



Ro-377

JAN 02 2002

**WORK PLAN  
FOR  
ADDITIONAL  
SOIL & GROUNDWATER INVESTIGATION**

*Sheaff's Garage  
5930 College Avenue  
Oakland, California*

Prepared For:

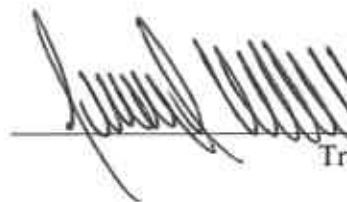

Mr. Brian Sheaff  
William G. Sheaff Trust  
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Prepared By:

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255 Shipley Street  
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GGTR Project No. 7335  
December 19, 2001

  
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Registered Geologist CEG 1380

## TABLE OF CONTENTS

INTRODUCTION .....	1
Purpose .....	1
Scope .....	1
Site Location and Description .....	2
Site History .....	2
Site Geology, Soil Conditions and Hydrogeology .....	4
PLANNED WORK .....	5
Sequence .....	5
Pre-field Activities .....	5
Excavation Activities .....	5
Excavation Soil Sampling Activities .....	6
Soil Boring & Sampling Activities .....	6
Groundwater Sampling Activities .....	7
Excavation/Boring Backfill Activities .....	8
Soil & Groundwater Sample Analysis .....	8
Waste Management .....	8
Data Interpretation and Report Preparation .....	9
Schedule .....	9
Report Distribution .....	9
ATTACHMENTS .....	

## INTRODUCTION

### Purpose

This work plan was prepared in response to the Alameda County Health Care Services Agency (ACHCSA) letter dated July 9, 2001 requesting additional subsurface soil investigation activities at Sheaff's Garage located at 5930 College Avenue in Oakland, California. A copy of the July 2001 ACHCSA letter is attached.

The general purpose of this work plan is to describe the procedures and methods used to excavate and remove all subsurface fuel product piping associated with the former underground storage tank system and assess the extent of hydrocarbons in soil in the direct vicinity of the piping and former fuel dispenser at the subject property. This phase of work will help evaluate whether such subsurface structures are a potential source of contamination contributing to the elevated concentrations of residual gasoline-range hydrocarbons in groundwater reported during continued quarterly groundwater monitoring activities at the site. Also, a limited soil boring investigation will be conducted on the west side of the property to determine whether the existing subsurface utilities running parallel along College Avenue may potentially act as a preferential migratory pathway for dissolved-phase hydrocarbons flowing from a presumed up-gradient (north-northeast), off-site source. The work will be conducted in general accordance with the State Water Resources Control Board's Leaking Underground Fuel Tank (LUFT) manual and the TRI-Regional Board Staff Recommendation for Preliminary Evaluation and Investigation of Underground Tank Sites.

### Scope

The general scope of work contained in this work plan includes the following:

- Pre-field work activities and permitting
- Excavation and removal of subsurface fuel product piping and underlying fuel-affected soil
- Hand Auger / Percussion soil boring activities
- Soil & groundwater sampling activities
- Sample handling and transportation
- Backfilling Activities
- Sample analysis and reporting
- Waste Management
- Data interpretation and report preparation and submittal.

### Site Location and Description

The subject property is located at 5930 College Avenue, along the east side of College Avenue between Harwood Street and Chabot Road in Oakland, California. The site lies approximately 0.2 mile (1,000 feet) north of Highway 24 and approximately 2.5 miles east of Interstate 80 and the San Francisco Bay. The general location of the site is shown on the attached Figure 1, *Site Location Map*.

The commercial property is currently occupied by Sheaff's Garage for the service and repair of automobiles, with no active fuel storage or distribution systems. The site is approximately 5,500 square feet in area with about 75% utilized by a covered warehouse/garage and 25% used as an exterior (uncovered) storage yard. The ground surface of the entire property is paved with concrete and the elevation of the site is approximately 195 feet above Mean Sea Level (Figure 1). The site, adjacent properties, and pertinent site structures are shown on the attached Figure 2, *Site Plan*. Figure 3, *Detail Area Map*, shows the approximate location of the subsurface product piping as well as the proposed excavation area and vicinity soil borings.

### Environmental Site History & Chronology

In August 1996, GGTR removed two underground storage tanks (USTs) and associated fuel dispenser from a common location at the site. The following table shows a summary of the tank designations, size, type of construction and contents:

Designation	Construction	Diameter (feet)	Length (feet)	Volume (gallons)	Contents
TANK 1	Steel	4	7	675	Gasoline
TANK 2	Steel	4	3.5	340	Waste Oil

The ages of the tanks are unknown but are believed to be between 40 and 60 years old. GGTR removed the residual fuel from the subsurface product piping which was left in place, thoroughly flushed and drained the piping, and capped both ends. During the UST removal, there was evidence of a gasoline leak in surrounding soils and GGTR over-excavated gasoline-contaminated soil surrounding the former UST location. Analytical results of soil samples collected during the UST removal and over-excavation activities at the site are summarized in the attached Table 1. The tank removal and over-excavation activities are documented in GGTR's *Tank Removal Report*, dated October 11, 1996.

Between May 1998 and October 1999, as requested by the ACHCSA, GGTR performed a preliminary subsurface soil boring investigation at the subject property and subsequently installed three groundwater monitor wells in the vicinity of the former UST cavity. Soil borings B1 through B3 were advanced immediately south, east, and west, respectively, of the former UST cavity at the locations shown in Figure 2. Following review and interpretation of all field and soil sample analytical data collected during these activities, additional soil borings (B4 through B6) were then advanced at the site to further assess the extent of contamination in soil and the potential impact to groundwater. These borings were converted to 2-inch-diameter groundwater monitoring wells, MW1 through MW3. The locations of the soil borings/monitor wells are shown in Figure 2. Table 2, attached, summarizes the laboratory analytical results of soil samples collected from B1 through B6.

