November 4, 2010

Paresh Khatri
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502

Subject: **Authorization To Sign On Behalf of Ms. Kanwaljit Sappal**
6211 San Pablo Avenue
Oakland, California
AEI Project # 280346
Fuel Leak Case RO0000127

Dear Mr. Khatri:

This letter has been submitted to inform you that I (Ms. Kanwaljit K. Sappal) am the owner of the property located at 6211 San Pablo Avenue in San Pablo, California, and that Jeremy Smith of AEI Consultants is authorized to sign reports and correspondence submitted to the Alameda County Health Care Services Agency on my behalf. I declare, to the best of my knowledge, that the information and/or recommendations contained in the attached document are true and correct.

If you have any additional questions or require additional information, please contact me at (707) 553-1200.

Best Regards,

Kanwaljit Sappal

cc: Mr. Jeremy Smith – AEI Consultants

October 5, 2010

WELL INSTALLATION & FEASIBILITY STUDY REPORT

6211 San Pablo Avenue
Oakland, California

AEI Project No. 280346

Prepared For

Mr. Pritpaul Sappal
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Prepared By

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AEI

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1.0 INTRODUCTION

AEI has prepared this report on behalf of Mr. Pritpaul Sappal (client) for the property located at 6211 San Pablo Avenue, Oakland, California (Figure 1: Site Location Map). AEI has been retained by the client to provide environmental engineering and consulting services relating to the release of petroleum hydrocarbons from the use of underground storage tanks (USTs) at the property. The ongoing investigation and remediation of the release is being performed under the direction of the Alameda County Health Care Services Agency (ACHCSA). AEI submitted the "Feasibility Study/Corrective Action Plan Addendum" to the ACHCSA on September 29, 2009. The addendum was approved by the ACHCSA in a letter dated October 22, 2009. This report has been prepared to document and summarize the methods and findings of the recent installation and sampling activities and to evaluate the proposed remedial options. In summary, this report contains the following:

- A summary of the historic and current site conditions.
- Details of the installation, survey, and sampling activities for offsite wells MW-7 through MW-10.
- Details of the installation and sampling activities for soil vapor probes SG-4 through SG-8.
- Details of the pilot testing activities for both soil and groundwater remediation alternatives, which included Bio-venting and sparging.
- A low risk closure evaluation for the subject site.

2.0 SITE DESCRIPTION AND HISTORY

The subject property is located at 6211 San Pablo Avenue, northwest of the intersection of San Pablo Avenue and 62nd Street in a mixed residential and light commercial area of Oakland, California (Figure 1 and 2). The site currently consists of a retail gasoline station with three USTs dispensing gasoline fuel through six dual-sided fuel dispensing islands. Site features are included in Figure 3.

In April 1999, three borings B-1 through B-3 were advanced at the site by Herschy Environmental, Inc. (Herschy). Significant concentrations of hydrocarbons were present in the soil and groundwater samples collected during the investigation. Subsequently, in June 1999, five additional soil borings were advanced (B-4 through B-8) at the site. Based on the data collected during the investigation, it was determined that additional assessment was necessary as the lateral extent of the contamination had not been determined. Therefore, in October 1999 monitoring wells MW-1 through MW-3 were installed and a groundwater monitoring program was initiated.

In November 2001, monitoring wells MW-4 through MW-6 were installed and borings B-9 through B-14 were advanced on the property. Based on the data obtained, it was determined that additional wells were necessary offsite and interim remedial action was required, therefore a

workplan was prepared for the implementation of both. The offsite monitoring wells were not installed by Herschy due to difficulty obtaining an encroachment permit with the City of Oakland.

In an effort to remediate hydrocarbons at the site, five air sparge wells (AS-1 through AS-5), thirteen vapor extraction wells (VE-1 through VE-13), and one groundwater extraction well (EX-1) were installed in January 2004. In addition, well MW-1R was installed to replace well MW-1. In February 2004, three 10,000 gallon USTs and associated product piping were removed and replaced (with the current UST system) at the site. During construction activities, approximately 1,100 tons of soil and 40,000 to 60,000 gallons of groundwater was removed from the site and properly disposed of.

A soil vapor extraction (SVE) system was installed and was operational from August 31, 2006 through November 19, 2007. Initially the system operated utilizing a thermal oxidizer; however, due to low influent concentrations, the system was modified to run in catalytic mode only during January and February 2007. Shortly thereafter, it was determined that hydrocarbon removal was reaching asymptotic levels. Therefore, on May 7, 2007, a dual phase extraction (DPE) pilot test was attempted in order to determine if SVE coupled with DPE would increase removal. The test was halted after 4 hours due to high temperatures (outside the catalytic oxidizer operating range) and increasing influent concentrations. Subsequently, after acquiring the proper equipment, on February 5 and 6, 2008, the DPE test was performed for approximately 13 hours. Following the test, Herschy concluded that the limited data suggested that DPE may be a viable option. DPE was never implemented and the SVE system was removed by Herschy in August and September 2008.

In August 2007 borings DP-1 and DP-3 were installed at and in the vicinity of the site. Several offsite borings were expected to be completed, however, they were not performed for a variety of reasons. In September 2008, consulting responsibilities were transferred to AEI Consultants. AEI submitted the requested revised Site Conceptual Model (SCM) dated October 8, 2008 which updated a proposed scope of work to complete additional offsite characterization for the site. Approval for the completion of the work was issued in a letter from the ACHCSA dated October 16, 2008.

On November 24 through November 26, 2008 AEI advanced ten shallow soil borings (DP-4, SB-5, SB-7 to SB-14) in the vicinity of the subject property and four deep soil borings (DDP-1 to DDP-4) at the subject property. In addition, three nested soil vapor probes (SG-1 through SG-3) were installed at the site. Data obtained during the investigation further validated the known need for offsite monitoring wells in the vicinity of the site.

The locations of all former and current site features, including previous boring locations, are included on Figures 2 and 3. Historical analytical and sampling results are included in Tables 1 to 7.

3.0 GEOLOGY AND HYDROGEOLOGY

Sediments encountered during the November 2008 investigation were generally classified as fine grained sediments (a combination of silt and clay) just below the asphalt surface to depths ranging from approximately 5 to 11 feet below ground surface (bgs). Grain size distribution analysis of samples encountered from this zone indicated approximately 7% to 21% sand, approximately 40% silt, and approximately 37% to 53% clay. The fine grained silty clay was underlain by a sandy, gravelly silt/clay with varying amounts of fine to coarse grained sand and minor gravel to depths ranging from approximately 11 feet bgs to 17 feet bgs (the terminus of several of the shallow borings). Grain size distribution analysis of select sediments encountered from this zone indicated approximately 4% to 26% gravel, 44% to 58% sand, and 29% to 36% fine grained silt and clay. Deep borings advanced at the site identified interbedded layers of silt and well graded sand and gravel to the maximum depth explored, 40 feet bgs. Laboratory reported physical properties of soil conditions are included on Table 4.

Sediments encountered during the recent investigation (February 2010) generally confirmed the 2008 investigation findings and were classified as fine grained (silty clay) with varying amounts of sand and gravel throughout to depths ranging from approximately 5 to 11 feet bgs. A general increase in silt and sand content was observed beneath the silty clay in the majority of the borings with interbedded layers of silt. A well graded gravelly sand layer was observed in MW-7 from 24.5 to 26.5 feet bgs, in MW-8 from 19.5 to 23 feet bgs, and MW-9 from 10 to 11 feet bgs. The well graded gravelly sand was underlain by silt or clay to the maximum depth explored (30 feet bgs in MW-7). A detailed description of encountered soils is included in the soil borings (Appendix A) as well as the Fence Diagrams as Figures 4 and 6.

The 2008 investigation identified shallow groundwater as being present at depths ranging approximately from 11 to 14 feet bgs, and stabilizing between 5 feet to 10 feet bgs. In deep borings DDP-2 through DDP-4, deep groundwater (past 20 feet bgs) was not collected. Several potential water producing zones were identified during drilling, however the zones may be described as slow producing and upon setting screens in these borings at varying depths from 25 to 40 feet bgs, measurable groundwater was not present after approximately 1 hour. In boring DDP-1, a hydropunch screen was open from 32 to 40 feet bgs; however, it was initially dry. After approximately 3 hours, groundwater was measured at 28 feet bgs.

The recent investigation (February 2010) identified shallow groundwater at depths ranging from 10 to 12 feet bgs in MW-7 through MW-9. Shallow water was measured in MW-10 at a depth of approximately 4 feet bgs. Borings MW-7 and MW-8 were advanced beyond the first identified water producing zone in order to investigation deeper groundwater for vertical delineation. A second water producing zone was identified based on field observations at approximately 20.5 to 24.5 feet bgs in MW-7 and 19.5 feet bgs in MW-8.

Groundwater during the recent monitoring episode on February 23, 2010 ranged from 0.98 to 6.67 feet below the top of casing or 26.06 to 30.31 feet above mean sea level (amsl). The direction of the groundwater flow during the February 23, 2010 sampling event was towards the west with an estimated overall hydraulic gradient of 0.01 feet/foot, relatively consistent with

historical data. Groundwater elevation and flow data is included on Table 5 and 6 as well as Figure 7.

4.0 MONITORING WELL INSTALLATION

Prior to initiating drilling activities, well construction permits (permit numbers W2010-0058 through W2010-0061) were obtained from the Alameda County Public Works Agency (ACPWA), and encroachment permits (application numbers X1000155 through X1000158) were obtained from the City of Oakland. Copies of the permits are included in Appendix B. Following permit approval, drilling activities were scheduled and Underground Service Alert-North (USA North) was notified to locate possible underground utilities in the area. On February 11 and February 12, 2010, AEI advanced four soil borings (MW-7 through MW-10) at the property, and converted the borings into groundwater monitoring wells.

4.1 Soil Sampling

The monitoring wells were installed with a direct push combo drilling rig, capable of running 8¼-inch diameter hollow stem augers. Prior to sampling, each boring was hand augured to approximately 5 feet bgs to clear for possible underground utility locations. The boreholes were advanced to depths of approximately 30 feet bgs (MW-7), 25 feet bgs (MW-8), and 15 feet bgs (MW-9 and MW-10). Soil samples were continuously collected with 1" diameter acrylic liners using a dual walled, direct push Geoprobe technique. Soil samples were examined and logged using the Unified Soil Classification System (USCS) and screened in the field using a PID. At approximately 4 foot intervals, AEI personnel cut a soil sample from the liner, sealed it with Teflon tape and plastic caps, and placed it in a cooler filled with water ice. The samples were transported under appropriate chain-of-custody documentation for potential analysis to McCampell Analytical Inc., (DOHS Certification Number 1644) of Pittsburg, California. Select soil samples were analyzed for total petroleum hydrocarbons as gasoline (TPHg) by EPA Method 8015, benzene toluene, ethylbenzene, and xylenes (collectively referred to as BTEX) by EPA Method 8021B, and fuel oxygenates by EPA Method 8260B. Field observations and screening data is presented on the borings logs in Appendix A.

4.2 Groundwater Grab Sampling - Soil Borings

Borings MW-7 and MW-8 were advanced to a depth of 30 feet bgs and 25 feet bgs, respectively. These borings were advanced past first encountered groundwater (approximately 11 to12 feet bgs) for the collection of a "deep" groundwater sample in the second water bearing zone. Since monitoring wells were to be installed within the first water producing zone, a groundwater sample was not collected from this "shallow" zone. Using dual walled, direct push sampling methods, the first groundwater zone was sealed off and upon encountering saturated sediments within the second water producing zone (approximately 21 feet bgs), a temporary ¾" diameter factory-slotted poly-vinyl chloride (PVC) casing was inserted into each of the borings to facilitate the collection of groundwater samples. New materials were used in each boring to avoid possible cross-contamination. Groundwater samples were collected using a check valve with dedicated, disposable tubing into 40-ml volatile organic analysis (VOA) vials. The

groundwater samples were capped so that there was no head space or visible air bubbles within the vials and labeled with a unique identifier and immediately placed in a cooler with wet ice and delivered to the designated laboratory.

4.3 Soil Sampling Results

A total of four soil samples were analyzed from soil borings MW-7 and MW-8 and three soil samples were analyzed from soil borings MW-9 and MW-10. The soil samples were reported to contain TPHg, benzene, and methyl tert butyl ether (MTBE) (the primary constituents of concern) as follows:

- MW-7 was reported to contain TPHg at a concentration of 220 milligrams per kilogram (mg/kg) at 8 feet bgs, however TPHg was not detected at or above the laboratory detection limit in the samples collected from 14.5 feet bgs, 19.5 feet bgs, and 29.5 feet bgs. Benzene was not detected at or above the laboratory detection limit in any of the soil samples analyzed from boring MW-7. MTBE was detected in MW-7 at a concentration of 0.19 mg/kg and 0.59 mg/kg at the depth of 14.5 feet bgs and 19.5 feet bgs, respectively, however did not contain MTBE at or above the laboratory detection limit in the soil samples from 8 feet bgs and 29.5 feet bgs.
- MW-8 was reported to contain TPHg at a concentration of 19 mg/kg and 1.8 mg/kg at 4.5 feet bgs and 9.5 feet bgs, respectively, however TPHg was not detected at or above the laboratory detection limit in the samples collected from 14.5 feet bgs and 19.5 feet bgs. Benzene was not detected at or above the laboratory detection limit in any of the soil samples analyzed from boring MW-8. MTBE was detected in MW-8 at a concentration of 0.40 mg/kg at the depth of 14.5 feet bgs, however did not contain MTBE at or above the laboratory detection limit in the soil samples from 4.5 feet bgs, 9.5 feet bgs, and 19.5 feet bgs.
- TPHg and benzene were not detected at or above the laboratory detection limit in any of the soil samples analyzed from boring MW-9. MTBE was detected in MW-9 at a concentration of 0.027 mg/kg at the depth of 14.5 feet bgs, however did not contain MTBE at or above the laboratory detection limit in the soil samples from 5.5 feet bgs and 9.5 feet bgs.
- MW-10 was reported to contain TPHg at a concentration of 64 mg/kg and 1.9 mg/kg at 6 feet bgs and 9.5 feet bgs, respectively, however TPHg was not detected at or above the laboratory detection limit in the sample collected from 14.5 feet bgs. Benzene and MTBE were not detected at or above the laboratory detection limit in any of the soil samples analyzed from boring MW-10.

Soil analytical data is displayed on Table 1 and Figure 8. A copy of the laboratory analytical reports is included in Appendix C.

4.4 Groundwater Grab Sampling Results

One “deep” groundwater sample was analyzed from MW-7 and MW-8 which was collected from the apparent second water bearing zone at approximately 21 feet bgs. The groundwater samples

were reported to contain TPHg, benzene, and MTBE (the primary constituents of concern) as follows:

- MW-8(D) was reported to contain TPHg and MTBE at a concentration of 54 micrograms per liter (µg/L) and 570 µg/L, respectively. Benzene was not detected at or above the laboratory detection limit.
- MW-7(D) did not contain TPHg, benzene, or MTBE at or above the laboratory detection limit.

Groundwater analytical data is displayed on Table 2 and 7 as well as Figure 9. A copy of the laboratory analytical reports is included in Appendix C.

4.5 Monitoring Well Installation

Following soil sampling activities, each of the boreholes were over drilled by advancing 8¼-inch diameter hollow stem augers to a depth of approximately 15 to 16 feet bgs in order to install the monitoring wells. Boreholes drilled deeper than 15 feet bgs (MW-7 and MW-8) were backfilled to approximately 15 feet bgs with bentonite pellets prior to well installation activities. The monitoring wells were constructed by placing a 2" diameter, schedule 40 PVC casing with 10' of factory slotted 0.020-inch well screen through the augers. An annular sand pack (consisting of clean #3 Monterey Sand) was installed through the augers to approximately 0.5 feet above the screened interval. A 1.5 foot bentonite seal was placed above the sand and hydrated with water while the remainder of each boring was sealed with neat cement grout. A flush mounted traffic rated well box was installed over the casing, and an expanding, locking inner cap was placed on the casing top. The drilling and well installation work was performed under the ACPWA permit guidelines. DWR well registration forms (DWR Form 188) have been completed for each of the wells and have been forwarded to the ACPWA.

Soil cuttings generated during the drilling and well installation activities, as well as purged groundwater and decontamination water, were stored on-site in sealed, labeled, department of transportation approved, 55-gallon drums and removed from the site by A&S Environmental.

5.0 WELL DEVELOPMENT AND SAMPLING

The newly installed monitoring wells were developed by surging, bailing, and purging the wells to remove accumulated fines from the casing and stabilize the sand pack on February 17, 2010. The wells were developed with the attempt to purge each well until water had cleared up and measurements including pH, conductivity, and temperature had stabilized.

AEI measured the depth to groundwater in the well network (MW-1R, MW-2 through MW-10, and EX-1) on February 23, 2010. The wells caps were first removed from each well, allowing the groundwater to equilibrate with the atmosphere. The depth to water from the top of each well casing was measured with an electric water level indicator prior to sampling. The wells were also checked for the presence of light non-aqueous phase liquid (LNAPL) using an oil/water interface meter,

however LNAPL was not detected in any of the wells. The wells were then purged by using a submersible pump and groundwater samples were collected using clean, unused disposable plastic bailers. The following parameters were measured during purging: temperature, pH, specific conductivity, dissolved oxygen (DO) and oxidation-reduction potential (ORP). At least three well volumes of water were removed from the wells that were sampled. Once the wells had recharged to at least 90% of the original water level, a water sample was collected. Groundwater field sampling forms are included in Appendix D.

Groundwater was collected into 40 ml VOA vials and capped so that neither headspace nor air bubbles were visible within the sample containers. Samples were transported on ice under proper chain of custody protocol to McCampbell Analytical, Inc. of Pittsburg, California (Department of Health Services Certification #1644).

The groundwater samples were collected and analyzed for TPHg (EPA Method 8015Cm), and BTEX and MTBE, by EPA Method 8021B. The groundwater samples were also analyzed for tert-Amyl Methyl Ether (TAME), tert-Butanol (TBA), di-isopropyl ether (DIPE), ethyl tert-butyl ether (ETBE), 1,2-Dichloroethane (1,2-DCA), ethylene dibromide (EDB), and MTBE by EPA method 8260.

5.1 Field Results

No free product was encountered during monitoring activities during the February 23, 2010 sampling events. Groundwater elevations during the recent monitoring episode ranged from 26.06 to 30.31 feet above mean sea level (amsl). The groundwater was on average 2.03 feet higher then during the previous event. The direction of the groundwater flow during the February 23, 2010 sampling event was towards the west with an estimated overall hydraulic gradient of 0.01 feet/foot, relatively consistent with historical groundwater flow data. This data includes readings from the newly installed monitoring wells MW-7 through MW-10. Groundwater elevation data is summarized in Table 5 and 6, and a groundwater elevation map is included as Figure 7.

5.2 Groundwater Quality

A summary of dissolved hydrocarbons detected in the groundwater samples during the February 23, 2010 sampling event is as follows:

- Monitoring well MW-1R was reported to contain TPHg, benzene, and MTBE at concentrations of 3,200 µg/L, 31 µg/L, and 3.9 µg/L, respectively. These concentrations are generally higher than last quarter, however relatively similar to historical concentrations.

- Monitoring well MW-2 was reported to contain TPHg, benzene, MTBE, and TBA at a concentration of 170 µg/L, 9.4 µg/L, 14 µg/L, and 36 µg/L, respectively. These concentrations represent a slight increase since the previous event, however are relatively consistent with recent data.

- Monitoring well MW-3 was reported to contain TPHg, benzene, MTBE, and TBA at concentrations of 1,700 µg/L, 22 µg/L, 4,700 µg/L, and 260,000 µg/L, respectively. These concentrations are relatively consistent with recent data, however MTBE continues to decrease and is the lowest concentration observed in MW-3 to date.

- Monitoring well MW-4 was reported to contain TPHg, benzene, MTBE, and TBA at concentrations of 15,000 µg/L, 250 µg/L, 180 µg/L, and 400 µg/L, respectively. These concentrations are generally lower than recently observed.

- Monitoring well MW-5 was reported to contain MTBE at a concentration of 1.9 µg/L, which is consistent with historical results.

- Monitoring well MW-6 was reported to contain benzene, MTBE, and TBA at a concentration of 0.66 µg/L, 5.7 µg/L, and 15 µg/L, respectively. These concentrations represent a general decrease since the last event.

- Monitoring well MW-7 was reported to contain TPHg, benzene, MTBE, and TBA at a concentration of 29,000 µg/L, 410 µg/L, 410 µg/L, and 1,500 µg/L, respectively. This is the first sampling event for this well.

- Monitoring well MW-8 was reported to contain TPHg, benzene, MTBE, and TBA at a concentration of 690 µg/L, 3.5 µg/L, 1,600 µg/L, and 24,000 µg/L, respectively. This is the first sampling event for this well.

- Monitoring well MW-9 was reported to contain MTBE and TBA at a concentration of 260 µg/L and 1,600 µg/L, respectively. This is the first sampling event for this well.

- Monitoring well MW-10 was reported to contain TPHg and MTBE at a concentration of 1,300 µg/L and 2.8 µg/L, respectively. This is the first sampling event for this well.

- Well EX-1 was reported to contain TPHg, benzene, MTBE, and TBA at concentrations of 39,000 µg/L, 1,300 µg/L, 880 µg/L, and 670 µg/L, respectively. With the exception of TBA, these concentrations, are higher than the last sampling event, however relatively similar to those seen during the historical sampling events. TBA concentrations have decreased to historical lows in the well.

Complete groundwater sample analytical data from the sampling event is included in Table 7 and select data is displayed on Figure 9. Laboratory results and chain of custody documents are included in Appendix C.

6.0 SITE SURVEY

On February 25, 2010, the well box and well casing elevations were surveyed by Milani & Associates, Concord, California; a California Registered Land Surveyor (LS No. 5311). Data from the survey was uploaded to the state GeoTracker database as required by Assembly Bill 592 and Senate Bill 1189. A copy of the well survey is included in Appendix E.

7.0 SOIL VAPOR PROBE INSTALLATION AND SAMPLING

7.1 Soil Vapor Monitoring Probe Installation

On February 11, 2010, AEI advanced five soil borings (SG-4 through SG-8) at the subject property and converted each boring into a permanent soil vapor monitoring probe. The borings were advanced by hand using direct push drilling equipment and tooling. A rotary hammer drill and solid drive point was used to created 1-½ inch diameter borehole for each probe. The total depth of each boring was approximately 4.5-feet bgs. Each soil vapor probe was constructed using the open-borehole method.

First, a bed of clean #30 Monterey sand 2 to 3-inches thick was installed at the bottom of the boring followed by installation of the soil vapor probe. Each soil vapor probe was constructed of a ½-inch outside diameter (OD) by 6-inch long stainless steel soil gas implant (#100 pore screen size) attached to ¼-inch OD by 4-foot long piece of type 316 stainless steel tubing using a ¼-inch Swagelok® compression fitting. Next, 9 to 12-inches of clean #30 Monterey sand was installed above the vapor screen to form a sandpack and 6-inches of dry granular bentonite was placed above each sand pack. Then, an annular seal consisting granular bentonite was installed and hydrated in 6 to 12-inch lifts to approximately 1-foot bgs. The remainder of each boring was sealed with cement grout. A ¼-inch Swagelok® plug valve was installed on the top of each probe to prevent intrusion of ambient air. Finally, a small flush-mounted well box was installed over each soil vapor probe. A typical soil vapor probe construction detail is shown on Figure 10.

7.2 Baseline Soil Vapor Sampling

On March 18, 2010, AEI completed a baseline soil vapor survey. The work was performed to evaluate the concentrations of hydrocarbons in soil vapor at newly installed probes as well as existing probes and to measure baseline soil gas conditions to evaluate the feasibility of Bioventing. Soil vapor samples were collected from SG-1(S/D) through SG-3(S/D) and SG-4 through SG-8 for field screening and lab analysis. Sampling activities included: 1) down-hole pressure (purge vacuum) measurements to estimate the relative soil air permeability, 2) field screening for evaluating natural attenuation potential and the feasibility of bioventing, and 3) collection of soil vapor samples for laboratory analysis.

7.2.1 Sampling Methodology

The sampling method described below was developed by AEI for the collection of soil vapor samples from lower permeability and/or pore water-saturated soils and other difficult formations, such as bedrock, where other soil gas sample collection methods and use of Summa canisters often fail.

Initially, AEI connected a Magnehelic® differential pressure gauge to each soil gas probe to check the initial soil gas pressure. Next, a new piece of 3/16-inch inside diameter (ID) by 12-inch long PVC tubing was connected to the soil gas probe using a Swagelok® compression fitting. A nylon tee was connected to the other end of the tubing. The low pressure side of a Magnehelic® differential pressure gauge was connected to the tee using a second identical piece of new PVC tubing. The other end of the second piece of PVC tubing was connected a new 12-inch long section of PharmaPure® using a straight connector. Then, the PharmaPure® tubing was secured in the peristaltic pump head. A 1-liter tedlar bag was connected to the downstream side of the peristaltic pump for collection of the soil vapor sample.

First, AEI performed a shut-in leak test by closing the plug valve at the top of the soil gas probe, turning on the peristaltic pump for a few seconds to develop vacuum in the sampling train, and then monitoring the Magnehelic® gauge for vacuum loss for at least one minute. If a leak was detected, the fittings were checked and another shut-in test was performed until no significant vacuum loss was observed. After demonstrating the sampling train was air-tight and leak-free, the peristaltic pump was turned on and operated at a relatively low flow rate of approximately 100 to 200 mL/minute. The sampling train was purged for several seconds prior to attaching the tedlar bag.

AEI collected each vapor sample into a tedlar bag until the bag was filled completely. The bag was then screened for total volatile hydrocarbons (TVH), methane, oxygen, and carbon dioxide using a RKI Instruments Eagle (Model No. 52-0206RK) Multi-gas detector. The tedlar bag containing the remainder of the vapor sample was labeled with unique identifiers, entered onto the chain of custody record, and transported to McCampbell Analytical, Inc (Department of Health Services Certification #1644) for analyses. The soil vapor samples were analyzed for TPHg by EPA Method 8015B and BTEX and MTBE by EPA Method 8021B.

7.2.2 Soil Gas Permeability

During soil vapor sampling, AEI recorded the purge vacuum using a Magnehelic gauge and noted if water was observed in the soil vapor probes, tubing, and/or tedlar bags. Groundwater and/or pore water was encountered in each of the probes with the exception of SG-2D and SG-8. The purge vacuums ranged from 30 inches of water in SG-6 to greater than 408 inches of water in SG-8, which is essentially a complete vacuum. As the purge vacuum increased, the flow rate decreased. In order for a soil vapor probe to be defined as "low-flow", a conservative value of 100 inches of water at a flow rate of 100 to 200 ml/min was used (DTSC-LARWQCB, 2003; DTSC, 2010). Purge vacuums greater than 100 inches of water and "low-flow" conditions were observed at the following probes: SG-1S, SG-1D, SG-2D, SG-3D, SG-5, SG-7, and SG-8. The flow rates were exceptionally low (less than 1 ml/min) to non-existent in SG-7 and SG-8. As a

result, "no-flow" conditions were observed at these probes and collecting soil vapor samples was not possible. Furthermore, all of the 1-liter tedlar bags with the exception of SG-2D contained approximately 10% to 50% or more water by volume. Since the soil vapor samples either contained water and/or were collected under deep vacuum, which is known to affect contaminant partitioning, none of the soil vapor samples are likely to be representative of the actual vapor-phase concentration and should not be used for potential vapor intrusion assessment. Furthermore, a significant portion of the volatile hydrocarbons measured in most of the tedlar bags was also most likely part of the dissolved-phase.

7.2.3 Soil Vapor Field Screening Results and Bioventing Feasibility

Part of the pilot study was to evaluate the feasibility of Bioventing as a potential vadose zone remedial alternative for onsite areas that were not previously excavated[1]. Because bioventing relies on aerating oxygen-depleted soil to stimulate and enhance natural biodegradation, the existing oxygen levels in the soil were measured and evaluated. TVH, methane, and carbon dioxide levels were also measured as indicators of soil and/or shallow groundwater contamination and to confirm respiration by petroleum-degrading microorganisms. Since biodegradation is not oxygen-limited at oxygen levels greater than 1 to 2% by volume, a practical design goal of Bioventing is to supply at least 5% oxygen to the entire contaminated soil volume during operation (USEPA, 1995; Leeson, 1996). As a result, if the existing oxygen levels are greater than about 5%, biodegradation is not oxygen-limited, and Bioventing may not provide any added benefit. However, other conditions, such as low soil moisture content, may also limit biodegradation. Refer to the results of the U.S. Air Force Center for Environmental Excellence (AFCEE) Bioventing Initiative, which was a 145-site nationwide bioventing pilot test program, for more information on condition that may limited biodegradation and the "lessons learned" (Leeson, 1996).

The following exhibit summarizes the soil vapor field screening results. The soil vapor field screening results are also summarized in Table 8.

[1] During the February 2004 UST system replacement activities, approximately 1,100 tons of contaminated soil was excavated and hauled off-site. The onsite target treatment zone is primarily in the west and southwest portion of the site in the vicinity of MW-1, MW-3, and MW-4.

Exhibit A: Soil Vapor Field Screening Data (March 18, 2010)

Soil Vapor Probe ID	Initial Soil Gas Pressure (in-H_2O)	Purge Vacuum (in-H_2O)	TVH (ppmv)	Methane (%)	Oxygen (%)	Carbon Dioxide (%)
SG-1S*	0.00	326	210	4.5	11.2	6.1
SG-1D*	0.00	136	>11,000	51	5.3	18.6
SG-2S*	0.00	50	880	8.5	13.2	3.1
SG-2D	0.00	190	>11,000	60	2.5	20.0
SG-3S*	0.00	93	0	0	19.2	1.0
SG-3D*	0.00	354	>11,000	78.5	0.9	>20.0
SG-4*	0.00	90	10	0	16.8	1.5
SG-5*	0.00	300	>11,000	50	1.4	13.7
SG-6*	0.00	30	80	0	20.6	1.2
SG-7*	0.00	367	NM	NM	NM	NM
SG-8*	0.00	>408	NM	NM	NM	NM

* = Water was observed in the soil vapor probe, tubing, and/or tedlar bag

NM = Not measured; soil gas sample collection not possible due to saturated soil and "no-flow" conditions

Based on this line of evidence, all of the shallowest probes (SG-1S, SG-2S, and SG-3S) screened from 2.5 to 3-feet bgs and two of the deeper probes (SG-4 and SG-6) screened from 4 to 4.5-feet bgs had more than sufficient oxygen (>10%) to support natural biodegradation. SG-1D had a minimal level of oxygen and high levels of TVH, methane, and carbon dioxide. However, three of the deeper soil vapor probes (SG-2D, SG-3D, and SG-5) had oxygen levels below the recommended 5% with high levels of TVH (>10,000), methane (≥50%), and carbon dioxide (>15%) which is generally associated with oxygen-limited biodegradation and a higher biological oxygen demand. Therefore, oxygen is a limiting factor at the deeper probes and supplying oxygen to this zone would most likely enhance biodegradation. **However, aeration by means of Bioventing may not be technically feasible because the air permeability of this zone is extremely low due to the presence of shallow groundwater and/or pore water and capillary actions. In other words, aerating saturated soil is not technically feasible unless combined with groundwater extraction to lower the water table.**

7.3 Soil Vapor Analytical Results

The soil vapor samples were reported to contain petroleum hydrocarbons as follows:

- TPHg was detected in six of the eight vapor samples at concentrations ranging from 1,100,000 micrograms per cubic meter (µg/m^3) in SG-6 to 59,000,000 µg/m^3 in SG-5. TPHg was not detected at or above the laboratory detection limit in SG-3S or SG-4.

- Benzene was detected in 5 of the 8 soil vapor samples at concentrations ranging from 1,900 µg/m^3 in SG-2S to 730,000 in SG-5 µg/m^3. Benzene was not detected at or above the laboratory detection limit in SG-1S, SG-3S, and SG-4.

- Toluene was detected in 7 of the 8 soil vapor samples at concentrations ranging from 280 µg/m^3 in SG-4 to 470,000 µg/m^3 in SG-1D. Toluene was not detected at or above the laboratory detection limit in SG-3S.

- Ethylbenzene was detected in 1 of the soil vapor samples (SG-5) at a concentration of 75,000 µg/m^3.

- Xylenes were detected in 5 of the 8 soil vapor samples at concentrations ranging from 720 µg/m^3 in SG-1S to 72,000 in SG-5 µg/m^3. Xylenes were not detected at or above the laboratory detection limit in SG-3S, SG-4, and SG-2D.

- MTBE was detected in 2 of the 8 soil vapor samples at a concentration of 7,400 µg/m^3 in SG-4 and 76,000 in SG-5 µg/m^3.

It is important to note that several of these concentrations were from vapor samples in which purge vacuums exceeded 100 inches of water (resulting in low flow conditions) and therefore may not be representative of actual soil conditions. Soil vapor analytical data is summarized on Table 3 and a copy of the laboratory analytical report with chain of custody documentation and quality control summary is included in Appendix C.

8.0 PILOT STUDY ACTIVITIES

On February 17, March 18, 2010, March 23, 2010, and April 12 through April 16, 2010, AEI conducted the pilot study activities. SVE pilot test was performed under an active Bay Area Air Quality Management District (BAAQMD) Permit to Operate (Plant No. 165113). The majority of the pilot testing activities occurred during the week of April 12, 2010. However, several site visits were necessary for site preparation. The following is a brief summary of the timeline and completion of field activities:

February 17, 2010 – AEI mobilized to the site with Foresite Utility Locating to determine which pipe from the system manifold corresponded with the actual vapor extraction well or air sparge well. The installation of the system by Herschy included air sparge wells and vapor extraction wells and associated conveyance piping connected to a common manifold at the northeast corner of the remediation system compound. Because flush-mounted well boxes were not installed, the wellheads were not accessible. The vapor extraction wells and air sparge wells were not labeled at the manifold. In addition, the entire site was resurfaced and no piping diagrams or as-built drawings were provided to AEI. Therefore, AEI attempted to identify the wells by tapping on the ground near the approximate location of each wellhead and listening at the manifold with a high-powered microphone and headset. Once the piping was identified based on field observations, it was marked at the manifold. This method was able to identify air sparge wells

AS-2 and AS-3 which were used for pilot testing. Vapor wells VE-2 and VE-3 were also identified, but to a lesser degree of certainty.

March 18, 2010 – AEI mobilized to the site to complete all baseline soil vapor probe field screening and sampling activities (Refer to Section 7.2). While at the site, AEI also fixed the electrical connections running to the existing air compressor, and completed minor modifications to the air compressor, which was used for the pilot study. In addition, AEI used air injection to further evaluate and determine if the wells identified during the February 17, 2010 microphone testing were identified correctly. Air was injected into previously identified sparge wells AS-2 and AS-3 and pressure readings were taken from nearby monitoring wells to verify that these wells were properly identified. Next, AEI injected air into two vapor extraction wells identified as potentially VE-3, but neither well was positively identified as VE-3. No pressure changes were observed in nearby monitoring points when the first well was tested. The second well tested had no flow at backpressures up to 150 psi. Upon realizing the no-flow condition, testing was immediately terminated and the backpressure was slowly relieved from this well. Excessive backpressure was observed because this well is most likely screened across saturated and essentially impermeable strata.

March 23, 2010 – AEI mobilized to the site to determine which pipe at the manifold corresponded to VE-2 and VE-3. This involved excavating pea gravel from large two concrete utility boxes to expose the pipes installed in a common trench. The utility boxes were located inside the remediation compound south of the vapor extraction well manifold. Each pipe was fitted with a brass sample port and faint sharpie markings that identified which well the pipe was connected to. After this discovery, AEI quickly identified which pipes were connected which wells by injecting air into each pipe at the manifold and checking for pressure at the corresponding sample ports. Then, AEI labeled each well at the manifold and photographed it for future reference. After the piping at the manifold was identified, AEI injected air into newly identified wells VE-2 and VE-3. During injection, pressure readings were collected from nearby monitoring points. Proper identification of VE-2 and VE-3 was confirmed by the results of the air injection and soil gas pressure monitoring tests.

April 12, 2010 – AEI mobilized to the site to set up equipment for the pilot testing activities. AEI's custom built vapor extraction and off-gas treatment system was setup on-site. The system consisted of a high pressure regenerative blower with variable speed drive and instrumentation and controls, a 55-gallon knock-out tank with high water level switch, two 200-pound activated carbon absorbers arranged in series, and ancillary equipment. AEI connected the blower system to the existing vapor extraction manifold, installed additional sample ports on the manifold, and connected the helium supply inline with air injection line.

April 13, 2010 – AEI completed the standard air sparging pilot testing and the helium tracer and recovery testing for AS-3.

April 14, 2010 – AEI completed the standard air sparging pilot testing and the helium tracer and recovery testing for AS-1.

April 15, 2010 – AEI completed the standard air sparging pilot testing and the helium tracer and recovery testing for AS-2.

April 16, 2010 – AEI demobilized the blower system and other pilot testing equipment and retrieved the pressure transducers from the monitoring wells.

8.1 Pressure and Oxygen Influence Testing

After measuring and evaluating the baseline soil gas conditions, part of the pilot study was to perform pressure and oxygen influence testing, if applicable. This test is used to estimate the permeability of the soil and to determine the oxygen radius of influence from an air injection well or vapor extraction well. This test is conducted by injecting into or extracting soil gas from a vapor extraction well and measuring the soil gas pressure and oxygen levels at various monitoring points over time. The test can be short-term (1 to 2 days) for higher permeability soils, such as gravel and sands, or long-term (2 to 4 weeks) for lower permeability soils, such as clays and silts. Because the results of the baseline soil gas survey indicated that the shallow soil was already naturally-aerated and injection of air into the deeper internal is not technically feasibly due to extremely low permeability and saturated soil conditions, pressure and oxygen influence testing was not attempted.

8.2 Air Sparging Pilot Testing

Over 3 days, AEI completed standard air sparging pilot testing and helium tracer and recovery testing on AS-1 through AS-3. The standard pilot testing activities included a 1) injection pressure versus flow rate test, 2) transient pressure response test during sparging startup and shutdown, 3) soil gas pressure and composition monitoring, 4) groundwater dissolved oxygen monitoring before and after sparging, and 5) helium tracer and recovery test. The injection pressure versus flow rate test was used to determine if the desired flow rates (1 to 5 cfm) can be achieved at reasonable pressures. The transient pressure response test was used to determine the time for the air injection to reach steady-state conditions, the general characteristics of the air distribution in the subsurface, and significance of trapped air and potential lateral migration due to stratification. Helium tracer testing was used to evaluate the distribution of helium in the subsurface and extent of vapor capture by the SVE system. The purpose of these simple field tests was to use multiple lines of evidence to determine an effective treatment radius of influence (ROI) from an air, oxygen, and/or ozone injection well.

During these tests, the following field activities were conducted:

- Pressure transducers were installed in selected monitoring wells near the air sparge well that was tested. The transducers were installed prior to air sparging startup and remained in the well for a minimum of 12 hours following air sparging shutdown.
- General groundwater physical-chemical data, including: temperature, pH, specific conductivity, DO, and ORP were collected from select monitoring wells near the sparge well that was tested. The groundwater parameters were collected prior to air sparging

startup activities using a peristaltic pump and low-flow (minimal drawdown) sampling techniques (Puls and Barcelona, 1996). Field readings were collected until the groundwater parameters stabilized. A second round of readings was collected from the same wells immediately following air sparging shutdown

- The SVE system was connected to the piping manifold and the selected vapor extraction wells near the air sparge well that was tested were opened. The vapor extraction system operated for approximately 30 to 60 minutes while soil gas pressure readings and field screening samples were collected from combined vapor influent and nearby soil gas probes. After the combined influent vapor concentration stabilized, air sparging commenced. Air sparging continued until the injection pressure reached near-equilibrium which indicated the air channels were fully developed. Influent PID readings over time are included as Figure 11 and on Table 9.
- Once near-steady air distribution was established, helium was bled into the injection line at a known flow rate and concentration. Soil gas samples were collected from the monitoring points and screened for helium to determine the lateral extent of the air distribution.
- After completing the helium tracer test, a helium recovery test was performed. First, helium was injected directly into the vapor extraction manifold to determine the 100% helium recovery concentration ($C_{100\%}$) and the helium flow rate and pressure readings were recorded. After determining the 100% helium recovery concentration, helium was injected into the sparge well and the helium cylinder pressure regulator and down-stream needle valve were adjusted to achieve the same flow rate and backpressure during the previous step. Helium injection continued until the combined influent vapor concentration stabilized. The concentration of helium in the SVE off-gas ($C_{off\text{-}gas}$) was divided by the 100% recovery concentration to determine the percent recovery.

8.2.1 AS-1 Test Details

Dissolved oxygen and other groundwater parameters were collected from monitoring wells MW-3, MW-4, and MW-5 before and immediately after the sparging test. Dissolve oxygen and other groundwater parameters were also collected from groundwater extraction well EX-1, but after the test only. Pressure transducers were deployed in wells MW-3, MW-4, and MW-5 to measure the pressure response during air sparging startup and shutdown. Vapor extraction wells VE-3, VE-4, and VE-13 were used to monitor the influent hydrocarbon vapor concentration and helium recovery. In addition, the soil gas pressure and the TVH, methane, oxygen, carbon dioxide, and helium levels in MW-3, MW-4, MW-5, EX-1, SG-3S, SG-3D, SG-5, and SG-6 were monitored periodically. The sparge test monitoring summary for AS-1 is also shown on Table 10.

8.2.2 AS-2 Test Details

Dissolved oxygen and other groundwater parameters were collected from monitoring wells MW-1R, MW-3, and MW-6 before and immediately after the sparging test. Pressure transducers were deployed in wells MW-1R, MW-3, and MW-6 to measure the pressure response during air sparging startup and shutdown. Vapor extraction wells VE-4, VE-5, VE-6, and VE-7 were used

to monitor the influent hydrocarbon vapor concentration and helium recovery. In addition, the soil gas pressure and the TVH, methane, oxygen, carbon dioxide, and helium levels in MW-1R, MW-3, MW-6, SG-1S, SG-1D, SG-2S, SG-2D, SG-4, SG-7, and SG-8 were monitored periodically. The sparge test monitoring summary for AS-2 is also shown on Table 10.

8.2.3 AS-3 Test Details

Dissolved oxygen and other groundwater parameters were collected from monitoring wells MW-1R, MW-3, and MW-6 before and immediately after the sparging test. Pressure transducers were deployed in wells MW-1R, MW-3, and MW-6 to measure the pressure response during air sparging startup and shutdown. Vapor extraction wells VE-5, VE-6, and VE-8 were used to monitor the influent hydrocarbon vapor concentration and helium recovery. In addition, the soil gas pressure and the TVH, methane, oxygen, carbon dioxide, and helium levels in MW-1R, MW-3, MW-6, SG-1S, SG-1D, SG-2S, SG-2D, SG-7, and SG-8 were monitored periodically. The sparge test monitoring summary for AS-3 is also shown on Table 10.

8.3 Air Sparging Results

As discussed previously, multiple lines of evidence were used to determine the effective treatment ROI for an air, oxygen, and/or ozone sparge well. The lines of evidence evaluated during the pilot study were 1) DO and ORP levels, 2) transient pressure transducer response data, 3) soil gas pressure data, and 4) helium distribution and recovery data.

8.3.1 Injection Pressure and Flow Rate

During air sparging activities, a flow rate of approximately 5 cubic feet per minute (cfm) was initially injected in each well. The injection began with 5 cfm in an attempt not to increase wellhead pressure above the calculated pressure at which fracturing of the aquifer could occur. This flow rate remained constant throughout the test in wells AS-2 and AS-3. A wellhead pressure up to 13.5 psig (AS-3) and 27 psig (AS-2) was initially observed. This was below the calculated potential fracturing pressure (15.3 psig) in AS-3, however above the calculated pressure in AS-2. However, it is likely that the fracturing occurred only within close proximity to the sparge well. This pressure slowly decreased in each well until after approximately 2 hours when pressure had stabilized at approximately 9 psig (AS-3) and 17 psig (AS-2).

During sparging activities in AS-1, an increase in wellhead pressure was not observed; therefore, AEI increased the flow rate to approximately 8 cfm. Following the increase of flow to 8 cfm in AS-1, a pressure increase was still not observed in the wellhead leading AEI to the conclusion that a broken well, wellhead, and/or conveyance piping was present at AS-1.

The air injection pressure for AS-1, AS-2, and AS-3 are summarized in Table 11. Plots of manifold injection pressure over time for AS-1, AS-2, and AS-3 are shown on Figure 12.

8.3.2 DO and ORP Monitoring

The first line of evidence evaluated was field measurements of DO and ORP in nearby monitoring wells before and immediately after the air sparging tests. The following exhibit summarizes the groundwater data collected from the wells for each air sparge well tests. The reported values are the final readings once the groundwater parameters stabilized. The groundwater field sampling forms are included in Appendix D.

Exhibit B: Groundwater Field Parameters: Sparge Well AS-1

Monitoring Well ID	Relative Sample Time	Temp (C^o)	pH	Electrical Conductivity (µS/cm)	DO (mg/L)	ORP (meV)
Baseline Sampling Results: AS-1						
MW-3	Baseline (~20 hrs before test)	18.75	6.61	626	1.01	80.2
MW-4	Baseline	18.00	7.09	462	0.29	-3.0
MW-5	Baseline	18.88	6.96	602	0.37	278.1
Post-Sparge Test Results: AS-1						
MW-3	Post (<1 hr)	18.27	6.64	666	0.56	78.7
MW-4	Post (<1 hr)	18.24	7.05	473	0.17	-25.4
MW-5	Post (<1 hr)	18.23	6.88	602	0.51	199.2
EX-1	Post (<1hr)	17.89	7.08	460	0.18	-24.5

The DO and ORP levels did not change significantly in any of the monitoring wells before and after sparging into AS-1. Therefore, positive communication between AS-1 and MW-3 (~50 feet away), MW-4 (~15 feet away), and MW-5 (~80 feet away) was not observed.

Exhibit C: Groundwater Field Parameters: Sparge Well AS-2

Monitoring Well ID	Relative Sample Time	Temp (C^o)	pH	Electrical Conductivity (µS/cm)	DO (mg/L)	ORP (meV)
Baseline Sampling Results: AS-2						
MW-1R	Baseline	18.17	6.92	441	4.75	78.0
MW-3	Baseline	18.94	6.72	672	0.45	58.6
MW-6	Baseline	17.53	6.83	437	0.78	98.7
Post-Sparge Test Results: AS-2						
MW-1R	Post (<1 hr)	17.55	6.68	454	3.05	256.6
MW-3	Post (< 1 hr)	18.52	6.61	701	1.63	214.3
MW-6	Post (<1 hr)	17.31	6.63	428	1.95	262.0

The DO and ORP levels increased significantly in MW-3 and MW-6 after sparging into AS-2. The DO level was higher and the ORP level was lower in MW-1R before sparging into AS-2. According to the groundwater field sampling forms, the baseline DO levels in MW-1R were initially very low (<1 mg/L) and slowly increased over time which may have been caused entrainment of ambient air in the samples. However, the ORP increased significantly in all three monitoring wells, including MW-1R. Therefore, positive communication between AS-2 and MW-1R (~40 feet away), MW-3 (~5 feet away), and MW-6 (~50 feet away) was observed.

Exhibit D: Groundwater Field Parameters: Sparge Well AS-3

Monitoring Well ID	Relative Sample Time	Temp (C°)	pH	Conductivity (µS/cm)	DO (mg/L)	ORP (meV)
Baseline Sampling Results: AS-3						
MW-1R	Baseline	17.87	6.86	563	0.53	29.0
MW-3	Baseline	18.56	6.67	697	0.44	42.6
MW-6	Baseline	17.22	6.89	377	0.32	73.4
Post-Sparge Test Results: AS-3						
MW-1R	Post (~17 hrs)	17.79	7.17	481	3.18	293.7
MW-3	Post (< 1 hr)	18.75	6.61	626	1.01	80.2
MW-6	Post (~17 hrs)	17.16	6.96	405	3.29	283.9

The DO levels increased significantly in all three monitoring wells. Therefore, positive communication between AS-3 and MW-1R (~25 feet away), MW-3 (~45 feet away), and MW-6 (~15 feet away) was observed.

8.3.3 Transient Pressure Transducer Response

The second line of evidence evaluated was the transient pressure transducer response data. Graphs of the pressure transducer response in the monitoring wells were created for each air sparge well. The pressure response graphs for AS-1 showed no response, which demonstrates that air was not being injected below the water table. This is consistent with the near zero air injection backpressure (well blow the minimum hydrostatic pressure) observed at the initiation of sparging and presumption that the sparge well and/or conveyance piping was broken and leaking. The response graphs for AS-2 and AS-3 showed response in all three wells that were monitored. The highest pressure response was measured in the monitoring well closest to the air injection well. Accordingly, the lowest pressure response was measured in the monitoring well furthest from the air sparge well.

The first area of the graph (before time = 0) shows the baseline or static pressure response prior to sparging startup. The next area of the graph shows the pressure buildup as air was being injected into the sparge well, started displacing groundwater, and began migrating upward to the vadose zone and possibly outward. The peak of the first hump indicates the maximum pressure response and point at which breakthrough occurred. This is also an indicator of the relative soil permeability but also depends on the air injection flow rate. In other words, lower, shorter-duration pressure responses on the order of a few millimeters to tens of centimeters are observed in higher permeability soils, such as gravels and sands, and higher, longer-duration pressure responses on the order of meters are observed in lower permeability soils, such as clays and silts (Leeson, 2002). The next area of the graph shows the pressure response declining back towards the baseline pressure which is the point at which the air distribution in the subsurface reached near steady state conditions. The short declining peaks within this interval correspond to soil gas pressure measurements and sample collection times and would not normally be observed if the monitoring wells remained completely sealed for the duration of the test. The steep drop in the pressure response is the point at which air sparging was stopped and the air channels began to collapse. This is usually represented by a single inverted u-shaped hump. However, since groundwater field measurements were collected after air sparging shutdown, a second inverted hump was observed after the first hump. The last area of the graph shows the time for the pressure response to return to near baseline conditions and can be used to evaluate the significance of trapped air and potential for lateral migration and pneumatic fracturing.

Overall, the pressure responses measured in the monitoring wells suggest that some (but not all) of the air may be trapped in stratified layers and could result is significant lateral migration. For example, it took over 10 hours for the pressure response to return the near-baseline conditions in MW-3 after terminating air injection into AS-2.

The transient pressure response graphs during air sparing startup and shutdown are included in Figures 13 to 15.

8.3.4 Soil Gas Pressure Monitoring

The third line of evidence evaluated was the soil gas pressure data. The soil gas pressure was measured at several monitoring points located at varying distances from the air sparing wells. All of soil gas pressure measurements, including the baseline measurements are shown in Table 12. Plots of the soil gas pressure measurements collected during sparging on AS-1, AS-2, and AS-3 are shown on Figures 16, 17, and 18, respectively. The following exhibit summarizes the soil gas pressure measurements during sparging activities:

Exhibit E: Soil Gas Pressure Data

Sparge Well AS-1			Sparge Well AS-2			Sparge Well AS-3		
Well ID	**Maximum Soil Gas Pressure (in-H2O)**	**Distance From Sparge Well**	**Well ID**	**Maximum Soil Gas Pressure (in-H2O)**	**Distance From Sparge Well**	**Well ID**	**Maximum Soil Gas Pressure (in-H2O)**	**Distance from Sparge Well**
SG-5	0.60	18’	**MW-6**	0	50’	**MW-6**	32	15’
MW-5	1.5*	80’	**MW-3**	85	6’	**SG-1S**	0	7’
MW-3	0	40’	**SG-1D**	7.5	48’	**SG-1D**	45	7’
SG-3D	6.8	17’	**SG-1S**	0.24	48’	**MW-1R**	62	23’
SG-3S	0.18	17’	**SG-2D**	40	20’	**SG-8**	0	25’
EX-1	0.11	30’	**SG-2S**	1.0	20’	**SG-7**	0.20	33’
SG-6	0.36	20’	**MW-1R**	4.0	42’	**SG-2S**	0.06	43’
MW-4	0.16	15’	**SG-4**	0	30’	**SG-2D**	0	43’
			SG-7	0.50	26’	**MW-3**	0	48’
			SG-8	0.18	52’			

*The baseline pressure was 1.5 in-H_2O and did not change significantly for the duration of the test.

The soil gas pressure did not change significantly in any of the monitoring points with the exception of SD-3D before and after sparging into AS-1. When sparging into AS-2, the soil gas pressure increased significantly in several of the monitoring points, including: MW-3 (~6 feet away), SG-1S, (~48-feet away), SG-1D (~48 feet away), SG-2D (~20 feet away), and MW-1R (~42 feet away). When sparging into AS-3, the soil gas pressure increased significantly in several of the monitoring points, including: MW-6 (~15 feet away), SG-1D (~7 feet away), and MW-1R (~23 feet away). Based on these lines of evidence, the ROI for AS-2 and AS-3 was estimated at up to 40 feet and 20 feet, respectively. The ROI for AS-1 was effectively zero because all data indicate that the well casing, wellhead, and/or conveyance piping is damaged.

8.3.5 Helium Distribution and Recovery

Following the injection of helium into the sparge wells, AEI collected tedlar bag samples from the selected monitoring points to check for the presence of the tracer gas. The helium distribution test was used to assist in ROI determination as pressure measurements alone are not sufficient to verify the lateral extent of the air distribution in the subsurface. The helium concentrations were

measured with a Marks Product (Model MGD-2002) radiodetection handheld helium detector. The helium detector was capable of measuring helium at concentrations from as low as 0.0025% to as high as 100% by volume. The following exhibit summarizes helium concentrations detected during sparging activities. Where multiple data points exist, the highest helium concentration detected has been used.

