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Cone Penetrometer Test Results and Recommendation for Case Closure

Former BP Service Station No. 6002
6235 Seminary Avenue
Oakland, California
ACEH Case #RO0000163

ENVIRONMENT

"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."

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Our ref:
GP09BPNA.C108



Imagine the result

Atlantic Richfield Company

**Cone Penetrometer Test Results
and Recommendation for Case
Closure**

Former Atlantic Richfield Company Station No. 6002
6235 Seminary Avenue
Oakland, California 94605
ACEH Case # RO0000163

November, 2010



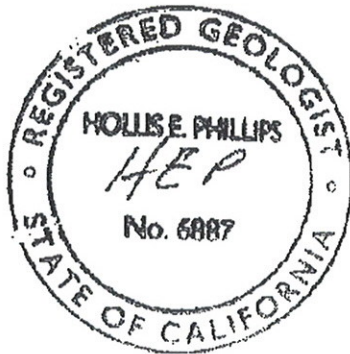
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**Cone Penetrometer Test
Results and Recommendation
for Case Closure**

Former Atlantic Richfield
Company Station No. 6002

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Our Ref.:
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Date:
November, 2010

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Acronyms

Alton	Alton Geoscience Inc.
Alisto	Alisto Engineering Group
ARCO	Atlantic Richfield Company
BAI	Broadbent Associates, Inc
Basin Plan	<i>San Francisco Bay Basin (Region 2) Water Quality Control Plan</i>
bgs	below ground surface
BP	British Petroleum
BTEX	benzene, toluene, ethylbenzene and xylene
btoc	below top of casing
COC	contaminant of concern
CPT	cone penetrometer testing
cy	cubic yard
DTSC	Department of Toxic Substances Control
DTW	depth to water
DWR	Department of Water Resources
ft	feet
EBMUD	East Bay Municipal Utility District
EPA	Environmental Protection Agency
ESL	Environmental Screening Level

Gph	gallons per hour
GSI	GeoStrategies, Inc
KEI	Kaprealian Engineering, Inc.
mg/kg	milligram per kilogram
mg/L	milligram per liter
MTBE	methyl tertiary butyl ether
MW	Monitoring Well
Pacific	Pacific Environmental Group, Inc.
Ppm	parts per million
Ppmv	parts per million volume
RESNA	RESNA Industries, Inc.
RWQCB	Regional Water Quality Control Board, San Francisco Bay
SECOR	Secor International, Inc.
Site	Former Atlantic Richfield Company Station No. 6002, located at 6235 Seminary Avenue, Oakland, California
SPH	separate phase hydrocarbon
SRS	separate-phase hydrocarbon
TOG	total oil and grease
TPH	total petroleum hydrocarbons
TPHd	total petroleum hydrocarbons as diesel

TPHg	total petroleum hydrocarbons as gasoline
UST	underground storage tank
VOC	volatile organic compounds
VW	Vapor extraction Well
Water Board	California Regional Water Quality Control Board
µg/L	microgram per liter

1. Introduction

ARCADIS has prepared this *Recommendation for Case Closure* (Report) for the Former Atlantic Richfield Company (ARCO) Service Station No. 6002 (Site) located at 6235 Seminary Avenue in Oakland California (**Figure 1**). This Closure report also contains the findings of a cone penetrometer testing (CPT) investigation conducted in July 2010. As part of the closure report a conceptual site model was generated which helps support the case closure request. Case closure is warranted for the site based on the following information:

- Petroleum hydrocarbon sources, including other potential secondary sources, have been removed as evidenced by current Site conditions.
- Free product has never been observed in any of the monitoring wells or excavated areas on-site.
- Current groundwater concentrations are orders of magnitude below historical maximums, are continuing to decrease with time, or are not detected above the detection limit, indicating that natural attenuation processes are occurring at the Site.
- The Site has been adequately characterized.
- The low-level plume is decreasing in size.
- No sensitive receptors are likely to be impacted, including surface-water bodies, municipal wells and drinking water sources.
- The site presents no current or potential risk to human health or the environment.

The report is organized into the following sections:

- Section 1 provides the Site background and history.
- Section 2 provides the Previous Site Investigations.
- Section 3 presents the Extent of Soil and Groundwater Impacts.

- Section 4 provides the Beneficial Uses.
- Section 5 presents Remedial Activities.
- Section 6 presents Remedial Effectiveness.
- Section 7 presents Conclusions with Recommendations for Case Closure

1.1 Site Background

The Site is currently an independently-branded gasoline station. Current improvements to the Site include three gasoline underground storage tanks (USTs) believed to have been installed in 1996, two fuel dispenser islands with a total of four dispensers, and a convenience store building (**Figure 2**). The majority of the Site surface is paved with asphalt and concrete. The Site is bound by Seminary Avenue to the north-northwest, Sunnymere Avenue to the east-northeast and single-family residential dwellings to the west-southwest and south-southeast. Interstate 580 is located across Sunnymere Avenue to the east.

1.2 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/RWQCB, 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 with thicknesses ranging from 300 to 700 feet deep. There are no well-defined aquitards such as the 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 ft), 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, water level contours show that the general direction of groundwater flow is from east to west or from the Hayward Fault to the San Francisco Bay. Groundwater 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 (BAI, 2009).

Based on geologic cross sections and soil boring logs from previous consultants, the shallow local water-bearing zone (10 to 20 feet thick) consists of silty sands, silty clay and gravelly clay layers. These moderately permeable layers range in thickness from approximately 5 to 20 feet bgs and are underlain by silty clay. According to the geologic cross section and Site boring interpretations, these layers appear to be relatively continuous.

The three CPT borings advanced in July 2010 indicate that the soil profile consists of alternating layers of clay, silty clay, and clayey silt with silt, silty sand, and with intermittent, discontinuous sand layers encountered between 15 to 30 feet bgs.

2. Previous Site Investigations

Subsurface investigations at the site began in 1994 and are described below. In January 1994, RESNA observed the advancement of four soil borings (RESNA 1994). Three borings were converted into:

- Monitoring Well (MW) MW-1, installed to a depth of 25 feet (ft) below ground surface (bgs) and screened between 5 and 25ft bgs, east of the former Underground Storage Tanks (USTs), and
- Vapor extraction Wells (VW) VW-1 and VW-2, installed to a depth of 14 ft bgs and screened between 6 and 14ft bgs, west of the former USTs.

RESNA determined that gasoline hydrocarbon concentrations in soil were greatest in the central area of the Site at approximately 10.5 ft bgs, downgradient of the former USTs. RESNA also noted there seems to be little to no impact by gasoline hydrocarbons to soil upgradient of the USTs (RESNA, 1994).

In June 1994, GeoStrategies, Inc. (GSI) observed the advancement of four soil borings, which were converted by Gettler Ryan into:

- MW-2, installed to a depth of 18 ft bgs and screened from 5 ft bgs to total depth;
- MW-3, installed to a depth of 25 ft bgs and screened from 5 ft bgs to total depth;
- MW-4 installed to a depth of 24.4 ft bgs and screened from 5 ft bgs to total depth; and

- MW-5 installed to a depth of 25 ft bgs and screened from ft bgs to total depth.

The wells were installed with the intent of further delineating the extent of hydrocarbon-impacted ground water beneath the Site.

On June 26 and 27, 1995, EMCON observed the advancement of the following:

- Soil borings SB-1 through SB-4, drilled onsite, beneath the station canopy, advanced to a depth of 16.5, 15.5, 21.5 and 21.5 ft bgs, respectively;
- Air Sparge (AS) well AS-1 installed at a depth of 22.5 ft bgs and screened from 20 to 22.5 ft bgs;
- VW-3 and VW-4 installed to a depth of 15 ft bgs and screened from 5.5 to 15 ft bgs. These two VWs, located between the former UST complex and the pump islands, were intended to evaluate the feasibility of air sparging and vapor extraction as remediation techniques at the Site;
- MW-6 installed at a depth of 32 ft bgs and screened from 17 to 32 ft bgs. Located offsite, it was intended to further investigate the potential for an up-gradient source of hydrocarbon-impacted ground water (EMCON, 1995).

2.1.1 USTs removal: February to June 1996

On February 12, 1996 MW-1 and MW-2 were abandoned in preparation for the installation of new USTs (EMCON, February 1996). Two 4,000 gallon and two 6,000 gallon USTs located on the east side of the Site were removed on March 6, 1996 by Balch Petroleum. Personnel from the Oakland Fire Department and from the Alameda County Health Care Services Agency also witnessed the removal activities. EMCON reported that the USTs appeared to be in good condition with no obvious holes or leaks. The UST cavity was excavated to an approximate depth of 12 ft bgs, with select locations over-excavated to approximately 14 ft bgs to remove additional source material. As a means of source removal, approximately 11,500 gallons of hydrocarbon-impacted groundwater that had accumulated in the UST cavity were pumped out for off-site disposal. Balch Petroleum also excavated and removed the product lines associated with the UST complex. Product line trenches were excavated to between approximately five and seven ft bgs. The UST cavity and associated product line trenches were reportedly backfilled with baserock. Approximately 370 cubic yards (cy) of hydrocarbon impacted soil was excavated during UST removal activities at the Site

(EMCON, April 1996). The historical excavation limits and soil sample locations are presented in **Figure 3**.

2.1.2 Additional monitoring wells installation

In July, 1996 EMCON observed the advancement of two off-site soil borings south of the Site at 6267 Sunnymere Avenue and southwest of the Site at 6217 Seminary Avenue. These borings were completed as MW-8, which was installed to 14.5ft bgs and screened from 5.5 to 14 ft bgs; and MW-7 installed to the total depth of 14 ft bgs and screened from 8 to 14 ft bgs.

Historical Soil Analytical Data is presented in **Table 1**. Historical Groundwater Analytical Data is presented in **Table 2**. The historical lateral extent of TPHg and benzene soil impacts is provided on **Figures 4** and **5**, respectively. The vertical extent of TPHg and benzene soil impacts is provided on **Figure 6** and **7**.

2.2 July 2010 Site Assessment

In July 2010 ARCADIS conducted site assessment activities that involved the advancement of three Cone Penetrometer Test (CPT) borings to obtain lithologic data and collect grab groundwater samples to further assess the vertical and lateral delineation of the petroleum hydrocarbons at the site. CPT-1 through CPT-3 were advanced to approximately 30 ft bgs on-site between monitoring wells MW-4 and MW-5 (**Figure 3**) on the western boundary of the site. During the grab groundwater sampling activities field crews were unable to collect samples from CPT-3 due to insufficient water. The borings were brought to grade with neat cement grout upon completion of sampling activities.

Prior to the start of field work a Health and Safety Plan was prepared. Soil boring permits were obtained from Alameda County Public Works Department and are included in **Appendix A**.

Underground Service Alert (USA) was notified at least 48 hours before proposed drilling activities to identify public utilities in the vicinity of the proposed borings. In conjunction with USA, a private utility locating company was utilized to further evaluate the potential presence of underground utilities in the vicinity of the proposed boring

locations. Prior to installation, the boring locations were cleared by hand augering to 5 feet bgs.

Three CPTs were advanced to a maximum depth of 30 feet bgs using direct-push technology. CPTs provide detailed lithologic data that can be used to identify permeable zones. The CPTs were conducted using a piezocone attached by stainless steel rods to a hydraulic system that pushes the piezocone through the soil. The piezocone continuously measured the friction, tip resistance and pore pressure which were used to evaluate soil types on a geologic log. Locations of the CPTs are presented on **Figure 8**. The logs of the completed CPTs are included in **Appendix B**.

2.2.1 Groundwater Sampling and Analysis

Grab groundwater samples were collected from borings to determine potential impacts at the specific depths using a Hydropunch sampling method. Once first encountered groundwater was identified during the CPT the CPT rig advanced a Hydropunch to the targeted depth at which point the 2-inch stainless steel rods were retracted to expose a polyvinyl chloride slotted screen.

Based on CPT data, groundwater samples were attempted to be collected from 30 feet bgs in all three CPTs. However, upon retraction of the rods at all three locations, sufficient amount of groundwater for the analysis was not present. After allowing the rods to sit for an extended period of time groundwater was still not present in the borehole. The rods were retracted and temporary wells were set in each boring. Prior to setting the temporary well in CPT-1 the borehole collapsed to approximately 20 feet bgs, CPT-2 had collapsed to 19 feet bgs and CPT-3 had collapsed to approximately 17 feet bgs. Based on depth to groundwater in MW-4 and MW-5 (8.89 and 11.19, respectively) it was decided to set a temporary well on top of the collapsed material. Groundwater was not present in the temporary wells on Friday afternoon so it was decided to leave them in over the weekend. Upon return on Monday morning groundwater samples were collected from CPT-1 and CPT-2. CPT-3 was still dry and no groundwater sample was collected. The groundwater samples were analyzed for the following constituents by a California certified laboratory:

- Total Petroleum Hydrocarbons as Gasoline (TPHg) by USEPA Method 8260B
- Benzene, Toluene, Ethylbenzene and total Xylenes (BTEX), Methyl-tert-butyl-ether (MTBE), 1,2-dichloroethane (1,2-DCA), diisopropyl ether (DIPE), ethyl

tert-butyl ether (ETBE), tert-amyl methyl ether (TAME), t-butyl alcohol (TBA) and 1,2-dibromoethane (EDB) and Ethanol by USEPA Method 8260B

Upon completion of the sample collection the borehole was brought to grade with neat cement grout.

Concentrations of TPHg and benzene were not detected above the laboratory reporting limits; concentrations of MTBE were detected in both samples at 110 µg/L (CPT-1) and 4.3 µg/L (CPT-2). Concentrations of TBA were reported in the sample from CPT-1 at a concentration of 110 µg/L; and concentrations of 1,2-DCA were reported in the sample from CPT-2 at a concentration of 4.0 µg/L. Grab groundwater samples generally contain higher concentrations of analytes than samples collected from monitoring wells.

The remaining analytes were not reported above laboratory detection limits. Groundwater analytical results are presented in **Table 3**. A copy of the laboratory analytical report and chain-of-custody documentation is included in **Appendix C**.

3. Extent of Soil and Groundwater Impacts

3.1 Soil Conditions

The 1996 UST complex removal/replacement activities appear to have adequately delineated the limits of petroleum hydrocarbons soil contamination above the groundwater table.

Potential source areas in the soil appear to have been isolated hotspots on the southwestern sidewall of the former UST pit, and under the western end of the northern pump dispenser island. Sample T1-W located near the northern end of the western sidewall of the UST excavation contained 4.5 milligrams per kilogram (mg/kg) of TPHg and minor concentrations of fuel constituents benzene (0.13 mg/kg), toluene (0.021 mg/kg), ethylbenzene (0.083 mg/kg) and total xylenes (0.11 mg/kg). Following over-excavation in this area, the confirmation soil sample T1-W(C) contained just trace concentrations of the above hydrocarbons. Both these samples were collected in saturated soil.

Sample T4-W located near the southern end of the western sidewall of the UST excavation contained 120 (mg/kg) of TPHg and minor concentrations of fuel constituents benzene (0.14 mg/kg), toluene (1.8 mg/kg), ethylbenzene (0.7 mg/kg) and

total xylenes (5.1 mg/kg). Following over-excavation in this area, the confirmation soil sample T4-W(C) contained just trace concentrations of the above hydrocarbons. Both these samples were collected in saturated soil.

A summary of all historical soil results is presented in **Table 1**.

The vadose zone is estimated to be from grade to approximately 10 feet bgs, which is based on historical depth-to-water (DTW) readings from 1994 to present. Any soil results referred to in this section will only be for samples collected from depths not exceeding 10 feet bgs. Although saturated soil samples have been collected (at depths exceeding 10 feet bgs), it is our assumption that these concentrations may not accurately represent vadose zone soil conditions due to potential interactions with groundwater.

Impacted soil has been encountered during removal of USTs and associated infrastructure, and soil boring and monitoring well installation events. Based on previous investigations conducted between 1994 and 2010, the maximum concentration of all analytes detected in soil was observed in samples SB-2, collected at 9.5 feet bgs (260 mg/kg of TPHg; 4.4 mg/kg toluene; 10 mg/kg of ethylbenzene; 49 mg/kg xylenes), ESL values from Table A – *Shallow Soils (<3m bgs); Groundwater IS a Current or Potential Source of Drinking Water* (Water Board 2008) were used to compare environmental sample results (refer to Table 1) .

The most recent soil samples taken from the vadose zone (10 feet bgs or shallower) were collected from wells MW-7 and MW-8 in August and July of 1996. Contaminants of concern were not detected above laboratory detection limits of from MW-7 (3, 5, and 8 feet bgs) and MW-8 (5 feet bgs).

Historical soil data is provided in **Table 1**. The lateral extent of TPHg and benzene soil impacts is provided on **Figures 4** and **5**, respectively. The vertical extent of TPHg and benzene soil impacts is provided on **Figure 6** and **7**.

3.2 Groundwater

Quarterly groundwater monitoring at the Site was initiated during the first quarter 1994 by RESNA, and is currently performed by Broadbent Associates (BAI). Monitoring wells MW-3, MW-4, MW-6, MW-7, MW-8 and VW-3 are sampled on an annual basis in the third quarter and do not contain concentrations of contaminants of concerns (COCs) above the method detection limits. Monitoring wells MW-5, VW-1 and VW-4 are

sampled on a semi-annual basis in the first and third quarters. Currently the highest reported concentrations of COCs are from MW-5 with concentrations of TPHg at 2,300 µg/L, toluene at 0.55 µg/L, ethylbenzene at 1.7 µg/L, and TBA at 18 µg/L. These concentrations are indicating decreasing trends (**Appendix D**). **Table 2** presents historical groundwater analytical data.

3.2.1 TPHg

Historically TPHg has been reported at concentrations greater than laboratory reporting limits in all site-related wells with the exception of MW-2, MW-6, VW-2 and VW-3. The highest concentrations were reported in MW-5 (27,000 • g/L; February 1996) and VW-1 (21,000 • g/L; February 1996), which are located west of the former USTs. TPHg has not been detected in VW-1 since the first quarter 2008 and was last detected in MW-5 in the third quarter 2010 at an order of magnitude below the historical high at 2,300 • g/L. Monitoring wells MW-1 and MW-2 were abandoned in 1996, with MW-1 reporting a concentration of 11,000 • g/L. Samples from MW-2 did not contain TPHg above the method detection limits.

Concentrations of TPHg in MW-3 have not been reported since the fourth quarter 1995. Concentrations of TPHg in MW-4 have not been reported since the first quarter 1996. Monitoring well MW-7 has not reported TPHg concentrations since the third quarter 2000 and MW-8 has not reported a concentration of TPHg since the third quarter 1997. Concentrations of TPHg in VW-4 have decreased two orders of magnitude below the historical high and were reported at 110 • g/L in March of 2010, and were reported below the laboratory reporting limit in August 2010.

3.2.2 Benzene

Historically benzene has been reported at concentrations greater than laboratory detection limits in all site related monitoring wells with the exception of MW-2, MW-6, and VW-3. The highest concentrations were reported in VW-4 (2,500 • g/L; May 1996) and MW-5 (2,100 • g/L; May 1995), which are located west of the former USTs. Benzene has not been detected in MW-5 since the second quarter 2006 and has decreased three orders of magnitude in VW-4 to its current concentration of <0.50 • g/L which is below laboratory reporting limits and below the ESL of 1.0 • g/L, *Table F of Revised May 2008 Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater*.

MW-1 was abandoned in 1996 and reported a concentration of 570 • g/L during its last sampling. Concentrations of benzene have not been detected in MW-3 since the fourth quarter 1995. Benzene has not been detected in MW-4 since the first quarter 1996 and has not been detected in MW-7 since the third quarter 1997. MW-8 has not reported concentrations of benzene in samples since the second quarter 1997. Benzene concentrations have not been reported in VW-1 since the second quarter 2006.

3.2.3 MTBE

Concentrations of MTBE have consistently been detected above the laboratory reporting limits in groundwater samples collected from all wells with the exception of MW-2 and MW-6. The highest concentrations were reported in VW-4 (43,000 • g/L; May 1996) and MW-1 (25,000 • g/L; November 1995). Concentrations of MTBE in VW-4 have decreased four orders of magnitude to the current concentrations reported at 9.7 • g/L, which is below the ESLs of 5.0 • g/L. MW-1 was abandoned in 1996 and reported a concentration of MTBE at 25,000 • g/L at that time.

Concentrations of MTBE in MW-3 were 5.8 • g/L during the last sampling event (August 2010) generally they have been below the ESLs of 5.0. Concentrations of MTBE in MW-4 have decreased four orders of magnitude from its historical high in October 1998 and have not been reported above laboratory detection limits since the fourth quarter 2002. Concentrations of MTBE in MW-5 have decreased four orders of magnitude from its historical high in September 1995 to its current concentrations reported at 3.7 • g/L.

Concentrations of MTBE have not been reported in MW-7 since the third quarter 2000 and have not been reported above laboratory detection limits in MW-8 since the third quarter 1998. Concentrations of MTBE in VW-1 have decreased three orders of magnitude from its historical high in February 1996 to its current concentrations reported at 0.6 • g/L, which is below the ESLs of 5.0 • g/L. MTBE concentrations have not been reported in VW-3 since the third quarter 2002.

3.3 Separate-Phase Hydrocarbon Status

Separate-phase hydrocarbon (SPH) has not been reported at the site in either soil or groundwater. Sheen has not been reported at the site in any groundwater sample.

3.4 Hydraulic Gradient Trends

Groundwater is typically encountered during drilling events from 7.5 feet bgs (B-6/MW-3; June 1994) to 20.5 feet bgs (MW-6; June 1995). The DTW in monitoring wells has ranged from 5.04 feet below top of casing (btoc) (VW-1; January 2002) to 17.84 feet btoc (MW-6; June 1999). Historically the groundwater gradient has ranged from 0.04 feet/foot to 0.1 feet/foot. The groundwater flow direction has been predominantly to the west/southwest.

Historical groundwater analytical results from monitoring events are presented in **Table 2** and concentrations of TPHg and MTBE from the four most recent groundwater monitoring events are illustrated on **Figures 9** through **16**. Additionally, concentration trends for TPHg, benzene and MTBE in wells MW-5 and VW-4 are provided in Charts 1 and 2 included in **Appendix D**.

Historical groundwater flow directions and gradients are provided in **Table 4** and shown on **Figure 17**. A potentiometric surface map of groundwater elevations in August 2010 is provided on **Figure 18**.

4. Beneficial Uses

4.1 San Francisco Bay RWQCB Basin Plan

Existing and potential beneficial uses for groundwater are presented in the Region 2 Water Board *San Francisco Bay Basin (Region 2) Water Quality Control Plan* (Basin Plan) dated January 18, 2007. According to the Basin Plan (Water Board 2007) the site is situated in the East Bay Plain groundwater sub-basin (basin number 2-9.04). Water supply uses including municipal, industrial process, industrial service and agricultural are identified in the Basin Plan as existing beneficial uses, based on best available information. The nearest surface-water body is the San Leandro Reservoir, located approximately 2.7 miles to the northeast of the site.

4.2 Sensitive Receptor Survey

To address the potentially complete exposure pathways (groundwater, soil and soil vapor), BAI conducted a sensitive receptor survey (SRS) in August 2009. The objective of the SRS was to identify potential downgradient and aboveground risk receptors within a quarter mile (1,320 feet) of the site. Potential risk receptors included water-producing wells, schools, hospitals, surface-water bodies, and aquatic environments.

Additionally the Alameda County Public Works Agency (ACPWA) was contacted for a survey of all subsurface wells within a quarter mile of the site.

In their *Onsite Tier 2 Risk-Based Corrective Action Evaluation*, dated June 3, 1996, EMCON concluded that the results of their evaluation indicated no acceptable levels of risk being exceeded at the Site. EMCON further concluded that the Site qualified as a low-risk case, as defined by the Regional Water Quality Control Board's (RWQCB) January 1996 Supplemental Instructions.

The nearest natural drainage is Arroyo Viejo, located approximately 1 mile southwest of the Site. Arroyo Viejo flows generally northeast to southwest at its closest proximity to the Site. The closest body of surface water is a small pond named Lake Aliso located on the Mills College campus approximately 1,500 feet northwest (cross gradient) of the Site.

No K-12 schools are known to be located within one quarter mile of the Site, although Mills College is located to the west/northwest of the Site across Seminary Avenue. No hospitals are known to be located within a quarter mile of the Site.

ARCADIS used the Revised May 2008 *Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater* (Water Board 2008) to obtain current ESLs and assess potential human health risks associated with current site conditions. The ESLs were developed using USEPA and California's Department of Toxic Substances Control (DTSC) human health risk assessment methodologies. Under most circumstances, the presence of a chemical in soil or groundwater at concentrations below the corresponding ESL can be assumed to not pose a significant threat to human health or the environment.

To evaluate the potential long-term fate of COCs associated with the site, the most recent and the maximum concentrations of contaminants detected in soil and groundwater have been compared to the appropriate ESLs. The use of commercial/industrial screening levels is based on the assumption that land use at the site will remain unchanged.

Soil ESLs were obtained from *Table K-2 – Direct Contact to a Commercial/Industrial Receptor* (Water Board 2008). The ESLs are presented in **Table 5**. The most recent soil data (1996) from the vadose zone (grade to 10 feet bgs) indicates that COCs were not detected above laboratory reporting limits. The maximum detected concentrations from 1996 (120 mg/kg of TPHg) were collected at 12 feet bgs). A commercial worker

would likely not have contact with soil located at 10 feet bgs or greater. Therefore, contact with on-site soil does not pose as a health risk to a commercial worker.

Groundwater ESLs were obtained from *Table E-1 – Groundwater Screening Levels for Evaluation of Potential Vapor Intrusion Concerns* (Water Board 2008). The inhalation of vapors migrating from the subsurface to indoor air and potential ingestion of groundwater are the only identified complete potential exposure pathways. Soil vapor samples have not been collected at the site. A station building is currently present at the site and the entire site is paved, with no exposed soil present at the ground surface. Current concentrations show that all COCs are below their applicable ESLs with the exception of TPHg (**Table 5**). Therefore the exposure potential from groundwater through inhalation of volatile organics in indoor air and particulate emissions through outdoor ambient air is considered an insignificant pathway. **Figure 19** illustrates the potential sources of exposure and the status of the corresponding pathways.

An ESL for TPHg in groundwater, considering the vapor intrusion pathway, is currently not available. The DTSC rescinded its total petroleum hydrocarbon risk assessment guidance document in April 2010. TPHg was reported at a relatively low concentration during the latest sampling event and should not be a vapor intrusion concern because the sample was collected approximately 35 feet from the nearest structure in the downgradient direction. Vapor intrusion potential was evaluated using groundwater BTEX data and found to be an insignificant pathway.

4.3 Preferential Pathway Evaluation

A Preferential Pathway study was requested by ACEH in their regulatory letter dated May 6, 2010. Preferential pathways were evaluated at the Site to assess potential migration of affected media. Preferential Pathways are evaluated based on available information collected in an underground utility survey as well as identifying wells within a quarter mile of the site was conducted (**Appendix E**).

4.3.1 Utility Survey

A utility survey was conducted to evaluate underground utilities located on or near the Site that could potentially act as preferential migration pathways. A dig alert was submitted to the Underground Service Alert of Northern California and Nevada in order to obtain a list of potential utilities at and around the site. Contact was made with the various agencies to acquire plans, where possible, of subsurface utilities in the area of the Site. These agencies include: Comcast-Oakland for underground telephone line

plans, City of Oakland Construction Department for sanitary sewer and storm drain utilities, East Bay Municipal Utility District (EBMUD), Pacific Bell Hayward (AT&T) for underground telephone line plans, and Pacific Gas & Electric Company (PG&E) for underground electrical and natural gas pipelines.

After multiple attempts to contact each agency, EBMUD was the only agency that provided the requested information. However, based on a 1996 report by EMCON, historical location of utilities in the Site vicinity were determined (EMCON, 1996). The report of a utility locate survey conducted at the Site during the July 2010 activities provided photos of utility line mark outs (ULS, 2010). The approximate location of on-site laterals was determined based on these photos (**Appendix E**). **Figure 20** shows approximate locations of utilities based on available information.

In the area of the Site, storm drain drop inlets are at street grade. An EBMUD 6-inch diameter steel pipe coated and lined with cement runs from Sunnymere Avenue to Seminary Avenue, and then west within Seminary Avenue. A storm drain inlet exists at the northwest corner of the Site, but the connection from the inlet to the main line was not located. A 20-inch steel pipe coated and lined with cement runs on Seminary Avenue towards Overdale Avenue, and runs behind the property south side towards Sunnymere Avenue. The water line on the Site is located to the west of the service island, but it is unclear where it connects to the main water line and where it enters the service station building on the Site. A gas line runs east/west on Sunnymere Avenue, and appears to connect to a north/south gas line west of the Site on Overdale Avenue.

An electrical line runs east/west along the northern boundary of the Site on Seminary Avenue, and turns north approximately 50 feet west of the westernmost Site boundary. At the corner of Seminary and Sunnymere Avenues, the line goes aboveground and becomes an overhead line. The electrical lateral enters the Site on the northwestern driveway and runs south to enter the building from the west. An additional electrical line runs from the building to the northwest corner of the Site to feed the electrical advertisement sign. This line also branches approximately halfway between the building and the sign and runs towards the southwest corner of the Site, to an unclear location. An unknown pipe was located for a length of about four feet running along this electrical line on the eastern boundary of the Site and north of the building.

Finally, an underground telephone line runs from the northwestern driveway to the building, parallel to the service island. It is unclear where the line connects. West of the block, the telephone lines are overhead lines on Overdale Avenue.

Although some of the onsite laterals may potentially intersect the plume horizontally, the lines are likely shallower than the groundwater level at the Site. The utilities are thus too shallow to act as a conduit for contamination. Additionally, based on the groundwater flow direction, the lines run crossgradient from the water, and are thus not a receptor or preferential pathway.

4.3.2 Well Survey

A quarter mile radius well survey, California Department of Water Resources (DWR) records was conducted. The Site is located in Township 2 South, Range 3 West Section 3, at the limit of Section 10. The records received from DWR (**Appendix E**) were supposed to include all available well records in these two sections.

The location of 46 of the 47 wells for which a log was provided by DWR was specified on their respective logs. One monitoring well location was not determined due to a lack of information on the log. There are seven wells within a quarter mile radius of the Site (**Figure 21**). Three wells are approximately 200 ft west of the Site (at the end of Pine Top Road), and four wells are located approximately 600 ft north of the Site (three wells at Leona Street and Mountain View Avenue and one well at Leona Street and Kuhnle Avenue). The three wells at Leona Street and Mountain View Avenue belong to Leona Sulfur Mines, are deeper than 35 ft (the second page of the log was not provided) and their use is unknown. The well at Leona Street and Kuhnle Avenue belongs to East Bay Municipal Utility District (EBMUD), is 65 ft deep, and is not a domestic, industrial, municipal, irrigation or test well. The use of the well, "Other," is not specified on the log. The three wells at the end of Pine Top Road are Mills Corporation Yard's monitoring wells, deeper than 20 ft (the second pages of the logs were not provided).

The groundwater flow direction is generally west/ southwest (see Figure 16). Leona Sulfur Mines, located on the hills north of the Site are an abandoned mining Site in remediation (SFWQCB, 2008; SFWQCB, 2010). Although the use of the wells is unknown, it is unlikely that the wells are used for domestic, industrial, municipal, or irrigation purposes. Additionally, the wells are upgradient from the Site. The well at Leona Street and Kuhnle is also upgradient from the Site and located at greater elevation than the site, therefore it is unlikely to be affected by groundwater quality at the Seminary Avenue Site. The three monitoring wells at the end of Pine Road are approximately 500 west and cross-gradient of the Site. Therefore it is unlikely they have been impacted from the Site.

Results of the well survey do not indicate the likelihood that historic or active wells in the area are acting as preferential pathways for vertical migration of contamination from the Site.

4.4 Summary Factors Affecting Long-Term Fate of Contaminants

5. Remedial Activities

The potential source of hydrocarbons includes the former UST complex in the eastern portion of the Site, and portions of the product piping east of the southern dispenser island. The exact volume released from the UST complex and product piping are unknown.

The removal of the original UST complex and associated piping in 1996 was conducted as a release intervention. During removal of the original UST complex, EMCON reported that the USTs appeared to be in good condition with no obvious holes or leaks. In addition, approximately 370 cubic yards of contaminated soil was excavated and removed at the time of the UST complex removal, as well as 11,500 gallons of hydrocarbon-impacted ground water (EMCON, April 1996).

Numerous soil borings and monitoring wells have been installed to delineate and monitor the lateral and vertical extent of petroleum hydrocarbon impacts. Remediation through site upgrades, equipment removal and associated over-excavations, and natural attenuation have proven to be effective for substantially removing on-site contamination sources. It has been demonstrated by declining petroleum hydrocarbon concentration trends in site monitoring wells that natural attenuation is occurring and should continue to occur at the site

6. Remedial Effectiveness

Based upon the previous remedial activities detailed above, the impacts to soil and groundwater have been addressed and are evident by the low levels of soil impacts and decreasing concentration trends in groundwater. Downgradient groundwater samples from monitoring wells MW-7 and MW-8 have largely been below laboratory detection limits since their installation in December 1996 with the exception of a few anomalous detections in 1997 and 1999, respectively (**Table 2/ Appendix D**). The lack of concentrations seen in the down gradient wells indicates that any residual groundwater impacts are not migrating off site. The low level of soil contamination remaining on site does not appear to be impacting the groundwater.

7. Conclusions

The site meets all published criteria and qualifies as low risk, as described in the *Supplemental Instructions to State Water Board December 18, 1995 Interim Guidance of Required Cleanup at Low-Risk Fuel Sites* (Water Board 1996). Therefore, ARCADIS requests approval for case closure and no further action at this site based on the following:

- Sources of petroleum hydrocarbons at the site have been removed. The absence of high concentrations observed in soil samples suggests that secondary sources (residual hydrocarbons in soil) were identified and removed.
- All the wells that contain TPHg concentrations (the current maximum concentration is 2,300 µg/L) in groundwater indicate decreasing concentration trends (**Appendix D**).
- All the wells that contain MTBE concentrations in groundwater (the current maximum concentration is 6.3 µg/L) indicate a decreasing trend (**Appendix D**).
- Concentrations of BTEX are all below the reporting limits.
- Groundwater samples collected during the CPT investigation indicated low levels of MTBE, TBA and 1,2-DCE. Grab groundwater samples generally indicate higher concentrations of analytes than samples collected from monitoring wells. The concentrations that were detected do not warrant the installation of a monitoring well on the western boundary of the site.
- Current site conditions suggest that TPHg is limited to the western site boundary in the vicinity of MW-5 (**Figure 9**).
- Current site conditions suggest that MTBE is limited to the central (VW-4) and south central (MW-3) areas of the site (Figure 9). The plume does not appear to be migrating, as evidenced by the results of groundwater samples collected in MW-7 and MW-8.
- The site has been adequately characterized.

- No sensitive receptors are likely to be impacted, including surface-water bodies, municipal wells and drinking water sources.
- The site presents no current or potential risk to human health or the environment.
- The preferential pathway study does not indicate that contaminants are likely to migrate off site via the reviewed pathways.

ARCADIS recommends that case closure be granted and that all groundwater monitoring wells associated with the site be destroyed. A Case Closure Summary is included in **Appendix F**.

8. References

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ARCADIS

Tables

Table 1: Historical Soil Results
Former BP Service Station No. 6002
6235 Seminary Avenue, Oakland, CA
Local Case #RO163

Location	Sample Depth (ft bgs)	Sample Date	TPHg		TPHd		Benzene		Toluene		Ethylbenzene		Xylene		MTBE		Total O & G		Total Hydrocarbons		Lead		
			<1.0	ppm	--	--	<0.0050	ppm	<0.0050	ppm	<0.0050	ppm	<0.0050	ppm	<0.0050	ppm	--	--	--	--	--	--	--
SB-3	21	6/25/1995	<1.0	ppm	--	--	<0.0050	ppm	<0.0050	ppm	<0.0050	ppm	<0.0050	ppm	--	--	--	--	--	--	--	--	--
SB-4	6	6/25/1995	<1.0	ppm	--	--	<0.0050	ppm	<0.0050	ppm	<0.0050	ppm	<0.0050	ppm	--	--	--	--	--	--	--	--	--
SB-4	11	6/25/1995	10	ppm	--	--	<0.0050	ppm	<0.0050	ppm	<0.0050	ppm	<0.0050	ppm	--	--	--	--	--	--	--	--	--
SB-4	21.5	6/25/1995	<1.0	ppm	--	--	<0.0050	ppm	<0.0050	ppm	<0.0050	ppm	<0.0050	ppm	--	--	--	--	--	--	--	--	--
T1-W	12	3/6/1996	4.5	ppm	--	--	0.13	ppm	0.021	ppm	0.083	ppm	0.11	ppm	--	--	--	--	--	--	--	--	--
T1-W-C	14	3/6/1996	1.4	ppm	--	--	0.035	ppm	0.02	ppm	0.018	ppm	0.037	ppm	--	--	--	--	--	--	--	--	--
T1-E	12	3/6/1996	6	ppm	--	--	0.055	ppm	<0.005	ppm	0.044	ppm	0.15	ppm	--	--	--	--	--	--	--	--	--
T1-N	12	3/6/1996	3.7	ppm	--	--	0.0058	ppm	<0.005	ppm	0.036	ppm	0.2	ppm	--	--	--	--	--	--	--	--	--
T2-W	12	3/6/1996	<1.0	ppm	--	--	<0.005	ppm	<0.005	ppm	0.0052	ppm	0.0074	ppm	--	--	--	--	--	--	--	--	--
T2-E	12	3/6/1996	1.2	ppm	--	--	0.087	ppm	0.073	ppm	0.024	ppm	0.13	ppm	--	--	--	--	--	--	--	--	--
T3-W	12	3/6/1996	<1.0	ppm	--	--	<0.005	ppm	<0.005	ppm	<0.005	ppm	<0.005	ppm	--	--	--	--	--	--	--	--	--
T3-E	12	3/6/1996	<1.0	ppm	--	--	<0.005	ppm	<0.005	ppm	<0.005	ppm	<0.005	ppm	--	--	--	--	--	--	--	--	--
T4-S	12	3/6/1996	1.4	ppm	--	--	0.031	ppm	0.15	ppm	0.022	ppm	0.24	ppm	--	--	--	--	--	--	--	--	--
T4-W	12	3/6/1996	120	ppm	--	--	0.14	ppm	1.8	ppm	0.7	ppm	501	ppm	--	--	--	--	--	--	--	--	--
T4-W-C	14	3/6/1996	1.5	ppm	--	--	0.03	ppm	<0.005	ppm	0.0086	ppm	0.097	ppm	--	--	--	--	--	--	--	--	--
PL-1	5	3/6/1996	<1.0	ppm	--	--	<0.005	ppm	<0.005	ppm	<0.005	ppm	<0.005	ppm	--	--	--	--	--	--	--	--	--
PL-2	5	3/6/1996	<1.0	ppm	--	--	<0.005	ppm	0.012	ppm	<0.005	ppm	0.048	ppm	--	--	--	--	--	--	--	--	--
PL-3	5	3/6/1996	130	ppm	--	--	<0.1	ppm	<0.1	ppm	0.21	ppm	<0.1	ppm	--	--	--	--	--	--	--	--	--
PL-4	5	3/6/1996	<1.0	ppm	--	--	<0.005	ppm	<0.005	ppm	<0.005	ppm	<0.005	ppm	--	--	--	--	--	--	--	--	--
PL-5	5	3/8/1996	<1.0	ppm	--	--	0.0058	ppm	<0.005	ppm	<0.005	ppm	0.0065	ppm	--	--	--	--	--	--	--	--	--
PL-6	5	3/8/1996	<1.0	ppm	--	--	<0.005	ppm	<0.005	ppm	<0.005	ppm	<0.005	ppm	--	--	--	--	--	--	--	--	--
PL-7	5	3/8/1996	1.4	ppm	--	--	0.061	ppm	<0.005	ppm	0.012	ppm	0.034	ppm	--	--	--	--	--	--	--	--	--
PL-8	5	3/8/1996	2.2	ppm	--	--	0.11	ppm	0.057	ppm	0.012	ppm	0.07	ppm	--	--	--	--	--	--	--	--	--
PL-9	5	3/8/1996	<1.0	ppm	--	--	<0.005	ppm	<0.005	ppm	<0.005	ppm	<0.005	ppm	--	--	--	--	--	--	--	--	--
PL-10	7	3/11/1996	2.3	ppm	--	--	0.082	ppm	0.027	ppm	0.06	ppm	0.035	ppm	--	--	--	--	--	--	--	--	--
PL-11	5	3/11/1996	<1.0	ppm	--	--	0.011	ppm	<0.005	ppm	<0.005	ppm	<0.005	ppm	--	--	--	--	--	--	--	--	--
MW-7	3	8/6/1996	<1.0	ppm	--	--	<0.0050	ppm	<0.0050	ppm	<0.0050	ppm	<0.0050	ppm	--	--	--	--	--	--	--	--	--
MW-7	5	8/6/1996	<1.0	ppm	--	--	<0.0050	ppm	<0.0050	ppm	<0.0050	ppm	<0.0050	ppm	--	--	--	--	--	--	--	--	--
MW-7	8	8/6/1996	<1.0	ppm	--	--	<0.0050	ppm	<0.0050	ppm	<0.0050	ppm	<0.0050	ppm	--	--	--	--	--	--	--	--	--
MW-7	12.5	8/6/1996	<1.0	ppm	--	--	<0.0050	ppm	<0.0050	ppm	<0.0050	ppm	<0.0050	ppm	--	--	--	--	--	--	--	--	--
MW-8	5	7/15/1996	<1.0	ppm	--	--	<0.0050	ppm	<0.0050	ppm	<0.0050	ppm	<0.0050	ppm	--	--	--	--	--	--	--	--	--

Notes:

- ft bgs = feet below ground surface
- TPHg = Total Petroleum Hydrocarbons as Gasoline
- TPHd = Total Petroleum Hydrocarbons as Diesel
- mg/kg = milligrams per kilogram
- mg/L = milligrams per liter
- ppm = parts per million
- MTBE = Methyl tert-butyl ether
- = not analyzed
- < = analyte not detected, result is less than value provided
- VW-3, and VW-4 not sampled for soil
- 1 = Soil ESLs values are listed from Table K-2

**Table 2: Historical Groundwater Results
Former BP Service Station No. 6002
6235 Seminary Avenue, Oakland, CA
Local Case # RO163**

Location	Sample Date	Notes	TOC Elevation (ft)	DTW (ft btoc)	Product Thickness (ft)	Water Level Elevation (ft)	TPHg	Benzene	Toluene	Ethylbenzene	Xylene	MTBE	TBA	TPHd
MW-4	11/13/2003	--	242.91	11.64	--	231.27	--	--	--	--	--	--	--	--
MW-4	02/13/2004	--	248.62	10.28	--	238.34	--	--	--	--	--	--	--	--
MW-4	05/05/2004	--	248.62	12.04	--	236.58	--	--	--	--	--	--	--	--
MW-4	08/30/2004	NP	248.62	12.98	--	235.64	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<20	--
MW-4	11/08/2004	--	248.62	11.29	--	237.33	--	--	--	--	--	--	--	--
MW-4	02/07/2005	--	248.62	10.03	--	238.59	--	--	--	--	--	--	--	--
MW-4	05/09/2005	--	248.62	10.65	--	237.97	--	--	--	--	--	--	--	--
MW-4	08/11/2005	NP	248.62	12.68	--	235.94	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<20	--
MW-4	12/02/2005	--	248.62	10.35	--	238.27	--	--	--	--	--	--	--	--
MW-4	02/15/2006	--	248.62	8.38	--	240.24	--	--	--	--	--	--	--	--
MW-4	5/19/2006	--	248.62	11.24	--	237.38	--	--	--	--	--	--	--	--
MW-4	8/25/2006	P	248.62	12.28	--	236.34	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<20	--
MW-4	11/2/2006	--	248.62	12.64	--	235.98	--	--	--	--	--	--	--	--
MW-4	2/6/2007	--	248.62	10.52	--	238.1	--	--	--	--	--	--	--	--
MW-4	5/9/2007	--	248.62	10.97	--	237.65	--	--	--	--	--	--	--	--
MW-4	8/8/2007	NP	248.62	12.95	--	235.67	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<20	--
MW-4	11/14/2007	--	248.62	11.38	--	237.24	--	--	--	--	--	--	--	--
MW-4	2/28/2008	--	248.62	9.01	--	239.61	--	--	--	--	--	--	--	--
MW-4	5/23/2008	--	248.62	11.20	--	237.42	--	--	--	--	--	--	--	--
MW-4	8/21/2008	NP	248.62	12.37	--	236.25	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<10	--
MW-4	11/13/2008	--	248.62	12.08	--	236.54	--	--	--	--	--	--	--	--
MW-4	2/23/2009	--	248.62	7.95	--	240.67	--	--	--	--	--	--	--	--
MW-4	5/14/2009	--	248.62	10.77	--	237.85	--	--	--	--	--	--	--	--
MW-4	9/23/2009	NP	248.62	12.65	--	235.97	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<10	--
MW-4	3/4/2010	--	248.62	8.89	--	239.73	--	--	--	--	--	--	--	--
MW-4	8/19/2010	--	248.62	12.08	--	236.54	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<4.0	--
MW-5	3/15/1995	--	244.82	11.99	--	232.83	21,000	870	22	1,600	1,900	--	--	--
MW-5	5/30/1995	--	244.82	12.97	--	231.85	17,000	2,100	250	1,000	520	--	--	--
MW-5	9/1/1995	--	244.82	14.03	--	230.79	19,000	1,500	25	1,600	880	8,300	--	--
MW-5	11/13/1995	--	244.82	13.65	--	231.17	21,000	1,300	22	1,400	630	--	--	--
MW-5	2/23/1996	--	244.82	11.93	--	232.89	27,000	1,300	<50	1,600	1,500	730	--	--
MW-5	5/10/1996	--	244.82	13.05	--	231.77	17,000	460	21	760	480	1,000	--	--
MW-5	8/9/1996	--	244.82	13.22	--	231.6	16,000	420	14	870	390	1,500	--	--
MW-5	11/8/1996	--	244.82	--	--	--	--	--	--	--	--	--	--	--
MW-5	3/21/1997	--	244.82	13.24	--	231.58	18,000	110	<50	730	1,500	1,800	--	--
MW-5	5/27/1997	--	244.82	13.10	--	231.72	21,000	86	<20	810	610	1,700	--	--
MW-5	8/5/1997	--	244.82	13.14	--	231.68	340	2.2	<0.5	15	8.8	39	--	--
MW-5	10/29/1997	--	244.82	13.03	--	231.79	19,000	130	<20	1,400	620	1,700	--	--
MW-5	2/25/1998	--	244.82	11.33	--	233.49	8,500	19	13	190	100	170	--	--
MW-5	5/12/1998	--	244.82	12.81	--	232.01	10,000	34	<10	390	220	610	--	--
MW-5	7/28/1998	--	244.82	13.12	--	231.7	15,000	68	<10	690	620	1,000	--	--
MW-5	10/27/1998	--	244.82	12.90	--	231.92	15,000	60	<10	770	400	890	--	--
MW-5	2/8/1999	--	244.82	11.08	--	233.74	8,200	23	<10	290	120	<60	--	--
MW-5	6/1/1999	NP	244.82	12.95	--	231.87	11,000	33	3.3	340	180	580	--	--
MW-5	8/25/1999	NP	244.82	12.99	--	231.83	9,200	26	14	420	270	1,100	--	--
MW-5	10/29/1999	NP	244.82	13.10	--	231.72	11,000	19	9.8	260	150	590	--	--
MW-5	2/16/2000	NP	244.82	8.21	--	236.61	12,000	8.1	10	340	160	130	--	--
MW-5	6/23/2000	NP	244.82	12.90	--	231.92	9,680	38	<20.0	212	114	930	--	--
MW-5	8/17/2000	NP	244.82	13.00	--	231.82	10,500	15	7.98	223	118	430	--	--
MW-5	11/10/2000	NP	244.82	12.50	--	232.32	7,030	19.7	<10.0	190	43.6	445	--	--
MW-5	2/12/2001	NP	244.82	12.81	--	232.01	8,840	33.9	<10.0	186	56.4	352	--	--
MW-5	4/13/2001	NP	244.82	11.31	--	233.51	9,020	54.2	43.3	137	96	297	--	--
MW-5	7/18/2001	NP	244.82	11.59	--	233.23	13,000	19	10	110	49	230	--	--
MW-5	10/1/2001	NP	244.82	11.84	--	232.98	8,500	6.9	<1.0	87	27	220	--	--
MW-5	1/14/2002	NP	244.82	10.75	--	234.07	9,500	<20	<20	140	22	<200	--	--

