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Alameda County
Environmental Health

October 3, 2008

Mr. Jerry Wickham
Alameda County Environmental Health Services
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

SUBJECT: SOIL VAPOR SURVEY AND REMEDIATION PILOT TEST WORK PLAN CERTIFICATION
ACEHS File # RO0002509
Thanh's Autobody Repair
901 77th Avenue
Oakland, California

Dear Mr. Wickham:

You will find enclosed one copy of the following document prepared by P&D Environmental, Inc.

- Soil Vapor Survey and Remediation Pilot Test Work Plan dated October 3, 2008 (document 0330.W4).

I declare, under penalty of perjury, that the information and/or recommendations contained in the above-mentioned document for the subject site is true and correct to the best of my knowledge.

Should you have any questions, please do not hesitate to contact me at (408) 354-9777.

Sincerely,

Cupertino Capital

Daniel Shaw

Enclosure

0330.L14

P&D ENVIRONMENTAL, INC.
55 Santa Clara Ave, Suite 240
Oakland, CA 94610
(510) 658-6916

October 3, 2008
Work Plan 0330.W4

Mr. Jerry Wickham
Alameda County Department of Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502

SUBJECT: SOIL GAS SAMPLE COLLECTION AND REMEDIATION PILOT TEST WORK PLAN
ACEHS File #RO0002509
Thanh's Autobody Repair
901 77th Avenue
Oakland, California

Dear Mr. Wickham:

P&D Environmental, Inc. (P&D) is pleased to present this work plan for collection of four soil gas samples designated as SG1 through SG4 to evaluate soil gas conditions beneath the floor slab at the subject site. In addition, this work plan describes activities for air sparging and dual phase groundwater and vapor extraction feasibility evaluation. This work plan is written in response to a request by the Alameda County Department of Environmental Health (ACDEH) in a letter dated July 25, 2008.

A Site Location Map is attached as Figure 1, and Site Vicinity Maps showing the proposed soil gas sample collection locations, and the groundwater extraction, vapor extraction, and air sparging locations are attached as Figures 3 and 4. All work will be performed under the supervision of a professional geologist.

BACKGROUND

On July 25, 2002 one 1,000-gallon capacity gasoline Underground Storage Tank (UST) was removed from the subject site. The removal of the tank is documented in the Underground Storage Tank Removal – Final Report dated August 6, 2002 prepared by AEI Consultants (AEI). Two tank pit soil samples were collected by AEI at a depth of 8 feet below grade (fbg) following removal of the UST and analyzed for Total Petroleum Hydrocarbons as Gasoline (TPH-G), methyl tertiary-butyl ether (MTBE), benzene, toluene, ethylbenzene, and xylenes (BTEX), and lead. Groundwater was not encountered in the UST pit at the time of UST removal. The sample collected at the west end of the UST pit (closest to the intersection of 77th Avenue and Hawley Street) contained 4,600 mg/kg TPH-G and 4.5 mg/kg benzene. The sample collected at the east end of the UST contained 310 mg/kg TPH-G, and benzene was not detected. MTBE was not detected in either sample, and lead was detected at concentrations of 16 and 9.1 mg/kg, respectively.

In a letter dated January 27, 2003 Mr. Ariu Levi of the Alameda County Department of Environmental Health (ACDEH) provided Notice of Responsibility for investigation and cleanup of the subject site to Mr. Daniel Shaw of D&D Ventures, LLC (D&D), the primary responsible party for the site. A subsequent letter dated February 3, 2003 from Mr. Amir Gholami of the ACDEH, also addressed to D&D, provided landowner notification and participation requirements associated with unauthorized release of a hazardous substance from an UST at the subject site.

Following conversations with Mr. Gholami to develop a scope of work to move the case towards closure, P&D submitted a January 26, 2004 Subsurface Investigation Work Plan (B1 Through B7) and associated addendum dated February 3, 2004. The January 26, 2004 work plan proposed a total of seven boreholes for collection of groundwater samples. The February 3, 2004 addendum included the collection of groundwater samples from an additional two boreholes located inside the building and analysis of soil samples from boreholes in the vicinity of the former UST pit. The work plan and addendum were approved in a letter from Mr. Gholami dated February 20, 2004.

On March 30, 2004 AEI drilled a total of seven boreholes and collected groundwater samples at locations identified in the P&D January 26, 2004 work plan. AEI did not drill at locations inside the building or arrange for laboratory analysis of soil samples as set forth in the February 3, 2004 work plan addendum. The boreholes were drilled to total depths ranging from 12 to 16 fbg. Saturated soils were encountered at depths of approximately 8 to 15 fbg, and groundwater was subsequently measured in the boreholes at depths of 6 to 10 fbg. The results of the March 30, 2004 investigation are documented in AEI's April 26, 2004 Groundwater Investigation addressed to D&D Ventures, LLC.

TPH-G was not detected in any of the boreholes except SB3 and SB4 at concentrations of 1,100 and 510 μg/L, respectively. BTEX was not detected in any of the samples with the exception of SB3 where toluene and ethylbenzene were detected at concentrations of 1.8 and 3.5 μg/L, and SB4 where toluene was detected at a concentration of 2.5 μg/L. MTBE was not detected in any of the samples except SB3, SB6 and SB7. In SB3, MTBE was detected at a concentration of 3.9 μg/L using EPA Method 8021B. In SB6 MTBE was detected at a concentration of 22 μg/L using EPA Method 8021B. In SB7, MTBE was detected at a concentration of 440 μg/L using EPA Method 8021B and at a concentration of 660 μg/L using EPA Method 8260B. In addition, the fuel oxygenate tertiary-amyl methyl ether (TAME) was detected in sample SB7 at a concentration of 34 μg/L.

Evaluation of the water quality data collected by AEI shows that TPH-G concentrations in groundwater appear to extend in a southwesterly direction from the former UST pit, and is defined in extent by boreholes SB1, SB2, SB5, SB6 and SB7. In addition, the water quality data shows that MTBE concentrations are highest on the opposite side of the street from the site, and decrease as one gets closer to the former UST pit.

Sample SB3 was also analyzed for TPH-D and TPH-MO, with 780 and 580 μg/L reported, respectively. The laboratory identified the results reported as diesel as consisting of gasoline-range and oil-range compounds. Based on subsequent conversations by P&D with the laboratory, the chromatograms showed that no diesel fuel was detected. The absence of BTEX and MTBE, the shape of the peaks on the chromatogram, and the distribution of gasoline-range compounds all suggested to the laboratory analyst that the detected petroleum hydrocarbons are very old, weathered gasoline.

MTBE was not detected in either of the soil samples collected at the time of the UST removal. The increasing concentration of MTBE as one gets farther from the former UST pit in conjunction with the absence of MTBE in the UST pit soil samples suggests an offsite source for the MTBE.

On November 7 through November 10 and on November 15, 2005, P&D observed the drilling of boreholes B8 through B14, soil conductivity logging, continuous borehole coring, Hydropunch sample collection, and soil and groundwater grab sample collection. P&D also oversaw the installation of groundwater monitoring wells MW1 through MW3. Well development was performed on November 21, 2005 and water level monitoring in the wells was performed on November 30 and December 7, 2005. The wells were not purged and sampled following development because water samples were collected from first encountered groundwater in GeoProbe boreholes located immediately adjacent to the monitoring well locations.

Soil conductivity logging was performed at locations B8, B9, B13, and B14 to a depth of 43.0 fbg except for location B9, where soil conductivity logging was performed to a depth of 42.0 fbg. Soil conductivity values were continuously measured and recorded and printed as a log. The soil conductivity logs suggested that a coarse-grained sand layer was encountered in all four of the boreholes at variable depths ranging between approximately 27 and 38 fbg. Following review of subsurface conditions identified in the soil conductivity logs, groundwater grab samples were also collected at all of the drilling locations (B8 through B14) by driving a Hydropunch to a depth of 36.0 fbg. The boreholes for wells MW1, MW2 and MW3 were drilled using a portable, limited access hollow stem auger drill rig and 6.5-inch outside diameter hollow stem augers. All of the boreholes were drilled to a depth of 14.0 fbg. Soil samples were collected at 5-foot intervals. Wells MW1, MW2 and MW3 were constructed using two-inch diameter Schedule 40 PVC pipe with 10 feet of 0.010-inch factory slot placed in the bottom of the borehole between the depths of 4 and 14 fbg.

