**Stacie H. Frerichs**
Team Lead
Marketing Business Unit

**Chevron Environmental Management Company**
6001 Bollinger Canyon Road
San Ramon, CA 94583
Tel (925) 842-9655
Fax (925) 842-8370

February 13, 2009
(date)



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

Re: Chevron Facility #_9-1723_____

Address: 9757 San Leandro Street, Oakland, California_____

I have reviewed the attached report titled *Work Plan for Soil Vapor Investigation*_____ and dated February 13, 2009.

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,

SH Frerichs

Stacie H. Frerichs
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

February 13, 2009 Reference No. 610675

Mr. Steven Plunkett
Alameda County Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Re: Work Plan for Soil Vapor Investigation
Former Chevron Service Station 9-1723
9757 San Leandro Street
Oakland, California
LOP Case No. RO0000412

Dear Mr. Plunkett:

Conestoga-Rovers & Associates (CRA) has prepared this *Work Plan for Soil Vapor Investigation* on behalf of Chevron Environmental Management Company (Chevron) for the referenced site. CRA previously submitted a *Closure Request*, dated December 14, 2006, in which case closure was recommended for the site based on low-risk conditions. However, in a letter dated October 23, 2008 (Attachment A), Alameda County Environmental Health (ACEH) requested that prior to consideration for case closure, further evaluation of soil vapor quality and potential vapor intrusion concerns at the site was needed due to elevated benzene concentrations previously detected in soil vapor in 1997. To evaluate current soil vapor quality, CRA proposes the installation and sampling of five shallow soil vapor wells (VP-1 through VP-5) at the site. The site description and background and the proposed scope of work are presented in the following sections.

Please note that as requested in the October 23, 2008 letter, the previous soil vapor data has been updated to show the results in micrograms per cubic meter ($\mu g/m^3$); the updated table (Table 1) is attached.

## SITE DESCRIPTION AND BACKGROUND

The site is a former Chevron-branded gasoline service station located on the western corner of the intersection of San Leandro Street and 98th Avenue in Oakland, California (Figure 1). The site was an active gasoline service station from at least 1947 until 1978 when the station was closed and the underground storage tanks (USTs) and associated facilities were removed. Two generations of USTs were located onsite. The first generation, removed prior to 1968 due to

street widening activities, consisted of three fuel USTs located on the northeast side of the site. The second generation features consisted of one used-oil tank and three fuel USTs located in the west and north-central portions of the site, respectively. A Shell service station was formerly located adjacent to the northwest of the site, and a Thrifty gasoline service station (9801 San Leandro Street) was formerly located to the southeast of the site across 98th Avenue. The property to the southwest, west, and northwest of the site was formerly occupied by a Gerber Products Company (Gerber) food processing plant. The subject site was purchased by Gerber in 1980. The site is currently occupied by portions of an industrial building and a former auto body shop, and associated paved parking areas. The site is located in a primarily industrial area. Current and former site facilities are presented on Figure 2.

Environmental investigation has been ongoing at the site since 1988. A summary of the environmental work performed at the site to date is included as Attachment B. Approximate well, boring, and soil vapor sampling locations are presented on Figure 2.

## PROPOSED SCOPE OF WORK

CRA proposes to install five soil vapor wells (VP-1 through VP-5) to evaluate shallow soil vapor quality at the site. The proposed vapor well locations are shown on Figure 2. The details of the proposed investigation are presented below.

**Permits:** CRA will obtain all necessary permits for the proposed wells prior to beginning field operations. A minimum of 72 hours written notification will be given to ACEH before initiation of drilling activities.

**Site Health and Safety Plan:** CRA will prepare a site-specific health and safety plan (HASP) to inform site workers of known hazards and to provide health and safety guidance. The plan will be reviewed and signed by all site workers and visitors and will be kept onsite during field activities.

**Underground Utility Location:** At least 48 hours prior to the start of drilling activities, CRA will notify Underground Service Alert to clear the proposed boring locations with local public utility companies. A private utility locator will also be retained to additionally clear the boring locations of utility lines prior to drilling.

**Drilling:** The five vapor well borings will be advanced to a total depth of approximately 6 feet below grade (fbg) using a 3-inch diameter hand auger in accordance with Chevron and CRA safety protocols. The final locations and depths of the borings will be based on field conditions.

**Soil Sampling and Laboratory Analysis:** Soil samples will be continuously collected the entire length of each boring for logging and observation purposes. The soil encountered in the borings will be logged in accordance with the Unified Soil Classification System (USCS). Soil samples from each boring will be screened in the field for volatile organic vapors using a photo-ionization detector (PID). Samples which return PID readings of 100 parts per million by volume (ppmv) or greater, or those in which evidence of contamination is observed, may be retained for laboratory analysis. Soil samples retained for laboratory analysis will be collected in brass or stainless steel liners, capped using Teflon tape and plastic end caps, labeled, placed in an ice-chilled cooler, and transported under chain of custody to Lancaster Laboratories, Inc. (Lancaster) in Lancaster, Pennsylvania for analysis. The samples will be analyzed for total petroleum hydrocarbons as gasoline (TPHg) by EPA Method 8015M; and benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA Method 8260B. CRA's Standard Field Procedures for Hand-Auger Soil Borings are included as Attachment C.

**Soil Vapor Well Installation:** The total depth of each boring will be approximately 6 fbg and the base of each vapor probe will be installed at approximately 5.5 fbg. The soil vapor wells will be constructed in general accordance with CRA's Standard Field Procedures (Attachment C). One-quarter inch diameter Nylaflow® tubing will be fitted with a 6-inch–long section of 0.010-inch slotted, Schedule 40 PVC screen. The tubing and screen will be placed into each open borehole with the bottom of 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 screen. A 3-inch layer of dry granular bentonite will be placed on top of the sand pack followed by hydrated bentonite powder (gel) to a few inches below the surface. The tubing exiting the bentonite will be capped, and well boxes with traffic-rated well vaults will be installed. A schematic diagram of the soil vapor well construction is presented on Figure A of Attachment C.

**Soil Vapor Sampling and Laboratory Analysis:** Soil vapor samples will be collected from the vapor wells in 1-liter SUMMA™ canisters for laboratory analysis. The samples will be collected in general accordance with the Department of Toxic Substances Control (DTSC) *Advisory-Active Soil Gas Investigations* guidance document dated January 28, 2003. A generalized schematic of the soil vapor sampling apparatus is presented on Figure B of Attachment C. CRA's Standard Field Procedures for Soil Vapor Probe Installation and Sampling are included in Attachment C. The samples will be collected no sooner than 72 hours after well installation to allow adequate equilibration time.

