

**RECEIVED**

3:13 pm, Oct 27, 2009

Alameda County  
Environmental Health

October 26, 2009

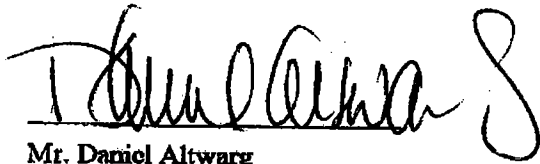
Mr. Jerry Wickham, PG, CRG, CHG  
Alameda County Environmental Health Services  
1131 Harbor Bay Parkway, Suite 250  
Alameda, CA 94502-6577

RE: Cardanal Partners, LLC  
632-638 2<sup>nd</sup> Street  
(aka "626 2<sup>nd</sup> Street")  
Oakland, California 94607  
Clearwater Group Project # GB001H

Dear Mr. Wickham,

As the legally authorized representative of the above-referenced project location, I have reviewed the *Workplan for Soil Vapor Sampling* prepared by our consultant of record, Clearwater Group. I declare, under penalty of perjury, that the information and/or recommendations contained in this report are true and correct to the best of our knowledge.

Sincerely,



Mr. Daniel Altwarg  
Cardanal Partners



**WORK PLAN  
FOR SOIL VAPOR  
SAMPLING**

Markus Supply Hardware  
632-638 2<sup>nd</sup> Street  
Oakland, CA 94607  
ACEH Fuel Case Leak No. RO0002949  
Geotracker Global ID T0619758441

Prepared for:

Markus Supply Hardware

Represented By:

Mr. Daniel Altwarg  
Cardanal Properties, LLC

Prepared By:

Clearwater Group  
229 Tewksbury Avenue  
Pt. Richmond, CA 94801  
Clearwater Project No. GB001H

October 2009



## INTRODUCTION

Clearwater Group (Clearwater), on behalf of Cardanal Partners, LLC, is pleased to present this *Work Plan for Soil Vapor Sampling* prepared for the site located at 632-638 2nd Street, Oakland, Alameda County, California (**Figure 1**) for your review, comments, and approval. In response to the results based on year 2007 and 2008 field work, presented in Clearwater's *Subsurface Investigation Report* dated January 11, 2009, the Alameda County Environmental Health Department (ACEH) in their September 18, 2009 letter (**Attachment 1**) requested that a Work Plan be prepared outlining a soil vapor sampling plan. The purpose of the soil vapor investigation described in this work plan is to evaluate potential vapor intrusion concerns and determine whether the site meets the criteria for low-risk case closure.

## SCOPE OF WORK

Soil vapor sampling points will be installed using direct push technology at 5 feet below ground surface (bgs) at the five locations shown on **Figure 2**. A four foot, continuous core, soil sample will be collected while installing each vapor point and the project geologist will characterize these samples. This soil data will be used in the soil vapor model to more accurately reflect the soil conditions under and near the building. One duplicate soil vapor sample will be collected for quality control purposes. Based on previous subsurface investigations, groundwater is estimated at 8 to 10 feet below ground surface. The locations for the soil vapor (SV) samples were selected for the following reasons:

Sample ID	Sample Depth	Location and Rationale
SV-1	5ft bgs	SV-1 will be located in the landscaped area as near as possible to the area marked "possible dispenser island". This sample will be collected to help outline the presumed plume in a lateral direction.
SV-2	5ft bgs	SV-2 will be located in the landscaped area as near as possible to the area marked "previous dispenser island". This is near the center of the presumed plume source.
SV-3	5ft bgs	SV-3 will be located in the landscaped area near the building, in the vicinity of UST IV and UST V. This sample will be collected since there is uncertainty as to the location and method of dispensing liquid from these tanks.
SV-4	5ft bgs	SV-4 will be located in the landscaped area near the building, between SV-2 and SV-3. This sample will be collected to help outline the presumed plume in a lateral direction.
SV-5	5ft bgs	SV-5 will be located in the landscaped area near the street, in the vicinity of UST I, UST II, and UST III. This sample will be collected to help outline the presumed plume in the down gradient direction.

A detailed methodology for sub-surface vapor sampling along with a figure outlining the gas probe construction are included in **Attachment 2**. Clearwater will obtain all necessary permits from Alameda County Environmental Health (ACEH) as well as the City of Oakland Public Works Department before field activities begin.



