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Atlantic Richfield Company (a BP affiliated company)

P.O. Box 1257 San Ramon, California 94583 Phone: (925) 275-3801 Fax: (925) 275-3815

6 April 2009

 Re: 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.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:

Sarl Supple

Paul Supple Environmental Business Manager

Prepared for

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

Prepared by

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

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6 April 2009

Project No. 06-88-621

# Preferential Pathway Evaluation and Soil &

**Ground-Water Investigation Work Plan** Atlantic Richfield Company Station No. 2169 889 West Grand Avenue, Oakland, California ACEHS Case No. RO0000072



6 April 2009

Project No. 06-88-621

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

Attn.: Mr. Paul Supple

Re: 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, California; ACEH Case #RO0000072

Dear Mr. Supple:

Broadbent & Associates, Inc. (BAI) is pleased to submit this *Preferential Pathway Evaluation and Soil & Ground-Water Investigation Work Plan* for Atlantic Richfield Company Station No. 2169 (herein referred to as Station No.2169) located at 889 West Grand Avenue, Oakland, California (Site). This Report was prepared in response to a letter request from Alameda County Environmental Health (ACEH) dated 8 January 2009.

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

Sincerely, BROADBENT & ASSOCIATES, INC.

Matthew G. Herrick, P.G., C.HG. Senior Hydrogeologist

Robert H. Miller, P.G., C.HG. Principal Hydrogeologist



Enclosures

cc: Mr. Paresh Khatri, Alameda County Environmental Health (Submitted via ACEH ftp site) Electronic copy uploaded to GeoTracker

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#### **1.0 INTRODUCTION**

On behalf of Atlantic Richfield Company, RM – a BP affiliated company, Broadbent & Associates, Inc. (BAI) has prepared this Preferential Pathway Evaluation and Soil and Ground-Water Investigation Work Plan for Atlantic Richfield Company Station No. 2169, located at 889 West Grand Avenue, Oakland, California (Site). This Report was prepared in response to a letter request from Alameda County Environmental Health (ACEH) dated 8 January 2009. A copy of this letter is provided in Appendix A. Specifically, ACEH technical comments within the 8 January 2009 letter requested a proposal for the collection of post remediation verification sampling in the former underground storage tank (UST) area, delineate migration of off-site ground-water contamination in the vicinity of well A-5, and conduct a preferential pathway study. This Report includes discussion on the site background including previous investigations and remediation efforts, regional and Site geology and hydrogeology, a preferential pathway evaluation and a soil and ground-water investigation work plan.

#### 2.0 SITE BACKGROUND

The Site is an active ARCO brand gasoline retail outlet located on the southeastern corner of Market Street and West Grand Avenue in Oakland, California (Drawing 1 and Drawing 2). The land use in the immediate vicinity of the Site is mixed commercial and residential. The Site consists of a service station building and four gasoline USTs with associated piping and dispensers. The Site is covered with asphalt or concrete surfacing.

On 14 May 1991, Gettler-Ryan, Inc. conducted a preliminary soil investigation and well abandonment prior to UST replacement. Four soil borings (A-B through A-E) were advanced to an approximate depth of 15 feet below ground surface (bgs) adjacent to the existing UST complex. One soil boring (A-A) was drilled to an approximate depth of 20 feet bgs within the area of the proposed UST complex. Ground water was encountered within each boring at approximately 13.5 feet bgs. Two soil samples were collected from each boring at approximate five foot intervals. Soil samples were analyzed for Total Petroleum Hydrocarbons as Gasoline (TPHg), Total Petroleum Hydrocarbons as Diesel (TPHd), and Benzene, Toluene, Ethylbenzene, and Total Xylenes (BTEX). An eight inch diameter monitoring well approximately 20 feet in depth located in the vicinity of the existing UST complex was also abandoned by Gettler-Ryan, Inc. on 14 May 1991. Based on the review of available historical documents, the purpose of this monitoring well is unknown. Summarized analytical results, boring locations, soil boring logs, and geologic cross-sections from this investigation are provided in Appendices B and C.

In January 1992, Roux Associates (Roux) oversaw Golden West Builders perform the excavation and removal of four single-wall USTs on-site. According to Roux, the removed USTs appeared to be in good condition with no visible holes. The static ground-water level measured within the excavation was approximately 13 feet bgs. Following the UST removal, Roux collected nine soil samples (SW-1 through SW-9) from the sidewalls of the excavation at approximately 12 feet bgs. Soil samples were analyzed for TPHg, TPHd, and BTEX. Excavated soil was stockpiled on-site and aerated to reduce hydrocarbon concentrations. According to Roux, approximately 2,196 cubic yards of soil were transported to Redwood

landfill for disposal and approximately 10,000 gallons of ground water encountered during the excavation was transported by H & H for proper disposal at their facility in San Francisco, California. Four new, double-wall, 10,000 gallon fiberglass USTs were installed at the Site following the excavation and removal activities. Summarized analytical data and specific soil sampling locations from this investigation are provided in Appendix B.

On 19 February 1992, following the removal of the product lines, Roux collected five soil samples (L1 through L5) from the product line trenches at depths ranging from approximately three to four feet bgs. Each soil sample was analyzed for TPHg and BTEX. Samples L4 and L5 were also analyzed for TPHd. Based on elevated concentrations of TPHd observed in sample L4 collected adjacent to the diesel pump island, over-excavation was conducted within this product line trench in order to remove additional contaminated soil. Following over-excavation, a confirmation soil sample (LINE-4A) was collected at approximately seven feet bgs. Summarized analytical data and specific sampling locations from this investigation are provided in Appendix B.

Components associated with a vapor and ground-water extraction system were installed concurrently with the installation of the new USTs and product piping to reduce future trenching. A 12-inch diameter slotted polyvinyl chloride (PVC) conductor casing was installed within the new UST complex to facilitate the future installation of a ground-water extraction well. Seven vault boxes were installed at locations chosen for the future installation of vapor extraction and ground-water monitoring wells, soil borings, or treatment systems. Assorted horizontal PVC piping was installed within subsurface trenches between the vault boxes in anticipation of connection to a remediation system.

In March 1992, GeoStrategies, Inc. (GSI) advanced five soil borings (A-1 through A-4 and AR-1) on-site to total depths ranging from approximately 26.5 to 30.0 feet bgs. Soil samples were collected at five-foot intervals and analyzed for TPHg, TPHd, and BTEX. A total of six soil samples were selected for laboratory analysis. Borings A-1 through A-4 were converted into three-inch diameter monitoring wells A-1 through A-4 and installed to depths of 25.0, 25.0, 29.5, and 28.0 feet bgs, respectively. Boring AR-1 was converted into a six-inch diameter recovery well installed to a depth of 28.0 feet bgs. Summarized analytical data, boring logs, geologic cross-sections, and boring/well locations from this investigation are provided in Appendices B and C.

On 8 June 1992, four on-site exploratory borings (AV-1 through AV-3 and AR-2) were installed by GSI. Soil samples were collected at five-foot intervals and transported to a laboratory for analysis of TPHg, TPHd, and BTEX. A total of six soil samples were submitted for laboratory analysis. Borings AV-1 through AV-3 were converted into two-inch diameter vapor extraction wells. Wells AV-1 through AV-3 were installed to a total approximate depth of 14.5 feet bgs. Boring AR-2 was advanced through the 12-inch diameter conductor casing installed within the UST complex previously discussed above and converted into a four-inch diameter recovery well to a total depth of approximately 28.5 feet bgs. Summarized analytical data, boring logs, and boring/well locations from this investigation are provided in Appendices B and C.

On 11 June 1992, GSI conducted a vapor extraction test utilizing well AV-2. Wells AV-1 and AV-3 were used as observation wells during the testing activities. According to GSI, based on vacuum pressure readings obtained from the observation wells, an estimated 50-foot radius of influence from the extraction well was calculated. An influent and effluent vapor sample was collected during the vapor extraction test. These samples were shipped to a laboratory for analysis of TPHg and BTEX.

On 15 and 16 June 1992, GSI performed a four-hour step-drawdown aquifer test and a 24-hour constant-rate aquifer test utilizing recovery well AR-1. These tests were conducted to assess the feasibility of using recovery well AR-1 to achieve hydrodynamic control of ground-water for extraction of petroleum hydrocarbons from the first encountered water-bearing zone. Drawdown was observed within each of the observation wells during aquifer testing. According to GSI, the results of the aquifer test indicate that pump and treat technology would be a feasible method for remediation at the Site.

On 4 February 1993, GSI advanced two off-site exploratory soil borings (A-5 and A-6) to a total depth of approximately 30 feet bgs. Soil samples were collected at five-foot intervals from each boring and submitted for laboratory analysis of TPHg and BTEX. Soil samples collected from boring A-5 were also analyzed for Halogenated Volatile Organics (HVO). A total of four soil samples were selected for laboratory analysis. Borings A-5 and A-6 were converted into two-inch ground-water monitoring wells A-5 and A-6. Well A-5 was installed to a total approximate depth of 30 feet bgs and well A-6 was installed to a total approximate depth of 28.5 feet bgs. Summarized analytical data, boring/monitoring well construction logs, and boring/well locations from this investigation are provided in Appendices B and C.

In September 1993, GSI conducted an off-site well search and environmental records search. The results of the off-site well search concluded that forty off-site wells are located within a <sup>1</sup>/<sub>2</sub>-mile radius of the Site. However, none of these wells included drinking water wells. The environmental records search indicated that forty one sites of environmental concern are located within a <sup>1</sup>/<sub>2</sub>-mile radius of the Site, which included 5 sites located less than a <sup>1</sup>/<sub>4</sub>-mile in the predominant upgradient direction. Based on proximity, location, and historical data, GSI concluded that three of these sites (Chevron #91853 – 850 West Grand Ave., Fyne Building – 774 West Grand Ave., and Greyhound Bus Terminal – 2103 San Pablo Ave.) could be potential secondary sources of hydrocarbon contamination within off-site well A-5.

On 7 and 8 September 1993, GSI advanced five on-site soil borings (AS-1 through AS-3, AV-4 and AV-6). Borings AS-1 through AS-3 were converted into air sparge wells and borings AV-4 and AV-5 were converted into vapor extraction wells. Summarized analytical data, boring/monitoring well construction logs, and well locations are provided in Appendices B and C. On September 15 and 17, 1993, GSI performed two eight-hour air sparge/vapor extraction tests at two locations on-site. Well AV-4 was utilized as the vapor extraction well and well AS-2 as the sparge well during the first test. Well AV-2 was utilized as the vapor extraction well and well AS-1 as the sparge well during the second test.

On 6 and 7 December 1993, GSI oversaw the installation of two air sparge wells (AS-4 and AS-5), two vapor extraction wells (AV-6 and AV-7), and two dual ground-water recovery/vapor extraction wells ADR-1 and ADR-2. Summarized analytical data,

boring/monitoring well construction logs, geologic cross-sections, and well locations are provided in Appendices B and C. In December 1993 and January 1994, installation of an on-site remediation system with the capability for air sparging (optional), vapor extraction, and ground-water extraction (optional) was completed.

The vapor extraction and air sparge remediation system began operation on 2 June 1994. Vapor treatment was accomplished using a thermal/catalytic oxidizer. The remediation system consisted of a vapor extraction blower, moisture separator, oxidizer, and controls. Operation of the air sparge and vapor extraction system continued until December 2001 when the system was shutdown due to the observation of low concentrations. During remediation system operation, approximately 9,151 pounds of hydrocarbons were removed from the soil and ground water onsite. Based on review of the available historical documents, the ground-water extraction system was not operated at the Site.

Ground-water monitoring has occurred at the Site since 1992. Historical ground-water analytical data (prior to 2000) is provided in Appendix B.

#### 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 Merrit 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. In the southern end of the study area however, near the San Lorenzo Sub-Area, the direction of flow may not be this simple. According to information presented in *East Bay Plain Groundwater Basin Beneficial Use Evaluation Report*, the small set of water level measurements available seemed to show that the ground water in the upper aquifers may be flowing south, with the deeper aquifers, the Alameda Formation, moving north. 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 mean sea level. The water table fluctuates seasonally. Historically, depth-to-water measurements have ranged from approximately 7 to 13 feet 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. Historical ground-water flow direction and gradient data are summarized in Table 5.

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 feet 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 feet bgs. Cross-sections within Appendix C illustrate subsurface conditions. Copies of the historic boring logs are also provided in Appendix C.

#### 4.0 PREFERENTIAL PATHWAY EVALUATION

#### 4.1 Utility Survey

Maps from the City of Oakland Sewer and Sidewalk Department, East Bay Municipal Utility District (EBMUD), AT&T and Pacific Gas and Electric (PG&E) were reviewed to evaluate the potential for conduits to cause preferential flow of impacted ground water from the Property. Sprint reported that they do not have any utilities in the area of the property. Level 3 Communications reported that their utility maps are confidential and a special on-site meeting, which would include a fee, would be required in order to release the information. It was decided that utility locations from Level 3 Communications would not be further pursued. Attempts were made to contact Time Warner, Comcast, and MCI regarding potential underground utilities on or near the Site; however no responses were received. Storm drains, water and sanitary sewer utilities are shown in Drawing 3. Although AT&T and PG&E provided information regarding utility locations, reproduction of this information on our drawings was prohibited by both utilities. However, a general discussion of the presence of AT&T and PG&E utilities is provided below.

Underground utilities run along West Grand Avenue, Market Street and 22<sup>nd</sup> Street surrounding the Site. Utilities include storm drain, water, sanitary sewer, telephone, electric and natural gas. North of the property along West Grand Avenue storm drain, water, sanitary sewer, telephone, electric, and natural gas are present. West of the property along Market street storm drain, water, sanitary sewer, electric and natural gas are present. South of the property along 22<sup>nd</sup> street water, sanitary sewer, electric and natural gas are present.

The City of Oakland Sewer and Sidewalk Department could not provide depth to the bottom of utilities and backfill material used to fill the trenches (native or non-native). AT&T could not provide a definite depth to the bottom of utilities and backfill material used to fill the trenches due to company policy. However, AT&T stated that the trench should have been installed approximately 24 inches bgs. PG&E stated that their utilities are located approximately

36 inches bgs but could not provide information regarding the backfill material. EBMUD did not respond to our request for information concerning total depth of utilities or backfill material.

The potential depth of utility conduits found in the area surrounding the property range from 2 to 3 feet bgs. As mentioned above, depth to ground water from monitor wells on the Site has historically ranged from 7 feet bgs to 13 feet bgs. Based on incomplete information on depth and backfill material of utilities, it is unclear whether or not utilities have in the past or are presently acting as preferential paths for the flow of impacted ground water. Storm water drains, water, sanitary sewer, electric, and natural gas utilities are all located in the near vicinity of well A-5, which was specifically mentioned in the ACEH January 8, 2009 Letter.

#### 4.2 Well Survey

Well logs were requested from the California Department of Water Resources (DWR) in order to complete the requested well survey. A total of 53 monitoring wells were identified within the ½ mile survey radius of the Property. No domestic or municipal wells were located within the ½ mile search radius.

Wells that were located in the immediate vicinity of Station 2169 included the following: six monitoring wells at a distance of approximately 280 feet directly north of the site across West Grand Avenue and five monitoring wells at a distance of approximately 725 feet southwest of the property on Market Street.

Based on our current understanding of the extent of the petroleum hydrocarbon plume, predominant historic gradient directions, and distance from Station 2169, it is unlikely that any of the wells mentioned above have been affected by petroleum hydrocarbon impacted ground water from Station 2169. Furthermore, it is very unlikely that any of these wells have acted as contaminant migration pathways at or from the Site.

#### 4.3 Historical Land Use Survey

The January 8, 2009 ACEH letter requested the completion of a background study of the historical land uses of the Site and properties in the immediate vicinity in order to determine the existence of unrecorded/unknown wells which could act as contaminant migration pathways at or from the Site. The background study also helps determine potential off-site sources of contamination. The following sections summarize data obtained from the review of government records, Sanborn maps, topographic maps, and aerial photographs of the Site and surrounding properties.

#### 4.3.1 State and Federal Environmental Records Review

As part of the background study pertaining to historical land use, BAI retained the services of Environmental Data Resources, Inc. (EDR) to prepare a base report of regulatory agency list review and file search summary results. Record searches were conducted consistent with ASTM guidelines

for radius of influence and age of databases. The record search was conducted on February 18, 2009. Table 1 summarizes the databases searched, currentness of database, search radii, and number of sites with documented environmental concerns identified within the Site vicinity. Table 2 summarizes the documented facilities, distance and direction from the Site, and the regulatory databases each facility was reported within. The search radius utilized for Table 2 was reduced to a <sup>1</sup>/<sub>4</sub> mile in order to focus on sites within close proximity to the subject property.

The Site itself was listed in the EDR report as being on several of the databases searched. The database search reported 51 sites with documented environmental concerns within a <sup>1</sup>/<sub>4</sub> mile of the subject Site. The following discussion is limited to facilities in the general upgradient direction (moving in a clockwise direction north to southeast) and properties with known current or historical petroleum hydrocarbon contamination. The specific facilities with potential impact on the Site are in bold type within Table 2.

- *Chevron, 850 West Grand Ave.* The former Chevron gasoline service station located approximately 0.018 miles east of the subject property was reported in several regulatory databases according to the EDR search, including the Leaking UST Database (Table 2). The EDR report indicated that a known historic release of gasoline occurred from one of the UST's located on the Chevron property. The release was discovered during UST removal activities. This station is located in the general upgradient direction of Station # 2169. However, the case has been closed since 1997 and the site is currently occupied by residential housing.
- *Meaders Cleaners, 800 West Grand Ave.* The former Meaders Cleaners located approximately 0.115 miles east-southeast of the Site was reported in several regulatory databases according to the EDR search, including the Leaking UST Database (Table 2). The EDR report indicated that three gasoline UST's were removed from the site in 1989. Gasoline contamination was discovered during the removal activities. However, the property owner filed for bankruptcy and no further environmental work was performed on-site. The site is currently a vacant lot.
- *Herrington Olson Photography, 769 22<sup>nd</sup> St.* The former Herrington Olson Photography located approximately 0.13 miles east-southeast of the Site was reported in several regulatory databases according to the EDR search, including the Leaking UST Database (Table 2). A gasoline release was discovered on the property during UST removal activities. However, the case for this site has been closed since 2001 and the property is no longer occupied by Herrington Olson Photography.
- *Fyne Building, 774 West Grand Ave.* The Fyne Building located approximately 0.14 miles east-southeast of the Site was reported in the Leaking UST Database according to the EDR search (Table 2). The EDR report did not specify the date of release or method used to determine the presence of gasoline contamination. According to the EDR search, the case is still open. The site is currently occupied by a commercial/residential building.

After review of the state and federal environmental records for the subject property and surrounding vicinity, the gasoline releases documented at each of the sites listed above could have potentially contributed to the ground-water contamination observed in off-site well A-5. However,

due to the distance and direction of these former businesses from the Site, the predominant groundwater flow direction, and the time of these releases, the recent increase in hydrocarbon concentrations in well A-5 are unlikely to be related to the previously discussed facilities.

#### 4.3.2 Sanborn Map Review

Fire insurance maps were initially produced by private companies (such as Sanborn, Perris, and the Fire Underwriters Inspection Bureau) for the insurance industry to provide information on the fire risks of buildings and other structures. Fire insurance maps have become a valuable historical resource for persons concerned with evaluating the potential for site contamination based on the history of past use. BAI queried EDR's collection of fire insurance maps, one of the largest and most complete collections available, for coverage of the Site. Nine fire insurance maps depicting the target property at the specified location were identified. Copies of these historical Sanborn maps are provided in Appendix D. A summarized description of each map is provided below.

- *1902.* The 1902 Sanborn Fire Insurance Map depicted a residential dwelling located on the subject property. Residential dwellings are also visible to the northwest of the Site across the intersection of Market Street and 22<sup>nd</sup> Street (currently known as West Grand Avenue) and immediately adjacent to the Site to the east and southeast. The only business located within the vicinity of the Site appears to be a laundry facility to the south of the Site across Lydia Street (currently 22<sup>nd</sup> Street). Properties to the immediate north, south, and west appear vacant.
- *1912.* The 1912 Sanborn Fire Insurance Map exhibited an unnamed store on the northwest corner of the Site and a vacant building on the north-eastern portion of the property. A saloon, store, and various residential dwellings are visible to the northwest of the Site. Residential dwellings are also present to the east and southeast of the property. A laundry business is located to the south of the Site across Lydia Street. A building entitled Market Street Station is visible directly west of the Site across Market Street. The Property to the immediate north appears vacant. Water lines are visible to the north of the Site running approximately east to west within 22<sup>nd</sup> Street and to the northwest of the Site running approximately north to south within Market Street. A water line is also present to the south of the Site running approximately east to west within Lydia Street. Unfortunately, the depth of these water lines cannot be determined from the Sanborn Map.
- 1951. The 1951 Sanborn Fire Insurance Map depicted the Cardinet Candy Company and a sheet metal works business located on the subject property. An electrical equipment company, auto repair shop, and laundry supply business are visible to the north of the property across West Grand Avenue and a sheet metal works and welding business including warehouses containing paint, oils, carpet, and linoleum is located to the northwest of the Site across West Grand Avenue. An automobile and truck repair shop is depicted immediately west of the property across Market Street. The laundry business is still present south of the Site across Lydia Street. Residential dwellings are

visible further to the northeast, east, and south of the subject property. The property directly east of the Site appears vacant.

- 1952. The 1952 Sanborn Fire Insurance Map depicts two significant changes when compared to the 1951 map. The sheet metal works business is no longer present immediately south of the Cardinet Candy Company, which now appears to occupy the entire subject property. Secondly, a gasoline and oil service station is present on the property immediately west of the Site, just south of the auto repair shop.
- *1957.* The 1957 Sanborn Fire Insurance Map does not depict any significant changes when compared to the 1952 map except the fact that information for properties to the north of the Site was not available and hence not shown.
- *1958.* The only notable difference between the 1957 Sanborn Fire Insurance Map when compared to the 1958 map is the presence of an auto repair shop south of the laundry business to the south of the Site. Information regarding properties to the north of the Site was not available and hence not visible on this Sanborn map.
- *1961.* The 1961 Sanborn Fire Insurance Map does not depict any significant changes when compared to the 1958 map. Information regarding properties to the north of the Site was not available and hence not visible on this Sanborn map.
- 1967. The 1967 Sanborn Fire Insurance Map exhibited a vacant building on the subject property. Gasoline and oil service stations are present to the north, north-northwest, and west of the Site on the corners of West Grand Avenue and Market Street. A gasoline and oil service station is also present to the east-northeast of the Site on the corner of Isabella Street and West Grand Avenue.
- *1970.* The 1970 Sanborn Fire Insurance Map depicts the subject property as a vacant lot void of any structures. No other significant changes are notable regarding the surrounding properties when compared to the 1967 map.

Several gasoline service stations were evident within close proximity to the Site from the historical Sanborn Fire Insurance Maps. Of notable concern is the gasoline and oil service station located immediately west of the Site and first observed in the 1952 Sanborn Map. It is possible that a former release from this station could be contributing to the impacted groundwater that has been observed in off-site well A-5.

The water line located to the south of the Site is in close proximity to existing off-site well A-5. Off-site contaminant migration could have potentially occurred along this water line. However, the depth of the water line could not be determined from the Sanborn Maps. No evidence of unrecorded/unknown wells within the Site vicinity was discernable from the Sanborn Maps.

## 4.3.3 Topographic Map Review

A topographic map is a color-coded line and symbol representation of natural and selected artificial features plotted to a scale. Topographic maps show the shape, elevation, and development of the terrain in precise detail by using contour lines and color-coded symbols. Historical topographic maps are a historical resource for documenting the prior use of a property and its surrounding area, and due to their frequent availability can be particularly helpful when other standard historical sources (such as city directories, fire insurance maps, or aerial photographs) are not reasonably ascertainable. The following historical topographic maps available were reviewed and commented on below. Copies of these historical topographic maps are provided in Appendix E.

- 1915, 15-minute series, San Francisco, California, scale of 1:62,500. The Site appears vacant in the 1915 USGS topographic map. There are no structural improvements or landmarks attributed to the Site noted on this map. Market Street and West Grand Avenue are visible on the map. Several unidentifiable structures do appear to be present to the northwest of the property. However, due to the scale and resolution of the map, it is not possible to discern the exact type of structures present.
- 1948, 15-minute series, San Francisco, California, scale of 1:50,000. The Site appears within a shaded region of this topographic map, which means that it is located in a densely built-up area. No specific structures are visible on the Site or the immediately adjacent properties. It is possible that residential dwellings or commercial buildings are present on the Site or adjacent properties.
- 1949, 7.5-minute series, Oakland West, California, scale of 1:24,000. The Site is once again depicted within a shaded region of this topographic map, indicating that the Site and surrounding areas are densely built-up. No specific structures are visible on the Site or the immediately adjacent properties.
- 1959, 7.5-minute series, Oakland West, California, scale of 1:24,000. The 1959 topographic map does not depict any significant changes on the subject property or immediate vicinity when compared to the 1949 map.
- 1968, 7.5-minute series, Oakland West, California, scale of 1:24,000. The 1968 topographic map does not depict any significant changes on the subject property or immediate vicinity when compared to the 1959 map.
- 1973, 7.5-minute series, Oakland West, California, scale of 1:24,000. The 1973 topographic map does not depict any significant changes on the subject property or immediate vicinity when compared to the 1968 map.

• 1980, 7.5-minute series, Oakland West, California, scale of 1:24,000. The 1980 topographic map does not depict any significant changes on the subject property or immediate vicinity when compared to the 1973 map.

Unfortunately, due to the dense development on the subject Site and the surrounding properties, review of historical topographic maps did not reveal any data relating to potential off-site sources of contamination or unrecorded/unknown wells within the Site vicinity.

#### 4.3.4 Aerial Photograph Review

Aerial photographs are a valuable historical resource for documenting past land use and can be particularly helpful when other historical sources (such as city directories or fire insurance maps) are not reasonably ascertainable. The EDR aerial photograph print service includes a search of aerial photograph collections flown by public and private agencies for the state of California. The following historical aerial photographs were reviewed and commented on below. Copies of these historical aerial photographs are provided in Appendix F.

- *1930, Pacific Aerial Surveys.* Coverage in the 1930 photograph is fair, encompassing the Site and surrounding area, but unfortunately cloud interference hinders the visibility of several surrounding properties. The scale is very good, given as 1 inch equaling 792 feet. An individual structure (possibly three separate structures) is visible on the northern portion of the Site which appears to be commercial in nature due to the amount of asphalt/concrete surrounding the building. It appears that several residential dwellings are located on the eastern portion of the Site. The southwestern portion of the property appears to be vacant. Residential dwellings are present to the east and southeast of the subject Site. Commercial structures appear to be present to the north, southwest, and south of the Site across West Grand Avenue, Market Street, and 22<sup>nd</sup> Street. The properties to the northwest and west of the Site are not visible due to cloud cover.
- 1947, Pacific Aerial Surveys. Coverage in the 1947 photograph is very good, encompassing the entire Site and surrounding properties. The scale is fair, given as 1 inch equaling 1,667 feet. The same structure(s) is visible on the northern portion of the property as was present in the 1930 photograph. Eight buildings are situated along the central portion of the Site and appear to be commercial structures. The southwestern and eastern portions of the Site still appear to be vacant. Commercial structures appear to the northwest, west, and south of the Site. The structures located immediately west of the Site across Market Street could possibly be associated with a gasoline service station. The majority of the property immediately north of the Site across West Grand Avenue appears vacant. However, commercial structures do appear to be present to the north adjacent to the vacant portion of the property. Residential dwellings are visible further to the southwest, south, southeast, and east of the Site.
- *1959, Pacific Aerial Surveys.* Coverage in the 1959 photograph is very good, encompassing the entire Site and surrounding properties. The scale is very good, given as 1 inch equaling 792 feet. No significant differences can be discerned on the Site and the surrounding properties when comparing the 1959 and 1947 photographs.

- *1969, Pacific Aerial Surveys.* Coverage in the 1969 photograph is very good, encompassing the entire Site and surrounding properties. The scale is good, given as 1 inch equaling 1,000 feet. The structures on the northern and central portions of the Site appear unchanged in this photograph when compared to the 1959 photograph. However, there appears to be some development on the southern and eastern portions of the Site but it is unclear as to what this development consists of. Gasoline service stations are present on the properties to the north across West Grand Avenue, west across Market Street, and east-northeast across West Grand Avenue to the South of Isabella Street. No other significant changes are present within the 1969 photograph.
- 1977, Pacific Aerial Surveys. Coverage in the 1977 photograph is very good, encompassing the entire Site and surrounding properties. The scale is good, given as 1 inch equaling 1,000 feet. A gasoline service station configured in the same manner as the present-day station is located on the subject property. A gasoline service station is also present to the west across Market Street and east-northeast across West Grand Avenue to the south of Isabella Street. The property immediately north of the Site across West Grand Avenue appears vacant. Commercial structures are still present to the south and northwest of the Site. Residential dwellings are visible to the east, southeast, and southwest of the Site.
- *1983, Pacific Aerial Surveys.* Coverage in the 1983 photograph is very good, encompassing the entire Site and surrounding properties. The scale is good, given as 1 inch equaling 1,000 feet. The only significant change in the 1983 photograph when compared to the 1977 photograph is the presence of a gasoline service station directly north of the Site across West Grand Avenue.
- *1992, Pacific Aerial Surveys.* Coverage in the 1993 photograph is very good, encompassing the entire Site and surrounding properties. The scale is good, given as 1 inch equaling 1,000 feet. A gasoline service station is still present on the subject property. The most significant difference between the 1983 and 1992 photographs is the disappearance of the gasoline service station to the east-northeast of the Site across West Grand Avenue to the south of Isabella Street. This property appears vacant in this photograph.
- 2003, Pacific Aerial Surveys. Coverage in the 2003 photograph is fair, encompassing the entire Site but limited in coverage to the south of the Site. The scale is very good, given as 1 inch equaling 500 feet. A gasoline service station is still situated on the subject property. A gasoline service station is also still present on the property to the north of the Site across West Grand Avenue. The property to the west of the Site no longer appears to be an operating gasoline service station but the station building is still present. A large commercial structure occupies the property to the east-northeast of the Site across West Grand Avenue to the south of Isabella Street.

A review of the historical aerial photographs of the Site and surrounding properties confirmed the existence of several gasoline service stations within close proximity to the Site. Of notable concern is the gasoline service station located immediately west of the Site which was also noted in the Sanborn Map review discussed above. It is possible that a former release from this station could be contributing to the impacted groundwater that has been observed in off-site well A-5. No evidence of unrecorded/unknown wells within the Site vicinity was discernable from the aerial photographs.

#### 5.0 SOIL AND GROUND-WATER INVESTIGATION WORK PLAN

#### 5.1 Scope of Work

The January 8, 2009 letter from ACEH requested the completion of an on-site soil investigation within the former source area to evaluate the effectiveness of previous remedial activities and to further define the vertical extent of impacted soil in the former source area. It is proposed that two soil borings (SB-1 and SB-2) be installed directly adjacent to the former UST complex. Proposed boring SB-1 is located between and in close proximity to the historic boring sample A-C collected in May 1991 and historic sidewall sample SW-1 collected in January 1992. Proposed boring SB-2 is located on the opposite side of the former UST area in the vicinity of soil vapor extraction wells AV-2 and SW-7. Historic soil boring/sampling locations and the proposed soil boring locations are presented in Drawing 2. The proposed boring locations may vary due to the potential presence of underground utility conflicts.

The January 8, 2009 ACEH letter also requested the completion of a ground-water investigation to further assess the extent of impacted ground water to the south and southwest from the Site. Increases in petroleum hydrocarbon concentrations in ground water have been observed in off-site well A-5 over the last couple years. It is proposed that four off-site soil borings (SB-3 through SB-6) be installed to collect grab ground-water samples. Proposed soil boring SB-3 is located south of the site across 22<sup>nd</sup> Street. Proposed soil borings SB-4 through SB-6 are located to the west and southwest of off-site well A-5. The locations of off-site soil borings on private property have been chosen to minimize safety concerns such as traffic and potential overhead and underground utility locations. Property access agreements will be submitted to the property owners to facilitate completion of field work. The actual boring locations may vary due to the potential presence of underground utility conflicts.

It is also proposed that a one-time ground-water sampling event be completed on on-site well A-4, which has not been sampled in six years. Sampling of this well will further help in assessing the potential for an off-site source of contamination. Proposed soil boring locations are provided in Drawing 2. Table 3 includes a summary of ground-water monitoring data (2000 through the present) including relative water elevations and laboratory analyses. Table 4 provides a summary of fuel additives analytical data. Table 5 lists historic ground-water flow direction and gradient data from the time period 2000 through the present.

#### 5.2 Project Setup

In accordance with the current contract with Atlantic Richfield Company, Stratus Environmental, Inc. (Stratus) will complete the field work associated with this soil and ground-

water investigation (i.e., drilling, gauging, and sampling). Stratus will obtain any permits necessary prior to the initiation of field work.

Once the field work is complete, Stratus will provide a data package which will include field notes, lithologic boring logs, and laboratory analytical reports from the investigation. BAI will then use this data package to generate a report for submittal to ACEH summarizing the soil and ground-water investigation including data interpretation and recommendations.

#### 5.3 Soil Investigation

The proposed soil borings will be advanced using a direct push drilling technique. Soils will be lithologically logged by a qualified geologist using the Unified Soil Classification System (USCS). The expected depth to static ground water in the vicinity of the proposed borings is estimated to be approximately 7 to 12 feet bgs (based on the range of historic depth to ground-water measurements from wells AR-1 and A-5 located in the general vicinity of the proposed borings). On-site soil borings SB-1 and SB-2 will be advanced to an approximate total depth of 28 feet bgs. Soil samples will be collected at four foot intervals beginning eight feet bgs and continuing to total depth drilled. Off-site soil borings SB-3 through SB-6 will be advanced to a total anticipated depth of approximately 12 feet bgs or until ground water is first encountered. One soil sample from approximately eight feet bgs will be collected from each off-site soil boring. Each sample collected for submittal to a laboratory for analysis will be sealed on both ends with Teflon tape, capped with plastic end caps, labeled, and placed in an ice-filled cooler for preservation. The soil samples will be transported under chain-of-custody protocol to a California State-certified analytical laboratory and analyzed for the following:

- Gasoline range organics (GRO), Diesel Range Organics (DRO), and BTEX via EPA Method 8260B; and
- Fuel additives methyl tert-butyl ether (MTBE), tert-butyl alcohol (TBA), ethyl tert-butyl ether (ETBE), tert-amyl methyl ether (TAME), di-isopropyl ether (DIPE), 1,2-dichloroethane (1,2-DCA), 1,2-dibromoethane (EDB), and ethanol via EPA Method 8260B.

Investigation-derived residuals will be collected in 55-gallon steel drums, stored on the Property, and profiled prior to disposal at an approved Atlantic Richfield Company disposal facility.

#### 5.4 Ground-Water Investigation

Collection of grab ground-water samples from on-site soil borings SB-1 and SB-2 will not be completed as numerous wells are present in the near vicinity. Off-site soil borings SB-3 through SB-6 will be advanced to a sufficient depth to collect grab ground-water samples at first encountered water (anticipated to be 7 to 12 feet bgs). Ground-water samples will be collected with disposable polyethylene tubing with a check valve or peristaltic pump or factory decontaminated disposable bailers. Each sample will be labeled and chilled prior to submittal to a California State-certified analytical laboratory. Ground-water samples will be analyzed for the following:

- GRO and BTEX via EPA Method 8260B; and
- Fuel additives MTBE, TBA, ETBE, TAME, DIPE, 1,2-DCA, EDB, and ethanol via EPA Method 8260B.

As discussed above, a ground-water sample will also be collected from well A-4. The sampling procedure will consist of first measuring the water level and depth to bottom, and checking for the presence of separate phase hydrocarbons (free product) using an electronic oil-water interface probe. If the well does not contain free product, it will be purged of approximately three wetted casing volumes of water (or until dewatered). During purging, temperature, pH, and electrical conductivity will be monitored to document that these parameters have stabilized prior to collecting a sample. After purging, water levels will be allowed to partially (at least 80%) recover. The ground-water sample will be collected using a dedicated disposable bailer, placed into appropriate containers, labeled, logged onto chain-of-custody records, and transported on ice to the laboratory. If the well contains free product, it will not be sampled and free product will be removed according to California Code of Regulations, Title 23, Division 3, Chapter 16, Section 2655, UST Regulations. The sample collected from well A-4 will be analyzed for the same constituents discussed above for ground-water samples soil borings SB-3 through SB-6.

## 5.5 PROPOSED SCHEDULE AND REPORTING

Once ACEH has approved this Soil and Ground-Water Investigation Work Plan, access agreement negotiations will be initiated. With necessary signed access agreements in place, Stratus will be directed to execute field work (both on-site and off-site). If necessary signed access agreements are not in place following 90 days from the approval of this Work Plan by ACEH, assistance with access agreement negotiations from ACEH will be requested. Upon completion of field work and receipt of a data packet from Stratus summarizing field activities including laboratory analytical reports, BAI will complete a soil and ground-water investigation report for submittal to ACEH.

#### 6.0 CLOSURE

The findings presented in this document are based upon: observation of field personnel from previous consultants, the points investigated, and results of laboratory tests performed by various laboratories. Our services were performed in accordance with the generally accepted standard of practice at the time this document was written. No other warranty, expressed on implied was made. This report has been prepared for the exclusive use of Atlantic Richfield Company. It is possible that variations in soil or ground-water conditions could exist beyond points explored in this investigation. Also changes in site conditions could occur in the future due to variations in rainfall, temperature, regional water usage, or other factors.

#### 7.0 REFERENCES

Alameda County Environmental Health, 8 January 2009. Fuel Leak Case No. RO0000072 and Geotracker Global ID T0600100112, ARCO #02169, 889 West Grand Avenue, Oakland, CA 94607. Directive letter to Atlantic Richfield Company.

