MADISON PARK
FINANCIAL CORPORATION

Time — To Live

Tribune Tower
409 Thirteenth St., 8th Floor
Oakland, CA 94612

P.O. Box 687
Oakland, CA 94604

510.452.2944

510.452.2973 Fax

www.mpfcorp.com

December 20, 2010

Mr. Jerry Wickham, PG
Senior Hazardous Materials Specialist
Alameda County Health Care Services Agency
Environmental Health Services
Environmental Protection
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502

Re: Site Characterization Workplan
P&D 23rd Avenue Associates
1125 Miller Avenue, Oakland, CA
Clearwater Project No. CB018H
ACEH Fuel Case Leak No. RO0000294

Dear Mr. Wickham,

As the legally authorized representative of the above-referenced project location I have reviewed the attached report prepared by my consultant of record, Clearwater Group, Inc. I declare, under penalty of perjury, that the information and/or recommendations contained in the attached document are true and correct to the best of my knowledge.

Sincerely,

John Protopappas
President/CEO

CLEARWATER GROUP
Environmental Services

SITE CHARACTERIZATION WORKPLAN

P&D 23rd Avenue Associates LLC
(Formerly 23rd Avenue Partners)
1125 Miller Avenue
Oakland, California

Prepared by

CLEARWATER GROUP

For

Mr. John Protopappas
P&D 23rd Avenue Associates LLC
(Formerly 23rd Avenue Partners)
Global ID # T0600177455

December 17, 2010

229 Tewksbury Avenue ◆ Point Richmond, California 94801 ◆ Telephone: 510-307-9943 ◆ Fax: 510-232-2823

CLEARWATER GROUP
Environmental Services

TABLE OF CONTENTS

FIGURES

APPENDICES

1 INTRODUCTION

Clearwater Group (Clearwater) is submitting this *Site Characterization Workplan (Workplan)* for the property located at 1125 Miller Avenue, Oakland, California (*Site*) (**Figure 1**). The contents of this *Workplan* are in response to an August 16, 2010, letter from Alameda County Environmental Health Services (ACEH) (**Appendix A**) prepared in response to Clearwater's July 23, 2010 *Results of Sub-Slab Soil Vapor Investigation*.

2 PURPOSE

The ACEH, in its letter dated August 16, 2010, requested a *Workplan* to address several items. Specifically, this letter stated that the ACEH would require a workplan to address apparent data gaps in TPH-g concentrations at the *Site*, and address the partial characterization of the *Site's* groundwater. The purpose of this *Workplan* is to provide these additional details in response to the requests listed above.

3 PROPOSED SCOPE OF WORK

This scope of proposed work includes the following updated tasks:

- Investigation permitting, field preparation, Health & Safety Plan (HSP), and utility locating and clearance;
- Drilling vertical soil borings to obtain soil and groundwater samples to further delineate the horizontal and vertical extent of the hydrocarbon plume on- and off-site;
- Disposal of investigation-derived waste;
- Preparation of the subsequent investigation report and production of workplans for future activities moving toward the goal of site closure.

4 PERMITTING/FIELD PREPARATION

All work will be pre-approved by ACEH staff prior to initiation.

4.1 Permitting

Permits for the soil borings will be obtained from Alameda County Public Works Agency (ACPWA) before field activities are initiated. Clearwater will obtain encroachment permits from the City of Oakland Building Department and Department of Public Works to install the soil borings.

4.2 Health and Safety Plan

As stated in the Workplan, a site-specific Health and Safety Plan (HSP) will be generated to cover the activities proposed in this phase of work. Traffic control will also be discussed in the HSP. The HSP will be signed by the Clearwater project manager and the Clearwater Health & Safety Officer before it is released to the field staff. All field staff will review and sign the HSP before the field activities begin.

4.3 Ground Penetrating Radar Survey

Clearwater will perform an extensive Ground Penetrating Radar (GPR) and diagnostics survey on the site as well as pre-screen each boring location.

4.4 Utility Locating

Clearwater staff will notify USA North for utility location mark outs before any field work is performed. Clearwater will provide at least a three week period to ensure all utilities have marked out their lines. Clearwater will meet on-site with the PG&E representative to establish all lines in and around the *Site*. This is needed due to known industrial infrastructure (incinerator gas line). A private contractor, using ground penetrating radar, will be used to locate utilities that enter the *Subject Property* and more precisely locate underground services at every soil boring location.