The vapor implants will be allowed to equilibrate at least 24 hours prior to vapor sampling. Samples will be collected according to the detailed procedures included in **Attachment 2**. Air Toxics Laboratory (CA NELAP #02110CA) will analyze samples for the presence of total petroleum hydrocarbons as gasoline (TPH-g), benzene, toluene, ethylbenzene, xylene (BTEX) by EPA Method TO-15; and total petroleum hydrocarbons as diesel (TPH-d), and naphthalene by EPA Method TO-17. If no additional soil vapor samples are required, the implants and Teflon tubing will be removed and each soil vapor borehole will be sealed with a neat cement grout to the surface.

Clearwater proposes to compare the subsurface vapor concentrations to the San Francisco Bay Regional Water Quality Control Board Environmental Screening Levels, revised May 2008 (ESL) and the California Human Health Screening Levels (CHHSLs). If the concentrations in subsurface vapor are below the ESLs or CHHSLs, a No Further Action Request (NFAR) report will be prepared and submitted for approval.

If the concentrations in subsurface vapor are significantly above the ESLs or CHHSLs, then the United States Environmental Protection Agency (USEPA) Model for Subsurface Vapor Intrusion (model) will be used to evaluate the data. This model is based on the work of Johnson and Ettinger (1991), and is revised periodically to incorporate different assumptions about soil properties as well as new human health criteria developed by USEPA for indoor vapor intrusion. If the model reaches the appropriate conclusions, a No Further Action Request (NFAR) report will be prepared (based on that modeling data) and submitted for approval.

In the event that this 'Soil Vapor Data with Modeling' output does not support a low-risk closure, Clearwater will require authorization to evaluate the inhalation exposure pathway inside the building in more detail. These tasks would be outlined in another workplan.





**CERTIFICATION**

This report was prepared under the supervision of a Professional Geologist in the State of California. All statements, conclusions and recommendations are based solely upon published results from previous consultants, and field observations by Clearwater Group.

Information and interpretation presented herein are for the sole use of the client. A third party should not rely upon the information and interpretation contained in this document.

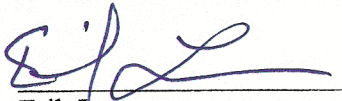
The service performed by Clearwater Group has been conducted in a manner consistent with the level of care and skill ordinarily exercised by members of our profession currently practicing under similar conditions. No other warranty, expressed or implied, is made.

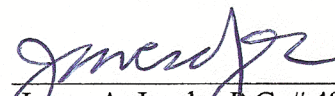
**LICENSED PROFESSIONALS**

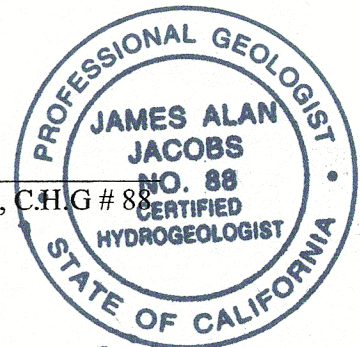
In-house licensed professionals direct all projects. These professionals, including geologists or engineers, shall be guided by the highest standards of ethics, honesty, integrity, fairness, personal honor, and professional conduct. To the fullest extent possible, the licensed professional shall protect the public health and welfare and property in carrying out professional duties. In the course of normal business, recommendations by the in-house professional may include the use of equipment, services, or products in which the Company has an interest. Therefore, the Company is making full disclosure of potential or perceived conflicts of interest to all parties.

Sincerely,

**CLEARWATER GROUP**

  
Erik Lervaag  
Project Manager

  
James A. Jacobs, P.G. # 4815, C.H.G # 88  
Chief Hydrogeologist





## **DISTRIBUTION**

Jerry Wickham, PG, CEG, CHG  
Alameda County Environmental Health Services  
1131 Harbor Bay Parkway, Suite 250  
Alameda, CA 94502-6577

Mr. Daniel Altwarg  
Cardanal Partners, LLC  
c/o Bartlett, Leader-Picone & Young, LLP  
2201 Broadway, Suite 803  
Oakland, CA 94612

Mr. Richard Arnold, et al.  
Gamma Investments  
301 Jefferson Street  
Oakland, CA 94607

Ms. Betty Brunswick  
PG&E  
77 Beale Street, Room 2439C  
San Francisco, CA 94105

Mr. James Kendall  
Bank of the West  
Legal Department – South (SC-CAL-06-D)  
300 South Grand Avenue, 6<sup>th</sup> Floor  
Los Angeles, CA 90071



