

November 13, 1992

92P-426I

**PROPOSAL FOR A  
SOIL AND GROUND-WATER INVESTIGATION IN THE VICINITY OF  
TWO ABOVEGROUND DIESEL FUEL STORAGE TANKS  
ORO LOMA SANITARY DISTRICT  
2600 GRANT AVENUE  
SAN LORENZO, CALIFORNIA**

**INTRODUCTION**

This proposal presents the scope of work, proposed schedule, and estimated budget to investigate soil and ground-water quality in the vicinity of two aboveground diesel fuel storage tanks located at the Oro Loma Sanitary District ("Oro Loma"), 2600 Grant Avenue, San Lorenzo, California ("the Site"; Figure 1). This proposal is based on the following information, which was provided by Oro Loma:

- Piping associated with the tanks was leaking for an unknown period of time.
- Affected soil in the vicinity of the leaking pipe has been excavated to a depth of 5 to 6 feet below ground surface (bgs) and is stockpiled on site.
- Four soil samples have been collected from the base of the excavation.
- Two water samples were collected from the excavation pit.
- Depth to ground water at the Site is approximately 5 feet bgs.
- Oro Loma is performing this project as a self-directed investigation with the Alameda County Health Care Services (ACHCS) acting as the lead local agency.
- The shallow ground-water flow direction is toward San Francisco Bay and may be influenced by the tidal changes in the Bay.

**BACKGROUND**

Because of the leaking pipe associated with the aboveground storage tanks, soil adjacent to the leaking pipe was excavated

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to depth of 5 to 6 feet bgs. A total of approximately 14 cubic yards of soil was excavated and stockpiled on site.

Testing and Technology, Inc. (T&T) collected three soil samples from the base of the excavation at a depth of approximately 6 feet bgs. One other soil sample was collected from a smaller area that was excavated adjacent to the tanks (Figure 2). These samples were submitted for the analysis for total petroleum hydrocarbons as diesel (TPHd), and benzene, toluene, ethylbenzene, and total xylenes (BTEX). In addition, two ground-water samples were collected from the excavation in the vicinity of the leaking pipes, and were analyzed for TPHd and BTEX compounds.

Analytical results of the soil sample collected along the western side of the excavation contained 33,000 parts per million (ppm) of TPHd, with lesser amounts of toluene, ethylbenzene, and total xylenes (0.31 ppm, 0.40 ppm, and 2.4 ppm, respectively). The soil samples collected from the center and the east side of the excavation contained TPHd at 230 ppm and 180 ppm, respectively, and the soil sample collected from the east side of the excavation contained 0.34 ppm total xylenes. Other BTEX compounds were not present above detection limits in these samples.

Analytical results of the soil sample collected from the west side of the tanks detected 110 ppm of TPHd with lesser amounts of toluene, ethylbenzene, and total xylenes (0.15 ppm, 0.09 ppm, and 0.40 ppm, respectively). Benzene was not present above detection limits in this sample.

Analytical results of the ground-water sample collected from the east side of the excavation contained 540 ppm of TPHd, with lesser amounts of toluene, ethylbenzene, and total xylenes (2.1 ppm, 7.0 ppm, and 29.0 ppm, respectively). The sample collected from the west side of the excavation contained 0.0075 ppm benzene, 0.019 ppm toluene, and 0.070 ppm total xylenes. This sample was not analyzed for TPHd.

### OBJECTIVES

The objective of this investigation is to assess the following:

- the lateral extent of petroleum-affected soil and ground water in the vicinity of the tanks

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- whether additional investigation or remediation is required at the Site

## PROPOSED SCOPE OF WORK

The proposed scope of work is intended to fulfill the objectives of this work order and will include the following tasks:

- Task 1: Work Plan Submittal
- Task 2: Borehole Drilling, Soil Sampling, and Ground-Water Sample Collection
- Task 3: Laboratory Analysis Program
- Task 4: Data Evaluation and Report Preparation
- Task 5: Project Management and Meetings

These tasks are described below.

### Task 1: Work Plan Submittal

A work plan describing the rationale and methods to be used during the field investigation will be submitted to the ACHCS for review and approval. To reduce project costs and expedite the project, this work order has been prepared in a manner that can be converted into a work plan for submittal to the ACHCS.

