CONESTOGA-ROVERS & ASSOCIATES

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www.CRAworld.com

TRANSMITTAL

DATE: April 12, 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
4:48 pm, Apr 16, 2012
Alameda County
Environmental Health

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- ☐ Originals
- ☐ Prints
- ☒ Final
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QUANTITY	DESCRIPTION
1	Dual-Phase 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
Email denis.l.brown@shell.com

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

DUAL-PHASE 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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APRIL 12, 2012
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LIST OF APPENDICES

1.0 INTRODUCTION

Conestoga-Rovers & Associates (CRA) on behalf of Equilon Enterprises LLC dba Shell Oil Products US (Shell) prepared this *Dual-Phase Extraction Pilot Test 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. Per CRA's March 14, 2012 electronic correspondence with ACEH, the due date for submitting this work plan was extended to April 13, 2011. Per CRA's April 11, 2012 telephone conversation with ACEH, we will submit work plans for an AS pilot test and a soil vapor investigation under separate cover.

CRA's January 31, 2011 *Data Review and Subsurface Investigation Work Plan* included an evaluation of data from Delta Consultants' (Delta's) 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, air sparge flow rates acceptable for successful AS only occurred at flow rates near the maximum acceptable applied pressure. CRA notes that further AS pilot testing would not likely be successful due to the lithology at this site, and still supports the conclusions from this report. As such, no AS pilot test work plan is being submitted with this work plan.

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.

2.0 SITE BACKGROUND

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 DPE PILOT TEST WORK PLAN

CRA recommends completing a DPE pilot test to confirm the validity of DPE as a viable remedial option. As noted in the January 31, 2011 *Data Review and Subsurface Investigation Work Plan,* DPE utilizing wells MW-1 and MW-2 produced maximum concentrations of total petroleum hydrocarbons as gasoline (TPHg) of 70 and 120 parts per million by volume (ppmv), respectively. DPE pilot testing utilizing well MW-4 produced a maximum concentration for TPHg of 4,900 ppmv. According to Delta's pilot test data tables, the maximum extracted vapor concentrations occurred after approximately 20 hours of operation. This indicates that the main source of residual TPHg is within the radius of influence, but at the outer edges of this zone. The purpose of this second DPE pilot test is to determine if adequate dewatering can be achieved, the degree of dewatering possible, the vacuum radius of influence, air/water yields necessary to achieve drawdown, and volatile organic compound mass removal rates near the former tank pit in the vicinity of former well S-1/WA-1. In summary, previous DPE pilot testing performed by Delta indicated that DPE can be a viable and effective measure for addressing residual hydrocarbon impacts to soils and groundwater in the shallow soil horizon in the vicinity of the former UST complex. This second pilot test will better define the shallow soil horizon where removable residual hydrocarbon mass is present.

The pilot test target areas are in the vicinity of former monitoring well S-1/WA-1, well MW-4, and boring SB-5. One new 4-inch diameter extraction well, EW-1, will be installed near former well S-1/WA-1 and will be used to evaluate DPE effectiveness in a shallow confined layer. Proposed piezometers P-1 and P-2 will be used for observation wells during pilot testing, as well as existing well SVE-3. Proposed 4-inch diameter

extraction well EW-2 will be installed between well MW-4 and boring SB-5 at a deeper depth. Proposed piezometers P-2 and P-3, as well as wells SVE-4 and MW-4, will be used as observation wells for DPE pilot testing. MW-4 is a 4-inch diameter well screened from 35 to 47 fbg, while SVE-3 and SVE-4 are screened from 20 to 30 fbg. The proposed well layouts can be seen in Figure 2.

When EW-1 is installed and constructed, if no groundwater is encountered in the hypothetical confined perched water zone, then EW-1 will be utilized solely as a soil vapor extraction (SVE) well completed in the shallow soil zone near the remaining residual hydrocarbon mass. All the variables will be the same, except CRA will not include any groundwater extraction monitoring equipment for EW-1. EW-1 is being screened where suspected impacts may remain at the bottom of the former UST complex (approximately 14 fbg). Groundwater was encountered at approximately 14 fbg during the 2002 UST replacement and over-excavation work. EW-2, P-2, and P-3 will be screened in the deeper aquifer zone, and will be constructed for DPE pilot testing and potential remedial use in a new system, as warranted.

3.1 DPE PILOT TEST OBJECTIVES

This DPE pilot test is being proposed to address some of the inconsistencies in the data collected by Delta during their DPE pilot test (in particular to the length of time it took to reach maximum extracted mass concentration and to evaluate the two zones of suspected residual hydrocarbon mass in relation to the northerly corner of the former UST complex). Other objectives for the DPE pilot test include determining:

- The rates and sustenance of groundwater and vapor recovery and associated hydrocarbon mass recovery rates;
- The magnitude of fuel-based hydrocarbon and oxygenate concentrations in the recovered groundwater and vapor streams;
- The optimal vacuum and air flow from the wells to limit the occurrence of short circuiting;
- The radius of influence for both vapor and groundwater extraction from a designated well;
- If short-circuiting will occur in the utilization of the extraction wells in proximity to the more porous backfill of the former UST complex; and
- If DPE is a practical, viable, and cost-effective remedial measure to meet the remediation objectives at the site.

3.2 WELL INSTALLATION

The following presents the details and activities for installing the proposed extraction well for the DPE pilot test.

3.2.1 PERMITS

CRA will obtain the necessary well installation permit from Alameda County Environmental Health (ACEH).

3.2.2 HEALTH AND SAFETY PLAN (HASP)

CRA will update the existing HASP to protect site workers. Job safety analyses (JSAs) will also be prepared in relation to the work associated with the well installations. The HASP and JSAs will be kept on site during field activities and will be reviewed and signed by each site worker prior to the commencement of work.

3.2.3 UTILITY CLEARANCE

CRA will mark the proposed drilling locations, and the locations will be cleared through Underground Service Alert and a private line locator service prior to drilling.

3.2.4 EXTRACTION WELL INSTALLATION

One new 4-inch diameter extraction well, EW-1, will be installed near former well S-1/WA-1. Proposed piezometers P-1 and P-2 will be installed approximately 10 feet to the southwest and northeast, respectively. Proposed 4-inch-diameter extraction well EW-2 will be installed between well MW-4 and boring SB-5 at a deeper depth. Proposed piezometer P-3 will be installed approximately 10 feet to the east of proposed well EW-3. The exact extraction well locations will be determined in the field based upon site conditions. The proposed well locations are shown in Figure 2.

Reportedly, the former UST tank complex excavation pit was excavated to approximately 14 fbg and backfilled with pea gravel. There is a potential risk of DPE

short-circuiting through the former UST complex backfilled excavation. Well EW-1 will be completed to a depth of approximately 24 fbg, with a screen interval extending from approximately 10 to 20 fbg using 0.020-inch Circumslot® screen. The exact screened interval will be determined in the field and will focus on the potentially confined layer between 10 and 20 fbg. As stated above, if no groundwater is encountered, this well will be developed as an SVE well and no groundwater extraction will be needed during its pilot test. A 2-foot sump will be installed as the bottom of the extraction well. An appropriate sand pack will be installed from approximately 0.5 feet above the perforated well casing interval to the total depth of the boring. Approximately 2 feet of bentonite will be installed above the sand pack (9.5 to 11.5 fbg), and a neat cement surface seal will be installed to near the ground surface.

Upon completion of DPE pilot testing, well EW-1 will either be properly destroyed or used for future DPE/SVE operation. P-1 will be installed approximately 10 feet away at a similar depth but as a 2-inch-diameter piezometer in order to monitor radius of influence effects of both groundwater and soil vapors during pilot testing activities. P-2 will be a 2-inch-diameter piezometer and will be placed approximately 10 feet away. This well will be screened from 10 to 40 fbg and will be used for in pilot test activities in both EW-1 and EW-2.

Well EW-2 will be completed to a depth of approximately 42 fbg, with a screen interval extending from 30 to 40 fbg, using 0.020-inch Circumslot® screen. EW-2 will be installed, completed, and destroyed after the pilot test similarly to EW-1, the sand pack being installed approximately 28 to 40 fbg. P-3 will be a 2-inch-diameter piezometer, similar to P-1, but installed to a depth of 42 fbg with a screen interval from 30 to 40 fbg. The installed piezometer will be used as observation wells during pilot testing of well EW-2.

A CRA geologist will supervise the drilling and describe encountered soils using the Unified Soil Classification System and Munsell Soil Color Charts. Soil samples will be collected continuously in EW-1 and at 5-foot intervals in the other well borings. Soil samples will be screened in the field for organic vapors using a photo-ionization detector (PID). CRA will prepare a boring log for each well boring, and PID measurements will be recorded on the boring logs.

3.2.5 WELL DEVELOPMENT AND SAMPLING

Blaine Tech Services, Inc. (Blaine) of San Jose, California will develop the new well at least 72 hours after installation is completed. At least 72 hours after well development,

Blaine will sample the site's groundwater monitoring wells according to the existing sampling schedule and chemical analysis protocol.

3.2.6 CHEMICAL ANALYSES

Soil and groundwater samples will be analyzed by a State-certified laboratory for TPHg, benzene, toluene, ethylbenzene and total xylenes (BTEX), and methyl tertiary-butyl ether (MTBE) by EPA Method 8260B.

3.2.7 WELLHEAD SURVEY

Following well installation, a licensed land surveyor will survey the installed wellhead Northing and Easting coordinates (or latitude and longitude) to NAD83, and wellhead vertical elevation referenced to mean sea level in compliance with AB2886 (Geotracker) requirements.

3.2.8 REPORT PREPARATION

Following the receipt of analytical results, CRA will prepare a written report which will include field procedures, laboratory results, and boring logs.

3.3 DPE PILOT TEST

3.3.1 PILOT TEST WELLS

CRA will utilize installed extraction wells EW-1 and EW-2 for DPE. Piezometers P-1, P-2, and P-3, and existing monitoring wells MW-4, SVE-3, and SVE-4 will be utilized as observation wells for the DPE pilot test. The extraction and observation well diameters, screen intervals, and approximate estimated distance from the planned locations of wells EW-1 and EW-2 are summarized in the table below.

Well ID	*Well Diameter (inches)*	*Screen Interval (fbg)*	*Estimated Distance from EW-1 (feet)*	*Estimated Distance from EW-2 (feet)*
P-1	2	10-20	12	36
P-2	2	10-40	15	12
P-3	2	30-40	36	10
SVE-3	4	20-30	14	16
SVE-4	4	20-30	32	14
MW-4	4	37-47	16	12

3.3.2 PILOT TEST EQUIPMENT

Critical components for conducting a DPE pilot test include an extraction device, water storage, and a vapor treatment device. A mobile unit (Solleco® 300TCat or equivalent) will be used for testing. It will be equipped with a vacuum pump as the extraction device and a thermal/catalytic oxidizer to treat the extracted soil vapor. Propane will be used as supplemental fuel for the operation of the TCat. The TCat is equipped with a vapor-liquid separator to remove condensation from the vapor stream. Accumulated condensation will be pumped from the separator to an on-site temporary storage tank through an aboveground hose. A down-well submersible pump will be used to extract groundwater from the extraction wells. Extracted groundwater will be pumped directly into the storage tank. The extracted groundwater will be temporarily stored in the storage tank and subsequently transported off site for proper disposal. The anticipated equipment layout is shown in Figure 3.

The TCat is equipped with controls to manage well flow, dilution air flow, pump vacuum, and well vacuum data. A Thomas Industries model 907CDC18F vacuum pump or similar will be used to collect the vapor samples. A Horiba organic vapor analyzer or similar will be used to field measure hydrocarbon concentrations in the extracted vapor stream. A TSI model 8330 air velocity meter or similar will be used to measure vapor extraction velocity rates and temperatures. Magnehelic differential pressure gauges will be used to measure induced vacuum in adjacent wells. A water level meter and/or down well pressure transducers will be used to measure groundwater drawdown in extraction and observation wells. A Kent C700 flow totalizing meter or similar will continuously measure extracted groundwater volume.

As noted above, should groundwater not be encountered in well EW-1, an SVE pilot test only will be conducted on this extraction well. All measurements and equipment will be the same as in DPE testing with the exemption of any equipment or measurements related to groundwater extraction.

3.3.3 AIR DISCHARGE PERMIT

CRA will contact the Bay Area Air Quality Management District (BAAQMD) regarding the proposed DPE test and will provide them with the required notification. The TCat will abate the extracted soil vapors to comply with the BAAQMD requirements. BAAQMD regulations limit pilot tests to 5 days in duration. A longer duration pilot test would require a site-specific BAAQMD permit-to-operate. CRA anticipates this pilot test to last 5 days or less.

3.3.4 SITE HEALTH AND SAFETY PLAN

Pursuant to Shell and CRA requirements and prior to commencement of field activities, CRA will again revise and update the site's HASP and JSAs to identity potential hazards and to protect site workers during the pilot test activities. The HASP will be kept on site during field activities and will be reviewed and signed by each site worker. The HASP and all JSAs will be reviewed and signed by each site worker prior to commencement of the applicable work associated with the JSAs.

3.3.5 DATA COLLECTION

Prior to pilot test activities, CRA will measure and record the water level in all extraction and observation wells. During the test, CRA will periodically measure and record the following DPE operational and monitoring information: applied vacuum to the extraction well; induced vacuum at observation wells, extraction well soil-vapor flow, dilution air flow, extracted hydrocarbon-vapor concentrations, extracted groundwater volume and olfactory and visual observations, and groundwater levels to calculate induced drawdown. This information will be collected initially every 30 minutes, then in longer intervals after operational data has stabilized.

Vapor samples will be collected periodically in 1-liter Tedlar bags to confirm field measured concentrations through laboratory analysis. The vapor samples will be collected from the extracted vapor of each well under extraction near the beginning of extraction, in the approximated middle of the extraction period, and prior to extraction shut-down. Grab groundwater samples will be collected prior to the beginning of tests in EW-1 (if groundwater is present) and EW-2, and one additional time prior to the conclusion of pilot testing, as warranted by system operation.

3.3.6 DPE TEST PROCEDURE

CRA will initiate each test on the well under extraction by commencing operation of the submersible pump in the well to dewater the well casing and associated well pack. Once dewatered, the SVE portion of the test will commence. The SVE system's blower will initially be started utilizing dilution air in the vacuum stream and adjusting the dilution air valve until the optimal vacuum and flow rate is determined to achieve the most effective mass removal rate and to avoid short-circuiting problems.

It is anticipated that a test lasting between 24 to 36 hours will be performed on each of the two extraction wells; the length of test will depend on the field results obtained. The total DPE testing is planned to be commenced and operated in a continuous 24-hour operation mode and to last between 3 to 5 days.

3.3.7 CHEMICAL ANALYSES FOR PILOT TEST SAMPLES

A State-certified analytical laboratory will analyze soil vapor samples for TPHg by EPA Method TO-3 and for BTEX and MTBE by EPA Method 8260B(M). Groundwater samples will be analyzed by a State-certified analytical laboratory for TPHg, BTEX, and MTBE by EPA Method 8260B.

3.2.8 REPORT PREPARATION

Following the receipt of analytical results from the laboratory, CRA will prepare a written report which will include field procedures for pilot testing; a tabulation and summary of field data collected; a summary and tabulation of the laboratory analytical obtained; and a summary of finding of conclusions for the DPE test.

3.3 SCHEDULE

Upon receiving ACEH approval of this work plan and a drilling permit from Zone 7 Water Agency, CRA will proceed with advancing the borings and installing the extraction wells and piezometers. Concurrently, CRA will schedule and prepare for the DPE pilot test. The DPE pilot test will occur after development and sampling of new wells EW-1, EW-2, P-1, P-2, and P-3. Prior to conducting the test, CRA will submit a

notification to the BAAQMD. CRA expects the pilot test to last 4 days, but it may be extended up to 5 days if the testing data and confirmation of feasibility warrants such.

The well installation and pilot test reports will be submitted approximately 60 days after receipt of the respective laboratory analytical data for samples collected during the well installation and the pilot test. Extraction wells EW-1 and EW-2, and piezometers P-1, P-2, and P-3 will be properly destroyed or used for future DPE operation if warranted.

