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December 13, 2006

GGTR Project # 8143

Mr. Jerry Wickham  
Alameda County Environmental Health Services  
1131 Harbor Bay Parkway, Suite 250  
Alameda, California 94502-6577

**SUBJECT: Soil and Groundwater Sampling Workplan**

**SITE: 410 Fairmount Avenue  
Oakland, California 94611  
SLIC CASE NUMBER RO0002512**

Dear Mr. Wickham:

In response to the letter dated September 29, 2006 from Alameda County Environmental Health (ACEH) and on behalf of Mr. Millard Dorntge, Golden Gate Tank Removal, Inc./ The Environmental Division (GGTR) is pleased to submit this soil and groundwater sampling workplan for the multi-unit residential property located at 410 Fairmount Avenue, Oakland, California .

Thank you for your cooperation. If you have any questions, please call me at (415) 512-1555 or email me at [s.malaeb@ggtr.com](mailto:s.malaeb@ggtr.com).

Sincerely,

A handwritten signature in black ink, appearing to read 'Sami Malaeb', with a stylized flourish at the end.

Sami Malaeb, P.E.

**Golden Gate Tank Removal, Inc.  
The Environmental Division**

cc: Mr. Millard Dorntge, 1321 Acton Street, Berkeley, California 94706

**Golden Gate Tank Removal, Inc.  
255 Shipley Street - San Francisco, CA 94107 - Tel.: 415.512.1555 Fax: 415.512.0964  
General Engineering Contractors License No. 616521**

WORKPLAN  
for  
SOIL AND GROUNDWATER SAMPLING

AT THE  
RESIDENTIAL PROPERTY

LOCATED AT  
410 FAIRMOUNT AVENUE  
OAKLAND, CALIFORNIA

PREPARED FOR:  
MR. MILLARD DORNTGE  
1321 ACTON STREET  
BERKELEY, CALIFORNIA 94706

PREPARED BY:  
GOLDEN GATE TANK REMOVAL, INC  
255 SHIPLEY STREET  
SAN FRANCISCO, CA 94107

GGTR PROJECT NO. 8143  
DECEMBER 13, 2006

AUTHORED AND APPROVED BY:  
SAMI MALAEB, P.E.  
GOLDEN GATE TANK REMOVAL, INC.  
THE ENVIRONMENTAL DIVISION

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## **1.0 INTRODUCTION**

In response to the letter dated September 29, 2006 from Alameda County Environmental Health (ACEH), Golden Gate Tank Removal, Inc./ The Environmental Division (GGTR) is pleased to submit this workplan for soil and groundwater sampling at the property located at 410 Fairmount Avenue, Oakland, California. The site location and its vicinity are shown on the topographic Figure 1. Figure 2 is a site plan. The objective of the soil and groundwater sampling is to assess the impact of the petroleum hydrocarbons on the soil and groundwater in the former heating oil underground storage tank (UST) location.

## **2.0 SITE DESCRIPTION**

The subject site, addressed as 410 Fairmount Avenue, Oakland, California, is a multi-unit residential property. One UST containing heating oil was located beneath the sidewalk, at the front of the site. The tank had a capacity of approximately 1,500 gallons, measuring approximately 10 feet in length by 5 feet in diameter, and was constructed of steel. The age of the tank is unknown. The location of the tank is shown on the attached Figure 2. The UST was removed in 2002. Glen Echo Creek exists approximately within 600 feet northwest of the site. San Francisco Bay Exists approximately 2.3 miles northwest of the site. The elevation of the site is approximately 90 feet above mean sea level (Figure 1).

## **3.0 SITE GEOLOGY AND HYDROGEOLOGY**

According to the GGTR tank removal report dated January 16, 2002, the soil surrounding the former UST was clayey brown sand to a depth of approximately 16 feet below grade (fbg). Clay and rocks were encountered below the bottom of the UST, at 16 fbg. No groundwater was encountered during the UST removal.

The subject site is located within the East Bay Plain Groundwater Basin. This groundwater is classified as a significant drinking water resource. However, further de-designation of the groundwater in the area of the site is possible based on several factors, such as low yield, brackish quality, or other surface contaminants and considerations.