MTBE was not detected in any of the soil samples. TPH-G and BTEX were detected only in samples from boreholes B9 through B12. In borehole B9, TPH-G was detected at a depth of 14.5 fbg at a concentration of 37 mg/kg, and benzene was detected at a concentration of 0.088 mg/kg. In borehole B10, TPH-G was detected at depths of 9.5, 19.5, and 29.5 fbg at concentrations of 1,400, 230, and 1.3 mg/kg, respectively, and benzene was detected at concentrations of 4.4, 4.6 and 0.014 mg/kg, respectively. In borehole B11, TPH-G was detected at depths of 9.5 and 22.0 fbg at concentrations of 150 and 13 mg/kg, respectively, and benzene was detected only in the sample collected at a depth of 22.0 fbg at a concentration of 0.093 mg/kg. In borehole B12, TPH-G was detected at depths of 9.5 and 19.5 fbg at concentrations of 26 and 1.2 mg/kg, respectively, and benzene was not detected in any of the soil samples. MTBE was not detected in any of the groundwater samples with the exception of sample B14-15.0 at a concentration of 1.8 µg/L. TPH-G and BTEX were detected in all of the boreholes except B8.

The TPH-G groundwater sample result at location B10 at a depth of 24 fbg (24,000 μg/L) indicated that the vertical extent of TPH-G had not yet been defined. Similarly, benzene concentrations in groundwater at 36 fbg (310 μg/L) indicated that the vertical extent of benzene had not yet been defined. The highest concentrations of TPH-G and benzene at the 36-foot depth are located at the southern portion of the property at borehole locations B10 and B11 (at the west end of the UST pit, between the UST pit and the building). The groundwater sample results also indicate that the horizontal extent of TPH-G and benzene are defined at the 15 or 20-foot depth with the exception of the area to the west of the site.

The absence of MTBE in all of the soil and water samples from boreholes B8 through B14 and the distribution of MTBE in water samples collected from boreholes B1 through B7 suggests that MTBE has not originated from the subject site. The absence of MTBE in samples at the subject site also suggests that a detached plume has not originated from the subject site because no residual MTBE has been detected in the immediate vicinity of the USTs. The distribution of MTBE in the vicinity of the site suggests an offsite source for the MTBE.

Based on the results of the previous investigation, P&D recommended that subsurface exploration be performed at two locations, designated as B15 and B16, as shown on Figure 2. P&D recommended that soil conductivity logs be recorded at locations B15 and B16 to depths of 50 and 100 fbg, respectively, and that one groundwater grab sample be collected using a Hydropunch® at location B15 at a depth of 36 fbg and at location B16 at a depth defined by the soil conductivity log as the next water bearing zone below the 36-foot depth. Documentation of the drilling of boreholes B8 through B14 and the installation of groundwater monitoring wells MW1 through MW3 is provided in P&D's Subsurface Investigation Report (document 0330.R1) dated March 22, 2006 addressed to Cupertino Capital.

Mr. Jerry Wickham of the ACDEH provided comments on the report in a letter dated April 21, 2006 and requested a work plan containing historic site use information, historic UST system information (including dispensers and piping), identification of methods for evaluation of potential vapor intrusion, a description of methods for collection of groundwater samples recommended in the March 2006 report, identification of potential preferential pathways, a detailed well survey within a 2,000-foot radius of the site, and the implementation of a quarterly groundwater monitoring program for the three groundwater monitoring wells.

Information regarding historic site use, the UST system, and potential vapor intrusion are provided in the Subsurface Investigation Report documenting the drilling of boreholes B15 and B16 (document 0330.R3) dated April 14, 2008. Documentation of the a review of potential preferential pathways is provided in P&D's Preferential Pathway Survey Report (document 0330.R2) dated April 17, 2008 and the results of a detailed 2,000-foot radius well survey are provided in P&D's Well Survey Report (document 0330.R4) dated April 29, 2008.

SCOPE OF WORK

To evaluate soil gas concentrations and subsurface remediation feasibility at the subject site, P&D will perform the following tasks:

- Coordinate with regulatory agencies, including permitting for drilling soil borings for construction of four temporary soil gas sample collection wells, one groundwater and soil vapor extraction well (EW1) and one air sparging well (ASP1), and scheduling inspection of borehole grouting. Permitting will also be performed for access to the public right-of-way for EW1 and ASP1, and notification will be provided to the BAAQMD for use of the various location permit for the vapor extraction thermal oxidizer.
- Prepare a health and safety plan.
- Construct four soil gas sample collection wells for soil gas sample collection. The wells will subsequently be used for remediation feasibility testing.
- Collect soil gas samples at four locations at a depth of five feet at the site to investigate the presence of gasoline constituents in soil gas beneath the floor slab at the subject site.
- Install one extraction well (EW1) to a depth of 20 feet and one air sparging well (ASP1) to a depth of 35 feet.
- Develop the groundwater and vapor extraction well and the air sparging well.
- Following completion of the soil gas survey, perform a dual phase groundwater and vapor extraction feasibility test, and perform an air sparging feasibility test. The feasibility test will include monitoring of subsurface conditions in soil vapor sampling and groundwater monitoring wells at the site.
- Arrange for laboratory analysis.
- Prepare a report documenting the soil gas sample collection procedures and results, and the remediation feasibility testing procedures and results.

Each of these is discussed below in detail.

Permitting and Regulatory Agency Coordination

Following ACDEH approval of this work plan, permits will be obtained for the drilling of the soil borings for soil gas sample collection and remediation feasibility testing, and for offsite property access. Notification will be provided to ACDEH of the scheduled drilling dates prior to drilling.

Health and Safety Plan Preparation

A health and safety plan will be prepared for the scope of work identified in this work plan. Prior to the beginning of field work, the drilling locations will be marked with white paint and Underground Service Alert will be notified for underground utility location.

Soil Gas Sample Collection

Soil gas samples will be collected at four locations designated as SG1 through SG4 (see Figures 3 and 4). The samples will be collected into one-liter Summa canisters at a depth of 5 feet using temporary soil gas sampling wells constructed using direct-push drilling equipment. The rationale for the proposed sample collection locations is as follows.

- SG1 – To evaluate soil gas above the highest groundwater concentrations of TPH-G and benzene identified in groundwater beneath the floor slab (see Figures 3 and 4).
- SG2, SG3, SG4 – To evaluate soil gas at the periphery of the area identified as having the highest groundwater concentrations of TPH-G and benzene identified in groundwater beneath the floor slab (see Figures 3 and 4).

Soil gas samples will be collected in accordance with general procedures set forth in the Department of Toxic Substances Control (DTSC) January 13, 2003 Advisory - Active Soil Gas Investigations.

Soil gas samples will be collected using temporary soil gas sampling wells. The temporary wells will be constructed by driving a hollow 1-inch diameter Geoprobe rod with an expendable tip to a depth of 5 feet and then inserting a 7-foot length of 0.250-inch outside diameter (0.187-inch inside diameter) Teflon tubing to the bottom of the hollow rod. Prior to inserting the Teflon tubing the lowermost 6 inches of the Teflon tube will be perforated at several locations by notching the sides of the tube with a clean razor blade. A #2/16 Lonestar sack sand will then be added to the annular space between the hollow rod and the Teflon tube as the hollow rod is withdrawn from the ground until the lowermost 8 inches of the hole is filled with sand. Granular bentonite (with grains the size of kitty litter) will be placed in the annular space above the sand to the ground surface. The bentonite will be hydrated and the temporary well will be undisturbed for a minimum of 30 minutes prior to purging for sample collection to allow soil gas equilibration.

