EQUILON
ENTERPRISES LLC
Shell & Texaco Working Together

May 23, 2002

Alameda County Health Care Services Agency
Department of Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502

RE: EQUILON ENTERPRISES LLC / Equiva Services LLC dba SHELL OIL PRODUCTS US

Dear Sir or Madam:

The Shell purchase of Texaco's interest in Equilon Enterprises LLC and Equiva Services LLC has been approved by government authorities and was completed in early February.

Please be advised that effective March 1, 2002, Equilon Enterprises LLC and Equiva Services LLC will begin doing business as (DBA) "Shell Oil Products US." Since Equilon Enterprises LLC will remain the owner and/or the responsible Party of remediation activities at 1230 14th Street, Oakland, California, no changes are needed or requested for permits.

If you have any questions please contact Ms. Karen Petryna at 559.645.9306.

Yours truly,

Karen Petryna
Sr. Environmental Engineer

CAMBRIA

RO 433

May 23, 2002

Mr. Barney Chan
Alameda County Health Care Services Agency
Department of Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502

Re: **Subsurface Investigation Work Plan**
Former Shell Service Station
1230 14th Street
Oakland, California
Incident #: 97088250
Cambria Project #: 244-0233

Dear Mr. Chan,

Cambria Environmental Technology, Inc. (Cambria) is submitting this *Subsurface Investigation Work Plan* on behalf of Shell Oil Products US (Shell). The site location and site features are shown on Figures 1 and 2. The work plan was requested by the Alameda County Health Care Services Agency (ACHCSA) in the May 6, 2002 meeting which included representatives from Cambria, Shell, ACHCSA and the Alameda County District Attorney's office. During the meeting, it was learned that the ACHCSA has concerns that this site may not meet the San Francisco Bay Regional Water Quality Control Board's (RWQCB's) definition of a low-risk case and needs to have these concerns regarding the site addressed. The ACHCSA's concerns were further clarified during a phone conversation between Barney Chan and Stephan Bork (Cambria) on May 9, 2002 and in an email from Barney Chan dated May 16, 2002. It is our understanding that the ACHCSA's present concerns are as follows:

1) The ACHCSA is concerned that the extent of hydrocarbon-impacted soil within the former tank pit may not be adequately defined. The lateral extent of impacted soil outside of the tank pit is adequately defined, as shown on Figures 3 and 4;

2) The ACHCSA is concerned that the extent of the dissolved hydrocarbon plume in groundwater downgradient of the site may not have been adequately defined or demonstrated;

3) The ACHCSA is concerned that potential health-risk exposures due to impacted groundwater migrating from the site may not have been adequately assessed. In particular, the ACHCSA is concerned about potential impact to a water well identified by Cambria's March 22, 2002 well survey (well number 6, Figure 1) and to possible wells or basements at properties directly downgradient of the site.

Oakland, CA
San Ramon, CA
Sonoma, CA

Cambria Environmental Technology, Inc.

1144 65th Street
Suite B
Oakland, CA 94608
Tel (510) 420-0700
Fax (510) 420-9170

4) The ACHCSA believes that impacted vadose-zone soils may exist in the former tank pit and a proper risk-based corrective action (RBCA) analysis should include results of additional soil samples from that area.

Given these concerns, Cambria's objectives for the proposed work are to further define the extent of impacted soil in the former underground storage tank (UST) area, to further characterize the extent of impacted groundwater downgradient of the site, and to further research the existence and potential impact to water wells or basements in the vicinity. In addition to the above scope, Cambria proposes to assess the feasibility of chemical oxidation using hydrogen peroxide injection as a potential remedial method for residual hydrocarbons. Our proposed scope of work is presented below.

PROPOSED SCOPE OF WORK

Additional Soil and Groundwater Plume Definition

To further assess the extent of impacted soil in both the vadose and saturated zones, Cambria proposes advancing nine borings in and near the former tank pit (Figure 2). To further define the extent of impacted groundwater downgradient of the site, Cambria will advance four hand-auger borings on adjacent offsite properties and collect grab-groundwater samples. Upon approval of this work plan by ACHCSA, Cambria will complete the following tasks:

Utility Location: Cambria will notify Underground Service Alert (USA) of our proposed drilling activities. USA will have the utilities in the vicinity identified.

Site Health and Safety Plan: Pursuant to OSHA requirements, Cambria will prepare a comprehensive site safety plan to protect site workers. The plan will be reviewed and signed by each site worker and will be kept onsite during field activities.

Permits: Cambria will obtain necessary permits from the City of Oakland and the Alameda County Public Works Agency.

Onsite Soil Boring and Sampling Activities: Using a hydraul[redacted]). Five of the borings in the former tank pit will be advanced to an approximate depth of 25 feet below grade (fbg). The remaining three borings in the former tank pit will be advanced to approximately 35 fbg. Soil samples will be collected from each of these borings at 2.5-foot intervals until total depth.

