



D R A F T

**Investigation of Field Area
South of Powerhouse
Marina Village
Alameda, California**

April 25, 1988
1245

Prepared for:

Vintage Properties / Alameda Commercial
1150 Marina Village Parkway, Suite 100
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CONSULTING ENGINEERS AND HYDROGEOLOGISTS

April 25, 1988

LF-1245

Mr. Don Parker
Vintage Properties/Alameda Commercial
1150 Marina Village Parkway, Suite 100
Alameda, California 94501

Subject: Enclosed Draft Report on Investigation of Field Area
South of Power House, Marina Village, Alameda,
California

Dear Don:

Enclosed please find the subject report detailing the field investigation and laboratory analysis results.

Observations from 17 soil borings and several backhoe-dug pits show that a thin layer of soil (less than a foot thick) stained with weathered petroleum is present over an approximately 5,550 square yard area. This petroleum, although present at the ground-water level (approximately 6 to 12 feet below ground-surface), does not appear to be affecting ground-water quality. No floating product was observed in the initial borings, and laboratory analysis results of water samples collected from borings located along the perimeter of the affected area indicated that there are no detectable, dissolved petroleum hydrocarbons in the ground water.

Five monitoring wells were installed in the affected area and along the northeastern edge of the field (between the affected area and the Alameda Inner Harbor) to confirm ground-water quality. Location of these wells was based on data gathered from the soil borings. Initial sampling of these wells indicated no floating petroleum product was present in the wells. Extractable petroleum hydrocarbons were detected in only one of the wells at a low concentration (LF5, at 1.8 parts per million (ppm)). The water samples were also analyzed for benzene, toluene, xylenes and ethylbenzene (BTXE). Very low concentrations (between 0.0006 and 0.003 ppm) of one or more of these compounds were detected in three of the wells. These concentrations are well below the State of California Department of Health Services Drinking Water Action Levels for BTXE. These wells are proposed to be used for future ground-water monitoring of the area.

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Water-levels were measured in the monitoring wells to define the ground-water flow direction and gradient in the area. This information has been used to further evaluate the potential, if any, for hydrocarbon migration toward the waters of the Alameda Inner Harbor.

Results of the investigation indicate that petroleum hydrocarbon concentrations in the soils immediately adjacent to the water table exceed typical cleanup guidelines. However, the apparent lack of mobility of the petroleum and absence of detectable concentration of aromatics in the ground water indicate these high concentrations of petroleum hydrocarbon in the soil are not impacting ground-water quality. Based on these conclusions, we recommend leaving the soils in place. An annual ground-water monitoring program should be implemented to confirm present conditions.

If you have any questions, comments, or request any modifications to the report, please contact the undersigned or Elizabeth Nixon at your earliest convenience.

Sincerely,

Tom Graf, P.E.
Principal Engineer

Anthony D. Daus, R.G.
Senior Hydrogeologist

Enclosure

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INVESTIGATION OF FIELD AREA SOUTH OF POWERHOUSE MARINA VILLAGE, ALAMEDA, CALIFORNIA

INTRODUCTION

This report describes the results of a soil and ground-water investigation performed between February 11 and March 29, 1988 in an open field south of the Powerhouse in Marina Village. The investigation included drilling and sampling of 17 soil borings, excavation of seven test pits, installation of five shallow ground-water monitoring wells, analysis of soil and ground-water samples, and ground-water level measurements.

Initially, 17 shallow borings were drilled, one of which was converted to a ground-water monitoring well, and seven shallow test pits were excavated to estimate the areal extent of the hydrocarbons. Soil and ground-water samples were collected from selected borings and pits and chemically analyzed to characterize and quantify the types and concentrations of hydrocarbons.

A total of four additional shallow ground-water monitoring wells were subsequently installed in the field area within and outside the boundaries of the petroleum-stained soils to document ground-water quality of the area and to evaluate the potential for migration, if any, of the hydrocarbons off-site.

The following text describes the field methods used, data obtained, and conclusions reached during the course of the investigation.

FIELD ACTIVITIES

Soil Borings and Well Installation

Drilling of an initial 16 soil borings, and drilling and installing one shallow monitoring well (LF5), were conducted during the period of February 11 through 17, 1988. Four additional monitoring wells were installed March 8, 9, and 23, 1988, to further define the shallow ground-water flow system and water quality. Drilling was completed using the hollow-stem auger method and was performed by Datum Exploration of Pittsburg (soil borings plus LF5) and All Terrain Drilling, Inc. of Roseville, California (additional well installations). All field activities during drilling, well installation, well development and sampling were performed under the direct supervision of a Levine-Fricke California Registered Geologist.

The hollow-stem auger method (using eight-inch outside diameter augers) was used to drill the soil borings and install the wells. Soil sampling was conducted continuously during drilling of the borings and wells using a drive or continuous core sampler. Soil samples were collected using a modified California sampler fitted with clean brass tubes, or composited from the open barrel of a standard split spoon sampler into brass tubes. Selected samples were retained for chemical analysis by placing clean aluminum foil over each end of the tube over which a clean plastic cap was placed. The cap was then securely fastened to the tube by wrapping it with electrical tape. All soil samples collected for possible chemical analysis were labeled and placed directly into a chilled cooler. Soil samples were delivered to the analytical laboratory as early as possible under strict chain-of-custody protocol.

Water samples were collected from the initial soil borings using clean laboratory supplied glass VOAs lowered into the boring. The samples were sealed, labeled and placed into a chilled cooler for delivery under strict chain-of-custody protocol to the analytical laboratory.

The wells were constructed of 2-inch diameter, Schedule 40 PVC casing, with 10 feet of factory-slotted perforations. A Number 3 Monterey sand pack was placed around the screened interval, extending from one to two feet above the top of the screen. Approximately one foot of bentonite pellets were placed above this sand pack as a seal. The remaining annular space above the bentonite seal was grouted with cement. Well screens were positioned to intersect the water table. Well depths, perforation intervals and well elevations are presented in Table 3.

All drilling and down-hole equipment and PVC casing was steam-cleaned prior to drilling and well installation.

Test Pits

Test pits were dug by a Vintage Properties subcontractor using a backhoe. Test pit excavations were observed jointly by a representative of Vintage Properties and a Levine·Fricke field engineer. Soil samples were collected for chemical analysis from the pits by manually pressing the tubes into backhoe-dug soils. The brass tubes were prepared for delivery to the analytical laboratory as described above.

Ground-Water Sampling of Monitoring Wells

One round of water samples was collected from wells LF1 through LF5 on March 28, 1988. Prior to sampling, approximately 10 well volumes were purged from each well using a centrifugal pump. All purging equipment was steam-cleaned prior to each use. Specific conductance, pH, and temperature were measured and water clarity was noted during this purging process to help determine when a sufficient quantity of water had been removed to obtain a sample of fresh formation water.

Water samples collected from each well were placed in laboratory-supplied 1-liter amber glass jars and 40-ml VOA vials using a clean Teflon bailer. The samples were labeled and then immediately placed in a chilled cooler for transport to Anatec Laboratories, Santa Rosa, California.

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

Floating product thickness measurements were taken prior to well sampling activities with a clean, clear acetate bailer.

Water-level measurements were taken during sample collection 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). A second round of water-level measurements was taken on April 21, 1988, during a falling tide. Ground-water elevation data is presented in Table 3 and on Figure 3. In addition to monitoring wells LF1 through LF5, the ground-water level was measured in a monitoring well previously installed by Woodward Clyde Consultants. This well is denoted as WC3 on Figure 3.

SITE GEOLOGY

Locations of the initial 17 soil borings and seven test pits are illustrated on Figure 2. Boring and pit locations are plotted according to a 50-foot grid pattern of the field area provided by Vintage Properties. Survey data of the grid is included as Appendix D. Sediment type, ground-water depth, petroleum staining, and volatile organic vapor content as measured with a volatile organic vapor meter (Photovac TIP) were logged in each boring. Logs of the borings are included in Appendix A. Sediments encountered and observations regarding petroleum content in the test pits, located along the railroad tracks west of the field area, are described in Appendix B.

Subsurface soils consisted of variable thicknesses (5 to 10 feet in soil borings) of brown, silty, sandy, and/or gravelly clay fill with variable amounts of large rocks and debris (wood, brick, concrete and asphalt). These materials were underlain by green-gray sand, silty to clayey sand, and sandy and silty clay fill containing variable amounts of shells and wood fragments. The water level was approximately 6 to 12 feet below ground surface, and generally corresponded to 1 to 2 feet below the brown, silty-clay fill/green-gray, sandy fill interface. Sediments in the test pits were similar to those encountered in the borings, but because of the test pits' lower elevation, the green-gray sands were encountered at shallower depths (3 to 4 feet), with water levels about 4 to 5 feet below the ground surface.

SOIL AND WATER QUALITY

Soil Sampling and Analysis

In many of the initial soil borings (see Figure 2, borings 7, 8, 9, 11, 12, and 15), an approximately 0.5- to 1-foot thick layer of black, petroleum-stained sediments was encountered at about the depth of the water table. The petroleum, weathered and tar-like in character, was restricted to a sharply defined zone in the sediments and did not appear to be miscible with the ground water. A layer of petroleum-stained sediments was also observed in three of the test pits (RR1, RR2 and RR3) just outside the western property boundary. The approximate boundary of the petroleum-affected area is shown on Figure 2.

Soil samples selected for chemical analysis were collected from the following areas:

- o the petroleum-stained zone, as determined by field observations, for petroleum identification and quantification;
- o soils directly above and below the petroleum-stained soils to verify the vertical distribution of the petroleum-affected soils;
- o at or near the ground-water level in borings outside of the petroleum-stained zone, as determined by field observations, to verify the lateral extent of the petroleum-affected area; and,
- o soils that appeared to have elevated organic vapor content as indicated by Photovac TIP readings.

Sample depths and analysis results of soil samples are listed in Table 1. Copies of laboratory certificates are included in Appendix C.

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One soil sample collected from the petroleum-stained horizon in boring 7 (sample SB7-2-2) was fuel fingerprinted to characterize the hydrocarbon. It was identified by Farr, Friedman and Bruya, Inc., of Seattle, Washington, as being a highly degraded heavy diesel fuel. The laboratory report of the identification analysis is included in Appendix C.

Thirteen additional soil samples were analyzed for total petroleum hydrocarbons (TPH) using EPA method 8015 (by extraction, for detection of heavy, or high boiling point hydrocarbons) to quantify concentrations and to determine the distribution of oil in the area.

A sample collected from the oily horizon in boring 8 (SB8-1-3) indicated a TPH (diesel) concentration of 13,000 parts per million (ppm). Analysis of samples from about 1.5 feet below this zone in boring 8 (SB8-2-3) and in boring 12 (SB12-2-2) did not contain detectable TPH. A sample from boring 7, about 1 foot above the petroleum-affected zone (sample SB7-1-3) also did not contain detectable TPH. These analysis results confirm the visual observations in the field that the petroleum-affected soils are contained in a sharply defined layer with a thickness of 1-foot or less.

Soil samples collected from six borings and pits on the perimeter of the petroleum-affected area at depths corresponding to about the ground-water level were analyzed for TPH using EPA method 8015 (extraction borings SB13, SB14, SB17, SB18 and pits RR2, RR4). Analysis results indicated that no detectable TPH are present in locations of borings 17 and 18 along the northern perimeter or in boring 13 and pit RR4 along the southern perimeter. A relatively low concentration of TPH was detected in boring 14 along the southeast edge of the affected area at a depth of 6 to 6.5 feet (130 parts per million (ppm)), but none were detected in a sample collected from 7 to 7.5 feet. Analysis of a sample taken from pit RR2, along the western perimeter of the study area at a depth of four to five feet on the east side of the railroad tracks indicated 70 ppm TPH.

Soil samples from three borings (6A, 6B and 10A), located in the southern portion of the study area where elevated concentrations of organic vapors were detected (over 100 ppm), were analyzed for low boiling point hydrocarbons using EPA 8015 (purge and trap), and for either purgeable aromatics (EPA method 8020) or benzene, toluene, xylene and ethylbenzene (BTXE - modified EPA method 8020). One additional sample in a boring south of this area (soil boring SB13) was also similarly analyzed to confirm the southern boundary of the apparent localized area where elevated volatile organic concentrations were indicated. These borings were located outside of the petroleum-stained area.

Additionally, samples from two borings (SB7 and SB8) within the petroleum-affected area were analyzed for low boiling point TPH and/or BTXE to confirm that these hydrocarbon fractions were not present in the petroleum-affected area.

Analysis results indicated that a very low concentration of low-boiling point TPH was present in boring SB6B (1.3 ppm) and was not detected in the other borings. Low concentrations of BTXE compounds were detected in borings SB6, SB6B, SB7, SB10A and SB13. Toluene was the most commonly encountered volatile organic compound and was found in all of the above listed borings in concentrations ranging from 0.001 to 0.066 ppm. Benzene was detected in borings SB6A and SB7 at 0.003 and 0.005 ppm, respectively. Xylene was also encountered in these two borings at 0.056 and 0.004 ppm, respectively. No other purgeable aromatics were detected in soil samples analyzed by EPA method 8020 (samples from borings SB6, SB6B, SB7, and SB8).

Ground-Water Analysis

Soil Borings

Five ground-water samples from the initial 17 soil borings were collected for chemical analysis. One sample was collected from a boring within the petroleum-affected area (sample SB11) and 4 samples were collected from borings outside of the affected area (SB6B, SB10A, SB16, and SB18). Four of these samples (SB10A-W, SB11-W, SB16-W and SB18-W) were analyzed for high boiling point TPH (EPA method 8015). Analysis results indicated that no detectable TPH concentrations were present in these water samples. Water samples SB6B-W and SB10A-W were analyzed for low boiling point TPH (EPA method 8015) and BTXE (modified EPA method 602). Results indicate that 0.003 ppm toluene were present in water from boring SB10A. Otherwise TPH and BTXE compounds were not detected. Additionally, water from boring SB6B was analyzed for purgeable halocarbons (EPA method 601) to further assess the origin of high organic vapor readings taken in the field from this boring. Analysis results indicate that no purgeable halocarbons were present in the water. Sample analysis data is presented in Table 2. Copies of Laboratory certificates are included in Appendix C.

Monitoring Wells

Two of the monitoring wells (LF4 and LF5) are located within the petroleum-affected area, and three are located along the northeast border of the open field area between the affected area and the Alameda Inner Harbor as shown in Figure 2 (LF1, LF2 and LF3). The locations of these wells were chosen to monitor ground-water quality within and outside the affected area and to assess the migration potential of petroleum hydrocarbons observed in the soil.

Ground-water samples collected during the initial round of sampling were analyzed for high boiling point TPH (EPA method 8015) and BTXE (modified EPA method 602). Two samples, one within (LF4) and one down-gradient (LF1) of the petroleum-affected area, were also analyzed for Total Dissolved Solids (TDS) to assess the general ground-water quality of the area.

Results of TPH analyses indicate that four of the five wells (LF1, LF2, LF3 and LF4) do not contain TPH concentrations above detection limits. The remaining well, LF5, contained 1.8 ppm TPH.

Volatile organic compounds (VOCs) were detected at very low concentrations in several of the wells. Benzene was not detected in any of the wells. Toluene was detected at a concentration slightly above detection limits (0.0006 ppm) in LF1. Xylene was found in three of the wells (LF1, LF2, and LF5) at concentrations ranging between 0.0007 and 0.003 ppm. Ethylbenzene was detected at a concentration slightly above detection limits in LF1 (0.0006 ppm). The detected concentrations of these compounds are well below the State of California Department of Health Services Action Levels for drinking water.

Analysis results for TPH and BTXE are listed in Table 3. Copies of laboratory certificates are included in Appendix C.

Product thickness measurements taken at the time of water sampling showed no petroleum product floating on the water table in any of the wells.

TDS concentrations in wells LF1 and LF4 were 9,000 and 13,000 ppm, respectively. These results indicate that the ground water is brackish (as defined by J.D. Hem, U.S. Geological Survey, paper No. 1473, 1970). These concentrations are well above the maximum concentration level (MCL) acceptable for drinking water according to EPA drinking water standards (MCL for TDS is 1,000 ppm). Copies of laboratory certificates are included in Appendix C.

GROUND-WATER FLOW SYSTEM

Ground-water elevation measurements and contours are plotted on Figure 3. As shown, the localized ground-water flow direction in the field area is predominantly to the north-northwest. Near the Powerhouse, the ground-water flow direction changes to the east. Although it is expected that the general ground-water flow direction would be directly toward the Alameda Inner Harbor (northeast of the field), flow direction of such a shallow ground-water table may vary according to localized conditions. The presence of surface irrigation systems associated with landscaping of the area (adjacent to wells LF1, LF2, and LF3, for example) has likely influenced ground-water elevations. Tidal fluctuations may also cause variability in localized direction and gradient of ground-water flow near the Bay. The relative consistency of ground-water levels between the two water-level measurement events (March 28 and April 21, 1988, see Table 3), however, indicate that tidal influence is not significant in the field area.

The ground-water gradient ranges from nearly flat near well WC3 to between 0.006 ft/ft toward the northwest in the vicinity of wells LF1, LF2 and LF3. The observed flow directions and gradients indicate that ground-water flow from the field area toward the Alameda Inner Harbor is limited.

CONCLUSIONS

Field observations and laboratory data indicate that the approximate areal extent of soils stained with weathered heavy diesel are as shown in Figure 2. The western boundary of the petroleum-area appears to extend past the railroad tracks west of the property boundary. The remaining boundaries appear to be within the open field area. Data also indicate that lighter weight hydrocarbons and volatile organic compounds are well below regulatory action levels for water and guidelines for soils. Water-sample analysis data indicates that the weathered diesel, although present at high concentrations within a narrow soil horizon at the depth of the water table, has not adversely impacted water quality in the area. High TDS concentrations in the ground-water demonstrate that ground-water in the area is non-potable.

The origin of the diesel is unknown. The distribution and degree of weathering of the diesel, however, suggest that it has been in the ground for many years and is not mobile in the soil or ground water as indicated by the absence of floating petroleum product and dissolved hydrocarbons in the monitoring wells. It is unlikely that the diesel would re-mobilize in the future under the present conditions.

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In addition, ground-water elevation data indicates that ground-water flow toward the Alameda Inner Harbor is restricted.

Based on the data gathered during the investigation, the petroleum-stained soils in the field area in their present condition do not pose a significant hazard to the environment or to humans and could be left in place. The weathered petroleum residues that are on the soils will continue to degrade with time due to chemical reactions and biodegradation. Continued monitoring of the area, however, is recommended on an annual basis for three years to confirm the immobility of the petroleum and verify non-detectable or very low concentrations of dissolved hydrocarbons.