5 SOIL BORINGS

Using direct push technology (DPT), Clearwater will sample up to eight locations, S12 through S19, at the *Site* (**Figure 2**). Sampling will be according to Clearwater's Standard Operating Procedures (**Appendix B**). One soil boring, S12, is proposed at the location shown in **Figure 2**. This location was chosen as an up gradient location of the former tank pit and the unknown source of TPH-g under the building.

West of the former tank pit at least three soil borings, S13 through S15, are proposed to help delineate the groundwater plume in the down-gradient and lateral directions (**Figure 2**). These soil borings will be advanced for the purposes of defining the southwestern, western, and northern extent of contamination. Groundwater samples from these soil borings will more closely define the extent of the groundwater impacts. Three step-out soil borings, S16 through S18, are proposed in the event that the original three soil borings do not adequately define these impacts.

One soil boring, S19, will be near the location of vapor sampling port SS-3. This is the location of the high TPH-g vapor concentrations discovered during the sub-slab vapor sampling event.

5.1 Soil Sample Collection

Attempts will be made to collect soil samples within the vadose zone, the smear zone, and the saturated soils. If discrete impacts are observed, samples will be collected from these locations and screened using PID, visual, and/or olfactory screening. For those soil samples that do not have obvious visual indicators of contamination, acetate liners will be scored every six vertical inches so that olfactory and PID observations can made for screening.

At least one soil sample will be collected from each soil boring. If no impacts are observed, one soil sample will be collected at the interval immediately above the

estimated groundwater level. Where impacts are observed through the clear, disposable acetate liner, the liner will be cut above and below the impacted soil and the liner capped, sealed, and sent to a laboratory for analysis.

All soil samples will be analyzed for Total Petroleum Hydrocarbons as diesel (TPH-d) by EPA Method 8015; Total Petroleum Hydrocarbons as gasoline (TPH-g); benzene, toluene, ethylbenzene, xylenes (BTEX) by method EPA 8260.

5.2 Grab Groundwater Sample Collection

Groundwater samples will be collected from temporary well casings placed in the soil borehole. After soil samples have been collected, a one-inch diameter temporary PVC (polyvinyl chloride) well screen will be placed into the well with the 5-foot screen interval placed across the groundwater-bearing zone, anticipated at approximately 17 ft to 20 ft below ground surface.

If possible, the groundwater samples will be collected using EPA-recommended low-flow sampling methods—maintaining a flow rate of less than 500 mL/min and a drawdown of less than 0.3 feet. Low-flow methods are recommended for these soil borings so that interference from suspended sorbed-phase impacts in samples collected from these temporary and non-reproducible sampling points do not alter laboratory findings. The soil borings will be purged using a peristaltic pump with new ¼-inch outside diameter (OD) low-density polyethylene (LDPE) tubing at every well. Water quality parameters will be collected using a YSI 5600 multi-parameter meter and flow-through cell. The well will be purged until three of the six field water-quality parameters (pH, temperature, conductivity, Oxidation Reduction Potential (ORP), Dissolved Oxygen (DO), and turbidity) have stabilized for three consecutive readings. Because these are not developed monitoring wells, ORP, DO, and turbidity, which can be highly influenced by sediment present in groundwater, will not need to be stable in order to collect samples. **Table A** below, lists water quality parameters and stabilization criteria.

Table A. Field Parameters

Water Quality Parameter	Stabilization Criteria
pH	± 0.1 standard units
Temperature	± 3 percent
Conductivity	± 3 percent
ORP	± 10 millivolts (mV) – Not necessary to achieve stabilization
DO	± 10 percent – Not necessary to achieve stabilization
Turbidity	< 10 NTUs – Not necessary to achieve stabilization

Note NTU = Nephelometric Turbidity Units

The groundwater samples will be collected by disconnecting or bypassing the flow-through cell and transferring the groundwater directly from the Teflon® tubing to the appropriate lab containers.

If the well is purged dry during low-flow sampling, a groundwater sample will be collected using a check valve and clean tubing as soon as the water level sufficiently recovers to a level at which a sample can be collected.

All soil samples will be analyzed for Total Petroleum Hydrocarbons as diesel (TPH-d) by EPA Method 8015; Total Petroleum Hydrocarbons as gasoline (TPH-g); benzene, toluene, ethylbenzene, xylenes (BTEX) by method EPA 8260.

All remaining void space from these soil borings will be then tremmie grouted to the surface using neat cement and surface finished to match the surrounding material. All groundwater data, including field parameters, purging methods, and analytical data, will be recorded and presented in a letter report.