### Task 2: Borehole Drilling, Soil Sampling, and Ground-Water Sample Collection

Three soil borings will be drilled at locations illustrated on Figure 2. The objectives of this task are as follows:

- to collect soil samples to assess the lateral and vertical extent of petroleum-affected soil
- to collect ground-water samples from the boreholes to assess the lateral extent of petroleum-affected ground water identified in the samples previously collected at the Site

Before boreholes are drilled, utilities at the Site will be identified by Oro Loma staff to clear the proposed drilling locations. Levine·Fricke may request that Oro Loma provide site plans illustrating utilities or lateral connections to public utilities.

Drilling activities will be conducted under the direction of a California Registered Geologist. All downhole drilling and

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sampling equipment will be steam cleaned before use at each drilling location. Steam cleaning of drilling equipment will be conducted off site by the drilling contractor. If steam-cleaning services are required on site, the rinsate water will be discharged to the headworks adjacent to the diesel tanks.

## Borehole Drilling

Each boring will be drilled to an appropriate depth below ground surface using the hollow-stem auger drilling method. A California state-licensed subcontractor will be retained to perform drilling services. Based on information provided by Oro Loma, we anticipate the total depth of these borings will be approximately 10 to 15 feet bgs. Upon completion, the borings will be backfilled with cement to the ground surface.

## Soil Samples

While drilling the borings, soil samples will be collected on a continuous basis for lithologic description using a 5-foot-long core barrel. The lithology of these samples will be described in the field by a trained Levine·Fricke soil scientist, engineer, or geologist. Lithologic logs will be prepared using the Unified Soil Classification System and standard geologic nomenclature. Soil samples for lithologic description and chemical analysis will be collected using the methodologies described below. Lithologic logging of the borings will be conducted by a qualified Levine·Fricke soil scientist, geologist, or engineer under the supervision of either a Registered Geologist or Certified Engineering Geologist.

Soil samples also will be collected for potential chemical analysis at 5-foot intervals from the surface down to the top of the water table by driving a brass-tube-lined split-spoon sampler ahead of the auger into undisturbed soil. The lowermost sample from the split-spoon sampler will be preserved for possible chemical analysis by placing aluminum foil-lined plastic caps over the ends of the brass tubes and storing the samples in an ice-chilled cooler.

The adjacent soil sample from the split-spoon sampler will be used for lithologic description using the Unified Soil Classification System and screened for organic vapors using a PID (photoionization detector). Lithologic descriptions and results from the field screening will be recorded in the field on borehole log forms.

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Based on the results of the PID screening, at least two soil samples per borehole will be submitted for laboratory analysis (a total of six soil samples).

## Ground-Water Sample Collection

Ground-water samples will be collected from each boring using a Teflon bailer. After the borehole has been drilled to its total depth, the hollow-stem augers will be raised 5 to 7 feet to allow ground water to enter the boring. Samples will be collected from the borings after 3 to 5 volumes of water are purged from the boring. Purging water from the boring will ensure that the samples are collected from representative ground water.

Samples will be collected in laboratory-supplied sample containers, labeled with the borehole identification number, the time and date of sample collection, the analysis requested, and the name of the sampler. The samples will be stored in a chilled ice chest, and maintained under standard chain-of-custody procedures until submittal to the analytical laboratory.

## Waste Management

Wastewater generated from sampling activities will be pumped to the treatment plant headworks. Drill cuttings produced during soil boring and sampling activities conducted as part of this work order will be placed in the soil stockpile temporarily stored on site. After receiving analytical results, Levine·Fricke will assist in identifying disposal options. The amounts, types, and concentrations of chemicals contained in the waste soils and water will determine the appropriate treatment or disposal methods, and therefore, the cost of soil disposal is not included in the estimated budget of this work order.

## **Task 3: Laboratory Analysis Program**

Soil and ground-water samples will be analyzed for TPHd using modified EPA Method 8015, and for BTEX using EPA Method 8020. Analytical services will be performed by a California-certified laboratory. Estimated costs assume a normal two-week turnaround time for receipt of analytical data from the laboratory.