**FIGURES:**

Figure 1: Site Vicinity Map

Figure 2: Map of Soil Vapor Sampling Locations

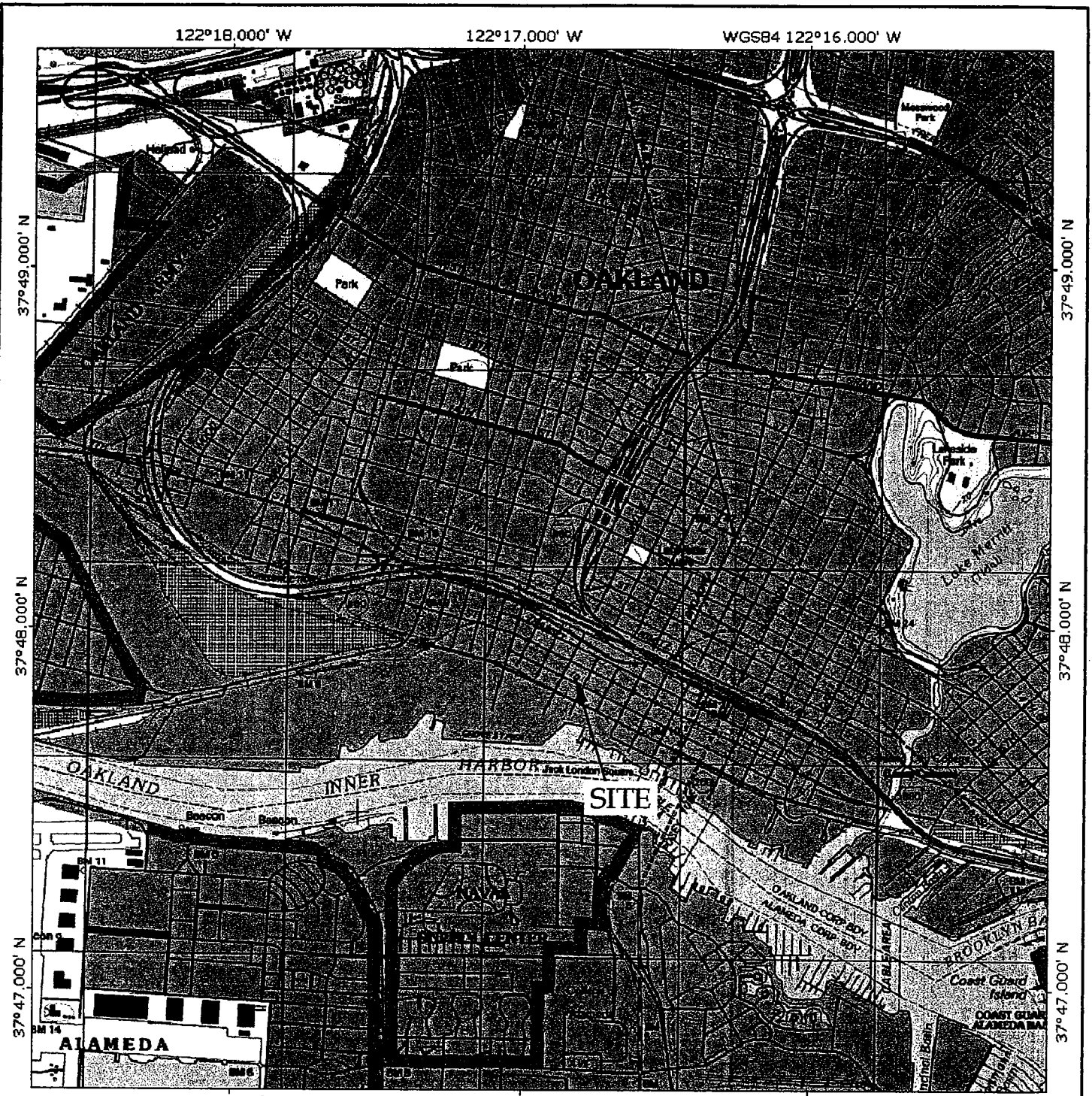
**ATTACHMENTS:**

Attachment 1: Alameda County Environmental Health Services Department letter dated September 18, 2009

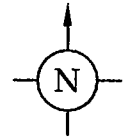
Attachment 2: Vapor Sampling Procedure and Figures for sub-surface, sub-slab, and indoor air

