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Letter of Transmittal

Date 10/4/95

From Chuck Pardini
To Dale Klettke

Project No.
Subject Maskell Al Reports

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June 2, 1989 report	1
November 5, 1990 report	1

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Comments Dale,
Here are the reports you requested. If you need anything else, please call me.

Chuck

P.S. Yellow stickies indicate most relevant data.

C Pardini
(Signed)

1900 Powell Street, 12th Floor
Emeryville, California 94608
(510) 652-4500
Fax (510) 652-2246

Soil and Ground-Water Investigation for Property at 14500 East 14th Street San Leandro, California

June 2, 1989
1596

Prepared for:

Ms. Coramarie Maskell Allenbaugh
10 Waverly Court
Alamo, California 94507

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CONSULTING ENGINEERS AND HYDROGEOLOGISTS

June 2, 1989

LF 1596

Ms. Coramarie Maskell Allenbaugh
10 Waverly Court
Alamo, California 94507

Subject: Enclosed Report on Soil and Ground-Water Investigation
for Property at 14500 East 14th Street
San Leandro, California

Dear Coramarie:

Enclosed is the subject report which was prepared in accordance with our proposal for soil and ground-water investigation, dated February 23, 1989.

At your request, we have evaluated several alternative remedial measures for the site. We can discuss these issues more fully after your review of this report.

Please call either of the undersigned if you have any questions or comments.

Sincerely,

Gregson W. Taylor
Project Hydrogeologist

Thomas M. Johnson, R.G.
Principal Hydrogeologist

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

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

Other offices in NEWPORT BEACH and OAKLAND, CA

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June 2, 1989 LF 1596

**SOIL AND GROUND-WATER INVESTIGATION
FOR PROPERTY AT 14500 EAST 14th STREET
SAN LEANDRO, CALIFORNIA**

1.0 INTRODUCTION

The Maskell Oil Site ("Site") is located at 14500 East 14th Street in San Leandro, California, 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 has been used to store and distribute petroleum fuels for approximately the past fifty years.

There are six storage tanks 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 tank (use not known). These tanks have reportedly been used at the Site for at least the past fifty 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 (water table) 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 also reported the possible presence of floating petroleum hydrocarbons on the ground-water surface beneath portions of the Site.

Information obtained through verbal communications with current tenants of the Site has revealed that tanker trucks hauling polychlorinated biphenyl (PCB) containing oils were formerly washed and rinsed at the Site. This activity reportedly occurred on a concrete washing pad in the southeastern portion of the Site.

In light of the findings of the Hageman-Schank investigation, the owners of the property, Ms. Coramarie Allenbaugh and Ms. Theadate Phillips, requested Levine·Fricke, Inc. to review the Hageman-Schank report and prepare a proposal for additional soil and ground-water investigations at the Site. Ms. Allenbaugh and Ms. Phillips have retained Levine·Fricke to complete the site investigation as outlined in Levine·Fricke's proposal dated February 23, 1989.

1.1 Objectives

The objective of the investigation, as presented in the Levine·Fricke February 23, 1989 proposal, was to complete subsurface investigations in the vicinity of the above-ground and underground petroleum storage tanks and in the vicinity of the fuel dispensing pumps to assess the potential impacts of those facilities, if any, on surrounding soil and ground water. Additionally, selected areas of the Site which had visible surface staining (e.g., petroleum staining), as well as the area adjacent to the concrete washing pad, also were investigated.

1.2 Scope of Work

The Scope of Work proposed by Levine·Fricke was developed to provide data to assess the presence and possible extent of fuel hydrocarbons in soil and ground water beneath the Site. The Scope of Work included the following tasks:

1) field inspection and background and record review
2) completion of soil borings
3) drilling and installing five monitoring wells
4) developing and sampling new monitoring wells
5) laboratory analysis of selected soil and ground-water samples
6) measuring ground-water elevations and product thickness, if present, in the monitoring wells
7) preparation of site figures showing the results of these field investigations

2.0 FIELD INSPECTION

Field inspections of the Site and surrounding area were conducted by Levine·Fricke personnel during February and March 1989 to observe general area features and identify potential indications of usage, storage, handling and/or disposal of hazardous materials. This included walk-through inspections of the Site and a drive-by survey of the surrounding properties.

Personal observations and interviews with longtime employees and tenants provided information on the following subjects: 1) site history and usage; 2) locations of various fuel lines, water lines, and underground tanks and their contents; 3) areas of previous fuel leaks/spills; and 4) washing and rinsing of tanker trucks reportedly hauling PCB-containing oils on the concrete wash pad in the southeast portion of the Site.

Sediments underlying the Site are classified as Quaternary alluvium. The alluvium consists of Holocene to late Pleistocene unconsolidated to weakly consolidated silts, sands and gravels (Borcherdt, Gibbs, and Lajoie, 1975).

4.2 Site Geology/Cross Sections

Five shallow (less than 40 feet in depth) monitoring wells were drilled and installed during April 1989. In addition, seven shallow (less than 10 feet in depth) soil borings were drilled or hand-augered during March and April 1989. A discussion of procedures used during drilling and well installation and during completion of the soil borings is presented in Appendix A. Lithologic and well construction logs for each monitoring well and lithologic logs for the two drilled soil borings are included in Appendix B.

Geologic cross-section locations A-A' and B-B' are shown on Figure 3; the cross sections are included as Figures 4 and 5, respectively. These cross sections illustrate near-surface geologic conditions (depths less than 40 feet) beneath the Site, and include lithologic information for the borings completed by Levine·Fricke during March and April 1989 and by Hageman-Schank during December 1988. Cross section A-A' depicts near-surface conditions from the southern portion of the Site (well LF-2) to the northern portion of the Site (LF-5). Cross section B-B' extends from east (well LF-3) to west (LF-4) across the Site.

Shallow (depths less than 38 feet) sediments underlying the Site consist of unconsolidated interbedded clay, silt, sand and gravel. Near-surface sediments from the surface to depths ranging from 9 to 12 feet below the ground surface generally consist of silty clay and clayey silt. Below these depths, coarser-grained silty sands, silty gravels and sandy gravels interbedded with finer-grained silty clays and clayey silts generally were encountered. Thicknesses of these coarser-grained sediments vary from 3 feet in well LF-3 to approximately 9 feet in well LF-4. These coarser-grained sediments typically extend to depths of 10 to 25 feet below the surface and appear to thin toward the north. Below these depths, finer-grained clayey silts underlain by silty clays were encountered to the total depths of the borings (33 to 38 feet).

5.0 GROUND-WATER ELEVATION AND FLOW DIRECTION

Ground-water elevations and floating petroleum hydrocarbon (product) thickness, where present, were measured in each of the newly installed monitoring wells on April 5, 6, 25 and May 9, 1989 (Table 1). Depth to ground water on April 25, 1989 varied from 24.34 feet (well LF-3) to 24.76 feet below the ground

surface (well LF-2); corresponding ground-water elevations ranged from 24.65 to 24.90 feet above mean sea level (msl).

Ground-water elevations measured on April 25, 1989 are shown graphically in Figure 6. Ground-water elevations and product thicknesses measured on April 25, 1989 also are shown on cross sections A-A' and B-B' (Figures 4 and 5). Ground-water elevations in well LF-5, which had measurable floating product, have been corrected to account for the thickness of the floating product.

Ground-water elevations measured on April 25, 1989 indicate that the shallow (less than 38 feet) ground-water flow direction beneath the Site is generally toward the west. The ground-water gradient was calculated to be 0.002 ft/ft (a decrease of 0.002 vertical feet per 1 horizontal foot).

Measurable floating product was present in three wells on April 25, 1989. Measured thicknesses of floating product on April 25, 1989 varied from trace amounts in LF-2 to 0.94 feet in LF-5 (Table 1). The distribution of floating product measured on April 25 is depicted on geologic cross sections A-A' and B-B' (Figures 4 and 5).

6.0 SOIL QUALITY RESULTS

Soil samples were collected for chemical analysis during March and April 1989. Details of sample collection protocol are provided in Appendix A. Selected soil samples were collected from the borings for wells LF-1 through LF-5 and from borings S-4, S-5, and S-7. Selected soil samples were analyzed for total petroleum hydrocarbons (TPH) as gasoline and diesel using EPA Method 8015; benzene, toluene, ethylbenzene and xylene (BTEX) using modified EPA Method 8020; and oil and grease using EPA Method 503D. Selected soil samples from borings S-1 and S-2 and a surface sample from Sump 1 were analyzed for TPH as diesel using EPA Method 503E, oil and grease using EPA Method 503D, and polychlorinated biphenyls using EPA Method 8080. Selected soil samples from the borings for wells LF-1, LF-2, and LF-5 also were analyzed for total lead using EPA Method 7420. Analytical results for soil samples are summarized in Table 2. Laboratory data sheets for soil samples analyzed are included in Appendix C.

Total Petroleum Hydrocarbons

Concentrations of TPH as diesel ranged from of 24,000 ppm at a depth of 1 foot in boring S-5 to 62 ppm at a depth of 3 feet in boring S-5. Elevated concentrations of TPH as diesel also were detected in samples collected from the boring for well LF-5 (18,000 ppm; depth of 23 feet), the boring for well LF-3 (17,000

ppm; depth of 18 feet), and surface sample Sump 1 (18,000 ppm). TPH as diesel was not present above analytical detection limits in soil samples collected from the borings for well LF-2 (depth of 23 feet) and S-7 (depth of 8 feet). Concentrations of TPH as gasoline were detected above analytical detection limits only in one sample collected from the boring for well LF-2 (2,600 ppm; depth of 23 feet).

Benzene, Toluene, Ethylbenzene and Xylenes

Concentrations of BTEX compounds in analyzed soil samples were generally below analytical detection limits, except soil samples collected from the boring for well LF-1 at a depth of 23 feet (which contained ethylbenzene at 80 ppm and xylenes at 260 ppm). In addition, toluene was detected as follows: 3 ppm in samples collected from the boring for well LF-3 at a depth of 18 feet; 0.819 ppm in samples collected from the boring for well LF-4 at a depth of 23 feet; 0.140 ppm in samples collected from boring S-4 at a depth of 1.5 feet; 0.030 ppm in samples collected from boring S-7 at a depth of 8 feet; and 0.008 ppm in samples collected from boring S-5 at a depth of 1 foot.

Oil and Grease

Oil and grease were detected at elevated concentrations in both surface and near-surface (depth of 3 feet) soil samples. Concentrations of oil and grease in samples collected from boring S-5 ranged from 39,000 ppm (depth of 1 foot) to 200 ppm (depth of 3 feet). A slight decrease in oil and grease concentrations with depth also was noted in boring S-2 (2,700 ppm at a depth of 2 feet, and 2,000 ppm at a depth of 3.5 feet). Elevated concentrations of oil and grease were also reported in surface sample Sump 1 (36,000 ppm).

Polychlorinated Biphenyls

Aroclor 1260 was the only polychlorinated biphenyl present above analytical detection limits. Aroclor 1260 was detected in the surface sample Sump 1 (1.3 ppm) and a sample collected from boring S-2 (0.09 ppm; depth of 2 feet).

Total Lead

Total lead was detected in selected soil samples analyzed ranging from 9 ppm in the boring for LF-2 (depth of 23 feet) to 6 ppm in the boring for well LF-5 (depth of 23 feet) (Table 2).

7.0 GROUND-WATER QUALITY

7.1 Ground-Water Sampling and Analyses

One round of ground-water samples was collected on April 6, 1989 from monitoring wells LF-1 through LF-5. Ground-water samples collected from each well were analyzed for TPH as gasoline, diesel, and waste oil using EPA Method 8015 and for BTEX using modified EPA Method 602. Ground-water samples from wells LF-1, LF-2 and LF-5 were also analyzed for total lead using EPA Method 7420. Laboratory data sheets for analyzed ground-water samples during this investigation are included in Appendix C. Table 3 summarizes analytical data for ground-water samples collected. Table 4 presents ground-water sampling data for each of the wells sampled. Details of sample collection protocol are presented in Appendix A.

7.2 Ground-Water Quality Results

Analytical data for ground-water samples collected from the recently installed monitoring wells at the Site revealed the presence of elevated concentrations of TPH as diesel and BTEX compounds were present in shallow ground water beneath portions of the Site. TPH as gasoline, waste oil, and total lead were not detected above analytical detection limits in ground-water samples analyzed.

7.2.1 Total Petroleum Hydrocarbons (TPH) as Diesel

TPH as diesel was detected at elevated concentrations in ground-water samples collected from wells LF-4 (340 ppm), LF-1 (180 ppm), LF-2 (98 ppm), and LF-5 (59 ppm) located along the south and west boundaries of the Site. A low concentration (0.5 ppm) of TPH as diesel was detected in well LF-3.

7.2.2 Benzene, Toluene, Ethylbenzene and Xylenes (BTEX)

Analytical results for ground-water samples collected revealed that BTEX compounds were present in ground-water samples collected from all wells except well LF-3, located in the east-central portion of the Site. The highest concentrations of these compounds are as follows: benzene at 1.6 ppm in LF-2; ethylbenzene at 1.1 ppm in LF-1; and xylenes at 0.470 ppm in LF-2. Toluene was not present above analytical detection limits in ground-water samples analyzed.

8.0 INTERPRETATION OF RESULTS

The results of this investigation have revealed that petroleum hydrocarbons have affected soil and ground water in the vicinity of the above-ground fuel storage tanks in the southern portion of the Site (wells LF-1, LF-2 and LF-4) and in the vicinity of the remote fuel dispensing pump island in the western portion of the Site (well LF-5). Additionally, petroleum hydrocarbons have affected soil at locations where surface spillage appears to have occurred along the eastern portion of the Site (well LF-3 and borings S-1, S-2 and S-5), and the western portion of the Site (boring S-4).

The following sections provide discussions and interpretations for the soil and ground-water quality results presented above.

8.1 Interpretation of Soil-Quality Results

Soil samples collected and analyzed during this investigation have revealed three areas of the Site soil contains significant concentrations (greater than 80 ppm) of petroleum hydrocarbons. The first area is in the eastern portion of the Site (Figure 7) where elevated concentrations of oil and grease (39,000 ppm in boring S-5) were reported at a depth of 3.5 feet. In addition, TPH as diesel was detected at elevated concentrations in boring S-5 (24,000 ppm at 1 foot depth) and well LF-3 (17,000 ppm at 18 feet). The presence of elevated concentrations of TPH as diesel and oil and grease in shallow sediments may be due portions of the Site used to park trucks which may leak various motor fuels and lubricants. Elevated concentrations of TPH as diesel in the samples collected from the boring for well LF-3 at a depth of 18 feet also may be related to larger spills/leaks that occurred in other areas of the Site.

A second area in which petroleum hydrocarbons have affected soil is in the vicinity of the four large above-ground fuel storage tanks in the southern portion of the Site (Figure 7). Analytical results of soil samples collected at a depth of 23 feet from the borings for wells LF-1 and LF-2 revealed elevated concentrations of TPH as diesel (320 ppm in LF-1) and TPH as gasoline (2,600 ppm), xylenes (260 ppm) and ethylbenzene (80 ppm) in LF-2. Elevated concentrations of petroleum hydrocarbons in this area are most likely related to spills/leaks in the vicinity of the above-ground fuel storage tanks.

A third area where soils were found to be affected by petroleum hydrocarbons is in the northwestern portion of the Site in the vicinity of the remote fuel pumping island (Figure 7). Elevated concentrations of diesel (18,000 ppm at a depth of 23 feet) in the boring for well LF-5 most likely reflect leaks/spills at the pump island. Elevated concentrations of diesel (700 ppm) and oil

and grease (1,200 ppm) at a depth of 1.5 feet in boring S-4 suggest isolated surface spills.

A soil sample collected at a depth of 8 feet in boring S-7, located adjacent to the underground storage tank in the southeastern portion of the Site, revealed only low concentrations of toluene (0.030 ppm). A sample of the contents of the tank was collected and laboratory analysis results indicated that the tank contained gasoline. The results of the one soil sample collected adjacent to the tank suggest that gasoline stored in the tank does not appear to have affected shallow soil adjacent to the tank.

Based on interviews with current tenants of the Site, soil samples were collected from the area in the vicinity of the concrete wash pad and analyzed for polychlorinated biphenyls (Figure 8). Analytical results for soil samples analyzed for PCBs revealed low concentrations (less than 1.5 ppm) in the vicinity of the wash pad. These results suggest that PCBs have not significantly impacted shallow soil in this area of the Site.

Analysis of soil samples collected from the borings for LF-1, LF-2 and LF-5 (depth of 23 feet in each boring) for total lead revealed concentrations ranging from 6 ppm (LF-5) to 9 ppm (LF-11) (Figure 9).

8.2 Interpretation of Ground-Water Quality Results

Ground-water samples collected from the five monitoring wells indicate that shallow ground water beneath the western and southern portions of the Site has been affected by petroleum hydrocarbons (Figure 10). Analytical results for these samples indicate that petroleum hydrocarbons affecting shallow ground water are primarily diesel and BTEX compounds; TPH as gasoline was not present above analytical detection limits in ground-water samples analyzed.

