CAMBRIA

August 23, 2001

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

AUG 2 8 2001

Re: **Revised Subsurface Investigation Work Plan**
Former Shell Service Station
1230 14th Street # 795
Oakland, California
Incident #: 97088250
Cambria Project #: 243-0233

Dear Mr. Chan,

Cambria Environmental Technology, Inc. (Cambria) is submitting this *Revised Subsurface Investigation Work Plan* on behalf of Equiva Services LLC. The work plan was revised in response to the Alameda County Health Care Services Agency's (ACHCSA) letter dated August 13, 2001, which requested modifications to our August 8, 2001 *Additional Subsurface Investigation Work Plan.* The objective of this project is to further define the lateral extent of the dissolved gasoline plume downgradient of the site, to assess the extent of residual hydrocarbons in the former underground storage tank (UST) area, and to provide data for further study of plume attenuation and stability. Our revised scope of work is presented below.

PROPOSED SCOPE OF WORK

Instead of installing three wells along the north and west property boundaries, Cambria will install two four-inch-diameter monitoring wells to a depth of approximately 20 feet below grade (fbg) in those locations shown on Figure 1. One well will be installed near the northern boundary of the property in the vicinity of soil boring GP-3, which exhibited elevated concentrations of total petroleum hydrocarbons as gasoline (TPHg) and benzene during Cambria's December 2000 investigation. Another well will be installed along the eastern boundary of the site, near soil boring GP-1, which also exhibited elevated concentrations of TPHg and benzene during the previous investigation.

In response to the ACHCSA's request for two wells within boundaries of the former UST excavation area, we instead propose one well located near the southern boundary of the tank pit which showed elevated hydrocarbon concentrations during the UST excavation in 1995. Samples collected in the northwest and southwest corners of the tank pit also exhibited high hydrocarbon

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concentrations during the UST excavation in 1995; however, quarterly monitoring data from VW/AS-3, VW/MW-2 and VW/AS1 is sufficient to monitor those areas. Given that the former tank pit is relatively small, Cambria believes that one additional well in that area is adequate to monitor the residual hydrocarbon impact from the USTs.

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 kept onsite during field activities and will be reviewed and signed by each site worker.

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

Well Installation and Sampling Activities: Using a hollow-stem-auger drill rig, Cambria will install three four-inch diameter groundwater monitoring wells to an approximate depth of 20 fbg. Based on depth to water measurements in site wells since 1996, Cambria plans to screen the wells from 5 to 20 fbg. Well construction will be completed as described in our "Standard Field Procedures for Monitoring Well Installation," which is included as Attachment A. Given the recent sampling in two of the proposed well locations and the clean nature of the backfill in the former tank excavation area, no soil or groundwater samples will be submitted for analysis.

only if corroborated by PID or equivalent

Well Development: Blaine Tech Services, Inc. of San Jose, California will develop and sample the new monitoring wells. Well sampling will coincide with periodic sampling of the other site wells, and sampling results will be reported in the subsequent quarterly groundwater monitoring report.

Laboratory Analyses: The grab-groundwater sample will be analyzed by a State-certified laboratory for TPHg, benzene, toluene, ethylbenzene, xylenes and methyl tert butyl ether by EPA Method 8260.

Monitoring Well Installation 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;
- Monitoring well logs;
- Tabulated analytical results for groundwater;

- Analytical reports and chain-of-custody forms; and
- A discussion of the hydrocarbon distribution in the subsurface.

SCHEDULE

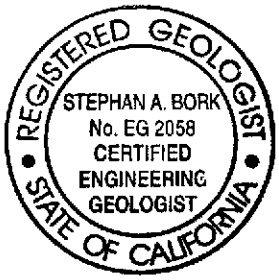
Upon receiving written approval of this work plan from ACHCSA, Cambria will apply for the necessary permits and schedule drilling. We will provide you with a 72-hour notice prior to field activities. We anticipate submitting our investigation report within eight weeks after completing the fieldwork.

CLOSING

Please call Melody Munz at (510) 420-3324 if you have any questions or comments. Thank you for your assistance with this project.

Sincerely,
Cambria Environmental Technology, Inc.