A field duplicate sample will also be collected. In accordance with the DTSC guidance, leak testing will be performed during sampling. Helium will be used as a as a leak check compound to evaluate if significant ambient air is entering the SUMMA™ canisters during sampling. Field application of helium will be accomplished through the use of a containment structure (i.e. a

clear, large volume Rubbermaid® or Tupperware® storage container) placed inverted over the entire well and sampling apparatus.

The soil vapor samples will be kept at ambient temperature and submitted under chain-of-custody to Air Toxics Air Toxics Ltd. in Folsom, California, for analysis. The soil vapor samples will be analyzed for the following constituents:

- TPHg by EPA Method TO-3;
- BTEX by EPA Method TO-15; and
- Helium (leak check compound), oxygen ($O_2$), and carbon dioxide ($CO_2$) by Method ASTM D-1946.

**Soil and Water Disposal:** Soil cuttings and decontamination rinsate generated during field activities will be temporarily stored onsite in 55-gallon steel drums and sampled for disposal purposes. Once profiled, the drums will be transported to a Chevron-approved facility for disposal.

**Reporting:** After receipt of the analytical results, CRA will prepare an investigation report which includes the following:

- A description of field activities;
- A figure illustrating the vapor well locations;
- Boring logs and well construction diagrams;
- Tabulated soil and soil vapor analytical results;
- Analytical reports and chain-of-custody forms; and
- Our conclusions and recommendations.

## SCHEDULE AND CLOSING

CRA will perform this investigation upon receiving written approval from ACEH, or 60 days following submittal of this work plan. CRA will conduct the proposed investigation during a period of dry weather. We will submit our investigation report approximately six weeks after completion of field activities.

We appreciate your assistance on this project and look forward to your reply. Please contact Mr. James Kiernan at (916) 751-4102 if you have any questions or comments regarding this work plan.

Sincerely,

CONESTOGA-ROVERS & ASSOCIATES

Dayna M. Cordano

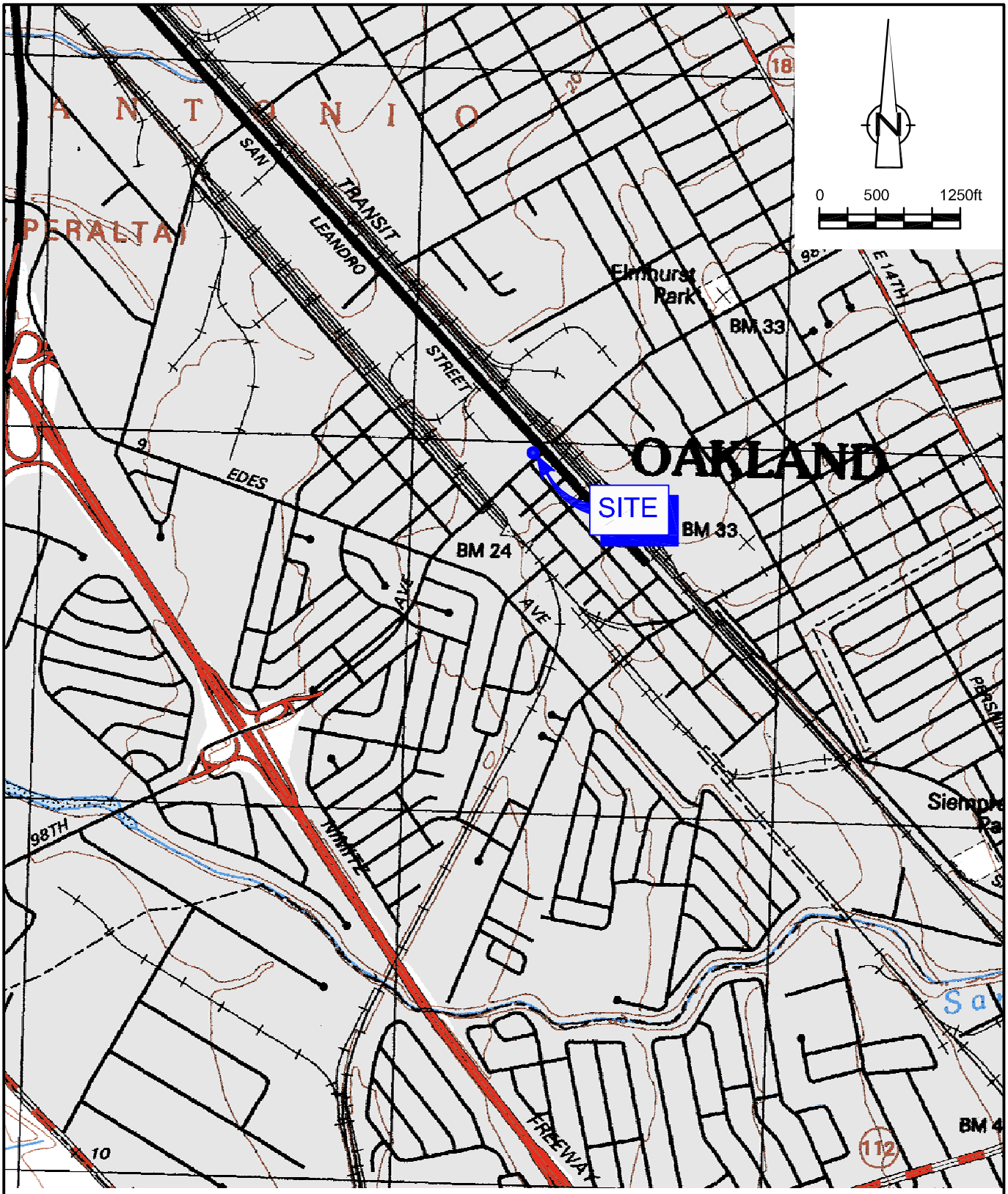
Brian P. Carey, PG #7820

James P. Kiernan, PE #C68498


DMC/kw/1
Encl.

| | |
|---|---|
| Figure 1 | Vicinity Map |
| Figure 2 | Site Plan |
| Table 1 | Historical Soil Vapor Sample Analytical Results |
| Attachment A | ACEH Letter Dated October 23, 2008 |
| Attachment B | Summary of Previous Investigations |
| Attachment C | Standard Field Procedures |

cc: Mr. Rob Speer, Chevron Environmental Management Company
Mr. Jan Greben, Greben & Associates




SOURCE: USGS QUADRANGLE MAP: SAN LEANDRO, CA. 1993.

figure 1

VICINITY MAP
FORMER CHEVRON SERVICE STATION 9-1723
9757 SAN LEANDRO STREET
*Oakland, California*