Elevated concentrations of TPH as diesel (greater than 98 ppm) were detected in ground-water samples collected from monitoring wells located downgradient of the above-ground fuel storage tanks and the remote fuel dispensing pump island, indicating that these facilities appear to have experienced leaks and/or spills in the past. Additionally, elevated concentrations of benzene (greater than 0.200 ppm) were detected in ground-water samples collected from wells LF-1 and LF-2, located downgradient of the above-ground tanks, suggesting that the tanks may have had leaks and/or spills of gasoline in the past. Petroleum hydrocarbons do not appear to have affected shallow ground water in the vicinity of well LF-3, located upgradient of the above ground fuel storage tanks.

8.3 Floating Petroleum Hydrocarbons

Floating petroleum hydrocarbons were measured in well LF-5 (0.94 feet) on April 25, 1989. Measured thickness of floating product in well LF-5 increased to 1.58 feet on May 9, 1989. It is assumed that the floating product is diesel fuel based on analytical results of soil and ground-water samples collected at this location. The fuel dispensing pump island appears to be the probable source of the floating product (diesel).

9.0 CONCLUSIONS

Analytical results for soil and ground-water samples collected during this investigation have revealed that petroleum hydrocarbons have affected the eastern, southern and western portions of the Site. Specifically, these 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; 2) elevated concentrations (up to 2,600 ppm) of gasoline in soil in the vicinity of well LF-2; 3) elevated concentrations (up to 260 ppm) of BTEX compounds in soil in the vicinity of wells LF-2 and LF-3; 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 well LF-5; and 6) elevated concentrations of diesel and BTEX compounds in shallow ground water in wells LF-1, LF-2, LF-4 and LF-5. The most likely sources for the elevated concentrations of petroleum hydrocarbons are the four large above-ground tanks in the southern portion of the Site, the remote pump island in the northwestern portion of the Site and parked trucks throughout the Site.

10.0 EVALUATION OF REMEDIAL ACTION ALTERNATIVES

Remedial actions are intended to address site problems which pose risks to public health and/or the environment. Site problems identified include the presence of fuel compounds in the shallow ground water and soils and floating product on top of the ground water observed in well(s) at the Site. Remedial action alternatives were evaluated to address both free product and affected soils at the Site.

Regulatory Guidelines

The Regional Water Quality Control Board (RWQCB) has developed guidelines for addressing leaking underground fuel tanks (RWQCB, June 1988). These guidelines are intended to provide assistance in evaluating the impact fuel leakage has had or potentially

could have on soils and/or ground water at a particular site. Petroleum hydrocarbons concentration criteria used to assess the necessity of soil or ground-water remediation and monitoring is also provided in this document. The primary objective of the RWQCB guidelines is to protect ground-water quality.

Petroleum hydrocarbon concentration guidelines used by the RWQCB are derived from the State of California Department of Health Services (DOHS) criteria for hazardous or designated waste determination. In addition to these criteria, other site-specific factors can be used to evaluate the necessity for cleanup actions. These factors are directed toward evaluating the potential impact on ground water that petroleum-affected soils may impose. These factors include depth to ground water, soil conditions, ground-water quality and beneficial uses of ground water.

In cases where floating petroleum product is present on the ground-water surface, the RWQCB generally requires that the product be removed for the purposes of safety, nuisance and source reduction. In cases where dissolved petroleum product is present in ground water (above DOHS Action Levels, as described below) detailed assessment of ground-water use and potential for product migration, and ground-water monitoring are typically required. Remediation of dissolved product in ground water may be required if findings indicate that ground water is being adversely affected.

Concentrations of petroleum hydrocarbons and associated aromatic compounds in soil or ground water which typically require further investigation, monitoring or remediation (depending on the site) are described below.

Soils which contain over 1,000 ppm of TPH are considered a hazardous waste by the DOHS, and therefore, under most circumstances, require remediation. Soils containing TPH at concentrations from 10 to 1,000 ppm are considered "designated wastes" by the DOHS and are subject to further evaluation of site-specific conditions (as described above) by the RWQCB for determining the level of remediation effort and/or monitoring required.

State-regulated aromatic compounds contained in fuel products include BTEX. DOHS designated levels in soils to protect ground water used by the RWQCB as a criteria to base requirements for further site evaluation are: 0.7 ppm benzene; 100 ppm toluene; 620 ppm xylene; and 29 ppm ethyl benzene.

RWQCB criteria governing acceptable BTEX concentrations in ground water are based on DOHS State Action Levels (concentrations intended to protect drinking water). State Action Levels for

BTEX are: benzene, 0.0007 ppm; toluene, 0.100 ppm; ethylbenzene, 0.680 ppm; and xylenes, 0.620 ppm.

State Action Levels for acceptable TPH concentrations in ground water are not published. Although published acceptable levels for waste discharge streams for certain fuel hydrocarbons are available (e.g., 1 ppm for diesel oil and kerosene) analytical detection limits (of about 0.5 to 1 ppm) are generally used as guidelines for fuel concentrations in ground water.

Remedial Action Alternatives for the Site

The presence of floating product in the vicinity of the remote fuel dispensing pumps in the northwestern portion of the Site warrants the development of a remedial action plan to remove the free product. Although elevated concentrations (greater than 1,000 ppm) of fuel hydrocarbons were detected in soil samples collected throughout the Site and these concentrations exceed DOHS criteria, the presence of fuel hydrocarbons may not require remedial measures at this time.

10.1 Product Recovery

Extraction wells to remove free product are a feasible alternative for on-site remedial action. One product recovery extraction well should be installed in the vicinity of well LF-5 to remove product. To enhance the flow of product into the extraction well, ground water also would be extracted to depress the ground-water surface. The product would then be removed using a "skimmer-type" system, designed to extract the fuel product floating on the water surface in the well. Ground water removed during this process and found to be affected by fuel compounds could be treated by carbon treatment and/or directly discharged to the sanitary sewer.

Diesel collected from the water surface will be stored in 55-gallon drums for disposal. The total volume of product and ground water extracted will be recorded and evaluated along with other pertinent data, including product thickness and water-level measurements.

The estimated costs associated with installation of and extraction well product recovery system (assuming one recovery well) can range from $75,000 to 250,000. Yearly operation and maintenance of the system would cost an estimated additional $50,000 to 150,000. A detailed breakdown of the costs associated with a product/ground-water extraction can be provided, if needed.

Once floating product has been recovered to the extent feasible, ground-water monitoring at the Site will most likely be necessary to assess the effectiveness of the remediation. Monitoring wells already present at the Site can be used for monitoring purposes. Typically, State and local agencies require quarterly monitoring for at least one year to establish that stable or decreasing chemical concentration conditions exist at the Site. Once these conditions have been established, monitoring frequency may be reduced.

10.2 Soils Remediation

Removal of the fuel-affected soils is a possible alternative for soils remediation. However, due to the presence of buildings and other structures at the Site, it is not feasible to remove all the affected soil. Additionally, problems may arise if the fuel-affected soils extend beneath East 14th Street, or beneath the apartment buildings located northwest of the Site. Excavation of the soils without prior removal of the floating fuel hydrocarbons could be difficult and may be a concern for health and safety during the work. The environmental and/or health benefits to be achieved are the reduction of further degradation of the ground water due to the removal of a large portion of the fuel-affected soils.

10.3 Recommended Remedial Action

Based on our experience at other sites, the recommended remedial alternative for the Maskell Oil Site is product removal and continued periodic sampling and analysis to monitor concentrations of fuel compounds in ground water at the Site and downgradient of the Site. This remedial alternative will remove a significant portion of the source of further degradation of the ground water at the Site. Additional monitoring wells will likely be required in areas downgradient of wells LF-2, LF-4 and LF-5 to assess downgradient ground-water quality.

Since the Site is reportedly capped by asphalt or oil-coated gravel, infiltration of surface waters have been reduced, lowering the potential for further degradation of ground water due to the presence of fuel-affected soils. Our involvement with regulatory staff from County and RWQCB on similar sites indicates that the above-proposed product removal and subsequent ground-water monitoring would likely be acceptable if significant off-site migration has not taken place. It is not clear at this time whether remediation of high-concentration (greater than 1,000 ppm) petroleum-affected soils will be required at a future date.

It is recommended that existing fuel distribution facilities (above-ground storage tanks, fuel dispensing pumps, piping, etc.) be formally abandoned or removed and associated significantly affected soils removed to prevent potential additional spills/leaks. Since site usage provides a potential continuing source for leakage/spillage of petroleum products, areas of the Site which can allow subsurface infiltration should be capped with asphalt or other low permeability materials.

11.0 REFERENCES

Hageman-Schank, 1988. "Environmental Site Characterization, 14530 East 14th Street, San Leandro, California," December 23.

Levine·Fricke, 1989. "Proposal for Soil and Ground-Water Investigation For Property at 14500 East 14th Street, San Leandro, California," February 23.

TABLE 1

GROUND-WATER ELEVATION AND PRODUCT THICKNESS MEASUREMENTS

Well No.	Well Elevations Top of Casing (feet - MSL)	April 5, 1989 Product Thickness (feet)	April 5, 1989 Ground-Water Elevations (feet - MSL)	April 6, 1989 Product Thickness (feet)	April 6, 1989 Ground-Water Elevations (feet - MSL)	April 25, 1989 Product Thickness (feet)	April 25, 1989 Ground-Water Elevations (feet - MSL)	May 9, 1989 Product Thickness (feet)	May 9, 1989 Ground-Water Elevations (feet - MSL)
LF-1	49.29	0	24.62	0	24.62	0	24.76	0	24.62
LF-2	49.49	0	24.65	0	24.63	TRACE	24.73	0	24.68
LF-3	49.24	0	24.86	0	24.85	0	24.90	0	24.75
LF-4	50.09	0	24.46	0	24.47	0.01	24.65	0	24.54
LF-5	49.26	0	24.90	0	24.92	0.94	24.86*	1.58	24.65

NM = not measured

MSL = mean sea level

* = Ground-water elevation corrected for floating petroleum hydrocarbons assuming specific gravity of 0.84

TABLE 2

CONCENTRATIONS OF TOTAL PETROLEUM HYDROCARBONS AS GASOLINE AND AS DIESEL,
BENZENE, TOLUENE, ETHYLBENZENE AND XYLENES, POLYCHLORINATED BIPHENYLS AND TOTAL LEAD IN SOIL SAMPLES
(concentrations expressed in parts per million, ppm)

Sample No.	Sample Depth (feet)	Sample Date	Lab	EPA Method	Polychlorinated biphenyls (Aroclor 1260)	Benzene	Toluene	Ethyl-benzene	Xylenes	TPH as Gasoline	TPH as Diesel	Oil and Grease	Total Lead
S1a	1.5	27-Mar-89	M-T	8080/503D/503E	<0.05	NA	NA	NA	NA	NA	530	1,700	NA
S2a	2	27-Mar-89	M-T	8080/503D/503E	0.09	NA	NA	NA	NA	NA	1,600	2,700	NA
S2b	3.5	27-Mar-89	M-T	8080/503D/503E	<0.05	NA	NA	NA	NA	NA	1,200	2,000	NA
S4a	1.5	27-Mar-89	M-T	8020/8015/503D/503E	NA	<0.001	0.140	<0.001	<0.003	<0.2	700	1,200	NA
S5a	1	27-Mar-89	M-T	8020/8015/503D/503E	NA	<0.001	0.008	<0.001	<0.003	<0.7	24,000	39,000	NA
S5b	3	27-Mar-89	M-T	8015/503E/503D	NA	NA	NA	NA	NA	NA	62	200	NA
S-7/8	8	4-Apr-89	M-T	8020/8015	NA	<0.001	0.030	<0.001	<0.003	<0.2	<10	NA	NA
Sump 1	sfc.	27-Mar-89	M-T	8080/503D/503E	1.3	NA	NA	NA	NA	NA	18,000	36,000	NA
LF-1/23	23	4-Apr-89	M-T	8020/8015/7420	NA	<1.000	<1.000	<1.000	<3.000	<300	320	NA	7
LF-2/23	23	3-Apr-89	M-T	8020/8015/7420	NA	<1.000	<5.000	80	260	2,600	<3,000	NA	9
LF-3/18	18	5-Apr-89	M-T	8020/8015	NA	<1.000	3.000	<2.000	<10.000	<20,000	17,000	<1000	NA
LF-3/22	22	5-Apr-89	M-T	8020/8015	NA	<0.005	<0.005	<0.005	<0.020	<400	420	NA	NA
LF-4/23	23	4-Apr-89	M-T	8020/8015	NA	<0.500	0.810	<0.500	<2.000	<400	350	NA	NA
LF-5/23	23	3-Apr-89	M-T	8020/8015/7420	NA	<1.000	<3.000	<6.000	<10.000	<20,000	18,000	NA	6

NA= not analyzed
M-T= Med-Tox Associates

TABLE 3

CONCENTRATIONS OF AROMATIC ORGANIC COMPOUNDS AND TPH
DETECTED IN GROUND-WATER SAMPLES COLLECTED
ON APRIL 6, 1989
(All concentrations expressed in parts per million, ppm)

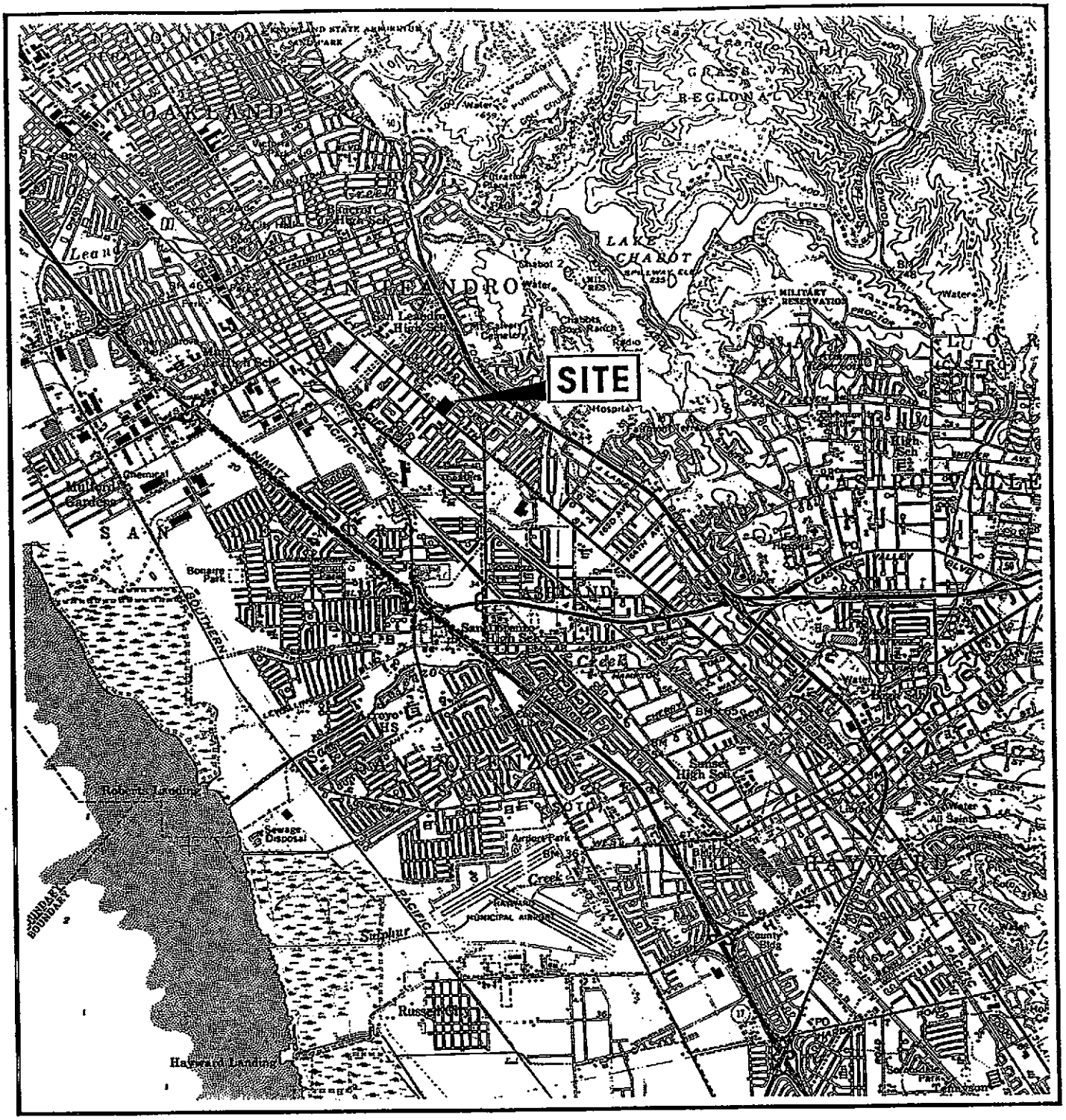
Sample No.	Date Sampled	Lab	Benzene	Toluene	Ethyl-benzene	Xylenes	Total Petroleum Hydrocarbons		Oil and Grease	Total Lead
							Gasoline	Diesel		
LF-1	6-Apr-89	M-T	0.200	<0.010	1.100	0.140	<200	180	<0.5	<0.01
LF-2	6-Apr-89	M-T	1.600	<0.0005	0.290	0.470	<100	98	<0.5	<0.01
LF-3	6-Apr-89	M-T	<0.0005	<0.0005	<0.0005	<0.002	<0.1	0.5	<0.5	NA
LF-4	6-Apr-89	M-T	0.100	<0.100	0.200	<0.300	<400	340	<0.5	NA
duplicate	6-Apr-89	M-T	<0.200	<0.050	<0.200	<0.300	<300	330	<0.5	NA
LF-5	6-Apr-89	M-T	0.050	<0.003	<0.003	0.040	<60	59	<0.5	<0.01
Blanks										
LF-3FB	6-Apr-89	M-T	<0.0005	<0.0005	<0.0005	<0.002	<0.1	NA	NA	NA

ND= not detected
NA= not analyzed
M-T= Med-Tox Associates
Analytical Methods for each sample include EPA Method 8015 and EPA Method 602.
LF-1, LF-2, and LF-5 were analyzed for lead (EPA Method 7420).