Melody Munz
Project Engineer



Stephan A. Bork, C.E.G., C.HG.
Associate Hydrogeologist

Figure: 1 - Proposed Monitoring Well Location Map

Attachment: A - Standard Field Procedures for Monitoring Well Installation

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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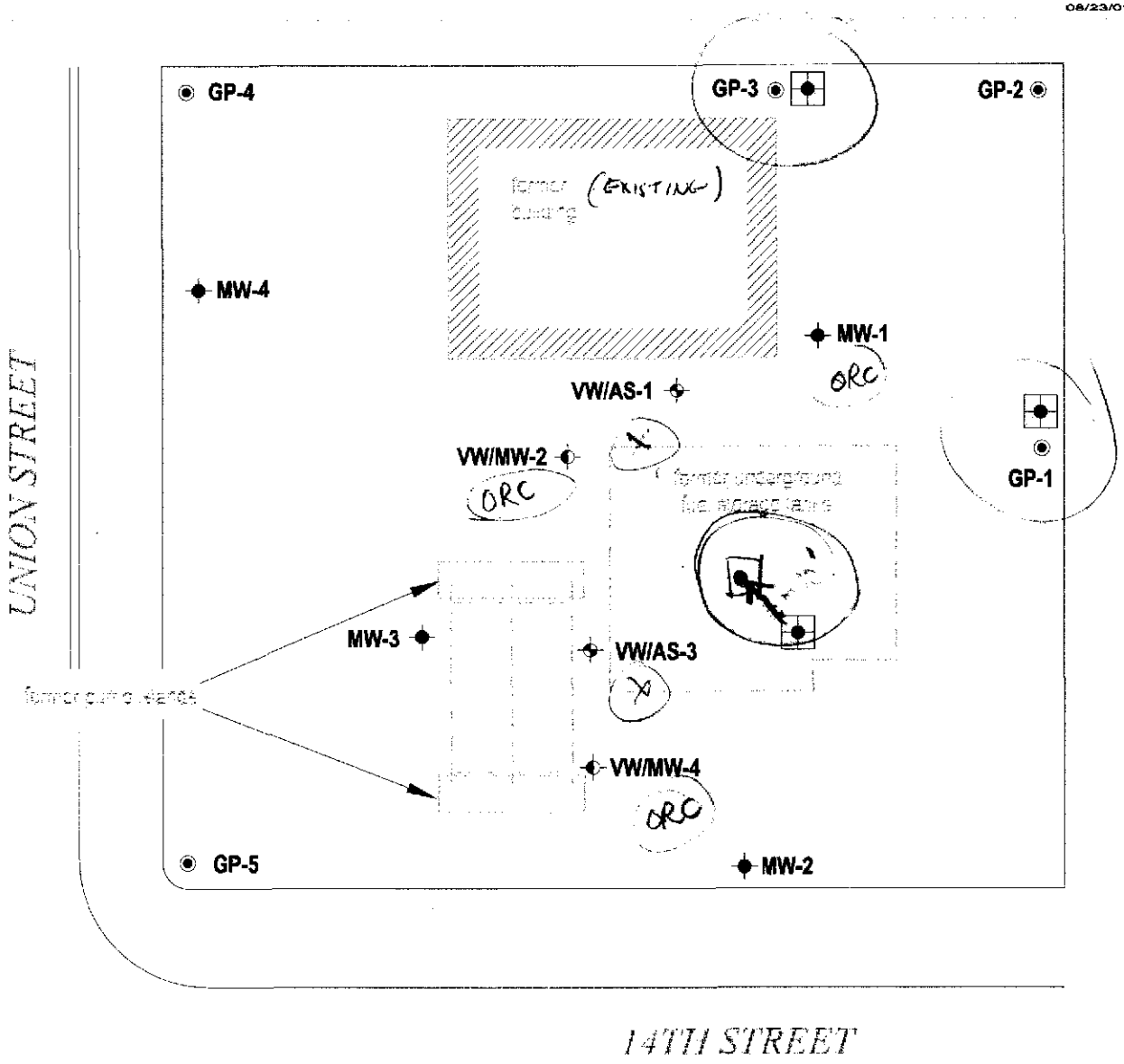

EXPLANATION

- Proposed monitoring well location
- 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)

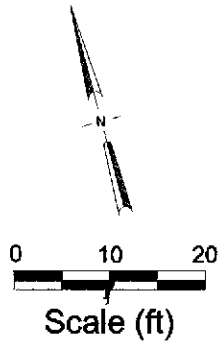

FIGURE
1

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Proposed Monitoring Well Location Map

ATTACHMENT A

Standard Field Procedures for Monitoring Well Installation

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STANDARD FIELD PROCEDURES FOR INSTALLATION OF MONITORING WELLS

This document presents standard field methods for drilling and sampling soil borings and installing, developing and sampling ground water monitoring wells. These procedures are designed to comply with Federal, State and local regulatory guidelines. Specific field procedures are summarized below.