610675-500(PRES001)GN-WA004 FEB 06/2009

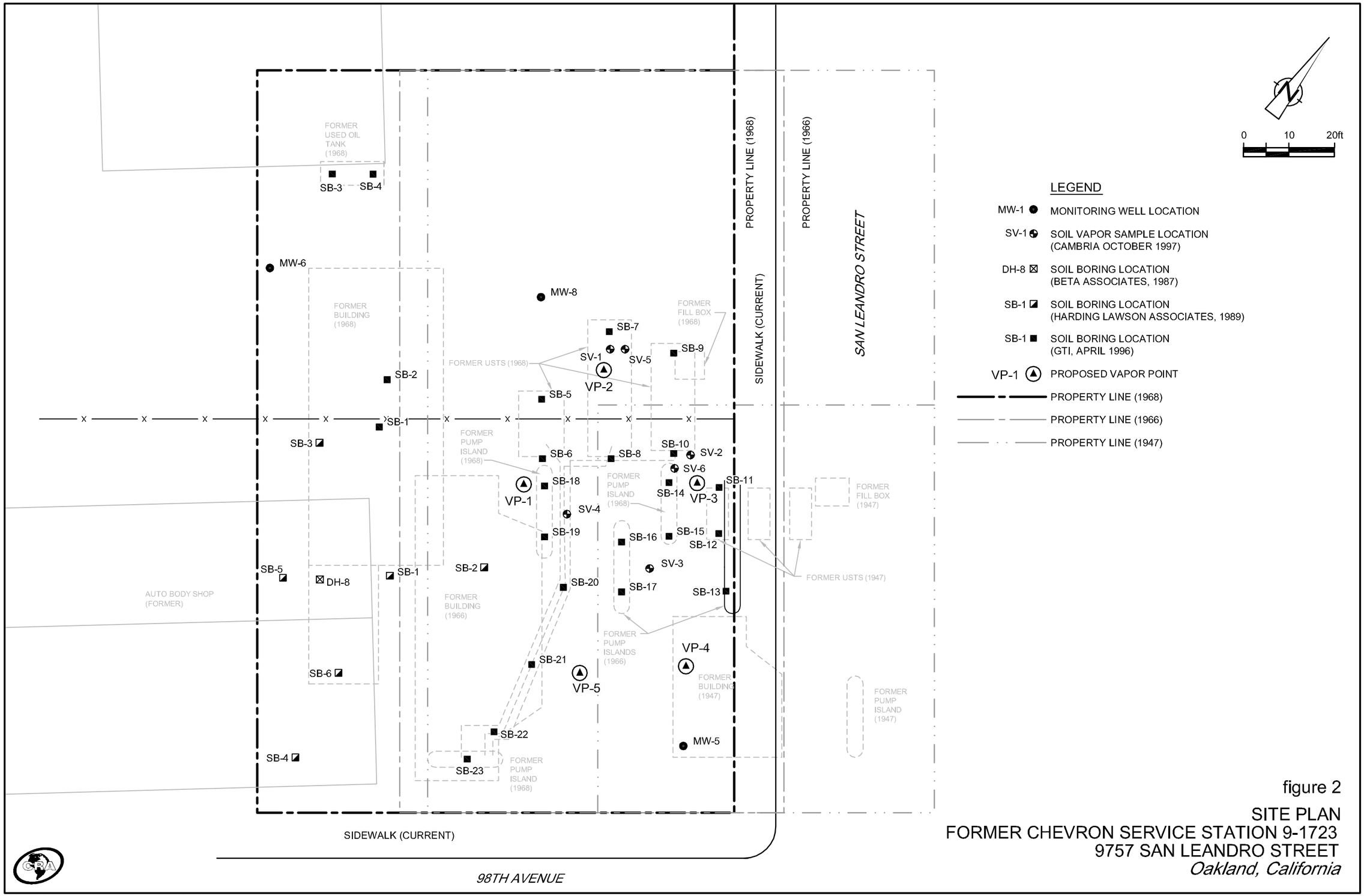



figure 2

SITE PLAN
FORMER CHEVRON SERVICE STATION 9-1723
9757 SAN LEANDRO STREET
*Oakland, California*

610675-500(001)GN-WA001 FEB 13/2009

**TABLE 1**

**HISTORICAL SOIL VAPOR SAMPLE ANALYTICAL RESULTS**
**FORMER CHEVRON STATION #9-1723**
**9757 SAN LEANDRO STREET**
**OAKLAND, CALIFORNIA**

| *Sample ID* | *Date* | *Depth* (ft) | *Benzene* | *Toluene* | *Ethylbenzene* | *m, p -Xylenes* | *o- Xylene* | *Comments* |
|---|---|---|---|---|---|---|---|---|
| | | | Concentrations reported in micrograms per cubic meter ($\mu g/m^3$) | | | | | |
| SV-1-3.0 | 10/06/97 | 3.0 | **306.69** | **19.22** | **26.92** | **60.79** | **22.58** | |
| SV-1-3.0(duplicate) | 10/06/97 | 3.0 | **300.3** | **21.1** | **27.35** | **60.79** | **23.45** | Laboratory Duplicate |
| SV-1-5.0 | 10/06/97 | 5.0 | **1,310** | **17.33** | **1,129** | **108.56** | **14.33** | |
| SV-2-3.0 | 10/06/97 | 3.0 | **3,099** | **45.22** | **824.97** | **1,780** | **356.07** | |
| SV-2-5.0 | 10/06/97 | 5.0 | **1,342** | **22.61** | **521.03** | **1,042** | **199.75** | |
| SV-2-8.0 | 10/06/97 | 8.0 | **9,904** | **4,522** | **12,592** | **39,950** | **13,896** | |
| SV-3-3.0 | 10/06/97 | 3.0 | **15.65** | **21.1** | **27.79** | **91.19** | **35.61** | |
| SV-3-5.0 | 10/06/97 | 5.0 | **11.5** | **7.91** | **11.72** | **39.08** | **13.9** | |
| SV-4-3.0 | 10/06/97 | 3.0 | **5.75** | **18.09** | **26.05** | **99.87** | **36.48** | |
| SV-4-5.0 | 10/06/97 | 5.0 | **6.39** | **37.68** | **26.05** | **95.53** | **35.61** | |
| SV-5-5.0 | 10/06/97 | 5.0 | **319,468** | **5,652** | **19,973** | **5,211** | <4125 | |
| SV-6-5.0 | 10/06/97 | 5.0 | **1,853** | **452.17** | **2,128** | **9,553** | **4,256** | |
| Commercial/Industrial ESL | | | 280 | 180,000 | 3,300 | 58,000* | | |

**Abbreviations / Notes:**

Benzene, toluene, ethylbenzene, and xylenes by EPA Method TO-14

Note: concentrations converted from parts per billion by volume (ppbv) to $\mu g/m^3$, and rounded up accordingly