TABLE 4

GROUND-WATER SAMPLING DATA
APRIL 6, 1989

WELL	DATE SAMPLED	WELL VOLUME (GALLONS)	GALLONS EXTRACTED	pH	SPECIFIC CONDUCTANCE (micromhos/cm)	TEMPERATURE (deg C)	WATER CLARITY
LF-1	6-April-89	1.35	13.5	6.97	1420	22.6	MUDDY
LF-2	6-April-89	2.04	20	6.82	2190	22.1	CLOUDY
LF-3	6-April-89	1.37	15	7.21	1180	20.5	MUDDY
LF-4	6-April-89	1.16	12	6.87	1980	20.3	MUDDY
LF-5	6-April-89	1.55	15	6.98	1410	20.0	CLOUDY



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

Figure 1 : SITE VICINITY

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1596GT2.JUN89jc

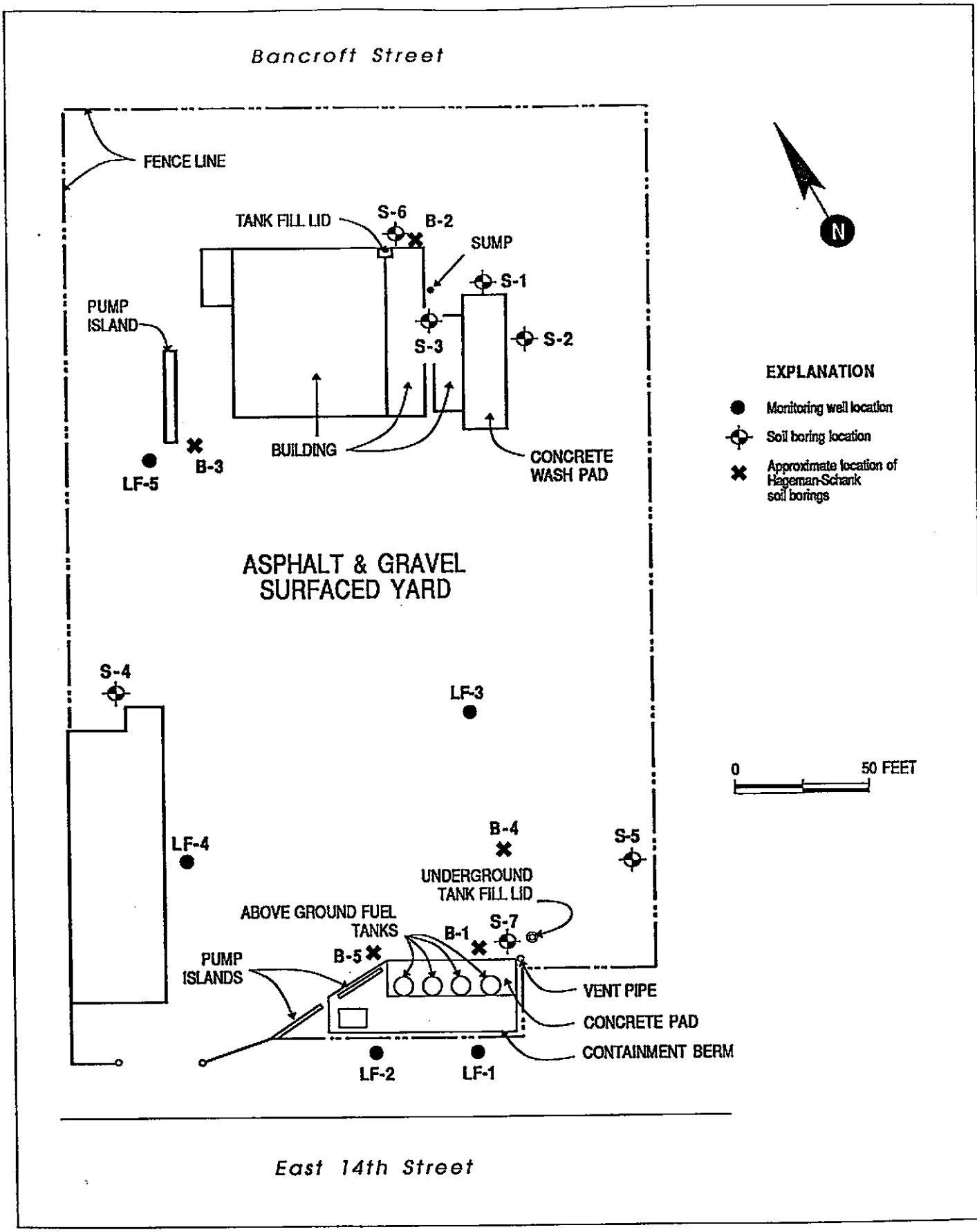

Figure 2: SITE MAP SHOWING LOCATIONS OF MONITORING WELLS AND SOIL BORINGS

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1596CP/GT27APR89 jc/emAfig .2

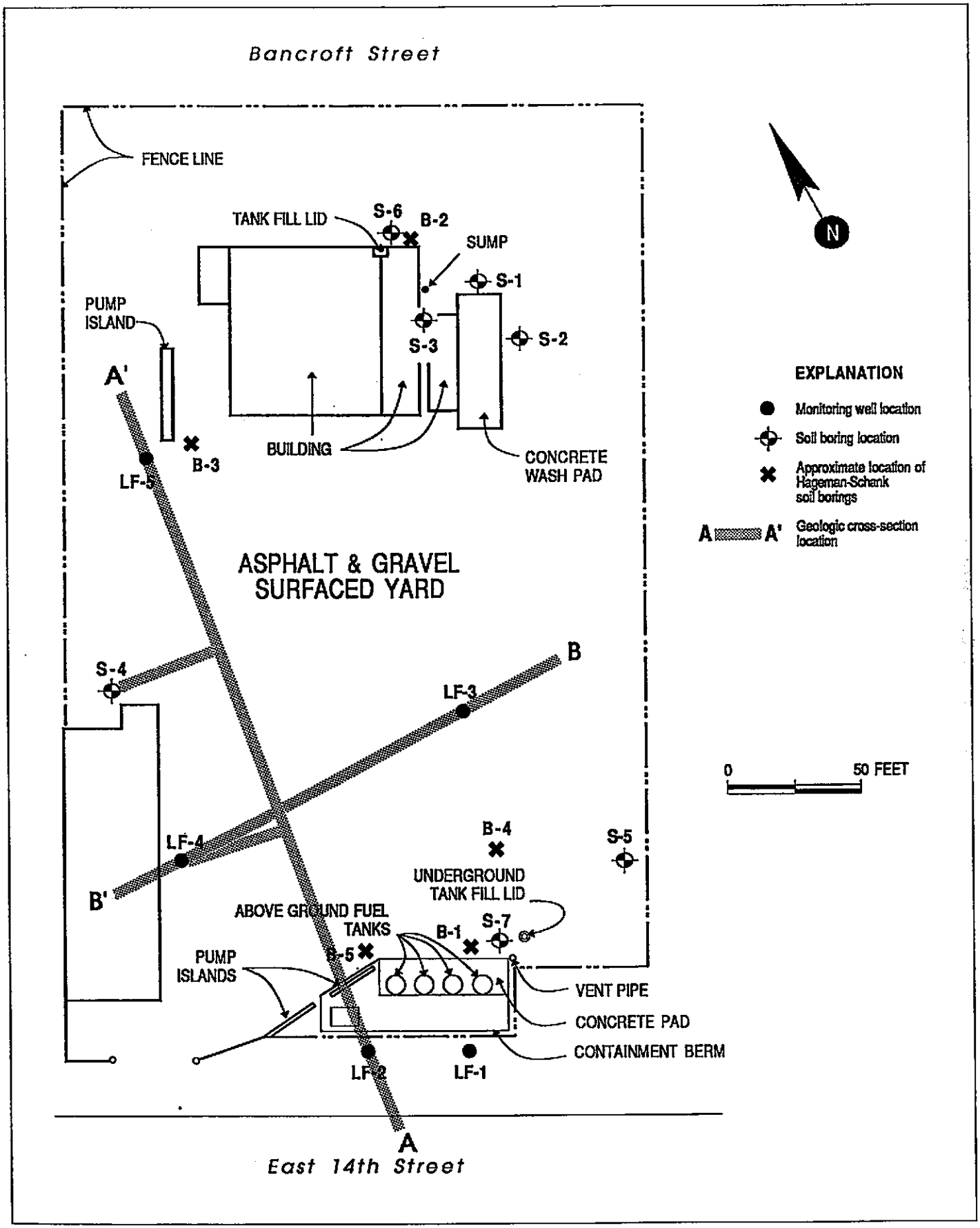

Figure 3: GEOLOGIC CROSS-SECTION LOCATIONS

123957

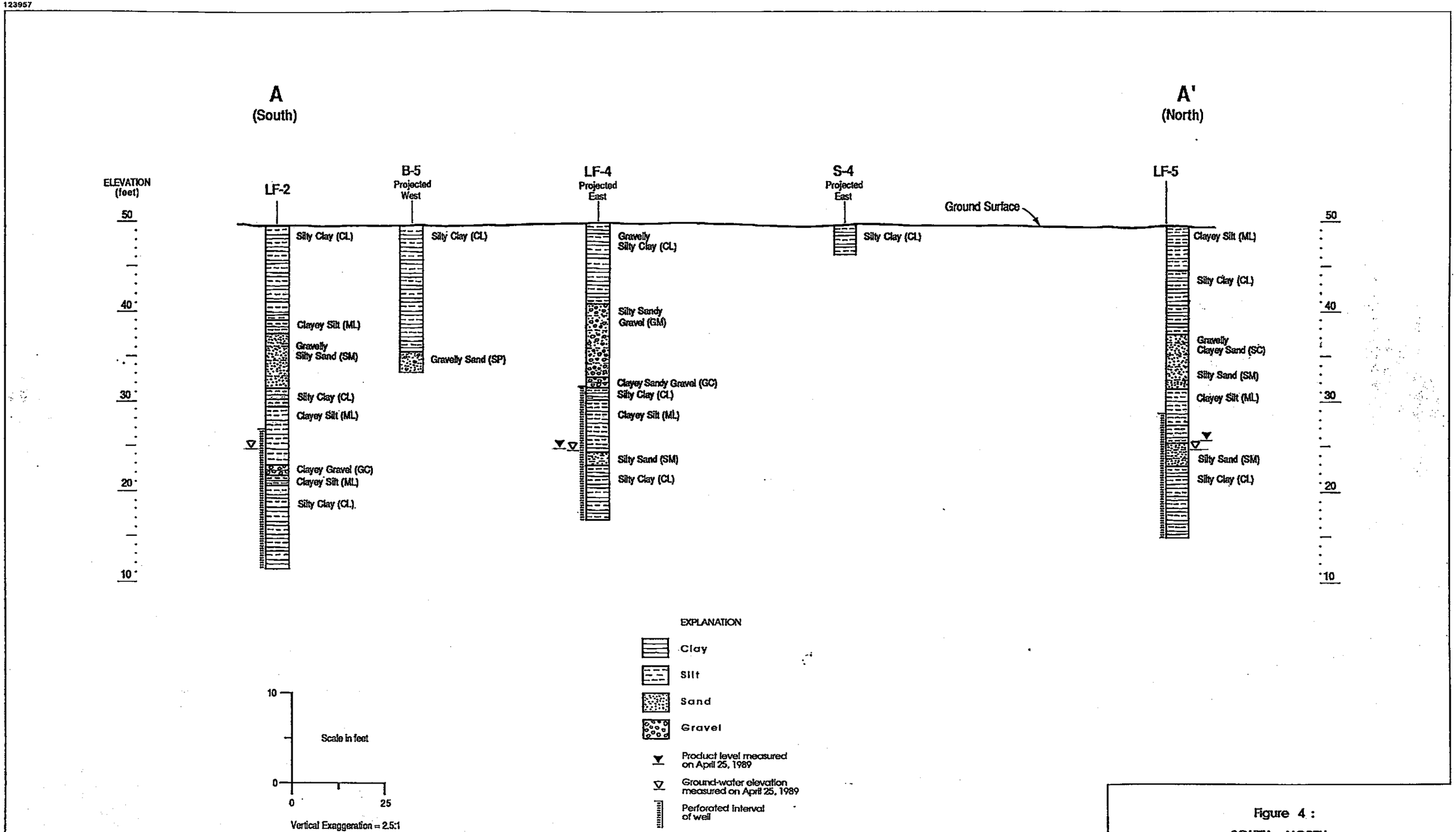

Figure 4 :

SOUTH - NORTH
GEOLOGIC CROSS SECTION A-A'

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1596GI17MAY89em

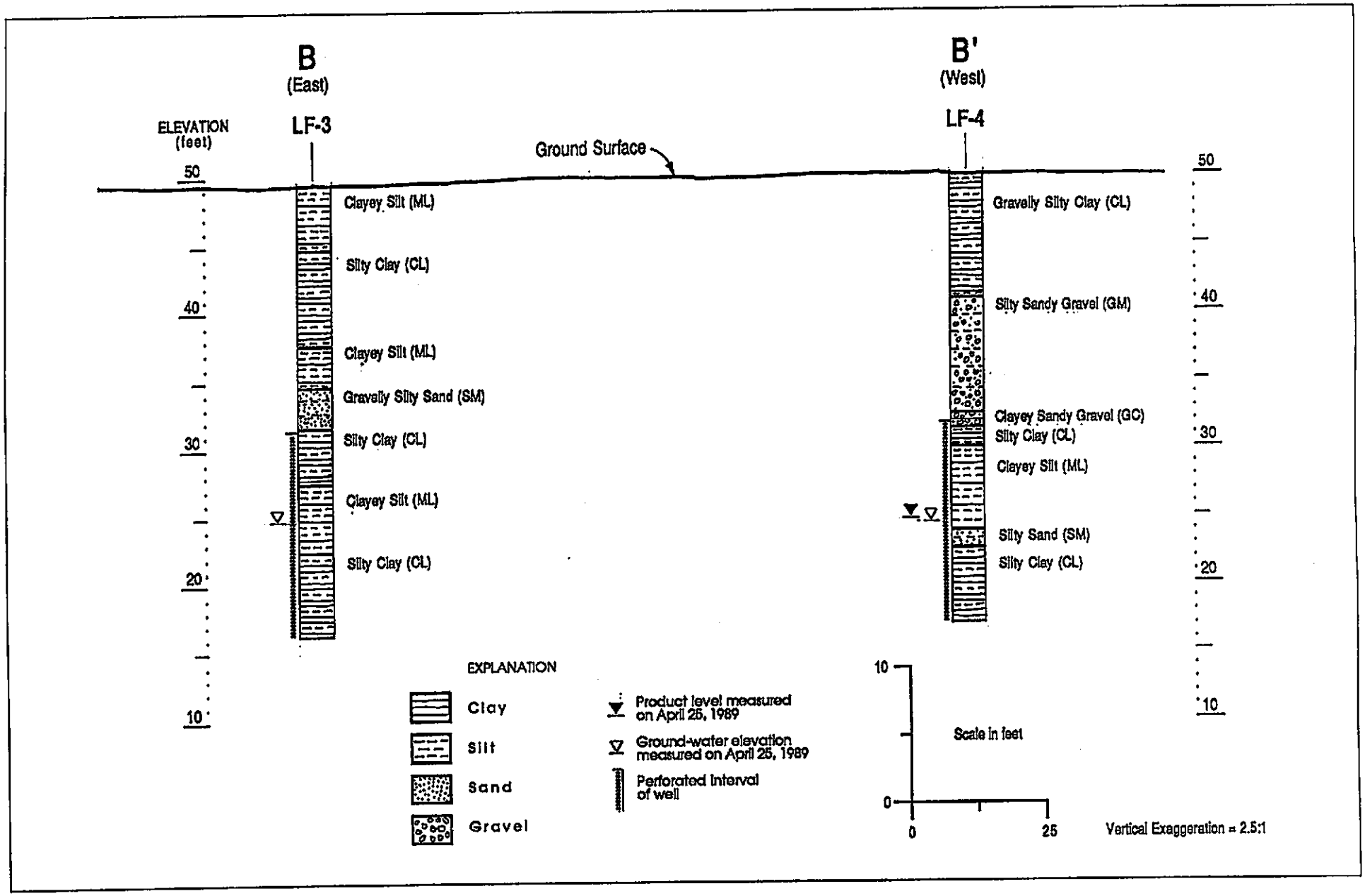

Figure 5 : EAST - WEST GEOLOGIC CROSS SECTION B-B'

