ABF FREIGHT SYSTEM, INC.
P.O. Box 10048
Fort Smith, AR 72917-0048
479-785-8700

abf.com

March 19, 2014

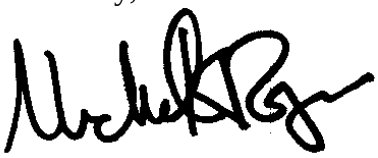
Mr. Mark Detterman, RG, CEG
Senior Hazardous Materials Specialist
Alameda County Environmental Health Department
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Re: **Perjury Statement-**
***Passive Soil Gas Survey Report***
ABF Freight System Facility (SLIC Case No. RO#0003033)
4575 Tidewater Avenue
Oakland, California

Dear Mr. Detterman:

I declare under penalty of perjury, that the information and/or recommendations contained in the attached document or report are true and correct to the best of my knowledge.

Sincerely,



Michael K. Rogers
Director, Real Estate
Arkansas Best Corporation

March 20, 2014
Project 154.006.004

Mr. Mark Detterman, RG, CEG
Senior Hazardous Materials Specialist
Alameda County Environmental Health Department
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Re: *Passive Soil Gas Survey Report*
ABF Freight System Facility
4575 Tidewater Avenue
Oakland, California
RO#0003033

Dear Mr. Detterman:

This *Passive Soil Gas Survey Report (Soil Gas Report)* was prepared by Trinity Source Group, Inc. (Trinity) for the subject site (Figures 1 and 2). This *Soil Gas Report* was requested by Alameda County Environmental Health Department (ACEH) in a letter dated December 23, 2013. This *Soil Gas Report* presents a brief site background, the scope of work, the procedures and results of the work conducted, along with conclusions and recommendations, as proposed in the November 20, 2013, *Soil Vapor Investigation Work Plan (Soil Vapor Work Plan)*. The ACEH letter and follow-up email correspondence is included in Attachment A of this *Soil Gas Report*.

## BACKGROUND

The site encompasses approximately 6.7 acres situated between Tidewater Avenue and the water channel extending north from San Leandro Bay, separating the cities of Alameda and Oakland (Figures 1 and 2). Land-use in the area is industrial.

Currently the site is in use as a trucking terminal, with a maintenance building located near the western property boundary. One aboveground storage tank currently exists adjacent to the maintenance building, and is labeled with “Diesel Fuel”, “Not in Use”, and “Permanently Closed Jan. 1995”. An underground clarifier is in use near the maintenance building. The underground storage tanks (USTs) at the site were also located near the maintenance building.

Previous environmental activities have evaluated soil and groundwater conditions, and are described in the *Soil Vapor Work Plan.* The most recent groundwater monitoring was the first semi-annual 2014 event, reported on March 12, 2014.

Trinity installed two sub-slab vapor probes (SVP-1 and SVP-2) inside the maintenance building (Figure 2), and sampled these probes on two occasions. Tetrachloroethene (PCE) was detected at concentrations exceeding the Environmental Screening Level (ESL)[1] for commercial land use indoor air, with a maximum of 901 to 971 micrograms per meter cubed (µg/$m^3$) in Probe SVP-2. The applicable ESL for PCE is 42 µg/$m^3$. Probe SVP-2 also had very low but detectable concentrations of several other halogenated volatile organic compounds (HVOCs). The attached Table 1 summarizes the sub-slab vapor data. Because the source and extent of PCE is unknown, ACEH requested additional delineation of the PCE.

## SCOPE OF WORK

The following scope of work was conducted to determine the source and extent of PCE in soil vapor at the maintenance building, using passive soil gas sampling.

The passive soil gas survey utilizes specialized modules which are buried at shallow depths and left in-place for approximately 14 days to adsorb HVOCs from the surrounding soil. The modules are then retrieved, and laboratory-analyzed for HVOCs. The laboratory results correlate generally with elevated HVOC concentrations in soil vapor, soil and/or groundwater at the sample locations. Therefore, the passive soil-gas survey can be an efficient means of identifying and delineating significant areas of HVOC impacts, although the actual HVOC concentrations in soil vapor, soil and groundwater are not indicated by the soil-gas module. The passive soil gas technology and field procedures are described in the literature from Beacon Environmental Services, Inc. presented in Attachment B. Trinity completed a passive soil gas survey using ten modules, located as shown on Figure 3.

In addition, Trinity conducted a site inspection in the maintenance building to look for evidence for parts washing facilities that may have existed prior to ABF's activities. Such evidence may include old sinks or basins, concrete patches where equipment may have been bolted to the floor, or other irregularities in the concrete floor. Trinity staff did not observe any evidence for a parts washer inside or outside the building.

The following tasks were completed:

**Prefield**

- Prepared a site-specific health and safety plan.
- Notified ACEH and tenants of field work.

[1] *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, updated December, 2013. ESLs are conservative risk-based numbers used to evaluate detections of chemicals in soil, groundwater and soil gas. Detections less than ESLs generally do not warrant further evaluation. Detections greater than ESLs may warrant further evaluation based on site-specific conditions.

- Trinity staff marked the module locations, and notified Underground Service Alert for utility clearance.

**Installing and Retrieving Passive Soil Gas Modules**

On January 22, 2014, Trinity installed ten modules (SG-1 thru SG-10) at the site, in and around the maintenance building and adjacent former UST area, as shown on Figure 3. The module locations are near the Probe SVP-2 area, along the sanitary sewer trench, in and near the former UST area, and near the western site boundary north and south of the maintenance building.

The full description of the soil gas module installation and retrieval procedure is presented in Attachment B. In general, Trinity installed the Beacon passive soil gas modules at the proposed locations, to a depth of approximately 12 inches. A hand-held drill was used to advance the hole. After installation, the hole was plugged temporarily with a ball of aluminum foil and a thin layer of cement grout. The modules were left undisturbed for 14 days. Modules were installed at ten locations, with one duplicate (SG-6 Dup), and one module was designated a trip blank for QA/QC during module transportation.

On February 5, 2014, Trinity retrieved the modules by breaking the cement seal, removing the foil, and placing each module into a labeled sample vial. The boreholes were backfilled with cement grout to existing grade.

**Laboratory Analysis**

Trinity shipped the soil gas modules to Beacon for laboratory analysis. The modules were analyzed for HVOCs by EPA Method 8260C. The Beacon analytical results, along with color isopleth maps showing analytical results for selected HVOCs in map view, are included in Attachment B. Figure 4 presents the isopleth map for PCE.

## RESULTS

The passive soil gas survey data generally indicated non-detectable to relatively low HVOC concentrations across the area surveyed, as described below and presented in the Beacon report included in Attachment B. The passive soil gas sample concentrations are summarized on Table 1.

PCE and trichloroethene (TCE) were the only HVOCs detected in multiple probes. PCE was detected in 7 of the 10 survey locations, at concentrations ranging from 7 to 834 nanograms (ng). The maximum PCE concentrations were reported for the Samples SG-5, SG-6, and SG-6 Dup located near a north-south trending sewer line beneath the maintenance building. Probe SG-6 is located adjacent to sub-slab Probe SVP-2, which had the maximum reported sub-slab vapor PCE concentration. As shown on Figure 4, the PCE extent is delineated to non-detectable or low levels by the passive soil gas samples surrounding Samples SG-5 and SG-6 to the east, south and west.

TCE was detected in 4 of the 10 survey locations, at concentrations ranging from 7 to 55 ng. The maximum TCE concentration was reported for Sample SG-5, which also had PCE detected.

## CONCLUSIONS AND RECOMMENDATIONS

Based on the data collected during the passive soil gas survey, Trinity concludes the following:

- No evidence for parts washing facilities was noted inside the maintenance building.
- The passive soil gas survey indicated non-detectable to relatively low concentrations across the area surveyed, with the maximum detections being PCE in two samples located near a sewer trench beneath the maintenance building.
- The maximum PCE concentrations were reported for Samples SG-6 and SG-6 Dup, located adjacent to sub-slab Probe SVP-2.
- The PCE plume identified by the passive soil gas survey does not extend towards the neighboring buildings to the northwest or southwest.
- The concentrations do not indicate the presence of a significant spill or release; however, intrusive sampling is recommended to confirm the presence or absence of soil impacts.

Trinity recommends drilling two soil borings to determine PCE concentrations in soil. One soil boring is proposed near Probe SVP-2 and Sample SG-6 in the area with the maximum reported PCE concentrations. A second soil boring is proposed north of Sample SG-5, to determine whether PCE is present in soil outside the area surveyed by passive soil gas probes. These two soil borings, along with the passive soil gas data, will provide additional source evaluation and delineation of PCE beneath the maintenance building. Proposed boring locations are shown on Figure 4.

Soil and grab-groundwater samples from these two borings should be collected and analyzed for PCE and related HVOCs including TCE, 1,1-dichloroethene, cis-1,2-dichloroethene, trans-1,2-dichloroethene, and vinyl chloride, using EPA Method 8260.

Should you have any questions regarding this letter, please call Trinity at (831) 426-5600.

Sincerely,

## TRINITY SOURCE GROUP, INC.

Information, conclusions, and recommendations made by Trinity in this document regarding this site have been prepared under the supervision of and reviewed by the licensed professional whose signature appears below.


Debra J. Moser, PG, CEG, CHG
Senior Geologist

Attachments:

| | |
|---|---|
| Table 1: | Sub-Slab Vapor Analytical Data |
| Table 2: | Passive Soil Gas Analytical Data |
| Figure 1: | Site Location Map |
| Figure 2: | Soil Boring, Sub-Slab Vapor Probe and Monitoring Well Location Map |
| Figure 3: | Passive Soil Gas Survey Sample Locations |
| Figure 4: | PCE Passive Soil Gas Survey and Proposed Boring Locations |
| Attachment A: | ACEH Letter Dated December 23, 2013 |
| Attachment B: | Beacon Environmental Services, Inc. Passive Soil Gas Survey Analytical Report |

## DISTRIBUTION

A copy of this report has been forwarded to:

Mr. Mike Rogers (via email to mkrogers@arkbest.com)

Leroy Griffin (via email to lgriffin@oaklandnet.com)