# FIGURES





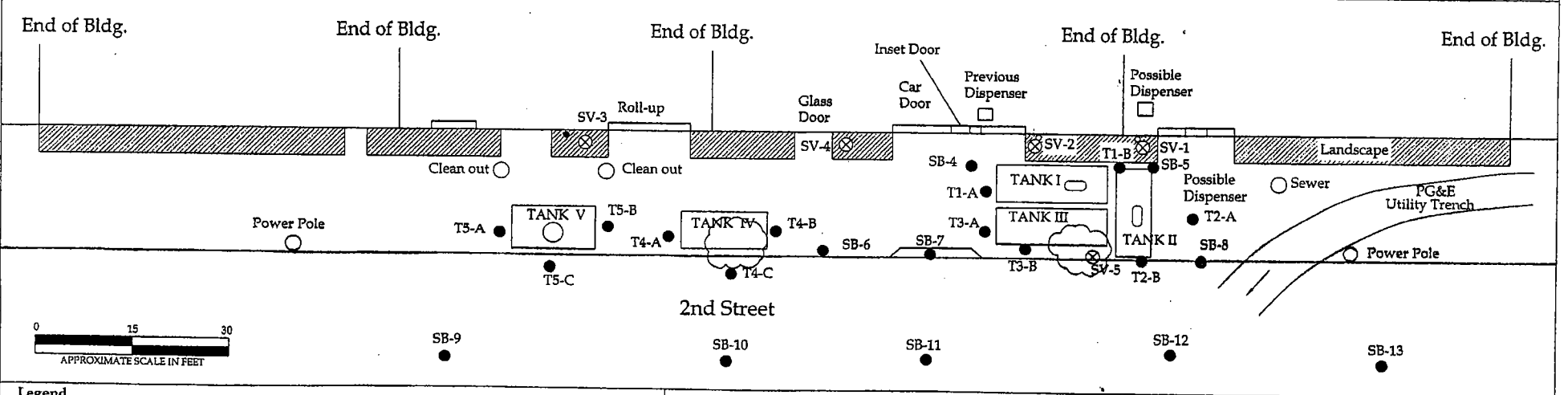
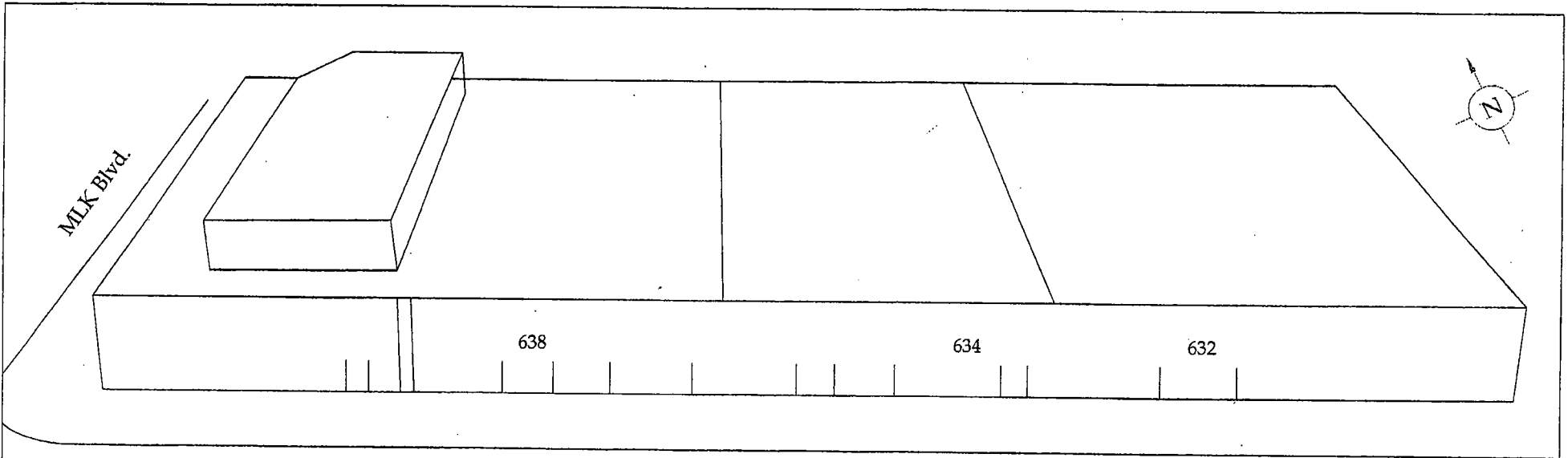
Map created with TOPO!® ©2002 National Geographic (www.nationalgeographic.com/topo)



