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

9-4-07
(date)

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

Re: Chevron Facility # 9-1583

Address: 5509 Martin Luther King Jr. Way, Oakland, CA

I have reviewed the attached report titled Soil Vapor Investigation Workplan and dated August 31, 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 31, 2007

Mr. Barney M. Chan
Alameda County Health Care Services Agency (ACHCS)
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Re: **Soil Vapor Investigation Workplan**
Chevron Service Station 9-1583
5509 Martin Luther King Jr. Way
Oakland, California

Dear Mr. Chan:

Conestoga-Rovers & Associates (CRA) has prepared this *Soil Vapor Investigation Workplan* on behalf of Chevron Environmental Management Company (Chevron) for the site referenced above. This workplan has been prepared in response to an ACHCS letter dated July 27, 2007 (Attachment A). CRA proposes advancing five hand augered soil borings, which will be completed as permanent soil vapor probes. Soil vapor probes will be used to evaluate potential risks from fuel releases to both on and off-site properties. The site background and CRA's proposed scope of work are described below.

SITE BACKGROUND

Site History: The site is situated on the northwest corner of Martin Luther King, Jr. Way and 55th Street in Oakland, California (Figure 1), at an elevation of approximately 85 feet above mean sea level. The surrounding topography slopes towards the west. Land use in the vicinity of the site is mixed commercial and residential. Prior to November 1998, the service station facilities included a station building, service islands, fuel and used-oil underground storage tanks (USTs), and product lines. The used-oil UST and hydraulic hoists in the service bays were removed in 1995 and 1998, respectively. Since November 1998, the site has been utilized as a gasoline fueling station only. Locations of former and current site features are shown on Figure 2.

Site Geology: Soil in the site vicinity consists of Pleistocene beach and dune sand deposits (Merritt Sand) of loose, well sorted fine to medium sand. The nearest surface water is the San Francisco Bay.

The site surface is paved with cement and asphalt from 2 to 8 inches thick. Based on a review of the subsurface materials encountered during soil boring installations, the site consists of sandy silt to clay from beneath the surface extending between 8 and 10 fbg.

Site Hydrogeology: Depth to groundwater beneath the site has historically ranged from approximately 6.5 to 14 fbg. Based on historical monitoring data, groundwater flow beneath the site fluctuates between a northeast and southeast direction.

PREVIOUS INVESTIGATIONS

Site Excavation

1989 Product Upgrade: In December 1989, Geotest removed product piping from the site and collected six soil samples from the piping trenches in the vicinity of the product dispenser islands. Sample B, collected at a depth of 3 feet below grade (fbg), contained 1,700 milligrams per kilogram (mg/kg) total petroleum hydrocarbons as gasoline (TPHg). No TPHg was detected in the other five samples. Benzene, toluene, ethylbenzene, and xylenes (BTEX) compounds were not analyzed.

1995 Used-Oil Tank Removal and Soil Excavation: In April 1995, Golden West/American Construction excavated and removed the used-oil UST from the northwest corner of the site. Touchstone Developments (TD) collected four soil samples from the base of the excavation at a depth of 10.5 to 11 fbg. Total petroleum hydrocarbons as motor oil (TPHmo) was detected in all four samples at concentrations ranging from 76 to 2,700 mg/kg. The pit was further over-excavated to 12.5 fbg. In May 1995, approximately 80 cubic yards of used-oil bearing soil was transported and disposed of at BFI Waste Systems in Livermore, California.

1998 Hydraulic Hoist and Clarifier Removal and Excavation: In November 1998, Musco Excavators removed two single post semi-hydraulic hoists and one dual post hydraulic hoist with clarifier from the site. TD collected one soil sample from beneath each of the hoists at depths ranging from 7.5 to 8 fbg. No TOG, TPHg, TPHd, BTEX or methyl tertiary butyl ether (MTBE) was detected in the samples.

Soil Boring and Monitoring Well Installation

1983 Subsurface Investigation: In December 1983, Gettler-Ryan, Inc. (G-R) advanced three on-site soil borings and completed the borings as monitoring wells MW-1 through MW-3. The borings were drilled to a depth of 21 fbg. Groundwater was encountered at depths ranging from 13 to 16 fbg. Although reports indicate these wells were installed in response to a suspected leak, no record exists of soil samples being collected and analyzed from MW-1 through MW-3.

1990 Well Redevelopment: In March 1990, G-R redeveloped and sampled wells MW-1 through MW-3. Laboratory analyses of the groundwater samples indicated the presence of TPHg at concentrations ranging from 800 to 50,000 micrograms per liter (µg/L), and BTEX concentrations ranging from 18 to 18,000 µg/L.

1990 Subsurface Investigation: In October 1990, H.E.W. Drilling, Inc. advanced three soil borings and completed the borings as monitoring wells MW-4 through MW-6 to further evaluate the off-site extent of petroleum hydrocarbons in groundwater. Well MW-4 was installed in the northeast corner of the subject property and wells MW-5 and MW-6 were installed off-site, along the southern shoulder of 55th Street. The borings were drilled to depths ranging between 20 and 26.5 fbg. Six soil samples collected from the borings at depths between 10.5 and 20.5 fbg were analyzed for TPHg only. TPHg was detected in MW-5 at 190 mg/kg and in MW-6 at 11 mg/kg at 10.5 fbg. No TPHg was detected in soil collected from MW-4.