SOIL BORINGS

Objectives

Soil samples are collected to characterize subsurface lithology, assess whether the soils exhibit obvious hydrocarbon or other compound vapor or staining, and to collect samples for analysis at a State-certified laboratory. All borings are logged using the Unified Soil Classification System by a trained geologist working under the supervision of a California Registered Geologist (RG).

Soil Boring and Sampling

Soil borings are typically drilled using hollow-stem augers or direct-push technologies such as the Geoprobe®. Soil samples are collected at least every five ft to characterize the subsurface sediments and for possible chemical analysis. Additional soil samples are collected near the water table and at lithologic changes. Samples are collected using lined split-barrel or equivalent samplers driven into undisturbed sediments at the bottom of the borehole.

Drilling 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 Analysis

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.

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 volatile vapor analyzer measures volatile hydrocarbon vapor concentrations in the tube headspace, extracting the vapor through a slit in the cap. Volatile vapor analyzer 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 either collected using a driven Hydropunch® type sampler or 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. Laboratory-supplied trip blanks accompany the samples and are analyzed to check for cross-contamination. An equipment blank may be analyzed if non-dedicated sampling equipment is used.

Grouting

If the borings are not completed as wells, the borings are filled to the ground surface with cement grout poured or pumped through a tremie pipe.

MONITORING WELL INSTALLATION, DEVELOPMENT AND SAMPLING

Well Construction and Surveying

Ground water monitoring wells are installed to monitor ground water quality and determine the ground water elevation, flow direction and gradient. Well depths and screen lengths are based on ground water depth, occurrence of hydrocarbons or other compounds in the borehole, stratigraphy and State and local regulatory guidelines. Well screens typically extend 10 to 15 ft below and 5 ft above the static water level at the time of drilling. However, the well screen will generally not extend into or through a clay layer that is at least three ft thick.

Well casing and screen are flush-threaded, Schedule 40 PVC. Screen slot size varies according to the sediments screened, but slots are generally 0.010 or 0.020 inches wide. A rinsed and graded sand occupies the annular space between the boring and the well screen to about one to two ft above the well screen. A two ft thick hydrated bentonite seal separates the sand from the overlying sanitary surface seal composed of Portland type I,II cement.

Well-heads are secured by locking well-caps inside traffic-rated vaults finished flush with the ground surface. A stovepipe may be installed between the well-head and the vault cap for additional security.

The well top-of-casing elevation is surveyed with respect to mean sea level and the well is surveyed for horizontal location with respect to an onsite or nearby offsite landmark.

Well Development

Wells are generally developed using a combination of ground water surging and extraction. Surging agitates the ground water and dislodges fine sediments from the sand pack. After about ten minutes of surging, ground water is extracted from the well using bailing, pumping and/or reverse air-lifting through an eductor pipe to remove the sediments from the well. Surging and extraction continue until at least ten well-casing volumes of ground water are extracted and the sediment volume in the ground water is negligible. This process usually occurs prior to installing the sanitary surface seal to ensure sand pack stabilization. If development occurs after surface seal installation, then development occurs 24 to 72 hours after seal installation to ensure that the Portland cement has set up correctly.

All equipment is steam-cleaned prior to use and air used for air-lifting is filtered to prevent oil entrained in the compressed air from entering the well. Wells that are developed using air-lift evacuation are not sampled until at least 24 hours after they are developed.

Ground Water Sampling

Depending on local regulatory guidelines, three to four well-casing volumes of ground water are purged prior to sampling. Purging continues until ground water pH, conductivity, and temperature have stabilized. Ground water samples are collected using bailers or pumps and 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. Laboratory-supplied trip blanks accompany the samples and are analyzed to check for cross-contamination. An equipment blank may be analyzed if non-dedicated sampling equipment is used.