LEVINE·FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

September 7, 1989 LF 1245

Mr. Ariu Levi
Division of Hazardous Materials
Department of Environmental Health
Alameda County Health Agency
470 27th Street, Room 332
Oakland, California 94612

Subject: Replacement Copy of Table 2 for
Report on Ground-Water Quality
in the Northwest Study Area
at Marina Village, Alameda, California,
Dated June 26, 1989

Dear Ariu:

Attached is one copy of a complete version of Table 2 to be inserted in the report entitled: "Continued Soil and Ground-Water Investigation of Parcel 5, Implementation of a Ground-Water Monitoring Program, and Proposed Remedial Measures in the Northwest Study Area, Marina Village, Alameda, California," dated June 26, 1989. Unfortunately, the Table 2 inserted into your report (submitted to you July 31, 1989) was incomplete.

We apologize for our error and the inconvenience.

Sincerely,

Elizabeth Nixon
Project Geotechnical Engineer

attachment

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Other offices in NEWPORT BEACH and OAKLAND, CA

TABLE 2

SOIL CHEMICAL ANALYSIS DATA
TOTAL PETROLEUM HYDROCARBONS AND BENZENE, TOLUENE, XYLENES AND ETHYLBENZENE
(Results expressed in ppm)

Sample Number	Depth (feet)	Date Sampled	TPH - EPA Method 8015		EPA METHOD 8020/8240			
			Diesel	Waste Oil	Benzene	Toluene	Xylenes	Ethyl-Benzene
Parcel 5								
5NW1-A	7.5-8	17-Feb-89	[illegible]	<100	<0.500	0.700	<1.000	<0.500
5NW2-A	7-7.5	17-Feb-89	NA	NA	<0.001	0.045	<0.003	<0.001
5NW2/A-B	7-8 *	17-Feb-89	<10	[illegible]	NA	NA	NA	NA
5NW3-A	7-7.5	17-Feb-89	<10	<20	<0.001	0.023	<0.003	<0.003
5NW4-B	8-8.5	17-Feb-89	<5,000	[illegible]	NA	NA	NA	NA
5NW5-A	7-7.5	17-Feb-89	<500	[illegible]	<0.003	0.460	<0.008	<0.003
5NW6	7-7.5/8.5-9 *	09-Mar-89	<30	150	NA	NA	NA	NA
	10-10.5/11.5-12 *	09-Mar-89	<300	[illegible]	NA	NA	NA	NA
	13-13.5	09-Mar-89	<600	[illegible]	NA	NA	NA	NA
5NW7	7.5-8	09-Mar-89	<20	[illegible]	NA	NA	NA	NA
	10-10.5	09-Mar-89	<10	73	NA	NA	NA	NA
5NW8	8-8.5/10-10.5 *	09-Mar-89	<500	[illegible]	NA	NA	NA	NA
5NW9	8-8.5/9.5-10*	09-Mar-89	<1,000	[illegible]	NA	NA	NA	NA
5NW10	10.5-11	09-Mar-89	<10	120	NA	NA	NA	NA
5NW11	6.5-7/7-7.5 *	09-Mar-89	<20	[illegible]	NA	NA	NA	NA
5NW12	9.5-10	09-Mar-89	<10	260	NA	NA	NA	NA
	11-11.5	09-Mar-89	<10	280	NA	NA	NA	NA
5NW13	7-7.5/8.5-9 *	10-Mar-89	<20	740	NA	NA	NA	NA
5NW14	9.5-10/11-11.5/ 12.5-13 *	13-Mar-89	<20	280	NA	NA	NA	NA
LF11	7.5-8/7-7.5 *	10-Mar-89	<10	32	NA	NA	NA	NA

TABLE 2

SOIL CHEMICAL ANALYSIS DATA
TOTAL PETROLEUM HYDROCARBONS AND BENZENE, TOLUENE, XYLENES AND ETHYLBENZENE
(Results expressed in ppm)

Sample Number	Depth (feet)	Date Sampled	TPH - EPA Method 8015		EPA METHOD 8020/8240			
			Diesel	Waste Oil	Benzene	Toluene	Xylenes	Ethyl-Benzene
Parcel 2								
2NW2	8-9.5	15-Aug-88	150	NQ	<0.005	0.016	<0.010	<0.005
2NW3	7-7.5	15-Aug-88	<10	NQ	NA	NA	NA	NA
	8.5-9	15-Aug-88	37	NQ	NA	NA	NA	NA
2NW5	7-7.5	15-Aug-88	<10	NQ	NA	NA	NA	NA
	10-10.5	15-Aug-88	120	NQ	NA	NA	NA	NA
Parcel 1								
1NW1	3-3.5/4-4.5 *	13-Mar-89	<200	1,600	NA	NA	NA	NA
1NW2	7-7.5/8.5-9 *	13-Mar-89	<200	5,700	NA	NA	NA	NA
LF12	7.5-8/8-8.5 *	09-Mar-89	<20	140	NA	NA	NA	NA
LF13	6-6.5/7.5-8 *	10-Mar-89	<4,000	8,000	NA	NA	NA	NA

Notes: * - Composite Sample.
- Sample contains higher molecular weight hydrocarbons than those typically contained in diesel fuel.
NQ - Not quantified against waste oil standard.
NA - Not analyzed.
Analyses performed by Med-Tox Associates of Pleasant Hill, California.

Continued Soil and Ground-Water Investigation of Parcel 5 Implementation of a Ground-Water Monitoring Program and Proposed Remedial Measures in the Northwest Study Area Marina Village, Alameda, California

June 26, 1989
1245

Prepared for:

Vintage Properties/Alameda Commercial
1150 Marina Village Parkway, Suite 100
Alameda, California 94501

LEVINE·FRICKE

CONTENTS

L I S T O F T A B L E S

L I S T O F F I G U R E S

CERTIFICATION

All hydrogeologic and geologic information, conclusions, and recommendations in this report have been prepared and reviewed by a Levine·Fricke California Registered Geologist. All engineering information, conclusions, and recommendations have been prepared or reviewed by a Levine·Fricke Professional Engineer.

Thomas M. Johnson
Principal Hydrogeologist
Registered Geologist (4268)

Thomas E. Graf
Principal Engineer
Professional Engineer (34719)

June 26, 1989 LF-1245

**CONTINUED SOIL AND GROUND-WATER INVESTIGATION OF PARCEL 5
IMPLEMENTATION OF A GROUND-WATER MONITORING PROGRAM AND
PROPOSED REMEDIAL MEASURES
IN THE NORTHWEST STUDY AREA
MARINA VILLAGE, ALAMEDA, CALIFORNIA**

1.0 INTRODUCTION

This report describes the results of a continued soil and ground-water quality investigation and the implementation of a ground-water quality monitoring program in the northwest corner of the Marina Village development ("the Northwest Study Area;" see Figures 1 and 2). Results of an initial soil and ground-water quality investigation of this area performed by Levine·Fricke were reported to Vintage Properties/Alameda Commercial in the report "Investigation of Northwest Area, Marina Village, Alameda, California," dated October 6, 1988.

Vintage Properties selected implementation of a long-term ground-water quality monitoring program to address the presence of petroleum hydrocarbons which had been identified in soil and ground water during the initial investigation of Parcel 1 and the Powerhouse Parcel, within the Northwest Study Area. The purpose of the current investigation described herein was to assess the presence of petroleum hydrocarbons in subsurface soils and ground water in Parcel 5, within the Northwest Study Area. Proposed remedial measures for petroleum-affected soil in Parcel 1 in the Northwest Study Area were also developed.

2.0 SCOPE OF WORK

The continued investigation and implementation of the ground-water monitoring program were conducted at the request of Vintage Properties in accordance with Levine·Fricke's Work Order No. 3, dated January 11, 1989.

The investigation of Parcel 5 included the following:

- drilling of 14 shallow soil borings on Parcel 5, and collection and chemical analysis of soil and ground-water samples
- installation of one additional shallow ground-water monitoring well on Parcel 5

The implementation of a ground-water quality monitoring program for the Northwest Study Area included the following:

- installation of two additional shallow ground-water monitoring wells on Parcel 1
- collection and chemical analysis of ground-water samples from the newly installed wells on Parcels 1 and 5, and the existing six monitoring wells located on Parcels 1, 2 and 5 and the Powerhouse Parcel
- initiation of routine measurement of ground-water levels
- drilling of two additional soil borings on Parcel 1, and collection and chemical analyses of soil samples

The following text describes the field methods used, data obtained, and conclusions reached during the course of the current investigation. Proposed remedial measures for petroleum-affected soil in Parcel 1 and a program for continued ground-water monitoring for the Northwest Study Area are also described.

3.0 FIELD ACTIVITIES

Locations of the 16 soil borings and three monitoring wells completed on Parcels 1 and 5 during this investigation are shown on Figure 2 (soil borings 5NW1 through 5NW14, 1NW1 and 1NW2; wells LF-11, LF-12 and LF-13). Borings and wells were drilled/installed during the period February 17 through March 13, 1989. Boring and well depths ranged from 10 to 15 feet below the ground surface. Observations were made for each soil and well boring regarding sediment types encountered, ground-water depth, and petroleum staining and odor, if present. Boring logs describing sediments encountered and observations regarding petroleum content are included in Appendix A. Drilling and well installation procedures are described in Appendix B; well construction data are summarized in Table 1.

Figure 2 also shows locations of the five existing wells (LF-6 through LF-10) installed by Levine·Fricke during the previous investigation on Parcels 1 and 5 and the Powerhouse Parcel, and the location of one well (WC3) installed by Woodward Clyde Consultants in 1987 on Parcel 2. These six wells were used during this investigation for ground-water level measurements and for collection and chemical analysis of ground-water samples.

Three soil borings (2NW2, 2NW3 and 2NW5) drilled as part of a separate (ongoing) Levine·Fricke soil-quality investigation for Parcel 2 are also shown on Figure 2. These borings were drilled on August 15, 1988. Soil-quality data obtained from these three

borings are included in this report, as they are located near the southern border of Parcel 5. Boring logs are included in Appendix A.

The locations of the test pits on Parcels 1, 5 and the Powerhouse Parcel, dug during the previous investigation, are also shown on Figure 2. Soil-quality data gathered from the test pits were reported in the above-mentioned Levine·Fricke's October 1988 report and are not repeated here.

Ground-water level measurements were recorded, and ground-water samples collected from the nine new and existing monitoring wells on March 28 and 29, and June 1, 1989. Sampling procedures are described in Appendix B.

4.0 SOIL QUALITY - PARCEL 5

4.1 Field Observations

Sediments containing indications (dark staining and odors) of petroleum hydrocarbons were encountered in fill materials at depths ranging from the approximate ground-water surface (6 to 8 feet below ground surface) to the boundary of the underlying Bay Mud (9 to 15 feet below ground surface). The observed thickness of petroleum-affected soils ranged from approximately 2 feet to as much as 8 feet, depending on fill characteristics and the depths to ground water and underlying Bay Mud sediments. Schematic cross sections of subsurface conditions encountered at the site are illustrated in Figures 3, 4 and 5. The interpreted extent of soils on Parcel 5 containing petroleum hydrocarbons above 500 ppm (with areal extent of approximately one acre) is shown on Figures 6.

4.2 Chemical Analyses and Results

Methods

Twenty soil samples collected at depths of 6.5 to 13 feet below grade from the 15 soil borings and one well boring located within Parcel 5 were analyzed for extractable total petroleum hydrocarbons (TPH) using EPA Modified Method 8015. One soil sample (5NW1-A) containing elevated TPH concentrations was additionally analyzed for priority pollutant volatile organic compounds (VOCs) using EPA Method 8240. Three soil samples from borings 5NW2, 5NW3 and 5NW5 were analyzed for benzene, toluene, xylene and ethylbenzene (BTXE) using EPA method 8020. Analyses were performed by Med-Tox Associates of Pleasant Hill, California, a State-certified analytical laboratory.

Petroleum hydrocarbon characterizations were performed by Friedman and Bruya, Inc., of Seattle, Washington, on three soil samples from borings 5NW4, 5NW6, and 5NW9 which contained elevated TPH concentrations ranging from approximately 900 to 28,000 ppm. One of these samples (5NW4-B) was also analyzed for polychlorinated biphenyls (PCBs). Two of these soil samples (5NW4-B and 5NW6-11.5-12') were analyzed for metals using an ICP scan. The ICP metals scans were performed by AmTest, Inc., of Redmond, Washington.

Soil sample depths and TPH analysis results are summarized in Table 2 and plotted on Figure 6. Copies of laboratory certificates for all analyses are included in Appendix C.

Results

Analysis results indicated that within the approximate boundary of petroleum-affected soils (those containing greater than 500 ppm, as shown on Figure 6), the highest TPH concentrations detected in the soil borings ranged from 510 to 28,000 ppm (with the exception of soils from boring 5NW10, which contained 120 ppm TPH). TPH were either not detected or were detected at relatively low concentrations, ranging from 37 to 280 ppm, in soil samples collected from borings northeast and southeast of this boundary (Figure 6).

Petroleum characterization of sample 5NW4-B indicated the presence of a mixture of weathered diesel number 2 fuel and a waste motor oil, with a lesser amount of a third product identified as a heavy oil. Characterization of samples 5NW6/11.5-12 and 5NW9/9-9.5 indicated the presence of a very heavily weathered light oil such as a diesel number 4 or 6, or else a mixture of waste motor oil and a heavy oil.

VOCs were not detected in sample 5NW1-A, except for toluene, which was detected at a concentration of 0.700 ppm. Samples 5NW2-A, 5NW3-A, and 5NW5-A contained toluene at concentrations ranging from 0.023 to 0.460 ppm, but did not contain benzene, xylenes, or ethylbenzene at concentrations above detection limits. Results of BTXE analyses are listed in Table 2.

Results of PCB analysis of sample 5NW4-B indicated that PCBs were not present above the laboratory detection limit of 1 ppm.

Concentrations of metals detected in samples 5NW4-B and 5NW6/11.5-12 were generally low relative to California Department of Health Services (DHS) Total Threshold Limit Concentrations (TTLCs) (criteria to classify a substance as a hazardous waste). Lead was detected at a concentration of 520 ppm in sample 5NW4-B.

Although this concentration is below the TTLC level for lead of 1,000 ppm, it is probably higher than expected background concentrations for soils in the area.

5.0 SOIL QUALITY - PARCEL 1

5.1 Field observations

Sediments containing visible indications of petroleum hydrocarbons (visible stains) were encountered in fill materials in borings 1NW1, 1NW2, and LF-13 at depths of 4 to 7 feet below the ground surface (upper boundary) to depths ranging between 7 and 11 feet below ground surface (bottom boundary). The upper boundary appeared to correspond with the approximate observed ground-water surface, and the bottom boundary appeared to be within fill materials and above the depth of the Bay Mud (depths of 10 to 13 feet below ground surface). Sediments observed in well boring LF-12, located near the Parcel 1/Parcel 5 border, did not contain visible indications of petroleum hydrocarbons.

5.2 Chemical Analyses and Results

Methods

Four soil samples collected from the two soil borings and two ground-water monitoring wells drilled/installed on Parcel 1 were analyzed for extractable TPH using EPA Modified Method 8015. Analyses were performed by Med-Tox Associates.

Petroleum hydrocarbon characterization was performed by Friedman and Bruya on a soil sample from well boring LF-13 which contained elevated TPH concentrations.

Soil sample depths and TPH analysis results are summarized in Table 2 and plotted on Figure 7. Copies of laboratory certificates are included in Appendix C.

Results

Analysis results indicate that soil samples collected from the petroleum-affected intervals in borings 1NW1, 1NW2 and LF-13 contained TPH concentrations ranging from 1,600 to 8,000 ppm. TPH was detected at a concentration of 140 ppm in a soil sample from well boring LF-12 (a composited sample from the depth interval 7.5 to 8.5 feet below the ground surface). Results of these analyses and previously gathered soil-quality data obtained from Parcel 1 indicate the approximate extent of soils containing petroleum hydrocarbons at concentrations above 500 ppm (with an areal extent of approximately 2.1 acres), as shown on Figure 7.

The petroleum hydrocarbon present in soil sample LF-13/6-6.5 (8,000 ppm) was characterized as a weathered light oil such as a diesel number 4 or 6 and a smaller amount of a heavy oil.

6.0 GROUND-WATER QUALITY

6.1 Ground-Water Samples from Soil Borings, Parcel 5

Ground-water samples collected from soil borings 5NW1 through 5NW5 (at depths of approximately 10 feet below the ground surface) were analyzed for extractable TPH using EPA Modified Method 8015. Samples from borings 5NW2, 5NW3 and 5NW5 were additionally analyzed for VOCs using EPA Method 624, and the sample from boring 5NW4 was analyzed for BTXE using EPA Method 602.

TPH analysis results for the soil boring ground-water samples are summarized on Table 3 and plotted on Figure 8. TPH concentrations ranged from 0.3 to 58 mg/l. It should be noted that chemical analyses of ground-water samples collected from soil borings provide only qualitative data regarding chemical concentrations. For quantitative interpretation regarding ground-water quality, analytical results should be used for ground-water samples which have been collected from monitoring wells with the appropriate ground-water sampling methodology.

VOCs were not detected in any of the ground-water samples analyzed from borings 5NW2, 5NW3 and 5NW5, and BTXE compounds were not detected in the ground-water sample from boring 5NW4. Laboratory certificates are included in Appendix C.

6.2 Monitoring Wells, Northwest Study Area

Ground-water samples collected during this investigation were analyzed for extractable TPH using EPA Modified Method 8015 and BTXE using EPA Method 602. Analyses were performed by Med-Tox Associates. A petroleum product sample collected from well LF-8 was characterized by Friedman and Bruya.

Results of TPH analyses indicate that ground water sampled from well LF-6 did not contain detectable concentrations of TPH. Ground water sampled from wells LF-7 through LF-13 (with the exception of LF-8) contained concentrations of TPH ranging from 1.0 to 18 ppm. Well LF-8 contained an approximately 2-inch-thick layer of floating petroleum product on the surface of the ground water. This product was characterized by Friedman and Bruya as most closely resembling an old crude oil. Ground water from well LF-8 was not analyzed for TPH. BTXE were not detected in any of the ground-water samples.

Analysis results are listed in Table 4 and plotted on Figure 9. Copies of laboratory certificates are included in Appendix C.

7.0 SHALLOW GROUND-WATER FLOW

Ground-water elevation measurement data are plotted on Figures 10A (March 29, 1989) and 10B (June 1, 1989) and summarized on Table 1. The localized ground-water flow direction in the Northwest Study Area is predominantly to the southeast (toward the Alameda Inner Harbor). The ground-water hydraulic gradient measured in March ranged from nearly flat over most of the area to about 0.02 ft/ft toward the northern portion of the study area in the vicinity of wells LF-7, LF-8 and LF-13. The gradient was nearly flat across the entire site during the June measurements, and flow direction was more southerly than during the March measurements. Localized mounding of the ground water was apparent in the vicinity of wells LF-11 and LF-6.

The difference in gradients and shift in flow directions observed during the two measurements is probably the result of seasonal fluctuations, tidal influence and change in irrigation patterns at the site (irrigation in the vicinities of wells LF-8 and LF-9 was reportedly discontinued after the March water-level measurements were recorded). Mounding of the shallow ground water in the vicinities of wells LF-6 and LF-11 is probably associated with landscape irrigation in this area.

8.0 SUMMARY AND CONCLUSIONS

The continued technical investigations in the northwest corner of the Marina Village development (the Northwest Study Area) described herein focused on soil and ground-water quality on Parcel 5, and the implementation of a ground-water monitoring program for the entire Northwest Study Area, including Parcels 1, 2, 5 and the Powerhouse Parcel.

8.1 General Conclusions

Based on the data and information obtained during this portion of the investigation, and the previously reported data (Levine·Fricke, "Investigation of Northwest Area, Marina Village, Alameda, California," October 6, 1988), the following conclusions have been reached regarding the occurrence of petroleum hydrocarbons in this area and their impacts on subsurface soil and ground water.

(1) Petroleum hydrocarbons encountered in soil and ground water at the site include diesel fuel, diesel oil, waste oil and crude oil and various mixtures of these compounds.

Priority pollutant VOCs were not detected in soils or ground water, with the exception of relatively low concentrations of toluene (0.023 to 0.700 ppm) detected in several soil samples (borings 5NW1, 5NW2, 5NW3, and 5NW5, sampled during this investigation). The Regional Water Quality Control Board (RWQCB) Designated Level for toluene in soils for the protection of ground water is 100 ppm (RWQCB report, "Designated Level Methodology for Waste Classification and Cleanup Level Determination," October 1986). Figure 11 shows the approximate areal distribution of petroleum-affected soils (those containing greater than 500 ppm TPH) encountered on Parcels 1 and 5 and the Powerhouse Parcel.

8.2 Parcel 1

(1) Petroleum hydrocarbons were detected in soils at concentrations greater than 500 ppm over an area of about 2.1 acres in Parcel 1. The estimated volume of these affected soils is approximately 10,000 cubic yards (based on an average thickness of 3 feet). The upper boundary of the petroleum-affected soils ranged from 4 to 7 feet below the ground surface and the lower boundary ranged from 7 to 11 feet below the ground surface.

(2) Ground water quality data from four shallow monitoring wells located on Parcel 1 indicate that TPH concentrations range from approximately 1.1 to 10 mg/l. A 2-inch-thick layer of floating petroleum product was measured in well 1B-8. This product was identified as most closely resembling an old crude oil.

8.3 Parcel 5

(1) Petroleum hydrocarbons were detected in soils at concentrations greater than 500 ppm within an estimated area of about 1 acre in Parcel 5. The estimated volume of these affected soils is approximately 6,500 cubic yards (based on an average thickness of 4 feet). The upper boundary of the petroleum-affected soils ranged from 6 to 8 feet below the ground surface and the lower boundary ranged from 9 to 15 feet below the ground surface.

(2) Ground water quality data from soil borings within the area of petroleum-affected soils indicate that petroleum compounds have impacted ground water to a limited extent. Four of the five ground-water samples collected from soil borings in Parcel 5 contained concentrations of extractable TPH ranging from 0.3 to 13 mg/l; the fifth sample contained no TPH. Except for the presence of a thin film of petroleum, floating petroleum product was not observed

on the ground-water surface in any of these borings. Although these data can only be used for qualitative purposes, it nevertheless indicates that ground water within the petroleum-affected area in Parcel 5 has probably been impacted similarly to that in Parcel 1.

However, ground-water samples collected from two ground-water monitoring wells (LF-6 and LF-11), located between the petroleum-affected area and the Inner Harbor, contained no detectable TPH and 1 [illegible] respectively. This indicates that petroleum hydrocarbons have had relatively limited impact on ground water downgradient of the area containing petroleum-affected soils.

(3) One [illegible] from a soil boring located on Parcel 5 which contained elevated TPH concentrations [illegible] characterized as [illegible], was analyzed for PCBs. PCBs were not detected in the sample.

Two [illegible] from two soil borings located on Parcel 5 ([illegible]) and containing elevated concentrations of TPH (approximately 900 to 28,000 ppm) characterized as waste oil were additionally tested for primary pollutant metals (total). Priority pollutant metals were not detected above DHS TTLC levels, and generally were either not detected or were found at relatively low concentrations. Lead was the only priority pollutant metal that appeared to be present above expected background concentrations in one of the samples. [illegible] was detected in this sample at a concentration of [illegible] however this is still below the DOHS TTLC level of 1,000 ppm.

8.4 Ground-Water Flow and Petroleum Hydrocarbon Migration Potential

(1) The occurrence of free product, identified as crude oil, on the ground-water surface in monitoring well LF-8 (approximately 2-inch-thick layer) indicates that free phase petroleum has accumulated on the ground-water surface in localized areas of Parcel 1 and likely extends off site to the north in the vicinity of well LF-8.

(2) Ground-water elevation data indicate that the direction of ground-water flow in the area is toward the Alameda Inner Harbor. Petroleum hydrocarbons have been detected at concentrations of up to 18 mg/l (this investigation) at a distance of approximately 200 feet west of the Harbor. However, ground-water quality data from wells close to the shoreline (within 30 feet) indicate only limited impacts (less than 5 ppm) of petroleum hydrocarbons on ground water.

(3) Due to the low mobility of the petroleum hydrocarbons, the occurrence of relatively low-permeability sediments in the site vicinity, and evidence of limited movement of the free-phase petroleum in the past (historical records suggest that the petroleum was introduced into the subsurface at least 40 years ago), ground-water flow and potential migration of dissolved or free-phase petroleum compounds toward the Harbor is expected to be limited unless site conditions are significantly altered.

9.0 PROPOSED REMEDIAL MEASURES

Development plans for the Northwest Study Area include construction of a [redacted] (the [redacted] location is shown on Figure 12) [redacted], and a surrounding parking lot. Reportedly, current plans for [redacted] are to maintain this area as a parking lot.

9.1 Parcel 1

In order to reduce potential future environmental impacts for that portion of the property which will be occupied by the proposed office building, it is [redacted] (plus an additional approximately 10-foot wide border) and replaced with clean fill. A 1.5- to 2-foot-wide [redacted] constructed of a relatively impermeable material (compacted clay-bentonite, cement/bentonite grout, appropriate geomembrane, or other equivalent materials) would [redacted] to reduce the potential for future migration of petroleum hydrocarbons under the building from [redacted] petroleum-affected soils and ground water. The proposed cut-off wall would be constructed to a depth of approximately 10 feet below the current ground surface, and keyed into the Bay Mud sediments underlying the fill materials at the site. The approximate proposed location of the cut-off wall is shown on Figure 12. ? where?

Petroleum-affected soils excavated and removed from beneath the building footprint would be moved to the area of Parcel 1 which contains petroleum-affected soils. A paved parking lot would then be constructed over this area. A ground-water monitoring program using existing wells (or new ones if existing ones are destroyed during site development) would be implemented for this parcel in conjunction with ground-water monitoring for the entire Northwest Study Area.

9.2 Northwest Study Area

Quarterly ground-water monitoring for the entire Northwest Study Area (Parcels 1, 2, 5 and the Power House Parcel) is proposed to continue for a period of at least two years. The necessity for continued monitoring after that time, and the frequency of further monitoring, will be re-evaluated with the RWQCB at the end of two years. If the monitoring program indicates migration of significant quantities of petroleum towards the Inner Harbor, the need for additional remedial measures should be evaluated at that time.

9.3 Anticipated Remedial and Monitoring Costs

Construction costs for removing petroleum-affected soils from beneath the proposed building location on Parcel 1, as described above, and installation of a cut-off wall will be on the order of $90,000 to $140,000, as estimated by Mr. Steve Getty of Vintage Properties/Alameda Commercial (personal communication, May, 1989).

Engineering services for the development of cut-off wall design parameters, observation of construction activities, collection of soil samples and sample analysis for documentation of removal of petroleum-affected soils, and reporting of remediation activities to regulatory agencies have estimated costs on the order of $20,000 to $25,000, as estimated by Levine·Fricke.

Estimated costs for two years of quarterly ground-water monitoring and reporting (assuming that the existing nine wells will not be destroyed during development activities and that no new wells will be required) are on the order of $30,000 to 35,000 per year, as estimated by Levine·Fricke.

TABLE 1

GROUND-WATER MONITORING WELL CONSTRUCTION AND GROUND-WATER ELEVATION DATA

Well No.	Well Depth (ft) *	Well Elevation # TOC (ft)	Ground Surface Elevation (ft)	Perforated Interval (ft) *	Date Measured	Depth to Water (ft) **	Ground Water Elevation # (ft)	Petroleum Product Thickness (ft)
LF-6	15	3.58	3.6	5 - 15	29-Mar-88	6.50	-2.92	
					21-Apr-88	6.06	-2.48	
					28-Mar-89	9.45	-5.87	
					01-Jun-89	6.37	-2.79	
LF-7	15	4.94	3.7	5 - 15	29-Mar-88	9.21	-4.27	
					21-Apr-88	9.16	-4.22	
					28-Mar-89	8.80	-4.15	
					01-Jun-89	7.05	-2.11	
LF-8	15	4.66	2.9	5 - 15	29-Mar-88	6.75	-2.09	<0.1 inch
					21-Apr-88	6.04	-1.38	<0.1 inch
					28-Mar-89	5.50	-0.84	approx. 2 inches
					01-Jun-89	6.97	-2.31	approx. 2 inches
LF-9	15	2.08	0.6	5 - 15	29-Mar-88	5.21	-3.13	
					21-Apr-88	5.06	-2.98	
					28-Mar-89	4.75	-2.67	
					01-Jun-89	5.50	-3.42	
LF-10	15	4.48	4.7	5 - 15	29-Mar-88	8.17	-3.69	
					21-Apr-88	7.28	-2.80	
					28-Mar-89	8.42	-3.94	
					01-Jun-89	8.73	-4.25	
LF-11	15	5.36	5.4	5 - 15	28-Mar-89	8.19	-2.83	
					01-Jun-89	8.49	-3.13	
LF-12	15	7.69	5.8	5 - 15	28-Mar-89	11.63	-3.49	
					01-Jun-89	11.81	-4.12	
LF-13	13	3.01	3.1	3 - 13	28-Mar-89	3.65	-0.64	
					01-Jun-89	5.02	-2.01	
WC-3 @	14	4.44	4.7	7 - 14	31-Mar-88	8.92	-4.48	
					21-Apr-88	7.81	-3.37	
					28-Mar-89	10.70	-6.26	
					01-Jun-89	10.70	-6.26	

Notes:

* - Below ground surface.
** - Below top of well casing.
\# - Elevations relative to City of Alameda Datum (6.4 feet above MSL).
@ - Well drilled by Woodward-Clyde Consultants, 1987.
TOC - Top of 2-inch PVC-casing.