**SITE LOCATION MAP**  
 Markus Supply  
 626 2nd Street, Oakland, CA

**CLEARWATER GROUP**

Project No. GB001	Figure Date 5/06	Figure 1
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**Legend**

⊗	Proposed Soil Vapor Sampling Location	☁	Tree
●	Soil Borings	▨	Landscaped Area
○	Vent Pipe	◻	Concrete Filled Fill Port
◻	Previous Vent Pipe		

**Proposed Soil Vapor Sampling Locations**

Markus Supply Hardware  
626 Second St  
Oakland, CA

CLEARWATER GROUP		
Project No. GB001	Figure Date 10/09	Figure 2

# ATTACHMENTS

# ATTACHMENT 1

ALAMEDA COUNTY  
HEALTH CARE SERVICES  
AGENCY  
ALEX BRISCOE, Acting Director



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

September 18, 2009

Mr. Daniel Altwarg  
Cardanal Properties, LLC  
C/o Bartlett, Leader-Picone & Young, LLP  
2201 Broadway, Suite 803  
Oakland, CA 94612

Ms. Betty Brunswick  
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Legal Department – South (SC-CAL-06-D)  
300 South Grand Avenue, 6<sup>th</sup> Floor  
Los Angeles, CA 90071

Subject: Fuel Leak Case No. RO0002949 and Geotracker Global ID T0619758441, Markus Supply Hardware, 632-638 2<sup>nd</sup> Street, Oakland, CA 94607

Dear Mr. Altwarg, Ms. Brunswick, Mr. Arnold, and Mr. Kendall:

Alameda County Environmental Health (ACEH) staff has reviewed the case file for the above-referenced site, including the most recent report entitled, "Underground Storage Tank Closure-in-Place Report," dated June 21, 2007, prepared on your behalf by Clearwater Group (Report). The report presents the results from soil and groundwater sampling at 15 locations. Total petroleum hydrocarbons as diesel (TPHd) were detected in groundwater at concentrations up to 21,000 micrograms per liter ( $\mu\text{g/L}$ ).

Based on the distribution of fuel hydrocarbons, the Report concludes that the primary source of fuel hydrocarbons may be the former dispensers and piping located north of the USTs. As a result, the largest mass of fuel hydrocarbons may be located beneath the building at 632-638 Second Street.

The Report concludes that the site poses minimal risk and requests low-risk case closure. We are not requesting further soil or groundwater sampling for the site at this time. However, in order to confirm that the site meets the criteria for low-risk case closure, we are requesting that you conduct soil vapor sampling and analysis for naphthalene to assess whether vapor intrusion is a concern for the site. At a minimum, soil vapor sampling is to be conducted at the two locations outside the building but nearest the locations of the two former dispensers and piping. We request that one soil vapor sample be collected adjacent to UST V and analyzed for naphthalene. Based on the results of the soil vapor sampling, case closure will re-evaluated.

Therefore, we request that you submit a Work Plan for soil vapor sampling by November 20, 2009.

### TECHNICAL REPORT REQUEST

Please submit technical reports to Alameda County Environmental Health (Attention: Jerry Wickham), according to the following schedule:

- **November 20, 2009 – Work Plan for Soil Vapor Sampling**

These reports are being requested pursuant to California Health and Safety Code Section 25296.10. 23 CCR Sections 2852 through 2854, 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/cleanup/electronic reporting](http://www.swrcb.ca.gov/ust/cleanup/electronic%20reporting)).

### 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.

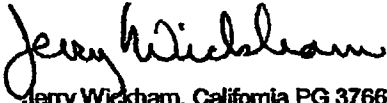
Responsible Parties  
RO0002949  
September 18, 2009  
Page 3

**AGENCY OVERSIGHT**

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

If you have any questions, please call me at 510-567-6791 or send me an electronic mail message at [jerry.wickham@acgov.org](mailto:jerry.wickham@acgov.org).

