CONESTOGA-ROVERS & ASSOCIATES

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www.CRAworld.com

TRANSMITTAL

DATE: May 8, 2012

REFERENCE NO.: 240523

PROJECT NAME: 4212 First Street, Pleasanton

TO: Jerry Wickham
Alameda County Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

RECEIVED
8:07 am, May 15, 2012
Alameda County
Environmental Health

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QUANTITY	DESCRIPTION
1	Air Sparge/Soil Vapor Extraction Pilot Test Work Plan

- ☐ As Requested
- ☐ For Your Use
- ☒ For Review and Comment
- ☐

COMMENTS:
If you have any questions regarding the contents of this document, please call Peter Schaefer at (510) 420-3319.

Copy to:
Denis Brown, Shell Oil Products US (electronic copy)
Douglas E. & Mary M. Safreno (property owners), 1627 Vineyard Avenue, Pleasanton, CA 94566-6389
Danielle Stefani, Livermore-Pleasanton Fire Department, 3560 Nevada Street, Pleasanton, CA 94566-6267
Cheryl Dizon, Zone 7 Water Agency, 100 North Canyons Parkway, Livermore, CA 94551
Clint Mercer (lessee), SC Fuels, 1800 West Katella Avenue, Orange, CA 92867
Aaron O'Brien, Tamalpais Environmental Consultants (electronic copy)

Completed by: Peter Schaefer Signed: Peter Schaefer

Filing: **Correspondence File**

Denis L. Brown
Shell Oil Products US
HSE – Environmental Services
20945 S. Wilmington Ave.
Carson, CA 90810-1039
Tel (707) 865 0251
Fax (707) 865 2542
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Jerry Wickham
Alameda County Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Re: Shell-branded Service Station
4212 First Street
Pleasanton, California
SAP Code 135782
Incident No. 98995840
ACEH Case No. RO0000360

Dear Mr. Wickham:

The attached document is provided for your review and comment. Upon information and belief, I declare, under penalty of perjury, that the information contained in the attached document is true and correct.

If you have any questions or concerns, please call me at (707) 865-0251.

Sincerely,

Denis L. Brown
Senior Program Manager

AIR SPARGE/SOIL VAPOR EXTRACTION PILOT TEST WORK PLAN

SHELL-BRANDED SERVICE STATION
4212 FIRST STREET
PLEASANTON, CALIFORNIA

SAP CODE	135782
INCIDENT NO.	98995840
AGENCY NO.	RO0000360

Prepared by:
Conestoga-Rovers & Associates

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MAY 8, 2012
REF. NO. 240523 (12)
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(Following Text)

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1.0 INTRODUCTION

Conestoga-Rovers & Associates (CRA), on behalf of Equilon Enterprises LLC dba Shell Oil Products US (Shell), prepared this *Air Sparge/Soil Vapor Extraction Pilot Test Work Plan* (work plan). CRA's October 24, 2011 *Corrective Action Plan* recommended monitored natural attenuation as the final remediation option for the site; however, Alameda County Environmental Health's (ACEH's) January 5, 2012 letter rejected that proposal and requested a work plan for dual-phase extraction (DPE) and air sparging (AS) pilot tests and for a soil vapor investigation. CRA submitted a work plan for DPE pilot testing on April 12, 2012. Per CRA's April 11, 2012 telephone conversation with ACEH, CRA is submitting this AS pilot test work plan under a separate cover.

CRA's January 31, 2011 *Data Review and Subsurface Investigation Work Plan* included an evaluation of data from Delta Consultants' (Delta's) January 2010 AS pilot test. CRA noted that the data was at best inconclusive, and likely demonstrated that AS is infeasible due to the following: first, a lack of groundwater mounding occurred during the test; and second, AS flow rates acceptable for successful AS only occurred at the maximum allowable applied pressure. CRA also found that high sparging pressure likely created a preferential pathway between sparge well AS-10 and monitoring well MW-4. However, at the request of the ACEH, CRA will conduct this second pilot test to determine if air sparge/soil vapor extraction (AS/SVE) can volatilize dissolved-phase hydrocarbons and capture the volatilized vapors, and increase the dissolved oxygen levels in groundwater and increase the rate of bioremediation. The SVE component of the system will also capture and treat soil vapors in the vadose zone. This test will allow CRA to determine if a full scale AS/SVE system is feasible and effective at this site.

2.0 SITE BACKGROUND

This Shell-branded service station is located on the southeastern corner of the First Street and Vineyard Avenue intersection in a mixed residential and commercial area of Pleasanton (Figures 1 and 2). The site layout includes three current fuel underground storage tanks (USTs), a former fuel UST complex, two fuel dispenser islands, a former waste oil UST, and a station building.

A summary of previous work performed at the site and additional background information is presented in Appendix A.

2.1 SITE GEOLOGY AND HYDROGEOLOGY

2.1.1 REGIONAL GEOLOGY AND HYDROGEOLOGY

According to the *Evaluation of Ground Water Resources: Livermore and Sunol Valleys* (California Department of Water Resources [DWR] Bulletin No. 118-2, June 1974), the site is located in the Bernal sub-basin of the Livermore Valley groundwater basin. Streams draining Livermore Valley merge in the Bernal sub-basin and then leave the valley as Arroyo de la Laguna.

Sediments below the site are inter-layered clays, silts, and sands with occasional gravel lenses to the total depth explored of approximately 108 feet below grade (fbg). DWR Bulletin No. 118-2 indicates that surface soils extend to 110 fbg in the area of the site and that water-bearing materials below these shallow sediments are comprised of the valley-fill materials. These materials are present as a sequence of sandy gravel and sandy clayey gravel aquifers up to 100 feet in thickness. The aquifers are separated by silty clay confining beds up to 30 feet in thickness.

2.1.2 SOIL TYPES

Available exploratory boring logs are included in Appendix B. Well and historical soil boring and soil sample locations are shown on Figures 2 and 3.

Shallow soils consist of interbedded layers of silts and clays from the surface to approximately 15 fbg, underlain by inter-layered sands, silts, and clays to approximately 30 fbg. Shallow groundwater occurs just below this sandy layer within a relatively low permeability zone at a depth of approximately 31 fbg. Deeper soils consist of silts and clays with sand and gravel inter-beds to approximately 95 fbg underlain by sands to the total depth explored of 108 fbg.

2.1.3 GROUNDWATER DEPTH AND FLOW DIRECTION

The depth to first-encountered groundwater typically ranges between 31 to 34 fbg. A groundwater contour map for the fourth quarter 2011 groundwater monitoring event is included as Figure 4. As illustrated on Figure 4, the groundwater flow direction for the site is predominantly toward the north-northeast, which is consistent with historical groundwater flow direction.

After further data review, it appears that there may be a confining layer situated between 15 and 20 fbg near the former UST complex, which may have trapped infiltrated surfaced water in the former UST complex and adjoining soil horizon.

2.1.4 GROUNDWATER QUALITY ASSESSMENT

The California State Water Resources Control Board's Geotracker website file for the environmental case at this site states that the groundwater at this site is considered a "drinking water supply"; however, neighboring properties receive potable water from the City of Pleasanton.

2.2 PREFERENTIAL PATHWAY ANALYSIS

Based on the depth to water which typically ranges between 31 to 34 fbg, on- and off-site utilities and infrastructure are not likely to be preferential pathways for groundwater flow.

2.3 SENSITIVE RECEPTORS

2.3.1 WELL SURVEY

In May 2004, Toxichem Management Systems, Inc. (Toxichem) conducted a well survey which identified a municipal well (3S/1E-21B1) and a well of unknown use (3S/1E-21B) located approximately 900 feet northeast of the site and another municipal well (3S/1E-16P1) located approximately 1,200 feet north of the site. The locations of the wells could not be field verified.

In September 2005, Delta conducted a well survey which located an old water tower in the area of the wells identified in Toxichem's 2004 well survey and identified a water supply well (3S/1E-21C1) and an irrigation well (3S/1E-21C4) located approximately 1,000 feet northwest of the site, and another irrigation well in Kottinger Park located approximately 800 feet east of the site.

Given the relative distance from the site to the municipal wells, it is unlikely that petroleum hydrocarbons originating from the site will reach these wells.

2.3.2 SURFACE WATER

Arroyo del Valle, a creek located approximately 1,130 feet north of the site, is the closest potential surface water receptor to the site. Surface water in Arroyo del Valle flows to the west at a depth of approximately 20 feet below the surrounding grade. Based on the typical depth to water which ranges between 31 to 34 fbg and the distance to Arroyo del Valle, it is unlikely that the creek will be impacted from petroleum-based hydrocarbons and oxygenates that may have been released from the site.

3.0 PILOT TEST WELL INSTALLATION WORK PLAN

As stated in Section 1.0 of this document, CRA found that the AS/SVE pilot test conducted in January of 2010 was inconclusive in determining if AS/SVE could be an effective remedial approach at this site. Air sparge flow into well AS-10 likely short-circuited to well MW-4. Therefore, CRA does not intend to re-use AS-10 for testing. CRA proposes installing one air sparge well (AS-1) and one vapor extraction well (SVE-5) at the locations shown on Figure 2. AS-1 will be the sparging well and SVE-5 will be used as a vapor extraction well during the proposed AS/SVE pilot test. Well SVE-5 is proposed, in lieu of using existing well SVE-4, which has a screened interval completed in clay. The clay soil will likely inhibit vapor recovery. Furthermore, no hydrocarbons were field-measured in any screened soil samples, as shown on the boring log for SVE-4, indicating there is no to little hydrocarbon in soil immediately around this well.

A CRA geologist will supervise the drilling and describe encountered soils using the Unified Soil Classification System and Munsell Soil Color Charts. The scope of work described in this section will be performed under the supervision of a registered geologist.

3.1 PERMITS

CRA will obtain drilling permits from the Zone 7 Water Agency.

3.2 HEALTH AND SAFETY PLAN (HASP)

CRA will prepare a HASP to protect site workers. The plan will be kept on site during field activities and will be reviewed and signed by each site worker.

3.3 UNDERGROUND UTILITY LOCATION

CRA will mark proposed drilling locations and the locations will be cleared through USA prior to drilling. CRA will also subcontract a private utility locator to identify subsurface obstacles prior to drilling.

3.4 SOIL BORING & WELL CONSTRUCTION

Borings AS-1 and SVE-5 will be drilled using hollow-stem-auger (HSA) drilling equipment. Boring AS-1 will be drilled to a depth of 48 fbg. Extraction well SVE-5 will be drilled to a depth of approximately 42 fbg.

Well AS-1 will be completed to a depth of 48 fbg. The screen interval will be from 44 to 46 fbg with a 2-foot sump at the bottom. Air sparge well AS-1 will be constructed using 2-inch diameter Schedule 40 poly vinyl chloride (PVC) casing. The screened interval will be 2-inch diameter Schedule 40 PVC casing with 0.010-inch slotted screen. The filter pack of #00 silica sand (or equivalent) will be placed from the bottom of the injection point to 1 foot above the screen, followed by a 5-foot bentonite seal to approximately 38 fbg and cement grout to grade. Actual injection well construction details will be based on soil types and field conditions encountered during drilling. The injection well will be secured with a locking cap under a traffic-rated well box.

Well SVE-5 will be completed to a depth of 42 fbg and constructed using 4-inch diameter Schedule 40 PVC casing with 0.020-inch slotted screen. The wells will be screened from approximately 20 to 40 fbg with a 2-foot sump at the bottom. The filter pack will be placed from the bottom of the well screen up to 1 foot above the top of the well screen, followed by a 2-foot-thick bentonite seal, and cement grout to grade. Actual well construction details will be based on field conditions during drilling. The extraction well will be secured with a locking cap under a traffic-rated well box.

3.5 SOIL SAMPLING

Soil samples from the borings will be collected at 5-foot intervals for soil description, possible chemical analyses, and organic vapor screening with a photo-ionization detector (PID) in the vadose zone. Soil samples in the saturated zone will be logged continuously to the bottom of each boring. The boring for proposed well AS-1 will be

sampled continuously from the surface to the bottom of the boring to assist in targeting acceptable soil for placement of the screened interval. CRA will prepare an exploratory boring log for each well, and PID measurements will be recorded on the boring logs. Soil samples designated for chemical analyses will be retained in stainless steel or brass sample tubes. The tubes will be covered on both ends with Teflon® sheets and plastic end caps. Soil samples will be labeled, entered onto a chain-of-custody record, and placed into a cooler with ice for transport to a State-of-California-certified laboratory for analyses. A standard 2-week turn-around time will be requested for laboratory results.

3.6 SOIL ANALYSIS

All laboratory samples will be analyzed by Test America Laboratories, Inc., a State-of-California-certified laboratory. Selected soil samples will be analyzed for total petroleum hydrocarbons as gasoline (TPHg), benzene, toluene, ethylbenzene, and total xylenes (BTEX), methyl tertiary butyl ether (MTBE), and tert-butyl alcohol (TBA) by EPA Method 8260B.

3.7 WELL DEVELOPMENT

Blaine Tech Services, Inc. (Blaine) of San Jose, California will develop well AS-1 at least 72 hours after installation is completed.

3.8 WELLHEAD SURVEY

Following well installation, a licensed surveyor will survey the latitude and longitude of the wells to NAD83, and well head elevations to mean sea level in compliance with AB2886 (Geotracker) requirements.

4.0 AS/SVE PILOT TEST WORK PLAN

The primary objective of the AS/SVE pilot test is to determine if AS/SVE is a viable remedial alternative to mitigate the residual concentrations of petroleum hydrocarbons observed in soils near the soil-groundwater interface at the southeast corner of the site and to obtain design information for a potential AS/SVE system.

4.1 AS/SVE PILOT TEST OBJECTIVES

The specific objectives of the AS/SVE pilot test are to:

1. Determine if sufficient air can be delivered and properly distributed through the impacted area,
2. Determine the maximum air injection flow rate,
3. Determine if SVE concentrations increase after AS begins,
4. Determine if hydrocarbons volatilized through AS can be effectively captured through SVE, and
5. Determine the magnitude and sustenance of hydrocarbon vapor concentrations from the vapor extraction well during sparging.

4.2 INJECTION AND EXTRACTION EQUIPMENT

CRA will use a Mako Industries, Ltd AS trailer (AS unit) with a rotary screw air compressor capable of approximately 28 cubic feet per minute (cfm) to a maximum pressure of 125 pounds per square inch (psi) to conduct the AS test. CRA will use a trailer-mounted thermal catalytic oxidizer (SVE unit) with an adequately sized blower for the expected conditions for SVE and extracted vapor abatement. A trailer-mounted portable diesel generator and a propane tank will be used to power the AS and SVE units. An on-site helium tank will be used to introduce helium into the injection wells through a pre-constructed manifold.

4.3 PERMITS

As required, CRA will notify the Bay Area Air Quality Management District (BAAQMD) regarding the proposed AS/SVE test. The SVE unit will abate the extracted soil vapors to comply with the BAAQMD requirements.

The Regional Water Quality Control Board - San Francisco Bay Region (RWQCB) does not have a General Order for Waste Discharge Requirements (WDR) for In-Situ groundwater remediation. The RWQCB only requires registration of the injection wells with the United States Environmental Protection Agency (USEPA) Region 9 Water

Program via their online form[1]. CRA will complete the registration process. CRA will submit a written notification to the ACEH prior to commencing the AS/SVE pilot test field activities.

4.4 HASP

Pursuant to Shell and CRA requirements, CRA will prepare a comprehensive HASP to protect site workers during the pilot test activities. The plan will be kept onsite during field activities and will be reviewed and signed by each site worker.

4.5 DATA COLLECTION EQUIPMENT

CRA will measure field vapor concentrations with a Horiba Model MEXA554J organic vapor analyzer. Vapor samples will be collected in 1-liter Tedlar® bags using a Gast rotary-vane sample pump. Helium concentrations will be assessed using a Marks product inline helium detector or equivalent. The helium detector will be able to detect multiple ranges of helium concentrations either with separate helium meters or calibration settings. Air rotameters will be mounted on the AS trailer manifold for measuring the injected airflow. Induced vacuums and pressures will be measured in adjacent wells with a Dwyer digital manometer and depth to groundwater (DTW) with a Solinst water level meter. YSI 600 XLM pressure transducers will measure pH, dissolved oxygen (DO), oxygen reduction potential (ORP), conductivity, temperature, and DTW. In-Situ Mini-Troll pressure transducers will be used to monitor depth-to-groundwater changes.

4.6 PILOT TEST WELLS

CRA will utilize proposed well AS-1 for AS and proposed well SVE-5 for vapor recovery (Figure 2). CRA will utilize the wells proposed in the DPE pilot test work plan (P-2 EW-1, and EW-2) and existing wells MW-4, SVE-3, and SVE-4 as observation wells. SVE-5 is being installed as an extraction well for this pilot test. It will also be of possible future use to mitigate soil vapors if a full scale AS/SVE system is built. CRA has eliminated proposed well P-3 from the construction schedule outlined in the DPE pilot test work plan. Well SVE-5 will take the place of well P-3 and will be screened so that it can be used as both a SVE for AS pilot testing and as a DPE pilot test observation well.

[1] http://www.epa.gov/region9/water/groundwater/injection-wells-register.html

The sparge, extraction, and observation well diameters, screen intervals, and estimated distance from proposed sparge will AS-1 are presented in the table below.

Well ID	*Well Diameter (inches)*	*Screen Interval (fbg)*	*Estimated Distance from AS-1 (feet)*
EW-1	4	10-20	21
EW-2	4	30-40	18
MW-4	4	37-47	16
P-2	2	10-40	15
SVE-3	4	20-30	20
SVE-4	4	20-30	13
SVE-5 (proposed)	4	20-40	15

4.7 AS/SVE TEST PROCEDURE

Prior to testing, CRA will collect vapor samples from wells EW-1, P-2, SVE-3, SVE-4, and SVE-5 to establish background hydrocarbon vapor concentrations. CRA will also collect static depth-to-groundwater measurements from the test wells prior to testing.

The test will begin with SVE from well SVE-5. After stabilizing the SVE system for approximately one hour, AS will begin in AS-1. Air will be injected into well AS-1 using an air compressor with injection pressure and air flow monitoring at the manifold.

The test will begin with an approximate injection flow rate of 5 actual cubic feet per minute (acfm) and be incrementally increased (stepped) on approximately an hourly interval to the highest flow rate achievable without going above the calculated maximum injection pressure of 44.8 pounds per square inch (psi), which is established as 75 percent of the overburden pressure. The overburden pressure was calculated as follows:

The hydrostatic pressure (P_H) was determined using the following equation:

P_H = (Water column above top of screen) (Specific weight water)

The static DTW in well AS-1 is assumed to be 32 fbg based on seasonal measurements. The top of the screened interval for well AS-1 is at 44 fbg. Therefore,

the water column above the top of screen is 12 feet. The specific weight of water is 62.4 pounds per cubic foot. Therefore, the hydrostatic pressure equates to:

P_H = (12 feet) (62.4 pounds/cu ft) (1 square foot/144 square inches) = 5.2 psi

The overburden pressure (P_{OB}) is determined using the following equation:

$P_{OB} = P_H + P_{SOIL}$ where;

P_{SOIL} = (Soil column above top of screen)(Specific $Gravity_{SOIL}$)(1-porosity)(weight of soil)

As stated above, the top of the screened interval for well AS-1 is at 46 fbg. The specific gravity and porosity of soil are estimated at 2.7 and 0.40. The unit weight of soil is taken as 110 pounds per cubic foot. Using this data, the soil pressure equates to:

P_{SOIL} = (44 feet)(2.7)(1 – 0.40)(110)(1 square foot/144 square inches) = 54.5 psi

Using the equation above, the overburden pressure equates to:

$P_{OB} = P_H + P_{SOIL}$ = 5.2 psi + 54.5 psi = 59.7 psi

75% of the calculated overburden pressure equates to 44.8 psi.

After step testing, CRA will conduct a 12- to 24-hour extended AS/SVE test while sparging into AS-1 at the determined most productive applied pressure and flow rate. The actual length of the constant rate test will depend on the AS and SVE testing results. Sparge pulsing cycles will be determined in the field depending on the observed groundwater level response to sparging. Key parameters that may necessitate a longer extended test would be vapor concentrations that rise or fall by an order of magnitude and do not readily stabilize; unstable SVE flow rates; and non-stable radius of influence readings. The system will be run overnight if possible. However, the noise from the system may exceed the City noise limitations at night and cause neighbors to complain. CRA will evaluate the rental equipment and determine if the components can be run overnight.

Helium gas (used as a study tracer) will also be injected into AS-1 during the extended test. The helium injection flow rate will be approximately 2 percent of the SVE flow. The helium injection flow rate will remain constant during the extended test. As necessary, CRA may increase the helium injection flow rate by an order of magnitude in order to clearly distinguish between different stages of tracer testing.

Hydrocarbon vapor concentrations will be periodically field measured from extraction well SVE-5 and observation wells EW-1, P-2, SVE-3, and SVE-4. Vapor samples will be collected from these same wells for laboratory analysis to assess volatilization of hydrocarbons from groundwater and soils. Vapor samples will also be collected from the SVE effluent to confirm required destruction efficiencies are met at least once during the test.

Helium concentrations will be monitored in extraction well SVE-5 and observation wells EW-1, P-2, SVE-3, and SVE-4 using the helium detector to assess the distribution of injected air in the formation and determine the recovery rate of the SVE system. A recovery rate of >80 percent is considered a successful rate of an SVE system, and any fugitive vapor migration risks are assumed to be low. The recovery rate will be calculated using the following equation:

$$\%\text{Recovery} = (\text{SVE flow rate}/\text{helium inject. rate})(\%\ \text{helium in extraction well})(100)$$

Pressure transducers will log DTW in observation wells P-2 and P-3. YSI 600 XLM transducers will measure pH, DO, ORP, conductivity, temperature, and DTW in wells EW-2 and MW-4.

4.8 DATA COLLECTION

Data will be collected on standard forms. Prior to pilot-test activities, CRA will measure and record the water level in all wells. During the test, CRA will periodically measure and record the following AS/SVE operational and monitoring information: air and helium injection pressures and flows, the YSI 600 XLM transducer data (DTW, DO, ORP, etc.), manifold vacuum, vacuum applied to the extraction well, induced vacuum at observation wells, extraction-well soil vapor flow rates, dilution air-flow rates, recovered hydrocarbon vapor, and injected and recovered helium concentrations. These readings will be collected every half hour during step testing and every hour during extended testing. Helium concentrations will be collected near the beginnings and ends of each air pulse, both in step testing and in extended test. Vapor samples will be collected at the end of each step test and once every 8 hours during extended testing. Vapor samples will be collected in 1-liter Tedlar® bags to confirm field-measured concentrations through laboratory analysis. A final set of vapor samples will be collected prior to ending the extended test.

4.9 CHEMICAL ANALYSES FOR PILOT TEST SAMPLES

All laboratory samples will be analyzed by Test America Laboratories, Inc., a State-of-California-certified laboratory. Vapor samples will be analyzed for TPHg, BTEX, MTBE, and TBA by EPA Method 8260B.

5.0 REPORT PREPARATION

After completion of the wells and pilot test activities, CRA will prepare a written AS/SVE pilot test and well installation report documenting the field procedures, methods utilized, and field and analytical results obtained. Based on the information obtained from the AS/SVE pilot test, CRA will include an evaluation of the feasibility and constructability of an AS/SVE system at the site.

6.0 SCHEDULE

Upon receiving ACEH's approval of this work plan, CRA will schedule the field work for the well installation and subsequent pilot test activities. As possible, CRA will schedule the pilot test to occur the same week as the DPE pilot test. In order to not change baseline conditions for groundwater elevation, the AS/SVE test would need to occur prior to the DPE pilot test. However, the actual dates of the AS/SVE pilot test will depend on equipment and personnel availability. Prior to conducting the test, CRA will submit a notification to ACEH.

CRA will adjust the implementation schedule for the DPE pilot test as necessary based upon the results of the AS/SVE test. If the AS/SVE test data indicates infeasibility with certainty and the results can be translated to DPE infeasibility, then CRA may indefinitely postpone the DPE pilot test. Furthermore, if AS/SVE proves very effective, a DPE test would not need to be implemented since AS/SVE is generally considered a more sustainable remedial approach than DPE.

The report will be submitted approximately 60 days after receiving the analytical data.