Exhibit F: Helium Distribution Data

Sparge Well AS-1			Sparge Well AS-2			Sparge Well AS-3		
Well ID	**Helium Detection (%)**	**Distance From Sparge Well**	**Well ID**	**Helium Detection (%)**	**Distance From Sparge Well**	**Well ID**	**Helium Detection (%)**	**Distance from Sparge Well**
SG-5	9.3	18’	**MW-6**	5.0	50’	**MW-6**	7.3	15’
MW-5	0	80’	**MW-3**	6.0	6’	**SG-1S**	8.5	7’
MW-3	0	40’	**SG-1D**	9.5	48’	**SG-1D**	9.4	7’
SG-3D	4.5	17’	**SG-1S**	1.9	48’	**MW-1R**	7.8	23’
SG-3S	0.96	17’	**SG-2D**	5.3	20’	**SG-8**	0.53	25’
EX-1	0.37	30’	**SG-2S**	4.5	20’	**SG-7**	0.25	33’
SG-6	0.12	20’	**MW-1R**	5.9	42’	**SG-2S**	0	43’
MW-4	0.04	15’	**SG-4**	0.25	30’	**SG-2D**	0.01	43’
						MW-3	0	48’

To evaluate the results of the helium distribution test, significant helium detection was defined as any measurement at or above 1% by volume. If greater than 1% helium was measured at a monitoring point, the sparge air and air channels most likely extended at least (and possibly beyond) this distance. Based on the results of the helium detections alone, communication between AS-1 was observed as far away as 18 feet (SG-5). Monitoring points at 15, 20, 30, 40, and 80 liner feet from AS-1 did not contain elevated helium readings. Helium was observed as far away as 50 feet (MW-6) when sparging into AS-2. However, monitoring points at 30 feet (SG-4) and 48 feet (SG-3D) did not contain significant helium detections. Communication between AS-3 was observed as far away as 23 feet (MW-1R), but monitoring points greater than 23 feet did not contain significant levels of helium. The helium distribution is summarized on Table 13 and shown on Figures 19 to 21.

The second helium test was performed to assess the recovery of sparge air and associated off-gas by the onsite SVE system. Calculations of the helium recovered by the SVE system can be used to determine if injected air is either being trapped below the water table (not captured by the SVE wells) indicating that lateral migration of the vapors may be a concern, or if the SVE wells are successful at capturing the injected air. Typically helium recovery over 80% indicates that the SVE system is performing well with regard to sparge air recovery. Based on the influent samples collected during the helium recovery test, it was calculated that approximately 90% of helium injected into AS-1 was captured by the SVE system, however this high recovery is likely due to the suspected broken well/pipe, and helium was not actually being injected into the groundwater. Helium recovery was calculated at approximately 44% for helium injected into AS-2, and approximately 4% of helium injected into AS-3 was captured by the SVE system. The helium recovery is summarized on Table 14.

8.4 Air Sparging Conclusions

8.4.1 AS-1 Conclusions

During sparging activities on AS-1, an airflow of approximately 8 cfm with near zero backpressure (<0.5 psig) was observed at the wellhead. The data gathered is indicative of a potential broken pipe, well, and/or wellhead in the ground. Therefore, data collected from this well was not used to estimate the effective ROI. Although helium was detected in some of the monitoring points (SG-5 in particular), other lines of evidence suggest this is a result of a broken pipe and helium traveling along the conveyance piping trench backfill rather then sparging communication. For instance, well MW-4 did not contain significant helium concentrations (approximately 15 feet from AS-1). Furthermore, the calculated recovery of 90% during the helium recovery test indicates that helium was likely being injected into the vadose zone rather than below the water table. In addition, monitoring wells did not exhibit a significant change in field readings (DO and ORP) after sparging into AS-1. Furthermore, pressure transducer response data did not indicate any communication between the sparge well and monitoring wells MW-3, MW-4, and MW-5.

8.4.2 AS-2 Conclusions

As previously discussed, the main objective of the air sparging pilot testing activities was to determine an effective ROI for potential injection activities at the site. The first test, DO and ORP monitoring, indicated that wells as far away as 50 feet (MW-6) observed positive communication. The second test completed, transient pressure transducer response, observed pressure changes in each of the wells monitored with the further well located approximately 50 feet away (MW-6). In addition, the injected air appears to be trapped, to some degree, in stratified layers which most likely resulted in significant lateral migration and an ROI greater than what would normally be expected for low permeability soil. The third test completed, soil gas pressure monitoring, indicated communication up to 48 feet away (SG-1S and SG-1D) resulting in an estimated ROI of up to 40 feet. The fourth test, helium distribution, indicated that communication was observed as far away as 50 feet (MW-6); however, select monitoring points

at 30 feet (SG-4) and 48 feet (SG-3D) did not contain elevated helium readings. Based on these lines of evidence, AEI has estimated an effective ROI of up to 40 feet for AS-2. Finally, helium recovery testing resulted in approximately 44% helium recovery by the vapor extraction wells which further supports the conclusion that soil stratification has resulted in significant lateral migration of injected gas and an ROI that most likely extends beyond 40-feet. However, it is unclear at this time in what direction or directions lateral migration has and will occur.

8.4.3 AS-3 Conclusions

In AS-3, the first test, DO and ORP monitoring, indicated that wells as far away as 45 feet (MW-3) observed positive communication. The second test completed, transient pressure transducer response, observed pressure changes in each of the wells monitored with the further well located approximately 45 feet away (MW-3). In addition, the injected air appears to be trapped, to some degree, which resulted in significant lateral migration. The third test completed, soil gas pressure monitoring, indicated communication up to 23 feet away (MW-1R) resulting in an estimated ROI of up to 20 feet. The fourth test, helium distribution, indicated that communication was observed as far away as 23 feet (MW-1R). Based on these lines of evidence, AEI has estimated an effective ROI of up to 20 feet for AS-3. Finally, helium recovery testing resulted in approximately 4% helium recovery by the vapor extraction wells which further supports the conclusion that soil stratification has resulted in significant lateral migration of vapors and an ROI that most likely extends beyond 20-feet. However, it is unclear at this time in what direction or directions lateral migration has and will occur.

9.0 SUMMARY AND CONCLUSIONS

The recent field work was completed in order to evaluate the feasibility of several remedial options as well as offsite groundwater conditions. In addition, pilot study activities were completed in order to further evaluate potential remedial options at the site including Bioventing and ozone sparging.

9.1 Groundwater Conditions

Groundwater during the February 2010 episode, which includes calculations from the newly installed monitoring wells, was calculated to flow towards the west with an estimated overall hydraulic gradient of 0.01 feet/foot, relatively consistent with historical data. Hydrocarbon concentrations in the onsite previously existing monitoring wells was relatively consistent with historical concentrations. Newly installed offsite wells were reported to contain TPHg, benzene, and MTBE at concentrations up to 29,000 µg/L (MW-7), 410 µg/L (MW-7), and 1,600 µg/L, respectively, which are lower than those concentrations reported onsite. Based on this data, the TPHg and benzene portion of the groundwater plume appears relatively well defined to the west and southwest based on data obtained from MW-8 through MW-10. The MTBE portion of the plume appears well defined to the south/southwest based on well MW-10. Additional monitoring events will help determine the stability of the plume and draw further conclusions regarding contaminate distribution and delineation.

During the well installation activities, two additional "deep" samples were collected from the perceived deeper groundwater producing zone at the site. The "deep" groundwater sample was collected from well MW-7 and MW-8 at approximately 20.5 feet and 19.5 feet bgs, respectively. TPHg, benzene, and MTBE were not detected at or above the laboratory detection limit in the "deep" groundwater sample from MW-7. Benzene was not detected at or above the laboratory detection limit in the "deep" groundwater sample collected from MW-8, however TPHg and MTBE were detected at a concentration of 54 µg/L and 570 µg/L, respectively. Based on this data, the TPHg and benzene portions of the contamination do not appear to have significantly migrated vertically into any deeper groundwater zones. Well MW-7 is located within a zone with relatively high shallow TPHg and benzene groundwater concentrations, however they were not detected in the deeper zone at approximately 20.5 feet bgs. Although MTBE was not detected in the deep sample from MW-7, MTBE in the deep groundwater sample within the vicinity of MW-8 was detected at a concentration of 570 µg/L. This MTBE concentration from MW-8 was significantly lower than the 1,600 µg/L shallow concentration, and suggests limited vertical migration of the MTBE may occur.

9.2 Soil Conditions

Several soil samples were collected from each of the installed monitoring wells. TPHg and MTBE were reported at a maximum concentration of 220 mg/kg and 0.59 mg/kg, respectively in the soil samples analyzed. Benzene was not detected at or above the laboratory detection limit in the soil samples analyzed. However, the deep soil sample from each boring was not report to contain TPHg or MTBE at or above the laboratory detection limit, with the exception of MW-9-14.5 which contained MTBE at a concentration of 0.027 mg/kg, just slightly above the MTBE ESL of 0.023 mg/kg. Based on this data, significant offsite soil contamination is not present at the site. Residual concentrations detected are likely a results of the offsite groundwater contaminate plume.

9.3 Soil Vapor Conditions

Due to the fine grained, non-permeable shallow clay observed at the site, in conjunction with the shallow groundwater, soil vapor sampling has been difficult to perform. As discussed earlier, low flow conditions were present in SG-1S, SG-1D, SG-2D, SG-3D, SG-5, SG-7, and SG-8 during the March 2010 sampling event. The low flow conditions prevented the collection of soil vapor from SG-3 at 6 feet bgs, SG-7 and SG-8. Therefore, soil vapor concentrations could not and have not been investigated in the northwestern portion of the property. Vapor samples from SG-2S and SG-6 near the western property boundary did not fall under the low flow category and indicated significant hydrocarbon concentrations are present in the soil vapor to the north and south of the onsite building. However, the vapor sample from SG-4, located between the building the western property boundary, did not contain elevated concentrations of hydrocarbons indicating the soil vapor along the western boundary in the central portion of the site has been adequately defined. Further investigation and/or remediation may be necessary to better assess the soil conditions along the western property boundary north and south of the onsite building.

9.4 Pilot Testing - Bioventing

Bioventing pilot testing consists of completing a series of field tests in order to determine the feasibility of Bioventing as a remedial alternative. First, the baseline soil gas data was evaluate and used to determine if site conditions were favorable for Bioventing. The baseline soil gas survey indicated that shallow soil (<4 feet bgs) had sufficient oxygen levels to support biodegradation and injecting additional oxygen was not likely to provide any added benefit. At less than 5% by volume, the deeper soil (>4 feet bgs) did not contain sufficient oxygen levels. However, low-flow and no-flow conditions were observed in the soil which indicated that Bioventing was not a feasible option. The low soil permeability is likely due to fine-grained nature of the soil type (clay) and shallow groundwater conditions. Based on the results of the feasibility study, Bioventing does not appear to be a feasible remedial option to address residual soil contamination at the site. In other words, aerating saturated soil is not technically feasible unless combined with groundwater extraction to lower the water table.

9.5 Pilot Testing - Sparging

Field testing using AS-1 strongly indicated the presence of a broken well, wellhead, and/or conveyance piping. As a result, an effective ROI for AS-1 was not determined. Evaluation of the data collected showed that the effective ROIs for AS-2 and AS-3 were approximately 40 and feet 20 feet, respectively. Therefore, multiple lines of evidence, indicate an effective ROI for sparging in the range of 20 to 40 feet. An ROI in this range could be used to design an air, oxygen, and/or ozone sparging system and well network should this technology be selected to remediate the dissolved hydrocarbon plume.

9.6 Conclusions

AEI's *Feasibility Study/Corrective Action Plan* dated June 29, 2009, evaluated several remedial options for the site and concluded that Bioventing, to target impacted soil, and ISCO using ozone sparging to target the dissolved phase plume may be viable options to reduce contaminant concentrations in a timely and cost effective manner. Therefore, the feasibility study described in this report was completed to evaluate the effectiveness of these remedial options.

Based on several phases of site assessment, shallow soil at the site consists of low permeability, clay-rich soils with a thick capillary fringe, in which a large portion of hydrocarbon source remains. This source is slowly leaching into the groundwater, contributing to the dissolved phase plume. These shallow soil conditions are not amenable for moving air through the soil pore space which was verified by the recent pilot testing activities and suggested by the poor performance of the HerShey SVE system. Despite the poor SVE performance, Bioventing has been effective at sites where SVE has not, where soils accept air at higher rates than it can be extracted. However, at this site, field data collected during the pilot test indicates that Bioventing will not work in the shallow soils; insufficient air flow was observed to consider this a viable option for oxygen delivery to the impacted source area soil.

Given that ISCO is a proven remedial alternative for gasoline contaminants and that AEI has considered using an ISCO (ozone sparging) program to treat groundwater at the site, AEI has

considered ISCO to treat the shallow soil. However, for the same reason that SVE and Bioventing were and would not likely be successful, ISCO would likely not be cost effective in the vadose zone. The low permeability moist to wet soil limits the ROI for the injection, and would require a high density (close spacing) of injection points, with injection point grid spacing expected at less than 5 feet. Furthermore, if an alternative liquid oxidant to ozone is considered, permeability will again be a limited factor, and often two or three injection events are necessary to adequately reduce contaminant concentrations. While a formal cost estimate has not been performed, given the required injection density and expected quantity oxidant needed, it is AEI's experience that an ISCO program for the vadose zone would be extremely costly. Therefore AEI does not recommend pursuing ISCO as a remedial alternative for the shallow soil.

Since SVE, Bioventing, and ISCO have either proven not to be feasible at the site, or will not likely be cost effective, the remaining traditional cleanup approach is source removal through excavation. AEI has considered several other approaches, such as thermal desorption and electrical resistance heating, that may be technologically feasible for the shallow tight clay, however given the configuration of the property (utilities, active fuel system, limited area) these options are not considered feasible or cost effective. Therefore, the remaining remedial option for the soil is excavation, which is, as described in the earlier FS/CAP, a feasible option. The main question to consider regarding excavation is if the resulting benefit of soil excavation is justified by the costs associated with excavation in a manner which is consistent with the maximum benefit of the people of the state, including economic and social costs (SWRCB Resolution 92-49). A preliminary estimate, which does not account for many logistical issues which would have to take place in order to complete the excavation (closure of an active gasoline station, etc.) estimates an excavation program could cost between $250,000 and $400,000.

As discussed in this report, an estimated effective ROI suggests that an ISCO program using ozone sparging would be an effective method for treating the groundwater plume. Given the relatively large plume identified at and in the vicinity of the site, the location of utilities within the public right of way, and the nearby residential properties, several factors must be evaluated to determine if the risk posed by the contaminated groundwater is justified by the costs associated with a groundwater remedial program in a manner which is consistent with the maximum benefit of the people of the state.

10.0 RECOMMENDATIONS

The previously proposed cleanup goals for the site were based on environmental screening levels (ESLs) in which shallow groundwater was a potential drinking water source. Current groundwater and soil concentrations do not meet these proposed cleanup goals and are not expected to in the near future. Therefore, at the request of our client, AEI has since evaluated the site on a risk basis to determine if alternative cleanup goals may be more appropriate for the site, or if the site would qualify for a low risk closure based on SWRCB low risk closure criteria. AEI understands that relatively high concentrations of petroleum hydrocarbons are present at the

site, however provided the contamination does not appear to present a significant threat to human health or the environment, the economic impact of site remediation would not be consistent with the maximum benefit of the people of the state. The following presents a low risk closure evaluation for the subject site.

10.1 Low Risk Closure Overview

In 1996, the San Francisco Bay RWQCB published guidance to assist responsible parties and regulatory personnel in evaluating petroleum release sites with respect to potential risk posed to human health and water quality (SF RWQCB January 5 1996, "Low Risk Guidelines"). This guidance provided six criteria that when all were met, were defined to represent a low-risk condition. The guidance was very useful but low-risk sites were sometimes still not closed due to the fact that the water quality objectives (WQOs) were not met in all parts of the plume (including the source area). Between 1998 and 2009, the SWRCB adopted closure orders for 14 sites that had been appealed from the regional board level, and clearly established that site closure could be granted even though WQOs had not yet been met, as long as site conditions were protective of human health, safety, and the environment and the beneficial use would be restored within a reasonable time period. The closure orders clarified that what constitutes "a reasonable time period" is based on several factors, and could be decades based on site specific conditions. In November 2009, the SWRCB adopted Resolution 2009-0081, which directed agencies to use the decision framework in the 14 case closures to close low-risk sites, and stated that such closures are consistent with SWRCB Resolution 92-49. Resolution 2009-0081 explained that the decision framework relied on several key factors for the regional boards to consider when evaluating the low-risk status of a site and granting closure. These factors are:

(1) Affected groundwater is limited in extent
(2) Further migration is unlikely
(3) Drinking water wells (or other sensitive receptors) are not located close to the plume
(4) Low likelihood that impacted groundwater will be needed before the beneficial use is restored
(5) Depth to impacted groundwater relative to local well construction ordinance
(6) Appropriate corrective action, including appropriate source removal, was performed
(7) Remaining petroleum does not pose a threat to human health or safety

Conditions at this site meet each of these low-risk factors as described below.

10.2 Factor 1. Affected groundwater is limited in extent

As described in Section 4.0, during February 2010, AEI completed additional groundwater plume delineation activities in the vicinity of the site. Prior to completing these activities, the extent of the offsite plume was unknown. Based on sampling data obtain from these wells, as described in Section 9.1, the horizontal TPHg and benzene portion of the groundwater plume appears relatively well defined to the west to southwest based on data obtained from MW-8

through MW-10. The horizontal MTBE portion of the plume appears well defined to the south/southwest based on well MW-10.

As described in Section 9.1, TPHg and benzene were either not detected, or present at very low concentrations in "deep" groundwater samples collected from MW-7 and MW-8, indicating that the TPHg and benzene portions of the contamination do not appear to have significantly migrated vertically into any deeper groundwater zones. MTBE was not detected in the deep sample from MW-7 indicating that MTBE has not migrated into any deeper groundwater zones, however, MTBE in the deep groundwater sample within the vicinity of MW-8 was detected at a concentration of 570 µg/L. This MTBE concentration from MW-8 was significantly lower than the 1,600 µg/L shallow concentration, and suggests limited vertical migration of the MTBE may occur at the site.

Based on the above observations, the relatively high dissolved concentrations seen at the site significantly decrease by downgradient wells MW-9 and MW-10. Therefore, the affected groundwater appears limited in extent and site conditions meet low-risk Factor 1.

10.3 Factor 2. Further migration of impacted groundwater is unlikely

In February 2004, the USTs (contamination source) were removed from the site. Now that the source is gone, it is expected that the contaminate plume has migrated as far as it will, therefore further migration is highly unlikely. Data collected from wells MW-1R, MW-2 through MW-6, and EX-1 indicates that concentrations show a decreasing trend. Therefore, site conditions meet low-risk Factor 2.

10.4 Factor 3. Drinking water wells, or other sensitive receptors, are not located close to the plume

Based on the HerSchy's June 18, 2008 *Addendum to Site Conceptual Model*, there appears to be 14 sites located within a ½ mile of the subject site which contain a water well. The water wells in each of the 14 sites were reportedly used for monitoring purposes. In addition, no observed surface water is present within a ½ mile radius of the site as well. Therefore, there are no known sensitive receptors within a ½ mile of the site potentially exposed to impacted groundwater.

Based on the lack of sensitive receptors, the site conditions meet low-risk Factor 3.

10.5 Factor 4. There is a low likelihood that impacted groundwater will be needed before its beneficial use is restored by natural attenuation

It is highly unlikely that shallow groundwater beneath the site will be used as a drinking water source in the near future. The source for the contamination (former USTs) have been removed. Based on hydrocarbon concentration trend lines for TPHg, benzene, and MTBE in wells MW-3 and MW-4 (within the source zone), it appears that hydrocarbon concentrations are currently decreasing at the site (Figures 22 and 23). This natural attenuation appears to be occurring at a rate in which WQOs will be reached within 40 years which is within a reasonable time frame as

defined by the SWRCB (decades to hundreds of years). It is highly unlikely that shallow groundwater in the vicinity of the site will be used for drinking water in the next 40 years.

Since the groundwater beneath the site is expected to naturally attenuate to below WQOs within 40 years, site conditions meet low-risk Factor 4.

10.6 Factor 5. Impacted groundwater is shallow and within the depth limits of surface seal protection required by local well construction requirements

Again, the site groundwater is not currently used as a source of drinking water or for any of the other designated beneficial uses, and it is highly unlikely that shallow groundwater in a mixed industrial/residential area less than 1 mile from the San Francisco Bay will ever be used as a drinking water supply. However, in theory a well could be installed at the site in the future for a different purpose. The majority of the contamination is in the upper 20 feet at the site (shallow groundwater) and wells in the immediate source zone (MW-3 and MW-4) are set at approximately 20 feet bgs. The State's minimum well seal depth requirement is 20 feet; therefore, the impacted zone at this site would be sealed off and would not be accessible for water supply due to local well construction requirements. Site conditions therefore meet low-risk Factor 5.

10.7 Factor 6. Appropriate corrective action, including appropriate source removal, has been performed

In 2004, the USTs (source) were removed, and during construction activities, approximately 1,100 tons of soil and 40,000 to 60,000 gallons of groundwater was removed from the site and properly disposed of. From August 31, 2006 through November 19, 2007, approximately 940.65 lbs., or 152 gallons, of free product were removed by the SVE/AS activities. During the February 2008 DPE pilot testing activities, approximately 104.19 lbs, or 16.86 gallons of product were removed from the subsurface. Finally, various small scale free product removal activities (absorbent socks) have taken place historically in order to remove measureable free product in wells MW-4 and EX-1.

Tight soil conditions have made remedial efforts difficult to date. Although over 168 gallons of free product and a relatively large sum of money has been spent on unsuccessful remedial alternatives which have been able to remove the contamination to the maximum extent practicable.

Thus, appropriate corrective action, including appropriate source removal, has been performed and site conditions meet low-risk Factor 6.

10.8 Factor 7. The remaining petroleum does not pose a threat to human health or safety

As discussed earlier, drinking water at the site is from supplied by East Bay Municipal Utilities District and shallow groundwater at the site is not and is not expected to be used as a drinking

water source. Additionally no know water wells are within the ½ mile radius of the site. Therefore the groundwater beneath the site does not pose a threat to human health or safety. Furthermore, the majority of the site is capped with asphalt or concrete which limits the potential of direct exposure to contaminated soil beneath the site. If necessary, the property owner is willing to sign a deed restriction to limit the use of the site to non-senstive commercial land use and will create a soil management plan to outline soil handling requirements and worker health and safety in the case of potential future excavations into the impacted area.

Therefore, the remaining petroleum does not pose a threat to human health or safety and site conditions meet low-risk Factor 7.

10.9 Conclusion and Request for Closure

In conclusion, site conditions satisfy all of the low-risk factors and the decisional framework discussed in SWRCB Resolution 2009-0081. Corrective actions taken at the site and current site conditions ensure protection of human health, safety and the environment. Corrective actions taken at the site are consistent with SWRCB Resolution 92-49 and other water quality control policies and applicable water quality control plans. Due to the low risk posed by the contamination at the site, the incremental benefit from additional source removal through excavation and/or groundwater treatment is not economically feasible in order to assure the maximum benefit of the people of the state. AEI, on behalf of our client, is requesting that the ACHCSA consider this site for closure on a low risk basis. Although a low risk closure is requested at this time, the second semester semi-annual groundwater monitoring event has already been completed and the results (which do not change the request for closure) will be issued under separate cover in the near future.

11.0 REFERENCES

Department of Toxic Substances Control (DTSC) and Los Angeles Regional Water Quality Control Board (DTSC-LARWQCB). 2003. Advisory – Active Soil Gas Investigations. Glendale and Los Angeles, California. Issued January 28, 2003.

DTSC. 2010. Advisory – Active Soil Gas Investigations. Draft for Review, Issued March 2010.

Leeson, A., Johnson, P.C., Johnson, R.L., et al. *"Air Sparging Design Paradigm"* August 12, 2004.

Leeson, A. and Hinchee, R.E., *"Principles and Practices of Bioventing Volumes I & II"*, Prepared for USAF Environics Directorate of the Armstrong Laboratory, Tyndall Air Force Base, FL and National Risk Management Research Laboratory of U.S. EPA, Cincinnati, OH, dated September 29, 1996.

U.S. Environmental Protection Agency (USEPA), "*Bioventing Principles and Practice"*, EPA/540/R-95/534a, September 1995.

12.0 REPORT LIMITATION & SIGNATURES

AEI Consultants (AEI) has prepared this report on behalf of the client for the property located at 6211 San Pablo Avenue in the City of Oakland, Alameda County, California. AEI has been retained by the property owner to provide environmental engineering and consulting services relating to the unauthorized release of petroleum hydrocarbons from the former UST at the subject property. Material samples have been collected and analyzed, and where appropriate conclusions drawn and recommendations made based on these analyses and other observations. This report may not reflect subsurface variations that may exist between sampling points. These variations cannot be fully anticipated, nor could they be entirely accounted for, in spite of exhaustive additional testing. This document should not be regarded as a guarantee that no further contamination, beyond that which could have been detected within the scope of past investigations is present beneath the property or that all contamination present at the site will be identified, treated, or removed. Undocumented, unauthorized releases of hazardous material(s) and petroleum products, the remains of which are not readily identifiable by visual inspection and/or are of different chemical constituents, are difficult and often impossible to detect within the scope of a chemical specific investigation and may or may not become apparent at a later time. All specified work has been performed in accordance with generally accepted practices in environmental engineering, geology, and hydrogeology that existed at the time and location of the work and performed under the direction of appropriate California registered professionals.

If you have any questions regarding our investigation, please do not hesitate to contact the undersigned at (925) 746-6000.

Sincerely,
AEI Consultants

Jeremy Smith, REA II
Senior Project Manager

Richard J. Bradford
Project Engineer

REGISTERED GEOLOGIST
PETER J. MCINTYRE
Exp. 5/31/12
No 7102
STATE OF CALIFORNIA

Peter J. McIntyre, PG, REA
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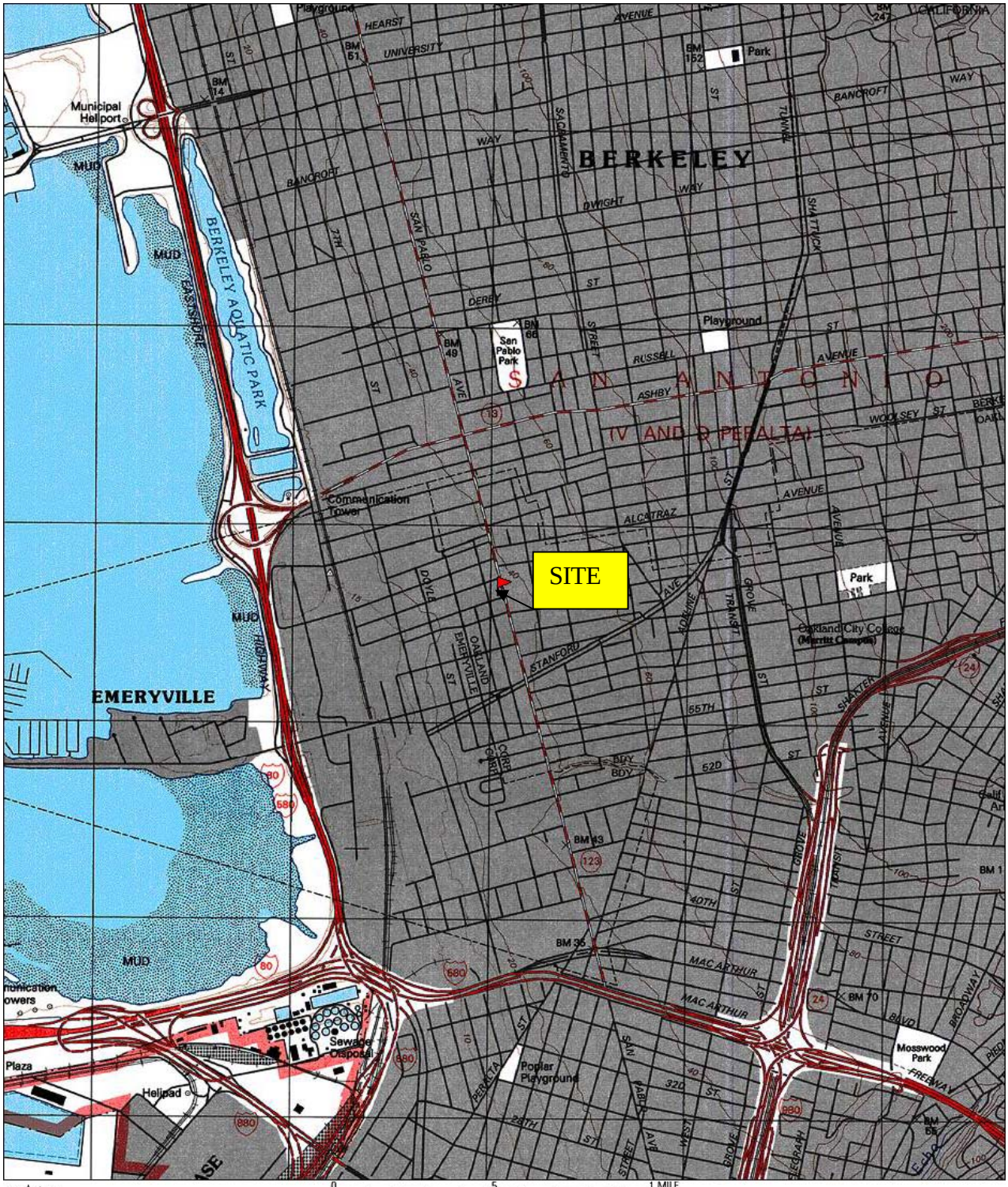
GeoTracker (electronically)

FIGURES



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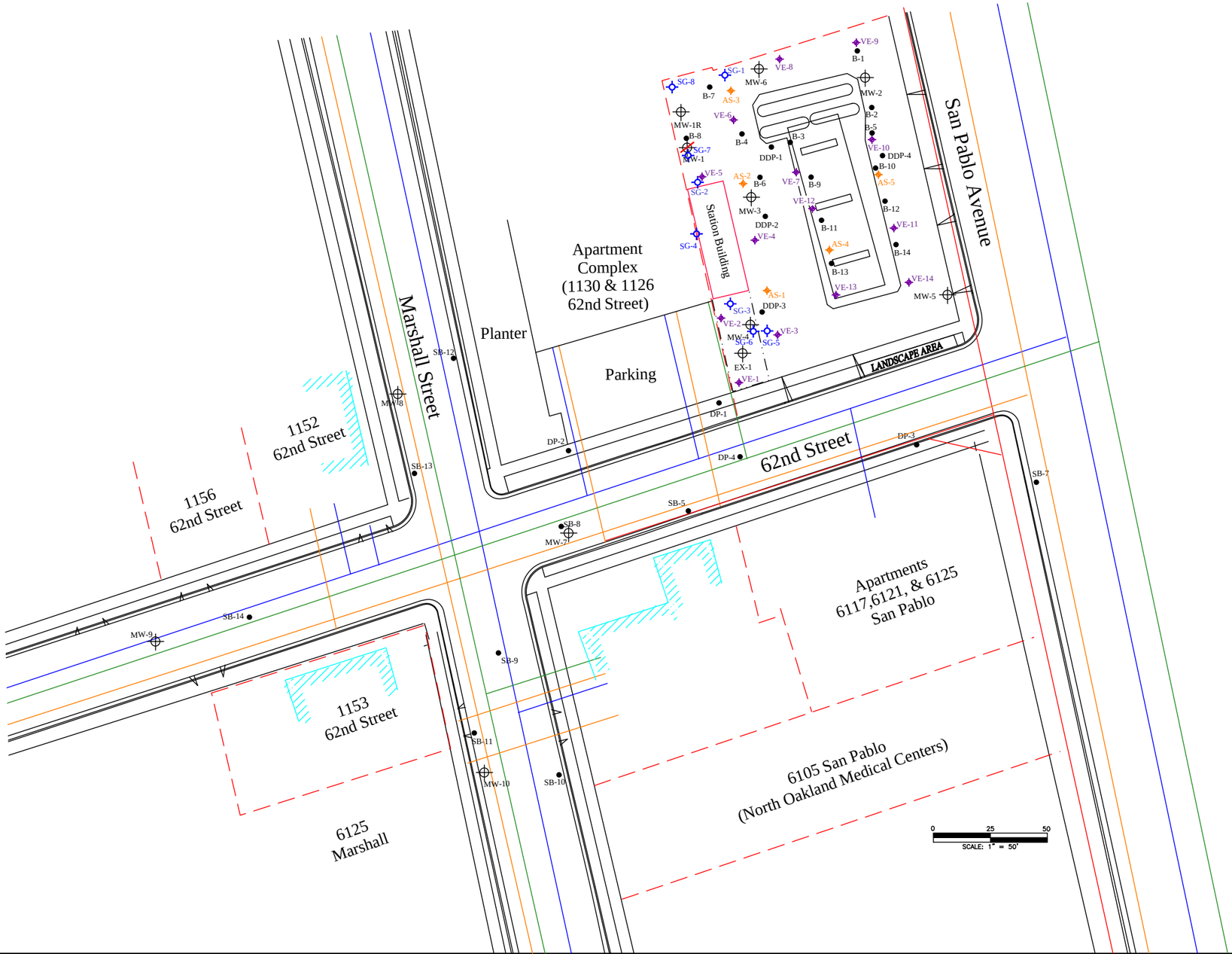
SITE LOCATION PLAN

6211 SAN PABLO AVENUE
OAKLAND, CALIFORNIA

FIGURE 1
PROJECT NO. 280346



LEGEND

- MONITORING WELL
- SOIL BORING
- ABANDONED WELL
- NESTED VAPOR PROBE
- VAPOR EXTRACTION WELL
- AIR SPARGE WELL
- APPROXIMATE PROPERTY BOUNDARY
- WATER LINE
- NATURAL GAS LINE
- ELECTRIC LINE
- SEWER LINE

DRAFTED BY JAS 9/10/08
REVISED BY JAS 9/26/08

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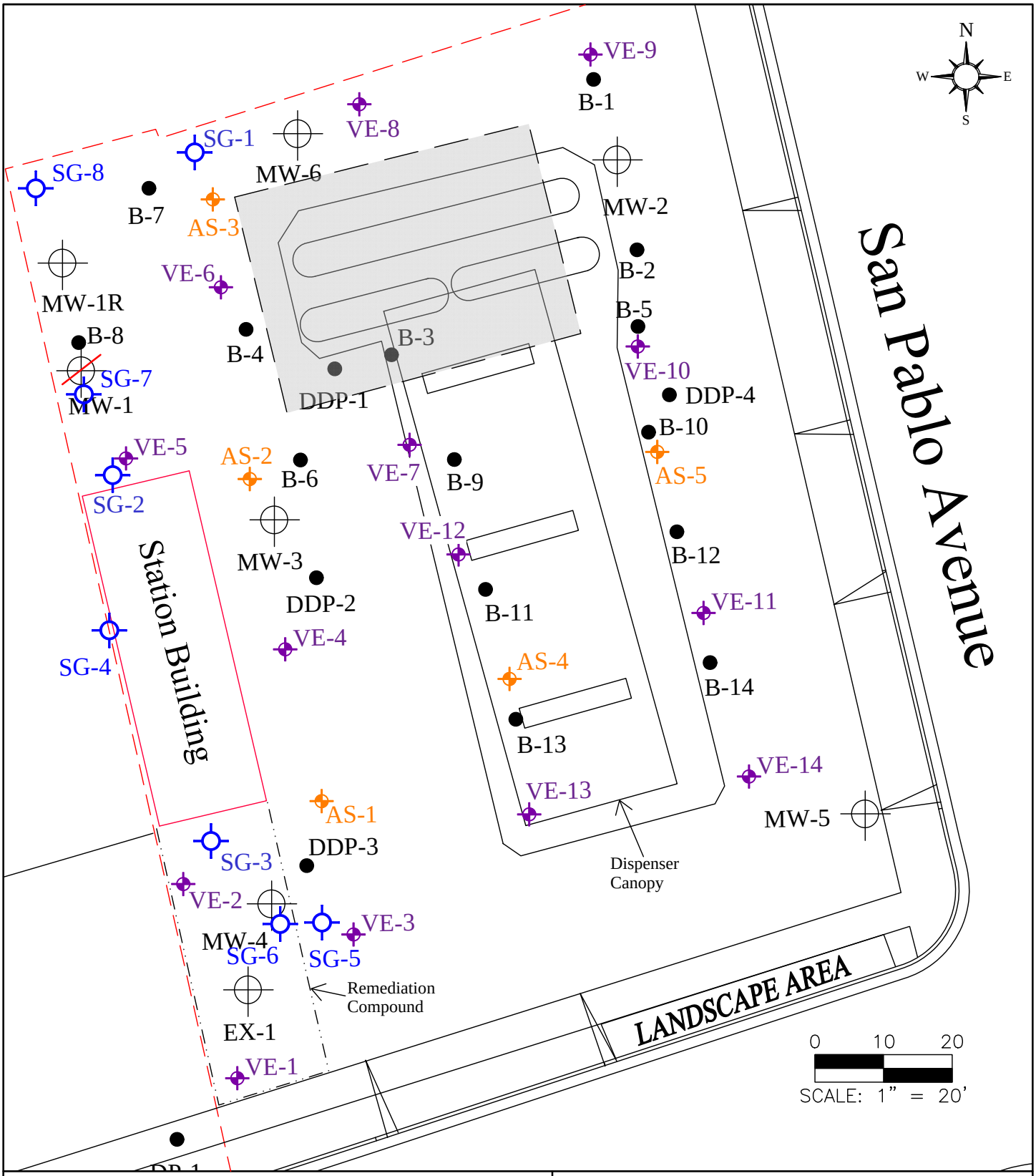
EXTENDED SITE PLAN

6211 SAN PABLO AVENUE
OAKLAND, CALIFORNIA

FIGURE 2
PROJECT NO. 280346



LEGEND

- MONITORING WELL
- SOIL BORING
- ABANDONED WELL
- SOIL VAPOR PROBE
- VAPOR EXTRACTION WELL
- AIR SPARGE WELL
- UNDERGROUND STORAGE TANK
- DISPENSER ISLAND
- FORMER UST EXCAVATION

DRAFTED BY JAS 09-10-08
REVISED BY JAS 09-26-08

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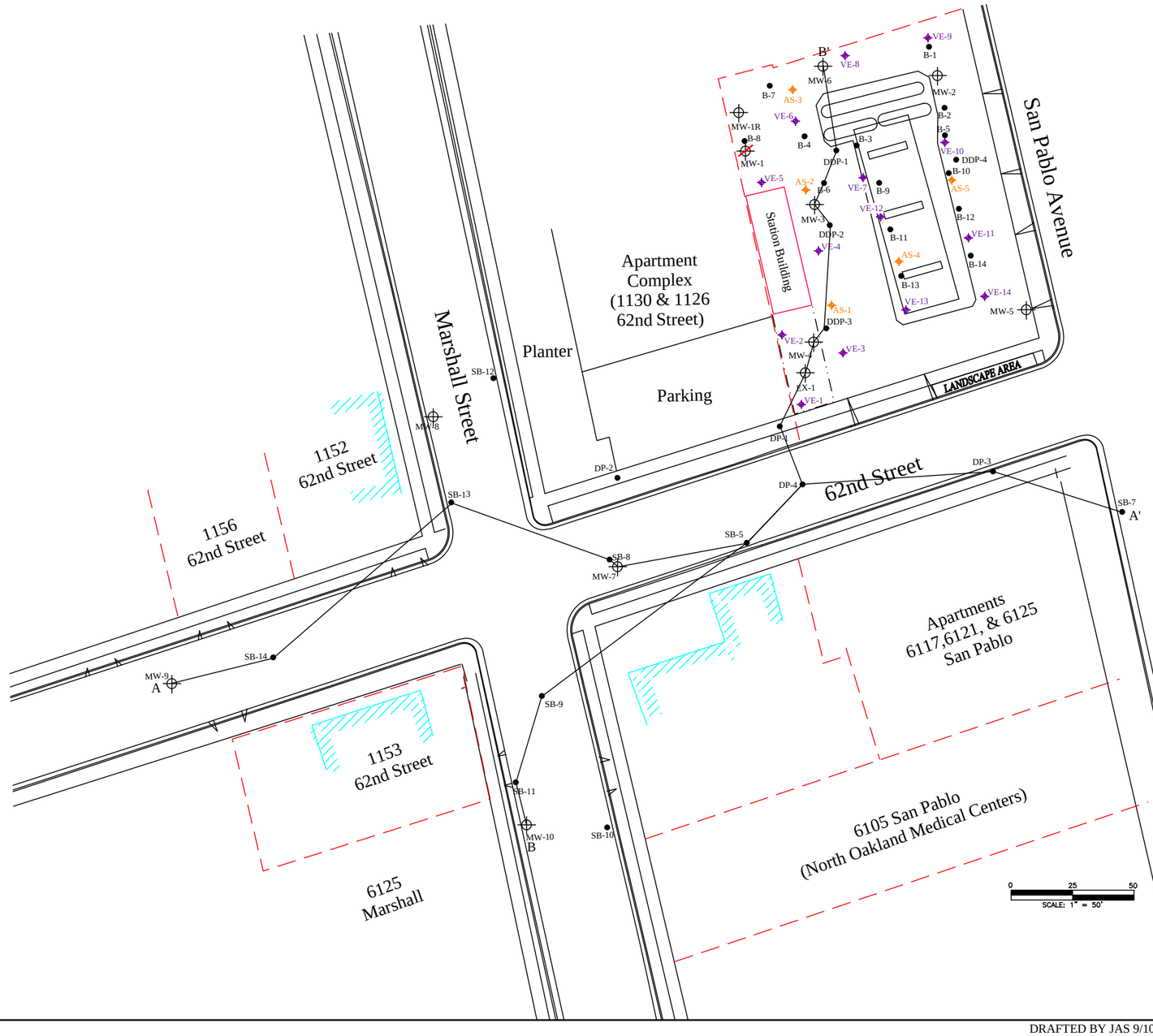
SITE PLAN

6211 SAN PABLO AVENUE
OAKLAND, CALIFORNIA

FIGURE 3
PROJECT NO. 280346



LEGEND

- MONITORING WELL
- SOIL BORING
- ABANDONED WELL
- NESTED VAPOR PROBE
- VAPOR EXTRACTION WELL
- AIR SPARGE WELL
- APPROXIMATE PROPERTY BOUNDARY

DRAFTED BY JAS 9/10/08
REVISED BY JAS 9/20/10

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FENCE DIAGRAM
LOCATION MAP

6211 SAN PABLO AVENUE
OAKLAND, CALIFORNIA

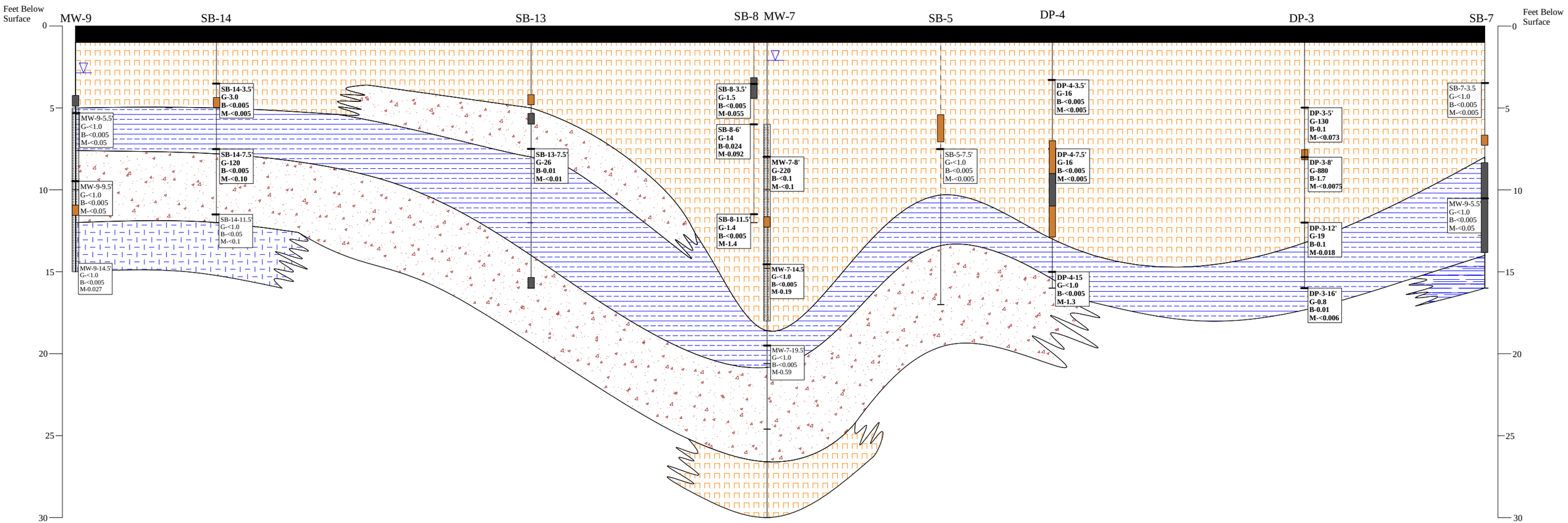
FIGURE 4
PROJECT NO. 280346

West

A

East

A'



VE: 5X

LEGEND

- Asphalt and Fill
- Silty Clay
- Clayey Silt
- Sandy Clayey Silt
- Sandy Silt
- Silty Sand
- Area of Increased Gravel Content
- Area of Increased Sand Content
- MW-9 / G - 12 / B - 12 / M - 12 Soil Analyses
- Interpreted Contact
- Slotted PVC
- Depth to Water (2/23/10)

G = Total Petroleum Hydrocarbons as Gasoline (mg/kg)
B = Benzene (mg/kg)
M = MTBE (mg/kg)

0 25 50 Horizontal Scale (Feet)

Drafted by
Adam Hawkins (6/10/2010)

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Fence Diagram A-A'

6211 San Pablo Avenue
Oakland, California

FIGURE 5
PROJECT NO.280346

South

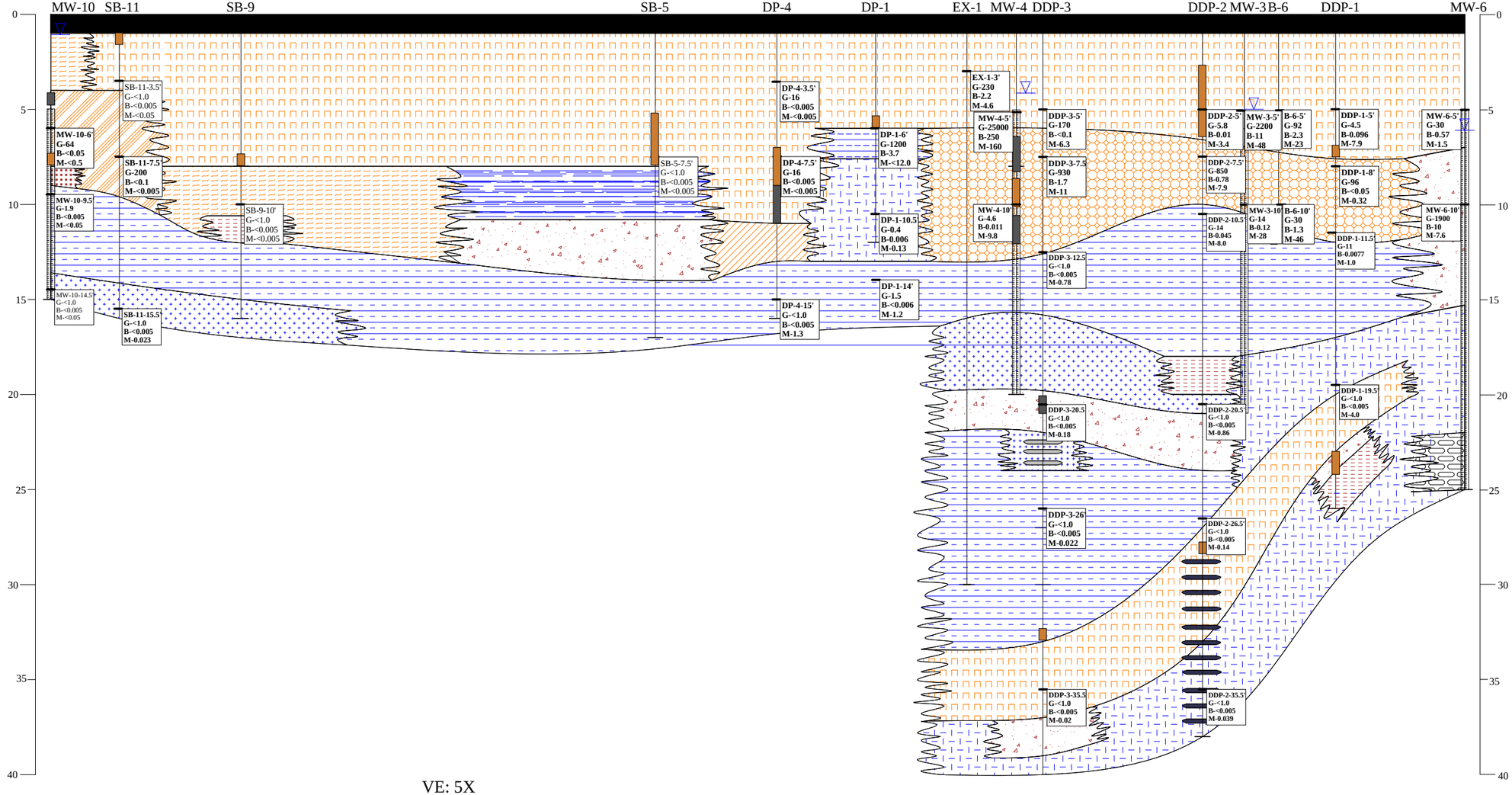
B

North

B'

Feet Below Surface

MW-10 SB-11 SB-9 SB-5 DP-4 DP-1 EX-1 MW-4 DDP-3 DDP-2 MW-3 B-6 DDP-1 MW-6



VE: 5X

LEGEND

- Asphalt and Fill
- Silty Clay
- Sandy Silty Clay
- Silty Sandy Clay
- Sandy Clay
- Gravelly Sandy Clay
- Clayey Silt
- Silt
- Sandy Clayey Silt
- Sandy Silt
- Silty Sand
- Sand
- Gravelly Silty Sand
- Clayey Gravel
- Thin layer of Silty Gravelly Sand
- Thin layer of Gravelly Sand
- Area of Increased Gravel Content
- Area of Increased Sand Content
- Interpreted Contact
- MW-9 G - 12 B - 12 M - 12 Soil Analyses
- Slotted PVC
- Depth to Water (2/23/10)

G = Total Petroleum Hydrocarbons as Gasoline (mg/kg)

B = Benzene (mg/kg)

M = MTBE (mg/kg)

0 25 50

Horizontal Scale (Feet)

Drafted by
Adam Hawkins (6/10/2010)

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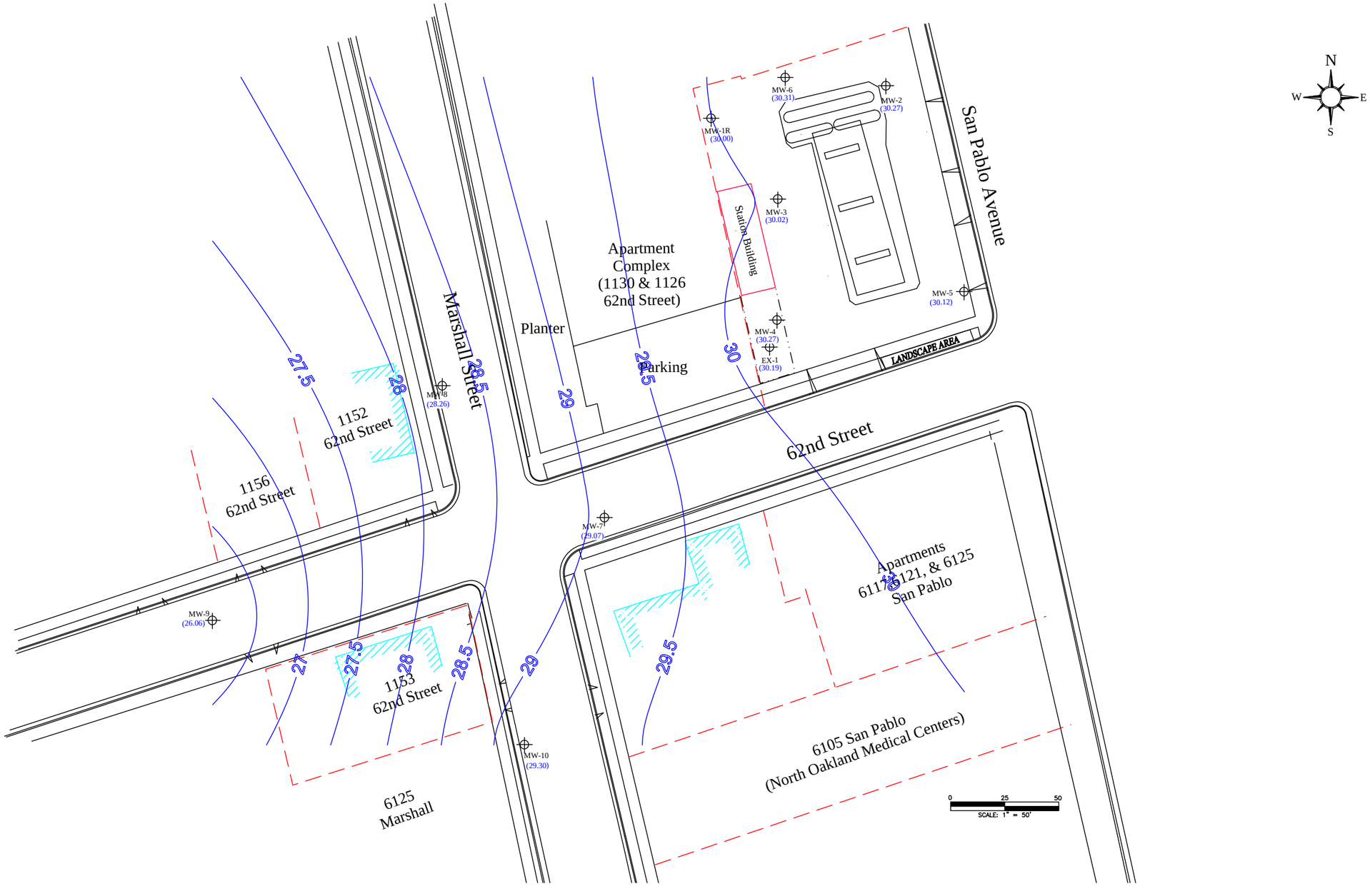
2500 CAMINO DIABLO, SUITE 200, WALNUT CREEK

Fence Diagram B-B'

6211 San Pablo Avenue
Oakland, California

FIGURE 6

PROJECT NO. 280346



LEGEND

MONITORING WELL

(28.68) = Groundwater Elevation Mean Sea Level

Depth to Groundwater Collected on February 23, 2010

Contour Line Gradient = 0.50 Feet

Contour Lines by Surfer® Version 7

Groundwater Flow Direction
Groundwater Gradient
Approximately 0.01 ft/ft

DRAFTED BY JAS 9/10/08
REVISED BY JAS 5/10/10

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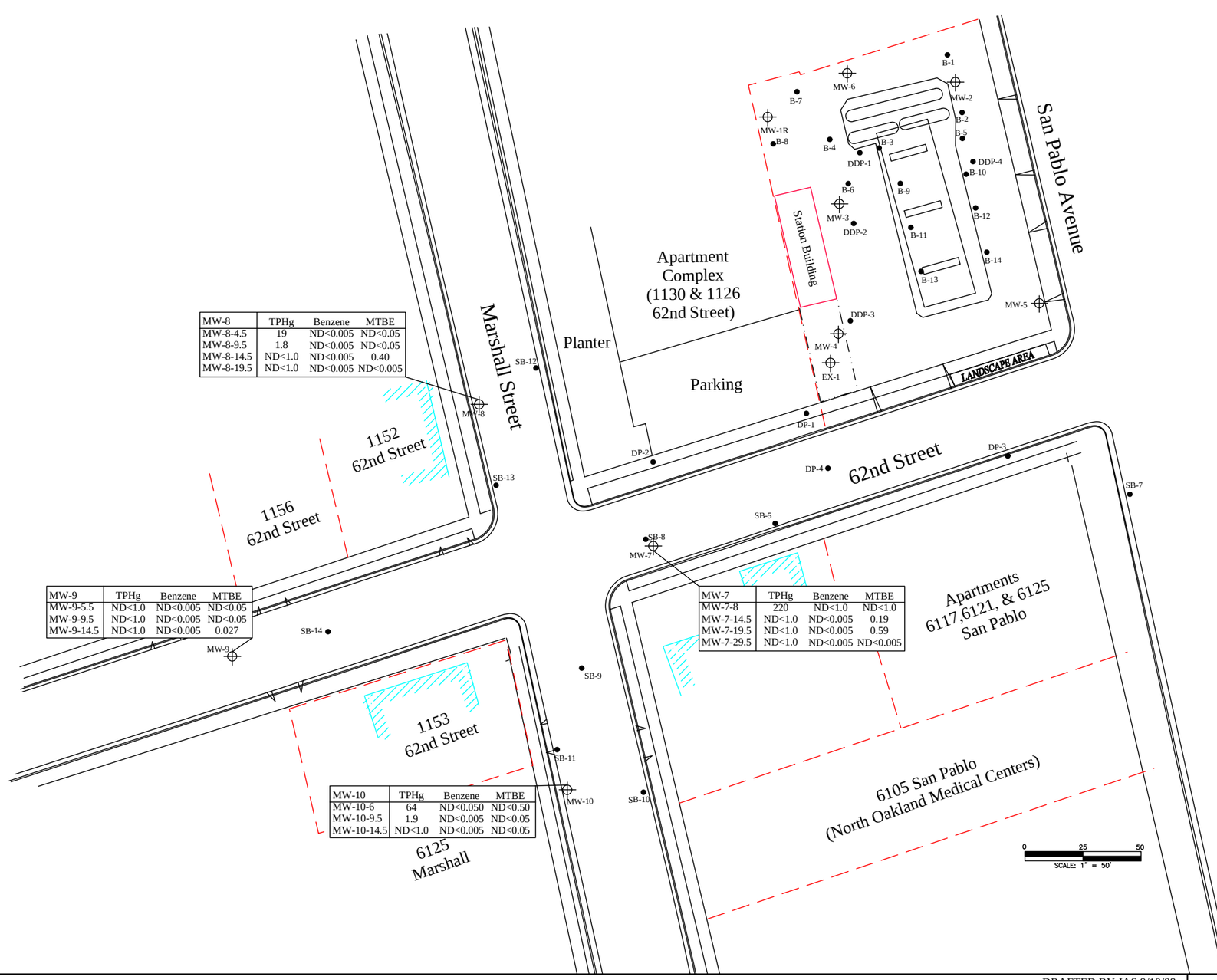
GROUNDWATER ELEVATION MAP

6211 SAN PABLO AVENUE
OAKLAND, CALIFORNIA

FIGURE 7
PROJECT NO. 280346



MW-8	TPHg	Benzene	MTBE
MW-8-4.5	19	ND<0.005	ND<0.05
MW-8-9.5	1.8	ND<0.005	ND<0.05
MW-8-14.5	ND<1.0	ND<0.005	0.40
MW-8-19.5	ND<1.0	ND<0.005	ND<0.005

MW-9	TPHg	Benzene	MTBE
MW-9-5.5	ND<1.0	ND<0.005	ND<0.05
MW-9-9.5	ND<1.0	ND<0.005	ND<0.05
MW-9-14.5	ND<1.0	ND<0.005	0.027

MW-10	TPHg	Benzene	MTBE
MW-10-6	64	ND<0.050	ND<0.50
MW-10-9.5	1.9	ND<0.005	ND<0.05
MW-10-14.5	ND<1.0	ND<0.005	ND<0.05

MW-7	TPHg	Benzene	MTBE
MW-7-8	220	ND<1.0	ND<1.0
MW-7-14.5	ND<1.0	ND<0.005	0.19
MW-7-19.5	ND<1.0	ND<0.005	0.59
MW-7-29.5	ND<1.0	ND<0.005	ND<0.005

LEGEND

- ○ MONITORING WELL
- ● SOIL BORING

All results in milligrams per kilogram (mg/kg)
TPHg = Total Petroleum Hydrocarbons as gasoline
MTBE = methyl tert butyl ether

Refer to Table 1 for complete analytical data.

