A·C·C
ENVIRONMENTAL
CONSULTANTS

July 25, 2003

Gary Werkmeister
575 Walavista Avenue
Oakland, CA 94610

RE: Work Plan – Limited Subsurface Soil Boring Investigation
2201 West Street, Oakland, California
ACC Project Number: 6766-001.00

Dear Mr. Werkmeister:

ACC Environmental Consultants, Inc., (ACC) presents this Work Plan (WP) to perform a limited subsurface soil boring investigation in the vicinity of the former underground storage tanks (USTs) located at 2201 West Street, Oakland, California (Site).

The goals of the investigation will be to: 1) characterize subsurface conditions and collect representative grab groundwater samples adjacent to the former underground storage tank (UST); 2) analyze water samples for suspect constituents of concern; and 3) prepare a report of findings requesting full regulatory closure.

INTRODUCTION

The Site is located along West Street, Oakland, California (Figure 1). In June 2002, AEI Consultants (AEI) removed one 300-gallon heating oil tank. Total petroleum hydrocarbons as diesel (TPHd) was reported in the confirmation soil sample collected at 9 feet below ground surface (bgs) at a concentration of 660 parts per million (ppm). At the direction of the Oakland Fire Services Agency (OFSA), the UST pit was overexcavated in July 2002. The final excavation size was 15 feet long by 6 feet wide by 13 feet deep and approximately 60.7 tons of soil was disposed offsite. Sidewall soil samples indicated that impacted soil was successfully remediated. A grab water sample from the final excavation indicated 3,700 parts per billion (ppb) TPHd with relatively minor concentrations of various volatile organic compounds (VOCs). Based on the reported TPHd and VOC impacts in groundwater, the OFSA referred the case to the Alameda County Health Care Services Agency (ACHCSA). While no significant recognized environmental concerns were identified during UST removal, ACC has prepared this Work Plan to address concerns of the ACHCSA and collect additional groundwater quality data for the Site. ACC will submit this data to the ACHCSA in order to justify approving full regulatory closure in regards to the former UST.

SCOPE OF WORK

In order to further characterize subsurface soil at the Site in regards to suspect TPHd impacts, and minimize the expense in addressing ACHCSA concerns, ACC proposes the following scope of work:

- Contacting Underground Service Alert to clear the proposed soil borings and obtain the necessary soil boring permit from the Alameda County Public Works Agency (ACPWA) prior to conducting field activities;

- Advance three exploratory soil borings to total depths of approximately 16 feet bgs (the approximate depth of first-encountered groundwater);

- Continuously core the soil borings to observe and log each foot of soil encountered and allow continuous screening of encountered soils with a photoionization detector (PID);

- Collect one to two representative soil samples and one grab groundwater sample from each soil boring for analysis in order to further characterize the degree and extent of suspect TPHd impact;

- Log and PID-screen soil encountered in the soil borings to maximize the quality of data regarding subsurface conditions and further assess the migration potential in soil;

- Submit each groundwater sample to a state certified analytical laboratory for analysis of TPHd by EPA Method 8015 and VOCs by EPA Method 8260B; and

- Prepare a summary report of findings for submission to the ACHCSA to present the soil boring investigation findings, which will include a scaled site plan depicting sample locations, soil boring logs, an evaluation of sample analytical results, hydrogeological conditions, and present arguments for approving regulatory closure.

All work will be performed according to State Water Resources Control Board Resolution No. 68-16, and Tri-Regional Guidelines set forth by the SFBRWQCB.

RATIONALE FOR PROPOSED SCOPE OF WORK

The primary goal of this investigation is to characterize current groundwater conditions for suspect TPHd in the vicinity of the former UST. Previously performed soil overexcavation successfully removed the majority of soil around and under the former UST and successfully removed suspect impacted soil for purposes of source removal. This scope of work is intended to primarily address the question of suspect groundwater impact in a cost-effective manner.

Three continuously cored, Geoprobe® soil borings will be advanced at select locations to log and screen soil from the surface 16 feet bgs. In three representative locations, ACC will collect grab groundwater samples to evaluate groundwater conditions at the Site. Soil boring locations are illustrated on Figure 2. ACC will advance soil borings SB-1 through SB-3 adjacent to and in the estimated downgradient direction.