One hand auger boring will be advanced to collect a soil sample as close as practical to the former piping soil sample TS-6, collected at 3 fbg. Cambria's Standard Field Procedures for Envirocore® Sampling and Hand Auger Soil Borings are described in Attachment A.

Offsite Soil Boring and Grab-Groundwater Sampling Activities: Using a 3-inch diameter hand auger, Cambria will advance 4 hand auger borings at the approximate locations shown on Figure 5. The borings will be advanced to a depth of approximately 2 feet below the static water level, or until free water readily enters the borehole. A disposable bailer will then be used to retrieve a grab-groundwater sample. Cambria's Standard Field Procedures for "Hand Auger Soil Borings are described in Attachment A.

Laboratory Analyses: A State-certified laboratory will analyze the soil samples for TPHg, benzene, toluene, ethylbenzene, and xylenes by EPA Method 8260B. Selected soil samples will be submitted for bench-scale chemical oxidation testing.

Chemical Oxidation Bench-Scale Testing

Selected soil samples collected during the assessment will be used for bench-scale testing to determine the feasibility of chemical oxidation as a potential remedial alternative. The bench-scale testing procedures and findings will be described in a subsequent report. The report will include discussion regarding any potential for chemical oxidation at the site to generate hexavalent chromium.

Offsite Water Well Research

Door-to-Door Well Survey: Cambria will perform a door-to-door well survey including residences in the residential block downgradient of, and including, the site. The survey will attempt to determine whether there are any active water wells or basements in the survey area. A questionnaire with a return envelope will be left at dwellings where residents are not available during the survey.

Wade Johnson Park Well Research: Cambria will further research the potential existence of the previously identified water well number 6 at Wade Johnson Park (Figure 1) by requesting (via certified mail) information about the well from the City of Oakland Parks, Recreation and Cultural Services.

OK

Analysis of the Dissolved Hydrocarbon Plume in Groundwater

Using results from the proposed grab-groundwater samples and from distance attenuation techniques described by ASTM[1], Cambria will assess the downgradient extent of hydrocarbons in groundwater. It is our expectation that the combination of actual sample results and ASTM analytical methods will be adequate to demonstrate the downgradient hydrocarbon plume extent without the need for fate and transport modeling. However, Cambria will review the findings of the proposed assessment and will then further discuss with ACHCSA the applicability of fate and transport modeling to further describe the plume.

Interim Remedial Action

Cambria proposes to conduct semi-monthly mobile groundwater extraction from MW-5 in an attempt to reduce hydrocarbon concentrations in groundwater in the suspected source area. This activity will be implemented immediately. Results will be conveyed in future reports.

Investigation Report

After the analytical results are received, Cambria will prepare a report that, at a minimum, will contain:

- A summary of the site background and history;
- Descriptions of drilling and sampling activities;
- Soil boring logs;
- Tabulated analytical results for soil;
- Analytical reports and chain-of-custody forms;
- Available findings of the door-to-door well/basement survey and Parks Department information request;
- An analysis of the downgradient groundwater plume extent; and
- A discussion of the hydrocarbon distribution in the subsurface.

SCHEDULE

Upon receiving written approval of this work plan from ACHCSA, Cambria will apply for the necessary permits and schedule drilling. We will provide you with a 72-hour notice prior to field activities. We anticipate submitting our investigation report, including findings of the additional

[1] American Society for Testing and Materials (ASTM), 1998; *Standard Guide for Remediation of Ground Water by Natural Attenuation at Petroleum Release Sites.*

water well research, distance attenuation analysis and bench-scale testing, within eight weeks after completing the fieldwork.

CLOSING

The intent of this work plan is to address the ACHCSA's existing concerns regarding environmental conditions at the site and the status of potential sensitive receptors. If this work plan does not fully address your present concerns, please indicate what other concerns you have.

As stated above, assessment of offsite, downgradient properties is proposed to address the ACHCSA's concern, discussed in the May 16 email, that the extent of the dissolved hydrocarbon plume in groundwater downgradient of the site may not have been adequately defined or demonstrated. Cambria will approach the downgradient property owners for permission to enter their property for the proposed work. In the interest of expediency, we request that the ACHCSA provide a letter to these property owners to assist Cambria in gaining the necessary access. Based on recent County Assessor records, the potentially affected property owners are:

- Richard and Irene P. Rong of 1674 47th Avenue, San Francisco, California, 94122-2913, owners of the property located at 1216 14th Street, Oakland, California, 94607.
- Oscar and L.B. Holland, c/o Jerlyn Smith of 7203 Holly Street, Oakland, California, 94621-3125, owners of property located at 1420 Union Street, Oakland California, 94607.

