CAMBRIA

December 19, 2001

Don Hwang
Alameda County
Health Care Services Agency
1131 Harbor Bay Parkway
Alameda, California 94502-6577

DEC 2 4 2001

Re: **Subsurface Investigation Work Plan**
Former Shell-branded Service Station
2703 Martin Luther King Jr. Way
Oakland, California 94112
Incident # 97093397
Cambria Project # 243-0781

Dear Mr. Hwang:

On behalf of Equiva Services LLC, Cambria Environmental Technology, Inc. (Cambria) is submitting this *Subsurface Investigation Work Plan*. The purpose of this work plan is to further define the extent of hydrocarbon impact in the northwest portion of the site. Presented below are the site summary, site background and the proposed scope of work.

SITE SUMMARY

Site Location: This former Shell-branded service station is located on the northwest corner of the intersection of Martin Luther King Jr. Way and 27th Street in Oakland, California (see Figures 1 and 2). The site is surrounded primarily by residential dwellings, but some light commercial development is included.

Site Lithology: The site is predominantly underlain by clay and clayey sand with lesser amounts of silt and silty sand to a maximum explored depth of 21 feet below grade (fbg).

Groundwater Flow and Direction: Historically, groundwater depths have ranged from approximately 4.5 to 10 fbg. The groundwater flow direction has fluctuated from southeast to southwest.

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SITE BACKGROUND

Site Use: A Shell service station operated on the property from approximately 1959 to 1979. The underground storage tanks (USTs) associated with the former Shell service station were removed after Shell terminated operations at the site.

In 1979, Acme West Ambulance Company (Acme) purchased the site and installed a 2,000-gallon UST for gasoline storage. Acme sold the property to Auto-Tech West (ATW) in 1986. ATW reportedly never used the UST.

Currently, the site is occupied by ATW and is utilized as an automotive repair shop.

1994 UST Removal: The 2,000-gallon UST was removed on October 11, 1994 by KTW & Associates. Two soil samples (TP-1-N and TP-2-S) were collected from beneath the tank (Figure 2). Chemical analysis of the soil samples identified the presence of total petroleum hydrocarbons as gasoline (TPHg) at concentrations ranging from 870 parts per million (ppm) to 18,000 ppm. Benzene concentrations in these samples ranged from 2.9 ppm to 100 ppm. The tank pit remained open until March 19, 1996 when the excavation was back-filled by a Shell contractor.

1995 Phase I Environmental Site Assessment (ESA): In August and September 1995, Enviros Inc. (Enviros) performed a Phase I ESA for this site. Available information collected during this ESA indicates that the subject property was occupied by residential housing prior to approximately 1959. A building permit to erect a building was obtained for Shell Oil Company in February 1959. A building permit to "close lube bays with sheet metal panels" was secured for Shell Oil Company in July 1976.

In 1979, several building permits were secured for Acme to modify existing site structures. Two building permits secured in 1979 related to the installation of a fuel pump at the site.

During a site survey, an excavation was observed near the southwest corner of the service building. The excavation was covered by a blue tarp. This excavation's location is consistent with that of the large concrete slab observed in aerial photographs taken in 1971 and 1973 and a smaller concrete slab observed in the 1981 and 1985 aerial photographs.

1995 Subsurface Investigation: A site assessment was performed by ACC Environmental Consultants on May 23, 1995. This included drilling nine soil borings in the vicinity of the former USTs and product dispenser islands with a pneumatic sampling tool, and collecting soil and groundwater samples for chemical analysis (Figure 2). TPHg concentrations in soil samples ranged from <20.0 ppm to 830 ppm. Benzene concentrations ranged from <1.0 ppm to 1.8 ppm. Separate phase hydrocarbons (SPH) were identified in water samples collected from four of the soil borings.

TPHg concentrations in the non-SPH water samples submitted for chemical analysis ranged from <50 parts per billion (ppb) to 89,000 ppb. Benzene concentrations in the water samples ranged from <0.5 ppb to 21,000 ppb.

