Chevron

Thomas K. Bauhs
Project Manager
Retail and Terminal
Business Unit

Chevron Environmental Management Company
6001 Bollinger Canyon Road
San Ramon, CA 94583
Tel (925) 842-8898
Fax (925) 842-8370

8/8/07
(date)

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

Re: Chevron Facility # 9-1740

Address: 6550 Moraga Avenue, Oakland, CA

I have reviewed the attached report titled Workplan for Additional Investigation and dated August 8, 2007.

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 Conestoga Rovers & Associates, 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,

Thomas K. Bauhs
Project Manager

Enclosure: Report

CONESTOGA-ROVERS
& ASSOCIATES

2000 Opportunity Dr., Suite 110, Roseville, California 95678
Telephone: 916-677-3407, ext. 100 Facsimile: 916-677-3687
www.CRAworld.com

August 8, 2007

Mr. Barney Chan
Alameda County Health Care Services Agency (ACHCSA)
Department of Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502

Re: **Workplan for Additional Investigation**
Chevron Service Station #9-1740
6550 Moraga Avenue
Oakland, California

Dear Mr. Chan:

Conestoga-Rovers and Associates (CRA) is submitting this *Workplan for Additional Investigation* on behalf of Chevron Environmental Management Company (Chevron) for the site referenced above. CRA proposes advancing four soil borings with depth discrete groundwater sampling to further define the extent of petroleum hydrocarbons in soil and groundwater, and evaluate the type of heavier hydrocarbons previously detected in groundwater. The site background and the proposed scope of work are described below.

SITE DESCRIPTION AND BACKGROUND

The site is an active service station located at the northwest corner of the intersection of Moraga Avenue and Mountain Boulevard, in a mixed commercial and residential area of Oakland, California (Figures 1 and 2). Under a ground lease agreement, Chevron began station operations in 1936. According to Chevron records, site improvements were made prior to 1936, indicating station operations existed prior to Chevron's involvement. Site facility configuration information prior to 1960 is not available.

Site facilities include a station building with two service bays, three 10,000-gallon double-walled fiberglass underground storage tanks (USTs), three dispenser islands, and associated product piping. Groundwater flow direction is towards south-southwest. Depth to groundwater during the first quarter 2007 monitoring and sampling event was between 4 and 8 feet below grade (fbg).

Previous Investigations

1960 Site Re-configuration: In 1960, Chevron reconfigured the site with a station building, two service bays, four (three gasoline and one diesel) 10,000-gallon single wall fiberglass USTs, one 1,000-gallon used-oil UST, two dispenser islands, and associated product piping.

1990 Monitoring Well Installation: In 1990 Touchstone Developments Environmental Management (Touchstone) installed monitoring wells C-1 through C-4 which have been monitored quarterly since 1991. Soil samples collected from borings C-1, C-2, and C-4 reported maximum concentrations of total petroleum hydrocarbons in gasoline (TPHg) at 442 mg/kg and 2 mg/kg benzene. No TPHg or benzene was reported in soil samples from C-3.

1992 Monitoring Well Destruction and Used Oil UST Replacement: In 1992 the 1,000-gallon used-oil UST was replaced. At that time, a previously unknown 550-gallon used-oil UST was discovered adjacent to the used-oil UST and was subsequently removed. Monitoring well C-1 was destroyed during used-oil UST replacement.

1996 Diesel UST Removal and Gasoline UST Replacement: In 1996, Chevron replaced its gasoline fuel USTs, dispensers, and product piping and permanently removed the diesel UST. Soil samples collected during UST replacement reported maximum concentrations of 1,200 mg/kg TPHg, 1,100 mg/kg total petroleum hydrocarbons in diesel (TPHd), and 3.9 mg/kg benzene.

1999 Oxygen Release Compound® (ORC Installation): In June 1999, ORC was installed in wells C-2 and C-4. Subsequent monitoring events reported TPHg, benzene, and methyl tertiary butyl ether (MTBE) concentrations had dropped significantly in these wells.

2004 Receptor Survey: In February 2004, Cambria completed a Department of Water Resources (DWR) well survey. One domestic well and one irrigation well were found within a one-half mile radius. Both identified wells are west of the site, down- to cross-gradient. However, both wells are screened in deeper sediments, approximately 300 to 400 fbg; thus, site hydrocarbons do not likely pose a significant risk to the nearby wells. A reservoir is located approximately 1,600 feet northwest of the site and Sausal Creek is approximately 2,000 feet east of the site.