# TABLES

**Table 1**
**Sub-Slab Vapor Analytical Data**

ABF Freight System Facility
4575 Tidewater Avenue
Oakland, California

| Sample ID | Sample Date | Analytical Test Methods | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ASTM D-1946 | | | | EPA TO-15 | | | | | | | | | | | EPA TO-17 | |
| | | Carbon Dioxide (%) | Methane (%) | Oxygen (%) | Helium (%) | PCE (µg/m$^3$) | 1,1,2-TCA (µg/m$^3$) | 1,2,4 - TMB (µg/m3) | TPHg (µg/m$^3$) | Benzene (µg/m$^3$) | Toluene (µg/m$^3$) | Ethyl Benzene (µg/m$^3$) | Ethyl Acetate (µg/m$^3$) | Total Xylenes (µg/m$^3$) | Ethanol (µg/m$^3$) | Other VOCs | (µg/m$^3$) | Naphthalene (µg/m$^3$) | TPHd (µg/m3) |
| SVP-1 | 6/20/2012 | 2.2 | <0.0001 | 16 | 0.049 | **60** | <11 | <10 | <1,800 | <2.8 | <7.7 | <8.8 | **20** | <27 | **180** | ND | | <2.0 | |
| SVP-1 | 12/17/2012 | | | | 8.0 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | | | <0.6 | <125 |
| SVP-1 | 1/17/2013 | 0.8 | <0.0002 | 20 | 0.23 | **16** | <11 | <10 | **1,300** | <6.5 | <7.7 | **9.6** | **33** | **77** | **290** | **Acetone, 340** | | **2.0** | |
| SVP-2 | 6/20/2012 | 0.22 | 0.00018 | 18 | <0.005 | **530** | **38** | **13** | **1,900** | **2.9** | **11** | **20** | **19** | **160** | **100** | **Acetone, 230** | | **3.4** | |
| SVP-2 | 12/17/2012 | | | | 1.1 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | | | <0.6 | <125 |
| SVP-2 | 1/17/2013 | | | | 40 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | | | | |
| SVP-2 | 2/5/2013 | 1.21 | <0.0009 | 17.1 | NA | **901** | <0.03 | **0.02** | NA | **0.03** | **0.02** | <0.02 | <0.02 | **0.04** | NA | **Acetone, 20.4<br>1,1-DFE, 12.5 (leak check)<br>Others as listed on Certified Analytical Report** | | | |
| SVP-2 (QC Sample) | 2/5/2013 | 1.22 | <0.001 | 17.3 | NA | **971** | <0.03 | **0.064** | **450*** | **0.15** | **0.21** | <0.02 | <0.02 | **0** | **NA** | **Acetone, 67.1<br>1,1-DFE, 426 (leak check)<br>Others as listed on Certified Analytical Report** | | | |
| ESLs for Commercial Indoor Air | | 2.1 | 0.77 | NA | 100 | 0.42 | 1,300 | 4.9 | NA | 440 | NA | NA | | | | | | 0.36 | 570 |
| Attenuated Commercial Indoor Air[a] | | 42 | 15.4 | NA | 2,000 | 8.4 | 26,000 | 98 | NA | 8,800 | NA | NA | | | | | | 7.2 | 11,400 |

Notes:

ID = Identification
% = Percentage
µg/m$^3$ = micrograms per meter cubed
PCE = Tetracholoroethene
1,1,2-TCA = 1,1,2 - Trichloroethane
1,2,4-TMB = 1,2,4 - Trimethylbenzene
TPHg = Total Petroleum Hydrcarbons as Gasoline
1,1-DFE = 1,1-Difluoroethane
ASTM = American Society for Testing Materials

**Table 1**
**Sub-Slab Vapor Analytical Data**

ABF Freight System Facility
4575 Tidewater Avenue
Oakland, California

| | |
|---|---|
| < = | Not detected at or above detection limit |
| ND = | Not detected |
| NA = | Not applicable |
| **Bold =** | data detected above laboratory detection limits |
| * | Duplicate sampled was analyzed for TPHg; result of 450 (µg/m$^3$) was attributed to single discrete peak (PCE). |
| ESLs = | Environmental Screening Levels (February 2013) |
| SFRWQCB = | San Francisco Bay Regional Water Quality Control Board, California EPA |
| | http://www.waterboards.ca.gov/rwqcb2/water_issues/programs/esl.shtml (May 2013) |
| a= | Attenuation factor for existing commercial building sub-slab from the DTSC-CEPA Vapor Intrusion Guidance (2011) is 0.05 |

**Table 2**
**Passive Soil Gas Analytical Data**

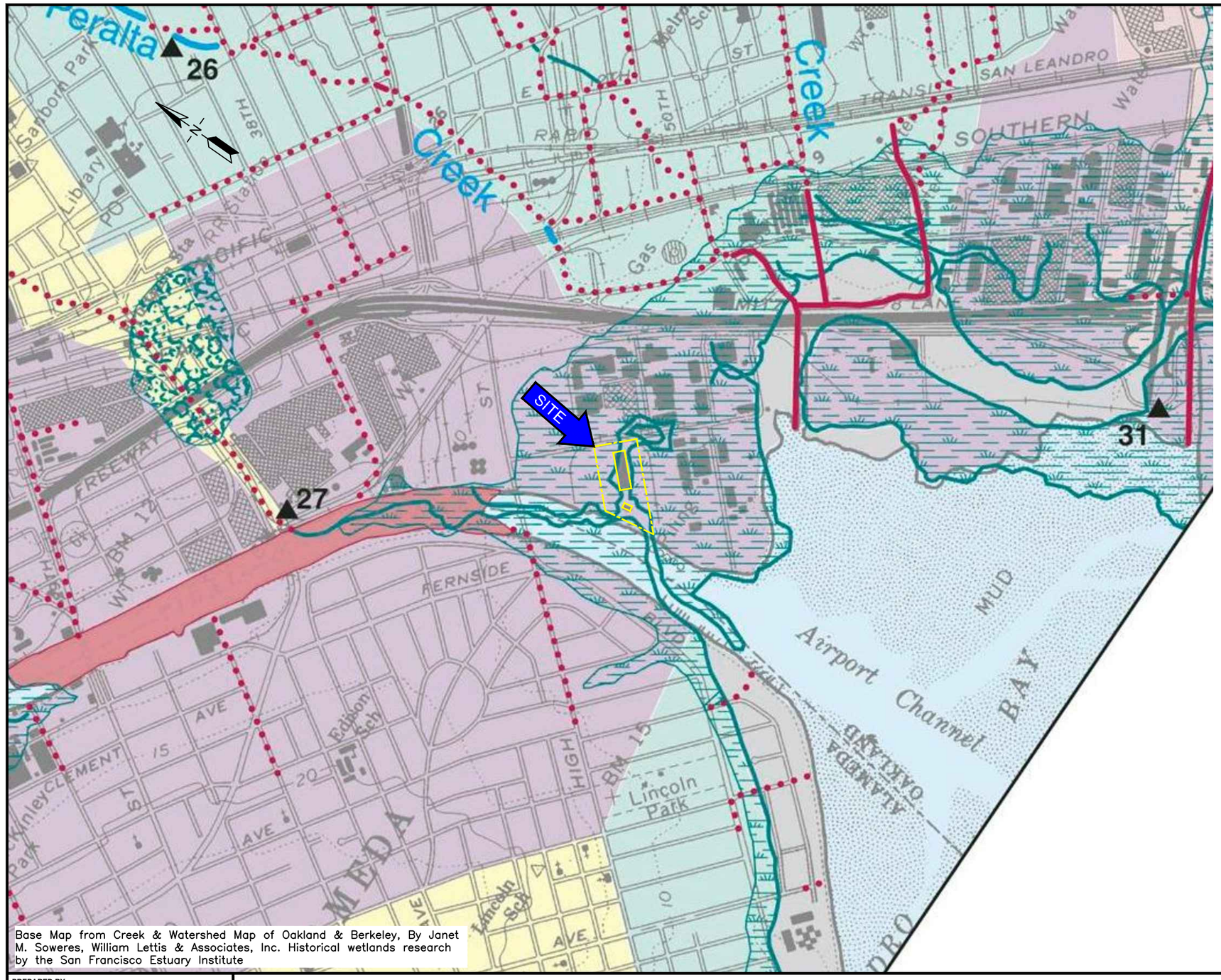
ABF Freight System Facility
4575 Tidewater Avenue
Oakland, California

| Sample ID | Sample Deployment Date | Sample Retrieval Date | EPA Method 8260C | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Vinyl Chloride (ng) | Trichloro-fluoro-ethane (ng) | 1,1-Dichloro-ethene (ng) | 1,1-Dichloro-ethane (ng) | 1,2-Dibromo-ethane (ng) | PCE (ng) | TCE (ng) | Other VOCs (ng) |
| SG-1 | 1/22/2014 | 2/5/2014 | <10 | <25 | <10 | <25 | <25 | <10 | <10 | A |
| SG-2 | 1/22/2014 | 2/5/2014 | <10 | <25 | <10 | <25 | <25 | **8 J** | <10 | ND |
| SG-3 | 1/22/2014 | 2/5/2014 | <10 | <25 | <10 | <25 | <25 | <10 | <10 | ND |
| SG-4 | 1/22/2014 | 2/5/2014 | <10 | <25 | <10 | <25 | <25 | <10 | <10 | ND |
| SG-5 | 1/22/2014 | 2/5/2014 | <10 | <25 | <10 | <25 | <25 | **545** | **55** | ND |
| SG-6 | 1/22/2014 | 2/5/2014 | <10 | <25 | <10 | <25 | <25 | **540** | **<10** | ND |
| SG-6 DUP | 1/22/2014 | 2/5/2014 | <10 | <25 | <10 | <25 | <25 | **834** | **7 J** | ND |
| SG-7 | 1/22/2014 | 2/5/2014 | <10 | <25 | <10 | <25 | <25 | **150** | <10 | ND |
| SG-8 | 1/22/2014 | 2/5/2014 | <10 | <25 | <10 | <25 | <25 | **51** | <10 | ND |
| SG-9 | 1/22/2014 | 2/5/2014 | <10 | <25 | <10 | <25 | <25 | **7 J** | <10 | ND |
| SG-10 | 1/22/2014 | 2/5/2014 | <10 | <25 | <10 | <25 | <25 | **118** | **8 J** | ND |

Notes:

ID = Identification
PCE = Tetrachloroethene
TCE = Trichloroethene
ND = Not detected
< = Not detected at or above detection limit
ng = Nanograms
**Bold =** data detected above laboratory detection limits
A = Chloroform was detected at a concentration of 54 ng
J = Values below limit of quantitation (LOQ) but above the limit of detection (LOD)

# FIGURES




## EXPLANATION

- Creeks
- Former creeks, buried or drained, and Bay shoreline, circa 1850
- Underground culverts and storm drains
- Engineered channels
- Willow groves, circa 1850
- Beach, circa 1850
- Tidal marsh, circa 1850
- now water
- now fill land
- Bay
- Bay, circa 1850, now fill land
- Artificial bodies of water
- Present watersheds

APPROX. SCALE IN FEET
0 1,000

Base Map from Creek & Watershed Map of Oakland & Berkeley, By Janet M. Soweres, William Lettis & Associates, Inc. Historical wetlands research by the San Francisco Estuary Institute

PREPARED BY
TRINITY source group, inc.
Environmental Consultants
500 Chestnut Street, Suite 225
Santa Cruz, California 95060
v: 831.426.5600
f: 831.426.5602