<x = not detected at or above stated laboratory reporting limit

ESL = Shallow soil gas environmental screening level at commercial/industrial sites associated with vapor intrusion concerns - San Francisco Bay RWQCB, May 2008 (Table E)

* ESL is for total xylenes

ATTACHMENT A

ACEH LETTER DATED OCTOBER 23, 2008

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

October 23, 2008

Mr. Rob Speer
Chevron Environmental Management
6001 Bollinger Canyon Rd K2256
PO Box 6012
San Ramon, CA 94583-2324

J. Jeannero
Gerber Products
445 State Street
Fremont, MI 49412

Ms. Linda Hothem
Linda Hothem Trust
104 Caledonia Street
Sausalito, CA 94565-1952

Subject: Fuel Leak Case No. RO0000412 (Global ID # T0600101789), Chevron #9-1723, 9757 San Leandro Street, Oakland, CA 94603

Dear: Mr. Speer, Ms Hothem and J. Jeannero

Alameda County Environmental Health (ACEH) staff has reviewed the case file for the above referenced site and the document entitled "Closure Request," received December 14, 2006 and prepared by Conestoga Rovers Associates (CRA). In May 1996 Chevron completed a site investigation that included the installation of 23 soil borings located throughout the site. Results from the investigation detected high levels of TPHg and benzene contamination at concentrations of up to 1,800 ppm and 99 ppm, respectively. We note that benzene levels in soil detected throughout the site significantly exceed the ESLs. In addition, grab groundwater samples collected during the investigation detected 19,000 µg/L TPHg and 400 µg/L benzene. However, limited groundwater samples were collected and not in areas of high benzene concentrations

In October 1997, Chevron completed an investigation which detected benzene in soil gas at concentrations of up to 319,000 µg/$m^3$ (sample ID #SV-5) which exceed RWQCB ESLs of 280 µg/$m^3$ (Screening For Environmental Concerns at Sites With Contaminated Soil and Groundwater November 2007, San Francisco Bay Regional Water Quality Control Board, California EPA, http://www.waterboards.ca.gov/sanfranciscobay/esl.htm.) Furthermore, in April 1997 Chevron concluded that the human health risk associated with residual benzene contamination in soil would require institutional controls, if future site redevelopment was considered. Then, in November 2001 Chevron completed a Tier 2 Risk Based Corrective Action which neglected to adequately evaluate the risk associated with the soil vapor data collected from previous soil vapor sampling.

In December 2006, Chevron submitted a "Request for Closure" for the site. In addition, Chevron asserts that soil vapor data collected from soil vapor point SV-5 (319,000 µg/$m^3$ benzene) is anomalous. ACEH does not agree with Chevron's assumption that simply because soil gas data collected from SV-5 conflicts with soil gas data from SV-1 (1,310 µg/$m^3$ benzene) the data from SV-5 is anomalous. Rather, data from all soil vapor probes, including SV-5, must be used to evaluate the potential human health risk associated with the soil vapor and the vapor intrusion pathway. Therefore, ACEH cannot consider case closure at this time. This decision to deny closure is subject to appeal to the State Water Resources Control Board (SWRCB), pursuant to Section 25299.39.2(b) of the Health and Safety Code (Thompson-Richter Underground Storage Tank Reform Act - Senate Bill 562). Please contact the SWRCB Underground Storage Tank Program at (916) 341-5851 for information regarding the appeal process.

Based on ACEH staff review of the case file, we request that you address the following technical comments and send us the reports described below. Please provide 72-hour advance written notification to this office (e-mail preferred to mail to:steven.plunkett@acgov.org) prior to the start of field activities.

## TECHNICAL COMMENTS

1. **Residual Contamination in Soil and Soil Vapor.** Initial site characterization activities, including the installation of 23 soil borings located throughout the site, indicate that a source of residual contamination remains in soil beneath the former UST tank pit and dispenser islands. Results from the investigation detected high levels of TPHg and benzene contamination at concentrations of up to 1,800 ppm and 99 ppm, respectively. In addition, grab groundwater samples collected during the investigation detected 19,000 µg/L TPHg and 400 µg/L benzene. However, groundwater was only collected from a select set of soil boring, and groundwater was not sampled in areas of high benzene concentration. Furthermore, no remedial action has been performed to mitigate contamination in soil and groundwater beneath the site.

   CRA's assertion that the soil vapor contamination detected in SV-5 (319,000 µg/m$^3$ benzene) is anomalous is a specious argument. ACEH strongly disagrees with the assumption that low levels of benzene in soil gas collected from SV-1 negate the high concentrations of soil gas detected in SV-5. Furthermore, soil gas data collected from SV-2 (3,100 µg/m$^3$ benzene), SV-6 (1,850 µg/m$^3$ benzene) and SV-5 (319,000 µg/m$^3$ benzene) would indicate that the low concentrations of benzene detected in SV-1 may be anomalous. Prior to the evaluation of your site for regulatory closure, ACEH requests that you assess soil vapor contamination throughout the site. Please prepare a work plan and present your plan to evaluate soil vapor contamination beneath your site. Please submit the work plan according to the schedule presented below.

   Please report your soil gas data in units of µg/m$^3$, consistent with reporting units utilized soil gas guidance and resubmit the soil gas tables as an attachment in the work plan requested below.

## TECHNICAL REPORT REQUEST

Please submit technical reports to Alameda County Environmental Health (Attention: Mr. Steven Plunkett), according to the following schedule:

- **February 14, 2009** – Work Plan

These reports are being requested pursuant to California Health and Safety Code Section 25296.10. 23 CCR Sections 2652 through 2654, and 2721 through 2728 outline the responsibilities of a responsible party in response to an unauthorized release from a petroleum UST system, and require your compliance with this request.

## ELECTRONIC SUBMITTAL OF REPORTS

ACEH's Environmental Cleanup Oversight Programs (LOP and SLIC) require submission of reports in electronic form. The electronic copy replaces paper copies and is expected to be used for all public information requests, regulatory review, and compliance/enforcement activities. Instructions for submission of electronic documents to the Alameda County Environmental Cleanup Oversight Program FTP site are provided on the attached "Electronic Report Upload Instructions." 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. In September 2004, the SWRCB adopted regulations that require electronic submittal of information for all 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

monitoring wells, and other data to the Geotracker database over the Internet. Beginning July 1, 2005, these same reporting requirements were added to Spills, Leaks, Investigations, and Cleanup (SLIC) sites. Beginning July 1, 2005, electronic submittal of a complete copy of all reports for all sites is required in Geotracker (in PDF format). Please visit the SWRCB website for more information on these requirements (http://www.swrcb.ca.gov/ust/electronic_submittal/report_rqmts.shtml.

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) 383-1761 or send me an electronic mail message at steven.plunkett@acgov.org.

