10/3/89

LEVINE·FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

August 30, 1989 LF 1596

Ms. Coramarie Allenbaugh
10 Waverly Court
Alamo, California 94507

Subject: Proposal for Further Hydrogeologic Investigations at 14500 East 14th Street, San Leandro, California

Dear Ms. Allenbaugh:

The enclosed Work Order details our proposal for further hydrogeologic investigations at 14500 East 14th Street, San Leandro, California.

If the Work Order meets with your approval, please sign the Approval and Acceptance form attached to each of the two enclosed copies and return one copy to us.

If you have any questions or comments, please give either of the undersigned or Tom Johnson a call.

Sincerely,

Gregson W. Taylor
Senior Project Hydrogeologist

Charles H. Pardini
Staff Geologist

Enclosures

cc: Mr. John Lyons, Landels, Ripley & Diamond

1900 Powell Street, 12th Floor
Emeryville, California 94608
(415) 652-4500

Other offices in NEWPORT BEACH and OAKLAND, CA

August 30, 1989 LF 1596

WORK ORDER NUMBER 2
14500 EAST 14th STREET
SAN LEANDRO, CALIFORNIA

The following describes the Scope of Services, Schedule and Estimated Budget to conduct further hydrogeologic investigations needed to better define the extent of petroleum hydrocarbons in soil and ground water at 14500 East 14th Street, San Leandro, California.

INTRODUCTION

The Maskell Oil site ("Site") is located at 14500 East 14th Street, San Leandro, California (Figure 1) and consists of approximately 2-2/3 acres. The Site is located approximately one-half mile southwest of Interstate 580. Until operations ceased in October 1988, the Site was used to store and distribute petroleum fuels for approximately the past 50 years.

There are six storage tanks which remain at the Site: four approximately 10,000-gallon above-ground fuel storage tanks (two diesel, one premium gasoline and one regular gasoline); one underground 550-gallon waste oil tank; and one underground 550-gallon gasoline vapor recovery tank. These tanks have reportedly been used at the Site for at least the past 50 years; however, the waste oil tank is the only tank still being used.

In December 1988, Hageman-Schank, Inc. completed a preliminary soil and shallow ground-water investigation at the Site (Hageman-Schank, 1988). That limited investigation revealed that several petroleum hydrocarbons, including diesel fuel, gasoline and motor oil, have affected soil and ground water to depths of about 30 feet below the ground surface. Hageman-Schank, Inc. also reported the possible presence of floating petroleum hydrocarbons on the ground-water surface beneath portions of the Site.

During April and May 1989, Levine·Fricke, Inc. conducted additional hydrogeologic investigations at the subject Site. Those investigations revealed that petroleum hydrocarbons have affected the eastern, southern and western portions of the Site. Specifically, those results revealed: 1) elevated concentrations (up to 24,000 ppm) of diesel in soil in the vicinity of wells LF-1, LF-3, LF-4 and LF-5, borings S-1, S-2, S-4 and S-5, and surface sample Sump 1 (Figure 2); 2) elevated concentrations (up to 2,600 ppm) of gasoline in soil in the vicinity of well LF-2

(Figure 2); 3) elevated concentrations (up to 260 ppm) of benzene, toluene, ethylbenzene and xylenes (BTEX compounds) in soil in the vicinity of wells LF-2 and LF-3 (Figure 2); 4) elevated concentrations (up to 39,000 ppm) of oil and grease in soil in the vicinity of borings S-1, S-2, S-4 and S-5, and surface sample Sump 1; 5) the presence of floating product in the vicinity of wells LF-4 and LF-5; 6) elevated concentrations of diesel and BTEX compounds in shallow ground water in wells LF-1, LF-2, LF-4 and LF-5; and 7) low concentrations (less than 1.3 ppm) of polychlorinated biphenyls in soil in the vicinity of surface sample Sump 1. The most likely sources for the elevated concentrations of petroleum hydrocarbons are the four large above-ground storage tanks in the southern portion of the Site, the remote fuel pump island and associated piping in the northwestern portion of the Site and parked trucks throughout the Site.

