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11:04 am, Mar 24, 2011

Alameda County  
Environmental Health

Mr. Lee Douglas  
Douglas Parking Company  
1721 Webster Street  
Oakland, California 94612

Ms. Barbara Jakub  
Alameda County Environmental Health  
Department of Environmental Health  
1131 Harbor Bay Parkway, 2<sup>nd</sup> Floor  
Alameda, CA 94502-6577

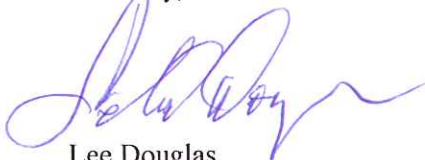
**Re: Douglas Parking Company**  
1721 Webster Street  
Oakland, California  
ACEH File No. 129

Dear Ms. Jakub:

I, Mr. Lee Douglas, have retained Pangea Environmental Services, Inc. (Pangea) as the environmental consultant for the project referenced above. Pangea is submitting the attached report on my behalf.

I declare, under penalty of perjury, that the information and/or recommendations contained in the attached report are true and correct to the best of my knowledge.

Sincerely,



Lee Douglas



March 23, 2011

***VIA ALAMEDA COUNTY FTP SITE***

Ms. Barbara Jakub  
Alameda County Environmental Health  
1131 Harbor Bay Parkway, 2<sup>nd</sup> Floor  
Alameda, California 94502

Re: **Cross Section and Response to Agency Letter of November 19, 2010**  
Douglas Parking Company  
1721 Webster Street  
Oakland, California 94612  
ACEH File No. 129

Dear Ms. Jakub:

On behalf of the Douglas Parking Company, Pangea Environmental Services, Inc. has prepared this cross section and letter requested by your November 9, 2010 letter and a telephone conversation in response to our email on December 15, 2010. Your letter was issued upon review of Pangea's *Investigation and Remediation Workplan* dated March 5, 2009 and *Groundwater Monitoring and Remediation Summary Report – Second Quarter 2009* dated June 30, 2009. This report addresses related site recommendations within the 5 Year Review prepared by the California UST Cleanup Fund. This report also proposes remediation and assessment tasks to help facilitate regulatory case closure.

**INTRODUCTION**

In addition to addressing proposed new remediation well screens, the cross section preparation will help evaluate the relationship between the onsite hydrocarbon release at 1721 Webster and hydrocarbons detected offsite at 1750 Webster. As stated in the Pangea's *Investigation and Remediation Workplan*, there were other potential sources for contamination at 1750 Webster. This evaluation will help establish the scope of future corrective action for the 1721 Webster Street release.

**LETTER COMMENT #1 - CROSS SECTION AND PROPOSED SVE/AS WELL SCREENS**

Comment #1 of your November 19, 2010 letter requires clarification for the proposed screen intervals for SVE and AS wells. The cross section on Figures 2 and 3, described in greater detail below, illustrates the appropriateness of the proposed well screens. The isoconcentration contours illustrate the relatively shallow nature of the contamination, with sparging proposed beneath the shallower impact. However, note that Pangea proposes below to implement a lower-cost remedial technique than expanding the SVE and AS system. Well Screen intervals and well diameter are listed on Table 1.

The depth to groundwater in the primary residual source area has ranged from approximately 18 to 21 ft below grade surface. Well SVE-3 is proposed from 10 to 25 ft bgs to allow both SVE from vadose zone soil as well as monitoring of shallow groundwater within the well. Given the relatively high permeability

**PANGEA Environmental Services, Inc.**

1710 Franklin Street, Suite 200, Oakland, CA 94612 Telephone 510.836.3700 Facsimile 510.836.3709 [www.pangeaenv.com](http://www.pangeaenv.com)

of the site soil, groundwater upwelling within the well screened into the vadose zone is not a concern. The proposed AS wells (AS-5 and AS-6) would be screened from 27 to 30 ft bgs to allow sparging approximately 6 to 10 ft below the top of the water table. Given the significant spacing between AS-6 and SVE-3 (20 ft) and SVE-1 (40 ft), shortcircuiting of injected air is not a significant concern. Also note that if the SVE and AS system is expanded, Pangea no longer proposes installing wells SVE-2 and AS-4 due to contaminant concentration reductions upgradient of the source area.

**LETTER COMMENT #2 – GROUNDWATER SAMPLING FOR PROPOSED WELLS**

As requested by the ACEH Pangea will wait at least 48 hours from well development to sample new wells, if installed. As also directed, Pangea will analyze all samples for oxygenates.

**LETTER COMMENT #3 – OFFSITE HYDROCARBON SOURCE AND CROSS SECTION**

In our December 15, 2010 email, Pangea informed your agency that the significant information about the offsite hydrocarbon impact was presented in the August 8, 2000 *Conduit Study and File Review Report* prepared by Cambria Environmental Technology. The requested cross section is described below and included as Figures 2 and 3.

To help illustrate conditions on both 1721 and 1750 Webster Street sites, Pangea references the historical benzene isoconcentration plan-view maps for grab groundwater and monitoring wells from the time period (1994 to 1998) when data was available for both sites (Appendix A). As shown on maps in Appendix A, the available data suggests two separate releases, with less impacted groundwater present between the two sites. For a cross-sectional representation of the two sites, Pangea prepared one long cross section where shown on Figure 1. The cross section includes well screen intervals and, for consistency, use benzene data from the plan-view maps in Appendix A.

Pangea presents cross section A-A' with two sets of elevation data due to uncertainty of the well survey datum used for wells MW-2 and MW-3 at 1721 Webster Street. Figure 2 shows cross-section A-A' with August 1998 groundwater elevation data listed in reviewed reports. This elevation data is presented below in Table A. Based on this elevation data and the water table elevation shown on Figure 2, groundwater apparently flows from the 1750 Webster site toward the 1721 Webster site in the cross-downgradient direction. This cross-sectional information suggests the presence of separate hydrocarbon releases, and that the impact at 1750 Webster is not from migration from 1721 Webster.

**Table A – Groundwater Elevation Reported for 1721 and 1750 Webster Street Sites**

Monitoring Well	Date	Groundwater Elevation (ft msl)	Survey Benchmark Elevation and Datum
MW-3 (1721 Webster)	08/11/1998	9.61	29.25 ft msl – City of Oakland 1929 NGVD?
MW-2 (1721 Webster)	08/11/1998	8.99 (lowest)	29.25 ft msl – City of Oakland 1929 NGVD?
A-3 (1750 Webster)	08/04/1998	11.66 (highest)	32.25 ft msl – 1929 NGVD
A-1 (1750 Webster)	08/04/1998	10.40	32.25 ft msl – 1929 NGVD

Pangea reviewed available information to confirm the groundwater elevations and benchmarks used for the data in Table A. Monitoring wells MW-4 and MW-5 were surveyed with to a benchmark at 17<sup>th</sup> and Harrison with a benchmark elevation of 29.25 ft msl (City of Oakland 1929 NGVD datum); the well elevation survey is included in Appendix B. Unable to find the initial well elevation survey for wells MW-2 and MW-3, Pangea suspected that these wells were also surveyed to the City of Oakland 1929 NGVD datum (29.25 ft msl). The offsite wells at 1750 Webster were surveyed using the same benchmark at 17<sup>th</sup> and Harrison, but using a 1929 NGVD elevation of 32.25 ft msl, which is three feet higher than the City of Oakland datum. In 2003, following the installation of wells MW-6 and MW-7, wells MW-2 and MW-3 at 1721 Webster Street were resurveyed to another benchmark using a NGVD 29 datum rather than the City of Oakland 1929 datum; the resultant well casing elevations were three feet higher than previously surveyed. Adjusted groundwater elevation data for wells MW-2 and MW-3 using this alternate benchmark elevation is presented below in Table B.

Figure 3 shows cross-section A-A' with adjusted groundwater elevations for wells MW-2 and MW-3. This adjusted elevation data suggests that the down/crossgradient direction of groundwater flow is actually slightly *toward* 1750 Webster rather than *from* 1750 Webster. Regardless of this gradient information, the benzene concentration data suggests the detected hydrocarbons are from separate releases.

**Table B – Adjusted Groundwater Elevation for 1721 Webster Wells**

Monitoring Well	Date	Groundwater Elevation (ft msl)	Survey Benchmark Elevation and Datum
MW-3	08/11/1998	12.61 (highest)	32.25 ft msl – 1929 NGVD
MW-2	08/11/1998	11.99	32.25 ft msl – 1929 NGVD
A-3	08/04/1998	11.66	32.25 ft msl – 1929 NGVD
A-1	08/04/1998	10.40 (lowest)	32.25 ft msl – 1929 NGVD

**LETTER COMMENT #4 – PREFERENTIAL PATHWAY EVALUATION**

As with Comment #3, our December 15, 2010 email also informed your agency about the preferential pathway evaluation presented in the August 8, 2000 *Conduit Study and File Review Report*. The conduit study concludes that hydrocarbon or MTBE migration from the subject site via trench backfill or conduits is *not* occurring. In general, all potential conduits are approximately 5 feet or more above site groundwater.

**FIVE YEAR REVIEW BY UST CLEANUP FUND**

Pangea and the ACEH also discussed the Five Year Review from the Fund dated December 2, 2010. The Fund review requested a Site Conceptual Model, Risk Assessment and Sensitive Receptor Survey. Pangea noted that the above work has already been performed in some fashion for this site, and that the Fund relied upon incomplete or incorrect well screen data for preparing their recommendation (the monitoring wells are not submerged). Select monitoring wells can be partially submerged at times but this should not affect the overall representativeness of the groundwater data. The approximate well screen intervals are shown on Table A. Since the monitoring wells are not submerged and since requested work has been performed in some fashion, perhaps the Fund would revise their recommendations.

## **PROPOSED REMEDIATION AND ASSESSMENT**

Based on the above information, Pangea believes the offsite hydrocarbons are from another source and that future remediation for 1721 Webster Street focus on the hydrocarbon impact near the former USTs and well MW-2. Therefore, in response to requests from the ACEH and Cleanup Fund, Pangea recommends the following tasks to help facilitate regulatory case closure in the near future:

- Implementation of enhanced site remediation for additional source removal;
- Soil gas sampling after enhanced remediation to confirm that residual petroleum hydrocarbons do not pose a vapor intrusion concern for buildings north of Webster Street;
- Sampling well AS-1 to confirm remediation of historic elevated benzene concentrations; and
- A well survey to help identify any potential sensitive receptors.

Note that the January 2011 monitoring results show a concentration rebound in key well MW-2 following shutdown of the AS and SVE systems in July 2010 and October 2010, respectively. Seasonal variations could also contribute to the concentration rebound. These observations suggest that additional remediation is merited to target residual hydrocarbon source material.

### **Proposed Assessment**

Pangea proposes to sample well AS-1 during the next routine groundwater monitoring event.

Pangea proposes to conduct a well survey soon after regulatory approval. The well survey will involve review of available records from the California Department of Water Resources (DWR) and the Alameda County Public Works Agency (ACPWA). Due to the commercial zoning in the site vicinity, Pangea does not propose a door-to-door well survey.

Following enhanced remediation, Pangea proposes soil gas sampling to help confirm that residual petroleum hydrocarbons do not pose a vapor intrusion concern for buildings north of Webster Street and near the contaminant source area. Several small businesses are located along the northern sidewalk of Webster Street adjacent the former UST area.

### **Evaluation of Remedial Alternatives**

The Cleanup Fund's 5 Year Review recommended an evaluation of remedial technologies prior to implementing 'current system modifications', which presumably refers to the SVE and AS system expansion proposed in the March 5, 2009 *Investigation and Remediation Workplan*. To facilitate selection of cost effective remediation enhancement, Pangea provides this brief evaluation of remedial techniques.

#### Expansion of the Existing SVE/AS System

The March 5, 2009 *Investigation and Remediation Workplan* proposed installation of additional SVE and AS wells. The expansion would include the installation of new wells SVE-3 and AS-5 and AS-6. Due to limited impact near well MW-3, Pangea would not expand the SVE/AS system using previously proposed wells SVE-2 and AS-4 to help control cost. This approach would require well installation, trenching within the sidewalk, and underground piping to the new wells. Pangea recommends a lower cost approach described below.

### Ozone Sparging

In the *Groundwater Monitoring and Remediation Summary Report- First Half 2010*, Pangea proposed a 30-day pilot test of ozone sparging using the existing sparge wells, existing piping, and existing electrical service. Ozone sparging could oxidize source area hydrocarbons and enhance dissolved oxygen to encourage biodegradation of downgradient hydrocarbons (dissolved oxygen concentrations in site wells, including MW-2 and MW-3, are regularly <1.0 mg/L). Pangea would monitor MW-2 for dissolved oxygen, oxidation-reduction potential, and total heterotrophic bacteria. Monthly monitoring of downgradient well MW-2 would also be performed to evaluate remedial effectiveness and potential formation of hexavalent chromium or bromate.

An ozone sparging test would require modification to the existing piping (use Teflon tubing) and potential equipment removal to make room for the ozone equipment. To effectively remediate well MW-3 located further downgradient, expansion of the ozone sparging well network could be required, similar to the SVE/AS expansion proposed in the March 5, 2009 *Investigation and Remediation Workplan*.

Pangea recommends a lower cost approach described below.