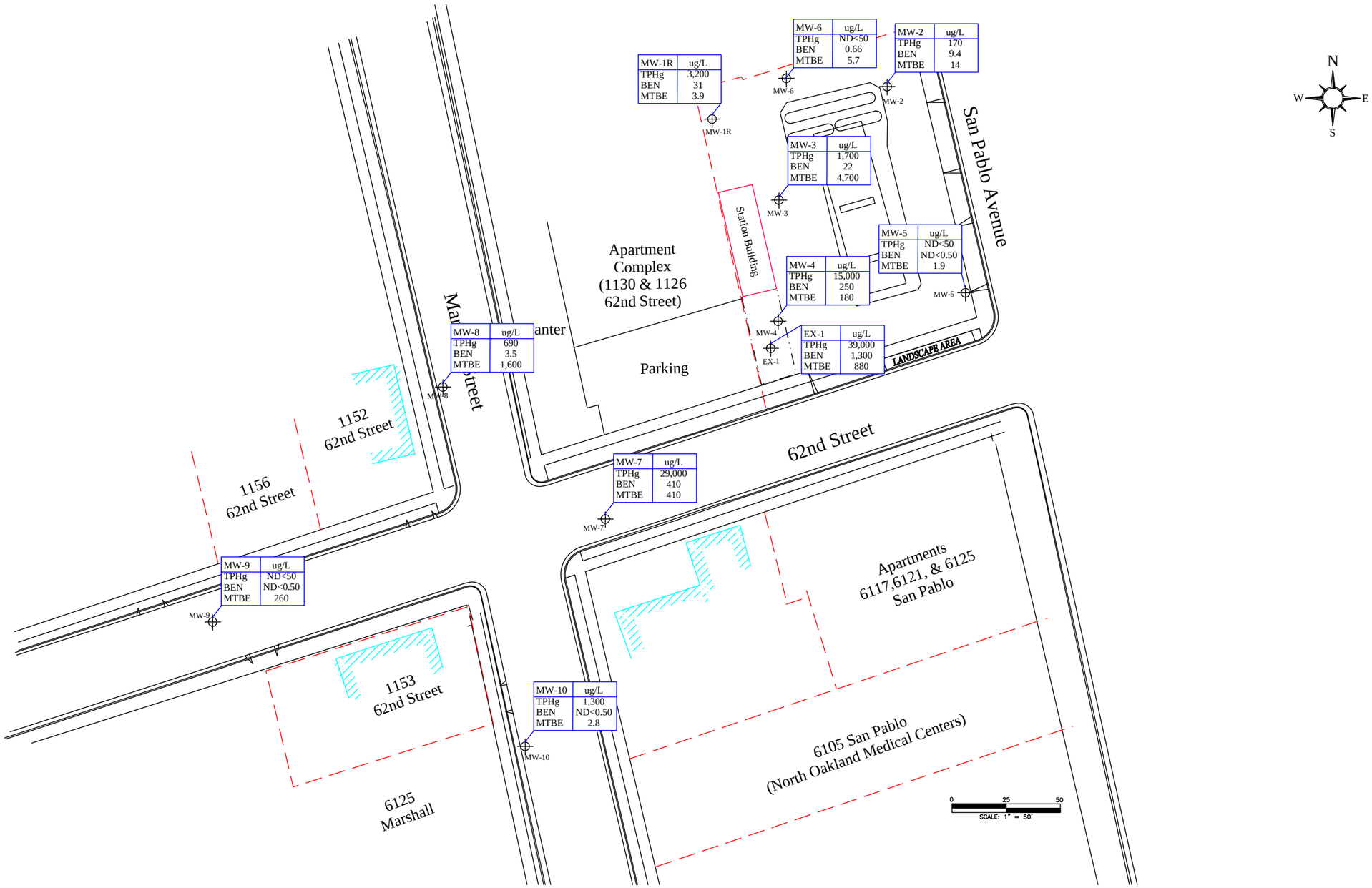
DRAFTED BY JAS 9/10/08
REVISED BY JAS 9/26/08

AEI CONSULTANTS
2500 CAMINO DIABLO, SUITE 200, WALNUT CREEK

SOIL ANALYTICAL MAP

6211 SAN PABLO AVENUE
OAKLAND, CALIFORNIA

FIGURE 8
PROJECT NO. 280346



LEGEND

MONITORING WELL

TPHg = Total Petroleum Hydrocarbons as Gasoline
BEN = Benzene
MTBE = Methyl Ter-butyl Ether
ug/L = Micrograms per Liter (ppb)

DRAFTED BY JAS 9/10/08
REVISED BY JAS 5/10/10

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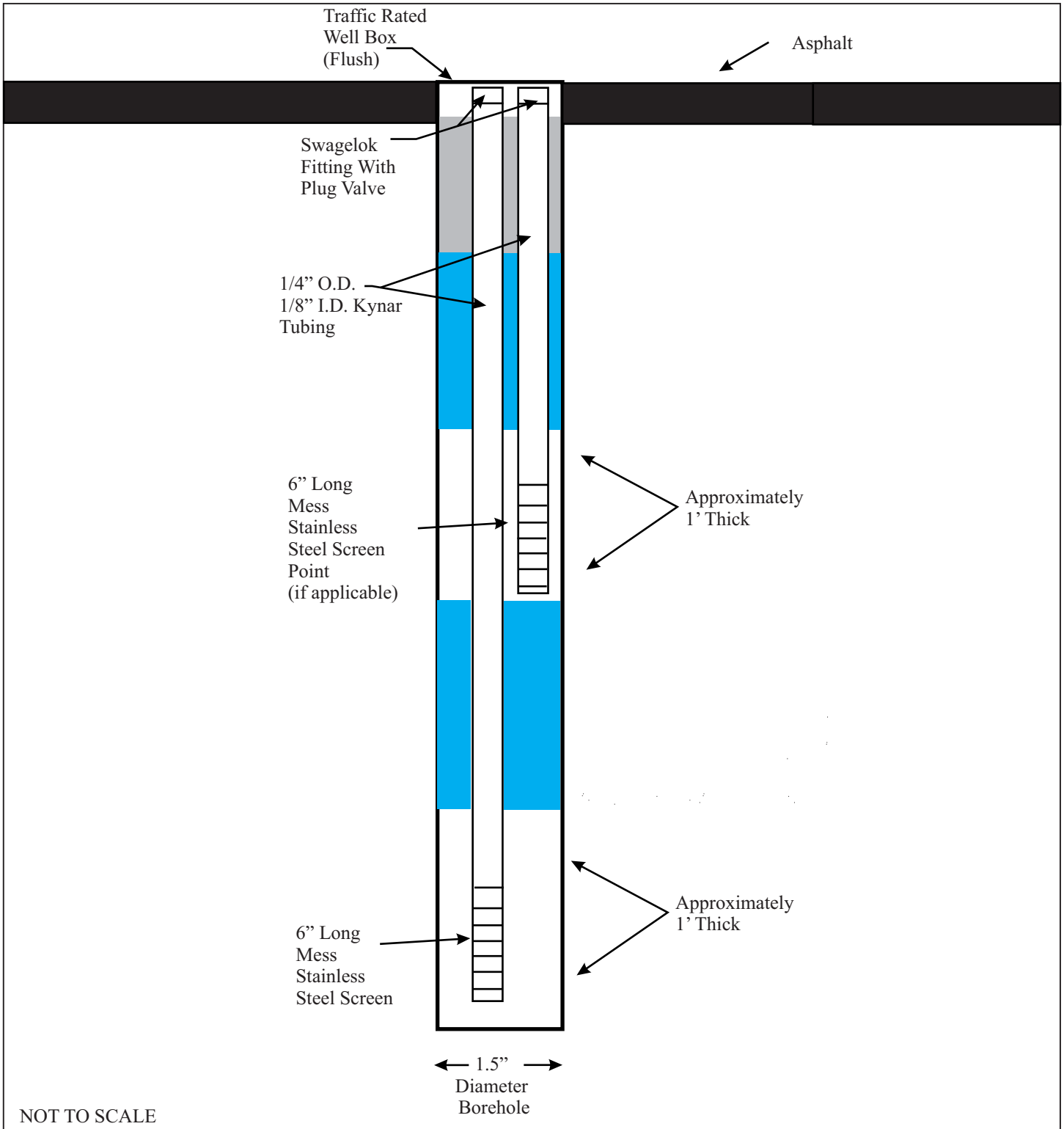
2500 CAMINO DIABLO, SUITE 200, WALNUT CREEK

GROUNDWATER ANALYTICAL MAP - February 23, 2010

6211 SAN PABLO AVENUE
OAKLAND, CALIFORNIA

FIGURE 9
PROJECT NO. 280346



NOT TO SCALE

LEGEND

- Neat Cement Grout Seal
- Bentonite Seal
- Sand Filter Pack
- Monitoring Point

AEI CONSULTANTS
2500 CAMINO DIABLO, WALNUT CREEK, CA

FIGURE 10:
TYPICAL SOIL VAPOR MONITORING PROBE

FIGURE 11: INFLUENT PID READINGS OVER TIME

6211 San Pablo Avenue, Oakland, California

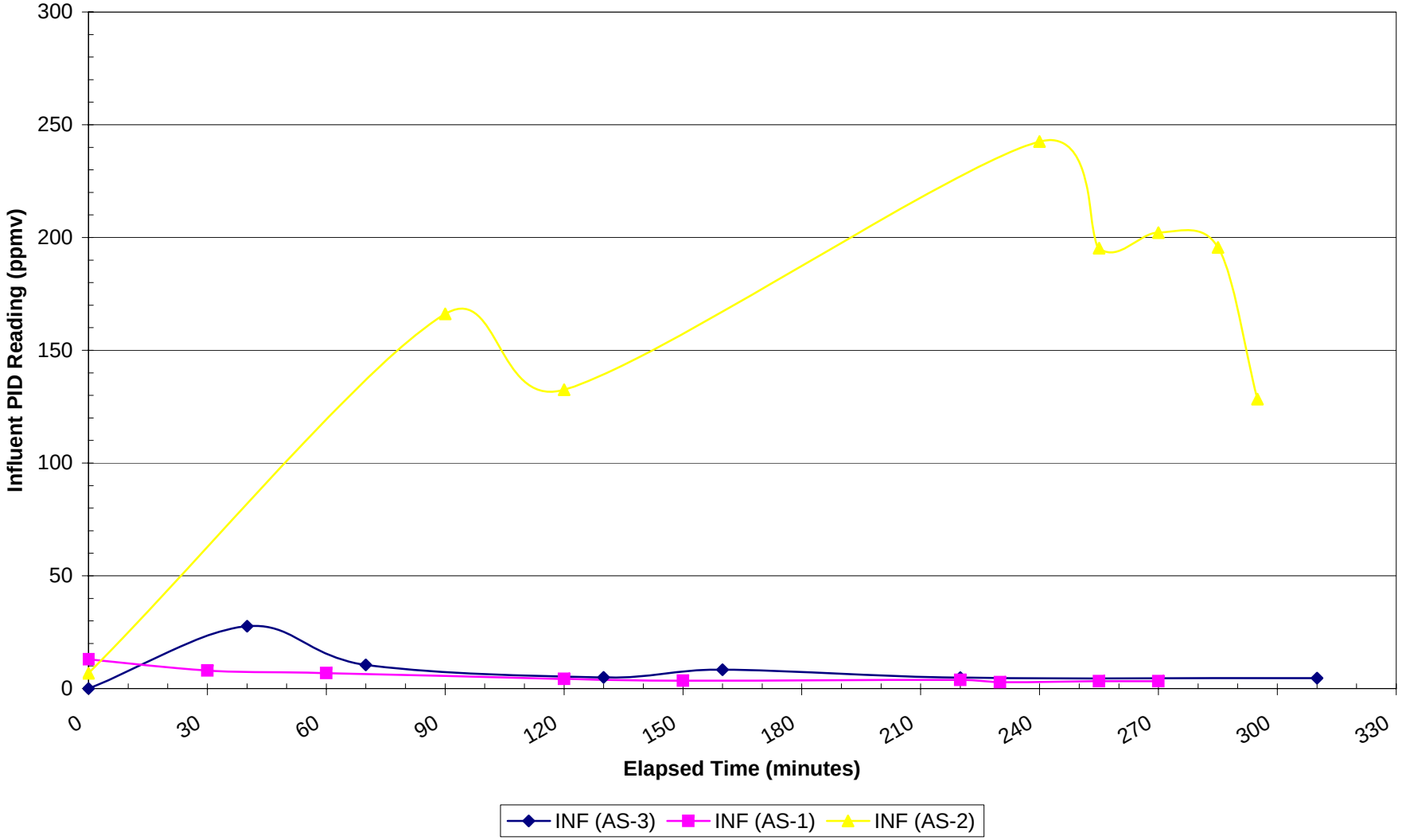


FIGURE 12: WELLHEAD PRESSURE OVER TIME

6211 San Pablo Avenue, Oakland, California

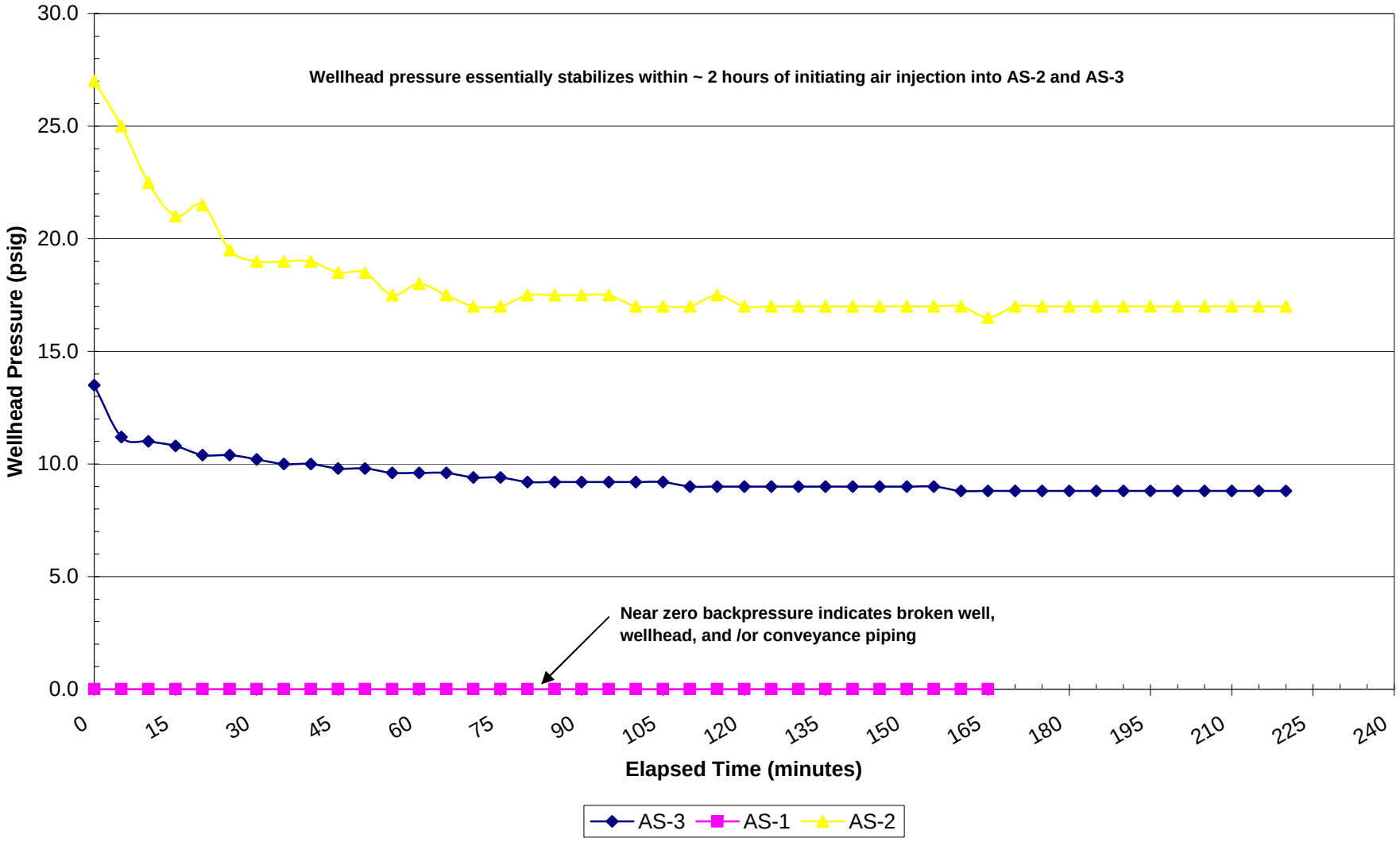


FIGURE 13: PRESSURE TRANSDUCER RESPONSES OVER TIME (AS-1 SPARGING)

6211 San Pablo Avenue, Oakland, California

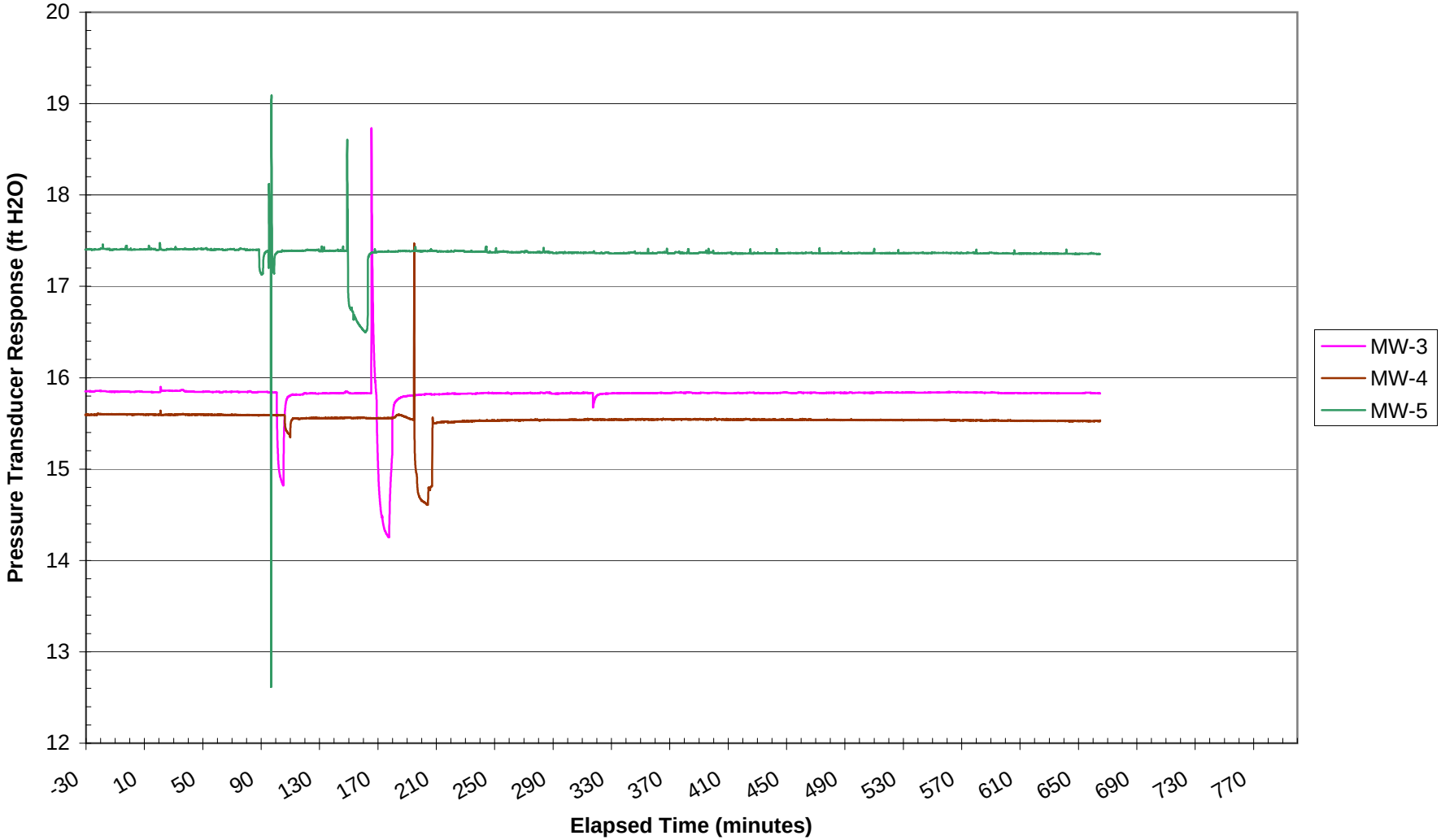


FIGURE 14: PRESSURE TRANSDUCER RESPONSES OVER TIME (SPARGING AS-2)

6211 San Pablo Avenue, Oakland, California

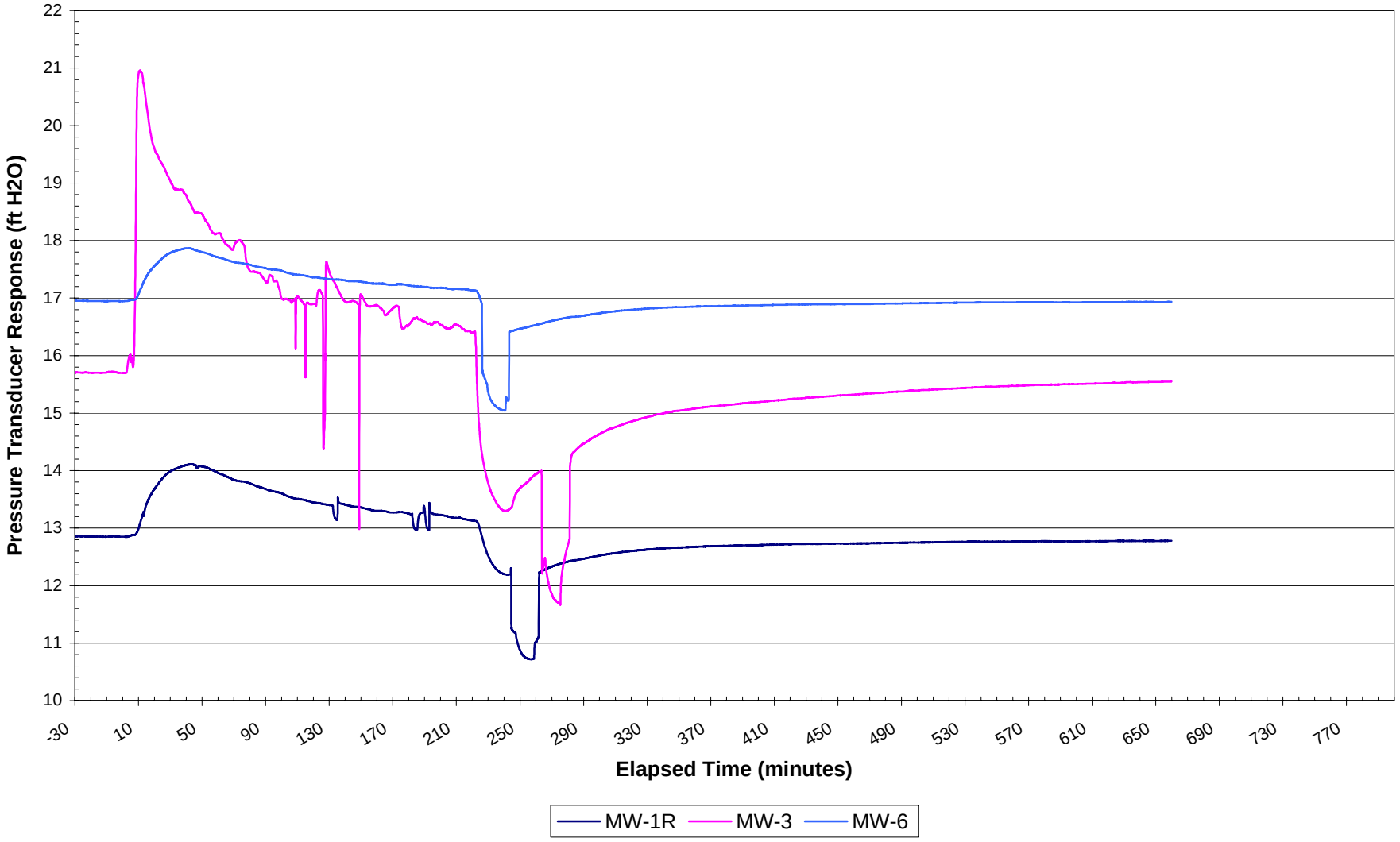


FIGURE 15: PRESSURE TRANSDUCER RESPONSES OVER TIME (SPARGING AS-3)

6211 San Pablo Avenue, Oakland, California

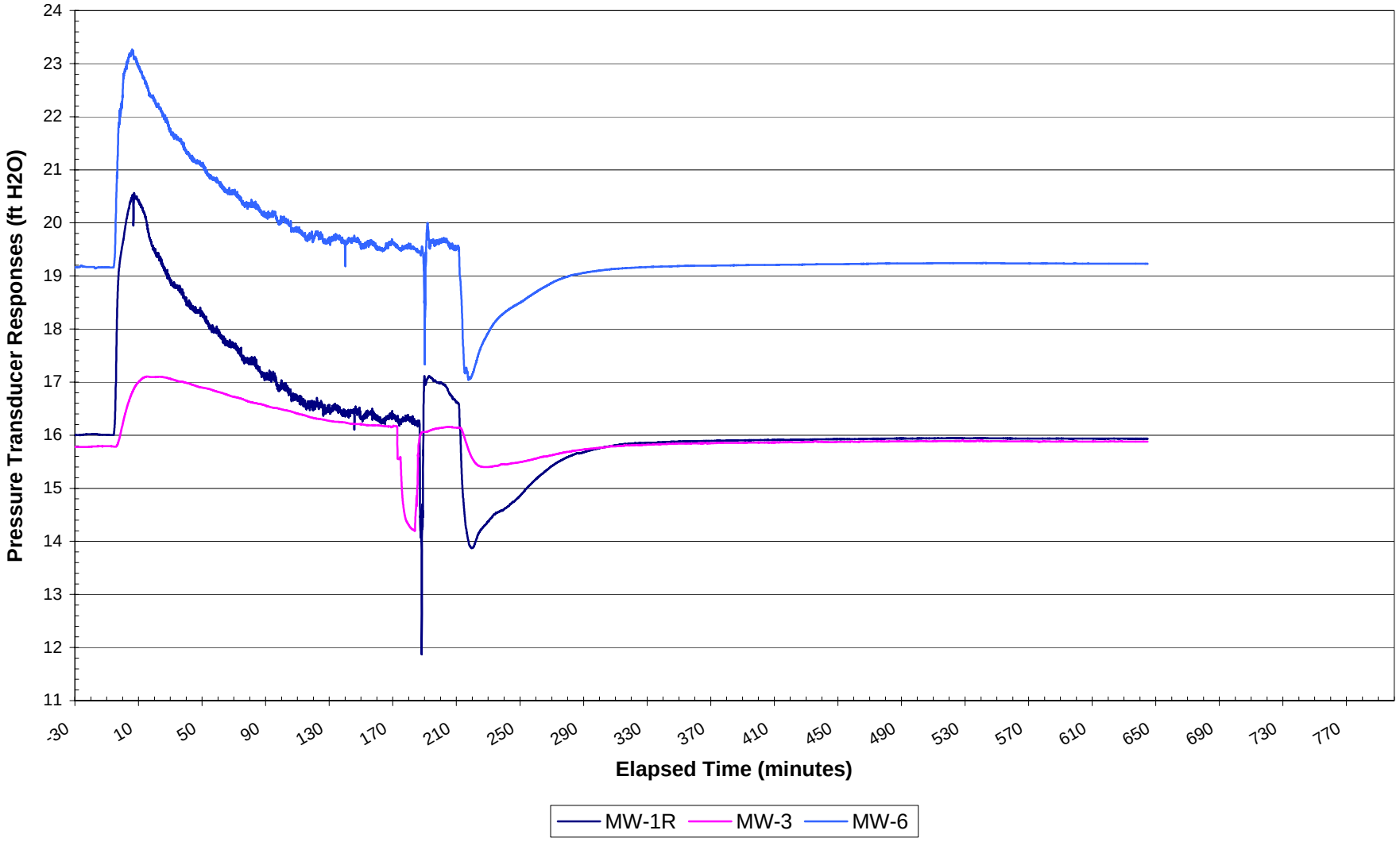


FIGURE 16: SOIL GAS PRESSURE OVER TIME (AS-1)

6211 San Pablo Avenue, Oakland, California

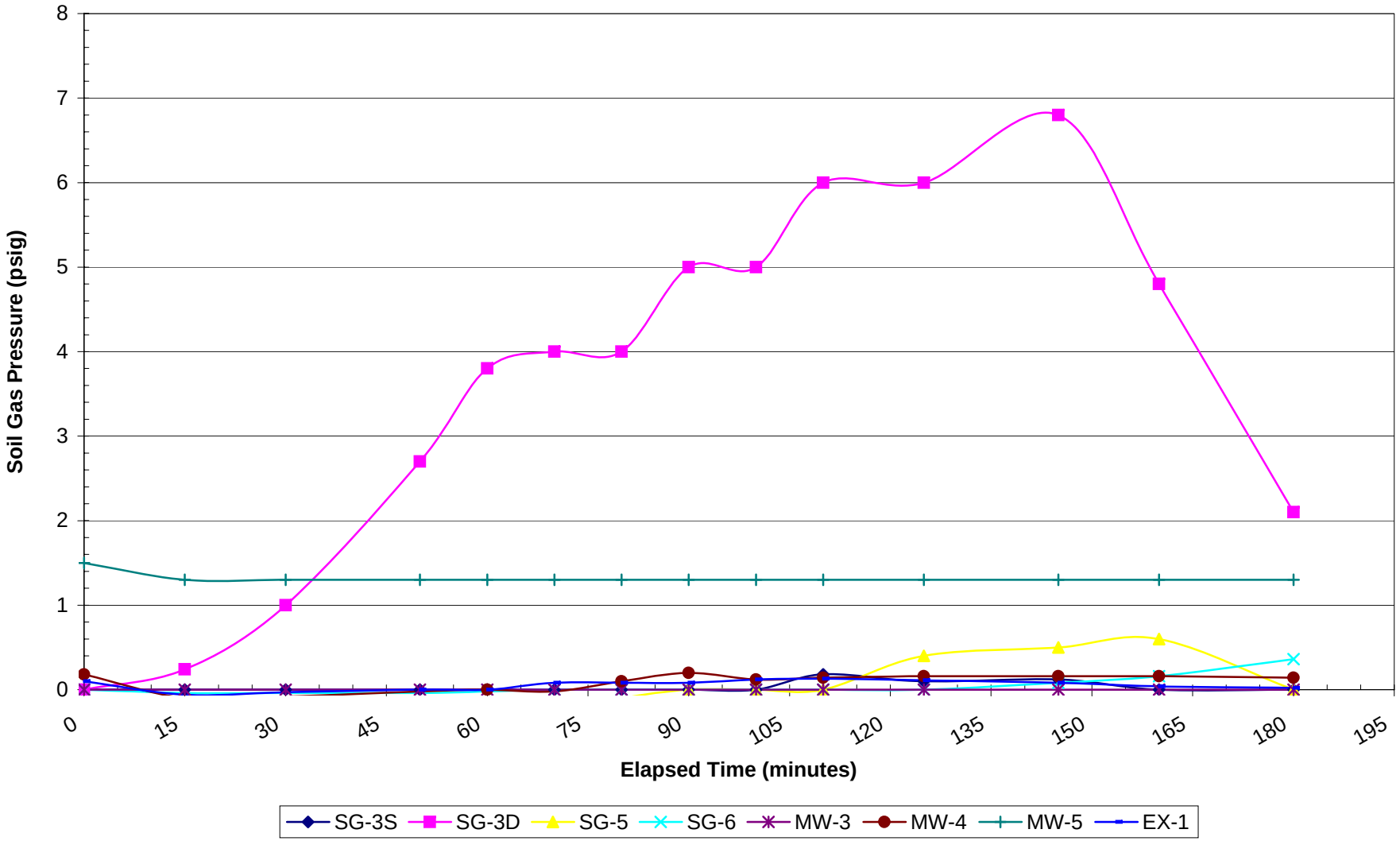


FIGURE 17: SOIL GAS PRESSURE OVER TIME (AS-2)

6211 San Pablo Avenue, Oakland, California

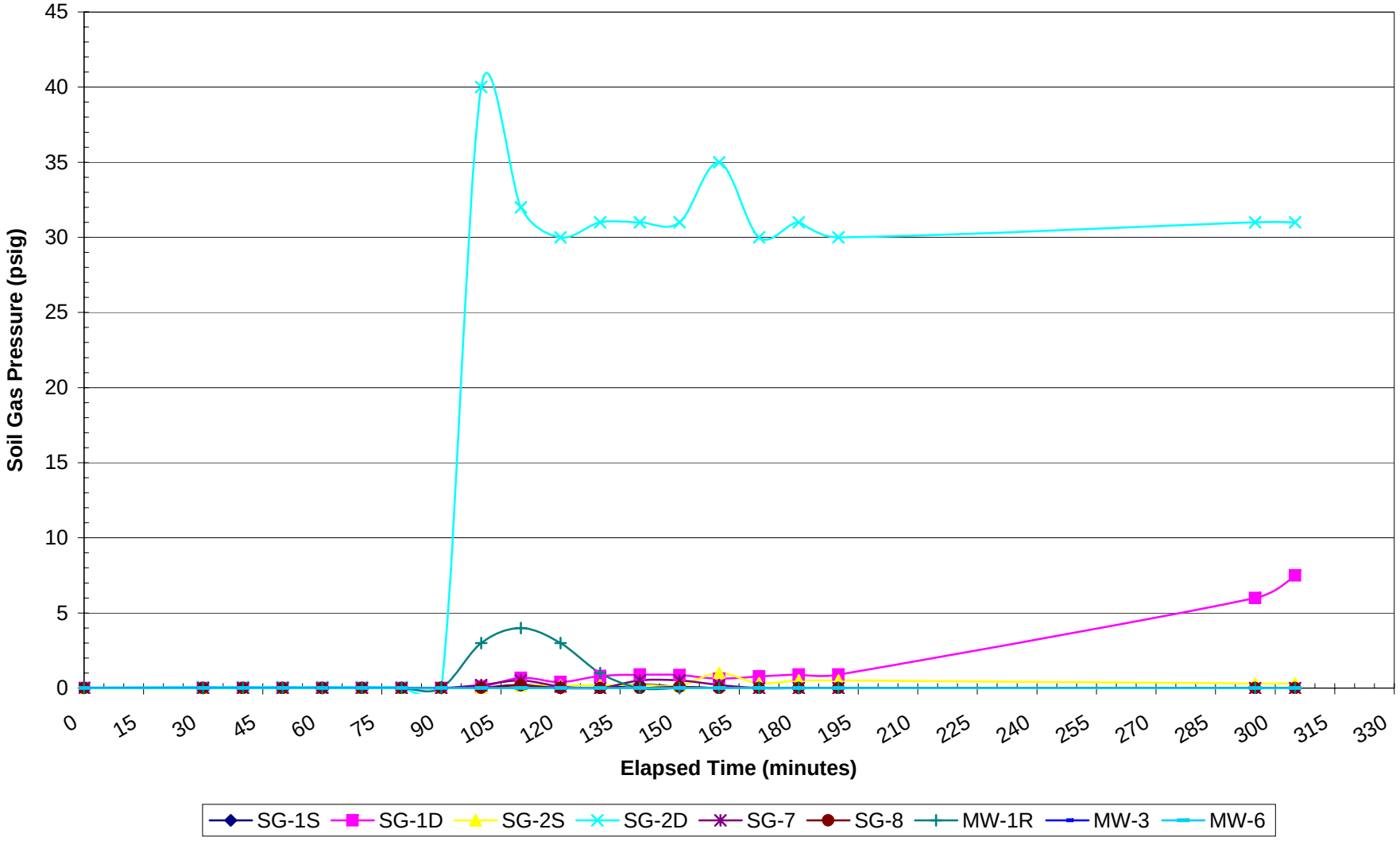


FIGURE 18: SOIL GAS PRESSURE OVER TIME (AS-3)

