- will borings be w/ hand-auger or w/ direct push
- Provide map of boring locations before start of field work.
- RBCA should include how representative soil + GW conc. determined (95% UCL) site specific parameters were used.

Chevron

July 12, 1999

Ms. Eva Chu
Alameda County Health Care Services
Department of Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Chevron Products Company
6001 Bollinger Canyon Road
Building L, Room 1080
PO Box 6004
San Ramon, CA 94583-0904

Philip R. Briggs
Project Manager
Site Assessment & Remediation
Phone 925 842-9136
Fax 925 842-8370

Re: Chevron Service Station #9-0290
1802 Webster Street, Alameda, California

Dear Ms. Chu:

Enclosed is the Subsurface Investigation Work Plan that was prepared by our consultant Cambria Environmental Technology, Inc. for the above noted site. This work plan was prepared in response to your letter of March 24, 1999, requesting an investigation to determine if utility trenches along Webster Street could be acting as conduits for the migration of contaminants and whether the residual soil and groundwater contamination poses a risk to human health.

ENVIRONMENTAL PROTECTION 99 JUL 12 PM 12:52

Cambria will conduct a study along Webster Street to locate all subsurface utilities prior to performing any drilling/sampling activities. Cambria proposes to install four to six soil borings by direct push technology and will collect soil samples at approximately 2 and 4-foot depths, along with a grab water sample collected from each boring.

Soil samples will also be collected for physical property analysis (i.e. dry bulk density, moisture content, porosity and fraction of organic carbon). This information will be used to calculate Tier 2 site-specific target levels (SSTLs) for site contaminants of concern (COCs).

Cambria is ready to proceed with the work outlined upon your approval. Any questions or comments to the work plan should be directed to Mr. Robert Foss of Cambria at (510) 420-3330 or to me at (925) 842-9136.

Sincerely,
CHEVRON PRODUCTS COMPANY

Philip R. Briggs
Site Assessment and Remediation Project Manager

Enclosure

Cc. Bill Scudder, Chevron

Mr. Arnold Cherry
10 Kelsey Court
Pleasant Hill, CA 94523

Mr. Robert Foss
Senior Project Geologist
Cambria Environmental Tech., Inc.
1144 65th Street, Suite B
Oakland, CA 94608 (less report)

CAMBRIA

June 16, 1999

Ms. Eva Chu
Alameda County Health Care Services
Department of Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Re: **Subsurface Investigation Work Plan**
Chevron Station #9-0290
1802 Webster Street
Alameda, California
Cambria Job No.310-1594

Dear Ms. Chu:

In response to a request from the Alameda County Department of Environmental Health (ACDEH), Cambria Environmental Technology, Inc. (Cambria) has prepared this Subsurface Investigation Work Plan. The objective for this investigation will be to determine if subsurface utility trenches are acting as conduits for the migration of contaminants and whether the residual soil and groundwater contamination poses a risk to human health. The site description, background, and current conditions, along with our proposed scope of work are presented below.

SITE DESCRIPTION

The site is located at the northeast corner of Webster Street (Highway 61) and Buena Vista Avenue in Alameda, California (Figure 1). Commercial businesses are located on the adjacent property to the north and across Webster Street to the west. A BP service station is located across Buena Vista Avenue to the south and an apartment building and parking lot are located on the adjacent property to the east. The Oakland Inner Harbor is approximately 0.75 mile to the north and the San Francisco Bay lies approximately 0.75 mile to the south. The site elevation is approximately 10 to 13 feet (ft) above mean sea level (amsl) and the topography slopes gently to the north. Chevron purchased the original property in 1925 and has operated on the site since, at least, the late 1940s. Chevron purchased two additional parcels in 1964 and leased the final two parcels in 1969. The service station was remodeled into its current configuration in 1969 and, at present, operates with four fuel underground storage tanks (USTs) and four dispenser islands.

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

Ms. Eva Chu
June 16, 1999

SITE BACKGROUND

1982 Well Installation: In January 1982, J.H. Kleinfelder & Associates of Walnut Creek, California installed six onsite monitoring wells (B-1 through B-6) to assess the extent of hydrocarbons within the subsurface resulting from a release of 50 gallons of gasoline. The wells were installed to a total depth of 18 ft below ground surface (bgs) and were screened from 3 to 18 ft bgs. Groundwater was encountered from 3.5 to 4.5 ft bgs. No soil or groundwater samples were collected for laboratory analysis; however, groundwater samples were analyzed for volatile hydrocarbons using a combustible gas meter. Following well development, hydrocarbon vapor concentrations were detected in wells B-1 through B-4 ranging from 100 to >1,000 parts per million (ppm). The 10,000-gallon regular gasoline UST was removed from service after a hole was found near the tank fill pipe. Additional information regarding well installation and sampling activities is presented in Weiss Associates's *Comprehensive Site Evaluation and Proposed Future Action Plan*, dated October 3, 1994.