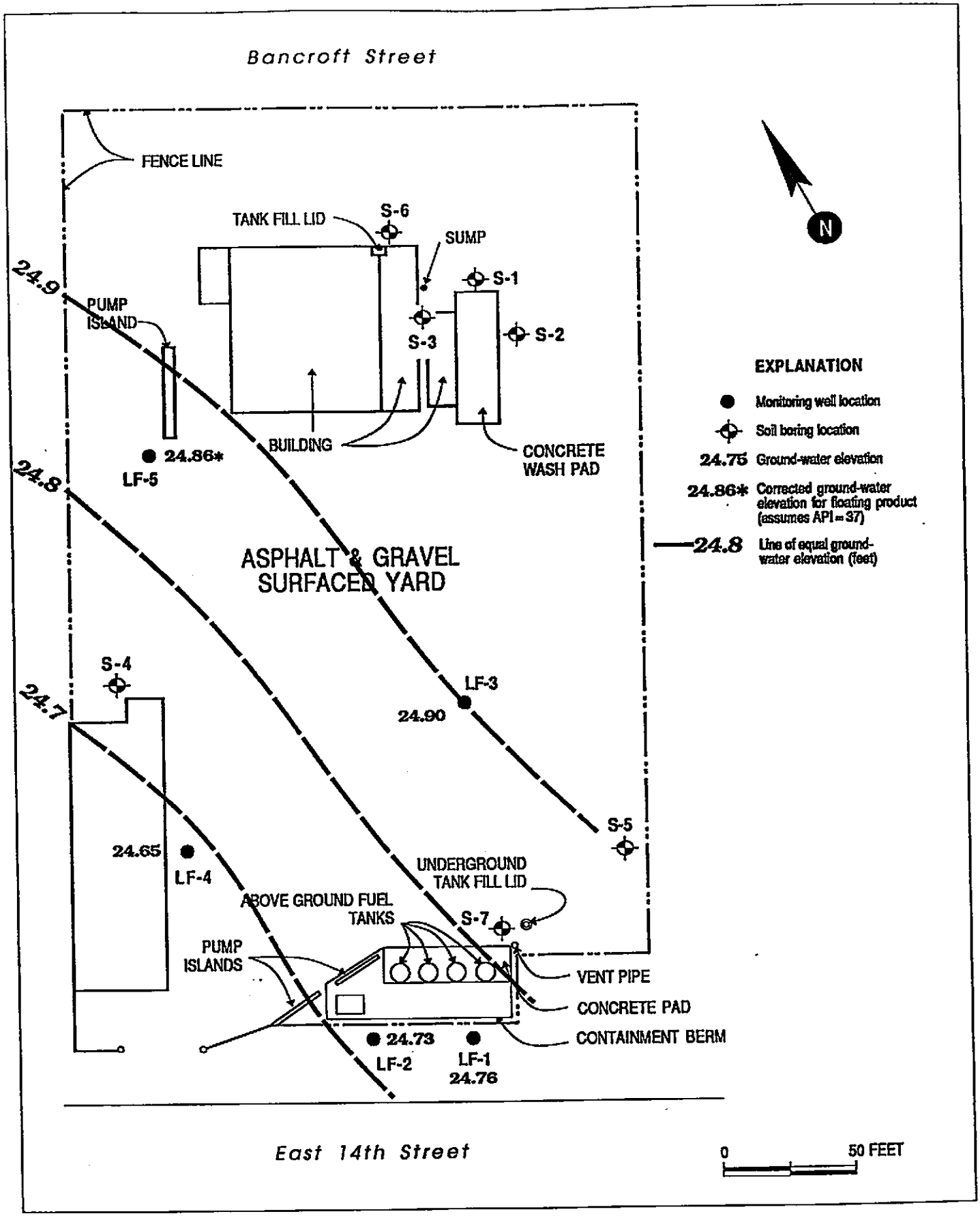

Figure 6 : GROUND-WATER ELEVATIONS MEASURED ON APRIL 25, 1989

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1596CP/GT28APR89mpA

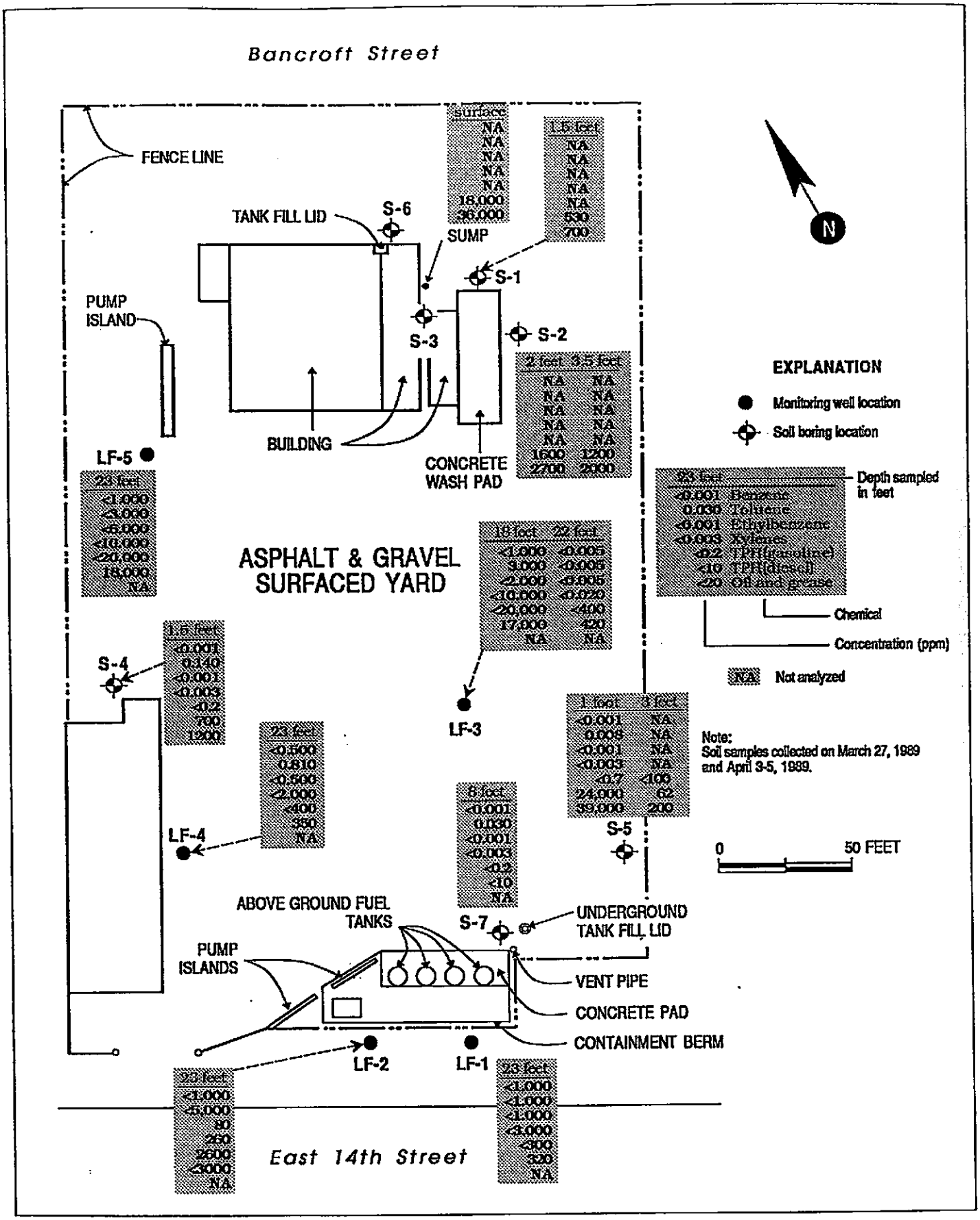

Figure 7 :CONCENTRATIONS OF BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TOTAL PETROLEUM HYDROCARBONS DETECTED IN SOIL (results in ppm)

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1596CP/GT1MAY89 jc&tg.

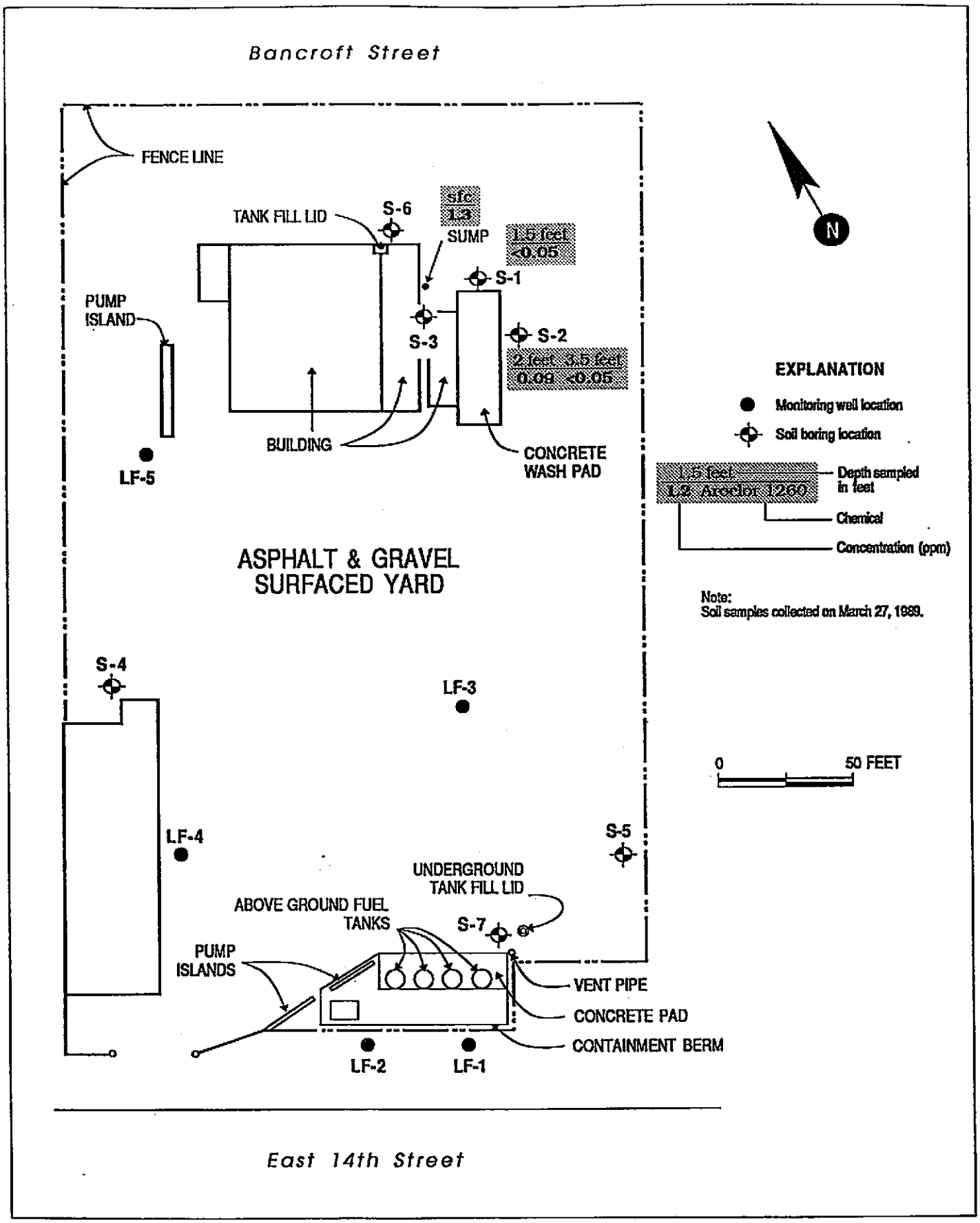

Figure 8 : CONCENTRATIONS OF POLYCHLORINATED BIPHENYLS (AROCLOR 1260) DETECTED IN SOIL (results in ppm)

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1596CP/GT09MAY89 jcafig.

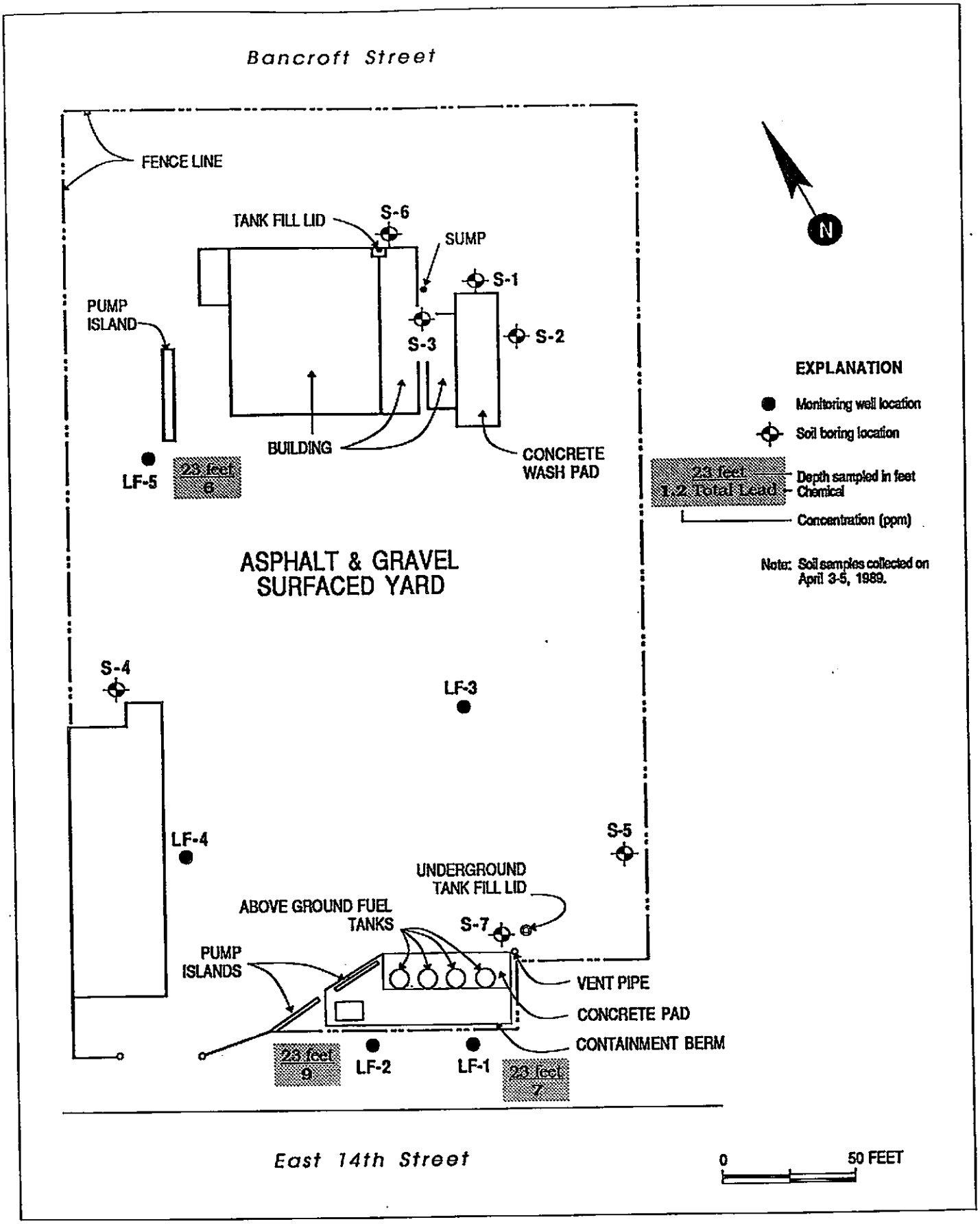

Figure 9 : CONCENTRATIONS OF TOTAL LEAD DETECTED IN SOIL (results in ppm)