All cored soil sample will be screened for field indications of VOCs and TPHd impact and screened with a PID. Only soil samples displaying elevated PID readings will be prepared for analysis. Soil screening will be done with a calibrated ppbRAE PID. This PID measures volatile constituents in air in the ppb range and is highly effective at prioritizing potential soil samples for analysis. Soil samples will be screened approximately every foot, especially from below former tank bottom through the capillary fringe zone. ACC will also collect additional soil samples to be held by the laboratory for possible analysis based on field observations, elevated PID reading, or lithology.

The soil samples will be submitted to a state-certified analytical laboratory following standard chain of custody procedures for analysis of VOCs by EPA Method 8260B and TPHd by EPA Method 8015.

Following review of the sample analytical results, ACC will prepare a summary report. Included with the report will be a scaled site plan depicting sample locations, soil boring logs, an evaluation of sample analytical results and hydrogeological conditions, discussion, and conclusions. ACC will also present arguments for approving regulatory closure.

ACC believes this scope of work will cost effectively and successfully characterize current site groundwater conditions, address concerns of the ACHCSA, and obtain the data necessary to obtain full regulatory closure.

DRILLING PROGRAM

ACC will contact Underground Services Alert to locate any underground public utilities prior to performing boring and sampling activities, and obtain the necessary soil boring permit from the ACPWA. ACC can schedule this work within two weeks of Work Plan approval. The proposed soil boring locations are illustrated on Figure 2. ACC believes these grab groundwater sample locations are appropriate based on the depth and size of the tank and the extent of original overexcavation.

Three exploratory soil borings will be advanced with a truck-mounted Geoprobe® drill rig from the surface to a depth of approximately 16 feet bgs. Soil borings will be continuously cored with a standard 2-inch-diameter, 4-foot long Geoprobe® macrocore equipped with clear acetate liners. All soil and grab groundwater sampling will be performed according to ACC sampling protocols. Grab groundwater samples will be collected with the use of small-diameter disposable bailers advanced inside temporary casing placed in the soil boring or advanced down the open hole. Turnaround time for analytical results is typically 5 working days. Following drilling and sample collection, each soil boring will be abandoned with neat cement to just below the surface (3 to 6 inches) and according to Alameda County requirements. The soil boring will then be completed with concrete to grade to match the surrounding material. Attached are ACC's protocols for "Soil Sampling in Boreholes" and "Grab Groundwater Sampling in Boreholes."

REPORT PREPARATION

A summary report discussing all fieldwork, observations and findings, analytical results, risk evaluation, conclusions, and recommendations will be prepared for submission to the ACHCSA. The summary report will be submitted within 15 working days of receipt of analytical results.

HEALTH AND SAFETY PLAN

A site-specific health and safety plan which encompasses the proposed work at the site and complies with the requirements of 29 CFR Part 1910.120 will be prepared and present during field activities.

If you have any questions, please call me at (510) 638-8400, extension 109 (office) or email me at ddement@accenv.com.

