual	Units
Gasoline Range Organics (C6-C12)	ND	0.50	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	96	42-126	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SB-1 8-9.5M	**10-06-1618-7-A**	**06/17/10 09:41**	**Solid**	**GC 11**	**06/19/10**	**06/23/10 12:16**	**100622B01**

Parameter	Result	RL	DF	Qual	Units
Gasoline Range Organics (C6-C12)	0.63	0.50	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	98	42-126	

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: 06/19/10
Work Order No: 10-06-1618
Preparation: EPA 5030B
Method: EPA 8015B (M)

Project: ARCO 2169

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SB-1 12-13.5T	**10-06-1618-8-A**	**06/17/10 09:45**	**Solid**	**GC 11**	**06/19/10**	**06/23/10 13:23**	**100622B02**

Parameter	Result	RL	DF	Qual	Units
Gasoline Range Organics (C6-C12)	230	50	100		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	100	42-126	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SB-1 16-17.5T	**10-06-1618-9-A**	**06/17/10 09:48**	**Solid**	**GC 11**	**06/19/10**	**06/23/10 13:57**	**100622B02**

Parameter	Result	RL	DF	Qual	Units
Gasoline Range Organics (C6-C12)	95	4.0	8		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	118	42-126	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SB-1 20-21.5M	**10-06-1618-10-A**	**06/17/10 09:51**	**Solid**	**GC 11**	**06/19/10**	**06/23/10 15:05**	**100622B01**

Parameter	Result	RL	DF	Qual	Units
Gasoline Range Organics (C6-C12)	ND	0.50	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	95	42-126	

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SB-1 24-25.5M	**10-06-1618-11-A**	**06/17/10 09:57**	**Solid**	**GC 11**	**06/19/10**	**06/23/10 12:50**	**100622B01**

Parameter	Result	RL	DF	Qual	Units
Gasoline Range Organics (C6-C12)	5.2	0.50	1		mg/kg

Surrogates:	REC (%)	Control Limits	Qual
1,4-Bromofluorobenzene	107	42-126	

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: 06/19/10
Work Order No: 10-06-1618
Preparation: EPA 5030B
Method: EPA 8015B (M)

Project: ARCO 2169

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SB-1 28-29.5B	**10-06-1618-12-A**	**06/17/10 10:00**	**Solid**	**GC 11**	**06/19/10**	**06/22/10 01:22**	**100621B01**

Comment(s): -The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons are also present (or were detected).

Parameter	Result	RL	DF	Qual	Units
Gasoline Range Organics (C6-C12)	5.2	0.50	1		mg/kg
Surrogates:	REC (%)	Control Limits		Qual	
1,4-Bromofluorobenzene	107	42-126			

Method Blank	**099-12-697-222**	**N/A**	**Solid**	**GC 11**	**06/21/10**	**06/21/10 13:28**	**100621B01**

Parameter	Result	RL	DF	Qual	Units
Gasoline Range Organics (C6-C12)	ND	0.50	1		mg/kg
Surrogates:	REC (%)	Control Limits		Qual	
1,4-Bromofluorobenzene	96	42-126			

Method Blank	**099-12-697-224**	**N/A**	**Solid**	**GC 11**	**06/22/10**	**06/23/10 06:39**	**100622B01**

Parameter	Result	RL	DF	Qual	Units
Gasoline Range Organics (C6-C12)	ND	0.50	1		mg/kg
Surrogates:	REC (%)	Control Limits		Qual	
1,4-Bromofluorobenzene	98	42-126			

Method Blank	**099-12-697-225**	**N/A**	**Solid**	**GC 11**	**06/22/10**	**06/23/10 08:20**	**100622B02**

Parameter	Result	RL	DF	Qual	Units
Gasoline Range Organics (C6-C12)	ND	4.0	8		mg/kg
Surrogates:	REC (%)	Control Limits		Qual	
1,4-Bromofluorobenzene	95	42-126			

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

Calscience Environmental Laboratories, Inc.

Analytical Report

ACCREDITED IN ACCORDANCE WITH nelac

Broadbent & Associates, Inc.	Date Received:	06/19/10
1324 Mangrove Ave, Ste 212	Work Order No:	10-06-1618
Chico, CA 95926-2642	Preparation:	EPA 5030B
	Method:	EPA 8260B
	Units:	mg/kg

Project: ARCO 2169

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SB-2 8-9.5M	**10-06-1618-1-A**	**06/17/10 08:35**	**Solid**	**GC/MS FF**	**06/23/10**	**06/23/10 15:25**	**100623L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.0010	1		Xylenes (total)	0.0032	0.0010	1	
1,2-Dibromoethane	ND	0.0010	1		Methyl-t-Butyl Ether (MTBE)	ND	0.0010	1	
1,2-Dichloroethane	ND	0.0010	1		Tert-Butyl Alcohol (TBA)	ND	0.010	1	
Ethylbenzene	0.0025	0.0010	1		Diisopropyl Ether (DIPE)	ND	0.0020	1	
Ethanol	ND	0.10	1		Ethyl-t-Butyl Ether (ETBE)	ND	0.0020	1	
Toluene	ND	0.0010	1		Tert-Amyl-Methyl Ether (TAME)	ND	0.0020	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
Dibromofluoromethane	101	63-141			1,2-Dichloroethane-d4	102	62-146		
Toluene-d8	112	80-120			1,4-Bromofluorobenzene	106	60-132		

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SB-2 12-13.5B	**10-06-1618-2-A**	**06/17/10 08:37**	**Solid**	**GC/MS FF**	**06/23/10**	**06/23/10 15:54**	**100623L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.0010	1		Xylenes (total)	0.0016	0.0010	1	
1,2-Dibromoethane	ND	0.0010	1		Methyl-t-Butyl Ether (MTBE)	ND	0.0010	1	
1,2-Dichloroethane	ND	0.0010	1		Tert-Butyl Alcohol (TBA)	ND	0.010	1	
Ethylbenzene	0.0023	0.0010	1		Diisopropyl Ether (DIPE)	ND	0.0020	1	
Ethanol	ND	0.10	1		Ethyl-t-Butyl Ether (ETBE)	ND	0.0020	1	
Toluene	ND	0.0010	1		Tert-Amyl-Methyl Ether (TAME)	ND	0.0020	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
Dibromofluoromethane	98	63-141			1,2-Dichloroethane-d4	102	62-146		
Toluene-d8	105	80-120			1,4-Bromofluorobenzene	105	60-132		

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SB-2 16-17.5M	**10-06-1618-3-A**	**06/17/10 08:40**	**Solid**	**GC/MS FF**	**06/22/10**	**06/22/10 21:30**	**100622L02**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.10	100		Xylenes (total)	ND	0.10	100	
1,2-Dibromoethane	ND	0.10	100		Methyl-t-Butyl Ether (MTBE)	ND	0.10	100	
1,2-Dichloroethane	ND	0.10	100		Tert-Butyl Alcohol (TBA)	ND	1.0	100	
Ethylbenzene	0.15	0.10	100		Diisopropyl Ether (DIPE)	ND	0.20	100	
Ethanol	ND	10	100		Ethyl-t-Butyl Ether (ETBE)	ND	0.20	100	
Toluene	ND	0.10	100		Tert-Amyl-Methyl Ether (TAME)	ND	0.20	100	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
Dibromofluoromethane	96	63-141			1,2-Dichloroethane-d4	97	62-146		
Toluene-d8	101	80-120			1,4-Bromofluorobenzene	100	60-132		

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

Calscience Environmental Laboratories, Inc.