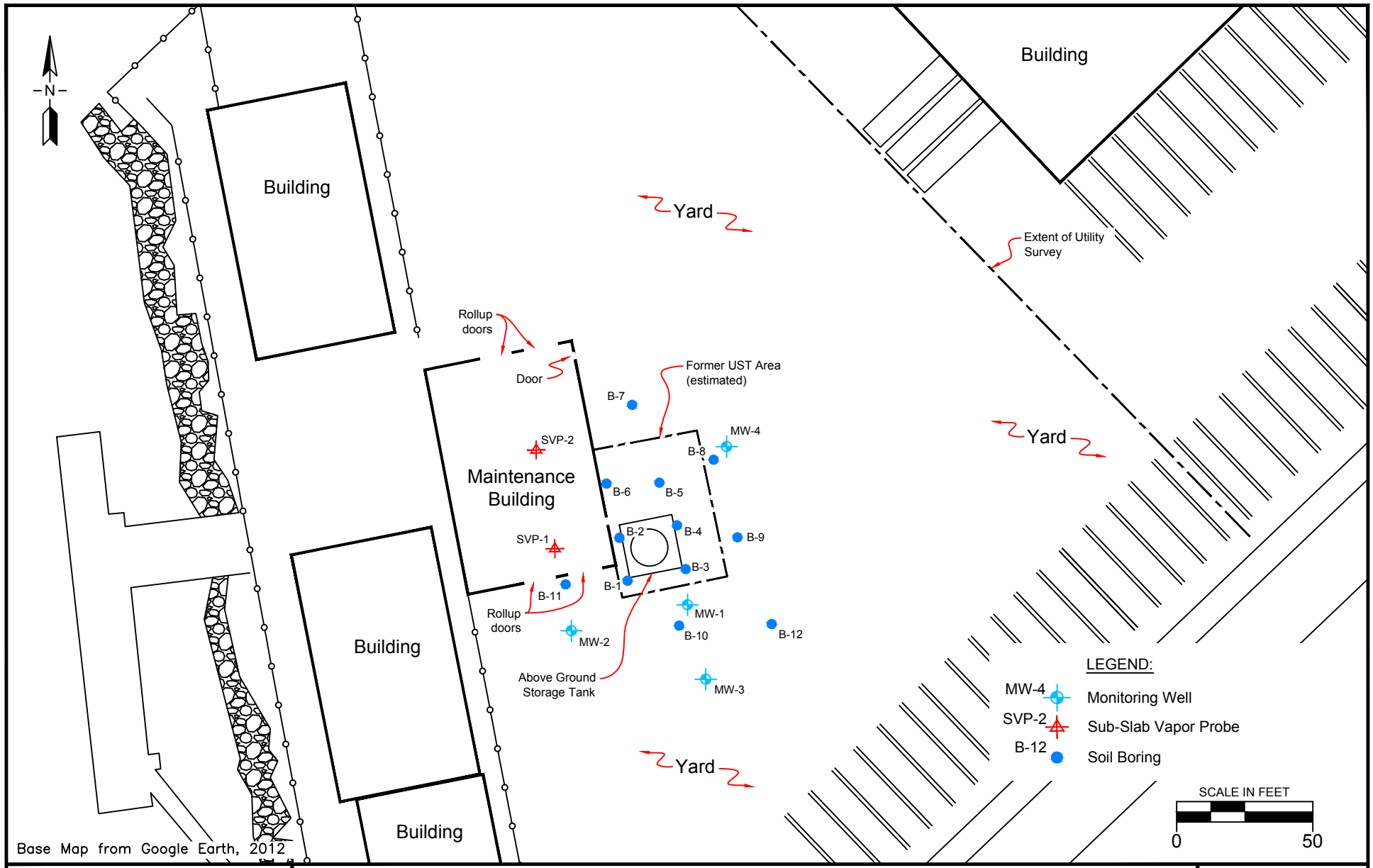
**SITE LOCATION MAP**

ABF Freight System Facility
4575 Tidewater Ave.
Oakland, California

PROJECT: 154.006.004

FIGURE: 1

REF. 154_001\154.004.001 fig1.dwg

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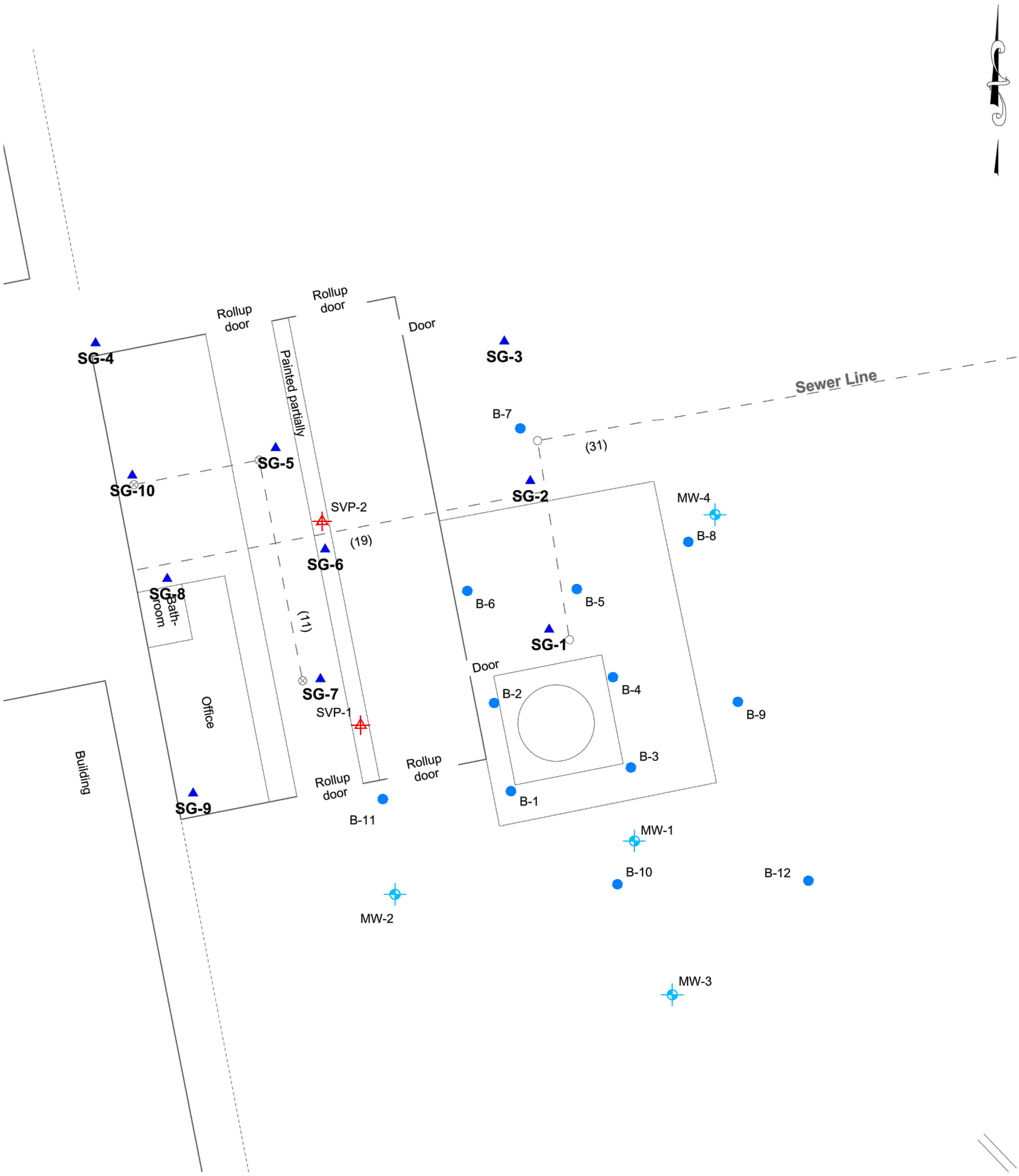
**SOIL BORING, SUB-SLAB VAPOR PROBE AND MONITORING WELL LOCATION MAP**

ABF Freight System Facility
4575 Tidewater Ave.
Oakland, California

PROJECT:
154.006.004

FIGURE:
2

REF. 154_001\154.005.001 figures.dwg




Base Map from Google Earth, Inc. and Beacon Environmental Services, Inc.

REF. 154_001\154.005.001 fig7.dwg

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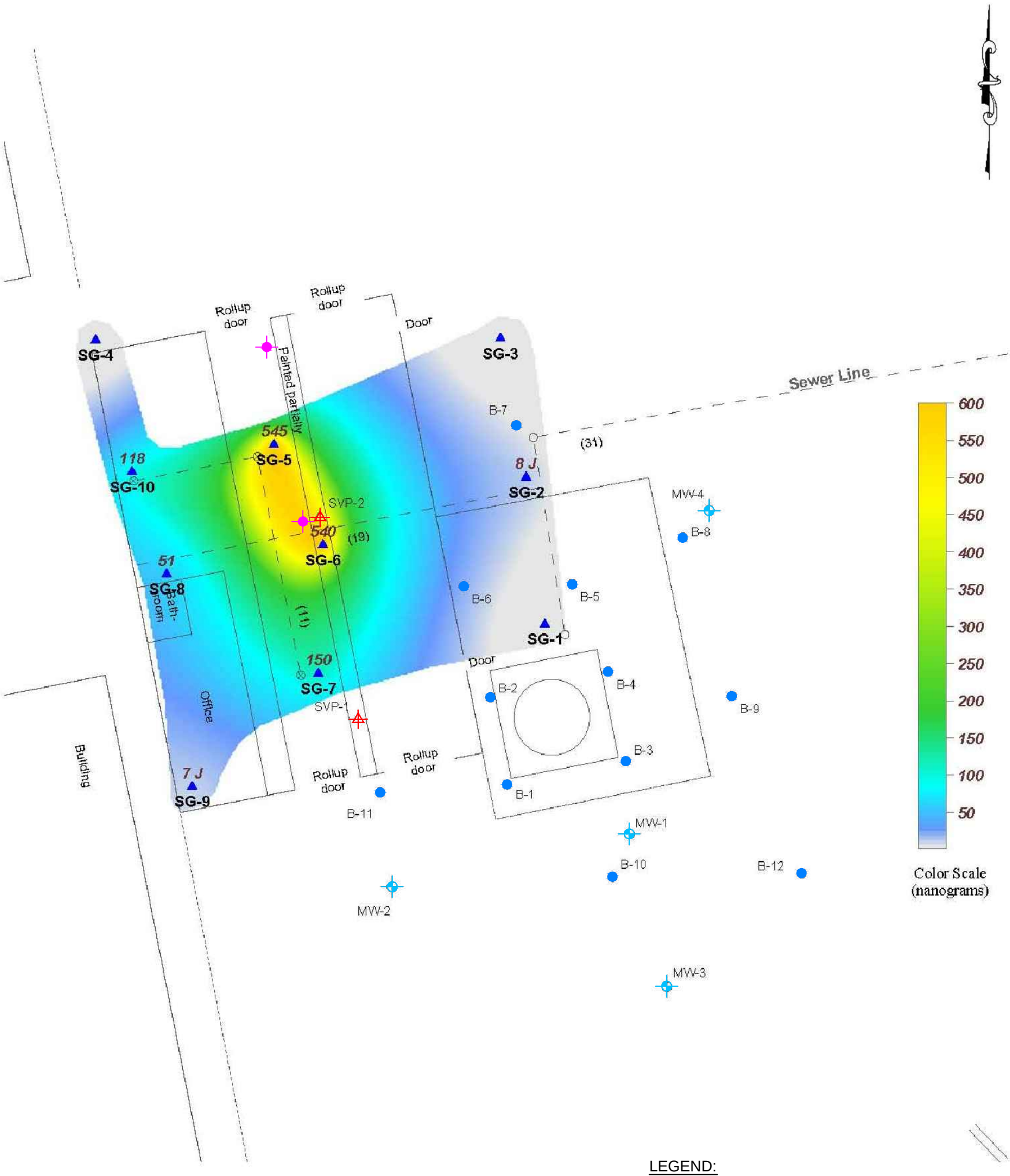
**PASSIVE SOIL GAS SURVEY SAMPLE LOCATIONS**

ABF Freight System Facility
4575 Tidewater Ave.
Oakland, California

PROJECT:
154.005.001

FIGURE:
3




Base Map from Google Earth, Inc. and Beacon Environmental Services, Inc.