5.3 Disposal of Investigation-Derived Waste

Efforts will be made to minimize the quantity of soil and groundwater discarded. Soil cuttings will be placed in labeled 55-gallon steel drums and temporarily stored on-site, pending receipt of the characterization of the sample results for soil disposal. The drummed soil will be disposed of at a permitted landfill, after receipt of the sample results. Investigation-derived groundwater waste will be taken to a licensed disposal location and properly disposed of.

6 REPORT PREPARATION

The soil sample and grab groundwater investigation report will include boring logs, groundwater sampling depths, soil cutting disposal manifests, and site photographs. The report will also include figures presenting soil boring data and groundwater data, analysis and discussion of detected site impacts, and Clearwater's recommendations as to appropriate remediation techniques and the next phase of work required to move the site toward closure.

7 SCHEDULE

Task	Description	Estimated Start Date	Estimated End Date	Duration (days)
1	Workplan Addendum approval by Local Oversight Agency	1/17/11	2/17/11	30
2	ACPWA permit application, City of Oakland encroachment and excavation permit, Engage driller, USA notification.	2/18/11	3/18/11	30
3	Conduct soil and groundwater investigation after screening by ground penetrating radar – re-plot locations as necessary	3/21/11	3/23/11	2
4	Analytical Results Received and Report Preparation. Site Conceptual Model preparation	4/04/11	7/08/11	90

8 REPORT LIMITATION

All work performed under this contract was directed by a licensed professional. The work was performed in accordance with generally accepted practices at the time the work was performed and completed in accordance with generally acceptable standards. It should be noted that during the course of normal business practices, Clearwater may purchase or use equipment, services, or products in which Clearwater has a professional or financial interest.

This report was prepared under the supervision of a State of California Professional Geologist, Engineer, or other licensed professional. Statements, conclusions, and recommendations made in this report are based on information provided to Clearwater, observations of existing site conditions, our general knowledge of the site, limited testing of selected soil and groundwater samples, and interpretations of a limited set of data. Clearwater cannot be held responsible for the accuracy of the analytical work performed by others.

Information and interpretation presented herein are for the use of the client. Third parties should rely upon the information and interpretation contained in this document at their own risk. No other warranties, certifications, or representations, either expressed or implied, are made about the information supplied in this report. The service performed by Clearwater 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 in the area of the site.

Sincerely,
Clearwater Group

Prepared by:

Erik Lervaag
Project Manager

Reviewed by:

James A. Jacobs, PG #4815, CHG #88
Chief Hydrogeologist

PROFESSIONAL GEOLOGIST
JAMES ALAN JACOBS
NO. 88
CERTIFIED HYDROGEOLOGIST
STATE OF CALIFORNIA

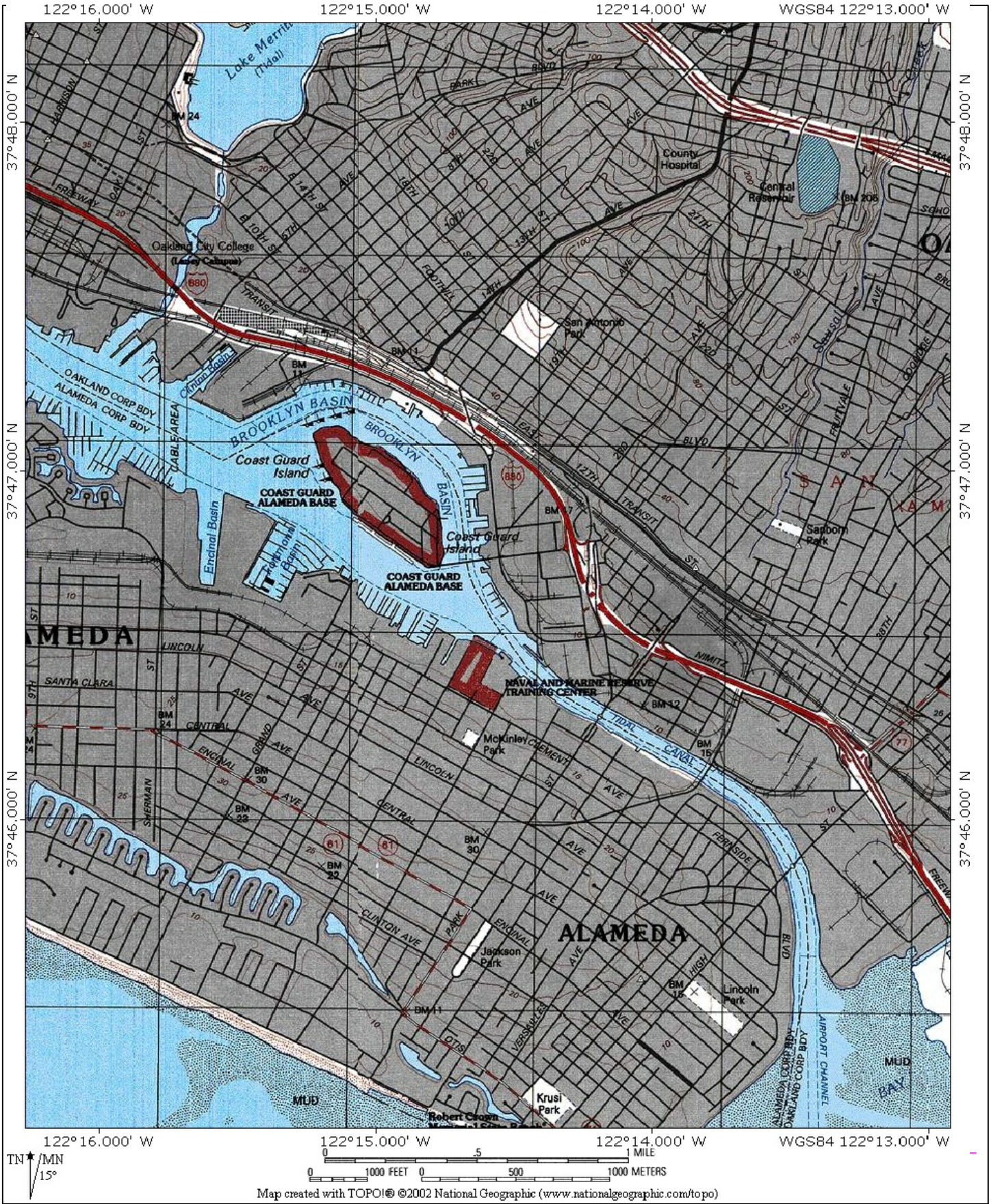
Olivia Jacobs, REA I #3219
Chief Executive Officer

DISTRIBUTION

Mr. John Protopappas
Madison Park Financial
Tribune Tower
409 Thirteenth St., 8th Floor
Oakland, CA 94612

Alameda County Environmental Health Services
(Sent via electronic upload to the Geotracker website)