Analytical Report

Broadbent & Associates, Inc.	Date Received:	06/19/10
1324 Mangrove Ave, Ste 212	Work Order No:	10-06-1618
Chico, CA 95926-2642	Preparation:	EPA 5030B
	Method:	EPA 8260B
	Units:	mg/kg

Project: ARCO 2169

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SB-2 20-21.5M	**10-06-1618-4-A**	**06/17/10 08:43**	**Solid**	**GC/MS FF**	**06/22/10**	**06/22/10 18:07**	**100622L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.0010	1		Xylenes (total)	0.0033	0.0010	1	
1,2-Dibromoethane	ND	0.0010	1		Methyl-t-Butyl Ether (MTBE)	ND	0.0010	1	
1,2-Dichloroethane	ND	0.0010	1		Tert-Butyl Alcohol (TBA)	ND	0.010	1	
Ethylbenzene	0.0071	0.0010	1		Diisopropyl Ether (DIPE)	ND	0.0020	1	
Ethanol	ND	0.10	1		Ethyl-t-Butyl Ether (ETBE)	ND	0.0020	1	
Toluene	ND	0.0010	1		Tert-Amyl-Methyl Ether (TAME)	ND	0.0020	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
Dibromofluoromethane	95	63-141			1,2-Dichloroethane-d4	98	62-146		
Toluene-d8	102	80-120			1,4-Bromofluorobenzene	98	60-132		

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SB-2 24-25.5M	**10-06-1618-5-A**	**06/17/10 08:48**	**Solid**	**GC/MS FF**	**06/22/10**	**06/22/10 18:36**	**100622L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.0010	1		Xylenes (total)	ND	0.0010	1	
1,2-Dibromoethane	ND	0.0010	1		Methyl-t-Butyl Ether (MTBE)	ND	0.0010	1	
1,2-Dichloroethane	ND	0.0010	1		Tert-Butyl Alcohol (TBA)	ND	0.010	1	
Ethylbenzene	ND	0.0010	1		Diisopropyl Ether (DIPE)	ND	0.0020	1	
Ethanol	ND	0.10	1		Ethyl-t-Butyl Ether (ETBE)	ND	0.0020	1	
Toluene	ND	0.0010	1		Tert-Amyl-Methyl Ether (TAME)	ND	0.0020	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
Dibromofluoromethane	98	63-141			1,2-Dichloroethane-d4	101	62-146		
Toluene-d8	100	80-120			1,4-Bromofluorobenzene	98	60-132		

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SB-2 28-29.5T	**10-06-1618-6-A**	**06/17/10 08:55**	**Solid**	**GC/MS FF**	**06/22/10**	**06/22/10 19:05**	**100622L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.0010	1		Xylenes (total)	ND	0.0010	1	
1,2-Dibromoethane	ND	0.0010	1		Methyl-t-Butyl Ether (MTBE)	ND	0.0010	1	
1,2-Dichloroethane	ND	0.0010	1		Tert-Butyl Alcohol (TBA)	ND	0.010	1	
Ethylbenzene	ND	0.0010	1		Diisopropyl Ether (DIPE)	ND	0.0020	1	
Ethanol	ND	0.10	1		Ethyl-t-Butyl Ether (ETBE)	ND	0.0020	1	
Toluene	ND	0.0010	1		Tert-Amyl-Methyl Ether (TAME)	ND	0.0020	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
Dibromofluoromethane	101	63-141			1,2-Dichloroethane-d4	105	62-146		
Toluene-d8	100	80-120			1,4-Bromofluorobenzene	98	60-132		

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

Calscience Environmental Laboratories, Inc.

Analytical Report

Broadbent & Associates, Inc.		Date Received:	06/19/10
1324 Mangrove Ave, Ste 212		Work Order No:	10-06-1618
Chico, CA 95926-2642		Preparation:	EPA 5030B
		Method:	EPA 8260B
		Units:	mg/kg
Project: ARCO 2169			Page 3 of 5

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SB-1 8-9.5M	**10-06-1618-7-A**	**06/17/10 09:41**	**Solid**	**GC/MS FF**	**06/22/10**	**06/22/10 19:34**	**100622L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.0010	1		Xylenes (total)	ND	0.0010	1	
1,2-Dibromoethane	ND	0.0010	1		Methyl-t-Butyl Ether (MTBE)	ND	0.0010	1	
1,2-Dichloroethane	ND	0.0010	1		Tert-Butyl Alcohol (TBA)	ND	0.010	1	
Ethylbenzene	ND	0.0010	1		Diisopropyl Ether (DIPE)	ND	0.0020	1	
Ethanol	ND	0.10	1		Ethyl-t-Butyl Ether (ETBE)	ND	0.0020	1	
Toluene	ND	0.0010	1		Tert-Amyl-Methyl Ether (TAME)	ND	0.0020	1	
Surrogates:	REC (%)	Control Limits	Qual		Surrogates:	REC (%)	Control Limits	Qual	
Dibromofluoromethane	100	63-141			1,2-Dichloroethane-d4	104	62-146		
Toluene-d8	99	80-120			1,4-Bromofluorobenzene	98	60-132		

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SB-1 12-13.5T	**10-06-1618-8-A**	**06/17/10 09:45**	**Solid**	**GC/MS FF**	**06/22/10**	**06/22/10 21:59**	**100622L02**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.10	100		Xylenes (total)	ND	0.10	100	
1,2-Dibromoethane	ND	0.10	100		Methyl-t-Butyl Ether (MTBE)	ND	0.10	100	
1,2-Dichloroethane	ND	0.10	100		Tert-Butyl Alcohol (TBA)	ND	1.0	100	
Ethylbenzene	ND	0.10	100		Diisopropyl Ether (DIPE)	ND	0.20	100	
Ethanol	ND	10	100		Ethyl-t-Butyl Ether (ETBE)	ND	0.20	100	
Toluene	ND	0.10	100		Tert-Amyl-Methyl Ether (TAME)	ND	0.20	100	
Surrogates:	REC (%)	Control Limits	Qual		Surrogates:	REC (%)	Control Limits	Qual	
Dibromofluoromethane	95	63-141			1,2-Dichloroethane-d4	95	62-146		
Toluene-d8	100	80-120			1,4-Bromofluorobenzene	101	60-132		

