EXCAVATION OF FUEL OIL IMPACTED SOIL

AT

DOROTHY COATES PROPERTY
33 LASALLE AVENUE
PIEDMONT, CALIFORNIA

WORK PLAN #060-WP91018

PREPARED BY ENVIRONMENTAL BIO-SYSTEMS, INC.
FOR
DOROTHY COATES
33 LASALLE AVENUNE
PIEDMONT, CA 94611

Timothy M. Babcock
Environmental Scientist

September 26, 1991

1.0) INTRODUCTION

The following document contains the purpose and scope of work, a brief site history, and a summary of previous investigations based upon information made available to Environmental Bio-systems, Inc. (EBS) through contact with Dorothy Coates (the client).

This scope of work was prepared in accordance with guidelines established by the Alameda County Health Department (ACHD), Alameda County Water District, and the Regional Water Quality Control Board (RWQCB).

2.0) SITE DESCRIPTION

The current and only reported past use of the site is residential. One single family residence was present on the site at the time of our work at the site. The topography of the site slopes sharply from the northwest toward the southeast.

3.0) PREVIOUS ENVIRONMENTAL EXPLORATIONS

On July 25, 1990, the client contracted Accutite to remove one 550 gallon underground storage tank (UST) from the site. Sampling of soil beneath the tank was performed by the contractor at the time of sampling. Soil samples collected from beneath the tank showed detectable concentrations of total petroleum hydrocarbons (TPH) as diesel and total oil and grease (TOG). No written documentation showing the location of the UST or subsequently collected soil samples was submitted by the contractor.

On August 29 and August 30, 1991, EBS personnel extracted 7 continuously sampled soil cores at the site using a Bobcat mounted impact coring device. A weathered sandstone bedrock was encountered at shallow depths in each of the sampled cores. Moderately high levels of total oil and grease (TOG) and total petroleum hydrocarbons as diesel (TPHd) were encountered in only 1 of the 7 cores sampled. No evidence of impact to or from the adjacent property was noted.

4.0) PREPARATION FOR FIELD WORK

Before commencement of work, all necessary permits from regulatory agencies will be obtained. All field work will be performed according to the site safety plan (SSP) prepared specifically for this project addressing the concerns of OSHA and Cal-OSHA. Work will begin after the appropriate regulatory agencies have been given the opportunity to indicate their approval for the scope of work presented here.

5.0) SCOPE OF WORK

The scope of work outlined in this work plan includes measures intended to address the known presence of fuel oil in the subsurface of the site. An evaluation of the probability of impact to groundwater beneath the site is also included to address the guidelines of the Regional Water Quality Control Board-San Francisco Bay Region (RWQCB-SFBR), as implemented by the Alameda County Health Department (ACHD).

5.1) Excavation of Impacted Soil and Bedrock

From previous exploration performed at the site, it was noted that the weathered sandstone bedrock at the location of core EB3 (from EBS report #060-185-01 dated 9/10/91) is impacted with what appears to be fuel oil. The sandstone bedrock found throughout the area of previous exploration is assumed to contain a limited, and as yet undefined, volume of fuel oil which may have been released through overspillage from the fill-pipe or leakage at associated pipe joints. Although documentation of the exact location of the tank and associated piping were not generated during removal activities, the estimated location of the fill-pipe is approximately in the area of core EB3. From a picture of the tank taken by the client during removal, we assume that its' location was directly southwest of the fill, less than 5-feet downslope.

Using a backhoe we intend to remove the upper 3-feet of overburden soil and segregate it for later reintroduction as backfill. We will attempt to remove the top several feet of bedrock where field observations indicate the presence of fuel oil through use of a hydraulic hammer mounted on the backhoe. The extent of bedrock removed will be dictated by the limitations of the available equipment, perceived threat to the structure of the building, or field observations indicating a lack of further impact. Impacted material will be stockpiled on and covered with plastic visqueen liners pending the receipt of analytical results and ultimate disposal. Intended options for disposal, based on analytical results, are class III landfill or Portland Cement reclamation.

The excavation will be immediately backfilled using clean, imported material to replace the removed volume of soil and bedrock. The backfilled material will be compacted to a rate of at least 85%.

Following excavation, confirmation samples of the exposed bedrock will be collected and analyzed to document the success of removal. Samples collected in the field will be analyzed by a State-certified laboratory for TPH as diesel using a modified EPA test method 8015, and TOG using EPA test method 5520 B&F. One composite sample, taken from the impacted material, will be analyzed according to landfill profiling requirements for TPH as diesel using a modified EPA test method 8015, and oil and grease using EPA test method 5520 B&F, reactivity, corrosivity, ignitability (RCI), and the heavy metals Arsenic, Barrium, Cadmium, Chromium (total), Copper, Lead, Mercury, Nickel, Selenium, Silver, and Zinc.