Sincerely,

Steven Plunkett
Hazardous Materials Specialist

Donna Drogos, PE
Supervising Hazardous Materials Specialist

cc: Laura Genin

CRA
5900 Hollis Street, Suite A
Emeryville, CA 94608

Donna Drogos, ACEH,Steven Plunkett ACEH, File

# ATTACHMENT B

# SUMMARY OF PREVIOUS INVESTIGATIONS

## SUMMARY OF PREVIOUS INVESTIGATIONS

***1978 Station Demolition:*** In 1978, the Chevron station was demolished, including removal of the dispenser islands, underground storage tanks (USTs), and associated product piping. No detailed records documenting these activities exist.

***1987 Subsurface Investigation:*** In March and April 1987, Beta Associates (BA) inspected the entire Gerber Products Company (Gerber) facility for potential sources of contamination and drilled 11 borings (DH-1 through DH-11) as part of a subsurface investigation on behalf of Gerber. One of the borings (DH-8) was located on the site. Borings DH-1, DH-2, and DH-4 were converted into monitoring wells MW-1, MW-2, and MW-4, respectively. Hydrocarbons were not detected in soil samples collected from borings DH-1 through DH-7. The soil sample collected at 10 feet below grade (fbg) inform boring DH-8 contained total petroleum hydrocarbons as gasoline (TPHg) at 1,017 milligrams per kilograms (mg/kg), TPH as motor oil (TPHmo) at 240 mg/kg, benzene at 1.063 mg/kg, toluene at 9.997 mg/kg, and xylenes at 108 mg/kg; TPH as diesel (TPHd) was not detected.

***1988 Subsurface Investigation:*** In May 1988, Groundwater Technology, Inc. (GTI) conducted a subsurface investigation (on behalf of Gerber) on and near the site to further evaluate the hydrocarbon impact to soil and groundwater. The investigation included performance of a ground-penetrating radar (GPR) survey to evaluate if any USTs remained from the two service stations, as well as the installation of monitoring wells MW-5 through MW-8. Well MW-7 was located approximately 100 feet northwest of the site. The GPR survey did not identify any previously unidentified USTs or underground features located beneath the site, with the exception of remnant utility piping. Soil samples were collected from the four well borings at depths of 5 and 10 fbg (and 15 fbg in boring MW-5) and analyzed for TPHg and benzene, toluene, ethylbenzene, and xylenes (BTEX). TPHg was detected in four of the soil samples at concentrations up to 310 mg/kg; low concentrations of toluene (2 mg/kg), ethylbenzene (up to 4 mg/kg), and xylenes (up to 18 mg/kg) were also detected in two of the samples. TPHg and BTEX were not detected in the soil samples collected from boring MW-7. TPHg was detected in the initial groundwater samples collected from wells MW-6 and MW-8 at 1,100 micrograms per liter (µg/L) and 77,000 µg/L, respectively. Benzene was detected at concentrations ranging from 93 (MW-5) to 2,300 µg/L (MW-8). Hydrocarbons were not detected in the initial groundwater sample collected from well MW-7; however, low concentrations of the volatile organic compounds (VOCs) 1,1-dichloroethene (1,1-DCE) (up to 39 µg/L), 1,1-dichloroethane (1,1-DCA) (up to 8 µg/L), and 1,1,1-trichloroethane (1,1,1-TCA) (up to 18 µg/L) were detected in this well. A well survey performed for a ½-mile radius around the site identified nine wells; all were used for industrial purposes. However, only one of the wells appeared to be of concern. The well (P2), installed by Gerber, was screened from 160 to 225 fbg. A survey of potential offsite sources of contamination did not identify any nearby cases; however, it was noted that Standard Brands Company once occupied the property upgradient of the site across San Leandro Street. Details of this investigation were presented in GTI's *Report-Subsurface Hydrocarbon Investigation*, dated November 17, 1988.

***1989 Subsurface Investigation:*** From August to November 1989, Harding Lawson Associates (HLA) drilled six borings (SB-1 through SB-6) and installed monitoring wells MW-9 and MW-10 to further evaluate the hydrocarbon distribution in soil at the site and in groundwater

downgradient of the site. Borings SB-1 through SB-6 were located on the eastern side of the site, in the vicinity of the former USTs and dispenser islands. A total of 21 soil samples were collected at various depths from the borings and analyzed for TPHg and BTEX. TPHg was only detected in seven of the soil samples at concentrations ranging from 34 (SB-2 at 9 fbg) to 470 mg/kg (SB-5 at 10 fbg). Benzene was only detected in 10 of the soil samples at concentrations ranging from 0.018 (SB-6 at 5 fbg) to 3.3 mg/kg (SB-4 at 10 fbg). Details of this investigation were presented in HLA's *Phase III Site Investigation Addendum*, dated February 21, 1990.

***1994 Investigation:*** In January 1994, GTI performed a well survey that identified approximately 80 wells within ½-mile of the site. An offsite investigation was also performed that identified two nearby cases: Fleischmann's Yeast across San Leandro Street from the site (diesel release) and 9801 San Leandro Street (vehicle fuel release). Details of this investigation were presented in GTI's *Environmental Investigation Report*, dated January 4, 1994.

***1994 Comprehensive Site Evaluation:*** In June 1994, Weiss Associates (Weiss) performed a comprehensive site evaluation to evaluate if further work was warranted. Based on the data that had been collected to date, it was concluded that although hydrocarbons had been present at the site for at least 16 years, the low permeability soils had kept the plume confined to the vicinity of the site, and it was very unlikely that significant additional migration would occur before natural degradation of the plume occurred. It was also determined that operations associated with the current site owner and adjacent service stations had also impacted groundwater in the vicinity of the site. The hydrocarbon sources (USTs and dispensers) had been removed; it was concluded that due to the hydrogeologic characteristics of the subsurface and the risk of encouraging migration of offsite plumes, no additional appropriate or cost-effective technologies existed that might have significantly accelerated cleanup of the plume. Based on this information, it was concluded that the remaining hydrocarbons at the site were contained in the vicinity of the site and did not pose a threat to human health or the surrounding aquifer. Also, no economically or technically feasible measures were available to further reduce the plume. Details of this investigation were presented in Weiss' *Comprehensive Site Evaluation and Proposed Future Action Plan*, dated June 23, 1994.