Sincerely,

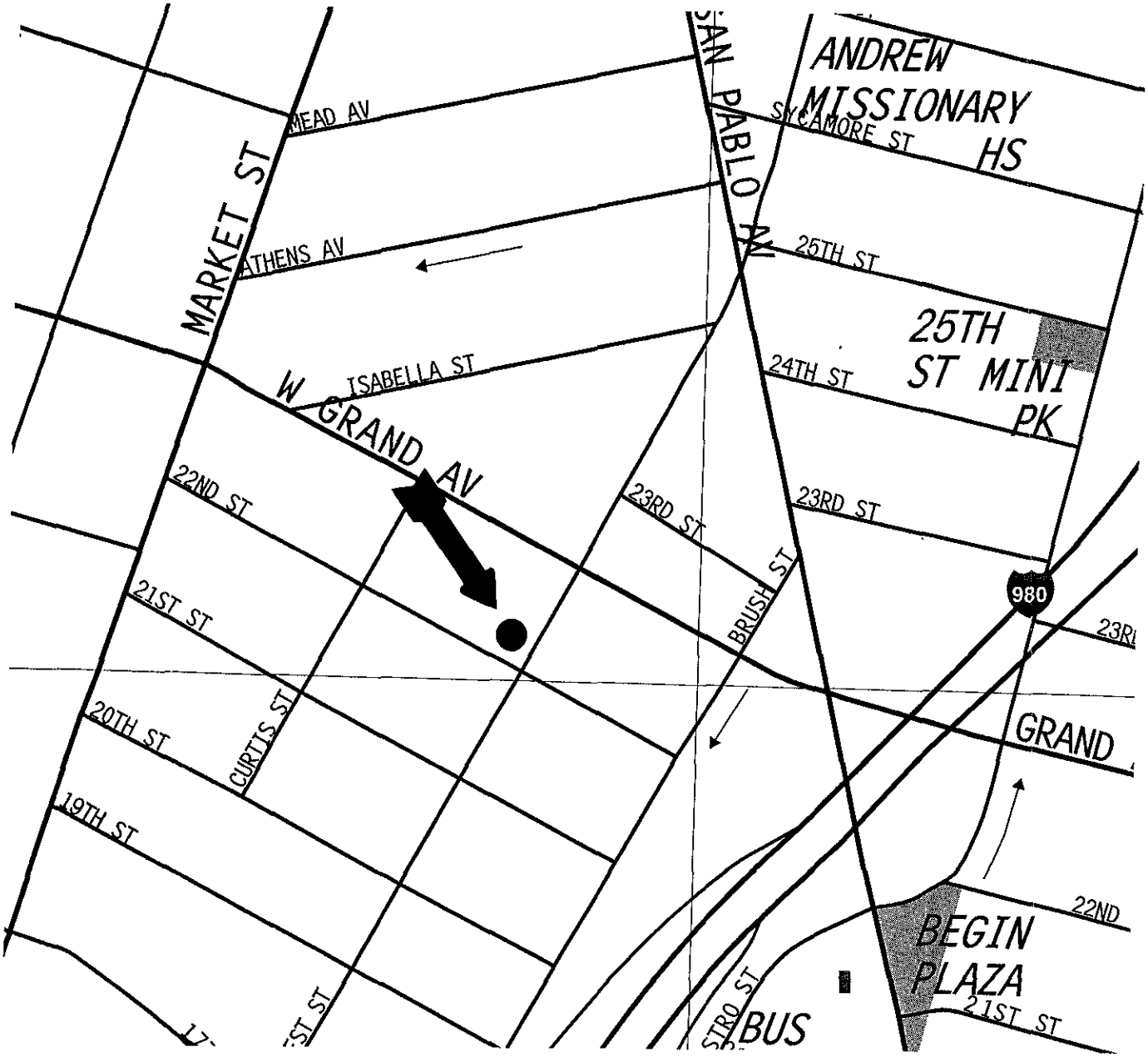
David R. DeMent, RG, REA II
Environmental Division Manager