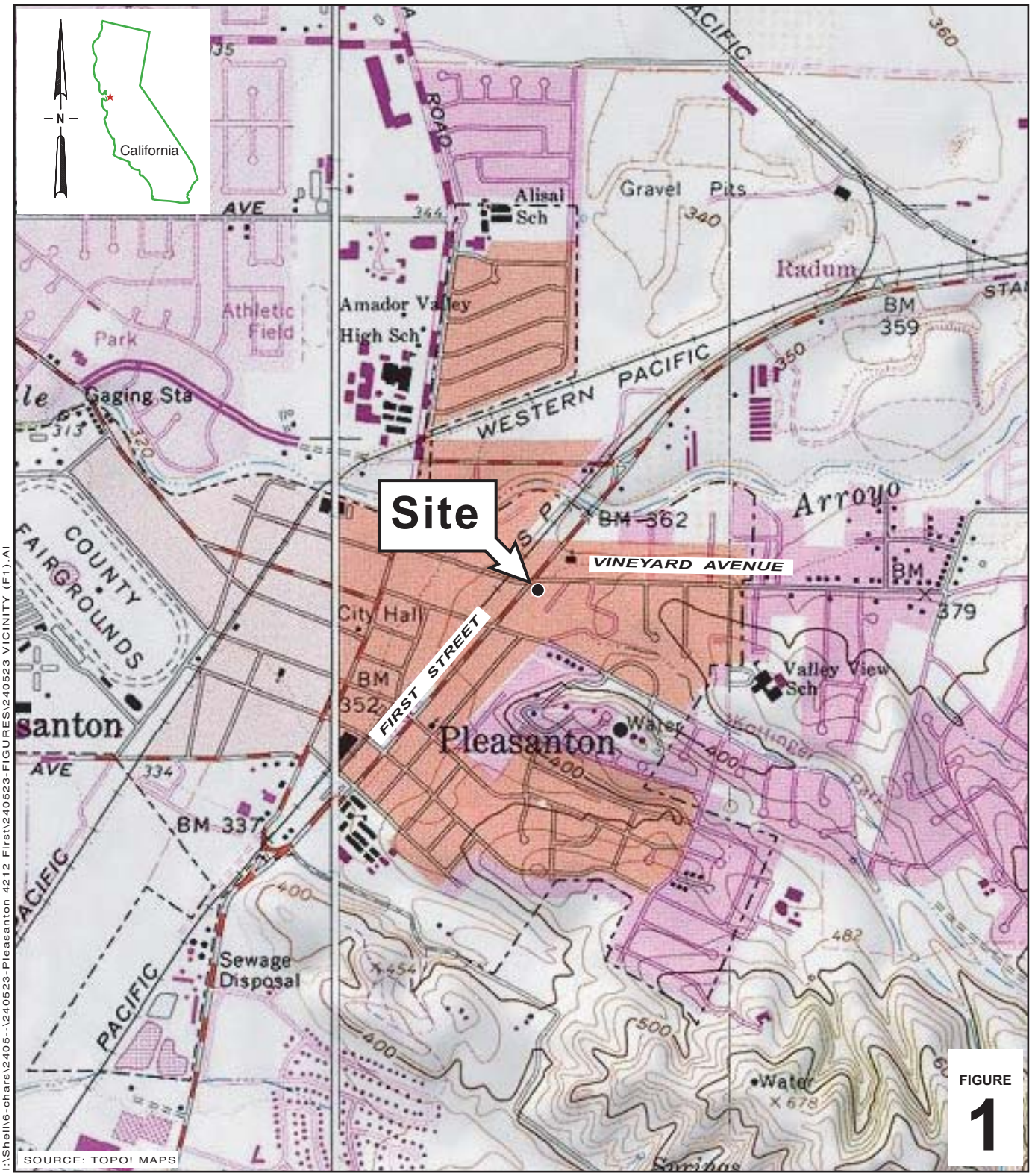
All of Which is Respectfully Submitted,
CONESTOGA-ROVERS & ASSOCIATES

Peter Schaefer, CEG, CHG

Dan Lescure, PE

FIGURES

01/18/2011



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SCALE : 1" = 1/4 MILE

FIGURE 1

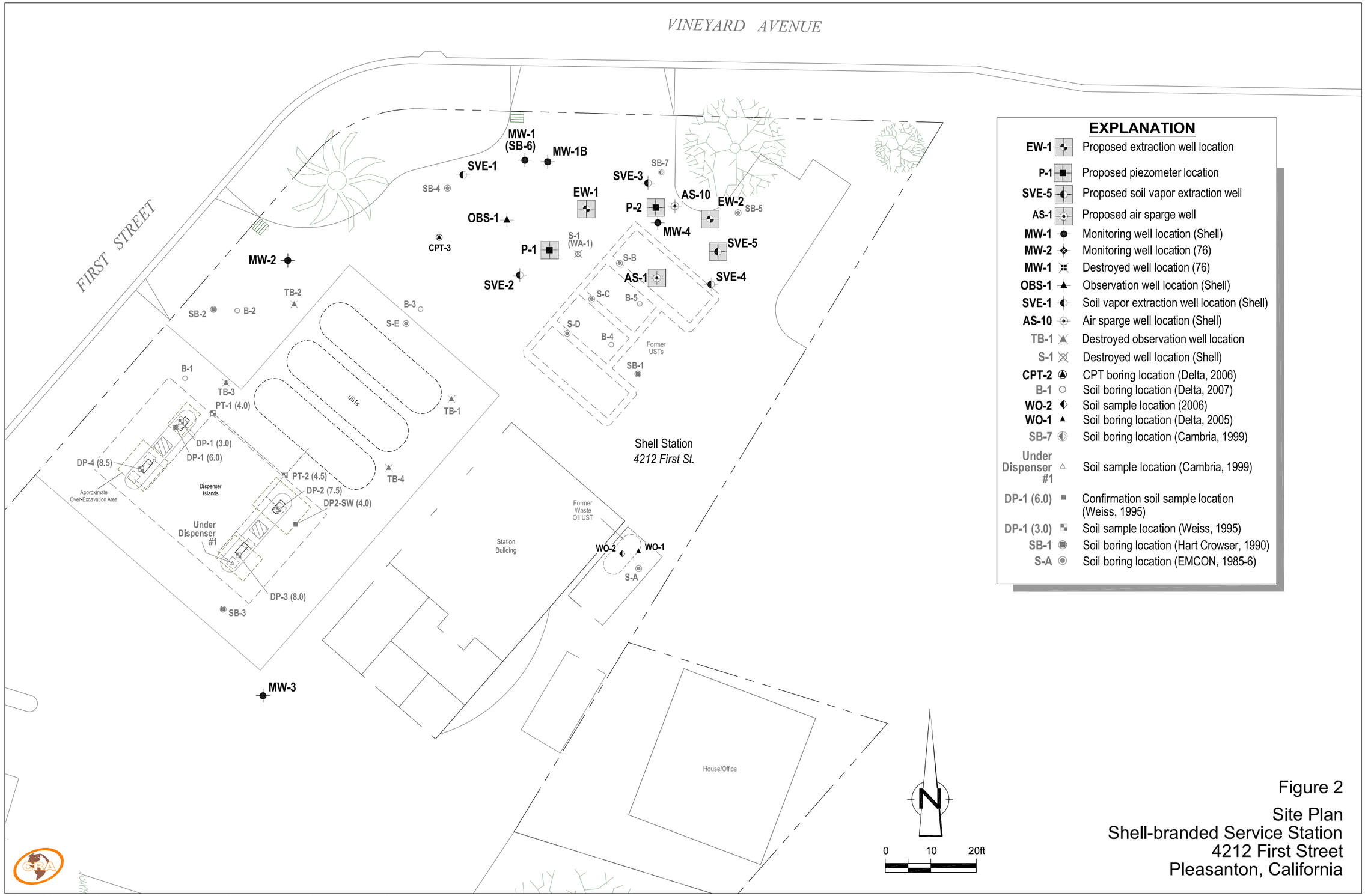
Shell-branded Service Station

4212 First Street

Pleasanton, California

CONESTOGA-ROVERS & ASSOCIATES

Vicinity Map



EXPLANATION

EW-1	Proposed extraction well location
P-1	Proposed piezometer location
SVE-5	Proposed soil vapor extraction well
AS-1	Proposed air sparge well
MW-1	Monitoring well location (Shell)
MW-2	Monitoring well location (76)
MW-1	Destroyed well location (76)
OBS-1	Observation well location (Shell)
SVE-1	Soil vapor extraction well location (Shell)
AS-10	Air sparge well location (Shell)
TB-1	Destroyed observation well location
S-1	Destroyed well location (Shell)
CPT-2	CPT boring location (Delta, 2006)
B-1	Soil boring location (Delta, 2007)
WO-2	Soil sample location (2006)
WO-1	Soil boring location (Delta, 2005)
SB-7	Soil boring location (Cambria, 1999)
Under Dispenser #1	Soil sample location (Cambria, 1999)
DP-1 (6.0)	Confirmation soil sample location (Weiss, 1995)
DP-1 (3.0)	Soil sample location (Weiss, 1995)
SB-1	Soil boring location (Hart Crowser, 1990)
S-A	Soil boring location (EMCON, 1985-6)

Figure 2

Site Plan
Shell-branded Service Station
4212 First Street
Pleasanton, California

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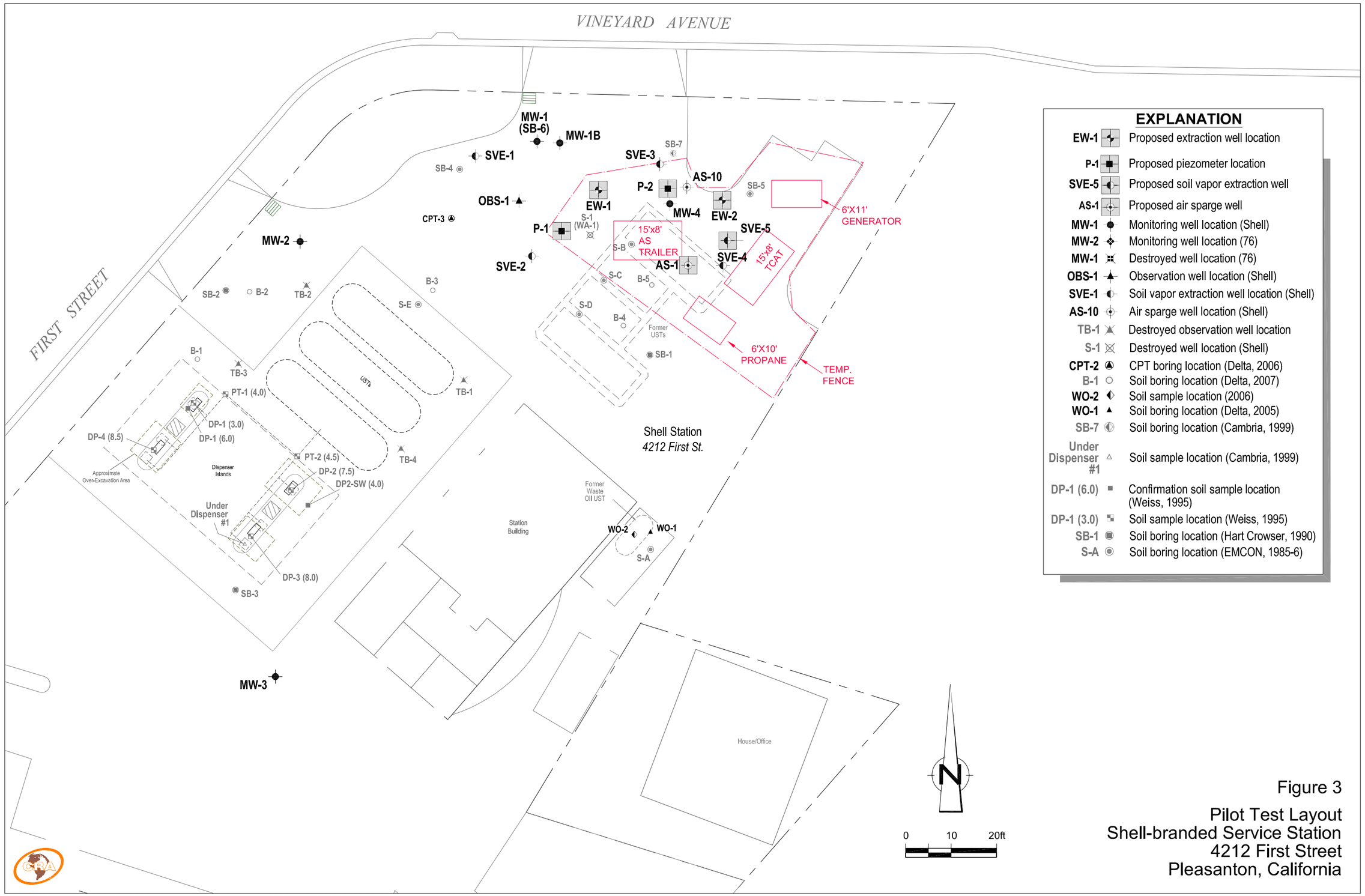

Figure 3

Pilot Test Layout
Shell-branded Service Station
4212 First Street
Pleasanton, California

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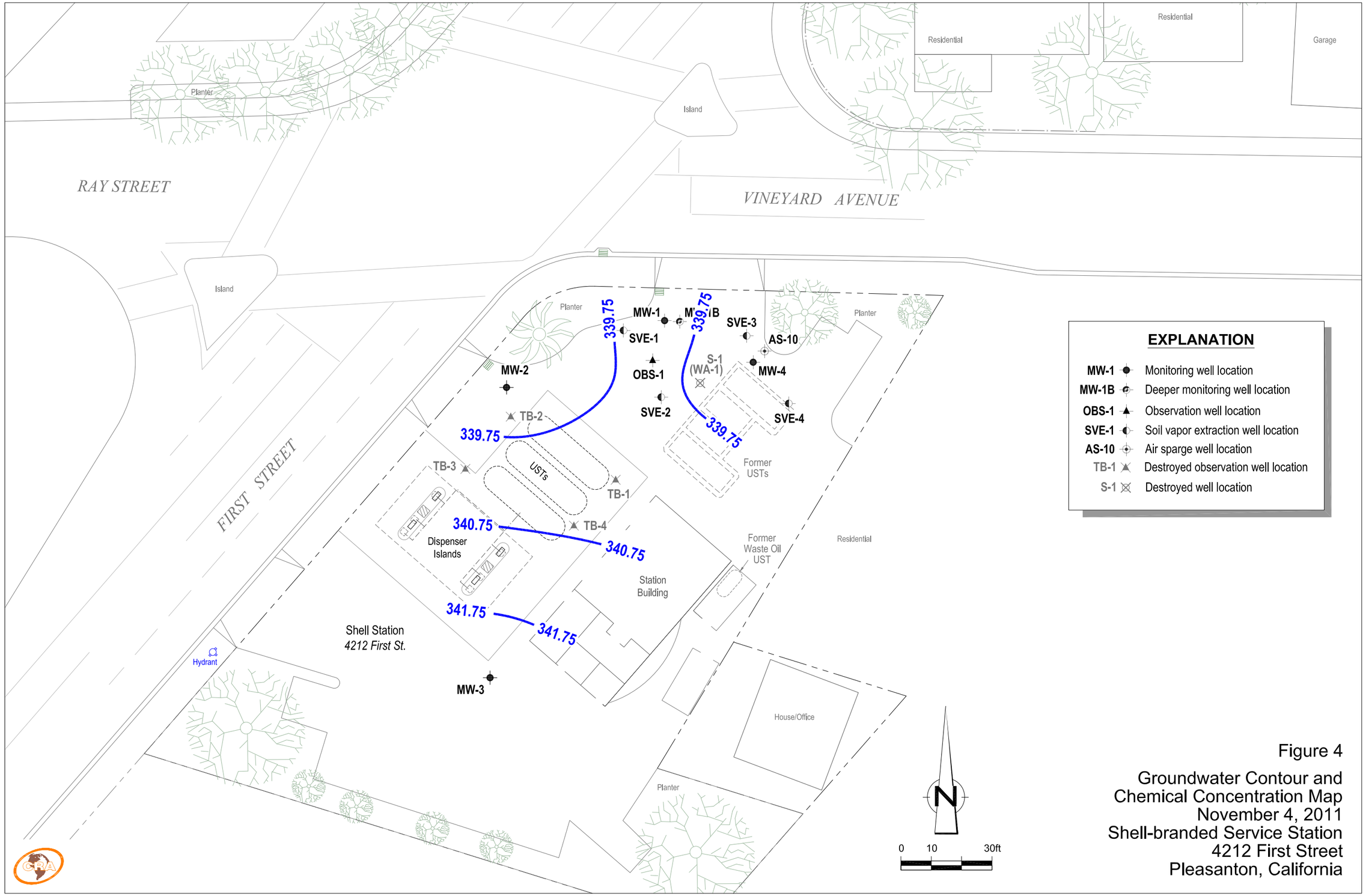

Figure 4

Groundwater Contour and Chemical Concentration Map
November 4, 2011
Shell-branded Service Station
4212 First Street
Pleasanton, California

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APPENDIX A

SITE HISTORY

SITE HISTORY

1985 Subsurface Investigation: In September 1985, Emcon Associates (Emcon) drilled one soil boring (S-A) adjacent to the waste oil underground storage tank (UST), and drilled three soil borings (S-B through S-D) and installed one groundwater monitoring well (S-1) adjacent to the gasoline USTs. Soil samples contained up to 1,300 milligrams per kilogram (mg/kg) total petroleum hydrocarbons as gasoline (TPHg), 9.6 mg/kg toluene, and 260 mg/kg xylenes and ethylbenzene. Benzene was not detected in the soil samples. The monitoring well was dry. Emcon's November 12, 1985 letter presents investigation details.

1986 Subsurface Investigation: In March 1986, one soil boring (S-E) was drilled adjacent to product lines. No TPHg, benzene, toluene, ethylbenzene, or xylenes (BTEX) were detected in soil samples.

1986 *UST Removal:* In May 1986, Blaine Tech Services (Blaine) collected soil samples following removal of four gasoline USTs and one waste oil UST. Soil samples from the gasoline UST excavation contained up to 240 mg/kg TPHg. Hydrocarbons were not detected in a soil sample collected from the waste oil tank excavation. Three 10,000-gallon, double-walled, fiberglass tanks were installed at a location closer to the dispenser islands.

1988 Gasoline Spill: In August 1988, approximately 40 gallons of gasoline were spilled in the area of the pump islands. Impacted soil was removed to a depth of 1 to 2 feet below grade (fbg).

1990 Subsurface Investigations: In March 1990, Hart Crowser, Inc. (Hart) drilled three soil borings (SB-1 through SB-3) and destroyed one groundwater monitoring well (S-1). Following the well destruction, Hart continued drilling a boring (WA-1) below the depth of the monitoring well. Soil samples contained up to 380 mg/kg TPHg, 2.2 mg/kg benzene, 2.7 mg/kg toluene, 5.3 mg/kg ethylbenzene, and 32 mg/kg xylenes. Hart's April 23, 1990 *Report of Supplemental Site Assessment* provides details of this investigation.

In July 1990, Hart drilled two additional soil borings (SB-4 and SB-5) down gradient from the former UST complex. Soil samples contained up to 820 mg/kg TPHg, 65 mg/kg benzene, 3.7 mg/kg toluene, 6.5 mg/kg ethylbenzene, and 65 mg/kg xylenes (SB-5 at 35 fbg). Hart's December 11, 1990 *Supplemental Site Assessment* presents the soil boring investigation details.

1995 Dispenser and Piping Replacement: In September 1995, Paradiso Mechanical of San Leandro, California removed the product lines and replaced the dispensers and piping. Weiss Associates (Weiss) collected soil samples from beneath the gasoline product piping (PT-1 and PT-2) and dispensers (DP-1 through DP-4). Soil samples contained up to 120 mg/kg TPHg, 0.038 mg/kg ethylbenzene, and 0.19 mg/kg xylenes. Benzene and toluene were not detected in the soil samples. Approximately 40 cubic yards of soil were over-excavated at the direction of the Pleasanton Fire Department. Weiss' December 21, 1995 *Dispenser Replacement Sampling* report presents soil sampling locations and results.

1998 Facility Upgrade: In July 1998, Cambria Environmental Technology, Inc. (Cambria) inspected the waste oil tank remote-fill piping during its removal by Gettler-Ryan of Dublin, California. No hydrocarbon impact was observed during the site visit, and, therefore, no sampling was required. A pea gravel sample contained 27 mg/kg total petroleum hydrocarbons as diesel (TPHd). Cambria's September 2, 1998 *1998 Upgrade Site Inspection Report* provides inspection details.

1999 Subsurface Investigation: In April 1999, Cambria drilled two soil borings (SB-6 and SB-7) and converted SB-6 to monitoring well MW-1. Soil samples contained up to 83 mg/kg TPHg, 0.10 mg/kg benzene, 0.37 mg/kg toluene, 0.26 mg/kg ethylbenzene, and 0.26 mg/kg xylenes. Methyl tertiary-butyl ether (MTBE) was not detected in soil samples. Grab groundwater samples contained up to 10,000 micrograms per liter (µg/l) TPHg, 4,500 µg/l benzene, 3.4 µg/l ethylbenzene, and 2.9 µg/l xylenes. Toluene and MTBE were not detected in the grab groundwater samples. Cambria's August 12, 1999 *Subsurface Investigation Report* presents investigation details.

2000 Subsurface Investigation: In January 2000, Cambria installed two wells (MW-2 and MW-3) to determine whether groundwater had been impacted by petroleum hydrocarbons. No petroleum hydrocarbons or MTBE were detected in soil samples. Cambria's June 23, 2000 *Subsurface Investigation Report* presents well installation details.

2004 Well Survey: In May 2004, Toxichem Management Systems, Inc. (Toxichem) conducted a well survey, which identified a municipal well (3S/1E-21B1) and a well of unknown use (3S/1E-21B) approximately 900 feet northeast of the site and another municipal well (3S/1E-16P1) approximately 1,200 feet north of the site. The locations of the wells could not be field verified.

2005 UST Upgrades: In January 2005, Town and Country Contractors, Inc. (T & C) upgraded the gasoline USTs.

2005 Tank Backfill Well Destructions: In January 2005, T & C destroyed four tank backfill wells (TB-1 through TB-4).

2005 Waste Oil UST Investigation: In January 2005, an unknown liquid was likely poured into a port on the waste oil UST which led directly into the pea gravel surrounding the UST. Based on this observation, Shell submitted a UST Unauthorized Release (Leak)/Site Contamination Report on January 19, 2005. Able Maintenance (Able) and Service Station Systems sealed the UST port with epoxy and excavated pea gravel around the UST. Toxichem collected pea gravel samples which contained 1.4 mg/kg TPHg, 1,400 mg/kg TPHd, and 10,000 mg/kg total petroleum hydrocarbons as oil and grease. In June 2005, Delta Consultants (Delta) drilled one soil boring (WO-1) adjacent to the waste oil UST to determine if the liquid poured into the pea gravel had impacted soils. Petroleum hydrocarbons were not detected in the soil samples. Delta's July 11, 2005 *Soil and Water Investigation Report* provides investigation details.

2005 Receptor Survey: In September 2005, Delta conducted a well survey which located an old water tower in the area of the wells identified in Toxichem's 2004 well survey and identified a water supply well (3S/1E-21C1) and an irrigation well (3S/1E-21C4) approximately 1,000 feet northwest of the site and another irrigation well in Kottinger Park, approximately 800 feet east of the site. Delta identified the nearest surface water as Arroyo del Valle Creek located approximately 1,130 feet northwest of the site.

2006 Waste Oil UST Removal: In July 2006, Wayne Perry Inc. removed a 550-gallon waste oil UST. Cambria collected a soil sample from the bottom of the UST excavation (WO-2) which contained 26 mg/kg oil and grease, 5.5 mg/kg TPHd, 0.021 mg/kg MTBE, 40.7 mg/kg chromium, 6.00 mg/kg lead, 46.9 mg/kg nickel, and 52.5 mg/kg zinc. Based on these concentrations, Shell submitted a UST Unauthorized Release (Leak)/Site Contamination Report on July 28, 2006. Cambria's September 21, 2006 *UST Removal Report* details the UST removal and sampling.