FIGURES



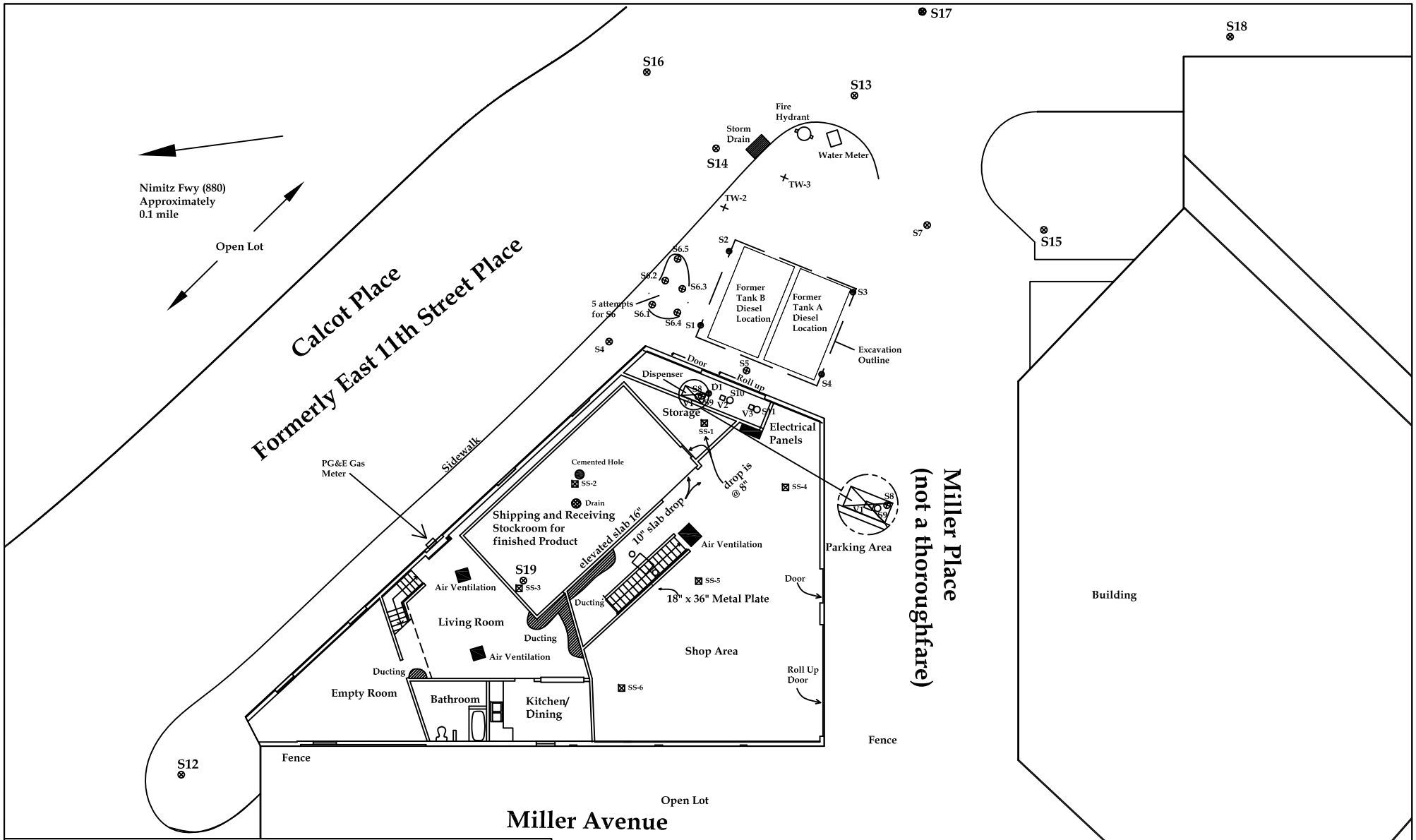
Site Vicinity Map

1125 Miller Avenue
Oakland, California

CLEARWATER GROUP

Project No.	Figure Date	Figure
CB018	**9/05**	**1**

\\Tagi\Shares\Department\Jobs\CB018 Miller Ave\CB018F Soil Vapor Investigation 2006\PDF\CB018F Figure 1 Site Vacinity Map



LEGEND

⊗ S12-S19	Proposed Soil Boring Locations
⊠ SS1-SS6	Sub-slab Vapor Location (06/17/10 and 11/04/10)
⊕ S1-S4	Soil Boring Location (12/2/98)
⊕ S5-S8	Soil Boring Location (11/16/05)
● D1	Soil Boring Location (10/24/00)
+ TW-3	Temporary Well (10/24/00)
○ S9-S11	Soil Boring Location (11/15/06)
□ V1-V3	Soil Vapor Location (11/15/06)

Proposed Soil Boring Locations

1125 Miller Avenue
Oakland, California

CLEARWATER GROUP

Project No.	Figure Date	Figure
CB018H	**12/10**	**2**

H:\Department\Jobs\CB018 Miller Ave\CB018H 2007 Workplan for Soil Vapor Sampling\Figures\Fig 4 Proposed Soil Boring Locations

APPENDICES

APPENDIX A

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

August 16, 2010

Mr. Dermot O'Doherty
P&D 23rd Avenue Associates, LLC
P.O. Box 687
Oakland, CA 94604

Subject: Fuel Leak Case No. RO0000294 and Geotracker Global ID T0600177455, 23rd Avenue Partners, 1125 Miller Avenue, Oakland, CA 94601 – Review of Sub-slab Sampling Results

Dear Mr. O'Doherty:

Alameda County Environmental Health (ACEH) staff has reviewed the fuel leak case file for the above-referenced site including the most recently submitted document entitled, "*Results of Sub-Slab Soil Vapor Investigation*," dated July 23, 2010 (Report). The Report presents the results from sampling of three sub-slab vapor probes inside the building at 1125 Miller Avenue. Total Petroleum Hydrocarbons as gasoline, ethylbenzene, toluene, and xylenes were detected at elevated concentrations in the original and duplicate sub-slab vapor sample from location SS-3. Location SS-3 is the location farthest from the former underground storage tanks and dispenser where the fuel release(s) are suspected to have occurred. Sub-slab vapor sampling location SS-3 is also adjacent to the portion of the building that is used as a residence.

The Report presents a concluding recommendation for low-risk case closure. As discussed in the technical comments below, we do not concur with the recommendation for low-risk case closure. We request that you prepare a Work Plan that addressed the technical comments below.