/ejg:drd

Enclosures

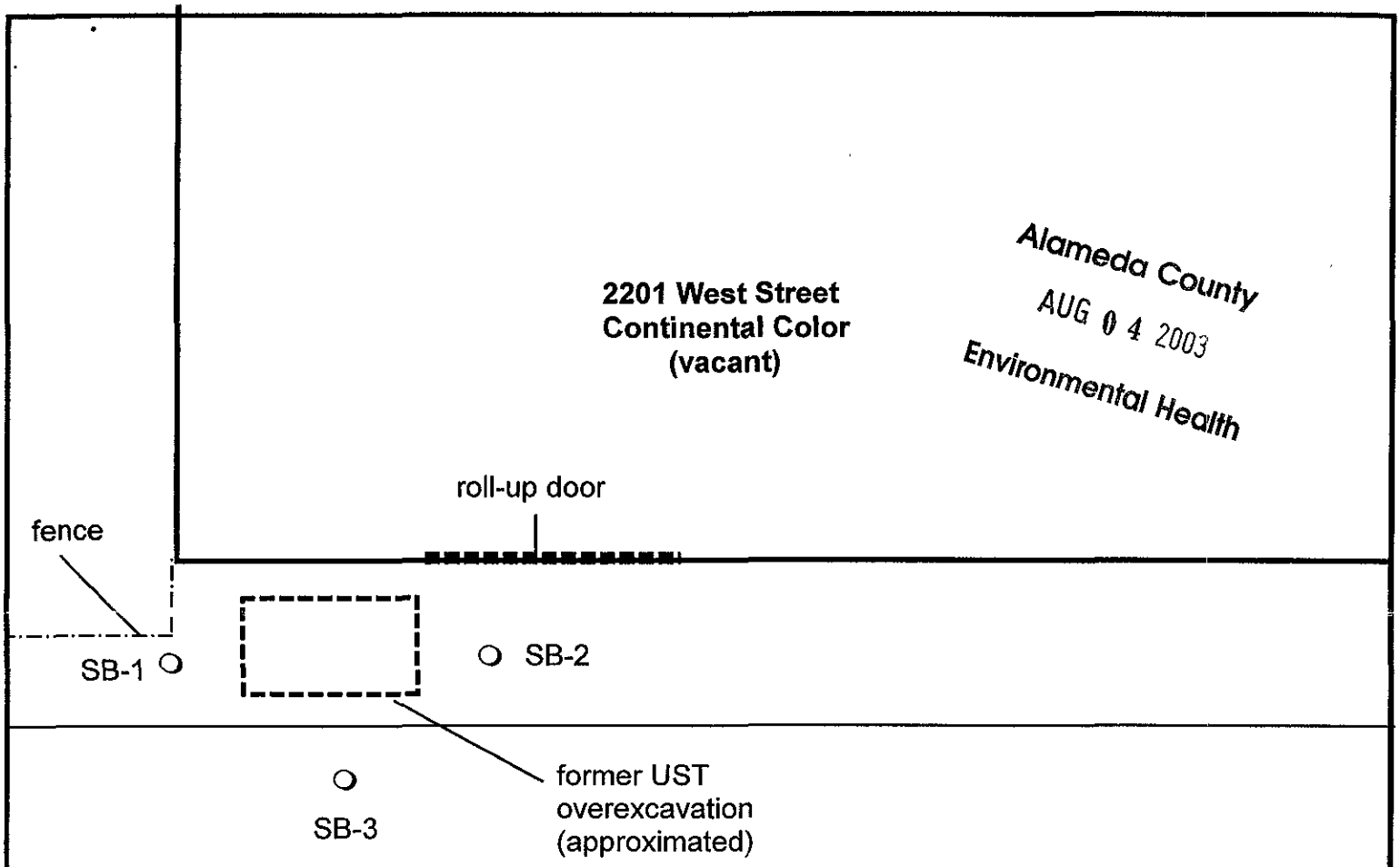
cc: ACHCSA

FIGURES



Source: Thomas Guide, Bay Area 2002

Title: ***2201 West Street Oakland, California***	
Figure Number: 1	Scale: None
Project No: 6766-001.00	Drawn By: TRB
A • C • C ENVIRONMENTAL CONSULTANTS	Date: 7/23/03
7977 Capwell Drive, Suite 100 Oakland, California 94621 (510) 638-8400 Fax: (510) 638-8404	N W E S



Alameda County
AUG 04 2003
Environmental Health

LEGEND

SB1 — Proposed Boring Location

0 5 10 15

Source: AEI Consultants 8/02

Title: ***Site Map (Revised)*** ***2201 West Street*** ***Oakland, California***	
Figure Number: 2	Scale: 1" = 10'
Project No: 6766-001.00	Drawn By: TRB
A • C • C ENVIRONMENTAL CONSULTANTS	Date: 7/29/03
7977 Capwell Drive, Suite 100 Oakland, California 94621 (510) 638-8400 Fax: (510) 638-8404	N W E S

SOIL SAMPLING IN BOREHOLES

U.S. Environmental Protection Agency standards serve as the foundation for all field sampling operations performed by ACC. EPA SW 846 is the primary publication from which procedures are derived. Some aspects of field and laboratory work may be regulated by guidelines of the California Environmental Protection Agency (Cal EPA) Department of Toxic Substances Control (DTSC), the Bay Area Regional Water Quality Control Board (RWQCB), and the Alameda County Health Care Services Agency (ACHCSA).

