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Alameda County  
Environmental Health

November 15, 2007

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

Subject: Phase V Site Investigation Workplan  
1171 Ocean Avenue, Oakland, California (Fuel Leak Case No. RO0002937)

Dear Mr. Plunkett:

### **INTRODUCTION AND BACKGROUND**

On behalf of the property owner, 1170 Ocean Avenue, LLC., (represented by Ms. Felicia Woytak), Stellar Environmental Solutions, Inc. (SES) is providing this workplan to the Alameda County Environmental Health Department (ACEH). The workplan was prepared in response to our discussions at ACEH's on October 29, 2007 which were to further investigate a possible trichloroethylene (TCE) "source" area in the southeastern corner of the yard area. Another objective is to establish a hydrologic baseline by installing and monitoring three monitoring wells (pairs).

The data objectives of this scope of work include:

- Completing a dense network of 14 bores in the southeastern corner of the yard area to collect lithologic information, vertical soil sampling profiles, and grab groundwater samples at two depth intervals;
- Constructing a detailed local cross section as well as site wide cross sections to better define the site lithology;
- Using field screening instruments to potentially modify the sampling plan if it appears it might result in the discovery of a source area of TCE; and

- Installing six groundwater monitoring wells, configured as three pairs of adjacent 1-inch pre-packed wells. The two adjacent wells in each pair will have screened intervals from 35 to 40 in one well, and 20 to 25 in the other well.

## **WORKPLAN SCOPE OF WORK**

The scope of work to address the Alameda County-requested workplan is presented in the following tasks: 1) Pre-Field Work Planning; 2) Borehole Drilling and Grab-Groundwater Sampling; 3) Groundwater Well Installation and Baseline Sampling; 4) Laboratory Analyses; and 5) Report Preparation.

### **Task 1: Pre-Field Work Planning**

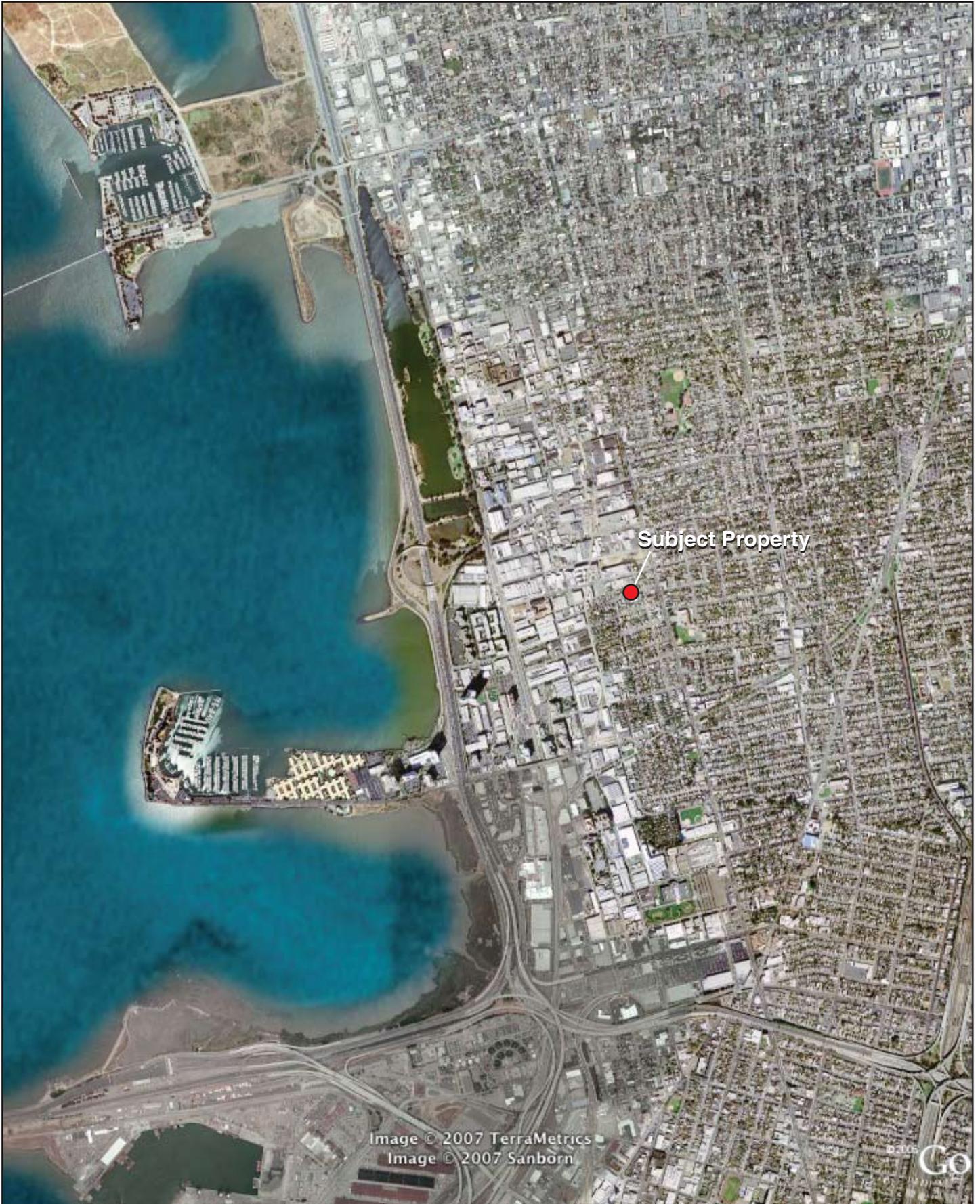
This task encompasses the pre-field work elements of the project including:

- Marking the site for the required Underground Service Alert (USA) utility clearance and making the required notification to USA;
- Scheduling and coordinating the drilling and analytical laboratory subcontractors;
- Applying and paying for the requisite borehole drilling permit from Alameda County Public Works Agency and providing notification of the onsite drilling schedule to that agency;
- Completing a Site Health and Safety Plan update; and
- Conducting overall program management.

### **Task 2: Soil and Grab-Groundwater Sampling**

A dense bore program is proposed in the area of the suspected source area located around the southeast corner of the property. This area is characterized by a sub-grade drain and concrete patch, and previously contained a shed. SES will dismantle and remove the drain (adjacent to the former bore BH-27) to examine the base of it in more detail. The results of previous sampling events have established this general area to contain the highest TCE concentrations in groundwater. This is also the only location where TCE was detected in soil samples as well as one soil gas sample (although the soil and soil gas were detected at trace concentrations). Figure 1 shows the site location map and figure 2 the location of proposed bores.

While SES suggested trenching across the subgrade sump area to remove it and examine the area around it for potential sources, discussions with ACEH resulted in the decision to do multiple



Subject Property

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**SITE LOCATION ON U.S.G.S. TOPOGRAPHIC MAP**

1171 Ocean Avenue  
Oakland, CA

By: MJC

NOVEMBER 2007

**Figure 1**



2006-21-01



boreholes in the area. This will accomplish a greater investigational depth compared to trenching, and vertical soil samples may be taken at depths below the groundwater table (estimated at 20 feet bgs). Detailed lithologic logs will also be constructed to obtain a cross section of the area.

The bores will be placed on approximately 5 foot centers, across an area of about 25 by 15 feet, for a total of 14 soil bores. The soil bores will be drilled to a depth of up to 40 feet bgs and soil samples will be collected at depths of 2, 5, 8, 15, 20, 30 and 40 feet bgs. The samples collected from 2, 8, 20 and 30 feet will be analyzed while the samples from 5, 15, and 40 will be held at the lab pending the need for further source area definition.

One shallow soil sample will be collected at the base of the sump area at the southeastern corner of the building. This location cannot be drilled due to lack of access, but a soil sample will be collected manually at the base of the estimated 3-foot sump.