5.2) Evaluation of Groundwater Elevation or Exploration

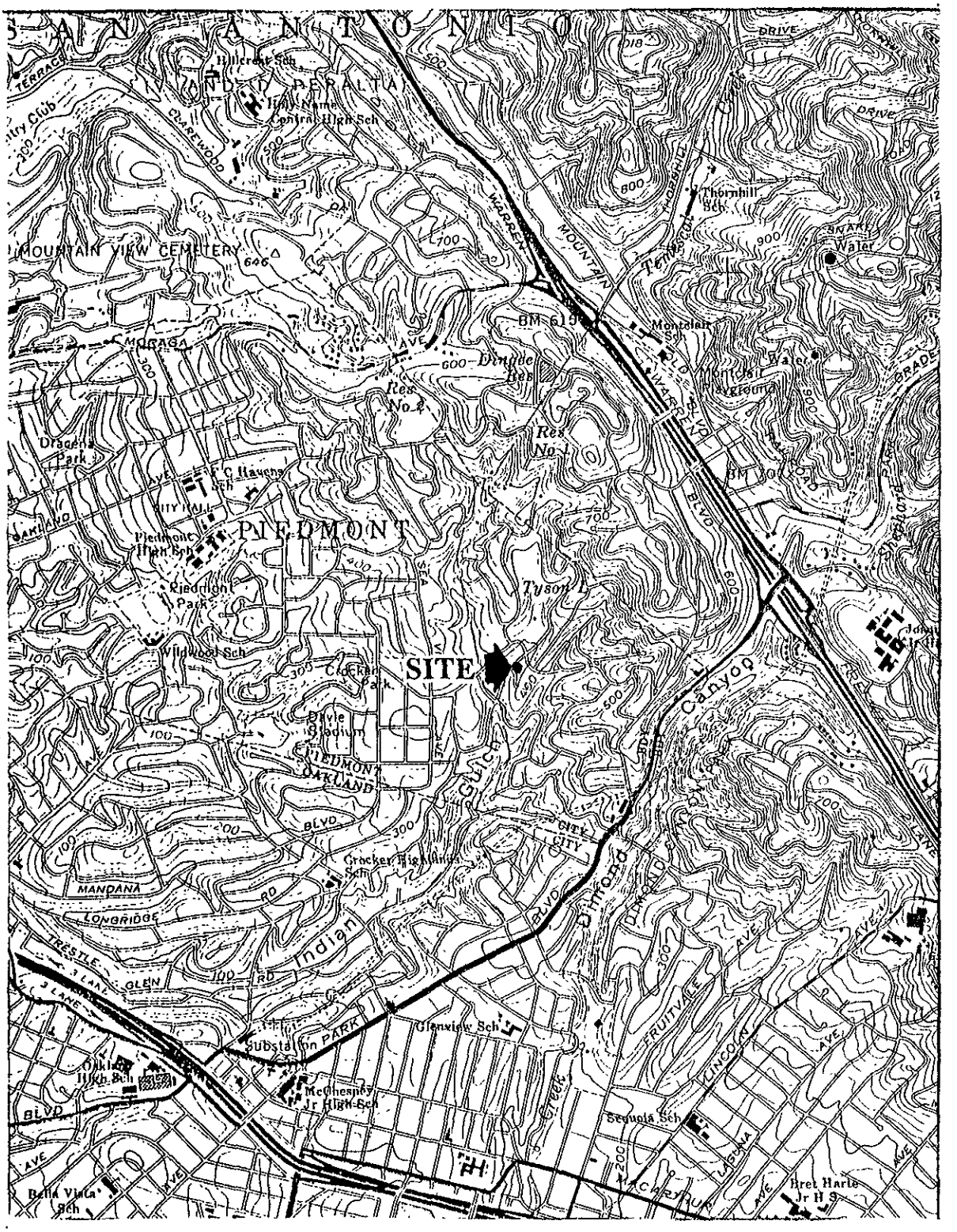
In addition to the excavation of impacted soils, an evaluation of the possible impact to shallow groundwater beneath the site is required at a minimum. Preliminary research into the depth to groundwater beneath the site combined with the observed shallow depth to bedrock suggest that the installation and sampling of groundwater monitoring wells may not be appropriate. The results of the scope of work outlined in this plan will be considered in conjunction with the results of collected groundwater elevation data from the area of the site to develop recommendations regarding the need for further exploration in the groundwater.

6.0) TIME SCHEDULE

Submission of exploration work plan to ACHD	**September 26, 1991**
Excavation	**September 30, 1991**
Backfill & Compaction	**September 30, 1991**
Receipt of Analyses	**October 14, 1991**
Disposal of Soil	**October 18, 1991**
Submission of Final Report	**October 21, 1991**

7.0) REPORTAGE

EBS will prepare a report describing the exploration findings including recommendations based upon these results. We will include documentation of field and laboratory procedures, soil encountered in the soil borings, interpretation of the soil strata, well construction, and laboratory results. Interpretations of the site conditions and results of analyses will be provided. Documentation will include scaled diagrams, logs of soil types encountered, copies of the chain of custody forms, laboratory reports, tabulated data, and interpretative figures as needed. The information obtained during this work will remain confidential and will be released only with the authorization of our client Dorothy Coates.