## Soil Samples

At least two soil samples per soil boring (a total of six samples) will be submitted for chemical analysis. Samples to be analyzed will be selected based on depth interval, observations made during borehole drilling, and results of PID screening.

## Ground-Water Samples

One ground-water sample collected from each boring (a total of three ground-water samples) will be submitted for chemical analysis. Additionally, a trip blank and a bailer rinsate blank will be collected and submitted "on hold" pending the results of the ground-water samples collected from the boreholes.

### **Task 4: Data Evaluation and Report Preparation**

Following completion of the field work and receipt of the analytical data from the laboratory, the data will be reviewed for accuracy and completeness. The data evaluation will assess concentrations of petroleum hydrocarbons in the soil and ground water.

Based upon our evaluation of the data, a report will be prepared that describes the field activities and presents the sampling results, conclusions, and recommendations for additional investigation or remedial work, if necessary, at the Site. Levine·Fricke will discuss these conclusions with Oro Loma before finalizing the report.

After Oro Loma has discussed the results with Levine·Fricke, the report will be finalized and submitted to Oro Loma for its submittal to the appropriate regulatory agencies.

### **Task 5: Project Management and Meetings**

This task includes updating Oro Loma on a regular basis on the status of the work, notifying Oro Loma of the schedule for the project, and scheduling field and laboratory work.

Mr. Ron Goloubow, Project Geologist, will be the overall project manager, will oversee all field activities, and will be directly responsible for all technical aspects of the project. Mr. Mark D. Knox, P.E., Chief Engineer, will be the primary contact for Oro Loma and will provide overall project review. Levine·Fricke personnel with appropriate expertise will observe field activities.

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## SCHEDULE

We anticipate that the work plan can be prepared and submitted to the regulatory agencies within two weeks after we receive authorization to proceed with this project. Barring subcontractor and weather-related delays or other conditions beyond Levine·Fricke's control, we anticipate that the field activities can be scheduled two weeks after the ACHCS has approved the work plan and the field work can be completed within three weeks. The report can be completed within four weeks after the field work is complete.

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## ESTIMATED BUDGET

Work will be conducted on a time-and-materials basis in accordance with the Schedule of Charges in effect at the time work is conducted. A copy of our 1992 Schedule of Charges is enclosed. We have estimated the time requirements and associated costs of this proposed scope of work based on a level of effort deemed appropriate for the work. We have included a 15 percent subcontract administrative fee for the drilling and laboratory subcontractors. Any anticipated modifications to this estimate will be discussed with Oro Loma as they become evident. The estimated total budget will not be exceeded without prior authorization from Oro Loma.

### Task 1: Work Plan Submittal

Levine·Fricke Personnel	\$ 700
Reproduction, Photocopying, Postage	100
Task Total	<hr/> \$ 800

### Task 2: Borehole Drilling, Soil Sampling, and Ground-Water Sample Collection

Drilling Subcontractor	1,700
Levine·Fricke Personnel	1,200
Levine·Fricke Equipment	300
Task Total	<hr/> 3,200

### Task 3: Laboratory Analysis Program

Soil Samples (6 samples)	1,300
Ground-Water Samples (3 samples)	600
Task Total	<hr/> 1,900



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## Task 4: Data Evaluation and Report Preparation

Levine-Fricke Personnel	2,600
Reproduction, Photocopying, and Postage	200
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Task Total	2,800
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## Task 5: Project Management and Meetings

Levine-Fricke Personnel	900
Telephone, Travel, Postage	100
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Task Total	1,000
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ESTIMATED TOTAL FOR THIS SCOPE OF WORK:

**\$9,700**  
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November 13, 1992

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**APPROVAL AND ACCEPTANCE**

Approval and acceptance of this Work Order are acknowledged by the signatures of duly authorized representatives of Oro Loma Sanitary District and Levine-Fricke, Inc.