As Barney Chan concurred during the May 9 phone conversation, Cambria will not submit a revised RBCA until additional assessment data is collected and a RBCA work plan is approved by the ACHCSA.

In response to Mr. Chan's May 16 email, groundwater analytical results of ether oxygenates and lead scavengers are presented in Table 1. The Department of Water Resources record requested in the email will be transmitted to the ACHCSA under separate cover.

Stephan Bork has transferred to a different department within Cambria and will no longer be involved with this project. If you have any questions or comments, please call either Melody Munz at (510) 420-3324 or Diane Lundquist at (510) 420-3334

Sincerely,
Cambria Environmental Technology, Inc.

Diane Lundquist, P.E.
Principal Engineer

Figures:
1 - Area Well Survey
2 - Proposed Boring Location Map
3 - TPHg Concentrations in Soil
4 - Benzene Concentrations in Soil
5 - Downgradient Area Map

Table:
1 - Groundwater Analytical Data – Gasoline Additives

Attachment:
A - Standard Field Procedures for Envirocore® Sampling and Hand Auger Soil Borings

cc:
Karen Petryna, Equiva Services LLC, P.O. Box 7869, Burbank, CA 91510-7869
Tom Saberi, 1045 Airport Boulevard, Suite 12, South San Francisco, CA 94080
Matthew Dudley, Sedgwick, Detert, Moran, & Arnold, 1 Embarcadero Center, 16th Floor, San Francisco, CA 94111-3628

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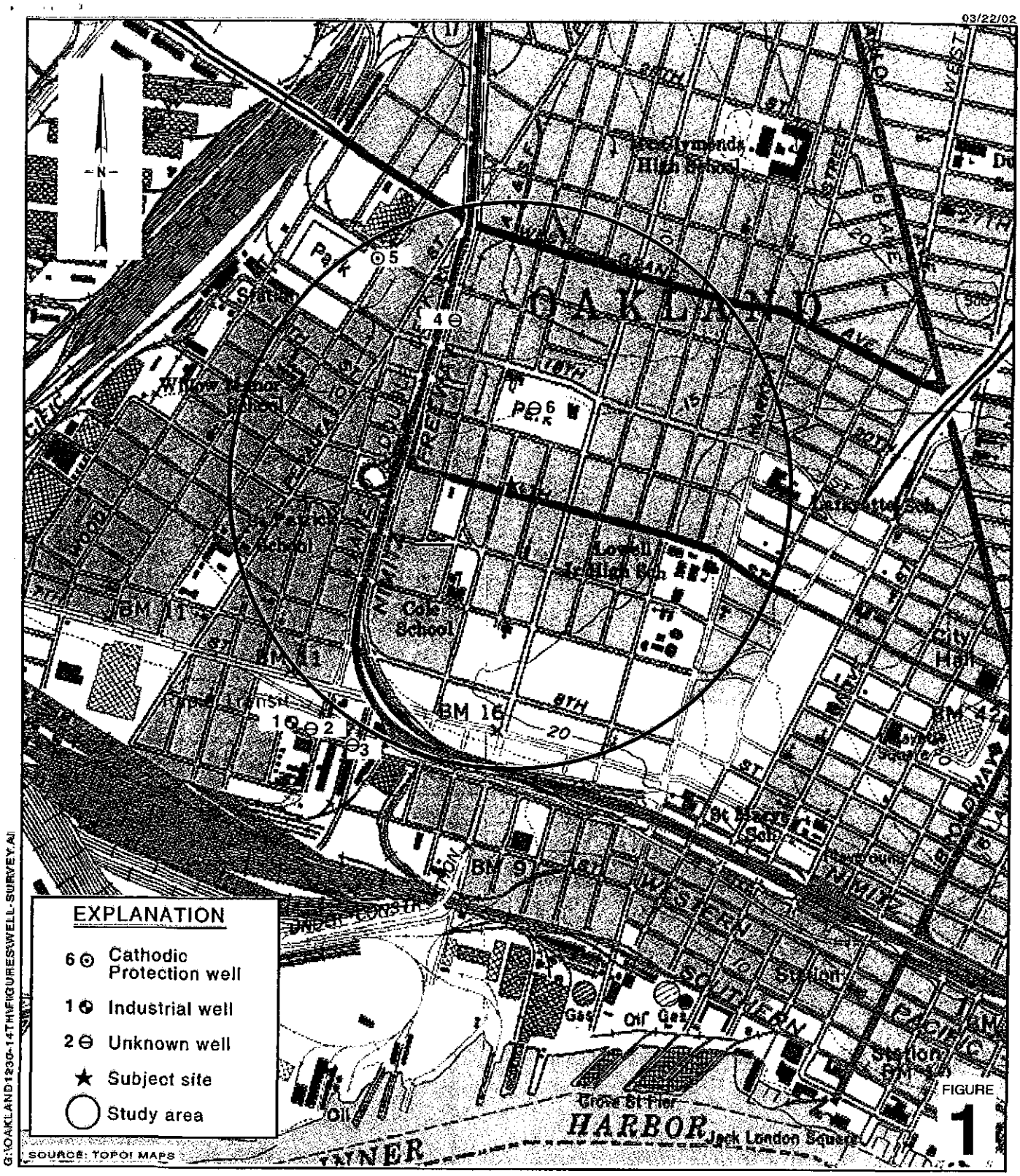

