

October 8, 2003

Mr. Barney Chan
Alameda County Environmental Health Services
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Re: **Workplan for Subsurface Investigation**
Former Chevron Station 9-4587
609 Oak Street
Oakland, California

Alameda County

OCT 11 2003

Dear Ms. Streich:

Environmental Health

As you requested in your September 4, 2003 letter, Cambria Environmental Technology, Inc. (Cambria) is submitting this workplan on behalf of ChevronTexaco to complete tasks necessary to close the site referenced above. Your letter requested confirmation borings in areas that may have exceeded environmental screening levels and requested assessment of whether adjacent utilities could act as potential conduits for hydrocarbon migration. A brief discussion of the site background and the two items requested by the Alameda County Environmental Health Services (ACEHS) are discussed below.

Site Background

The site is a former Chevron service station at 609 Oak Street, in Oakland California (Figure 1). The station ceased operations in 1994. To date, 10 monitoring wells, 12 remediation wells and numerous borings have been drilled at the site (Figure 2). Historically, up to 1.06 ft of non-aqueous-phase liquid gasoline (NAPL) had been detected in wells C-1, CR-1, C-A, C-B and C-C. The site was aggressively remediated by TerraVac using multi-phase extraction and air sparging to the point that no hydrocarbons were detected in groundwater within 6 months of system start-up. Hydrocarbon concentrations since that time have remained near or below laboratory detection limits. An area of hydrocarbon-bearing soil was later excavated near the southern dispenser islands to further reduce benzene concentrations in soil as ~~directed~~ by the ACEHS.

approved

In an August 25, 2003 letter, Delta submitted data requested by the ACEHS to support case closure. In their letter, Delta calculated that the 95% upper confidence level (UCL) concentration of benzene remaining in soil was 0.1 mg/kg for soils shallower than 10 ft (the typical low groundwater table depth). The environmental screening level (ESL) for residential exposure to soil is 0.18 mg/kg for sites where groundwater is not a source of drinking water. Therefore, the 95% UCL benzene concentration calculated by Delta is below the ESL. The commercial ESL for

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benzene is 0.38 to 0.5 mg/kg depending on soil depth, well above the UCL benzene concentration calculated by Delta.

To confirm Delta's analysis, Cambria reran the UCL calculation using all un-excavated, pre-remediation benzene concentrations shallower than 11 ft (including the saturated hydrocarbon smear zone data collected before multi-phase extraction) and calculated a 95% UCL concentration of 0.2 mg/kg (Attachment A). Since this concentration is based on soil analytical data prior to multi-phase extraction, it is nearly certain that the current UCL concentration is well below the 0.18 mg/kg ESL.



These ESLs were calculated assuming a potential exposure pathway from hydrocarbons volatilizing from soil to indoor air. Because no hydrocarbons are detected in groundwater, it is apparent that there is no pathway for hydrocarbons leaching from soil to groundwater and volatilizing into indoor air. Therefore, hydrocarbons leaching from soil to groundwater is no longer a complete pathway.

Confirmation Assessment

The objective of the requested confirmation borings is to further confirm that site conditions meet the ESLs. To meet the ACEHS investigation objectives, we recommend hand-auger borings in the two areas with the highest hydrocarbon concentrations in soil that were not directly adjacent to soil vapor extraction wells. Specifically, we recommend a boring near former well SP-6 and a boring near UST excavation sample NE (Figure 2). These two locations formerly contained the highest benzene concentrations in in-situ soil detected at the site; 160 mg/kg (SP-6) and 27 mg/kg (NE) (Attachment B). The proposed locations are also not immediately adjacent to extraction wells and represent site conditions between extraction points.

If benzene concentrations are reduced in these borings compared to pre-remediation concentrations, then it will be evident that benzene concentrations across the site have been similarly reduced and it would further confirm that the site meets the ESLs as originally indicated by Delta. We also propose collecting a groundwater sample from the boring near SP-6 to aid in the utility investigation outlined below.

Sampling Protocol: Three soil samples will be collected from each boring at 3, 6 and 10 ft depth using a drive sampler lined with a brass tube. Cambria's Standard Procedures for drilling and sampling are presented in Attachment C.

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Chemical Analysis: Samples will be analyzed for TPHg by modified EPA Method 8015 and benzene, toluene, ethylbenzene, xylenes and MTBE by EPA Method 8260B.