Sample Intervals

Undisturbed soil samples are generally obtained for chemical analysis and lithologic classification at three to five-foot intervals or at distinct lithologic changes. Sampling in a soil boring that will be converted into a monitoring well begins at approximately five feet below grade.

Collection Devices

When using a mobile drill rig, samples are collected using a 2-inch inside diameter Modified California Split Spoon Sampler containing three six-inch-long brass tubes or two three-inch-long tubes between two six-inch-long brass tubes. The sample collection device and tubes are decontaminated before and after each use by steam cleaning or by an Alconox solution wash, tap water rinse and deionized water rinse. The sampler will be driven ahead of the auger using a 140-pound drop hammer. The average blow counts required to drive the sampler the last 12 inches will be recorded on the boring logs.

When using hydraulic or pneumatic "direct push" sampling devices and stainless steel hydropunch-type samplers, soil samples are collected using a 1-inch or 2-inch inside-diameter stainless steel probe equipped with new, clear acetate liners, either two or four feet long. Either the vertical column of soil is sampled continuously, or if a specific interval is to be investigated, the probe is advanced to the desired depth, the retaining pin removed, and the probe advanced to collect the desired sample interval. The probe containing the undisturbed soil sample is removed from the ground and the process can be repeated for additional intervals of interest. In gravel and coarse-grained soils, stainless steel liners are used if acetate liners are being damaged during the sampling process. The probe ends are dismantled and the liner containing the undisturbed soil sample is removed. Depth intervals selected for analysis are immediately capped with teflon tape and tight fitting plastic caps are placed on each end. All sampled intervals are logged and characterized. The sample collection device is decontaminated before and after each use by steam cleaning or by an Alconox solution wash, tap water rinse and deionized water rinse. The acetate and stainless steel liners are certified clean by the manufacturer. Acetate liners are disposable, and stainless steel liners are recovered, decontaminated, and reused.

Preservation and Handling

After collection, soil sample containers are labeled, sealed at each end with new Teflon® sheeting and PVC end caps, and stored in pre-chilled insulated containers (approximately 4 degrees centigrade) to be delivered to a state-certified laboratory for analysis. Sample containers are labeled with self-adhesive, pre-printed tags.
Labels contain the following information in waterproof ink:

- Project number (or name)
- Sample number (or name)
- Sample location (well number, soil boring number, etc.)
- Date and time samples are collected
- Treatment (preservative added, filtration method, etc.)
- Name of sample collector

Soils Classification

Soil recovered in the clear acetate liners is examined by a geologist for obvious signs of contamination and classified according to the Unified Soil Classification System. These observations are recorded in the boring logs.

Selection of samples for laboratory analysis are based primarily on headspace readings using a photoionization detector (PID) and position within the soil boring. In general, samples with headspace readings over 50 ppm or that have visual or olfactory indications of contamination are submitted for analysis. Headspace readings are obtained by removing approximately four inches of soil from a 1-inch-diameter liner or one inch of soil from a 2-inch-diameter liner and immediately placing the soil in a resealable plastic bag. The soil in the sealed plastic bag is homogenized, allowed to sit for one minute, the sensor probe of the PID is inserted into the sealed bag, and the maximum PID reading is recorded. When contamination is encountered, one sample is selected from one or two sampling intervals below the apparent lower limit of soil impact to obtain a "zero line" value. During investigation of impact associated with underground storage tanks, the sample closest to the depth of the storage tank invert is submitted for analysis. If the water table is above the tank invert, the sample closest to the water table is selected.

GRAB GROUNDWATER SAMPLING IN BOREHOLES

Sample Collection

Borings are sampled using new, clean, disposable Teflon® bailers attached to new, clean rope or nylon string. Sample vials and bottles are filled to overflowing and sealed so that no air is trapped in the vial or bottle. Once filled, samples are inverted and tapped to test for air bubbles. Samples are contained in vials and bottles approved by the US EPA and the Regional Water Quality Control Board. Some analyses may require separate sample containers in accordance with EPA methods described in 40 CFR Part 136 and SW-846.