Table 2: Historical Groundwater Results
Former BP Service Station No. 6002
6235 Seminary Avenue, Oakland, CA
Local Case # RO163

Location	Sample Date	Notes	TOC Elevation (ft)	DTW (ft btoc)	Product Thickness (ft)	Water Level Elevation (ft)	TPHg	Benzene	Toluene	Ethylbenzene	Xylene	MTBE	TBA	TPHd
MW-6	11/10/2000	--	252.2	11.79	--	240.41	--	--	--	--	--	--	--	--
MW-6	2/12/2001	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-6	2/12/2001	P	252.2	7.35	--	244.85	<50	<0.50	<0.50	<0.50	<0.50	<2.5	--	--
MW-6	4/13/2001	--	252.2	10.52	--	241.68	--	--	--	--	--	--	--	--
MW-6	7/18/2001	--	252.2	11.03	--	241.17	--	--	--	--	--	--	--	--
MW-6	10/1/2001	--	252.2	11.31	--	240.89	--	--	--	--	--	--	--	--
MW-6	1/14/2002	P	252.2	9.87	--	242.33	<50	<0.50	<0.50	<0.50	<0.50	<5.0	--	--
MW-6	4/3/2002	--	252.2	12.19	--	240.01	--	--	--	--	--	--	--	--
MW-6	8/8/2002	--	252.2	7.04	--	245.16	--	--	--	--	--	--	--	--
MW-6	11/27/2002	--	252.2	6.85	--	245.35	--	--	--	--	--	--	--	--
MW-6	2/10/2003	NP	252.2	6.74	--	245.46	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<20	--
MW-6	6/3/2003	--	252.2	14.35	--	237.85	--	--	--	--	--	--	--	--
MW-6	8/14/2003	--	252.2	10.74	--	241.46	--	--	--	--	--	--	--	--
MW-6	11/13/2003	--	252.2	10.68	--	241.52	--	--	--	--	--	--	--	--
MW-6	02/13/2004	--	257.94	7.38	--	250.56	--	--	--	--	--	--	--	--
MW-6	05/05/2004	--	257.94	7.43	--	250.51	--	--	--	--	--	--	--	--
MW-6	08/30/2004	P	257.94	7.39	--	250.55	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<20	--
MW-6	11/08/2004	--	257.94	15.57	--	242.37	--	--	--	--	--	--	--	--
MW-6	02/07/2005	--	257.94	15.26	--	242.68	--	--	--	--	--	--	--	--
MW-6	05/09/2005	--	257.94	11.31	--	246.63	--	--	--	--	--	--	--	--
MW-6	08/11/2005	P	257.94	9.80	--	248.14	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<20	--
MW-6	12/02/2005	--	257.94	14.55	--	243.39	--	--	--	--	--	--	--	--
MW-6	02/15/2006	--	257.94	10.33	--	247.61	--	--	--	--	--	--	--	--
MW-6	5/19/2006	--	257.94	6.50	--	251.44	--	--	--	--	--	--	--	--
MW-6	8/25/2006	P	257.94	6.75	--	251.19	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<20	--
MW-6	11/2/2006	--	257.94	7.15	--	250.79	--	--	--	--	--	--	--	--
MW-6	2/6/2007	--	257.94	6.93	--	251.01	--	--	--	--	--	--	--	--
MW-6	5/9/2007	--	257.94	7.03	--	250.91	--	--	--	--	--	--	--	--
MW-6	8/8/2007	P	257.94	7.01	--	250.93	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<20	--
MW-6	11/14/2007	--	257.94	7.25	--	250.69	--	--	--	--	--	--	--	--
MW-6	2/28/2008	--	257.94	6.85	--	251.09	--	--	--	--	--	--	--	--
MW-6	5/23/2008	--	257.94	7.15	--	250.79	--	--	--	--	--	--	--	--
MW-6	8/21/2008	P	257.94	7.17	--	250.77	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<10	--
MW-6	11/13/2008	--	257.94	12.30	--	245.64	--	--	--	--	--	--	--	--
MW-6	2/23/2009	--	257.94	7.61	--	250.33	--	--	--	--	--	--	--	--
MW-6	5/14/2009	--	257.94	7.50	--	250.44	--	--	--	--	--	--	--	--
MW-6	9/23/2009	P	257.94	7.42	--	250.52	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<10	--
MW-6	3/4/2010	--	257.94	8.75	--	249.19	--	--	--	--	--	--	--	--
MW-6	8/19/2010	--	257.94	8.75	--	249.19	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<4.0	--
MW-7	8/9/1996	--	235.95	--	--	--	--	--	--	--	--	--	--	--
MW-7	11/8/1996	--	235.95	--	--	--	--	--	--	--	--	--	--	--
MW-7	1/27/1997	--	235.95	--	--	--	2,900	29	<5	<5	580	220	--	--
MW-7	3/21/1997	--	235.95	7.13	--	228.82	590	3.5	<0.5	<0.5	1.3	90	--	--
MW-7	5/27/1997	--	235.95	9.02	--	226.93	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
MW-7	8/5/1997	--	235.95	12.33	--	223.62	110	0.5	<0.5	<0.5	0.8	81	--	--
MW-7	10/29/1997	--	235.95	--	--	--	--	--	--	--	--	--	--	--
MW-7	2/25/1998	--	235.95	8.04	--	227.91	<50	<0.5	0.6	<0.5	0.7	<3	--	--
MW-7	5/12/1998	--	235.95	8.88	--	227.07	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
MW-7	7/28/1998	--	235.95	10.50	--	225.45	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
MW-7	10/27/1998	--	235.95	8.75	--	227.2	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
MW-7	2/8/1999	--	235.95	9.35	--	226.6	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
MW-7	6/1/1999	NP	235.95	9.85	--	226.1	250	<0.5	0.6	<0.5	1.6	18	--	--
MW-7	8/25/1999	NP	235.95	11.31	--	224.64	119	<0.5	5.7	<0.5	<0.5	11	--	--
MW-7	10/29/1999	NP	235.95	9.08	--	226.87	<50	<0.5	<0.5	<0.5	<1	<3	--	--
MW-7	2/25/2000	NP	235.95	8.02	--	227.93	<50	<0.5	<0.5	<0.5	<1	38	--	--

Table 2: Historical Groundwater Results
Former BP Service Station No. 6002
6235 Seminary Avenue, Oakland, CA
Local Case # RO163

Location	Sample Date	Notes	TOC Elevation (ft)	DTW (ft btoc)	Product Thickness (ft)	Water Level Elevation (ft)	TPHg	Benzene	Toluene	Ethylbenzene	Xylene	MTBE	TBA	TPHd
MW-8	6/23/2000	NP	240.37	9.45	--	230.92	<50	<0.50	<0.50	<0.500	<0.50	<2.5	---	---
MW-8	8/17/2000	NP	240.37	6.40	--	233.97	<50	<0.50	<0.50	<0.50	<0.50	<2.5	---	---
MW-8	11/10/2000	NP	240.37	6.25	--	234.12	<50	<0.50	<0.50	<0.50	<0.50	<2.5	---	---
MW-8	11/10/2000	--	240.37	--	--	--	<50	<0.50	<0.50	<0.50	<0.50	<2.5	---	---
MW-8	2/12/2001	NP	240.37	8.11	--	232.26	<50	<0.50	<0.50	<0.50	<0.50	<2.5	---	---
MW-8	4/13/2001	P	240.37	5.19	--	235.18	<50	<0.50	<0.50	<0.50	<0.50	<2.5	---	---
MW-8	7/18/2001	NP	240.37	5.55	--	234.82	<50	<0.50	<0.50	<0.50	<0.50	<2.5	---	---
MW-8	10/1/2001	NP	240.37	6.41	--	233.96	<50	<0.50	<0.50	<0.50	<0.50	<2.5	---	---
MW-8	1/14/2002	P	240.37	5.07	--	235.3	<50	<0.50	<0.50	<0.50	<0.50	<5.0	---	---
MW-8	4/3/2002	P	240.37	8.60	--	231.77	<50	<0.50	<0.50	<0.50	<0.50	<2.5	---	---
MW-8	8/8/2002	P	240.37	9.58	--	230.79	<50	<0.50	<0.50	<0.50	<0.50	<2.5	---	---
MW-8	11/27/2002	P	240.37	9.15	--	231.22	<50	<0.50	<0.50	<0.50	<0.50	<0.50	---	---
MW-8	2/10/2003	P	240.37	8.55	--	231.82	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<20	---
MW-8	6/3/2003	--	240.37	8.72	--	231.65	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<20	---
MW-8	8/14/2003	--	240.37	9.52	--	230.85	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<20	---
MW-8	11/13/2003	--	240.37	9.45	--	230.92	--	--	--	--	--	--	---	---
MW-8	02/13/2004	--	246.09	8.38	--	237.71	--	--	--	--	--	--	---	---
MW-8	05/05/2004	--	246.09	9.30	--	236.79	--	--	--	--	--	--	---	---
MW-8	08/30/2004	P	246.09	9.69	--	236.4	<50	<0.50	<0.50	<0.50	0.75	<0.50	<20	---
MW-8	11/08/2004	--	246.09	8.34	--	237.75	--	--	--	--	--	--	---	---
MW-8	02/07/2005	--	246.09	8.23	--	237.86	--	--	--	--	--	--	---	---
MW-8	05/09/2005	--	246.09	7.07	--	239.02	--	--	--	--	--	--	---	---
MW-8	08/11/2005	--	246.09	--	--	--	--	--	--	--	--	--	---	---
MW-8	12/02/2005	--	246.09	8.15	--	237.94	--	--	--	--	--	--	---	---
MW-8	02/15/2006	--	246.09	--	--	--	--	--	--	--	--	--	---	---
MW-8	5/19/2006	--	246.09	8.48	--	237.61	--	--	--	--	--	--	---	---
MW-8	8/25/2006	P	246.09	9.45	--	236.64	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<20	---
MW-8	11/2/2006	--	--	--	--	--	--	--	--	--	--	--	---	---
MW-8	2/6/2007	--	246.09	--	--	--	--	--	--	--	--	--	---	---
MW-8	5/9/2007	--	246.09	--	--	--	--	--	--	--	--	--	---	---
MW-8	8/8/2007	--	246.09	--	--	--	--	--	--	--	--	--	---	---
MW-8	11/14/2007	--	246.09	8.78	--	237.31	--	--	--	--	--	--	---	---
MW-8	2/28/2008	--	246.09	7.77	--	238.32	--	--	--	--	--	--	---	---
MW-8	5/23/2008	--	246.09	8.30	--	237.79	--	--	--	--	--	--	---	---
MW-8	8/21/2008	--	246.09	--	--	--	--	--	--	--	--	--	---	---
MW-8	11/13/2008	--	246.09	--	--	--	--	--	--	--	--	--	---	---
MW-8	2/23/2009	--	246.09	--	--	--	--	--	--	--	--	--	---	---
MW-8	5/14/2009	--	246.09	--	--	--	--	--	--	--	--	--	---	---
MW-8	9/23/2009	--	246.09	--	--	--	--	--	--	--	--	--	---	---
MW-8	3/4/2010	--	246.09	--	--	--	--	--	--	--	--	--	---	---
MW-8	8/19/2010	--	246.09	--	--	--	--	--	--	--	--	--	---	---
VW-1	2/23/1996	--	--	5.29	--	--	21,000	490	57	520	1,500	240	---	---
VW-1	5/10/1996	--	--	6.80	--	--	3,700	61	<5	100	50	200	---	---
VW-1	8/9/1996	--	--	7.03	--	--	970	2.7	<2.5	2.7	3.7	180	---	---
VW-1	11/8/1996	--	--	--	--	--	--	--	--	--	--	--	---	---
VW-1	3/21/1997	--	--	7.51	--	--	640	<4	<1	1	3	194	---	---
VW-1	5/27/1997	--	--	7.51	--	--	--	--	--	--	--	--	---	---
VW-1	8/5/1997	--	--	7.51	--	--	630	<1	<1	3	2	120	---	---
VW-1	10/29/1997	--	--	7.53	--	--	600	<0.5	<0.5	<0.5	1.6	84	---	---
VW-1	2/25/1998	--	--	6.77	--	--	230	<4	<0.7	1.2	0.5	27	---	---
VW-1	5/12/1998	--	--	7.43	--	--	340	<0.5	0.5	2.3	0.8	29	---	---
VW-1	7/28/1998	--	--	7.00	--	--	240	<0.5	<0.5	<0.5	1.1	54	---	---
VW-1	10/27/1998	--	--	7.52	--	--	230	<0.5	<0.5	<0.5	<0.5	65	---	---
VW-1	2/8/1999	--	--	7.05	--	--	<50	<0.5	<0.5	<0.5	<0.5	<3/36	---	---
VW-1	6/1/1999	NP	--	7.55	--	--	180	<0.5	<0.5	<0.5	<0.5	23	---	---

Table 2: Historical Groundwater Results
Former BP Service Station No. 6002
6235 Seminary Avenue, Oakland, CA
Local Case # RO163

Location	Sample Date	Notes	TOC Elevation (ft)	DTW (ft btoc)	Product Thickness (ft)	Water Level Elevation (ft)	TPHg	Benzene	Toluene	Ethylbenzene	Xylene	MTBE	TBA	TPHd
VW-3	02/07/2005	--	252.26	8.28	--	243.98	--	--	--	--	--	--	--	--
VW-3	05/09/2005	--	252.26	8.44	--	243.82	--	--	--	--	--	--	--	--
VW-3	08/11/2005	--	252.26	8.96	--	243.3	--	--	--	--	--	--	--	--
VW-3	12/02/2005	--	252.26	8.26	--	244	--	--	--	--	--	--	--	--
VW-3	02/15/2006	--	252.26	7.61	--	244.65	--	--	--	--	--	--	--	--
VW-3	5/19/2006	--	252.26	8.83	--	243.43	--	--	--	--	--	--	--	--
VW-3	8/25/2006	--	252.26	8.95	--	243.31	--	--	--	--	--	--	--	--
VW-3	11/2/2006	--	252.26	9.08	--	243.18	--	--	--	--	--	--	--	--
VW-3	2/6/2007	--	252.26	8.61	--	243.65	--	--	--	--	--	--	--	--
VW-3	5/9/2007	--	252.26	8.79	--	243.47	--	--	--	--	--	--	--	--
VW-3	8/8/2007	--	252.26	9.10	--	243.16	--	--	--	--	--	--	--	--
VW-3	11/14/2007	--	252.26	8.52	--	243.74	--	--	--	--	--	--	--	--
VW-3	2/28/2008	--	252.26	8.27	--	243.99	--	--	--	--	--	--	--	--
VW-3	5/23/2008	--	252.26	8.95	--	243.31	--	--	--	--	--	--	--	--
VW-3	8/21/2008	--	252.26	9.06	--	243.2	--	--	--	--	--	--	--	--
VW-3	11/13/2008	--	252.26	8.80	--	243.46	--	--	--	--	--	--	--	--
VW-3	2/23/2009	--	252.26	6.60	--	245.66	--	--	--	--	--	--	--	--
VW-3	5/14/2009	--	252.26	8.70	--	243.56	--	--	--	--	--	--	--	--
VW-3	9/23/2009	NP	252.26	9.08	--	243.18	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<10	--
VW-3	3/4/2010	--	252.26	7.31	--	244.95	--	--	--	--	--	--	--	--
VW-3	3/4/2010	--	252.26	9.03	--	243.23	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	--
VW-3	8/19/2010	--	--	--	--	--	--	--	--	--	--	1.3	<4.0	--
VW-4	5/10/1996	--	--	8.58	--	--	13,000	2,500	41	420	660	43,000	--	--
VW-4	8/9/1996	--	--	11.70	--	--	<50	<0.5	<0.5	<0.5	<0.5	6,200	--	--
VW-4	11/8/1996	--	--	9.38	--	--	7,800	510	7	180	370	21,000	--	--
VW-4	3/21/1997	--	--	9.11	--	--	10,000	290	10	270	230	8,900	--	--
VW-4	5/27/1997	--	--	9.34	--	--	--	--	--	--	--	--	--	--
VW-4	8/5/1997	--	--	9.47	--	--	<10,000	180	<100	<100	110	12,000	--	--
VW-4	10/29/1997	--	--	9.35	--	--	9,800	200	69	260	360	4,900	--	--
VW-4	2/25/1998	--	--	7.08	--	--	<50	2.5	<0.5	<0.5	0.7	<3	--	--
VW-4	5/12/1998	--	--	9.17	--	--	3,200	<20	22	29	52	2,100	--	--
VW-4	7/28/1998	--	--	9.55	--	--	<10,000	<100	<100	<100	<100	5,100	--	--
VW-4	10/27/1998	--	--	9.92	--	--	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
VW-4	2/8/1999	--	--	7.50	--	--	<2,500	<25	<25	28	<25	2,400/3,100	--	--
VW-4	6/1/1999	NP	--	9.87	--	--	2,100	2.5	1.1	2.5	15	3,300	--	--
VW-4	8/25/1999	NP	--	9.78	--	--	1,300	4.4	4.9	1.7	2.9	4,600	--	--
VW-4	10/29/1999	NP	--	9.93	--	--	1,400	<0.5	1.8	1.6	3	4,200	--	--
VW-4	2/16/2000	NP	--	7.45	--	--	1,800	<0.5	2.9	15	10	3,400	--	--
VW-4	6/23/2000	--	--	--	--	--	1,260	<2.00	<2.00	<2.00	2.73	2,720	--	--
VW-4	6/23/2000	NP	--	9.74	--	--	1,360	<2.00	2.26	<2.00	2.25	4,900	--	--

Table 2: Historical Groundwater Results
Former BP Service Station No. 6002
6235 Seminary Avenue, Oakland, CA
Local Case # RO163

Location	Sample Date	Notes	TOC Elevation (ft)	DTW (ft btoc)	Product Thickness (ft)	Water Level Elevation (ft)	TPHg	Benzene	Toluene	Ethylbenzene	Xylene	MTBE	TBA	TPHd
VW-4	8/17/2000	NP	--	9.95	--	--	2,230	<10.0	<10.0	<10.0	<10.0	5,310	--	---
VW-4	11/10/2000	NP	--	9.22	--	--	1,390	18.5	<5.00	<5.00	<5.00	8,840	--	---
VW-4	2/12/2001	NP	--	8.99	--	--	1,400	9.42	<2.00	17.8	16.1	3,570	--	---
VW-4	4/13/2001	NP	--	7.80	--	--	556	3.82	<1.25	<1.25	<1.25	2,450	--	---
VW-4	7/18/2001	--	--	--	--	--	2,000	8.7	2.2	<2.0	<2.0	3,400	--	---
VW-4	7/18/2001	NP	--	7.73	--	--	2,100	9.2	<2.0	<2.0	<2.0	3,700	--	---
VW-4	10/1/2001	NP	--	6.69	--	--	2,000	<10	<10	<10	13	5,900	--	---
VW-4	10/1/2001	--	--	--	--	--	1,800	<10	<10	<10	<10	5,800	--	---
VW-4	1/14/2002	P	--	5.93	--	--	580	<2.0	<2.0	<2.0	<2.0	2,700	--	---
VW-4	4/3/2002	NP	--	9.60	--	--	1,400	5.2	16	<5.0	9.6	2,200	--	---
VW-4	8/8/2002	--	--	10.01	--	--	--	--	--	--	--	--	--	---
VW-4	11/27/2002	P	--	10.30	--	--	<10,000	<100	<100	<100	<100	3,800	--	---
VW-4	2/10/2003	NP	--	10.06	--	--	<5,000	<50	<50	<50	<50	2,500	<2,000	---
VW-4	6/3/2003	--	--	10.04	--	--	<1,000	<10	<10	<10	<10	440	4,100	---
VW-4	8/14/2003	--	--	9.66	--	--	<500	<5.0	<5.0	<5.0	<5.0	170	3,200	---
VW-4	11/13/2003	P	--	10.01	--	--	<500	<5.0	<5.0	<5.0	<5.0	130	3,300	---
VW-4	02/13/2004	P	252.69	9.34	--	243.35	330	<2.5	<2.5	<2.5	3	210	1,300	---
VW-4	05/05/2004	P	252.69	10.07	--	242.62	130	<1.0	<1.0	<1.0	<1.0	66	1,500	---
VW-4	08/30/2004	P	252.69	10.32	--	242.37	<500	<5.0	<5.0	<5.0	<5.0	220	5,400	---
VW-4	11/08/2004	P	252.69	9.35	--	243.34	480	<2.5	<2.5	<2.5	<2.5	140	2,700	---
VW-4	02/07/2005	P	252.69	9.22	--	243.47	180	<0.50	<0.50	<0.50	<0.50	47	1,000	---
VW-4	05/09/2005	P	252.69	9.78	--	242.91	120	0.63	<0.50	<0.50	<0.50	37	1,200	---
VW-4	08/11/2005	P	252.69	10.11	--	242.58	74	<0.50	<0.50	<0.50	<0.50	15	2,000	---
VW-4	12/02/2005	P	252.69	9.59	--	243.1	160	<1.0	<1.0	<1.0	<1.0	28	2,400	---
VW-4	02/15/2006	P	252.69	8.56	--	244.13	64	<0.50	<0.50	<0.50	<0.50	11	230	---
VW-4	5/19/2006	P	252.69	9.95	--	242.74	150	<0.50	<0.50	<0.50	<0.50	1.2	580	---
VW-4	8/25/2006	P	252.69	10.03	--	242.66	140	<0.50	<0.50	<0.50	<0.50	17	1,900	---
VW-4	11/2/2006	P	252.69	10.13	--	242.56	120	<0.50	<0.50	<0.50	<0.50	20	2,400	---
VW-4	2/6/2007	NP	252.69	9.57	--	243.12	<50	<0.50	<0.50	<0.50	<0.50	1.6	<20	---
VW-4	5/9/2007	NP	252.69	9.75	--	242.94	110	<0.50	<0.50	<0.50	<0.50	21	410	---
VW-4	8/8/2007	NP	252.69	10.13	--	242.56	140	<0.50	<0.50	<0.50	<0.50	5.4	1,300	---
VW-4	11/14/2007	NP	252.69	9.81	--	242.88	150	<0.50	<0.50	<0.50	<0.50	6.4	1,700	---
VW-4	2/28/2008	NP	252.69	9.00	--	243.69	<50	<0.50	<0.50	<0.50	<0.50	8.4	59	---
VW-4	5/23/2008	NP	252.69	9.73	--	242.96	68	<1.0	<1.0	<1.0	<1.0	6.4	280	---
VW-4	8/21/2008	NP	252.69	10.04	--	242.65	74	<2.5	<2.5	<2.5	<2.5	3.2	720	---
VW-4	11/13/2008	NP	252.69	9.95	--	242.74	89	<2.0	<2.0	<2.0	<2.0	2.7	940	---
VW-4	2/23/2009	NP	252.69	7.35	--	245.34	290	0.97	<0.50	<0.50	<0.50	27	99	---
VW-4	5/14/2009	NP	252.69	9.60	--	243.09	<50	0.54	<0.50	<0.50	<0.50	10	100	---
VW-4	9/23/2009	NP	252.69	10.04	--	242.65	81	<0.50	<0.50	<0.50	<0.50	<0.50	61	---
VW-4	3/4/2010	NP	252.69	8.05	--	244.64	110	1.2	<0.50	<0.50	<1.0	9.7	45	---
VW-4	8/19/2010	NP	252.69	9.93	--	242.76	<50	<0.50	<0.50	<0.50	<1.0	6.3	150	---

Notes:

- P = well purged prior to sampling
- NP = well not purged prior to sampling
- TOC = Top of Casing
- DTW = Depth to Water
- ft = feet
- TPHg = Total Petroleum Hydrocarbons as Gasoline
- MTBE = Methyl tert-butyl ether
- TPHd = Total Petroleum Hydrocarbons as Diesel
- µg/L = micrograms per liter
- = not analyzed
- < = analyte not detected, result is less than value provided

Table 3
July 2010 CPT Groundwater Analytical Data
Former BP Service Station 6002
6235 Seminary Avenue
Oakland, California

Sample Location	Date	TPH-GRO (ug/L)	Benzene (ug/L)	Toluene (ug/L)	Ethyl-benzene (ug/L)	Total Xylenes (ug/L)	MTBE (ug/L)	TBA (ug/L)	DIPE (ug/L)	ETBE (ug/L)	TAME (ug/L)	EDB (ug/L)	EDC (ug/L)	Methanol (ug/L)
Groundwater ESLs (ug/L)¹		100	1.0	150	300	1,800	13	12	--	--	--	--	--	--
CPT-1	7/19/2010	<250	<2.5	<2.5	<2.5	<5.0	110	110	<2.5	<2.5	<2.5	<2.5	<2.5	<500
CPT-2	7/19/2010	<50	<0.50	<0.50	<0.50	<1.0	4.3	<4.0	<0.50	<0.50	<0.50	<0.50	4.0	<100
TRIP BLANK	7/15/2010	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<4.0	<0.50	<0.50	<0.50	<0.50	<0.50	<100

Notes:

TPH-GRO - Total Petroleum Hydrocarbons as Gasoline Range Organics

MTBE - Methyl Tertiary Butyl Ether

TBA - tert Butanol alcohol

DIPE - Di-isopropyl Ether

ETBE - Ethyl tert-Butyl Ether

TAME - ter-Amyl Methyl Ether

EDB - 1,2-dibromoethane

EDC - 1,2-dichloroethane

N/A - Not Applicable

-- - Not Analyzed/Not Measured

1 - Groundwater ESLs taken from Table F-1a

Analytical Methods:

TPH-GRO by EPA Method 8260B

BTEX, MTBE and oxygenates by EPA Method 8260B

Table 4: Historical Groundwater Flow Directions and Gradients
Former BP Service Station No. 6002
6235 Seminary Avenue, Oakland, CA
Local Case #RO163

Date Sampled	Approximate Flow Direction	Approximate Hydraulic Gradient (ft/ft)
3/15/1995	West-Southwest	0.08
5/30/1995	West-Southwest	0.08
9/1/1995	West-Southwest	0.09
11/13/1995	West-Southwest	0.08
2/23/1996	West-Southwest	0.08
5/10/1996	West-Southwest	0.08
8/9/1996	Southwest	0.08
11/8/1996	Southwest	0.06
3/21/1997	West-Southwest	0.05
5/27/1997	West-Southwest	0.07
8/5/1997	West	0.08
10/29/1997	West-Southwest	0.04
2/25/1998	West-Southwest	0.05
5/12/1998	West	0.07
7/28/1998	West	0.07
10/27/1998	West-Southwest	0.06
2/8/1999	West-Southwest	0.07
6/1/1999	West-Southwest	0.07
8/25/1999	West-Southwest	0.07
10/29/1999	West	0.07
2/16/2000	Southwest	0.05
6/23/2000	West	0.04
8/17/2000	West	0.09
11/10/2000	West-Southwest	0.08
2/12/2001	West-Southwest	0.07
4/13/2001	West	0.09
7/18/2001	West	0.08
10/1/2001	West-Southwest	0.08
1/14/2002	West-Southwest	0.07
4/3/2002	West-Southwest	0.08
8/8/2002	West-Southwest	0.09
11/27/2002	West-Southwest	0.08
2/10/2003	Southwest	0.06
6/3/2003	West	0.07
8/14/2003	West-Southwest	0.07
11/13/2003	West-Southwest	0.07
2/13/2004	Southwest	0.05
5/4/2004	Southwest	0.06
8/30/2004	Southwest	0.07
11/8/2004	Southwest	0.1
2/7/2005	Southwest	0.1
5/9/2005	Southwest	0.07
8/11/2005	West	0.07
12/2/2005	Southwest	0.1
2/15/2006	Southwest	0.07
4/28/2006	West	0.07
8/25/2006	West	0.07
11/2/2006	West	0.09
2/6/2007	West	0.05
5/9/2007	West	0.05
8/8/2007	West	0.05
11/14/2007	West	0.06
2/28/2008	West-Southwest	0.06
5/23/2008	West-Southwest	0.06
8/21/2008	West-Southwest	0.07
11/13/2008	West	0.08
2/23/2009	West	0.05
5/14/2009	West-Southwest	0.06
9/23/2009	West	0.06
3/3/2010	West-Southwest	0.05
8/19/2010	West	0.06

Table 5: Most Recent Maximum Concentration of Contaminants Detected in Soil and Groundwater
Former BP Service Station No. 6002
6235 Seminary Avenue, Oakland, CA
Local Case #RO163

Analyte	Soil ¹							Groundwater					
	Most Recent Concentration Observed (mg/kg)	Sample Depth (feet bgs)	Sample Date	Maximum Concentration Observed (mg/kg)	Sample Depth (feet bgs)	Sample Date	Commercial ESL (mg/kg)	Most Recent Concentration Observed (µg/L)	Sample Date	Maximum Concentration Observed (µg/L)	Sample Date	Commercial ESL for the Protection of the Vapor Intrusion Pathway (µg/L)	State of California Maximum Contaminant Level (µg/L)
TPHg	<1.0 (MW-7)	8	8/6/1996	260 (SB-2)	9.5	6/25/1995	450	2,300 (MW-5)	8/19/2010	27,000 (MW-5)	2/23/1996	100	NA
Benzene	<0.0050 (MW-7)	8	8/6/1996	0.11 (PL-8)	5	3/8/1996	0.27	<0.50 (MW-5)	8/19/2010	2,500 (VW-4)	5/10/1996	1,800	1
Toluene	<0.0050 (MW-7)	8	8/6/1996	4.4 (SB-2)	9.5	6/25/1995	210	0.55 (MW-5)	8/19/2010	250 (MW-5)	5/30/1995	350,000	150
Ethylbenzene	<0.0050 (MW-7)	8	8/6/1996	10 (SB-2)	9.5	6/25/1995	5	1.7 (MW-5)	8/19/2010	1,600 (MW-5)	2/23/1996	175,000	300
Xylenes	<0.0050 (MW-7)	8	8/6/1996	49 (SB-2)	9.5	6/25/1995	100	<1.0 (MW-5)	8/19/2010	1,900 (MW-5)	3/15/1995	160,000	1750
MTBE	-	-	-	-	-	-	65	6.3 (VW-4)	8/19/2010	43,000 (VW-4)	5/10/1996	80,000	13
TPHd	-	-	-	-	-	-	450	-	-	-	-	-	NA

¹ Soil results are reported from the vadose zone, which does not exceed 10 feet bgs

Bold = exceedances of commercial ESL

TPHg = Total Petroleum Hydrocarbons as Gasoline

MTBE = methyl tert-butyl ether

TPHd = Total Petroleum Hydrocarbons as Diesel

mg/kg = milligrams per kilogram

µg/L = micrograms per liter

bgs = below ground surface

ND = non-detect, below laboratory detection limits

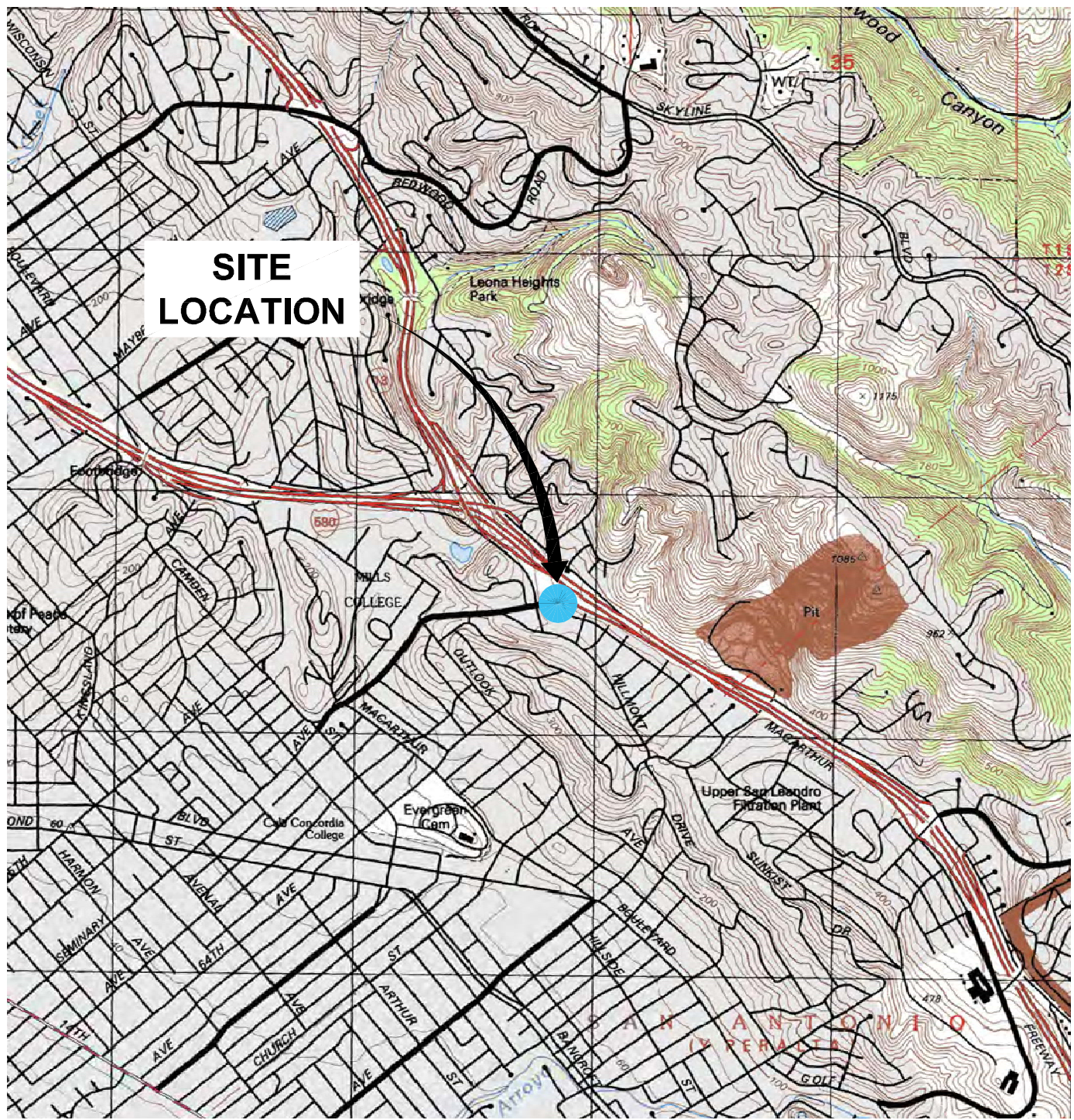
GRO Commercial ESL values are listed as TPH (gasolines) in Table A of *Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater*

DRO Commercial ESL values are listed as TPH (middle distillates) in Table A of *Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater*

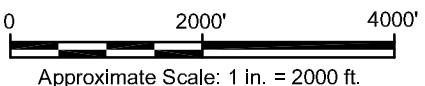
ARCADIS

Figures

CITY: J. HARRIS DIV/GROUP: ENV DB: J. HARRIS TM: L. KWONG L:\PROJECTS\OFF\REF\GREN\CAD\emery\file\ACT\GIBBP\NAC\108\CLOSURE\FIG7_Site Location.mxd PLOT: 11/20/10 11:11 AM BY: BEARDSLEY, DANIEL
 PLOT: H. PHILLIPS TIT: L. KWONG L:\PROJECTS\OFF\REF\GREN\CAD\emery\file\ACT\GIBBP\NAC\108\CLOSURE\FIG7_Site Location.mxd PLOT: 11/20/10 10:24 AM ACADVER: 18.0 US (LMS TECH) PAGESETUP: -- PLOTSTYLETABLE: LFR STANDARD.CTB
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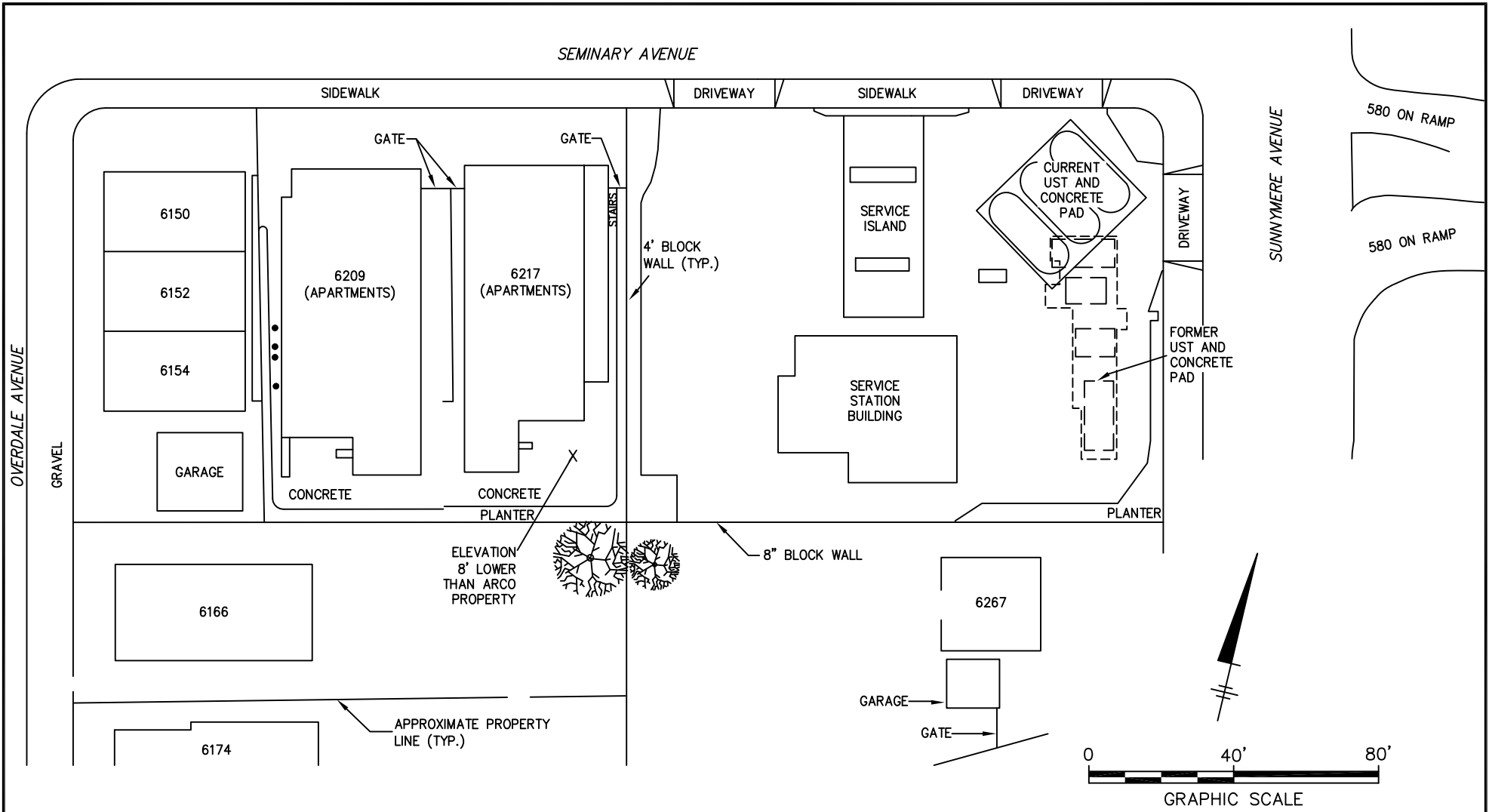


NOTE:
 1. BASE MAP USGS 7.5 MIN. TOPO. QUAD, OAKLAND EAST, CALIFORNIA 1997.



FORMER ARCO SERVICE STATION #6002
 6235 SEMINARY AVENUE
 OAKLAND, CALIFORNIA
BP SITE 6002 CLOSURE

SITE LOCATION MAP



ELEVATION
8' LOWER
THAN ARCO
PROPERTY

APPROXIMATE PROPERTY
LINE (TYP.)

NOTES:

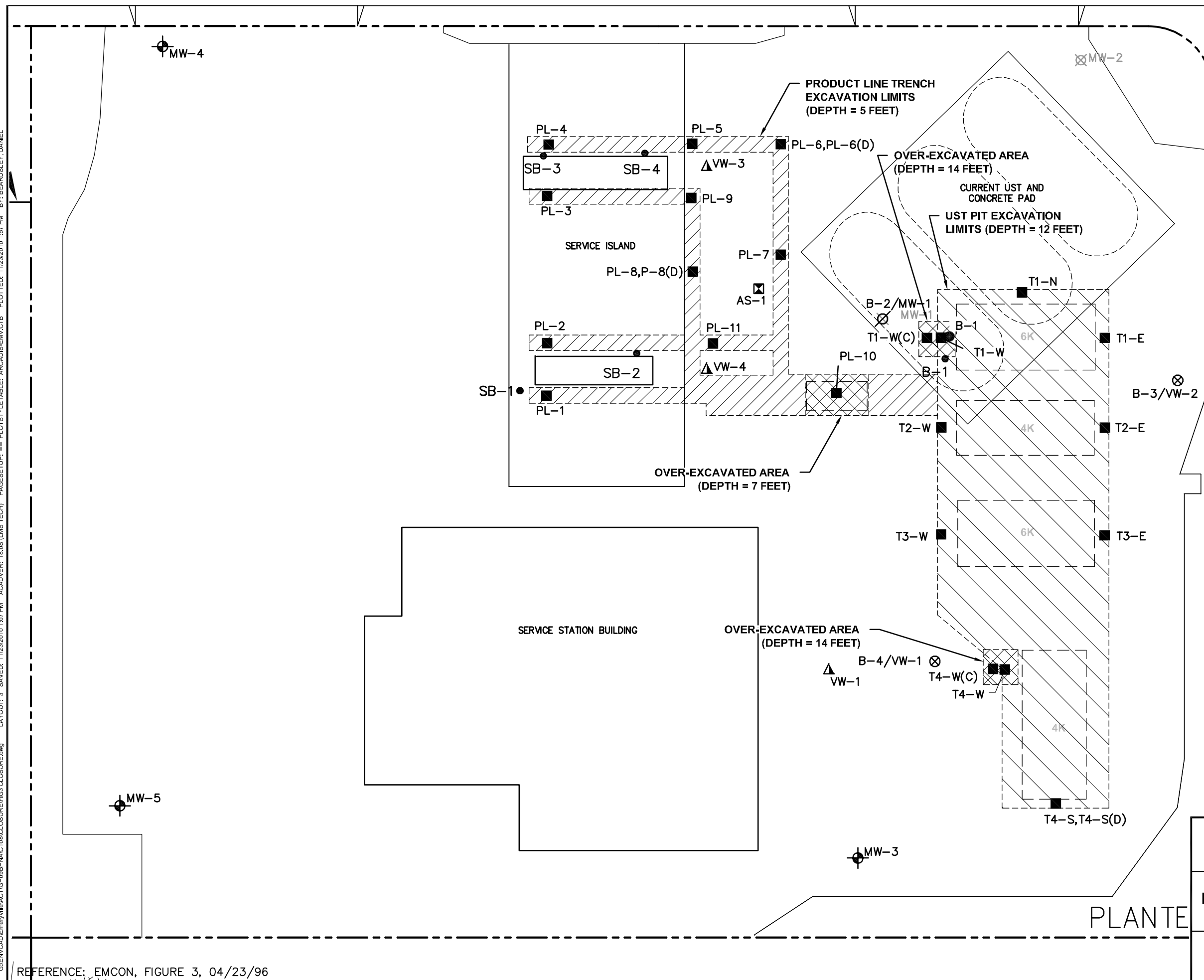
1. SITE MAP PROVIDED BY BROADBENT & ASSOCIATES, INC., DATED 7/29/09, AT A SCALE OF 1"=40'.
2. SITE DIMENSIONS AND FACILITY LOCATIONS NOT VERIFIED.

