Barbara Jakub
Alameda County Environmental Health
1131 Harbor Bay Parkway
Alameda, CA 94502-6577

Re: BPS Reprographics (Formerly City Blue Print)
RWQCB Case #01-0210
1700 Jefferson St
Oakland CA, 94612

Dear Barbara Jakub,

BPS had directed ERS Corporation to provide, on our behalf, professional environmental consulting services to the best of their ability. To the best of my knowledge the information in this report is accurate and all local Agency and/or Regional Water Quality Control Board regulations and guidelines have been followed.

This report was prepared by ERS Corporation and BPS has relied on their advice and assistance. I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge.

Sincerely,

Authorized Representative

Attachment: Report

January 25, 2013

Ms. Barbara Jakub
Hazardous Materials Specialist
Alameda County Department of Environmental Health
Local Oversight Program
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502

RE: Conceptual Site Model and Work Plan
1700 Jefferson Street, Oakland, California
Fuel Leak Case No. RO 151

Dear Ms. Jakub:

On behalf of ARC and based on our meeting on May 19, 2011 and your letters dated September 10, 2009 and December 10, 2012, Environmental Risk Specialties Corporation (ERS) has prepared the enclosed Conceptual Site Model and Work Plan for 1700 Jefferson Street, Oakland, California. Upon your approval, ERS will upload the Report to the Regional Water Quality Control Board's GeoTracker database and to your website.

If you have any questions regarding this report or the findings of the work, please contact me at (925) 938-1600, extension 102 or email me at smichelson@erscorp.us.

Sincerely,

Steven Michelson, PG
Principal Geologist

cc: Mr. Christopher Payne, ARC

Enclosure

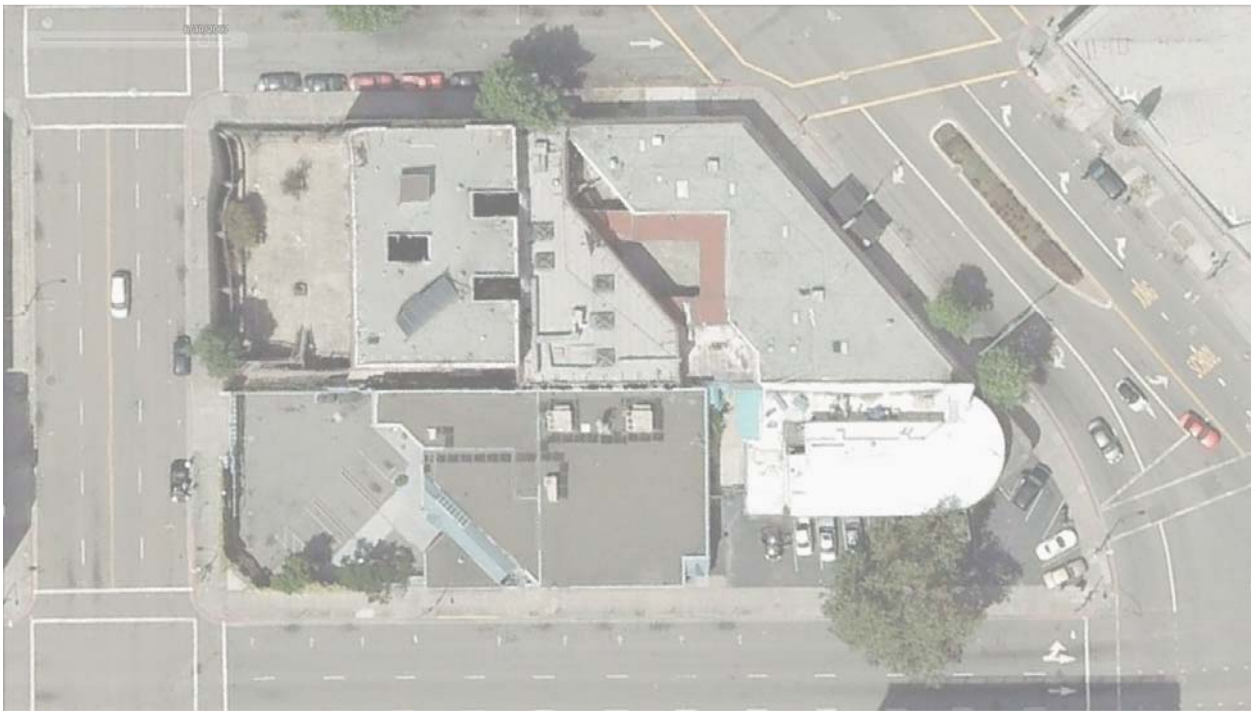
Conceptual Site Model and Work Plan

ARC

1700 Jefferson Street

Oakland, California

January 2013



ENVIRONMENTAL RISK SPECIALTIES CORPORATION

CONCEPTUAL SITE MODEL AND WORK PLAN

1700 Jefferson Street
Oakland, California

Prepared for:
ARC
945 Bryant Street
San Francisco, CA 94103

Prepared by:
Environmental Risk Specialties Corporation
Walnut Creek, California

January 2013

Yola Bayram
Geologist

Steven Michelson, PG
Principal Geologist

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APPENDICES

1.0 INTRODUCTION

This Conceptual Site Model and Work Plan (Work Plan) was prepared by Environmental Risk Specialties Corporation (ERS) on behalf of ARC facility at 1700 Jefferson Street in Oakland, California. This Work Plan was prepared in response to Alameda County Department of Environmental Health's (ACEH) letters dated September 10, 2009 and December 10, 2012 and our meeting on May 19, 2011. The objective of the Work Plan is to describe the additional investigations needed to address data gaps identified by the ACEH and the CSM.

The ACEH letter requested the following specific elements to be addressed:

- Delineation of vertical and lateral contamination in source area
- Lateral extent of dissolved plume
- Well survey
- Site conceptual model
- Tabulation of data from site investigations and monitoring

This Work Plan addresses the ACEH requests by providing the conceptual site model (CSM) for the known and suspected environmental conditions at 1700 Jefferson, identifying the data gaps to be addressed, and then recommending specific tasks and the methods to collect the additional information.

2.0 BACKGROUND

2.1 Site Setting

The Site is located in City of Oakland on the northeast corner of the intersection of Jefferson Street and 17th Street in Oakland, California (Figure 1). The nearest significant surface water features are Lake Merritt, 0.5 mile to the west, and San Francisco Bay, 2.5 miles to the east. The Site is essentially flat at an approximate elevation of 35 feet above mean sea level (msl). The local topography slopes gently down towards the north and northeast.

The Site is a former gas station that had two 1,000 gallon gasoline underground storage tanks (USTs) and one 550 gallon gasoline UST. The Site is located in a largely commercial portion of downtown Oakland and is currently used by ARC for commercial printing operations.

Adjacent to the northern boundary of the Site is a three story apartment building that includes one level below surrounding ground level. The courtyard for the apartment building is also approximately 10 feet

below street level and adjacent to Jefferson Street. Approximately 350 feet north of the Site is Merrill Sign Company, which included three shallow ground water monitor wells.

2.2 Previous Investigations and Remedial Actions

This section summarizes the investigations and remedial actions completed to date. The reports upon which this summary is based are listed in the References section of this Work Plan. Tables 1 and 2 summarize all laboratory analytical results for soil and grab ground water samples, respectively. Table 3 summarizes the ground water elevation, and approximate gradient direction. Table 4 summarizes the routine ground water quality monitoring data. Figure 2 shows the Site Plan and Figure 3 shows the soil and ground water sampling locations. Charts 1 and 2 depict the temporal trends of TPH as gasoline range organics (GRO) and benzene respectively in the monitor wells MW-1, MW-3, MW-4, MW-5, and MW-6.

On February 20, 1987, three borings (Borings 1, 2, and 3) were advanced as part of a geotechnical investigation. Two additional borings (Borings 4 and 5) were advanced near the former USTs.

On June 16, 1987, the three USTs were removed from the Site and a suspected unauthorized release was confirmed (HLA 1987). According to a memo dated October 27, 1987, a waste oil tank was not found during excavation of the Site. Soil samples were collected at either 8 or 9 feet below ground surface (bgs) on the northwest, southwest, northeast, and southeast sidewalls and from 6.5 feet bgs on the bottom of the excavation. The excavation was then deepened to approximately 9.5 feet bgs. The excavated soil was aerated on-site for approximately one month and until laboratory testing revealed the excavated soil contained concentrations of petroleum hydrocarbons less than 1 mg/kg. The aerated excavated soil was subsequently used to backfill the excavation.

In June 1987, three ground water monitor wells were installed (MW-1, MW-2, MW-3). Well MW-2 was subsequently destroyed on November 9, 1987 when the current building was constructed. On August 12, 1987, Boring 6 was advanced to investigate soil permeability. In October 1987, borings for piers were drilled in the northwest corner of the property for future construction. A three-point composite sample was collected and analyzed for volatile hydrocarbons by EPA method 8015, which were not detected above the laboratory reporting limit of 600 mg/kg.

In January 1988, ground water extraction wells MW-1A and MW-4 were installed to specifically remove free product. From September 1987 to March 1991, approximately 2,300 gallons of free product were removed from well MW-1A on a daily basis using a hand bailer.

In June 1992 a ground water extraction and treatment system was installed and ceased operating in July 1999; the system removed a total of 867 gallons of free product.

In April 1996, well MW-6 was installed to monitor ground water quality to the north and downgradient from the site.

In March 1998 five Cone Penetrometer Test (CPT) borings were advance south and north of the Site to further characterize off-site conditions.

In April 1998, it was determined that the petroleum at the Site was comprised of leaded gasoline. As a consequence of the free product removal efforts, free product thicker than a sheen has not been measured in the monitor wells since 1999.

In 1999, oxygen release compound (ORC®) socks were installed within wells MW-1A, MW-3, MW-4, and MW-5. The ORC® socks were removed at the request of ACEH in 2002 (MACTEC 2004).

2.3 Ground Water Quality Monitoring

Quarterly ground water monitoring of wells MW-1, MW-3, MW-5, and MW-6 was conducted from January 1994 to 2009. The monitoring schedule was adjusted to semi-annual in 2009 pursuant to the State Water Resources Control Board Resolution No. 2009-0042 and the ACEH letter dated July 24, 2009. Ground water extraction wells MW-1A and MW-4 were periodically sampled from August 1991 to June 1999. MW-4 was also sampled in March and October of 2012.

2.4 Elevation Datum of the Monitor Wells

All monitor wells were initially surveyed to the City of Oakland datum, which differs -5.7 feet from NAVD88, the standard national datum. On April 15, 2010, all monitor wells were resurveyed by Muir Consulting of Oakdale, California to Geotracker specifications on the NAVD88 datum. The ground water elevations presented in Table 3 have been recalculated according to the recent survey.

3.0 CONCEPTUAL SITE MODEL

The Conceptual Site Model (CSM) is a representation of site conditions developed using available data, interpretations, and assumptions based on experience to demonstrate the relationship between contaminants of concern, transport media and mechanisms, and potential receptors. The CSM is documented herein with written description, maps, geologic cross-sections, soil boring logs, tables, and diagrams. This CSM also identifies data gaps that if addressed, would aid the assessment of risk, if any, and the design of a remedy, if needed. As appropriate, the data gaps guide the development of work plan to further characterize site conditions. This CSM will be updated as new information becomes available.

3.1 Geologic Setting

The Site is located in a topographically level area located approximately a mile north of the Oakland Estuary. The topography of the area immediately surrounding the site slopes gradually down to the north. The elevation is approximately 35 feet above mean sea level (msl). The Site is approximately 2.5 miles east of the San Francisco Bay and 0.75 miles west of Lake Merritt (MACTEC 2003).

Eleven borings have been advanced at the Site to a maximum depth of 42 feet bgs. Boring logs are provided in Appendix A. Geologic cross sections through these borings extend approximately north-south (Figure 4) and east-west (Figure 5). Based on the boring logs and the cross-sections, the geology at the Site is generally characterized by silty sand and clayey sand present from the surface to a depth of approximately 16.0 to 19.0 feet below ground surface (bgs). However, in MW-4, silty sand was present to approximately 26 feet bgs. Poorly graded sand is present in most other borings at the Site from approximately 16.0 to 27.5 feet bgs. These soils are underlain by stiff to very stiff, saturated silty clays to the maximum explored depth of 42.0 feet bgs.

The geologic structure also reveals that the UST excavation was limited to the upper silty and clayey sand zone. Also, the basement and courtyard of the nearby apartment building may be completed either at the base of the silty sand zone or within the upper portion of the underlying sandy zone. Based on the approximate 10 feet thickness of the upper silt, trenches for underground utilities, which are typically backfilled with gravel or engineered fill, may provide preferential pathways within the silt.

3.2 Hydrogeologic Setting and Monitor Well Construction

The depth to ground water at the site ranges from approximately 21 feet to 27 feet bgs. Based on these depths, ground water resides under water table conditions and solely within the sandy zone between 16.0 feet and 27.5 feet bgs. The vadose zone consists of the unsaturated portion of this sandy zone, approximately 5 feet, and the overlying silty sand and clayey sand zone to ground surface.

The inclusion of data collected from the three monitor wells at 612 18th Street (Merrill Site) improved the overall interpretation of the ground water gradient in the vicinity of the Site. Based on data collected prior to 2011, the ground water gradient direction ranges from northwest to southwest and magnitude ranges from 0.001 to 0.05 feet per foot. With the inclusion of the data from the neighboring wells, the dominant ground water gradient direction appears to be towards the northwest. The Merrill Site was given case closure on July 31, 2012 and the monitor wells were destroyed shortly after.

Ground water elevations measured on April 2012 are illustrated on Figure 6 and include data from the Merrill Site. Ground water elevations measured on October 10, 2012 are illustrated on Figure 7 and the interpretation of the gradient is influenced by the data previously collected from the Merrill Site. The ground water gradient direction in October 2012 is to the northwest at an average of 0.0027 ft/ft. A rose diagram depicting ground water gradients over time is presented in Figure 10.

The construction details of the six monitor wells at the Site and the three neighboring wells are summarized on Table 3. However, the actual boring log for MW-6 is not available and other than depth, its construction details are not known.

3.3 Sources and Distribution of TPHg and BTEX

3.3.1 On-Site Source Area

The three former USTs and dispenser island at the Site are the only known potential sources of petroleum hydrocarbons at the Site. These USTs, piping, and dispenser were approximately 40 years old when they were removed in 1987. The excavation of the USTs extended to approximately 9.5 feet. The product lines and dispensers were also removed, but these excavations were not documented and neither their depths nor soil conditions are known. Consequently, it is not known if this infrastructure also released petroleum hydrocarbons.

The excavated soil was stockpiled and spread on site and allowed to aerate. Aeration continued until sampling revealed concentrations less than 1 mg/kg volatile hydrocarbons (HLA 1987). The excavation was backfilled on August 5 and 6, 1987 with the aerated soil.

3.3.2 Off-Site

Properties near to the Site with the potential to affect conditions at 1700 Jefferson, and/or with the potential to contribute to petroleum measured in ground water migrating from 1700 Jefferson were identified in the Geotracker and ACEH databases.

There are two former UST sites located southeast and upgradient of the Site. The site at 1 City Hall was closed in 1995 and the site at 1417 Clay Street was closed in 1996. The Merrill site is located at 612 18th Street and downgradient of the Site and was closed in 2012. A Chevron station is located approximately 800 feet downgradient of Site at 1700 Castro Street and is currently active. Another Chevron station is located at 1900 Telegraph, about 1000 feet cross-gradient from the site. A former bus depot was located cross-gradient to the Site at 1825 San Pablo Ave, and is not an active site on the Geotracker website.

Although the above sites are in the vicinity of 1700 Jefferson, at present they do not appear to have the potential to contribute to conditions beneath 1700 Jefferson. However, some of the above sites do have the potential to contribute petroleum to ground water cross and downgradient from 1700 Jefferson.

3.4 Distribution of Petroleum Hydrocarbons

Sampling at the Site has consistently revealed GRO and BTEX as the constituents of concern. Although the released gasoline was determined in 1998 to be leaded, the routine monitoring has not included sampling and analysis for lead.

3.4.1 Distribution in Vadose Zone Soil

The only vadose zone soil samples collected at the Site are from borings B5 and B4, in 1987. These borings were advanced near the former USTs. Soil samples were collected above the highest ground water level to date and contained residual TPHg and BTEX in very fine-grained soils between approximately 15 to 25 feet bgs.

3.4.2 Distribution in Ground Water

Monitor wells (MW-1, MW-3, MW-4) in the vicinity of the former USTs revealed free product until remedial actions designed to remove free product were implemented. The offsite monitor well MW-5, approximately 170 feet from the former USTs, also contained free petroleum product. We note that while MW-5 is topographically downslope, it also appears to be cross-gradient with respect to the dominant ground water gradient direction.

Following the cessation of ground water extraction remediation efforts in September 1999, the monitor wells have not revealed a measurable thickness of free product. The distributions of GRO and benzene in ground water in October 2012 are interpreted in Figures 8 and 9.

Six exploratory borings were advanced in February 1998 to collect grab ground water samples. Figures 11 and 12 depict the interpreted distribution of GRO and benzene at that time using all of the data describing ground water quality in the samples collected from the borings and from the monitor wells, the latter samples were collected in December 1997 and March 1998.

Because the USTs were approximately 40 years old at the time of removal in 1987, and because free phase product was present in the offsite well MW-5 in 1998, it is possible that sufficient time had elapsed to allow dissolved phase GRO to migrate to the grab sample locations. However, based on the data, the dissolved phase plume appears to have extended only approximately 100 feet beyond MW-5. Given the separate phase GRO in MW-5, this short distance to the downgradient edge of the measureable concentrations in ground water is atypical (LLNL, 1995) and may be a consequence of the crossgradient location of these borings, or due to some unknown mechanism resulting in GRO at MW-5.

For example, it is possible that the conditions at MW-5 are not related to the release at 1700 Jefferson, because to date no data have been collected between the Site and MW-5.

Concentrations of petroleum in MW-6 were only measured in 2011, which is located downgradient and west of the former USTs. This finding contrasts with the persistent and much higher concentrations measured in ground water in the more distant cross-gradient well MW-5. The mechanisms responsible for the relative lack of GRO in MW-6 and the persistent presence of GRO in MW-5 are currently not known.

During the last three recent sampling events, an odor similar to sewage was noted MW-5 during purging and sampling. It is possible that this odor is indicative of a possible leak from a nearby sewage line,

which may reveal a preferential pathway of GRO to this location. The same odor was not noted in the other wells located at the Site.

3.4.3 Distribution in Soil Gas and Potential Risk to Indoor Air

The primary VOCs detected in the ground water include BTEX. Based on the recent ground water monitoring event in October 2012, benzene is detected above the ground water environmental screening level, 1800 µg/l, for the protection of indoor air in monitor wells MW-1 and MW-5. Consequently, samples of soil gas and/or indoor air should be collected from the Site.

3.4.4 Sensitive Receptor Survey

The Site is located within the urbanized area of the City of Oakland. Buildings overlying ground water with measurable concentrations of petroleum include the ARC facility, a residential apartment adjacent to the northeast, and a currently vacant commercial building near MW-5. It is currently unknown if any domestic/agricultural wells are located near the Site. There are no surface water bodies near the site.

3.5 Data Gaps

The following data gaps have been identified based on the site history and conceptual site model described above. Addressing these data gaps will enable both an adequate assessment of risk posed by the Site conditions and an evaluation of appropriate remedial actions. Section 4 describes the scope of work designed to fill these data gaps.

3.5.1 Specific Elements Requested by ACEH

- Well Survey – though unlikely, it is possible that water supply wells are in the vicinity of the Site. The presence of water supply wells in the vicinity of the Site should be evaluated to prevent potential exposure to humans.

- Indoor Air Quality – based on the data, ground water in the vicinity of the contains benzene above the ESL for the protection of indoor air. The quality of indoor air in the apartment building, and possibly the ARC building, should be evaluated.

3.5.2 Additional Data Gaps

- GRO in the Vadose Zone – with the UST excavation extending to 9.5 feet bgs and free product historically on ground water at approximately 25 feet bgs, it is possible that residual GRO is present in the unexcavated soil below the former USTs. The quality of soil beneath the former fuel piping and dispenser is also not known. The possible presence of GRO in the vadose zone beneath the former UST and infrastructure should be investigated.

- GRO Migration and Distribution – the relative lack of GRO in the nearby downgradient MW-6 conflicts with the relatively higher concentrations in the cross-gradient MW-5. As with the

underground utilities above, the mechanism(s) responsible for this atypical distribution is unknown and should be investigated. In addition, the overall distribution of petroleum in ground water should be further investigated in order to understand the extent of the plume, identify other potential risks to indoor air, and to assess the reasonableness of the current network of monitor wells.

- Underground Utilities – may provide a preferential pathway within the silt zone underlying the Site. These utilities should be mapped and evaluated as potential pathways.

- Nearby Sites – further assess the potential for nearby properties to contribute conditions heretofore solely associated with the 1700 Jefferson.

4.0 PROPOSED INVESTIGATION AND WORK PLAN

The purpose of this proposed investigation is to address the data gaps listed in Section 3 and the items listed in the ACEH letter dated September 10, 2009. With the completion of this investigation, it is anticipated that sufficient data will be available to adequately assess risks posed by the site and to identify appropriate remedial actions, if any.

The work proposed in this plan is a guide to investigation and is subject to change depending on actual field conditions and investigation findings. The scope of work consists of the following tasks:

- Task 1 - Utility Location, Permitting, and Health and Safety Plan
- Task 2 – Field Investigation
    - Map underground utilities and evaluate potential preferential pathways
    - Investigate soil quality in the former source area
    - Assess the quality of indoor air
    - Investigate the distribution of petroleum in ground water
    - Sensitive receptor survey
- Task 3 - Reporting
- Task 4 – Ground Water Quality Monitoring

All fieldwork will be performed under the supervision of a California Professional Geologist.

4.1 Task 1 - Utility Location, Permitting, and Health and Safety Plan

As described below, investigation activities include collecting soil, ground water, and soil gas samples and drilling at the Site. Subsurface investigation permits for will be acquired from the appropriate agencies at Alameda County and City of Oakland.

Underground Services Alert (USA) will be notified and the boring locations will be cleared for underground utilities using a private underground utility locating subcontractor. The proposed drilling locations are contingent upon access limitations (i.e., site features, utilities) and final locations may be moved to the closest accessible location and/or modified by additional information describing the Site.

As required by the Occupational Health and Safety Administration (OSHA) 29 CFR 1910.120, Hazardous Waste Operations and Emergency Responses, a site Health and Safety Plan (HSP) will be prepared for use while conducting proposed field sampling activities. The HSP will be read and approved by the ERS Project Manager, a Quality Assurance Reviewer, and the On-site Safety Officers of all subcontractors working at the Site.

4.2 Task 2 - Field Investigation

4.2.1 Underground Utility Mapping and Soil Gas Sampling

Utility trenches can influence contaminant migration. First, a thorough records review will be conducted to determine the location, type and depth of utilities in the vicinity of the Site. Building plans available from the City of Oakland and ARC will be reviewed. Then, based on the plans and utility covers at and near the Site, a private utility locator will trace utilities at and adjacent to the Site. Utility covers will be removed, as possible, to measure the depth to the utility line and invert elevations of sewer lines. The above information will be used to create plan view and cross-section maps to evaluate the potential for these utilities to serve as a preferential pathway between the source area and off-site areas, including MW-5. The information generated from the utility survey may alter the locations where soil, ground water, and soil gas samples are proposed herein.

Based on the above and with approval from the City of Oakland, soil gas screening samples will be collected by driving small-diameter steel probes 3 to 5 feet into, or adjacent to, the utility trench approximately every 50 linear feet. Once the probe is driven to depth, a soil gas sample will be collected using a vacuum pump and Tedlar bag. The sample will be screened on-site using a photoionization detector (PID) equipped with a 10.2 electron-volt lamp able to detect benzene and other volatile petroleum constituents. Locations yielding soil gas with the highest concentrations on the PID will be further sampled for analysis by EPA Method TO-17 following the DTSC Advisory for Soil Gas Investigations (April 2012).

4.2.2 Subsurface Investigation

All direct push work will be performed by a licensed C-57 drilling contractor. The drilling will be performed using direct push methods advancing dual tube casing to allow for discrete ground water sample collection. Soil samples will be collected continuously and screened using a Photo Ionization Detector (PID) for volatile organic compounds.

Based on the results from borings proposed on Figure 13 and the soil gas sampling along the utility lines, additional step out locations may be advanced in order to delineate the lateral extent of contamination. All drilling equipment will be decontaminated between each sampling location.

4.2.2.1 Grab Ground Water Sampling and Analysis

Grab ground water samples will be collected using dual tube sampling equipment at locations proposed on Figure 13. Upon reaching the desired depth in the boring, 1-inch diameter PVC well casing and screen will be inserted into the borehole and the dual tube casing will be raised approximately 1 foot to allow ground water to enter the PVC. Ground water grab samples will be collected within the casing using dedicated tubing with a check valve, or a peristaltic pump. The ground water samples will be collected into laboratory-supplied containers for the appropriate type of analyses. The ground water sample containers will be sealed, labeled, and placed in a cooler containing ice immediately after collection. The samples will be transported to a state-certified laboratory under standard chain-of-custody protocols.

The grab ground water samples will be analyzed for:

- TPHg by EPA Method 8015 and
- Benzene, toluene, ethyl benzene, and total xylenes (BTEX) by EPA Method 8020.

4.2.2.2 Soil Sampling and Analysis

In the borings located at locations proposed on Figure 13, soil samples will be collected continuously and described with regard to soil type, relative moisture, and color in accordance with the Unified Soil Classification System. If contamination is observed based on the PID readings, a soil sample will be collected in EPA method 5035 compliant Encore sampling containers and analyzed for TPHg by EPA method 8015 and BTEX by EPA method 8020. Upon completion of all sampling and data collection activities, the borings will be tremie grouted to ground surface with neat cement using a tremie pipe. The top of the boring will be finished similar to surrounding materials.

4.2.3 Assessing Indoor Air Quality

Samples of indoor air will be collected within the ARC building and within the adjacent apartment complex at the locations shown in Figure 13. All indoor air samples and the background air sample will be collected within the laboratory-supplied cartridge that using an 8-hour regulator to generate a time

weighted average concentration. The air samples will be analyzed for volatile organic compounds using EPA Method TO-17.