Prior to purging the soil gas from the temporary soil gas sampling well, the sample canister will be checked for vacuum with a vacuum gauge, followed by a 10 minute leak check of the sampling manifold. The leak check will be performed by closing the valve located between the filter and the pressure gauge and opening the purge canister and recording the manifold system vacuum (see Figure 5 for a picture of a typical manifold). No purge testing will be done because no mobile laboratory will be at the site. A default of three purge volumes will be purged prior to sample collection. All purge volume calculation information will be provided in the report documenting field activities. Following successful verification of the manifold leak check, the three purge volumes will be purged.

One purge volume is calculated as the volume of the tubing interior plus the volume of the sand interval of the borehole.

The tubing interior volume is calculated as follows.

V tubing = pi X (r X r) X h, where pi = 3.14, r = 0.187 in./2, and h = 7 ft.

V tubing = 3.14 X (0.0935 X 0.0935) X (7 ft. X 12 in./ft.) = 2.31 cubic inches.

The sand interval volume is calculated as follows.

V sand interval = pi X (r X r) X h X porosity, where pi = 3.14, r = 1.0 in./2, h = 8 in., and porosity = 0.35.

V sand interval = 3.14 X (0.5 X 0.5) X 8 in. X 0.35 = 2.20 cubic inches.

The total volume for one purge volume is V tubing + V sand interval, where

V total = 2.31 cubic inches + 2.20 cubic inches = 2.51 cubic inches.

To convert to cubic centimeters,

V total = 2.51 cubic inches X 16.39 cubic centimeters/cubic inches = 41.14 cubic centimeters.

The total volume to be purged is 3 purge volumes.

V purge total = 41.14 cubic centimeters X 3 = 123.42 cubic centimeters.

The flow controller has a nominal flow rate of 200 cubic centimeters per minute.

The purge time is calculated as follows.

T purge = 123.42 cubic centimeters/200 cubic centimeters per minute = 0.62 minutes.

Converting the purge time to seconds, 0.62 minutes X 60 seconds/minute = 37 seconds.

Following completion of purging 3 purge volumes, the valve to the purge canister will be closed and a tracer gas (2-Propanol) will be placed in a dish adjacent to the purge canister and a clear Rubbermaid bin will be placed over the top of the temporary well, the sampling manifold, and the 1-liter sample canister. The vapor concentration of the 2-Propanol will be monitored with a photoionization detector until 2-Propanol vapor concentrations appear to have equilibrated. The Rubbermaid bin will then be temporarily and partially lifted long enough to open the sample canister valve and the bin will then be replaced over the sampling equipment and the 2-Propanol vapor concentrations will then again be monitored with the PID. Once the vacuum for the sample canister decreases to 5 inches of Mercury, the Rubbermaid lid will be removed and the sample canister valve closed.

One duplicate soil gas sample will be collected into a one-liter Summa canister using procedures described above immediately after the collection of one original sample. The void space and tubing will not be purged of three purge volumes prior to collection of the duplicate sample.

Following soil gas sample collection, the soil gas samples will be stored in a box and promptly shipped to the laboratory for extraction and analysis. The requested laboratory analysis will include the tracer gas 2-Propanol. Soil gas sampling will not be performed during or following a precipitation event. Chain of custody procedures will be observed for all sample handling.

All drilling rods and associated drilling fittings will be cleaned with an Alconox solution wash and clean water rinse. New Teflon tubing will be used at each sample collection location. Clean, unused vacuum gages and stainless steel tee and valve assemblies will be used at each sample collection location. Following soil gas sample collection the Teflon tubing will be capped with a Swage lock blank fitting and the temporary well left in place for use during remediation feasibility testing. Upon completion of the remediation feasibility testing, The Teflon tubing will be pulled from each temporary soil gas sampling well and a 1-inch diameter solid steel rod will be driven through the bentonite and sand to a total depth of 5 feet. The solid steel rod will then be removed, and the borehole filled with neat cement.

Well Installation

One 4-inch diameter extraction well (EW1) and one 1-inch diameter air sparging well will be installed at the locations shown on Figures 3 and 4. TPH-G and benzene groundwater isoconcentration contours at the 15 or 20-foot depth are shown in Figures 3 and 4, respectively, and at the 36 foot depth in Figures 6 and 7, respectively. Geologic cross sections A-A' and B-B' showing TPH-G and benzene in groundwater are attached as Figures 8 and 9, respectively. A copy of the B16 soil conductivity log is also attached with this work plan. The water table shown in Figures 8 and 9 is approximated at a depth of 5 feet below the ground surface, based on depth to water level measurements in site vicinity groundwater monitoring wells MW1 through MW3 (see Table 1 of P&D's Groundwater Monitoring and Sampling Report dated April 14, 2008).

Review of the B16 soil conductivity log shows that a sand body is present between the depths of approximately 31 to 35 feet, and that approximately 15 feet of silty material overlies the sandy body and approximately 30 feet of silty material underlies the sandy body. Review of the TPH-G and benzene isoconcentration contours on Figures 3, 4 and 6 through 9 shows that TPH-G concentrations exceeding 1,000 ug/L in groundwater are limited horizontally in shallow groundwater to within approximately 30 feet of the proposed extraction well, and based on the groundwater grab samples from B10 and B16 and the B16 soil conductivity log, TPH-G concentrations exceeding 10,000 ug/L in groundwater is limited vertically to within approximately 40 feet of the ground surface. Similarly, benzene concentrations exceeding 1,000 ug/L in groundwater are limited horizontally in shallow groundwater to within approximately 15 feet of the proposed extraction well, and based on the groundwater grab samples from B16 and the B16 soil conductivity log benzene concentrations exceeding 1,000 ug/L in groundwater is limited vertically to within approximately 20 feet of the ground surface.

Based on the B16 soil conductivity log and the interpreted depth of TPH-G and benzene in groundwater, the groundwater and soil vapor extraction well (EW1) will be installed to a depth of 20 feet below the ground surface, and the air sparge well (ASP1) will be installed to a depth of 35 feet. EW1 and ASP1 are shown on Figures 8 and 9.

Well EW1 will be drilled with a truck-mounted hollow stem auger drill rig and 8-inch outside diameter hollow stem augers. Soil samples will be collected at 5-foot intervals for lithologic logging purposes using a California modified split-spoon sampler driven by a 140 pound hammer falling 30 inches. Blow counts will be recorded. No soil samples will be retained for laboratory analysis. The well will be constructed to a total depth of 20 feet below the ground surface, and will consist of 4-inch diameter Schedule 40 PVC pipe with the bottom 15 feet constructed of 0.020-inch factory slot screen. The well screen will be surrounded with #2/16 washed sack sand to a height of one foot above the top of the screen. Bentonite pellets will be placed in the borehole above the filter sand to a height of one foot above the sand. The remaining annular space will be filled with neat cement grout to approximately one foot below the ground surface.

Similarly, air sparging point ASP1 will be drilled with a truck-mounted hollow stem auger drill rig and 6-inch outside diameter hollow stem augers. Soil samples will be collected at 5-foot intervals for lithologic logging purposes using a California modified split-spoon sampler driven by a 140 pound hammer falling 30 inches. Blow counts will be recorded. No soil samples will be retained for laboratory analysis. The air sparging point will be constructed to a total depth of 35 feet below the ground surface, and will consist of 1-inch diameter Schedule 40 PVC pipe with the bottom 2 feet constructed of 0.020-inch factory slot screen. The well screen will be surrounded with #2/16 washed sack sand to a height of one foot above the top of the screen. A bentonite slurry will be placed in the borehole above the filter sand using a tremie pipe to a height of one foot above the sand. The remaining annular space will be filled with neat cement grout to approximately one foot below the ground surface.

The tops of the wells will be covered with traffic-rated locking well vaults. All drilling and sampling equipment will be steam cleaned or washed with an Alconox solution followed by a clean water rinse prior to use in each borehole. Soil and water generated during well and air sparging point installation will be stored in labeled 55-gallon steel drums and stored at the site pending appropriate disposal.