1982 USTs Removal/Replacement: In 1982, the UST system was removed and replaced. A gauge stick hole was observed in the bottom of the regular gasoline tank during UST removal activities. The gasoline USTs were replaced and, in addition, a new diesel and waste oil tank and two tank backfill monitoring wells (A1 and A-2) were installed at the time. Monitoring well B-2 was destroyed to accommodate the new UST installation.

1991 Diesel Release: On September 19, 1991, approximately 1,400 gallons of diesel were accidently pumped into tank back fill well A-1 during UST testing activities. Approximately 1,600 gallons of separate-phase hydrocarbons (SPH) were removed from well A-1 immediately after the release. A SPH recovery program performed by Pacific Environmental Group Inc. of Santa Clara, California, removed an additional 346 gallons from September 1991 through July 1992. Laboratory analysis of the free product suggested that waste-oil must also have been inadvertently disposed of into well A-1. A groundwater sampling program was initiated in September 1991.

1993 Well Installation and Groundwater Monitoring: On March 29 and 30, 1993, Groundwater Technology Inc. of Concord, California supervised the installation of three additional monitoring wells (B-7 through B-9) to further assess the extent of hydrocarbons within the subsurface. The wells were installed to a total depth of 15 ft bgs and were screened from 3 to 15 ft. Groundwater was

encountered at approximately 5 ft bgs. Groundwater monitoring indicated the presence of free product in wells A-1 and A-2 at thicknesses of 0.6 ft and 0.18 ft, respectively. Total petroleum hydrocarbons as gasoline (TPHg) concentrations were detected in groundwater from wells B-1, B-3, and B-4 ranging from 5,700 to 18,000 parts per billion (ppb). No hydrocarbon concentrations in soil were detected above laboratory detection limits. Additional information regarding well installation and sampling activities is presented in Groundwater Technology Inc.'s report dated May 26, 1993.

1994 UST Removal and Well Abandonments: In April and May 1994, Touchstone Developments of San Francisco, California removed one 1,000-gallon waste-oil UST, one 350-gallon waste-oil UST and associated product piping. TPHg concentrations in soil were detected beneath the 1,000-gallon waste-oil tank up to 440 ppm and up to 1,200 ppm beneath the 350-gallon waste oil tank. TPHg concentrations in soil were detected beneath the product piping up to 4,900 ppm. Approximately 700 cubic yards of soil was excavated from the waste-oil tank pits and from beneath the product lines and transported to Redwood Landfill in Novato, California for disposal. Monitoring wells A-2, B-3, and B-4 were abandoned by Pacific Environmental Group during waste-oil UST removal activities. Additional information regarding UST removal activities is presented in Touchstone Developments' report dated July 21, 1994.

1995 Well Installation: On March 29 and 30, 1995, Gettler Ryan Inc. of Dublin, California supervised the installation of four additional monitoring wells (B-10 through B-13) to further assess the extent of hydrocarbons within the subsurface. The wells ranged in total depth from 15 to 16.5 ft bgs and were screened from 3 to 15 ft. Groundwater was encountered at approximately 7 ft bgs in wells B-10, B-12, and B-13, and at 1 ft bgs in well B-11. No free product was observed in any of the wells. TPHg concentrations were detected in soil ranging from 69 to 1,900 ppm in borings B-10 through B-12. Total petroleum hydrocarbons as diesel (TPHd) concentrations were detected in soil ranging from 1.1 to 330 ppm in borings B-10 through B-13. Methyl tert-butyl ether (MtBE) was detected in soil from borings B-11 and B-12 at concentrations of 17 ppm and 8.2 ppm, respectively. Additional information regarding well installation and sampling activities is presented in Gettler Ryan Inc.'s report dated December 29, 1995.

Ms. Eva Chu
June 16, 1999

SITE CONDITIONS

Site Lithology: The site is primarily underlain by moderate permeability sand and silty sand to the total explored depth of 18 ft bgs.

Groundwater Monitoring Wells: Monitoring wells A-1, A-2, and B-1 through B-6 have been monitored quarterly since September 1991, wells B-7 through B-9 have been monitored quarterly since April 1993, and wells B-10 through B-13 have been sampled quarterly since November 1995. Monitoring wells A-2, B-2, B-3, and B-4 were subsequently removed/abandoned during UST removal activities.