1994 Subsurface Investigation: In February 1994, Groundwater Technology Inc. (GTI) advanced two on-site soil borings and completed them as monitoring wells MW-7 and MW-8 to evaluate the extent of petroleum hydrocarbons in groundwater near the former used-oil UST. Wells MW-7 and MW-8 were installed to depths of 20 fbg. Four soil samples were collected from the soil borings at depths between 5 and 15 fbg. No TPHg or BTEX was detected.

RESPONSE TO TECHNICAL COMMENTS

In their letter dated July 27, 2007, the ACHCSA provided technical comments to CRA's February 28, 2007, *Subsurface Investigation Report*. The technical comments expressed interest as to why groundwater impacts were detected in borings B-1 and B-2, which are upgradient of the USTs. The ACHCSA also requested an explanation of MTBE in monitoring wells MW-7 and MW-8, which are upgradient of the gasoline USTs and near the former used oil UST.

Based on CRA's review of previous quarterly monitoring reports, it appears that the groundwater flow direction typically has a southeasterly component at the UST pit. This was more common prior to approximately 1998, which explain the groundwater impacts in borings B-1 and B-2, and monitoring wells MW-1 and MW-2. Also, the groundwater flow direction was commonly to the northwest prior to about 1994. This is the most likely explanation for groundwater impacts in MW-2, and the presence of MTBE in MW-7 and MW-8. It is not known what caused the change in groundwater flow direction from northwest to southeast in 1994-1995. Despite the presence of these compounds, further assessment is not warranted at this time. Assessment of dissolved MTBE is not possible northwest of MW-7 and MW-8 due to the adjacent private residences. CRA will instead collect vapor samples in the northwest corner of the site to evaluate potential vapor intrusion concerns. The scope of work for vapor sample collection is described in the sections below.

The ACHCSA letter also requested the inclusion of an additional subsurface investigation and site conceptual model revision in this work plan. Specifically, the letter asks for an explanation or plausible SCM regarding the data in borings B-1 and B-2, and monitoring wells MW-7 and MW-8. A revised SCM and additional investigation are not included in this work plan based on the explanations provided above.

PROPOSED SCOPE OF WORK

CRA proposes advancing five hand augered soil borings, which will be completed as permanent soil vapor probes. The probes will be used to collect soil vapor samples to evaluate the potential risks from fuel releases to both on and off-site properties. The vapor probe borings will be advanced to approximately 6 fbg; actual depths may be changed depending on the depth to water observed during field work. The locations of the proposed borings are indicated on Figure 2. CRA's standard field procedures are presented as Attachment B.

Underground Utility Location: CRA will notify Underground Service Alert prior to scheduled work to clear boring locations with utility companies. A private utility line locator will be contracted to additionally clear boring locations of utility lines prior to construction. All vapor borings will be advanced using a 3-inch diameter hand auger.

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 on-site at all times during field activities and signed by all site workers and site visitors.

Permits: CRA will obtain the necessary permits from Alameda County Environmental Health (ACEH) prior to beginning field operations. A minimum of 48 hours notice will be given to ACEH prior to probe installation and vapor sampling activities.

Soil Vapor Probe Installation: CRA proposes to advance five shallow hand-auger borings which will be completed as soil vapor probes at the approximate locations shown on Figure 2. The total depth of each boring will be approximately 6 fbg, and the bottom of each vapor probe will be approximately 5.5 fbg. Soil samples will be collected at approximately 3 fbg using a slide hammer and a drive-core barrel. The borings will be continuously logged by CRA field personnel. The final locations of the borings will be based on site and utility constraints as evaluated in the field.

A schematic diagram of the soil vapor probe construction is presented as Attachment B, Figure A. The soil vapor probes will also be constructed in general accordance with CRA's Standard Field Procedures (Attachment B). One-quarter inch diameter Nylaflow® nylon tubing will be fitted with a 6-inch long 0.010-

inch slotted PVC filter screen. The tubing and screen will be placed into each open boring, with the screen at approximately 5.5 fbg. Washed No. 2/16 silica sand will be placed from 5 to 6 fbg to create a filter pack around the PVC screen. A 3-inch layer of dry granular bentonite will be placed on top of the sand pack followed by hydrated bentonite powder to a few inches from the surface. The tubing exiting the bentonite will be capped, and the top of the point will be protected by a traffic-rated vault.

Soil Vapor Sampling: Soil vapor samples will be collected no sooner than 72 hours after installation of the probes to allow adequate time for accumulation of representative soil vapor. Soil vapor sample collection will not be scheduled until after a minimum of five consecutive significantly precipitation-free days (≥0.5 inches of rain). The service station manager will be asked to discontinue any on-site watering for five days prior to soil vapor samples collection.

