

**PIERS**



**Environmental  
Services, Inc.**

1330 S. Bascom Ave., Suite F  
San Jose, CA 95128

Tel (408) 559-1248 Fax (408) 559-1224

April 3, 2007

Mr. Jesse Kupers  
Oakland Fire Department  
250 Frank Ogawa Plaza, Suite 3341  
Oakland, CA 94612

**RE: Work Plan for Additional Subsurface Investigation  
557 Merrimac Street  
Oakland, CA**

Dear Mr. Kupers:

At your request, PIERs Environmental, Inc. (PIERS) has prepared this workplan for the investigation of groundwater impacts at the above-referenced site.

**BACKGROUND**

The Property is located on the western end of the 500 block of Merrimac Street, in the City of Oakland, Alameda County, California. Refer to Figure 1. The Property consists of a rectangular-shaped parcel of approximately 14,162 square feet in size, which is improved with a former gasoline service station building.

The Property is a closed Leaking Underground Storage Tank (LUST) case. In January 1995, four underground storage tanks (USTs) were removed from the site. The tanks included one 6,000-gallon, one 8,000-gallon and one 10,000-gallon gasoline UST, and one 500-gallon waste oil UST. The removals were witnessed by the Alameda County Health Care Services Agency (ACHCSA). Holes were encountered in one of the fuel USTs and in the waste oil UST.

Also on the day of the tank removals, and as requested and witnessed by the ACHCSA, 17 soil samples were taken from the tank pit excavations and stockpiles, and three soil samples were collected from beneath the dispenser islands. A groundwater sample was taken from the fuel tank pit.

The six soil samples taken from the fuel tank pit yielded non-detectable results for Total Petroleum Hydrocarbons (TPH) as gasoline; and benzene, toluene, ethylbenzene and xylenes (BTEX). The three soil samples taken from beneath the dispenser islands yielded largely non-detectable results. The water sample collected from the excavation contained 910 parts per billion (ppb) of TPH as gasoline, and BTEX constituents ranging from 6.9 to 19 ppb.

The soil sample collected from beneath the waste oil tank contained 8.1 parts per million (ppm) of TPH as gasoline, 74 ppm of TPH as diesel, and BTEX constituents ranging up to 92 ppm (xylenes). Oil and grease concentrations were detected at 2,500 ppm. The LUFT 5 metals (cadmium, chromium, lead, nickel, and zinc) were detected at what appeared to be background concentrations, and chlorinated hydrocarbons concentrations were non-detectable.

Following this work, the waste oil tank area was over-excavated in February 1995, under the supervision of the ACHCSA. The excavation was enlarged to dimensions of approximately 25 feet by 25 feet wide, and 9 feet deep, and approximately 250 cubic yards of impacted soil were disposed of off-site. The four soil samples taken from the excavation sidewalls yielded completely non-detectable concentrations of hydrocarbons. A soil sample collected from the bottom of the excavation contained elevated concentrations of hydrocarbons. This soil sample was collected from a depth of just above the water table. Based on these findings, a groundwater investigation was requested by the ACHCSA.

Approximately 100 cubic yards of soil were re-used as backfill. The 100 cubic yards of soil were analyzed and results were non-detectable for TPH as gasoline and BTEX, but contained 71 ppm of diesel and 35 ppm of Total Oil and Grease (below regulatory limits).

Three groundwater monitoring wells were installed at the site, at the locations shown on Figure 2. In four sampling events between July 1995 and June 1996, the analytical results of the groundwater samples collected from the monitoring wells have been entirely non-detectable for hydrocarbons, with one significant exception. In March 1996, the groundwater sample collected from well MW3, down-gradient of the former tank pit, contained concentrations of TPH as gasoline and TPH as diesel of 2,300 and 1,100 ppb, respectively. Benzene, ethylbenzene, and xylenes were detected at concentrations of 30 ppb, 140 ppb, and 22 ppb, respectively. This date corresponded to a shift in the direction of groundwater flow to the south-southeast, where MW-3 was more down-gradient of the former tank pit. In the next sampling event (June 1996), all of the wells again yielded non-detectable results.

In a letter dated January 29, 1997, "no further action" status was granted by the ACHCSA. In the Case Closure Summary that accompanied this letter, the remaining residual hydrocarbons in soil are stated as 120 ppm of TPH as gasoline, 420 ppm of TPH as diesel, 6,800 ppm of Total Oil and Grease, and BTEX constituents ranging between 0.032 and 0.140 ppm. The residual concentrations of dissolved hydrocarbons in groundwater are stated as 150 ppb of TPH as gasoline, 58 ppb of diesel, 0.73 ppb of ethylbenzene, and low (below regulatory limits) concentrations of chromium, nickel, and zinc.

