AUGEAS

September 1, 1994

Ms. Medulla Logan
Alameda County Health Agency
Division of Hazardous Materials
Department of Environmental Health
1131 Harbor Bay Parkway
Alameda, CA 94502
510/ 567-6700 x 36764
510/ 337-9335 (fax)

RE: Foothill Square Shopping Center, 10700 MacArthur Boulevard, Oakland, California

Dear Ms. Logan:

With this letter, I am faxing over a workplan that I have revised to reflect what we discussed this week concerning a site investigation at Young's Cleaners. This is the most current Workplan update for the proposed site investigation. We are currently still scheduled to begin drilling at the subject site September 2, 1994. Please call me with your comments. If I do not hear from you, Augeas Corporation will start the work as scheduled.

Please call me at (415) 726-7700 if you have questions.

Sincerely yours,

Charles D. Conway

Charles D. Conway
Project Geologist

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1.0 INTRODUCTION

Augeas Corporation has prepared this Workplan for site investigation of the subject site located at 10700 MacArthur Boulevard, Oakland, California. The site is located in the Foothill Square Shopping Center at the intersection of Foothill Boulevard and MacArthur Boulevard. The site location is shown in Figure 1, "Site Location Map".

2.0 BACKGROUND

2.1 Operation as a Dry Cleaners

The site has been operated as Young's Cleaners since 1984. A coin operated dry cleaner, Norge Cleaners, operated at the location between 1962 and 1980. In July, 1980 the current owners took over management of the property.

In December, 1980 the cleaners was placed on the CALSITES list for further evaluation. On October 1, 1993, Augeas Corporation contacted Mr. Don Cox, Unit Chief, Site Mitigation Branch, Site Evaluation Unit, Department of Toxic Substances Control, Berkeley, California concerning the status of the investigation. Mr. Cox indicated that the original site inspection "checklist" that had been filed showed that the site had been placed on the CALSITES list because of its SIC classification and not because of any identified contamination problems.

2.2 Request by County for Site Investigation

On March 23, 1993 Alameda County Health Care Services Agency requested that the vertical and lateral extent of perchloroethylene contamination, discovered on the shopping center site by ARCO while investigating its release from adjacent underground tanks, be investigated by the shopping center owners.

According to the correspondence from the Alameda County Health Care Services Agency, "data generated by ARCO's investigation suggests that perchloroethylene detected in ground water samples from their monitoring wells came from [the shopping center] site."

3.0 PURPOSE AND SCOPE OF WORK

The purpose of the proposed investigation will be to evaluate the extent of dissolved fuel hydrocarbons and perchloroethylene present in groundwater at the subject property

in accordance with the criteria specified in the Regional Board Staff Recommendations for Initial Evaluation and Investigation of Underground Tanks, Appendix A, Tri-Regional Recommendations.

The scope of the proposed investigation will be accomplished by and limited to: exploratory boring and soil sampling, installation of two groundwater monitoring wells, development and sampling of the groundwater wells, and chemical analysis of soil and groundwater samples. The completed "Site Investigation Report" will provide a summary of existing groundwater conditions. The proposed scope of services will include the following tasks:

•Preparation and submittal of a Technical Work Plan acceptable to the Alameda County Health Care Services Agency and in accordance with Alameda County guidelines.

•Obtaining necessary permits prior to the commencement of the field portion of the investigation;

•Drilling and sampling of soils for lithologic evaluation and laboratory analysis;

•Installation of one 2-inch diameter groundwater monitoring well near the rear of the store, and one 2-inch diameter monitoring well near the front of the store, if access conditions permit;

•Installation of one soil boring at the rear of the store; He wanted 3 borings outside + inside bldg

•Well development and sampling of the wells installed by Augeas Corporation and sampling of well WGR MW-2 installed by Western Geologic Resources (Figure 2);

•Chemical analysis of soil and groundwater samples to assess the presence and concentrations of fuel hydrocarbons and solvents;

•Arrange for a survey of the horizontal locations of all the nearby existing monitoring wells and the mean sea level elevations of their wellheads. We will

measure the water level in each well, and prepare a local ground water gradient map showing ground water elevation contours.