TECHNICAL COMMENTS

1. **Contaminants of Concern.** We do not believe there is sufficient evidence to conclude that Total Petroleum Hydrocarbons as gasoline (TPHg) is not a contaminant of concern for this site. A review of compiled soil analytical data in Table 1 of the January 11, 2007 report entitled, "*Results of Soil Vapor Sampling and Soil Boring Sampling Investigation – Risk-Based Corrective Action Report*," indicates that no soil samples were analyzed for TPHg. Review of the referenced table also indicates that benzene was detected at a concentration of 1.4 milligrams per kilogram (mg/kg) in soil sample TW2-16.5, which was collected in the area of the former USTs. Benzene was also detected in the two groundwater samples collected from the site. Based on this information and the detections of TPHg in soil vapor, it appears that the lack of TPHg analyses is a data gap rather than a basis for assuming that TPHg is not a contaminant of concern. We request that you submit a Work Plan to address this data gap. A review of historic site uses is also requested in the Work Plan.

2. **Analyses for Sub-slab Vapor Samples.** The sub-slab soil vapor samples were analyzed using EPA Method 8260B rather than EPA Method TO-15 as proposed in the "*Work Plan for Sub-Slab Vapor Sampling*," dated September 2008. As a result, the reporting limit for benzene exceeds the indoor air goal for benzene by approximately three orders of magnitude. Improved reporting limits are necessary to evaluate the potential from vapor intrusion for benzene. Please see technical comment 3 below.

3. **Screening Evaluation for Sub-slab Soil Vapor Samples.** Table 2 of the Report compares the sub-slab vapor samples to Environmental Screening Levels (ESLs) from Table 2 of the "*Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater*," (Revised May 2008). Table E-2 of the referenced document applies to soil vapor samples collected typically at a depth of approximately 5 feet bgs and is based on attenuation of vapors over approximately 5 feet of soil. Since sub-slab vapor samples are collected directly below the building slab, attenuation over a vertical interval of 5 feet of soil is not applicable. Therefore, an evaluation based on a comparison of sub-slab vapor sample results to ESLs for soil vapor may underestimate potential risks. Sub-slab vapor samples are to be compared to indoor air goals using a default attenuation factor of 0.01 for attenuation between the sub-slab and indoor air. A comparison of the results for SS-3 with application of an attenuation factor of 0.01 indicates that the concentrations of TPHg, ethylbenzene, and xylenes in SS-3 exceed the indoor air goals for residential land use. Based on the results from SS-3 and the elevated reporting limit for benzene, further evaluation of the potential for vapor intrusion to indoor air is needed. At a minimum, re-sampling of the sub-slab probes is required.

4. **Conclusions Regarding Site Characterization.** The July 23, 2010 Report concludes that the site is partially characterized and indicates that no groundwater samples were collected. However, the "*Work Plan for Sub-Slab Vapor Sampling*," dated September 2008, identifies three analytical results for groundwater. One of the requirements to consider a case under low-risk criteria is that the site has been adequately characterized to assess potential risk. In the Work Plan requested below, please indicate whether the limited groundwater results represent a data gap. If so, please propose work to address the data gap accordingly.

5. **Odor Survey.** We previously concurred with a recommendation to interview residents regarding nuisance odors. In the Work Plan requested below, please whether an inquiry has been made regarding possible odors.

TECHNICAL REPORT REQUEST

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

- **October 27, 2010** – Work Plan

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

Sincerely,

Digitally signed by Jerry Wickham
DN: cn=Jerry Wickham, o, ou, email=jerry.wickham@acgov.org, c=US
Date: 2010.08.17 14:44:29 -07'00'

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 2032 (*Sent via E-mail to: lgriffin@oaklandnet.com*)

Erik Lervaag, Clearwater Group, 229 Tewksbury Avenue, Pt. Richmond, CA 94801 (*Sent via E-mail to: ELervaag@clearwatergroup.com*)

James Jacobs, Clearwater Group, 229 Tewksbury Avenue, Pt. Richmond, CA 94801

Donna Drogos, ACEH (*Sent via E-mail to: donna.drogos@acgov.org*)
Jerry Wickham, ACEH