Over-excavation and back-filling of Acme's former UST excavation was performed on March 19, 1996. The excavation, originally left open to 9 fbg, was over-excavated to approximately 11 fbg. Two soil samples (TP-3-W and TP-4-E) were collected from the bottom of the over-excavated former UST area. Soil sample TP-3-W, collected from the western end of the excavation, contained 560 ppm TPHg and 3.1 ppm benzene. Soil sample TP-4-E, collected from the eastern end of the excavation, contained 2,700 ppm TPHg and <3.0 ppm benzene. The excavation was back-filled with clean imported fill material. Soil sampling and back-filling activities are documented in Enviros' May 10, 1996 correspondence.

1996 Subsurface Investigation: In July 1996, Enviros performed additional site assessment activities. Six exploratory borings (B-10, B-11, B-12, B-13, V-1, and V-2) were drilled and sampled on July 17 and 19, 1996 using a hollow-stem auger drill rig (Figure 2). Borings B-11 and B-12 were completed as groundwater monitoring wells MW-1 and MW-2, and borings V-1 and V-2 were completed as soil vapor extraction wells V-1 and V-2, respectively. Soil sampling was not performed in boring V-1 due to the fact that it was installed into the back-fill material within the former UST excavation. A soil sample from below the saturated zone in boring V-2 was submitted for physical parameter analyses (porosity, permeability, fractional organic carbon content, and dry bulk density).

TPHg and benzene were not detected in soil samples collected from MW-1 (B-11), MW-2 (B-12) and B-13. TPHg was detected in soil samples collected from B-10 and V-2 at concentrations of 1.7 ppm and 110 ppm, respectively. Benzene concentrations in soil samples from B-10 and V-2 were <0.0050 ppm and 0.29 ppm, respectively.

Grab groundwater samples were collected from borings B-10, B-12 (MW-2), and B-13 at the depth of first encountered groundwater (approximately 8 to 11 fbg) for chemical analysis. Boring B-11 (MW-1) did not yield sufficient groundwater for grab groundwater sample collection. Monitoring wells MW-1 and MW-2 were developed and sampled on August 2, 1999 by Blaine Tech Services of San Jose, CA.

TPHg concentrations in the groundwater samples ranged from <50 ppb to 290,000 ppb. Benzene concentrations ranged from <0.50 ppb to 34,000 ppb.

1997 Modified Phase I ESA: In February 1997, Enviros performed a modified Phase I ESA for the subject facility. A review of aerial photographs (1952 to 1994), city directories (1967 to 1993) and Sanborn maps (1912 to 1970) did not reveal evidence of an off-site source of petroleum hydrocarbons which would have impacted groundwater onsite. The properties located north and

west of the subject facility appear to have been occupied by residential houses from at least 1912 to the present. The nearest gasoline stations identified in the vicinity of the subject facility were a former Chevron station (740 27th Street at West) approximately 450 feet to the west, a former station (26th Street and MLK Jr. Way) approximately 300 feet to the south, and a former Mobil station (554 27th Street) to the east.

2000 Sensitive Receptor Survey: In late 2000, Cambria performed a sensitive receptor survey which attempted to identify wells and underground utility conduits which may be impacted by subsurface conditions onsite. Cambria obtained well installation and destruction records from the California Department of Water Resources (DWR) in order to identify any active water producing wells in the vicinity of the site which may be at risk to petroleum hydrocarbon impact due to contaminant migration from the subsurface of the site. DWR records did not identify any existing wells within a ½-mile radius of the site.

2000 Subsurface Investigation: In November 2000, Cambria installed three soil borings (B-17, B-18 and B-19) and three groundwater monitoring wells (MW-4, MW-5 and MW-6) (Figure 2). Up to 2,100 ppm TPHg and 3.3 ppm benzene were reported in soil samples collected. No TPHg or benzene was detected in soil samples collected from well MW-3. Except for 0.0070 ppm detected in soil sample B-18-7.0, no methyl tertiary butyl ether (MTBE) was detected in any of the analyzed soil samples. Tertiary butyl alcohol (TBA) was detected in samples MW4-5.0 and B19-5.0 only at 0.0079 and 0.0059 ppm, respectively.