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SB-1 16-17.5T	**10-06-1618-9-A**	**06/17/10 09:48**	**Solid**	**GC/MS FF**	**06/22/10**	**06/22/10 22:28**	**100622L02**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.10	100		Xylenes (total)	ND	0.10	100	
1,2-Dibromoethane	ND	0.10	100		Methyl-t-Butyl Ether (MTBE)	ND	0.10	100	
1,2-Dichloroethane	ND	0.10	100		Tert-Butyl Alcohol (TBA)	ND	1.0	100	
Ethylbenzene	ND	0.10	100		Diisopropyl Ether (DIPE)	ND	0.20	100	
Ethanol	ND	10	100		Ethyl-t-Butyl Ether (ETBE)	ND	0.20	100	
Toluene	ND	0.10	100		Tert-Amyl-Methyl Ether (TAME)	ND	0.20	100	
Surrogates:	REC (%)	Control Limits	Qual		Surrogates:	REC (%)	Control Limits	Qual	
Dibromofluoromethane	91	63-141			1,2-Dichloroethane-d4	95	62-146		
Toluene-d8	101	80-120			1,4-Bromofluorobenzene	99	60-132		

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

Calscience Environmental Laboratories, Inc.

Analytical Report

Broadbent & Associates, Inc.	Date Received:	06/19/10
1324 Mangrove Ave, Ste 212	Work Order No:	10-06-1618
Chico, CA 95926-2642	Preparation:	EPA 5030B
	Method:	EPA 8260B
	Units:	mg/kg

Project: ARCO 2169

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SB-1 20-21.5M	**10-06-1618-10-A**	**06/17/10 09:51**	**Solid**	**GC/MS FF**	**06/22/10**	**06/22/10 22:57**	**100622L02**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	0.13	0.10	100		Xylenes (total)	2.4	0.10	100	
1,2-Dibromoethane	ND	0.10	100		Methyl-t-Butyl Ether (MTBE)	ND	0.10	100	
1,2-Dichloroethane	ND	0.10	100		Tert-Butyl Alcohol (TBA)	ND	1.0	100	
Ethylbenzene	0.63	0.10	100		Diisopropyl Ether (DIPE)	ND	0.20	100	
Ethanol	ND	10	100		Ethyl-t-Butyl Ether (ETBE)	ND	0.20	100	
Toluene	ND	0.10	100		Tert-Amyl-Methyl Ether (TAME)	ND	0.20	100	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
Dibromofluoromethane	93	63-141			1,2-Dichloroethane-d4	95	62-146		
Toluene-d8	99	80-120			1,4-Bromofluorobenzene	99	60-132		

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SB-1 24-25.5M	**10-06-1618-11-A**	**06/17/10 09:57**	**Solid**	**GC/MS FF**	**06/22/10**	**06/22/10 15:13**	**100622L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	0.020	0.0010	1		Xylenes (total)	0.17	0.0010	1	
1,2-Dibromoethane	ND	0.0010	1		Methyl-t-Butyl Ether (MTBE)	ND	0.0010	1	
1,2-Dichloroethane	ND	0.0010	1		Tert-Butyl Alcohol (TBA)	ND	0.010	1	
Ethylbenzene	0.044	0.0010	1		Diisopropyl Ether (DIPE)	ND	0.0020	1	
Ethanol	ND	0.10	1		Ethyl-t-Butyl Ether (ETBE)	ND	0.0020	1	
Toluene	0.012	0.0010	1		Tert-Amyl-Methyl Ether (TAME)	ND	0.0020	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
Dibromofluoromethane	96	63-141			1,2-Dichloroethane-d4	98	62-146		
Toluene-d8	102	80-120			1,4-Bromofluorobenzene	99	60-132		

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
SB-1 28-29.5B	**10-06-1618-12-A**	**06/17/10 10:00**	**Solid**	**GC/MS FF**	**06/22/10**	**06/22/10 20:03**	**100622L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	0.0087	0.0010	1		Xylenes (total)	0.24	0.0010	1	
1,2-Dibromoethane	ND	0.0010	1		Methyl-t-Butyl Ether (MTBE)	ND	0.0010	1	
1,2-Dichloroethane	ND	0.0010	1		Tert-Butyl Alcohol (TBA)	ND	0.010	1	
Ethylbenzene	0.061	0.0010	1		Diisopropyl Ether (DIPE)	ND	0.0020	1	
Ethanol	ND	0.10	1		Ethyl-t-Butyl Ether (ETBE)	ND	0.0020	1	
Toluene	0.0081	0.0010	1		Tert-Amyl-Methyl Ether (TAME)	ND	0.0020	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
Dibromofluoromethane	95	63-141			1,2-Dichloroethane-d4	101	62-146		
Toluene-d8	104	80-120			1,4-Bromofluorobenzene	99	60-132		

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

Calscience Environmental Laboratories, Inc.

Analytical Report

Broadbent & Associates, Inc.	Date Received:	06/19/10
1324 Mangrove Ave, Ste 212	Work Order No:	10-06-1618
Chico, CA 95926-2642	Preparation:	EPA 5030B
	Method:	EPA 8260B
	Units:	mg/kg

Project: ARCO 2169

Client Sample Number	Lab Sample Number	Date/Time Collected	Matrix	Instrument	Date Prepared	Date/Time Analyzed	QC Batch ID
Method Blank	**099-12-709-348**	**N/A**	**Solid**	**GC/MS FF**	**06/22/10**	**06/22/10 13:46**	**100622L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.0010	1		Xylenes (total)	ND	0.0010	1	
1,2-Dibromoethane	ND	0.0010	1		Methyl-t-Butyl Ether (MTBE)	ND	0.0010	1	
1,2-Dichloroethane	ND	0.0010	1		Tert-Butyl Alcohol (TBA)	ND	0.010	1	
Ethylbenzene	ND	0.0010	1		Diisopropyl Ether (DIPE)	ND	0.0020	1	
Ethanol	ND	0.10	1		Ethyl-t-Butyl Ether (ETBE)	ND	0.0020	1	
Toluene	ND	0.0010	1		Tert-Amyl-Methyl Ether (TAME)	ND	0.0020	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
Dibromofluoromethane	98	63-141			1,2-Dichloroethane-d4	98	62-146		
Toluene-d8	100	80-120			1,4-Bromofluorobenzene	99	60-132		