Geotracker, File

Attachment 1
Responsible Party(ies) Legal Requirements/Obligations

REPORT REQUESTS

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

ELECTRONIC SUBMITTAL OF REPORTS

ACEH's Environmental Cleanup Oversight Programs (LOP and SLIC) require submission of reports in electronic form. The electronic copy replaces paper copies and is expected to be used for all public information requests, regulatory review, and compliance/enforcement activities. Instructions for submission of electronic documents to the Alameda County Environmental Cleanup Oversight Program FTP site are provided on the attached "Electronic Report Upload Instructions." Submission of reports to the Alameda County FTP site is an addition to existing requirements for electronic submittal of information to the State Water Resources Control Board (SWRCB) GeoTracker website. In September 2004, the SWRCB adopted regulations that require electronic submittal of information for all groundwater cleanup programs. For several years, responsible parties for cleanup of leaks from underground storage tanks (USTs) have been required to submit groundwater analytical data, surveyed locations of monitoring wells, and other data to the GeoTracker database over the Internet. Beginning July 1, 2005, these same reporting requirements were added to Spills, Leaks, Investigations, and Cleanup (SLIC) sites. Beginning July 1, 2005, electronic submittal of a complete copy of all reports for all sites is required in GeoTracker (in PDF format). Please visit the SWRCB website for more information on these requirements (http://www.swrcb.ca.gov/ust/electronic_submittal/report_rqmts.shtml.

PERJURY STATEMENT

All work plans, technical reports, or technical documents submitted to ACEH must be accompanied by a cover letter from the responsible party that states, at a minimum, the following: "I declare, under penalty of perjury, that the information and/or recommendations contained in the attached document or report is true and correct to the best of my knowledge." This letter must be signed by an officer or legally authorized representative of your company. Please include a cover letter satisfying these requirements with all future reports and technical documents submitted for this fuel leak case.

PROFESSIONAL CERTIFICATION & CONCLUSIONS/RECOMMENDATIONS

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

UNDERGROUND STORAGE TANK CLEANUP FUND

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

AGENCY OVERSIGHT

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

Alameda County Environmental Cleanup Oversight Programs (LOP and SLIC)	**ISSUE DATE:** July 5, 2005
	REVISION DATE: July 8, 2010
	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
         Or
      ii) Send a fax on company letterhead to (510) 337-9335, to the attention of Teena Le Khan.
   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 Page on upper right side of browser, 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 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.

APPENDIX B

CLEARWATER GROUP
Direct-Push Drilling Investigation Procedures

The direct-push method of drilling soil borings has several advantages over hollow-stem auger drilling. The direct-push method produces no drill cuttings and is capable of 150 to 200 feet of soil boring or well installation work per day. Direct-push drilling can be used for soil gas surveys, soil sampling, groundwater sampling, and installation of small-diameter monitoring well and remediation system components such as air sparge points. The equipment required to perform direct-push work is varied, ranging from a roto-hammer and operator to a pickup truck-mounted rig capable of substantial static downward force combined with percussive force. This method allows subsurface investigation work to be performed in areas inaccessible to conventional drill rigs such as basements, beneath canopies, or below power lines. Direct-push equipment is ideal at sites with unconsolidated soil or overburden, and for sampling depths less than 30 feet. This method is not appropriate for boring through bedrock or gravelly soils.

Permitting and Site Preparation

Prior to direct-push drilling, Clearwater Group will obtain all necessary permits and locate all underground and above-ground utilities through Underground Service Alert and a thorough site inspection. All drilling equipment will be inspected daily and will be maintained in safe operating condition. All down-hole drilling equipment will be cleaned prior to arriving on-site. Working components of the rig near the borehole, as well as casing and sampling equipment, will be thoroughly decontaminated between each boring location by either steam cleaning or washing with an Alconox® solution. All drilling and sampling methods will be consistent with ASTM Method D-1452-80 and county, state, and federal regulations.

Boring Installation and Soil Sampling

Direct-push drilling uses a 1.5-inch outer barrel with an inner rod held in place during pushing. Soil samples are collected by penetrating to the desired depth, retracting the inner rod, and attaching a soil sampler. The sampler is then thrust beyond the outer barrel into native soil. Soil samples are recovered in brass, stainless steel, or acetate sample tubes held inside the sampler.

Soil removed from the upper tube section is used for lithologic descriptions, according to the Unified Soil Classification System. If organic vapors will be analyzed in the field, a portion of each soil sample will be placed in a plastic zip-lock bag. The bag will be sealed and warmed for approximately 10 minutes to allow soil vapors to be released from the sample and diffused into the head space of the bag. The bag is then pierced with the probe of a calibrated organic vapor detector and the detector readings recorded with the lithologic descriptions on the soil boring log. Soil samples selected for laboratory analysis will be covered on both ends with Teflon™ tape and plastic end caps. The samples will then be labeled, recorded on a chain-of-custody document, stored on ice in a cooler, and transported to a state-certified analytical laboratory.