Groundwater Depth: Historically, depth to groundwater across the site has varied between 3 to 7 ft bgs. Groundwater elevations can fluctuate seasonally as much as 4 ft.

Groundwater Flow Direction and Gradient: Groundwater flow direction ranges from northwest to north with an approximate gradient of 0.01 ft/ft.

Hydrocarbon Concentrations in Groundwater: The highest hydrocarbon concentrations in groundwater are present in the vicinity north and northwest (down gradient) of the dispenser islands. Recent groundwater sampling performed in February 1999 detected TPHg concentrations ranging from ND to 690 ppb and MtBE concentrations ranging from ND to 67,000 ppb, with the highest TPHg and MtBE concentrations in well B-11.

PROPOSED SCOPE OF WORK

To determine the extent of hydrocarbon impacted soil and groundwater along subsurface utilities and to assess the potential risk of these contaminants to human health, Cambria proposes to perform the tasks described below.

Underground Utility Location: Cambria will contact Underground Service Alert and Alameda County Public Works and use an underground utility locator to locate onsite subsurface utilities and locate all subsurface utilities along Webster Street, prior to performing any drilling/sampling

utility survey should determine if they are potential conduits for off site migration

activities. Based on the results of the utility search, Cambria will conduct the boring program described below.

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

Permits: Cambria will obtain a soil boring permit from the ACDEH and if necessary, an encroachment permit, prior to beginning drilling/sampling activities.

Soil Borings and Sample Collection: Cambria proposes drilling 4 to 6 soil borings along subsurface utilities using a hand auger. The proposed borings will be located based on the results of utilities identified from the utility search described above. At that time a revised Figure 2 will be submitted identifying both the utilities and the proposed locations. Soil samples will be collected using a split spoon sampler at approximately 2 and 4 ft depths and field screened for hydrocarbons using a portable photo ionization detector (PID). Based on field screening results, subsequent soil boring locations may be revised during field activities. Soil borings will be drilled to approximately 7 ft below ground surface (bgs). Shallow groundwater is located at approximately 5 ft bgs. The borings will extend approximately 2 ft below the watertable to enable the collection of grab samples. A grab groundwater sample will be collected from each soil boring using a clean disposal bailer. Screened PVC casing may be temporarily placed into each boring to facilitate collection of a groundwater sample. All soil and groundwater samples will be placed in an iced cooler and transported under chain of custody to a State-certified laboratory for analysis. Soil borings will be grouted to the surface with neat cement and their horizontal location will be measured in the field relative to a permanent onsite reference using a measuring wheel or tape measure. Cambria's standard field procedures for soil and grab groundwater sampling are presented in Attachment A.

A key portion of a risk-based corrective action (RBCA) analysis is the potential volatilization of petroleum hydrocarbons in underlying soil and groundwater. To more accurately estimate hydrocarbon vapor concentrations beneath the site, Cambria will also collect soil samples for physical property analysis (i.e. dry bulk density, moisture content, porosity, and fraction of organic carbon). These data will be used to calculate Tier 2 site-specific target levels (SSTLs) for site contaminants of concern (COCs).

Chemical Analysis: Selected soil samples and groundwater samples will be analyzed for:

- TPHg as gasoline by modified EPA Method 8015,
- TPHd as diesel by modified EPA Method 8015 (with silica gel cleanup),
- Benzene, toluene, ethyl benzene, xylene (BTEX), and MtBE by EPA Method 8020,
- MtBE confirmation and other oxygenates by EPA Method 8260, and
- Dry bulk density, moisture content, porosity, and fraction of organic carbon.

Reporting: After the analytical results are received, a Subsurface Investigation and Risk-Based Corrective Action (RBCA) report will be prepared that, at a minimum, will contain:

- A summary of the site background and history,
- Descriptions of the drilling and sampling methods,
- Tabulated analytical results,
- A figure illustrating sampling locations and subsurface utilities,
- Analytical reports and chain-of-custody forms,
- A discussion of the hydrocarbon distribution beneath, and adjacent to, the site,
- An evaluation of all exposure pathways and sensitive receptors on- and off-site that are potentially at risk from residual hydrocarbons in soil and groundwater and;
- Risk-based clean-up goals to support case closure efforts or guide remedial actions, if necessary.

The risk assessment will be conducted in accordance with guidelines outlined in the *American Society for Testing of Materials (ASTM) Standard E 1739-95: Risk-Based Corrective Action Applied at Petroleum Release Sites.*

Ms. Eva Chu
June 16, 1999

SCHEDULE

Cambria will perform the proposed activities following written approval of the work plan from the ACDEH. We will submit the Subsurface Investigation Report and Human Health Risk Assessment approximately six weeks after completing the field activities.