In collaboration with Gettler-Ryan, Inc. of Dublin, California, which is conducting a separate groundwater investigation adjacent to the subject property (5940 College Avenue; Former Chevron Station), GGTR has jointly monitored and sampled each well on a quarterly basis since January 2000. The locations of the subject monitor wells as well as Gettler-Ryan's monitoring wells are shown on Figure 2. The attached Table 3 presents the historical boring/monitor well data & groundwater analytical results for samples collected from B1 through B3 and B4/MW1 through B6/MW3.

The following chronological list of activities shows the significant UST removal and investigative activities performed at the site:

08/06/96	Underground storage tanks 1 and 2 were removed and samples recovered
08/15/96	A work plan was submitted by GGTR for over excavation and disposal of gasoline-contaminated soil surrounding the UST
09/30/96	Over-excavation of gasoline-contaminated soil performed
10/01/96	Last of additional excavation soil disposed of at a Class II facility
10/11/96	Tank Removal Report published by GGTR
12/30/96	ACHCSA submitted letter requiring soil and groundwater investigation
03/10/97	GGTR authorized to prepare a work plan for additional investigation
04/01/97	GGTR submitted work plan for a Soil and Groundwater Investigation
04/21/97	ACHCSA submitted letter authorizing work plan
05/06/98	GGTR drills borings B1 through B3
05/20/98	GGTR drills borings B4 ( Monitoring Well MW1)
05/27/98	GGTR develops monitoring well MW1
06/01/98	GGTR measures, purges and samples monitoring well MW1
06/17/98	GGTR submitted Soil and Groundwater Investigation Report
07/21/98	GGTR submitted Work Plan Addendum for installation of two additional groundwater monitoring wells
09/10/98	GGTR measures, purges and samples monitoring well MW1 then submits a groundwater monitoring report
10/02/99	GGTR drills two borings (B5 and B6) and converts them to groundwater monitoring Wells (MW2 and MW3)
10/04/99	GGTR develops monitoring wells MW2 and MW3

- 10/07/99 GGTR surveys monitoring wells MW2 / MW3; measures, purges and samples monitoring wells MW1, MW2 and MW3 then submits a groundwater monitoring report
- 10/22/99 GGTR submitted Summary Report
- 11/24/99 ACHCSA submitted letter requiring quarterly monitoring and setting parameters for January 2000 analyses
- 01/26/00 GGTR measures, purges and samples monitoring wells MW1, MW2 and MW3 then submits a groundwater monitoring report
- 10/25/00 GGTR and Gettler-Ryan, Inc. perform joint groundwater monitoring activities; GGTR measures, purges and samples monitoring wells MW1, MW2 and MW3 then submits a groundwater monitoring report
- 04/25/01 GGTR and Gettler-Ryan, Inc. perform joint groundwater monitoring activities; GGTR surveys, measures and samples monitoring wells MW1, MW2 and MW3 then submits a groundwater monitoring report
- 07/10/01 GGTR and Gettler-Ryan, Inc. perform joint groundwater monitoring activities; GGTR measures and samples monitoring wells MW1, MW2 and MW3 then submits a groundwater monitoring report
- 10/08/01 GGTR and Gettler-Ryan, Inc. perform joint groundwater monitoring activities; GGTR monitors and samples MW1, MW2 and MW3.
- 11/28/01 GGTR submits October 2001 Groundwater Monitoring Report to the ACHCSA

#### **Site Geology, Soil Conditions and Hydrogeology**

According to a Geologic Map of the San Francisco-San Jose Quadrangle published by the California Department of Conservation, the site is underlain by up to 500 feet of dissected Quaternary alluvium deposited on marine sandstone, shale and conglomerate of the Mesozoic Franciscan Complex and possibly Mesozoic, cretaceous marine sedimentary rocks of the Great Valley Sequence (thicknesses not established). Native subsurface soil encountered at the site during preliminary soil and groundwater investigation activities (June 1998) and groundwater monitor well installation (October 1999) was predominantly a brown/black silty clay up to approximately 20 feet below grade (fbg) with a clayey, gravelly silt lens between 5 and 10 fbg.

Depth to groundwater, as measured on a quarterly basis in the three onsite monitoring wells (October 1999 through October 2001) ranges between approximately 7 and 13 fbg. The associated groundwater gradient across the site ranged between 0.005 and 0.007 foot per foot and the flow direction has fluctuated between 11° west of south (October 1999) to 48° east of north (October 2001). The regional groundwater flow in the vicinity of the site is assumed to be towards the west-southwest, in the direction of the San Francisco Bay, and generally following the natural topographic relief of the area.

## PLANNED WORK

### Sequence

The following is the planned sequence of activities at the site:

- Notify all representative parties of scheduled field activities
- Obtain site Excavation Permit from City of Oakland Department of Public Works
- Conduct site markout and notify Underground Service Alert for utility clearance
- Locate subsurface product piping and sawcut/remove concrete sidewalk above proposed trench excavation area
- Excavate all clean overburden soil and stockpile on plastic sheeting
- Expose and remove product piping leading from former UST excavation to the former fuel dispenser including the dispenser island (Figure 3);
- Remove underlying fuel-effected soil and separately stockpile on plastic sheeting
- Collect confirmation soil samples directly beneath product piping
- Perform hand auger soil boring and sampling activities to assess vertical extent of fuel-effected soil and its potential impact to groundwater (if encountered)
- Backfill trench excavation with overburden soil/clean import soil and compact; backfill soil borings with neat Portland cement
- Submit samples to State-licensed environmental laboratory for analysis
- Sample analysis and reporting
- Profile, transport, and dispose of all fuel-effected solid/liquid waste
- Interpret all field and analytical data and prepare summary report.

### Pre-Field Activities

GGTR will obtain all permits which are required for the excavation and hand augering activities proposed at the site. These permits may include a drilling permit from of the ACHCSA, an excavation permit from the City of Oakland Office of Planning & Building, and a parking permit from the Oakland Traffic Control Department. GGTR will notify all property owners and tenants as well as the ACHCSA of all scheduled work activities. At least 72 hours before commencing field activities, GGTR will visit the site and outline the proposed work area in white surface paint and subsequently notify Underground Service Alert to locate and mark any subsurface utilities extending through the designated work area. GGTR will schedule a courier service for daily transport of samples to the State-certified analytical laboratory. Also, GGTR will prepare a traffic control plan should partial or complete closure of the parking lane or sidewalk along the College Avenue frontage be warranted.