Well Development

At least 48 hours after construction of the wells, the wells will be developed by surging and overpumping until the water from the wells is relatively clear. Prior to development, the depth to water in the wells will be measured using an electric water level indicator to the nearest 0.01 feet. Water discharged from the wells during development will be stored in drums at the site pending appropriate disposal.

Remediation Feasibility Evaluation

Following completion of soil gas sample collection remediation feasibility will be evaluated. Pressure transducers will be installed in wells MW1 through MW3 and EW1 with air-tight caps and magnehelic gages at each wellhead to evaluate changes in water levels associated with groundwater pumping and changes in subsurface air pressure associated with vapor extraction at well EW1 and air sparging at ASP1. Similarly, the top of the Teflon tubing for the temporary soil gas sampling wells SG1 through SG4 will also be fitted with magnehelic gages to evaluate changes in subsurface air pressure.

A submersible pump will be installed in extraction well EW1 for groundwater extraction and a trailer-mounted liquid ring vacuum pump with a thermal oxidation unit will also be connected to the top of EW1 for vapor extraction. Groundwater pumping will be performed at EW1 using the submersible pump for one day and the drawdown in EW1 and the surrounding groundwater monitoring wells will be recorded using data loggers connected to the pressure transducers. Groundwater extraction flow rates will be regulated with a gate valve, and will be measured with an in-line flow meter and manually recorded. Groundwater extraction flow rates will be adjusted upwards in a step-wise manner, as necessary, to result in drawdown to near the bottom of the extraction well.

Approximately two hours after groundwater pumping is initiated, vacuum will be simultaneously applied to extraction well EW1 and any measurable vacuum will be periodically monitored and manually recorded in the extraction well and in the surrounding monitoring locations. Vacuum will be increased in a step-wise manner, as necessary, to result in measurable vacuum observations at surrounding observation wells MW1 through MW3, if possible. Vapor extraction flow rates will be periodically manually measured and recorded at the wellhead using a hot wire anemometer, and extracted organic vapor concentrations will be digitally recorded with a Horiba Photoionization Detector (PID) located downstream of the moisture knock-out unit and immediately upstream of the thermal oxidation unit. A printout of the PID values in an EXCEL spreadsheet will be provided from the PID recording device.

One 3-liter air sample will be collected into a Tedlar bag from the inlet to the thermal oxidation unit approximately 5 minutes after the liquid ring vacuum pump is started. Additional 3-liter samples will be collected into Tedlar bags approximately 2 hours and 4 hours after the liquid ring vacuum pump is started. The samples will be stored in a cooler without ice pending delivery to the laboratory. Chain of custody procedures will be observed for all sample handling.

Groundwater extracted from extraction well EW1 will be either stored in a storage tank pending characterization and disposal or will be discharged to the sanitary sewer with any necessary pre-treatment with a permit from EBMUD. Vapors removed from the extraction well will be treated with a thermal oxidizer prior to emission to the atmosphere.

After four hours of vapor extraction, the liquid ring vacuum pump will be shut off and the decrease in vacuum will be periodically monitored and recorded. Groundwater pumping will continue uninterrupted after the vapor extraction is discontinued. Once the measured vacuum in the monitoring locations has returned to near-equilibrium conditions, the magnehilic gages will be converted to measure pressure, and air will be pumped from a compressor into ASP1. Air pressure will be increased in a step-wise manner at pressures of 15, 20 and 25 pounds per square inch. Air flow rates from the compressor will be measured at the air sparging well head using a hot wire anemometer, and air pressure will be monitored at the air sparging well head using a magnehelic gage. Any measurable subsurface pressure will be periodically monitored and manually recorded in the adjacent extraction well and in the surrounding monitoring locations. Air sparging will be performed for up to two hours or until a positive pressure increase is detected in all of the soil gas sampling locations (SG1 through SG4). Once a positive pressure increase is observed at all of the soil gas sampling locations (or two hours of air sparging has elapsed), the air compressor will be shut off and the decrease of positive pressure will be periodically monitored and manually recorded in the adjacent extraction well and in the surrounding monitoring locations.

Arrange for Sample Analysis

All of the soil gas samples will be analyzed at Air Toxics Limited of Folsom California for TPH-G using EPA Method TO-3 and for MBTEX using EPA Method TO-15. The Tedlar bags will be analyzed within 72 hours of sample collection.

Report Preparation

Upon receipt of the laboratory analytical results, a report will be prepared. The report will document soil gas sample collection procedures and sample results, and the remediation feasibility testing and sample results. The report will include a site vicinity map showing the drilling locations, tables summarizing the sample results, recommendations based on the results, and the stamp of an appropriately registered professional.

Should you have any questions, please do not hesitate to contact us at (510) 658-6916.

Sincerely,

P&D Environmental, Inc.

PROFESSIONAL GEOLOGIST
PAUL H. KING
No. 5901
STATE OF CALIFORNIA

Paul H. King
Professional Geologist #5901
Expires: 12/31/09

Attachments: Figure 1 – Site Location Map
Figure 2 – Site Vicinity Map Showing Borehole, Well, and Geologic Cross Section Locations
Figure 3 – Site Vicinity Map Showing TPH-G Concentrations in Groundwater at 15– or 20–Foot Depth
Figure 4 – Site Location Map Showing Benzene Concentrations in Groundwater at 15- or 20-Foot Depth
Figure 5 - Typical Soil Gas Sampling Manifold
Figure 6 – Site Vicinity Map Showing TPH-G Concentrations in Groundwater at 36 – Foot Depth
Figure 7 – Site Location Map Showing Benzene Concentrations in Groundwater at 36- Foot Depth
Figure 8 – Geologic Cross Sections A-A', B-B' Showing TPH-G Concentrations in Groundwater
Figure 9 – Geologic Cross Sections A-A', B-B' Showing Benzene Concentrations in Groundwater
Borehole B16 Soil Conductivity Log