TABLE 1
SOIL LABORATORY ANALYSIS RESULTS
TOTAL PETROLEUM HYDROCARBONS (TPH)
AND BENZENE, TOLUENE, XYLENE AND ETHYLBENZENE (BTXE)

SAMPLE NO.	SAMPLE DEPTH* (FEET)	DATE SAMPLED	TPH AS DIESEL (ppm)	TPH AS GASOLINE (ppm)	BENZENE (ppm)	TOLUENE (ppm)	XYLENE (ppm)	ETHYLBENZENE (ppm)
SB6-1-2	(8-8.5)	2/12/88	NA	1.3	0.003	0.006	0.056	0.010
SB68-2-2	(10-10.5)	2/12/88	NA	<0.1	<0.001	0.001	<0.003	<0.001
SB7-1-3	(7.5-8)	2/11/88	<50	NA	0.005	0.006	0.004	<0.001
SB8-1-3	(8.5-9)	2/12/88	13,000	NA	<0.001	<0.001	<0.003	<0.001
SB8-2-3	(10.5-11)	2/12/88	<50	NA	<0.001	<0.001	<0.003	<0.001
SB10A-2	(11.5-13)	2/17/88	NA	<0.1	<0.001	0.064	<0.003	<0.001
SB13-1	(7-8.5)	2/17/88	<50	<0.1	<0.001	0.066	<0.003	<0.001
SB14-1-3	(6-6.5)	2/17/88	520**	NA	NA	NA	NA	NA
SB14-1-3	(6-6.5)	2/17/88	130**	NA	NA	NA	NA	NA
SB14-2-3	(7-7.5)	2/17/88	<50	NA	NA	NA	NA	NA
SB17-2-3	(8-8.5)	2/17/88	<50	NA	NA	NA	NA	NA
SB18-1-3	(10.5-11)	2/17/88	<50	NA	NA	NA	NA	NA
SB18-2-3	(12-12.5)	2/17/88	<50	NA	NA	NA	NA	NA
RR2-100	(4-5)	2/17/88	74	NA	NA	NA	NA	NA
RR4-200	(4-5)	2/17/88	<50	NA	NA	NA	NA	NA

Laboratory Analysis performed by Med-Tox Associates, using EPA method 8015 and modified EPA method 8020.

NA - Not Analyzed

< - Below Detection Limit

* Below Ground Surface

** Sediments in sample SB14-1-3 contained intermittent small pockets of petroleum staining. Original analysis results (520 ppm TPH) may represent a hydrocarbon concentration within one of these pockets. The sample was re-analyzed after homogenizing the sediments. The results of this analysis (130 ppm) is considered more representative of the sampling interval than the original analysis result.

TABLE 2
GROUND-WATER LABORATORY ANALYSIS RESULTS
FROM SOIL BORINGS

TOTAL PETROLEUM HYDROCARBONS (TPH)
AND BENZENE, TOLUENE, XYLENE AND ETHYLBENZENE (BTXE)

SAMPLE NO.	DATE SAMPLED	TPH AS DIESEL (ppm)	TPH AS GASOLINE (ppm)	BENZENE (ppm)	TOLUENE (ppm)	XYLENE (ppm)	ETHYLBENZENE (ppm)
SB6B-W	2/12/88	NA	<0.1	<0.0005	<0.0005	<0.002	<0.0005
SB10A-W	2/17/88	<10	<0.1	<0.0005	0.003	<0.002	<0.0005
SB11-W	2/12/88	<10	NA	NA	NA	NA	NA
SB18-W	2/17/88	<10	NA	NA	NA	NA	NA

Laboratory Analysis performed by Med-Tox Associates using EPA method 8015 and modified EPA method 602.

NA - Not Analyzed

< - Detection Limit

TABLE 3
MONITORING WELL GROUND WATER SAMPLING RESULTS
AND WELL CONSTRUCTION DATA

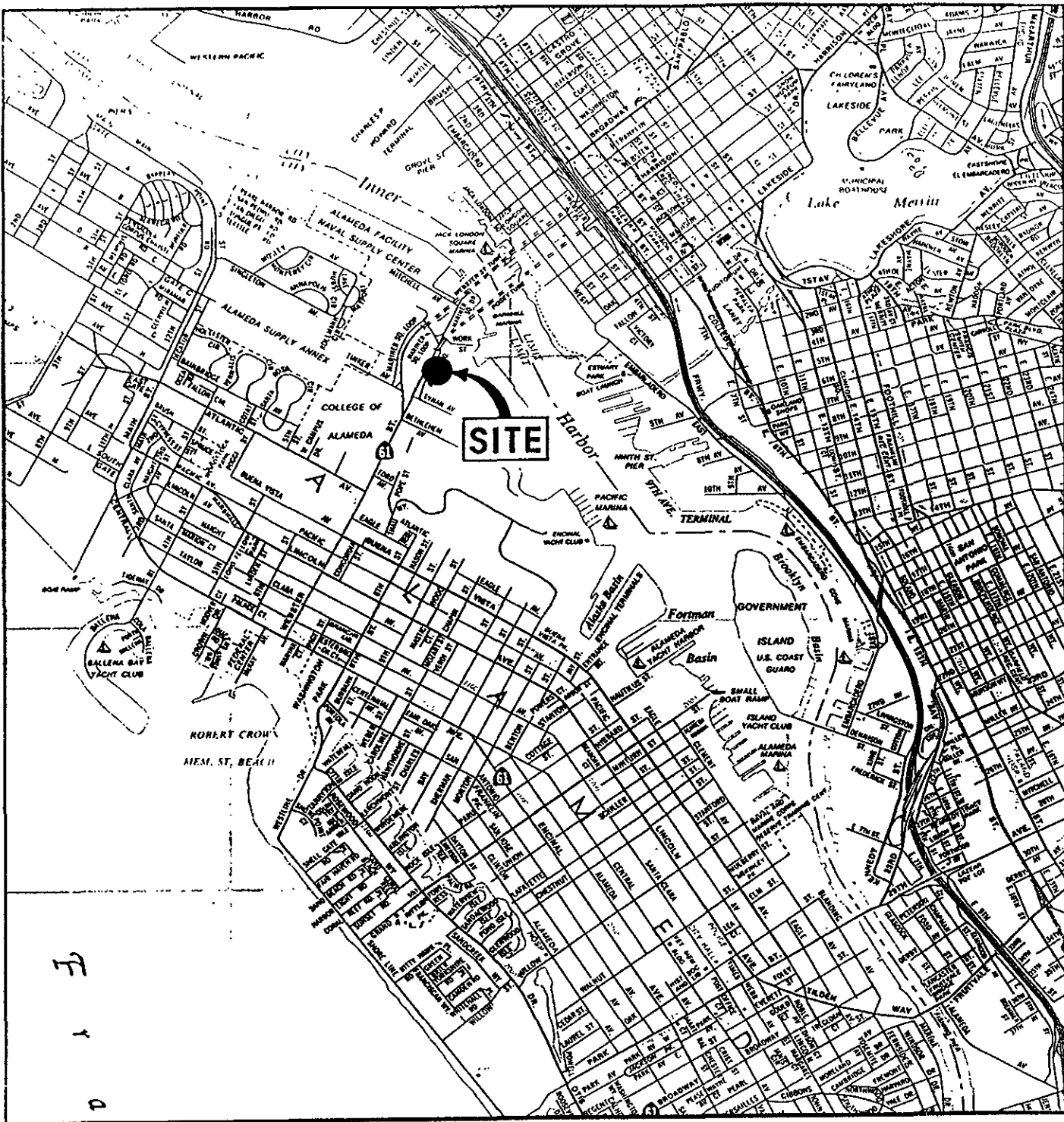
WELL NO.	WELL DEPTH (ft)*	WELL ~ELEV. (ft) (Datum)	GROUND SURFACE ~ELEV. (ft) (Datum)	PERFORATION INTERVAL (ft)*	SAMPLE NAME	DATE SAMPLED	WATER DEPTH (ft) (Datum)	WATER ELEVATION (FEET)	TPH (Diesel) (ppm)	BENZENE (ppm)	TOLUENE (ppm)	XYLENE (ppm)	ETHYL-BENZENE (ppm)
LF-1	15	7.00	5.5	5-15	LF-1	3/28/88	9.00	-2.00	<0.05	<0.0005	0.0006	0.003	0.0006
						4/21/88	8.16	-1.16	---	---	---	---	---
					LF1-BLANK	3/28/88			<0.05	<0.0005	<0.0005	<0.0005	<0.0005
LF-2	15	6.30	5.2	5-15	LF-2	3/28/88	9.00	-2.70	<0.05	<0.0005	<0.0005	0.0007	<0.0005
						4/21/88	8.68	-2.38	---	---	---	---	---
LF-3	14.5	4.30	3.6	4.5-14.5	LF-3	3/28/88	7.88	-3.58	<0.05	<0.0005	<0.0005	<0.0005	<0.0005
						4/21/88	7.10	-2.80	---	---	---	---	---
LF-4	15	6.58	5.1	5-15	LF-4	3/28/88	10.13	-3.55	<0.05	<0.0005	<0.0005	<0.0005	<0.0005
						4/21/88	9.51	-2.93	---	---	---	---	---
LF-5	15	5.46	6.0	5-15	LF-5	3/28/88	8.33	-2.87	1.8	<0.0005	<0.0005	0.001	<0.0005
						4/21/88	7.94	-2.48	---	---	---	---	---

*Below Ground Surface

~ Elevations based on City of Alameda Datum (6.4 feet above MSL)

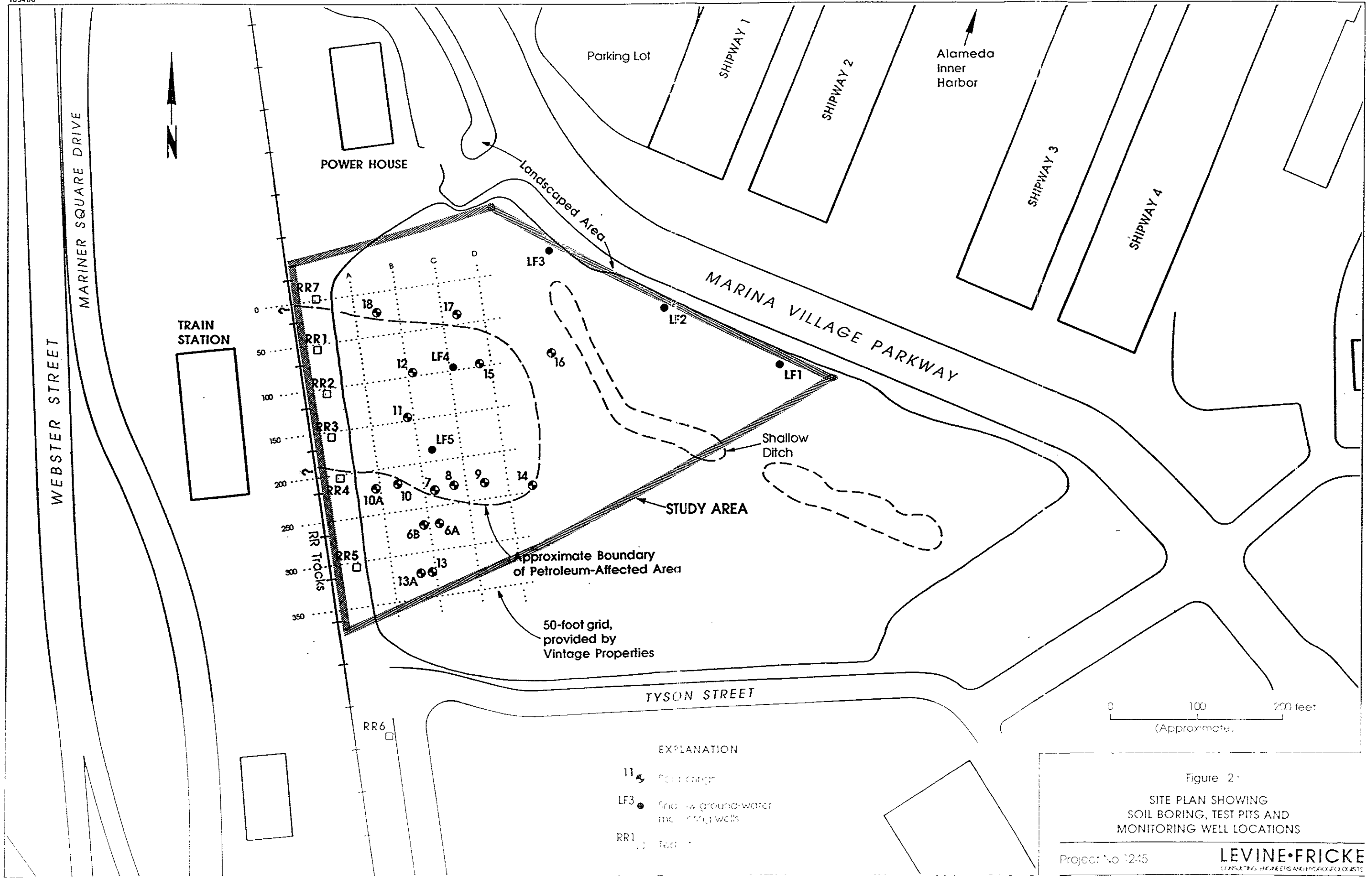
--- Ground-water sampling and analysis not performed

< Detection Limit



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

Figure 1 : SITE VICINITY



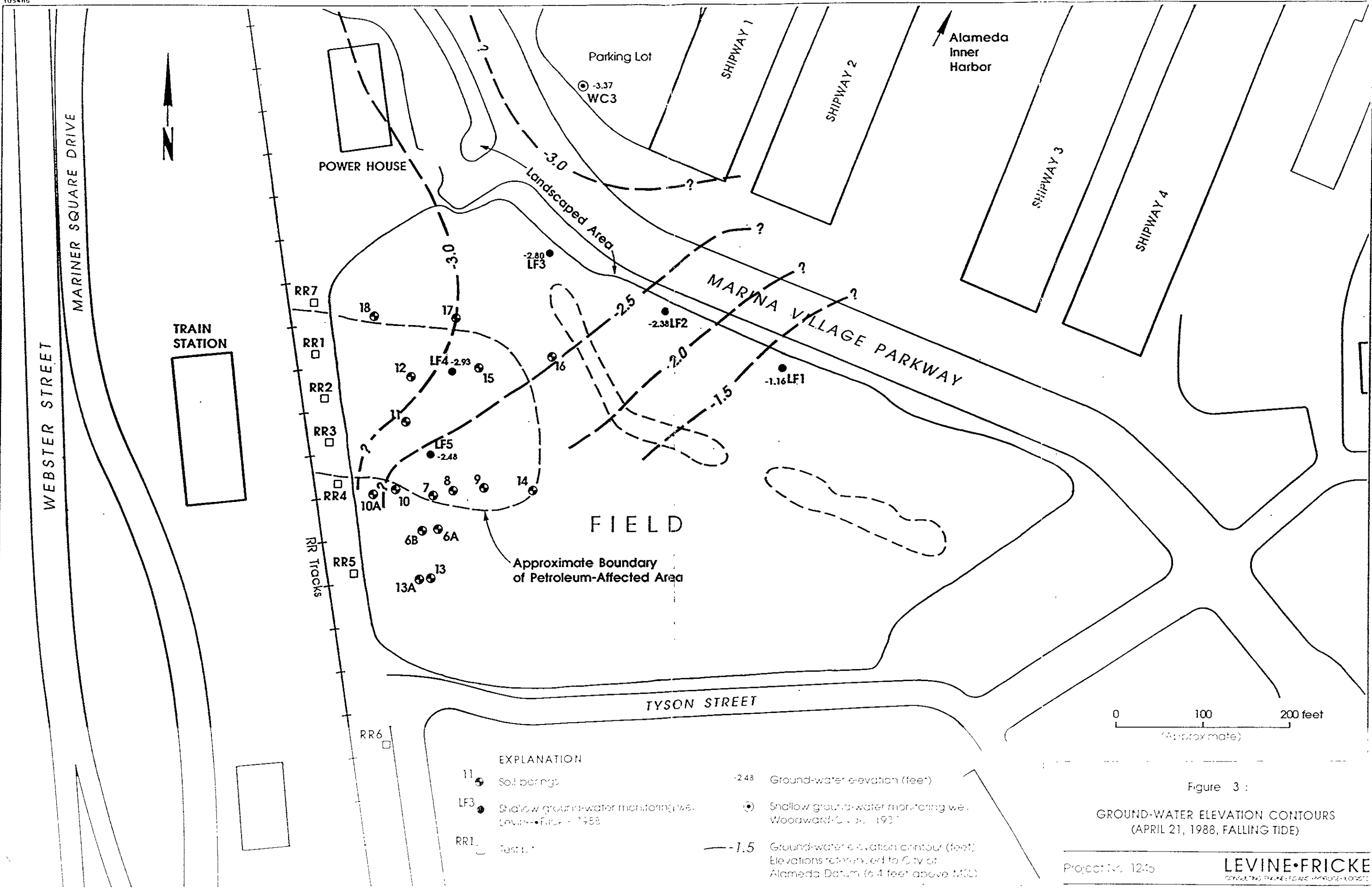
- EXPLANATION
- 11 ● Soil core
 - LF3 ● Shallow ground-water monitoring wells
 - RR1 □ Test pit

0 100 200 feet
(Approximate)

Figure 2
SITE PLAN SHOWING
SOIL BORING, TEST PITS AND
MONITORING WELL LOCATIONS

Project No 1245

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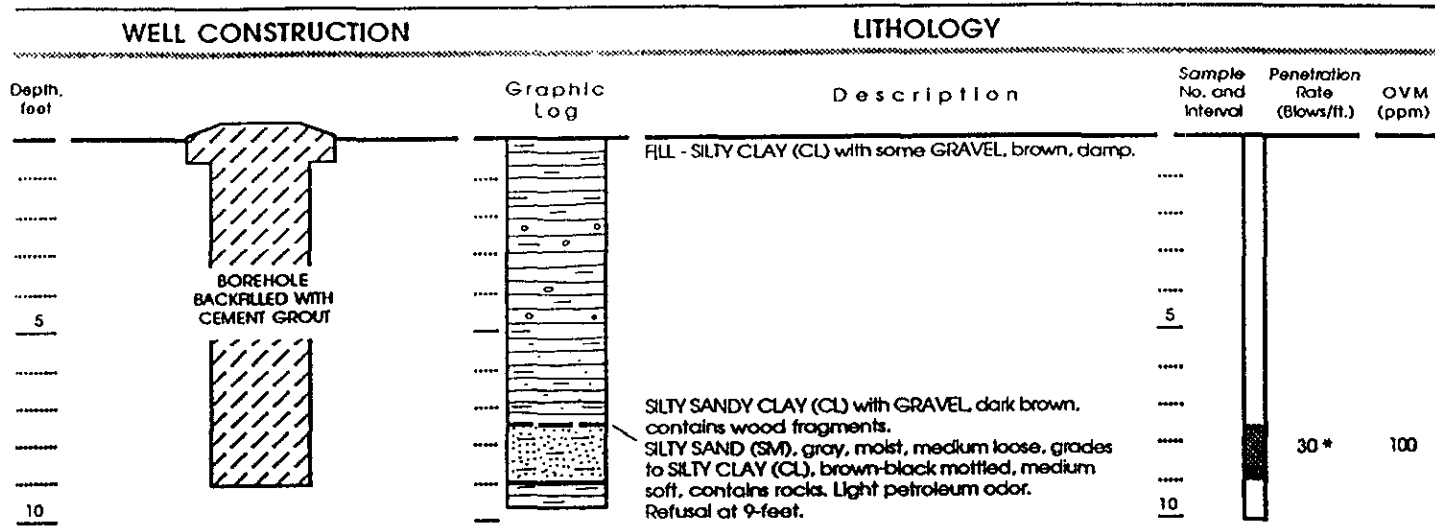