Grab groundwater samples were collected from borings B17 through B19 at first encountered groundwater for analyses during the investigation. TPHg concentrations in grab water samples collected from borings ranged from 58,000 to 190,000 micrograms per liter (µg/l or ppb). Benzene concentrations ranged from 4,400 to 13,000 ppb. MTBE was detected in groundwater at concentrations of 16 ppb and 300 ppb from B19 and B17, respectively, and TBA was detected at 240 ppb in B19 only. No SPH was observed during the investigation.

Groundwater Monitoring: Quarterly groundwater monitoring has been on-going at the site since August 1996. No TPHg or benzene has been reported in samples collected from monitoring wells MW-1 and MW-2 since monitoring began. Except for 2.36 ppb by EPA Method 8020 on January 18, 1999, no MTBE has been reported in samples collected from well MW-1 since monitoring began. MTBE was reported in well MW-2 at 6.3 ppb on January 9, 1998 and at 2.47 ppb on January 18, 1999 (by EPA method 8020). Well V-1, installed within the former UST excavation, has had decreasing TPHg and benzene concentrations since 1997. A reported MTBE concentration of 1,900 ppb in V-1 (sampled on October 24, 1997) was <200 ppb when confirmed by EPA Method 8260. Well V-2, located downgradient of the former UST excavation, has had concentrations of up to 90,000 ppb TPHg, 10,200 ppb benzene and 750 ppb MTBE (by EPA Method 8020). During two sampling events (July 2, 1997 and October 24, 1997) MTBE concentrations in

V-2, reported as 530 ppb and 120 ppb respectively when analyzed by EPA Method 8020, were both found to be below detection limits when the samples were analyzed by EPA Method 8260.

Wells MW-3, MW-4 and MW-5 were added to the quarterly monitoring program in May 2001. No TPHg or benzene has been reported in well MW-3 since monitoring began. Up to 16,000 ppb TPHg and 4,100 ppb benzene have been reported in well MW-4, and up to 160,000 ppb TPHg and 12,000 benzene have been reported in well MW-5. No MTBE has been reported in MW-3, MW-4 or MW-5 since monitoring began.

PROPOSED SCOPE OF WORK

Cambria proposes to further define the lateral extent of petroleum hydrocarbons in soil and groundwater in the vicinity of well MW-5 and previously installed boring B-13 by installing three borings and collecting soil and groundwater samples. The borings will be advanced using a hand auger due to limited access. The borings will be extended to first encountered groundwater, approximately 10 fbg, at the approximate locations show on Figure 2. Soil and grab groundwater samples will be collected and analyzed for TPHg, benzene, toluene, ethylbenzene, and xylenes (BTEX), and 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 identify utilities in the site vicinity.

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 required permits for installation of the borings.

Soil Borings: Assuming the absence of subsurface obstructions, Cambria will advance three soil borings at the approximate locations shown on Figure 2. Soil samples will be collected from the borings using a single tube hand sampler. Grab groundwater samples will be collected from the open borehole at first encountered groundwater using a disposable bailer. Upon completion of the sampling, the borings will be grouted to the surface with Portland cement. Soil and grab groundwater samples will be transported to a State-approved analytical laboratory for chemical analysis. Our standard field procedures are presented as Attachment A.

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

Reporting: Upon receipt of the analytical 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 groundwater analytical results;
- Analytical reports and chain-of-custody forms; and
- A discussion of the hydrocarbon distribution in soil and groundwater.

CLOSING

Please call Jacquelyn Jones at (510) 420-3316 if you have any questions.

Sincerely,
Cambria Environmental Technology, Inc.

Stephan Bork

for: Jacquelyn L. Jones
Project Geologist

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

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Figures: 1 - Vicinity/Area Well Survey
2 - Proposed Soil Boring and Utility Location Map

Attachment: A - Standard Field Procedures for Hand Auger Borings

cc: Karen Petryna, Equiva Services LLC, P.O. Box 7689, Burbank, California 91510-7869
Rodney and Janet Kwan, 1834 Alameda Avenue, Alameda, California, 94501