In the Case Closure Summary, the reasons for case closure include 1) that the source has been removed and the site adequately characterized, 2) there are no sensitive environmental receptors, and 3) that there is no significant risk to human health using a commercial receptor scenario. It is stated that agency notification is required if there is a proposal for a change in land use or site activity, or if basements to buildings are to be constructed.

Prior to issuance of a building permit, two exploratory soil borings, designated as B1 and B1A, were completed at the Property within 1.5 feet of former monitoring well MW3 on February 9, 2007. Mr. Jesse Kupers of OFD witnessed the collection of the soil samples. The location of the soil boring B1 is shown on Figure 2.

The first exploratory soil boring, designated as B1, was extended to approximately 12 feet below grade with continuous coring. A hydrocarbon-stained interval that corresponded with the first permeable soils was encountered between 9.25 and 10.8 feet below grade. The subsurface soils consisted of clayey to sandy silt and lesser amounts of silty sand (ML), except for a more permeable interval of gravelly silty sand that was encountered between approximately 9.3 and 10.8 feet below grade. This interval appeared to be stained light gray and had a moderate odor of weathered gasoline.

After retrieving the rods, the hole collapsed below a depth of 8 feet below grade, and no groundwater collected in the soil boring. An attempt to collect a water sample was then made with a hydropunch. The drilling rods were extended to approximately 11 feet below grade and the rods retracted approximately 1.5 feet. No water had collected after about 20 minutes, apparently because the screen had become smeared with sediment. After pulling the rods and sampling tool, one-inch-diameter slotted PVC casing was installed in the soil boring, and groundwater was measured at 7.8 feet below grade using a sounder.

After completion of water sampling, an attempt to collect a vapor sample was made, but was unsuccessful (boring B1A). This work was summarized in PIERS' previous "Report of Subsurface Investigation" dated February 2007.

The soil sample collected from 10.3 feet below grade, which had a moderate odor, contained 20 parts per million (ppm) of TPH as gasoline, 0.065 ppm of toluene, and 0.0081 ppm of xylenes. The analytical results of the sample collected from 11.5 feet below grade were non-detectable for all of the analytes. All of the analytes were also non-detectable in the grab groundwater sample, except for TPH as diesel and motor oil, which were detected at concentrations of 2,300 ppb and 11,000 ppb, respectively.

**Based on these findings, PIERS proposes four additional soil borings to further delineate the extent of diesel and motor oil in groundwater prior to excavation of the planned development, and to confirm whether the impacts are from residual hydrocarbons originating from the Property, or from an off-site source. It is anticipated that the planned excavation for the condominium development would remove the vast majority or all residual hydrocarbon-impacted soil remaining at the Property, which is potentially continuing to provide a source of the dissolved levels of diesel and motor oil groundwater contamination. During the excavation, the dissolved concentrations of hydrocarbons remaining in groundwater could be reduced by dewatering the excavation into Baker Tanks. It is anticipated that the data from the exploratory soil borings could be used to plan for implementation of this remedial measure.**

## PROPOSED SCOPE OF WORK

Four exploratory soil borings are proposed, as shown on Figure 2. The soil borings are sited on the presumed down-gradient perimeter of the Property, based on a varying flow direction previously measured as south on one occasion, west-southwest on one occasion, and south-southeast on two occasions.

The exploratory soil borings would be completed using a Geoprobe direct push drill rig. The soil borings would be extended to approximately 12 feet below grade. Water samples would be collected either by retracting the drilling rods and placing small diameter screened PVC casing in the boreholes, or by using a hydropunch. The water samples would then be retrieved by using small diameter vinyl tubing fitted with a chuck ball tip.

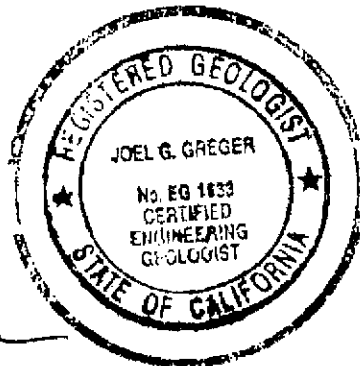
Prior to drilling, a health and safety plan will be prepared, and the site will be marked for Underground Service Alert. Also, a drilling permit will be obtained from Alameda County Public Works.