4.2.4 Sample Containers and Preservation

All samples for laboratory analysis will be collected into containers supplied by the laboratory. Following collection, all samples will be appropriately labeled with the sample ID, date and time of collection, and sampler's initials. The samples will be placed on ice within an ice chest and transported to the laboratory under standard chain-of-custody procedures.

4.2.5 Sensitive Receptor Survey

It is currently unknown if any domestic/agricultural wells are located near the subject property. A request for all well data within a 0.5-mile of the subject property will be submitted to the County of Alameda Public Works Agency and the California Department of Water Resources. A survey of residential building, hospitals, schools, and day care facilities within a 2000 feet radius will also be performed.

4.3 Task 3 - Reporting

A Site Investigation Report will be prepared and submitted presenting the results of activities described above. The report will include the following:

- Descriptions of the methodologies used to collect and analyze the data,
- Significant deviations from this Work Plan,
- Updated Site Conceptual Model based on the findings, including description of the Site, utility corridors, local geology, and hydrogeology
- Appropriately scaled base maps showing the boring location and boring logs illustrating soils observed in the field,
- Summary and interpretation of water, soil, and air analytical results and laboratory data certificates, including an assessment of the extent of chemicals in soil, potential impacts on beneficial uses of ground water, and health risk to humans and the environment.
- Comparison of on-site with off-site conditions
- Remaining data gaps, if any
- Recommended additional actions, if any.

4.4 Task 4 – Ground Water Quality Monitoring

Semi-annual ground water sampling will continue at the Site in March and September of every year at monitor wells MW-1, MW-3, MW-4, MW-5, and MW-6. Groundwater will continue to be analyzed for TPHg and BTEX. In addition, groundwater will also be evaluated for monitored natural attenuation potential in the next sampling event and will be analyzed for total iron, ferrous iron, nitrate as N, nitrate as NO3-, sulfate, carbon dioxide, and methane.

5.0 REFERENCES

DTSC, Advisory for Active Soil Gas Investigations, April 2012.

DTSC, Calulate Risk Based Ground Water Concentration (GW-Screen Version 3.0, Model2009rev) http://www.dtsc.ca.gov/AssessingRisk/upload/HERD_Groundwater_Screening_Model_2009rev.xls, 2009

HLA, Additional Investigations, October 1989.

HLA, Drilled Pier Soil Analysis, January 1988.

HLA, Final Report: Soil Aeration and Tank Excavation Backfilling, November 1987.

HLA, Final Report: Ground Water Investigation, November 1987.

HLA, Groundwater Investigation, July 27, 1999.

HLA, Memorandum to Alameda County Environmental Health Service, October 27, 1987.

HLA, Off-Site Hydrogeologic Investigation, November 1988.

HLA, Preliminary Hazardous Waste Assessment, June 1987.

HLA, Professional Services during Tank Removal, August 1987.

HLA, Soil Permeability Results, January 1988.

MACTEC, Phase II Environmental Site Assessment 1701 San Pablo Avenue, March 2003.

MACTEC, Work Plan, May 2004.

P&D Environmental, Limited Phase II Environmental Site Sampling Report, August 2010.

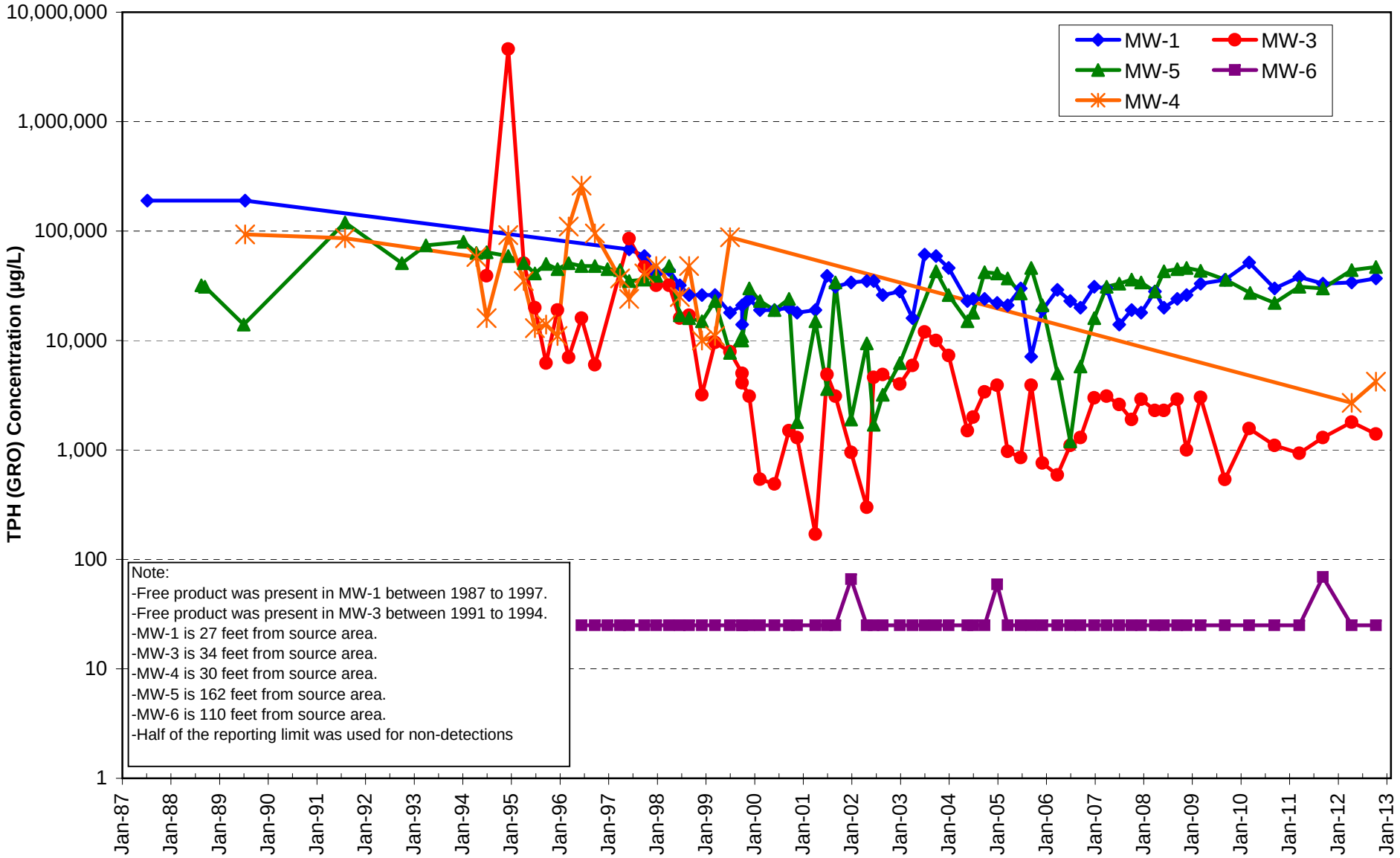
P&D Environmental, Groundwater Monitoring Well Installation Report (MW1 through MW3), May 2011.

RWQCB-SF, Tier 1 Environmental Screening Levels Surfer, SFBRWQCB California EPA, Table E-1, Groundwater Screening Levels for Evaluation of Potential Vapor Intrusion Concerns (volatile chemicals only), 2008

USEPA, Environmental Quality Management, Inc. Draft User's Guide for Evaluating Subsurface Vapor Intrusion Into Buildings, 2003

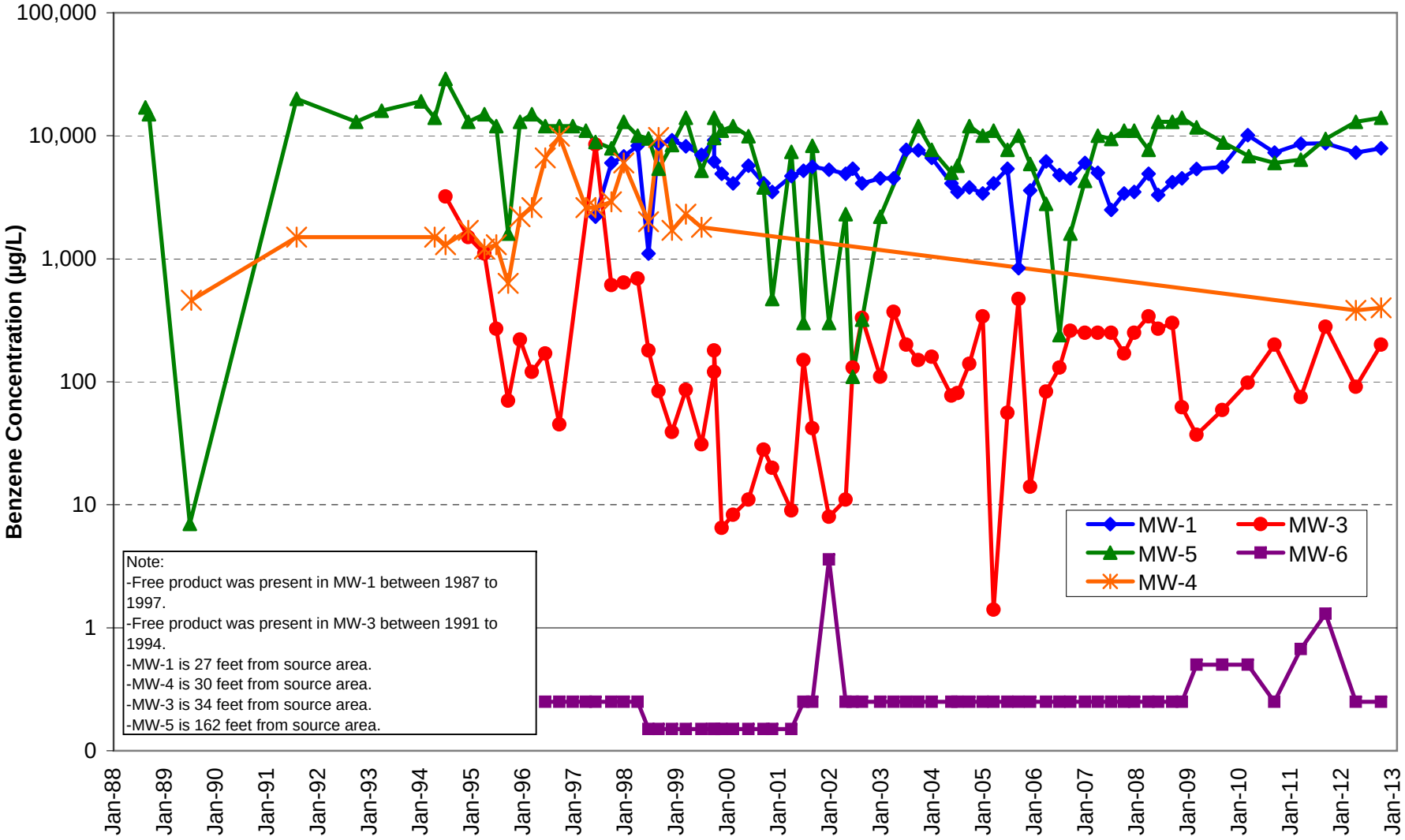
CHARTS

CHART 1
Concentrations of TPH (GRO) vs. Time in MW-1, MW-3, MW-4, MW-5, and MW-6
1700 Jefferson, Oakland, California



Note:
-Free product was present in MW-1 between 1987 to 1997.
-Free product was present in MW-3 between 1991 to 1994.
-MW-1 is 27 feet from source area.
-MW-3 is 34 feet from source area.
-MW-4 is 30 feet from source area.
-MW-5 is 162 feet from source area.
-MW-6 is 110 feet from source area.
-Half of the reporting limit was used for non-detections

CHART 2
Concentrations of Benzene vs. Time in MW-1, MW-3, MW-4, MW-5, and MW-6
1700 Jefferson, Oakland, California



TABLES

Table 1
Soil Analytical Results
1700 Jefferson, Oakland, California

Sample ID	Sample Depth (ft bgs)	Date Sampled	TVH	TPHg	TPHd	TPHk	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes, Total
			(mg/Kg)								
4	11.5	2/19/1987	64	--	--	--	--	--	--	--	--
	15.5	2/19/1987	310	--	--	--	--	--	--	--	--
	20	2/19/1987	2100	--	--	--	--	--	--	--	--
	26.5	2/19/1987	1700	--	--	--	--	--	--	--	--
	30	2/19/1987	46	--	--	--	--	--	--	--	--
5	14.5	2/20/1987	150	--	--	--	--	--	--	--	--
	19.5	2/20/1987	900	--	--	--	--	--	--	--	--
	24	2/20/1987	3300	--	--	--	--	--	--	--	--
Northwest	9	6/16/1987	17	--	--	--	--	--	--	--	--
Southwest	9	6/16/1987	170	--	--	--	--	--	--	--	--
Northeast	8	6/16/1987	920	--	--	--	--	--	--	--	--
Southeast	8	6/16/1987	690	--	--	--	--	--	--	--	--
North Center Bottom	6.5	6/16/1987	8800	--	--	--	--	--	--	--	--
South Center Bottom	6.5	6/16/1987	2900	--	--	--	--	--	--	--	--
Stockpile	--	6/16/1987	410	--	--	--	--	--	--	--	--
MW-1	23.5	6/24/1987	4500	--	--	--	--	--	--	--	--
MW-2	24	6/25/1987	1U	--	--	--	--	--	--	--	--
MW-3	23.5	6/24/1987	0.8U	--	--	--	--	--	--	--	--
MW-4	23	6/24/1987	270	--	--	--	--	--	--	--	--
CB-4 (MW-5)	21	8/15/1988	--	10U	10U	10U	--	0.009	0.005U	0.005U	0.005U
CB-6 (MW-5)	31	8/15/1988	--	10U	10U	10U	--	--	--	--	--
CPT-1	1-1.5	2/19/1998	--	1U	--	--	50U	5U	5U	5U	5U
CPT-1	24-24.5	2/19/1998	--	1U	--	--	50U	5U	5U	5U	5U
CPT-2	1-1.5	2/19/1998	--	1U	--	--	50U	5U	5U	5U	6
CPT-2	24-24.5	2/19/1998	--	4.3	--	--	300U	30U	30U	30U	30U
CPT-3	1.5-1.8	2/19/1998	--	1U	--	--	50U	5U	5U	5U	5U
CPT-3	23-23.5	2/19/1998	--	1U	--	--	50U	5U	5U	5U	5U
CPT-4	0.5-1.0	2/19/1998	--	1U	--	--	50U	5U	5U	5U	5U
CPT-4	23-23.5	2/19/1998	--	1U	--	--	50U	5U	5U	5U	5U
CPT-5	0.5-1.0	2/19/1998	--	2U	--	--	100U	10U	10U	10U	10U
CPT-6	0.5-1.0	2/19/1998	--	1U	--	--	50U	5U	5U	5U	5U
CPT-6	23-23.5	2/19/1998	--	1U	--	--	50U	5U	5U	5U	5U

Notes:

ft bgs: feet below ground surface

--: Not Analyzed

TVH: Total volatile hydrocarbon

mg/Kg: milligrams per kilogram

TPHg: Total petroleum hydrocarbons as gasoline

MTBE: Methyl tert-butyl ether

Table 2
Grab Ground Water Analytical Results
1700 Jefferson, Oakland, California

Sample ID	Date Sampled	TPHg	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes, Total
		(µg/L)					
CPT-1	2/19/1998	50U	5U	0.5U	0.5U	0.5U	2U
CPT-2	2/19/1998	200	5U	0.5U	0.6	0.5U	2
CPT-3	2/19/1998	180	5U	0.5U	0.5U	0.5U	2U
CPT-4	2/19/1998	50	5U	0.5U	0.5U	0.5U	2U
CPT-6	2/19/1998	420	5U	1.2	0.5U	0.5U	2U

Notes:
(µg/L): micrograms per liter
TPHg: Total petroleum hydrocarbons as gasoline
MTBE: Methyl tert-butyl ether

Table 3
Ground Water Elevations, Gradient, and Direction
1700 Jefferson Street, Oakland, California

1700 Jefferson St, BPS Reprographics

Well ID	MW-1		MW-1A		MW-3		MW-4		MW-5		MW-6	
Top of Casing (ft above MSL)	36.81		35.25		36.23		36.77		35.21		35.91	
Date	DTW (ft bgs)	GWE (ft bgs)	DTW (ft bgs)	GWE (ft bgs)	DTW (ft bgs)	GWE (ft bgs)	DTW (ft bgs)	GWE (ft bgs)	DTW (ft bgs)	GWE (ft bgs)	DTW (ft bgs)	GWE (ft bgs)
7/8/1987	25.75	5.69	--	--	25.50	6.27	--	--	--	--	--	--
7/12/1989	26.00	5.44	--	--	24.44	7.33	--	--	24.91	4.31	--	--
Data not available from 1990 to 1995												
3/6/1996	NS	--	--	--	24.79	6.98	--	--	23.53	7.03	NA	---
6/11/1996	FP	--	--	--	25.60	6.17	--	--	23.78	6.78	25.16	6.10
9/19/1996	FP	--	--	--	26.09	5.68	--	--	24.48	6.08	25.76	5.50
12/23/1996	FP	--	--	--	FP	---	--	--	24.83	5.73	25.88	5.38
3/27/1997	FP	--	--	--	FP	---	--	--	23.82	6.74	24.78	6.48
6/4/1997	26.41	5.95	--	--	25.11	6.66	--	--	23.92	6.64	24.60	6.66
9/26/1997	26.80	5.56	--	--	25.41	6.36	--	--	24.29	6.27	24.80	6.46
12/22/1997	26.00	6.36	--	--	24.91	6.86	--	--	24.02	6.54	24.71	6.55
3/31/1998	26.06	6.30	--	--	24.05	7.72	--	--	22.78	7.78	23.75	7.51
6/18/1998	25.60	6.76	--	--	23.71	8.06	--	--	22.51	8.05	23.22	8.04
8/28/1998	25.45	6.91	--	--	23.70	8.07	--	--	22.74	7.82	22.23	9.03
12/2/1998	24.92	7.44	--	--	23.60	8.17	--	--	23.16	7.40	23.72	7.54
3/10/1999	24.90	7.46	--	--	22.65	9.12	--	--	22.82	7.74	23.54	7.72
6/30/1999	25.53	6.83	--	--	23.07	8.70	--	--	22.41	8.15	23.04	8.22
9/29/1999	24.23	8.13	--	--	23.03	8.74	--	--	22.81	7.75	23.42	7.84
11/22/1999	24.33	8.03	--	--	23.68	8.09	--	--	22.88	7.68	23.64	7.62
2/11/2000	24.38	7.98	--	--	23.74	8.03	--	--	22.74	7.82	23.67	7.59
5/30/2000	23.57	8.79	--	--	22.97	8.80	--	--	21.73	8.83	22.82	8.44
9/15/2000	23.85	8.51	--	--	23.12	8.65	--	--	22.14	8.42	23.10	8.16
11/16/2000	24.14	8.22	--	--	23.40	8.37	--	--	22.39	8.17	23.41	7.85
4/2/2001	23.40	8.96	--	--	23.40	8.37	--	--	22.07	8.49	23.33	7.93
6/28/2001	23.58	8.78	--	--	23.17	8.60	--	--	22.15	8.41	23.15	8.11
8/30/2001	24.00	8.36	--	--	23.35	7.42	--	--	22.35	8.21	23.35	7.91
12/26/2001	24.18	8.18	--	--	23.54	8.23	--	--	22.49	8.07	23.27	7.99
4/23/2002	NA	--	--	--	22.89	8.88	--	--	21.07	9.49	22.89	8.37
6/14/2002	23.41	8.95	--	--	22.85	8.92	--	--	21.80	8.76	22.81	8.45
8/20/2002	23.85	8.51	--	--	23.11	8.66	--	--	22.14	8.42	23.15	8.11
12/27/2002	24.10	8.26	--	--	23.34	8.43	--	--	NA[1]	NA[1]	23.41	7.85
4/1/2003	23.75	8.61	--	--	22.90	8.87	--	--	NA[1]	NA[1]	23.16	8.10
7/1/2003	23.50	8.86	--	--	22.80	8.97	--	--	NA[1]	NA[1]	22.75	8.51
9/24/2003	23.82	8.54	--	--	23.15	8.62	--	--	22.21	8.35	23.16	8.10
12/29/2003	24.07	8.29	--	--	23.45	8.32	--	--	22.56	8.00	23.47	7.79
5/18/2004	23.64	8.72	--	--	22.98	8.79	--	--	21.85	8.71	22.87	8.39
6/30/2004	23.64	8.72	--	--	23.04	8.73	--	--	22.00	8.56	22.43	8.83
9/23/2004	23.98	8.38	--	--	23.32	8.45	--	--	22.36	8.20	23.30	7.96
12/28/2004	24.07	8.29	--	--	28.71	3.06	--	--	22.42	8.14	23.42	7.84
3/16/2005	23.80	8.56	--	--	23.70	8.07	--	--	22.11	8.45	23.60	7.66
6/23/2005	22.90	9.46	--	--	22.40	9.37	--	--	21.20	9.36	22.27	8.99
9/9/2005	23.27	9.09	--	--	22.63	9.14	--	--	21.68	8.88	22.55	8.71
12/2/2005	23.75	8.61	--	--	23.06	8.74	--	--	22.19	8.37	23.05	8.21
3/24/2006	23.05	9.31	--	--	22.57	9.20	--	--	21.01	9.55	22.50	8.76
6/29/2006	22.56	9.80	--	--	23.91	9.84	--	--	20.78	9.78	21.85	9.41
9/13/2006	23.00	9.36	--	--	22.35	9.42	--	--	21.35	9.21	22.31	8.95
12/27/2006	23.47	8.89	--	--	22.82	8.95	--	--	21.82	8.74	22.85	8.41
3/30/2007	23.51	8.85	--	--	22.91	8.86	--	--	21.70	8.86	22.88	8.38
7/2/2007	23.39	8.97	--	--	22.88	8.89	--	--	21.81	8.75	22.75	8.51
10/2/2007	23.87	8.49	--	--	23.20	8.57	--	--	22.22	8.34	23.17	8.09
12/13/2007	24.05	8.31	--	--	23.40	8.37	--	--	22.31	8.25	23.37	7.89
3/26/2008	23.56	8.80	--	--	23.00	8.77	--	--	21.77	8.79	22.97	8.29
6/2/2008	23.70	8.66	--	--	23.08	8.69	--	--	22.04	8.52	23.07	8.19
9/10/2008	24.07	8.29	--	--	23.55	8.22	--	--	22.52	8.04	23.49	7.77
11/19/2008	24.33	8.03	--	--	23.68	8.09	--	--	22.63	7.93	23.64	7.62
3/3/2009	24.31	8.05	--	--	23.78	7.99	--	--	22.51	8.05	22.51	7.51
9/3/2009	24.16	8.20	--	--	23.55	8.22	--	--	22.36	8.20	23.49	-15.44
3/3/2010	23.99	12.82	22.42	12.83	23.45	12.78	23.87	12.90	22.14	13.07	23.49	12.42
9/8/2010	23.75	13.06	22.31	12.94	23.09	13.14	23.63	13.14	22.05	13.16	23.11	12.80
3/16/2011	23.63	13.18	22.09	13.16	23.05	13.18	23.55	13.22	21.85	13.36	23.06	12.85
9/9/2011	23.16	13.65	21.64	13.61	22.50	13.73	23.06	13.71	21.57	13.64	22.50	13.41
4/12/2012	23.42	13.39	21.89	13.36	22.79	13.44	23.33	13.44	21.69	13.52	22.83	13.08
10/10/2012	23.61	13.20	--	--	22.90	13.33	23.47	13.30	22.02	13.19	22.95	12.96

612 18th St, Merrill Sign Company

	MW-1		MW-2		MW-3	
	34.62		34.57		34.72	
	DTW (ft bgs)	GWE (ft bgs)	DTW (ft bgs)	GWE (ft bgs)	DTW (ft bgs)	GWE (ft bgs)
4/25/2011	21.18	13.44	21.21	13.36	21.61	13.11
7/25/2011	21.22	13.40	21.14	13.43	21.54	13.18
9/9/2011	21.51	13.11	21.39	13.18	21.79	12.93
4/12/2012	21.58	13.04	21.56	13.01	21.76	12.96

Notes:

NS: Not Sampled
FP: Free Product
NA: Not Available
MSL: Mean sea level
ft: feet
bgs: below ground surface
1: Data not available due to ORC socks in well
2: Data not available due to probable equipment malfunction or operator error
Well elevations prior to 2010 are in City of Oakland Datum; After 2010, all elevations are in NAVD 88 Datum.