2005 and 2006 Offsite Assessment: In October and November 2005, Cambria advanced five offsite borings (SB-1, and SB-4 through SB-7) southwest, south, and southeast of the site. In April 2006, four Geoprobe borings (GP-1 through GP-4) were advanced cross- and downgradient of the site (to the southwest and south of the site). TPHd, TPHg, BTEX, and MTBE were not reported in soil samples above laboratory reporting limits, but were reported in groundwater samples collected from GP-1 through GP4, SB-6, and SB-7. MTBE was inadvertently omitted from groundwater analyses for GP-1 through GP-4. Concentrations of semi-volatile organic compounds perchloroethene (PCE), cis-1,2-dichloroethene, and trichloroethene (TCE) were also reported in groundwater samples collected from SB-5 and SB-7.

PROPOSED SCOPE OF WORK

To further evaluate the lateral extent of MTBE in groundwater, CRA proposes four cross- and downgradient Geoprobe® soil borings with discrete grab-groundwater samples. Proposed boring locations will be adjacent to GP-1 through GP-4, as shown on Figure 2. CRA's standard operating procedures are presented as Attachment A. The specific scope of work is discussed below.

In lieu of soil borings, CRA considered monitoring wells in Moraga Avenue to monitor dissolved concentrations downgradient. However, subsurface utilities identified during previous investigations would force the well locations into unsafe traffic patterns in Moraga Avenue. Also, very thick vegetation and Highway 13 prevent well installation further downgradient of Moraga Avenue. CRA hopes that results from recent investigations and the work proposed in this work plan show dissolved concentrations are low enough downgradient such that monitoring wells will not be warranted.

Underground Utility Location: CRA will notify underground service alert (USA) prior to field work to clear boring locations with utility companies. A private utility line locator will be contracted to additionally clear boring locations of utility lines.

Site Health and Safety Plan: CRA will prepare a site safety plan to inform site workers of known hazards and to provide health and safety guidance. The plan will be kept onsite at all times and signed by all site workers.

Permits: CRA will obtain boring permits from the ACHCSA and an encroachment permit from the City of Oakland prior to beginning field operations. A minimum of 72 hours notice will be given to the ACHCSA prior to field work.

Soil borings: CRA proposes advancing four Geoprobe® soil borings. After clearing to 8 fbg using a hand auger to further ensure no utilities are present, each boring will be advanced to approximately 15 feet below first encountered groundwater. Soil will not be logged and soil samples will not be analyzed since that data was obtained in adjacent borings in April 2006. Soil samples will be screened using a photoionization detector (PID). Upon completion of each boring and collection of grab-groundwater samples as described below, the borings will grouted to surface with neat Portland cement. CRA's Standard Field Procedures are presented as Attachment A.

Grab Groundwater Sampling: One grab-groundwater sample will be collected from each borehole at first encountered groundwater, and a second sample will be collected at

approximately 10 to 15 feet below first encountered water. The ground water samples will be decanted into the appropriate containers supplied by the analytical laboratory. Samples will be labeled, stored on crushed ice at or below 4° C, and transported under chain-of-custody to the laboratory.

In addition, a grab-groundwater sample will be collected from monitoring well C-4 to be analyzed for a gas chromatograph (GC) fingerprint analysis. This will help identify the heavier-end hydrocarbons present beneath the site, which has been reported during previous investigations and has been discussed with ACHCS.

Chemical Analysis: The grab-groundwater samples will be analyzed for:

- MTBE by EPA Method 8260 (soil borings only)
- Multi-Range TPH Fuel Fingerprint and TPHCWG Fractionated Aliphatics and Aromatics by EPA Method 8015C (monitoring well C-4 only)

Soil and Water Disposal: Soil cuttings will be temporarily stockpiled and covered with plastic or placed in sealed DOT-approved drums onsite. Rinse water will be stored in drums pending proper disposal. Following review of laboratory analytical reports, wastes will be transported to a Chevron-approved disposal facility.

Reporting: Upon completion, CRA will document all field activities and analytical results in a report that, at a minimum, will contain:

- A brief summary of the site background and history,
- Boring logs,
- Tabulated soil and groundwater sample analytical results,
- A figure illustrating the location of the borings,
- Analytical reports and chain-of-custody forms,
- Soil/water disposal methods,
- A discussion of hydrocarbon and oxygenate distribution at the site, and
- CRA's conclusions and recommendations.