### Excavation Activities

GGTR will mobilize all excavation and support equipment to the site. GGTR will initially locate vicinity subsurface utilities and determine the approximate location of the product piping using an Metrotech® 9800 Line Locator. GGTR will then saw cut an 18- to 24-inch-wide trench through the sidewalk and interior concrete garage floor directly above the product piping, at the approximate location shown in Figure 3. GGTR will remove all

concrete using a backhoe excavator and transfer the debris to a flatbed truck for transport and disposal at a designated recycling facility.

Under direct supervision by a representative of the ACHCSA, GGTR will excavate and remove the soil overlying the entire length of the product piping and expose the piping for observation and subsequent removal. All clean overburden soil will be stockpiled on plastic sheeting adjacent to the trench excavation. The product piping will be drained of any residual fluids, observed for areas of pitting and holes, wrapped in plastic sheeting, and then placed on a flatbed truck for transport and disposal at a recycling facility. Soil beneath the product piping will be observed for any apparent signs of contamination or discoloration. For safety purposes, GGTR will continually monitor the air quality within the general work area and trench excavation using a Thermo® 580B Organic Vapor Analyzer (OVA).

If warranted, GGTR will excavate and remove any fuel-effected soil underlying the former product piping up to a depth approved by the ACHCSA. The fuel-effected soil will be either placed in a separate stockpile, in D.O.T-approved storage drums, or transferred directly to a plastic-lined dump truck.

#### **Excavation Soil Sampling Activities**

At the direction of the ACHCSA, GGTR will collect confirmation soil samples (Designated as EX-1 through EX-4) from the bottom of the trench excavation directly beneath the product piping at the approximate locations shown in Figure 3 and/or at pertinent locations chosen during field activities. Samples will be collected using a brass tube-lined, 2-inch-diameter remote sampler (3- to 6- inch length) driven by a 15 pound slide hammer into relatively undisturbed soil, then sealed with Teflon® sheeting and plastic end caps, labeled, and transferred to a cooler chilled to approximately 4°C. Soil extracted from the shoe of the core sampler will be screened for soil vapor concentration (parts per million) using an OVA. GGTR will record the exact location, depth, and collection time of each sample. All sampling equipment will be washed with a non-phosphate Alconox® solution and double rinsed with potable water prior to each sample location.

#### **Soil Boring & Sampling Activities**

GGTR will remove a 3- to 4-inch-diameter section of asphalt/concrete in the east parking lane of College Avenue at designated locations along the western boundary line of the subject property. GGTR will advance one soil boring at each location to help evaluate the potential for any offsite contaminant soil and/or groundwater source contributing to the elevated concentrations of gasoline-range hydrocarbons reported in onsite monitor wells MW1 through MW3. These proposed soil borings will also help assess whether the subsurface utility corridor located on the west edge of the subject parking lane (Figure 2) is a potential migratory pathway for hydrocarbon-effected groundwater (from an offsite source to the north) following the apparent regional direction of flow (southwest).



In addition, GGTR will advance one soil boring in the direct vicinity of the former fuel dispenser, located in the interior northwest corner of the garage structure to assess the vertical extent of fuel-affected soil at this location. The proposed location of each soil boring (B7 through B10) is shown in Figure 3. To facilitate future reporting, soil boring designation numbers are in consecutive order with the previous soil borings / monitoring wells (i.e., B5/MW2 & B6/MW3) installed at the site in October 1999. Soil boring B10 will be placed in the vicinity of the southwest corner of the former UST cavity to confirm elevated concentrations of total petroleum hydrocarbons as gasoline (TPH-G) previously reported during both over-excavation activities (Sample 7819-OE-1 @ 1,400 ppm [10.5 fbg]; October 1996) and preliminary soil boring activities (Sample 7335-B2-9 @ 2,800 ppm [9 fbg]).

GGTR will drill each boring using either a 2.25- to 3.25-inch diameter hand auger or Geoprobe® direct push rig (1- to 2-inch-diameter drill rods/sampler) to approximately 13 feet below grade, or 2 to 3 feet past the first encountered groundwater. Prior to drilling, the depth to groundwater (relative to grade surface) will initially be measured in MW1 and MW3 to determine the approximate location of the capillary fringe zone. Soil samples will be collected in each boring using either a brass tube-lined remote sampler or other direct push sampling technology at approximately 5, 7 (approximate upper limit of contaminant smear zone), 9, and 13 (approximate lower limit of contaminant smear zone) fbg. All soil samples will be sealed, labeled, and transferred to a chilled cooler. Soil boring samples will also be screened with an OVA and described using the Unified Soil Classification System and Munsell Rock Color Chart.

Geoprobe® drilling, if warranted, will be conducted by a California Licensed Water Well Drilling Contractor (C57). Boreholes will be logged under the supervision of a Registered Civil Engineer/Geologist. Hand auger soil cuttings generated during drilling activities will be transferred to the stockpile containing the fuel-affected soil or transferred to a 55-gallon, D.O.T.-approved steel drum. GGTR will collect a four point composite soil sample from the drummed and/or stockpiled soil cuttings for analysis and waste disposal characterization. All down hole drilling and sampling equipment will be decontaminated prior to initiating activities at each boring location.

#### **Groundwater Sampling Activities**

Immediately following soil sampling activities, GGTR will place 0.75-inch-diameter, factory-sealed, screened PVC casing to the approximate total depth of each borehole and allow a sufficient volume of water to enter each boring. GGTR will then monitor the depth to water in each temporary well casing and collect a groundwater sample in each soil boring using either a disposable, factory-sealed polyethylene bailer or peristaltic pump and polyethylene sample tubing. The groundwater samples will be placed in appropriate laboratory-cleaned containers, sealed, labeled, and transferred to a cooler chilled to approximately 4°C.

### **Excavation/Boring Backfill Activities**

Immediately following excavation sampling activities, GGTR will backfill the trench excavation with the overburden soil and clean import Class 2 baserock up to approximately 0.5 fbg and compact. GGTR will then resurface the balance of the excavation with concrete to restore original site conditions. Discrete soil borings will be backfilled with neat Portland cement and surface concrete (0 to 1 fbg).