Table 4
GROUND WATER ANALYTICAL RESULTS
1700 Jefferson Street, Oakland, California

Well ID	Date Sampled	TPH (GRO)	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	Free Product
		(µg/L)						(inches)
ESLs		210	46	130	43	100	1800	--
MW-1	7/8/1987	190,000	18,000	26,000	--	3,700	--	30
	9/12/1988	--	--	--	--	--	--	25
	7/12/1989	190,000	1,000	8,900	2,900	19,000	--	21.6
	8/1/1991	--	--	--	--	--	--	12
	6/18/1992	--	--	--	--	--	--	34
	7/2/1992	--	--	--	--	--	--	18
	7/23/1992	--	--	--	--	--	--	10
	8/18/1992	--	--	--	--	--	--	10
	11/11/1992	--	--	--	--	--	--	13
	1/29/1993	--	--	--	--	--	--	25.2
	2/12/1993	--	--	--	--	--	--	10.2
	1/6/1994	--	--	--	--	--	--	14.8
	3/17/1994	--	--	--	--	--	--	23.4
	4/13/1994	--	--	--	--	--	--	12
	6/29/1994	--	--	--	--	--	--	0
	12/8/1994	--	--	--	--	--	--	FP
	4/3/1995	--	--	--	--	--	--	FP
	6/27/1995	--	--	--	--	--	--	FP
	9/19/1995	--	--	--	--	--	--	FP
	12/13/1995	--	--	--	--	--	--	FP
	3/6/1996	--	--	--	--	--	--	FP
	6/11/1996	--	--	--	--	--	--	FP
	9/19/1996	--	--	--	--	--	--	FP
	12/23/1996	--	--	--	--	--	--	FP
	3/27/1997	--	--	--	--	--	--	FP
	6/4/1997	68,000	2,200	4,500	1,500	11,000	<500	--
	9/26/1997	59,000	6,000	3,000	1,600	8,600	<500	--
	12/23/1997	41,000	6,800	3,000	1,400	6,600	300	--
	3/31/1998	44,000	8,300	3,700	1,100	4,300	420	--
	6/18/1998	32,000	1,100	3,800	550	3,000	<50	--
	8/28/1998	26,000	8,600	2,300	730	2,100	<50	--
	12/2/1998	26,000	9,200	4,300	820	2,800	<50	--
	3/10/1999	26,000	8,200	5,900	870	3,500	<50	--
	6/30/1999	18,000	7,000	5,800	950	2,500	<25	--
	9/29/1999	21,000	9,200	10,000	1,200	5,500	<250	--
	9/29/1999	14,000	6,200	5,900	620	3,500	<250	--
	11/22/1999	24,000	4,900	5,000	730	3,500	<100	--
	2/11/2000	19,000	4,100	4,800	530	2,800	7	--
	5/30/2000	19,000	5,700	8,400	730	3,500	<5.0	--
	9/15/2000	20,000	4,100	5,700	540	2,700	<12	--
	11/16/2000	18,000	3,500	4,300	640	3,200	<40	--
	4/2/2001	19,000	4,700	5,200	570	2,600	50	--
	6/28/2001	39,000	5,200	4,200	660	3,900	9	--
	8/30/2001	31,000	5,600	5,100	560	2,500	<100	--
	12/26/2001	34,000	5,300	5,200	630	2,400	<120	--
	4/24/2002	35,000	4,900	6,000	740	3,100	<120	--
	6/14/2002	35,000	5,400	6,800	870	3,500	<250	--
	8/20/2002	26,000	4,100	4,700	620	2,700	<120	--
	12/27/2002	28,000	4,500	5,000	660	3,000	<120	--
	4/1/2003	16,000	4,500	6,000	680	3,100	<120	--
	7/1/2003	61,000	7,700	11,000	1,200	6,700	<250	--
	9/25/2003	59,000	7,600	9,400	1,000	4,800	<1,200	--
	12/29/2003	46,000	6,600	7,900	960	4,000	<250	--
	5/18/2004	23,000	4,100	4,700	450	1,500	<50	--
	6/30/2004	24,000	3,500	3,600	390	1,300	<50	--
	9/23/2004	24,000	3,800	3,900	470	1,400	<25	--
	12/28/2004	22,000	3,400	3,400	380	1,400	<250	--
	3/16/2005	21,000	4,100	4,200	470	1,300	<50	--
	6/23/2005	30,000	5,400	5,500	520	1,900	<1,200	--
	9/9/2005	7,100	840	950	120	410	<120	--
	12/2/2005	19,000	3,600	3,500	410	1,300	<2.5	--
	3/24/2006	29,000	6,200	6,000	620	2,000	<500	--
	6/29/2006	23,000	4,800	4,000	330	1,200	<500	--
	9/13/2006	20,000	4,500	3,900	400	1,400	<250	--
	12/27/2006	31,000	6,000	5,300	710	2,500	<500	--
	3/30/2007	30,000	5,000	4,600	520	1,700	<500	--
	7/2/2007	14,000	2,500	2,000	280	930	<500	--
	10/2/2007	19,000	3,400	2,700	400	1,200	<500	--
	12/13/2007	18,000	3,500	2,700	390	1,100	<500	--
	3/26/2008	28,000	4,900	4,900	530	2,100	<500	--
	6/2/2008	20,000	3,300	3,300	380	1,700	<500	--
	9/10/2008	24,000	4,200	4,200	470	2,200	<500	--
	11/19/2008	26,000	4,500	4,500	490	2,500	<500	--
	3/3/2009	33,100	5,380	5,380	603	2,800	<100	--
	9/3/2009	35,900	5,570	5,180	620	3,270	<100	--
	3/3/2010	51,700	10,100	8,050	952	4,560	<200	--
	9/8/2010	30,000	7,300	6,300	550	3,700	<50	--
	3/16/2011	38,000	8,600	6,900	670	4,300	<50	--
	9/9/2011	33,000	8,700	6,500	620	4,400	<50	--
	4/12/2012	34,000	7,300	4,700	570	4,300	<50	--
	10/10/2012	37,000	7,900	5,200	800	5,100	<50	--
MW-1A	9/12/1988	--	--	--	--	--	--	28.2
	7/12/1989	220,000	1,200	9,210	3,100	24,000	NA	18.6
	8/1/1991	350,000	17,000	31,000	3,000	FP	NA	FP
	7/2/1992	FP	FP	FP	FP	FP	NA	18
	9/30/1992	FP	FP	FP	FP	FP	NA	10 - 13
	2/12/1993	FP	FP	FP	FP	FP	NA	13
	3/30/1993	FP	FP	FP	FP	FP	NA	10.2-14.8
	1/6/1994	FP	FP	FP	FP	14,000	NA	16.2
	4/13/1994	170,000	17,000	31,000	2,100	22,000	NA	12
	6/29/1994	95,000	16,000	21,000	1,500	12,000	NA	4.5+/-
	12/8/1994	190,000	13,000	21,000	1,400	11,000	NA	--
	4/3/1995	67,000	11,000	13,000	910	9,800	NA	--
	6/27/1995	53,000	11,000	9,900	500	6,300	NA	--
	9/19/1995	52,000	8,900	11,000	790	5,300	NA	--
	12/13/1995	62,000	9,900	9,200	710	6,800	NA	--
	3/6/1996	200,000	14,000	22,000	2,700	22,000	NA	--
	6/11/1996	140,000	18,000	28,000	2,800	19,000	NA	--
	9/19/1996	100,000	16,000	22,000	2,100	14,000	NA	--
	12/23/1996	FP	FP	FP	FP	FP	NA	--
	3/27/1997	66,000	12,000	15,000	1,400	100	1,800	--
	6/4/1997	54,000	11,000	12,000	1,000	7,200	<500	--
	9/26/1997	73,000	10,000	16,000	1,400	8,500	<500	--
	12/23/1997	66,000	10,000	16,000	1,400	12,000	1,900	--
	3/31/1998	51,000	9,100	11,000	1,100	6,800	300	--
	6/18/1998	50,000	11,000	15,000	870	5,800	<50	--
	8/28/1998	15,000	1,100	830	31	3,000	<50	--
	12/2/1998	41,000	8,500	11,000	720	6,700	<50	--
	3/10/1999	10,000	2,300	1,900	1,600	2,300	<50	--
	6/30/1999	18,000	6,400	7,800	660	4,100	<25	--
MW-2	7/8/1987	8,200	1,500	340	--	87	--	--
	11/9/1987	WELL DESTROYED						
MW-3	7/8/1987	6,200	180	500	--	170	--	0
	7/12/1989	13,000	4	160	210	420	--	0
	8/1/1991	74,000	1,600	4,600	670	4,300	--	4
	9/30/1992	--	--	--	--	--	--	4.1
	11/11/1992	--	--	--	--	--	--	2
	1/29/1993	--	--	--	--	--	--	1.7
	2/12/1993	--	--	--	--	--	--	1.3
	1/6/1994	--	--	--	--	--	--	2.2
	3/17/1994	--	--	--	--	--	--	2.4
	4/13/1994	--	--	--	--	--	--	1.8
	6/29/1994	39,000	3,200	2,900	580	4,300	--	0.5
	12/8/1994	4,600,000	1,500	4,200	6,000	95,000	--	--
	4/3/1995	51,000	1,100	2,300	580	4,800	--	--
	6/27/1995	20,000	270	550	190	1,700	--	--
	9/19/1995	6,200	70	140	68	500	--	--
	12/13/1995	19,000	220	480	140	1,700	--	--
	3/6/1996	7,000	120	170	49	440	--	--
	6/11/1996	16,000	170	270	68	1,500	--	--
	9/19/1996	6,000	45	30	15	300	--	--
	6/4/1997	85,000	8,500	13,000	2,400	16,000	<500	--
	9/26/1997	47,000	610	6,000	930	5,900	<100	--
	12/23/1997	32,000	640	5,300	800	5,900	<300	--
	3/31/1998	32,000	690	3,800	870	5,200	350	--
	6/18/1998	16,000	180	1,500	490	3,700	<25	--
	8/28/1998	17,000	84	1,100	430	3,800	<50	--
	12/2/1998	3,200	39	85	25	360	<50	--
	3/10/1999	9,600	86	540	250	2,300	<25	--
	6/30/1999	7,900	31	330	200	1,800	<25	--
	9/29/1999	5,000	120	340	230	1,300	10	--
	9/29/1999	4,100	180	340	130	580	14	--
	11/22/1999	3,100	7	33	27	260	<1.0	--
	2/11/2000	540	8	20	2	28	31	--
	5/30/2000	490	11	6	0	17	<5.0	--
	9/15/2000	1,500	28	14	3	160	<5.0	--
	11/16/2000	1,300	20	34	25	28	<5.0	--
	4/2/2001	170	9	6	1	8	77	--
	6/28/2001	4,900	150	240	38	160	<2	--
	8/30/2001	3,100	42	48	26	210	<1.2	--
	12/26/2001	950	8	5	1	7	<0.5	--
	4/24/2002	300	11	5	1	1	<0.5	--
	6/14/2002	4,600	130	470	91	390	<0.5	--
	8/20/2002	4,900	330	170	40	150	<5.0	--
	12/27/2002	4,000	110	280	57	260	19	--
	4/1/2003	5,900	370	150	44	230	<1.0	--
	7/1/2003	12,000	200	460	130	390	<5.0	--
	9/25/2003	10,000	150	300	120	280	<2.5	--
	12/29/2003	7,300	160	250	79	210	<2.5	--
	5/18/2004	1,500	77	72	19	59	<12	--
	6/30/2004	2,000	81	37	34	40	<1.0	--
	9/23/2004	3,400	140	95	36	40	<10	--
	12/28/2004	3,900	340	37	11	60	<5.0	--
	3/16/2005	970	1	2	1	3	<2.5	--
	6/23/2005	850	56	7	<5	12	<25	--
	9/9/2005	3,900	470	100	33	96	<62	--
	12/2/2005	760	14	8	2	17	<0.5	--
	3/24/2006	590	83	41	7	33	<12	--
	6/29/2006	1,100	130	38	16	21	<25	--
	9/13/2006	1,300	260	71	44	28	<25	--
	12/27/2006	3,000	250	160	49	140	<25	--
	3/30/2007	3,100	250	260	46	110	<25	--
	7/2/2007	2,600	250	250	54	130	<25	--
	10/2/2007	1,900	170	140	24	48	<25	--
	12/13/2007	2,900	250	170	66	120	<25	--
	3/26/2008	2,300	340	95	26	64	<25	--
	6/2/2008	2,300	270	250	59	130	<25	--
	9/10/2008	2,900	300	180	88	220	<25	--
	11/19/2008	1,000	62	55	21	32	<25	--
	3/3/2009	3,020	37	10	3.8J	12.3J	<10	--
	9/3/2009	538	59	1	13	2	<1.0	--
	3/3/2010	1,570	98	12	20	14	<1.0	--
	9/8/2010	1,100	200	23	23	11	<0.5	--
	3/16/2011	930	75	19	8	6	<2.5	--
	9/9/2011	1,300	280	43	13	40	<2.5	--
	4/12/2012	1,800	91	21	10	26	<0.5	--
	10/10/2012	1,400	200	14	9.4	<10	<0.5	--

Notes:

µg/L: micrograms per liter (approximately equivalent to ppb)

<: Concentration is below the reporting limit of the lab

J: Estimated value

--: not applicable or none

ESLs: Environmental Screening Levels for non-drinking water sources - May 2008

FP: Free product measured (amount unknown)

Concentration is above selected screening criteria

Table 4
GROUND WATER ANALYTICAL RESULTS
1700 Jefferson Street, Oakland, California

Well ID	Date Sampled	TPH (GRO)	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	Free Product
		(µg/L)						(inches)
ESLs		210	46	130	43	100	1800	--
MW-4	9/12/1988	--	--	--	--	--	--	5.9
	7/12/1989	93,000	460	4,200	1,200	9700	NA	25.2
	8/1/1991	86,000	1,500	6,200	1,000	FP	NA	18
	9/30/1992	FP	FP	FP	FP	FP	NA	FP
	2/12/1993	FP	FP	FP	FP	FP	NA	8.8
	1/6/1994	FP	FP	FP	FP	3,200	NA	6.2
	4/13/1994	58,000	1,500	2,500	520	7,300	NA	--
	6/29/1994	16,000	1,300	790	51	3,400	NA	--
	12/8/1994	92,000	1,700	4,100	310	5,400	NA	--
	4/3/1995	35,000	1,200	3,400	280	5,800	NA	--
	6/27/1995	13,000	1,300	1,600	77	1,800	NA	--
	9/19/1995	14,000	630	470	14	1,800	NA	--
	12/13/1995	11,000	2,200	2,100	110	2,100	NA	--
	3/6/1996	110,000	2,600	3,600	780	10,000	NA	--
	6/11/1996	260,000	6,600	19,000	3,700	28,000	NA	--
	9/19/1996	95,000	9,900	19,000	2,000	13,000	NA	--
	12/23/1996	FP	FP	FP	FP	FP	NA	FP
	3/27/1997	37,000	2,600	6,900	540	5,500	1,400	--
	6/4/1997	24,000	2,600	3,200	140	3,500	<300	--
	9/26/1997	41,000	2,900	5,000	350	4,800	<500	--
	12/23/1997	48,000	6,000	11,000	580	8,200	270	--
	6/18/1998	25,000	2,000	460	<15	6,400	<50	--
	8/28/1998	48,000	9,700	11,000	890	5,000	<50	--
	12/2/1998	10,000	1,700	610	<15	2,300	<50	--
	3/10/1999	11,000	2,300	2,100	88	1,600	<25	--
	6/30/1999	88,000	1,800	3,000	150	2,700	<25	--
	4/12/2012	2,700	380	160	100	100	<0.5	--
	10/10/2012	4,200	400	200	150	130	<0.5	--
MW-5	9/12/1988	--	--	--	--	--	--	0.5
	7/12/1989	14,000	7	190	210	500	--	0.4
	8/1/1991	120,000	20,000	14,000	1,900	4,900	--	0
	9/30/1992	51,000	13,000	5,900	1,400	2,600	--	0
	3/30/1993	74,000	16,000	5,000	1,800	2,700	--	0.06
	1/6/1994	80,000	19,000	8,200	1,400	2,700	--	0
	4/13/1994	63,000	14,000	3,500	1,500	2,100	--	0
	6/29/1994	64,000	29,000	5,400	2,800	4,500	--	0
	12/8/1994	59000	13000	3800	1800	2900	--	--
	4/3/1995	51,000	15,000	2,200	2,800	4,500	--	--
	6/27/1995	41000	12000	2100	1400	1600	--	--
	9/19/1995	50000	1600	2700	2000	2100	--	--
	12/13/1995	45000	13000	2100	16000	1900	--	--
	3/6/1996	51000	15000	2800	2000	2400	--	--
	6/11/1996	48000	12000	2900	2000	2700	--	--
	9/19/1996	48000	12000	4500	2300	4000	--	--
	12/23/1996	45000	12000	2200	2700	6500	600	--
	3/27/1997	44000	11000	1100	1900	2800	300	--
	6/4/1997	35000	8900	560	1500	1700	<100	--
	9/26/1997	36000	7900	270	1500	1300	<500	--
	12/23/1997	39000	13000	500	1900	1700	<1,000	--
	3/31/1998	48000	10000	400	2000	2200	350	--
	6/18/1998	17000	9500	310	420	850	<10	--
	8/28/1998	16000	5400	160	1100	900	<50	--
	12/2/1998	15000	8400	120	1500	840	<50	--
	3/10/1999	23000	14000	300	1800	1100	<50	--
	6/30/1999	7700	5200	270	1100	690	<25	--
	9/29/1999	11000	9600	710	1100	1100	<100	--
	9/29/1999	10000	14000	470	1100	600	<100	--
	11/22/1999	30000	11000	3400	1500	2500	<100	--
	2/11/2000	23000	12000	4500	1200	1300	6.6	--
	5/30/2000	19000	9900	6900	1200	2600	<200	--
	9/15/2000	24,000	3,800	3,000	460	1,200	<10	--
	11/16/2000	1,800	470	220	39	100	<5	--
	4/2/2001	15,000	7,400	3,000	1,000	2,200	<50	--
	6/28/2001	3,600	300	11	16	15	4	--
	8/30/2001	34,000	8,300	3,000	1,400	2,600	<50	--
	12/26/2001	1,900	300	110	55	120	<10	--
	4/24/2002	9,400	2,300	130	300	270	<50	--
	6/14/2002	1,700	110	<2.5	7	<2.5	<0.50	--
	8/20/2002	3,200	320	9	22	19	<0.50	--
	12/27/2002	6,200	2,200	140	160	250	<25	--
	9/25/2003	43,000	12,000	2,800	1,500	3,000	<1,200	--
	12/29/2003	26,000	7,700	1,900	910	210	<2.5	--
	5/18/2004	15,000	5,000	1,300	380	770	<50	--
	6/30/2004	18,000	5,700	1,600	540	1,200	<50	--
	9/23/2004	42,000	12,000	3,900	1,200	2,400	<120	--
	12/28/2004	41,000	10,000	3,800	1,000	2,300	<250	--
	3/16/2005	37,000	11,000	3,800	1,100	2,400	<120	--
MW-1*	4/25/2011	< 50	< 0.5	--	< 0.5	< 0.5	< 0.5	--
	9/9/2011	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	--
MW-2*	4/25/2011	< 50	< 0.5	--	< 0.5	< 0.5	< 0.5	--
	9/9/2011	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	--
MW-3*	4/25/2011	< 50	< 0.5	--	< 0.5	< 0.5	< 0.5	--
	9/9/2011	< 50	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	--

Well ID	Date Sampled	TPH (GRO)	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	Free Product
		(µg/L)						(inches)
ESLs		210	46	130	43	100	1800	--
MW-5	6/23/2005	27,000	7,700	1,700	680	1,300	<1,200	--
	9/9/2005	46,000	10,000	2,700	1,100	2,100	<1,200	--
	12/2/2005	21,000	5,900	1,500	600	1,200	<500	--
	3/24/2006	<10,000	2,800	450	190	180	<500	--
	6/29/2006	1,200	240	11	13	18	<2.5	--
	9/13/2006	5,800	1,600	210	180	270	<120	--
	12/27/2006	16,000	4,300	610	460	750	<500	--
	3/30/2007	31,000	10,000	1,400	1,100	1,600	<500	--
	7/2/2007	33,000	9,400	1,400	1,000	1,500	<500	--
	10/2/2007	36,000	11,000	2,100	1,100	1,700	<620	--
	12/13/2007	34,000	11,000	2,600	1,200	1,900	<1,200	--
	3/26/2008	28,000	7,700	1,900	860	1,300	<1,200	--
	6/2/2008	43,000	13,000	3,800	1,400	2,400	<1,200	--
	9/10/2008	45,000	13,000	3,700	1,200	2,200	<1,200	--
	11/19/2008	46,000	14,000	3,900	3,900	2,700	<1,200	--
	3/3/2009	43,400	11,700	3,560	1,290	2,200	<250	--
	9/3/2009	35,900	8,800	1,240	1,720	2,420	<100	--
	3/3/2010	27,200	6,820	279	1,870	2,050	<100	--
	9/8/2010	22,000	6,000	250	1,700	1,900	<50	--
	3/16/2011	31,000	6,400	500	1,900	2,600	<50	--
	9/9/2011	30,000	9,400	1,600	1,800	2,500	<50	--
	4/12/2012	44,000	13,000	5,000	1,700	2,900	<50	--
	10/10/2012	47,000	14,000	6,700	1,900	3,400	<50	--
MW-6	6/11/1996	<50	<0.5	<0.5	<0.5	<2	--	--
	9/19/1996	<50	<0.5	<0.5	<0.5	<2	--	--
	12/23/1996	<50	<0.5	<0.5	<0.5	<2	<5	--
	3/27/1997	<50	<0.5	<0.5	<0.5	<2	<5	--
	6/4/1997	<50	<0.5	<0.5	<0.5	<2	<5	--
	9/26/1997	<50	<0.5	<0.5	<0.5	<2	<5	--
	12/23/1997	<50	<0.5	<0.5	<0.5	<2	<5	--
	3/31/1998	<50	<0.5	<0.5	<0.5	<2	<5	--
	6/18/1998	<50	<0.3	<0.3	<0.3	<0.6	<1.0	--
	8/28/1998	<50	<0.3	<0.3	<0.3	<0.6	<1.0	--
	12/2/1998	<50	<0.3	<0.3	<0.3	<0.6	<1.0	--
	3/10/1999	<50	<0.3	<0.3	<0.3	<0.6	<1.0	--
	6/30/1999	<50	<0.3	<0.3	<0.3	<0.6	<1.0	--
	9/29/1999	<50	<0.3	<0.3	<0.3	<0.6	<1.0	--
	9/29/1999	<50	<0.3	<0.3	<0.3	<0.6	<1.0	--
	11/22/1999	<50	<0.3	<0.3	<0.3	<0.6	<1.0	--
	2/11/2000	<50	<0.3	<0.3	<0.3	<0.6	<1.0	--
	5/30/2000	<50	<0.3	<0.3	<0.3	<0.6	<1.0	--
	9/15/2000	<50	<0.3	<0.3	<0.3	<0.6	<1.0	--
	11/16/2000	<50	<0.3	<0.3	<0.3	<0.3	<1.0	--
	4/2/2001	<50	<0.3	<0.3	<0.3	2.7	5	--
	6/28/2001	<50	<0.5	<0.5	<0.3	<0.5	17	--
	8/30/2001	<50	<0.5	<0.5	<0.3	8.7	<2.5	--
	12/26/2001	66	3.6	3.6	3.6	<0.5	<2.5	--
	4/24/2002	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--
	6/14/2002	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--
	8/20/2002	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--
	12/27/2002	<50	<0.5	<0.05	<0.5	<0.5	<2.5	--
	4/1/2003	<50	<0.5	<0.05	<0.5	<0.5	<2.5	--
	7/1/2003	<50	<0.5	<0.05	<0.5	<2.5	<2.5	--
	9/25/2003	<50	<0.5	<0.05	<0.5	<2.5	<2.5	--
	12/29/2003	<50	<0.5	<0.05	<0.5	<0.5	<2.5	--
	5/18/2004	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--
	6/30/2004	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--
	9/23/2004	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--
	12/28/2004	59	<0.5	<0.5	<0.5	2	<2.5	--
	3/16/2005	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--
	6/23/2005	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--
	9/9/2005	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--
	12/2/2005	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--
	3/24/2006	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--
	6/29/2006	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--
	9/13/2006	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--
	12/27/2006	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--
	3/30/2007	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--
	7/2/2007	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--
	10/2/2007	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--
	12/13/2007	<50	<0.5	1	<0.5	<0.5	<2.5	--
	3/26/2008	<50	<0.5	<0.5	<0.5	1	<2.5	--
	6/2/2008	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--
	9/10/2008	<51	<0.5	<0.5	<0.5	<0.5	<2.6	--
	11/19/2008	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--
	3/3/2009	<50	<1.0	0.53J	<1.0	<2.0	<1.0	--
	9/3/2009	<50	<1.0	<1.0	<1.0	<2.0	<1.0	--
	3/3/2010	<50	<1.0	<1.0	<1.0	<2.0	<1.0	--
	9/8/2010	<50	<0.5	<0.5	<0.5	<1.0	<0.5	--
	3/16/2011	<50	0.67	<0.5	<0.5	<1.0	<0.5	--
	9/9/2011	69	1	<0.5	<0.5	<1.0	<0.5	--
	4/12/2012	<50	<0.5	<0.5	<0.5	<1.0	<0.5	--
	10/10/2012	<50	<0.5	<0.5	<0.5	<1.0	<0.5	--

Notes:

µg/L: micrograms per liter (approximately equivalent to ppb)

<: Concentration is below the reporting limit of the lab

J: Estimated value

--: not applicable or none

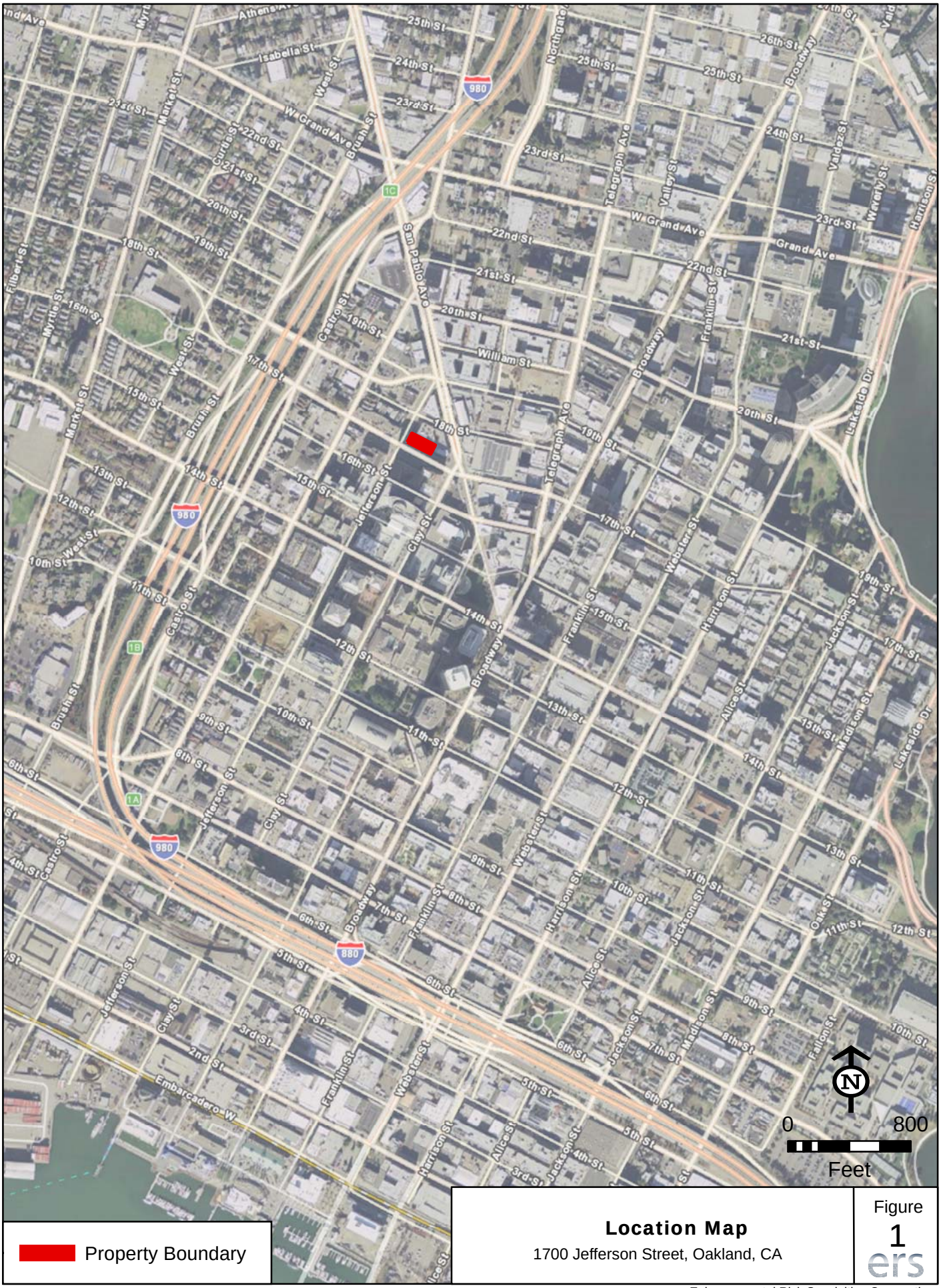
*: Well Located on the Merrill Sign Company Site, data provided by P&D Environmental