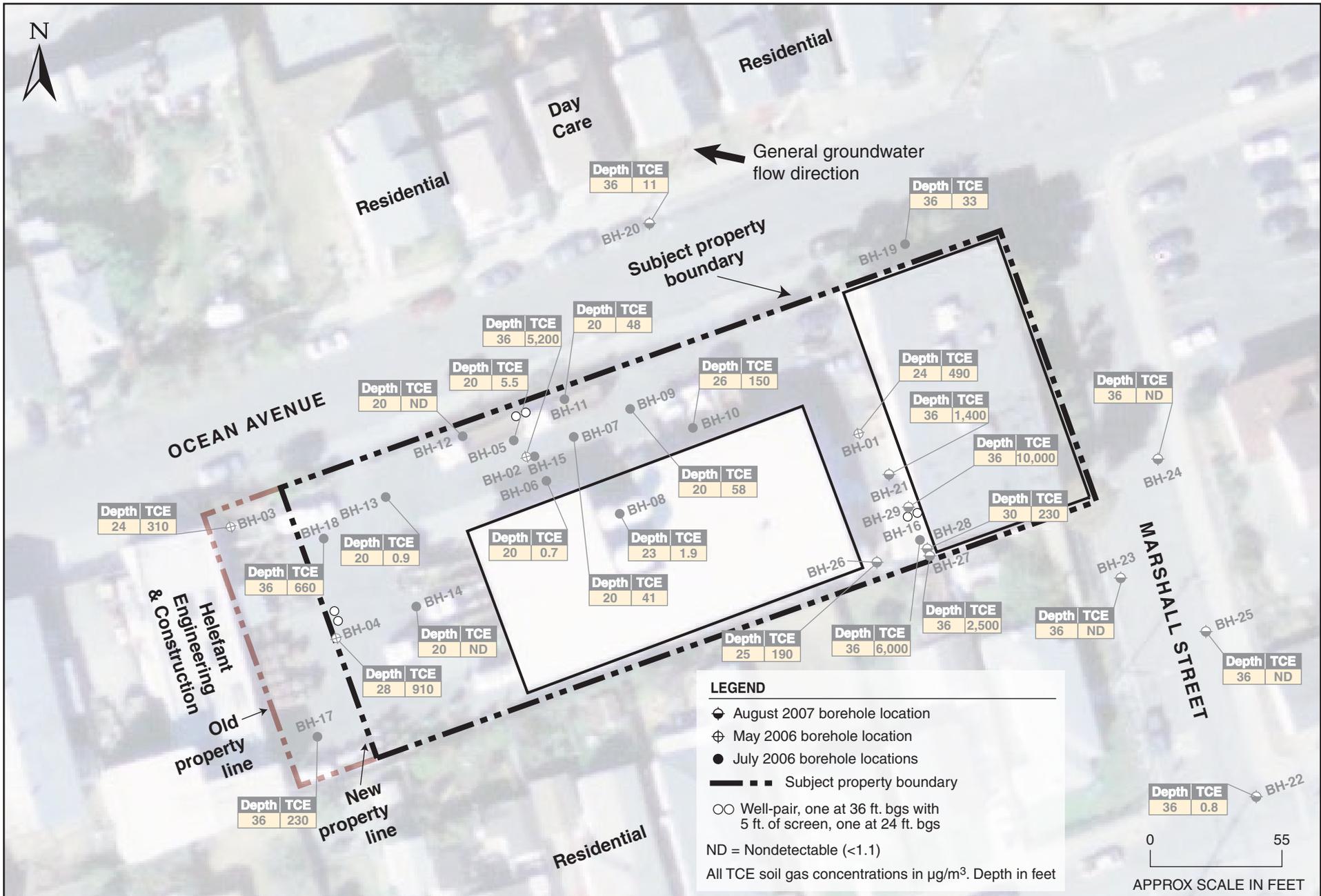
The drilling, sampling, and well installations will be completed using a licensed drilling subcontractor under the direction of SES. The boreholes will be advanced with a Geoprobe™ (direct-push) rig that advances approximately 2-inch-diameter sampling rods into undisturbed soil and collects continuous core samples. A photoionization detector (PID) will be used to screen soil samples. Geologic logs will be constructed for each bore using the USGS soil classification method so that subsequent cross sections can be developed.

### **Task 3: Groundwater Well Installation and Baseline Sampling**

#### Technical Rationale: Well Location and Construction Specifications

As discussed in detail in our October meeting, there appears to be a consistent trend of higher TCE concentrations in grab-groundwater samples collected from the deeper 36 foot bgs depth, and consistently lower concentrations of TCE in the upper part of the groundwater table at about 24 feet bgs. To verify this vertical contaminant concentration profile, SES proposed to install three sets of adjacent well pairs. Of the two adjacent wells included in each well pair, one will contain a screen interval from 20 to 25 feet bgs, and the other with a screen interval from 35 to 40 feet bgs. The wells will be installed at the following locations; Figure 3 features the locations on a site map.

- MW-1A/1B: In the area of maximum groundwater contamination (near BH-29) to evaluate conditions near the presumed contaminant source;



**PROPOSED GROUNDWATER WELL-PAIR LOCATIONS**  
**1171 Ocean Avenue, Oakland, CA**

**Figure 3**

by: MJC NOVEMBER 2007

- MW-2A/2B: Within the mid-site northern area where the plume is projected to move offsite, this monitoring well pair will establish the concentration along the property line; and
- MW-3A/3B: Along the new property line (the adjacent property lot line is being moved 20 feet east). This well pair will provide the necessary triangulation for computing hydraulic gradient.

All six of the groundwater monitoring wells will be located within several feet of existing recent boreholes from which soil analytical data were obtained.

### Well Completion

The two “paired” wells will be installed at the proposed locations, each with a 5-foot screened interval. We propose to utilize narrow-diameter “pre-packed” stainless steel groundwater monitoring wells, which are commonly utilized for groundwater monitoring and sampling at VOC release sites.

The well emplacement procedure will be as follows:

- 2-inch continuous core sampling rods are withdrawn after soil sampling run is completed.
- 3¼-inch OD “blind” (closed with sacrificial tip) drive rods are driven over the 2-inch borehole to well completion depth, and the sacrificial tip is dropped.
- The pre-packed well is placed inside the drive rods, and supplemental sand is added to fill the annular space around the pre-packed screens. The sand also covers the top of the well screens approximately 0.5 foot. The sand is then wetted.
- Bentonite chips are added on top of the sand and hydrated.
- Portland cement grout slurry is brought to near ground surface, and the well box is installed.