Method Blank	**099-12-709-349**	**N/A**	**Solid**	**GC/MS FF**	**06/22/10**	**06/22/10 14:15**	**100622L02**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.10	100		Xylenes (total)	ND	0.10	100	
1,2-Dibromoethane	ND	0.10	100		Methyl-t-Butyl Ether (MTBE)	ND	0.10	100	
1,2-Dichloroethane	ND	0.10	100		Tert-Butyl Alcohol (TBA)	ND	1.0	100	
Ethylbenzene	ND	0.10	100		Diisopropyl Ether (DIPE)	ND	0.20	100	
Ethanol	ND	10	100		Ethyl-t-Butyl Ether (ETBE)	ND	0.20	100	
Toluene	ND	0.10	100		Tert-Amyl-Methyl Ether (TAME)	ND	0.20	100	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
Dibromofluoromethane	96	63-141			1,2-Dichloroethane-d4	95	62-146		
Toluene-d8	99	80-120			1,4-Bromofluorobenzene	98	60-132		

Method Blank	**099-12-709-350**	**N/A**	**Solid**	**GC/MS FF**	**06/23/10**	**06/23/10 12:31**	**100623L01**

Parameter	Result	RL	DF	Qual	Parameter	Result	RL	DF	Qual
Benzene	ND	0.0010	1		Xylenes (total)	ND	0.0010	1	
1,2-Dibromoethane	ND	0.0010	1		Methyl-t-Butyl Ether (MTBE)	ND	0.0010	1	
1,2-Dichloroethane	ND	0.0010	1		Tert-Butyl Alcohol (TBA)	ND	0.010	1	
Ethylbenzene	ND	0.0010	1		Diisopropyl Ether (DIPE)	ND	0.0020	1	
Ethanol	ND	0.10	1		Ethyl-t-Butyl Ether (ETBE)	ND	0.0020	1	
Toluene	ND	0.0010	1		Tert-Amyl-Methyl Ether (TAME)	ND	0.0020	1	
Surrogates:	REC (%)	Control Limits		Qual	Surrogates:	REC (%)	Control Limits		Qual
Dibromofluoromethane	100	63-141			1,2-Dichloroethane-d4	103	62-146		
Toluene-d8	100	80-120			1,4-Bromofluorobenzene	94	60-132		

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

Calscience Environmental Laboratories, Inc.

Quality Control - Spike/Spike Duplicate

Broadbent & Associates, Inc.		Date Received:	06/19/10
1324 Mangrove Ave, Ste 212		Work Order No:	10-06-1618
Chico, CA 95926-2642		Preparation:	EPA 5030B
		Method:	EPA 8015B (M)

Project ARCO 2169

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
SB-2 8-9.5M	**Solid**	**GC 11**	**06/19/10**	**06/21/10**	**100621S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Gasoline Range Organics (C6-C12)	0	0	42-126	16	0-25	LN,AY

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: 06/19/10
Work Order No: 10-06-1618
Preparation: EPA 5030B
Method: EPA 8015B (M)

Project ARCO 2169

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
SB-2 20-21.5M	**Solid**	**GC 11**	**06/22/10**	**06/23/10**	**100622S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Gasoline Range Organics (C6-C12)	94	90	42-126	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: 06/19/10
Work Order No: 10-06-1618
Preparation: EPA 5030B
Method: EPA 8260B

Project ARCO 2169

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
SB-1 24-25.5M	**Solid**	**GC/MS FF**	**06/22/10**	**06/22/10**	**100622S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	127	87	61-127	27	0-20	BA,AY
Chloroform	105	98	80-120	6	0-20	
1,1-Dichloroethane	102	95	80-120	7	0-20	
1,2-Dichloroethane	106	97	80-120	9	0-20	
1,1-Dichloroethene	99	92	47-143	7	0-25	
Ethanol	88	105	17-167	17	0-47	
Tetrachloroethene	116	113	80-120	2	0-20	
Toluene	118	96	63-123	17	0-20	
Trichloroethene	103	95	44-158	8	0-20	
Methyl-t-Butyl Ether (MTBE)	95	96	57-123	1	0-21	

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: 06/19/10
Work Order No: 10-06-1618
Preparation: EPA 5030B
Method: EPA 8260B

Project ARCO 2169

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	MS/MSD Batch Number
10-06-1741-1	**Solid**	**GC/MS FF**	**06/23/10**	**06/23/10**	**100623S01**

Parameter	MS %REC	MSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Benzene	117	97	61-127	19	0-20	
1,2-Dichloroethane	120	101	80-120	17	0-20	
1,1-Dichloroethene	115	94	47-143	20	0-25	
Ethanol	119	81	17-167	36	0-47	
Toluene	118	101	63-123	16	0-20	
Trichloroethene	119	100	44-158	17	0-20	
Methyl-t-Butyl Ether (MTBE)	121	88	57-123	32	0-21	BA,AY

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: 10-06-1618
Preparation: EPA 3550B
Method: EPA 8015B (M)

Project: ARCO 2169

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-701-41	**Solid**	**GC 46**	**06/22/10**	**06/23/10**	**100622B21**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Diesel Range Organics (C10-C28)	100	104	75-123	4	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: 10-06-1618
Preparation: EPA 5030B
Method: EPA 8015B (M)

Project: ARCO 2169

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-697-225	**Solid**	**GC 11**	**06/22/10**	**06/23/10**	**100622B02**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Gasoline Range Organics (C6-C12)	101	102	70-118	1	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: 10-06-1618
Preparation: EPA 5030B
Method: EPA 8015B (M)

Project: ARCO 2169

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-697-222	**Solid**	**GC 11**	**06/21/10**	**06/21/10**	**100621B01**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Gasoline Range Organics (C6-C12)	103	100	70-118	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: 10-06-1618
Preparation: EPA 5030B
Method: EPA 8015B (M)

Project: ARCO 2169

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-697-224	**Solid**	**GC 11**	**06/22/10**	**06/23/10**	**100622B01**

Parameter	LCS %REC	LCSD %REC	%REC CL	RPD	RPD CL	Qualifiers
Gasoline Range Organics (C6-C12)	101	102	70-118	1	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: 10-06-1618
Preparation: EPA 5030B
Method: EPA 8260B