ESLs: Environmental Screening Levels for non-drinking water sources - May 2008

FP: Free product measured (amount unknown)

Concentration is above selected screening criteria

FIGURES



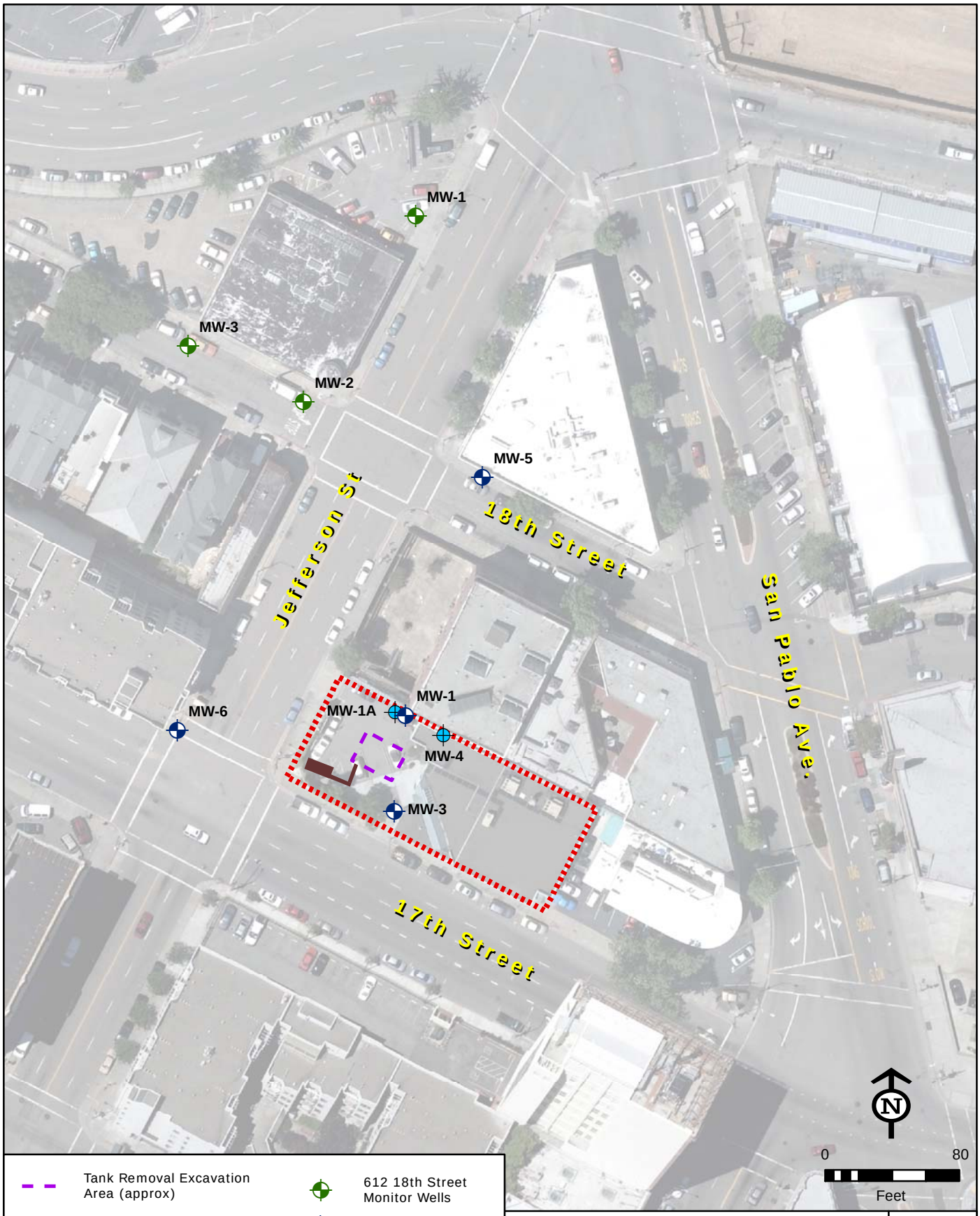
Location Map

1700 Jefferson Street, Oakland, CA

Figure 1

ers

Enivoronmental Risk Specialties Corporation



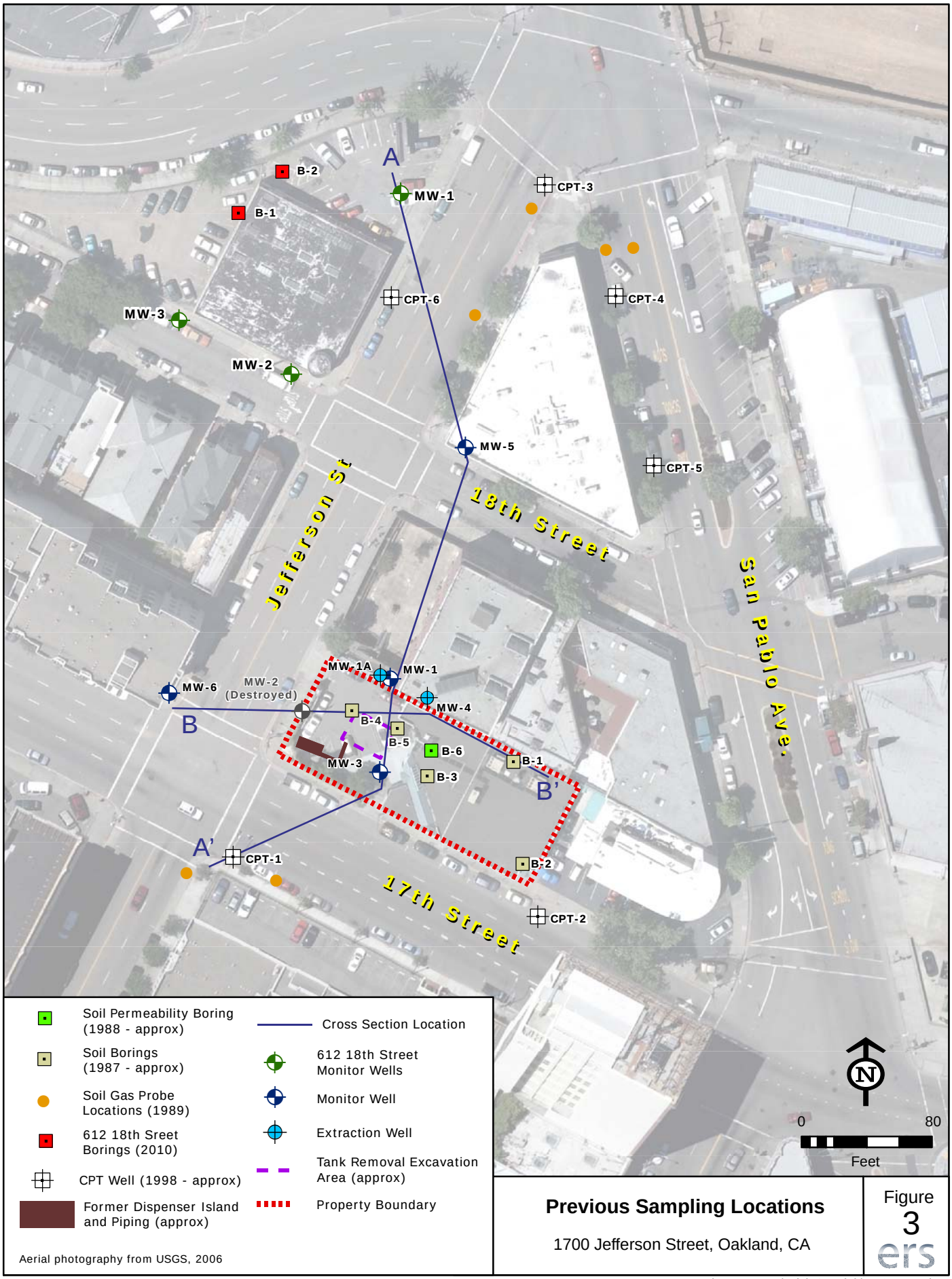
Site Plan

1700 Jefferson Street, Oakland, CA

Figure 2

ers

Enivoronmental Risk Specialties Corporation



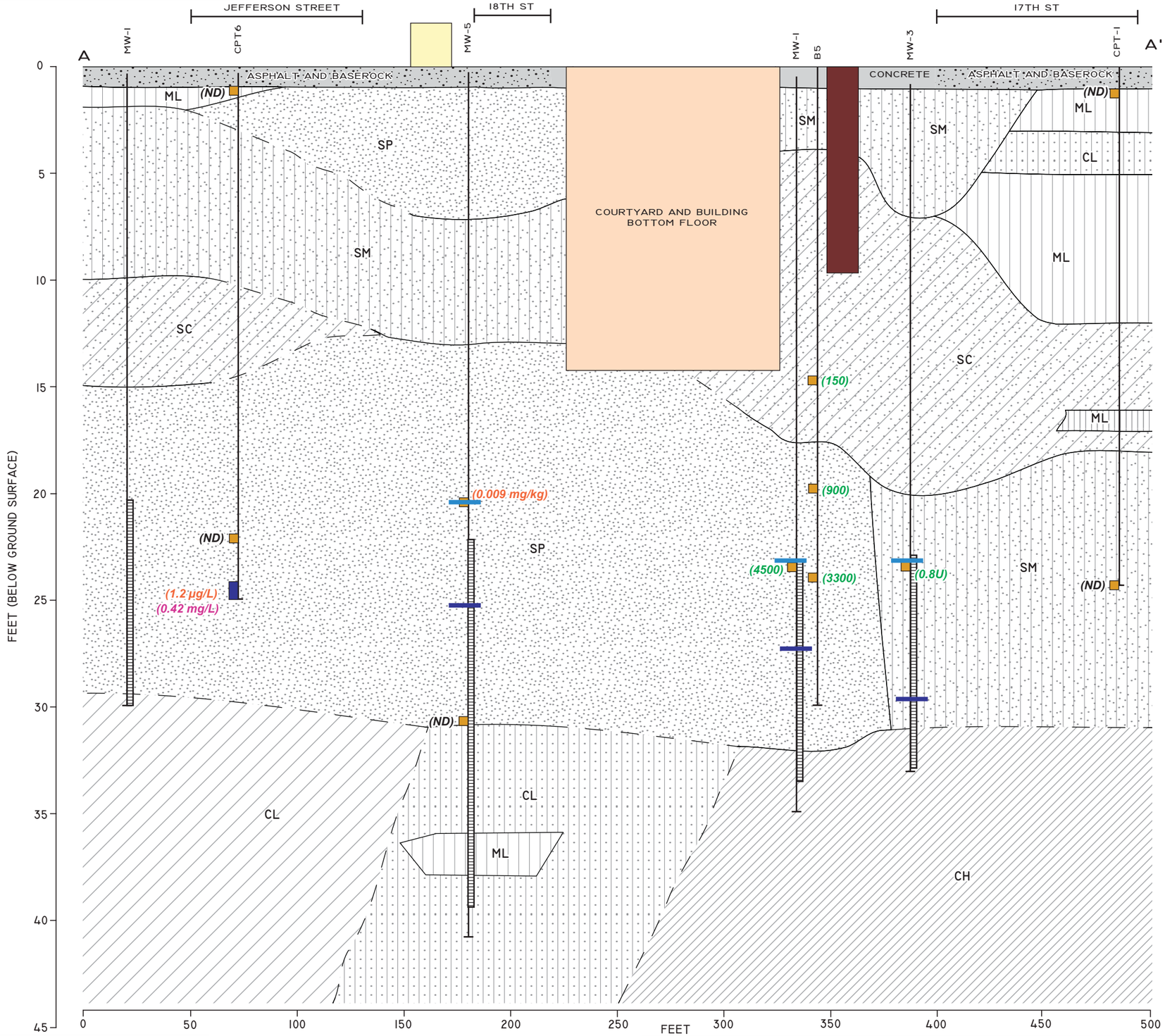
Previous Sampling Locations

1700 Jefferson Street, Oakland, CA

Figure 3

ers

Enivoronmental Risk Specialties Corporation



(0.42 mg/kg) TPH GRO

(0.009 mg/kg) Benzene

(4500) TVH (in mg/kg)

(U or ND) No analytes detected over reporting limit.

Soil Sample

Water Sample

Highest groundwater level to date

Lowest groundwater level to date

Screen Interval

Excavation (1987 projected)

Building (not to scale)

SP Poorly Graded Sand

SM Silty Sand

SC Clayey Sand

ML Silt

CH Fat Clay

CL Clay

CL Silty Clay

mg/kg: milligrams per killogram
µg/L: micro grams per liter
mg/L: milligrams per liter

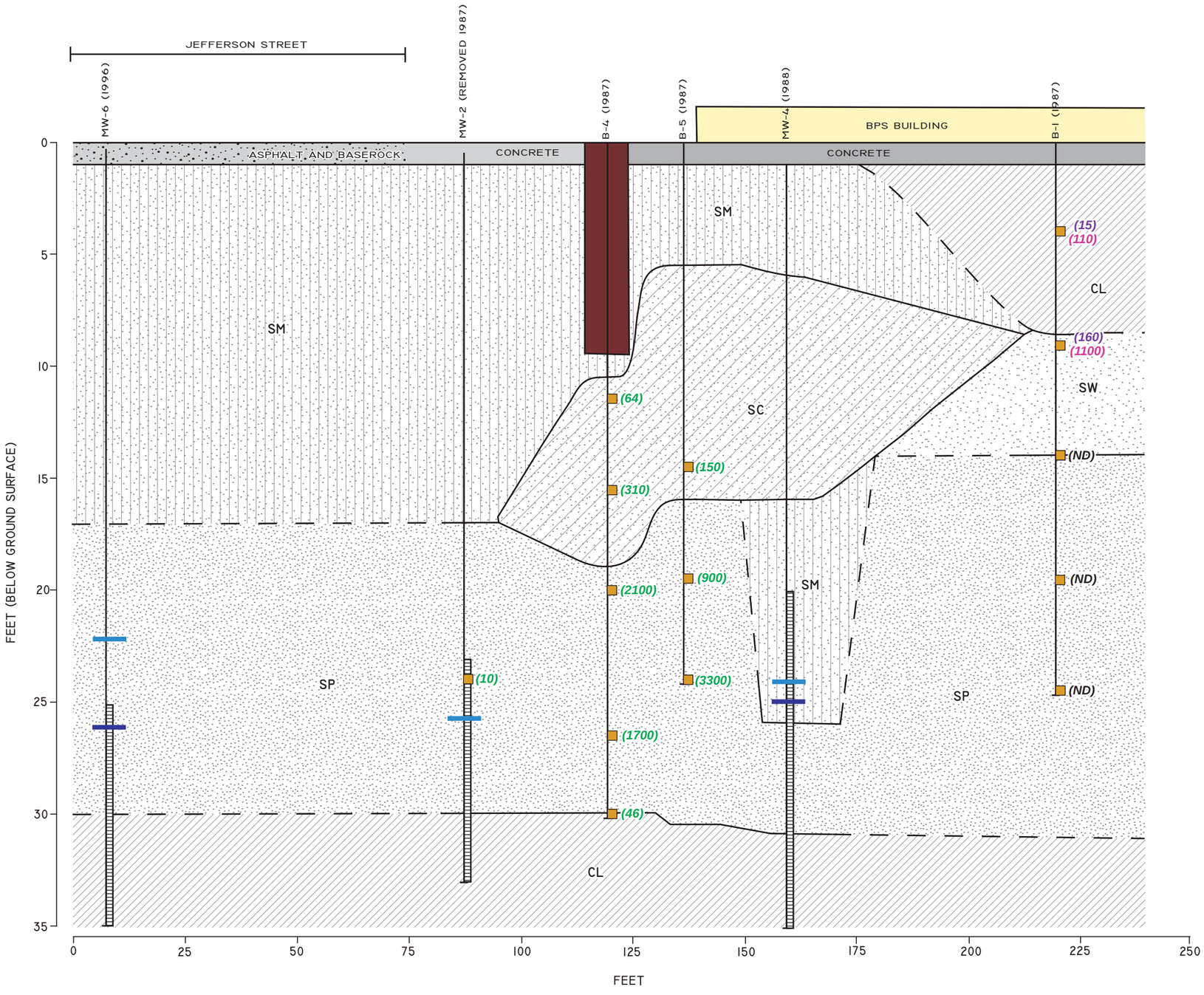
VERTICAL EXAGGERATION
10X

Cross Section A-A'
1700 Jefferson Street, Oakland, CA

Figure 4

ers

Environmental Risk Services Corporation



(15) TPH D (in mg/kg)

(110) TPH MO (in mg/kg)

(1700) TVH (in mg/kg)

(U or ND) No analytes detected over reporting limit.

Soil Sample

Water Sample

Highest groundwater level to date

Lowest groundwater level to date

Screen Interval

Excavation (projected 1987)

Building (not to scale)

SP Poorly Graded Sand

SW Well-Graded Sand

SM Silty Sand

CL Fat Clay

SC Clayey Sand

mg/kg: milligrams per killogram
µg/L: micro grams per liter
mg/L: milligrams per liter

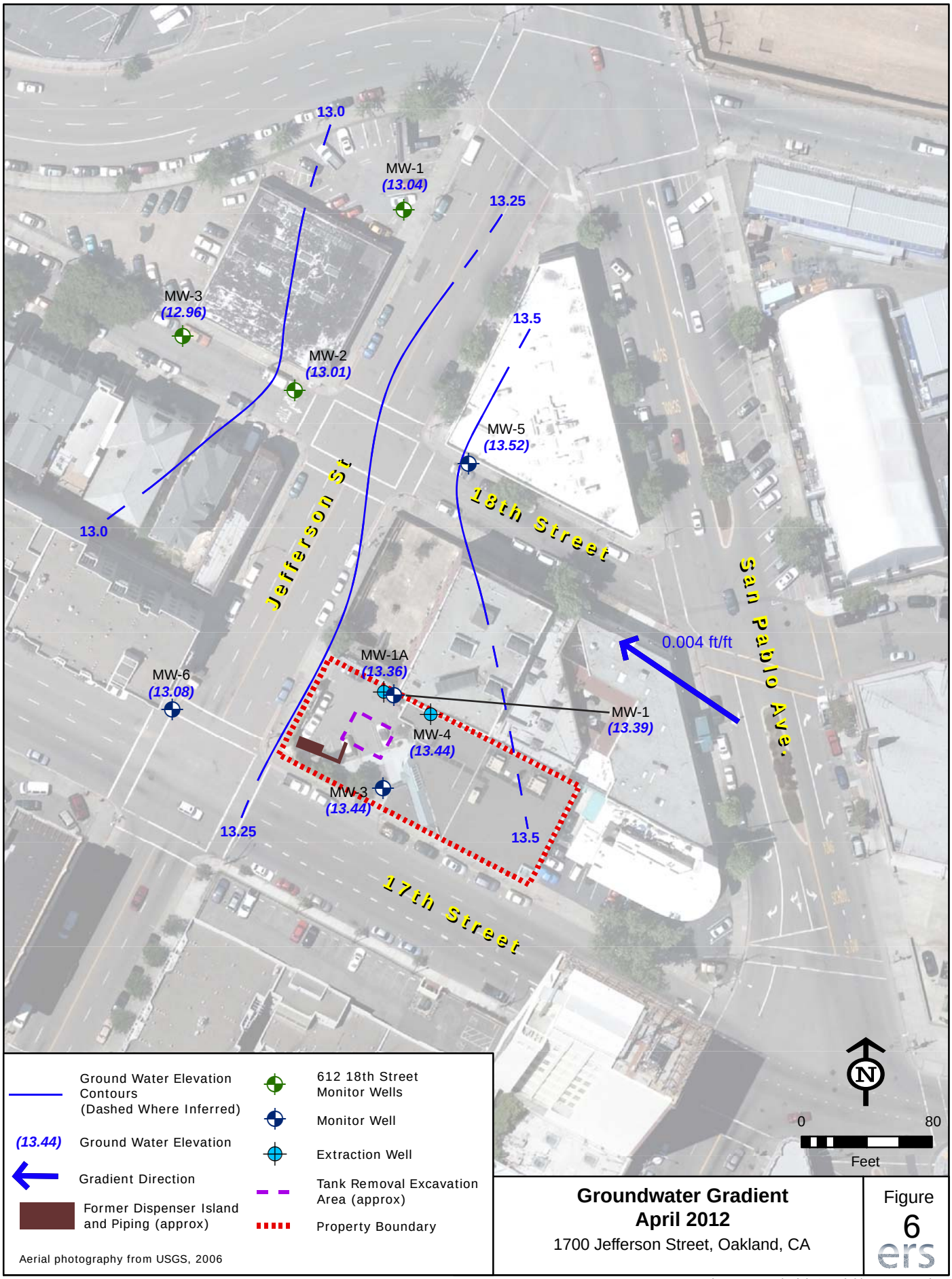
VERTICAL EXAGGERATION
5X

Cross Section B-B′
1700 Jefferson Street, Oakland, CA

Figure 5

ers

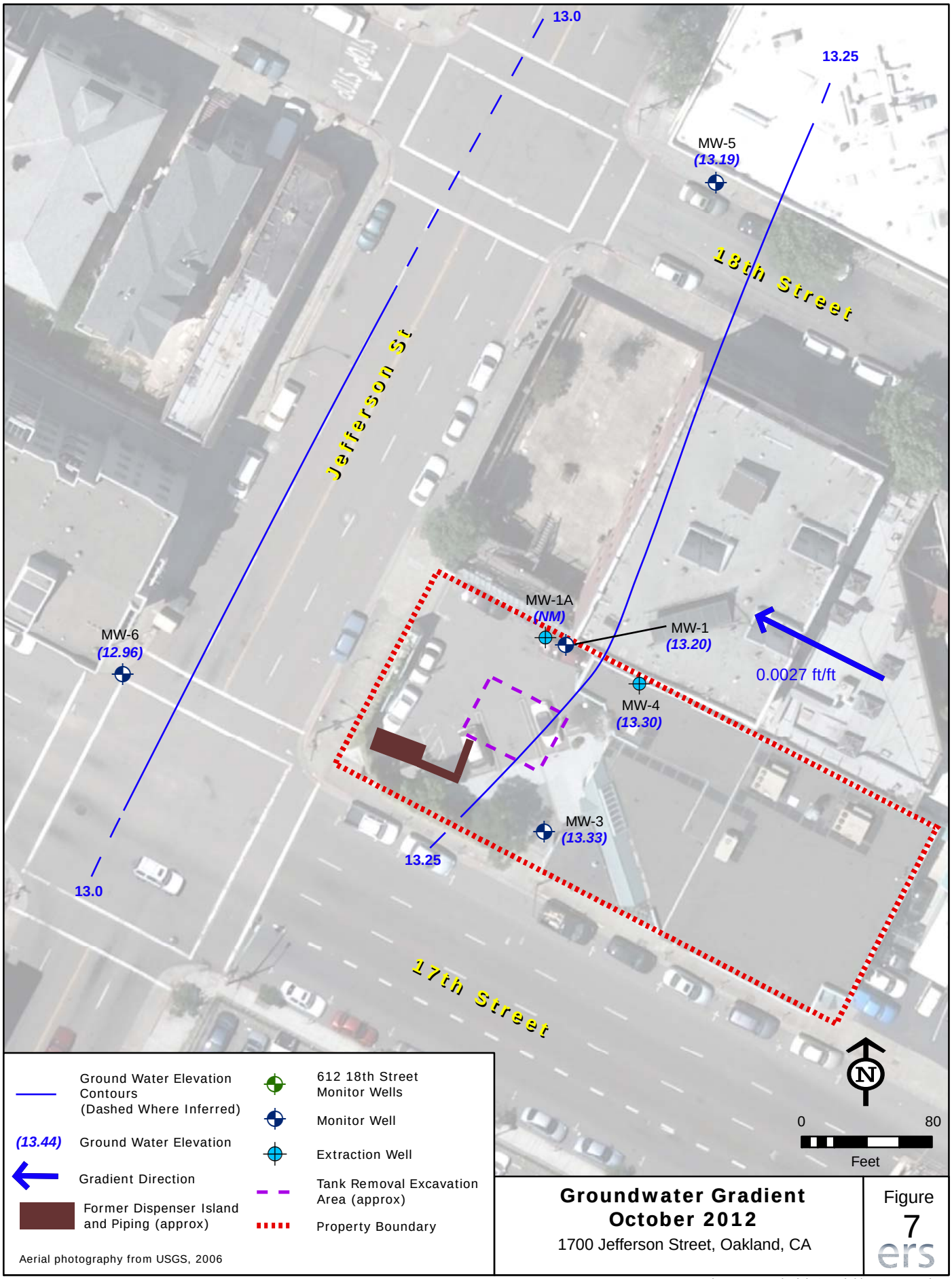
Environmental Risk Services Corporation



Groundwater Gradient
April 2012
1700 Jefferson Street, Oakland, CA

Figure 6

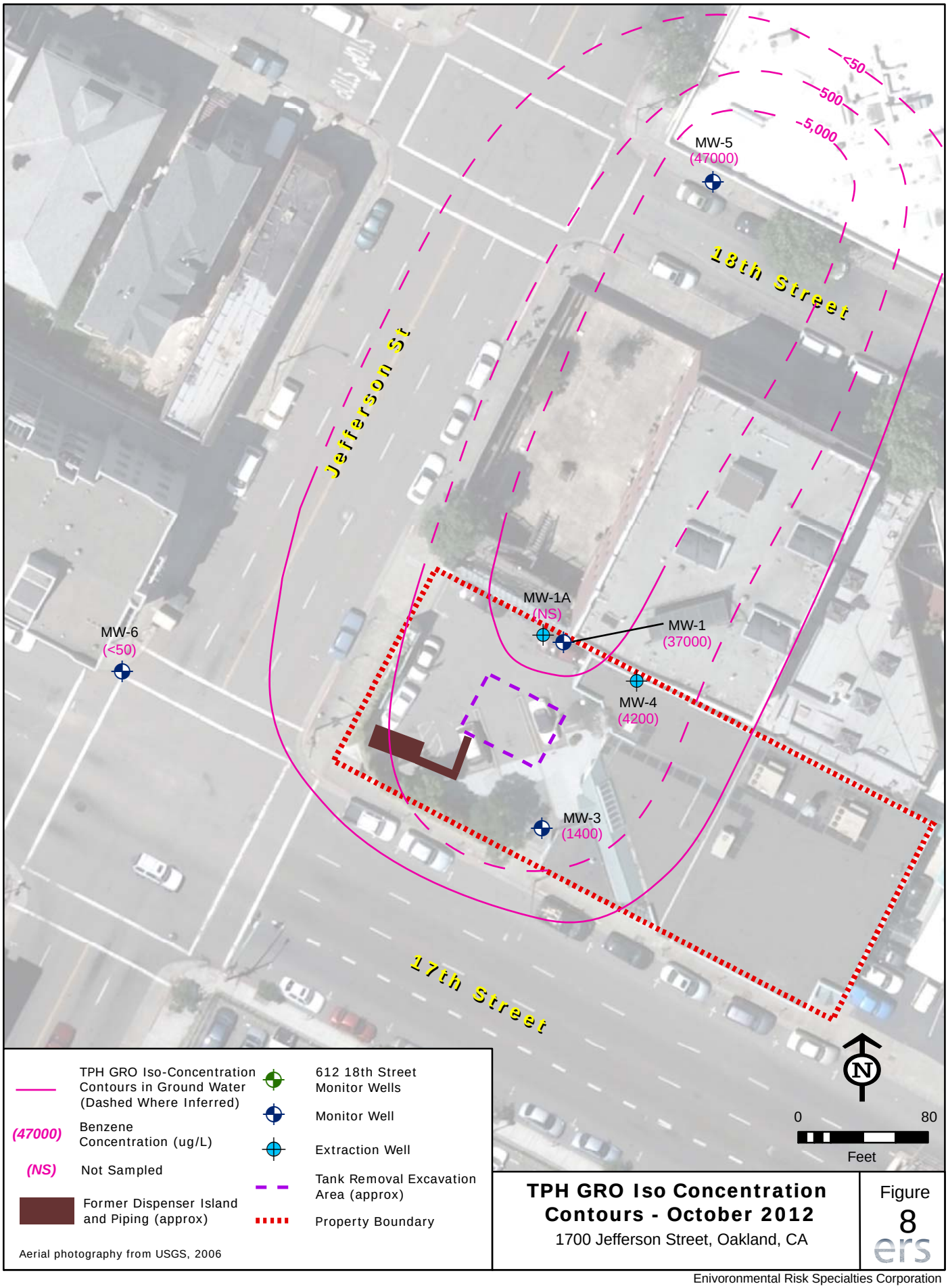
Enivoronmental Risk Specialties Corporation