Sincerely,



Jerry Wickham, California PG 3766, CEG 1177, and CHG 297  
Senior Hazardous Materials Specialist

Enclosure: ACEH Electronic Report Upload (ftp) Instructions

cc: Leroy Griffin, Oakland Fire Department, 250 Frank H. Ogawa Plaza, Ste. 3341, Oakland, CA 94612-2032

James Jacobs, Clearwater Group, 229 Tewksbury Avenue, Point Richmond, CA 94801

Donna Drogos, ACEH  
Jerry Wickham, ACEH  
Geotracker, File



<b>Alameda County Environmental Cleanup Oversight Programs (LOP and SLIC)</b>	ISSUE DATE: July 5, 2005
	REVISION DATE: March 27, 2009
	PREVIOUS REVISIONS: December 16, 2005, October 31, 2005
SECTION: Miscellaneous Administrative Topics & Procedures	SUBJECT: Electronic Report Upload (ftp) Instructions

The Alameda County Environmental Cleanup Oversight Programs (LOP and SLIC) require submission of all reports in electronic form to the county's ftp site. Paper copies of reports will no longer be accepted. The electronic copy replaces the paper copy and will be used for all public information requests, regulatory review, and compliance/enforcement activities.

#### REQUIREMENTS

- Entire report including cover letter must be submitted to the ftp site as a single portable document format (PDF) with no password protection. (Please do not submit reports as attachments to electronic mail.)
- 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)

#### Additional Recommendations

- A separate copy of the tables in the document should be submitted by e-mail to your Caseworker in Excel format. These are for use by assigned Caseworker only.

#### 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 [dehloptoxic@acgov.org](mailto:dehloptoxic@acgov.org)
    - Or
    - ii) Send a fax on company letterhead to (510) 337-9335, to the attention of My Le Huynh.
  - 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 and Firefox browsers will not open the FTP site.
  - b) Click on File, then on Login As.
  - 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 [dehloptoxic@acgov.org](mailto:dehloptoxic@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.

## ATTACHMENT 2

## CLEARWATER GROUP

### Temporary Soil Vapor Monitoring Well Installation and Sampling Procedures

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#### Permits, Site Safety Plan, Utility Clearance

Clearwater Group obtains all the required permits, unless otherwise contractually directed. Clearwater prepares a site specific Site Safety Plan detailing site hazards, site safety and control, decontamination procedures, and emergency response procedures to be employed throughout the work. At least 48 hours prior to drilling, Underground Service Alert (USA) or an equivalent agency is notified of the planned work. Clearwater attempts to locate all underground and aboveground utilities by site inspection (in conjunction with its subcontractors and knowledgeable site managers, if available), and review of site as-built drawings. Clearwater may employ a private, professional utility locator and/or ground penetrating radar survey subcontractor to refine the site utility inspection.

#### Soil Vapor Sample Collection Depth and Location

Soil vapor sample collection depths will be chosen to minimize the effects of change in barometric pressure, or breakthrough of ambient air from the surface, and to ensure that consistent and representative samples are collected. Sampling points will be laterally spaced to adequately represent soil gas concentrations proximate to structures, taking into consideration the location of the contamination relative to the structures.

#### Drilling Equipment

Temporary soil vapor wells are installed using a truck-mounted Geoprobe<sup>®</sup> drill rig, unless site conditions warrant a different drilling method. Subsurface conditions permitting, the first five feet of each boring is advanced using a hand-auger or post-hole digger. All drilling equipment will be inspected daily by the operator and maintained in a safe working condition. All down-hole drilling equipment is steam cleaned prior to arriving on site. Working components of the drill rig near the borehole, as well as the probe rods are thoroughly steam-cleaned between each boring location. All Clearwater drilling and sampling methods will be consistent with local, state and federal regulations.

The borehole for the soil vapor well may be installed using either direct push, hollow stem auger drilling equipment or hand driven using a rotary hammer or a hand auger. A soil vapor monitoring well example is shown on **Figure 1**. The sample probe consists of a probe tip through which the soil gas probe is collected, and probe tubing that extends from the probe tip to the ground surface. The sample probe tubing has a small diameter (1/8 to 1/4 inch). The sample probe and tubing is constructed of material that will not react or interact with the target compounds. The tubing is marked at the surface to identify the probe location and depth. The probe tip is placed midway between the top and bottom of the one-foot thick sampling interval, with a sand (or 60-100 sieve glass bead) pack extending approximately 6 inches above and below the probe tip. At least 1 foot of dry granular bentonite will be placed on top of the sand and then hydrated with clean water. The remainder of the annulus may be filled with hydrated bentonite pellets or lean cement grout.

For sampling from multiple depths, adjacent temporary soil vapor wells can be constructed in the same borehole. When using a hollow-stem auger drill, separate probe tips and sand packs can be set in the same borehole annulus at different depths. The probe tips and sand packs are separated by a minimum of one-foot thick layer of hydrated bentonite powder. The borehole will be grouted to the surface with hydrated bentonite.

