Investigation of Northwest Area

Marina Village
Alameda, California

October 6, 1988
1245

Prepared for:

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

LEVINE·FRICKE

LEVINE·FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

October 6, 1988

LF-1245

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

Subject: Enclosed Report on Investigation of Northwest Area, Marina Village, Alameda, California

Dear Don:

Enclosed please find the subject report detailing the field investigation, monitoring well installation, laboratory analysis results, interpretations, conclusions and recommendations.

Excavation of 22 test pits revealed the presence and approximate distribution of petroleum hydrocarbons (diesel) in the northwest corner of the Marina Village development. Total petroleum hydrocarbon (TPH) concentrations in soils ranging from 52 to 11,000 parts per million (ppm) are in an area of approximately 1.9 acres (9,000 square yards) on property subparcel 1.

Although TPH concentrations in soils were not quantified in the property subparcel occupied by the Powerhouse, visual observations in that area and ground-water quality data indicate that elevated (greater that 100 ppm) concentrations of petroleum hydrocarbons are likely present in soils on at least the northern portion of the parcel.

Five monitoring wells were installed in and outside the affected area to confirm water quality. Location of these wells was based on data gathered from the test pits. One additional well, previously installed by Woodward Clyde Consultants in 1987, was also used to obtain water-quality data.

Initial sampling of these wells indicated that a thin layer of floating petroleum product was present in three wells located within the affected area (two on subparcel 1 and one on the Powerhouse subparcel). Ground-water samples from these wells contained extractable petroleum hydrocarbons at concentrations between 43 and 65 ppm. The remaining wells, located outside the affected area, did not contain detectable concentrations of TPH.

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Other offices in NEWPORT BEACH and OAKLAND, CA

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.

Further investigation of the presence of petroleum hydrocarbons on subparcel 2 has been initiated. When this work is completed, information gathered can either be incorporated into this report, or a separate letter report can be prepared.

It should be noted that as the property owner, you are required by law to notify regulatory agencies of chemical releases on the property.

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

Sincerely,

Tom Graf, P.E.
Principal Engineer

Elizabeth Nixon
Project Engineer

Enclosure

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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.

Anthony D. Daus
Principal Hydrogeologist (4267)

Thomas E. Graf
Principal Engineer (34719)

LF-1245
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**INVESTIGATION OF NORTHWEST AREA
MARINA VILLAGE, ALAMEDA, CALIFORNIA**

1.0 INTRODUCTION

This report describes the results of a soil and ground-water investigation performed between February 17 and June 23, 1988 in the northwest corner of Marina Village development (herein referred to as the Northwest study area, see Figure 1). The study area, located northwest of the Shipway buildings and in the vicinity of the Powerhouse building, is comprised of property subparcels 1, 2, 5, 6 and the Powerhouse parcel (Figure 2). The purpose of the investigation was to assess the presence of petroleum hydrocarbons in the area, and to define their areal extent. Additionally, the impact of these petroleum hydrocarbons on ground water and their potential for off-site migration was evaluated.

The investigation included the following:

- excavation of 22 test pits;
- collection and chemical analysis of soil samples from the test pits;
- installation of five shallow ground-water monitoring wells;
- collection and chemical analysis of ground-water samples; and
- measurements of ground-water levels.

A sixth well (WC3), previously installed by Woodward Clyde Consultants in 1987 and located within the study zone, was also used to measure water levels and obtain ground-water samples.

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

2.0 FIELD ACTIVITIES

2.1 Test Pits

On February 17, 1988 four preliminary test pits (NWPIT, RR8, RR9 and WEB) were dug in the general vicinity of the study area to assess the occurrence of petroleum hydrocarbons. Test pit (NWPIT) was located within the study area (Figure 2). The other three pits were located outside the study area west of the Powerhouse and near the railroad tracks (pits RR8, RR9 and WEB). Locations of these pits are shown on Figure 2. The occurrence of petroleum hydrocarbons was assessed mainly by visual observations. One soil sample was collected from test pit WEB, and one ground-water sample was collected from test pit RR9 and chemically analyzed for petroleum hydrocarbons. The ground-water sample was additionally analyzed for volatile organic compounds (VOCs, as described below).