The regional groundwater flow direction in the vicinity of the site is estimated to be toward the southeast, in the general decreasing topographic relief. The depth to groundwater at the site is not known and was not encountered in the excavation up to 16 fbg. However, GGTR conducted a cursory search of nearby sites with monitoring wells and with close topographic elevation. The depth to shallow groundwater at the former Chevron Service Station, 3701 Broadway, Oakland, is between 12 and 15 fbg. Since the subject site at 410 Fairmount Avenue is slightly higher in elevation, we expect the depth to groundwater to be slightly greater than 16 fbg, the total depth explored during the UST removal.

## **4.0 ENVIRONMENTAL BACKGROUND**

**January 2002, UST Removal** - One UST containing heating oil was located beneath the sidewalk in front of the subject site (Figure 2). The tank had a capacity of approximately 1,500 gallons.

On January 9, 2002, upon the approval of the Oakland Fire Department, GGTR removed the tank from the excavation. After a visual inspection, the tank was loaded onto a flatbed truck and transported to Circosta Iron for recycling. GGTR observed visible pitting and at least one hole in the UST shell. Apparent signs of petroleum hydrocarbon-impacted soil were observed on the east side and under the UST. According to the tank removal report, a small amount of trapped water, less than 2 gallons, was noted in the excavation. Besides this water, no groundwater was encountered. The encountered soil was clayey with rocks and clay encountered in the bottom of the excavation at 16 fbg. The UST bottom was at 15 fbg.

Immediately following the tank removal activities, under the direction of Mr. Keith Matthews of the Oakland Fire Department, GGTR collected a soil sample from beneath each end of the former tank. Soil sample 8143-E was collected from the east end of the excavation at approximately 16 fbg. Soil sample 8143-W was collected from the west end of the excavation at approximately 16 fbg. One four-point composite soil sample 8143-SP was collected from the soil stockpile. All samples were transported to North State Environmental Laboratory under the formal chain-of-custody protocol for the required analyses. All sample locations are shown on the attached Figure 2.

The tank excavation and stockpile composite soil samples were analyzed for Total Petroleum Hydrocarbons as Diesel (TPH-D), Benzene, Toluene, Ethylbenzene and Total Xylenes (BTEX); and Methyl Tertiary-Butyl Ether (MTBE). The results are tabulated on the attached Table.

The overburden soil and the soil excavated from around the tank were returned to the excavation. The volume of the tank was replaced with clean imported soil. The tank pit was backfilled and compacted and the sidewalk was resurfaced with concrete.

Visible holes and pitting were observed on the UST shell. Soil discoloration and odor of petroleum hydrocarbons were noticed in the east side of the tank. The analytical results of the excavation confirmation samples showed a maximum of 42,000 parts per million (ppm) of TPH-D in the soil sample 8143-E, collected from the east side of the excavation at 16 fbg. Benzene was detected in the same sample at 0.024 ppm, Xylenes at 2.890 ppm, and MTBE was detected at 0.127 ppm. The remaining collected samples did not detect any significant concentration of TPH-D, BTEX, or MTBE. MTBE was not confirmed by using the GC/MS Method 8260b (see the attached table).

In a letter dated September 29, 2006, ACEH requested the submittal of a workplan to investigate the extent of the petroleum hydrocarbons in soil and groundwater beneath the site. The workplan is to include at a minimum, the collection of soil and groundwater samples from one soil boring located in the proximity to the former tank excavation. Below, GGTR presents the requested workplan.

## **5.0 SOIL AND GROUNDWATER SAMPLING**

GGTR proposes the drilling of one direct-push soil boring B-1, located on the northeast side of the excavation, where the maximum of 42,000 ppm TPH-D was detected during the tank removal (Figure 3). The objective of this boring is to assess the extent of the impact of petroleum hydrocarbons on the soil and groundwater.

**Pre-Field Activities** - Prior to drilling the boring, GGTR will obtain drilling permit from Alameda County Public Work Agency. A Health and Safety Plan will be prepared for the job. USA will be called to mark the underground utilities in the drilling area. An Encroachment permit will be obtained from the City of Oakland, Department of Public Works to drill on the sidewalk.

**Drilling and Sampling** - GGTR will initially direct the subcontracted driller to hand auger the boring location up to approximately 5 fbg to clear for any unmarked subsurface utilities. Based on not encountering water in the former UST excavation to the maximum depth of 16 fbg, GGTR proposes to drill boring B-1 to approximately 25 fbg, or at least 5 feet past the first encountered groundwater. Drilling will stop if refusal is encountered due to the rocks encountered during the tank removal. However, GGTR will employ a dual use drill rig to drill this boring. Should the direct push Geoprobe drilling equipment fails to reach the needed depth in the boring, hollow stem auger equipment will be used.

