RO 323

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Karen Streich
Project Manager

ChevronTexaco

May 27, 2004

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

Re: Chevron Service Station #9-0260

Address: 21995 Foothill Blvd, Hayward, CA

Dear Mr. Seery:

I have reviewed the attached *Additional Subsurface Investigation Workplan* for the referenced site.

I agree with the conclusions and recommendations presented in the referenced report. The information in this report is accurate to the best of my knowledge and all local Agency/Regional Board guidelines have been followed. This report was prepared by Cambria Environmental Technology, Inc., upon whose assistance and advice I have relied.

This letter is submitted pursuant to the requirements of California Water Code Section 13267(b)(1) and the regulating implementation entitled Appendix A pertaining thereto.

I declare under penalty of perjury that the foregoing is true and correct.

Sincerely,

Karen Streich
Project Manager

Enclosure: Report

RO 583

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May 27, 2004

Mr. Scott Seery
Alameda County Health Care Services Agency
Environmental Health Services
1131 Harbor Bay Parkway
Alameda, CA 94502

Re: **Additional Subsurface Investigation Workplan**
Former Chevron Station 9-0260
21995 Foothill Blvd.
Hayward, California
Cambria Project No. 31E-1915

Dear Mr. Seery:

On behalf of Chevron Environmental Management Company (Chevron), Cambria Environmental Technology, Inc (Cambria) submits this subsurface investigation workplan for the referenced site. This workplan has been prepared in response to a letter from the Alameda County Health Care Services Agency (ACHCSA) dated April 7, 2004 requesting further site investigation. This letter was prepared in response to recommendations for further site investigation in Cambria's January 30, 2004 *Site Conceptual Model* (SCM) and discussed in a meeting between Cambria, Chevron, and the ACHCSA on April 5, 2004. The site background and Cambria's proposed scope of work is presented below.

SITE BACKGROUND

Site Description: The site is a former Chevron gasoline service station located on the northwest corner of the intersection of Foothill Blvd and Rex Road in Hayward, California. The site and facilities were purchased by Chevron from USA Petroleum in 1985. Local topography is flat and the site is approximately 100 ft above mean sea level (Figure 1). It is currently fenced and undeveloped. Commercial properties are located north, east and south of the site. Residential properties are located west (down-gradient) of the site.

Pre-1985 Investigation: The previous owner of the site had apparently contracted the installation of three wells (or piezometers) in the tank field to the depth of the underground storage tanks (USTs). No records are available regarding these wells.

Cambria Environmental Technology, Inc.

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1985 UST and Piping Replacement: In 1985, Chevron discovered a leak in one of the USTs in use at the site. They were subsequently removed and replaced with double-walled fiberglass USTs. No records of subsurface conditions encountered at that time are available. Apparently, the three wells mentioned above were removed at this time.

1987 Soil Vapor Contaminant Assessment: EA Engineering conducted a vapor investigation in 1987 that detected the highest hydrocarbon vapor concentrations in the vicinity of the station's tank field.

January 1988 Subsurface Investigation: Weiss Associates (WA) conducted an investigation to further identify subsurface soil conditions and determine whether hydrocarbons had impacted groundwater. A total of six soil borings were drilled across the site. Two were drilled adjacent to the USTs to check for releases near the tank field. The remaining four were drilled across the site and completed as monitoring wells MW-4 through MW-7.

October 1988 Phase II Investigation: WA drilled four soil borings and completed three of them as wells MW-8 through MW-10.

June 1989 Phase III Investigation: WA drilled and installed wells MW-11 and MW-12 onsite and MW-13 offsite.

August 1990 Subsurface Investigation: WA installed wells MW-14 through MW-16.

Remediation Design/Installation/Operation: WA coordinated the design, permitting and installation of a groundwater extraction system to remediate groundwater beneath the site. Operation of this system began on August 23, 1991.

Bioreactor Groundwater Remediation: Beginning in June 1992, Geraghty & Miller (G&M) assumed operation of the groundwater extraction system and operated it using a bioreactor and aqueous carbon.

August 1992 Subsurface Investigation: G&M installed well MW-17 and a piezometer to assess the effects of San Lorenzo Creek on groundwater flow in the area.