FORMER ARCO SERVICE STATION #6002
 6235 SEMINARY AVENUE
 OAKLAND, CALIFORNIA
BP SITE 6002 CLOSURE

SITE VICINITY MAP

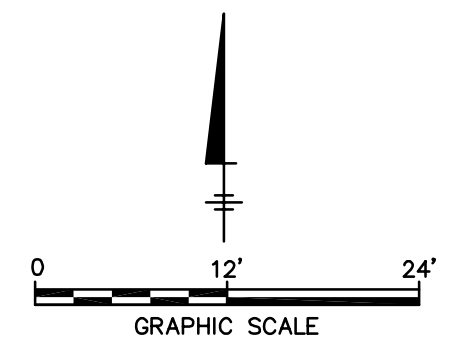
	FIGURE 2
---	--------------------

CITY: CM, DW: GROUP: ENV: CAD, DB: EN: W: CAD, P: N: M: (RE: MP), G: A: EN: W: CAD, D: E: M: A: C: T: I: G: P: 0: 8: B: P: N: A: C: 1: 0: 8: C: L: O: S: U: R: E: I: F: I: G: S: C: L: O: S: U: R: E: .: d: w: g, L: A: Y: O: U: T: : 3, S: A: V: E: D: : 11/23/2010 1:07 PM, A: C: A: D: V: E: R: : 18.0: S (L: I: M: S T: E: C: H), P: A: G: E: S: E: T: U: P: : --, P: L: O: T: I: S: T: Y: L: E: T: A: B: L: E: : A: R: C: A: D: I: S: E: M: V: C: I: B, P: L: O: T: T: E: D: : 11/23/2010 1:57 PM, B: Y: : B: E: A: R: D: S: L: E: Y, D: A: N: I: E: L



LEGEND

- VAPOR EXTRACTION WELL
- DECOMMISSIONED WELL
- SOIL BORING
- SOIL SAMPLING LOCATION
- MONITORING WELL
- DECOMMISSIONED MONITORING WELL
- VAPOR EXTRACTION WELL
- AIR SPARGE WELL
- 6K** CAPACITY OF UNDERGROUND GASOLINE STORAGE TANK (THOUSANDS OF GALLONS)
- (D)** DUPLICATE SAMPLE, GEOTECHNICAL ANALYSIS

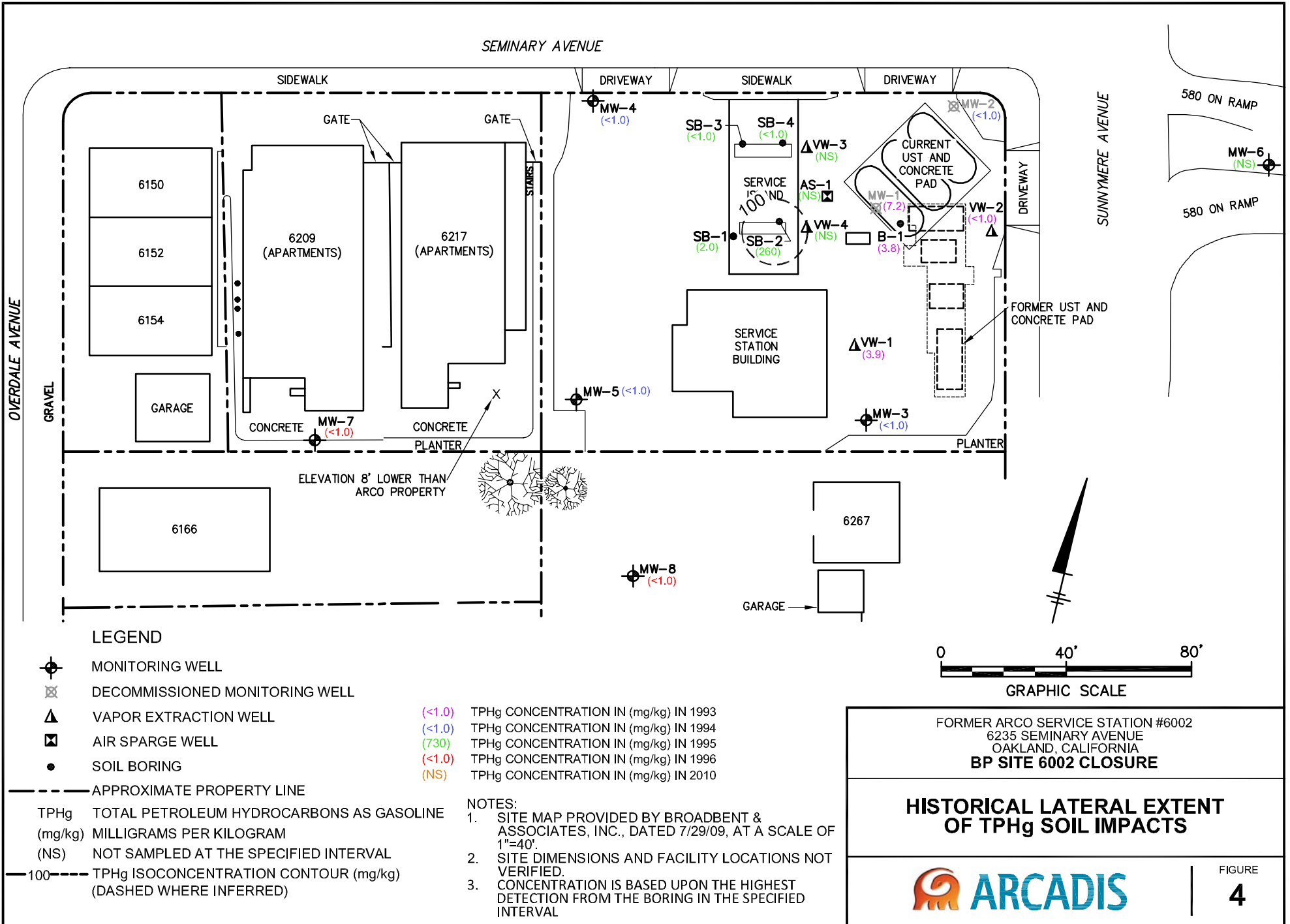


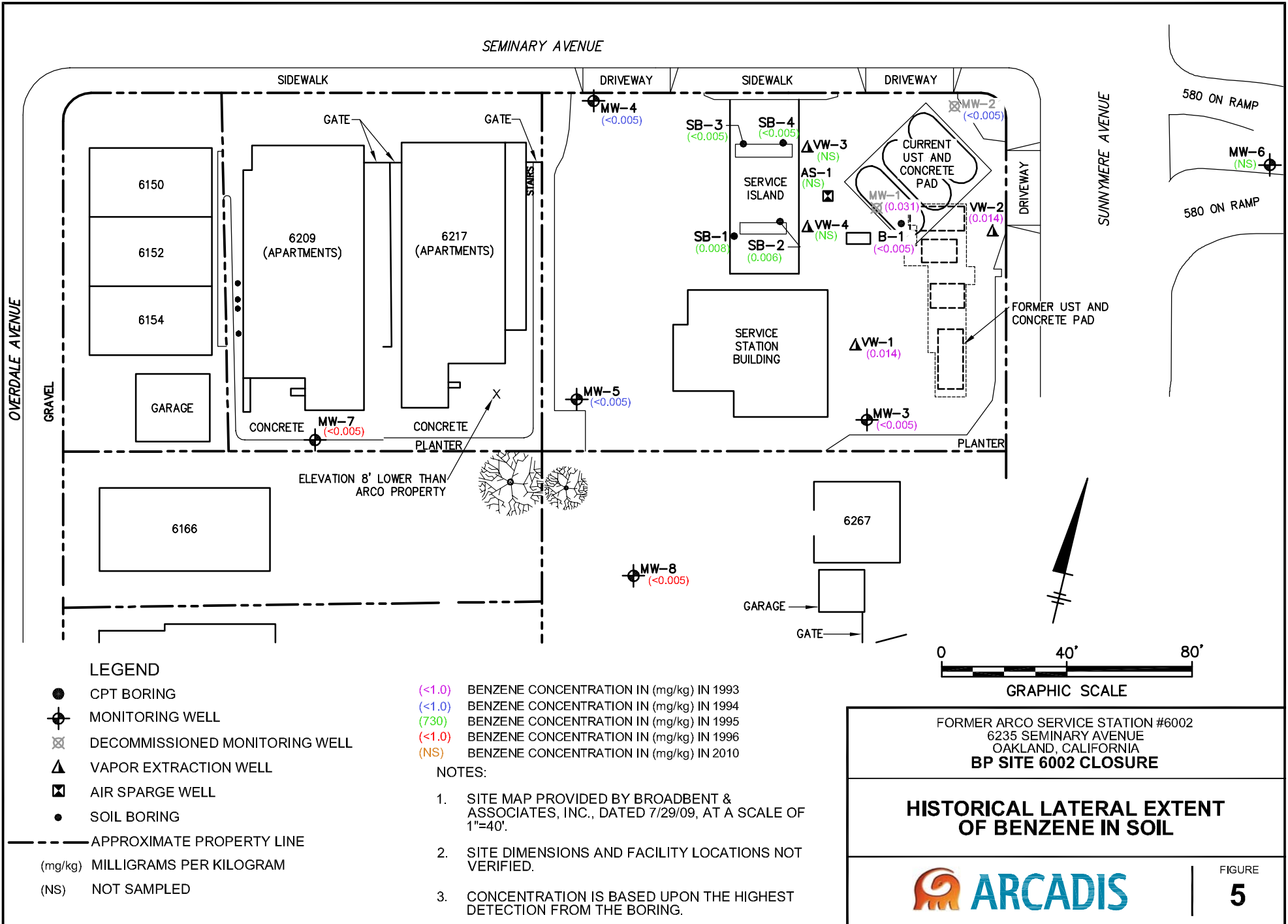
FORMER ARCO SERVICE STATION #6002
 6235 SEMINARY AVENUE
 OAKLAND, CALIFORNIA
BP SITE 6002 CLOSURE

**SITE PLAN WITH HISTORICAL
 EXCAVATION LIMITS AND SOIL SAMPLE
 LOCATIONS**

FIGURE
3

PLANTE





LEGEND

- CPT BORING
- ⊕ MONITORING WELL
- ⊗ DECOMMISSIONED MONITORING WELL
- ▲ VAPOR EXTRACTION WELL
- ⊠ AIR SPARGE WELL
- SOIL BORING

- (<1.0) BENZENE CONCENTRATION IN (mg/kg) IN 1993
- (<1.0) BENZENE CONCENTRATION IN (mg/kg) IN 1994
- (730) BENZENE CONCENTRATION IN (mg/kg) IN 1995
- (<1.0) BENZENE CONCENTRATION IN (mg/kg) IN 1996
- (NS) BENZENE CONCENTRATION IN (mg/kg) IN 2010

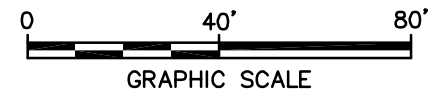
NOTES:

1. SITE MAP PROVIDED BY BROADBENT & ASSOCIATES, INC., DATED 7/29/09, AT A SCALE OF 1"=40'.
2. SITE DIMENSIONS AND FACILITY LOCATIONS NOT VERIFIED.
3. CONCENTRATION IS BASED UPON THE HIGHEST DETECTION FROM THE BORING.

--- APPROXIMATE PROPERTY LINE

(mg/kg) MILLIGRAMS PER KILOGRAM

(NS) NOT SAMPLED



FORMER ARCO SERVICE STATION #6002
 6235 SEMINARY AVENUE
 OAKLAND, CALIFORNIA
BP SITE 6002 CLOSURE

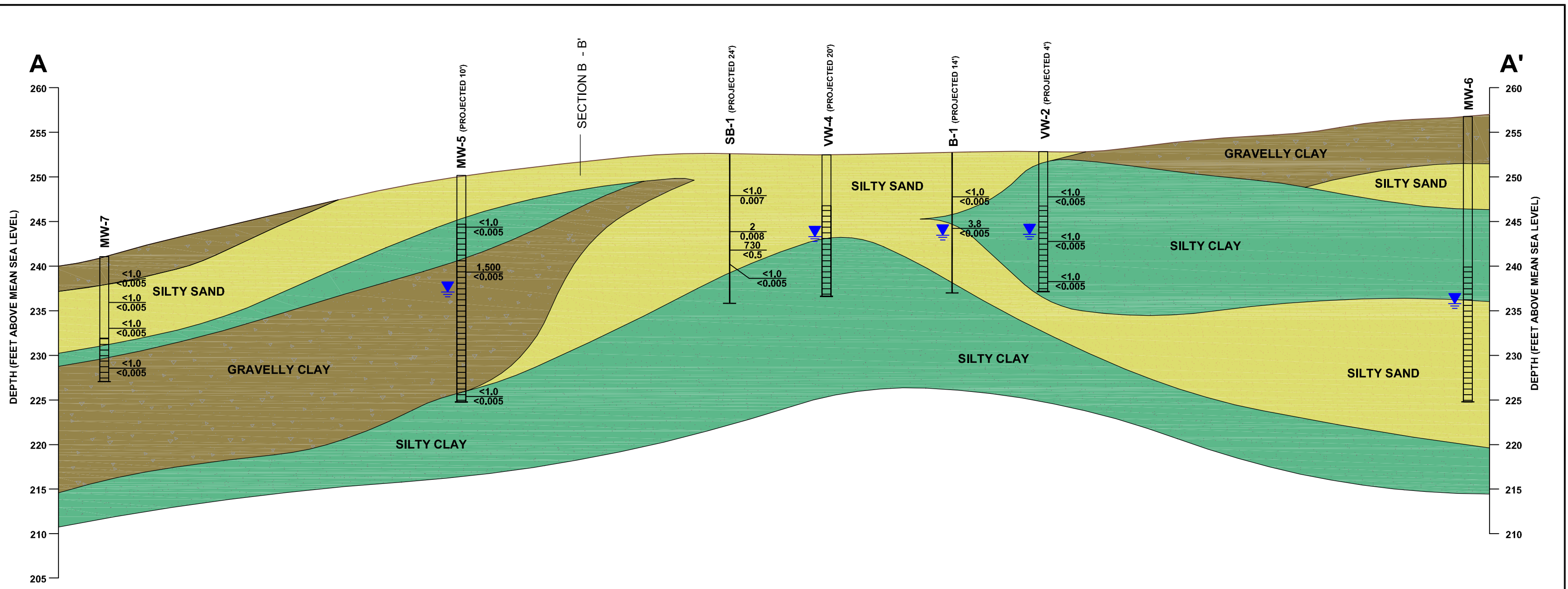
**HISTORICAL LATERAL EXTENT
 OF BENZENE IN SOIL**



FIGURE

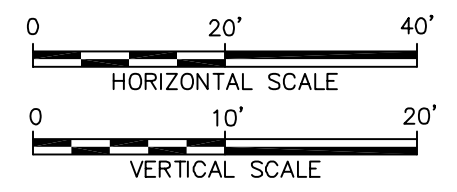
5

CITY: PETALUMA, CA DIV/GROUP: ENV DB: J. HARRIS LD: PIC: S. GLENN PM: H. PHILLIPS TM: KJ. PRESTON LYR: 0/0/0/0 OFF: REF
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 XREFS: IMAGES: PROJECTNAME: -1 SERVENV-106697360002.dwg



LEGEND

- TPHg** LABORATORY ANALYZED SOIL SAMPLE IN MILLIGRAMS PER KILOGRAM (mg/kg)
- Benzene** LABORATORY ANALYZED SOIL SAMPLE IN MILLIGRAMS PER KILOGRAM (mg/kg)
- 83** TPHg ENVIRONMENTAL SCREENING LEVEL (mg/kg)
- 0.044** BENZENE ENVIRONMENTAL SCREENING LEVEL (mg/kg)
- WATER LEVEL DURING DRILLING
- WELL SCREEN
- TPHg** TOTAL PETROLEUM HYDROCARBONS AS GASOLINE
- GRAVELLY CLAY
- SILTY SAND
- SILTY CLAY

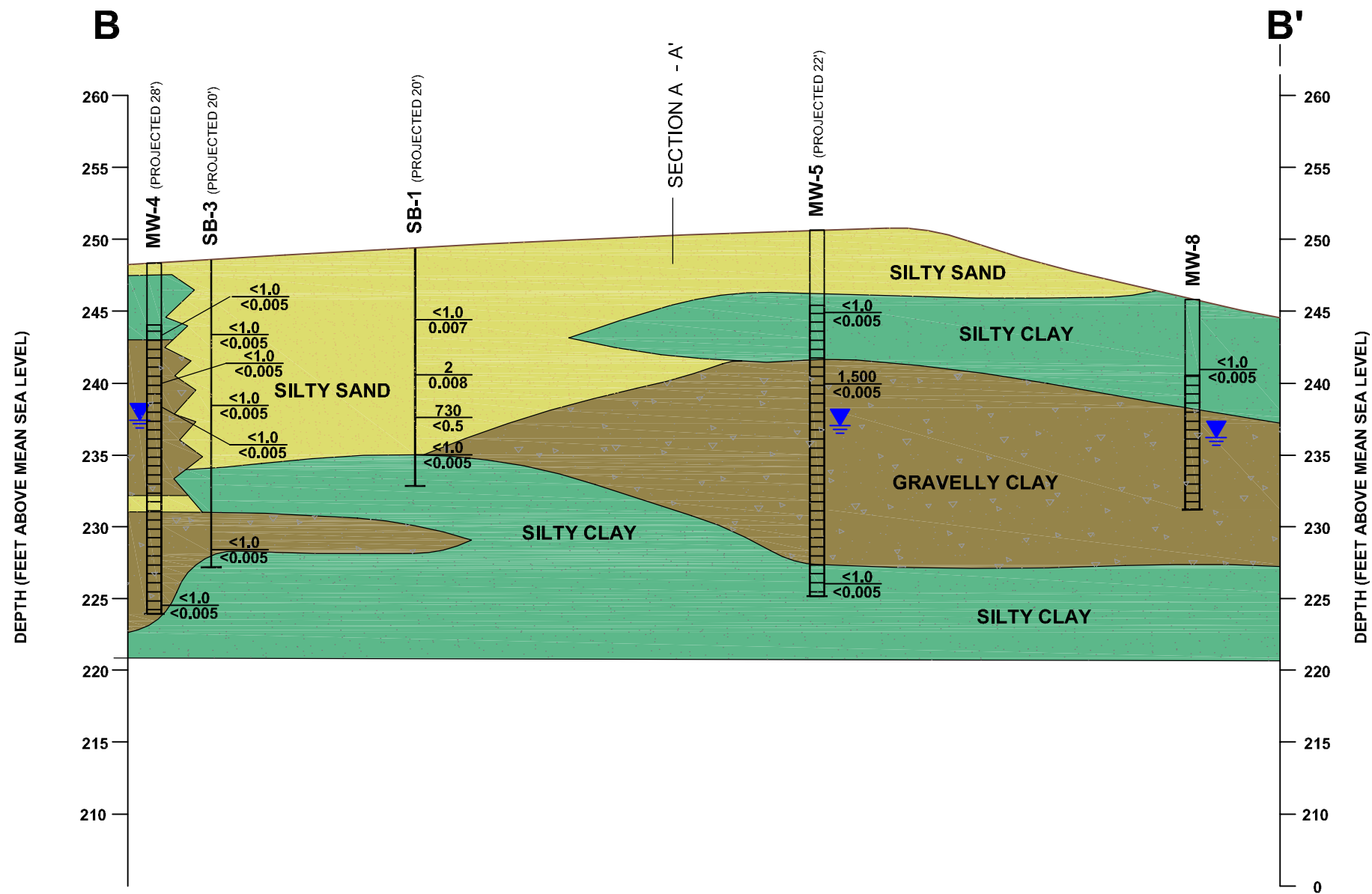


FORMER BP STATION #6002
 6235 SE OMARU AVENUE
 OAKLAND, CALIFORNIA
BP SITE 6002 CLOSURE

VERTICAL EXTENT OF TPHg AND BENZENE SOIL IMPACTS GEOLOGIC CROSS SECTION A-A'

ARCADIS

FIGURE **6**



LEGEND

TPHg LABORATORY ANALYZED SOIL SAMPLE IN MILLIGRAMS PER KILOGRAM (mg/kg)

83 TPHg ENVIRONMENTAL SCREENING LEVEL (mg/kg)
0.044 BENZENE ENVIRONMENTAL SCREENING LEVEL (mg/kg)

▼ WATER LEVEL DURING DRILLING

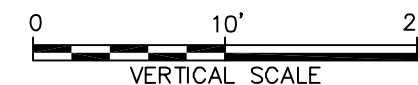
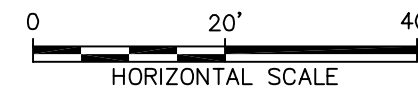
▬ WELL SCREEN

TPHg TOTAL PETROLEUM HYDROCARBONS AS GASOLINE

GRAVELLY CLAY

SILTY SAND

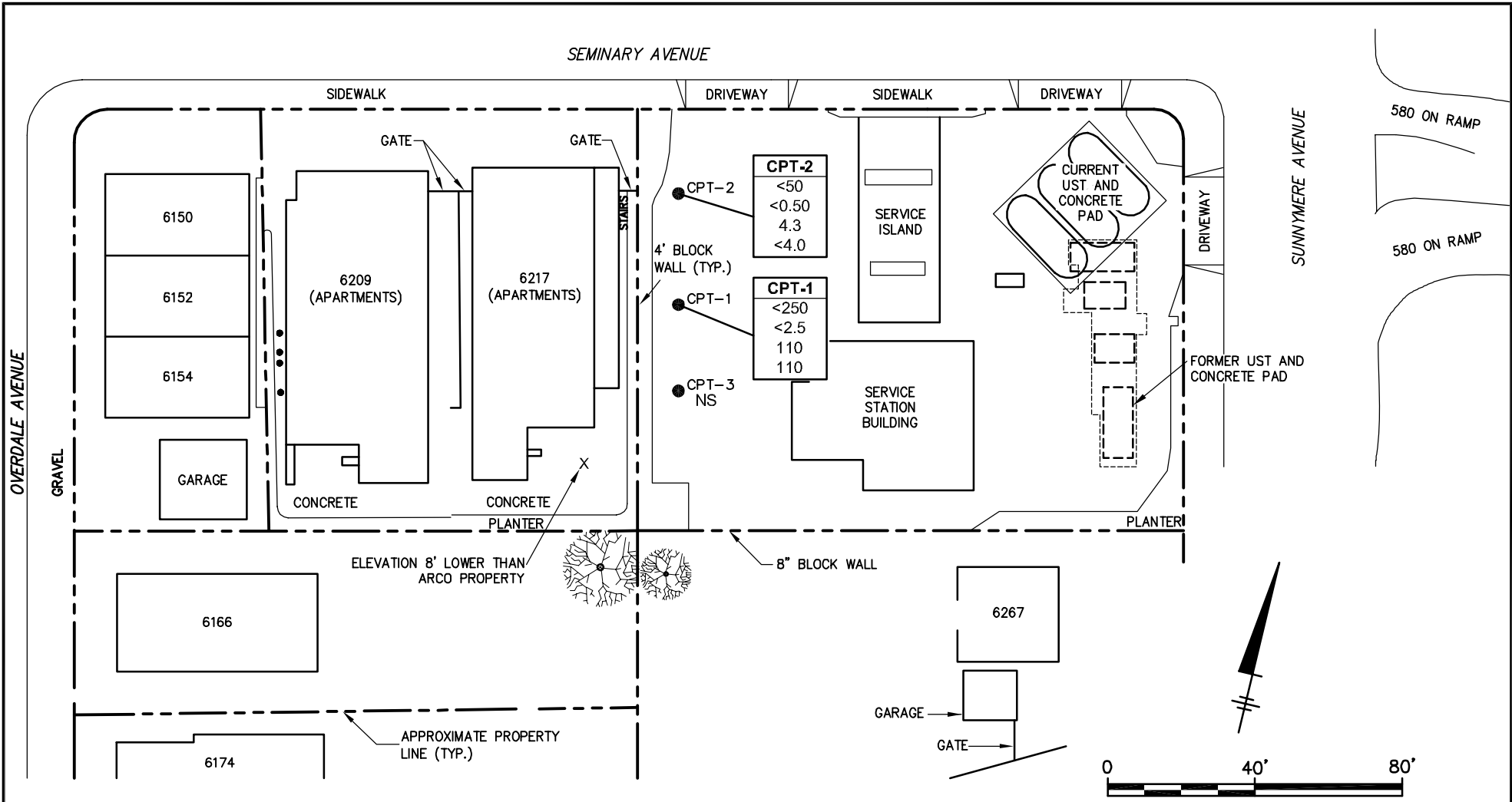
SILTY CLAY



FORMER BP STATION #6002
 6235 SEMINARY AVENUE
 OAKLAND, CALIFORNIA
BP SITE 6002 CLOSURE

**VERTICAL EXTENT OF TPHg AND
 BENZENE SOIL IMPACTS
 GEOLOGIC CROSS SECTION B-B'**





NOTES:

1. SITE MAP PROVIDED BY BROADBENT & ASSOCIATES, INC., DATED 7/29/09, AT A SCALE OF 1"=40'.
2. SITE DIMENSIONS AND FACILITY LOCATIONS NOT VERIFIED.
3. ALL GROUNDWATER ANALYTICAL RESULTS ARE REPORTED IN MICROGRAMS PER LITER (µg/L)

LEGEND

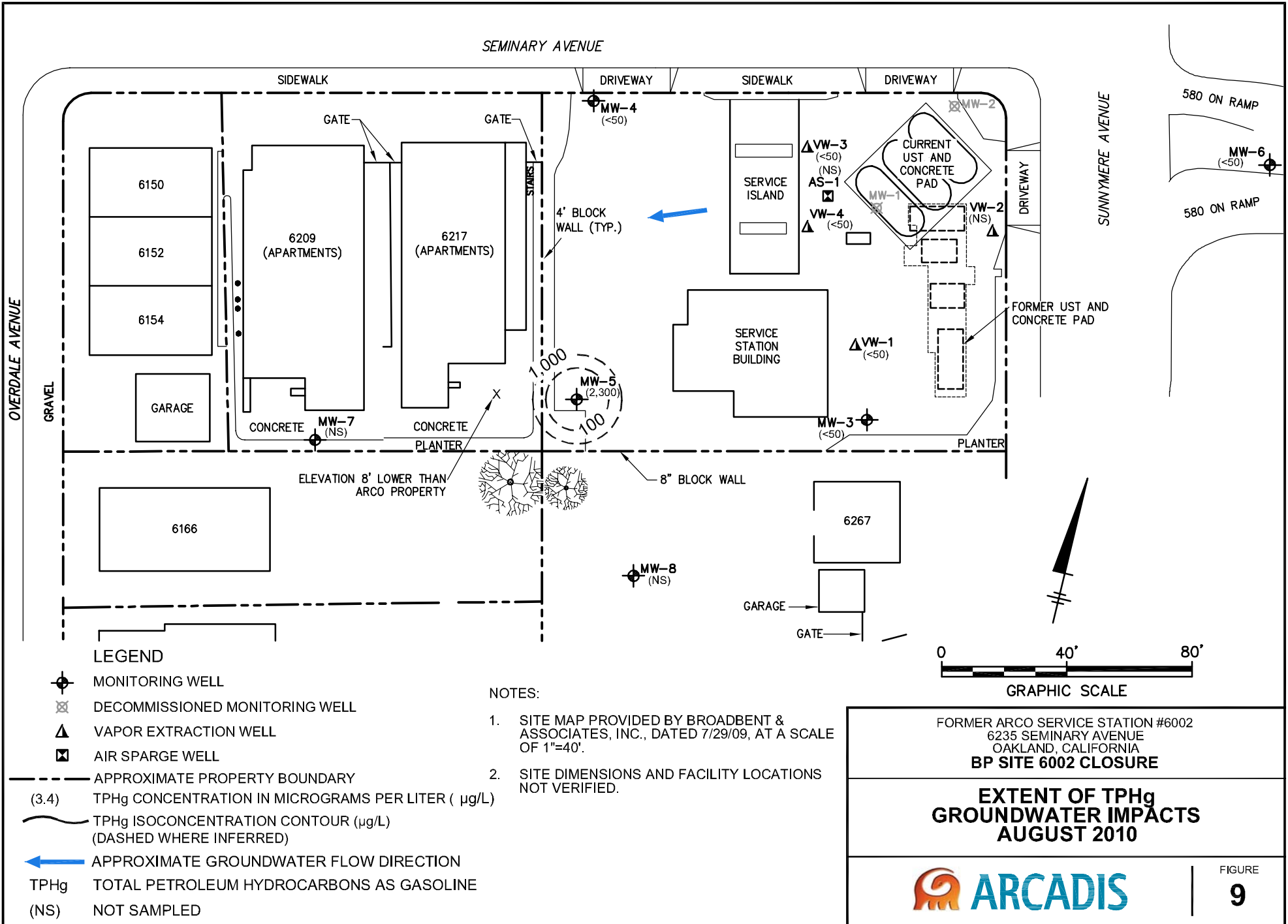
- CONE PENETROMETER TESTING LOCATION
- NS NOT SAMPLED

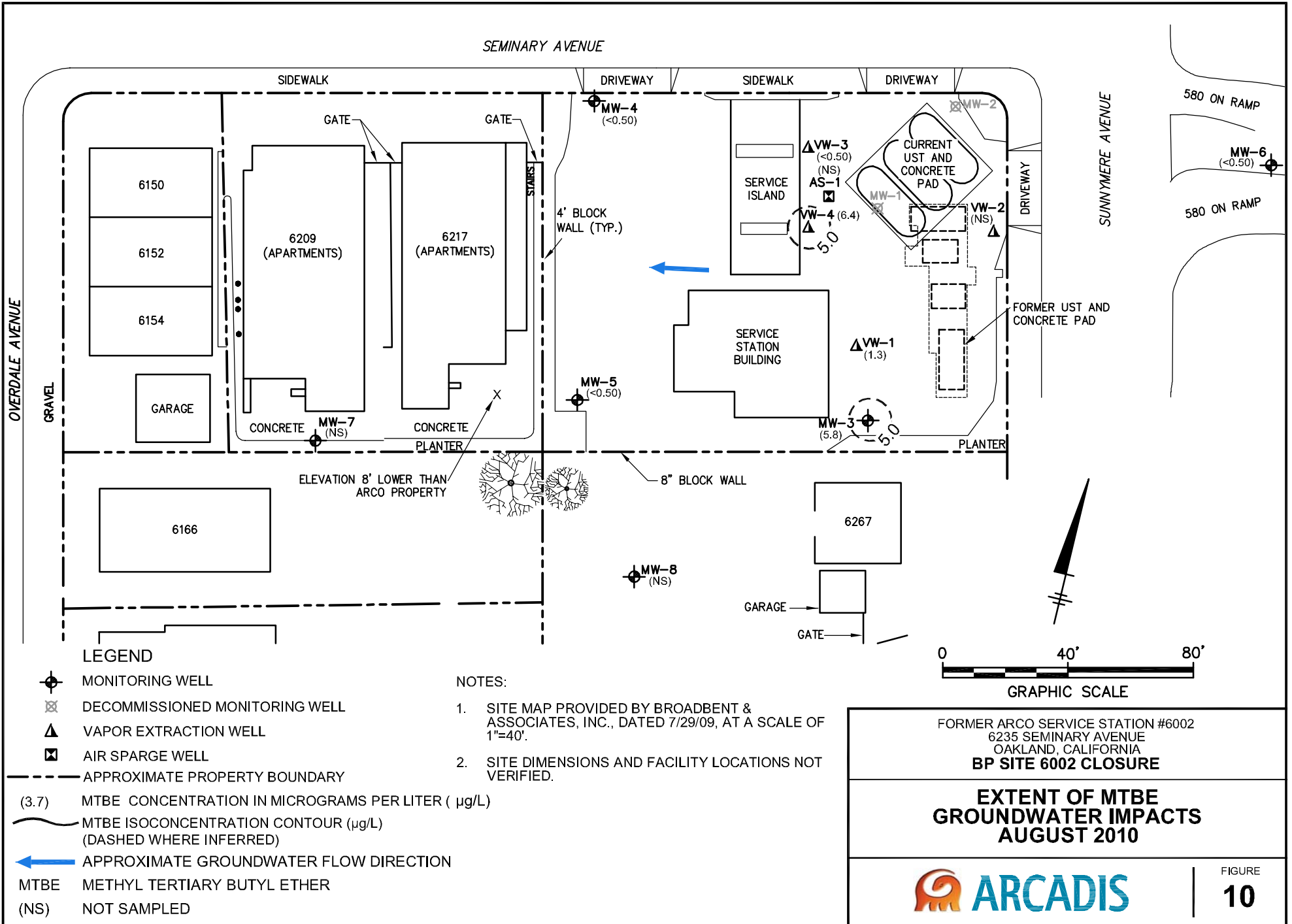
CPT-1	CPT LOCATION
<250	TOTAL PETROLEUM HYDROCARBONS AS GASOLINE (TPHg)
<2.5	BENZENE
110	METHYL TERT-BUTYL ETHER (MTBE)
110	TETRT-BUTYL ALCOHOL (TBA)

FORMER ARCO SERVICE STATION #6002
 6235 SEMINARY AVENUE
 OAKLAND, CALIFORNIA
BP SITE 6002 CLOSURE

CONE PENETROMETER TESTING LOCATIONS WITH GROUNDWATER ANALYTICAL DATA

 **ARCADIS** | FIGURE **8**



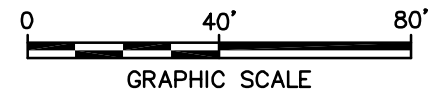


LEGEND

- ⊕ MONITORING WELL
- ⊗ DECOMMISSIONED MONITORING WELL
- ▲ VAPOR EXTRACTION WELL
- ⊠ AIR SPARGE WELL
- - - APPROXIMATE PROPERTY BOUNDARY
- (3.7) MTBE CONCENTRATION IN MICROGRAMS PER LITER (μg/L)
- MTBE ISOCONCENTRATION CONTOUR (μg/L)
(DASHED WHERE INFERRED)
- ← APPROXIMATE GROUNDWATER FLOW DIRECTION
- MTBE METHYL TERTIARY BUTYL ETHER
- (NS) NOT SAMPLED

NOTES:

1. SITE MAP PROVIDED BY BROADBENT & ASSOCIATES, INC., DATED 7/29/09, AT A SCALE OF 1"=40'.
2. SITE DIMENSIONS AND FACILITY LOCATIONS NOT VERIFIED.

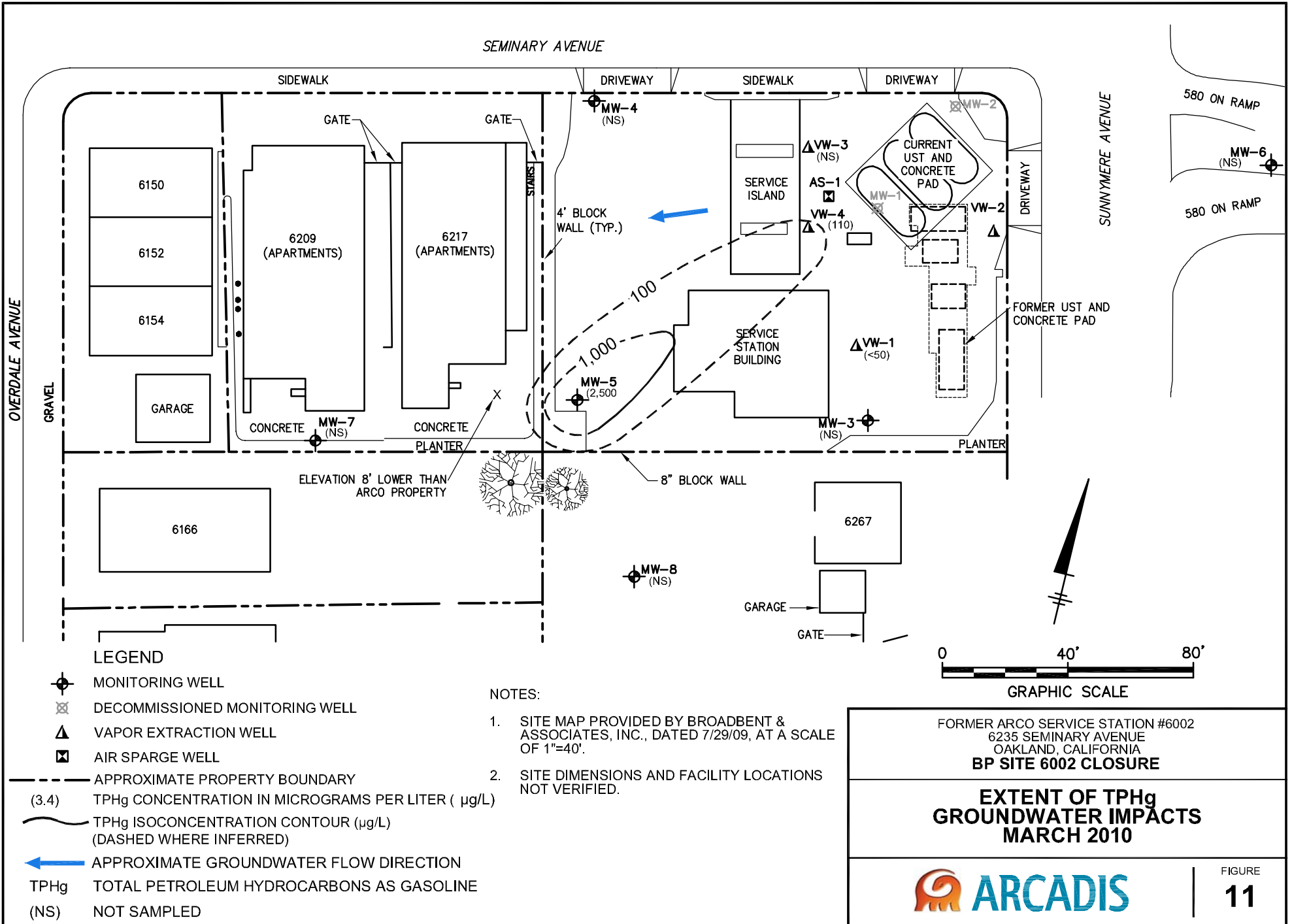


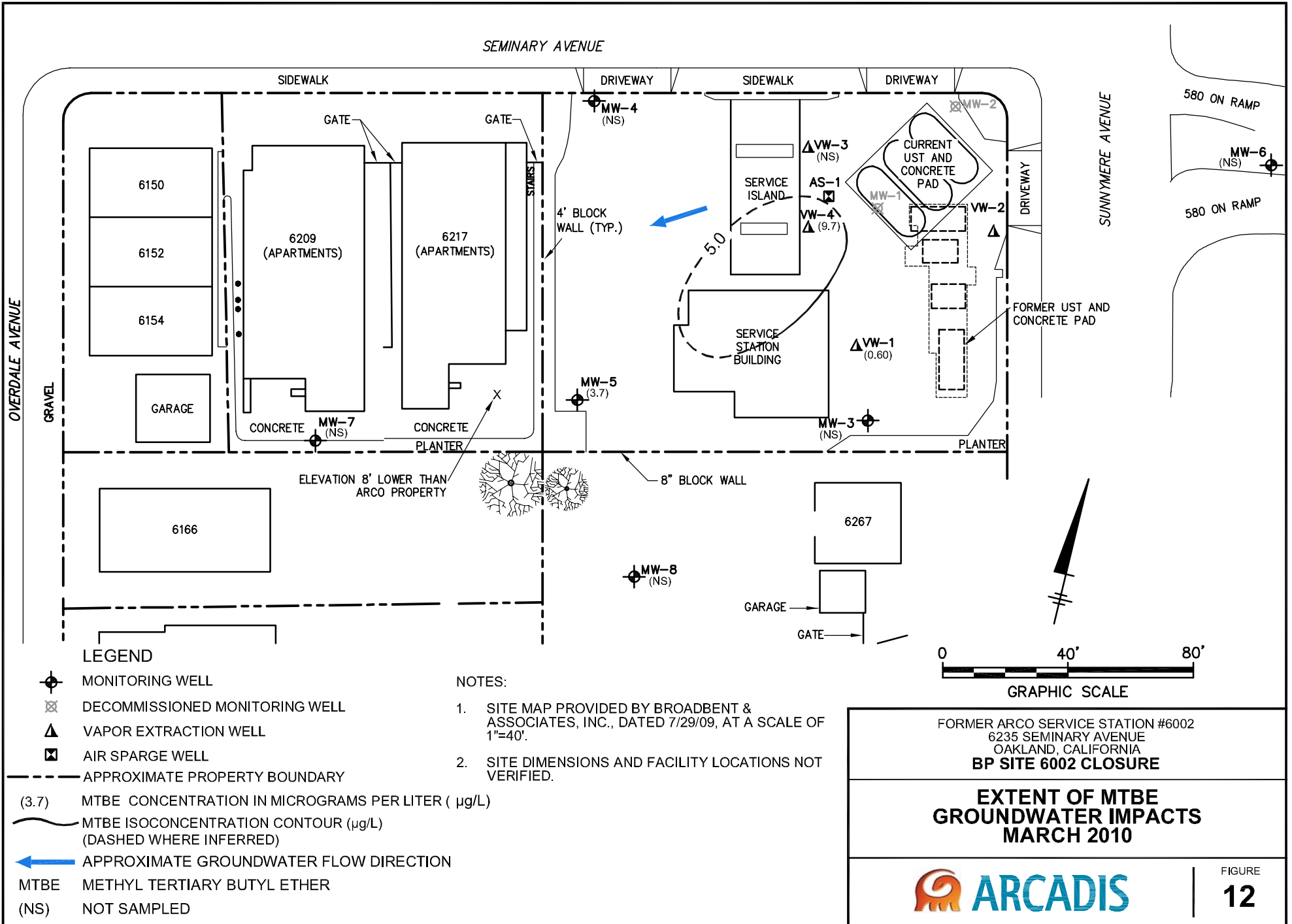
FORMER ARCO SERVICE STATION #6002
 6235 SEMINARY AVENUE
 OAKLAND, CALIFORNIA
BP SITE 6002 CLOSURE

**EXTENT OF MTBE
 GROUNDWATER IMPACTS
 AUGUST 2010**

ARCADIS

FIGURE
10



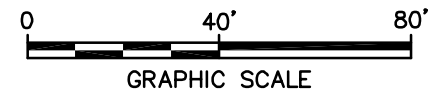


LEGEND

- ⊕ MONITORING WELL
- ⊗ DECOMMISSIONED MONITORING WELL
- ▲ VAPOR EXTRACTION WELL
- ⊠ AIR SPARGE WELL
- - - APPROXIMATE PROPERTY BOUNDARY
- (3.7) MTBE CONCENTRATION IN MICROGRAMS PER LITER (μg/L)
- MTBE ISOCONCENTRATION CONTOUR (μg/L)
(DASHED WHERE INFERRED)
- ← APPROXIMATE GROUNDWATER FLOW DIRECTION
- MTBE METHYL TERTIARY BUTYL ETHER
- (NS) NOT SAMPLED

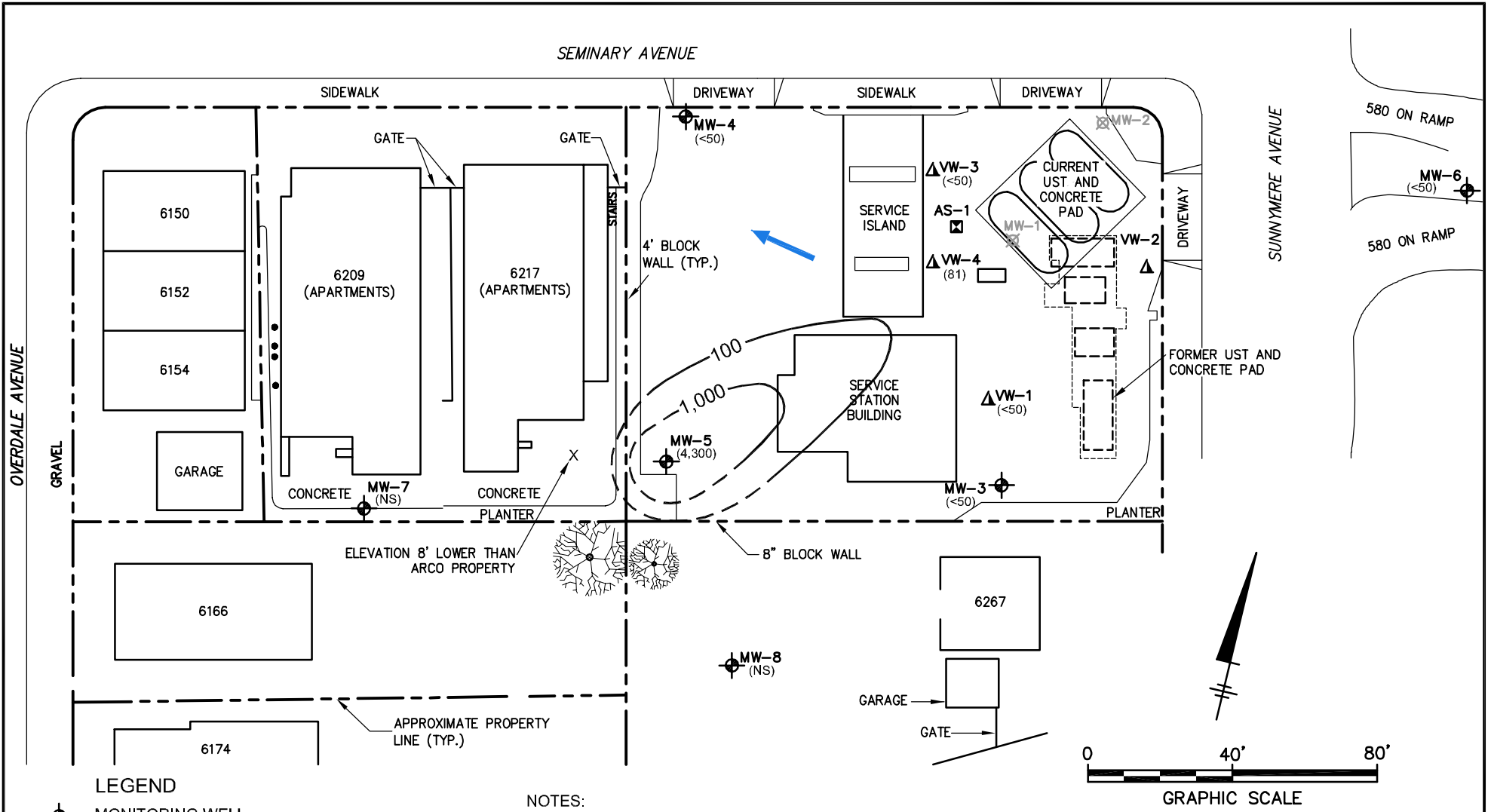
NOTES:

1. SITE MAP PROVIDED BY BROADBENT & ASSOCIATES, INC., DATED 7/29/09, AT A SCALE OF 1"=40'.
2. SITE DIMENSIONS AND FACILITY LOCATIONS NOT VERIFIED.