On March 14 through 17, 1988 an additional 15 test pits (pits 1 through 15, as shown on Figure 2) were dug on subparcels 1 and 5 and west of subparcel 1 on Work Street and along the railroad tracks to further assess the occurrence and distribution of petroleum hydrocarbons in these areas. Twelve soil samples were collected and chemically analyzed from these pits.

On June 23, 1988 three more test pits (16, 17 and 18, Figure 2) were dug in parcels 1 and 5 to further define the boundaries of free petroleum product encountered during digging of the previous test pits. Visual observations were made regarding the occurrence of petroleum hydrocarbons.

Test pits were dug by a Vintage Properties subcontractor (Alameda Paving and Excavating) using a backhoe. Test pit excavations were observed by a Levine·Fricke field engineer, and a representative of Vintage Properties was on-site during a portion of the work. Soil samples were collected from selected pits for chemical analysis. Samples were retrieved from the backhoe bucket using brass tubes. which were capped with aluminum foil and plastic caps and sealed 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 quickly as possible under strict chain-of-custody protocol. Test pit descriptions are included as Appendix A.

2.2 Well Installation

Five monitoring wells were installed between March 22 and 23, 1988 to assess the shallow ground-water flow system and water quality. Well locations are shown on Figure 2.

Drilling was completed using the hollow-stem auger method and was performed by All Terrain Drilling, Inc. of Roseville, 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 a depth of 15 feet below the ground surface. Soil sampling was conducted continuously during drilling of the wells using a continuous core sampler. Boring logs describing sediments encountered and visual observations regarding the presence of fuel hydrocarbons were prepared, and are included in Appendix B.

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 1 to 2 feet above the top of the screen. Approximately 1-foot of bentonite pellets was 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 1.

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

2.3 Ground-Water Sampling

Monitoring Wells

One round of ground-water samples was collected from wells LF6 through LF10 on March 29, 1988. A ground-water sample was collected from well WC3 on March 31, 1988. Prior to sampling, approximately 10 well volumes were purged from each well using a centrifugal pump or hand-operated Teflon bailer. 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 relatively fresh ground water.

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. The samples were labeled and then immediately placed in a chilled cooler for transport to Anatec Laboratories, Santa Rosa, 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.

Test Pit

A ground-water sample was collected from one test pit (RR9) on February 17, 1988. The sample was collected in 40-ml VOA vials by dipping the vials directly into the ground water. The sample bottles were handled as described above.

2.4 Ground-Water Level Measurements

Water-level measurements were taken prior to well sampling 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 tidal period. Ground-water elevation data is presented in Table 1 and on Figure 3.

3.0 SITE GEOLOGY

Locations of the 22 test pits and five new monitoring wells are illustrated on Figure 2. Well and pit locations are plotted according to a 50-foot grid pattern of the area provided by Vintage Properties. Survey data of the grid is included as Appendix D. Each pit and boring was logged for sediment type, ground-water depth, and petroleum staining and odor. Sediments encountered and observations regarding petroleum content in the test pits are described in Appendix A. Logs of the wells are included in Appendix B.

Subsurface soils consisted of variable thicknesses (3 to 8 feet) of brown, silty, sandy, and/or gravelly clay fill with variable amounts of large rocks and debris (wood, brick, concrete and asphalt) underlain by 2 to 5 feet of green-gray sand, silty to clayey sand, sandy and silty clay or gravelly fill containing variable amounts of shells and wood fragments. Green Bay Mud was encountered underneath this fill material in most test pits and two of the wells. The water level was approximately 3 to 9 feet below ground surface, and generally corresponded to 1 to 2 feet below the brown, silty-clay fill/green-gray, sandy fill interface.