October 1996 Station Demolition: In October 1996, all station facilities were removed, including The USTs and all product lines. Nearly 1,000 gallons of water and separate-phase hydrocarbons

were pumped from the tank excavation and disposed of offsite. Records indicate that pea gravel and soil overburden was placed back into the tank excavation.

Two-Phase Extraction Remediation: In July 1997, Terra Vac installed sixteen extraction wells and groundwater monitoring well MW-18. In October 1997, a two-phase extraction (TPE) remediation system began operation. Through November 1998, the TPE system had removed an estimated 29,000 pounds of hydrocarbons. Terra Vac operated the system through June 2002.

Dual-Phase Extraction Pilot Testing: In December 2002, Delta Environmental Consultants (DEC) conducted an MPE pilot test utilizing wells MW-4, MW-11 and MW-12 and two temporary wells, TMP-1 and TMP-2. Pilot testing results are reported in the document titled, *Dual-Phase Extraction Pilot Testing Results Report*, by DEC, dated February 20, 2003.

July 2003 Vapor Probe Installation: In July 2003, Cambria installed soil vapor probes VP-1 through VP-3 on the down-gradient property line to assess the vertical profile of vapor concentrations above the area of highest known residual hydrocarbon impact. Additional rounds of vapor samples were collected in January and May 2004

2003 Risk Assessment: An evaluation was performed using the initial vapor analytic data to estimate potential risk under a residential development scenario. The total estimated cancer risks for adult and child residents were 2×10^{-9} and 1×10^{-9}, respectively. Based on the National Contingency Plan (NCP), EPA's regulations for the evaluation of risk at Superfund sites, the acceptable cancer risk range is from 10^{-4} to 10^{-6}. Following the approach used by the USEPA given the inherent higher dose estimates for children, non-cancer hazards were only estimated for child residents. The total Hazard Quotient or Hazard Index (HI) for child residents was estimated at 7×10^{-5} (non-cancer hazard). An HI above 1 is considered to be of potential concern. Therefore, the risk assessment indicates that no cancer or non-cancer risk guidelines are exceeded at the site. The risk assessment was submitted to ACHCSA as an appendix in the SCM. Results of subsequent vapor sampling events will be compared to the initial data to confirm the results of the risk evaluation.

PROPOSED SCOPE OF WORK

Several data gaps were identified at this site in Cambria's January 30, 2004 SCM. To fill these gaps, Cambria proposes the following activities:

- Cambria will advance 14 cone penetration test (CPT) soil borings at the locations shown on Figure 2. These proposed borings lie along three separate transect lines perpendicular

to groundwater flow. One transect will trace along the down-gradient edge of the property. A second transect will be located approximately 300 feet down-gradient of the source area, provided access can be obtained from property owners. The third transect will be located along the access road adjacent to the eastern edge of San Lorenzo Creek, approximately 600 feet down-gradient of the source area. Soil, groundwater and vapor data will be collected from these borings at selected locations and depths, as described below. These data will be used to define conditions within the groundwater plume, calculate a mass flux estimate and provide data for developing a corrective action plan to address residual hydrocarbons.

- Cambria will advance up to six soil borings at locations across the subject site to determine current site conditions and evaluate the effectiveness of past remediation efforts. These borings will be advanced with direct push technology.

- Cambria will conduct a door-to-door well survey of the site vicinity to ensure that no drinking water wells are being impacted.

- Cambria will conduct a conduit study to determine whether utility trenches could provide potential preferential migration pathways for either dissolved or separate-phase hydrocarbons in, or on, groundwater.

Presented below is a detailed description of our proposed tasks. Standard field procedures for CPT Borings and Geoprobe borings are presented in Attachment A.

Underground Utility Location: Cambria will contact Underground Service Alert to clear all proposed boring locations. If available, utility maps of each property will be reviewed to assist in the identification of subsurface features. All CPT locations will be hand-cleared to eight fbg.

Site Health and Safety Plan: Cambria will prepare a site health and safety plan to protect site workers. The plan will be reviewed and signed by all site workers and kept onsite at all times.

Permits and Access Agreements: Cambria will obtain boring permits from the Alameda County Department of Public Works (ACDPW) prior to field activities. Cambria will also secure any necessary access agreements from private property owners and encroachment permits from the city of Hayward and from the Alameda County Flood Control District. Inspection of the field work

will be scheduled with the ACDPW and the city of Hayward in accordance with agency and city requirements.