FORMER ARCO SERVICE STATION #6002
 6235 SEMINARY AVENUE
 OAKLAND, CALIFORNIA
BP SITE 6002 CLOSURE

**EXTENT OF MTBE
 GROUNDWATER IMPACTS
 MARCH 2010**



LEGEND

- ⊕ MONITORING WELL
- ⊗ DECOMMISSIONED MONITORING WELL
- ▲ VAPOR EXTRACTION WELL
- ⊠ AIR SPARGE WELL
- (4,300) TPHg CONCENTRATION IN MICROGRAMS PER LITER (µg/L)
- TPHg ISOCONCENTRATION CONTOUR (µg/L)
(DASHED WHERE INFERRED)
- ← GROUNDWATER FLOW DIRECTION
- TPHg TOTAL PETROLEUM HYDROCARBONS AS GASOLINE
- (NS) NOT SAMPLED

NOTES:

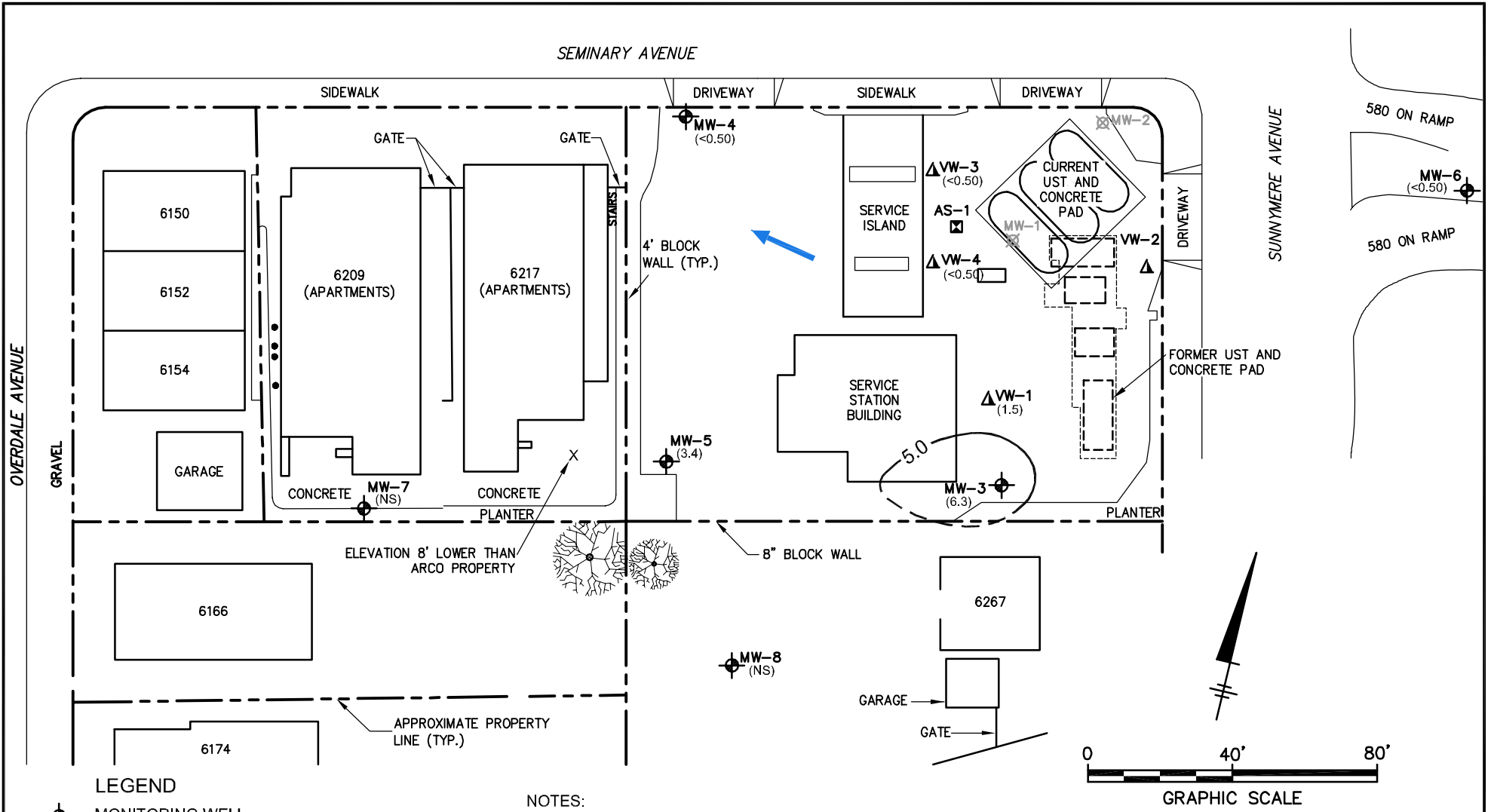
1. SITE MAP PROVIDED BY BROADBENT & ASSOCIATES, INC., DATED 7/29/09, AT A SCALE OF 1"=40'.
2. SITE DIMENSIONS AND FACILITY LOCATIONS NOT VERIFIED.

FORMER ARCO SERVICE STATION #6002
 6235 SEMINARY AVENUE
 OAKLAND, CALIFORNIA
BP SITE 6002 CLOSURE

**EXTENT OF TPHg
 GROUNDWATER IMPACTS
 SEPTEMBER 2009**

ARCADIS

FIGURE
13



- LEGEND**
- ⊕ MONITORING WELL
 - ⊗ DECOMMISSIONED MONITORING WELL
 - ▲ VAPOR EXTRACTION WELL
 - ⊠ AIR SPARGE WELL
 - (3.4) MTBE CONCENTRATION IN MICROGRAMS PER LITER (µg/L)
 - - - MTBE ISOCONCENTRATION CONTOUR (µg/L)
(DASHED WHERE INFERRED)
 - ← GROUNDWATER FLOW DIRECTION
 - MTBE METHYL TERTIARY BUTYL ETHER
 - (NS) NOT SAMPLED

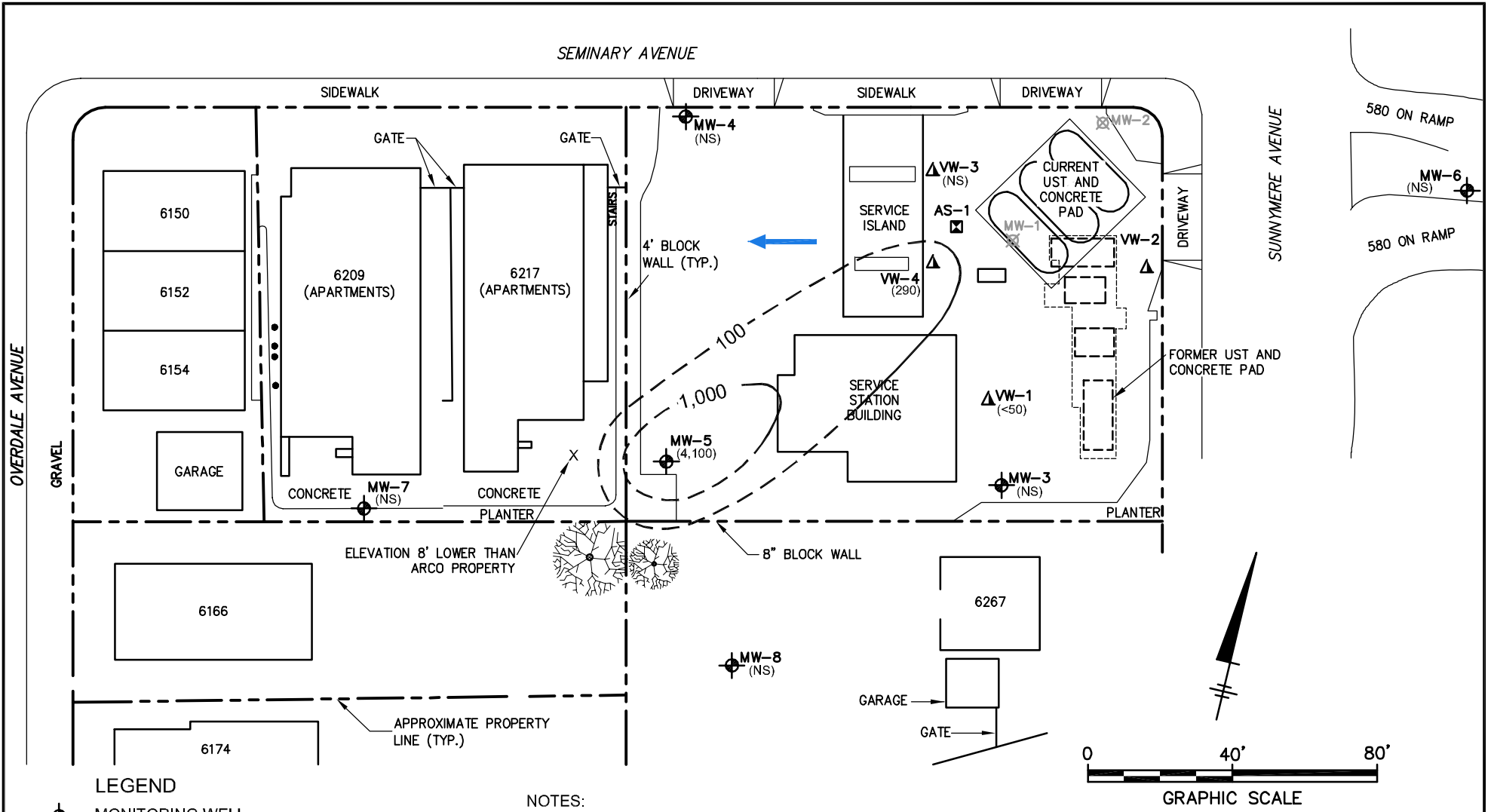
- NOTES:**
1. SITE MAP PROVIDED BY BROADBENT & ASSOCIATES, INC., DATED 7/29/09, AT A SCALE OF 1"=40'.
 2. SITE DIMENSIONS AND FACILITY LOCATIONS NOT VERIFIED.

FORMER ARCO SERVICE STATION #6002
 6235 SEMINARY AVENUE
 OAKLAND, CALIFORNIA
BP SITE 6002 CLOSURE

**EXTENT OF MTBE
 GROUNDWATER IMPACTS
 SEPTEMBER 2009**

ARCADIS

FIGURE
14



LEGEND

- ⊕ MONITORING WELL
- ⊗ DECOMMISSIONED MONITORING WELL
- ▲ VAPOR EXTRACTION WELL
- ⊠ AIR SPARGE WELL
- (4,100) TPHg CONCENTRATION IN MICROGRAMS PER LITER (µg/L)
- TPHg ISOCONCENTRATION CONTOUR (µg/L)
(DASHED WHERE INFERRED)
- ← GROUNDWATER FLOW DIRECTION
- TPHg TOTAL PETROLEUM HYDROCARBONS AS GASOLINE
- (NS) NOT SAMPLED

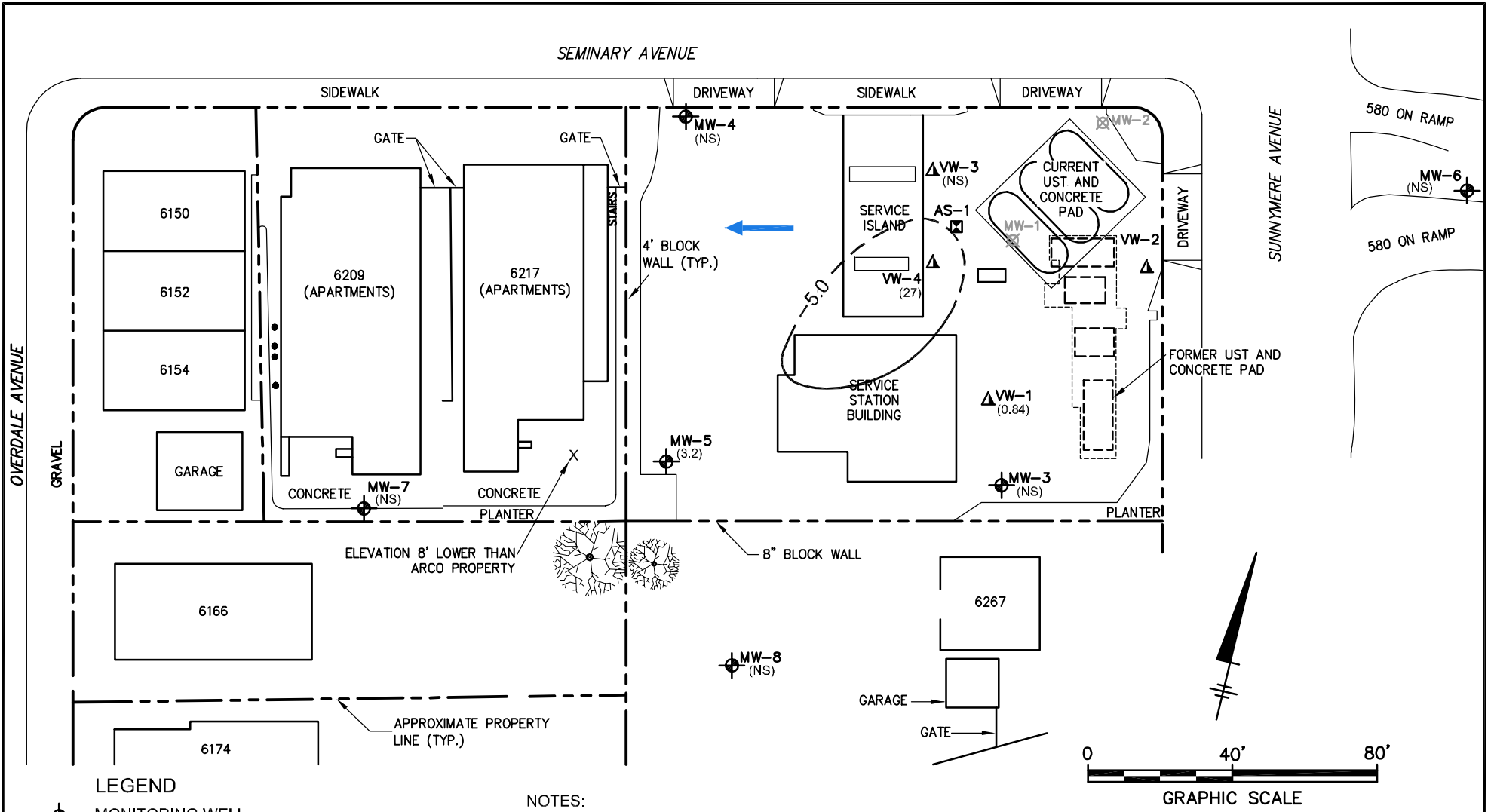
NOTES:

1. SITE MAP PROVIDED BY BROADBENT & ASSOCIATES, INC., DATED 7/29/09, AT A SCALE OF 1"=40'.
2. SITE DIMENSIONS AND FACILITY LOCATIONS NOT VERIFIED.

FORMER ARCO SERVICE STATION #6002
 6235 SEMINARY AVENUE
 OAKLAND, CALIFORNIA
BP SITE 6002 CLOSURE

**EXTENT OF TPHg
 GROUNDWATER IMPACTS
 FEBRUARY 2009**

FIGURE
15



LEGEND

- ⊕ MONITORING WELL
- ⊗ DECOMMISSIONED MONITORING WELL
- ▲ VAPOR EXTRACTION WELL
- ⊠ AIR SPARGE WELL
- (3.2) MTBE CONCENTRATION IN MICROGRAMS PER LITER (µg/L)
- MTBE ISOCONCENTRATION CONTOUR (µg/L)
(DASHED WHERE INFERRED)
- ← GROUNDWATER FLOW DIRECTION
- MTBE METHYL TERTIARY BUTYL ETHER
- (NS) NOT SAMPLED

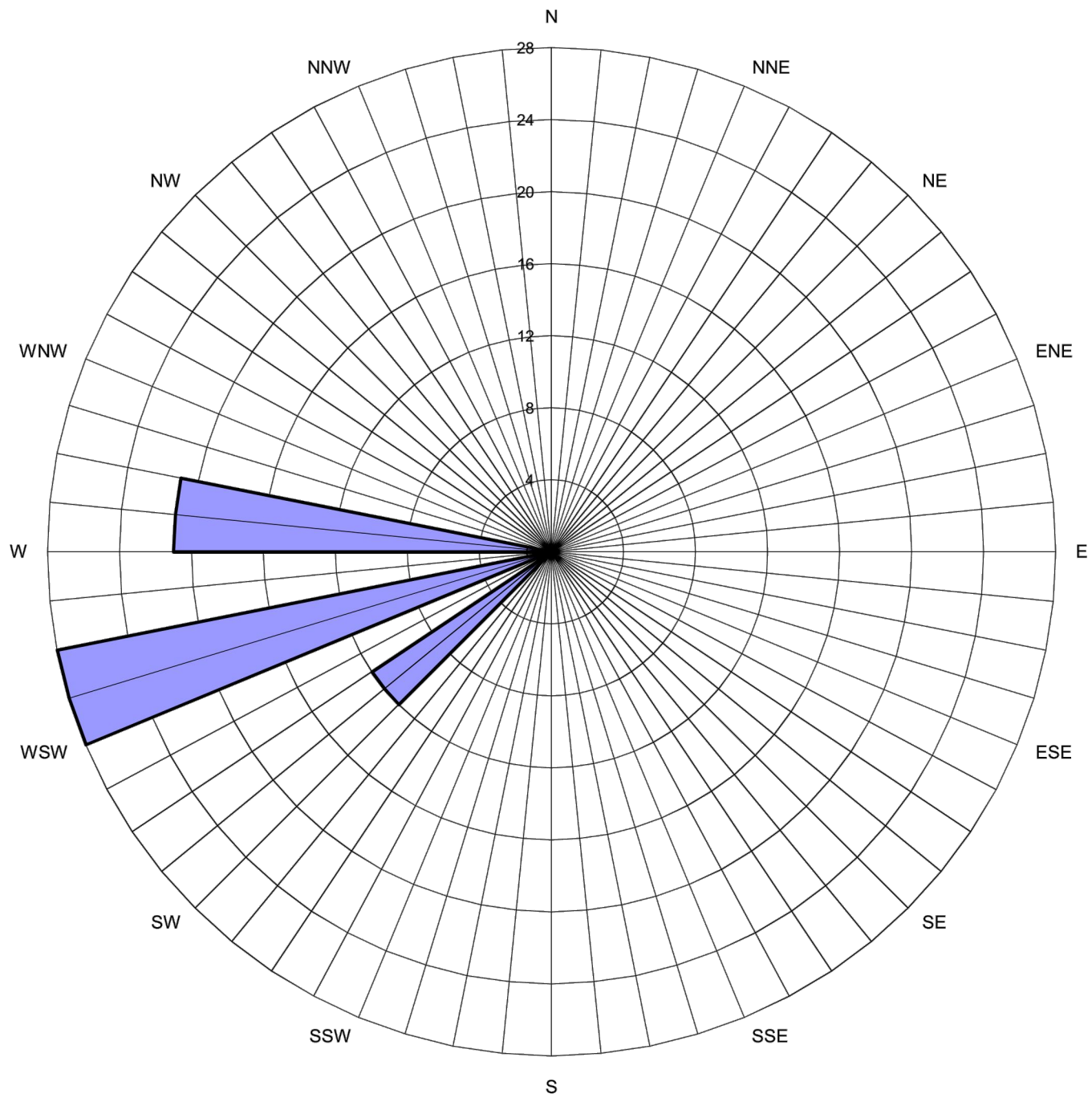
NOTES:

1. SITE MAP PROVIDED BY BROADBENT & ASSOCIATES, INC., DATED 7/29/09, AT A SCALE OF 1"=40'.
2. SITE DIMENSIONS AND FACILITY LOCATIONS NOT VERIFIED.

FORMER ARCO SERVICE STATION #6002
 6235 SEMINARY AVENUE
 OAKLAND, CALIFORNIA
BP SITE 6002 CLOSURE

**EXTENT OF MTBE
 GROUNDWATER IMPACTS
 FEBRUARY 2009**

CITY: FULLERTON, CA DIV/GROUP: ENV LDR:HUBATCH PIC:S. GLENN PMH, PHILLIPS TMB, MCKENNA Lyr:Option="OFF=REF"
C:\Documents and Settings\hubatch\Desktop\jessac021\GP08BP\NAC\108 00\000 -\W01.dwg LAYOUT: 16 SAVED: 11/1/2010 10:11 AM AC-ADVER: 18.0S (LMS TECH) PAGESETUP: PLOTSTYLETABLE: PLOTTED: 11/30/2010 9:59 AM BY: HUBATCH, RICK



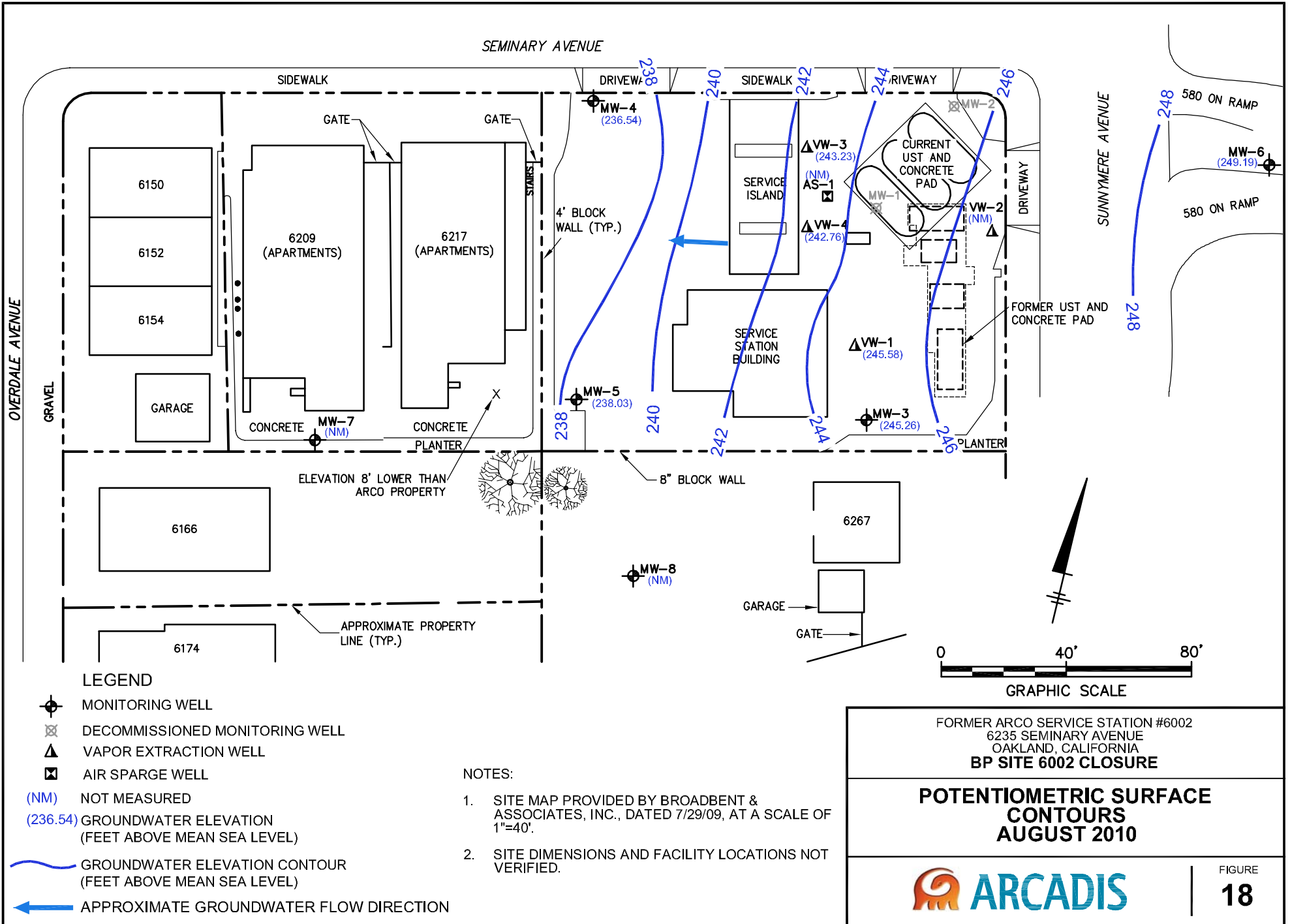
LEGEND

 GROUNDWATER FLOW DIRECTION

CONCENTRIC CIRCLES REPRESENT 61 MONITORING EVENTS CONDUCTED BETWEEN 3/95 AND 8/10.

FORMER BP STATION #6002
6235 SEMINARY AVENUE
OAKLAND, CALIFORNIA
LOCAL CASE # RO162

HISTORICAL GROUNDWATER FLOW DIRECTION ROSE DIAGRAM



LEGEND

- ⊕ MONITORING WELL
- ⊗ DECOMMISSIONED MONITORING WELL
- ▲ VAPOR EXTRACTION WELL
- ⊠ AIR SPARGE WELL

(NM) NOT MEASURED
 (236.54) GROUNDWATER ELEVATION
 (FEET ABOVE MEAN SEA LEVEL)

— GROUNDWATER ELEVATION CONTOUR
 (FEET ABOVE MEAN SEA LEVEL)

← APPROXIMATE GROUNDWATER FLOW DIRECTION

NOTES:

1. SITE MAP PROVIDED BY BROADBENT & ASSOCIATES, INC., DATED 7/29/09, AT A SCALE OF 1"=40'.
2. SITE DIMENSIONS AND FACILITY LOCATIONS NOT VERIFIED.

FORMER ARCO SERVICE STATION #6002
 6235 SEMINARY AVENUE
 OAKLAND, CALIFORNIA
BP SITE 6002 CLOSURE

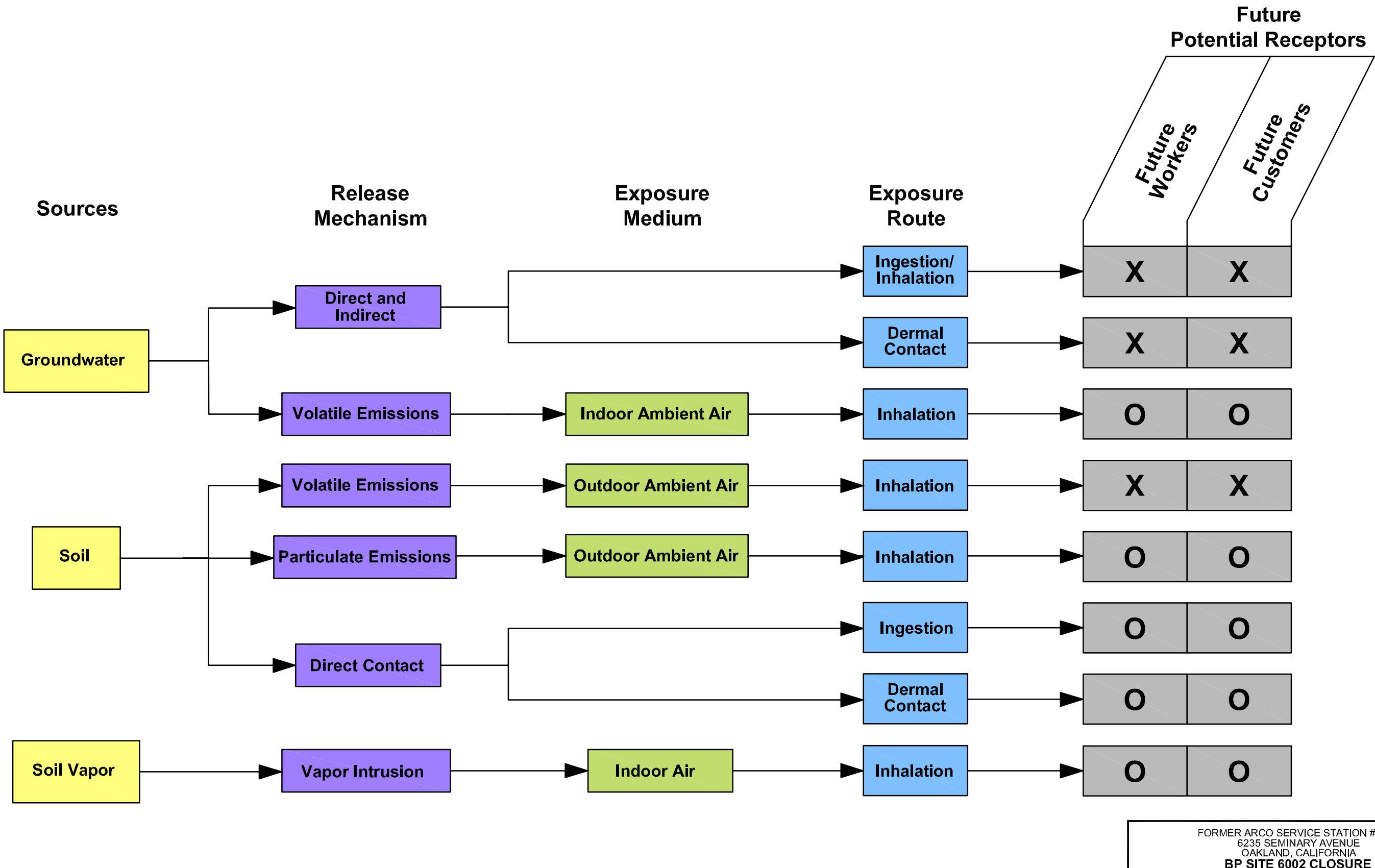
**POTENTIOMETRIC SURFACE
 CONTOURS
 AUGUST 2010**

 **ARCADIS**

FIGURE **18**

CITY: PETALUMA, CA DIV/GROUP: ENV DB: J. HARRIS LD: P.C.S. GLENN PM: H. PHILLIPS TM: K.J. PRESTON LYR(OP)O(ON)P(O)FF(F)REF*
 G:\ENV\CAD\EMPH\ACT\G09\BPNAIC\08\CLOSURE\REVISION\FIG19\CLOSURE.DWG LAYOUT: 19 SAVED: 11/29/2010 5:27 PM ACADVER: 18.05 (LMS TECH) PAGES: 18 PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 11/29/2010 5:40 PM BY: BEARDSLEY, DANIEL

PROJECTNAME: ---

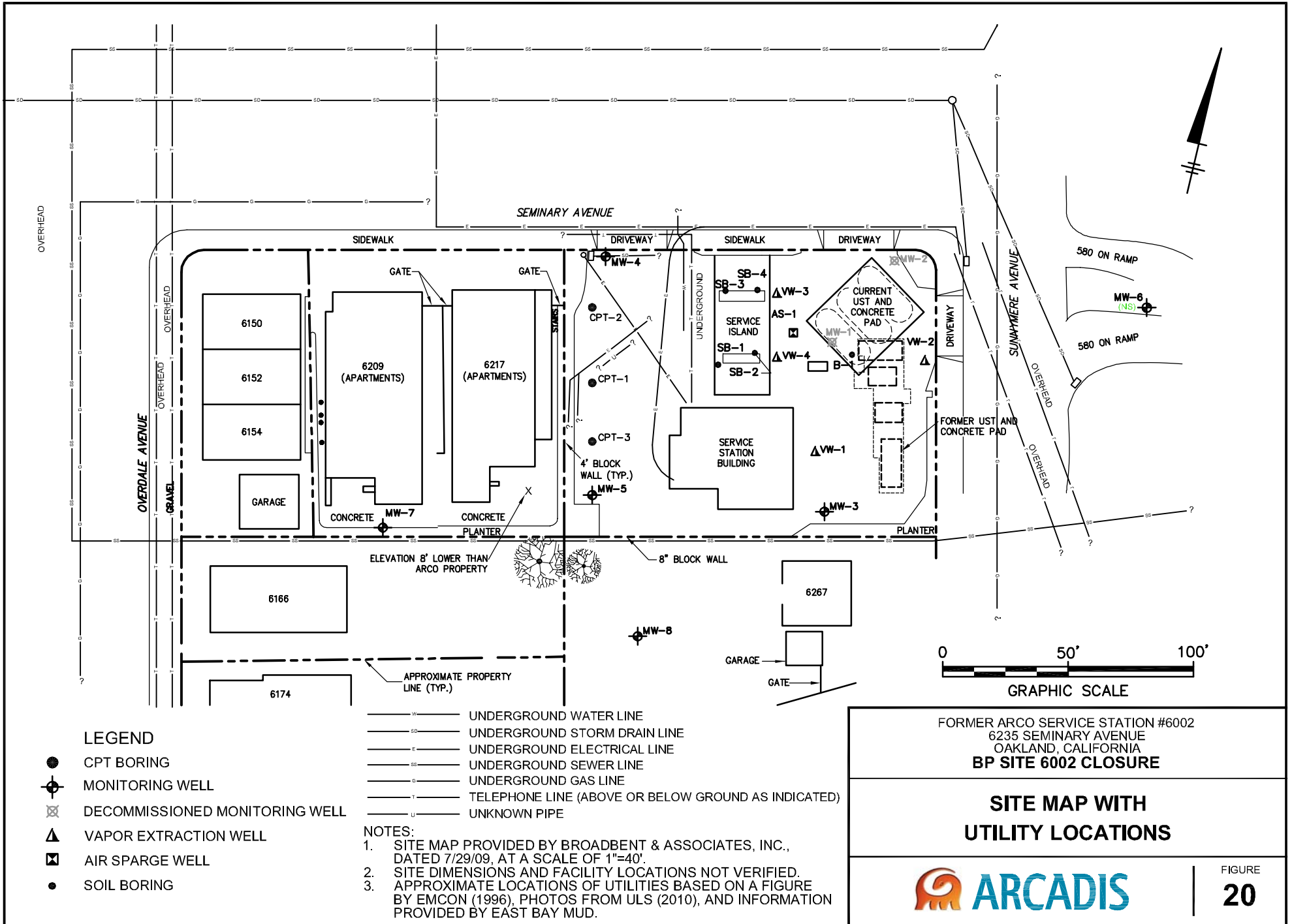


- EXPLANATION**
- X** INCOMPLETE PATHWAY
 - O** COMPLETE PATHWAY

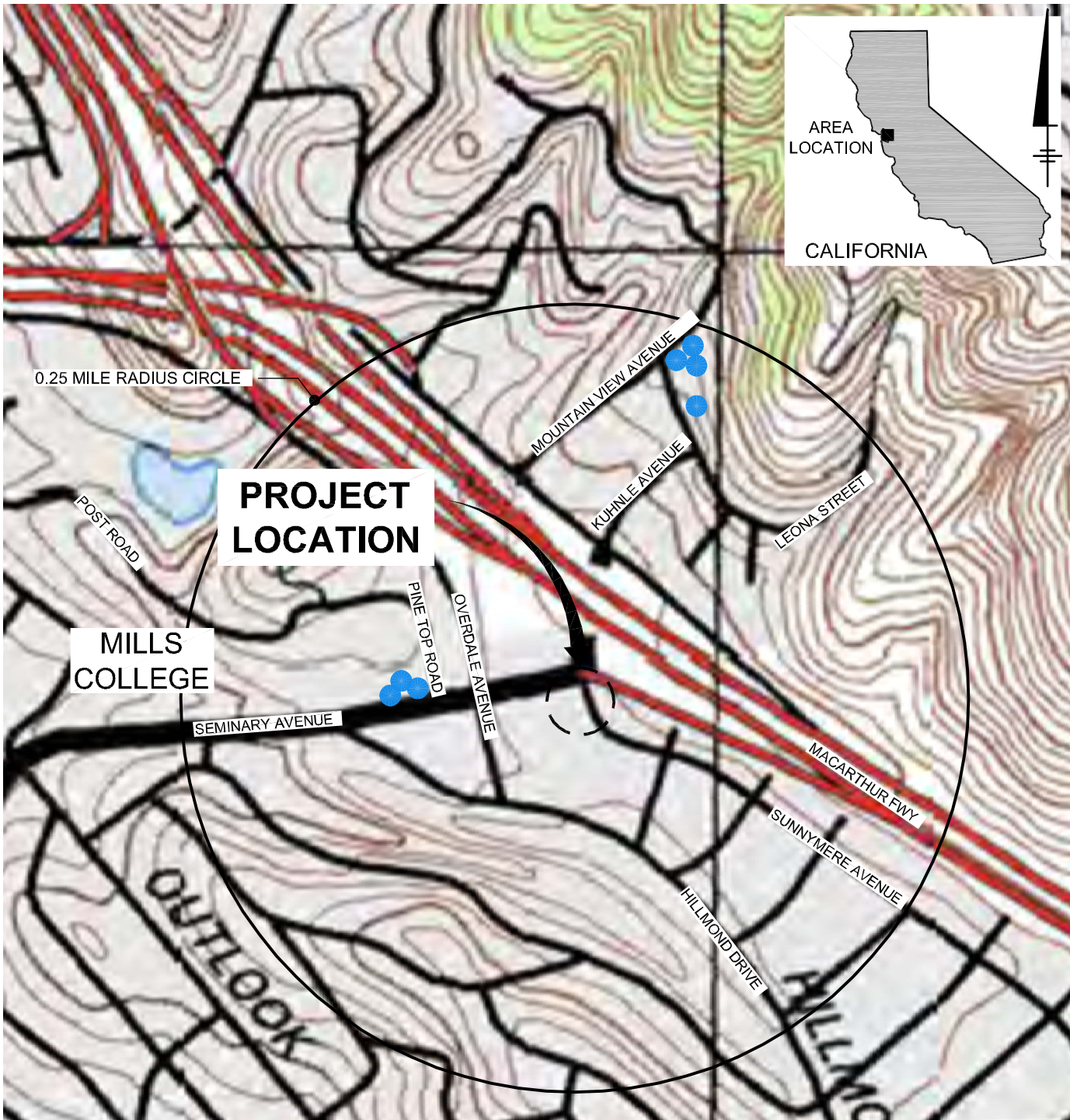
FORMER ARCO SERVICE STATION #6002
 6235 SEMINARY AVENUE
 OAKLAND, CALIFORNIA
 BP SITE 6002 CLOSURE

POTENTIAL EXPOSURE PATH FLOW CHART

ARCADIS | **FIGURE 19**



CITY: J. HARRIS DIV/GROUP: ENV DB: J. HARRIS LD: --- PIC: --- PM: H. PHILLIPS TM: L. KWONG L YR(OP)ON(OFF)REF*
 GREEN/CAD/EMERY/MI/ACT/GR/BB/NA/C/10/CLOSURE/REVISION/F162/CLOSURE.DWG LAYOUT: 21 SAVED: 11/29/2010 5:38 PM ACADVER: 8.05 (LMS TECH) PAGESETUP: --- PLOTSTYLETABLE: LFR STANDARD.CTB PLOTTED: 11/29/2010 5:38 PM BY: BEARDSLEY, DANIEL
 XREFS: IMAGES: PROJECTNAME: Oakland_East_topo.dwg

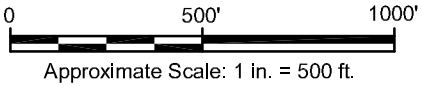


LEGEND:

- APPROXIMATE HISTORIC WELL LOCATION

NOTE:

1. BASE MAP USGS 7.5 MIN. TOPO. QUAD, OAKLAND EAST, CALIFORNIA 1997.
2. APPROXIMATE WELL LOCATIONS ARE FROM WELL LOG PROVIDED BY THE CALIFORNIA DEPARTMENT OF WATER RESOURCES, DIVISION OF PLANNING AND LOCAL ASSISTANCE, 8/13/2010. THE LOCATION OF ONE WELL IS NOT IDENTIFIED FOR ONE OF THE LOGS.



Approximate Scale: 1 in. = 500 ft.

FORMER ARCO SERVICE STATION #6002 6235 SEMINARY AVENUE OAKLAND, CALIFORNIA BP SITE 6002 CLOSURE	
WELL SURVEY MAP	
	FIGURE 21

Appendix A

Alameda County Public Works
Boring Permits

Alameda County Public Works Agency - Water Resources Well Permit



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

Application Approved on: 07/07/2010 By jamesy

Permit Numbers: W2010-0494
Permits Valid from 07/15/2010 to 07/16/2010

Application Id: 1278108122824
Site Location: 6235 Seminary Avenue, Oakland, CA work is on the eastern portion of the site
Project Start Date: 07/15/2010
Assigned Inspector: Contact John Shouldice at (510) 670-5424 or johns@acpwa.org

City of Project Site:Oakland
Completion Date:07/16/2010

Applicant: ARCADIS - Loretta Kwong
2033 North Main Street, Suite 340, Walnut Creek, CA 94596
Property Owner: Manal Gazali
6259 Sunnymere Avenue, Oakland, CA 94605
Client: Loretta Kwong
2033 North Main Street, Suite 340, Walnut Creek, CA 94596
Contact: Loretta Kwong

Phone: 925-296-7832
Phone: 510-639-7260
Phone: 925-296-7832
Phone: 925-296-7832
Cell: 805-705-0796

Receipt Number: WR2010-0237 Total Due: \$265.00
Payer Name : Loretta Kwong Total Amount Paid: \$265.00
Paid By: VISA PAID IN FULL

Works Requesting Permits:

Borehole(s) for Investigation-Geotechnical Study/CPT's - 3 Boreholes
Driller: Chris Tatum - Lic #: 283326 - Method: CPT

Work Total: \$265.00

Specifications

Permit Number	Issued Dt	Expire Dt	# Boreholes	Hole Diam	Max Depth
W2010-0494	07/07/2010	10/13/2010	3	3.50 in.	25.00 ft

Specific Work Permit Conditions

1. Backfill bore hole by tremie with cement grout or cement grout/sand mixture. Upper two-three feet replaced in kind or with compacted cuttings. All cuttings remaining or unused shall be containerized and hauled off site.
2. Boreholes shall not be left open for a period of more than 24 hours. All boreholes left open more than 24 hours will need approval from Alameda County Public Works Agency, Water Resources Section. All boreholes shall be backfilled according to permit destruction requirements and all concrete material and asphalt material shall be to Caltrans Spec or County/City Codes. No borehole(s) shall be left in a manner to act as a conduit at any time.
3. Permittee shall assume entire responsibility for all activities and uses under this permit and shall indemnify, defend and save the Alameda County Public Works Agency, its officers, agents, and employees free and harmless from any and all expense, cost, liability in connection with or resulting from the exercise of this Permit including, but not limited to, properly damage, personal injury and wrongful death.
4. Prior to any drilling activities, it shall be the applicant's responsibility to contact and coordinate an Underground Service Alert (USA), obtain encroachment permit(s), excavation permit(s) or any other permits or agreements required for that Federal, State, County or City, and follow all City or County Ordinances. No work shall begin until all the permits and requirements have been approved or obtained. It shall also be the applicants responsibilities to provide to the Cities or to Alameda County an Traffic Safety Plan for any lane closures or detours planned. No work shall begin until all the permits and requirements have been approved or obtained.