•Preparation of a written report to present our findings, conclusions and recommendations.

• In accordance with request of the Alameda County Health Agency, Augeas Corporation will prepare, under separate cover, another Workplan for the installation of soil vapor probes just north and south of the dry cleaners to analyze soil vapor samples for the EPA 8010 compounds. The soil vapor samples will be collected from the capillary fringe zone above the groundwater table.

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4.0 TECHNICAL APPROACH

Based upon review of previous investigations conducted at the subject property and published data regarding local geographic and hydrologic conditions, Augeas Corporation developed the following technical approach for the proposed investigation.

In order to accomplish the goals established for the proposed investigation, the project would be separated into three distinct work items as follows:

Field Investigation to advance three exploratory soil borings for the purpose of logging subsurface conditions and obtaining soil samples for chemical analysis. Two of these borings will be completed to a depth of about 32 feet, and will be completed as monitoring wells. Since the depth to ground water ranges from 24 to 27 feet below grade, the screened interval will extend from approximately 22 feet to 32 feet below grade. The third boring will be completed to a depth of about 20 feet, and it will not be completed as a monitoring well.

Laboratory Analysis of soil and ground water samples obtained from the field investigation to evaluate the presence and concentration of chlorinated solvents and petroleum constituents.

Report Preparation summarizing the results of the chemical analysis and the evaluation of applicable mitigating and/or remedial technologies appropriate for the site based upon data obtained from current and previous investigations.

Further description of these work phases is presented in the following discussion.

4.1 Phase I - Field Testing

Augeas Corporation will install three exploratory soil borings on the subject property at the locations shown in Figure 2. These soil borings will provide additional data regarding the presence of chlorinated solvents in the soil and fuel hydrocarbons present in the soil and groundwater. Field screening of the soil samples will be used to detect variations of contaminant concentrations with depth. A photoionization detector (PID)

meter calibrated for sensitivity to the presence of chlorinated solvents will be used to screen the samples.

Augeas Corporation will arrange for a survey of the horizontal locations of all the existing monitoring wells with respect to streets and property lines, as well as the mean sea level elevations of their wellheads. The water level in each well will be measured, and a local groundwater gradient map will be completed showing groundwater elevation contours.

The groundwater monitoring wells nearby will be utilized to evaluate lateral migration of hydrocarbons in groundwater, and their surveyed locations and elevations will provide data for assessing the groundwater quality and gradient. No characterization of site-specific hydrogeologic parameters, such as a pumping test, will be performed during this investigation.

4.2 Phase II- Laboratory Analysis

Soil and groundwater samples will be maintained and transported under proper chain-of custody protocol to a State-approved laboratory for chemical analysis. Soil samples will be analyzed to detect the presence and concentration of chlorinated solvents (EPA Method 8010/601) and for total petroleum hydrocarbons as stoddard solvent (EPA Method 8015 [modified]). Groundwater samples will be analyzed to detect the presence and concentration of chlorinated solvents by EPA Method 8010/601, as well as benzene, toluene, xylenes, ethylbenzene (EPA Method 8020) and total petroleum hydrocarbons as referenced to gasoline and to stoddard solvent (EPA Method 8015 [modified]).

4.3 Phase III - Report of Findings

Augeas Corporation will prepare an investigation report at the completion of the field, laboratory, and office analysis portions of the investigation. The report will detail the findings of the investigation, and include provisions for control of contaminated groundwater, if analytical data indicate a need for such control.

Augeas Corporation will then prepare a remedial action plan to evaluate remedial and mitigating alternatives based upon data obtained. All reports will be prepared under the

supervision of and signed by a State of California Registered Civil Engineer or Geologist.

5.0 METHODOLOGY

5.1 Drilling and Soil Sampling

Drilling of the monitoring wells will be performed utilizing a truck mounted drill rig equipped with 8-inch continuous flight hollow-stem augers. Augeas Corporation's geologist or engineer will be present during drilling to assist in obtaining relatively undisturbed samples of the subsurface materials, to maintain a log of borings, to field screen samples with a device capable of detecting volatile organic hydrocarbons as a trace gas, and to make observations of the site conditions.