#### Surface Completion

At the ground surface the sample probe tubing is sealed with a layer of hydrated bentonite pellets hand packed tightly around the tubing. The following components may be installed, as necessary:

- Gas-tight valve or fitting for capping the vapor point;
- Fitting for connection to above ground sampling equipment;

#### Soil Gas Probe Equilibration

Soil gas sampling will not be conducted for at least 30 minutes following probe installation using the direct push method to allow time for the soil gas to equilibrate within the sample probes and for the bentonite to hydrate. For probes installed with hollow stem auger drilling methods, soil gas sampling will not be conducted for at least 48 hours following probe installation.

#### Soil Vapor Sample Collection Using Suma Canisters

The soil vapor sample collection and analysis will follow the protocols provided in the California Department of Toxic Substances Control, Interim Final document, *Advisory – Active Soil Gas Investigations*, January 28, 2003 (Vapor Sampling Guidance Document).

The sample line is purged prior to collecting the sample. The soil vapor samples will be collected from the vapor monitoring wells according to EPA Method TO-15, using a specially prepared stainless steel canister (SUMA<sup>®</sup> canister). The canister is provided by and prepared for use by the analytical laboratory. A 6-liter sub-atmospheric-pressure SUMA<sup>®</sup> canister is used to collect each soil vapor sample. The canister is attached to the Geoprobe<sup>®</sup> gas sampling device using Teflon<sup>®</sup> tubing connected to a flow controller, which regulates the sample flow at 200 milliliters per minute into the SUMA canister. Prior to sample collection the initial vacuum pressure in the SUMA canister is recorded, then the canister valve is opened. Since the sub-atmospheric-pressure canister is an evacuated canister, the soil vapor sample is collected without the use of a sample pump. The canister valve is closed after the recommended sample duration of 30 minutes. The final canister pressure will be below atmospheric pressure. Following sample collection, the canister is sealed, the final canister pressure is recorded, and the sample name is recorded on the Chain-of-Custody document and sample label. The sample canisters will be sent under Chain of Custody documentation to a California-certified analytical laboratory and analyzed for the constituents of concern.

#### Leak Testing

A leak test is recommended each time a soil gas sample is collected. A leak check, or tracer, compound such as isopropanol is recommended to determine if leaks are present. Other compounds such as pentane, isobutene, propane, or butane may be used. A leak check compound is selected that is not known or suspected to be site related or otherwise associated with the site or nearby properties.

Immediately before sampling, the leak check compound is placed at each location where ambient air could enter the sampling system or where cross contamination may occur. For liquid compounds, a paper towel is wetted with the leak compound and the towel is placed over each location where air could enter the system. The leak check compound is included in the list of analytes looked for during laboratory analysis of each sample.

#### Quality Assurance Procedures

To prevent contamination of the samples, Clearwater personnel adhere to the following procedures in the field:

- A new, clean pair of latex gloves are put on prior to sampling each well.
- Wells are purged and samples are collected in the expected order of increasing degree of contamination based on historical analytical results.
- All purging equipment will be thoroughly decontaminated between each well.

#### Temporary Soil Vapor Well Abandonment

After the sample collection has been completed each temporary soil vapor well will be properly abandoned. Wells installed by Geoprobe drill will be pulled out from the ground surface, if possible, and the Geoprobe drill will be driven to a depth at least one foot greater than the depth of the well (overdriven). If the temporary well was installed using a hollow-stem auger drill the well will be overdriven using an auger as large a diameter as, or larger, than the augers that installed the well. The well borehole annulus will be filled with either bentonite pellets hydrated with clean water, or filled with lean cement grout, depending on local regulatory requirements. The ground surface will be restored to its original condition.