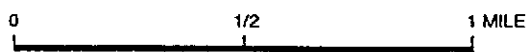
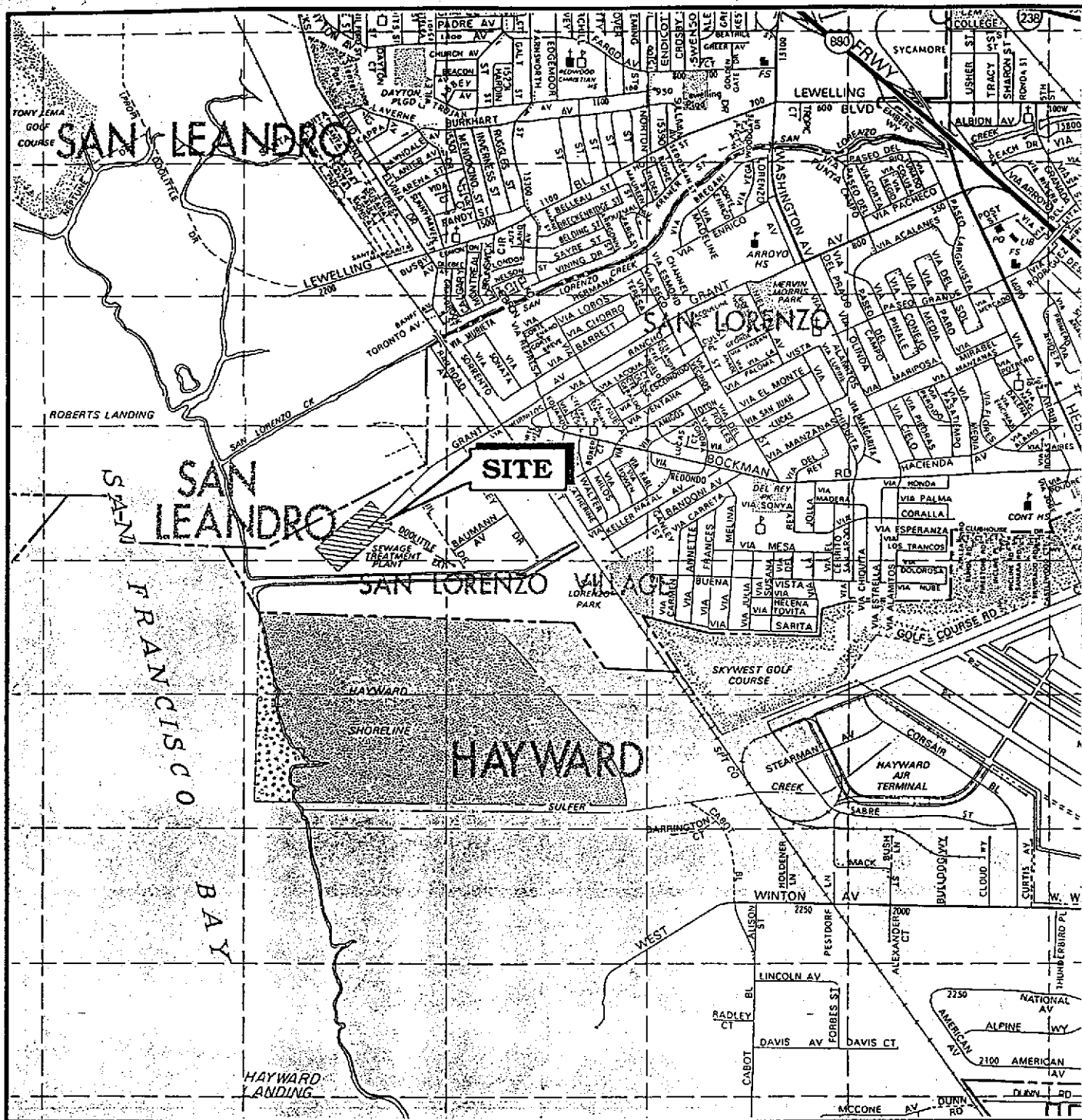
**ORO LOMA SANITARY DISTRICT**

Signature	Title	Date

(Please print or type name)

