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GEOMATRIX

22 June 1994
Project 2530.01

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

Subject: Work Plan for Groundwater Characterization
Former Petroleum Hydrocarbon Tank Locations
Encinal Terminals
1521 Buena Vista Avenue
Alameda, California

Dear Ms. Shin:

This work plan has been prepared by Geomatrix Consultants, Inc. (Geomatrix), at the request of Encinal Terminals (Encinal) and in response to your 9 May 1994 letter to Mr. Peter Wang of Encinal regarding the subject site. The work plan describes a program to characterize groundwater quality near three former tanks at 1521 Buena Vista Avenue in Alameda, California (Figure 1). The purposes of conducting the site characterization described in this work plan are to evaluate whether petroleum hydrocarbons are present in shallow groundwater near the former tank locations, and to evaluate the need for and design of a groundwater monitoring program.

## PREVIOUS WORK

Three gasoline underground storage tanks were removed from the property in January 1988 and a concrete containment sump which previously surrounded an above-ground tank used to store waste oil was removed in February 1989 by Trace Environmental Services (Figure 2). Blymyer Engineers, Inc. documented the removal of the tanks and surrounding soil as well as excavation sampling in a report titled "Site Assessment - Preliminary Site Investigation" and dated 9 June 1993. According to Blymyer's work, limited releases of petroleum hydrocarbons into the subsurface may have occurred in the vicinities of two of the gasoline tanks (Tanks T-1 and T-3) and the waste oil tank (Tank T-4) located on Figure 2. Results of soil and groundwater sample chemical analysis in the vicinity of Tank T-2 at the time of the tank removal did not indicate that a release of petroleum had occurred. Blymyer subsequently installed 3 monitoring wells, one piezometer, and drilled three additional borings. This work, along with the collection and analysis of soil and groundwater samples, also was documented in their 9 June 1993 report. Based on your 9 May 1994 letter to Mr. Wang, the wells may not be appropriate to fulfill Alameda County Health Care Services Agency (ACHCSA) groundwater monitoring requirements.

**PROPOSED GROUNDWATER CHARACTERIZATION**

Shallow groundwater samples will be collected at three locations around each of former tank locations T-1, T-3, and T-4, as shown on Figure 2. Based on the location of the site relative to Alaska (Encinal) Basin and Fortmann Basin, groundwater flow directions are expected to be from northeast to northwest. Therefore, the shallow groundwater points will be collected from the northeast, north, and northwest sides of the former tank locations. Because previous work in the vicinity of Tank T-2 suggests that the tank had not released petroleum hydrocarbons, groundwater in this area will not be sampled.

The shallow groundwater grab samples will be collected by advancing a boring the minimum depth necessary to produce water (but no deeper than 10 feet below ground surface) and collecting the groundwater in a clean teflon bailer. The borings will be advanced by continuous sampling with a 2.5-inch diameter split-spoon sampler pushed by hydraulic load, or with 3.5-inch diameter augers. The samples will be transferred from the bailer directly into laboratory-prepared bottles and will be delivered under chain-of-custody procedures to AEN Laboratories of Pleasant Hill, California. Samples from former tank areas T-1 and T-3 will be analyzed for gasoline and benzene, toluene, xylenes, and ethylbenzene (BTEX) using the California LUFT Method (GCFID). Groundwater samples from former tank location T-4 will be analyzed for petroleum hydrocarbons characterized as diesel and motor oil using EPA Method 8015 with a silica gel clean-up, and for BTEX using the California LUFT method.

Five temporary piezometers will be installed at the locations shown on Figure 2. The borings will be advanced by continuous sampling, and will be logged by a Geomatrix geologist according to Geomatrix protocols. Three of the borings will have been used to collect shallow groundwater samples, and two will be advanced solely to construct temporary piezometers. The piezometers will be constructed using a ten-foot length of 1-inch diameter PVC screen with a 0.02-inch slot size below solid casing. Sandpack will be placed around the casing, and asphalt patch will be placed at the ground surface. The piezometers will be abandoned by pulling out the casing, re-drilling the borehole, and filling the borehole with neat cement.

Measuring point elevations will be surveyed by a state certified surveyor, and due to potential tidal fluctuations, groundwater levels will be measured in the five piezometers three times over a period of 24 hours by Geomatrix personnel. Three potentiometric maps will be prepared showing the groundwater elevation and flow direction at various times during the day.