EXPLANATION	
11 ●	Soil borings
LF3 ●	Shallow ground-water monitoring well Levine-Fricke - 1988
RR1 □	Test pit
-2.48	Ground-water elevation (feet)
○	Shallow ground-water monitoring well Woodward-Clyde - 1987
-1.5	Ground-water elevation contour (feet) Elevations referenced to City of Alameda Datum (6.4 feet above MSL)

0 100 200 feet
(Approximate)

Figure 3 :
GROUND-WATER ELEVATION CONTOURS
(APRIL 21, 1988, FALLING TIDE)

APPENDIX A
SOIL BORING AND WELL LOGS



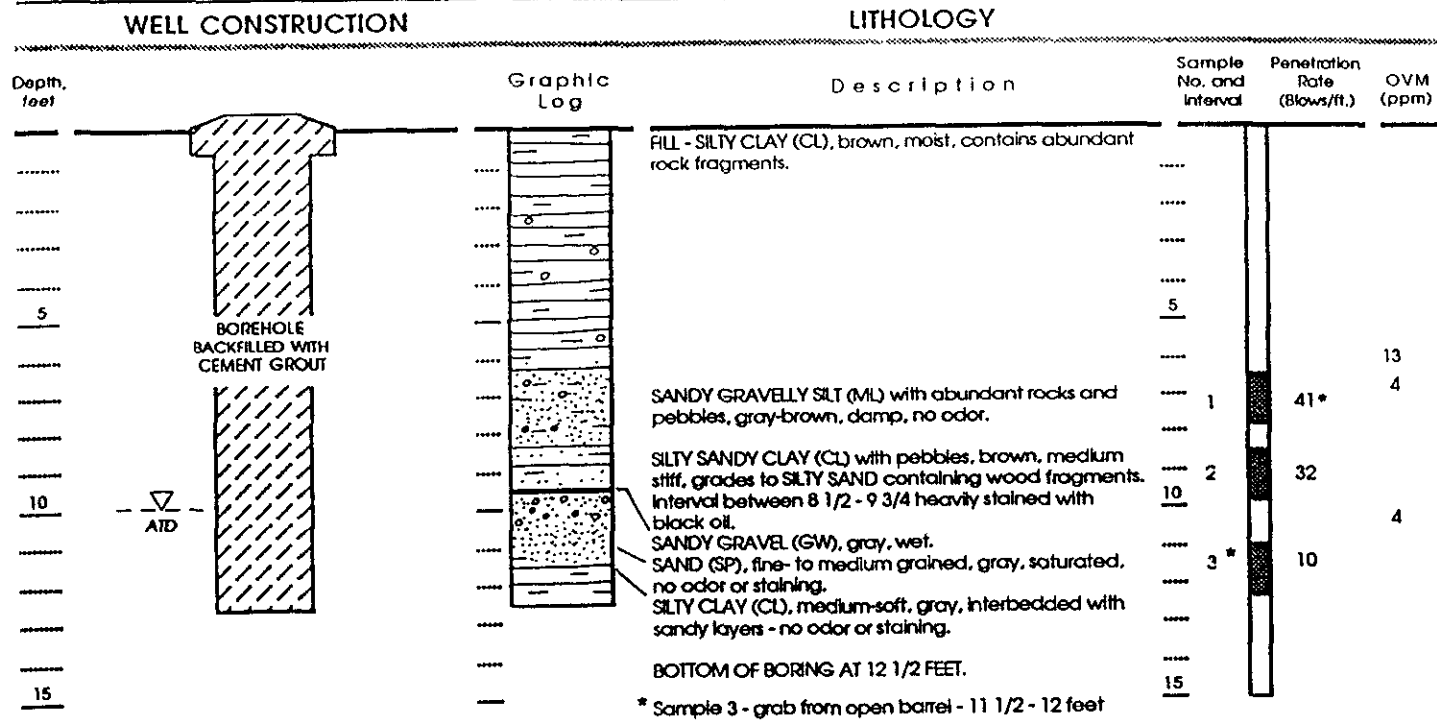
Date boring drilled: 12 February 1988
 Drilling method: Hollow Stem Auger
 Hammer weight: 140 lbs/30-inch drop
 LF Geologist: Elizabeth Nixon

EXPLANATION

- Clay
- Silt
- Sand
- Gravel
- OVM** Organic vapor meter reading in parts-per-million (ppm)
- Modified California Sampler
- * Blow count reflects rocks encountered in sediments

Approved by: 4267

Figure A1 : LITHOLOGY AND SAMPLE DATA FOR SOIL BORING SB6A



Date boring drilled: 11 February 1988
 Drilling method: Hollow Stem Auger
 Hammer weight: 140 lbs/30-inch drop
 LF Geologist: Elizabeth Nixon

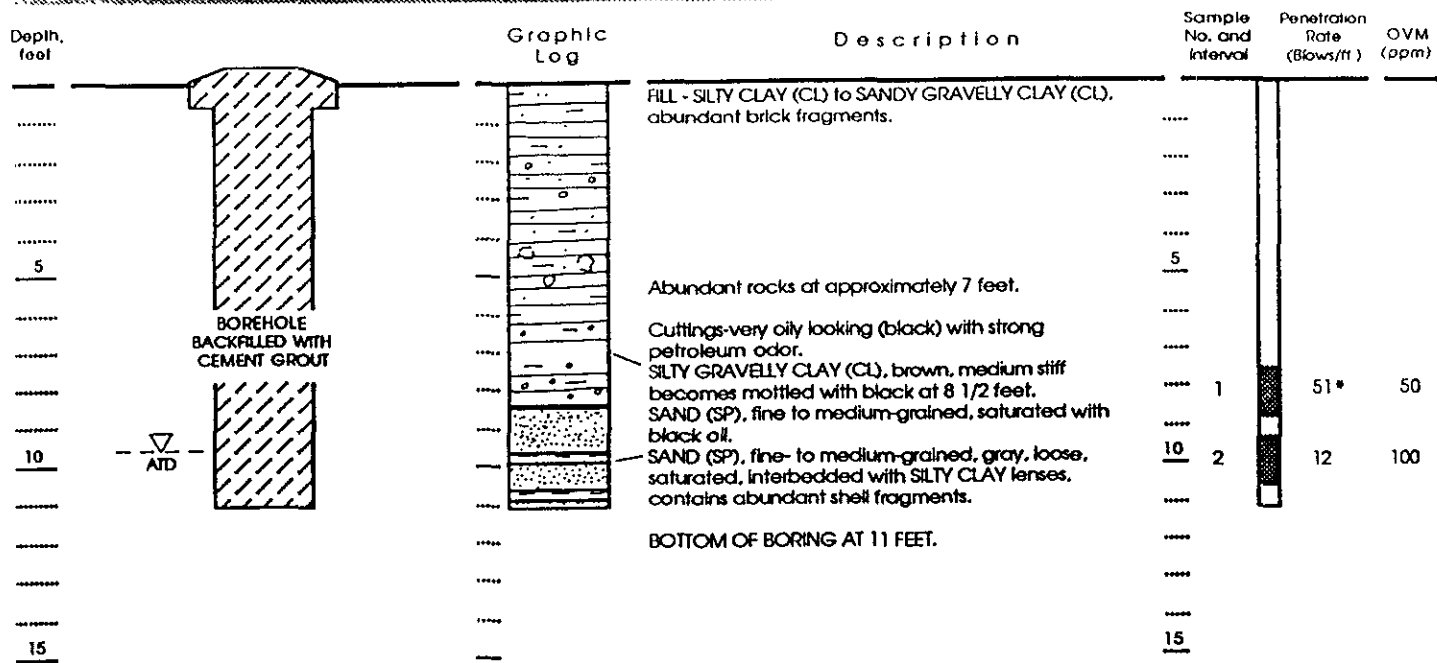
- EXPLANATION**
- Clay
 - Silt
 - Sand
 - Gravel
 - Water level at time of drilling
 - ATD
 - OVM Organic vapor meter reading in parts-per-million (ppm)
 - Modified California Sampler
 - * Blow count reflects rocks encountered in sediments

Approved by: 4267

Figure A3 : LITHOLOGY AND SAMPLE DATA FOR SOIL BORING SB7

WELL CONSTRUCTION

LITHOLOGY



BOREHOLE BACKFILLED WITH CEMENT GROUT

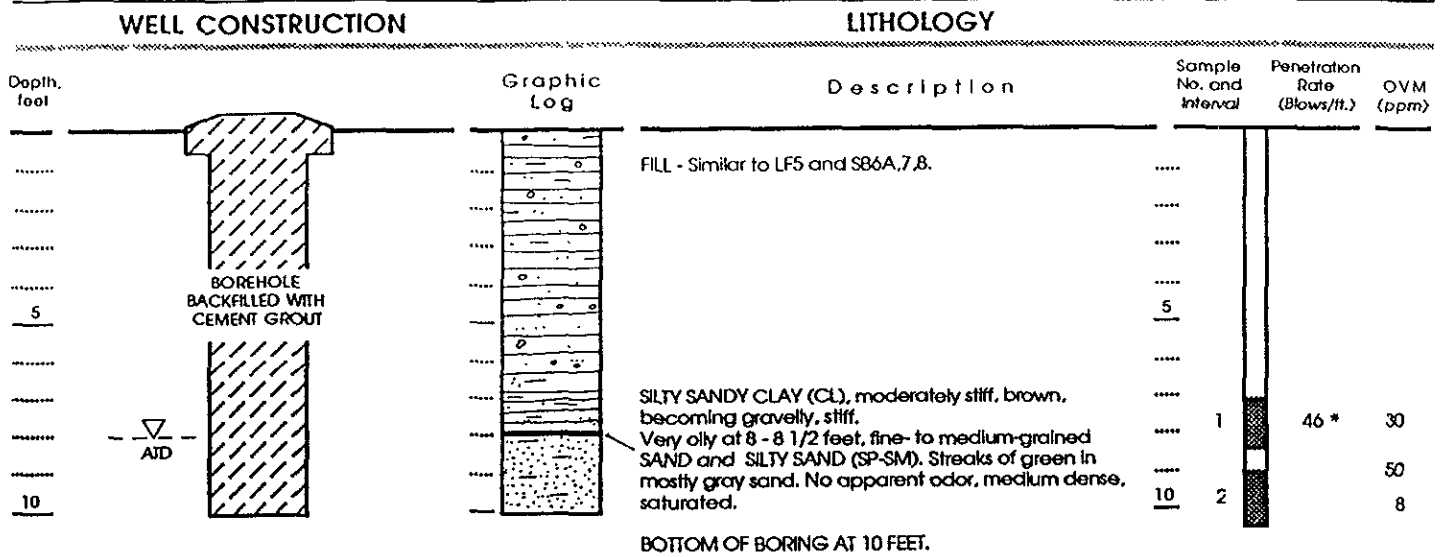
ATD

Date boring drilled: 12 February 1988
 Drilling method: Hollow Stem Auger
 Hammer weight: 140 lbs/30-inch drop
 LF Geologist: Elizabeth Nixon

- EXPLANATION**
- Clay
 - Silt
 - Sand
 - Gravel
 - Water level at time of drilling
 - ATD
 - OVM Organic vapor meter reading in parts-per-million (ppm)
 - Modified California Sampler
 - * Blow count reflects rocks encountered in sediments

Approved by: 4267

Figure A4 : LITHOLOGY AND SAMPLE DATA FOR SOIL BORING SB8

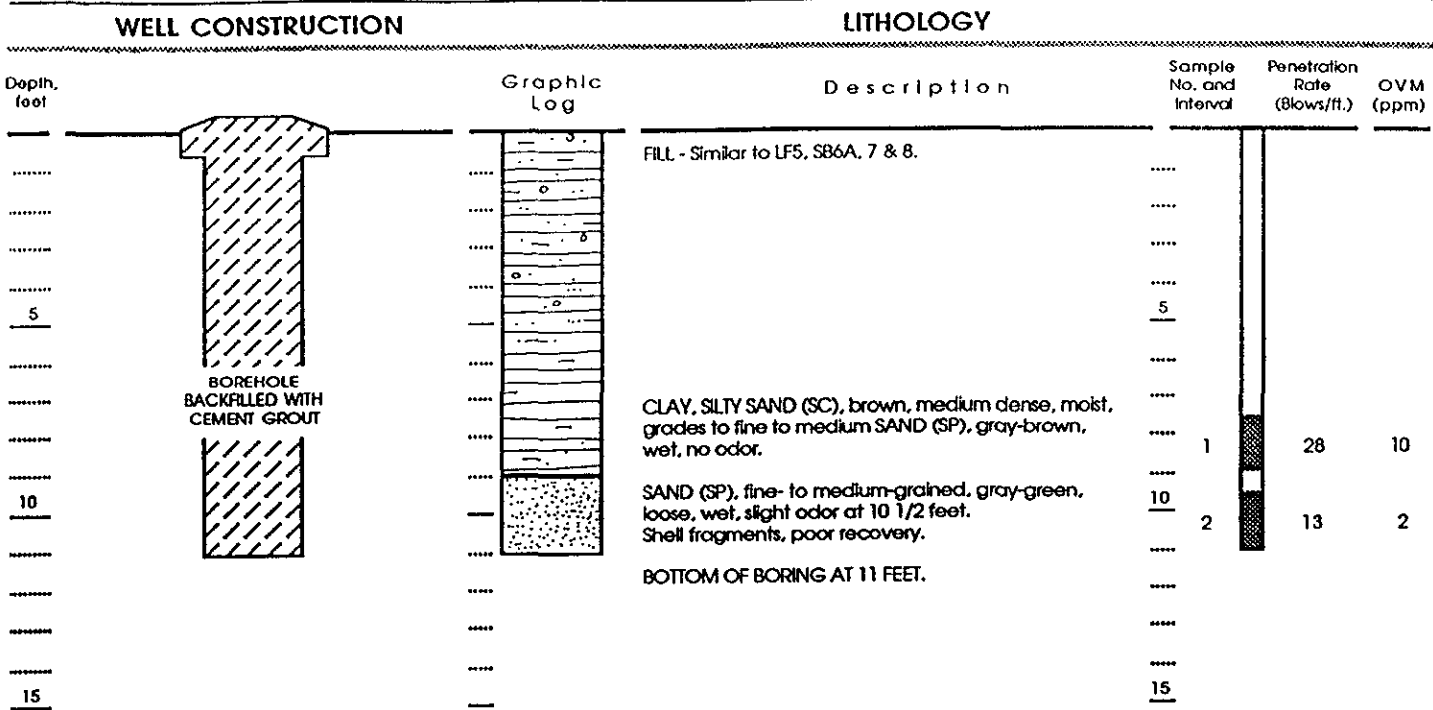


Date boring drilled: 12 February 1988
 Drilling method: Hollow Stem Auger
 Hammer weight: 140 lbs/30-inch drop
 LF Geologist: Elizabeth Nixon

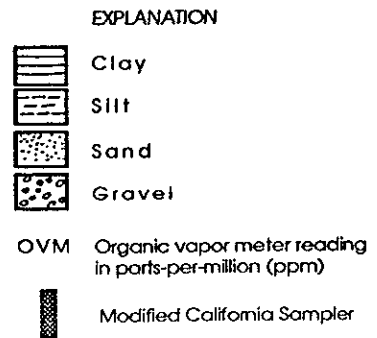
- EXPLANATION
- Clay
 - Silt
 - Sand
 - Gravel
 - Water level at time of drilling
 - ATD
 - OVM Organic vapor meter reading in parts-per-million (ppm)
 - Modified California Sampler
 - * Blow count reflects rocks encountered in sediments

Approved by: 4767

Figure A5 : LITHOLOGY AND SAMPLE DATA FOR SOIL BORING SB9

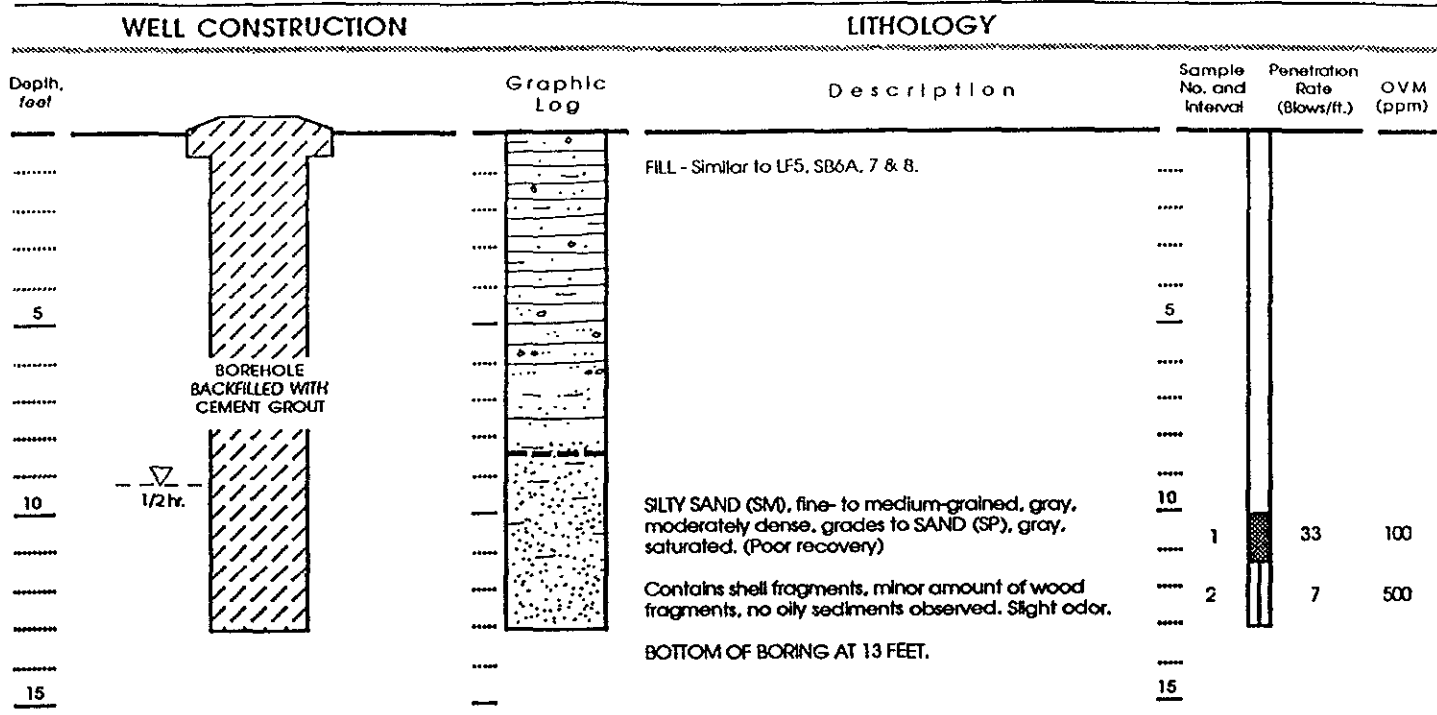


Date boring drilled: 12 February 1988
 Drilling method: Hollow Stem Auger
 Hammer weight: 140 lbs/30-inch drop
 LF Geologist: Elizabeth Nixon