It appears, based on the information collected during Levine·Fricke's investigation, that further investigations are needed to better assess the lateral extent of petroleum hydrocarbons beneath and immediately downgradient of the Site. Additionally, it appears likely that some form of remedial action will be required to mitigate the presence of petroleum hydrocarbons in soil, and possibly ground water, beneath the Site. Remedial costs for similar sites have ranged from hundreds of thousands to over one million dollars. Further investigations should provide additional data needed to complete an evaluation of remedial action alternatives for the Site. Additional work activities to further evaluate hydrogeologic conditions as they relate to the above issues are organized into the following tasks:

Task 1: Aerial Photograph Review and Well Canvass
Task 2: Soil Sampling
Task 3: Drilling and Installation of Six Shallow Ground-Water Monitoring Wells
Task 4: Well Development and Ground-Water Sampling
Task 5: Laboratory Analysis
Task 6: Data Evaluation and Report Preparation
Task 7: Project Management and Meetings

Detailed descriptions of each task follow:

Task 1: Aerial Photograph Review and Well Canvass

To facilitate the evaluation of potential conduits for migration of shallow petroleum-affected ground water into deeper water-yielding zones, an inventory of industrial, domestic, agricultural and investigatory wells within a one-half mile radius of the Site will be conducted. Data from the Department of Water Resources (DWR) and the Alameda County Environmental Health Department will be used as the basis for the well canvass.

Walk-by and drive-by inspections of wells identified through these file searches will be conducted to determine the status of those wells, if possible. To assist in locating undocumented wells, an aerial photograph review will also be conducted.

Task 2: Soil Sampling

Approximately six shallow soil borings will be completed using hand-augering sampling equipment or a hand-trowel in the vicinity of the sump and concrete washing pad located in the eastern portion of the Site. The proposed locations of the soil borings are shown in Figure 3. Soil samples will be collected from each boring at the approximate depths of 1/2 to 1 foot and 2-1/2 to 3 feet. Soil samples collected from each boring will be placed in laboratory-supplied glass jars. These samples will be immediately sealed and placed in a chilled cooler for transport to the analytical laboratory. Approximately six soil samples from the borings have been budgeted for chemical analysis. Additional samples collected from the borings will be submitted to the laboratory for analysis at a later date, if necessary.

Task 3: Drilling and Installation of Six Shallow Ground-Water Monitoring Wells

Permits for monitoring well installation will be obtained from the Alameda County Environmental Health Department prior to the start of work. In addition, possible underground utilities in the site vicinity to be investigated will be located prior to the start of drilling. This proposal estimate includes the cost of an underground utility locating service to assist in locating underground fuel, power and other underground utility lines.

Six ground-water monitoring wells will be drilled using the hollow-stem auger drilling method to depths of approximately 25 to 35 feet below the ground surface. The proposed locations of the monitoring wells are shown on Figure 3; the final well locations will depend on access agreements with adjacent property owners. The actual depths of the monitoring wells will be determined in the field based on the depth to ground water and the types, depths and thicknesses of sediments encountered.

Soil samples will be collected near-continuously from the borings for each well for lithologic description. Selected soil samples also will be retained from selected borings for possible chemical analysis for fuel hydrocarbons. Samples for chemical analysis will be collected in laboratory-supplied glass jars or in clean brass liners. These samples will be immediately sealed and placed in a chilled cooler for transport to the laboratory. A portable organic vapor analyzer (OVA) will be used during sampling to help select samples for possible chemical analysis. Approximately 12 soil samples from selected borings have been

budgeted for chemical analysis. Additional soil samples delivered to the laboratory will be retained for possible later analysis, if necessary.

Each monitoring well will be constructed of 2-inch diameter polyvinyl chloride (PVC), factory-slotted casing. The well annulus outside the perforated interval will be backfilled with an appropriately-sized sand pack. Bentonite pellets and a cement-bentonite slurry will be placed above the sand pack to the ground surface to seal the annular space of the borehole. A protective, locking steel cover or Christy box will then be placed over the top of each well.