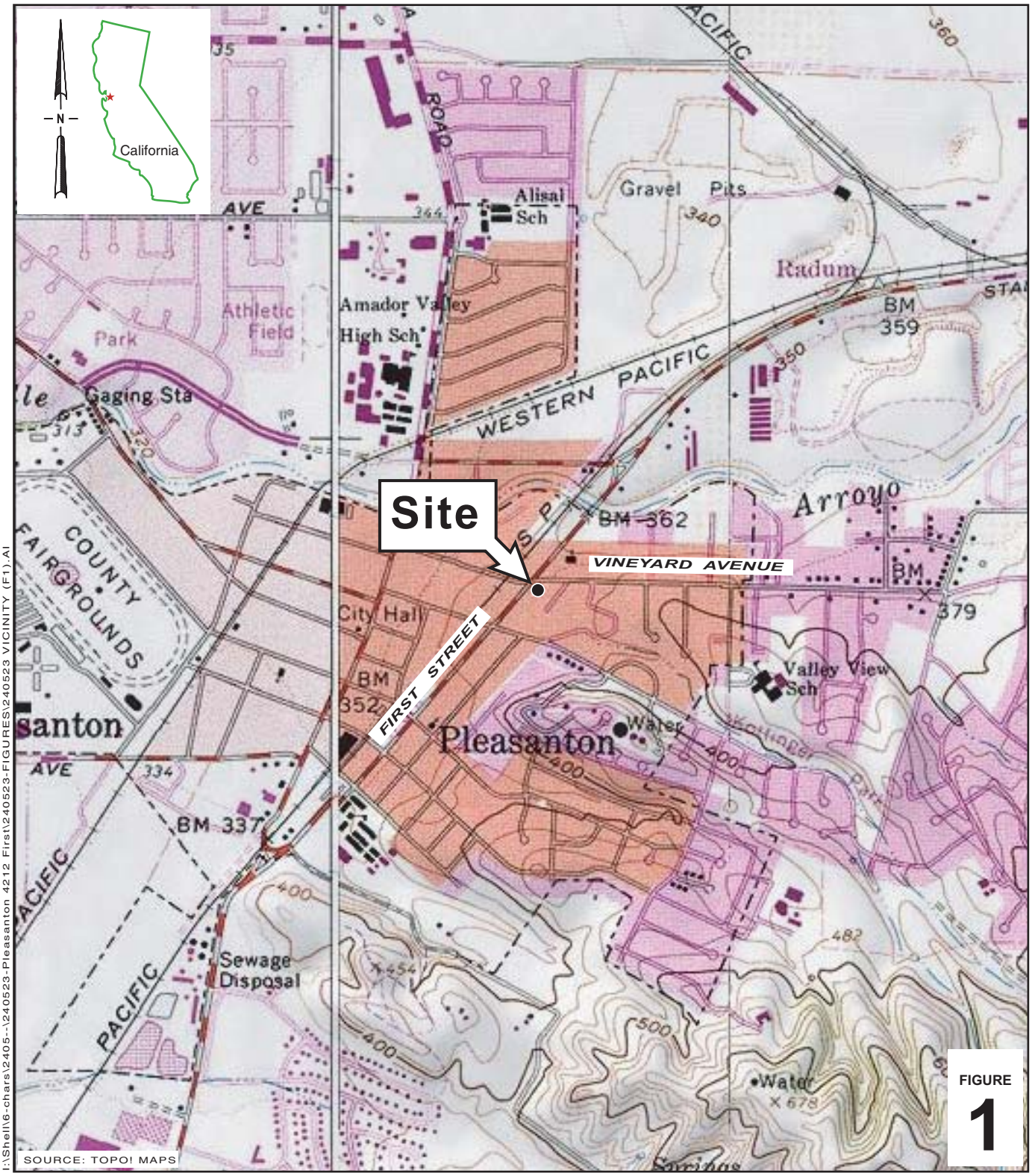
All of which is Respectfully Submitted,
CONESTOGA-ROVERS & ASSOCIATES

Peter Schaefer, CEG, CHG

Lee Brennen, P.E

FIGURES

01/18/2011



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SCALE : 1" = 1/4 MILE

FIGURE 1

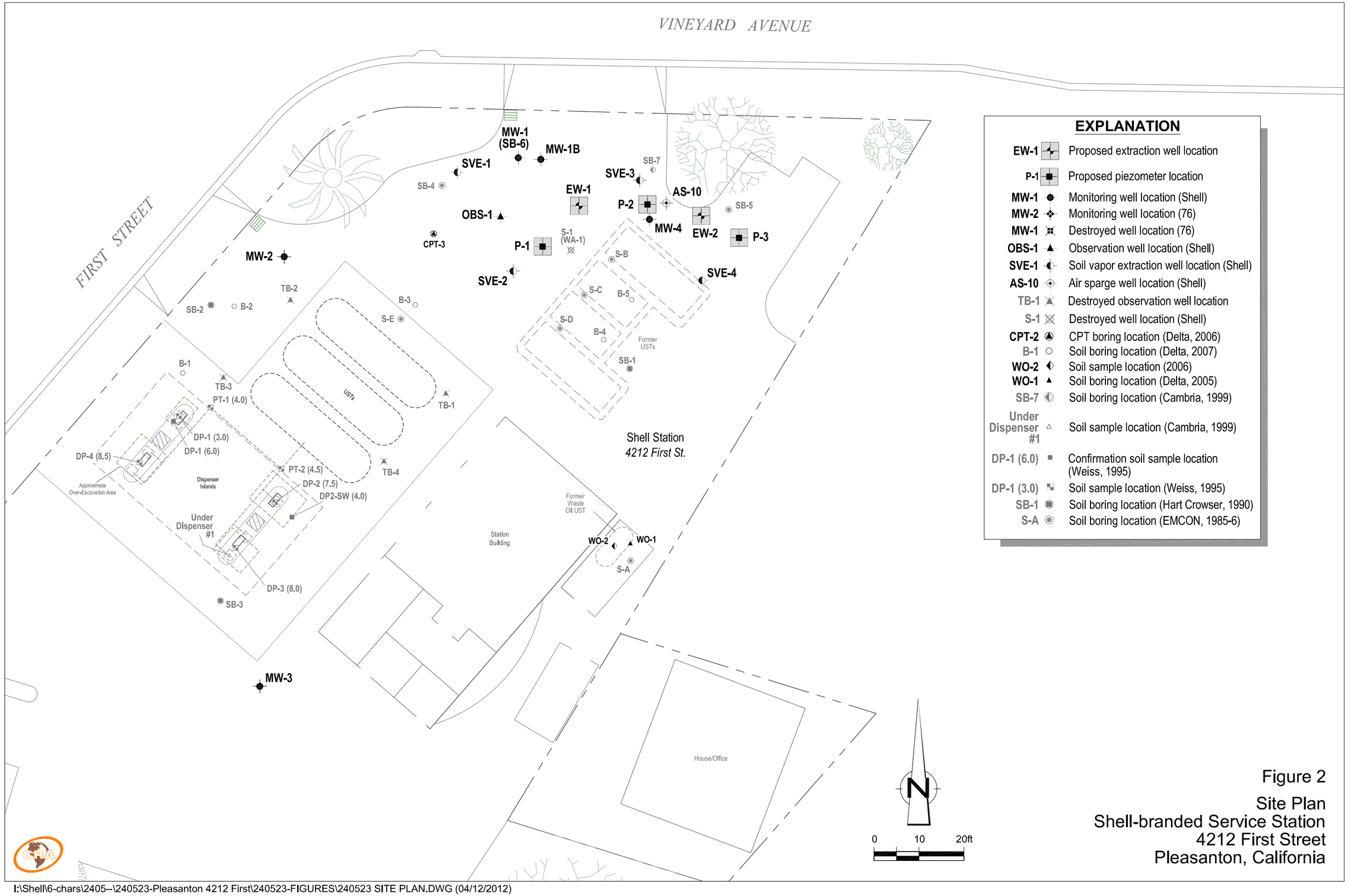
Shell-branded Service Station

4212 First Street

Pleasanton, California

CONESTOGA-ROVERS & ASSOCIATES

Vicinity Map



EXPLANATION

EW-1	Proposed extraction well location
P-1	Proposed piezometer location
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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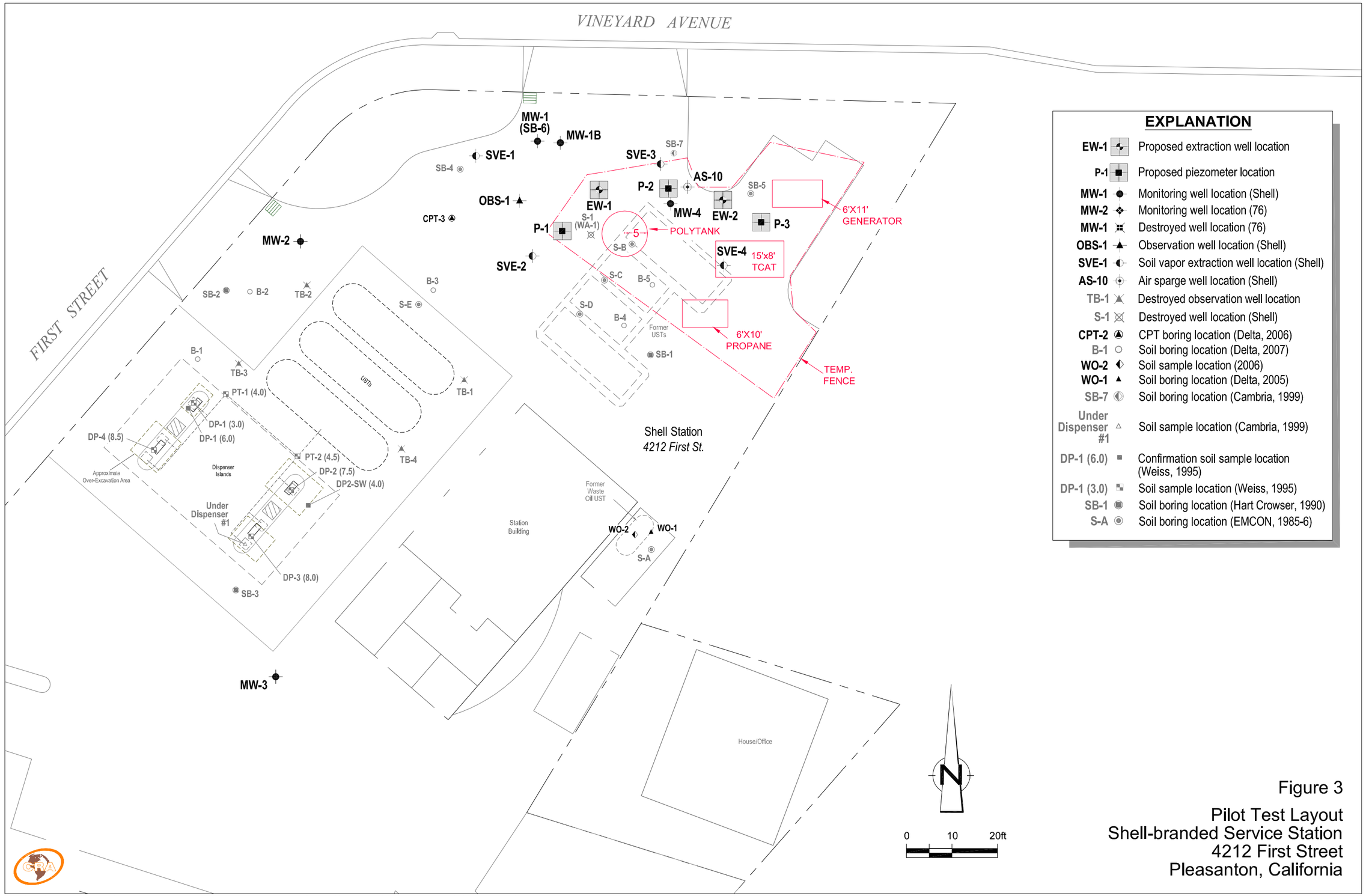

EXPLANATION

EW-1	Proposed extraction well location
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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)
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S-A	Soil boring location (EMCON, 1985-6)

Figure 3

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

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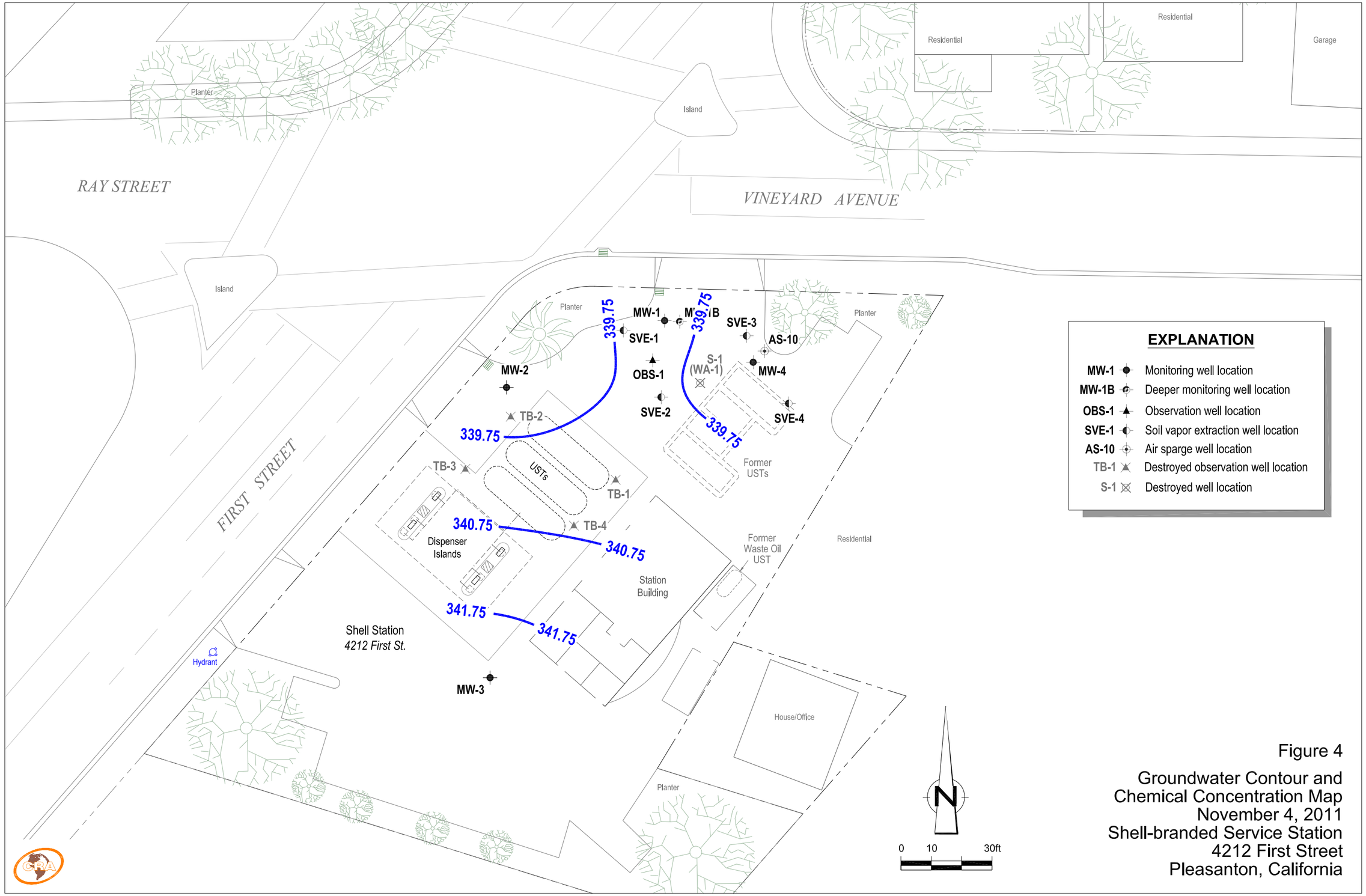