0 1/8 1/4 1/2 1

SCALE : 1" = 1/4 MILE

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Incident #97088250

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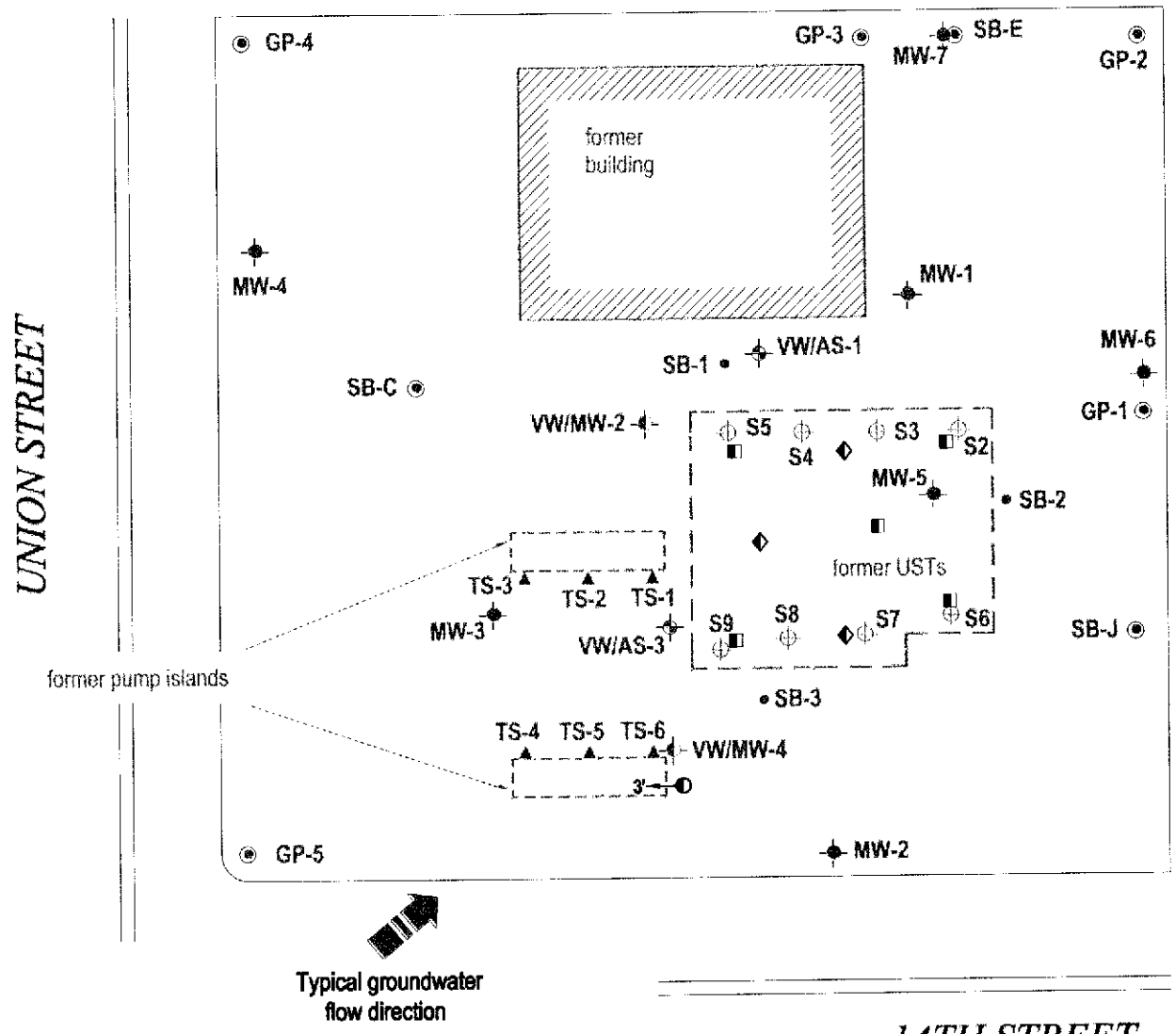
Area Well Survey
(1/2-Mile Radius)



