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GEOMATRIX

30 December 1993
Project 2530

Ms. Madhulla Logan
Alameda County Health Care Services Agency
80 Swan Way, Room 200
Oakland, California 94621

Subject: Amended Workplan for Site Characterization
Proposed Encinal Marina Landing
2020 Sherman Avenue
Alameda, California

Dear Ms. Logan:

This workplan has been prepared by Geomatrix Consultants, Inc. (Geomatrix), at the request of Encinal Real Estate, Inc. (Encinal), for additional site characterization of the former warehouse site (originally owned by Alameda Marina Village Associates) located at 2020 Sherman Avenue in Alameda, California. The purpose of conducting the site characterization described in this workplan is to obtain sufficient additional information regarding the presence of chemicals in soil and groundwater to allow Alameda County Health Care Services Agency (ACHCSA) to determine if remediation is required before the site can be developed for residential use. The scope of work presented in this workplan was developed to address ACHCSA concerns and information requirements expressed in a meeting on 23 November 1993.

PREVIOUS INVESTIGATIONS

Previous site investigations completed by others in 1990 include:

- A Phase I Environmental Survey by MSE Environmental, which included a site history, environmental setting discussion, regulatory records review, and aerial photograph review. The records reviewed did not indicate the presence of underground tanks on the property.

- A Phase II Environmental Survey by MSE Environmental, which included a magnetics and radar search for underground tanks which did not locate any evidence suggesting the existence of underground storage tanks, and sampling with analysis of two groundwater grab samples from the site. The groundwater samples were analyzed for petroleum hydrocarbons, benzene, toluene, ethylbenzene, and xylenes. No analyte compounds were detected.

- A soil and groundwater investigation by Kaldveer Associates, which consisted of eight boring locations. One groundwater grab sample was collected and analyzed from each of the borings, and soil samples were collected from all borings at depths of two and six feet. Samples from each depth interval were divided into northern and southern site composites resulting in four samples for laboratory analysis. The groundwater and soil samples were analyzed for petroleum hydrocarbons, volatile and semivolatile organics, pesticides, and CAM 17 metals. In groundwater, 1,1-DCA and 1,1,1-TCA were detected in one sample, and low concentrations of motor oil were detected in both samples. The metals concentrations were below MCL limits with the exception of chromium, arsenic, lead, and thallium. In soil, 1,1-DCA, pyrenes, and low concentrations of motor oil were detected in certain samples; the metals concentrations were below 10 times the Soluble Threshold Limit Concentration (STLC) except for chromium in one sample, which was 4 ppb above this criteria.

The results for all samples collected during previous investigations are presented in Tables 1 and 2, and the locations of borings and groundwater grab samples are shown on Figure 2.

OBJECTIVES

Evaluation of previous reports and sampling results does not indicate significant chemical impact to soil at the site, except in the area of EB-1, where elevated concentrations of chlorinated solvents were detected. Additionally, chemically affected groundwater appears to be limited to the same area, assuming that metals detected in groundwater were primarily due to suspended sediment in non-filtered grab groundwater samples.

Based on this evaluation, the sampling program for the site has been designed to accomplish the following:

- Assess the lateral extent of chlorinated VOCs in groundwater in the area of EB-1.
- Confirm that evaluated metal concentrations in groundwater are due to suspended sediment in samples.
- Measure groundwater gradient at the site.

BENEFICIAL USES OF GROUNDWATER

First groundwater at the site is expected to occur as a very thin zone (on the order of 6 inches to one foot in thickness) above the Bay Mud. Based on data from nearby sites and the site's proximity to the San Francisco Bay, we anticipate that this groundwater is brackish. The brackish nature of the water and its very low potential yield make this water bearing zone unsuitable for municipal and domestic supply, agricultural supply, industrial process supply, and industrial service supply. The Bay Mud layer which occurs at the site is expected to act as an aquitard to limit downward migration of chemicals into underlying water bearing zones.

GROUNDWATER CHARACTERIZATION PLAN

To determine the groundwater gradient, [redacted] will be installed near former boring EB-1. Each piezometer will be constructed by placing a clean, 1-inch diameter PVC pipe into a boring and surrounding the pipe with sandpack. The pipe will be screened across the water-bearing zone, and asphalt patch will be used to seal the top of the boring if wet weather is expected. The piezometers will be allowed to equilibrate for at least 24 hours, and water levels will then be measured according to Geomatrix protocols. A registered surveyor will survey the measuring points of the piezometers. These piezometers will be located approximately as shown on Figure 2, and will be destroyed after one set of groundwater elevation data has been collected.