Groundwater Gradient
October 2012
1700 Jefferson Street, Oakland, CA

Figure 7

Enivoronmental Risk Specialties Corporation



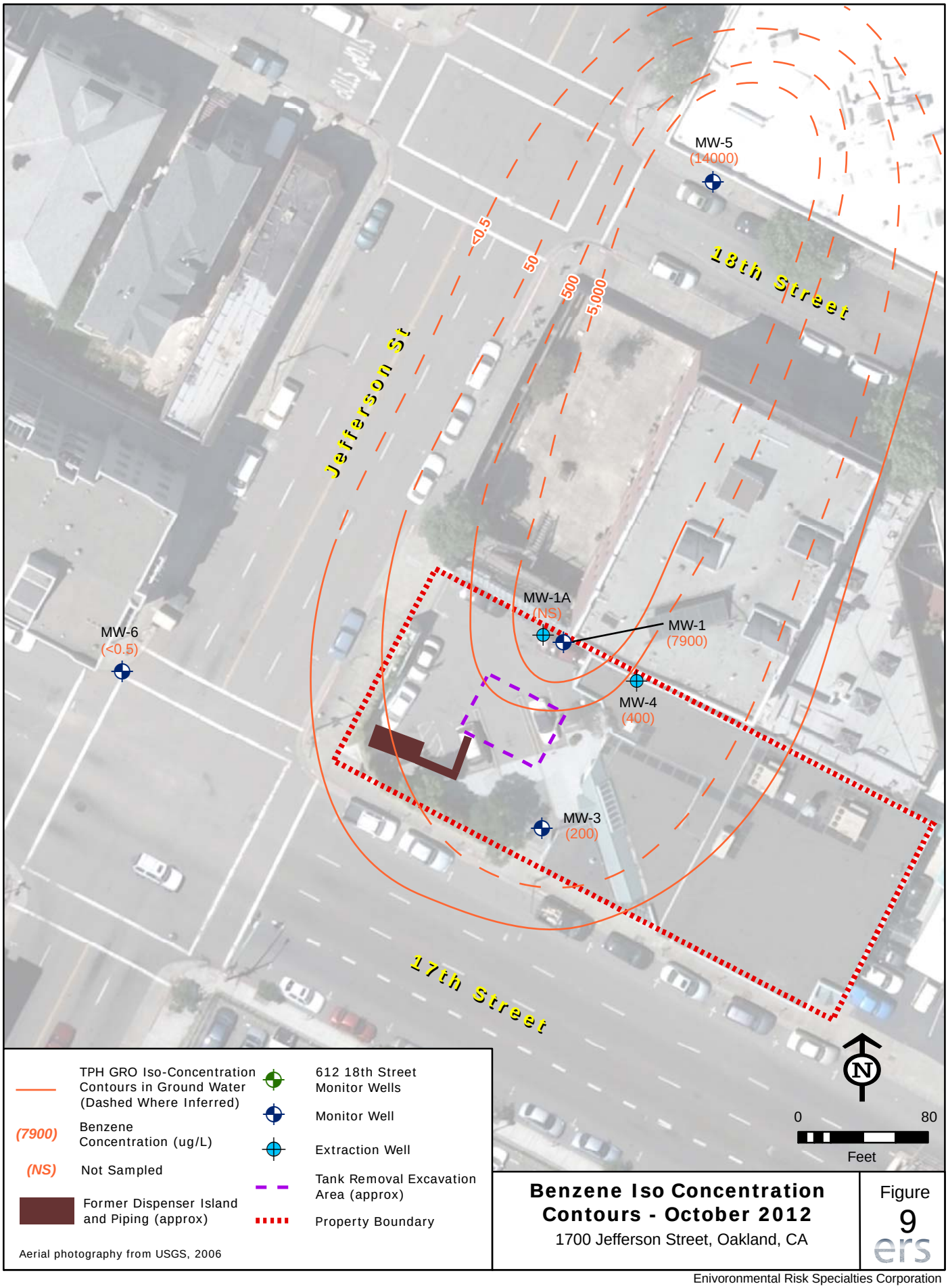
TPH GRO Iso Concentration Contours - October 2012

1700 Jefferson Street, Oakland, CA

Figure 8

ers

Enivoronmental Risk Specialties Corporation



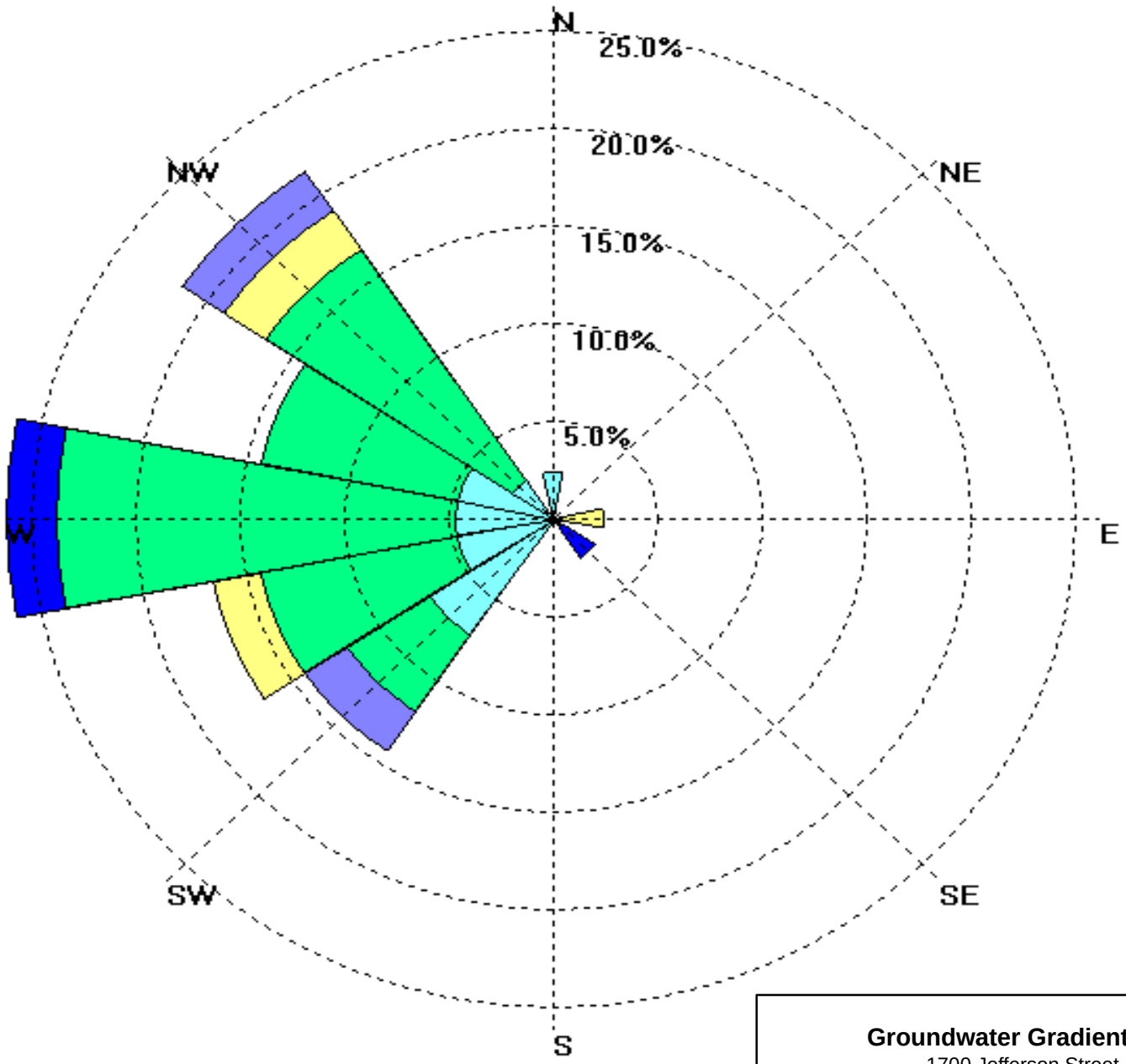
Benzene Iso Concentration Contours - October 2012

1700 Jefferson Street, Oakland, CA

Figure 9

ers

Enivoronmental Risk Specialties Corporation

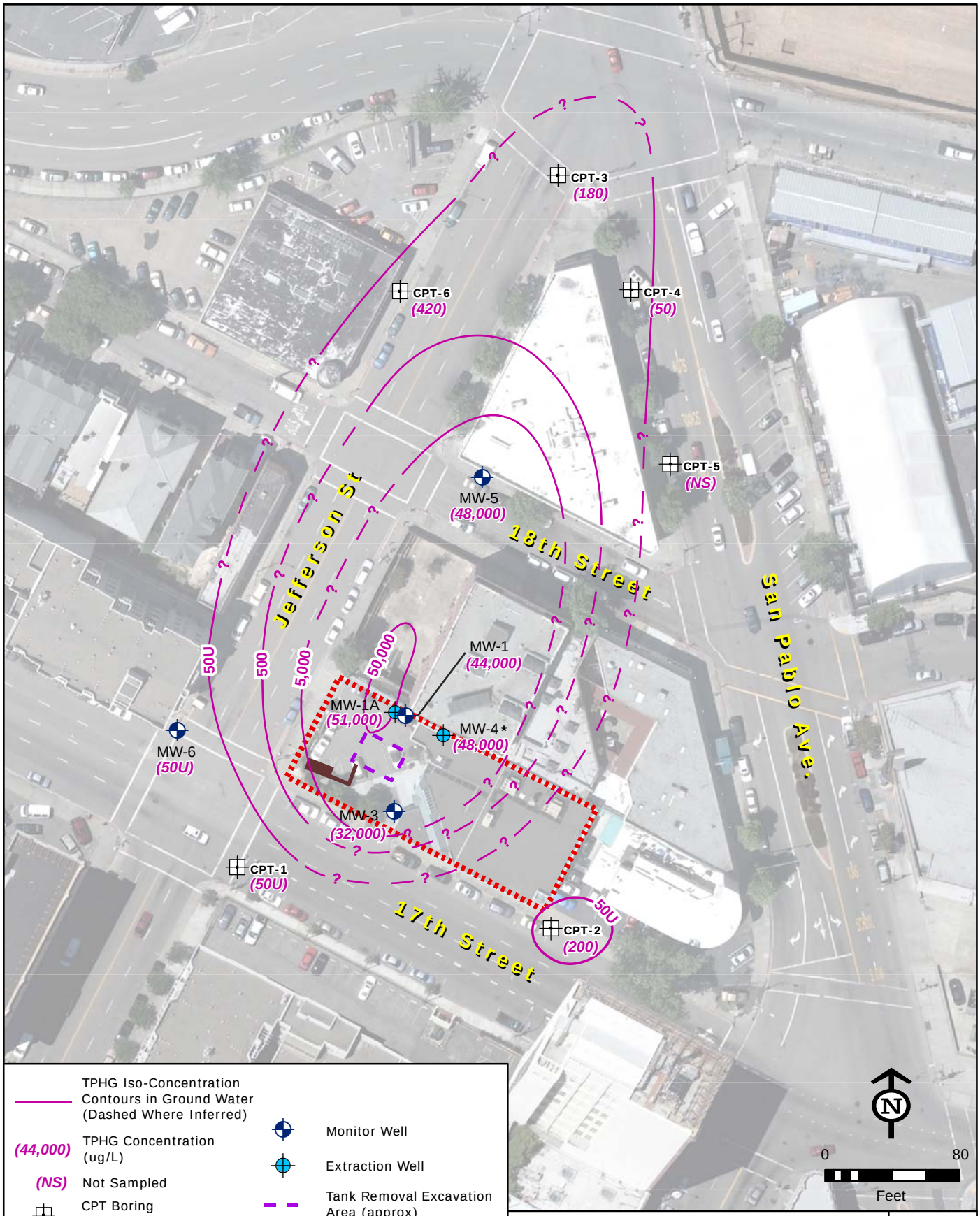


Groundwater Gradient Rose Diagram
1700 Jefferson Street, Oakland, CA

Figure
10

ers

Environmental Risk Specialties Corporation

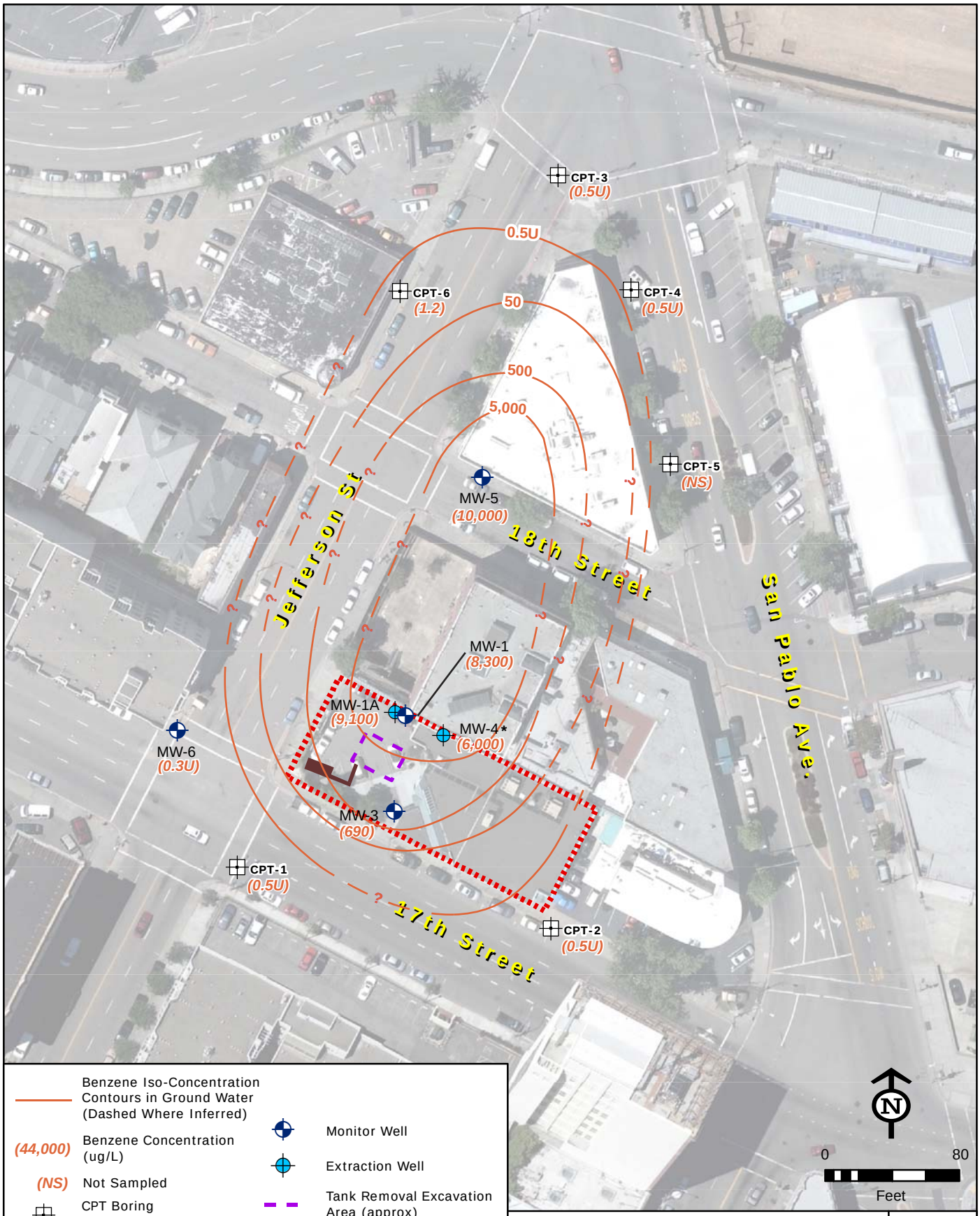


TPHG Iso-Concentration Contours
1998
1700 Jefferson Street, Oakland, CA

Figure
11

ers

Enivoronmental Risk Specialties Corporation



Benzene Iso-Concentration Contours in Ground Water (Dashed Where Inferred)

(44,000) Benzene Concentration (ug/L)

(NS) Not Sampled

CPT Boring (1998 - approx)

Former Dispenser Island and Piping (approx)

Monitor Well

Extraction Well

Tank Removal Excavation Area (approx)

Property Boundary

Aerial photography from USGS, 2006

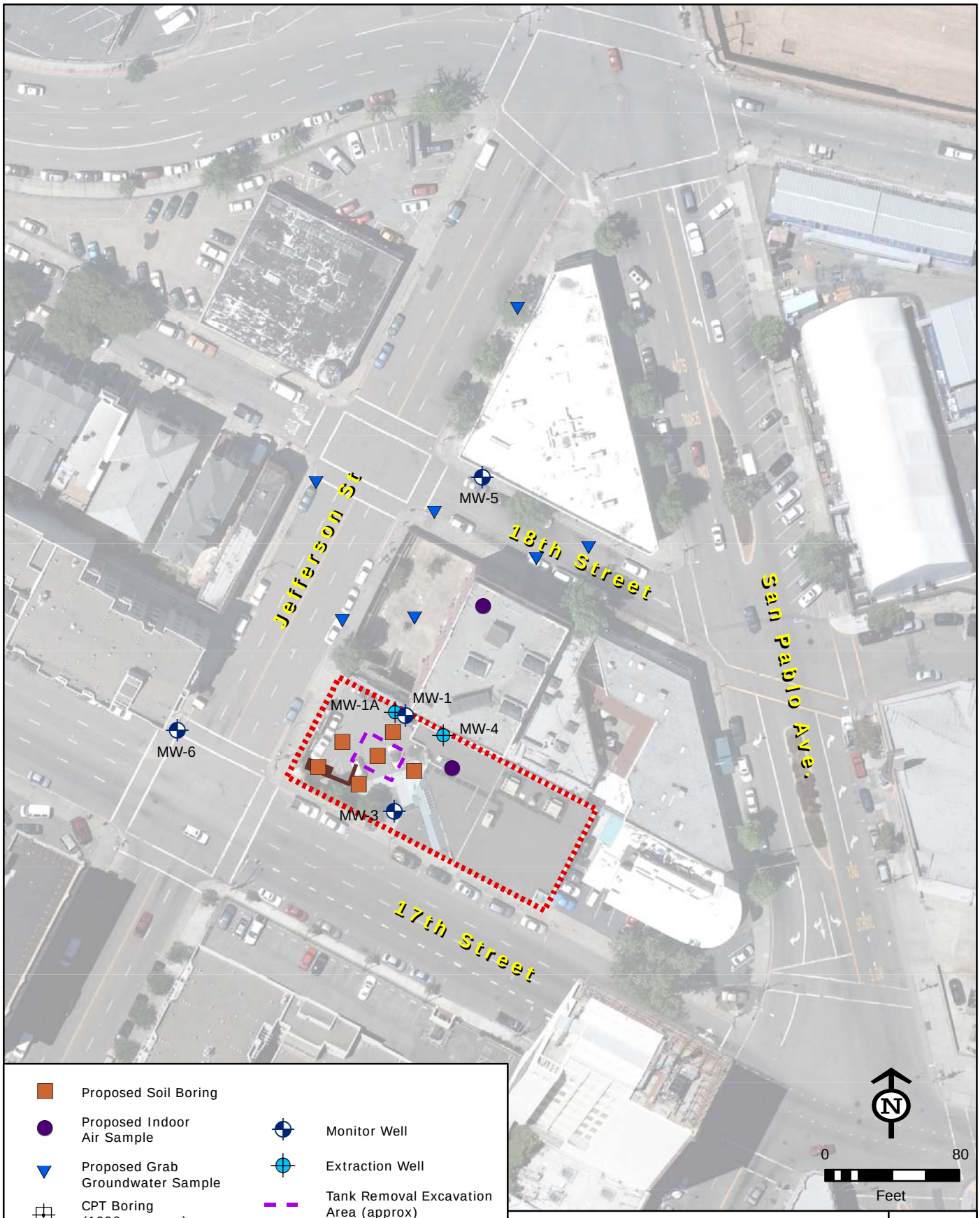
* Sampled December 1997
All CPT wells sampled February 19th, 1998
All other wells sampled March 31st,1998

Benzene Iso-Concentration Contours
1998
1700 Jefferson Street, Oakland, CA

Figure 12

ers

Enivoronmental Risk Specialties Corporation



Proposed Soil Boring

Proposed Indoor Air Sample

Proposed Grab Groundwater Sample

CPT Boring (1998 - approx)

Former Dispenser Island and Piping (approx)

Monitor Well

Extraction Well

Tank Removal Excavation Area (approx)

Property Boundary

Aerial photography from USGS, 2006

Proposed Sampling Locations

1700 Jefferson Street, Oakland, CA

Figure 13

ers

Enivoronmental Risk Specialties Corporation

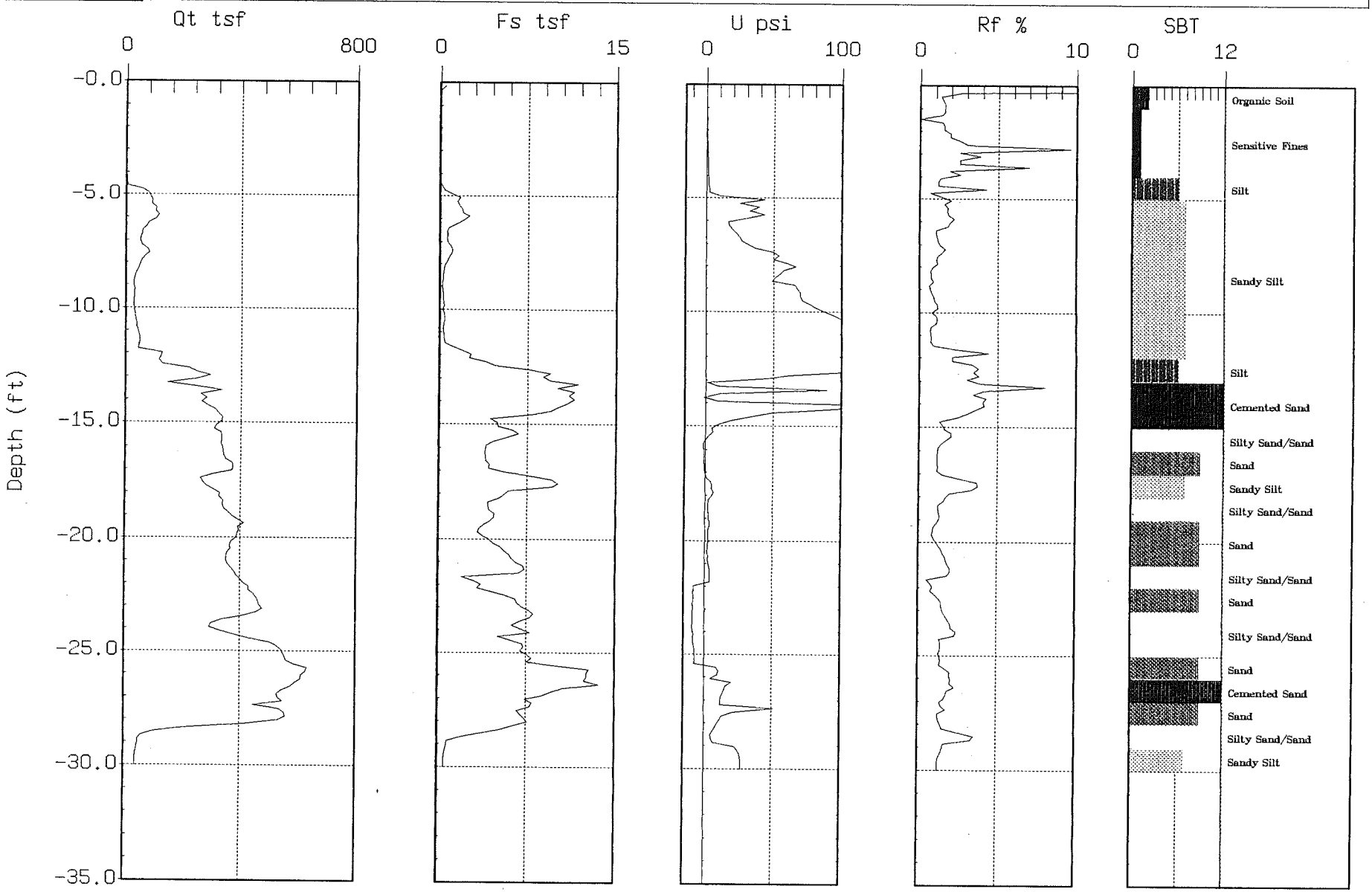
APPENDICES

GREGG

HLA

Site : BLUE PRINT
Location : CPT-03

Engineer : J. McCARTY
Date : 02/19/98



Max. Depth: 30.02 (ft)