- 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.*
- Environmental Data Resources, 18 February 2009. The EDR Radius Map Report: 889 West Grand Avenue, Oakland, CA 94607 (Inquiry No. 2423080.2s).
- Environmental Data Resources, 18 February 2009. Certified Sanborn Map Report: 889 West Grand Avenue, Oakland, CA 94608 (Inquiry No. 2423080.3).
- Environmental Data Resources, 18 February 2009. The EDR Historical Topographic Map Report: 889 West Grand Avenue, Oakland, CA 94608 (Inquiry No. 2423080.4).
- GeoStrategies, Inc., 30 June 1992. Well Installation Report, ARCO Service Station No. 2169, 889 West Grand Avenue, Oakland, California.
- GeoStrategies, Inc., 24 November 1992. Continuing Site Assessment/Quarterly Monitoring Report, ARCO Service Station No. 2169, 889 West Grand Avenue, Oakland, California.
- GeoStrategies, Inc., 9 April 1993. *Quarterly Monitoring/Well Installation Report, ARCO Service Station No. 2169, 889 West Grand Avenue, Oakland, California.*
- GeoStrategies, Inc., 6 May 1994. Additional Subsurface Investigation and Remedial Action Plan, ARCO Service Station No. 2169, 889 West Grand Avenue, Oakland, California.
- GeoStrategies, Inc., 27 September 1994. Letter Report Vapor Extraction Start Up and Quarterly Ground-Water Monitoring Second Quarter 1994, ARCO Service Station No. 2169, 889 West Grand Avenue, Oakland, California.
- Gettler-Ryan, Inc., 1 July 1991. Preliminary Tank Replacement Report, ARCO Service Station No. 2169, 889 West Grand Avenue, Oakland, California.
- Pacific Aerial Surveys, 1930. Historical aerial photograph. Scale 1 in=792 ft.
- Pacific Aerial Surveys, 1947. Historical aerial photograph. Scale 1 in=1,667 ft.
- Pacific Aerial Surveys, 1959. Historical aerial photograph. Scale 1 in=800 ft.
- Pacific Aerial Surveys, 1969. Historical aerial photograph. Scale 1 in=1,000 ft.
- Pacific Aerial Surveys, 1977. Historical aerial photograph. Scale 1 in=1,000 ft.
- Pacific Aerial Surveys, 1983. Historical aerial photograph. Scale 1 in=1,000 ft.
- Pacific Aerial Surveys, 1992. Historical aerial photograph. Scale 1 in=1,000 ft.
- Pacific Aerial Surveys, 2003. Historical aerial photograph. Scale 1 in=500 ft.

Roux Associates, 14 July 1992. Underground Storage Tank Removal and Soil Sampling, ARCO Service Station No.2169, 889 West Grand Avenue, Oakland, California.

United States Geological Survey, 1915. 15-Minute Topographic Series, San Francisco, California.

United States Geological Survey, 1948. 15-Minute Topographic Series, San Francisco, California.

United States Geological Survey, 1949. 7.5-Minute Topographic Series, San Francisco, California.

United States Geological Survey, 1959. 7.5-Minute Topographic Series, Oakland West, California.

United States Geological Survey, 1968. 7.5-Minute Topographic Series, Oakland West, California.

United States Geological Survey, 1973. 7.5-Minute Topographic Series, Oakland West, California.

United States Geological Survey, 1980. 7.5-Minute Topographic Series, Oakland West, California.

URS Corporation, 27 January 2003. Second Quarter 2002 Ground-Water Monitoring Report, ARCO Service Station No. 2169, 889 West Grand Avenue, Oakland, California.







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# Table 1: Results of Regulatory Agency List Review

Databases	Total Sites of Concern	Search Distance (miles)	Database Currency
Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS), EPA	1	0.5	10/07/2008
CERCLIS No Further Remedial Action Planned, EPA	1	0.5	12/03/2007
Corrective Action Report, EPA	2	1.0	09/11/2008
Resource Conservation and Recovery Act Information (RCRA Info), EPA	10	0.25	09/10/2008
Formerly Used Defense Sites (FUDS), US Army Corps of Engineers	2	1.0	12/31/2007
US Brownfields, EPA	33	0.5	10/01/2008
Cal-Sites Database, California EPA (Cal-EPA) Department of Toxic Substances Control (DTSC)	4	1.0	08/08/2005
Bond Expenditure Plan, Department of Health Services	1	1.0	01/01/1989
Toxic Pits Cleanup Act Sites, California State Water Resources Control Board (SWRCB)	2	1.0	07/01/1995
"Cortese" Hazardous Waste and Substances Sites List, Cal-EPA/Office of Emergency Information	37	0.5	04/01/2001
Leaking UST Database (LUST), California Regional Water Quality Control Board, Central Valley (RWQCB)	44	0.5	01/06/2009
Facility Inventory Database (FID UST), Cal-EPA	13	0.25	10/31/1994
Spills, Leaks, Investigation & Cleanup Cost Recovery Listing (SLIC), RWQCB	8	0.5	01/06/2009
Hazardous Substance Storage Container (HIST UST), SWRCB	12	0.25	10/15/1990
Statewide Environmental Evaluation and Planning System (SWEEPS) UST Listing, SWRCB	13	0.25	06/01/1994
Proposition 65 Records, SWRCB	17	1.0	10/21/1993
Voluntary Cleanup Program Properties, DTSC	1	0.5	11/25/2008
Dry Cleaning Facilities, DTSC	1	0.25	09/23/2008
State Response Sites, DTSC	5	1.0	11/25/2008
Contaminated Sites (CS)	45	0.5	10/28/2008
EnviroStor Database, DTSC	39	1.0	11/25/2008
Hazardous Waste Facility and Manifest Data (Haznet), DTSC	1	0.25	12/31/2006
Active UST Facilities, SWRCB	1	0.5	01/06/2009
Emissions Inventory Data (EMI), Air Resources Board	1	0.25	12/31/2006
Facility Index System/Facility Identification Initiative Program Summary Report (FINDS), EPA	1	0.25	10/30/2008
Historical Auto Stations	8	0.25	
Historical Cleaners	20	0.25	

Facility Name and Address	<b>Distance and Direction</b>	<b>Regulatory Databases</b> <sup>(a)</sup>
ARCO #02169, 889 West Grand Ave.	0.0 miles	LUST, Cortese, EMI, Haznet, FID UST, CS, SWEEPS, UST, FINDS, HIST UST
Eug Lamoure, 885 22 <sup>nd</sup> St.	0.0 miles	Hist. Cleaners
Mac Auto Repair, 905 W. Grand Ave.	WNW – 0.009 miles	LUST, CS
RC McKay, 2226 Market St.	N - 0.015 miles	Hist. Auto Station
Stanford Laundry, 2134 Market St.	SW – 0.016 miles	Hist. Cleaners
Chevron, 850 W. Grand Ave.	E – 0.018 miles	LUST, CS, FID UST, HIST UST, SWEEPS, Cortese
No D-Lay Dry Cleaners Plant, 2300 Market St.	N – 0.039 miles	Hist. Cleaners
Orton and Libitzky Property, Market St.	NNE – 0.041 miles	CS
P & H Cleaners, 945 W. Grand Ave.	WNW – 0.059 miles	Hist. Cleaners
Union French Laundry, 861 Isabella St.	ENE – 0.061 miles	Hist. Cleaners
Elliott and Elliott Co., 2336 Market St.	NNE – 0.063 miles	FID UST, HIST UST, SWEEPS
Burke Property, 949 Grand Ave.	WNW – 0.064 miles	LUST, CS
Pierre Mautalin, 2129 Myrtle St.	W – 0.068 miles	Hist. Cleaners
Market Wash House, 2347 Market St.	NNE – 0.070 miles	Hist. Cleaners
Peter Madere, 866 Athens Ave.	NNE – 0.079 miles	Hist. Cleaners
Scott Broadway, 2014 Market St.	SSW – 0.092 miles	RCRA Info
Rel's Foods, Inc., 975 W. Grand Ave.	WNW – 0.095 miles	FID UST, HIST UST, SWEEPS
The Clean Cleaners, 800 22 <sup>nd</sup> St.	ESE - 0.108 miles	Hist. Cleaners
Continental Color (aka Santilli and Forester Construction), 2201 West St.	ESE – 0.108 miles	LUST, CS
Oak Center Homes, Inc., 827 20 <sup>th</sup> St.	S – 0.109 miles	RCRA Info
H & H Pressing Shop, 919 24 <sup>th</sup> St.	N – 0.110 miles	Hist. Cleaners
Meaders Cleaners (aka Clean Cleaners), 800 W. Grand Ave.	ESE – 0.115 miles	RCRA Info, LUST, CS, Cortese, Dry Cleaners, Hist. Cleaners
Peter Lascurettes, 2423 Market St.	NNE – 0.117 miles	Hist. Cleaners
Acme French Laundry, 2425 Market St.	NNE – 0.119 miles	Hist. Cleaners
Stanford Laundry, 779 22 <sup>nd</sup> St.	ESE – 0.122 miles	Hist. Cleaners
Rent-A-Trailer System, 2434 Market St.	NNE - 0.125 miles	Hist. Auto Station
Grand Ave Refrigerated Store, 2240 Filbert St.	WNW – 0.125 miles	SLIC
Langendorf United Bakeries, Inc. (aka Good Stuff Food Co.), 1000 W. Grand Ave.	WNW – 0.126 miles	RCRA Info, LUST, CS, HIST UST, SWEEPS, Cortese
Estate of Carlos Sledge (aka Scott Company of California and AT&T Communications), 1919 Market St.	SSW – 0.128 miles	RCRA Info, LUST, CS, FID UST, SWEEPS, Cortese

# Table 2: Documented Facilities within ¼ Mile Radius of Site

Facility Name and Address	<b>Distance and Direction</b>	Regulatory Databases <sup>(a)</sup>
Auto Service Company, 820 Isabella St.	ENE – 0.128 miles	LUST, CS, FID UST, HIST UST, SWEEPS, Cortese
Harrington Olson Photography, 769 22 <sup>nd</sup> St.	ESE – 0.130 miles	RCRA Info, LUST, CS, FID UST, HIST UST, SWEEPS, Cortese
ATC Leasing Corp., 780 W. Grand Ave.	ESE – 0.134 miles	Hist. Auto Station
Fyne Building, 774 W. Grand Ave.	ESE – 0.140 miles	LUST
Morris Unterberger, 2328 Filbert St.	NW – 0.140 miles	Hist. Cleaners
Cal West Periodicals, 2400 Filbert St.	NNW – 0.162 miles	LUST, CS, Cortese
Newman Stamping and Machine Co., 1001 24 <sup>th</sup> St.	NNW – 0.163 miles	RCRA Info
Jos Benkosky, 759 20 <sup>th</sup> St.	SSE – 0.167 miles	Hist. Auto Station
A & H Truck Repair, Inc., 1825 Market St.	SSW – 0.181 miles	FID UST, HIST UST, SWEEPS
Anderson Property, 2139 Linden St.	WNW – 0.184 miles	FID UST, HIST UST, SWEEPS
HC Dabner, 905 18 <sup>th</sup> St.	SSW – 0.193 miles	Hist. Auto Station
Atarco Corp., 2020 Brush St.	SE – 0.197 miles	RCRA Info
Peerless Stages, Inc., 2021 Brush St.	SE – 0.197 miles	FID UST, HIST UST, SWEEPS
Union Laundry Co., 2510 Filbert Ave.	NNW – 0.208 miles	Hist. Cleaners
Chris and George's Auto Repair, 2520 West St.	NE – 0.216 miles	EnvirStor
Clear Vision Window & Janitorial, 1732 Market St.	SSW – 0.224 miles	Hist. Cleaners
Josiah Iverson, 1915 Brush St.	SSE – 0.226 miles	Hist. Auto Station
Emanuel Hein, 727 25 <sup>th</sup> St.	ENE – 0.229 miles	Hist. Auto Station
Mcclymond Senior High School, 2607 Myrtle St.	N – 0.230 miles	RCRA Info, LUST, CS, FID UST, HIST UST, SWEEPS, Cortese
Bekins Moving and Storage, 2227 San Pablo Ave.	ESE – 0.230 miles	FID UST, HIST UST, SWEEPS
Lafayette Cleaners, 1702 Market St.	SSW - 0.240 miles	Hist. Cleaners
Brown's Auto Wheel Service, 2640 Market St.	NNE – 0.242 miles	Hist. Auto Station
EBMUD Adeline Administration, 1100 21 <sup>st</sup> St.	W – 0.248 miles	RCRA Info

# Table 2: Documented Facilities within ¼ Mile Radius of Site

Notes:

(a) Key to abbreviations of regulatory databases provided in preceding Table 1.

				Stat	tion #2169, 88	9 W. Gran	id Ave., Oakla	nd, CA						
				Top of	Bottom of		Water Level			Concentra	tions in (µį	g/L)		
Well and			TOC	Screen	Screen	DTW	Elevation	GRO/			Ethyl-	Total		DO
Sample Date	P/NP	Comments	(feet msl)	(ft bgs)	(ft bgs)	(feet bgs)	(feet msl)	TPHg	Benzene	Toluene	Benzene	Xylenes	MTBE	(mg/L)
A-1														
6/26/2000			14.16	9.00	25.00	10.75	3.41							
7/20/2000			14.16	9.00	25.00	11.01	3.15	3,900	1,100	28	12	46	25	
9/19/2000			14.16	9.00	25.00	11.26	2.90	4,800	2,400	27	20	57	32	
12/26/2000			14.16	9.00	25.00	10.96	3.20	429	104	2.85	12.2	9.91	18.7	
3/20/2001			14.16	9.00	25.00	9.59	4.57	<500	13.9	7.12	13.9	23.2	<25	
6/12/2001			14.16	9.00	25.00	10.83	3.33	140	2.2	< 0.5	8.7	9.2	25	
9/23/2001			14.16	9.00	25.00	11.43	2.73	<50	< 0.50	< 0.50	< 0.50	< 0.50	4.5	
12/28/2001			14.16	9.00	25.00	8.66	5.50	930	250	7.6	21	13	<25	

8.43

9.36

11.12

11.11

10.10

10.18

10.85

11.35

9.65

10.57

11.05

10.50

9.18

9.28

10.70

9.04

10.44

10.34

10.43

8.75

10.30

5.73

4.80

3.04

3.05

4.06

3.98

3.31

2.81

7.10

6.18

5.70

6.25

7.57

7.47

6.05

7.71

6.31

6.41

6.32

8.00

6.45

<50

< 50

170

98

73

400

140

< 50

99

< 50

64

< 50

56

52

420

170

200

270

3,500

2,600

7.400

< 0.5

< 0.5

8.4

2.9

9.3

88

3.2

0.64

18

0.73

1.1

1.4

14

7.8

61

60

18

5.5

350

160

420

< 0.5

< 0.5

< 0.5

0.75

< 0.50

1.6

< 0.50

< 0.50

< 0.50

< 0.50

< 0.50

< 0.50

< 0.50

< 0.50

< 0.50

1.5

< 0.50

< 0.50

21

7.2

28

< 0.5

< 0.5

< 0.5

< 0.5

1

4.6

< 0.50

< 0.50

1.2

< 0.50

< 0.50

< 0.50

< 0.50

0.53

1.8

3.5

0.73

0.95

110

16

190

1.2

< 0.5

1.4

< 0.5

0.53

11

0.56

< 0.50

0.96

< 0.50

< 0.50

< 0.50

0.55

0.52

1.0

5.1

0.60

1.2

68

11

170

<2.5

<2.5

4.9

6.4

2.9

4.9

10

4.2

3.2

1.9

1.7

< 0.50

5.1

2.7

4.2

5.6

3.7

20

1.8

<2.5

<2.5

3/21/2002

4/17/2002

8/14/2002

11/27/2002

2/12/2003

5/22/2003

7/23/2003

11/13/2003

02/16/2004

05/06/2004

09/02/2004

11/29/2004

02/02/2005

05/09/2005

08/11/2005

02/09/2006

8/11/2006

2/7/2007

8/14/2007

2/22/2008

8/12/2008

A-2

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Table 3. Summary of Ground-Water Monitoring Data: Relative Water Elevations and Laboratory Analyses

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Table 3.	. Summary o	of Ground-Water	Monitoring Data:	<b>Relative Water</b>	<b>Elevations and</b>	Laboratory Analyses

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				Top of	Bottom of		Water Level			Concentra	tions in (µ	g/L)			
Well and	DAD	C	TOC	Screen	Screen	DTW	Elevation	GRO/	D	T	Ethyl-	Total	MTDE	DO	
Sample Date	P/NP	Comments	(feet msi)	(It bgs)	(It bgs)	(feet bgs)	(reet msi)	TPHg	Benzene	1 oluene	Benzene	Aylenes	MIBE	(mg/L)	рн
A-2 Cont.															
6/26/2000			14.55	10.00	25.00	11.27	3.28								
7/20/2000			14.55	10.00	25.00	11.52	3.03	<50	< 0.5	< 0.5	< 0.5	<1.0	<3		
9/19/2000			14.55	10.00	25.00	11.63	2.92								
12/26/2000			14.55	10.00	25.00	11.44	3.11	<50	< 0.5	< 0.5	< 0.5	< 0.5	<2.5		
3/20/2001			14.55	10.00	25.00	10.08	4.47								
6/12/2001			14.55	10.00	25.00	11.35	3.20	<50	< 0.5	< 0.5	< 0.5	< 0.5	<2.5		
9/23/2001			14.55	10.00	25.00	11.92	2.63								
12/28/2001			14.55	10.00	25.00	9.31	5.24	<50	<0.5	<0.5	<0.5	<0.5	<2.5		
3/21/2002			14.55	10.00	25.00	9.05	5.50								
4/17/2002			14.55	10.00	25.00	9.88	4.67	52	<0.5	<0.5	<0.5	<0.5	26		
8/14/2002		с	14.55	10.00	25.00	11.62	2.93	<50	< 0.5	< 0.5	< 0.5	1.2	<2.5	3.7	7.2
11/27/2002			14.55	10.00	25.00	11.56	2.99								
2/12/2003		d	14.55	10.00	25.00	10.75	3.80	<50	< 0.50	< 0.50	< 0.50	< 0.50	12	2.9	7.1
5/22/2003			14.55	10.00	25.00	10.72	3.83								
7/23/2003			14.55	10.00	25.00	11.39	3.16	<50	< 0.50	< 0.50	< 0.50	< 0.50	2.6	1.3	6.8
11/13/2003			14.55	10.00	25.00	11.60	2.95								
02/16/2004		i	17.18	10.00	25.00	10.27	6.91								
05/06/2004			17.18	10.00	25.00	11.05	6.13								
09/02/2004	Р		17.18	10.00	25.00	11.45	5.73	130	< 0.50	< 0.50	< 0.50	< 0.50	2.5	5.1	7.4
11/29/2004			17.18	10.00	25.00	11.12	6.06								
02/02/2005			17.18	10.00	25.00	9.73	7.45								
05/09/2005			17.18	10.00	25.00	12.82	4.36								
08/11/2005	Р	m	17.18	10.00	25.00	11.29	5.89	120	< 0.50	< 0.50	< 0.50	< 0.50	1.2	1.6	7.1
02/09/2006			17.18	10.00	25.00	10.43	6.75								
8/11/2006	Р		17.18	10.00	25.00	11.12	6.06	<50	< 0.50	< 0.50	< 0.50	< 0.50	1.4	1.1	7.0
2/7/2007			17.18	10.00	25.00	11.07	6.11								
8/14/2007	NP		17.18	10.00	25.00	11.28	5.90	<50	< 0.50	< 0.50	< 0.50	< 0.50	0.65	0.64	7.57
2/22/2008			17.18	10.00	25.00	9.50	7.68								
8/12/2008	NP		17.18	10.00	25.00	11.28	5.90	64	<0.50	<0.50	<0.50	<0.50	0.96	0.57	9.44
Δ-3															
A-3															

Table 5. Summary of Ground-water Monitoring Data, Relative water Elevations and Laboratory Analysi
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Station	#2169.	889 W.	Grand Ave.	. Oakland.	CA
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				Top of	Bottom of		Water Level			Concentra	tions in (µ	g/L)			
Well and Sample Date	P/NP	Comments	TOC (feet msl)	Screen (ft bgs)	Screen (ft bgs)	DTW (feet bgs)	Elevation (feet msl)	GRO/ TPHg	Benzene	Toluene	Ethyl- Benzene	Total Xylenes	MTBE	DO (mg/L)	рН
A-3 Cont.															
6/26/2000			15.75	9.00	29.50	11.98	3.77								
7/20/2000			15.75	9.00	29.50	12.21	3.54								
9/19/2000			15.75	9.00	29.50	12.50	3.25								
12/26/2000			15.75	9.00	29.50	12.17	3.58	<50	<0.5	<0.5	< 0.5	< 0.5	<2.5		
3/20/2001			15.75	9.00	29.50	10.70	5.05								
6/12/2001			15.75	9.00	29.50	12.09	3.66								
9/23/2001			15.75	9.00	29.50	12.65	3.10								
12/28/2001			15.75	9.00	29.50	9.94	5.81	<50	< 0.5	< 0.5	< 0.5	< 0.5	<2.5		
3/21/2002			15.75	9.00	29.50	9.69	6.06								
4/17/2002			15.75	9.00	29.50	10.61	5.14								
8/14/2002			15.75	9.00	29.50	12.27	3.48								
11/27/2002			15.75	9.00	29.50	12.22	3.53								
2/12/2003		d	15.75	9.00	29.50	11.40	4.35	<50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	1.2	6.9
5/22/2003			15.75	9.00	29.50	11.42	4.33								
7/23/2003			15.75	9.00	29.50	12.00	3.75								
02/16/2004		g, i	18.37	9.00	29.50	10.94	7.43								
05/06/2004			18.37	9.00	29.50	11.75	6.62								
09/02/2004			18.37	9.00	29.50	12.15	6.22								
11/29/2004			18.37	9.00	29.50	11.87	6.50								
02/02/2005			18.37	9.00	29.50	10.42	7.95								
05/09/2005			18.37	9.00	29.50	10.49	7.88								
08/11/2005			18.37	9.00	29.50	12.02	6.35								
02/09/2006			18.37	9.00	29.50	11.27	7.10								
8/11/2006			18.37	9.00	29.50	11.83	6.54								
2/7/2007			18.37	9.00	29.50	11.82	6.55								
8/14/2007			18.37	9.00	29.50	12.06	6.31								
2/22/2008			18.37	9.00	29.50	10.25	8.12								
8/12/2008			18.37	9.00	29.50	12.10	6.27								
A-4															
6/26/2000			15.25	8.00	28.00	10.99	4.26								

Station #2169, 889 W. Grand Ave., Oakland, CA

				Top of	Bottom of		Water Level			Concentra	tions in (µ	g/L)			
Well and			тос	Screen	Screen	DTW	Elevation	GRO/			Ethyl-	Total		DO	
Sample Date	P/NP	Comments	(feet msl)	(ft bgs)	(ft bgs)	(feet bgs)	(feet msl)	TPHg	Benzene	Toluene	Benzene	Xylenes	MTBE	(mg/L)	pН
A-4 Cont.															
7/20/2000			15.25	8.00	28.00	11.16	4.09								
9/19/2000			15.25	8.00	28.00	11.97	3.28								
12/26/2000			15.25	8.00	28.00	11.19	4.06	<50	< 0.5	< 0.5	< 0.5	< 0.5	<2.5		
3/20/2001			15.25	8.00	28.00	9.81	5.44								
6/12/2001			15.25	8.00	28.00	11.12	4.13								
9/23/2001			15.25	8.00	28.00	11.63	3.62								
12/28/2001			15.25	8.00	28.00	8.41	6.84	<50	< 0.5	< 0.5	< 0.5	< 0.5	<2.5		
3/21/2002			15.25	8.00	28.00	8.63	6.62								
4/17/2002			15.25	8.00	28.00	9.68	5.57								
8/14/2002			15.25	8.00	28.00	11.31	3.94								
11/27/2002			15.25	8.00	28.00	11.25	4.00								
2/12/2003		d	15.25	8.00	28.00	10.37	4.88	<50	< 0.50	< 0.50	< 0.50	< 0.50	<0.50	0.9	7.1
5/22/2003			15.25	8.00	28.00	10.42	4.83								
7/23/2003			15.25	8.00	28.00	11.02	4.23								
02/16/2004		g, i	18.01	8.00	28.00	9.65	8.36								
05/06/2004			18.01	8.00	28.00	10.68	7.33								
09/02/2004			18.01	8.00	28.00	10.83	7.18								
11/29/2004			18.01	8.00	28.00	10.50	7.51								
02/02/2005			18.01	8.00	28.00	9.22	8.79								
05/09/2005			18.01	8.00	28.00	8.98	9.03								
08/11/2005			18.01	8.00	28.00	10.99	7.02								
02/09/2006			18.01	8.00	28.00	10.15	7.86								
8/11/2006			18.01	8.00	28.00	10.30	7.71								
2/7/2007			18.01	8.00	28.00	10.63	7.38								
8/14/2007			18.01	8.00	28.00	10.70	7.31								
2/22/2008			18.01	8.00	28.00	8.90	9.11								
8/12/2008			18.01	8.00	28.00	10.60	7.41								
A-5															
6/26/2000			13.51	8.00	30.00	10.04	3.47								
7/20/2000			13.51	8.00	30.00	10.31	3.20	730	140	11	<0.5	8.9	3		

Table 3.	Summary	of Ground-	Water Mon	itoring Data:	Relative	Water Eleva	ations and La	aboratory .	Analyses

Station #2169	. 889 W.	Grand Ave.	Oakland.	CA
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				Top of	Bottom of		Water Level			Concentra	tions in (µ	g/L)			
Well and	DAD		TOC	Screen	Screen	DTW	Elevation	GRO/	n	<b>m</b> 1	Ethyl-	Total	MEDE	DO	
Sample Date	P/NP	Comments	(feet msl)	(ft bgs)	(ft bgs)	(feet bgs)	(feet msl)	TPHg	Benzene	Toluene	Benzene	Xylenes	MTBE	(mg/L)	рН
A-5 Cont.															
9/19/2000			13.51	8.00	30.00	10.55	2.96	160	13	< 0.5	2.8	1.9	<3		
12/26/2000			13.51	8.00	30.00	10.37	3.14	8,120	465	108	659	1,450	<250		
3/20/2001			13.51	8.00	30.00	8.81	4.70	7,990	1,110	473	611	1,580	<250		
6/12/2001			13.51	8.00	30.00	10.13	3.38	450	91	18	35	95	<5.0		
9/23/2001			13.51	8.00	30.00	10.80	2.71	110	20	< 0.5	5	5	2.7		
12/28/2001			13.51	8.00	30.00	8.17	5.34	320	24	2	20	27	5		
3/21/2002			13.51	8.00	30.00	7.78	5.73	2,500	420	85	130	350	31		
4/17/2002			13.51	8.00	30.00	8.68	4.83	1,300	190	36	67	210	<25		
8/14/2002		b	13.51	8.00	30.00	10.41	3.10	840	150	<5.0	68	41	<25	1.4	6.8
11/27/2002		b	13.51	8.00	30.00	10.50	3.01	300	26	2.3	17	6	< 0.5	1.16	7.2
2/12/2003		d	13.51	8.00	30.00	10.81	2.70	<500	74	7	34	45	<5.0	1.0	7.3
5/22/2003			13.51	8.00	30.00	9.46	4.05	500	100	9	28	47	<5.0	1.0	7.6
7/23/2003			13.51	8.00	30.00	10.29	3.22	900	100	5.7	65	57	<5.0	4.5	8.4
11/13/2003	NP	f	13.51	8.00	30.00	11.24	2.27	1,800	210	5.1	190	140	<5.0	4.3	7.32
02/16/2004	NP	h, i	16.09	8.00	30.00	9.45	6.64	680	52	15	50	77	< 0.50	5.0	7.8
05/06/2004	Р		16.09	8.00	30.00	10.28	5.81	1,500	140	13	72	110	<2.5	1.03	6.93
09/02/2004	NP		16.09	8.00	30.00	10.78	5.31	690	69	1.3	42	35	<1.0	1.3	7.1
11/29/2004	NP		16.09	8.00	30.00	10.05	6.04	<5,000	360	<50	190	290	<50	1.0	7.0
02/02/2005	NP		16.09	8.00	30.00	8.37	7.72	220	31	2.3	10	13	< 0.50	0.6	7.4
05/09/2005	NP		16.09	8.00	30.00	8.45	7.64	110	1.7	< 0.50	1.4	1.1	< 0.50	2.5	7.6
08/11/2005	NP		16.09	8.00	30.00	10.11	5.98	<50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.8	7.3
02/09/2006	NP	0	16.09	8.00	30.00	9.02	7.07	<50	0.62	< 0.50	< 0.50	< 0.50	< 0.50	0.89	7.3
8/11/2006	NP		16.09	8.00	30.00	9.77	6.32	400	13	3.4	8.0	58	< 0.50	2.16	7.2
2/7/2007	Р		16.09	8.00	30.00	9.90	6.19	10,000	670	120	1,100	3,100	<10	2.12	7.03
8/14/2007	NP		16.09	8.00	30.00	9.70	6.39	28,000	260	68	3,000	7,800	<10	1.37	7.80
2/22/2008	NP		16.09	8.00	30.00	8.02	8.07	27,000	410	98	2,600	4,400	<50	1.36	7.42
8/12/2008	NP		16.09	8.00	30.00	9.50	6.59	31,000	140	<50	1,800	3,900	<50	0.62	9.70
A-6															
6/26/2000			13.51	8.00	28.50	10.09	3.42								
7/20/2000			13.51	8.00	28.50	10.91	2.60	170	<0.5	<0.5	0.6	2	6		

Table 3.	Summary	of Ground-	Water Mon	itoring Data:	Relative	Water Eleva	ations and La	aboratory .	Analyses

Station #2169, 889 W. Grand Ave., Oakland, CA

				Top of	Bottom of		Water Level			Concentra	tions in (µ	g/L)			
Well and			TOC	Screen	Screen	DTW	Elevation	GRO/			Ethyl-	Total		DO	
Sample Date	P/NP	Comments	(feet msl)	(ft bgs)	(ft bgs)	(feet bgs)	(feet msl)	TPHg	Benzene	Toluene	Benzene	Xylenes	MTBE	(mg/L)	pН
A-6 Cont.															
9/19/2000			13.51	8.00	28.50	11.27	2.24	<50	< 0.5	<0.5	<0.5	<1.0	6		
12/26/2000			13.51	8.00	28.50	10.65	2.86	56.2	< 0.5	<0.5	< 0.5	< 0.5	8.17		
3/20/2001			13.51	8.00	28.50	8.72	4.79	216	< 0.5	< 0.5	< 0.5	1.8	19.9		
6/12/2001			13.51	8.00	28.50	10.80	2.71	80	0.62	<0.5	< 0.5	<0.5	15		
9/23/2001			13.51	8.00	28.50	10.79	2.72	450	1.7	1.9	2.3	3.3	53		
12/28/2001			13.51	8.00	28.50	8.05	5.46	270	0.98	3.5	0.77	1.4	26		
3/21/2002			13.51	8.00	28.50	7.83	5.68	130	< 0.5	< 0.5	< 0.5	< 0.5	19		
4/17/2002			13.51	8.00	28.50	8.73	4.78	<50	< 0.5	<0.5	< 0.5	<0.5	16		
8/14/2002		b	13.51	8.00	28.50	10.43	3.08	980	4.8	2.6	2	4.9	75	1.5	7.1
11/27/2002		b	13.51	8.00	28.50	10.47	3.04	280	< 0.5	0.74	< 0.5	< 0.5	16	0.9	6.9
2/12/2003		d	13.51	8.00	28.50	10.44	3.07	51	< 0.50	< 0.50	< 0.50	< 0.50	9.9	0.8	7.1
5/22/2003			13.51	8.00	28.50	9.43	4.08	<50	< 0.50	< 0.50	< 0.50	< 0.50	11	1.2	8.2
7/23/2003			13.51	8.00	28.50	10.27	3.24	120	< 0.50	< 0.50	< 0.50	< 0.50	14	>20	9.6
11/13/2003	NP	f	13.51	8.00	28.50	11.20	2.31	<50	< 0.50	< 0.50	< 0.50	< 0.50	2.3	6.2	9.0
02/16/2004	NP	h, i	16.10	8.00	28.50	9.76	6.34	50	< 0.50	< 0.50	< 0.50	< 0.50	3.9	6.5	8.3
05/06/2004	Р		16.10	8.00	28.50	10.03	6.07	110	< 0.50	< 0.50	< 0.50	< 0.50	7.1	1.01	7.02
09/02/2004	NP		16.10	8.00	28.50	10.47	5.63	56	< 0.50	< 0.50	< 0.50	< 0.50	4.4	3.2	7.4
11/29/2004	NP		16.10	8.00	28.50	9.99	6.11	<50	< 0.50	< 0.50	< 0.50	< 0.50	2.9	0.92	6.9
02/02/2005	NP		16.10	8.00	28.50	8.46	7.64	150	< 0.50	< 0.50	< 0.50	< 0.50	14	0.5	7.4
05/09/2005	NP		16.10	8.00	28.50	8.55	7.55	93	< 0.50	< 0.50	< 0.50	< 0.50	12	3.0	7.2
08/11/2005	NP		16.10	8.00	28.50	10.13	5.97	780	< 0.50	< 0.50	< 0.50	< 0.50	14	1.0	6.9
02/09/2006	NP	0	16.10	8.00	28.50	9.23	6.87	210	< 0.50	< 0.50	< 0.50	< 0.50	17	1.27	6.8
8/11/2006	NP		16.10	8.00	28.50	9.95	6.15	920	< 0.50	< 0.50	< 0.50	< 0.50	21	1.6	7.0
2/7/2007	Р		16.10	8.00	28.50	9.72	6.38	170	< 0.50	< 0.50	< 0.50	1.4	7.1	2.18	7.24
8/14/2007	NP		16.10	8.00	28.50	9.82	6.28	<50	< 0.50	< 0.50	< 0.50	< 0.50	2.3	1.72	8.22
2/22/2008	NP		16.10	8.00	28.50	8.07	8.03	350	< 0.50	< 0.50	< 0.50	< 0.50	11	0.79	7.48
8/12/2008	NP		16.10	8.00	28.50	9.70	6.40	<50	<0.50	<0.50	<0.50	<0.50	2.4	0.58	9.58
ADR-1															
6/26/2000			13.95	5.00	22.00	10.55	3.40								
7/20/2000			13.95	5.00	22.00	10.85	3.10	180	29	<0.5	0.8	<1.0	22		

Table 3.	Summarv	of Ground-	Water Mon	itoring Data:	Relative	Water Elevatio	ons and Laborato	rv Analyses

Station #2169, 889 W. Grand Ave., Oakland, CA

				Top of	Bottom of		Water Level			Concentra	tions in (µ	g/L)			
Well and			тос	Screen	Screen	DTW	Elevation	GRO/			Ethyl-	Total		DO	
Sample Date	P/NP	Comments	(feet msl)	(ft bgs)	(ft bgs)	(feet bgs)	(feet msl)	TPHg	Benzene	Toluene	Benzene	Xylenes	MTBE	(mg/L)	pН
ADR-1 Cont.															
9/19/2000			13.95	5.00	22.00	11.08	2.87	120	7.4	< 0.5	1.2	<1.0	22		
12/26/2000			13.95	5.00	22.00	10.93	3.02	<50	1.29	<0.5	< 0.5	<0.5	14.7		
3/20/2001			13.95	5.00	22.00	9.32	4.63	225	23.4	< 0.5	8.71	4.13	10.8		
6/12/2001			13.95	5.00	22.00	10.65	3.30	250	23	0.5	13	4.2	7.5		
9/23/2001			13.95	5.00	22.00	11.25	2.70	<50	1.4	<0.5	<0.5	0.57	2.8		
12/28/2001			13.95	5.00	22.00	8.43	5.52	250	16	< 0.5	1.2	4.1	6.8		
3/21/2002			13.95	5.00	22.00	8.27	5.68	<50	<0.5	<0.5	<0.5	<0.5	<2.5		
4/17/2002			13.95	5.00	22.00	9.17	4.78	<50	< 0.5	< 0.5	< 0.5	< 0.5	<2.5		
8/14/2002			13.95	5.00	22.00	11.88	2.07	<50	1.1	< 0.5	< 0.5	< 0.5	<2.5	3.4	6.7
11/27/2002			13.95	5.00	22.00	10.91	3.04	<50	0.54	< 0.5	< 0.5	< 0.5	1.1	1.8	6.8
2/12/2003		d	13.95	5.00	22.00	9.95	4.00	<50	< 0.50	< 0.50	< 0.50	< 0.50	0.73	1.9	7.2
5/22/2003			13.95	5.00	22.00	9.86	4.09	<50	0.96	< 0.50	< 0.50	< 0.50	3.5	1.2	7.3
7/23/2003			13.95	5.00	22.00	10.59	3.36	<50	2.5	< 0.50	0.56	< 0.50	4	>20	9.4
11/13/2003		f	13.95	5.00	22.00	11.15	2.80	<50	0.60	< 0.50	< 0.50	< 0.50	1.6	8.5	8.2
02/16/2004	NP	f, i	16.56	5.00	22.00	9.43	7.13	<50	< 0.50	< 0.50	< 0.50	< 0.50	1.6	5.5	9.6
05/07/2004	NP		16.56	5.00	22.00	10.41	6.15	<500	5.3	<5.0	<5.0	<5.0	<5.0	1.72	7.0
09/02/2004	NP		16.56	5.00	22.00	10.73	5.83	<50	< 0.50	< 0.50	< 0.50	< 0.50	0.84	18.1	8.4
11/29/2004	NP		16.56	5.00	22.00	10.30	6.26	<50	3.0	< 0.50	< 0.50	< 0.50	< 0.50	0.77	6.9
02/02/2005	NP		16.56	5.00	22.00	9.02	7.54	<50	< 0.50	< 0.50	< 0.50	< 0.50	3.4	0.5	7.5
05/09/2005	NP		16.56	5.00	22.00	8.92	7.64	<50	< 0.50	< 0.50	< 0.50	< 0.50	2.6	2.9	7.3
08/11/2005	NP		16.56	5.00	22.00	10.57	5.99	67	2.8	< 0.50	< 0.50	< 0.50	4.0	0.6	6.0
02/09/2006	NP	0	16.56	5.00	22.00	10.05	6.51	<50	< 0.50	< 0.50	< 0.50	< 0.50	2.9	1.09	7.0
8/11/2006	NP		16.56	5.00	22.00	10.20	6.36	76	< 0.50	< 0.50	< 0.50	< 0.50	2.2	1.06	7.1
2/7/2007	NP		16.56	5.00	22.00	10.15	6.41	<50	< 0.50	< 0.50	< 0.50	< 0.50	3.8	0.64	7.33
8/14/2007	NP		16.56	5.00	22.00	10.30	6.26	560	11	1.7	12	2.5	3.6	0.94	7.38
2/22/2008	NP		16.56	5.00	22.00	8.55	8.01	120	< 0.50	< 0.50	< 0.50	< 0.50	3.9	1.52	6.95
8/12/2008	NP		16.56	5.00	22.00	10.20	6.36	1,400	46	7.7	13	19	6.5	0.50	9.32
ADR-2															
6/26/2000			14.64	5.00	22.00	11.22	3.42								
7/20/2000			14.64	5.00	22.00	11.60	3.04	12,000	410	2.5	540	720	23		