Project: ARCO 2169

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-709-348	**Solid**	**GC/MS FF**	**06/22/10**	**06/22/10**	**100622L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	ME_CL	RPD	RPD CL	Qualifiers
Benzene	92	91	78-120	71-127	0	0-20	
Bromobenzene	96	97	80-120	73-127	1	0-20	
Bromochloromethane	96	98	80-120	73-127	2	0-20	
Bromodichloromethane	95	95	80-120	73-127	1	0-20	
Bromoform	94	96	80-120	73-127	2	0-20	
Bromomethane	102	95	80-120	73-127	7	0-20	
n-Butylbenzene	100	98	77-123	69-131	1	0-25	
sec-Butylbenzene	98	98	80-120	73-127	0	0-20	
tert-Butylbenzene	97	97	80-120	73-127	0	0-20	
Carbon Disulfide	83	83	80-120	73-127	1	0-20	
Carbon Tetrachloride	98	98	49-139	34-154	0	0-20	
Chlorobenzene	96	97	79-120	72-127	1	0-20	
Chloroethane	83	82	80-120	73-127	2	0-20	
Chloroform	97	95	80-120	73-127	2	0-20	
Chloromethane	82	81	80-120	73-127	1	0-20	
2-Chlorotoluene	97	96	80-120	73-127	0	0-20	
4-Chlorotoluene	96	96	80-120	73-127	0	0-20	
Dibromochloromethane	92	94	80-120	73-127	2	0-20	
1,2-Dibromo-3-Chloropropane	100	98	80-120	73-127	2	0-20	
1,2-Dibromoethane	96	97	80-120	73-127	1	0-20	
Dibromomethane	97	97	80-120	73-127	0	0-20	
1,2-Dichlorobenzene	97	96	75-120	68-128	1	0-20	
1,3-Dichlorobenzene	95	94	80-120	73-127	1	0-20	
1,4-Dichlorobenzene	95	94	80-120	73-127	1	0-20	
Dichlorodifluoromethane	89	87	80-120	73-127	2	0-20	
1,1-Dichloroethane	93	92	80-120	73-127	1	0-20	
1,2-Dichloroethane	98	99	80-120	73-127	1	0-20	
1,1-Dichloroethene	92	91	74-122	66-130	1	0-20	
c-1,2-Dichloroethene	93	92	80-120	73-127	1	0-20	
t-1,2-Dichloroethene	85	90	80-120	73-127	5	0-20	
1,2-Dichloropropane	95	94	79-115	73-121	1	0-25	
1,3-Dichloropropane	95	96	80-120	73-127	1	0-20	
2,2-Dichloropropane	94	92	80-120	73-127	3	0-20	
1,1-Dichloropropene	93	94	80-120	73-127	0	0-20	
c-1,3-Dichloropropene	98	99	80-120	73-127	1	0-20	
t-1,3-Dichloropropene	95	95	80-120	73-127	0	0-20	
Ethylbenzene	97	98	76-120	69-127	1	0-20	
Isopropylbenzene	97	99	80-120	73-127	1	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: 10-06-1618
Preparation: EPA 5030B
Method: EPA 8260B

Project: ARCO 2169

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-709-348	**Solid**	**GC/MS FF**	**06/22/10**	**06/22/10**	**100622L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	ME_CL	RPD	RPD CL	Qualifiers
p-Isopropyltoluene	100	99	80-120	73-127	1	0-20	
Methylene Chloride	93	92	80-120	73-127	2	0-20	
Naphthalene	93	93	80-120	73-127	1	0-20	
n-Propylbenzene	98	99	80-120	73-127	1	0-20	
Styrene	97	99	80-120	73-127	2	0-20	
Ethanol	87	91	56-140	42-154	5	0-20	
1,1,1,2-Tetrachloroethane	95	98	80-120	73-127	3	0-20	
1,1,2,2-Tetrachloroethane	94	96	80-120	73-127	2	0-20	
Tetrachloroethene	111	115	80-120	73-127	3	0-20	
Toluene	95	96	77-120	70-127	1	0-20	
1,2,3-Trichlorobenzene	95	94	80-120	73-127	1	0-20	
1,2,4-Trichlorobenzene	96	93	80-120	73-127	3	0-20	
1,1,1-Trichloroethane	96	96	80-120	73-127	0	0-20	
1,1,2-Trichloroethane	96	96	80-120	73-127	0	0-20	
Trichloroethene	96	95	80-120	73-127	1	0-20	
Trichlorofluoromethane	97	94	80-120	73-127	4	0-20	
1,2,3-Trichloropropane	98	98	80-120	73-127	0	0-20	
1,2,4-Trimethylbenzene	98	98	80-120	73-127	0	0-20	
1,3,5-Trimethylbenzene	99	99	80-120	73-127	0	0-20	
Vinyl Acetate	88	87	80-120	73-127	0	0-20	
Vinyl Chloride	88	87	68-122	59-131	1	0-20	
p/m-Xylene	97	98	80-120	73-127	1	0-20	
o-Xylene	99	100	80-120	73-127	1	0-20	
Methyl-t-Butyl Ether (MTBE)	88	100	77-120	70-127	13	0-20	
Tert-Butyl Alcohol (TBA)	86	85	68-122	59-131	0	0-20	
Diisopropyl Ether (DIPE)	92	92	78-120	71-127	0	0-20	
Ethyl-t-Butyl Ether (ETBE)	92	91	78-120	71-127	2	0-20	
Tert-Amyl-Methyl Ether (TAME)	92	93	75-120	68-128	1	0-20	

Total number of LCS compounds : 66
Total number of ME compounds : 0
Total number of ME compounds allowed : 3
LCS ME CL validation result : Pass

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: 10-06-1618
Preparation: EPA 5030B
Method: EPA 8260B

Project: ARCO 2169

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-709-349	**Solid**	**GC/MS FF**	**06/22/10**	**06/22/10**	**100622L02**