Water samples intended for volatile hydrocarbon analysis (EPA Methods 8010, 8020, or 8260) are contained in 40 milliliter (mL) volatile organic analysis (VOA) vials which contain a small amount of hydrochloric acid preservative (HCl) in the vial. Samples intended for analysis by EPA Methods 3500 or 3510/8015M procedures may not be preserved. Water samples intended for low-level diesel analysis are stored in amber glass 1-liter bottles to reduce degradation by sunlight. HCl preservative may be added to the sample if a holding time longer than seven days is expected prior to analysis.

All samples are stored in pre-chilled insulated containers (approximately 4 degrees centigrade) to be delivered to a state-certified laboratory for analysis.

Documentation

Sampling information is recorded in ink on the field boring logs or in a bound notebook with consecutively numbered pages. Pages are not to be removed for any reason. Alternatively, specially formatted field data sheets may be used to record the information collected during monitoring well water quality sampling. Errata may be marked out with a single line and initialed by the person making the change. The log book and data sheets will be placed in the project file when sampling is completed.

Field Equipment Decontamination Procedures

Bailers and string are properly decontaminated and disposed of offsite. All other sampling equipment, such as buckets and stands, are decontaminated after each use by washing in an Alconox solution, followed by tap water and deionized water rinses. Equipment will be sealed in plastic bags or sealed containers to prevent contact with potential contaminants prior to use.

All rinsate used in the decontamination process is stored onsite in steel DOT-approved drums or may be used to mix grout cement. Drums are labeled as to contents, suspected contaminants, date the container is filled, expected removal date, company name, contact and phone number. These drums are sealed and left onsite for subsequent disposal pending receipt of analytical results. Rinsate is disposed of at an accepting facility.

Sample Labeling and Chain of Custody

Sample containers will be labeled with self-adhesive, pre-printed tags. Labels will contain the following information in waterproof ink:

- Project number (or name)
- Sample number (or name)
- Sample location (well number, etc.)
- Date and time samples were collected
- Treatment (preservative added, filtered, etc.)
- Name of sample collector

The same information will be recorded on the chain of custody.

Environmental, Energy & Software Services
Northern California Office
7977 Capwell Drive, Suite 100
Oakland, CA 94621
(510) 638-8400
Fax: (510) 638-8404

A·C·C ENVIRONMENTAL CONSULTANTS

Facsimile

To:	Mr. Don Hwang / ACHCSA	**From:**	Trevor Bausman / Proj. Administrator
Fax:	(510) 337-9335	**Pages:**	1 (excluding coversheet)
Phone:	(510) 567-6746	**Date:**	August 12, 2003
Re:	2201 West Street, Oakland	**CC:**	

☐ **Urgent** ☐ **For Review** ☐ **For Comment** ☐ **Please Reply** ☐ **Other:** _____

Here is the Work Plan signature page with the RG stamp.

You can contact me at (510) 638-8400 ext. 113 or by email at tbausman@accenv.com.

ACC provides the following services:

- Asbestos Consulting
- Lead-paint Consulting
- Indoor Air Quality Consulting
- Mold & Water Intrusion Inspections
- Health & Safety Training
- Compliance Software
- Environmental Site Assessments
- Soil & Groundwater Remediation
- Underground Storage Tank Services
- Energy Consulting

Original to follow by:

X No Hard Copy to Follow
____ Via US Mail
____ Via Express
____ Via Courier

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Fax:	(510) 337-9335	**Pages:**	1 (excluding coversheet)
Phone:	(510) 567-6746	**Date:**	July 30, 2003
Re:	2201 West Street, Oakland	**CC:**	Gary Werkmeister (510) 839-7270

☐ **Urgent** ☐ **For Review** ☐ **For Comment** ☐ **Please Reply** ☐ **Other:** _____

Attached is the revised Site Map - Figure 2 showing the correct location of the former UST overexcavation and ACC's proposed boring locations at the Site.