EXPLANATION

- Proposed deeper soil boring location
- Proposed soil boring location
- 3' — Proposed slanted soil boring location and target depth
- SB-1 • Soil boring location (2/91)
- TS-1 ▲ Product piping sample (11/95)
- S2-15.0 ⊕ Tank Pit grab soil sample (1995)
- SB-C ◉ Soil boring location (3/96)
- GP-1 ◉ Soil boring location (12/00)
- MW-1 ⊕ Monitoring well location
- VW/AS-1 ⊕ Combination air sparge/soil vapor extraction well
- VW/MW-2 ⊕ Combination soil vapor extraction well/monitoring well

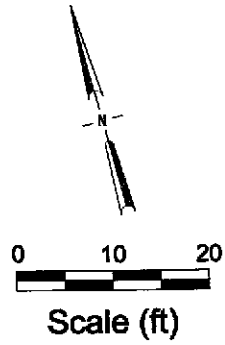


FIGURE **2**

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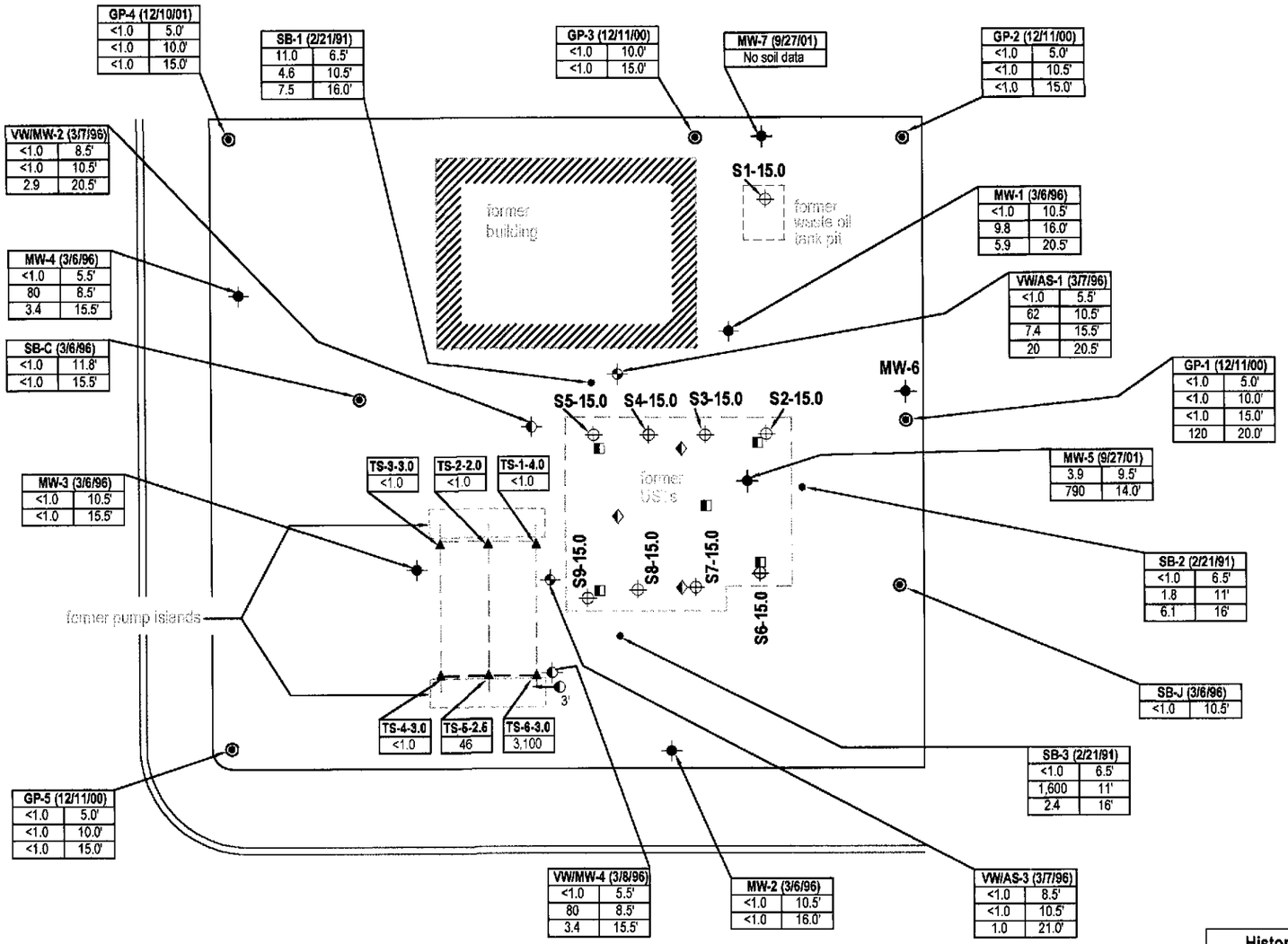
Proposed Soil Boring Locations