Depth Inc.: 0.164 (ft)

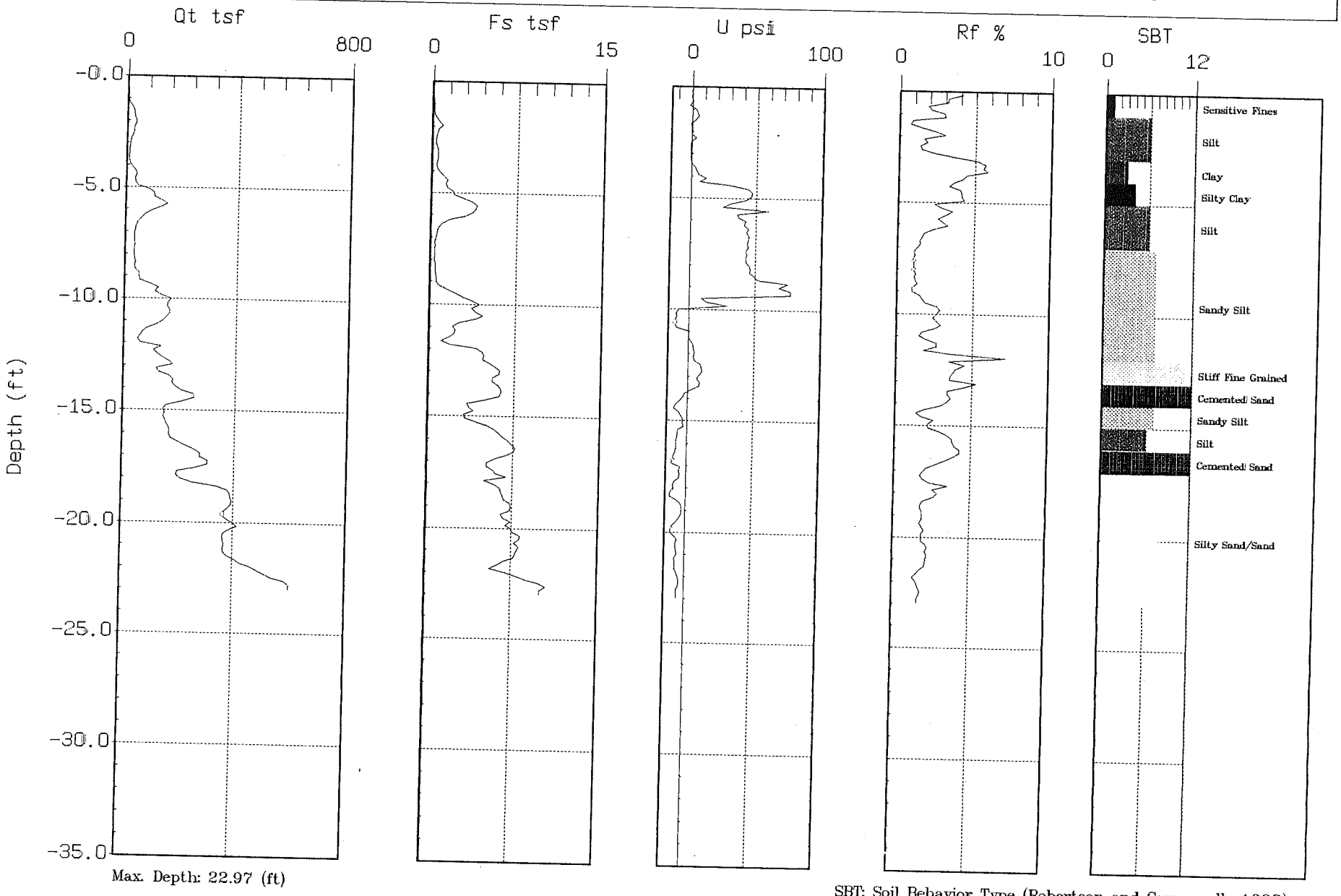
SBT: Soil Behavior Type (Robertson and Campanella 1988)

GREGG

HLA

Site : BLUE PRINT
Location : CPT-01

Engineer : J. McCARTY
Date : 02/19/98



Max. Depth: 22.97 (ft)

Depth Inc.: 0.164 (ft)

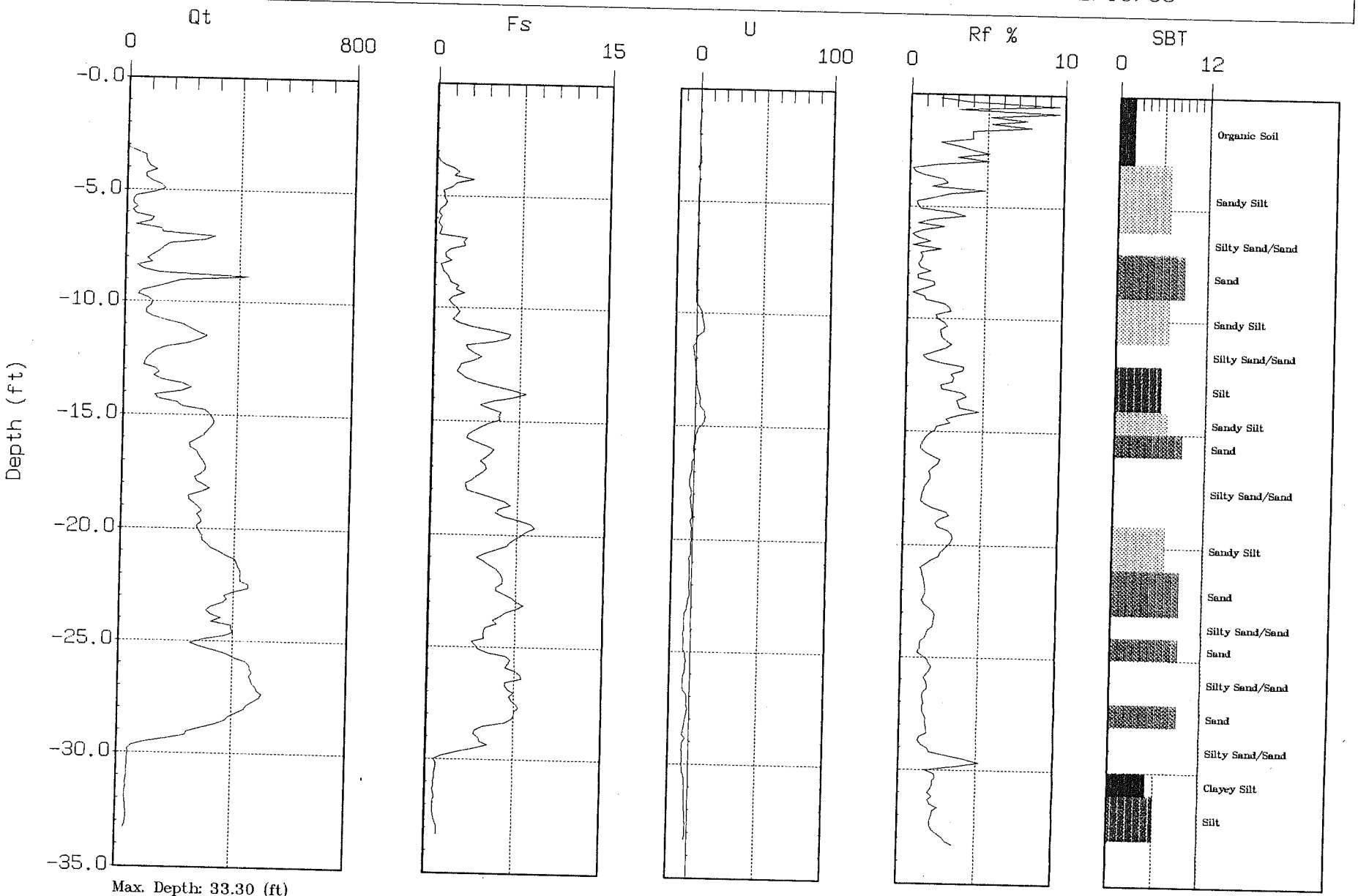
SBT: Soil Behavior Type (Robertson and Campanella 1988)

GREGG

HLA

Site : BLUE PRINT
Location : CPT-02

Engineer : J. MAcCARTY
Date : 02/19/98



Max. Depth: 33.30 (ft)

Depth Inc.: 0.164 (ft)

SBT: Soil Behavior Type (Robertson and Campanella 1988)

HLA

Contractor: GREGG IN SITU
CPT-01
Project: BLUE PRINT
Tot. Unit Wt. (avg) : 120 pcf

Date: 02/19/98
J. McCARTY
Water table (feet) : 26.24672

DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
1	0.80	0.02	2.51	0.03	undefined	UNDFND	UNDFD	UDF	UNDEFINED
2	18.72	0.35	1.89	0.09	sandy silt to clayey silt	UNDFND	UNDFD	7	1.5
3	18.50	0.39	2.09	0.15	sandy silt to clayey silt	UNDFND	UNDFD	7	1.5
4	10.31	0.48	4.64	0.22	clay	UNDFND	UNDFD	10	.8
5	41.81	1.46	3.50	0.28	clayey silt to silty clay	UNDFND	UNDFD	20	3.4
6	114.95	3.47	3.01	0.33	sandy silt to clayey silt	UNDFND	UNDFD	44	9.5
7	44.90	0.78	1.74	0.39	silty sand to sandy silt	50-60	38-40	14	UNDEFINED
8	31.30	0.34	1.07	0.45	silty sand to sandy silt	40-50	34-36	10	UNDEFINED
9	39.13	0.44	1.11	0.51	silty sand to sandy silt	40-50	36-38	12	UNDEFINED
10	111.25	2.55	2.29	0.57	silty sand to sandy silt	70-80	42-44	36	UNDEFINED
11	153.42	3.47	2.26	0.63	silty sand to sandy silt	80-90	42-44	49	UNDEFINED
12	71.42	2.17	3.03	0.69	sandy silt to clayey silt	UNDFND	UNDFD	27	5.8
13	140.00	5.23	3.74	0.75	sand to clayey sand (*)	UNDFND	UNDFD	>50	UNDEFINED
14	157.65	6.00	3.81	0.81	sand to clayey sand (*)	UNDFND	UNDFD	>50	UNDEFINED
15	204.30	4.18	2.05	0.87	sand to silty sand	80-90	42-44	49	UNDEFINED
16	155.10	5.16	3.33	0.93	sandy silt to clayey silt	UNDFND	UNDFD	>50	12.8
17	216.41	7.03	3.25	0.98	sand to clayey sand (*)	UNDFND	UNDFD	>50	UNDEFINED
18	256.82	5.67	2.21	1.04	sand to silty sand	>90	42-44	>50	UNDEFINED
19	324.79	6.57	2.02	1.10	sand to silty sand	>90	44-46	>50	UNDEFINED
20	377.90	7.03	1.86	1.16	sand to silty sand	>90	44-46	>50	UNDEFINED
21	379.93	7.89	2.08	1.23	sand to silty sand	>90	44-46	>50	UNDEFINED
22	401.53	6.86	1.71	1.29	sand to silty sand	>90	44-46	>50	UNDEFINED
23	555.32	9.51	1.71	1.35	sand to silty sand	>90	44-46	>50	UNDEFINED

Dr - All sands (Jamiolkowski et al. 1985) PHI - Durgunoglu and Mitchell 1975 Su: Nk= 12

(*) overconsolidated or cemented

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

HLA

Contractor: GREGG IN SITU
CPT-02
Project: BLUE PRINT
Tot. Unit Wt. (avg) : 120 pcf

Date: 02/19/98
J. MAcCARTY
Water table (feet) : 26.24672

DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
1	0.23	0.01	4.32	0.03	undefined	UNDFND	UNDFD	UDF	UNDEFINED
2	0.20	0.01	5.00	0.09	undefined	UNDFND	UNDFD	UDF	UNDEFINED
3	0.49	0.01	2.62	0.15	undefined	UNDFND	UNDFD	UDF	UNDEFINED
4	68.19	0.96	1.41	0.22	silty sand to sandy silt	70-80	44-46	22	UNDEFINED
5	94.11	1.35	1.44	0.28	sand to silty sand	80-90	44-46	23	UNDEFINED
6	26.89	0.49	1.80	0.33	sandy silt to clayey silt	UNDFND	UNDFD	10	2.2
7	128.71	1.09	0.85	0.39	sand	80-90	44-46	25	UNDEFINED
8	141.58	1.24	0.88	0.45	sand	80-90	44-46	27	UNDEFINED
9	155.75	1.14	0.73	0.51	sand	80-90	44-46	30	UNDEFINED
10	89.92	1.74	1.94	0.57	silty sand to sandy silt	70-80	40-42	29	UNDEFINED
11	113.25	2.68	2.36	0.63	silty sand to sandy silt	70-80	40-42	36	UNDEFINED
12	234.26	4.56	1.95	0.69	sand to silty sand	>90	44-46	>50	UNDEFINED
13	89.75	2.77	3.09	0.75	sandy silt to clayey silt	UNDFND	UNDFD	34	7.4
14	167.50	5.58	3.33	0.81	sandy silt to clayey silt	UNDFND	UNDFD	>50	13.8
15	201.28	5.23	2.60	0.87	silty sand to sandy silt	80-90	42-44	>50	UNDEFINED
16	303.98	3.71	1.22	0.93	sand	>90	44-46	>50	UNDEFINED
17	254.84	4.74	1.86	0.98	sand to silty sand	>90	42-44	>50	UNDEFINED
18	276.98	3.72	1.34	1.04	sand	>90	42-44	>50	UNDEFINED
19	266.23	5.30	1.99	1.10	sand to silty sand	>90	42-44	>50	UNDEFINED
20	273.35	7.56	2.77	1.16	silty sand to sandy silt	>90	42-44	>50	UNDEFINED
21	297.88	6.17	2.07	1.23	sand to silty sand	>90	42-44	>50	UNDEFINED
22	405.85	5.67	1.40	1.29	sand	>90	44-46	>50	UNDEFINED
23	418.85	6.49	1.55	1.35	sand	>90	44-46	>50	UNDEFINED
24	337.73	6.41	1.90	1.41	sand to silty sand	>90	42-44	>50	UNDEFINED
25	350.35	4.39	1.25	1.48	sand	>90	42-44	>50	UNDEFINED
26	386.36	6.69	1.73	1.54	sand to silty sand	>90	42-44	>50	UNDEFINED
27	467.97	7.32	1.56	1.58	sand	>90	44-46	>50	UNDEFINED
28	476.47	7.45	1.56	1.61	sand	>90	44-46	>50	UNDEFINED
29	344.04	5.25	1.53	1.64	sand	>90	42-44	>50	UNDEFINED
30	106.15	3.08	2.90	1.67	sandy silt to clayey silt	UNDFND	UNDFD	41	8.6
31	35.45	0.77	2.17	1.70	sandy silt to clayey silt	UNDFND	UNDFD	14	2.8
32	31.39	0.69	2.19	1.73	sandy silt to clayey silt	UNDFND	UNDFD	12	2.4
33	33.87	0.78	2.32	1.75	sandy silt to clayey silt	UNDFND	UNDFD	13	2.6

Dr - All sands (Jamiolkowski et al. 1985) PHI - Durgunoglu and Mitchell 1975 Su: Nk= 12

**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

HLA

Contractor: GREGG IN SITU
CPT-03
Project: BLUE PRINT
Tot. Unit Wt. (avg) : 120 pcf

Date: 02/19/98
J. McCARTY
Water table (feet) : 26.24672

DEPTH (feet)	Qc (avg) (tsf)	Fs (avg) (tsf)	Rf (avg) (%)	SIGV' (tsf)	SOIL BEHAVIOUR TYPE	Eq - Dr (%)	PHI deg.	SPT N	Su tsf
1	0.67	0.07	10.47	0.03	undefined	UNDFND	UNDFD	UDF	UNDEFINED
2	0.67	0.01	1.24	0.09	undefined	UNDFND	UNDFD	UDF	UNDEFINED
3	0.34	0.01	2.90	0.15	undefined	UNDFND	UNDFD	UDF	UNDEFINED
4	0.42	0.01	2.36	0.22	undefined	UNDFND	UNDFD	UDF	UNDEFINED
5	37.05	0.55	1.48	0.28	silty sand to sandy silt	50-60	38-40	12	UNDEFINED
6	100.78	1.87	1.86	0.33	silty sand to sandy silt	80-90	44-46	32	UNDEFINED
7	59.75	0.76	1.27	0.39	silty sand to sandy silt	60-70	40-42	19	UNDEFINED
8	62.46	0.76	1.22	0.45	silty sand to sandy silt	60-70	40-42	20	UNDEFINED
9	32.83	0.24	0.74	0.51	silty sand to sandy silt	40-50	34-36	10	UNDEFINED
10	27.16	0.26	0.96	0.57	silty sand to sandy silt	<40	32-34	9	UNDEFINED
11	33.75	0.30	0.89	0.63	silty sand to sandy silt	40-50	34-36	11	UNDEFINED
12	57.45	1.11	1.93	0.69	silty sand to sandy silt	50-60	36-38	18	UNDEFINED
13	185.71	6.16	3.32	0.75	sand to clayey sand (*)	UNDFND	UNDFD	>50	UNDEFINED
14	251.57	10.84	4.31	0.81	very stiff fine grained (*)	UNDFND	UNDFD	>50	UNDEFINED
15	308.26	7.91	2.57	0.87	silty sand to sandy silt	>90	44-46	>50	UNDEFINED
16	325.48	5.37	1.65	0.93	sand to silty sand	>90	44-46	>50	UNDEFINED
17	351.28	4.02	1.14	0.98	sand	>90	44-46	>50	UNDEFINED
18	298.16	8.08	2.71	1.04	sand to clayey sand (*)	UNDFND	UNDFD	>50	UNDEFINED
19	337.37	4.65	1.38	1.10	sand	>90	44-46	>50	UNDEFINED
20	391.13	3.87	0.99	1.16	sand	>90	44-46	>50	UNDEFINED
21	362.87	5.48	1.51	1.23	sand	>90	44-46	>50	UNDEFINED
22	382.97	4.96	1.29	1.29	sand	>90	44-46	>50	UNDEFINED
23	448.31	5.61	1.25	1.35	sand	>90	44-46	>50	UNDEFINED
24	372.08	7.34	1.97	1.41	sand to silty sand	>90	42-44	>50	UNDEFINED
25	488.66	6.70	1.37	1.48	sand	>90	44-46	>50	UNDEFINED
26	595.47	10.59	1.78	1.54	sand to silty sand	>90	44-46	>50	UNDEFINED
27	563.29	10.40	1.85	1.58	sand to silty sand	>90	44-46	>50	UNDEFINED
28	528.32	7.39	1.40	1.61	sand	>90	44-46	>50	UNDEFINED
29	145.47	3.11	2.14	1.64	silty sand to sandy silt	70-80	36-38	46	UNDEFINED
30	39.48	0.53	1.34	1.67	silty sand to sandy silt	<40	<30	13	UNDEFINED

Dr - All sands (Jamiolkowski et al. 1985) PHI - Durgunoglu and Mitchell 1975 Su: Nk= 12

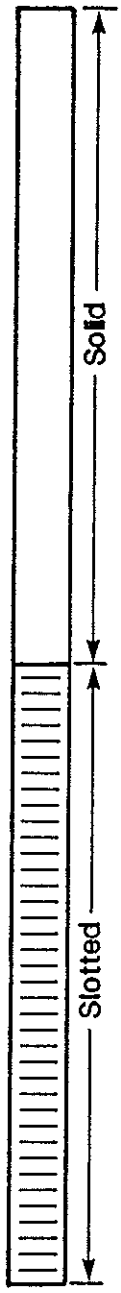
(*) overconsolidated or cemented

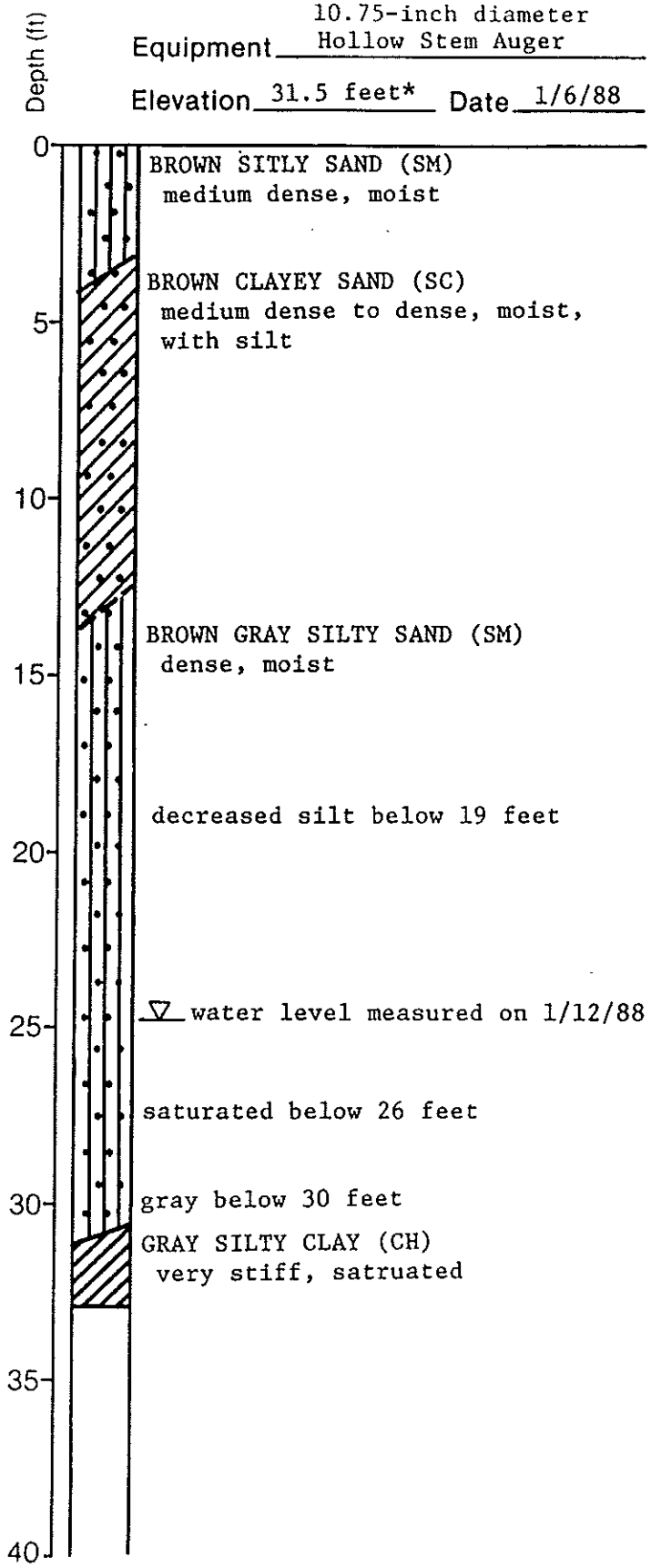
**** Note: For interpretation purposes the PLOTTED CPT PROFILE should be used with the TABULATED OUTPUT from CPTINTR1 (v 3.02) ****

Equipment 10.75-inch diameter Hollow Stem Auger

Elevation 31.5 feet* Date 1/6/88

Laboratory Tests	Odor	Field Gastech Reading (ppm)
	none	ND**
	none	ND
	none	ND
	none	35
	weak	320
	strong	500+
	strong	500+





*City of Oakland datum

**ND = not detected

Harding Lawson Associates
Engineers, Geologists
& Geophysicists

Log of Boring MW-1A

City Blue Production Facility
Oakland, California

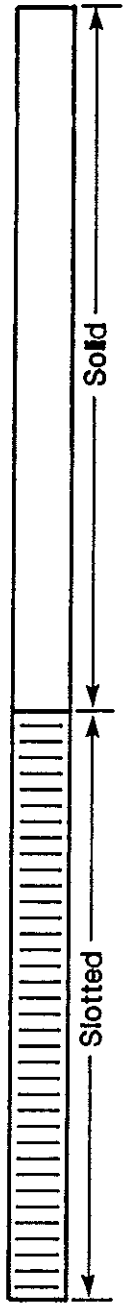
PLATE 2

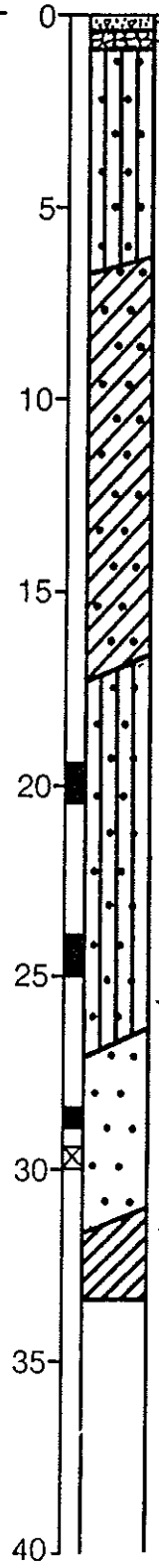
DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
RS	18106,004.04		1/88		