A hard copy is being sent to you by mail today.

You can contact me at (510) 638-8400 ext. 113 or by email at tbausman@acceny.com.

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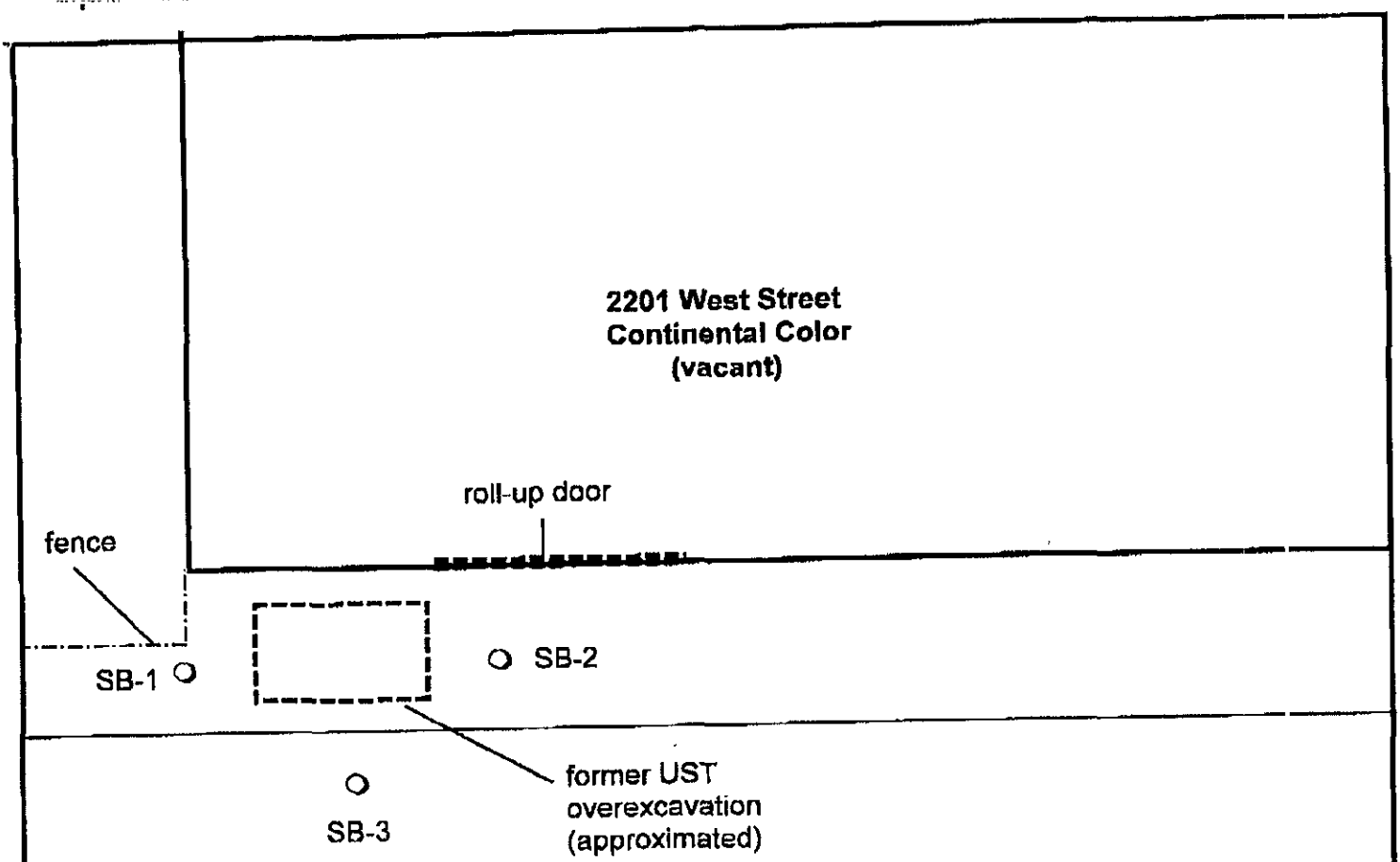

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