A generalized schematic of the soil vapor sampling apparatus is presented as Attachment B, Figure B. Samples will be collected using a 1-liter SUMMA™ canister connected to the sampling tubing at each vapor point. Prior to collecting soil vapor samples, the initial vacuum of the canister will be measured and recorded on the chain-of-custody (this should be approximately 30-inches of mercury). The vacuum of the SUMMA™ canister will be used to draw the soil vapor through the flow controller until a negative pressure of approximately 5-inches of Hg is observed on the vacuum gauge. This is the residual vacuum and this measurement should be recorded on the chain-of-custody. With the flow controller set at approximately 200 ml/minute, sample collection should take approximately 5 minutes.

Prior to sample collection, stagnant air in the sampling apparatus will be sufficiently removed by purging approximately 3 probe volumes using a purge pump (Attachment B, Figure B). The volume of the borehole will generally not be included in the volume calculation as it is assumed that the soil vapor concentrations in the probe and sand pack are equilibrated with the surrounding native soil.

A minimum of one field duplicate will be collected for each day of sampling. A field duplicate will be collected by using a splitter connected to the soil vapor probe. After vapor sampling, the SUMMA™ canisters will be properly labeled, packaged and sent to the Air Toxics laboratory under chain-of-custody for analysis. Samples will be analyzed on standard turn around time. CRA's *Standard Field Procedures for Soil and Soil Vapor Sampling* is presented as Attachment B.

Leak Detection: In order to detect any leakage of atmospheric gasses and/or ambient air during sampling, CRA will perform leak detection tests. Helium will be used as a source gas for leak detection. Field application of helium will be accomplished through using a containment structure (i.e. a clear, large volume Rubbermaid® or Tupperware® storage container) placed inverted over the entire sample probe and sampling apparatus.

Additionally, CRA will analyze vapor samples for oxygen (O_2) and carbon dioxide (CO_2) to assess whether samples are compromised by surface vapor migration.

Soil Disposal/Recycling: Soil cuttings produced during field activities will be temporarily stored on-site. Soil cuttings will be stockpiled on plastic and covered with plastic or stored in drums on-site. Following review of laboratory analytical results, the soil will be transported to a Chevron-approved facility for disposal/recycling.

Vapor Chemical Analyses: The soilvapor samples will be kept at ambient temperature and submitted under chain-of-custody to Air Toxics for analysis. The samples will be analyzed on a standard turn around time for:

- TPHg by EPA Method TO-3,
- TPHd by NIOSH Method 1550,
- BTEX, MTBE, t-butyl alcohol (TBA), 1,2-dichloroethane (1,2-DCA) and 1,2-dibromoethane (EDB) by EPA Method TO-15, and
- Helium, O_2, andCO_2 by Method ASTM 1946

Soil Chemical Analyses and Soil Parameters: Soil samples from the soil vapor borings will be analyzed on a standard turn around time for the following analytes:

- TPHg and TPHd by EPA Method 8015B, and
- BTEX, MTBE, TBA, 1,2-DCA, and EDB by EPA Method 8260B.

Reporting: After the initial analytical results are received, CRA will prepare an investigation report that at a minimum contains:

- A summary of the site background and history,
- Descriptions of the drilling and sampling methods,
- A figure illustrating the boring locations,
- Boring logs,
- Tabulated soil analytical results
- Tabulated vapor analytical results,
- Analytical reports and chain-of-custody forms,
- Soil disposal methods, and
- CRA's conclusions and recommendations.

SCHEDULE

CRA will perform this investigation after receiving written approval of this workplan from the ACHCS. CRA will conduct the proposed investigation during a period of dry weather. CRA will submit an investigation report approximately six weeks after receiving analytical results.

CLOSING

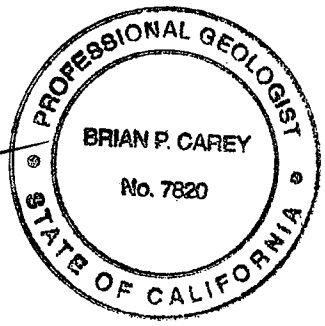
CRA is performing this work to satisfy site closure requirements. Please call Lindsay Marsh at (916) 677-3407 ext. 123 if you have any questions or comments regarding this work.

Sincerely,

Conestoga-Rovers & Associates

Lindsay Marsh
Staff Geologist

Brian Carey P.G. #7820
Project Geologist



Figures: 1 – Vicinity Map
2 – Site Plan

Attachments: A – Regulatory Correspondence
B – Standard Field Procedures

cc: Mr. Tom Bauhs, Chevron Environmental Management Company, PO Box 6012, K2204, San Ramon, CA 94583