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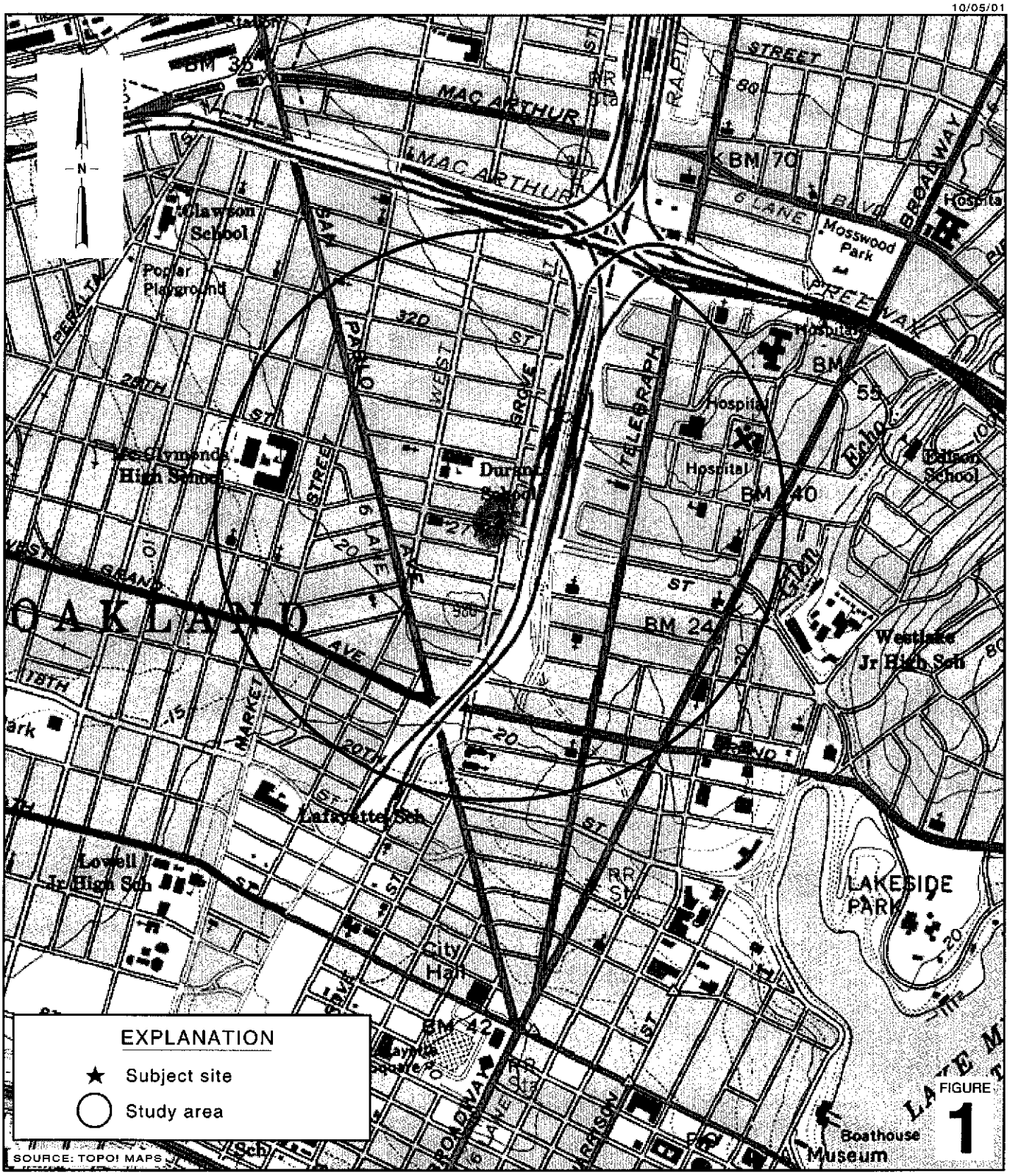