Temporary Well Installation and Groundwater Sampling

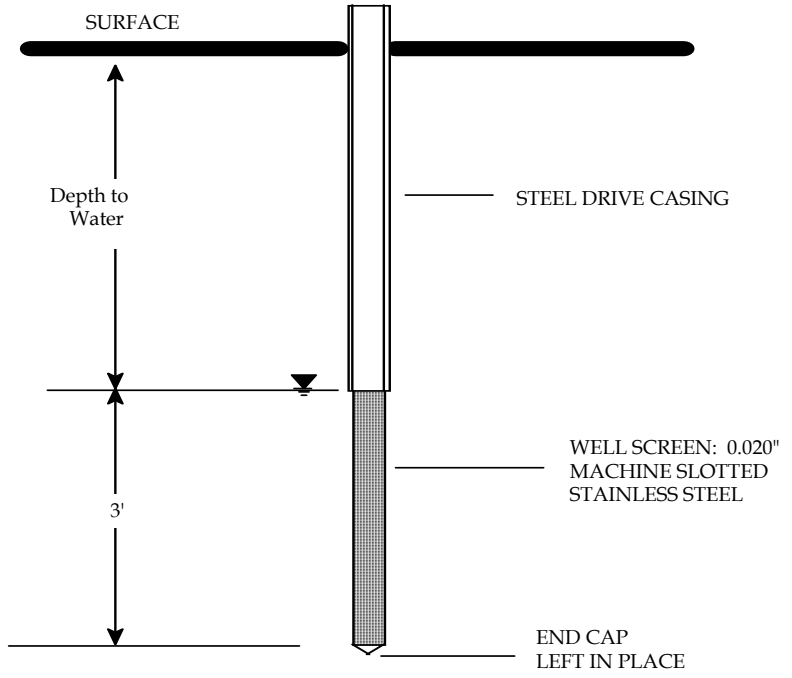


Figure 1

Grab Groundwater Sample Collection

Groundwater samples are collected by removing the inner rod and attaching a 4-foot stainless steel screen with a drive point at the end (**Figure 1**). The screen and rod are then inserted inside the outer barrel and driven to the desired depth, where the outer rod is retracted to expose the screen. If enough water for sampling is not produced through the stainless well screen, a 1-inch PVC screen can be installed in the boring and the outer rod retracted to leave a temporary well point for collecting groundwater samples, water level, or other parameters.

Monitoring Well Installation and Development

Permanent small-diameter monitoring wells are installed by driving a 2-inch diameter outer barrel and inner rod as described above. Upon reaching the desired depth, the system is removed, and 1-inch outside diameter (OD) (1/2-inch inside diameter [ID]) pre-packed PVC piping is installed. The well plug is created using granular bentonite. The well seal is constructed of cement and sealed at the surface with a conventional "Christy® Box" or similar vault. Monitoring wells are developed by surging the well with a small-diameter bailer and removing approximately 10 casing volumes of water, until the water is clear.

Groundwater Sample Collection and Water Level Measurement from Monitoring Wells

Before groundwater is collected from the wells, the water levels are measured in all wells using an electronic water-level gauge. Monitoring wells are prepared for sampling by purging three or more well volumes of water. Water is removed using small-diameter bailers, a peristaltic pump, or by manually pumping using tubing with a check valve at the bottom. During removal of each well volume of water, the temperature, pH, and conductivity are measured and recorded on the field sampling form. Successive well volumes are removed until the parameters have stabilized

or the well has gone dry. Prior to sampling, the well is allowed to recover to within 90% of the stabilized water levels. The groundwater samples[1] are collected using small-diameter bailers.

The samples are decanted into laboratory-supplied containers, labeled, recorded on a chain-of-custody document, stored on ice in a cooler, and transported to a certified analytical laboratory for analysis.

[1] Small-diameter wells often produce small sample quantities and are appropriate for analysis of volatile and aromatic compounds and dissolved metals analysis using VOA vials. Obtaining liter-size samples can be difficult and time consuming. Monitoring wells installed by the direct-push method are most effective at sites where the subsurface soils are more coarse than silt, gasoline components are the key contaminants of concern, and water levels are not more than 25 feet below ground surface.