Environmental Science & Engineering, Inc.

A CILCORP Company

January 25, 1993

ESE Project No. 6-93-5021

Mr. Jeff Shapiro
Alameda County
Department of Environmental Health
80 Swan Way, Room 200
Oakland, California 94621

SUBJECT: **Workplan for Subsurface Investigation of Soil Surrounding an Underground Storage Tank at Fairmont Hospital, 15401 Foothill Boulevard, San Leandro, Alameda County, California.**

Dear Mr. Shapiro:

Environmental Science & Engineering, Inc. (ESE) has prepared this workplan on behalf of Alameda County General Services Agency (ACGSA). The workplan describes the procedures to be undertaken for a preliminary assessment of soil quality adjacent to and beneath one underground storage tank (UST) located at the Fairmont Hospital, 15401 Foothill Boulevard, San Leandro, California (Figure 1). The UST, designated UST #1 (Figure 2), is of 12,000-gallon capacity and is part of a tank cluster comprised of four USTs. UST #1 was used for the storage ~~of domestic #5 fuel oil~~ as emergency fuel for the hospital boilers. The objective of this investigation is to determine if the soil in the vicinity of UST #1 has been impacted by petroleum hydrocarbons. To achieve this objective, ESE proposes to perform the following:

HEALTH AND SAFETY PLAN

To ensure the health and safety of ESE personnel and other authorized representatives involved in the proposed work, ESE will prepare a Health and Safety Plan (HASP) prior to beginning work at the site. This document will be reviewed and approved ESE's Concord Office Health and Safety Officer prior to its implementation. The HASP will delineate potential physical and chemical hazards associated with the work, and, general and site specific safe work practices to be followed by all ESE personnel, subcontractors and site visitors. The HASP will also list local and national emergency telephone numbers, and will provide a detailed description and map of the route to the nearest hospital.

FIELD WORK

ESE will drill three soil borings at locations surrounding UST #1. The UST and associated piping are adjacent to a loading dock area of a building at the Fairmont Hospital facility. The soil boring locations, shown on Figure 2, will be within ten feet of the lateral extent of the UST. The soil borings will be drilled using a truck-mounted hollow stem auger drill rig. The three borings will be advanced to an approximate depth of 25 feet, approximately ten

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feet below the base of the UST. Soil samples will be collected during drilling at approximate five foot intervals. The soil borings and soil sampling will be conducted in accordance with ESE Standard Operating Procedure No. 1, included as Attachment No. 1.

ANALYTICAL LABORATORY

ESE will contract ESE Laboratory (ESE-Lab) of Peoria, Illinois to perform analyses on soil samples collected from this site. ESE-Lab is a California State-certified laboratory. Since the former contents of the UST are reported to have been domestic #5 fuel oil, the five soil samples from each boring will be analyzed using EPA Methods 8015-modified and 8020 for Total Petroleum Hydrocarbons as Diesel (TPH-D) and Benzene, Toluene, Ethylbenzene, and Total Xylenes (BTEX), respectively.

REPORTING

ESE will prepare a report of findings documenting the methods employed while conducting field activities, the findings of the investigation, and conclusions and recommendations based upon those findings. The report will include geologic boring logs, a table summarizing analytical results, and figures showing concentrations of petroleum hydrocarbons in soil. A draft copy of the report will be submitted to ACGSA for review. Subsequently, the report will be finalized based on ACGSA review comments and final copies will be submitted to the Alameda County Health Care Services Agency (ACHCSA) and the Regional Water Quality Control Board, San Francisco Bay Region.

If you have any questions or comments concerning this workplan, please call the Bart Miller at (510) 685-4053. ESE will commence scheduling field activities upon receiving your approval of this workplan.

Sincerely,

ENVIRONMENTAL SCIENCE & ENGINEERING, INC.

