RO-2433

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September 16, 2002

Ms. eva chu
Alameda Health Care Services Agency
1131 Harbor Bay Parkway, Room 250
Oakland, California 94502-6577

Re: **Subsurface Investigation Work Plan**
Former Shell-branded Service Station
2160 Otis Drive
Alameda, California
Incident # 98995140
Cambria Project # 244-0627

Dear Ms. chu:

Cambria Environmental (Cambria) has prepared this work plan on behalf of Equiva Services LLC dba Shell Oil Products US (Shell). The work plan is being submitted in response to a June 12, 2002 transmittal from eva chu of the Alameda County Health Care Service Agency (ACHCSA) requesting an evaluation of the potential for benzene detected in onsite well MW-3 to impact a surface lagoon located approximately 300 feet northeast of the site. The ACHCSA noted that the maximum benzene concentration detected in well MW-3 (250 parts per billion [ppb]) exceeded the Ecological Protection Zone Tier I Standard of 71 ppb benzene. The site background and proposed scope of work are presented below.

SITE BACKGROUND

This former Shell Service Station is located on Otis Drive, between Willow and Park Streets in Alameda, California approximately 3,000 feet east of San Francisco Bay (Figure 1). Shell discontinued operation of the station in September 1997, demolished the aboveground facilities, and removed the underground storage tanks (USTs) and piping.

Based on the results of more than five years of groundwater monitoring, the ACHCSA granted no further action status on November 14, 1995 for a waste-oil tank release. During the groundwater monitoring between 1989 and 1995, the depth to groundwater at this site varied between 3 and 5 feet with a flow direction of north-northeast. Groundwater samples

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collected from former wells MW-1 and MW-2 on October 11, 1994 contained over 6,500 milligrams per liter of total dissolved solids, which exceeds state guidelines for use as a drinking water source.

August 1997 Pre-Characterization Sampling: On August 1, 1997, soil samples (SB-A through SB-H) were collected near the gasoline tanks to pre-characterize soils before the tanks were removed (Figure 2). Of the 40 samples analyzed, the maximum benzene concentration was 0.15 parts per million (ppm). No benzene was detected in 35 of the samples. The maximum total petroleum hydrocarbons as gasoline (TPHg) detected in the samples was 46 ppm. No TPHg was detected in 30 of the samples.

September 1997 Tank Removal Sampling: On September 4, 1997, Paradiso Mechanical of San Leandro, California removed three 10,000-gallon fiberglass gasoline USTs and one 550-gallon fiberglass waste-oil tank, as well as associated gasoline product piping, vent piping, and dispensers. Cambria collected soil samples from near the ends of the former gasoline tanks and the waste-oil tank (Figure 2). Grab groundwater samples were collected from the gasoline tank and the waste-oil tank excavations. Cambria also collected six soil samples from beneath the former dispensers and product piping and one soil sample from beneath each of two former hoists and the former garage oil/water separator. The tank removal and sampling activities were documented in Cambria's October 3, 1997 *Tank Removal and Sampling Report.* Although petroleum hydrocarbons were detected in the grab groundwater samples from both tank pits, no petroleum hydrocarbons were detected in the soil sample from near the waste oil tank pit and only low concentrations of petroleum hydrocarbons (non-detected TPHg, maximum 0.11 ppm benzene, maximum 0.49 ppm methyl tertiary butyl ether [MTBE]) were reported (by EPA Method 8020) in the soil samples collected around the gasoline tank pit. Maximum concentrations of 270 ppm TPHg, 1.7 ppm benzene, and 0.32 ppm MTBE were detected in shallow soil samples collected beneath the former dispensers.

December 1997 Geoprobe® Investigation: On December 17, 1997, Cambria collected soil and/or grab groundwater samples from Geoprobe® borings G-1 through G-7 (Figure 2). The complete sampling activities and analytical results are documented in Cambria's January 28, 1998 *Investigation Report.* No TPHg, total extractable petroleum hydrocarbons as diesel, or benzene, toluene, ethylbenzene or total xylenes (BTEX) were detected in any of the soil samples from near the former gasoline tanks and waste oil tank, or from the northern corner of the property. MTBE was reported in one soil sample collected near the former gasoline tank pit at a concentration of 0.28 ppm by EPA Method 8020. No MTBE was detected in any other soil sample collected from any location onsite. Of the four soil samples collected from the

former dispenser areas, only one (G-6-3.5') contained detectable concentrations of TPHg (5.2 ppm) or benzene (0.0059 ppm).