The elevation of each well will then be surveyed to the nearest 0.01-foot and tied to an existing elevation benchmark to allow accurate measurement of the ground-water elevation.

Drilling and sampling equipment and well materials will be steam-cleaned before each use. Power, water and an area for cleaning equipment are to be provided at the Site.

Levine·Fricke will direct the drilling subcontractor to place waste soils and wastewater generated during this investigation in appropriate containers. Disposal of the wastewater and soils will be the responsibility of Ms. Coramarie Allenbaugh, the designated waste generator. Levine·Fricke will assist in identifying disposal options after receiving analytical results of soils collected from the borings. The cost for waste disposal will depend on the amounts, types and concentrations of chemicals contained in the waste.

Task 4: Well Development and Ground-Water Sampling

Monitoring wells will be developed by pumping, surging and/or bailing to remove fine particles near the well screen and improve hydraulic communication with the surrounding formation. Water-quality parameters such as water clarity, pH, temperature, specific conductance and volume extracted will be measured during the development process to gauge its progress.

Ground-water sampling will involve pumping and/or bailing approximately 6 to 10 well casing volumes of water out of the well prior to sampling. Only wells which have no measurable floating product will be sampled. Water-quality parameters listed above will be measured during purging to determine when to sample.

Ground-water samples will be collected using a Teflon bailer. Samples will be transferred into 40-ml VOA vials with Teflon septa and 1-liter amber-colored glass bottles. The samples will be stored in a chilled cooler for delivery to the laboratory. A

field blank sample and duplicate will also be collected for quality control purposes.

Measuring of depth-to-ground water and floating product thickness will be completed using an electronic product/water interface sounder. In addition, depth-to-ground water also will be measured using an electric water-level meter when possible. The product/water interface sounder will be cleaned with Alconox (a laboratory-grade detergent) and rinsed with deionized water prior to each use.

Task 5: Laboratory Analysis

Approximately 13 ground-water samples (11 well samples [includes five existing wells and six proposed wells], one duplicate and one blank) will be analyzed by a State-certified laboratory for Total Petroleum Hydrocarbons (TPH) as both diesel and gasoline, and for benzene, toluene, ethylbenzene and xylenes (BTEX) distinction using EPA Methods 8015 and 8020. In addition, approximately 12 soil samples collected from the borings for the monitoring wells will be analyzed for TPH as diesel and gasoline and for BTEX using EPA Methods 8015 and 8020. Approximately six soil samples from the shallow soil borings will be analyzed for polychlorinated biphenyls using EPA Method 8080 and for total extractable petroleum hydrocarbons using EPA Method 8015.

Task 6: Data Evaluation and Report Preparation

A report will be prepared summarizing the data and presenting the resulting interpretations and recommendations for additional investigations, if necessary. The report will include detailed descriptions of the methodologies used to collect and analyze data and the technical rationale for the conclusions reached.

The report will describe the type of geologic materials encountered, the occurrence, concentrations and distribution of petroleum hydrocarbons and related compounds in soil and ground water and interpretations concerning hydrogeologic conditions at the Site. The report will also include lithologic logs prepared during drilling activities, including well construction design, geologic cross sections, chemical analyses data and other documentation.