### **Soil & Groundwater Sample Analysis**

A Chain-of-Custody form will be initiated by GGTR personnel at the time of sampling and will accompany the soil and groundwater samples to a State-certified environmental laboratory using California Department of Health Services approved analytical methods.

All soil and groundwater samples will be analyzed for:

- Total Petroleum Hydrocarbons as Gasoline (TPH-G; EPA Methods 5030/8015M)
- Benzene, Toluene, Ethylbenzene and Total Xylenes (BTEX; EPA Methods 5030/8020)
- Methyl Tertiary-Butyl Ether (MTBE; EPA Method 5030/8020)

The soil and groundwater samples collected from B10 will be additionally analyzed for:

- Total Oil & Grease (TOG; Standard Method 5520 E&F)
- Cadmium, Chromium, Lead, Nickel, and Zinc (LUFT Metals; EPA 3000/7000 Series)
- VOCs (EPA Method 8260)

The stockpile composite soil sample will additionally be analyzed for:

- Total Lead (EPA Method 6310B/ICAP)
- Halogenated Volatile Organic Compounds (HVOCs; EPA Method 8010)

### **Waste Management**

If warranted, hydrocarbon-affected soil generated during trench excavation and soil boring activities will be covered with plastic sheeting or drummed and transported by GGTR to their storage yard in San Francisco, California. Pending receipt of the composite stockpile soil sample analysis, GGTR will subsequently profile and transport the waste to an appropriate licensed disposal facility under uniform waste manifest.

Equipment wash and rinse water generated from the decontamination of soil boring equipment will be transferred to a 55-gallon, D.O.T.-approved steel drum, labeled, and transported to the GGTR's storage yard. The liquid waste will be profiled for disposal/recycling under uniform waste manifest following receipt of the laboratory results of soil boring grab groundwater sample analysis.

### **Data Interpretation and Report Preparation**

Following the completion of all field work, GGTR will review all field and analytical data and prepare a report of additional investigation activities. The report will discuss the activities and findings of the investigation and present conclusions and recommendations.

Soil and groundwater assessment at the site will be in direct accordance with guidelines set forth by the Regional Water Quality Control Board LUFT Field Manual, October 1989 and the TRI-Regional Board Staff Recommendation for Preliminary Evaluation and Investigation of Underground Tank Sites, August 1990.

### **Schedule**

GGTR anticipates beginning the additional field activities within two weeks of receiving client authorization to proceed. The aforementioned report should be available within three to five weeks following receipt of all soil and groundwater analytical results.

During this phase of work or shortly thereafter, GGTR recommends conducting a professional re-survey of the site monitor wells to acquire GPS x,y-coordinate survey data for electronic submission to the GeoTracker (Assembly Bill 2886, Fall 2000).

### **Report Distribution**

All reports that are prepared during the continuing work on this project will be sent to:

Alameda County Health Care Services  
Environmental Health Services  
Environmental Protection (LOP)  
1131 Harbor Bay Parkway, Suite 250  
Alameda, CA 94502-6577  
*Attention: Ms. Eva Chu*

William G Sheaff Trust  
c/o Mr. Brian Sheaff  
1945 Parkside Drive  
Concord, California 94519

## ATTACHMENTS

**Regulatory Correspondence, Figures, Tables**

WORK PLAN  
FOR  
ADDITIONAL  
SOIL AND GROUNDWATER INVESTIGATION

Sheaff's Garage  
5930 College Avenue  
Oakland, California

GGTR Project No. 7335  
December 19, 2001

ALAMEDA COUNTY  
HEALTH CARE SERVICES



AGENCY  
DAVID J. KEARS, Agency Director

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

RO0000377

July 9, 2001

Mr. Brian Sheaff  
William G Sheaff Trust  
1945 Parkside Drive  
Concord, CA 94519

RE: Additional Investigations at 5930 College Ave, Oakland, CA

Dear Mr. Sheaff:

I have completed review of Golden Gate Tank Removal's April 2001 *Quarterly Groundwater Monitoring Report* prepared for the above referenced site. The most recent monitoring event, in April 2001, continues to identify elevated levels of petroleum hydrocarbon constituents in groundwater. Currently up to 120,000ppb TPHg, and 21,000ppb benzene are in groundwater from well MW1.

The upgradient site, former Chevron Station #20-9339, located at 5940 College Avenue, has installed two groundwater monitoring wells to evaluate groundwater impact due to their former underground storage tanks. When groundwater was sampled in January 2001, petroleum hydrocarbon constituents were at least three orders of magnitude less than what is found at 5930 College Ave.

Based on data collected from both 5930 and 5940 College Avenue, it appears there may be another onsite source for hydrocarbons identified in well MW1. At this time, investigations should be conducted in the vicinity of the former fuel dispenser and product piping to determine if these former/existing structures are a potential source of contamination. A workplan for this phase of investigation is due within 60 days of the date of this letter, or by September 11, 2001.