### InSitu Chemical Oxidation

InSitu Chemical Oxidation (ISCO) can be an effective technology for remediating petroleum hydrocarbons in saturated soil and groundwater. Through the process of oxidation, soil and groundwater contaminants are ultimately broken down into carbon dioxide and water. Some oxidants are stronger than others. The effectiveness of ISCO is dependent upon many factors, including stoichiometry, kinetics, and thermodynamics. A major factor is the ability to deliver the oxidant for contact with the contaminant molecules in the ground. Bench-scale testing is often performed to optimize selection of the oxidants and catalysts for ISCO. The testing also helps evaluate the potential formation of deleterious compounds such as hexavalent chromium and bromate. Possible oxidants, catalysts, and additives for ISCO with petroleum hydrocarbons include hydrogen peroxide, calcium peroxide, sodium persulfate, ozone, iron (for Fenton's Reagent with hydrogen peroxide), and citric acid. ISCO could also rely upon chemical additive stabilizers, inhibitors, pH buffers, surfactants, and biological agents.

To target the contaminant extent at this site, ISCO could be performed in existing wells and via temporary injection points. To maximize ISCO effectiveness at this site, bench-scale testing (which requires the collection of impacted soil) and temporary injection points could be merited. Pangea recommends a lower cost approach described below.

### Enhanced Biodegradation using Bio-Organic Catalyst

The persistence of petroleum hydrocarbons despite oxygenation by air sparging suggests that the natural attenuation/biodegradation of contaminants at this site is very slow. A bio-organic catalyst may be used to cost effectively increase the effectiveness of the existing SVE and AS system. According to product literature in Appendix D, "NONTOX™-TPH Eliminator" is a highly concentrated bio-organic catalyst (BOC) in liquid form designed to accelerate the biodegradation rates of petroleum hydrocarbons. Petroleum hydrocarbons are decomposed, eventually degrading to carbon dioxide and water as end products. NONTOX™ is non-toxic, 100% biodegradable, and safe to human, animals and plant life. NONTOX™ is mostly water, proteins, and enzymes derived from plant and mineral sources. NONTOX™ works in concert with indigenous bacteria. NONTOX™ behaves similar to a surfactant and forms small bubbles when agitated by air injection (or shaking of product within a jar or treatment cell).

NONTOX™ is primarily comprised of enzymes derived from yeast. NONTOX™ has been used effectively on open water spills of petroleum crude oil. Product literature for NONTOX™ is included in Appendix D.

For this site, NONTOX™ could be injected into existing wells and dispersed further into the subsurface using the existing AS system. The NONTOX™ should help biodegrade the recalcitrant the longer-chain TPHg molecules in site groundwater and adsorbed to site soil. NONTOX™ reportedly decreases surface tension to help distribute the blend of oxygen and enzymes/proteins. The small bubbles formed by the NONTOX™ reportedly forms tiny bubbles should help transport oxygen throughout the subsurface. Bringing the enzymes, oxygen and contaminants together is the key to accelerated biodegradation achieved by NONTOX™. Initial NONTOX™ use can be performed and monitoring using existing wells. Due to the relatively low cost of NONTOX™ and the use of the existing wells and AS system, Pangea recommends implementation of this technique as described below.

### **Proposed Remediation**

Based on the above evaluation of applicable remediation techniques, Pangea proposes to enhance biodegradation using a relatively new and understudied bio-organic catalyst product called NONTOX™-TPH Eliminator. NONTOX™ is a low-cost, innovative and 'green' product with potential applicability for a wide range of sites impacted by petroleum hydrocarbons. Pangea is currently using NONTOX™ at one site and has proposed use at other sites. If successful, this remedial technology may be able to help control remediation costs across the state of California where reimbursement from the UST Cleanup Fund is increasingly limited.

For this site, NONTOX™ will be injected into existing wells and dispersed further into the subsurface using the existing AS system. Pangea plans to procure 55 gallons of the NONTOX™ (approximately \$3,500) for batch treatment within site wells. Additional NONTOX™ may be purchased only after initial monitoring of remedial effectiveness. The NONTOX™ will primarily be injected into existing well AS-2, but will also be injected into wells AS-1, AS-2, SVE-1 and MW-3. Pangea will initially inject approximately 5 gallons of NONTOX™ into each of these 5 wells, followed by flushing/dispersion with approximately 25 gallons of water. On a weekly basis thereafter for three weeks, Pangea will inject another 5 gallons of NONTOX™ into well AS-2 (with water flush). This yields a total NONTOX™ injection of 40 gallons (20 gallons for AS-2 and 5 gallons each for wells AS-1, SVE-1 and MW-3).

The radius of effectiveness of NONTOX™ injection will be initially evaluated by monitoring of key well MW-2 located approximately 20 ft horizontally from well AS-2. After two months of radius of influence monitoring within MW-2, NONTOX™ will also be injected into well MW-2 for enhanced site remediation. On a weekly basis for three weeks, Pangea will inject 5 gallons of NONTOX™ into well MW-2 (with water flush). This yields a total NONTOX™ injection of 50 gallons: 15 gallons for MW-2, 20 gallons for AS-2, and 5 gallons each for AS-1, SVE-1 and MW-3.

To evaluate NONTOX™ remediation, Pangea will monitor wells MW-2 and MW-3 before NONTOX™ injection, monthly for three months, and quarterly for one year (or as otherwise directed). Wells MW-2 and MW-3 will be monitored for the following parameters:

Cross Section and Response to Agency Letter  
Douglas Parking Company  
1721 Webster Street, Oakland, CA  
March 23, 2011

- Petroleum hydrocarbons (TPHg/BTEX/MTBE);
- Dissolved oxygen (DO);
- Oxidation Reduction Potential (ORP); and
- Hydrocarbon-degrading heterotropic bacteria.

Pangea will also monitor for the presence of NONTOX™ using visual indicators (pale amber water color and foam/bubbles in shaken sample), since NONTOX™ makes water cloudy and acts like a surfactant. Pangea will also submit a NONTOX™ sample to an analytical laboratory to identify an appropriate analytical technique for evaluating (and hopefully quantifying) the presence of NONTOX™ in a groundwater sample. Based on initial discussions the laboratory suspects an alcohol analysis may be performed to determine the presence of NONTOX™.

## CLOSING

If you have any questions, please call me at (510) 435-8664 or email [briddell@pangeaenv.com](mailto:briddell@pangeaenv.com).

Sincerely,  
Pangea Environmental Services, Inc.



Bob Clark-Riddell, PE  
Principal Engineer



cc: Mr. Lee Douglas, Douglas Parking Company, 1721 Webster Street, Oakland, California 94612  
SWRCB Geotracker Database (electronic copy)

## ATTACHMENTS

Figure 1 – Monitoring Well and Boring Location Map

Figure 2 – Geologic Cross Section A-A' Showing Benzene Distribution in Groundwater

Figure 3 – Geologic Cross Section A-A' Showing Benzene Distribution in Groundwater with adjusted Groundwater Elevations

Table 1 – Well Construction Details

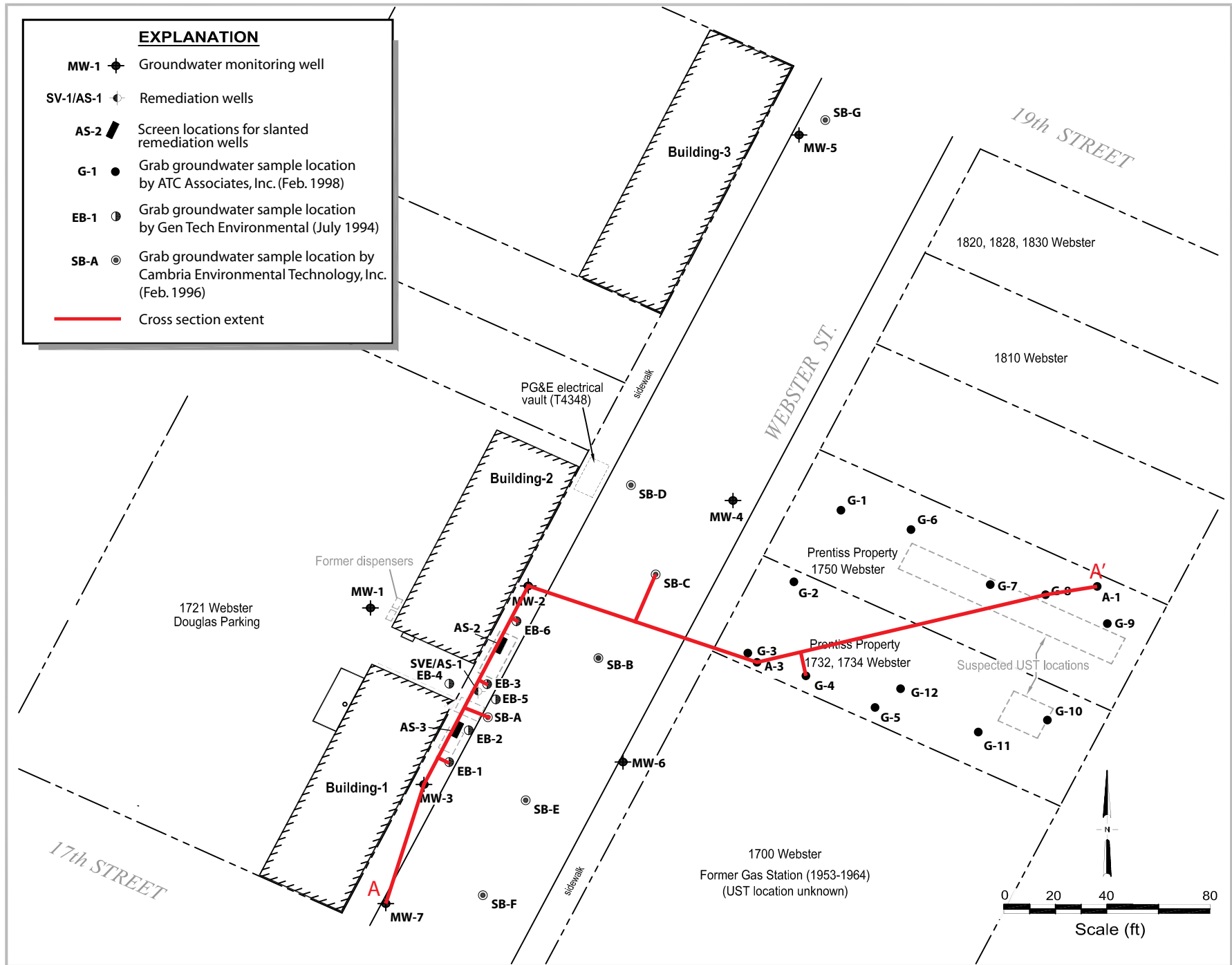
Appendix A – Historic Benzene Isoconcentration Maps