One piezometer and two additional borings will be used to collect groundwater samples which will be analyzed for chromium, arsenic, lead, and thallium by EPA Method 6010. These metals are those detected at concentrations higher than MCLs during previous investigations. These samples will be field filtered according to EPA guidance to represent metal concentrations in groundwater. The approximate groundwater sampling locations for metals are shown on Figure 2.

What about chlorinated solvents

Each [redacted] will be advanced using steam-cleaned split-spoon soil samplers sequentially pushed into the ground with a 70-pound hammer. The sampler will be withdrawn every 1.5 to 2.0 feet, and the soil retained will be observed. Each boring will be logged according to Geomatrix protocols. The boring will be terminated at the base of the fill or the top of the Bay Mud, expected to be a depth of approximately six feet. For additional lithologic information, the four piezometer borings will be advanced beyond the base of the fill until three feet of Bay Mud or soil classified as an aquitard have been observed. To collect groundwater samples, a clean, 1-inch diameter PVC pipe screened across the water-bearing zone will be placed in the boring, and a clean, teflon or stainless-steel bailer will be used to collect groundwater from inside the pipe. Borings which will be completed as piezometers will be sampled before sandpack is placed.

The groundwater samples will be collected in laboratory-prepared bottles and handled according to Geomatrix protocols. The ~~samples for metals analysis~~ will be sent under chain-of-custody procedures to an analytical laboratory ~~certified by the California~~ Department of Health Services for the analyses requested. ~~Samples~~ collected from the piezometers for ~~chlorinated halogens~~ will be retained for one or two days and analyzed during the shallow groundwater survey described below.

One or two days after the work described above has been completed, a one-day ~~shallow groundwater survey~~ will be performed in the vicinity of previous boring EB-1 to determine the lateral extent of ~~1,1-DCA~~ in the shallow groundwater. In general, sample locations will follow a grid pattern, and will remain within the property boundaries. The survey will be conducted by Tracer Research Corporation (Tracer) under Geomatrix supervision by pushing a 1-inch diameter steel rod into the ground to the expected depth to groundwater, previously found at approximately 6 feet. The rod will be withdrawn one or two feet to allow groundwater to enter the boring, and a clean stainless steel or teflon bailer will be used to collect a groundwater sample. The ~~samples will be analyzed in the field by Tracer~~ using a ~~screening technique for chlorinated~~ halogens including 1,1-DCA. Additional points will be ~~chosen in a progressive~~ manner.

The borings will be backfilled with cement upon completion. Soil cuttings are expected to be minimal due to the boring technique utilized, and will be retained in 55-gallon drums on the site. The drums will be sampled and the cuttings disposed of according to regulatory requirements.

SOIL CHARACTERIZATION

Soil samples to determine the extent of 1,1-DCA in soil were requested by ACHCSA. We propose to first define the extent of this compound in groundwater before attempting to locate a potential source area in the surficial soils. If appropriate, soil analyses will be conducted in the future.

The ACHCSA has also requested analysis of petroleum hydrocarbons in soil. Results from samples analyzed by previous consultants were non-detect, but were preliminary. Therefore, we propose to analyze samples from locations P-1, P-3, B-1, and B-2 for petroleum hydrocarbons. Samples from all borings at a depth of two feet will be composited, and the same will be done with samples from a depth of six feet. These two composite samples will be analyzed on a one-week turnaround using EPA Method 8015 for gasoline, diesel, motor oil, benzene, toluene, xylene, and ethylbenzene. If significant concentrations are detected, individual samples may be re-analyzed for the compound(s) of concern.

HEALTH AND SAFETY

A health and safety plan for site characterization work performed by Geomatrix has been developed. It is enclosed as an addendum.

SCHEDULE AND REPORTING

After evaluation of current and previous site data, a report will be prepared summarizing field activities, analytical results, groundwater gradient information, soil types, and our evaluation of environmental site characteristics that could potentially impact residential development. The work is expected to require two days of field time, and is tentatively scheduled for January 1994. The actual schedule will depend on when approval of the workplan is received from the ACHCSA. A report presenting the results of the site characterization work with recommendations will be completed within four weeks of the fieldwork.

Thank you for this opportunity to be of service. If you have any questions, please call either of the undersigned.

Sincerely,

GEOMATRIX CONSULTANTS, INC.