***1996 Subsurface Investigation and Well Survey:*** In April 1996, Fluor Daniel GTI advanced 23 borings (SB-1 through SB-23) to assess the hydrocarbon impact to site soils. A total of 36 soil samples were collected from the borings at depths of 5, 10, or 15 fbg and analyzed for TPHg and BTEX. The samples collected at 10 fbg from borings SB-1 through SB-4 were also analyzed for total oil and grease (TOG). TPHg was detected in the majority of the soil samples at concentrations ranging from 1.9 (SB-16 at 5 fbg) to 1,800 mg/kg (SB-15 at 10 fbg). Benzene was also detected in the majority of the soil samples at concentrations ranging from 0.0054 (SB-8 at 15 fbg) to 99 mg/kg (SB-10 at 10 fbg). Toluene (up to 68 mg/kg), ethylbenzene (up to 150 mg/kg), and xylenes (up to 260 mg/kg) were also detected in the majority of the soil samples. TOG was detected in the four samples analyzed at concentrations ranging from 24 (SB-2 at 5 fbg) to 940 mg/kg (SB-4 at 10 fbg). Petroleum hydrocarbons were not detected in the soil sample collected at 5 fbg from boring SB-21. Grab-groundwater samples were also collected from borings SB-11, SB-19, and SB-22 and analyzed for TPHg and BTEX. TPHg was detected in the samples collected from borings SB-11, SB-19, and SB-22 at concentrations of 5,100 µg/L, 2,300 µg/L, and 19,000 µg/L, respectively; benzene was detected in these samples at 210 µg/L, 170 µg/L, and 400 µg/L, respectively. Low concentrations of toluene (up to 30 µg/L),

ethylbenzene (up to 180 µg/L), and xylenes (up to 400 µg/L) were also detected in the groundwater samples.

In May 1996, Fluor Daniel GTI conducted a field survey of water wells on the former Gerber facility adjacent to the southwest of the site. A pump (P1) and two wells (P2 and P3) were identified within 250 feet downgradient of the site. The pump served to supply city water to a 200,000-gallon aboveground storage tank (AST) which was used to store process water at the facility. Well P2 was an operative pumping well on standby basis and was used to draw water from a well located in a pump house in the event of a fire. Well P3 was an operating pumping well used to extract water for industrial purposes. It was determined that well P2 may have extended to approximately 600 fbg and may have been screened from 160 to 225 fbg. Details of this investigation were presented in Fluor Daniel GTI's *Environmental Assessment Report*, dated May 15, 1996.

***1997 Soil Vapor Investigation:*** In October 1997, Cambria Environmental Technology, Inc. (Cambria) collected soil vapor samples from six borings (SV-1 through SV-6) drilled at the site in the area of the former USTs and dispensers. As requested by Alameda County Environmental Health (ACEH), borings SV-5 and SV-6 were located adjacent to borings SV-1 and SV-2, respectively. Soil vapor samples were collected at depths of 3 and 5 fbg from borings SV-1 through SV-4 (and 8 fbg from boring SV-2), and at 5 fbg from borings SV-5 and SV-6, and analyzed for BTEX. Benzene was detected in the samples collected from borings SV-1 through SV-4 at concentrations ranging from 1.8 (SV-4 at 3 fbg) to 3,100 parts per billion by volume (ppbv) (SV-2 at 8 fbg). Toluene was detected in the samples collected from borings SV-1 through SV-4 at concentrations ranging from 2.1 (SV-3 at 5 fbg) to 1,200 ppbv (SV-2 at 8 fbg). Ethylbenzene was detected in the samples collected from borings SV-1 through SV-4 at concentrations ranging from 2.7 (SV-3 at 5 fbg) to 2,900 ppbv (SV-2 at 8 fbg). Total xylenes were detected in the samples collected from borings SV-1 through SV-4 at concentrations ranging from 12.2 (SV-3 at 5 fbg) to 12,400 ppbv (SV-2 at 8 fbg). Significantly higher concentrations of benzene (100,000 ppbv), toluene (1,500 ppbv), ethylbenzene (4,600 ppbv), and xylenes (1,200 ppbv) were detected in the sample collected at 5 fbg from boring SV-5 located adjacent to boring SV-1. Higher concentrations of benzene (580 ppbv), toluene (120 ppbv), ethylbenzene (490 ppbv), and xylenes (2,200 ppbv) were detected in the sample collected at 5 fbg from boring SV-6 located adjacent to boring SV-2. Details of this investigation were presented in Cambria's *Investigation Report*, dated January 5, 1998.

***1998 Tier 2 RBCA Evaluation:*** In July 1998, Cambria performed a Tier 2 RBCA evaluation for the site. The RCBA indicated that petroleum hydrocarbons at the site did not pose a significant risk to human health. Hydrocarbon concentrations were low and decreasing. Therefore, case closure was recommended. Details of this investigation were presented in Cambria's *Tier 2 RBCA Analysis and Closure Request*, dated July 7, 1998.

***2001 Risk Management Plan:*** In January 2001, Gettler-Ryan Inc. (GR) prepared a Risk Management Plan that summarized the contaminants of concerns (COCs) and the risk at the site, and outlined steps for risk management of identified hazards. Impacted soil remained in the vicinity of the former USTs and dispenser islands. It was noted that the highest concentrations of TPHg and benzene detected in soil were 1,800 mg/kg and 99 mg/kg, respectively, in the vicinity of the former USTs. Based on the data to date, it was determined that the vertical and lateral extent of impacted soil had been adequately delineated. It was also

concluded that the benzene concentration detected in soil vapor from boring SV-5 at 5 fbg (100,000 ppbv) appeared to be anomalous based on the data from adjacent boring SV-1. Groundwater had been monitored quarterly since 1993, and decreasing trends of TPHg and benzene were evident. Two industrial wells were present within 250 feet downgradient of the site; however, hydrocarbons generally had not been detected in offsite well MW-9 located near one of the industrial wells. Hydrocarbons had been detected in offsite well MW-2 and perimeter well MW-6; however, the detected TPHg and benzene concentrations were low. Based on the data and the deep screen interval of the industrial supply well, it was concluded that it was unlikely that the industrial wells would have been impacted by hydrocarbons from the site. The results of the RBCA evaluation indicated no complete human or ecological exposure pathways. Details of this investigation were presented in GR's *Risk Management Plan*, dated January 17, 2001.

***2001 Tier 2 RBCA Evaluation:*** In November 2001, Delta Environmental Consultants, Inc. (Delta) performed a Tier 2 RBCA evaluation to evaluate if residual hydrocarbons in site soil and groundwater posed a significant risk to human health. The identified potential exposure pathways consisted of subsurface soil and groundwater volatilization to outdoor and indoor air. The results of the evaluation indicated that the site conditions did not exceed the Site-Specific Target Levels (SSTLs). Therefore, it was concluded that no further work was warranted. Details of this investigation were presented in Delta's *Risk-Based Corrective Action Evaluation*, dated November 15, 2001.

# ATTACHMENT C

# STANDARD FIELD PROCEDURES

# Conestoga-Rovers & Associates

## STANDARD FIELD PROCEDURES FOR HAND-AUGER SOIL BORINGS

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

### Objectives

Soil samples are collected to characterize subsurface lithology, assess whether the soils exhibit obvious hydrocarbon or other compound vapor odor or staining, estimate ground water depth and quality and to submit samples for chemical analysis.