Appendix B – Well Elevation Survey Reports

Appendix C – Boring Logs and Well Construction Details

Appendix D – Product Literature for NONTOX™ – TPH Eliminator



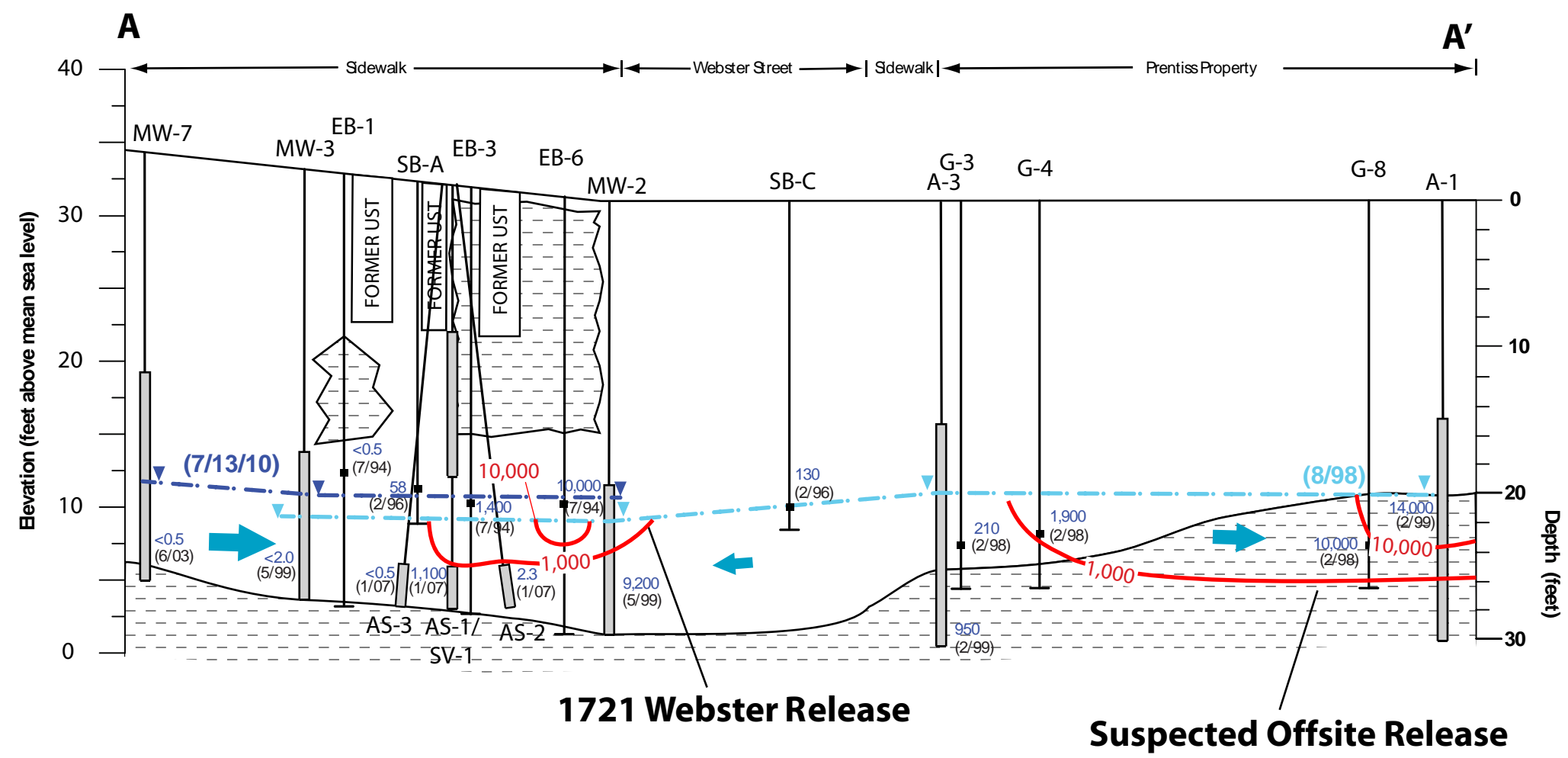


**Douglas Parking**  
 1721 Webster Street  
 Oakland, California



**Monitoring Well and Boring Location Map**

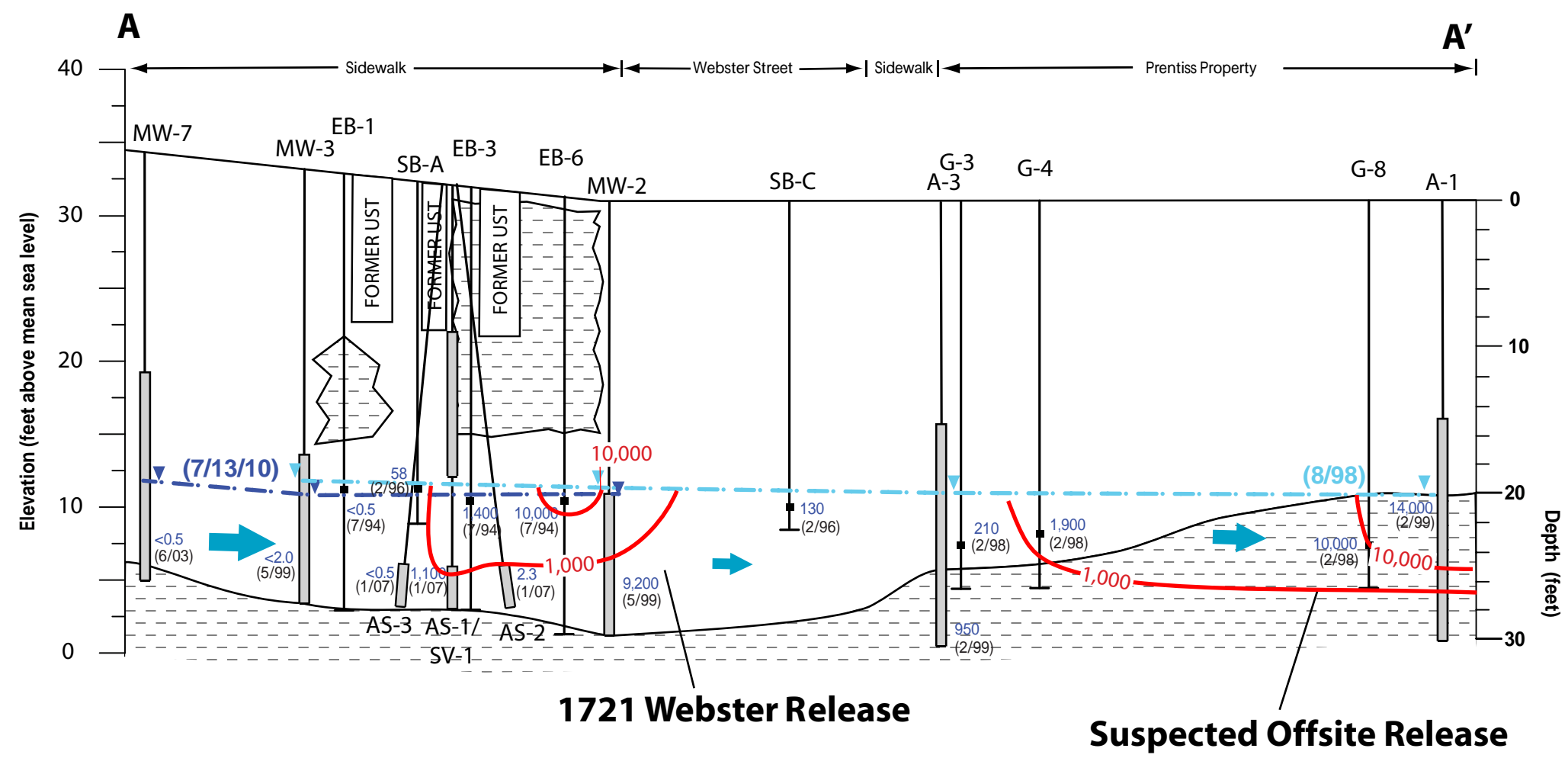
FIGURE  
**1**



EXPLANATION	
	Coarse (Sands)
	Fine (Silt or Clay)
	Benzene isoconcentration contours
	Static groundwater elevation piezometric surface (July 2010)
	Static groundwater elevation piezometric surface (August 1998)
	Groundwater gradient with respect to cross section; large arrow represents downgradient, small arrow crossgradient.
	MW-3 9,200 (5/99) Groundwater monitoring well
	EB-1 210 (2/98) Soil boring showing approximate groundwater sample location, first encountered groundwater
	210 (2/98) Benzene concentrations in grab groundwater (sample date, µg/L)

Vertical Exaggeration  
1:4  
Horizontal Scale in Feet  
0 20 40

Figure  
**2**



EXPLANATION	
	Coarse (Sands)
	Fine (Silt or Clay)
	Benzene isoconcentration contours
	Static groundwater elevation piezometric surface (July 2010)
	Static groundwater elevation piezometric surface (August 1998)
	Groundwater gradient with respect to cross section; large arrow represents downgradient, small arrow crossgradient.
	Groundwater monitoring well
	Benzene concentrations in well groundwater (sample date, µg/L)
	Soil boring showing approximate groundwater sample location, first encountered groundwater
	Benzene concentrations in grab groundwater (sample date, µg/L)

Vertical Exaggeration  
1:4  
Horizontal  
Scale in Feet

Figure  
**3**

**Table 1 - Groundwater Monitoring Program**  
Douglas Parking Company, 1721 Webster Street, Oakland, CA.

Well ID	Well Type	Screened Interval (ft bgs)	Well Location for Monitoring	Casing Diam. (in)	Gauge Frequency	Sample Frequency	TPHg/BTEX/MTBE	TAME/TBA/DIPE/ETBE/MTBE
<b>Onsite Monitoring and Remediation Wells</b>								
MW-1	Mon	17-30	Source Area	2	1st, 3rd	1st	1st	---
MW-2	Mon	19.5-29.5	Downgradient	2	1st, 3rd	1st, 3rd	1st, 3rd	---
MW-3	Mon	20-30	Upgradient	2	1st, 3rd	1st, 3rd	1st, 3rd	---
AS-1	Rem	27-30	Source Area	1	---	---	---	---
AS-2	Rem	27-30	Source Area	2	---	---	---	---
AS-3	Rem	27-30	Source Area	2	---	---	---	---
<b>Offsite Monitoring Wells</b>								
MW-4	Mon	15-30	Mid-Downgradient	2	1st, 3rd	1st, 3rd	1st, 3rd	---
MW-5	Mon	10-25	Downgradient	2	1st, 3rd	1st	1st	---
MW-6	Mon	15-30	Crossgradient	2	1st, 3rd	1st, 3rd	1st, 3rd	---
MW-7	Mon	15-30	Upgradient	2	1st, 3rd	1st	1st	---

Notes and Abbreviations:

1st = Sampled during the 1st quarter, typically January

1st, 3rd = Sampled during the 1st and 3rd quarters, typically January and July

Mon = Groundwater Monitoring Only

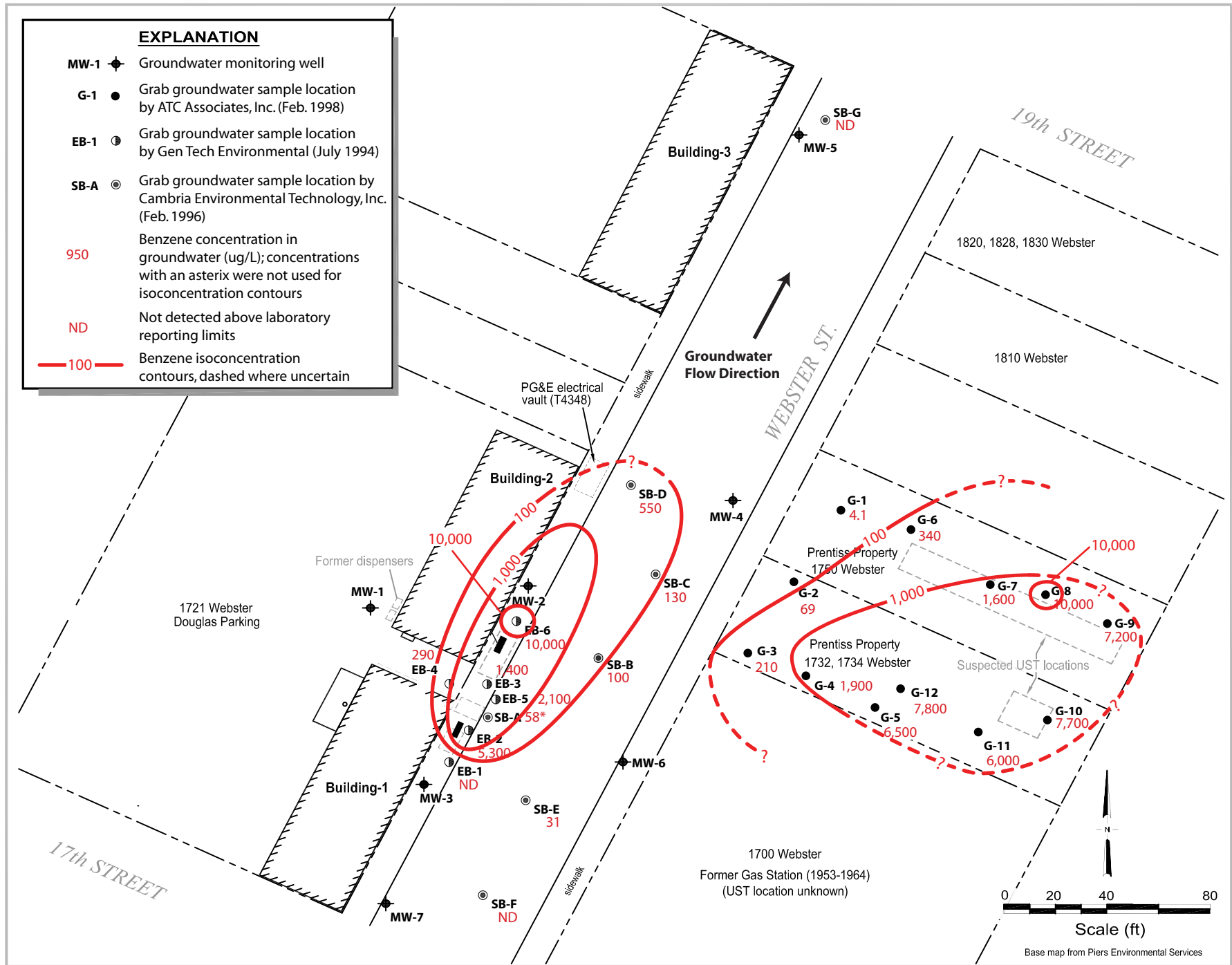
Rem= Remediation Well Only

--- = None or not applicable

AS-1 = Air Sparging Well

## **APPENDIX A**

### Historical Benzene Isoconcentration Maps

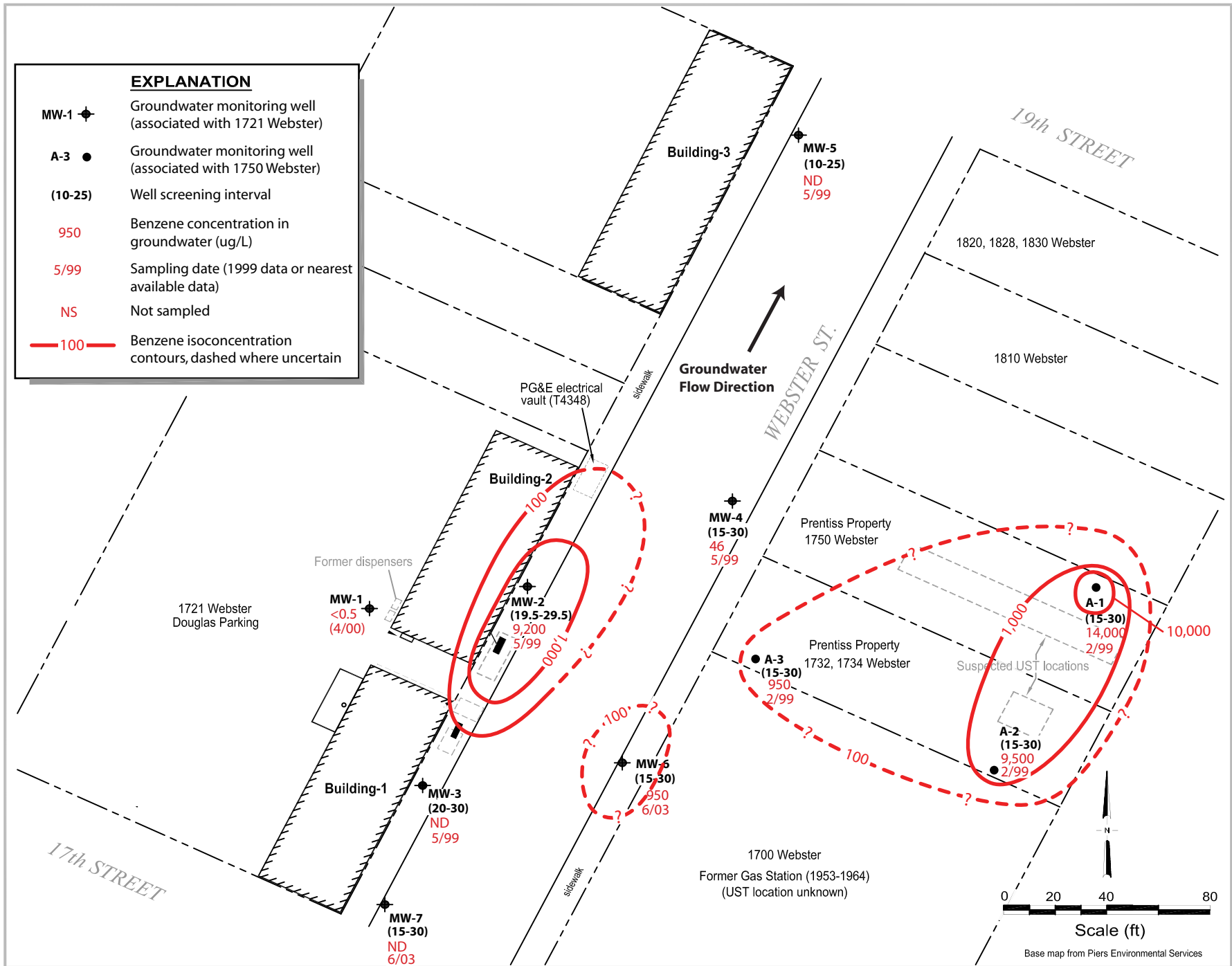


**Douglas Parking**  
 1721 Webster Street  
 Oakland, California



**Benzene Isoconcentration Map - Grab Sampling Data July 1994 to February 1998**

FIGURE 2



**Douglas Parking**  
1721 Webster Street  
Oakland, California



**Benzene Isoconcentration Map - Well Data 1999**

**FIGURE 3**

## **APPENDIX B**

Well Elevation Survey Reports



**L. WADE HAMMOND**  
*Land Surveyor*  
6310 THORNTON AVENUE  
NEWARK, CA 94560  
Tel: 510-796-2624      FAX 510-790-2650

May 16, 1996

**Cambria Environmental Technology, Inc.**

**Attn: John Espinoza**

1144 65th St. Suite C

Oakland, CA 94608

Tel: 510-420-0700 Fax: 510-420-9170

**Subject: 1721 Webster St., Oakland**

Dear Mr. Espinoza:

I have completed the well elevation survey at the above site.

The results are as follows:

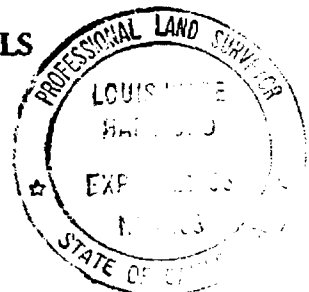
<u>Well</u>	<u>Top PVC Casing Elevation</u>	<u>Rim Elevation</u>
MW-4	25.29	25.64
MW-5	21.97	22.22

**Benchmark: City of Oakland #3893 - Cut Square at the mid point of the return at  
the southwest corner of 17th and Harrison st.  
Elevation: 29.25      City of Oakland 1929 NGVD**

Very truly,



L. Wade Hammond PLS



# RON ARCHER

CIVIL ENGINEER, INC.

CONSULTING • PLANNING • DESIGN • SURVEYING

4133 Mohr Ave., Suite E • Pleasanton, CA 94566  
(510) 462-9372 • FAX (510) 462-4454



APRIL 28, 1998

JOB No.2601

ELEVATIONS OF EXISTING MONITORING WELLS AT THE PROPERTY LOCATED AT 1750, 1734 / 1732, WEBSTER STREET, CITY OF OAKLAND, ALAMEDA COUNTY CALIFORNIA.

FOR: ATC ASSOCIATES INC.

**BENCHMARK:**

A FOUND SQUARE CUT IN THE TOP OF THE CONCRETE CURB AT MID RETURN, AT THE SOUTHWESTERLY CORNER OF THE INTERSECTION OF 17<sup>TH</sup> STREET WITH HARRISON STREET. ELEVATION TAKEN AS 32.25 M.S.L. (N.G.V.D.)

## MONITORING WELL DATA TABLE

	WELL DESIGNATION	TOP OF CASING ELEVATION	TOP OF BOX ELEVATION
A-1	MW-1	30.20	30.89
A-2	MW-2	31.31	31.84
A-3	MW-3	30.71	31.42

**Virgil Chavez Land Surveying**

312 Georgia Street, Suite 225  
Vallejo, California 94590-5907  
(707) 553-2476 • Fax (707) 553-8698

August 6, 2003  
Project No.: 2216-20

Mary Holland-Ford  
Cambria Environmental  
5900 Hollis Street, Suite A  
Emeryville, CA 94608

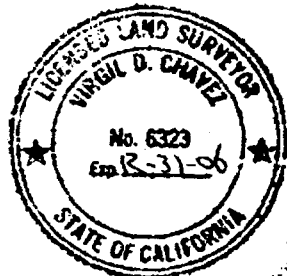
Subject: Monitoring Well Survey  
Douglas Parking Facility  
1721 Webster Street  
Oakland, CA

Dear Mary:

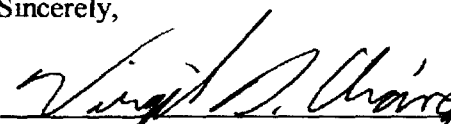
This is to confirm that we have proceeded at your request to survey the ground water monitoring wells located at the above referenced location. The survey was completed on July 31, 2003. The benchmark for this survey was a cut "X" in the top of curb near the southwest return of the northwest corner of 34<sup>th</sup> and Broadway. The latitude, longitude and coordinates are for top of casings and are based on the California State Coordinate System, Zone III (NAD83).

Benchmark Elevation = 60.40 feet (NGVD 29).

<u>Latitude</u>	<u>Longitude</u>	<u>Northing</u>	<u>Easting</u>	<u>Elev.</u>	<u>Desc.</u>
				33.05	RIM MW-1
37.8061963	-122.2673331	2120837.19	6051114.42	32.75	TOC MW-1
				30.69	RIM MW-2
37.8062282	-122.2671334	2120847.71	6051172.31	30.40	TOC MW-2
				32.89	RIM MW-3
37.8059870	-122.2672754	2120760.65	6051129.63	32.56	TOC MW-3
				28.64	RIM MW-4
37.8063276	-122.2668660	2120882.42	6051250.23	28.29	TOC MW-4
				25.23	RIM MW-5
37.8067201	-122.2667981	2121024.97	6051272.54	24.99	TOC MW-5
				31.37	RIM MW-6
37.8060253	-122.2670352	2120773.30	6051199.28	30.99	TOC MW-6
				33.82	RIM MW-7
37.8058274	-122.2673310	2120702.86	6051112.48	33.11	TOC MW-7



Sincerely,

  
Virgil D. Chavez, PLS 6323

## **APPENDIX C**

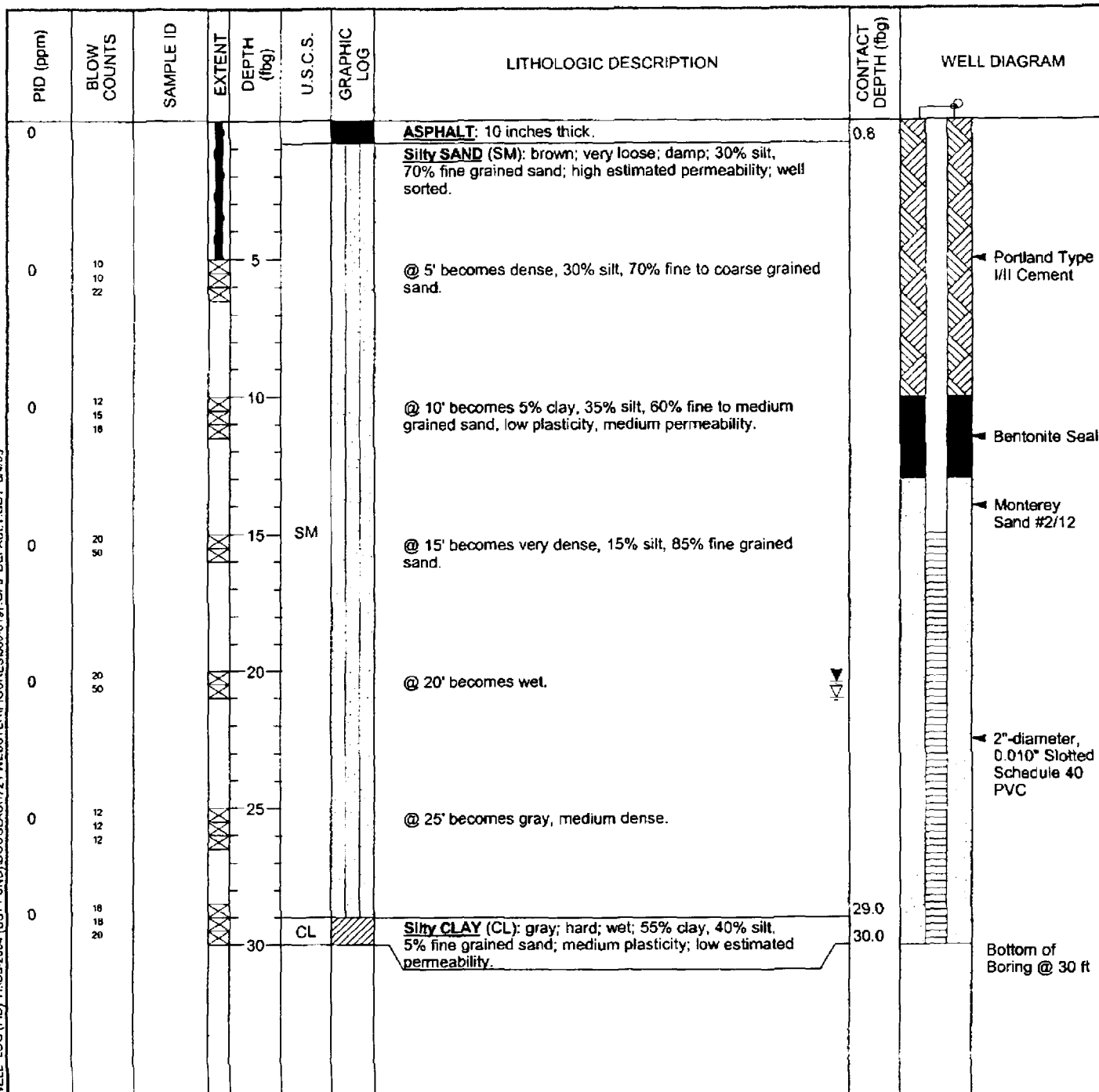
### Boring Logs and Well Construction Details



Cambria Environmental Technology, Inc.  
 5900 Hollis Street, Suite A  
 Emeryville, CA 94608  
 Telephone: (510) 420-0700  
 Fax: (510) 420-9170

# BORING/WELL LOG

<b>CLIENT NAME</b>	Douglas Parking Company	<b>BORING/WELL NAME</b>	MW-7
<b>JOB/SITE NAME</b>	Webster	<b>DRILLING STARTED</b>	27-Jun-03
<b>LOCATION</b>	1721 Webster Street, Oakland, CA.	<b>DRILLING COMPLETED</b>	27-Jun-03
<b>PROJECT NUMBER</b>	580-0197	<b>WELL DEVELOPMENT DATE (YIELD)</b>	30-Jun-03 (10 gallons)
<b>DRILLER</b>	Woodward Drilling	<b>GROUND SURFACE ELEVATION</b>	Not Surveyed
<b>DRILLING METHOD</b>	Hollow-stem auger	<b>TOP OF CASING ELEVATION</b>	NA
<b>BORING DIAMETER</b>	8"	<b>SCREENED INTERVAL</b>	15 to 30 ft bgs
<b>LOGGED BY</b>	R. Fennell	<b>DEPTH TO WATER (First Encountered)</b>	21.0 ft (27-Jun-03) ▼
<b>REVIEWED BY</b>	Mary C. Holland-Ford R.G. #7551	<b>DEPTH TO WATER (Static)</b>	20.40 ft (27-Jun-03) ▼
<b>REMARKS</b>	Hand augered to 5' bgs.		