REF. 154_001\154.005.001 fig7.dwg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**PCE PASSIVE SOIL GAS SURVEY AND PROPOSED BORING LOCATIONS**

ABF Freight System Facility
4575 Tidewater Ave.
Oakland, California

PROJECT: 154.005.001

FIGURE: 4

# ATTACHMENT A

# ACEH Letter Dated December 23, 2013

ALAMEDA COUNTY
**HEALTH CARE SERVICES**
AGENCY
ALEX BRISCOE, Agency Director

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

December 23, 2013

Arkansas Bandag Corporation
PO Box 10048
Fort Smith AR 72917

Mr. Mike Rogers
ABF Freight Systems, Inc.
PO Box 10048
Fort Smith AR 72917
(sent via electronic mail to mkrogers@arkbest.com)

Subject: Approval of Data Gap Investigation Work Plan; Fuel Leak Case No. RO0003033 and GeoTracker Global ID T0600100018, ABF Freight Systems, 4575 Tidewater Avenue, Oakland, CA 94601

Dear Mr. Rogers:

Alameda County Environmental Health (ACEH) staff has reviewed the case file for the above-referenced site, including the *Soil Vapor Investigation Work Plan,* dated November 20, 2013. The report was prepared by the Trinity Source Group, Inc (Trinity). Thank you for the report. The report was submitted to initiate investigations to address the last remaining data gap at the site, principally vapor intrusion from potential waste oil contaminants.

With regards to the State Water Resources Control Board's (SWRCBs) Low Threat Underground Storage Tank Case Closure Policy (LTCP), ACEH has evaluated site data and recommendations presented in the above-mentioned reports, in conjunction with the case files, and the LTCP. Based on ACEH staff review, we have determined that the site fails to meet the LTCP General Criteria b (Release Only Consists of Petroleum), e (Site Conceptual Model), potentially the Media-Specific Criteria for Groundwater, and the Media-Specific Criteria for Vapor Intrusion to Indoor Air (see Geotracker for a copy of the LTCP checklist). Each is associated with the detection of tetrachloroethene (PCE) above appropriate Environmental Screening Levels (ESLs) levels in sub-slab vapor samples at the site.

Based on ACEH staff review of the referenced documents and of the case file we generally concur with the recently proposed scope of work, provided that the modifications requested in the technical comments below are addressed and incorporated during the field implementation. Submittal of a revised work plan or a work plan addendum is not required unless an alternate scope of work outside that described in the work plan or technical comments below is proposed. We request that you address the following technical comments, submit the requested document, and upon ACEH approval, perform the proposed work, and send us the technical reports requested below. Please provide 72-hour advance written notification to this office (e-mail preferred to: mark.detterman@acgov.org) prior to the start of field activities.

## TECHNICAL COMMENTS

1. **Human Health Exposure Determination** – ACEH is in general agreement with the proposed scope of work that will employ passive soil gas samplers to rapidly determine the spacial distribution of PCE contamination in the subsurface in the vicinity of the maintenance shop at the subject site. The scope of work is approved as an exploratory survey only as the results are only relative and are not directly comparable to remedial goals; followup confirmation sampling, in accordance with Department of Toxic Substances Control (DTSC), with reproducible results will be required. Please ensure the methodology adheres to Appendix A of the *Active Soil Gas Investigation Advisory* (DTSC, April 2012). Please include information, figures, and tables in the soil gas investigation report in accordance with

Section 2 of the *Active Soil Gas Investigation Advisory*. Please also describe QA / QC protocols in the final report, and submit the report by the date identified below.

**TECHNICAL REPORT REQUEST**

Please upload technical reports to the ACEH ftp site (Attention: Mark Detterman), and to the State Water Resources Control Board's Geotracker website, in accordance with the specified file naming convention below, according to the following schedule:

- **March 3, 2014** – Soil Gas Investigation Report
  File to be named: RO3033_SWI_R_yyyy-mm-dd

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.

Online case files are available for review at the following website: http://www.acgov.org/aceh/index.htm. If your email address does not appear on the cover page of this notification, ACEH is requesting you provide your email address so that we can correspond with you quickly and efficiently regarding your case.

If you have any questions, please call me at (510) 567-6876 or send me an electronic mail message at mark.detterman@acgov.org.

Sincerely,

Digitally signed by Mark Detterman
DN: cn=Mark Detterman, o, ou, email=mark.detterman@acgov.org, c=US
Date: 2013.12.23 09:54:38 -08'00'

Mark E. Detterman, PG, CEG
Senior Hazardous Materials Specialist

Enclosures: Attachment 1 – Responsible Party (ies) Legal Requirements / Obligations
Electronic Report Upload (ftp) Instructions

cc: Debra Moser, Trinity Source Group, Inc, 500 Chestnut Street, Suite 225, Santa Cruz, CA 95060 (sent via electronic mail to djm@tsgcorp.net)

Dilan Roe (sent via electronic mail to dilan.roe@acgov.org)
Mark Detterman (sent via electronic mail to mark.detterman@acgov.org)
Electronic File, GeoTracker

# Attachment 1

## Responsible Party(ies) Legal Requirements/Obligations

REPORT/DATA REQUESTS

These reports/data are being requested pursuant to Division 7 of the California Water Code (Water Quality), Chapter 6.7 of Division 20 of the California Health and Safety Code (Underground Storage of Hazardous Substances), and Chapter 16 of Division 3 of Title 23 of the California Code of Regulations (Underground Storage Tank Regulations).

ELECTRONIC SUBMITTAL OF REPORTS

ACEH's Environmental Cleanup Oversight Programs (Local Oversight Program [LOP] for unauthorized releases from petroleum Underground Storage Tanks [USTs], and Site Cleanup Program [SCP] for unauthorized releases of non-petroleum hazardous substances) require submission of reports in electronic format pursuant to Chapter 3 of Division 7, Sections 13195 and 13197.5 of the California Water Code, and Chapter 30, Articles 1 and 2, Sections 3890 to 3895 of Division 3 of Title 23 of the California Code of Regulations (23 CCR). Instructions for submission of electronic documents to the ACEH FTP site are provided on the attached "Electronic Report Upload Instructions."

Submission of reports to the ACEH FTP site is in addition to requirements for electronic submittal of information (ESI) to the State Water Resources Control Board's (SWRCB) Geotracker website. In April 2001, the SWRCB adopted 23 CCR, Division 3, Chapter 16, Article 12, Sections 2729 and 2729.1 (Electronic Submission of Laboratory Data for UST Reports). Article 12 required electronic submittal of analytical laboratory data submitted in a report to a regulatory agency (effective September 1, 2001), and surveyed locations (latitude, longitude and elevation) of groundwater monitoring wells (effective January 1, 2002) in Electronic Deliverable Format (EDF) to Geotracker. Article 12 was subsequently repealed in 2004 and replaced with Article 30 (Electronic Submittal of Information) which expanded the ESI requirements to include electronic submittal of any report or data required by a regulatory agency from a cleanup site. The expanded ESI submittal requirements for petroleum UST sites subject to the requirements of 23 CCR, Division, 3, Chapter 16, Article 11, became effective December 16, 2004. All other electronic submittals required pursuant to Chapter 30 became effective January 1, 2005. Please visit the SWRCB website for more information on these requirements: (http://www.waterboards.ca.gov/water_issues/programs/ust/electronic_submittal/).

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, 7835, 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, late 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.

| Alameda County Environmental Cleanup Oversight Programs (LOP and SCP) | **REVISION DATE:** July 25, 2012 |
|---|---|
| | **ISSUE DATE:** July 5, 2005 |
| | **PREVIOUS REVISIONS:** October 31, 2005; December 16, 2005; March 27, 2009; July 8, 2010 |
| **SECTION:** Miscellaneous Administrative Topics & Procedures | **SUBJECT:** Electronic Report Upload (ftp) Instructions |

The Alameda County Environmental Cleanup Oversight Programs (petroleum UST and SCP) 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.

**REQUIREMENTS**

- **Please do not submit reports as attachments to electronic mail.**
- Entire report including cover letter must be submitted to the ftp site as **a single Portable Document Format (PDF) with no password protection**.
- It is **preferable** that reports be converted to PDF format from their original format, (e.g., Microsoft Word) rather than scanned.
- **Signature pages and perjury statements must be included and have either original or electronic signature.**
- **Do not password protect the document**. Once indexed and inserted into the correct electronic case file, the document will be secured in compliance with the County's current security standards and a password. **Documents with password protection will not be accepted**.
- Each page in the PDF document should be rotated in the direction that will make it easiest to read on a computer monitor.
- Reports must be named and saved using the following naming convention:

  RO#_Report Name_Year-Month-Date (e.g., RO#5555_WorkPlan_2005-06-14)

**Submission Instructions**

1) Obtain User Name and Password
   a) Contact the Alameda County Environmental Health Department to obtain a User Name and Password to upload files to the ftp site.
      i) Send an e-mail to deh.loptoxic@acgov.org
   b) In the subject line of your request, be sure to include **"ftp PASSWORD REQUEST"** and in the body of your request, include the **Contact Information, Site Addresses**, and the **Case Numbers (RO# available in Geotracker) you will be posting for**.

2) Upload Files to the ftp Site
   a) Using Internet Explorer (IE4+), go to ftp://alcoftp1.acgov.org
      (i) Note: Netscape, Safari, and Firefox browsers will not open the FTP site as they are NOT being supported at this time.
   b) Click on Page located on the Command bar on upper right side of window, and then scroll down to Open FTP Site in Windows Explorer.
   c) Enter your User Name and Password. (Note: Both are Case Sensitive.)
   d) Open "My Computer" on your computer and navigate to the file(s) you wish to upload to the ftp site.
   e) With both "My Computer" and the ftp site open in separate windows, drag and drop the file(s) from "My Computer" to the ftp window.