4.0 SOIL AND WATER QUALITY

4.1 Field observations

Test Pits

In several of the test pits (NWPIT, 11, 12, 13, 13A, and 16, see Figure 2) free petroleum product seeping from excavation sidewalls was encountered at about the depth of the water table. The lower vertical extent of the petroleum product appeared to be bounded by the Bay Mud layer, and was generally contained in about 1 to 2 feet of sediments. The occurrence of the product appeared to be associated with the presence of abundant wood debris, coarse gravel, or abandoned piping routes. The strong hydrocarbon odor associated with the product resembled diesel. The interpreted areal boundary of soils containing petroleum product above 1,000 ppm is shown on Figure 4.

In several other test pits located near the shoreline (1, 2, 3, 4 and 18), sediments near the ground-water surface were lightly to moderately stained with black, oily residue. Free product was not observed in these pits. Occurrence of the oil staining appeared to be associated with abundant wood debris. The approximate areal boundary of soils containing petroleum hydrocarbons at concentrations above 100 parts per million (ppm) is shown on Figure 4.

Several test pits were dug west of the heavily stained area along Work Street and the railroad track (pits 7, 8, 9, 10, 14 and 15, see Figure 2). With the exception of pit 9, there were no visual indications of petroleum product. In pit 9, oil staining was moderate to light and generally occurred as mottled dark staining in sandy sediments at about the depth of the water table.

Sediments in pits RR8 and RR9, located west of the Powerhouse along the railroad tracks, contained moderate to heavy petroleum staining. Floating product was observed on the ground water in these pits. Intermittent patches of dark, viscous product floating on the ground water were observed in pit RR8. In pit RR9, there was a light, transparent sheen on the ground-water surface. Test pit WEB did not contain visible evidence of petroleum product. (These observations were reported by Steve Getty of Vintage Properties.)

Three test pits dug south of this area on Parcel 5 (pits 5, 6 and 17) did not contain evidence of petroleum product.

Well Borings

Free petroleum product was observed in a 2- to 3-foot thick layer of sediments (mostly gravels) in well borings LF8, LF9 and LF10. In two of the well borings (LF8 and LF10), the depth of this layer corresponded to about the depth of the water table. In LF9 the oily layer was located several feet below the water table. → considered superficial?

In well boring LF7, on the west edge of the site near test pit 4, petroleum-stained sediments similar to those observed in test pit 4 were encountered at a depth of 8.5 to 10 feet. Evidence of petroleum hydrocarbons was not present in well boring LF6 (located on Parcel 5).

4.2 Laboratory Analysis of Soil Samples

Soil samples selected for chemical analysis were collected from several pits to characterize the concentrations and distribution of petroleum hydrocarbons in the area. Sample depths and total petroleum hydrocarbon analysis results are listed in Table 2. Copies of laboratory certificates are included in Appendix C.

Twelve soil samples were analyzed for total petroleum hydrocarbons (TPH) using EPA Method 8015 (extraction). Three samples (NWPIT4-9'-10', NWPIT5-7.5' and NWPIT11-8') were additionally analyzed for priority pollutant volatile organic compounds (VOCs) using EPA Method 8240. Sample NWPIT11-8', which contained elevated TPH, was also analyzed for acid and base/neutral extractables using EPA Method 8270.

Analysis results indicated that TPH are present at concentrations between 760 and 11,000 parts per million in pits that contained free product (pits 11 and 12). In pits close to the shoreline where light to moderate petroleum staining was observed in the sediments, TPH concentrations ranged between 52 and 260 ppm (pits 2 and 4).

Petroleum hydrocarbons were not detected in soil samples from pit 5 (in parcel 5) or in most of the pits located along the railroad track and Work Street, west of parcel 1 (pits 7, 8, 9, 10 and 15). The soil sample collected from Pit 9, where dark staining had been observed during excavation, contained 110 ppm TPH. A soil sample collected from test pit WEB, several hundred feet west of the study area, did not contain detectable TPH.

VOCs were not detected in the three samples analyzed, except sample NWPIT4-9'-10' where 0.038 ppm of trichlorethene (TCE) was detected. Acid and Base/Neutral extractables were not detected in sample NWPIT11-8'.