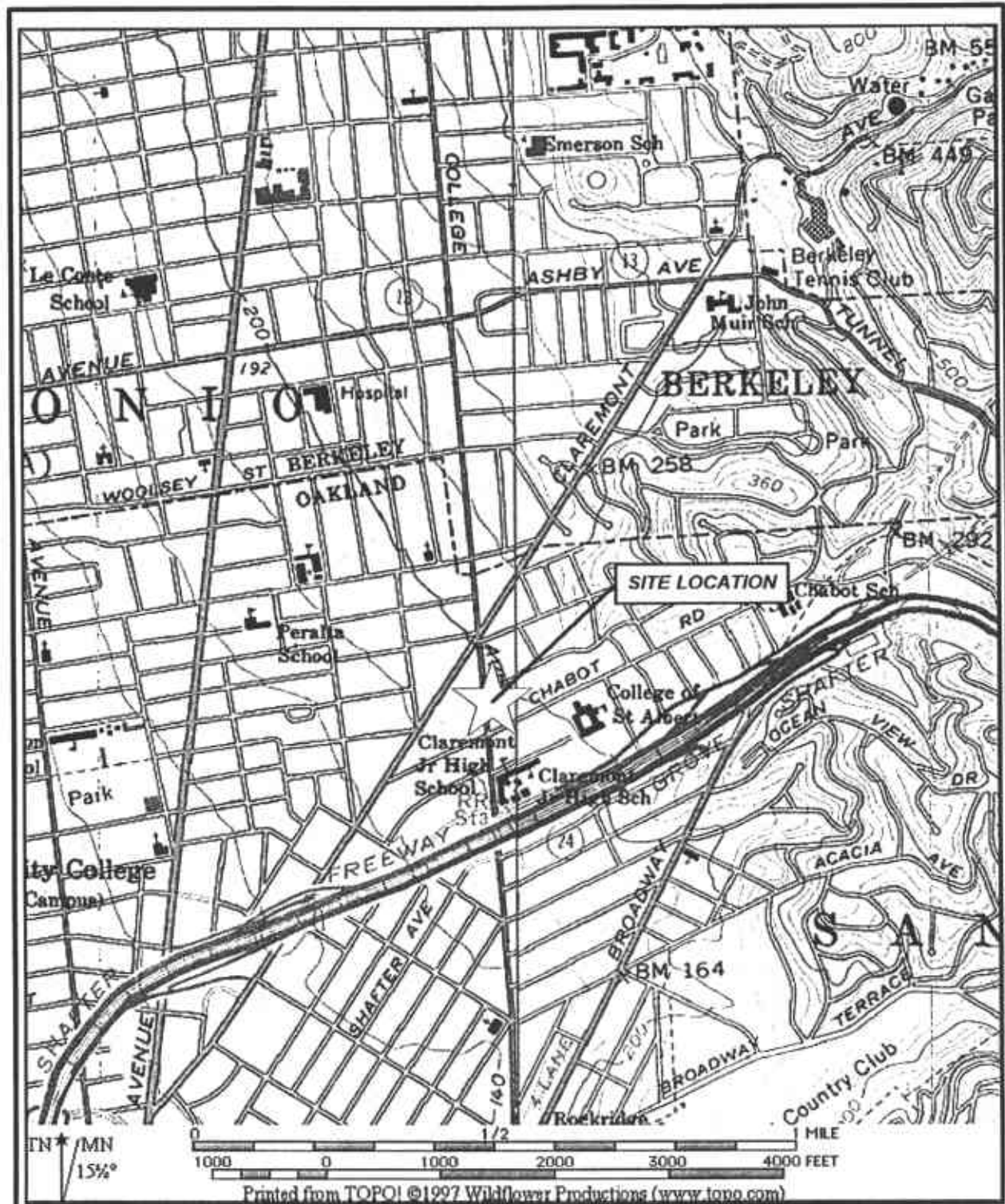
If you have any questions, I can be reached at (510) 567-6762.

A handwritten signature in black ink, appearing to read "eva chu".

eva chu  
Hazardous Materials Specialist

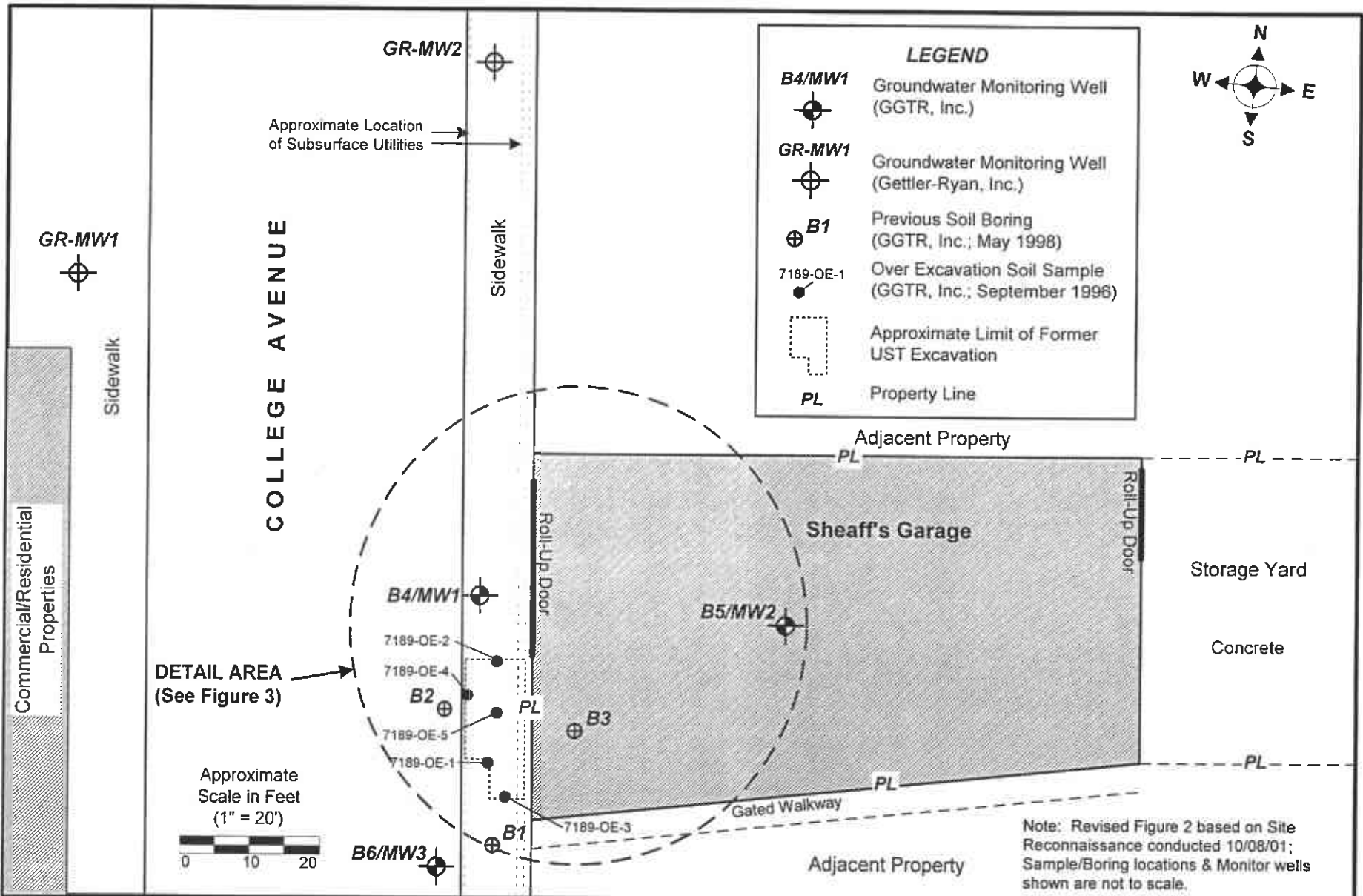
c: Tracy Wallace, Golden Gate Tank Removal, 255 Shipley St, San Francisco, CA  
94107