2006 Subsurface Investigation: In August and September 2006, Delta installed two monitoring wells (MW-1B and MW-4) and drilled two cone penetrometer test (CPT) borings (CPT-2 and CPT-3). Well MW-4 was installed in first-encountered groundwater, and well MW-1B was installed in a deeper water-bearing zone. Soil samples from well boring MW-4 contained up to 380 mg/kg TPHg, 1.2 mg/kg ethylbenzene, 1.6 mg/kg xylenes, and 0.59 mg/kg MTBE. TPHg, BTEX, MTBE, and tertiary-butyl alcohol (TBA) were not detected in soil samples from MW-1B, and benzene, toluene, and TBA were not detected in soil samples from MW-4. Grab groundwater samples from off-site CPT boring CPT-2 contained up to 0.99 µg/l

benzene, 47 µg/l MTBE, and 27 µg/l TBA. Grab groundwater samples from on-site CPT boring CPT-3 contained up to 700 µg/l TPHg, 0.78 µg/l ethylbenzene, 2.1 µg/l xylenes, 79 µg/l MTBE, and 2,000 µg/l TBA. Delta's October 31, 2006 *Soil and Groundwater Investigation Report* provides well installation and CPT investigation details.

2007 Subsurface Investigation: In March 2007, Delta drilled five soil borings (B-1 through B-5) in or near on-site source areas. Soil samples from the soil borings contained up to 710 mg/kg TPHg, 2.3 mg/kg ethylbenzene, 16 mg/kg xylenes, 0.78 mg/kg MTBE, and 0.80 mg/kg TBA. Delta's June 25, 2007 *Site Investigation and Interim Remediation Report* provides details of this investigation.

2007 Mobile Groundwater Extraction (GWE): From June through August 2007, Delta extracted approximately 4,226 gallons of groundwater from MW-4. Delta's June 25, 2007 *Site Investigation and Interim Remediation Report* and November 2, 2007 *Draft Corrective Action Plan (CAP)* provide remediation details.

2009 Dual-Phase Extraction (DPE) Pilot Test: In January 2009, Delta conducted a 5-day DPE pilot test on MW-4 and 4-hour DPE pilot tests on MW-1 and MW-2. Prior to conducting the DPE pilot tests, Delta conducted step drawdown tests in MW-1 and MW-4. Delta calculated hydraulic conductivities of 3.59×10^{-5} centimeters per second (cm/sec) in MW-1 at a pumping rate of 0.48 gallons per minute (gpm) and 3.17×10^{-5} cm/sec in MW-4 at a pumping rate of 0.40 gpm. Based on the results of the DPE pilot test, Delta calculated a theoretical radius of influence of 26 feet for soil vapor extraction and estimated that 286.3 pounds of hydrocarbons were removed from the vadose zone. An estimated 0.23 pounds of dissolved hydrocarbons were removed along with 2,748 gallons of groundwater. Delta concluded that while GWE results indicated it was likely not a viable remediation strategy, soil vapor extraction (SVE) could be a viable remediation alternative. Delta's February 12, 2009 *DPE Pilot Test Report* provides pilot test data.

2009 Dispenser Repairs: In January 2009, Able replaced the faulty pan beneath the south dispenser on the pump island closest to the station building. Delta collected a soil sample (Under Dispenser #1) from the dispenser excavation. No TPHg, TPHd, BTEX, fuel oxygenates, or lead scavengers were detected in the soil sample. Delta's March 6, 2009 *Dispenser Repair Report* presents details of the repair and soil sampling.

2010 Subsurface Investigation: In January 2010, Delta installed one observation well (OBS-1), one air sparging (AS) well (AS-1), and four SVE wells (SVE-1 through SVE-4). Delta's June 7, 2010 *2010 AS Pilot Test Report* provides well installation details.

2010 AS Pilot Test: In January 2010, Delta conducted an AS pilot test using well AS-10. Delta calculated an air sparging radius of influence of 31 feet; however, CRA's subsequent analysis of the pilot test data determined that the test was flawed and therefore inconclusive. Delta's June 7, 2010 *2010 AS Pilot Test Report* details pilot testing results.

2011 Subsurface Investigation: In June 2011, CRA attempted to install two off-site wells across Vineyard Avenue from the site. CRA abandoned the well installation attempts because there were no other locations in the sidewalk where the wells could be installed safely due to the interference of underground utilities. CRA's July 28, 2011 letter provides investigation details.

Groundwater Monitoring Program: Groundwater monitoring and sampling began in June 1999. The depth to first-encountered groundwater typically ranges between 31 to 34 fbg. Groundwater flow is generally northwesterly.

APPENDIX B

BORING LOGS

LOG OF EXPLORATORY BORING

PROJECT NUMBER 738-60.01 BORING NO. S-A

PROJECT NAME Gettler-Ryan, Shell, 4226 First St., Pleasanton PAGE 1 OF 1

BY MGB DATE 9/27/85 SURFACE ELEV. 375'±

TORVANE (TSF)	POCKET PENETROMETER (TSF)	PENETRATION (Blows/Ft.)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHOGRAPHIC COLUMN	DESCRIPTION
				0		ML / CL	ASPHALT and SAND - Fill GRAVELLY SILT - Fill; black (5Y, 2.5/2); 20% fine to coarse sand; 10% fine gravel; damp; no product odor.
				5			CLAY; light olive brown (2.5Y, 5/6); silty; 10% fine to medium sand; stiff; damp; no product odor.
	4.4	88			1		@7': no sand; hard; no product odor.
				10			@10': 20% fine gravel; no product odor.
	1.5	21		15	2		@14': 15-20% fine to medium sand; trace fine gravel; stiff; moist; no product odor.
	5	61		20	3		@18½': brownish yellow (10YR, 6/8); silty; hard; moist; no product odor. BOTTOM OF BORING AT 20 FEET.
				25			
				30			
				35			
				40			

REMARKS Drilled by 5-inch continuous flight auger; samples collected with 2-inch California modified split-spoon sampler; borehole backfilled with soil cuttings to ½ foot; concrete to surface.

EMCON ASSOCIATES

PLATE A

LOG OF EXPLORATORY BORING

PROJECT NUMBER 738-60.01 BORING NO. S-B

PROJECT NAME Gettler-Ryan, Shell, 4226 First St., Pleasanton PAGE 1 OF 1

BY MGB DATE 9/27/85 SURFACE ELEV. 373'±

TORVANE (TSF)	POCKET PENETROMETER (TSF)	PENETRATION (Blows/Ft.)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHOGRAPHIC COLUMN	DESCRIPTION
				0			CONCRETE.
						SW	SAND - Fill; very dark gray (5Y, 3/1); fine to coarse grained; trace fine gravel; trace fines; loose; damp; strong gasoline odor.
		Push		5	1		
		2			2		@7': strong gasoline odor.
				10			
		64			3	GC	CLAYEY GRAVEL; olive gray (5Y, 5/2); to olive (5Y, 4/3); fine to coarse grained; 30% fines; 15% fine to coarse sand; very dense; damp; moderate gasoline odor.
	3.6	39		15	4	CL	CLAY; light olive brown (2.5Y, 5/6) to dark grayish brown (2.5Y, 4/2); 15% fine sand; trace coarse sand; very stiff; damp.; no gasoline odor.
	2.3	41		20	5		@19': olive gray (5Y, 4/2) to olive (5Y, 5/6); 20% fine to medium sand; no coarse sand; no gasoline odor.
			▽				@24': olive (5Y, 4/4); 25% fine to coarse sand; very plastic; soft; faint gasoline odor.
	0.4	50for 6"		25	6		BOTTOM OF BORING AT 24½ FEET.
				30			
				35			
				40			

REMARKS Drilled by 8-inch continuous flight, hollow stem auger; samples collected with 2-inch California modified split-spoon sampler; borehole backfilled with soil cuttings to ½ foot; concrete to surface.

EMCON ASSOCIATES

PLATE B

LOG OF EXPLORATORY BORING

PROJECT NUMBER 738-60.01 BORING NO. S-C

PROJECT NAME Gettler-Ryan, Shell, 4226 First St., Pleasanton PAGE 1 OF 1

BY MGB DATE 9/27/85 SURFACE ELEV. 373'±

TORVANE (TSF)	POCKET PENETROMETER (TSF)	PENETRATION (Blows/Ft.)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHOGRAPHIC COLUMN	DESCRIPTION
				0		SW	CONCRETE. SAND - Fill; very dark gray (5Y, 3/1); fine to coarse grained; trace fine gravel; trace fines; damp; strong gasoline odor.
		Push		5	1		
		2			2		@7'; loose; strong gasoline odor.
				10			
	4.3	30			3	CL	CLAY; olive (5Y, 5/6, 5/3); 20% fine to coarse sand; silty; hard; damp; no gasoline odor.
		50for 6"		15	4	GC	CLAYEY GRAVEL; olive (5Y, 5/6, 5/4); fine grained; 35% fine to coarse sand; 15% fines; very dense; damp; no gasoline odor.
	0.4	19		20	5	CL	CLAY; yellowish brown (10YR, 5/6, 5/8); 35% fine to coarse sand; silty; soft; moist; no gasoline odor.
		72		25	6	SW	SAND: olive (5Y, 4/3); fine to coarse grained; 10% fines; medium dense; moist; no gasoline odor.
		48			7	ML SC	SANDY SILT; light olive brown (2.5Y, 5/6) 40% fine sand; very stiff; moist; no gasoline odor. CLAYEY SAND; olive brown (2.5Y, 4/4); fine to coarse grained; 40% clay; dense; moist; faint gasoline odor. BOTTOM OF BORING AT 28 FEET
				30			
				35			
				40			

REMARKS Drilled by 8-inch continuous flight, hollow-stem auger; samples collected with 2-inch California modified split-spoon sampler; borehole backfilled with concrete from 28 to 15 feet, soil cuttings to ½ foot; concrete to surface.

EMCON ASSOCIATES

PLATE C

LOG OF EXPLORATORY BORING

PROJECT NUMBER 738-60.01 BORING NO. S-D

PROJECT NAME Gettler-Ryan, Shell, 4226 First St., Pleasanton PAGE 1 OF 1

BY MGB DATE 9/27/85 SURFACE ELEV. 374'±

TORVANE (TSF)	POCKET PENETROMETER (TSF)	PENETRATION (Blows/Ft.)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHOGRAPHIC COLUMN	DESCRIPTION
				0		SW	CONCRETE.
		Push		5	1		SAND - Fill; very dark gray (5Y, 3/1); fine to coarse grained; 15% fine gravel; trace fines; loose; damp; strong gasoline odor.
		2			2		@7': strong gasoline odor.
	4.25	37		10	3	CL	CLAY; olive yellow (5Y, 6/8) to olive (5Y, 4/3); 20% fine to coarse sand; silty; hard; damp; faint gasoline odor.
	5	44		15	4		@14': olive (5Y, 4/3); 35% fine to coarse sand; 10% fine gravel; faint gasoline odor.
	2.2	22		20	5		@19': olive (5Y, 4/3); to gray (5Y, 5/1); 20% fine to medium sand; slightly silty; very stiff; damp; faint gasoline odor.
	1.25	31			6	ML	SANDY SILT; olive (5Y, 4/4); 40% fine sand; slightly clayey; stiff; damp; faint gasoline odor.
				25			BOTTOM OF BORING AT 22½ FEET.
				30			
				35			
				40			

REMARKS Drilled by 8-inch continuous flight, hollow-stem auger; samples collected with 2-inch California modified split-spoon sampler; borehole backfilled with concrete from 22½ to 11½ feet, soil cuttings to ½ foot ; concrete to surface.

EMCON ASSOCIATES

PLATE D

LOG OF EXPLORATORY BORING

PROJECT NUMBER 738-60.01 BORING NO. S-1

PROJECT NAME Gettler-Ryan, Shell, 4226 First St., Pleasanton PAGE 1 OF 1

BY MGB DATE 9/27/85 SURFACE ELEV. 373'±

TORVANE (TSF)	POCKET PENETROMETER (TSF)	PENETRATION (Blows/Ft.)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHOGRAPHIC COLUMN	DESCRIPTION
				0		SW SC	ASPHALT and GRAVEL - Fill SAND - Fill; very dark gray (5Y, 3/1); fine to coarse grained; 10% fine gravel; trace fines; damp; moderate gasoline odor.
				5			CLAYEY SAND; very dark gray (5Y, 3/1); fine to coarse grained; damp; moderate gasoline odor.
				10			
	4.25	34		15	1	CL	@12½': 10% fine gravel. CLAY; light olive brown (2.5Y, 5/6); 5% fine to coarse sand; silty; hard; damp; faint gasoline odor.
	3.6	28		20	2		@19': 20% fine to coarse sand; silty; very stiff; faint gasoline odor.
		57		25	3	GC	CLAYEY GRAVEL; olive (5Y, 5/4); fine grained; 35% fine to coarse sand; clayey; very dense; damp; no gasoline odor.
		60		30	4		@29': no gasoline odor. BOTTOM OF BORING AT 30½ FEET.
				35			
				40			

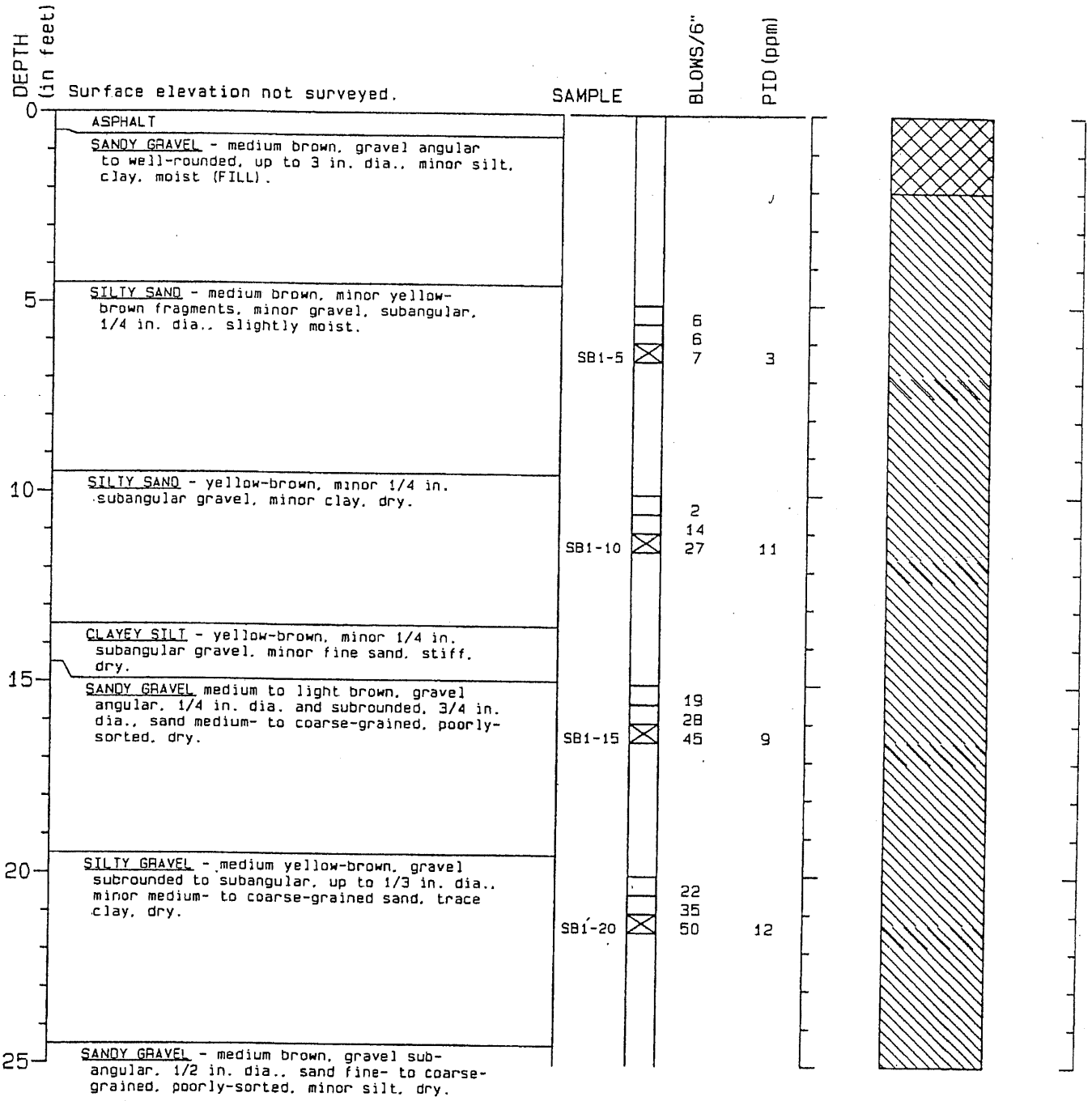
REMARKS Drilled by 8-inch continuous flight, hollow-stem auger; samples collected with 2-inch California modified split-spoon sampler; borehole converted to 3-inch monitoring well as detailed on Plate F.

EMCON ASSOCIATES

PLATE E

Boring Log SB-1

Geologic Log



1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil description and stratum lines are interpretive and actual changes may be gradual.
3. No free water encountered.

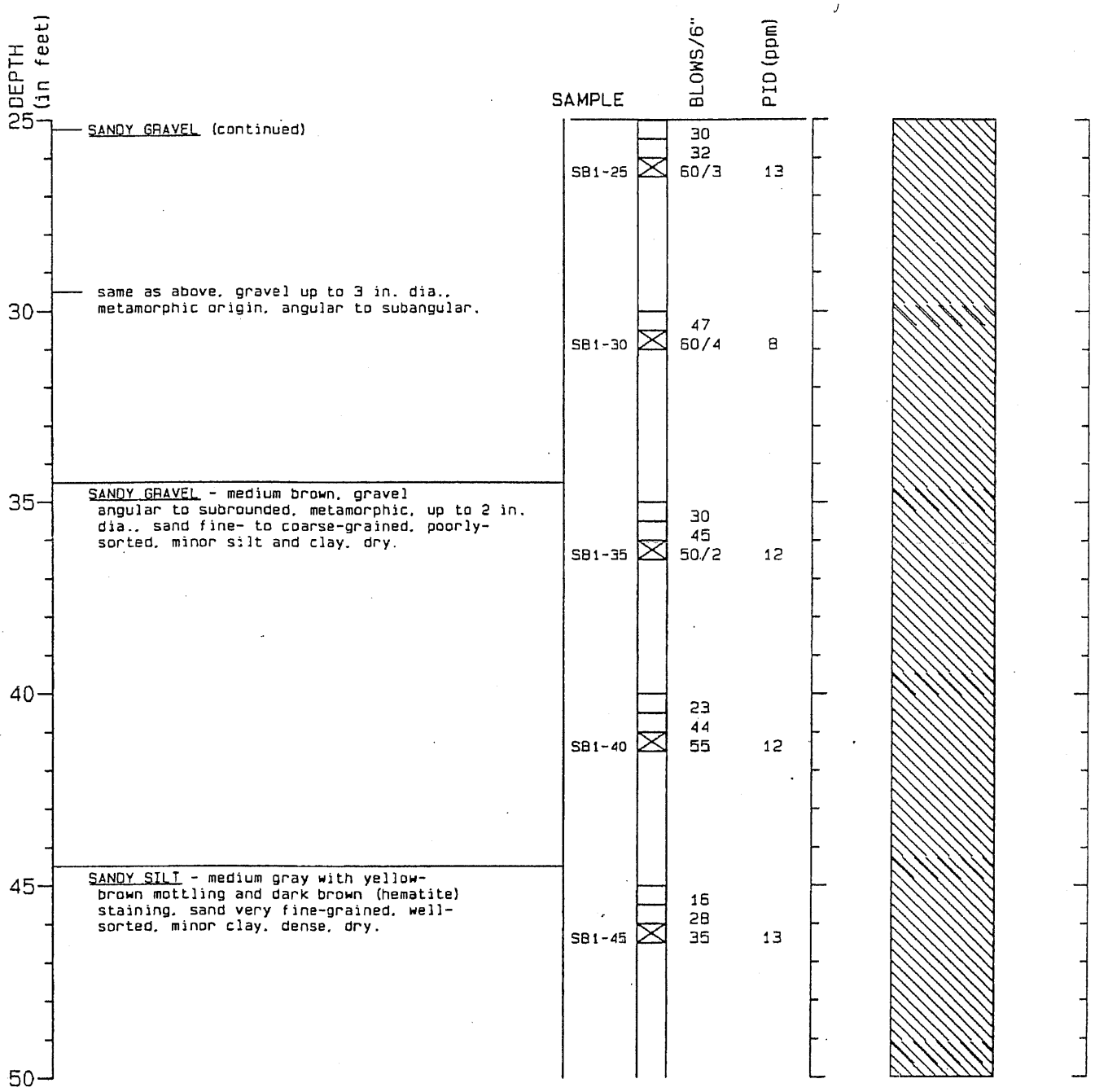
HARTCROWSER

J-6006 4/90

Figure A-2

Boring Log SB-1

Geologic Log



1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil description and stratum lines are interpretive and actual changes may be gradual.
3. No free water encountered.

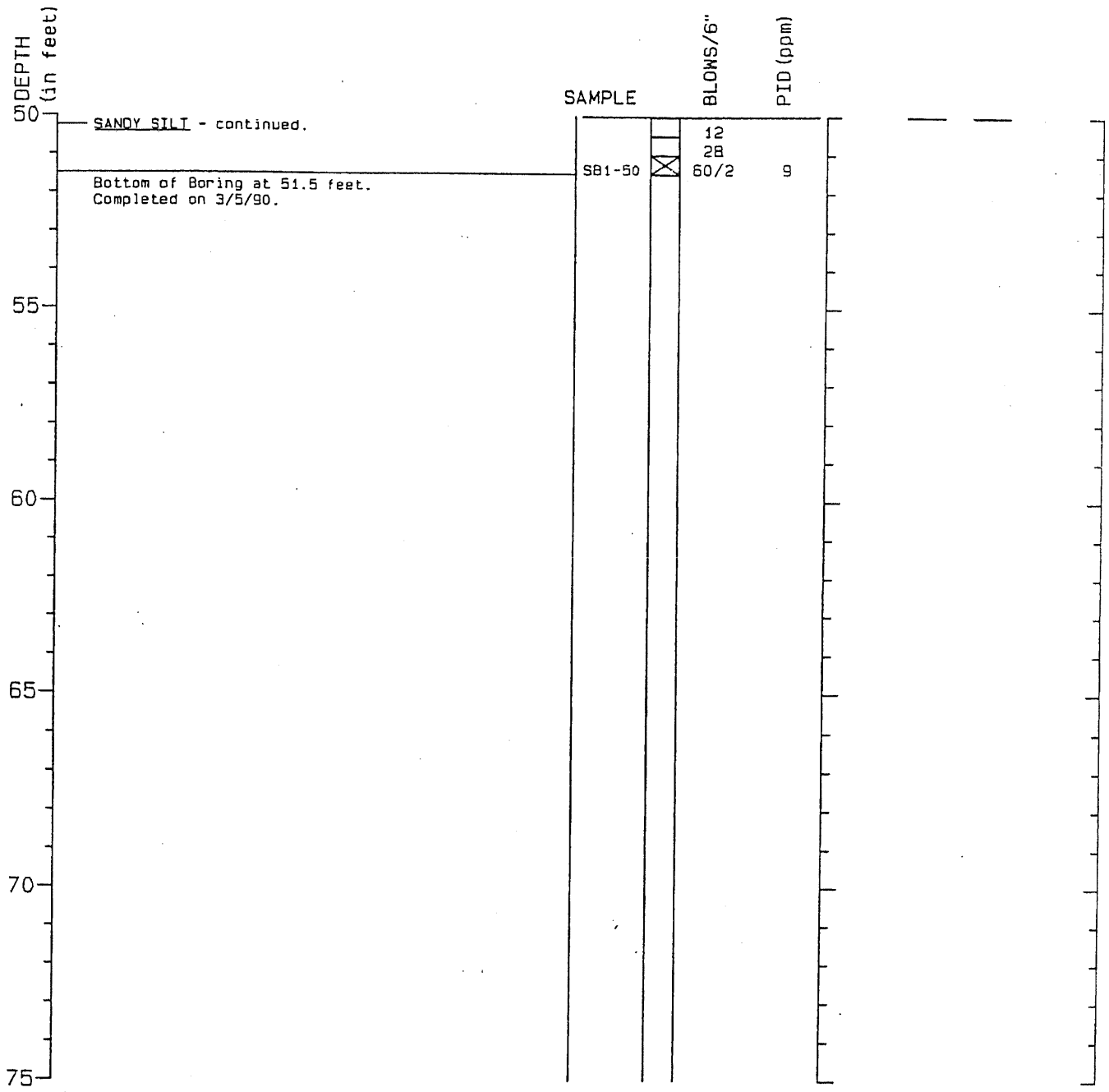
HARTCROWSER

J-6006 4/90

Figure A-2

Boring Log SB-1

Geologic Log



1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil description and stratum lines are interpretive and actual changes may be gradual.
3. No free water encountered.