Table 3.	Summary	of Ground-	Water Mon	itoring Data:	Relative	Water Eleva	ations and La	aboratory .	Analyses

$\mathcal{O}$	Station #216	9. 889 W.	Grand Ave.	. Oakland.	CA
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				Top of	Bottom of		Water Level	Concentrations in (µg/L)							
Well and Sample Date	P/NP	Comments	TOC (feet msl)	Screen (ft bgs)	Screen (ft bgs)	DTW (feet bos)	Elevation (feet msl)	GRO∕ TPHσ	Benzene	Toluene	Ethyl- Benzene	Total Xylenes	MTRE	DO (mg/L)	nH
ADB 2 Cont	1/11	Comments	(reet hist)	(10 050)	(11 050)	(leet bgb)	(recentist)		Denizene	Toruche	Demzene	nyienes	MIDL	(ing/12)	P
ADK-2 Cont.															
9/19/2000			14.64	5.00	22.00	11.81	2.83	1,400	530	5	680	740	34		
12/26/2000			14.64	5.00	22.00	11.52	3.12	901	26.6	<5.0	21.4	32.5	32.8		
3/20/2001		j	14.64	5.00	22.00	10.10	4.54								
6/12/2001		j	14.64	5.00	22.00	11.41	3.23								
9/23/2001			14.64	5.00	22.00	11.98	2.66	5,300	370	<5.0	550	96	60		
12/28/2001			14.64	5.00	22.00	9.48	5.16	2,600	190	<5.0	160	29	61		
3/21/2002			14.64	5.00	22.00	9.10	5.54	180	6	<0.5	4.5	3.2	15		
4/17/2002			14.64	5.00	22.00	9.93	4.71	730	86	< 0.5	13	< 0.5	<25		
8/14/2002		b	14.64	5.00	22.00	12.09	2.55	1,300	170	<10	100	47	<50	0.9	7.0
11/27/2002		b	14.64	5.00	22.00	11.66	2.98	1,800	240	3.1	120	14	74	0.6	6.9
2/12/2003		d	14.64	5.00	22.00	10.74	3.90	760	120	<5.0	15	5.2	22	1.3	7.1
5/22/2003			14.64	5.00	22.00	10.67	3.97	520	110	<5.0	7.1	<5.0	9.7	0.7	7.6
7/23/2003			14.64	5.00	22.00	11.38	3.26	140	2.8	< 0.50	5	0.98	8.4	>20	9.4
02/16/2004		f, i	17.24	5.00	22.00	10.26	6.98								
05/06/2004			17.24	5.00	22.00	11.05	6.19								
09/02/2004	Р		17.24	5.00	22.00	11.50	5.74	<500	67	<5.0	71	12	5.6	0.7	7.4
11/29/2004			17.24	5.00	22.00	11.20	6.04								
02/02/2005			17.24	5.00	22.00	9.76	7.48								
05/09/2005			17.24	5.00	22.00	11.18	6.06								
08/11/2005	NP		17.24	5.00	22.00	11.30	5.94	1,900	200	<2.5	160	9.6	9.0	0.6	6.6
02/09/2006			17.24	5.00	22.00	9.60	7.64								
8/11/2006	NP		17.24	5.00	22.00	11.13	6.11	570	54	<1.0	2.2	<1.0	4.6	0.8	7.1
2/7/2007			17.24	5.00	22.00	11.08	6.16								
8/14/2007	NP		17.24	5.00	22.00	11.28	5.96	520	5.4	< 0.50	3.6	< 0.50	5.3	0.65	7.37
2/22/2008			17.24	5.00	22.00	9.47	7.77								
8/12/2008	NP		17.24	5.00	22.00	11.27	5.97	560	0.92	<0.50	0.80	<0.50	4.2	0.71	9.40
AR-1															
6/26/2000			15.61	8.00	28.00	11.59	4.02								
7/20/2000			15.61	8.00	28.00	12.06	3.55	<50	<0.5	< 0.5	<0.5	<1.0	6		
9/19/2000			15.61	8.00	28.00	11.89	3.72	<50	< 0.5	< 0.5	< 0.5	<1.0	<3		
Table 3. Summar	v of Ground-Water Monitoring	g Data: Relative Water E	Elevations and Laboratory Analyses												
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Lable of Summar	y of Oround Water Monitoring	Dutui Iterative viater E	nevations and Edboratory rindigses												

Station #2169, 889 W. Grand Ave., Oakland, CA

				Top of	Bottom of		Water Level			Concentra	tions in (µ	g/L)			
Well and			TOC	Screen	Screen	DTW	Elevation	GRO/			Ethyl-	Total		DO	
Sample Date	P/NP	Comments	(feet msl)	(ft bgs)	(ft bgs)	(feet bgs)	(feet msl)	TPHg	Benzene	Toluene	Benzene	Xylenes	MTBE	(mg/L)	pН
AR-1 Cont.															
12/26/2000			15.61	8.00	28.00	11.95	3.66	<50	<0.5	<0.5	< 0.5	< 0.5	<2.5		
03/20/01		а	15.61	8.00	28.00										
6/12/2001			15.61	8.00	28.00	11.87	3.74	<50	< 0.5	< 0.5	< 0.5	< 0.5	17		
9/23/2001			15.61	8.00	28.00	12.42	3.19								
12/28/2001			15.61	8.00	28.00	7.62	7.99	<50	< 0.5	< 0.5	< 0.5	< 0.5	<2.5		
3/21/2002			15.61	8.00	28.00	9.37	6.24								
4/17/2002			15.61	8.00	28.00	10.43	5.18	<50	< 0.5	<0.5	< 0.5	< 0.5	<2.5		
8/14/2002			15.61	8.00	28.00	12.08	3.53	<50	<0.5	<0.5	< 0.5	1.3	<2.5	2.2	7.9
11/27/2002			15.61	8.00	28.00	12.00	3.61								
2/12/2003		d	15.61	8.00	28.00	10.89	4.72	<50	< 0.50	< 0.50	< 0.50	<0.50	< 0.50	1.8	7.9
5/22/2003			15.61	8.00	28.00	11.18	4.43								
7/23/2003			15.61	8.00	28.00	11.73	3.88	<50	< 0.50	< 0.50	< 0.50	<0.50	< 0.50	1.3	7.7
11/13/2003			15.61	8.00	28.00	12.05	3.56								
02/16/2004			18.18	8.00	28.00	10.35	7.83								
05/06/2004			18.18	8.00	28.00	11.60	6.58								
09/02/2004	Р		18.18	8.00	28.00	11.88	6.30	<50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	1.2	7.8
11/29/2004			18.18	8.00	28.00	11.55	6.63								
02/02/2005			18.18	8.00	28.00	9.92	8.26								
05/09/2005			18.18	8.00	28.00	10.19	7.99								
08/11/2005	Р	n	18.18	8.00	28.00	11.80	6.38	<50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	7.4	7.6
02/09/2006			18.18	8.00	28.00	10.49	7.69								
8/11/2006	Р		18.18	8.00	28.00	11.48	6.70	<50	< 0.50	< 0.50	< 0.50	<0.50	< 0.50	5.42	8.1
2/7/2007		e	18.18	8.00	28.00										
8/14/2007		e	18.18	8.00	28.00										
2/22/2008		e	18.18	8.00	28.00										
8/12/2008	NP		18.18	8.00	28.00	11.57	6.61	<50	<0.50	<0.50	<0.50	<0.50	<0.50	0.42	9.51
AR-2															
6/26/2000			15.28	8.50	28.50	11.79	3.49								
7/20/2000			15.28	8.50	28.50	12.07	3.21	<50	<0.5	<0.5	<0.5	<1.0	<3		
9/19/2000			15.28	8.50	28.50	12.08	3.20	<50	< 0.5	< 0.5	< 0.5	<1.0	<3		

				Billi	1011 // 102,002	/ Wi Ofun	u mon, oumu	nu, en							-
				Top of	Bottom of		Water Level			Concentra	tions in (µg	g/L)			
Well and			тос	Screen	Screen	DTW	Elevation	GRO/			Ethyl-	Total		DO	
Sample Date	P/NP	Comments	(feet msl)	(ft bgs)	(ft bgs)	(feet bgs)	(feet msl)	TPHg	Benzene	Toluene	Benzene	Xylenes	MTBE	(mg/L)	pН
AR-2 Cont.															
12/26/2000			15.28	8.50	28.50	11.95	3.33	<50	< 0.5	< 0.5	< 0.5	<0.5	<2.5		
3/20/2001			15.28	8.50	28.50	10.50	4.78								
6/12/2001			15.28	8.50	28.50	11.73	3.55	<50	< 0.5	< 0.5	< 0.5	<0.5	82		
9/23/2001			15.28	8.50	28.50	12.43	2.85								
12/28/2001			15.28	8.50	28.50	8.60	6.68	<50	< 0.5	< 0.5	< 0.5	< 0.5	30		
3/21/2002			15.28	8.50	28.50	9.49	5.79								
4/17/2002			15.28	8.50	28.50	10.37	4.91	<50	< 0.5	< 0.5	< 0.5	< 0.5	3.2		
8/14/2002			15.28	8.50	28.50	12.13	3.15	<50	< 0.5	< 0.5	< 0.5	< 0.5	<2.5	1.4	7.9
11/27/2002			15.28	8.50	28.50	12.08	3.20								
2/12/2003		d	15.28	8.50	28.50	11.15	4.13	<50	< 0.50	< 0.50	< 0.50	<0.50	< 0.50	1.2	7.5
5/22/2003			15.28	8.50	28.50	11.18	4.10								
7/23/2003			15.28	8.50	28.50	11.85	3.43	<50	< 0.50	< 0.50	< 0.50	<0.50	< 0.50	1.3	8.2
11/13/2003		f	15.28	8.50	28.50	11.98	3.30								
02/16/2004		f, i	17.87	8.50	28.50	10.69	7.18								
05/06/2004			17.87	8.50	28.50	11.55	6.32								
09/02/2004		k	17.87	8.50	28.50										
09/20/2004	NP		17.87	8.50	28.50	11.98	5.89	<50	< 0.50	< 0.50	< 0.50	<0.50	< 0.50	2.2	10.4
11/29/2004			17.87	8.50	28.50	12.62	5.25								
02/02/2005			17.87	8.50	28.50	10.12	7.75								
05/09/2005			17.87	8.50	28.50	10.13	7.74								
08/11/2005	NP		17.87	8.50	28.50	11.73	6.14	<50	< 0.50	< 0.50	< 0.50	<0.50	< 0.50	1.8	7.3
02/09/2006			17.87	8.50	28.50	10.03	7.84								
8/11/2006	NP		17.87	8.50	28.50	11.61	6.26	<50	< 0.50	< 0.50	< 0.50	<0.50	< 0.50	2.1	7.4
2/7/2007			17.87	8.50	28.50	11.52	6.35								
8/14/2007	NP		17.87	8.50	28.50	11.75	6.12	<50	< 0.50	< 0.50	< 0.50	<0.50	< 0.50	0.86	7.41
2/22/2008			17.87	8.50	28.50	9.82	8.05								
8/12/2008	NP		17.87	8.50	28.50	11.78	6.09	<50	< 0.50	< 0.50	<0.50	<0.50	<0.50	0.37	9.13

Table 3. Summary of Ground-Water Monitoring Data: Relative Water Elevations and Laboratory Analyses

Station #2169, 889 W. Grand Ave., Oakland, CA

#### ABBREVIATIONS & SYMBOLS:

- -- = Not analyzed/applicable/measured/available
   < = Not detected at or above specified laboratory reporting limit</li>
   DO = Dissolved oxygen
   DTW = Depth to water in ft bgs
   ft bgs = Feet below ground surface
   ft MSL = Feet above mean sea level
   GRO = Gasoline range organics
   GWE = Groundwater elevation measured in ft MSL
   mg/L = Milligrams per liter
   MTBE = Methyl tert-butyl ether analyzed by EPA Method 8021B unless otherwise noted
   NP = Well not purged prior to sampling
   P = Well purged prior to sampling
   TOC = Top of casing measured in ft MSL
   TPH-g = Total petroleum hydrocarbons as gasoline
   μg/L = Micrograms per liter
- $\mu g E = \text{interograms per in}$

#### FOOTNOTES:

- a = Well was covered by stockpiled soil and not accessible.
- b = GRO/TPH-g chromatogram pattern: Gasoline C6-C10.
- c = Primary and confirmation results for xylene varied by greater than 40% RPD. The values may still be useful for their intended purpose.
- d = TPH-g, BTEX, and MTBE analyzed using EPA Method 8260B starting first quarter 2003.
- e = Well inaccessible.
- f = ORC sock in well.
- g = Well removed from annual sampling schedule.
- h = ORC sock removed prior to gauging.
- i = Site re-survey to NAV'88 datum on January 30, 2004.
- j = Sheen in well.
- k = Car parked over well AR-2 during monitoring event on 9/2/04. Well was sampled 9/20/04.
- m = Hydrocarbon result partly due to individual peak(s) in quant. range.
- n = Possible low bias for GRO due to CCV falling outside acceptance criteria.
- o = Initial analysis within holding time but failed QA/QC criteria.

#### NOTES:

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

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

Top and bottom of screen depths for wells ADR-1 and ADR-2 are estimated from EMCON sampling sheets.

Values for DO and pH were obtained through field measurements.

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

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

Well and				Concentratio	ons in (µg/L)				
Sample Date	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	Comments
A-1									
2/12/2003	<40	<20	2.9	< 0.50	< 0.50	< 0.50			
5/22/2003	<100	<20	4.9	< 0.50	< 0.50	< 0.50			
7/23/2003	<100	<20	10	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
11/13/2003	<100	<20	4.2	< 0.50	< 0.50	< 0.50			
02/16/2004	<100	<20	3.2	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
05/06/2004	<100	<20	1.9	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
09/02/2004	<100	<20	1.7	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
11/29/2004	<100	<20	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
02/02/2005	<100	<20	5.1	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	a
05/09/2005	<100	<20	2.7	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
08/11/2005	<100	<20	4.2	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	а
02/09/2006	<300	<20	5.6	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	b
8/11/2006	<300	<20	3.7	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
2/7/2007	<300	<20	20	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
8/14/2007	<300	<20	1.8	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	d (1,2-DCA)
2/22/2008	<1,500	<50	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	
8/12/2008	<1,500	<50	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	
A-2									
2/12/2003	<40	<20	12	< 0.50	< 0.50	< 0.50			
7/23/2003	<100	<20	2.6	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
09/02/2004	<100	<20	2.5	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
08/11/2005	<100	<20	1.2	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	a
8/11/2006	<300	<20	1.4	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
8/14/2007	<300	<20	0.65	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	d (1,2-DCA)
8/12/2008	<300	<10	0.96	<0.50	<0.50	<0.50	<0.50	<0.50	
A-3									
2/12/2003	<40	<20	< 0.50	< 0.50	< 0.50	< 0.50			
A-4									
2/12/2003	<40	<20	< 0.50	< 0.50	< 0.50	< 0.50			

	Station #2169.	889 W.	Grand Ave.	Oakland,	CA
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Well and				Concentratio	ons in (µg/L)				
Sample Date	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	Comments
A-5									
2/12/2003	<400	<200	<5.0	<5.0	<5.0	<5.0			
5/22/2003	<1,000	<200	<5.0	<5.0	<5.0	<5.0			
7/23/2003	<1,000	<200	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	
11/13/2003	<1,000	<200	<5.0	<5.0	<5.0	<5.0			
02/16/2004	<100	<20	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
05/06/2004	<500	<100	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	
09/02/2004	<200	<40	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
11/29/2004	<10,000	<2,000	<50	<50	<50	<50	<50	<50	
02/02/2005	<100	<20	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
05/09/2005	<100	<20	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
08/11/2005	<100	<20	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	a
02/09/2006	<300	<20	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	b
8/11/2006	<300	<20	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
2/7/2007	<6,000	<400	<10	<10	<10	<10	<10	<10	
8/14/2007	<6,000	<400	<10	<10	<10	<10	<10	<10	d (1,2-DCA)
2/22/2008	<30,000	<1,000	<50	<50	<50	<50	<50	<50	
8/12/2008	<30,000	<1,000	<50	<50	<50	<50	<50	<50	
A-6									
2/12/2003	<40	<20	9.9	< 0.50	< 0.50	< 0.50			
5/22/2003	<100	<20	11	< 0.50	< 0.50	0.6			
7/23/2003	<100	<20	14	< 0.50	< 0.50	0.54	< 0.50	< 0.50	
11/13/2003	<100	<20	2.3	< 0.50	< 0.50	< 0.50			
02/16/2004	<100	<20	3.9	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
05/06/2004	<100	<20	7.1	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
09/02/2004	<100	<20	4.4	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
11/29/2004	<100	<20	2.9	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
02/02/2005	<100	<20	14	< 0.50	< 0.50	0.91	< 0.50	< 0.50	a
05/09/2005	<100	<20	12	< 0.50	< 0.50	0.66	< 0.50	< 0.50	
08/11/2005	<100	<20	14	< 0.50	< 0.50	2.2	< 0.50	< 0.50	a
02/09/2006	<300	<20	17	< 0.50	< 0.50	1.2	< 0.50	< 0.50	b
8/11/2006	<300	<20	21	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	

Dunion nator, 007 in Orana mich Camana, Cr.	Station #2169.	, 889 W.	Grand Ave.,	Oakland,	CA
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Well and				Concentratio	ons in (µg/L)				
Sample Date	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	Comments
A-6 Cont.									
2/7/2007	<300	<20	7.1	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
8/14/2007	<300	<20	2.3	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	d (1,2-DCA)
2/22/2008	<300	<10	11	< 0.50	< 0.50	0.89	< 0.50	< 0.50	
8/12/2008	<300	<10	2.4	<0.50	<0.50	<0.50	<0.50	<0.50	
ADR-1									
2/12/2003	<40	<20	0.73	< 0.50	< 0.50	< 0.50			
5/22/2003	<100	<20	3.5	< 0.50	< 0.50	< 0.50			
7/23/2003	<100	<20	4	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
11/13/2003	<100	<20	1.6	< 0.50	< 0.50	< 0.50			
02/16/2004	<100	<20	1.6	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
05/07/2004	<1,000	<200	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	
09/02/2004	<100	<20	0.84	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
11/29/2004	<100	<20	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
02/02/2005	<100	<20	3.4	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	a
05/09/2005	<100	<20	2.6	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
08/11/2005	<100	<20	4.0	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	a
02/09/2006	<300	<20	2.9	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	b
8/11/2006	<300	<20	2.2	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
2/7/2007	<300	<20	3.8	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
8/14/2007	<300	<20	3.6	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	d (1,2-DCA)
2/22/2008	<300	<10	3.9	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
8/12/2008	<600	<20	6.5	<1.0	<1.0	<1.0	<1.0	<1.0	
ADR-2									
2/12/2003	<400	<200	22	<5.0	<5.0	<5.0			
5/22/2003	<1,000	<200	9.7	<5.0	<5.0	<5.0			
7/23/2003	<100	<20	8.4	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
09/02/2004	<1,000	<200	5.6	<5.0	<5.0	<5.0	<5.0	<5.0	
08/11/2005	<500	<100	9.0	<2.5	<2.5	<2.5	<2.5	<2.5	a
8/11/2006	<600	<40	4.6	<1.0	<1.0	<1.0	<1.0	<1.0	a, c
8/14/2007	<300	<20	5.3	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	d (1,2-DCA)

Well and				Concentrati	ons in (µg/L)				
Sample Date	Ethanol	ТВА	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	Comments
ADR-2 Cont.									
8/12/2008	<300	<10	4.2	<0.50	<0.50	<0.50	<0.50	<0.50	
AR-1									
2/12/2003	<40	<20	< 0.50	< 0.50	< 0.50	< 0.50			
7/23/2003	<100	<20	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
09/02/2004	<100	<20	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
08/11/2005	<100	<20	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
8/11/2006	<300	<20	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
8/12/2008	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
AR-2									
2/12/2003	<40	<20	< 0.50	< 0.50	< 0.50	< 0.50			
7/23/2003	<100	<20	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
09/20/2004	<100	<20	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
08/11/2005	<100	<20	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	a
8/11/2006	<300	<20	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	
8/14/2007	<300	<20	<0.50	< 0.50	< 0.50	<0.50	<0.50	<0.50	d (1,2-DCA)
8/12/2008	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	

## Station #2169, 889 W. Grand Ave., Oakland, CA

#### ABBREVIATIONS & SYMBOLS:

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

#### FOOTNOTES:

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

b = Initial analysis within holding time but failed QA/QC criteria.

c = Possible high bias due to CCV failing outside acceptance criteria for TBA.

d = CCV recovery above limit; analyte not detected.

#### NOTES:

All volatile organic compounds analyzed using EPA Method 8260B.

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

Date Sampled	Approximate Flow Direction	Approximate Hydraulic Gradient
7/20/2000	Northwest	0.004
9/19/2000	West-Northwest	0.003
12/26/2000	Northwest	0.004
3/20/2001	Northwest	0.003
6/12/2001	Northwest	0.004
9/23/2001	Northwest	0.004
12/28/2001	Variable	Variable
3/21/2002	Northwest	0.004
4/17/2002	Northwest	0.003
8/14/2002	West	0.003
11/27/2002	West	0.003
2/12/2003	South	0.005
5/22/2003	West to Northwest	0.002 to 0.003
7/23/2003	Southwest to Northwest	0.005 to 0.004
11/13/2003	Southwest	0.009
2/16/2004	Southwest	0.009
5/6/2004	Southwest	0.004
9/2/2004	West-Northwest	0.005
11/29/2004	West to Southwest	0.005 to 0.006
2/2/2005	Northwest to Southwest	0.005
5/9/2005	Northwest	0.01
8/11/2005	West	0.004
2/9/2006	West	0.003
8/11/2006	Northwest*	0.005
2/7/2007	North-Northwest*	0.004
8/14/2007	Northwest	0.005
2/22/2008	North-Northwest	0.005
8/12/2008	North-Northwest	0.005

## Table 5. Historical Ground-Water Flow Direction and GradientStation #2169, 889 W. Grand Ave., Oakland, CA

\* = Base map provided to Broadbent & Associates, Inc. incorrectly oriented north arrow 47° east of true north. Flow directions from Broadbent & Associates, Inc. reports for Third Quarter 2006 and First Quarter 2007 corrected in table above.

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

APPENDIX A.

RECENT REGULATORY CORRESPONDENCE

ALAMEDA COUNTY HEALTH CARE SERVICES



RECEIVED

JAN 1 4 2009

DAVID J. KEARS, Agency Director

AGENCY

ENVIRONMENTAL HEALTH SERVICES ENVIRONMENTAL PROTECTION 1131 Harbor Bay Parkway, Suite 250 Alameda, CA 94502-6577 (510) 567-6700 FAX (510) 337-9335

RY

January 8, 2009

Paul Supple Atlantic Richfield Company (A BP Affiliated Company) P.O. Box 1257 San Ramon, CA 94583

Subject: Fuel Leak Case No. RO0000072 and GeoTracker Global ID T0600100112, ARCO #02169, 889 W Grand Avenue, Oakland, CA 94608

Dear Mr. Supple:

Alameda County Environmental Health (ACEH) staff has reviewed the case file for the abovereferenced site including the recently submitted document entitled, "Third Quarter 2008 Semi-Annual Ground-Water Monitoring Report," dated October 15, 2008, which was prepared by Broadbent & Associates, Inc. (BAI) for the subject site. Following the UST removals in January 1992, several site investigations were conducted at the site including active remediation consisting of a soil vapor extraction system (SVE), which operated from June 1994 to December 2001. However, potential data gaps identified below still remain unaddressed at the site.

ACEH requests that you address the following technical comments and send us the technical work plan and reports requested below.

## **TECHNICAL COMMENTS**

 Post Remediation Verification Sampling – In May 1991, four borings were installed to assess subsurface conditions prior to replacing the four USTs. Total petroleum hydrocarbons (TPH) as gasoline (g) and benzene were detected as high as 1,900 mg/kg and 18 mg/kg, respectively, in a soil sample collected from boring A-C at a depth of 11.0 feet bgs indicating that an unauthorized release had occurred. In January 1992, four USTs were removed from one common excavation at the site. TPH-g, TPH-diesel (d) and benzene were detected at maximum concentrations of 1,200 mg/kg, 620 mg/kg, and 6.8 mg/kg, respectively, in sidewall soil sample SW-1 collected from a depth of 12 feet bgs, verifying that the soil has been impacted with petroleum hydrocarbons.

An SVE system was installed at the site and operated from June 1994 through December 2001. Approximately 3191 lbs (532 gallons) of TPH-g and 96 lbs (13 gallons) of benzene were recovered from the site. Although an SVE system operated at the site, the effectiveness of the system is uncertain since post remediation verification sampling does not appear to have been conducted. Additionally, based on the soil sample analytical results, the vertical extent of contamination in the former source areas appears uncharacterized at this time. Please propose a scope of work to address the above-mentioned concerns and submit a work plan due by the date specified below.

Mr. Supple RO0000072 January 8, 2009, Page 2

- 2. Soil and Groundwater Characterization Increasingly elevated concentrations of TPH-g have been detected in off-site groundwater monitoring well A-5. During the first quarter 2007, TPH-g was detected in monitoring well A-5 at a concentration of 10,000 µg/L and during the third quarter of 2008, TPH-g concentrations have increased to 31,000 µg/L. Groundwater flow direction has varied at the site from northwest to south and depth to groundwater in the monitoring well has ranged from 7.78 feet 11.24 feet bgs. Based on the varying groundwater flow direction at the site, monitoring well A-5 can be cross to down-gradient from the site and the extent of the groundwater plume appears uncharacterized due to the elevated concentrations of TPH-g detected in monitoring well A-5. Please propose a scope of work to address the above-mentioned concerns and submit a work due by the date specified below.
- 3. Preferential Pathway Study As mentioned above, depth to groundwater at the site is relatively shallow and has ranged between 7.62 feet 12.82 feet bgs and TPH-g contamination in monitoring well A-5 located cross to down-gradient has been increasing. Since groundwater is relatively shallow at the site, a preferential pathway evaluation appears prudent. The purpose of the preferential pathway study is to locate potential migration pathways and conduits and determine the probability of the NAPL and/or plume encountering preferential pathways and conduits that could spread contamination. We request that you perform a preferential pathway study that details the potential migration pathways and potential conduits (wells, utilities, pipelines, etc.) for vertical and lateral migration that may be present in the vicinity of the site.

Discuss your analysis and interpretation of the results of the preferential pathway study (including the detailed well survey and utility survey requested below) and report your results in the work plan requested below. The results of your study shall contain all information required by California Code of Regulations, Title 23, Division 3, Chapter 16, §2654(b).

a. Utility Survey

An evaluation of all utility lines and trenches (including sewers, storm drains, pipelines, trench backfill, etc.) within and near the site and plume area(s) is required as part of your study. Please include maps and cross-sections illustrating the location and depth of all utility lines and trenches within and near the site and plume areas(s) as part of your study.

b. Well Survey

The preferential pathway study shall include a survey of all wells (monitoring and production wells: active, inactive, standby, decommissioned (sealed with concrete), abandoned (improperly decommissioned or lost); and dewatering, drainage, and cathodic protection wells) within a ¼ mile radius of the subject site. As part of your well survey, please perform a background study of the historical land uses of the site and properties in the vicinity of the site. Use the results of your background study to determine the existence of unrecorded/unknown (abandoned) wells, which can act as contaminant migration pathways at or from your site. Please review and submit copies of historical maps, such as Sanborn maps, aerial photographs, etc., when conducting the background study.

 Groundwater Contaminant Plume Monitoring – Semi-annual groundwater monitoring is currently conducted at the site. Please include a figure with a rose diagram in future semiannual reports so that the varying groundwater flow directions can be easily discerned.

## TECHNICAL REPORT REQUEST

Please submit technical reports to ACEH (Attention: Paresh Khatri), according to the following schedule:

- March 9, 2009 Soil and Water Investigation Work Plan (Including Preferential Pathway Evaluation)
- April 30, 2009 Semi-annual Monitoring Report (1<sup>st</sup> Quarter 2009)
- October 30, 2009 Semi-annual Monitoring Report (3<sup>rd</sup> Quarter 2009)

These reports are being requested pursuant to California Health and Safety Code Section 25296.10. 23 CCR Sections 2652 through 2654, and 2721 through 2728 outline the responsibilities of a responsible party in response to an unauthorized release from a petroleum UST system, and require your compliance with this request.

## ELECTRONIC SUBMITTAL OF REPORTS

ACEH's Environmental Cleanup Oversight Programs (LOP and SLIC) require submission of reports in electronic form. The electronic copy replaces paper copies and is expected to be used for all public information requests, regulatory review, and compliance/enforcement activities. Instructions for submission of electronic documents to the Alameda County Environmental Cleanup Oversight Program FTP site are provided on the attached "Electronic Report Upload Instructions." Submission of reports to the Alameda County FTP site is an addition to existing requirements for electronic submittal of information to the State Water Resources Control Board (SWRCB) GeoTracker website. In September 2004, the SWRCB adopted regulations that require electronic submittal of information for all groundwater cleanup programs. For several years, responsible parties for cleanup of leaks from underground storage tanks (USTs) have been required to submit groundwater analytical data, surveyed locations of monitoring wells, and other data to the GeoTracker database over the Internet. Beginning July 1, 2005, these same reporting requirements were added to Spills, Leaks, Investigations, and Cleanup (SLIC) sites. Beginning July 1, 2005, electronic submittal of a complete copy of all reports for all sites is required in GeoTracker (in PDF format). Please visit the SWRCB website for more information on these requirements (http://www.swrcb.ca.gov/ust/electronic\_submittal/report\_rqmts.shtml.

## PERJURY STATEMENT

All work plans, technical reports, or technical documents submitted to ACEH must be accompanied by a cover letter from the responsible party that states, at a minimum, the following: "I declare, under penalty of perjury, that the information and/or recommendations contained in the attached document or report is true and correct to the best of my knowledge." This letter must be signed by an officer or legally authorized representative of your company. Please include a cover

Mr. Supple RO0000072 January 8, 2009, Page 4

letter satisfying these requirements with all future reports and technical documents submitted for this fuel leak case.

## PROFESSIONAL CERTIFICATION & CONCLUSIONS/RECOMMENDATIONS

The California Business and Professions Code (Sections 6735, 6835, and 7835.1) requires that work plans and technical or implementation reports containing geologic or engineering evaluations and/or judgments be performed under the direction of an appropriately registered or certified professional. For your submittal to be considered a valid technical report, you are to present site specific data, data interpretations, and recommendations prepared by an appropriately licensed professional and include the professional registration stamp, signature, and statement of professional certification. Please ensure all that all technical reports submitted for this fuel leak case meet this requirement.

## UNDERGROUND STORAGE TANK CLEANUP FUND

Please note that delays in investigation, later reports, or enforcement actions may result in your becoming ineligible to receive grant money from the state's Underground Storage Tank Cleanup Fund (Senate Bill 2004) to reimburse you for the cost of cleanup.

### **AGENCY OVERSIGHT**

If it appears as though significant delays are occurring or reports are not submitted as requested, we will consider referring your case to the Regional Board or other appropriate agency, including the County District Attorney, for possible enforcement actions. California Health and Safety Code, Section 25299.76 authorizes enforcement including administrative action or monetary penalties of up to \$10,000 per day for each day of violation.

If you have any questions, please call me at (510) 777-2478 or send me an electronic mail message at paresh.khatri@acgov.org.

Sincerely,

Paresh C. Khatri Hazardous Materials Specialist

Donna L. Drogos, PE Supervising Hazardous Materials Specialist

Enclosure: ACEH Electronic Report Upload (ftp) Instructions

cc: Tom Venus, Broadbent & Associates, Inc., 1324 Mangrove Ave., Ste 212, Chico, CA 95926 Leroy Griffin, Oakland Fire Department, 250 Frank H. Ogawa Plaza, Ste. 3341, Oakland, CA 94612-2032

Donna Drogos, ACEH (sent via electronic mail) Paresh Khatri, ACEH (sent via electronic mail) File

## **Matt Herrick**

From:	Khatri, Paresh, Env. Health [paresh.khatri@acgov.org]
Sent:	Wednesday, March 04, 2009 8:05 AM
То:	'Matt Herrick'
Cc:	'Rob Miller'; 'Supple, Paul V'; 'Jason Duda'
Subject:	RE: Extension Request Technical Report Station #2169 (ACEH Case #RO000072)

Matt,

Based on a review of your e-mail, your submittal extension request appears reasonable.

Thanks,

Paresh C. Khatri Hazardous Materials Specialist Alameda County Environmental Health Local Oversight Program 1131 Harbor Bay Parkway Alameda, CA 94502-6577

Phone: (510) 777-2478 Fax: (510) 337-9335

E-mail: Paresh.Khatrl@acgov.org

http://www.acgov.org/aceh/lop/lop.htm

<u>Confidentiality Notice</u>: This e-mail message, including any attachments, is for the sole use of intended recipient(s) and may contain confidential and protected information. Any unauthorized review, use, disclosure, or distribution is prohibited. If you are not the intended recipient, please contact the sender by reply e-mail and destroy all copies of the original message.

From: Matt Herrick [mailto:mherrick@broadbentinc.com]
Sent: Tuesday, March 03, 2009 2:42 PM
To: Khatri, Paresh, Env. Health
Cc: 'Rob Miller'; 'Supple, Paul V'; 'Jason Duda'
Subject: Extension Request Technical Report Station #2169 (ACEH Case #R0000072)

Paresh,

The ACEH January 8, 2009 letter requested submittal of a Soil and Ground-water Investigation Work Plan and Preferential Pathway Evaluation (PPE) by March 9, 2009 for Atlantic Richfield Company Station #2169 located at 889 West Grand Avenue, Oakland, California. The Work Plan is for the most part complete; however, various components of the PPE are still in the works. An update on the current status of the PPE is as follows with outstanding components in bold type:

Well Survey

- Department of Water Resources Received and reviewed disc for ½ mile well search.
- Environmental Data Resources Received data package including historic topo maps, sanborn maps, and environmental records search.
- Pacific Aerial Surveys Received list of available aerial photos. Will be placing an order of the applicable images in the near future. A visit to their office to review photos may also be completed prior to purchase.

Utility Survey

- East Bay MUD Made contact and received utility maps on CD.
- Sprint Made contact and received letter stating no conflict with Station #2169.
- PG&E Made contact and awaiting utility maps via standard mail.
- City of Oakland Made contact and need to pick up utility maps from their office.
- AT&T Made contact and need to setup an account prior and pay fees before receiving utility maps.
- Level 3 Communications Made contact. They require an on-site meeting (plus a fee) in order to provide us with the needed information. Will not release utility maps.
- Time Warner Still need to make contact. Awaiting return phone call.
- Comcast Still need to make contact.
- MCI Still need to make contact.

Once all components of the PPE are obtained the necessary map(s) will be generated and an analysis and interpretation of the date will be completed. Additional time beyond the current deadline of March 9, 2009 is needed to complete these tasks. It is therefore requested that the deadline for submittal of the Work Plan and PPE be revised to April 6, 2009.

Please provide a response to this email and our request for an extension. If you should have questions or require additional information, please do not hesitate to contact me directly.

Thanks

Matt Herrick Senior Hydrogeologist Broadbent & Associates, Inc. (775) 322-7969 APPENDIX B.

HISTORIC SOIL AND GROUND-WATER DATA



#### TABLE 1

*********	SOIL ANALYSES DATA											
SAHPLE NO	SAMPLE DATE	ANALYZED DATE	TPH-G (PPM)	трн-d (ррм)	BENZENE (PPM)	TOLUEXE (PPM)	ETHYLBENZENE (PPM)	XYLENES (PPM)				
A-A-4.5	 14-May-91	22-May-91	<1.0	<1.0	<0.0050	<0.0050	<0.0050	<0.0050				
A-A-9.5	14-May-91	22-May-91	69	31	1.0	3.8	1.6	7.8				
A-B-5.5	14-May-91	22-May-91	250	31	2.1	6.2	4.5	30				
A-B-10.5	14-May-91	22-May-91	<b>9</b> 60	280	16	61	19	110				
A-C-6.0	14-May-91	22-May-91	<1.0	<1.0	<0.005	<0.005	<0.005	<0.0050				
A-C-11.0	_14-May-91	22-May-91	1,900	300	18	64	44	220				
A-0-6.0	14-May-91	22-May-91	2.3	1.6	0.10	0.019	0.11	0.44				
A-0-9.5	14-Nay-91	22-May-91	10	1.6	0.27	0.021	0.47	1.7				
A-E-6.5	_14-May-91	22-May-91	<1.0	<1.0	0.16	<0.0050	0.0070	<0.0050				
A-E-10.5	14-May-91	22-May-91	330	130	3.9	17	6.5	39				

.