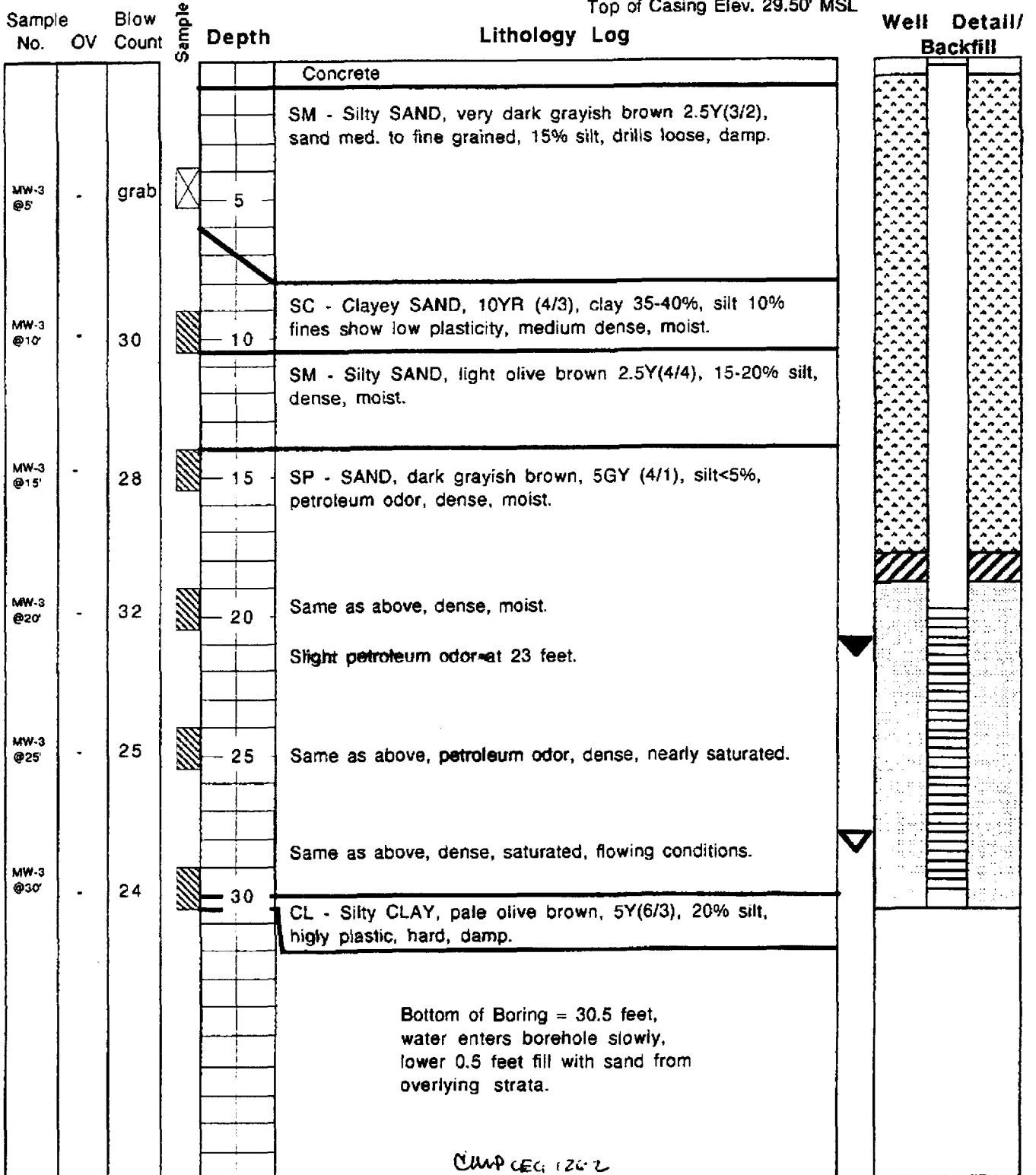
WELL LOG (PID) H:\SB-2004 (UST FUND)\DOUGLAS\1721 WEBSTER\GURES\580-0197.GPJ DEFAULT.GDT 8/4/03

**Gen Tech Environmental, Inc. San Jose, CA**

**Exploratory Boring Log**

**Project No.** 9432 **Boring/Well No.** MW-3  
**Client:** Douglas Parking **Date Drilled:** Sept. 8, 1994  
**Location:** 1721 Webster St., Oakland, CA **Logged by:** EL  
**Drilling Method:** Hollowstem **Permit:** Zone 7 #94501  
**Water Levels:** 1st Enc: 28.20' Static: 21.60'

**Borehole Completion**  
 Well Installed: 2" dia. Sch 40 PVC  
 Total Depth: 30.5' Casing Depth: 30'  
 Screen Length: 10' 0.020" Blank Length: 20'  
 Top Sand Pack: 19' Top Bentonite: 18'  
 Grout Seal: 18' to 0.5' vault box  
 Top of Casing Elev. 29.50' MSL



Project No. 9432 Boring/Well No. EB-1  
 Client: Douglas Parking Date Drilled: July 8, 1994  
 Location: 1721 Webster St., Oakland, CA Logged by: EL  
 Drilling Method: Hollowstem Permit: Zone 7 borings  
 Water Levels: 1st Enc: 24' Static: 21.5'

Borehole Completion  
 Well Installed: No  
 Total Depth: 30.5 feet  
 Grout Seal: 30' to surface

Sample No.	Blow No. OV	Blow Count	Sample	Depth	Lithology Log	Well Detail/Backfill
					Concrete and subgrade	
EB-1 @ 5'	-	grab	⊗	5	SM - Silty SAND, very dark grayish brown 10YR(3/2), up to 5% fine gravel to coarse sand, drills dense, damp.  color change to dark yellowish brown 10YR4/6, 15% clay, 20% silt, drills dense, damp.  driller calls change at 8 feet.	
EB-1 @ 10'	-	50 for 6"	▨	10	CL - Sandy CLAY, dark yellowish brown 10YR(4/6), 15% silt 25% sand, low-med. plasticity, rare burrows, oxidation mottling, hard, damp.	
EB-1 @ 15'	-	82	▨	15	SP - SAND, light olive brown 2.5Y(5/4), very fine to med. grained, very dense, damp to moist.	
EB-1 @ 20'	-	50 for 6"	▨	20	color change to dark greenish gray discoloration 2.5Y(5/4), slight petroleum odor, very dense, moist.  driller calls water at 24 feet.	▼
EB-1 @ 25'	-	60	▨	25	same as above, sheen on water, very dense, saturated.	▼
EB-1 @ 30'	-	24/50 for 6"	▨	30	same as above, flowing conditions.	
					CL - Silty CLAY, light olive brown 2.5Y(5/4), 15% silt, 20% fine to med grained sand, low-med. plasticity, contaminants not observed, hard, damp.	
					Bottom of Boring = 30.5 feet, sand flows into lower 0.5 feet.	

QAMP CEC 126 Z

Depth Feet	Blow Count	Sample Interval	Lithologic Description	TPHg (ppm)	Graphic Log	Boring Completion Graphics	Depth Feet	Additional Comments
0	Ground Surface		<b>ASPHALT</b>				0	
5			<b>Silty SAND; (SM);</b> grey to brown; damp to moist; 30% silt, 70% fine to medium grained sand; moderate estimated permeability				5	
10							10	
15			<b>SAND; (SP);</b> grey to brown; moist; 10% silt, 90% medium grained sand; high estimated permeability				15	
20				nd			20	
25							25	
30							30	Bottom of boring

Driller <b>Vironex</b>	Drilling Started <b>2/22/96</b>	Notes: <b>Webster Street in #4 lane</b>
Logged By <b>JME</b>	Drilling Completed <b>2/22/96</b>	<b>near site entrance</b>
Water-Bearing Zones <b>NA</b>	Grout Type <b>Portland Type I/II</b>	

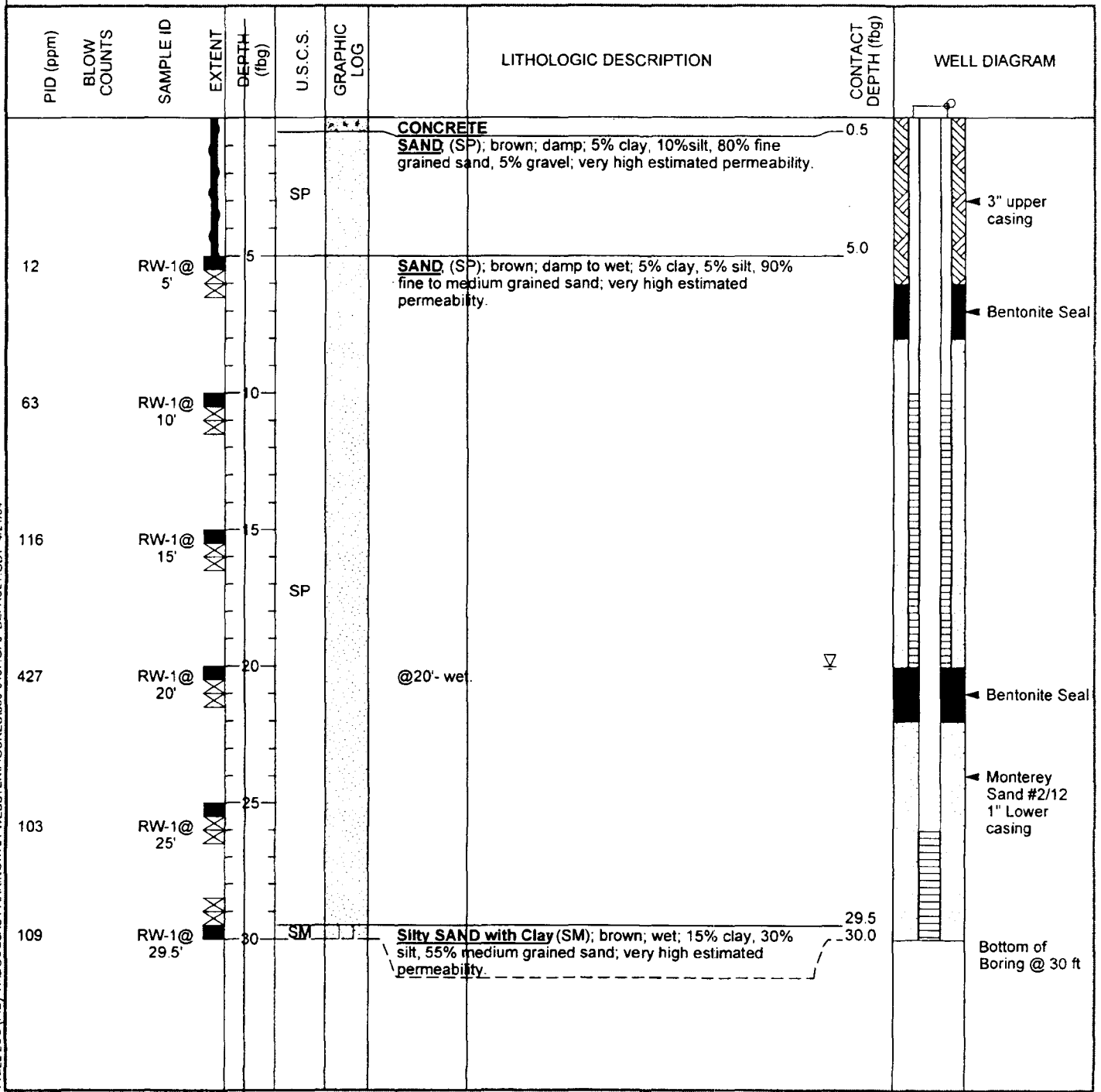




Cambria Environmental Technology, Inc.  
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# BORING/WELL LOG

<b>CLIENT NAME</b>	Douglas Parking Company	<b>BORING/WELL NAME</b>	SV-1/AS-1 (formerly RW-1)
<b>JOB/SITE NAME</b>	Webster	<b>DRILLING STARTED</b>	04-Mar-00
<b>LOCATION</b>	1721 Webster Street, Oakland, CA.	<b>DRILLING COMPLETED</b>	04-Mar-00
<b>PROJECT NUMBER</b>	580-0197	<b>WELL DEVELOPMENT DATE (YIELD)</b>	NA
<b>DRILLER</b>	Gregg Drilling	<b>GROUND SURFACE ELEVATION</b>	Not Surveyed
<b>DRILLING METHOD</b>	Hollow-stem auger Limited Access Rhino	<b>TOP OF CASING ELEVATION</b>	NA
<b>BORING DIAMETER</b>	8"	<b>SCREENED INTERVAL</b>	NA
<b>LOGGED BY</b>	J. Riggi	<b>DEPTH TO WATER (First Encountered)</b>	20.0 ft (04-Mar-00)
<b>REVIEWED BY</b>	R. Clark-Riddell, PE# 49629	<b>DEPTH TO WATER (Static)</b>	NA
<b>REMARKS</b>	Hand Augered to 5' bgs., boring located in Webster street sidewalk in garage entrance. Well is a co-axial SVE/AS well.		