**HEALTH AND SAFETY**

A health and safety plan for site characterization work will be prepared. This plan will be followed by field personnel during site investigation activities.

**SCHEDULE AND REPORTING**

The work outlined above is tentatively scheduled for mid-August 1994. After receipt of laboratory analytical results, a letter report will be prepared summarizing field activities, analytical results, groundwater gradient information, and soil types. If indicated, locations and screened intervals for groundwater monitoring wells will be proposed. We anticipate the report will be submitted to ACHCSA within six weeks of the fieldwork. We will keep you apprised of project scheduling as work progresses.

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

Elizabeth A. Nixon
Senior Engineer

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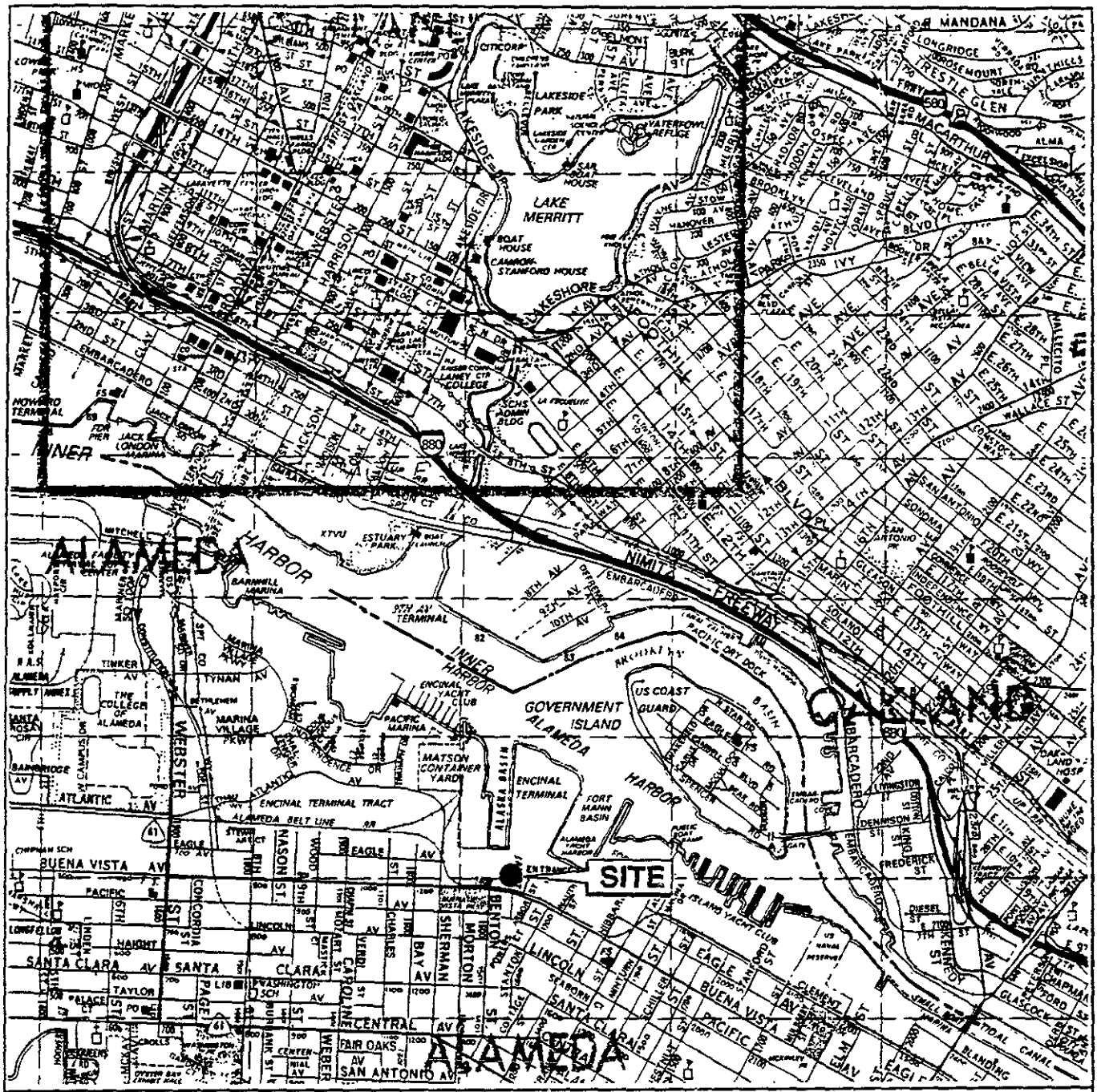
cc: Mr. Peter Wang - President, Encinal Real Estate, Inc.