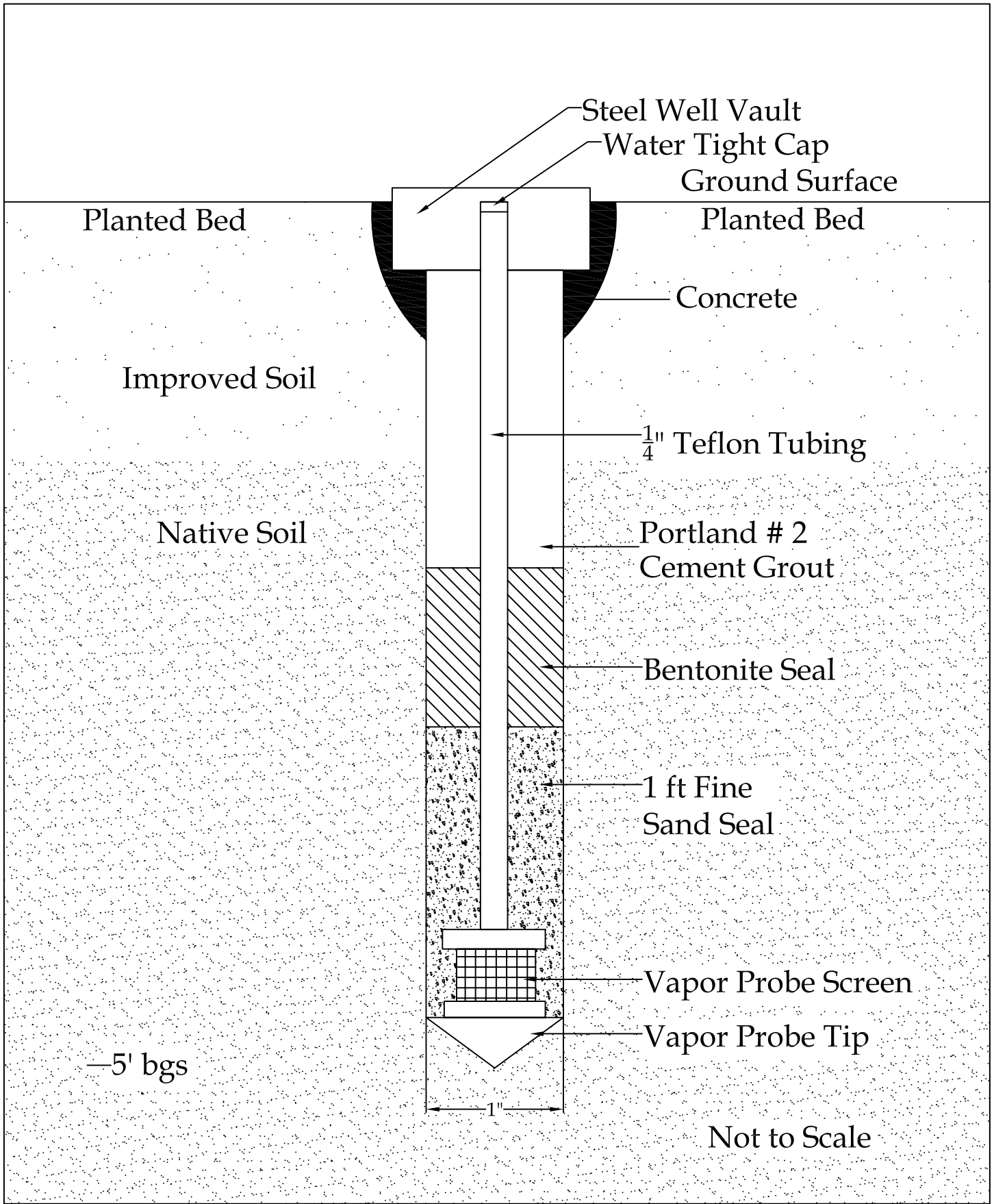
#### Recordkeeping

Proper record keeping consists of recording the following information, at a minimum:

- Sample identification information (location, depth, sample identifiers, data and time)
- Field personnel
- Weather conditions (temperature, wind speed, barometric pressure, precipitation, etc.)
- Sampling method, devices and equipment used
- Purge volumes prior to sample collection
- Volume of soil gas extracted per sample
- Vacuum of canisters before and after samples were collected
- If observable, the apparent moisture content of the sampling zone
- Shipment information, including chain-of-custody protocols and records.

#### Soil Waste Management

Soil cuttings are stockpiled on and covered with plastic sheeting to control runoff, or contained in 55-gallon D.O.T.-approved drums on site. Waste soil is sampled and analyzed to profile it for disposal, then hauled by a licensed waste hauler to an appropriate landfill. All waste stored on site is properly labeled at the time of production.



**Soil Vapor Monitoring Point Installation at 5' bgs**

Markus Supply Hardware  
 632-638 2nd Street  
 Oakland, California

**CLEARWATER GROUP**

Project No.  
**GB001H**

Figure Date  
**10/09**

Figure  
**1**