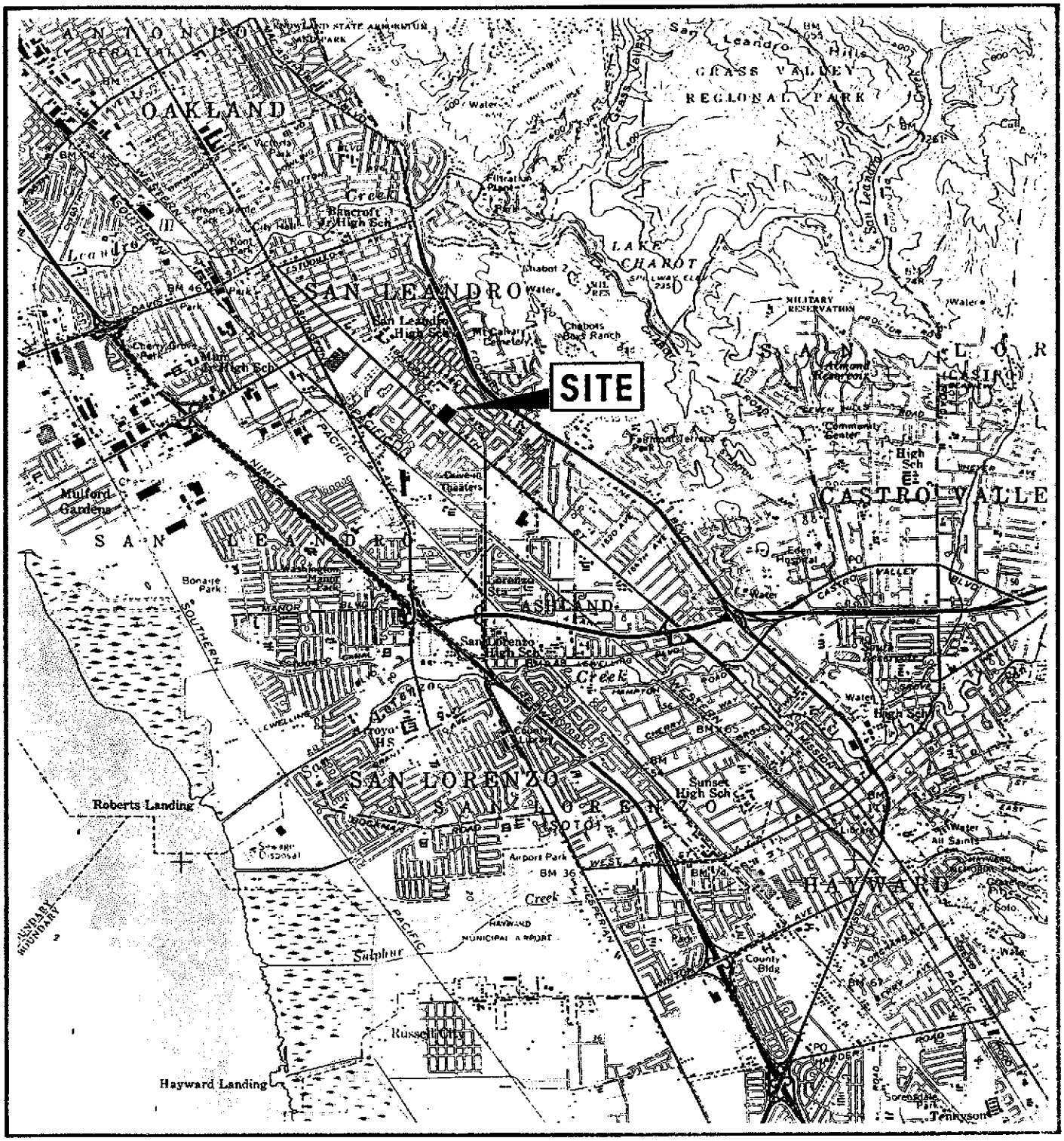
The report also will include and evaluation and cost estimates for remedial action alternatives for the Site. The remedial action alternatives to be considered will address site problems that pose a risk to public health and/or the environment.

Task 7: Project Management and Meetings

Mr. Gregson Taylor, Senior Project Hydrogeologist, will be the Project Manager. As such, he will be the primary contact for Ms. Allenbaugh and will be responsible for all technical and administrative aspects of the project. Mr. Charles Pardini, Staff Geologist, will assist with field work, data evaluation and report preparation. Mr. Thomas Johnson, R.G. and Principal Hydrogeologist, will provide peer review for the project.

SCHEDULE

Levine·Fricke can begin the process of obtaining access and scheduling the field work within one week after being given authorization to proceed. Based on a normal laboratory schedule (two weeks), we anticipate that a draft report can be completed within about eight weeks after work begins. This schedule is subject to change due to weather, subcontractor availability, or difficulties in obtaining access agreements from adjacent property owners.