Equipment: 10.75-inch diameter Hollow Stem Auger

Elevation: 32 feet Date: 1/6/88

Laboratory Tests	*Blows/foot	Odor	Field Gastech Reading (ppm)
		none	ND
		none	ND
		none	ND
		none	ND
	54	weak	180
	48	strong	500+
	43/6"	strong	—
		none	ND





6-inch concrete slab
6-inch crushed rock

BROWN SILTY SAND (SM)
medium dense, moist

some clay below 4 feet

BROWN CLAYEY SAND (SC)
medium dense to dense, moist, with some silt

BROWN SILTY SAND (SM)
dense, moist

grayish brown below 24 feet

▽ water level measured on 1/12/88

GRAY SAND (SP)
dense, saturated, with silt

BROWNISH GRAY SILTY CLAY (CH)
stiff to very stiff, saturated

*Equivalent Standard Penetration test (SPT) blow counts

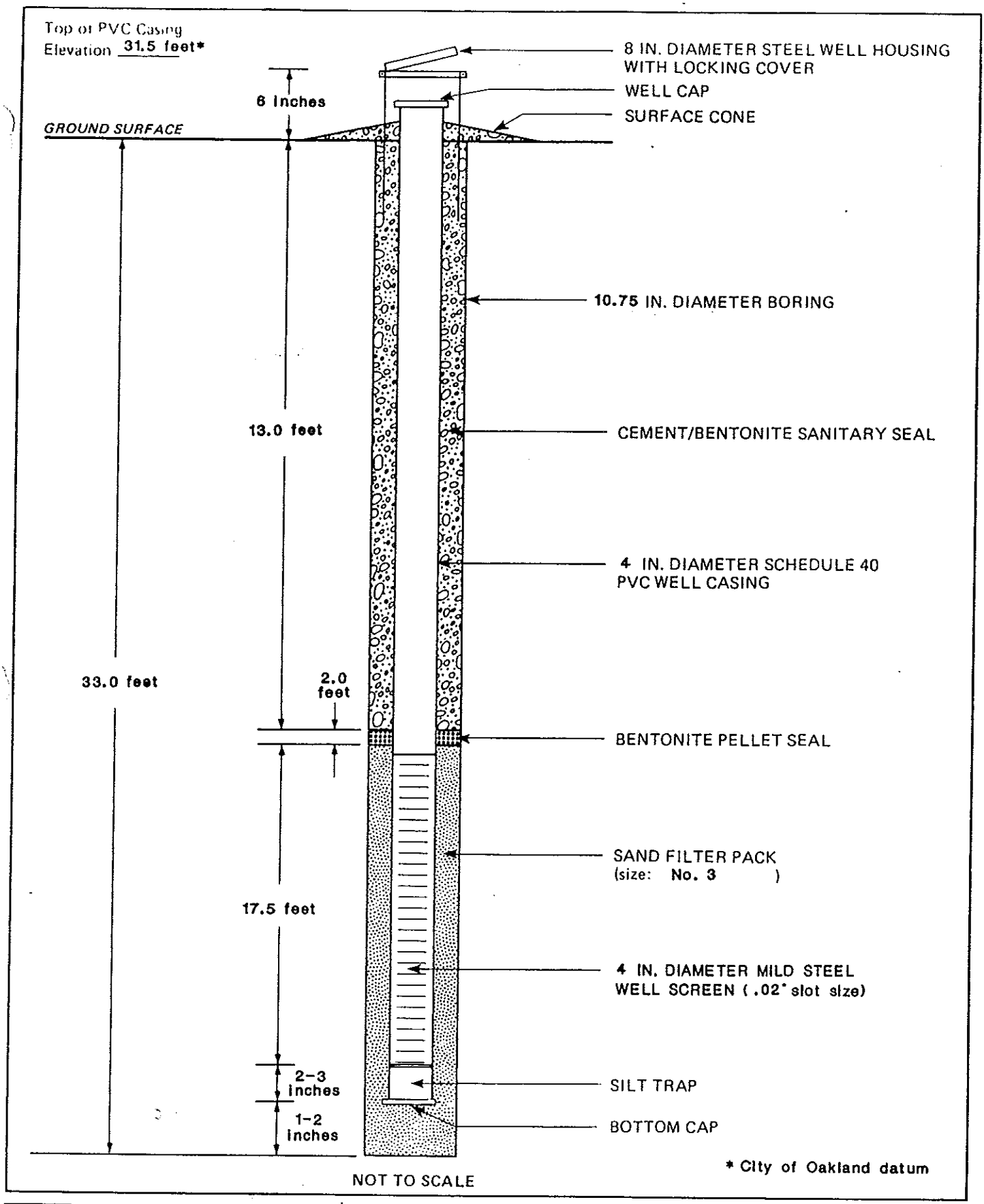
Harding Lawson Associates
Engineers, Geologists & Geophysicists

Log of Boring MW-4

City Blue Production Facility
Oakland, California

PLATE 3

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
RS	18106,004.04		1/88		



Harding Lawson Associates
Engineers Geologists & Geophysicists

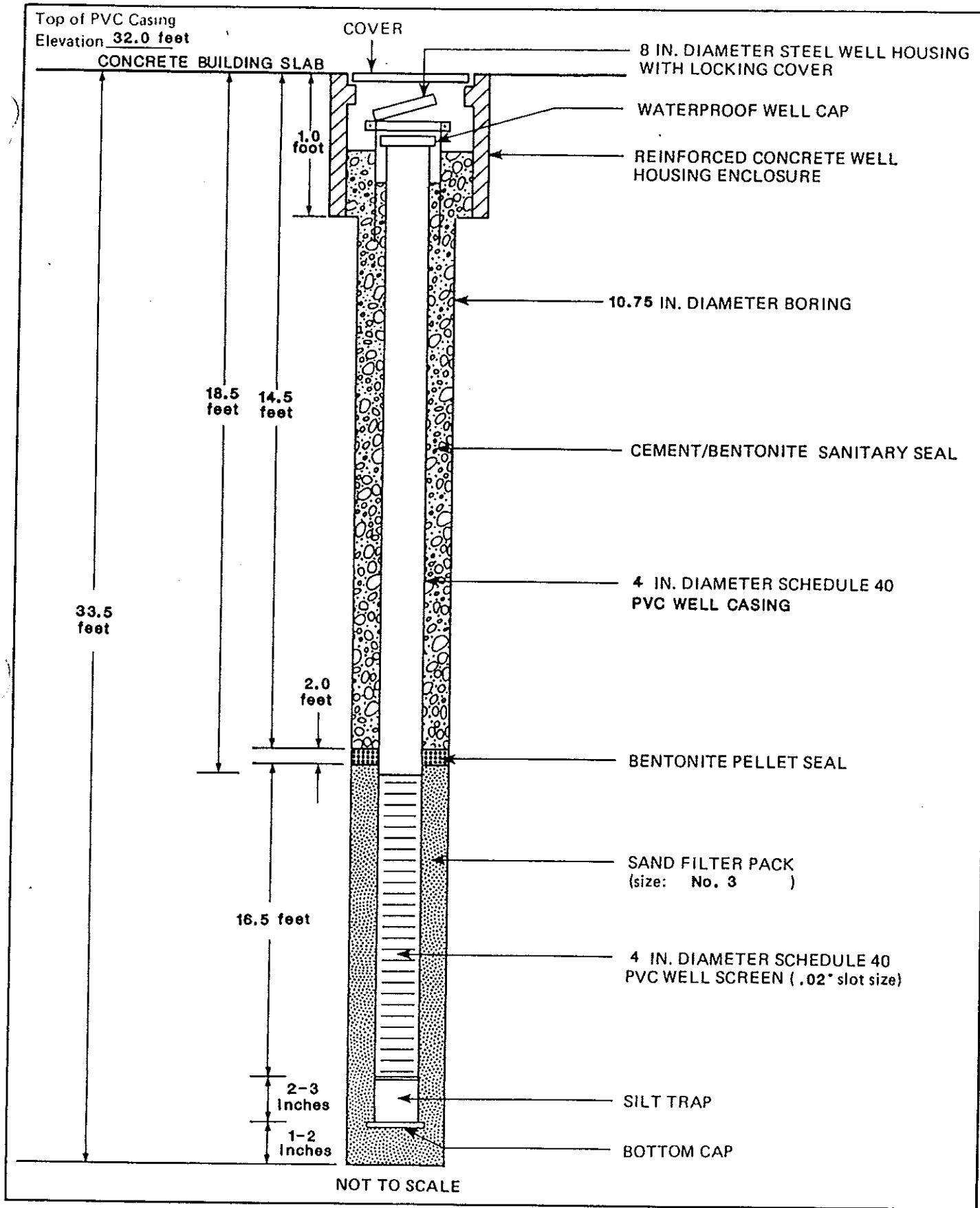
MW-1A Well Completion Detail

City Blue Production Facility
Oakland, California

PLATE **4**

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
RS	18106,004.04		1/88		

FORM GW1



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MW-4 Well Completion Detail

City Blue Production Facility
Oakland, California

PLATE **5**

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
RS	18106,004.04		1/88		

FORM GW3

Equipment: 10-inch Diameter Hollow Stem Auger

Elevation: 31.6 feet* Date: 6/24/87

Field and Laboratory Tests	Blows/foot	Depth (ft)	Sample	Well Completion Schematic	
		0			BROWN AND GRAY SILTY SAND (SM) medium dense, moist, some clay
Field GasTech (GT) reading = 30 ppm	42				BROWN CLAYEY SAND (SC) dense, moist, with silt
GT = 90 ppm	20	5			mottled brown and gray with interbedded silty sand below 7 feet
		10			medium dense below 9 feet
GT = 225 ppm	22				decreased clay and silt with slight orange-brown discoloration below 12 feet
		15			
GT = 500+ ppm	56				GRAY SAND (SP) dense, moist, uniform, fine-grained sand
GT = 500+ ppm Lab Moisure Content = 13% Lab Dry Density = 109 pcf Lab Volatile Hydrocarbons (TVH) = 4500 ppm	33/6"	20		Solid	
					▽ water level measured on 6/25/87
		25			▽ water level measured during drilling, 6/24/87
GT = 500+ ppm	47			Slotted	
		30			GRAY SILTY CLAY (CH) very stiff, saturated, with trace sand
GT = 100 ppm	38	35			
		40			

Note: Strong petroleum hydrocarbon odors encountered between 18-30 feet

*City of Oakland datum.

**Equivalent Standard Penetration Test (SPT) blow counts

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Log of Boring MW-1

Underground Tank Investigation
City Blue Production Facility
Oakland, California

PLATE 2

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
AG	18106,002.04	DL	7/87		

Equipment 10-inch Diameter Hollow Stem Auger

Elevation 30.7 feet Date 6/25/87

Field and Laboratory Tests	Blows/foot	Depth (ft)	Sample	Well Completion Schematic	
		0			MOTTLED BROWN AND GRAY SILTY SAND (SM) dense, moist, with clay
GT = 25 ppm	43	5			
		10			medium dense, very moist below 9 feet
GT = 50 ppm	15				
GT = 25 ppm	22	15		Solid	
GT = 150 ppm	33/6"	20			BROWN SAND (SP) dense to very dense, moist to wet, fine-grained sand
					brown-gray, silty below 22 feet
GT = 280 ppm Lab Moisture Content = 11% Lab Dry Density = 106 pcf Lab TVH < 1 ppm	33/6"	25		Slotted	▽ water level measured during drilling, 6/25/87 saturated with increased silt below 27 feet
GT = 60 ppm	33/6"	30			GRAY SILTY CLAY (CH) stiff to very stiff, saturated, occasional thin lenses of mottled brown-gray silty sand
GT = 25 ppm	25	35			
		40			

Note: Petroleum hydrocarbon odors encountered between 19-27 feet

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Log of Boring MW-2

Underground Tank Investigation
City Blue Production Facility
Oakland, California

PLATE 3

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
AG	18106,002.04	DZ	7/87		

Equipment 10-inch Diameter Hollow Stem Auger

Elevation 31.2 feet Date 6/24/87

Field and Laboratory Tests	Blows/foot	Depth (ft)	Sample
GT = 50 ppm	25/6"	0	
GT = 30 ppm	20	5	
GT = 75 ppm	20	10	
GT = 200 ppm	33/6"	15	
Labor Moisture Content = 11% Lab Dry Density = 122 pcf GT = 500 ppm Lab TVH < 0.8 ppm	32/6"	20	
GT = 150 ppm	34/6"	25	
GT = 100 ppm		30	
		35	
		40	

Well Completion Schematic: Solid; Slotted

BROWN SILTY SAND (SM)
dense, moist, with interbedded clayey sand layers

MOTTLED BROWN AND GRAY CLAYEY SAND (SC)
medium dense, moist, with silt

increased silt, moist to wet below 12 feet

dense below 19 feet

GRAY SILTY SAND (SM)
dense, moist

▽ water level measured on 6/25/87

saturated below 29 feet

BROWNISH GRAY SILTY CLAY (CH)
stiff to very stiff, moist, trace sand

Note: Petroleum hydrocarbon odors encountered between 17-30 feet

HLA Harding Lawson Associates
Engineers, Geologists & Geophysicists

Log of Boring MW-3
Underground Tank Investigation
City Blue Production Facility
Oakland, California

PLATE 4

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
AG	18106,002.04	DJ	7/87		

Equipment 8 inch Hollow Stem Auger

Elevation not surveyed Date 8/15/88

Laboratory Tests	Blows/foot	HNV (ppm)	Time	Depth (ft)	Sample	
				0		BROWN SAND (SP) poorly graded, dense, slightly moist
	24	0	1345	5		BROWN SILTY SAND (SM) dense, slightly moist
	9	50	1350	10		BROWN SILTY SAND (SM) with orange and gray mottling, dense, moist
	27	50	1355	15		BROWN SAND (SP) gray petroleum staining, hydrocarbon odor, dense, moist
				20	▽	
	57	50	1405			BROWN SAND (SP) petroleum staining, hydrocarbon odor, poorly graded, very dense, saturated
	60	44	1415	25		BROWN SAND (SP) petroleum staining, hydrocarbon odor, poorly graded, very dense, saturated
	22	15	1425	30		BROWN SILTY CLAY (CL) no hydrocarbon odor, very stiff, moist
	23	5	1438	35		BROWN SANDY SILTY (ML) no hydrocarbon odor, very stiff, moist
				40		

(Continuation of Log)

Laboratory Tests	Blows/foot	HNV (ppm)	Time	Depth (ft)	Sample	
	20	0	1453	40		GRAY SILTY CLAY (CL) orange and dark gray mottling, no hydrocarbon odor, very stiff, moist
				45		bottom of boring 41.5 feet
				50		
				55		
				60		
				65		
				70		
				75		
				80		

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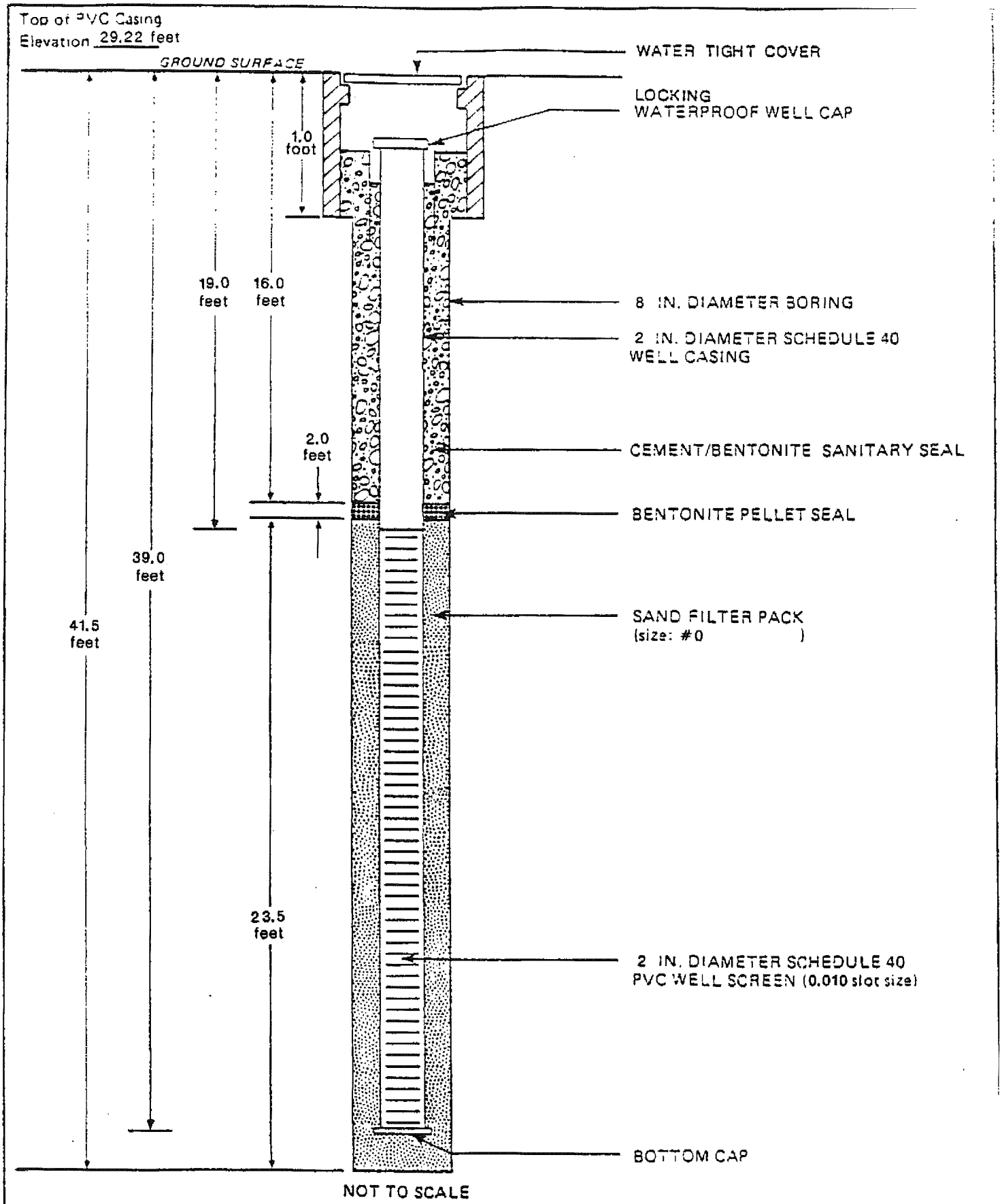
Log of Monitoring Well MW-5

City Blue Production Facility
Oakland, California

PLATE **2**

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
RS	18106,004.04	RGB	11/88		



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Monitoring Well MW-5
Completion Detail

City Blue Production Facility
Oakland, California

4

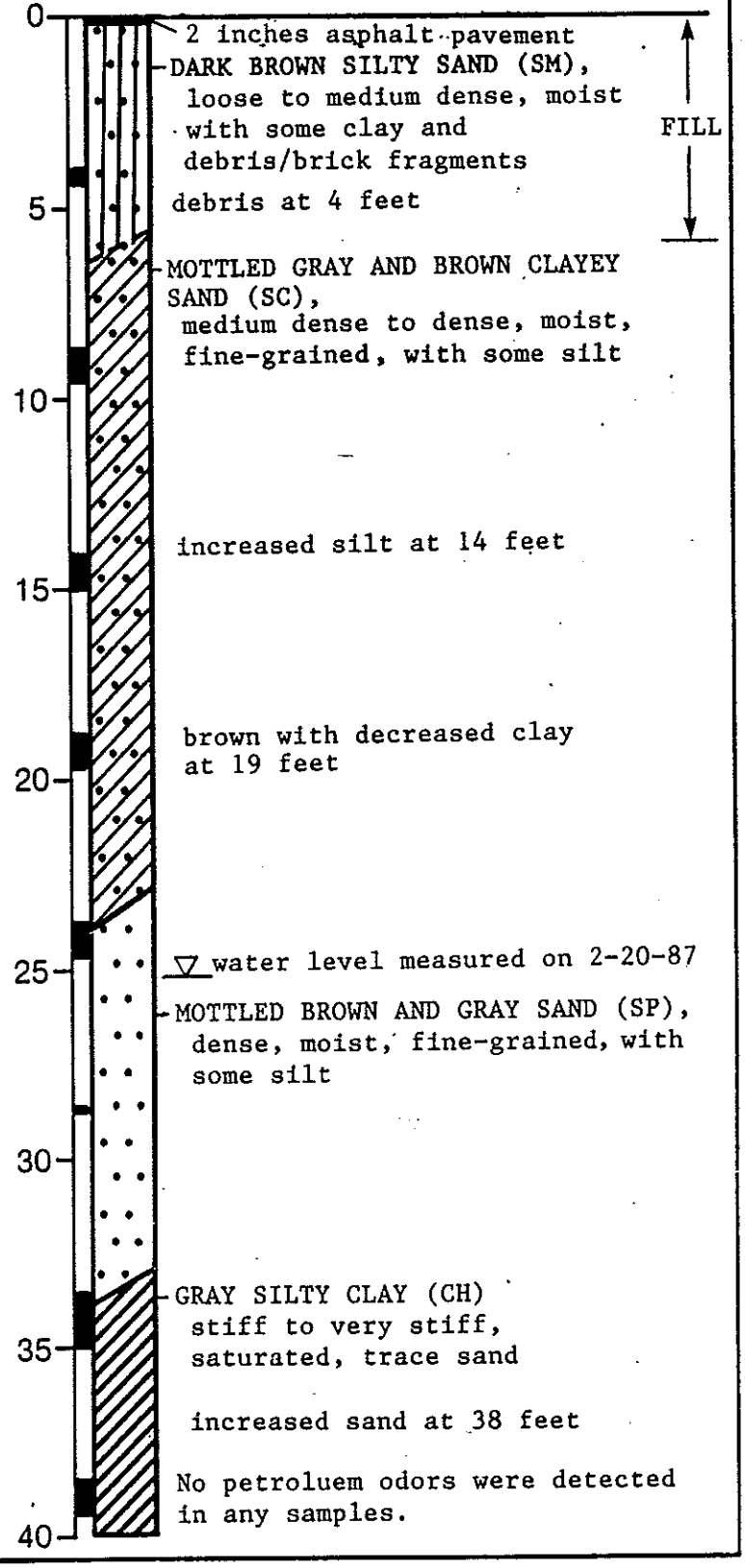
DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
RS	18106,004.04	RGB	11/88		

FORM GW3

Equipment Hollow Stem Auger

Elevation 33.5 feet * Date 2-20-87

Laboratory Tests	Blows/foot **	Moisture Content (%)	Dry Density (pcf)
	7		
	26	16	110
	41		
	46	10	134
TxUU 4390 (2500)	45	18	105
	45		
	31	29	94
	13	27	95



* City of Oakland Datum

** Equivalent Standard Penetration Test (SPT) Resistance Values

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Log of Boring 1

City Blue Production Facility
Oakland, California

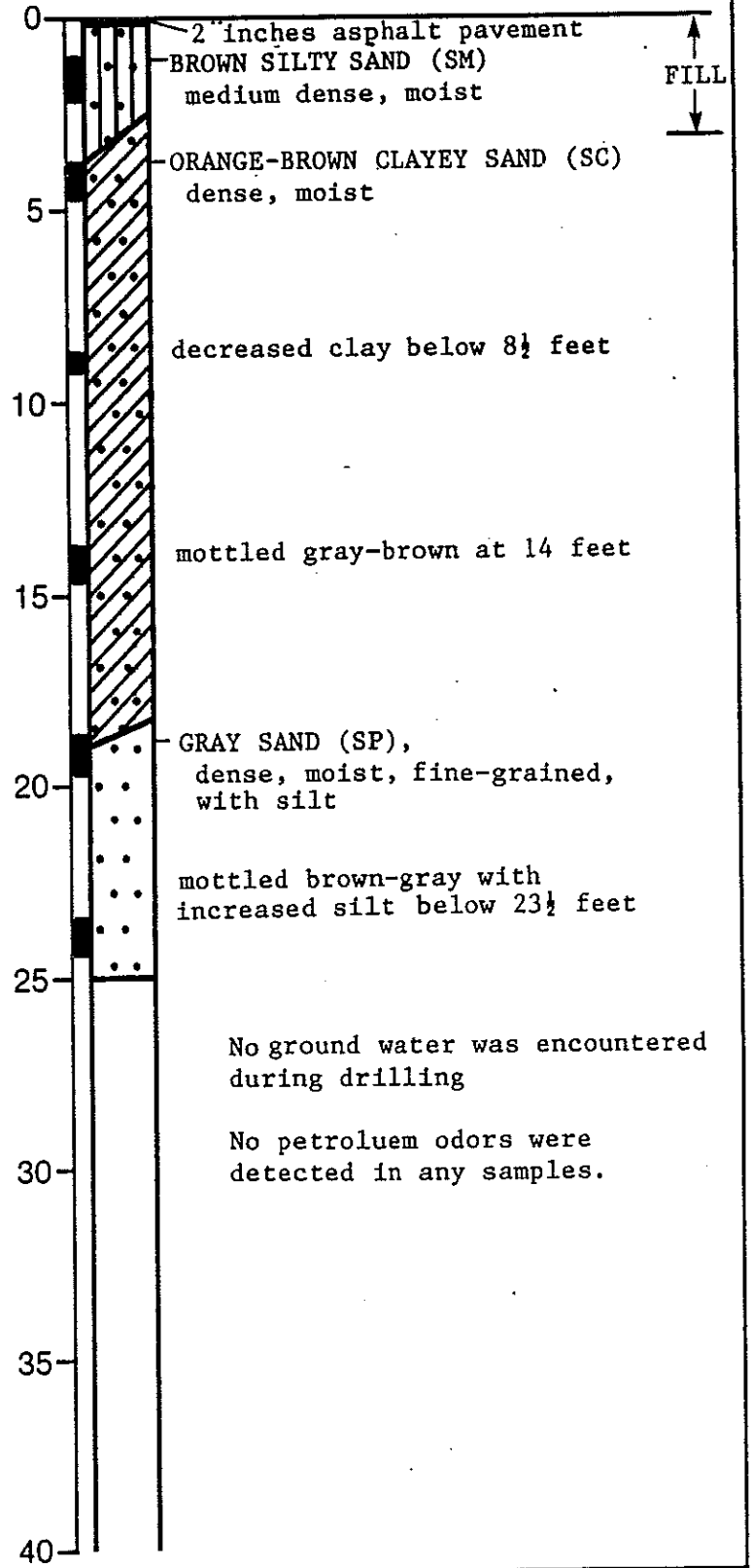
PLATE 2

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
Shields	18106,001.04	DZ	2/87		

Equipment Hollow Stem Auger

Elevation 32.0 feet Date 2-20-87

Laboratory Tests	Blows/foot	Moisture Content (%)	Dry Density (pcf)
25% passing #200 sieve	22	10	111
	39		
TxUU 1370 (950)	33	14	108
17% passing #200 sieve	36	18	113
	33		
12% passing #200 sieve	35	14	96



No ground water was encountered during drilling

No petroluem odors were detected in any samples.

