CAMBRIA

ENVIRONMENTAL PROTECTION

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January 12, 1999

Mr. Scott Seery
Alameda County Health Care Services Agency
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Re: **Work Plan Addendum**
Shell-branded Service Station
350 Grand Avenue
Oakland, California
WIC #204-5510-0204
Cambria Project #240-0715-014

Dear Mr. Seery:

On behalf of Equiva Services LLC (Equiva), Cambria Environmental Technology, Inc. (Cambria) has prepared this Work Plan Addendum as requested by the Alameda County Health Care Services Agency (ACHCSA) during a phone conversation with Cambria on December 1, 1998. The initial work plan for the referenced site was described in Cambria's *Conduit Study Report* (Conduit Study) dated November 18, 1998. As discussed with the ACHCSA, this work plan addendum proposes relocation of proposed hydropunch boring HP-6 and further discusses the protocol for the proposed boring completions.

SCOPE OF WORK

Cambria proposes to conduct this phase of soil and ground water investigation to evaluate potential migration of petroleum hydrocarbons and MTBE in the sanitary sewer trench located south of the site. In addition, Cambria will evaluate the potential migration of MTBE to the west of the site in the direction of the storm drain trenches located in Perkins Street. Two soil borings will be completed south of the site within the sanitary sewer trench and spaced 100 feet apart (Figure 1). One soil boring will be completed to the west of the site between the nearest storm drain trench and existing well S-2. Following is a summary of the specific scope of work proposed.

Sewer Line Location: Cambria will coordinate with the City of Oakland Public Works and a private locator if necessary to determine the center line of the sewer pipe located south of the site and the width of the trench in which the sewer pipe was completed. This information will assist in Cambria's efforts to complete proposed borings HP-4 and HP-5 within the sewer trench backfill material as discussed below.

Oakland, CA
Sonoma, CA
Portland, OR
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Soil Borings HP-4 and HP-5: Proposed borings HP-4 and HP-5 shown on Figure 1, will be completed within the sewer line trench backfill material. Cambria will hand auger the first 5 to 10 feet below ground surface (bgs) to confirm borings HP-4 and HP-5 are located within the sewer trench backfill material. The remainder of the boring depth will be completed with a Geoprobe® direct-push rig to a total depth of 15 feet. Soil samples will be collected from each boring at 5 foot intervals or at lithologic changes. One grab ground water sample will be collected from each boring utilizing a direct-push hydropunch. Cambria's Standard Field Procedures for Geoprobe® investigations are included as Attachment A.

Soil Boring HP-6: The proposed location of boring HP-6 is shown on Figure 1. HP-6 has been relocated to a location west of source area well S-2 to evaluate the migration of petroleum hydrocarbons and MTBE to the west towards storm drain conduits located within Perkins Street. Boring HP-6 will be completed with a Geoprobe® direct-push rig to a total depth of 15 feet. Soil samples will be collected in the boring at 5 foot intervals or at lithologic changes. One grab ground water sample will be collected from the boring utilizing a direct-push hydropunch.

Chemical Analysis: Soil and ground waters samples will be analyzed for total petroleum hydrocarbons as gasoline (TPHg) and total petroleum hydrocarbons as diesel (TPHd) by modified EPA Method 8015, benzene, toluene, ethyl-benzene, and xylenes (BTEX) and methyl tert-butyl ether (MTBE) by EPA Method 8020. The highest MTBE detected in ground water samples will be confirmed by EPA Method 8260.

Schedule: Upon written approval of our proposed scope of work, Cambria will begin permitting and pre-field activities for the investigation.

CLOSING

We appreciate your continued assistance with this project. Please contact Darryk Ataide at (510) 420-3339 if you have any questions or comments.

Sincerely,
Cambria Environmental Technology, Inc.

D. Ataide

Darryk Ataide
Environmental Scientist

Diane M. Lundquist, P.E.
Principal Engineer

Attachments: A - Cambria's Standard Field Procedures for Geoprobe® investigations

cc: Karen Petryna, Equiva Services LLC, P.O. 6249 Carson, California 90749-6249
Chuck Headlee, Regional Water Quality Control Board - San Francisco Bay Region, 1515 Clay Street, Suite 1400, Oakland, California, 94612
Leroy Griffin, Oakland Fire Department, 505 14th St., Suite 702, Oakland, California, 94612

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Shell-branded Service Station
350 Grand Avenue
Oakland, California
WIC #204-5510-0204