sheaff6



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<b>GOLDEN GATE TANK REMOVAL, INC.</b> 255 Shipley Street San Francisco, California 94107 Ph (415) 512-1555 Fx (415) 512-0964		<b>SITE LOCATION MAP</b> Sheaff's Garage 5930 College Avenue Oakland, California	
GGTR Project No. 7335	Dwg: baw/11.01	December 2001	Figure 1

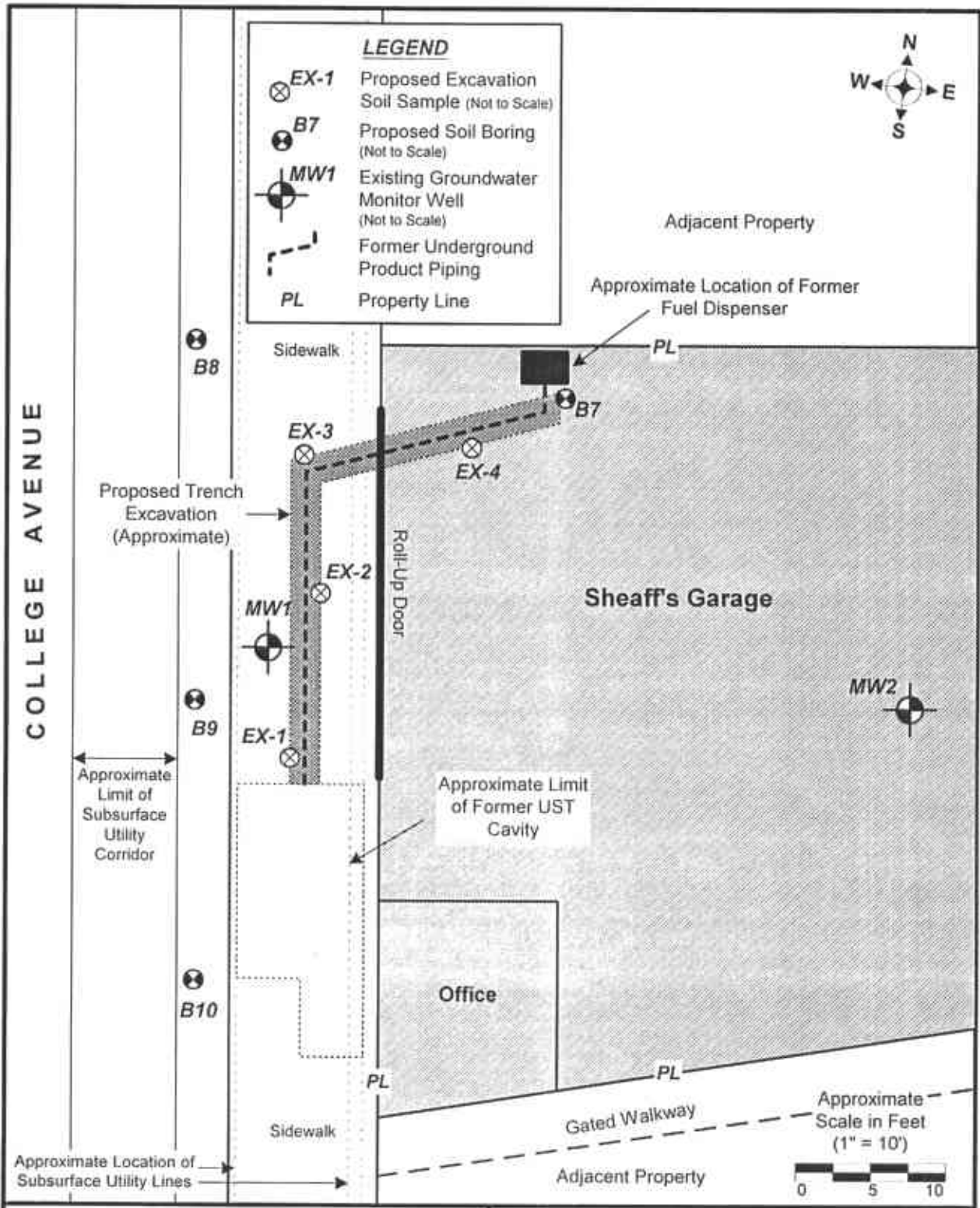


**GOLDEN GATE TANK REMOVAL**

255 Shipley Street  
 San Francisco, California 94107  
 Phone (415) 512-1555 Fax (415) 512-1555

**SITE PLAN**

Sheaff's Garage  
 5930 College Avenue, Oakland, California



<b>GOLDEN GATE TANK REMOVAL</b> 255 Shipley Street San Francisco, CA 94107 Ph (415) 512-1555 Fx (415) 512-0964		<b>DETAIL AREA MAP</b> Sheaff's Garage 5930 College Avenue Oakland, California	
GGTR Project No. 7335	Drawing By: baw/11.01	December 2001	Figure 3



**TABLE 1**  
**Results of Tank Removal and Over-Excavation Soil Sample Analysis**  
**5930 College Avenue, Oakland, CA**