TABLE 2

SOIL CHEMICAL ANALYSIS DATA
TOTAL PETROLEUM HYDROCARBONS AND BENZENE, TOLUENE, XYLENES AND ETHYLBENZENE
(Results expressed in ppm)

Sample Number	Depth (feet)	Date Sampled	TPH - EPA Method 8015		EPA METHOD 8020/8240			
			Diesel	Waste Oil	Benzene	Toluene	Xylenes	Ethyl-Benzene
Parcel 2								
2NW2	8-9.5	15-Aug-88	150	NQ	<0.005	0.016	<0.010	<0.005
2NW3	7-7.5	15-Aug-88	<10	NQ	NA	NA	NA	NA
	8.5-9	15-Aug-88	37	NQ	NA	NA	NA	NA
2NW5	7-7.5	15-Aug-88	<10	NQ	NA	NA	NA	NA
	10-10.5	15-Aug-88	120	NQ	NA	NA	NA	NA
Parcel 1								
1NW1	3-3.5/4-4.5 *	13-Mar-89	<200	1,600	NA	NA	NA	NA
1NW2	7-7.5/8.5-9 *	13-Mar-89	<200	5,700	NA	NA	NA	NA
LF12	7.5-8/8-8.5 *	09-Mar-89	<20	140	NA	NA	NA	NA
LF13	6-6.5/7.5-8 *	10-Mar-89	<4,000	8,000	NA	NA	NA	NA

Notes: * - Composite Sample.
- Sample contains higher molecular weight hydrocarbons than those typically contained in diesel fuel.
NQ - Not quantified against waste oil standard.
NA - Not analyzed.
Analyses performed by Med-Tox Associates of Pleasant Hill, California.

TABLE 3

GROUND-WATER CHEMICAL ANALYSIS DATA - SOIL BORINGS, PARCEL 5
TOTAL PETROLEUM HYDROCARBONS
(Results expressed in mg/l)

Well No.	Date	Analytical Lab.	TPH - EPA Method 8015 Diesel	Waste Oil
5NW-1	17-Feb-89	M-T	25 #	33
5NW-2	17-Feb-89	M-T	0.3 #	<0.5
5NW-3	17-Feb-89	M-T	13 #	<0.5
5NW-4	17-Feb-89	M-T	0.9	<0.5
5NW-5	17-Feb-89	M-T	<1	8.7

Notes:

M-T = Med-Tox Associates of Pleasant Hill, California.

- Sample contains higher molecular weight hydrocarbons than those typically contained in a diesel fuel.

LF 1245/1245E1894.WKS

TABLE 4

GROUND-WATER CHEMICAL ANALYSIS DATA - MONITORING WELLS
NORTHWEST STUDY AREA
TOTAL PETROLEUM HYDROCARBONS
(Results expressed in mg/l)

Well No.	Date	Analytical Lab.	TPH - EPA Method 8015 Diesel	Waste Oil	Character-ization
LF-6	29-Mar-88	AN	<0.05	<0.05	
	28-Mar-89	M-T	<0.3	<0.5	
LF-7	29-Mar-88	AN	<0.05	<0.05	
	28-Mar-89	M-T	<0.3	1.8	
LF-8	29-Mar-88	AN	62.0	NQ	
	29-Mar-89	FB	--	--	Product Sample = crude oil
LF-9	29-Mar-88	AN	54.0	NQ	
	28-Mar-89	M-T	12.0	6.0	
LF-10	29-Mar-88	AN	43.0	NQ	
	28-Mar-89	M-T	<0.2	7.8	
LF-11	28-Mar-89	M-T	<0.3	1.0	
LF-12	28-Mar-89	M-T	<0.3	1.1	
LF-13	28-Mar-89	M-T	<0.3	4.4	
WC-3 @	31-Mar-88	AN	<0.05	<0.05	
	28-Mar-89	M-T	<0.3	3.2	

Notes:

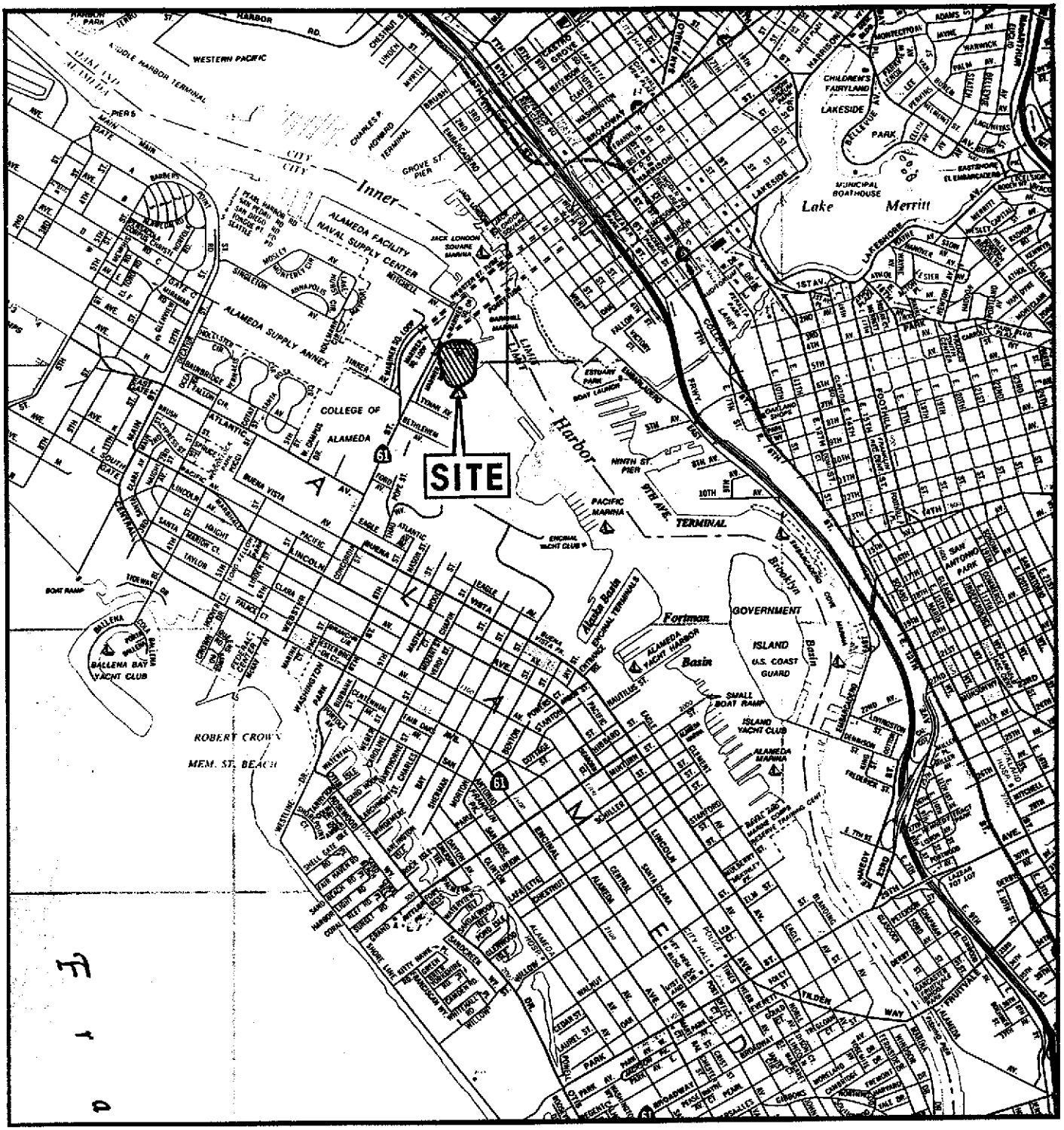
-- = Not Analyzed.

AN = Anatec Laboratories of Santa Rosa, California (current name is Net Pacific).

FB = Friedman & Bruya, Inc. of Seattle, Washington.

M-T = Med-Tox Associates of Pleasant Hill, California.

NQ = Extractable TPH detected in samples was not quantified against waste oil standard.



MAP SOURCE:
California State Automobile Association
Oakland/Berkeley/Alameda
June 1982

Figure 1 : SITE LOCATION MAP

Project No.1245

LEVINE•FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

EAN09AUG88JM

105486

ESTUARY

BOAT DOCK

BOAT DOCK

BOAT DOCK

SHIPWAY 1

2

Parking Lot

LF-11

2NW3

WC3

2NW5

2NW2

5NW12

5NW7

5NW6

5NW5

5NW1

LF-6

Also for metals

Shoreline

LF-7

1NW2

4

5

5NW11

5NW3

5NW2

LF-12

2

1

1NW1

LF-13

3

18

5NW9

5NW8

5NW14

5NW4

5NW10

5NW13

17

11

NW PIT

Parcel Boundaries

LF-8

12

16

LF-9

6

13A

13

14

7

15

9

10

8

Work Street

MARINA

Also for PCB + metals

VILLAGE

PARKWAY

Lead ES20 ppm

POWER HOUSE

LF-10

RR9

RR8

RR Tracks

TRAIN STATION

WEB

MARINER SQUARE DRIVE

WEBSTER STREET

0 100 200 feet

(Approximate)

EXPLANATION

LF-6 ● Shallow monitoring well, Levine-Fricke, 1988, 1989

WC3 ⊙ Shallow monitoring well, Woodward-Clyde, 1987

2 □ Test pit, Levine-Fricke, 1988

2NW5 ⊕ Test boring, Levine-Fricke, 1988, 1989

O new wells
All borings analyzed for 8015 & 8240
Visible stains observed anywhere from 4 to 11' bgs.

Figure 2:

SITE PLAN SHOWING NORTHWEST STUDY AREA AND LOCATIONS OF SOIL BORINGS AND MONITORING WELLS

Project No. 1245

LEVINE • FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

EAN31MAY89DTA

105486

ESTUARY

N

BOAT DOCK

BOAT DOCK

BOAT DOCK

SHIPWAY 1

2NW4

2

2NW1

LF-11

6

Parking Lot

2NW3

WC3

2NW5

A

A'

2NW2

B

5NW12

5NW7

5NW6

LF-6

5NW5

5NW1

5

Subparcel boundary

Shoreline

1NW2

LF-7

4

5

5NW11

5NW3

5NW8

5NW2

2

1

1NW1

LF-13

3

STUDY AREA BOUNDARY

LF-12

5NW14

5NW9

PARKWAY

18

1

5NW4

VILLAGE

5NW10

B'

11

5NW13

17

NW PIT

LF-8

A

12

16

LF-9

6

MARINA

LF-10

POWER HOUSE

13A

13

14

RR9

RR8

RR Tracks

TRAIN STATION

15

7

9

10

Work Street

8

WEB

MARINER SQUARE DRIVE

WEBSTER STREET

0 100 200 feet

(Approximate)

EXPLANATION

LF-6 ● Shallow monitoring well, Levine•Fricke, 1988, 1989

WC3 ⊙ Shallow monitoring well, Woodward-Clyde, 1987

2 □ Test pit, Levine•Fricke, 1988

2NW5 ⊕ Test boring, Levine•Fricke, 1988, 1989

A▒▒A' Cross section location

Figure 3:

SITE PLAN SHOWING CROSS SECTION LOCATIONS

Project No. 1245

LEVINE•FRICKE

CONSULTING ENGINEERS AND HYDROGEOLOGISTS

EA\31MAY89DTA

123957

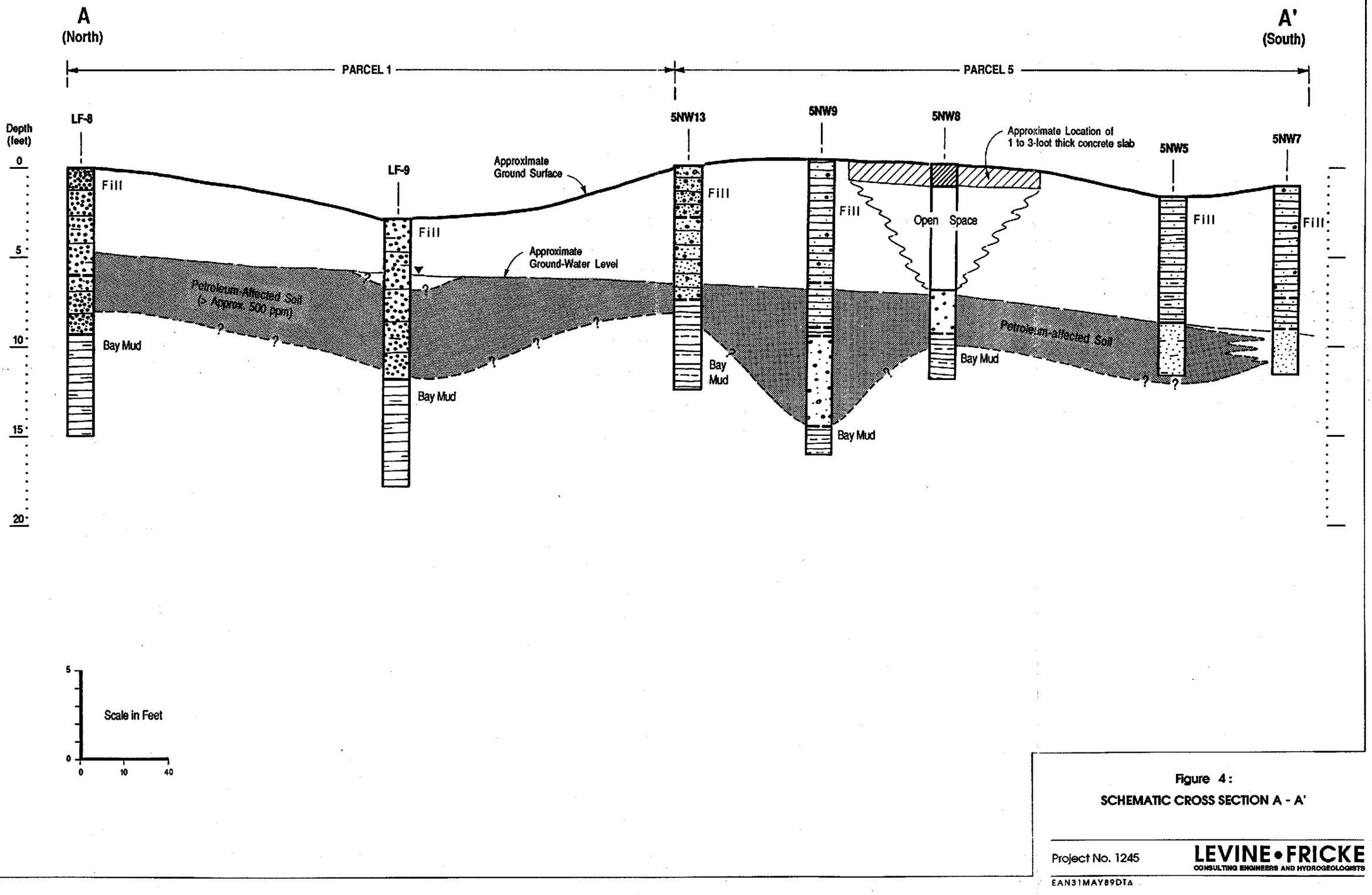


Figure 4:
SCHEMATIC CROSS SECTION A - A'

Project No. 1245

LEVINE • FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

EAN31MAY89DTA

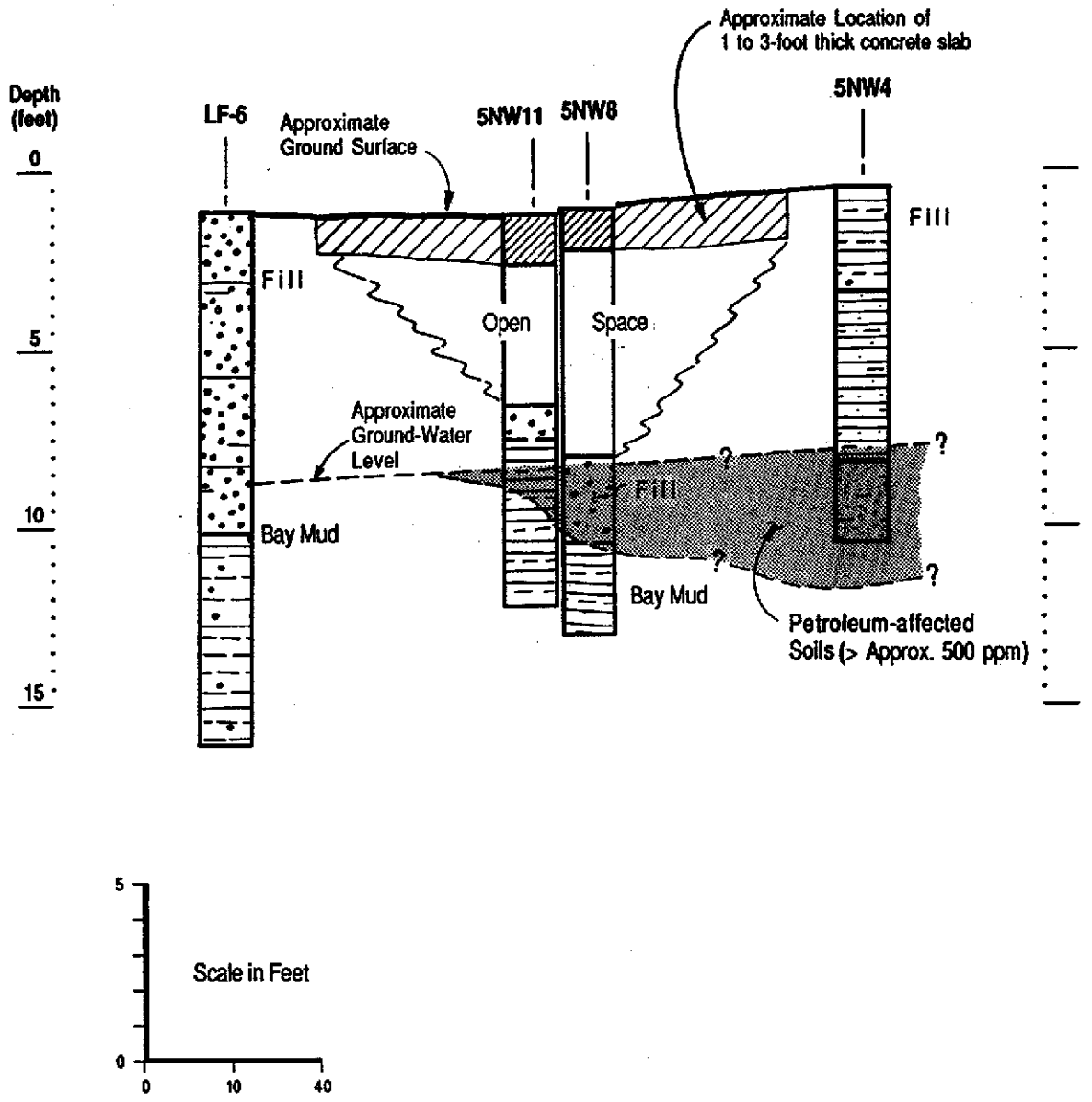


Figure 5 : SCHEMATIC CROSS SECTION B - B'

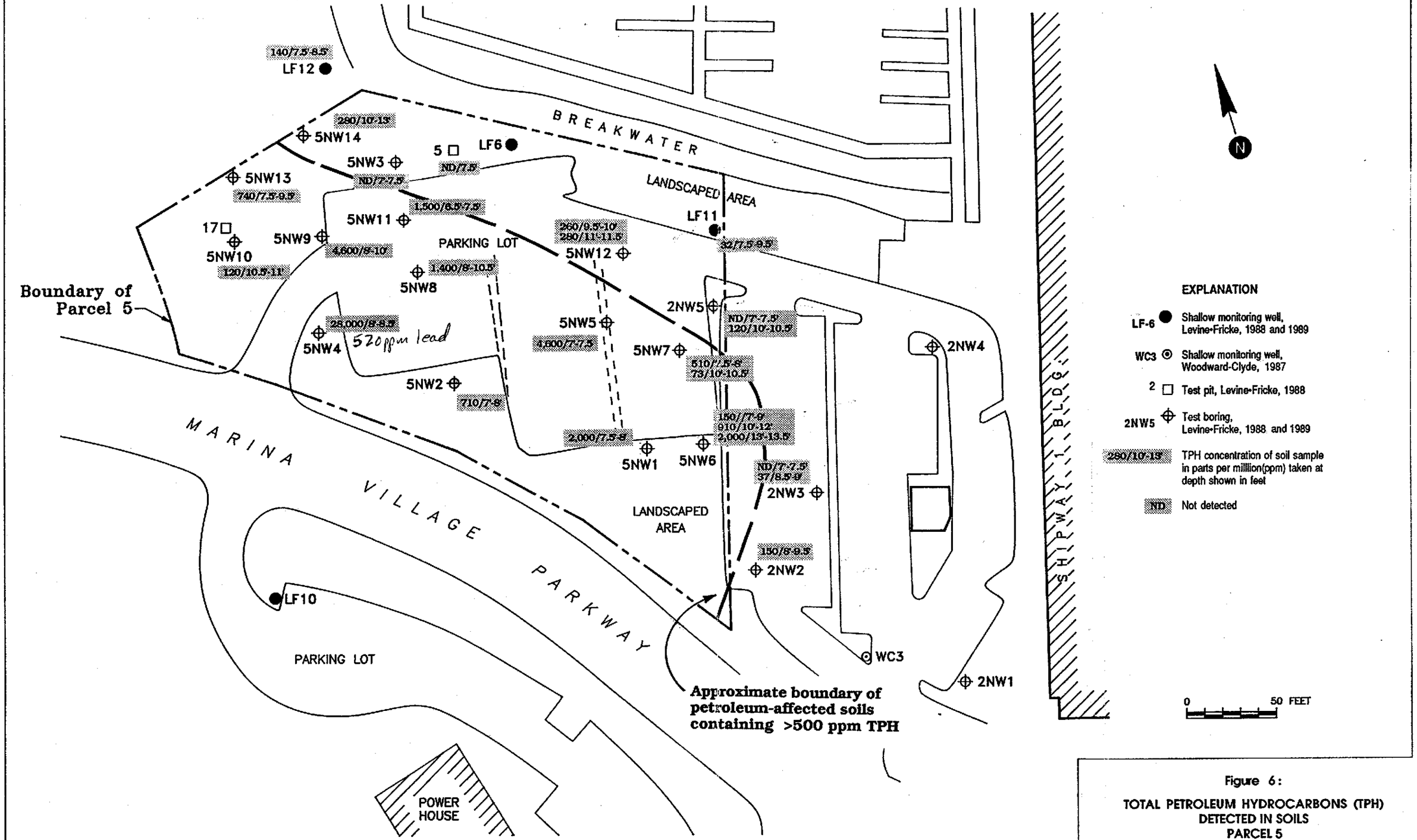


Figure 6:

TOTAL PETROLEUM HYDROCARBONS (TPH) DETECTED IN SOILS PARCEL 5

Project No. 1245

LEVINE • FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

1245EAN5JUN89mpa

1245\F2JN02.EAN89JSAB

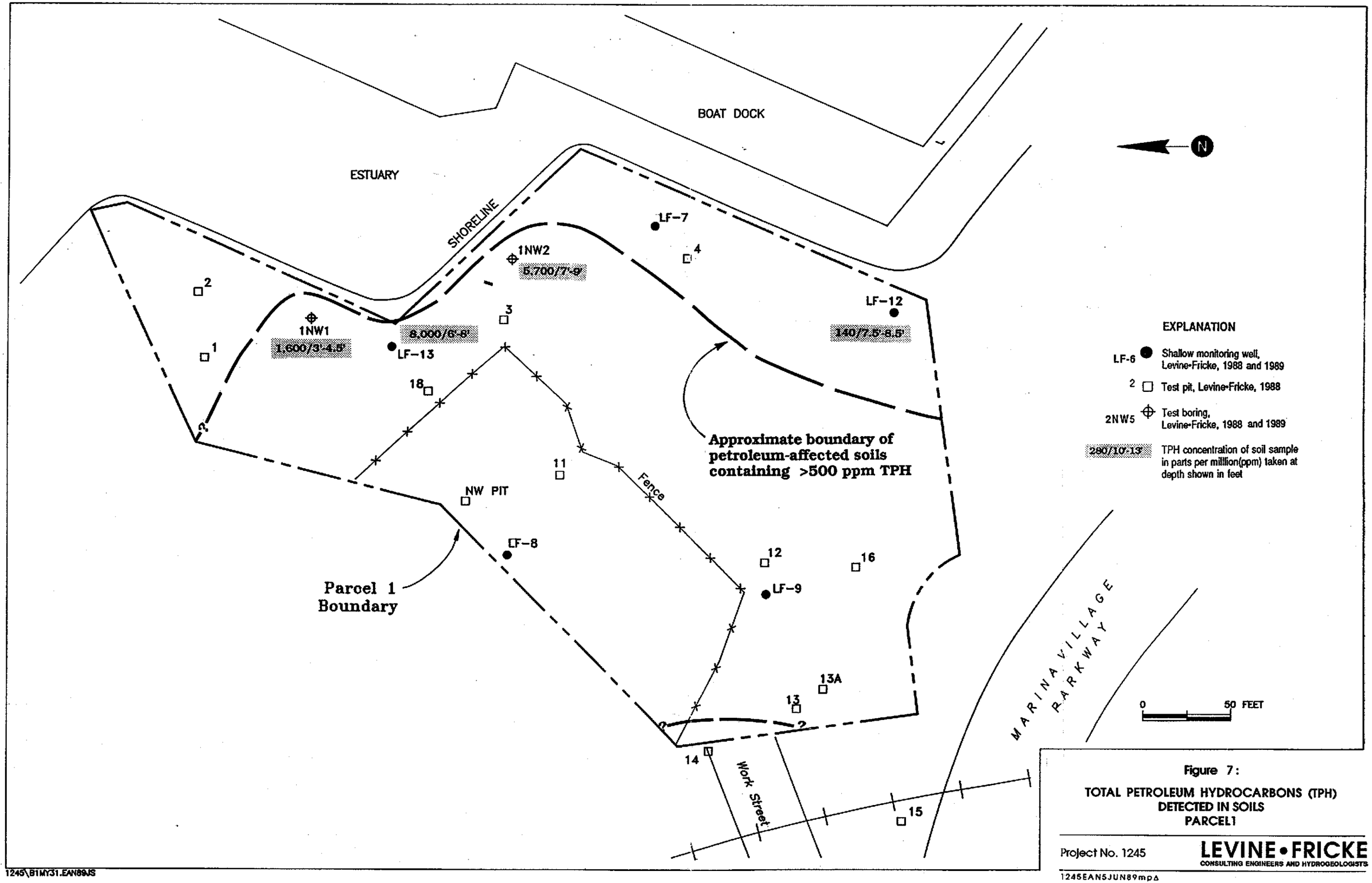


Figure 7:

TOTAL PETROLEUM HYDROCARBONS (TPH)
DETECTED IN SOILS
PARCEL1

Project No. 1245

LEVINE • FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

1245EAN5JUN89mpA

1245\B1MY31.EAN89JS

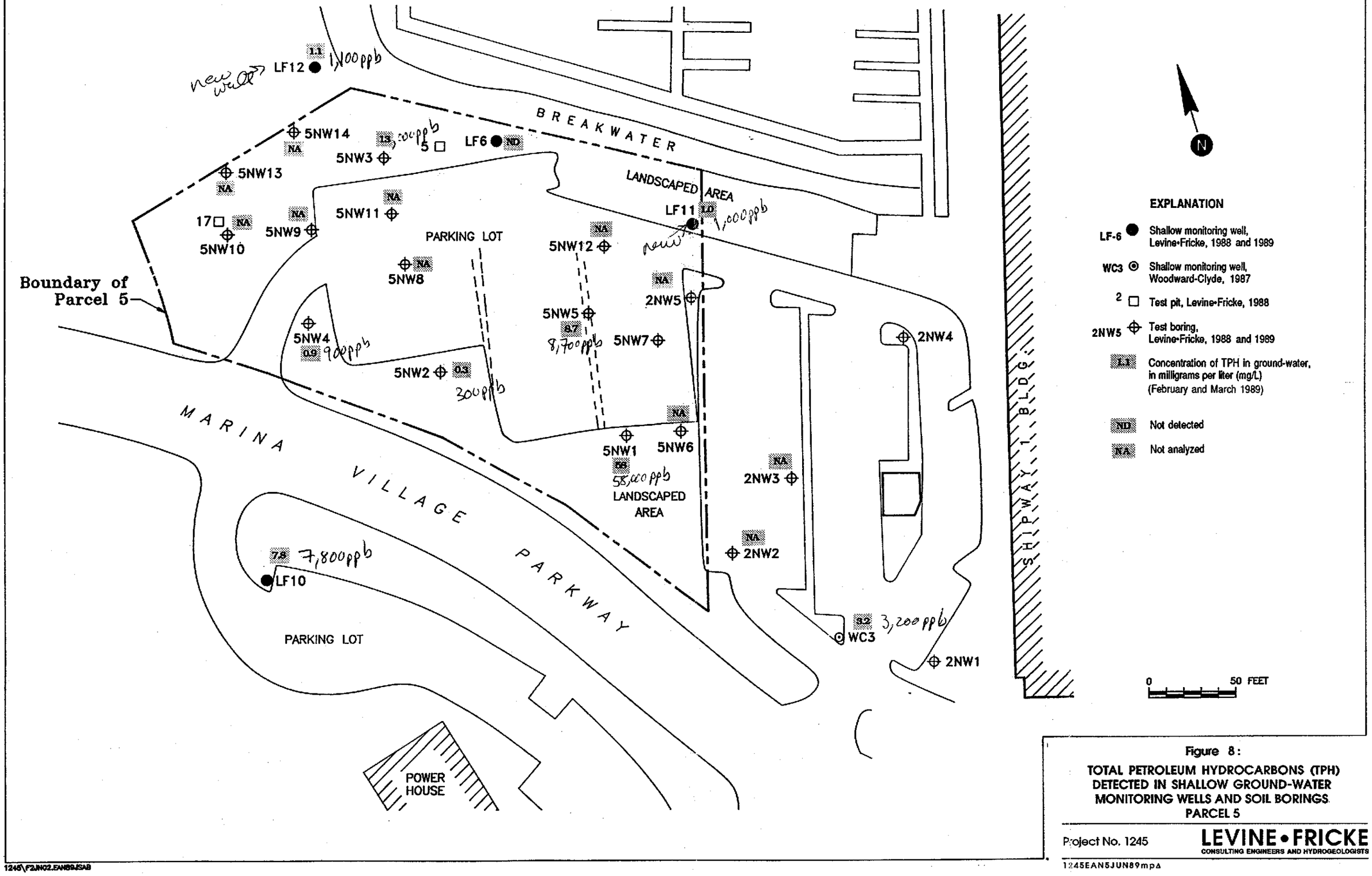


Figure 8:
TOTAL PETROLEUM HYDROCARBONS (TPH) DETECTED IN SHALLOW GROUND-WATER MONITORING WELLS AND SOIL BORINGS. PARCEL 5

Project No. 1245

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CONSULTING ENGINEERS AND HYDROGEOLOGISTS

1245EAN5JUN89mpa

1245\F2JN02.EAN89JSAB

105486

ESTUARY

N

BOAT DOCK

BOAT DOCK

BOAT DOCK

SHIPWAY 1

2

1.0

LF-11

6

Parking Lot

2NW3

WC3

3.2

2NW5

2NW2

5NW12

5NW7

5NW6

5NW5

5NW1

LF-6

ND

5

Subparcel boundary

Shoreline

1NW2

LF-7

1.8

4

5

2

1

1NW1

LF-13

4.4

3

STUDY AREA BOUNDARY

LF-12

1.1

5NW3

5NW11

5NW8

5NW2

5NW14

5NW9

5NW4

18

1

5NW10

5NW13

17

11

NW PIT

LF-8

12

16

LF-9

1.8

6

13A

13

14

7

15

9

10

Work Street

8

MARINA

VILLAGE

PARKWAY

LF-10

7.9

POWER HOUSE

RR9

RR8

RR Tracks

TRAIN STATION

WEB

MARINER SQUARE DRIVE

WEBSTER STREET

0 100 200 feet

(Approximate)

EXPLANATION

LF-6 ● Shallow monitoring well, Levine•Fricke, 1988, 1989

WC3 ◉ Shallow monitoring well, Woodward-Clyde, 1987

2 □ Test pit, Levine•Fricke, 1988

2NW5 ⊕ Test boring, Levine•Fricke, 1988, 1989

1.1 Concentration of TPH in ground-water, in milligrams per liter (mg/L) (March 1989)

ND Not detected

Figure 9:

TOTAL PETROLEUM HYDROCARBONS (TPH) DETECTED IN SHALLOW GROUND-WATER MONITORING WELLS

Project No. 1245

LEVINE•FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

1245EAN5JUN89mpa

105-66

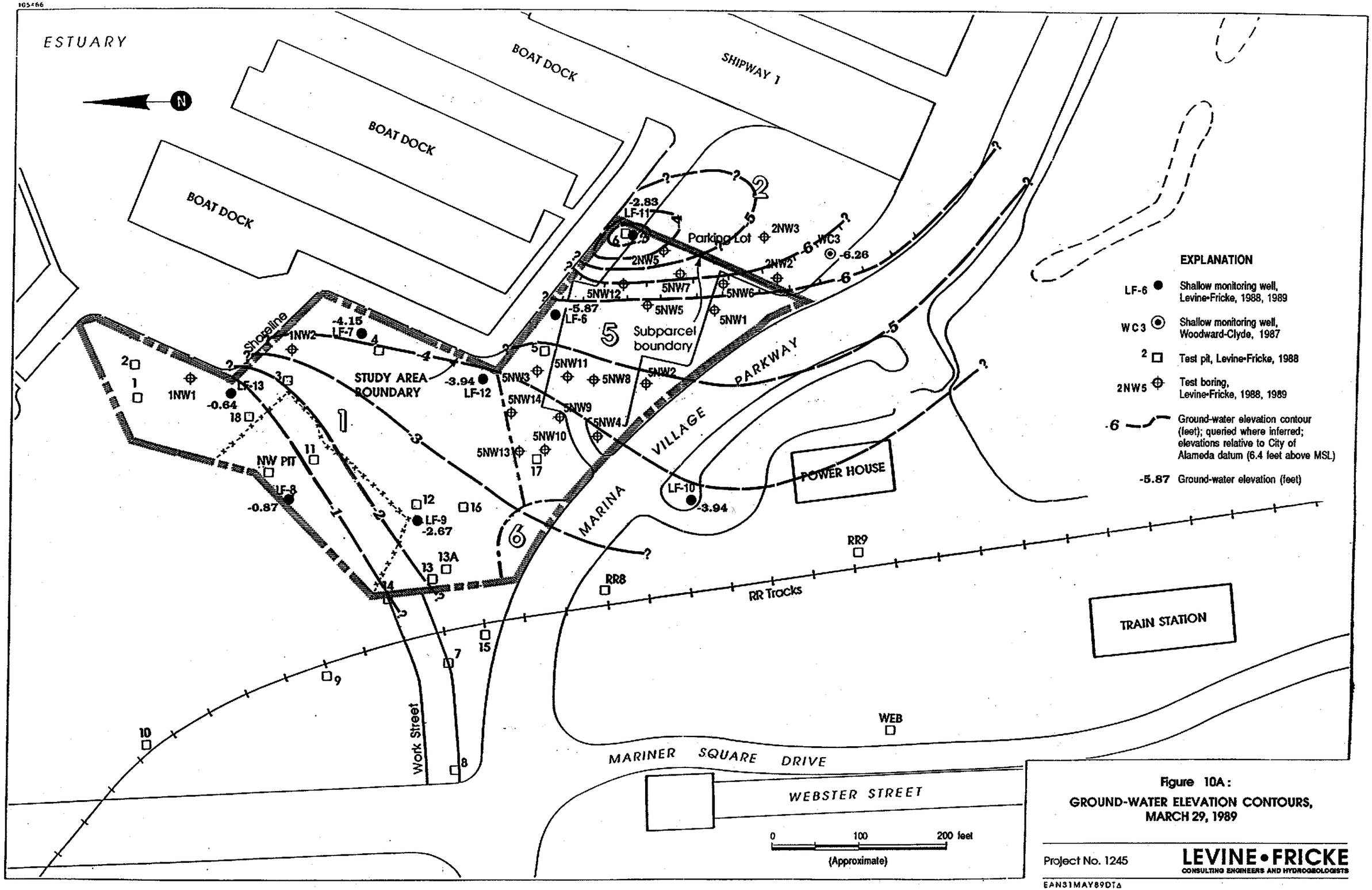


Figure 10A:
GROUND-WATER ELEVATION CONTOURS, MARCH 29, 1989

Project No. 1245

LEVINE•FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

EAN31MAY89DTA

105486

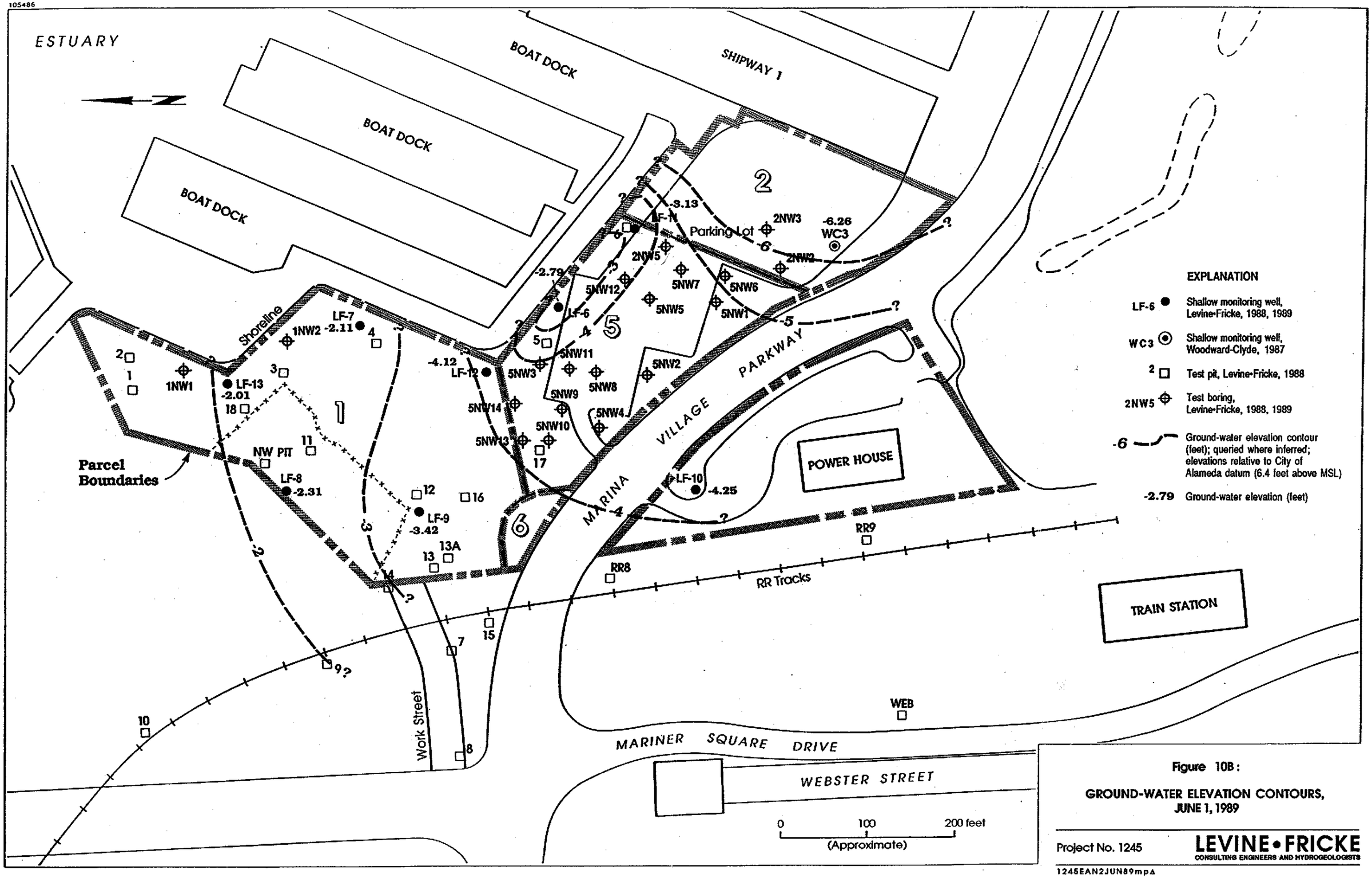


Figure 10B:

GROUND-WATER ELEVATION CONTOURS, JUNE 1, 1989

Project No. 1245

LEVINE•FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

1245EAN2JUN89mpa

105-66

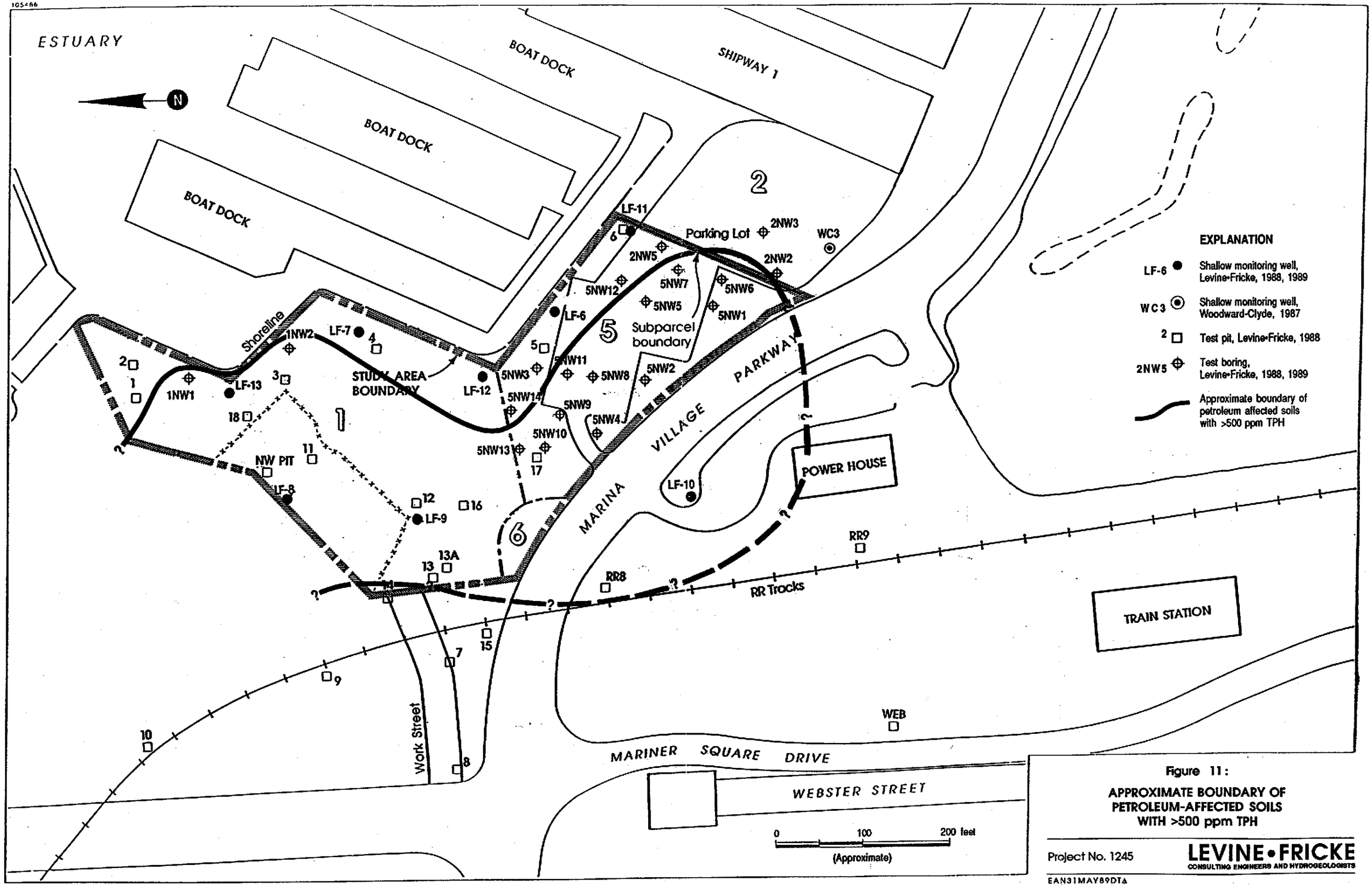


Figure 11:

APPROXIMATE BOUNDARY OF PETROLEUM-AFFECTED SOILS WITH >500 ppm TPH

Project No. 1245

LEVINE•FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

EAN31MAY89DTA

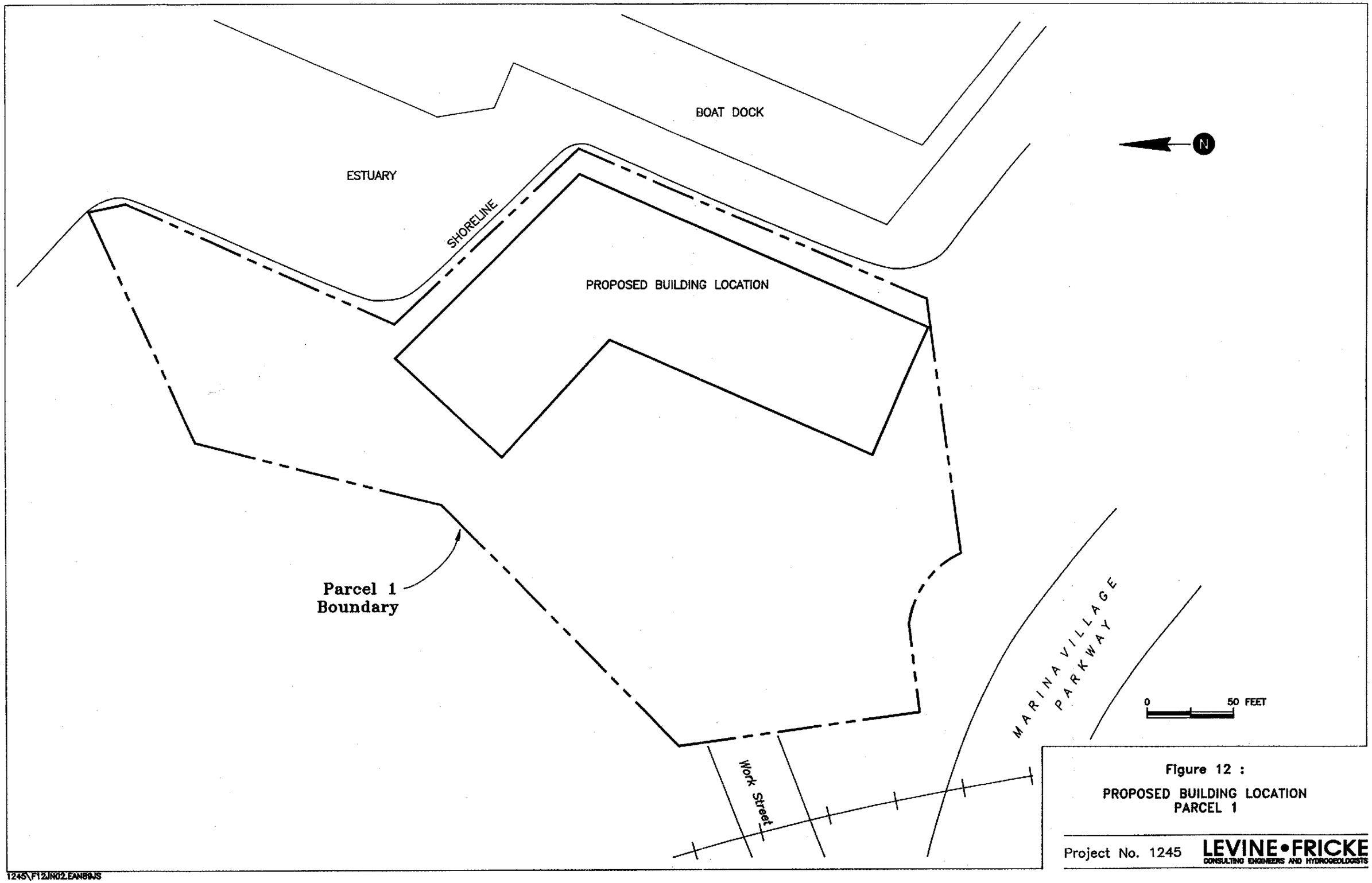


Figure 12 :

PROPOSED BUILDING LOCATION
PARCEL 1

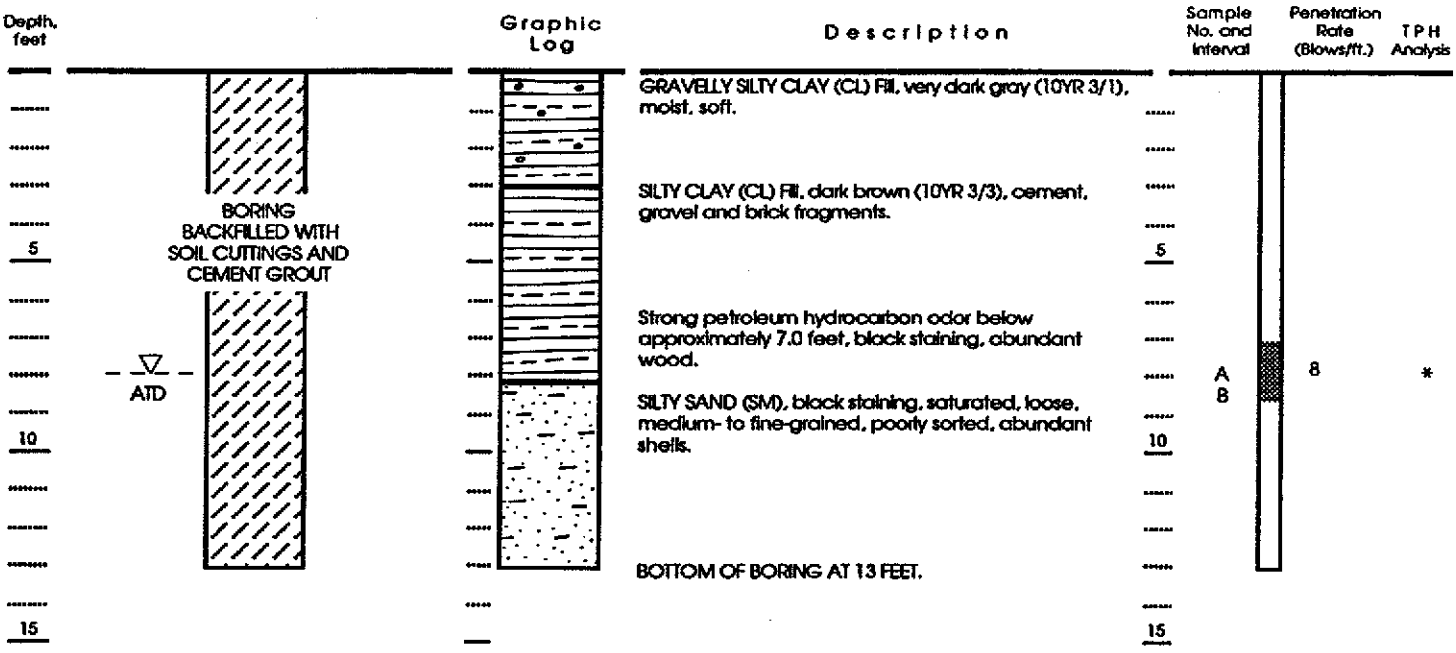
Project No. 1245 LEVINE•FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

1245\F12JN02.EAN8GJS

APPENDIX A

SOIL BORING AND WELL LOGS

LITHOLOGY



Date boring drilled:	17 February 1989
Drilling method:	Hollow-Stem Auger
Hammer weight:	140 lbs/30-inch drop
LF Engineer/Geologist:	Michael Bombard

EXPLANATION

- Clay
- Silt
- Sand
- Gravel
- 2-inch I.D. Modified California Sampler
- ATD — Water level at time of drilling
- * TPH — Total Petroleum Hydrocarbons

Approved by:

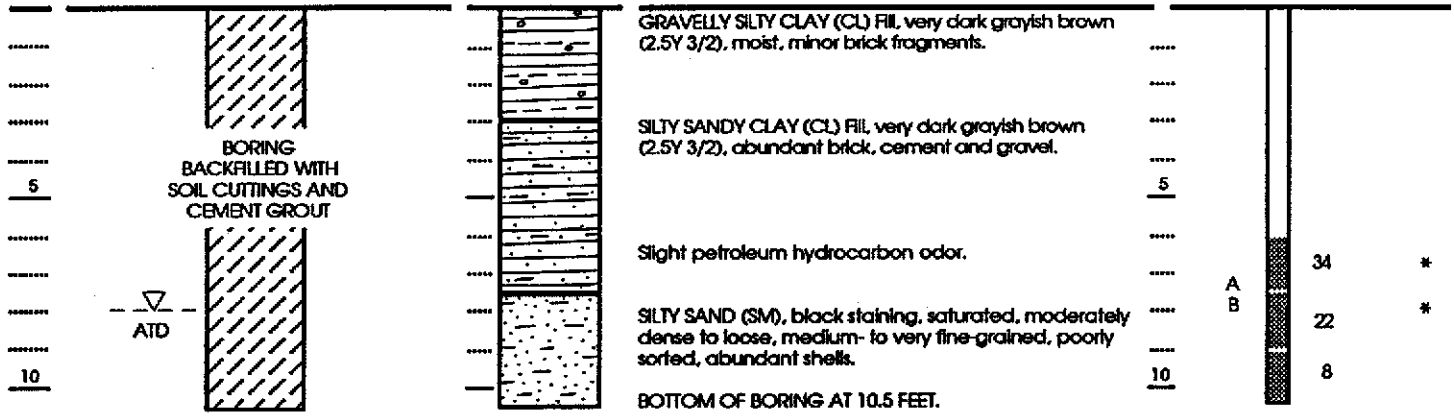
Figure A1 : LITHOLOGY AND SAMPLE DATA FOR SOIL BORING 5NW1

Project No. 1245

LEVINE•FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

1245MB3JUN 89jc

LITHOLOGY



Date boring drilled:	17 February 1989
Drilling method:	Hollow-Stem Auger
Hammer weight:	140 lbs/30-inch drop
LF Engineer/Geologist:	Michael Bombard

EXPLANATION

- Clay
- Silt
- Sand
- Gravel
- 2-inch I.D. Modified California Sampler
- ATD — Water level at time of drilling
- * TPH Total Petroleum Hydrocarbon

Approved by:

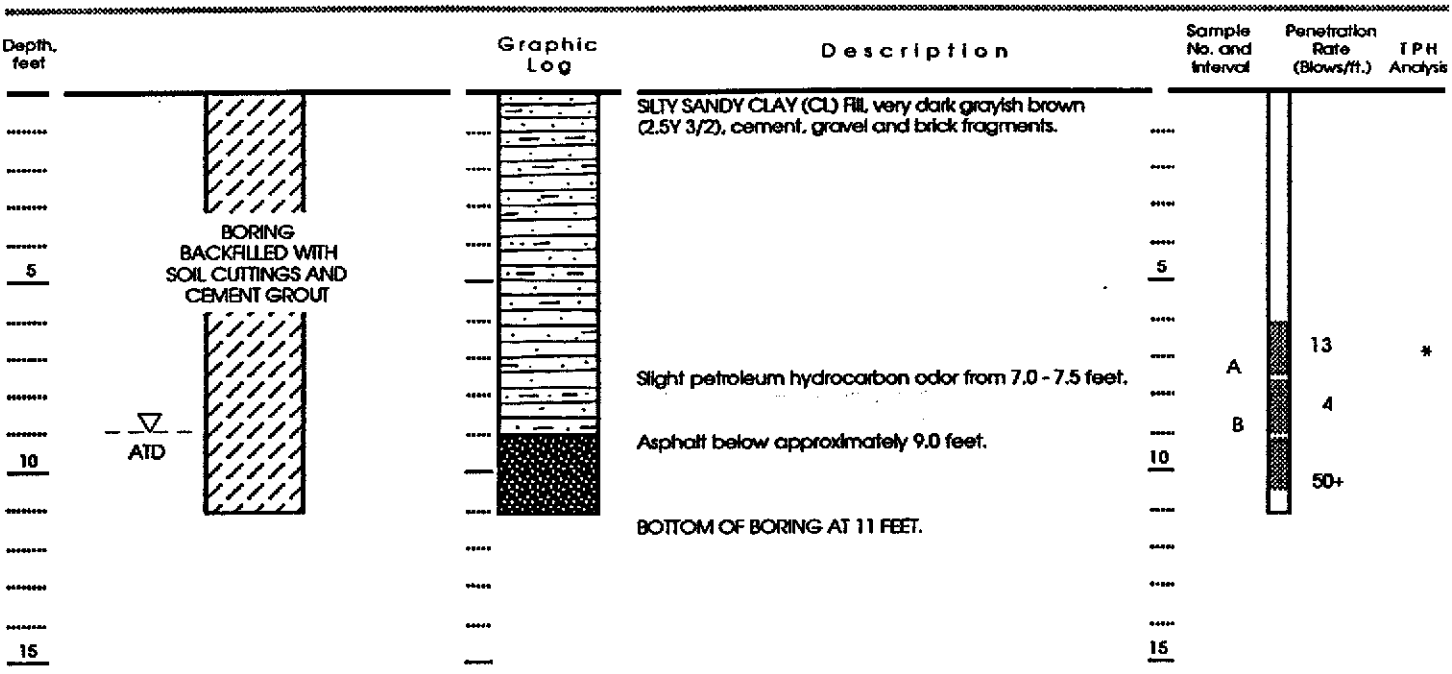
Figure A2 : LITHOLOGY AND SAMPLE DATA FOR SOIL BORING 5NW2

Project No. 1245

LEVINE•FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

1245MB3JUN 89|c

LITHOLOGY



Date boring drilled:	17 February 1989
Drilling method:	Hollow-Stem Auger
Hammer weight:	140 lbs/30-inch drop
LF Engineer/Geologist:	Michael Bombard

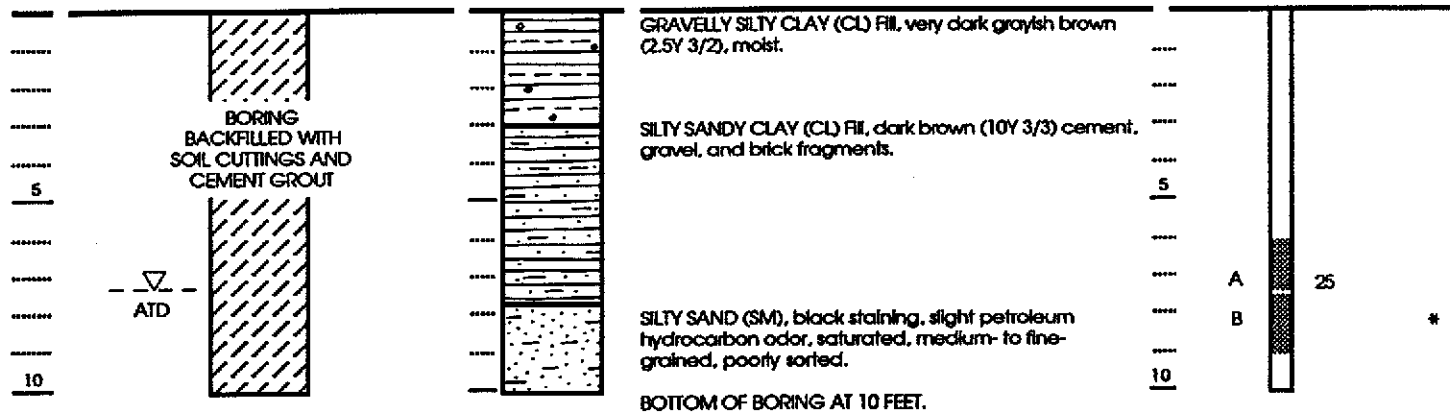
EXPLANATION

- Clay
- Silt
- Sand
- Gravel
- 2-inch I.D. Modified California Sampler
- ATD — Water level at time of drilling
- * TPH Total Petroleum Hydrocarbons

Approved by: T...

Figure A3 : LITHOLOGY AND SAMPLE DATA FOR SOIL BORING 5NW3

LITHOLOGY



Date boring drilled: 17 February 1989
Drilling method: Hollow-Stem Auger
Hammer weight: 140 lbs/30-inch drop
LF Engineer/Geologist: Michael Bombard

EXPLANATION

- Clay
- Silt
- Sand
- Gravel
- 2-inch I.D. Modified California Sampler
- ATD — Water level at time of drilling
- * TPH Total Petroleum Hydrocarbon

Approved by: Tim

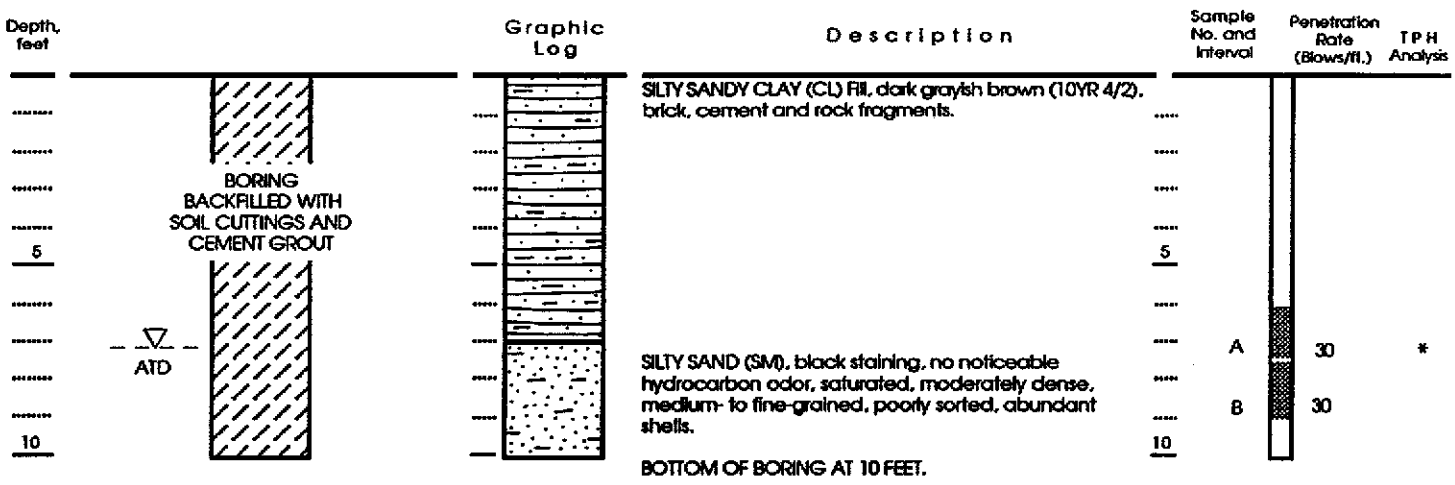
Figure A4 : LITHOLOGY AND SAMPLE DATA FOR SOIL BORING 5NW4

Project No. 1245

LEVINE•FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

1245MB31MAY89jc

LITHOLOGY



Date boring drilled: 17 February 1989

Drilling method: Hollow-Stem Auger

Hammer weight: 140 lbs/30-inch drop

LF Engineer/Geologist: Michael Bombard

EXPLANATION

- Clay
- Silt
- Sand
- Gravel
- 2-inch I.D. Modified California Sampler
- ATD — Water level at time of drilling
- *TPH — Total Petroleum Hydrocarbon

Approved by: T M J

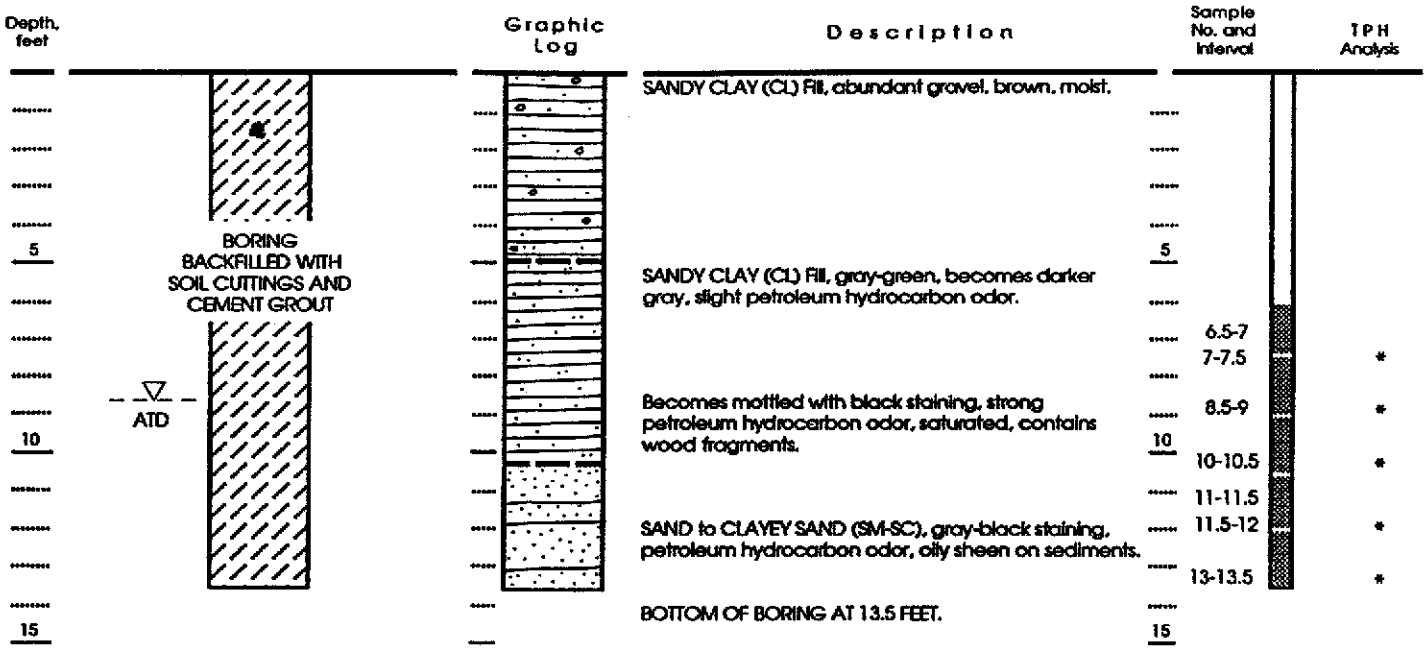
Figure A5 : LITHOLOGY AND SAMPLE DATA FOR SOIL BORING 5NW5

Project No. 1245

LEVINE•FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

1245MB31MAY 89|c

LITHOLOGY



Date boring drilled: 9 March 1989

Drilling method: Hollow-Stem Auger

LF Engineer/Geologists: Elizabeth Nixon
Jane Chambers

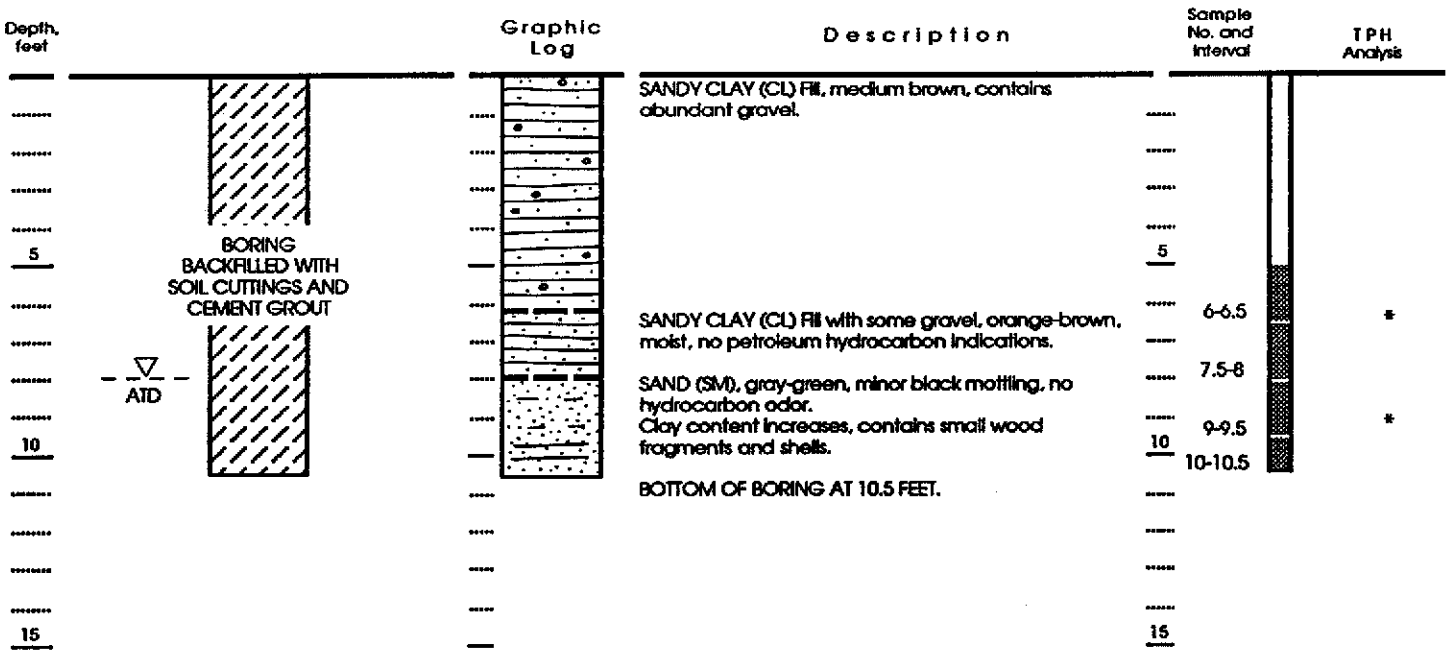
EXPLANATION

- Clay
- Silt
- Sand
- Gravel
- 2-inch I.D. Modified California Sampler
- ATD — Water level at time of drilling
- * TPH — Total Petroleum Hydrocarbon

Approved by:

Figure A6 : LITHOLOGY AND SAMPLE DATA FOR SOIL BORING 5NW6

LITHOLOGY



Date boring drilled: 9 March 1989

Drilling method: Hollow-Stem Auger

LF Engineer/Geologists: Elizabeth Nixon, Jane Chambers

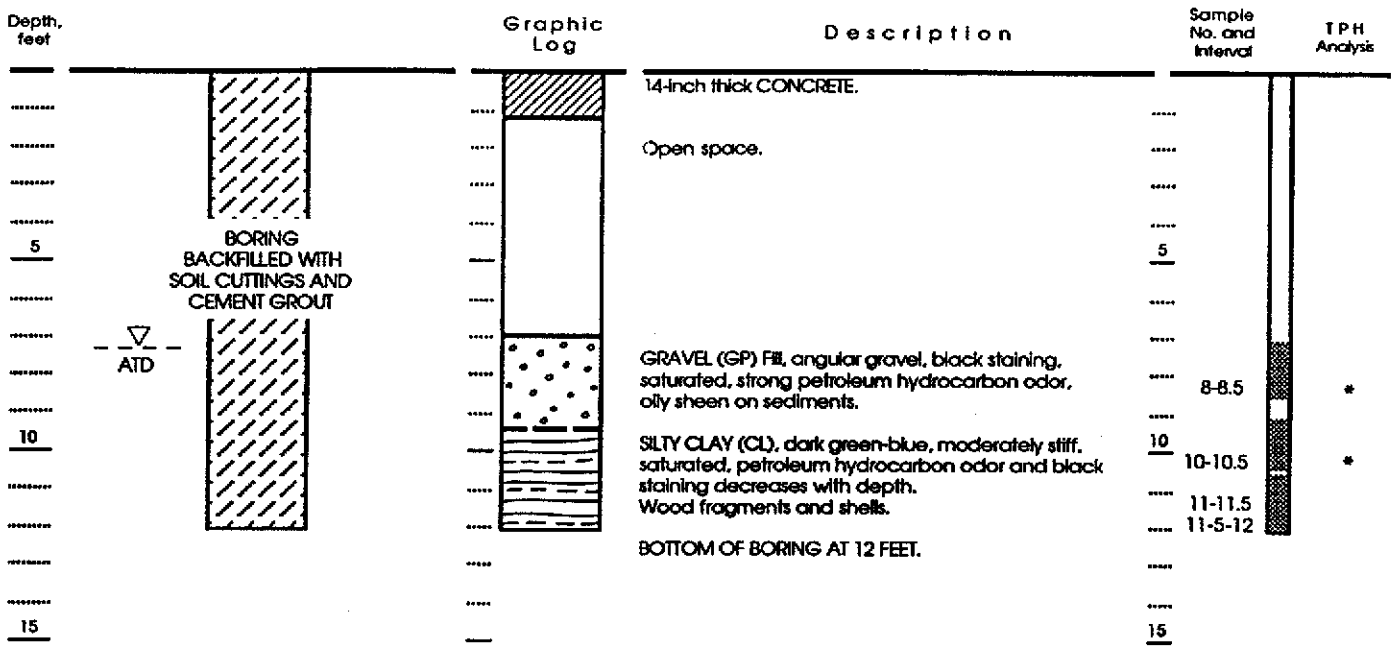
EXPLANATION

- Clay
- Silt
- Sand
- Gravel
- 2-inch I.D. Modified California Sampler
- * TPH Total Petroleum Hydrocarbon
- ATD — Water level at time of drilling

Approved by: TM

Figure A7 : LITHOLOGY AND SAMPLE DATA FOR SOIL BORING 5NW7

LITHOLOGY



Date boring drilled: 9 March 1989

Drilling method: Hollow-Stem Auger

LF Engineer/Geologist: Jane Chambers

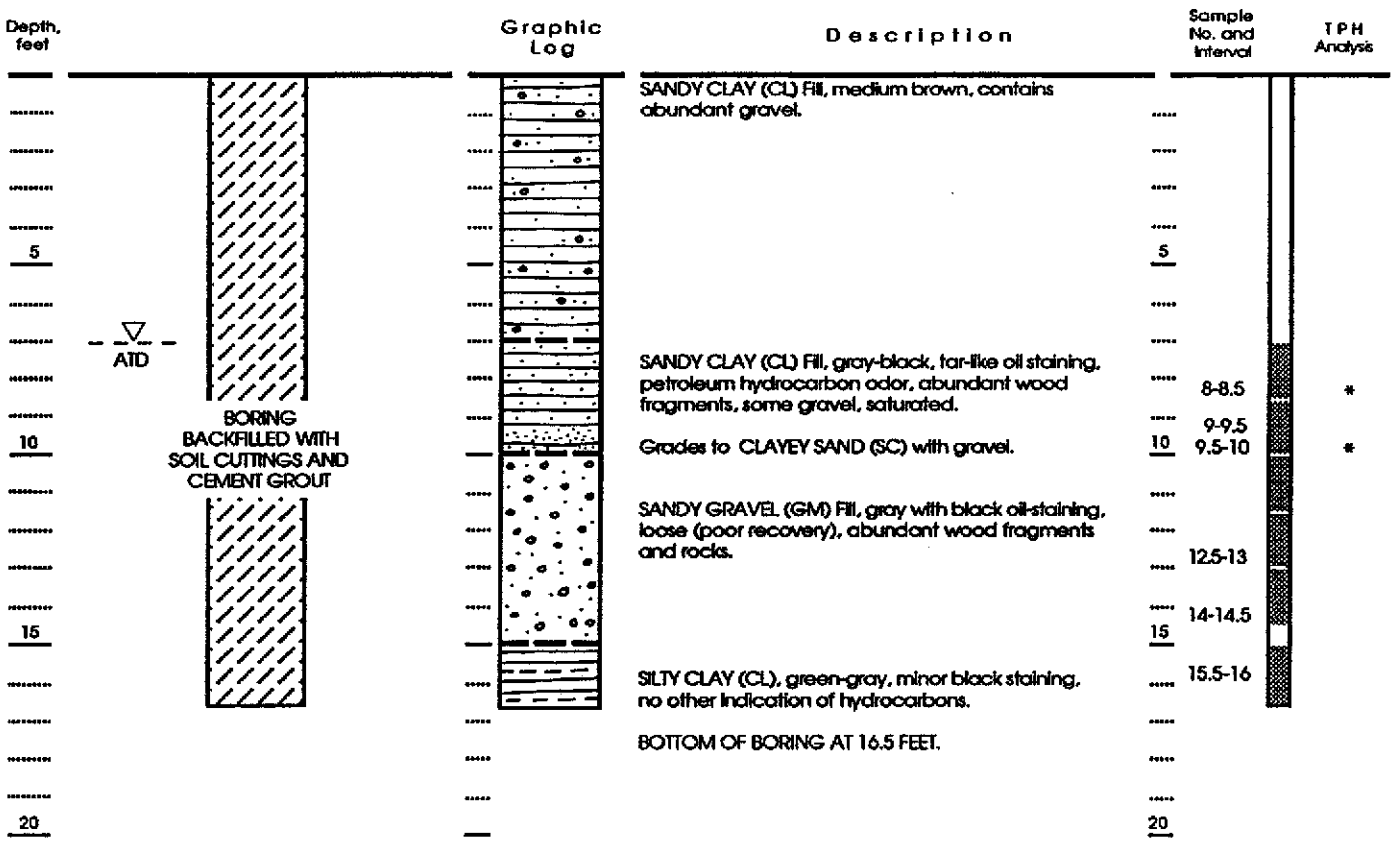
EXPLANATION

- Clay
- Silt
- Sand
- Gravel
- 2-inc I.D. Modified California Sampler
- ATD — Water level at time of drilling
- * TPH — Total Petroleum Hydrocarbon

Approved by: Tony Johnson

Figure A8 : LITHOLOGY AND SAMPLE DATA FOR SOIL BORING 5NW8

LITHOLOGY



Date boring drilled: 9 March 1989

Drilling method: Hollow-Stem Auger

LF Engineer: Elizabeth Nixon

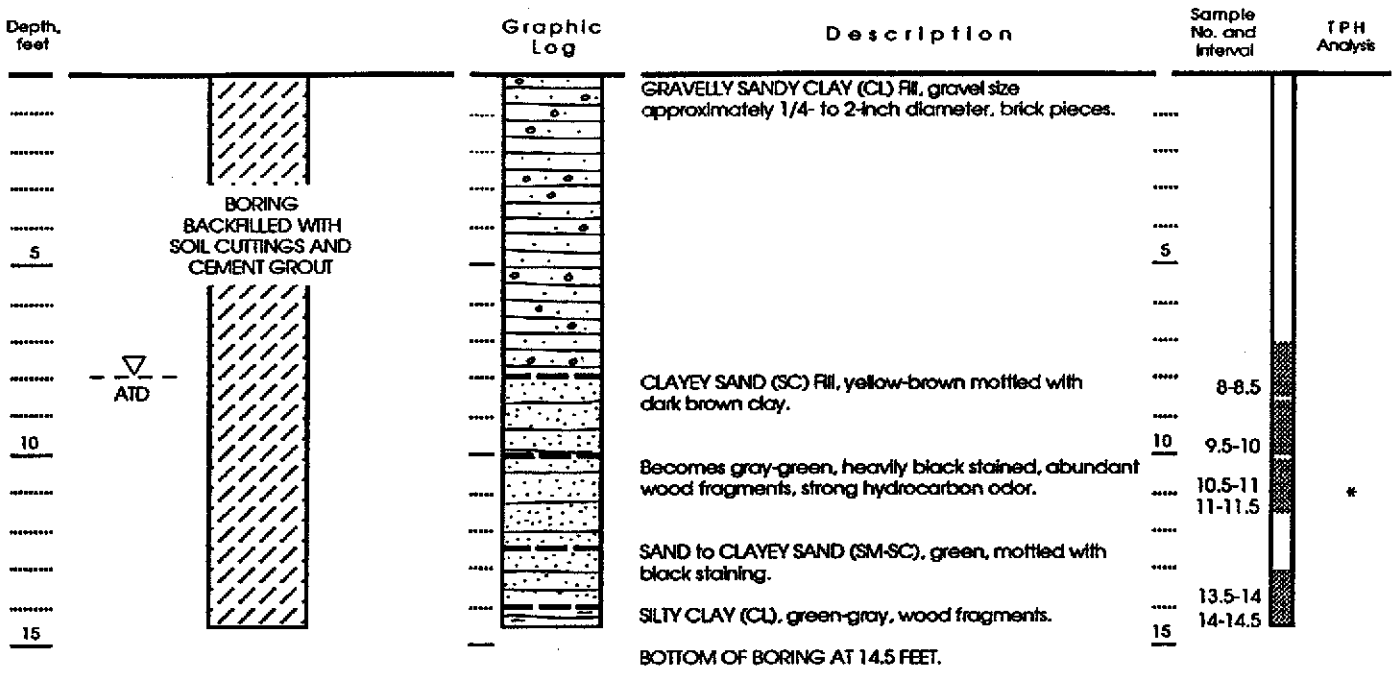
EXPLANATION

- Clay
- Silt
- Sand
- Gravel
- 2-inch I.D. Modified California Sampler
- ATD — Water level at time of drilling
- * TPH Total Petroleum Hydrocarbon

Approved by: Tm Jl

Figure A9 : LITHOLOGY AND SAMPLE DATA FOR SOIL BORING 5NW9

LITHOLOGY



Date boring drilled: 9 March 1989

Drilling method: Hollow-Stem Auger

LF Engineer/Geologist: Jane Chambers
Elizabeth Nixon

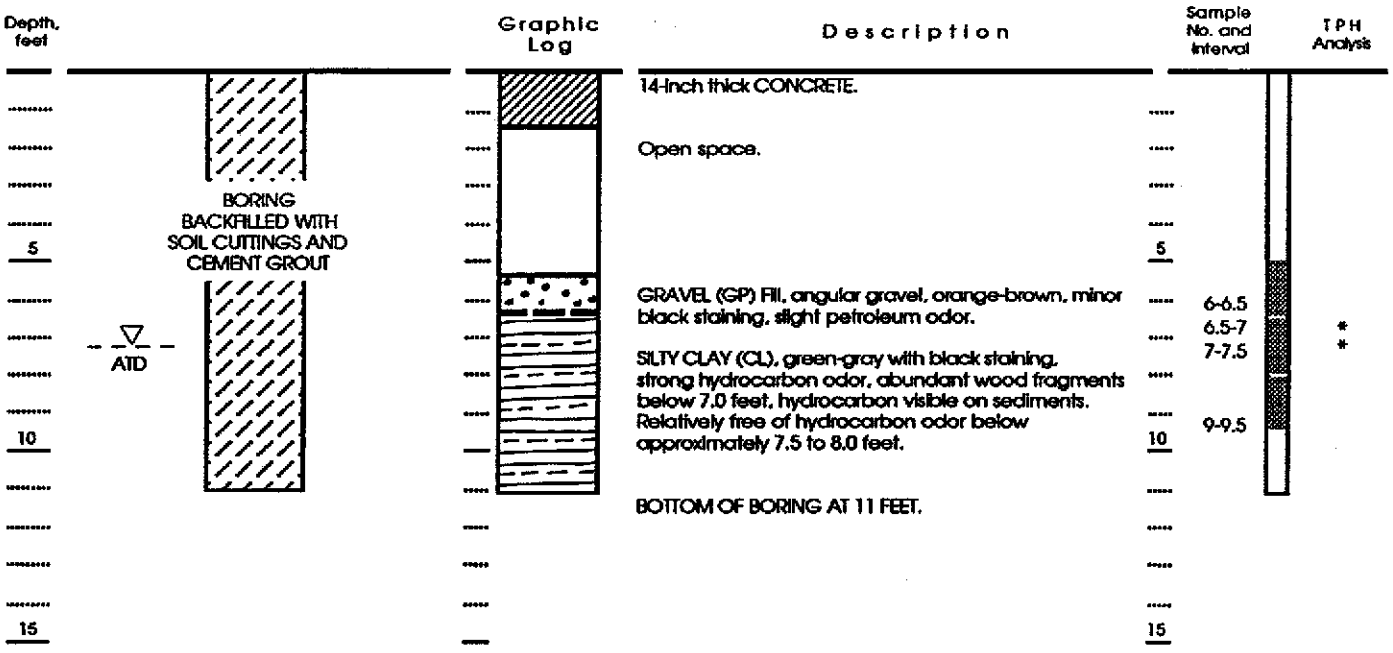
EXPLANATION

- Clay
- Silt
- Sand
- Gravel
- 2-inch I.D. Modified California Sampler
- ATD — Water level at time of drilling
- * TPH Total Petroleum Hydrocarbon