6211 San Pablo Avenue, Oakland, California

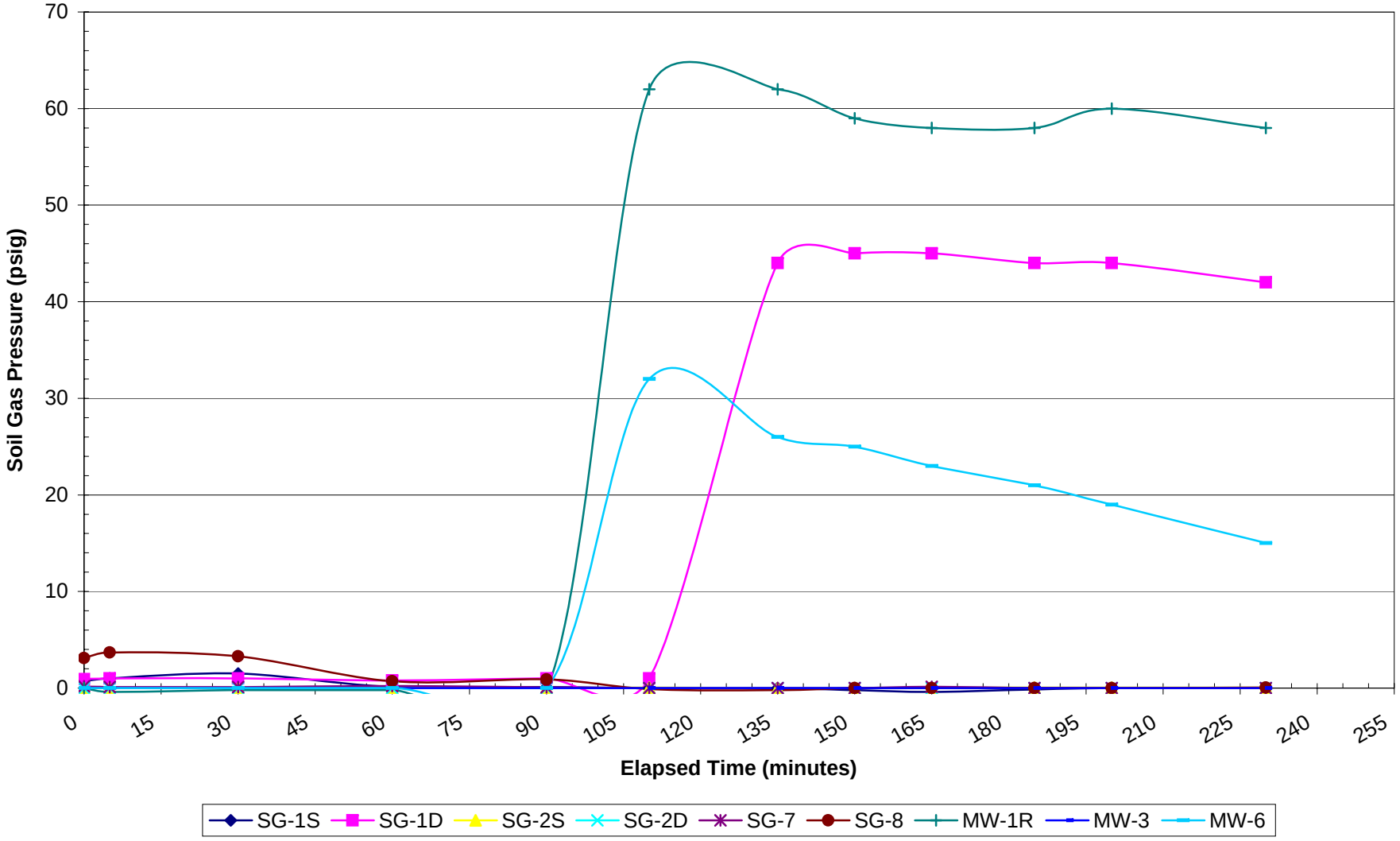


FIGURE 19: SPARGE TEST AS-1 HELIUM DISTRIBUTION

6211 San Pablo Avenue, Oakland, California

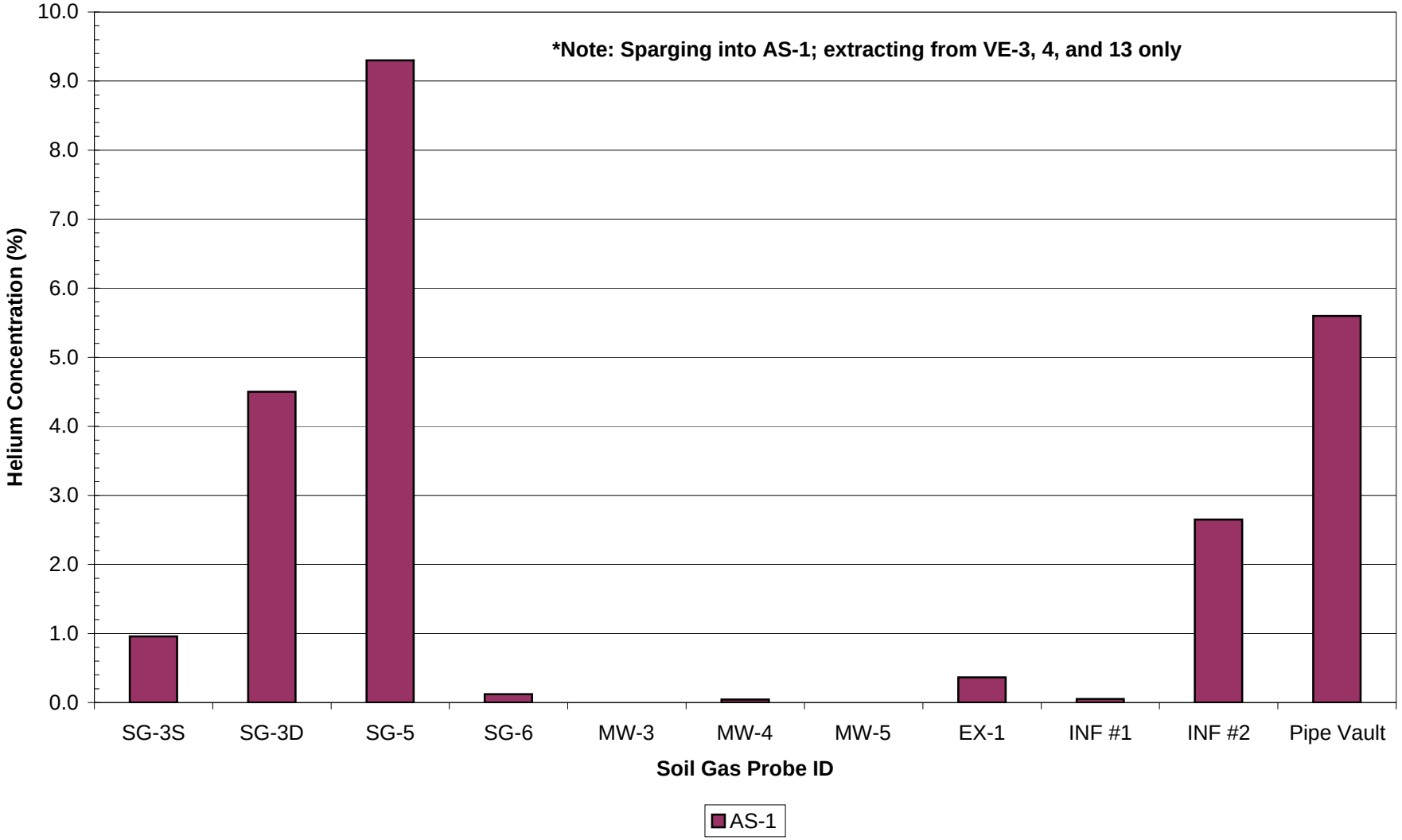


FIGURE 20: SPARGE TEST AS-2 HELIUM DISTRIBUTION

6211 San Pablo Avenue, Oakland, California

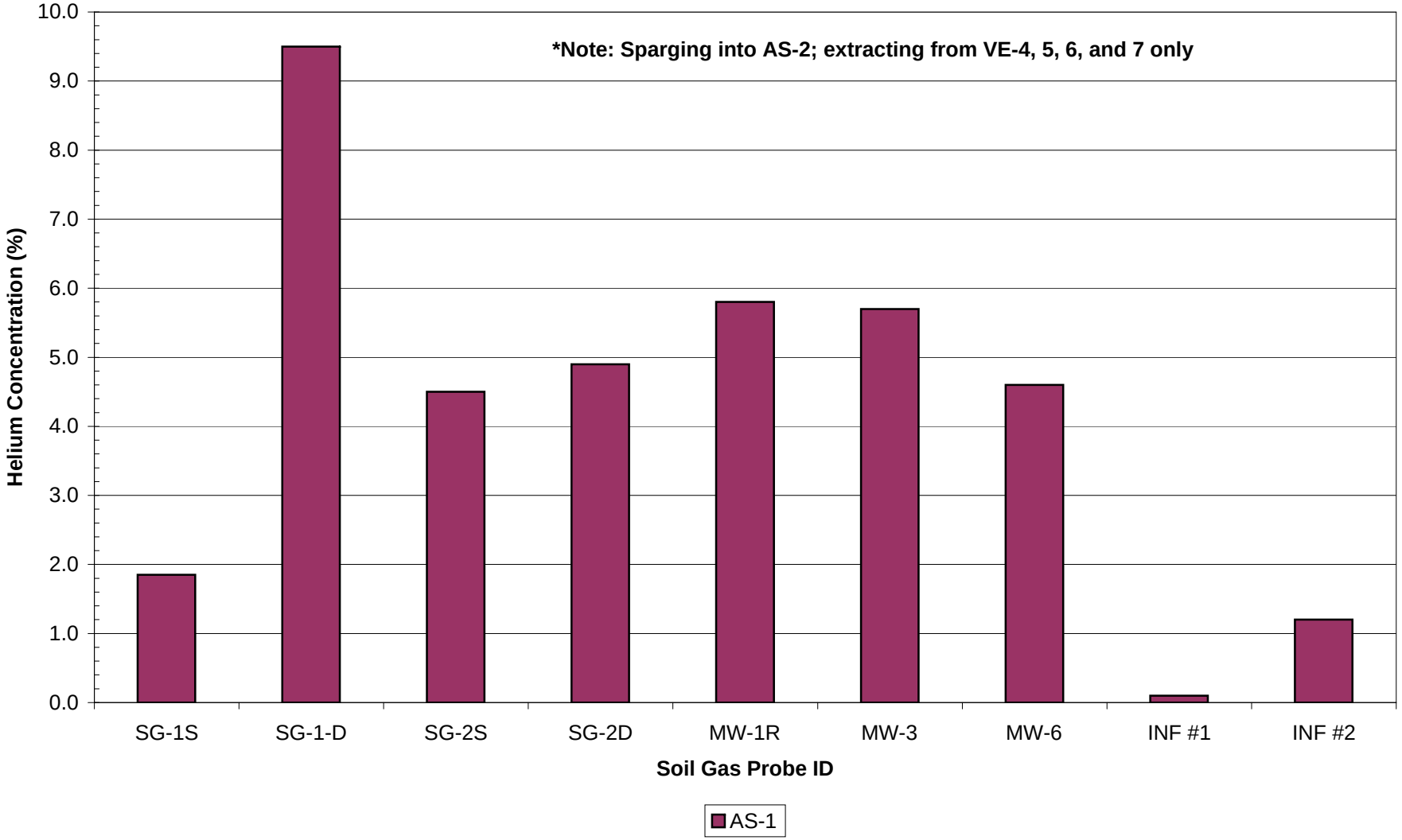


FIGURE 21: SPARGE TEST AS-3 HELIUM DISTRIBUTION

6211 San Pablo Avenue, Oakland, California

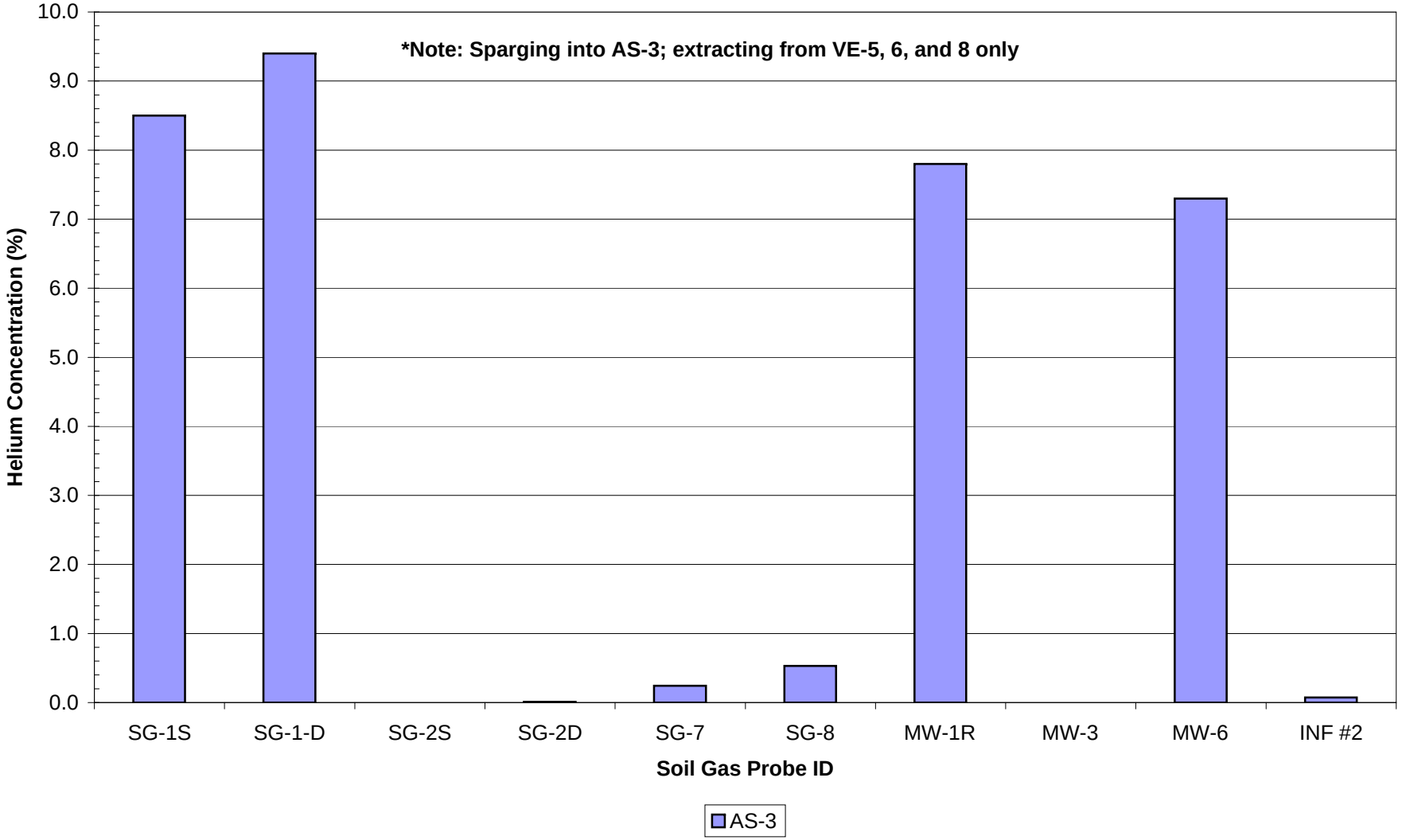


Figure 22: MW-3 Groundwater Concentrations Over Time

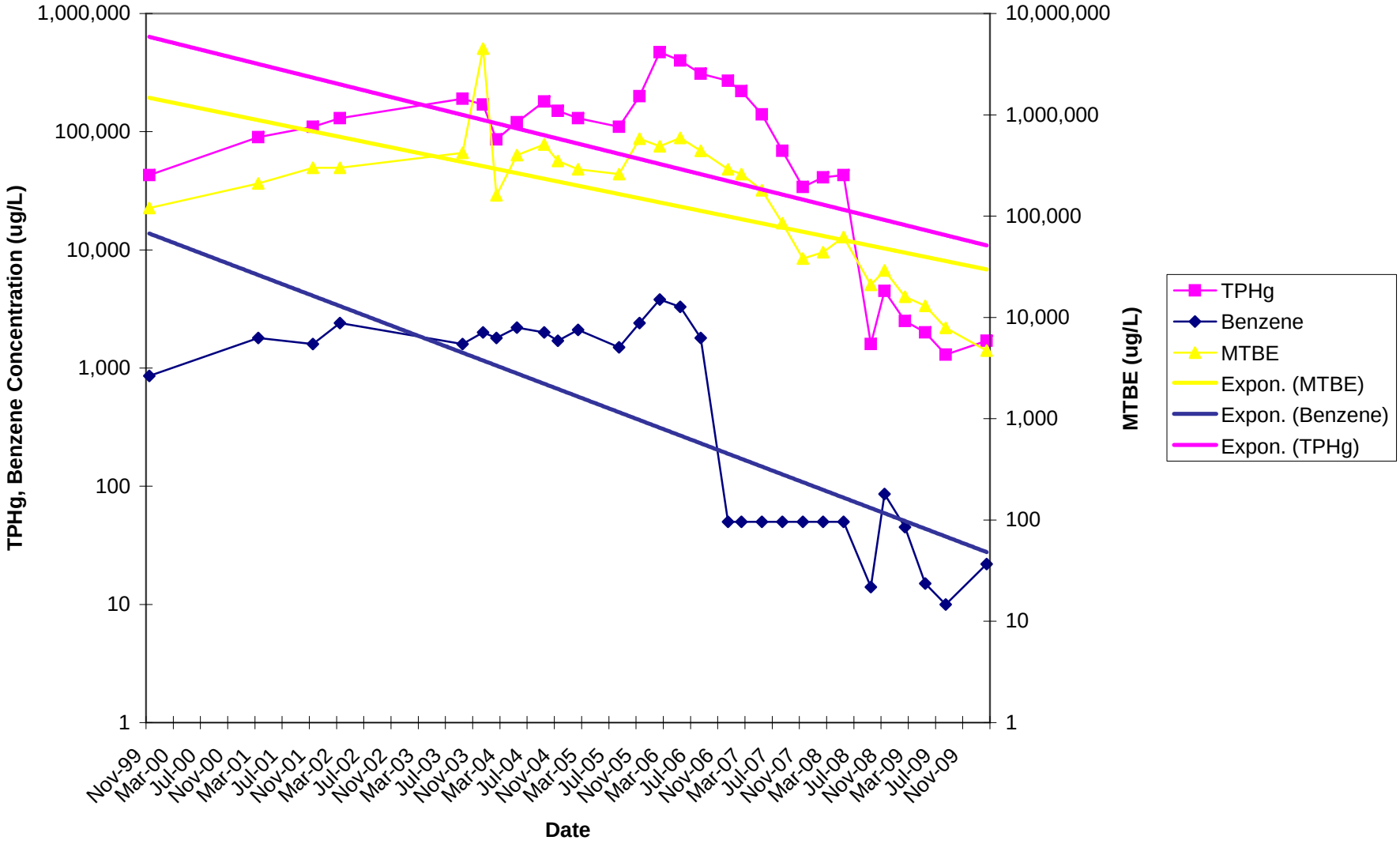
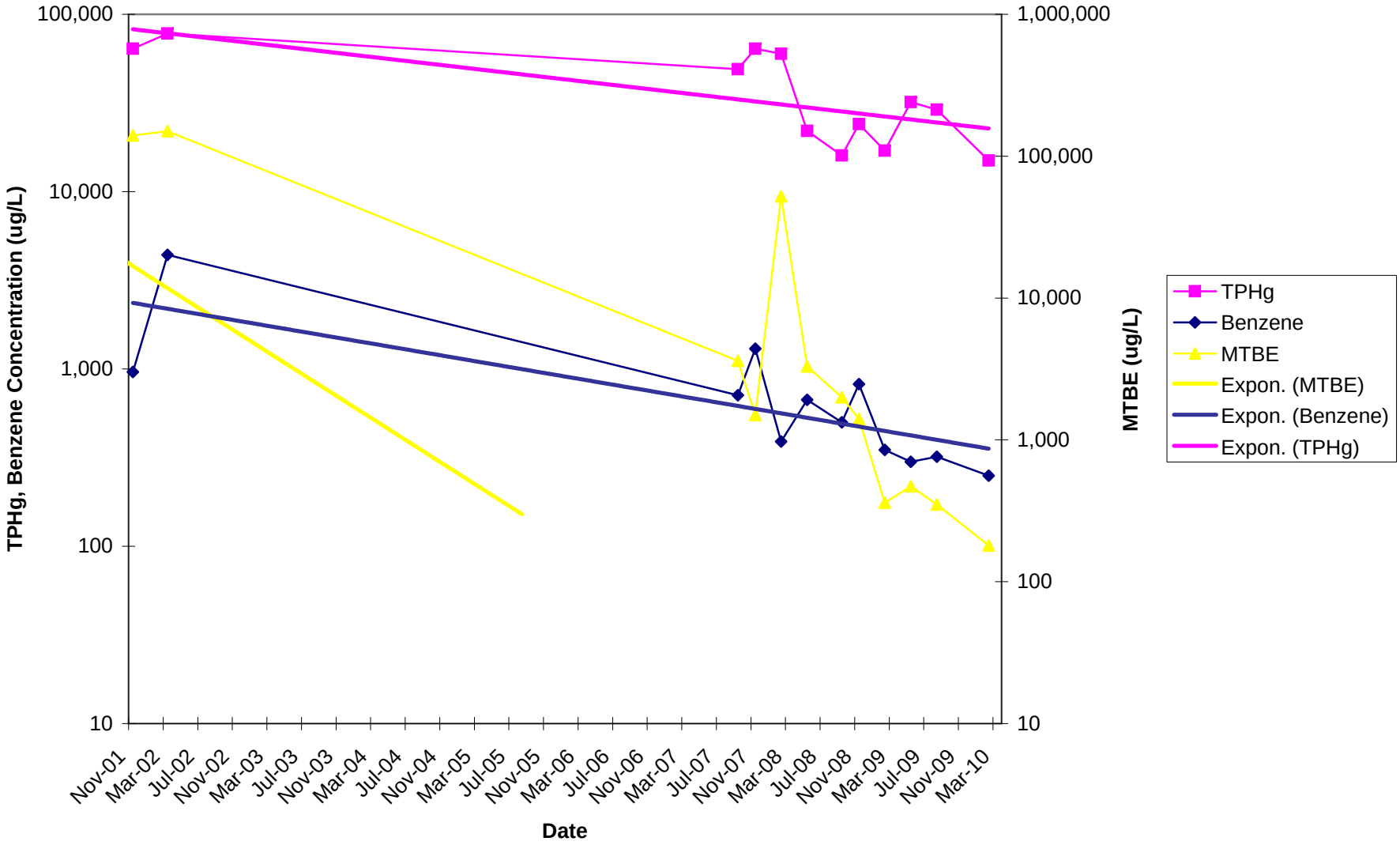


Figure 23: MW-4 Groundwater Concentrations Over Time



TABLES

Table 1, 6211 San Pablo Avenue, Oakland, CA - AEI Project # 280346

Soil Analytical Data

Sample ID	Date	Depth (feet bgs)	TPHg mg/kg	Benzene mg/kg	Toluene mg/kg	Ethylbenzene mg/kg	Xylenes mg/kg	MTBE mg/kg	DIPE mg/kg	ETBE mg/kg	TAME mg/kg	TBA mg/kg	1,2-DCA mg/kg	EDB mg/kg
DP-4														
DP-4-3.5	11/24/2008	3.5	**16**	ND<0.005	**0.037**	ND<0.005	**0.041**	ND<0.005	ND<0.005	ND<0.005	ND<0.005	**0.15**	ND<0.004	ND<0.004
DP-4-7.5	11/24/2008	7.5	**16**	ND<0.005	**0.12**	**0.016**	**0.032**	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.05	ND<0.004	ND<0.004
DP-4-15	11/24/2008	15	ND<1.0	ND<0.005	ND<0.005	ND<0.005	ND<0.005	**1.3**	ND<0.10	ND<0.10	**0.12**	ND<1.0	ND<0.080	ND<0.080
SB-5														
SB-5-7.5	11/25/2008	7.5	ND<1.0	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.05	ND<0.004	ND<0.004
SB-7														
SB-7-3.5	11/25/2008	3.5	ND<1.0	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.05	ND<0.004	ND<0.004
SB-7-10.5	11/25/2008	10.5	ND<1.0	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.05	ND<0.004	ND<0.004
SB-8														
SB-8-3.5	11/24/2008	3.5	**1.5**	ND<0.005	**0.024**	ND<0.005	ND<0.005	**0.055**	ND<0.005	ND<0.005	ND<0.005	ND<0.05	ND<0.004	ND<0.004
SB-8-6	11/24/2008	6	**14**	**0.024**	**0.12**	**0.45**	**0.087**	**0.092**	ND<0.005	ND<0.005	ND<0.005	**0.090**	ND<0.004	ND<0.004
SB-8-11.5	11/24/2008	11.5	**1.4**	ND<0.005	ND<0.005	**0.034**	**0.049**	**1.4**	ND<0.050	ND<0.050	**0.061**	**2.7**	ND<0.040	ND<0.040
SB-9														
SB-9-10	11/24/2008	10	ND<1.0	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.05	ND<0.004	ND<0.004
SB-10														
SB-10-6	11/24/2008	6	ND<1.0	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.05	ND<0.004	ND<0.004
SB-11														
SB-11-3.5	11/24/2008	3.5	ND<1.0	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.05	ND<0.004	ND<0.004
SB-11-7.5	11/24/2008	7.5	**200**	ND<0.10	**0.96**	**1.4**	**3.9**	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.05	ND<0.004	ND<0.004
SB-11-15.5	11/24/2008	15.5	ND<1.0	ND<0.005	ND<0.005	ND<0.005	ND<0.005	**0.023**	ND<0.005	ND<0.005	ND<0.005	ND<0.05	ND<0.004	ND<0.004
SB-12														
SB-12-3.5	11/25/2008	3.5	ND<1.0	ND<0.005	ND<0.005	ND<0.005	ND<0.005	**0.0083**	ND<0.005	ND<0.005	ND<0.005	ND<0.05	ND<0.004	ND<0.004
SB-12-6.5	11/25/2008	6.5	**4.2**	**0.023**	**0.034**	**0.036**	**0.0088**	**0.26**	ND<0.010	ND<0.010	ND<0.010	**0.17**	ND<0.0080	ND<0.0080
SB-12-11.5	11/25/2008	11.5	ND<1.0	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.050	ND<0.050	ND<0.050	ND<0.050	**2.1**	ND<0.040	ND<0.040
SB-13														
SB-13-7.5	11/25/2008	7.5	**26**	**0.010**	**0.20**	**0.18**	**0.64**	ND<0.010	ND<0.010	ND<0.010	ND<0.010	**0.12**	ND<0.0080	ND<0.0080
SB-14														
SB-14-3.5	11/24/2008	3.5	**3.0**	ND<0.050	**0.014**	ND<0.050	ND<0.050	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.05	ND<0.004	ND<0.004
SB-14-7.5	11/24/2008	7.5	**120**	ND<0.050	**0.75**	**2.3**	**6.2**	ND<0.10	ND<0.10	ND<0.10	ND<0.10	ND<1.0	ND<0.080	ND<0.080
SB-14-11.5	11/24/2008	11.5	ND<1.0	ND<0.050	ND<0.050	ND<0.050	ND<0.050	**0.15**	ND<0.005	ND<0.005	ND<0.005	ND<0.05	ND<0.004	ND<0.004

Table 1, 6211 San Pablo Avenue, Oakland, CA - AEI Project # 280346

Soil Analytical Data

Sample ID	Date	Depth (feet bgs)	TPHg mg/kg	Benzene mg/kg	Toluene mg/kg	Ethylbenzene mg/kg	Xylenes mg/kg	MTBE mg/kg	DIPE mg/kg	ETBE mg/kg	TAME mg/kg	TBA mg/kg	1,2-DCA mg/kg	EDB mg/kg
DDP-1														
DDP-1-5	11/25/2008	5	**4.5**	**0.096**	**0.044**	**0.017**	**0.021**	**7.9**	ND<0.25	ND<0.25	**0.28**	**12**	ND<0.20	ND<0.20
DDP-1-8	11/25/2008	8	**96**	ND<0.050	**0.93**	**0.19**	**0.13**	**0.32**	ND<0.020	ND<0.020	ND<0.020	**1.3**	ND<0.016	ND<0.016
DDP-1-11.5	11/25/2008	11.5	**11**	**0.0077**	**0.099**	**0.016**	**0.057**	**1.0**	ND<0.033	ND<0.033	**0.17**	**4.4**	ND<0.027	ND<0.027
DDP-1-19.5	11/25/2008	19.5	ND<1.0	ND<0.005	ND<0.005	ND<0.005	ND<0.005	**4.0**	ND<0.20	ND<0.20	**0.26**	**7.1**	ND<0.16	ND<0.16
DDP-2														
DDP-2-5	11/26/2008	5	**5.8**	**0.010**	**0.054**	**0.0063**	**0.057**	**3.4**	ND<0.10	ND<0.10	**0.23**	**2.3**	ND<0.080	ND<0.080
DDP-2-7.5	11/26/2008	7.5	**850**	**0.78**	**4.0**	**6.8**	**63**	**7.9**	ND<0.20	ND<0.20	**0.58**	**3.4**	ND<0.16	ND<0.16
DDP-2-10.5	11/26/2008	10.5	**14**	**0.045**	**0.13**	**0.040**	**0.14**	**8.0**	ND<0.50	ND<0.50	ND<0.50	**12**	ND<0.40	ND<0.40
DDP-2-20.5	11/26/2008	20.5	ND<1.0	ND<0.005	ND<0.005	ND<0.005	ND<0.005	**0.86**	ND<0.050	ND<0.050	ND<0.050	ND<0.50	ND<0.040	ND<0.040
DDP-2-26.5	11/26/2008	26.5	ND<1.0	ND<0.005	ND<0.005	ND<0.005	ND<0.005	**0.14**	ND<0.005	ND<0.005	ND<0.005	ND<0.05	ND<0.004	ND<0.004
DDP-2-35.5	11/26/2008	35.5	ND<1.0	ND<0.005	ND<0.005	ND<0.005	ND<0.005	**0.039**	ND<0.005	ND<0.005	ND<0.005	ND<0.05	ND<0.004	ND<0.004
DDP-3														
DDP-3-5	11/26/2008	5	**170**	ND<0.10	**1.6**	**0.81**	**20**	**6.3**	ND<0.25	ND<0.25	**0.38**	**6.6**	ND<0.20	ND<0.20
DDP-3-7.5	11/26/2008	7.5	**930**	**1.7**	**23**	**11**	**73**	**11**	ND<0.50	ND<0.50	**1.1**	ND<5.0	ND<0.40	ND<0.40
DDP-3-12.5	11/26/2008	12.5	ND<1.0	ND<0.005	**0.0075**	ND<0.005	**0.013**	**0.78**	ND<0.10	ND<0.10	ND<0.10	**12**	ND<0.080	ND<0.080
DDP-3-20.5	11/26/2008	20.5	ND<1.0	ND<0.005	ND<0.005	ND<0.005	ND<0.005	**0.18**	ND<0.010	ND<0.010	ND<0.010	ND<0.10	ND<0.0080	ND<0.0080
DDP-3-26	11/26/2008	26	ND<1.0	ND<0.005	ND<0.005	ND<0.005	ND<0.005	**0.022**	ND<0.005	ND<0.005	ND<0.005	ND<0.05	ND<0.004	ND<0.004
DDP-3-35.5	11/26/2008	35.5	ND<1.0	ND<0.005	ND<0.005	ND<0.005	ND<0.005	**0.020**	ND<0.005	ND<0.005	ND<0.005	ND<0.05	ND<0.004	ND<0.004
DDP-4														
DDP-4-3.5	11/26/2008	3.5	ND<1.0	ND<0.005	ND<0.005	ND<0.005	ND<0.005	**0.055**	ND<0.005	ND<0.005	ND<0.005	ND<0.05	ND<0.004	ND<0.004
DDP-4-7.5	11/26/2008	7.5	**180**	**0.040**	**0.84**	**0.26**	**2.5**	**0.11**	ND<0.020	ND<0.020	ND<0.020	ND<0.20	ND<0.016	ND<0.016
DDP-4-10.5	11/26/2008	10.5	ND<1.0	ND<0.005	ND<0.005	ND<0.005	ND<0.005	**0.0093**	ND<0.005	ND<0.005	ND<0.005	ND<0.05	ND<0.004	ND<0.004
DDP-4-20.5	11/26/2008	20.5	ND<1.0	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.05	ND<0.004	ND<0.004
DDP-4-29.5	11/26/2008	29.5	ND<1.0	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.05	ND<0.004	ND<0.004
MW-7														
MW-7-8	2/11/2010	8	**220**	ND<0.10	**1.6**	**2.6**	**1.9**	ND<1.0*	NA	NA	NA	NA	NA	NA
MW-7-14.5	2/11/2010	14.5	ND<1.0	ND<0.005	ND<0.005	ND<0.005	ND<0.005	**0.19***	NA	NA	NA	NA	NA	NA
MW-7-19.5	2/11/2010	19.5	ND<1.0	ND<0.005	ND<0.005	ND<0.005	ND<0.005	**0.59***	NA	NA	NA	NA	NA	NA
MW-7-29.5	2/11/2010	29.5	ND<1.0	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.05	ND<0.004	ND<0.004
MW-8														
MW-8-4.5	2/11/2010	4.5	**19**	ND<0.005	**0.19**	**0.066**	**0.033**	ND<0.05*	NA	NA	NA	NA	NA	NA
MW-8-9.5	2/11/2010	9.5	**1.8**	ND<0.005	**0.010**	**0.022**	**0.097**	ND<0.05*	NA	NA	NA	NA	NA	NA
MW-8-14.5	2/11/2010	14.5	ND<1.0	ND<0.005	ND<0.005	ND<0.005	ND<0.005	**0.40***	NA	NA	NA	NA	NA	NA
MW-8-19.5	2/11/2010	19.5	ND<1.0	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.05	ND<0.004	ND<0.004
MW-9														
MW-9-5.5	2/12/2010	5.5	ND<1.0	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.05*	NA	NA	NA	NA	NA	NA
MW-9-9.5	2/12/2010	9.5	ND<1.0	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.05*	NA	NA	NA	NA	NA	NA
MW-9-14.5	2/12/2010	14.5	ND<1.0	ND<0.005	ND<0.005	ND<0.005	ND<0.005	**0.027**	ND<0.005	ND<0.005	ND<0.005	ND<0.05	ND<0.004	ND<0.004
MW-10														
MW-10-6	2/12/2010	6	**64**	ND<0.050	**0.62**	ND<0.050	ND<0.050	ND<0.50*	NA	NA	NA	NA	NA	NA
MW-10-9.5	2/12/2010	9.5	**1.9**	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.05*	NA	NA	NA	NA	NA	NA
MW-10-14.5	2/12/2010	14.5	ND<1.0	ND<0.005	ND<0.005	ND<0.005	ND<0.005	ND<0.05*	NA	NA	NA	NA	NA	NA

Table 1, 6211 San Pablo Avenue, Oakland, CA - AEI Project # 280346

Soil Analytical Data

Sample ID	Date	Depth (feet bgs)	TPHg mg/kg	Benzene mg/kg	Toluene mg/kg	Ethylbenzene mg/kg	Xylenes mg/kg	MTBE mg/kg	DIPE mg/kg	ETBE mg/kg	TAME mg/kg	TBA mg/kg	1,2-DCA mg/kg	EDB mg/kg

Notes:
TPHg = total petroleum hydrocarbons as gasoline using EPA Method 8015
Benzene, toluene, ethylbenzene, and xylenes using EPA Method 8021B
MTBE = methyl-tertiary butyl ether using EPA Method 8260B
* = MTBE = methyl-tertiary butyl ether using EPA Method 8021B
TBA = tert-butyl alcohol using EPA Method 8260B
TAME = tert-amyl methyl ether using EPA Method 8260B
DIPE = diisopropyl ether using EPA Method 8260B
ETBE = ethyl tert-butyl ether using EPA Method 8260B
1,2-DCA = 1,2-dichloroethane using EPA Method 8260B
EDB = Ethylene dibromide using EPA Method 8260B
mg/kg = milligrams per kilogram
ND = non detect at respective reporting limit
NA = not analyzed

Table 2, 6211 San Pablo Avenue, Oakland, CA - AEI Project # 280346

Groundwater Analytical Data - Soil Borings

Sample ID	Date	TPHg ug/L	Benzene ug/L	Toluene ug/L	Ethylbenzene ug/L	Xylenes ug/L	MTBE ug/L	DIPE ug/L	ETBE ug/L	TAME ug/L	TBA ug/L	1,2-DCA ug/L	EDB ug/L
DP-4	11/24/2008	**1,700**	**17**	**5.6**	**22**	**5.3**	**9,700**	ND<250	ND<250	**800**	**10,000**	ND<250	ND<250
SB-5	11/25/2008	**430**	ND<1.7	ND<1.7	ND<1.7	ND<1.7	**4,600**	ND<100	ND<100	**460**	ND<400	ND<100	ND<100
SB-7	11/25/2008	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<2.0	ND<0.5	ND<0.5
SB-8	11/24/2008	**47,000**	**530**	**200**	**3,100**	**4,100**	**1,900**	ND<170	ND<170	ND<170	**30,000**	ND<170	ND<170
SB-9	11/24/2008	**1,300**	**8.6**	**3.9**	**55**	**200**	**180**	ND<5.0	ND<5.0	**12**	**25**	ND<5.0	ND<5.0
SB-10	11/24/2008	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	**18**	ND<0.5	ND<0.5	ND<0.5	**2.5**	ND<0.5	ND<0.5
SB-11	11/24/2008	**1,200**	**5.6**	**0.59**	**38**	**220**	**160**	ND<5.0	ND<5.0	**5.4**	**37**	ND<5.0	ND<5.0
SB-12	11/25/2008	**390**	**1.3**	**0.93**	**18**	**56**	**3,900**	ND<120	ND<120	ND<120	**29,000**	ND<120	ND<120
SB-13	11/25/2008	**1,100**	ND<5.0	ND<5.0	ND<5.0	**14**	**18,000**	ND<250	ND<250	**720**	**5,400**	ND<250	ND<250
SB-14	11/24/2008	**1,300**	**20**	**6.9**	**61**	**170**	**1,900**	ND<50	ND<50	**52**	**350**	ND<50	ND<50
DDP-1	11/25/2008	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5	**47**	ND<1.0	ND<1.0	**2.8**	**100**	ND<1.0	ND<1.0
DDP-1D	11/25/2008	**130**	**5.7**	**6.6**	**5.4**	**21**	**21**	ND<2.5	ND<2.5	**2.7**	**500**	ND<2.5	ND<2.5
MW-7(D)	2/11/2010	ND<50	ND<0.5	ND<0.5	**1.2**	**2.3**	ND<25	ND<25	ND<25	ND<25	**3,000**	ND<25	ND<25
MW-8(D)	2/11/2010	**54**	ND<0.5	ND<0.5	**1.1**	**3.0**	**570**	ND<12	ND<12	**14**	ND<50	ND<12	ND<12

Notes:
TPHg = total petroleum hydrocarbons as gasoline using EPA Method 8015
Benzene, toluene, ethylbenzene, and xylenes using EPA Method 8021B
MTBE = methyl-tertiary butyl ether using EPA Method 8260B
TBA = tert-butyl alcohol using EPA Method 8260B
TAME = tert-amyl methyl ether using EPA Method 8260B
DIPE = diisopropyl ether using EPA Method 8260B
ETBE = ethyl tert-butyl ether using EPA Method 8260B
1,2-DCA = 1,2-dichloroethane using EPA Method 8260B
EDB = Ethylene dibromide using EPA Method 8260B
µg/L= micrograms per liter
ND = non detect at respective reporting limit

Table 3, 6211 San Pablo Avenue, Oakland, CA - AEI Project # 280346

Soil Vapor Analytical Data

Sample ID	Date	Notes	Purge Vacuum (in-H2O)	TPHg ug/m^3	Benzene ug/m^3	Toluene ug/m^3	Ethylbenzene ug/m^3	Xylenes ug/m^3	MTBE ug/m^3
Shallow Probes *(Screened Interval)*									
SG-1-3	12/3/2008	1,3,5	NA	**20,000**	ND<6.5	**25**	**10**	**39**	ND<7.3
(2.5 to 3.0')	5/15/2009	1,3,5,8	NA	**150,000**	ND<26	ND<31	ND<35	ND<110	ND<29
	3/18/2010	2,4,6,8	326	**3,800,000**	ND<250	**26,000**	ND<250	**720**	ND<2,500
SG-2-3	12/3/2008	1,3,5	NA	**18,000**	ND<26	ND<31	ND<35	ND<110	**470**
(2.5 to 3.0')	5/15/2009	8	NA	NS	NS	NS	NS	NS	NS
	3/18/2010	2,4,6,8	50	**5,700,000**	**1,900**	**57,000**	ND<1,000	**1,700**	ND<25,000
SG-3-3	12/3/2008	1,4,6	NA	**470,000**	ND<140	**10,000**	ND<120	**750**	ND<1,200
(2.5 to 3.0')	5/15/2009	1,3,5	NA	**78,000**	ND<6.5	ND<7.7	ND<8.8	ND<27	ND<7.3
	3/18/2010	2,4,6,8	93	ND<25,000	ND<250	ND<250	ND<250	ND<250	ND<2,500
SG-4	3/18/2010	2,4,6,8	90	ND<25,000	ND<250	**280**	ND<250	ND<250	**7,400**
(4 to 4.5')									
SG-5	3/18/2010	2,4,6,8	300	**59,000,000**	**730,000**	**320,000**	**75,000**	**72,000**	ND<800,000
(4 to 4.5')									
SG-6	3/18/2010	2,4,6,8	30	**1,100,000**	**9,200**	**12,000**	ND<1,700	**28,000**	**76,000**
(4 to 4.5')									
SG-7	3/18/2010	8,10	367	NS	NS	NS	NS	NS	NS
(4 to 4.5')									
SG-8	3/18/2010	10	>408	NS	NS	NS	NS	NS	NS
(4 to 4.5')									
Deep Probes									
SG-1-6	12/3/2008	1,4,6	NA	**43,000,000**	**12,000**	**480,000**	ND<7,600	**21,000**	ND<110,000
(5.5' to 6.0')	5/15/2009	1,3,7	NA	**860,000**	**3,200**	ND<500	ND<500	ND<500	ND<500
	3/18/2010	2,4,6,8	136	**48,000,000**	**42,000**	**470,000**	ND<5,000	**37,000**	ND<150,000
SG-2-6	12/3/2008	1,4,6	NA	**38,000,000**	**41,000**	**370,000**	ND<5,400	ND<8,000	ND<290,000
(5.5' to 6.0')	5/15/2009	1,3,7	NA	**860,000**	**12,000**	ND<500	ND<500	ND<500	ND<500
	3/18/2010	2,4,6	190	**41,000,000**	**72,000**	**390,000**	ND<10,000	ND<10,000	ND<200,000
SG-3-6	12/3/2008	1,4,6	NA	**1,200,000**	**890**	**26,000**	ND<1.5	**2,300**	ND<15,000
(5.5' to 6.0')	5/15/2009	1,3,7,9	NA	**860,000**	**2,300**	ND<500	ND<500	ND<500	ND<500
	3/18/2010	2,4,6,8	354	NS	NS	NS	NS	NS	NS
Replicate Samples									
SG-3-6-DUP	12/3/2008	1,4,6	NA	**440,000**	**570**	**8,800**	ND<390	**1,100**	ND<17,000
SG-3-3	5/15/2009	1,3,5	NA	**10,000**	ND<6.5	ND<7.7	ND<8.8	ND<27	ND<7.3
SG-6(Dup)	3/18/2010	2,4,6,8	35	**480,000**	**1,800**	**7,300**	ND<500	**600**	**87,000**
ESL - Residential				10,000	84	63,000	980	21,000	9,400
ESL - Commercial				29,000	280	180,000	3,300	58,000	31,000

Notes:
TPHg = total petroleum hydrocarbons as gasoline
MTBE = methyl-tertiary butyl ether
µg/m^3= micrograms per cubic meter
ND = non detect at respective reporting limit
NA = not available
NS = not sampled
ESL = Environmental Screening Level for shallow soil vapor as determined by the Regional Water Quality Control Board - San Francisco Bay Region.
190 - Red color indicates purge vacuum is greater than current "low flow" criteria of 100 in-H2O
1 - Sample collected using a summa canister
2 - Sample collected using a tedlar bag
3 - TPHg analyzed using TO3
4 - TPHg analyzed using EPA Method 8015
5 - BTEX/MTBE analyzed using Method TO15
6 - BTEX/MTBE analyzed using EPA Method 8021B
7 - BTEX/MTBE analyzed using EPA Method 8260B
8 - Water observed coming from the probe, partial or no sample collected.
9 - Low flow conditions, took 1 hour to move from -30 in-Hg to -20 in-Hg
10 - After 15+ minutes, no air collected in Tedlar Bag.

Table 4, 6211 San Pablo Avenue, Oakland, CA - AEI Project # 280346
Additional Soil Analytical Data

Sample ID	Date	Depth (feet bgs)	Moisture Content[1] (wet wt)	Bulk Density (g/cm^3)	Dry Bulk Density (g/cm^3)	Estimated Total Porosity (n)	Estimated Water-Filled Porosity ($\theta_{w)}$)	Estimated Air-Filled Porosity ($\theta_{a)}$)	TIC (mg/kg)	TOC (mg/kg)	TC (mg/kg)	Grain Size Distribution (%) Gravel	Sand	Silt	Clay	Soil Description
SB-12																
SB-12-11.5	11/25/08	11.5	17.4%	2.0	1.7	0.36	0.36	0.00	390	660	1,050	4.4	58.5	26.9	10.2	Gray Clayey SAND
DDP-1																
DDP-1-6	11/25/08	6	19.6%	1.9	1.6	0.40	0.31	0.09	1,200	5,200	6,400	0	7.3	39.6	53.1	Gray CLAY
DDP-1-10	11/25/08	10	13.3%	2.1	1.9	0.30	0.30	0.00	ND<200	1,000	1,100	18.5	45.6	21.1	14.8	Olive Gray Clayey SAND w/ Gravel
DDP-3																
DDP-3-5.5	11/26/08	5.5	13.1%	1.9	1.7	0.37	0.22	0.15	6,700	10,000	16,700	0	21.1	41.5	37.4	Gray CLAY w/ Sand & Calcium Carbonate
DDP-3-10	11/26/08	10	14.8%	1.9	1.7	0.38	0.38	0.00	ND<200	900	1,000	26.3	44.9	21.8	7.0	Mottled Olive Clayey SAND w/ Gravel

NOTES:

feet bgs = feet below ground surface
g/cm^3 = grams per cubic centimeter
pcf = pounds per cubic foot
wet wt = wet weight
TIC = Total Inorganic Carbon
TOC = Total Organic Carbon
TC = TIC + TOC = Total Carbon

Bulk Density by SSSA #5
Moisture Content by ASTM D2216
TIC by SM5310B
TOC by SM5310B
Grain-Size Distribution by ASTM D422
Moisture Content (w) = Weight of Water / Weight of Solids

Bulk Density (γ)
Dry Bulk Density (γ_d) = $\gamma/(1+w)$
Total Porosity (n) = 1 - (Dry Bulk Density / Soil Specific Gravity)
Water-Filled Porosity = Moisture Content * Dry Bulk Density
Air-Filled Porosity = Total Porosity - Water-Filled Porosity
Soil Specific Gravity = 2.65 (estimated value for sand)

1 pound = 454 grams
1 ft^3 = 28,317 cm^3
g/cm^3 * 62.37 = pcf
Density of Water = 1.0 g/cm^3

1) A 2% by weight was the lowest soil moisture content measured at a successful U.S. Air Force Bioventing Initiative site in San Bernardino County, California (Hinchee & Leeson, 1997)
2) Because the soil core sample was compressed during collection, the actual air-filled porosity is most likley greater than the estimated value

Table 5, 6211 San Pablo Avenue, Oakland, CA - AEI Project # 280346
Groundwater Elevation Data

Well ID (Screen Interval)	Date Collected	Well Elevation *(ft amsl)*	Depth to Water *(ft)*	Groundwater Elevation *(ft amsl)*
MW-1R	5/15/2008	36.67	8.53	28.14
(3-23)	9/10/2008	36.67	9.36	27.31
	11/18/2008	36.67	8.82	27.85
	2/17/2009	36.67	5.67	31.00
	5/15/2009	36.67	7.79	28.88
	8/13/2009	36.67	9.20	27.47
	2/23/2010	**36.67**	**6.67**	**30.00**
MW-2	5/15/2008	36.33	7.63	28.70
(6-21)	9/10/2008	36.33	8.43	27.90
	11/18/2008	36.33	7.83	28.50
	2/17/2009	36.33	4.92	31.41
	5/15/2009	36.33	6.81	29.52
	8/13/2009	36.33	8.23	28.10
	2/23/2010	**36.33**	**6.06**	**30.27**
MW-3	5/15/2008	35.12	7.23	27.89
(6-21)	9/10/2008	35.12	8.08	27.04
	11/18/2008	35.12	7.52	27.60
	2/17/2009	35.12	4.36	30.76
	5/15/2009	35.12	6.50	28.62
	8/13/2009	35.12	7.96	27.16
	2/23/2010	**35.12**	**5.10**	**30.02**
MW-4	5/15/2008	34.11	5.43	28.68
(5-20)	9/10/2008	34.11	7.26	26.85
	11/18/2008	34.11	5.84	28.27
	2/17/2009	34.11	2.67	31.44
	5/15/2009	34.11	4.90	29.21
	8/13/2009	34.11	6.02	28.09
	2/23/2010	**34.11**	**3.84**	**30.27**

Well ID (Screen Interval)	Date Collected	Well Elevation *(ft amsl)*	Depth to Water *(ft)*	Groundwater Elevation *(ft amsl)*
MW-5	5/15/2008	35.17	6.29	28.88
(5-25)	9/10/2008	35.17	6.99	28.18
	11/18/2008	35.17	6.41	28.76
	2/17/2009	35.17	4.07	31.10
	5/15/2009	35.17	5.59	29.58
	8/13/2009	35.17	6.81	28.36
	2/23/2010	**35.17**	**5.05**	**30.12**
MW-6	5/15/2008	36.07	7.51	28.56
(5-25)	9/10/2008	36.07	8.32	27.75
	11/18/2008	36.07	7.73	28.34
	2/17/2009	36.07	4.64	31.43
	5/15/2009	36.07	6.89	29.18
	8/13/2009	36.07	8.26	27.81
	2/23/2010	**36.07**	**5.76**	**30.31**
MW-7	**2/23/2010**	**31.16**	**2.09**	**29.07**
(6-16)				
MW-8	**2/23/2010**	**30.92**	**2.66**	**28.26**
(5-15)				
MW-9	**2/23/2010**	**28.90**	**2.84**	**26.06**
(5-15)				
MW-10	**2/23/2010**	**30.28**	**0.98**	**29.30**
(5-15)				
EX-1	5/15/2008	33.28	4.69	28.59
(5-30)	9/10/2008	33.28	5.46	27.82
	11/18/2008	33.28	4.79	28.49
	2/17/2009	33.28	1.86	31.42
	5/15/2009	33.28	4.16	29.12
	8/13/2009	33.28	8.36	24.92
	2/23/2010	**33.28**	**3.09**	**30.19**

Table 6, 6211 San Pablo Avenue, Oakland, CA - AEI Project # 280346
Groundwater Flow Data

Event #	Date	Average Water Table Elevation (ft amsl)	Change from Previous Episode (ft)	Gradient (Flow Direction) (ft/ft)
1	11/7/1999	NA	NA	0.0068 (SW)
2	3/8/2001	NA	NA	0.0092 (SW)
3	11/17/2001	NA	NA	0.0091 (SW)
4	3/31/2002	NA	NA	0.0108 (SSW)
5	9/9/2003	NA	NA	0.0031 (SW)
6	12/9/2003	NA	NA	0.0031 (SW)
7	2/19/2004	NA	NA	0.0154 (SW)
8	5/24/2004	NA	NA	0.0081 (WSW)
9	9/3/2004	NA	NA	0.0075 (SW)
10	11/2/2004	NA	NA	0.0083 (WSW)
11	2/17/2005	NA	NA	0.0036 (SW)
12	5/24/2005	NA	NA	0.0097 (SSW)
13	8/15/2005	NA	NA	0.013 (SW)
14	11/17/2005	NA	NA	0.010 (SW)
15	2/8/2006	NA	NA	0.010 (SW)
16	5/5/2006	NA	NA	0.013 (SSW)
17	8/18/2006	NA	NA	0.0125 (SSW)
18	12/1/2006	NA	NA	0.03 (S)
19	2/23/2007	NA	NA	0.012 (SW)
20	5/10/2007	NA	NA	0.013 (SW)
21	8/16/2007	NA	NA	0.022 (SW)
22	11/8/2007	NA	NA	0.012 (WSW)
23	2/14/2008	NA	NA	0.013 (SW)
24	5/15/2008	28.49	NA	0.01 (W)
25	9/10/2008	27.55	-0.94	0.015 (SW)
26	11/18/2008	28.26	0.71	0.012 (W)
27	2/17/2009	31.22	2.96	0.01 (SW)
28	5/15/2009	29.16	-2.06	0.01 (WSW)
29	8/13/2009	27.42	-1.74	0.01 (W)
30 [1]	**2/23/2010**	**29.44**	**2.03**	**0.01 (W)**

ft amsl = feet above mean sea level
All water level depths are measured from the top of casing
NA = not available

[1] = Includes data from newly installed monitoring wells MW-7 through MW-10.

Table 7, 6211 San Pablo Avenue, Oakland, CA - AEI Project # 280346

Groundwater Analytical Data

Sample ID	Date	TPHg µg/L	Benzene µg/L	Toluene µg/L	Ethylbenzene µg/L	Xylenes µg/L	MTBE µg/L	DIPE µg/L	ETBE µg/L	TAME µg/L	TBA µg/L	1,2-DCA µg/L	EDB µg/L
MW-1	11/7/1999	5,700	170	59	22	85	20,000	NA	NA	NA	NA	NA	NA
	3/8/2001	17,000	480	150	52	170	38,000	NA	NA	NA	NA	NA	NA
	11/17/2001	10,000	230	210	60	250	22,000	NA	NA	NA	NA	NA	NA
	3/31/2002	12,000	61	ND	ND	29	35,000	NA	NA	NA	NA	NA	NA
	11/9/2003	19,000	ND	ND	ND	ND	50,000	NA	NA	NA	NA	NA	NA
	12/9/2003	22,000	150	ND	ND	ND	66,000	NA	NA	NA	NA	NA	NA
MW-1R	11/17/2001	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	3/31/2002	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	9/9/2003	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	12/9/2003	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	2/19/2004	1,800	95	130	44	200	220	NA	NA	NA	NA	NA	NA
	5/24/2004	210	12	10	5.4	23	79	ND	ND	2.1	37	ND	ND
	9/3/2004	300	1.5	7.1	9.4	42	81	ND	ND	1.6	ND	ND	ND
	11/2/2004	290	14	30	9.5	45	45	ND	ND	1.1	ND	NA	NA
	2/17/2005	530	3.4	ND	ND	2.6	1,000	ND	ND	100	ND	NA	NA
	5/24/2005	NA	NA	NA	NA	NA	NA	ND	ND	610	ND	ND	ND
	8/15/2005	2,500	64	240	61	210	2,300	ND	ND	210	ND	ND	ND
	11/17/2005	2,500	66	290	75	290	1,300	ND	ND	110	1,600	ND	ND
	2/8/2006	3,300	100	310	86	470	1,400	ND	ND	130	1,400	ND	ND
	5/5/2006	3,400	170	350	97	550	1,100	ND	ND	100	2,400	ND	ND
	8/18/2006	5,800	190	1,000	230	1,000	490	ND	ND	36	2,900	ND	ND
	12/1/2006	410	1.7	6.3	1.2	47	100	ND	ND	4.7	100	ND	ND
	2/23/2007	ND	ND	0.51	ND	1.4	3	ND	ND	ND	ND	ND	ND
	5/10/2007	ND	ND	ND	ND	2.0	5.9	ND	ND	ND	ND	ND	ND
	8/16/2007	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	11/8/2007	1,300	11	82	54	270	1.4	ND	ND	ND	ND	ND	ND
	2/14/2008	800	7.6	31	23	150	1.7	ND	ND	ND	ND	ND	ND
	5/15/2008	3,200	20	200	110	550	4.2	ND<0.50	ND<0.50	1.0	ND<20	ND<0.50	ND<0.50
	9/10/2008	1,000	6.5	22	19	120	2.3	ND<0.50	ND<0.50	ND<0.50	4.0	ND<0.50	ND<0.50
	11/18/2008	430	4.1	18	12	100	1.8	ND<0.50	ND<0.50	ND<0.50	ND<2.0	ND<0.50	ND<0.50
	2/17/2009	220	3.6	6.1	2.0	41	1.3	ND<0.50	ND<0.50	ND<0.50	ND<2.0	ND<0.50	ND<0.50
	5/15/2009	890	6.0	17	27	110	1.8	ND<0.50	ND<0.50	ND<0.50	3.9	ND<0.50	ND<0.50
	8/13/2009	2,000	17	23	73	350	2.1	ND<0.50	ND<0.50	ND<0.50	ND<2.0	ND<0.50	ND<0.50
	2/23/2010	**3,200**	**31**	**77**	**120**	**810**	**3.9**	**ND<1.7**	**ND<1.7**	**ND<1.7**	**ND<6.7**	**ND<1.7**	**ND<1.7**

Table 7, 6211 San Pablo Avenue, Oakland, CA - AEI Project # 280346

Groundwater Analytical Data

Sample ID	Date	TPHg µg/L	Benzene µg/L	Toluene µg/L	Ethylbenzene µg/L	Xylenes µg/L	MTBE µg/L	DIPE µg/L	ETBE µg/L	TAME µg/L	TBA µg/L	1,2-DCA µg/L	EDB µg/L
MW-2	11/7/1999	6,000	1,300	92	50	400	6,800	NA	NA	NA	NA	NA	NA
	3/8/2001	41,000	8,100	870	2,000	4,100	26,000	NA	NA	NA	NA	NA	NA
	11/17/2001	18,000	3,700	180	610	640	16,000	NA	NA	NA	NA	NA	NA
	3/31/2002	32,000	6,500	270	1,700	2,700	19,000	NA	NA	NA	NA	NA	NA
	9/9/2003	24,000	4,600	ND	1,200	440	19,000	NA	NA	NA	NA	NA	NA
	12/9/2003	31,000	6,200	170	1,600	2,700	19,000	NA	NA	NA	NA	NA	NA
	2/19/2004	21,000	4,600	120	970	2,000	15,000	NA	NA	NA	NA	NA	NA
	5/24/2004	1,200	120	3	63	67	1,900	ND	ND	ND	ND	ND	ND
	9/3/2004	2,300	120	ND	51	70	1,700	ND	ND	26	ND	ND	ND
	11/2/2004	530	35	ND	17	30	520	ND	ND	28	100	NA	NA
	2/17/2005	18,000	2,100	31	800	680	20,000	ND	ND	1,000	ND	NA	NA
	5/24/2005	22,000	3,200	52	1,400	1,700	16,000	ND	ND	NS	NS	ND	ND
	8/15/2005	2,000	66	ND	46	47	2,400	ND	ND	95	880	ND	ND
	11/17/2005	760	19	0.64	15	13	1,000	ND	ND	26	810	ND	ND
	2/8/2006	10,000	1,500	8	660	380	4,300	ND	ND	120	2,800	ND	ND
	5/5/2006	15,000	1,800	ND	1,200	1,200	5,800	ND	ND	150	4,300	ND	ND
	8/18/2006	360	11	ND	13	9.7	160	ND	ND	4.6	600	ND	ND
	12/1/2006	11,000	1,000	ND	990	910	2,100	ND	ND	87	2,000	ND	ND
	2/23/2007	3,200	210	ND	270	85	900	ND	ND	33	1,400	ND	ND
	5/10/2007	590	31	ND	39	22	200	ND	ND	5.9	250	ND	ND
	8/16/2007	650	49	ND	71	49	100	ND	ND	3.5	82	ND	ND
	11/8/2007	110	1.6	ND	1.9	1.6	23	ND	ND	0.64	48	ND	ND
	2/14/2008	350	24	ND	12	5.9	190	ND	ND	7.7	320	ND	ND
	5/15/2008	81	0.59	ND<0.50	0.71	0.66	38	ND<0.50	ND<0.50	1.4	54	ND<0.50	ND<0.50
	9/10/2008	150	6.4	ND<0.50	8.4	5.1	14	ND<0.50	ND<0.50	0.55	38	ND<0.50	ND<0.50
	11/18/2008	420	25	0.70	46	47	29	ND<0.50	ND<0.50	1.3	60	ND<0.50	ND<0.50
	2/17/2009	460	23	0.96	51	37	26	ND<0.50	ND<0.50	1.4	61	ND<0.50	ND<0.50
	5/15/2009	220	13	0.93	26	13	21	ND<0.50	ND<0.50	0.87	60	ND<0.50	ND<0.50
	8/13/2009	110	7.0	ND<0.50	13	5.0	7.7	ND<0.50	ND<0.50	ND<0.50	26	ND<0.50	ND<0.50
	2/23/2010	**170**	**9.4**	**0.65**	**27**	**5.6**	**14**	**ND<0.50**	**ND<0.50**	**ND<0.50**	**36**	**ND<0.50**	**ND<0.50**

Table 7, 6211 San Pablo Avenue, Oakland, CA - AEI Project # 280346

Groundwater Analytical Data

Sample ID	Date	TPHg µg/L	Benzene µg/L	Toluene µg/L	Ethylbenzene µg/L	Xylenes µg/L	MTBE µg/L	DIPE µg/L	ETBE µg/L	TAME µg/L	TBA µg/L	1,2-DCA µg/L	EDB µg/L
MW-3	11/7/1999	43,000	860	70	ND	65	120,000	NA	NA	NA	NA	NA	NA
	3/8/2001	90,000	1,800	ND	ND	ND	210,000	NA	NA	NA	NA	NA	NA
	11/17/2001	110,000	1,600	ND	ND	ND	300,000	NA	NA	NA	NA	NA	NA
	3/31/2002	130,000	2,400	670	300	390	300,000	NA	NA	NA	NA	NA	NA
	9/9/2003	190,000	1,600	ND	ND	ND	420,000	NA	NA	NA	NA	NA	NA
	12/9/2003	170,000	2,000	ND	ND	ND	4,500,000	NA	NA	NA	NA	NA	NA
	2/19/2004	86,000	1,800	630	ND	ND	160,000	NA	NA	NA	NA	NA	NA
	5/24/2004	120,000	2,200	ND	180	220	400,000	ND	ND	15,000	ND	ND	ND
	9/3/2004	180,000	2,000	ND	ND	ND	510,000	ND	ND	14,000	ND	ND	ND
	11/2/2004	150,000	1,700	ND	ND	ND	350,000	ND	ND	31,000	140,000	NA	NA
	2/17/2005	130,000	2,100	420	210	730	290,000	ND	ND	11,000	ND	NA	NA
	5/24/2005	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	8/15/2005	110,000	1,500	ND	ND	ND	260,000	ND	ND	21,000	25,000	ND	ND
	11/17/2005	200,000	2,400	ND	ND	ND	580,000	ND	ND	24,000	49,000	ND	ND
	2/8/2006	470,000	3,800	660	ND	790	490,000	ND	ND	26,000	49,000	ND	ND
	5/5/2006	400,000	3,300	ND	ND	ND	590,000	ND	ND	21,000	86,000	ND	ND
	8/18/2006	310,000	1,800	ND	ND	ND	440,000	ND	ND	23,000	79,000	ND	ND
	12/1/2006	270,000	ND	ND	ND	ND	290,000	ND	ND	11,000	90,000	ND	ND
	2/23/2007	220,000	ND	ND	ND	ND	260,000	ND	ND	15,000	33,000	ND	ND
	5/10/2007	140,000	ND	ND	ND	ND	180,000	ND	ND	7,100	80,000	ND	ND
	8/16/2007	69,000	ND	ND	ND	ND	85,000	ND	ND	3,400	180,000	ND	ND
	11/8/2007	34,000	ND	ND	ND	ND	38,000	ND	ND	1,400	140,000	ND	ND
	2/14/2008	41,000	ND	ND	ND	ND	44,000	ND	ND	1,900	110,000	ND	ND
	5/15/2008	43,000	ND<100	ND<100	ND<100	ND<100	62,000	ND<100	ND<100	1,100	200,000	ND<100	ND<100
	9/10/2008	1,600	14	8.6	7.7	23	21,000	ND<1,000	ND<1,000	ND<1,000	290,000	ND<1,000	ND<1,000
	11/18/2008	4,500	86	150	100	590	29,000	ND<1,000	ND<1,000	ND<1,000	290,000	ND<1,000	ND<1,000
	2/17/2009	2,500	45	53	35	160	16,000	ND<1,000	ND<1,000	ND<1,000	190,000	ND<1,000	ND<1,000
	5/15/2009	2,000	15	21	13	35	13,000	ND<1,000	ND<1,000	ND<1,000	260,000	ND<1,000	ND<1,000
	8/13/2009	1,300	10	11	4.1	14	7,900	ND<1,200	ND<1,200	ND<1,200	250,000	ND<1,200	ND<1,200
	2/23/2010	**1,700**	**22**	**21**	**11**	**38**	**4,700**	**ND<1,700**	**ND<1,700**	**ND<1,700**	**260,000**	**ND<1,700**	**ND<1,700**

