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GEOSCIENCE & ENGINEERING CONSULTING

January 31, 2007

Ms. Steven Plunkett
Hazardous Material Specialist
Alameda County Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Subject: Soil and Groundwater Investigation Workplan
387 Orange Street, Oakland, California (Fuel Leak Case No. RO0002921)

Dear Mr. Plunkett:

INTRODUCTION AND BACKGROUND

On behalf of the property executor (Ms. Mary Kranz), Stellar Environmental Solutions, Inc. (SES) is providing this workplan to the Alameda County Environmental Health Department (ACEH). The workplan was prepared in response to your December 20, 2006 letter requesting additional assessment of potential subsurface groundwater contamination by the 500-gallon home heating underground storage tanks (UST) beneath the sidewalk in front of the subject property.

The ACEH letter summarizes the findings presented in the UST Investigation Report completed by Clearwater Group (March 2006), which reported a maximum of 15,000 milligrams per kilogram (mg/kg) of total petroleum hydrocarbons as diesel (TPHd) at a depth of approximately 14 feet blow ground surface (bgs). While four other soil samples were also collected in the area of the UST at depths ranging from 13 to 20 feet bgs (all showing less than 100 mg/kg of TPHd), no groundwater samples were collected. The lack of groundwater samples beneath the UST area leaves open the question of potential impacts to groundwater quality.

Three soil samples were also collected from a depth of 8 feet bgs along the fuel line leading from the house boiler to the UST. The fuel line samples showed non-detectable amounts of TPHd (less than 1 mg/kg) in two samples, and 96 mg/kg in one. None of the samples under the UST or along the fuel line showed detectable concentrations of benzene or toluene; ethylbenzene and

total xylenes were detected in soil at trace concentration of less than 0.12 mg/kg in two of the UST-related samples.

The one soil sample with hydrocarbon concentrations of regulatory significance was collected from the 13.5 to 14 feet bgs within 5 feet northeast of the UST. Three other soil samples were collected near the same depth, or deeper on the angled bore, also northeast of the UST. The three samples from depths of 13 to approximately 21 feet bgs showed TPHd at less than 100 mg/kg. Sample T3-13-13.5 was collected within a few feet of sample T-2 (with 15,000 mg/kg of TPHd), but only reported 2.7 mg/kg of TPHd. This suggests a number of plausible scenarios, including: 1) the 15,000 mg/kg of TPHd reported in T-2 was a false positive; 2) the contamination of the soil is real, but limited in extent, and is at minor levels a few feet away; or 3) the contamination is more extensive to the northeast of T-2.

As the continuous T-2 bore log indicated, the presence of hydrocarbon odors starting at 12 feet bgs in the bore, it appears unlikely that the results are a false positive. The soil contamination may be limited, but there does not appear to be any unique geologic conditions (e.g., a clay-rich zone) that would account for the high concentrations at only T-2. The soil contamination at this depth may or may not extend farther to the northeast.

The subject site fuel UST is typical of historical USTs that supplied fuel to the boiler to heat a residential unit before on-demand natural gas became widely used. Such fuel USTs were commonly buried beneath the sidewalk near the driveway, as is the case for the subject site UST. The size of the UST (500-gallon) is also typical for a residential heating oil UST. A site inspection showed evidence of a fill pipe in the sidewalk area.

The source of the petroleum hydrocarbon in the soil could be from a UST leak, a pipe/UST junction leak, or spillage during filling. Leakage from the UST itself seems less likely because the integrity of the UST was good enough to contain 340 gallons of product, possibly mixed with some water.

Groundwater was not encountered during the Clearwater Group drilling, which was performed to a maximum depth of 24 feet (at bore T-1) during the high recharge period of March 2006. It thus seems unlikely that water entered the UST from groundwater. Some leakage from the pipe/UST junction and or spillage in the area of the fill port—which is on the northeast side of the tank—is more likely.