Alameda County Public Works Agency - Water Resources Well Permit

5. Applicant shall contact John Shouldice for an inspection time at 510-670-5424 at least five (5) working days prior to starting, once the permit has been approved. Confirm the scheduled date(s) at least 24 hours prior to drilling.
 6. Permittee, permittee's contractors, consultants or agents shall be responsible to assure that all material or waters generated during drilling, boring destruction, and/or other activities associated with this Permit will be safely handled, properly managed, and disposed of according to all applicable federal, state, and local statutes regulating such. In no case shall these materials and/or waters be allowed to enter, or potentially enter, on or off-site storm sewers, dry wells, or waterways or be allowed to move off the property where work is being completed.
 7. Cuttings may also be left on site or spread out as long as the applicants has approval from the property owner and the cuttings will not violate the State and County Clean Water laws (NPDES).
 8. Copy of approved drilling permit must be on site at all times. Failure to present or show proof of the approved permit application on site shall result in a fine of \$500.00.
 9. Prior to any drilling activities onto any public right-of-ways, it shall be the applicants responsibilities to contact and coordinate a Underground Service Alert (USA), obtain encroachment permit(s), excavation permit(s) or any other permits required for that City or to the County and follow all City or County Ordinances. It shall also be the applicants responsibilities to provide to the Cities or to Alameda County a Traffic Safety Plan for any lane closures or detours planned. No work shall begin until all the permits and requirements have been approved or obtained.
 10. Permit is valid only for the purpose specified herein. No changes in construction procedures, as described on this permit application. Boreholes shall not be converted to monitoring wells, without a permit application process.
-

Appendix B

Monitoring Well Construction Details
and Soil Boring Logs

UNIFIED SOIL CLASSIFICATION SYSTEM

MAJOR DIVISION		LTR	DESCRIPTION	MAJOR DIVISION		LTR	DESCRIPTION
COARSE- GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	GW	Well-graded gravels or gravel-sand mixtures, little or no fines.	FINE- GRAINED SOILS	SILTS AND CLAYS LL<50	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands, or clayey silts with slight plasticity.
		GP	Poorly-graded gravels or gravel-sand mixtures, little or no fines.			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
		GM	Silty gravels, gravel-sand-silt mixtures.			OL	Organic silts and organic silt-clays of low plasticity.
		GC	Clayey gravel, gravel-sand-clay mixtures.			MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts.
	SAND AND SANDY SOILS	SW	Well-graded sand or gravelly sands, little or no fines.		SILTS AND CLAYS LL>50	CH	Inorganic clays of high plasticity, fat clays.
		SP	Poorly-graded sands or gravelly sands, little or no fines.			OH	Organic clays of medium to high plasticity, organic silts.
		SM	Silty sands, sand-silt mixtures.			PT	Peat and other highly organic soils.
		SC	Clayey sands, sand-clay mixtures.			HIGHLY ORGANIC SOILS	

Depth through which sampler is driven Relatively undisturbed sample No sample recovered Static water level observed in well/boring Initial water level observed in boring S-10 Sample number	Sand pack Bentonite Neot cement Caved native soil Blank PVC Machine-slotted PVC Pea gravel	<table border="1" style="width: 100%; height: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"></td> <td style="width: 50%; text-align: center;">Stratigraphic contact</td> </tr> <tr> <td style="text-align: center;">-----</td> <td style="text-align: center;">Gradational contact</td> </tr> <tr> <td style="text-align: center;">-----</td> <td style="text-align: center;">Inferred contact</td> </tr> </table> <p style="text-align: right; margin-top: 10px;">P.I.D. Photoionization detector</p>		Stratigraphic contact	-----	Gradational contact	-----	Inferred contact
	Stratigraphic contact							
-----	Gradational contact							
-----	Inferred contact							

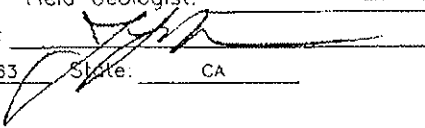
BLOWS REPRESENT THE NUMBER OF BLOWS OF A 140-POUND HAMMER FALLING 30 INCHES TO DRIVE THE SAMPLER THROUGH EACH 6 INCHES OF AN 18-INCH PENETRATION.







GRADATIONAL AND INFERRED CONTACT LINES SEPARATING UNITS ON THE LOG REPRESENT APPROXIMATE BOUNDARIES ONLY. ACTUAL BOUNDARIES MAY BE GRADUAL. LOGS REPRESENT SUBSURFACE CONDITIONS AT THE BORING LOCATION AT THE TIME OF DRILLING ONLY.

RESNA <i>Working to Restore Nature</i>	UNIFIED SOIL CLASSIFICATION SYSTEM AND SYMBOL KEY ARCO Station 6002 6235 Seminary Avenue Oakland, California	PLATE 3
PROJECT 130063.01		

Total depth of boring: 15-1/2 feet
 Diameter of boring: 12 inches
 Date drilled: 1-13-94
 Drilling Company: Exploration Geoservices
 Driller: Dave and Howard
 Drilling method: Hollow-Stem Auger

Casing diameter: NA
 Casing material: NA
 Slot size: NA
 Sand size: NA
 Screen Interval: NA
 Field Geologist: Erin Krueger

Signature of Registered Professional: 
 Registration No.: CEC 1463 State: CA

P.I.D.	Sample No.	Blows	Depth	USCS Code	Description	Well Const.
90	S-5		2	SP	Asphalt (2 inches).	
			4		Medium-grained sand, trace cobbles, tan, damp, very dense; probably fill, trace patches silty clay, black, damp, medium plasticity, stiff.	
			6		Hand dug to 5 feet, fill, no pipes or utilities encountered.	
250	S-8.5		8	ML	Sandy silt, gray, damp, medium plasticity, stiff; fill.	
			10	SP-SM	Medium-grained sand with silt, gray, moist to wet, medium dense; probable fill, pieces of wood; fill. Wet, product odor.	
108	S-14.5		14	CL	Silty clay, trace gravel, brown-orange, damp, medium plasticity, wet around gravel.	
			16		Total Depth = 15-1/2 feet.	
			18			
			20			
			22			
			24			
			26			
			28			
			30			
			32			
			34			
			36			
			38			
			40			



PROJECT: 130063.01

LOG OF BORING B-1
 ARCO Station 6002
 6235 Seminary Avenue
 Oakland, California

PLATE
 4

Total depth of boring: 36-1/2 feet
 Diameter of boring: 12 inches
 Date drilled: 1-13-94
 Drilling Company: Exploration Geoservices
 Driller: Dave and Howard
 Drilling method: Hollow-Stem Auger

Casing diameter: 4 inches
 Casing material: Sch 40 PVC
 Slot size: 0.020-inch
 Sand size: No. 3 sand
 Screen Interval: 5 feet to 25 feet
 Field Geologist: Erin Krueger

Signature of Registered Professional: [Signature]
 Registration No.: CEG 1463 State CA

P.I.D.	Sample No.	Blows	Depth	USCS Code	Description	Well Const.
			2	GP	Asphalt (2 inches). Sandy gravel, orange, damp, very dense; baserock.	
			4	ML	Clayey silt, trace fine gravel, black, damp, medium plasticity, very stiff.	
4400	S-5.5		6	ML	Sandy silt, with gravel, gray, damp, medium plasticity, stiff.	
>9999	S-7.5		8		Visible product, black, rootholes.	
	S-8.5					
614	S-10.5		10	CL	Silty clay, with gravel, orange, damp, medium plasticity, stiff; visible product. Wet around gravel and in rootholes.	
			12			
1500	S-13.5		14		With gray mottling.	
190	S-16		16			
210	S-18		18		Roots and increasing amounts of gravel and moisture.	
770	S-20.5		20	GM	Silty gravel with sand, gray, moist to wet, dense; wet around roots and in rootholes.	
			22		Wet.	
250	S-23.5		24		Wet around gravel.	
			26	GP	Coarse sandy gravel, gray, sand red, white, and gray, damp, dense; wet around gravel.	
20	S-27		28			
			30	SM	Silty sand with gravel, gray, damp to moist, dense; wet around gravel.	
			32	GP	Coarse sandy gravel, orange, moist to wet, dense.	
0	S-32.5		34	SC	Clayey sand with fine gravel, orange, damp, dense; wet around gravel	
			36			
0	S-36		38			
			38		Total Depth = 36-1/2 feet.	
			40			



PROJECT: 130063.01

LOG OF BORING B-2/MW-1
 ARCO Station 6002
 6235 Seminary Avenue
 Oakland, California

PLATE
 5

Total depth of boring: 15-1/2 feet

Casing diameter: 4 inches

Diameter of boring: 12 inches

Casing material: Sch 40 PVC

Date drilled: 1-14-94

Slot size: 0.1-inch

Drilling Company: Exploration Geoservices

Sand size: 3/8" pea gravel

Driller: Dave and Howard

Screen Interval: 6 feet to 14 feet

Drilling method: Hollow-Stem Auger

Field Geologist: Erin Krueger

Signature of Registered Professional: [Signature]

Registration No.: CEG 1463 State: CA

P.I.D.	Sample No.	Blows	Depth	USCS Code	Description	Well Const.
			2	GP	Asphalt (2 inches).	
			2	ML	Sandy gravel, orange, damp, dense; baserock	
95	S-5	5 5 8	4		Sandy silt with fine gravel, brown, damp, medium plasticity, stiff.	
			4		Hand dug to 4 feet, native material encountered.	
			8			
78	S-10	8 10 17	10		Gray, moist, wet around gravel.	
			12			
			12	ML	Sandy silt, with gravel, trace clay, orange, moist to wet, medium plasticity, stiff.	
33	S-14.5	6 7 8	14			
			16		Total Depth = 15-1/2 feet.	
			18			
			20			
			22			
			24			
			26			
			28			
			30			
			32			
			34			
			36			
			38			
			40			



LOG OF BORING B-3/VW-2

ARCO Station 6002
6235 Seminary Avenue
Oakland, California

PLATE

6

PROJECT: 130063.01

Total depth of boring: 16 feet
 Diameter of boring: 12 inches
 Date drilled: 1-14-94
 Drilling Company: Exploration Geoservices
 Driller: Dave and Howard
 Drilling method: Hollow-Stem Auger

Casing diameter: 4 inches
 Casing material: Sch 40 PVC
 Slot size: 0.1 inch
 Sand size: 3/8" pea gravel
 Screen interval: 6 feet to 14 feet
 Field Geologist: Erin Krueger

Signature of Registered Professional: [Signature]
 Registration No.: CEG 1463 State: CA

P.I.D.	Sample No.	Blows	Depth	USCS Code	Description	Well Const.
			2	GP	Asphalt (2 inches). Sandy gravel, brown, damp, dense; baserock. Hand dug to 3 feet, native material encountered.	
8	S-5	5 6 6	4	ML	Sandy silt with gravel, brown, damp, medium plasticity, stiff.	
			6			
			8		Gray, moist to wet.	
			10	▽	Brown.	
39	S-10	15 18 12	10		Orange, damp, wet around gravel.	
			12			
			14			
26	S-15.5	7 11 13	14		With gray mottling in rootholes.	
			16		Total Depth = 16 feet.	
			18			
			20			
			22			
			24			
			26			
			28			
			30			
			32			
			34			
			36			
			38			
			40			








PROJECT: 130063.01

LOG OF BORING B-4/VW-1
 ARCO Station 6002
 6235 Seminary Avenue
 Oakland, California

PLATE
 7

MAJOR DIVISIONS				TYPICAL NAMES
COARSE-GRAINED SOILS MORE THAN HALF IS COARSER THAN NO. 200 SIEVE	GRAVELS MORE THAN HALF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE SIZE	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW	WELL GRADED GRAVELS WITH OR WITHOUT SAND, LITTLE OR NO FINES
			GP	POORLY GRADED GRAVELS WITH OR WITHOUT SAND, LITTLE OR NO FINES
		GRAVELS WITH OVER 15% FINES	GM	SILTY GRAVELS, SILTY GRAVELS WITH SAND
			GC	CLAYEY GRAVELS, CLAYEY GRAVELS WITH SAND
	SANDS MORE THAN HALF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE SIZE	CLEAN SANDS WITH LITTLE OR NO FINES	SW	WELL GRADED SANDS WITH OR WITHOUT GRAVEL, LITTLE OR NO FINES
			SP	POORLY GRADED SANDS WITH OR WITHOUT GRAVEL, LITTLE OR NO FINES
		SANDS WITH OVER 15% FINES	SM	SILTY SANDS WITH OR WITHOUT GRAVEL
			SC	CLAYEY SANDS WITH OR WITHOUT GRAVEL
FINE-GRAINED SOILS MORE THAN HALF IS FINER THAN NO. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT 50% OR LESS		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTS WITH SANDS AND GRAVELS
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY CLAYS WITH SANDS AND GRAVELS, LEAN CLAYS
			OL	ORGANIC SILTS OR CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACIOUS, FINE SANDY OR SILTY SOILS, ELASTIC SILTS
			CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH	ORGANIC SILTS OR CLAYS OF MEDIUM TO HIGH PLASTICITY
		HIGHLY ORGANIC SOILS	PT	PEAT AND OTHER HIGHLY ORGANIC SOILS

- LL - Liquid Limit (%)
- PI - Plastic Index (%)
- PID - Volatile Vapors in ppm
- MA - Particle Size Analysis
- 2.5 YR 6/2 - Soil Color according to Munsell Soil Color Charts (1975 Edition)
- 5 GY 5/2 - GSA Rock Color Chart

-  - No Soil Sample Recovered
-  - "Undisturbed" Sample
-  - Bulk or Classification Sample
-  - First Encountered Ground Water Level
-  - Piezometric Ground Water Level
- Penetration - 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



GeoStrategies, Inc.

Log of Boring B-5/MW-2

PROJECT: ARCO PRODUCTS COMPANY

LOCATION: 6235 Seminary Avenue, Oakland, CA

GSI PROJECT NO.: 4945.703

SURFACE ELEVATION:

DATE STARTED: 6/29/94

WL (ft. bgs): 9.50 DATE: 6/29/94 TIME: 14:30

DATE FINISHED: 6/29/94

WL (ft. bgs): 9.50 DATE: 6/29/94 TIME: 16:00

DRILLING METHOD: 10 in. Hollow Stem Auger

TOTAL DEPTH: 21.5 Feet

DRILLING COMPANY: West Hazmat Drilling Corp.

GEOLOGIST: BS

DEPTH feet	PID (ppm)	BLOWS/FT. *	SAMPLE NUMBER	SAMPLE INT. GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	WELL DIAGRAM
					ML	PAVEMENT	<p>4" blank PVC (sch. 40)</p> <p>4" machine slotted PVC (0.02 inch)</p> <p>Cap</p> <p>grout</p> <p>ben-tonite</p> <p>sand (onester #2/12)</p> <p>ben-tonite</p>
5	0	22	B-5-5.5		GC	SANDY SILT WITH GRAVEL (ML) - dark reddish brown (6YR 3/2), damp, very stiff, low plasticity; 60% fines, 30% sand, 10% gravel.	
	0	20	B-5-7.5			CLAYEY GRAVEL (GC) - dark yellowish brown (10YR 4/4), moist, medium dense, 50% gravel, 30% fines, 20% sand.	
10		60	B-5-10.5			saturated at 9.5 feet. increasing clay at 10 feet.	
15	0	38	B-5-15.5		CL	SANDY CLAY WITH GRAVEL (CL) - dark yellowish brown (10YR 4/6), mottled dark gray (N5), moist, low plasticity; hard, 50% fines, 30% sand, 20% gravel.	
20	0	48	B-5-21.0		CL	SILTY CLAY WITH SAND (CL) - strong brown (7.5YR 3/4), damp, hard, medium plasticity; 70% fines, 30% sand.	
25						Bottom of boring at 21.5 feet, 6/29/94	
30						(* = converted to equivalent standard penetration blows/ft.)	
35							



GeoStrategies, Inc.

Log of Boring B-6/MW-3

PROJECT: ARCO PRODUCTS COMPANY

LOCATION: 6235 Seminary Avenue, Oakland, CA

GSI PROJECT NO.: 4945.703

SURFACE ELEVATION:

DATE STARTED: 6/29/94

WL (ft. bgs): 7.50 DATE: 6/29/94 TIME: 10:00

DATE FINISHED: 6/29/94

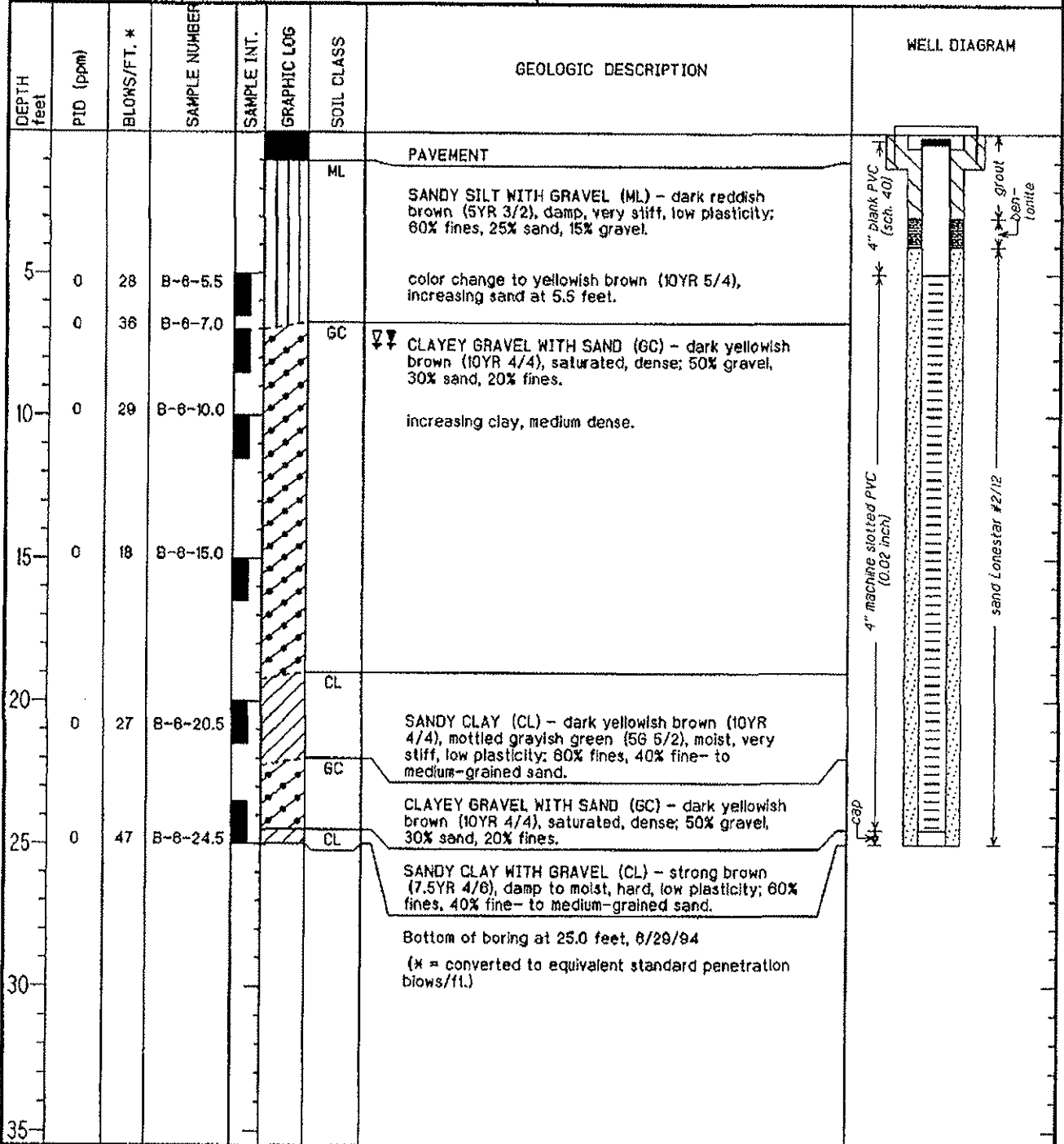
WL (ft. bgs): 7.50 DATE: 6/29/94 TIME: 16:30

DRILLING METHOD: 10 in. Hollow Stem Auger

TOTAL DEPTH: 25.0 Feet

DRILLING COMPANY: West Hazmat Drilling Corp.

GEOLOGIST: BS





GeoStrategies, Inc.

Log of Boring B-7/MW-4

PROJECT: ARCO PRODUCTS COMPANY

LOCATION: 6235 Seminary Avenue, Oakland, CA

GSI PROJECT NO.: 4945.703

SURFACE ELEVATION:

DATE STARTED: 6/29/94

WL (ft. bgs): 10.30 DATE: 6/29/94 TIME: 12:00

DATE FINISHED: 6/29/94

WL (ft. bgs): 10.70 DATE: 6/29/94 TIME: 19:00

DRILLING METHOD: 10 in. Hollow Stem Auger

TOTAL DEPTH: 24.5 Feet

DRILLING COMPANY: West Hazmat Drilling Corp.

GEOLOGIST: BS

DEPTH feet	PID (ppm)	BLOWS/FT. *	SAMPLE NUMBER	SAMPLE INT.	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	WELL DIAGRAM
0		18	B-7-5.5			ML	PAVEMENT	<p>4" blank PVC (sch. 40)</p> <p>4" machine slotted PVC (0.02 inch)</p> <p>grout</p> <p>ben-tonite</p> <p>sand Laneslar #2/12</p> <p>cap</p>
5		18	B-7-7.0			GC	SANDY SILT WITH GRAVEL (ML) - very dark grayish brown (2.5YR 3/2), damp, very stiff, low plasticity; 60% fines, 25% sand, 15% gravel. becoming moist at 6 feet.	
6		18	B-7-8.5			GC	CLAYEY GRAVEL (GC) - dark yellowish brown (10YR 4/4), damp to moist, medium dense; 50% gravel, 20% sand, 30% fines.	
10		21	B-7-10.0			GP	color change to grayish green (5G 4/2), increasing sand, saturated at 10.3 feet.	
12		20	B-7-12.0			GP	SANDY GRAVEL (GP) - strong brown (7.5YR 4/6), saturated, medium dense; 50% gravel, 30% sand, 20% fines.	
14		20	B-7-14.0			GP	SANDY GRAVEL (GP) - strong brown (7.5YR 4/6), saturated, medium dense; 50% gravel, 30% sand, 20% fines.	
16		24	B-7-16.0			GP	CLAYEY SAND WITH GRAVEL (SP) - yellowish red (5YR 3/4), saturated, medium dense; 60% sand, 25% fines, 15% gravel.	
18		40				GP	SANDY GRAVEL (GP) - strong brown (7.5YR 4/6), saturated, dense; 50% gravel, 35% sand, 15% fines.	
20		58	B-7-21.0			GP	becoming very dense at 19 feet.	
22		52	B-7-21.0			GP	increasing clay, becoming moist at 21 feet.	
24			B-7-24.0				decreasing gravel, becoming damp to moist at 23 feet.	
25							Bottom of boring at 24.5 feet, 6/29/94	
30							(* * converted to equivalent standard penetration blows/ft.)	
35								



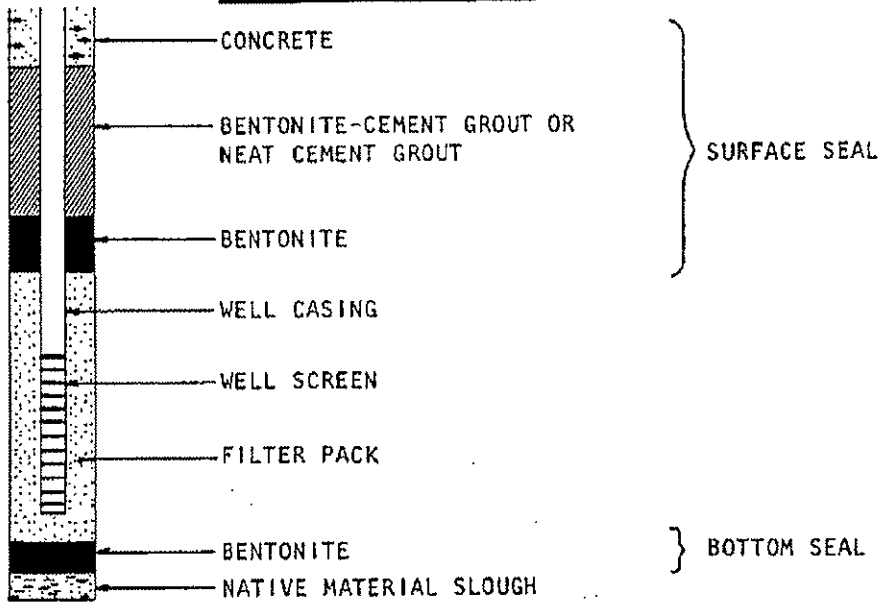
PROJECT: ARCO PRODUCTS COMPANY	LOCATION: 6235 Seminary Avenue, Oakland, CA
GSI PROJECT NO.: 4945.703	SURFACE ELEVATION:
DATE STARTED: 6/29/94	WL (ft. bgs): 13.00 DATE: 6/29/94 TIME: 16:30
DATE FINISHED: 6/29/94	WL (ft. bgs): 13.00 DATE: 6/29/94 TIME: 18:00
DRILLING METHOD: 10 in. Hollow Stem Auger	TOTAL DEPTH: 25.0 Feet
DRILLING COMPANY: West Hazmat Drilling Corp.	GEOLOGIST: BS

DEPTH feet	PID (ppm)	BLOWS/FT. *	SAMPLE NUMBER	SAMPLE INT.	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION	WELL DIAGRAM
						SC	PAVEMENT CLAYEY SAND (SC) - light olive brown (2.5Y 5/6), damp, dense; 70% sand, 30% fines.	<p>4" blank PVC (sch. 40)</p> <p>4" machine slotted PVC (0.02 inch)</p> <p>sand LongStar #2/12</p> <p>ben- tonite</p> <p>cap</p>
5	0	38	U-8-5.5			ML	SANDY SILT WITH GRAVEL (ML) - very dark brown (10YR 2/1), damp, hard, low plasticity; 60% fines, 30% sand, 10% fine gravel. color change to dark grayish brown (10YR 4/2) at 7 feet.	
	0	31	B-8-7.5			GC	CLAYEY GRAVEL (GC) - dark yellowish brown (10YR 4/4), damp, dense; 50% gravel, 30% fines, 20% sand, obvious product odor; becoming moist at 11 feet.	
10	230	48	B-8-10.5			GP	SANDY GRAVEL WITH CLAY (GP) - strong brown (7.5YR 4/6), mottled grayish green (5G 5/2), saturated, very dense, 50% gravel, 30% sand, 20% fines.	
15	4	<50	B-8-15.5			GC	CLAYEY GRAVEL WITH SAND (GC) - strong brown (7.5YR 4/6), wet around gravel, very dense; 40% gravel, 30% fines, 30% sand. increasing clay at 20 feet.	
20	5	48	B-8-20.5			ML	SANDY SILT WITH FINE GRAVEL (ML) - yellowish brown (10YR 5/6), moist, hard, low plasticity, 50% silt, 40% fine-grained sand, 10% fine gravel.	
25	3	52	B-8-24.5				Bottom of boring at 25.0 feet, 6/29/94	
30							(* = converted to equivalent standard penetration blows/ft.) <50 = less than 1 foot was penetrated	
35								



EXPLANATION OF SYMBOLS ON EXPLORATORY BORING LOGS

Well Details Column



Sample Column



BAG/BULK SAMPLES

FIVE-FOOT SPLIT BARREL SAMPLER (CONTINUOUS SAMPLER)

MODIFIED CALIFORNIA SPLIT SPOON

OTHER SAMPLERS (SEE REMARKS FOR TYPE AND SIZE)

PITCHER BARREL

ROCK CORE (SEE REMARKS FOR TYPE AND SIZE)

SHELBY TUBE SAMPLER

STANDARD PENETRATION TEST SPLIT SPOON SAMPLER (2" OD)

(OVER)

EXPLANATION OF SYMBOLS ON
EXPLORATORY BORING LOGS
(CONTINUED)



Ground-Water Level Column

DEPTH TO FIRST OBSERVED GROUND WATER

DEPTH TO STABILIZED GROUND WATER

Miscellaneous

2.5 YR 6/2

Color as field checked to Munsell Soil Color Chart
(1975 Edition)

PENETRATION

Blows required to drive sampler 1 foot into soil.
Standard drive hammer weight: 140 pounds.
Standard drop: 30 inches

DBA

LOG OF EXPLORATORY BORING

PROJECT NUMBER: 805-131.04

BORING NO.: AS-1

PROJECT NAME: ARCO Service Station 8002

PAGE: 1 of 2

BY: R. Davis

DATE: 6/26/85

SURFACE ELEVATION: ft.

RECOVERY (ft/ft)	PID (ppm)	PENETRA- TION (blows/ft)	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES LITHOGRAPHIC COLUMN	DESCRIPTION	WELL DETAIL
					ASPHALT FILL.		
100%	26	2 4 5		5	[Sample Column]	CLAYEY SAND (SC), dark grayish brown (2.5Y, 3/3); 50% medium plasticity fines; 20-30% fine to coarse sand; 20-30% fine to coarse gravel, to 2.5"; damp; product odor.	[Well Detail]
80%	156	4 7 7		10	[Sample Column]	CLAYEY SAND (SC), olive brown (2.5Y, 4/4); 40% medium plasticity fines; 30% fine to coarse sand; 20% fine to coarse gravel, up to 1.5"; medium dense; moist; product odor.	[Well Detail]
100%	0	4 6 9		15	[Sample Column]	SANDY CLAY (CL), dark yellowish brown (10YR, 4/4); 55-60% medium plasticity fines; 30-35% fine to coarse sand; 10% fine gravel; stiff; damp to moist; product odor.	[Well Detail]
			▽	20	[Sample Column]	CLAYEY SAND (SC), 20-30% medium plasticity fines; 70-80% fine to coarse sand; wet; no product odor.	[Well Detail]

REMARKS

Boring drilled with 8" diameter hollow-stem augers. Samples were taken using a 2" diameter modified-California split spoon sampler. Boring converted into a 2" diameter polyvinyl chloride (PVC) air-sparge well. See explanation sheet for definition of symbols used in well detail and sample columns of this log. See explanation sheet for definition of symbols on this log.



LOG OF EXPLORATORY BORING

PROJECT NUMBER: 805-131.04

BORING NO.: AS-1

PROJECT NAME: ARCO Service Station 8002

PAGE: 2 of 2

BY: R. Davis

DATE: 8/28/85

SURFACE ELEVATION: ft.

RECOVERY (ft/ft)	PID (ppm)	PENETRATION (blows/ft)	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	LITHOGRAPHIC COLUMN	DESCRIPTION	WELL DETAIL
25%	0	2 2 8	▽				CLAYEY SAND (SC), continued.	
100%	0	7 7 7		25			SILTY CLAY (CL), dark olive gray (5Y, 3/2); 75-80% low plasticity fines; 20-25% fine to medium sand; stiff; moist; no product odor.	
100%		2 7 8		30			@28-28.5': 55-60% low plasticity fines; 40-45% fine to coarse sand; trace fine gravel; damp; no product odor. CLAYEY SAND (SC), dark olive gray (5y, 3/2); 20-30% low to medium plasticity fines; 70-80% fine to coarse sand; medium dense; moist; no product odor.	
90%		6 14 25		30			@30-31.5': dark brown (7.5YR, 4/4); 30% low to medium plasticity fines; 50% fine to coarse sand; 20% fine gravel; damp; no product odor. BORING TERMINATED AT 31.5 FEET BGS.	
				35				
				40				



REMARKS

Boring drilled with 8" diameter hollow-stem augers. Samples were taken using a 2" diameter modified-California split spoon sampler. Boring converted into a 2" diameter polyvinyl chloride (PVC) air-spargue well. See explanation sheet for definition of symbols used in well detail and sample columns of this log. See explanation sheet for definition of symbols on this log.

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LOG OF EXPLORATORY BORING

PROJECT NUMBER: 805-131.04

BORING NO.: MW-6 *mw-6*

PROJECT NAME: ARCO Service Station 8002

PAGE: 1 of 2

BY: R. Davis

DATE: 6/28/95

SURFACE ELEVATION: NA ft.

RECOVERY (ft/ft)	PID (ppm)	PENETRATION (blows/ft)	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	LITHOGRAPHIC COLUMN	DESCRIPTION	WELL DETAIL
100%	0	6 14 16		5		CONCRETE		
60%	0	3 13 14		10			FILL - CLAYEY GRAVEL (GC), brown, 20-30% low to medium plasticity fines; 30-40% fine to coarse sand; 40% fine to coarse gravel; damp; no product odor.	
100%	0	4 8 10		15			CLAYEY SAND (SC), dark grayish brown (10YR, 4/2); 40% medium plasticity fines; 40% fine to coarse sand; 20% fine to coarse gravel, up to 1"; medium dense; moist or wet; no product odor.	
	0	4 7		20			SANDY CLAY (CL), mottled gray (2.5Y, 5/0) and light olive brown (2.5Y, 5/6); 70% low to medium plasticity fines; 20% fine to coarse sand; 10% fine gravel, subangular; thin (<1mm) organic fragments present; very stiff; damp; no product odor.	
							@19.0-20.5': as above at 14.0-15.5'	



REMARKS
 Boring drilled with 8" diameter hollow-stem augers. Samples were taken using a 2" diameter modified-California split spoon sampler. Boring converted into a 2" diameter polyvinyl chloride (PVC) groundwater monitoring well. See explanation sheet for definition of symbols used in well detail and sample columns of this log. See explanation sheet for definition of symbols on this log.

LOG OF EXPLORATORY BORING

PROJECT NUMBER: 805-131.04

BORING NO.: MW-6

PROJECT NAME: ARCO Service Station 8002

PAGE: 2 of 2

BY: R. Davls

DATE: 6/26/95

SURFACE ELEVATION: NA ft.

RECOVERY (t/t)	PID (ppm)	PENETRATION (blws/ft)	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	LITHOGRAPHIC COLUMN	DESCRIPTION	WELL DETAIL
		9	▽				SANDY CLAY (CL), continued. @20.5': moist to wet.	
100%	0	9					CLAYEY SAND (SC), strong brown (7.5YR, 4/6); 40-45% low plasticity fines; 50-55% fine to medium sand; 5% fine to coarse gravel, up to 1-in; medium dense; moist to wet; no odor. @25.5-27': 20% low plasticity fines; 60% fine to coarse sand; 20% fine to coarse gravel, up to 2"; very moist; no odor. @27.5-28.5': dark brown (10YR, 4/3); moist to wet.	
80%	0	11		25				
80%	0	17						
	0	14						
	0	16						
85%	0	12						
	0	14						
	0	18						
	0	6		30			@30-31.5': 25-30% low to medium plasticity fines; 65-70% fine to medium sand; 5% fine gravel; wet; no product odor.	
	0	16						
	0	13						
							BORING TERMINATED AT 32.0 FEET BGS.	
				35				
				40				



REMARKS

Boring drilled with 8" diameter hollow-stem augers. Samples were taken using a 2" diameter modified-California split spoon sampler. Boring converted into a 2" diameter polyvinyl chloride (PVC) groundwater monitoring well. See explanation sheet for definition of symbols used in well detail and sample columns of this log. See explanation sheet for definition of symbols on this log.

LOG OF EXPLORATORY BORING

PROJECT NUMBER: 805-13104

BORING NO.: SB-1

PROJECT NAME: ARCO Service Station 6002

PAGE: 1 of 1

BY: R. Davis

DATE: 8/27/95

SURFACE ELEVATION: ft.

RECOVERY (ft/ft)	PID (ppm)	PENETRATION (blows/ft)	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	LITHOGRAPHIC COLUMN	DESCRIPTION	WELL DETAIL
						CONCRETE		
						FILL: GRAVELLY CLAYEY SAND (SC)		
95%	6.4	4		5	█	CLAYEY SAND (SC), dark brown (10YR, 3/3); 40% medium plasticity fines; 45% fine to coarse sand (f:m:c=1:1:2); 15% fine to coarse gravel; medium dense; damp; no product odor.		
	2.1	5			█	@5.8-6.5': very dark grayish brown (2.5Y, 3/2); moist; product odor.		
40%	29.1	5			█	@8-9.5': as above at 5.8'-6.5' with ~30% coarse gravel, up to 2-in.		
90%	608	9		10	█	@10-11.5': dark grayish brown (2.5Y, 4/2); 40 low to medium plasticity fines; 40% fine to coarse sand (f:m:c=2:2:1); 20% fine to coarse gravel; dense; wet; product odor.	<i>Sample contained 730ppm TPH & BTEX</i>	
80%	36	12			█	@11.5-12.5': damp; no product odor.		
90%	0	11		15	█	SANDY CLAY (CL), dark yellowish brown (10YR, 4/4); 55-60% low to medium plasticity fines; 35-40% fine to coarse sand; 5% fine to coarse gravel; damp; no product odor.		
		15			█	BORING TERMINATED AT 18.5 FEET BELOW GROUND SURFACE.		
				20				

REMARKS

Boring drilled with 6-inch-diameter solid-stem augers. Boring sampled using 2-inch-diameter modified California split spoon samplers. See explanation sheet for definition of symbols on this log.



EMCON
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LOG OF EXPLORATORY BORING

PROJECT NUMBER: 805-13104

BORING NO.: SB-2

PROJECT NAME: ARCD Service Station 8002

PAGE: 1 of 1

BY: R. Davis

DATE: 8/27/95

SURFACE ELEVATION: ft.

RECOVERY (ft/ft)	PIU (ppm)	PENETRATION (blows/ft)	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	LITHOGRAPHIC COLUMN	DESCRIPTION	WELL DETAIL
						CONCRETE	CONCRETE	
						FILL: GRAVELLY CLAYEY SAND (SC), 30% fines (clay); 40% fine to coarse sand; 30% fine to coarse gravel, up to 3-in.	FILL: GRAVELLY CLAYEY SAND (SC), 30% fines (clay); 40% fine to coarse sand; 30% fine to coarse gravel, up to 3-in.	
70%	8.1	5 8 9		5		CLAYEY SAND (SC), dark brown (10YR, 3/3); 25-30% medium plasticity fines; 55-60% fine to coarse sand (f:m:c=l:l); 10-15% fine to coarse gravel, up to 2-in.; medium dense; damp; product odor.	CLAYEY SAND (SC), dark brown (10YR, 3/3); 25-30% medium plasticity fines; 55-60% fine to coarse sand (f:m:c=l:l); 10-15% fine to coarse gravel, up to 2-in.; medium dense; damp; product odor.	
70%	6.9	7 8 7				@8-9.5': moist to wet; product odor.	@8-9.5': moist to wet; product odor.	<i>Sample contained 2.6 ppm TPH & BTEX</i>
40%	0	10 10 10		10		@10-11.5': 20% medium plasticity fines; 60% fine to coarse sand (f:m:c=l:l); 20% fine to coarse gravel; medium dense; no product odor.	@10-11.5': 20% medium plasticity fines; 60% fine to coarse sand (f:m:c=l:l); 20% fine to coarse gravel; medium dense; no product odor.	
80%	0	7 8 9				SANDY CLAY (CL), mottled grayish brown (10YR, 5/2) and dark yellowish brown (10YR, 4/4); 55-60% medium plasticity fines; 35-40% fine to coarse sand, poorly graded; 5% fine gravel; moist; no product odor.	SANDY CLAY (CL), mottled grayish brown (10YR, 5/2) and dark yellowish brown (10YR, 4/4); 55-60% medium plasticity fines; 35-40% fine to coarse sand, poorly graded; 5% fine gravel; moist; no product odor.	
90%	0	6 9 11		15		BORING TERMINATED AT 15.5 FEET BELOW GROUND SURFACE.	BORING TERMINATED AT 15.5 FEET BELOW GROUND SURFACE.	



REMARKS

Boring drilled with 6-inch-diameter solid-stem augers. Boring sampled using 2-inch-diameter modified California split spoon samplers. See explanation sheet for definition of symbols on this log.

EMCON
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LOG OF EXPLORATORY BORING

PROJECT NUMBER: 805-13104

BORING NO.: SB-3

PROJECT NAME: ARCO Service Station 8002

PAGE: 1 of 2

BY: R. Davis

DATE: 8/27/85

SURFACE ELEVATION: ft.

RECOVERY (ft./ft)	PID (ppm)	PENETRA- TION (blows/ft)	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	LITHOGRAPHIC COLUMN	DESCRIPTION	WELL DETAIL
						CONCRETE		
70%	0	5 6 7		5	5	[Cross-hatched pattern]	FILL: GRAVELLY CLAYEY SAND (SC), 30% fines (clay); 40% fine to coarse sand; 30% fine to coarse gravel, up to 3-in.	
90%	0	2 3 3		10	10	[Diagonal hatching pattern]	CLAYEY SAND (SC), dark brown (10YR, 3/3); 25-30% low to medium plasticity fines; 40% fine to coarse sand, poorly graded; 30-35% fine to coarse gravel, subangular; medium dense; damp; no product odor.	
60%	0	12 18 27		15	15	[Diagonal hatching pattern]	@10-11.5': dark olive gray (5Y, 3/2); 15-20% low to medium plasticity fines; 45-50% fine to coarse sand; well sorted; 35% fine to coarse gravel, subangular; loose; wet; product odor.	
				20	20	[Diagonal hatching pattern]	@15-15.3': Sandy Clay (SC), same as SB-2 at 12-13.5'. SANDY CLAY (CL), mottled grayish brown (10YR, 5/2) and dark yellowish brown (10YR, 4/4); 55-60% medium plasticity fines; 35-40% fine to coarse sand, poorly graded; 5% fine gravel; moist; no product odor. CLAYEY GRAVEL (GC), yellowish brown (10YR, 5/4); 15% medium plasticity fines; 35% fine to coarse sand, poorly graded; 50% fine to coarse gravel, up to 2.5-in.; dense; wet; no product odor.	



REMARKS

Boring drilled with 6-inch-diameter solid-stem augers. Boring sampled using 2-inch-diameter modified California split spoon samplers. See explanation sheet for definition of symbols on this log. See explanation sheet for definition of symbols on this log.

EMCON
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LOG OF EXPLORATORY BORING

PROJECT NUMBER: 805-131.04

BORING NO.: SB-3

PROJECT NAME: ARCO Service Station 6002

PAGE: 2 of 2

BY: R. Davis

DATE: 8/27/85

SURFACE ELEVATION: ft.

RECOVERY (ft/ft)	PID (ppm)	PENETRA- TION (blows/ft)	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	LITHOGRAPHIC COLUMN	DESCRIPTION	WELL DETAIL
100%	0	12 15 19		<div style="border-left: 1px solid black; border-right: 1px solid black; height: 100%; position: relative;"> 25 30 35 40 </div>			<p>SANDY CLAY (CL), dark reddish brown (5YR, 3/4); 60% medium plasticity fines; 25% fine to coarse sand; 15% fine to coarse gravel, up to 1-in.; hard; damp; no product odor.</p> <p>BORING TERMINATED AT 21.5 FEET BELOW GROUND SURFACE.</p>	

REMARKS

Boring drilled with 6-inch-diameter solid-stem augers. Boring sampled using 2-inch-diameter modified California split spoon samplers. See explanation sheet for definition of symbols on this log. See explanation sheet for definition of symbols on this log.



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LOG OF EXPLORATORY BORING

PROJECT NUMBER: 805-131.04

BORING NO.: SB-4

PROJECT NAME: ARCO Service Station 8002

PAGE: 1 of 2

BY: R. Davis

DATE: 6/27/85

SURFACE ELEVATION: ft.

RECOVERY (ft/ft)	PID (ppm)	PENETRA- TION (blks/ft)	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	LITHOGRAPHIC COLUMN	DESCRIPTION	WELL DETAIL
						CONCRETE		
100%	0	6 7 9		5	■	[Cross-hatched pattern]	FILL: GRAVELLY CLAYEY SAND (SC), 30% fines (clay); 40% fine to coarse sand; 30% fine to coarse gravel, up to 3-in.	
60%	0	5 8 9	▽	10	■	[Diagonal lines pattern]	@10-11.5': dark olive gray (5Y, 3/2); 15-20% low to medium plasticity fines; 45-50% fine to coarse sand; well sorted; 35% coarse gravel, subangular, up to 2-in; loose; wet; faint product odor.	
70%	0	13 8 10		15	■	[Dotted pattern]	CLAYEY GRAVEL (GC), yellowish brown (10YR, 5/4); 10-20% low to medium plasticity fines; 20% fine to coarse sand; 60-70% fine to coarse gravel, up to 2.5-in.; medium dense; wet; no product odor. SANDY CLAY (CL), yellowish brown (10YR, 5/4); 55% medium plasticity fines; 35% fine to coarse sand; 10% fine gravel; firm; moist; no product odor.	
				20				

REMARKS

Boring drilled with 6-inch-diameter solid-stem augers. Boring sampled using 2-inch-diameter modified California split spoon samplers. See explanation sheet for definition of symbols on this log.



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LOG OF EXPLORATORY BORING

PROJECT NUMBER: **805-131.04**

BORING NO.: **SB-4**



PROJECT NAME: **ARCO Service Station 8002**

PAGE: **2 of 2**

BY: **R. Davis**

DATE: **6/27/85**

SURFACE ELEVATION: **ft.**

RECOVERY (ft/ft)	PID (ppm)	PENETRA- TION (blows/ft)	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES LITHOGRAPHIC COLUMN	DESCRIPTION	WELL DETAIL
90%	0	11 18 21		<div style="text-align: center;">  </div>	<div style="text-align: center;">  </div>	<p> @20.0-21.5': dark reddish brown (5YR, 3/4); 60% medium plasticity fines; 25% fine to coarse sand; 15% fine to coarse gravel, up to 1-in.; hard; damp; no product odor. BORING TERMINATED AT 21.5 FEET BELOW GROUND SURFACE. </p>	

REMARKS

Boring drilled with 8-inch-diameter solid-stem augers. Boring sampled using 2-inch-diameter modified California split spoon samplers. See explanation sheet for definition of symbols on this log.



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LOG OF EXPLORATORY BORING

PROJECT NUMBER: 805-131.04

BORING NO.: VW-3

PROJECT NAME: ARCO Service Station 8002

PAGE: 1 of 1

BY: R. Davis

DATE: 6/26/85

SURFACE ELEVATION: ft.