EXPLANATION

- Proposed soil boring location
- Proposed deeper soil boring location
- 3' — Proposed slanted soil boring showing slant direction and target depth
- **SB-1** • Soil boring location (2/91)
- **SB-C** ◉ Soil boring location (3/96)
- **TS-1-4.0** ▲ Product piping sample location (11/95)
- **S2-15.0** ⊕ Tank pit grab soil sample location (1995)
- **MW-1** ✦ Monitoring well location
- **VW/AS-1** ✦ Combination air sparge/soil vapor extraction well
- **VW/MW-2** ✦ Combination soil vapor extraction well/monitoring well
- **GP-1** ◉ Soil boring location (12/11/00)

TS-1-4.0
<1.0

Grab soil sample ID - sample depth (ft)

TPHg concentration in soil in parts per million, sampled on November 27, 1995, analyzed by EPA Method 8015.

GP-1 (12/11/00)	
<1.0	5.0'
<1.0	10.0'
<1.0	15.0'
<1.0	20.0'

Boring ID (Date)

TPHg Concentration | Sample Depth

TPHg concentration in soil in parts per million, analyzed by EPA Method 8260B beginning in 1996; analyzed by EPA Method 8015 prior to 1996.

Historical Soil Analytical Data-Tank Pit Samples (TPHg, in ppm)

Sample ID	8/27/93	11/27/95
S1 -15.0	67	NA
S2-15.0	2,200	3,600
S3-15.0	530	1,000
S4-15.0	40	5,600
S5-15.0	1	2,800
S6-15.0	1,600	3,800
S7-15.0	1,100	570
S8-15.0	18,000	3,200
S9-15.0	6,200	5,100

FIGURE

3

TPHg Concentrations in Soil

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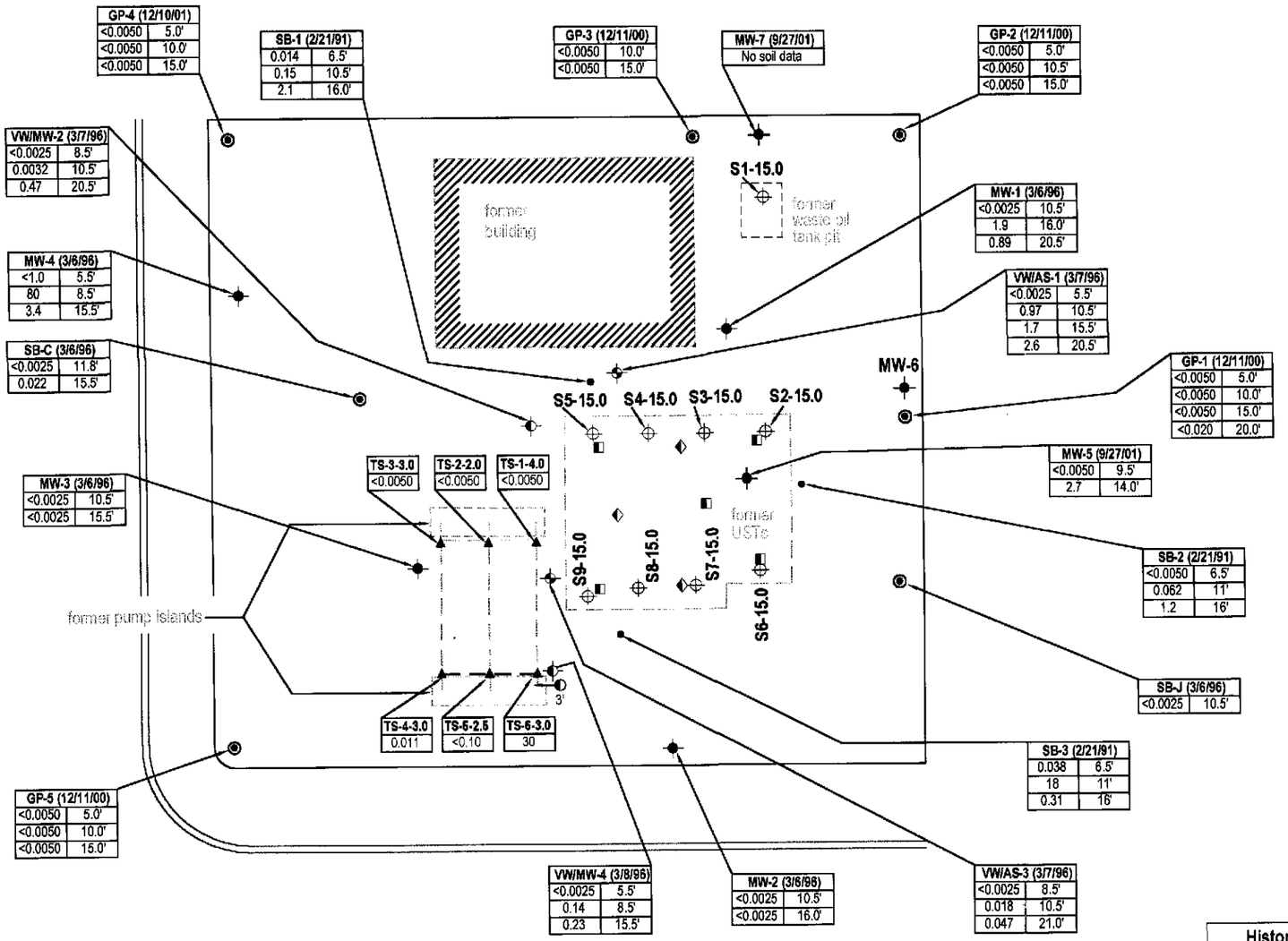
Benzene Concentrations in Soil