TPH-G = Total Petroleum Hydrocarbons calculated as Gasoline TPH-D = Total Petroleum Hydrocarbons calculated as Diesel PPM = Parts Per Million

Note: 1. All data shown as <x are reported as ND (none detected).

WEST GRAND AVENUE	
PLANTER PLA	
PLANTER SW-6 PLANTER 22ND STREET	
EXPLANATION:         EXCAVATED AREA         Image: Designation of soll sample         Image: Designation of line trench soil sample.         SOURCE:         MAP MODIFIED FROM PLATE 1 10/91 PROVIDED BY GEOSTRATEGIES INC.	
COMPILED BY: P.S. PREPARED FOR ARCO PRODUCTS COMPANY	FIGURE
ROUX ASSOCIATES       PROJECT MNCR. P.S. TITLE:       LOCATION OF FORMER TANK CAVITY         ROUX ASSOCIATES       OG/92       AND PRODUCT LINE         SCALE:       AS SHOWN       TRENCH SOIL SAMPLES         PROJECT NO       A133W01       ARCO FACILITY NO. 2169	3

Sample		Depth	<b></b>			BTEX D	istinction (1)	
Designation	Date	(feet bgs)	TPH-G(1)	TPH-D(1)	Benzene	Toluene	Ethylbenzene	Xylenes
Former Tai	<u>nk Cavity</u>							
SW-1	1/16/92	12	1200	620	6.8	47	22	140
SW-2	1/16/92	12	81	19	0.98	2.9	1.9	9.1
SW-3	1/16/92	12	200	7.1	3.0	10	4.6	25
SW-4	1/16/92	12	170	3.4	3.2	11	3.9	22
SW-5	1/16/92	12	3.0	ND	1.1	0.022	0.21	0.11
SW-6	1/16/92	12	100	2.8	0.88	3.9	2.1	15
SW-7	1/16/92	12	420	10	4.2	16	8.0	53
SW-8	1/16/92	12	180	4.4	2.5	2.7	3.7	23
SW-9	1/16/92	12	200	17	2	4.5	4.7	29
Product Lin	e Trenche	s	$\frown$					
LINE-1	2/19/92	3	( 120 )	NA	0.36	0.81	0.56	3.8
LINE-2	2/19/92	3	4.7	NA	0.32	0.097	0.088	0.18
LINE-3	2/19/92	4	ND	NA	ND	ND	ND	ND
LINE-4	2/19/92	3	( <u>1</u> 40)	<b>450</b>	2.2	0.28	2.2	5.1
LINE-5	2/19/92	3	2.8	6.0	0,19	0.005	0.024	0.088
LINE-4A	3/3/92	7	4.6	54	0.054	0.059	0.14	0.64

# TABLE 1: Summary of Soil Analyses: Former Tank Cavity and Product Line Trenches ARCO Facility No. 2169, Oakland, California

## **FOOTNOTES**

(1) = Concentrations reported in mg/kg (ppm)

TPH-G = Total Petroleum Fuel Hydrocarbons As Low/Medium Boiling Point Hydrocarbons (USEPA Method 8015)

TPH-D = Total Petroleum Fuel Hydrocarbons As High Boiling Point Hydrocarbons (USEPA Method 8015)

BTEX Distinction (USEPA Method 8020)

NA = Not Analyzed

ND = None Detected (for detection limits see laboratory reports in Appendix B)

bgs = Below ground surface

ROUX ASSOCIATES



## SOIL ANALYSES DATA

SAMPLE SAMPLE ANALYZED TPH-G BENZENE TOLUENE ETHYLBENZENE XYLENES TPH-D łD DATE DATE (PPM) (PPM) (PPM) (PPM) (PPH) (PPM) A-1-4.5 16-Mar-92 01-Apr-92 <1.0 0.024 0.014 0.009 0.034 <1.0 A-1-10.0 16-Mar-92 01-Apr-92 2.2 0.13 0.051 0.023 0.71 <1.0 A-2-4.0 16-Mar-92 01-Apr-92 <1.0 <0.0050 0.0050 <0.0050 <0.0050 14 A-2-10.0 16-Mar-92 01-Apr-92 <1.0 <0.0050 <0.0050 <0.0050 <0.0050 <1.0 A-3-10.0 17-Mar-92 01-Apr-92 <1.0 <0.0050 <0.0050 <0.0050 <0.0050 <1.0 A-4-10.0 17-Mar-92 01-Apr-92 <1.0 <0.0050 <0.0050 <0.0050 <0.0050 <1.0

TPH-G = Total petroleum hydrocarbons calculated as gasoline TPH-D = Total petroleum hydrocarbons calculated as diesel PPM = Parts Per Killion

NOTES: 1. All data shown as <X are reported as ND (None Detected)

2. The last number of the sample I.D. corresponds to the depth the sample was taken.

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SOIL ANALYSES DATA

SAMPLE I.D.	SAMPLE Date	ANALYZED DATE	TPX-G (PPM)	BENZENE (PPM)	TOLUENE (PPM)	ETHYLBENZENE (PPM)	XYLENES (PPM)	TPH-D (PPN)
AV-1-6.5	08-Jun-92	11-Jun-92	<1.0	0.15	0.019	0.014	0.062	<1.0
AV-1-12	08-Jun-92	11-Jun-92	12	0.81	1.3	0.27	1.5	<1.0
AV-2.6.5	08-Jun-92	11-Jun-92	1.8	0.31	Q, 15	0.036	0.21	<1.0
AV-2-11.5	08-jun-92	11-Jun-92	1500	21	84	27	170	<1.0
AV-3-6.5	08-Jun-92	11-Jun-92	<1.0	0.037	0.0050	0.018	0.028	<1.0
AV-3-11.5	08-jun-92	11-Jun-92	110	2.4	4.6	1.9	10	<1.0

TPH-G = Total Petroleum Hydrocarbons calculated as Gasoline TPH-D = Total Petroleum Hydrocarbons calculated as Diesel

PPM = Parts Per Million

Notes: 1. All data shown as <x are reported as ND (none detected).

2. The last number of the sample 1.0. corresponds to the depth the sample was collected.



#### TABLE 1

Sample I.D.	Sample Date	Analyzed Date	TPH-G (PPM)	Benzene (PPM)	Toluene (PPM)	Ethγlbenzene (PPM)	Xylenes (PPM)
A-5-6.5	04-Feb-93	08-Feb-93	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
A-5-9,5	04-Feb-93	08-Feb-93	17	0.21	0,076	0.28	0.54
A-6-6.5	04-Feb-93	08-Feb-93	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
A-6-9.0	04-Feb-93	08-Feb-93	<1.0	<0.0050	<0.0050	<0.0050	<0,005

## SOIL ANALYSES DATA

TPH-G = Total Petroleum Hydrocarbons calculated as Gasoline PPM = Parts Per Million

- Notes: 1. All data shown as <x are reported as ND (none detected).
  - 2. The last number of the sample I.D. corresponds to the depth the sample was collected.
    - 3. Halogenated volatile organic analyses performed on samples A-5-6.5 and A-5-.9.5 were reported as ND.



### TABLE 1 SOIL ANALYSES DATA ARCO Station 2169 Oakland, California

SAMPLE I.D.	SAMPLE DATE	ANALYZED DATE	TPH-G (PPM)	BENZENE (PPM)	TOLUENE · (PPM)	ETHYLBENZ. (PPM)	XYLENES	TPH-D (PPM)
A-A-4.5	14-May-91	22-May-91	<1.0	< 0.0050	< 0.0050	< 0.0050	`<0.0050	<1.0
A-A-9.5	14-May-91	22-May-91	69	1.0	3.8	1.6	7.8	31
A-8-5.5	14-May-91	22-May-91	250	2.1	6.2	4,5	30	31
A-B-10.5	14-May-91	22-May-91	960	16	61	19	110	280
A-C-6.0	14-May-91	22-May-91	<1.0	<0.0050	<0.0050	<0.0050	< 0.0050	<1.0
A-C-11.0	14-May-91	22-May-91	1,900	18	64	44	220	300
A-D-6.0	14-May-91	22-May-91	2.3	0.10	0.019	0.11	0.44	1.6
A-D-9.5	14-May-91	22-May-91	10	0.27	0.21	0.47	1.7	1:6
A-E-6.5	14-May-91	22-May-91	<1.0	0.16	<0,0050	0.0070	< 0.0050	< 1.0
A-E-10.5	14-May-91	22-May-91	330 ·	3.9	17	6.5	39	130
A-1-4.5	16-Mar-92	01-Apr-92	. <1.0	0.024	0.014	0.0090	0.034	<1.0
A-1-10.0	16-Mar-92	01-Apr-92	2.2	0.13	0.051	0.023	0.71	<1.0
A-2-4.0	16-Mar-92	01-Apr-92	< 1.0	<0.0050	< 0.0050	<0.0050	< 0.0050	14
A-2-10.0	16-Mar-92	01-Apr-92	<1.0	< 0.0050	<0.0050	<0.0050	·<0.0050	<1.0
A-3-10.0	17-Mar-92	01-Apr-92	<1.0	< 0.0050	< 0.0050	< 0.0050	<0.0050	<sup>`</sup> <1.0
A-4-10.0	17-Mar-92	01-Apr-93	<1.0	< 0.0050	< 0.0050	<0.0050	< 0.0050	<1,0
AV-1-6.5	08-Jun-92	, 11-Jun-92	<1.0	0.15	0.019	0.014	0.062	<1.0
AV-1-12.0	08-Jun-92	11-Jun-92	12	0.81	1.3	0.27	1.5	<1.0
AV-2-6.5	08-Jun-92	11-Jun-92	1,8	0.31	0.15	0.036	0:21	<1.0
AV-2-11.5	08-Jun-92	11-Jun-92	1500	21	84	27	170	<1,0
AV-3-6,5	08-Jun-92	11-Jun-92	<1.0	0.037	< 0.0050	0.018	0.028	<1.0
AV-3-11.5	08-Jun-92	11-Jun-92	110	2.4	4.6	1.9	10	<1.0
A-5-6.5	04-Feb-93	08-Feb-93	<1.0	<0.0050	< 0.0050	<0.0050	<0.0050	NA
A-5-9.5	04-Feb-93	08-Feb-93	17	0.21	0.076	0.28	0.54	NA
A-6-6.5	04-Feb-93	08-Feb-93	<1.0	< 0.0050	< 0.0050	<0.0050	< 0.0050	NA
A-6-9.0	04-Feb-93	08-Feb-93	<1.0	< 0.0050	<0.0050	<0.0050	< 0.0050	NA
AV-4-5	07-Sep-93	15-Sep-93	<1.0	0.94	< 0.0050	< 0.0050	0.25	 NA
AV-4-10.5	07-Sep-93	16-Sep-93	270	2.2	7.0	4.5	25	NA
AV-4-12.5	07-Sep-93	16-Sep-93	470	1.9	. 8.7	4,9	27	NA
AV-4-16	07-Sen-93	15-Sen-93	< 1.0	0.016	< 0.0050	< 0.0050	0.014	NΔ

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#### TABLE 1 SOIL ANALYSES DATA ARCO Station 2169 Oakland, California

							······································	<u></u>	
	SAMPLE I.D.	SAMPLE DATE	ANALYZED DATE	TPH-G (PPM)	BENZENE (PPM)	TOLUENE (PPM)	`ETHYLBENZ. (PPM)	XYLÈNES (PPM)	TPH-D (PPM)
	AV-5-5.5	07-Sep-93	15-Sep-93	<1.0	< 0.0050	< 0.0050	, <0.0050	<0.0050	NA
	AV-5-10.5	07-Sep-93	15-Sep-93	<1.0	0.13	<0.0050	< 0.0050	0.0027	NA
	AV-5-12.5	07-Sep-93	16-Sep-93	30	0.24	0.058	0.31	0.98	NA
	AV-5-15.5	07-Sep-93	15-Sep-93	<100	< 0.50	<0.50	<0.50	<0.50	NA
	AS-1+6	07-Sep-93	15-Sep-93	<1.0	0.031	<0.0050	< 0.0050	0.036	15
	AS-1-11	07-Sep-93	16-Sep-93	41	0.18	0.47	0.35	1.9	43*
	AS-1-12.5	07-Sep-93	16-Sep-93	160	1.5	4.4	2.6	13	14*
	AS-1-15.5	07-Sep-93	16-Sep-93	89 -	0.77	1.5	0.90	4.8	. 15 <b>*</b>
	AS-1-30	07-Sep-93	15-Sep-93	7.5	0.24 ·	0.78	· 0.22	. 1.1	2.8*
ļ	AS-2-5.5	08-Sep-93	16-Sep-93	<1.0	0.016	0.0060	< 0.0050	0.011	NA
	AS-2-10	08-Sep-93	16-Sep-93	<1.0	0.010	0.011	<0.0050	0.023	NA
	AS-2-13	08-Sep-93	16-Sep-93	1,500	5.7	31	25	130	NA
	AS-2-16	08-Sep-93	16-Sep-93	<1.0	0.018	0.031	0.0090	0.048	NA
Ĭ	AS-2-24	08-Sep-93	16-Sep-93	<1.0	<0.0050	< 0.0050	<0.0050	< 0.0050	NA
	AS-3-5.5	08-Sep-93	16-Sep-93	<1.0	0.016	<0.0050	< 0.0050	< 0.0050	NA
	AS-3-10.5	08-Sep-93	16-Sep-93	23,	0.45	0.73	0.36	2.0	NA
	AS-3-30	08-Sep-93	16-Sep-93	<1.0	0.0060	Ó.013	< 0.0050	0.013	NA
	AS-4-15.5	07-Dec-93	16-Dec-93	58	0.21	0.10	0.73	3.0	37*
	AS-4-24	07-Dec-93	16-Dec-93	<1.0	0.011	0.011	<0.0050	0.019	<1.0
	AS-5-5.5	07-Dec-93	16-Dec-93	9.6	0.093	0.022	0.10	0.28	2.3*
	AS-5-12	07-Dec-93	16-Dec-93	320	2.0	7.5	5,9	31	230
	AS-5-24	07-Dec-93	16-Dec-93	<1.0	0.0087	<0.0050	< 0.0050	< 0.0050	3.2
	AV-6-5.5	06-Dec-93	16-Dec-93	<1.0	< 0.0050	<0,0050	< 0.0050	<0.0050	NA
	AV-6-12.5	06-Dec-93	16-Dec-93	330	1.1	4.4	5.8	29	NA
	AV-6-16	06-Dec-93	16-Dec-93	22 .	0.13	0.38	0.30	1.6	NA
	AV-7-5,5	06-Dec-93	16-Dec-93	<1.0	0.0094	< 0.0050	< 0.0050	<0.0050	<1.0
	AV-7-10.5	06-Dec-93	16-Dec-93	190	1.8	4.8	7.5	17	47
	AV-7-15.6	06-Dec-93	16-Dec-93	1.9	0.099	0.019	0.026	0.039	<1.0
	ADR-1-5.5	06-Dec-93	15-Dec-93	< 1.0	0.16	0.0090	0.026	0.02 <sup>`</sup> 7	<1.0
	ADR-1-12	06-Dec-93	17-Dec-93	500	2.4	14	.8.0	45	36*\
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### TABLE 1 SOIL ANALYSES DATA ARCO Station 2169 Oakland, California

SAMPLE I.D.	SAMPLE DATE	ANALYZED DATE	TPH-G (PPM)	BENZENE (PPM)	TOLUENE (PPM)	ETHYLBENZ. (PPM)	XYLENES (PPM)	TPH-D (PPM)
ADR-1-23	06-Dec-93	15-Dec-93	<1.0	< 0.0050	< 0.0050	< 0.0050	< 0.0050	<1.0
ADR-2-5.5	06-Dec-93	15-Dec-93	<1.0	0.018	< 0.0050	<0.0050	<0.0050	9,7*
ADR-2-12	06-Dec-93	17-Dec-93	2,200	11	64	34	180	1,000
ADR-2-15.5	06-Dec-93	16-Dec-93	4.4	0.81	0.055	0.11	0.20	<1.0
ADR-2-27.5	06-Dec-93	16-Dec-93	<1.0	< 0.0050	<0.0050	< 0.0050	< 0.0050	<1.0

TPH-G = Total Petroleum Hydrocarbons calculated as Gasoline.

TPH-D = Total Petroleum Hydrocarbons calculated as Diesel.

PPM = Parts Per Million.

= Reported as a non-diesel mix.

Note: All data shown as <x are reported as ND (none detected).

Sample Identification:

ADR-2-17.5

Depth in feet



***************************************												
	HISTORICAL GROUND WATER QUALITY DATABASE											
					I VAIADASE	-						
WELL	SAMPLE	ANALYZED	TPH-G	RENTENE	TOUIGHE	ETHYL DEURENS	·····	•••••				
NO.	DATE	DATE	(PPB)	(PPR)	/DDDA	CINILBENZENE	XYLENES	TPH-DIESEL				
	-======================================				(FT <b>D</b> )	(PPB)	(PPB)	(PPB)				
A-1	03-Apr -92	10-App-00	7/000		222222222	*************	*********	252322222222				
		10 / 01 - 72	54000	6200	3900	410	3100	6100				
6.7	67 - Ame - 07	10 1										
A C	03*Apt**92	10-Apr-92	<30	<0.30	<0.30	<0.30	<0.30	<50				
. 7	07 A 00											
8° 3	03-Apr-92	10-Apr-92	200	0.79	0,65	4.4	<0.30	130				
A-4	03-Apr-92	10-Apr-92	35	<0.30	<0.30	<0.30	<0.30	95				
							-0150	60				
AR - 1	03 · Apr · 92	10-Apr-92	17000	310	1/00	) 770	7000					
		-		2.9	1400	520	3000	12000				
				<								

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TABLE 3

CURRENT REGIONAL WATER QUALITY CONTROL BOARD MAXIMIM CONTAMINANT LEVELS Benzene 1. ppb Xylenes 1750. ppb Ethylbenzene 680. ppb

## CURRENT DHS ACTION LEVELS

Toluene 100.0 ppb

TPH-G = Total Petroleum Hydrocarbons calculated as Gasoline

- PPB = Parts Per Billion
- Notes: 1. DHS Action levels and MCL's are subject to change pending State of California review.
  - 2. All data shown as <X are reported as ND (none detected).



HISTORICAL GROUND-WATER QUALITY DATABASE

TABLE 7

WELL NO.	SAMPLE DATE	ANALYZED DATE	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)	TPH-DIESEL (PPB)
A · 1	03-Apr-92	10-Apr-92	34000	6200	3900	410	3100	6100
A-1	17-Jul-92	21-Jul-92	5600	3000	500	<100	<100	₩/A
A-2	03-Apr-92	10-Apr -92	<30	<0.30	<0.30	<0.30	<0.30	<\$0
A-2	17-Jul-92	21 Jul - 92	<50	<0.50	<0.50	<0.50	<0.50	N/A
5-A	03-Apr-92	10-Apr-92	200	0,79	0.65	4.4	<0.30	130
A-3	17- Jul - 92	21-Jul-92	<50	<0.50	<0.50	1.3	2.3	N/A
A·4	03-Apr-92	10-Apr -92	35	<0.30	<0.30	<0.30	<0.30	85
A-4	17 - Jul - 92	21 - Jul - 92	<50	<0.50	<0.50	<0.50	<0.50	N/A
AR-1	03-Apr-92	10-Apr-92	17000	310	1400	320	3000	12000
AR-1	17-Jul-92	21-Jul-92	44000	9100	1800	1800	16000	N/A
AR-2	17- Jul - 92	21- Jul - 92	150	6.6	24	6.6	39	N/A

CURRENT REGIONAL WATER QUALITY CONTROL BOARD MAXIMIM CONTAMINANT LEVELS

Benzene 1. ppb Xylenes 1750, ppb Ethylbenzene 680, ppb

CURRENT DHS ACTION LEVELS

Toluene 100.0 ppb

TPH-G = Total Petroleum Hydrocarbons calculated as Gasoline

- PPB = Parts Per Billion
- N/A = Not Analyzed
- Notes: 1. DHS Action levels and MCL's are subject to change pending State of Celifornia review.
  - 2. All data shown as <X are reported as ND (none detected).


#### GROUND-WATER ANALYSES DATA

			le e e Le construction de la construction		•				·			
WELL NO.	SAMPLE DATE	ÁNALYZED DÁTE	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)	TPH-D (PPB)	WELL ELEV. (FT)	STĂTIC WĂTÊR ELEV: IFT)	PRODUCT THICKNESS (FT)	DEPTH WATER (FT)
A-1	23-Nov-92	544	ine o	Atuat		******	879.07		14.75	2.92	0.00	11.83
	16-Dec-92		and and a second se				javavo		14.75	3.72	0.00	11.03
	28-Jan-93	03-Feb-93	3700	780	360	130	460	620°	14.75	5.67	0.00	9.08
A-2	23-Nov-92				er#900		aiwawaya	·····	15.16	2.98	0.00	12.18
	18-Dec-92	a. ****	â0790-bet	****		sec.	میں رواند کا انتخاب کا انتخاب انتخاب کا انتخاب کا ا		15.16	3.64	0.00	11.52
	28-Jen-93	03-Feb-93	<50	<0.50	<0.50	<0.50	<0.50	N/A	15.16	5,43	0.00	9.73
A-3	23-Nov-92					eta da e <mark>n e</mark> esperante			16.38	2.78	0.00	13.60
	16-Dec-92			nin				***	16.38	4,07	0.00	12.31
	28-Jan-93	03-Feb-93	<50	<0.50	<0.50	<0.50	<0.50	N/A	16.38	6.05	0.00	10.33
A-4	23-Nov-92			nala.		and the second			15.89	3.26	0.00	12.63
	16-Dec-92				سيتي .	antina antina Antina antina	in an		15.89	4.55	0.00	11.34
	28-Jan-93	03-Feb-93	< 50	<0,50	<0,50	<0.50	<0.50	N/A	15.89	6.49	0.00	9.40
A-5	11-Feb-93	17-66-93	4900	380	640	<b>140</b>	970	N/A	14.14	4.99	0.00	9,15
A-6	11-Feb-93	18 Fob-93	990	1,8	5,1	17	10000 (k. 1410) 1610 - <b>7</b> 22	N/A	14.17	4,82	0.00	9,35
AR-1	23-Nov-92			19 M			ing ing the second s 	***	15.71	2.91	0.00	12.80
	16-Dec-92	***		***					15.71	4.22	0.00	11.49
· · · · · · · · · · · · · · · · · · ·	28-Jan-93	03-Feb-93	15000	1200	510	510	2600	5300*	15,71	6.25	0.00	9.46
AR-2	23-Nov-92	***			3-0-00 Ve		·		15.79	·		. ••••
· .	16-Dec-92		10 M 10	**	÷			اسيد ا	15.79	3.63	0.00	12.15
	28-Jan-93	03 Feb 93	2000	570	13	<10	380	290*	15.79	5.53	0.00	10,26

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#### TABLE 2

#### GROUND-WATER ANALYSES DATA

Current Regional Water Quality Control Board Maximum Contaminant Levels Benzene 1.0 ppb Xylenes 1750, ppb Ethylbenzene 680, ppb

Current DHS Action Levels Toluene 100.0 ppb

- TPH-G = Total Petroleum Hydrocarbons calculated as Gasoline.
- PPB = Parts Per Billion.
- TB = Trip Blank
- \* Reported as a non-diesel mix.
- Notes: 1. All data shown as <x are reported as ND (none detected).
  - 2. Water level elevations referenced to Mean Sea Level (MSL).
  - 3. Well AR-2 could not be located on November 23, 1992.
  - 4. Halogenated volatile organic analyses performed on samples from Wells A-5 and A-6 collected on February 11, 1993 were reported as ND.

792701-8

#### HISTORICAL WATER-LEVEL DATA

MONITORING DATE	WELL NUMBER	DEPTH TO WATER (ft)	WELL ELEVATION (FT)	STATIC WATER ELEVATION (FT)	FLOATING PRODUCT THICKNESS (FT)
03-Apr-92	A-1	10.35	14.75	4.40	0,00
20-May-92	A-1	11.66	14.75	3.09	0.00
16-Jun-92	A-1	11.95	14.75	2.80	0.00
17-Jul-92	A-1	12.23	14.75	2.52	0.00
07-Aug-92	A-1	12.16	14.75	2.59	0.00
22-Sep-92	A-1	12.42	14.75	2.33	0.00
13-Oct-92	A-1	12.47	14.75	2.28	0.00
23-Nov-92	A-1	11.83	14.75	2.92	0.00
16-Dec-92	A-1	11.03	14.75	3.72	0.00
28-Jan-93	A-1	9.08	14.75	5.67	0.00
03-Apr-92	A-2	10.97	15.16	4.19	0.00
20-May-92	A-2	12.17	15.16	2.99	0.00
16-Jun-92	A-2	12.43	15.16	2.73	0.00
17-Jul-92	A-2	12.64	15.16	2.52	0.00
07-Aug-92	A-2	12.75	15.16	2.41	0.00
22-Sep-92	A-2	12.88	15.16	2.28	0.00
13-Oct-92	A-2	12.92	15.16	2.24	0.00
23-Nov-92	A-2	12.18	15.16	2.98	0.00
16-Dec-92	A-2	11.52	15.16	3.64	0.00
28-Jan-93	A-2	9.73	15.16	5.43	0.00
03-Apr-92	A-3	11.70	16.38	4.68	0.00
20-May-92	A-3	13.00	16.38	3.38	0.00
16-Jun-92	A-3	13.46	16.38	2.92	0.00
17-Jul-92	A-3	13.45	16.38	2.93	0.00
07-Aug-92	A-3	12.37	16.38	4.01	0.00
22-Sep-92	A-3	13.71	16.38	2.67	0.00
13-Oct-92	A-3	13.76	16.38	2.62	0.00
23-Nov-92	A-3	13.60	16.38	2.78	0.00
16-Dec-92	A-3	12.31	16.38	4.07	0.00
28-Jan-93	A-3	10.33	16.38	6.05	0.00
03-Apr-92	A-4	10.84	15.89	5.05	0.00

#### HISTORICAL WATER-LEVEL DATA

MONITORING DATE	WELL NUMBER	DEPTH TO WATER (ft)	WELL ELEVATION (FT)	STATIC WATER ELEVATION (FT)	FLOATING PRODUCT THICKNESS (FT)
20-May-92	A-4	12.13	15.89	3.76	0.00
16-Jun-92	A-4	12.33	15.89	3.56	0.00
17-Jul-92	A-4	12.60	15.89	3.29	0.00
07-Aug-92	A-4	12.56	15.89	3.33	0.00
22-Sep-92	A-4	12.87	15.89	3.02	0.00
13-Oct-92	A-4	12.87	15.89	3.02	0.00
23-Nov-92	A-4	12.63	15.89	3.26	0.00
16-Dec-92	A-4	11.34	15.89	4.55	0.00
28-Jan-93	A-4	9.40	15.89	6.49	0.00
11-Feb-93	A-5	9.15	14.14	4.99	0.00
11-Feb-93	A-6	9.35	14.17	4.82	0.00
03-Apr-92	AR-1	11.07	15.71	4.64	0.00
20-May-92	AR-1	12.37	15.71	3.34	0.00
16-Jun-92	AR-1	12.47	15.71	3.24	0.00
17-Jul-92	AR-1	13.00	15.71	2.71	0.00
07-Aug-92	AR-1	12.87	15.71	2.84	0.00
22-Sep-92	AR-1	12.99	15.71	2.72	0.00
13-Oct-92	AR-1	13.05	15.71	2.66	0.00
23-Nov-92	AR-1	12.80	15.71	2.91	0.00
16-Dec-92	AR-1	11.49	15.71	4.22	0.00
28-Jan-93	AR-1	9.46	15.71	6.25	0.00
17-Jป-92	AR-2	13.14	15.79	2.65	0.00
07-Aug-92	AR-2	13.25	15.79	2.54	0.00
22-Sep-92	AR-2	13.58	15.79	2.21	0.00
13-Oct-92	AR-2	13.65	15.79	2.14	0.00
23-Nov-92	AR-2	Not me	asured		
16-Dec-92	AR-2	12.16	15.79	3.63	0.00
28-Jan-93	AR-2	10.26	15.79	5.53	0.00

Notes: 1.

2. Well elevations and depths-to-water are referenced to the top of the well box.

3. Well AR-2 could not be located on November 23, 1992.

Static water elevations referenced to Mean Sea Level (MSL).

#### HISTORICAL GROUND-WATER QUALITY DATABASE

WELL NO.	SAMPLE DATE	ANALYZED DATE	TPH-G (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)	TPH-D (PPB)
A-1	03-Apr-92	10-Apr-92	34000	6200	410	3100	6100
A-1	17-Jul-92	21-Jul-92	5600	3000	<100	<100	N/A
A-1	13-Oct-92	19-0ct-92	5600	980	85	910	N/A
A-1	28-Jan-93	03-Feb-93	3700	780	130	460	620*
A-2	03-Apr-92	10-Apr-92	<30	<0.30	<0.30	<0.30	<50
A-2	17-Jul-92	21-Jul-92	<50	<0.50	<0.50	<0.50	N/A
A-2	13-Oct-92	19-Oct-92	<50	0.57	< 0.50	< 0.50	N/A
A-2	28-Jan-93	03-Feb-93	<50	< 0.50	< 0.50	<0.50	N/A
A-3	03-Apr-92	10-Apr-92	200	0.79	4,4	< 0.30	130
A-3	17-Jul-92	21-Jul-92	< 50	< 0.50	1.3	2.3	N/A
A-3	13-Oct-92	19-Oct-92	<50	<0.50	<0.50	< 0.50	N/A
A-3	28-Jan-93	03-Feb-93	<50	<0.50	<0.50	< 0.50	N/A
A-4	03-Apr-92	10-Apr-92	35	< 0.30	<0.30	< 0.30	85
A-4	17-Jul-92	21-Jul-92	<50	< 0.50	<0.50	<0.50	N/A
A-4	13-Oct-92	19-0ct-92	<50	<0.50	<0.50	<0.50	N/A
A-4	28-Jan-93	03-Feb-93	<50	<0.50	<0.50	< 0.50	N/A
A-5	11-Feb-93	17-Feb93	4900	380	140	970	N/A
A-6	11-Feb-93	18-Feb-93	990	1.8	17	7.2	N/A
AR-1	03-Apr-92	10-Apr-92	17000	310	320	3000	12000
AR-1	17-Jul-92	21-Jul-92	44000	4300	1800	10000	N/A
AR-1	13-Oct-92	19-Oct-92	32000	310	570	3100	22000*
AR-1	28-Jan-93	03-Feb-93	15000	1200	510	2600	5300*
AR-2	17-Jul-92	21-Jul-92	150	6.6	6.6	39	N/A
AR-2	13-Oct-92	19-Oct-92	< 50	2.0	0.51	3.8	58*
AR-2	28-Jan-93	03-Feb-93	2000	570	<10	380	290*

CURRENT REGIONAL WATER QUALITY CONTROL BOARD MAXIMUM CONTAMINANT LEVELS Benzene 1. ppb Xylenes 1750. ppb Ethylbenzene 680 ppb

CURRENT DHS ACTION LEVELS Toluene 100

TPH-G = Total Petroleum Hydrocarbons calculated as Gasoline.

TPH-D = Total Petroleum Hydrocarbons calculated as Diesel.

PPB = Parts Per Billion.

- N/A = Not Analyzed.
- reported as a non-diesel mix.

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#### HISTORICAL GROUND-WATER QUALITY DATABASE

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Notes: 1. All data shown as <x are reported as ND (none detected).

#### Table 1 Groundwater Monitoring Data Third Quarter 1994 Summary Report

ARCO Service Station 2169 889 West Grand Avenue, Oakland, CA

Date: 01-27-95 Project Number: 0805-129.01

Well Desig- nation	Water Level Field Date	TOC Elevation ft-MSL	Depth to Water feet	Ground- water Elevation ft-MSL	Floating Product Thickness feet	Ground- water Flow Direction MWN	Hydraulic Gradient foot/foot	Water Sample Field Date	TPHG ppb	Benzene ppb	Toluene	Ethyl- benzene ppb	Total Xylenes ppb	ТРНD ppb
A-1	08-10-94	14.16	10.28	3.88	ND	WNW	0.007	08-10-94	27000	2700	1100	\$40	2000	
A-2	08-10-94	14.55	11.56	2.99	ND	WNW	0.007	08-10-94	27000	2700	1100	.540	3000	^3000
A-3	08-10-94	15.75	11.12	4 63	ND	W/MW/	0.007	00-10-24	090	41	25	3.9	86	Not analyzed
۵۸	08 10 04	15.75	11.75	7.00		** 14 **	0.007	08-10-94	<00	<0.5	<0.5	<0.5	<0.5	Not analyzed
A-4	00-10-94	15.25	11.75	3.50	ND	WNW	0.007	08-10-94	<50	<0.5	< 0.5	<0.5	<0.5	Not analyzed
A-5	08-10-94	13.51	10.76	2.75	ND	WNW	0.007	08-10-94	11000	730	930	310	1300	Not analyzed
A-6	08-10-94	13.51	10.77	2.74	ND	WNW	0.007	08-10-94	300	<06	05	<u></u>	-1000	Not analyzed
AR-1	08-10-94	15.61	11.09	4.52	ND	WNW	0.007	08-10-94	6100	120	66	<0.0	500	Not analyzed
AR-2	08-10-94	15.28	12.48	2 80	ND	WNW	0.007	09 10 04	200	120	1 7	00	530	^2900
ADR-1	08-10-04	13.05	10.26	2.00	ND	** 1 * ** 31/3/111/	0.007	00-10-94	200	2	1./	2.1	38	^55
ADD 1	00-10-24	13.75	10.30	3.39	ND	WNW	0.007	08-10-94	150000	5400	15000	3600	24000	^^^4800
AUK-2	08-10-94	14.64	9.81	** 4 <i>.</i> 90	0.10	WNW	0.007	08-10-94 N	Not sampled	: well contai	ned floating	product		

TOC = Top of casing

TPHG = Total petroleum hydrocarbons as gasoline

TPHD = Total petroleum hydrocarbons as diesel

ft-MSL = Elevation in feet, relative to mean sea level

MWN = Groundwater flow direction and gradient apply to the entire monitoring well network

ppb = Parts per billion or micrograms per liter (µg/I)

ND = None detected

WNW = West-northwest

\* = Sample contains a lower boiling point hydrocarbon quantitated as diesel; chromatogram does not match the typical diesel fingerprint

\*\* [Corrected elevation (Z')] = Z + (h \* 0.73) where: Z = measured elevation, h = floating product thickness, 0.73 = density ratio of oil to water

esj/h:\2169\2169mdb.xls\Table 1:dcl 0805-129.01

### Table 2 Historical Groundwater Elevation Data Summary Report

889 West Gra	nd Avenue, Oal	Date: 01-27-95 Project Number: 0805-129.01					
Well Desig- nation	Water Level Field Date	TOC Elevation ft-MSL	Depth to Water feet	Ground- water Elevation ft-MSL	Floating Product Thickness feet	Ground- water Flow Direction MWN	Hydraulic Gradient foot/foot
A-1	04-03-92	14.75	10.35	4.40	ND	NR	NR
A-1	05-20-92	14.75	11.66	3.09	ND	NR	NR
A-1	06-16-92	14.75	11,95	2.80	ND	NR	NR
A-1	07-17-92	14.75	12.23	2.52	ND	NR	NR
A-1	08-07-92	14.75	12.16	2.59	ND	NR	NR
A-1	09-22-92	14.75	12.42	2.33	ND	NR	NR
A-1	10-13-92	14.75	12.47	2.28	ND	NR	NR
A-1	11-23-92	14.75	11,83	2.92	ND	NR	NR
A-1	12-16-92	14.75	11.03	3.72	ND	NR	NR
A-I	01-28-93	14.75	9.08	5.67	ND	NR	NR
A-1	02-22-93	14.75	9.46	5.29	ND	NR	NR
A-1	03-25-93	14.75	10.02	4.73	ND	NR	NR
A-1	04-15-93	14.75	10.50	4.25	ND	NR	NR
A-1	05-22-93	14.75	11.33	3.42	ND	NR	NR
A-1	06-1 <del>6</del> -93	14.75	11.51	3.24	ND	NR	NR
A-1	07-27-93	14.75	11.91	2.84	ND	NR	NR
A-1	08-26-93	14.75	12.11	2.64	ND	NR	NR
A-1	09-27-93	14.75	12.21	2.54	ND	NR	NR
A-1	10-08-93	14.75	12.21	2.54	ND	NR	NR
A-1	02-09-94	14.16	10.09	4.07	ND	NR	NR
A-1	05-04-94	14.16	10.68	3.48	ND	NW	0.004
A-1	08-10-94	14.16	10.28	3.88	ND	WNW	0.007

ARCO Servi 389 West Gr	ce Station 2169 and Avenue, Oa	kland, CA	Date: 01-27-95 Project Number: 0805-129.01				
Well Desig- nation	Water Level Field Date	TOC Elevation ft-MSL	Depth to Water feet	Ground- water Elevation ft-MSL	Floating Product Thickness feet	Ground- water Flow Direction MWN	Hydraulic Gradient foot/foot
A-2	04-03-92	15.16	10.97	4.19	ND	NR	NR
A-2	05-20-92	15.16	12.17	2.99	ND	NR	NR
A-2	06-16-92	15.16	12.43	2.73	ND	NR	NR
A-2	07-17-92	15.16	12.64	2.52	ND	NR	NR
A-2	08-07-92	15.16	12.75	2.41	ND	NR	NR
A-2	09-22-92	15.16	12.88	2.28	ND	NR	NR
A-2	10-13-92	15.16	12.92	2.24	ND	NR	NR
A-2	11-23-92	15.16	12.18	2.98	ND	NR	NR
A-2	12-16-92	15.16	11.52	3.64	ND	NR.	NR
A-2	01-28-93	15.16	9.73	5.43	ND	NR.	NR
A-2	02-22-93	15.16	9.28	5.88	ND	NR	NR
A-2	03-25-93	15.16	10.57	4.59	ND	NR	NR
A-2	04-15-93	15.16	11.20	3.96	ND	NR	NR
A-2	05-22-93	15.16	11.91	3.25	ND	NR	NR
A-2	06-16-93	15.16	12.04	3.12	ND	NR	NR
A-2	07-27-93	15.16	12.41	2.75	ND	NR	NR
A-2	08-25-93	15.16	12.54	2.62	ND	NR	NR
A-2	09-27-93	15.16	12.66	2.50	ND	NR	NR
A-2	10-08-93	15.16	12.65	2.51	ND	NR	NR
A-2	02-09-94	14.55	10.67	3.88	ND	NR	NR
A-2	05-04-94	14.55	11.25	3.30	ND	NW	0.004
A-2	08-10-94	14.55	11.56	2.99	ND	WNW	0.007