Table 7, 6211 San Pablo Avenue, Oakland, CA - AEI Project # 280346

Groundwater Analytical Data

Sample ID	Date	TPHg µg/L	Benzene µg/L	Toluene µg/L	Ethylbenzene µg/L	Xylenes µg/L	MTBE µg/L	DIPE µg/L	ETBE µg/L	TAME µg/L	TBA µg/L	1,2-DCA µg/L	EDB µg/L
MW-4	11/17/2001	64,000	960	1,400	360	1,600	140,000	NA	NA	NA	NA	NA	NA
	3/31/2002	78,000	4,400	4,700	690	2,700	150,000	NA	NA	NA	NA	NA	NA
	9/6/2007	49,000	710	840	ND	10,000	3,600	ND	ND	510	32,000	ND	ND
	11/8/2007	64,000	1,300	2,600	1,000	8,500	1,500	ND	ND	360	14,000	ND	ND
	2/14/2008	60,000	390	460	230	2,000	52,000	ND	ND	2,000	58,000	ND	ND
	5/15/2008	22,000	670	130	740	2,700	3,300	ND<5.0	ND<5.0	340	35,000	ND<5.0	ND<5.0
	9/10/2008	16,000	500	150	730	2,500	2,000	ND<250	ND<250	ND<250	65,000	ND<250	ND<250
	11/18/2008	24,000	820	190	1,200	5,000	1,400	ND<50	ND<50	260	9,300	ND<50	ND<50
	2/17/2009	17,000	350	170	620	2,600	360	ND<10	ND<10	82	2,100	ND<10	ND<10
	5/15/2009	32,000	300	190	880	3,200	470	ND<10	ND<10	95	380	ND<10	ND<10
	8/13/2009	29,000	320	250	980	3,400	350	ND<50	ND<50	61	10,000	ND<50	ND<50
	2/23/2010	**15,000**	**250**	**77**	**580**	**2,200**	**180**	**ND<5.0**	**ND<5.0**	**41**	**400**	**ND<5.0**	**ND<5.0**
MW-5	11/17/2001	210	15	12	11	23	4.8	NA	NA	NA	NA	NA	NA
	3/31/2002	120	11	7.4	6.1	16	4.2	NA	NA	NA	NA	NA	NA
	9/9/2003	ND	1.5	ND	ND	ND	1.7	NA	NA	NA	NA	NA	NA
	12/9/2003	130	32	ND	2.6	0.57	5	NA	NA	NA	NA	NA	NA
	2/19/2004	ND	ND	ND	ND	ND	1.5	NA	NA	NA	NA	NA	NA
	5/24/2004	ND	ND	ND	ND	ND	0.55	ND	ND	ND	ND	ND	ND
	9/3/2004	100	6.4	ND	ND	0.79	4.2	ND	ND	ND	ND	ND	ND
	11/2/2004	ND	2.6	ND	1.7	0.87	1	ND	ND	ND	ND	ND	ND
	2/17/2005	51	0.74	ND	0.94	ND	1.5	ND	ND	ND	ND	ND	ND
	5/24/2005	ND	ND	ND	ND	ND	1	ND	ND	ND	ND	ND	ND
	8/15/2005	ND	ND	ND	ND	ND	0.88	ND	ND	ND	ND	ND	ND
	11/17/2005	71	0.81	ND	1.1	ND	1.4	ND	ND	ND	ND	ND	ND
	2/8/2006	50	ND	ND	ND	ND	1	ND	ND	ND	ND	ND	ND
	5/5/2006	ND	ND	ND	ND	ND	0.93	ND	ND	ND	ND	ND	ND
	8/18/2006	ND	ND	ND	ND	ND	1	ND	ND	ND	ND	ND	ND
	12/1/2006	ND	0.69	ND	ND	0.52	0.97	ND	ND	ND	ND	ND	ND
	2/23/2007	73	ND	ND	ND	ND	1.7	ND	ND	ND	ND	ND	ND
	5/10/2007	ND	ND	ND	ND	ND	1.5	ND	ND	ND	ND	ND	ND
	8/16/2007	ND	ND	ND	ND	ND	1.3	ND	ND	ND	ND	ND	ND
	11/8/2007	ND	ND	ND	ND	ND	1.5	ND	ND	ND	ND	ND	ND
	2/14/2008	ND	ND	ND	ND	ND	1.3	ND	ND	ND	ND	ND	ND
	5/15/2008	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	1.7	ND<0.50	ND<0.50	ND<0.50	ND<20	ND<0.50	ND<0.50
	9/10/2008	480	17	1.8	2.7	0.59	12	ND<0.50	ND<0.50	ND<0.50	4.4	ND<0.50	ND<0.50

Table 7, 6211 San Pablo Avenue, Oakland, CA - AEI Project # 280346

Groundwater Analytical Data

Sample ID	Date	TPHg µg/L	Benzene µg/L	Toluene µg/L	Ethylbenzene µg/L	Xylenes µg/L	MTBE µg/L	DIPE µg/L	ETBE µg/L	TAME µg/L	TBA µg/L	1,2-DCA µg/L	EDB µg/L
MW-5	11/18/2008	130	2.3	1.6	ND<0.50	ND<0.50	7.3	ND<0.50	ND<0.50	ND<0.50	ND<2.0	ND<0.50	ND<0.50
(cont.)	2/17/2009	170	ND<0.50	2.7	ND<0.50	ND<0.50	4.2	ND<0.50	ND<0.50	ND<0.50	ND<2.0	ND<0.50	ND<0.50
	5/15/2009	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	7.6	ND<0.50	ND<0.50	ND<0.50	ND<2.0	ND<0.50	ND<0.50
	8/13/2009	380	19	2.1	3.8	0.88	11	ND<0.50	ND<0.50	ND<0.50	ND<2.0	ND<0.50	ND<0.50
	2/23/2010	**ND<50**	**ND<0.50**	**0.87**	**ND<0.50**	**ND<0.50**	**1.9**	**ND<0.50**	**ND<0.50**	**ND<0.50**	**ND<2.0**	**ND<0.50**	**ND<0.50**
MW-6	11/17/2001	3,500	160	260	95	420	1,500	NA	NA	NA	NA	NA	NA
	3/31/2002	3,200	410	170	82	280	3,000	NA	NA	NA	NA	NA	NA
	9/9/2003	800	49	ND	7.4	ND	1,700	NA	NA	NA	NA	NA	NA
	12/9/2003	970	150	9.9	31	83	1,200	NA	NA	NA	NA	NA	NA
	2/19/2004	1,900	280	58	17	160	2,700	NA	NA	NA	NA	NA	NA
	9/3/2004	1,100	27	ND	14	27	2,200	ND	ND	85	ND	ND	ND
	11/2/2004	1,800	32	ND	5	11	4,100	ND	ND	170	270	ND	ND
	2/17/2005	5,600	190	34	41	110	10,000	ND	ND	780	2,000	ND	ND
	8/15/2005	1,800	27	ND	6	23	3,800	ND	ND	300	3,500	ND	ND
	11/17/2005	1,100	30	ND	4	9	2,400	ND	ND	190	9,500	ND	ND
	2/8/2006	3,600	220	43	66	160	2,700	ND	ND	180	7,800	ND	ND
	5/5/2006	1,600	130	21	37	65	1,400	ND	ND	53	3,100	ND	ND
	8/18/2006	270	27	ND	3	4	240	ND	ND	11	2,400	ND	ND
	12/1/2006	1,700	ND	ND	ND	ND	1,700	ND	ND	92	800	ND	ND
	2/23/2007	ND	ND	ND	ND	ND	15	ND	ND	ND	ND	ND	ND
	5/10/2007	ND	3.0	ND	ND	1.9	26	ND	ND	2	48	ND	ND
	8/16/2007	ND	ND	ND	ND	ND	1.4	ND	ND	ND	ND	ND	ND
	11/8/2007	ND	ND	ND	ND	ND	5.3	ND	ND	ND	ND	ND	ND
	2/14/2008	ND	ND	ND	ND	ND	11	ND	ND	0.94	220	ND	ND
	5/15/2008	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	13	ND<0.50	ND<0.50	1.0	130	ND<0.50	ND<0.50
	9/10/2008	78	1.4	0.60	0.94	1.3	71	ND<1.0	ND<1.0	6.2	160	ND<1.0	ND<1.0
	11/18/2008	ND<50	2.4	ND<0.50	ND<0.50	0.70	72	ND<1.2	ND<1.2	7.2	180	ND<1.2	ND<1.2
	2/17/2009	ND<50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<2.0	ND<0.50	ND<0.50
	5/15/2009	53	3.2	ND<0.50	ND<0.50	1.7	44	ND<1.0	ND<1.0	4.3	89	ND<1.0	ND<1.0
	8/13/2009	74	5.9	0.57	0.97	5.0	27	ND<0.50	ND<0.50	2.2	140	ND<0.50	ND<0.50
	2/23/2010	**ND<50**	**0.66**	**ND<0.50**	**ND<0.50**	**0.57**	**5.7**	**ND<0.50**	**ND<0.50**	**ND<0.50**	**15**	**ND<0.50**	**ND<0.50**

Table 7, 6211 San Pablo Avenue, Oakland, CA - AEI Project # 280346

Groundwater Analytical Data

Sample ID	Date	TPHg µg/L	Benzene µg/L	Toluene µg/L	Ethylbenzene µg/L	Xylenes µg/L	MTBE µg/L	DIPE µg/L	ETBE µg/L	TAME µg/L	TBA µg/L	1,2-DCA µg/L	EDB µg/L
MW-7	**2/23/2010**	**29,000**	**410**	**380**	**2,100**	**6,100**	**410**	**ND<10**	**ND<10**	**19**	**1,500**	**ND<10**	**ND<10**
MW-8	**2/23/2010**	**690**	**3.5**	**2.8**	**29**	**40**	**1,600**	**ND<100**	**ND<100**	**ND<100**	**24,000**	**ND<100**	**ND<100**
MW-9	**2/23/2010**	**ND<50**	**ND<0.50**	**0.70**	**ND<0.50**	**ND<0.50**	**260**	**ND<10**	**ND<10**	**ND<10**	**1,600**	**ND<10**	**ND<10**
MW-10	**2/23/2010**	**1,300**	**ND<0.50**	**11**	**3.1**	**2.6**	**2.8**	**ND<0.50**	**ND<0.50**	**ND<0.50**	**ND<2.0**	**ND<0.50**	**ND<0.50**
EX-1	2/19/2004	120,000	9,500	4,300	840	3,900	150,000	NA	NA	NA	NA	NA	NA
	2/14/2008	84,000	2,300	4,900	1,800	14,000	3,900	ND	ND	610	10,000	ND	ND
	5/15/2008	24,000	2,100	750	640	2,100	1,800	ND<0.50	ND<0.50	380	11,000	ND<0.50	ND<0.50
	9/10/2008	9,200	1,000	160	300	1,000	780	ND<100	ND<100	180	22,000	ND<100	ND<100
	11/18/2008	8,900	1,400	290	360	1,300	840	ND<100	ND<100	230	20,000	ND<100	ND<100
	2/17/2009	70,000	2,700	3,600	1,900	13,000	1,400	ND<25	ND<25	480	1,500	ND<25	ND<25
	5/15/2009	18,000	1,400	250	530	1,700	640	ND<25	ND<25	200	5,500	ND<25	ND<25
	8/13/2009	10,000	1,100	150	410	940	520	ND<25	ND<25	120	5,200	ND<25	ND<25
	2/23/2010	**39,000**	**1,300**	**1,100**	**1,100**	**7,700**	**880**	**ND<25**	**ND<25**	**250**	**670**	**ND<25**	**ND<25**

Notes:
TPHg = total petroleum hydrocarbons as gasoline using EPA Method 8015
Benzene, toluene, ethylbenzene, and xylenes using EPA Method 8021B
MTBE = methyl-tertiary butyl ether using EPA Method 8021B; EPA Method 8260B Beginning in May 2008
TBA = tert-butyl alcohol using EPA Method 8260B
TAME = tert-amyl methyl ether using EPA Method 8260B
DIPE = diisopropyl ether using EPA Method 8260B
ETBE = ethyl tert-butyl ether using EPA Method 8260B
1,2-DCA = 1,2-dichloroethane using EPA Method 8260B
EDB = Ethylene dibromide using EPA Method 8260B
µg/L= micrograms per liter
ND = non detect at respective reporting limit
NA - not analyzed

TABLE 8: SOIL GAS FIELD SCREENING DATA SUMMARY

6211 San Pablo Avenue, Oakland, California

Soil Gas Probe ID (screen interval)	Date	Notes	Vacuum/ Pressure (in-H2O)	Purge Vacuum (in-H2O)	TVH (ppmv)	CH4 (%)	O2 (%)	CO2 (%)
SG-1S	03/18/10	1,2	0.00	326	210	4.5	11.2	6.1
(2.5 - 3.0)	04/13/10	2,5	-	-	-	-	-	-
	04/15/10	2,10	-	-	50	0.0	18.2	3.0
SG-1-D	03/18/10	1,2	0.00	136	>11,000	51.0	5.3	18.6
(5.5 - 6.0)	04/13/10	2,5	-	-	-	-	-	-
	04/15/10	2,5	-	-	-	-	-	-
SG-2S	03/18/10	1,2	0.00	50	880	8.5	13.2	3.1
(2.5 - 3.0)	04/13/10	2,5	-	-	-	-	-	-
	04/15/10	2,8	-	-	>11,000	15.5	8.2	17.9
SG-2D	03/18/10	1	0.00	190	>11,000	60.0	2.5	20.0
(5.5 - 6.0)	04/13/10	5	-	-	-	-	-	-
	04/15/10	8	-	-	>11,000	27.5	9.4	19.7
	04/15/10	9	-	-	>11,000	24.5	10.2	18.6
SG-3S	03/18/10	1,2	0.00	93	0	0.0	19.2	1.0
(2.5 - 3.0)	03/18/10	1,2,4	0.00	65	0	0.0	19.6	0.5
	04/14/10	2,7	-	-	2,250	2.5	19.1	0.8
SG-3D	03/18/10	1,2	0.00	354	>11,000	78.5	0.9	>20.0
(5.5 - 6.0)	04/14/10	2,7	-	-	>11,000	67.0	1.5	20.0
SG-4	03/18/10	1,2	0.00	90	10	0.0	16.8	1.5
(4.0 - 4.5)								
SG-5	03/18/10	1,2	0.00	300	>11,000	50.0	1.4	13.7
(4.0 - 4.5)	04/14/10	2,6	-	-	>11,000	55.0	5.2	14.0
	04/14/10	2,7	-	-	>11,000	16.5	2.5	10.1
SG-6	03/18/10	1,2	0.00	30	80	0.0	20.6	1.2
(4.0 - 4.5)	03/18/10	1,2,4	0.00	35	60	0.0	19.5	1.0
	04/14/10	2,7	-	-	200	0.5	18.5	2.0
SG-7	03/18/10	1,2,3	0.00	367	-	-	-	-
(4.0 - 4.5)	04/13/10	2,3	-	-	-	-	-	-
SG-8	03/18/10	1,2,3	0.00	>408	-	-	-	-
(4.0 - 4.5)	04/13/10	2,3	-	-	-	-	-	-

TABLE 8: SOIL GAS FIELD SCREENING DATA SUMMARY

6211 San Pablo Avenue, Oakland, California

Soil Gas Probe ID (screen interval)	Date	Notes	Vacuum/ Pressure (in-H2O)	Purge Vacuum (in-H2O)	TVH (ppmv)	CH4 (%)	O2 (%)	CO2 (%)

NOTES

in-H2O = inches of water

ppmv = parts per million by volume

% = percent concentration by volume

- not applicable or measured

gw = groundwater present

1) Baseline soil gas survey
2) Groundwater present in soil gas probe, sample tubing, and/or 1-liter tedlar bag
3) Waited 30 minutes, but less than 10ml of sample. Therefore, sample collection not possible. Flow rate was less than 1.0 ml/min
4) Duplicate soil gas sample for data QA/QC purposes
5) More than 50% groundwater in 1-liter teldar bag; not enough headspace left after helium field screening
6) Soil gas sample collected approximately 90 minutes after sparging into AS-1
7) Soil gas sample collected approximately 120 to 150 minutes after sparging into AS-1
8) Soil gas sample collected approximately 150 minutes after sparging into AS-2
9) Soil gas sample collected approximately 175 minutes after sparging into AS-2
10) Soil gas sample collected approximately 200 minutes after sparging into AS-2

TABLE 9: COMBINED INFLUENT PID READINGS OVER TIME

6211 San Pablo Avenue, Oakland, California

Well ID: AS-3				Well ID: AS-1				Well ID: AS-2			
Date	**Time**	**Elapsed Time (min)**	**Influent PID (ppmv)**	**Date**	**Time**	**Elapsed Time (min)**	**Influent PID (ppmv)**	**Date**	**Time**	**Elapsed Time (min)**	**Influent PID (ppmv)**
04/13/10	1120	0	<1.0	04/14/10	1130	0	13.0	04/15/10	1200	0	6.8
	1200	40	27.7		1200	30	8.0		1330[e]	90	166.1
	1230	70	10.5		1230	60	6.9		1400	120	132.5
	1330[a]	130	5.0		1330[c]	120	4.3		1600	240	242.6
	1400	160	8.3		1400	150	3.6		1615	255	195.3
	1500	220	4.8		1510	220	3.9		1630	270	202.2
	1630[b]	310	4.6		1520	230	2.8		1645[f]	285	195.6
					1545[d]	255	3.3		1655	295	128.3
					1600	270	3.3				

NOTES:

ppmv = parts per million by volume

a) Started sparging into AS-3 at 13:15 (extracting from VE-5, 6 and 8 only)
b) Stopped sparging into AS-3 at 17:00
c) Started sparging into AS-1 at 13:00 (extracting from VE-3, 4 and 13 only)
d) Stopped sparging into AS-3 at 15:40
e) Started sparging into AS-2 at 13:00 (extracting from VE-4, 5, 6 and 7 only)
f) Stopped sparging into AS-2 at 16:40

TABLE 10: SPARGE TEST MONITORING PARAMETER SUMMARY

6211 San Pablo Avenue, Oakland, California

Test Well	*Soil Gas Parameters*				*Groundwater Parameters*			
	Soil Gas Pressure (Magnehelic)	**TVH, CH4, O2, & CO2 (Eagle)**	***Helium (Marks)**	**TPH-g MBTEX (8015/8021)**	**Manual Water Level**	**Groundwater Pressure (Levelogger)**	**Temp, pH, ec, DO, ORP (YSI 556)**	**TPH-g MBTEX (8015/8021)**
AS-1 (21' - 26')	SG-3, SG-5, SG-6, MW-3, MW-4, EX-1	VE-2, VE-3, VE-4, SG-3, SG-5, SG-6	MW-3, MW-4 MW-5, EX-1, SG-3, SG-5, SG-6, INF	All Probes Before	All Wells Before/After MW-3, MW-4, EX-1	MW-3, MW-4, MW-5	All Wells Before / After MW-3, MW-4 MW-5 Post - EX-1	NA
AS-2 (21' - 26')	SG-2, SG-7, SG-1,MW-1R, MW-3, MW-6 SG-8	VE-4, VE-5, VE-6, VE-7, SG-2, SG-4	MW-3, MW-1R MW-6, INF SG-1, SG-2	All Probes Before	All Wells Before/After MW-1R, MW-3, MW-6	MW-1R, MW-3, MW-6	All Wells Before/After MW-1R, MW-3 MW-6	NA
AS-3 (21' - 26')	SG-1, SG-7 SG-2, MW-1R, MW-6, MW-3	VE-5, VE-6, VE-8, SG-1, SG-2	SG-1, SG-2 SG-7, SG-8, MW-1R, MW-3, MW-6, INF	All Probes Before	All Wells Before/After MW-1R, MW-3, MW-6	MW-1R, MW-3, MW-6	All Wells Before/After MW-1R, MW-3, MW-6	NA

NOTES:

Reference: Air Sparging Design Paradigm - Appendix F

TABLE 11: AIR SPARGE WELL INJECTION PRESSURE OVER TIME

6211 San Pablo Avenue, Oakland, California

Well ID: AS-3				Well ID: AS-1				Well ID: AS-2			
Date	**Time**	**Elapsed Time (min)**	**Wellhead Pressure (psig)**	**Date**	**Time**	**Elapsed Time (min)**	**Wellhead Pressure (psig)**	**Date**	**Time**	**Elapsed Time (min)**	**Wellhead Pressure (psig)**
04/13/10	1315	0	13.5	04/14/10	1255	0	<1.0[1]	04/15/10	1300	0	27.0
	1320	5	11.2		1300	5	<0.5		1305	5	25.0
	1325	10	11.0		1305	10	<0.5		1310	10	22.5
	1330	15	10.8		1310	15	<0.5		1315	15	21.0
	1335	20	10.4		1315	20	<0.5		1320	20	21.5
	1340	25	10.4		1320	25	<0.5		1325	25	19.5
	1345	30	10.2		1325	30	<0.5		1330	30	19.0
	1350	35	10.0		1330	35	<0.5		1335	35	19.0
	1355	40	10.0		1335	40	<0.5		1340	40	19.0
	1400	45	9.8		1340	45	<0.5		1345	45	18.5
	1405	50	9.8		1345	50	<0.5		1350	50	18.5
	1410	55	9.6		1350	55	<0.5		1355	55	17.5
	1415	60	9.6		1355	60	<0.5		1400	60	18.0
	1420	65	9.6		1400	65	<0.5		1405	65	17.5
	1425	70	9.4		1405	70	<0.5		1410	70	17.0
	1430	75	9.4		1410	75	<0.5		1415	75	17.0
	1435	80	9.2		1415	80	<0.5		1420	80	17.5
	1440	85	9.2		1420	85	<0.5		1425	85	17.5
	1445	90	9.2		1425	90	<0.5		1430	90	17.5
	1450	95	9.2		1430	95	<0.5		1435	95	17.5
	1455	100	9.2		1435	100	<0.5		1440	100	17.0
	1500	105	9.2		1440	105	<0.5		1445	105	17.0
	1505	110	9.0		1445	110	<0.5		1450	110	17.0
	1510	115	9.0		1450	115	<0.5		1455	115	17.5
	1515	120	9.0		1455	120	<0.5		1500	120	17.0
	1520	125	9.0		1500	125	<0.5		1505	125	17.0
	1525	130	9.0		1505	130	<0.5		1510	130	17.0
	1530	135	9.0		1510	135	<0.5		1515	135	17.0
	1535	140	9.0		1515	140	<0.5		1520	140	17.0
	1540	145	9.0		1520	145	<0.5		1525	145	17.0
	1545	150	9.0		1525	150	<0.5		1530	150	17.0
	1550	155	9.0		1530	155	<0.5		1535	155	17.0
	1555	160	8.8		1535	160	<0.5		1540	160	17.0
	1600	165	8.8		1540	165	<0.5		1545	165	16.5
	1605	170	8.8						1550	170	17.0
	1610	175	8.8						1555	175	17.0
	1615	180	8.8						1600	180	17.0
	1620	185	8.8						1605	185	17.0
	1625	190	8.8						1610	190	17.0
	1630	195	8.8						1615	195	17.0
	1635	200	8.8						1620	200	17.0
	1640	205	8.8						1625	205	17.0
	1645	210	8.8						1630	210	17.0
	1650	215	8.8						1635	215	17.0
	1655	220	8.8						1640	220	17.0

NOTES:

1) Near zero backpressure indicates broken pipe and /or well

TABLE 12: SOIL GAS PRESSURE OVER TIME

6211 San Pablo Avenue, Oakland, California

Date	Time	Elapsed Time (min)	SG-1S (in-H2O)	SG1D (in-H2O)	SG2S (in-H2O)	SG2D (in-H2O)	SG3S (in-H2O)	SG3D (in-H2O)	SG-5 (in-H2O)	SG-6 (in-H2O)	SG-7 (in-H2O)	SG-8 (in-H2O)	MW-1R (in-H2O)	MW-3 (in-H2O)	MW-4 (in-H2O)	MW-5 (in-H2O)	MW-6 (in-H2O)	EX-1 (in-H2O)
04/13/10	11:30	0	0.74	0.92	0.00	0.00	-	-	-	-	0.18	3.10	0.00	0.00	-	-	0.00	-
(AS-3)	11:35	5	1.00	1.00	0.00	0.00	-	-	-	-	0.10	3.70	-0.40	0.00	-	-	0.00	-
	12:00	30	1.50	1.00	0.00	0.00	-	-	-	-	0.10	3.30	-0.20	0.00	-	-	0.00	-
	12:30	60	0.10	0.80	0.00	0.00	-	-	-	-	0.20	0.70	-0.20	0.00	-	-	0.00	-
	13:00	90	0.10	1.00	0.00	0.00	-	-	-	-	0.08	0.90	-0.20	0.00	-	-	0.00	-
	13:20	110	0.00	1.00	0.04	0.00	-	-	-	-	0.00	-0.10	62	0.00	-	-	32	-
	13:45	135	0.00	44	0.00	0.00	-	-	-	-	0.00	-0.20	62	0.00	-	-	26	-
	14:00	150	-0.20	45	0.00	0.00	-	-	-	-	0.00	0.00	59	0.00	-	-	25	-
	14:15	165	-0.40	45	0.02	0.00	-	-	-	-	0.14	0.00	58	0.00	-	-	23	-
	14:35	185	-0.14	44	0.06	0.00	-	-	-	-	0.00	0.00	58	0.00	-	-	21	-
	14:50	200	0.00	44	0.04	0.00	-	-	-	-	0.00	0.00	60	0.00	-	-	19	-
	15:20	230	0.00	42	0.06	0.00	-	-	-	-	0.00	0.04	58	0.00	-	-	15	-
04/14/10	11:00	0	-	-	-	-	0.00	0.00	-0.14	0.00	-	-	-	0.00	0.18	1.50	-	0.10
(AS-1)	11:15	15	-	-	-	-	0.00	0.24	-0.23	-0.04	-	-	-	0.00	-0.10	1.30	-	-0.06
	11:30	30	-	-	-	-	0.00	1.00	-0.24	-0.04	-	-	-	0.00	-0.08	1.30	-	-0.03
	11:50	50	-	-	-	-	0.00	2.70	-0.25	-0.04	-	-	-	0.00	-0.02	1.30	-	0.00
	12:00	60	-	-	-	-	0.00	3.80	-0.25	-0.02	-	-	-	0.00	0.00	1.30	-	0.00
	12:10	70	-	-	-	-	0.00	4.00	-0.25	0.00	-	-	-	0.00	-0.02	1.30	-	0.08
	12:20	80	-	-	-	-	0.00	4.00	-0.10	0.00	-	-	-	0.00	0.10	1.30	-	0.08
	12:30	90	-	-	-	-	0.00	5.00	0.00	0.00	-	-	-	0.00	0.20	1.30	-	0.08
	12:40	100	-	-	-	-	0.00	5.00	0.00	0.00	-	-	-	0.00	0.12	1.30	-	0.12
	12:50	110	-	-	-	-	0.18	6.00	0.00	0.00	-	-	-	0.00	0.14	1.30	-	0.13
	13:05	125	-	-	-	-	0.10	6.00	0.40	0.00	-	-	-	0.00	0.16	1.30	-	0.11
	13:25	145	-	-	-	-	0.12	6.80	0.50	0.08	-	-	-	0.00	0.16	1.30	-	0.08
	13:40	160	-	-	-	-	0.00	4.80	0.60	0.16	-	-	-	0.00	0.16	1.30	-	0.04
	14:00	180	-	-	-	-	0.00	2.10	0.00	0.36	-	-	-	0.00	0.14	1.30	-	0.02
04/15/10	11:35	0	0.00	0.00	0.00	0.04	-	-	-	-	0.00	0.00	0.00	0.00	-	-	0.00	-
(AS-2)	12:05	30	0.00	0.00	0.00	0.06	-	-	-	-	0.00	0.00	0.00	0.00	-	-	0.00	-
	12:15	40	0.00	0.00	0.00	0.06	-	-	-	-	0.00	0.00	0.00	0.00	-	-	0.00	-
	12:25	50	0.00	0.00	0.00	0.06	-	-	-	-	0.00	0.00	0.00	0.00	-	-	0.00	-
	12:35	60	0.00	0.00	0.00	0.06	-	-	-	-	0.00	0.00	0.00	0.00	-	-	0.00	-
	12:45	70	0.00	0.00	0.00	0.06	-	-	-	-	0.00	0.00	0.00	0.00	-	-	0.00	-
	12:55	80	0.00	0.00	0.00	0.06	-	-	-	-	0.00	0.00	0.00	0.00	-	-	0.00	-
	13:05	90	0.01	0.00	0.00	0.00	-	-	-	-	0.00	0.02	0.00	40	-	-	0.00	-
	13:15	100	0.04	0.10	0.00	40	-	-	-	-	0.20	0.02	3.00	85	-	-	0.00	-
	13:25	110	0.22	0.68	0.17	32	-	-	-	-	0.50	0.18	4.00	85	-	-	0.00	-
	13:35	120	0.08	0.40	0.17	30	-	-	-	-	0.10	0.00	3.00	80	-	-	0.00	-
	13:45	130	0.00	0.80	0.18	31	-	-	-	-	0.00	0.00	1.00	75	-	-	0.00	-
	13:55	140	0.24	0.90	0.20	31	-	-	-	-	0.50	0.00	0.00	75	-	-	0.00	-
	14:05	150	0.08	0.86	0.17	31	-	-	-	-	0.50	0.08	0.00	71	-	-	0.00	-
	14:15	160	0.00	0.62	1.00	35	-	-	-	-	0.20	0.00	0.00	75	-	-	0.00	-
	14:25	170	0.00	0.78	0.32	30	-	-	-	-	0.00	0.00	0.00	70	-	-	0.00	-
	14:35	180	0.00	0.90	0.50	31	-	-	-	-	0.00	0.00	0.00	70	-	-	0.00	-
	14:45	190	0.00	0.90	0.50	30	-	-	-	-	0.00	0.00	0.00	65	-	-	0.00	-
	16:30	295	0.00	6.00	0.30	31	-	-	-	-	0.00	0.00	0.00	60	-	-	0.00	-
	16:40	305	0.00	7.50	0.31	31	-	-	-	-	0.00	0.00	0.00	60	-	-	0.00	-

NOTES:

in-H2O = inches of water

TABLE 13: HELIUM DISTRIBUTION DATA SUMMARY

6211 San Pablo Avenue, Oakland, California

Monitoring Point ID	Notes	AS-3 Test (04/13/10) Helium (%)	AS-1 Test (04/14/10) Helium (%)	AS-2 Test (04/15/10) Helium (%)
SG-1S		8.5	-	1.9
SG-1-D		9.4	-	9.5
SG-2S		0.0	-	4.5
SG-2D		0.01	-	4.9
SG-3S		-	1.0	-
SG-3D		-	4.5	-
SG-4		-	-	-
SG-5		-	9.3	-
SG-6		-	0.1	-
SG-7		0.2	-	-
SG-8		0.5	-	-
MW-1R		7.8	-	5.8
MW-3		0.0	0.0	5.7
MW-4		-	0.0	nm
MW-5		-	0.0	nm
MW-6		7.3	-	4.6
EX-1		-	0.4	-
INF #1		-	0.1	0.1
INF #2		0.1	2.7	1.2
Pipe Vault		-	5.6	-

NOTES

ppmv = parts per million by volume

% = percent concentration by volume

- not applicable or measured

1% = 10,000 ppmv

TABLE 14: HELIUM RECOVERY TEST DATA SUMMARY

6211 San Pablo Avenue, Oakland, California

Air Sparge Well Tested	Date	Notes	$C_{off-gas}$	$C_{100\%}$	% Recovery
AS-3	**4/13/2010**	1	875 (ppm)	23,000 (ppm)	4
AS-1	**4/14/2010**	2	2.7%	3.0%	90
AS-2	**4/15/2010**	3	1.1%	2.5%	44

NOTES

ppm = parts per million by volume

% = percent concentration by volume

- not applicable or measured

% Recovery = $(C_{off-gas}/C1_{00\%})*100$

1) Low helium recovery (<30%); it is likley that air is being trapped below the water table and the vapor extraction wells are not capturing the vapors. Therefore, lateral migration of vapor may be a concern.

2) High helium recovery (>80%); it is likley that the vapor extraction wells are recovering helium being injected into the vadose zone due to broken pipe and/or sparge well (AS-1).

3) Partial helium recovery; it is likely that some air is being trapped below the water table, but the vapor extraction well are catching some of the vapors. However, lateral migration of vapor may still be a concern because the helium recovery is not high.

Table 15, 6211 San Pablo Avenue, Oakland, CA - AEI Project # 280346
Summary of Monitoring Point Details

Well ID	Installation Date	Nominal Diameter (inch)	Total Depth (ft bgs)	Screen Interval (ft bgs)	Sand Pack Interval (ft bgs)	Sand Pack Size	Screen Slot Size (inch)	Bentonite Seal Interval (ft bgs)	Cement Grout Interval (feet bgs)	Casing Material	Design / Use
MW-1R*	01/12/04	2	23	3 - 23	2 - 23	#3	0.02	1 - 2	0.5 - 1	SCH40 PVC	Monitoring Well
MW-2*	10/11/99	2	21	6 - 21	5 - 21	#3	0.02	3.5 - 5	0.5 - 3.5	SCH40 PVC	Monitoring Well
MW-3*	10/11/99	2	21	6 - 21	5 - 21	#3	0.02	3.5 - 5	0.5 - 3.5	SCH40 PVC	Monitoring Well
MW-4*	11/16/01	2	20	5 - 20	4 - 20	#3	0.02	2 - 4	0.5 - 2	SCH40 PVC	Monitoring Well
MW-5*	11/16/01	2	25	5 - 25	4 - 25	#3	0.02	2 - 4	0.5 - 2	SCH40 PVC	Monitoring Well
MW-6*	11/16/01	2	25	5 - 25	4 - 25	#3	0.02	2 - 4	0.5 - 2	SCH40 PVC	Monitoring Well
EX-1*	01/12/04	4	30	5 - 30	3 - 30	#3	0.02	2 - 3	0.5 - 2	SCH40 PVC	Monitoring / Remediation
MW-7	02/11/10	2	16	6 - 16	5.5 - 6	#3	0.02	4.5 - 5.5	0.5 - 4.5	SCH40 PVC	Monitoring Well
MW-8	02/11/10	2	15	5 - 15	4.5 - 15	#3	0.02	3 - 4.5	0.5 - 3	SCH40 PVC	Monitoring Well
MW-9	02/11/10	2	15	5 - 15	4.3 - 15	#3	0.02	3 - 4.3	0.5 - 3	SCH40 PVC	Monitoring Well
MW-10	02/12/10	2	15	5 - 15	4.5 - 15	#3	0.02	3 - 4.5	0.5 - 3	SCH40 PVC	Monitoring Well
VE-1*	01/13/04	2	13	3 - 13	2 - 13	#3	0.02	1 - 2	0 - 0.5	SCH40 PVC	SVE Well
VE-2*	01/13/04	2	13	3 - 13	2 - 13	#3	0.02	1 - 2	0 - 0.5	SCH40 PVC	SVE Well
VE-3*	01/13/04	2	13	3 - 13	2 - 13	#3	0.02	1 - 2	0 - 0.5	SCH40 PVC	SVE Well
VE-4*	01/13/04	2	13.5	3.5 - 13.5	2 - 13.5	#3	0.02	1 - 2	0 - 0.5	SCH40 PVC	SVE Well
VE-5*	01/13/04	2	13.5	3.5 - 13.5	2 - 13.5	#3	0.02	1 - 2	0 - 0.5	SCH40 PVC	SVE Well
VE-6*	01/13/04	2	13.5	3.5 - 13.5	2 - 13.5	#3	0.02	1 - 2	0 - 0.5	SCH40 PVC	SVE Well
VE-7*	01/13/04	2	14	4 - 14	2 - 14	#3	0.02	1.5 - 2	0 - 1.5	SCH40 PVC	SVE Well
VE-8*	01/13/04	2	14	3 - 13	2.5-14	#3	0.02	1.5 - 2.5	0 - 1.5	SCH40 PVC	SVE Well
VE-9*	01/13/04	2	14	3 - 13	2.5-14	#3	0.02	1.5 - 2.5	0 - 1.5	SCH40 PVC	SVE Well
VE-10*	01/13/04	2	14	3 - 13	2.5-14	#3	0.02	1.5 - 2.5	0 - 1.5	SCH40 PVC	SVE Well
VE-11*	01/14/10	2	14	3 - 13	2.5-14	#3	0.02	1.5 - 2.5	0 - 1.5	SCH40 PVC	SVE Well
VE-12*	01/14/10	2	14	3 - 13	2.5-14	#3	0.02	1.5 - 2.5	0 - 1.5	SCH40 PVC	SVE Well
VE-13*	01/14/10	2	14	3 - 13	2.5-14	#3	0.02	1.5 - 2.5	0 - 1.5	SCH40 PVC	SVE Well
AS-1*	01/15/04	2	26	21 - 26	19 - 26	#3	0.02	~ 17 - 19	0.5 - 17	SCH40 PVC	Air Sparge Well
AS-2*	01/15/04	2	26	21 - 26	18 - 26	#3	0.02	~ 16 - 18	0.5 - 16	SCH40 PVC	Air Sparge Well
AS-3*	01/14/04	2	26	21 - 26	18 - 26	#3	0.02	~ 16 - 18	0.5 - 16	SCH40 PVC	Air Sparge Well
AS-4*	01/14/04	2	26	21 - 26	12 - 26	#3	0.02	~ 10 - 12	0.5 - 10	SCH40 PVC	Air Sparge Well
AS-5*	01/14/04	2	26	21 - 26	14 - 26	#3	0.02	~ 12 - 14	0.5 - 12	SCH40 PVC	Air Sparge Well
SG-1(S)	11/25/08	0.25	3	2.5 - 3	2 - 3	#30 Mesh	-	1 - 2	0.5 - 1	Kynar Tubing	Soil Gas Probe
SG-1(D)	11/25/08	0.25	6	5.5 - 6	5 - 6	#30 Mesh	-	3 - 5	-	Kynar Tubing	Soil Gas Probe
SG-2(S)	11/25/08	0.25	3	2.5 - 3	2 - 3	#30 Mesh	-	1 - 2	0.5 - 1	Kynar Tubing	Soil Gas Probe
SG-2(D)	11/25/08	0.25	6	5.5 - 6	5 - 6	#30 Mesh	-	3 - 5	-	Kynar Tubing	Soil Gas Probe
SG-3(S)	11/25/08	0.25	3	2.5 - 3	2 - 3	#30 Mesh	-	1 - 2	0.5 - 1	Kynar Tubing	Soil Gas Probe
SG-3(D)	11/25/08	0.25	6	5.5 - 6	5 - 6	#30 Mesh	-	3 - 5	-	Kynar Tubing	Soil Gas Probe
SG-4	02/11/10	0.25	4.5	4 - 4.5	3.5 - 4.5	#30 Mesh	-	1 - 3.5	0 - 1	Stainless Steel	Soil Gas Probe
SG-5	02/11/10	0.25	4.5	4 - 4.5	3.5 - 4.5	#30 Mesh	-	1 - 3.5	0 - 1	Stainless Steel	Soil Gas Probe
SG-6	02/11/10	0.25	4.5	4 - 4.5	3.5 - 4.5	#30 Mesh	-	1 - 3.5	0 - 1	Stainless Steel	Soil Gas Probe
SG-7	02/11/10	0.25	4.5	4 - 4.5	3.5 - 4.5	#30 Mesh	-	1 - 3.5	0 - 1	Stainless Steel	Soil Gas Probe
SG-8	02/11/10	0.25	4.5	4 - 4.5	3.5 - 4.5	#30 Mesh	-	1 - 3.5	0 - 1	Stainless Steel	Soil Gas Probe

NOTES:

* Installed by HerSchy Environmental, Inc.

SVE = soil vapor extraction

ft bgs = feet below ground surface

APPENDIX A

SOIL BORINGS

Project: Alaska Gasoline
Project Location: 6211 San Pablo Avenue, Oakland, CA
Project Number: 280346

Log of Boring MW-7

Sheet 1 of 2

Date(s) Drilled **February 11, 2010**	Logged By **Jeremy Smith**	Checked By **Peter McIntyre**
Drilling Method **Double walled direct push**	Drill Bit Size/Type **2 inch**	Total Depth of Borehole **30 feet bgs**
Drill Rig Type **Combo Rig**	Drilling Contractor **Penecore**	Approximate Surface Elevation
Groundwater Level and Date Measured	Sampling Method(s) **Tube, Grab**	Hammer Data
Borehole Backfill	Location	

Depth, feet	Sample Type	Sample Number	Sampling Resistance, blows/foot	USCS Symbol	Graphic Log	MATERIAL DESCRIPTION	PID Reading, ppm	Well Log	REMARKS AND OTHER TESTS
0						Asphalt and fill material.			
				CL		Silty clay, black, moist			Neat Cement Grout
				CL		Turns greenish grey (5G/6) with some gravel (10,10,80)	1,124		2" Schedule 40 PVC Blank
5				CL		Increase in sand and gravel (10, 20, 70)			Bentonite
		MW-7-8		SC		Sandy, silty clay (20,30,50) turning brown at 9 feet bgs.	1,418		#3 Sand
10				SC		Sandy clay, dark yellowish brown (10YR 4/6) with varying amounts of sand and clay (20,20,60) to (20,50,30); wet at 12 feet bgs.			0.020 Slotted Screen
		MW-7-14.5					18.3		
15				SC		Moist, stiff			
		MW-7-19.5		ML		Very dark greenish grey (10 BG/3) silt with some fine grained sand (0,20,80), very moist, soft.	16.5		
20				SM-ML		Fine grained sand and silt, (0,70,30), wet.			
							10.6		
25				SW		Well graded fine to coarse grained sand, (0,90,10), some silt, saturated.			

Figure

X:\PROJECTS\CHARACTERIZATION & REMEDIATION\CHARACTERIZATION\Alaska Gasoline (280346), Oakland - JAS\Boring Logs\MW-7 to MW-10.bgs [HSA Well 70.tpl]

Project: Alaska Gasoline
Project Location: 6211 San Pablo Avenue, Oakland, CA
Project Number: 280346

Log of Boring MW-7

Sheet 2 of 2

Depth, feet	Sample Type	Sample Number	Sampling Resistance, blows/foot	USCS Symbol	Graphic Log	MATERIAL DESCRIPTION	PID Reading, ppm	Well Log	REMARKS AND OTHER TESTS
26				SW		Well graded fine to coarse grained sand, (0,90,10), some silt, saturated. (cont.)			
				CL		Stiff, silty clay, becomes greenish grey (5 BG/6) (0,5,95), moist.			
		MW-7-29.5					8		
						Boring Terminated at 30 feet bgs; backfilled with bentonite to 16 feet bgs, well set at 16 feet bgs.			
31									
36									
41									
46									
51									
56									

Figure

X:\PROJECTS\CHARACTERIZATION & REMEDIATION\CHARACTERIZATION\Alaska Gasoline (280346), Oakland - JAS\Boring Logs\MW-7 to MW-10.bgs [HSA Well 70.tpl]

Project: Alaska Gasoline
Project Location: 6211 San Pablo Avenue, Oakland, CA
Project Number: 280346

Log of Boring MW-8

Sheet 1 of 1

Date(s) Drilled **February 11, 2010**	Logged By **Jeremy Smith**	Checked By **Peter McIntyre**
Drilling Method **Double walled direct push**	Drill Bit Size/Type **2 inch**	Total Depth of Borehole **25 feet bgs**
Drill Rig Type **Combo Rig**	Drilling Contractor **Penecore**	Approximate Surface Elevation
Groundwater Level and Date Measured	Sampling Method(s) **Tube**	Hammer Data
Borehole Backfill	Location	

Depth, feet	Sample Type	Sample Number	Sampling Resistance, blows/foot	USCS Symbol	Graphic Log	MATERIAL DESCRIPTION	PID Reading, ppm	Well Log	REMARKS AND OTHER TESTS
0						Asphalt and fill material.			
				CL		Mottled brown/grey silty clay with some gravel, (10,10,80) moist, stiff.			Neat Cement Grout
									Bentonite
5		MW-8-4.5		CL		Gravelly clay, grey, varying amounts of sand/gravel throughout, (20, 20, 60) very moist.	27		2" Schedule 40 PVC Blank
									#3 Sand
10		MW-8-9.5		CL		Becomes brown, decrease in sand and gravel (10,10,80)	1,706		
				SC		Silty clay / clayey silt with fine to coarse grained sand (0, 20, 80) soft, wet.			0.020 Slotted Screen
15		MW-8-14.5					17		
				ML		Clayey silt, brown, stiff, moist, (0,0,100)			
				SC		Sandy, silty clay with increasing sand and gravel (20, 50, 30) to 19 feet bgs, very moist to wet.	17		
		MW-8-19.5					17		
20				SW		Well graded sand and gravel (20, 70, 10) fine to coarse sand, brown, loose, saturated.			
							86		
				ML		Clayey, sandy, silt, brown, moist.			
25						Boring Terminated at 25 feet bgs; backfilled with bentonite to 15 feet bgs, well set at 15 feet bgs.			

Figure

X:\PROJECTS\CHARACTERIZATION & REMEDIATION\CHARACTERIZATION\Alaska Gasoline (280346), Oakland - JAS\Boring Logs\MW-7 to MW-10.bgs [HSA Well 70.tpl]

Project: Alaska Gasoline
Project Location: 6211 San Pablo Avenue, Oakland, CA
Project Number: 280346

Log of Boring MW-9

Sheet 1 of 1

Date(s) Drilled **February 11, 2010**	Logged By **Jeremy Smith**	Checked By **Peter McIntyre**
Drilling Method **Double walled direct push**	Drill Bit Size/Type **2 inch**	Total Depth of Borehole **15 feet bgs**
Drill Rig Type **Combo Rig**	Drilling Contractor **Penecore**	Approximate Surface Elevation
Groundwater Level and Date Measured	Sampling Method(s) **Tube**	Hammer Data
Borehole Backfill	Location	

Depth, feet	Sample Type	Sample Number	Sampling Resistance, blows/foot	USCS Symbol	Graphic Log	MATERIAL DESCRIPTION	PID Reading, ppm	Well Log	REMARKS AND OTHER TESTS
0						Asphalt and fill material.			Neat Cement
				CL		Black clay			2" Schedule 40 PVC Blank
				CL		Gravelly, silty clay, light grey, (20, 10, 70), increasing sand and gravel with depth. very moist to wet at 5 feet bgs.			Bentonite
5		MW-9-5.5		SM		Greenish grey (5G/6) clayey, sandy silt, (10,20,70)	7.7		0.020 Slotted Screen
				SM		Becomes brown with an increase in sand, (10,40,50) very moist to wet throughout.			
10		MW-9-9.5		SW		Well graded, silty sand (20,70,10) with gravel, wet.	7.9		#3 Sand
				SP		Fine grained sand,			
				ML		Clayey silt, yellowish brown (10YR 4/6), very moist. (0,10,90)			
15		MW-9-14.5				Boring terminated at 15 feet bgs, well set.	4.7		
20									
25									

Figure

X:\PROJECTS\CHARACTERIZATION & REMEDIATION\CHARACTERIZATION\Alaska Gasoline (280346), Oakland - JAS\Boring Logs\MW-7 to MW-10.bgs [HSA Well 20 Feet.tpl]

Project: Alaska Gasoline
Project Location: 6211 San Pablo Avenue, Oakland, CA
Project Number: 280346

Log of Boring MW-10

Sheet 1 of 1

Date(s) Drilled **February 12, 2010**	Logged By **Jeremy Smith**	Checked By **Peter McIntyre**
Drilling Method **Double walled direct push**	Drill Bit Size/Type **2 inch**	Total Depth of Borehole **15 feet bgs**
Drill Rig Type **Combo Rig**	Drilling Contractor **Penecore**	Approximate Surface Elevation
Groundwater Level and Date Measured	Sampling Method(s) **Tube**	Hammer Data
Borehole Backfill	Location	

Depth, feet	Sample Type	Sample Number	Sampling Resistance, blows/foot	USCS Symbol	Graphic Log	MATERIAL DESCRIPTION	PID Reading, ppm
0						Asphalt and fill material.	
				SC		Sandy, gravelly clay, light brown (10,40,50), very mosit	206
				SC		Gravelly, sandy clay (20,50,20), wet.	
5				CL/ML		Brown and grey mottled silty clay/clayey silt, with varying amounts of sand throughout (10,20,70), very moist.	
		MW-10-6					
				SC		Brown, (20,50,30) very moist.	
				ML		Increase in silt, (10,30,60), very moist. at 10 feet bgs becomes has rust color throughout, less gravel and sand (0,20,80),	38
10		MW-10-9.5					
				SM		Pockets of increased sand, (0,40,60)	
				ML		Back to silt.	
15		MW-10-14.5				Boring terminated at 15 feet bgs, well set.	19
20							
25							

Well Log: Neat Cement; 2" Schedule 40 PVC Blank; Bentonite; 0.020 Slotted Screen; #3 Sand

REMARKS AND OTHER TESTS

Figure

X:\PROJECTS\CHARACTERIZATION & REMEDIATION\CHARACTERIZATION\Alaska Gasoline (280346), Oakland - JAS\Boring Logs\MW-7 to MW-10.bgs [HSA Well 20 Feet.tpl]

APPENDIX B

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: 02/01/2010 By jamesy

Permit Numbers: W2010-0058 to W2010-0062
Permits Valid from 02/11/2010 to 02/12/2010

Application Id: 1264195894092
City of Project Site: Oakland
Site Location: 6211 San Pablo Avenue
Project Start Date: 02/11/2010
Completion Date: 02/12/2010
Assigned Inspector: Contact John Shouldice at (510) 670-5424 or johns@acpwa.org

Applicant: AEI Consultants - Jeremy Smith
2500 Camino Diablo, Walnut Creek, CA 94597
Phone: 925-746-6000 x128

Property Owner: Pritpaul Sappal
2718 Washburn Court, Vallejo, CA 94591
Phone: --

Client: ** same as Property Owner **

Contact: Jeremy Smith
Phone: --
Cell: --

Total Due: $1853.00
Receipt Number: WR2010-0027 **Total Amount Paid:** $1853.00
Payer Name : Jeremy Smith Paid By: VISA **PAID IN FULL**

Works Requesting Permits:

Well Construction-Monitoring-Monitoring - 4 Wells
Driller: PeneCore Drilling - Lic #: 906899 - Method: hstem **Work Total: $1588.00**

Specifications

Permit #	Issued Date	Expire Date	Owner Well Id	Hole Diam.	Casing Diam.	Seal Depth	Max. Depth
W2010-0058	02/01/2010	05/12/2010	MW-10	8.00 in.	2.00 in.	3.00 ft	15.00 ft
W2010-0059	02/01/2010	05/12/2010	MW-7	8.00 in.	2.00 in.	3.00 ft	50.00 ft
W2010-0060	02/01/2010	05/12/2010	MW-8	8.00 in.	2.00 in.	3.00 ft	50.00 ft
W2010-0061	02/01/2010	05/12/2010	MW-9	8.00 in.	2.00 in.	3.00 ft	15.00 ft

Specific Work Permit Conditions

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

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

3. 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.

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

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

6. 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.

7. Wells shall have a Christy box or similar structure with a locking cap or cover. Well(s) shall be kept locked at all times. Well(s) that become damaged by traffic or construction shall be repaired in a timely manner or destroyed immediately (through permit process). No well(s) shall be left in a manner to act as a conduit at any time.

8. Minimum surface seal thickness is two inches of cement grout placed by tremie

9. Minimum seal (Neat Cement seal) depth for monitoring wells is 5 feet below ground surface(BGS) or the maximum depth practicable or 20 feet.

10. 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.

Well Construction-Vapor monitoring well-Vapor monitoring well - 5 Wells
Driller: PeneCore Drilling - Lic #: 906899 - Method: DP **Work Total: $265.00**

Specifications

Permit #	Issued Date	Expire Date	Owner Well Id	Hole Diam.	Casing Diam.	Seal Depth	Max. Depth
W2010-0062	02/01/2010	05/12/2010	SG-4	1.50 in.	0.25 in.	2.50 ft	5.00 ft
W2010-0062	02/01/2010	05/12/2010	SG-5	1.50 in.	0.25 in.	2.50 ft	5.00 ft
W2010-0062	02/01/2010	05/12/2010	SG-6	1.50 in.	0.25 in.	2.50 ft	5.00 ft
W2010-0062	02/01/2010	05/12/2010	SG-7	1.50 in.	0.25 in.	2.50 ft	5.00 ft
W2010-0062	02/01/2010	05/12/2010	SG-8	1.50 in.	0.25 in.	2.50 ft	5.00 ft

Specific Work Permit Conditions

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

2. Compliance with the above well-sealing specifications shall not exempt the well-sealing contractor from complying with appropriate state reporting-requirements related to well destruction (Sections 13750 through 13755 (Division 7, Chapter 10, Article 3) of the California Water Code). Contractor must complete State DWR Form 188 and mail original to the

Alameda County Public Works Agency, Water Resources Section, within 60 days, including permit number and site map.

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. 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.

5. 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.

6. No changes in construction procedures or well type shall change, as described on this permit application. This permit may be voided if it contains incorrect information.

7. 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.

8. Wells shall have a Christy box or similar structure with a locking cap or cover. Well(s) shall be kept locked at all times. Well(s) that become damaged by traffic or construction shall be repaired in a timely manner or destroyed immediately (through permit process). No well(s) shall be left in a manner to act as a conduit at any time.

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

10. Vapor monitoring wells above water level constructed with tubing maybe be backfilled with pancake-batter consistency bentonite. Minimum surface seal thickness is two inches of cement grout around well box.

Vapor monitoring wells above water level constructed with pvc pipe shall have a minimum seal depth (Neat Cement Seal) of 2 feet below ground surface (BGS). Minimum surface seal thickness is two inches of cement grout around well box. All other conditions for monitoring well construction shall apply.

CITY OF OAKLAND • Community and Economic Development Agency
250 Frank H. Ogawa Plaza, 2nd Floor, Oakland, CA 94612 • Phone (510) 238-3443 • Fax (510) 238-2263

Applications for which no permit is issued within 180 days shall expire by limitation. No refund after 180 days when expired.

Appl# OB100079 Job Site 6211 SAN PABLO AV Parcel# 016 -1455-020-00

Reserve for monitoring well. Loc #2. Four NO FEE spaces Permit Issued 01/22/10
Post 72 hours prior. No impact on traffic lane or sidewalk
Four (4) monitoring wells. Ref: X1000155 -0158

Nbr of days: 1 Linear feet: 25
Effective: 02/11/10 Expiration: 02/11/10

SHORT TERM NON-METERED

		Applcnt	Phone#	Lic#	--License Classes--
Owner	SAPPAL KANWALJIT K				
Contractor	ALL ENVIRONMENTAL INC	X	(925)283-6000	654919	A
Arch/Engr					
Agent					

Applic Addr 2500 CAMINO DIABLO, WALNUT CREEK, CA, 94597

$97.54 TOTAL FEES PAID AT FILING $.00 TOTAL FEES PAID AT ISSUANCE

$68.50 Applic	$16.50 Permit
$.00 Process	$8.08 Rec Mgmt
$.00 Gen Plan	$.00 Invstg
$.00 Other	$4.46 Tech Enh

JOB SITE

TCP needs to be approved by Transportation Services every 30 days or whenever deviated from the previously approved plan.

Applicant: _____ _____

Issued by: _____ _____

ADDRESS: _____

DIST: _____

CITY OF OAKLAND

PAID 1/22/10

CITY OF OAKLAND • Community and Economic Development Agency
250 Frank H. Ogawa Plaza, 2nd Floor, Oakland, CA 94612 • Phone (510) 238-3443 • Fax (510) 238-2263

Applications for which no permit is issued within 180 days shall expire by limitation. No refund after 180 days when expired.