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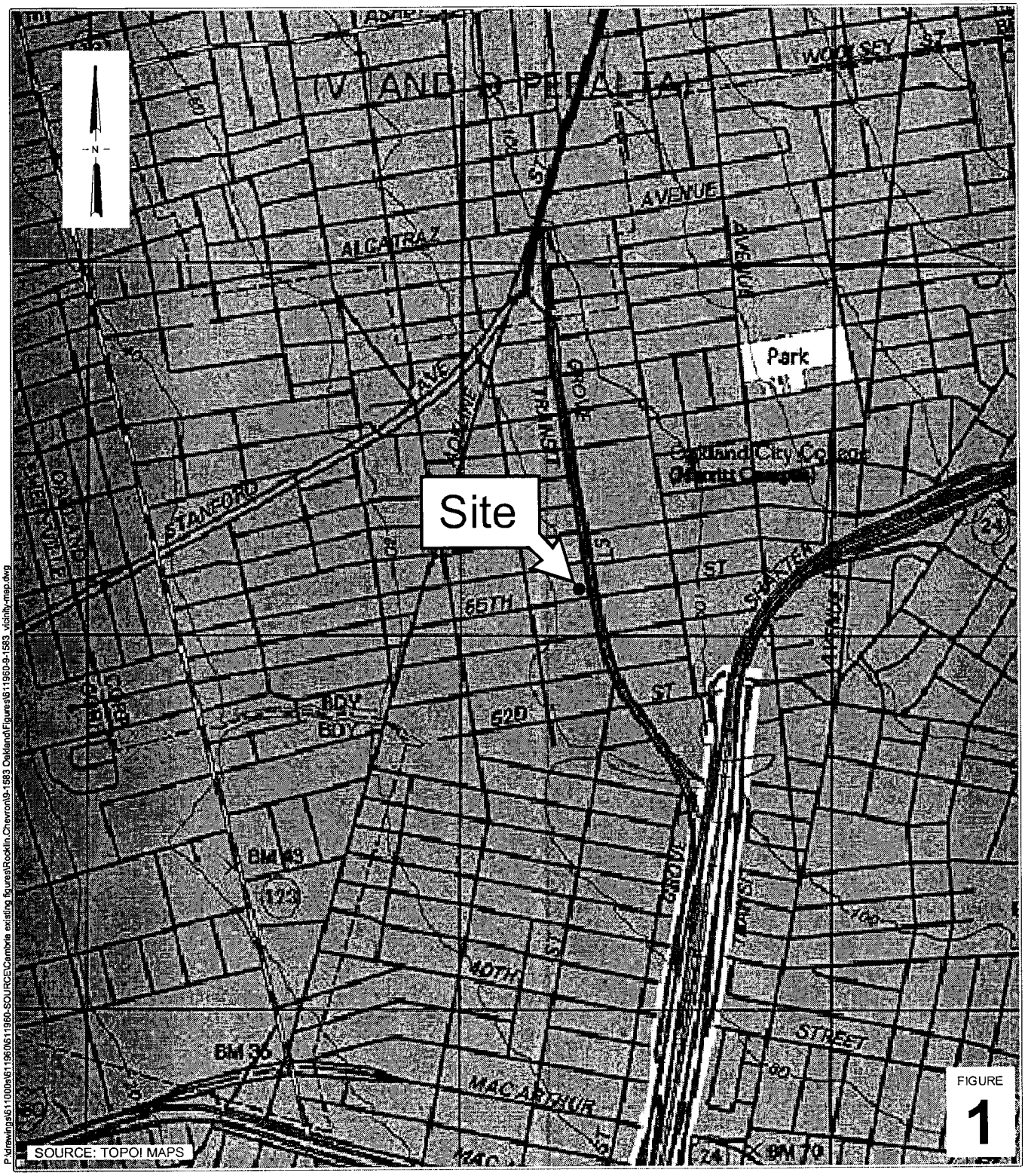