Site Health and Safety Plan: We will prepare a comprehensive site safety plan to protect site workers prior to conducting field work. The plan will be kept on site during field activities and signed by each site worker.

Utility Location: Cambria will notify Underground Service Alert of our drilling activities to identify utilities in the site vicinity.



Soil Disposal: Soil cuttings produced during field activities will be temporarily stored on site. Following review of analytical results, the soil will be transported to an appropriate facility for disposal if needed.

Utility Investigation

To assess whether utilities could have acted as preferential flow pathways, we will map utilities in Oak and 6th Streets between the site and the down-gradient wells. We will also contact the City and County and other agencies as needed to determine the depths of these utilities. If utility depths are shallower than the average groundwater depth beneath the site, then we can presume that they could not have acted as preferential pathways. If utilities are substantially deeper than the average groundwater depth, we will review the new groundwater monitoring data and the groundwater data collected from the proposed boring at SP-6 to determine whether residual hydrocarbons in groundwater pose a potential risk of preferential flow in the utility.

Reporting

Upon completion of field activities and review of the analytical results, we will prepare an investigation/exposure evaluation report that, at a minimum, will contain:

- Descriptions of the drilling and sampling methods;
- Boring logs;
- Tabulated soil and groundwater analytic results;
- Analytic reports and chain-of-custody forms;

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- Soil disposal methods; and
- Conclusions and recommendations.

If the data confirms that benzene concentrations in soils are below ESLs, and if it is unlikely that the utilities could have acted as preferential pathways, then this site will have met all the criteria for a low-risk closure and we understand that no additional information will be required to close the site. If the ACEHS believes there are any data gaps, we request that the ACEHS inform us now so we can collect whatever additional data is needed to close this site during the upcoming investigation work.



As Ms. Karen Streich of ChevronTexaco and Donna Drogos discussed on September 17, 2003, Cambria will set up a conference call with yourself, Ms. Drogos, Ms. Streich and myself to discuss this workplan and confirm that all outstanding issues required by the ACEHS are addressed.

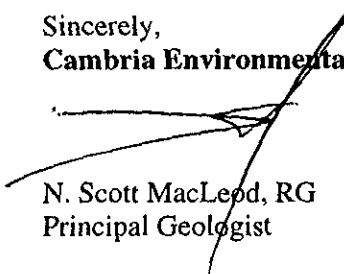
Schedule

Cambria will proceed with the proposed scope of work upon receiving written approval from the ACEHS. We anticipate submitting a completed report within about six weeks of sampling.

Closing

We appreciate this opportunity to provide you with environmental consulting services. Please call me at (510) 420-3301 if you have any questions or comments.