EXPLANATION

- Proposed soil boring location
- Proposed deeper soil boring location
- 3' — Proposed slanted soil boring showing slant direction and target depth
- SB-1 — Soil boring location (2/91)
- SB-C — Soil boring location (3/96)
- TS-1-4.0 — Product piping sample location (11/95)
- S2-15.0 — Tank pit grab soil sample location (1995)
- MW-1 — Monitoring well location
- VW/AS-1 — Combination air sparge/soil vapor extraction well
- VW/MW-2 — Combination soil vapor extraction well/monitoring well
- GP-1 — Soil boring location (12/11/00)

TS-1-4.0 / <1.0 — Grab soil sample ID - sample depth (ft) / Benzene concentration in soil in parts per million, sampled on November 27, 1995, analyzed by EPA Method 8020.

GP-1 (12/11/00) / <0.0050 5.0' / <0.0050 10.0' / <0.0050 15.0' / <0.020 20.0' — Boring ID (Date); Benzene Concentration | Sample Depth

Benzene concentration in soil in parts per million, analyzed by EPA Method 8260B beginning in 1996; analyzed by EPA Method 8020 prior to 1996.

Historical Soil Analytical Data- Tank Pit Samples (Benzene, in ppm)

Sample ID	8/27/93	11/27/95
S1 -15.0	38	NA
S2-15.0	1,400	<6.0
S3-15.0	400	8
S4-15.0	31	72
S5-15.0	<5.0	36
S6-15.0	970	<6.0
S7-15.0	6,700	<0.50
S8-15.0	1,100	60
S9-15.0	3,700	62

FIGURE

4

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Former Shell Service Station
1230 14th Street
Oakland, California
Incident #97088250

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05/22/02

EXPLANATION

- Proposed hand augur location
- Proposed soil boring location
- Proposed deeper soil boring location
- 3' — Proposed slanted soil boring showing slant direction and target depth
- SB-1 — Soil boring location (2/91)
- TS-1 — Product piping sample (11/95)
- S2 15.0 — Tank Pit grab soil sample (1995)
- SB-C — Soil boring location (3/96)
- GP-1 — Soil boring location (12/00)
- MW-1 — Monitoring well location
- VW/AS-1 — Combination air sparge/soil vapor extraction well
- VW/SVE-2 — Combination soil vapor extraction well/monitoring well

1430-32 Union St.

1426 Union St.

1418-20 Union St..

former station
1230 14th St.

1216 14th St.

1210 14th St.

1204-06-08 14th St.

UNION STREET

MAGNOLIA STREET

14TH STREET

Typical groundwater flow direction

0 15 30 60
Scale (ft)

FIGURE
5

Downgradient Area Map

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Former Shell Service Station
1230 14th Street
Oakland, California
Incident #97088250

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Table 1. **Groundwater Analytical Data - Gasoline Additives** - Former Shell Service Station, Incident #97088250, 1230 14th Street, Oakland, California

Sample ID	Date Sampled	MTBE	DIPE	ETBE	TAME	TBA	1,2-DCA	EDB
		← (Concentrations in ppb) →						
MW-5	04/17/02	<20	<20	<20	<20	<200	<20	<20

Abbreviations:

MTBE = Methyl tert-butyl ether, analyzed by by EPA Method 8260
DIPE = Di-isopropyl ether, analyzed by EPA Method 8260
ETBE = Ethyl tert-butyl ether, analyzed by EPA Method 8260
TAME = Tert-amyl methyl ether, analyzed by EPA Method 8260
TBA = Tert-butyl alcohol, analyzed by EPA Method 8260
1,2-DCA = 1,2-dichloroethane, analyzed by EPA Method 8260
EDB = 1,2-dibromomethane or ethlyene dibromide, analyzed by EPA Method 8260
ppb = Parts per billion

STANDARD FIELD PROCEDURES FOR ENVIROCORE® SAMPLING

This document describes Cambria Environmental Technology's standard field methods for Envirocore® soil and groundwater sampling. These procedures are designed to comply with Federal, State and local regulatory guidelines. Specific field procedures are summarized below.