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FIGURE
1

0 1/8 1/4 1/2 1

SCALE : 1" = 1/4 MILE

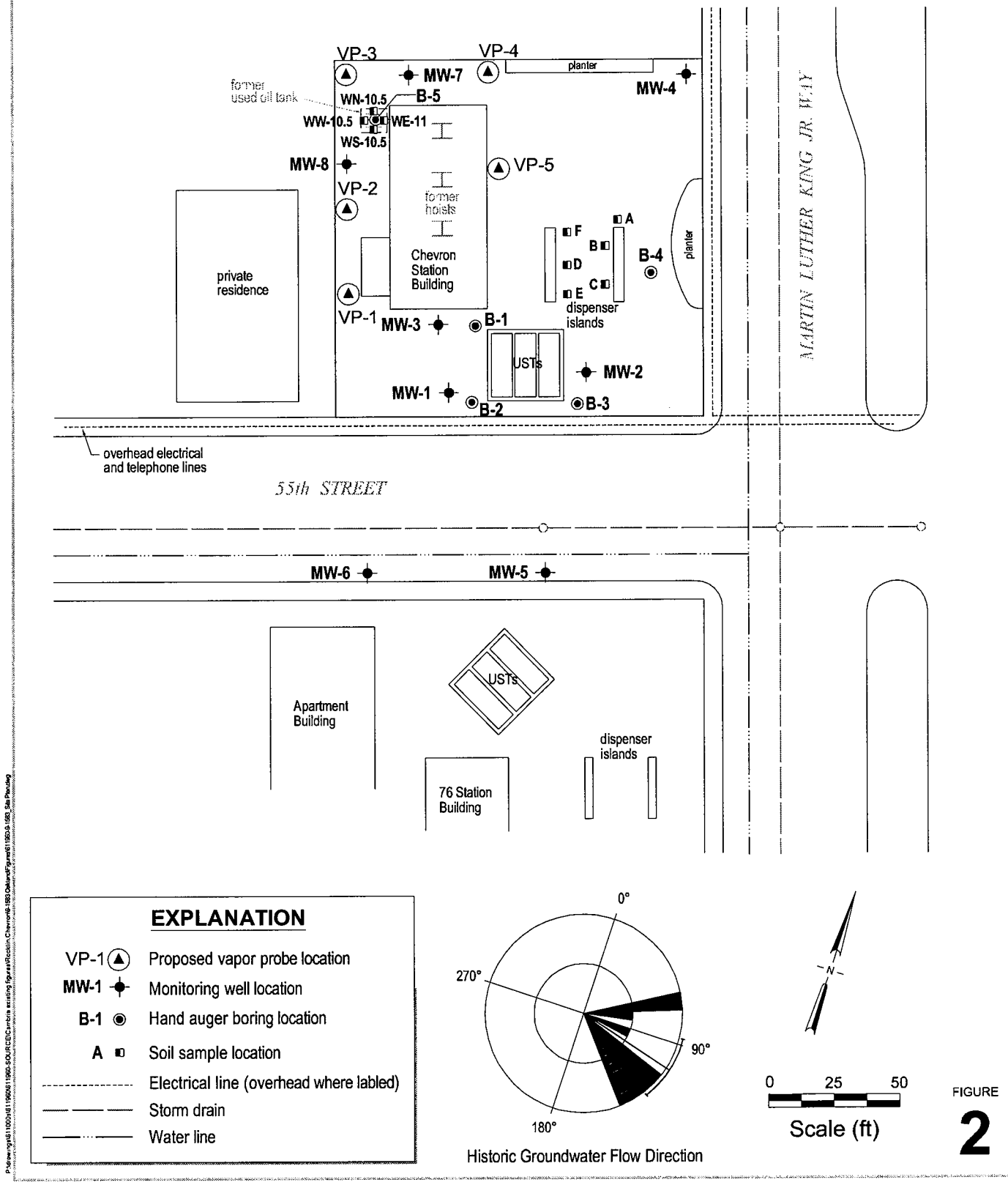
Chevron Service Station 9-1583

5509 Martin Luther King Way

Oakland, California

CONESTOGA-ROVERS
& ASSOCIATES

Vicinity Map



FIGURE

2

Chevron Service Station 9-1583

5509 Martin Luther King Jr. Way

Oakland, California

CONESTOGA-ROVERS & ASSOCIATES

Site Plan

CONESTOGA-ROVERS
& ASSOCIATES

ATTACHMENT A
Regulatory Correspondence

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
FAX (510) 337-9335

July 27, 2007

Mr. Tom Bauhs
Chevron Environmental Management Co.
6001 Bollinger Canyon Rd., K2204
San Ramon, CA 94583-2324

Dear Mr. Bauhs:

Subject: Fuel Leak Case RO0000002 & Global ID T0600100348, 5509 Martin Luther King Jr. Way, Oakland, CA 94609

Alameda County Environmental Health (ACEH) staff has reviewed the case file for the subject site including the February 28, 2007 Subsurface Investigation Report by Cambria (CRA). This report's work plan was approved in the County's November 11, 2006 letter. The intent of the work was to fill in identified data gaps and move the site towards closure. Unfortunately, not all samples were collected and analyzed as proposed and approved by our office due to boring refusal in B-5. Because of this, the area around the waste oil tank still remains in question. The historic presence of TPHg and MTBE in wells MW-7 and MW-8, adjacent to the former waste oil tank remains unexplained. The sampling of shallow fill material from the tank pit did not provide any information as no contaminants were detected, as expected. Therefore, CRA's recommendation to submit an updated site closure request appears premature without further site information. Please address the following technical comments and submit the requested reports.

TECHNICAL COMMENTS

1. Borings Around Former Fuel USTs- Soil samples from 3-9' bgs from the three boring indicate that no shallow contamination exists in the immediate vicinity of the former UST tank pit. Grab groundwater samples from B-1 and B-2 from 11-12' bgs, however, were contaminated with up to 4500 ppb TPHg, which may be residual contamination from historic releases also detected in MW-1 and MW-3. This suggests that there may have been impacted soil or groundwater below the depths of these borings and that groundwater gradient has not always been to the southeast as depicted in monitoring reports. Please provide an explanation or plausible SCM, which explains this data. Propose additional investigation, if necessary. We request soil vapor sampling be done to evaluate potential risks from fuel releases to both on and off-site properties.

2. Contaminants in Boring B- The compounds, BTEX, MTBE, other ether oxygenates and the lead scavengers were not analyzed in soil boring B, which detected 1700 ppm TPHg. Soil and groundwater samples from B-4, down-gradient of boring B were ND for TPHg, BTEX, MTBE, oxygenates and lead scavengers. It appears that these other contaminants, including TPHg, have not impacted soil and groundwater down-gradient of these dispensers.

3. Waste Oil Tank Area- The historic presence of TPHg and MTBE in wells MW-7 and MW-8 near the former waste oil tank, has not been explained. As mentioned previously, the inability to collect deep soil and groundwater samples from the former pit leaves this area still in question. Was the historic elevated TPHg, BTEX and MTBE contamination in MW-8 from the former waste oil tank or is there another source for these contaminants either on or off-site? Has this contamination migrated off-site and affected neighboring properties? Please provide an explanation or plausible SCM, which explains this data. Propose additional investigation, if necessary. We request soil vapor sampling be done to evaluate potential risks from fuel releases to both on and off-site properties.