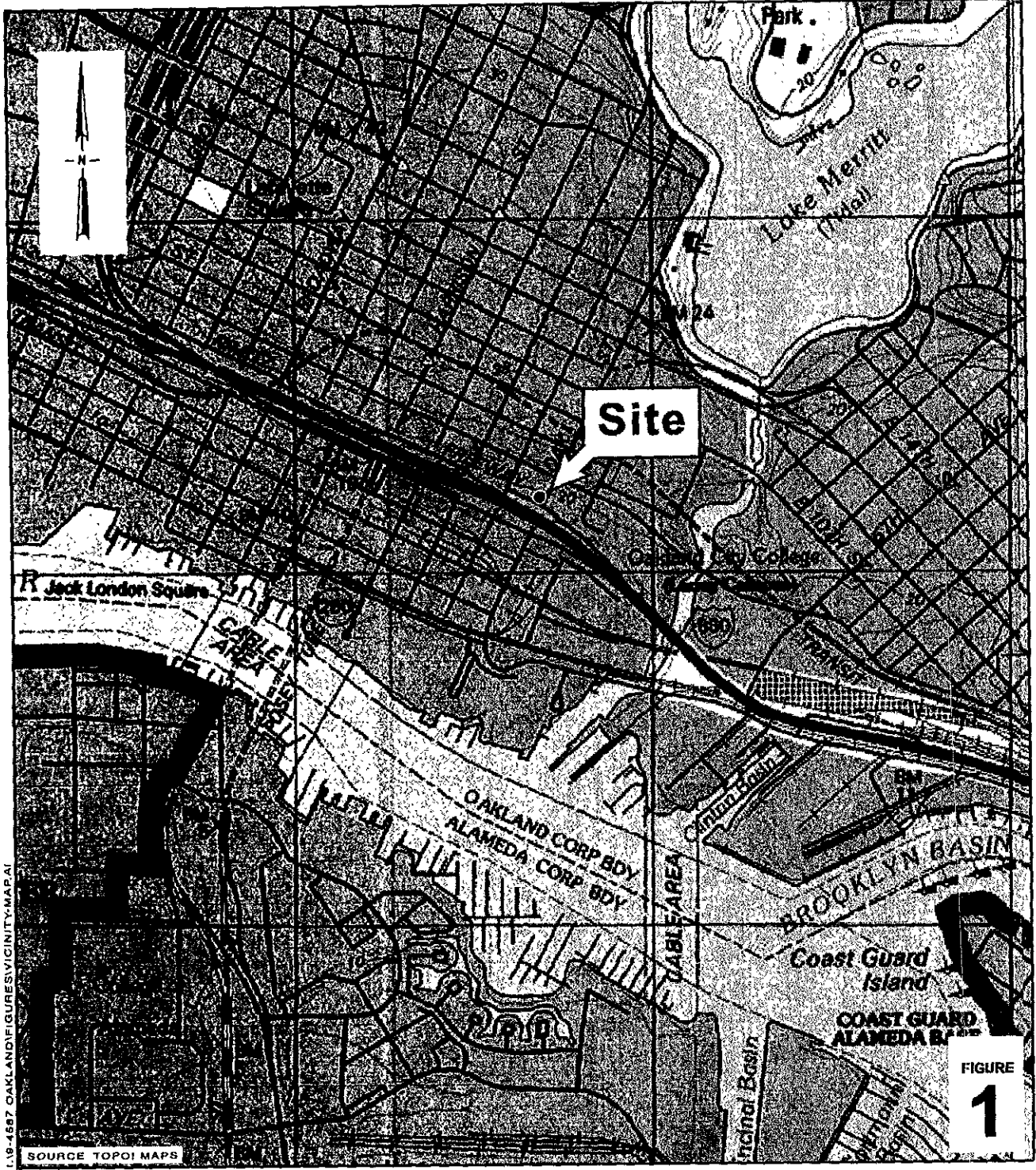
Sincerely,
Cambria Environmental Technology, Inc.



N. Scott MacLeod, RG
Principal Geologist

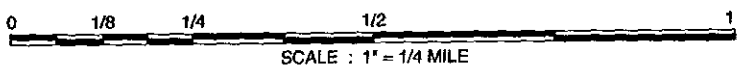
I:\9-4587 Oakland\Workplan.doc

Attachments: A – Cambria UCL Calculations
B – Soil Analytical Data
C – Standard Operating Procedures