4.3 Ground-Water Sample Analysis

Test Pits

The one ground-water sample collected from test pit RR9 (sample RR9(-200)-W) was analyzed for TPH, BTXE and purgeable halocarbons (EPA Methods 8015, 602 and 601, respectively). Results indicate that no detectable TPH were present. Toluene was detected at 0.001 ppm, and chloroform and tetrachlorethene (PCE) were detected at 0.003 and 0.001 ppm, respectively. No other VOCs were detected. The concentrations of toluene, chloroform and PCE detected in the sample are below regulatory guidelines (California State Department of Health Action Levels are 0.1 ppm for toluene and 0.004 ppm for PCE. Although there is not a state action level for chloroform, the U.S. Environmental Protection Agency's maximum concentrations level (MCL) acceptable for drinking water is 0.1 ppm).

Monitoring Wells

Three of the monitoring wells (LF8, LF9 and LF10) are located within the petroleum-affected area, and two are located on the east edge of the study area adjacent to the Marina boat dock area, as shown in Figure 2. 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. The Woodward Clyde well (WC3) located in the parking lot area adjacent and north of Shipway, was also used to obtain ground-water quality and flow information.

Ground-water samples collected during the initial round of sampling were analyzed for extractable TPH (EPA Method 8015 and priority pollutant volatile organic compounds (VOCs, EPA Method 624).

Results of TPH analyses indicate that three of the six wells (LF8, LF9 and LF10) contain TPH concentrations between 43 and 62 ppm. The other wells (LF6, LF7 and WC3) did not contain detectable concentrations of TPH.

VOCs were not detected in any of the wells.

Analysis results for TPH are listed in Table 1 and plotted on Figure 5. Copies of laboratory certificates are included in Appendix C.

Product thickness measurements taken at the time of water sampling showed that a thin sheen of petroleum product (less than 1/16-inch thick) was floating on the ground-water table in wells LF8, LF9 and LF10.

During an environmental investigation of an area adjacent to this site (Levine·Fricke draft report submitted to Vintage Properties and dated April 25, 1988 entitled Investigation of Field Area South of Powerhouse, Marina Village), ground-water from two shallow ground-water monitoring wells was analyzed for total dissolved solid (TDS) to assess overall ground-water quality in the area. These wells, located approximately 400 to 800 feet south of this study area, contained 9,000 and 13,000 ppm TDS, respectively. These results indicate that the ground water is brackish (as defined by J.D. Hem, U.S. Geological Survey, paper No. 1473, 1970). The TDS 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). The shallow ground water under the site is therefore probably not potable due to the high TDS.

5.0 SHALLOW GROUND-WATER FLOW

Ground-water elevation measurements and contours are plotted on Figure 3. As shown, the localized ground-water flow direction in the study area is predominantly to the east (toward the Alameda Inner Harbor). The ground-water gradient ranges 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 LF7 and LF8.

The influence of tidal fluctuations on flow direction and water levels in the study area has not been assessed in this investigation.

6.0 CONCLUSIONS

As reported above, Levine·Fricke conducted a technical investigation in the northwest corner of the Marina Village development. Based on the field data and observations, and information obtained through these activities, the following conclusions have been reached regarding the occurrence of petroleum hydrocarbons in this area and their impact on the soils and ground-water.

(1) The predominant petroleum hydrocarbon encountered at the site is an extractable fuel hydrocarbon, probably a heavy diesel. Priority pollutant VOCs were not detected in soils or ground water.

6.1 Subparcel 1:

(2) Petroleum hydrocarbons are present in soils at concentrations between 52 and 11,000 ppm on about 1.9 acres of land in subparcel 1. The estimated volume of these affected soils is approximately 6,000 cubic yards (based on an average thickness of two feet). The area and volume of soils containing free product or petroleum hydrocarbon concentrations greater that 1000 ppm is estimated to be 1.2 acres and 4,000 cubic yards, respectively.

The northwest extent of this affected area appears to be beyond the parcel property line. Free product in test pits and elevated TPH concentrations in ground-water were detected immediately adjacent to this border. Estimated ground-water flow directions suggest that free product may be migrating onto the site from an upgradient (west) source.

The eastern boundary of petroleum-affected soils is fairly well defined and is close to the shoreline. TPH concentrations in soils near the shoreline are greatly reduced (52 to 260 ppm) relative to other parts of the study area where free product and higher TPH concentrations in the soils were observed (700 to 11,000 ppm).