The boring will be drilled by a California-licensed Water Well Drilling Contractor (C-57) using a truck-mounted, limited access drill rig, equipped with percussion (Direct Push Technology) sampling equipment. Boring B-1 will be advanced using 1- to 1.5-inch-diameter drill tubing. In accordance with ASTM sampling procedures, soil samples will be collected using a 1-to 1.5-inch-diameter, polybutyrate plastic, tube-lined, core sampler driven in 3- to 4-foot increments into relatively undisturbed soil. GGTR proposes collecting continuous soil samples in the borehole beginning at 5 fbg and continuing to the groundwater. Also, soil samples will be collected at changes of lithology, at the soil/groundwater interface, and at areas showing obvious contamination.

GGTR will classify and log all samples and soil cuttings using the Unified Soil Classification System and Munsell Rock Color Chart, and monitor and record the organic vapor concentrations of all soil samples using a Photo Ionizing Detector (PID). The boring will be logged under the supervision of a California-registered Civil Engineer/Geologist.

Hand auger and excess sample will be transferred to a 55-gallon, D.O.T.-approved steel drum. All down hole drilling and sampling equipment will be pressure washed and/or cleaned using a non-phosphate Alconox® solution and double rinsed using clean, potable water following completion of the soil boring. Equipment wash and rinse water will be transferred to a separate 55-gallon storage drum. Four discrete soil samples will be collected from the drummed soil cuttings and submitted to the analytical laboratory for composition. All drum containers will then be sealed with a steel lid, appropriately labeled, and temporarily stored onsite in a secure area.

Soil samples obtained for laboratory analysis will be sealed with factory supplied Teflon tape and plastic caps, appropriately labeled, and placed in a cooler chilled to approximately 4° Centigrade.

GGTR will submit the samples under chain of custody command to Entech Analytical Laboratories, Inc., (CA ELAP#2346) in Santa Clara for chemical analysis.

**Soil Sample Analysis** – Should staining, odor of petroleum hydrocarbons, or significant PID reading be detected, selected soil samples collected from the boring will be chosen for laboratory analysis using the following California Department of Health Services approved methods:

- TPH as Diesel (TPH-D) by EPA Method 8015M
- BTEX and fuel Oxygenates by EPA Method 8260B

All TPH-D sample extracts will initially be passed through a packed silica gel column prior to analysis (EPA Method 3630B).

Four discrete soil samples will be collected from the containerized soil cuttings and submitted to Entech for composition. The composite sample will be analyzed using the following California Department of Health Services approved methods.

- TPH as Diesel (TPH-D) by EPA Method 8015M
- BTEX and MTBE by EPA Method 8021B
- Total Lead by EPA Method 6010B ICAP

GGTR will request that all associated laboratory analytical reports be reported in Electronic Deliverable Format (State Assembly Bill 2886, Fall 2000) in general accordance with the State Water Resources Control Board's GeoTracker Database System (for future Geotracker uploading if needed).

**Grab Groundwater Sampling Activities** - Immediately following soil sampling activities in boring B-1, GGTR will direct the driller to extract the percussion drill tubes from the boring and place factory sealed, 0.75-inch-diameter, screened PVC casing to the total depth of the borehole. GGTR will allow the groundwater within the borehole to stabilize for at least 10 minutes and then initially measure and record the depth to water in the boring using an electronic water level indicator.

GGTR will then collect a grab groundwater sample from the borehole using a 0.5-inch-diameter, stainless steel or factory-sealed, disposable, polyethylene bailer. The volatile water samples will be collected and poured directly into laboratory cleaned 40-milliliter volatile organic analysis (VOA) vials (pre-preserved with hydrochloric acid) to prevent loss of any volatile constituents. The vials will be filled slowly and in such a manner that the meniscus extends above the top of the VOA vial. After the vials are filled and sealed with a laboratory provided Teflon cap, they will be inverted to insure there is no headspace or entrapped air bubbles. The samples will be labeled and placed in a cooler chilled to approximately 4°C. GGTR will submit the samples under chain of custody command to the analytical laboratory for chemical analysis. Amber Jars will be used for collecting the water sample for TPH-D analysis.