Soils will be sampled at approximately 5-foot vertical intervals (or more frequently as deemed appropriate by the field geologist or engineer), commencing at an approximate depth of five feet below the existing grade. Samples will be obtained by means of a California Modified sampler lined with stainless steel sleeves or rings. The samples will be advanced by blows from a 140 pound hammer falling 30 inches. Soil will be classified according to the Unified Soil Classification System.

Upon retrieval, samples retained for chemical analysis will be contained with a plastic caps over Teflon™ seals, and taped at each end. The samples will be stored in a chilled container and shipped under proper chain-of-custody protocol to a certified analytical laboratory. All the soil samples, down to the sampling interval just above the groundwater table, will be submitted for analysis. Field screening results will be utilized to augment the soils analytical data.

5.2 Monitoring Well Installation

The boreholes for the monitoring wells will be advanced to about 30 feet to 32 feet below ground surface. The design of the groundwater monitoring wells is in general compliance with the State of California Department of Water Resources Bulletin 74-90 Monitoring Well Standards (DWR 163907).

The monitoring wells will be constructed through hollow stem augers using 2-inch flush threaded PVC Schedule 40 casing, since the static groundwater level is approximately 24 to 27 feet below ground surface. The screened intervals will allow an approximately five-foot interval above and below the stabilized groundwater level. A No. 2/12 medium graded sand will be used as a filter medium around the screened interval and completed to a depth of one foot above the well screen. A seal composed of bentonite pellets will be placed to an approximate thickness of one foot above the sand. The pellets will be hydrated to prevent the entry of portland cement grout into the screened interval.

From the bentonite seal to the surface vault, the remaining annulus will be back-filled with a sand/cement slurry with approximately 3 per cent bentonite added.

Expansion locking caps will be installed on the wellheads, and a water-tight, traffic-rated surface vault will be placed at grade for well security.

5.3 Well Development and Sampling

The wells will be developed by hand bailing and surging and/or by using a positive displacement pump. Well development methods which employ air-lift or the introduction of air into the well will not be used. The wells will be developed until they are relatively free of sediment and turbidity.

The wells will be sampled with a disposable PVC bailer. The depth to ground water will be initially measured with a well sounder. Each well will then be purged of a minimum of four well casing volumes, and it will be sampled following stabilization of pH, temperature and specific conductivity. If the wells are slow to recover while they are being purged, they will be sampled following recovery to 80 percent of their original stabilized level.

5.4 Laboratory Analysis

The laboratory analyses will be focused on the detection of chlorinated solvents and fuel hydrocarbon compounds. The following methodologies will be specified for the chemical analyses of groundwater samples:

EPA Method 602/8020 for BTEX

EPA Method 8015 (modified) for Total Petroleum Hydrocarbons (TPH) as gasoline and as stoddard solvent

EPA Method 8010/601 for chlorinated solvents.

Soil samples will be analyzed for chlorinated solvents by EPA Method 8010 and for total petroleum hydrocarbons as stoddard solvent by EPA method 8015 (modified)