Figure 4

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		SW	CONCRETE.
		Push		5	1		SAND - Fill; very dark gray (5Y, 3/1); fine to coarse grained; trace fine gravel; trace fines; loose; damp; strong gasoline odor.
		2			2		@7': strong gasoline odor.
		64		10	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.
	0.4	50for 6"	▽	25	6		@24': olive (5Y, 4/4); 25% fine to coarse sand; very plastic; soft; faint gasoline odor.
				30			BOTTOM OF BORING AT 24½ FEET.
				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.
		Push		5	1		SAND - Fill; very dark gray (5Y, 3/1); fine to coarse grained; trace fine gravel; trace fines; damp; strong gasoline odor.
		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 ML SC	SAND; olive (5Y, 4/3); fine to coarse grained; 10% fines; medium dense; moist; no gasoline odor.
		48			7		SANDY SILT; light olive brown (2.5Y, 5/6) 40% fine sand; very stiff; moist; no gasoline odor.
				30			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
				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			CONCRETE.
						SW	SAND - Fill; very dark gray (5Y, 3/1); fine to coarse grained; 15% fine gravel; trace fines; loose; damp; strong gasoline odor.
		Push		5	1		
		2			2		@7': strong gasoline odor.
				10			
	4.25	37			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			

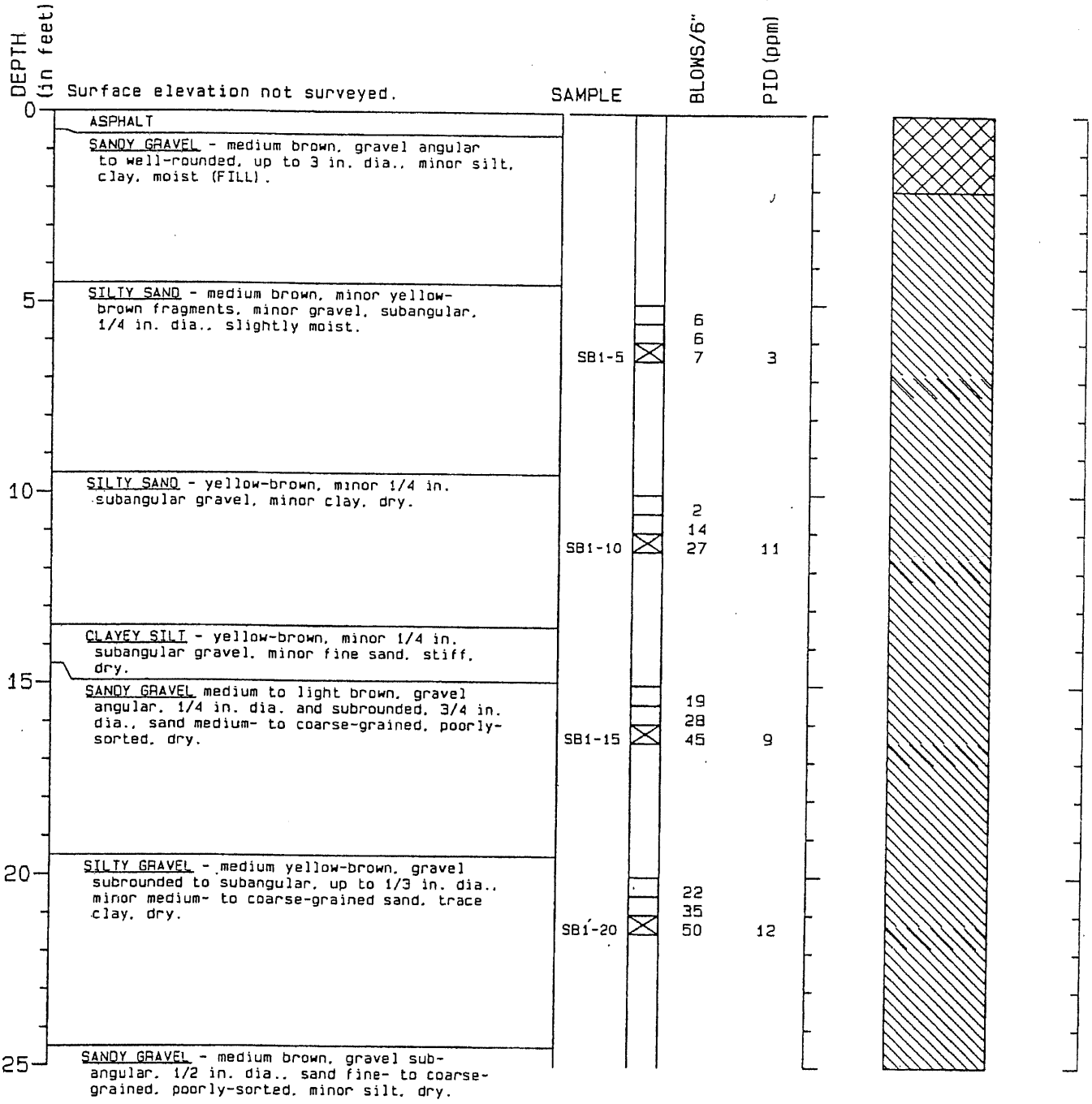
REMARKS Drilled by 8-inch continuous flight, hollow-stem auger; samples collected with 2-inch California modified split-spoon sampler; borehole converted to 3-inch monitoring well as detailed on Plate F.

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.

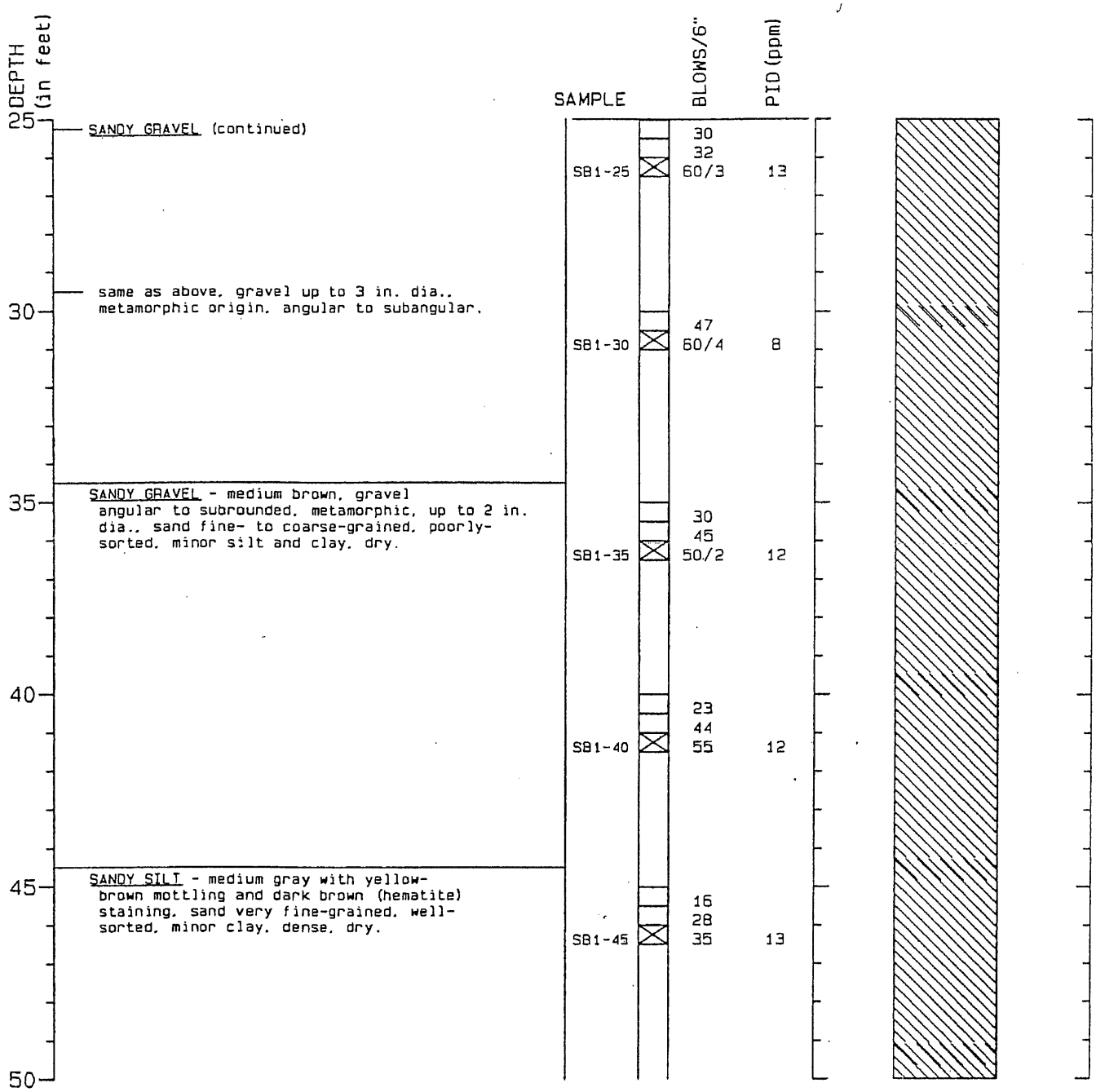
HARTCROWSER

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.

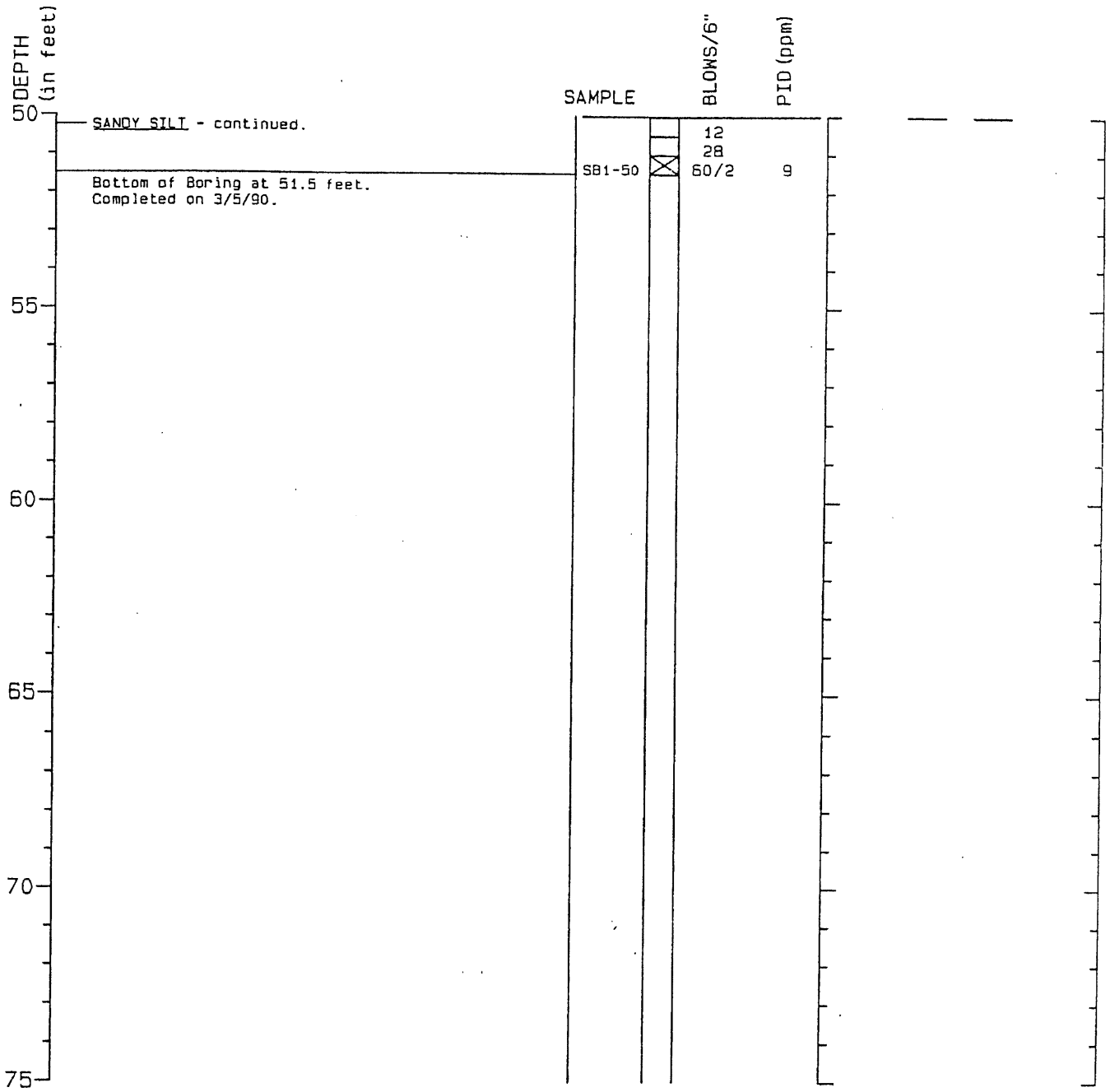
HARTCROWSER

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.

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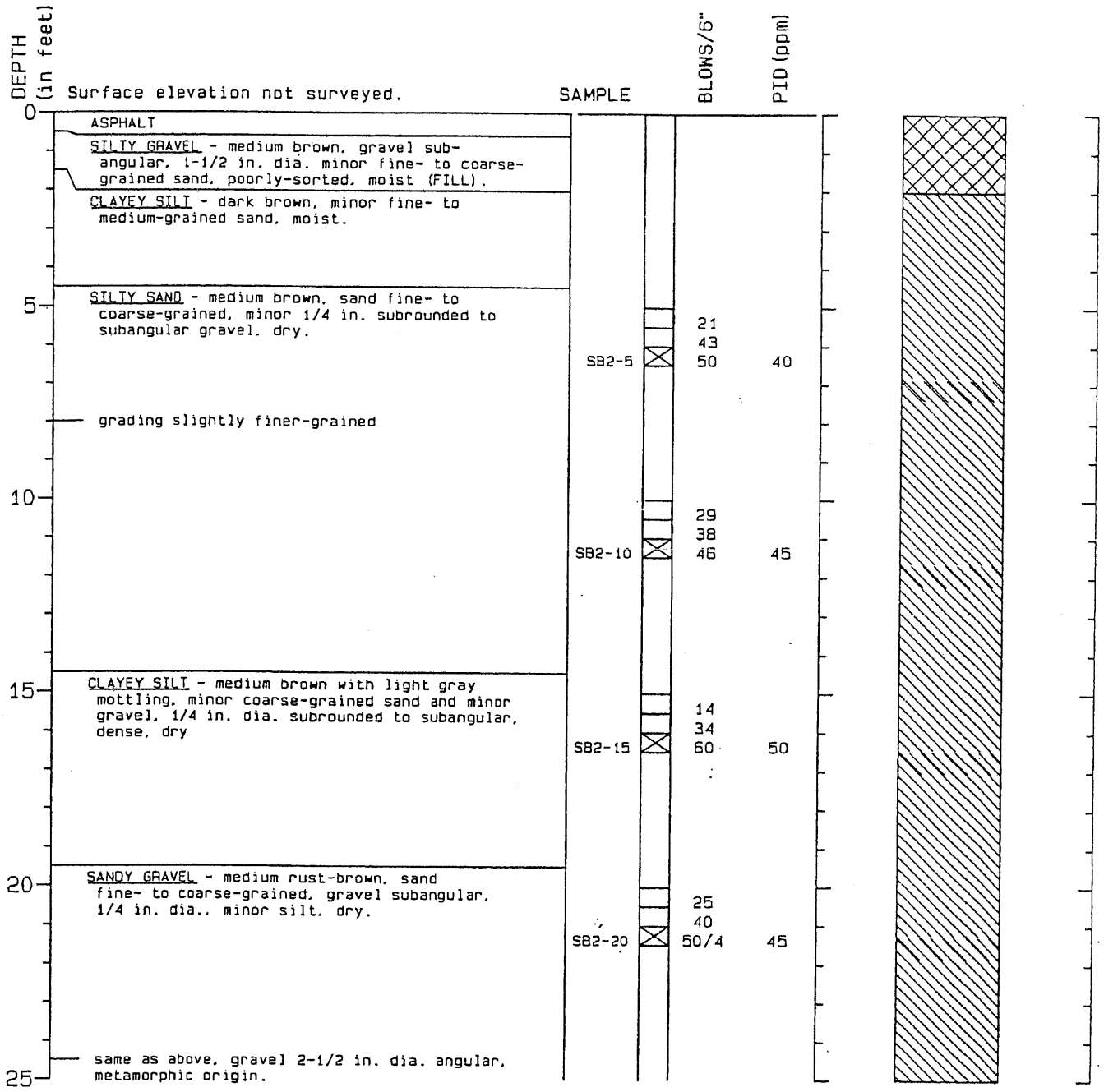
Figure A-2

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.