Approved by: Tom

Figure A10 : LITHOLOGY AND SAMPLE DATA FOR SOIL BORING 5NW10

LITHOLOGY



Date boring drilled: 9 March 1989

Drilling method: Hollow-Stem Auger

LF Engineer/Geologist: Jane Chambers

EXPLANATION

- Clay
- Silt
- Sand
- Gravel

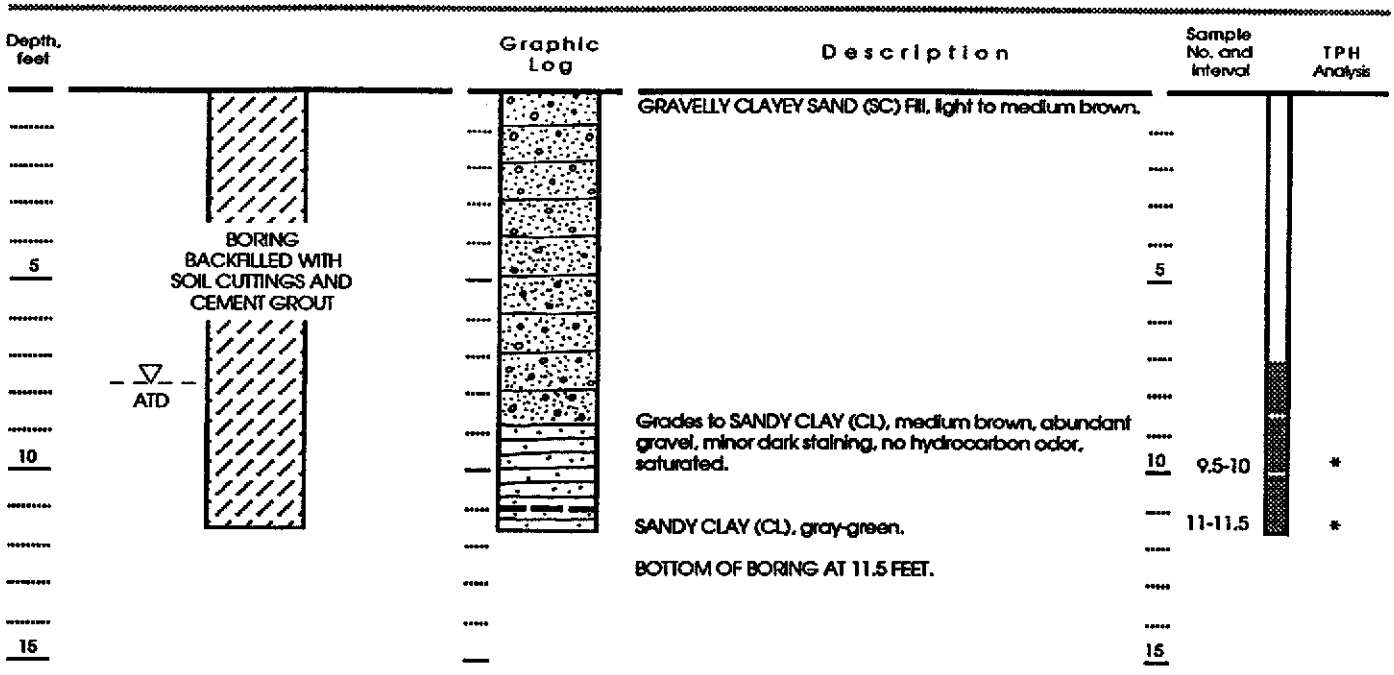
2-inch I.D. Modified California Sampler

ATD — Water level at time of drilling

* TPH Total Petroleum Hydrocarbon

Approved by:

Figure A11 : LITHOLOGY AND SAMPLE DATA FOR SOIL BORING 5NW11



Date boring drilled: 9 March 1989

Drilling method: Hollow-Stem Auger

LF Engineer: Jane Chambers

EXPLANATION

Clay

Silt

Sand

Gravel

2-inch I.D. Modified California Sampler

ATD Water level at time of drilling

* TPH Total Petroleum Hydrocarbon

Approved by:

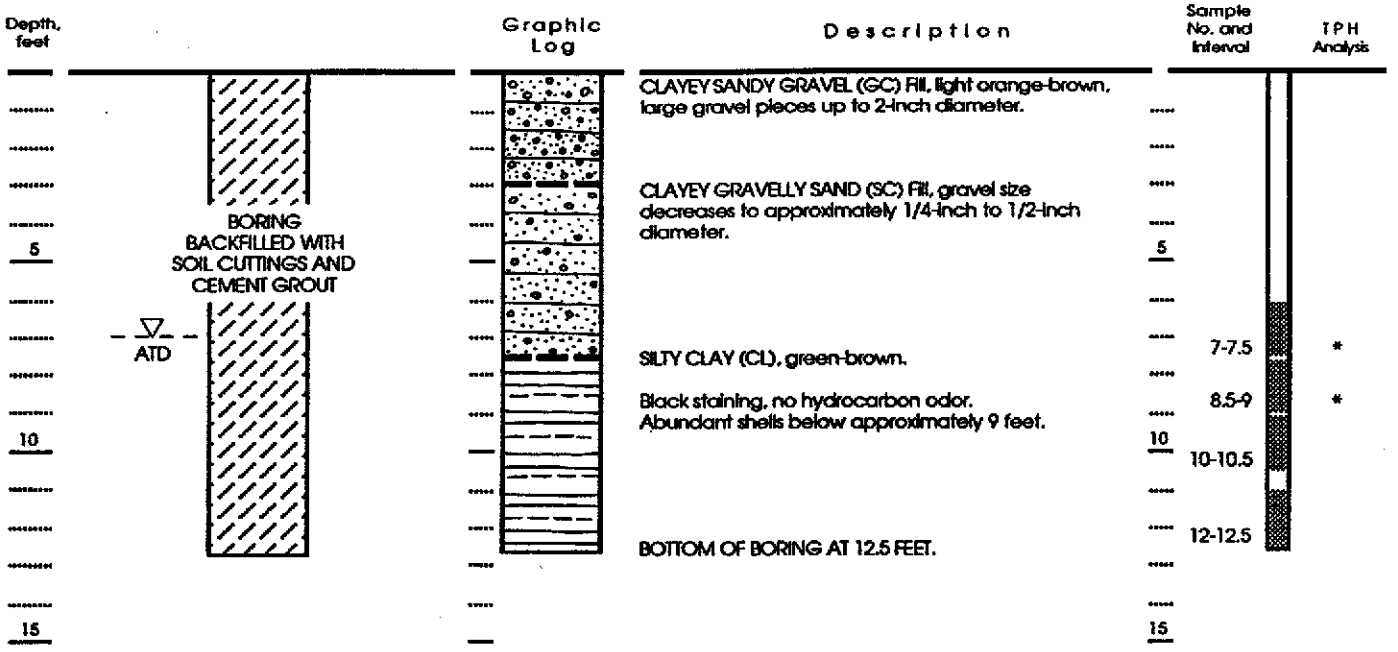
Figure A12 : LITHOLOGY AND SAMPLE DATA FOR SOIL BORING 5NW12

Project No. 1245

LEVINE•FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

1245EAN31JUN89mp

LITHOLOGY



Date boring drilled: 10 March 1989

Drilling method: Hollow-Stem Auger

LF Engineer/Geologist: Jane D. Chambers

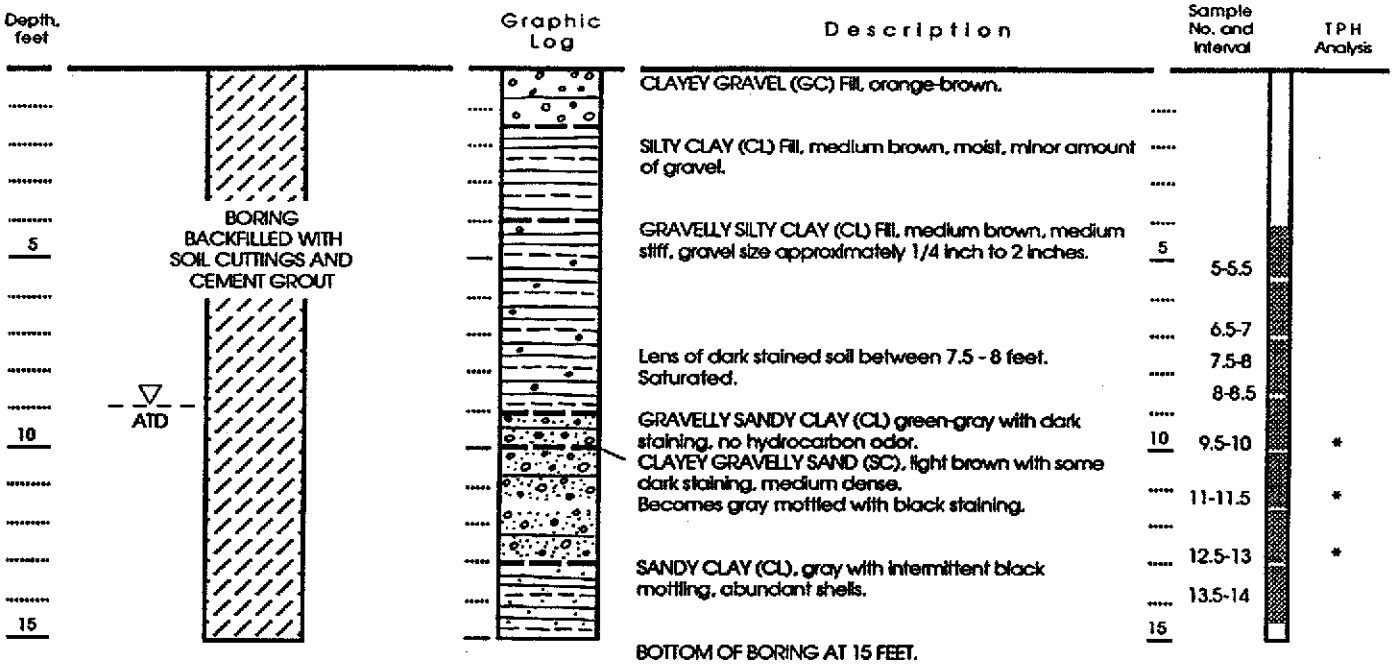
EXPLANATION

- Clay
- Silt
- Sand
- Gravel
- 2-inch I.D. Modified California Sampler
- ATD — Water level at time of drilling
- * TPH — Total Petroleum Hydrocarbon

Approved by:

Figure A13 : LITHOLOGY AND SAMPLE DATA FOR SOIL BORING 5NW13

LITHOLOGY



Date boring drilled: 13 March 1989

Drilling method: Hollow-Stem Auger

LF Engineer/Geologist: Jane D. Chambers

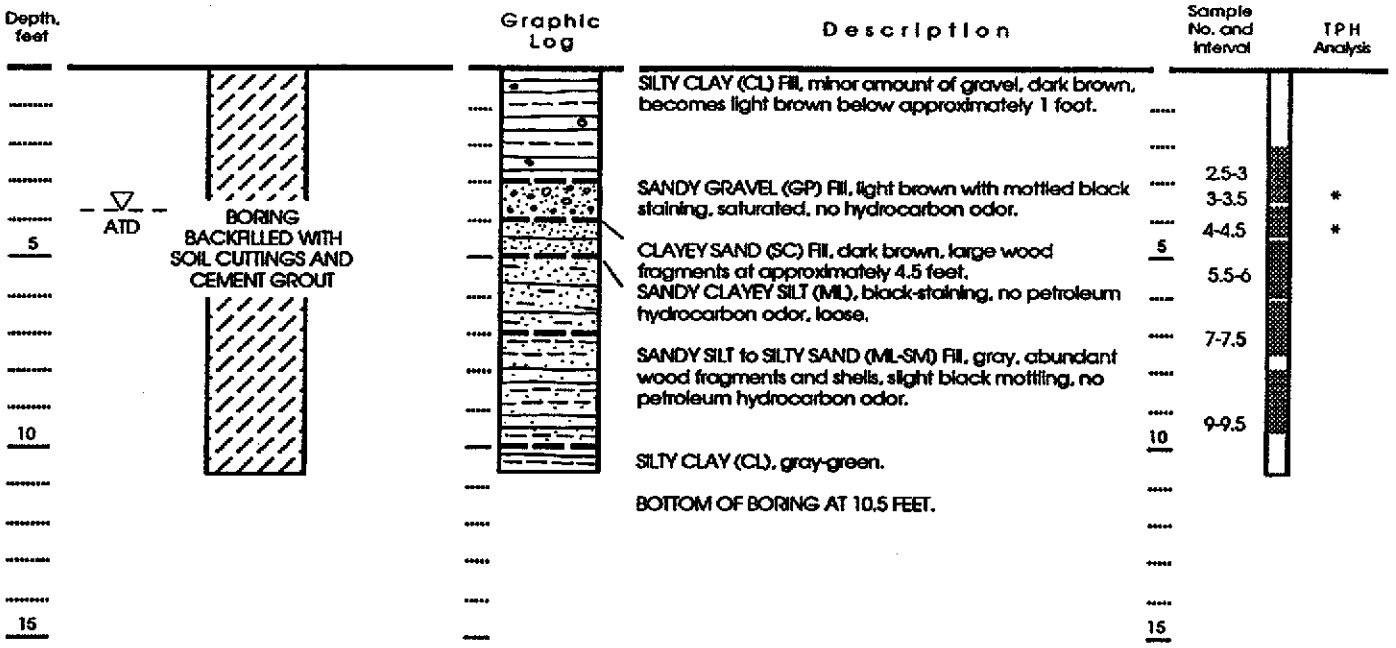
EXPLANATION

- Clay
- Silt
- Sand
- Gravel
- 2-inch I.D. Modified California Sampler
- ATD — Water level at time of drilling
- * TPH — Total Petroleum Hydrocarbon

Approved by:

Figure A14 : LITHOLOGY AND SAMPLE DATA FOR SOIL BORING 5NW14

LITHOLOGY



Date boring drilled: 13 March 1989

Drilling method: Hollow-Stem Auger

LF Engineer/Geologist: Jane D. Chambers

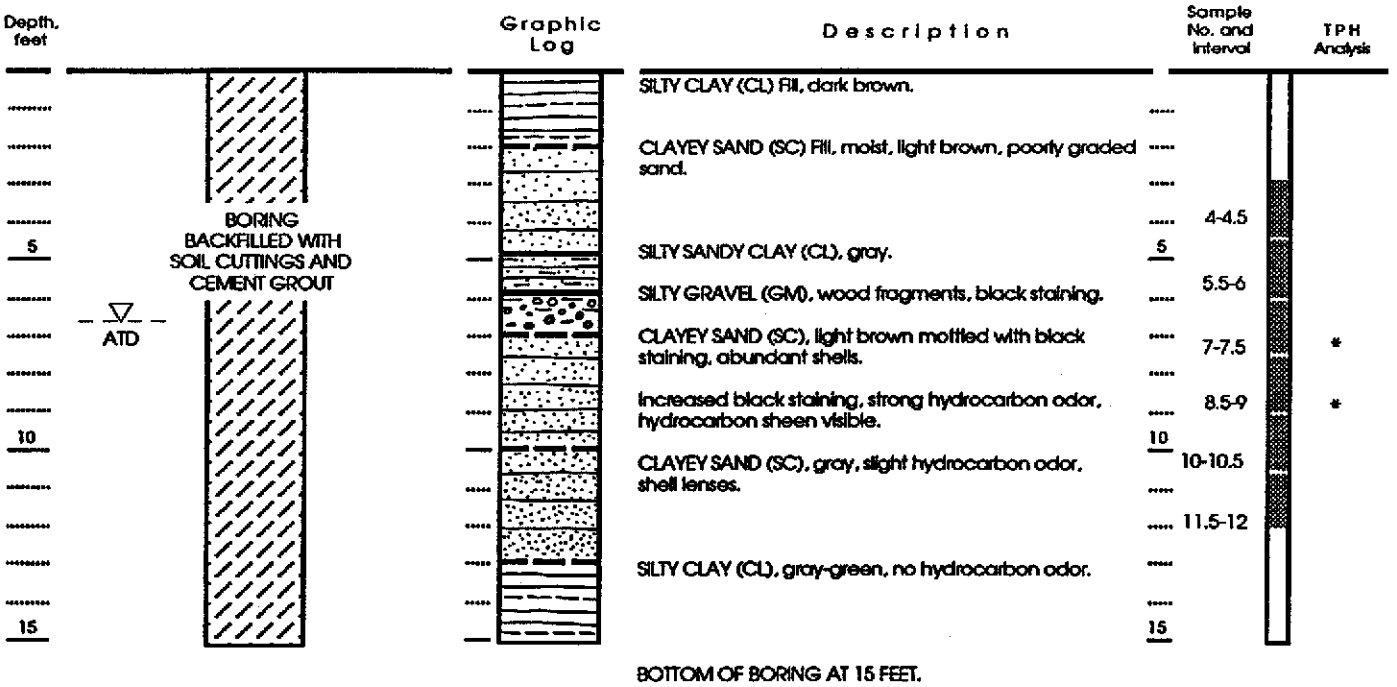
EXPLANATION

- Clay
- Silt
- Sand
- Gravel
- 2-inch I.D. Modified California Sampler
- ATD — Water level at time of drilling
- * TPH — Total Petroleum Hydrocarbon

Approved by: TMJ

Figure A15 : LITHOLOGY AND SAMPLE DATA FOR SOIL BORING 1NW1

LITHOLOGY



Date boring drilled: 13 March 1989

Drilling method: Hollow-Stem Auger

LF Engineer/Geologist: Jane Chambers

EXPLANATION

- Clay
- Silt
- Sand
- Gravel
- 2-inch I.D. Modified California Sampler
- ATD — Water level at time of drilling
- * TPH — Total Petroleum Hydrocarbon

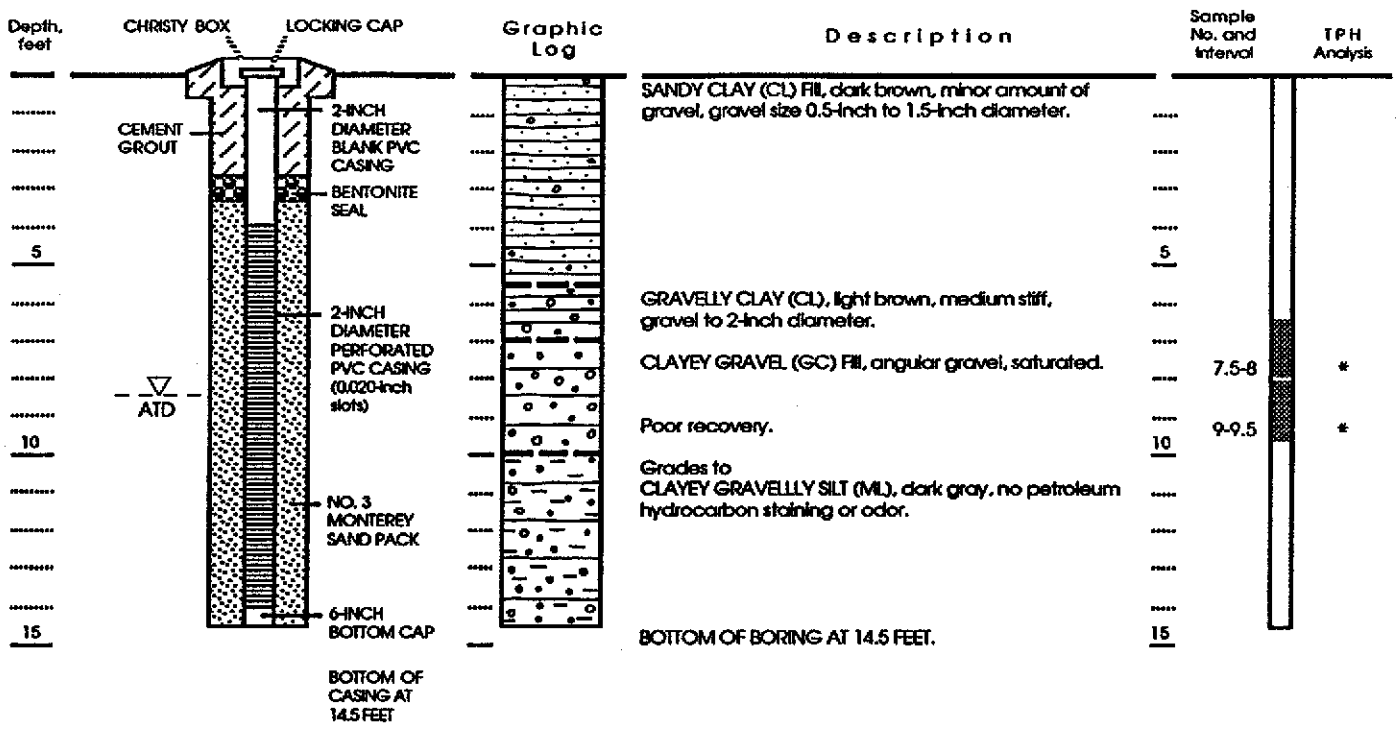
Approved by: Tom Jl

Figure A16 : LITHOLOGY AND SAMPLE DATA FOR SOIL BORING 1NW2

Project No. 1245

LEVINE•FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

JDC31MAY89mp



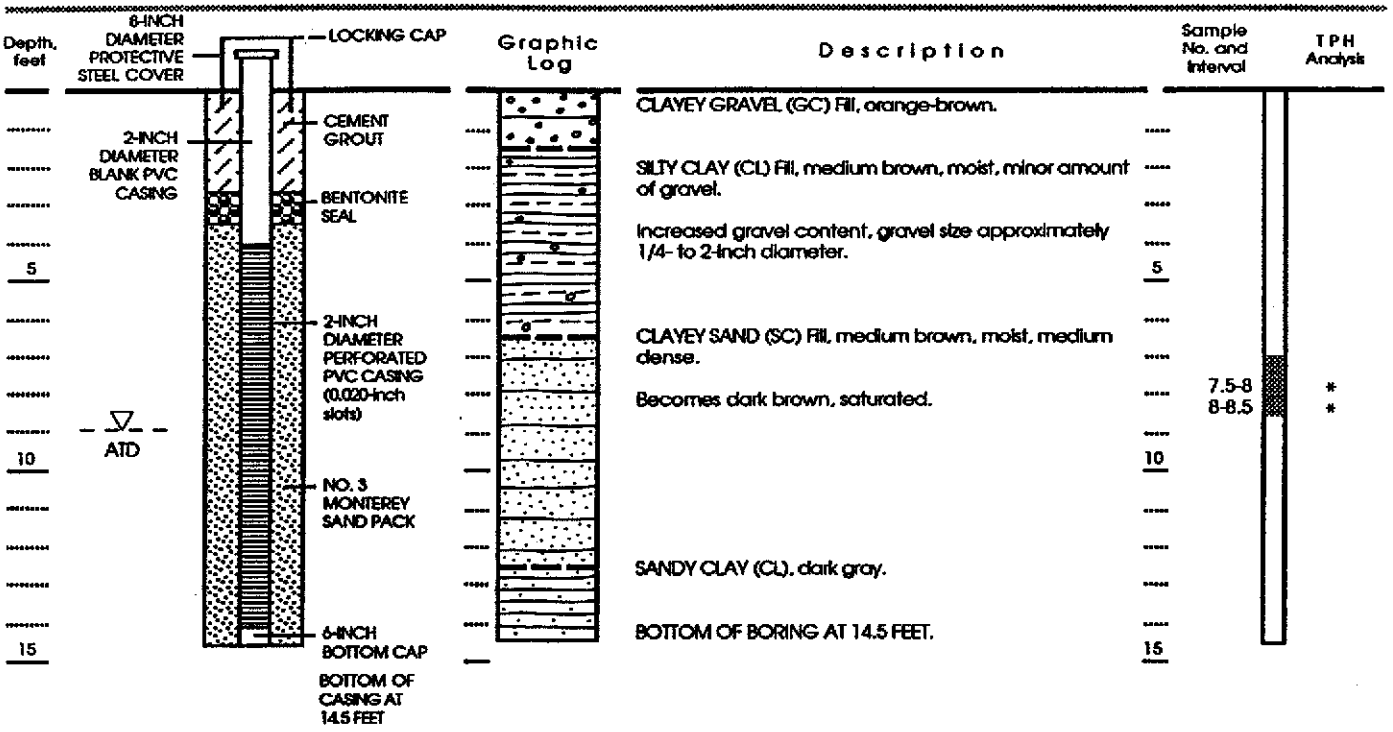
Well Permit No.	88063
Date well drilled:	10 March 1989
Drilling method:	Hollow-Stem Auger
Sampling method:	Modified California Sampler
Well elevation:	5.4 feet (City of Alameda Datum)
LF Geologist:	Jane D. Chambers

EXPLANATION

- Clay
- Silt
- Sand
- Gravel
- 2-inch I.D. Modified California Sampler
- ATD — Water level at time of drilling
- *TPH — Total Petroleum Hydrocarbon

Approved by:

Figure A17 : WELL CONSTRUCTION AND LITHOLOGY FOR WELL LF-11



Well Permit No.	88063
Date well drilled:	9 March 1989
Drilling method:	Hollow-Stem Auger
Well elevation:	7.7 feet (City of Alameda Datum)
LF Engineer/Geologist:	Elizabeth Nixon Jane Chambers

EXPLANATION

- Clay
- Silt
- Sand
- Gravel
- 2-inch I.D. Modified California Sampler
- * TPH Total Petroleum Hydrocarbon
- ATD — Water level at time of drilling

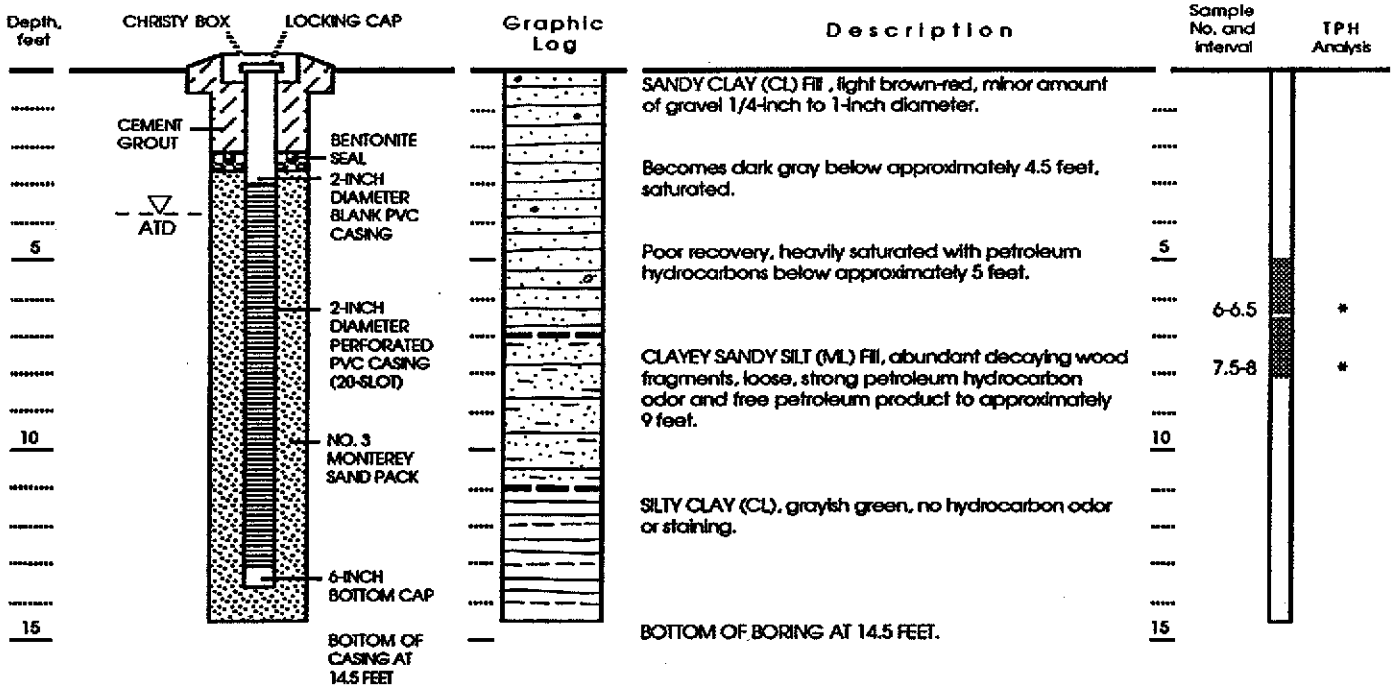
Approved by:

Figure A18 : WELL CONSTRUCTION AND LITHOLOGY FOR WELL LF-12

Project No.1245

LEVINE•FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

1245EN/JC31MAY89jc



Well Permit No.	88063
Date well drilled:	10 March 1989
Drilling method:	Hollow-Stem Auger
Sampling method:	Modified California Sampler
Well elevation:	3.0 feet (City of Alameda Datum)
LF Geologist:	Jane D. Chambers

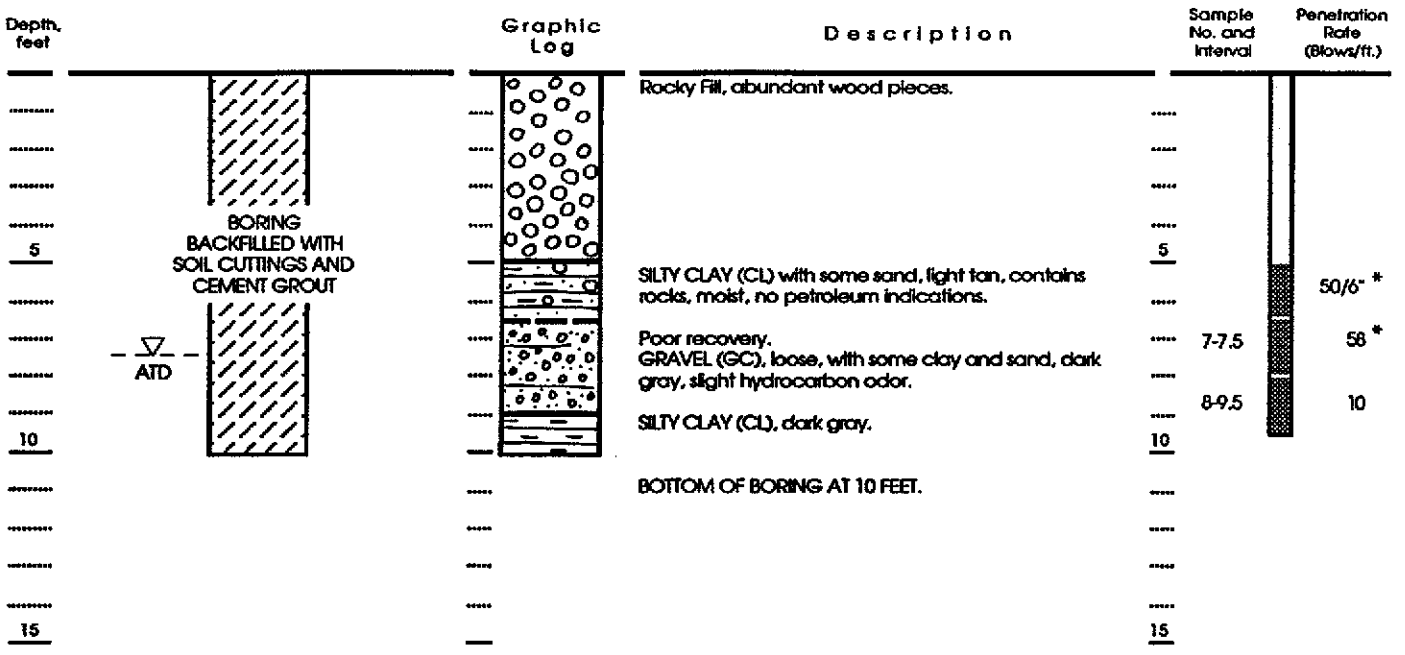
EXPLANATION

- Clay
- Silt
- Sand
- Gravel
- 2-inch I.D. Modified California Sampler
- ATD — Water level at time of drilling
- * TPH — Total Petroleum Hydrocarbon

Approved by:

Figure A19 : WELL CONSTRUCTION AND LITHOLOGY FOR WELL LF-13

LITHOLOGY



Date boring drilled: 15 August 1988

Drilling method: Hollow-Stem Auger

Hammer weight: 140 lb/30-inch drop

LF Engineer: Elizabeth Nixon

EXPLANATION

- Clay
- Silt
- Sand
- Gravel
- ATD — Water level at time of drilling
- 2-inch I.D. Modified California Sampler
- * High blow counts reflect the presence of rocks in sediments

Approved by: Tyaff

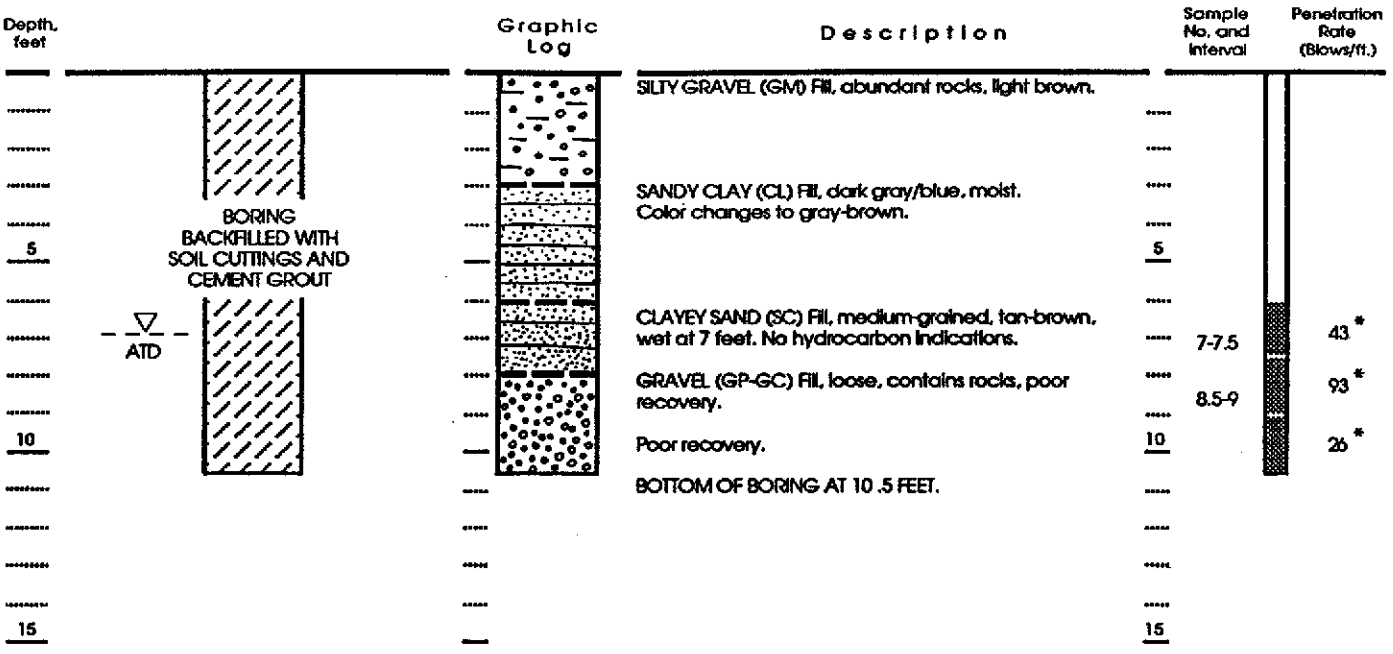
Figure A20 : LITHOLOGY AND SAMPLE DATA FOR SOIL BORING 2NW2

Project No. 1245

LEVINE•FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

1245EAN3JUN89mp

LITHOLOGY



Date boring drilled: 15 August 1988
Drilling method: Hollow-Stem Auger
Hammer weight: 140 lb/30-inch drop
LF Engineer: Elizabeth Nixon

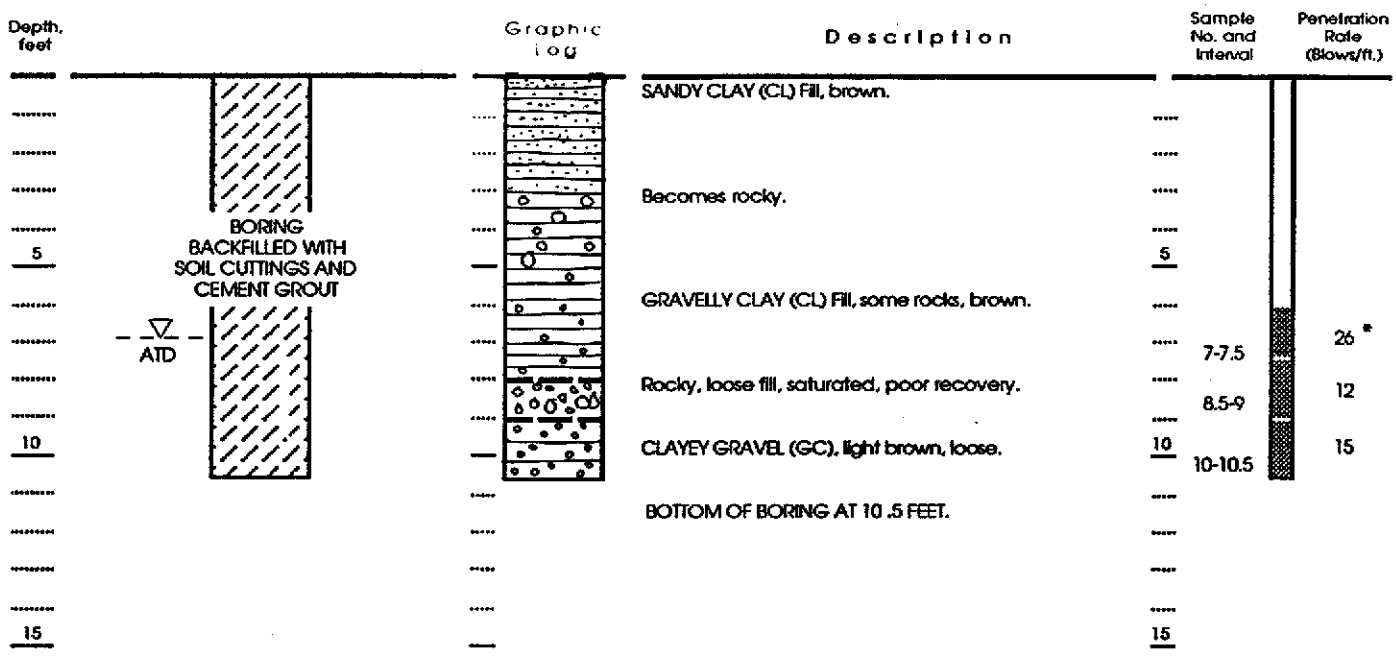
EXPLANATION

- Clay
- Silt
- Sand
- Gravel
- ATD — Water level at time of drilling
- 2-inch I.D. Modified California Sampler
- * High blow counts reflects the presence of rocks in the sediments

Approved by:

Figure A21: LITHOLOGY AND SAMPLE DATA FOR SOIL BORING 2NW3

LITHOLOGY



Date boring drilled: 15 August 1988

Drilling method: Hollow -Stem Auger

Hammer weight: 140 lb/30-inch drop

LF Engineer: Elizabeth Nixon

EXPLANATION

- Clay
- Silt
- Sand
- Gravel
- ATD — Water level at time of drilling
- 2-inch I.D. Modified California Sampler
- * High blow counts reflect the presence of rocks in sediments

Approved by: Tm

Figure A22 : LITHOLOGY AND SAMPLE DATA FOR SOIL BORING 2NW5

Project No. 1245

LEVINE•FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

1245EAN3JUN89mp

APPENDIX B

FIELD ACTIVITIES

APPENDIX B

DESCRIPTION OF FIELD ACTIVITIES
PROCEDURES USED DURING DRILLING, WELL INSTALLATION AND DEVELOPMENT, AND GROUND-WATER SAMPLING

Soil Boring and Well Installation

Five shallow soil borings (less than 15 feet deep) were drilled February 17, 1989. Sixteen shallow soil borings were drilled and three shallow monitoring wells were installed March 9 through 13, 1989. Wells were installed under the Alameda County Flood Control and Water Conservation District well permit number 88063.

Drilling was completed using the hollow-stem auger drilling method and was performed by Kvildhaug Drilling, Inc., of Concord, California. All field activities during drilling, logging of soil lithology, well installation, well development and sampling were performed under the direct supervision of a Levine·Fricke California Registered Geologist.

Borings were drilled to depths of 10 to 15 feet below the ground surface. Soil sampling was conducted continuously during drilling of the soil borings and well borings for lithologic description and possible chemical analysis using a Modified California Sampler containing clean, 2-inch-diameter brass tubes. Graphic illustrations and lithologic descriptions of sediments encountered in the borings, and the depths of samples retained for possible chemical analysis, are indicated on boring logs contained in Appendix A.

The well bores were completed as ground-water monitoring wells by installing threaded-joint, 2-inch-diameter, schedule-40 PVC casing, with 10 feet of factory-slotted perforations. The well annulus surrounding the perforated interval in each well was backfilled with Number 3 Monterey sand pack to approximately 1 foot above the top of the screened interval. Approximately 1 foot of bentonite pellets was placed above this sand pack to isolate the screened interval from the material above and to prevent the entrance of grout into the sand pack. The remaining annular space above the bentonite seal was grouted with a cement-bentonite mixture. A locking cover was placed over the top of the casing to protect the integrity of the well. Well screens were positioned to intersect the water table.

Soil borings were backfilled with a mixture of cuttings and cement-bentonite grout.

All drilling equipment was steam-cleaned prior to drilling and well installation.

Well Development and Purging

Monitoring wells were developed and sampled on March 28 and 29, 1989 by Levine·Fricke personnel.

The newly installed wells (LF11, LF12 and LF13) were developed by purging a minimum of ten well volumes of water from the well with a centrifugal pump or a Teflon bailer. The purpose of well development was to remove sediments left in the well and sand pack during construction and to enhance hydraulic communication with the surrounding sediments. Five to ten well volumes were purged from existing wells prior to sampling, with the exception of well LF8. Specific conductance, pH, and temperature were measured and water clarity was noted during this purging process to help assess when a sufficient quantity of water had been removed to obtain a sample of relatively fresh ground water. Ground-water sampling was conducted immediately following well development or purging.

All purging equipment was steam-cleaned prior to each use.

Ground-Water Quality Sampling

Monitoring Wells

After development and purging of the well, one round of ground-water samples was collected from wells LF-6 through LF-13 and WC3 using a Teflon bailer. A ground-water sample was collected from beneath the layer of floating petroleum product in well LF-8 without prior purging. Water samples collected from each well were placed in laboratory-supplied 1-liter amber glass jars and 40-ml volatile organic analysis (VOA) vials using a clean Teflon bailer. For quality control/assurance a bailer blank sample was collected prior to sampling one of the wells by filling the bailer with organic-free water and pouring the water into sample containers. The samples were labeled and then immediately placed in a chilled cooler for transport to Med-Tox Associates, of Pleasant Hill, California. Transport was conducted under strict chain-of-custody protocol.

Prior to each use, the Teflon bailer was washed with Alconox (a laboratory-grade detergent) and steam-cleaned.

Grab Samples from Soil Borings

Water samples were collected from soil borings 5NW1 through 5NW5 using a Teflon bailer lowered into the boring after the drilling augers had been removed from the boring. Sampling equipment was steam-cleaned or washed with Alconox prior to each use. Ground-water samples were poured into sample containers and handled/transported in a manner similar to that described above.

Ground-Water Level Measurements

Water-level measurements were recorded on March 28 and 29, 1989 and on June 1, 1989, using an electric water-level probe graduated in 5-foot increments, and an engineer's tape graduated in 0.01-foot increments. Well elevations were surveyed by Stedman Engineering to the nearest 0.01 foot and tied to the City of Alameda Datum (6.4 feet above Mean Sea Level). Thickness of free-phase petroleum hydrocarbons (if any) was measured using an electronic petroleum/water interface probe.

APPENDIX C

LABORATORY CERTIFICATES

JEAN

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 CONSULTING
1900 POWELL STREET, 12TH FL.
EMERYVILLE, CA 94608

ATTN: ELIZABETH NIXON

REPORT DATE: 03/10/89
DATE SAMPLED: 02/17/89
DATE RECEIVED: 02/17/89
DATE ANALYZED: 02/24/89

CLIENT PROJECT NO: 1245

MED-TOX JOB NO: 8902120

ANALYSIS OF: WATER AND SOIL SAMPLES

METHOD: 8020

Sample Identification Client Id.	Lab No.	Benzene (ug/kg)	Toluene (ug/kg)	Ethylbenzene (ug/kg)	Xylenes (ug/kg)
SNW-2A	03A	ND	45	ND	ND
Detection limit		1	1	1	3

ND = Not detected at or above indicated method detection limit

received
MAR 13 1989

Michael Lynch
Michael Lynch, Manager
Organic Laboratory

Results FAXed to Elizabeth Nixon 03/03/89

LEVINE-FRICKE CONSULTING

CLIENT PROJECT NO: 1245

REPORT DATE: 03/10/89

DATE EXTRACTED: 02/24/89
DATE ANALYZED: 02/26-28/89

MED-TOX JOB NO: 8902120

METHOD: 8015 (Extraction)

Sample Identification Client Id.	Lab No.	Total Petroleum Hydrocarbons As Diesel (mg/kg)	Total Petroleum Hydrocarbons As Waste Oil (mg/kg)
5NW-1A	01A	2,000*	ND(100)
5NW-2A-2B (Comp)	03B	ND	710
5NW-4B	07A	ND(5000)	28,000
Detection limit		10	20

METHOD: 8015 (Extraction)

Sample Identification Client Id.	Lab No.	Total Petroleum Hydrocarbons As Diesel (mg/L)	Total Petroleum Hydrocarbons As Waste Oil (mg/L)
5NW-1	10A	25*	33
5NW-2	11C	0.3*	ND
5NW-3	12E	13*	ND
5NW-5	14D	ND(1)	8.7
Detection limit		0.3	0.5

ND = Not detected at or above indicated method detection limit, (unless other wise indicated in parenthesis)

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

LEVINE-FRICKE CONSULTING

CLIENT ID: 5NW-1A
CLIENT JOB NO: 1245
DATE SAMPLED: 02/17/89
DATE RECEIVED: 02/17/89

MED-TOX LAB NO: 8902120-01A
MED-TOX JOB NO: 8902120
DATE ANALYZED: 02/28/89
REPORT DATE: 03/10/89

EPA METHOD 8240
GC/MS VOLATILE ORGANICS

COMPOUND	CAS #	CONCENTRATION (ug/kg)	DETECTION LIMIT (ug/kg)
Acetone	67-64-1	ND	10,000
Benzene	71-43-2	ND	500
Bromodichloromethane	75-27-4	ND	500
Bromoform	75-25-2	ND	500
Bromomethane	74-83-9	ND	1,000
2-Butanone	78-93-3	ND	10,000
Carbon Disulfide	75-15-0	ND	1,000
Carbon Tetrachloride	56-23-5	ND	500
Chlorobenzene	108-90-7	ND	500
Chloroethane	75-00-3	ND	1,000
2-Chloroethyl Vinyl Ether	110-75-8	ND	1,000
Chloroform	67-66-3	ND	500
Chloromethane	74-87-3	ND	1,000
Dibromochloromethane	124-48-1	ND	500
1,1-Dichloroethane	75-34-3	ND	500
1,2-Dichloroethane	107-06-2	ND	500
1,1-Dichloroethene	75-35-4	ND	500
1,2-Dichloroethene, total	540-59-0	ND	500
1,2-Dichloropropane	78-87-5	ND	500
cis-1,3-Dichloropropene	10061-01-5	ND	500
trans-1,3-Dichloropropene	10061-02-6	ND	500
Ethylbenzene	100-41-4	ND	500
2-Hexanone	591-78-6	ND	5,000
Methylene Chloride	75-09-2	ND	1,000
4-Methyl-2-pentanone	108-10-1	ND	5,000
Styrene	100-42-5	ND	1,000
1,1,2,2-Tetrachloroethane	79-34-5	ND	500
Tetrachloroethene	127-18-4	ND	500
Toluene	108-88-3	700	500
1,1,1-Trichloroethane	71-55-6	ND	500
1,1,2-Trichloroethane	79-00-5	ND	500
Trichloroethene	79-01-6	ND	500
Vinyl Acetate	108-05-4	ND	5,000
Vinyl Chloride	75-01-4	ND	1,000
Xylenes, total	------	ND	1,000

ND = Not Detected at or above indicated method detection limit
Analytical Method: EPA 8240, SW-846 3rd Edition, 1986
NOTE: Sample was diluted 100x due to significant diesel content.
Detection limits have been adjusted accordingly.

LEVINE-FRICKE CONSULTING

CLIENT ID: 5NW-3A
CLIENT JOB NO: 1245

DATE SAMPLED: 02/17/89
DATE RECEIVED: 02/17/89

MED-TOX LAB NO: 8902120-04A
MED-TOX JOB NO: 8902120

DATE ANALYZED: 02/24-27/89
REPORT DATE: 03/10/89
DATE EXTRACTED: 02/24/89

TOTAL PETROLEUM HYDROCARBONS WITH PURGEABLE AROMATICS

METHOD: EPA 8020, 8015 (PURGE & TRAP)

	CONCENTRATION (ug/kg)	DETECTION LIMIT (ug/kg)
Benzene	ND	1
Toluene	23	1
Ethylbenzene.	ND	1
Xylenes	ND	3

Total Petroleum Hydrocarbons as:

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

LEVINE-FRICKE CONSULTING

CLIENT ID: 5NW-5A
CLIENT JOB NO: 1245

DATE SAMPLED: 02/17/89
DATE RECEIVED: 02/17/89

MED-TOX LAB NO: 8902120-08A
MED-TOX JOB NO: 8902120

DATE ANALYZED: 02/24-27/89
REPORT DATE: 03/10/89
DATE EXTRACTED: 02/24/89

TOTAL PETROLEUM HYDROCARBONS WITH PURGEABLE AROMATICS

METHOD: EPA 8020, 8015 (PURGE & TRAP)

	CONCENTRATION (ug/kg)	DETECTION LIMIT (ug/kg)
Benzene	ND	3
Toluene	460	3
Ethylbenzene	ND	3
Xylenes	ND	8

Total Petroleum Hydrocarbons as:

Diesel	ND mg/kg	500 mg/kg
Waste Oil	4,600 mg/kg	500 mg/kg

ND = Not detected at or above indicated method detection limit

LEVINE-FRICKE CONSULTING

CLIENT ID: 5NW-4
CLIENT JOB NO: 1245

DATE SAMPLED: 02/17/89
DATE RECEIVED: 02/17/89

MED-TOX LAB NO: 8902120-13A
MED-TOX JOB NO: 8902120

DATE ANALYZED: 02/26-03/03/89
REPORT DATE: 03/10/89
DATE EXTRACTED: 02/24/89

TOTAL PETROLEUM HYDROCARBONS WITH PURGEABLE AROMATICS

METHOD: EPA 602, 8015 (PURGE & TRAP)

	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
Benzene	ND	1
Toluene	ND	1
Ethylbenzene.	ND	1
Xylenes	ND	4
Total Petroleum Hydrocarbons as:		
Diesel	0.9 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: 5NW-2
CLIENT JOB NO: 1245
DATE SAMPLED: 02/17/89
DATE RECEIVED: 02/17/89

MED-TOX LAB NO: 8902120-11A
MED-TOX JOB NO: 8902120
DATE ANALYZED: 02/24/89
REPORT DATE: 03/10/89

EPA METHOD 624
PURGEABLE ORGANIC COMPOUNDS

COMPOUND	CAS #	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
Acetone	67-64-1	ND	100
Benzene	71-43-2	ND	5
Bromodichloromethane	75-27-4	ND	5
Bromoform	75-25-2	ND	5
Bromomethane	74-83-9	ND	10
2-Butanone	78-93-3	ND	100
Carbon Disulfide	75-15-0	ND	10
Carbon Tetrachloride	56-23-5	ND	5
Chlorobenzene	108-90-7	ND	5
Chloroethane	75-00-3	ND	10
2-Chloroethyl Vinyl Ether	110-75-8	ND	10
Chloroform	67-66-3	ND	5
Chloromethane	74-87-3	ND	10
Dibromochloromethane	124-48-1	ND	5
1,1-Dichloroethane	75-34-3	ND	5
1;2-Dichloroethane	107-06-2	ND	5
1,1-Dichloroethene	75-35-4	ND	5
1,2-Dichloroethene, total	540-59-0	ND	5
1,2-Dichloropropane	78-87-5	ND	5
cis-1,3-Dichloropropene	10061-01-5	ND	5
trans-1,3-Dichloropropene	10061-02-6	ND	5
Ethylbenzene	100-41-4	ND	5
2-Hexanone	591-78-6	ND	50
Methylene Chloride	75-09-2	ND	5
4-Methyl-2-pentanone	108-10-1	ND	50
Styrene	100-42-5	ND	10
1,1,2,2-Tetrachloroethane	79-34-5	ND	5
Tetrachloroethene	127-18-4	ND	5
Toluene	108-88-3	ND	5
1,1,1-Trichloroethane	71-55-6	ND	5
1,1,2-Trichloroethane	79-00-5	ND	5
Trichloroethene	79-01-6	ND	5
Vinyl Acetate	108-05-4	ND	50
Vinyl Chloride	75-01-4	ND	10
Xylenes, total	------	ND	10

ND = Not detected at or above indicated method detection limit

LEVINE-FRICKE CONSULTING

CLIENT ID: 5NW-3
CLIENT JOB NO: 1245
DATE SAMPLED: 02/17/89
DATE RECEIVED: 02/17/89

MED-TOX LAB NO: 8902120-12A
MED-TOX JOB NO: 8902120
DATE ANALYZED: 02/24/89
REPORT DATE: 03/10/89

EPA METHOD 624
PURGEABLE ORGANIC COMPOUNDS

COMPOUND	CAS #	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
Acetone	67-64-1	ND	100
Benzene	71-43-2	ND	5
Bromodichloromethane	75-27-4	ND	5
Bromoform	75-25-2	ND	5
Bromomethane	74-83-9	ND	10
2-Butanone	78-93-3	ND	100
Carbon Disulfide	75-15-0	ND	10
Carbon Tetrachloride	56-23-5	ND	5
Chlorobenzene	108-90-7	ND	5
Chloroethane	75-00-3	ND	10
2-Chloroethyl Vinyl Ether	110-75-8	ND	10
Chloroform	67-66-3	ND	5
Chloromethane	74-87-3	ND	10
Dibromochloromethane	124-48-1	ND	5
1,1-Dichloroethane	75-34-3	ND	5
1,2-Dichloroethane	107-06-2	ND	5
1,1-Dichloroethene	75-35-4	ND	5
1,2-Dichloroethene, total	540-59-0	ND	5
1,2-Dichloropropane	78-87-5	ND	5
cis-1,3-Dichloropropene	10061-01-5	ND	5
trans-1,3-Dichloropropene	10061-02-6	ND	5
Ethylbenzene	100-41-4	ND	5
2-Hexanone	591-78-6	ND	50
Methylene Chloride	75-09-2	ND	5
4-Methyl-2-pentanone	108-10-1	ND	50
Styrene	100-42-5	ND	10
1,1,2,2-Tetrachloroethane	79-34-5	ND	5
Tetrachloroethene	127-18-4	ND	5
Toluene	108-88-3	ND	5
1,1,1-Trichloroethane	71-55-6	ND	5
1,1,2-Trichloroethane	79-00-5	ND	5
Trichloroethene	79-01-6	ND	5
Vinyl Acetate	108-05-4	ND	50
Vinyl Chloride	75-01-4	ND	10
Xylenes, total	------	ND	10