Sincerely,
Cambria Environmental Technology, Inc.

Robert Foss

Robert Foss
Senior Project Geologist

(for)

Deno Milano, RG
Senior Geologist

cc: Mr. Phil Briggs, Chevron Products Company
Mr. Bill Scudder, Chevron Products Company (w/o attachments)

Attachments: A - Standard Field Procedures for Geoprobe® Sampling

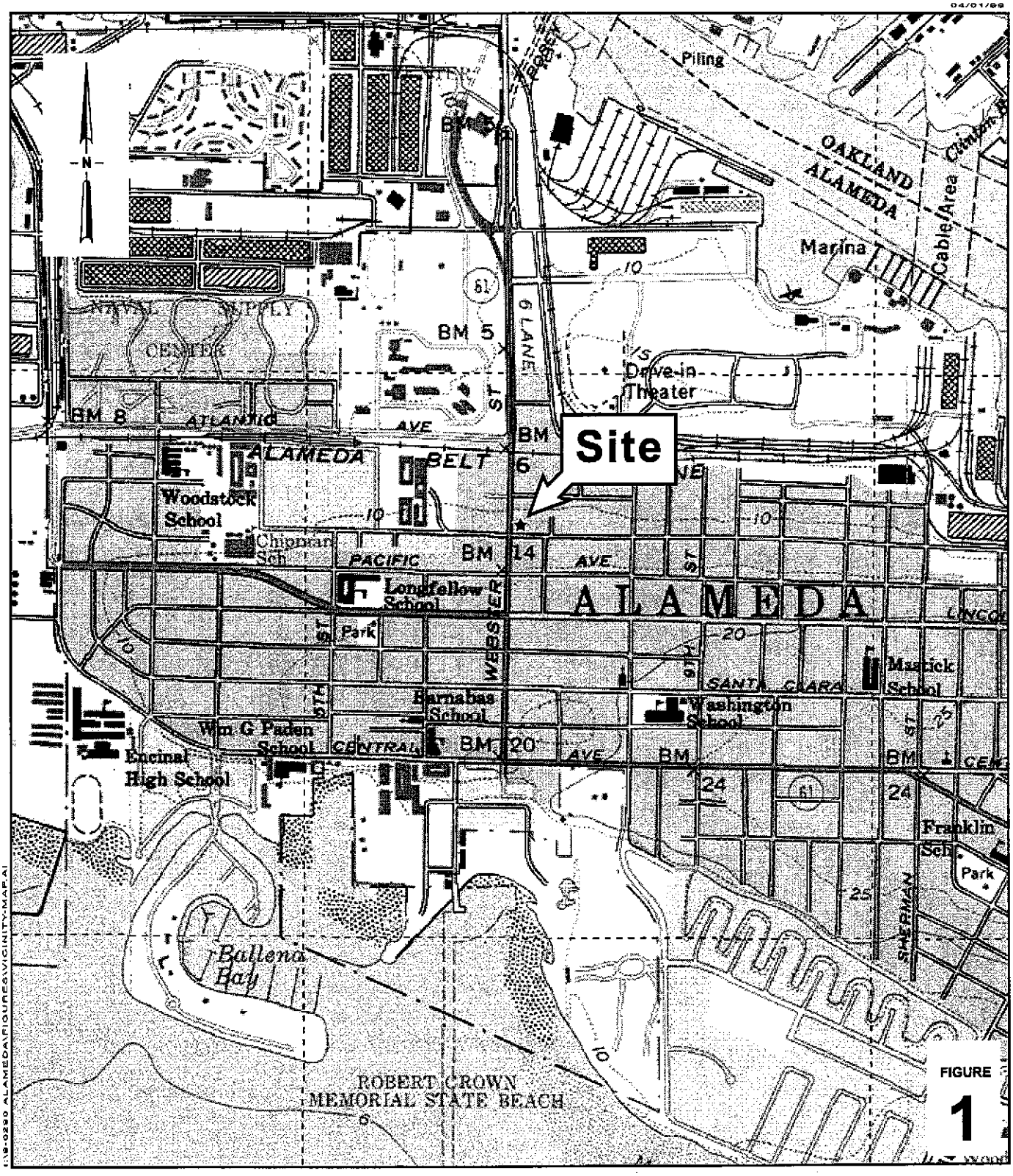


FIGURE 1

0 1/8 1/4 1/2 1

SCALE 1:1/4 MILES

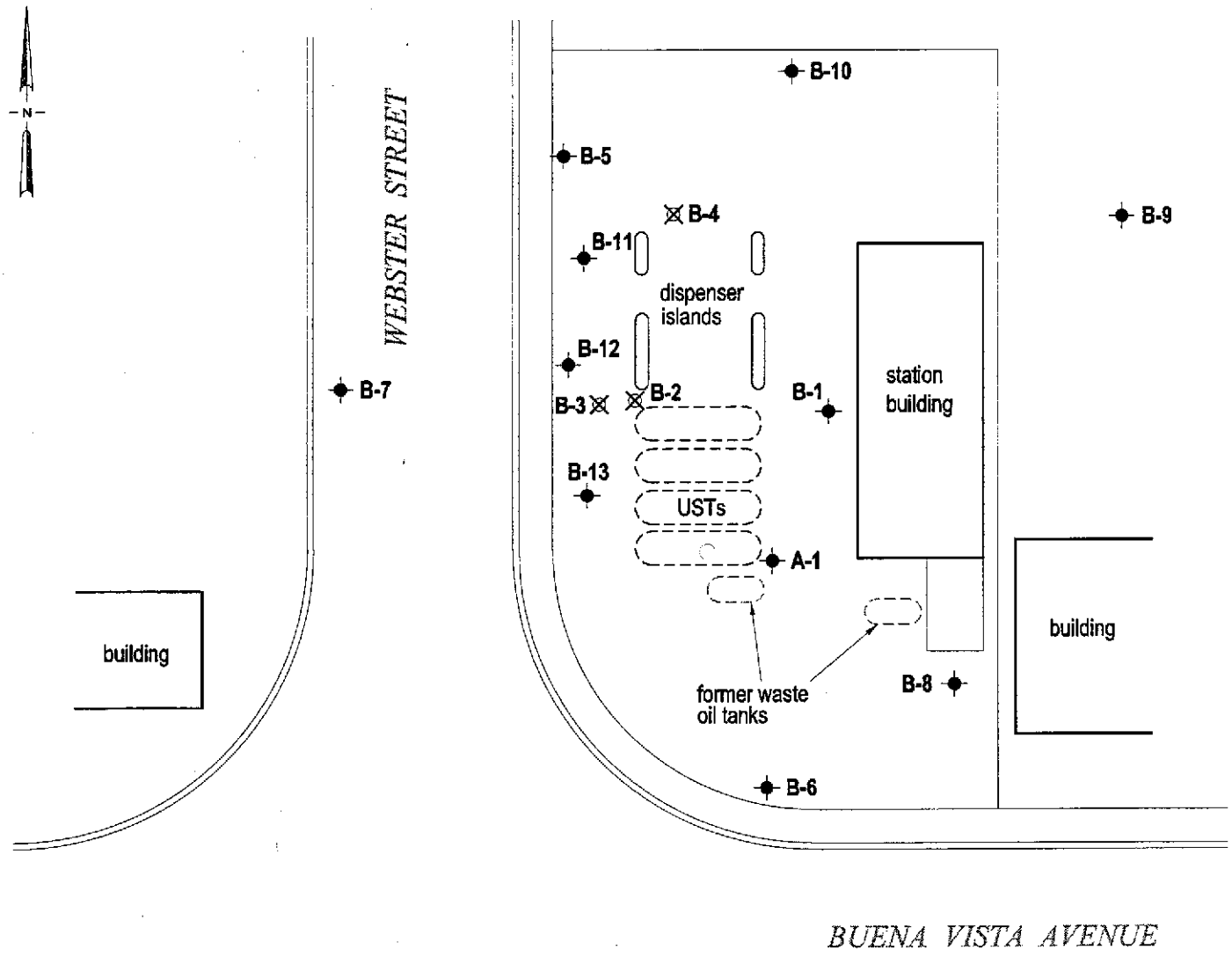
Chevron Service Station 9-0290

1802 Webster Street

Alameda, California

CAMBRIA

Vicinity Map



EXPLANATION

- MW-1 ⊕ Monitoring well location
- SB-1 ⊠ Abandoned monitoring well
- → Ground water flow direction
- XX.XX Ground water elevation contour, in feet above mean sea level (msl), dashed where inferred
- Well designation
- ELEV Ground water elevation (msl)
- Benzene and MTBE concentrations are measured in parts per billion (ppb)

0 5 10

Scale (ft)

FIGURE 2

I:\9-0290 ALAMEDA\FIGURES\SITE-PLAN.DWG

Chevron Service Station 9-0290

1802 Webster Street

Alameda, California

CAMBRIA

Site Plan

CAMBRIA

ATTACHMENT A

Standard Field Procedures

CAMBRIA

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.