REGULATORY BACKGROUND AND CONSIDERATIONS

The regulatory history of this UST evaluation project was initiated during the due–diligence phase of the sale of the adjacent property located at 385 and 387 Orange Street (properties owned by the Ulibarri Estate), which occurred in approximately October 2005. At that time, the 500-gallon fuel UST between the 385 and 387 Orange Street residences, which was associated with historical fueling of a boiler located within the 387 Orange Street residence, was discovered. As part of the real estate agreement, the Ulibarri Estate was stipulated to be responsible for the regulatory closure of the fuel UST.

In February 2006, Ms. Mary Kranz, executor of the estate of David Ulibarri, initiated the project to complete the environmental closure of the historical UST by retaining Clearwater Group. While Clearwater Group was initially retained to remove the UST, the tight site constraints prompted an application to the Oakland Fire Prevention Bureau to "Abandon/Close in Place" the 500-gallon UST (Tank Permit Number T-06-0008). The closure in-place required that subsurface sampling be conducted to document if any residual contamination remained at concentrations of potential regulatory concern. The permit was granted on February 28, 2006.

In the ACEH letter dated December 20, 2006, the County requested additional assessment of potential subsurface contamination by the 500-gallon home-heating UST at the subject property. Specifically, the ACEH letter requested that the responsible party complete the following:

- **Technical Report:** Prepare a workplan for a soil and groundwater investigation by January 30, 2007 for submission to Alameda County hazardous material specialist Mr. Steven Plunkett. This deadline was extended 15 days at the request of Ms. Kranz. (This workplan is designed to fulfill this request.)
- **Electronic Report Submittal:** Previous subsurface investigation work completed apparently was not uploaded to the Alameda County Environmental Cleanup Oversight Program ftp site as required. ACEH requested that this be completed along with the workplan upload.

In addition, the ACEH letter indicated that communication and technical documents must be received with a perjury statement signed by the responsible party (the executor in this case) and professional certification by those completing the technical report(s). Also discussed was the possible eligibility for costs associated with investigation or corrective action to be reimbursed though the California Underground Storage Tank Cleanup Fund.

WORKPLAN SCOPE OF WORK

This SES workplan addresses the ACEH letter request Number 1. Items 2 through 5 will also be completed within their context. The scope of work to address the Alameda County-requested workplan are presented in the following tasks: 1) Pre-Field Work Planning; 2) Borehole Drilling and Sampling; 3) Laboratory Analyses; 4) Tier 1 Risk and Water Body Sensitive Receptors Assessment; and 5) Report Preparation.

Task 1: Pre-Field Work Planning

This task encompasses the pre-field work elements of the project, including:

- Mark the site for the required Underground Service Alert (USA) utility clearance and make the required notification to USA;
- Schedule and coordinate the drilling and analytical laboratory subcontractors;
- Apply and pay for the requisite borehole drilling permit from Alameda County Public Works Agency, and provide notification of the onsite drilling schedule to that agency;
- Complete a Site Health and Safety Plan; and
- Conduct overall program management.

Task 2: Borehole Drilling and Sampling

The subject property is in the Oakland sub-area boundary of the East Bay Plains groundwater basin according to the East Bay Plain Groundwater Basin Beneficial Use and Evaluation Report (RWQCB, 1999). This hydrologic sub-area, similar to much of the East Bay plains, consists of a sequence of alluvial fans downslope of upland hill and estuarine muds at the Bay margins. The existing logs indicate clay rich sands with some gravel, reflective of alluvial fans.

SES proposes to drill three bores to an estimated depth of 35 to 40 feet each, which should take no more than one day of field work. Based on the general surface elevations, groundwater, and the previous bores by a Geoprobe™ (direct-push) rig, it is assumed that the Geoprobe™ rig is capable of achieving the depth and groundwater that will be encountered within the bores. The boreholes will be drilled with a Geoprobe™ rig that advances approximately 2-inch-diameter sampling rods and collects continuous core soil samples. The drilling and sampling will be completed using a licensed drilling subcontractor under SES's direction, overseen by a California Professional Geologist. SES will measure water levels in each borehole following drilling. We will geologically log the boreholes in accordance with the visual method of the Unified Soils Classification System.