1:8-4587 OAKLAND/FIGURES/VICINITY-MAP.A1

SOURCE TOPOI MAPS



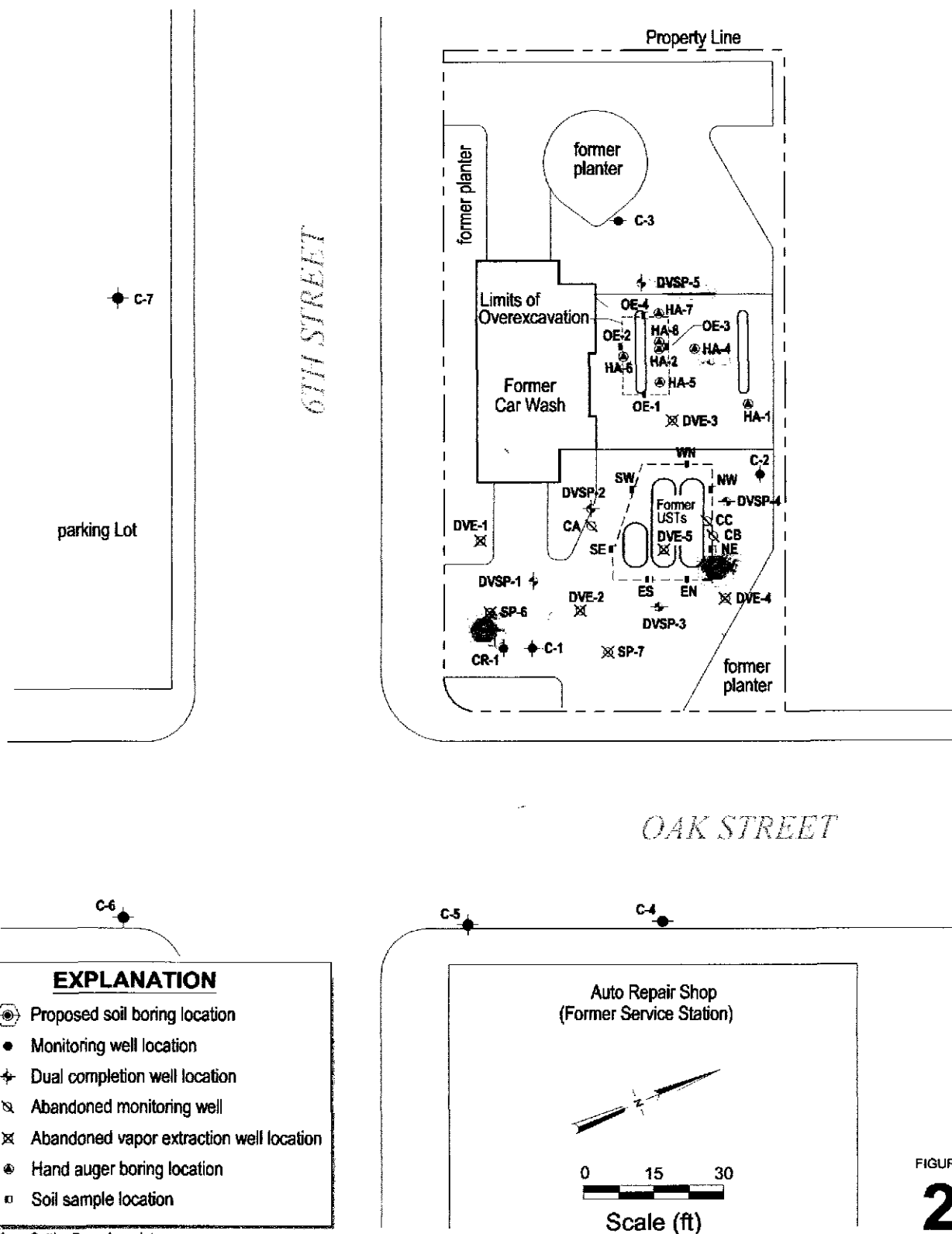
Former Chevron Station 9-4587
 609 Oak Street
 Oakland, California



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Vicinity Map

FIGURE
1



FIGURE

2

Former Chevron Station 9-4587
 609 Oak Street
 Oakland, California



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**Site Plan with Proposed
 Soil Boring Locations**

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ATTACHMENT A

Cambria UCL Calculations

Commands and Options				Site Name: Former Chevron Station 9-4587		Job ID:	
<input type="button" value="Return"/> <input type="button" value="Print Sheet"/> <input type="button" value="Help"/>				Location: 609 Oak Street, Oakland, California		Date: 24-Sep-03	
				Compl. By: Scott MacLeod			
Soil Source Zone Concentration Calculator							UCL
							Percentile
							<input type="text" value="95%"/>
				<input type="button" value="Paste Defaults"/>	<input type="button" value="Mean Option"/>		
Constituent	Detection Limit	No. of Samples	No. of Detects	Estimated Distribution of Data	Max. Conc.	Mean Conc.	UCL on Mean
	<i>(mg/kg)</i>				<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>
Benzene	#N/A	34	34	Lognormal	1.6E+2	8.5E-2	2.0E-1

RBCA Tool Kit for Chemical Releases, Version 1.3a

Enter Analytical Data from
Soil Source Zone

(up to 50 Data Points)

Analytical Data

	1	2	3	4	5	6	7	8	9	10	11	12	13
ID	CR-1-5.0	CR-1-10.0	P4	P5	P6	WN	NE	NW	SE	SW	EN	ES	WN
Date	19-Sep-90	19-Sep-90	17-Oct-94	17-Oct-94	17-Oct-94	17-Oct-94	17-Oct-94	17-Oct-94	17-Oct-94	17-Oct-94	17-Oct-94	17-Oct-94	17-Oct-94
	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>
	2.50E-2	2.50E-2	3.60E-1	2.50E-3	2.10E-2	2.00E-1	2.70E+1	5.20E-1	3.60E+0	9.30E-2	2.70E-1	2.40E-1	2.00E-1