Approved by: *ADA* 4267

Figure A6 : LITHOLOGY AND SAMPLE DATA FOR SOIL BORING SB10

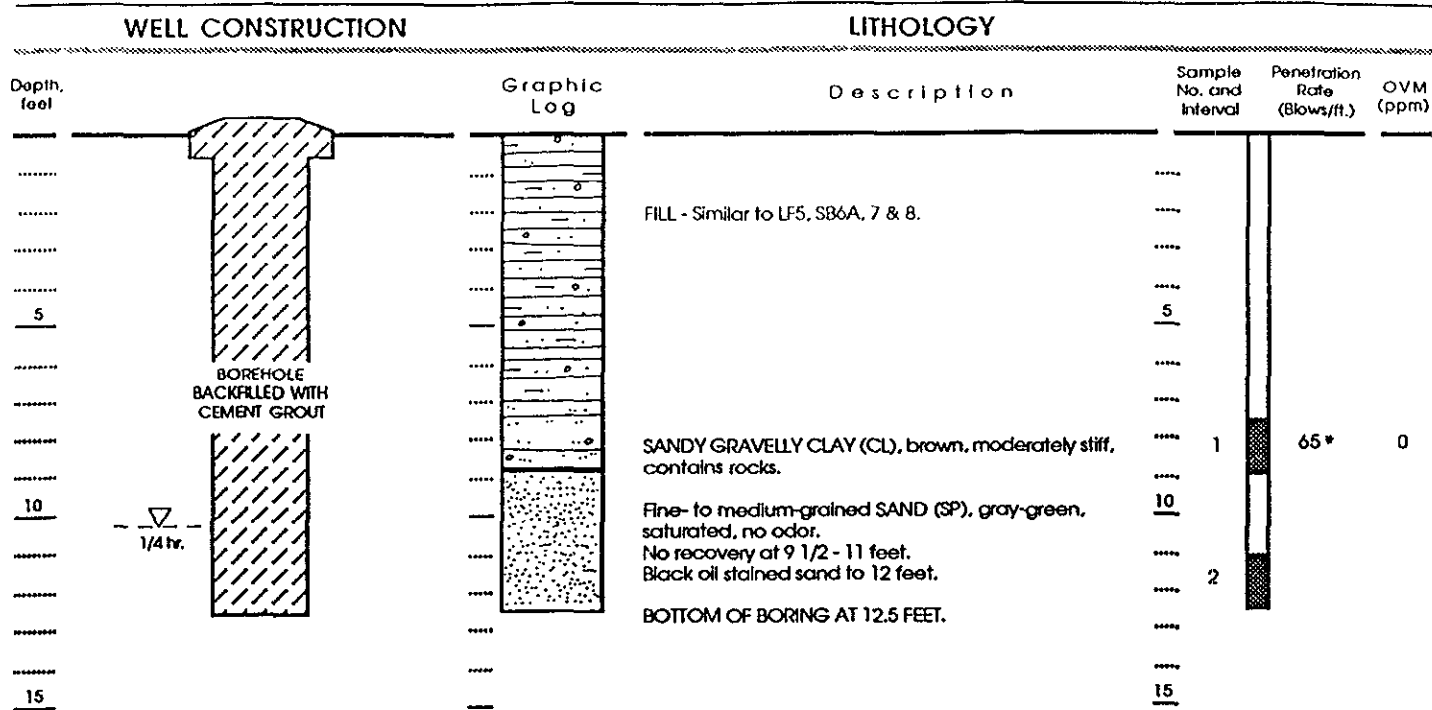


Date boring drilled: 17 February 1988
 Drilling method: Hollow Stem Auger
 Hammer weight: 140 lbs/30-inch drop
 LF Geologists: Elizabeth Nixon

- EXPLANATION
- Clay
 - Silt
 - Sand
 - Gravel
 - Water level at 1/2 hour after time of drilling
 - OVM Organic vapor meter reading in parts-per-million (ppm)
 - Modified California Sampler
 - Standard Penetration

Approved by: *ADD* 4267

Figure A7 : LITHOLOGY AND SAMPLE DATA FOR SOIL BORING SB10A



Date boring drilled: 12 February 1988
 Drilling method: Hollow Stem Auger
 Hammer weight: 140 lbs/30-inch drop
 LF Geologist: Elizabeth Nixon

EXPLANATION

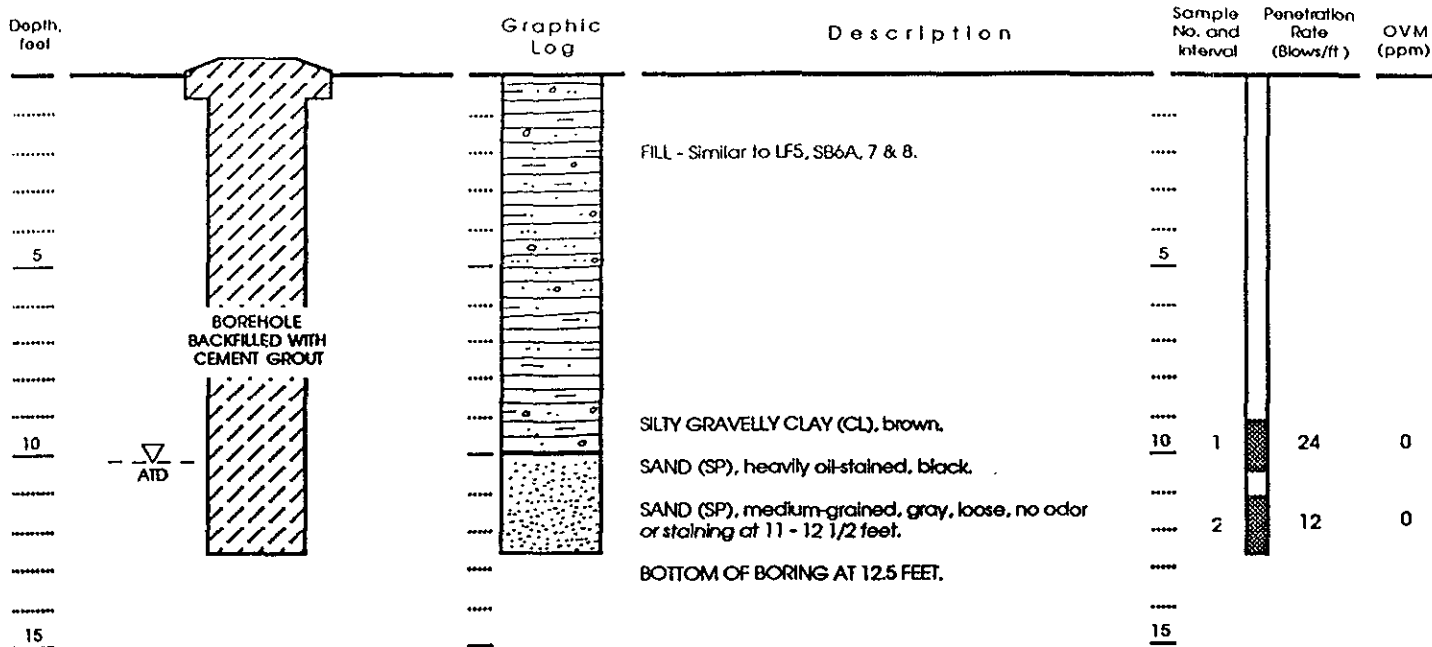
- Clay
- Silt
- Sand
- Gravel
- Water level at 1/4 hour after time of drilling
- OVM Organic vapor meter reading in parts-per-million (ppm)
- Modified California Sampler
- * Blow count reflects rocks encountered in sediments

Approved by: *ADD* 4267

Figure A8 : LITHOLOGY AND SAMPLE DATA FOR SOIL BORING SB11

WELL CONSTRUCTION

LITHOLOGY



BOREHOLE BACKFILLED WITH CEMENT GROUT

ATD

EXPLANATION

- Clay
- Silt
- Sand
- Gravel
- Water level at time of drilling
- OVM Organic vapor meter reading in parts-per-million (ppm)
- Modified California Sampler

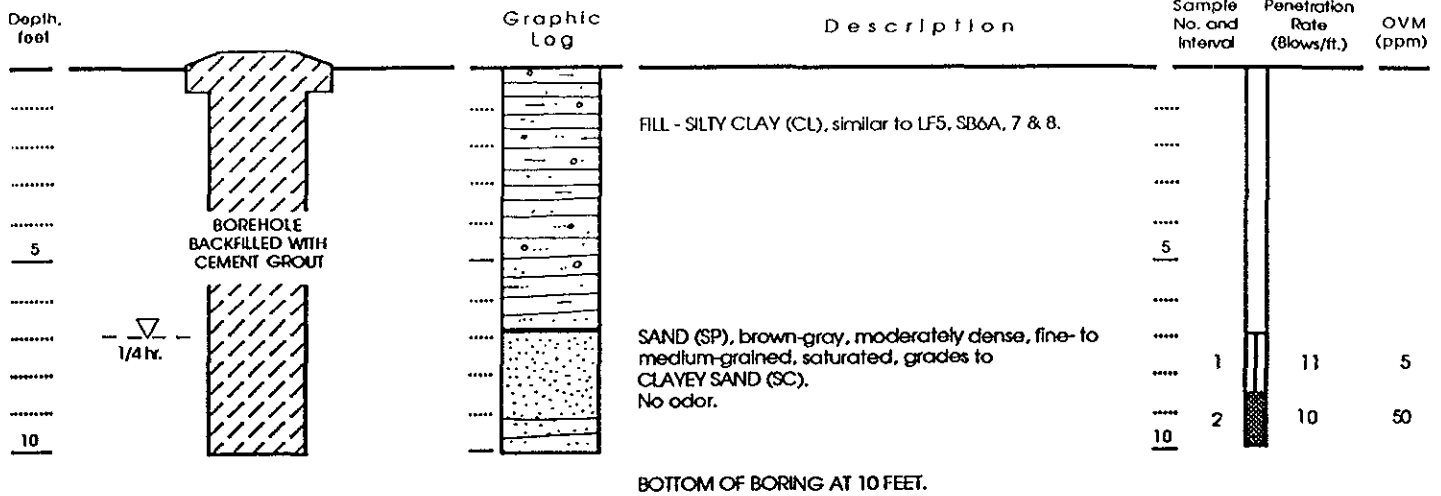
Date boring drilled: 12 February 1988
 Drilling method: Hollow Stem Auger
 Hammer weight: 140 lbs/30-inch drop
 LF Geologist: Elizabeth Nixon

Approved by: *[Signature]* 4267

Figure A9 : LITHOLOGY AND SAMPLE DATA FOR SOIL BORING SB12

WELL CONSTRUCTION

LITHOLOGY

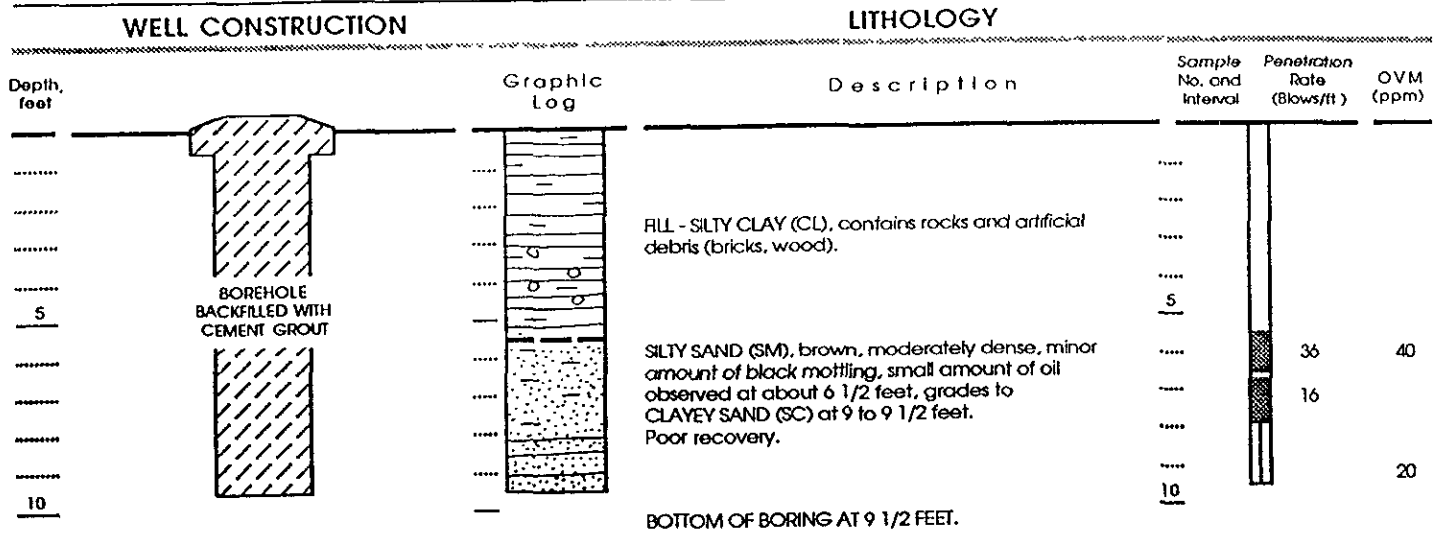


Date boring drilled: 17 February 1988
 Drilling method: Hollow Stem Auger
 Hammer weight: 140 lbs/30-inch drop
 LF Geologist: Elizabeth Nixon







- EXPLANATION**
- Clay
 - Silt
 - Sand
 - Gravel
 - Water level at 1/4 hour after time of drilling
 - OVM Organic vapor meter reading in parts-per-million (ppm)
 - Modified California Sampler
 - Standard Penetration.

Approved by: *[Signature]* - 4267

Figure A10: LITHOLOGY AND SAMPLE DATA FOR SOIL BORING SB13

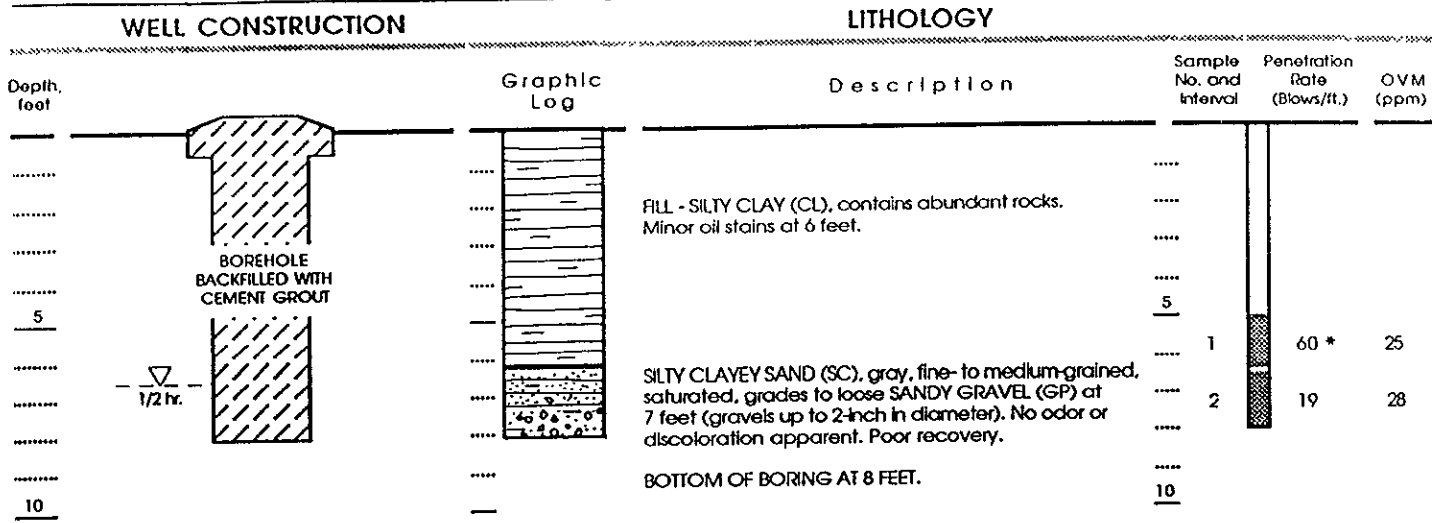


Date boring drilled: 17 February 1988
 Drilling method: Hollow Stem Auger
 Hammer weight: 140 lbs/30-inch drop
 LF Geologist: Elizabeth Nixon

- EXPLANATION
-  Clay
 -  Silt
 -  Sand
 -  Gravel
 - OVM Organic vapor meter reading in parts-per-million (ppm)
 -  Modified California Sampler
 -  Standard Penetration

Approved by:  4267

Figure A11: LITHOLOGY AND SAMPLE DATA FOR SOIL BORING SB13A



EXPLANATION

- Clay
- Silt
- Sand
- Gravel
- Water level at 1/2 hour after time of drilling
- OVM Organic vapor meter reading in parts-per-million (ppm)
- Modified California Sampler
- * Blow count reflects rocks encountered in sediments

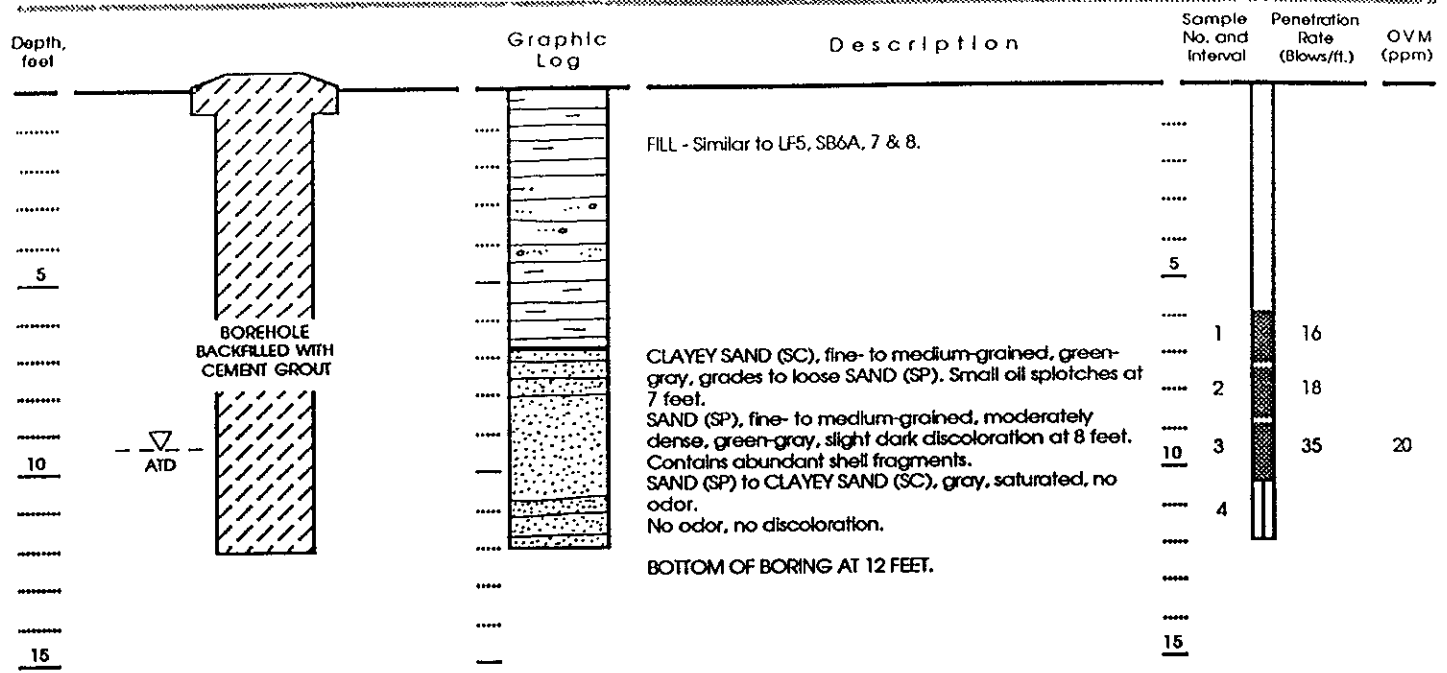
Date boring drilled: 17 February 1988
 Drilling method: Hollow Stem Auger
 Hammer weight: 140 lbs/30-inch drop
 LF Geologist: Elizabeth Nixon