Source: USGS Topographic Map SW/4 Concord Quandrangle

SCALE - **1:24000**

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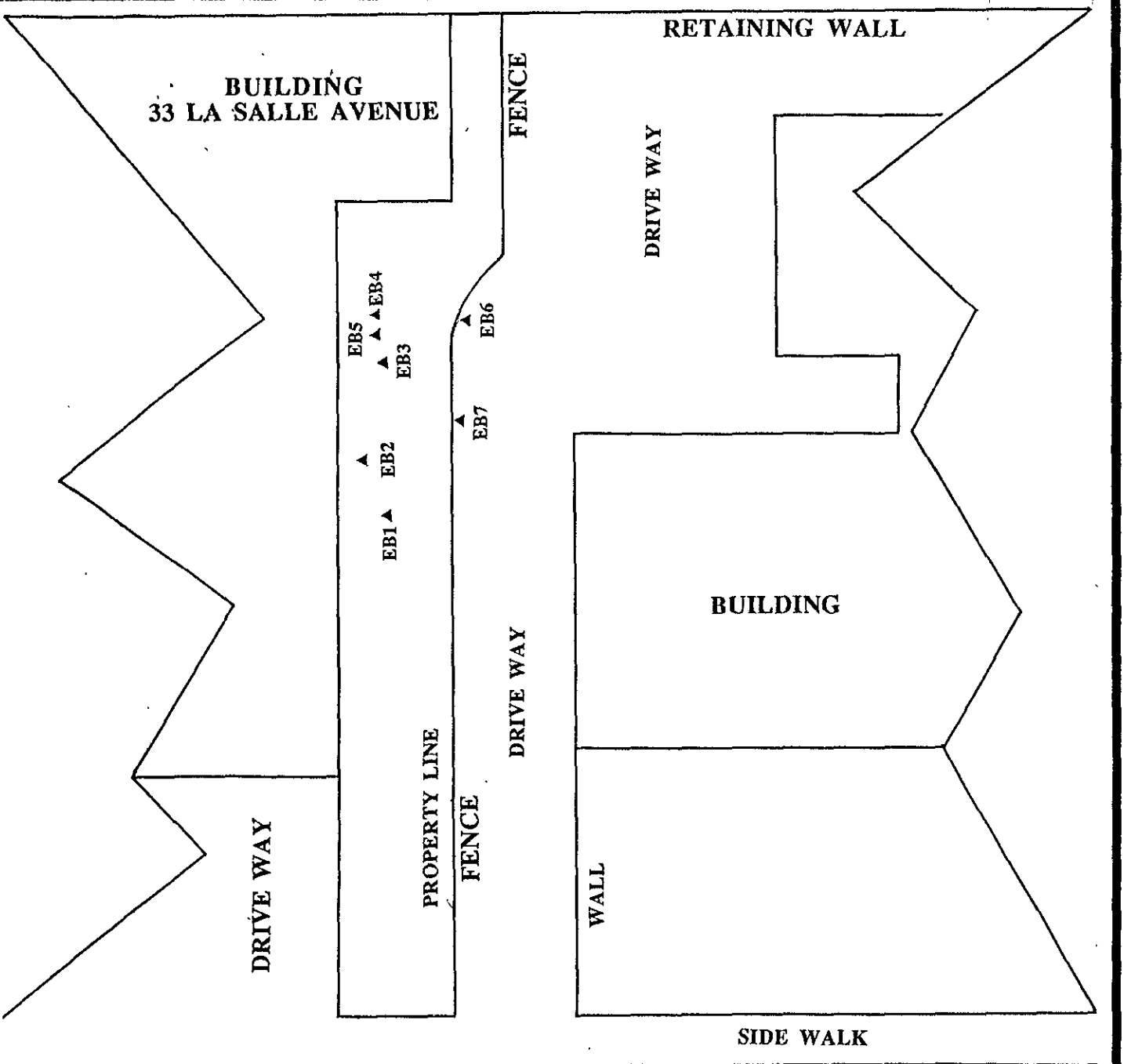
DATE: **AUG 1991**

DRWN BY: **SLS**

APPRVD: **TMB**

FIGURE 1: SITE LOCATION MAP

Coates Property
33 LaSalle Ave.
Piedmont, CA



EXPLANATION

EB7 ▲ - Location of Core Sample

NOTE: All property boundaries not shown.

SCALE - 1" = 15'

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FIGURE 2- Site Diagram

Coates Property
33 La Salle Ave.
Piedmont, CA