MAP SOURCE:
U.S.G.S. Hayward, California
15 Minute Series

Figure 1 : SITE VICINITY

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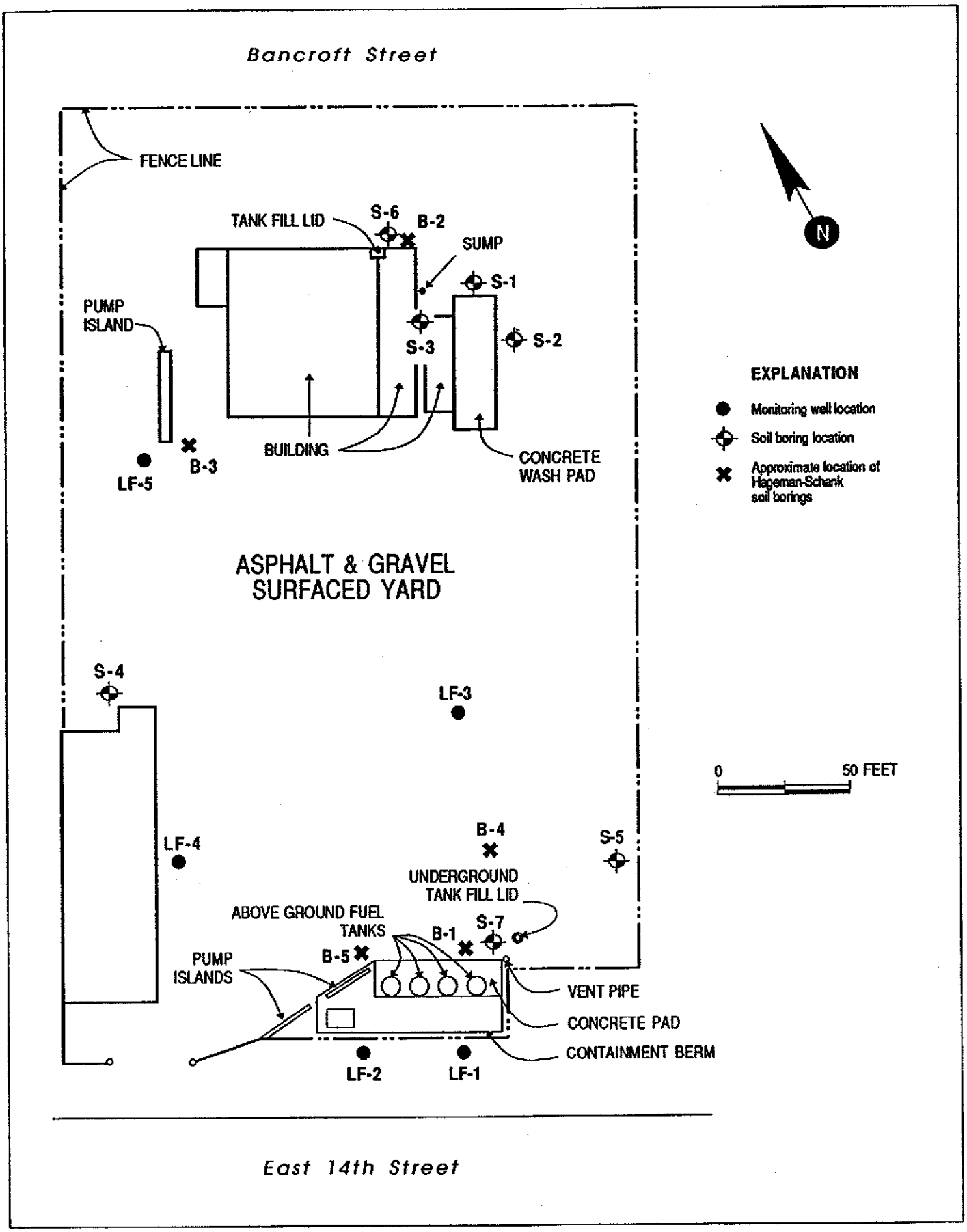