WELL LOG (PID) H:\DOUGLAS PARKING\1721 WEBSTER\FIGURES\580-0197.GPJ DEFAULT.GDT 4/21/04

Project No. 9432 Boring/Well No. EB-3  
 Client: Douglas Parking Date Drilled: July 8, 1994  
 Location: 1721 Webster St., Oakland, CA Logged by: EL  
 Drilling Method: Hollowstem Permit: Zone 7 borings  
 Water Levels: 1st Enc: 24' Static: 22'

Borehole Completion  
 Well Installed: No  
 Total Depth: 30'  
 Cement Grout Seal: 26' to surface

Sample No.	Blow No.	Blow Count	Sample	Depth	Lithology Log	Well Detail/ Backfill
					Concrete and subgrade	
EB-3 @ 5'	-	grab	⊗	5	CL - Sandy CLAY, olive 5Y(4/4), low plasticity, slight petroleum odor, drills soft, damp.	
EB-3 @ 10'	-	46	▨	10	sand interbed, 1.5' thick, slight petroleum odor,	
EB-3 @ 15'	-	54	▨	15	SP - SAND, dark yellowish brown 10YR(4/6), fine to med. grained, fines < 5%, dense, moist.	
EB-3 @ 20'	100 ppm	76	▨	20	same as above, moderate petroleum odor, dense, moist.	
EB-3 @ 25'	-	70	▨	25	same as above, sheen on water, very dense, saturated.	
EB-3 @ 30'	-	53	▨	30	CL - Silty CLAY, light olive brown 2.5Y(5/4), 40% silt, < 5% sand, med. plasticity, laminated, some burrows, hard, damp.	
					Bottom of Boring = 30 feet, flowing sand fills lower 4 feet	
					Han- Hanby Field Analytical Chemical Colorimetric Test for petroleum hydrocarbons in parts per million.	
					OLM CEC. 1262	

Project No. 9432 Boring/Well No. EB-6  
 Client: Douglas Parking Date Drilled: July 8, 1994  
 Location: 1721 Webster St., Oakland, CA Logged by: EL  
 Drilling Method: Hollowstem Permit: Zone 7 borings  
 Water Levels: 1st Enc: 24' Static: 21.50'

Borehole Completion  
 Well Installed: No  
 Total Depth: 30'  
 Cement Grout Seal: 28' to surface

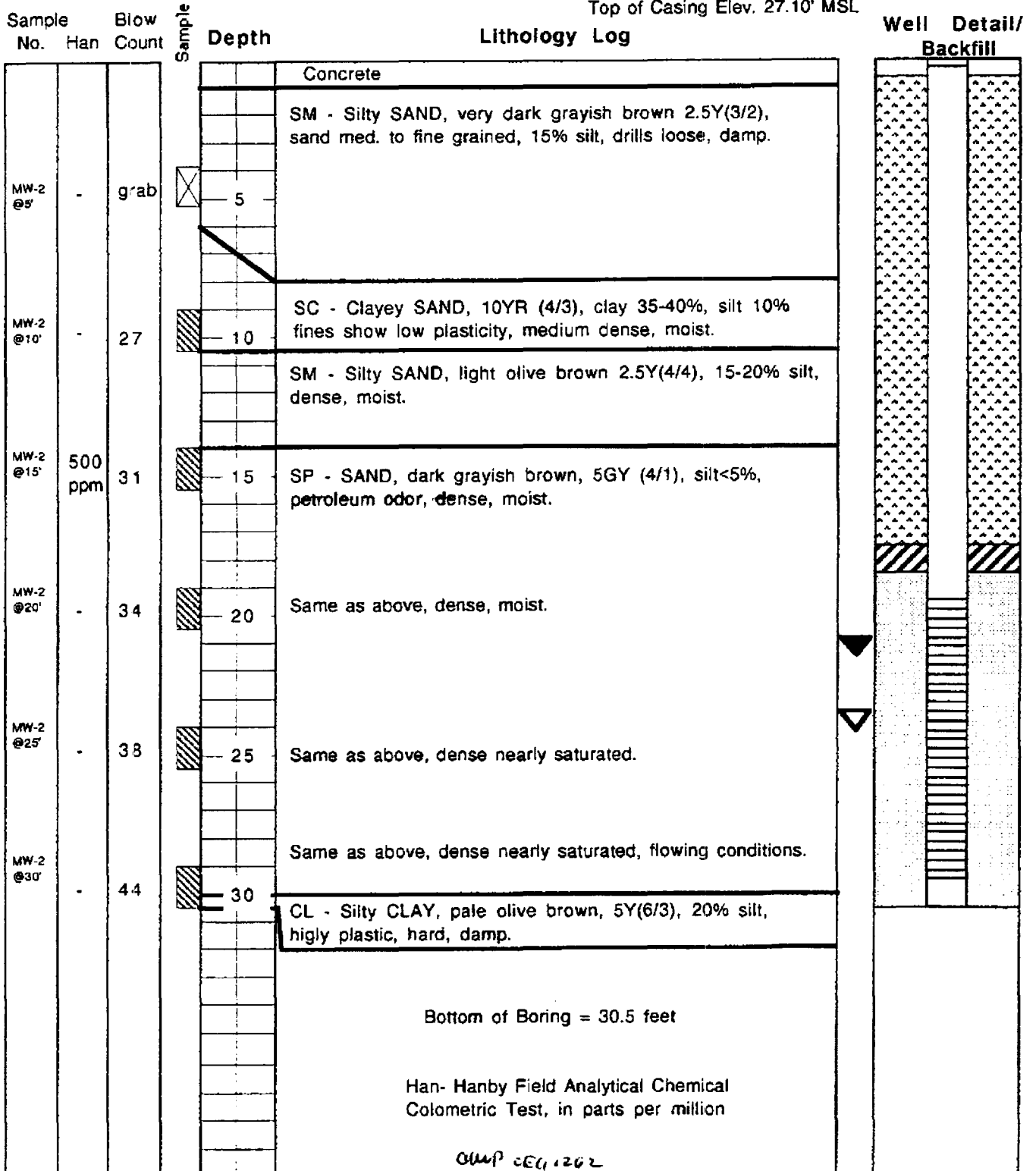
Sample No.	Blow No.	Blow Count	Sample	Depth	Lithology Log	Well Detail/Backfill
EB-6 @ 5'	-	grab	⊗	5	Concrete and subgrade  CL - Sandy CLAY, dark yellowish brown 10YR(4/4), 35% sand, med. plasticity, drills firm, damp.	
EB-6 @ 10'	-	42/50 for 3"	▨	10	same as above, color darkens to dark olive gray, slight petroleum odor, hard, damp.	
EB-6 @ 15'	-	50	▨	15	SP - SAND, olive 5Y(4/3), fine to med. grained, slight petroleum odor, dense to very dense, damp.	
EB-6 @ 20'	1000 ppm	57/50 for 5"	▨	20	same as above, stained dark bluish gray, strong petroleum odor, very dense, moist.	
EB-6 @ 25'	-	48	▨	25	same as above, strong petroleum odor, dense, saturated, flowing conditions.	
EB-6 @ 30'	-	51	▨	30	CL - Silty CLAY, pale olive, 5Y(6/3), laminated, 15% silt, highly plastic, hard, damp.	
					Bottom of Boring = 30 feet, flowing sand fills lower 2 feet	
					Han-Hanby Field Analytical Chemical Colometric Test for petroleum hydrocarbons in parts per million.	
					CMP & EG 1262	

**Gen Tech Environmental, Inc. San Jose, CA**

**Exploratory Boring Log**

**Project No. 9432 Boring/Well No. MW-2**  
**Client: Douglas Parking Date Drilled: Sept. 8, 1994**  
**Location: 1721 Webster St., Oakland, CA Logged by: EL**  
**Drilling Method: Hollowstem Permit: Zone 7 #94501**  
**Water Levels: 1st Enc: 24' Static: 20.1'**

**Borehole Completion**  
 Well Installed: 2" dia. Sch 40 PVC  
 Total Depth: 30.5 Casing Depth: 29.5  
 Screen Length: 10' 0.020" Blank Length: 19.5  
 Top Sand Pack: 18.5' Top Bentonite: 17.5'  
 Grout Seal: 17.5' to 0.5' vault box  
 Top of Casing Elev. 27.10' MSL



Depth Feet	Blow Count	Sample Interval	Lithologic Description	TPH9 (ppm)	Graphic Log	Boring Completion Graphics	Depth Feet	Additional Comments
0	Ground Surface		<b>ASPHALT</b>				0	
5			<b>Silty SAND:</b> (SM); brown; moist; 30% silt, 70% fine to medium grained sand; moderate estimated permeability				5	
10			wet				10	
15			<b>SAND:</b> (SP); brown; moist; 10% silt, 90% medium grained sand; high estimated permeability				15	
20			grey; wet	1.40			20	
25							25	
30							30	
								Bottom of boring

Driller <b>Vironex</b>	Drilling Started <b>2/22/96</b>	Notes: <b>Webster Street in #4 lane,</b>
Logged By <b>JME</b>	Drilling Completed <b>2/22/96</b>	<b>34' northeast of MW-2</b>
Water-Bearing Zones <b>NA</b>	Grout Type <b>Portland Type I/II</b>	

# ATC Environmental, Inc.

# WELL LOG

BORING NO: A-3

PROJECT NO: 61877.0004

PROJECT NAME: Prentiss Properties Ltd. Inc. CLIENT: Charles Sumner  
 PROJECT LOCATION: 1750 Webster St., Oakland, CA DRILLING CONTRACTOR: V&W  
 DRILLING MTHD: Hollow Stem Auger SAMPLE MTHD: Split Spoon; 6 inch sleeves  
 DATE STARTED: Apr 26, 1998 DATE FINISHED: Apr 26, 1998 DRILLER: Frank INSPECTOR: None

DEPTH (FT)	SPT BLOWS PER 6"	REC (%)	PID (ppm)	LITHOLOGY	SURFACE ELEVATION: NA		WELL CONST	REMARKS
					LITHOLOGIC DESCRIPTION			
0.0								Background PID = 0.4 ppm
5.0	8 8 10	95	414	LIQID	Fine grained Sand, SM, orange-brown, very moist (wet), loose, no odor, some clay, well sorted		[Pattern]	
					Sandy Clay, CL, orange-brown, moist, slightly stiff, some orange black mottling, no odor			
10.0	5 12 20	100	1713	[Pattern]	Fine grained Clayey Sand, SC, light brown, moist, moderately loose, well sorted		[Pattern]	Soil Sample A-3-11.5FT collected #12:30
15.0	30 50/5	50	756	[Pattern]	Fine grained Sand, SM, orange-brown, moist, loose, no odor, well sorted. At 18 Ft wet, color changes to grey-brown, no odor			
	12 50/5	50	246	[Pattern]				
	18 50/5	35	722	[Pattern]			[Pattern]	Soil sample A-3-17.5FT collected #12:37 Initial water level: 18 Ft
20.0	10 27 50/5	70	257	[Pattern]	Fine grained Clayey Sand, SC, light brown, very wet, loose, well sorted, odor			
25.0	5 10 15	100	912	[Pattern]	Sandy Clay, CL, light blue-grey, very wet, stiff, high plasticity, some well rounded gravels, some orange mottling, slight odor		[Pattern]	Geologist: Behram Zangeneh-Azad
	5 7 13	100	722	[Pattern]	Sandy Clay, CL, light brown, very wet, soft to very stiff, high plasticity, some gravels, slight odor			

<p>BOTTOM OF TEST BORING: 30.00'</p> <p>SPT = STANDARD PENETRATION TEST                  REC = SAMPLE RECOVERY                  ND = NON-DETECTABLE                  PID = FLAME IONIZATION DETECTOR                  PID = PHOTO-IONIZATION DETECTOR</p>	<p><b>WELL CONSTRUCTION</b></p> <p>WELL DIAM.: 2 inch                  CASING MATERIAL: Schedule 40 PVC                  SCREEN MATERIAL: Schedule 40 PVC                  SLOT SIZE: 0.01 inch                  METHOD: Hollow Stem Auger                  MONITORING WELL INSTALLED UPON COMPLETION</p>	<p> <input type="checkbox"/> OUTER CASING  <input checked="" type="checkbox"/> GROUT  <input checked="" type="checkbox"/> BENTONITE  <input checked="" type="checkbox"/> SAND  <input checked="" type="checkbox"/> SCREEN                 </p>	<p>PAGE: 1 OF 1</p>
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# ATC Environmental, Inc.