Approved by: *ADD* 4267

Figure A12: LITHOLOGY AND SAMPLE DATA FOR SOIL BORING SB14

WELL CONSTRUCTION

LITHOLOGY



BOREHOLE BACKFILLED WITH CEMENT GROUT

ATD

EXPLANATION

- Clay
- Silt
- Sand
- Gravel
- Water level at time of drilling
- ATD
- OVM Organic vapor meter reading in parts-per-million (ppm)
- Modified California Sampler
- Standard Penetration

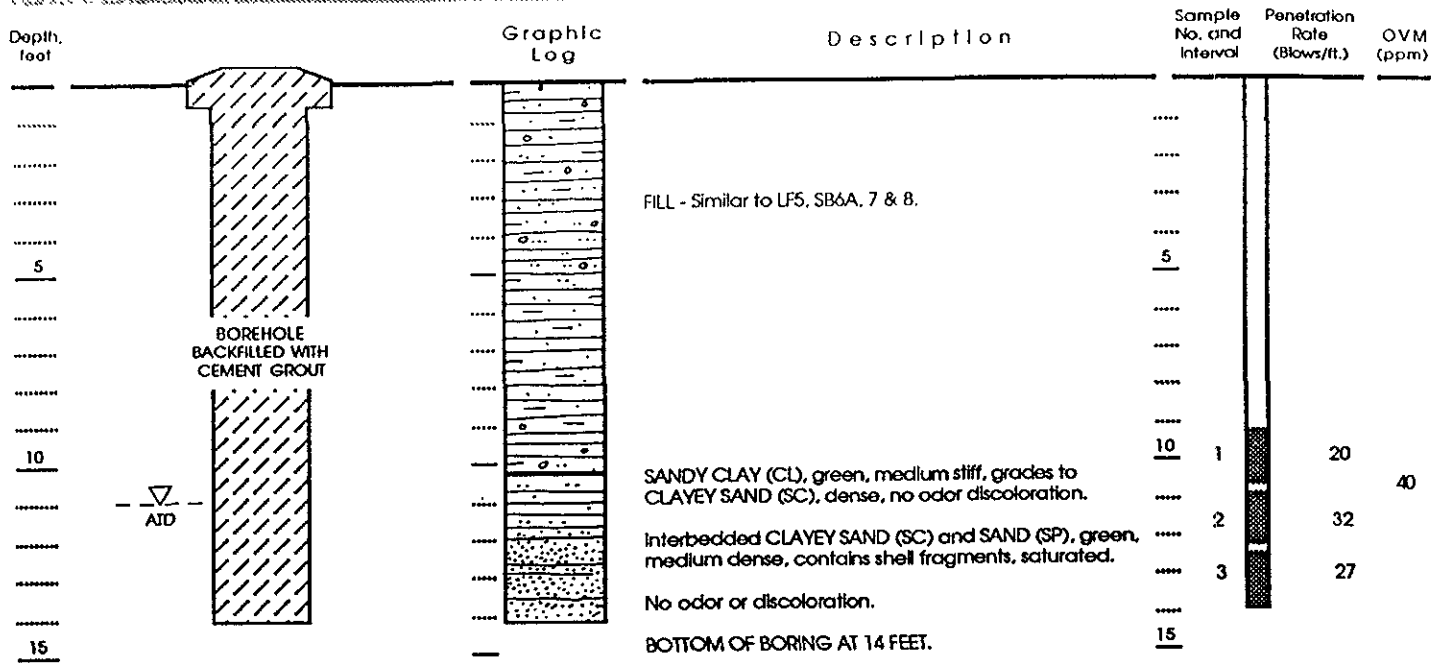
Date boring drilled: 17 February 1988
 Drilling method: Hollow Stem Auger
 Hammer weight: 140 lbs/30-inch drop
 LF Geologist: Elizabeth Nixon

Approved by: *ADD* 4267

Figure A15 : LITHOLOGY AND SAMPLE DATA FOR SOIL BORING SB17

WELL CONSTRUCTION

LITHOLOGY



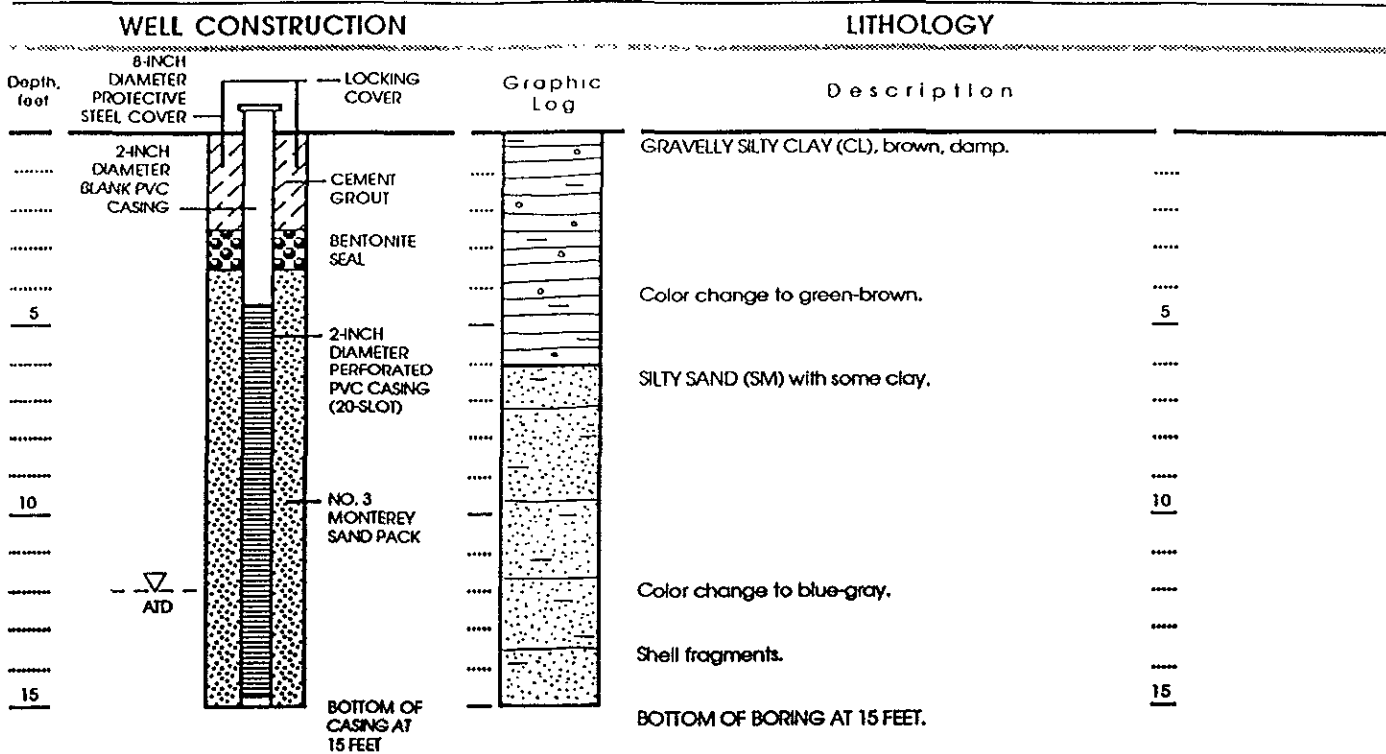
Date boring drilled: 17 February 1988
 Drilling method: Hollow Stem Auger
 Hammer weight: 140 lbs/30-inch drop
 LF Geologist: Elizabeth Nixon

EXPLANATION

- Clay
- Silt
- Sand
- Gravel
- Water level at time of drilling
- ATD.
- OVM Organic vapor meter reading in parts-per-million (ppm)
- Modified California Sampler

Approved by: *ADA* 4267

Figure A16 : LITHOLOGY AND SAMPLE DATA FOR SOIL BORING SB18

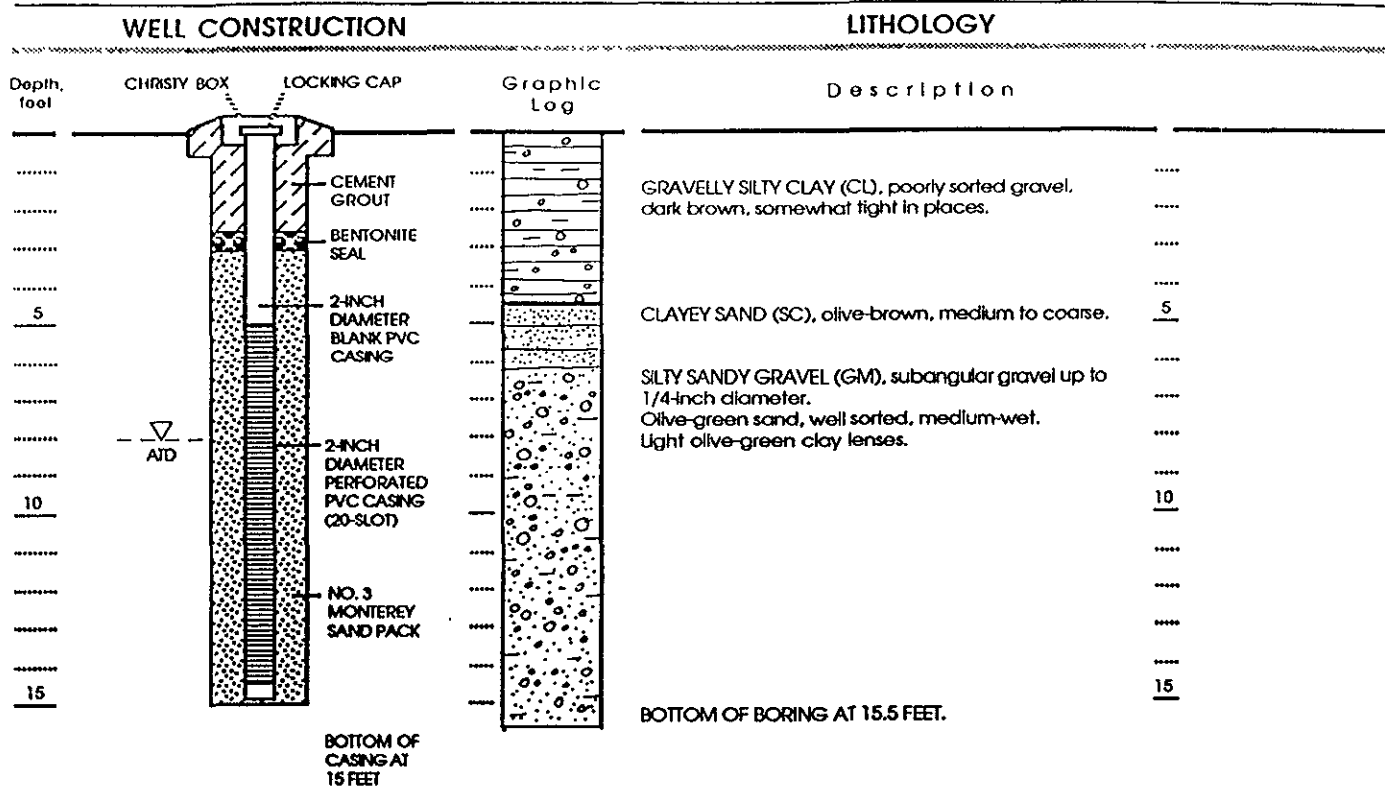


- EXPLANATION
- Clay
 - Silt
 - Sand
 - Gravel
 - Water level at time of drilling

Well Permit No. 88063
 Date well drilled: 23 March 1988
 LF Geologist: Scott Seyfried

Approved by: *ADA* 4267

Figure A17 : WELL CONSTRUCTION AND LITHOLOGY FOR WELL LF-1



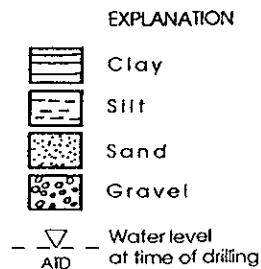
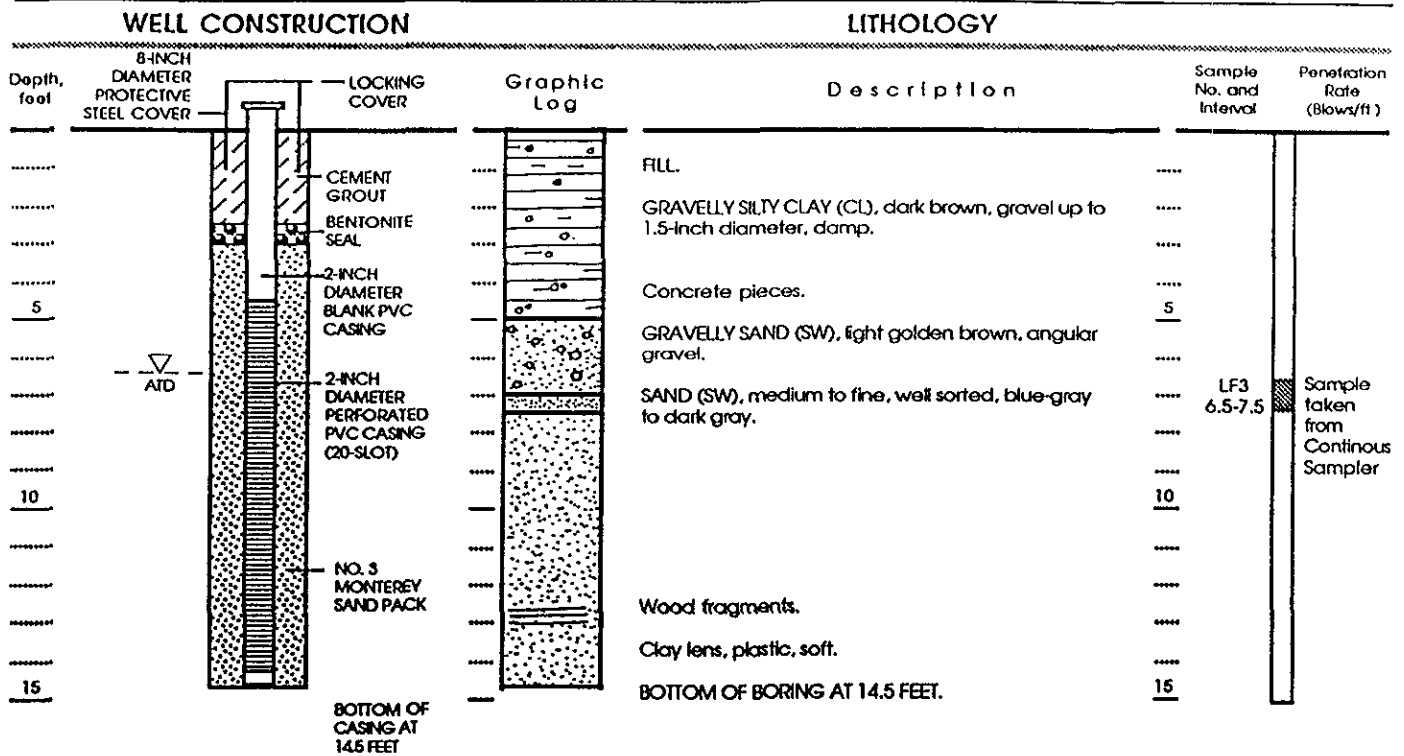
Well Permit No. 88063
 Date well drilled: 8 March 1988
 LF Geologist: Scott Seyfried

EXPLANATION

- Clay
- Silt
- Sand
- Gravel
- Water level at time of drilling

Approved by: *ADA 4267*

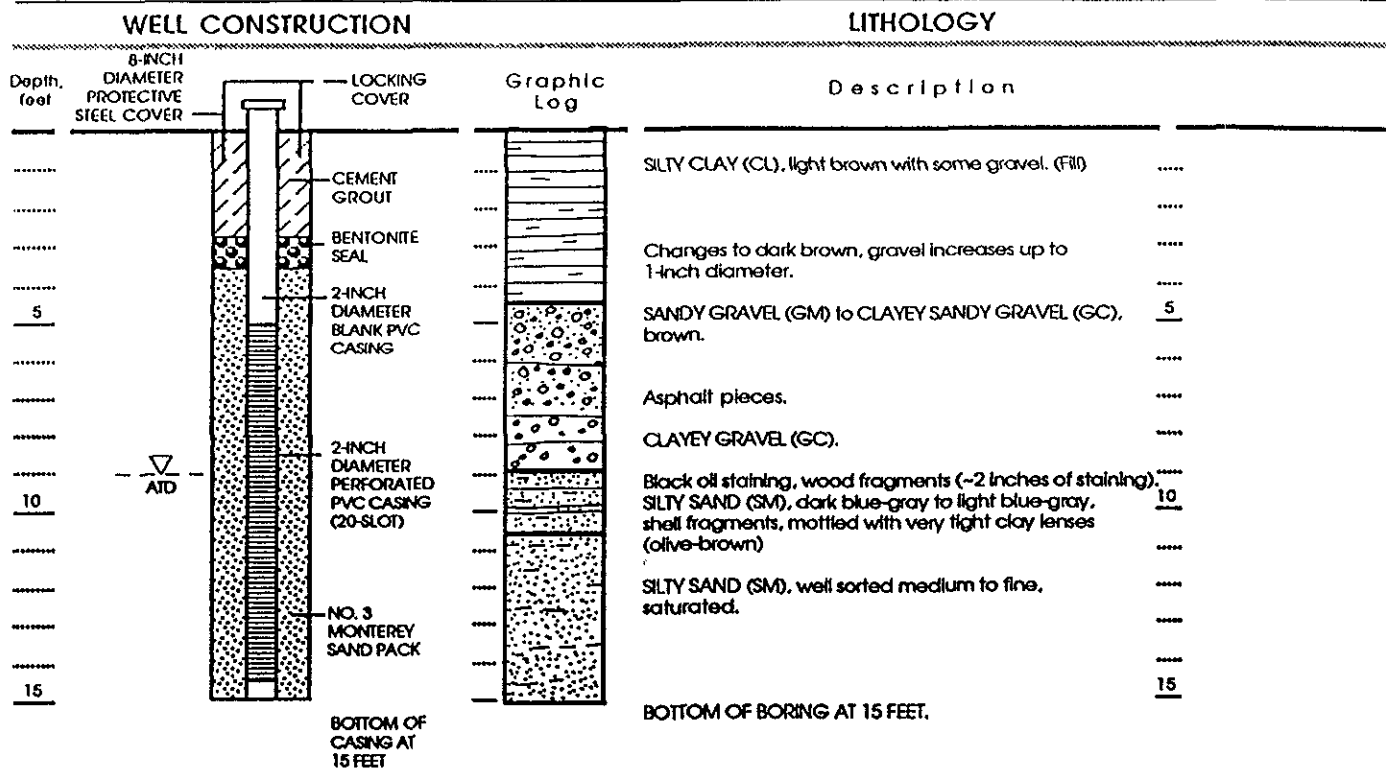
Figure A18 : WELL CONSTRUCTION AND LITHOLOGY FOR WELL LF-2