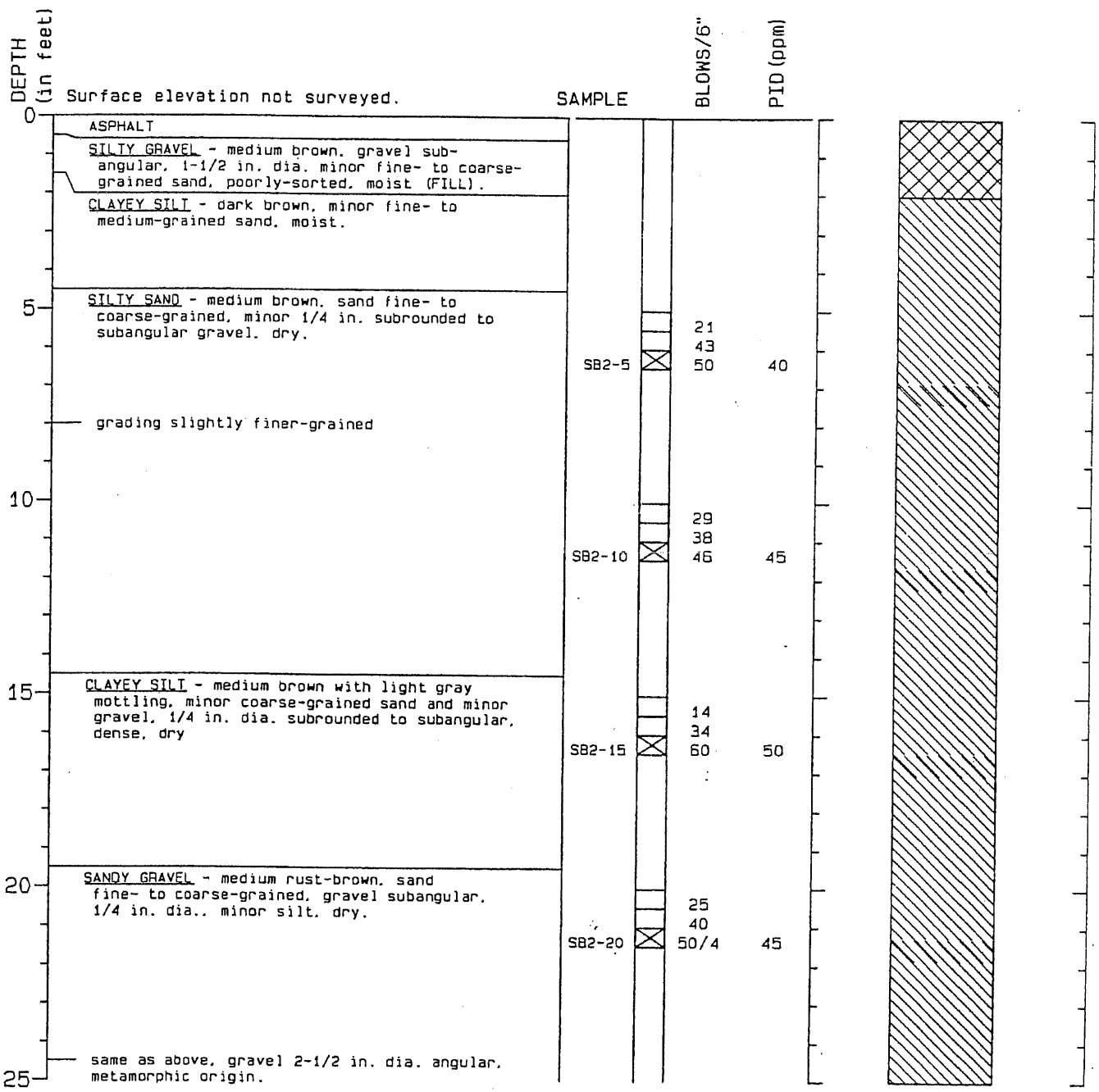
HARTCROWSER

J-6006 4/90

Figure A-2

Boring Log SB-2

Geologic Log



1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil description and stratum lines are interpretive and actual changes may be gradual.
3. No free water encountered.

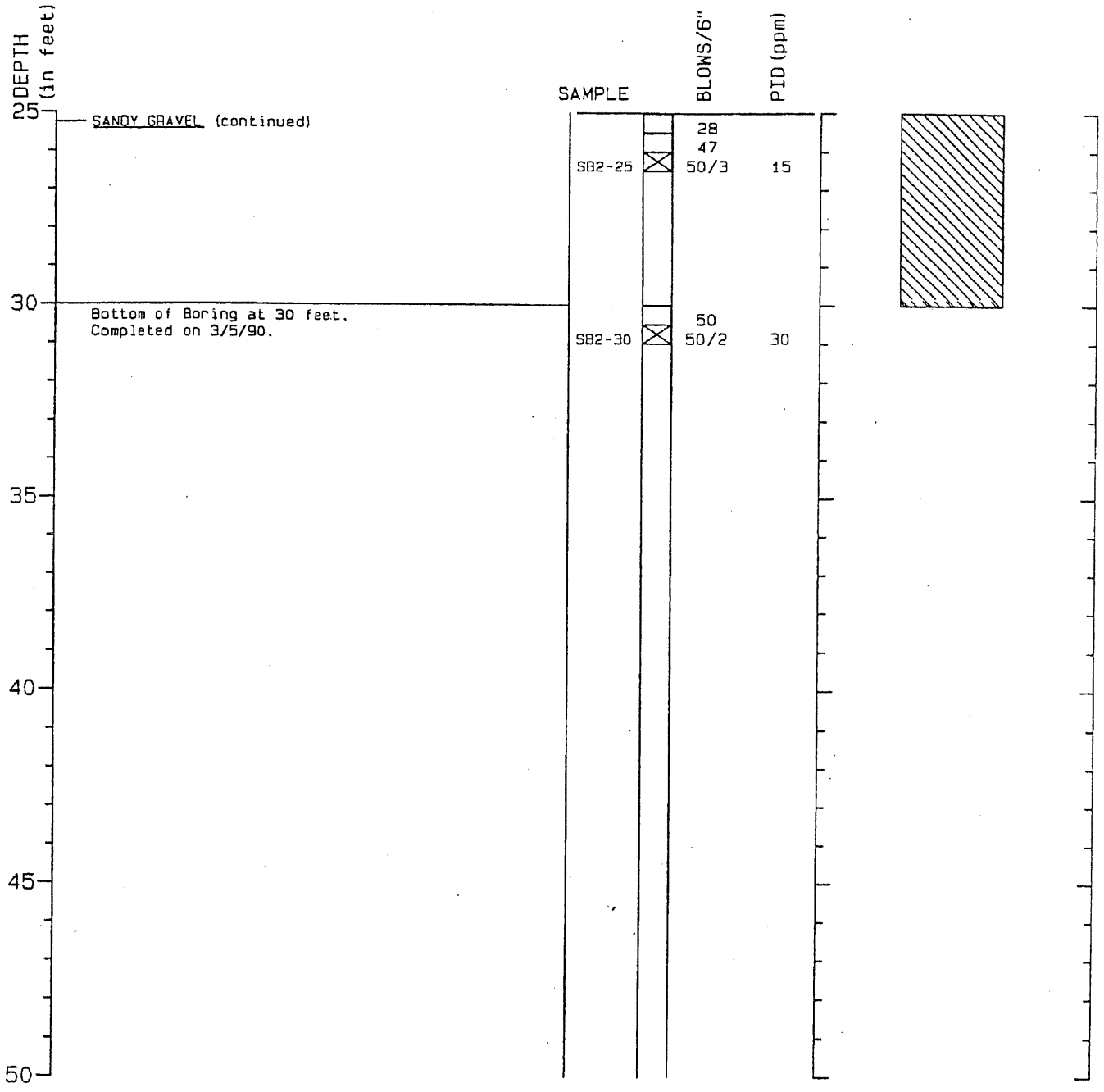
HARTCROWSER

J-6006 3/90

Figure A-3

Boring Log SB-2

Geologic Log



1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil description and stratum lines are interpretive and actual changes may be gradual.
3. No free water encountered.

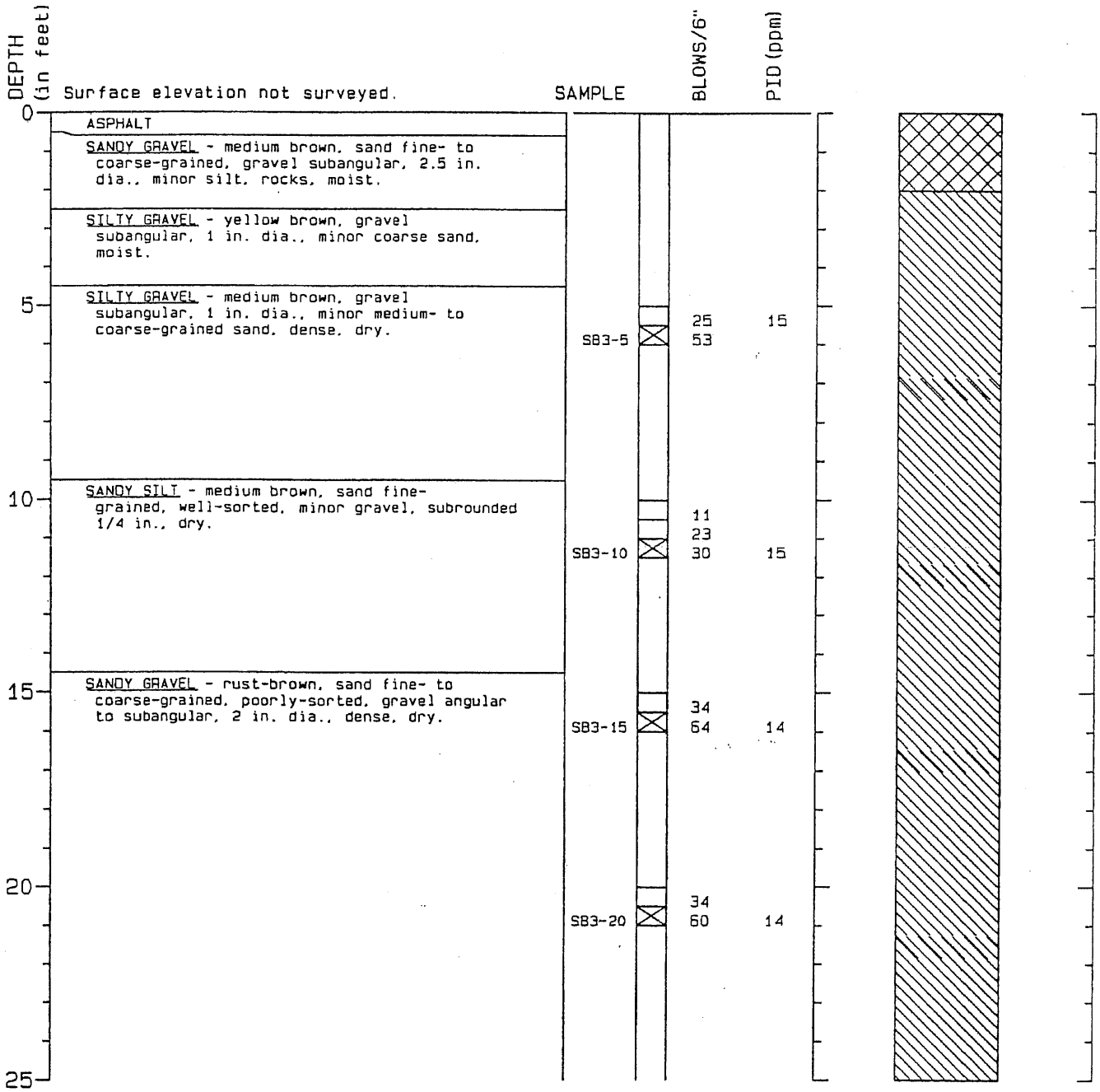
HARTCROWSER

J-6006 3/90

Figure A-3

Boring Log SB-3

Geologic Log



1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil description and stratum lines are interpretive and actual changes may be gradual.
3. No free water encountered.

HARTCROWSER

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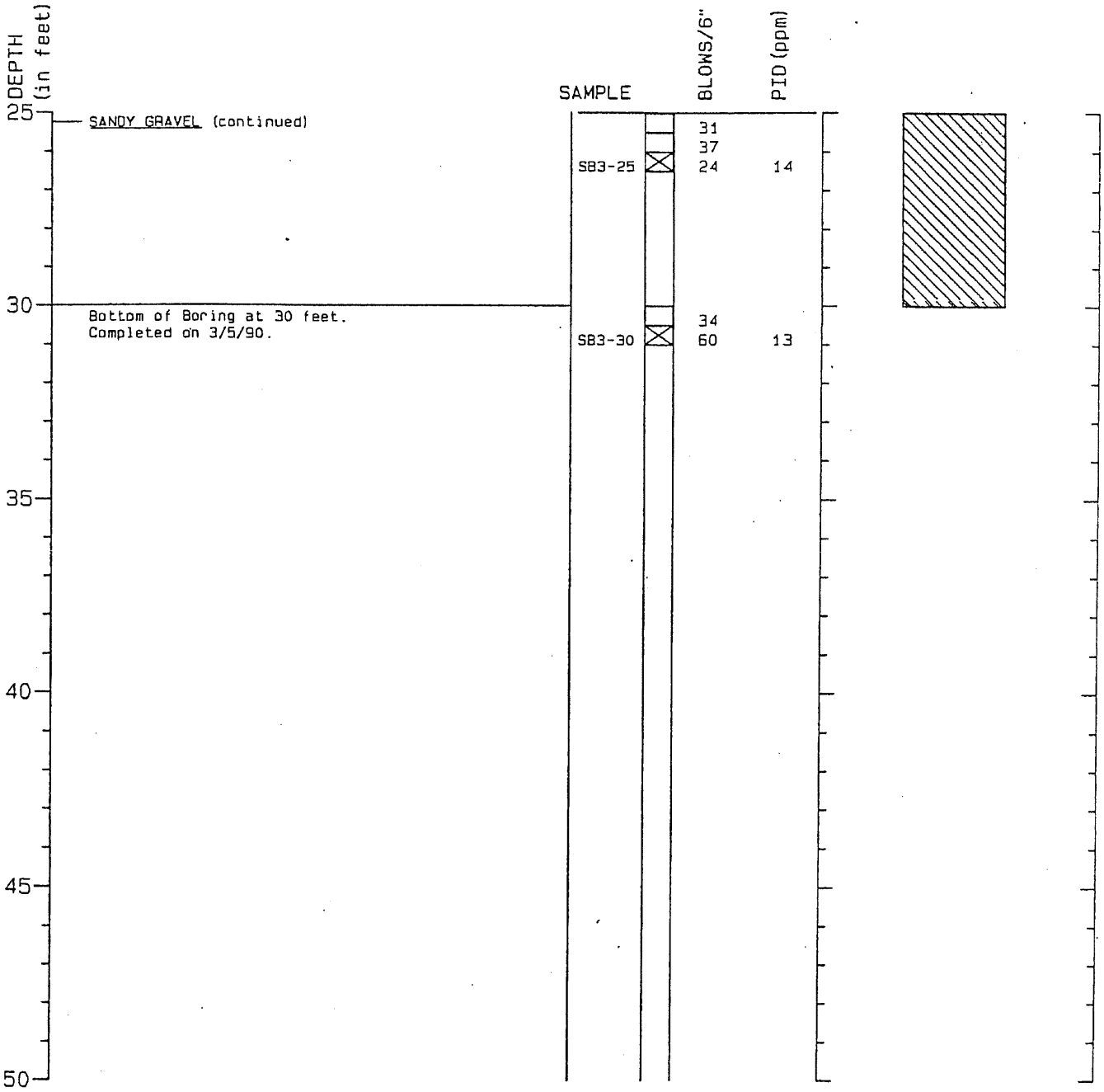
Figure A-4

Boring Log SB-3

Geologic Log



1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil description and stratum lines are interpretive and actual changes may be gradual.
3. No free water encountered.

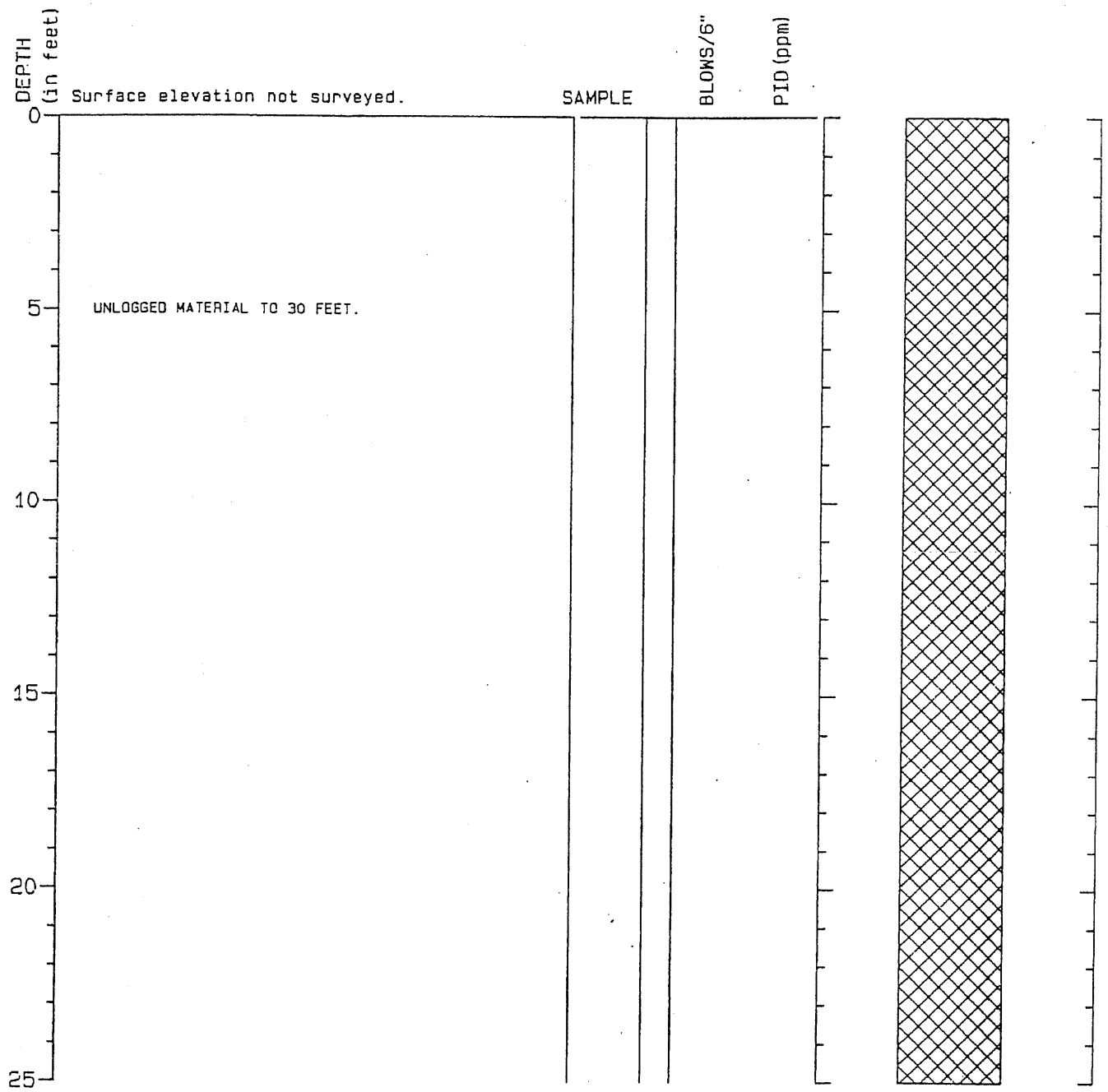
HARTCROWSER

J-6006 3/90

Figure A-4

Boring Log WA-1

Geologic Log



1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil description and stratum lines are interpretive and actual changes may be gradual.
3. No free water encountered.

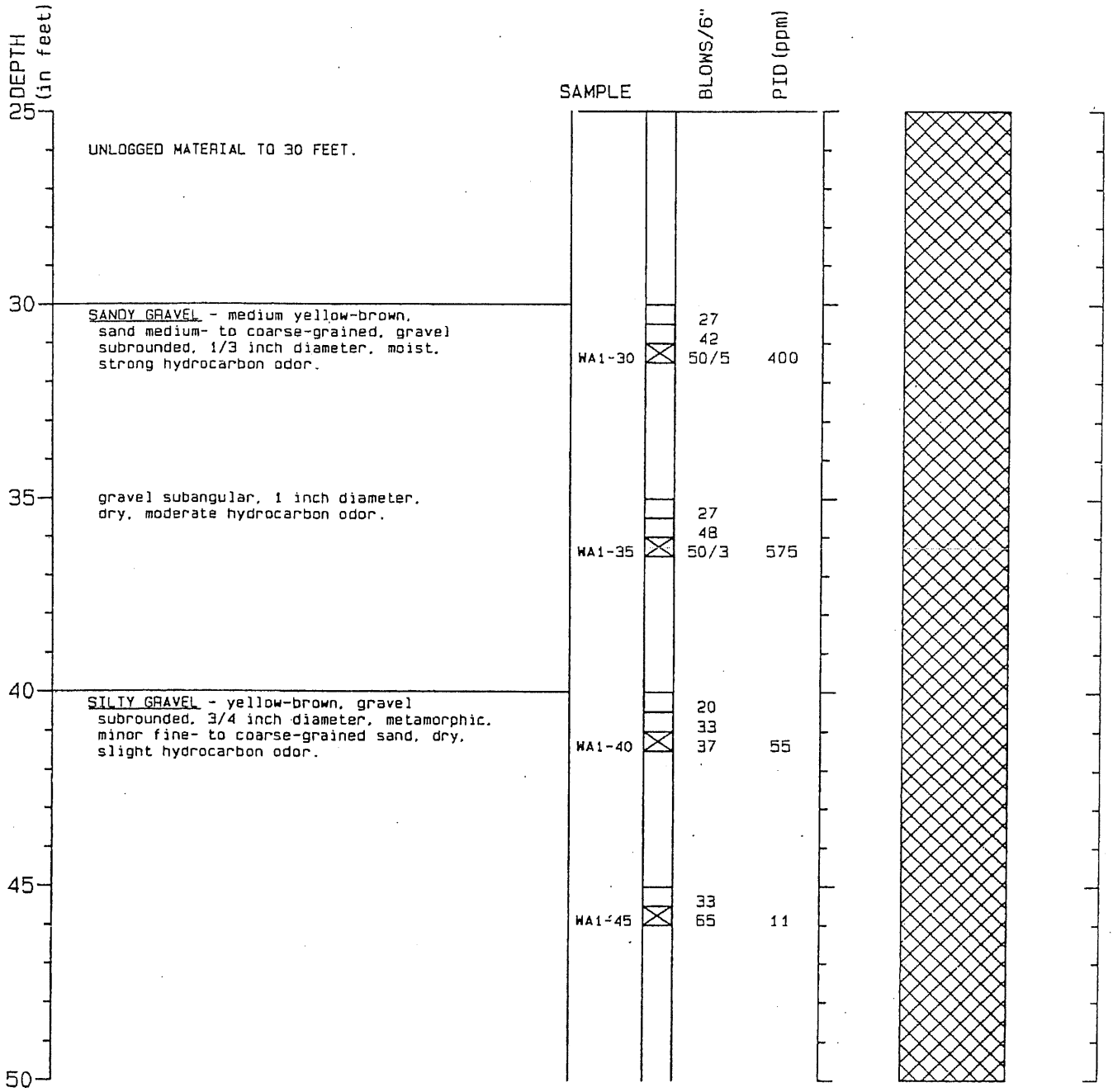
HARTCROWSER

J-6006 4/90

Figure A-5

Boring Log WA-1

Geologic Log



1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil description and stratum lines are interpretive and actual changes may be gradual.
3. No free water encountered.