Door-to-Door Well Survey and Community Communication: To ensure that no domestic use wells are being impacted, Cambria proposes performing a door-to-door canvass of the area down and cross-gradient of the former station. This area includes properties between Foothill Blvd and the San Lorenzo Creek, Hazel Street and Kimball Avenue. The well survey will be performed in conjunction with delivery of an information letter to the community describing proposed activities in the neighborhood and providing contact information for questions. The community communications document will be submitted to ACHCSA and the City of Hayward to review prior to distribution.

Conduit Study: Cambria proposes to map the subsurface utility structures at the site by noting exposed features (e.g. manhole covers) and underground service alert markings, and reviewing engineering drawings at the City of Hayward. Each utility will be contacted for information describing the depth of utility trenches. All utilities will be shown on a scaled site plan.

CPT Borings: Cambria will advance 14 CPT borings to a potential maximum depth of approximately 60 fbg, depending on site conditions. These borings will be advanced along three transects, perpendicular to the direction of groundwater flow. All sample locations will be cleared to 8 fbg prior to using the CPT rig. The CPT rig will be used to provide a continuous log of each hole prior to sampling. The following samples will be collected:

- ***Soil samples***: Soil samples will be collected from the two on-site CPT borings at five foot intervals, at the capillary fringe and at signs of obvious hydrocarbon impacts. Additional soil samples may be collected at lithologic changes. Soil samples will be collected from other CPT locations at the capillary fringe, at specific depths within the waterbearing zone and at signs of obvious hydrocarbon impacts to evaluate the thickness of the smear zone. Samples will be collected by advancing an adjacent boring to desired depths and driving a soil sampler lined with clean stainless steel sampling tubes into undisturbed sediment at each desired depth.

- ***Groundwater samples***: Groundwater samples will be collected at specific depths based on data from CPT logs. Cambria will target permeable and semi-permeable zones as identified by these logs for groundwater sample collection. We anticipate collecting 2 to 4 groundwater samples from each boring based on encountered lithology. These

groundwater samples will be collected using a Hydropunch® sampler. Groundwater will be decanted into sampling containers provided by Lancaster Laboratories. Cambria is currently identifying potential real-time field data collection techniques that may be used to guide at what depths samples should be collected for analysis to characterize the vertical extent of hydrocarbon impact in groundwater. Cambria will notify ACHCSA of the recommended method prior to field mobilization, if an appropriate technique is identified.

- ***Vapor samples***: Vapor samples will be collected from the CPT locations in the center transect within the neighborhood and at the northern location along the on-site transect at intervals of 8-9 fbg and 12-13 fbg. Samples will be collected in Summa canisters and submitted to Air Toxics of Folsom, California for laboratory analysis of hydrocarbons, oxygen and carbon dioxide.

Additional Geoprobe Borings: Approximately six additional borings will be advanced onsite to evaluate the effectiveness of previous remediation efforts based on current hydrocarbon concentrations in soil. These borings will be conducted in a separate mobilization. Proposed onsite boring locations are illustrated on Figure 3.

Laboratory Analysis: Selected soil samples, all groundwater samples, and all vapor samples will be analyzed for the following:

- TPHg by EPA Method 8015M,
- Benzene, toluene, ethylbenzene, xylenes (BTEX), MTBE, DIPE, TAME, TBA, ETBE, and lead scavengers 1,2-DCA) and EDB by EPA Method 8260B.
- Vapor samples will be analyzed for TPHg, BTEX and oxygenates by EPA Method TO-15, oxygen, carbon dioxide and methane.

Soil and Water Disposal: Any soil cuttings or equipment wash and rinse water generated will be stored onsite on visqueen or in sealed and labeled DOT-approved drums. These wastes will be transported to a Chevron-approved facility following receipt of laboratory soil and groundwater results.

Reporting: After the analytical results are received, an investigation report will be prepared and will include the following:

- A summary of the site background and history,

- Descriptions of the field methods,
- CPT generated logs,
- A site map showing CPT/Geoprobe boring and subsurface utility locations,
- A discussion of hydrocarbon distribution at the site,
- An updated SCM,
- Updated cross-sections, and
- Waste disposal methods.