No TPHg, BTEX, or MTBE was detected in the grab groundwater sample (G-5) collected from the northern corner of the site. Maximum concentrations of 2,900 parts per billion (ppb) TPHg, 240 ppb benzene, and 920 ppb MTBE (by EPA Method 8020) were detected in the two grab groundwater samples collected directly downgradient of the former dispensers and gasoline tanks.

November 2000 Well Installation: In November 2000, Cambria installed monitoring well MW-3 onsite (Figures 2 and 3). No TPHg, BTEX or MTBE was detected in any of the soil samples collected from well MW-3.

Groundwater Monitoring: Groundwater monitoring was reinitiated at the site after well MW-3 installation during the fourth quarter 2000, and suspended after the fourth quarter 2001 pending case closure review by the ACHCSA. Maximum detected TPHg, benzene and MTBE concentrations in well MW-3 were 3,100 ppb, 250 ppb and 180 ppb, respectively, during the four quarters of monitoring conducted. Depth to groundwater ranged from 5.06 feet below grade (fbg) to 5.93 fbg during the four quarters of monitoring conducted.

PROPOSED SCOPE OF WORK

To better define the northeastern extent of benzene in groundwater downgradient of monitoring well MW-3, Cambria proposes to advance three soil borings northeast of the site. The nearest practical location for boring installation is within the public right-of-way across Otis Drive from the site. The proposed soil boring locations are shown on Figure 3. Cambria's scope of work for this investigation will include the following tasks:

Utility Location: Cambria will notify Underground Services Alert (USA) of our drilling activities, and USA will identify utilities in the site vicinity.

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

Permits: Cambria will obtain the required well installation permits from the Alameda County Public Works Department and encroachment permits from the City of Alameda.

Soil Borings: Assuming the absence of subsurface and overhead obstructions, Cambria will use a direct-push drill rig to advance three soil borings in the approximate locations shown on Figure 3. The borings will be advanced to approximately 10 fbg. Soil will be continuously cored for lithologic logging purposes, and soil samples will be collected for chemical analysis at approximate 5-foot intervals. All collected soil samples will be transported to a State-approved analytical laboratory. Cambria's standard field procedures for soil boring installation are included as Attachment A.

Grab Groundwater Sampling: Grab groundwater samples will be collected from each boring at first encountered groundwater. All collected grab groundwater samples will be transported to a State-approved analytical laboratory.

Boring Backfill: Following soil and grab groundwater sampling, the borings will be backfilled with cement grout to total depth and capped to match the existing grade.

Chemical Analysis: All collected soil and grab groundwater samples will be analyzed by a State-certified analytical laboratory for TPHg, BTEX, and MTBE by EPA Method 8260.

Reporting: Upon receipt of the analytical results, Cambria 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 grab groundwater analytical results;
- Analytical reports and chain-of-custody forms; and
- Cambria's conclusions and recommendations.

Schedule: Upon receiving written work plan approval, permits will be acquired and the field activities will be schedule. An investigation report will be submitted approximately 60 days after completing the field activities.

CLOSING

We appreciate the opportunity to work with you on this project. Please call Jacquelyn Jones at (510) 420-3316 if you have any questions or comments.

Sincerely,
Cambria Environmental Technology, Inc.