RBCA Tool Kit for Chemical Releases, Version 1.3a

											Analytical Data		
14	15	16	17	18	19	20	21	22	23	24	25	26	
DVE-1	DVE-3	DVE-4	DVSP-2	DVSP-4	DVSP-5	SP6-9.7	SP7-4.7	SP7-9.3	HA1-5	HA1-7	HA4-2.5	HA4-5	
12-Jul-95	10-Jul-95	11-Jul-95	11-Jul-95	10-Jul-95	12-Jul-95	20-Dec-95	20-Dec-95	20-Dec-95	12-Jun-97	12-Jun-97	13-Sep-02	13-Sep-02	
<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	
3.10E-1	1.30E-1	2.40E-1	6.60E-2	2.50E-3	1.50E+1	1.60E+2	2.50E-3	2.50E-3	2.50E-3	2.50E-3	2.50E-3	2.10E+0	

RBCA Tool Kit for Chemical Releases, Version 1.3a

Analytical Data												
27	28	29	30	31	32	33	34	35	36	37	38	39
HA4-1.9)	HA7-2.5	HA7-5	HA7-7.5	OE-1	OE-2	OE-3	OE-4					
13-Sep-02	13-Sep-02	13-Sep-02	13-Sep-02	29-Jan-03	29-Jan-03	29-Jan-03	29-Jan-03					
(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
1.90E+0	2.50E-3	2.50E-3	6.10E-2	2.50E-2	2.50E-2	3.10E-1	2.50E-2					

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ATTACHMENT B
Soil Analytical Data

Table 1. Pre-Remediation Soil Analytical Data, Former Chevron Station 9-4587, 609 Oak Street, Oakland, California

Sample Location and ID	Date Collected	Sample Depth (ft)	Benzene (mg/kg)	Toulene (mg/kg)	Ethyl-Benzene (mg/kg)	Total Xylenes (mg/kg)	TPHg (mg/kg)	Total Lead (mg/kg)	MTBE (mg/kg)
<u>Product Line Trench</u>									
87087T3#2&3	3/27/87	7	150	430	NA	270	1,300	NA	NA
<u>Extraction Well Boring</u>									
CR-1	09/19/90	5.0	<0.05	<0.05	<0.05	<0.05	<1	NA	NA
CR-1	09/19/90	10.0	<0.05	<0.05	<0.05	<0.05	<1	NA	NA
CR-1	09/19/90	15.0	0.26	<0.05	<0.05	<0.05	<1	NA	NA
<u>Product Line Trenches</u>									
P-1	10/17/94	3.0	5.0	82	30	220	1,400	14	NA
P-2	10/17/94	2.5	0.26	3.0	1.7	16	260	<2	NA
P-3	10/17/94	2.5	<0.1	15	5.9	39	380	<2	NA
P-4	10/17/94	2.5	0.36	4.4	<0.005	33	410	12	NA
P-5	10/17/94	2.5	<0.005	<0.005	<0.005	<0.005	<1	<2	NA
P-6	10/17/94	3.0	0.021	0.042	0.091	0.16	29	6.0	NA
<u>UST Excavation</u>									
NE	10/17/94	10.5	27	200	69	400	3,700	<2	NA
NW	10/17/94	10.5	0.52	0.16	0.091	0.44	5.0	13	NA
SE	10/17/94	11.0	3.6	11	9.0	37	600	11	NA
SW	10/17/94	9.0	0.093	0.16	0.36	1.2	18	10	NA
EN	10/17/94	11.0	0.27	0.12	0.023	0.12	2.0	<2	NA
ES	10/17/94	10.0	0.24	0.22	0.32	1.6	42	<2	NA
WN	10/18/94	10.5	0.2	0.12	0.81	2.4	40	<2	NA
<u>VE Well Borings</u>									
DVE-1	07/12/95	10.3	0.31	0.098	0.025	0.12	1.0	NA	NA
DVE-2	07/11/95	14.0	1	0.032	0.43	1.3	7.6	NA	NA
DVE-3	07/10/95	10.2	0.13	0.071	0.021	0.082	<1	NA	NA
DVE-4	07/11/95	10.1	0.24	<0.005	0.1	0.16	2.8	NA	NA
DVE-5	07/11/95	18.8	0.045	0.055	0.26	1.3	5.6	NA	NA
<u>Dual Completion Well Borings</u>									
DVSP-1	07/11/95	15.5	4.2	<0.005	0.47	0.069	8.5	NA	NA
DVSP-2	07/11/95	10.5	0.066	<0.005	0.0096	<0.005	<1	NA	NA
DVSP-3	07/10/95	15.5	0.012	0.0082	0.0074	0.0045	<1	NA	NA
DVSP-4	07/10/95	5.5	<0.005	<0.005	<0.005	<0.005	<1	NA	NA
DVSP-5	07/11/95	10.5	15	83	25	140	700	NA	NA
<u>Air Sparge Well Borings</u>									
SP6	12/20/95	9.7	160	1,300	300	1,600	11,000	NA	NA
SP6	12/20/95	14.7	0.81	0.22	0.24	0.56	4.4	NA	NA
SP7	12/20/95	4.7	<0.005	<0.005	<0.005	<0.005	<1	NA	NA
SP7	12/20/95	93.0	<0.005	0.038	0.009	0.032	1.2	NA	NA
SP7	12/20/95	143.0	1.2	0.068	0.19	0.18	3.1	NA	NA
SP7	12/20/95	19.3	<0.005	0.0086	<0.005	0.067	<1	NA	NA
SP7	12/20/95	24.3	<0.005	<0.005	<0.005	0.0052	<1	NA	NA