Cheri Y. Page, R.G.
Project Geologist

John D Galloway FOR
Tom Graf, P.E.
Vice President

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Attachments: Table 1 - Summary of Previous Groundwater Sample Results
Table 2 - Summary of Previous Soil Sample Results
Figure 1 - Location Map
Figure 2 - Site Plan

Enclosure: Health and Safety Plan

cc: Mr. Peter Wang - Encinal Real Estate, Inc.

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TABLE 1

SUMMARY OF PREVIOUS GROUNDWATER SAMPLE RESULTS

Encinal Real Estate
2020 Sherman Avenue
Alameda, California

Compounds detected in micrograms per liter (µg/l)

Sample Location I.D.	EPA Method 602	EPA Method 8015	EPA Method 624	EPA Method 625	EPA Method 608	CAM 17 Metals	
TB-1[1]	ND[2]	ND	NA[3]	NA	NA	NA	
TB-2[1]	ND	ND	NA	NA	NA	NA	
EB-1[4]	NA	Motor oil: 300	1,1-DCA: 1500 1,1,1-TCA: 17	ND	ND	Antimony Arsenic Barium Beryllium Cadmium Cobalt Chromium Copper Mercury Molybdenum Nickel Lead Selenium Silver Thallium Vanadium Zinc	ND 170 540 3 ND 58 330 200 1.3 ND 280 50 ND ND 280 320 300

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TABLE 1

SUMMARY OF PREVIOUS GROUNDWATER SAMPLE RESULTS

Sample Location I.D.	EPA Method 602	EPA Method 8015	EPA Method 624	EPA Method 625	EPA Method 608	CAM 17 Metals	
EB-2[4]	NA	Motor oil: 200	ND	ND	ND	Antimony	ND
						Arsenic	150
						Barium	770
						Beryllium	4
						Cadmium	ND
						Cobalt	50
						Chromium	360
						Copper	200
						Mercury	ND
						Molybdenum	ND
						Nickel	330
						Lead	ND
						Selenium	ND
						Silver	ND
						Thallium	650
						Vanadium	420
						Zinc	310

Notes:

1 Work conducted by MSE Environmental, Inc., in 1990.
2 ND = not detected.
3 NA = not analyzed.
4 Work conducted by Kaldveer Associates in 1990.

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TABLE 2

SUMMARY OF PREVIOUS SOIL SAMPLE RESULTS
Encinal Real Estate
2020 Sherman Avenue
Alameda, California

Compounds detected in milligrams per kilogram (mg/kg)

Boring Numbers	Sample Depth (feet)	EPA Method 8240	EPA Method 8270	EPA Method 8080	EPA Method 8015	Metals[1]	
EB-2 EB-3 EB-4 EB-8 (composite)	2	ND[2]	ND	ND	motor oil: 180/110	Antimony Arsenic Barium Beryllium Cadmium Cobalt Chromium Copper Cyanide Mercury Molybdenum Nickel Lead Selenium Silver Thallium Vanadium Zinc	ND 8 59 0.3 ND 7.5 43 20 1.2 ND ND 39 31 ND ND 23 37 42
EB-2 EB-3 EB-4 EB-8 (composite)	6	ND	benzo(b)fluoranthene: 0.35 benzo(a)pyrene: 0.34 pyrene: 0.76	ND	motor oil: 40/70	Antimony Arsenic Barium Beryllium Cadmium Cobalt Chromium Copper Cyanide Mercury Molybdenum Nickel Lead Selenium Silver Thallium Vanadium Zinc	ND 20 52 0.6 ND 15 54 26 0.85 ND 0.6 74 4 ND ND 39 50 120