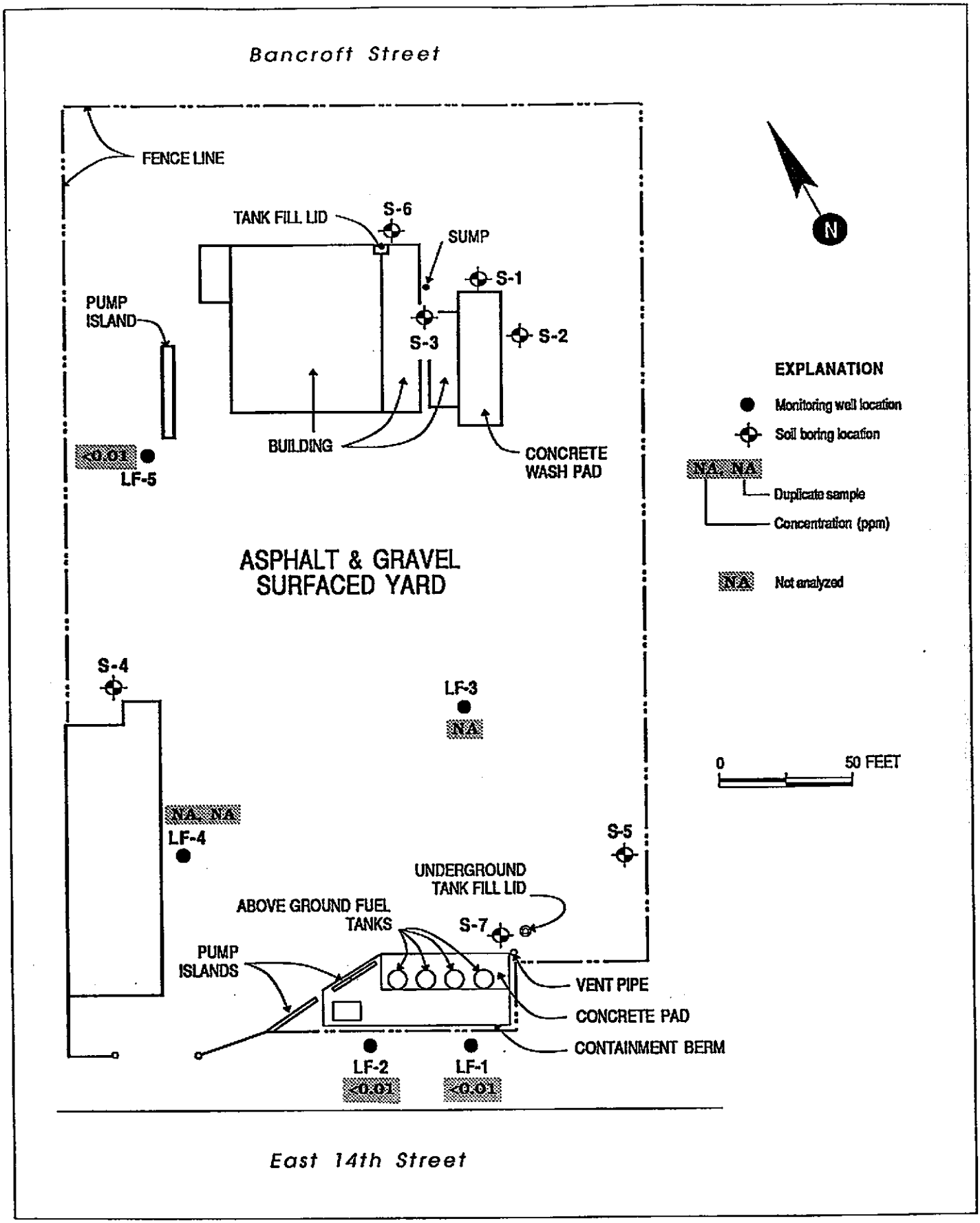

Figure 11 : CONCENTRATIONS OF TOTAL LEAD DETECTED IN GROUND WATER (results in ppm)

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CONSULTING ENGINEERS AND HYDROGEOLOGISTS

1596CPKGT28APR89 jcafg.

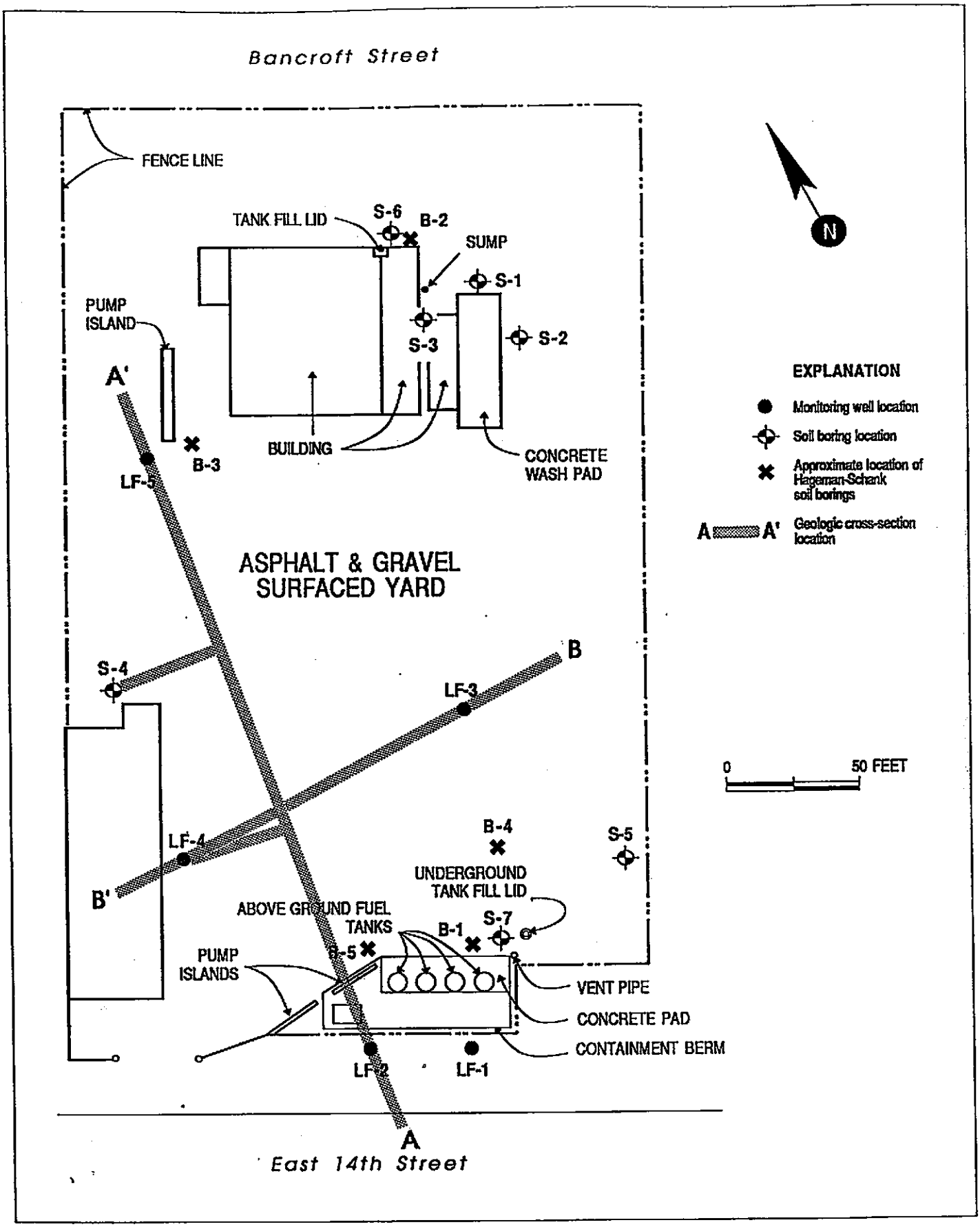

Figure 3: GEOLOGIC CROSS-SECTION LOCATIONS

APPENDIX A

FIELD PROCEDURES

APPENDIX A

FIELD PROCEDURES

Well Drilling and Installation

Five shallow wells (33 to 39 feet deep) were drilled and installed from April 3 to 5, 1989 by Hew Drilling Company, Inc., of Palo Alto, California, using the hollow-stem auger method. All field activities during drilling, including well construction, well development, and sampling were performed under the supervision of a Levine·Fricke registered geologist.

The hollow-stem auger method, with 8-inch outside diameter augers, was used to complete drilling of the borings to the desired total depth. Soil samples were collected, described, and lithologically logged during the drilling of each boring using the continuous-core sampling method. Soil samples also were collected from selected borings for possible chemical analysis. These samples were collected in laboratory-supplied glass jars directly from the continuous-core sampler. After collection, a lid was fastened to the jar and the lid was wrapped with electrical tape to obtain a tight seal. The jar was then placed in a chilled cooler for transport by Levine·Fricke personnel to Med-Tox Associates of Pleasant Hill, California.

Shallow soil samples were collected on March 27, 1989 using a stainless steel hand auger. The hand auger was cleaned with Alconox, a laboratory-grade detergent, and rinsed with distilled water between each use.

Well Construction

Each newly installed well was constructed by installing 2-inch-diameter, schedule-40 polyvinyl chloride (PVC) casing; the perforated interval of each well consists of 0.020-inch machine slotted perforations. The screened interval of each well was selected based on lithologic data obtained during soil sampling. A sand pack of number 3 Monterey sand was then placed above the screened interval, extending approximately two feet above the perforations. Approximately one to two feet of bentonite pellets were placed above this sand pack as a seal. Levels of sand and bentonite in the well annulus were confirmed during well construction by sounding with a weighted tape. The remaining annular space above the bentonite seal was grouted with a cement-bentonite slurry. All equipment was steam-cleaned before use in each boring. The well casings also were steam-cleaned prior to installation.

Well Development and Sampling

Five wells, numbered LF-1 through LF-5 were developed and sampled for chemical analysis on April 6, 1989. Each well was developed in order to clear silt and sand from the well and to establish better hydraulic communication between the well and the surrounding sediments. Wells were developed by purging at least ten well volumes of water from the well and until the parameters being monitored (pH, specific conductance and temperature) had stabilized. All water evacuated during development was placed in on-site 55 gallon drums which were sealed.

The five wells were sampled for TPH as gasoline and BTEX, and these samples were placed in 40 ml vials; two vials from each well. Each well also was sampled for TPH as diesel, and these samples were placed in one-liter amber bottles. LF-1, LF-2 and LF-5 also were sampled for Total Lead, and these samples were placed in one-liter plastic bottles. All samples were collected using a Teflon bailer. Before each use the Teflon bailers were washed with Alconox, steam-cleaned and fitted with new polypropylene rope.

One bailer blank was collected as a quality control check of sampling procedures. The blank sample was prepared by pouring distilled water into a clean Teflon bailer and then into a sample bottle.

Samples were stored in a cooler and kept cold with ice during sampling. Samples were then transported by Levine Fricke personnel to Med-Tox Associates of Pleasant Hill, California for analysis.

Product Thickness and Ground-Water Elevation Measurements

Product thickness, where present, and ground-water elevation measurements were taken in each well using an electric oil/water interface probe graduated in 0.01-foot increments. Well elevations were surveyed by Nolte and Associates of San Jose, California, to the nearest 0.01-foot and tied to benchmarks located near the Site.

APPENDIX B

LITHOLOGIC AND WELL CONSTRUCTION LOGS

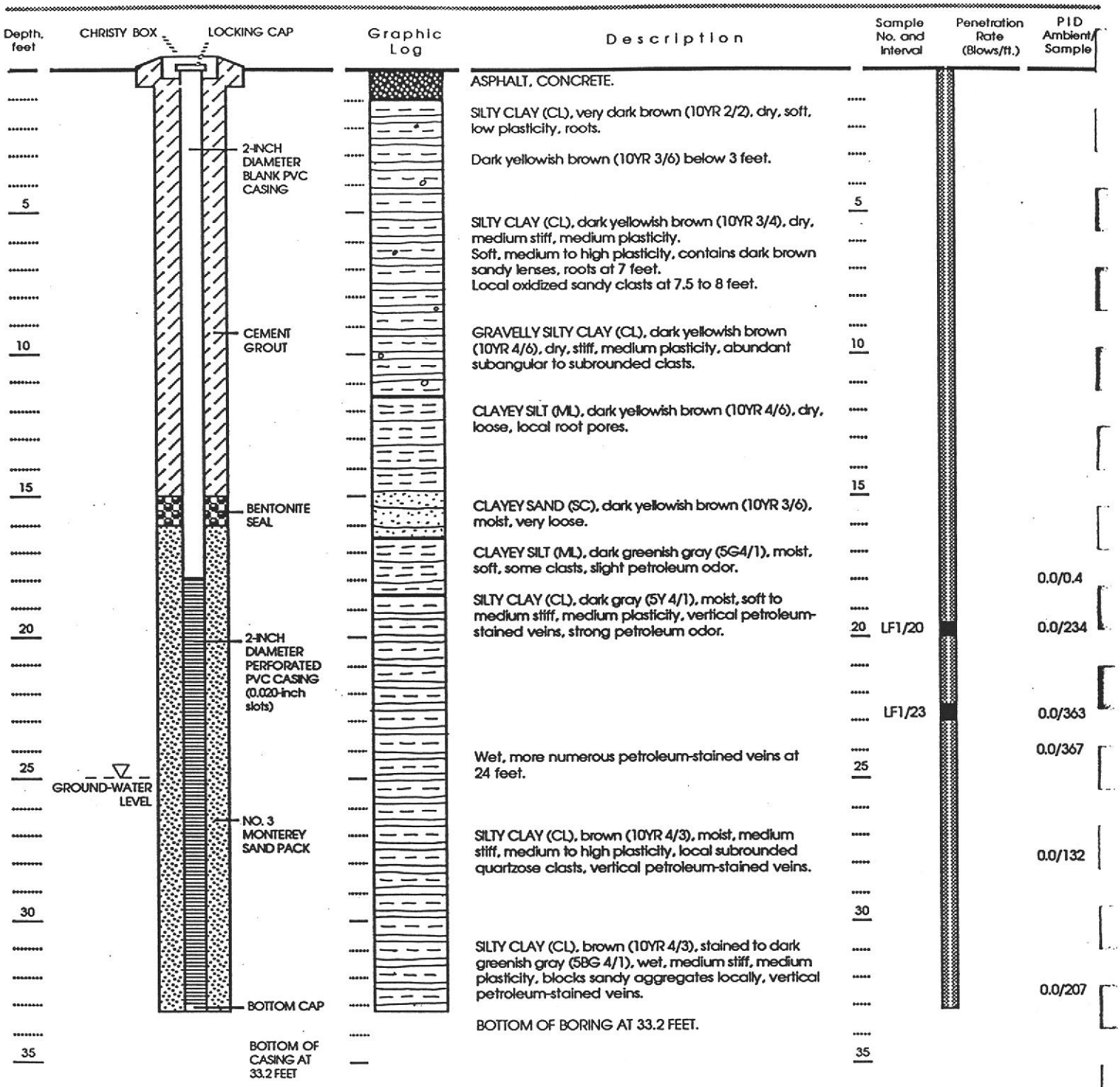

Figure B-1 : WELL CONSTRUCTION AND LITHOLOGY FOR WELL LF-1

Project No. 1596

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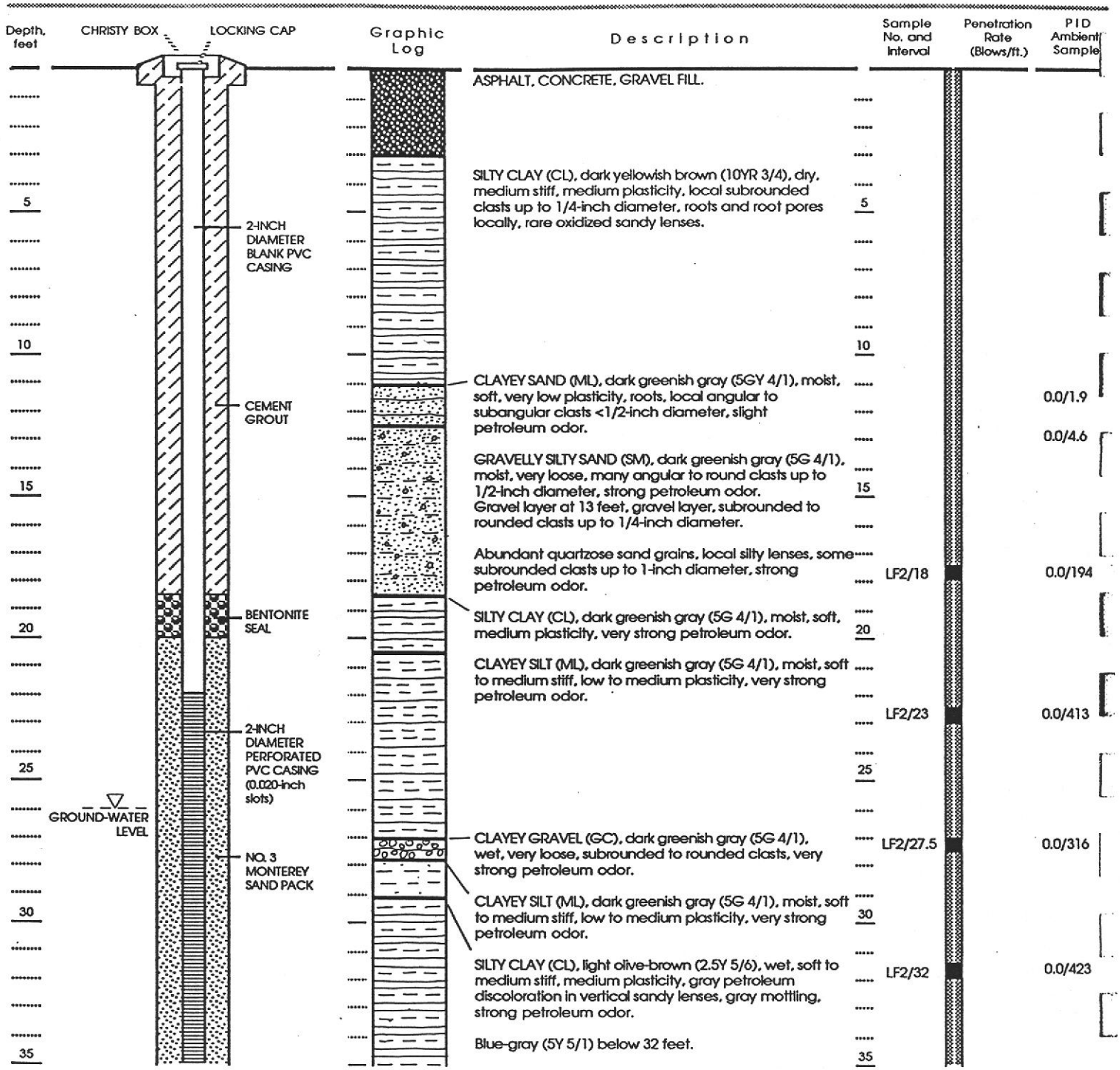
1596CP01JUN89em/mp