3) Send E-mail Notifications to the Environmental Cleanup Oversight Programs
   a) Send email to deh.loptoxic@acgov.org notify us that you have placed a report on our ftp site.
   b) Copy your Caseworker on the e-mail. Your Caseworker's e-mail address is the entire first name then a period and entire last name @acgov.org. (e.g., firstname.lastname@acgov.org)
   c) The subject line of the e-mail must start with the RO# followed by **Report Upload**. (e.g., Subject: RO1234 Report Upload) If site is a new case without an RO#, use the street address instead.
   d) If your document meets the above requirements and you follow the submission instructions, you will receive a notification by email indicating that your document was successfully uploaded to the ftp site.

# APPENDIX A PASSIVE SOIL GAS METHOD

Passive soil gas sampling consists of burying an adsorbent material into the subsurface soil and subsequently retrieving and measuring organic vapors passively amassed onto the absorbent material. Unlike active soil gas sampling, passive soil gas sampling does not force soil gas into the sampling vessel through pumping or vacuum. Instead, as the vapors disperse from a subsurface contaminant source, the sorbent acts as a sink for the VOCs and SVOCs found in soil gas.

Passive soil gas methods provide a quantified mass value for the absorbent material and a semi-quantitative soil gas result. In contrast to active soil gas samples, which yield concentration data in micrograms per cubic meter ($\mu g/m^3$) or micrograms per liter ($\mu g/L$), passive soil gas samples do not generate contaminant concentration data. For this reason, passive soil gas sampling and analysis is not applicable as a stand-alone method for determination of human exposure.

Potential uses of the passive soil gas method are as follows:

1) To delineate contaminant plumes, contaminant sources, and hot spots;

2) To identify potential preferential pathways where sewer and utility corridors provide vapor migration pathways into and around buildings. Passive methods can also identify preferential pathways resulting from lithologic variability;

3) To collect soil gas in areas where active soil gas samples are difficult to obtain. These areas include low-permeability lithology, high-moisture soils and shallow groundwater conditions. When the depth to groundwater is within five feet of the surface, the capillary fringe may prevent sample collection by active soil gas methods due to the high soil moisture content; and

4) To evaluate whether a release has occurred. Active soil gas data should be collected following the detection of subsurface contamination by the passive method.

**Advantages of the passive soil gas methods are:**

1) Provides a time-integrated measurement, which reduces uncertainty due to temporal variations;
2) Detects compounds with low vapor pressures not easily captured by active methods, such as naphthalene (see Appendix E);
3) Maintains subsurface equilibrium during sampling since there is no forced movement of soil gas into the sampling vessel with passive methods; and
4) Simple to design, install, and retrieve.

## Passive Sampling Procedures

Analytical procedures, deployment depths, and sampling durations will depend on the manufacturer's recommended procedures. Some samplers currently available can be installed at any depth, and at the same sampling density as the active method. Typically, passive samplers are deployed in hand-drilled boreholes that are three to five feet deep and one-inch in diameter. The sampler is lowered into the borehole with a string and the surface is covered to prevent the introduction of ambient air. Deployment duration is usually 10 to 14 days. The samplers are retrieved by pulling the device from the borehole with its string. Analysis of the absorbent material is conducted by Methods 8260, 8270 or TO-17. Sample preparation prior to analysis can be very simple and may involve cutting the tip off the bottom of the sampler and transferring an exposed sorbent material to a thermal desorption tube.

Replicate samples, if collected, are retained for approximately two weeks after initial analysis. Two trip blanks should be collected and analyzed for passive soil gas sampling. One trip blank should accompany the passive samplers to the field and then be analyzed. The second trip blank should accompany the samples from the field to the laboratory.

## Debra Moser

**From:** Detterman, Mark, Env. Health
**Sent:** Friday, February 21, 2014 2:58 PM
**To:** 'Debra Moser'
**Cc:** Mike Rogers
**Subject:** RE: Request for Extension, ABF Freight Facility, 4575 Tidewater, Oakland

Hi Debra and Mike,
The extension request would be fine. Please use this email to document agreement with the requested date. I'll update Geotracker shortly with a March 21 delivery date.
Thanks for the update.

*Mark Detterman*
*Senior Hazardous Materials Specialist, PG, CEG*
*Alameda County Environmental Health*
*1131 Harbor Bay Parkway*
*Alameda, CA 94502*
*Direct: 510.567.6876*
*Fax: 510.337.9335*
*Email: mark.detterman@acgov.org*

*PDF copies of case files can be downloaded at:*

*http://www.acgov.org/aceh/lop/ust.htm*

---

**From:** Debra Moser [mailto:djm@tsgcorp.net]
**Sent:** Friday, February 21, 2014 1:07 PM
**To:** Detterman, Mark, Env. Health
**Cc:** Mike Rogers
**Subject:** Request for Extension, ABF Freight Facility, 4575 Tidewater, Oakland

Hi Mark,
I just left you a voicemail with this request, and wanted to get this email to you as well.

Trinity is working on the groundwater monitoring report and passive soil gas survey report for this site. We do not yet have the subcontractor's soil gas report, although we do have preliminary data that shows relatively low HVOC concentrations in sub-slab vapor.

We request an extension for the due date for these reports, to 3/20/14. This will give us time to compile the recently-received data and the pending soil gas survey information.

Please contact Trinity if you need additional information for this site.

Thank you,
Debbie

***Debra J. Moser, PG, CEG, CHG***
Senior Geologist
Trinity Source Group, Inc.

500 Chestnut Street, Suite 225
Santa Cruz, CA 95060

Tel:  (831) 426-5600
Fax:  (831) 426-5602

Visit our website at: www.trinitysourcegroup.com

# ATTACHMENT B

# Beacon Environmental Services, Inc.
# Passive Soil Gas Survey
# Analytical Report

BEACON ENVIRONMENTAL SERVICES, INC.

*The Leaders in Soil Gas Surveys and Vapor Intrusion Monitoring*

**Trinity Source Group, Inc.**
**500 Chestnut Street, Suite 225**
**Santa Cruz, CA 95060**
**Attn: Mr. Bill Rice**

**Passive Soil Gas Survey – Analytical Report**

**Date: February 27, 2014**
**Beacon Project No. 2792**

| | |
|---|---|
| **Project Reference:** | ABF Site, Oakland, CA |
| **Samplers Installed:** | January 22, 2014 |
| **Samplers Retrieved:** | February 5, 2014 |
| **Samples Received:** | February 11, 2014 |
| **Analyses Completed:** | February 12, 2014 |
| **Laboratory Data Issued:** | February 18, 2014 |

**EPA Method 8260C**
All samples were successfully analyzed using thermal desorption-gas chromatography/mass spectrometry (TD-GC/MS) instrumentation to target a custom compound list following EPA Method 8260C. Laboratory results are reported in nanograms (ng) of specific compound per sample.

Laboratory QA/QC procedures included internal standards, surrogates, and blanks based on EPA Method 8260C. Analyses and reporting were in accordance with BEACON's Quality Assurance Project Plan.

**Reporting limits**
The reporting limit (RL) is 10 nanograms (ng) for vinyl chloride, 1,1-dichloroethene, trans-1,2-dichloroethene, cis-1,2-dichloroethene, trichloroethene, and tetrachloroethene; and 25 ng for the remaining individual compounds. **Table 1** provides survey results in nanograms per sampler by sample-point number and compound name. For the six (6) compounds listed above, measurements below the limit of quantitation (10 ng) but above the limit of detection (5 ng) are flagged with a "J." The RLs represent a baseline above which results exceed laboratory-determined limits of precision and accuracy. Any field sample measurements above the upper calibration standard are estimated; however, these values are reported without qualifiers because all reported measurements are relative to each other and are appropriate to meet the survey objectives of locating source areas and vapor intrusion pathways and defining the lateral extent of contamination.

**Calibration Verification**
The continuing calibration verification (CCV) values for the calibration check compounds were all within ±20% of the true values as defined by the initial five-point calibration and met the requirements specified in Beacon Environmental's Quality Assurance Project Plan.

**Method Blanks/Trip Blanks**
Laboratory method blanks are run with each sample batch to identify contamination present in the laboratory. If contamination is detected on a method blank, measurements of identical compounds in that sample batch are flagged in the laboratory report. The laboratory method blank analyzed in connection with the present samples revealed no contamination.

The trip blank is a sampler prepared, transported, and analyzed with other samples but intentionally not exposed. Any target compounds identified on the trip blanks are reported in the laboratory data. The analysis of the trip blank (labeled Trip-1 in **Table 1**) reported none of the targeted compounds.

**Passive Soil-Gas Survey Notes**

When sample locations are covered with or near the edge of an artificial surface (*e.g.*, asphalt or concrete), the concentrations of compounds in soil gas are often significantly higher than the concentrations would be if the surfacing were not present. Thus, a reading taken below or near an impermeable surface is much higher than it would be in the absence of such a cap. Therefore, the sample location conditions should be evaluated when comparing results between locations.

Survey findings are exclusive to this project and when the spatial relationships are compared with results of other BEACON Surveys it is necessary to incorporate survey and site information from both investigations (*e.g.*, depth to sources, soil types, porosity, soil moisture, presence of impervious surfacing, sample collection times). BEACON recommends the guidelines stated in **Attachment 1** to establish a relationship between reported soil-gas measurements and actual subsurface contaminant concentrations, which will indicate those measurements representing significant subsurface contamination.

BEACON's passive soil-gas samplers are prepared with two sets of adsorbent cartridges for subsequent duplicate or confirmatory sample analysis. At Trinity Source Group's request, duplicate analysis was performed for one (1) field sample, designated "Dup" following the sample number. When comparing quantitative results, a duplicate correspondence should be considered when the relative percent difference (RPD) between the two samples is less than or equal to 100%. For the purpose of calculating correspondences, all non-detections should be assigned, as a baseline value, the CRQL for the specific contaminant. Based on these assumptions, a 100% correlation was found between the field sample duplicate and its base sample.

**Project Details**

Samplers were deployed on January 22, 2014, and were retrieved on February 5, 2014. **Attachment 2** describes standard field procedures. Individual deployment and retrieval times will be found in the Field Deployment Report (**Attachment 3**).

Ten (10) field samples, one (1) field sample duplicate, and one (1) trip blank were received by BEACON on February 11, 2014. Adsorbent cartridges from the passive samplers were thermally desorbed, then analyzed using gas chromatography/mass spectrometry (GC/MS) equipment, in accordance with EPA Method 8260C, as described in **Attachment 4**. BEACON's laboratory analyzed each sample for the targeted compounds; analyses were completed on February 12, 2014. Following a laboratory review, results were provided to Trinity Source Group on February 18, 2014. The Chain-of-Custody form, which was shipped with the samples for this survey, is supplied as **Attachment 5**.