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SITE LOCATION MAP
1521 Buena Vista Avenue
Underground Tanks
Alameda, California

Figure
1

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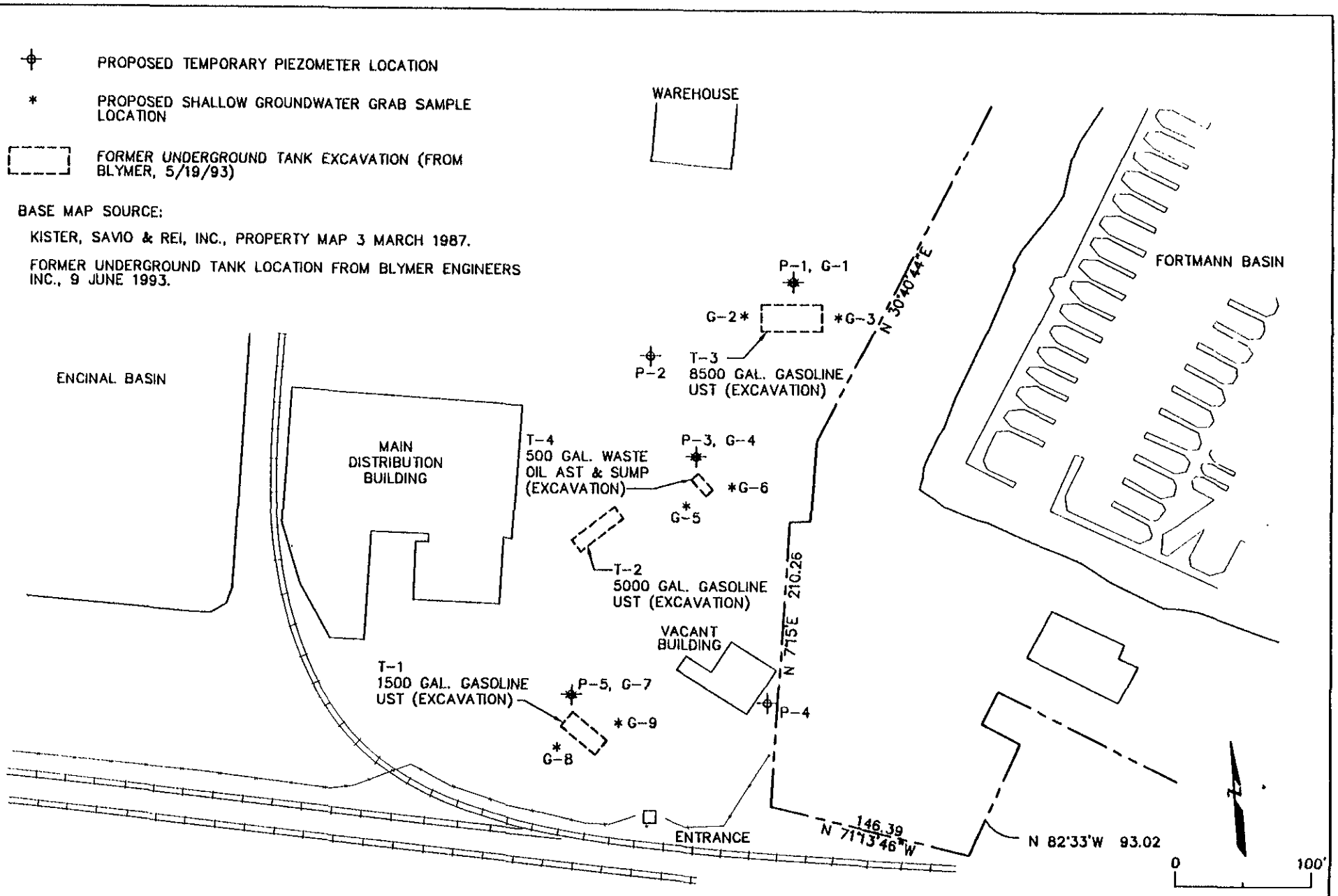


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**SITE PLAN**
**ENCINAL TERMINALS**
**1521 BUENA VISTA AVENUE**
**ALAMEDA, CALIFORNIA**

Figure
2

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