TECHNICAL REPORT REQUEST

Please submit the following report according to the following schedule:

- August 31, 2007- Work Plan for Soil Vapor Sampling, Additional SWI and SCM Revision

ELECTRONIC SUBMITTAL OF REPORTS

Effective **January 31, 2006**, the Alameda County Environmental Cleanup Oversight Programs (LOP and SLIC) require submission of all reports in electronic form to the county's ftp site. Paper copies of reports will no longer be accepted. The electronic copy replaces the paper copy and will be used for all public information requests, regulatory review, and compliance/enforcement activities. Please do not submit reports as attachments to electronic mail.

Submission of reports to the Alameda County ftp site is an addition to existing requirements for electronic submittal of information to the State Water Resources Control Board (SWRCB) Geotracker website. Submission of reports to the Geotracker website does not fulfill the requirement to submit documents to the Alameda County ftp site. In September 2004, the SWRCB adopted regulations that require electronic submittal of information for groundwater cleanup programs. For several years, responsible parties for cleanup of leaks from underground storage tanks (USTs) have been required to submit groundwater analytical data, surveyed locations of monitor wells, and other data to the Geotracker database over the Internet. Beginning July 1, 2005, electronic submittal of a complete copy of all necessary reports was required in Geotracker (in PDF format). Please visit the SWRCB website for more information on these requirements (http://www.swrcb.ca.gov/ust/cleanup/electronic_reporting).
In order to facilitate electronic correspondence, we request that you provide up to date electronic mail addresses for all responsible and interested parties. Please provide current electronic mail addresses and notify us of future changes to electronic mail addresses by sending an electronic mail message to me at barney.chan@acgov.org.

PERJURY STATEMENT

All work plans, technical reports, or technical documents submitted to ACEH must be accompanied by a cover letter from the responsible party that states, at a minimum, the following: "I declare, under penalty of perjury, that the information and/or recommendations contained in the attached document or report is true and correct to the

best of my knowledge." This letter must be signed by an officer or legally authorized representative of your company. Please include a cover letter satisfying these requirements with all future reports and technical documents submitted for this fuel leak case.

PROFESSIONAL CERTIFICATION & CONCLUSIONS/RECOMMENDATIONS

The California Business and Professions Code (Sections 6735, 6835, and 7835.1) requires that work plans and technical or implementation reports containing geologic or engineering evaluations and/or judgments be performed under the direction of an appropriately registered or certified professional. For your submittal to be considered a valid technical report, you are to present site specific data, data interpretations, and recommendations prepared by an appropriately licensed professional and include the professional registration stamp, signature, and statement of professional certification. Please ensure all that all technical reports submitted for this fuel leak case meet this requirement.

UNDERGROUND STORAGE TANK CLEANUP FUND

Please note that delays in investigation, later reports, or enforcement actions may result in your becoming ineligible to receive grant money from the state's Underground Storage Tank Cleanup Fund (Senate Bill 2004) to reimburse you for the cost of cleanup.

AGENCY OVERSIGHT

If it appears as though significant delays are occurring or reports are not submitted as requested, we will consider referring your case to the Regional Board or other appropriate agency, including the County District Attorney, for possible enforcement actions. California Health and Safety Code, Section 25299.76 authorizes enforcement including administrative action or monetary penalties of up to $10,000 per day for each day of violation.

If you have any questions, please call me at (510) 567-6765.

Sincerely,

Barney M. Chan
Hazardous Materials Specialist

cc: files, D. Drogos
Mr. David Herzog, Cambria Environmental, 2000 Opportunity Drive, Suite 110, Roseville, CA 95678

7_25_07 5509 MLKJr Way

CONESTOGA-ROVERS
& ASSOCIATES

ATTACHMENT B
Standard Field Procedures

STANDARD FIELD PROCEDURES FOR SOIL VAPOR PROBE INSTALLATION AND SAMPLING

DIRECT PUSH AND VAPOR POINT METHODS

This document describes Conestoga-Rovers & Associates' standard field methods for soil vapor sampling. These procedures are designed to comply with Federal, State and local regulatory guidelines. Specific field procedures are summarized below.

Objectives

Soil vapor samples are collected and analyzed to assess whether vapor-phase subsurface contaminants pose a threat to human health or the environment.