SCHEDULE

Cambria will proceed with the proposed scope of work upon receiving written approval from the ACHCSA. We will submit a Subsurface Investigation Report 60 days after the completion of field activities.

CLOSING

Please contact Robert Foss at (510) 420-3348 with any questions or comments regarding this workplan.

Sincerely,
Cambria Environmental Technology, Inc.

Robert Foss

Robert Foss, R.G.
Associate Geologist

Figures: 1 – Vicinity Map
2 – Proposed CPT and Vapor Probe Locations
3 – Proposed Onsite Soil Borings

Attachments: A – Standard Field Procedures for CPT Borings, Standard Field Procedures for Geoprobe Borings

cc: Karen Streich, ChevronTexaco, P.O. Box 6012, San Ramon, CA 94583
Mr. Danilo Galang, Hayward Fire Dept., 777 B Street, Hayward, CA 94541

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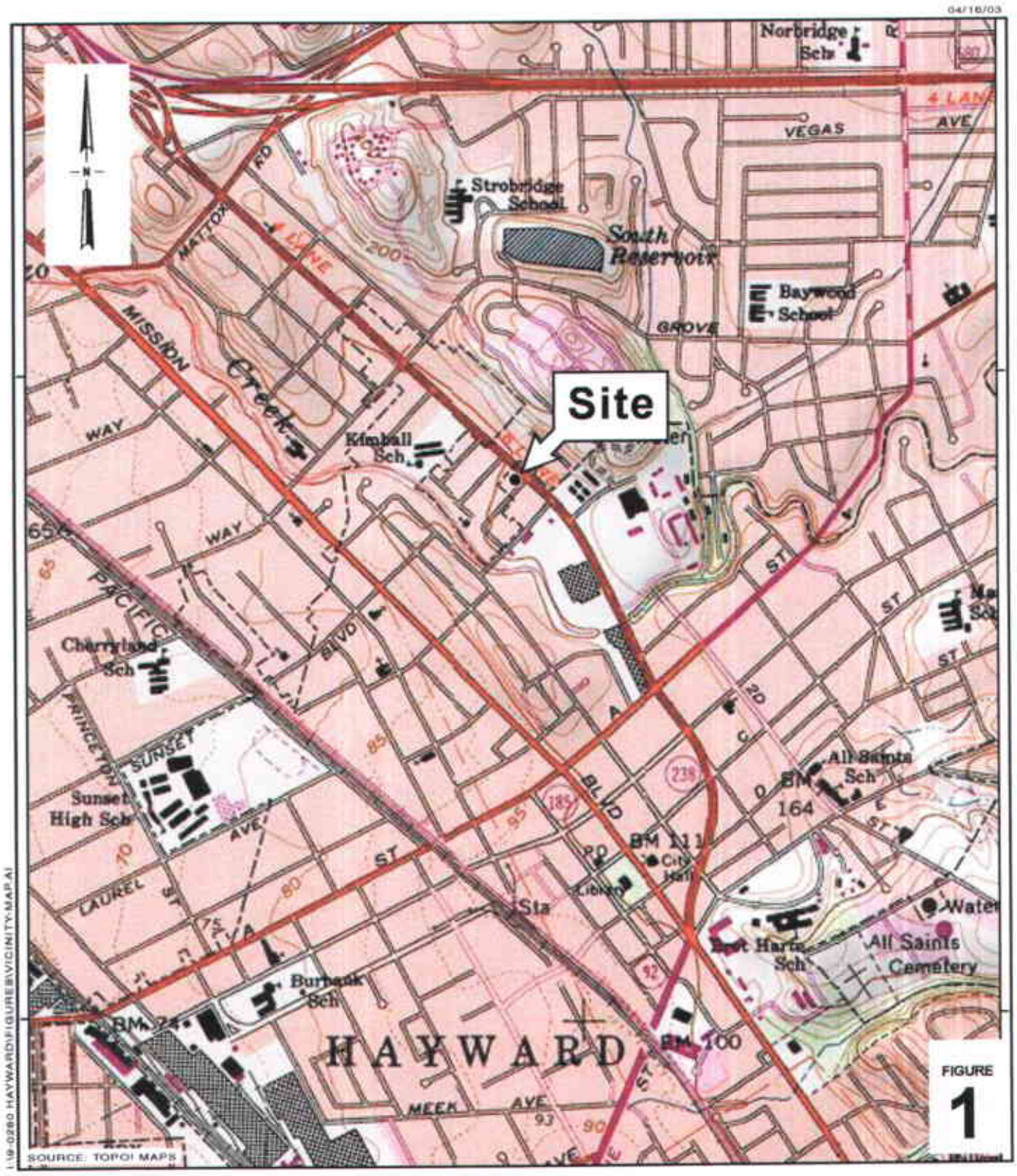