Sample locations are shown on **Figure 1**. The following table lists frequency of detections based on the number of field samples analyzed, the reporting limit, and the maximum value for each mapped compound. The table also includes the transformation and interpolation method for the compound distribution maps provided.

| **Figure No.** | **2** | **3** |
|---|---|---|
| Compound | Trichloroethene | Tetrachloroethene |
| Frequency | 2 | 7 |
| Reporting Limit (nanograms) | 10 | 10 |
| Max Value (nanograms) | 55 | 545 |
| Transformation Method | Log | Log |
| Interpolation Method | Kriging | Kriging |

**Attachments:**

- **-1-** Applying Results From Passive Soil-Gas Surveys
- **-2-** Field Procedures
- **-3-** Field Deployment Report
- **-4-** Laboratory Procedures
- **-5-** Chain-of-Custody Form

ALL DATA MEET REQUIREMENTS AS SPECIFIED IN THE BEACON ENVIRONMENTAL SERVICES, INC. QUALITY ASSURANCE PROJECT PLAN AND THE RESULTS RELATE ONLY TO THE SAMPLES REPORTED. BEACON ENVIRONMENTAL SERVICES IS ACCREDITED TO ISO 17025:2005, AND THE WORK PERFORMED WAS IN ACCORDANCE WITH ISO 17025 REQUIREMENTS, WITH THE EXCEPTION THAT FREON 113 AND 1,4-DIOXANE, ARE NOT INCLUDED IN BEACON'S SCOPE OF ACCREDITATION. THIS REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL, WITHOUT THE WRITTEN APPROVAL OF THE LABORATORY. RELEASE OF THE DATA CONTAINED IN THIS HARDCOPY DATA PACKAGE HAS BEEN AUTHORIZED BY THE LABORATORY DIRECTOR OR HIS SIGNEE, AS VERIFIED BY THE FOLLOWING SIGNATURES:

Steven C. Thornley
Laboratory Director

Patti J. Riggs
Quality Manager

**Table 1**

**Beacon Environmental Services, Inc.**
**2203A Commerce Road, Suite 1**
**Forest Hill, MD 21050 USA**

**Analysis by EPA Method 8260C**

| Client Sample ID: | mb140212c | Trip-1 | SG-1 | SG-2 | SG-3 | SG-4 |
|---|---|---|---|---|---|---|
| Project Number: | | 2792 | 2792 | 2792 | 2792 | 2792 |
| Lab File ID: | C14021209 | C14021211 | C14021212 | C14021213 | C14021214 | C14021215 |
| Received Date: | | 2/11/2014 | 2/11/2014 | 2/11/2014 | 2/11/2014 | 2/11/2014 |
| Analysis Date: | 2/12/2014 | 2/12/2014 | 2/12/2014 | 2/12/2014 | 2/12/2014 | 2/12/2014 |
| Analysis Time: | 12:19 | 13:04 | 13:26 | 13:48 | 14:10 | 14:32 |
| Matrix: | | | Soil Gas | Soil Gas | Soil Gas | Soil Gas |
| Units: | ng | ng | ng | ng | ng | ng |
| COMPOUNDS | | | | | | |
| Vinyl Chloride | <10 | <10 | <10 | <10 | <10 | <10 |
| Trichlorofluoromethane (Freon 11) | <25 | <25 | <25 | <25 | <25 | <25 |
| 1,1-Dichloroethene | <10 | <10 | <10 | <10 | <10 | <10 |
| 1,1,2-Trichlorotrifluoroethane (Fr.113) | <25 | <25 | <25 | <25 | <25 | <25 |
| trans-1,2-Dichloroethene | <10 | <10 | <10 | <10 | <10 | <10 |
| 1,1-Dichloroethane | <25 | <25 | <25 | <25 | <25 | <25 |
| cis-1,2-Dichloroethene | <10 | <10 | <10 | <10 | <10 | <10 |
| Chloroform | <25 | <25 | **54** | <25 | <25 | <25 |
| 1,2-Dichloroethane | <25 | <25 | <25 | <25 | <25 | <25 |
| 1,1,1-Trichloroethane | <25 | <25 | <25 | <25 | <25 | <25 |
| Carbon Tetrachloride | <25 | <25 | <25 | <25 | <25 | <25 |
| Trichloroethene | <10 | <10 | <10 | <10 | <10 | <10 |
| 1,4-Dioxane | <25 | <25 | <25 | <25 | <25 | <25 |
| 1,1,2-Trichloroethane | <25 | <25 | <25 | <25 | <25 | <25 |
| 1,2-Dibromoethane (EDB) | <25 | <25 | <25 | <25 | <25 | <25 |
| Tetrachloroethene | <10 | <10 | <10 | **8 J** | <10 | <10 |
| 1,1,1,2-Tetrachloroethane | <25 | <25 | <25 | <25 | <25 | <25 |
| Chlorobenzene | <25 | <25 | <25 | <25 | <25 | <25 |
| 1,1,2,2-Tetrachloroethane | <25 | <25 | <25 | <25 | <25 | <25 |

Results in nanograms (ng). J = Values below limit of quantitation (LOQ) but above limit of detection (LOD). B = Detected in method blank.

**Table 1**

**Beacon Environmental Services, Inc.**
**2203A Commerce Road, Suite 1**
**Forest Hill, MD 21050 USA**

**Analysis by EPA Method 8260C**

| Client Sample ID: | SG-5 | SG-6 | SG-6 Dup | SG-7 | SG-8 | SG-9 |
|---|---|---|---|---|---|---|
| Project Number: | 2792 | 2792 | 2792 | 2792 | 2792 | 2792 |
| Lab File ID: | C14021216 | C14021217 | C14021218 | C14021219 | C14021220 | C14021221 |
| Received Date: | 2/11/2014 | 2/11/2014 | 2/11/2014 | 2/11/2014 | 2/11/2014 | 2/11/2014 |
| Analysis Date: | 2/12/2014 | 2/12/2014 | 2/12/2014 | 2/12/2014 | 2/12/2014 | 2/12/2014 |
| Analysis Time: | 14:55 | 15:17 | 15:39 | 16:01 | 16:23 | 16:46 |
| Matrix: | Soil Gas | Soil Gas | Soil Gas | Soil Gas | Soil Gas | Soil Gas |
| Units: | ng | ng | ng | ng | ng | ng |
| COMPOUNDS | | | | | | |
| Vinyl Chloride | <10 | <10 | <10 | <10 | <10 | <10 |
| Trichlorofluoromethane (Freon 11) | <25 | <25 | <25 | <25 | <25 | <25 |
| 1,1-Dichloroethene | <10 | <10 | <10 | <10 | <10 | <10 |
| 1,1,2-Trichlorotrifluoroethane (Fr.113) | <25 | <25 | <25 | <25 | <25 | <25 |
| trans-1,2-Dichloroethene | <10 | <10 | <10 | <10 | <10 | <10 |
| 1,1-Dichloroethane | <25 | <25 | <25 | <25 | <25 | <25 |
| cis-1,2-Dichloroethene | <10 | <10 | <10 | <10 | <10 | <10 |
| Chloroform | <25 | <25 | <25 | <25 | <25 | <25 |
| 1,2-Dichloroethane | <25 | <25 | <25 | <25 | <25 | <25 |
| 1,1,1-Trichloroethane | <25 | <25 | <25 | <25 | <25 | <25 |
| Carbon Tetrachloride | <25 | <25 | <25 | <25 | <25 | <25 |
| Trichloroethene | **55** | <10 | **7 J** | <10 | <10 | <10 |
| 1,4-Dioxane | <25 | <25 | <25 | <25 | <25 | <25 |
| 1,1,2-Trichloroethane | <25 | <25 | <25 | <25 | <25 | <25 |
| 1,2-Dibromoethane (EDB) | <25 | <25 | <25 | <25 | <25 | <25 |
| Tetrachloroethene | **545** | **540** | **834** | **150** | **51** | **7 J** |
| 1,1,1,2-Tetrachloroethane | <25 | <25 | <25 | <25 | <25 | <25 |
| Chlorobenzene | <25 | <25 | <25 | <25 | <25 | <25 |
| 1,1,2,2-Tetrachloroethane | <25 | <25 | <25 | <25 | <25 | <25 |

Results in nanograms (ng). J = Values below limit of quantitation (LOQ) but above limit of detection (LOD). B = Detected in method blank.

**Table 1**

**Beacon Environmental Services, Inc.**
**2203A Commerce Road, Suite 1**
**Forest Hill, MD 21050 USA**

**Analysis by EPA Method 8260C**

| | |
|---|---|
| Client Sample ID: | SG-10 |
| Project Number: | 2792 |
| Lab File ID: | C14021222 |
| Received Date: | 2/11/2014 |
| Analysis Date: | 2/12/2014 |
| Analysis Time: | 17:08 |
| Matrix: | Soil Gas |
| Units: | ng |

| COMPOUNDS | |
|---|---|
| Vinyl Chloride | <10 |
| Trichlorofluoromethane (Freon 11) | <25 |
| 1,1-Dichloroethene | <10 |
| 1,1,2-Trichlorotrifluoroethane (Fr.113) | <25 |
| trans-1,2-Dichloroethene | <10 |
| 1,1-Dichloroethane | <25 |
| cis-1,2-Dichloroethene | <10 |
| Chloroform | <25 |
| 1,2-Dichloroethane | <25 |
| 1,1,1-Trichloroethane | <25 |
| Carbon Tetrachloride | <25 |
| Trichloroethene | **8 J** |
| 1,4-Dioxane | <25 |
| 1,1,2-Trichloroethane | <25 |
| 1,2-Dibromoethane (EDB) | <25 |
| Tetrachloroethene | **118** |
| 1,1,1,2-Tetrachloroethane | <25 |
| Chlorobenzene | <25 |
| 1,1,2,2-Tetrachloroethane | <25 |

Results in nanograms (ng). J = Values below limit of quantitation (LOQ) but above limit of detection (LOD). B = Detected in method blank.