RECOVERY (ft/ft)	PID (ppm)	PENETRATION (blows/ft)	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	LITHOGRAPHIC COLUMN	DESCRIPTION	WELL DETAIL
						ASPHALT FILL.		
100%	0.5	2 3 5		5	5	SANDY CLAY (CL) TO CLAYEY SAND (SC), very dark grayish brown (2.5Y, 3/2); 50% medium plasticity fines; 20-30% fine to coarse sand; 20-30% fine to coarse gravel, up to 2-in; damp; product odor at 5'.		
100%	665	2 3 5	▽	10	10	@9-10.2': CLAYEY SAND (SC), very dark grayish brown (2.5Y, 3/2); 35-40% medium plasticity fines; 35% fine to coarse sand; 25-30% fine to coarse gravel; loose; wet; product odor. @10.2-10.5': dark brown (10YR, 4/3).		
100%	0	8 13 7		15	15	CLAYEY GRAVEL (GC), brown (2.5Y, 5/4); 20% medium plasticity fines; 30% fine to coarse sand, subangular; 50% fine to coarse gravel, subangular; medium dense; no product odor. CLAY (CL), mottled brown (7.5YR, 5/2) & (7.5YR, 5/4); 80-85% medium plasticity fines; 15-20% fine to medium sand; very stiff; damp; no product odor. BORING TERMINATED AT 15.0 FEET BELOW GROUND SURFACE.		
				20				

REMARKS

Boring drilled with 10" diameter hollow-stem augers. Samples were taken using a 2" diameter modified-California split spoon sampler. Boring converted into a 4" diameter polyvinyl chloride (PVC) vapor extraction well. See explanation sheet for definition of symbols used in well detail and sample columns of this log.



EMCON
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LOG OF EXPLORATORY BORING

PROJECT NUMBER: 805-131.04

BORING NO.: VW-4

PROJECT NAME: ARCO Service Station 8002

PAGE: 1 of 1

BY: R. Davis

DATE: 8/28/95

SURFACE ELEVATION: ft.

RECOVERY (ft/ft)	PIU (ppm)	PENETRATION (blows/ft)	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	LITHOGRAPHIC COLUMN	DESCRIPTION	WELL DETAIL
						ASPHALT		
						FILL - SANDY CLAYEY GRAVEL.		
100%	95	1 3 5		5	5	CLAYEY SAND (SC), very dark grayish brown (2.5Y, 3/2); 30-40% medium plasticity fines; 50-60% fine to coarse sand; 10% fine gravel; loose; damp; product odor.		
100%	698	3 3 4	▽	10	10	@8-9.5': 30% fines; 50% fine to coarse sand; 20% fine to coarse gravel; moist; product odor.		
25%	0	4 8 9		15	15	SANDY CLAY (CL), brown (10YR, 4/3) with grayish brown and black mottling; 70-75% medium plasticity fines; 20-25% fine to coarse sand; 5% fine to coarse gravel; stiff to very stiff; moist; no product odor.		
100%	0	3 5 6		15.5	15.5	@15-15.5': 45-50% low to medium plasticity fines. BORING TERMINATED AT 15.5 FEET BELOW GROUND SURFACE.		
				20				



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REMARKS

Boring drilled with 10" diameter hollow-stem augers. Samples were taken using a 2" diameter modified-California split spoon sampler. Boring converted into a 4" diameter polyvinyl chloride (PVC) vapor extraction well. See explanation sheet for definition of symbols used in well detail and sample columns of this log.

LOG OF EXPLORATORY BORING

PROJECT NUMBER: 20805-131.002

BORING NO.: MW-7

PROJECT NAME: ARCO Service Station 6002

PAGE: 1 of 1

BY: R. Davis

DATE: 8/08/98

SURFACE ELEVATION: NA

RECOVERY (ft/ft)	PENETRATION (blws/6")	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	LITHOGRAPHIC COLUMN	DESCRIPTION	WELL DETAIL
			5			<p>FILL, CLAYEY GRAVEL (GC), dark grayish brown; nails, copper wire, and plastic fragments in soil.</p> <p>CLAYEY SAND to CLAYEY GRAVEL (SC-GC), yellowish brown; 20% medium-plasticity fines; 40% fine to coarse sand, (1:1); 40% fine to coarse gravel, (2:1); damp; no odor.</p>	
100%			10			<p>@9.0-10.5': very tough drilling; coarse gravel and cobbles.</p> <p>SANDY CLAY (CL), yellowish brown; 60% medium-plasticity fines; 25% fine to coarse sand; 15% fine to coarse gravel; damp; no odor.</p>	
100%			15			<p>CLAYEY SAND to CLAYEY GRAVEL (SC-GC), yellowish brown; 20% medium-plasticity fines; 40% fine to coarse sand, (1:1); 40% fine to coarse gravel, (1:3); damp to moist; no odor.</p> <p>@11.0-14.0': very tough drilling.</p> <p>BORING TERMINATED AT 14.0 FEET, AUGER REFUSAL.</p>	
			20				



REMARKS

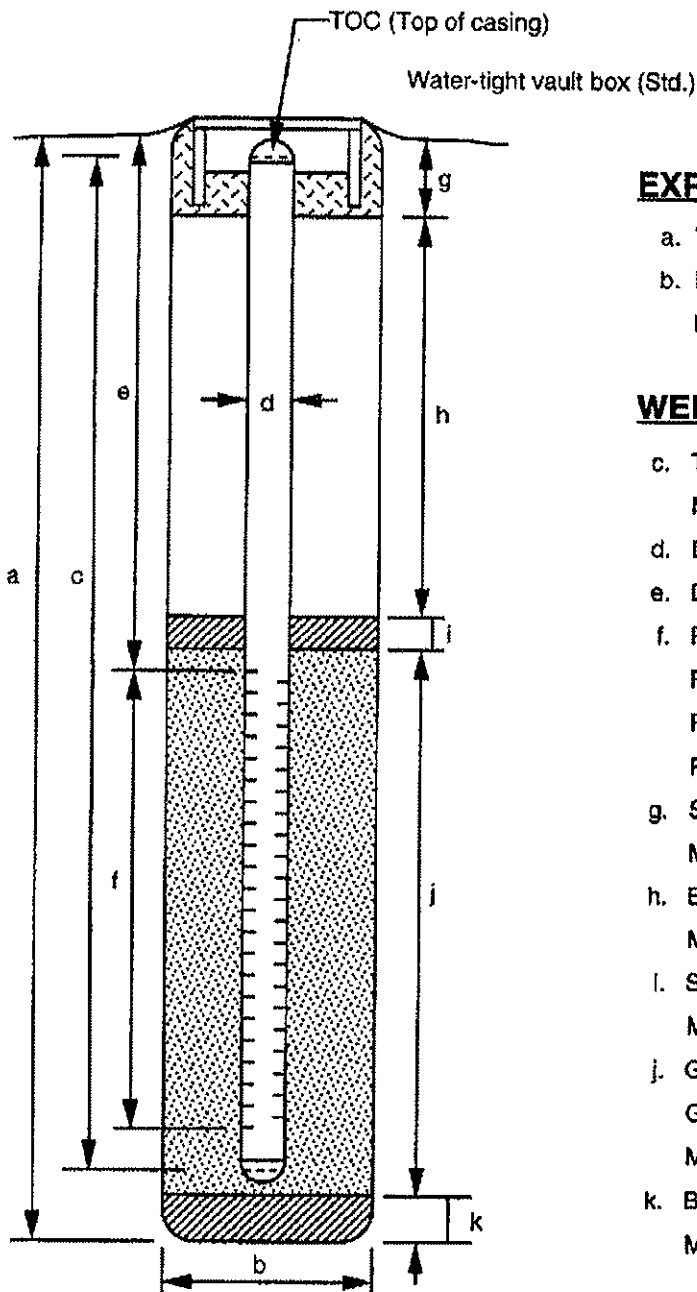
Boring completed to 14.0' using 4" diameter hand auger drilling equipment. Samples were collected by driving 2" diameter by 4" long stainless steel liners into undisturbed soil. Boring converted into a 2" diameter polyvinyl chloride (PVC) groundwater monitoring well. See explanation sheet for definition of symbols used in well detail and sample columns of this log.

WELL DETAILS



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PROJECT NUMBER 20805-131.002 BORING / WELL NO. MW-7
 PROJECT NAME ARCO 6002 TOP OF CASING ELEV. NA
 LOCATION Oakland GROUND SURFACE ELEV. NA
 WELL PERMIT NO. 96485 DATUM M.S.L.
 INSTALLATION DATE 8/06/96



EXPLORATORY BORING

a. Total depth 14.0 ft.
 b. Diameter 4.0 in.
 Drilling method Hand Auger

WELL CONSTRUCTION

c. Total casing length 13.7 ft.
 Material Schedule 40 PVC
 d. Diameter 2.0 in.
 e. Depth to top perforations 5.0 ft.
 f. Perforated length 8.5 ft.
 Perforated interval from 8.5 to 13.5 ft.
 Perforation type Machine Slotted
 Perforation size 0.020 inch
 g. Surface seal 1.0 ft.
 Material Concrete
 h. Backfill NA ft.
 Material NA
 i. Seal 6.0 ft.
 Material Bentonite
 j. Gravel pack 7.0 ft.
 Gravel pack interval from 7.0 to 14.0 ft.
 Material 2/12 Sand
 k. Bottom seal/fill NA ft.
 Material NA

filepath: RKD-welldetails/ARCO/6002

Form prepared by R. Davis

LOG OF EXPLORATORY BORING

PROJECT NUMBER: 805-131.02

BORING NO.: MW-8

PROJECT NAME: ARCO Service Station 8002

PAGE: 1 of 1

BY: J. Young

DATE: 7/15/95

SURFACE ELEVATION: NA

RECOVERY (ft/ft)	PENETRATION (blows/6")	GROUND WATER LEVELS	DEPTH IN FEET	SAMPLES	LITHOGRAPHIC COLUMN	DESCRIPTION	WELL DETAIL
			5	■		SANDY CLAY (CL), brown (10YR,4/3); 60% fines; 35% fine to coarse sand; 5% fine gravel; moist; no odor.	
100%			10	■		CLAYEY GRAVEL (GC), light brown; 30% fines; 20-25% fine to coarse sand; 45-50% fine to coarse gravel; very moist; no odor.	
		▽ 7/15/95	15			BORING TERMINATED AT 14.5 FEET BGS.	
			20				



REMARKS

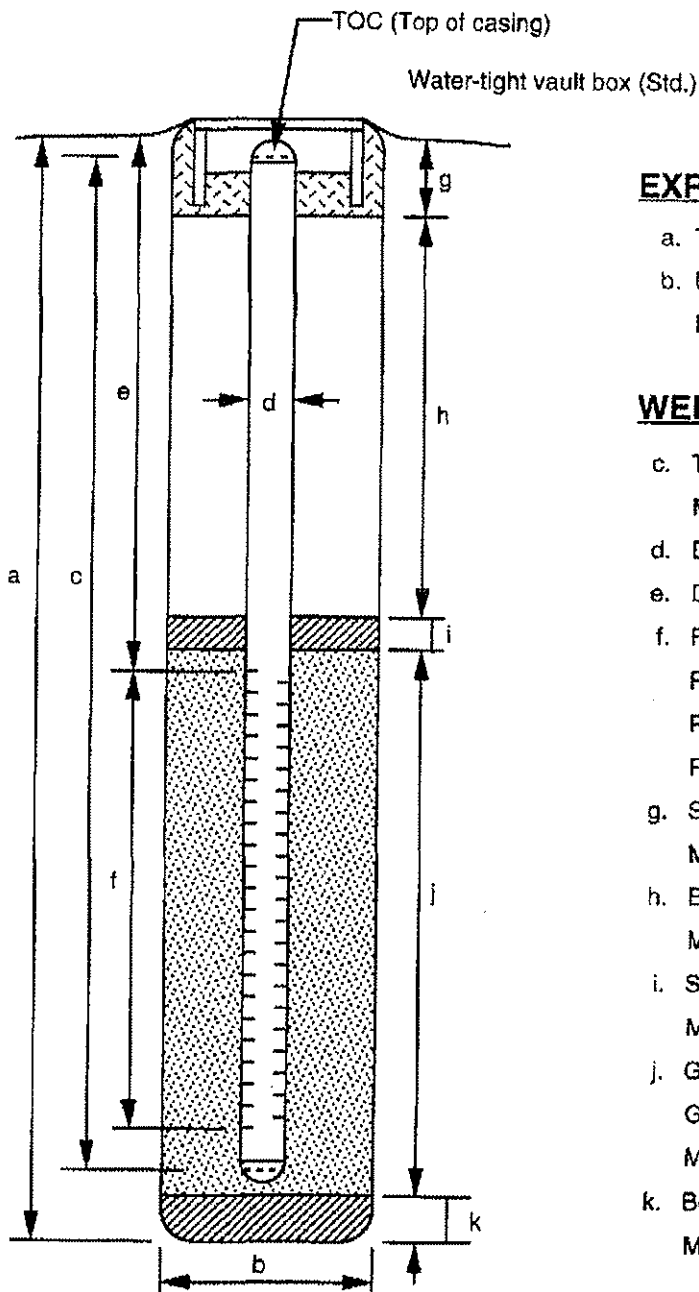
Boring drilled with 8" diameter hollow-stem augers. Samples were taken using a 2" diameter modified-California split spoon sampler. Boring converted into a 2" diameter polyvinyl chloride (PVC) groundwater monitoring well. See explanation sheet for definition of symbols used in well detail and sample columns of this log. See explanation sheet for definition of symbols on this log.



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WELL DETAILS

PROJECT NUMBER 20805-131.002 BORING / WELL NO. MW-8
 PROJECT NAME ARCO 6002 TOP OF CASING ELEV. NA
 LOCATION Oakland GROUND SURFACE ELEV. NA
 WELL PERMIT NO. 96486 DATUM M.S.L.
 INSTALLATION DATE 7/15/96



EXPLORATORY BORING

a. Total depth 14.5 ft.
 b. Diameter 4.0 in.
 Drilling method Hand Auger

WELL CONSTRUCTION

c. Total casing length 14.0 ft.
 Material Schedule 40 PVC
 d. Diameter 2.0 in.
 e. Depth to top perforations 5.0 ft.
 f. Perforated length 8.5 ft.
 Perforated interval from 5.5 to 14.0 ft.
 Perforation type Machine Slotted
 Perforation size 0.020 inch
 g. Surface seal 1.0 ft.
 Material Concrete
 h. Backfill 2.5 ft.
 Material Cement
 i. Seal 1.5 ft.
 Material Bentonite
 j. Gravel pack 9.5 ft.
 Gravel pack interval from 5.0 to 14.5 ft.
 Material 2/12 Sand
 k. Bottom seal/fill NA ft.
 Material NA

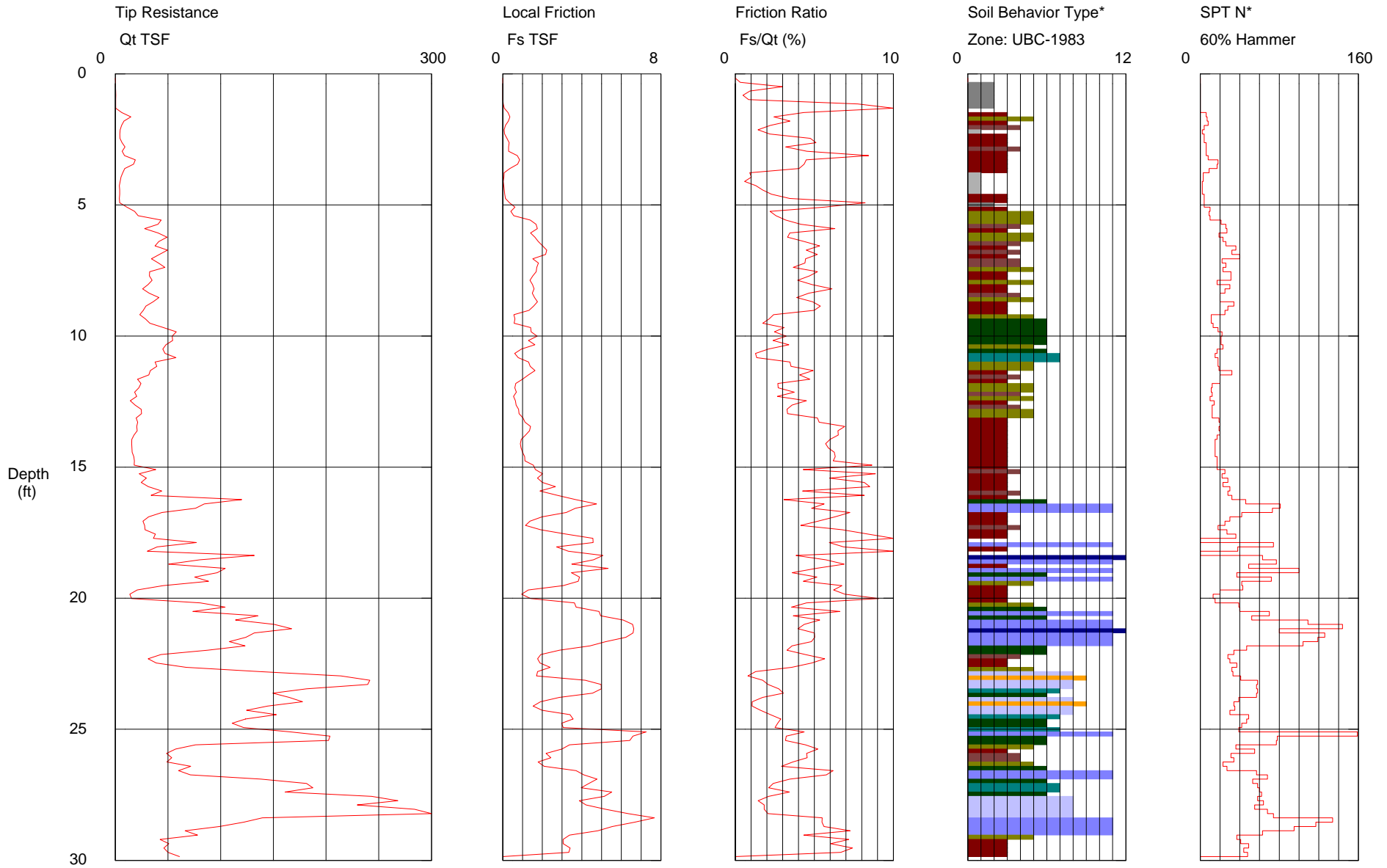
filepath: RKD-welldetails/ARCO/6002

Form prepared by R. Davis

Arcadis

Operator: BH-ML
Sounding: CPT-01
Cone Used: DSG0786

CPT Date/Time: 7/15/2010 9:29:48 AM
Location: BP FACILITY 6002
Job Number: GP09BPNA-C108



Maximum Depth = 30.02 feet

Depth Increment = 0.164 feet

- 1 sensitive fine grained
- 2 organic material
- 3 clay

- 4 silty clay to clay
- 5 clayey silt to silty clay
- 6 sandy silt to clayey silt

- 7 silty sand to sandy silt
- 8 sand to silty sand
- 9 sand

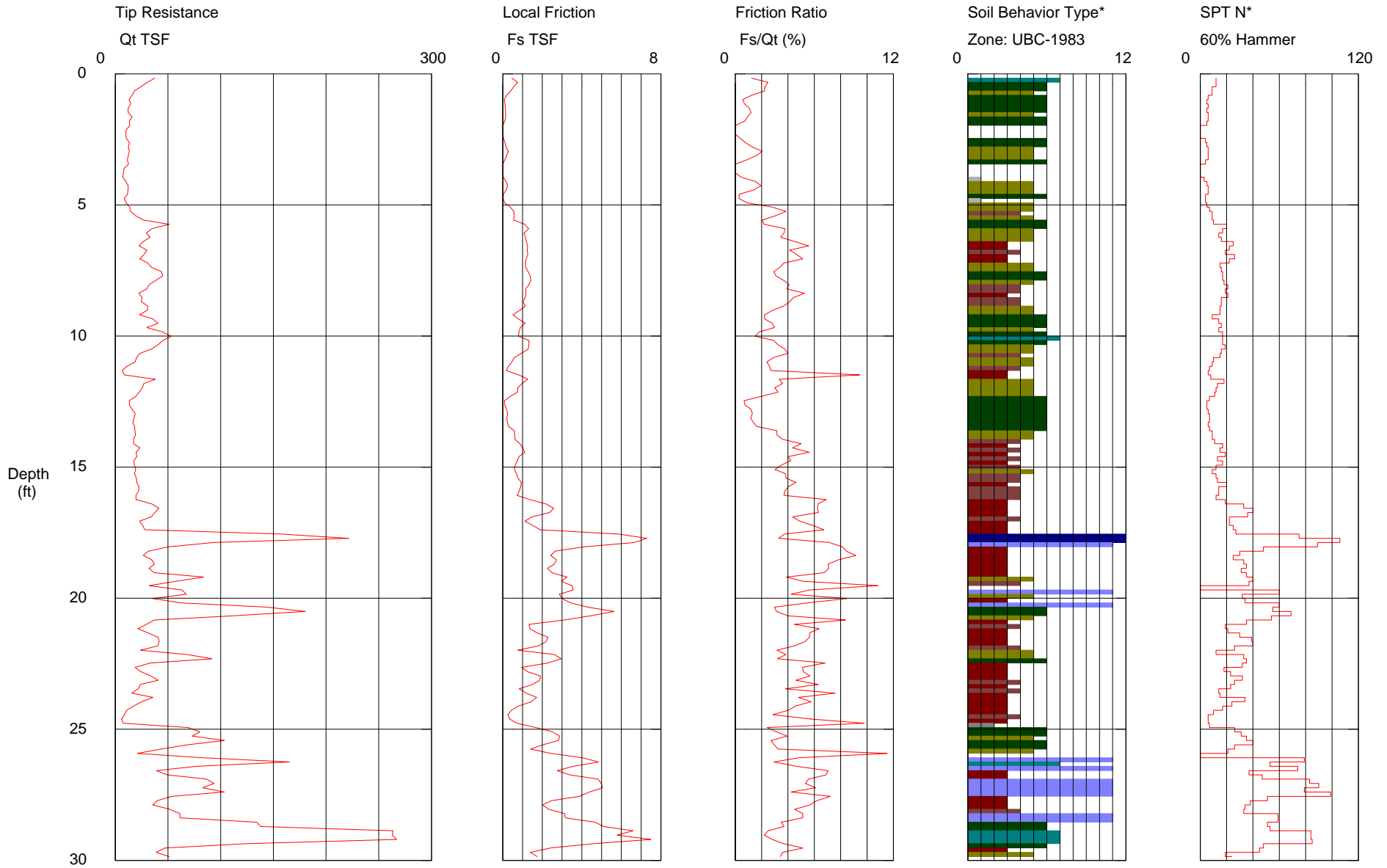
- 10 gravelly sand to sand
- 11 very stiff fine grained (*)
- 12 sand to clayey sand (*)

*Soil behavior type and SPT based on data from UBC-1983

Arcadis

Operator: BH-ML
 Sounding: CPT-02
 Cone Used: DSG0786

CPT Date/Time: 7/15/2010 12:10:50 PM
 Location: BP FACILITY 6002
 Job Number: GP09BPNA-C108



Maximum Depth = 30.68 feet

Depth Increment = 0.164 feet

- 1 sensitive fine grained
- 2 organic material
- 3 clay

- 4 silty clay to clay
- 5 clayey silt to silty clay
- 6 sandy silt to clayey silt

- 7 silty sand to sandy silt
- 8 sand to silty sand
- 9 sand

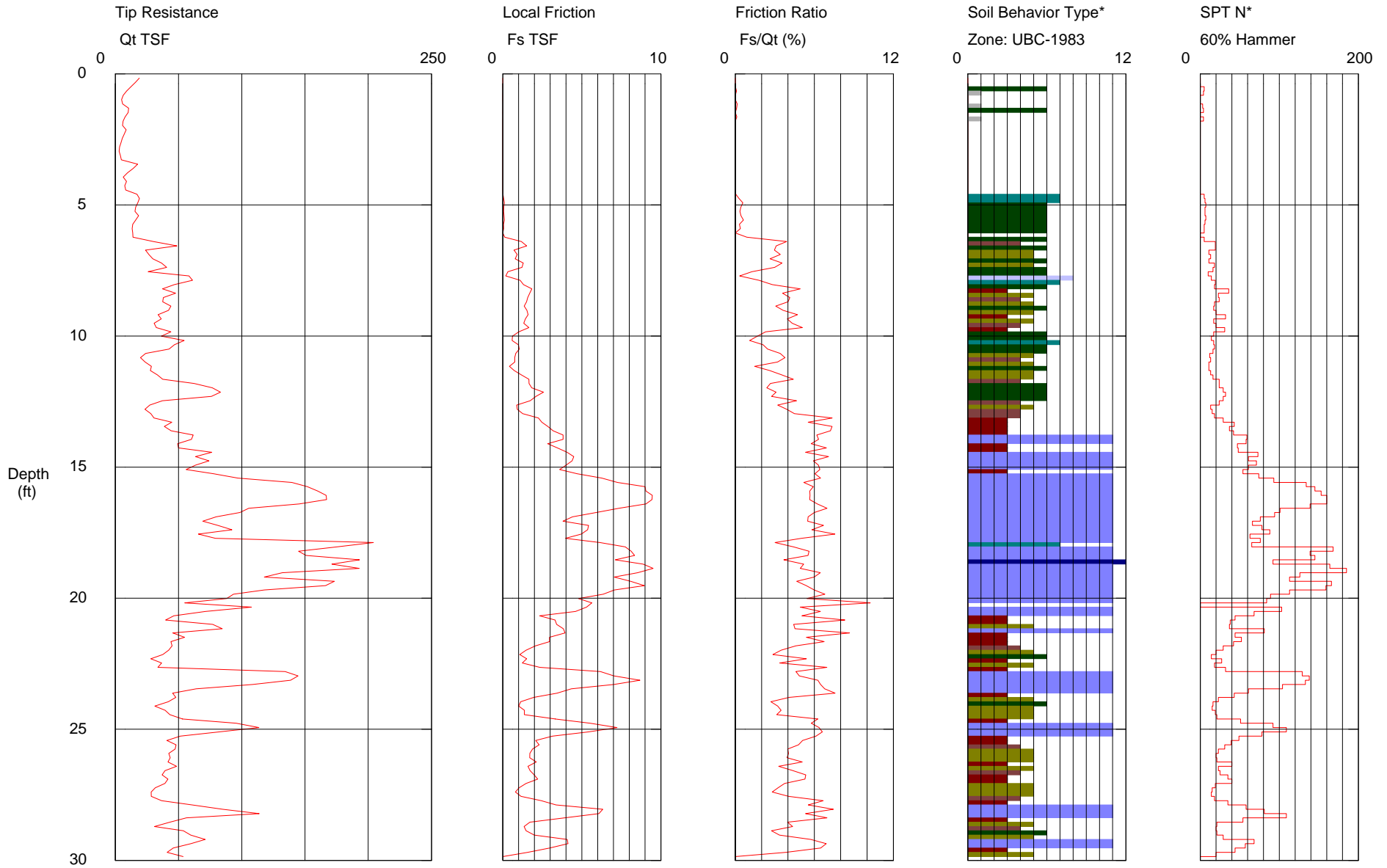
- 10 gravelly sand to sand
- 11 very stiff fine grained (*)
- 12 sand to clayey sand (*)

*Soil behavior type and SPT based on data from UBC-1983

Arcadis

Operator: BH-ML
 Sounding: CPT-03
 Cone Used: DSG0786

CPT Date/Time: 7/15/2010 2:46:47 PM
 Location: BP FACILITY 6002
 Job Number: GP09BPNA-C108



Maximum Depth = 30.02 feet

Depth Increment = 0.164 feet

- 1 sensitive fine grained
- 2 organic material
- 3 clay

- 4 silty clay to clay
- 5 clayey silt to silty clay
- 6 sandy silt to clayey silt

- 7 silty sand to sandy silt
- 8 sand to silty sand
- 9 sand

- 10 gravelly sand to sand
- 11 very stiff fine grained (*)
- 12 sand to clayey sand (*)

*Soil behavior type and SPT based on data from UBC-1983

Appendix C

Laboratory Analytical Report and
Chain of Custody Documentation

ANALYTICAL REPORT

Job Number: 720-29375-1
Job Description: BP #6002, Oakland

For:
ARCADIS U.S., Inc.
155 Montgomery Street
Suite 1500
San Francisco, CA 94104
Attention: Hollis Phillips

Surinder Sidhu

Approved for release.
Surinder Sidhu
Customer Service Manager
7/26/2010 4:18 PM

Designee for
Dimple Sharma
Project Manager I
dimple.sharma@testamericainc.com
07/26/2010

cc: Mr. Jason Duda
Mr. Ben McKenna

CA ELAP Certification # 2496

The Chain(s) of Custody are included and are an integral part of this report.

The report shall not be reproduced except in full, without the written approval of the laboratory. The client, by accepting this report, also agrees not to alter any reports whether in the hard copy or electronic format and to use reasonable efforts to preserve the reports in the form and substance originally provided by TestAmerica.

A trip blank is required to be provided for volatile analyses. If trip blank results are not included in the report, either the trip blank was not submitted or requested to be analyzed.

TestAmerica Laboratories, Inc.

TestAmerica San Francisco 1220 Quarry Lane, Pleasanton, CA 94566

Tel (925) 484-1919 Fax (925) 600-3002 www.testamericainc.com

Job Narrative
720-29375-1

Comments

No additional comments.

Receipt

Sample CPT-1: Received only 1 partially-filled vial. Client approved analysis was 8260 rather than 8015. Gas range C6-C12 .

All other samples were received in good condition within temperature requirements.

GC/MS VOA

No analytical or quality issues were noted.

EXECUTIVE SUMMARY - Detections

Client: ARCADIS U.S., Inc.

Job Number: 720-29375-1

Lab Sample ID	Client Sample ID	Result / Qualifier	Reporting Limit	Units	Method
720-29375-1	CPT-2				
MTBE		4.3	0.50	ug/L	8260B/CA_LUFTMS
1,2-DCA		4.0	0.50	ug/L	8260B/CA_LUFTMS
720-29375-2	CPT-1				
MTBE		110	2.5	ug/L	8260B/CA_LUFTMS
TBA		110	20	ug/L	8260B/CA_LUFTMS

METHOD SUMMARY

Client: ARCADIS U.S., Inc.

Job Number: 720-29375-1

Description	Lab Location	Method	Preparation Method
Matrix Water			
8260B / CA LUFT MS	TAL SF	SW846 8260B/CA_LUFTMS	
Purge and Trap	TAL SF		SW846 5030B

Lab References:

TAL SF = TestAmerica San Francisco

Method References:

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

SAMPLE SUMMARY

Client: ARCADIS U.S., Inc.

Job Number: 720-29375-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
720-29375-1	CPT-2	Water	07/19/2010 0910	07/19/2010 1525
720-29375-2	CPT-1	Water	07/19/2010 0950	07/19/2010 1525
720-29375-3TB	TB-20100715	Water	07/15/2010 0000	07/19/2010 1525

Analytical Data

Client: ARCADIS U.S., Inc.

Job Number: 720-29375-1

Client Sample ID: CPT-2

Lab Sample ID: 720-29375-1

Date Sampled: 07/19/2010 0910

Client Matrix: Water

Date Received: 07/19/2010 1525

8260B/CA_LUFTMS 8260B / CA LUFT MS

Method: 8260B/CA_LUFTMS Analysis Batch: 720-74886 Instrument ID: HP9
Preparation: 5030B Lab File ID: 07211017.D
Dilution: 1.0 Initial Weight/Volume: 10 mL
Date Analyzed: 07/21/2010 1648 Final Weight/Volume: 10 mL
Date Prepared: 07/21/2010 1648

Analyte	Result (ug/L)	Qualifier	RL
Gasoline Range Organics (GRO)-C6-C12	ND		50
Benzene	ND		0.50
Toluene	ND		0.50
Ethylbenzene	ND		0.50
Xylenes, Total	ND		1.0
MTBE	4.3		0.50
EDB	ND		0.50
1,2-DCA	4.0		0.50
TBA	ND		4.0
Ethanol	ND		100
DIPE	ND		0.50
TAME	ND		0.50
Ethyl t-butyl ether	ND		0.50

Surrogate	%Rec	Qualifier	Acceptance Limits
4-Bromofluorobenzene	94		67 - 130
1,2-Dichloroethane-d4 (Surr)	105		67 - 130
Toluene-d8 (Surr)	94		70 - 130

Analytical Data

Client: ARCADIS U.S., Inc.

Job Number: 720-29375-1

Client Sample ID: CPT-1

Lab Sample ID: 720-29375-2

Date Sampled: 07/19/2010 0950

Client Matrix: Water

Date Received: 07/19/2010 1525

8260B/CA_LUFTMS 8260B / CA LUFT MS

Method: 8260B/CA_LUFTMS Analysis Batch: 720-74886 Instrument ID: HP9
Preparation: 5030B Lab File ID: 07211018.D
Dilution: 5.0 Initial Weight/Volume: 10 mL
Date Analyzed: 07/21/2010 1720 Final Weight/Volume: 10 mL
Date Prepared: 07/21/2010 1720

Analyte	Result (ug/L)	Qualifier	RL
Gasoline Range Organics (GRO)-C6-C12	ND		250
Benzene	ND		2.5
Toluene	ND		2.5
Ethylbenzene	ND		2.5
Xylenes, Total	ND		5.0
MTBE	110		2.5
EDB	ND		2.5
1,2-DCA	ND		2.5
TBA	110		20
Ethanol	ND		500
DIPE	ND		2.5
TAME	ND		2.5
Ethyl t-butyl ether	ND		2.5

Surrogate	%Rec	Qualifier	Acceptance Limits
4-Bromofluorobenzene	89		67 - 130
1,2-Dichloroethane-d4 (Surr)	100		67 - 130
Toluene-d8 (Surr)	92		70 - 130

Analytical Data

Client: ARCADIS U.S., Inc.

Job Number: 720-29375-1

Client Sample ID: TB-20100715

Lab Sample ID: 720-29375-3TB

Date Sampled: 07/15/2010 0000

Client Matrix: Water

Date Received: 07/19/2010 1525

8260B/CA_LUFTMS 8260B / CA LUFT MS

Method:	8260B/CA_LUFTMS	Analysis Batch: 720-74886	Instrument ID:	HP9
Preparation:	5030B		Lab File ID:	07211014.D
Dilution:	1.0		Initial Weight/Volume:	10 mL
Date Analyzed:	07/21/2010 1512		Final Weight/Volume:	10 mL
Date Prepared:	07/21/2010 1512			

Analyte	Result (ug/L)	Qualifier	RL
Gasoline Range Organics (GRO)-C6-C12	ND		50
Benzene	ND		0.50
Toluene	ND		0.50
Ethylbenzene	ND		0.50
Xylenes, Total	ND		1.0
MTBE	ND		0.50
EDB	ND		0.50
1,2-DCA	ND		0.50
TBA	ND		4.0
Ethanol	ND		100
DIPE	ND		0.50
TAME	ND		0.50
Ethyl t-butyl ether	ND		0.50

Surrogate	%Rec	Qualifier	Acceptance Limits
4-Bromofluorobenzene	91		67 - 130
1,2-Dichloroethane-d4 (Surr)	95		67 - 130
Toluene-d8 (Surr)	93		70 - 130

DATA REPORTING QUALIFIERS

Lab Section	Qualifier	Description
-------------	-----------	-------------

Quality Control Results

Client: ARCADIS U.S., Inc.

Job Number: 720-29375-1

QC Association Summary

Lab Sample ID	Client Sample ID	Report Basis	Client Matrix	Method	Prep Batch
GC/MS VOA					
Analysis Batch:720-74886					
LCS 720-74886/5	Lab Control Sample	T	Water	8260B/CA_LUFT	
LCS 720-74886/7	Lab Control Sample	T	Water	8260B/CA_LUFT	
LCSD 720-74886/6	Lab Control Sample Duplicate	T	Water	8260B/CA_LUFT	
LCSD 720-74886/8	Lab Control Sample Duplicate	T	Water	8260B/CA_LUFT	
MB 720-74886/4	Method Blank	T	Water	8260B/CA_LUFT	
720-29375-1	CPT-2	T	Water	8260B/CA_LUFT	
720-29375-2	CPT-1	T	Water	8260B/CA_LUFT	
720-29375-3TB	TB-20100715	T	Water	8260B/CA_LUFT	

Report Basis

T = Total

Quality Control Results

Client: ARCADIS U.S., Inc.

Job Number: 720-29375-1

Method Blank - Batch: 720-74886

**Method: 8260B/CA_LUFTMS
Preparation: 5030B**

Lab Sample ID: MB 720-74886/4
 Client Matrix: Water
 Dilution: 1.0
 Date Analyzed: 07/21/2010 0951
 Date Prepared: 07/21/2010 0951

Analysis Batch: 720-74886
 Prep Batch: N/A
 Units: ug/L

Instrument ID: HP9
 Lab File ID: 07211004.D
 Initial Weight/Volume: 10 mL
 Final Weight/Volume: 10 mL

Analyte	Result	Qual	RL
Gasoline Range Organics (GRO)-C6-C12	ND		50
Benzene	ND		0.50
Toluene	ND		0.50
Ethylbenzene	ND		0.50
Xylenes, Total	ND		1.0
MTBE	ND		0.50
EDB	ND		0.50
1,2-DCA	ND		0.50
m-Xylene & p-Xylene	ND		1.0
o-Xylene	ND		0.50
TBA	ND		4.0
Ethanol	ND		100
DIPE	ND		0.50
TAME	ND		0.50
Ethyl t-butyl ether	ND		0.50
Surrogate	% Rec		Acceptance Limits
4-Bromofluorobenzene	94		67 - 130
1,2-Dichloroethane-d4 (Surr)	96		67 - 130
Toluene-d8 (Surr)	94		70 - 130

Quality Control Results

Client: ARCADIS U.S., Inc.

Job Number: 720-29375-1

**Lab Control Sample/
Lab Control Sample Duplicate Recovery Report - Batch: 720-74886**

**Method: 8260B/CA_LUFTMS
Preparation: 5030B**

LCS Lab Sample ID: LCS 720-74886/5
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 07/21/2010 1023
Date Prepared: 07/21/2010 1023

Analysis Batch: 720-74886
Prep Batch: N/A
Units: ug/L

Instrument ID: HP9
Lab File ID: 07211005.D
Initial Weight/Volume: 10 mL
Final Weight/Volume: 10 mL

LCSD Lab Sample ID: LCSD 720-74886/6
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 07/21/2010 1055
Date Prepared: 07/21/2010 1055

Analysis Batch: 720-74886
Prep Batch: N/A
Units: ug/L

Instrument ID: HP9
Lab File ID: 07211006.D
Initial Weight/Volume: 10 mL
Final Weight/Volume: 10 mL

Analyte	% Rec.		Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
	LCS	LCSD					
Benzene	97	97	82 - 127	0	20		
Toluene	97	99	83 - 129	2	20		
Ethylbenzene	110	111	86 - 135	1	20		
MTBE	98	100	62 - 130	2	20		
EDB	99	101	70 - 130	2	20		
1,2-DCA	91	92	70 - 126	1	20		
m-Xylene & p-Xylene	110	111	70 - 142	1	20		
o-Xylene	107	109	89 - 136	1	20		
TBA	103	101	82 - 116	1	20		
Ethanol	104	96	31 - 216	8	20		
DIPE	95	96	74 - 155	1	20		
TAME	103	106	79 - 129	2	20		
Ethyl t-butyl ether	99	99	70 - 130	1	20		
Surrogate	LCS % Rec		LCSD % Rec		Acceptance Limits		
4-Bromofluorobenzene	101		101		67 - 130		
1,2-Dichloroethane-d4 (Surr)	91		91		67 - 130		
Toluene-d8 (Surr)	97		97		70 - 130		

Quality Control Results

Client: ARCADIS U.S., Inc.

Job Number: 720-29375-1

**Lab Control Sample/
Lab Control Sample Duplicate Recovery Report - Batch: 720-74886**

**Method: 8260B/CA_LUFTMS
Preparation: 5030B**

LCS Lab Sample ID: LCS 720-74886/7
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 07/21/2010 1127
Date Prepared: 07/21/2010 1127

Analysis Batch: 720-74886
Prep Batch: N/A
Units: ug/L

Instrument ID: HP9
Lab File ID: 07211007.D
Initial Weight/Volume: 10 mL
Final Weight/Volume: 10 mL

LCSD Lab Sample ID: LCSD 720-74886/8
Client Matrix: Water
Dilution: 1.0
Date Analyzed: 07/21/2010 1159
Date Prepared: 07/21/2010 1159

Analysis Batch: 720-74886
Prep Batch: N/A
Units: ug/L

Instrument ID: HP9
Lab File ID: 07211008.D
Initial Weight/Volume: 10 mL
Final Weight/Volume: 10 mL

Analyte	% Rec.		Limit	RPD	RPD Limit	LCS Qual	LCSD Qual
	LCS	LCSD					
Gasoline Range Organics (GRO)-C6-C12	80	77	58 - 106	4	20		
Surrogate	LCS % Rec		LCSD % Rec		Acceptance Limits		
4-Bromofluorobenzene	103		100		67 - 130		
1,2-Dichloroethane-d4 (Surr)	96		96		67 - 130		
Toluene-d8 (Surr)	97		98		70 - 130		

ID#: _____

CHAIN OF CUSTODY & LABORATORY ANALYSIS REQUEST FORM

Page 1 of 1

720-29375

125714

Lab Work Order # _____

Send Results to:	Contact & Company Name: Hollis Phillips @ ARCADIS	Telephone: 415.374.2744 x13	Preservative B									Keys Preservation Key: A. H ₂ SO ₄ B. HCl C. HNO ₃ D. NaOH E. None F. Other: _____ G. Other: _____ H. Other: _____ Matrix Key: SO - Soil W - Water T - Tissue SE - Sediment SL - Sludge A - Air Container Information Key: 1. 40 ml Vial 2. 1 L Amber 3. 250 ml Plastic 4. 500 ml Plastic 5. Encore 6. 2 oz. Glass 7. 4 oz. Glass 8. 8 oz. Glass 9. Other: _____ 10. Other: _____
	Address: 100 Montgomery St Suite 300	Fax: 415.374.2744	Filtered (✓)									
	City State Zip San Francisco CA 94104	E-mail Address: hollis.phillips@arcadis-us.com	# of Containers									
			Container Information	1								
PARAMETER ANALYSIS & METHOD												
Project Name/Location (City, State): Former ARCO #6002/Oakland CA	Project #: GPO9BPN4.C108.C0000	GRO (CG-CU) USEPA 8015M STEX USEPA 82605 MIBE 12-204-12 ELBETPE EPA E100 USEPA 82605										
Sampler's Printed Name: Andrea Valdivia	Sampler's Signature: <i>Andrea Valdivia</i>											
Sample ID	Collection		Type (✓)		Matrix							REMARKS
	Date	Time	Comp	Grab								
1 CPT-2	07/19	0910		X	W	X	X	X	X	X	X	GRO first priority only 1 VOA
2 CPT-1	07/19	0950		X	W	X	X	X	X	X	X	GRO first priority only 1 partial VOA
3 TB-20100715	07/15	—		X	W	X	X	X	X	X	X	

Special Instructions/Comments: _____ Special QA/QC Instructions(✓): _____

Laboratory Information and Receipt		Relinquished By		Received By		Relinquished By		Laboratory Received By	
Lab Name:	Cooler Custody Seal (✓) <input type="checkbox"/> Intact <input type="checkbox"/> Not Intact	Printed Name: Andrea Valdivia	Signature: <i>Andrea Valdivia</i>	Printed Name: Bryan Thomas	Signature: <i>Bryan Thomas</i>	Printed Name: Bryan Thomas	Signature: <i>Bryan Thomas</i>	Printed Name: Mullen	Signature: <i>John Mullen</i>
<input type="checkbox"/> Cooler packed with ice (✓)	Sample Receipt:	Firm: ARCADIS	Date/Time: 07/19/10 1230	Firm/Counter: Test America	Date/Time: 7/19/10 1230	Firm/Counter: Test America	Date/Time: 7/19/10 1525	Firm: Test America	Date/Time: 7-19-10 1525
Specify Turnaround Requirements:	Condition/Cooler Temp: _____								

Page 14 of 15

Login Sample Receipt Check List

Client: ARCADIS U.S., Inc.