### Soil Classification/Logging

All soil samples are classified according to the Unified Soil Classification System by a trained geologist or engineer working under the supervision of a California Professional Geologist (PG) or a Certified Engineering Geologist (CEG). The following soil properties are noted for each soil sample:

- Principal and secondary grain size category (i.e. sand, silt, clay or gravel)
- Approximate percentage of each grain size category,
- Color,
- Approximate water or product saturation percentage,
- Observed odor and/or discoloration,
- Other significant observations (i.e. cementation, presence of marker horizons, mineralogy), and
- Estimated permeability.

### Soil Boring and Sampling

Hand-auger borings are typically drilled using a hand-held bucket auger to remove soil to the desired sampling depth. Samples are collected using lined split-barrel or equivalent samplers driven into undisturbed sediments beyond the bottom of the augered hole. The vertical location of each soil sample is determined using a tape measure. All sample depths use the ground surface immediately adjacent to the boring as a datum. The horizontal location of each boring is measured in the field from an onsite permanent reference using a measuring wheel or tape measure.

Augering and sampling equipment is steam-cleaned prior to drilling and between borings to prevent cross-contamination. Sampling equipment is washed between samples with trisodium phosphate or an equivalent EPA-approved detergent.

### Sample Storage, Handling and Transport

Sampling tubes chosen for analysis are trimmed of excess soil and capped with Teflon tape and plastic end caps. Soil samples are labeled and stored at or below 4°C on either crushed or dry ice, depending upon local regulations. Samples are transported under chain-of-custody to a State-certified analytic laboratory.

### Field Screening

One of the remaining tubes is partially emptied leaving about one-third of the soil in the tube. The tube is capped with plastic end caps and set aside to allow hydrocarbons to volatilize from the soil. After ten to fifteen minutes, a portable photoionization detector (PID) measures volatile hydrocarbon vapor concentrations in the tube headspace, extracting the vapor through a slit in the cap. PID measurements are used along with the field observations, odors, stratigraphy and ground water depth to select soil samples for analysis.

### Water Sampling

Water samples, if they are collected from the boring, are collected from the open borehole using bailers. The ground water samples are decanted into the appropriate containers supplied by the analytic laboratory. Samples are labeled, placed in protective foam sleeves, stored on crushed ice at or below 4°C, and transported under chain-of-custody to the laboratory.

### Duplicates and Blanks

Blind duplicate water samples are collected usually collected only for monitoring well sampling programs, at a rate of one blind sample for every 10 wells sampled. Laboratory-supplied trip blanks accompany samples collected for all sampling programs to check for cross-contamination caused by sample handling and transport. These trip blanks are analyzed if the internal laboratory QA/QC blanks contain the suspected field contaminants. An equipment blank may also be analyzed if non-dedicated sampling equipment is used.

### Grouting

The borings are filled to the ground surface with cement grout poured or pumped through a tremie pipe.

### Waste Handling and Disposal

Soil cuttings from drilling activities are usually stockpiled onsite on top of and covered by plastic sheeting. At least four individual soil samples are collected from the stockpiles for later compositing at the analytic laboratory. The composite sample is analyzed for the same constituents analyzed in the borehole samples. Soil cuttings are transported by licensed waste haulers and disposed in secure, licensed facilities based on the composite analytic results.

Ground water removed during sampling and/or rinsate generated during decontamination procedures are stored onsite in sealed 55-gallon drums. Each drum is labeled with the drum number, date of generation, suspected contents, generator identification and consultant contact. Disposal of the water is based on the analytic results for the well samples. The water is either pumped out using a vacuum truck for transport to a licensed waste treatment/disposal facility or the individual drums are picked up and transported to the waste facility where the drum contents are removed and appropriately disposed.

# Conestoga-Rovers & Associates

## STANDARD FIELD PROCEDURES FOR SOIL VAPOR PROBE INSTALLATION AND SAMPLING

## 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.

### Shallow Soil Vapor Point Installation

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 probe, connected with Swagelok fittings to nylon or Teflon tubing of ¼-inch outer-diameter, is placed within 12-inches of number 2/16 filter sand (Figure A). A 12-inch layer of dry granular bentonite is placed on top of the filter pack. Pre-hydrated granular bentonite is then poured to fill the borehole. The tube is coiled and placed within a wellbox finished flush to the surface. Soil vapor samples will be collected no sooner than 48 hours 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 different Summa purge canister. 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.

### Sampling of Soil Vapor Points

Samples will be collected using a SUMMA™ canister connected to sampling tubing at each vapor point. Prior to collecting soil vapor samples, the initial vacuum of the canisters is measured and recorded on the chain-of-custody. The vacuum of the SUMMA™ canister is 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 and recorded on