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0 1/8 1/4 1/2 1

SCALE : 1" = 1/4 MILE

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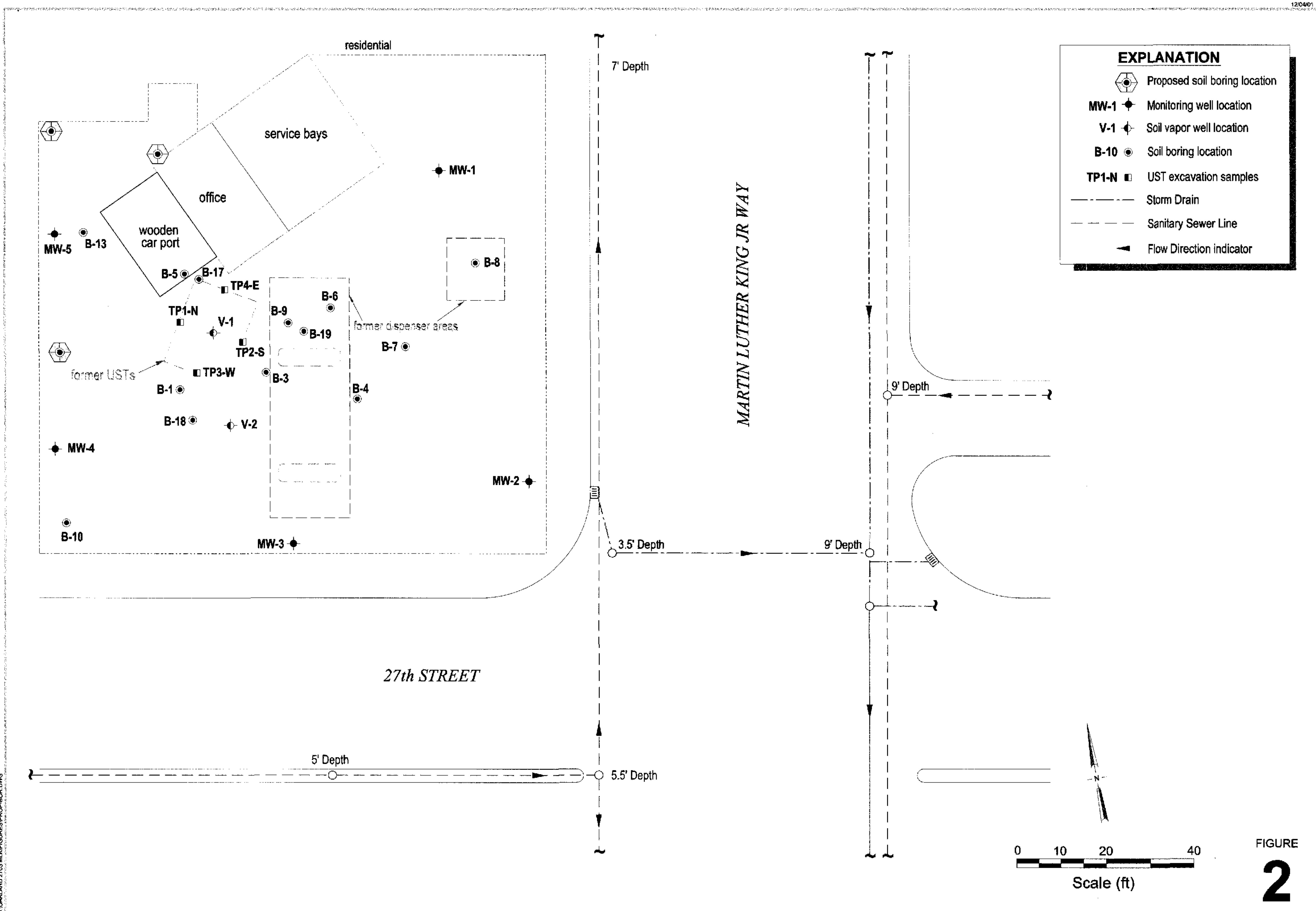
Vicinity / Area Well Survey Map
(1/2 - Mile Radius)



Proposed Soil Boring and Utility Location Map

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FIGURE

2

Former Shell Service Station

2703 Martin Luther King Jr. Way

Oakland, California

Incident #97093397

ATTACHMENT A

Standard Field Procedures for Hand Auger Borings

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STANDARD FIELD PROCEDURES FOR HAND-AUGER SOIL BORINGS

This document describes Cambria Environmental Technology's standard field methods for drilling and sampling soil borings using a hand-auger. 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

Hand-auger borings are typically drilled using a hand-held bucket auger to remove soil to the desired sampling depth. Samples are collected using lined split-barrel or equivalent samplers driven into undisturbed sediments beyond the bottom of the augered hole. The vertical location of each soil sample is determined using a tape measure. 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.

Augering 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 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

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.

11/28/01