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ENVIRONMENTAL PROTECTION

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June 29, 1999

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

Re: **Additional Investigation Work Plan**
Shell-branded Service Station
9750 Golf Links Road
Oakland, California
Incident # 98995744
Cambria Project #240-0472

Dear Mr. Seery:

On behalf of Equiva Services LLC (Equiva), Cambria Environmental Technology, Inc. (Cambria) has prepared this work plan to conduct additional site investigation at the Shell-branded service station referenced above. This work plan serves as an addendum to Cambria's *Soil and Water Investigation Work Plan* dated January 14, 1999. The objective of this phase of investigation is to further assess the horizontal and vertical extent of subsurface hydrocarbons beneath the site. Following is a potential receptor summary, a conduit study to evaluate potential migration pathways, and Cambria's proposed scope of work for additional soil and groundwater investigation.

Potential Receptor Survey

A well survey was performed to identify existing wells (sensitive receptors) and previously existing wells within a 1/4-mile radius from the site and to determine groundwater depths in the vicinity of the site. Records from the California Department of Water Resources (DWR) were reviewed to provide well logs within 1/4-mile radius of the site. In addition, surface topography maps were reviewed to identify any surface bodies of water in the vicinity of the site.

Monitoring Wells: No monitoring wells were identified within a 1/4-mile radius of the site. The nearest monitoring wells identified were approximately 3/4 quarters of a mile to the west of the site. One cathodic protection well was identified within a 1/4-mile of the site. Depth to groundwater was not noted in the boring log for the cathodic protection well. The total depth of the cathodic protection well was noted as 120 feet. Well locations in the vicinity of the site are mapped on Figure 1.

Oakland, CA
Sonoma, CA
Portland, OR
Seattle, WA

Cambria Environmental Technology, Inc.

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

Water Producing Wells: No water producing wells were identified within a 1/4-mile radius of the subject property.

Surface Water Bodies: Arroyo Viejo Creek is located above ground to the southeast of the site. Cal-Trans and City of Oakland engineering maps indicate the Arroyo Viejo Creek is diverted into a large (6'x5') storm drain culvert which runs underground along the west portion of the site (Figure 2).

Conduit Study

A conduit study was performed to identify potential vertical and horizontal migration pathways that may exist in the vicinity of the site. The conduit study included identification of underground utilities in the vicinity of the site. In addition, Cambria obtained storm drain and sanitary sewer maps from the City of Oakland Public Works Department (COPW) and Cal-Trans "as-built" plans for the area. Utility locations, storm drain conduits and sanitary sewer conduits are mapped on Figure 2.

Sanitary sewer conduits are located within Golf Links Road and Mountain Boulevard as shown on Figure 2. Storm drain conduits run along the west portion of the site. Construction details and estimated invert depths of sanitary sewer and storm drain conduits are also shown on Figure 2.

PROPOSED SCOPE OF WORK

To determine the extent of hydrocarbons in soil and groundwater beneath the site, we propose installing at least four hollow stem auger soil borings on site (SB-1 through SB-4) and analyzing selected soil and groundwater samples for petroleum hydrocarbons and MTBE. Proposed locations for the borings are shown on Figure 2. A fifth boring, SB-5, may be installed depending on field observations of staining and organic vapor field screening in SB-3.

Our scope of work for this investigation includes:

- Preparing a site Health and Safety Plan, coordinating field activities, securing drilling permits and notifying Underground Service Alert;
- Drilling four hollow stem auger soil borings and collecting soil and groundwater samples. Soil and groundwater data from the proposed borings will be used to

delineate a possible perched aquifer which is assumed to exist beneath the site at approximately 12 feet below ground surface.

- Preparing an investigation report presenting the results of the drilling/sampling.

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

Utility Location: Cambria will notify Underground Service Alert (USA) of our proposed drilling activities. USA will have the underground utilities in the site vicinity identified. In addition, Cambria will arrange to have a private line locator survey the proposed drilling location for underground utilities, if needed.

Permits: We will obtain the necessary permits for the installation of the soil borings from the Alameda County Department of Public Works.

Boring Installation: Four borings (SB-1 through SB-4) will be installed using a hollow stem auger drill rig. We will collect soil samples at a minimum of five foot intervals, at lithologic changes, and from within the perched water table, if encountered. **SB-5 will only be installed if field indications of hydrocarbons are observed in SB-3. We** will select soil samples for chemical analysis based on observations of staining and odor and on the results of field screening with a volatile vapor analyzer. Groundwater samples will be collected via the use of a hydropunch. Our standard field procedures for soil boring installations are presented as Attachment A.

Chemical Analysis: Selected soil and groundwater samples will be analyzed for total petroleum hydrocarbons as gasoline (TPHg) by modified EPA Method 8015, and benzene, toluene, ethylbenzene, and xylenes (BTEX) and methyl tertiary butyl ether (MTBE) by EPA Method 8020. The highest MTBE concentrations detected in soil and groundwater samples by EPA Method 8020 in each boring will be confirmed by EPA Method 8260.

Reporting: Upon receipt of the analytical results, we will prepare an investigation report that, at a minimum, will contain:

- A summary of the site background and history;
- Descriptions of the drilling and sampling methods;
- Boring logs;

- Tabulated analytical results;
- Analytical reports and chain-of-custody forms;
- Soil and water disposal methods; and,
- A discussion of the hydrocarbon distribution in the subsurface.

SCHEDULE

Upon receiving written approval of this work plan from your office, Cambria will apply for the necessary permits and schedule drilling.