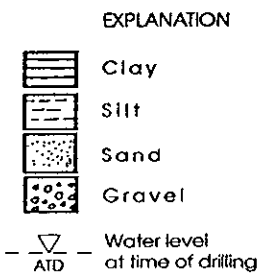
Well Permit No. 88063
 Date well drilled: 9 March 1988
 LF Geologist: Scott Seyfried

Approved by: *ADA 4267*

Figure A19 : WELL CONSTRUCTION AND LITHOLOGY FOR WELL LF-3

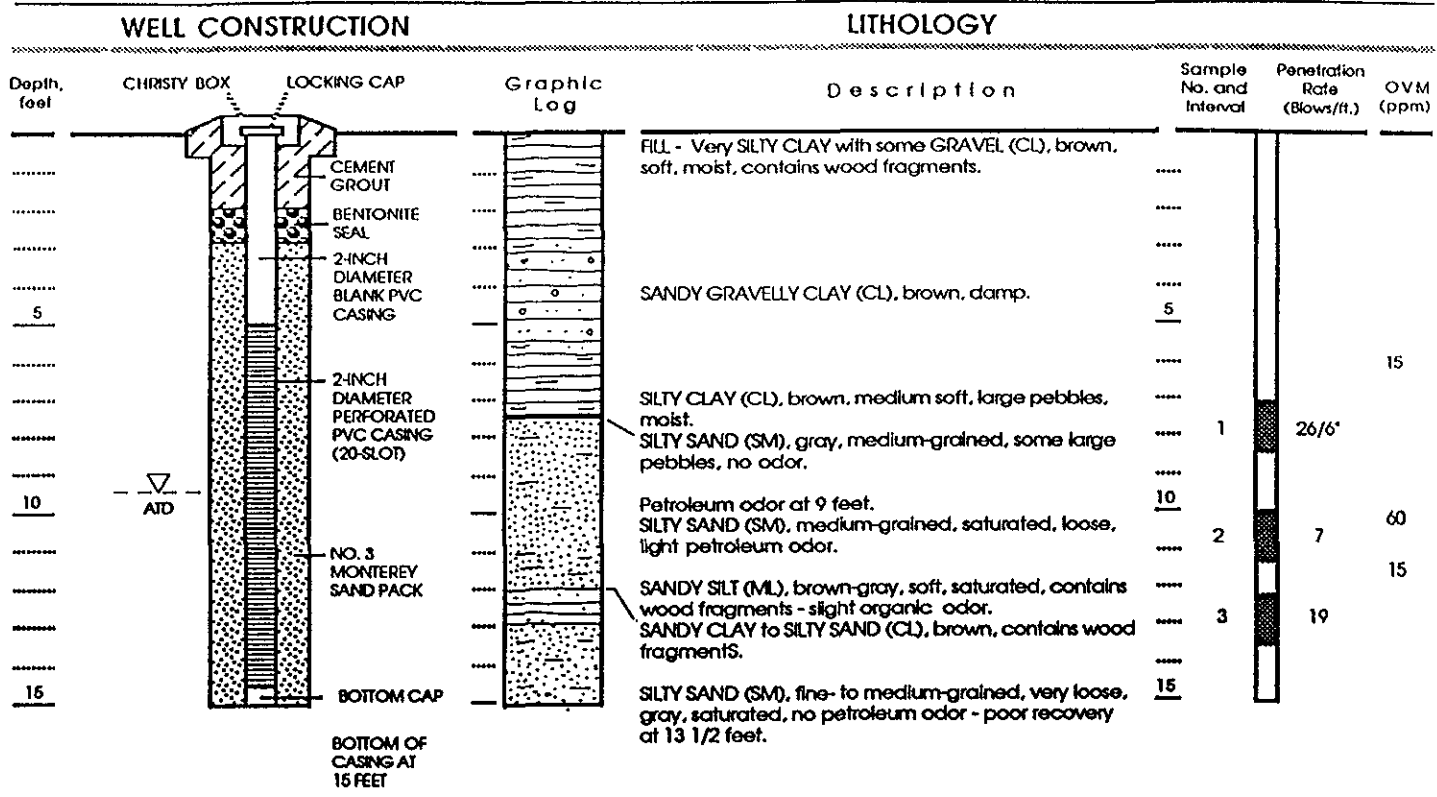


Well Permit No. 88063
 Date well drilled: 8 March 1988
 LF Geologist: Scott Seyfried










Approved by: *ADA* 4267

Figure A20 : WELL CONSTRUCTION AND LITHOLOGY FOR WELL LF-4



Well Permit No. 88063
 Date well drilled: 11 February 1988
 Drilling method: Hollow Stem Auger
 Hammer weight: 140 lbs/30-inch drop
 LF Geologist: Elizabeth Nixon

- EXPLANATION
-  Clay
 -  Silt
 -  Sand
 -  Gravel
 -  Water level at time of drilling
 -  OVM Organic vapor meter reading in parts-per-million (ppm)
 -  Modified California Sampler

Approved by:  4267

Figure A21 : WELL CONSTRUCTION AND LITHOLOGY FOR WELL LF-5

APPENDIX B
TEST PIT DESCRIPTIONS

APPENDIX B

TEST PIT DESCRIPTIONS

General Lithology

All pits contained 2 to 4 feet of variable fill consisting of gravel, silty and gravelly brown clays, and artificial debris. Below this fill, green-gray sand, silty and clayey sand, and silty clays were present to the bottom of the pits (approximately 5 to 6 feet). Ground-water elevations in the pits were approximately 4 to 5 feet.

Occurrence of Petroleum-Stained Sediments

Test pits RR2, RR3, and RR4 contained black, heavily petroleum-stained soils (mostly sand and clayey sand) confined to 1-foot or less thickness at the approximate depth of the ground-water level observed in the open pits (4 to 5 feet). Organic vapor readings (taken with Photovac TIP organic vapor meter) were negligible (less than 10 ppm) in these pits.

Test pit RR5 and RR7 contained a very small amount of splotchy black staining in the soils, but appeared mostly free of petroleum product. No organic vapors were detected.

Test pits RR6 appeared free of petroleum staining.

APPENDIX B

TEST PIT DESCRIPTIONS

General Lithology

All pits contained 2 to 4 feet of variable fill consisting of gravel, silty and gravelly brown clays, and artificial debris. Below this fill, green-gray sand, silty and clayey sand, and silty clays were present to the bottom of the pits (approximately 5 to 6 feet). Ground-water elevations in the pits were approximately 4 to 5 feet.

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Test pits RR2, RR3, and RR4 contained black, heavily petroleum-stained soils (mostly sand and clayey sand) confined to 1-foot or less thickness at the approximate depth of the ground-water level observed in the open pits (4 to 5 feet). Organic vapor readings (taken with Photovac TIP organic vapor meter) were negligible (less than 10 ppm) in these pits.

Test pit RR5 and RR7 contained a very small amount of splotchy black staining in the soils, but appeared mostly free of petroleum product. No organic vapors were detected.

Test pits RR6 appeared free of petroleum staining.

APPENDIX C
LABORATORY CERTIFICATES

MED-TOX

ASSOCIATES, INC.

ENVIRONMENTAL & OCCUPATIONAL HEALTH SERVICES

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

LABORATORY ANALYSIS REPORT

LEVINE FRICKE CONSULTING
1900 POWELL ST., 12TH FLOOR
EMERYVILLE, CA 94608

REPORT DATE: 02/29/88

DATE SAMPLED: 02/12/88

ATTN: ELIZABETH NIXON

DATE RECEIVED: 02/12/88

MED-TOX JOB NO: 8802067

DATE ANALYZED: 02/18/88
02/25/88

CLIENT PROJECT NO: 1245

ANALYSIS OF: THREE SOIL SAMPLES FOR PURGEABLE AROMATICS AND
TOTAL PETROLEUM HYDROCARBONS; TWO SOIL SAMPLES FOR PURGEABLE
AROMATICS AND TOTAL PETROLEUM HYDROCARBONS

METHOD: 8015 (EXTRACTION AND PURGE & TRAP)

Sample Identification		Total Petroleum Hydrocarbons As Diesel (mg/kg)	Total Petroleum Hydrocarbons As Waste Oil (mg/kg)	Total Petroleum Hydrocarbons As Gasline (mg/kg)
Client	Lab No.			
SB8-1-3	15A	ND	13,000	NA
SB8-2-3	17A	ND	ND	NA
SB6-1-2	20A	NA	NA	1.3
SB6B-2-2	22A	NA	NA	ND
SB7-1-3	24A	ND	ND	NA

Detection Limit 25 50 0.1
NA = Not Applicable; analysis not requested
ND = Not Detected

Michael J. Jaeger
Michael J. Jaeger, Manager
Organic Laboratory

Results reported verbally to Elizabeth Nixon 02/23/88.

received
APR 1 1988
WASHINGTON, D.C.

Levine-Fricke Consulting

CLIENT ID: SB8-1-3
CLIENT JOB NO.: 1245MED-TOX LAB NO.: 8802067-15A
MED-TOX JOB NO.: 8802067DATE SAMPLED: 02/12/88
DATE RECEIVED: 02/12/88DATE ANALYZED: 02/17/88
REPORT DATE: 03/30/88

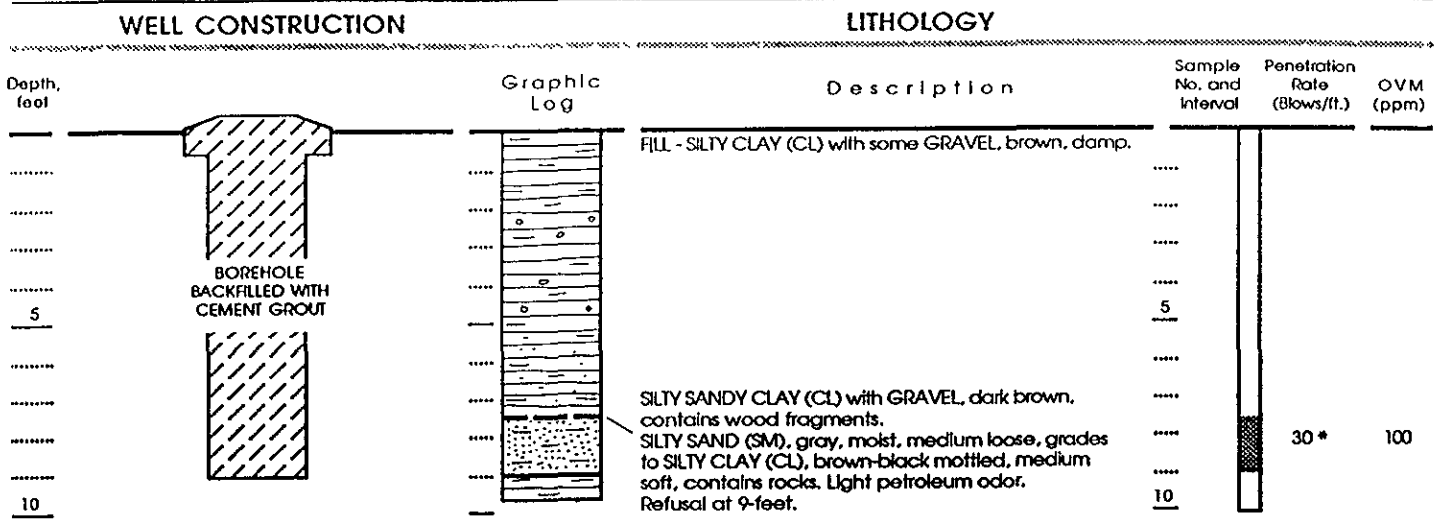
EPA METHOD 8020

PURGEABLE AROMATICS

COMPOUND	CAS #	CONCENTRATION (ug/kg)	DETECTION LIMIT (ug/kg)
Benzene	71-43-2	ND	1
Chlorobenzene	108-90-7	ND	1
1,2-Dichlorobenzene	95-50-1	ND	1
1,3-Dichlorobenzene	541-73-1	ND	1
1,4-Dichlorobenzene	106-46-7	ND	1
Ethylbenzene	100-41-4	ND	1
Toluene	108-88-3	ND	1
Xylenes, Total	-----	ND	3

ND = Not Detected

APPENDIX A
SOIL BORING AND WELL LOGS



EXPLANATION

Clay
 Silt
 Sand
 Gravel

OVM Organic vapor meter reading in parts-per-million (ppm)
 Modified California Sampler
 * Blow count reflects rocks encountered in sediments

Date boring drilled: 12 February 1988
 Drilling method: Hollow Stem Auger
 Hammer weight: 140 lbs/30-inch drop
 LF Geologists: Elizabeth Nixon

Approved by: 4767

Figure A1 : LITHOLOGY AND SAMPLE DATA FOR SOIL BORING SB6A

Levine-Fricke Consulting

CLIENT ID: SB8-2-3
CLIENT JOB NO.: 1245MED-TOX LAB NO.: 8802067-17A
MED-TOX JOB NO.: 8802067DATE SAMPLED: 02/12/88
DATE RECEIVED: 02/12/88DATE ANALYZED: 02/17/88
REPORT DATE: 03/30/88

EPA METHOD 8020

PURGEABLE AROMATICS

COMPOUND	CAS #	CONCENTRATION (ug/kg)	DETECTION LIMIT (ug/kg)
Benzene	71-43-2	ND	1
Chlorobenzene	108-90-7	ND	1
1,2-Dichlorobenzene	95-50-1	ND	1
1,3-Dichlorobenzene	541-73-1	ND	1
1,4-Dichlorobenzene	106-46-7	ND	1
Ethylbenzene	100-41-4	ND	1
Toluene	108-88-3	ND	1
Xylenes, Total	-----	ND	3

ND = Not Detected

Levine-Fricke Consulting

CLIENT ID: SB6-1-2
CLIENT JOB NO.: 1245MED-TOX LAB NO.: 8802067-20A
MED-TOX JOB NO.: 8802067DATE SAMPLED: 02/12/88
DATE RECEIVED: 02/12/88DATE ANALYZED: 02/17/88
REPORT DATE: 03/30/88

EPA METHOD 8020

PURGEABLE AROMATICS

COMPOUND	CAS #	CONCENTRATION (ug/kg)	DETECTION LIMIT (ug/kg)
Benzene	71-43-2	3	1
Chlorobenzene	108-90-7	ND	1
1,2-Dichlorobenzene	95-50-1	ND	1
1,3-Dichlorobenzene	541-73-1	ND	1
1,4-Dichlorobenzene	106-46-7	ND	1
Ethylbenzene	100-41-4	10	1
Toluene	108-88-3	6	1
Xylenes, Total	-----	56	3

ND = Not Detected

Levine-Fricke Consulting

CLIENT ID: SB6B-2-2
CLIENT JOB NO.: 1245MED-TOX LAB NO.: 8802067-22A
MED-TOX JOB NO.: 8802067DATE SAMPLED: 02/12/88
DATE RECEIVED: 02/12/88DATE ANALYZED: 02/18/88
REPORT DATE: 03/30/88

EPA METHOD 8020

PURGEABLE AROMATICS

COMPOUND	CAS #	CONCENTRATION (ug/kg)	DETECTION LIMIT (ug/kg)
Benzene	71-43-2	ND	1
Chlorobenzene	108-90-7	ND	1
1,2-Dichlorobenzene	95-50-1	ND	1
1,3-Dichlorobenzene	541-73-1	ND	1
1,4-Dichlorobenzene	106-46-7	ND	1
Ethylbenzene	100-41-4	ND	1
Toluene	108-88-3	1	1
Xylenes, Total	-----	ND	3

ND = Not Detected

Levine-Fricke Consulting

CLIENT ID: SB7-1-3
CLIENT JOB NO.: 1245MED-TOX LAB NO.: 8802067-24A
MED-TOX JOB NO.: 8802067DATE SAMPLED: 02/11/88
DATE RECEIVED: 02/12/88DATE ANALYZED: 02/17/88
REPORT DATE: 03/30/88

EPA METHOD 8020

PURGEABLE AROMATICS

COMPOUND	CAS #	CONCENTRATION (ug/kg)	DETECTION LIMIT (ug/kg)
Benzene	71-43-2	5	1
Chlorobenzene	108-90-7	ND	1
1,2-Dichlorobenzene	95-50-1	ND	1
1,3-Dichlorobenzene	541-73-1	ND	1
1,4-Dichlorobenzene	106-46-7	ND	1
Ethylbenzene	100-41-4	ND	1
Toluene	108-88-3	6	1
Xylenes, Total	-----	4	3

ND = Not Detected

CHAIN OF CUSTODY / ANALYSES REQUEST FORM

Project No.: <i>21215</i>	Field Logbook No.:	Date: <i>2/11/88</i>	Serial No.: <i>Nº 2776</i>
Project Name: <i>San Joaquin Hills</i>	Project Location: <i>Mar. eda</i>		

SAMPLERS						ANALYSES						SAMPLERS:		
SAMPLE NO.	DATE	TIME	LAB SAMPLE NO.	NO. OF CON-TAINERS	SAMPLE TYPE	ANALYSES						REMARKS		
						EPA 601	EPA 624	TPH	UNSAT. OIL	BTX	PH			HOLD
			<i>88-02091</i>	<i>1</i>	<i>sol</i>							<i>X</i>		
				<i>1</i>	<i>↓</i>		<i>X</i>						<i>X</i>	
				<i>1</i>	<i>↓</i>							<i>X</i>		
				<i>1</i>	<i>↓</i>		<i>X</i>						<i>X</i>	
				<i>1</i>	<i>↓</i>							<i>X</i>		
				<i>1</i>	<i>sol</i>		<i>X</i>						<i>1</i>	<i>5.00</i>
				<i>1</i>	<i>↓</i>		<i>X</i>						<i>X</i>	
			<i>8862091</i>	<i>2</i>	<i>sol</i>		<i>X</i>		<i>X</i>	<i>X</i>			<i>X</i>	<i>" "</i>
				<i>1</i>	<i>sol</i>		<i>X</i>						<i>1</i>	<i>1.4</i>
				<i>1</i>	<i>↓</i>		<i>X</i>						<i>1</i>	<i>1.2</i>
				<i>1</i>	<i>↓</i>							<i>X</i>		<i>1.2</i>
				<i>3</i>	<i>sol</i>		<i>X</i>						<i>1</i>	<i>1.2</i>