5.5 Decontamination

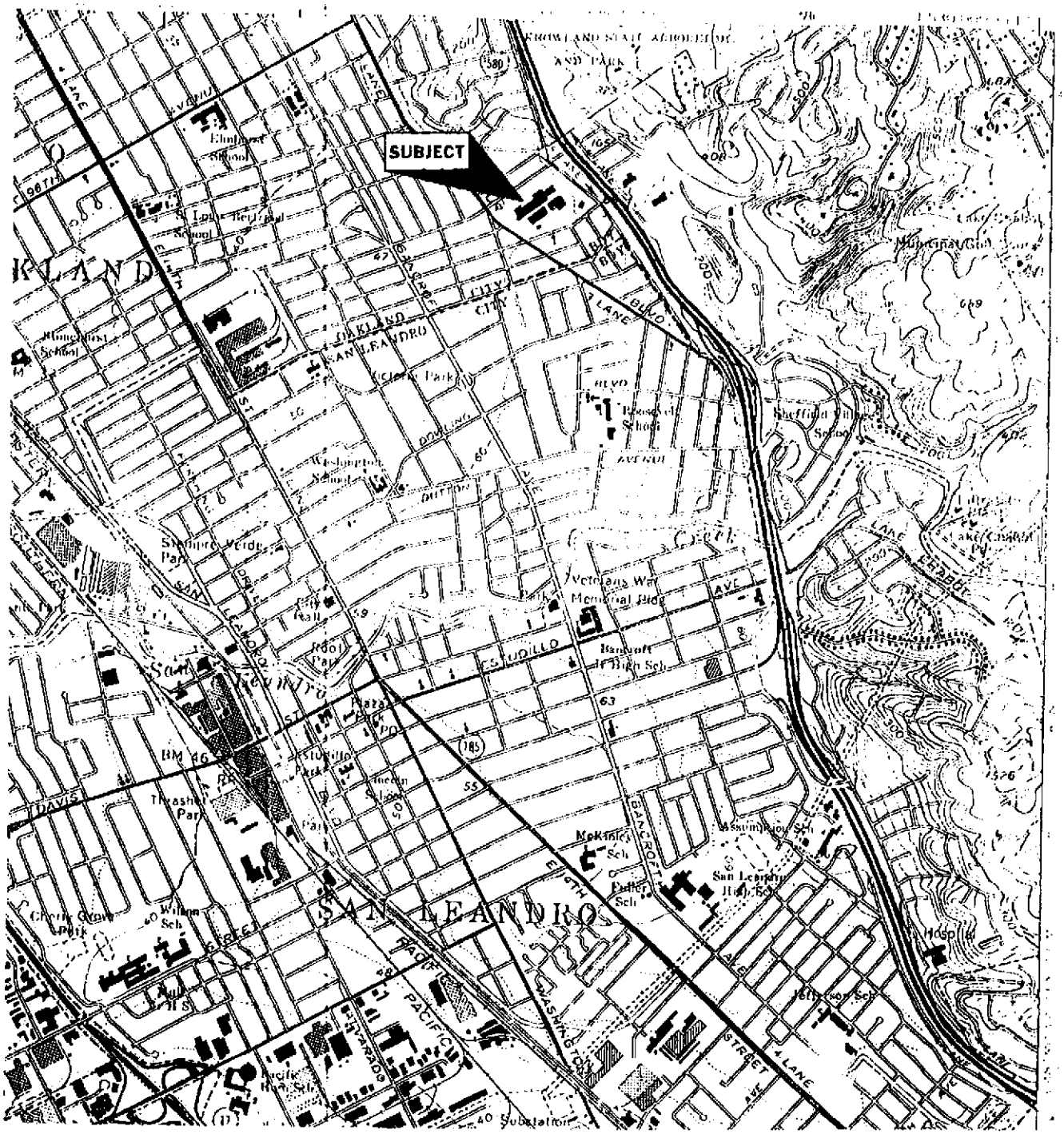
Between soil sampling attempts, the sampler will be disassembled and washed in a trisodium phosphate (TSP) solution, rinsed twice with clean tap water, and re-assembled with to minimize the potential of spreading any contaminants among samples.

5.6 Drilling Spoils

Auger cuttings from the drilling operation will be placed in drums and retained on-site. The results of chemical analysis will be used to evaluate the appropriate disposal of any contaminated auger cuttings.