Approved by:

Figure B-2A : WELL CONSTRUCTION AND LITHOLOGY FOR WELL LF-2

Project No. 1596

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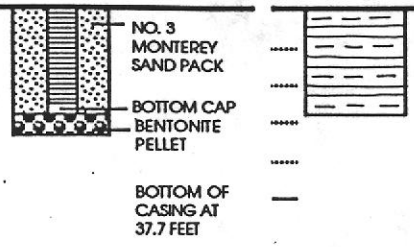
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

1596CP02JUN89em



Well Permit No. 89177

Date well drilled: 3 April 1989

Date water level measured: 6 April 1989

Well elevation: 49.49 feet

LF Geologist: Charles Pardini

EXPLANATION

Clay

Silt

Sand

Gravel

Continuous Core Sampler

Sample retained for analysis

PID Photoionization detector

Approved by:

Figure B-2B : WELL CONSTRUCTION AND LITHOLOGY FOR WELL LF-2 (cont'd)

Project No. 1596

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CONSULTING ENGINEERS AND HYDROGEOLOGISTS

1533CY01JUN89em

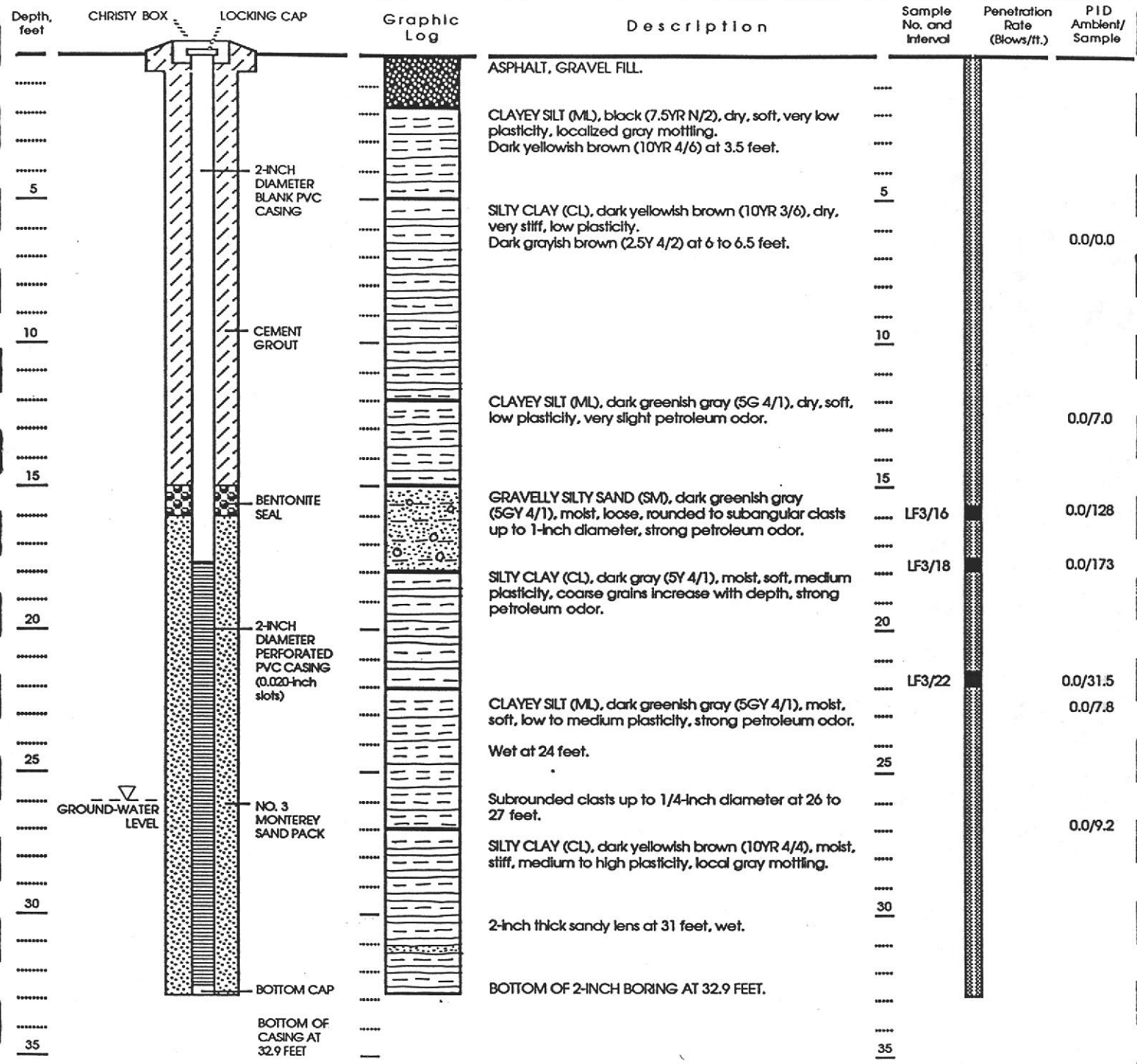

Figure B-3 : WELL CONSTRUCTION AND LITHOLOGY FOR WELL LF-3

Project No. 1596

LEVINE•FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

1596CP01JUN89em/mp

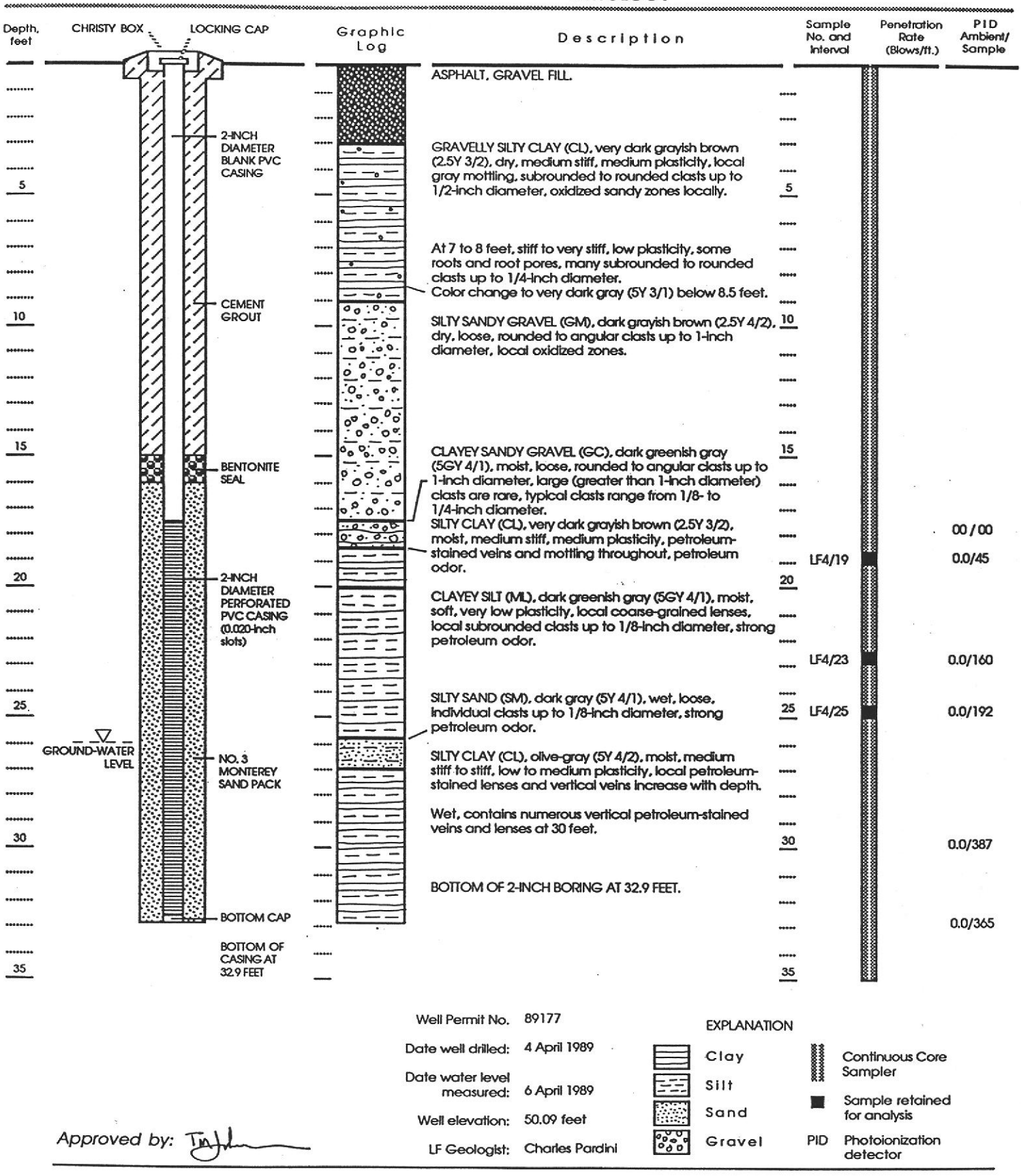

Figure B-4 : WELL CONSTRUCTION AND LITHOLOGY FOR WELL LF-4

Project No. 1596

LEVINE•FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

1596CP01JUN89em

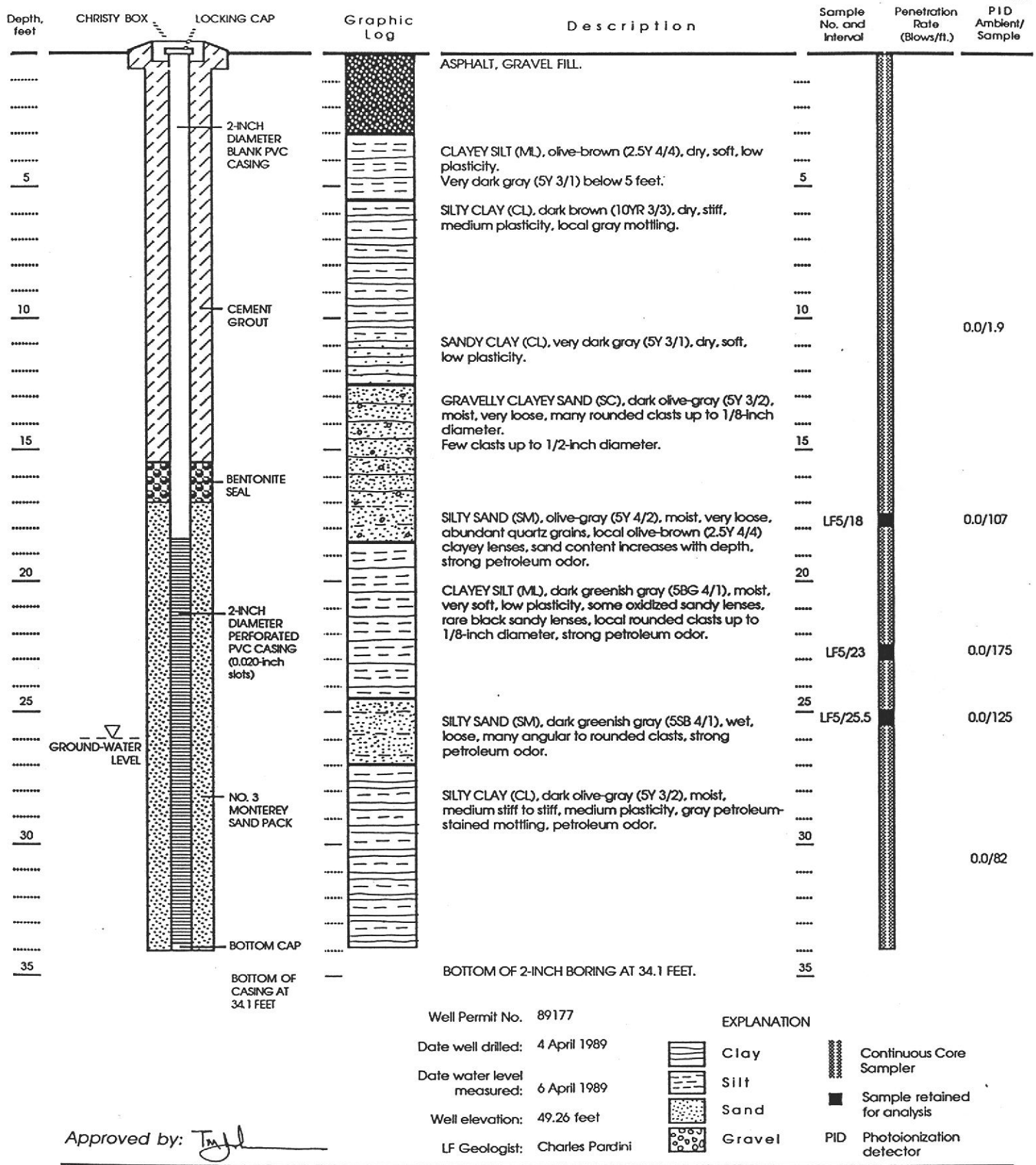

Figure B-5 : WELL CONSTRUCTION AND LITHOLOGY FOR WELL LF-5

Project No. 1596

LEVINE•FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

1596CP01JUN89em/mp

Depth, feet	Graphic Log	Description	Sample No. and Interval	Penetration Rate (Blows/ft.)	PID Ambient/ Sample
		LITHOLOGY			**SAMPLE DATA**
		S-6			
		ASPHALT, CONCRETE.			
		CLAYEY SILT (ML), black (10YR 2/1), dry, stiff, low plasticity, local oxidized sandy lenses, isolated subrounded clasts, no odor.			0.0/0.0
		Dark yellowish brown (10YR 3/4) below 4 feet.	S6/4		0.0/0.0
5		SILTY CLAY (CL), dark brown (7.5YR 3/2), dry, stiff to very stiff, medium plasticity, isolated root pores, local oxidized sandy nodules, no odor.	5 S6/5.5		0.0/0.0 0.0/0.0 0.0/0.0
		BOTTOM OF 8-INCH BORING AT 8 FEET.			0.0/0.0
		Borehole backfilled with cement grout.			0.0/0.0
10			10		0.0/0.0

Permit No. 89177

Date boring drilled: 5 April 1989

LF Geologist: Charles Pardini

Depth, feet	Graphic Log	Description	Sample No. and Interval	Penetration Rate (Blows/ft.)	PID Ambient/ Sample
		S-7			
		ASPHALT, GRAVEL FILL.			
		CLAYEY SILT (ML), very dark brown (10YR 2/2), dry, medium stiff, low to medium plasticity, local subrounded clasts, roots locally, peat odor, brown mottling increases with depth.			0.0/0.0
		Olive-brown (2.5Y 4/4) below 3.5 feet.	S7/4		0.0/0.0
5		SILTY CLAY (CL), olive-brown (2.5Y 4/4), dry, stiff, low to medium plasticity, roots locally, isolated subrounded clasts, local oxidized sandy lenses, no odor.	5		0.0/0.0
					0.0/0.0
			S7/8		0.0/0.0 0.0/0.0
					0.0/0.0
10		BOTTOM OF 8-INCH BORING AT 10 FEET.	10		0.0/0.0
		Borehole backfilled with cement grout.			

Permit No. 89177

Date boring drilled: 4 April 1989

LF Geologist: Charles Pardini

EXPLANATION

- Clay
- Silt
- Sand
- Gravel
- Continuous Core Sampler
- ■ Sample retained for analysis
- PID Photoionization detector

Approved by: [signature]

Figure B-6 : LITHOLOGY AND SAMPLE DATA FOR SOIL BORING S-6 & S-7

APPENDIX C

LABORATORY CERTIFICATES

MED-TOX ASSOCIATES, INC.