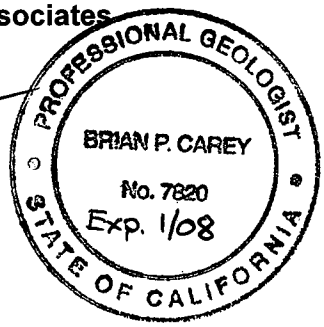
SCHEDULE

CRA will proceed with this work after receiving written approval of this work plan from the ACHCSA, or following 60 days after submittal to the ACHCSA. CRA will submit an investigation report approximately six to eight weeks after completion of field activities.

CLOSING

We appreciate this opportunity to work with you on this project. Please contact me at (916) 677-3407 (ext. 106) if you have any questions or comments.

Sincerely,
Conestoga-Rovers and Associates



Brian P. Carey, P.G.
Project Geologist

Figures: 1 – Vicinity Map
2 – Site Plan

Attachments: A – Standard Field Procedures for Soil Borings

cc: Mr. Tom Bauhs, Chevron Environmental Management Company
P.O. Box 6012, San Ramon, CA 94583

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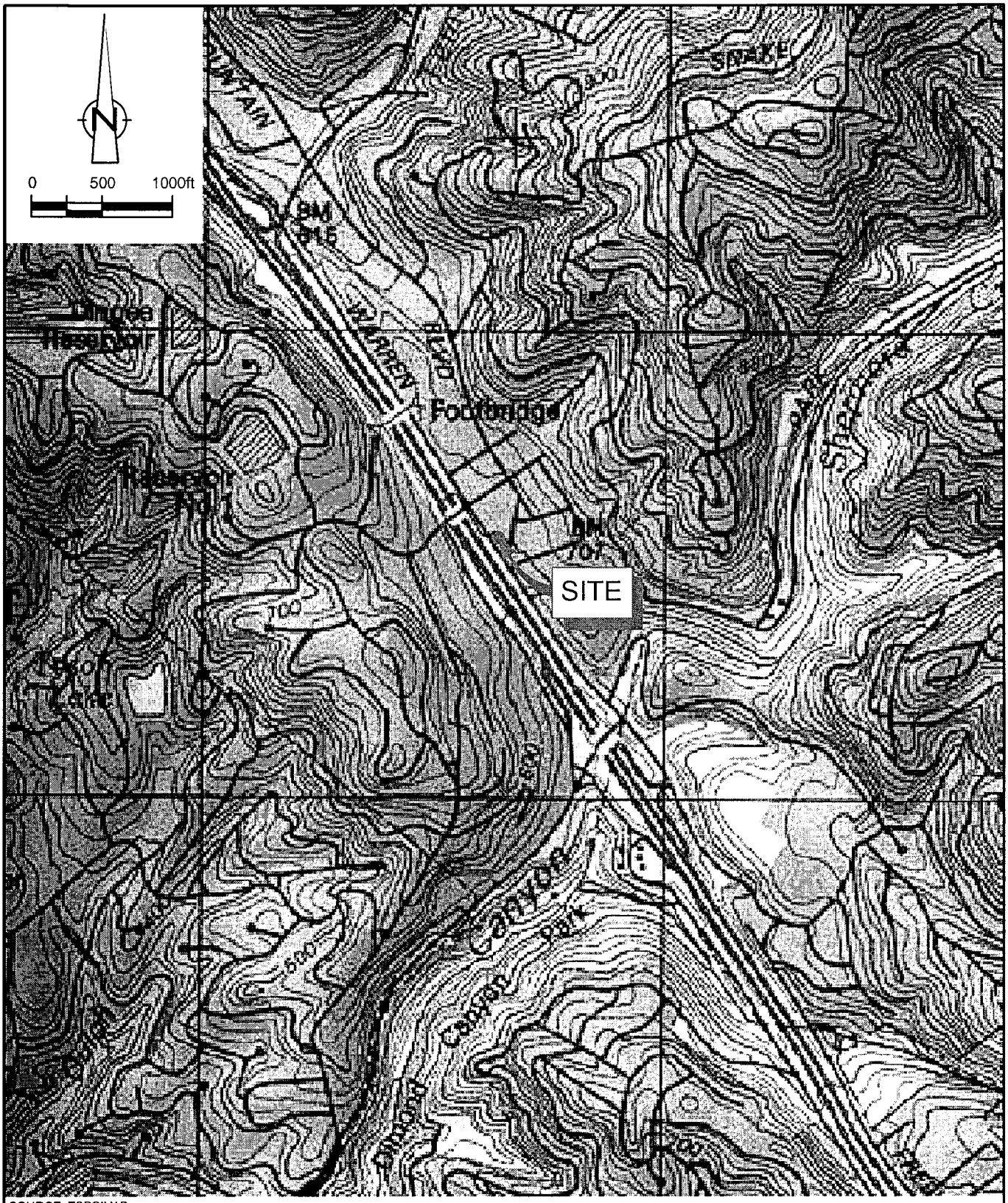