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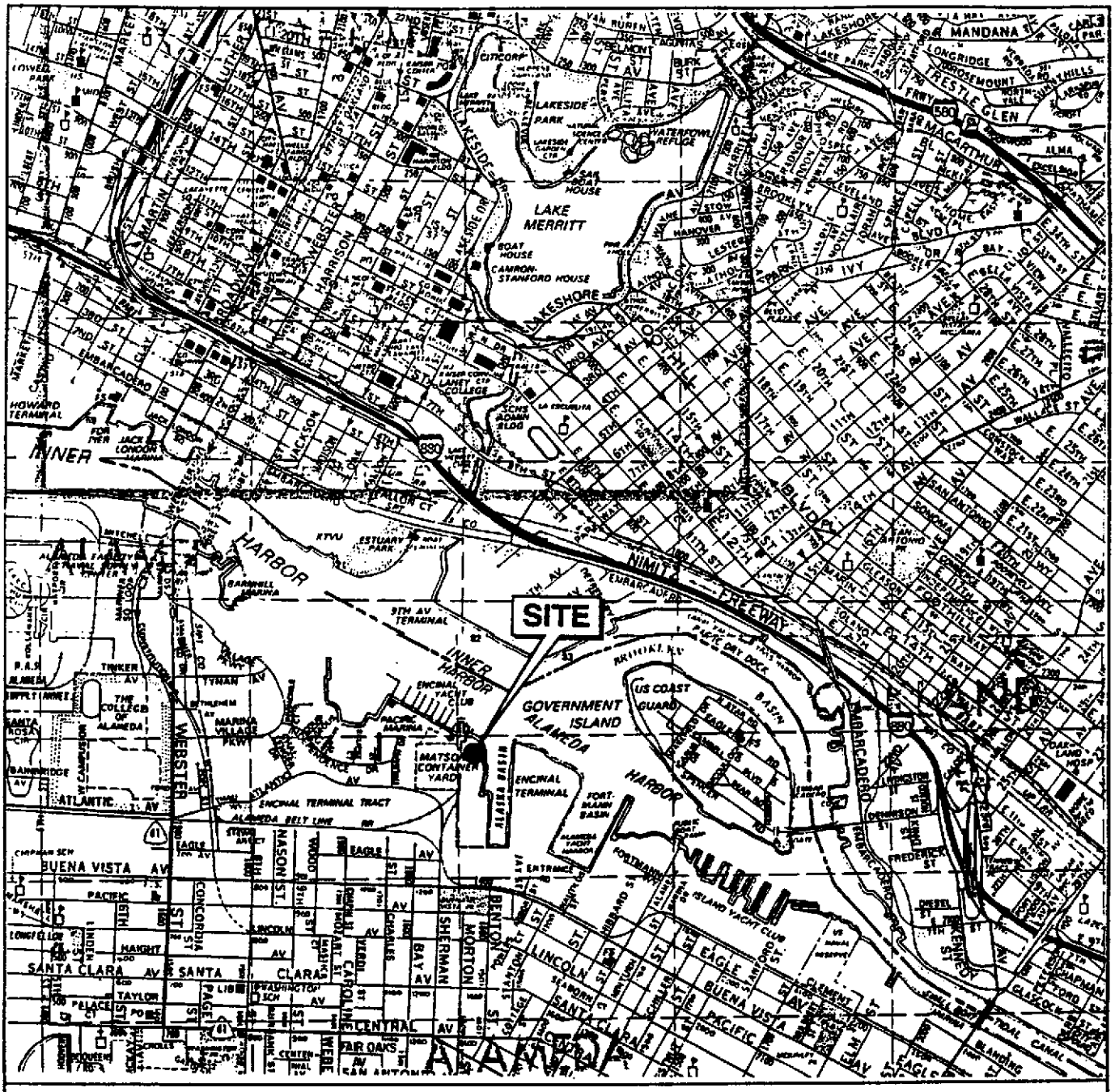
TABLE 2

SUMMARY OF PREVIOUS SOIL SAMPLE RESULTS

Boring Numbers	Sample Depth (feet)	EPA Method 8240	EPA Method 8270	EPA Method 8080	EPA Method 8015	Metals[1]	
EB-1 EB-5 EB-6 EB-7 (composite)	2	ND	ND	ND	motor oil: 180/110	Antimony Arsenic Barium Beryllium Cadmium Cobalt Chromium Copper Cyanide Mercury Molybdenum Nickel Lead Selenium Silver Thallium Vanadium Zinc	ND 13 54 0.4 ND 7.7 43 54 0.5 0.3 ND 38 9 ND ND 49 37 51
EB-1 EB-5 EB-6 EB-7 (composite)	6	1,1-DCA: 0.4	ND	ND	motor oil: 40/70	Antimony Arsenic Barium Beryllium Cadmium Cobalt Chromium Copper Cyanide Mercury Molybdenum Nickel Lead Selenium Silver Thallium Vanadium Zinc	ND 9 24 0.3 ND 5.7 35 16 0.4 ND ND 29 2 ND ND 20 33 29

Notes:

1 CAM 17 metals and cyanide
2 ND = not detected



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SITE LOCATION MAP
2020 Sherman
Alameda, California

Figure
1

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