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### Table 2 Historical Groundwater Elevation Data Summary Report

West Gr	and Avenue, Oal	kland, CA			Date: 01-27-95 Project Number: 0805-129.01			
Well Desig- nation	Water Level Field Date	TOC Elevation ft-MSL	Depth to Water feet	Ground- water Elevation ft-MSL	Floating Product Thickness feet	Ground- water Flow Direction MWN	Hydraulic Gradient foot/foot	
A-3	04-03-92	16.38	11.70	4.68	ND	NR	NR	
A-3	05-20-92	16.38	13.00	3.38	ND	NR	NR	
A-3	06-16-92	16.38	13.46	2.92	ND	NR	NR	
A-3	07-17-92	16.38	13,45	2.93	ND	NR	NR	
A-3	08-07-92	16.38	12.37	4.01	ND	NR	NR	
A-3	09-22-92	16.38	13.71	2.67	ND	NR	NR	
A-3	10-13-92	16.38	13.76	2.62	ND	NR	NR	
A-3	11-23-92	16.38	13.60	2.78	ND	NR	NR	
A-3	12-16-92	16.38	12.31	4.07	ND	NR	NR	
A-3	01-28-93	16.38	10.33	6.05	ND	NR	NR	
A-3	02-22-93	16.38	10.44	5,94	ND	NR	NR	
A-3	03-25-93	16.38	11.27	5.11	ND	NR	NR	
A-3	04-15-93	16.38	11.98	4.40	ND	NR	NR	
A-3	05-22-93	16.38	12.70	3.68	ND	NR	NR	
A-3	06-16-93	16.38	12.84	3.54	ND	NR	NR	
A-3	07-27-93	16.38	13.22	3.16	ND	NR	NR	
A-3	08-25-93	16.38	13.35	3.03	ND	NR	NR	
A-3	09-27-93	16.38	13.50	2.88	ND	NR	NR	
A-3	10-08-93	16.38	13.48	2.90	ND	NR	NR	
A-3	02-09-94	15.75	11.32	4,43	ND	NR	NR	
A-3	05-04-94	15.75	11.99	3.76	ND	NW	0.004	
A-3	08-10-94	15.75	11.12	4.63	ND	WNW	0.007	

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Table 2
Historical Groundwater Elevation Data
Summary Report

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RCO Servi 39 West Gr	ce Station 2169 and Avenue, Oa	kland, CA	Date: 01-27-95 Project Number: 0805-129.01				
Well Desig- nation	Water Level Field Date	TOC Elevation ft-MSL	Depth to Water feet	Ground- water Elevation ft-MSL	Floating Product Thickness feet	Ground- water Flow Direction MWN	Hydraulic Gradient foot/foot
A-4	04-03-92	15.89	10.84	5.05	ND	NR	NR
A-4	05-20-92	15.89	12.13	3.76	ND	NR	NR
A-4	06-16-92	15.89	12.33	3.56	ND	NR	NR
A-4	07-17-92	15.89	12.60	3.29	ND	NR	NR
A-4	08-07-92	15.89	12.56	3.33	ND	NR	NR
A-4	09-22-92	15.89	12.87	3.02	ND	NR	NR
A-4	10-13-92	15.89	12.87	3.02	ND	NR	NR
A-4	11-23-92	15.89	12.63	3.26	ND	NR	NR
A-4	12-16-92	15.89	11.34	4,55	ND	NR	NR
A-4	01-28-93	15.89	9.40	6.49	ND	NR	NR
A-4	02-22-93	15.89	9.35	6.54	ND	NR	NR
A-4	03-25-93	15.89	10.32	5.57	ND	NR	NR
A-4	04-15-93	15.89	11.15	4.74	ND	NR	NR
A-4	05-22-93	15.89	11.84	4.05	ND	NR	NR
A-4	06-16-93	15.89	12.01	3.88	ND	NR	NR
A-4	07-27-93	15.89	12.33	3.56	ND	NR	NR
A-4	08-25-93	15.89	12.48	3.41	ND	NR	NR
A-4	09-27-93	15.89	12.60	3.29	ND	NR	NR
A-4	10-08-93	15.89	12.57	3.32	ND	NR	NR
A-4	02-09-94	15.25	10.01	5.24	ND	NR	NR
A-4	05-04-94	15.25	11.08	4.17	ND	NW	0.004
A-4	08-10-94	15.25	11.75	3.50	ND	WNW	0.007

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Table 2
Historical Groundwater Elevation Data
Summary Report

ARCO Servi 889 West Gr	ce Station 2169 and Avenue, Oa	kland, CA	Date: 01-27-95 Project Number: 0805-129.01				
Well Desig- nation	Water Level Field Date	TOC Elevation ft-MSL	Depth to Water feet	Ground- water Elevation ft-MSL	Floating Product Thickness feet	Ground- water Flow Direction MWN	Hydraulic Gradient foot/foot
A-5	02-11-93	14.14	9.15	4.99	ND	NR	NR
A-5	03-25-93	14.14	9.33	4.81	ND	NR	NR
A-5	04-15-93	14.14	10.11	4.03	ND	NR	NR
A-5	05-22-93	14.14	10.71	3.43	ND	NR	NR
A-5	06-16-93	14.14	10.84	3.30	ND	NR	NR
A-5	07-27-93	14.14	11.22	2.92	ND	NR	NR
A-5	08-26-93	14.14	11.44	2.70	ND	NR	NR
A-5	09-27-93	14.14	11.51	2.63	ND	NR	NR
A-5	10-08-93	14.14	11.68	2.46	ND	NR	NR
A-5	02-09-94	13.51	9.44	4.07	ND	NR	NR
A-5	05-04-94	13.51	10.00	3.51	ND	NW	0.004
A-5	08-10-94	13.51	10.76	2.75	ND	WNW	0.007

A-6	02-11-93	14.17	9.35	4.82	ND	NR	NR
A-6	03-25-93	14.17 No	t surveyed: wel	I was inaccessi	ble	• • • •	
A-6	04-16-93	14.17	9.36	4.81	ND	NR	NR
A-6	05-22-93	14.17	10.86	3.31	ND	NR	NR
A-6	06-16-93	14.17	10.98	3.19	ND	NR	NR
A-6	07-27-93	14.17 No	t surveyed: wel	l was inaccessi	ble		
A-6	08-25-93	14.17 No	t surveyed: wel	l was inaccessi	ble		
A-6	09-27-93	14.17	11.65	2.52	ND	NR	NR
A-6	10-08-93	14.17	11.80	2.37	ND	NR	NR
A-6	02-09-94	13.51	9.48	4.03	ND	NR	NR
A-6	05-04-94	13.51	10.07	3.44	ND	NW	0.004
A-6	08-10-94	13.51	10.77	2.74	ND	WNW	0.007

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ARCO Service Station 2169 Date: 01-27-95 889 West Grand Avenue, Oakland, CA Project Number: 0805-129,0												
Well Desig- nation	Water Level Field Date	TOC Elevation ft-MSL	Depth to Water feet	Ground- water Elevation ft-MSL	Floating Product Thickness feet	Ground- water Flow Direction MWN	Hydraulic Gradient foot/foot					
AR-I	04-03-92	15.71	11.07	4.64	ND	NR	NR					
AR-1	05-20-92	15.71	12.37	3.34	ND	NR	NR					
AR-1	06-16-92	15.71	12,47	3.24	ND	NR	NR					
AR-1	07-17-92	15.71	13.00	2.71	ND	NR	NR					
AR-1	08-07-92	15.71	12.87	2.84	ND	NR	NR					
AR-1	09-22-92	15.71	12.99	2.72	ND	NR	NR					
AR-1	10-13-92	15.71	13.05	2.66	ND	NR	NR					
AR-1	11-23-92	15.71	12.80	2.91	ND	NR	NR					
AR-I	12-16-92	15.71	11.49	4.22	ND	NR	NR					
AR-1	01-28-93	15.71	9.46	6.25	ND	NR	NR					
AR-1	02-22-93	15.71	10.05	5.66	ND	NR	NR					
AR-1	03-25-93	15.71	10.75	4.96	ND	NR	NR					
AR-1	04-15-93	15.71	11.26	4.45	ND	NR	NR					
AR-1	05-22-93	15.71	12.07	3.64	ND	NR	NR					
AR-I	06-16-93	15.71	12.21	3.50	ND	NR	NR					
AR-1	07-27-93	15.71	12.60	3.11	ND	NR	NR					
AR-1	08-25-93	15.71	12.78	2.93	ND	NR	NR					
AR-I	09-27-93	15.71	12.89	2.82	ND	NR	NR					
AR-1	10-08-93	15.71	12.84	2.87	ND	NR	NR					
AR-1	02-09-94	15.61	11.08	4.53	ND	NR	NR					
AR-I	05-04-94	15.61	11.83	3.78	ND	NW	0.004					
AR-1	08-10-94	15.61	11.09	4.52	ND	WNW	0.007					

ARCO Servi 889 West Gr	ce Station 2169 and Avenue, Oa	kland, CA			Proj	Date: 0 ect Number: 0	1-27-95 805-129.01
Well Desig- nation	Water Level Field Date	TOC Elevation ft-MSL	Depth to Water feet	Ground- water Elevation ft-MSL	Floating Product Thickness feet	Ground- water Flow Direction MWN	Hydraulic Gradient foot/foot
	07-17-92	15.79	13.14	2.65	ND	NR	NR
AR-2	08-07-92	15.79	13.25	2.54	ND	NR	NR
AR-2	09-22-92	15.79	13.58	2.21	ND	NR	NR
AR-2	10-13-92	15.79	13.65	2.14	ND	NR	NR
AR-2	11-23-92	15.79 No	t surveyed: c	ould not locate	ed well		
AR-2	12-16-92	15,79	12.16	3.63	ND	NR	NR
AR-2	01-28-93	15.79	10.26	5,53	ND	NR	NR
AR-2	02-22-93	15.79	10.52	5.27	ND	NR	NR
AR-2	03-25-93	15.79	11,18	4.61	ND	NR	NR
AR-2	04-15-93	15.79	11.81	3.98	ND	NR	NR
AR-2	05-22-93	15.79	12.46	3.33	ND	NR	NR
AR-2	06-16-93	15.79	12.53	3.26	ND	NR	NR
AR-2	07-27-93	15.79	12.77	3.02	ND	NR	NR
AR-2	08-26-93	15.79	13.23	2.56	ND	NR	NR
AR-2	09-27-93	15.79	13.16	2.63	ND	NR	NR
AR-2	10-08-93	15.79	13.32	2.47	ND	NR	NR
AR-2	02-09-94	15.28	11.33	3.95	ND	NR	NR
AR-2	05-04-94	15.28	11.88	3.40	ND	NW	0.004
AR-2	08-10-94	15.28	12.48	2.80	ND	WNW	0.007

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ARCO Servic 889 West Gra	ee Station 2169 and Avenue, Oa	kland, CA			Proj	Date: 01-27-95 roject Number: 0805-129.01			
Well Desig- nation	Water Level Field Date	TOC Elevation ft-MSL	Depth to Water feet	Ground- water Elevation ft-MSL	Floating Product Thickness feet	Ground- water Flow Direction MWN	Hydraulic Gradient foot/foot		
ADR-1 ADR-1 ADR-1	02-09-94 05-04-94 08-10-94	13.95 13.95 13.95	9.90 10.50 10.36	4.05 3.45 3.59	ND ND ND	NR NW WNW	NR 0.004 0.007		

	00.00.04	1124	10.00	0.01	1. TP3	NID	
ADK-Z	02-09-94	14.04	10.75	3.91	ND	NK	NK
ADR-2	05-04-94	14.64	11.31	3.33	ND	NW	0.004
ADR-2	08-10-94	14.64	9.81	** 4.90	0.10	WNW	0.007

TOC = Top of casing

ft-MSL = Elevation in feet, relative to mean sea level

MWN = Groundwater flow direction and gradient apply to the entire monitoring well network

ND = None detected

NR = Not reported; data not available or not measurable

NW = Northwest

WNW = West-northwest

\*\* [Corrected elevation (Z')] = Z + (h \* 0.73) where: Z = measured elevation, h = floating product thickness, 0.73 = density ratio of oil to water

Table 3
Historical Groundwater Analytical Data
Summary Report

<u> </u>							
Well Desig- nation	Water Sample Field Date	TPHG	Benzene	Toluene	Ethyl- benzene	Total Xylenes	TPHD
	·	ррь	ppb	ppb	ppb	ррь	ppb
A-1	04-03-92	34000	6200	3900	410	3100	6100
A-1	07-17-92	5600	3000	500	<100	<100	Not analyzed
A-1	10-13-92	5600	980	590	85	910	Not analyzed
A-1	01-28-93	3700	780	360	130	460	^620
A-1	04-15-93	210	34	11	7.1	20	^420
A-1	08-26-93	2000	370	35	50	220	41500
A-1	10-08-93	2600	430	65	64	99	^1200
A-1	02-09-94	3000	560	150	66	190	^650
A-1	05-04-94	1300	250	61	27	110	^2100
A-1	08-10-94	27000	3700	1100	540	3000	^3000
A-2 A-2 A-2 A-2	04-03-92 07-17-92 10-13-92 01-28-93	<30 <50 <50	<0.3 <0.5 0.57	<0.3 <0.5 <0.5	<0.3 <0.5 <0.5	<0.3 <0.5 <0.5	<50 Not analyzed Not analyzed
4.7	01-26-93	<50	<0.5	<0.5	<0.5	<0,5	Not analyzed
ጠ-2 ለ_2	08 25 02	<30	<0.5	<0.5	<0.5	<0.5	Not analyzed
A-4 A-2	10.09.03	<00	<0.5	<0.5	<0.5	<0.5	Not analyzed
A-2 A-2	02 00 04	<00	<0.5	<0.5	<0.5	<0.5	Not analyzed
ለ። አ.ን	02-09-94	~~200	<0.6	<0.5	<0.5	<0.5	Not analyzed
A.2	03-04-94	< <u>0</u> 0	<0.5	<0.5	<0.5	<0.5	Not analyzed
	00-10-24	090	47	25	3.9	86	Not analyzed
A-3	04-03-92	200	0.79	0.65	4.4	<0.3	130
A-3	07-17-92	<50	<0.5	<0.5	1.3	2.3	Not analyzed
A-3	10-13-92	<50	<0.5	<0.5	<0.5	<0.5	Not analyzed
A-3	01-28-93	<ර0	<0.5	<0.5	<0.5	<0.5	Not analyzed
A-3	04-15-93	<50	<0.5	<0.5	<0.5	<05	Not analyzed
A-3	08-25-93	<50	<0.5	<0.5	<0.5	<0.5	Not analyzed
<b>A-</b> 3	10-08-93	<50	<0.5	<0.5	<0.5	<0.5	Not analyzed
A-3	02-09-94	<50	<0.5	<0.5	<0.5	<0.5	Not analyzed
A-3	05-04-94	<50	<0.5	<0.5	<0.5	<0.5	Not analyzed
4-3	08-10-94	<50	<0.5	<0.5	<0.5	<0.5	Not analyzed

			Project Number: 0805-129.01					
Well Desig- nation	Water Sample Field Date	ТРНС	Benzene	Toluene	Ethyl- benzene	Total Xylenes	TPH	
		ppb	ppb	ppb	ppb	ppb	p	
A-4	04-03-92	35	<0.3	<0.3	<03	<0.3		
A-4	07-17-92	<50	<0.5	<0.5	<0.5	<0.5	Not another	
A-4	10-13-92	<50	<0.5	<0.5	<0.5	<0.5	Not analyz	
A-4	01-28-93	<50	< 0.5	<0.5	<0.5	<0.5	Not analyze	
A-4	04-15-93	<50	<0.5	<0.5	<0.5	<0.5	Not analyze	
A-4	08-25-93	<50	<0.5	<0.5	<0.5	<0.5	Not analyze	
A-4	10-08-93	<50	<0.5	< 0.5	<0.5	<0.5	Not analyze	
A-4	02-09-94	<50	< 0.5	<0.5	<0.5	<0.5	Not analyze	
A-4	05-04-94	<50	<0.5	< 0.5	<0.5	<0.5	Not analyze	
A-4	08-10 <b>-9</b> 4	<50	<0.5	<0.5	<0.5	<0.5	Not analyze	
A-5 A-5 A-5 A-5 A-5 A-5 A-5	02-11-93 04-15-93 08-26-93 10-08-93 02-09-94 05-09-94 08-10-94	4900 27000 13000 6800 2200 13000 11000	380 3100 1100 490 190 1000 730	640 4000 1400 620 130 1500 930	140 1100 480 280 130 490 310	970 4600 1800 980 310 2000 1300	Not analyze Not analyze Not analyze Not analyze Not analyze Not analyze	
A-6 A-6 A-6 A-6	02-11-93 04-16-93 08-25-93 10-08-93 02-09-04	990 390 Not sampled: web 220	1.8 1.3 1 was inaccess 0.73	5.1 1.6 ible <0.5	17 1.7 0.82	7.2 7.7 0.65	Not analyze Not analyze Not analyze	
A-6	05 04 04	040	<2.9	<3.7	<2.4	<8.2	Not analyze	
м-D Хб	03-04-94	260	<0.5	<1.5	<1.5	<0.5	Not analyze	
/ <b>1-</b> 0	08-10-94	300	<0.6	<2.5	<0.8	<1	Not analyze	

#### Table 3 Historical Groundwater Analytical Data Summary Report

) West Gr	and Avenue, (	Dakland, CA	Date: 01-27-95 Project Number: 0805-129.01					
Well Desig- nation	Water Sample Field Date	TPHG	Benzene	Toluene	Ethyl- benzene	Total Xylenes	TPHD	
			PPO		hho		ppc	
AR-1	04-03-92	17000	310	1400	320	3000	12000	
AR-1	07-17-92	44000	4300	1800	1800	10000	Not analyzed	
AR-1	10-13-92	32000	310	730	570	3100	^22000	
AR-1	01-28-93	15000	1200	510	510	2600	^5300	
AR-1	04-15-93	17000	1800	360	520	1600	^5400	
AR-1	08-25-93	2900	260	54	80	160	^2800	
AR-1	10-08-93	3500	200	85	120	290	^4100	
AR-1	02-09-94	26000	2900	450	920	3000	^4200	
AR-1	05-04-94	36000	3400	360	1400	3700	^7200	
AR-1	08-10-94	6100	120	66	65	530	^2900	
AR-2	07-17-92	150	6.6	24	6.6	39	Not analyzed	
AR-2	10-13-92	<50	2	0.86	0.51	3.8	^58	
AR-2	01-28-93	2000	570	13	<10	380	^290	
AR-2	04-15-93	85	15	<0.5	<0.5	2.4	<50	
AR-2	08-26-93	<50	<0.5	<0.5	<0.5	<0.5	<50	
AR-2	10-08-93	<50	<0.5	<0.5	<0.5	<0.5	<50	
AR-2	02-09-94	^^82	<0.5	<0.5	<0.5	<0.5	<50	
AR-2	05-04-94	<50	<0.5	<0.5	<0.5	<0.5	<50	
AR-2	08-10-94	200	5	1 <b>.7</b>	2.7	38	^55	
ADR-1	02-09-94	3000	380	140	59	240	^110	
ADR-I	05-04-94	2100	490	93	68	140	^60	
ADR-1	08-10-94	150000	5400	15000	3600	24000	^^^4800	
ADR-2	02-09-94	83000	6300	6100	2000	11000	12000	
ADR-2	05-04-94	36000	4600	2600	030	4500	14000 AA300	
	08-10-04	Not compled: wa	11 contained flo	2000	750	-1000	~+200	

#### Table 3 Historical Groundwater Analytical Data Summary Report

TPHG = Total petroleum hydrocarbons as gasoline

TPHD = Total petroleum hydrocarbons as diesel

\* = Sample contains a lower boiling point hydrocarbon quantitated as diesel; chromatogram does not match the typical diesel fingerprint

\*\* = Sample contains a single non-fuel component eluting in the gasoline range, and quantified as gasoline

\*\*\* = Sample contains a mixture of diesel and a lower boiling point hydrocarbon quantitated as diesel; chromatogram does not match the typical diesel fingerprint

ppb = Parts per billion or micrograms per liter ( $\mu g/l$ )

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

		TOC	Depth	FP	Groundwater		TPH			Ethyl-	Total	MTBE	MTBE	TPH	Dissolved	Purged/
Well	Date	Elevation	to Water	Thickness	Elevation	Date	Gasoline	Benzene	Toluene	benzene	Xylenes	8021B*	8260	Diesel	Oxygen	Not Purged
Number	Gauged	(ft-MSL)	(feet)	(feet)	(ft-MSL)	Sampled	(µg/L)	(ug/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(mg/L)	(P/NP)
Δ_1	03.24.95	14 16	8 10	ND	6.06	03-24-95	1.200	230	39	34	66			160		
A-1	06-05-95	14.16	11.13	ND	3.03	06-05-95	1,500	310	27	36	76			710		
A_1	08-17-95	14 16	11 71	ND	2.45	08-18-95	1.600	470	35	48	110	120		240		
A-1	12-04-95	14.16	12.28	ND	1.88	12-04-95	1,200	240	17	25	56		120			
A-1	03-01-96	14.16	8.78	ND	5.38	03-13-96	1,300	300	74	29	73	100				
A-1	05-29-96	14.16	9.85	ND	4.31	05-29-96	Not sample	d: well same	oled semi-ar	unually, dur	ing the first	and third qu	arters			
A-1	08-29-96	14.16	11.08	ND	3.08	08-29-96	1,200	320	5.9	25	27	110				
A-1	11-21-96	14.16	10,54	ND	3.62	11-21-96	Not sample	d: well samp	oled semi-ar	mually, dur	ing the first	and third qu	arters			
A-1	03-26-97	14.16	10.55	ND	3.61	03-26-97	<50	0.8	<0.5	<0.5		64		- ~		
A-1	05-21-97	14.16	11.10	ND	3.06	05-21-97	Not sample	d: well samp	oled semi-ar	mually, dur	ing the first	and third qu	arters			
A-1	08-08-97	14.16	11.32	ND	2.84	08-08-97	91	7	<0.5	0.5	3.9	<60		- •		
A-1	11-18-97	14.16	3,46	ND	10.70	11-18-97	54	<0.5	<0.5	<0.5	0.6	27				
A-1	02-20-98	14.16	7.10	ND	7.06	02-23-98	590	160	22	15	28	70				
A-1	05-11-98	14.16	9.87	ND	4.29	05-11-98	280	26	<0.5	0.8	2.3	6				
A-1	07-30-98	14.16	10.73	ND	3.43	07-30-98	1,000	210	5	<5	38	<30				
A-1	10-08-98	14.16	11.15	ND	3.01	10-08-98	3,100	740	11	<10	24	<60				
A-1	02-18-99	14.16	8.00	ND	6.16	02-18-99	510	87	7.1	6.4	13	52				
A-1	05-26-99	14.16	10.60	ND	3.56	05-26-99	240	26	<0.5	1.2	6.2	34				
A-I	08-23-99	14.16	11.22	ND	2.94	08-23-99	79	3.9	0.6	<0.5	1.7	38			0.68	NP
A-1	10-27-99	14.16	11.37	ND	2.79	10-27-99	110	2.2	<0.5	<0.5	<1	25			0.80	NP
A-1	01-31-00	14.16	9.44	ND	4.72	01-31-00	<50	<0.5	<0.5	⊲0.5	<1	<3	- <del>-</del>		1.0	NP
8																
A-2	03-24-95	14.55	8.64	ND	5.91	03-24-95	<50	<0.5	<0.5	<0.5	<0.5					
A-2	06-05-95	14.55	11.72	ND	2.83	06-05-95	<50	<0.5	<0.5	<0.5	<0.5					
A-2	08-17-95	14.55	12.35	ND	2.20	08-17-95	<50	<0.5	<0.5	<0.5	<0.5	12	• •			
A-2	12-04-95	14.55	12.74	ND	1.81	12-04-95	<\$0	<0.5	<0.5	<0.5	<0.5					
A-2	03-01-96	14.55	9.34	ND	5.21	03-13-96	<50	<0.5	0.6	<0.5	1.3	<9				

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

<u></u>		TOC	Denth	ED	Groundwater		TDU			Tabad	Total	ACCOL	ACTOR			
Well	Date	Flevation	to Water	Thicknee	Elevation	Data	Gaseline	Deserve	Takana	Ethys-	I DIQI	MIBE	MIBE	IPH	Dissolved	Purged/
Number	Gauced	(A.MST)	(feet)	(feat)	(A MST)	Samalad	Gasonie (w=/T)	Benzene	1 Officine	denzene	Aylenes	6021B*	8200	Diesei	Oxygen	Not Purged
Thunda	Jacgeo	(11-14151)	(icel)	(IEEI)	(11-1415L)	Sampled	<u>(µg/L)</u>	(µ <u>g/</u> L)	(世界下)	(µg/L)	<u>(µg/L)</u>	(µg/L)	(µg/L)	(µg/L)	(mg/L)	<u>(P/NP)</u>
A-2	05-29-96	14.55	10.40	ND	4.15	05-29-96	<50	<0.5	<0.5	<0.5	<0.5	<20		••		
A-2	08-29-96	14.55	11.50	ND	3.05	08-29-96	<50	<0.5	<0.5	<0.5	<0.5	<39				1
A-2	11-21-96	14.55	11,06	ND	3.49	11-21-96	<50	<0.5	<0.5	<0.5	<0.5	<30		~ -		
A-2	03-26-97	14.55	11.12	NÐ	3.43	03-26-97	<50	<0.5	<0.5	<0.5	<0.5	<20				
A-2	05-21-97	14.55	11.58	ND	2.97	05-21-97	Not sample	d: well sam	oled semi-ar	mually, dur	ing the first	and third qu	larters			1
A-2	08-08-97	14.55	11.82	ND	2.73	08-08-97	<50	<0.5	<0.5	<0.5		⊲0	- *			
A-2	11-18-97	14.55	3.33	ND	11.22	11-18-97	Not sample	d: well sam	oled semi-ar	mually, dur	ing the first	and third qu	lartess			
A-2	02-20-98	14.55	7.68	ND	6.87	02-20-98	<50	<0.5	<0.5	<0.5	<0.5	17	- •			
A-2	05-11-98	14.55	10,45	ND	4.10	05-11-98	Not sample	d								
A-2	07-30-98	14.55	11.23	ND	3.32	07-30-98	Not sample	d; well sam	oled semi-ar	mually, dur	ing the first	and second	quarters			
A-2	10-08-98	14.55	11.62	ND	2.93	10-08-98	Not sample	d: well sam	oled semi-ar	inually, dur	ing the first	and second	quarters			
A-2	02-18-99	14.55	8.62	ND	5.93	02-18-99	93	<0.5	<0.5	<0.5	<1	26				
A-2	05-26-99	14.55	11.16	ND	3.39	05-26-99	<50	<0.5	<0.5	<0.5	<0.5	<3	~ -			
A-2	08-23-99	14.55	11.69	ND	2.86	08-23-99	Not sample	d: well sam	oled semi-ar	mually, dur	ing the first	and second	quarters		0.59	
A-2	10-27-99	14.55	11.88	ND	2.67	10-27-99	Not sample	d: well samp	oled semi-ar	mually, dur	ing the first	and second	quarters		0.59	
A-2	01-31-00	14.55	10.17	ND	4.38	01-31-00	<50	<0.5	<0.5	<0.5	<1	<3			1.0	NP
]																
A-3	03-24-95	15.75	8.83	ND	6.92	03-24-95	<50	<0.5	<0.5	<0.5	<0.5	- •				1
A-3	06-05-95	15.75	12.44	ND	3.31	06-05-95	Not sample	d: well samp	oled annuall	у						
A-3	08-17-95	15.75	13.04	ND	2.71	08-17-95	Not sample	d: well same	oled annuall	y						1
A-3	12-04-95	15.75	13.57	ND	2.18	12-04-95	Not sample	d: well same	led annuall	y Y						
A-3	03-01-96	15.75	9.90	ND	5.85	03-13-96	<50	<0.5	<0.5	<0.5	<0.5	<3				
A-3	05-29-96	15.75	11.08	ND	4.67	05-29-96	Not sample	t: well same	oled annuall	y						1
A-3	08-29-96	15.75	12.38	ND	3.37	08-29-96	Not sample	d: well same	led annual	V						ļ
A-3	11-21-96	15.75	11.86	ND	3.89	11-21-96	Not sampled	d: well same	led annuall	V						1
A-3	03-26-97	15.75	11.81	ND	3.94	03-26-97	<50	<0.5	<0.5	<0.5	<0.5	<3	•			
A-3	05-21-97	15.75	12.35	ND	3.40	05-21-97	Not sampled	1: well same	led annuall	v						

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

1		TOC	Depth	FP	Groundwater		TPH			Ethyl-	Total	MTRF	MTRE	TPH	Dissolund	Purse d/
Well	Date	Elevation	to Water	Thickness	Elevation	Date	Gasoline	Benzene	Toluene	henzene	Yulenec	\$071B*	8760	Therei	Ortugon	Fugeo/
Number	Gauged	(ft-MSL)	(feet)	(feet)	(ft-MSL)	Sampled	(ug/L)	(ug/L)	(ug/L)	(up/L)	(up/T)	(110/L)	(ug/T)	$(\mu \alpha T)$	(mg/T)	NOL PUISED
4.3	02 08 07	1575	12 42	<u> </u>	7.17	00.00.07		<u> </u>	<u> </u>	VEG - 7.	<u></u>	<u> </u>	<u>(192)</u>		(INE) L.J	(1/11)
4 2	11 18 07	15.75	2.75	ND	3.13	08-08-97	Not sampled	I: well sam	oled annually	/						
1.1	11-10-27	15.75	5.15	ND	12.00	11-18-97	Not sampled	i: well sam	pled annually	<i>,</i>						
A-3	02-20-98	15.75	8.00	ND	7.69	02-20-98	<50	<0.5	<0.5	<0,5	<0.5	<3				
A-3	03-11-98	15.75	11.19	ND	4.50	05-11-98	Not sampled	: well sam	oled annually	1						
A-3	07-30-98	15.75	12.05	ND	3.70	07-30-98	Not sampled	i: well sam	oled annually	7						
1 A-3	10-08-98	15.75	12.43	ND	3.32	10-08-98	Not sampled	i: well sam	oled annually	<i>r</i>						
A-3	02-18-99	15.75	9.05	ND	6.70	02-18-99	Not sampled	i: well sam	oled annually	,						
A-3	05-26-99	15.75	11.93	ND	3.82	05-26-99	<50	<0.5	<0.5	<0.5	<0.5	<3				
A-3	08-23-99	15.75	12.57	ND	3.18	08-23-99	Not sampled	i: weil sam	oled annually	r					0.88	
A-3	10-27-99	15.75	12.65	ND	3.10	10-27-99	Not sampled	f: well sam	led annually	,						
A-3	01-31-00	15.75	9.55	ND	6.20	01-31-00	<50	<0.5	<0.5	<0.5	<1	9			1.0	NP
A-4	03-24-95	15.25	7.20	ND	8.05	03-24-95	<50	<0.5	<0.5	<0.5	<0.5					
A-4	06 <b>-</b> 05-95	15.25	11.70	ND	3.55	06-05-95	Not sampled	l: well sam	led annually	r						
A-4	08-17 <b>-9</b> 5	15.25	12.28	ND	2.97	08-17-95	Not sampled	: well same	led annually	,						
A-4	12-04-95	15.25	12.63	ND	2.62	12-04-95	Not sampled	: well same	ied annually	,						
A-4	03-01-96	15.25	8.55	ND	6.70	03-13-96	<50	<0.5	<0.5	<05	<0.5	<3				)
A-4	05-29-96	15.25	10.32	ND	4.93	05-29-96	Not sampled	i: well sam	oled annually		-0.0	-0				
A-4	08-29-96	15.25	11.55	ND	3.70	08-29-96	Not sample	well same	led annualty	,						
A-4	11-21-96	15.25	10.83	ND	4.42	11-21-96	Not sampled	r well sam	sled annually							
A-4	03-26-97	15.25	10.97	ND	4 28	03-26-97	<50	<0.5	<0.5	50.5	-05	~				j
A-4	05-21-97	15.25	11.51	ND	3 74	05-21-97	Not cample	v.∪ Ir wall com	lad aroualir	~0,J	~0.9	$\sim$				1
A-4	08-08-97	15.25	11 73	ND	3.52	08-08-97	Not sampled	l- well com	ad annually							
A-4	11-18-97	15.25	437	NO	10.88	11-12-07	Not campled	l- well come	itad annually	-						
A-4	02-20-98	15 25	6.25	ND	0.00	07.30.09	~50	- 11 vir samlj - 11 s		-0.5	-0 E	~				ł
A-4	05-11-98	15.25	10.33	ND	4 07	05.11.08	Not complete	~0.2 • • • • • • • • • • •	Sod ormunitie	~0.5	~-0,5	</td <td></td> <td></td> <td></td> <td></td>				
A-4	07-30-98	15 25	11 25	ND	4.00	03-11-98	Not complex	. wen samp	ded appually	,						

OAK\C:\ARCO\2169\QTRLY\2169q100.xls\uh:1 Recreated from electronic data provided by IT Corporation.