Appl# X1000155 Job Site 6211 SAN PABLO AV Parcel# 016 -1455-020-00

Descr Install one (1) of 6 permitted wells. Location 1. Permit Issued 01/22/10
Call PWA INSPECTION prior to start: 510-238-3651.
Allow six (6) monitoring wells in Public Right-of-Way
Work Type EXCAVATION-PRIVATE P

USA # Util Co. Job # Acctg#:
Util Fund #:

		Applcnt	Phone#	Lic#	--License Classes--
Owner	SAPPAL KANWALJIT K				
Contractor	ALL ENVIRONMENTAL INC	X	(925)283-6000	654919	A
Arch/Engr					
Agent					

Applic Addr 2500 CAMINO DIABLO, WALNUT CREEK, CA, 94597

JOB SITE

$433.18 TOTAL FEES PAID AT ISSUANCE

$68.50 Applic	$309.00 Permit
$.00 Process	$35.86 Rec Mgmt
$.00 Gen Plan	$.00 Invstg
$.00 Other	$19.82 Tech Enh

Permit Issued By _____ Date: _____

Finaled By _____ Date: _____

ADDRESS:

DIST:

CITY OF OAKLAND

Sgle 1/22/10

CITY OF OAKLAND • Community and Economic Development Agency
250 Frank H. Ogawa Plaza, 2nd Floor, Oakland, CA 94612 • Phone (510) 238-3443 • Fax (510) 238-2263

Applications for which no permit is issued within 180 days shall expire by limitation. No refund after 180 days when expired.

Project Address: 6211 SAN PABLO AV

Licensed Contractors' Declaration
I hereby affirm under penalty of perjury that I am licensed under provisions of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code, and my license is in full force and effect.

Construction Lending Agency Declaration
I hereby affirm under penalty of perjury that there is a construction-lending agency for the performance of the work for which this permit is issued, as provided by Section 3097 of the Business and Professions Code. N/A under Lender implies No Lending Agency.

Lender_____ Address_____

Workers' Compensation Declaration

I hereby affirm under penalty of perjury one of the following declarations:

[ ] I have and will maintain a certificate of consent to self-insure for workers' compensation, as provided for by Section 3700 of the Labor Code, for the performance of the work for which this permit is issued.

[ ] I have and will maintain workers' compensation insurance, as required by Section 3700 of the Labor Code, for the performance of the work for which this permit is issued.

CARRIER:_____POLICY NO. _____

[ ] I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the workers' compensation laws of California, and agree that if I should become subject to the workers' compensation provisions of Section 3700 of the Labor Code, I shall forthwith comply with those provisions.

WARNING: FAILURE TO SECURE WORKERS' COMPENSATION COVERAGE IS UNLAWFUL, AND SHALL SUBJECT AN EMPLOYER TO CRIMINAL PENALTIES AND CIVIL FINES UP TO ONE HUNDRED THOUSAND DOLLARS, IN ADDITION TO THE COST OF COMPENSATION, DAMAGES AS PROVIDED FOR IN SECTION 3707 OF THE LABOR CODE, INTEREST, AND ATTORNEY'S FEES.

Hazardous Materials Declaration

I hereby affirm that the intended occupancy [ ] WILL [ ] WILL NOT use, handle or store any hazardous, or acutely hazardous, materials. (Checking "WILL" acknowledges that Sections 25505, 25533, & 25534 of the Health & Safety Code, as well as filing instructions, were made available to you.)

I HEREBY CERTIFY THE FOLLOWING: That I have read this document; that the above information is correct; and that I have truthfully affirmed all applicable declarations contained in this document. I agree to comply with all city and county ordinances and state laws relating to building construction, and hereby authorize representatives of this city to enter upon the above-mentioned property for inspection. I am fully authorized by the owner and to perform the work authorized by this permit.

PRINT NAME _____ Signature [ ] Contractor, or [ ] Agent _____ Date _____

ADDRESS: _____

DIST: _____

CITY OF OAKLAND • Community and Economic Development Agency
250 Frank H. Ogawa Plaza, 2nd Floor, Oakland, CA 94612 • Phone (510) 238-3443 • Fax (510) 238-2263

Applications for which no permit is issued within 180 days shall expire by limitation. No refund after 180 days when expired.

Appl# X1000156 Job Site 6211 SAN PABLO AV Parcel# 016 -1455-020-00

Descr Install #two (2) of 6 permitted wells. Location 2. Permit Issued 01/22/10
Call PWA INSPECTION prior to start: 510-238-3651.
Allow six (6) monitoring wells in Public Right-of-Way
Work Type EXCAVATION-PRIVATE P

USA # Util Co. Job # Acctg#:
Util Fund #:

		Applcnt	Phone#	Lic#	--License Classes--
Owner	SAPPAL KANWALJIT K				
Contractor	ALL ENVIRONMENTAL INC	X	(925)283-6000	654919	A
Arch/Engr					
Agent					

Applic Addr 2500 CAMINO DIABLO, WALNUT CREEK, CA, 94597

JOB SITE

$433.18 TOTAL FEES PAID AT ISSUANCE

$68.50 Applic	$309.00 Permit
$.00 Process	$35.86 Rec Mgmt
$.00 Gen Plan	$.00 Invstg
$.00 Other	$19.82 Tech Enh

Permit Issued By _____ Date: 0

Finaled By _____ Date: _____

ADDRESS:

DIST:

CITY OF OAKLAND

FILED
SMC 1/22/10

CITY OF OAKLAND • Community and Economic Development Agency
250 Frank H. Ogawa Plaza, 2nd Floor, Oakland, CA 94612 • Phone (510) 238-3443 • Fax (510) 238-2263

Applications for which no permit is issued within 180 days shall expire by limitation. No refund after 180 days when expired.

Project Address: 6211 SAN PABLO AV

Licensed Contractors' Declaration
I hereby affirm under penalty of perjury that I am licensed under provisions of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code, and my license is in full force and effect.

Construction Lending Agency Declaration
I hereby affirm under penalty of perjury that there is a construction-lending agency for the performance of the work for which this permit is issued, as provided by Section 3097 of the Business and Professions Code. N/A under Lender implies No Lending Agency.

Lender_____ Address_____

Workers' Compensation Declaration

I hereby affirm under penalty of perjury one of the following declarations:

[ ] I have and will maintain a certificate of consent to self-insure for workers' compensation, as provided for by Section 3700 of the Labor Code, for the performance of the work for which this permit is issued.

[ ] I have and will maintain workers' compensation insurance, as required by Section 3700 of the Labor Code, for the performance of the work for which this permit is issued.

CARRIER:_____POLICY NO. _____

[ ] I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the workers' compensation laws of California, and agree that if I should become subject to the workers' compensation provisions of Section 3700 of the Labor Code, I shall forthwith comply with those provisions.

WARNING: FAILURE TO SECURE WORKERS' COMPENSATION COVERAGE IS UNLAWFUL, AND SHALL SUBJECT AN EMPLOYER TO CRIMINAL PENALTIES AND CIVIL FINES UP TO ONE HUNDRED THOUSAND DOLLARS, IN ADDITION TO THE COST OF COMPENSATION, DAMAGES AS PROVIDED FOR IN SECTION 3707 OF THE LABOR CODE, INTEREST, AND ATTORNEY'S FEES.

Hazardous Materials Declaration

I hereby affirm that the intended occupancy [ ] WILL [ ] WILL NOT use, handle or store any hazardous, or acutely hazardous, materials. (Checking "WILL" acknowledges that Sections 25505, 25533, & 25534 of the Health & Safety Code, as well as filing instructions, were made available to you.)

I HEREBY CERTIFY THE FOLLOWING: That I have read this document; that the above information is correct; and that I have truthfully affirmed all applicable declarations contained in this document. I agree to comply with all city and county ordinances and state laws relating to building construction, and hereby authorize representatives of this city to enter upon the above-mentioned property for inspection. I am fully authorized by the owner and to perform the work authorized by this permit.

DIST: ADDRESS:

PRINT NAME _____ Signature [ ] Contractor, or [ ] Agent _____ Date _____

CITY OF OAKLAND • Community and Economic Development Agency
250 Frank H. Ogawa Plaza, 2nd Floor, Oakland, CA 94612 • Phone (510) 238-3443 • Fax (510) 238-2263

Applications for which no permit is issued within 180 days shall expire by limitation. No refund after 180 days when expired.

Appl# X1000157 Job Site 6211 SAN PABLO AV Parcel# 016 -1455-020-00

Descr Install #three (3) of 6 permitted wells. Location 3. Permit Issued 01/22/10
Call PWA INSPECTION prior to start: 510-238-3651.
Allow six (6) monitoring wells in Public Right-of-Way
Work Type EXCAVATION-PRIVATE P

USA # Util Co. Job # Acctg#:
Util Fund #:

		Applcnt	Phone#	Lic#	--License Classes--
Owner	SAPPAL KANWALJIT K				
Contractor	ALL ENVIRONMENTAL INC	X	(925)283-6000	654919	A
Arch/Engr					
Agent					

Applic Addr 2500 CAMINO DIABLO, WALNUT CREEK, CA, 94597

$433.18 TOTAL FEES PAID AT ISSUANCE

$68.50 Applic	$309.00 Permit
$.00 Process	$35.86 Rec Mgmt
$.00 Gen Plan	$.00 Invstg
$.00 Other	$19.82 Tech Enh

JOB SITE

Permit Issued By _____ Date: _____

Finaled By _____ Date: _____

ADDRESS:

DIST:

CITY OF OAKLAND

PAID
SMC 1/22/10

CITY OF OAKLAND • Community and Economic Development Agency
250 Frank H. Ogawa Plaza, 2nd Floor, Oakland, CA 94612 • Phone (510) 238-3443 • Fax (510) 238-2263

Applications for which no permit is issued within 180 days shall expire by limitation. No refund after 180 days when expired.

Project Address: 6211 SAN PABLO AV

Licensed Contractors' Declaration
I hereby affirm under penalty of perjury that I am licensed under provisions of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code, and my license is in full force and effect.

Construction Lending Agency Declaration
I hereby affirm under penalty of perjury that there is a construction-lending agency for the performance of the work for which this permit is issued, as provided by Section 3097 of the Business and Professions Code. N/A under Lender implies No Lending Agency.

Lender_____ Address_____

Workers' Compensation Declaration

I hereby affirm under penalty of perjury one of the following declarations:

[ ] I have and will maintain a certificate of consent to self-insure for workers' compensation, as provided for by Section 3700 of the Labor Code, for the performance of the work for which this permit is issued.

[ ] I have and will maintain workers' compensation insurance, as required by Section 3700 of the Labor Code, for the performance of the work for which this permit is issued.

CARRIER:_____POLICY NO. _____

[ ] I certify that in the performance of the work for which this permit is issued, I shall not employ any person in any manner so as to become subject to the workers' compensation laws of California, and agree that if I should become subject to the workers' compensation provisions of Section 3700 of the Labor Code, I shall forthwith comply with those provisions.

WARNING: FAILURE TO SECURE WORKERS' COMPENSATION COVERAGE IS UNLAWFUL, AND SHALL SUBJECT AN EMPLOYER TO CRIMINAL PENALTIES AND CIVIL FINES UP TO ONE HUNDRED THOUSAND DOLLARS, IN ADDITION TO THE COST OF COMPENSATION, DAMAGES AS PROVIDED FOR IN SECTION 3707 OF THE LABOR CODE, INTEREST, AND ATTORNEY'S FEES.

Hazardous Materials Declaration

I hereby affirm that the intended occupancy [ ] WILL [ ] WILL NOT use, handle or store any hazardous, or acutely hazardous, materials. (Checking "WILL" acknowledges that Sections 25505, 25533, & 25534 of the Health & Safety Code, as well as filing instructions, were made available to you.)

I HEREBY CERTIFY THE FOLLOWING: That I have read this document; that the above information is correct; and that I have truthfully affirmed all applicable declarations contained in this document. I agree to comply with all city and county ordinances and state laws relating to building construction, and hereby authorize representatives of this city to enter upon the above-mentioned property for inspection. I am fully authorized by the owner and to perform the work authorized by this permit.

_____ _____ _____
PRINT NAME Signature [ ] Contractor, or [ ] Agent Date

ADDRESS:_____

DIST:_____

CITY OF OAKLAND • Community and Economic Development Agency
250 Frank H. Ogawa Plaza, 2nd Floor, Oakland, CA 94612 • Phone (510) 238-3443 • Fax (510) 238-2263

Applications for which no permit is issued within 180 days shall expire by limitation. No refund after 180 days when expired.

Appl# X1000158 Job Site 6211 SAN PABLO AV Parcel# 016 -1455-020-00

Descr Install #four (4) of 6 permitted wells. Location 4. Permit Issued 01/22/10
Call PWA INSPECTION prior to start: 510-238-3651.
Allow six (6) monitoring wells in Public Right-of-Way
Work Type EXCAVATION-PRIVATE P

USA # Util Co. Job # Acctg#:
Util Fund #:

		Applcnt	Phone#	Lic#	--License Classes--
Owner	SAPPAL KANWALJIT K				
Contractor	ALL ENVIRONMENTAL INC	X	(925)283-6000	654919	A
Arch/Engr					
Agent					

Applic Addr 2500 CAMINO DIABLO, WALNUT CREEK, CA, 94597

JOB SITE

$433.18 TOTAL FEES PAID AT ISSUANCE

$68.50	Applic	$309.00	Permit
$.00	Process	$35.86	Rec Mgmt
$.00	Gen Plan	$.00	Invstg
$.00	Other	$19.82	Tech Enh

Permit Issued By _____ Date: _____

Finaled By _____ Date: _____

ADDRESS:

DIST:

CITY OF OAKLAND

PAID
5912 1/22/10

CITY OF OAKLAND • Community and Economic Development Agency
250 Frank H. Ogawa Plaza, 2nd Floor, Oakland, CA 94612 • Phone (510) 238-3443 • Fax (510) 238-2263

Applications for which no permit is issued within 180 days shall expire by limitation. No refund after 180 days when expired.

Project Address: 6211 SAN PABLO AV

Licensed Contractors' Declaration
I hereby affirm under penalty of perjury that I am licensed under provisions of Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code, and my license is in full force and effect.

Construction Lending Agency Declaration
I hereby affirm under penalty of perjury that there is a construction-lending agency for the performance of the work for which this permit is issued, as provided by Section 3097 of the Business and Professions Code. N/A under Lender implies No Lending Agency.

Lender_____ Address_____

Workers' Compensation Declaration

I hereby affirm under penalty of perjury one of the following declarations:

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[ ] I have and will maintain workers' compensation insurance, as required by Section 3700 of the Labor Code, for the performance of the work for which this permit is issued.

CARRIER:_____POLICY NO. _____

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Hazardous Materials Declaration

I hereby affirm that the intended occupancy [ ] WILL [ ] WILL NOT use, handle or store any hazardous, or acutely hazardous, materials. (Checking "WILL" acknowledges that Sections 25505, 25533, & 25534 of the Health & Safety Code, as well as filing instructions, were made available to you.)

I HEREBY CERTIFY THE FOLLOWING: That I have read this document; that the above information is correct; and that I have truthfully affirmed all applicable declarations contained in this document. I agree to comply with all city and county ordinances and state laws relating to building construction, and hereby authorize representatives of this city to enter upon the above-mentioned property for inspection. I am fully authorized by the owner and to perform the work authorized by this permit.

_____ _____ _____
PRINT NAME Signature [ ] Contractor, or [ ] Agent Date

ADDRESS:_____

DIST:_____

APPENDIX C

LABORATORY ANALYTICAL REPORTS

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Web: www.mccampbell.com E-mail: main@mccampbell.com
Telephone: 877-252-9262 Fax: 925-252-9269

AEI Consultants	Client Project ID: #280346; Alaska Gas	Date Sampled: 02/11/10
		Date Received: 02/11/10
2500 Camino Diablo, Ste. #200	Client Contact: Jeremy Smith	Date Reported: 02/19/10
Walnut Creek, CA 94597	Client P.O.: #WC082233	Date Completed: 02/19/10

WorkOrder: 1002321

February 19, 2010

Dear Jeremy:

Enclosed within are:

1) The results of the **7** analyzed samples from your project: **#280346; Alaska Gas,**
2) A QC report for the above samples,
3) A copy of the chain of custody, and
4) An invoice for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits.

If you have any questions or concerns, please feel free to give me a call. Thank you for choosing

McCampbell Analytical Laboratories for your analytical needs.

Best regards,

Angela Rydelius
Laboratory Manager
McCampbell Analytical, Inc.

100238 #1

McCAMPBELL ANALYTICAL INC.

1534 Willow Pass Road
Pittsburg, CA 94565
Telephone: (925) 252-9262 Fax: (925) 252-9269

CHAIN OF CUSTODY RECORD

TURN AROUND TIME ☐ RUSH ☐ 24 HR ☐ 48 HR ☐ 72 HR ☒ 5 DAY

EDF Required? ☒ Yes ☐ No

Report To: Jeremy Smith Bill To: same P.O. # WC082233

Company: AEI Consultants
2500 Camino Diablo
Walnut Creek, CA 94597 E-Mail: jasmith@aeiconsultants.com
Tele: (925) 746-6000 Fax: (925) 944-2895
Project #: 280346 Project Name: Alaska Gas
Project Location: 6211 San Pablo Avenue, Oakland, California
Sampler Signature:

SAMPLE ID (Field Point Name)	LOCATION	SAMPLING Date	SAMPLING Time	# Containers	Type Containers	MATRIX: Water	Soil	Air	Sludge	Other	METHOD PRESERVED: Ice	HCl	HNO_3	Other	BTEX / MTBE 8021B	TPH - gasoline (8015)	Total Petroleum Oil & Grease (413.1) w/ Silica	Total Petroleum Hydrocarbons (418.1)	Fuel Oxys (8260) – MTBE, DIPE, ETBE, TAME, TBA, 1,2-DCA, EDB	TPH(g)+MBTEX 5-day added 02/16/10	Nitrate/Nitrite	EPA 608 / 8080 PCB's ONLY	VOCs 8260	SVOCs (with PAHs) 8270	PAH's / PNA's by EPA 625 / 8270 / 8310	CAM-17 Metals	LUFT 5 Metals (Cd, Cr, pb,,Ni,zinc (6010C).	Lead (field filtered 200.8)	RCI	Other: HOLD	Comments
MW-7 (D)		2-11-10	900	3	V	X					X	X			X	X			X												
MW-7-8			940	1	Liter		X				X									X										X	OFF Hold 02/16/10 per JS
MW-7-14.5			845				X				X									X										X	
MW-7-19.5			850				X				X									X										X	
MW-7-24.5			910				X				X									X										X	
MW-7-29.5			920				X				X									X										X	OFF Hold
MW-8 (D)			1300	3	V	X					X	X			X	X			X												
MW-8-4.5			1230	1	Liter		X				X									X										X	OFF Hold
MW-8-9.5			1240				X				X									X										X	
MW-8-14.5			1245				X				X									X										X	
MW-8-19.5			1250				X				X									X										X	

Relinquished By:	Date:	Time:	Received By:
	2/11/10	450	Envirotech T. L.
Envirotech SR	1730	2/11/10	
	2/11/10	600	02/11/10 6:00 PM

ICE/t° YES 8.1°C
GOOD CONDITION J
HEAD SPACE ABSENT J
DECHLORINATED IN LAB N/A
PRESERVED IN LAB N/A

PRESERVATION APPROPRIATE CONTAINERS	VOAS	O&G	METALS	OTHER

McCampbell Analytical, Inc.
1534 Willow Pass Rd
Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 100232 A **ClientCode: AEL**

☐ WaterTrax ☐ WriteOn ☑ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Report to:
Jeremy Smith
AEI Consultants
2500 Camino Diablo, Ste. #200
Walnut Creek, CA 94597
(925) 283-6000 FAX (925) 944-2895

Email: jasmith@aeiconsultants.com
cc:
PO: #WC082233
ProjectNo: #280346; Alaska Gas

Bill to:
Denise Mockel
AEI Consultants
2500 Camino Diablo, Ste. #200
Walnut Creek, CA 94597
dmockel@aeiconsultants.com

Requested TAT: 5 days
Date Received: **02/11/2010**
Date Add-On: **02/16/2010**
Date Printed: **02/16/2010**

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below)											
					1	2	3	4	5	6	7	8	9	10	11	12
1002321-002	MW-7-8	Soil	2/11/2010 8:40	☐	A											
1002321-003	MW-7-14.5	Soil	2/11/2010 8:45	☐	A											
1002321-004	MW-7-19.5	Soil	2/11/2010 8:50	☐	A											
1002321-006	MW-7-29.5	Soil	2/11/2010 9:20	☐	A											
1002321-008	MW-8-4.5	Soil	2/11/2010 12:30	☐	A											
1002321-009	MW-8-9.5	Soil	2/11/2010 12:40	☐	A											
1002321-010	MW-8-14.5	Soil	2/11/2010 12:45	☐	A											

Test Legend:

1	G-MBTEX_S	2		3		4		5	
6		7		8		9		10	
11		12							

Prepared by: Samantha Arbuckle

Comments: Soil samples off HOLD and set up for TPH(g)+MBTEX 5-day except MW-7-24.5 and MW-8-19.5 per JS 02/16/10.

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Web: www.mccampbell.com E-mail: main@mccampbell.com
Telephone: 877-252-9262 Fax: 925-252-9269

AEI Consultants	Client Project ID: #280346; Alaska Gas	Date Sampled: 02/11/10
		Date Received: 02/11/10
2500 Camino Diablo, Ste. #200	Client Contact: Jeremy Smith	Date Extracted: 02/16/10
Walnut Creek, CA 94597	Client P.O.: #WC082233	Date Analyzed: 02/16/10-02/18/10

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE*

Extraction method: SW5030B Analytical methods: SW8021B/8015Bm Work Order: 1002321

Lab ID	Client ID	Matrix	TPH(g)	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	DF	% SS	Comments
002A	MW-7-8	S	220	ND<1.0	ND<0.10	1.6	2.6	1.9	20	100	d1
003A	MW-7-14.5	S	ND	0.19	ND	ND	ND	ND	1	89	
004A	MW-7-19.5	S	ND	0.59	ND	ND	ND	ND	1	79	
006A	MW-7-29.5	S	ND	ND	ND	ND	ND	ND	1	89	
008A	MW-8-4.5	S	19	ND	ND	0.19	0.066	0.033	1	84	d2,d9
009A	MW-8-9.5	S	1.8	ND	ND	0.010	0.022	0.097	1	86	d2
010A	MW-8-14.5	S	ND	0.40	ND	ND	ND	ND	1	85	

Reporting Limit for DF =1; ND means not detected at or above the reporting limit	W	50	5.0	0.5	0.5	0.5	0.5	ug/L
	S	1.0	0.05	0.005	0.005	0.005	0.005	mg/Kg

* water and vapor samples are reported in µg/L, soil/sludge/solid samples in mg/kg, wipe samples in µg/wipe, product/oil/non-aqueous liquid samples and all TCLP & SPLP extracts in mg/L.

cluttered chromatogram; sample peak coelutes w/surrogate peak; low surrogate recovery due to matrix interference.

+The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation:

d1) weakly modified or unmodified gasoline is significant
d2) heavier gasoline range compounds are significant (aged gasoline?)
d9) no recognizable pattern

DHS ELAP Certification 1644

Angela Rydelius, Lab Manager

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Web: www.mccampbell.com E-mail: main@mccampbell.com
Telephone: 877-252-9262 Fax: 925-252-9269

QC SUMMARY REPORT FOR SW8021B/8015Bm

W.O. Sample Matrix: Soil QC Matrix: Soil BatchID: 48686 WorkOrder 1002321

EPA Method SW8021B/8015Bm **Extraction SW5030B** **Spiked Sample ID: 1002368-014A**

Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	mg/Kg	mg/Kg	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
TPH(btex)£	ND	0.60	109	102	6.84	108	108	0	70 - 130	20	70 - 130	20
MTBE	ND	0.10	113	111	1.86	111	115	3.06	70 - 130	20	70 - 130	20
Benzene	ND	0.10	89.2	89.1	0.0398	90.9	91.6	0.832	70 - 130	20	70 - 130	20
Toluene	ND	0.10	93	92.6	0.339	92.2	93.3	1.21	70 - 130	20	70 - 130	20
Ethylbenzene	ND	0.10	93.1	92.4	0.749	91	92.5	1.62	70 - 130	20	70 - 130	20
Xylenes	ND	0.30	94.8	93.9	0.991	92.2	93.2	0.993	70 - 130	20	70 - 130	20
%SS:	87	0.10	80	80	0	80	81	1.15	70 - 130	20	70 - 130	20

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:
NONE

BATCH 48686 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
1002321-002A	02/11/10 8:40 AM	02/16/10	02/17/10 2:05 PM	1002321-003A	02/11/10 8:45 AM	02/16/10	02/18/10 6:13 PM
1002321-004A	02/11/10 8:50 AM	02/16/10	02/16/10 5:50 PM	1002321-006A	02/11/10 9:20 AM	02/16/10	02/16/10 6:21 PM
1002321-008A	02/11/10 12:30 PM	02/16/10	02/16/10 6:51 PM	1002321-009A	02/11/10 12:40 PM	02/16/10	02/16/10 7:21 PM
1002321-010A	02/11/10 12:45 PM	02/16/10	02/16/10 7:51 PM				

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery = 100 * (MS-Sample) / (Amount Spiked); RPD = 100 * (MS - MSD) / ((MS + MSD) / 2).

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

£ TPH(btex) = sum of BTEX areas from the FID.

cluttered chromatogram; sample peak coelutes with surrogate peak.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

NR = matrix interference and/or analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content.

McCampbell Analytical, Inc.
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Web: www.mccampbell.com E-mail: main@mccampbell.com
Telephone: 877-252-9262 Fax: 925-252-9269

AEI Consultants	Client Project ID: #280346; Alaska Gas	Date Sampled: 02/11/10
		Date Received: 02/11/10
2500 Camino Diablo, Ste. #200	Client Contact: Jeremy Smith	Date Reported: 02/19/10
Walnut Creek, CA 94597	Client P.O.: #WC082233	Date Completed: 02/23/10

WorkOrder: 1002321

February 25, 2010

Dear Jeremy:

Enclosed within are:

1) The results of the **2** analyzed samples from your project: **#280346; Alaska Gas,**
2) A QC report for the above samples,
3) A copy of the chain of custody, and
4) An invoice for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits.

If you have any questions or concerns, please feel free to give me a call. Thank you for choosing

McCampbell Analytical Laboratories for your analytical needs.

Best regards,

Angela Rydelius
Laboratory Manager
McCampbell Analytical, Inc.

100232

McCAMPBELL ANALYTICAL INC.

1534 Willow Pass Road
Pittsburg, CA 94565
Telephone: (925) 252-9262 Fax: (925) 252-9269

CHAIN OF CUSTODY RECORD

TURN AROUND TIME ☐ RUSH ☐ 24 HR ☐ 48 HR ☐ 72 HR ☒ 5 DAY

EDF Required? ☐ Yes ☐ No

Report To: Jeremy Smith	Bill To: same	P.O. # WC082233
Company: AEI Consultants		
2500 Camino Diablo		
Walnut Creek, CA 94597	E-Mail: jasmith@aeiconsultants.com	
Tele: (925) 746-6000	Fax: (925) 944-2895	
Project #: 280346	Project Name: Alaska Gas	
Project Location: 6211 San Pablo Avenue, Oakland, California		
Sampler Signature:		

SAMPLE ID (Field Point Name)	LOCATION	SAMPLING Date	SAMPLING Time	# Containers	Type Containers	MATRIX Water	MATRIX Soil	MATRIX Air	MATRIX Sludge	MATRIX Other	METHOD PRESERVED Ice	METHOD PRESERVED HCl	METHOD PRESERVED HNO_3	METHOD PRESERVED Other
MW-7 (D)		2-11-10	900	3	V	X					X	X		
MW-7-8			840	1	Liner		X				X			
MW-7-14.5			845				X				X			
MW-7-19.5			850				X				X			
MW-7-24.5			910				X				X			
MW-7-29.5			920				X				X			
MW-8 (D)			1300	3	V	X					X	X		
MW-8-4.5			1230	1	Liner		X				X			
MW-8-9.5			1240				X				X			
MW-8-14.5			1245				X				X			
MW-8-19.5			1250				X				X			

Analysis Request

BTEX / MTBE 8021B	TPH - gasoline (8015)	Total Petroleum Oil & Grease (413.1) w/ Silica	Total Petroleum Hydrocarbons (418.1)	Fuel Oxys (8260) – MTBE, DIPE, ETBE, TAME, TBA, 1,2-DCA, EDB	TPH(g)+MBTEX 5-day extended analysis	Nitrate/Nitrite	EPA 608 / 8080 PCB's ONLY	VOCs 8260	SVOCs (with PAHs) 8270	PAH's / PNA's by EPA 625 / 8270 / 8310	CAM-17 Metals	LUFT 5 Metals (Cd, Cr, pb,,Ni,zinc (6010C).	Lead (field filtered 200.8)	RCI	Other: HOLD	Comments
X	X			X	X											
					X										X	OFF Hold 2/16/10 per JS
					X										X	
					X										X	
					X										X	
				X	X										X	OFF Hold
X	X			X												
					X										X	OFF Hold
					X										X	
					X										X	
				X	X										X	OFF HOLD 2/22/10

Relinquished By:	Date:	Time:	Received By:
	2/11/10	450	Envirotech T. L.
Envirotech SR	1730	2/11/10	
	2/11/10	600	02/11/10 9:00 PM

ICE/t° YES 8.1°C
GOOD CONDITION ✓
HEAD SPACE ABSENT ✓
DECHLORINATED IN LAB ✓
PRESERVED IN LAB ✓

PRESERVATION APPROPRIATE	VOAS	O&G	METALS	OTHER
CONTAINERS	✓			

McCampbell Analytical, Inc.
1534 Willow Pass Rd
Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 100232 B **ClientCode: AEL**

☐ WaterTrax ☐ WriteOn ☑ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Report to:
Jeremy Smith
AEI Consultants
2500 Camino Diablo, Ste. #200
Walnut Creek, CA 94597
(925) 283-6000 FAX (925) 944-2895

Email: jasmith@aeiconsultants.com
cc:
PO: #WC082233
ProjectNo: #280346; Alaska Gas

Bill to:
Denise Mockel
AEI Consultants
2500 Camino Diablo, Ste. #200
Walnut Creek, CA 94597
dmockel@aeiconsultants.com

Requested TAT: 5 days
Date Received: **02/11/2010**
Date Add-On: **02/22/2010**
Date Printed: **02/22/2010**

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below)											
					1	2	3	4	5	6	7	8	9	10	11	12
1002321-006	MW-7-29.5	Soil	2/11/2010 9:20	☐	A											
1002321-011	MW-8-19.5	Soil	2/11/2010 12:50	☐	A	A										

Test Legend:

1	5-OXYS+PBSCV_S	2	G-MBTEX_S	3		4		5	
6		7		8		9		10	
11		12							

Prepared by: Samantha Arbuckle

Comments: Soil samples off HOLD and set up for TPH(g)+MBTEX 5-day except MW-7-24.5 and MW-8-19.5 per JS 02/16/10. MW-8-19.5 & MW-7-29.5 2/22/10 5d per email

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Web: www.mccampbell.com E-mail: main@mccampbell.com
Telephone: 877-252-9262 Fax: 925-252-9269

AEI Consultants	Client Project ID: #280346; Alaska Gas	Date Sampled: 02/11/10
		Date Received: 02/11/10
2500 Camino Diablo, Ste. #200	Client Contact: Jeremy Smith	Date Extracted: 02/22/10
Walnut Creek, CA 94597	Client P.O.: #WC082233	Date Analyzed: 02/22/10

Oxygenated Volatile Organics + EDB and 1,2-DCA by P&T and GC/MS*

Extraction Method: SW5030B Analytical Method: SW8260B Work Order: 1002321

Lab ID	1002321-006A	1002321-011A			Reporting Limit for DF =1	
Client ID	MW-7-29.5	MW-8-19.5				
Matrix	S	S				
DF	1	1			S	W
Compound	**Concentration**				mg/kg	ug/L
tert-Amyl methyl ether (TAME)	ND	ND			0.005	NA
t-Butyl alcohol (TBA)	ND	ND			0.05	NA
1,2-Dibromoethane (EDB)	ND	ND			0.004	NA
1,2-Dichloroethane (1,2-DCA)	ND	ND			0.004	NA
Diisopropyl ether (DIPE)	ND	ND			0.005	NA
Ethyl tert-butyl ether (ETBE)	ND	ND			0.005	NA
Methyl-t-butyl ether (MTBE)	ND	ND			0.005	NA
Surrogate Recoveries (%)						
%SS1:	128	126				
Comments						

* water and vapor samples are reported in µg/L, soil/sludge/solid samples in mg/kg, product/oil/non-aqueous liquid samples and all TCLP & SPLP extracts are reported in mg/L, wipe samples in µg/wipe.

ND means not detected above the reporting limit/method detection limit; N/A means analyte not applicable to this analysis.

surrogate diluted out of range or coelutes with another peak; &) low surrogate due to matrix interference.

DHS ELAP Certification 1644

Angela Rydelius, Lab Manager

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AEI Consultants	Client Project ID: #280346; Alaska Gas	Date Sampled: 02/11/10
		Date Received: 02/11/10
2500 Camino Diablo, Ste. #200	Client Contact: Jeremy Smith	Date Extracted: 02/22/10
Walnut Creek, CA 94597	Client P.O.: #WC082233	Date Analyzed: 02/22/10

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE*

Extraction method: SW5030B Analytical methods: SW8021B/8015Bm Work Order: 1002321

Lab ID	Client ID	Matrix	TPH(g)	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	DF	% SS	Comments
011A	MW-8-19.5	S	ND	ND	ND	ND	ND	ND	1	91	

Reporting Limit for DF =1; ND means not detected at or above the reporting limit	W	50	5.0	0.5	0.5	0.5	0.5	ug/L
	S	1.0	0.05	0.005	0.005	0.005	0.005	mg/Kg

* water and vapor samples are reported in µg/L, soil/sludge/solid samples in mg/kg, wipe samples in µg/wipe, product/oil/non-aqueous liquid samples and all TCLP & SPLP extracts in mg/L.

cluttered chromatogram; sample peak coelutes w/surrogate peak; low surrogate recovery due to matrix interference.

+The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation:

DHS ELAP Certification 1644

Angela Rydelius, Lab Manager

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QC SUMMARY REPORT FOR SW8260B

W.O. Sample Matrix: Soil QC Matrix: Soil BatchID: 48791 WorkOrder 1002321

EPA Method SW8260B **Extraction SW5030B** **Spiked Sample ID: 1002452-010a**

Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	mg/Kg	mg/Kg	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
tert-Amyl methyl ether (TAME)	ND	0.050	79.5	79.6	0.212	80.5	80.6	0.153	70 - 130	30	70 - 130	30
t-Butyl alcohol (TBA)	ND	0.25	84.2	82.4	2.07	85.3	86	0.871	70 - 130	30	70 - 130	30
1,2-Dibromoethane (EDB)	ND	0.050	107	107	0	106	109	3.10	70 - 130	30	70 - 130	30
1,2-Dichloroethane (1,2-DCA)	ND	0.050	98.4	96.3	2.15	99.9	98.6	1.32	70 - 130	30	70 - 130	30
Diisopropyl ether (DIPE)	ND	0.050	93.2	92.4	0.805	93.1	95.3	2.26	70 - 130	30	70 - 130	30
Ethyl tert-butyl ether (ETBE)	ND	0.050	92.8	92.5	0.385	92.5	94	1.60	70 - 130	30	70 - 130	30
Methyl-t-butyl ether (MTBE)	ND	0.050	89.9	89.3	0.721	91.3	91.7	0.473	70 - 130	30	70 - 130	30
%SS1:	93	0.13	122	122	0	123	123	0	70 - 130	30	70 - 130	30

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:
NONE

BATCH 48791 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
1002321-006A	02/11/10 9:20 AM	02/22/10	02/22/10 9:07 PM	1002321-011A	02/11/10 12:50 PM	02/22/10	02/22/10 9:46 PM

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery = 100 * (MS-Sample) / (Amount Spiked); RPD = 100 * (MS - MSD) / ((MS + MSD) / 2).

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

NR = analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content.

Laboratory extraction solvents such as methylene chloride and acetone may occasionally appear in the method blank at low levels.

DHS ELAP Certification 1644

QA/QC Officer

McCampbell Analytical, Inc.
"When Quality Counts"

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QC SUMMARY REPORT FOR SW8021B/8015Bm

W.O. Sample Matrix: Soil QC Matrix: Soil BatchID: 48790 WorkOrder 1002321

EPA Method SW8021B/8015Bm **Extraction SW5030B** **Spiked Sample ID: 1002452-010A**

Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	mg/Kg	mg/Kg	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
TPH(btex)£	ND	0.60	104	105	1.00	109	105	3.82	70 - 130	20	70 - 130	20
MTBE	ND	0.10	117	113	3.34	102	107	4.37	70 - 130	20	70 - 130	20
Benzene	ND	0.10	92.3	90.6	1.81	87	89.6	2.89	70 - 130	20	70 - 130	20
Toluene	ND	0.10	90.7	89.2	1.61	85.6	88	2.81	70 - 130	20	70 - 130	20
Ethylbenzene	ND	0.10	90.1	88.9	1.34	86.8	87.5	0.749	70 - 130	20	70 - 130	20
Xylenes	ND	0.30	90.9	90.4	0.600	85.7	88.5	3.16	70 - 130	20	70 - 130	20
%SS:	101	0.10	98	102	3.53	96	94	2.78	70 - 130	20	70 - 130	20

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:
NONE

BATCH 48790 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
1002321-011A	02/11/10 12:50 PM	02/22/10	02/22/10 11:25 PM				

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery = 100 * (MS-Sample) / (Amount Spiked); RPD = 100 * (MS - MSD) / ((MS + MSD) / 2).

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

£ TPH(btex) = sum of BTEX areas from the FID.

cluttered chromatogram; sample peak coelutes with surrogate peak.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

NR = matrix interference and/or analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content.

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AEI Consultants	Client Project ID: #280346; Alaska Gas	Date Sampled: 02/11/10
		Date Received: 02/11/10
2500 Camino Diablo, Ste. #200	Client Contact: Jeremy Smith	Date Reported: 02/18/10
Walnut Creek, CA 94597	Client P.O.: #WC082233	Date Completed: 02/18/10

WorkOrder: 1002321

February 18, 2010

Dear Jeremy:

Enclosed within are:

1) The results of the **2** analyzed samples from your project: **#280346; Alaska Gas,**
2) A QC report for the above samples,
3) A copy of the chain of custody, and
4) An invoice for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits.

If you have any questions or concerns, please feel free to give me a call. Thank you for choosing

McCampbell Analytical Laboratories for your analytical needs.

Best regards,

Angela Rydelius
Laboratory Manager
McCampbell Analytical, Inc.

1002301

McCAMPBELL ANALYTICAL INC.

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CHAIN OF CUSTODY RECORD

TURN AROUND TIME ☐ RUSH ☐ 24 HR ☐ 48 HR ☐ 72 HR ☒ 5 DAY

EDF Required? ☒ Yes ☐ No

Report To: Jeremy Smith	Bill To: same	P.O. # WC082233
Company: AEI Consultants		
2500 Camino Diablo		
Walnut Creek, CA 94597	E-Mail: jasmith@aeiconsultants.com	
Tele: (925) 746-6000	Fax: (925) 944-2895	
Project #: 280346	Project Name: Alaska Gas	
Project Location: 6211 San Pablo Avenue, Oakland, California		
Sampler Signature:		

SAMPLE ID (Field Point Name)	LOCATION	SAMPLING Date	SAMPLING Time	# Containers	Type Containers	MATRIX Water	MATRIX Soil	MATRIX Air	MATRIX Sludge	MATRIX Other	METHOD PRESERVED Ice	METHOD PRESERVED HCl	METHOD PRESERVED HNO_3	METHOD PRESERVED Other	BTEX / MTBE 8021B	TPH - gasoline (8015)	Total Petroleum Oil & Grease (413.1) w/ Silica	Total Petroleum Hydrocarbons (418.1)	Fuel Oxys (8260) – MTBE, DIPE, ETBE, TAME, TBA, 1,2-DCA, EDB	Nitrate/Nitrite	EPA 608 / 8080 PCB's ONLY	VOCs 8260	SVOCs (with PAHs) 8270	PAH's / PNA's by EPA 625 / 8270 / 8310	CAM-17 Metals	LUFT 5 Metals (Cd, Cr, pb, Ni, zinc (6010C).	Lead (field filtered 200.8)	RCI	Other: HOLD	Comments
+2 MW-7 (D)		2-11-10	900	3	V	X					X	X			X	X			X											
MW-7-8			840	1	Liter		X				X																		X	
MW-7-14.5			845				X				X																		X	
MW-7-19.5			850				X				X																		X	
MW-7-24.5			910				X				X																		X	
MW-7-29.5			920				X				X																		X	
+2 MW-8 (D)			1300	3	V	X					X	X			X	X			X											
MW-8-4.5			1230	1	Liter		X				X																		X	
MW-8-9.5			1240				X				X																		X	
MW-8-14.5			1245				X				X																		X	
MW-8-19.5			1250				X				X																		X	

Relinquished By:	Date: 2/11/10	Time: 450	Received By: Envirotech T. L.
Relinquished By: Envirotech SR	Date: 1730	Time: 2/11/10	Received By:
Relinquished By:	Date: 2/11/10	Time: 600	Received By: 02/11/10 6:00PM

ICE/t° YES 8.1°C
GOOD CONDITION ✓
HEAD SPACE ABSENT ✓
DECHLORINATED IN LAB ✓

PRESERVATION APPROPRIATE CONTAINERS ✓	VOAS	O&G	METALS	OTHER
PRESERVED IN LAB ✓				

McCampbell Analytical, Inc.
1534 Willow Pass Rd
Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 1002321 **ClientCode: AEL**

☐ WaterTrax ☐ WriteOn ☑ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Report to:
Jeremy Smith
AEI Consultants
2500 Camino Diablo, Ste. #200
Walnut Creek, CA 94597
(925) 283-6000 FAX (925) 944-2895

Email: jasmith@aeiconsultants.com
cc:
PO: #WC082233
ProjectNo: #280346; Alaska Gas

Bill to:
Denise Mockel
AEI Consultants
2500 Camino Diablo, Ste. #200
Walnut Creek, CA 94597
dmockel@aeiconsultants.com

Requested TAT: 5 days

Date Received: **02/11/2010**
Date Printed: **02/11/2010**

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below)											
					1	2	3	4	5	6	7	8	9	10	11	12
1002321-001	MW-7D	Water	2/11/2010 9:00	☐	B	A	A									
1002321-007	MW-8 (D)	Water	2/11/2010 13:00	☐	B	A										

Test Legend:

1	7-OXYS_W	2	G-MBTEX_W	3	PREDF REPORT	4		5	
6		7		8		9		10	
11		12							

Prepared by: Samantha Arbuckle

Comments:

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

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Sample Receipt Checklist

Client Name: **AEI Consultants**

Date and Time Received: **2/11/2010 9:42:27 PM**

Project Name: **#280346; Alaska Gas**

Checklist completed and reviewed by: Samantha Arbuckle

WorkOrder N°: **1002321** Matrix Soil/Water

Carrier: Rob Pringle (MAI Courier)

Chain of Custody (COC) Information

Chain of custody present?	Yes ☑	No ☐
Chain of custody signed when relinquished and received?	Yes ☑	No ☐
Chain of custody agrees with sample labels?	Yes ☑	No ☐
Sample IDs noted by Client on COC?	Yes ☑	No ☐
Date and Time of collection noted by Client on COC?	Yes ☑	No ☐
Sampler's name noted on COC?	Yes ☑	No ☐

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	NA ☑
Shipping container/cooler in good condition?	Yes ☑	No ☐	
Samples in proper containers/bottles?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature	Cooler Temp: 8.1°C		NA ☐
Water - VOA vials have zero headspace / no bubbles?	Yes ☑	No ☐	No VOA vials submitted ☐
Sample labels checked for correct preservation?	Yes ☑	No ☐	
Metal - pH acceptable upon receipt (pH<2)?	Yes ☐	No ☐	NA ☑
Samples Received on Ice?	Yes ☑	No ☐	

(Ice Type: WET ICE)

** NOTE: If the "No" box is checked, see comments below.*

Client contacted: Date contacted: Contacted by:

Comments:

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Telephone: 877-252-9262 Fax: 925-252-9269

AEI Consultants	Client Project ID: #280346; Alaska Gas	Date Sampled: 02/11/10
		Date Received: 02/11/10
2500 Camino Diablo, Ste. #200	Client Contact: Jeremy Smith	Date Extracted: 02/17/10
Walnut Creek, CA 94597	Client P.O.: #WC082233	Date Analyzed: 02/17/10

Oxygenated Volatile Organics by P&T and GC/MS*

Extraction Method: SW5030B Analytical Method: SW8260B Work Order: 1002321

Lab ID	1002321-001B	1002321-007B			Reporting Limit for DF =1	
Client ID	MW-7D	MW-8 (D)				
Matrix	W	W				
DF	50	25			S	W
Compound	**Concentration**				ug/kg	µg/L
tert-Amyl methyl ether (TAME)	ND<25	14			NA	0.5
t-Butyl alcohol (TBA)	3000	ND<50			NA	2.0
1,2-Dibromoethane (EDB)	ND<25	ND<12			NA	0.5
1,2-Dichloroethane (1,2-DCA)	ND<25	ND<12			NA	0.5
Diisopropyl ether (DIPE)	ND<25	ND<12			NA	0.5
Ethyl tert-butyl ether (ETBE)	ND<25	ND<12			NA	0.5
Methyl-t-butyl ether (MTBE)	ND<25	570			NA	0.5
Surrogate Recoveries (%)						
%SS1:	111	110				
Comments	b1	b1				

* water and vapor samples are reported in µg/L, soil/sludge/solid samples in mg/kg, product/oil/non-aqueous liquid samples and all TCLP & SPLP extracts are reported in mg/L, wipe samples in µg/wipe.

ND means not detected above the reporting limit/method detection limit; N/A means analyte not applicable to this analysis.

surrogate diluted out of range or surrogate coelutes with another peak.

b1) aqueous sample that contains greater than ~1 vol. % sediment

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AEI Consultants	Client Project ID: #280346; Alaska Gas	Date Sampled: 02/11/10
		Date Received: 02/11/10
2500 Camino Diablo, Ste. #200	Client Contact: Jeremy Smith	Date Extracted: 02/12/10-02/16/10
Walnut Creek, CA 94597	Client P.O.: #WC082233	Date Analyzed: 02/12/10-02/16/10

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE*

Extraction method: SW5030B Analytical methods: SW8021B/8015Bm Work Order: 1002321

Lab ID	Client ID	Matrix	TPH(g)	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	DF	% SS	Comments
001A	MW-7D	W	ND	6.0	ND	ND	1.2	2.3	1	100	b1
007A	MW-8 (D)	W	54	580	ND	ND	1.1	3.0	1	107	d1,b1

Reporting Limit for DF =1; ND means not detected at or above the reporting limit	W	50	5.0	0.5	0.5	0.5	0.5	µg/L
	S	1.0	0.05	0.005	0.005	0.005	0.005	mg/Kg

* water and vapor samples are reported in ug/L, soil/sludge/solid samples in mg/kg, wipe samples in µg/wipe, product/oil/non-aqueous liquid samples and all TCLP & SPLP extracts in mg/L.

cluttered chromatogram; sample peak coelutes w/surrogate peak; low surrogate recovery due to matrix interference.

+The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation:

b1) aqueous sample that contains greater than ~1 vol. % sediment
d1) weakly modified or unmodified gasoline is significant

DHS ELAP Certification 1644

Angela Rydelius, Lab Manager

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Web: www.mccampbell.com E-mail: main@mccampbell.com
Telephone: 877-252-9262 Fax: 925-252-9269

QC SUMMARY REPORT FOR SW8260B

W.O. Sample Matrix: Water QC Matrix: Water BatchID: 48614 WorkOrder 1002321

EPA Method SW8260B **Extraction SW5030B** **Spiked Sample ID: 1002264-007a**

Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
tert-Amyl methyl ether (TAME)	ND<170	10	80.8	86.1	6.36	86.8	96.4	10.4	70 - 130	30	70 - 130	30
t-Butyl alcohol (TBA)	ND<670	50	77	85.9	10.9	79.8	89.9	11.9	70 - 130	30	70 - 130	30
Diisopropyl ether (DIPE)	ND<170	10	118	126	6.04	113	119	5.19	70 - 130	30	70 - 130	30
Ethyl tert-butyl ether (ETBE)	ND<170	10	97.2	104	6.84	96	102	5.76	70 - 130	30	70 - 130	30
Methyl-t-butyl ether (MTBE)	ND<170	10	86.5	93.5	7.74	95.6	102	6.05	70 - 130	30	70 - 130	30
%SS1:	94	25	117	117	0	109	110	0.646	70 - 130	30	70 - 130	30

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:
NONE

BATCH 48614 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
1002321-007B	02/11/10 1:00 PM	02/17/10	02/17/10 10:04 PM				

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery = 100 * (MS-Sample) / (Amount Spiked); RPD = 100 * (MS - MSD) / ((MS + MSD) / 2).

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

NR = analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content.

Laboratory extraction solvents such as methylene chloride and acetone may occasionally appear in the method blank at low levels.

DHS ELAP Certification 1644

QA/QC Officer

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QC SUMMARY REPORT FOR SW8260B

W.O. Sample Matrix: Water QC Matrix: Water BatchID: 48656 WorkOrder 1002321

EPA Method SW8260B **Extraction SW5030B** **Spiked Sample ID: 1002318-001A**

Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
tert-Amyl methyl ether (TAME)	ND	10	89	92.8	4.12	86.5	91	5.06	70 - 130	30	70 - 130	30
t-Butyl alcohol (TBA)	ND	50	95.1	110	14.5	78.2	86	9.61	70 - 130	30	70 - 130	30
Diisopropyl ether (DIPE)	ND	10	125	129	3.31	125	129	2.93	70 - 130	30	70 - 130	30
Ethyl tert-butyl ether (ETBE)	ND	10	106	112	5.11	104	107	3.28	70 - 130	30	70 - 130	30
Methyl-t-butyl ether (MTBE)	ND	10	97.2	105	7.56	94.8	95.5	0.698	70 - 130	30	70 - 130	30
%SS1:	110	25	118	122	3.05	113	108	3.81	70 - 130	30	70 - 130	30

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:
NONE

BATCH 48656 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
1002321-001B	02/11/10 9:00 AM	02/17/10	02/17/10 9:21 PM				

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery = 100 * (MS-Sample) / (Amount Spiked); RPD = 100 * (MS - MSD) / ((MS + MSD) / 2).

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

NR = analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content.

Laboratory extraction solvents such as methylene chloride and acetone may occasionally appear in the method blank at low levels.

DHS ELAP Certification 1644

QA/QC Officer

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QC SUMMARY REPORT FOR SW8021B/8015Bm

W.O. Sample Matrix: Water QC Matrix: Water BatchID: 48629 WorkOrder 1002321

EPA Method SW8021B/8015Bm **Extraction SW5030B** **Spiked Sample ID: 1002285-005A**

Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
TPH(btex)£	ND	60	107	105	2.50	115	120	4.10	70 - 130	20	70 - 130	20
MTBE	ND	10	123	122	1.39	118	125	5.98	70 - 130	20	70 - 130	20
Benzene	0.63	10	102	101	0.634	107	110	3.30	70 - 130	20	70 - 130	20
Toluene	ND	10	95.2	94.6	0.670	93.1	96.1	3.11	70 - 130	20	70 - 130	20
Ethylbenzene	ND	10	94.5	94.4	0.111	93.4	94.8	1.52	70 - 130	20	70 - 130	20
Xylenes	ND	30	107	107	0	106	108	1.73	70 - 130	20	70 - 130	20
%SS:	99	10	105	101	4.00	102	104	2.40	70 - 130	20	70 - 130	20

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:
NONE

BATCH 48629 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
1002321-001A	02/11/10 9:00 AM	02/16/10	02/16/10 8:39 PM	1002321-007A	02/11/10 1:00 PM	02/12/10	02/12/10 11:58 PM
1002321-007A	02/11/10 1:00 PM	02/16/10	02/16/10 9:38 PM				

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery = 100 * (MS-Sample) / (Amount Spiked); RPD = 100 * (MS - MSD) / ((MS + MSD) / 2).

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

£ TPH(btex) = sum of BTEX areas from the FID.

cluttered chromatogram; sample peak coelutes with surrogate peak.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

NR = matrix interference and/or analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content, or inconsistency in sample containers.

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Telephone: 877-252-9262 Fax: 925-252-9269

AEI Consultants	Client Project ID: #280346; Alaska Gas	Date Sampled: 02/12/10
		Date Received: 02/12/10
2500 Camino Diablo, Ste. #200	Client Contact: Jeremy Smith	Date Reported: 02/22/10
Walnut Creek, CA 94597	Client P.O.: #WC082234	Date Completed: 02/23/10

WorkOrder: 1002359

February 25, 2010

Dear Jeremy:

Enclosed within are:

1) The results of the **2** analyzed samples from your project: **#280346; Alaska Gas,**
2) A QC report for the above samples,
3) A copy of the chain of custody, and
4) An invoice for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits.

If you have any questions or concerns, please feel free to give me a call. Thank you for choosing

McCampbell Analytical Laboratories for your analytical needs.

Best regards,

Angela Rydelius
Laboratory Manager
McCampbell Analytical, Inc.

1002359

McCAMPBELL ANALYTICAL INC.