Former Chevron Station 9-0260

21995 Foothill Boulevard

Hayward, California

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Vicinity Map

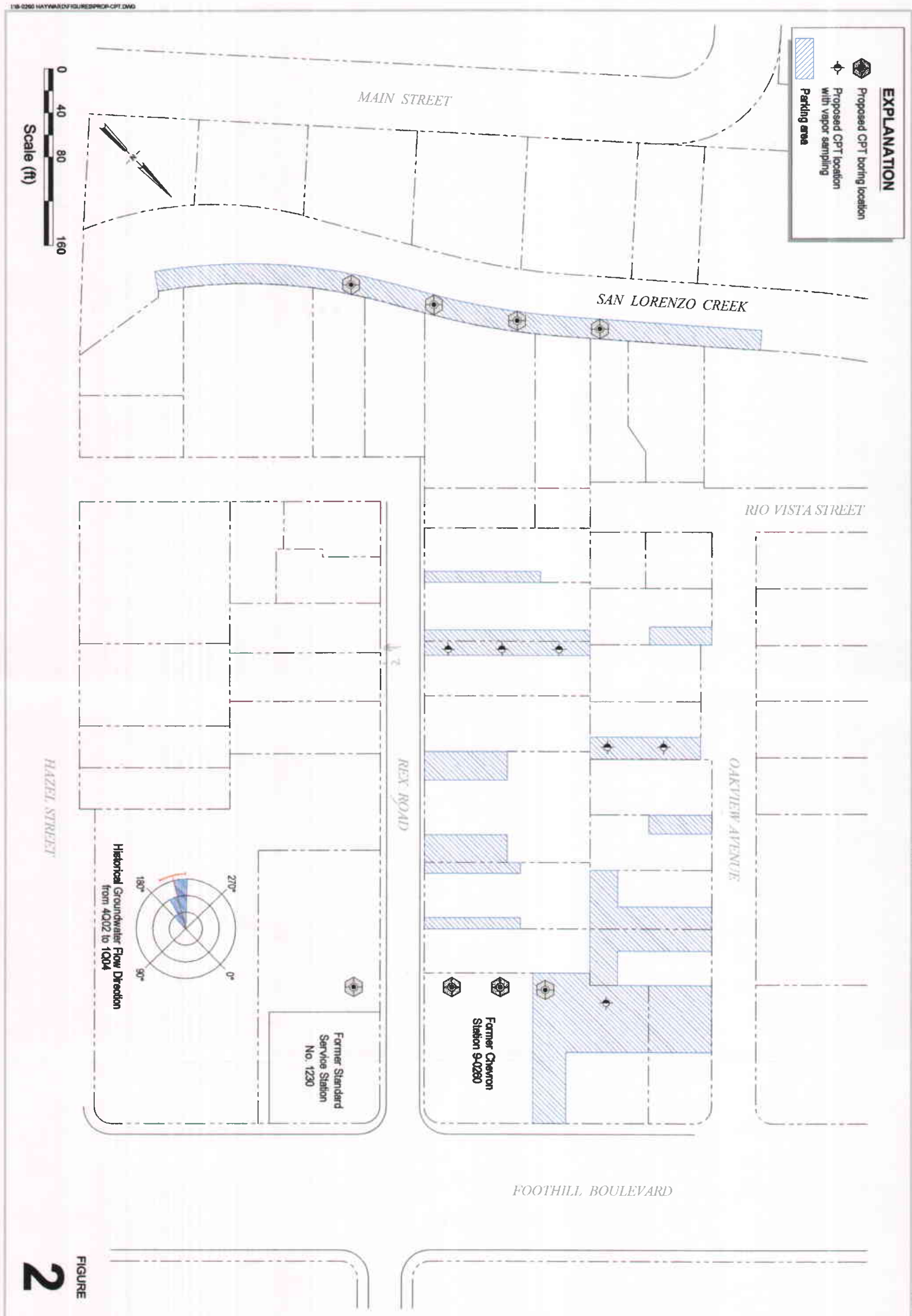

FIGURE 2

Former Chevron Station 9-0260
21995 Foothill Boulevard
Hayward, California

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Proposed CPT Boring Locations