SES will collect one soil sample from each of three boreholes that will be located in close proximity to, and the approximate depth of, the area suspected to be potentially impacted by the historical fuel UST (based on the previous soil sampling). Soil samples will be screened with a photoionization detector (PID) every 5 feet. The soil samples will be collected at a depth of 14 feet, or at a location where maximum PID response is noted.

We will also collect one grab-groundwater sample from each borehole. All of the bore soil and water samples will be analyzed for total extractable petroleum hydrocarbons as diesel (TEHd). Soil and groundwater samples will be securely sealed in appropriate containers, placed in an ice chest with ice at approximately 4 degrees Celsius, and transported to the analytical laboratory under chain-of-custody record. We propose that waste soil from the drilling be containerized in 5-gallon, labeled plastic pails, to be temporarily stored onsite.

Task 3: Laboratory Analyses

A California-certified analytical laboratory will complete the laboratory analyses. The analytical results will be performed at a standard turnaround (2 weeks). The samples will be analyzed for the following site chemical of concern:

- TEHd, by EPA Method 8015 (six samples—three soil and three groundwater)

Task 4: Tier 1 Risk Assessment and Water Body Sensitive Receptors Evaluation

Based on the results of any detected TEHd, SES will complete a Tier 1 Environmental Risk Assessment using the Regional Water Quality Control Board's *Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater* guidance.

If there are significant TPHd of concern in groundwater, SES will complete a commercial database search to identify groundwater supply wells and all surface water bodies within ½ mile of the subject site. Water bodies in the downgradient direction of the site will be examined further to evaluate if they could be sensitive receptors of any identified diesel from the subject site.

Task 5: Report Preparation

The methodology and findings of the investigation will be incorporated into a comprehensive documentation report that will contain the following elements:

- The responsible party's perjury statement letter and workplan, investigation scope and objectives, site description, summary of previous investigations findings, and discussion of the UST excavation constraints;

- Sampling and analytical protocols used;
- Site map delineating previous and current investigation borehole locations;
- Discussion of analytical results in the context of regulatory agency guidelines/criteria, and the magnitude and extent of contamination;
- Completion of a sensitive water body receptor survey and Tier 1 risk evaluation for any detected hydrocarbons;
- An evaluation of the site closure criteria and the need for any additional action, and if so, a discussion of corrective action options;
- Conclusions and, where appropriate, recommendations; and
- Technical appendices.

SES will upload an electronic version of the report, with all associated documentation and required signatures and professional certifications, to ACEH's designated website.

This workplan is submitted on behalf of Ms. Mary Kranz, executor of the estate of David Ulibarri. Ms. Kranz is eager to move the project forward to achieve site closure of the remnant fuel UST. Please contact the undersigned directly if you have any questions.