cc: Mr. Daniel Shaw, Cupertino Capital

PHK
0330.W4

FIGURES

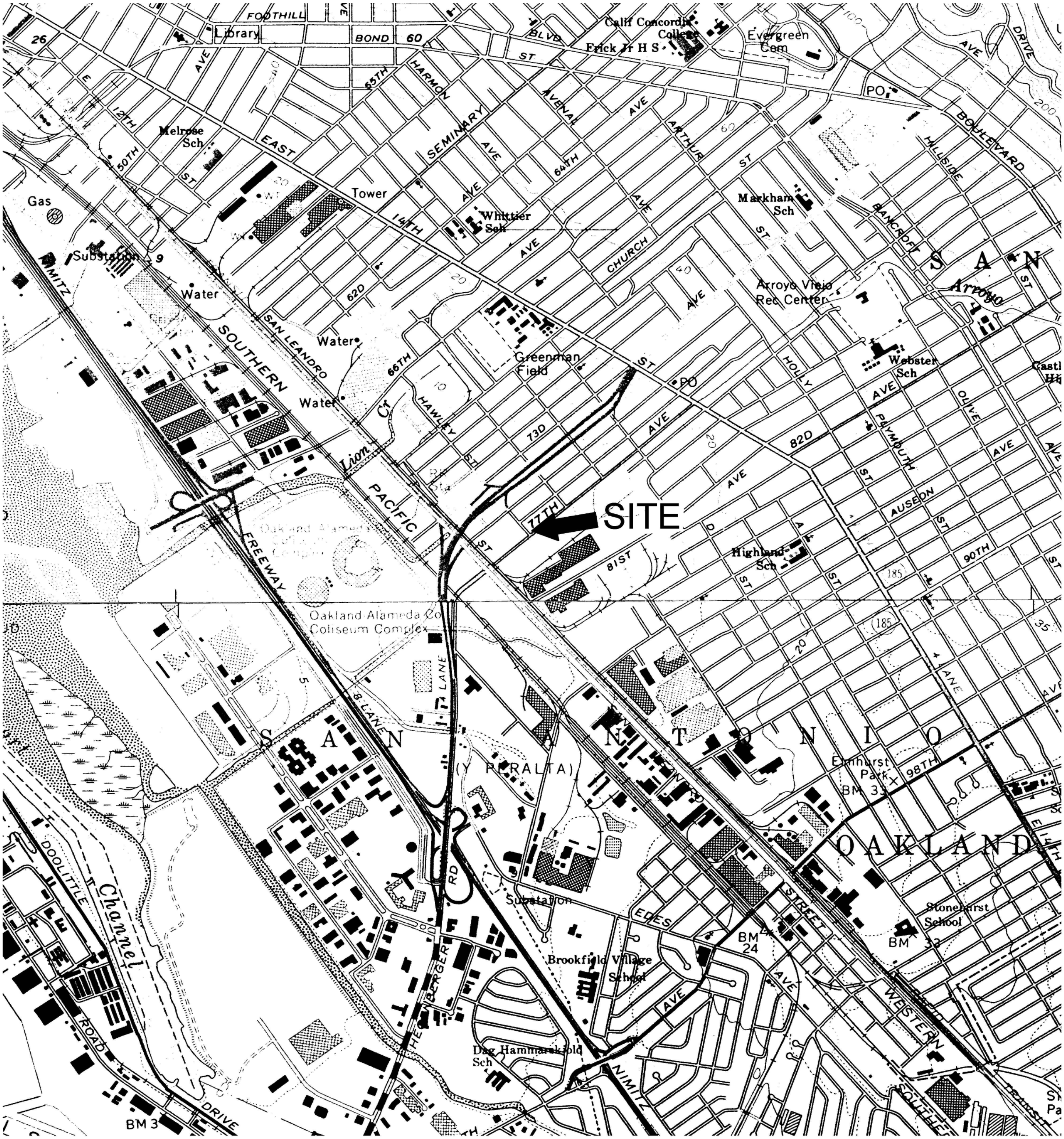

Figure 1
Site Location Map
901 77th Avenue
Oakland, California

N

Base Map prepared by:
U.S. Geological Survey
Oakland East and San Leandro, California
7.5 Minure Quadrangles
Photorevised 1980

P&D Environmental, Inc.
55 Santa Clara Ave., Suite 240
Oakland, CA 94610

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SCALE IN FEET

P&D ENVIRONMENTAL, INC.
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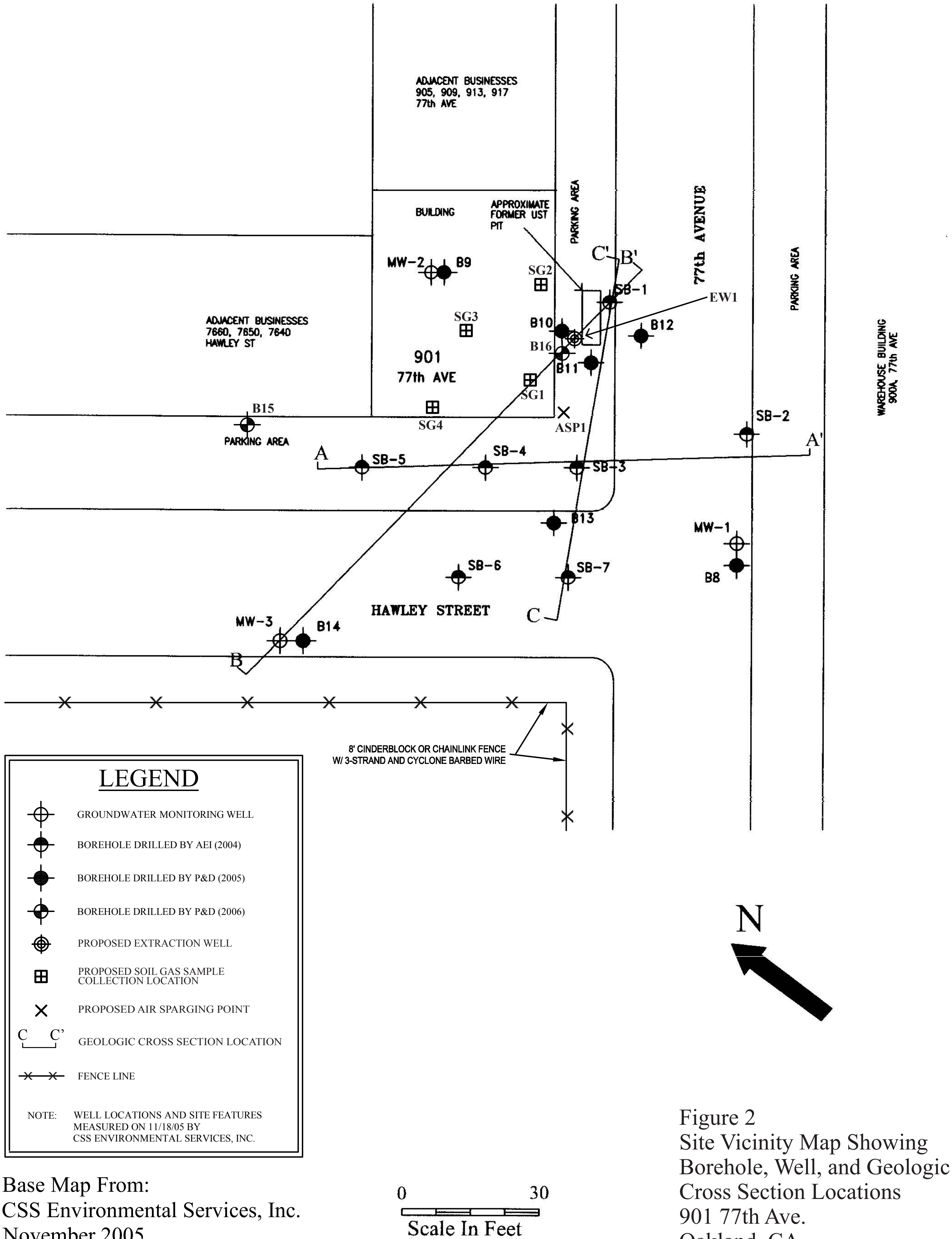

Base Map From:
CSS Environmental Services, Inc.
November 2005

Figure 2
Site Vicinity Map Showing Borehole, Well, and Geologic Cross Section Locations
901 77th Ave.
Oakland, CA