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Log of Boring 2

City Blue Production Facility
Oakland, California

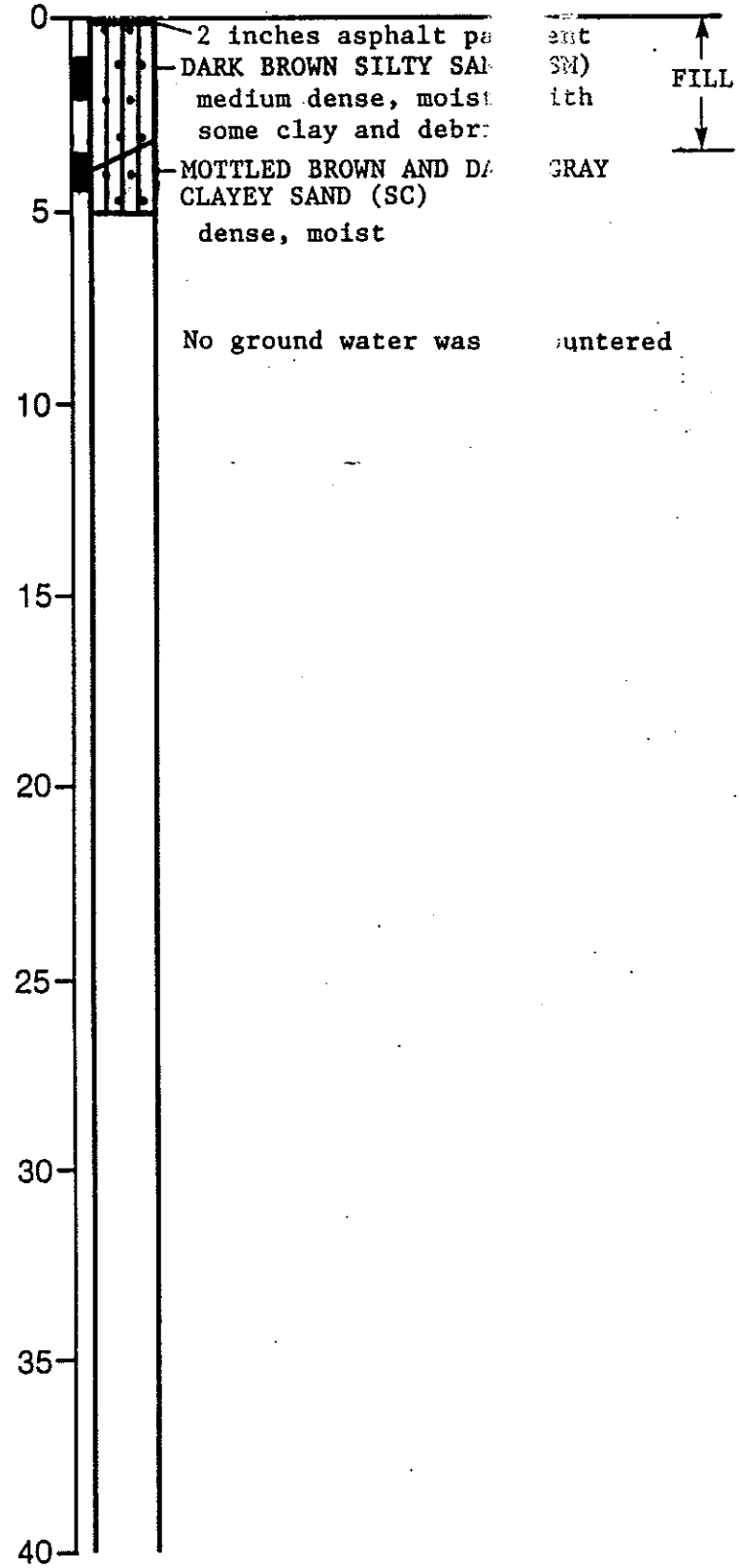
PLATE 3

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
Shields	18106,001.04	DJ	2/87		

Equipment Hollow S: Auger

Elevation 31.6 feet 9 2-20-87

Laboratory Tests	Blows/foot	Moisture Content (%)	Dry Density (pcf)
	23		
TxUU 1000 (350)	34	16	107



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Log of Boring 3

City Blue Production Facility
Oakland, California

PLATE 4

DRAWN	JOB NUMBER	APPROVED	DATE	REVISE	DATE
Shields	18106,001.04	DJ	2/87		

Laboratory Tests	Blows/foot ***	Moisture Content (%)	Dry Densit
TPH = Total Petroleum Hydrocarbons			
ppm = parts per million			
	21		
TPH = 64 ppm	31		
TPH = 310 ppm	49		
TPH = 2100 ppm	33/6"		
	33/5½"		
TPH = 1700 ppm	49/6"		
TPH = 46 ppm	40		

Depth (ft) | Sample

Equipment Hollow Stem Auge

Elevation 31.5 feet * Date 1 19-87

0 – 2 inches Asphalt pavement
6 inches Gravel road base
DARK BROWN SILTY SAND (SM)
medium dense, moist,
no petroluem odor detected

5 – some clay below 4 feet
mottled green-gray and brown
with increased clay below 6 feet

no petroluem odor detected
at 7 feet

FILL

10 – MOTTLED GRAY AND BROWN CLAYEY SAND (SC)
medium dense to dense, moist,
with very slight petroluem odor

dense, with slight petroluem odor
below 14½ feet

15 –

BROWNISH-GRAY SAND (SP)
dense to very dense, moist,
very fine grained, uniform,
trace silt with petroluem
odor

20 –

25 – strong petroluem odor at 25 feet

** ▽ water level measured on 2-20-87,
no product visible on surface,
strong petroluem odor detected

30 – greenish-gray with silt
below 28 feet

35 –

40 –

* City of Oakland datum

** Water sample
TPH = 58 ppm

*** Equivalent Standard Penetration test (SPT) resistance values

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Log of Boring 4

City Blue Production Facility
Oakland, California

PLATE **2**

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
Shields	18106,001.04	DJ	2/87		

Equipment Hollow Stem Auger

Elevation 31.5 feet Date 2-20-87

Laboratory Tests	Blows/foot	Moisture Content (%)	Dry Density (pcf)	Depth (ft)	Sample
				0	
				5	
	17			10	
TPH = 150 ppm	12			15	
TPH = 900 ppm	27			20	
TPH = 3300 ppm	49			25	
	33			30	
				35	
				40	

2 inches Asphalt pavement
6 inches Gravel road base

GREENISH GRAY SILTY SAND (SM)
medium dense, moist, trace clay

FILL

increased clay at 5 feet

MOTTLED BROWN AND GREENISH GRAY CLAYEY SAND (SC)
medium dense, moist, with silt, no petroluem odor detected

increased clay below 9 feet

decreased clay, slight petroluem odor below 13½ feet

GRAY-BROWN SAND (SP)
medium dense, moist, uniform, fine-grained, with strong petroluem odor

dense with some silt, strong to very strong petroluem odor at 24 feet

* ▽ water level measured on 2-20-87, product was visible on surface, strong petroluem odor detected

greenish gray, saturated, with slightly less petroluem odor below 28½ feet.

* Water sample
TPH = 51 ppm

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Log of Boring 5

City Blue Production Facility
Oakland, California

PLATE 3

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
Shields	18106,001.04	DL	2/87		

Equipment 6-inch Diameter Solid Auger

Elevation 31.4 feet Date 8/12/87

Laboratory Tests	Blows/foot	Moisture Content (%)	Dry Density (pcf)	Depth (ft)	Sample
				0	
Laboratory Permeability = 9.9×10^{-6} cm/sec	38/9"	16	110	5	
	41			10	
Laboratory Permeability = 3.1×10^{-4} cm/sec	47 40/10"	16	100	15	
				20	
				25	
				30	
				35	
				40	

BROWN SILTY SAND (SM)
medium dense, moist, with some clay

BROWN AND GRAYISH BROWN CLAYEY SAND (SC)
medium dense to dense, moist, with silt

dense below 11 feet

BROWNISH GRAY SAND (SP)
dense, moist, very fine-grained, uniform, with silt

▽ water level observed 8/12/87
saturated below 26 feet

BROWNISH GRAY SILTY CLAY (CH)
stiff to very stiff, saturated, trace sand

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Log of Boring 6

City Blue Production Facility
Oakland, California

PLATE 1

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
RS	18106,004.04	DZ	1/88		

Equipment 6-inch Diameter Soild Auger

Elevation 31.4 feet Date 8/12/87

Laboratory Tests	Blows/foot	Moisture Content (%)	Dry Density (pcf)	Depth (ft)	Sample
				0	
				5	
				10	
	38/9"			15	
	41			20	
	47				
	40/10"			25	
				30	
				35	
				40	

BROWN SILTY SAND (SM)
medium dense, moist, with some clay

BROWN AND GRAYISH BROWN CLAYEY SAND (SC)
medium dense to dense, moist, with silt

dense below 11 feet

BROWNISH GRAY SAND (SP)
dense, moist, very fine-grained, uniform, with silt

▽ water level observed 8/12/87
saturated below 26 feet

BROWNISH GRAY SILTY CLAY (CH)
stiff to very stiff, saturated, trace sand

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Log of Boring 6

City Blue Production Facility
Oakland, California

PLATE 5

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
RS	18106,002.04	DZ	10/87		

Equipment 6-inch Diameter Solid Auger

Elevation 31.4 feet Date 8/12/87

Laboratory Tests	Blows/foot	Moisture Content (%)	Dry Density (pcf)	Depth (ft)	Sample
				0	
					BROWN SILTY SAND (SM) medium dense, moist, with some clay
					BROWN AND GRAYISH BROWN CLAYEY SAND (SC) medium dense to dense, moist, with silt
				5	
				10	
					dense below 11 feet
Laboratory Permeability = 9.9×10^{-6} cm/sec	38/9"	16	110		
				15	
	41				
				20	
					BROWNISH GRAY SAND (SP) dense, moist, very fine-grained, uniform, with silt
	47				
Laboratory Permeability = 3.1×10^{-4} cm/sec	40/10"	16	100	25	
					▽ water level observed 8/12/87 saturated below 26 feet
				30	
					BROWNISH GRAY SILTY CLAY (CH) stiff to very stiff, saturated, trace sand
				35	
				40	

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Log of Boring 6

City Blue Production Facility
Oakland, California

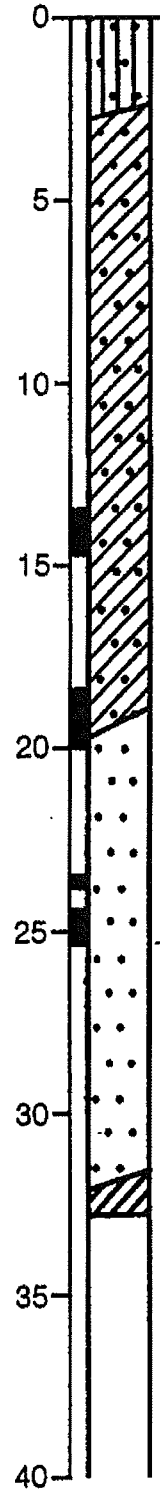
PLATE 1

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
RS	18106,004.04	DZ	1/88		

Equipment 6-inch Diameter Soild Auger

Elevation 31.4 feet Date 8/12/87

Laboratory Tests	Blows/foot	Moisture Content (%)	Dry Density (pcf)	Depth (ft)	Sample
				0	
				5	
				10	
	38/9"			15	
	41			20	
	47				
	40/10"			25	
				30	
				35	
				40	



BROWN SILTY SAND (SM)
medium dense, moist, with some clay

BROWN AND GRAYISH BROWN CLAYEY SAND (SC)
medium dense to dense, moist, with silt

dense below 11 feet

BROWNISH GRAY SAND (SP)
dense, moist, very fine-grained, uniform, with silt

▽ water level observed 8/12/87
saturated below 26 feet

BROWNISH GRAY SILTY CLAY (CH)
stiff to very stiff, saturated, trace sand

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Log of Boring 6

City Blue Production Facility
Oakland, California

PLATE 5

DRAWN	JOB NUMBER	APPROVED	DATE	REVISED	DATE
RS	18106,002.04	DL	10/87		

P&D ENVIRONMENTAL, INC.

BORING NO.: B1	PROJECT NO.: 0518	PROJECT NAME: Basics - 612 18th Street, Oakland	
BORING LOCATION: Adjacent to collection drain/sump		ELEVATION AND DATUM: None	
DRILLING AGENCY: Vironex, Inc.	DRILLER: Joel	DATE & TIME STARTED: 7/27/10 1015	DATE & TIME FINISHED: 7/27/10 1230
DRILLING EQUIPMENT: Geoprobe 6600			
COMPLETION DEPTH: 28.0 Feet	BEDROCK DEPTH: Not Encountered	LOGGED BY: MLD	CHECKED BY:
FIRST WATER DEPTH: 24.0 Feet	NO. OF SAMPLES: 2 soil, 1 water		

DEPTH (FT.)	DESCRIPTION	GRAPHIC COLUMN	WELL CONSTRUCTION LOG	BLOW COUNT PER 6"	PID	REMARKS
	0.0 to 0.6 ft. Concrete and base rock.		No Well Constructed			Borehole continuously cored using a 5-foot long 2.0-inch O.D. Geoporobe Macrocore Barrel Sampler lined with 4.8-foot long 1.5-inch O.D. Transparent PVC sleeves.
	0.6 to 7.0 ft. Brown silty fine sand (SM); medium dense, moist, with orange mottling. No Petroleum Hydrocarbon (PHC) or solvent odor.	SM				
5	X		B1 - 4.5		0	0-5 ft 2.5 ft recovery.
						5-10 ft 4.8 ft recovery.
						10-15 ft 4.0 ft recovery.
	7.0 to 15.0 ft. Grayish brown clayey sand (SC); medium dense, moist. No PHC or solvent odor.					15-20 ft 4.6 ft recovery.
						20-25 ft 4.6 ft recovery.
10	X	SC	B1 - 9.5		0	25-28 ft 3.0 ft recovery.
15	15.0 to 15.5 ft. Brown fine sand (SP); medium dense, moist. No PHC or solvent odor.	SP			0	
	15.5 to 23.0 ft. Grayish brown silty fine sand (SP); dense, moist. No PHC or solvent odor.					Water encountered during drilling at 24.0 ft. Borehole terminated at 28.0 ft. because of slough in borehole. Temporary 1- inch diameter slotted PVC casing placed in borehole. Water level measured at 23.3 ft. at 1130, and at 22.7ft. at 1140 on 7/27/10. Sample B1-W collected at 1150; no odor or sheen on sample. Water level subsequently measured at 22.5 ft. at 1210.
20		SP			0	
	23.0 to 28.0 ft. Gray fine sand (SP); medium dense, Moist to wet. No PHC or solvent odor. Saturated at 24.0 ft.					Borehole grouted on 7/27/10 using a tremie pipe and neat cement grout.
25		SP			0	
30						

P&D ENVIRONMENTAL, INC.

BORING NO.: B2	PROJECT NO.: 0518	PROJECT NAME: Basics - 612 18th Street, Oakland	
BORING LOCATION: In west parking lot adjacent to building		ELEVATION AND DATUM: None	
DRILLING AGENCY: Vironex, Inc.	DRILLER: Joel	DATE & TIME STARTED: 7/27/10 0730	DATE & TIME FINISHED: 7/27/10 1000
DRILLING EQUIPMENT: Geoprobe 6600			
COMPLETION DEPTH: 28.0 Feet	BEDROCK DEPTH: Not Encountered	LOGGED BY: MLD	CHECKED BY:
FIRST WATER DEPTH: 22.0 Feet	NO. OF SAMPLES: 2 soil, 1 water		

DEPTH (FT.)	DESCRIPTION	GRAPHIC COLUMN	WELL CONSTRUCTION LOG	BLOW COUNT PER 6"	PID	REMARKS
	0.0 to 0.6 ft. Asphalt and base rock.		No Well Constructed			Borehole continuously cored using a 5-foot long 2.0-inch O.D. Geoporobe Macrocore Barrel Sampler lined with 4.8-foot long 1.5-inch O.D. Transparent PVC sleeves.
	0.6 to 2.5 ft. Dark brown silt (ML); medium stiff, moist. No Petroleum Hydrocarbon (PHC) or solvent odor.	ML				
	2.5 to 4.5 ft. Grayish brown silty fine sand (SM); medium dense, moist. No PHC or solvent odor.	SM			0	
5	4.5 to 20.0 ft. Grayish brown clayey fine sand (SC); medium dense, moist. No PHC or solvent odor.	X	B2 - 4.5			0-5 ft 3.0 ft recovery. 5-10 ft 4.6 ft recovery. 10-15 ft 4.8 ft recovery. 15-20 ft 4.6ft recovery. 20-25 ft 4.5 ft recovery. 25-28 ft 3.0 ft recovery.
10		X	B2 - 9.5		0	
		SC				Water encountered during drilling at 22.0 ft. Borehole terminated at 28.0 ft. because of slough in borehole. Temporary 1- inch diameter slotted PVC casing placed in borehole. Water level measured at 22.7 ft. at 0823, and at 22.7 ft. at 0833 on 7/27/10. Sample B2-W collected at 0900; no odor or sheen on sample. Water level subsequently measured at 23.7 ft. at 0930.
15					0	
20	20.0 to 22.0 ft. Brown fine sand (SP); medium dense, moist. No PHC or solvent odor.	SP			0	Borehole grouted on 7/27/10 using a tremie pipe and neat cement grout.
	22.0 to 25.0 ft. Grayinh brown clayey sand (SC); medium dense, moist to wet. No PHC or solvent odor. Saturated at 23.0 ft.	SC				
25	25.0 to 28.0 ft. Grayish brown silty sand (SM); medium dense, saturated. No PHC or solvent odor.	SM			0	
30						

P&D ENVIRONMENTAL, INC.

BORING NO.: MW1	PROJECT NO.: 0518	PROJECT NAME: 612 18th Street, Oakland	
BORING LOCATION:	Approximately 25 ft. from Northeast corner of building	ELEVATION AND DATUM:	None
DRILLING AGENCY:	Exploration Geoservices, Inc.	DRILLER: Loren	DATE & TIME STARTED: 4/14/11 1245 / DATE & TIME FINISHED: 4/14/11 1600
DRILLING EQUIPMENT:	Mobile B-53 Hollow Stem Auger Drill Rig		
COMPLETION DEPTH: 30.0 Feet	BEDROCK DEPTH: Not Encountered		LOGGED BY: MLD / CHECKED BY: PHK
FIRST WATER DEPTH: 22.0 Feet	NO. OF SAMPLES: None		

DEPTH (FT.)	DESCRIPTION	GRAPHIC COLUMN	BLOW COUNT PER 6"	WELL CONSTRUCTION LOG	PID	REMARKS
	0.0 to 0.5 ft. Asphalt (6 in.) and base rock.			See Well Construction Diagram		Borehole drilled from 0.0 to 30.0 ft. using a truck-mounted 8-inch O.D. hollow stem auger drill rig.
	0.5 to 2.0 ft. Dark brown silt (ML); medium stiff, moist. No Petroleum Hydrocarbon (PHC) or solvent odor.	ML			0	
	2.0 to 10.0 ft. Brown silty fine sand (SM); medium dense, moist. No PHC or solvent odor.				0	Soil collected for lithologic logging using a 2.0-inch O.D. California Modified split spoon sampler driven by a 140-pound down-hole hammer falling 30 inches.
5		SM	8 15 15		0	
					0	
10	10.0 to 15.0 ft. Brown clayey fine sand (SC); medium dense, moist, with gray mottling. No PHC or solvent odor.	SC	4 5 6		0	
15	15.0 to 29.5 ft. Brown fine sand (SP); very dense, moist to saturated. No PHC or solvent odor.	SP	15 27 29		0	
20	Wet at 21.5 ft. Saturated at 22.0 ft.		14 18 26	▼	0	Water encountered during drilling at 22.0 ft. Water level measured in borehole at 23.6 ft. below the ground surface at 1420, and at 22.8 ft. at 1425.
25	25.0 to 29.5 ft. Color change to gray.		16 24 35		0	Water level was subsequently measured in completed well at 21.5 ft. below the ground surface at 1515.
					0	
	29.5 to 30.0 ft. Gray clay (CL); hard, moist,with brown and black mottling . No PHC or solvent odor.	CL	16 13 21		0	Borehole terminated at 30.0 ft. on 4/14/11. Well constructed in borehole on 4/14/11.
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P&D ENVIRONMENTAL, INC.

BORING NO.: MW2	PROJECT NO.: 0518	PROJECT NAME: 612 18th Street, Oakland	
BORING LOCATION: Approximately 16.5 ft. from property line and 25 ft. west of Jefferson St.		ELEVATION AND DATUM: None	
DRILLING AGENCY: Exploration Geoservices, Inc.	DRILLER: Loren	DATE & TIME STARTED: 4/14/11 0800	DATE & TIME FINISHED: 4/14/11 1230
DRILLING EQUIPMENT: Mobile B-53 Hollow Stem Auger Drill Rig			
COMPLETION DEPTH: 30.0 Feet	BEDROCK DEPTH: Not Encountered	LOGGED BY: MLD	CHECKED BY: PHK
FIRST WATER DEPTH: 21.0 Feet	NO. OF SAMPLES: None		

DEPTH (FT.)	DESCRIPTION	GRAPHIC COLUMN	BLOW COUNT PER 6"	WELL CONSTRUCTION LOG	PID	REMARKS
	0 to 1.5 ft. Asphalt and cemented cobble stone (11-inches) and base rock.			See Well Construction Diagram		Borehole drilled from 0.0 to 30.0 ft. using a truck-mounted 8-inch O.D. hollow stem auger drill rig.
	1.0 to 6.5 ft. Brown silty fine sand (SM); loose, saturated, with gray mottling and trace coarse angular gravel to 0.25-inch diameter. No Petroleum Hydrocarbon (PHC) or solvent odor.	SM	1 3 4		0 0	Soil collected for lithologic logging using a 2.0-inch O.D. California Modified split spoon sampler driven by a 140-pound down-hole hammer falling 30 inches.
5					0	Perched water encountered at 1.5 ft. below the ground surface.
	6.5 to 15.0 ft. Grayish-brown clayey fine sand (SC); medium dense, moist, with some coarse angular gravel to 0.25-inch diameter. No PHC or solvent odor.	SC	6 5 3 4 5 7		0 0 0	
10						
15	15.0 to 25.0 ft. Brown fine sand (SP); very dense, moist to saturated. No PHC or solvent odor.	SP	8 35 18		0	
20	Wet at 20.5 ft. Saturated at 21.0 ft.			▼	0	Water encountered during drilling at 21.0 ft. Water level was subsequently measured in completed well at 20.6 ft. below the ground surface at 1502.
25	25.0 to 30.0 ft. Gray silty fine sand (SM); very dense, saturated. No PHC or solvent odor.	SM			0 0 0	Borehole terminated at 30.0 ft. on 4/14/11. Well constructed in borehole on 4/14/11. Ms. Vicky Hamlin with Alameda County Public Works Agency on site to observe and document pouring of the sanitary seal.
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P&D ENVIRONMENTAL, INC.

BORING NO.: MW3	PROJECT NO.: 0518	PROJECT NAME: 612 18th Street, Oakland	
BORING LOCATION: Approximately 19.0 ft. from southwest corner of building, on 18th St.		ELEVATION AND DATUM: None	
DRILLING AGENCY: Exploration Geoservices, Inc.	DRILLER: Loren	DATE & TIME STARTED: 4/15/11 0730	DATE & TIME FINISHED: 4/15/11 1130
DRILLING EQUIPMENT: Mobile B-53 Hollow Stem Auger Drill Rig			
COMPLETION DEPTH: 30.0 Feet	BEDROCK DEPTH: Not Encountered	LOGGED BY: MLD	CHECKED BY: PHK
FIRST WATER DEPTH: 21.5 Feet	NO. OF SAMPLES: None		

DEPTH (FT.)	DESCRIPTION	GRAPHIC COLUMN	BLOW COUNT PER 6"	WELL CONSTRUCTION LOG	PID	REMARKS
	0 to 1.0 ft. Asphalt and cemented cobble stone (8-inches) and base rock.			See Well Construction Diagram		Borehole drilled from 0.0 to 30.0 ft. using a truck-mounted 8-inch O.D. hollow stem auger drill rig.
	1.0 to 6.5 ft. Brown silty fine sand (SM); medium dense, saturated, with gray mottling. No Petroleum Hydrocarbon (PHC) or solvent odor.	SM			0	Soil collected for lithologic logging using a 2.0-inch O.D. California Modified split spoon sampler driven by a 140-pound down-hole hammer falling 30 inches.
5			4		0	
			6			
			5		0	Perched water encountered at 1.0 ft. below the ground surface.
	6.5 to 10.0 ft. Brown clayey fine sand (SC); medium dense, wet to moist, with gray mottling. No PHC or solvent odor.	SC			0	
10			9			
	10.0 to 15.0 ft. Brown silty fine sand (SM); dense, moist. No PHC or solvent odor.		18		0	
		SM	30			
					0	
15					0	
	15.0 to 30.0 ft. Grayish-brown fine sand (SP); very dense, moist to saturated. No PHC or solvent odor.					
					0	
20			36			
			50	▽▼		Water encountered during drilling at 21.5 ft.
	Wet at 21.0 ft. Saturated at 21.5 ft.	SP				Water level was subsequently measured in completed well at 20.9 ft. below the ground surface at 1020.
					0	
25			45			
			50		0	
					0	
			50			Borehole terminated at 30.0 ft. on 4/15/11. Well constructed in borehole on 4/15/11.
					0	
30						