TPHg = Total petroleum hydrocarbons as gasoline
 MTBE = Methyl tertiary butyl ether (analyzed by EP A Method 8260)
 mg/kg = Milligrams per kilogram
 NA = Not Analyzed
 <x = Not detected at detection limit of x mg/kg

Table based on data tabulated by Delta with values corrected.

TABLE 2
POST-REMEDATION
SOIL SAMPLE LABORATORY ANALYTICAL RESULTS

Former Chevron Service Station No. 9-4587
609 Oak Street Oakland, California

Sample Location	Date Collected	Depth Collected (ft)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Total Xylenes (mg/kg)	TPH as Gasoline (mg/kg)	Total Lead (mg/kg)	MTBE (mg/kg)
Hand Auger Borings									
HA-1	06/12/97	5.0	<0.005	<0.005	<0.005	<0.005	<1	NA	NA
HA-1	06/12/97	7.0	<0.005	<0.005	<0.005	<0.005	<1	NA	NA
HA-2	06/12/97	5.0	23	210	60	330	2,800	NA	NA
HA-2	06/12/97	7.0	2.1	2.1	2.1	7.5	310	NA	NA
Hand Auger Borings									
HA-4	09/13/02	2.5	<0.005	<0.005	<0.005	0.056	36	NA	<0.050
HA-4	09/13/02	5.0	2.1	92	50	310	1,700	NA	<1.0
HA-4	09/13/02	7.5	1.9	100	76	550	2,700	NA	<2.0
HA-5	09/13/02	2.5	<0.005	0.022	0.0087	0.058	<1.0	NA	<0.050
HA-5	09/13/02	5.0	<0.005	<0.005	<0.005	0.018	<1.0	NA	<0.050
HA-5	09/13/02	7.5	0.0099	0.061	0.12	0.94	15	NA	<0.050
HA-6	09/13/02	2.5	0.0079	0.092	0.14	1.5	24	NA	<0.050
HA-6	09/13/02	5.0	0.23	3.5	2.7	20	130	NA	<0.50
HA-6	09/13/02	7.5	5.9	120	44	260	1,500	NA	<1.0
HA-7	09/13/02	2.5	<0.005	0.020	<0.005	0.027	<1.0	NA	<0.050
HA-7	09/13/02	5.0	<0.005	<0.005	<0.005	<0.015	<1.0	NA	<0.050
HA-7	09/13/02	7.5	0.061	0.41	2.0	25	400	NA	<0.20
HA-8	09/13/02	2.5	<0.005	<0.005	<0.005	0.028	3.3	NA	<0.050
HA-8	09/13/02	5.0	<0.005	3.7	4.0	38	260	NA	<0.20
HA-8	09/13/02	8.5	0.15	6.2	5.6	57	540	NA	<0.50
Post-Overexcavation									
OE-1	01/29/03	8.5	<0.05	<0.05	<0.05	<0.05	<5.0	NA	<0.025
OE-2	01/29/03	8.5	<0.05	<0.05	<0.05	<0.05	<5.0	NA	<0.025
OE-3	01/29/03	8.5	0.31	<0.05	0.29	1.4	8.5	NA	0.042
OE-4	01/29/03	8.5	<0.05	<0.05	<0.05	<0.05	<5.0	NA	<0.025

TPH = Total petroleum hydrocarbons.