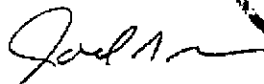
The groundwater samples will be decanted into VOAs, labeled, placed in an ice chest, on ice and entered on a chain of custody form prior to same day delivery to the laboratory. The water samples will be analyzed for TPH as diesel and motor oil by EPA Method 8015.

Soil cuttings from the soil borings will be stored on site in a drum or pail prior to disposal. The borings will be backfilled with neat cement grout using a tremie pipe. The work described above will be summarized in a technical report, which will be submitted for your review.


Should you have any questions regarding this work plan, please do not hesitate to call me at (510) 593-5382.

Sincerely,  
**PIERS Environmental Services, Inc.**



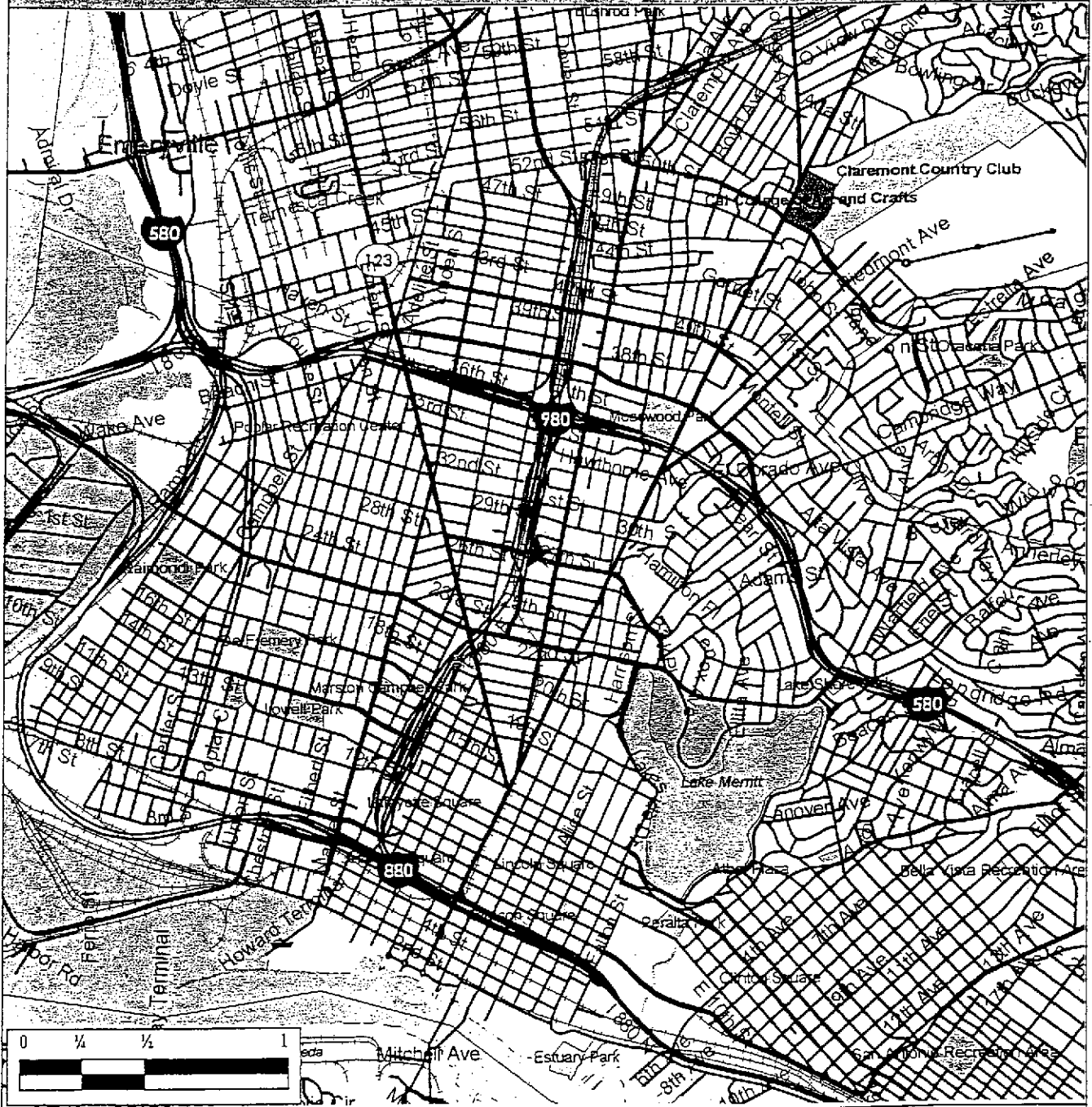
  
