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ENVIRONMENTAL PROTECTION
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June 15, 1998

Ms. Eva Chu
Alameda County Department of Environmental Health
1131 Harbor Bay Parkway, 2nd Floor
Alameda, California 94502

Re: **Secondary Subsurface Investigation Workplan**
Shell Service Station
11989 Dublin Boulevard
Dublin, California
WIC #204-2277-0204
Cambria Project #240-548-15

Dear Ms. Chu:

On behalf of Shell Oil Products Company (Shell), Cambria Environmental Technology, Inc. (Cambria) is submitting this work plan for a secondary subsurface investigation at the site referenced above. This work plan was requested by the Alameda County Department of Environmental Health (ACDEH) in an April 20, 1998 letter. The objective is to define the extent of hydrocarbons in soil and ground water down gradient of the tank complex. After the ACDEH has reviewed our report of findings, we propose to perform a Tier One Risk Based Corrective Action Evaluation in an effort to move towards site closure. A site summary and our proposed scope of work for this investigation are presented below.

SITE SUMMARY

Site Location: This operating Shell service station is located at the intersection of Dublin Boulevard and San Ramon Road in Dublin, California (Figure 1). The surrounding area is primarily commercial with retail businesses adjacent to the site.

Dispenser and Piping Removal and Replacement: In June 1997, soil samples were collected and analyzed during dispenser and piping replacement. Maximum concentrations of total petroleum hydrocarbons as gasoline (TPHg) and total petroleum hydrocarbons as diesel (TPHd) were 690 milligrams per kilogram (mg/kg) and 12,000 mg/kg, respectively.

Underground Storage Tanks (USTs): Three gasoline USTs and one diesel UST are in use on site.

Site Wells: On August 8, 1997, six tank backfill wells were abandoned in accordance with permit #97433 issued by the Alameda County Flood Control and Water Conservation District Zone 7 (Zone 7).

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ENVIRONMENTAL
TECHNOLOGY, INC.
1144 65TH STREET,
SUITE B
OAKLAND,
CA 94608
PH: (510) 420-0700
FAX: (510) 420-9170

One tank backfill well still exists on site. Water was not encountered at 12 ft below ground surface (bgs), the maximum tank backfill well depth.

Topography: The topography in the site area is generally flat, with a slight slope to the east. Flowing east, Dublin Creek is located less than 1/4 mile south of the site and may be lined with concrete.

Hydrocarbon Distribution in Soil: Maximum concentrations of TPHg and TPHd were 690 mg/kg and 12,000 mg/kg, respectively, in soil samples taken from the southwest corner of the dispenser area during dispenser and piping removal in June 1997. The highest detected benzene and methyl tert-butyl ether (MTBE) concentrations during the same sampling event were 0.55 mg/kg and 8.9 mg/kg, respectively, both from beneath the center dispenser in the northern pump island.

Ground Water Depth and Flow Direction: Historical data from wells adjacent to the site indicate that ground water is typically 20 to 25 ft bgs. In consideration of the topography, we anticipate that ground water flows toward the east to southeast.

***Subsurface Investigation*:** As summarized in a February 24, 1998 report to the ACDEH, a Geoprobe® investigation was conducted at the site to determine the extent of hydrocarbons in soil and ground water to the north, south and east of the existing dispensers. The highest TPHg and TPHd concentrations detected in soil were 11 mg/kg and 300 mg/kg respectively, in a sample located southeast of the dispenser islands taken 25 feet bgs. A ground water sample collected directly east of the dispenser islands contained 0.47 mg/L TPHg, 4.9 mg/L TPHd, 0.017 mg/L benzene, and 0.11 mg/L MTBE. No ground water was encountered in the other borings. No field indications of hydrocarbon contamination were observed during drilling and the analytical results indicate that there is minimal impact to soil and ground water at the site.

PROPOSED SCOPE OF WORK

Available data for the site currently meets Tier One RBCA levels for closure of the site. The ACDEH has indicated that they want to ensure that higher levels of petroleum hydrocarbons are not present in soil or groundwater down gradient of the USTs. To determine the extent of hydrocarbons in soil and ground water down gradient of the tank complex, we propose drilling one soil borings using a Geoprobe® direct-push rig at the locations shown in Figure 1. If elevated hydrocarbon concentrations are detected using field screening methods, one additional soil boring will be drilled further from the tank complex area to define the extent of hydrocarbons in soil. Soil and grab ground water samples will be analyzed for TPHg, TPHd, benzene, toluene, ethylbenzene, and xylenes (BTEX), and methyl tert-butyl ether (MTBE).

Our scope of work for this investigation includes the following tasks.

Utility Location: Cambria will notify Underground Service Alert (USA) of our drilling activities. USA will have the utilities in the site vicinity identified. Due to proximity of the proposed soil borings to the active USTs and pump islands, we will review available engineering plans for the site, and if necessary, survey each

location using a private line locating firm.

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

Permits: We will obtain permits for the installation of the borings from Zone 7.

Soil Borings: Assuming the absence of overhead and subsurface obstructions, Cambria will drill one soil boring at the locations shown on Figure 1. We will collect soil samples at five foot intervals, at lithologic changes when possible, and from just above the water table. The borings will be advanced approximately 5 ft below first encountered ground water and will have an anticipated total boring depth of 25 to 30 ft bgs. Upon completion of the sampling, the boring will be sealed with cement grout to match the existing ground surface. We will select soil samples for chemical analysis based on observations of staining and odor and on the results of field screening with an organic vapor analyzer. We will also collect a grab ground water sample from the boring to measure hydrocarbon concentrations. Our standard field procedures are presented as Attachment A.