ENVIRONMENTAL & OCCUPATIONAL HEALTH SERVICES

3440 Vincent Road • Pleasant Hill, CA 94523 • (415) 930-9090

LABORATORY ANALYSIS REPORT

LEVINE-FRICKE
1900 POWELL ST., 12TH FL.
EMERYVILLE, CA 94608

ATTN: GREG TAYLOR

REPORT DATE: 04/24/89

DATE SAMPLED: 03/27/89
DATE RECEIVED: 03/28/89
DATE EXTRACTED: 04/10/89
DATE ANALYZED: 04/10-12/89

CLIENT PROJECT NO: 1596

MED-TOX JOB NO: 8903214

ANALYSIS OF: SIX SOIL SAMPLES FOR OIL & GREASE; FOUR SOIL SAMPLES FOR POLYCHLORINATED BIPHENYLS; TWO SOIL SAMPLES FOR BTXE AND TOTAL PETROLEUM HYDROCARBONS; ONE PRODUCT FOR CHARACTERIZATION

Sample Identification Client Id.	Lab No.	Oil & Grease (mg/kg)	Total Petroleum Hydrocarbons (mg/kg)	Product Characterization
S1a	01A	1,700	530	----
S2a	03A	2,700	1,600	----
S2b	04A	2,000	1,200	----
S2b Comp 1	06A	36,000	18,000	----
S4a	07A	1,200	700	----
S5a	09A	39,000	24,000	----
V6T1	11A	----	----	Gasoline
Detection limit		100	100	NA
Method		SM 503D	SM 503E	GC-FID

NA = Not Applicable

Michael Lynch, Manager
Organic Laboratory

RECEIVED
APR 26 1989
LEVINE-FRICKE

Results FAXed to Greg Taylor 04/14/89

LEVINE-FRICKE CONSULTING

CLIENT ID: S1a
CLIENT JOB NO: 1596

DATE SAMPLED: 03/27/89
DATE RECEIVED: 03/28/89

MED-TOX LAB NO: 8903214-01A
MED-TOX JOB NO: 8903214
DATE EXTRACTED: 04/06-11/89
DATE ANALYZED: 04/11/89
REPORT DATE: 04/24/89

EPA METHOD 8080

POLYCHLORINATED BIPHENYLS

AROCLOR	CAS #	CONCENTRATION (mg/kg)	DETECTION LIMIT (mg/kg)
Aroclor 1016	12674-11-2	ND	0.05
Aroclor 1221	11104-28-2	ND	0.05
Aroclor 1232	11141-16-5	ND	0.05
Aroclor 1242	53469-21-9	ND	0.05
Aroclor 1248	12672-29-6	ND	0.05
Aroclor 1254	11097-69-1	ND	0.05
Aroclor 1260	11096-82-5	ND	0.05

ND = Not detected at or above indicated method detection limit

Analytical Method: EPA 8080, SW-846 3rd Edition, 1986

LEVINE-FRICKE CONSULTING

CLIENT ID: S2a
CLIENT JOB NO: 1596

DATE SAMPLED: 03/27/89
DATE RECEIVED: 03/28/89

MED-TOX LAB NO: 8903214-03A
MED-TOX JOB NO: 8903214
DATE EXTRACTED: 04/06-11/89
DATE ANALYZED: 04/11/89
REPORT DATE: 04/24/89

EPA METHOD 8080

POLYCHLORINATED BIPHENYLS

AROCLOR	CAS #	CONCENTRATION (mg/kg)	DETECTION LIMIT (mg/kg)
Aroclor 1016	12674-11-2	ND	0.05
Aroclor 1221	11104-28-2	ND	0.05
Aroclor 1232	11141-16-5	ND	0.05
Aroclor 1242	53469-21-9	ND	0.05
Aroclor 1248	12672-29-6	ND	0.05
Aroclor 1254	11097-69-1	ND	0.05
Aroclor 1260	11096-82-5	0.09	0.05

ND = Not detected at or above indicated method detection limit

Analytical Method: EPA 8080, SW-846 3rd Edition, 1986

LEVINE-FRICKE CONSULTING

CLIENT ID: S2b
CLIENT JOB NO: 1596

DATE SAMPLED: 03/27/89
DATE RECEIVED: 03/28/89

MED-TOX LAB NO: 8903214-04A
MED-TOX JOB NO: 8903214
DATE EXTRACTED: 04/06-11/89
DATE ANALYZED: 04/11/89
REPORT DATE: 04/24/89

EPA METHOD 8080

POLYCHLORINATED BIPHENYLS

AROCLOR	CAS #	CONCENTRATION (mg/kg)	DETECTION LIMIT (mg/kg)
Aroclor 1016	12674-11-2	ND	0.05
Aroclor 1221	11104-28-2	ND	0.05
Aroclor 1232	11141-16-5	ND	0.05
Aroclor 1242	53469-21-9	ND	0.05
Aroclor 1248	12672-29-6	ND	0.05
Aroclor 1254	11097-69-1	ND	0.05
Aroclor 1260	11096-82-5	ND	0.05

ND = Not detected at or above indicated method detection limit

Analytical Method: EPA 8080, SW-846 3rd Edition, 1986

LEVINE-FRICKE CONSULTING

CLIENT ID: Sump 1
CLIENT JOB NO: 1596

DATE SAMPLED: 03/27/89
DATE RECEIVED: 03/28/89

MED-TOX LAB NO: 8903214-06A
MED-TOX JOB NO: 8903214
DATE EXTRACTED: 04/06-11/89
DATE ANALYZED: 04/11/89
REPORT DATE: 04/24/89

EPA METHOD 8080

POLYCHLORINATED BIPHENYLS

AROCLOR		CAS #	CONCENTRATION (mg/kg)	DETECTION LIMIT (mg/kg)
Aroclor	1016	12674-11-2	ND	0.05
Aroclor	1221	11104-28-2	ND	0.05
Aroclor	1232	11141-16-5	ND	0.05
Aroclor	1242	53469-21-9	ND	0.05
Aroclor	1248	12672-29-6	ND	0.05
Aroclor	1254	11097-69-1	ND	0.05
Aroclor	1260	11096-82-5	1.3	0.05

ND = Not detected at or above indicated method detection limit

Analytical Method: EPA 8080, SW-846 3rd Edition, 1986

LEVINE-FRICKE CONSULTING

CLIENT ID: S4a
CLIENT JOB NO: 1596

MED-TOX LAB NO: 8903214-07A
MED-TOX JOB NO: 8903214

DATE SAMPLED: 03/27/89
DATE RECEIVED: 03/28/89

DATE ANALYZED: 04/04/89
REPORT DATE: 04/24/89

BTXE AND TOTAL PETROLEUM HYDROCARBONS

METHOD: EPA 8020, 8015 (PURGE & TRAP)

	CONCENTRATION (ug/kg)	DETECTION LIMIT (ug/kg)
Benzene	ND	1
Toluene	140	1
Ethylbenzene	ND	1
Xylenes	ND	3

TOTAL PETROLEUM HYDROCARBONS AS:

Gasoline	ND mg/kg	0.2 mg/kg

ND = Not detected at or above indicated method detection limit

LEVINE-FRICKE CONSULTING

CLIENT ID: S5a
CLIENT JOB NO: 1596

MED-TOX LAB NO: 8903214-09A
MED-TOX JOB NO: 8903214

DATE SAMPLED: 03/27/89
DATE RECEIVED: 03/28/89

DATE ANALYZED: 04/04/89
REPORT DATE: 04/24/89

BTXE AND TOTAL PETROLEUM HYDROCARBONS

METHOD: EPA 8020, 8015 (PURGE & TRAP)

	CONCENTRATION (ug/kg)	DETECTION LIMIT (ug/kg)
Benzene	ND	1
Toluene	8	1
Ethylbenzene	ND	1
Xylenes	ND	3

TOTAL PETROLEUM HYDROCARBONS AS:

Gasoline	ND mg/kg	0.7* mg/kg

ND = Not detected at or above indicated method detection limit

* Elevated detection limit due to presence of hydrocarbons heavier than those typically contained in gasoline.

8903219

CHAIN OF CUSTODY / ANALYSES REQUEST FORM

R4 S2

Project No.: 1596	Field Logbook No.:	Date: 3/27/89	Serial No.: Nº 5486
Project Name: Mastell Oil	Project Location: San Leandro		
Sampler (Signature): C Parchini			Samplers: CHP

SAMPLE NO.	DATE	TIME	LAB SAMPLE NO.	NO. OF CONTAINERS	SAMPLE TYPE	EPA 601	EPA 624	PCB's	TPH as Extractables	TPH as Purgeables w/ BTEX Distinction	HOLD	RUSH	REMARKS
S1a	3/27	1335	01A	1	Soil			X	X				NORMAL TURNAROUND
S1b		1345	02A								X		PER MIKE LYNCH, TPH AS
S2a		1425	03A					X	X				EXTRACTABLES TO BE COMPLETED
S2b		1440	04A					X	X				USING ~~EPA METHOD 503 (ETD)~~ ?
S3a		1455	05A								X		-SHOULD INCLUDE ~~TPH/BTEX~~
Sump 1		1400	06A					X	X				1. DIESEL
S4a		1520	07A						X	X			2. WASTE OIL .
S4b		1525	08A								X		3. OIL & GREASE
S5a		1540	09A						X	X			HAVE MIKE CALL G. TAYLOR
S5b	↓	1545	10A	↓	↓						X		IF HE HAS ANY QUESTIONS.
VBT1	3/27	1615	11A, B, C, D R-1 S-E	4 VOA's	liquid					X			Hold extraction until PAT complete
													SEND RESULTS TO ATTENTION OF G. TAYLOR

RELINQUISHED BY: (Signature) Eugene W. Taylor	DATE 3/28/89	TIME 3:35	RECEIVED BY: (Signature) Paula Neal	DATE 3-28-89	TIME 3:35
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME
METHOD OF SHIPMENT: Hand-delivered	DATE	TIME	LAB COMMENTS:		

Sample Collector:
LEVINE-FRICKE
1900 Powell Street, 12th Floor
Emeryville, Ca 94608
(415) 652-4500

Analytical Laboratory:
Med-Tox & Assoc.

Shipping Copy (White) Lab Copy (Green) File Copy (Yellow) Field Copy (Pink)

FORM NO—86/COC/ARF

MED-TOX ASSOCIATES, INC.

ENVIRONMENTAL & OCCUPATIONAL HEALTH SERVICES

3440 Vincent Road Pleasant Hill, CA 94523 • (415) 930-9090 • FAX# (415) 930-0256

LABORATORY ANALYSIS REPORT

LEVINE-FRICKE
1900 POWELL ST. 12TH FL.
EMERYVILLE, CA 94608

REPORT DATE: 05/23/89

DATE SAMPLED: 03/27/89
DATE RECEIVED: 03/28/89

ANALYSIS REQUESTED: 04/27/89

ATTN: GREG TAYLOR

DATE EXTRACTED: 04/29-05/09/89
DATE ANALYZED: 04/29-05/09/89

CLIENT PROJECT NO: 1596

MED-TOX JOB NO: 8904168

ANALYSIS OF: ONE SOIL SAMPLE FOR OIL & GREASE AND TOTAL PETROLEUM HYDROCARBONS

Sample Identification Client Id.	Lab No.	Oil & Grease (mg/kg)	Total Petroleum Hydrocarbons (mg/kg)	Total Petroleum Hydrocarbons As Diesel* (mg/kg)	Total Petroleum Hydrocarbons As Waste Oil (mg/kg)
S5b	01A	200	ND	62	ND
Detection limit		100	100	10	60
Method		SM503D	SM503E	EPA 8015	EPA 8015

ND = Not detected at or above indicated method detection limit

* This sample contains what appears to be "weathered" diesel, which includes higher molecular weight hydrocarbons than those typically contained in a diesel fuel.

RECEIVED
MAY 24 1989
LEVINE-FRICKE

Michael Lynch, Manager
Organic Laboratory

Results FAXed to Charles Pardini 05/11/89.

~~8903214~~

CHAIN OF CUSTODY / ANALYSES REQUEST FORM

R 4
S II

Project No.: 1596	Field Logbook No.:	Date: 3/27/89
Project Name: Mastell Oil	Project Location: San Leandro	Serial No.: Nº 5486
Sampler (Signature): C Panchini		Samplers: CHP

SAMPLE NO.	DATE	TIME	LAB SAMPLE NO.	NO. OF CONTAINERS	SAMPLE TYPE	~~EPA 601~~	~~EPA 624~~	PCB's	TPH as Extractables	TPH as Purgeables w/ BTEX distinction	HOLD	RUSH	REMARKS
S1a	3/27	1335	01A	1	Soil			X	X				Normal Turnaround
S1b		1345	02A								X		Per Mike Lynch, TPH as
S2a		1425	03A					X	X				Extractables to be Completed
S2b		1440	04A					X	X				~~using EPA Method 503 (E+D)~~
S3a		1455	05A								X		~~- Should include~~
Sump 1		1400	06A					X	X				1. Diesel
S4a		1520	07A						X	X			2. White Oil
S4b		1525	08A								X		3. Oil & Grease
S5a		1540	09A						X	X			Have Mike ~~Cato~~ G. Taylor
S5b	↓	1545	10A	↓	↓						X		if he has any questions.
WBT1	3/27	1615	11A, B, C, D	4 VOA's	liquid					X			Hold extraction until PE T complete
													D of C
													Send Results to Attention of
													G. Taylor

RELINQUISHED BY: (Signature) Eugene W. Chyle	DATE 3/28/89	TIME 3:35	RECEIVED BY: (Signature) Paula Neal	DATE 3-28-89	TIME 3:35
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME
METHOD OF SHIPMENT: Hand-delivered	DATE	TIME	LAB COMMENTS:		

Sample Collector:
LEVINE-FRICKE
1900 Powell Street, 12th Floor
Emeryville, Ca 94608
(415) 652-4500

Analytical Laboratory:
Med-Tox & Assoc.

Shipping Copy (White) Lab Copy (Green) File Copy (Yellow) Field Copy (Pink)

FORM NO. 86/COC/ARF

MED-TOX ASSOCIATES, INC.

ENVIRONMENTAL & OCCUPATIONAL HEALTH SERVICES

2440 Vincent Road Pleasant Hill, CA 94523 • (415) 930-9090 • FAX# (415) 930-0256

LABORATORY ANALYSIS REPORT

LEVINE-FRICKE
1900 POWELL ST. 12TH FL.
EMERYVILLE, CA 94608

ATTN: GREG TAYLOR

CLIENT PROJECT NO: 1596

REPORT DATE: 04/27/89

DATE SAMPLED: 04/03-04/89

DATE RECEIVED: 04/05/89

MED-TOX JOB NO: 8904019

ANALYSIS OF: THREE SOIL SAMPLES FOR BTXE, TOTAL PETROLEUM HYDROCARBONS, AND LEAD; TWO SOIL SAMPLES FOR BTXE AND TOTAL PETROLEUM HYDROCARBONS

Sample Identification Client Id.	Lab No.	Lead (mg/kg)
LF-5/23	02A	6
LF-2/23	03A	9
LF-1/23	06A	7
Detection Limit		1
EPA Method		7420

Michael Lynch
Michael Lynch, Manager
Organic Laboratory

Results FAXed to Greg Taylor 04/20/89

RECEIVED
APR 28 1989
LEVINE-FRICKE

LEVINE-FRICKE CONSULTING

CLIENT ID: LF-5/23
CLIENT JOB NO: 1596

DATE SAMPLED: 04/03/89
DATE RECEIVED: 04/05/89

MED-TOX LAB NO: 8904019-02A
MED-TOX JOB NO: 8904019
DATE EXTRACTED: 04/17/89

DATE ANALYZED: 04/08-18/89
REPORT DATE: 04/27/89

BTXE AND TOTAL PETROLEUM HYDROCARBONS

METHOD: EPA 8020, 8015 (PURGE & TRAP AND EXTRACTION)

	CONCENTRATION (ug/kg)	DETECTION LIMIT (ug/kg)
Benzene	ND	1,000
Toluene	ND	3,000
Ethylbenzene	ND	6,000
Xylenes	ND	10,000

TOTAL PETROLEUM HYDROCARBONS AS:

Gasoline	ND mg/kg	20,000 mg/kg
Diesel	18,000 mg/kg	10 mg/kg
Waste Oil	ND mg/kg	20 mg/kg

ND = Not detected at or above indicated method detection limit

LEVINE-FRICKE CONSULTING

CLIENT ID: LF-2/23
CLIENT JOB NO: 1596

DATE SAMPLED: 04/03/89
DATE RECEIVED: 04/05/89

MED-TOX LAB NO: 8904019-03A
MED-TOX JOB NO: 8904019
DATE EXTRACTED: 04/17/89

DATE ANALYZED: 04/16-18/89
REPORT DATE: 04/27/89

BTXE AND TOTAL PETROLEUM HYDROCARBONS

METHOD: EPA 8020, 8015 (PURGE & TRAP AND EXTRACTION)

	CONCENTRATION (ug/kg)	DETECTION LIMIT (ug/kg)
Benzene	ND	1,000
Toluene	ND	5,000
Ethylbenzene	80,000	1,000
Xylenes	260,000	3,000

TOTAL PETROLEUM HYDROCARBONS AS:

Gasoline	2,600 mg/kg	200 mg/kg
Diesel	ND mg/kg	3,000 mg/kg
Waste Oil	ND mg/kg	20 mg/kg