Job Number: 720-29375-1

Login Number: 29375

List Source: TestAmerica San Francisco

Creator: Hoang, Julie

List Number: 1

Question	T / F / NA	Comment
Radioactivity either was not measured or, if measured, is at or below background	N/A	
The cooler's custody seal, if present, is intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	False	SEE NCM
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	

Appendix D

Concentration versus Time Graphs
for TPHg, Benzene and MTBE

CHART 1: MW-5 Concentration Trends

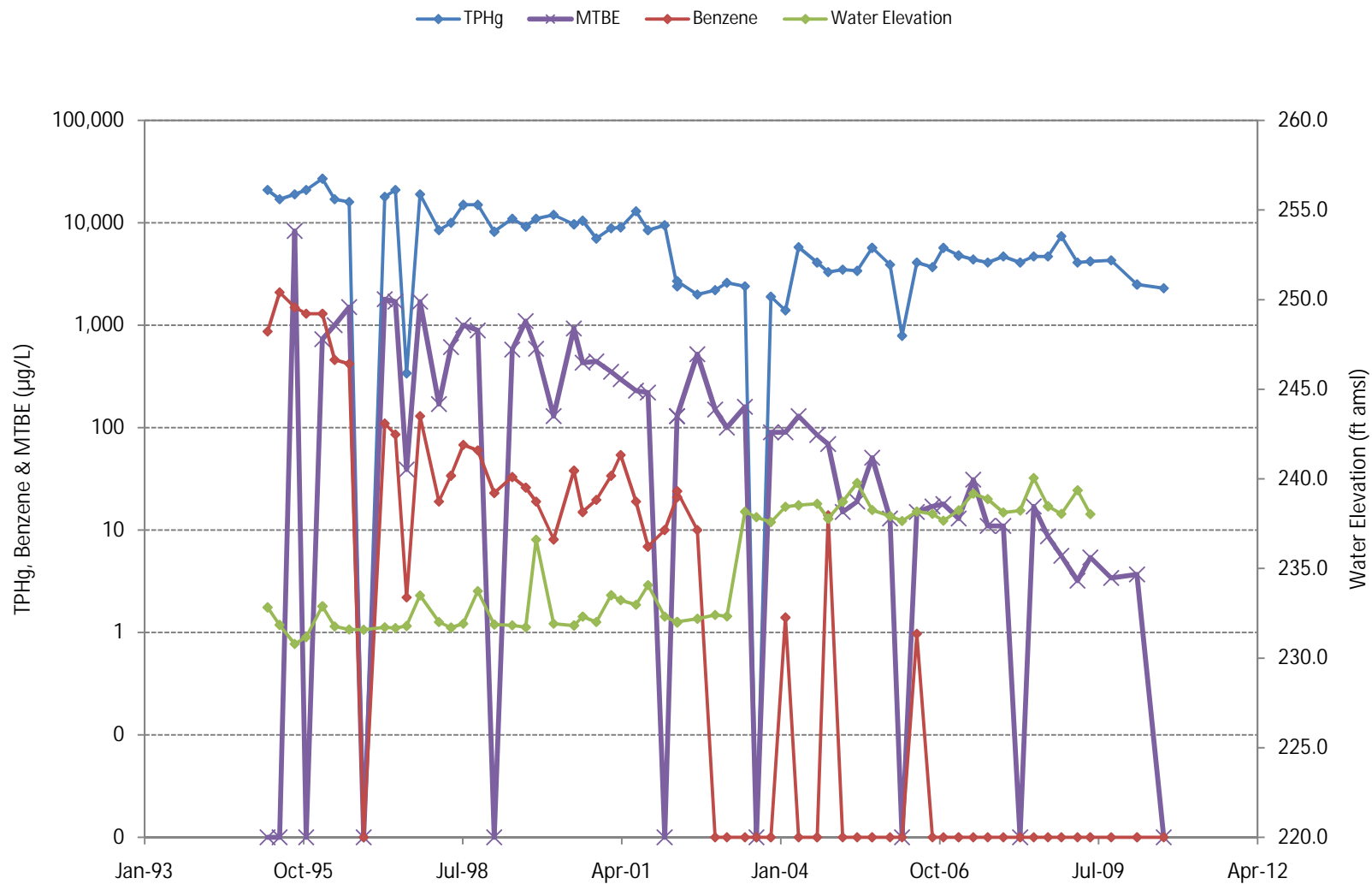
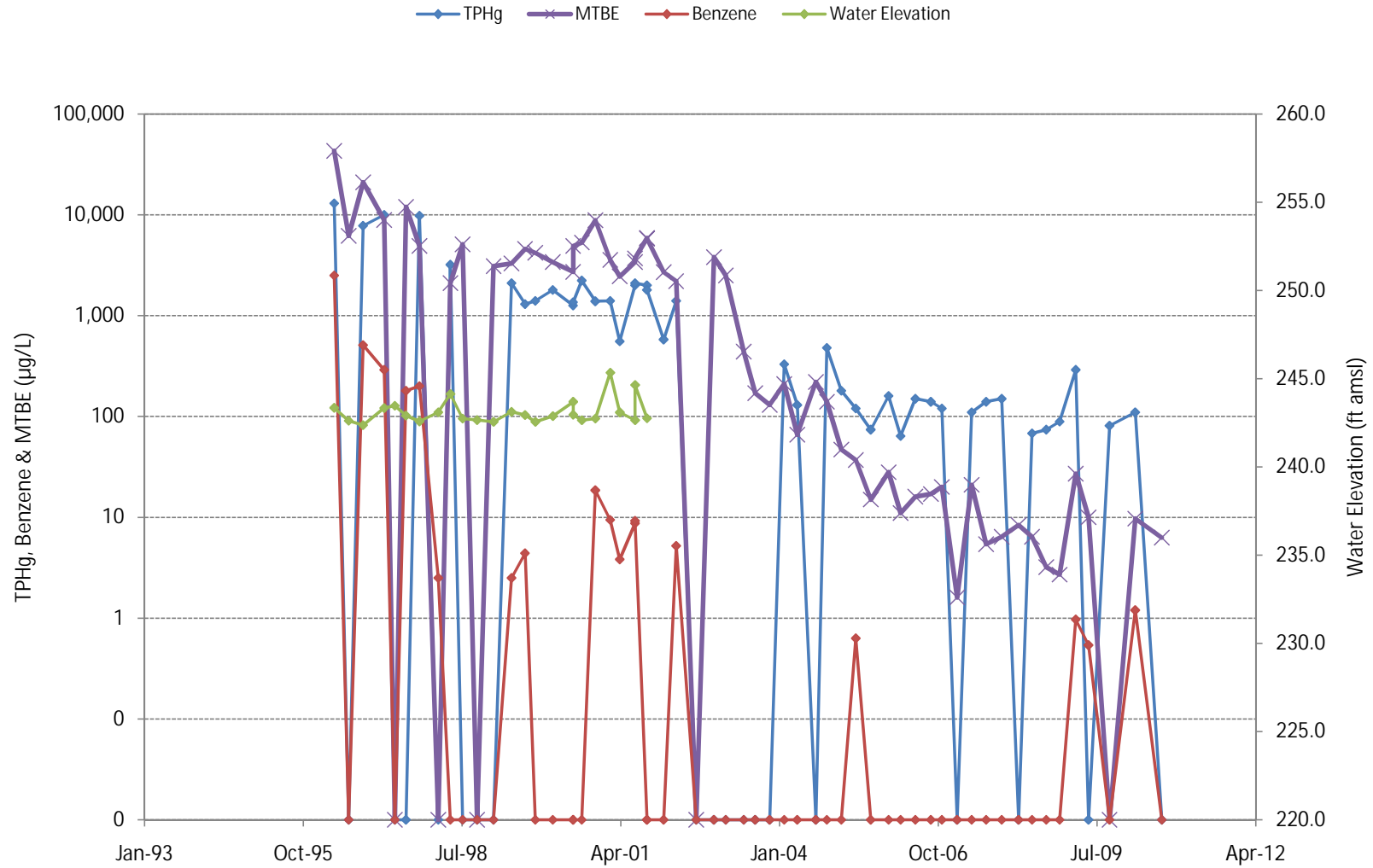


CHART 2: VW-4 Concentration Trends



Appendix E

Underground Utility Site Photos,
Historical Utility Figures, Utility
Documentation and California
Department of Water Resources Well
Records

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

01-436F 2S/30-3N4

DRILL RIG		SURFACE ELEVATION		LOGGED BY					
Hollow Stem Auger		—		RDB					
DEPTH TO GROUNDWATER		BORING DIAMETER		DATE DRILLED					
25' (note 2)		8"		6-2-89					
DESCRIPTION AND CLASSIFICATION				DEPTH (FEET)	SAMPLER	PENETRATION RESISTANCE (BLOWS/FT)	WATER CONTENT (%)	P.I.D. Reading (ppm)	UNCONFINED COMPRESSIVE STRENGTH (PSI)
DESCRIPTION AND REMARKS	COLOR	CONSIST.	SOIL TYPE						
2" asphalt over 15" baserock				1					
SAND, clayey with silt, fine-grained, damp	light orange brown	medium dense	SC	2					
				3					
				4					
				5					
				6					
GRANITIC ROCK, decomposed, close fracturing, friable, damp	mottled yellow orange brown white	very dense	bed rock	6	50			6.1	
				7					
				8					
				9					
				10					
				11	50/6"			7.9	
				12					
				13					
				14					
				15					
bedrock hardens at a depth of approximately 19 feet				16	50/6"			2.5	
				17					
				18					
				19					
				20					



EXPLORATORY BORING LOG

MILLS CORPORATION YARD
Oakland, California

PROJECT NO.	DATE	BORING NO
KE 1025-2	July 1989	

MW-3
NO

01-436F 25/3W-3N4

DRILL RIG Hollow Stem Auger	SURFACE ELEVATION	LOGGED BY RDB
DEPTH TO GROUNDWATER 25' (Note 2)	BORING DIAMETER 8"	DATE DRILLED 6-2-89

DESCRIPTION AND CLASSIFICATION				DEPTH (FEET)	SAMPLER	PENETRATION RESISTANCE (BLOWS/FT.)	WATER CONTENT (%)	P.I.D. Reading (ppm)	UNCONFINED COMPRESSIVE STRENGTH (KSF)	
DESCRIPTION AND REMARKS	COLOR	CONSIST.	SOIL TYPE							
GRANITIC ROCK, decomposed, close factoring, damp to moist grading to saturated	mottled yellow orange brown white	very dense	bed rock	21		50/3"		1.5		
				22						
				23						
				24						
				25						
				26					50/4"	
				27						
				28						
				29						
				30						
				31					80/10"	
				32						
				33						
				34						
				35					81/10"	
Bottom of Boring = 35½ feet				36						
Notes; 1. The stratification lines represent the approximate boundaries between soil types and the transition may be gradual. 2. Groundwater level was measured at 25 feet at time of drilling.				37						
				38						
				39						
				40						

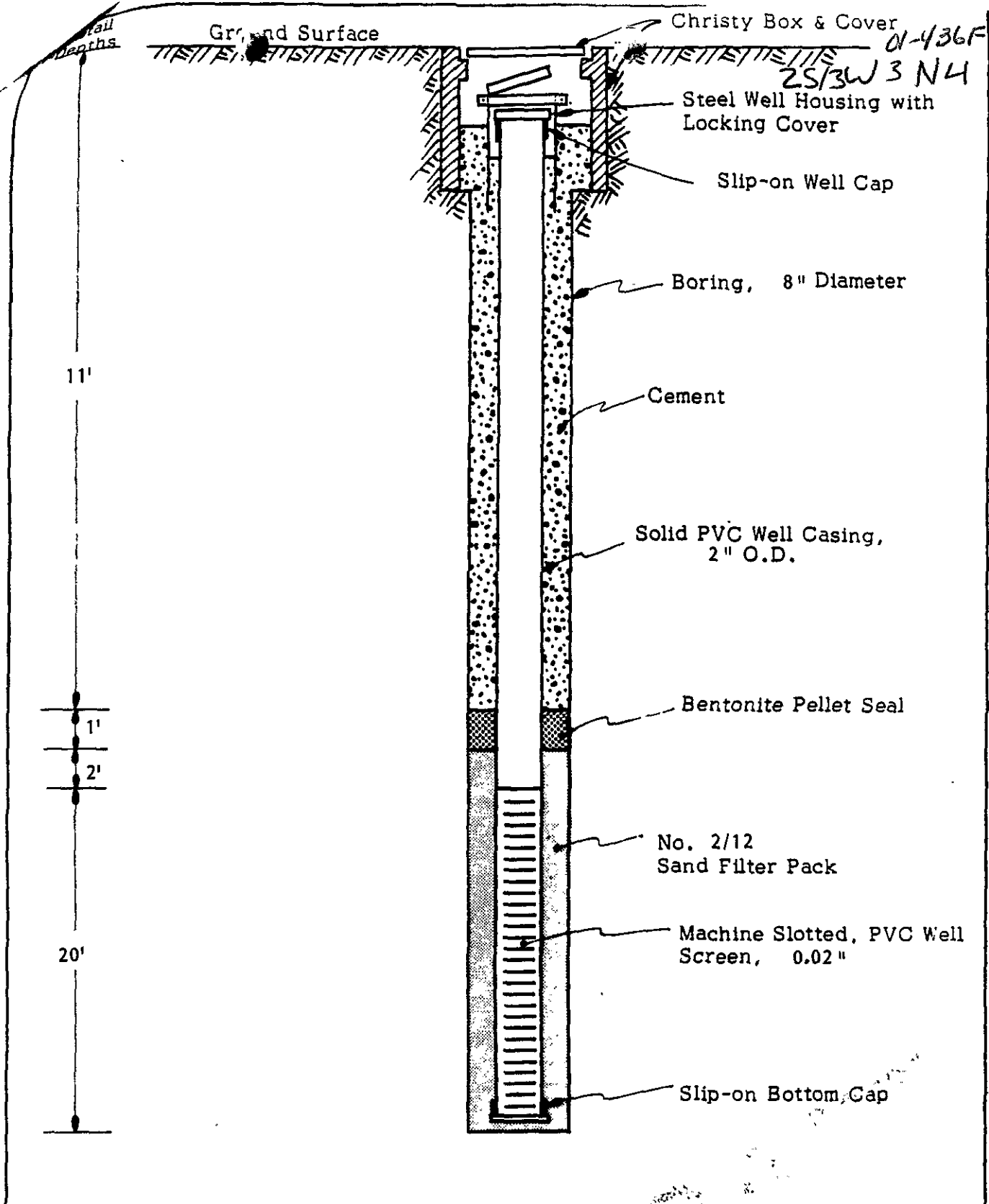



Kaldveer Associates
Geoscience Consultants
A California Corporation

EXPLORATORY BORING LOG

WALLS CORPORATION YARD
Oakland, California

PROJECT NO. KE 1025-2	DATE July 1989	BORING NO. MW-3
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 <p>Kaldveer Associates Geoscience Consultants A California Corporation</p>	MONITORING WELL COMPLETION DETAIL		
	MILLS CORPORATION YARD Oakland, California		
	PROJECT NO.	DATE	Figure MW-3
	KE 1025-2	July 1989	

01-436E 2S/3W-3N3

DRILL RIG Hollow Stem Auger	SURFACE ELEVATION _____	LOGGED BY RDB
DEPTH TO GROUNDWATER 25' (note 2)	BORING DIAMETER 8"	DATE DRILLED 6/2/89

DESCRIPTION AND CLASSIFICATION				DEPTH (FEET)	SAMPLER	PENETRATION RESISTANCE (BLOWS/FT)	WATER CONTENT (%)	p.H. Reading	UNCONFINED COMPRESSION STRENGTH (PSI)
DESCRIPTION AND REMARKS	COLOR	CONSIST	SOIL TYPE						
2½" asphalt over 15" baserock				1					
SAND, clayey with silt, fine-grained, damp	light orange- brown	medium dense	SC	2					
				3					
				4					
				5					
GRANITIC ROCK, decomposed, close fracturing, friable, damp	mottled yellow orange brown white	very dense	bed rock	6	75/10"			50.4	
				7					
				8					
				9					
				10					
				11	50/6"			17.3	
				12					
				13					
				14					
				15					
				16	50/4"			25.7	
				17					
				18					
				19					
				20					

bedrock hardens at a depth of approximately 13 feet

NET



Kaldveer Associates
Geoscience Consultants
A California Corporation

EXPLORATORY BORING LOG

MILLS CORPORATION YARD
Oakland, California

PROJECT NO. KE 1025-2	DATE July 1989	BORING NO MW-2
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01-436E 25/3W-3N3

RIG Hollow Stem Auger SURFACE ELEVATION LOGGED BY RDB
 DEPTH TO GROUNDWATER 25 feet (note 2) BORING DIAMETER 8" DATE DRILLED 6/2/89

DESCRIPTION AND CLASSIFICATION				DEPTH (FEET)	SAMPLER	PENETRATION RESISTANCE (BLOWS/FT.)	WATER CONTENT (%)	P.I.D. Reading	UNCONFINED COMPRESSIVE STRENGTH (KSF)	
DESCRIPTION AND REMARKS	COLOR	CONSIST.	SOIL TYPE							
GRANITIC ROCK, decomposed, close fracturing, low hardness, damp to moist grading to saturated	mottled yellow orange brown white	very dense	bed rock	21		50/4"		26		
				22						
				23						
				24						
				25					▽	
				26					50/6"	8.1
				27						
				28						
				29						
				30						
				31					50/5"	
				32						
				33						
34										
35										
36					50/5½"					
37										
38										
39										
40										

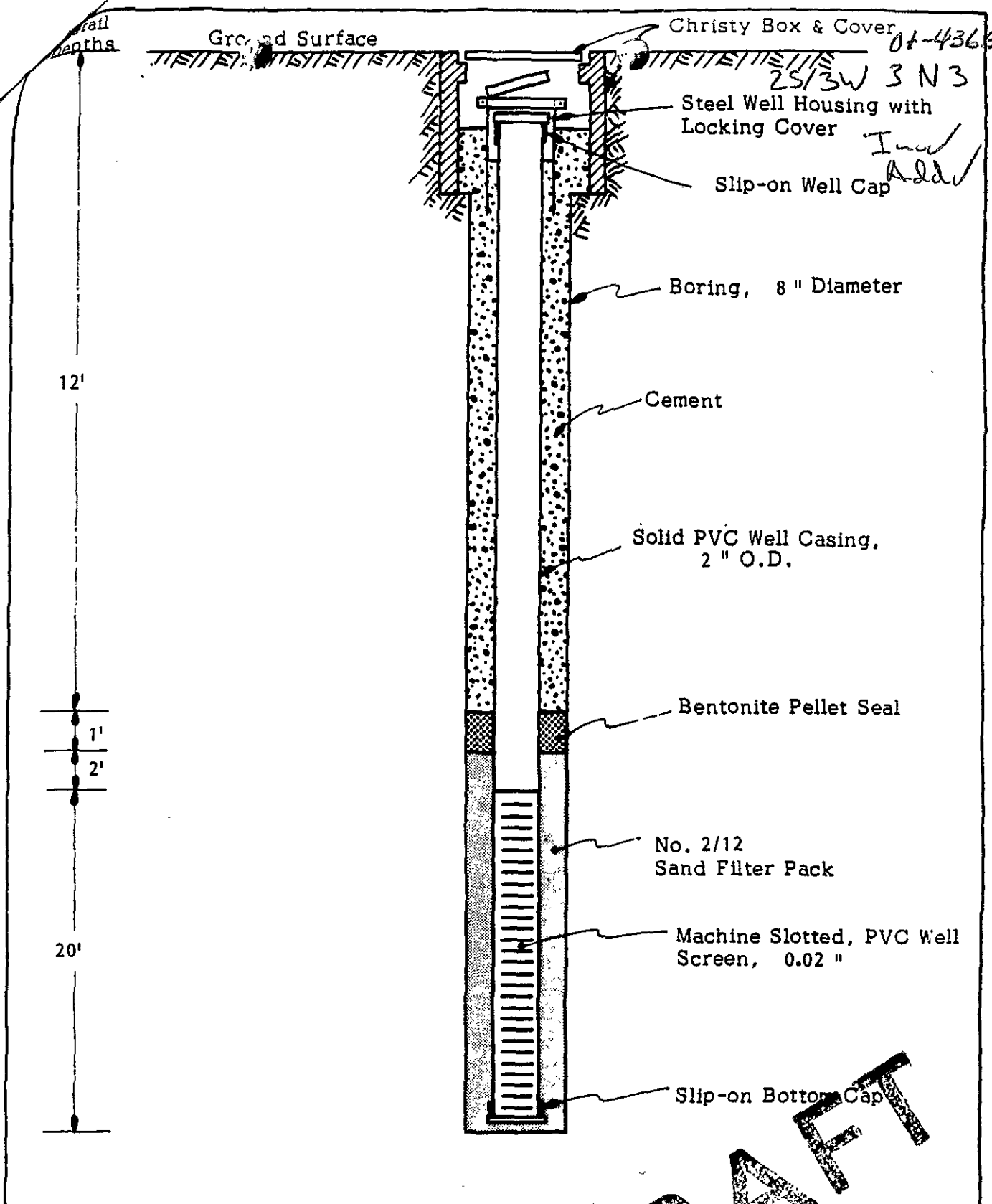
Bottom of Boring = 36½ feet
 Notes:
 1. The stratification lines represent the approximate boundaries between soil types and the transition may be gradual.
 2. Groundwater was measured at 25 feet at time of drilling.



EXPLORATORY BORING LOG

MILLS CORPORATION YARD
 Oakland, California

PROJECT NO. KE 1025-2	DATE July 1989	BORING NO. MW-2
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DRAFT



MONITORING WELL COMPLETION DETAIL

MILES CORPORATION YARD
Oakland, California

PROJECT NO.	DATE	Figure MW-2
KE 1025-2	July 1989	

01-436D

25/30-3N2

DRILL RIG Hollow Stem Auger	SURFACE ELEVATION —	LOGGED BY RDB
DEPTH TO GROUNDWATER 24½' (note 2)	BORING DIAMETER 8"	DATE DRILLED 6-1-89

DESCRIPTION AND CLASSIFICATION				DEPTH (FEET)	SAMPLER	PENETRATION RESISTANCE (BLOWS/FT)	WATER CONTENT (%)	P.I.D. Reading (ppm)	UNCONFINED COMPRESSIVE STRENGTH (KSF)
DESCRIPTION AND REMARKS	COLOR	CONSIST.	SOIL TYPE						
2" asphaltic concrete over 14" base-rock				1					
CLAY, sandy, coarse grained, damp slight odor (petroleum hydrocarbons)	olive green	firm	CL	2					
SAND, clayey, with silt, fine grained damp	light orange-brown	medium dense	SC	3					
				4					
GRANITIC ROCK, decomposed, close fracturing, friable, damp, no odor	mottled yellow orange brown white	dense	bed rock	5					
				6		38			
grading to strong odor (petroleum hydrocarbons)		very dense		7					
				8					
grading no odor				9					
				10					
				11		50/6"		90	
				12					
				13					
				14					
				15					
				16		50/6"		5.0	
grading to strong odor (petroleum hydrocarbon)				17					
				18					
bedrock hardens at 20 ft.				19					
				20					



Kaldveer Associates
Geoscience Consultants
A California Corporation

EXPLORATORY BORING LOG

MILLS CORPORATION YARD
Oakland, California

PROJECT NO. KE 1025-2	DATE July 1989	BORING NO. MW-1
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Lic # C57-464324

01-436 D 2S/36-3N2

Hollow Stem Auger	SURFACE ELEVATION	LOGGED BY RDB
DEPTH TO GROUNDWATER 24½' (note 2)	BORING DIAMETER 8"	DATE DRILLED 6-1-89

DESCRIPTION AND CLASSIFICATION				DEPTH (FEET)	SAMPLER	PENETRATION RESISTANCE (BLOWS/FT.)	WATER CONTENT (%)	P.I.D. Reading (ppm)	UNCONFINED COMPRESSIVE STRENGTH (KSF)
DESCRIPTION AND REMARKS	COLOR	CONSIST.	SOIL TYPE						
GRANITIC ROCK. decomposed, close fracturing, low hardness strong odor (petroleum hydrocarbons) moist to wet	mottled yellow orange brown white	very dense	bed rock	21		75/10"		100	
				22					
grading to saturated grading to no odor				23					
				24					
grading to saturated grading to no odor				25					
				26		60/6"		5.0	
bedrock hardens at at depth of approximately 27 feet				27					
				28					
bedrock softens slightly				29					
				30					
bedrock hardens at a depth of approximately 32 feet				31		50/4"			
				32					
bedrock softens at a depth of approximately 34 feet				33					
				34					
Bottom of Boring = 36½ feet				35		60/6"			
				36					
Notes: 1. The Stratification lines represent the approximate boundaries between soil types and the transition may be gradual. 2. Groundwater level was measured at 24½ feet at time of drilling.				37					
				38					
				39					
				40					

DRAFT

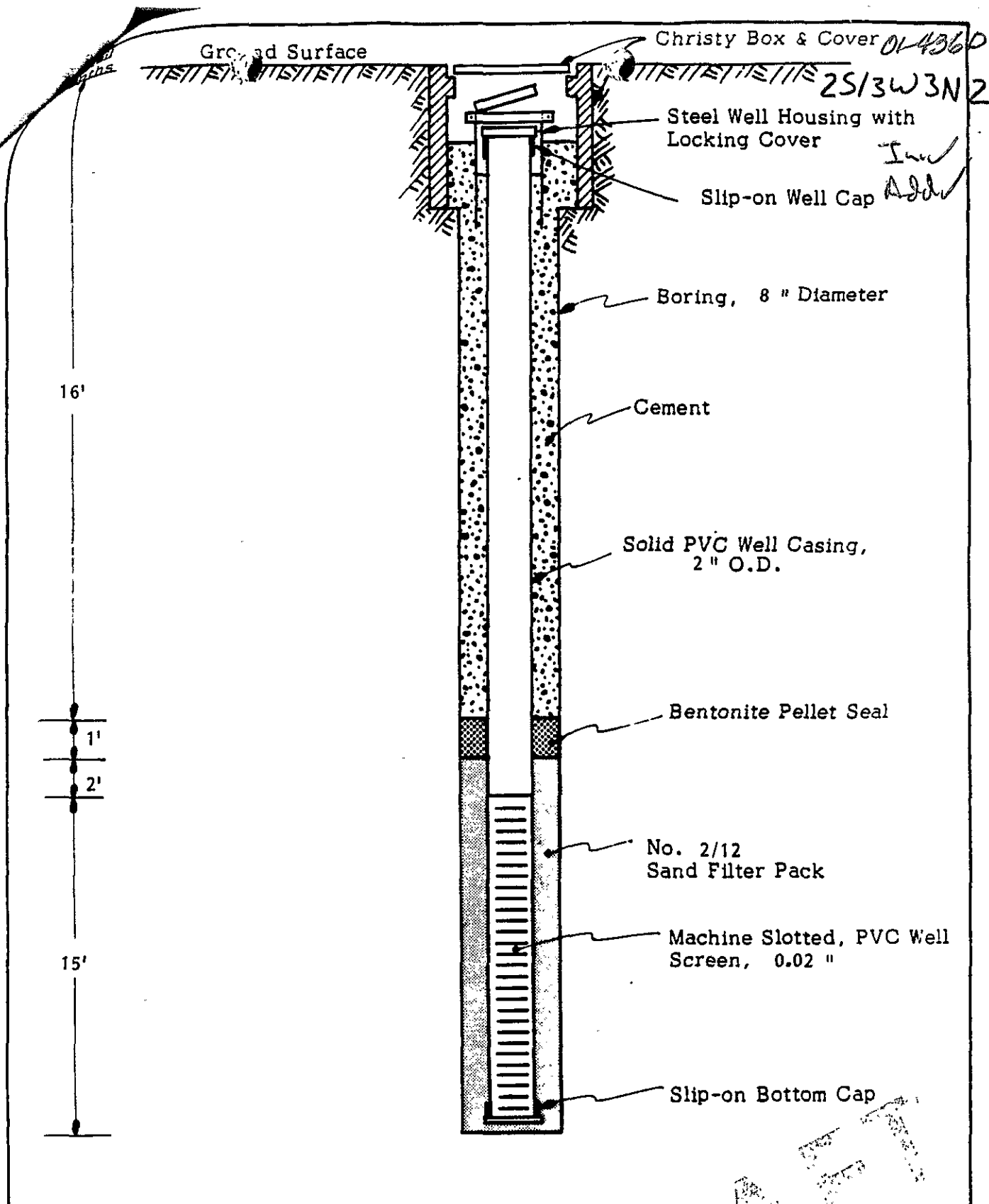


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EXPLORATORY BORING LOG

MILLS CORPORATION YARD
Oakland, California

PROJECT NO. KE 1025-2	DATE July 1989	BORING NO. MW-1
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 <p>Kaldveer Associates Geoscience Consultants A California Corporation</p>	MONITORING WELL COMPLETION DETAIL	
	MILLS CORPORATION YARD Oakland, California	
	PROJECT NO.	DATE
	KE 1025-2	July 1989

Figure MW-1

192

01-548J

D2503W03J03

WELL CONSTRUCTION

LITHOLOGY

SAMPLE DATA

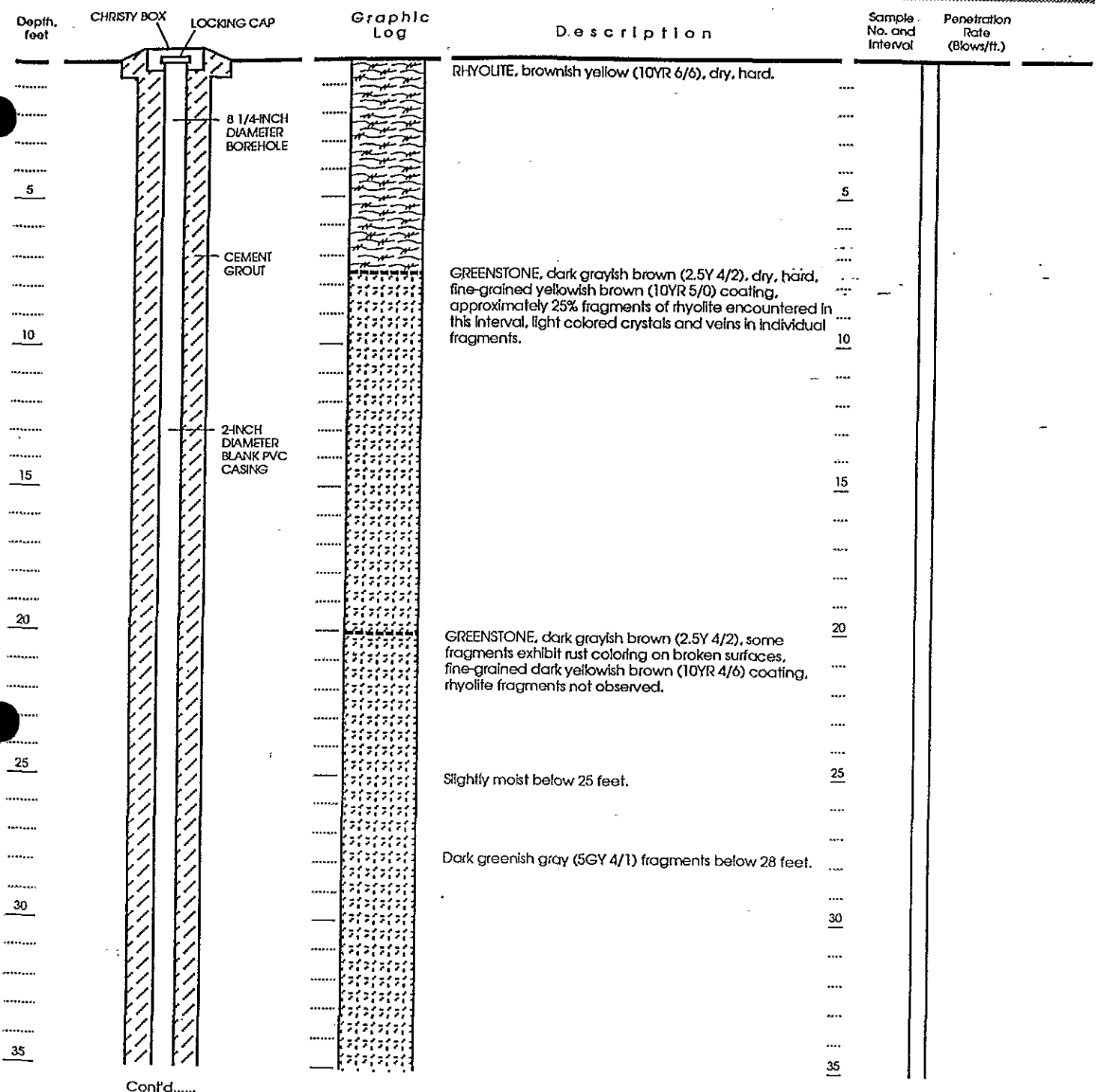


Figure B-3 : WELL CONSTRUCTION AND LITHOLOGY FOR WELL LF-3 (page 1 of 3)

Project No. 2622.04

CHP20SEP92MP

LEVINE•FRICKE
ENGINEERS, HYDROGEOLOGISTS & APPLIED SCIENTISTS

WELL CONSTRUCTION

LITHOLOGY

SAMPLE DATA

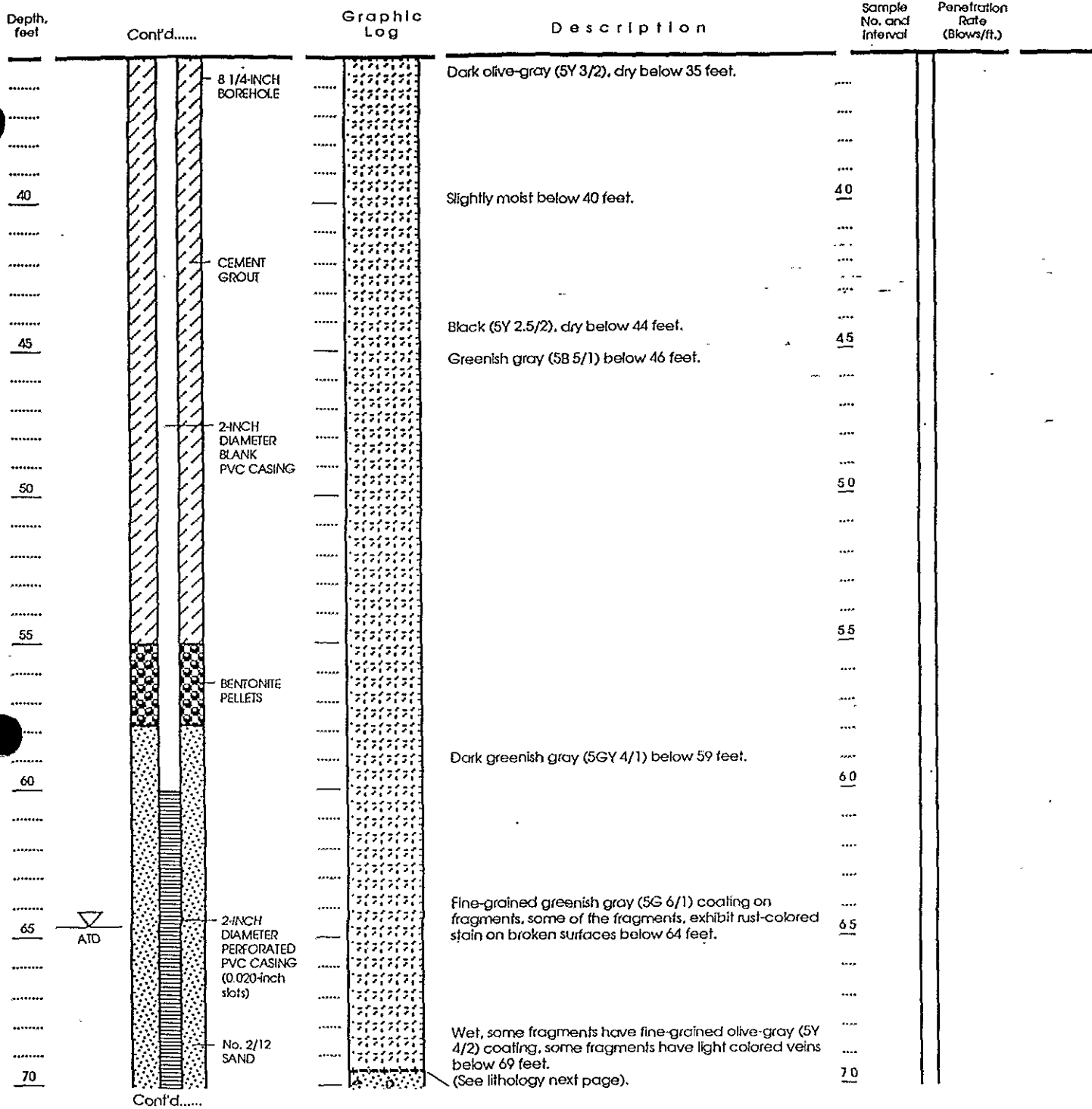
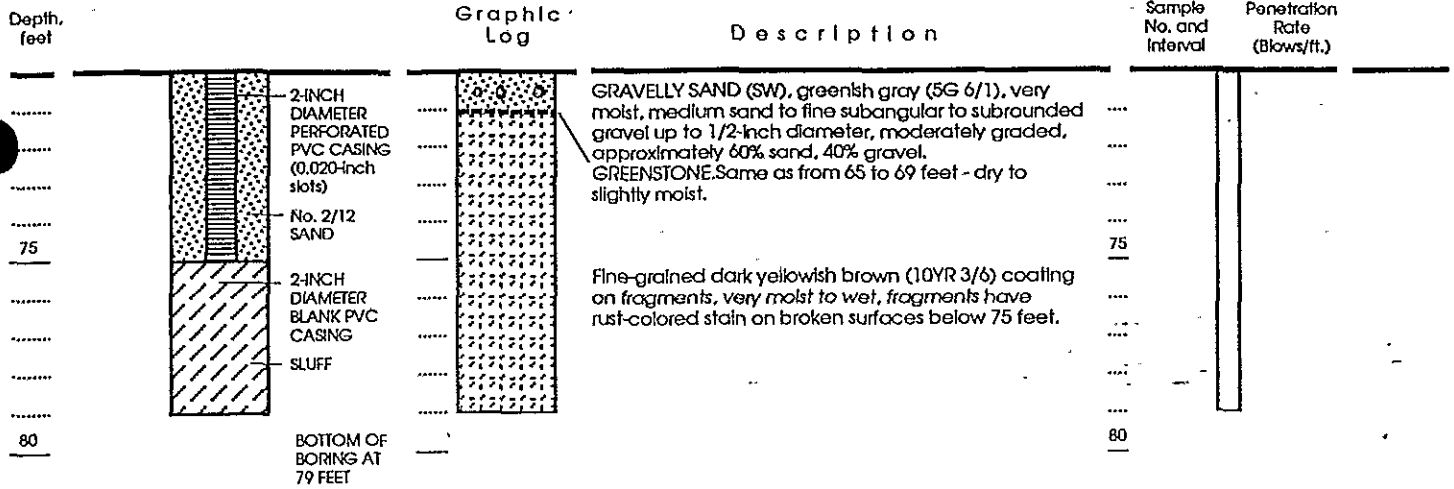


Figure B-3: WELL CONSTRUCTION AND LITHOLOGY FOR WELL LF-3 (page 2 of 3)

WELL CONSTRUCTION

LITHOLOGY

SAMPLE DATA

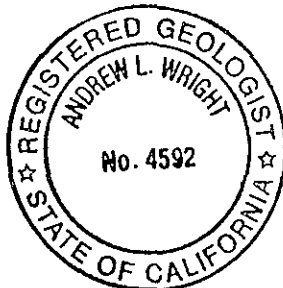


EXPLANATION

- Clay
- Silt
- Sand
- Gravel
- Greenstone

Well Permit No.: 92390
 Date well drilled: September 2, 1992
 Well Elevation: Approx. 545 ft. msl
 Sampling Method: Cuttings
 LF Geologist: Charles Pardini

Water level at time of drilling
 ATD



Approved by:

AW

Figure B-3 : WELL CONSTRUCTION AND LITHOLOGY FOR WELL LF-3 (page 3 of 3)

192

01-548 I

D2SD3W03J02

WELL CONSTRUCTION

LITHOLOGY

SAMPLE DATA

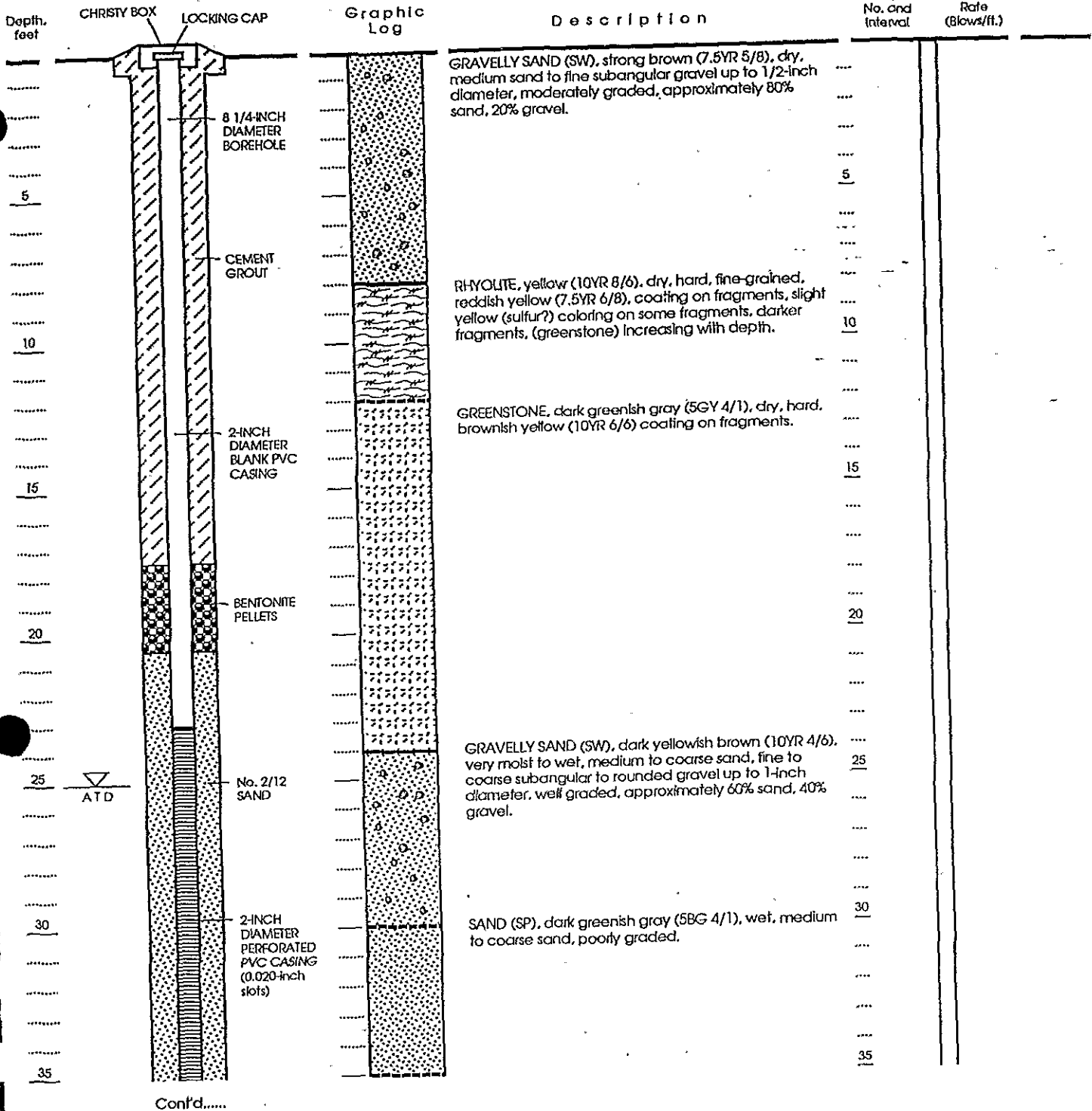


Figure B-2 : WELL CONSTRUCTION AND LITHOLOGY FOR WELL LF-2 (page 1 of 2)

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01-548I

02503W03J02







WELL CONSTRUCTION

LITHOLOGY


SAMPLE DATA

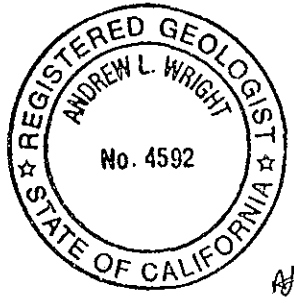
Depth, feet	Conf'd.....	Graphic Log	Description	Sample No. and Interval	Penetration Rate (Blows/ft.)
.....	2-INCH DIAMETER PERFORATED PVC CASING (0.020-inch slots)	8 1/4-INCH BOREHOLE	GREENSTONE, dark greenish gray (5BG 4/1), slightly moist, fine-grained, greenish gray (5GY 6/1) coating on fragments, medium to coarse sand, fine-grained greenish gray (5BG 6/1) coating on fragments below 38 feet.		
.....	No. 2/12 SAND			
.....	SLUFF			
40	BOTTOM OF BORING AT 39 FEET			40	

EXPLANATION

-  Clay
-  Silt
-  Sand
-  Gravel
-  Rhyolite
-  Greenstone

Well Permit No.: 92390
 Date well drilled: September 8, 1992
 Well Elevation: Approx. 435 ft. msl
 Sampling Method: Cuttings
 LF Geologist: Charles Pardini

 Water level at time of drilling
 ATD



Approved by:

ALW

Figure B-2 : WELL CONSTRUCTION AND LITHOLOGY FOR WELL LF-2 (page 2 of 2)

1462

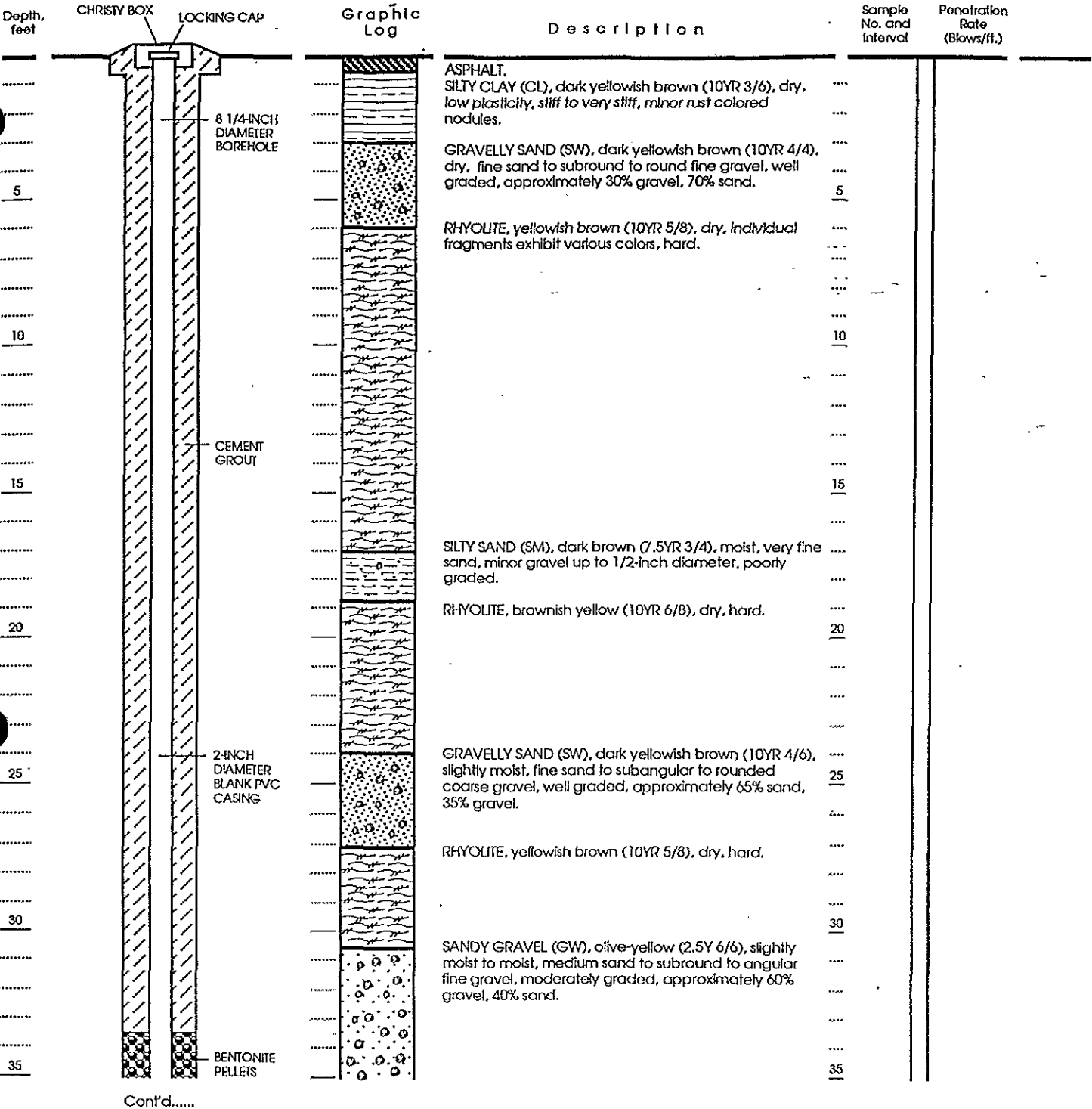
01-548H

02S03W03J01

WELL CONSTRUCTION

LITHOLOGY

SAMPLE DATA



Cont'd.....