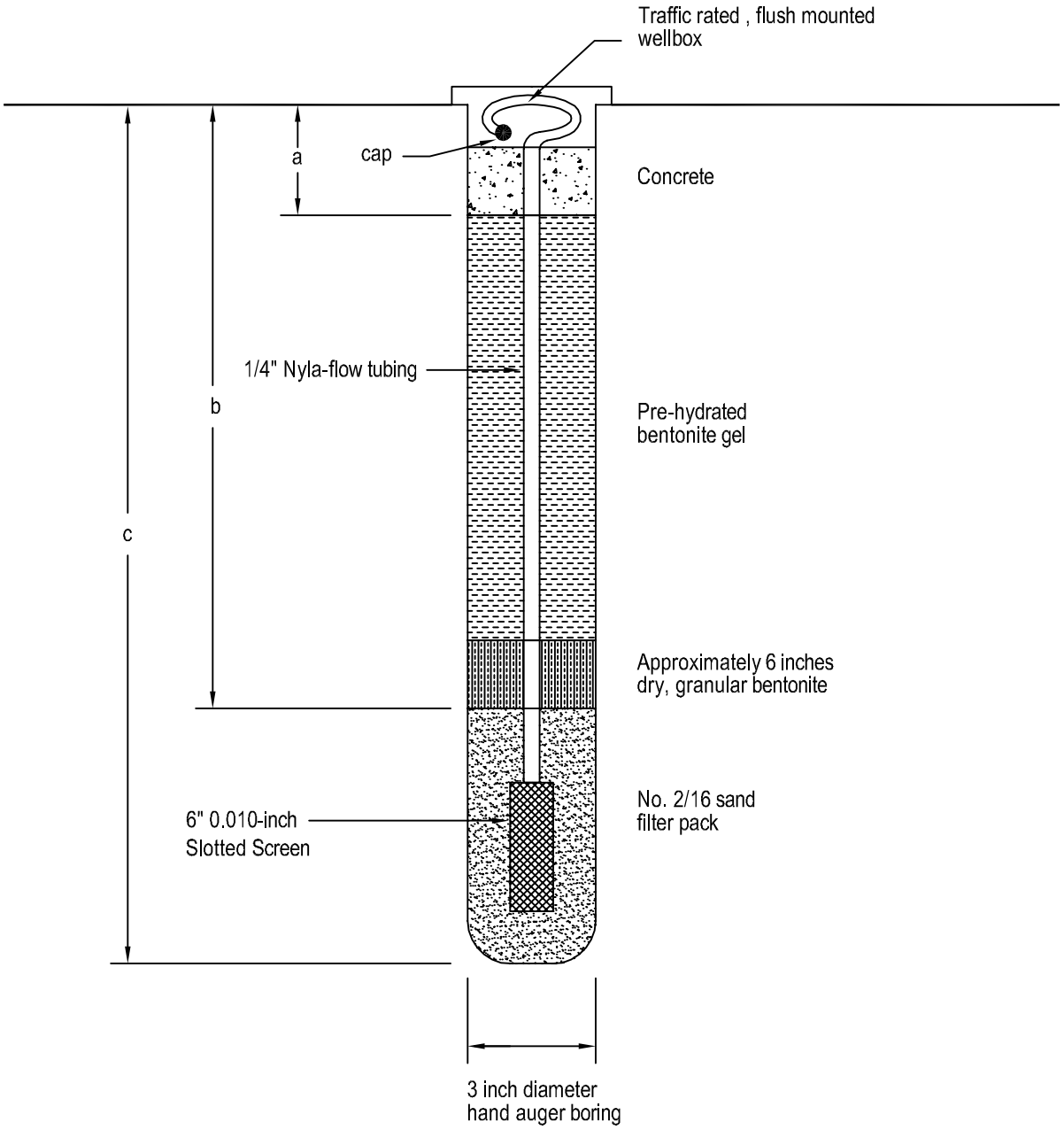
the chain-of-custody. The flow controllers should be set to 100-200 ml/minute. Field duplicates should be collected for every day of sampling and/or for every 10 samples collected.

Prior to sample collection, stagnant air in the sampling apparatus should be removed by purging approximately 3 purge volumes. The purge volume is defined as the amount of air within the probe and tubing.

In accordance with the DTSC Advisory-Active Soil Gas Investigations guidance document, dated January 28, 2003, leak testing needs to be performed during sampling. Helium is recommended, although shaving cream is acceptable.

### Vapor Sample Storage, Handling, and Transport

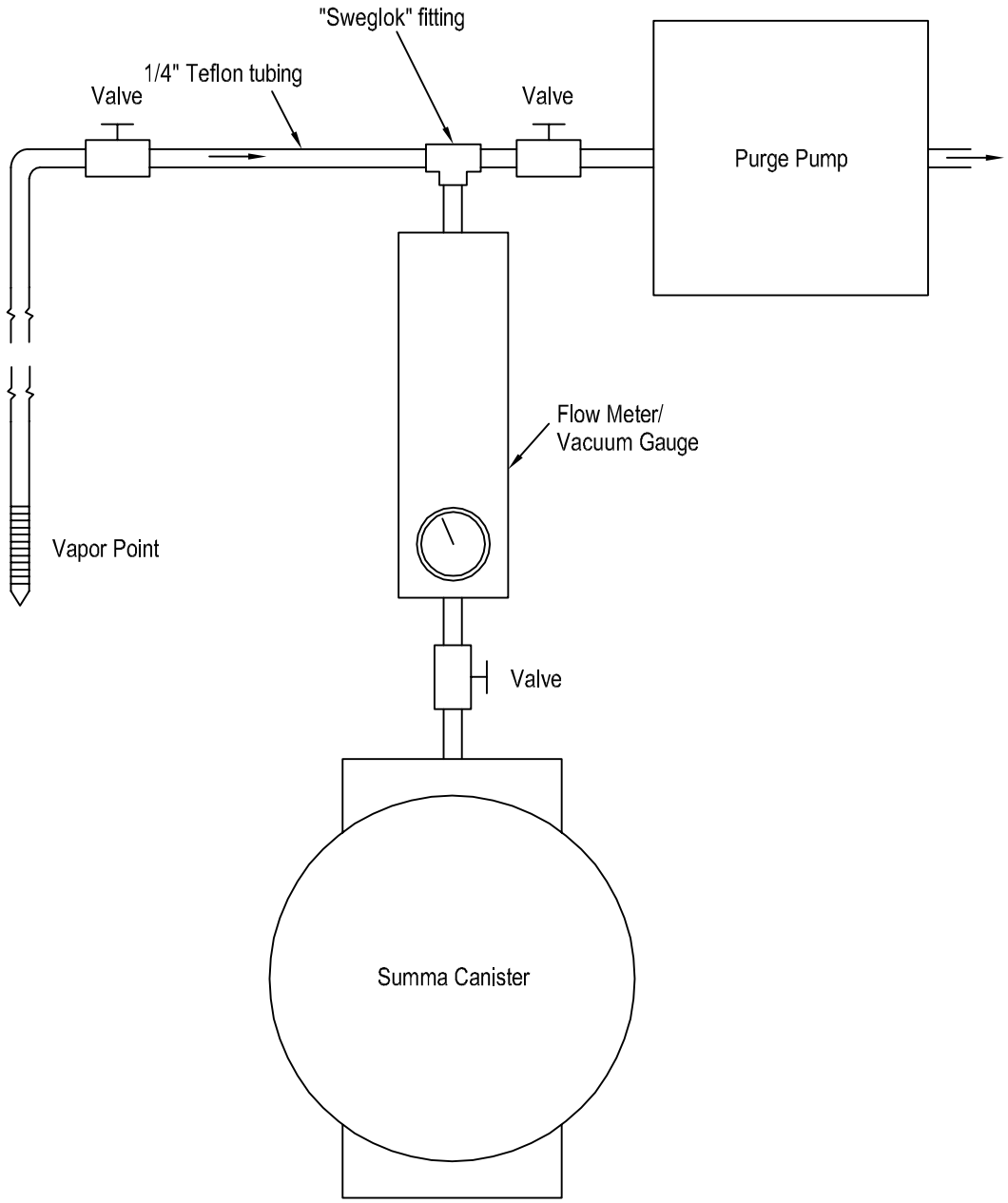
Samples are stored and transported under chain-of-custody to a state-certified analytic laboratory. Samples should never be cooled due to the possibility of condensation within the canister.




Schematic Not to Scale

figure A

SOIL VAPOR POINT




Schematic Not to Scale

figure B

SOIL VAPOR SAMPLING APPARATUS DIAGRAM