Parameter	LCS %REC	LCSD %REC	%REC CL	ME_CL	RPD	RPD CL	Qualifiers
Benzene	92	91	78-120	71-127	0	0-20	
Bromobenzene	96	97	80-120	73-127	1	0-20	
Bromochloromethane	96	98	80-120	73-127	2	0-20	
Bromodichloromethane	95	95	80-120	73-127	1	0-20	
Bromoform	94	96	80-120	73-127	2	0-20	
Bromomethane	102	95	80-120	73-127	7	0-20	
n-Butylbenzene	100	98	77-123	69-131	1	0-25	
sec-Butylbenzene	98	98	80-120	73-127	0	0-20	
tert-Butylbenzene	97	97	80-120	73-127	0	0-20	
Carbon Disulfide	83	83	80-120	73-127	1	0-20	
Carbon Tetrachloride	98	98	49-139	34-154	0	0-20	
Chlorobenzene	96	97	79-120	72-127	1	0-20	
Chloroethane	83	82	80-120	73-127	2	0-20	
Chloroform	97	95	80-120	73-127	2	0-20	
Chloromethane	82	81	80-120	73-127	1	0-20	
2-Chlorotoluene	97	96	80-120	73-127	0	0-20	
4-Chlorotoluene	96	96	80-120	73-127	0	0-20	
Dibromochloromethane	92	94	80-120	73-127	2	0-20	
1,2-Dibromo-3-Chloropropane	100	98	80-120	73-127	2	0-20	
1,2-Dibromoethane	96	97	80-120	73-127	1	0-20	
Dibromomethane	97	97	80-120	73-127	0	0-20	
1,2-Dichlorobenzene	97	96	75-120	68-128	1	0-20	
1,3-Dichlorobenzene	95	94	80-120	73-127	1	0-20	
1,4-Dichlorobenzene	95	94	80-120	73-127	1	0-20	
Dichlorodifluoromethane	89	87	80-120	73-127	2	0-20	
1,1-Dichloroethane	93	92	80-120	73-127	1	0-20	
1,2-Dichloroethane	98	99	80-120	73-127	1	0-20	
1,1-Dichloroethene	92	91	74-122	66-130	1	0-20	
c-1,2-Dichloroethene	93	92	80-120	73-127	1	0-20	
t-1,2-Dichloroethene	85	90	80-120	73-127	5	0-20	
1,2-Dichloropropane	95	94	79-115	73-121	1	0-25	
1,3-Dichloropropane	95	96	80-120	73-127	1	0-20	
2,2-Dichloropropane	94	92	80-120	73-127	3	0-20	
1,1-Dichloropropene	93	94	80-120	73-127	0	0-20	
c-1,3-Dichloropropene	98	99	80-120	73-127	1	0-20	
t-1,3-Dichloropropene	95	95	80-120	73-127	0	0-20	
Ethylbenzene	97	98	76-120	69-127	1	0-20	
Isopropylbenzene	97	99	80-120	73-127	1	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: 10-06-1618
Preparation: EPA 5030B
Method: EPA 8260B

Project: ARCO 2169

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-709-349	**Solid**	**GC/MS FF**	**06/22/10**	**06/22/10**	**100622L02**

Parameter	LCS %REC	LCSD %REC	%REC CL	ME_CL	RPD	RPD CL	Qualifiers
p-Isopropyltoluene	100	99	80-120	73-127	1	0-20	
Methylene Chloride	93	92	80-120	73-127	2	0-20	
Naphthalene	93	93	80-120	73-127	1	0-20	
n-Propylbenzene	98	99	80-120	73-127	1	0-20	
Styrene	97	99	80-120	73-127	2	0-20	
Ethanol	87	91	56-140	42-154	5	0-20	
1,1,1,2-Tetrachloroethane	95	98	80-120	73-127	3	0-20	
1,1,2,2-Tetrachloroethane	94	96	80-120	73-127	2	0-20	
Tetrachloroethene	111	115	80-120	73-127	3	0-20	
Toluene	95	96	77-120	70-127	1	0-20	
1,2,3-Trichlorobenzene	95	94	80-120	73-127	1	0-20	
1,2,4-Trichlorobenzene	96	93	80-120	73-127	3	0-20	
1,1,1-Trichloroethane	96	96	80-120	73-127	0	0-20	
1,1,2-Trichloroethane	96	96	80-120	73-127	0	0-20	
Trichloroethene	96	95	80-120	73-127	1	0-20	
Trichlorofluoromethane	97	94	80-120	73-127	4	0-20	
1,2,3-Trichloropropane	98	98	80-120	73-127	0	0-20	
1,2,4-Trimethylbenzene	98	98	80-120	73-127	0	0-20	
1,3,5-Trimethylbenzene	99	99	80-120	73-127	0	0-20	
Vinyl Acetate	88	87	80-120	73-127	0	0-20	
Vinyl Chloride	88	87	68-122	59-131	1	0-20	
p/m-Xylene	97	98	80-120	73-127	1	0-20	
o-Xylene	99	100	80-120	73-127	1	0-20	
Methyl-t-Butyl Ether (MTBE)	88	100	77-120	70-127	13	0-20	
Tert-Butyl Alcohol (TBA)	86	85	68-122	59-131	0	0-20	
Diisopropyl Ether (DIPE)	92	92	78-120	71-127	0	0-20	
Ethyl-t-Butyl Ether (ETBE)	92	91	78-120	71-127	2	0-20	
Tert-Amyl-Methyl Ether (TAME)	92	93	75-120	68-128	1	0-20	

Total number of LCS compounds : 66
Total number of ME compounds : 0
Total number of ME compounds allowed : 3
LCS ME CL validation result : Pass

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: 10-06-1618
Preparation: EPA 5030B
Method: EPA 8260B

Project: ARCO 2169

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-709-350	**Solid**	**GC/MS FF**	**06/23/10**	**06/23/10**	**100623L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	ME_CL	RPD	RPD CL	Qualifiers
Benzene	96	100	78-120	71-127	4	0-20	
Bromobenzene	100	101	80-120	73-127	2	0-20	
Bromochloromethane	102	106	80-120	73-127	3	0-20	
Bromodichloromethane	98	100	80-120	73-127	3	0-20	
Bromoform	97	101	80-120	73-127	4	0-20	
Bromomethane	99	109	80-120	73-127	9	0-20	
n-Butylbenzene	101	104	77-123	69-131	3	0-25	
sec-Butylbenzene	99	105	80-120	73-127	6	0-20	
tert-Butylbenzene	98	104	80-120	73-127	6	0-20	
Carbon Disulfide	82	86	80-120	73-127	4	0-20	
Carbon Tetrachloride	101	104	49-139	34-154	3	0-20	
Chlorobenzene	99	102	79-120	72-127	3	0-20	
Chloroethane	82	95	80-120	73-127	15	0-20	
Chloroform	101	103	80-120	73-127	1	0-20	
Chloromethane	82	87	80-120	73-127	6	0-20	
2-Chlorotoluene	99	102	80-120	73-127	3	0-20	
4-Chlorotoluene	97	101	80-120	73-127	4	0-20	
Dibromochloromethane	94	99	80-120	73-127	5	0-20	
1,2-Dibromo-3-Chloropropane	101	108	80-120	73-127	7	0-20	
1,2-Dibromoethane	100	102	80-120	73-127	2	0-20	
Dibromomethane	100	105	80-120	73-127	4	0-20	
1,2-Dichlorobenzene	98	102	75-120	68-128	3	0-20	
1,3-Dichlorobenzene	96	101	80-120	73-127	5	0-20	
1,4-Dichlorobenzene	96	100	80-120	73-127	5	0-20	
Dichlorodifluoromethane	90	93	80-120	73-127	3	0-20	
1,1-Dichloroethane	97	100	80-120	73-127	3	0-20	
1,2-Dichloroethane	103	106	80-120	73-127	3	0-20	
1,1-Dichloroethene	93	95	74-122	66-130	1	0-20	
c-1,2-Dichloroethene	96	99	80-120	73-127	3	0-20	
t-1,2-Dichloroethene	97	89	80-120	73-127	8	0-20	
1,2-Dichloropropane	99	103	79-115	73-121	4	0-25	
1,3-Dichloropropane	101	102	80-120	73-127	1	0-20	
2,2-Dichloropropane	97	98	80-120	73-127	1	0-20	
1,1-Dichloropropene	98	101	80-120	73-127	3	0-20	
c-1,3-Dichloropropene	101	105	80-120	73-127	5	0-20	
t-1,3-Dichloropropene	96	99	80-120	73-127	4	0-20	
Ethylbenzene	100	102	76-120	69-127	2	0-20	
Isopropylbenzene	100	102	80-120	73-127	2	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: 10-06-1618
Preparation: EPA 5030B
Method: EPA 8260B