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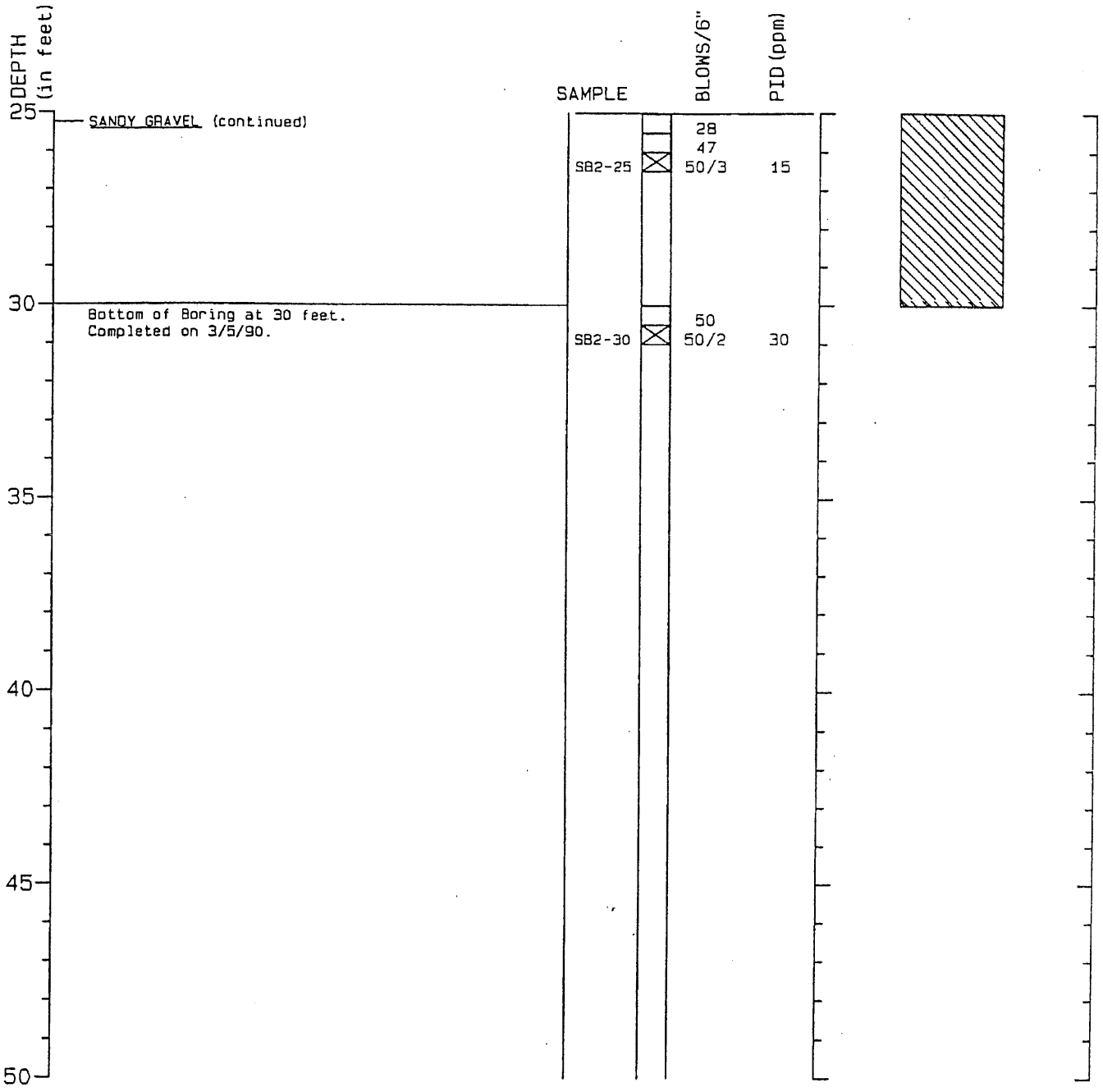
Figure A-3

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.

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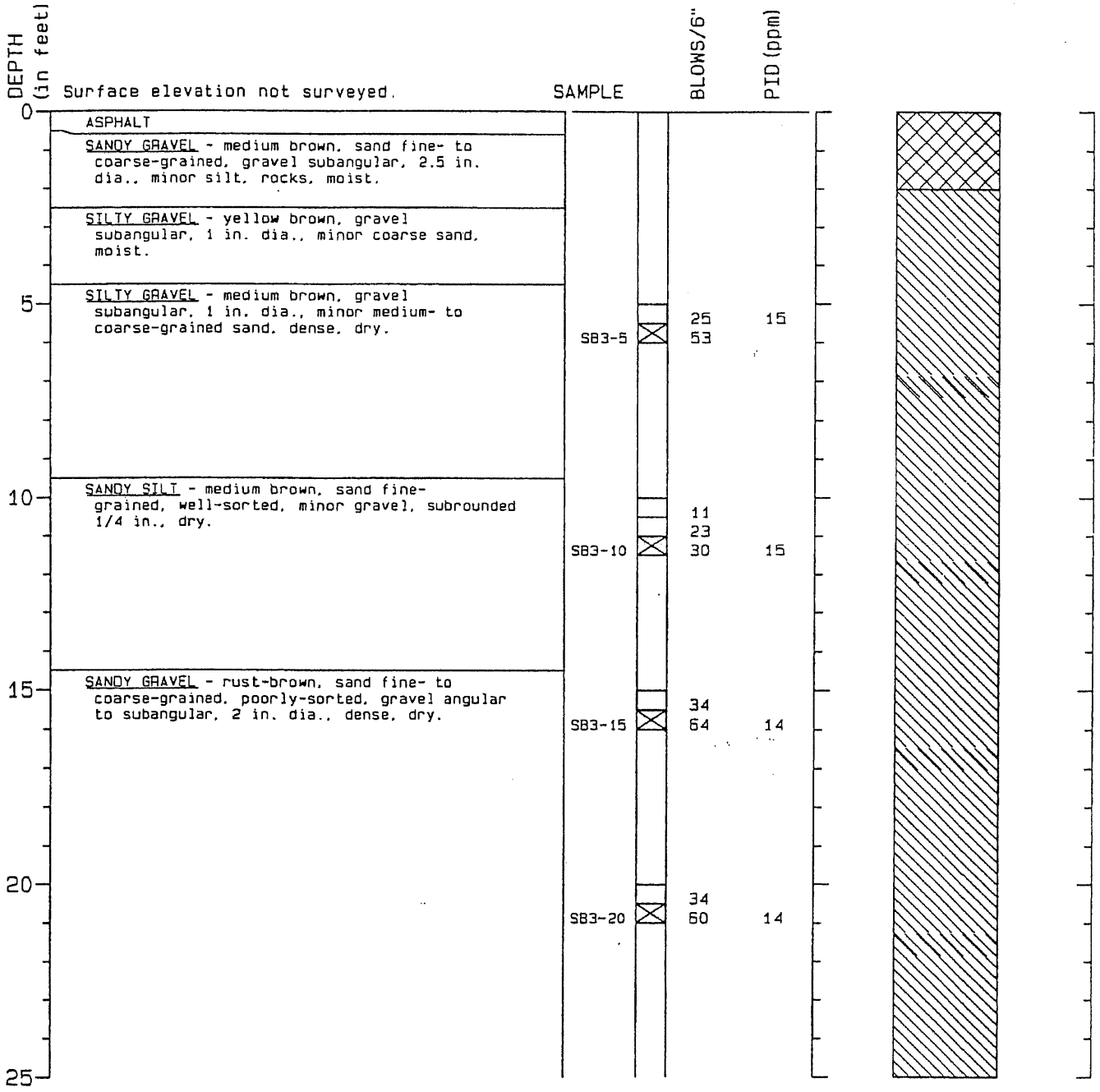
Figure A-3

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.

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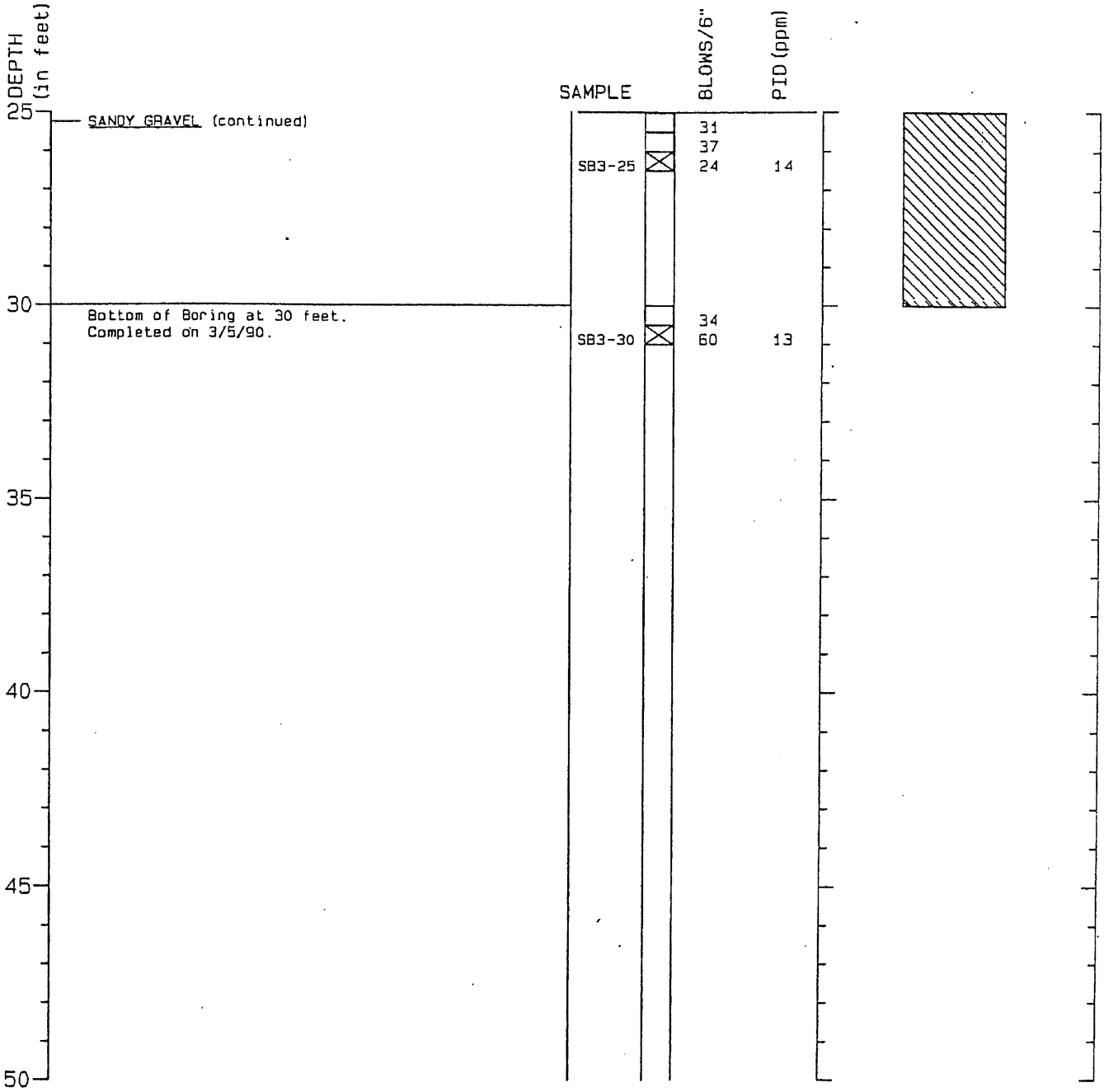
Figure A-4

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.

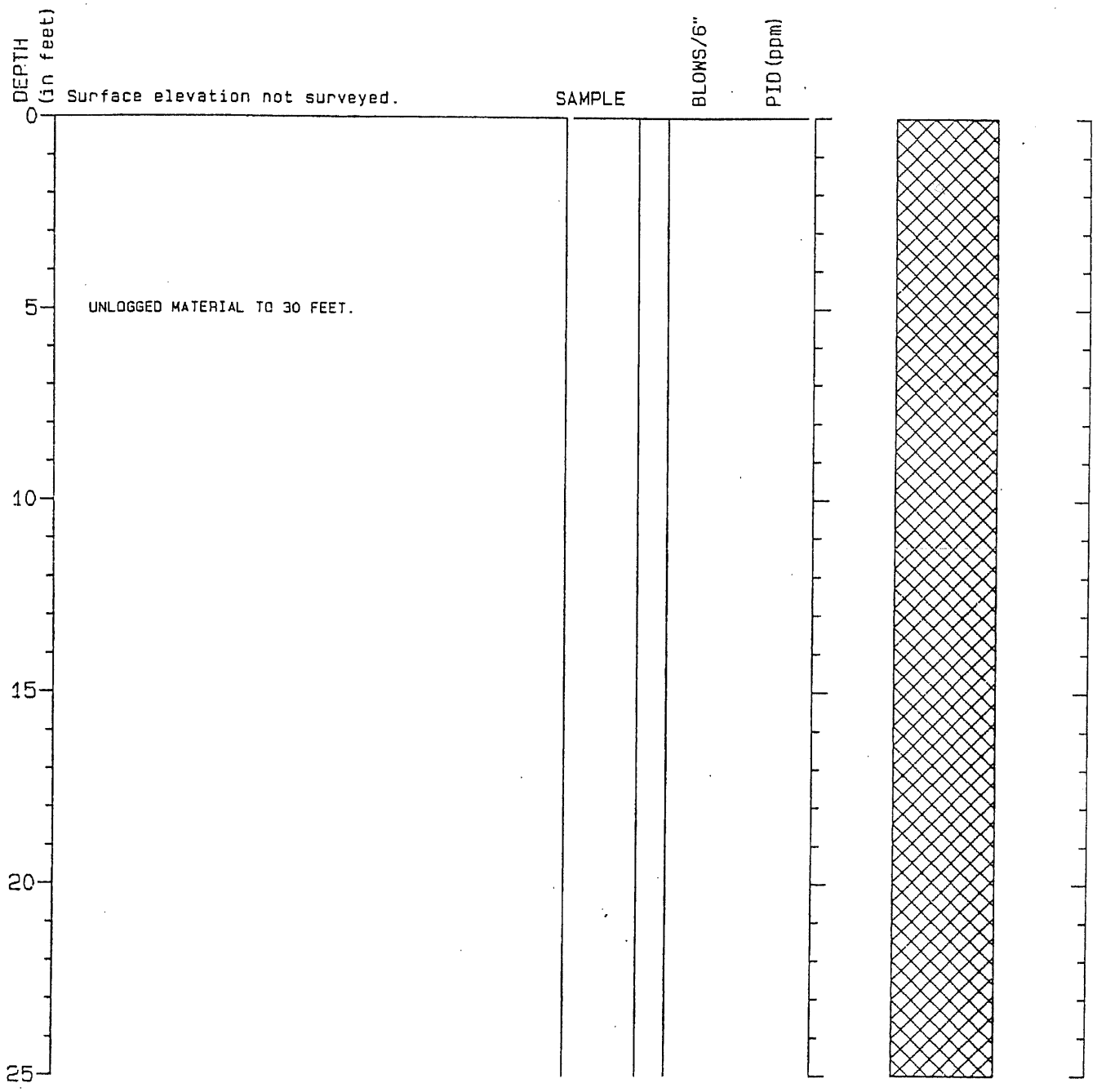
HARTCROWSER

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.