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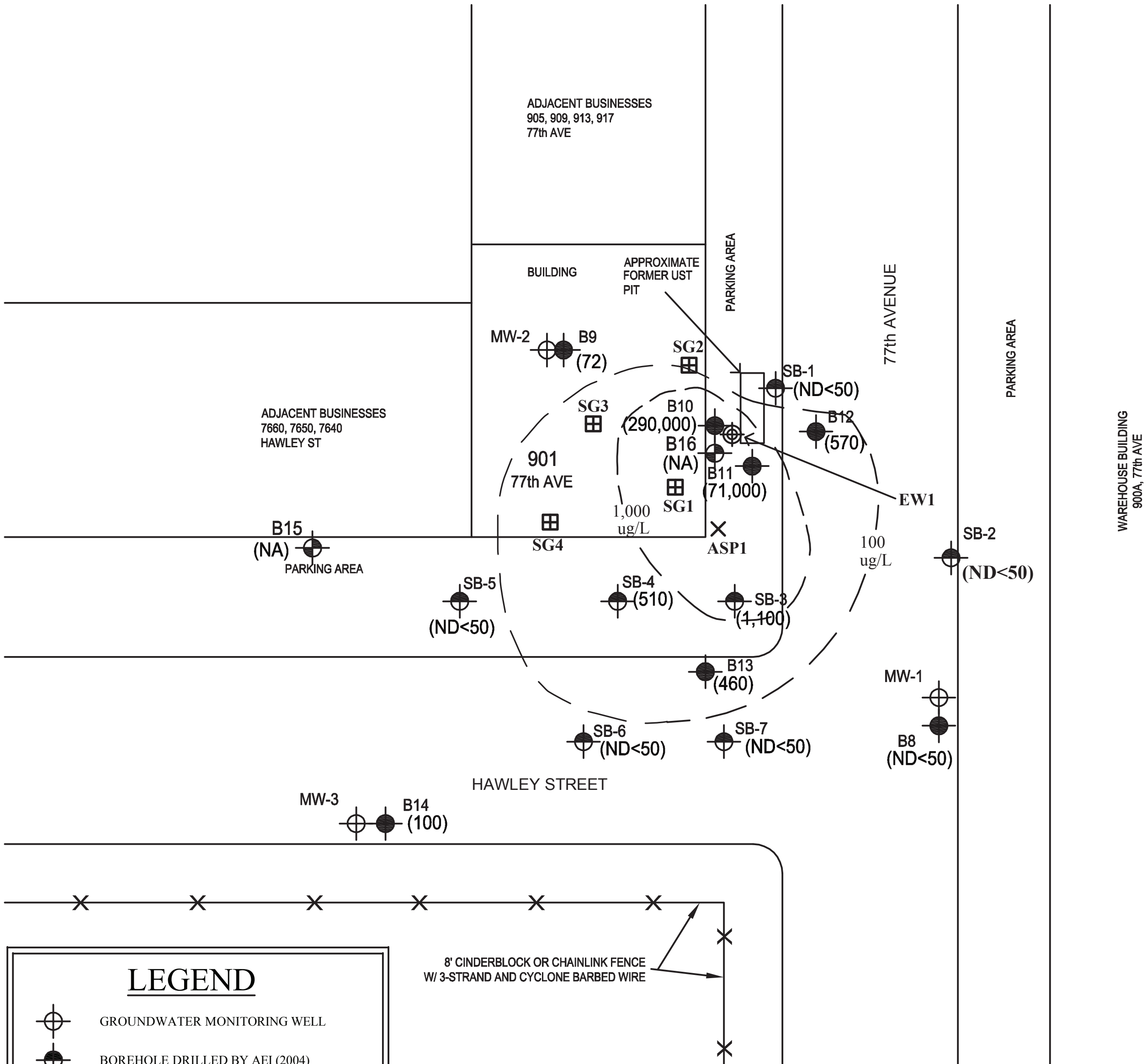
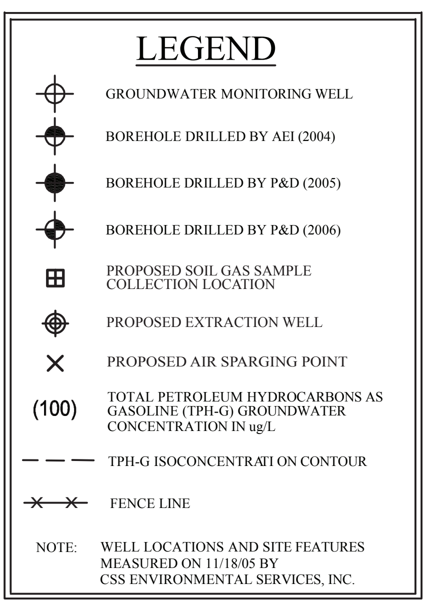
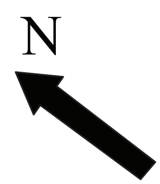
Oakland, CA 94610
(510) 658-6916







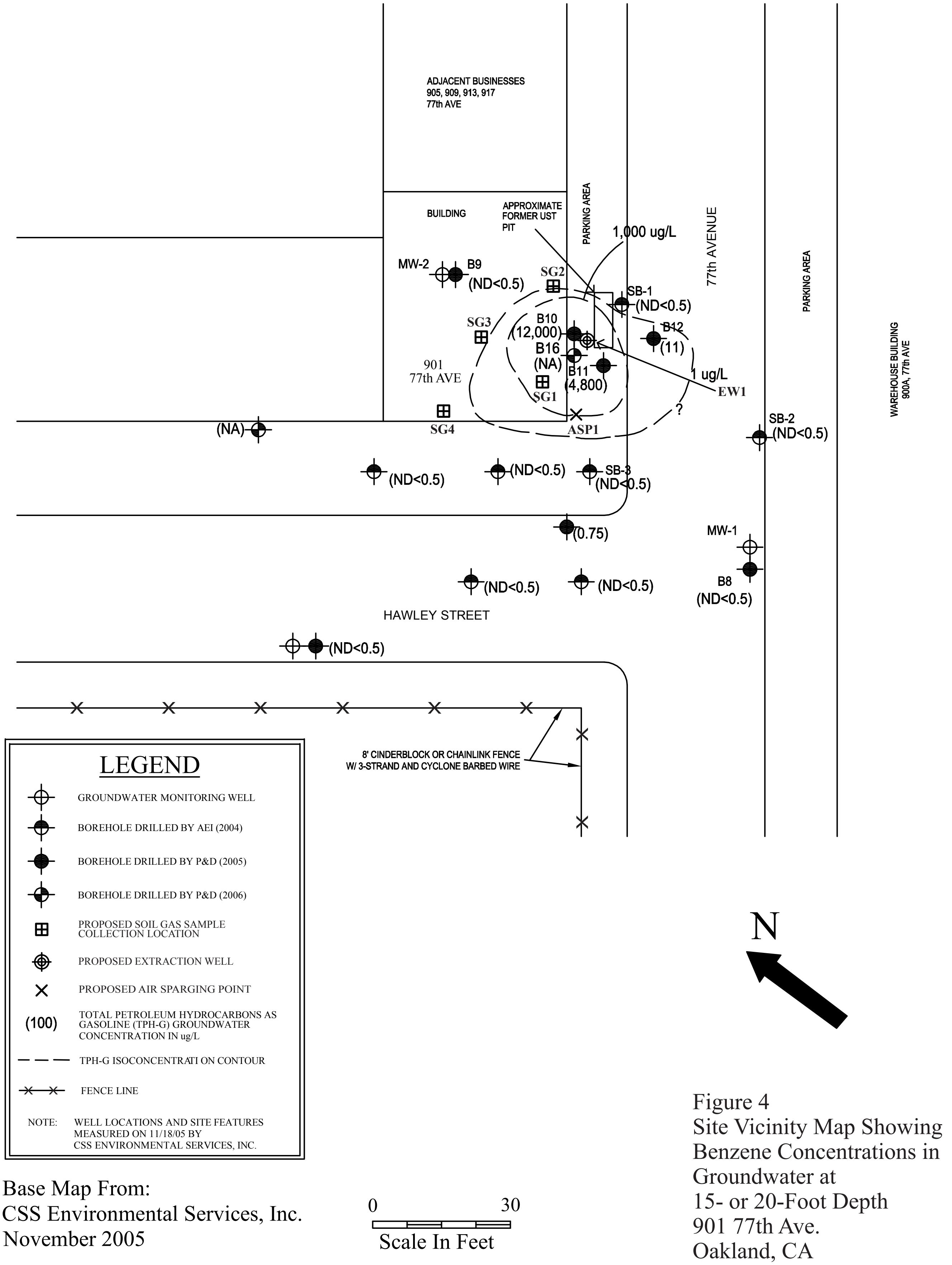
Base Map From:
CSS Environmental Services, Inc.
November 2005

0 30
Scale In Feet

Figure 3
Site Vicinity Map Showing
TPH-G Concentrations in
Groundwater at
15- or 20-Foot Depth
901 77th Ave.
Oakland, CA

P&D Environmental, Inc.