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

		TOC	Depth	FP	Groundwater		TPH			Ethyl-	Total	MTBE	MTBE	TPH	Dissolved	Purged/
Well	Date	Elevation	to Water	Thickness	Elevation	Date	Gasoline	Benzene	Tohiene	benzene	Xylenes	8021B*	8260	Diesel	Oxygen	Not Purged
Number	Gauged	(ft-MSL)	(feet)	(feet)	(ft-MSL)	Sampled	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(mg/L)	<u>(P/NP)</u>
A-4	10-08-98	15.25	11.62	ND	3.63	10-08-98	Not sample	d: well sam	oled annuall	v						
A-4	02-18-99	15.25	7.12	ND	8.13	02-18-99	Not sample	d: well same	led annuall	v						
A-4	05-26-99	15.25	11.12	ND	4.13	05-26-99	<50	<0.5	<0.5	<0.5	<0.5	<3				
A-4	08-23-99	15.25	11.62	ND	3.63	08-23-99	Not sample	d: well same	sled annuall	v		-			0.54	
A-4	10-27-99	15.25	11.74	ND	3.51	10-27-99	Not sample	d: well same	led annuall	v						
A-4	01-31-00	15.25	9.45	ND	5.80	01-31-00	<50	<0.5	<0.5	<0.5	<1	4			1.0	NP
1																
A-5	03-24-95	13.51	7.40	ND	6.11	03-24-95	3,300	200	310	130	460		•-			
A-5	06-05-95	13.51	10.43	ND	3.08	06-05-95	57,000	2,700	4,600	1,500	6,800	÷	~*			
A-5	08-17-95	13.51	11.15	ND	2.36	08-18-95	34,000	1,600	2,700	1,100	5,100	<28	÷-			
A-5	12-04-95	13.51	11.42	ND	2.09	12-04-95	61	<0.5	<0.5	<0.5	<0.5		• •			
A-5	03-01-96	13.51	8.11	ND	5.40	03-13-96	11,000	860	960	380	1,600	<100				
A-5	05-29-96	13.51	9.30	ND	4.21	05-29-96	19,000	1,600	1,900	880	3,300	<100				
A-5	08-29-96	13.51	10,60	ND	2.91	08-29-96	7,700	490	450	260	990	<30				
A-5	11-21-96	13.51	10:05	ND	3,46	11-21-96	8,000	450	550	340	1,100	<30		••		
A-5	03-26-97	13.51	9.87	ND	3.64	03-26-97	3,100	190	140	130	340	<30				
A-5	05-21-97	13.51	10.25	ND	3.26	05-21-97	16,000	1,500	900	700	2,700	<120				
A-5	08-08-97	13,51	10.42	ND	3.09	08-08-97	9,000	690	240	440	1,300	<30				]
A-5	11-18-97	13.51	Not su	rveyed: well:	inaccessible											
A-5	02-20-98	13.51	Not su	rveyed: well	inaccessible											
A-5	05-11-98	13.51	Not su	rveyed: well:	inaccessible											
A-5	07-30-98	13.51	Not su	rveyed: well	inaccessible											
A-5	10-08-98	13.51	Not su	rveyed: well	inaccessible											
A-5	02-18-99	13,51	7.63	ND	5.88	02-18-99	<50	0.8	<0.5	<0.5	1.5	<10				
A-5	05-26-99	13.51	9.85	ND	3.66	05-26-99	1,700	240	41	110	330	<12			-	
A-5	08-23-99	13.51	10.60	ND	2.91	08-23-99	560	65	3	30	52	<6			0.73	NP
A-5	10-27-99	13.51	10.72	ND	2.79	10-27-99	480	93	1.0	16	19	<3			0.65	NP

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

[		TOC	Depth	FP	Groundwater		TPH			Ethyl-	Total	MTBE	MTBE	TPH	Dissolved	Purged/
Well	Date	Elevation	to Water	Thickness	Elevation	Date	Gasoline	Benzene	Tohiene	benzene	Xylenes	8021B*	8260	Diesel	Oxygen	Not Purged
Number	Gauged	(ft-MSL)	(feet)	(feet)	(ft-MSL)_	Sampled	(µg/Ĺ)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(μg/L)	_(µg/L)	(µg/L)	(mg/L)	(P/NP)
A.5	01_31_00	12 51	0 37	NT)	414	01-31-00	Not sample	d: well was	inaccessible							
	01-51-00	10.01	1.01			•••••										
A-6	03-24-95	13.51	7.89	ND	5.62	03-24-95	120	<0.5	<1	<0.5	<1.5					
A-6	06-05-95	13.51	10.06	ND	3.45	06-05-95	160	<0.5	<0.6	<0.5	<0.5					
A-6	08-17-95	13.51	11.10	ND	2.41	08-18-95	530	<0.5	<0.5	<2.4	<4.2	6				
A-6	12-04-95	13.51	11.52	ND	1.99	12-04-95	28,000	1,600	1,800	880	3,600					
A-6	03-01-96	13.51	8.21	ND	5.30	03-13-96	1,400	<3	<15	<7	<10	<20				
A-6	05-29-96	13.51	9.25	ND	4.26	05-29-96	410	<2	<2	<2	<2	3				
A-6	08-29-96	13.51	10.52	ND	2.99	08-29-96	80	<0.5	<0.5	<0.5	<0.5	6				
A-6	11-21-96	13.51	10.54	ND	2.97	11-21-96	62	<0.5	<0.5	<0.5	<0.5	12	••			
A-6	03-26-97	13.51	9.93	ND	3.58	03-26-97	110	<0.5	0.8	1	1.4	15	••			
A-6	05-21-97	13.51	10.54	ND	2.97	05-21-97	600	0.6	0.6	~	2.7	<3	• •			
A-6	08-08-97	13.51	10.77	ND	2.74	08-08-97	850	<0.5	<0.5	6.1	<0.5	<4	••			
A-6	11-18-97	13.51	3.41	ND	10.10	11-18-97	690	<1	<1	3	2	7				
A-6	02-20-98	13.51	6.73	ND	6.78	02-20-98	60	<0.5	0.6	1.3	0.5	4				
A-6	05-11-98	13.51	9.26	ND	4.25	05-11-98	140	<0.5	0.7	0.6	<0.5	6				
A-6	07-30-98	13.51	10.12	ND	3.39	07-30-98	910	<2	<2	3	7	34		- •		
A-6	10-08-98	13.51	10.53	ND	2.98	10-08-98	1,300	<2	4	3	4	21				
A-6	02-18-99	13.51	7.50	ND	6.01	02-18-99	150	<0.5	<0.5	1.4	1.7	35				
A-6	05-26-99	13.51	10.00	ND	3.51	05-26-99	100	<0.5	<0,5	<0.5	<0.5	17				
A-6	08-23-99	13.51	10.70	ND	2.81	08-23-99	98	0.6	<0.5	1.1	4.3	13	• •		2.42	NP
A-6	10-27-99	13.51	11.00	ND	2.51	10-27-99	<50	<0.5	<0.5	<0.5	<1	7	• •		13.23	NP
A-6	01-31-00	13.51	9.31	ND	4.20	01-31-00	<50	<0.5	<0.5	<0.5	<1	9			1.0	NP
1																
AR-1	03-24-95	15.61	7.25	ND	8.36	03-24-95	270	14	0.6	2.5	2.1			130		
AR-I	06-05-95	15.61	11.37	ND	4.24	06-05-95	190	10	<0.5	0,8	0.5			580		
AR-1	08-17-95	15.61	12.40	ND	3.21	08-17-95	960	[10	12	4,5	150	14		<50		

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

		TOC	Depth	FP	Groundwater		TPH			Ethyl-	Total	MTBE	MTBE	TPH	Dissolved	Purged/
Well	Date	Elevation	to Water	Thickness	Elevation	Date	Gasoline	Benzene	Toluene	benzene	Xylenes	8021B*	8260	Diesel	Oxygen	Not Purged
Number	Gauged	(ft-MSL)	(feet)	(feet)	(ft-MSL)	Sampled	(μg/L)	(μg/Ľ)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(mg/L)	(P/NP)
	10.04.00	17.71	10.00	<u> </u>	2.71	12.04.05	~*0	1 5	~0.5	<0.5	0.8					
AR-1	12-04-95	15.01	12.90	ND	2./1	12-04-73	150	1.5	C.U~ 0.5	14	13	<3				
AR-1	03-01-96	15.61	8.19	ND	7.42	03-13-90	Not comple	3.0 	C.U na iman hafe	T.T.	ing the first	and third or	liorfat?			
AR-1	05-29-96	15.61	10.41	ND	5.20	03-29-90	Not sample	u: wen sam	20 SCHI-40	muany, out		2000 HILLO Q	uarters			
AR-1	08-29-96	15.61	12.12	ND	3,49	11 21 06	Not commis	d. unall annu	0.0~ 10 inner hole	nousliv dur	ing the first	and third or				
AR-1	11-21-96	15.61	11.52	ND	4.09	11-21-90	Not sample	a: well sam	neo semi-a ∠∩ s	muany, um			uarers			
AR-1	03-26-97	15.61	11.33	ND	4.28	03-26-97	<00	~0.5	<0,5		 ina tha firmt	end shird a				
AR-1	05-21-97	15.61	12.02	ND	3.39	03-21-97	Not sample	a: wen sam	neo semi-a.	muany, uu	1118 1110 11154 -0 5	ann mun h	UALICIS	_		
AR-1	08-08-97	15.61	12.31	ND	3.30	08-08-97	<50	0.7	<0.5	1	~0.3 	ورجا ومنطو المرور				
AR-1	11-18-97	15.61	3.97	ND	11.64	11-18-97	Not sample	a: wea sam	nea semi-a	nnuaiy, uu			uarces	_		
AR-1	02-20-98	15.61	6.42	ND	9.19	02-23-98	<200	-2	~4	~4	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	100				
AR-1	05-11-98	15.61	10.93	ND	4.68	05-11-98	<50	<0.5	<0.5	<0.5	<0.5	4				
AR-1	07-30-98	15.61	11.82	ND	3,79	07-30-98	<50	<0.5	<0.5	<0.5	<0.5	0				
AR-1	10-08-98	15.61	12.24	ND	3.37	10-08-98	<50	<0.5	<0.5	<0.5	<0.5	0				
AR-1	02-18-99	15.61	7.75	ND	7.86	02-18-99	<50	<0.5	<0.5	<0.5	<10	<10				
AR-1	05-26-99	15.61	11.62	ND	3.99	05-26-99	<50	<0.5	<0.5	<0.5	<0.5	3				
AR-I	08-23-99	15.61	9.32	ND	6.29	08-23-99	Not sample	d: well sam	pled semi-a	nnually, dur	ing the first	and second	l quarters			
AR-1	10-27-99	15.61	12.14	ND	3.47	10-27-99	Not sample	d: well sam	pled semi-a	nnually, dur	ing the first	and second	quarters			
AR-1	01-31-00	15.61	Not su	rveyed: well	inaccessible											
				·												
AR-2	03-24-95	15.28	9.13	ND	6.15	03-24-95	<50	6.2	<0.5	<0.5	0.6			<50		
AR-2	06-05-95	15.28	12.09	ND	3.19	06-05-95	<50	<0.5	<0.5	<0.5	<0.5		• •	<50		
AR-2	08-17-95	15.28	12.78	ND	2 50	08-18-95	<50	<0.5	<0.5	<0.5	<0.5	4		<50		
AR-2	12-04-95	15.28	11.44	ND	3.84	12-13-95	<50	<0.5	<0.5	<0.5	<0.5					
AR-2	03-01-96	15.28	9.83	ND	5.45	03-13-96	190	26	2.6	3.3	13	200				
AR-2	05-29-96	15.28	10.97	ND	4.31	05-29-96	Not sample	d; well sam	pled semi-a	nnually, du	ing the first	and third q	uarters			
AR-2	08-29-96	15.28	12.20	ND	3.08	08-29-96	< <b>5</b> 0	<0.5	<0.5	<0.5	<0.5	95				
AR-2	11.21-96	1578	11.57	ND	3.71	11-21-96	Not sample	d: well sam	pled semi-a	nnually, dur	ing the first	and third q	uarters			

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

[		TOC	Depth	FP	Groundwater		TPH	··········		Ethyl-	Total	MTBE	MTBE	TPH	Dissolved	Purged/
Well	Date	Elevation	to Water	Thickness	Elevation	Date	Gasoline	Benzene	Toluene	benzene	Xylenes	8021B*	8260	Diesel	Oxygen	Not Purged
Number	Gauged	(ft-MSL)	(feet)	(feet)	(ft-MSL)_	Sampled	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	_ (mg/L)	(P/NP)
AR-2	03-26-97	15.28	11.60	ND	3.68	03-26-97	<50	<0.5	<0.5	<0.5	<0.5	9				
AR-2	05-21-97	15.28	12.12	ND	3.16	05-21-97	Not sample	i: well sam	led semi-ar	mually, duri	ng the first	and third ou	arters			
AR-2	08-08-97	15.28	12.35	ND	2.93	08-08-97	<50	<0.5	<0.5	<0.5	<0.5	<3 <3				
AR-2	11-18-97	15.28	3.48	ND	11.80	11-18-97	Not sample	i: well same	led semi-ar	mually, duri	ng the first	and third of	arters			
AR-2	02-20-98	15.28	8.00	ND	7.28	02-20-98	<50	<0.5	< 0.5	<0.5	<0.5	43		~ ~		
AR-2	05-11-98	15.28	10.97	ND	4.31	05-11-98	<50	<0.5	<0.5	<0.5	<0.5	<3				
AR-2	07-30-98	15.28	11.76	ND	3.52	07-30-98	<50	<0.5	<0.5	<0.5	<0.5	<3				
AR-2	10-08-98	15.28	12.17	ND	3.11	10-08-98	<50	<0.5	<0.5	<0.5	<0.5	<3				
AR-2	02-18-99	15.28	9.17	ND	6.11	02-18-99	<50	<0.5	<0.5	<0.5	<1.0	<10	·-			
AR-2	05-26-99	15.28	11.72	ND	3.56	05-26-99	<50	<0.5	<0.5	<0.5	<0.5	<3		• •		
AR-2	08-23-99	15.28	12.31	ND	2.97	08-23-99	Not sampled	i: well samp	led semi-ar	mually, duri	ing the first	and second	quarters		0.61	
AR-2	10-27-99	15.28	12.42	ND	2.86	10-27-99	Not sample	i: well sam	led semi-ar	mually, duri	ng the first	and second	quarters			
AR-2	01-31-00	15.28	10.31	ND	4.97	01-31-00	Not sample	d -		• ·	-		•			:
ADP 1	03 24 05	12.05	2.04	0.01	** 5 03	07 24 95	Mot complex	to wall contr	inad flantin	a product						
	05-24-95	12.55	1107	0.01	2.72	05-24-75	22 000	1. wen cona 210	11160 110301. 470	200	1 000			12.000		
	09 17 05	13,93	11.02	ND	2.93	09 19 05	23,000	510	420	300	1,500	120		4 500		
	12 01-05	13.95	10.05	ND	2.09	12.13.05	4,400 8 800	100	120	120	020	120		4,000		
ADR.1	03.01-06	13.95	876	ND	5 10	03.13-96	000,08	370	1 000	840	8 100	~500		~ *		
ADR-1	05-29-96	13.95	0.70	ND	421	05-30-96	27,000	220	1,000	370	2 700	<100				l l
ADR-1	08-29-96	13.95	10 77	ND	3 1 2	08-20-96	5 300	100	58	76	470	-100				
ADR-1	11-21-96	13.95	10.49	ND	3 46	11-21-96	1,900	87	21	32	270	110				
ADR.1	03-26-97	13.95	10.37	ND	3 58	03-26-97	1,200	260	6	30	210	20				
ADP-1	05-21-97	13.95	10.90	ND	3.05	05-21-97	2 100	300	18	37	20	79				
ADR-1	08-08-97	13.95	11 12	ND	2 83	08-08-97	2,100	620	40	110	470	<200				
ADR-1	11,18,97	13.95	3.47	ND	1048	11_18-97	18,000	900	140	360	2 700	<60				1
ADR-1	02-20-98	13.95	Not su	rveyed: well i	naccessible	11-10 37	10,000	200	2-10		2,,00					

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

		TOC	Depth	FP	Groundwater		TPH			Ethyl-	Total	MTBE	MTBE	TPH	Dissolved	Purged/
Well	Date	Elevation	to Water	Thickness	Elevation	Date	Gasoline	Benzene	Toluene	benzene	Xylenes	8021B*	8260	Diesel	Oxygen	Not Purged
Number	Gauged	(ft-MSL)	(feet)	(feet)	(ft-MSL)	Sampled	(µg/L)	(µg/L)	_(µg/L)	(ug/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(mg/L)	(P/NP)
ADR-1	05-11-98	13.95	Not su	rveyed; well:	inaccessible											
ADR-1	07-30-98	13.95	Not su	rveyed: well	inaccessible											
ADR-1	10-08-98	13.95	Not sur	rveved: well	inaccessible											1
ADR-1	02-18-99	13.95	7.80	ND	6.15	02-18-99	200	4.4	<0.5	1.3	1.3	43				
ADR-1	05-26-99	13.95	10.40	ND	3.55	05-26-99	160	10	<0.5	1.7	1.8	43				
ADR-1	08-23-99	13.95	10.70	ND	3.25	08-23-99	7,400	310	16	210	970	18			0.37	NP
ADR-1	10-27-99	13.95	10.82	ND	3.13	10-27-99	5,000	210	6.3	180	490	5			0.73	NP
ADR-1	01-31-00	13.95	9.21	ND	4.74	01-31-00	290	3.6	<0.5	1.1	<1	26			1.0	NP
ATIR_2	03_24-05	14 64	8 41	~3.00	NIDIAI	02 24 05	Not comple	l								
ADR-2	06-05-95	14 64	1145	>3.00	NPTI	06-05-95	Not sample	L well cont	med floati	ig product						
ADR-2	08-17-95	14.64	12.40	0.03	** 2 56	08.17.05	Not cample	t, wen cond	ined floatin	ig product						1
ADR-2	12-04-95	14.64	10.93	0.03	** 3 73	12_13_05	Not sample	i, well contr	ined floatin	ig product						1
ADR-2	03-01-96	14 64	8 74	ND	5 0.7 0	03-13-96	79 000	1. WEII COBA 1 100	1 700	18 product 710	2 200	~500				
ADR-2	05-29-96	14 64	1043	ND	4.21	05-29-96	33,000	510	1,200	170	3,000	120		••		
ADR-2	08-29-96	14.64	11.64	ND	3 00	08-79-96	8,000	230	180	150	2,300	120	••	~ -		
ADR-2	11-21-96	14.64	11.23	ND	3 41	11-21-96	15,000	630	440	300	2 100	75				ſ
ADR-2	03-26-97	14.64	11.13	ND	3 51	03-26-97	6 100	320	23	180	400	32				
ADR-2	05-21-97	14.64	11.64	ND	3.00	05-21-97	6 100	380	22	210	370	~30				li li
ADR-2	08-08-97	14.64	11.85	ND	2.79	08-08-97	8,400	380	35	230	910	<30				1
ADR-2	11-18-97	14.64	3.33	ND	11.31	11-18-97	11.000	230	29	300	1 200	<60				
ADR-2	02-20-98	14.64	7.67	ND	6.97	02-20-98	4,700	320	30	130	360	20				
ADR-2	05-11-98	14.64	10.47	ND	4.17	0S-11-98	Not sampled	1		120	305	20		-+		1
ADR-2	07-30-98	14.64	Not sur	veyed; well i	inaccessible			-								
ADR-2	10-08-98	14.64	11.67	ND	2.97	10-08-98	Not sampled	l								
ADR-2	02-18-99	14.64	Not sur	veyed: well i	naccessible			-								
ADR-2	05-26-99	14.64	11.02	ND	3.62	05-26-99	5,900	670	5	340	104	16				1

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

Well Number ADR-2 ADR-2	Date Gauged 08-23-99 10-27-99	TOC Elevation (ft-MSL) 14.64 14.64	Depth to Water (feet) 9.82 9.85	FP Thickness (feet) ND Sheen	Groundwater Elevation (ft-MSL) 4.82 4.79	Date Sampled 08-23-99 10-27-99	TPH Gasoline (µg/L) 9,100 Not sample	Benzene (µg/L) 570 d: sheen pres	Toluene (μg/L) 12 sent	Ethyl- benzene (µg/L) 410	Total Xylenes (µg/L) 1,000	MTBE 8021B* (µg/L) 28	MTBE 8260 (µg/L)	TPH Diesei (µg/L)	Dissolved Oxygen (mg/L) 0.50 0.65	Purged/ Not Purged (P/NP) NP NP
ADK-2 TOC: top of if ft-MSL: elevi MTBE: Methug/L: microg BTEX, benze MTBE: Methug/L: microg mg/L: milleg ND: none det NR: not repoi : not analy : not analy	oi-si-du casing ation in feet, rei troiteum bydrowne, tolucae, eti yyl text-butyl eti rams per liter tected tect; data, not ar zed or not appli tected tect; data, not ar zed or not appli ained more tha devation (27); Grand Avenae,	14.64 lative to mean s cathons, Califor hybeczene, totz her valiable or not t icable present at or al n 3 feet of float o 10/27/99 l=Z + (h * 0.7;groundwater eleOakland, Calig	10.15 ca level nia DHS LUF I xylenes by E neasurable powe laboratory ing product; et s) where: Z = 1 xylion data ph forma, (EMCC	ND T Method PA method 802 y detection limit kact product thic measured elevat case refer to <i>Pot</i> <i>ON, March 4, 15</i>	4.49 15. (EPA method 80 stated to the right, kness and groundwa on, h = floating prod with Quarter 1995 Gr 296).	01-31-00 20 prior to 10/27 ter elevation cou fuct thickness, 0 oundwater Mon	7,700 1/99). Id not be measu 73 = density rat itoring Program	280 Ired 10 of oil to wate 11 Results and 1	3.4	370	390 ance Evaluato.	23 n Report, ARC	O Service State	 ton 2169,	2.0	NP

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### Table 2Groundwater Flow Direction and Gradient

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

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Date	Average	Average
Measured	Flow Direction	Hydraulic Gradient
03-24-95	Northwest	0.009
06-05-95	Northwest	0.002
08-17-95	West	0.001
12-04-95	North-Northwest	0.002
03-01-96	Northwest	0.003
05-29-96	Northwest	0.002
08-29-96	West	0.002
11-21-96	West-Northwest	0.002
03-26-97	Northwest	0.002
05-21-97	North-Northwest	0.002
08-08-97	North-Northwest	0.002
11-18-97	North-Northwest	0.003
02-20-98	North	0.013
05-11-98	North	0.03
07-30-98	North	0.002
10-08-98	North-Northwest	0.002
02-18-99	Northwest	0.008
05-26-99	North-Northwest	0.003
08-23-99	Variable	Variable
10-27-99	Variable	Variable
01-31-00	West-Northwest	0.006

OAK\C:\ARCO\2169\QTRLY\2169q100.xls\uh:1 Recreated from electronic data provided by IT Corporation.

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#### APPENDIX C.

#### HISTORIC SOIL BORING / MONITORING WELL LOGS AND GEOLOGIC CROSS-SECTIONS

		SIONS			TYPICAL NAMES
ĥ		CLEAN GRAVELS	GW		WELL GRADED GRAVELS WITH OR WITHOUT SAND, LITTLE OR NO FINES
. 200 SIE		OR NO FINES	GP		POORLY GRADED GRAVELS WITH OR WITHOUT SAND, LITTLE OR NO FINES
D SOILS	COARSE FRACTION IS LARGER THAN NO. 4 SIEVE SIZE	GRAVELS WITH	GM		SILTY GRAVELS, SILTY GRAVELS WITH SAND
GRAINE		OVER 15% FINES	GC		CLAYEY GRAVELS, CLAYEY GRAVELS WITH SAND
OARSE-			sw		WELL GRADED SANDS WITH OR WITHOUT GRAVEL, LITTLE OR NO FINES
E THAN F	SANDS MORE THAN HALF	OR NO FINES	SP		POORLY GRADED SANDS WITH OR WITHOUT GRAVEL, LITTLE OR NO FINES
MOM	COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE SIZE	SANDS WITH	SM		SILTY SANDS WITH OR WITHOUT GRAVEL
		over 15% fines	sc		CLAYEY SANDS WITH OR WITHOUT GRAVEL
SIEVE			ML		INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTS WITH SANDS AND GRAVELS
LS NO. 200	SILTS AN LIQUID LIMIT	D CLAYS 50% OR LESS	CL		INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY CLAYS WITH SANDS AND GRAVELS, LEAN CLAYS
LED SOL			OL		ORGANIC SILTS OR CLAYS OF LOW PLASTICITY
IE-GRAN			МН		INORGANIC SILTS, MICACEOUS OR DIATOMACIOUS, FINE SANDY OR SILTY SOILS, ELASTIC SILTS
FIN HA	SILTS AN	D CLAYS EATER THAN 50%	СН		INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
MORE			он		ORGANIC SILTS OR CLAYS OF MEDIUM TO HIGH PLASTICITY
	HIGHLYORG	ANIC SOILS	PT		PEAT AND OTHER HIGHLY ORGANIC SOILS
LL PI PID MA 2.5 YR 5 GY 5	- Liquid Limit (% - Plastic Index ( - Volatile Vapor - Particle Size A 6/2 - Soil Color aco Munsell Soil C /2 - GSA Rock Col	) %) s in ppm .nalysis ording to olor Charts (1975 Edit lor Chart	ion)	I I I I I I I I I I I I I I I I I I I	<ul> <li>No Soil Sample Recoverd</li> <li>"Undisturbed' Sample</li> <li>Bulk or Classification Sample</li> <li>First Encountered Ground Water Level</li> <li>Piezometric Ground Water Level</li> <li>Sample drive hammer weight - 140 pounds falling 30 inches. Blows required to drive sampler 1 foot are indicated on the logs</li> </ul>
<b>GSI</b> °	eoStrategles Inc.		Unifie and K	d Soll ( ey to To	Classification - ASTM D 2488-85 est Data

### and Key to Test Data

Field loos	ation of 1	xoring:		. ^\				Project No.: Client:	792702 ARCO Proc	Date; Jucts Compa	05/14/91 any	Boring No
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				4		{	$\langle / / /$		CL) - very da	rk gray (10Y	R 3/1), ven	/ stiff, dam
	<u> </u>		<u> </u>		}	-	X///	meaium	plasticity; 90	J% TINES; SII	jiitiy siity; 1	U% TIDE Sa
	400	S&H	A.C.			-	V//				····	
12	400	nush	6.0	6			$\langle / / \rangle$	COLOR	CHANGE to	verv dark o	ray (10YR (	3/1) at 5.0
	500		0.0	ſĭ		1		increase	tine sand to	25%		5/1) at 5.0
		-{		7	<b>_</b>		$\chi//$					
		- <del> </del>	······································	-		1	$\langle / / \rangle$					
				8		]	X///				······································	
				]		]						
	<u> </u>			<u>j</u> 9	 	ļ	V//					
	<u> </u>		 		<u> </u>	4	VII					
	<u> </u>	<u> </u>		10		ł	$\langle / / \rangle$					
4440		C2LL	A-C-			ł	X///	COLOR		o dark gray (	<u>10YR 4/1) a</u>	it 10.0 ft, w
1110	0	Joan	11.0	- ' '		1	$\mathbf{V}$					
	{			12			V//					<u></u>
······	<u> </u>			1'-						·	*******	
		1	·····	13		1	111				*********	
				]			KIII	SILT wit	h SAND (ML	.) - brown (1	OY 5/3), me	dium stiff,
			A-C-	14		] Ŧ		saturate	d; 80% silt; 2	20% fine san	d.	
1066	6	S&H	14.5			4					·····	
	ļ			15		ł		SAND (S	<u>SP) - very da</u>	irk grayish b	rown (10YF	R 3/2), loos
	ļ	·}		1.				saturate	a, medium d	ense; 100%	medium to	tine sand.
				10		}						
	[	<u> </u>		<b>1</b> 7		ļ		Rottom	of Baring of	150#		
			•·····	{''}		1		05/14/91	n Lonny at	10,0 IL,		
		[/		18								·
		<b> </b>		1}						<u>ر میں میں جب الحمد میں میں معامل میں وق</u> میں المحمد الحمد ا		
				19		l					······	
Remarks:		~~~~				4						
	* Convi	erted to e	quivale	nt St	and	ard Per	netration t	olows/ft.				
en linde							Log of E	Boring		<u>~~~~~</u>	<del></del>	BORIN
いら	Geo	ostrategi	es inc.									ж
	20											A-
	<u></u>								N 1 ****		1-1-1-1 PL & 1-1-1-	
32702	r1	1	DUP		- <u>-</u> 0				5/91	HEVIS	xu unit	HEVISED DAT
		·	¥.4~4						_,		·······	

Field loca	tion of 1	poring:	<u> </u>					Project No.:	792702	Date:	05/14/91	Boring No:	
(See Plate 2)								Client:	ARCO Prod	lucts Compa	any	A-D	
								Location: 889 West Grand Avenue					
								Logged by:	Cakiano, Ca	anoma	Deuland	Sheet 1	
								Casing Install	T.U.L.		Dayland		
Drilling m	ethod:	Hollow	Stem Au	Ider									
Hole diam	neter:	8-inches	S	1991				Top of Box Elevation: Datum:					
	T		1			1	. 19	Water Level	13.5'	1			
۵Ê	Biows/it.* or Pressure (ps	Type of Sample	Sample Number		Semple	Detait	Son Group Symbol (USC	Time	13:50	1			
£ ĝ				1 Me				Date	05/14/91				
									·····	Description			
		<u></u>	<u> </u>		 	-	Í	······					
			 	0		4		DAV/EN				······································	
		<u></u>	<u> </u>	$\left\{ \begin{array}{c} 1 \\ 1 \end{array} \right\}$		-		PAVEM	ENISECIO	JN - 1.0 ft.		·	
			<u> </u>	{'}		$\left\{ \right.$		EILLO		brouplaby		<u> (()</u>	
		1	}	10		-		dense damp: 100% fine sand					
			<u> </u>	-  -		4		<u>uonoc, c</u>	amp, 10078	The sallo.			
		+	<u> </u>	3		1			#**-		<u></u>	·····	
			<u> </u>			1			· · · · · · · · · · · · · · · · · · ·				
		1		4		1				······································			
		1		1		]	777	CLAY w	ith SAND (C	L) - very dar	k gray (10Y	R 5/1), ven	
				] 5 [		]	$\mathbf{V}/\mathbf{I}$	stiff, dan	np, medium	plasticity; 70	0% fine; mo	derately sil	
	400	S&H	A-D-			]	$\langle / / \rangle$	30% fine	sand.				
1142	500	push	6,0	6		1	$\langle / / \rangle$	COLOR	CHANGE to	) brown (10)	/R 5/3) at 6,	5 ft.	
	500	<u> </u>	 	)	Δ	4	$\chi//$			·····			
		<u> </u>	<u> </u>	7		4	XII						
			ļ			-							
		<u> </u>		┤╹┟		-							
		+	A.D.	9		1	1.1.1.1		AND (SM)	olive arev (4	V 6/2 mor	lium donco	
625	6	S&H	9.5	Ĭ		1		damn' 6	0% fine san	1. 40% fines	slichty clay	IUIII UEIISE.	
				10		1		- oump, o		a, +070 miloo	, onginy wa	/oy.	
		<u> </u>				1	$\left( 1, 1, 1, 1 \right)$	COLOR	CHANGE to	vellowish b	rown (10YF	(5/4) at 9.5	
<b>-</b>  -		†		111		1					<u></u>		
				] [		]							
			[	12		]							
						Į –							
				13						······			
	_ <b>.</b>		 			∇							
+			A-D-	14		1 -	1	SAND (S	sr) gray (5Y	5/1), loose,	saturated; §	15% fine	
921	0	JOAH	14,5	╎╻┏		{	f	san0; 5%	SIII; MOTILE	s		······································	
			ļ	<sup>1</sup>		{							
		}		16		}		Bottom r	f Boring et	150#		····	
		<u> </u>	•	┤́``┣		{		05/14/91	n borniyat				
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Remarks:	میں ریپنی انٹرینے د					4 <sup>-</sup>					······································	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
*	Conve	rted to e	quivaler	nt Sta	inda	ard Pen	etration b	iows/ft.					
	3						Log of E	Boring				BORING	
20	Geo	Strategi	ies Inc.										
GD												Δ-Ι	
es sa se	]				_								
B NUMBER			REVIEWED	AN PROVID	ËG				DATE	REVI	SED DATE	REVISED DATE	
32702			WH1	-					5/91				

Field loc	ation of	boring:						Project No.:	792702	Date:	05/14/91	Boring No:
				-1				Client:	ARCO Prod	ucts Compa	any	
(See Plate 2)								Location: 889 West Grand Avenue A-E				
								City:	Oakland, Ca	alifornia		Sheet 1
								Loggeo by:	I.D.L.	Driller:	Bayland	<u> </u>
Drilling	method:	Hollow	Stem A	Iner				Casing matai	allon uala;			
Hole dia	meter:	8-inche	5	490		·		Top of Box Elevation: Datum:				
·	5	1	{		Γ	1	- 8	Water Level	13.5'	<u> </u>		
۵Ê	9 5 - 9	ple of	Sample Number	Depth (IL)	Sample	ie in the second	òol Group ribot (USC	Time	15:40			
k g	Blow	Sam Sam				Š <sup>8</sup>		Date	05/14/91			
	e e		}		<u> </u>	<u> </u>	ð (			Description		······
····	<b> </b>				ļ	-				······································		
	{		<u></u>	10	<u> </u>	-						
	<u>}</u>		<u> </u>	1	├	-		PAVEIV	ENI SECTIC	$JN - 1.0 \pi$ .		
	}			- '	┣—	-		FILLS	AND (SP)	vrownich vo		7/0) madium
			<u></u>	2		-		dense	damp: 100%	fine sand		o/o), meaium
				1 -		{		001,00,	oump; 10078	nne sana.	······	
				3		1		·		······		<u> </u>
				]		]	777	CLAY W	ith SAND (C	L) - verv dar	k gray (10Y	R 5/1), verv
		}		4		]	V//	stiff, da	mp, medium	plasticity; 70	0% fines; m	oderately
		ļ		_			V//	silty; 30	% fine sand.		*	
		·	ļ	5	L	4	1/11				· · · · · · · · · · · · · · · · · · ·	·····
						1						
	500	S&H	A-E-	6		4		SILT wit	th SAND (ML	) - olive gra	<u>y (5Y 5/2), s</u>	tiff, damp,
106	500	push	6.5			4		non-pla	stic; 65% fine	es; moderate	ely clayey; 3	5% fine san
	600	7	······	-1		-			· · · · · · · · · · · · · · · · · · ·	······		
				- 0		-						
		<u> </u>				{				<u> </u>		/
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		+	······································	1	┝	1						
		1	A-E-	10		1		COLOR	CHANGE to	brown (10)	(R 5/3) at 9.	5 ft mottles
810	5	S&H	10,5									
				] 11		].					**************************************	
		<u> </u>	···		L							
		<u>}</u>		12	<b> </b>	ļ		<u> </u>				
		<b></b>				1						
		{		13	<u> </u>	{	1/11/1					
			Δ. <b>Ε</b>			ΙΫ	[:::]		ANIA (OLD	aline ITV FV	)) mod!	
53	7	S&H	14 5	-   <sup>1</sup> **		1	·];	OIL   1 O	1 60% fine a	uive (51 5/2	p, meaium c	
				15		4		SAND //	SP - Olive or	av (57 8/2)	medium da	uidyey.
	······	<u> </u>		1 . ]				saturate	d: 100% fine	sand	mealum de	130,
			······	16		1			<u>, 10070 mile</u>		······································	······································
		<u>├</u>	······	1		1					······	
†				17				Bottom	of Boring at 1	5.0 ft.		
				1		1		05/14/91				
				] 18		]	T	·····				······································
				] [								
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temarks:				-			-					
	* Conve	erted to e	quivale	nt St	and	ard Per	netration b	lows/ft.				
		Charter					Log of B	oring				BORING NO
70	Geo	strategi	es inc.									A 🛩
<u>u</u>												A-E
23 6 3 5	ය <b>ා</b>								· · · · · · · · · · · · · · · · · · ·			
ы NUMBER 12702	L	f	REVIEWED I	sy para	ÆG				DATE 5/Q1	REVIS	SED DATE	REVISED DATE
			<u>V</u> 13	1					J/J /			
	MAJOR DIV	SIONS			TYPICAL NAMES							
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ų		CLEAN GINVELS	GW		WELL GRADED GRAVELS WITH OR WITHOUT SAND, LITTLE OR NO FINES							
). 200 SIE	GRAVELS	OR NO FINES	GP		POORLY GRADED GRAVELS WITH OR WITHOUT SAND, LITTLE OR NO FINES							
D SOILS	COARSE FRACTION IS LARGER THAN NO. 4 BIEVE SIZE	GRAVELS WITH	GM		SILTY GRAVELS, SILTY GRAVELS WITH SAND							
GRAINE		OVER 15% FINES	GC		CLAYEY GRAVELS, CLAYEY GRAVELS WITH SAND							
OARSE- HALF IS C		CLEAN SANDS	sw		WELL GRADED SANDS WITH OR WITHOUT GRAVEL, LITTLE OR NO FINES							
C E THAN I	SANDS	OR NO FINES	SP		POORLY GRADED SANDS WITH OR WITHOUT GRAVEL, LITTLE OR NO FINES							
MOR	COARSE FRACTION IS SMALLER THAN NO. 4 BIEVE BIZE	SANDS WITH	SM		SILTY SANDS WITH OR WITHOUT GRAVEL							
		OVER 15% FINES	sc		CLAYEY SANDS WITH OR WITHOUT GRAVEL							
) SIEVE			ML		INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTS WITH SANDS AND GRAVELS							
ILS VNO. 200	SILTS AN LIQUID LIMIT	ID CLAYS 50% OR LESS	CL		INO/IGANIC CLAYS OF LOW TO MEDIUM PLASTICITY CLAYS WITH SANDS AND GRAVELS, LEAN CLAYS							
NED SO			OL		ORGANIC SILTS OR CLAYS OF LOW PLASTICITY							
LE GRA			MH		INORGANIC SILTS, MICACEOUS OR DIATOMACIOUS, FINE SANDY OR SILTY SOILS, ELASTIC SILTS							
FIN H/	SILTS AN LIQUID LIMIT GRE	ID CLAYS EATER THAN 50%	СН		INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS							
MORE			он		ORGANIC SILTS OR CLAYS OF MEDIUM TO HIGH PLASTICITY							
	HIGHLY ORG	ANIC SOILS	РТ		PEAT AND OTHER HIGHLY ORGANIC SOILS							
				Ø	- No Soil Sample Recovered							
				10	- "Undisturbod" Samplo							
L.	- Liquid Limit (%	»)			Bulk or Classification Sample							
기	- Plastic Index (	%)		Ā	<ul> <li>First Encountered Ground Water Level</li> </ul>							
ID	<ul> <li>Volatile Vapor</li> </ul>	s in ppm		<b>*</b>	<ul> <li>Piezometric Ground Water Level</li> </ul>							
۸A	Parlicle Size A	nalysis										
5 YR 6/2 GY 5/2	2 - Soil Color acco Munsell Soil C - GSA Rock Col	ording to olor Charts (1975 Editi or Chart	ion)	Per	netration - Sample drive hammer weight - 140 pounds falling 30 inches. Blows required to drive sampler 1 foot are indicated on the logs							
	•											

GeoStrategies Inc.