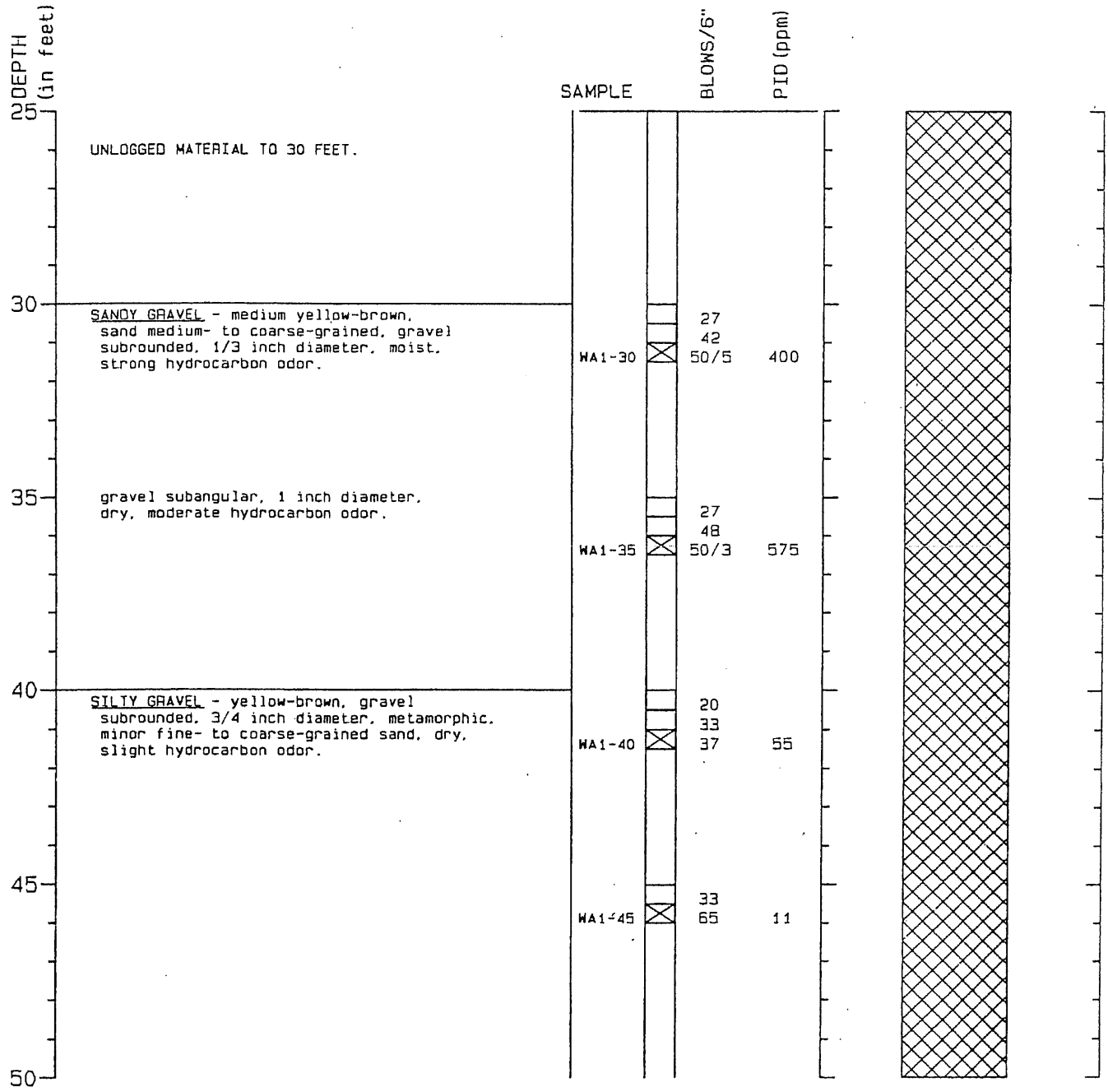
HARTCROWSER

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

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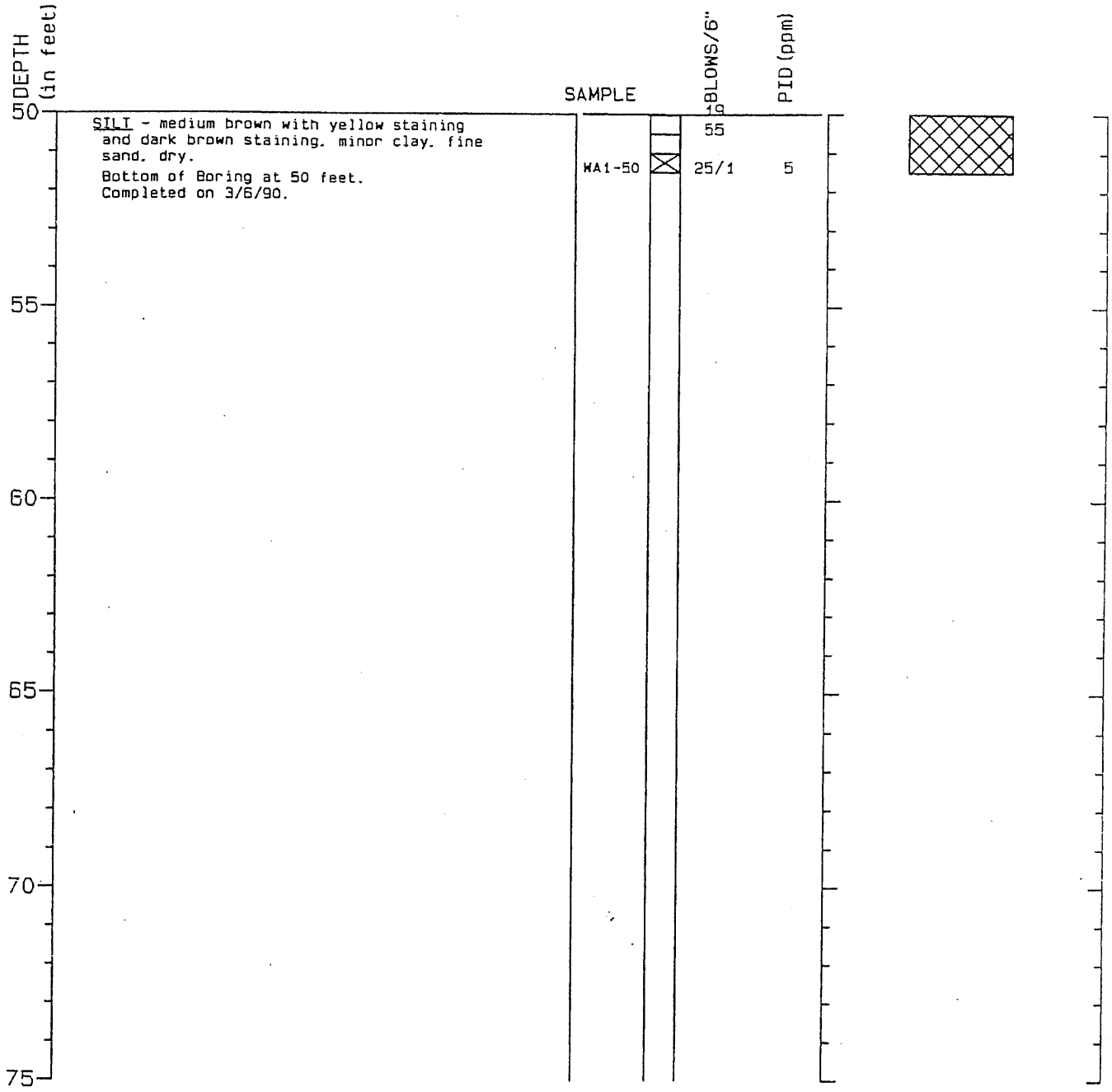
Figure A-5

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.

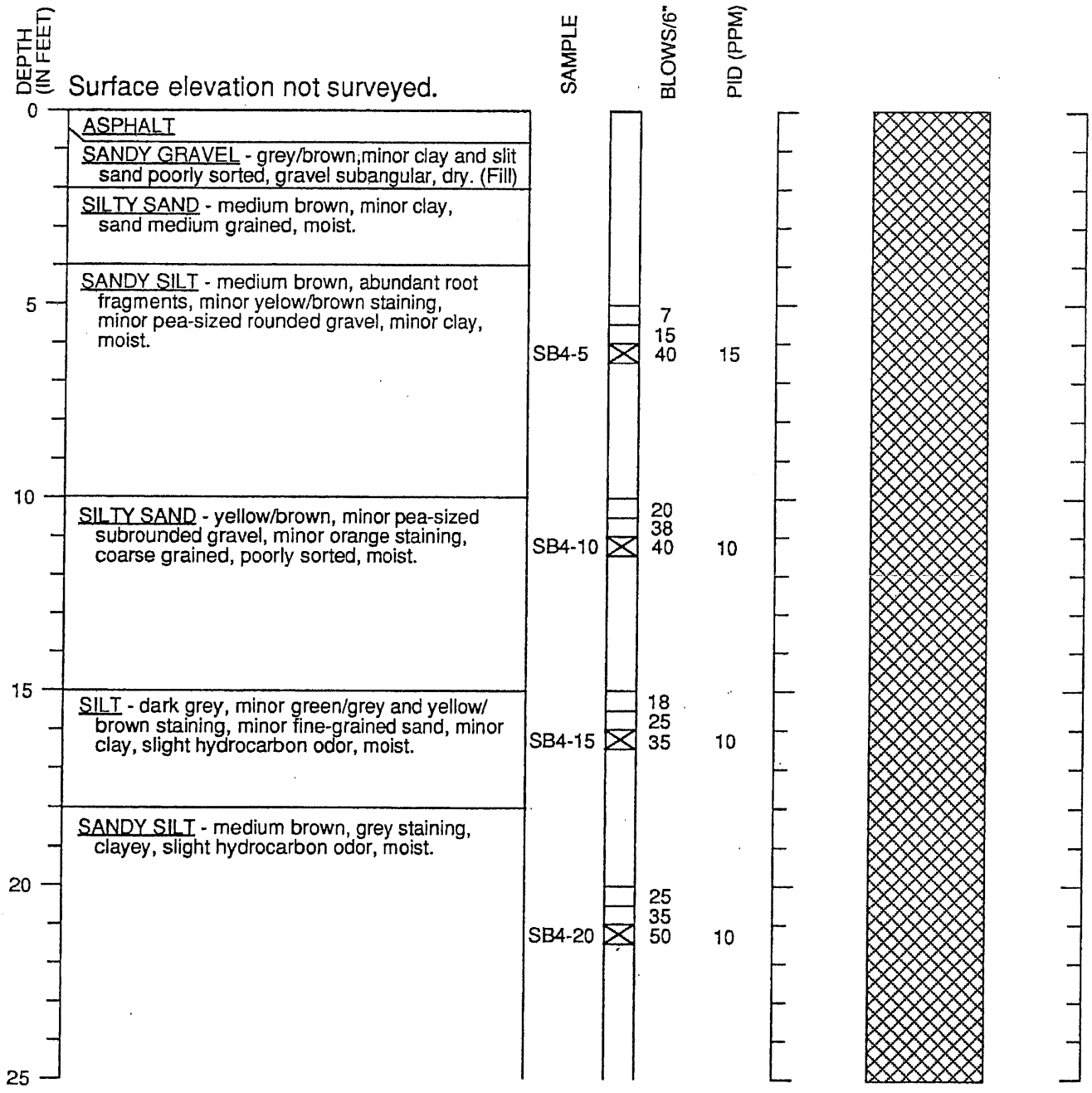
HARTCROWSER

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.

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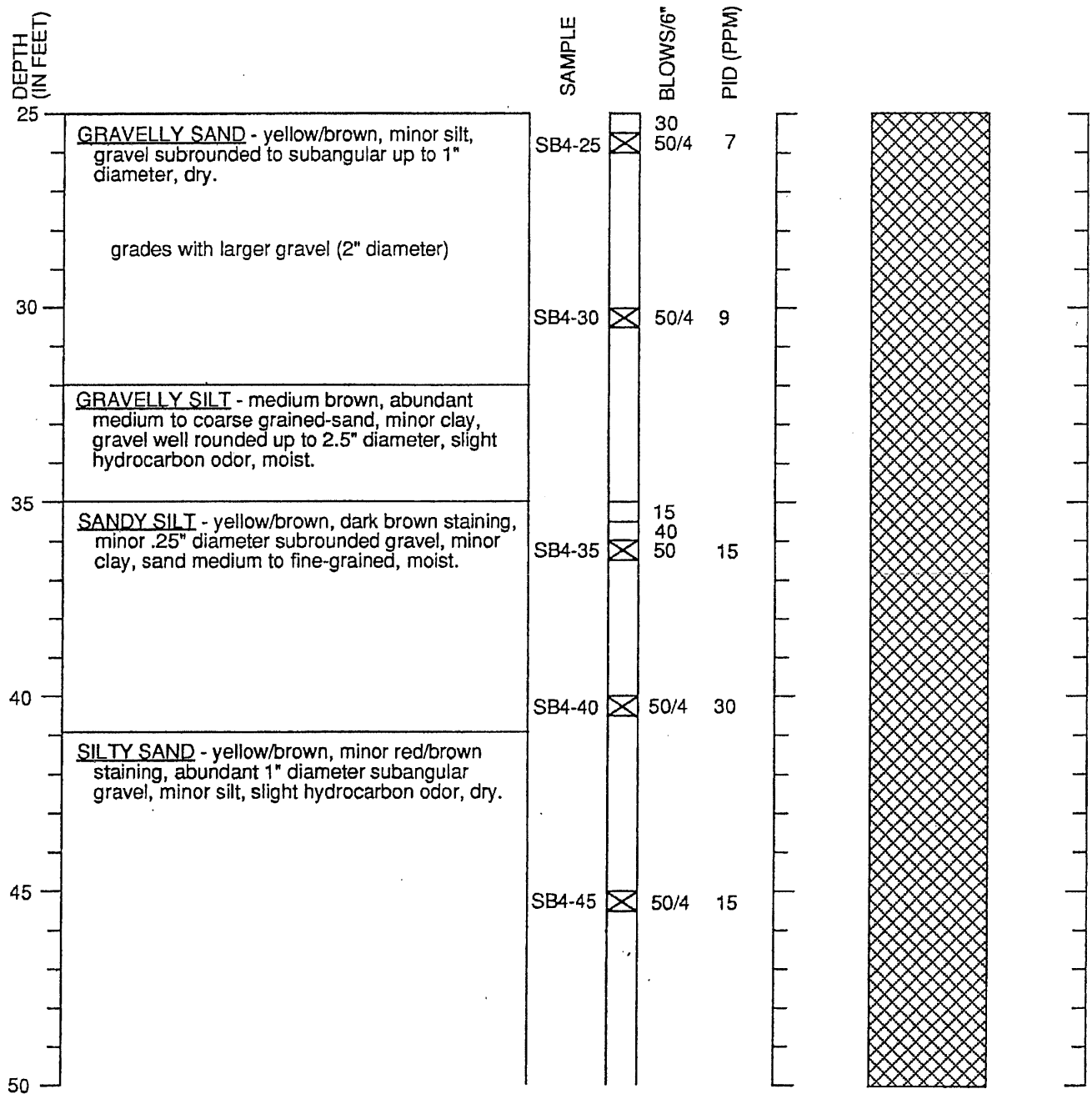
J-6006 *12/90*