Direct Push Method for Soil Vapor Sampling

The direct push method for soil vapor sampling uses a hollow vapor probe, which is pushed into the ground, rather than augured, and the stratigraphy forms a vapor seal between the surface and subsurface environments ensuring that the surface and subsurface gases do not mix. Once the desired soil vapor sampling depth has been reached, the field technician installs disposable polyethylene tubing with a threaded adapter that screw into the bottom of the rods. The screw adapter ensures that the vapor sample comes directly from the bottom of the drill rods and does not mix with other vapor from inside the rod or from the ground surface. In addition, hydrated bentonite is placed around the sampling rod and the annulus of the boring to prevent ambient air from entering the boring. The operator then pulls up on the rods and exposes the desired stratigraphy by leaving an expendable drive point at the maximum depth. The required volume of soil vapor is then purged through the polyethylene tubing using a standard vacuum pump. The soil vapor can be sampled for direct injection into a field gas chromatograph, pumped into inert tedlar bags using a "bell jar" sampling device, or allowed to enter a Summa vacuum canister. Once collected, the vapor sample is transported under chain-of-custody to a state-certified laboratory. 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 washed between samples with trisodium phosphate or

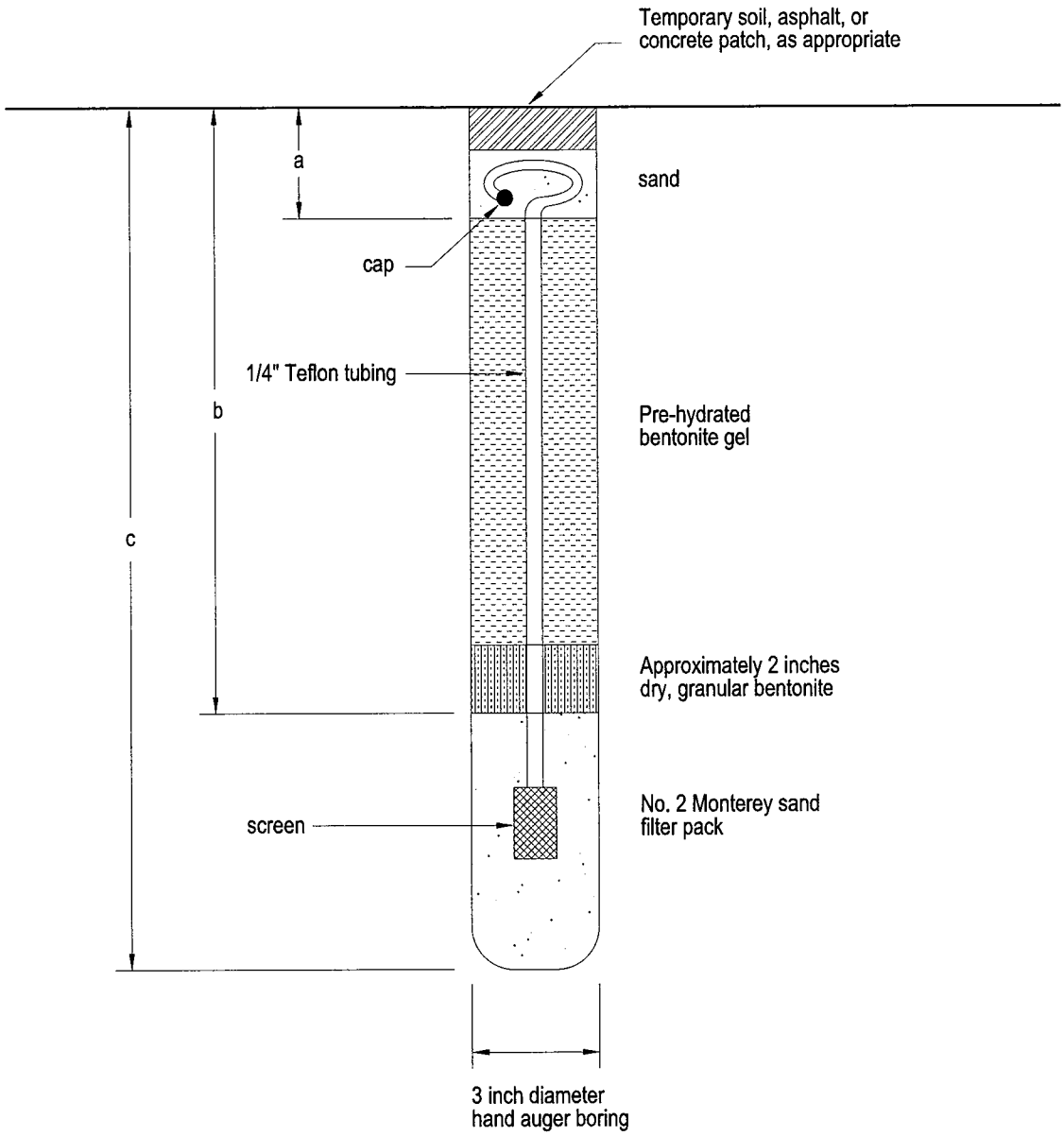
an equivalent EPA-approved detergent. Once the sampling is completed, the borings are filled to the ground surface with neat cement.