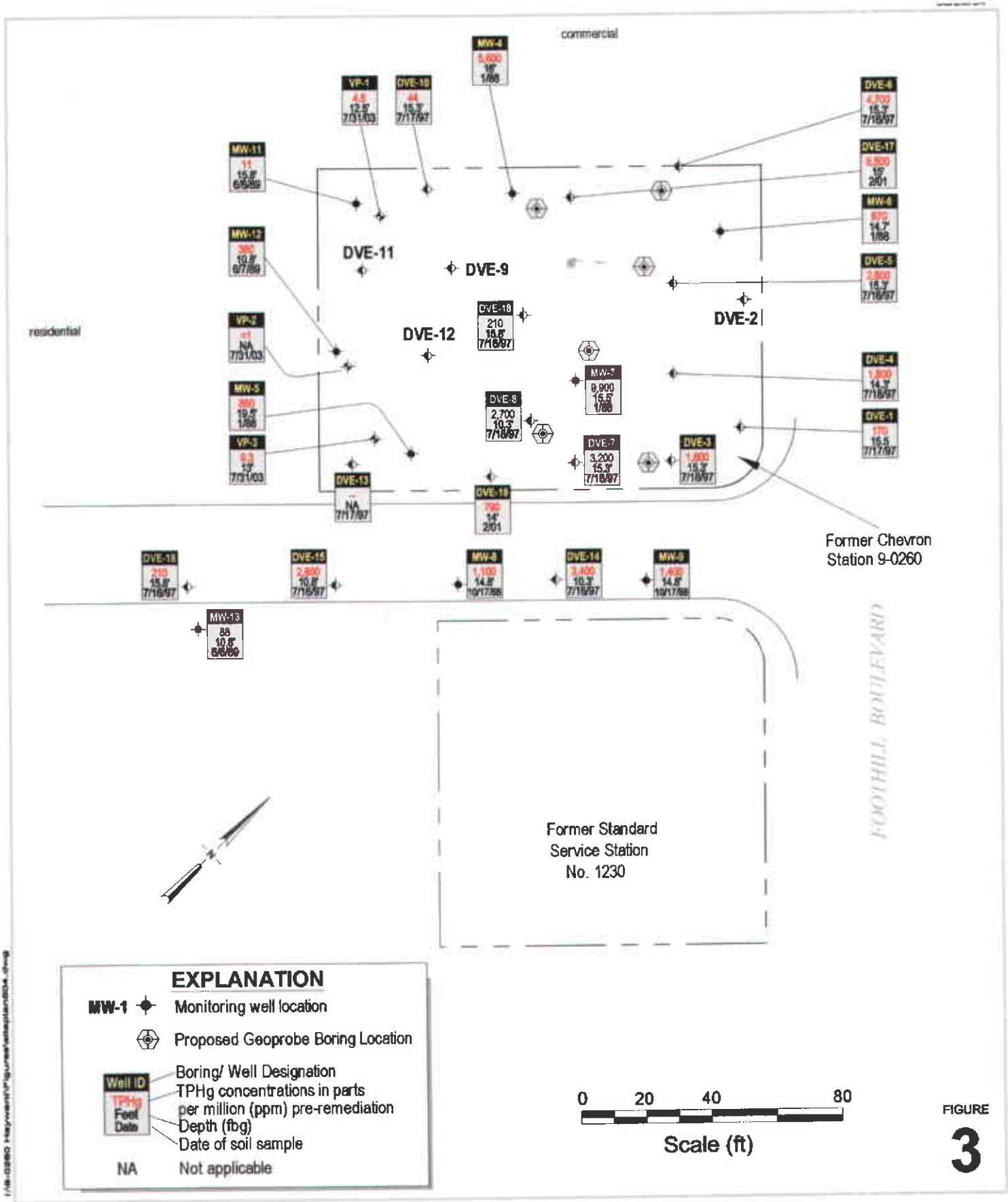

FIGURE
3

Former Chevron Station 9-0260

21995 Foothill Boulevard

Hayward, California

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Proposed Boring Locations

ATTACHMENT A

Standard Field Procedures for CPT Borings

Standard Field Procedures for Geoprobe Borings

STANDARD FIELD PROCEDURES FOR CONE PENETROMETER TESTING AND SAMPLING

This document describes Cambria Environmental Technology's standard field methods for Cone Penetrometer Testing (CPT) and direct-push soil and groundwater sampling. These procedures are designed to comply with Federal, State and local regulatory guidelines.

Use of CPT for logging and soil and groundwater sampling requires separate borings. Typically an initial boring is advanced to estimate soil and groundwater characteristics as described below. To collect soil samples a separate boring must be advanced using a soil sampling device. If groundwater samples are collected, another separate boring must be advanced using a groundwater sampling device. Specific field procedures are summarized below.

Cone Penetrometer Testing (CPT)

Cone Penetrometer Testing is performed by a trained geologist or engineer working under the supervision of a California Registered Geologist (RG) or a Certified Engineering Geologist (CEG). Cone Penetrometer Tests (CPT) are carried out by pushing an integrated electronic piezocone into the subsurface. The piezocone is pushed using a specially designed CPT rig with a force capacity of 20 to 25 tons. The piezocones are capable of recording the following parameters:

Tip Resistance (Qc)
Sleeve Friction (Fs)
Pore Water Pressure (U)
Bulk Soil Resistivity (rho) - with an added module

A compression cone is used for each CPT sounding. Piezocones with rated load capacities of 5, 10 or 20 tons are used depending on soil conditions. The 5 and 10 ton cones have a tip area of 10 sq. cm. and a friction sleeve area of 150 sq. cm. The 20 ton cones have a tip area of 15 sq. cm. and a friction sleeve area of 250 sq. cm. A pore water pressure filter is located directly behind the cone tip. Each of the filters is saturated in glycerin under vacuum pressure prior to penetration. Pore Pressure Dissipation Tests (PPDT) are recorded at 5 second intervals during pauses in penetration. The equilibrium pore water pressure from the dissipation test can be used to identify the depth to groundwater.

The measured parameters are printed simultaneously on a printer and stored on a computer disk for future analysis. All CPTs are carried out in accordance with ASTM D-3441. A complete set of baseline readings is taken prior to each sounding to determine any zero load offsets.