## LEGEND

SG-7 PASSIVE SOIL-GAS SAMPLE LOCATION

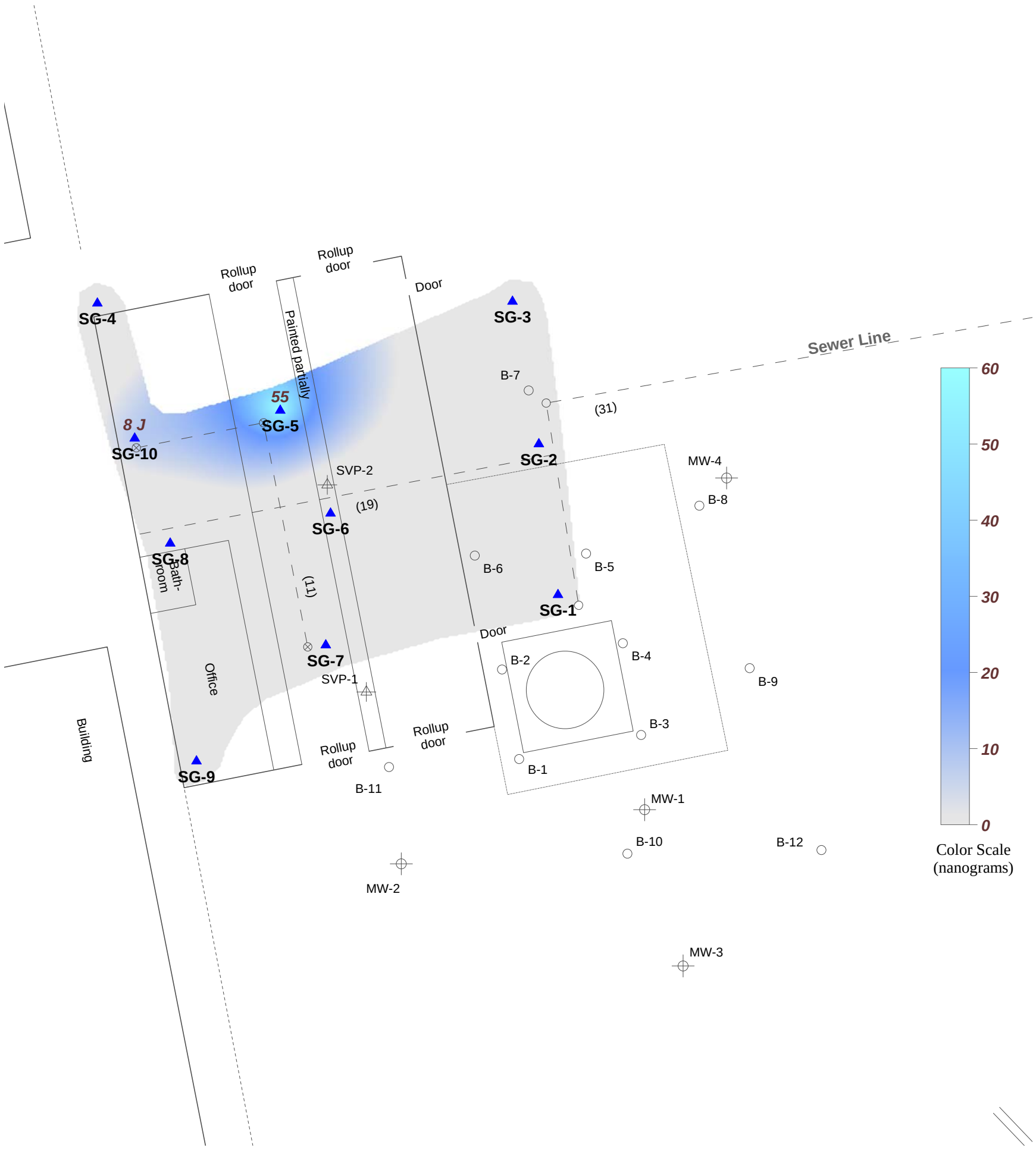
Scale in Feet

0 20 40

BEACON ENVIRONMENTAL SERVICES, INC.
2203A Commerce Road, Suite 1, Forest Hill, MD 21050 USA
www.Beacon-USA.com 1-410-838-8780
Beacon Project No. 2792, February 2014

**Figure 1**
**Passive Soil-Gas Survey**
**Sample Locations**

**ABF Site**
**Oakland, CA**




## LEGEND

*8 J* NANOGRAMS/SAMPLER (J = Estimated Value)

▲ SG-7 PASSIVE SOIL-GAS SAMPLE LOCATION

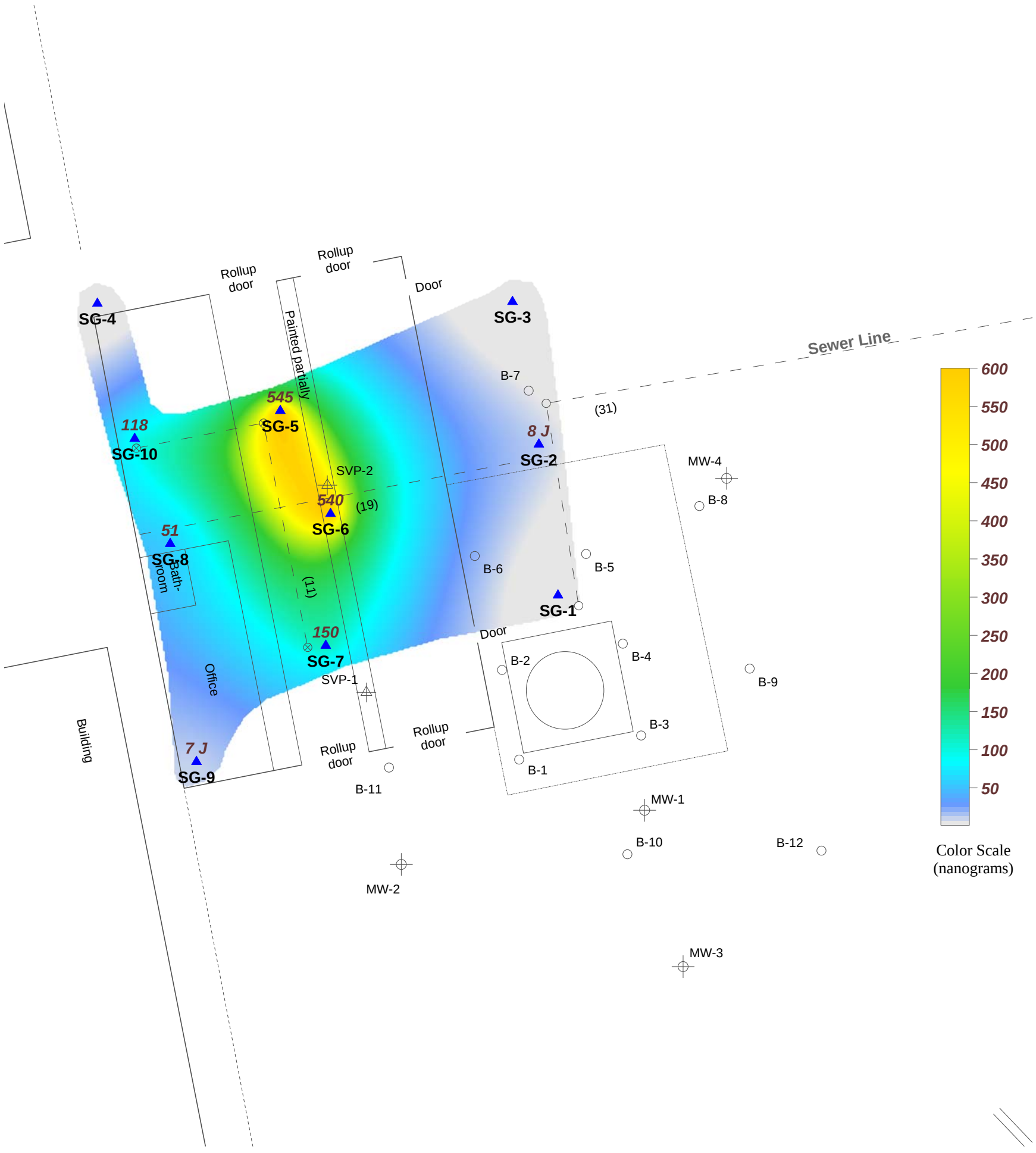
Scale in Feet

0 20 40

BEACON ENVIRONMENTAL SERVICES, INC.
2203A Commerce Road, Suite 1, Forest Hill, MD 21050 USA
www.Beacon-USA.com 1-410-838-8780
Beacon Project No. 2792, February 2014

**Figure 2**
**Passive Soil-Gas Survey**
**Trichloroethene**

**ABF Site**
**Oakland, CA**




## LEGEND

**8 J** NANOGRAMS/SAMPLER (J = Estimated Value)

▲ **SG-7** PASSIVE SOIL-GAS SAMPLE LOCATION

Scale in Feet

0 20 40

BEACON ENVIRONMENTAL SERVICES, INC.
2203A Commerce Road, Suite 1, Forest Hill, MD 21050 USA
www.Beacon-USA.com 1-410-838-8780
Beacon Project No. 2792, February 2014

**Figure 3**
**Passive Soil-Gas Survey**
**Tetrachloroethene**

**ABF Site**
**Oakland, CA**

## Attachments

## Attachment 1

## APPLYING RESULTS FROM PASSIVE SOIL-GAS SURVEYS

The utility of soil-gas surveys is directly proportional to their accuracy in reflecting and representing changes in the subsurface concentrations of source compounds. Passive soil-gas survey results are the mass collected from the vapor-phase emanating from the source(s). The vapor-phase is merely a fractional trace of the source(s) and, as a matter of convenience, the units used in reporting detection values from passive soil-gas surveys are smaller than those employed for source-compound concentrations.

Passive soil gas data are reported in mass of compounds identified per sample location (e.g., nanograms (ng) or micrograms (µg) per sampler). Results from a passive soil gas survey typically are then used to guide where follow-on intrusive samples should be collected to obtain corresponding concentrations of the contaminants in soil, soil gas, and/or groundwater, as well as eliminate those areas where intrusive samples are not required. It is not practical to report passive soil gas data as concentration because the sampler's uptake rates of the compounds are often greater than the replenishment rates of the compounds around the sampler, which results in low bias measurements, and the replenishment rates will be dependent on several factors that include, at a minimum, soil gas concentrations, soil porosity and permeability, and soil moisture level.

Whatever the relative concentrations of source and associated soil gas, best results are realized when the ratio of soil-gas measurements to actual subsurface concentrations remains as close to constant as the real world permits. It is the reliability and consistency of this ratio, not the particular units of mass (*e.g.*, nanograms) that determine usefulness. Thus, BEACON emphasizes the necessity of conducting — at minimum — follow-on intrusive sampling in areas that show relatively high soil-gas measurements to obtain corresponding concentrations of soil and groundwater contaminants. These correspondent values furnish the basis for approximating a relationship. For extrapolating passive soil gas results to vapor intrusion evaluations, we recommend a minimum of three passive soil gas locations be converted to a shallow vapor well then sampled using an active soil gas method. Once a relationship is established, it can be used in conjunction with the remaining soil-gas measurements to estimate subsurface contaminant concentrations across the survey field. (See www.beacon-usa.com/passivesoilgas.html, Publication 1: *Mass to Concentration Tie-In for PSG Surveys* and Publication 4: *Groundwater and PSG Correlation*.) It is important to keep in mind, however, that specific conditions at individual sample points, including soil porosity and permeability, depth to contamination, and perched ground water, can have an impact on soil-gas measurements at those locations.

When passive soil-gas surveys are utilized as described above, the data provide information that can yield substantial savings in drilling costs and in time. They furnish, among other things, a checklist of compounds expected at each survey location and help to determine how and where drilling budgets can most effectively be spent. Passive soil-gas surveys can also be used as a remediation or general site monitoring tool that can be implemented on a quarterly, semi-annual or annual basis.