ND = Not detected at or above indicated method detection limit

LEVINE-FRICKE CONSULTING

CLIENT ID: 5NW-5
CLIENT JOB NO: 1245
DATE SAMPLED: 02/17/89
DATE RECEIVED: 02/17/89

MED-TOX LAB NO: 8902120-14A
MED-TOX JOB NO: 8902120
DATE ANALYZED: 02/24/89
REPORT DATE: 03/10/89

EPA METHOD 624
PURGEABLE ORGANIC COMPOUNDS

COMPOUND	CAS #	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
Acetone	67-64-1	ND	100
Benzene	71-43-2	ND	5
Bromodichloromethane	75-27-4	ND	5
Bromoform	75-25-2	ND	5
Bromomethane	74-83-9	ND	10
2-Butanone	78-93-3	ND	100
Carbon Disulfide	75-15-0	ND	10
Carbon Tetrachloride	56-23-5	ND	5
Chlorobenzene	108-90-7	ND	5
Chloroethane	75-00-3	ND	10
2-Chloroethyl Vinyl Ether	110-75-8	ND	10
Chloroform	67-66-3	ND	5
Chloromethane	74-87-3	ND	10
Dibromochloromethane	124-48-1	ND	5
1,1-Dichloroethane	75-34-3	ND	5
1,2-Dichloroethane	107-06-2	ND	5
1,1-Dichloroethene	75-35-4	ND	5
1,2-Dichloroethene, total	540-59-0	ND	5
1,2-Dichloropropane	78-87-5	ND	5
cis-1,3-Dichloropropene	10061-01-5	ND	5
trans-1,3-Dichloropropene	10061-02-6	ND	5
Ethylbenzene	100-41-4	ND	5
2-Hexanone	591-78-6	ND	50
Methylene Chloride	75-09-2	ND	5
4-Methyl-2-pentanone	108-10-1	ND	50
Styrene	100-42-5	ND	10
1,1,2,2-Tetrachloroethane	79-34-5	ND	5
Tetrachloroethene	127-18-4	ND	5
Toluene	108-88-3	ND	5
1,1,1-Trichloroethane	71-55-6	ND	5
1,1,2-Trichloroethane	79-00-5	ND	5
Trichloroethene	79-01-6	ND	5
Vinyl Acetate	108-05-4	ND	50
Vinyl Chloride	75-01-4	ND	10
Xylenes, total	------	ND	10

ND = Not detected at or above indicated method detection limit

8902120

CHAIN OF CUSTODY / ANALYSES REQUEST FORM

Project No.: 1215	Field Logbook No.:	Date: 2/17/89	Serial No.: No 5493
Project Name: MARINA VILLAGE	Project Location: ALAMEDA		
Sampler (Signature): Michael J Brubaud			

SAMPLES / ANALYSES

Samplers: MJB

	SAMPLE NO.	DATE	TIME	LAB SAMPLE NO.	NO. OF CONTAINERS	SAMPLE TYPE	EPA 601	EPA 624					HOLD	RUSH	REMARKS
13A,B,C	DSNW-4	2/17	1310		4 VOA	H_2O							X		HOLD ALL SAMPLES
14D,E	DSNW-5	2/17	1410		2-1LTR								X		UNTIL TUESDAY - 2/21/89
14A,B,C	11	11	11		3 VOA*								X		DETERMINATION OF WHICH
															SAMPLES TO ANALYZE WILL
															BE MADE THEN.
															PHONE ELIZABETH NIXON
															IF THERE ARE ANY QUESTIONS
															* I BROKE AFTER HOLE FILLED IN

RELINQUISHED BY: (Signature) Michael J Brubaud	DATE 2/17/89	TIME 4:37	RECEIVED BY: (Signature) Bruce Thompson	DATE 2-17-89 / TIME 4:37
RELINQUISHED BY: (Signature) Bruce Thompson	DATE 2-17-89	TIME 5:35	RECEIVED BY: (Signature) Robin Byars	DATE 2-17-89 / TIME 17:37
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE / TIME
METHOD OF SHIPMENT:	DATE	TIME	LAB COMMENTS:	

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

Analytical Laboratory: MED TOX 4550C
3440 VINCENT RD
PLEASANT HILL, CA
(415) 930-9010

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

FORM NO. 86/COC/ARF

8902120

CHAIN OF CUSTODY / ANALYSES REQUEST FORM

Project No.: 1245	Field Logbook No.:	Date: 2/17/89	Serial No.: Nº 5494
Project Name: MARINA VILLAGE	Project Location: ALAMEDA		
Sampler (Signature): Michael J Bonland			

SAMPLES						ANALYSES								Samplers: MJB
	SAMPLE NO.	DATE	TIME	LAB SAMPLE NO.	NO. OF CONTAINERS	SAMPLE TYPE	EPA 601	EPA 624				HOLD	RUSH	REMARKS
1A	SNW-1A	2/17	0925		1 TUBE BRASS	SOIL						X		HOLD ALL SAMPLES
2A	SNW-1B		0905									X		UNTIL TUESDAY
3A	SNW-2A		0955									X		2/21/89 -
3A	SNW-2B		1000									X		DETERMINATION OF WHICH
4A	SNW-2A		"									X		SAMPLES TO ANALYZE WILL
5A	SNW-3B		1058									X		BE MADE THEN.
6A	SNW-4A		1240									X		PHONE ELIZABETH NIXON
7A	SNW-4B		1245									X		IF THERE ARE ANY QUESTIONS
8A	SNW-5A		1									X		
9A	SNW-5B		1340									X		
10A	SNW-1				1-LTR	H_2O						X		
11C,D	SNW-2		1000		2-1 LTR							X		
11A,B	"		"		2 VOA							X		
12E,F	SNW-3		1140		2-1 LTR							X		
12A,B,C,D	"		"		4 VOA							X		
13E,F	SNW-4		1310		2-1 LTR							X		

RELINQUISHED BY: (Signature) Michael J Bonland	DATE 2/17/89	TIME 4:37	RECEIVED BY: (Signature) Paul Hampton	DATE 2.17.89	TIME 4:37
RELINQUISHED BY: (Signature) Paul Hampton	DATE 2-17-89	TIME 5:35	RECEIVED BY: (Signature) Robin Byers	DATE 2-17-89	TIME 17:37
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME
METHOD OF SHIPMENT:	DATE	TIME	LAB COMMENTS:		

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

Analytical Laboratory: MED TOX ASSOC
3440 VINCENT RD
PLEASANT HILL, CA
(415) 930-9090

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

FORM NO. 86/COC/ARF

EAN

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 CONSULTING
1900 POWELL STREET, 12TH FL.
EMERYVILLE, CA 94608

ATTN: JANE CHAMBERS

CLIENT PROJECT NO: 1245

REPORT DATE: 03/31/89
DATE SAMPLED: 03/09/89
DATE RECEIVED: 03/09/89
DATE ANALYZED: 03/18/89
DATE EXTRACTED: 03/17/89
MED-TOX JOB NO: 8903079

ANALYSIS OF: TEN SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS

See attached for results.

RECEIVED
APR - 5 1989
LEVINE-FRICKE

Michael Lynch
Michael Lynch, Manager
Organic Laboratory

Results FAXed to Jane Chambers 03/24/89

MED-TOX ASSOCIATES, INC.

LEVINE-FRICKE CONSULTING

REPORT DATE: 03/31/89

CLIENT PROJECT NO: 1245

MED-TOX JOB NO: 8903079

METHOD: EPA 8015 (EXTRACTION)

Sample Identification Client Id.	Lab No.	Total Petroleum Hydrocarbons As Diesel (mg/kg)	Total Petroleum Hydrocarbons As Waste Oil (mg/kg)
5NW8-8-8.5-10-10.5' Composite	01A	ND(500)	1,400
5NW10-10.5-11'	04A	ND	120
5NW12-9.5-10'	10A	ND	260
5NW12-11-11.5'	11A	ND	280
5NW7-7.5-8'	13A	ND(20)	510
5NW7-10-10.5'	15A	ND	73
5NW9-8-8.5/9.5-10' Composite	16A	ND(1,000)	4,600
5NW6-7-7.5/8.5-9' Composite	22A	ND(30)	150
5NW6-10-10.5/11.5-12' Composite	23A	ND(300)	910
5NW6-13-13.5'	25A	ND(600)	2,000
Detection limit (unless otherwise indicated in parentesis)		10	20

ND = Not detected at or above indicated method detection limit

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ENVIRONMENTAL & OCCUPATIONAL HEALTH SERVICES

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LABORATORY ANALYSIS REPORT

LEVINE-FRICKE CONSULTING ENGS.
1900 POWELL STREET, 12TH FL.
EMERYVILLE, CA 94608

ATTN: JANE CHAMBERS

REPORT DATE: 04/10/89

DATE SAMPLED: 03/10/89
DATE RECEIVED: 03/10/89
DATE EXTRACTED: 03/13/89
DATE ANALYZED: 03/15-20/89

CLIENT PROJECT NO: 1245

MED-TOX JOB NO: 8903087

ANALYSIS OF: FOUR SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS

METHOD: EPA 8015 (EXTRACTION)

Sample Identification Client Id.	Lab No.	Total Petroleum Hydrocarbons as Diesel (mg/kg)	Total Petroleum Hydrocarbons as Waste Oil (mg/kg)
5NW11-6.5'-7'/7'-7.5' (composite)	01A	ND(20)	1,500
LF11-7.5'-8'/9'-9.5' (composite)	02A	ND	32
5NW13-7'-7.5'/8.5'~~-5.9'~~ 9.5 (composite)	03A	ND(20)	740
LF13-6'-6.5'/7.5'-8' (composite)	04A	ND(4,000)	8,000
Detection Limit (unless otherwise indicated in parentheses)		10	20

Michael Lynch
Michael Lynch, Manager
Organic Laboratory

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LEVINE-FRICKE

cc: Elizabeth Nixon 03/27/89
Revision of report dated 03/31/89

EAN

MED-TOX ASSOCIATES, INC.

ENVIRONMENTAL & OCCUPATIONAL HEALTH SERVICES
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LABORATORY ANALYSIS REPORT

LEVINE-FRICKE CONSULTING ENGS.
1900 POWELL STREET, 12TH FL.
EMERYVILLE, CA 94608

ATTN: JANE CHAMBERS

REPORT DATE: 04/04/89

DATE SAMPLED: 03/13/89
DATE RECEIVED: 03/13/89
DATE EXTRACTED: 03/21/89
DATE ANALYZED: 03/28/89

CLIENT PROJECT NO: 1245

MED-TOX JOB NO: 8903098

ANALYSIS OF: FOUR SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS

METHOD: EPA 8015 (EXTRACTION)

Sample Identification Client Id.	Lab No.	Total Petroleum Hydrocarbons as Diesel (mg/kg)	Total Petroleum Hydrocarbons as Waste Oil (mg/kg)
LF12-7.5-8'/8-8.5' (composite)	01A	ND	140
5NW14-9.5'-10'/ 11-11.5'/12.5-13' (composite)	05A	ND	280
INW1 INW1-3-3.5'/~~9-9.5'~~ 4'-4.5' (composite)	09A	ND(200)	1,600
INW2 INW2-7-7.5'/8.5-9' (composite)	15A	ND(200)	5,700
Detection Limit (unless otherwise indicated in parentheses)		20	40

ND = Not detected at or above indicated method detection limit

Michael Lynch, Manager
Organic Laboratory

Results FAXed to Elizabeth Nixon 03/27/89

RECEIVED
APR - 6 1989
LEVINE-FRICKE

EAN

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: 04/27/89

DATE RECEIVED: 03/29/89

DATE SAMPLED: 03/28-29/89

ATTN: Jane Chambers

CLIENT PROJECT ID: 1245

MED-TOX JOB NO: 8903232

ANALYSIS OF: NINE WATER SAMPLES FOR BTXE AND TOTAL PETROLEUM HYDROCARBONS

See attached for results

Michael Lynch
Michael Lynch, Manager
Organic Laboratory

RECEIVED
APR 28 1989
LEVINE-FRICKE

Results FAXed to Jan Chambers 04/16/89

LEVINE-FRICKE CONSULTING

CLIENT ID: LF-7
CLIENT JOB NO: 1245

MED-TOX LAB NO: 8903232-01A
MED-TOX JOB NO: 8903232

DATE SAMPLED: 03/28/89
DATE RECEIVED: 03/29/89

DATE ANALYZED: 04/05-09/89
REPORT DATE: 04/27/89
DATE EXTRACTED: 04/04/89

BTXE AND TOTAL PETROLEUM HYDROCARBONS

METHOD: EPA 602, 8015 (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:

Diesel	ND mg/L	0.3 mg/L
Waste Oil	1.8 mg/L	0.5 mg/L

ND = Not detected at or above indicated method detection limit

LEVINE-FRICKE CONSULTING

CLIENT ID: LF-6
CLIENT JOB NO: 1245

DATE SAMPLED: 03/28/89
DATE RECEIVED: 03/29/89

MED-TOX LAB NO: 8903232-02A
MED-TOX JOB NO: 8903232

DATE ANALYZED: 04/05-09/89
REPORT DATE: 04/27/89
DATE EXTRACTED: 04/04/89

BTXE AND TOTAL PETROLEUM HYDROCARBONS

METHOD: EPA 602, 8015 (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:		
Diesel	ND 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-10
CLIENT JOB NO: 1245

DATE SAMPLED: 03/28/89
DATE RECEIVED: 03/29/89

MED-TOX LAB NO: 8903232-03A
MED-TOX JOB NO: 8903232

DATE ANALYZED: 04/07-09/89
REPORT DATE: 04/27/89
DATE EXTRACTED: 04/05/89

BTXE AND TOTAL PETROLEUM HYDROCARBONS

METHOD: EPA 602, 8015 (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:

Diesel	ND mg/L	2 mg/L
Waste Oil	7.8 mg/L	3 mg/L

ND = Not detected at or above indicated method detection limit

LEVINE-FRICKE CONSULTING

CLIENT ID: LF-14
CLIENT JOB NO: 1245

DATE SAMPLED: 03/28/89
DATE RECEIVED: 03/29/89

MED-TOX LAB NO: 8903232-04A
MED-TOX JOB NO: 8903232

DATE ANALYZED: 04/07-09/89
REPORT DATE: 04/27/89
DATE EXTRACTED: 04/05/89

BTXE AND TOTAL PETROLEUM HYDROCARBONS

METHOD: EPA 602, 8015 (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:

Diesel	ND mg/L	2 mg/L
Waste Oil	5.1 mg/L	3 mg/L

ND = Not detected at or above indicated method detection limit

LEVINE-FRICKE CONSULTING

CLIENT ID: LF-13
CLIENT JOB NO: 1245

MED-TOX LAB NO: 8903232-05A
MED-TOX JOB NO: 8903232

DATE SAMPLED: 03/28/89
DATE RECEIVED: 03/29/89

DATE ANALYZED: 04/07/89
REPORT DATE: 04/27/89
DATE EXTRACTED: 04/05/89

BTXE AND TOTAL PETROLEUM HYDROCARBONS

METHOD: EPA 602, 8015 (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:		
Diesel	ND mg/L	0.3 mg/L
Waste Oil	4.4 mg/L	0.5 mg/L

ND = Not detected at or above indicated method detection limit

LEVINE-FRICKE CONSULTING

CLIENT ID: LF-11
CLIENT JOB NO: 1245

MED-TOX LAB NO: 8903232-06A
MED-TOX JOB NO: 8903232

DATE SAMPLED: 03/29/89
DATE RECEIVED: 03/29/89

DATE ANALYZED: 04/07/89
REPORT DATE: 04/27/89
DATE EXTRACTED: 04/05/89

BTXE AND TOTAL PETROLEUM HYDROCARBONS

METHOD: EPA 602, 8015 (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:

Diesel	ND mg/L	0.3 mg/L
Waste Oil	1.0 mg/L	0.5 mg/L

ND = Not detected at or above indicated method detection limit

LEVINE-FRICKE CONSULTING

CLIENT ID: LF-9
CLIENT JOB NO: 1245

MED-TOX LAB NO: 8903232-07A
MED-TOX JOB NO: 8903232

DATE SAMPLED: 03/29/89
DATE RECEIVED: 03/29/89

DATE ANALYZED: 04/07-11/89
REPORT DATE: 04/27/89
DATE EXTRACTED: 04/06/89

BTXE AND TOTAL PETROLEUM HYDROCARBONS

METHOD: EPA 602, 8015 (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:		
Diesel	12 mg/L	3 mg/L
Waste Oil	6.0 mg/L	5 mg/L

ND = Not detected at or above indicated method detection limit

LEVINE-FRICKE CONSULTING

CLIENT ID: WC-3
CLIENT JOB NO: 1245

MED-TOX LAB NO: 8903232-08A
MED-TOX JOB NO: 8903232

DATE SAMPLED: 03/29/89
DATE RECEIVED: 03/29/89

DATE ANALYZED: 04/07-13/89
REPORT DATE: 04/27/89
DATE EXTRACTED: 04/06/89

BTXE AND TOTAL PETROLEUM HYDROCARBONS

METHOD: EPA 602, 8015 (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:		
Diesel	ND mg/L	0.3 mg/L
Waste Oil	3.2 mg/L	0.5 mg/L

ND = Not detected at or above indicated method detection limit

LEVINE-FRICKE CONSULTING

CLIENT ID: LF-9FB
CLIENT JOB NO: 1245

MED-TOX LAB NO: 8903232-09A
MED-TOX JOB NO: 8903232

DATE SAMPLED: 03/29/89
DATE RECEIVED: 03/29/89

DATE ANALYZED: 04/07-10/89
REPORT DATE: 04/27/89
DATE EXTRACTED: 04/06/89

BTXE AND TOTAL PETROLEUM HYDROCARBONS

METHOD: EPA 602, 8015 (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:

Diesel	ND 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-12
CLIENT JOB NO: 1245

MED-TOX LAB NO: 8903232-10A
MED-TOX JOB NO: 8903232

DATE SAMPLED: 03/29/89
DATE RECEIVED: 03/29/89

DATE ANALYZED: 04/07/89
REPORT DATE: 04/27/89
DATE EXTRACTED: 04/06/89

BTXE AND TOTAL PETROLEUM HYDROCARBONS

METHOD: EPA 602, 8015 (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:

Diesel	ND mg/L	0.3 mg/L
Waste Oil	1.1 mg/L	0.5 mg/L

ND = Not detected at or above indicated method detection limit

8903233

CHAIN OF CUSTODY / ANALYSES REQUEST FORM

8903233

Project No.: 1245	Field Logbook No.:	Date: 3/29/89	Serial No.: No 5460
Project Name: Alameda Marina Village	Project Location: Alameda		
Sampler (Signature) :			Samplers: RWB, JDC

SAMPLES						ANALYSES									
SAMPLE NO.	DATE	TIME	LAB SAMPLE NO.	NO. OF CONTAINERS	SAMPLE TYPE	EPA 601	EPA 624	TPH extraction 8015	BTXE				HOLD	RUSH	REMARKS
LF-7	3/28	1216	1A-1D	4	water			X	X						
LF-6	3/28	1400	2A-2D	4				X	X						
LF-10	3/28	1430	3A-3D	4				X	X						Call Jane Chambers for any questions
LF-14	3/28	600	4A-4D	4				X	X						
LF-13	3/28	1130	5A-5D	4				X	X						
LF-8	3/28	1330	8903233 A,B	2	↓				X						652-4500
LF-8	3/28	1330	2A,B	2	Product								X		
LF-11	3/29	1130	6A-6D	4				X	X						
LF-9	3/29	1310	7A-7D	4				X	X						
WC-3	3/29	1445	8A-8D	4				X	X						
LF-9FB	3/29	1300	9A-9D	4				X	X						
LF-12	3/29	1530	10A-10D	4				X	X						

RELINQUISHED BY: (Signature) Robin Fricke	DATE 3/29/89	TIME 1703	RECEIVED BY: (Signature) Fred Thompson	DATE 3-29-89	TIME 1703
RELINQUISHED BY: (Signature) Fred Thompson	DATE 3/29/89	TIME 1945	RECEIVED BY: (Signature) G. Van Vleck	DATE 3-30-89	TIME 0730
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME
METHOD OF SHIPMENT:	DATE	TIME	LAB COMMENTS:		

Sample Collector: Deni Chambers

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

Analytical Laboratory: Med Tox

Shipping Copy (White) Lab Copy (Green) File Copy (Yellow) Field Copy (Pink) FORM NO. 86/COC/ARF

EAN

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 FLOOR
EMERYVILLE, CA 94608

ATTN: JANE CHAMBERS

CLIENT JOB NO: 1245

REPORT DATE: 04/25/89
DATE SAMPLED: 03/28/89
DATE RECEIVED: 03/29/89
DATE ANALYZED: 04/07/89
MED-TOX JOB NO: 8903233

ANALYSIS OF: ONE WATER SAMPLE FOR BTXE

METHOD: EPA 602

Sample Identification Client Id.	Lab No.	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)
LF-8	01A	ND	ND	ND	ND
Detection limit		3	3	3	10

ND = Not Detected at or above indicated method detection limit

Note: Elevated detection limits due to presence of heavy hydrocarbons

Michael Lynch

Michael Lynch, Manager
Organic Laboratory

Results FAXed to Jane Chambers 04/13/89

RECEIVED
APR 26 1989
LEVINE-FRICKE

8903232 f
8903232 8903233

CHAIN OF CUSTODY / ANALYSES REQUEST FORM

8903234

Project No.: 1245	Field Logbook No.:	Date: 3/29/89	Serial No.: Nº 5460
Project Name: Alameda Marina Village	Project Location: Alameda		
Sampler (Signature) :			Samplers: KMB, JDC

SAMPLES						ANALYSES								
SAMPLE NO.	DATE	TIME	LAB SAMPLE NO.	NO. OF CONTAINERS	SAMPLE TYPE	EPA 601	EPA 624	TPH extract 8015	BTXE			HOLD	RUSH	REMARKS
LF-7	3/28	1216	1A-1D	4	water			X	X					
LF-6	3/28	1400	2A-2D	4				X	X					
LF-10	3/28	1430	3A-3D	4				X	X					Call Jane Chambers for any questions
LF-14	3/28	1600	4A-4D	4				X	X					
LF-13	3/28	1130	5A-5D	4				X	X					
LF-8	3/28	1330	8903233 A,B	2					X					652-4500
LF-8	3/28	1330	2A,B	2	Product							X		
LF-11	3/29	1130	6A-6D	4				Y	X					
LF-9	3/29	1310	7A-7D	4				X	X					
WC-3	3/29	1445	8A-8D	4				X	X					
LF-9FB	3/29	1300	9A-9D	4				X	X					
LF-12	3/29	1530	10A-10D	4				X	X					

RELINQUISHED BY: (Signature)	DATE 3/29/89	TIME 1703	RECEIVED BY: (Signature)	DATE 3.29.89	TIME 17 05
RELINQUISHED BY: (Signature)	DATE 3/29/89	TIME 19 45	RECEIVED BY: (Signature)	DATE 3-30-89	TIME 0773
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME
METHOD OF SHIPMENT:	DATE	TIME	LAB COMMENTS:		

Sample Collector:
Deni Chambers

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

Analytical Laboratory:
Med Tox

Shipping Copy (White) Lab Copy (Green) File Copy (Yellow) Field Copy (Pink) FORM NO. 86/COC/ARF

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Andrew John Friedman
James E. Bruya, Ph.D.
(206) 285-8282

3008-B 16th Avenue West
Seattle, WA 98119
FAX: (206) 283-5044

March 20, 1989

Elizabeth Nixon, Project Leader
Levine-Fricke, Inc.
1900 Powell, 12th Floor
Emeryville, CA 94608

Dear Elizabeth:

Enclosed are the results of the analyses of samples submitted on March 17, 1989 from Project 1245.

We appreciate this opportunity to be of service to you on this project. If you have any questions regarding this material, or if you just want to discuss any aspect of your projects, please do not hesitate to contact me.

Sincerely,

James E. Bruya, Ph.D.

JEB

Enclosures

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: March 20, 1989
Date Submitted: March 17, 1989
Project: 1245

FINGERPRINT CHARACTERIZATION
BY CAPILLARY GAS CHROMATOGRAPHY

Sample #	GC Characterization
5NW-4B 8'-8.5	The gas chromatographic trace was indicative of weathered diesel #2 (10-20%) containing a heavier material such as a waste motor oil. This characterization is based on the presence of a relatively uneven envelope of peaks present from ca *n*-C_{10} to *n*-C_{15} which showed no even alkane pattern which is indicative of a weathered diesel. There was also an envelope of peaks from ca *n*-C_{15} to greater than *n*-C_{32} indicative of a waste oil. There also appeared to be a small amount of a third product showing a maximum near *n*-C_{32} indicative of a heavy oil.
LF-13-6-6.5	The gas chromatographic trace was indicative of a weathered light oil such as a diesel #4 or #6 plus a small amount of a heavy oil possibly similar to that seen in sample 5NW-4B 8'-8.5 above. This characterization is based on the presence of a relatively uneven envelope of peaks present from ca *n*-C_{12} to *n*-C_{25} plus a second envelope beginning at ca *n*-C_{25}.
5NW6-8.5-9	The gas chromatographic trace showed no apparent contamination present in the sample.

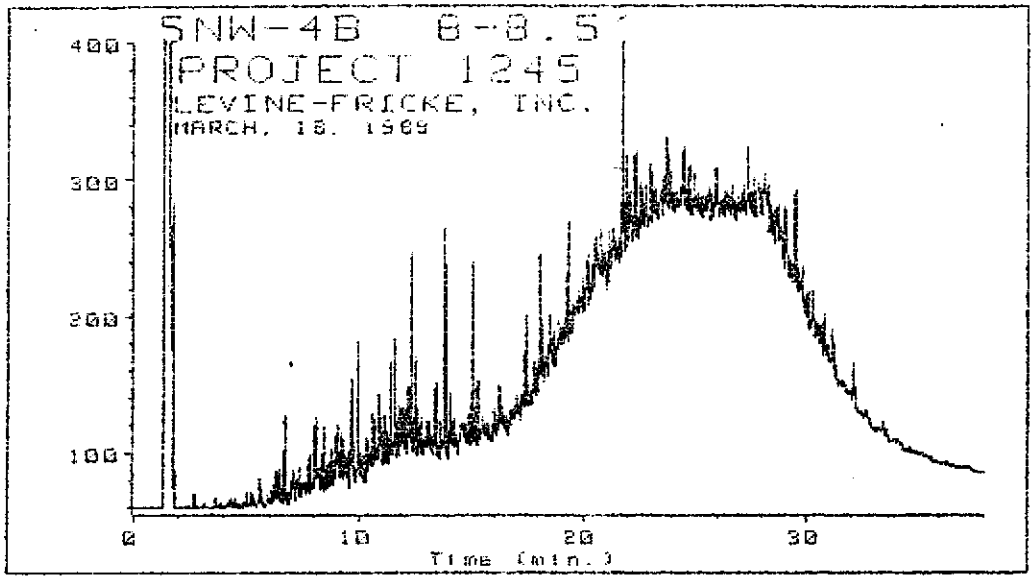
FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: March 20, 1989
Date Submitted: March 17, 1989
Project: 1245

FINGERPRINT CHARACTERIZATION
BY CAPILLARY GAS CHROMATOGRAPHY

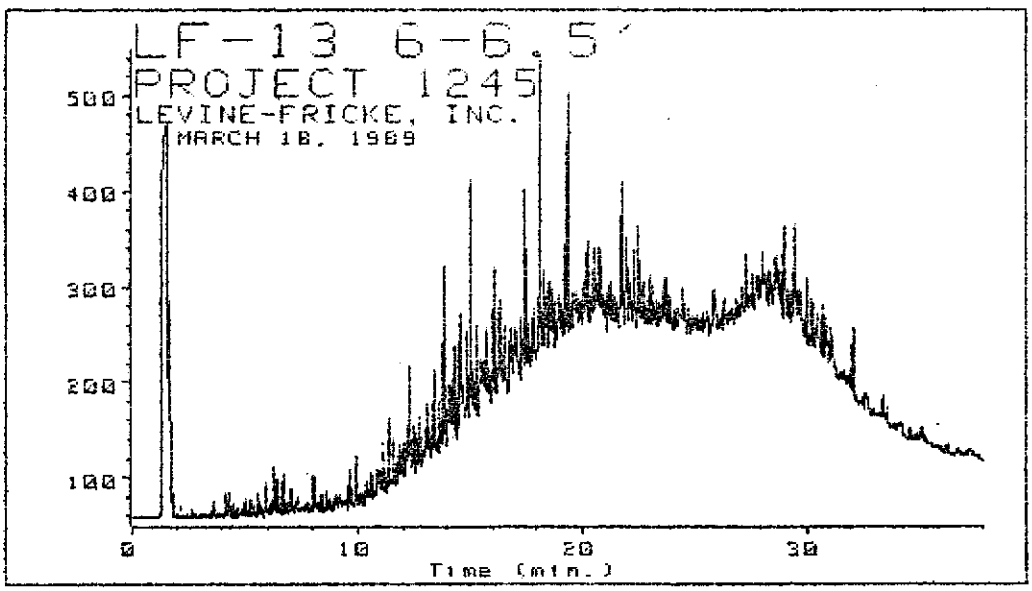
Sample #	GC Characterization
5NW6-11.5-12	The gas chromatographic trace was indicative of a very heavily weathered light oil such as a diesel #4 or #6 or else a waste motor oil plus a heavy oil similar to that seen in samples 5NW-4B 8'-8.5 and LF-13-6-6.5 above. This characterization is based on the presence of a relatively uneven envelope of peaks present from ca *n*-C_{12} to greater than *n*-C_{32} with a second hump present near *n*-C_{30}.
5NW9-9-9.5	The gas chromatographic trace was indicative of a small amount of a very heavily weathered light oil such as a diesel #4 or #6 or else a waste motor oil plus a heavy oil similar to that seen in samples 5NW-4B 8'-8.5, LF-13-6-6.5 and 5NW6-11.5-12 above. This characterization is based on the presence of a relatively smooth envelope of peaks present from ca *n*-C_{12} to *n*-C_{25} with a hump present near *n*-C_{30}.