Unified Soil Classification - ASTM D 2488-85 and Key to Test Data

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Field lo	cation of	poung,	·····					Project No., 7927	705	Date:	3/16/92	Boring	No.
			(See Pla	10 21				Client: ARC	CO Proc	ducts Compa	iny SS#2169		4
		1		ue zj				City: Oal	W. Gra	nd Avenue			··· I
								Logged by: DOM	And	Delllor	D and a set	Sheet	1
								Casing installation of	jata;	Danet.	Bayland	t	2
Drilling	method:	Hollow	Stem A	luger	•	·····							
mole di	ameler:	8" con	verted to	o <u>10"</u>	<del></del>		-	Top of Box Elevatio	n: 14	.75'	Datum: MSI		
~	: 3	2.0		12	.	,	e Si	Water Level	13.5	10.8'	1	1	
0 2 2 3	Surg I	ype q amp	d ugun	h d		Welf	0 5 5	Time S	9:40	11:10			
	10 60	~ ~ ~	02	5	0		Sou Cinv	Date 1 3/	16/92	3/16/92			
****	1	į						PAVEMENT	SECTIO	Description	·		
				1						214-0.75 1661			
	ر ملعب		_								**************************************		· · · · · · · · · · · · · · · · · · ·
				_ 2	ļ	_	V//				<u></u>		· ·····
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				-1 3	-					<u> </u>			
**********	250	S&H	A-1-	4		-		ULAY (UL) - (	olive (5	Y 5/4); medil	um stiff; damp	; 90%	clay
54.0	250		4.5				$\langle / / \rangle$	10 /0 Silt, 11406	e mie si				
	i 350			5	$\overline{\Lambda}$	-							
		<u> </u>				]							
	<u> </u>			6				······					
	ļ					4							
	<u>                                     </u>	<u> </u>	- <b> </b>	7	<b> </b>	4	$V/\Lambda$	······································					
							VIA				······		
···	<u> </u>			-l°			VIA						
	†	S&H		9		-	$V/\Lambda$	Von stiff troo	o oroor	nin mottor of			
	1	1	A-1-	-		7	V/A	very still, it do	e orgai	ne matter at	10.0 feet.		
82	17		10.0	10		]	Y//X						
	; 		<u> </u>	_		]							<u> </u>
		SAH		11		ļ.	1/1	CLAYEY SAN	ID (SC)	- light olive t	prown, (2.5Y	S/Y);	•
74			A-1-	40		-{	1/A	medium dense	e; moist	t; 60% find s	and; 40% cla	y; trace	e
			12.0	- 12	<b></b> .	-		tine gravel.		_ <u></u> ,	······································		
		<u> </u>	†	13		1	///				**************************************		
			†	1''			1.1.1	Saturated at 1	35 100	t			
		S&H		14		÷	1//	- churched the fr	5.5 1661	ha <u></u>			
			A-1-				K.K.A					······	·····
12.4	12		15.0	[15]		-	1.77	SAND WITH C	LAY (S	SP-SC) - dark	greenish are	γ (5G)	7
						ļ	1:4/	4/1); medium (	dense;	saturated; 90	0% fine to me	dium	
				10			1: //	sand; 10% cla	y; trace	fine gravel.		······	
				17	•	{	1:1/				· · · · · · · · · · · · · · · · · · ·	<u></u>	
			]	1.1		1	1: 1/			<u> </u>			
		·····		18		1	1.1	· · · · · · · · · · · · · · · · · · ·					
				] [		1	1.1.1	CLAYEY SAN	D (SC)	- light olive h	10WD (2 5Y 5	/4)	
		S&H		19		]	1.1.1	medium dense	; satura	ated; 60% fin	e to coarse s	and 3	0%
i 			A-1-			l	$V/\Lambda$	clay; 10% fine	to med	lium angular	gravel.		2.0
5.5 i	25	}	20.0	20			V. / /.			······································			
marks:	•••										* <u></u>		
	Conver	ted to e	quivaler	nt Sta	inda	ard Pene	stration blo	ws/ft.					
a sa a p	a Beo	Strateni	ies inc			-	Log of B	ring				BORIN	IG NO
żS												A	الد.
SI STORE	<b>.</b>											A	-7
NUMBER			BELADUED	av on m								- *	•
2705			di-	1/	çu			DA1 CA1	1E 20	REVISED	DATE RE	MSED DAT	TE

Field lo	cation of	boring: ((	See Pia	te 2)				Project No.: Client: Location: City:	792705 ARCO Pro 889 W. Gr Oakland	Date: Doucts Comp and Avenue	3/16/92 any SS#2169	Bonng A	No:
								Logged by:	RCM	Driller;	Bayland	of	2
Drilling	method:	Hotlow	Stom A	ugor		_		Casing insta	llation data:				<u> </u>
Hole dia	meler:	8" . con	verted t	o 10'	r			Top of Box F	-levation:		Data		*******
	. 3	1			1	; 	<u></u>	Water Level			Datum:		
		ye of Pe of	a de la	14	ър(в	ta l	CSC CSC	Time			~		
- <u>9</u>	6	ት ምም	<sup>3</sup> ₹	l å	ð,	۶ð	Soil (	Date				*******	*******
						<u> </u>	5			Description			
	/		1	21			1.1						
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· • • • • • • • • • • • • • • • • • • •	+	·		23									
<u> </u>		1	<u> </u>	1	┢──┤			SAND /	(SW) - dark	vellowish hro		lace	
		S&H		24				saturate	ed; 95% fine	to coarse sa	Ind: 5% fines	100SE	<u>zi</u> ine
~~~~~			A-1-					gravel.					
<u> </u>	¥		25.0	25			1//	CLAY (	CL) - dark g	reenish gray	(5G 4/1); stiff;	moist;	95
	{ <del>-</del>	+		26			V//	ciay; 59	e sano, traci	e tine gravel.			
				1				<u></u>				· · · · · · · · · · · · · · · · · · ·	
				27			//			~ <u></u>		<u> </u>	
				-	]					······································			<b>.</b>
	l 			28							·····		
		S&H		29				SANDY	SILT (ML)		V 4/0)		
2.5			A-1-					fines; 20	)% sand: 10	% fine oravel	(4/2) sun; mc	ist; 70	%
	11		30.0	30						<u></u>	·		<u> </u>
				24	{			Datta a		- <u></u>		······	
								3/16/92	of boring 30	.0 teet.	·····		
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Field to	cation of	boring.						Project No.	702705	Datas	0// 0/00	·
								Client:	ABCO Pro	Date:	3/16/92	Boring No:
		(	(See Pla	te 2)				Location:	889 W. Gr	and Avenue	any 30#2109	A-2
								City:	Oakland			Sheet 1
								Logged by:	RCM	Driller:	Bayland	01.001
	······							Casing insta	llation data:		Dayland	<u> </u>
	method:	Hollow	Stem A	uger		·····						
	ameter:	<u>8", con</u>	verted to	<u>o 10"</u>		<u> </u>		Top of Box E	Elevation: 15	.16'	Datum: MSL	
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	- <u> </u>		+			-		damp. 8	0L) - Very U	ark gray (10 1	(H 3/1); medit	im stiff;
		†	+	3		-		vamp, c	3376 Lidy, 15	% sanu; trac	e brick tragmi	ents (fill).
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			10.0	- 10		1	$V/\Lambda$					
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			A.2.	13	$\vdash$	•	· · · · }-	SAIND (5	vv) - Olive b	rown (2.5 Y 4	/4) medium de	ense;
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(See Plate 2)         Converting 10:00 Stem Auger         Account of the second of the	Field loc	cation of	boring:	·····					Project No	792705	Date:	3/16/92	Bonna Na
(See Plate 2)         Location:         BB9 W. Grand Avenue         A2           Dring method:         Hollow Stem Auger         For of Box Elevator:         Determine         Det									Client:	ARCO Pro	ducts Compa	any SS#2169	
Office         Dakiand         Design         Beyland         Beyland         Sevier         2           Drider dement         B: converted to 10°         10°         Top d' Boc Hewton         Doilor:	1		(\$	See Plate	32)				Location:	889 W. Gra	nd Avenue		j A-2
Dräng method:         Hollow Stem Auger         Top of Box Elevator:         Detur:         Detur:           B & disseler         B & disseler         B & disseler         Top of Box Elevator:         Detur:									City:	Oakland			Sheet 2
Optimized Hole dismetar:         Hole Stem Auger B' good by Stem Auger B' good	}								Logged by:	RCM	Driller:	Bayland	of 2
Convertion         Top of Box Elevation:         Deturn:           0	Dolling	Mathod	Lallan	Chom A.					Casing insta	llation data.	····		4
O         Distriction (Color 10 (C	Hole dia	meter:	8" conv	Stem Au	iger 10"				Top of Box F	levetion:		- Data	
P S         I = a         B </td <td></td> <td></td> <td>0,001</td> <td>1</td> <td>10</td> <td>i</td> <td></td> <td>1 6</td> <td>Woter Level</td> <td>i isvatici).</td> <td></td> <td></td> <td></td>			0,001	1	10	i		1 6	Woter Level	i isvatici).			
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21       22         23       Increase fine subangular gravel to 20% at 23.5 feet.         0.4       19       25.0         0       15       27         0       15       27         0       15       27         0       15       27         0       15       27         0       15       27         0       15       27         0       15       27         0       15       27         0       15       27         0       30       31         0       33       33         0       33       33         0       33       33         0       33       33         0       34       33         0       38       33         0       38       33         0       38       33         0       38       33         0       38       33         0       38       39         0       39       39         0       39       39         0       39       39 <td></td> <td></td> <td></td> <td></td> <td>1</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>					1								
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0.4       19       23       Increase fine subangular gravel to 20% at 23.5 feet.         0.4       19       250       25         0       15       26       CLAY (CL) - greenish gray (5G 5/1) stift; damp; 80% ctay;         0       15       27       20% fine sand interbedded lammae.         0       15       27       28       Bottom of boring 26.5 feet.         3/16/92       33       33       34       34         33       33       33       33       34         34       35       36       36       36         36       37       38       36       36         36       36       36       36       36         36       36       36       36       36         37       38       36       36       36         38       39       40       37       38       36         39       40       36       36       36       36         39       40       37       38       38       36         39       40       36       36       36       36         39       6eoStrategies Inc.       Log of Boring       Acvectoute <t< td=""><td></td><td>·{</td><td></td><td><u> </u></td><td>22</td><td>  </td><td></td><td></td><td></td><td>يى دەرەر بەك بور دېرى رويىيى .</td><td></td><td></td><td></td></t<>		·{		<u> </u>	22					يى دەرەر بەك بور دېرى رويىيى .			
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				12			$Y/\Lambda$	Satura	ted; medium :	stiff at 12.0 f	eet.	
		SPT		1		- T	Y//					
				13		4	Y//					
0	4	-		- <u> </u>		4	7.7.7	0.00	NOAND (00	W harman / /		
		J S&H	A 2	14		-	1.1.1		ET SAIND (SU	1) - UIUWII (1) d: 30% alar	ノ T ロ ン/ ン) ~ Sa 10% ei#	alui aleo;
~~~	0		150	1=		-	11/1	10056,	UD /D INTE SALI	u, uu 10 ulay,	TO A OIL	······································
					<b>-</b>	1	1/1/		<u></u>			
	}	+		16	<b> </b>	1	V.//			<u></u>		
	· · · · · · · · · · · · · · · · · · ·			1.		1	1.1.1				**************************************	
				17		1	VIA		·····			· · · · · · · · ·
				1		1	Y//	CLAY	(CL) - light oli	ve brown (2	.5 Y 5/4) ver	y stiff; mo
				18		]	Y//1	80% cl	ay; 20% fine :	sand.		
						]	$Y//\lambda$	GRAV	EL with SAND	) (GW) - ligh	t olive brown	(2.5 Y 5
		S&H		<b>_</b> 19		1	K-/-/	mediur	n dense; sati	urated; 65%	fine to medi	um;
			A-3-			4		sub-rol	unded to sub-	-angular gra	vel; 30% fine	to coars
0	28		20.0	20		<u> </u>	10.01	sand; s	5% fines.			
emarks:	: +0:				ار مر م		ntuntina 1-1-					
	*Conve	erted to e	quivale	ni sta	and	aro pen	etration blo	ows/π.	a —			
		oStratea	ies Inc.				Log of B	oring				BORI
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Ə NUMBE	<u>نمن</u> A		REVIEWED	BY FIG	CEG				DATE	REV	ISED DATE	REVISED D
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		(S	ee Plate	ə 2)				Location: City:	889 W. Gra Oakland	nd Avenue	(iy 55#210	A-:
								Logged by:	RCM	Driller:	Bayland	of
								Casing instal	lation data:			
rilling 1	method:	Hollow S	Stem Au	iger	,			Ten of Dave D	In allow.		Deture	
			vented to	10"	[]				tievation;		Datum:	
~	وي 10 م	<u></u>	25	E	p	_	a de la constante de la consta	Time				
C E	ows/	edi	dua	41de	dung	Deta Deta	200	Dete				
9	12 200-1	6.0	ØŽ	ື	ŝ		Na Soi	Dale		Description		
<u> </u>						- <u>-</u>	4			Description		<u>.</u>
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				1-:				h		t		
		1		22								
<u></u>				1						,		
				23								
										·····		
		S&H		24				CLAY (	CL) - greenis	sh gray (5GY	5/1) very st	iff; moist;
			A-3-	4			X//	90% cla	ay, 10% fine	sand.		
0	30		25.0	25			KK		(20)			
		SPT						SAND (	(SP) - Olive (8	5 Y 4/3) dens	e; saturatec	1; 100% fi
	40			26			· · ·	sand; tr	ace fines.			
	43			077	╺┺╼┤			· <u>u</u>		<u> </u>		
				21					·····			·····
				28								
				- 20						······································		<u> </u>
	· · · ·	S&H		29				COLOF	CHANGE T	O dark oree	nish orav (5	G 4/1) at
			A3-					feet.		<u></u>	11011 9.07 10	<u> </u>
0	36		30.0	30			777	CLAY (	CL) dark gre	enish grav (§	5G 4/1) mois	st; hard; 7
								clay, 25	% silt; trace	fine to coars	e sand.	
	T			] 31								
									·			·····
				32								
		· · -		33				Bottom	of boring 30	.0 teet.		· ·····
<u>.</u>			<u> </u>					3/17/92	·			
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accal	Sec	Strateo	es Inc.				LOG OF E	oring				BORI
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		жину. 		~1				Client	ARCO Proc	Jucts Compa	iny SS#2169	A-4
		(S	ee Plate	2)				Location:	889 W. Gra	nd Avenue		
								City:	Oakland	*****	······································	Sheet
								Logged by:	RCM	Driller:	Bayland	ot
Drillion	nethod	Hollow	tom A.	aer				Casing insta	lation data;			
-lole diar	meter:	8", conv	erted to	<u>10"</u>				Top of Box E	Elevation: 15	.89'	Datum: MS	iL.
	5						20	Water Level	13.5'			
ρÊ	1,5 1,5 1,6	eof	ap a	ц Ш	90		Log of	Time	13:55			
a g	Blow Blow	d a	La S	Dep	ଞ୍ଚି	≤å		Date	3/17/92			
	- Æ						ี ซี ซี			Description		
						]		PAVEN	<b>MENT SECTION</b>	ON - 0.75 fee	t,	
				1		]						
				]			Y//					
		Î I		2			Y//	CLAY (	(CL) - very da	ark gray (10 \	7R 3/1) stiff; (	damp; 80
		1		1		7	Y//	clay, 20	0% silt, trace	fine sand; tr	ace brick frag	gments.
		1		3		1	Y//				······································	
		1		1		1	Y//					
	200	S&H		4		1	Y//	**		·······	· · · · · · · · · · · · · · · · · · ·	
	200	1	A-4-	1		1	V//		····			
0	250		5.0	5		1	V//					
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				B		-	1//	~~~~			hansing 10 F	
					_	4	1//	COLO	HUHANGE	U light olive	Drown (2.5 Y	′ 5/4), Ve
		S&H	<u> </u>	9		4	X///	stiff at l	B.5 teet.	······································		
		<u> </u>	<u>A-4-</u>	ļ			X///					
0	23	1	10.0	10		1	K.					
*****		1		1	L	1		SAND	(SW) - yellow	vish brown (1	0 YR 5/4) m	edium
				111		]		dense;	moist' 80% f	ine to coarse	e sand; 20%	sub-roun
				l			·: ··	to sub-	angular fine	gravel.		
				12			1: 11					
				]		]	12/1/					
				13		]	1.1.1					
							1.1.1.	CLAYE	Y SAND (SC	) - light olive	brown; (2.5	Y 5/4)
		S&H		14		Ŧ	V././.	mediun	n dense; satu	irated; 70%	line sand; 30	% clay.
		Ţ	A-4-	1		1	1.1.1.					
0	10	11	15.0	15			1.1.1.			******		
		11	~	1		1	1.1.1.					
		11		16		1	1.1.1			· · · · · ·		
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,		<u> </u>		10		1		SAND	(SIM - Nork	allowish bro		(6) modi
		<u> </u>		1.0		1		deneer	saturatod: 0	5% fine to po	area cand. E	% finder
		00		40		-		trana fi	no gravol		aros sariu, s	10 11103
			A 4	13		4			(CI) arossi	h arou /EQV	5/1) otiffe m	hict: 0/10/
		+	<u>- M-4-</u>			-	1			ମା ସ୍ଥାରମ୍ଭ (ରୁପ Y	5/1) Sun; mo	JISC 90%
U	15	<u>                                      </u>	20.0	20		!		clay; 10	u% tine sand	·		
-onia(NS)	*Conve	erted to e	quivaler	nt Sta	and	ard Pen	etration b	lows/ft.				
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Field locati	ion of 1	wring:						Project No.: Client:	792705 ARCO Proc	Date: lucts Compa	3/17/92 any SS#2169	
		(S	ee Plate	2)				Location:	889 W. Grai	nd Avenue		A-4
								City:	Oakland			Sheet 2
								Logged by:	HCM	Uniller:	Bayland	of 2
Villing -	athodi	Hollow	tom A.	007				Casing instal	ixuon oata:			
tole diam	eler:		erted to	<u>ger</u> 10"				Top of Box E	levation:		Datum:	
	, TT			Ť		<b>-</b>	<u>.</u> R	Water Level			······································	1
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6	Biow	Serr	Num	Depti	Sar	Š₿	Soil C	Date				<u> </u>
	<u>ج</u>	_		<u> </u>			<u>لې چې ا</u>		······	Description		
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		+		121	┝──┤		V/L			······································		
		+		22			1/1				*	
		<u>†</u>	<b>-</b>	1								
				23								
									1L) - olive (5)	′ 5/3); stiff; n	noist; 70% sil	t; 20% fin
		S&H		24				sand; 1	u% clay.			*** ****
0	26	<u>  </u>	25.0	25			╎┊┊┊┊┊				<u>,,, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</u>	
<u> </u>	20	<u> </u>	20.0	1			1	SAND	(SP) - areeni	sh grav (5G	5/1) dense: s	aturated:
		1		26	 		[	95% fin	e sand; 5% f	ines.		
				]					·····			
				27			1					
			,	00			[		·····			
		+		28								
		S&H		29				<u> </u>				
			A-4-	1				SILT (N	IL) - dark gre	enish gray (	5G 4/1) stiff;	damp; 80
0	13		30.0	30				silt; 209	% clay; trace	fine sand; ro	ootholes.	
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				31					······			
			- <u>-</u>	30								<u></u>
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				33				Bottom	of boring 30	.0 feet		
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		(S	ee Plate	2)				Location:	889 W. Gran	d Avenue			۱ <i>۳</i> ۱
				7				City:	Oakland			Sheet	1
								Logged by:	RCM	Driller:	Bayland	of	2
	<u></u>							Casing installa	ation data:				
Drilling n	nethod:	Hollow S	Stem Aug	ger				Ton of Poy Fi	oution: 15	741	Detum: MC		
riole diar	neler:		ened to	12"	}	}		Water ) AVA	10.0'		WS	<u>لا۔</u> ا	
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	Nave Nave	dm9	d mp U mp	-fact	dime	Deta	e la cuerta	Date	3/25/92				
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	_	1				<u> </u>		STOCK	PILED SOIL	0.5 ft.			
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				-	├			GRAVE		Cl.V., dark or	av (5¥ 4/1) s	tiff: moie	et
		000		1 2	-	{	$\langle / / \rangle$		V 25% fine o	ravel: 15%	sand (fill)	ani, 1906	
				<u>م</u>			V//		y,	,			
1.5	Q		0.0	0		ł	V//				<b></b>	·····	-
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		1	1	10		V							
		S&H	[	]		] <del>.</del>		GRAVE	L (GW) - gre	eenish gray	(5 G 5/1) me	dium de	n
				]11				saturate	ed; 95% fine	to coarse gi	avel; 5% sar	<u>nd (fill).</u>	
	11		ļ	ļ		1							
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				14		4							
			+	46		4	····	SAND /	SP) - greenie	sh arav (5G	Y 5/1) mediu	m dense	<u>.</u>
		C2LI	+	110	-	1		saturate	ed: 95% fine	sand: 5% fi	nes.		-1
			AR-1-	16		1	• • • • •						
131.3	14		16.5	1.0		1	177						
10110		-		17		1	X///	GRAVE	LLY CLAY (	CL) brown (	10 YR 5/3) st	iff; satur	a
à		1	1	1	<b></b>	1	1//	_55% cla	ay; 30% fine t	to medium g	gravel; 15% f	ine to co	22
		1	1	18		]	1//	sand; m	ninor black (1	0YR 3/1) m	ottling and b	luish gr	a
				1		]	1.	(5B 5/1)	) discoloratio	n,			
				] 19		]	1				····	······································	
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1000 S. 8895	*Conv	erted to e	equivaler	nt st	and	ara pen	letration b	IOWS/IL.				RO	
	🔊 Ge	oStrateg	jies Inc.				Log of	Boning					
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OB NUMBE	A		REVIEWED	BY RG	CEG				DATE	RE	VISED DATE	REVISED	D
			in	1/					3/92				

Field loca	ation of l	oring:						Client:	ARCO Pro	ducts Compa	3/25/92 any SS#2169	
		(S	ee Plate	2)				Location:	889 W. Gra	ind Avenue		
		•						City:	Oakland			Sheet
								Logged by:	RCM	Driller:	Bayland	of
Delling -	mation al.	Lallour	Stom A.	007				Casing Instal	llation data:			
Hole diar	netnoa: meter:	Hollow : 8", com	vertedto	ger 12"				Top of Box B	Elevation:		Datum:	
	क्र	1					6	Water Level				
ъÊ		e of	90	Ē	ald	ta la	line SO	Time				}
6 6	3low	£.5§	S N	Je j	Sar	\$8		Date	1			
	ΨĔ	1					Syn			Description		
		S&H	l					SAND	with GRAVE	L (SW) - darl	( greenish gra	iy (5GY 4
		1	AR-1-	21				mediun	n dense; sati	urated; 85%	fine to coarse	sand; 1
197.2	29		21.5	1			1.77	fine to i	medium grav	/el.		
				22			1:11	SAND	with CLAY (S	SW - SC) - da	ark greenish g	ray (5G)
								4/1) me	edium dense	; saturated ;	80% fine to c	oarse sa
				23			1.1	10% cl	ay; 10% fine	to medium g	ravel.	
		1		1			1.11:					
		1	1	24			1.					
		1		1 - 1						<del>,</del> , ,		
		1		25			• • •					
		S&H	<u> </u>	1				SAND	(SW) - dark (	areenish arav	/ (5BG 4/1) vi	ery dense
			AR-1-	26				saturat	ed: 95% fine	to coarse se	nd: 5% fine c	ravel.
100	70	+	265	1~~1				SAND	(SP) olive (5)	Y 4/4) verv d	ense: saturat	ed: 95%
10.0 -	10	<u> </u>	20.0	27				sand f	(01) 0110 (0 (% elit		onioo, oadarad	00, 0070
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		S&H		29	<b>_</b>					1) dayle area	siah may (E/2)	V 4/4\
			AH-1-					SILIY		L) dark greet	lish gray (5G	Y 4/1) Ve
2.5	19		30	30				stiff; da	imp; 70% cla	ay; 30% siit; t	race organic	matter;
			ļ					<u>rootnoi</u>	<u>es.</u>		<u></u>	······
				31								
				32				Bottom	of boring 30	0.0 feet.		
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Remarks		1	<u></u>									
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				19			<i>ل</i> د			······································	· · · · · · · · · · · · · · · · · · ·	
				ιQ			بنمل ا					
				10								······
			6,01	17					3.		,,,,,	
	21		AR-2	16		1		gravel; g	preenish gray	r (5 GY 5/1)	discoloratio	n in
		S&H		15		Ϋ́		stiff; moi	st; 70% silt;	30% fine to	coarse sand	; trace
				15				SANDY	SILT (NAL)	ollowich here	W/n (10 \/D	= (4)
				14								
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			 	1	<u> </u>	ł		FILL-0	ea oravel to	15 feet		
				<u> </u>	<u> </u>		6	Conduc	tor casing to	Description 10.5 feet.		
DIA DIA	Blows	Type	Samp Numb	Depth	Samp	Pete Val	Sout Gn /mbof (t	Date	6/8/92			
. ?	(sd) (	हुर	- 	(T)	e e e		oup	Water Level	15.0°			
Hole dia	meter:	10 - incl	les	<u>भुषः</u> म्रा				Top of Box E	levation:	······································	Datum:	
Drilling	method:	Hollow	Stom Ar	nor				Casing Install	ation data:			
								Logged by:	Oakland RCM	Driller:	W. Hazma	Sheet
		(9	See Plate	<del>)</del> 2)				Location:	889 W. Grai	nd Avenue		~ AR-
											1111 33 # / 17	1.71

Drilling method: Hollow Stem Auger Hole diameter: 10 - inches CLudg, 1	Casing installation data: Top of Box Elevation: Datum: Water Level Time
Hole diameter: 10 - inches Hole diameter: 10 - inches Glady Hole of the state of th	Top of Box Elevation: Datum: Water Level Time
PID (ppm) Blows/it.* or Pressure (psi) Type of Sample Number Depth (ft.) Sample Sample Sample Vetal Depth (ft.)	Water Level
PID (ppm) (ppm) Pressure (p. or Pressure (p. or Number Number Number Depth (ft.) Semple Semple Semple	Time
Prossure 1 Prossure 1 Prosection 1	
	Date
	Description
S&H AR-2	SAND with GRAVEL (SW) - brown (10 YR 4/3); dens
	saturated; 60% fine to coarse sand; 40% angular to
	sub-rounded, fine to medium gravel.
23 23	
24	
	CLAYEY SAND (SC) - dark greenish gray (5 GY 4/1)
Art-2 20	dense; saturated; 80% fine to medium sand; 20% cla
20.0	SAND (SF) - Uark greenish gray (5 GY 4/1); dense;
	saulateu, 100 % Ille Sallu.
28 28	· · · · · · · · · · · · · · · · · · ·
29 1	
S&H AR-2	SILT with SAND (ML) - dark greenish gray ( 5 GY 4/1
30.0 30	hard; damp; 80% silt; 20% fine to coarse sand.
	Bottom of horing at 30.5 fast
	6/8/92.
	**************************************
34	
35	
<u> </u>	
	······································
38	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
39	
Iemarks:	
GeoStrategies Inc.	soring BOR
B NUMBER REVIEWED BY POCCES	DATE REVISED DATE REVISED D



Field lo	cation of	boring:	See Pla	ite 2)				Project No.; Client: Location:	792705 ARCO Pro 889 W. Gra	Date: ducts Co. SS nd Avenue	6/8/92 5 #2169	Boring - A	No: /-1
								City:	Oakland, C	alifornia		Sheet	1
								Casing installe	HCM tion data:	Driller:	W. Hazmat	of	1
Drilling	method:	Hollow	Stem A	uger	-								
	aneter:	8-inche	<u>s</u>					Top of Box Ele	evation:		Datum:		
٥Ê	1	28	9 F	æ			SCS)	Water Level	12.0'				
äğ	Blows or ossure	Samp	L L L L	5	Semo	Neta Seta	or (C		14:35				
							Ster	Date	0/0/92	Description			
	<u> </u>	ļ		-				PAVEME	INT SECTIO	DN - 1.0 feet.			4 Kinese a
<b>.</b> <u>-</u>	+			-1	$\vdash$			01.43770					·
	+			12				CLAY (C	L) - black (1	10 YR 2/1); n	nedium stiff; c	lamp; 9	0%
						-1	V//	07	o nne sanu.				
		<u> </u>		3		]							
	+	<u> </u>			<u> </u>		V//						
	+	<u> </u>		- 4	┣	-	YA						
	+			5			Y//			• • • • • • • • • •			
		S&H		-		1		verv stiff		o dark grayis staining in m	sh brown (2.5	<u>Y 4/2);</u>	
			AV-1	6		]	V//	tury dant,	a on oxide	stanning in re	Joinoles at 5.	0 teet.	
444	22		6.5			4	$V/\Lambda$				······································		
		·····		7	<u> </u>	4		······					<u> </u>
				R		-							
				1		-		·······					
				9			V/T			<b></b>			<u> </u>
				-		4	$V/\Lambda$						
		S&H		10		-	V/A					· · · · · · · · · · · · · · · · · · ·	
			AV-1	11		í	$\mathbb{V}/\mathbb{A}$	Minor oro	onich orou	C CAL MIAN			
2146	21		11.5			1		11.5 feet.	enisii gray (	<u>5 Gr 5/1) a</u>	iscoloration; i	noist a	t
		S&H		12		z	$V/\Lambda$	Saturated	at 12.0 feet				
1062				1		-	$//\Lambda$	·····					
002	<u> </u>	S&H	AV.1	13			1/A						
			14.0	14			644	CLAVEV	SAND (CO)	flackub			
875	29		<u>````````````````````````````````</u>				1/1	dense: sat	urated. 759	- iignt yellow	visn prown (2 tium eand ar	5 Y 6/4	<u>);</u>
				15				greenish o	ray (5 GY 5	i/1) discolor:	ation in rooth	7% Clay	<u>;                                    </u>
	<u> </u>												
		i					-	Rotton -1	havin				
				17			-	6/8/92	uoring at 14	1.5 feet.	·		
									·		······································	·	]
				18									
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marks: *	* Convei	ted to ea	quivaler	nt sta	nda	rd pene	tration blo	ws/ft.		**************************************			
	) Geos	trategie					Log of Bo	ring				BORING	
<del>zS</del>		n arcyle	a nic.								ļ	<b>4</b> V-	1
NUMBER		RE	EVIEWED B	AGICE	G				DATE	AEVISED	DATE	ASED OAT	
.700			an	·					6/92				ũ