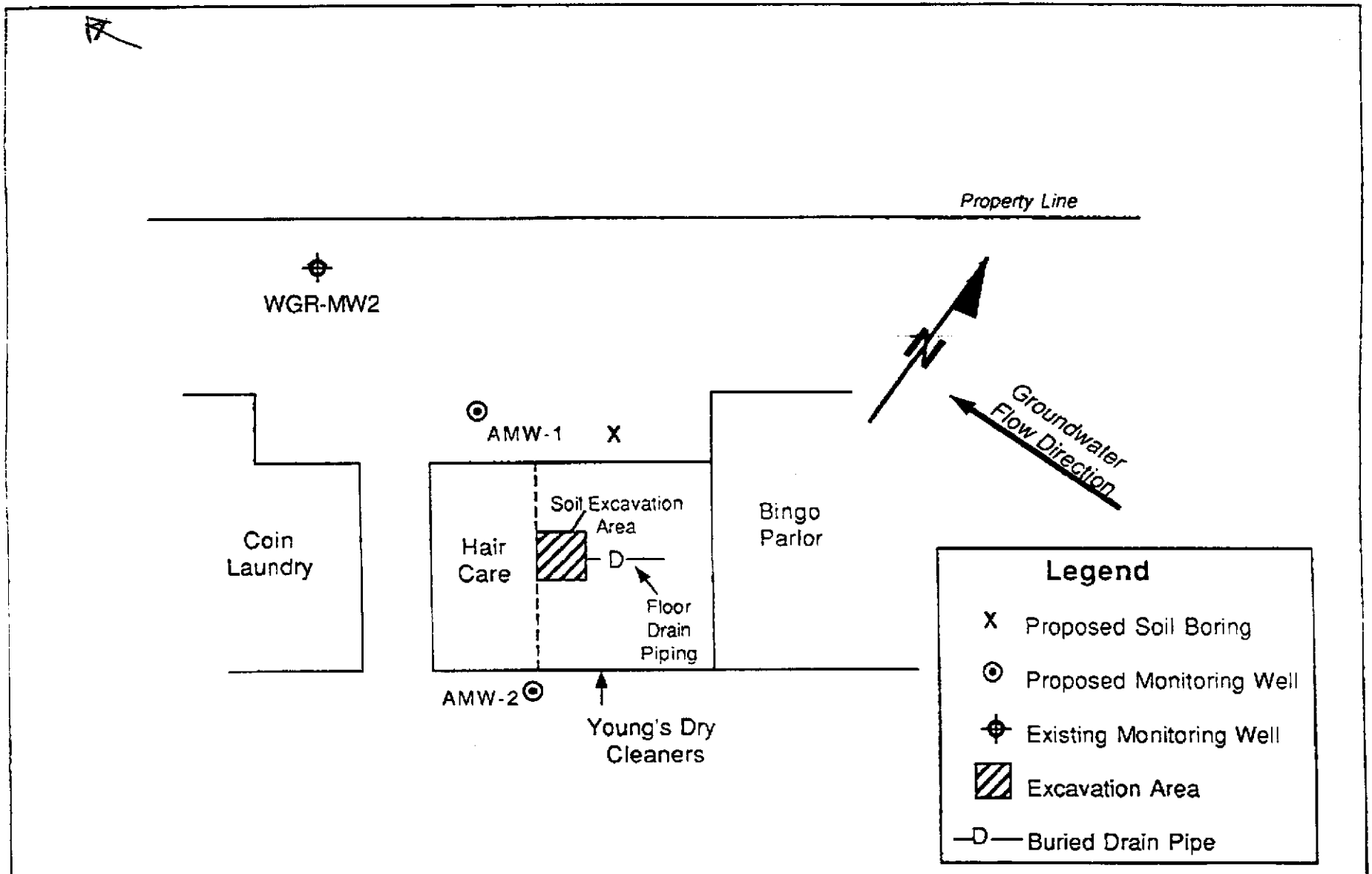
6.0 PROJECT SCHEDULE

Augeas Corporation will be prepared to begin this study upon receipt of approval for the work from Drake Builders. The Alameda County Health Agency will request notification before starting any work at the site. It is estimated that the proposed scope of services will require about six to eight weeks to complete. This schedule is partially dependent on the scheduling of drilling equipment, local weather restrictions, access to the site, permitting requirements, and time required for specific chemical analyses. A visit to the site for the field portion of the investigation is to be arranged through the subject property owners.



AUGEAS CORPORATION	Figure 1- Site Location Map	jl
	10700 MacArthur Boulevard, Oakland, CA	09/16/93

Area Site



Augeas Corporation Half Moon Bay, CA	**Fig. 2 -- Site Location Map**	Drawn by Carol Lapinski	Scale 1" = 100'
	10700 MacArthur Blvd Oakland, CA	8-18-94 DYS/HD	