Figure A-2

Boring Log SB-4

Geologic Log



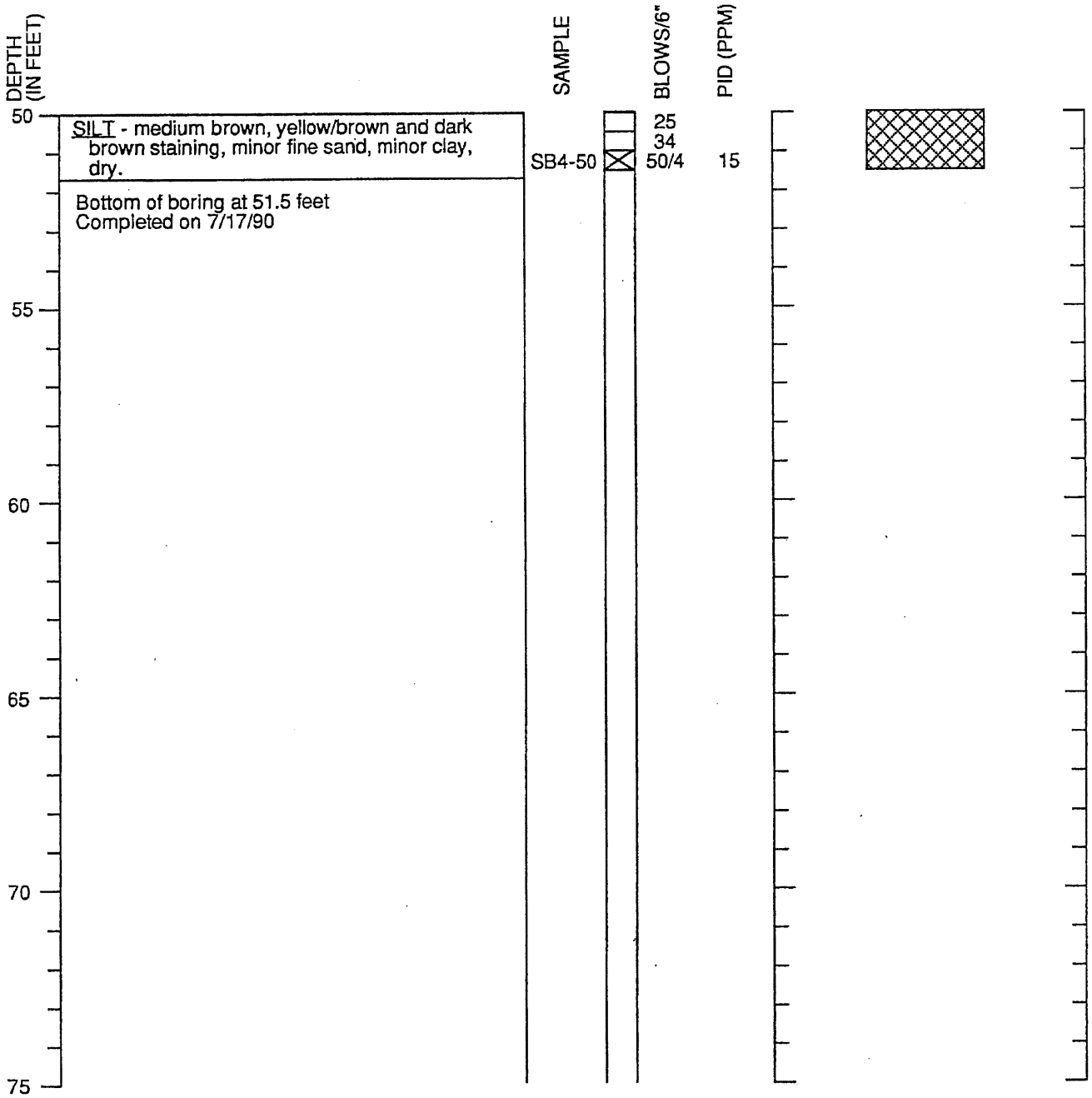
1. Refer to Figure A-1 for explanation of descriptions and symbols.
2. Soil descriptions and stratum lines are interpretive and actual changes may be gradual.
3. No free water encountered.

HARTCROWSER

J-6006 *12/90*
Figure A-2
Page 2 of 3

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.

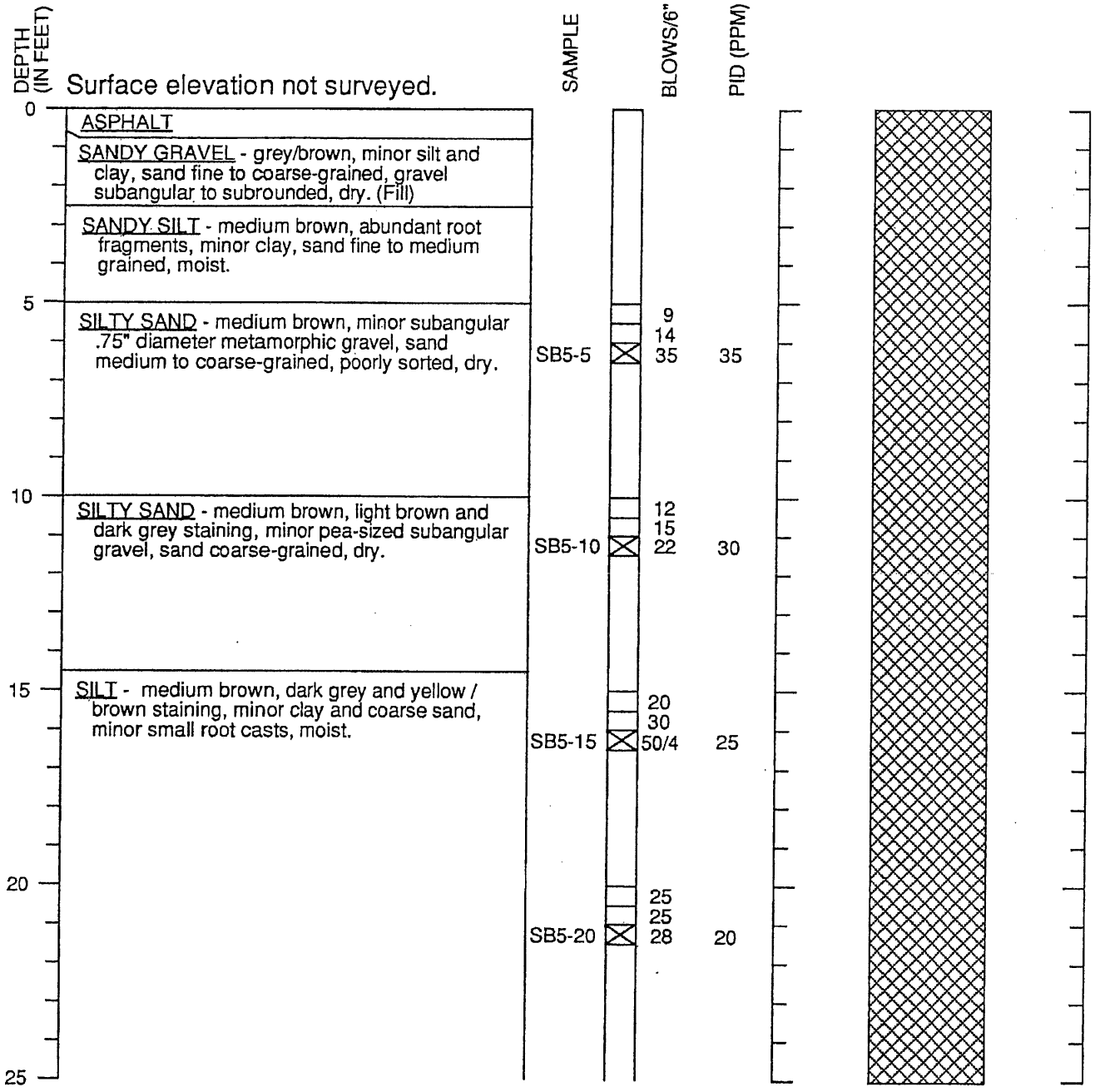
HARTCROWSER

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

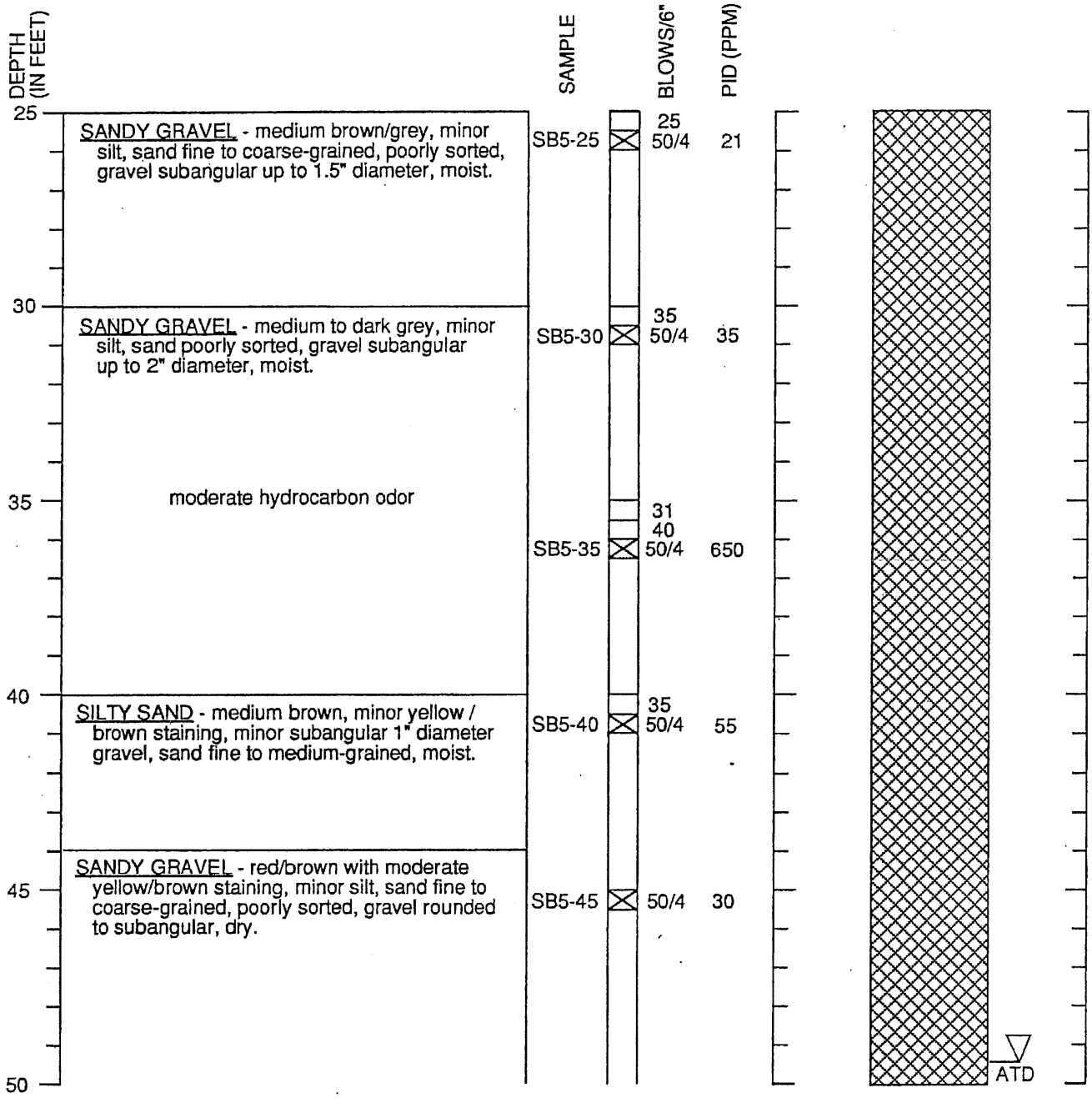
J-6006 *12/90*

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

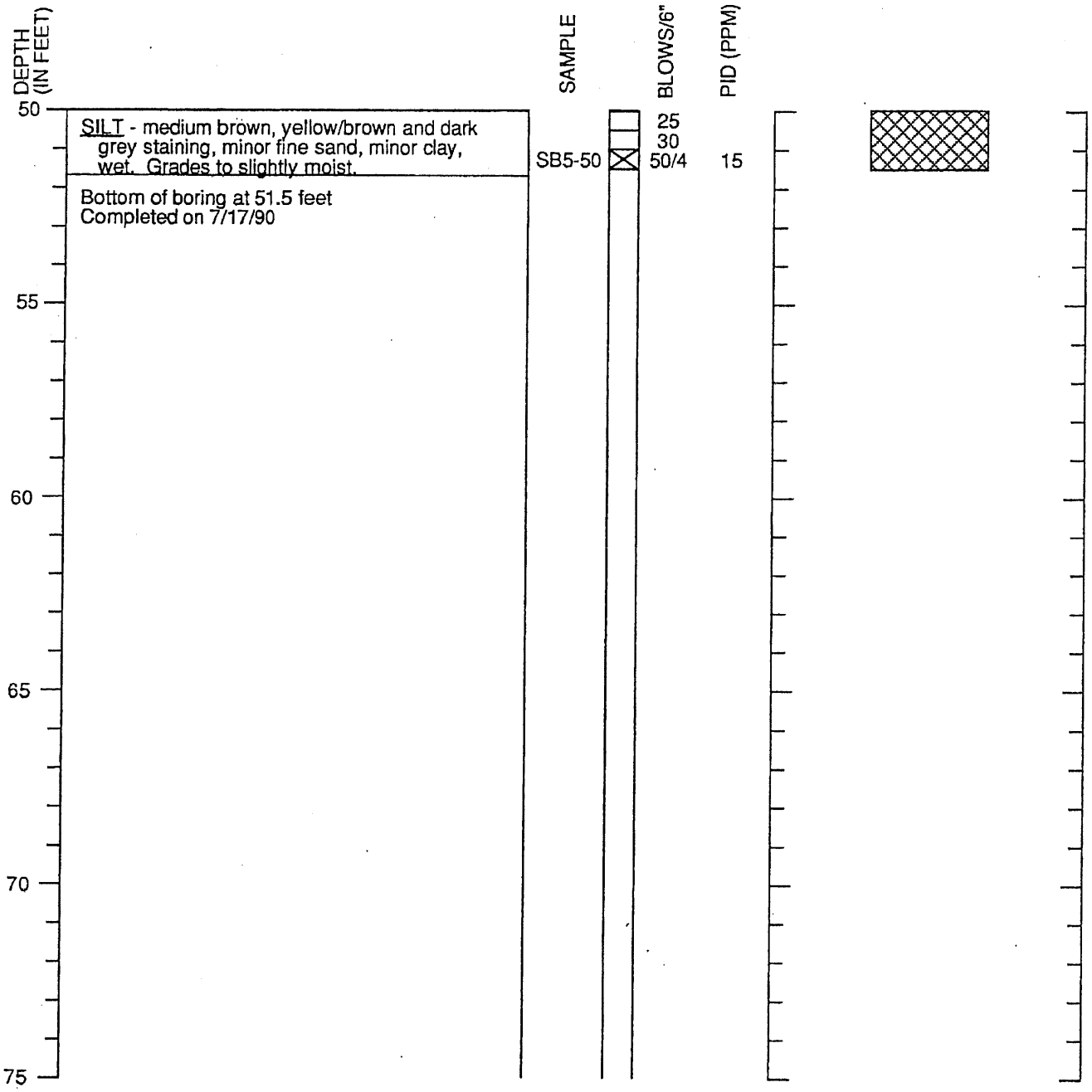
J-6006 *12/90*

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
						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.	
	16 25 35				15				
<1.0			SB-7 -15.0			ML		@ 14.3 - olive brown (2.5Y4/4) mottled with olive; 20% clay, 78% silt, 2% fine grained gravel; medium plasticity; low estimated permeability.	
	11 22 25				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
<1.0			SB-7 - 19.5			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.	24.3
	20 20 20				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.	25.3
<1.0			SB-7 - 24.5			ML		**Clayey SILT**; (ML); stiff; damp; 30% clay, 60% silt, 10% fine grained sand; high plasticity; low estimated permeability; trace carbon.	29.0
	35 36 40				30			**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.	
<1.0			SB-7 - 29.3			GP			
	19 20				35			**Clayey GRAVEL with Silt**; (GC); yellow brown	34.0