The following are key construction specifications:

- Well screen and filter pack (“pre-packed”): 2- or 5-foot-long 2½-inch outside diameter (OD) stainless steel mesh, enclosing ¾-inch-thick #20/40 sand, around 1-inch inside diameter (ID) (0.010-inch slotted) Schedule 40 PVC screen.
- Well riser: 1-inch ID Schedule 40 PVC.
- Pollution seal: 2-foot-thick bentonite chips (hydrated) overlain by Portland cement grout slurry to near ground surface).

- Surface completion: Christy-type flush-mount box and locking well casing cap (separate well completions for each of the two “nested” wells at each location).

This type of well completion has been previously approved by the Alameda County Public Works Agency on other sites in Oakland.

#### Well Development

No later than 2 to 3 days following well installations, each well will be developed by purging standing water in the well casings. Ten wetted casing volumes will be purged, and aquifer stability parameters (temperature, pH, and electrical conductivity) will be measured between each purged volume.

#### Monitoring Well Surveying

Following well installations, the horizontal coordinates and vertical elevations of the wells will be surveyed by a licensed land surveyor, in accordance with State of California GeoTracker requirements. The elevation precision will be to 0.01 feet relative to an established benchmark datum.

#### Monitoring Well Quarterly Sampling

We propose to begin a program of consecutive quarterly groundwater monitoring events. The first sampling event likely will be conducted immediately following well development. Each sampling event will consist of:

- Measuring equilibrated water levels in wells using an electric water level meter, and checking for free-product petroleum with an oil-water interface probe.
- Purging each well (with a peristaltic pump) of a minimum of 3 casing volumes and a maximum of 5 casing volumes, and measuring aquifer stability parameters (pH, temperature, and electrical conductivity) before purging and after each purged volume.
- Collecting post-purge groundwater samples for laboratory analysis.
- Delivering the samples to the analytical laboratory.

Groundwater monitoring and sampling will be conducted by an SES subcontractor under supervision of SES personnel.

#### Management of Investigation-Derived Waste

*Soil.* Waste soil from the drilling will be containerized in labeled 55-gallon steel drums that will be temporarily stored onsite (and combined with the previous investigation drill cuttings). As a

cost-saving measure, we propose to combine the soil with the proposed corrective action soil cuttings, which we anticipate will be sent to a local non-hazardous (Class II) landfill.

**Water.** Well development water, monitoring event purge water, and equipment decontamination rinseate will be containerized onsite in labeled, 55-gallon drum(s). This non-hazardous water will be added to the water to be pumped during the groundwater interim corrective action (see below), which will be properly sampled, profiled, and disposed of at a permitted wastewater treatment facility.

#### **Task 4: 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:

- Soil samples will be analyzed by an ELAP-certified laboratory for analysis of volatile organic compounds via EPA Method 8260 for 8010 volatile organic compounds;
- Groundwater Grab samples will be analyzed by an ELAP-certified laboratory for analysis of via EPA Method 8260 for 8010 volatile organic compounds; and
- Baseline samples from the six groundwater monitoring wells via EPA Method 8260 for 8010 volatile organic compounds.

#### **Task 5: Report Preparation**

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

- The responsible party's perjury statement letter, investigation scope and objectives, site description, summary of previous investigational findings, and discussion of any constraints;
- Sampling and analytical protocols used;
- Site map delineating previous and current investigational borehole locations;
- Discussion of analytical results in the context of regulatory agency guidelines/criteria, and the magnitude and extent of contamination from previous site investigational findings;
- Examination of previous and current investigational evidence for an on-site source area to account for the distribution of TCE;
- Detailed lithologic cross sections based on current and previous site data;
- A re-examination of the site conceptual model in the light of the new data;

- Conclusions, and where appropriate, recommendations; and
- Technical appendices.

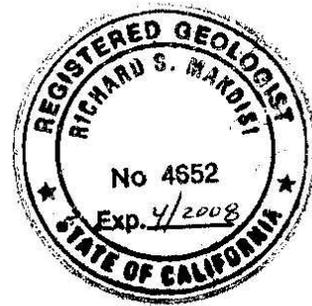
SES will upload an electronic version of the report, with all associated documentation and required signatures and professional certifications, to ACEH's designated website.

This workplan is submitted on behalf of Ms. Felicia Woytak, a partner in the ownership of the subject property. Ms. Woytak is eager to move the project forward to achieve site closure so as to be able to have the site redeveloped. Please contact me directly if you have any questions.

Sincerely,



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



cc: Ms. Felicia Woytak.