55 Santa Clara Ave, Suite 240
Oakland, CA 94610
(510) 658-6916



Base Map From:
CSS Environmental Services, Inc.
November 2005

Figure 4
Site Vicinity Map Showing
Benzene Concentrations in
Groundwater at
15- or 20-Foot Depth
901 77th Ave.
Oakland, CA

Figure 5 - Typical Soil Gas Sampling Manifold

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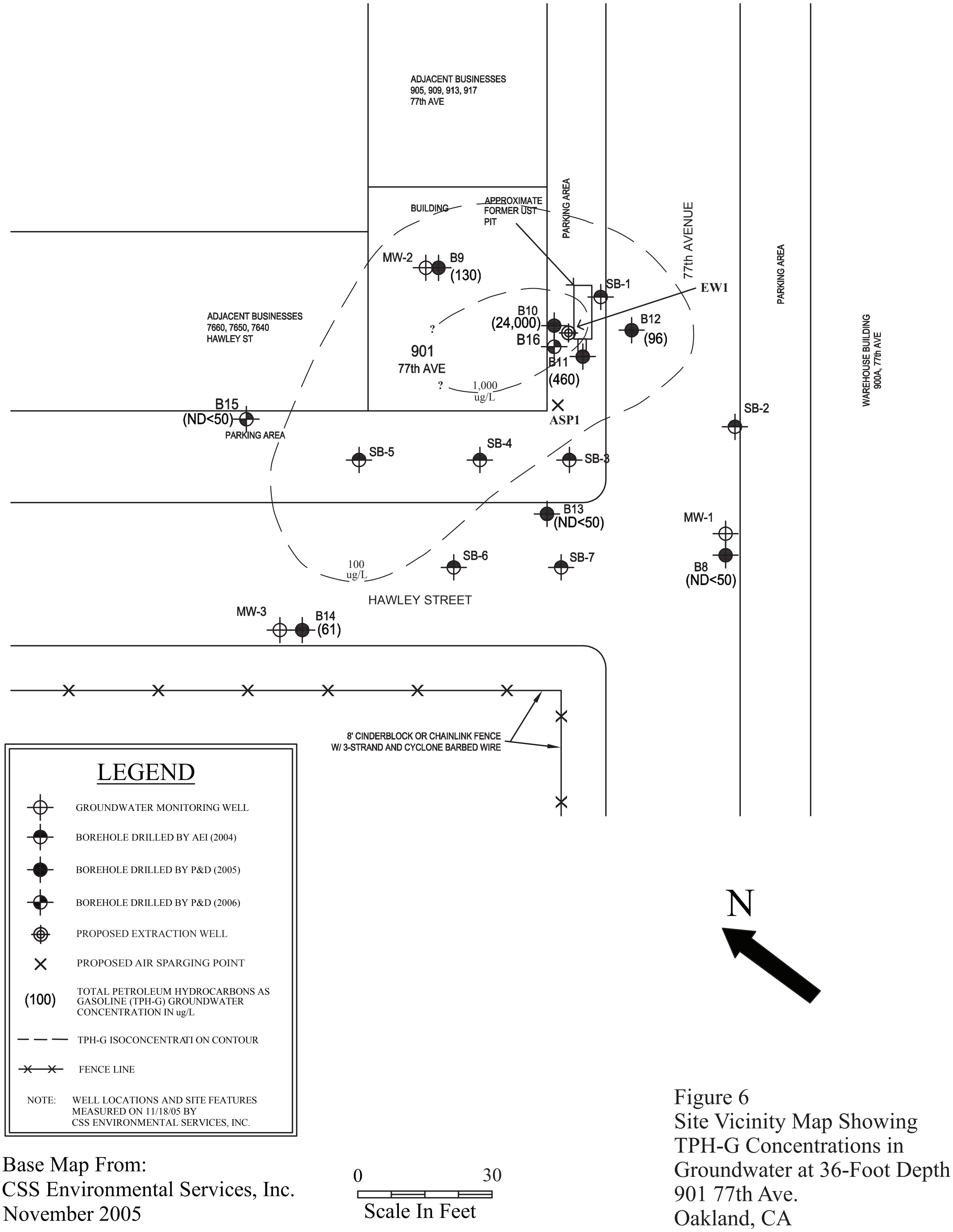

Base Map From:
CSS Environmental Services, Inc.
November 2005

Figure 6
Site Vicinity Map Showing
TPH-G Concentrations in
Groundwater at 36-Foot Depth
901 77th Ave.
Oakland, CA

P&D ENVIRONMENTAL, INC.

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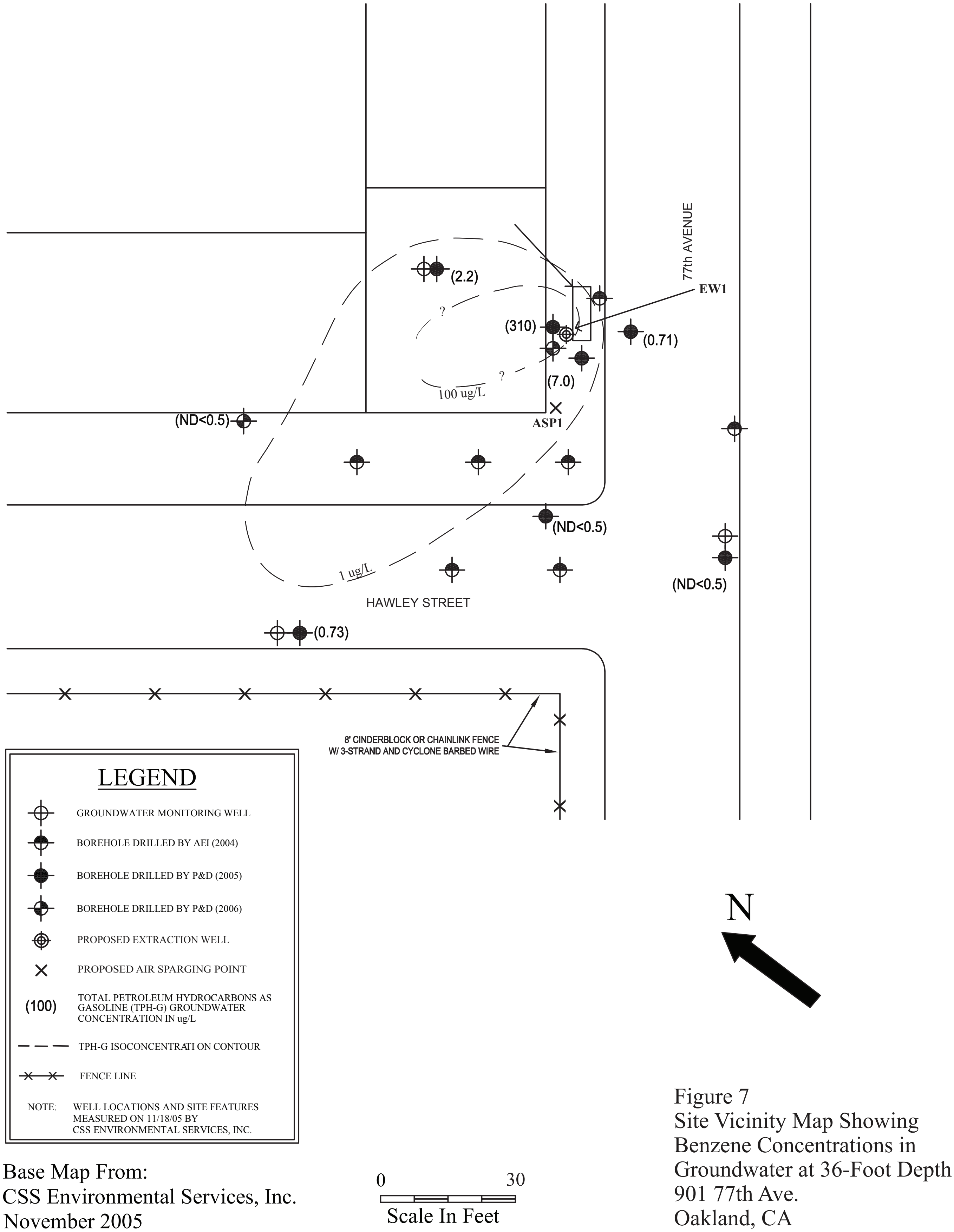
Oakland, CA 94610
(510) 658-6916



Base Map From:
CSS Environmental Services, Inc.
November 2005

Figure 7
Site Vicinity Map Showing
Benzene Concentrations in
Groundwater at 36-Foot Depth
901 77th Ave.
Oakland, CA

P&D ENVIRONMENTAL, INC.
55 Santa Clara Ave, Suite 240
Oakland, CA 94610
(510) 658-6916