ND = Not detected at or above indicated method detection limit

LEVINE-FRICKE CONSULTING

CLIENT ID: LF-1/23
CLIENT JOB NO: 1596

DATE SAMPLED: 04/04/89
DATE RECEIVED: 04/05/89

MED-TOX LAB NO: 8904019-06A
MED-TOX JOB NO: 8904019
DATE EXTRACTED: 04/17/89

DATE ANALYZED: 04/08-18/89
REPORT DATE: 04/27/89

BTXE AND TOTAL PETROLEUM HYDROCARBONS

METHOD: EPA 8020, 8015 (PURGE & TRAP AND EXTRACTION)

	CONCENTRATION (ug/kg)	DETECTION LIMIT (ug/kg)
Benzene	ND	1,000
Toluene	ND	1,000
Ethylbenzene	ND	1,000
Xylenes	ND	3,000

TOTAL PETROLEUM HYDROCARBONS AS:

Gasoline	ND mg/kg	300 mg/kg
Diesel	320 mg/kg	10 mg/kg
Waste Oil	ND mg/kg	20 mg/kg

ND = Not detected at or above indicated method detection limit

LEVINE-FRICKE CONSULTING

CLIENT ID: LF-4/23
CLIENT JOB NO: 1596

DATE SAMPLED: 04/04/89
DATE RECEIVED: 04/05/89

MED-TOX LAB NO: 8904019-08A
MED-TOX JOB NO: 8904019
DATE EXTRACTED: 04/17/89

DATE ANALYZED: 04/09-18/89
REPORT DATE: 04/27/89

BTXE AND TOTAL PETROLEUM HYDROCARBONS

METHOD: EPA 8020, 8015 (PURGE & TRAP AND EXTRACTION)

	CONCENTRATION (ug/kg)	DETECTION LIMIT (ug/kg)
Benzene	ND	500
Toluene	810	500
Ethylbenzene	ND	500
Xylenes	ND	2,000

TOTAL PETROLEUM HYDROCARBONS AS:

Gasoline	ND mg/kg	400 mg/kg
Diesel	350 mg/kg	10 mg/kg
Waste Oil	ND mg/kg	20 mg/kg

ND = Not detected at or above indicated method detection limit

LEVINE-FRICKE CONSULTING

CLIENT ID: S-7/8
CLIENT JOB NO: 1596

DATE SAMPLED: 04/04/89
DATE RECEIVED: 04/05/89

MED-TOX LAB NO: 8904019-10A
MED-TOX JOB NO: 8904019
DATE EXTRACTED: 04/17/89

DATE ANALYZED: 04/09-18/89
REPORT DATE: 04/27/89

BTXE AND TOTAL PETROLEUM HYDROCARBONS

METHOD: EPA 8020, 8015 (PURGE & TRAP AND EXTRACTION)

	CONCENTRATION (ug/kg)	DETECTION LIMIT (ug/kg)
Benzene	ND	1
Toluene	30	1
Ethylbenzene	ND	1
Xylenes	ND	3

TOTAL PETROLEUM HYDROCARBONS AS:

Gasoline	ND mg/kg	0.2 mg/kg
Diesel	ND mg/kg	10 mg/kg
Waste Oil	ND mg/kg	20 mg/kg

ND = Not detected at or above indicated method detection limit

CHAIN OF CUSTODY / ANALYSES REQUEST FORM

8904 J19

Project No.: 1596	Field Logbook No.:	Date: 4/4/89	Serial No.: No 3737
Project Name: Master Cl	Project Location: San Leandro		
Sampler (Signature): C Parsons			

SAMPLE NO.	DATE	TIME	LAB SAMPLE NO.	NO. OF CONTAINERS	SAMPLE TYPE	EPA 601	EPA 624	TPH gas	TPH diesel	PB (TOTAL)	HOLD	RUSH	REMARKS
LF-S/18	4/3	930	01A	1	Soil						X		NORMAL TURNAROUND
LF-S/23		940	02A					X	X	X			
LF-2/23		1310	03A					X	X	X			
LF-2/18		1300	04A								X		
LF-2/27.5	↓	1325	05A								X		
LF-1/23	4/4	900	06A					X	X	X			
LF-1/20		900	07A								X		
LF-4/23		1135	08A					X	X				
LF-4/10		1140	09A								X		SEND RESULTS TO ATTENTION OF GREG TAYLOR
S-7/8		1345	10A	↓	↓			X	X				
S-7/4	↓		11A								X		
LF-5/25.5	4/3		12A								X		
LF-4/25	4/4		13A								X		
LF-2/32	4/3		14A								X		
LF-2/37	4/3		15A								X		

Samplers: CHP

RELINQUISHED BY: (Signature) Stephen W. Taylor	DATE 4/5/89	TIME 09:15	RECEIVED BY: (Signature) Robin Byars	DATE 4-5-89	TIME 9:15
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME
METHOD OF SHIPMENT:	DATE	TIME	LAB COMMENTS:		

SAMPLE COLLECTOR: (check one)

☒ LEVINE·FRICKE ~~629 Oakland Avenue Oakland, CA 94611-4567~~ 1400 Powell St Emeryville (415) 652-4500

☐ LEVINE·FRICKE 4019 Westerly Place, Suite 103 Newport Beach, CA 92660 (714) 955-1390

Analytical Laboratory: Med-Tox

Shipping Copy (White) Lab Copy (Green) File Copy (Yellow) Field Copy (Pink)

FORM NO. 86/COC/ARF

MED-TOX ASSOCIATES, INC.
ENVIRONMENTAL & OCCUPATIONAL HEALTH SERVICES
3440 Vincent Road Pleasant Hill, CA 94523 • (415) 930-9090 • FAX# (415) 930-0256

LABORATORY ANALYSIS REPORT

LEVINE-FRICKE
1900 POWELL ST., 12TH FL.
EMERYVILLE, CA 94608

ATTN: GREG TAYLOR

CLIENT PROJECT NO: 1596

REPORT DATE: 04/27/89

DATE SAMPLED: 04/05-06/89
DATE RECEIVED: 04/06/89
DATE EXTRACTED: 04/07-19/89
DATE ANALYZED: 04/10-18/89

MED-TOX JOB NO: 8904035

ANALYSIS OF: TWO SOIL SAMPLES FOR BTXE AND TOTAL PETROLEUM HYDROCARBONS; THREE WATER SAMPLES FOR BTXE, TOTAL PETROLEUM HYDROCARBONS, AND LEAD; FOUR WATER SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS

Sample Identification Client Id.	Lab No.	Lead (mg/L)
LF-1	06E	ND
LF-2	07E	ND
LF-5	11E	ND
Detection limit		0.01
EPA Method		7420

ND = Not detected at or above indicated method detection limit

Michael Lynch, Manager
Organic Laboratory

Results FAXed to Greg Taylor 04/25/89

RECEIVED
MAY - 1 1989
LEVINE-FRICKE

LEVINE-FRICKE CONSULTING

CLIENT ID: LF-3/18
CLIENT JOB NO: 1596

DATE SAMPLED: 04/05/89
DATE RECEIVED: 04/06/89

MED-TOX LAB NO: 8904035-02A
MED-TOX JOB NO: 8904035
DATE EXTRACTED: 04/19/89

DATE ANALYZED: 04/10-24/89
REPORT DATE: 04/27/89

BTXE AND TOTAL PETROLEUM HYDROCARBONS

METHOD: EPA 8020, 8015 (PURGE & TRAP AND EXTRACTION)

	CONCENTRATION (ug/kg)	DETECTION LIMIT (ug/kg)
Benzene	ND	1,000
Toluene	3,000	1,000
Ethylbenzene	ND	2,000
Xylenes	ND	10,000

TOTAL PETROLEUM HYDROCARBONS AS:

Gasoline	ND mg/kg	20,000 mg/kg
Diesel	17,000 mg/kg	500 mg/kg
Waste Oil	ND mg/kg	1,000 mg/kg

ND = Not detected at or above indicated method detection limit

LEVINE-FRICKE CONSULTING

CLIENT ID: LF-3/22
CLIENT JOB NO: 1596

DATE SAMPLED: 04/05/89
DATE RECEIVED: 04/06/89

MED-TOX LAB NO: 8904035-03A
MED-TOX JOB NO: 8904035
DATE EXTRACTED: 04/19/89

DATE ANALYZED: 04/10-24/89
REPORT DATE: 04/27/89

BTXE AND TOTAL PETROLEUM HYDROCARBONS

METHOD: EPA 8020, 8015 (PURGE & TRAP AND EXTRACTION)

	CONCENTRATION (ug/kg)	DETECTION LIMIT (ug/kg)
Benzene	ND	5
Toluene	ND	5
Ethylbenzene	ND	5
Xylenes	ND	20

TOTAL PETROLEUM HYDROCARBONS AS:

Gasoline	ND mg/kg	400 mg/kg
Diesel	420 mg/kg	10 mg/kg
Waste Oil	ND mg/kg	20 mg/kg

ND = Not detected at or above indicated method detection limit

LEVINE-FRICKE CONSULTING

CLIENT ID: LF-1
CLIENT JOB NO: 1596

DATE SAMPLED: 04/06/89
DATE RECEIVED: 04/06/89

MED-TOX LAB NO: 8904035-06C
MED-TOX JOB NO: 8904035
DATE EXTRACTED: 04/07/89

DATE ANALYZED: 04/08, 10/89
REPORT DATE: 04/27/89

BTXE AND TOTAL PETROLEUM HYDROCARBONS

METHOD: EPA 602, 8015 (PURGE & TRAP AND EXTRACTION)

	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
Benzene	200	10
Toluene	ND	10
Ethylbenzene	1,100	10
Xylenes	140	40

TOTAL PETROLEUM HYDROCARBONS AS:

Gasoline	ND mg/L	200 mg/L
Diesel	180 mg/L	0.3 mg/L
Waste Oil	ND mg/L	0.5 mg/L

ND = Not detected at or above indicated method detection limit

LEVINE-FRICKE CONSULTING

CLIENT ID: LF-2
CLIENT JOB NO: 1596

DATE SAMPLED: 04/06/89
DATE RECEIVED: 04/06/89

MED-TOX LAB NO: 8904035-07C
MED-TOX JOB NO: 8904035
DATE EXTRACTED: 04/07/89

DATE ANALYZED: 04/08-10/89
REPORT DATE: 04/27/89

BTXE AND TOTAL PETROLEUM HYDROCARBONS

METHOD: EPA 602, 8015 (PURGE & TRAP AND EXTRACTION)

	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
Benzene	1,600	0.5
Toluene	ND	0.5
Ethylbenzene	290	0.5
Xylenes	470	2

TOTAL PETROLEUM HYDROCARBONS AS:

Gasoline	ND mg/L	100 mg/L
Diesel	98 mg/L	0.3 mg/L
Waste Oil	ND mg/L	0.5 mg/L

ND = Not detected at or above indicated method detection limit

LEVINE-FRICKE CONSULTING

CLIENT ID: LF-3
CLIENT JOB NO: 1596

DATE SAMPLED: 04/06/89
DATE RECEIVED: 04/06/89

MED-TOX LAB NO: 8904035-08C
MED-TOX JOB NO: 8904035
DATE EXTRACTED: 04/07/89

DATE ANALYZED: 04/08-10/89
REPORT DATE: 04/27/89

BTXE AND TOTAL PETROLEUM HYDROCARBONS

METHOD: EPA 602, 8015 (PURGE & TRAP AND EXTRACTION)

	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
Benzene	ND	0.5
Toluene	ND	0.5
Ethylbenzene.	ND	0.5
Xylenes	ND	2
TOTAL PETROLEUM HYDROCARBONS AS:		
Gasoline	ND mg/L	0.1 mg/L
Diesel	0.5 mg/L	0.3 mg/L
Waste Oil	ND mg/L	0.5 mg/L

ND = Not detected at or above indicated method detection limit

LEVINE-FRICKE CONSULTING

CLIENT ID: LF-3FB
CLIENT JOB NO: 1596

MED-TOX LAB NO: 8904035-09A
MED-TOX JOB NO: 8904035

DATE SAMPLED: 04/06/89
DATE RECEIVED: 04/06/89

DATE ANALYZED: 04/08/89
REPORT DATE: 04/27/89

BTXE AND TOTAL PETROLEUM HYDROCARBONS

METHOD: EPA 602, 8015 (PURGE & TRAP)

	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
Benzene	ND	0.5
Toluene	ND	0.5
Ethylbenzene.	ND	0.5
Xylenes	ND	2
TOTAL PETROLEUM HYDROCARBONS AS:		
Gasoline	ND mg/L	0.1 mg/L

ND = Not detected at or above indicated method detection limit

LEVINE-FRICKE CONSULTING

CLIENT ID: LF-4
CLIENT JOB NO: 1596

DATE SAMPLED: 04/06/89
DATE RECEIVED: 04/06/89

MED-TOX LAB NO: 8904035-10C
MED-TOX JOB NO: 8904035
DATE EXTRACTED: 04/13/89

DATE ANALYZED: 04/10-18/89
REPORT DATE: 04/27/89

BTXE AND TOTAL PETROLEUM HYDROCARBONS

METHOD: EPA 602, 8015 (PURGE & TRAP AND EXTRACTION)

	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
Benzene	100	100
Toluene	ND	100
Ethylbenzene.	200	100
Xylenes	ND	300

TOTAL PETROLEUM HYDROCARBONS AS:

Gasoline	ND mg/L	400 mg/L
Diesel	340 mg/L	0.3 mg/L
Waste Oil	ND mg/L	0.5 mg/L

ND = Not detected at or above indicated method detection limit

LEVINE-FRICKE CONSULTING

CLIENT ID: LF-5
CLIENT JOB NO: 1596

DATE SAMPLED: 04/06/89
DATE RECEIVED: 04/06/89

MED-TOX LAB NO: 8904035-11C
MED-TOX JOB NO: 8904035
DATE EXTRACTED: 04/13/89

DATE ANALYZED: 04/08-12/89
REPORT DATE: 04/27/89

BTXE AND TOTAL PETROLEUM HYDROCARBONS

METHOD: EPA 602, 8015 (PURGE & TRAP AND EXTRACTION)

	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
Benzene	50	3
Toluene	ND	3
Ethylbenzene.	ND	3
Xylenes	40	10

TOTAL PETROLEUM HYDROCARBONS AS:

Gasoline	ND mg/L	60 mg/L
Diesel	59 mg/L	0.3 mg/L
Waste Oil	ND mg/L	0.5 mg/L

ND = Not detected at or above indicated method detection limit

LEVINE-FRICKE CONSULTING

CLIENT ID: LF-6 (LF-6 Duplicate)
CLIENT JOB NO: 1596

DATE SAMPLED: 04/06/89
DATE RECEIVED: 04/06/89

MED-TOX LAB NO: 8904035-12C
MED-TOX JOB NO: 8904035
DATE EXTRACTED: 04/13/89

DATE ANALYZED: 04/12-18/89
REPORT DATE: 04/27/89

BTXE AND TOTAL PETROLEUM HYDROCARBONS

METHOD: EPA 602, 8015 (PURGE & TRAP AND EXTRACTION)

	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
Benzene	ND	200
Toluene	ND	50
Ethylbenzene.	ND	200
Xylenes	ND	300

TOTAL PETROLEUM HYDROCARBONS AS:

Gasoline	ND mg/L	300 mg/L
Diesel	330 mg/L	0.3 mg/L
Waste Oil	ND mg/L	0.5 mg/L

ND = Not detected at or above indicated method detection limit

R-4-5-E
R-3-5-3

CHAIN OF CUSTODY / ANALYSES REQUEST FORM

8904035

Project No.: 1596	Field Logbook No.:	Date: 4/6/89	Serial No.: No 3742
Project Name: Maskell Oil	Project Location: San Leandro		
Sampler (Signature): C Parkin			Samplers: CHP

SAMPLES / ANALYSES

SAMPLE NO.	DATE	TIME	LAB SAMPLE NO.	NO. OF CONTAINERS	SAMPLE TYPE	EPA 601	EPA 624	TPH Gas as w/ BTEX & TPH as extractables	TPH as extractables	Total Pb	HOLD	RUSH	REMARKS
LF-3/16	4/5	855	01A	1	Soil			X			X		
LF-3/18	↓	855	02A	↓	↓			X	X				TPH as extractables should be analyzed for diesel fuel, waste oil, & motor oil.
LF-3/22		905	03A					X	X				
S-7/4		1110	04A								X		
S-7/5.5	↓	1110	05A	↓	↓						X		
			TMEW TMEW										
LF-1	4/6		06A,B,C,D,E	5	H2O			X	X	X	Filt		Contact Greg Taylor or Chuck Barding with results.
LF-2	↓		07 "	5	↓			X	X	X	Filt		
LF-3			08ABCD	4				X	X				
LF-3FB			09A,B	2				X					Blank contains D.I. water.
LF-4			10ABCD	4				X	X				
LF-5			11ABCDE	5				X	X	X	Filt		
LF-6	↓		12ABCD	4	↓			X	X				

RELINQUISHED BY: (Signature) Stephen W Taylor	DATE 4/6/89	TIME 17:30	RECEIVED BY: (Signature) Robin M. Byars	DATE 4-6-89	TIME 17:34
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME
METHOD OF SHIPMENT: Hand-delivered	DATE	TIME	LAB COMMENTS:		

SAMPLE COLLECTOR: (check one)

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FORM NO. 86/COC/ARF