Joel G. Greger  
Senior Project Manager  
CEG # EG1633, REA # 07079










  
Kay Pannell  
Chief Operations Officer  
REP #5800, REA-II #20236

Attachments: Figures 1 and 2

**IDENTIFIED HAZARDOUS MATERIALS SITES  
RADIUS REPORT  
Site Vicinity Map**



-  MAJOR ROADS
-  ROADS
-  FREEWAYS
-  RAILROAD TRACKS
-  PARKS
-  PLACES, SCHOOLS
-  SUBJECT PROPERTY



**FIGURE 1  
PROPERTY VICINITY MAP**

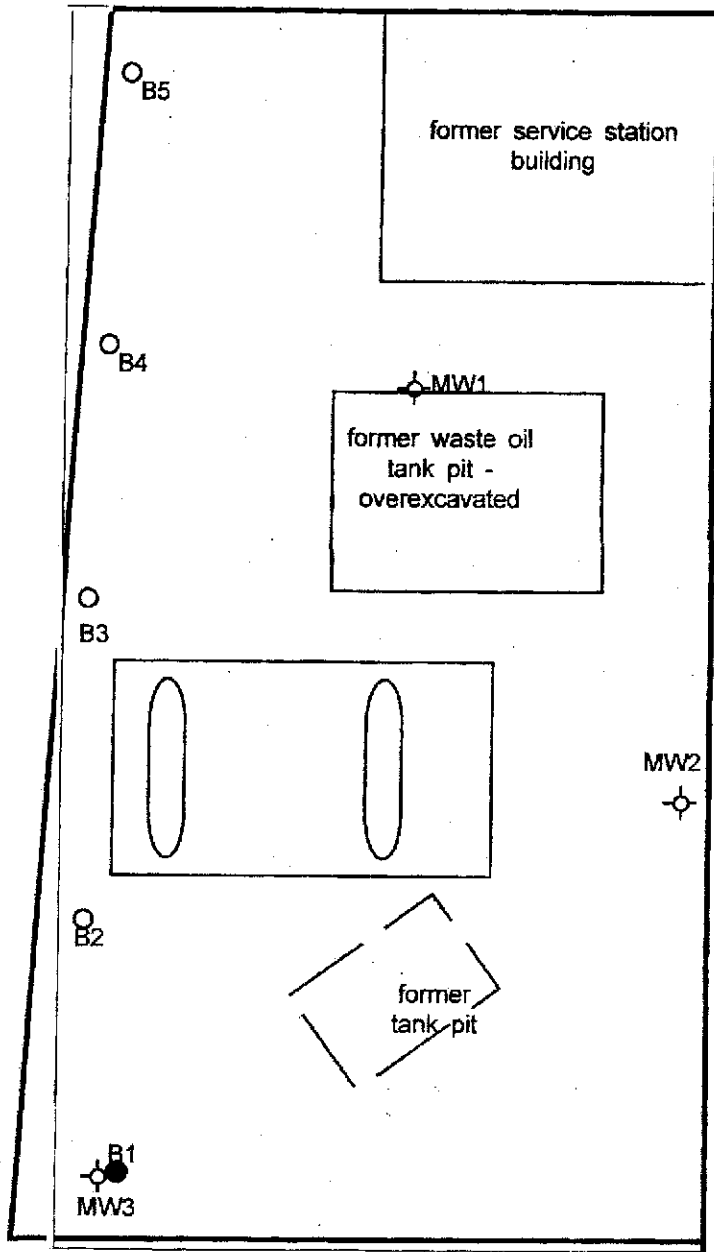
557 MERRIMAC STREET  
OAKLAND, CALIFORNIA

NOT TO SCALE  
FEBRUARY 2003



27th STREET

MERRIMAC STREET



LEGEND

- monitoring well, destroyed
- exploratory boring, 2-9-07
- exploratory boring, proposed

SCALE:  
1" = 20'

Noel Yi Property  
557 Merrimac Drive  
Oakland, California

Figure No:  
**2**

Date: April 2, 2007  
Drawn By: JG

# Site Plan