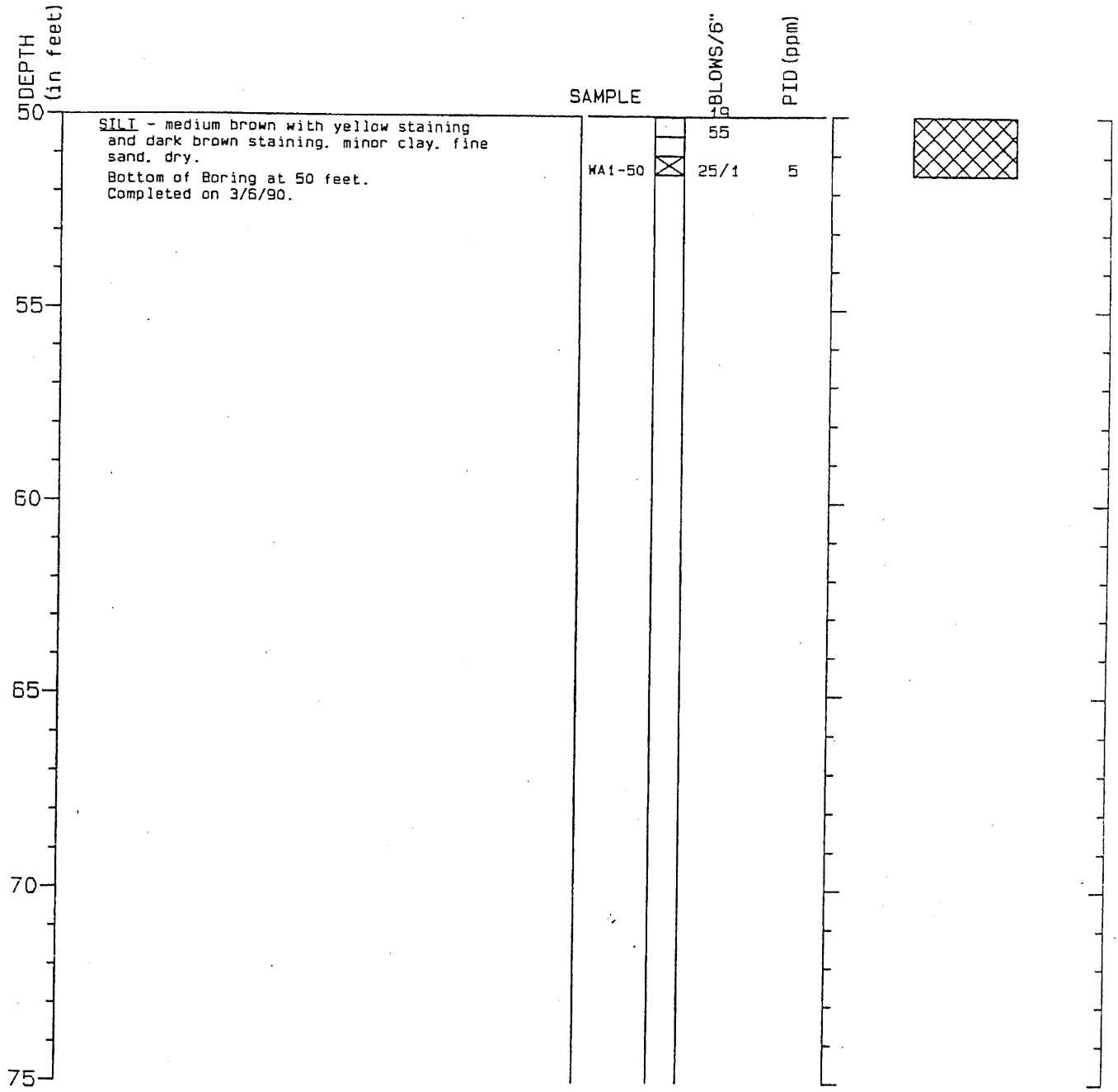
HARTCROWSER

J-6006 4/90

Figure A-5

Boring Log WA-1

Geologic Log



1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil description and stratum lines are interpretive and actual changes may be gradual.
3. No free water encountered.

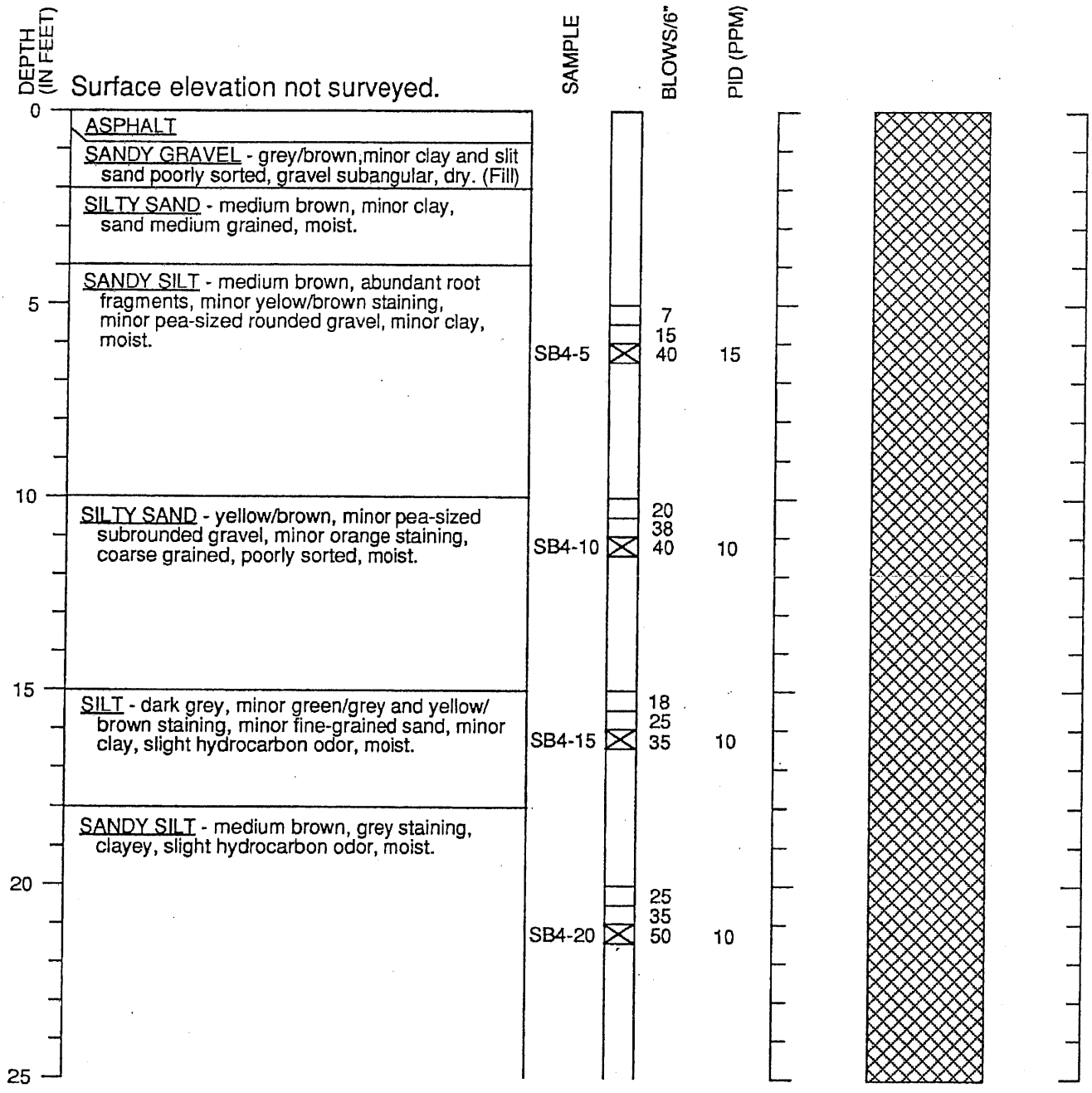
HARTCROWSER

J-6006 4/90

Figure A-5

Boring Log SB-4

Geologic Log



1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. No free water encountered.

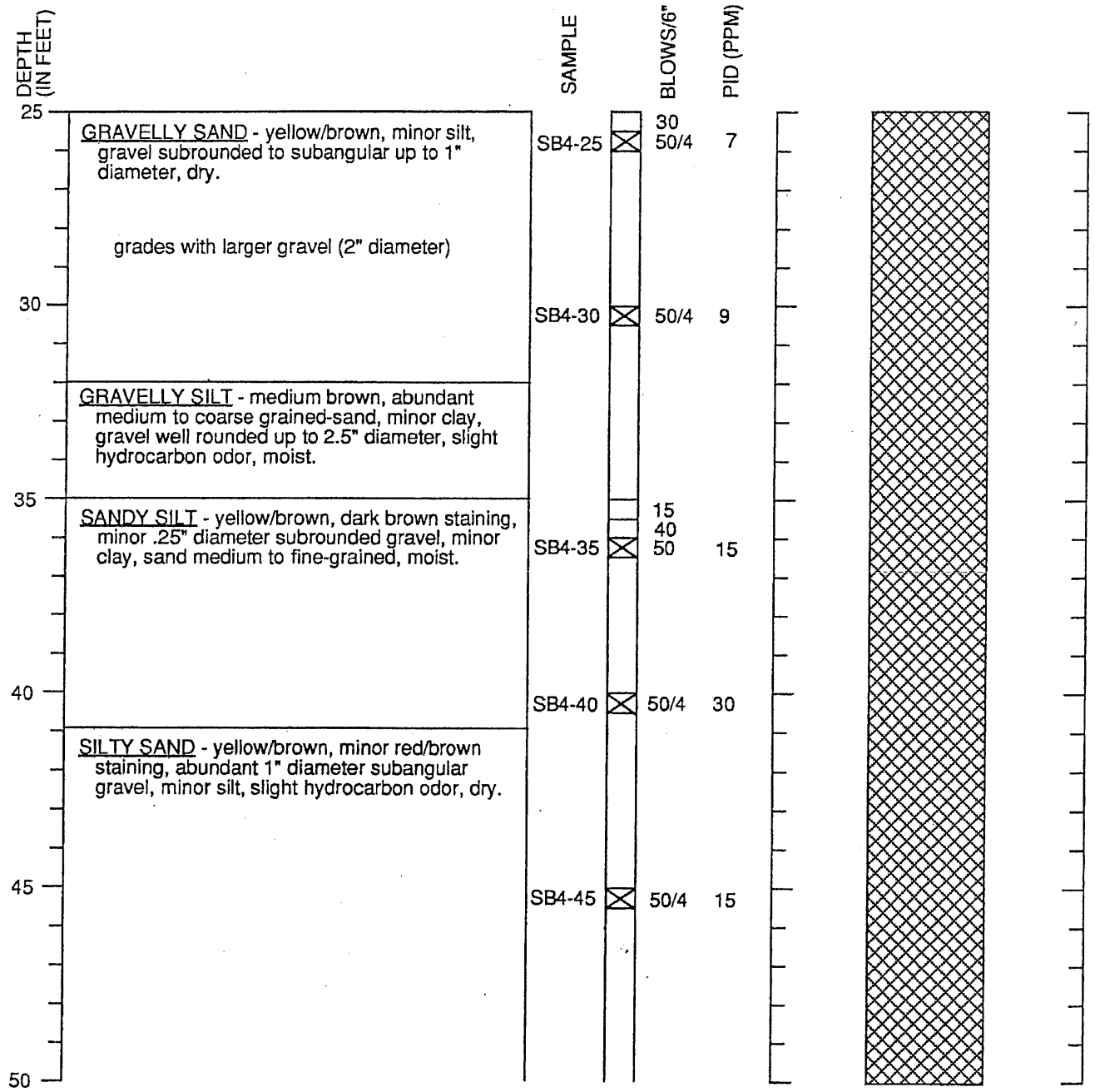
HARTCROWSER

J-6006 *12/90*

Figure A-2

Boring Log SB-4

Geologic Log



1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. No free water encountered.

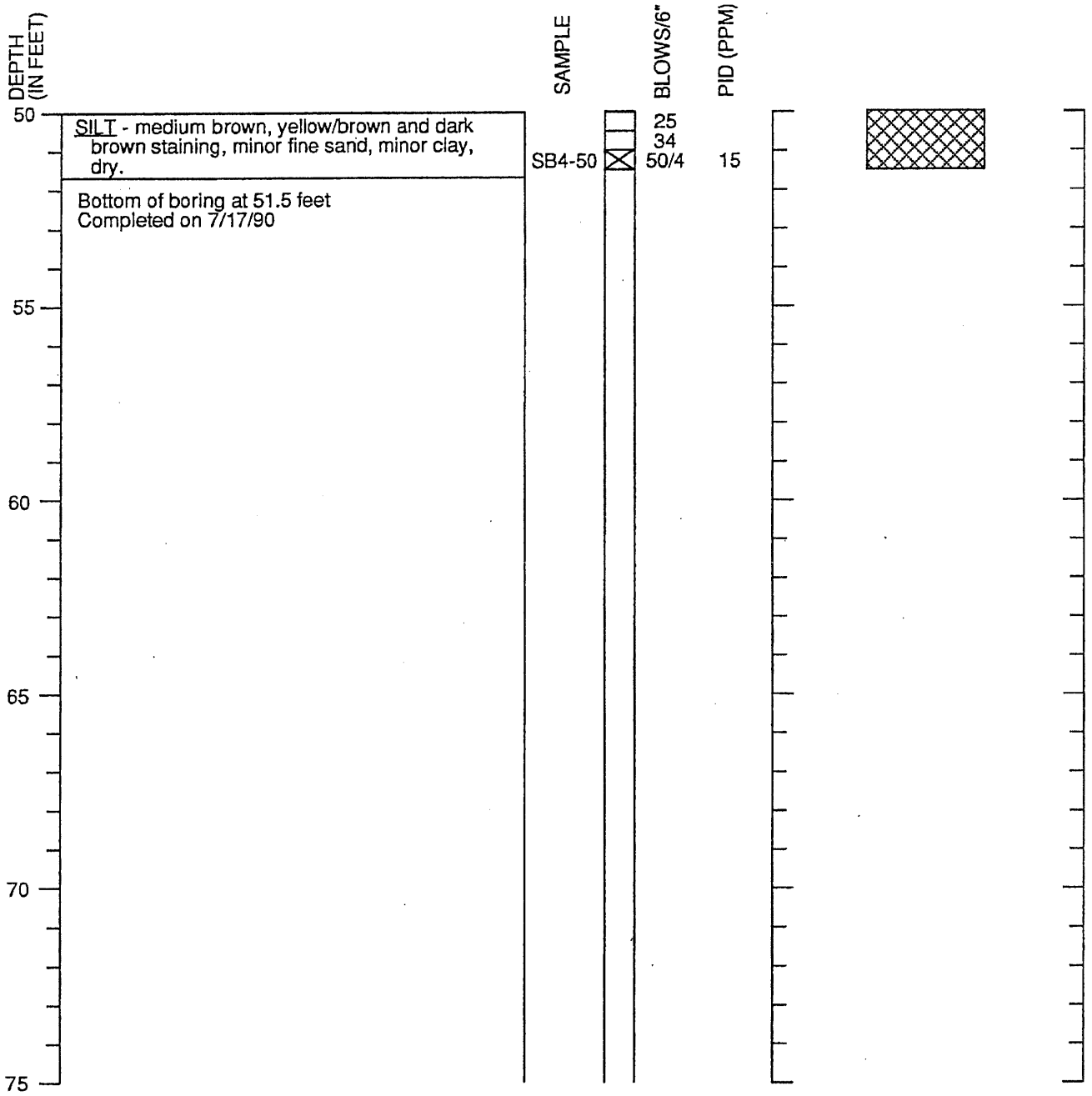
HARTCROWSER

J-6006 *12/90*

Figure A-2

Boring Log SB-4

Geologic Log



1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. No free water encountered.

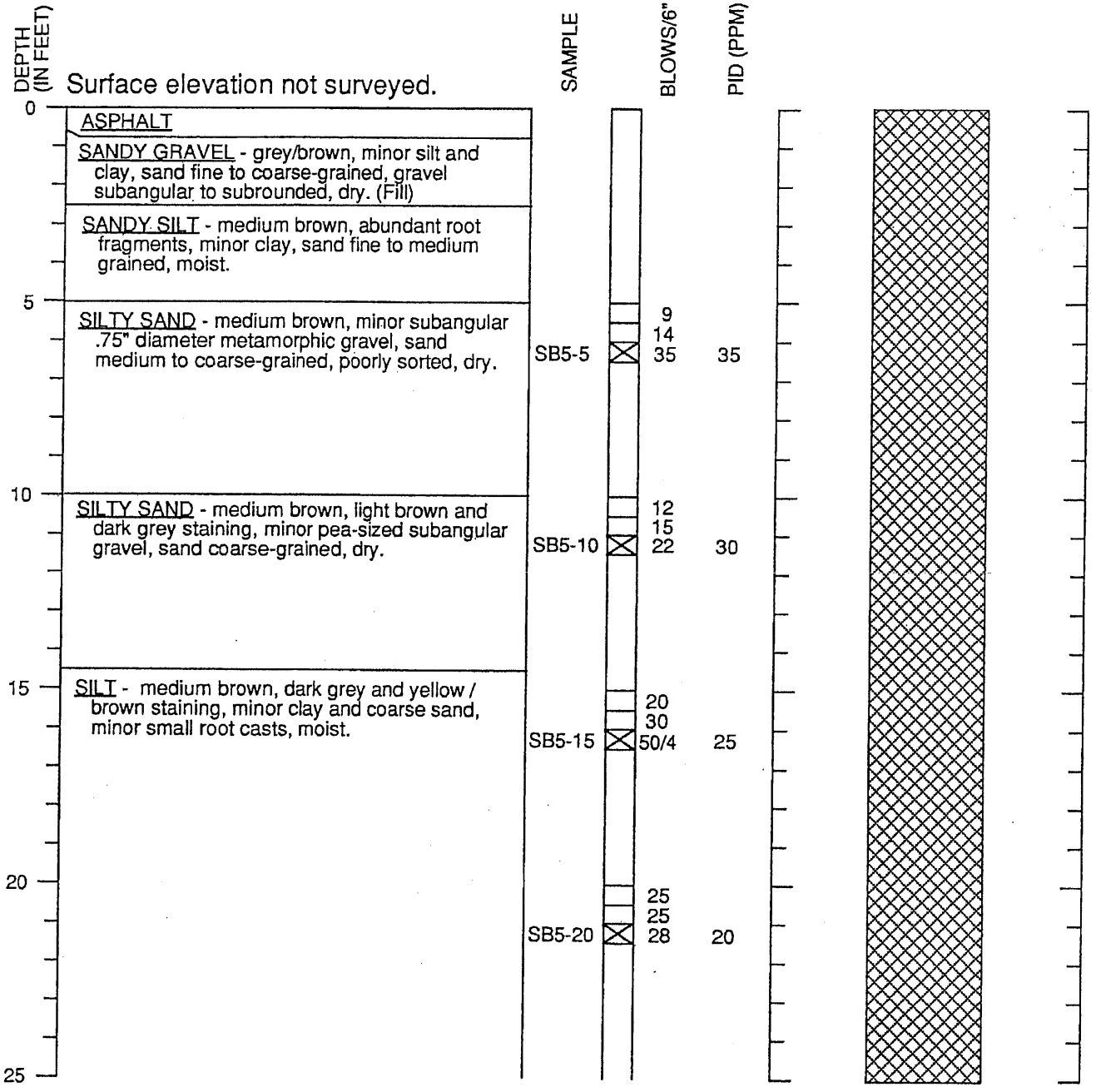
HARTCROWSER

J-6006 *12/90*

Figure A-2

Boring Log SB-5

Geologic Log



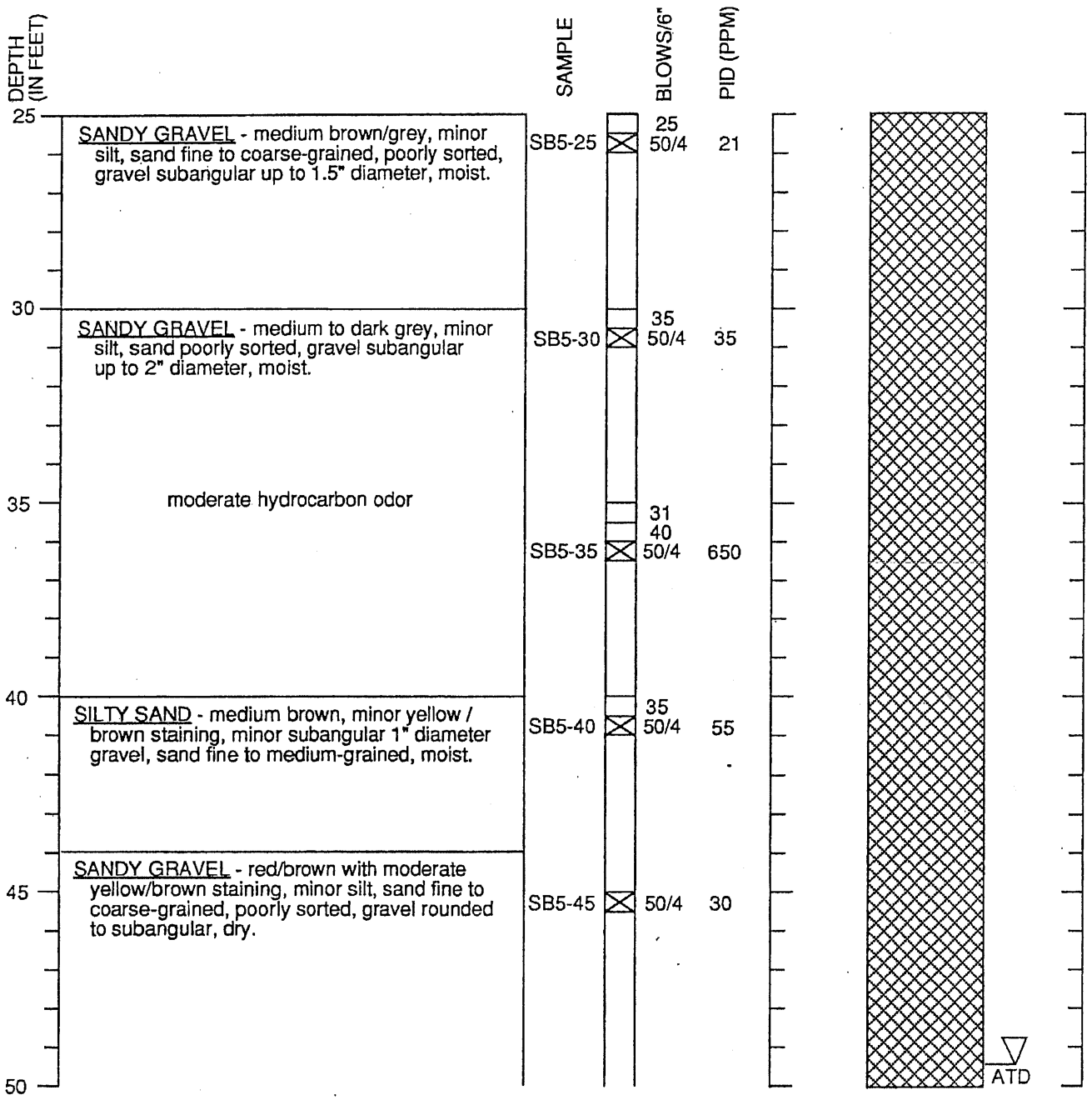
1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. Perched water encountered at 49.5 feet BGS.