Bart S. Miller
Senior Staff Geologist

Michael E. Quillin
Senior Hydrogeologist
California Registered Geologist No. 5315

REGISTERED GEOLOGIST
MICHAEL E. QUILLIN
#5315
STATE OF CALIFORNIA

cc: Mr. Peter Kinney, ACGSA

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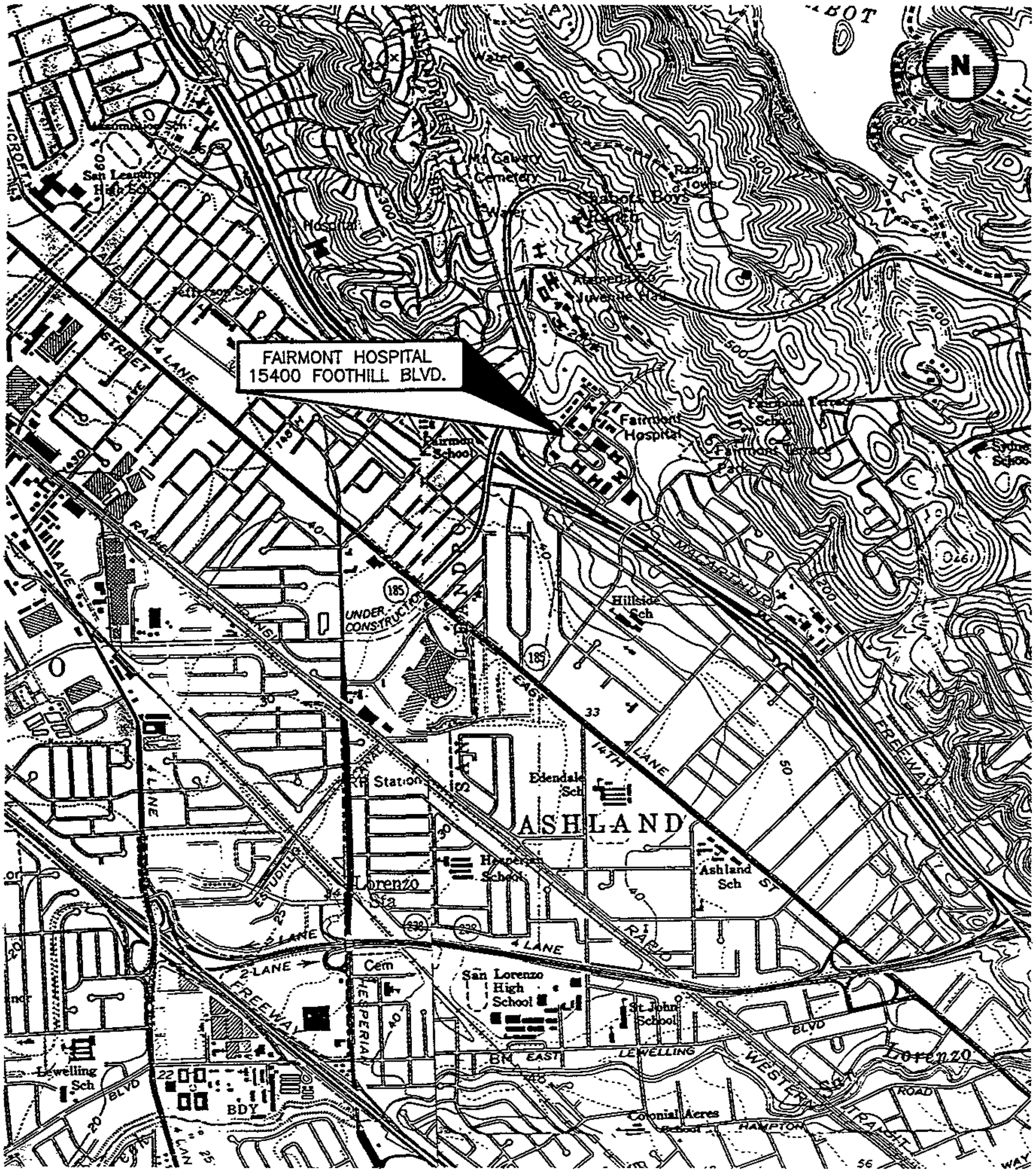
FIGURES