Sample ID	Sample Depth (fbg)	Sample Date	TPH-G (mg/kg)	TPH-D (mg/kg)	TRPH (mg/kg)	BTEX (mg/kg)	Total VOCs (mg/kg)	Cd (mg/kg)	Cr (mg/kg)	Pb (mg/kg)	Ni (mg/kg)	Zn (mg/kg)
7189-T1-N	8	8/6/96	6.000	--	--	19/240/76/470	--	--	--	--	--	--
7189-T1-S	8	8/6/96	8.100	--	--	16/240/72/530	--	--	--	--	--	--
7189-T1-C-10'	10	8/6/96	1.200	--	--	9.1/68/10/79	--	--	--	--	--	--
7189-T2-C	8	8/6/96	560	ND	16.000	2.7/16/3.3/33	38.984 <sup>2</sup>	ND	49	48	68	210
7189-SP1	NA	8/6/96	ND	ND	--	ND/ND/ND/ND	--	--	--	--	--	--
7189-SP2	NA	8/6/96	1.3	ND	14.000	ND/ND/ND/0.020	1.384 <sup>3</sup>	ND	34	79	32	130
7189-OE-1	10.5	10/2/96	1.400 <sup>1</sup>	ND	1.700	9.8/81/14/110 <sup>1</sup>	--	--	--	--	--	--
7189-OE-2	10.5	10/2/96	840 <sup>1</sup>	ND	320	3.3/51/12/91 <sup>1</sup>	--	--	--	--	--	--
7189-OE-3	10.5	10/2/96	ND	ND	21	ND/0.01/ND/0.027	--	--	--	--	--	--
7189-OE-4	10.5	10/2/96	430 <sup>1</sup>	ND	240	0.93/18/4.6/41 <sup>1</sup>	--	--	--	--	--	--
7189-OE-5	10.5	10/2/96	1.400 <sup>1</sup>	ND	1.100	2.2/40/14/120 <sup>1</sup>	--	--	--	--	--	--
Laboratory Detection Limit			1	10	10	<0.015	<250	2.0	5.0	2.0	5.0	1.0

Notes: 7189-T1-N, -S, -C-10', -C = tank removal soil samples collected from north and south ends and center of UST cavity

7189-SP1, -SP2 = tank removal stockpile composite soil samples

7189-OE-(1-5) = over-excavation soil samples collected from sidewalls and center (-OE-5) of cavity

TPH-G = total petroleum hydrocarbons (TPH) as gasoline (CA DHS); TPH-D = TPH as diesel (CA DHS)

TRPH = total recoverable petroleum hydrocarbons (CA DHS)

BTEX = benzene, toluene, ethylbenzene, total xylenes (EPA Method 8020)

Total VOCs = total (summation of) of volatile organic compounds (EPA Method 8260)

Cd, Cr, Pb, Ni, Zn = cadmium, chromium, lead, nickel, and zinc (TTLIC Metals by EPA Method 3050/7000 Series)

fbg = feet below grade; mg/kg = milligrams per kilogram (parts per million); -- = not analyzed for this constituent

NA = not applicable; ND = concentration below associated laboratory reporting limit

<sup>1</sup> = sample dilution required by laboratory; detection limits were adjusted accordingly

<sup>2</sup> = 2.3 mg/kg benzene, 0.360 mg/kg 4-methyl-2-pentanone, 6.6 mg/kg toluene, 0.024 mg/kg tetrachloroethene, 2.7 mg/kg ethylbenzene,

15 mg/kg total xylenes, 0.260 mg/kg isopropyl benzene, 1.1 mg/kg n-propyl benzene, 2.8 mg/kg 1,3,5-trimethylbenzene,

7.5 mg/kg 1,2,4-trimethylbenzene, 0.200 mg/kg sec-butylbenzene, and 0.140 mg/kg p-isopropylbenzene

<sup>3</sup> = 0.042 mg/kg 4-methyl-2-pentanone, 0.005 mg/kg toluene, 0.031 mg/kg tetrachloroethene, 0.010 mg/kg ethylbenzene,

0.322 mg/kg total xylenes, 0.017 mg/kg n-propyl benzene, 0.920 mg/kg 1,3,5-trimethylbenzene, 0.037 mg/kg 1,2,4-trimethylbenzene

**TABLE 2**  
**Results of Subsurface Boring Soil Sample Analysis**  
**5930 College Avenue, Oakland, CA**

Boring Location	Sample ID	Sample Depth (fbg)	TPH-G (mg/kg)	TEPH (mg/kg)	BTEX (mg/kg)	MTBE (mg/kg)	Total Lead (mg/kg)
B1	7335-B1-5	5	ND	ND	ND/ND/ND/ND	ND	--
	7335-B1-9	9	75	53	0.07/0.04/0.53/1	0.06	--
B2	7335-B2-5	5	0.6	60	ND/ND/ND/ND	0.03	--
	7335-B2-9	9	2,800	ND	13/78/38/160	ND	--
B3	7335-B3-6	6	ND	ND	ND/ND/ND/ND	ND	--
	7335-B3-10	10	48	ND	0.5/0.6/0.5/2	ND	--
B4	7335-B4-5	5	ND	ND	ND/ND/ND/0.02	ND	8
	7335-B4-9	9	280	ND	4/8/6/27	1	11
B5	7335-B5-3.0	3	ND	ND	ND/ND/ND/ND	ND	--
	7335-B5-5.0	5	ND	ND	ND/ND/ND/ND	ND	--
	7335-B5-9.0	9	ND	ND	ND/ND/ND/ND	ND	--
	7335-B5-15.5	15.5	2.8	ND	0.69/0.092/0.066/0.22	ND	--
	7335-B5-20.0	20	ND	ND	0.028/0.021/0.007/0.029	ND	--
B6	7335-B6-5.0	5	ND	200	ND/ND/ND/ND	ND	--
	7335-B6-10.0	10	1.5	ND	ND/ND/0.005/0.013	ND	--
	7335-B6-15.0	15	ND	ND	ND/ND/ND/ND	0.031	--
	7335-B6-19.0	19	ND	ND	ND/ND/ND/ND	0.043	--
Laboratory Detection Limit			0.5	50	<0.010	0.005	1.0