T: null.
Z: null.
Y: null.
X: Sig. 2 of DATA:LF1_A01A.D

[DE]

New Data File | CHROMAT KEYS | GRAPHICS KEYS | DATA & LIST | Zoom In | Zoom Out | HELP | QUIT



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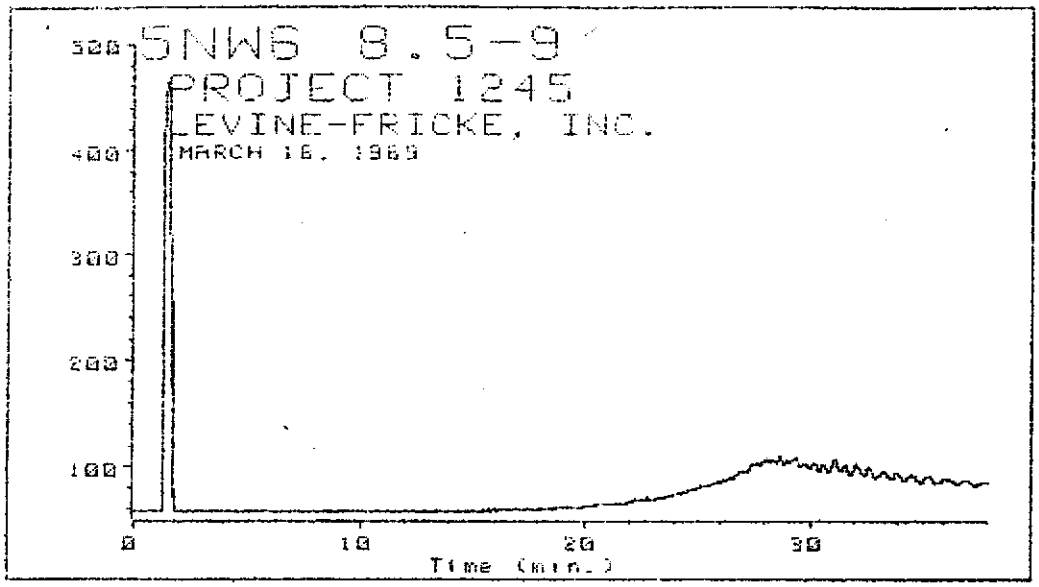
Y: Sig. 2 of DATA:LF1_A01A.D
X: Sig. 2 of DATA:LF1_A02A.D

[DE]

New Data File | CHROMAT KEYS | GRAPHICS KEYS | DATA & LIST | Zoom In | Zoom Out | HELP | QUIT

natural / transmission oil

C_{16} - C_{34}



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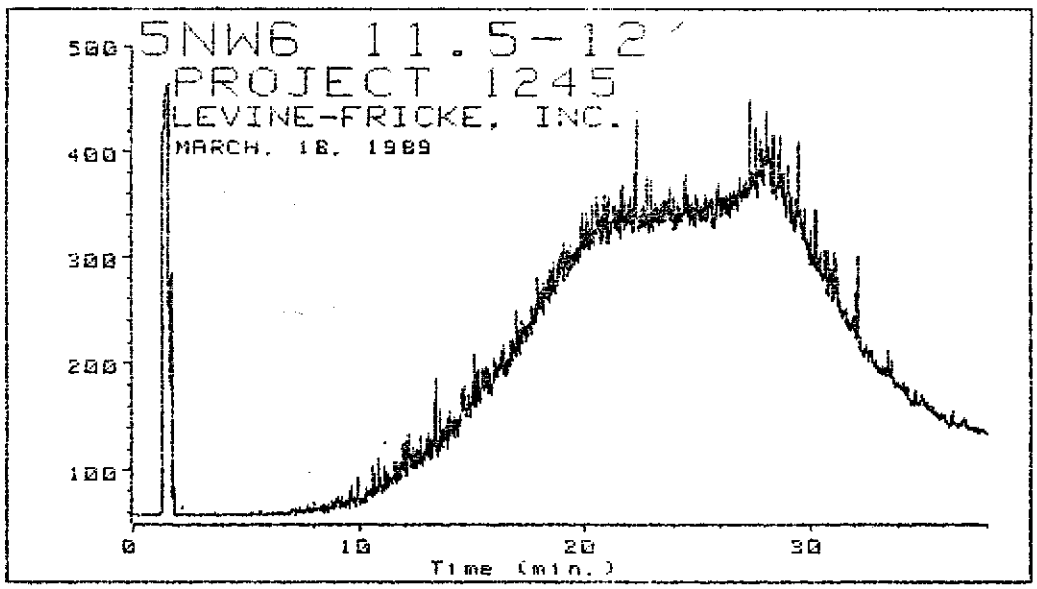
Z: Sig. 2 of DATA:LF1_A01A.D
Y: Sig. 2 of DATA:LF1_A02A.D
X: Sig. 2 of DATA:LF1_A03A.D

[GR1]

Point/Plot | Horizontal Scale | Vertical Scale | Zoom to Window 4 | Zoom In | Zoom Out | MORE KEYS | EXIT



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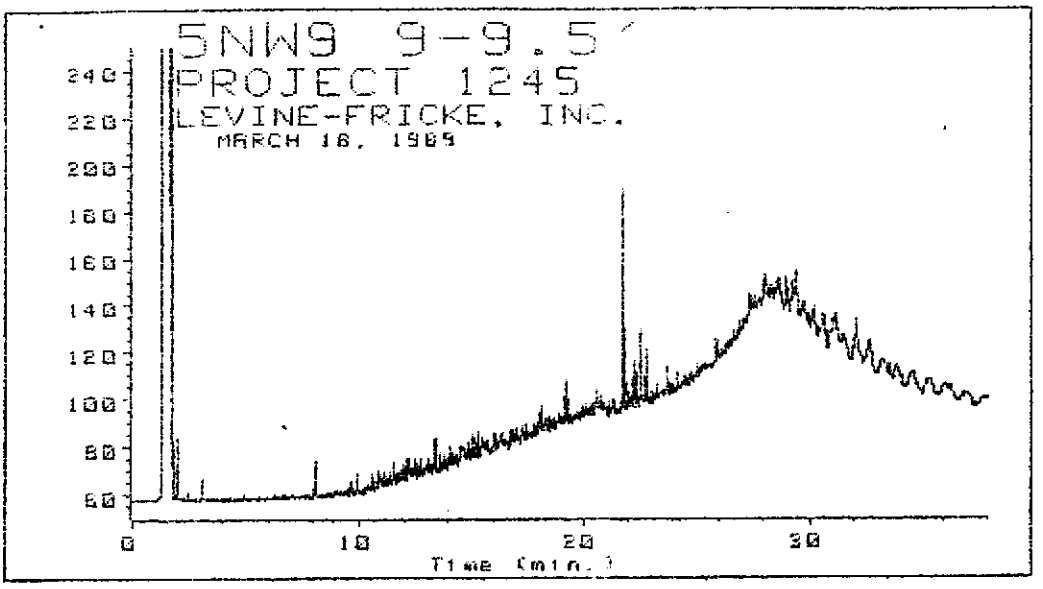
Z: Sig. 2 of DATA:LF1_A02A.D
Y: Sig. 2 of DATA:LF1_A03A.D
X: Sig. 2 of DATA:LF1_A04A.D

[DE]

New Data File | CHROMAT KEYS | GRAPHICS KEYS | MATH & LIST | Zoom In | Zoom Out | HELP | QUIT



T: Sig. 2 of DATA:LF1_A02A.D
Z: Sig. 2 of DATA:LF1_A03A.D
Y: Sig. 2 of DATA:LF1_A04A.D
X: Sig. 2 of DATA:LF1_A05A.D

[DE]

New Data File | CHROMAT KEYS | GRAPHICS KEYS | MATH & LIST | Zoom In | Zoom Out | HELP | QUIT

EAN

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Andrew John Friedman
James E. Bruya, Ph.D.
(206) 285-8282

3008-B 16th Avenue West
Seattle, WA 98119
FAX: (206) 283-5044

April 25, 1989

Elizabeth Nixon, Project Leader
Levine-Fricke, Inc.
1900 Powell, 12th Floor
Emeryville, CA 94608

Dear Ms Nixon:

Enclosed are the results of the analyses you requested on April 7, 1989, of samples submitted on March 17, 1989 from Project 1245.

As you will see in the results, no PCB was found in sample 5NW-4B 8'-8.5. The ICP analysis of this sample showed slightly elevated levels of Mercury and Lead. Sample 5NW6-11.5-12 did not show particularly high levels of any of the metals.

We appreciate this opportunity to be of service to you on this project. If you have any questions regarding this material, or if you just want to discuss any aspect of your projects, please do not hesitate to contact me.

Sincerely,

Andrew John Friedman

Andrew John Friedman, Chemist

AJF

Enclosures

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: April 25, 1989
Date Submitted: March 17, 1989
Project: 1245

RESULTS OF ANALYSES OF ENVIRONMENTAL SAMPLES FOR PCB AS AROCHLOR 1254 BY GC/ECD

Sample #	PCB (ppm)
5NW-4B 8'-8.5	<1
Quality Assurance	
Method Blank	<1
5NW-4B 8'-8.5 (Duplicate)	<1
5NW-4B 8'-8.5 (Matrix Spike) Spiked @ 4 ppm Percent Recovery	120%

AMTEST

AmTest Inc.
Professional
Analytical
Services
14603 N.E. 87th St.
Redmond, WA
98052
Fax: 206 883 3495
Tel: 206 885 1664

ANALYSIS REPORT

CLIENT: Friedman & Bruya
DATE RECEIVED: 4/11/89
DATE REPORTED: 4/18/89
REPORT TO: 3008 B 16th Avenue West
Seattle, WA 98119
P.O. NO.: G-546

Laboratory Sample No.		904808	904809	DETECTION
Client Identification		5NW-4B 8-8.5' 6991	5NW6-11.5-12 6994	LIMIT (ppm) TTLC STLC
Silver	Ag	L	2.0	1.0 500 5
Aluminum	Al	9,900.	9,800.	1.0 — —
Arsenic	As	L	L	3.0 500 5
Boron	B	11.	3.9	1.0 — —
Barium	Ba	120.	87.	0.3 10,000 100
Beryllium	Be	L	L	0.7 75 .75
Calcium	Ca	3,300.	84,000.	1.0 — —
Cadmium	Cd	L	L	0.2 100 1.0
Cobalt	Co	L	L	0.3 8,000 80
Chromium	Cr	40.	36.	0.6 500 5 (VI)
Copper	Cu	240.	85.	0.2 2,500 25
Iron	Fe	13,000.	13,000.	1.0 — —
Mercury	Hg	1.1	L	1.0 20 0.200
Potassium	K	1,700.	1,900.	100. — —
Lithium	Li	9.0	7.8	2.0 — —
Magnesium	Mg	3,600.	2,900.	1.0 — —
Manganese	Mn	130.	150.	0.2 — —
Molybdenum	Mo	L	L	1.0 3,500 350
Sodium	Na	3,500.	2,600.	2.0 — —
Nickel	Ni	48.	70.	1.0 2,000 20
Phosphorus	P	150.	150.	5.0 — —
Lead	Pb	520.	130.	2.0 1000 5
Sulfur	S	3,900.	6,900.	10. — —
Antimony	Sb	L	L	2.0 500 15
Selenium	Se	L	L	3.0 100 1.0
Silicon	Si	120.	36.	4.0 — —
Tin	Sn	L	L	2.0 — —
Strontium	Sr	24.	280.	0.3 — —
Titanium	Ti	600.	520.	1.0 — —
Thallium	Tl	L	L	3.0 700 7
Vanadium	V	29.	33.	0.2 2,400 24
Yittrium	Y	4.5	5.9	0.1 — —
Zinc	Zn	220.	62.	0.2 5,000 250
Total Solids (%)	-	83.2	83.2	-

L = Less than.
All results are reported in parts per million (ppm), on a "dry weight" basis.

REPORTED BY: Kathy Fugiel
Kathy Fugiel

KF/ja

MED-TOX ASSOCIATES, INC.

ANALYTICAL PROJECT INFORMATION FORM
(Complete Analytical Request Form on Opposite Side)

REPORTING INFORMATION
CLIENT: 1. Levine Fricke
Address: 1900 Powell St, 12th Floor
Emeryville, CA 94608
Contact: Elizabeth Nixon
Alt. Contact: _____

Client Ref.# 1245
Date Results Needed Call Elizabeth Nixon
Phone (415) 652-4500
Phone _____

ADDRESS REPORT TO: 2.
(1) (circle) or
2 (circle and complete)
Attn: _____

SEND REPORT TO: 3.
(1) or 2 (circle)
or 3 (circle and complete)
Attn: _____

****

BILLING INFORMATION
Please Note the Following:
Standard turnaround time is ten (10) working days. Rush turnaround is available by prior arangement only and is subject to surcharges of 50% (5 work days) or 100% (1-2 work days) as appropriate. Holiday and/ or weekend work will be negotiated on a project basis.

ADDRESS INVOICE TO: 4.
(1) 2, or 3 (circle) or
4 (circle and complete)
Attn: _____

Client P.O. # _____
(Attach completed P.O.)

SEND INVOICE TO: 5.
(1) 2,3 or 4 (circle) or
5 (circle and complete)
Attn: _____

Authorized Signature:

Suzanne Silvera 3/16/89
Signature Date

Lab Project No: _____ (lab use only)

Suzanne Silvera
Printed Name

Comments: Call Elizabeth Nixon if you have any questions.

MED-TOX ASSOCIATES, INC.
ANALYTICAL REQUEST/CHAIN OF CUSTODY FORM
(Complete Information on Opposite Side)

CLIENT Levine Fricke (AMV)
CLIENT JOB REF.: 1245
LAB PROJECT NO: _____ (lab use only)

Date: 3/16/89
SAMPLER(S): _____

CLIENT SAMPLE IDENTIFICATION	DATE Collected	Lab Number (lab use only)	AIR VOLUME (Liters)	NO. CONT.	SAMPLE TYPE *	ANALYSES: Fuel Characterization	COMMENTS/ INTERFERENCES
5NW-4B 8-8.5	2/17			1	8	X	
LF-13-6-6.5	3/10			↓	↓	X	
5NW6-8.5-9	3/9					X	
5NW6-11.5-12	3/9					X	
5NW9-9-9.5	3/9			↓	↓	X	

Relinquished by: (Signature) Suzanne Pelvera	Date 3/16/89	Time 3:40pm	Received by: (Signature)	Date	Time
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
Dispatched by: (Signature)	Date	Time	Received for lab by: (Signature)	Date	Time
Method of Shipment:			Lab Comments:		

*SAMPLE TYPE (SPECIFY): (1) 37 mm 0.8 um MCEF;2) 25 mm 0.8 um MCEF; (3) 25 mm 0.4 um polycarb. filter; (4) PVC filter, diam. pore size ; (5) Charcoal tube; (6) Silica gel tube (7) Water; (8) Soil; (9) Bulk Sample;

EAN

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Andrew John Friedman
James E. Bruya, Ph.D.
(206) 285-8282

3008-B 16th Avenue West
Seattle, WA 98119
FAX: (206) 283-5044

May 1, 1989

Elizabeth Nixon, Project Leader
Levine-Fricke, Inc.
1900 Powell, 12th Floor
Emeryville, CA 94608

Dear Ms Nixon:

Enclosed are the results of the analyses of samples submitted on April 25, 1989 from Project 1245.

Comparison of this sample with the others sent from this project shows some similarity between this product and the materials found in samples from 5NW6-11.5-12' and 5NW9-9-9.5' submitted on March 7 of this year, however, both of the latter samples showed separate humps that were different from the single smooth envelope this sample displayed.

We appreciate this opportunity to be of service to you on this project. If you have any questions regarding this material, or if you just want to discuss any aspect of your projects, please do not hesitate to contact me.

Sincerely,

Andrew John Friedman

Andrew John Friedman, Chemist

AJF

Enclosures

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: May 1, 1989
Date Submitted: April 25, 1989
Project: 1245

FINGERPRINT CHARACTERIZATION
BY CAPILLARY GAS CHROMATOGRAPHY

Sample #	GC Characterization
LF8	The gas chromatographic trace was indicative of a heavily weathered hydrocarbon material, most closely resembling an old crude oil. This characterization is based on the presence of a relatively smooth envelope, or hump, without *n*-alkane predominance, ranging from ca *n*-C_8 to larger than *n*-C_{35} with a maximum greater than *n*-C_{30}. The smooth distribution makes it impossible to locate separate boiling fractions that may have been used to compose this mixture, but the possibility exists that this is a mixture of waste oils.

8903079

CHAIN OF CUSTODY / ANALYSES REQUEST FORM

Project No.: 1245	Field Logbook No.:	Date: 3/9/89	Serial No.: No 5434
Project Name: Alameda - Marina Village	Project Location:		
Sampler (Signature): Jane Chambers			

Samplers: JDC EAW

SAMPLES: SAMPLE NO.	DATE	TIME	LAB SAMPLE NO.	NO. OF CONTAINERS	SAMPLE TYPE	ANALYSES: EPA 601	EPA 624	TPH extract 8015*				HOLD	RUSH	REMARKS
SNW9-8'-8.5'	3/9		16A	1	Soil			X						composite SNW9-8'-8.5' + SNW9-9.5-10'
SNW9-9'-9.5'			17A									X		
SNW9-9.5'-10'			16A					X						
SNW9-12.5-13'			18A									X		* Diesel → waste oil
SNW9-14-14.5'			19A									X		
SNW9-15.5'-16'			20A									X		
SNW6-6.5-7'			21A									X		
SNW6-7-7.5'			22A					X						composite SNW6-7-7.5' + SNW6-8.5-9
SNW6-8.5-9			22A					X						
SNW6-10-10.5			23A					X						
SNW6-11-11.5			24A					*				X		composite SNW6-10-10.5 + SNW6-11.5-12
SNW6-11.5-12			23A					X						
SNW6-13-13.5			25A					X						
														Homogenize individual samples then composite, (4 homogenized) save individual samples separately HOLD

RELINQUISHED BY: (Signature) Jane D. Chambers	DATE 3/9/89	TIME 5:20pm	RECEIVED BY: (Signature) Bruce Thompson	DATE 3.9.89	TIME 5:20 5pm
RELINQUISHED BY: (Signature) Bruce Thompson	DATE 3.9.89	TIME 18 15	RECEIVED BY: (Signature) G. Van Vleck	DATE 3-10-89	TIME 0800
RELINQUISHED BY: (Signature) Robin Byars	DATE 3-10-89	TIME 8:00	RECEIVED BY: (Signature) Robin Byars	DATE 3-9-89	TIME 15:15
METHOD OF SHIPMENT:	DATE	TIME	LAB COMMENTS: Samples came in 3-9-89. Lab received them 3-10-89.		

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

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 CONSULTING
1900 POWELL ST., 12TH FL.
EMERYVILLE, CA 94608

ATTN: ELIZABETH NIXON

CLIENT ID: 1245

REPORT DATE: 09/07/88

DATE SAMPLED: 08/15/88

DATE RECEIVED: 08/16/88
DATE ANALYZED: 08/25-29/88
MED-TOX JOB NO: 8808114

ANALYSIS OF: NINE SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS; THREE SOIL SAMPLES FOR GC\MS VOLATILE ORGANICS

METHOD: EPA 8015 (EXTRACTION)

Sample Identification Client Id.	Lab No.	Total Petroleum Hydrocarbons As Diesel (mg/kg)
2NW1-9.5-10	01A	1,600
2NW1-11-11.5	03A	14,000
2NW2-8-9.5	05A	150
2NW3-7-7.5	06A	ND
2NW3-8.5-9	07A	37
2NW4-8.5-9	09A	230*
2NW4-10-10.5	10A	ND
2NW5-7-7.5	11A	ND
2NW5-10-10.5	13A	120
Detection Limit		10

* Although this sample contains what appears to be higher molecular weight hydrocarbons than those typically contained in a diesel fuel, reported concentration is based on diesel calibration.

See attached for remaining results.

Michael J. Jaeger, Manager
Organic Laboratory

Results FAXed to Elizabeth Nixon 08/30/88

Levine-Fricke Consulting

CLIENT ID: 2NW2-8-9.5
CLIENT JOB NO: Alameda Marina Village
DATE SAMPLED: 08/15/88
DATE RECEIVED: 08/16/88

MED-TOX LAB NO: 8808114-05A
MED-TOX JOB NO: 8808114
DATE ANALYZED: 08/23/88
REPORT DATE: 09/06/88

EPA METHOD 8240
GC/MS VOLATILE ORGANICS

COMPOUND	CAS #	CONCENTRATION (ug/kg)	DETECTION LIMIT (ug/kg)
Acetone	67-64-1	ND	100
Benzene	71-43-2	ND	5
Bromodichloromethane	75-27-4	ND	5
Bromoform	75-25-2	ND	5
Bromomethane	74-83-9	ND	10
2-Butanone	78-93-3	ND	100
Carbon Disulfide	75-15-0	ND	10
Carbon Tetrachloride	56-23-5	ND	5
Chlorobenzene	108-90-7	ND	5
Chloroethane	75-00-3	ND	10
2-Chloroethyl Vinyl Ether	110-75-8	ND	10
Chloroform	67-66-3	ND	5
Chloromethane	74-87-3	ND	10
Dibromochloromethane	124-48-1	ND	5
1,1-Dichloroethane	75-34-3	ND	5
1,2-Dichloroethane	107-06-2	ND	5
1,1-Dichloroethene	75-35-4	ND	5
trans-1,2-Dichloroethene	156-60-5	ND	5
1,2-Dichloropropane	78-87-5	ND	5
cis-1,3-Dichloropropene	10061-01-5	ND	5
trans-1,3-Dichloropropene	10061-02-6	ND	5
Ethylbenzene	100-41-4	ND	5
2-Hexanone	591-78-6	ND	50
Methylene Chloride	75-09-2	ND	5
4-Methyl-2-pentanone	108-10-1	ND	50
Styrene	100-42-5	ND	10
1,1,2,2-Tetrachloroethane	79-34-5	ND	5
Tetrachloroethene	127-18-4	ND	5
Toluene	108-88-3	16	5
1,1,1-Trichloroethane	71-55-6	ND	5
1,1,2-Trichloroethane	79-00-5	ND	5
Trichloroethene	79-01-6	ND	5
Vinyl Acetate	108-05-4	ND	50
Vinyl Chloride	75-01-4	ND	10
Xylenes, total	------	ND	10

NOTES AND DEFINITIONS FOR THIS REPORT:
ND = Not Detected
Analytical Method: EPA 8240, SW-846 3rd Edition, 1986

Levine-Fricke Consulting

CLIENT ID: 2NW4-10-10.5
CLIENT JOB NO: Alameda Marina Village
DATE SAMPLED: 08/15/88
DATE RECEIVED: 08/16/88

MED-TOX LAB NO: 8808114-10A
MED-TOX JOB NO: 8808114
DATE ANALYZED: 08/27/88
REPORT DATE: 09/06/88

EPA METHOD 8240
GC/MS VOLATILE ORGANICS

COMPOUND	CAS #	CONCENTRATION (ug/kg)	DETECTION LIMIT (ug/kg)
Acetone	67-64-1	ND	1000
Benzene	71-43-2	ND	50
Bromodichloromethane	75-27-4	ND	50
Bromoform	75-25-2	ND	50
Bromomethane	74-83-9	ND	100
2-Butanone	78-93-3	ND	1000
Carbon Disulfide	75-15-0	ND	100
Carbon Tetrachloride	56-23-5	ND	50
Chlorobenzene	108-90-7	ND	50
Chloroethane	75-00-3	ND	100
2-Chloroethyl Vinyl Ether	110-75-8	ND	100
Chloroform	67-66-3	ND	50
Chloromethane	74-87-3	ND	100
Dibromochloromethane	124-48-1	ND	50
1,1-Dichloroethane	75-34-3	ND	50
1,2-Dichloroethane	107-06-2	ND	50
1,1-Dichloroethene	75-35-4	ND	50
trans-1,2-Dichloroethene	156-60-5	ND	50
1,2-Dichloropropane	78-87-5	ND	50
cis-1,3-Dichloropropene	10061-01-5	ND	50
trans-1,3-Dichloropropene	10061-02-6	ND	50
Ethylbenzene	100-41-4	ND	50
2-Hexanone	591-78-6	ND	500
Methylene Chloride	75-09-2	ND	50
4-Methyl-2-pentanone	108-10-1	ND	500
Styrene	100-42-5	ND	100
1,1,2,2-Tetrachloroethane	79-34-5	ND	50
Tetrachloroethene	127-18-4	ND	50
Toluene	108-88-3	210	50
1,1,1-Trichloroethane	71-55-6	ND	50
1,1,2-Trichloroethane	79-00-5	ND	50
Trichloroethene	79-01-6	ND	50
Vinyl Acetate	108-05-4	ND	500
Vinyl Chloride	75-01-4	ND	100
Xylenes, total	------	ND	100

NOTES AND DEFINITIONS FOR THIS REPORT:
ND = Not Detected
Analytical Method: EPA 8240, SW-846 3rd Edition, 1986

Levine-Fricke Consulting

CLIENT ID: 2NW1-9.5-10
CLIENT JOB NO: Alameda Marina Village
DATE SAMPLED: 08/15/88
DATE RECEIVED: 08/16/88

MED-TOX LAB NO: 8808114-01A
MED-TOX JOB NO: 8808114
DATE ANALYZED: 08/23/88
REPORT DATE: 09/06/88

EPA METHOD 8240
GC/MS VOLATILE ORGANICS

COMPOUND	CAS #	CONCENTRATION (ug/kg)	DETECTION LIMIT (ug/kg)
Acetone	67-64-1	ND	500
Benzene	71-43-2	ND	25
Bromodichloromethane	75-27-4	ND	25
Bromoform	75-25-2	ND	25
Bromomethane	74-83-9	ND	50
2-Butanone	78-93-3	ND	500
Carbon Disulfide	75-15-0	ND	50
Carbon Tetrachloride	56-23-5	ND	25
Chlorobenzene	108-90-7	ND	25
Chloroethane	75-00-3	ND	50
2-Chloroethyl Vinyl Ether	110-75-8	ND	50
Chloroform	67-66-3	ND	25
Chloromethane	74-87-3	ND	50
Dibromochloromethane	124-48-1	ND	25
1,1-Dichloroethane	75-34-3	ND	25
1,2-Dichloroethane	107-06-2	ND	25
1,1-Dichloroethene	75-35-4	ND	25
trans-1,2-Dichloroethene	156-60-5	ND	25
1,2-Dichloropropane	78-87-5	ND	25
cis-1,3-Dichloropropene	10061-01-5	ND	25
trans-1,3-Dichloropropene	10061-02-6	ND	25
Ethylbenzene	100-41-4	ND	25
2-Hexanone	591-78-6	ND	250
Methylene Chloride	75-09-2	ND	25
4-Methyl-2-pentanone	108-10-1	ND	250
Styrene	100-42-5	ND	50
1,1,2,2-Tetrachloroethane	79-34-5	ND	25
Tetrachloroethene	127-18-4	ND	25
Toluene	108-88-3	ND	25
1,1,1-Trichloroethane	71-55-6	ND	25
1,1,2-Trichloroethane	79-00-5	ND	25
Trichloroethene	79-01-6	ND	25
Vinyl Acetate	108-05-4	ND	250
Vinyl Chloride	75-01-4	ND	50
Xylenes, total	------	ND	250

NOTES AND DEFINITIONS FOR THIS REPORT:
ND = Not Detected
Analytical Method: EPA 8240, SW-846 3rd Edition, 1986