MTBE = Methyl tertiary butyl ether (analyzed by EPA Method 8260)

mg/kg = Milligrams per kilogram.

NA = Not Analyzed

Table 1. Soil Sample Analytical Results, Former Chevron Service Station #9-4587, 609 Oak Street, Oakland, California.

Sample ID	Date	TPHg	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE	HVOs
		←-----ppm----->						
S1-3.5	02/27/98	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	ND
S2-3.5	02/27/98	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	ND
S3-3.5	02/27/98	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	ND
S4-5.0	02/27/98	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	ND
S5-7.0	02/27/98	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	ND
S6-7.0	02/27/98	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	ND
S7-7.0	02/27/98	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	ND

EXPLANATION:

TPHg = Total Petroleum Hydrocarbons as gasoline
 MTBE = Methyl tertiary-Butyl Ether
 HVOs = Halogenated Volatile Organics
 ppm = Parts per million
 ND = Not detected

ANALYTICAL METHODS:

TPHg = EPA Method 8015Mod
 Benzene, toluene, ethylbenzene, xylenes, MTBE = EPA Method 8020
 HVOs = EPA 8010

ANALYTICAL LABORATORY:

Sequoia Analytical (ELAP #1210)

TABLE 1

SOIL ANALYSES DATA

SAMPLE I.D.	SAMPLE DATE	ANALYZED DATE	TPH-G (PPM)	BENZENE (PPM)	TOLUENE (PPM)	ETHYLBENZENE (PPM)	XYLENES (PPM)
C-7-9.5	01-Feb-91	06-Feb-91	<1	<.005	<.005	<.005	<.005
C-7-15.0	01-Feb-91	06-Feb-91	<1	<.005	0.010	<.005	0.015

TPH-G = Total Petroleum Hydrocarbons calculated as Gasoline

PPM = Parts Per Million

Note: 1. All data shown as <x are reported as not detected (ND).

TABLE I

CHEVRON STATION #4587

<u>Well</u>	<u>Elevation (Feet)</u>	<u>Groundwater Elevation (Feet)</u>	<u>Evidence of Gasoline</u>
B-1	17.15	8.49	No Gasoline
B-2	17.02	8.17	No Gasoline

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ATTACHMENT C

Standard Operating Procedures

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.

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Field Screening

One of the remaining tubes is partially emptied leaving about one-third of the soil in the tube. The tube is capped with plastic end caps and set aside to allow hydrocarbons to volatilize from the soil. After ten to fifteen minutes, a portable photoionization detector (PID) measures volatile hydrocarbon vapor concentrations in the tube headspace, extracting the vapor through a slit in the cap. PID measurements are used along with the field observations, odors, stratigraphy and ground water depth to select soil samples for analysis.

Water Sampling

Water samples, if they are collected from the boring, are collected from the open borehole using bailers. The ground water samples are decanted into the appropriate containers supplied by the analytic laboratory. Samples are labeled, placed in protective foam sleeves, stored on crushed ice at or below 4°C, and transported under chain-of-custody to the laboratory.

Duplicates and Blanks

Blind duplicate water samples are usually collected only for monitoring well sampling programs, at a rate of one blind sample for every 10 wells sampled. Laboratory-supplied trip blanks accompany samples collected for all sampling programs to check for cross-contamination caused by sample handling and transport. These trip blanks are analyzed if the internal laboratory QA/QC blanks contain the suspected field contaminants. An equipment blank may also be analyzed if non-dedicated sampling equipment is used.

Grouting

The borings are filled to the ground surface with cement grout poured or pumped through a tremie pipe.

Waste Handling and Disposal

Soil cuttings from drilling activities are usually stockpiled onsite on top of and covered by plastic sheeting. At least four individual soil samples are collected from the stockpiles for later compositing at the analytic laboratory. The composite sample is analyzed for the same constituents analyzed in the borehole samples. Soil cuttings are transported by licensed waste haulers and disposed in secure, licensed facilities based on the composite analytic results.

Ground water removed during sampling and/or rinsate generated during decontamination procedures are stored onsite in sealed 55-gallon drums. Each drum is labeled with the drum number, date of generation, suspected contents, generator identification and consultant contact. Disposal of the water is based on the analytic results for the well samples. The water is either pumped out using a vacuum truck for transport to a licensed waste treatment/disposal facility or the individual drums are picked up and transported to the waste facility where the drum contents are removed and appropriately disposed.

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