# BORING LOG

BORING NO: G-3

PROJECT NO: 61877.0002

PROJECT NAME: Prentiss Properties Ltd. Inc CLIENT: Charles Sumner

PROJECT LOCATION: 1750 Webster St., Oakland, CA DRILLING CONTRACTOR: V&W Drilling LOGGED BY: Bob Azem

DRILLING MTHD: Geoprobe SAMPLE MTHD: Geoprobe

DATE STARTED: Feb 7, 1998 DATE FINISHED: Feb 7, 1998 DRILLER: Robert Vickery INSPECTOR: None

DEPTH (FT)	SPT BLOWS PER 4"	REC (%)	PID (ppm)	RECOVERY	SURFACE ELEVATION: NA	REMARKS
					LITHOLOGIC DESCRIPTION	
0.0						Samples collected continuously as shown
1		100			Silty Sand, SM, dark grey, slightly moist, loose Color changes to orange/light brown at 2 ft	
5.0					Sandy Clay, CL, orange to light brown, slightly moist, high plasticity; 2 inch gravel lens at 5.5 ft	
2		100			Clayey Sand, SC, orange-brown, slightly moist, loose, some gravels, orange & brown spotted discolorations	
10.0					Silty Clay, CL, orange-brown, slightly moist, high plasticity, some gravels, orange-brown spotted discolorations	Soil sample G-3-10ft collected at 13:20
3		100	1		Clayey Sand, SC, light to orange brown, slightly moist, well sorted, no odor	
15.0		95			Sand, SM, orange-brown, slightly moist, well sorted, loose, wet at 19ft	The 13 to 15 ft section of soil fell out of the sample tube when it was being retrieved from the hole  Soil sample G-3-15ft collected at 13:40
5		95	5			Initial water level: 19 ft
20.0					Silty Clay, CL, dark grey, moist, medium plasticity, strong odor	Soil sample G-3-19ft collected at 14:00
6		95	2500		Sand, SM, dark grey, SM, wet, well graded, very strong odor throughout section	Soil sample G-3-22ft collected at 14:10
25.0						Water sample G-3 collected at 14:30. Silty, light grey  Boring sealed with grout, 1:6 ratio, 5% bentonite  Temporary 4 ft well screen (to 26ft to 28ft) used for sampling, pushed last 1 ft
30.0						

BOTTOM OF TEST BORING: 26.03'

SPT = STANDARD PENETRATION TEST  
 REC = SAMPLE RECOVERY  
 ND = NON-DETECTABLE  
 FID = FLAME IONIZATION DETECTOR  
 PID = PHOTO-IONIZATION DETECTOR

# ATC Environmental, Inc.

# BORING LOG

BORING NO: G-4

PROJECT NO: 61877.0002

PROJECT NAME: Prentiss Properties, Ltd., Inc.

CLIENT: Charles Sumner

PROJECT LOCATION: 1750 Hepster St., Oakland, CA

DRILLING CONTRACTOR: V&K Drilling

LOGGED BY: Bob Azam

DRILLING MTHD: Geoprobe

SAMPLE MTHD: Geoprobe

DATE STARTED: Feb 7, 1998

DATE FINISHED: Feb 7, 1998

DRILLER: Robert Vickery

INSPECTOR: None

DEPTH (FT)	SPT BLOWS PER 48"	REC (%)	PID (ppm)	FID (ppm)	SURFACE ELEVATION: NA		REMARKS
					LITHOLOGIC DESCRIPTION		
0.0							Samples collected continuously as shown
1.0	100					Clayey Sand, SC, brown, slightly moist, no odor	
5.0	100					Sandy Clay, CL, orange to light brown, slightly moist, low plasticity, no odor, orange & brown spotted discolorations	
10.0	85					Silty/sandy Clay, CL, light brown, slightly moist, stiff, medium to high plasticity, no odor, orange/brown spotted discolorations Slight odor from 11 Ft to 12 Ft	
15.0	100					Sand, SW, light orange-brown, slightly moist, loose, well graded, no odor	Sample G-4-12Ft collected at 15:15
20.0	100						Geoprobe hit obstacle at 15 Ft; moved boring 2 inches east and proceeded directly to 15 Ft depth with smaller 1-inch Geoprobe. PID battery is low, and getting "Fault" display: PID light source may be coated with water/soil particles
25.0	100					Clayey Sand, SC, dark grey, SC, moist, loose, well sorted, strong odor 6 inch lens of sand at 23 Ft, wet at 23 Ft, 2 inch lens of clay at 23.5 Ft	Final water level: 20.7 Ft measured with water level indicator Soil Sample G-4-22Ft collected at 16:15 Initial water level: 23 Ft Soil sample G-4-24Ft collected at 16:30 Water sample G-4 collected at 16:30. Silty, light grey Boring sealed with grout: 1:6 ratio, 5% bentonite Temporary 9Ft screen (@ 22Ft to 26Ft) used for sampling, pushed last 1 Ft
30.0							
BOTTOM OF TEST BORING 26.00'							
<p>SPT = STANDARD PENETRATION TEST            REC = SAMPLE RECOVERY            ND = NON-DETECTABLE            FID = FLAME IONIZATION DETECTOR            PID = PHOTO-IONIZATION DETECTOR</p>							



# ATC Environmental, Inc.

# BORING LOG

BORING NO: G-8

PROJECT NO: 61877.0002

PROJECT NAME: Prentiss Properties Ltd. Inc

CLIENT: Charles Sumner

PROJECT LOCATION: 1750 Webster St. Oakland, CA

DRILLING CONTRACTOR: V&W Drilling LOGGED BY: Bob Azam

DRILLING MTHD: Geoprobe

SAMPLE MTHD: Geoprobe, Acetate Sleeve

DATE STARTED: Feb 8, 1998

DATE FINISHED: Feb 8, 1998

DRILLER: Robert Vickery

INSPECTOR: None

DEPTH (FT)	SOIL CLASS	SPT BLOWS PER 48"	REC (%)	PID (ppm)	FID (ppm)	SURFACE ELEVATION: NA		REMARKS
						LITHOLOGIC DESCRIPTION		
0.0								Samples collected every 5 Ft as shown
5.0	1		100					Soil sample G-8-5ft collected at 10:45
								Clayey Sand, SC, orange-brown, slightly moist, loose, no odor
10.0	2		100					Soil sample G-8-12FT collected at 10:55
								Sandy Clay, CL, orange-brown, slightly moist, stiff, medium plasticity, no odor
15.0	3		100					Soil sample G-8-16ft collected at 11:00
								Sand, SW, orange-brown, slightly moist, loose, fine grained, no odor
20.0	4		100					Final water level: 19.3 measured with digital level and probe at 20 ft
								Soil sample G-8-20ft collected at 11:10
	5		100					Water sample G-8 collected at 11:30. Silty, grey, sheen, strong odor
								Boring sealed with grout: 1:6 ratio, 5% bentonite
								Temporary 4ft screen (#21 to 25ft) used for sampling, pushed last 1 ft
25.0								
								Sand, SW, dark grey, wet, loose, fine grained, loose, strong odor
								At 23 ft, color changes to black
30.0								
BOTTOM OF TEST BORING: 25.00'								
<p>SPT = STANDARD PENETRATION TEST            REC = SAMPLE RECOVERY            ND = NON-DETECTABLE            FID = FLAME IONIZATION DETECTOR            PID = PHOTO-IONIZATION DETECTOR</p>								

# ATC Environmental, Inc.

# WELL LOG

BORING NO: A-1

PROJECT NO: 61877 0004

PROJECT NAME: Prentiss Properties Ltd Inc

CLIENT: Charles Sumner

PROJECT LOCATION: 1750 Webster St, Oakland, CA DRILLING CONTRACTOR: V&W

DRILLING MTHD: Hollow Stem Auger

SAMPLE MTHD: Split Spoon, 6 inch sleeves

DATE STARTED: Apr 25, 1998 DATE FINISHED: Apr 26, 1998 DRILLER: Frank

INSPECTOR: None

DEPTH (FT)	SPT BLOWS PER 6"	REC (%)	PID (ppm)	LITHOLOGY	SURFACE ELEVATION: NA	WELL CONST	REMARKS
0.0							Background PID = 0.4 ppm
5.0	6 11 17	95	42.5	Sandy Clay, CL, orange-brown with orange & brown mottling, slightly moist, medium plasticity, stiff, no odor, few rounded gravels			
10.0	12 20 22	80	78	Fine grained Clayey Sand, SC, orange-brown, moist, loose, no odor			Soil Sample A-1-10.5FT collected @ 09:10
15.0	20 50/5"	75	61	Fine grained Sand, SP, light orange-brown, moist, loose, no odor. Wet from 18ft-20 ft, color changes to grey at 19.5ft			Soil sample A-1-15FT collected @ 09:25
	30 50/3"	38	950				
	30 50/5"	70					Initial water level: 18ft
20.0	8 8 12	100	525	Sandy Clay, CL, orange-brown to grey, wet, soft, low plasticity, some orange-brown mottling; 3-in lens of grey wet sand, hard at 20.5-21ft, odor; color changes to grey at 20.5ft			Final water level: 20.1ft
25.0	8 12 15	100	82	Silty Clay, CL, light brown with grey mottling, wet, stiff, medium plasticity, odor; very wet at 28ft; 2-in layer of sand at 28.33ft			At 23 Ft on 4/25/98 auger seal blew out; stopped drilling; could not repair; continued on 4/26/98
	9 9 10	100	107				
	8 12 12	100					
30.0	10 7	100	234	Sandy Clay, CL, light orange-brown, moist, very stiff, low plasticity, odor			

BOTTOM OF TEST BORING: 31.00'

### WELL CONSTRUCTION

WELL DIAM: 2 inch


CASING MATERIAL: Schedule 40 PVC

SCREEN MATERIAL: Schedule 40 PVC


SLOT SIZE: 0.01 inch

METHOD: Hollow Stem Auger

MONITORING WELL INSTALLED UPON COMPLETION

 OUTER CASING

 GROUT

 BENTONITE

 SAND

 SCREEN

SPT = STANDARD PENETRATION TEST  
 REC = SAMPLE RECOVERY  
 ND = NON-DETECTABLE  
 FID = FLAME IONIZATION DETECTOR  
 PID = PHOTO-IONIZATION DETECTOR

# ATC Environmental, Inc.

# WELL LOG

BORING NO: A-1

PROJECT NO: 61877.0004

PROJECT NAME: Prentiss Properties Ltd. Inc.

CLIENT: Charles Sumner

PROJECT LOCATION: 1750 Webster St., Oakland, CA

DRILLING CONTRACTOR: V&W

DRILLING MTHD: Hollow Stem Auger

SAMPLE MTHD: Split Spoon, 6 inch sleeves

DATE STARTED: Apr 25, 1998

DATE FINISHED: Apr 26, 1998

DRILLER: Frank

INSPECTOR: None

DEPTH (FT)	SPT BLOWS PER 6"	REC (%)	PID (ppm)	PROF	SURFACE ELEVATION: NA	WELL CONST	REMARKS
					LITHOLOGIC DESCRIPTION		
30.0	10 20 22	100	234		Silty Clay, CL, light orange-brown, slightly moist, medium stiff, medium plasticity, some angular to subangular white&red gravels, slight odor		
35.0							
40.0							
45.0							
50.0							
55.0							
60.0							Geologist: Behram Zangeneh-Azam

BOTTOM OF TEST BORING 31 00'

### WELL CONSTRUCTION

WELL DIAM: 2 inch


CASING MATERIAL: Schedule 40 PVC

SCREEN MATERIAL: Schedule 40 PVC


SLOT SIZE: 0.01 inch

METHOD: Hollow Stem Auger

MONITORING WELL INSTALLED UPON COMPLETION

 OUTER CASING

 GROUT

 BENTONITE

 SAND

 SCREEN

SPT = STANDARD PENETRATION TEST  
 REC = SAMPLE RECOVERY  
 ND = NON-DETECTABLE  
 FID = FLAME IONIZATION DETECTOR  
 PID = PHOTO-IONIZATION DETECTOR

## **APPENDIX D**

Product Literature for NONTOX™ – TPH Eliminator

## **General Description**

### **NONTOX: PETROLEUM HYDROCARBON REMEDICATION/CLEANING**

- Is a biocatalytic system in a liquid concentrate form that stimulates and accelerates natural biological reactions. When combined with fresh or salt water and oxygen, the product will cause crude oil, jet fuel, diesel oil and other organic substances to rapidly decompose, eventually biodegrading them to carbon dioxide and water as end products.

- It is non-toxic and safe to humans, animals, marine life and plant life. It is 100% biodegradable.

- Works in concert with indigenous bacteria. No cultured or foreign bacteria are introduced into the ecosystem.

- Is nonflammable. It will reduce fire hazards by increasing flash points and autoignition threshold points in substances such as gasoline or fuel oil.

- Eliminates obnoxious odors associated with crude oil, petroleum derivatives and other organic molecules that are proceeding through the natural decomposing process.

- Is fully compatible with most types of application equipment now in use. The product may be easily applied by hand or power sprayers, helicopter, airplane or floating equipment. Its application requires no special safety equipment.

### **TARGETED HYDROCARBON CONTAMINANTS**

In this case, the hydrocarbon compounds found in water, soil and air are the selected targets of NONTOX. This would include such petroleum derived products as crude oil, drilling muds, creosote, kerosene, coal tars, gasoline, diesel, bunker fuels, lubricating and hydraulic fluids. Other contaminant groups would include aliphatic and aromatic hydrocarbons, polynuclear aromatic hydrocarbons, chlorinated aliphatic compounds, chlorinated aromatic compounds and chlorinated and non-chlorinated phenols.

It has been shown that the product has unique features in odor elimination of such gases as hydrogen sulfide, ammonia, mercaptan and other noxious odors emanating from anaerobic decomposition. The odor degradation activity happens in a very short period and effectively eliminates volatilization of light chain organic molecules, such as the BTEX group of petrochemicals, into the atmosphere.