Jacquelyn L. Jones
Project Geologist

Matthew W. Derby, P.E.
Senior Project Engineer

Figure: 1 - Vicinity Map
2 - Site Plan
3 - Proposed Soil Boring Location Map

Attachments: A - Standard Procedures for Soil Borings

cc: Ms. Karen Petryna, Shell Oil Products US, P.O. Box 7869, Burbank, CA 91510-7869
Mr. Preston Niette, Harsch Investment Group, 523 W. Plaza, Alameda, CA 94501

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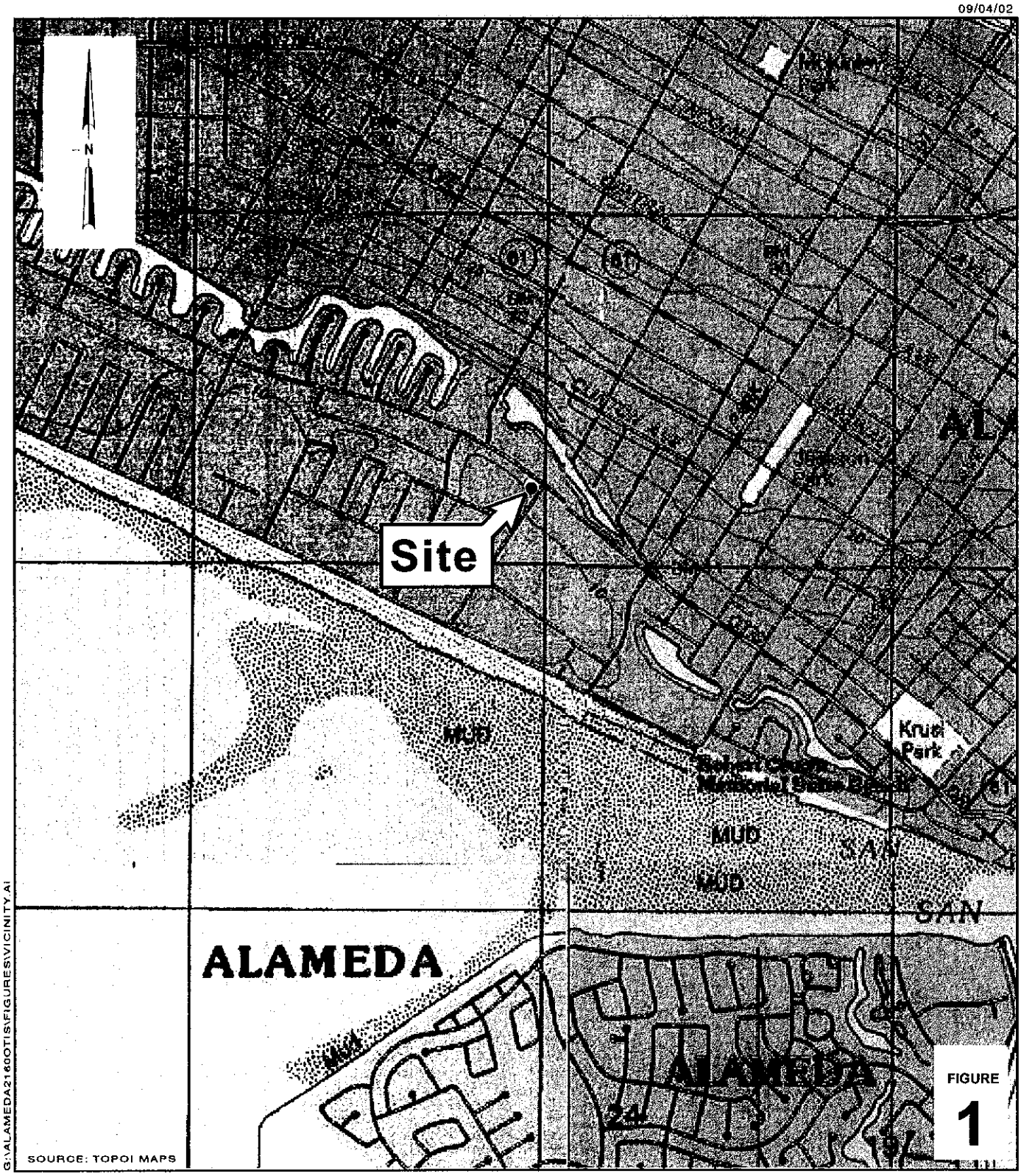

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FIGURE 1

0 1/8 1/4 1/2 1

SCALE : 1" = 1/4 MILE

Former Shell Service Station
2160 Otis Drive
Alameda, California
Incident #98995140