WELL DIAGRAM

WELL LOG (TPH-G) G:\PLE4226\GINT\PLE4226GPJ 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									
<1.0	45				40			@ 39' - quartz, siltstone, chert gravels.		
	53		SB-7 - 40.0			GC				
	25									
83	40		SB-7 - 44.5		45			@ 44' - moist to wet.		
	50/3								49.0	
	20							**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	30		SB-7 -49.5		50					
	50									
	30					GC				
<1.0	50/3		SB-7 - 54.3		55					
	20								59.0	
<1.0	30		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.		
	50/3									
	25					MH				
<1.0	35		SB-7 - 64.5		65			@ 64' - dark brown MnO_2 or organic blebs throughout.		
	50/3									
	17								69.0	
	32		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.		
	50/4									
	20									
	40				75			@ 74' - increasing mottled with yellow brown (10YR5/8).	74.5	

Continued Next Page

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

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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

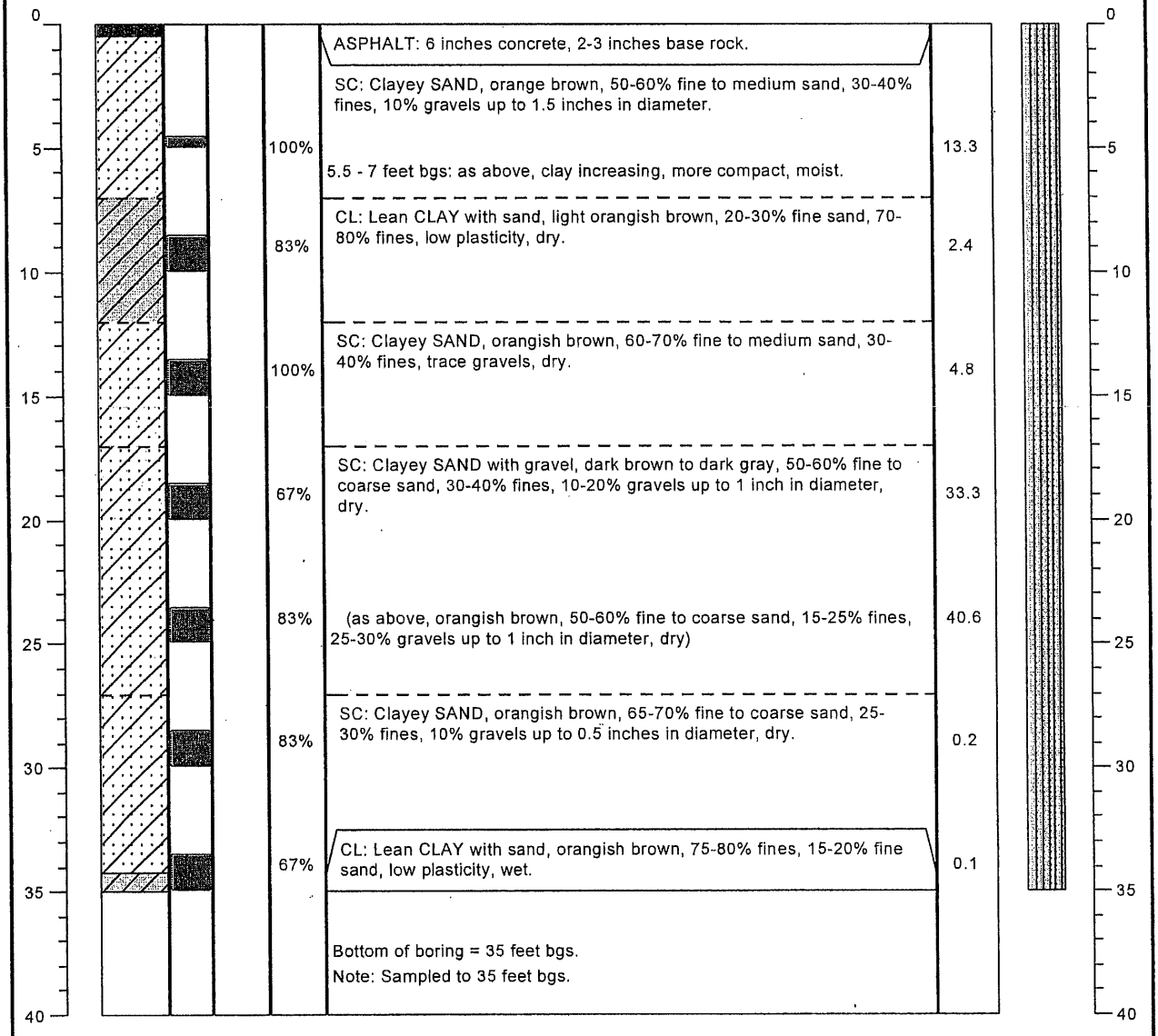
DELTA Xinogen

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



BORING LOG

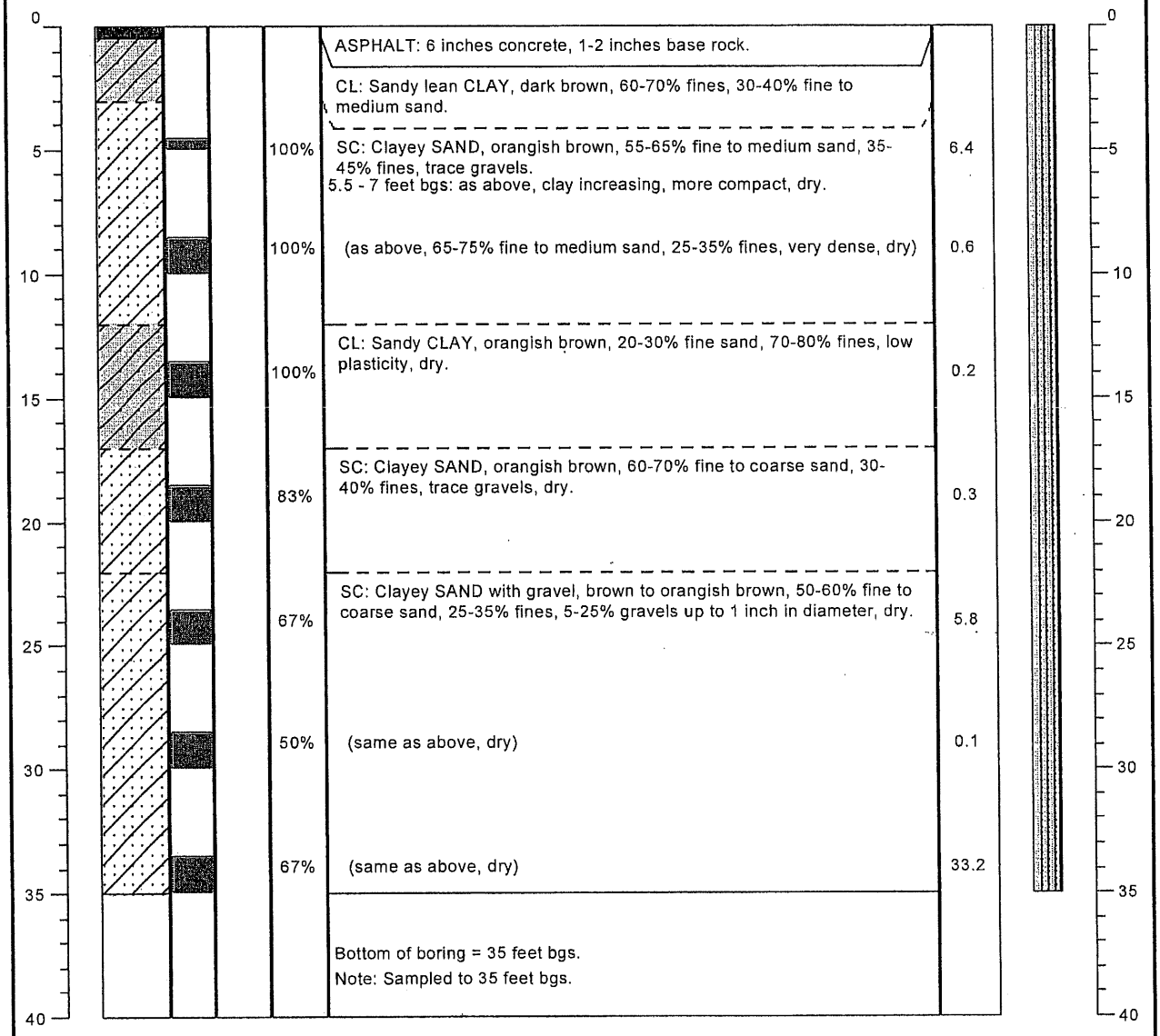
DELTA Xinogen

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

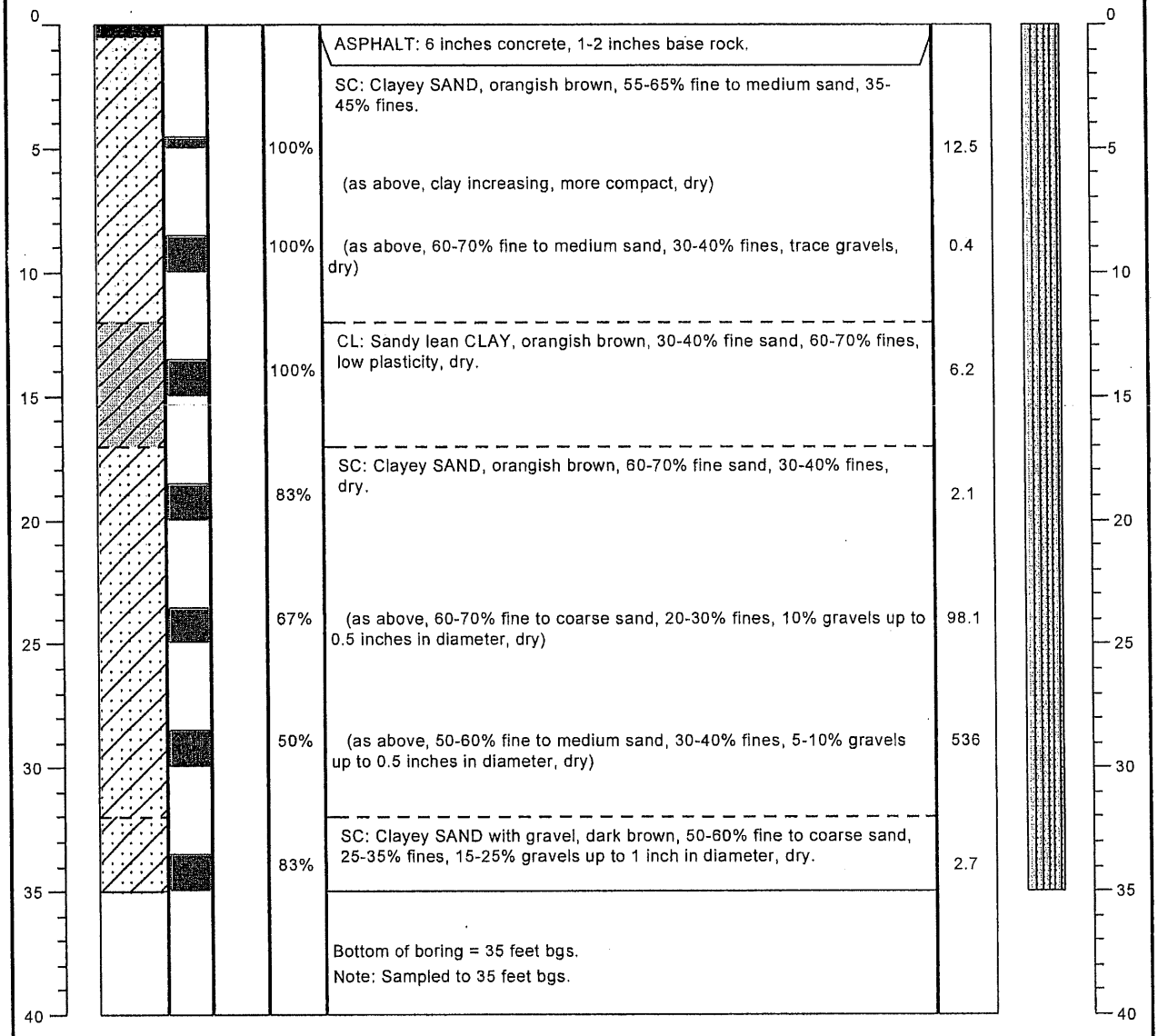
DELTA Xinogen

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



BORING LOG

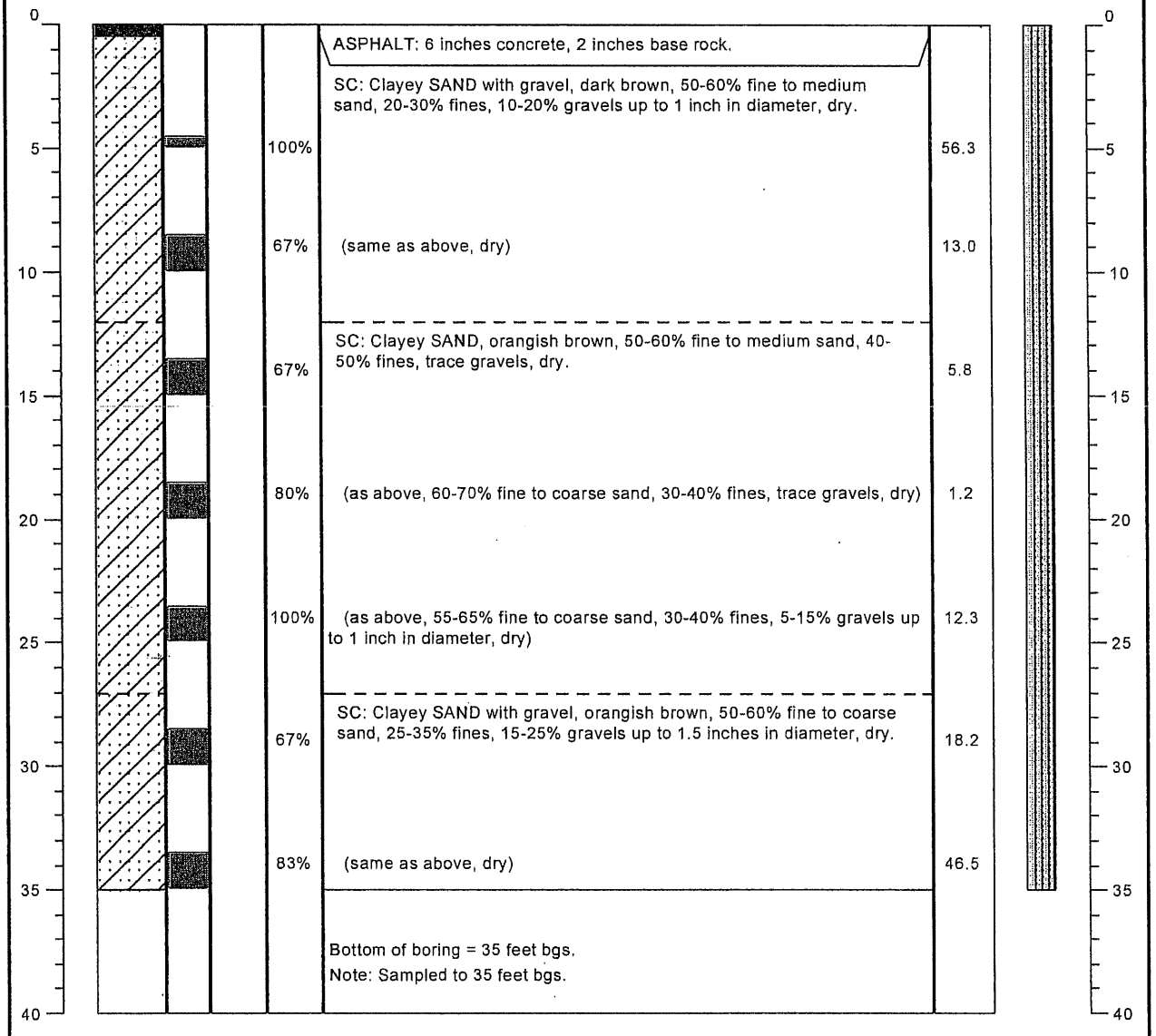
DELTA Xinogen

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

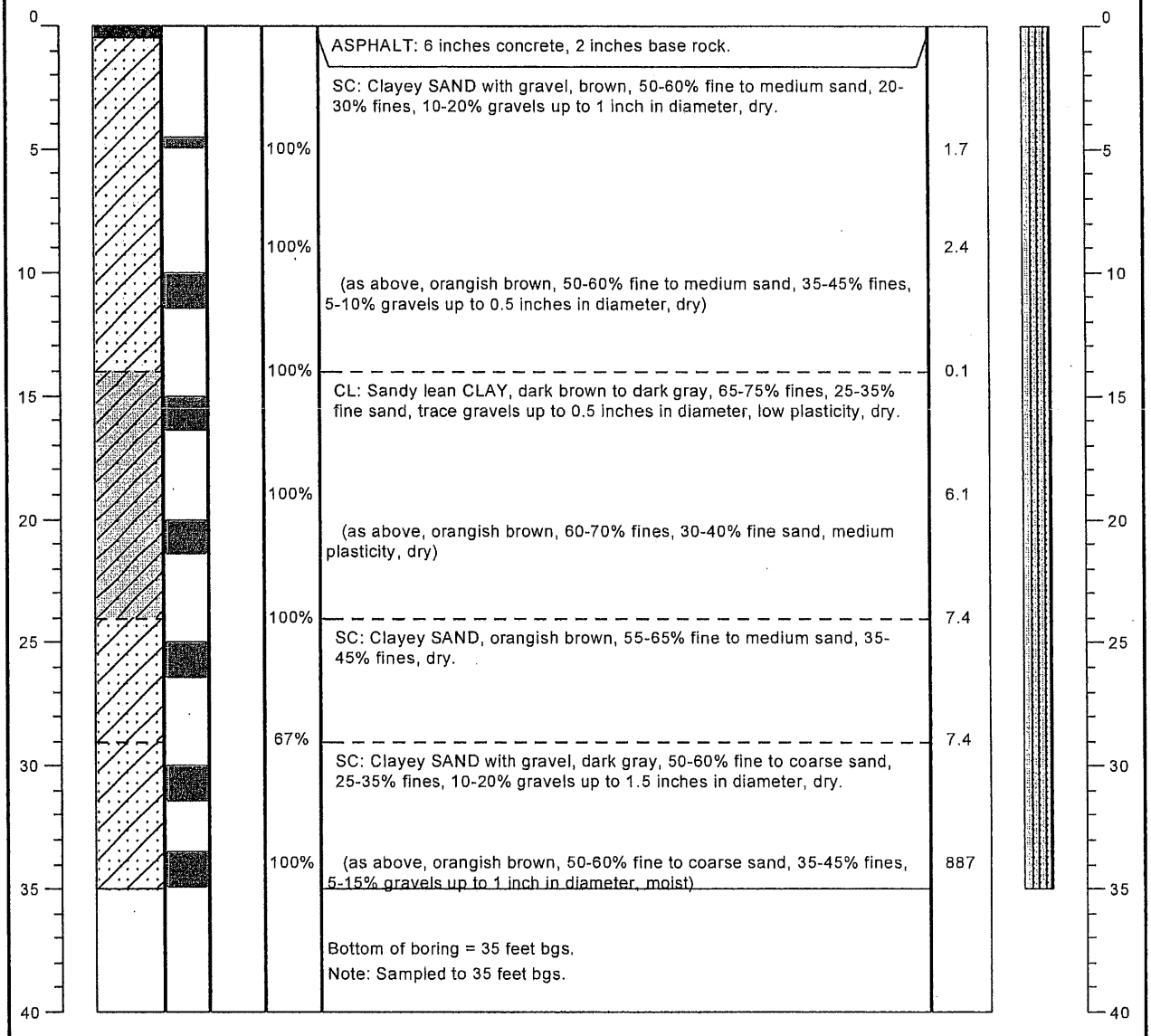
DELTA Xinogen

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**



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BORING/WELL LOG
(SB-6)

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
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.	4.5
					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.	9.7
					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.	15.0
<1.0	18 26 30		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.	19.3
<1.0	13 11 20		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.	24.5
<1.0	20 26 30		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.	29.0
<1.0	40 43 45		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.	34.0
	20 35				35			Clayey Gravelly SAND; (SP); dark yellow brown	

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

WELL LOG (TPH-G) G:\PLE4226G\INTPLE4226.GPJ DEFAULT.GDT 6/11/99

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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	50/4		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

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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	EXTENT	DEPTH (ft bgs)	U.S.C.S.	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	CONTACT DEPTH (ft bgs)
							ASPHALT.	0.5
					ML		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.	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".	26.0
<1.0		MW-2-26.0'		25	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
<1.0	35 50/6 38 50/6 45 50/6 24	MW-2-30.5'		30	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
							Sandy Clayey GRAVEL; (GC); very dense; wet to saturated; 25% clay, 15% silt, 20% sand, 40% gravel.	
				35				

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

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

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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 29 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

Cambria Environmental Technology, Inc.
1144 - 65th St.
Oakland, CA 94608
Telephone: (510) 420-0700
Fax: (510) 420-9170

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\GINT\PL\4226.GPJ DEFAULT.GDT 6/23/00

Continued Next Page

Cambria Environmental Technology, Inc.
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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 46				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

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 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	

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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	
Drilling Method:	Direct Push	Hole Diameter:	3"	
Sampling Method:	GeoProbe	Hole Depth:	37 ft	
Casing Type:		Well Diameter:		
Slot Size:		Well Depth:		
Gravel Pack:		Casing Stickup:		

Location Map: Please see site map