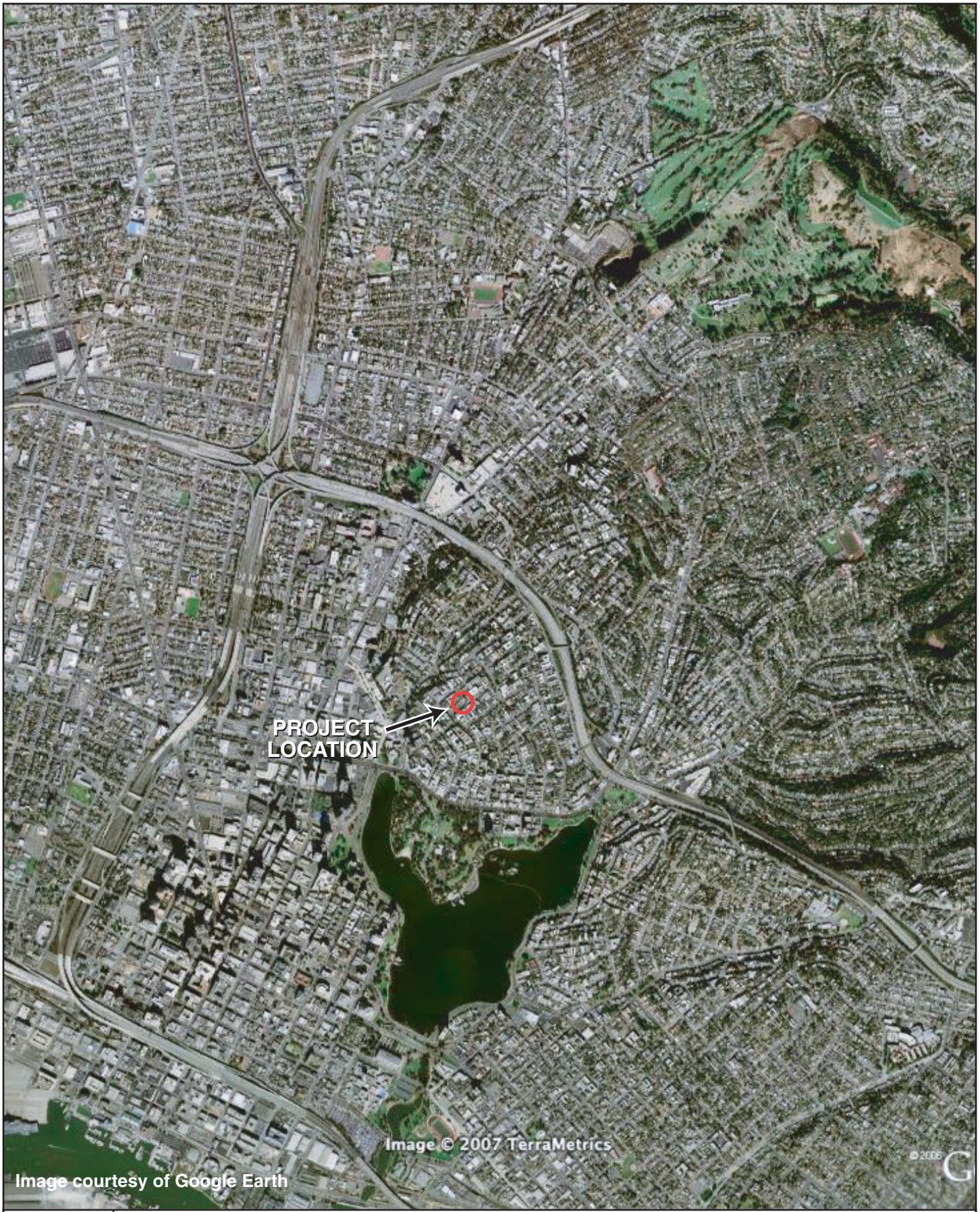
Sincerely,

Richard S. Makdisi, R.G., R.E.A.
Principal

Attachments: Figure 1; Figure 2

cc: Ms. Mary Kranz – Executor, Estate of David Ulibarri.

FIGURES



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SITE LOCATION ON AERIAL PHOTO