HARTCROWSER

J-6006 *12/90*
Figure A-3
Page 1 of 3

Boring Log SB- 5

Geologic Log



1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. Perched water encountered at 49.5 feet BGS

HARTCROWSER

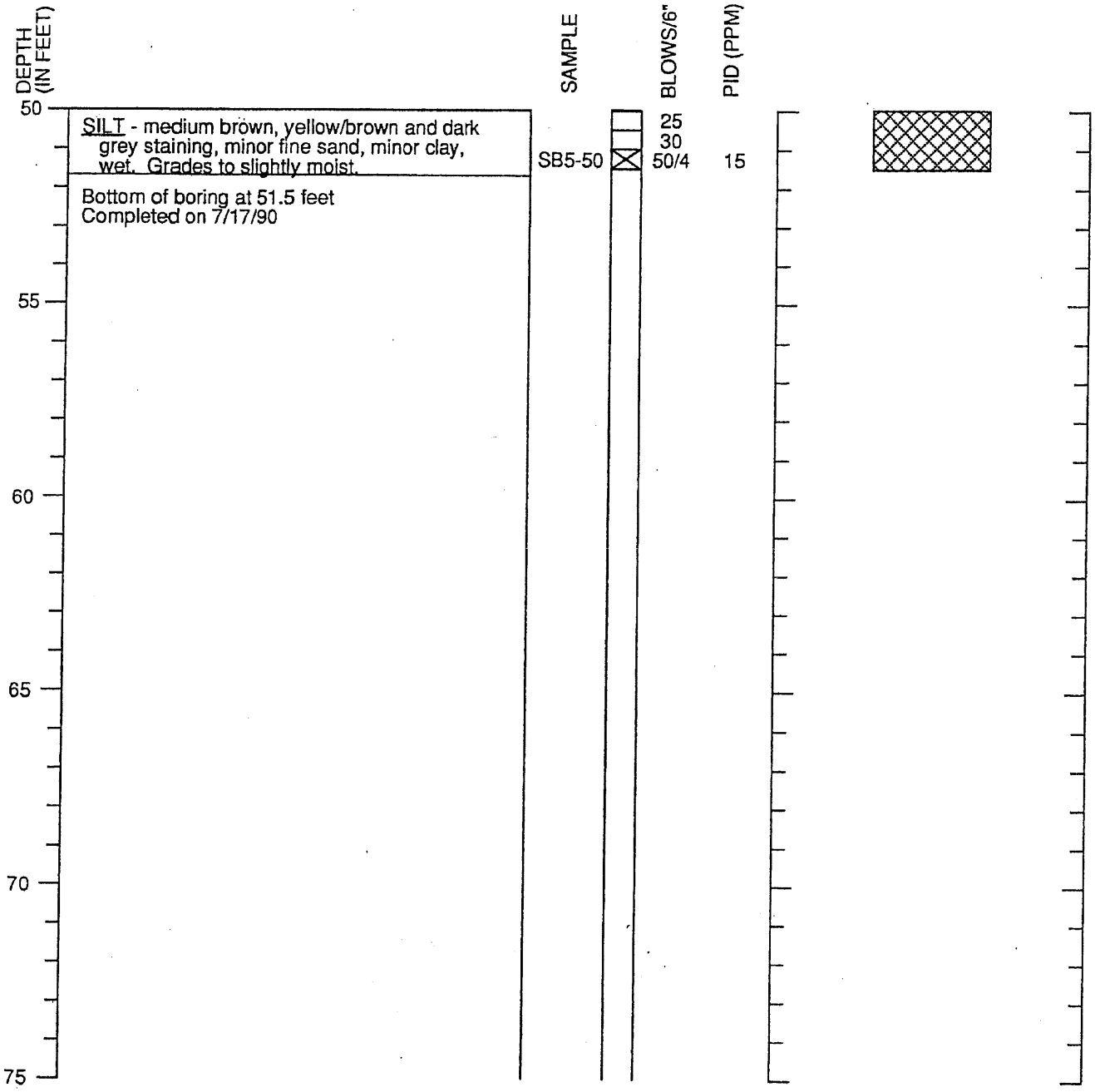
J-6006 *12/90*

Figure A-3

Page 2 of 3

Boring Log SB-5

Geologic Log



1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. Perched water encountered at 49.5 feet.

HARTCROWSER

J-6006 *12/90*
Figure A-3
Page 3 of 3

Cambria Environmental Technology, Inc.
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Oakland, CA 94608
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Fax: (510) 420-9170

BORING/WELL LOG

CLIENT NAME	Equiva Services LLC	**BORING/WELL NAME**	SB-7
JOB/SITE NAME	ple-4226	**DRILLING STARTED**	07-Apr-99
LOCATION	4226 First Street, Pleasanton, California	**DRILLING COMPLETED**	07-Apr-99
PROJECT NUMBER	241-0395	**WELL DEVELOPMENT DATE (YIELD)**	NA
DRILLER	Gregg Drilling	**GROUND SURFACE ELEVATION**	Not Surveyed
DRILLING METHOD	Hollow-stem auger	**TOP OF CASING ELEVATION**	Not Surveyed
BORING DIAMETER	8"	**SCREENED INTERVAL**	NA
LOGGED BY	B. Jakub	**DEPTH TO WATER (First Encountered)**	NA
REVIEWED BY	B. Jakub	**DEPTH TO WATER (Static)**	42.50ft (08-Apr-99)
REMARKS	Hand augered to 4' bgs; located E side of Vineyard exit near planter.		

TPHg (mg/kg)	BLOW COUNTS	RECOVERY	SAMPLE ID	EXTENT	DEPTH (ft bgs)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (ft bgs)
								ASPHALT.	0.3
								FILL.	1.5
						ML		**Sandy SILT**; (ML); brown (10YR4/3); very soft; wet; 5% clay, 70% silt, 25% fine to medium grained sand; low plasticity; moderate to low estimated permeability.	
	11 12 19				5				4.5
						ML		**SILT**; (ML); dark yellow brown (10YR4/6); stiff; moist; 5% clay, 85% silt, 8% sand, 2% fine grained gravel; low plasticity; low estimated permeability.	
	15 25 31				10				9.7
								Clayey SILT; (ML); yellow brown (10YR5/8); stiff; damp; 38% clay, 50% silt, 2% fine grained sand, 10% fine to coarse subangular gravel; high plasticity; low estimated permeability.	
<1.0	16 25 35		SB-7 -15.0		15	ML		@ 14.3 - olive brown (2.5Y4/4) mottled with olive; 20% clay, 78% silt, 2% fine grained gravel; medium plasticity; low estimated permeability.	
<1.0	11 22 25		SB-7 - 19.5		20	SP		**Gravelly SAND with Silt**; (SP); olive gray (5Y4/2); dense; damp; 3% clay, 15% silt, 62% fine to coarse grained sand, 20% fine to coarse grained gravel; no plasticity; high estimated permeability.	19.5 20.3
						GP		**Clayey Sandy GRAVEL**; (GP); yellow brown (10YR5/6); 20% clay, 20% fine to coarse grained sand, 80% fine to coarse grained gravel (quartz, possibly chert); low to medium plasticity; low to moderate estimated permeability.	
<1.0	20 20 20		SB-7 - 24.5		25	SP		**Gravelly SAND with Silt**; (SP); yellow brown (10YR5/6); dense; damp; 3% clay, 15% silt, 52% medium grained sand, 25% fine grained gravel; no plasticity; high estimated permeability.	24.3 25.3
						ML		**Clayey SILT**; (ML); stiff; damp; 30% clay, 60% silt, 10% fine grained sand; high plasticity; low estimated permeability; trace carbon.	
<1.0	35 36 40		SB-7 - 29.3		30	GP		**Sandy GRAVEL with Clay**; (GP); dark olive gray (5Y3/2); 15% clay, 5% silt, 35% fine to coarse grained sand, 45% fine to coarse grained gravel (quartz); low plasticity; moderate to high estimated permeability.	29.0
	19 20				35			**Clayey GRAVEL with Silt**; (GC); yellow brown	34.0

WELL DIAGRAM

WELL LOG (TPH-G) G:\PLE4226\GINT\PLE4226.GPJ DEFAULT.GDT 8/11/99

Continued Next Page

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BORING/WELL LOG

CLIENT NAME	Equiva Services LLC	**BORING/WELL NAME**	SB-7
JOB/SITE NAME	ple-4226	**DRILLING STARTED**	07-Apr-99
LOCATION	4226 First Street, Pleasanton, California	**DRILLING COMPLETED**	07-Apr-99

Continued from Previous Page

TPHg (mg/kg)	BLOW COUNTS	RECOVERY	SAMPLE ID	EXTENT	DEPTH (ft bgs)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (ft bgs)	WELL DIAGRAM
	50		SB-7 - 34.3					(10YR5/8); very dense; damp; 35% clay, 15% silt, 10% sand, 40% fine to coarse grained gravel (quartz); medium plasticity; moderate to low estimated permeability.		
	25 45							@ 39' - quartz, siltstone, chert gravels.		
<1.0	53		SB-7 - 40.0		40	GC				
	25 40							@ 44' - moist to wet.		
83	50/3		SB-7 - 44.5		45				49.0	
	20 30							**Clayey GRAVEL**; (GC); yellow brown (10YR5/4); very dense; moist to wet; 20% clay, 10% silt, 10% medium to coarse grained sand, 60% fine grained gravel; medium plasticity; low to moderate estimated permeability.		Portland Type I/II
<1.0	50		SB-7 -49.5		50					
	30					GC				
<1.0	50/3		SB-7 - 54.3		55					
	20 30									
<1.0	50/3		SB-7 - 59.5		60			**Clayey SILT**; (MH); mottled yellow brown (10YR4/6) and light brownish gray (2.5Y6/2); hard; dry; 20% clay, 70% silt, 10% very fine to fine grained sand; medium plasticity; low estimated permeability.	59.0	
	25 35					MH		@ 64' - dark brown MnO_2 or organic blebs throughout.		
<1.0	50/3		SB-7 - 64.5		65					
	17 32								69.0	
	50/4		SB-7 - 69.5		70			**Clayey SILT**; (MH); light olive brown (2.5Y5/4); hard; dry; 25% clay, 75% silt; medium plasticity; very low estimated permeability.		
	20 40				75			@ 74' - increasing mottled with yellow brown (10YR5/8).	74.5	

Continued Next Page

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BORING/WELL LOG

CLIENT NAME	Equiva Services LLC	**BORING/WELL NAME**	SB-7
JOB/SITE NAME	ple-4226	**DRILLING STARTED**	07-Apr-99
LOCATION	4226 First Street, Pleasanton, California	**DRILLING COMPLETED**	07-Apr-99

Continued from Previous Page

TPHg (mg/kg)	BLOW COUNTS	RECOVERY	SAMPLE ID	EXTENT	DEPTH (ft bgs)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (ft bgs)	WELL DIAGRAM
	50/4		SB-7 - 74.5					@ 74' to 74.5' - black blebs, possibly MnO_2.		
	15 30 50/2		SB-7 - 79.5		80					
	15 25 50		SB-7 - 85.0		85	MH		@ 84' - dark yellow brown (10YR4/6); damp; 30% clay, 70% silt.		
	15 46 50				90					
	25 30 50		SB-7 - 94.5		95			@ 94' - MnO_2 blebs throughout; becomes siltier.		
	25 50/3		SB-7 - 100.0		100	SC		**Clayey SAND with Gravel**; (SC); dark yellow brown (10YR4/6); dense; damp; 30% clay, 5% silt, 50% fine to coarse grained sand, 15% fine grained gravel (quartz); medium plasticity; low to moderate estimated permeability.	99.0 100.0	Bottom of Boring @ 100 ft
								Ground water sample (SB-7-GW) collected.		

WELL LOG (TPH-G) G:\PLE4226\GINT\PLE4226.GPJ DEFAULT.GDT 8/11/99

BORING LOG

DELTA Inogen

Client: Shell Oil Products US
Project Number: SJ4226F1X

Boring No. B-1

Address:	Drilling Date(s): 3/27/07	Boring diameter (in.): 8	Casing Material: NA
4226 1st Street	Drilling Company: Gregg	Sampling Method: Hand Auger/Split Spoon	Screen Interval: NA
Pleasanton, California	Drilling Method: HSA	Well Depth (ft.): NA	Screen slot size: NA
Logged By: Andy Persio	Boring Depth (ft): 35	Casing Diameter (in.): NA	Sand Pack: NA

Depth (ft.)	Water Level	Soil/Rock Graphic	Sampled Interval	Blow Counts (blows/ft)	Recovery (%)	Soil/Rock Visual Description	PID Reading (ppm)	Boring Completion	Depth (ft.)
0						ASPHALT: 6 inches concrete, 2-3 inches base rock.			0
						SC: Clayey SAND, orange brown, 50-60% fine to medium sand, 30-40% fines, 10% gravels up to 1.5 inches in diameter.			
5					100%	5.5 - 7 feet bgs: as above, clay increasing, more compact, moist.	13.3		5
						CL: Lean CLAY with sand, light orangish brown, 20-30% fine sand, 70-80% fines, low plasticity, dry.			
10					83%		2.4		10
						SC: Clayey SAND, orangish brown, 60-70% fine to medium sand, 30-40% fines, trace gravels, dry.			
15					100%		4.8		15
						SC: Clayey SAND with gravel, dark brown to dark gray, 50-60% fine to coarse sand, 30-40% fines, 10-20% gravels up to 1 inch in diameter, dry.			
20					67%		33.3		20
					83%	(as above, orangish brown, 50-60% fine to coarse sand, 15-25% fines, 25-30% gravels up to 1 inch in diameter, dry)	40.6		
25									25
						SC: Clayey SAND, orangish brown, 65-70% fine to coarse sand, 25-30% fines, 10% gravels up to 0.5 inches in diameter, dry.			
30					83%		0.2		30
						CL: Lean CLAY with sand, orangish brown, 75-80% fines, 15-20% fine sand, low plasticity, wet.			
35					67%		0.1		35
						Bottom of boring = 35 feet bgs. Note: Sampled to 35 feet bgs.			
40									40

BORING LOG

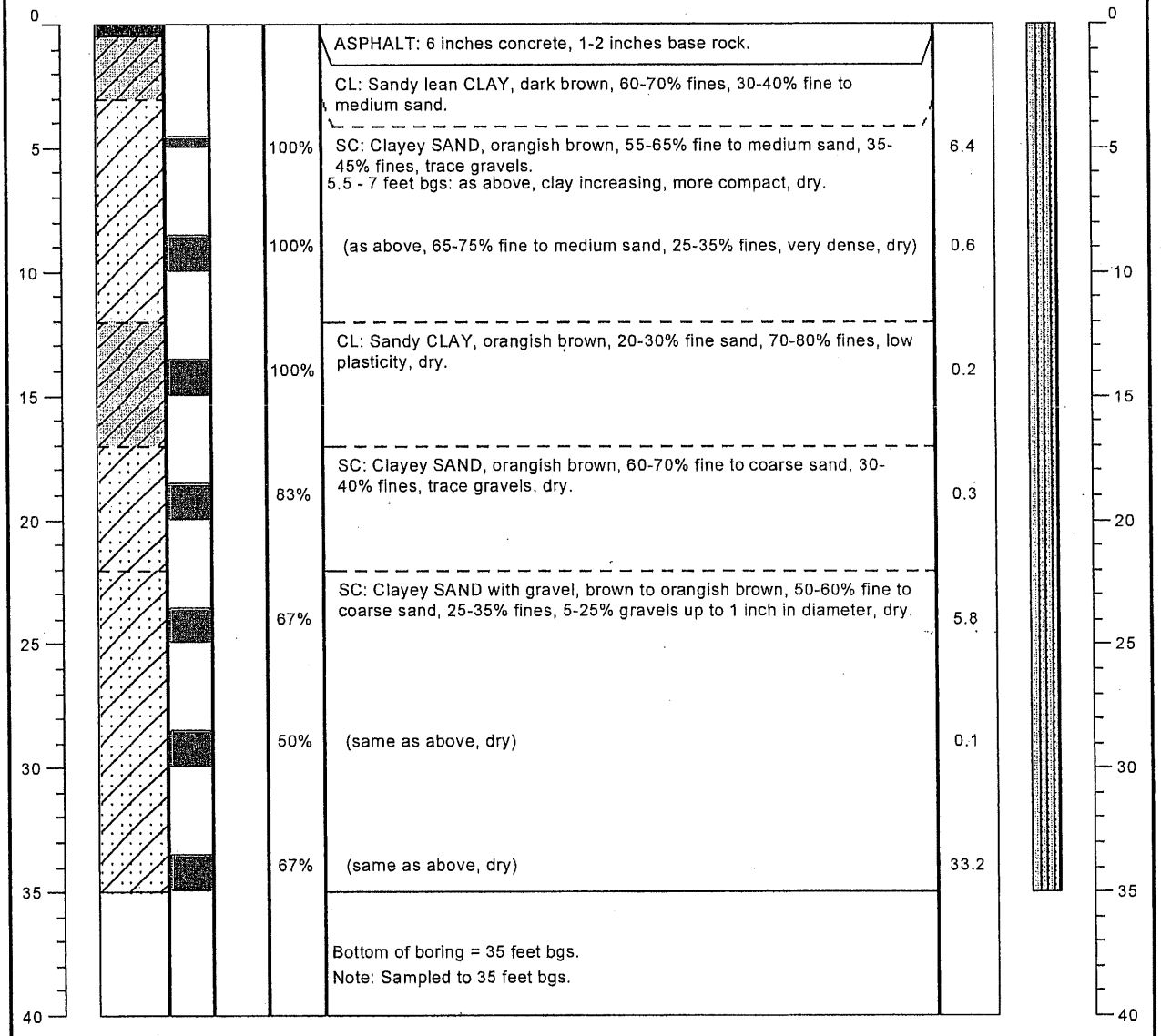
DELTA Xinogen

Client: Shell Oil Products US

Project Number: SJ4226F1X

Boring No. B-2

Address:	Drilling Date(s): 3/27/07	Boring diameter (in.): 6	Casing Material: NA
4226 1st Street	Drilling Company: Gregg	Sampling Method: Hand Auger/Split Spoon	Screen Interval: NA
Pleasanton, California	Drilling Method: HSA	Well Depth (ft.): NA	Screen slot size: NA
Logged By: Andy Persio	Boring Depth (ft): 35	Casing Diameter (in.): NA	Sand Pack: NA



BORING LOG

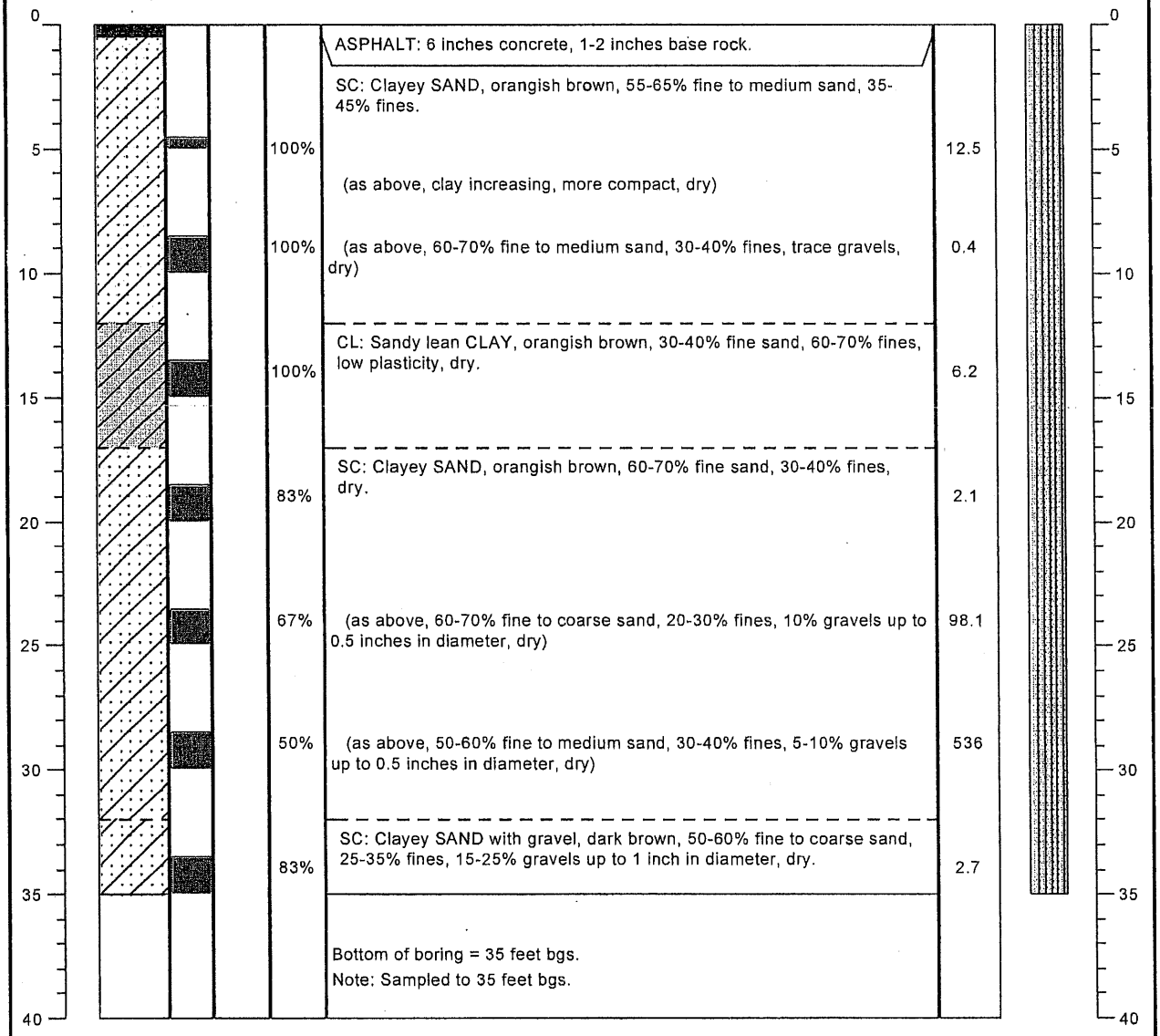
DELTA Xinogen

Client: **Shell Oil Products US**

Project Number: **SJ4226F1X**

Boring No. **B-3**

Address:	Drilling Date(s): **3/27-28/07**	Boring diameter (in.): **8**	Casing Material: **NA**
4226 1st Street	Drilling Company: **Gregg**	Sampling Method: **Hand Auger/Split Spoon**	Screen Interval: **NA**
Pleasanton, California	Drilling Method: **HSA**	Well Depth (ft.): **NA**	Screen slot size: **NA**
Logged By: **Andy Persio**	Boring Depth (ft): **35**	Casing Diameter (in.): **NA**	Sand Pack: **NA**



DELTA Xinogen

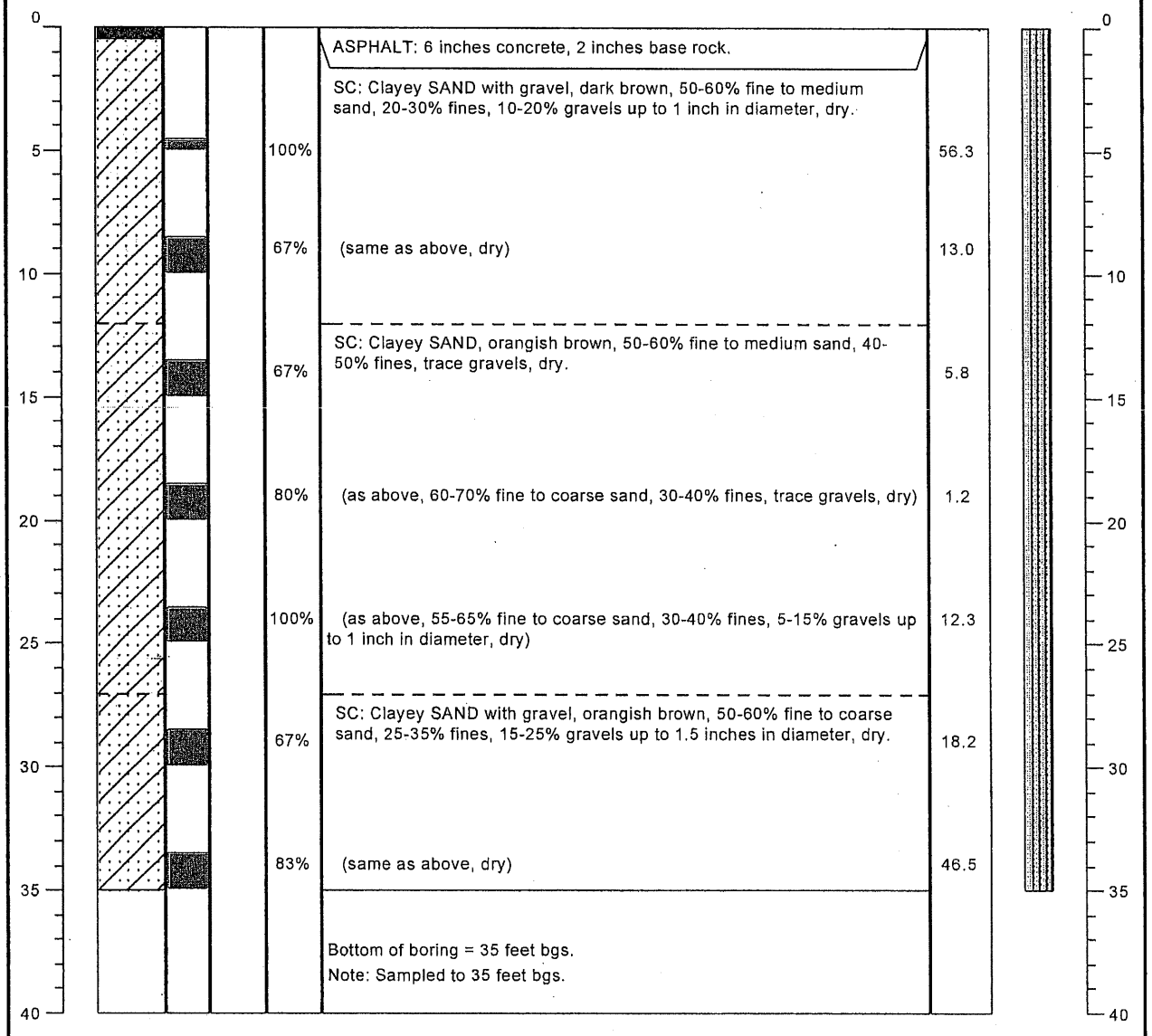
BORING LOG

Client: **Shell Oil Products US**

Project Number: **SJ4226F1X**

Boring No. **B-4**

Address:	Drilling Date(s): **3/27-28/07**	Boring diameter (in.): **6**	Casing Material: **NA**
4226 1st Street	Drilling Company: **Gregg**	Sampling Method: **Hand Auger/Split Spoon**	Screen Interval: **NA**
Pleasanton, California	Drilling Method: **HSA**	Well Depth (ft.): **NA**	Screen slot size: **NA**
Logged By: **Andy Persio**	Boring Depth (ft): **35**	Casing Diameter (in.): **NA**	Sand Pack: **NA**