## Attachment 2

## FIELD PROCEDURES FOR PASSIVE SOIL-GAS SURVEYS

The following field procedures are routinely used during a BEACON Passive Soil-Gas Survey. Modifications can be and are incorporated from time to time in response to individual project requirements. In all instances, BEACON adheres to EPA-approved Quality Assurance and Quality Control practices.

A. Field personnel carry a BESURE Sample Collection Kit™ and support equipment to the site and deploy the passive samplers in a prearranged survey pattern. A passive sampler consists of a borosilicate glass vial containing hydrophobic adsorbent cartridges with a length of wire attached to the vial for retrieval. Although samplers require only one person for emplacement and retrieval, the specific number of field personnel required depends upon the scope and schedule of the project. Each Sampler emplacement generally takes less than two minutes.

B. At each survey point a field technician clears vegetation as needed and, using a hammer drill with a 1″- to 1½″-diameter bit, creates a hole 12 to 14 inches deep. [Note: For locations covered with asphalt, concrete, or gravel surfacing, the field technician drills a 1″- to 1½″-diameter hole through the surfacing to the soils beneath]. The technician then, using a hammer drill with a ½″ diameter bit, creates a hole three-feet deep. The hole is then sleeved with a 1″-diameter metal sleeve.

C. The technician then removes the solid plastic cap from a sampler and replaces it with a Sampling Cap (a plastic cap with a hole covered by screen meshing). The technician inserts the sampler, with the Sampling Cap end facing down, into the hole (**see attached figure**). The sampler is then covered with an aluminum foil plug and soils for uncapped locations or, for capped locations, an aluminum foil plug and a concrete patch. The sampler's location, time and date of emplacement, and other relevant information are recorded on the Field Deployment Form.

D. One or more trip blanks are included as part of the quality-control procedures.

E. Once all the samplers have been deployed, field personnel schedule sampler recovery and depart, taking all other equipment and materials with them.

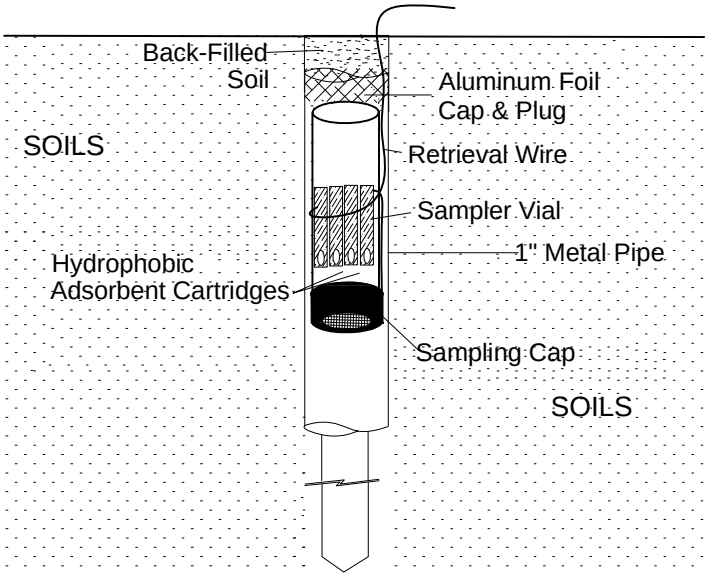
F. Field personnel retrieve the samplers at the end of the exposure period. At each location, a field technician withdraws the sampler from its hole, removes the retrieval wire, and wipes the outside of the vial clean using gauze cloth; following removal of the Sampling Cap, the threads of the vial are also cleaned. A solid plastic cap is screwed onto the vial and the sample location number is written on the label. The technician then records sample-point location, date, time, etc. on the Field Deployment Form.

G. Sampling holes are refilled with soil, sand, or other suitable material. If samplers have been installed through asphalt or concrete, the hole is filled to grade with a plug of cold patch or cement.

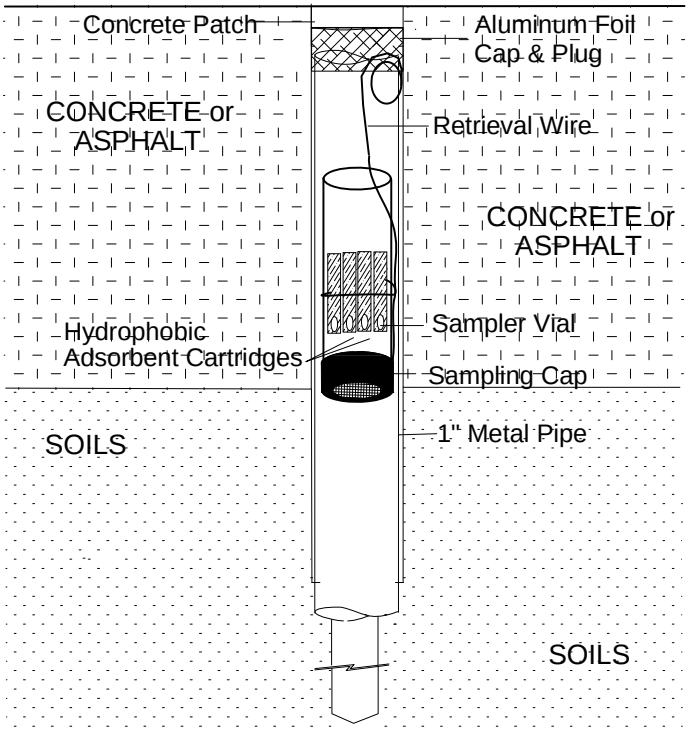
H. Following retrieval, field personnel ship or transport the passive samplers to BEACON's laboratory.

# BEACON'S PASSIVE SOIL-GAS SAMPLER

## DEPLOYMENT THROUGH SOILS




## DEPLOYMENT THROUGH AN ASPHALT/CONCRETE CAP



## Attachment 3

## Field Deployment Report

# PASSIVE SOIL-GAS SURVEY
# FIELD DEPLOYMENT REPORT

| Project Information | |
|---|---|
| Beacon Project No.: | 2792 |
| Site Name: | ABF |
| Site Location: | Oakland, CA |

BEACON ENVIRONMENTAL SERVICES, INC.
2203A Commerce Road | Suite 1
Forest Hill, MD 21050 USA
800-878-5510 | 1-410-838-8780

| Client Information | |
|---|---|
| Company Name: | Trinity Source Group, Inc. |
| Office Location: | Santa Cruz, CA |
| Samples Collected By: | |

| FIELD SAMPLE ID | Date Emplaced / Time Emplaced | Date Retrieved / Time Retrieved | Sampling Hole Depth (inches) | FIELD NOTES (e.g., asphalt/concrete/gravel, description of sample location, PID/FID readings) |
|---|---|---|---|---|
| SG-1 | 11/22/14 8:30 | | 24" | Concrete |
| SG-2 | 8:45 | | 24" | Asphalt |
| SG-3 | 8:58 | | 24" | Asphalt |
| SG-4 | 9:27 | | 24" | Concrete |
| SG-5 | 9:55 | | 24" | Concrete |
| SG-6 | 10:38 | | 24" | Concrete |
| SG-7 | 10:46 | | 24" | Concrete |
| SG-8 | 11:00 | | 24" | Concrete |
| SG-9 | 11:25 | | 24" | Concrete |
| SG-10 | 11:41 | | 24" | Concrete |
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## Attachment 4

## LABORATORY PROCEDURES FOR PASSIVE SOIL-GAS SAMPLES

Following are laboratory procedures used with BEACON Passive Soil-Gas Surveys, a screening technology for expedited site investigation. After exposure, adsorbent cartridges from the passive samplers are analyzed using U.S. EPA Method 8260C as a guidance document, a capillary gas chromatographic/mass spectrometric method, modified to accommodate high temperature thermal desorption of the adsorbent cartridges and to meet the objecitves of reporting semi-quantitative data. This procedure is summarized as follows:

A. The adsorbent cartridges are loaded with internal standards and surrogates prior to loading the autosampler with the cartridges. The loaded cartridges are purged in a helium flow. Then the cartridges are thermally desorbed in a helium flow onto a focusing trap. Any analytes in the helium stream are adsorbed onto a focusing trap.

B. Following trap focusing, the trap is thermally desorbed onto a Rxi-624Sil MS 20m, 0.18 mm ID, 1.00 micron filament thickness capillary column.

C. The GC/MS is scanned between 35 and 270 Atomic Mass Units (AMU) at 3.12 scans per second.

D. BFB tuning criteria and the initial five-point calibration procedures are those stated in method SW846-8260C. System performance and calibration check criteria are met prior to analysis of samples. A laboratory method blank is analyzed after the daily standard to determine that the system is contaminant-free.

E. The instrumentation used for these analyses includes:

- Agilent 7890-5975c Gas Chromatograph/Mass Spectrometer;
- Markes Unity2 thermal desorber;
- Markes UltrA2 autosampler; and
- Markes Mass Flow Controller Modules.

## Attachment 5

## Chain-of-Custody Form

# CHAIN-OF-CUSTODY
# PASSIVE SOIL-GAS SAMPLES

| Project Information | |
|---|---|
| Beacon Project No.: | 2792 |
| Site Name: | ABF |
| Site Location: | Oakland, CA |
| Analytical Method: | EPA Method 8260C |
| Target Compounds: | Beacon Project Number 2792 Target Compound List |

BEACON ENVIRONMENTAL SERVICES, INC.
2203A Commerce Road | Suite 1
Forest Hill, MD 21050 USA
800-878-5510 | 1-410-838-8780

| Client Information | |
|---|---|
| Company Name: | Trinity Source Group, Inc. |
| Office Location: | Santa Cruz, CA |
| Samples Submitted By: | |
| Contact Phone No.: | |

| Field Sample ID | Comments (only necessary if problem or discrepancy) Notes | Date | Time | Initial |
|---|---|---|---|---|
| Trip -1 | | 2/5/14 | 13:00 | |
| SG -3 | | | 10:40 | |
| SG -4 | | | 10:55 | |
| SG -5 | | | 11:16 | |
| SG -6 | | | 11:23 | |
| SG -7 | | | 11:27 | |
| SG -9 | | | 11:47 | |
| SG -8 | | | 11:55 | |
| SG -10 | | | 12:10 | |
| SG -2 | | | 12:44 | |
| SG -1 | | | 12:55 | |
| SG -6-Dupe | | | 11:23 | |

**Shipment of Field Kit to Site — Custody Seal #** 3014164 **Intact?** (Y) N

| Relinquished by: | Date/Time | Courier | Received by: | Date/Time |
|---|---|---|---|---|
| Kenny Ifeacho | 01-06-2014 / 1700 Hours | FedEx | Bill Rice | 1/9/14 8:00 |
| | | | | |

**Shipment of Field Kit to Laboratory — Custody Seal #** **Intact?** Y N

| Relinquished by: | Date/Time | Courier | Received by: | Date/Time |
|---|---|---|---|---|
| Bill Rice | 2/6/14 1200 | Fed Ex | Stacy Shanley | 2.11.14 / 13:19 |
| | | | | |