ADAPTED FROM USGS HAYWARD AND SAN LEANDRO 7 1/2 MINUTE TOPOGRAPHIC QUADRANGLES

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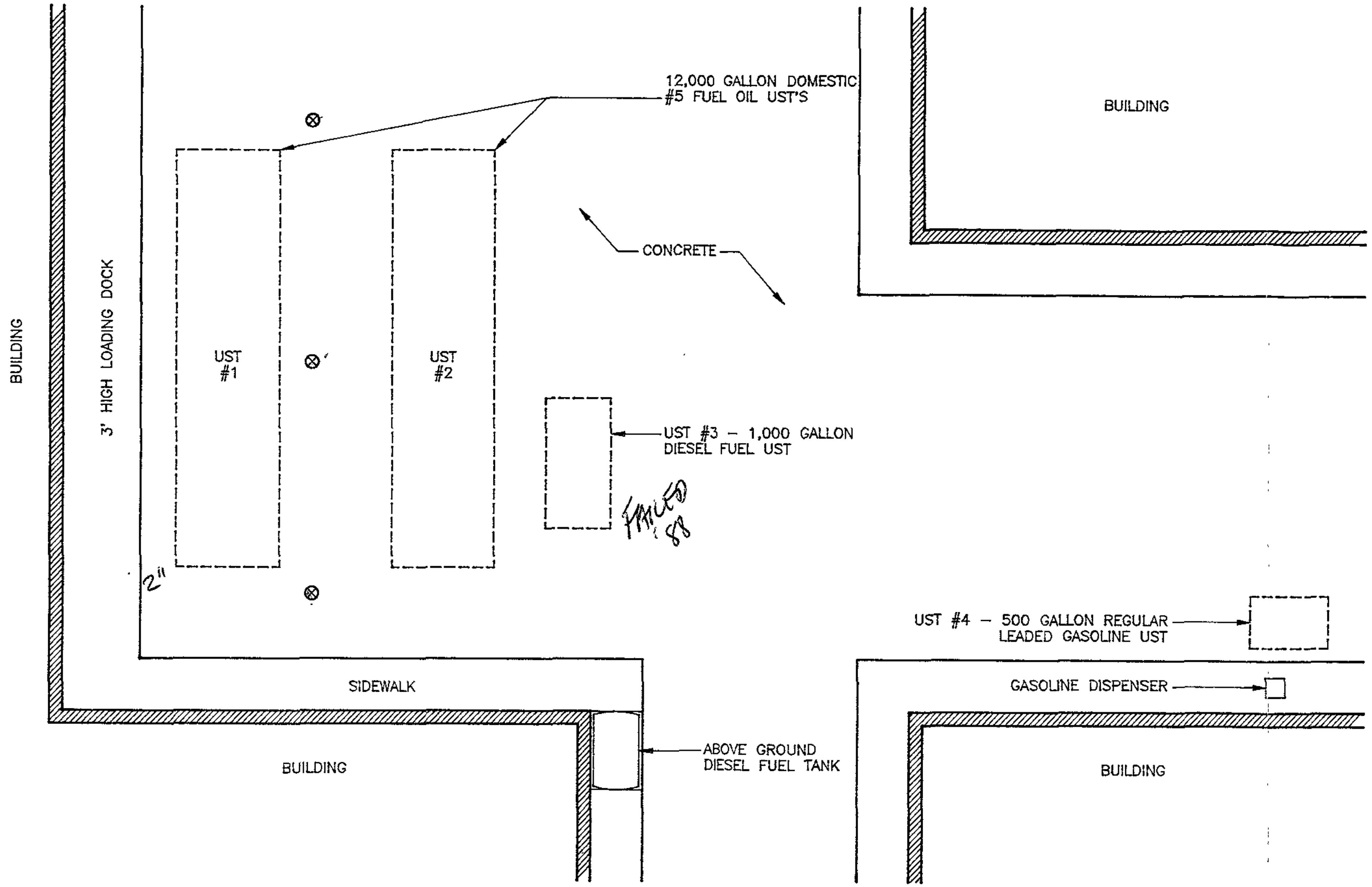
	DRAWN BY CVS	CAD FILE 50211001	
4090 NELSON AVENUE, SUITE J CONCORD, CA 94520	APPROVED BY	REVISED	FIGURE 1 VICINITY MAP