Shallow Soil Vapor Point Method for Soil Vapor Sampling

The shallow soil vapor point method for soil vapor sampling utilizes a hand auger or drill rig to advance a boring for the installation of a soil vapor sampling point. Once the boring is hand augered to the final depth, a 6-inch slotted probe, capped on either end with brass or Swagelok fittings, is placed within 12-inches of number 2/16 filter sand (Figure A). Nylon tubing of ¼-inch inner-diameter of known length is attached to the probe. A 2-inch to 12-inch layer of unhydrated bentonite chips is placed on top of the filter pack. Next pre-hydrated granular bentonite is then poured into the hole to approximately and topped with another 2-inch layer of unhydrated bentonite chips or concrete, depending if the boring will hold one probe or multiple probes. The tube is coiled and placed within a wellbox finished flush to the surface. Soil vapor samples will be collected no sooner than one week after installation of the soil-vapor points to allow adequate time for representative soil vapors to accumulate. Soil vapor sample collection will not be scheduled until after a minimum of three consecutive precipitation-free days and irrigation onsite has ceased. Figure B shows the soil vapor sampling apparatus. A measured volume of air will be purged from the tubing using a vacuum pump and a tedlar bag. Immediately after purging, soil-vapor samples will be collected using the appropriate size Summa canister with attached flow regulator and sediment filter. The soil-vapor points will be preserved until they are no longer needed for risk evaluation purposes. At that time, they will be destroyed by extracting the tubing, hand augering to remove the sand and bentonite, and backfilling the boring with neat cement. The boring will be patched with asphalt or concrete, as appropriate.

Vapor Sample Storage, Handling, and Transport

Samples are stored and transported under chain-of-custody to a state-certified analytic laboratory. Samples should never be cooled due to the possibility of condensation within the canister.



Schematic Not to Scale

FIGURE

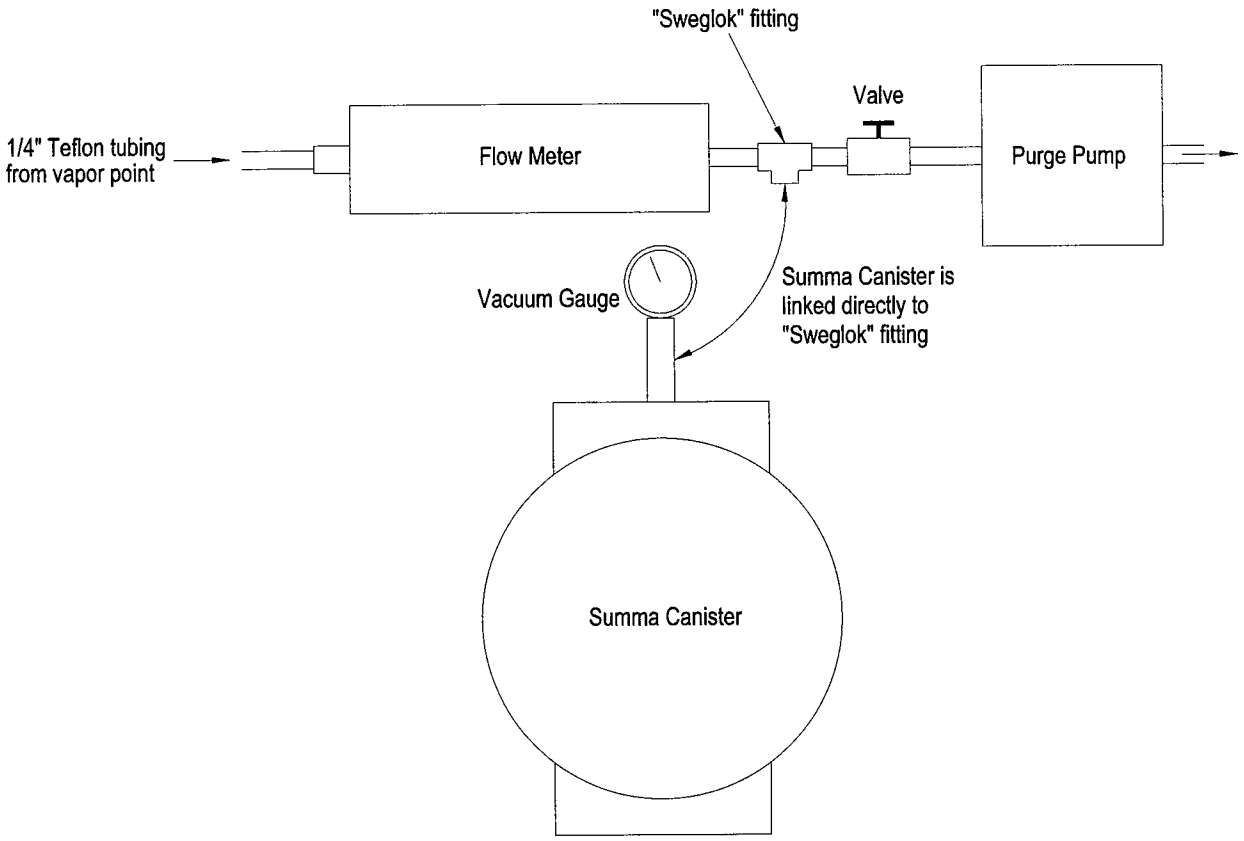
A

Soil Vapor Point

CONESTOGA-ROVERS
& ASSOCIATES

S:\0-TEXACO\TEX-SITES\211273\FIGURES\VAPOR-POINT.DWG

09/25/02



FIGURE

B

Schematic Not to Scale

S:\0-TEXACO\TEX-SITES\211273\FIGURES\VAPOR-DIAG.DWG

CONESTOGA-ROVERS
& ASSOCIATES

Soil Vapor Sampling Apparatus Diagram