CAMBRIA

Underground Utility and Proposed Boring Locations

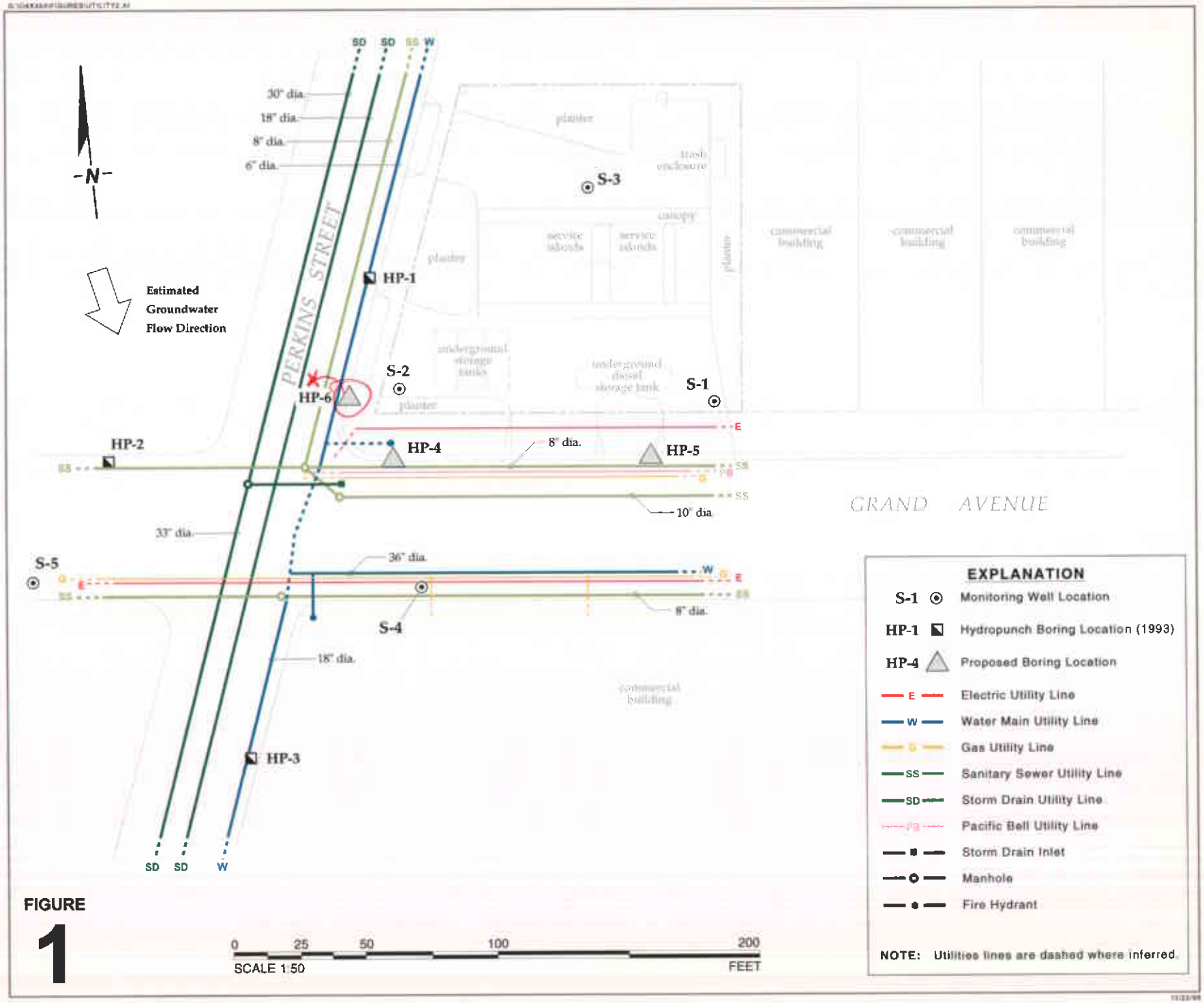

FIGURE
1

ATTACHMENT A

Cambria's Standard Field Procedures for Geoprobe® Investigations

STANDARD FIELD PROCEDURES FOR GEOPROBE® SAMPLING

This document describes Cambria Environmental Technology's standard field methods for GeoProbe® soil and ground water 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 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 separate-phase hydrocarbon saturation percentage,
- Observed odor and/or discoloration,
- Other significant observations (i.e., cementation, presence of marker horizons, mineralogy), and
- Estimated permeability.

Soil Sampling

GeoProbe® soil samples are collected from borings driven using hydraulic push technologies. A minimum of one and one half ft of the soil column is collected for every five ft of drilled depth. Additional soil samples can be collected near the water table and at lithologic changes. Samples are collected using samplers lined with polyethylene or brass tubes driven into undisturbed sediments at the bottom of the borehole. 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 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.

Field Screening

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 ground water depth to select soil samples for analysis.

Grab Ground Water Sampling

Ground water samples are collected from the open borehole using bailers, advancing disposable Tygon® tubing into the borehole and extracting ground water using a diaphragm pump, or using a hydro-punch style sampler with a bailer or tubing. 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 quality assurance/quality control (QA/QC) blanks contain the suspected field contaminants. An equipment blank may also 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.

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