### **TREATMENT METHODOLOGY**

The product is fully compatible with most types of application equipment now in use. NONTOX may be easily applied with hand or power sprayers, standard educator tubes, helicopters, airplane or floating equipment. No special nozzles or hoses are required. Each

treatment site may differ in its requirements and modality of treatment. Factors that can influence the tactical use of NONTOX are:

Redox Potential Temperature Availability of Nutrients Nature and Concentration of Contaminants pH Heavy Metals Should these variables complicate the application and treatment procedures, the NONTOX works well with other commonly accepted treatment modalities such as venting, injection aeration, aeration lagoons and inoculants for removal of heavy metals.

### **Water or Beach Spills**

Reducing the danger of oil reaching beaches and shore structures is best achieved by spraying the oil slick perimeter with a diluted solution of 10 gallons of NONTOX mixed with 150 gallons of sea water or fresh water for each 40,000 square feet of surface area to be treated. If the slick has a heavy consistency, it is recommended that a 1:15 diluted NONTOX solution is applied over a three-day period, using one-third of the mixed solution each day. For best results, the product should be applied at a high pressure – generally above 500 psi.

## **TECHNICAL DATA**

### **Bacterial Proliferation**

The successful biodegradation of petroleum is dependent on two factors: 1) having the bio-organic catalyst reduce the petroleum to a form, which can be readily assimilated, by bacteria and 2) stimulating the proliferation of naturally occurring nonpathogenic heterotrophic bacteria. NONTOX to significantly increase beneficial bacterial activity in bay water by 12,857% and ocean water by 14,333%.

### **Accelerated Bioremediation**

Independent laboratory studies from specialists in petroleum technology have quantified the ability of NONTOX to dramatically reduce petroleum contaminants. showing a 90% reduction in Jet-A, Diesel-2 and Heavy Duty Lube Oil within 96 hours. While treatment time required may vary dependent on conditions previously noted, the mode of action is the same. NONTOX is a unique biocatalytic system that accelerates natural biological reactions with hydrocarbon products in water.

## **METAL CONTAMINANT PRECIPITATION**

Another benefit of NONTOX use is its ability to break the matrix that suspends metals.

## **FLAMMABILITY REDUCTION**

Open cup flash points and auto ignition temperature tests quantify the ability of NONTOX to render petroleum products nonflammable and dramatically increase their auto ignition temperatures. NONTOX alters the molecular structure that dramatically reduces

flammability and the elimination of volatile organic compounds (VOCs) and their odors. The importance of this feature cannot be overstated in terms of shipboard safety and survivability. In addition, the use of other ecologically incompatible materials, such as AFFF Foam, may be significantly reduced.

## **SAFETY PROFILE**

Extensive independent laboratory testing utilizing accepted standards for dermal and ocular effects on animal and human subjects have been performed. Phytotoxicity, bacteria community and internal aquatic organism safety studies are well documented.

## **OTHER POSSIBLE APPLICATIONS**

- Initial Actions for Fire Fighting, i.e. cover the fire hazard with a layer of AFFF and flash point reducing product.
- Fuel or Oil Tank Cleaning
- Engine / Generator Wipe down
- Galley Drain Line Unclogging
- CHT Tank Cleaning / Degreasing
- Flight Deck Cleaning (should be able to hose it over the side).
- Trough Cleaning

<b>MATERIAL SAFETY DATA SHEET</b>	
OSHA Hazard Communication Standard, 29CFR 1910.1200.	
<b>1. Identification Of Product &amp; Company</b>	
PRODUCT NAME:	<b>NonTox®-TPH Eliminator</b>
INTENDED USE :	<b>Surface Washing Agent, Hydrocarbon Cleaner, for use on Beaches, and Hard surfaces</b>
DETAILS OF COMPANY:	Bio-Organic Catalyst, Inc., A wholly-owned subsidiary Of Neozyme International, Inc. 711 W. 17th Street, Suite E-6 Costa Mesa, CA 92627 Phone: (949) 515-1301 / Fax: (949) 515-1314
<b>2. Composition/Information On Ingredients</b>	
SUBSTANCE: Water, highly purified proteins from plant and mineral sources.	
<b>3. Hazardous Identification</b>	
DANGER CLASSIFICATION: None	
RISK PHRASES: None	
P PHRASES: None	
<b>4. First Aid Measures</b>	
GENERAL: Wash well after use.	
ON INHALATION: None	
ON EYE CONTACT: Wash with copious amounts of water.	
ON SKIN CONTACT: Wash with soap and water.	
ON INGESTION: Should any symptoms occur, seek medical attention.	
<b>5. Fire Fighting Measures</b>	
<b>EXTINGUISHING MEDIA</b>	
RECOMMENDED: Water/Dry Chemical	
NOT TO BE USED: None	
SPECIAL INSTRUCTIONS FOR FIRE FIGHTING PERSONNEL: None	
<b>6. Accidental Release Measures</b>	
Flush away with copious amounts of water.	
<b>7. Storage &amp; Handling</b>	
HANDLING: General good work practices.	
STORAGE: 5 Liter and 200 Liter containers in either metal or plastic.	
Store below 45°C as higher storage temperatures reduce the effectiveness of the product.	
Should not be stored close to caustics or strong bases.	
<b>8. Exposure Controls/Personal Protection</b>	
GENERAL PROTECTION: Follow good industrial practices of hygiene and care.	
RESPIRATORY PROTECTION: None	
HAND PROTECTION: None, although the use of rubber gloves is suggested.	
EYE PROTECTION: None, although the use of protective eyewear is recommended under normal GMP's	
SKIN PROTECTION: None	
<b>9. Physical And Chemical Properties</b>	
PHYSICAL STATE: LIQUID	
COLOR: Colorless - pale amber	
ODOR: Mild	
ODOR THRESHOLD: No test data available	
FLASH POINT: None	
VISCOSITY: @ 40 °C 2.3373 cst	
SPECIFIC GRAVITY: @20°C /68°F=1.005-1.008 @ 20 ° C	
PH: Full Strength. 3.5 to 4	
VAPOR DENSITY: None	

**Bio-Organic Catalyst, Inc., A Wholly Owned Subsidiary Of Neozyme International, Inc.**

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E-Mail: [Info@bio-organic.com](mailto:Info@bio-organic.com)



<p>LOWER EXPLOSION LIMIT: None          SOLUBILITY IN WATER: 100% in water          FLASH POINT: Closed Cup &gt;93 °C          FLAMMABILITY (SOLID, GAS): None          FLAMMABLE LIMITS IN AIR LOWER: No test data available.          UPPER: No test data available.          AUTO IGNITION TEMPERATURE: No test data available.          VAPOR PRESSURE: &lt; 0.01 mmHg @ 20°C <i>Calculated</i>          BOILING POINT:(@760 mmHg): &gt; 100°C          VAPOR DENSITY (air = 1): &gt;1 <i>Calculated</i>          FREEZING POINT: See Pour Point          MELTING POINT: Not applicable          POUR POINT: 2.22°C (+28 °F)          SOLUBILITY IN WATER (by weight): <i>Visual</i> Completely soluble.          DECOMPOSITION TEMPERATURE: No test data available</p>
<p><b>10. Stability &amp; Reactivity</b></p>
<p><b>NO KNOWN REACTION TO OCCUR</b></p> <p>CONDITIONS TO AVOID: Temperatures above 45°C., pH below 3.0 and above 9.5 will affect the quality and condition of the product. Strong caustics and strong bases may affect the quality and condition of the product.</p>
<p><b>11. Toxicological Information</b></p> <p>ORAL LD50: Levels of 5,000 mg/kg: No Effects.          OCULAR: Primary Ocular-Albino Rabbits-Levels of 1,000 mg/kg for 24hours: No effects; Non-Toxic; "No Warning Required".          ACUTE TOXICITY: LC50-Level of 10,000 mg/kg: No effects after 168 hours; Non-Toxic; "No Warning Required."          SKIN TESTS: Draize Test-Dermal score of .38; Non Irritant; "No Warning Required." Repeated Insult Patch - No indication of irritation or sensitization; Non Irritant; "No Warning Required."          INHALATION TESTS: Results. No possibility of Irritation; Non Irritant; "No Warning Required."          LONG TERM STUDIES: No recorded side effects since 1971.</p>
<p><b>12. Ecological Information</b></p> <p>This is a totally safe and efficient biocatalytic degrader of organic waste materials. The product causes contaminants and other organic matter to eventually biodegrade, thus returning to carbon dioxide and water. When disposed of in sewage and drainage systems, the product aids in the breakdown of pollutants such as oil.</p> <p><b>OECD BIODEGRADATION TESTS:</b> For this family of materials: OECD Guideline for Testing of Chemicals, 302 B, Inherent Biodegradability: Zahn-Wellens/EMPA-Test Adopted: July 17, 1992, as well as German Standard Procedures for Water, Waste Water and Sludge Testing, Test procedure with water organisms (Group L) Determination of the biodegradability, Static Test (L25),DIN 38 412, Part 25</p> <p><b>BIODEGRADATION EXPOSURE TIME METHOD:</b> &gt; 58% -48 HRS OECD 302B TEST          Closed Bottle Ready Biodegradability Test Reference: Environmental Protection Agency - Toxic Substances Control Act, Code of Federal Regulations Title 40, part 796, section 3200 (40 CFR 796.3200)</p> <p><b>BIODEGRADATION EXPOSURE TIME METHOD:</b> &gt; 75%-28 Days</p> <p><b>ENVIRONMENTAL FATE:</b> Persistence and Degradability: The material is readily biodegradable. Passes OECD test(s) for ready biodegradability.</p> <p><b>ECOTOXICITY:</b> The material is non-toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested).</p> <p><b>FISH ACUTE &amp; PROLONGED TOXICITY:</b> For this family of materials: LC50, fathead minnow (<i>Pimephales promelas</i>), static, 96 hrs 100 % survival rate at 1ppm</p> <p><b>AQUATIC INVERTEBRATE ACUTE TOXICITY:</b> EC50, water flea <i>Daphnia magna</i>, 48 hrs, Toxicity, Not Detected.</p> <p><b>TOXICITY TO MICRO-ORGANISMS:</b> EC<sub>50</sub> <i>Vibrio fischeri</i> (<i>Photobacterium phosphoreum</i>), <i>Pseudokirchnerjella subcapitata</i> (<i>Selenastrum capricornutum</i>) Toxicity: Not Detected.</p> <p><b>MUTAGENICITY TEST</b> ;The organisms <i>P. subcapitata</i> and <i>D. magna</i> are continental water organisms. <i>V. fischeri</i> is an organism that can that can be involved for both continental water and marine water samples. <i>Salmonella typhimurium</i> is an organism to evaluate sweet water and its results can be applied to the environment and extrapolated to humans. <i>Salmonella typhimurium</i>:  <b>Mutagenicity: Not Detected</b></p> <p><b>MARINE ACUTE TOXICITY:</b> The marine invertebrate species, <i>Mysidopsis bahia</i> (<i>Americamysis bahia</i>) and the marine vertebrate species, <i>Menidia beryllina</i> were used in the tests. For the marine invertebrate species,48-Hour Acute <i>Mysidopsis bahia</i> survival</p>

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test results : LC-50 -316.23 (ppm), The 96-Hour LC-50 (concentration at which 50% mortality is expected to occur, <i>Menidia beryllina</i> survival data, was 203.04 (ppm)
<b>13. Disposal Considerations</b>
"IN ACCORDANCE WITH NATIONAL AND LOCAL LAWS AND PRACTICES" Flush down sewage or drainage systems with copious amounts of water.
<b>14. Transport Information</b>
DOMESTIC ROAD/RAIL: Unrestricted SEA: Unrestricted AIR: Unrestricted INTERNATIONAL ROAD/RAIL: Unrestricted
<b>15. Regulatory Information</b>
<b>OSHA Hazard Communication Standard</b> This product is a "Not A Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.
<b>Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312:</b> Immediate (Acute) Health Hazard: No Delayed (Chronic) Health Hazard: No Fire Hazard: No Reactive Hazard: No Sudden Release of Pressure Hazard: No
<b>US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 302 Extremely Hazardous Substance (40 CFR 355, Appendix A)</b> To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.
<b>California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986):</b> This product contains no listed substances known to the State of California to cause cancer, birth defects or other reproductive harm, at levels which would require a warning under the statute.
<b>US. Toxic Substances Control Act</b> All components of this product are on the TSCA Inventory or are exempt from TSCA Inventory requirements under 40 CFR 720.30
The information contained in this Safety Data Sheet does not constitute the user's own assessment of the workplace risks as required by other health and safety legislation.
<b>16. Other Information</b>
The product should not be used for purposes other than those shown in Section 1 without first referring to the supplier and obtaining written instructions. As specific conditions of use of the product are outside of the supplier's control, the user is responsible for ensuring that the requirements of relevant legislation are complied with. The information contained in this Safety Data Sheet is based on the present state of knowledge and current national legislation. It provides guidance on health, safety and environmental aspects of the product and should not be construed as any guarantee of technical performance or suitability for particular applications. This MSDS will be revised and updated as requirements occur. Should further information and relevant advice be required, contact Bio-Organic Catalyst, Inc. @ <a href="mailto:Info@bio-organic.com">Info@bio-organic.com</a> NonTox® is manufactured under U. S. Patent No.5,879,928.

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