**Grab Groundwater Sample Analysis** - The grab groundwater sample collected from the percussion soil boring will be analyzed for the following California Department of Health Services approved methods.

- TPH-D by EPA Method 8015M
- BTEX and fuel oxygenates by EPA Method 8260B

GGTR will request that all associated laboratory analytical reports be reported in Electronic Deliverable Format (State Assembly Bill 2886, Fall 2000) in general accordance with the State Water Resources Control Board's GeoTracker Database System (for future uploading if needed).

The boring will be completely backfilled by tremie grouting with neat cement upon the conclusion of drilling.

## 6.0 SCHEDULE AND APPROVAL

GGTR anticipates beginning the pre-field activities within two to three weeks of receiving written approval to proceed from the ACEH and the responsible party. Drilling and sampling should occur during January or February 2007, depending on work plan approval, permitting, and client approval of the work.

Thank you for your cooperation. If you have any questions, please call at (415) 512-1555 or email Sami Malaeb at s.malaeb@ggtr.com.

Sincerely,

  
Sami Malaeb, P.E.  
Golden Gate Tank Removal, Inc.  
The Environmental Division



cc: Mr. Millard Dorntge, 1321 Acton Street, Berkeley, California 94706



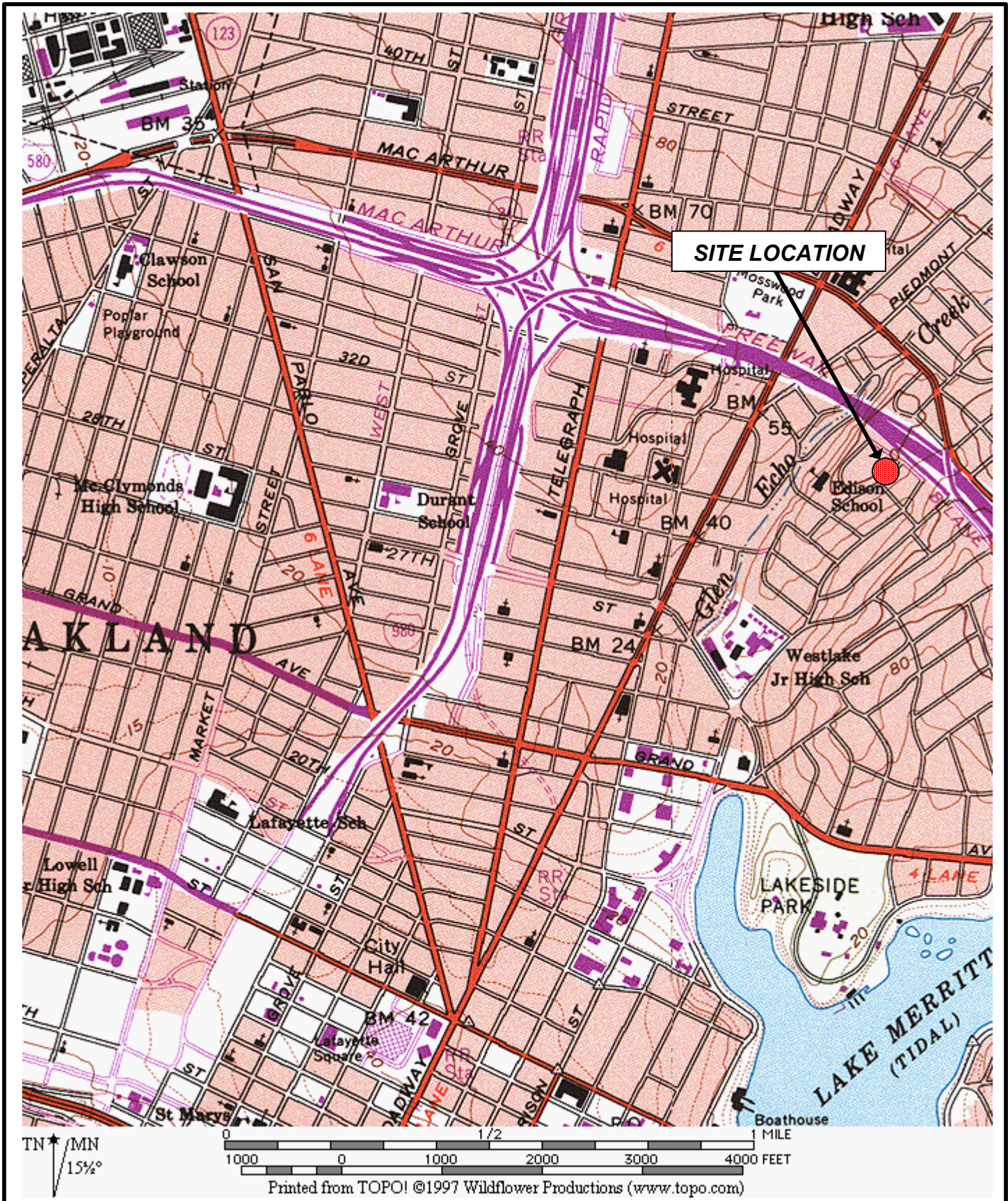
## TABLE

**TABLE**  
**Summary of Soil Analytical Data**  
RESIDENTIAL APPARTEMENT BUILDING  
410 FAIRMOUNT AVENUE  
OAKLAND, CALIFORNIA

Sample ID	Depth (fbg)	Date Sampled	Petroleum Hydrocarbon Concentrations					
			TPH-D	B	T	E	X	MTBE
			mg/kg					
8143-SP (STOCKPILE)		1/9/2002	ND<1.0	ND<0.005	ND<0.005	ND<0.005	ND<0.01	ND<0.005
8143-E (EAST SIDE OF EXCAVATION)	16	1/9/2002	42,000	0.024	0.292	0.544	2.89	0.127