Project: ARCO 2169

Quality Control Sample ID	Matrix	Instrument	Date Prepared	Date Analyzed	LCS/LCSD Batch Number
099-12-709-350	**Solid**	**GC/MS FF**	**06/23/10**	**06/23/10**	**100623L01**

Parameter	LCS %REC	LCSD %REC	%REC CL	ME_CL	RPD	RPD CL	Qualifiers
p-Isopropyltoluene	100	105	80-120	73-127	5	0-20	
Methylene Chloride	94	96	80-120	73-127	3	0-20	
Naphthalene	93	93	80-120	73-127	0	0-20	
n-Propylbenzene	101	103	80-120	73-127	3	0-20	
Styrene	100	102	80-120	73-127	2	0-20	
Ethanol	101	98	56-140	42-154	3	0-20	
1,1,1,2-Tetrachloroethane	99	101	80-120	73-127	2	0-20	
1,1,2,2-Tetrachloroethane	96	106	80-120	73-127	9	0-20	
Tetrachloroethene	106	113	80-120	73-127	6	0-20	
Toluene	97	102	77-120	70-127	5	0-20	
1,2,3-Trichlorobenzene	95	95	80-120	73-127	1	0-20	
1,2,4-Trichlorobenzene	95	95	80-120	73-127	0	0-20	
1,1,1-Trichloroethane	100	102	80-120	73-127	2	0-20	
1,1,2-Trichloroethane	101	104	80-120	73-127	3	0-20	
Trichloroethene	97	103	80-120	73-127	6	0-20	
Trichlorofluoromethane	98	102	80-120	73-127	4	0-20	
1,2,3-Trichloropropane	102	104	80-120	73-127	2	0-20	
1,2,4-Trimethylbenzene	99	103	80-120	73-127	4	0-20	
1,3,5-Trimethylbenzene	101	102	80-120	73-127	1	0-20	
Vinyl Acetate	90	92	80-120	73-127	2	0-20	
Vinyl Chloride	92	93	68-122	59-131	2	0-20	
p/m-Xylene	100	102	80-120	73-127	2	0-20	
o-Xylene	101	103	80-120	73-127	2	0-20	
Methyl-t-Butyl Ether (MTBE)	104	92	77-120	70-127	13	0-20	
Tert-Butyl Alcohol (TBA)	91	89	68-122	59-131	1	0-20	
Diisopropyl Ether (DIPE)	95	97	78-120	71-127	3	0-20	
Ethyl-t-Butyl Ether (ETBE)	93	96	78-120	71-127	3	0-20	
Tert-Amyl-Methyl Ether (TAME)	94	98	75-120	68-128	4	0-20	

Total number of LCS compounds : 66
Total number of ME compounds : 0
Total number of ME compounds allowed : 3
LCS ME CL validation result : Pass

RPD - Relative Percent Difference , CL - Control Limit

Calscience Environmental Laboratories, Inc.

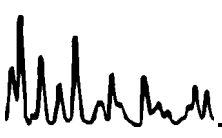
Glossary of Terms and Qualifiers

Work Order Number: 10-06-1618

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.
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.

Work Order Number: 10-06-1618

Qualifier	Definition
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.



Atlantic Richfield Company
A BP affiliated company

Laboratory Management Program LaMP Chain of Custody Record

BP/ARC Project Name: ARCO 2169 **Req Due Date (mm/dd/yy):** STD-TAT **Rush TAT:** Yes ___ No X

BP/ARC Facility No: 2169 **Lab Work Order Number:** 10-06-1618

Lab Name:	Cal science	BP/ARC Facility Address:	889 w. Grand Avenue	Consultant/Contractor:	Broadbent & Associates, Inc.
Lab Address:	7440 Lincoln Way	City, State, ZIP Code:	Oakland, CA 94607	Consultant/Contractor Project No:	06-88-621-5-822
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.:	T0600100112	Consultant/Contractor PM:	Tom Venus
Lab Shipping Accnt:	9255	Enfos Proposal No:	000WP-0035	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:	Operate (5) Activity: Monitoring/MNA (22)	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 (8015)	BTEX (8260)	5 Oxys (8260)	EDB (8260)	1,2-DCA (8260)	Ethanol (8260)	DRO (8260)				Report Type & QC Level / Comments
1	SB-2 8-9.5M	6/17/2010	835	X				1	X						X	X	X	X	X	X	X				
2	SB-2 12-13.5B	6/17/2010	837	X				1	X						X	X	X	X	X	X	X				
3	SB-2 16-17.5M	6/17/2010	840	X				1	X						X	X	X	X	X	X	X				
4	SB-2 20-21.5M	6/17/2010	843	X				1	X						X	X	X	X	X	X	X				
5	SB-2 24-25.5M	6/17/2010	848	X				1	X						X	X	X	X	X	X	X				
6	SB-2 28-29.5T	6/17/2010	855	X				1	X						X	X	X	X	X	X	X				
7	SB-1 8-9.5M	6/17/2010	941	X				1	X						X	X	X	X	X	X	X				
8	SB-1 12-13.5T	6/17/2010	945	X				1	X						X	X	X	X	X	X	X				
9	SB-1 16-17.5T	6/17/2010	948	X				1	X						X	X	X	X	X	X	X				
10	SB-1 20-21.5M	6/17/2010	951	X				1	X						X	X	X	X	X	X	X				
11	SB-1 24-25.5M	6/17/2010	957	X				1	X						X	X	X	X	X	X	X				
12	SB-1 28-29.5B	6/17/2010	1000	X				1	X						X	X	X	X	X	X	X				ON HOLD

Report Type & QC Level: Standard X; Full Data Package ___

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

	Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time
Sampler's Name: Eric Furlow						
Sampler's Company: BAI		6/17/10	1400			
Shipment Method: GSO Ship Date: 6/18/10					6/18/10	0934
Shipment Tracking No: 106193654						