BORING LOG

DELTA Inogen

Client: Shell Oil Products US

Project Number: SJ4226F1X

Boring No. B-5

Address:	Drilling Date(s): 3/27-28/07	Boring diameter (in.): 6	Casing Material: NA
4226 1st Street	Drilling Company: Gregg	Sampling Method: Hand Auger/Split Spoon	Screen Interval: NA
Pleasanton, California	Drilling Method: HSA	Well Depth (ft.): NA	Screen slot size: NA
Logged By: Andy Persio	Boring Depth (ft): 35	Casing Diameter (in.): NA	Sand Pack: NA

Depth (ft.)	Water Level	Soil/Rock Graphic	Sampled Interval	Blow Counts (blows/ft)	Recovery (%)	Soil/Rock Visual Description	PID Reading (ppm)	Boring Completion	Depth (ft.)
0						ASPHALT: 6 inches concrete, 2 inches base rock.			0
						SC: Clayey SAND with gravel, brown, 50-60% fine to medium sand, 20-30% fines, 10-20% gravels up to 1 inch in diameter, dry.			
5					100%		1.7		5
					100%		2.4		
10						(as above, orangish brown, 50-60% fine to medium sand, 35-45% fines, 5-10% gravels up to 0.5 inches in diameter, dry)			10
					100%		0.1		
15						CL: Sandy lean CLAY, dark brown to dark gray, 65-75% fines, 25-35% fine sand, trace gravels up to 0.5 inches in diameter, low plasticity, dry.			15
					100%		6.1		
20						(as above, orangish brown, 60-70% fines, 30-40% fine sand, medium plasticity, dry)			20
					100%		7.4		
25						SC: Clayey SAND, orangish brown, 55-65% fine to medium sand, 35-45% fines, dry.			25
					67%		7.4		
30						SC: Clayey SAND with gravel, dark gray, 50-60% fine to coarse sand, 25-35% fines, 10-20% gravels up to 1.5 inches in diameter, dry.			30
					100%	(as above, orangish brown, 50-60% fine to coarse sand, 35-45% fines, 5-15% gravels up to 1 inch in diameter, moist)	887		
35						Bottom of boring = 35 feet bgs. Note: Sampled to 35 feet bgs.			35
40									40

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BORING/WELL LOG
(SB-6)

CLIENT NAME	Equiva Services LLC	BORING/WELL NAME	MW-1
JOB/SITE NAME	pie-4226	DRILLING STARTED	08-Apr-99
LOCATION	4226 First Street, Pleasanton, California	DRILLING COMPLETED	09-Apr-99
PROJECT NUMBER	241-0395	WELL DEVELOPMENT DATE (YIELD)	NA
DRILLER	Gregg Drilling	GROUND SURFACE ELEVATION	371.83 ft
DRILLING METHOD	Hollow-stem auger	TOP OF CASING ELEVATION	371.20 ft
BORING DIAMETER	8"	SCREENED INTERVAL	37.5 to 57.5 ft bgs
LOGGED BY	B. Jakub	DEPTH TO WATER (First Encountered)	42.5 ft (08-Apr-99)
REVIEWED BY	B. Jakub	DEPTH TO WATER (Static)	NA

REMARKS: Hand augered to 5' bgs; located near NW planter/entrance to Shell station on Vineyard and W of SB-7.

TPHg (mg/kg)	BLOW COUNTS	RECOVERY	SAMPLE ID	EXTENT	DEPTH (ft bgs)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (ft bgs)
								ASPHALT.	0.3
								FILL.	1.5
						ML		Sandy SILT; (ML); brown (10YR4/3); very soft; wet; 5% clay, 70% silt, 25% fine to medium grained sand; low plasticity; moderate to low estimated permeability.	
					5	ML		SILT; (ML); dark yellow brown (10YR4/6); stiff; moist; 5% clay, 85% silt, 8% sand, 2% fine grained gravel; low plasticity; low estimated permeability.	4.5
					10	ML		Clayey SILT; (ML); yellow brown (10YR5/8); stiff; damp; 38% clay, 50% silt, 2% fine grained sand, 10% fine to coarse subangular gravel; high plasticity; low estimated permeability.	9.7
	18 26 30								
<1.0			SB-6 -15.5		15	SP		Clayey Gravelly SAND; (SP); dark greenish gray (5GY4/1); dense; damp; 20% clay, 50% sand, 30% gravel; medium plasticity; low to moderate estimated permeability; wood fragments.	15.0
	13 11 20								19.3
<1.0			SB-6 - 19.5		20	ML		Sandy SILT with Clay; (ML); olive (5Y4/3); very stiff; damp; 15% clay, 50% silt, 35% very fine grained sand; low plasticity; moderate to low estimated permeability.	
	20 26 30								24.5
<1.0			SB-6 - 25.0		25	SP		Gravelly SAND with Silt; (SP); olive (5Y4/3); dense; damp; 5% clay, 15% silt, 60% fine to medium grained sand, 20% gravel; no plasticity; high to moderate estimated permeability.	
	40 43 45								29.0
<1.0			SB-6 - 30.0		30	GP		Sandy GRAVEL; (GP); olive (5Y4/3); very dense; damp; 2% clay, 13% silt, 35% medium grained sand (red grains), 50% fine to coarse, subangular to subrounded gravel (chert); no plasticity; high estimated permeability.	
	20 35				35			Clayey Gravelly SAND; (SP); dark yellow brown	34.0

WELL DIAGRAM: Portland Type I/II; 2" diam., Schedule 40 PVC; Bentonite Seal

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BORING/WELL LOG

CLIENT NAME	Equiva Services LLC	BORING/WELL NAME	MW-1
JOB/SITE NAME	ple-4226	DRILLING STARTED	08-Apr-99
LOCATION	4226 First Street, Pleasanton, California	DRILLING COMPLETED	09-Apr-99

Continued from Previous Page

TPHg (mg/kg)	BLOW COUNTS	RECOVERY	SAMPLE ID	EXTENT	DEPTH (ft bgs)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (ft bgs)	WELL DIAGRAM
<1.0	50		SB-6 - 35.0					(10YR4/6); very dense; damp; 20% clay, 10% silt, 40% medium grained sand, 30% fine to coarse grained gravel (sandstone/claystone, serpentinite, some MnO_2/Fe staining); low plasticity; moderate to low estimated permeability.		◄ Monterey Sand #3
	20									
	45									
<1.0	60/4		SB-6 - 40.0		40	SP				
	25									
	45							@ 44' - moist to wet.		
	45				45					
										◄ 2"-diam., 0.020" Slotted Schedule 40 PVC
	32				50	GC		Clayey GRAVEL with Silt; (GC); dark yellow brown (10YR4/6); very dense; moist to wet; 25% clay, 15% silt, 20% fine to coarse grained sand, 40% fine to coarse grained gravel.	50.0	
	60/6									
	15				55	MH		Clayey SILT; (MH); light olive brown (2.5Y5/4); hard; damp; 25% clay, 75% silt; medium to high plasticity; very low estimated permeability; black MnO_2 blebs throughout.	55.2	
	40									
	50								58.0	Bottom of Boring @ 58 ft

WELL LOG (TPH-G) G:\PLE4226\GINTPLE4226.GPJ; DEFAULT.GDT 8/11/99

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BORING/WELL LOG

CLIENT NAME	Equiva Services LLC	BORING/WELL NAME	MW-2
JOB/SITE NAME	Shell-branded service station	DRILLING STARTED	18-Jan-00
LOCATION	4226 First Street, Pleasanton, California	DRILLING COMPLETED	19-Jan-00
PROJECT NUMBER	241-0395	WELL DEVELOPMENT DATE (YIELD)	03-Feb-00
DRILLER	Gregg Drilling	GROUND SURFACE ELEVATION	372.65 ft above msl
DRILLING METHOD	Hollow-stem auger	TOP OF CASING ELEVATION	372.40 ft above msl
BORING DIAMETER	8"	SCREENED INTERVAL	26 to 46 ft bgs
LOGGED BY	B. Jakub	DEPTH TO WATER (First Encountered)	33.0 ft (18-Jan-00) ▽
REVIEWED BY	S. Bork, RG# 5620	DEPTH TO WATER (Static)	NA ▼
REMARKS	Hand augered to 5' bgs.		

TPHg (ppm)	BLOW COUNTS	SAMPLE ID	DEPTH (ft bgs)	U.S.C.S.	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (ft bgs)
				ML	ASPHALT. Sandy SILT; (ML); dark brown; soft; damp; 3% clay, 80% silt, 15% fine grained sand, 2% gravel; low plasticity; low to moderate estimated permeability; palm tree roots.	0.5 4.0
			5	SM	Silty SAND; (SM); yellow brown; soft; damp; 2% clay, 43% silt, 50% sand, 5% gravel; low plasticity; moderate estimated permeability.	5.8
				MH	Clayey SILT; (MH); yellow brown; stiff; damp; 38% clay, 50% silt, 2% fine grained sand, 10% fine to coarse, subangular gravel; high plasticity; low estimated permeability.	6.6
<1.0		MW-2-6.3'		SM	Silty SAND; (SM); yellow brown; dense; damp; 2% clay, 40% silt, 50% sand, 8% gravel; no plasticity; high estimated permeability.	10.0
			10	SM	Clayey Silty SAND; (SM); yellow brown; stiff; damp; 15% clay, 30% silt, 50% sand, 5% gravel; low plasticity; moderate estimated permeability.	11.0
				SM	Silty SAND; (SM); yellow brown; dense; damp; 2% clay, 40% silt, 50% sand, 8% gravel; no plasticity; high estimated permeability. @ 12.8' - 10% clay, 38% silt, 50% sand, 8% gravel; moderate estimated permeability.	15.0
			15	ML	Clayey SILT; (ML); yellowish brown; stiff; damp; 15% clay, 80% silt, 3% sand, 2% gravel; medium plasticity; low estimated permeability.	16.5
<1.0		MW-2-16.5'		SM	Gravelly Silty SAND; (SM); yellow brown; damp; 5% clay, 25% silt, 45% fine to coarse grained sand, 25% gravel to 3/4"; high estimated permeability.	18.2
			20	SM	Clayey Silty SAND; (SM); yellow brown; damp; 15% clay, 25% silt, 50% sand, 10% fine gravel.	22.0
<1.0		MW-2-21.5'		GM	Sandy Silty GRAVEL; (GM); yellow brown; damp; 10% clay, 30% silt, 20% sand, 40% fine to coarse gravel; chert to 2".	
			25			26.0
<1.0		MW-2-26.0'		SM	Gravelly Silty SAND; (SM); very dense; damp; 5% clay, 30% silt, 40% sand, 25% gravel; no to low plasticity; moderate to high estimated permeability.	30.0
	35 50/6		30			
<1.0	36 50/6	MW-2-30.5'		GM	Clayey Sandy Silty GRAVEL; (GM); dark yellow brown; very dense; damp; 15% clay, 15% silt, 20% sand, 50% fine to coarse gravel; low plasticity; moderate estimated permeability. @ 31.7' - color change to dark greenish gray; chert to 2". ▽	33.5
	45 50/6				Sandy Clayey GRAVEL; (GC); very dense; wet to saturated; 25% clay, 15% silt, 20% sand, 40% gravel.	
	24		35			

WELL DIAGRAM: 4" diam., Schedule 40 PVC; Portland Type I/II; Bentonite Seal; Lonestar Sand #3

Continued Next Page

Cambria Environmental Technology, Inc.
1144 - 65th St.
Oakland, CA 94608
Telephone: (510) 420-0700
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BORING/WELL LOG

CLIENT NAME	Equiva Services LLC	**BORING/WELL NAME**	MW-2
JOB/SITE NAME	Shell-branded service station	**DRILLING STARTED**	18-Jan-00
LOCATION	4226 First Street, Pleasanton, California	**DRILLING COMPLETED**	19-Jan-00

Continued from Previous Page

TPHg (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (ft bgs)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (ft bgs)	WELL DIAGRAM
<1.0	50/6 40 50/6 35 50/6 50/6 37 50/6 29 50/6 27 50/6 26 50/6 12 19 27	MW-2-35.0'		40 45	GC ML ML ML		**Sandy Clayey GRAVEL**; (GC); very dense; wet to saturated; 25% clay, 15% silt, 20% sand, 40% gravel. **Sandy Gravelly SILT**; (ML); hard; saturated; 12% clay, 58% silt, 15% sand, 15% gravel; medium plasticity; low estimated permeability. **Sandy Clayey SILT**; (ML); hard; saturated; 15% clay, 60% silt, 15% sand, 10% gravel. **Sandy SILT**; (ML); hard; saturated; 12% clay, 45% silt, 43% fine grained sand; slight plasticity ; low estimated permeability.	40.3 43.5 45.0 48.0	4"-diam., 0.020" Slotted Schedule 40 PVC Bottom of Boring @ 48 ft

WELL LOG (SHELL) G:\PLEASA-4\GINT\PLE4226.GPJ DEFAULT.GDT 6/23/00

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BORING/WELL LOG

CLIENT NAME	Equiva Services LLC	BORING/WELL NAME	MW-3
JOB/SITE NAME	Shell-branded service station	DRILLING STARTED	18-Jan-00
LOCATION	4226 First Street, Pleasanton, California	DRILLING COMPLETED	19-Jan-00
PROJECT NUMBER	241-0395	WELL DEVELOPMENT DATE (YIELD)	03-Feb-00
DRILLER	Gregg Drilling	GROUND SURFACE ELEVATION	375.90 ft above msl
DRILLING METHOD	Hollow-stem auger	TOP OF CASING ELEVATION	375.05 ft above msl
BORING DIAMETER	8"	SCREENED INTERVAL	20 to 35 ft bgs
LOGGED BY	B. Jakub	DEPTH TO WATER (First Encountered)	25.0 ft (18-Jan-00) ▽
REVIEWED BY	S. Bork, RG# 5620	DEPTH TO WATER (Static)	NA ▼
REMARKS	Hand augered to 5' bgs.		

TPHg (ppm)	BLOW COUNTS	SAMPLE ID	DEPTH (ft bgs)	U.S.C.S.	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (ft bgs)
			0		**ASPHALT.**	0.5
				ML	**SILT**; (ML); brown; soft; damp; 2% clay, 90% silt, 7% fine grained sand, 1% gravel; no plasticity; moderate to low estimated permeability.	
<1.0	14 28 40	MW-3-5.0'	5	SM	**Silty SAND**; (SM); yellow brown; dense; damp; 2% clay, 43% silt, 55% sand.	5.3 5.8
					Clayey SILT; (ML); yellow brown; hard; wet; 15% clay, 60% silt, 5% sand, 10% fine to coarse, subangular gravel; medium plasticity; low estimated permeability.	
<1.0	26 50/6	MW-3-10.5'	10	ML		
<1.0	42 50/6	MW-3-15.5'	15		**Gravelly Silty SAND**; (SM); yellow brown; very dense; 5% clay, 20% silt, 60% fine grained sand, 15% fine, subangular to subrounded gravel.	15.0
<1.0	13 24 50/6	MW-3-20.5'	20	SM	@ 22' - silt layer noted by driller.	
<1.0	12 22 30	MW-3-25.5'	25	SM	▽ **Clayey Silty SAND**; (SM); yellow brown; dense; wet to saturated; 15% clay, 35% silt, 40% fine grained sand, 10% fine to coarse, subangular gravel; low plasticity; low estimated permeability.	25.0
	50/6		30	GM	**Sandy Silty GRAVEL**; (GM); very dense; 5% clay, 30% silt, 25% sand, 40% gravel; low plasticity; moderate estimated permeability.	30.0
			35			35.0

WELL DIAGRAM

- 4" diam., Schedule 40 PVC
- Portland Type I/II
- Bentonite Seal
- Lonestar Sand #3
- 4"-diam., 0.020" Slotted Schedule 40 PVC

WELL LOG (SHELL) G:\PLEASA~4\GINTPLE4226.GPJ DEFAULT.GDT 6/23/00

Continued Next Page

Cambria Environmental Technology, Inc.
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Oakland, CA 94608
Telephone: (510) 420-0700
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BORING/WELL LOG

CLIENT NAME	Equiva Services LLC	**BORING/WELL NAME**	MW-3
JOB/SITE NAME	Shell-branded service station	**DRILLING STARTED**	18-Jan-00
LOCATION	4226 First Street, Pleasanton, California	**DRILLING COMPLETED**	19-Jan-00

Continued from Previous Page

TPHg (ppm)	BLOW COUNTS	SAMPLE ID	EXTENT	DEPTH (ft bgs)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (ft bgs)	WELL DIAGRAM
	15 36 48				ML		SILT; (ML); light brown; hard; 10% clay, 80% silt, 10% sand; low plasticity; low estimated permeability.		Bentonite Seal
	15 25 42			40	ML		Clayey SILT; (ML); hard; 20% clay, 70% silt, 10% fine grained sand; medium plasticity; low estimated permeability.	40.0 41.5	Bottom of Boring @ 41.5 ft

WELL LOG (SHELL) G:\PLEASA~4\GINT\PLE4226.GPJ DEFAULT.GDT 6/23/00

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Project No:	Sj42-26F-1	Client:	Shell Oil Products US	Boring No: WO-1	
Logged By:	Heather Buckingham	Location:	4226 First Street, Pleasanton	Page 1 of 2	
Driller:	Gregg	Date Drilled:	6/10/2005	Location Map	
Drilling Method:	Direct Push	Hole Diameter:	3"	Please see site map	
Sampling Method:	GeoProbe	Hole Depth:	37 ft		
Casing Type:		Well Diameter:			
Slot Size:		Well Depth:			
Gravel Pack:		Casing Stickup:			
Elevation		Northing		Easting	

Well Completion (Backfill / Casing)	Static Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample Recovery	Sample Interval	Soil Type	LITHOLOGY / DESCRIPTION
Grout				hand augered				AF	Asphalt ~4"
		damp			1			CL	**Sandy Lean CLAY**: medium brown; 30-40% fine to coarse grained sand; soft; low plasticity
					2				
					3				
					4				
					5				(same as above, orangish brown; trace gravels)
					6				
					7			CL	**Sandy Lean CLAY with Gravels**: orangish brown; 55-65% fines; 35-45% fine grained sand; 15-20% rounded gravels up to ~4 mm in length
					8				
					9				
			0.1		10				
					11				(same as above, trace coarse grained sand)
					12				
					13				
					14				
			0.1		15				
					16			CL	**Sandy Lean CLAY**: same as above, trace gravels
					17				
		moist			18			CL	**Sandy Lean CLAY with Gravels**: same as above; gravels up to ~0.5 cm in length
					19				
			0.1		20				
					21			CL	**Sandy Lean CLAY**: same as above, dark gray mottling
					22				**Sandy Lean CLAY with Gravels**: same as above, dark gray mottling
								CL	

Delta
Environmental Consultants, Inc.

Project No:	SJ42-26F-1	Client:	Shell Oil Products US	Boring No: WO-1	
Logged By:	Heather Buckingham	Location:	4226 First Street, Pleasanton	Page 2 of 2	
Driller:	Gregg	Date Drilled:	6/10/2005	Location Map	
Drilling Method:	Direct Push	Hole Diameter:	3"	Please see site map	
Sampling Method:	GeoProbe	Hole Depth:	37 ft		
Casing Type:		Well Diameter:			
Slot Size:		Well Depth:			
Gravel Pack:		Casing Stickup:			
Elevation		Northing		Easting	

Well Completion (Backfill / Casing)	Static Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample Recovery	Sample Interval	Soil Type	LITHOLOGY / DESCRIPTION
Grout								CL	**Sandy Lean CLAY with Gravels** (Continued)
					23			SC	**Clayey SAND**: orange brown; ~70% poorly graded fine
		wet							grained sand; ~30% fines
		moist			24			CL	**Sandy Lean CLAY with Gravels**: same as above
			0.1		25				
					26				
					27			GW	**Well-graded GRAVEL with Sand**: orange brown; 10% fines; 30% coarse grained sand; 60% well graded sub-angular gravels
					28				
					29			CL	**Sandy Lean CLAY with Gravel**: same as above
					30				
			0.1		31			GW	**Well-graded GRAVEL with Silt**: orange tan; 10-20% silt; sub-angular gravels up to 0.5 cm in length
					32			GW	**Well-graded GRAVEL with Sand**: orange brown; ~40% coarse grained sand; 55-60% sub-rounded gravels; trace fines
					33			GW	**Well-graded GRAVEL with Clay**: orange brown; 20-30% clay; 80-70% sub-angular gravel up to 0.5 cm in length; trace coarse grained sand
					34				
					35				
			5.7		36				
					37				**Refusal at 37 feet below grade.** Hole remained dry after three hour wait.
					38				
					39				
					40				
					41				
					42				
					43				
					44				

Delta
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Project No:	SJ42-26F-1	Client:	Shell Oil Products US	Well No: MW-1B
Logged By:	AP	Location:	4226 First Street	Page 1 of 6
Driller:	Gregg	Date Drilled:	8/23/2006	
Drilling Method:	HSA/AK (7')	Hole Diameter:	12"	
Sampling Method:	SS	Hole Depth:	108'	
Casing Type:	sch 40 PVC	Well Diameter:	4"	
Slot Size:	0.01	Well Depth:	108'	
Gravel Pack:	#2/12 sand	Casing Stickup:	-	
Elevation		Northing		Easting

Location Map

Please see site map

Well Completion (Backfill / Casing)	Static Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample Recovery	Sample Interval	Soil Type	LITHOLOGY / DESCRIPTION
Grout				air knifed & hand augered	1			AF	~4" asphalt, ~8" baserock
					2				See Cambria's MW-1 boring log (attached) for soil lithology between 1 and 58.5 feet bg
					3				
					4				
					5				
					6				
					7				
					8				
					9				
					10				
					11				
					12				
					13				
					14				
					15				
					16				
					17				
					18				
					19				
					20				

Delta

Environmental Consultants, Inc.

Project No:	SJ42-26F-1	Client:	Shell Oil Products US	Well No: MW-1B	
Logged By:	AP	Location:	4226 First Street	Page 2 of 6	
Driller:	Gregg	Date Drilled:	8/23/2006	Location Map	
Drilling Method:	HSA/AK (7')	Hole Diameter:	12"	Please see site map	
Sampling Method:	SS	Hole Depth:	108'		
Casing Type:	sch 40 PVC	Well Diameter:	4"		
Slot Size:	0.01	Well Depth:	108'		
Gravel Pack:	#2/12 sand	Casing Stickup:	-		
Elevation		Northing		Easting	

Well Completion: Backfill	Well Completion: Casing	Static Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample: Recovery	Sample: Interval	Soil Type	LITHOLOGY / DESCRIPTION
Grout						21				
						22				
						23				
						24				
						25				
						26				
						27				
						28				
						29				
						30				
						31				
						32				
						33				
						34				
						35				
						36				
						37				
						38				
						39				
						40				

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Environmental Consultants, Inc.