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figure 1

VICINITY MAP
CHEVRON SERVICE STATION 9-1740
6550 MORAGA AVENUE
Oakland, California

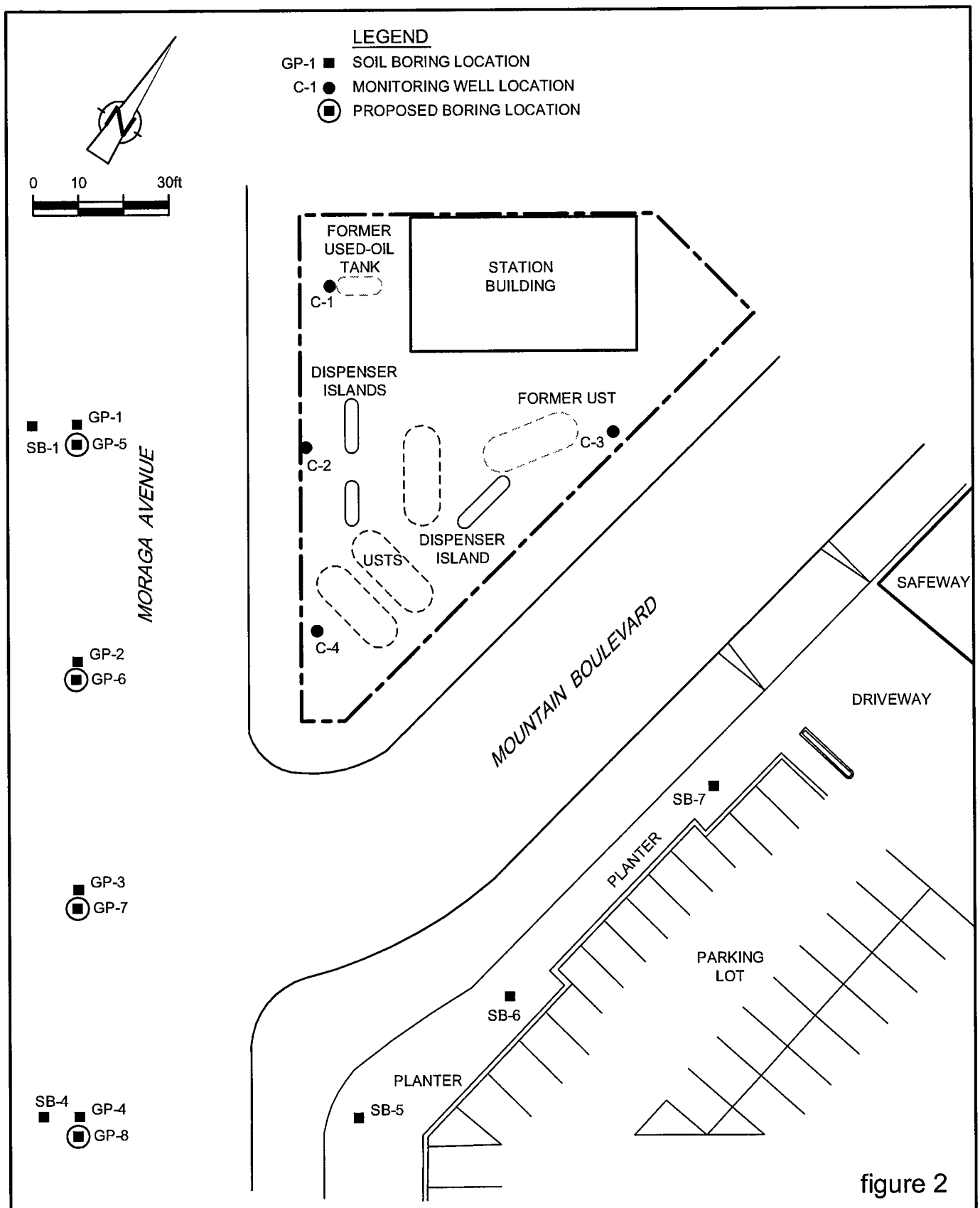

figure 2

* FEATURES OUTSIDE OF SERVICE STATION NOT SURVEYED

SITE PLAN
CHEVRON SERVICE STATION 9-1740
6550 MORAGA AVENUE
Oakland, California

CRA

ATTACHMENT A

Standard Field Procedures for Soil Borings

CRA

STANDARD FIELD PROCEDURES FOR SOIL BORING AND MONITORING WELL INSTALLATION

This document presents standard field methods for drilling and sampling soil borings and installing, developing and sampling groundwater monitoring wells. These procedures are designed to comply with Federal, State and local regulatory guidelines. Specific field procedures are summarized below.