LEGEND

⊗ PROPOSED SOIL BORING LOCATION

UST UNDERGROUND STORAGE TANK

SCALE

0 10 FEET

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SAN LEANDRO, CALIFORNIA

FIGURE 2
PROPOSED SOIL BORING LOCATIONS

ATTACHMENT NO. 1

ESE Standard Operating Procedure No. 1

NOT

Environmental Science & Engineering, Inc. (ESE) typically installs ground-water monitoring wells in unconsolidated sediments drilled using a truck-mounted hollow-stem auger drill rig. The design and installation of all monitoring wells is performed and supervised by an experienced ESE geologist. Figure A - Typical ESE Monitoring Well Construction Diagram (attached) graphically displays a typical ESE well completion. Prior to the construction of the well, the portion of the borehole that penetrates a lower confining layer (if any) is filled with bentonite pellets. The monitoring well is then constructed by inserting polyvinylchloride (PVC) pipe through the center of the hollow stem augers. The pipe (well-casing) is fastened together by joining the factory threaded pipe ends. ESE typically uses two-inch or four-inch diameter pipe for ground-water monitoring wells. The diameter of the borehole is typically 6-inches greater than that of the diameter of the well-casing, but is at least four-inches greater than that of the well casing. The lowermost portion of the well-casing will be factory perforated (typically having slot widths of 0.010-inch or 0.020-inch). The slotted portion of the well-casing will extend from the bottom of the boring up to approximately five-feet above the occurrence of ground water. A PVC slip or threaded cap will be placed at the bottom end of the well-casing, and a locking expandable well cap will be placed over the top (or surface) end of the well-casing. A sand pack (typically No. 2/12 or No. 3 Monterey sand) will be placed in the borehole annulus, from the bottom of the well-casing up to one to two-feet above the top of the slotted portion, by pouring the clean sand through the hollow stem augers. One to two-feet of bentonite pellets will be placed on top of the sand pack. The bentonite pellets will then be hydrated with three to four-gallons of potable water, to protect the sand pack from intrusion during the placement of the sanitary seal. The sanitary seal (grout) will consist of either neat cement, a neat cement and bentonite powder mixture (containing no more than 5% bentonite), or a neat cement and sand mixture (containing no more than a 2:1 sand to cement ratio). If, the grout seal is to be greater than 30-feet in depth or if standing water is present in the boring on top of the bentonite pellet seal, then the grout mixture will be tremied into the boring from the top of the bentonite seal using either a hose, pipe or the hollow-stem augers, which serve as a tremie. The well will be protected at the surface by a water tight utility box. The utility box will be set into the grout mixture so that it is less than 0.1-foot above grade, to prevent the collection of surface water at the well head. If the well is set within the public right of way, then the utility box will be Department of Transportation (DOT) traffic rated, and the top of the box will be set flush to grade. If the well is constructed in a vacant field a brightly painted metal standpipe may be used to protect the well from traffic. If a standpipe is used, it will be held in place with a grout mixture and will extend one to two-feet above ground surface. All well completion details will be recorded by the ESE geologist on the geologic boring logs.

Subsequent to the solidification of the sanitary seal of the well (a minimum of 72 hours), the new well will be developed by an ESE geologist or field technician. Well development will be performed using surging, bailing and overpumping techniques. Surging is performed by raising and lowering a surge block through the water column within the slotted interval of the well casing. The surge block utilized has a diameter just smaller than that of the well casing, thus, forcing water flow through the sand pack due to displacement and vacuum caused by the movement of the surge block. Bailing is performed by lowering a bailer to the bottom of the well and gently bouncing the bailer off of the well end cap, then removing the full bailer and repeating the procedure. This will bring any material (soil or PVC fragments) that may have accumulated in the well into suspension for removal. Overpumping is performed by lowering a submersible pump to the bottom of each well and pumping at the highest sustainable rate without completely evacuating the well casing. Effective well development will settle the sand pack surrounding the well-casing, which will improve the filtering properties of the sand pack and allow water to flow more easily through the sand pack; improve the communication between the aquifer and the well by aiding the removal of any smearing of fine sediments along the borehole penetrating the aquifer; and, remove fine sediments and any foreign objects (PVC fragments) from the well casing. The ESE geologist or