Figure 2: SITE MAP SHOWING LOCATIONS OF MONITORING WELLS AND SOIL BORINGS

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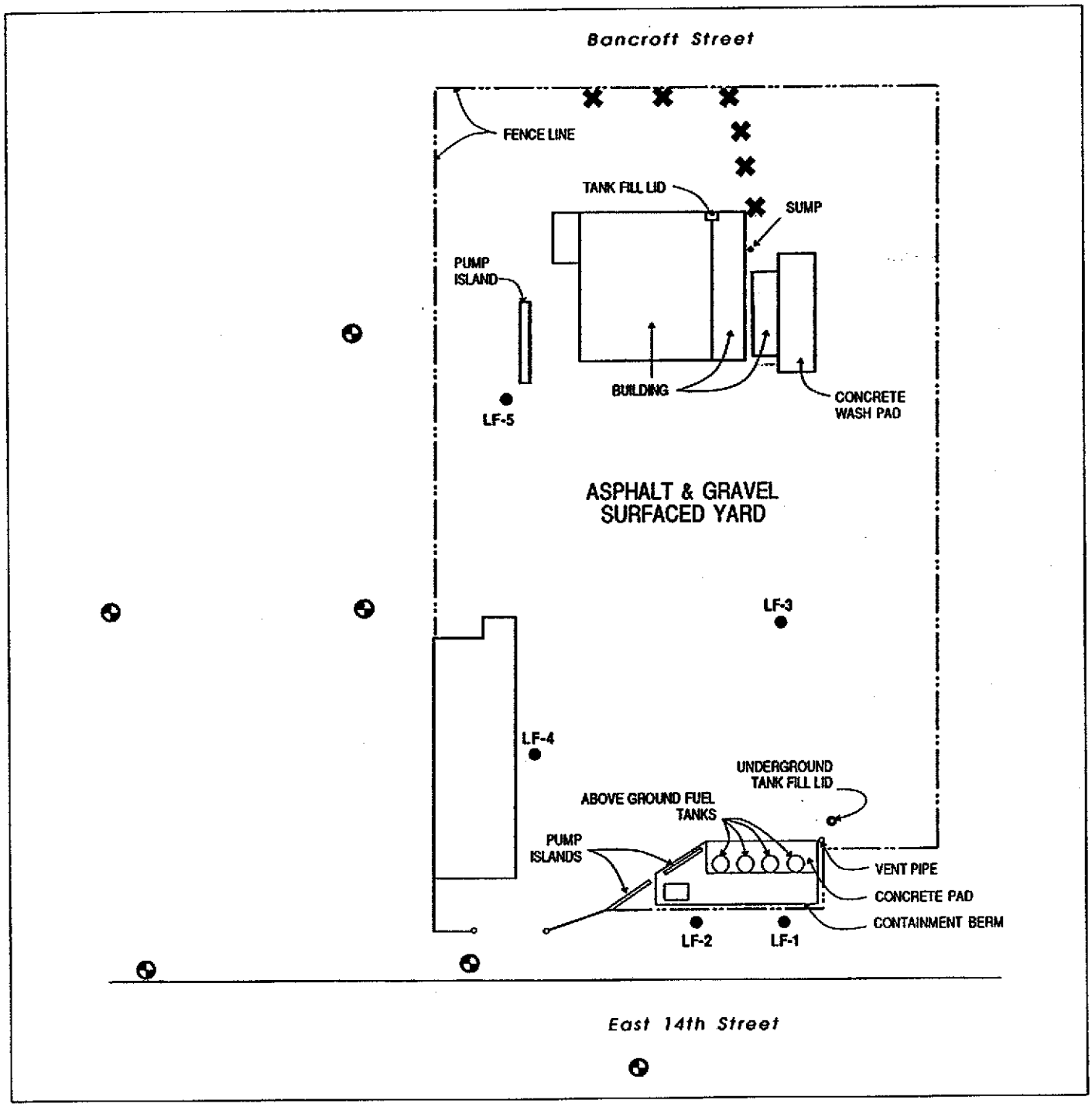

Figure 3 : SITE MAP SHOWING LOCATIONS OF MONITORING WELLS AND SOIL BORINGS

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