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Vicinity Map

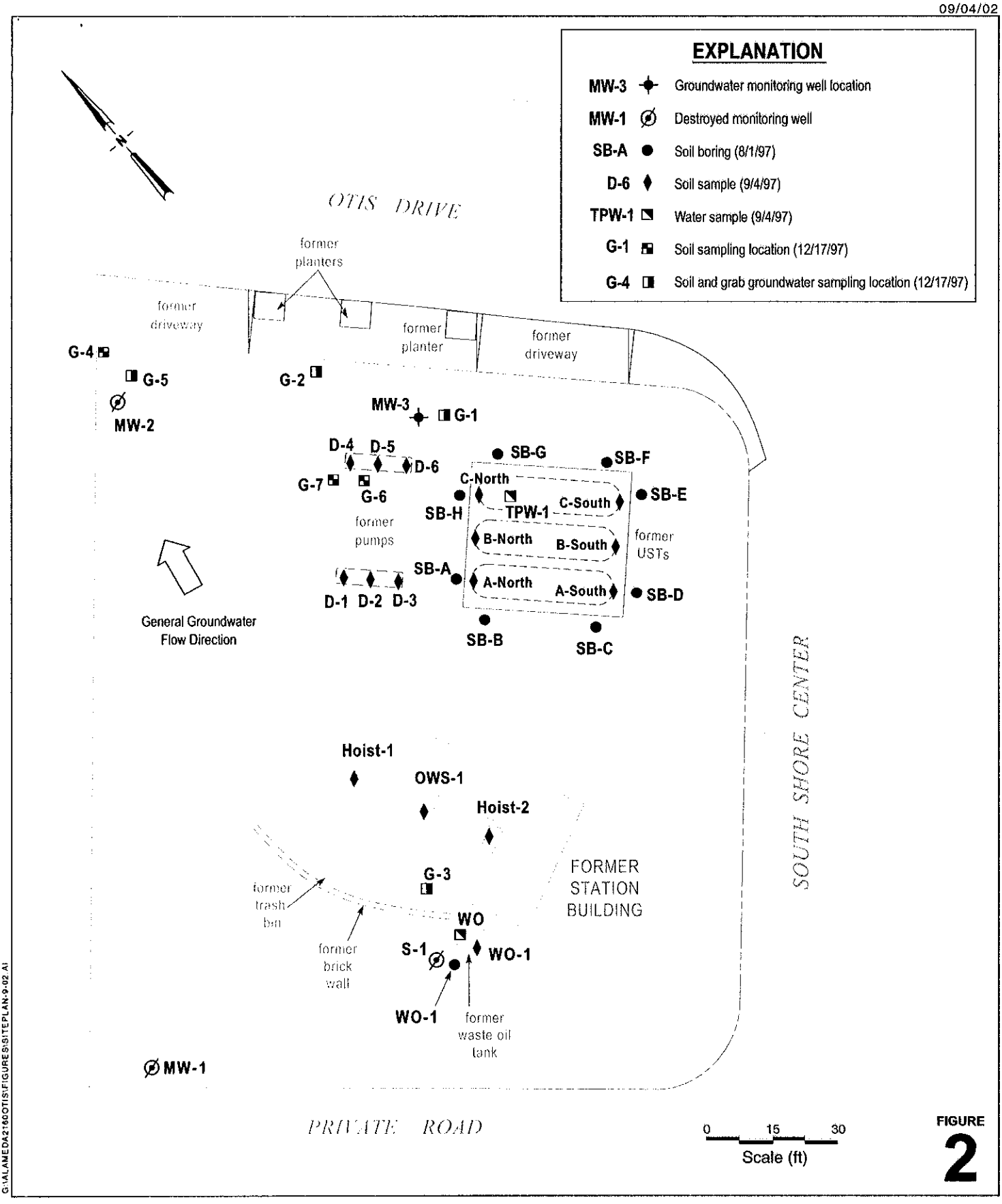

FIGURE
2

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Former Shell Service Station