1534 Willow Pass Road
Pittsburg, CA 94565
Telephone: (925) 252-9262 Fax: (925) 252-9269

CHAIN OF CUSTODY RECORD

TURN AROUND TIME ☐ RUSH ☐ 24 HR ☐ 48 HR ☐ 72 HR ☒ 5 DAY

EDF Required? ☒ Yes ☐ No

Report To: Jeremy Smith	Bill To: same	P.O. # WC082234
Company: AEI Consultants		
2500 Camino Diablo		
Walnut Creek, CA 94597	E-Mail: jasmith@aeiconsultants.com	
Tele: (925) 746-6000	Fax: (925) 944-2895	
Project #: 280346	Project Name: Alaska Gas	
Project Location: 6211 San Pablo Avenue, Oakland, California		
Sampler Signature:		

SAMPLE ID (Field Point Name)	LOCATION	SAMPLING Date	SAMPLING Time	# Containers	Type Containers	MATRIX Water	Soil	Air	Sludge	Other	METHOD PRESERVED Ice	HCl	HNO_3	Other	BTEX & TPH as gasoline (8021B/8015)	TPH - gasoline (8015)	Total Petroleum Oil & Grease (413.1) w/ Silica	Total Petroleum Hydrocarbons (418.1)	Fuel Oxys (8260) – MTBE, DIPE, ETBE, TAME, TBA, 1,2-DCA, EDB	TPH(g) + MBTEX 5-day 02/16/10	Nitrate/Nitrite	EPA 608 / 8080 PCB's ONLY	VOCs 8260	SVOCs (with PAHs) 8270	PAH's / PNA's by EPA 625 / 8270 / 8310	CAM-17 Metals	LUFT 5 Metals (Cd, Cr, pb, Ni, zinc (6010C).	Lead (field filtered 200.8)	RCI	Other: HOLD	Comments
MW-9-5.5		2-12-10	835	1	Liner		X				X				X	X			X	X											X	off Hold
MW-9-9.5			840																	X											per Jeremy 02/16/10
MW-9-14.5			845																X	X												
MW-10-6			1110																	X												
MW-10-9.5			1115																	X												
MW-10-14.5			1120																	X											off Hold 2/22/10	

Relinquished By:	Date:	Time:	Received By:
	2-12-10	345	Envirotech BM
Enviro-Tech SR	2/12/10	1750	
	2/12/10	6:10PM	02/12/10 6:10PM

ICE/t° yes 7.9°C ✓
GOOD CONDITION ✓
HEAD SPACE ABSENT ✓
DECHLORINATED IN LAB ✓

PRESERVATION APPROPRIATE ✓	VOAS	O&G	METALS	OTHER
CONTAINERS ✓				
PERSERVED IN LAB ✓				

McCampbell Analytical, Inc.
1534 Willow Pass Rd
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(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 100235 A **ClientCode: AEL**

☐ WaterTrax ☐ WriteOn ☑ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Report to:
Jeremy Smith
AEI Consultants
2500 Camino Diablo, Ste. #200
Walnut Creek, CA 94597
(925) 283-6000 FAX (925) 944-2895

Email: jasmith@aeiconsultants.com
cc:
PO: #WC082234
ProjectNo: #280346; Alaska Gas

Bill to:
Denise Mockel
AEI Consultants
2500 Camino Diablo, Ste. #200
Walnut Creek, CA 94597
dmockel@aeiconsultants.com

Requested TAT: 5 days
Date Received: **02/12/2010**
Date Add-On: **02/22/2010**
Date Printed: **02/22/2010**

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below)											
					1	2	3	4	5	6	7	8	9	10	11	12
1002359-003	MW-9-14.5	Soil	2/12/2010 8:45	☐	A											
1002359-006	MW-10-14.5	Soil	2/12/2010 11:20	☐		A										

Test Legend:

1	5-OXYS+PBSCV_S	2	G-MBTEX_S	3		4		5	
6		7		8		9		10	
11		12							

Prepared by: Samantha Arbuckle

Comments: Soil samples off HOLD and set up for TPH(g)+MBTEX 5-day except MW-10-14.5 per JS 02/16/10. MW-9-14.5 & MW-10-14.5 off Hold 2/22/10 5d per email.

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

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Web: www.mccampbell.com E-mail: main@mccampbell.com
Telephone: 877-252-9262 Fax: 925-252-9269

AEI Consultants	Client Project ID: #280346; Alaska Gas	Date Sampled: 02/12/10
		Date Received: 02/12/10
2500 Camino Diablo, Ste. #200	Client Contact: Jeremy Smith	Date Extracted: 02/22/10
Walnut Creek, CA 94597	Client P.O.: #WC082234	Date Analyzed: 02/22/10

Oxygenated Volatile Organics + EDB and 1,2-DCA by P&T and GC/MS*

Extraction Method: SW5030B Analytical Method: SW8260B Work Order: 1002359

Lab ID	1002359-003A				Reporting Limit for DF =1	
Client ID	MW-9-14.5					
Matrix	S					
DF	1				S	W
Compound	**Concentration**				mg/kg	ug/L
tert-Amyl methyl ether (TAME)	ND				0.005	NA
t-Butyl alcohol (TBA)	ND				0.05	NA
1,2-Dibromoethane (EDB)	ND				0.004	NA
1,2-Dichloroethane (1,2-DCA)	ND				0.004	NA
Diisopropyl ether (DIPE)	ND				0.005	NA
Ethyl tert-butyl ether (ETBE)	ND				0.005	NA
Methyl-t-butyl ether (MTBE)	0.027				0.005	NA
Surrogate Recoveries (%)						
%SS1:	127					
Comments						

* water and vapor samples are reported in µg/L, soil/sludge/solid samples in mg/kg, product/oil/non-aqueous liquid samples and all TCLP & SPLP extracts are reported in mg/L, wipe samples in µg/wipe.

ND means not detected above the reporting limit/method detection limit; N/A means analyte not applicable to this analysis.

surrogate diluted out of range or coelutes with another peak; &) low surrogate due to matrix interference.

DHS ELAP Certification 1644

Angela Rydelius, Lab Manager

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Telephone: 877-252-9262 Fax: 925-252-9269

AEI Consultants	Client Project ID: #280346; Alaska Gas	Date Sampled: 02/12/10
		Date Received: 02/12/10
2500 Camino Diablo, Ste. #200	Client Contact: Jeremy Smith	Date Extracted: 02/22/10
Walnut Creek, CA 94597	Client P.O.: #WC082234	Date Analyzed: 02/22/10

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE*

Extraction method: SW5030B Analytical methods: SW8021B/8015Bm Work Order: 1002359

Lab ID	Client ID	Matrix	TPH(g)	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	DF	% SS	Comments
006A	MW-10-14.5	S	ND	ND	ND	ND	ND	ND	1	95	

Reporting Limit for DF =1; ND means not detected at or above the reporting limit	W	50	5.0	0.5	0.5	0.5	0.5	ug/L
	S	1.0	0.05	0.005	0.005	0.005	0.005	mg/Kg

* water and vapor samples are reported in µg/L, soil/sludge/solid samples in mg/kg, wipe samples in µg/wipe, product/oil/non-aqueous liquid samples and all TCLP & SPLP extracts in mg/L.

cluttered chromatogram; sample peak coelutes w/surrogate peak; low surrogate recovery due to matrix interference.

+The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation:

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Angela Rydelius, Lab Manager

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QC SUMMARY REPORT FOR SW8260B

W.O. Sample Matrix: Soil QC Matrix: Soil BatchID: 48791 WorkOrder 1002359

EPA Method SW8260B **Extraction SW5030B** **Spiked Sample ID: 1002452-010a**

Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	mg/Kg	mg/Kg	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
tert-Amyl methyl ether (TAME)	ND	0.050	79.5	79.6	0.212	80.5	80.6	0.153	70 - 130	30	70 - 130	30
t-Butyl alcohol (TBA)	ND	0.25	84.2	82.4	2.07	85.3	86	0.871	70 - 130	30	70 - 130	30
1,2-Dibromoethane (EDB)	ND	0.050	107	107	0	106	109	3.10	70 - 130	30	70 - 130	30
1,2-Dichloroethane (1,2-DCA)	ND	0.050	98.4	96.3	2.15	99.9	98.6	1.32	70 - 130	30	70 - 130	30
Diisopropyl ether (DIPE)	ND	0.050	93.2	92.4	0.805	93.1	95.3	2.26	70 - 130	30	70 - 130	30
Ethyl tert-butyl ether (ETBE)	ND	0.050	92.8	92.5	0.385	92.5	94	1.60	70 - 130	30	70 - 130	30
Methyl-t-butyl ether (MTBE)	ND	0.050	89.9	89.3	0.721	91.3	91.7	0.473	70 - 130	30	70 - 130	30
%SS1:	93	0.13	122	122	0	123	123	0	70 - 130	30	70 - 130	30

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:
NONE

BATCH 48791 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
1002359-003A	02/12/10 8:45 AM	02/22/10	02/22/10 8:28 PM				

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery = 100 * (MS-Sample) / (Amount Spiked); RPD = 100 * (MS - MSD) / ((MS + MSD) / 2).

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

NR = analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content.

Laboratory extraction solvents such as methylene chloride and acetone may occasionally appear in the method blank at low levels.

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QA/QC Officer

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QC SUMMARY REPORT FOR SW8021B/8015Bm

W.O. Sample Matrix: Soil QC Matrix: Soil BatchID: 48790 WorkOrder 1002359

EPA Method SW8021B/8015Bm **Extraction SW5030B** **Spiked Sample ID: 1002452-010A**

Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	mg/Kg	mg/Kg	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
TPH(btex)£	ND	0.60	104	105	1.00	109	105	3.82	70 - 130	20	70 - 130	20
MTBE	ND	0.10	117	113	3.34	102	107	4.37	70 - 130	20	70 - 130	20
Benzene	ND	0.10	92.3	90.6	1.81	87	89.6	2.89	70 - 130	20	70 - 130	20
Toluene	ND	0.10	90.7	89.2	1.61	85.6	88	2.81	70 - 130	20	70 - 130	20
Ethylbenzene	ND	0.10	90.1	88.9	1.34	86.8	87.5	0.749	70 - 130	20	70 - 130	20
Xylenes	ND	0.30	90.9	90.4	0.600	85.7	88.5	3.16	70 - 130	20	70 - 130	20
%SS:	101	0.10	98	102	3.53	96	94	2.78	70 - 130	20	70 - 130	20

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:
NONE

BATCH 48790 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
1002359-006A	02/12/10 11:20 AM	02/22/10	02/22/10 10:21 PM				

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery = 100 * (MS-Sample) / (Amount Spiked); RPD = 100 * (MS - MSD) / ((MS + MSD) / 2).

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

£ TPH(btex) = sum of BTEX areas from the FID.

cluttered chromatogram; sample peak coelutes with surrogate peak.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

NR = matrix interference and/or analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content.

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Telephone: 877-252-9262 Fax: 925-252-9269

AEI Consultants	Client Project ID: #280346; Alaska Gas	Date Sampled: 02/12/10
		Date Received: 02/12/10
2500 Camino Diablo, Ste. #200	Client Contact: Jeremy Smith	Date Reported: 02/22/10
Walnut Creek, CA 94597	Client P.O.: #WC082234	Date Completed: 02/18/10

WorkOrder: 1002359

February 22, 2010

Dear Jeremy:

Enclosed within are:

1) The results of the **5** analyzed samples from your project: **#280346; Alaska Gas,**
2) A QC report for the above samples,
3) A copy of the chain of custody, and
4) An invoice for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits.

If you have any questions or concerns, please feel free to give me a call. Thank you for choosing

McCampbell Analytical Laboratories for your analytical needs.

Best regards,

Angela Rydelius
Laboratory Manager
McCampbell Analytical, Inc.

1002359

McCAMPBELL ANALYTICAL INC.

1534 Willow Pass Road
Pittsburg, CA 94565
Telephone: (925) 252-9262 Fax: (925) 252-9269

CHAIN OF CUSTODY RECORD

TURN AROUND TIME ☐ RUSH ☐ 24 HR ☐ 48 HR ☐ 72 HR ☒ 5 DAY

EDF Required? ☒ Yes ☐ No

Report To: Jeremy Smith	Bill To: same	P.O. # WC082234
Company: AEI Consultants		
2500 Camino Diablo		
Walnut Creek, CA 94597	E-Mail: jasmith@aeiconsultants.com	
Tele: (925) 746-6000	Fax: (925) 944-2895	
Project #: 280346	Project Name: Alaska Gas	
Project Location: 6211 San Pablo Avenue, Oakland, California		
Sampler Signature: Jeremy Smith		

SAMPLE ID (Field Point Name)	LOCATION	SAMPLING Date	SAMPLING Time	# Containers	Type Containers	MATRIX Water	Soil	Air	Sludge	Other	METHOD PRESERVED Ice	HCl	HNO_3	Other	Analysis Request: BTEX / MTBE 8021B	TPH - gasoline (8015)	Total Petroleum Oil & Grease (413.1) w/ Silica	Total Petroleum Hydrocarbons (418.1)	Fuel Oxys (8260) – MTBE, DIPE, ETBE, TAME, TBA, 1,2-DCA, EDB	TPH(g) + MBTEX 5-day 02/16/10	Nitrate/Nitrite	EPA 608 / 8080 PCB's ONLY	VOCs 8260	SVOCs (with PAHs) 8270	PAH's / PNA's by EPA 625 / 8270 / 8310	CAM-17 Metals	LUFT 5 Metals (Cd, Cr, pb,,Ni,zinc (6010C).	Lead (field filtered 200.8)	RCI	Other: HOLD	Comments
MW-9-5.5		2-12-10	835	1	Liner		X				X				X	X			X	X										X	Off Hold
MW-9-9.5			840																	X											per Jeremy 02/16/10
MW-9-14.5			845																	X											
MW-10-6			1110																	X											
MW-10-9.5			1115																	X											
MW-10-14.5			1120																	X											

Relinquished By: Jeremy Smith	Date: 2-12-10	Time: 345	Received By: Envirotech BM
Relinquished By: Envirotech BM	Date: 2/12/10	Time: 1750	Received By: Vicky Hale
Relinquished By: Vicky Hale	Date: 2/12/10	Time: 6:10PM	Received By: 02/12/10 6:10PM

ICE/t° yes 7.9°C ✓
GOOD CONDITION ✓
HEAD SPACE ABSENT N/A
DECHLORINATED IN LAB N/A

PRESERVATION	VOAS	O&G	METALS	OTHER
APPROPRIATE CONTAINERS	✓			
PERSERVED IN LAB	N/A			

McCampbell Analytical, Inc.
1534 Willow Pass Rd
Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 1002359 **ClientCode: AEL**

☐ WaterTrax ☐ WriteOn ☑ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Report to:
Jeremy Smith
AEI Consultants
2500 Camino Diablo, Ste. #200
Walnut Creek, CA 94597
(925) 283-6000 FAX (925) 944-2895

Email: jasmith@aeiconsultants.com
cc:
PO: #WC082234
ProjectNo: #280346; Alaska Gas

Bill to:
Denise Mockel
AEI Consultants
2500 Camino Diablo, Ste. #200
Walnut Creek, CA 94597
dmockel@aeiconsultants.com

Requested TAT: 5 days

Date Received: **02/12/2010**
Date Printed: **02/16/2010**

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below)											
					1	2	3	4	5	6	7	8	9	10	11	12
1002359-001	MW-9-5.5	Soil	2/12/2010 8:35	☐	A	A										
1002359-002	MW-9-9.5	Soil	2/12/2010 8:40	☐	A											
1002359-003	MW-9-14.5	Soil	2/12/2010 8:45	☐	A											
1002359-004	MW-10-6	Soil	2/12/2010 11:10	☐	A											
1002359-005	MW-10-9.5	Soil	2/12/2010 11:15	☐	A											

Test Legend:

1	G-MBTEX_S	2	PREDF REPORT	3		4		5	
6		7		8		9		10	
11		12							

Prepared by: Samantha Arbuckle

Comments: Soil samples off HOLD and set up for TPH(g)+MBTEX 5-day except MW-10-14.5 per JS 02/16/10.

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

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"When Quality Counts"

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Telephone: 877-252-9262 Fax: 925-252-9269

Sample Receipt Checklist

Client Name: **AEI Consultants**

Date and Time Received: **2/12/2010 8:35:46 PM**

Project Name: **#280346; Alaska Gas**

Checklist completed and reviewed by: Samantha Arbuckle

WorkOrder N°: **1002359** Matrix Soil

Carrier: EnviroTech (MTZ)

Chain of Custody (COC) Information

Chain of custody present?	Yes ☑	No ☐
Chain of custody signed when relinquished and received?	Yes ☑	No ☐
Chain of custody agrees with sample labels?	Yes ☑	No ☐
Sample IDs noted by Client on COC?	Yes ☑	No ☐
Date and Time of collection noted by Client on COC?	Yes ☑	No ☐
Sampler's name noted on COC?	Yes ☑	No ☐

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	NA ☑
Shipping container/cooler in good condition?	Yes ☑	No ☐	
Samples in proper containers/bottles?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature	Cooler Temp: 7.9°C		NA ☐
Water - VOA vials have zero headspace / no bubbles?	Yes ☐	No ☐	No VOA vials submitted ☑
Sample labels checked for correct preservation?	Yes ☑	No ☐	
Metal - pH acceptable upon receipt (pH<2)?	Yes ☐	No ☐	NA ☑
Samples Received on Ice?	Yes ☑	No ☐	

(Ice Type: WET ICE)

** NOTE: If the "No" box is checked, see comments below.*

Client contacted: Date contacted: Contacted by:

Comments:

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AEI Consultants	Client Project ID: #280346; Alaska Gas	Date Sampled: 02/12/10
		Date Received: 02/12/10
2500 Camino Diablo, Ste. #200	Client Contact: Jeremy Smith	Date Extracted: 02/16/10
Walnut Creek, CA 94597	Client P.O.: #WC082234	Date Analyzed: 02/17/10-02/18/10

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE*

Extraction method: SW5030B Analytical methods: SW8021B/8015Bm Work Order: 1002359

Lab ID	Client ID	Matrix	TPH(g)	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	DF	% SS	Comments
001A	MW-9-5.5	S	ND	ND	ND	ND	ND	ND	1	92	
002A	MW-9-9.5	S	ND	ND	ND	ND	ND	ND	1	95	
003A	MW-9-14.5	S	ND	0.075	ND	ND	ND	ND	1	93	
004A	MW-10-6	S	64	ND<0.50	ND<0.050	0.62	ND<0.050	ND<0.050	10	83	d7,d9
005A	MW-10-9.5	S	1.9	ND	ND	ND	ND	ND	1	83	d7

Reporting Limit for DF =1; ND means not detected at or above the reporting limit	W	50	5.0	0.5	0.5	0.5	0.5	ug/L
	S	1.0	0.05	0.005	0.005	0.005	0.005	mg/Kg

* water and vapor samples are reported in µg/L, soil/sludge/solid samples in mg/kg, wipe samples in µg/wipe, product/oil/non-aqueous liquid samples and all TCLP & SPLP extracts in mg/L.

cluttered chromatogram; sample peak coelutes w/surrogate peak; low surrogate recovery due to matrix interference.

+The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation:

d7) strongly aged gasoline or diesel range compounds are significant in the TPH(g) chromatogram
d9) no recognizable pattern

DHS ELAP Certification 1644

Angela Rydelius, Lab Manager

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QC SUMMARY REPORT FOR SW8021B/8015Bm

W.O. Sample Matrix: Soil QC Matrix: Soil BatchID: 48682 WorkOrder 1002359

EPA Method SW8021B/8015Bm **Extraction SW5030B** **Spiked Sample ID: 1002358-003A**

Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	mg/Kg	mg/Kg	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
TPH(btex)£	ND	0.60	103	104	0.277	103	100	2.91	70 - 130	20	70 - 130	20
MTBE	ND	0.10	124	117	5.71	122	124	1.40	70 - 130	20	70 - 130	20
Benzene	ND	0.10	93.5	91.8	1.86	94.7	95.7	1.01	70 - 130	20	70 - 130	20
Toluene	ND	0.10	90.8	89.5	1.51	92.5	93.3	0.872	70 - 130	20	70 - 130	20
Ethylbenzene	ND	0.10	90.7	89	1.83	91.3	92	0.738	70 - 130	20	70 - 130	20
Xylenes	ND	0.30	85.9	90.1	4.85	92.6	92.9	0.407	70 - 130	20	70 - 130	20
%SS:	84	0.10	86	87	0.675	84	87	2.87	70 - 130	20	70 - 130	20

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:
NONE

BATCH 48682 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
1002359-001A	02/12/10 8:35 AM	02/16/10	02/17/10 6:14 AM	1002359-002A	02/12/10 8:40 AM	02/16/10	02/17/10 6:45 AM
1002359-003A	02/12/10 8:45 AM	02/16/10	02/18/10 7:44 PM	1002359-004A	02/12/10 11:10 AM	02/16/10	02/17/10 3:43 PM
1002359-005A	02/12/10 11:15 AM	02/16/10	02/17/10 3:37 PM				

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery = 100 * (MS-Sample) / (Amount Spiked); RPD = 100 * (MS - MSD) / ((MS + MSD) / 2).

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

£ TPH(btex) = sum of BTEX areas from the FID.

cluttered chromatogram; sample peak coelutes with surrogate peak.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

NR = matrix interference and/or analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content.

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AEI Consultants	Client Project ID: #280346; Alaska Gas	Date Sampled: 02/23/10
		Date Received: 02/23/10
2500 Camino Diablo, Ste. #200	Client Contact: Jeremy Smith	Date Reported: 03/02/10
Walnut Creek, CA 94597	Client P.O.: #WC082247	Date Completed: 03/02/10

WorkOrder: 1002575

March 02, 2010

Dear Jeremy:

Enclosed within are:

1) The results of the **11** analyzed samples from your project: **#280346; Alaska Gas,**
2) A QC report for the above samples,
3) A copy of the chain of custody, and
4) An invoice for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits.

If you have any questions or concerns, please feel free to give me a call. Thank you for choosing

McCampbell Analytical Laboratories for your analytical needs.

Best regards,

Angela Rydelius
Laboratory Manager
McCampbell Analytical, Inc.

100515

McCAMPBELL ANALYTICAL INC.

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Pittsburg, CA 94565
Telephone: (925) 252-9262 Fax: (925) 252-9269

CHAIN OF CUSTODY RECORD

TURN AROUND TIME ☐ RUSH ☐ 24 HR ☐ 48 HR ☐ 72 HR ☒ 5 DAY

EDF Required? ☒ Yes ☐ No

Report To: Jeremy Smith **Bill To:** same **P.O. # WC082247**

Company: AEI Consultants
2500 Camino Diablo
Walnut Creek, CA 94597 **E-Mail:** jasmith@aeiconsultants.com

Tele: (925) 746-6000 **Fax:** (925) 746-6099

Project #: 280346 **Project Name:** Alaska Gas

Project Location: 6211 San Pablo Avenue, Oakland, California

Sampler Signature:

SAMPLE ID (Field Point Name)	LOCATION	SAMPLING Date	SAMPLING Time	# Containers	Type Containers	MATRIX Water	Soil	Air	Sludge	Other	METHOD PRESERVED Ice	HCl	HNO_3	Other
MW-1R		9/23/16	1215	3	VOAs	X					X	X		
MW-2			1200			X					X	X		
MW-3			1220			X					X	X		
MW-4			1235			X					X	X		
MW-5			1205			X					X	X		
MW-6			1150			X					X	X		
MW-7			940			X					X	X		
MW-8			830			X					X	X		
MW-9			915			X					X	X		
MW-10			845			X					X	X		
EX-1			1355			X					X	X		

Analysis Request

BTEX / MTBE 8021B	TPH - gasoline (8015)	Total Petroleum Oil & Grease (413.1) w/ Silica	Total Petroleum Hydrocarbons (418.1)	Fuel Oxys (8260) – MTBE, DIPE, ETBE, TAME, TBA, 1,2-DCA, EDB	Nitrate/Nitrite	EPA 608 / 8080 PCB's ONLY	VOCs 8260	SVOCs (with PAHs) 8270	PAH's / PNA's by EPA 625 / 8270 / 8310	CAM-17 Metals	LUFT 5 Metals (Cd, Cr, pb,,Ni,zinc (6010C).	Lead (field filtered 200.8)	RCI
X	X			X									
X	X			X									
X	X			X									
X	X			X									
X	X			X									
X	X			X									
X	X			X									
X	X			X									
X	X			X									
X	X			X									
X	X			X									

Other | **Comments**

Relinquished By:	Date:	Time:	Received By:
	9/23/16	7:40	
Relinquished By:	Date:	Time:	Received By:
Relinquished By:	Date:	Time:	Received By:

ICE/t° 5.4c
GOOD CONDITION
HEAD SPACE ABSENT
DECHLORINATED IN LAB PERSERVED IN LAB

PRESERVATION APPROPRIATE CONTAINERS	VOAS	O&G	METALS	OTHER

McCampbell Analytical, Inc.
1534 Willow Pass Rd
Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 1002575 **ClientCode: AEL**

☐ WaterTrax ☐ WriteOn ☑ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Report to:
Jeremy Smith
AEI Consultants
2500 Camino Diablo, Ste. #200
Walnut Creek, CA 94597
(925) 283-6000 FAX (925) 944-2895

Email: jasmith@aeiconsultants.com
cc:
PO: #WC082247
ProjectNo: #280346; Alaska Gas

Bill to:
Denise Mockel
AEI Consultants
2500 Camino Diablo, Ste. #200
Walnut Creek, CA 94597
dmockel@aeiconsultants.com

Requested TAT: 5 days

Date Received: **02/23/2010**
Date Printed: **02/23/2010**

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below)											
					1	2	3	4	5	6	7	8	9	10	11	12
1002575-001	MW-1R	Water	2/23/2010 12:15	☐	B	A	A									
1002575-002	MW-2	Water	2/23/2010 12:00	☐	B	A										
1002575-003	MW-3	Water	2/23/2010 12:20	☐	B	A										
1002575-004	MW-4	Water	2/23/2010 13:50	☐	B	A										
1002575-005	MW-5	Water	2/23/2010 12:05	☐	B	A										
1002575-006	MW-6	Water	2/23/2010 11:50	☐	B	A										
1002575-007	MW-7	Water	2/23/2010 9:40	☐	B	A										
1002575-008	MW-8	Water	2/23/2010 8:30	☐	B	A										
1002575-009	MW-9	Water	2/23/2010 9:15	☐	B	A										
1002575-010	MW-10	Water	2/23/2010 8:45	☐	B	A										
1002575-011	EX-1	Water	2/23/2010 13:55	☐	B	A										

Test Legend:

1	5-OXYS+PBSCV_W	2	G-MBTEX_W	3	PREDF REPORT	4		5	
6		7		8		9		10	
11		12							

Prepared by: Melissa Valles

Comments:

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

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Sample Receipt Checklist

Client Name: **AEI Consultants**

Date and Time Received: **2/23/2010 7:57:04 PM**

Project Name: **#280346; Alaska Gas**

Checklist completed and reviewed by: Melissa Valles

WorkOrder N°: **1002575** Matrix Water

Carrier: Client Drop-In

Chain of Custody (COC) Information

Chain of custody present?	Yes ☑	No ☐
Chain of custody signed when relinquished and received?	Yes ☑	No ☐
Chain of custody agrees with sample labels?	Yes ☑	No ☐
Sample IDs noted by Client on COC?	Yes ☑	No ☐
Date and Time of collection noted by Client on COC?	Yes ☑	No ☐
Sampler's name noted on COC?	Yes ☑	No ☐

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	NA ☑
Shipping container/cooler in good condition?	Yes ☑	No ☐	
Samples in proper containers/bottles?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature	Cooler Temp: 5.4°C		NA ☐
Water - VOA vials have zero headspace / no bubbles?	Yes ☑	No ☐	No VOA vials submitted ☐
Sample labels checked for correct preservation?	Yes ☑	No ☐	
Metal - pH acceptable upon receipt (pH<2)?	Yes ☐	No ☐	NA ☑
Samples Received on Ice?	Yes ☑	No ☐	

(Ice Type: WET ICE)

** NOTE: If the "No" box is checked, see comments below.*

Client contacted: Date contacted: Contacted by:

Comments:

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AEI Consultants	Client Project ID: #280346; Alaska Gas	Date Sampled: 02/23/10
		Date Received: 02/23/10
2500 Camino Diablo, Ste. #200	Client Contact: Jeremy Smith	Date Extracted: 02/25/10-03/01/10
Walnut Creek, CA 94597	Client P.O.: #WC082247	Date Analyzed: 02/25/10-03/01/10

Oxygenated Volatile Organics + EDB and 1,2-DCA by P&T and GC/MS*

Extraction Method: SW5030B Analytical Method: SW8260B Work Order: 1002575

Lab ID	1002575-001B	1002575-002B	1002575-003B	1002575-004B	Reporting Limit for DF =1	
Client ID	MW-1R	MW-2	MW-3	MW-4		
Matrix	W	W	W	W		
DF	3.3	1	3300	10	S	W
Compound	**Concentration**				ug/kg	µg/L
tert-Amyl methyl ether (TAME)	ND<1.7	ND	ND<1700	41	NA	0.5
t-Butyl alcohol (TBA)	ND<6.7	36	260,000	400	NA	2.0
1,2-Dibromoethane (EDB)	ND<1.7	ND	ND<1700	ND<5.0	NA	0.5
1,2-Dichloroethane (1,2-DCA)	ND<1.7	ND	ND<1700	ND<5.0	NA	0.5
Diisopropyl ether (DIPE)	ND<1.7	ND	ND<1700	ND<5.0	NA	0.5
Ethyl tert-butyl ether (ETBE)	ND<1.7	ND	ND<1700	ND<5.0	NA	0.5
Methyl-t-butyl ether (MTBE)	3.9	14	4700	180	NA	0.5
Surrogate Recoveries (%)						
%SS1:	101	119	95	91		
Comments						

* water and vapor samples are reported in µg/L, soil/sludge/solid samples in mg/kg, product/oil/non-aqueous liquid samples and all TCLP & SPLP extracts are reported in mg/L, wipe samples in µg/wipe.

ND means not detected above the reporting limit/method detection limit; N/A means analyte not applicable to this analysis.

surrogate diluted out of range or coelutes with another peak; &) low surrogate due to matrix interference.

DHS ELAP Certification 1644

Angela Rydelius, Lab Manager

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AEI Consultants	Client Project ID: #280346; Alaska Gas	Date Sampled: 02/23/10
		Date Received: 02/23/10
2500 Camino Diablo, Ste. #200	Client Contact: Jeremy Smith	Date Extracted: 02/25/10-03/01/10
Walnut Creek, CA 94597	Client P.O.: #WC082247	Date Analyzed: 02/25/10-03/01/10

Oxygenated Volatile Organics + EDB and 1,2-DCA by P&T and GC/MS*

Extraction Method: SW5030B Analytical Method: SW8260B Work Order: 1002575

Lab ID	1002575-005B	1002575-006B	1002575-007B	1002575-008B	Reporting Limit for DF =1	
Client ID	MW-5	MW-6	MW-7	MW-8		
Matrix	W	W	W	W		
DF	1	1	20	200	S	W
Compound	**Concentration**				ug/kg	µg/L
tert-Amyl methyl ether (TAME)	ND	ND	19	ND<100	NA	0.5
t-Butyl alcohol (TBA)	ND	15	1500	24,000	NA	2.0
1,2-Dibromoethane (EDB)	ND	ND	ND<10	ND<100	NA	0.5
1,2-Dichloroethane (1,2-DCA)	ND	ND	ND<10	ND<100	NA	0.5
Diisopropyl ether (DIPE)	ND	ND	ND<10	ND<100	NA	0.5
Ethyl tert-butyl ether (ETBE)	ND	ND	ND<10	ND<100	NA	0.5
Methyl-t-butyl ether (MTBE)	1.9	5.7	410	1600	NA	0.5
Surrogate Recoveries (%)						
%SS1:	117	116	93	92		
Comments						

* water and vapor samples are reported in µg/L, soil/sludge/solid samples in mg/kg, product/oil/non-aqueous liquid samples and all TCLP & SPLP extracts are reported in mg/L, wipe samples in µg/wipe.

ND means not detected above the reporting limit/method detection limit; N/A means analyte not applicable to this analysis.

surrogate diluted out of range or coelutes with another peak; &) low surrogate due to matrix interference.

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Telephone: 877-252-9262 Fax: 925-252-9269

AEI Consultants	Client Project ID: #280346; Alaska Gas	Date Sampled: 02/23/10
		Date Received: 02/23/10
2500 Camino Diablo, Ste. #200	Client Contact: Jeremy Smith	Date Extracted: 02/25/10-03/01/10
Walnut Creek, CA 94597	Client P.O.: #WC082247	Date Analyzed: 02/25/10-03/01/10

Oxygenated Volatile Organics + EDB and 1,2-DCA by P&T and GC/MS*

Extraction Method: SW5030B Analytical Method: SW8260B Work Order: 1002575

Lab ID	1002575-009B	1002575-010B	1002575-011B		Reporting Limit for DF =1	
Client ID	MW-9	MW-10	EX-1			
Matrix	W	W	W			
DF	20	1	50		S	W
Compound	**Concentration**				ug/kg	µg/L
tert-Amyl methyl ether (TAME)	ND<10	ND	250		NA	0.5
t-Butyl alcohol (TBA)	1600	ND	670		NA	2.0
1,2-Dibromoethane (EDB)	ND<10	ND	ND<25		NA	0.5
1,2-Dichloroethane (1,2-DCA)	ND<10	ND	ND<25		NA	0.5
Diisopropyl ether (DIPE)	ND<10	ND	ND<25		NA	0.5
Ethyl tert-butyl ether (ETBE)	ND<10	ND	ND<25		NA	0.5
Methyl-t-butyl ether (MTBE)	260	2.8	880		NA	0.5
Surrogate Recoveries (%)						
%SS1:	96	102	96			
Comments						

* water and vapor samples are reported in µg/L, soil/sludge/solid samples in mg/kg, product/oil/non-aqueous liquid samples and all TCLP & SPLP extracts are reported in mg/L, wipe samples in µg/wipe.

ND means not detected above the reporting limit/method detection limit; N/A means analyte not applicable to this analysis.

surrogate diluted out of range or coelutes with another peak; &) low surrogate due to matrix interference.

DHS ELAP Certification 1644

Angela Rydelius, Lab Manager

McCampbell Analytical, Inc.
"When Quality Counts"

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AEI Consultants	Client Project ID: #280346; Alaska Gas	Date Sampled: 02/23/10
		Date Received: 02/23/10
2500 Camino Diablo, Ste. #200	Client Contact: Jeremy Smith	Date Extracted: 02/24/10-02/27/10
Walnut Creek, CA 94597	Client P.O.: #WC082247	Date Analyzed: 02/24/10-02/27/10

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE*

Extraction method: SW5030B Analytical methods: SW8021B/8015Bm Work Order: 1002575

Lab ID	Client ID	Matrix	TPH(g)	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	DF	% SS	Comments
001A	MW-1R	W	3200	ND<50	31	77	120	810	10	117	d1
002A	MW-2	W	170	18	9.4	0.65	27	5.6	1	118	d1
003A	MW-3	W	1700	4500	22	21	11	38	10	118	d1
004A	MW-4	W	15,000	ND<500	250	77	580	2200	10	119	d1
005A	MW-5	W	ND	ND	ND	0.87	ND	ND	1	111	
006A	MW-6	W	ND	6.0	0.66	ND	ND	0.57	1	97	
007A	MW-7	W	29,000	ND<1300	410	380	2100	6100	20	116	d1
008A	MW-8	W	690	1800	3.5	2.8	29	40	1	111	d1
009A	MW-9	W	ND	290	ND	0.70	ND	ND	1	112	
010A	MW-10	W	1300	ND	ND	11	3.1	2.6	1	100	d2,d9
011A	EX-1	W	39,000	760	1300	1100	1100	7700	20	111	d1

Reporting Limit for DF =1; ND means not detected at or above the reporting limit	W	50	5.0	0.5	0.5	0.5	0.5	µg/L
	S	1.0	0.05	0.005	0.005	0.005	0.005	mg/Kg

* water and vapor samples are reported in ug/L, soil/sludge/solid samples in mg/kg, wipe samples in µg/wipe, product/oil/non-aqueous liquid samples and all TCLP & SPLP extracts in mg/L.

cluttered chromatogram; sample peak coelutes w/surrogate peak; low surrogate recovery due to matrix interference.

+The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation:

d1) weakly modified or unmodified gasoline is significant
d2) heavier gasoline range compounds are significant (aged gasoline?)
d9) no recognizable pattern

DHS ELAP Certification 1644

Angela Rydelius, Lab Manager

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QC SUMMARY REPORT FOR SW8260B

W.O. Sample Matrix: Water QC Matrix: Water BatchID: 48847 WorkOrder 1002575

EPA Method SW8260B **Extraction SW5030B** **Spiked Sample ID: 1002528-017C**

Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
tert-Amyl methyl ether (TAME)	ND	10	98.8	99.9	1.13	84.5	85	0.595	70 - 130	30	70 - 130	30
t-Butyl alcohol (TBA)	ND	50	88.8	110	21.6	86.3	87	0.858	70 - 130	30	70 - 130	30
1,2-Dibromoethane (EDB)	ND	10	107	107	0	99.1	98.3	0.806	70 - 130	30	70 - 130	30
1,2-Dichloroethane (1,2-DCA)	ND	10	121	119	1.50	101	99.5	1.39	70 - 130	30	70 - 130	30
Diisopropyl ether (DIPE)	ND	10	113	112	0.613	95	95	0	70 - 130	30	70 - 130	30
Ethyl tert-butyl ether (ETBE)	ND	10	108	109	0.398	99.3	99.1	0.198	70 - 130	30	70 - 130	30
Methyl-t-butyl ether (MTBE)	ND	10	114	118	3.81	89.9	89.5	0.413	70 - 130	30	70 - 130	30
%SS1:	117	25	95	98	2.68	118	115	2.66	70 - 130	30	70 - 130	30

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:
NONE

BATCH 48847 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
1002575-001B	02/23/10 12:15 PM	02/25/10	02/25/10 3:33 PM	1002575-002B	02/23/10 12:00 PM	02/25/10	02/25/10 5:06 PM
1002575-003B	02/23/10 12:20 PM	02/25/10	02/25/10 8:54 PM	1002575-004B	02/23/10 1:50 PM	02/26/10	02/26/10 5:12 PM
1002575-005B	02/23/10 12:05 PM	02/25/10	02/25/10 5:44 PM	1002575-006B	02/23/10 11:50 AM	02/25/10	02/25/10 11:32 PM
1002575-007B	02/23/10 9:40 AM	02/26/10	02/26/10 2:01 PM	1002575-008B	02/23/10 8:30 AM	03/01/10	03/01/10 8:27 PM
1002575-009B	02/23/10 9:15 AM	02/27/10	02/27/10 9:23 AM	1002575-010B	02/23/10 8:45 AM	02/26/10	02/26/10 12:11 AM
1002575-011B	02/23/10 1:55 PM	03/01/10	03/01/10 9:14 PM				

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery = 100 * (MS-Sample) / (Amount Spiked); RPD = 100 * (MS - MSD) / ((MS + MSD) / 2).

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

NR = analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content.

Laboratory extraction solvents such as methylene chloride and acetone may occasionally appear in the method blank at low levels.

DHS ELAP Certification 1644


QA/QC Officer

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QC SUMMARY REPORT FOR SW8021B/8015Bm

W.O. Sample Matrix: Water QC Matrix: Water BatchID: 48875 WorkOrder 1002575

EPA Method SW8021B/8015Bm **Extraction SW5030B** **Spiked Sample ID: 1002607-002E**

Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
TPH(btex)£	ND	60	113	112	1.63	108	109	1.70	70 - 130	20	70 - 130	20
MTBE	ND	10	122	116	4.63	113	123	7.93	70 - 130	20	70 - 130	20
Benzene	ND	10	107	108	0.997	103	105	1.67	70 - 130	20	70 - 130	20
Toluene	ND	10	93.8	95	1.27	91	93.2	2.38	70 - 130	20	70 - 130	20
Ethylbenzene	ND	10	93.4	94.7	1.40	91.1	89.7	1.57	70 - 130	20	70 - 130	20
Xylenes	ND	30	107	107	0	103	104	0.545	70 - 130	20	70 - 130	20
%SS:	100	10	102	105	2.21	104	102	2.03	70 - 130	20	70 - 130	20

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:
NONE

BATCH 48875 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
1002575-001A	02/23/10 12:15 PM	02/24/10	02/24/10 6:41 PM	1002575-002A	02/23/10 12:00 PM	02/25/10	02/25/10 1:36 AM
1002575-003A	02/23/10 12:20 PM	02/24/10	02/24/10 7:11 PM	1002575-003A	02/23/10 12:20 PM	02/25/10	02/25/10 11:55 PM
1002575-004A	02/23/10 1:50 PM	02/24/10	02/24/10 7:41 PM	1002575-005A	02/23/10 12:05 PM	02/25/10	02/25/10 2:34 AM
1002575-006A	02/23/10 11:50 AM	02/26/10	02/26/10 4:20 AM	1002575-007A	02/23/10 9:40 AM	02/24/10	02/24/10 8:40 PM
1002575-008A	02/23/10 8:30 AM	02/24/10	02/24/10 9:10 PM	1002575-008A	02/23/10 8:30 AM	02/25/10	02/25/10 8:28 PM
1002575-009A	02/23/10 9:15 AM	02/25/10	02/25/10 3:33 AM	1002575-010A	02/23/10 8:45 AM	02/25/10	02/25/10 6:29 AM
1002575-011A	02/23/10 1:55 PM	02/27/10	02/27/10 12:59 AM				

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery = 100 * (MS-Sample) / (Amount Spiked); RPD = 100 * (MS - MSD) / ((MS + MSD) / 2).

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

£ TPH(btex) = sum of BTEX areas from the FID.

cluttered chromatogram; sample peak coelutes with surrogate peak.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

NR = matrix interference and/or analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content, or inconsistency in sample containers.

DHS ELAP Certification 1644

QA/QC Officer

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Web: www.mccampbell.com E-mail: main@mccampbell.com
Telephone: 877-252-9262 Fax: 925-252-9269

AEI Consultants	Client Project ID: #280346; Alaska Gas	Date Sampled: 03/18/10
		Date Received: 03/18/10
2500 Camino Diablo, Ste. #200	Client Contact: Jeremy Smith	Date Reported: 03/25/10
Walnut Creek, CA 94597	Client P.O.: #WC082291	Date Completed: 03/22/10

WorkOrder: 1003544

March 25, 2010

Dear Jeremy:

Enclosed within are:

1) The results of the **9** analyzed samples from your project: **#280346; Alaska Gas,**
2) A QC report for the above samples,
3) A copy of the chain of custody, and
4) An invoice for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits.

If you have any questions or concerns, please feel free to give me a call. Thank you for choosing

McCampbell Analytical Laboratories for your analytical needs.

Best regards,

Angela Rydelius
Laboratory Manager
McCampbell Analytical, Inc.

10003544

McCAMPBELL ANALYTICAL INC.

1534 Willow Pass Road
Pittsburg, CA 94565
Telephone: (925) 252-9262 Fax: (925) 252-9269

CHAIN OF CUSTODY RECORD

TURN AROUND TIME ☐ RUSH ☐ 24 HR ☐ 48 HR ☐ 72 HR ☒ 5 DAY

EDF Required? ☒ Yes ☐ No

Report To: Jeremy Smith	**Bill To: same**	**P.O. # WC082291**
Company: AEI Consultants		
2500 Camino Diablo		
Walnut Creek, CA 94597	**E-Mail:** jasmith@aeiconsultants.com	
Tele: (925) 746-6000	**Fax: (925) 746-6099**	
Project #: 280346	**Project Name: Alaska Gas**	
Project Location: 6211 San Pablo Avenue, Oakland, California		
Sampler Signature:		

SAMPLE ID (Field Point Name)	LOCATION	SAMPLING Date	SAMPLING Time	# Containers	Type Containers	MATRIX Water	MATRIX Soil	MATRIX Air	MATRIX Sludge	MATRIX Other	METHOD PRESERVED Ice	METHOD PRESERVED HCl	METHOD PRESERVED HNO_3	METHOD PRESERVED Other	Analysis Request: BTEX / MTBE 8021B	TPH - gasoline (8015)	Total Petroleum Oil & Grease (413.1) w/ Silica	Total Petroleum Hydrocarbons (418.1)	Fuel Oxys (8260) – MTBE, DIPE, ETBE, TAME, TBA, 1,2-DCA, EDB	Nitrate/Nitrite	EPA 608 / 8080 PCB's ONLY	VOCs 8260	SVOCs (with PAHs) 8270	PAH's / PNA's by EPA 625 / 8270 / 8310	CAM-17 Metals	LUFT 5 Metals (Cd, Cr, pb,,Ni,zinc (6010C).	Lead (field filtered 200.8)	RCI	Other: HOLD	Comments
SG-1-3		3/18/10	1332	1	Tb			X							X	X														Aerator
SG-1-6			1344	1	Tb			X							X	X														IS Present
SG-2-3			1411	1	Tb			X							X	X														In Screen
SG-2-6			1428	1	Tb			X							X	X														TB
SG-3-3			1055	1	Tb			X							X	X														Samples
~~SG-3-6~~				~~1~~	~~Tb~~			~~X~~							~~X~~	~~X~~														
SG-4			1441	1	Tb			X							X	X														
SG-5		3/18/10	1025	1	Tb			X							X	X														
SG-6			1042	1	Tb			X							X	X														
~~SG-7~~				~~1~~	~~Tb~~			~~X~~							~~X~~	~~X~~														
~~SG-8~~				~~1~~	~~Tb~~			~~X~~							~~X~~	~~X~~														
SG-6 (DUP)			1501	1	TB			X							X	X														
SG-353 DUP			1523	1	TB			X																				X		

Relinquished By:	**Date:** 3/18/10	**Time:** 5:10	**Received By:** EnviroTech T.L.
Relinquished By: EnviroTech SR	**Date:** 3/18	**Time:** 1803	**Received By:** Ricky Daly
Relinquished By: Ricky Daly	**Date:** 3/18	**Time:** 6:15 PM	**Received By:** 3/18/10

ICE/t° N/A
GOOD CONDITION ✓
HEAD SPACE ABSENT ____
DECHLORINATED IN LAB ____

PRESERVATION	VOAS	O&G	METALS	OTHER
APPROPRIATE				
CONTAINERS ✓				

PERSERVED IN LAB ____

McCampbell Analytical, Inc.
1534 Willow Pass Rd
Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 1003544 **ClientCode: AEL**

☐ WaterTrax ☐ WriteOn ☐ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty ☐ J-flag

Report to:
Jeremy Smith
AEI Consultants
2500 Camino Diablo, Ste. #200
Walnut Creek, CA 94597
(925) 283-6000 FAX (925) 944-2895

Email: jasmith@aeiconsultants.com
cc:
PO: #WC082291
ProjectNo: #280346; Alaska Gas

Bill to:
Denise Mockel
AEI Consultants
2500 Camino Diablo, Ste. #200
Walnut Creek, CA 94597

Requested TAT: 5 days

Date Received: **03/18/2010**
Date Printed: **03/18/2010**

Lab ID	Client ID	Matrix	Collection Date	Hold	Requested Tests (See legend below) 1	2	3	4	5	6	7	8	9	10	11	12
1003544-001	SG-1-3	Air	3/18/2010 13:32	☐	A	A										
1003544-002	SG-1-6	Air	3/18/2010 13:44	☐	A											
1003544-003	SG-2-3	Air	3/18/2010 14:11	☐	A											
1003544-004	SG-2-6	Air	3/18/2010 14:28	☐	A											
1003544-005	SG-3-3	Air	3/18/2010 10:55	☐	A											
1003544-006	SG-4	Air	3/18/2010 14:41	☐	A											
1003544-007	SG-5	Air	3/18/2010 10:25	☐	A											
1003544-008	SG-6	Air	3/18/2010 10:42	☐	A											
1003544-009	SG-6(Dup)	Air	3/18/2010 15:01	☐	A											

Test Legend:

1	G-MBTEX_AIR	2	PREDF REPORT	3		4		5	
6		7		8		9		10	
11		12							

The following SampIDs: 001A, 002A, 003A, 004A, 005A, 006A, 007A, 008A, 009A contain testgroup.

Prepared by: Shino Hamilton

Comments:

NOTE: Soil samples are discarded 60 days after results are reported unless other arrangements are made (Water samples are 30 days).
Hazardous samples will be returned to client or disposed of at client expense.

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Telephone: 877-252-9262 Fax: 925-252-9269

Sample Receipt Checklist

Client Name: **AEI Consultants**

Date and Time Received: **3/18/2010 6:34:53 PM**

Project Name: **#280346; Alaska Gas**

Checklist completed and reviewed by: Shino Hamilton

WorkOrder N°: **1003544** Matrix Air

Carrier: EnviroTech (MTZ)

Chain of Custody (COC) Information

Chain of custody present?	Yes ☑	No ☐
Chain of custody signed when relinquished and received?	Yes ☑	No ☐
Chain of custody agrees with sample labels?	Yes ☑	No ☐
Sample IDs noted by Client on COC?	Yes ☑	No ☐
Date and Time of collection noted by Client on COC?	Yes ☑	No ☐
Sampler's name noted on COC?	Yes ☑	No ☐

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	NA ☑
Shipping container/cooler in good condition?	Yes ☑	No ☐	
Samples in proper containers/bottles?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature	Cooler Temp:		NA ☑
Water - VOA vials have zero headspace / no bubbles?	Yes ☐	No ☐	No VOA vials submitted ☑
Sample labels checked for correct preservation?	Yes ☑	No ☐	
Metal - pH acceptable upon receipt (pH<2)?	Yes ☐	No ☐	NA ☑
Samples Received on Ice?	Yes ☐	No ☑	

** NOTE: If the "No" box is checked, see comments below.*

Client contacted: Date contacted: Contacted by:

Comments:

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AEI Consultants	Client Project ID: #280346; Alaska Gas	Date Sampled: 03/18/10
		Date Received: 03/18/10
2500 Camino Diablo, Ste. #200	Client Contact: Jeremy Smith	Date Extracted: 03/19/10
Walnut Creek, CA 94597	Client P.O.: #WC082291	Date Analyzed: 03/19/10

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with BTEX and MTBE*

Extraction method: SW5030B Analytical methods: SW8021B/8015Bm Work Order: 1003544

Lab ID	Client ID	Matrix	TPH(g)	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	DF	% SS	Comments
001A	SG-1-3	A	3800	ND	ND	26	ND	0.72	1	85	d1
002A	SG-1-6	A	48,000	ND<150	42	470	ND<5.0	37	20	109	d1
003A	SG-2-3	A	5700	ND<25	1.9	57	ND<1.0	1.7	4	99	d1
004A	SG-2-6	A	41,000	ND<200	72	390	ND<10	ND<10	40	92	d1
005A	SG-3-3	A	ND	ND	ND	ND	ND	ND	1	99	
006A	SG-4	A	ND	7.4	ND	0.28	ND	ND	1	104	
007A	SG-5	A	59,000	ND<800	730	320	75	72	40	99	d1
008A	SG-6	A	1100	76	9.2	12	ND<1.7	28	6.7	109	d1
009A	SG-6(Dup)	A	480	87	1.8	7.3	ND<0.50	0.60	2	103	d1

Reporting Limit for DF =1; ND means not detected at or above the reporting limit	A	25	2.5	0.25	0.25	0.25	0.25	µg/L
	S	1.0	0.05	0.005	0.005	0.005	0.005	mg/Kg

* water and vapor samples are reported in µg/L, soil/sludge/solid samples in mg/kg, wipe samples in µg/wipe, product/oil/non-aqueous liquid samples in mg/L.

cluttered chromatogram; sample peak coelutes with surrogate peak.

+The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation:

d1) weakly modified or unmodified gasoline is significant

DHS ELAP Certification 1644

Angela Rydelius, Lab Manager

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AEI Consultants	Client Project ID: #280346; Alaska Gas	Date Sampled: 03/18/10
		Date Received: 03/18/10
2500 Camino Diablo, Ste. #200	Client Contact: Jeremy Smith	Date Extracted: 03/19/10
Walnut Creek, CA 94597	Client P.O.: #WC082291	Date Analyzed: 03/19/10

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline with MTBE and BTEX in ppmv*

Extraction method: SW5030B Analytical methods: SW8021B/8015Bm Work Order: 1003544

Lab ID	Client ID	Matrix	TPH(g)	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	DF	% SS	Comments
001A	SG-1-3	A	1100	ND	ND	6.9	ND	0.16	1	85	d1
002A	SG-1-6	A	13,000	ND<45	13	120	ND<1.1	8.3	20	109	d1
003A	SG-2-3	A	1600	ND<10	0.60	15	ND<0.23	0.38	4	99	d1
004A	SG-2-6	A	12,000	ND<65	22	100	ND<2.3	ND<2.3	40	92	d1
005A	SG-3-3	A	ND	ND	ND	ND	ND	ND	1	99	
006A	SG-4	A	ND	2.0	ND	0.074	ND	ND	1	104	
007A	SG-5	A	16,000	ND<250	220	83	17	16	40	99	d1
008A	SG-6	A	300	21	2.8	3.2	ND<0.38	6.4	6.7	109	d1
009A	SG-6(Dup)	A	130	24	0.56	1.9	ND<0.11	0.14	2	103	d1

ppm (mg/L) to ppmv (ul/L) conversion for TPH(g) assumes the molecular weight of gasoline to be equal to that of hexane.

Reporting Limit for DF =1; ND means not detected at or above the reporting limit	A	7.0	0.68	0.077	0.065	0.057	0.057	1	uL/L
	S	NA	NA	NA	NA	NA	NA	1	mg/Kg

* vapor samples are reported in µL/L, soil/sludge/solid samples in mg/kg, wipe samples in µg/wipe, product/oil/non-aqueous liquid samples in mg/L, water samples and all TCLP & SPLP extracts are reported in µg/L.

cluttered chromatogram; sample peak coelutes with surrogate peak.

+The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation:

d1) weakly modified or unmodified gasoline is significant

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Angela Rydelius, Lab Manager

McCampbell Analytical, Inc.
"When Quality Counts"

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QC SUMMARY REPORT FOR SW8021B/8015Bm

W.O. Sample Matrix: Air QC Matrix: Water BatchID: 49316 WorkOrder 1003544

EPA Method SW8021B/8015Bm **Extraction SW5030B** **Spiked Sample ID: 1003517-010A**

Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
TPH(btex)£	ND	60	109	104	4.61	104	106	2.22	70 - 130	20	70 - 130	20
MTBE	ND	10	101	105	3.89	101	102	0.779	70 - 130	20	70 - 130	20
Benzene	ND	10	93.2	92	1.34	89.8	90.6	0.827	70 - 130	20	70 - 130	20
Toluene	ND	10	93.6	92.7	0.994	90.4	90.4	0	70 - 130	20	70 - 130	20
Ethylbenzene	ND	10	92.3	91.5	0.885	88.7	90	1.45	70 - 130	20	70 - 130	20
Xylenes	ND	30	95.4	93.8	1.64	91.4	92.5	1.21	70 - 130	20	70 - 130	20
%SS:	98	10	97	99	1.90	96	97	0.500	70 - 130	20	70 - 130	20

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:
NONE

BATCH 49316 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
1003544-001A	03/18/10 1:32 PM	03/19/10	03/19/10 10:42 AM	1003544-001A	03/18/10 1:32 PM	03/19/10	03/19/10 10:42 AM

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery = 100 * (MS-Sample) / (Amount Spiked); RPD = 100 * (MS - MSD) / ((MS + MSD) / 2).