Objectives

Soil samples are collected to characterize subsurface lithology, assess whether the soils exhibit obvious hydrocarbon or other compound vapor odor or staining, estimate groundwater depth and quality and to submit samples for chemical analysis.

Soil Classification/Logging

All soil samples are classified according to the Unified Soil Classification System by a trained geologist or engineer working under the supervision of a California Registered Geologist (RG). The following soil properties are noted for each soil sample:

- Principal and secondary grain size category (i.e., sand, silt, clay or gravel)
- Approximate percentage of each grain size category,
- Color,
- Approximate moisture content,
- Observed odor and/or discoloration,
- Other significant observations (i.e., cementation, presence of marker horizons, mineralogy), and
- Estimated permeability.

Soil Sampling

The Envirocore® (dual-tube) system consists of a segmented casing with an internal sampler which is driven hydraulically into the subsurface. The casing and the sampler are driven simultaneously in three-foot increments. Continuous sample cores are collected by the sampler in 1.5-inch diameter sample tubes which are either 6-inch long stainless steel or 3-foot long butyrate. The ground surface immediately adjacent to the boring is used as a datum to measure sample depth. The horizontal location of each boring is measured in the field relative to a permanent on-site reference using a measuring wheel or tape measure.

Drilling and sampling equipment is steam-cleaned or washed prior to drilling and between borings to prevent cross-contamination. Sampling equipment is washed between samples with trisodium phosphate, Alconox® or an equivalent EPA-approved detergent, and double rinsed with de-ionized water.

Hydrocarbon Field Screening

When hydrocarbons are a chemical of concern, soil samples are field screened for the presence of hydrocarbon vapors. After a soil sample has been collected, soil from the remaining tubing is placed inside a sealed plastic bag and set aside to allow hydrocarbons to volatilize from the soil. After ten to fifteen minutes, a portable GasTech® or photoionization detector measures volatile hydrocarbon vapor concentrations in the bag's headspace, extracting the vapor through a slit in the plastic bag. The measurements are used along with the field observations, odors, stratigraphy and groundwater depth to select soil samples for analysis.

CAMBRIA

STANDARD FIELD PROCEDURES FOR HAND-AUGER SOIL BORINGS

This document describes Cambria Environmental Technology's standard field methods for drilling and sampling soil borings using a hand-auger. These procedures are designed to comply with Federal, State and local regulatory guidelines. Specific field procedures are summarized below.

Objectives

Soil samples are collected to characterize subsurface lithology, assess whether the soils exhibit obvious hydrocarbon or other compound vapor odor or staining, estimate ground water depth and quality and to submit samples for chemical analysis.

Soil Classification/Logging

All soil samples are classified according to the Unified Soil Classification System by a trained geologist or engineer working under the supervision of a California Registered Geologist (RG) or a Certified Engineering Geologist (CEG). The following soil properties are noted for each soil sample:

- Principal and secondary grain size category (i.e. sand, silt, clay or gravel)
- Approximate percentage of each grain size category,
- Color,
- Approximate water or product saturation percentage,
- Observed odor and/or discoloration,
- Other significant observations (i.e. cementation, presence of marker horizons, mineralogy), and
- Estimated permeability.

Soil Boring and Sampling

Hand-auger borings are typically drilled using a hand-held bucket auger to remove soil to the desired sampling depth. Samples are collected using lined split-barrel or equivalent samplers driven into undisturbed sediments beyond the bottom of the augered hole. The vertical location of each soil sample is determined using a tape measure. All sample depths use the ground surface immediately adjacent to the boring as a datum. The horizontal location of each boring is measured in the field from an onsite permanent reference using a measuring wheel or tape measure.

Augering and sampling equipment is steam-cleaned prior to drilling and between borings to prevent cross-contamination. Sampling equipment is washed between samples with trisodium phosphate or an equivalent EPA-approved detergent.

Sample Storage, Handling and Transport

Sampling tubes chosen for analysis are trimmed of excess soil and capped with Teflon tape and plastic end caps. Soil samples are labeled and stored at or below 4°C on either crushed or dry ice, depending upon local regulations. Samples are transported under chain-of-custody to a State-certified analytic laboratory.