Notes: 7335-B1-5 through 7335-B4-9 = soil boring samples collected during preliminary soil and groundwater investigation (May 1998)  
7335-B5-3.0 through 7335-B6-19.0 = soil boring samples collected during additional soil and groundwater investigation (October 1999)  
TPH-G = total petroleum hydrocarbons (TPH) as gasoline (EPA Method 8015M)  
TEPH = total extractable petroleum hydrocarbons (SM 5520 E&F)  
BTEX = benzene, toluene, ethylbenzene, total xylenes (EPA Method 8020)  
MTBE = methyl tertiary-butyl ether (EPA Method 8020)  
Total Lead by EPA Method 7420/AA Spectroscopy  
fbg = feet below grade  
mg/kg = milligrams per kilogram (parts per million)  
-- = not analyzed for this constituent; ND = concentration below associated laboratory reporting limit

**TABLE 3**  
**Boring/Well Data & Historical Results of Groundwater Sample Analysis**  
**5930 College Avenue, Oakland, CA**

Boring/ Well ID	Sample Date	Casing Elevation (TOC)	DTW (TOC)	Water Elevation (TOC)	Product/ Odor/ Sheen	TPH-G (ug/L)	TEPH (ug/L)	VOC (ug/L)	MTBE (ug/L)	B/T/E/X (ug/L)
<b>B1</b>	05/06/98	NA	NR	NR	NR	31,000	6,000	--	ND	2,600/390/1,600/4,200
<b>B2</b>	05/06/98	NA	NR	NR	NR	200,000	ND	--	2,500	30,000/49,000/45,000/21,000
<b>B3</b>	05/06/98	NA	NR	NR	NR	1,000,000	7,000	--	18,000	17,000/24,000/20,000/80,000
<b>B4/ MW1</b>	06/01/98	50.00*	4.81	45.19	slight sheen	160,000	ND	--	1,900	28,000 / 21,000 / 3,800 / 21,000
	09/10/98	50.00*	7.50	42.50	odor	290,000	ND	--	440	<50 / 25,000 / 7,100 / 32,000
	10/07/99	50.00*	10.04	39.96	odor	85,000	ND	ND <sup>1</sup>	1,100	20,000 / 13,000 / 3,800 / 17,000
	01/26/00	50.00*	8.26	41.74	slight sheen	130,000	--	--	470	25,000 / 18,000 / 4,500 / 22,000
	10/25/00	50.00*	10.10	39.90	odor	130,000	--	770 <sup>2,3</sup>	1,300	23,000 / 12,000 / 3,900 / 18,000
	02/02/01	50.00*	9.61	40.39	odor	128,000	--	--	780	19,000 / 11,000 / 3,800 / 18,000
	04/25/01	195.90	7.39	188.51	odor	120,000	--	--	900	21,000 / 13,000 / 390 / 18,000
	07/10/01	195.90	9.72	186.18	odor	79,000	--	--	660	15,000 / 7,800 / 3,000 / 15,000
<b>B5/ MW2</b>	10/08/01	195.90	10.88	185.02	sheen/odor	112,000	--	--	374	25,300 / 11,800 / 4,280 / 20,600
	10/07/99	51.42*	11.49	39.93	slight/odor	18,000	ND	ND <sup>1</sup>	490	3,000 / 1,700 / 1,000 / 3,900
	01/26/00	51.42*	7.85	43.57	none	42,000	--	--	560	9,300 / 2,200 / 2,300 / 7,700
	10/25/00	51.42*	11.57	39.85	slight/odor	31,000	--	312 <sup>2,4</sup>	500	5,500 / 370 / 1,700 / 2,600
	02/02/01	51.42*	10.77	40.65	odor	36,000	--	--	400	4,300 / 530 / 1,800 / 4,500
	04/25/01	197.28	8.52	188.76	odor	56,000	--	--	460	6,700 / 1700 / 2,600 / 8,200
	07/10/01	197.28	11.05	186.23	odor	39,000	--	--	180	6,200 / 730 / 2,300 / 6,100
<b>B6/ MW3</b>	10/08/01	197.28	12.79	184.49	sheen/odor	40,700	--	--	6,460	6,310 / 399 / 2,100 / 5,320
	10/07/99	49.39*	9.67	39.72	none	6,600	ND	ND <sup>1</sup>	390	310 / 110 / 430 / 1,000
	01/26/00	49.39*	5.40	43.99	none	3,300	--	--	40	110 / 8 / 100 / 32
	10/25/00	49.39*	9.24	40.15	slight odor	4,500	--	ND <sup>2</sup>	ND	100 / 2 / 120 / 130
	02/02/01	49.39*	8.73	40.66	slight odor	2,900	--	--	35	35 / 3 / 160 / 298
	04/25/01	195.22	6.61	188.61	slight odor	8,400	--	--	56	260 / 33 / 290 / 510
	07/10/01	195.22	8.85	186.37	slight odor	12,000	--	--	35	39 / 10 / 690 / 1600
10/08/01	195.22	9.75	185.47	sheen/odor	4,913	--	--	52	108 / 4 / 99 / 133	
Laboratory Reporting Limit						50	5000	<100	0.5	<1.0

**NOTES:**

DTW = depth to water relative to top of well casing (TOC); ug/L - micrograms per liter (equivalent to parts per billion)  
 TPH-G = Total Petroleum Hydrocarbons as Gasoline; TEPH = Total Extractable Petroleum Hydrocarbons (EPA Methods 5030/8015M)  
 Volatile Organic Compounds by EPA Method 8010 (10/07/99) or 8260 (10/25/00)  
 MTBE = Methyl Tertiary Butyl Ether; BTEX - Benzene / Toluene / Ethylbenzene / Total Xylenes (EPA Methods 5030/8020)  
 \* = arbitrary datum point with assumed elevation of 50 feet used prior to MSL survey on April 26, 2001  
 NA = not applicable; NR = not reported; ND = not detected above laboratory reporting limit; -- = not analyzed for this constituent  
<sup>1</sup> = halogenated VOCs by EPA Method 8010; <sup>2</sup> = fuel oxygenates by EPA Method 8260;  
<sup>3</sup> = 770 ug/l benzene; <sup>4</sup> = 312 ug/l benzene