If separate phase hydrocarbons are observed on ground water or if field observations detect significant petroleum hydrocarbons in soil, we will advance one additional boring. The potential boring location is shown on Figure 1.

Chemical Analysis: Selected soil samples and grab ground water sample will be analyzed for TPHg and TPHd by modified EPA Method 8015, and BTEX and MTBE by EPA Method 8020. If elevated MTBE concentrations are detected in ground water by EPA Method 8020, we will confirm the presence of MTBE using EPA Method 8260.

Reporting: After we receive the analytic results, we will prepare a 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 soil and ground water analytic results;
- Analytic reports and chain-of-custody forms;
- Soil and water disposal methods; and,
- A discussion of the hydrocarbon distribution in soil and ground water.

SCHEDULE

Upon receiving written approval of this work plan from the ACDEH, Cambria will obtain any necessary permits and schedule drilling. We plan to submit our investigation report about four to six weeks after completing the field work. After receiving written notification that the ACDEH has reviewed the investigation report, if site data warrants, Cambria will begin generation of a Risk Based Corrective Action Evaluation in conjunction with a site closure request.

CLOSING

We appreciate this opportunity to work with you on this project. Please call if you have any questions or comments.

Sincerely,
Cambria Environmental Technology, Inc.

Aubrey Cool FOR:

Christina Empedocles
Staff Geologist

Diane Lundquist, P.E.
Principal Engineer

Attachments: A - Standard Field Procedures for Geoprobe®

cc: A. E. (Alex) Perez, Shell Oil Products Company, P.O. Box 8080, Martinez, California 94553

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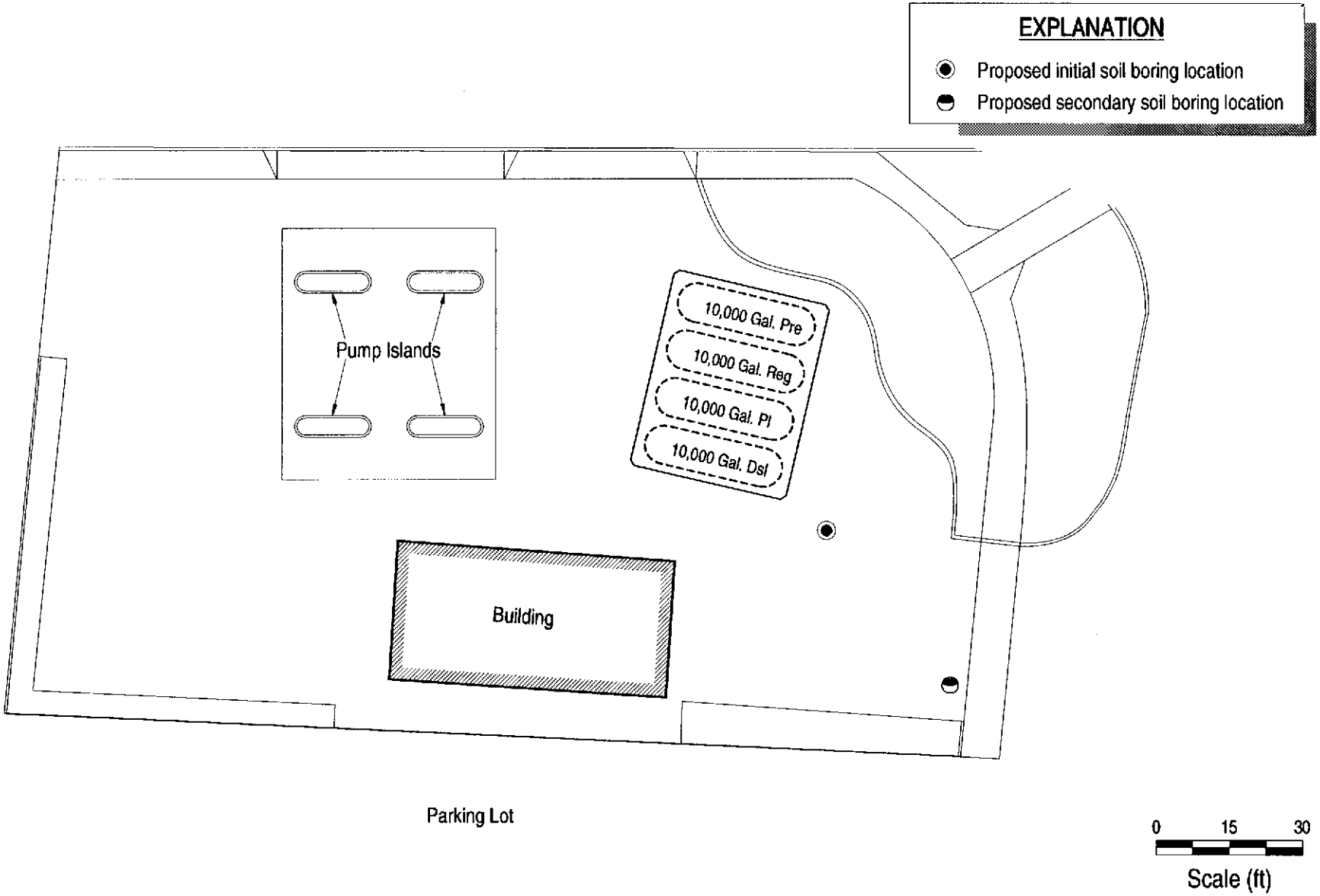

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Shell Service Station
11989 Dublin Boulevard
Dublin, California

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Proposed Soil Boring Location Map

FIGURE
1

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Attachment A

Standard Field Procedures for Geoprobe®

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.