**LEVINE-FRICKE, INC.**

<i>Mark D. Knox</i>		<i>11/13/92</i>
Mark D. Knox, P.E.	Chief Engineer	Date



MAP SOURCE:  
Thomas Bros. Map  
Alameda and Contra Costa Counties, 1991

Figure 1 : SITE VICINITY

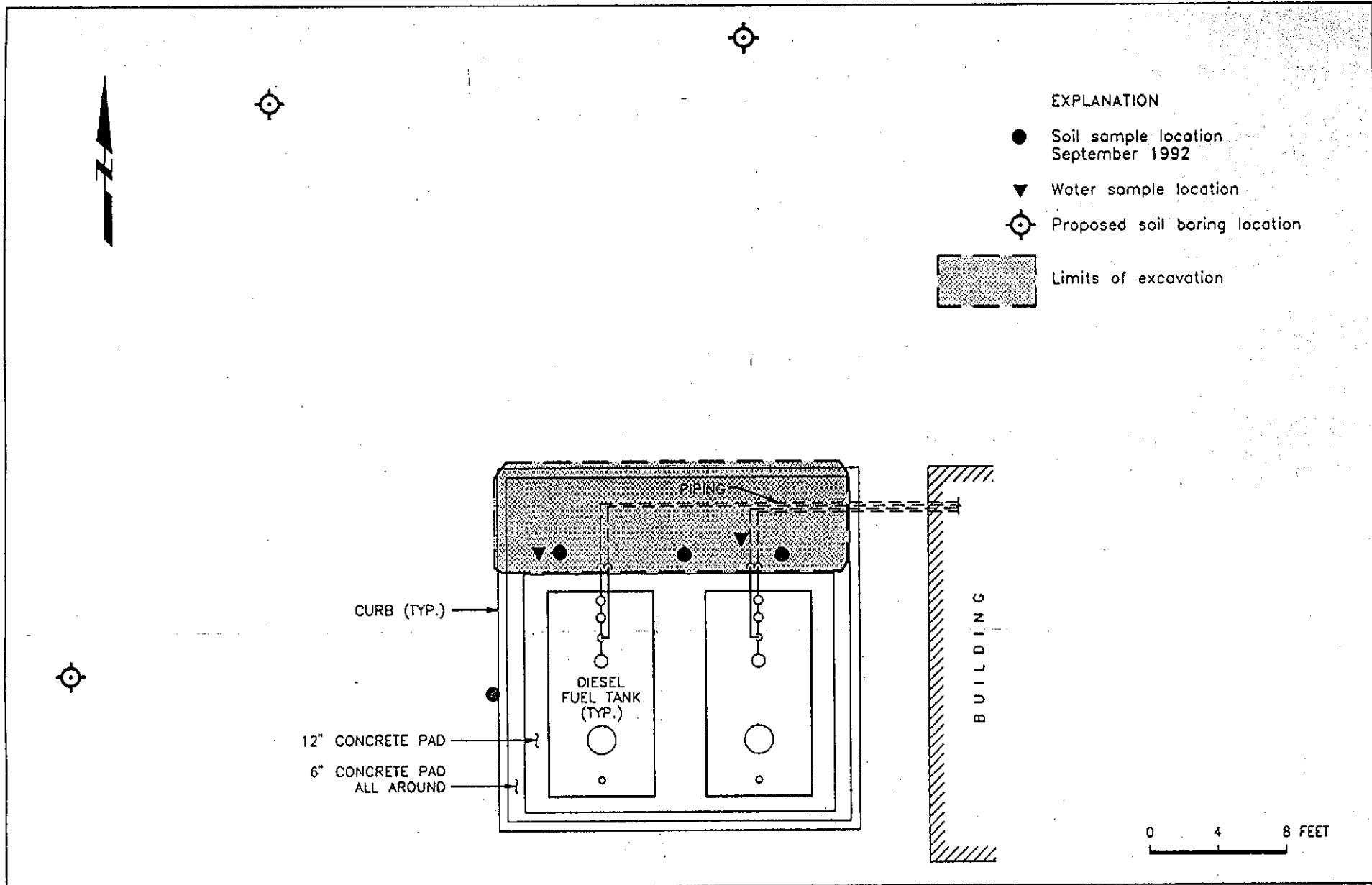


Figure 2 : TANK LOCATIONS