SOIL BORINGS

Objectives

Soil samples are collected to characterize subsurface lithology, assess whether the soils exhibit obvious hydrocarbon or other compound vapor or staining, and to collect samples for analysis at a State-certified laboratory. All borings are logged using the Unified Soil Classification System by a trained geologist working under the supervision of a California Professional Geologist (PG).

Soil Boring and Sampling

Soil borings are typically drilled using hollow-stem augers or direct-push technologies such as the Geoprobe®. Soil samples are collected at least every five ft to characterize the subsurface sediments and for possible chemical analysis. 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 at the bottom of the borehole.

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 Analysis

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 volatile vapor analyzer measures volatile hydrocarbon vapor concentrations in the tube headspace, extracting the vapor through a slit in the cap. Volatile vapor analyzer measurements are used along with the field observations, odors, stratigraphy and groundwater 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 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. Laboratory-supplied trip blanks accompany the samples and are analyzed to check for cross-contamination. An equipment blank may 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.

MONITORING WELL INSTALLATION, DEVELOPMENT AND SAMPLING

Well Construction and Surveying

Groundwater monitoring wells are installed to monitor groundwater quality and determine the groundwater elevation, flow direction and gradient. Well depths and screen lengths are based on groundwater depth, occurrence of hydrocarbons or other compounds in the borehole, stratigraphy and State and local regulatory guidelines. Well screens typically extend 10 to 15 feet below and 5 feet above the static water level at the time of drilling. However, the well screen will generally not extend into or through a clay layer that is at least three feet thick.

Well casing and screen are flush-threaded, Schedule 40 PVC. Screen slot size varies according to the sediments screened, but slots are generally 0.010 or 0.020 inches wide. A rinsed and graded sand occupies the annular space between the boring and the well screen to about one to two feet above the well screen. A two feet thick hydrated bentonite seal separates the sand from the overlying sanitary surface seal composed of Portland type I, II cement.

Well-heads are secured by locking well-caps inside traffic-rated vaults finished flush with the ground surface. A stovepipe may be installed between the well-head and the vault cap for additional security.

The well top-of-casing elevation is surveyed with respect to mean sea level and the well is surveyed for horizontal location with respect to an onsite or nearby offsite landmark.

Well Development

Wells are generally developed using a combination of groundwater surging and extraction. Surging agitates the groundwater and dislodges fine sediments from the sand pack. After about ten minutes of surging, groundwater is extracted from the well using bailing, pumping and/or reverse air-lifting through an eductor pipe to remove the sediments from the well. Surging and extraction continue until at least ten well-casing volumes of groundwater are extracted and the sediment volume in the groundwater is negligible. This process usually occurs prior to installing the sanitary surface seal to ensure sand pack stabilization. If development occurs after surface seal installation, then development occurs 24 to 72 hours after seal installation to ensure that the Portland cement has set up correctly.

All equipment is steam-cleaned prior to use and air used for air-lifting is filtered to prevent oil entrained in the compressed air from entering the well. Wells that are developed using air-lift evacuation are not sampled until at least 24 hours after they are developed.

Groundwater Sampling

Depending on local regulatory guidelines, three to four well-casing volumes of groundwater are purged prior to sampling. Purging continues until groundwater pH, conductivity, and temperature have stabilized. Groundwater samples are collected using bailers or pumps and 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. Laboratory-supplied trip blanks accompany the samples and are analyzed to check for cross-contamination. An equipment blank may be analyzed if non-dedicated sampling equipment is used.

Waste Handling and Disposal

Soil cuttings from drilling activities are usually stockpiled onsite and covered by plastic sheeting. At least three individual soil samples are collected from the stockpiles and composited at the analytic laboratory. The composite sample is analyzed for the same constituents analyzed in the borehole samples in addition to any analytes required by the receiving disposal facility. Soil cuttings are transported by licensed waste haulers and disposed in secure, licensed facilities based on the composite analytic results.

Groundwater removed during development and sampling is typically 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. Upon receipt of analytic results, 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.