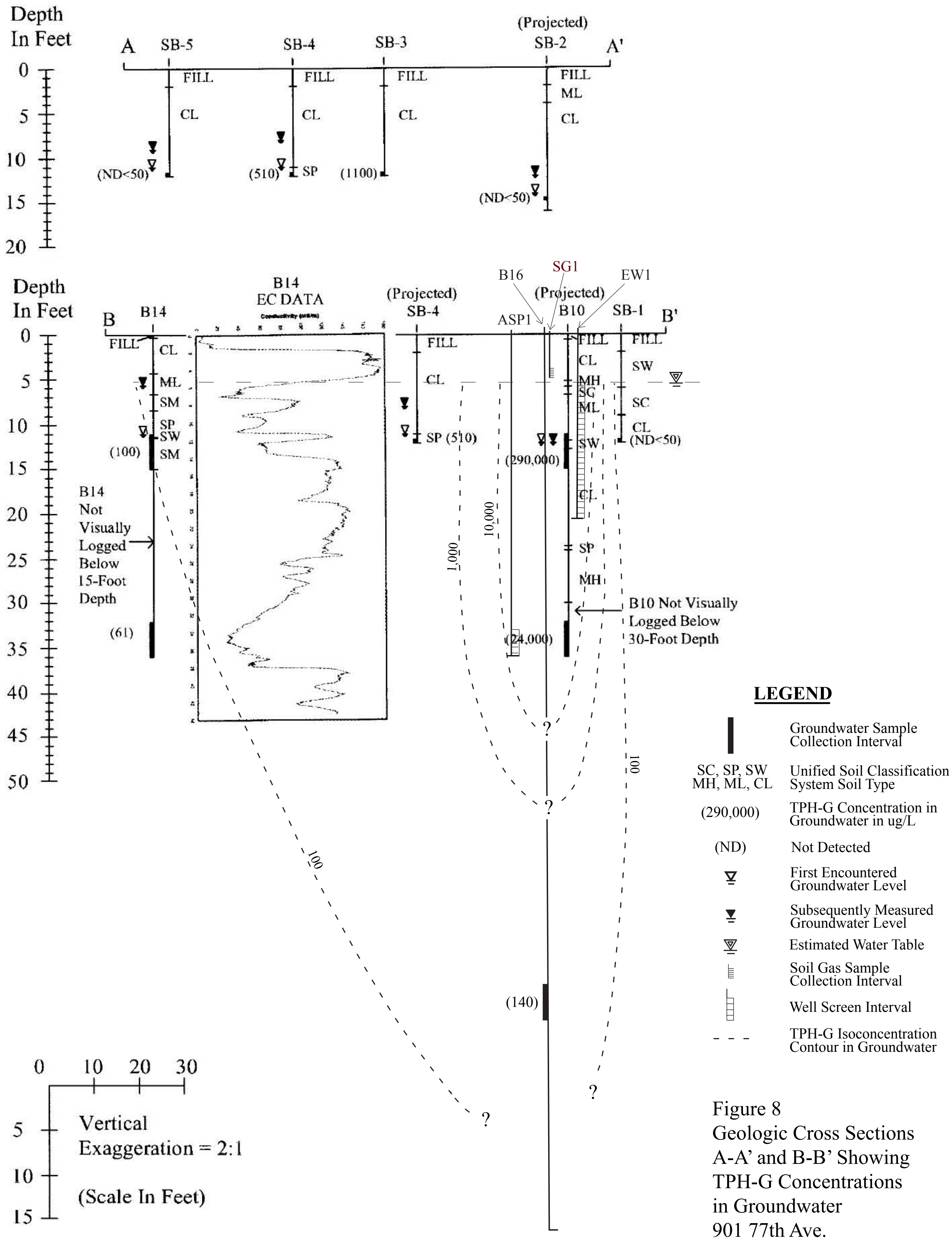


Figure 8
Geologic Cross Sections
A-A' and B-B' Showing
TPH-G Concentrations
in Groundwater
901 77th Ave.
Oakland CA

P&D ENVIRONMENTAL, INC.

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Oakland, CA 94610
(510) 658-6916

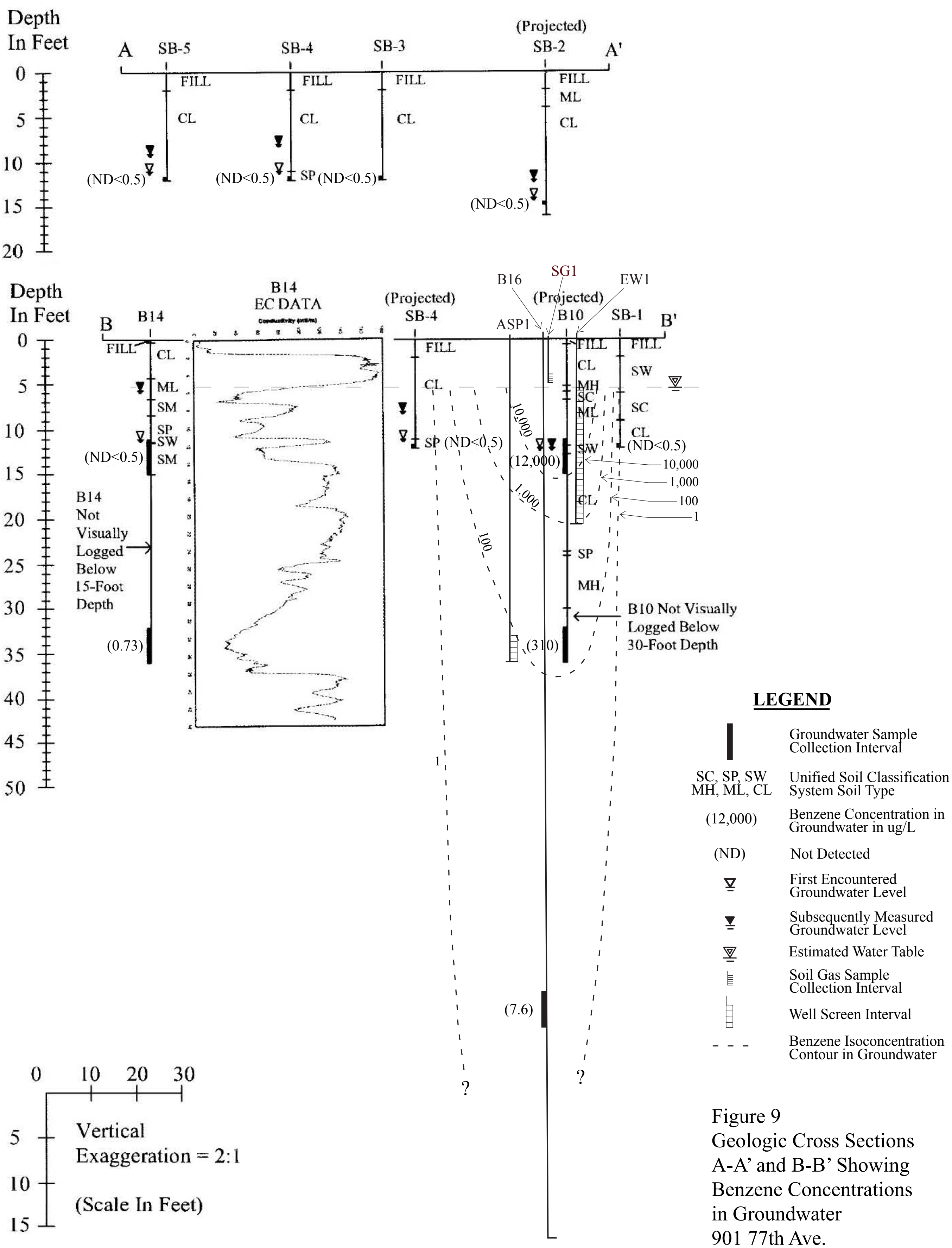

Figure 9
Geologic Cross Sections A-A' and B-B' Showing Benzene Concentrations in Groundwater
901 77th Ave.
Oakland CA

SOIL CONDUCTIVITY LOG

LOG: A:\EC0082.DAT

BOREHOLE B16