2160 Otis Drive
Alameda, California
Incident #98995140

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Site Plan

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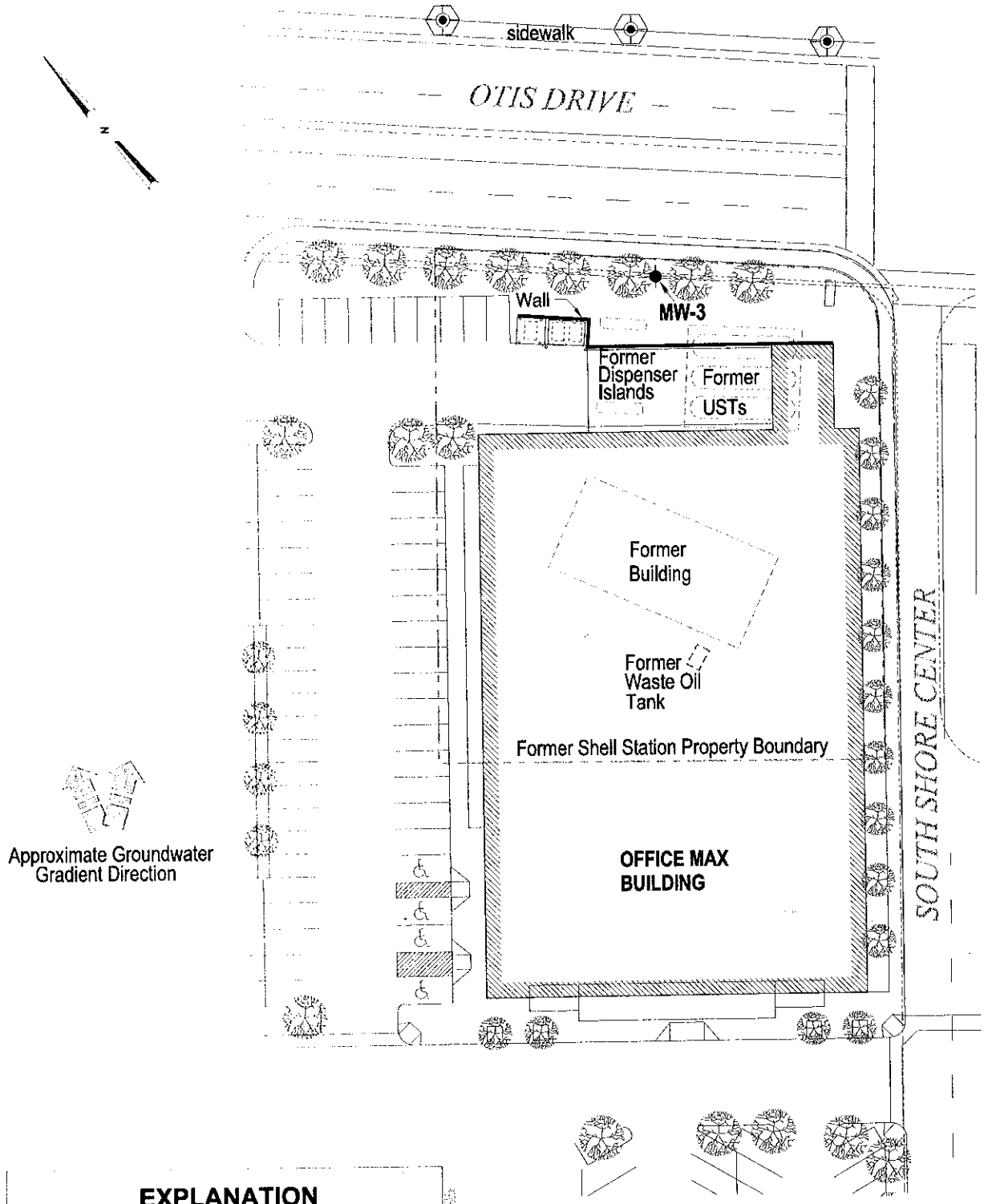

FIGURE

3

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Proposed Soil Boring Location Map

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:

- X Principal and secondary grain size category (i.e. sand, silt, clay or gravel)
- X Approximate percentage of each grain size category,
- X Color,
- X Approximate water or product saturation percentage,
- X Observed odor and/or discoloration,
- X Other significant observations (i.e. cementation, presence of marker horizons, mineralogy), and
- X 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 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.