RELINQUISHED BY: (Signature) <i>John Wick</i>	DATE: <i>2/11/88</i>	TIME:	RECEIVED BY: (Signature) <i>Salon St John</i>	DATE: <i>2-11-88</i>	TIME: <i>1:00</i>
RELINQUISHED BY: (Signature)	DATE:	TIME:	RECEIVED BY: (Signature)	DATE:	TIME:
RELINQUISHED BY: (Signature)	DATE:	TIME:	RECEIVED BY: (Signature)	DATE:	TIME:
METHOD OF SHIPMENT:	DATE:	TIME:	LAB COMMENTS:		

SAMPLE COLLECTOR: <input checked="" type="checkbox"/> LEVINE-FRICKE 629 Oakland Avenue Oakland, CA 94611-4567 (415) 652-4500	<input type="checkbox"/> LEVINE-FRICKE 4019 Westerly Place, Suite 103 Newport Beach, CA 92660 (714) 955-1390
Analytical Laboratory: <i>ATTN: MACE JONES</i>	

CHAIN OF CUSTODY / ANALYSES REQUEST FORM

Project No.: <u>1215</u>			Field Logbook No.:			Date: <u>2/11/88</u>			Serial No.: <u>30 2775</u>		
Project Name: <u>Alameda Marina</u>			Project Location: <u>Alameda</u>						Samplers: <u>E. J. ...</u>		
Sampler (Signature): <u>[Signature]</u>			ANALYSES						REMARKS		
SAMPLES			EPA 601	EPA 624	TPH-DISEL	TPH-PAH	TPH-PAH	HOLD	RUSH		
SAMPLE NO.	DATE	TIME	LAB SAMPLE NO.	NO. OF CON-TAINERS	SAMPLE TYPE						
<u>8802091</u>	<u>2/11/88</u>		<u>8802091</u>	<u>1</u>	<u>SMI</u>						<u>11/2-13</u>
<u>8802091</u>			<u>8802091</u>	<u>3</u>	<u>water</u>		<u>X</u>	<u>X</u>			
<u>8802091</u>			<u>8802091</u>	<u>1</u>	<u>SMI</u>	<u>X</u>	<u>X</u>				<u>7-8</u>
				<u>1</u>	<u>SMI</u>					<u>X</u>	
				<u>1</u>	<u>SMI</u>					<u>X</u>	
				<u>1</u>	<u>water</u>					<u>X</u>	
				<u>1</u>	<u>SMI</u>					<u>X</u>	
				<u>1</u>	<u>SMI</u>					<u>X</u>	
			<u>8803013</u>	<u>1</u>			<u>X</u>	<u>X</u>			
				<u>1</u>			<u>X</u>	<u>X</u>			
				<u>1</u>						<u>X</u>	
				<u>1</u>						<u>X</u>	<u>Date Rec'd 3/25/88</u>
				<u>1</u>						<u>X</u>	
				<u>1</u>						<u>X</u>	
				<u>1</u>						<u>X</u>	

RELINQUISHED BY: (Signature) <u>[Signature]</u>	DATE <u>2/15/88</u>	TIME	RECEIVED BY: (Signature) <u>[Signature]</u>	DATE <u>2/18</u>	TIME <u>3:05</u>
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME
METHOD OF SHIPMENT:	DATE	TIME	LAB COMMENTS:		

SAMPLE COLLECTOR: <input type="checkbox"/> LEVINE-FRICKE 629 Oakland Avenue Oakland, CA 94611-4567 (415) 652-4500	<input type="checkbox"/> LEVINE-FRICKE 4019 Westerly Place, Suite 103 Newport Beach, CA 92660 (714) 955-1390
Analytical Laboratory: <u>MEP-TPX</u> <u>SICK VIKING</u> <u>Alameda Marina</u>	

CHAIN OF CUSTODY / ANALYSES REQUEST FORM

Project No.: <i>11205</i>	Field Logbook No.:	Date: <i>2/12/88</i>	Serial No.: <i>100 2773</i>
Project Name: <i>Marina Marina Village</i>	Project Location: <i>12 Armistead</i>		

Sampler (Signature): <i>[Signature]</i>	ANALYSES	Samplers: <i>[Signature]</i>
---	-----------------	---------------------------------

SAMPLES				ANALYSES								REMARKS
SAMPLE NO.	DATE	TIME	LAB SAMPLE NO.	NO. OF CON-TAINERS	SAMPLE TYPE	EPA 601	EPA 624	TPH	BTX	HOLD	RUSH	
			<i>88-02-067</i>	<i>1</i>								
				<i>4</i>	<i>Water</i>							
			<i>8802089-4A</i>	<i>4</i>	<i>Water</i>							<i>10-1-88</i>
				<i>4</i>	<i>Water</i>							
				<i>4</i>	<i>Water</i>							
			<i>8802089-02A</i>	<i>4</i>	<i>Water</i>							
			<i>8802067</i>									<i>10-1-88</i>

RELINQUISHED BY: (Signature) <i>[Signature]</i>	DATE <i>2/12/88</i>	TIME	RECEIVED BY: (Signature) <i>[Signature]</i>	DATE <i>2-12-88</i>	TIME <i>5:55</i>
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME
METHOD OF SHIPMENT:	DATE	TIME	LAB COMMENTS:		

SAMPLE COLLECTOR: (check one) <input checked="" type="checkbox"/> LEVINE-FRICKE 629 Oakland Avenue Oakland, CA 94611-4567 (415) 652-4500	<input type="checkbox"/> LEVINE-FRICKE 4019 Westerly Place, Suite 103 Newport Beach, CA 92660 (714) 955-1390	Analytical Laboratory: <i>MED TOX</i> <i>3111 VILLAGE</i> <i>Newport Hill</i>
--	---	---

CHAIN OF CUSTODY / ANALYSES REQUEST FORM

Project No.: 1-2-1	Field Logbook No.:	Date: 2/12/87	Serial No.: NO 2774
Project Name: <i>Alameda Indian Village</i>		Project Location: <i>Alameda</i>	

SAMPLES						ANALYSES						SAMPLERS:		REMARKS
SAMPLE NO.	DATE	TIME	LAB SAMPLE NO.	NO. OF CON-TAINERS	SAMPLE TYPE	EPA 601	EPA 624	TPH*	BTX	HOLD	RUSH	E. Miller		
	2/12		88-02-067	1	Soil									10-12-87
				1	↓									11-13-87
			8802089-03A	1	↓									11-13-87
			8802067	1	Soil									8-8-87
				1	↓									8-8-87
			8802067	1	↓									10-13-87
				1	↓									11-14-87
* TPH - checked 1/11/87														

RELINQUISHED BY: <i>G. L. ...</i>	DATE: 2/12/87	TIME:	RECEIVED BY: <i>[Signature]</i>	DATE: 2-12-87	TIME: 5:55
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME
METHOD OF SHIPMENT:	DATE	TIME	LAB COMMENTS:		
SAMPLE COLLECTOR: <input checked="" type="checkbox"/> LEVINE-FRICKE 629 Oakland Avenue Oakland, CA 94611-4567 (415) 652-4500			Analytical Laboratory: <i>[Signature]</i> 4019 Westerly Place, Suite 103 Newport Beach, CA 92660 (714) 955-1390		

MED-TOX

ASSOCIATES, INC.

ENVIRONMENTAL & OCCUPATIONAL HEALTH SERVICES

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

LABORATORY ANALYSIS REPORT

LEVINE FRICKE CONSULTING
1900 POWELL ST., 12TH FLOOR
EMERYVILLE, CA 94608

ATTN: ELIZABETH NIXON

CLIENT ID: 1245

REPORT DATE: 03/23/88

DATE SAMPLED: 02/17/88

DATE RECEIVED: 02/18/88

DATE ANALYZED: 02/18-22/88

MED-TOX JOB NO: 8802091

ANALYSIS OF: NINE SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS;
ONE WATER SAMPLE FOR TOTAL PETROLEUM HYDROCARBONS;
ONE WATER SAMPLE FOR PURGEABLE HALOCARBONS, BENZENE,
TOLUENE, ETHYL BENZENE, XYLENES, AND TOTAL PETROLEUM
HYDROCARBONS; TWO SOIL SAMPLES FOR BENZENE, TOLUENE,
ETHYL BENZENE, XYLENES, AND TOTAL PETROLEUM
HYDROCARBONS; AND ONE WATER SAMPLE FOR BENZENE,
TOLUENE, ETHYL BENZENE, XYLENES, AND TOTAL PETROLEUM
HYDROCARBONS

METHOD: EPA 8020, 8015 (PURGE & TRAP)

Sample Identification Client	Lab No.	Benzene (ug/kg)	Toluene (ug/kg)	Ethylbenzene (ug/kg)	Total Xylenes (ug/kg)	Total Petroleum Hydrocarbons As Gasoline (mg/kg)
SB10A-2	14A	ND	64	ND	ND	ND
SB13-1	16A	ND	66	ND	ND	ND
Detection Limit		1	1	1	3	0.1

ND = Not Detected

See attached for remaining results.

received
APR 1 1988

MED-TOX JOB NO: 8802091
CLIENT ID: 1245

REPORT DATE: 03/23/88
DATE RECEIVED: 02/18/88

METHOD: EPA 602, 8015 (PURGE & TRAP)

Sample Identification Client	Lab No.	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)	Total Petroleum Hydrocarbons As Gasoline (mg/L)
SB10A-W	15A	ND	3	ND	ND	ND
Detection Limit ND = Not Detected		0.5	0.5	0.5	2	0.1

METHOD: 8015 (EXTRACTION)

Sample Identification Client	Lab No.	Total Petroleum Hydrocarbons As Diesel (mg/L)	Total Petroleum Hydrocarbons As Waste Oil (mg/L)
SB18-W	13A	ND	ND
SB10A-W	15A	ND	ND
Detection Limit ND = Not Detected		5	10

See attached for remaining results.

Levine-Fricke Consulting

CLIENT ID: RR9(-200)-W
 CLIENT JOB NO.: 1245
 DATE SAMPLED: 02/17/88
 DATE RECEIVED: 02/18/88

MED-TOX LAB NO.: 8802091-09A
 MED-TOX JOB NO.: 8802091
 DATE ANALYZED: 02/19/88
 REPORT DATE: 03/23/88

EPA METHOD 601
 PURGEABLE HALOCARBONS

COMPOUND	CAS #	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
Bromodichloromethane	75-27-4	ND	0.5
Bromoform	75-25-2	ND	0.5
Bromomethane	74-83-9	ND	0.5
Carbon Tetrachloride	56-23-5	ND	0.5
Chlorobenzene	108-90-7	ND	0.5
Chloroethane	75-00-3	ND	0.5
2-Chloroethyl Vinyl Ether	110-75-8	ND	0.5
Chloroform	67-66-3	3	0.5
Chloromethane	74-87-3	ND	0.5
Dibromochloromethane	124-48-1	ND	0.5
1,2-Dichlorobenzene	95-50-1	ND	0.5
1,3-Dichlorobenzene	541-73-1	ND	0.5
1,4-Dichlorobenzene	106-46-7	ND	0.5
Dichlorodifluoromethane	75-71-8	ND	0.5
1,1-Dichloroethane	75-34-3	ND	0.5
1,2-Dichloroethane	107-06-2	ND	0.5
1,1-Dichloroethene	75-35-4	ND	0.5
trans-1,2-Dichloroethene	156-60-5	ND	0.5
1,2-Dichloropropane	78-87-5	ND	0.5
cis-1,3-Dichloropropene	10061-01-5	ND	0.5
trans-1,3-Dichloropropene	10061-02-6	ND	0.5
Methylene Chloride	75-09-2	ND	0.5
1,1,2,2-Tetrachloroethane	79-34-5	ND	0.5
Tetrachloroethene	127-18-4	1	0.5
1,1,1-Trichloroethane	71-55-6	ND	0.5
1,1,2-Trichloroethane	79-00-5	ND	0.5
Trichloroethene	79-01-6	ND	0.5
Trichlorofluoromethane	75-69-4	ND	0.5
1,1,2-Trichloro-			
1,2,2-trifluoroethane	76-13-1	ND	0.5
Vinyl Chloride	75-01-4	ND	0.5

ND = Not Detected

MED-TOX JOB NO: 8802091
CLIENT ID: 1245REPORT DATE: 03/23/88
DATE RECEIVED: 02/18/88

METHOD: 8015 (EXTRACTION)

Sample Identification Client	Lab No.	Total Petroleum Hydrocarbons As Diesel (mg/kg)	Total Petroleum Hydrocarbons As Waste Oil (mg/kg)
SB17-2-3	02A	ND	ND
RR2-100	04A	ND	74
RR4-200	08A	ND	ND
SB18-1-3	10A	ND	ND
SB18-2-3	11A	ND	ND
SB13-1	16A	ND	ND
SB14-1-3	23A	ND	520
SB14-2-3	24A	ND	ND
Detection Limit		25	50

ND = Not Detected

CHAIN OF CUSTODY / ANALYSES REQUEST FORM

Project No.: <u>1215</u>				Field Logbook No.:				Date: <u>2/17/88</u>		Serial No.: <u>NO 2775</u>	
Project Name: <u>Alameda / Marina</u>				Project Location: <u>Alameda</u>				Samplers: <u>E. J. ...</u>			
Sampler (Signature): <u>[Signature]</u>				ANALYSES							
SAMPLES				EPA 601	EPA 624	TPH-DIB	TPH-DIB	HOLD	RUSH	REMARKS	
SAMPLE NO.	DATE	TIME	LAB SAMPLE NO.	NO. OF CONTAINERS	SAMPLE TYPE						
<u>1-2</u>	<u>2/17/88</u>		<u>8802091</u>	<u>1</u>	<u>soil</u>					<u>X</u>	<u>11/2-13</u>
<u>1-12</u>			<u>8802091</u>	<u>3</u>	<u>water</u>		<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	
<u>1-1</u>			<u>8802091</u>	<u>1</u>	<u>soil</u>		<u>X</u>	<u>X</u>		<u>X</u>	<u>7-13</u>
				<u>1</u>	<u>soil</u>					<u>X</u>	
				<u>1</u>	<u>soil</u>					<u>X</u>	
				<u>1</u>	<u>water</u>					<u>X</u>	
				<u>1</u>	<u>soil</u>					<u>X</u>	
			<u>8803013</u>	<u>1</u>			<u>X</u>	<u>X</u>		<u>X</u>	
				<u>1</u>			<u>X</u>	<u>X</u>		<u>X</u>	
				<u>1</u>					<u>X</u>		
				<u>1</u>					<u>X</u>		<u>1-1-88 Date Rec'd 3/25/88</u>
				<u>1</u>					<u>X</u>		
				<u>1</u>					<u>X</u>		
				<u>1</u>					<u>X</u>		

RELINQUISHED BY: (Signature) <u>[Signature]</u>	DATE <u>2/17/88</u>	TIME	RECEIVED BY: (Signature) <u>[Signature]</u>	DATE <u>2/18</u>	TIME <u>3:05</u>
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME
METHOD OF SHIPMENT:	DATE	TIME	LAB COMMENTS:		

SAMPLE COLLECTOR: <input type="checkbox"/> LEVINE-FRICKE 629 Oakland Avenue Oakland, CA 94611-4567 (415) 652-4500	<input type="checkbox"/> LEVINE-FRICKE 4019 Westerly Place, Suite 103 Newport Beach, CA 92660 (714) 955-1390
Analytical Laboratory: <u>[Signature]</u> <u>[Signature]</u>	

CHAIN OF CUSTODY / ANALYSES REQUEST FORM

Project No.: <i>10000</i>			Field Logbook No.:			Date: <i>2/12/88</i>			Serial No.: <i>280 2873</i>			
Project Name: <i>San Francisco Bay</i>			Project Location: <i>Richmond</i>						Samplers: <i>11</i>			
Sampler (Signature): <i>[Signature]</i>			ANALYSES						REMARKS			
SAMPLES						HOLD			RUSH			
SAMPLE NO.	DATE	TIME	LAB SAMPLE NO.	NO. OF CONTAINERS	SAMPLE TYPE	EPA 601	EPA 624	TPH	BTX			
<i>88-02-067</i>				<i>1</i>								
<i>8802089-01A</i>				<i>4</i>	<i>with</i>							
<i>8802089-02A</i>				<i>4</i>	<i>with</i>							<i>ME + T-2.5</i>
<i>8802067</i>												

RELINQUISHED BY: (Signature) <i>[Signature]</i>	DATE <i>2/12/88</i>	TIME	RECEIVED BY: (Signature) <i>[Signature]</i>	DATE <i>2-12-88</i>	TIME <i>5:55</i>
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME
METHOD OF SHIPMENT:	DATE	TIME	LAB COMMENTS:		

SAMPLE COLLECTOR: <input checked="" type="checkbox"/> LEVINE-FRICKE 629 Oakland Avenue Oakland, CA 94611-4567 (415) 652-4500	<input type="checkbox"/> LEVINE-FRICKE 4019 Westerly Place, Suite 103 Newport Beach, CA 92660 (714) 955-1390
Analytical Laboratory: <i>MED TOX</i> <i>3141 Van Ness St</i> <i>Presidio Hill</i> <i>Attn: Mike Saegert</i>	

CHAIN OF CUSTODY / ANALYSES REQUEST FORM

Project No.: 1207		Field Logbook No.:			Date: 2/12/88		Serial No.: 2770					
Project Name: <i>Alameda Indian Village</i>		Project Location: <i>Alameda</i>							Samplers: <i>F. ...</i>			
Sampler (Signature): <i>[Signature]</i>		ANALYSES					REMARKS					
SAMPLES												
SAMPLE NO.	DATE	TIME	LAB SAMPLE NO.	NO. OF CONTAINERS	SAMPLE TYPE	ANALYSES					REMARKS	
						EPA 601	EPA 624	TPH*	BIX	HOLD		RUSH
			88-02-067	1	SM							
				1	↓							
			8802089-03A	1	↓							
			8802067	1	SM							
				1	↓							
			8802067	1	↓							
				1	↓							
* TPH ...												