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		wet moist	0.1		23			CL	**Sandy Lean CLAY with Gravels** (Continued)
								SC	**Clayey SAND**: orange brown; ~70% poorly graded fine grained sand; ~30% fines
					24			CL	**Sandy Lean CLAY with Gravels**: same as above
					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
			0.1		30				
					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				

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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	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				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				

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 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:	-	

Location Map

Please see site map

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						41				
						42				
						43				
						44				
						45				
						46				
						47				
						48				
						49				
						50				
						51				
						52				
						53				
						54				
						55				
						56				
						57				
						58				
					14	59		↑	ML	**SILT**: mottled yellow brown and orangish brown, hard,
			dry	8.1	16					80-90% fines, <10% fine to very fine grained sands,
					21	60		↓		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	
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 / Interval	Soil Type	LITHOLOGY / DESCRIPTION
Grout					61		ML	SILT (cont.)
					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			

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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				
					97				
					98				
Bentonite				11	99			SC	**Clayey SAND with Gravel**: brown, dense, 10-20% fines,
Sand		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 / Casing)	Static Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample Recovery / Interval	Soil Type	LITHOLOGY / DESCRIPTION
Grout				air knifed & hand augered	1–8		AF	~4" asphalt, ~8" baserock
		dry	0.1	3 4 5	9–10		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
					11–12			
		moist	7.4	6 8 12	13–15		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
					16–18		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
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 2 of 3	
Driller:	Gregg	Date Drilled:	8/24/2006	Location Map	
Drilling Method:	HSA/AK (7')	Hole Diameter:	12"	Please see site map	
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	

Well Completion (Backfill / Casing)	Static Water Level	Moisture Content	PID Reading (ppm)	Penetration (blows/6")	Depth (feet)	Sample Recovery / 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			
					38			
Sand				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	Location Map	
Drilling Method:	HSA/AK (7')	Hole Diameter:	12"	Please see site map	
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	

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				
		moist	106	14 17 24	44				no grey mottling, 10-20% gravels, 20-30% fine grained sands, 50-70% fines
					45				
					46				
	▽				47				
Bentonite					48			CL	sandy lean CLAY: orangish brown, hard, 35-45% fine grained sands, 55-65% fines, low plasticity
		wet	27	11 17 20	49				
					50				Bottom of the boring is at 50 feet bg
					51				
					52				
					53				
					54				
					55				
					56				
					57				
					58				
					59				
					60				

BORING LOG

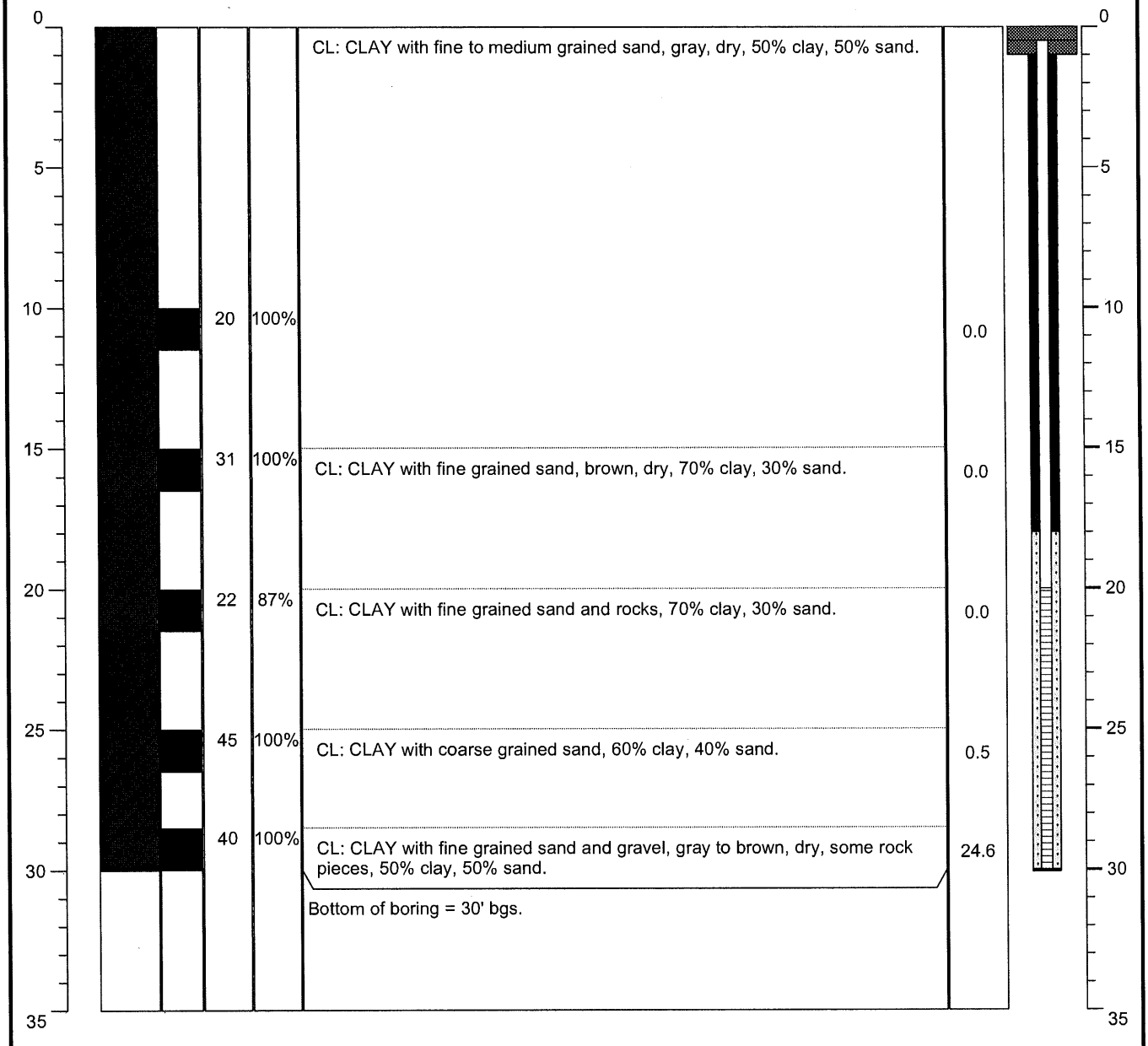
DELTA Inogen

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

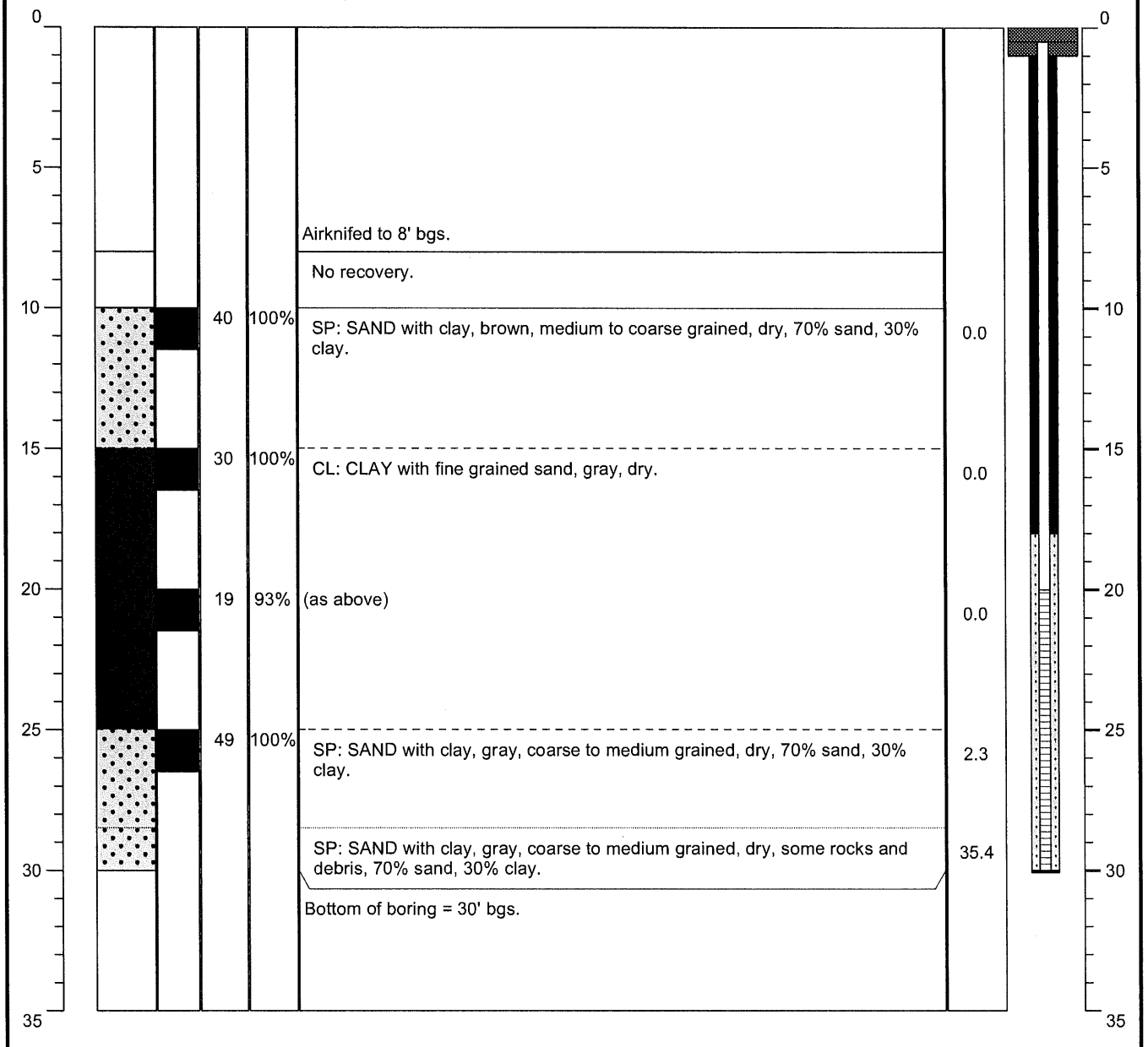
DELTA Xinogen

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						Airknifed to 8' bgs.			0
10				31	100%	CL: CLAY with fine grained sand, brown, dry, rocks, 70% clay, 30% sand.	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
30				44	97%	(as above)	0.0		30
35						Bottom of boring = 30' bgs. Note: Sampled to 30.5' bgs.			35

BORING LOG

DELTA Xinogen

Client Shell Oil Products US

Project Number SCA421211A

Well No. SVE-4

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: **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						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 Inogen

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				20	100%	No recovery.			10
						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
						Bottom of boring = 52' bgs.			
55									55

BORING LOG

DELTA Inogen

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**