The inferred stratigraphic profile at each CPT location is included on the plotted CPT logs. The stratigraphic interpretations are based on relationships between cone bearing (Qc) and friction ratio (Rf). The friction ratio is a calculated parameter (Fs/Qc) used in conjunction with the cone bearing to identify the soil type. Generally, soft cohesive soils have low cone bearing pressures and high friction ratios. Cohesionless soils (sands) have high cone bearing pressures and low friction ratios. The classification of soils is based on correlations developed by Robertson et al (1986). It is not always possible to clearly identify a soil type based on Qc and Rf alone. Correlation with existing soils information and analysis of pore water pressure measurements should also be used in determining soil type.

CPT and sampling equipment are steam-cleaned or washed prior to work and between borings to prevent cross-contamination. Sampling equipment is washed between samples with trisodium phosphate or an equivalent EPA-approved detergent. Groundwater samples are decanted into 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.

After the CPT probes are removed, the borings are filled to the ground surface with cement grout poured or pumped through a tremie pipe.

Objectives

Soil samples are collected to characterize subsurface lithology, assess whether the soils exhibit obvious hydrocarbon or other compound vapor odor or staining, estimate groundwater 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

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 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 groundwater depth to select soil samples for analysis.

Grab Groundwater Sampling

Groundwater samples are collected from the open borehole using bailers, advancing disposable Tygon[7] tubing into the borehole and extracting groundwater using a diaphragm pump, or using a hydro-punch style sampler with a bailer or tubing. The groundwater 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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STANDARD FIELD PROCEDURES FOR GEOPROBE® SOIL 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.

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- 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.

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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.

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