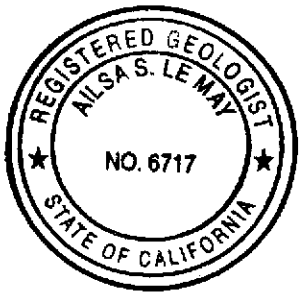
CLOSING

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

Sincerely,
Cambria Environmental Technology, Inc.

Darryk Ataide, REA I
Project Manager

Ailsa Le May R.G.
Senior Geologist



Attachments: A - Standard Field Procedures for Hollow Stem Borings

cc: Karen Petryna, Equiva Services LLC, P.O. Box 6249, Carson, CA 90749-6249

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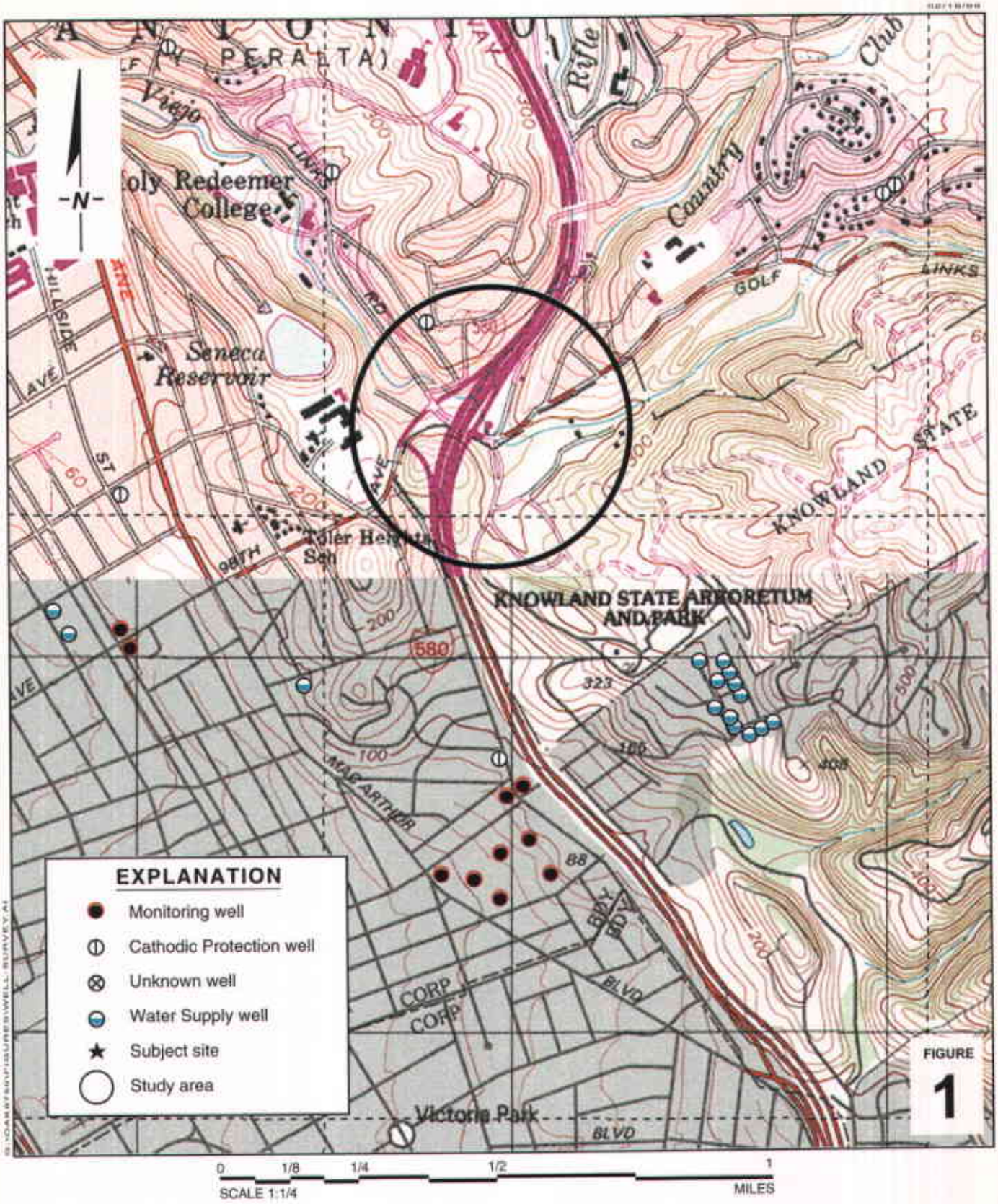

Shell-branded Service Station

9750 Golf Links Road

Oakland, California

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Area Well Survey

(1/4-Mile Radius)

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FIGURE
2

Shell-branded Service Station
9750 Golf Links Road
Oakland, California
Incident #98995744

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Site Map with Underground Conduits and Proposed Boring Locations

Attachment A

Standard Field Procedures for Soil Borings

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STANDARD FIELD PROCEDURES FOR SOIL BORINGS

This document describes Cambria Environmental Technology's standard field methods for drilling and sampling soil borings. 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

Soil borings are typically drilled using hollow-stem augers or hydraulic push technologies. At least one and one half ft of the soil column is collected for every five ft of drilled depth. 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 beyond the bottom of the borehole. The vertical location of each soil sample is determined by measuring the distance from the middle of the soil sample tube to the end of the drive rod used to advance the split barrel sampler. 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.

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 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

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 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.

Duplicates and Blanks

Blind duplicate water samples are collected 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

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.

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 licenced waste haulers and disposed in secure, licenced 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 licenced 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.