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

£ TPH(btex) = sum of BTEX areas from the FID.

cluttered chromatogram; sample peak coelutes with surrogate peak.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

NR = analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content.

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QA/QC Officer

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QC SUMMARY REPORT FOR SW8021B/8015Bm

W.O. Sample Matrix: Air QC Matrix: Water BatchID: 49319 WorkOrder 1003544

EPA Method SW8021B/8015Bm **Extraction SW5030B** **Spiked Sample ID: 1003543-006B**

Analyte	Sample	Spiked	MS	MSD	MS-MSD	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	µg/L	µg/L	% Rec.	% Rec.	% RPD	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
TPH(btex)£	ND	60	94.9	97.6	2.78	94.8	96	1.28	70 - 130	20	70 - 130	20
MTBE	ND	10	98	102	3.74	101	104	2.54	70 - 130	20	70 - 130	20
Benzene	ND	10	96.6	99.2	2.58	100	99.7	0.501	70 - 130	20	70 - 130	20
Toluene	ND	10	96.7	97.1	0.359	98.1	97.3	0.753	70 - 130	20	70 - 130	20
Ethylbenzene	ND	10	95.6	97.5	1.95	98.8	97.9	0.920	70 - 130	20	70 - 130	20
Xylenes	ND	30	98.3	99.9	1.65	102	101	0.510	70 - 130	20	70 - 130	20
%SS:	99	10	98	99	0.255	98	98	0	70 - 130	20	70 - 130	20

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:
NONE

BATCH 49319 SUMMARY

Lab ID	Date Sampled	Date Extracted	Date Analyzed	Lab ID	Date Sampled	Date Extracted	Date Analyzed
1003544-002A	03/18/10 1:44 PM	03/19/10	03/19/10 4:45 PM	1003544-002A	03/18/10 1:44 PM	03/19/10	03/19/10 4:45 PM
1003544-003A	03/18/10 2:11 PM	03/19/10	03/19/10 7:16 PM	1003544-003A	03/18/10 2:11 PM	03/19/10	03/19/10 7:16 PM
1003544-004A	03/18/10 2:28 PM	03/19/10	03/19/10 7:46 PM	1003544-004A	03/18/10 2:28 PM	03/19/10	03/19/10 7:46 PM
1003544-005A	03/18/10 10:55 AM	03/19/10	03/19/10 9:16 PM	1003544-005A	03/18/10 10:55 AM	03/19/10	03/19/10 9:16 PM
1003544-006A	03/18/10 2:41 PM	03/19/10	03/19/10 9:46 PM	1003544-006A	03/18/10 2:41 PM	03/19/10	03/19/10 9:46 PM
1003544-007A	03/18/10 10:25 AM	03/19/10	03/19/10 10:16 PM	1003544-007A	03/18/10 10:25 AM	03/19/10	03/19/10 10:16 PM
1003544-008A	03/18/10 10:42 AM	03/19/10	03/19/10 1:21 PM	1003544-008A	03/18/10 10:42 AM	03/19/10	03/19/10 1:21 PM
1003544-009A	03/18/10 3:01 PM	03/19/10	03/19/10 5:16 PM	1003544-009A	03/18/10 3:01 PM	03/19/10	03/19/10 5:16 PM

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery = 100 * (MS-Sample) / (Amount Spiked); RPD = 100 * (MS - MSD) / ((MS + MSD) / 2).

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

£ TPH(btex) = sum of BTEX areas from the FID.

cluttered chromatogram; sample peak coelutes with surrogate peak.

N/A = not enough sample to perform matrix spike and matrix spike duplicate.

NR = analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte content.

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QA/QC Officer

APPENDIX D

GROUNDWATER MONITORING WELL FIELD SAMPLING FORMS

AEI CONSULTANTS

GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

Monitoring Well Number: MW-1R

Project Name:	Alaska Gas	Date of Sampling:	2/23/2010
Job Number:	280346	Name of Sampler:	A. Nieto
Project Address:	6211 San Pablo Avenue, Oakland		

MONITORING WELL DATA

Well Casing Diameter (2"/4"/6")	2"		
Wellhead Condition	OK		
Elevation of Top of Casing (feet above msl)	36.67		
Depth of Well	22.75		
Depth to Water (from top of casing)	6.67		
Water Elevation (feet above msl)	30.00		
Well Volumes Purged	3		
Gallons Purged: formula valid only for casing sizes of 2" (.16 gal/ft), 4" (.65 gal/ft), and 6" (1.44 gal/ft)	**7.7**		
Actual Volume Purged (gallons)	8.0		
Appearance of Purge Water	Initially black, clearing before 1 gallon purged		
Free Product Present?	No	Thickness (ft):	

GROUNDWATER SAMPLES

Number of Samples/Container Size: 4 VOAs

Time	Vol Removed (gal)	Temperature (deg C)	pH	Conductivity (µ sec/cm)	DO (mg/L)	ORP (meV)	Comments
10:00	1	18.33	6.20	580	1.68	-236.4	Clear
	2	18.38	6.31	571	1.17	-230.9	Clear
	3	18.40	6.40	565	0.90	-227.0	Clear
	4	18.43	6.53	558	0.70	-224.5	Clear
	5	18.48	6.60	554	0.62	-224.6	Clear
	6	18.57	6.67	546	0.50	-220.5	Clear
	7	18.57	6.69	545	0.46	-218.8	Clear
	8	18.59	6.70	544	0.46	-216.8	Clear

COMMENTS (i.e., sample odor, well recharge time & percent, etc.)

Strong hydrocarbons odors noted during purging

AEI CONSULTANTS

GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

Monitoring Well Number: MW-2

Project Name:	Alaska Gas	Date of Sampling:	2/23/2010
Job Number:	280346	Name of Sampler:	A. Nieto
Project Address:	6211 San Pablo Avenue, Oakland		

MONITORING WELL DATA

Well Casing Diameter (2"/4"/6")	2"		
Wellhead Condition	OK		
Elevation of Top of Casing (feet above msl)	36.33		
Depth of Well	20.70		
Depth to Water (from top of casing)	6.06		
Water Elevation (feet above msl)	30.27		
Well Volumes Purged	3		
Gallons Purged: formula valid only for casing sizes of 2" (.16 gal/ft), 4" (.65 gal/ft), and 6" (1.44 gal/ft)	**7.0**		
Actual Volume Purged (gallons)	8.0		
Appearance of Purge Water	Initially brown,clearing around 1.5 gallons		
Free Product Present?	No	Thickness (ft):	

GROUNDWATER SAMPLES

Number of Samples/Container Size: 4 VOAs

Time	Vol Removed (gal)	Temperature (deg C)	pH	Conductivity (µ sec/cm)	DO (mg/L)	ORP (meV)	Comments
10:32	1	18.63	6.50	589	0.52	-109.4	Brown
	2	18.33	6.53	589	0.47	-119.4	Clear
	3	18.14	6.52	588	0.45	-124.0	Clear
	4	17.95	6.54	590	0.39	-130.5	Clear
	5	17.86	6.54	590	0.34	-135.0	Clear
	6	17.92	6.55	599	0.29	-143.2	Clear
	7	18.10	6.56	604	0.28	-149.7	Clear
	8	18.38	6.58	612	0.26	-159.3	Clear

COMMENTS (i.e., sample odor, well recharge time & percent, etc.)

No hydrocarbon odors noted.

AEI CONSULTANTS

GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

Monitoring Well Number: MW-3

Project Name:	Alaska Gas	Date of Sampling:	2/23/2010
Job Number:	280346	Name of Sampler:	A. Nieto
Project Address:	6211 San Pablo Avenue, Oakland		

MONITORING WELL DATA

Well Casing Diameter (2"/4"/6")	2"		
Wellhead Condition	OK		
Elevation of Top of Casing (feet above msl)	35.12		
Depth of Well	20.82		
Depth to Water (from top of casing)	5.10		
Water Elevation (feet above msl)	30.02		
Well Volumes Purged	3		
Gallons Purged: formula valid only for casing sizes of 2" (.16 gal/ft), 4" (.65 gal/ft), and 6" (1.44 gal/ft)	**7.5**		
Actual Volume Purged (gallons)	8.0		
Appearance of Purge Water	Initially dark/grey, clears quickly		
Free Product Present?	No	Thickness (ft):	

GROUNDWATER SAMPLES

Number of Samples/Container Size: 4 VOAs

Time	Vol Removed (gal)	Temperature (deg C)	pH	Conductivity (µ sec/cm)	DO (mg/L)	ORP (meV)	Comments
11:16	1	16.93	6.43	385	4.35	-105.0	Clear
	2	16.98	6.44	419	3.86	-107.8	Clear
	3	17.73	6.45	581	1.28	-127.0	Clear
	4	18.06	6.46	637	0.80	-136.0	Clear
	5	18.21	6.49	659	0.66	-140.3	Clear
	6	18.41	6.48	690	0.52	-145.2	Clear
	7	18.64	6.51	722	0.44	-149.9	Clear
	8	18.91	6.55	760	0.39	-154.8	Clear

COMMENTS (i.e., sample odor, well recharge time & percent, etc.)

Strong petroleum odors present

Rain water entered well during purging

AEI CONSULTANTS

GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

Monitoring Well Number: MW-4

Project Name:	Alaska Gas	Date of Sampling:	2/23/2010
Job Number:	280346	Name of Sampler:	A. Nieto
Project Address:	6211 San Pablo Avenue, Oakland		

MONITORING WELL DATA

Well Casing Diameter (2"/4"/6")	2"		
Wellhead Condition	OK		
Elevation of Top of Casing (feet above msl)	34.11		
Depth of Well	19.75		
Depth to Water (from top of casing)	3.84		
Water Elevation (feet above msl)	30.27		
Well Volumes Purged	3		
Gallons Purged: formula valid only for casing sizes of 2" (.16 gal/ft), 4" (.65 gal/ft), and 6" (1.44 gal/ft)	**7.6**		
Actual Volume Purged (gallons)	8.0		
Appearance of Purge Water	Initially Black, clearing quickly		
Free Product Present?	No	Thickness (ft):	

GROUNDWATER SAMPLES

Number of Samples/Container Size: 4 VOAs

Time	Vol Removed (gal)	Temperature (deg C)	pH	Conductivity (µ sec/cm)	DO (mg/L)	ORP (meV)	Comments
12:54	1	17.81	6.08	567	0.97	-229.4	Clear
	2	17.59	6.27	566	0.80	-237.2	Clear
	3	17.57	6.39	574	0.72	-237.1	Clear
	4	17.61	6.52	596	0.63	-234.4	Clear
	5	17.66	6.61	617	0.57	-234.5	Clear
	6	17.72	6.68	634	0.51	-236.5	Clear
	7	17.76	6.72	642	0.48	-238.0	Clear
	8	17.80	6.76	653	0.44	-239.5	Clear

COMMENTS (i.e., sample odor, well recharge time & percent, etc.)

Strong hydrocarbon odors present

AEI CONSULTANTS

GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

Monitoring Well Number: MW-5

Project Name:	Alaska Gas	Date of Sampling:	2/23/2010
Job Number:	280346	Name of Sampler:	A. Nieto
Project Address:	6211 San Pablo Avenue, Oakland		

MONITORING WELL DATA

Well Casing Diameter (2"/4"/6")	2"		
Wellhead Condition	OK		
Elevation of Top of Casing (feet above msl)	35.17		
Depth of Well	24.31		
Depth to Water (from top of casing)	5.05		
Water Elevation (feet above msl)	30.12		
Well Volumes Purged	3		
Gallons Purged: formula valid only for casing sizes of 2" (.16 gal/ft), 4" (.65 gal/ft), and 6" (1.44 gal/ft)	**9.2**		
Actual Volume Purged (gallons)	Clear		
Appearance of Purge Water	10		
Free Product Present?	No	Thickness (ft):	

GROUNDWATER SAMPLES

Number of Samples/Container Size: 4 VOAs

Time	Vol Removed (gal)	Temperature (deg C)	pH	Conductivity (µ sec/cm)	DO (mg/L)	ORP (meV)	Comments
10:55	1	19.34	6.49	713	0.83	-125.9	Clear
	2	18.74	6.56	706	0.72	-136.4	Clear
	3	18.09	6.69	700	0.57	-149.3	Clear
	4	17.83	6.73	697	0.45	-159.3	Clear
	5	17.88	6.75	696	0.40	-164.5	Clear
	6	17.95	6.75	696	0.37	-137.2	Clear
	7	18.12	6.75	697	0.34	-169.8	Clear
	8	18.48	6.74	699	0.30	-173.0	Clear
	10	19.05	6.74	699	0.28	-175.3	Clear

COMMENTS (i.e., sample odor, well recharge time & percent, etc.)

No hydrocarbon odors noted during purging

AEI CONSULTANTS

GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

Monitoring Well Number: MW-6

Project Name:	Alaska Gas	Date of Sampling:	2/23/2010
Job Number:	280346	Name of Sampler:	A. Nieto
Project Address:	6211 San Pablo Avenue, Oakland		

MONITORING WELL DATA

Well Casing Diameter (2"/4"/6")	2"		
Wellhead Condition	OK		
Elevation of Top of Casing (feet above msl)	36.07		
Depth of Well	23.45		
Depth to Water (from top of casing)	5.76		
Water Elevation (feet above msl)	30.31		
Well Volumes Purged	3		
Gallons Purged: formula valid only for casing sizes of 2" (.16 gal/ft), 4" (.65 gal/ft), and 6" (1.44 gal/ft)	**8.5**		
Actual Volume Purged (gallons)	9.0		
Appearance of Purge Water	Initially brown, clearing quickly		
Free Product Present?	No	Thickness (ft):	

GROUNDWATER SAMPLES

Number of Samples/Container Size: 4 VOAs

Time	Vol Removed (gal)	Temperature (deg C)	pH	Conductivity (µ sec/cm)	DO (mg/L)	ORP (meV)	Comments
10:20	1	17.80	6.67	544	1.40	-158.3	Brown
	2	17.92	6.66	540	0.94	-164.8	Clear
	3	17.92	6.65	537	0.71	-165.5	Clear
	4	18.01	6.64	534	0.60	-165.8	Clear
	5	18.01	6.64	532	0.50	-166.3	Clear
	6	18.03	6.64	529	0.48	-164.9	Clear
	7	18.07	6.64	526	0.46	-162.5	Clear
	8	18.18	6.64	526	0.46	-162.0	Clear
	9	18.08	6.64	527	0.44	-162.7	Clear

COMMENTS (i.e., sample odor, well recharge time & percent, etc.)

No hydrocarbon odors noted during purging

AEI CONSULTANTS

GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

Monitoring Well Number: MW-7

Project Name:	Alaska Gas	Date of Sampling:	2/23/2010
Job Number:	280346	Name of Sampler:	A. Nieto
Project Address:	6211 San Pablo Avenue, Oakland		

MONITORING WELL DATA

Well Casing Diameter (2"/4"/6")	2"		
Wellhead Condition	OK		
Elevation of Top of Casing (feet above msl)	31.16		
Depth of Well	16.00		
Depth to Water (from top of casing)	2.09		
Water Elevation (feet above msl)	29.07		
Well Volumes Purged	3		
Gallons Purged: formula valid only for casing sizes of 2" (.16 gal/ft), 4" (.65 gal/ft), and 6" (1.44 gal/ft)	**6.7**		
Actual Volume Purged (gallons)	7.0		
Appearance of Purge Water	Brownish, turned light brown at 3 gallons		
Free Product Present?	No	Thickness (ft):	

GROUNDWATER SAMPLES

Number of Samples/Container Size: 4 VOAs

Time	Vol Removed (gal)	Temperature (deg C)	pH	Conductivity (µ sec/cm)	DO (mg/L)	ORP (meV)	Comments
9:23	1	17.78	6.45	677	1.42	-56.7	Brownish
	2	17.80	6.50	674	0.97	-82.2	Brownish
	3	17.89	6.60	675	0.75	-104.7	Light brown
	4	17.91	6.66	677	0.69	-116.6	Light brown
	5	17.90	6.70	677	0.67	-121.9	Light brown
	7	17.93	6.75	672	0.58	-137.1	Light brown

COMMENTS (i.e., sample odor, well recharge time & percent, etc.)

No hydrocarbon odors noted during purging

AEI CONSULTANTS

GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

Monitoring Well Number: MW-8

Project Name:	Alaska Gas	Date of Sampling:	2/23/2010
Job Number:	280346	Name of Sampler:	A. Nieto
Project Address:	6211 San Pablo Avenue, Oakland		

MONITORING WELL DATA

Well Casing Diameter (2"/4"/6")	2"		
Wellhead Condition	OK		
Elevation of Top of Casing (feet above msl)	30.92		
Depth of Well	15.00		
Depth to Water (from top of casing)	2.66		
Water Elevation (feet above msl)	28.26		
Well Volumes Purged	3		
Gallons Purged: formula valid only for casing sizes of 2" (.16 gal/ft), 4" (.65 gal/ft), and 6" (1.44 gal/ft)	**5.9**		
Actual Volume Purged (gallons)	6.0		
Appearance of Purge Water	Initially brown, light brown after 2 gallons purged		
Free Product Present?	No	Thickness (ft):	

GROUNDWATER SAMPLES

Number of Samples/Container Size: 4 VOAs

Time	Vol Removed (gal)	Temperature (deg C)	pH	Conductivity (µ sec/cm)	DO (mg/L)	ORP (meV)	Comments
7:49	1	17.76	5.47	1201	2.74	-17.5	Brown
	2	17.26	5.88	1178	2.79	-45.9	Brown
	3	17.08	6.13	1182	2.89	-59.6	Light brown
	4	17.26	6.26	1173	2.79	-74.1	Light brown
	5	17.40	6.34	1182	2.66	-77.1	Light brown
	6	17.59	6.39	1166	2.35	-82.9	Light brown

COMMENTS (i.e., sample odor, well recharge time & percent, etc.)

No hydrocarbon odors noted during purging.

AEI CONSULTANTS

GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

Monitoring Well Number: MW-9

Project Name:	Alaska Gas	Date of Sampling:	2/23/2010
Job Number:	280346	Name of Sampler:	A. Nieto
Project Address:	6211 San Pablo Avenue, Oakland		

MONITORING WELL DATA

Well Casing Diameter (2"/4"/6")	2"		
Wellhead Condition	OK		
Elevation of Top of Casing (feet above msl)	28.90		
Depth of Well	15.00		
Depth to Water (from top of casing)	2.84		
Water Elevation (feet above msl)	26.06		
Well Volumes Purged	3		
Gallons Purged: formula valid only for casing sizes of 2" (.16 gal/ft), 4" (.65 gal/ft), and 6" (1.44 gal/ft)	**5.8**		
Actual Volume Purged (gallons)	7.0		
Appearance of Purge Water	Initially brown, turning light brown after 3 gallons		
Free Product Present?	No	Thickness (ft):	

GROUNDWATER SAMPLES

Number of Samples/Container Size: 4 VOAs

Time	Vol Removed (gal)	Temperature (deg C)	pH	Conductivity (µ sec/cm)	DO (mg/L)	ORP (meV)	Comments
8:57	1	17.44	6.24	674	1.72	-75.9	Brown
	2	17.77	6.35	674	1.32	-92.5	Brown
	3	17.13	6.50	725	1.20	-96.6	Brown
	4	17.21	6.60	776	1.11	-101.9	Light Brown
	5	17.31	6.63	746	0.84	-114.3	Light Brown
	6	17.41	6.66	798	0.70	-127.1	Light Brown
	7	17.51	6.69	691	0.63	-138.9	Light Brown

COMMENTS (i.e., sample odor, well recharge time & percent, etc.)

Hydrocarbon odors not noted during purging.

AEI CONSULTANTS

GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

Monitoring Well Number: MW-10

Project Name:	Alaska Gas	Date of Sampling:	2/23/2010
Job Number:	280346	Name of Sampler:	A. Nieto
Project Address:	6211 San Pablo Avenue, Oakland		

MONITORING WELL DATA

Well Casing Diameter (2"/4"/6")	2"		
Wellhead Condition	OK		
Elevation of Top of Casing (feet above msl)	30.28		
Depth of Well	15.00		
Depth to Water (from top of casing)	0.98		
Water Elevation (feet above msl)	29.30		
Well Volumes Purged	3		
Gallons Purged: formula valid only for casing sizes of 2" (.16 gal/ft), 4" (.65 gal/ft), and 6" (1.44 gal/ft)	**6.7**		
Actual Volume Purged (gallons)	7.0		
Appearance of Purge Water	Initially brown, becoming light brown at 2 gallons		
Free Product Present?	No	Thickness (ft):	

GROUNDWATER SAMPLES

Number of Samples/Container Size: 4 VOAs

Time	Vol Removed (gal)	Temperature (deg C)	pH	Conductivity (µ sec/cm)	DO (mg/L)	ORP (meV)	Comments
8:35	1	16.03	6.45	316	1.04	-81.7	Brown
	2	15.45	6.50	322	0.75	-112.9	Light Brown
	3	15.42	6.52	335	0.68	-124.2	Light Brown
	4	15.42	6.52	351	0.62	-134.9	Light Brown
	5	15.45	6.52	365	0.56	-143.4	Light Brown
	6	15.48	6.52	375	0.53	-149.7	Light Brown
	7	15.48	6.52	382	0.50	-156.6	Light Brown

COMMENTS (i.e., sample odor, well recharge time & percent, etc.)

No hydrocarbon odors noted during purging

AEI CONSULTANTS

GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

Monitoring Well Number: EX-1

Project Name:	Alaska Gas	Date of Sampling:	2/23/2010
Job Number:	280346	Name of Sampler:	A. Nieto
Project Address:	6211 San Pablo Avenue, Oakland		

MONITORING WELL DATA

Well Casing Diameter (2"/4"/6")	4"		
Wellhead Condition	OK		
Elevation of Top of Casing (feet above msl)	33.28		
Depth of Well	27.50		
Depth to Water (from top of casing)	3.09		
Water Elevation (feet above msl)	30.19		
Well Volumes Purged	3		
Gallons Purged: formula valid only for casing sizes of 2" (.16 gal/ft), 4" (.65 gal/ft), and 6" (1.44 gal/ft)	**47.6**		
Actual Volume Purged (gallons)	48.0		
Appearance of Purge Water	Clear		
Free Product Present?	No	Thickness (ft):	

GROUNDWATER SAMPLES

Number of Samples/Container Size: 4 VOAs

Time	Vol Removed (gal)	Temperature (deg C)	pH	Conductivity (µ sec/cm)	DO (mg/L)	ORP (meV)	Comments
13:13	1	19.24	6.64	774	0.50	-192.9	Clear
	2	19.22	6.70	773	0.47	-203.5	Clear
	3	19.12	6.75	771	0.47	-206.9	Clear
	4	18.97	6.80	768	0.42	-212.0	Clear
	5	18.50	6.81	766	0.39	-214.3	Clear
	10	18.40	6.83	755	0.27	-217.7	Clear
	15	17.95	6.91	742	0.28	-209.0	Clear
	20	17.88	6.90	735	0.31	-201.1	Clear
	25	17.80	6.88	727	0.35	-193.9	Clear
	30	17.71	6.86	721	0.35	-190.3	Clear
	35	17.65	6.85	722	0.31	-192.0	Clear
	40	17.50	6.84	720	0.40	-192.2	Clear
	45	17.49	6.84	720	0.37	-190.2	Clear
	48	17.47	6.84	720	0.36	-188.3	Clear

COMMENTS (i.e., sample odor, well recharge time & percent, etc.)

AEI CONSULTANTS

GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

Monitoring Well Number: MW-1R

Project Name:	Alaska Gas	Date of Sampling:	4/13/2010
Job Number:	280346	Name of Sampler:	J. Smith
Project Address:	6211 San Pablo Avenue, Oakland		

MONITORING WELL DATA

Well Casing Diameter (2"/4"/6")	2"		
Wellhead Condition	OK		
Elevation of Top of Casing (feet above msl)	36.67		
Depth of Well	22.75		
Depth to Water (from top of casing)			
Water Elevation (feet above msl)	--		
Well Volumes Purged	--		
Gallons Purged: formula valid only for casing sizes of 2" (.16 gal/ft), 4" (.65 gal/ft), and 6" (1.44 gal/ft)	**Micropurge**		
Actual Volume Purged (gallons)			
Appearance of Purge Water	Mostly clear, some silt		
Free Product Present?		Thickness (ft):	

GROUNDWATER SAMPLES

Number of Samples/Container Size

Time	Vol Removed (liters)	Temperature (deg C)	pH	Conductivity (µ sec/cm)	DO (mg/L)	ORP (meV)	Comments
Pre-Sparge (AS-3)							
9:54	1	17.57	6.86	583	0.56	125.0	HC Odor
9:56	2	17.65	6.85	581	0.46	86.0	HC Odor
9:58	3	17.73	6.86	580	0.60	53.9	HC Odor
10:00	4	17.74	6.86	576	0.60	37.6	HC Odor
10:02	5	17.85	6.86	565	0.54	30.7	HC Odor
10:04	6	17.87	6.86	563	0.53	29.0	HC Odor

COMMENTS (i.e., sample odor, well recharge time & percent, etc.)

AEI CONSULTANTS

GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

Monitoring Well Number: MW-1R

Project Name:	Alaska Gas	Date of Sampling:	4/14/2010
Job Number:	280346	Name of Sampler:	J. Smith
Project Address:	6211 San Pablo Avenue, Oakland		

MONITORING WELL DATA

Well Casing Diameter (2"/4"/6")	2"		
Wellhead Condition	OK		
Elevation of Top of Casing (feet above msl)	36.67		
Depth of Well	22.75		
Depth to Water (from top of casing)			
Water Elevation (feet above msl)	--		
Well Volumes Purged	--		
Gallons Purged: formula valid only for casing sizes of 2" (.16 gal/ft), 4" (.65 gal/ft), and 6" (1.44 gal/ft)	**Micropurge**		
Actual Volume Purged (gallons)			
Appearance of Purge Water	Clear		
Free Product Present?		Thickness (ft):	

GROUNDWATER SAMPLES

Number of Samples/Container Size

Time	Vol Removed (liters)	Temperature (deg C)	pH	Conductivity (µ sec/cm)	DO (mg/L)	ORP (meV)	Comments
Post-Sparge (AS-3)							
9:12	1	17.13	7.24	483	4.17	335.0	Clear
9:14	2	17.36	7.23	484	3.54	330.0	Clear
9:16	3	17.46	7.20	483	3.36	324.8	Clear
9:18	4	17.59	7.20	483	3.30	319.1	Clear
9:20	5	17.69	7.18	483	3.16	310.2	Clear
9:22	6	17.79	7.17	481	3.18	293.7	Clear

COMMENTS (i.e., sample odor, well recharge time & percent, etc.)

AEI CONSULTANTS

GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

Monitoring Well Number: MW-1R

Project Name:	Alaska Gas	Date of Sampling:	4/15/2010
Job Number:	280346	Name of Sampler:	J. Sigg
Project Address:	6211 San Pablo Avenue, Oakland		

MONITORING WELL DATA

Well Casing Diameter (2"/4"/6")	2"		
Wellhead Condition	OK		
Elevation of Top of Casing (feet above msl)	36.67		
Depth of Well	22.75		
Depth to Water (from top of casing)	6.18		
Water Elevation (feet above msl)	--		
Well Volumes Purged	--		
Gallons Purged: formula valid only for casing sizes of 2" (.16 gal/ft), 4" (.65 gal/ft), and 6" (1.44 gal/ft)	**Micropurge**		
Actual Volume Purged (gallons)			
Appearance of Purge Water	Clear		
Free Product Present?		Thickness (ft):	

GROUNDWATER SAMPLES

Number of Samples/Container Size

Time	Vol Removed (liters)	Temperature (deg C)	pH	Conductivity (µ sec/cm)	DO (mg/L)	ORP (meV)	Comments
Pre-Sparge (AS-2)							
9:50	1	17.37	6.99	486	0.81	70.0	Clear
9:54	3	17.90	6.97	487	0.46	75.4	Clear
9:58	5	18.07	7.00	485	1.55	65.4	Clear
10:02	7	18.14	6.99	468	2.83	63.9	Clear
10:06	9	18.17	6.97	462	3.47	64.7	Clear
10:10	11	18.17	6.96	454	3.94	66.9	Clear
10:14	13	18.11	6.94	455	3.90	70.0	Clear
10:18	15	18.23	6.94	445	4.47	73.3	Clear
10:22	17	18.19	6.93	445	4.56	76.1	Clear
10:26	19	18.18	6.92	440	4.74	81.2	Clear
10:28	20	18.12	6.92	441	4.74	82.1	Clear

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GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

Monitoring Well Number: MW-1R

Project Name:	Alaska Gas	Date of Sampling:	4/15/2010
Job Number:	280346	Name of Sampler:	J. Sigg
Project Address:	6211 San Pablo Avenue, Oakland		

MONITORING WELL DATA

Well Casing Diameter (2"/4"/6")	2"		
Wellhead Condition	OK		
Elevation of Top of Casing (feet above msl)	36.67		
Depth of Well	22.75		
Depth to Water (from top of casing)	6.69		
Water Elevation (feet above msl)	--		
Well Volumes Purged	--		
Gallons Purged: formula valid only for casing sizes of 2" (.16 gal/ft), 4" (.65 gal/ft), and 6" (1.44 gal/ft)	**Micropurge**		
Actual Volume Purged (gallons)			
Appearance of Purge Water	Clear		
Free Product Present?		Thickness (ft):	

GROUNDWATER SAMPLES

Number of Samples/Container Size

Time	Vol Removed (liters)	Temperature (deg C)	pH	Conductivity (µ sec/cm)	DO (mg/L)	ORP (meV)	Comments
Post-Sparge (AS-2)							
17:12	1	17.43	6.68	462	3.05	259.4	Clear
17:14	2	17.43	6.65	461	2.93	257.6	Clear
17:16	3	17.46	6.64	459	2.89	256.8	Clear
17:18	4	17.53	6.67	454	3.00	256.2	Clear
17:20	5	17.54	6.68	454	3.03	256.3	Clear
17:21	6	17.55	6.68	454	3.05	256.6	Clear

COMMENTS (i.e., sample odor, well recharge time & percent, etc.)

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GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

Monitoring Well Number: MW-3

Project Name:	Alaska Gas	Date of Sampling:	4/13/2010
Job Number:	280346	Name of Sampler:	J. Smith
Project Address:	6211 San Pablo Avenue, Oakland		

MONITORING WELL DATA

Well Casing Diameter (2"/4"/6")	2"		
Wellhead Condition	OK		
Elevation of Top of Casing (feet above msl)	35.12		
Depth of Well	20.82		
Depth to Water (from top of casing)			
Water Elevation (feet above msl)	35.12		
Well Volumes Purged	--		
Gallons Purged: formula valid only for casing sizes of 2" (.16 gal/ft), 4" (.65 gal/ft), and 6" (1.44 gal/ft)	**Micropurge**		
Actual Volume Purged (gallons)			
Appearance of Purge Water	Clear		
Free Product Present?		Thickness (ft):	

GROUNDWATER SAMPLES

Number of Samples/Container Size

Time	Vol Removed (liters)	Temperature (deg C)	pH	Conductivity (µ sec/cm)	DO (mg/L)	ORP (meV)	Comments
Pre-Sparge (AS-3)							
10:26	1	18.23	6.68	693	0.62	60.4	
10:28	2	18.28	6.66	695	0.49	52.2	
10:30	3	18.47	6.67	697	0.40	46.1	
10:32	4	18.56	6.67	697	0.44	42.6	

COMMENTS (i.e., sample odor, well recharge time & percent, etc.)

AEI CONSULTANTS

GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

Monitoring Well Number: MW-3

Project Name:	Alaska Gas	Date of Sampling:	4/13/2010
Job Number:	280346	Name of Sampler:	J. Smith
Project Address:	6211 San Pablo Avenue, Oakland		

MONITORING WELL DATA

Well Casing Diameter (2"/4"/6")	2"		
Wellhead Condition	OK		
Elevation of Top of Casing (feet above msl)	35.12		
Depth of Well	20.82		
Depth to Water (from top of casing)			
Water Elevation (feet above msl)	35.12		
Well Volumes Purged	--		
Gallons Purged: formula valid only for casing sizes of 2" (.16 gal/ft), 4" (.65 gal/ft), and 6" (1.44 gal/ft)	**Micropurge**		
Actual Volume Purged (gallons)			
Appearance of Purge Water	Clear		
Free Product Present?		Thickness (ft):	

GROUNDWATER SAMPLES

Number of Samples/Container Size

Time	Vol Removed (liters)	Temperature (deg C)	pH	Conductivity (µ sec/cm)	DO (mg/L)	ORP (meV)	Comments
Post-Sparge (AS-3) - Pre-Sparge (AS-1)							
16:15	1	18.44	6.62	641	1.56	137.7	
16:17	2	18.50	6.56	638	1.27	115.4	
16:19	3	18.54	6.57	635	1.15	97.2	
16:21	4	18.65	6.60	632	1.15	86.7	
16:23	5	18.75	6.61	626	1.01	80.2	

COMMENTS (i.e., sample odor, well recharge time & percent, etc.)

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GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

Monitoring Well Number: MW-3

Project Name:	Alaska Gas	Date of Sampling:	4/14/2010
Job Number:	280346	Name of Sampler:	J. Smith
Project Address:	6211 San Pablo Avenue, Oakland		

MONITORING WELL DATA

Well Casing Diameter (2"/4"/6")	2"		
Wellhead Condition	OK		
Elevation of Top of Casing (feet above msl)	35.12		
Depth of Well	20.82		
Depth to Water (from top of casing)			
Water Elevation (feet above msl)	35.12		
Well Volumes Purged	--		
Gallons Purged: formula valid only for casing sizes of 2" (.16 gal/ft), 4" (.65 gal/ft), and 6" (1.44 gal/ft)	**Micropurge**		
Actual Volume Purged (gallons)			
Appearance of Purge Water	Clear		
Free Product Present?		Thickness (ft):	

GROUNDWATER SAMPLES

Number of Samples/Container Size

Time	Vol Removed (liters)	Temperature (deg C)	pH	Conductivity (µ sec/cm)	DO (mg/L)	ORP (meV)	Comments
Post-Sparge (AS-1)							
15:52	1	17.88	6.62	652	0.54	125.1	Clear
15:54	2	18.00	6.60	658	0.64	105.2	Clear
15:56	3	18.11	6.62	663	0.54	89.3	Clear
15:58	4	18.27	6.64	666	0.56	78.7	Clear

COMMENTS (i.e., sample odor, well recharge time & percent, etc.)

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GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

Monitoring Well Number: MW-3

Project Name:	Alaska Gas	Date of Sampling:	4/15/2010
Job Number:	280346	Name of Sampler:	J. Sigg
Project Address:	6211 San Pablo Avenue, Oakland		

MONITORING WELL DATA

Well Casing Diameter (2"/4"/6")	2"		
Wellhead Condition	OK		
Elevation of Top of Casing (feet above msl)	35.12		
Depth of Well	20.82		
Depth to Water (from top of casing)	4.93		
Water Elevation (feet above msl)	30.19		
Well Volumes Purged	--		
Gallons Purged: formula valid only for casing sizes of 2" (.16 gal/ft), 4" (.65 gal/ft), and 6" (1.44 gal/ft)	**Micropurge**		
Actual Volume Purged (gallons)			
Appearance of Purge Water	Clear		
Free Product Present?		Thickness (ft):	

GROUNDWATER SAMPLES

Number of Samples/Container Size

Time	Vol Removed (liters)	Temperature (deg C)	pH	Conductivity (µ sec/cm)	DO (mg/L)	ORP (meV)	Comments
Pre-Sparge (AS-2)							
9:15	1	18.22	6.71	685	1.57	184.1	Clear
9:17	2	18.44	6.73	685	1.47	157.4	Clear
9:19	3	18.52	6.72	686	1.23	140.6	Clear
9:21	4	18.69	6.72	687	0.99	116.3	Clear
9:23	5	18.72	6.72	688	0.89	105.8	Clear
9:25	6	18.75	6.71	686	0.80	95.6	Clear
9:27	7	18.81	6.72	687	0.70	83.3	Clear
9:29	8	18.84	6.72	686	0.66	78.4	Clear
9:31	9	18.88	6.71	683	0.57	69.7	Clear
9:33	10	18.89	6.72	682	0.52	64.9	Clear
9:35	11	18.91	6.71	675	0.46	60.5	Clear
9:37	12	18.92	6.73	673	0.46	59.2	Clear
9:39	13	18.94	6.72	672	0.45	58.6	Clear

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GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

Monitoring Well Number: MW-3

Project Name:	Alaska Gas	Date of Sampling:	4/15/2010
Job Number:	280346	Name of Sampler:	J. Sigg
Project Address:	6211 San Pablo Avenue, Oakland		

MONITORING WELL DATA

Well Casing Diameter (2"/4"/6")	2"		
Wellhead Condition	OK		
Elevation of Top of Casing (feet above msl)	35.12		
Depth of Well	20.82		
Depth to Water (from top of casing)	7.18		
Water Elevation (feet above msl)	27.94		
Well Volumes Purged	--		
Gallons Purged: formula valid only for casing sizes of 2" (.16 gal/ft), 4" (.65 gal/ft), and 6" (1.44 gal/ft)	**Micropurge**		
Actual Volume Purged (gallons)			
Appearance of Purge Water	Clear		
Free Product Present?		Thickness (ft):	

GROUNDWATER SAMPLES

Number of Samples/Container Size

Time	Vol Removed (liters)	Temperature (deg C)	pH	Conductivity (µ sec/cm)	DO (mg/L)	ORP (meV)	Comments
Post-Sparge (AS-2)							
17:26	1	18.43	6.63	711	2.40	214.1	Clear
17:28	2	18.46	6.62	709	2.08	213.8	Clear
17:30	3	18.47	6.62	706	1.87	214.4	Clear
17:32	4	18.50	6.62	703	1.65	214.4	Clear
17:34	5	18.50	6.61	702	1.64	214.7	Clear
17:36	6	18.52	6.61	701	1.63	214.3	Clear

COMMENTS (i.e., sample odor, well recharge time & percent, etc.)

AEI CONSULTANTS

GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

Monitoring Well Number: MW-4

Project Name:	Alaska Gas	Date of Sampling:	4/14/2010
Job Number:	280346	Name of Sampler:	J. Smith
Project Address:	6211 San Pablo Avenue, Oakland		

MONITORING WELL DATA

Well Casing Diameter (2"/4"/6")	2"		
Wellhead Condition	OK		
Elevation of Top of Casing (feet above msl)	34.11		
Depth of Well	19.75		
Depth to Water (from top of casing)			
Water Elevation (feet above msl)	--		
Well Volumes Purged	--		
Gallons Purged: formula valid only for casing sizes of 2" (.16 gal/ft), 4" (.65 gal/ft), and 6" (1.44 gal/ft)	**Micropurge**		
Actual Volume Purged (gallons)			
Appearance of Purge Water	Clear		
Free Product Present?		Thickness (ft):	

GROUNDWATER SAMPLES

Number of Samples/Container Size

Time	Vol Removed (liters)	Temperature (deg C)	pH	Conductivity (µ sec/cm)	DO (mg/L)	ORP (meV)	Comments
Pre-Sparge (AS-1)							
10:21	1	17.82	7.09	460	0.56	83.1	Clear
10:23	2	17.90	7.08	461	0.26	37.3	Clear
10:25	3	17.94	7.10	462	0.23	15.4	Clear
10:27	4	17.98	7.09	464	0.27	3.5	Clear
10:29	5	18.00	7.09	462	0.29	-3.0	Clear

COMMENTS (i.e., sample odor, well recharge time & percent, etc.)

AEI CONSULTANTS

GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

Monitoring Well Number: MW-4

Project Name:	Alaska Gas	Date of Sampling:	4/14/2010
Job Number:	280346	Name of Sampler:	J. Smith
Project Address:	6211 San Pablo Avenue, Oakland		

MONITORING WELL DATA

Well Casing Diameter (2"/4"/6")	2"		
Wellhead Condition	OK		
Elevation of Top of Casing (feet above msl)	34.11		
Depth of Well	19.75		
Depth to Water (from top of casing)			
Water Elevation (feet above msl)	--		
Well Volumes Purged	--		
Gallons Purged: formula valid only for casing sizes of 2" (.16 gal/ft), 4" (.65 gal/ft), and 6" (1.44 gal/ft)	**Micropurge**		
Actual Volume Purged (gallons)			
Appearance of Purge Water	Clear		
Free Product Present?		Thickness (ft):	

GROUNDWATER SAMPLES

Number of Samples/Container Size

Time	Vol Removed (liters)	Temperature (deg C)	pH	Conductivity (µ sec/cm)	DO (mg/L)	ORP (meV)	Comments
Post-Sparge (AS-1)							
16:19	1	18.16	7.04	469	0.40	-14.5	Clear
16:21	2	18.19	7.02	470	0.22	-18.6	Clear
16:23	3	18.23	7.05	471	0.18	-22.5	Clear
16:25	4	18.24	7.05	473	0.17	-25.4	Clear

COMMENTS (i.e., sample odor, well recharge time & percent, etc.)

AEI CONSULTANTS

GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

Monitoring Well Number: MW-5

Project Name:	Alaska Gas	Date of Sampling:	4/14/2010
Job Number:	280346	Name of Sampler:	J. Smith
Project Address:	6211 San Pablo Avenue, Oakland		

MONITORING WELL DATA

Well Casing Diameter (2"/4"/6")	2"		
Wellhead Condition	OK		
Elevation of Top of Casing (feet above msl)	35.17		
Depth of Well	24.31		
Depth to Water (from top of casing)			
Water Elevation (feet above msl)	--		
Well Volumes Purged	--		
Gallons Purged: formula valid only for casing sizes of 2" (.16 gal/ft), 4" (.65 gal/ft), and 6" (1.44 gal/ft)	**Micropurge**		
Actual Volume Purged (gallons)			
Appearance of Purge Water	Clear		
Free Product Present?		Thickness (ft):	

GROUNDWATER SAMPLES

Number of Samples/Container Size

Time	Vol Removed (liters)	Temperature (deg C)	pH	Conductivity (µ sec/cm)	DO (mg/L)	ORP (meV)	Comments
Pre-Sparge (AS-1)							
10:02	1	18.83	6.95	604	0.77	304.7	Clear
10:04	2	18.85	6.96	604	0.39	297.4	Clear
10:06	3	18.92	6.95	603	0.32	291.3	Clear
10:08	4	18.91	6.95	603	0.33	285.0	Clear
10:10	5	18.88	6.96	602	0.37	278.1	Clear

COMMENTS (i.e., sample odor, well recharge time & percent, etc.)

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GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

Monitoring Well Number: MW-5

Project Name:	Alaska Gas	Date of Sampling:	4/14/2010
Job Number:	280346	Name of Sampler:	J. Smith
Project Address:	6211 San Pablo Avenue, Oakland		

MONITORING WELL DATA

Well Casing Diameter (2"/4"/6")	2"		
Wellhead Condition	OK		
Elevation of Top of Casing (feet above msl)	35.17		
Depth of Well	24.31		
Depth to Water (from top of casing)			
Water Elevation (feet above msl)	--		
Well Volumes Purged	--		
Gallons Purged: formula valid only for casing sizes of 2" (.16 gal/ft), 4" (.65 gal/ft), and 6" (1.44 gal/ft)	**Micropurge**		
Actual Volume Purged (gallons)			
Appearance of Purge Water	Clear		
Free Product Present?		Thickness (ft):	

GROUNDWATER SAMPLES

Number of Samples/Container Size

Time	Vol Removed (liters)	Temperature (deg C)	pH	Conductivity (µ sec/cm)	DO (mg/L)	ORP (meV)	Comments
Post-Sparge (AS-1)							
15:36	1	18.27	6.92	602	0.92	226.5	Clear
15:38	2	18.03	6.86	600	0.61	218.3	Clear
15:40	3	18.17	6.87	601	0.58	207.9	Clear
15:42	4	18.23	6.88	602	0.51	199.2	Clear

COMMENTS (i.e., sample odor, well recharge time & percent, etc.)

AEI CONSULTANTS

GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

Monitoring Well Number: MW-6

Project Name:	Alaska Gas	Date of Sampling:	4/13/2010
Job Number:	280346	Name of Sampler:	J. Smith
Project Address:	6211 San Pablo Avenue, Oakland		

MONITORING WELL DATA

Well Casing Diameter (2"/4"/6")	2"		
Wellhead Condition	OK		
Elevation of Top of Casing (feet above msl)	36.07		
Depth of Well	23.45		
Depth to Water (from top of casing)			
Water Elevation (feet above msl)	--		
Well Volumes Purged	--		
Gallons Purged: formula valid only for casing sizes of 2" (.16 gal/ft), 4" (.65 gal/ft), and 6" (1.44 gal/ft)	**Micropurge**		
Actual Volume Purged (gallons)			
Appearance of Purge Water	Clear		
Free Product Present?		Thickness (ft):	

GROUNDWATER SAMPLES

Number of Samples/Container Size

Time	Vol Removed (liters)	Temperature (deg C)	pH	Conductivity (µ sec/cm)	DO (mg/L)	ORP (meV)	Comments
Pre-Sparge (AS-3)							
10:09	1	17.06	6.92	311	0.77	54.4	
10:11	2	17.16	6.90	354	0.47	66.8	
10:13	3	17.24	6.91	374	0.35	71.2	
10:15	4	17.22	6.89	377	0.32	73.4	

COMMENTS (i.e., sample odor, well recharge time & percent, etc.)

AEI CONSULTANTS

GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

Monitoring Well Number: MW-6

Project Name:	Alaska Gas	Date of Sampling:	4/14/2010
Job Number:	280346	Name of Sampler:	J. Smith
Project Address:	6211 San Pablo Avenue, Oakland		

MONITORING WELL DATA

Well Casing Diameter (2"/4"/6")	2"		
Wellhead Condition	OK		
Elevation of Top of Casing (feet above msl)	36.07		
Depth of Well	23.45		
Depth to Water (from top of casing)			
Water Elevation (feet above msl)	--		
Well Volumes Purged	--		
Gallons Purged: formula valid only for casing sizes of 2" (.16 gal/ft), 4" (.65 gal/ft), and 6" (1.44 gal/ft)	**Micropurge**		
Actual Volume Purged (gallons)			
Appearance of Purge Water	Clear		
Free Product Present?		Thickness (ft):	

GROUNDWATER SAMPLES

Number of Samples/Container Size

Time	Vol Removed (liters)	Temperature (deg C)	pH	Conductivity (µ sec/cm)	DO (mg/L)	ORP (meV)	Comments
Post-Sparge (AS-3)							
9:29	1	16.84	6.99	403	3.62	294.1	Clear
9:31	2	16.91	6.95	405	3.32	290.3	Clear
9:33	3	17.07	6.96	406	3.34	286.7	Clear
9:35	4	17.16	6.96	405	3.29	283.9	Clear

COMMENTS (i.e., sample odor, well recharge time & percent, etc.)

AEI CONSULTANTS

GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

Monitoring Well Number: MW-6

Project Name:	Alaska Gas	Date of Sampling:	4/15/2010
Job Number:	280346	Name of Sampler:	J. Sigg
Project Address:	6211 San Pablo Avenue, Oakland		

MONITORING WELL DATA

Well Casing Diameter (2"/4"/6")	2"		
Wellhead Condition	OK		
Elevation of Top of Casing (feet above msl)	36.07		
Depth of Well	23.45		
Depth to Water (from top of casing)	5.17		
Water Elevation (feet above msl)	--		
Well Volumes Purged	--		
Gallons Purged: formula valid only for casing sizes of 2" (.16 gal/ft), 4" (.65 gal/ft), and 6" (1.44 gal/ft)	**Micropurge**		
Actual Volume Purged (gallons)			
Appearance of Purge Water	Clear		
Free Product Present?		Thickness (ft):	

GROUNDWATER SAMPLES

Number of Samples/Container Size

Time	Vol Removed (liters)	Temperature (deg C)	pH	Conductivity (µ sec/cm)	DO (mg/L)	ORP (meV)	Comments
Pre-Sparge (AS-2)							
10:42	1	17.28	6.87	437	1.98	103.2	Clear
10:44	2	17.21	6.86	438	1.26	100.4	Clear
10:46	3	17.29	6.87	439	1.07	98.3	Clear
10:48	4	17.30	6.87	439	0.95	97.1	Clear
10:50	5	17.37	6.87	439	0.86	96.4	Clear
10:52	6	17.40	6.86	437	0.81	96.6	Clear
10:54	7	17.41	6.84	437	0.78	97.6	Clear
10:56	8	17.47	6.84	437	0.78	98.1	Clear
10:58	9	17.52	6.84	437	0.79	98.6	Clear
11:00	10	17.53	6.83	437	0.78	98.7	Clear

COMMENTS (i.e., sample odor, well recharge time & percent, etc.)

AEI CONSULTANTS

GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

Monitoring Well Number: MW-6

Project Name:	Alaska Gas	Date of Sampling:	4/15/2010
Job Number:	280346	Name of Sampler:	J. Sigg
Project Address:	6211 San Pablo Avenue, Oakland		

MONITORING WELL DATA

Well Casing Diameter (2"/4"/6")	2"		
Wellhead Condition	OK		
Elevation of Top of Casing (feet above msl)	36.07		
Depth of Well	23.45		
Depth to Water (from top of casing)	5.17		
Water Elevation (feet above msl)	--		
Well Volumes Purged	--		
Gallons Purged: formula valid only for casing sizes of 2" (.16 gal/ft), 4" (.65 gal/ft), and 6" (1.44 gal/ft)	**Micropurge**		
Actual Volume Purged (gallons)			
Appearance of Purge Water	Clear		
Free Product Present?		Thickness (ft):	

GROUNDWATER SAMPLES

Number of Samples/Container Size

Time	Vol Removed (liters)	Temperature (deg C)	pH	Conductivity (µ sec/cm)	DO (mg/L)	ORP (meV)	Comments
Post-Sparge (AS-2)							
16:52	1	17.22	6.78	413	2.83	246.2	Clear
16:54	2	17.25	6.71	419	2.50	250.6	Clear
16:56	3	17.26	6.67	422	2.22	254.4	Clear
16:58	4	17.28	6.66	423	2.05	258.3	Clear
17:00	5	17.29	6.65	427	2.02	260.3	Clear
17:02	6	17.30	6.64	427	2.00	260.7	Clear
17:04	7	17.31	6.64	428	1.96	261.1	Clear
17:06	8	17.31	6.63	428	1.95	262.0	Clear

COMMENTS (i.e., sample odor, well recharge time & percent, etc.)

AEI CONSULTANTS

GROUNDWATER MONITORING WELL FIELD SAMPLING FORM

Monitoring Well Number: EX-1

Project Name:	Alaska Gas	Date of Sampling:	4/14/2010
Job Number:	280346	Name of Sampler:	J. Smith
Project Address:	6211 San Pablo Avenue, Oakland		

MONITORING WELL DATA

Well Casing Diameter (2"/4"/6")	4"		
Wellhead Condition	OK		
Elevation of Top of Casing (feet above msl)	33.28		
Depth of Well	27.50		
Depth to Water (from top of casing)			
Water Elevation (feet above msl)	--		
Well Volumes Purged	--		
Gallons Purged: formula valid only for casing sizes of 2" (.16 gal/ft), 4" (.65 gal/ft), and 6" (1.44 gal/ft)	**Micropurge**		
Actual Volume Purged (gallons)			
Appearance of Purge Water	Clear		
Free Product Present?		Thickness (ft):	

GROUNDWATER SAMPLES

Number of Samples/Container Size

Time	Vol Removed (liters)	Temperature (deg C)	pH	Conductivity (µ sec/cm)	DO (mg/L)	ORP (meV)	Comments
Post-Sparge (AS-1)							
16:07	1	17.99	7.07	463	0.41	-1.8	
16:09	2	17.94	7.07	463	0.24	-11.3	
16:11	3	17.92	7.08	460	0.21	-18.5	
16:13	4	17.89	7.08	460	0.18	-24.5	

COMMENTS (i.e., sample odor, well recharge time & percent, etc.)

APPENDIX E

WELL SURVEY

MONITORING WELL DATA TABLE				
WELL #	DESCRIPTION	NORTHING	EASTING	ELEVATION
MW-7	2" PVC PIPE IN WELL CASING	2134884.595	6046262.304	31.16 TOP OF PVC
MW-8	2" PVC PIPE IN WELL CASING	2134944.773	6046186.826	30.92 TOP OF PVC
MW-9	2" PVC PIPE IN WELL CASING	2134836.151	6046080.893	28.90 TOP OF PVC
MW-10	2" PVC PIPE IN WELL CASING	2134778.692	6046228.416	30.28 TOP OF PVC

NOTES:

1. BASED UPON THE CALIFORNIA COORDINATE SYSTEM, ZONE III, POINT #HT2935, "YACHT" HELD IN FIXED POSITION TAKEN FROM NGS DATA SHEETS: (N)2142129.370, (E)6037331.330.
2. BENCHMARK: "Z 1197", #HT0991 ELEVATION=34.75 (NGVD 29) BRASS DISC AT THE NORTHEAST CORNER OF THE JUNCTION OF SAN PABLO AVENUE AND 61st STREET, IN THE TOP OF THE NORTH CURB OF THE STREET AT THE NORTHWEST CORNER OF A CATCH BASIN, 1.4' SOUTH OF A STREET SIGN POST, AND ABOUT LEVEL WITH THE STREET.
3. FIELD WORK PERFORMED BY MILANI AND ASSOCIATES SURVEY CREW ON FEBRUARY 25 & MARCH 9, 2010.

30 15 0 30 60 90

SCALE: 1"=30'

Planning • Surveying & Mapping • Land Development Engineering
Municipal Engineering • Construction Staking • Construction Management
Joint Trench Services • Landscape Architecture

MILANI & Associates

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Web: www.milaniassociates.com

INTERSECTION OF MARSHALL AND 62ND STREETS

MONITORING WELL
SURVEY

CITY OF OAKLAND — ALAMEDA COUNTY — CALIFORNIA

DESIGNED UNDER THE DIRECTION OF:

MICHAEL E. MILANI — DATE
L.S. No. 5311 EXPIRES 12/31/09

DESIGN: SL	JOB NO: 262
DRAWN: SL	DATE: 03/01/10
CHECKED: KRA	SCALE: 1"=30'

LICENSED LAND SURVEYOR — MICHAEL E. MILANI — No. 5311 EXP.12/31/11 — STATE OF CALIFORNIA

SHEET 1 OF 1 SHEETS