Figure B-1: WELL CONSTRUCTION AND LITHOLOGY FOR WELL LF-1 (page 1 of 2)

652-4500

Project No. 2622.04

LEONA SULPHUR MINES

LEVINE•FRICKE ENGINEERS, HYDROGEOLOGISTS & APPLIED SCIENTISTS

CHP28SEP92MP

Per. 92390

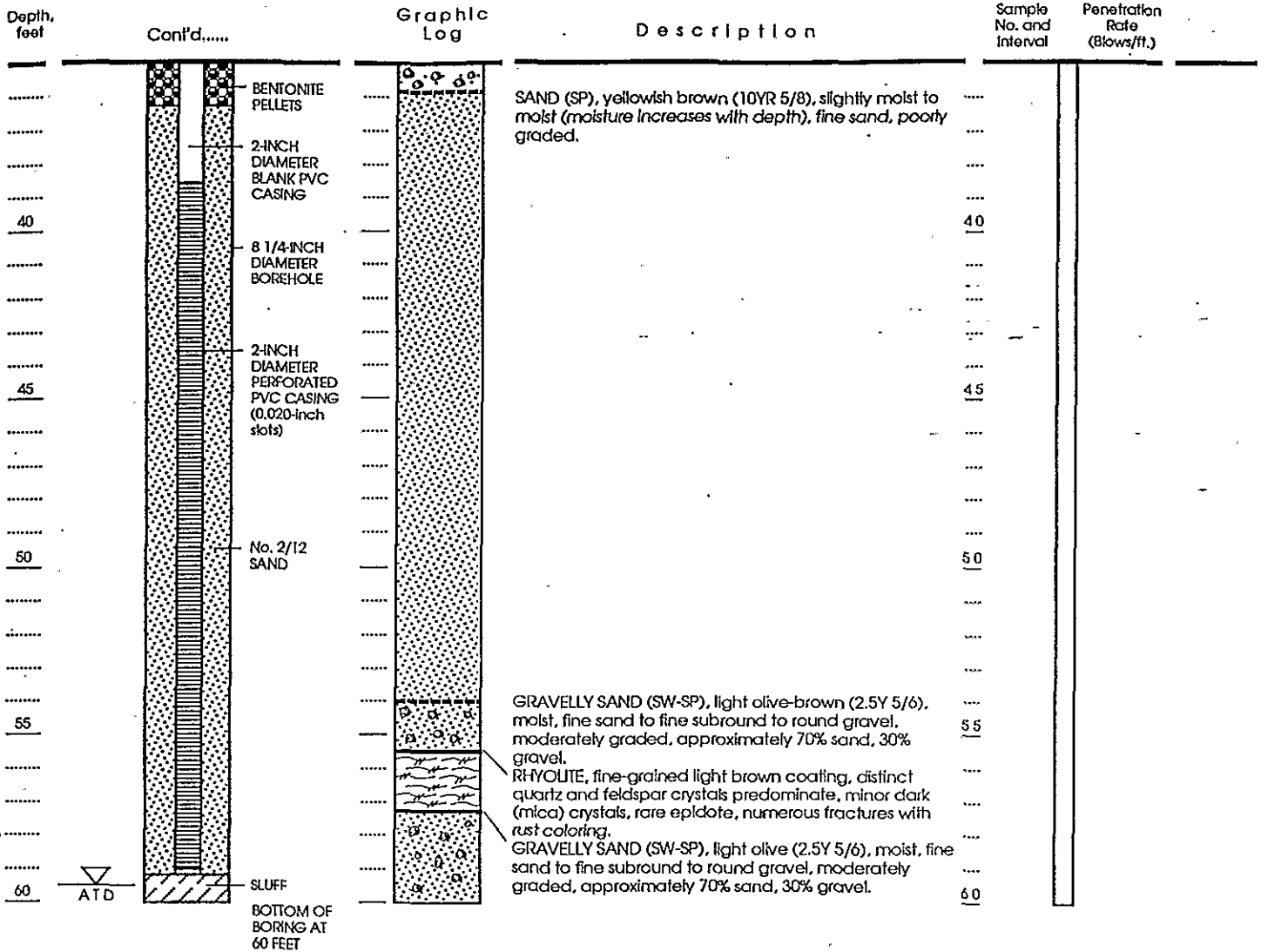
(McDonnell Ave.)

Leona St. 1/2 Mtn. View Ave.






272
WELL CONSTRUCTION

01-548H
LITHOLOGY


02503W03J01
SAMPLE DATA

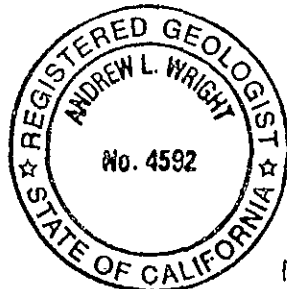


EXPLANATION

-  Clay
-  Silt
-  Sand
-  Gravel
-  Rhyolite

Well Permit No.: 92390
 Date well drilled: September 1, 1992
 Well Elevation: Approx. 340 ft. msl
 Sampling Method: Cuffings
 LF Geologist: Charles Pardini

 Water level at time of drilling



Approved by: *[Signature]*

Figure B-1 : WELL CONSTRUCTION AND LITHOLOGY FOR WELL LF-1 (page 2 of 2)

DEPARTMENT OF WATER RESOURCES

CENTRAL DISTRICT
3251 S Street
Sacramento, CA 95816
(916) 227-7632
(916) 227-7600(Fax)

NORTHERN DISTRICT
2440 Main Street
Red Bluff, CA 96080
(530) 529-7300
(530) 529-7322 (Fax)

SAN JOAQUIN DISTRICT
3374 E. Shields Ave Ste A7
Fresno, CA 93726
(559) 230-3300
(559) 230-3301 (Fax)

SOUTHERN DISTRICT
770 Fairmont Avenue
Glendale, CA 91203
(818) 500-1645 ext. 233
(818) 543-4604 (Fax)

**WELL COMPLETION REPORT RELEASE REQUEST AND CONFIDENTIALITY AGREEMENT
REGULATORY-RELATED ENVIRONMENTAL CLEANUP STUDY**

Well Completion Reports associated with wells located within two miles of an area affected or potentially affected by a known unauthorized release of a contaminant will be made available upon request to any person performing an environmental cleanup study associated with the unauthorized release, if the study is conducted pursuant to a regulatory agency order (Water Code Section 13752).

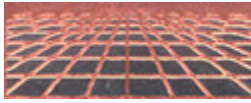
Requests must be made on the form below, signed and submitted to the appropriate DWR District Office. Please provide the township, range, and section of the property where the study is to be conducted. Attach a map or a sketch with a north arrow, and provide as much identifying information requested below as possible; additional paper may be attached if necessary.

By signing below, the requester acknowledges and agrees that, in compliance with Section 13752, the information obtained from these reports will be kept confidential and will not be disseminated, published, or made available for inspection by the public. Copies obtained must be stamped **CONFIDENTIAL** and kept in a restricted file accessible only to authorized personnel. These reports must not be used for any purpose other than for the purpose of conducting the environmental cleanup study.

Project Name: ARCO #6002County: AlamedaStreet Address: 6235 Seminary AvenueCity: OaklandTownship, Range, and Section: 37°46'49.37"N, 122°10'28.70"W
(Include entire study area and a map that shows the area of interest.)Radius: 0.25 mile
(maximum 2 miles)Requester's Company: ARCADIS USRegulatory Agency Name: Alameda County Environmental HealthRequester's Name (please print): Ben McKennaAgency Contact Name (please print): Paresh KhatriAddress: 2033 North Main Street, Suite 340Address: 1131 Harbor Bay ParkwayCity, State, and Zip Code: Walnut Creek, CA, 94596City, State, and Zip Code: Alameda, CA 94502Signature: Signature: 

Digitally signed by Paresh Khatri
DN: cn=Paresh Khatri, o=Alameda County
Environmental Health, ou=Local Oversight Program,
email=Paresh.Khatri@acgov.org, c=US
Date: 2010.08.12 15:27:45 -0700

Title: Project GeologistTitle: Hazardous Materials SpecialistTelephone: (925) 296-7857Telephone: (510) 777-2478FAX: (925) 274-1103FAX: (510) 337-9335Date: 08/13/2010Date: August 12, 2010E-mail: Benino.McKenna@arcadis-us.com E-mail: paresh.khatri@acgov.org



ULS SERVICES CORP

GEOMARKOUT LOCATING CO a trade name of ULS

Work Order Agreement

SEATTLE / PORTLAND/ ALASKA/ SAN DIEGO/ LA / SAC

WWW.ULSSERVICES.COM

WWW.GEOMARKOUT.COM

CORPORATE ADDRESS / INQUIRIES

P.O. Box 724, Pocatello, ID 83204 (Mail only)

1465 Los Altos Way, Pocatello, ID 83201 (Parcels only)

Ph. (208) 234-1441 (800) 301-4420 FAX (208) 234-1507

FIELD SERVICES:

SEATTLE/PORTLAND/SACRAMENTO:

1 866 804-5734

SOCAL 1 800 528-8206

Job Site Location 6235 SEMINARY RD.		Job PO TO		FIELD SERVICES: SEATTLE/PORTLAND/SACRAMENTO: 1 866 804-5734 SOCAL 1 800 528-8206				
City, State OAKLAND, CA		Job Date 9 JULY 2010						
CLIENT ARCADIS US		1000 – 1230 + .5 HR report						
ADDRESS				LABOR HOURS W/REPORT/ HRS				
CITY, STATE, ZIP SF, CA				FAXED				
PHONE/FAX				TELEPHONED				
E-MAIL				HAND DELIVERED				
E-MAIL				E-MAILED				
WORK REQUESTED: UTILITY LOCATE-PRESCREENING AT THREE PROPOSED CPT LOCATIONS (ONE ZONE ALONG WEST SIDE SITE) AT ACTIVE STATION. GENERATE REPORT.								
WORK PERFORMED			PRELIMINARY REVIEW OF CLIENT PROVIDED UTILITY DRAWINGS/AS-BUILTS: SS MAPS					
VISUAL SITE INSPECTION (MANHOLES, DRAINS): SURFACE ONLY			EMPCL CONDUCTIVE UTILITY SURVEY: CHECK GAS: X ELECTRIC: X COMM.: X WATER: X					
EMIMD METAL DETECTION SURVEY : AMBIENT NOISE AND SETTINGS			EM INSERTION : NF					
<table border="1"> <tr> <td>LOW NOISE</td> <td>GAIN 7.5</td> <td>LOW ELV</td> </tr> </table> OPTIMUM VERY HI SETTINGS ACHIEVED			LOW NOISE	GAIN 7.5	LOW ELV			
LOW NOISE	GAIN 7.5	LOW ELV						
GPR NON-CONDUCTIVE SURVEY: YES T GOOD RESPONCE			CLIENT ON-SITE REVIEW OF FINDINGS: YES					
GENERAL LIMITATIONS								
<p>NOTE: The work described herein is performed to industry standards (or higher) using multiple methodology and QA/QC protocol. ULS cannot guarantee the accuracy or the ability to detect all underground facilities and potential interferences. Non-conductive or conductive utilities/facilities may not be detected due to variables and constraints beyond ULS control. Where known, constraints and limitations will be brought to the client's attention. Excavation work may result in injury to persons and/or damage to facilities. Client and/or excavator are advised to take all steps necessary to avoid contact with underground facilities. This includes, but is not limited to, safe digging practices, hand tooling in congested areas and within two feet on side of marked utilities (distance may vary by law), utility drawing review, site facilities representative review, and "one-call" utilities notification. ULS and its representatives are not responsible for injury to persons or damage to facilities. This document and accompanying pages will be delivered to the client before commencement of intrusive work for the client's review. If any questions arise, please notify our office immediately.</p> <p>NOTE: Specific comments/limitations/constraints, known and recognized will be recorded on attached pages (field notes). Caution – some facilities (conductive or non- conductive) may not be detected. Not all limitations and constraints may be recognized.</p>								
SIGNATURE OF ULS REPRESENTATIVE ON-SITE M BENEDICT				PAGE OF 1 1				

ULS SERVICES CORPORATION

GEOMARKOUT LOCATING Co a tradename

SAN DIEGO-LA . SF-SAC . SEATTLE . ALASKA . HAWAII-GUAM
 1 (800) 528 - 8206 www.geomarkout.com 1 (866) 804 - 5734
 A Veteran Owned Small Business

GEOMARKOUT

a trade name of ULS Services Corp (23 years Anv)

**6235 SEMINARY RD., OAKLAND, CA
 9 JULY 2010**

METHODS AND GENERAL OBSERVATIONS:

ARRIVED SITE, SET UP BEACONS AROUND VEHICLE AND NEAR ENTRY WAY CLOSE TO WORK AREA. WENT OVER WORK PERMIT WITH CLIENT. MADE GENERAL SITE WALK TO REVIEW SURVEY AREA WHERE PROPOSED ZONE IS (WEST SIDE SITE)... CHECKED FOR SURFACE UTILITY MANIFESTATIONS SUCH AS VALVES, METERS, CONDUITS, TRENCHING SEAMS, VAULT LIDS AND EXISTING ONE CALL MARKINGS. METHODS UTILIZED INCLUDE: EM PIPE AND CABLE LOCATION USING AMBIENT, GROUND INDUCTION AND CONNNECTION MODE SWEEPS. EM INDUCTION METAL DETECTION AND GPR. GPR RUN ACROSS ZONE AND EACH PROPOSED LOCATION. OBSERVATIONS ARE MARKED WITH WHITE AND PINK PAINT. MARKED OUT ZONE IS WHITE BOX AS WELL (REFER TO PHOTOS).

UTILITY LOCATION (MARKOUT)

A CARTISIAN GRID PATH IS WALKED ACROSS THE SURROUNDING AREA OF PROPOSED ZONES USING EM PIPE AND CABLE LOCATION (EMPCL), EM INDUCTION METAL DETECTOR (EMIMD). AND GPR. DURING EMPCL SURVEY, AMBIENT, GROUND INDUCTION, AND CONNECTION MODES ARE UTILIZED. EMIMD METAL DETECTOR BACKGROUND EM NOISE IS LOW AND VERY HIGH SETTING AND LOW SCAN ELEVATION IS USED, ALLOWING FOR OPTIMUM DETECTION IN ASPHALT AREAS AWAY FFROM METAL INTERFERENCE. A MAGNETIC GRADIOMETER IS ALSO UTILIZED. GPR PENETRATION AND RESOLUTION IS ALSO FAIR TO GOOD.

SEE OBSERVATION COMMENTS TO RIGHT SIDE AND BELOW>

X	SITE WALK
X	VISUALS
X	ONECALL /DIG ALERT RECALL?
X	UTILITY MAINS
X	ELECTRIC TRENDS OFF POLE NE CORNER AND ALONG SIDEWALK NSIDE TURNS INTO SITE UP TO WEST SIDE BLDG.
X	TELEPHONE SAME UP TO NW CORNER BLDG
X	NAT GAS NO METER
X	WATER FIRE SPRINKLER
X	SEWER/STORM SEWER NOT KNOWN MAY TREND EAST OR NORTH - NW (CAUTION NEAR NW CORNER)
X	STORM DRAINS trend east
	WATER CAUTION METER AT SIDEWALK NORTH SIDE. SIGNAL MIXED WITH E AND TEL.
X	
X	OTHER CAUTION SIGN CONDUCT AND UNKNOWN IN ZONE
X	FUEL SYSTEM OUT OF AREA TO EAST
	TANKS/LIMITS N/A
	PUMPS/VISUAL NA
	CONDUIT
	PIPING
	VENTS

GEOMARKOUT

a trade name of ULS Services Corp (23 years Any)

6235 SEMINARY RD., OAKLAND, CA

9 JULY 2010

GENERAL OBSERVATIONS.

MAIN UTILITIES

MAIN ELECTRIC TO BLDG RUNS OFF POLE AT NE CORNER AND FOLLOWS SIDEWALK NORTH SIDE SITE BEFORE TURNING IN TOWARDS WEST SIDE BLDG. TEL IS SIMILAR UP TO NORTH – NW CORNER BLDG. **NAT GAS** MAIN DOES NOT EXIST AT BLDG.. **WATER** METER EXISTS AT SIDEWALK NEXT TO ENTRY POINT FOR E AND TEL. EM DIRECT CONNECT IS POOR AND WATER PIPE SIGNAL IS MIXED WITH TEL AND ELT. WATER NOT CONFIRMED BUT APPEARS TO TREND INTO BLDG FROM METER. STORM DRAIN CATCH BASIN NORTH OF ZONE DRAINS EAST FROM INLET BASED ON GPR DATA. DRAIN IS CLOGGED.. CAUTION SEWER LATERAL PIPE NOT KNOWN, MAY TRENDI EAST OR NORHT TO ROADS. **CAUTION** NEAR NORTH END ZONE IN THE EVENT IT DRAINS NW..

SECONDARIES

SIGN AT NW CONRER APPEARS TO BE ASSOCIATED WITH A SIGNAL TRACED SE TOWARD NW CORNER OF BLDG. A SECOND UNKNOWN SIGNAL IS ALSO OBSERVED TRENDING N-S THRU THE MID SECTION OF ZONE (SEE PHOTOS)

SPECIFIC OBSERVATIONS AND COMMENTS OR CONCERNS:

PROPOSED ZONE MARKOUT AREA WEST SIDE

CAUTION OF UNKNOWN SIGNAL TRACE AND SIGN CABLE. CAUTION FOR UNDETECTED SEWER LATERAL.

END REPORT / REFER TO PHOTOS /

**SAWCUT, JACKHAMMAR AIRKNIFE AND DRIVE/ DRILL CAREFULLY ALL LOCATIONS.
ADVISE LOCATING ENERGY ISOLATION SHUTOFF FOR FUEL, WATER, ELEC, AND NAT GAS.**

MWB 9 JULY 2010



AIRCADIS / VLS
9 JULY 10 MNB

MARKOUT FOR PROPOSED
CPT LOCATIONS
6235 SEMINARY RD













STOP

WEAK SIGNAL















REBAR
THRUOUT
1'x1' spacing?
}





EMAIN





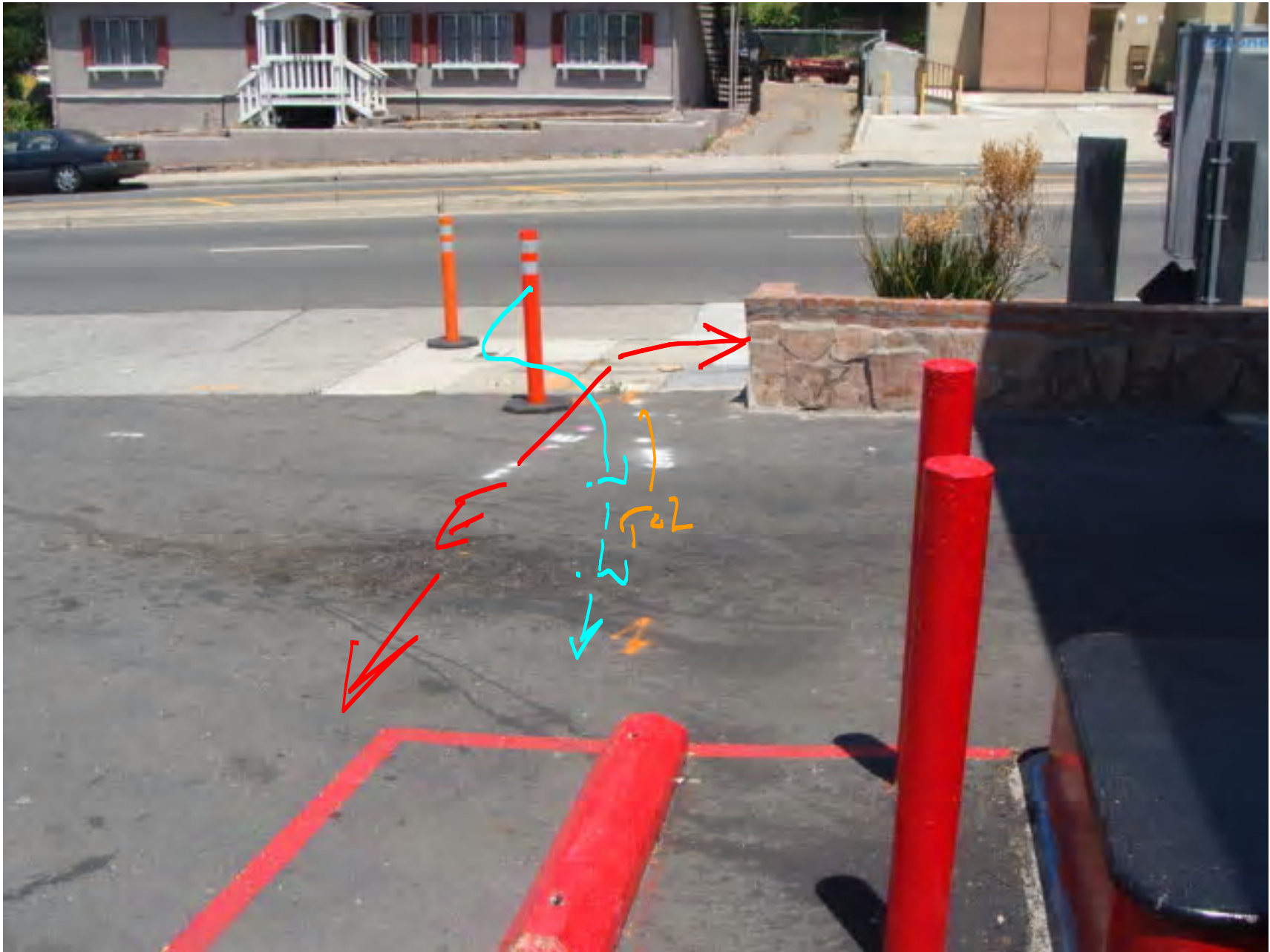
← E MIN
TO ROAD

N NORTH

E

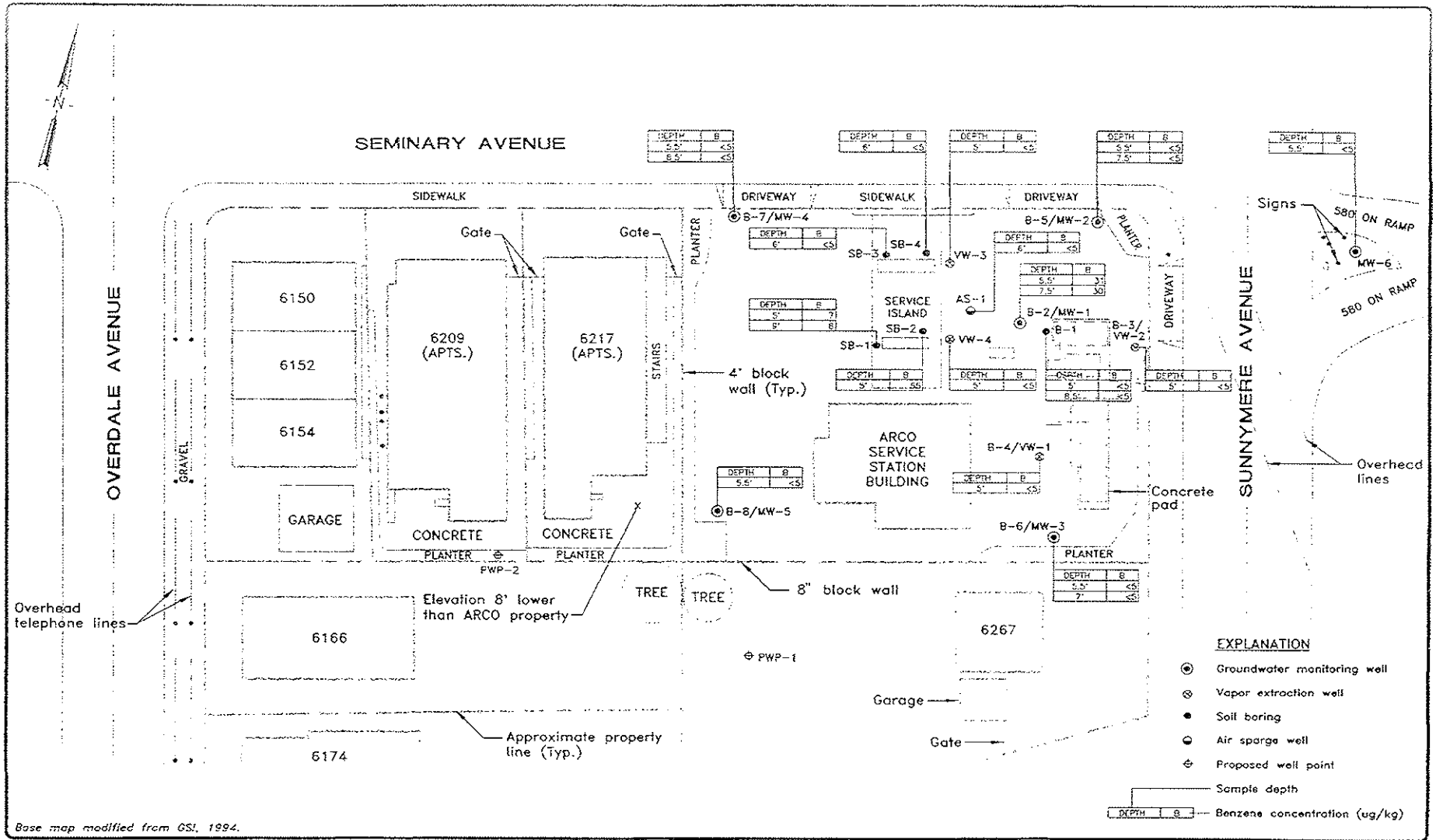
MONSTER ENERGY







S:\805-151\BENZ REV 0 01/26/96 09:14:38 DD DJ



Base map modified from GSI, 1994.



SCALE: 0 30 60 FEET

ARCO PRODUCTS COMPANY
 SERVICE STATION 6092, 6235 SEMINARY AVE.
 OAKLAND, CALIFORNIA

BENZENE CONCENTRATIONS IN SUBSURFACE SOIL (3 TO 9 FEET BGS)

FIGURE NO.

6

PROJECT NO.
 805-151.07

R/W MAPS S-919
CONST DET S-956

2" F S B-05170
2" & IRR B-05168 (A-D)
1" A-6629
6218
DIV OF HWYS
146096
6224
1.0" A-16638
6238

KUHNLE

24SMM64
38128-B

12" EMERGENCY OUTLET
W-8541
P42364

216235

20SMM64
38128-C
6SMM63
38129-F

2" AV
6" BOPT

SEMINARY AVE
E-15379
6C29

85052
6235
76612
6225
76450
6217
82088
6209
158021
6150
1.0"

6SMM63
38129-E

A-6630
6250
2"
DIV OF HWY

146083
6155-59
159142
6151-55
16726
6" BO
69

OVERDALE AVE
20SMM27
E-1413
6" BOPT

PA 2002942

98558
20SMM27
W-9607
P43557

154790
6167
78975
6175
80887
6183
288
289
297

73133
6166
127754
6174
77082
6182
A-73221
6190
6" BOPT

105314
6267
149658
6273

SUNNYMERE

105315
6281

105311
6268
152832
6288
40
104652
4007
105313
4001
45788
6A81
104368
6285
105316
6289
261
105317
3935

S

M

O

ENGINEERING STANDARD PRACTICE

ESP	251.1
EFFECTIVE	31 JAN 89
SUPERCEDES	15 NOV 79

SUBJECT:

PIPE DESIGNATIONS FOR 100 FT/IN DISTRIBUTION AND SERVICE MAP

PURPOSE

The size, kind, lining, coating, and year of pipe installation are presented on the 100 ft. per inch Distribution and Service Maps with the designation scheme described here.

PIPE SIZE

Main size will be shown to the nearest whole inch of net inside diameter.

KIND, LINING AND COATING

LETTER CODE	KIND	LINING	COATING
A - Asbestos Cement		M - Mortar or Cement	M - Mortar or Cement
C - Cast Iron		B - Insulating Material: Epoxy,	B - Insulating Material
D - Ductile Iron		Asphaltic, Coal	BM - Insulating Material with Mortar Overcoat
K - Copper		Tar, etc.	MB - Mortar with Insulating Overcoat
N - Non-metallic, plastic, etc.		U - Unlined	PE - Polyethylene Coating
W - Wrought Iron			PP - Polypropylene Coating
L - Reinforced Concrete Cylinder			TW - Tape wrapped
R - Reinforced Concrete Non-Cylinder			
S - Steel			
T - Pretensioned Concrete Cylinder			
P - Prestressed Concrete Cylinder			

The pipeline description will then be expressed in a one, two, three or four letter code. The first position will invariably indicate the kind of pipe. If the pipe is bare, this will be the only position used. The second position will describe the lining. Again, if there is no coating, there would be only two positions. The third and fourth positions will describe the coating and/or an overcoat when used.

YEAR OF INSTALLATION

The year of installation will be indicated with the last two digits from the year.

PIPE DESIGNATION

A standard grouping of these designations will be used throughout. The first element in the group will be size expressed in numerals; the second element will be the one, two, three or four position letter code describing kind, lining and coating; and the third element will be the year of installation, again in numerals.

E-104*

ENGINEERING STANDARD PRACTICE

ESP	251.1
EFFECTIVE	31 JAN 89
SUPERCEDES	15 NOV 79

SUBJECT:

PIPE DESIGNATIONS FOR 100 FT/IN DISTRIBUTION AND SERVICE MAP

EXAMPLES

6A53	6" I.D. Asbestos Cement installed in 1953
8C36	8" I.D. Cast Iron bare pipe installed in 1936
12CM28	12" I.D. Cast Iron mortar lined but no coating installed in 1928
16SUM08	16" I.D. Steel Pipe unlined but mortar coated installed in 1908
24SMB56	24" I.D. Steel Pipe mortar lined and coal-tar enamel coating installed in 1956
53SMM52	53" I.D. Steel Pipe mortar lined and coated installed in 1952
60T63	60" I.D. Pretensioned concrete cylinder pipe installed in 1963
36SMBM62	36" I.D. Steel Pipe mortar lined and coated first with an insulating coating followed by a mortar overcoat installed in 1962
16SMPP78	16" I.D. Steel Pipe mortar lined and polypropylene coated installed in 1978


C. V. WAY
Chief Engineer

E-104 • 12



**EAST BAY MUNICIPAL UTILITY DISTRICT
ENGINEERING SERVICES DIVISION
MAIL SLOT 503**

DATE: 9/1/2010

SEND TO: Arcadis U.S., Inc.

FAX NUMBER:(925) 274-1100

FILES TRANSMITTED (including this cover sheet): (1)PDF

FROM: Eric West, Drafter III , Mapping Unit
Phone: (510) 287-1876
Fax: (510) 287-1260
E-mail: ewest@ebmud.com

ATTENTION: Ines de Sainte Marie

SUBJECT: Map Request

Dear Ines,

Attached is the map area you requested. Please note that these enlargements are at no specific scale. Let me know if you need any further assistance.

By receipt of requested documents, the DOCUMENT RECIPIENT agrees that he or she, and/or any other authorized representatives of the DOCUMENT RECIPIENT, will provide no copy (nor partial copy) to any other person or agency, will not redistribute any document to any other entity, business or individual, nor use the document for other than the specified purpose. At the point the document is no longer required for use by the DOCUMENT RECIPIENT, the data shall be returned to the District or destroyed.

Very truly yours,

Eric West

Re: Attachments - Maps are to be used for general reference purposes only. The data was not compiled nor intended to be used to determine, establish, or reestablish a legal boundary or location of fixed works. Posted revisions include data that may be proposed, unverified or otherwise tentative in nature. EBMUD is not responsible for any errors that may be contained herein. If discrepancies are found please notify the EBMUD Mapping Unit.

Appendix F

Alameda County Environmental
Health Case Closure Summary

DRAFT

Alameda County Environmental Health

**CASE CLOSURE SUMMARY
LEAKING UNDERGROUND FUEL STORAGE TANK – LOCAL OVERSIGHT PROGRAM**

I. AGENCY INFORMATION

Date: November 30, 2010

Agency Name: Alameda County Environmental Health	Address: 1131 Harbor Bay Parkway
City/State/Zip: Alameda, CA 94502-6577	Phone: 510.668.4411
Responsible Staff Person: Paresh Khatri	Title: Groundwater Resources Engineer

II. CASE INFORMATION

Site Facility Name: Former BP Service Station #6002		
Site Facility Address: 4190 Mowry Avenue, Fremont, CA		
RB Case No.: 01-0113	Local Case No.: RO0000163	LOP Case No.: RO0000163
URF Filing Date:	Global ID No.: T0600100105	APN: 37A-2770-6-3
Responsible Parties	Addresses	Phone Numbers
Atlantic Richfield Company	P.O. Box 1257, San Ramon, CA 94583	(925) 275-3801

Tank I.D. No	Size in Gallons	Contents	Closed In Place/Removed?	Date
Unknown	4,000	Gasoline	In Place	1996-Present
Unknown	4,000	Gasoline	In Place	1996-Present
Unknown	6,000	Gasoline	In Place	1996-Present
Unknown	6,000	Gasoline	Removed	1996
Unknown	6,000	Gasoline	Removed	1996
Unknown	4,000	Gasoline	Removed	1996
Unknown	4,000	Gasoline	Removed	1996
Piping			Removed	February 1996

Four USTs (one 15,000-gal, one 12,000-gal, and two 6,000-gal) were installed in 1982. An August 1986 tank test indicated the 12,000-gal tank storing unleaded gasoline was leaking at approximately 10 gph. The results from the other three tanks came back as "tight". Subsequent annual tank tests of all four tanks came back as "tight" (EMCON Northwest, 1994).

III. RELEASE AND SITE CHARACTERIZATION INFORMATION

Cause and Type of Release: Exact release source is unknown; upon excavation in 1996 the USTs were described as being in good condition with no obvious holes or leaks.	
Site characterization complete? Yes	Date Approved By Oversight Agency: TBD

DRAFT

Monitoring wells installed? Yes	Number: 9	Proper screened interval? yes
Highest GW Depth Below Ground Surface: 17.84 feet (below top of casing)	Lowest Depth: 5.04 feet (below top of casing)	Flow Direction: predominately west
Most Sensitive Current Use: municipal and domestic water supply		

Summary of Production Wells in Vicinity: Production wells are not present in site vicinity (1,320 feet)	
Are drinking water wells affected? No	Aquifer Name: NA
Is surface water affected? No	Nearest SW Name: Lake Aliso
Off-Site Beneficial Use Impacts (Addresses/Locations): None	
Reports on file? Yes with ACEH	Where are reports filed? ACEH & SFBRWQCB

TREATMENT AND DISPOSAL OF AFFECTED MATERIAL			
Material	Amount (Include Units)	Action (Treatment or Disposal w/Destination)	Date
Tank	two 4,000-gallon UST two 6,000-gallon UST	4,000-gallon Gasoline USTs removed in 1996; 6,000-gallon Gasoline USTs removed in 1996. Waste manifests included in UST removal report	March 1996
Piping	Unknown	Product lines removed in March 1996; waste manifest included in removal report	Piping removed on March, 1996
Free Product	None	--	--
Soil	370 Cubic Yards	Soil removed in March 1996 during product line replacement. Soil removed during Gasoline UST removal in March 1996	March 1996
Groundwater	11,500 Gallons	Groundwater pumped out of UST cavity during UST removal in March 1996	March 1996

DRAFT

MAXIMUM DOCUMENTED CONTAMINANT CONCENTRATIONS BEFORE AND AFTER CLEANUP (Please see appendices for additional information on contaminant locations and concentrations)				
Contaminant	Soil (ppm) ¹		Water (ppb)	
	Before	After ²	Before	After ²
TPHg	130 mg/kg (PL-3@ 5', 3/6/1996)	<1.0 mg/kg (MW-7@ 5', 8/6/1996)	27,000 µg/L MW-5, 2/23/1996	2,300 µg/L MW-5, 8/19/2010
TPHd	Not sampled	Not sampled	Not sampled	Not sampled
Total Oil and Grease	Not sampled	Not sampled	Not sampled	Not sampled
Benzene	0.11 mg/kg (PL-8@ 5', 3/8/1996)	<0.005 mg/kg (MW-7@ 5', 8/6/1998)	2,500 µg/L VW-4, 5/10/1996	<0.50 µg/L MW-5, 8/19/2010
Toluene	0.057 mg/kg (PL-8@ 5', 3/8/1996)	<0.005 mg/kg (MW-7@ 5', 8/6/1998)	250 µg/L MW-5, 5/30/1995	0.55 µg/L MW-5, 8/19/2010
Ethylbenzene	0.21 mg/kg (PL-3@ 5', 3/6/1996)	<0.005 mg/kg (MW-7@ 5', 8/6/1998)	1,600 µg/L MW-5, 2/23/1996	1.7 µg/L MW-5, 8/19/2010
Xylenes	0.14 mg/kg (SB-2@ 5', 6/25/1995)	<0.005 mg/kg (MW-7@ 5', 8/6/1998)	1,900 µg/L MW-5, 3/15/1995	<1.0 µg/L MW-5, 8/19/2010
MTBE	Not sampled	Not sampled	43,000 µg/L ³ VMW-4, 5/10/1996	6.3 µg/L ⁴ VW-4, 8/19/2010
Lead	Not sampled	Not sampled	Not sampled	Not sampled

¹ Soil results are from samples collected at depths of 5 feet bgs or shallower.
² After results are represented by the maximum concentration on site.
³ Other fuel oxygenates (groundwater [µg/L] before cleanup): TBA 5,400 µg/L (VW-4), DIPE <0.50 µg/L, ETBE 5.4 µg/L (VW-4), TAME <0.50 µg/L, 1.2-DCA <0.50 µg/L, EDB 0.61 µg/L (MW-5), ethanol <100 µg/L
⁴ Other fuel oxygenates (groundwater [µg/L] after cleanup): TBA 140 µg/L (VW-4), DIPE <0.50 µg/L, ETBE <0.50 µg/L, TAME <0.50 µg/L, 1.2-DCA <0.50 µg/L, EDB <0.50 µg/L, ethanol <100 µg/L

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IV. CLOSURE

Does completed corrective action protect existing beneficial uses per the Regional Board Basin Plan? Yes		
Does completed corrective action protect potential beneficial uses per the Regional Board Basin Plan? Yes		
Does corrective action protect public health for current land use? It does not appear that the release would present a significant risk to human health based upon current land use and conditions.		
Site Management Requirements: City of Oakland Building Department will be notified if excavation or development of the site be proposed that impacted soil or groundwater may be encountered, Alameda County Environmental Health must be notified as required by Government Code Section 65850.2.2.		
Should corrective action be reviewed if land use changes? NA		
Was a deed restriction or deed notification filed? No		Date Recorded: --
Monitoring Wells Decommissioned: Upon Case Closure Approval	Number Decommissioned: All	Number Retained: None
List Enforcement Actions Taken: NA		
List Enforcement Actions Rescinded: NA		

V. ADDITIONAL COMMENTS, DATA, ETC.

<p>Considerations and/or Variances:</p> <p>Low levels of residual soil and groundwater contamination remain onsite (refer Tables 1 and 2 below); however, these concentrations do not pose a significant risk because soil vapor is not a threat and the entire site is capped.</p> <p>Conclusion:</p> <p>ARCADIS requests approval for case closure and no further action at this site based on the following:</p> <ul style="list-style-type: none"> • The sources of petroleum hydrocarbons at this site have been removed. The absence of high concentrations observed during excavation activities in soil samples suggests that secondary sources (residual hydrocarbons in soil) were identified and removed. The concentration of hydrocarbons remaining in place does not warrant additional investigation or remediation. • All the wells that contain (or recently contained) TPHg concentrations (the maximum concentration is 2,300 µg/L) in groundwater indicate a decreasing concentration trend. • All the wells that contain (or recently contained) MTBE concentrations in groundwater (the maximum concentration is 6.3 µg/L) indicate a decreasing trend. • Concentrations of BTEX are all below the reporting limits. • Current site conditions suggest the MTBE and TPHg plumes are limited to the western site boundary in the vicinity of MW-5. • The plume does not appear to be migrating, as evidenced by the results of groundwater samples collected in MW-7 and MW-8.

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- The site has been adequately characterized.
- No sensitive receptors are likely to be impacted, including surface-water bodies, municipal wells and drinking water sources.
- The site presents no current or potential risk to human health or the environment.

VI. LOCAL AGENCY REPRESENTATIVE DATA

Prepared by: Paresh Khatri	Title: Hazardous Materials Specialist
Signature:	Date:
Approved by:	Title:
Signature:	Date:

This closure approval is based upon the available information and with the provision that the information provided to this agency was accurate and representative of site conditions.

VII. REGIONAL BOARD NOTIFICATION

Regional Board Staff Name: Cherie McCaulou	Title: Engineering Geologist
RB Response:	Date Submitted to RB:
Signature:	Date:

VIII. MONITORING WELL DECOMMISSIONING

Date Requested by ACEH: TBD	Date of Well Decommissioning Report: TBD	
All Monitoring Wells Decommissioned: TBD	Number Decommissioned: TBD	Number Retained: TBD
Reason Wells Retained: TBD		
Additional requirements for submittal of groundwater data from retained wells:		
ACEH Concurrence - Signature:	Date:	

Attachments:

1. Tables 1 and 2 (comparison of maximum residual contamination to applicable ESLs or approved cleanup goals).
2. Site figures provided in Case Closure Summary Report.
3. Analytical data tables for soil, groundwater, depth to groundwater, etc. are provided in Case Closure Summary Report.
4. Boring logs/monitoring well construction details are provided in Appendix B of the Case Closure Summary Report.

This document and the related CASE CLOSURE LETTER & REMEDIAL ACTION COMPLETION CERTIFICATE will be retained by the lead agency as part of the official site file.

Environmental Impacts in Groundwater
 BP 6002
 6235 Seminary Avenue, Oakland, California

Table 1. Comparison of Most Current Maximum Residual Soil Concentrations at the Site to Relevant Cleanup Standards (mg/kg)

	TPHg (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)	MTBE (mg/kg)	TPH-DRO (mg/kg)
Current Maximum Residual Soil Concentrations at Site^{1,3}	<1.0 mg/kg (MW-7 @ 5', 8/6/1996)	<0.005 mg/kg (MW-7 @ 5', 8/6/1998)	<0.005 mg/kg (MW-7 @ 5', 8/6/1998)	<0.005 mg/kg (MW-7 @ 5', 8/6/1998)	<0.005 mg/kg (MW-7 @ 5', 8/6/1998)	--	--
RWQCB, Region 2 ESLs¹	83²	0.044²	2.9²	3.3²	2.3²	0.023²	83²

Notes:

¹ Regional Water Quality Control Board, San Francisco Bay Region (RWQCB) Environmental Screening Levels (ESLs) *Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater*, Water Board, May 2008.

² ESL value for Shallow Soils (≤ 3 meters bgs) where groundwater is a current or potential source of drinking water-commercial/industrial land use (Table A).

³ Depth to water ranges between 5.04 feet and 17.84 feet below top of casing; therefore, all soil results are from sample depths of 5 feet or shallower.

Environmental Impacts in Groundwater
 BP 6002
 6235 Seminary Avenue, Oakland, California

Table 2. Comparison of Most Current Maximum Residual Groundwater Concentrations at the Site to Relevant Cleanup Standards (µg/L)

	TPH-GRO (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L) (µg/L)	TPH-DRO (µg/L)
Maximum Residual Groundwater Concentrations at Site	2,300 MW-5, 8/19/2010	<0.50 (all active monitoring wells)	0.55 MW-5, 8/19/2010	1.7 (MW-5, 8/19/2010)	<1.0 (all active monitoring wells)	6.3 (VW-4, 8/19/2010)	--
RWQCB, Region 2 ESLs¹	100²	1.0²	40²	30²	20²	5.0²	100²

Notes:

¹ Regional Water Quality Control Board, San Francisco Bay Region (Water Board) Environmental Screening Levels (ESLs) *Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater*, Water Board, May 2008.

² ESL value for Shallow Soils (≤ 3 meters bgs) where groundwater is a current or potential source of drinking water-commercial/industrial land use (Table A).