385-387 Orange St. Oakland, CA	By: MJC	JANUARY 2007
	Figure 1	

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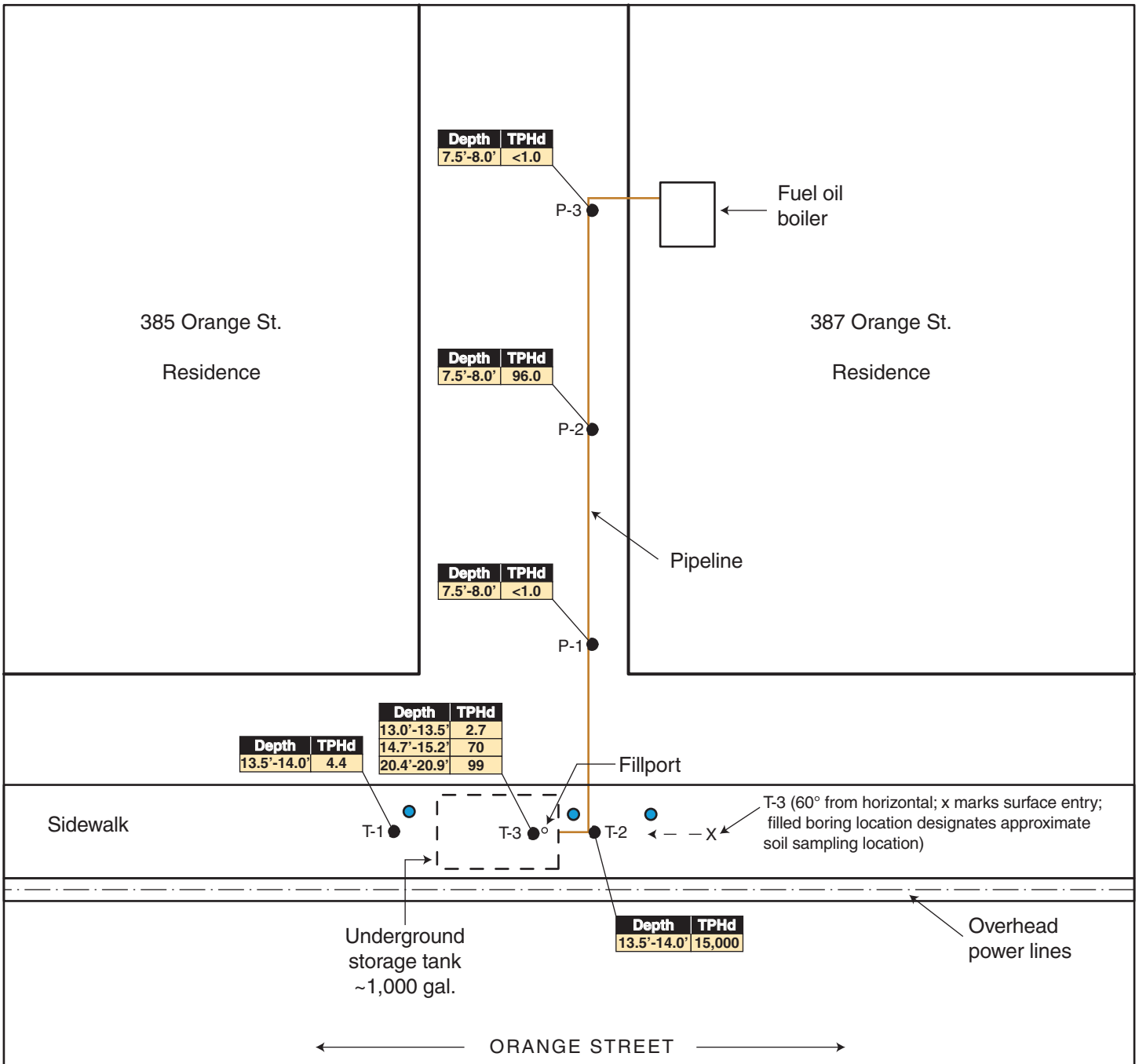
2007-09-01



LEGEND

- T-2 Clearwater Group tank sample
- P-2 Clearwater Group pipeline sample
- Proposed bore

TPHd = Total parts hydrocarbons as diesel; concentrations in mg/kg

0 10

APPROX. SCALE IN FEET

Source: Clearwater Group

HISTORICAL DATA AND PROPOSED BORES NEAR UST

385-387 Orange St. Oakland, CA	By: MJC	JANUARY 2007
	Figure 2	

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2007-09-02