(See Plate 2)     Location     889 W. Grand Avenue     Avenue       Drilling method:     Hollow Stem Auger     Totaliand California     Seet T       Hold diamoter:     8-Inches     Tor of Box Elevation     Datum:       Inde diamoter:     8-Inches     Tor of Box Elevation     Datum:       Inde diamoter:     8-Inches     Tor of Box Elevation     Datum:       Inde diamoter:     8-Inches     Tor of Box Elevation     Datum:       Inde diamoter:     8-Inches     Inches     Description       Inde diamoter:     2     Inches     Description       Inde diamoter:     2     Inches     CLAY (CL) - very dark (arg. (10 YR 3/1): modium stiff;       Inde diamoter:     3     Inches     COLOR CHANGE to pale olive (5 Y 6/3); trace fine       Inde diamoter:     3     Inches     COLOR CHANGE to pale olive (5 Y 6/3); trace fine       Inde diamoter:     3     Inches     SAND with GRAVEL (SW) - yellowish brown (10 YR 5/4); medium stiff;       Inde diamoter:     3     Inches     SAND with GRAVEL (SW) - yellowish brown (10 YR 5/4); medium stand;       Inde diamoter:     3     Inches     SAND with GRAVEL (SW) - yellowish brown (10 YR 5/4); wery stiff; seturated; 70% stil; 30% fine sand;       Inde diamoter:     3     Inches     Inches     SAND with GRAVEL (SW) - yellowish brown (10 YR 5/4); wery stiff; seturated;	Field loc	cation of	boring:	0				***********************	Project No.:         792705         Date:         6/8/92           Client:         ARCO Products Co. SS #2169	Boring No.
Umail         Oakland Cationia         Sheet 1           Dolling method:         Hollow Stam Auger         Top of Box Elevation:         Datum:           Pail of the standard presentation of the standard penetration biows/ft.         Sheet 1         Datum:         Datum:           Pail of the standard penetration biows/ft.         Sheet 1         Datum:         Datum:         Datum:           Pail of the standard penetration biows/ft.         Sheet 1         Datum:         Datum:         Datum:           Pail of the standard penetration biows/ft.         Sheet 1         Datum:         Da			6	See Plat	le 2)				Location: 889 W. Grand Avenue	AV-2
Delling method:         Hollow Stem Auger         Top of Box Elevation         Delline:         W. Hazmati         of 1           2 a         1         3         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1         1									City: Oakland, California	Sheet 1
Drifting method:         Holiow Stem Auger         For of Box Elevation:         Datum:           Value         B-inches         B-inches         B-inches           SAND with GRAVEL<									Casing installation data	of 1
Hole diameter:       B-inches       Top of Box Elevation:       Datum::	Drilling .	method:	Hollow	Stem A	uaer					
gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring         gring <th< td=""><td>Hole dia</td><td>ameter:</td><td>8-inche</td><td>IS</td><td></td><td></td><td></td><td></td><td>Top of Box Elevation:</td><td></td></th<>	Hole dia	ameter:	8-inche	IS					Top of Box Elevation:	
g g g g g g g g g g g g g g g g g g g g		5		1		1	1	57	Water Level 12 0'	
1         3         3         3         3         3         3         3         3         Date         6/8/92         Description           1         1         1         1         1         1         Date         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         10         11         11         10         11         10         11         11         11         11         11         11         11         11         11         11         11         11         11         11         11         11         11         11         11         11         11         11         11         11         11         11         11         11         11         11         11         11         11         11         11         11         12         12         12         12         12         12         12         12         12         12         12         12         12         12	e ĝ	1 4 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	jo e Note	b e	- <del>-</del>	2	ie i	LSU LSU	Time 15:40	
Constraint         Constraint           1         2           2         2           3         2           3         3           4         5           5         COLOPI CHANGE to pale olive (5 Y 6/3); trace fine           114         33           4         5           5         COLOPI CHANGE to pale olive (5 Y 6/3); trace fine           114         33           65         7           114         33           5         COLOPI CHANGE to pale olive (5 Y 6/3); trace fine           gravel at 5.0 feet.         11           114         33           65         7           9         9           114         33           115         12           116         20% fine gravel           117         13           118         14.0           118         15           119         20           118         11           119         20           111         13           112         14           113         15           116         16           118 <td>ч<u>э</u></td> <td>Blow</td> <td>dr ag</td> <td>Las La</td> <td>- G</td> <td>1.58</td> <td>  ≩∄</td> <td>te de</td> <td>Date 6/8/92</td> <td>·····</td>	ч <u>э</u>	Blow	dr ag	Las La	- G	1.58	≩∄	te de	Date 6/8/92	·····
PAVEMENT SECTION - 1.0 feet.           2         2           3         2           3         3           4         3           5         COLOR CHANGE to pale olive (5 Y 6/3); trace fine gravel at 5.0 feet.           114         33           6.5         7           8         9           9         10           10         5           S&H         10           114         33           6.5         7           8         9           9         10           10         5           S&H         10           114         33           6.5         7           8         9           10         5           114         33           10         10           114         33           10         10           114         14           115         SAND with GRAVEL (SW) - yellowish brown (10 YR 5/3); trace fine gravel (30% fine to medium stand; 20% fine gravel (30% fine sand.           114         13           12         5           13         15           14 <td></td> <td>d.</td> <td></td> <td></td> <td><math>\perp</math></td> <td><u> </u></td> <td>-</td> <td>5°2</td> <td>Description</td> <td></td>		d.			$\perp$	<u> </u>	-	5°2	Description	
1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1       1					╡.		4		PAVEMENT SECTION - 1.0 feet.	
CLAY (CL) - very dark gray (10 YR 3/1); medium stiff;           damp; 90 % clay; 5% fine sand; brick fragments.           3           4           5           6           114           33           4           5           COLOR CHANGE to pale olive (5 Y 6/3); trace fine           gravel at 5.0 feet.           114           33           4           5           7           8           9           9           38H           10           8           9           114           33           6.5           7           8           9           10           11           12           13           14           15           16           17           18           19           20             118           119           20             118           119           20    Log of Borine		<u> </u>		<u> </u>	- 1	<b> </b>	4			
amp; 90 % day; 5% fine sand; brick fragments.           amp; 90 % day; 5% fine sand; brick fragments.           amp; 90 % day; 5% fine sand; brick fragments.           amp; 90 % day; 5% fine sand; brick fragments.           amp; 90 % day; 5% fine sand; brick fragments.           amp; 90 % day; 5% fine sand; brick fragments.           amp; 90 % day; 5% fine sand; brick fragments.           amp; 90 % day; 5% fine sand; brick fragments.           amp; 90 % day; 5% fine sand; brick fragments.           amp; 90 % day; 5% fine sand; brick fragments.           amp; 90 % day; 5% fine sand; brick fragments.           amp; 90 % day; 5% fine sand; brick fragments.           amp; 90 % day; 5% fine sand; brick fragments.           amp; 90 % day; 5% fine sand; brick fragments.           amp; 90 % day; 5% fine sand; brick fragments.           amp; 90 % day; 5% fine sand; brick fragments.           amp; 90 % day; 5% fine sand; brick fragments.           amp; 90 % day; 5% fine sand; brick fragments.           amp; 90 % day; 5% fine sand; brick fragments.           amp; 90 % day; 5% fine sand; brick fragments.           fine gravel.           saturated; 70% fine sand.           amp; 90 % day; 5% fine sand; bring at 14.5 feet.           6% 92           amp; 90 % day; 5% fine sand; bring at 14.5 feet.           6% 92 % fine sand.           amp;			<u> </u>		12		-	$\chi//$	CLAY (CL) - very dark gray (10 YR 3/1); medit	ım stiff;
3         4           S&H         5           114         33           6.5         7           8         9           10         5           3         6.5           7         8           9         10           5         8           9         10           5         8           9         10           5         11           10         5           11         10           10         5           10         10           11         11           10         5           11         10           12         11           13         12           14         13           15         13           16         14           18         13           19         11           19         10           11         11           11         12           12         13           13         14.0           14         14           15         Bottom of bo		<u> </u>				<u>}</u>	┥	XII	damp; 90 % clay; 5% fine sand; brick fragmen	ts.
38H         4           S&H         5           6         7           114         33           6.5         7           8         9           9         9           10         38H           114         33           6.5         7           8         9           10         38H           10         10           114         33           10         10           114         33           9         10           10         S&H           10         S&H           11         10           11         11           12         Y           13         12           14.0         14           14.0         14           14.0         14           14.0         14           14.0         14           15         Bottom of boring at 14.5 feet.           6/8/92         6/8/92           17         18           19         20           19         20           19         20			<u>+</u>	+	13		-			
114       33       6.5       7         114       33       6.5       7         114       33       6.5       7         114       33       6.5       7         114       33       6.5       7         114       33       6.5       7         114       33       6.5       7         114       33       6.5       7         114       33       6.5       7         114       33       6.5       7         114       33       6.5       7         115       12       2       2         12       2       2       20         20       13       14       14         115       15       15       16         12       14       15       16         13       14       15       16         14       19       20       17         13       19       20       14         14       19       20       14         19       20       16       6/8/92         106       19       20       14 <td< td=""><td></td><td><u> </u></td><td>1</td><td>1</td><td>-</td><td></td><td>1</td><td><math>\langle / / \rangle</math></td><td>·</td><td>······································</td></td<>		<u> </u>	1	1	-		1	$\langle / / \rangle$	·	······································
S&H         S           114         33         6.5           114         33         6.5           114         33         6.5           114         33         6.5           114         33         6.5           114         33         6.5           114         33         6.5           114         33         6.5           114         33         6.5           114         33         6.5           114         33         6.5           114         33         6.5           115         10         11           116         12         12           117         13         13           118         15         15           119         10         14           111         15         16           115         16         6/6/9/2           117         18         19           119         20         20           3marks: * Converted to equivalent standard penetration blows/ft.         Log of Boring		••••••••••••••••••••••••••••••••••••••	1		4	<u> </u>	-			
S&H         5           114         33         6.5           114         33         6.5           114         33         6.5           114         33         6.5           114         33         6.5           114         33         6.5           114         33         6.5           114         33         6.5           114         33         6.5           114         33         6.5           114         33         6.5           116         9           110         10           111         11           111         12           111         12           111         13           112         12           113         13           114         14           115         SANDY SILT (ML) - brown (10 YR 5/3); very stiff; saturated; 80% fine sand.           116         15           118         14           119         12           119         12           118         19           119         20           200 f Boring			1	<u> </u>	1	<u> </u>	1			
S&H         AV-2         6           114         33         6.5         7           114         33         6.5         7           114         33         6.5         7           114         33         6.5         7           114         33         6.5         7           114         33         6.5         7           114         33         6.5         7           114         33         6.5         7           114         33         6.5         7           116         10         11           117         11         11           118         12         12           114         14         14           115         14           116         6/6/92           117         18           119         20           119         20           119         20           119         20           119         20           119         20		<u> </u>	1	<u> </u>	5		1		COLOR CHANGE to pale alive /5 V clow the	<u> </u>
114       33       AV-2       6         114       33       6.5       7         114       33       6.5       7         114       33       6.5       7         114       33       6.5       7         114       33       6.5       7         114       33       6.5       7         114       33       6.5       7         114       33       6.5       7         114       33       6.5       7         114       33       6.5       7         115       12       12       12         116       13       14.0       14         117       14       14       14         118       15       16       6/8/92         119       20       18       19         119       20       20       19         119       20       19       19         119       20       19       19         119       20       19       19         119       20       19       19         119       20       19       19			S&H		1		ſ		gravel at 5.0 feet	tine
114       33       6.5       7         114       33       6.5       7         114       33       6.5       7         114       33       6.5       7         114       33       6.5       7         114       33       6.5       7         114       33       6.5       7         11       9       9       9         110       10       10       10         11       10       10       10         115       12       2       20% fine gravel.       80% fine to medium sand;         112       11       20% fine gravel.       10       17         114       14       14       14       14       14         115       16       15       80ttom of boring at 14.5 feet.       6/8/92.         117       118       19       20       119       119       119         119       20       20       119       20       119       119       119         119       20       20       119       20       119       119       119       119         20       10       10				AV-2	6		1		g.u.o, u. u.o 1000,	
7       8         9       9         10       9         10       10         896       24         11.5       12         20%       13         20%       13         20%       10         13       13         20%       13         14.0       14         655       31         16       6/8/92.         17       18         18       17         16       6/8/92.         17       18         19       20         20       20         amarks: * Converted to equivalent standard penetration blows/ft.	114	33		6.5	]		1	$V/\Lambda$		
38       9         38       9         10       10         396       24         11.5       12         2       38H         12       2         20       11         396       24         11.5       12         2       38H         12       2         20       13         306       24         13       13         2       20% fine gravel.         20% fine gravel.       20% fine sand.         20% fine gravel.       20% fine sand.         20% fine gravel.       20% fine sand.         655       31       15         16       16         17       18         19       20         20       20         20       20         20       20         21       18         19       20         20       20         20       20         20       20         20       20         20       20         21       20         21       20 </td <td></td> <td></td> <td></td> <td></td> <td>7</td> <td></td> <td>]</td> <td><math>V/\Lambda</math></td> <td>· · · · · · · · · · · · · · · · · · ·</td> <td></td>					7		]	$V/\Lambda$	· · · · · · · · · · · · · · · · · · ·	
3       3         9       10         10       11         896       24         11.5       12         702       18         13       13         702       18         14.0       14         15       14         16       15         17       16         18       19         19       20         20marks: * Converted to equivalent standard penetration blows/ft.							]	$V/\Lambda$		
9         10           896         24           11.5         12           20%         58H           13         13           20%         11           20%         58H           13         12           20%         11           20%         58H           13         13           14         13           15         14           16         665           16         678/92           17         18           18         13           19         20					8		]	$V/\Lambda$		
9       10         896       24         11       11         896       24         11.5       12         702       18         13       13         9       13         14.0       14         15       14         16       16         17       18         18       16         19       17         18       19         19       20         amarks: * Converted to equivalent standard penetration blows/ft.								$V/\Lambda$		
3&H       10         896       24         11       11         12       11         13       12         702       18         14       13         15       14         16       6/8/92         17       18         18       19         20       18         17       18         18       19         20       18         19       20         111       14         111       18         111       19         111       10         111       10         111       10         111       10         111       11         111       12         111       13         111       14         112       14         113       15         114       16         117       18         118       19         119       20         111       110         111       110         111       110         111 </td <td></td> <td></td> <td></td> <td></td> <td>9</td> <td></td> <td></td> <td><math>V/\Lambda</math></td> <td></td> <td></td>					9			$V/\Lambda$		
3&H       10         3&H       11         896       24       11.5         S&H       12       2         702       18       13         S&H       13       20% fine gravel.         702       18       13         S&H       14       14         655       31       15         16       15       Bottom of boring at 14.5 feet.         6/8/92.       17       18         19       20       19         20       19       20         emarks: * Converted to equivalent standard penetration blows/ft.       Log of Boring								$V/\Lambda$		
3xH       AV-2       11         896       24       11.5         S&H       12       2         702       18       13         S&H       13       20% fine gravel.         20% fine gravel.       20% fine sand.         655       31       14         16       16       6/8/92.         17       18       18         18       19       20         emarks: * Converted to equivalent standard penetration blows/ft.       Log of Boring					10			$V/\Lambda$		
896       24       11.5         S&H       12       12         702       18       13         S&H       13       20% fine gravel.         20% fine gravel.       20% fine sand.         SANDY SILT (ML) - brown (10 YR 5/3); very stiff; saturated; 70% silt; 30% fine sand.       30% fine sand.         655       31       15         16       16       6/8/92.         17       18       19         20       19       20         emarks: * Converted to equivalent standard penetration blows/ft.       Log of Boring			3αΠ	AV(0				$V/\Lambda$		
38H       12       Y       SAND with GRAVEL (SW) - yellowish brown (10 YR 5/4); medium dense, saturated; 80% fine to medium sand; 20% fine gravel.         702       18       13         14.0       14         655       31         16       16         17       18         18       17         19       20         20       18         19       20         20       19         20       19         20       19         20       19         20       19         20       19         20       19         20       19         20       10	806	24		AV-2	11					
702       18       13       13       20% fine gravel.       20% fine gravel.         702       18       13       SANDY SiLT (ML) - brown (10 YR 5/3); very stiff; saturated; 70% sit; 30% fine sand.         655       31       14       Saturated; 70% sit; 30% fine sand.         655       31       15       Saturated; 70% sit; 30% fine sand.         16       6/8/92.       17       Saturated; 70% sit; 30% fine sand.         18       19       19       Saturated; 70% sit; 30% fine sand.         19       20       19       Saturated; 70% sit; 30% fine sand.         19       20       Saturated; 70% sit; 30% fine sand.       Saturated; 70% sit; 30% fine sand.			SEH	11.5	10	-	_		SAND with GRAVEL (SW) - yellowish brown (1	0 YR 5/4);
702       18       13         S&H       AV-2         14.0       14         655       31         15       Bottom of boring at 14.5 feet.         6/8/92.       6/8/92.         17       18         18       19         20       19         20       14					12		¥		medium dense, saturated; 80% fine to medium	sand;
S&H         AV-2         SANDY SIL! (ML) - brown (10 YR 5/3); very stiff; saturated; 70% silt; 30% fine sand.           655         31         15         Bottom of boring at 14.5 feet.         6/8/92.           16         6/8/92.         17         18         19         19           19         20         20         19         10         10	702	18			13				20% the gravel.	
Image: Sector Allows         Image: Sector Allows         Image: Sector Allows         Image: Sector Allows         Image: Sector Allows         Image: Sector Allows         Image: Sector Allows         Image: Sector Allows         Image: Sector Allows         Image: Sector Allows         Image: Sector Allows         Image: Sector Allows         Image: Sector Allows         Image: Sector Allows         Image: Sector Allows         Image: Sector Allows         Image: Sector Allows         Image: Sector Allows         Image: Sector Allows         Image: Sector Allows         Image: Sector Allows         Image: Sector Allows         Image: Sector Allows         Image: Sector Allows         Image: Sector Allows         Image: Sector Allows         Image: Sector Allows         Image: Sector Allows         Image: Sector Allows         Image: Sector Allows         Image: Sector Allows         Image: Sector Allows         Image: Sector Allows         Image: Sector Allows         Image: Sector Allows         Image: Sector Allows         Image: Sector Allows         Image: Sector Allows         Image: Sector Allows         Image: Sector Allows         Image: Sector Allows         Image: Sector Allows         Image: Sector Allows         Image: Sector Allows         Image: Sector Allows         Image: Sector Allows         Image: Sector Allows         Image: Sector Allows         Image: Sector Allows         Image: Sector Allows         Image: Sector Allows         Image: Sector Allows         Image: Sector Allows         Image: Se			S&H	AV.2	10				SANDY SILI (ML) - brown (10 YR 5/3); very stif	f;
655       31       15         15       16         16       6/8/92.         17       18         18       19         20       20         emarks: * Converted to equivalent standard penetration blows/ft.         Log of Boring				14.0	14				saturated; 70% silt; 30% fine sand.	
15       Bottom of boring at 14.5 feet.         16       6/8/92.         17       18         18       19         20       19         20       10         emarks: * Converted to equivalent standard penetration blows/ft.         Log of Boring	655	31				H				·
Bottom of boring at 14.5 feet. 6/8/92. 17 18 19 20 emarks: * Converted to equivalent standard penetration blows/ft.				······	15	┻┥	:	┠┶╾┵╾┶╌┟╴┢╴		
16     6/8/92.       17     18       19     19       20     20   Log of Boring					ľ		i		Bottom of horing at 14.5 feet	
17       18       19       20   Imarks: * Converted to equivalent standard penetration blows/ft. Log of Boring					16				6/8/92.	
emarks: * Converted to equivalent standard penetration blows/ft.					Γ					
emarks: * Converted to equivalent standard penetration blows/ft.					17 [					
emarks: * Converted to equivalent standard penetration blows/ft.										
emarks: * Converted to equivalent standard penetration blows/ft.					18					
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emarks: * Converted to equivalent standard penetration blows/ft.					19					
emarks: * Converted to equivalent standard penetration blows/ft.					~					
Log of Boring	amarka	+ 0			20		l			
Log of Boring	o ( 162 R26; 1	- Conve	erted to e	quivale	nt sta	anda	ard pene	etration bl	ows/ft.	
ROPING NO			Chrot'					Log of B	oring	BORING NO
Sevenategies Inc.	<u>5</u> 5	Geo	ərrateği	58 INC.						
AV-2										<b>4V-2</b>
3 NUMBER REVIEWED BY RGACEG DATE REVISED DATE REVISED DATE REVISED DATE	3 NUMBER		F	FVEWED 8	Y RG/C	EG				
6/92 ALL HEVISED DATE	12705			m	<i>.</i>				6/92	



Field loc	cation of	boring:						Project No.: 792705 Date: 6/8/92 Boring	No:
ļ								Client: ARCO Products Co. SS #2169	140;
		(	See Plat	e 2)				Location: 889 W. Grand Avenue AV	/-3
								City: Oakland, California Sheet	1
								Logged by: RCM Driller: W. Hazmat of	
0-30								Casing installation data:	
Unling	method:	Hollow	Stem Al	lger					
	aneter;	8-inche	is .	·····				Top of Box Elevation: Datum:	
	1 . 6		• *	2		Ì	4%	Water Level 12.0'	
<u>n</u>	lysing en	ed	admi admi	្រុំ	du	Volt	Į gž	Time 14:30	
3	Press	r-3	0 ź	8	ത്	1 -0	18 ge	Date 6/8/92	
	1			╺┝┄──			ଜ	Description	
				4.				PAVEMENT SECTION - 1.0 feet.	
	+	~ <b> </b>		- '		-	777		
	+					-	$\langle / / \rangle$	dama: 05 % claw 58 ( 10 YH 3/1); medium stiff	:
	<u> </u>		+	1 -	<u> </u>	-	X///	damp; 95 % clay; 5% fine sand.	
	+		<u>+</u>	3		-{	$\langle / / \rangle$		
			+	Ť		1	$\langle / / \rangle$		
				4		-	$\langle / / /$		
	<u> </u>	+	-	- 7	<u> </u>	-	$\langle / / /$		
	··		1	5	<b> </b>	-	$\langle / / \rangle$	COLOR CHANGE to light all a brown (0.5 V FU)	4
		S&H	1	1		1		white nodules at 5.0 feet	nor
		1	AV-3	6		-		mate rioddies at 5.0 feet.	<del></del>
186	12	1	6.5			1			
				7		1			
	1		1	1		1	V//		
			1	8		1	$\bigvee$		<del></del>
				1			$V/\Lambda$		
				9		1	V//		
						1	V//		
				10			$V/\Lambda$		
		S&H					$V/\Lambda$	Minor greenish gray (5 GY 5/1) discoloration: moist a	et
			AV-3	11			$V/\Lambda$	11.5 feet.	
765	18		11.5			]	$V/\Lambda$		
		S&H		12		V	KAA	SILTY SAND (SM) - greenish gray (5 GY 5/1); mediun	n
						] <del>.</del>		dense, saturated; 65% fine to coarse sand; 35% silt.	<u> </u>
435	20			13					
		S&H	AV-3					SANDY SILT (ML) - yellowish brown (10 YR 5/4); very	,
			14.0	14				stiff; saturated; 70% silt; 30% fine sand.	
275	19								
				15					
					•				
				16				Bottom of boring at 14.5 feet.	
				╎╻╻┝				6/8/92.	
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				1					
				19					
				20+					
lamerive:	* Com	utod to -	ا	20					
	- Conve	ateo 10 6	equivaler	II STA	inda	ara pene	etration bl	iows/ft.	
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		Straton	ae ina				Log of B	Boring BORIN	KI NO.
		onategi	çə mç.						
								AV.	-3
									-
B NUMBER		1	REVEWED B	Y RG/CI	EG			DATE REVISED DATE REVISED DA	TE
56100			<u>/17</u>					6/92	



Field loc	ation of t	xoring:						Project No.:	792708	Date:	02/04/93	Boring	No:
		(9	oo Diata	2)				Location:	ARCO Pro	nd Avenue	any 55#2169	A-	.5
		(3	ee riate	1				City:	Oakland			Sheet	1
								Logged by:	RCM	Driller:	Great Sierra	of	2
								Casing install	ation data:				
Drilling r	method:	Hollow S	Stem Au	ger									
Hole dia	meter:	8-inch		1				Top of Box E	evation: 14	.14	Datum: MSL		
	1 6	20	e 8	a	æ		ta SS SS	Water Level	10.0	10.5			
G dd	ows/j	ype ( empi	d La	bt.	dmay	Detail Detail	Sol Ca	Date	2/4/93	2/4/93			
	76 Bi	5-1	0 Z	ď	0		Synt So			Description			
	<u> //////////////////////////////////</u>			1		1		PAVEM	ENT SECTI	ON - 1.0 ft			
				1									
						-		CLAY (	CL) - very da	ark gray (10)	(R 3/1); mediu	im stiff,	
L				2	<u> </u>	ļ		sand, m	eolum plast	ICITY; 65% CI	ay, 25% siit, 11	U% TINE	3
			·	3		{		Sanu.	······	<u></u>			
<u> </u>			±	1	·		1/1				<del></del>	·····	
				4		]						***	
					<u> </u>	]							
l				5				SANDY	SILT (ML) -	olive (5Y 4/3	3); very stiff; m	ioist; 5	5%
		S&H	^ E	6		ł		SIII, 45%	6 TINE to me	olum sano.			
13	21		65	ľ						<u> </u>			
<u></u>	Am 1		0,0	7		1							
L	[			1		1							
				8				SILTY S	SAND (SM)	- greenish gr	ay (5GY 5/1);	mediu	m
		S&H				ł		dense; v	very moist;	80% fine to r	nedium sand,	20% s	ilt.
200200	.`V. 4 ⊑		A-5	9									
1994	~ 15		9.5	10				Saturat	od: increase	fine gravel t	o 5% light ve	llowich	
		S&H		1.0		l¥.		brown (	2.5Y 6/4) m	ottlina: fe-ox	ide staining at	: 10.0 f	t.
			A-5	11		j 😤		X		<u></u>		•	
618	14		11.5	]		]	ŀ						
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				15						······································			
		S&H											
		<b> </b>	A-5	16				Increase	9 SIII 10:60%	→, dense at 1	5:U/II.		
	31		10.5	17									
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Remarke	* 000	ortod to r	auivala	1 <u>20</u>	and	ard non	t <u>`</u>	lowe/#	<u></u>				
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1.119 192161	5755			<u></u>	·		l on of l	Boring				BO	RING NO
	Geo	oStrategi	ies Inc.				209 001	9					,
UI2												A	-5
											<u></u>		
JOB NUMBE	R		REVIEWED E	BY RGA	CEG				DATE 2/03	REV	ISED DATE	REVISED	DATE
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Field loca	ation of b	xoring:						Project No.	792708	Date:	02/04/93	Boring No:
		(0)		~				Client:	ARCO Proc	lucts Compa	iny SS#2169	A-5
]		(S	e Plate	: 2)				City:	0089 W. Gra	no Avenue	• <b></b>	Sheet 0
[								Logged by:	DCM	Driller	Great Siorra	
								Casing install	ation data:	Chinden	Cieal Oleria	<u>~'' 2</u>
Drilling n	nethod:	Hollow S	Stem Au	aer								
Hole diar	meter:	8-inch						Top of Box E	levation:		Datum:	
	ক	Ţ						Water Level				
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- 5	Blo	ዾ፝፞፞፞	S-2	å	8	> 0	i og E	Date				
		Q2LL		+			6	SAND /	SD) dark o	Description	(5GV 5/1) · m	odum
		30.1	A-5	21			1 · · ·	dense:	saturated: 9	5% medium :	sand. 5% fine	s.
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		1		-			11 11					
				24	$\vdash$				·····		· · · · · · · · · · · · · · · · · · ·	
<b> </b> ───-			<u> </u>	25	$\left  - \right $			Grading	to fine san	1 at 25.0 ft		····
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<b>16806</b>	11		30.0	30			1 · . · .					
12				1			<u> </u>					
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Remarks:												
		<u></u>					Log of	Boring				BORING NO.
60	Geo	Strateg	ies Inc.				~	-				Λ
												C-A
			BELADARD !		<u></u>				DATE	100		REVISED DATE
792708	<b>n</b>		M.		~50				2/93	nev		NEVIDED DATE
				····				<u> </u>			<u> </u>	



Drilling method: tole diameter;	Hollow S 8-inch	ee Plate Stem Aug	2)	: 			Citent: Location: City:	ARCO Prodi 889 W. Gran Dakland	ucts Compa id Avenue		A-	6
Drilling method: Hole diameter: Di uu Di u	Hollow S 8-inch	Stem Aug	<i>~</i> )	- 14  			City:	Oakland	0.446106		Sheet	
Drilling method: tole diameter:	Hollow 8 8-inch	Stem Aug		•		1. L. L. 1. L.						I
Drilling method: tole diameter: (uuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuuu	Hollow S 8-inch	Stem Aug					Logged by:	RCM	Driller:	Great Sierra	01	2
rilling method: ole diameter: Que diameter:	Hollow S 8-inch	Stem Aug			a na sé.		Casing install	lation deta:				
ole diameter: (td) (td) (td) (td) (td) (td) (td) (td)	8-inch		ger							3		
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		dan	hth	durb	Well	AL Gr	Date	2/4/93	2/4/93			
	► 0)	07-32.	ď	ŝ		Symt8			Description			
		1			·	201203000	PAVEM	IENT SECTIO	DN 1.5 FT.		*******	
		a a a superior a la construction la construction de la construction de la construction de la construction de la	1									
							CLAY (	<u>CL) - very da</u>	rk gray (10)	(R 3/1); mediu	ım stiff,	
			2				damp, r	nedium plast	icity; 70% c	lay, 25% silt, !	5% fine	
							sano.					
			5						······································			
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		1	5			X///	· · · · · · · · · · · · · · · · · · ·		· · · · · · · · · · · · · · · · · · ·			
	S&H	1			(	(///	Color c	hange to dar	k greenish g	aray (5GY 4/1	); very	stiff;
		A-6	6		]	V//	increas	e in silt to 40	%, fine sand	to 10%; calid	che noo	Jules
29 21		6.5				1//				·····		
			7			V//	l				·····	
		l				X///	1 1		n an			·····
	0.011		ι ö			///						
	San	4 600	à	<b>8</b> —		144	CAND	(SD) - dark o	roonleh ara	/ (5GV 4/1) · n	nedium	
31 61 91		A-6 9.0	19		Σ.		dense	saturated (at	9.2 ft ): 959	% fine to med	um sar	nd,
		14-0 3,3	10	<b>.</b>	- <u>×</u>		5% fine	entartares (a.				,
	S&H								· · · · ·			
		A-6	11		<b>1</b> . 19 . 19							
341 17		11.5				117	SILTY	CLAY (ML/CI	L) - greenist	n gray (5GY 5/	'1); ven	y stif
			] 12 [		]		moist, r	medium plast	icity; 60% c	lay, 35% silt,	5% fine	<u>}</u>
				***			sand; c	olive (5Y 4/4)	mottling.			
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		A-6	16			11/						
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GSI) °	eoStrate	gies inc.				rog or	Bonng					and a
08 NUMBER 192708		REVIEWED	BY RGA	CEG		<u>.</u>		DATE 2/93	PE	MBED DATE	REVISE	) DATE
												· .

## WELLCONSTRUCTION DETAIL



Field loci	auon of t	wring:						Project No.:	792708	Date:	2/4/93	Boring No:
				-				Client:	ARCO Proc	lucts Compa	any SS# 2169	A-6
ļ		(S	see Plate	92)				Location:	889 W. Gra	nd Avenue		
1								Logged but	Dakiand	Dellar	Groat Diarra	Sheet 2
								Casing instal	Intoivi	Dnilef;	Great Sierra	2 10 2
Drilling r	method:	Hollow	Stem Au	oer								
Hole dia	meter:	8-inch						Top of Box E	levation:	<u></u>	Datum;	
	5	1				<u></u>	-8	Water Level				
ç	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	e of Pipe	npla	5		(e) Mart	Inoug	Time				
۵ğ	BIO	હેંસ	Ner Ner	Dep	8	ځ≥	Soil (	Date			<u></u>	
	<u> </u>						- <u></u>	CAND		Description	14 D3 (13 A)	
		SAN	A-6	21				SANU	(SVV) - 081K y	to coarea ea	WN (10YH 4/4	y; dense,
38	37		21.5	12'				Saturat	50, 30 % inite			yravei,
	<u> </u>			22								
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				23								
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	<b> </b>	 	 	24	{			 		·····		
	<u> </u>		<u> </u>	25	┝╍╍┥		• • • •	Increase	e in fines to -	5% fine ar	avel to 25%	
		S&H	<u>}</u>	25				nivi cas	<u>e in intes to</u>	1076; IINO <u>9</u> 16	aver to 23%.	
			A-6	26				SAND	(SP) - very d	ark gray (2.5	SY 3/1); mediu	m dense,
3	24		26.5	1				saturate	ed; 100% fine	e sand, trace	fines.	
				27								
	ļ											
				28	{			CAND.		(10)/[0 4/9)	modium dor	
	<b> </b>	S2H		20				SAIND	ad: 00% fine	to coarea es	- mealum der	aravol
			A-6	20			¥777	Saluran	eu, 30 /8 mile	tu cuarse se		<u>yiavei,</u>
0	18		30.0	30			X///	CLAY (	CL) - greenis	sh gray (5G	5/1): stiff, moi	st. medium
							percent	plasticit	y; 60% clay,	30% silt, 10	% fine sand.	
				31								
	~			32			ļ	Bottom	of boring at	30.0 ft.		
	ļ			00				2/4/93				
				33	{		1			·····		
				34								
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Hemarks:	:											
(1991) (1991)	903 9						I on of	Roring				
C C	Geo	Strateg	ies Inc.				LUYUI	Johnig				
<b>GD</b>		-										A-6
13 North	<b>W</b>											
	3		REVIEWED E	BY RGA	CEG				DATE	REV	ISED DATE	REVISED DATE
192108				<u>~</u>					2/30			

G		8747	Sierra Courl	1 - S	Suite G	i Du	blin, Ca. 95468	Log of Boring	
ROJ	ECT:	ARC	0 Station	216	9			LOCATION: 889 West Grand Avenu	ie, Oakland, CA.
SI P	ROJEC	CT NC	).: 7927.	17				SURFACE ELEVATION: ft. MSL	
ATE	STAR	TED:	12/06/9	3				WL (ft. bgs): 12.5 DATE: 12/06/93	TIME: 2:00pm
ATE	FINIS	SHED	: 12/06/9	93				WL (ft. bgs): 12.5 DATE: 12/06/93	TIME: 2:30pm
RILL	ING M	ETH	DD: 10 in.	Но	llow S	tem Au	iger	TOTAL DEPTH: 23.5 Feet	·····
RILL	ING C	OMPA	NY: Exp	lora	tion G	Geoser	vices	GEOLOGIST: BS	
eet	ID (ppm)	BLOWS/FT. *	SAMPLE NUMBER	SAMPLE INT.	SRAPHIC LOG	SOIL CLASS	GE	OLOGIC DESCRIPTION	WELL DIAGRAM
	<u> </u>	<u>u</u>					DRILLING THROU	IGH AN EXISTING WELL BOX.	
-				-			Bottom of a well	box at 2.5 feet.	A O PVC
- - 5	•	00	400-1-E E			CL.	SILTY CLAY (CL fine grained san	) – olive, hard, damp, 90% fines, 10% d, medium plasticity.	+k- 4"blai
	9	29	ADK-1-5.5	-					
0-	10	36	ADR-1-10.5				Increasing sand		
	51	32	ADR-1-12		1.1.1 1.1 1.1 1.1 1.1	SC	CLAYEY SAND ↓ 70% fine grained saturated at 12.	SC) – light olive brown, dense, moist, i sand, 30% fines. Becoming 5 feet.	PVC (0.02 i MIMIMIMI
5-	3	24	ADR-1-16.5				With fine gravel.		4" slotted
- - 0	0	24	100-1-00			SW	SAND WITH GRA 85% fine to coa	VEL (SW) – gray, dense, saturated, rse grained sand, 15% fine gravel.	
• -	U	54	ADR-1-204			SP CL	SAND (SP) - gr grained sand.	ay, dense, saturated, 100% fine	
1	0	29	ADR-1-23				CLAY (CL) - blu fine sand, mediu	lish gray, hard, moist, 90% fines, 10% Im plasticity.	
5-				-			Becoming damp	at 2 feet.	
-							Bottom of		
- - -0				-					
-							(X = converted	to equivalent standard penetration	
16	]	1		.	4		blows/ft.)	• • • • • • • • • • • • • • • • • • • •	1

200	IE CT·	APC	O Station	216	9			LOCATION: 889 West Grand Avenu	ie, Oakland, CA.
		אחנ	· 7.097	17	~			SURFACE ELEVATION: <i>ft. MSI</i>	
	NUJEL		12/06/0	2				WI (ft bas): /8 DATE: 12/06/93	TIME: 3:000m
			12/00/3	23				WI (ft bos): 127 DATE: 12/07/91	TIME: 5:000m
	THC N		- 1270070	Ho	llow C	tom Au	nor	TOTAL DEPTH: 28 Feet	F 11121 010 0 p 11
				lore	Hon 6	Con Au	vices	GEOLOGIST: 85	
14101	-1140 C					120321			[
eet eet	(mqq) OI	BLOWS/FT. *	SAMPLE NUMB	SAMPLE INT.	SRAPHIC LOG	SOIL CLASS	GE	EOLOGIC DESCRIPTION	WELL DIAGRAM
	<u></u>	<u> </u>		<u> </u>		<u> </u>	DRILLING THROU	JGH AN EXISTING WELL BOX.	
-				-			Bottom of a well	box at 2.5 feet.	nk PVC n 40) P
- - 5	47	20	4DD-0-5	-		CL	SANDY CLAY (C fines, 30% fine c	:L) - gray, very stiff, damp, 70% grained sand, low plasticity.	** 4" <sup>b</sup> la (sc.
	41	30	AUN-2-0.0			CL	SILTY CLAY WIT hard, damp, 85% plasticity.	[H SAND (CL) – brown mottled gray, fines, 15% fine grained sand, medium	
10-	25	21	ADR-2-10.6				Color change to becoming moist.	olive brown, increasing sand, verv stiff.	
-	51	21	40B-2-12				perenning moret		
- - 15 -	9	23	ADR-2-15.				Becoming very r 10 minutes. ▽	noist. No water in hole after waiting	slotted PVC (0.02 mch)
- - 20 - -	0	50 /5"	ADR-2-20.			SW	GRAVELLY SANI very dense, sat sand, 30% fine (	D WITH CLAY (SW) — olive brown, urated, 60% fine to coarse grained gravel, 10% fines.	
- 25	0	34	ADR-2-25			SP	SAND (SP) — br fine grained sar	ownish gray, dense, saturated, 100% Id.	
-	0	61	ADR-2-27.			CL	SILTY CLAY (C 90% fines, 10% f	L) – bluish gray, hard, damp to moist, ine grained sand, medium plasticity.	L Den-+
-30 -					-		Bottom of	boring at 28 feet. 12/06/93	
					1		(x = converted	t to equivalent standard penetration	



JOB NUMBER: 7927.11

Page 1 of 1



	ECT.	ADI	n Station	216	0			LOCATION: 889 West Grand Ave	nue Oakland CA
ST P	BOILE		,0 31811011 ) · 7927	17				SUBFACE FLEVATION: # MSL	nue, Oakland, CA.
ATE	STAR	TED:	12/07/9	3				WL (ft. bas): 13 DATE: 12/07/93	TIME: <i>11:00am</i>
DATE	FINIS	SHED	: 12/07/5	93				WL (ft. bgs): 12.8 DATE: 12/07/93	TIME: 7:10pm
RILL	ING M	ETH	00: <i>8 in</i> .	Holi	low St	em Au	ger	TOTAL DEPTH: 24.5 Feet	
RILL	ING C	OMP/	NY: Exp	lora	ition G	eoser	vices	GEOLOGIST: BS	
Jerin feet	(mqq) Ole	BLOWS/FT. *	SAMPLE NUMBER	SAMPLE INT.	GRAPHIC LOG	SOIL CLASS	GE	OLOGIC DESCRIPTION	WELL DIAGRAM
				<u>.</u>	N ST	PV	PAVEMENT SECT	10N - 4" asphalt over baserock.	─────────────────────────────────────
				-		CL.	SILTY CLAY (CL fine grained sand	.) – dark brown, damp, 80% fines, 15% d, 5% gravel, medium plasticity.	
5	29	NM	AS-6-5.5	-		CL ,	SANDY CLAY (C grained sand, los	L) – gray, damp, 70% fines, 30% fine w plasticity.	ent
10	128 152	NM NM	AS-5-10.5 AS-6-12				Color change to organic matter, y Increasing sand,	olive brown, some fine gravel, some with root holes. , becoming moist.	2" blank PVC (schedula 40)
- - 15 -	18	NM	AS-5-15.5		111 111 111 111 111	SC	CLAYEY SAND ( fines, 40% fine g	SC) – olive brown, saturated, 60% rained sand,	5 (0.02 mch) 7 / / / / / / / / / / / / / / / / / / /
- - 20 - -	NM	NM		<u> </u>		SW	GRAVELLY SAND 60% fine to coar fines.	) WITH CLAY (SW) - gray, saturated, se grained sand, 30% gravel, 10%	
4	0	NM	AS-5-24			CL	CLAY WITH SAN	D (CL) — bluish gray, moist, 80% grained sand, medium plasticity.	ben- tonite
25							Bottom of	boring at 24.5 feet. 12/07/93	
- - -  30 -									
_							(x = converted blows/ft.)	to equivalent standard penetration	






GSI GEOSTRATEGIES, INC. 6747 Sierra Court - Suite G Dublin, Ca. 95468							)ublin,	Ca. 95468	Log of Boring AV-7			
PROJECT: ARCO Station 2/69									LOCATION: 889 West Grand Avenue, Oakland, CA.			
GS1 PROJECT NO. : 7927.17									SURFACE ELEVATION: <i>ft. MSL</i>			
DATE STARTED: 12/06/93									WL (ft. bgs): 12.8 DATE: 12/06/93 TIME: 11:30am			
JATI	EFINI	SHE	3: 12/06/	93					WL (ft. bgs): 12.0 DATE: 12/07/93 TIME: 7:00pm			
DRIL	LING	METH	0D: 10 in	. На	llow 5	tem A	uger		TOTAL DEPTH: 16.5 Feet			
JRIL	LING	COMP	ANY: Exp	lora	tion (	Geose	rvice	S	GEOLOGIST: BS			
DEPTH feet	(mqq) UI9	BLOWS/FT. *	SAMPLE NUMBER	SAMPLE INT.	GRAPHIC LOG	SOIL CLASS		GE	OLOGIC DESCRIPTION			
							$\mathcal{h}$	PAVEMENT SECT	ION - 4" asphalt over baserock			
1 1						<u> </u>		SILTY CLAY WITH very stiff, 80% fil plasticity, pieces	H SAND (CL) - dark brown, damp, hes, 20% fine grained sand, medium of brick observed (FILL).			
5-	35	34	AV-7-5.5	Veletion		CL.	$\vdash$	SILTY CLAY (CL) fines, 10% fine gra	- greenish gray, hard, damp, 90%			
								SANDY SILT WITH damp, 80% fines, low plasticity.	HCLAY (ML) olive gray, hard, 40% fine to medium grained sand,			
)	157	30	AV-7-10 5			UL		GRAVELLY CLAY gray, hard, damp, fine sand, low pla	WITH SAND (CL) - brown mottled 60% fines, 30% fine gravel, 10% stlcity.			
-	101	00	AV 1 0.0	-	1 1	SC		CLAYEY SAND (S	iC) - dray mottled brown, dense			
-	129	31	AV-7-12		1.1		₽₹	moist, 70% fine sa Becoming saturat	and, 30% fines.			
- 5- -	61	34	AV-7-15.5		A A A	GC		CLAYEY GRAVEL gray, dense, mois	WITH SAND (GC) - brown mottled t, 50% gravel, 30% fines, 20% sand,			
-				-				Bottom of boring	at 16.5 feet. 12/06/93			
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5	:							<pre>it = converted to blows/ft.)</pre>	o equivalent standard penetration			
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#### APPENDIX D.

## HISTORICAL SANBORN MAPS















Volume 1, Sheet 48 Volume 1, Sheet 49







Volume 1, Sheet 48 Volume 1, Sheet 49 Volume 1A, Sheet 38A Volume 1A, Sheet 39A







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Volume 1A, Sheet 38A Volume 1A, Sheet 39A Volume 1, Sheet 48 Volume 1, Sheet 49







Volume 1, Sheet 48 Volume 1, Sheet 49 Volume 1A, Sheet 38A Volume 1A, Sheet 39A



## APPENDIX E.

# HISTORICAL TOPOGRAPHIC MAPS



N A	TARGET QU NAME: MAP YEAR:	JAD SAN FRANCISCO 1915	SITE NAME: ADDRESS:	Atlantic Richfield Co. Sta. #2169 889 West Grand Avenue Oakland, CA 94608	CLIENT: CONTACT: INQUIRY#: RESEARCH	Broadbent & Associates, Inc. Jason Duda 2423080.4 DATE: 02/18/2009
	SERIES: SCALE:	15 1:62500	LAT/LONG:	Oakland, CA 94608 37.8142 / 122.278	RESEARCH	DATE: 02/18/2009



z 🗲	TARGET QU	IAD	SITE NAME:	Atlantic Richfield Co. Sta.	CLIENT: Broadbent & Associates, Inc.		
	MAP YEAR:	1948	ADDRESS:	889 West Grand Avenue	INQUIRY#:	2423080.4	
	SERIES: SCALE:	15 1:50000	LAT/LONG:	37.8142 / 122.278	RESEARCH	DATE: 02/18/2009	



N TAF NAM MAI SEF	ARGET QU/ AME: AP YEAR: ERIES: CALE:	AD OAKLANDWEST 1949 7.5 1:24000	SITE NAME: ADDRESS: LAT/LONG:	Atlantic Richfield Co. Sta. #2169 889 West Grand Avenue Oakland, CA 94608 37.8142 / 122.278	CLIENT: CONTACT: INQUIRY#: RESEARCH I	Broadbent & Associates, Inc. Jason Duda 2423080.4 DATE: 02/18/2009
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N ▲	TARGET QU NAME: MAP YEAR: SERIES: SCALE:	AD OAKLANDWEST 1959 7.5 1:24000	SITE NAME: ADDRESS: LAT/LONG:	Atlantic Richfield Co. Sta. #2169 889 West Grand Avenue Oakland, CA 94608 37.8142 / 122.278	CLIENT: CONTACT: INQUIRY#: RESEARCH	Broadbent & Associates, Inc. Jason Duda 2423080.4 DATE: 02/18/2009
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N TARGET QUAD NAME: OAKLANDWEST MAP YEAR: 1968 PHOTOREVISED FROM:1959 SERIES: 7.5 SCALE: 1:24000 SITE NAME: Atlantic Richfield Co. Sta. #2169 CLIENT: Broadbent & Associates, Inc. CONTACT: Jason Duda INQUIRY#: 2423080.4 RESEARCH DATE: 02/18/2009	
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TARGET QUAD SITE NAME: Atlantic Richfield Co. Sta. CLIENT: Broadbent & Associates, Inc. Ν #2169 NAME: OAKLANDWEST CONTACT: Jason Duda ADDRESS: INQUIRY#: MAP YEAR: 1973 889 West Grand Avenue 2423080.4 PHOTOREVISED FROM:1959 **RESEARCH DATE: 02/18/2009** Oakland, CA 94608 SERIES: LAT/LONG: 37.8142 / 122.278 7.5 SCALE: 1:24000



APPENDIX F.

# HISTORICAL AERIAL PHOTOGRAPHS






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