RELINQUISHED BY: (Signature) <i>[Signature]</i>	DATE	TIME	RECEIVED BY: (Signature) <i>[Signature]</i>	DATE	TIME
	DATE	TIME		DATE	TIME
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME
METHOD OF SHIPMENT:	DATE	TIME	LAB COMMENTS:		

SAMPLE COLLECTOR: <input checked="" type="checkbox"/> LEVINE • FRICKE 629 Oakland Avenue Oakland, CA 94611-4567 (415) 652-4500	<input type="checkbox"/> LEVINE • FRICKE 4019 Westerly Place, Suite 103 Newport Beach, CA 92660 (714) 955-1390	Analytical Laboratory: <i>[Handwritten notes]</i>
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1245
EAN

FARR, FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James K. Farr, Ph.D.
Andrew John Friedman
James E. Bruya, Ph.D.

3008 B - 16th West
Seattle, WA 98119
(206) 285-8282

April 7, 1988

Tony Douse, Project Leader
Levine-Fricke, Inc.
629 Oakland Avenue
Oakland, CA 94611-4567

Dear Mr. Douse:

Enclosed are the results of the analyses of samples submitted on April 6, 1988 from your project via Federal Express from Med-Tox Associates, Inc.

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, Chemist

AJF/cag

Enclosures

received
APR 15 1988

FARR, FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: April 7, 1988

Date Submitted: April 6, 1988

Project: Not specified

FINGERPRINT CHARACTERIZATION
BY CAPILLARY GAS CHROMATOGRAPHY

Sample #

GC Characterization

SB9-1-2

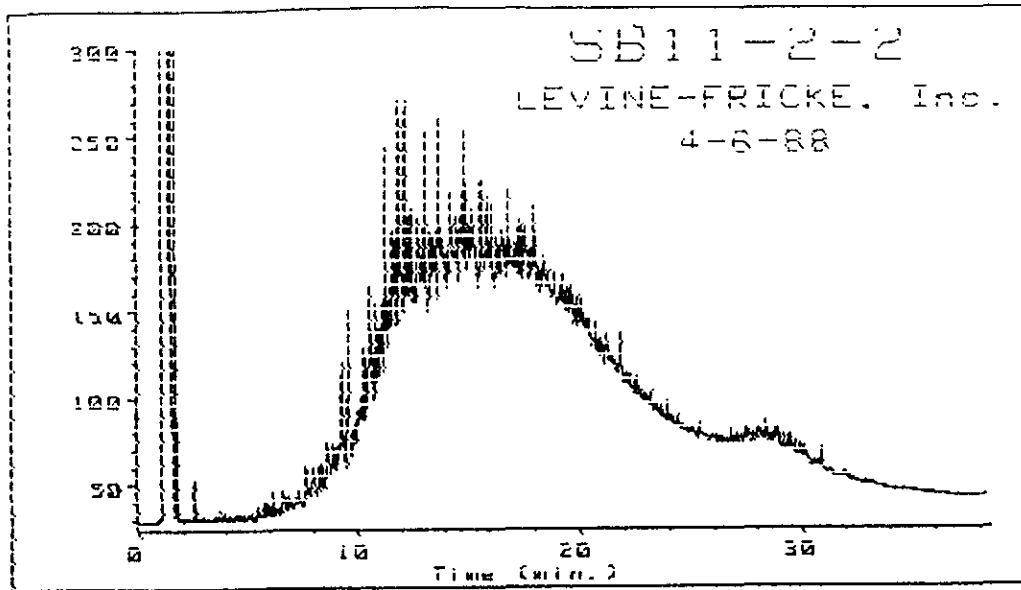
The gas chromatographic trace was indicative of a heavy diesel fuel, probably a #6 diesel. There appears to be a heavier product present in a much smaller amount, possibly a motor oil. These assignments are made on the basis of the boiling ranges and predominant peaks presented in the chromatogram (enclosed).

SB11-2-2

The gas chromatographic trace was indicative of a heavy diesel fuel, probably a #6 diesel. There appears to be a heavier product present in a much smaller amount, possibly a motor oil. These assignments are made on the basis of the boiling ranges and predominant peaks presented in the chromatogram (enclosed). The product in this sample seems to be considerably degraded, probably by microbial degradation since there is very little loss of the front end compounds relative to the later ones.

SB12-1-3

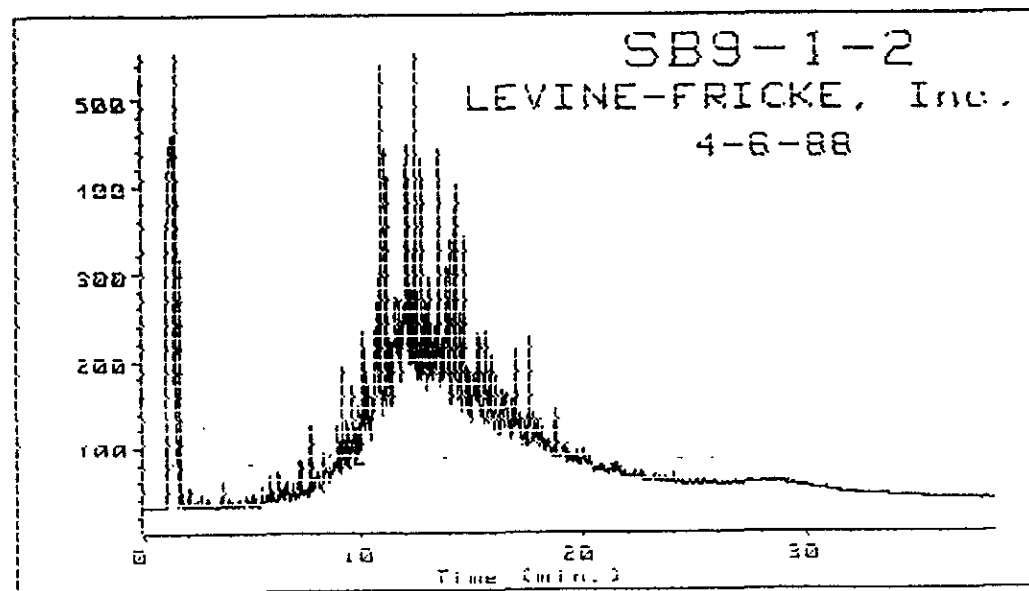
Three attempts were made to extract hydrocarbon material from this sample. None of the samples showed appreciable amounts of any fuel or lubricating-type products (>100 ppm).



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

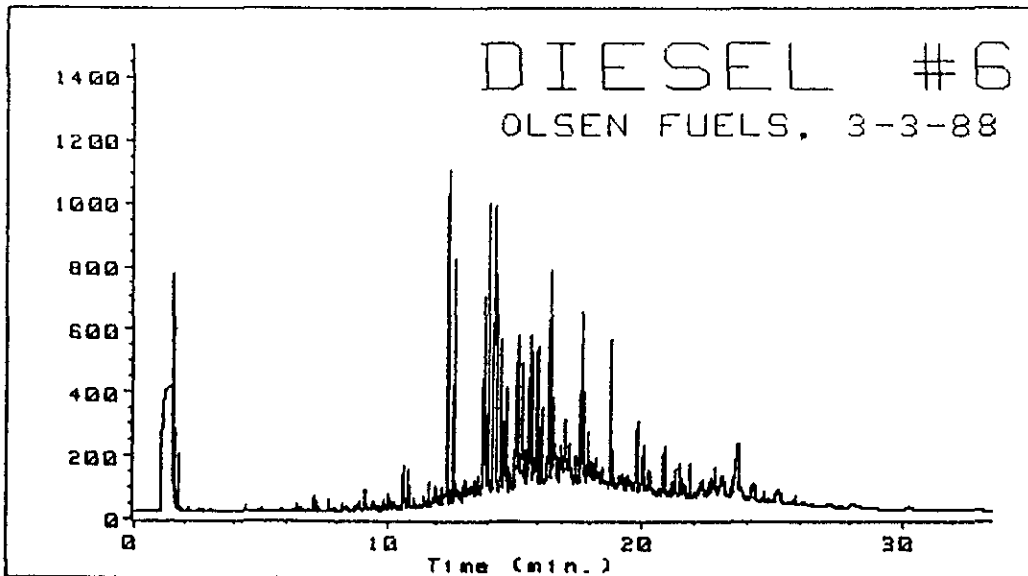
[DE]

Gen Data	CHROMAT	GRAPHICS	MATH &	Zoom	Zoom		
File	NEWS	NEWS	LIST	In	Out	HELP	QUIT



Object: Sig. 2 of DATA:LF1_A05A.D ADDING NEW LABELS TO WINDOW: ?
 Text: 4-6-88
 Position: 0.6674-0.7544 window units Color: 1 Size: 16 Rotation: 0

		Erase	Position	Rotate			
		Label	Label	Label			EXIT

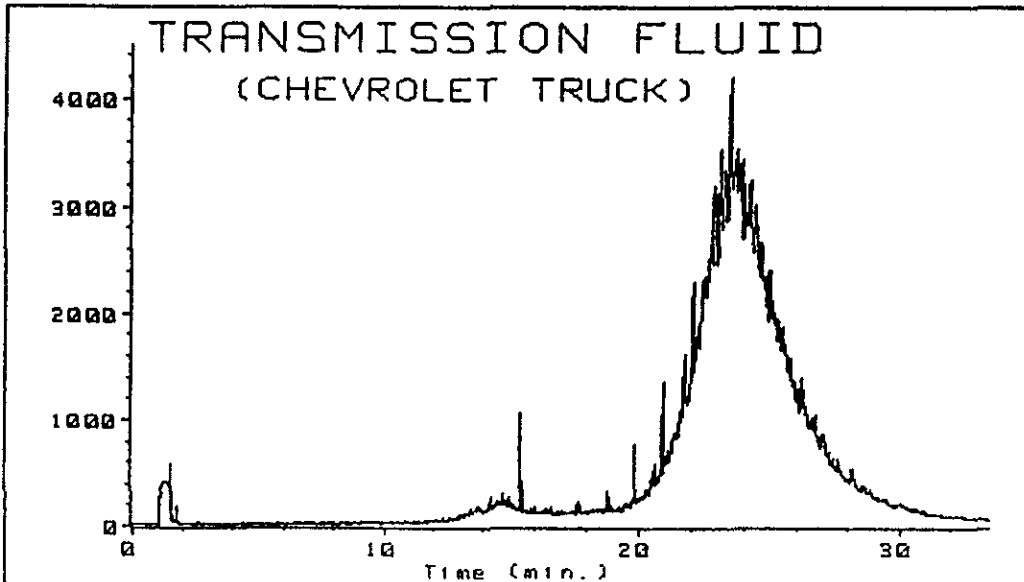


T: null.
 Z: Sig. 2 of DATA:G&D_D23A.D
 Y: Sig. 2 of DATA:G&D_D24A.D
 X: Sig. 2 of DATA:G&D_D25A.D

[GR1]

Print/Plot Horizontal Scale Vertical Scale Zoom to Window 4

Zoom In Zoom Out MORE KEYS EXIT



T: Sig. 2 of DATA:G&D_D23A.D
 Z: Sig. 2 of DATA:G&D_D24A.D
 Y: Sig. 2 of DATA:G&D_D25A.D
 X: Sig. 2 of DATA:G&D_D26A.D

[GR1]

Print/Plot Horizontal Scale Vertical Scale Zoom to Window 4

Zoom In Zoom Out MORE KEYS EXIT

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

Date: 4/5/88
 SAMPLER(S): _____

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

CLIENT SAMPLE IDENTIFICATION	DATE	LAB NUMER (lab use only)	AIR VOLUME (Liters)	NO. CONT.	SAMPLE TYPE *	ANALYSES										COMMENTS/ INTERFERENCES		
						1	2	3	4	5	6	7	8	9	10			
SB9-1-2	4/5			1	S	777												
SB11-2-2	4/5			1	S													
SB12-1-3	4/5			1	S													

Relinquished by: <u>Robin Byars</u>	Date: <u>4/5/88</u>	Time: <u>15:30</u>	Received by:	Date:	Time:
(Signature)			(Signature)		
Relinquished by:	Date:	Time:	Received by:	Date:	Time:
(Signature)			(Signature)		
Dispatched by: <u>Robin Byars</u>	Date: <u>4/5/88</u>	Time: <u>15:30</u>	Received for lab by:	Date:	Time:
(Signature)			(Signature)		
Method of Shipment: <u>FED-X</u>			Lab Comments:		

... (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, ...

CHAIN OF CUSTODY / ANALYSES REQUEST FORM

Project No.: <i>11205</i>	Field Logbook No.:	Date: <i>2/12/88</i>	Serial No.: <i>110 2773</i>
Project Name: <i>Marina Village</i>	Project Location: <i>11th Street</i>		

SAMPLES					ANALYSES						SAMPLERS:		
SAMPLE NO.	DATE	TIME	LAB SAMPLE NO.	NO. OF CONTAINERS	SAMPLE TYPE	EPA 601	EPA 624	TPH	BTX	HOLD	RUSH	REMARKS	
			<i>88-02-067</i>	<i>1</i>									
				<i>1</i>									<i>11/2-12</i>
				<i>1</i>									<i>1-11/2</i>
				<i>1</i>									<i>13/2-11</i>
				<i>1</i>									<i>14/2-11</i>
				<i>4</i>	<i>water</i>								
			<i>8802089-04</i>	<i>4</i>	<i>water</i>								<i>file # 7-1-85</i>
				<i>4</i>	<i>↓</i>								<i>UNSAT I...</i>
				<i>4</i>	<i>↓</i>								<i>...</i>
			<i>8802089-02A</i>	<i>4</i>	<i>↓</i>								<i>...</i>
													<i>...</i>
													<i>...</i>
													<i>...</i>
													<i>...</i>
													<i>...</i>
			<i>8802067-15A</i>										<i>...</i>

RELINQUISHED BY: (Signature) <i>[Signature]</i>	DATE: <i>2/12/88</i>	TIME:	RECEIVED BY: (Signature) <i>[Signature]</i>	DATE: <i>2-12-88</i>	TIME: <i>3:55</i>
RELINQUISHED BY: (Signature)	DATE:	TIME:	RECEIVED BY: (Signature)	DATE:	TIME:
RELINQUISHED BY: (Signature)	DATE:	TIME:	RECEIVED BY: (Signature)	DATE:	TIME:

METHOD OF SHIPMENT:	DATE:	TIME:	LAB COMMENTS:
SAMPLE COLLECTOR: <input checked="" type="checkbox"/> LEVINE-FRICKE 629 Oakland Avenue Oakland, CA 94611-4567 (415) 652-4500			Analytical Laboratory: <i>MEP TOX</i> <i>3111 ...</i> <i>...</i>
<input type="checkbox"/> LEVINE-FRICKE 4019 Westerly Place, Suite 103 Newport Beach, CA 92660 (714) 955-1390			<i>Att: Mike Saegert</i>

CHAIN OF CUSTODY / ANALYSES REQUEST FORM

Project No.: 1205	Field Logbook No.:	Date: 2/12/88	Serial No.:
Project Name: Alameda Bismiah Village	Project Location: Alameda		NO 2774

SAMPLER (Signature): [Signature]					ANALYSES							SAMPLERS:
SAMPLE NO.	DATE	TIME	LAB SAMPLE NO.	NO. OF CON-TAINERS	SAMPLE TYPE	SAMPLER'S: F. [Signature]				HOLD	RUSH	REMARKS
						EPA 601	EPA 624	TPH*	BTX			
			88-02-067-1A	1	Soil							10-10-1
				↓								10-10-2
			8802089-03A	1	↓							11-10-1
			8802067-20A	1	Soil							8-8-2
				↓								8-8-1
			8802067-22A	1	↓							10-10-2
				↓								10-10-1
											* TPH is checked & have [unclear]	
											* Date Recd 4/1/88	

RELINQUISHED BY: [Signature]		DATE: 2/12/88	TIME:	RECEIVED BY: [Signature]	DATE:	TIME:
RELINQUISHED BY:		DATE:	TIME:	RECEIVED BY:	DATE:	TIME:
RELINQUISHED BY:		DATE:	TIME:	RECEIVED BY:	DATE:	TIME:
METHOD OF SHIPMENT:		DATE:	TIME:	LAB COMMENTS:		
SAMPLE COLLECTOR:	<input checked="" type="checkbox"/> LEVINE-FRICKE 629 Oakland Avenue Oakland, CA 94611-4567 (415) 652-4500	<input type="checkbox"/> LEVINE-FRICKE 4019 Westerly Place, Suite 103 Newport Beach, CA 92660 (714) 955-1390	Analytical Laboratory: [unclear]			



**ANATEC
LABORATORIES
INC.**

435 Tesconi Circle
Santa Rosa, CA 95401
707-526-7200
Fax 707-526-9623

Elizabeth Nixon
Levine-Fricke
1900 Powell Street 12th Floor
Emeryville, CA 94608

April 15, 1988
ANATEC Log No: 2706 (1-7)
Series No: 430/028
Client Ref: Project #1245

Subject: Urgent Priority Analysis and Transmittal of Results for Seven Water Samples Identified as "Alameda Marina Village" Received March 29, 1988.

TABLE 1. SUMMARIZED ANALYTICAL RESULTS FOR SIX "LF" SAMPLES

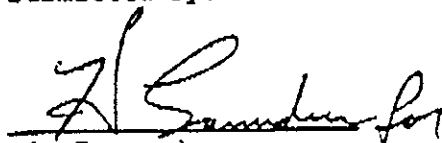
Parameter	Descriptor, Lab No. & Results (mg/L) ^a					
	LF-1 1245 3/28/88 (-7300)	LF-2 1245 3/28/88 (-7301)	LF-3 1245 3/28/88 (-7302)	LF-4 1245 3/28/88 (-7303)	LF-5 1245 3/28/88 (-7304)	LF-1 Blank 1245 3/28/88 (-7306)
Petroleum Hydrocarbons						
Volatile, as Gasoline	NR ^b	NR	NR	NR	NR	NR
Extractable, as Diesel Fuel	<0.05	<0.05	<0.05	<0.05	1.8	NR
Benzene	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Ethylbenzene	0.0006	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Toluene	0.0006	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Xylenes, Total	0.003	0.0007	<0.0005	<0.0005	0.001	<0.0005
Total Dissolved Solids	8,700	NR	NR	13,000	NR	

^amg/L--Data are expressed in units of milligrams analyte per liter sample.


^bNR--Analysis not requested.

Results for "RC-1" are presented in Table 2. Results of quality control analyses are summarized in Table 3. Please feel welcome to contact us should you have questions regarding procedures or results.

Submitted by:


Kim Hansard
Project Chemist

Approved by:


Greg Anderson, Director
Analytical Laboratories

/sm

Enc. Sample custody document



APPENDIX D

SURVEY NOTES FOR GRID PATTERN

6/71

9/71

BDR
CIH

STAKE GRID FC

π@A-0+00 H
H&T TD

B.S. "A" 0 00 00 'TRIB'
LINE 180 00 00 &

BM T.C. 295.30 -3.9
C.B. -3.9

HEAD #2 278 05 35 547.09 +16.423
91 05 40 547.08
M) 271 05 37

A-400 0 00 00 400 -1.6

π@ HEAD #2 (2A)

B.S. TRIB. 0 00 00
(#4) 180 00 15

F.S. 1 258 04 30
A-0+00 2) 78 04 30
M) 258 04 23

CLOSING & 10155 40