SHIPPING AIR BILL

GSO GOLDEN STATE OVERNIGHT

1-800-322-5555

WWW.GSO.COM

1 FROM

DATE 6/16/16 SHIPPERS GSO ACCOUNT NO. 9255

COMPANY EMI

ADDRESS 75 Cotter Lane

ADDRESS STE/ROOM G

CITY Vacaville ZIP CODE 95618

SENDERS NAME Eric Fonn PHONE NUMBER 775-247-7161

2 TO

COMPANY CAL SCIENCE

NAME PHONE NUMBER 714-895-5494

ADDRESS 7440 LINCOLN WAY

ADDRESS STE/ROOM

CITY GARDEN GROVE ZIP CODE 92841

3 YOUR INTERNAL BILLING REFERENCE WILL APPEAR ON YOUR INVOICE

SPECIAL INSTRUCTIONS

4 PACKAGE INFORMATION

☐ LETTER (MAX 8 OZ)

☑ PACKAGE (WT) 40

☐ 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

6 RELEASE SIGNATURE

SIGN TO AUTHORIZE DELIVERY WITHOUT OBTAINING SIGNATURE

7 CREDIT CARD ☐ M/C ☐ VISA ☐ AM EX CREDIT CARD NUMBER

8 PICK UP INFORMATION TIME DRIVER # ROUTE #

106193654

9 GSO TRACKING NUMBER

106193654

4.

1618

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 10-06-1618

SAMPLE RECEIPT FORM

Cooler 1 of 1

CLIENT: Broadbent & Asso. DATE: 06/19/10

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

Temperature 3.1 °C + 0.5 °C (CF) = 3.6 °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 ☐ Metals Only ☐ PCBs Only Initial: YL

CUSTODY SEALS INTACT:

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

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

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	~~☑~~ 6/21/10	☑	☐
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 (5) ☐EnCores® ☐TerraCores® ☐_____

Water: ☐VOA ☐VOAh ☐VOAna_2 ☐125AGB ☐125AGBh ☐125AGBp ☐1AGB ☐1AGBna_2 ☐1AGBs ☐500AGB ☐500AGJ ☐500AGJs ☐250AGB ☐250CGB ☐250CGBs ☐1PB ☐500PB ☐500PBna ☐250PB ☐250PBn ☐125PB ☐125PBznna ☐100PJ ☐100PJna_2 ☐_____ ☐_____ ☐_____

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

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

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:** WSC

Calscience Environmental Laboratories, Inc.

WORK ORDER #: 10-06-1 6 1 8

SAMPLE ANOMALY FORM

SAMPLES - CONTAINERS & LABELS:

- ☐ **Sample(s)/Container(s) NOT RECEIVED but listed on COC**
- ☐ **Sample(s)/Container(s) received but NOT LISTED on COC**
- ☐ **Holding time expired** – list sample ID(s) and test
- ☐ **Insufficient quantities for analysis** – list test
- ☐ **Improper container(s) used** – list test
- ☐ **Improper preservative used** – list test
- ☐ **No preservative noted on COC or label** – list test & notify lab
- ☐ **Sample labels illegible** – note test/container type
- ☑ **Sample label(s) do not match COC** – Note in comments
  - ☑ **Sample ID**
  - ☐ **Date and/or Time Collected**
  - ☐ **Project Information**
  - ☐ **# of Container(s)**
  - ☐ **Analysis**
- ☐ **Sample container(s) compromised** – Note in comments
  - ☐ **Water present in sample container**
  - ☐ **Broken**
  - ☐ **Without Label(s)**
- ☐ **Air sample container(s) compromised** – Note in comments
  - ☐ **Flat**
  - ☐ **Very low in volume**
  - ☐ **Leaking (Not transferred - duplicate bag submitted)**
  - ☐ **Leaking (transferred into Calscience Tedlar® Bag*)**
  - ☐ **Leaking (transferred into Client's Tedlar® Bag*)**
- ☐ **Other:** _____

Comments:

(-5) Sample ID labeled as SB-2 24-24.5M on 6/17/10 @ 8:48

HEADSPACE – Containers with Bubble > 6mm or ¼ inch:

Sample #	Container ID(s)	# of Vials Received	Sample #	Container ID(s)	# of Vials Received	Sample #	Container ID(s)	# of Cont. received	Analysis

Comments: _____

*Transferred at Client's request.

Initial / Date: WSC 06/19/10

APPENDIX C

GEOTRACKER UPLOAD CONFIRMATION RECEIPTS

STATE WATER RESOURCES CONTROL BOARD

GEOTRACKER ESI

UPLOADING A GEO_BORE FILE

SUCCESS

Your GEO_BORE file has been successfully submitted!

Submittal Type:	**GEO_BORE**
Facility Global ID:	**T0600100112**
Field Point:	**SB-1**
Facility Name:	**ARCO #02169**
File Name:	**2169 GEO_BORE SB-1.pdf**
Organization Name:	**Broadbent & Associates, Inc.**
Username:	**BROADBENT-C**
IP Address:	**67.118.40.90**
Submittal Date/Time:	**9/16/2010 5:01:01 PM**
Confirmation Number:	**6378091394**

STATE WATER RESOURCES CONTROL BOARD

GEOTRACKER ESI

UPLOADING A GEO_BORE FILE

SUCCESS

Your GEO_BORE file has been successfully submitted!

Submittal Type:	**GEO_BORE**
Facility Global ID:	**T0600100112**
Field Point:	**SB-2**
Facility Name:	**ARCO #02169**
File Name:	**2169 GEO_BORE SB-2.pdf**
Organization Name:	**Broadbent & Associates, Inc.**
Username:	**BROADBENT-C**
IP Address:	**67.118.40.90**
Submittal Date/Time:	**9/16/2010 5:02:04 PM**
Confirmation Number:	**3440347254**

STATE WATER RESOURCES CONTROL BOARD

GEOTRACKER ESI

UPLOADING A GEO_MAP FILE

SUCCESS

Your GEO_MAP file has been successfully submitted!

Submittal Type:	**GEO_MAP**
Facility Global ID:	**T0600100112**
Facility Name:	**ARCO #02169**
File Name:	**2169 GEO_MAP.pdf**
Organization Name:	**Broadbent & Associates, Inc.**
Username:	**BROADBENT-C**
IP Address:	**67.118.40.90**
Submittal Date/Time:	**9/16/2010 4:59:49 PM**
Confirmation Number:	**1448876798**

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 - Soil and Water Investigation Report**
Submittal Title:	**Soil Boring Samples 0610**
Facility Global ID:	**T0600100112**
Facility Name:	**ARCO #02169**
File Name:	**10061618.zip**
Organization Name:	**Broadbent & Associates, Inc.**
Username:	**BROADBENT-C**
IP Address:	**67.118.40.90**
Submittal Date/Time:	**9/17/2010 10:27:29 AM**
Confirmation Number:	**1760877251**

VIEW QC REPORT

VIEW DETECTIONS REPORT