8143-W (WEST SIDE OF EXCAVATION)	16	1/9/2002	ND<1.0	ND<0.005	0.007	0.006	0.034	ND<0.005

**Notes:**  
fbg Feet below grade  
mg/kg Milligrams per Kilogram  
TPH-D Total petroleum hydrocarbons as diesel  
BTEX Benzene, toluene, ethylbenzene, total xylenes  
MTBE Methyl tertiary butyl ether

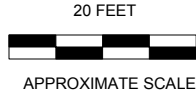
## FIGURES



**GOLDEN GATE TANK REMOVAL, INC.**

255 Shipley Street  
 San Francisco, CA 94107  
 Ph (415) 512-1555 Fx (415) 512-0964

**VICINITY MAP**  
 410 Fairmount Avenue  
 Oakland, CA 94611



STANLEY PLACE

RESIDENTIAL

RESIDENTIAL

FAIRMOUNT AVENUE

SIDEWALK

171 FEET (NOT TO SCALE)

RESIDENTIAL

FORMER UNDERGROUND STORAGE TANK (UST)

SOIL SAMPLE  
8143-E  
TPH-D 42,000 PPM

GARAGE ENTRANCE

UST

410 FAIRMOUNT AVENUE BLDG.

BUILDING ENTRANCE

SOIL SAMPLE  
8143-W  
TPH-D ND<1.0 PPM

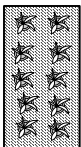
SIDEWALK

RESIDENTIAL

LEGEND:

PPM = PARTS PER MILLION

TPH-D = TOTAL PETROLEUM HYDROCARBONS AS DIESEL



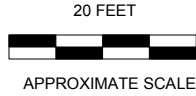
LANDSCAPED AREA

**GOLDEN GATE TANK REMOVAL, INC.**

255 Shipley Street  
San Francisco, CA 94107  
Ph (415) 512-1555 Fx (415) 512-0964

**SITE PLAN**

410 Fairmount Avenue  
Oakland, CA 94611



STANLEY PLACE

RESIDENTIAL

RESIDENTIAL

FAIRMOUNT AVENUE

RESIDENTIAL

FORMER UNDERGROUND STORAGE TANK (UST)

171 FEET (NOT TO SCALE)

GARAGE ENTRANCE

PROPOSED BORING LOCATION

UST

410 FAIRMOUNT AVENUE BLDG.

BUILDING ENTRANCE

SIDEWALK

SIDEWALK

RESIDENTIAL

LEGEND:

● PROPOSED BORING LOCATION

LANDSCAPED AREA

**GOLDEN GATE TANK REMOVAL, INC.**

255 Shipley Street  
San Francisco, CA 94107  
Ph (415) 512-1555 Fx (415) 512-0964

**PROPOSED BORING LOCATION**

410 Fairmount Avenue  
Oakland, CA 94611