Project No:	SJ42-26F-1	Client:	Shell Oil Products US	Well No: MW-1B
Logged By:	AP	Location:	4226 First Street	Page 3 of 6
Driller:	Gregg	Date Drilled:	8/23/2006	
Drilling Method:	HSA/AK (7')	Hole Diameter:	12"	
Sampling Method:	SS	Hole Depth:	108'	
Casing Type:	sch 40 PVC	Well Diameter:	4"	
Slot Size:	0.01	Well Depth:	108'	
Gravel Pack:	#2/12 sand	Casing Stickup:	-	
Elevation		Northing		Easting

Location Map

Please see site map

Well Completion: Backfill	Well Completion: Casing	Static Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample: Recovery	Sample: Interval	Soil Type	LITHOLOGY / DESCRIPTION
Grout						41				
						42				
						43				
						44				
						45				
						46				
						47				
						48				
						49				
						50				
						51				
						52				
						53				
						54				
						55				
						56				
						57				
						58				
			dry	8.1	14 16 21	59 60			ML	**SILT**: mottled yellow brown and orangish brown, hard, 80-90% fines, <10% fine to very fine grained sands, low plasticity

Delta
Environmental Consultants, Inc.

Project No:	SJ42-26F-1	Client:	Shell Oil Products US	Well No: MW-1B	
Logged By:	AP	Location:	4226 First Street	Page 4 of 6	
Driller:	Gregg	Date Drilled:	8/23/2006	Location Map	
Drilling Method:	HSA/AK (7')	Hole Diameter:	12"	Please see site map	
Sampling Method:	SS	Hole Depth:	108'		
Casing Type:	sch 40 PVC	Well Diameter:	4"		
Slot Size:	0.01	Well Depth:	108'		
Gravel Pack:	#2/12 sand	Casing Stickup:	-		
Elevation		Northing		Easting	

Well Completion: Backfill	Well Completion: Casing	Static Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample: Recovery	Sample: Interval	Soil Type	LITHOLOGY / DESCRIPTION
Grout									ML	SILT (cont.)
						61				
						62				
						63				
			dry	11.5	10 12 14	64				
						65				
						66				
						67				
						68				
			dry	10.9	11 16 18	69				
						70				
						71				
						72				
						73				
			dry	9.9	11 13 17	74				
						75				
						76				
						77				
						78				
			dry	9.1	11 13 16	79				(80-90% fines, <10% very fine grained sands, medium plasticity)
						80				

Delta
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Project No:	SJ42-26F-1	Client:	Shell Oil Products US	Well No: MW-1B	
Logged By:	AP	Location:	4226 First Street	Page 5 of 6	
Driller:	Gregg	Date Drilled:	8/23/2006	Location Map	
Drilling Method:	HSA/AK (7')	Hole Diameter:	12"	Please see site map	
Sampling Method:	SS	Hole Depth:	108'		
Casing Type:	sch 40 PVC	Well Diameter:	4"		
Slot Size:	0.01	Well Depth:	108'		
Gravel Pack:	#2/12 sand	Casing Stickup:	-		
Elevation		Northing		Easting	

Well Completion (Backfill / Casing)	Static Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample Recovery	Sample Interval	Soil Type	LITHOLOGY / DESCRIPTION
Grout					81			ML	SILT (cont.)
					82				
					83				
				10	84			ML	**SILT with Sand**: mottled yellow brown and orange brown,
		dry	9.2	14					hard, 70-80% fines, 20-30% very fine to fine grained sands,
				18	85				low to no plasticity
					86				
					87				
					88				
				10	89				
		moist	9.9	16					(15-25% very fine grained sands)
				21	90				
					91				
					92				
					93				
				13	94				
		dry	11.9	16					(20-30% very fine grained sands)
				20	95				
					96				
Bentonite					97				
					98				
Sand	▽			11	99			SC	**Clayey SAND with Gravel**: brown, dense, 10-20% fines,
		wet	8.1	16					20-30% gravels up to 1" diameter, 60-70% medium to
				20	100				coarse grained sands (mostly coarse grained)

Delta
Environmental Consultants, Inc.

Project No:	SJ42-26F-1	Client:	Shell Oil Products US	Well No: MW-1B
Logged By:	AP	Location:	4226 First Street	Page 6 of 6
Driller:	Gregg	Date Drilled:	8/23/2006	
Drilling Method:	HSA/AK (7')	Hole Diameter:	12"	
Sampling Method:	SS	Hole Depth:	108'	
Casing Type:	sch 40 PVC	Well Diameter:	4"	
Slot Size:	0.01	Well Depth:	108'	
Gravel Pack:	#2/12 sand	Casing Stickup:	-	
Elevation		Northing		Easting

Location Map

Please see site map

Well Completion (Backfill / Casing)	Static Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample Recovery	Sample Interval	Soil Type	LITHOLOGY / DESCRIPTION
Sand					101			SC	**Clayey SAND with Gravel** (cont.)
					102				
					103				
				13	104				(30-40% fines, 40-60% fine to coarse graines sands,
		wet	0.7	17					10-20% gravels up to 1" diameter)
				19	105				
					106				
				13	107				(25-35% fines, 55-65% sand, 10-20% gravels up to
		wet	0.8	17					2" diameter)
				20	108				Bottom of boring at 108 feet bg
					109				
					110				
					111				
					112				
					113				
					114				
					115				
					116				
					117				
					118				
					119				
					120				

Delta
Environmental Consultants, Inc.

Project No:	SJ42-26F-1	Client:	Shell Oil Products US	Well No: MW-4
Logged By:	AP	Location:	4226 First Street	Page 1 of 3
Driller:	Gregg	Date Drilled:	8/24/2006	
Drilling Method:	HSA/AK (7')	Hole Diameter:	12"	
Sampling Method:	SS	Hole Depth:	50'	
Casing Type:	sch 40 PVC	Well Diameter:	4"	
Slot Size:	0.01	Well Depth:	47'	
Gravel Pack:	#2/12 sand	Casing Stickup:	-	
Elevation		Northing		Easting

Location Map

Please see site map

Well Completion: Backfill	Well Completion: Casing	Static Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample: Recovery	Sample: Interval	Soil Type	LITHOLOGY / DESCRIPTION
Grout					air knifed & hand augered	1			AF	~4" asphalt, ~8" baserock
						2				
						3				
						4				
						5				
						6				
						7				
						8				
			dry	0.1	3 4 5	9			SC	**Clayey SAND with Gravel**: dark brown to orangish brown, loose, 60-70% fine to coarse grained sands, 20-30% fines, 10-20% gravels up to 1" diameter
						10				
						11				
						12				
						13			CL	**Sandy Lean CLAY**: orangish brown, very stiff, 5-10% gravels up to 1" diameter, 35-45% fine grained sands, 50-60% fines, low plasticity
			moist	7.4	6 8 12	14				
						15				
						16				
						17				
						18			SC	
			moist	2	7 11 11	19 20				**Clayey SAND**: orangish brown, medium dense, 20-30% fines, 70-80% fine grained sands, trace gravels up to 0.5" diameter, low plasticity

Delta
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Project No:	SJ42-26F-1	Client:	Shell Oil Products US	Well No: MW-4
Logged By:	AP	Location:	4226 First Street	Page 2 of 3
Driller:	Gregg	Date Drilled:	8/24/2006	
Drilling Method:	HSA/AK (7')	Hole Diameter:	12"	
Sampling Method:	SS	Hole Depth:	50'	
Casing Type:	sch 40 PVC	Well Diameter:	4"	
Slot Size:	0.01	Well Depth:	47'	
Gravel Pack:	#2/12 sand	Casing Stickup:	-	
Elevation		Northing		Easting

Location Map

Please see site map

Well Completion (Backfill / Casing)	Static Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample Recovery	Sample Interval	Soil Type	LITHOLOGY / DESCRIPTION
Grout								SC	Clayey SAND (cont.)
					21				
					22				
					23				
				6	24			SP-SC	**Poorly Graded SAND with Clay**: brown, medium dense,
		moist	4.1	8					5-15% fines, 85-95% fine grained sands
				9	25				
					26				
					27				
					28				
				11	29			SC	**Clayey SAND with Gravel**: brown, medium dense, 20-30%
		moist	7.2	13					fines, 10-20% gravels up to 0.5" diameter, 50-70% fine to
				17	30				coarse grained sands
					31				
					32				
					33				
Bentonite	▼			10	34			CL	**Sandy lean CLAY with Gravel**: brown, hard, 10-20%
		moist	340	16					gravels up to 1" diameter, 20-30% fine grained sands
				20	35				(mostly in small inclusions or lenses), 50-70% fines,
				12	36				low plasticity
		moist	555	14					
				17	37				
Sand					38				
				13	39				(orangish brown w/grey mottling, 15-25% gravels up
		moist	762	17					to 1" diameter, 20-30% fine grained sands, 45-65%
				20	40				fines, low plasticity)

Delta

Environmental Consultants, Inc.

Project No:	SJ42-26F-1	Client:	Shell Oil Products US	Well No: MW-4
Logged By:	AP	Location:	4226 First Street	Page 3 of 3
Driller:	Gregg	Date Drilled:	8/24/2006	
Drilling Method:	HSA/AK (7')	Hole Diameter:	12"	
Sampling Method:	SS	Hole Depth:	50'	
Casing Type:	sch 40 PVC	Well Diameter:	4"	
Slot Size:	0.01	Well Depth:	47'	
Gravel Pack:	#2/12 sand	Casing Stickup:	-	
Elevation		Northing		Easting

Location Map

Please see site map

Well Completion (Backfill / Casing)	Static Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample Recovery	Sample Interval	Soil Type	LITHOLOGY / DESCRIPTION
Sand					41			CL	sandy lean CLAY w/gravel (cont.)
					42				
					43				
				14	44				no grey mottling, 10-20% gravels, 20-30% fine
		moist	106	17					grained sands, 50-70% fines
				24	45				
					46				
	▽				47				
Bentonite					48			CL	sandy lean CLAY: orangish brown, hard, 35-45% fine
				11	49				grained sands, 55-65% fines, low plasticity
		wet	27	17					
				20	50				Bottom of the boring is at 50 feet bg
					51				
					52				
					53				
					54				
					55				
					56				
					57				
					58				
					59				
					60				

BORING LOG

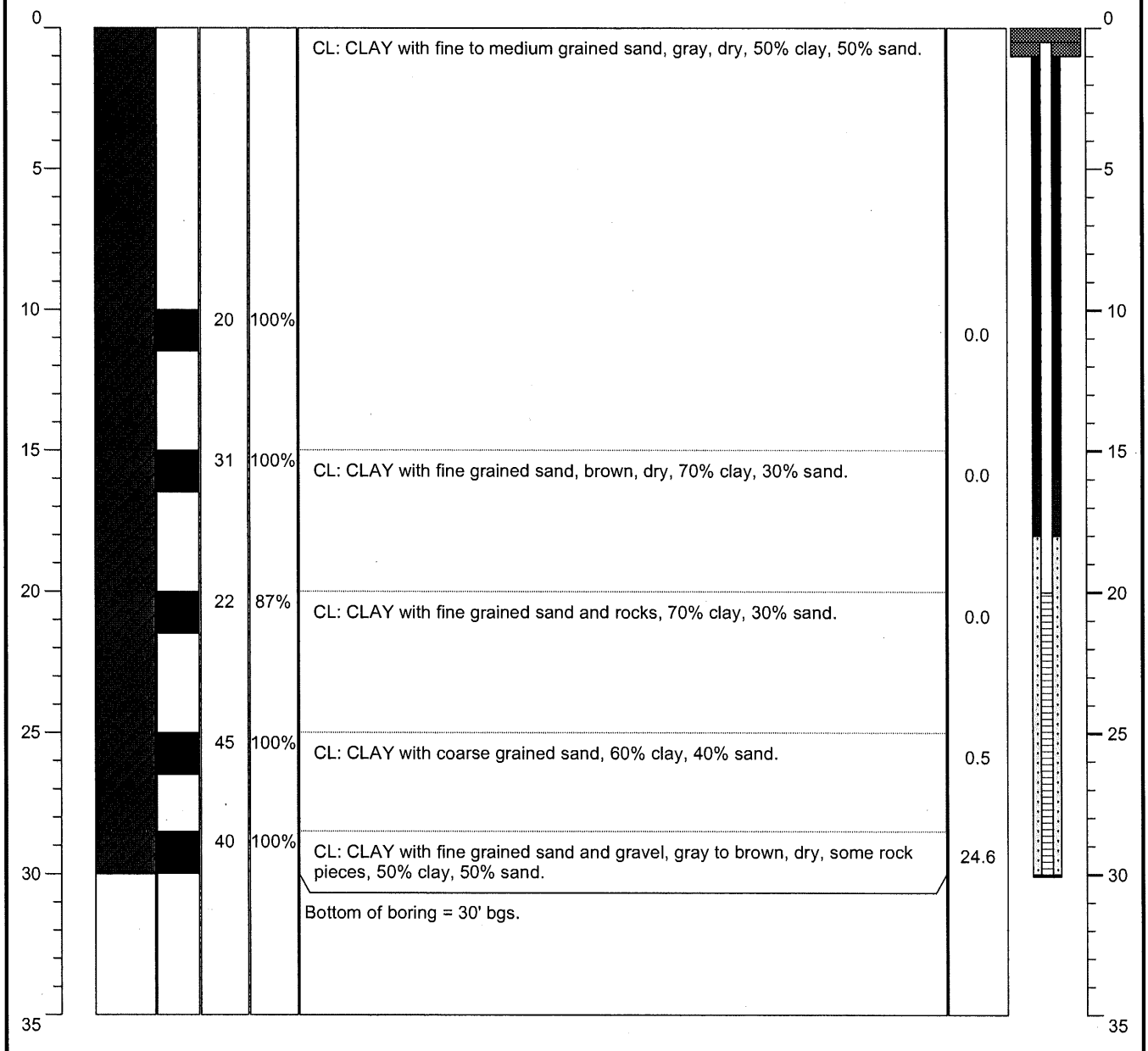
DELTA Xinogen

Client **Shell Oil Products US**

Project Number **SCA421211A**

Well No. **SVE-1**

Address:	Drilling Date(s): **01/14/10**	Boring diameter (in.): **10"**	Casing Material: **Sch 40 PVC**
4212 First Street	Drilling Company: **RSI**	Sampling Method: **Split Spoon**	Screen Interval: **20' - 30' bgs**
Pleasanton, CA	Drilling Method: **HSA**	Well Depth (ft.): **30'**	Screen slot size: **0.020"**
Logged By: **Cora Olsun**	Boring Depth (ft): **30'**	Casing Diameter (in.): **4"**	Sand Pack: **2/12**



BORING LOG

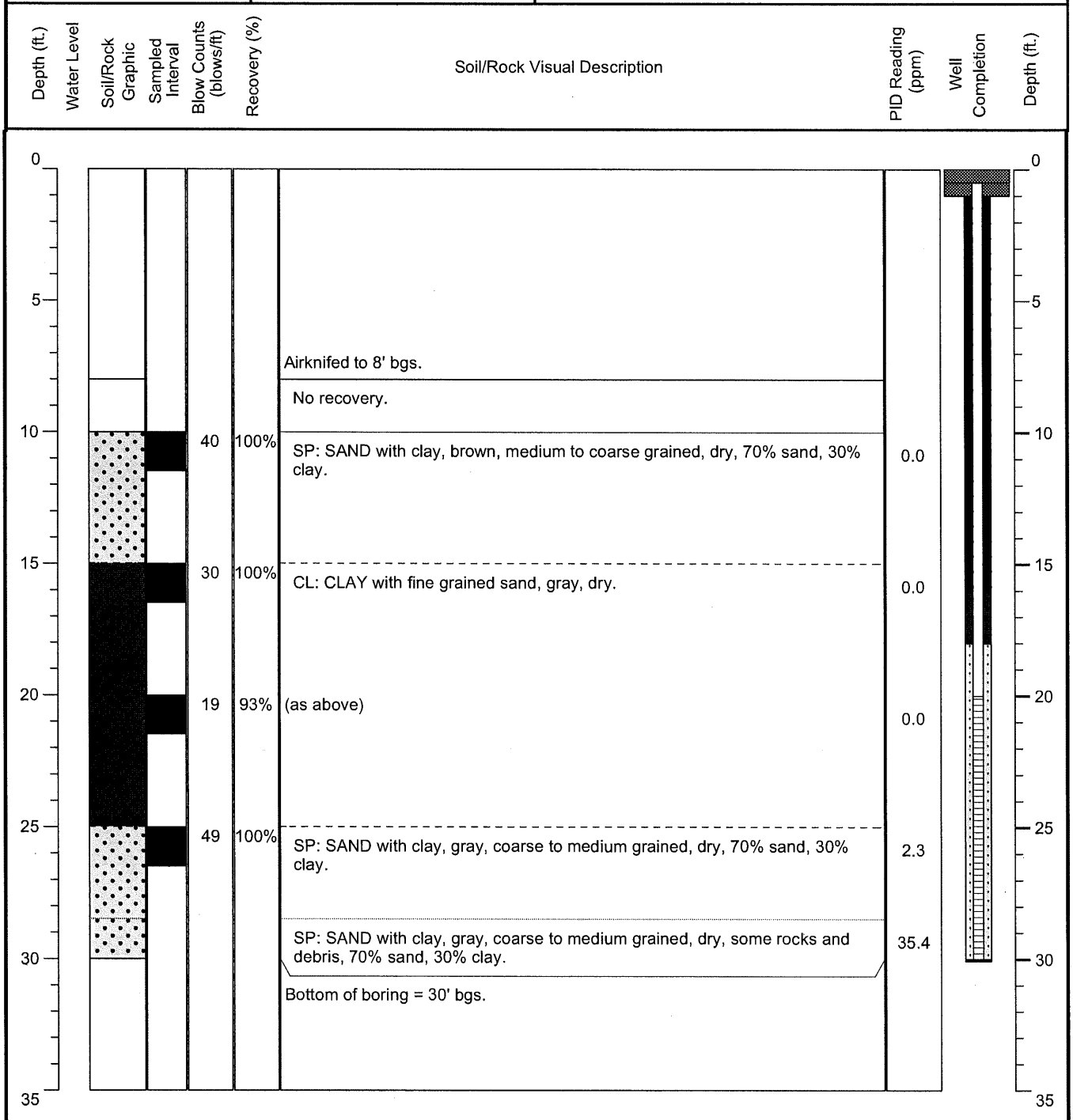
DELTA Xinogen

Client **Shell Oil Products US**

Project Number **SCA421211A**

Well No. **SVE-2**

Address:	Drilling Date(s): **01/12/10**	Boring diameter (in.): **10"**	Casing Material: **Sch 40 PVC**
4212 First Street	Drilling Company: **RSI**	Sampling Method: **Split Spoon**	Screen Interval: **20' - 30' bgs**
Pleasanton, CA	Drilling Method: **HSA**	Well Depth (ft.): **30'**	Screen slot size: **0.020"**
Logged By: **Cora Olsun**	Boring Depth (ft): **30'**	Casing Diameter (in.): **4"**	Sand Pack: **2/12**



BORING LOG

DELTA Xinogen

Client Shell Oil Products US
Project Number SCA421211A

Well No.
SVE-3

Address:	Drilling Date(s): **01/12/10**	Boring diameter (in.): **10"**	Casing Material: **Sch 40 PVC**
4212 First Street	Drilling Company: **RSI**	Sampling Method: **Split Spoon**	Screen Interval: **20' - 30' bgs**
Pleasanton, CA	Drilling Method: **HSA**	Well Depth (ft.): **30'**	Screen slot size: **0.020"**
Logged By: **Cora Olsun**	Boring Depth (ft): **30'**	Casing Diameter (in.): **4"**	Sand Pack: **2/12**

Depth (ft.)	Water Level	Soil/Rock Graphic	Sampled Interval	Blow Counts (blows/ft)	Recovery (%)	Soil/Rock Visual Description	PID Reading (ppm)	Well Completion	Depth (ft.)
0									0
						Airknifed to 8' bgs.			
5									5
						CL: CLAY with fine grained sand, brown, dry, rocks, 70% clay, 30% sand.			
10				31	100%		0.0		10
15				50	100%	SP: SAND with clay, brown, medium grained, dry.	0.0		15
20				18	100%	CL: CLAY with sand, brown, dry, 80% clay, 20% sand.	0.0		20
25				47	97%	SP: SAND and gravel with clay, gray, medium grained, dry, some big rocks.	2.4		25
				44	97%	(as above)	0.0		
30						Bottom of boring = 30' bgs. Note: Sampled to 30.5' bgs.			30
35									35

BORING LOG

DELTA Xinogen

Client Shell Oil Products US
Project Number SCA421211A

Well No. AS-10

Address:	Drilling Date(s): **01/14/10**	Boring diameter (in.): **8"**	Casing Material: **Sch 40 PVC**
4212 First Street	Drilling Company: **RSI**	Sampling Method: **Split Spoon**	Screen Interval: **47' - 52' bgs**
Pleasanton, CA	Drilling Method: **HSA**	Well Depth (ft.): **52'**	Screen slot size: **0.020"**
Logged By: **Cora Olsun**	Boring Depth (ft): **52'**	Casing Diameter (in.): **2"**	Sand Pack: **2/12**

Depth (ft.)	Water Level	Soil/Rock Graphic	Sampled Interval	Blow Counts (blows/ft)	Recovery (%)	Soil/Rock Visual Description	PID Reading (ppm)	Well Completion	Depth (ft.)
0						Airknifed to 8' bgs.			0
10						No recovery.			10
				20	100%	CL: CLAY with fine grained sand, brown, dry.	0.0		
15				28	97%	CL: CLAY with fine grained sand, gray with red staining, dry, 70% clay, 30% sand.	0.0		15
20				16	100%	CL: CLAY with fine grained sand, brown, dry, 70% clay, 30% sand.	0.0		20
25				15	100%	CL: CLAY with fine grained sand, brown, dry, 70% clay, 30% sand.	1.4		25
30				36	100%	CL: CLAY with fine grained sand and rocks, gray to brown, dry, 80% clay, 20% sand.	5.4		30
35				46	100%	CL: CLAY with fine grained sand, gray, dry, odor, 70% clay, 30% sand.	15000		35
40				56	43%	CL: CLAY with fine grained sand, moist, odor, rock pieces.	15000		40
45				52	87%	CL: CLAY with fine to medium grained sand, wet, some rocks.	40.9		45
50				47	100%	(as above)	142		50
55						Bottom of boring = 52' bgs.			55

BORING LOG

DELTA Xinogen

Client **Shell Oil Products US**

Project Number **SCA421211A**

Well No. SVE-4

Address: **4212 First Street** **Pleasanton, CA** Logged By: **Cora Olsun**	Drilling Date(s): **01/13/10** Drilling Company: **RSI** Drilling Method: **HSA** Boring Depth (ft): **30'**	Boring diameter (in.): **10"** Sampling Method: **Split Spoon** Well Depth (ft.): **30'** Casing Diameter (in.): **4"**	Casing Material: **Sch 40 PVC** Screen Interval: **20' - 30' bgs** Screen slot size: **0.020"** Sand Pack: **2/12**

Depth (ft.)	Water Level	Soil/Rock Graphic	Sampled Interval	Blow Counts (blows/ft)	Recovery (%)	Soil/Rock Visual Description	PID Reading (ppm)	Well Completion	Depth (ft.)
0						Airknifed to 8' bgs.			0
10				30	100%	SP: SAND with clay, brown, medium to coarse grained, dry, 70% sand, 30% clay.	0.0		10
15				31	100%	CL: CLAY with sand, brown, fine grained, dry, 60% clay, 40% sand.	0.0		15
20				30	83%	CL: CLAY with sand, brown, fine grained, dry, 85% clay, 15% sand.	0.0		20
25				59	100%	CL: CLAY with sand and gravel, brown, dry, some rock, 50% clay, 50% sand.	0.0		25
30				53	100%	CL: CLAY with sand, brown, fine grained, dry, some rock and gravel, 65% clay, 35% sand.	0.0		30
35						Bottom of boring = 30' bgs. Note: Sampled to 31.5' bgs.			35

BORING LOG

DELTA Xinogen

Client Shell Oil Products US
Project Number SCA421211D

Well No. OBS-1

Address:	Drilling Date(s): **01/13/10**	Boring diameter (in.): **10"**	Casing Material: **Sch 40 PVC**
4212 First Street	Drilling Company: **RSI**	Sampling Method: **Split Spoon**	Screen Interval: **22' - 47' bgs**
Pleasanton, CA	Drilling Method: **HSA**	Well Depth (ft.): **47'**	Screen slot size: **0.020"**
Logged By: **Cora Olsun**	Boring Depth (ft): **47'**	Casing Diameter (in.): **4"**	Sand Pack: **2/12**