Observations and chemical analysis data from test pits located on subparcel 5 suggest that the southern limit of petroleum-affected soils is just north of the subparcels 1 and 5 boundary and the eastern limit is near the subparcel 5 and 6 boundary.

(3) VOCs were not detected in soils samples collected from the test pits, except for a very low concentration of TCE (0.038 ppm) encountered in test pit 4. Acid and base/neutral extractables were also not detected in the soils.

(4) Ground-water quality data from three shallow monitoring wells located on subparcel 1 indicate that TPH concentrations range between 54 and 62 ppm in the area where TPH concentrations in the soils were between 720 and 11,000 ppm. Toward the shoreline where TPH concentrations were relatively low (52 to 260 ppm) in soils, the ground water does not appear to have been significantly impacted (TPH was not detected in well LF7 located in this area). These data suggest that the heavy, residual hydrocarbons in the soil are not very soluble.

6.2 Subparcel Powerhouse:

(5) Elevated concentrations (43 ppm) of extractable petroleum hydrocarbons are present in ground water on the Powerhouse subparcel. This data, and field observations made during the investigation suggest that subsurface soils also contain heavy petroleum hydrocarbons. Concentrations of hydrocarbons in the soils were not quantified during the investigation. The continuity between the hydrocarbons here and those encountered on Parcel 1 has not been defined.

A detailed assessment of the areal extent of petroleum hydrocarbons on the Powerhouse subparcel was not attempted. However, data obtained from a ground-water monitoring well and several test pits suggest that a portion of this parcel has been impacted by heavy petroleum hydrocarbons.

6.3 Subparcel 5:

(6) Petroleum hydrocarbons were not detected in the several test pits and one ground-water monitoring well on Parcel 5. These results indicate that if petroleum hydrocarbons are present on this subparcel, their lateral extent is not significant.

6.4 Subparcel 2:

(7) No test pits or borings were dug/drilled on this parcel during the investigation. Ground-water quality data collected from a well (WC3) previously installed on this parcel, however, indicates that TPH and VOCs are not contained in the ground water at detectable concentrations.

6.5 Subparcel 6:

(8) No test pits were excavated in subparcel 6 during the investigation. However, the distribution of TPH found in subparcel 1 and the Powerhouse suggest that TPH concentrations exceeding 1,000 ppm may be present in the subsurface soils.

6.6 Ground-Water Flow and Petroleum Hydrocarbon Migration Potential

(9) Ground-water elevation data indicate that the regional direction of ground-water flow in the area is toward the Alameda Inner Harbor. The hydraulic gradient over most of the area is very low (nearly flat to 0.01 ft/ft), and therefore net ground-water flow toward the harbor is expected to be limited.

Ground-water quality data from wells close to the shoreline indicate that the presence of the hydrocarbons in ground water inland has not impacted harbor waters.

(10) Free product at the depth of the ground water in test pits and monitoring wells indicates that it is mobile and may be transported with the ground water.

Although the source of the product is not known, historical records indicate that similar fuel products were handled at the site several decades ago and may have been introduced into the subsurface. In that time, migration of the product appears to have been limited. This observation, and the low hydraulic gradient (and probable low flow velocity) in the area, suggest that movement of subsurface petroleum hydrocarbons into harbor waters is not expected in the near future.

This conclusion is supported by the reported presence of previously installed sheet piles along the subparcel 1 shoreline and ground water mounding along the subparcel 5 shoreline. The mounding appears to be due to landscape irrigation in this area. Although the as-built specifications of the sheet piles have not been reviewed by Levine·Fricke, both the sheet piles and mounding would retard migration of TPH into the Inner Harbor in these areas.

7.0 LONG-TERM MONITORING OF PETROLEUM-AFFECTED AREAS

Currently, development plans for the Parcel 1 site (see Figure 1) are to use the site for a parking lot. Diesel-affected soils excavated from the field area south of the powerhouse (LF October 5, 1988 Report) are planned to be spread on Parcel 1 for bio-remediation prior to paving the site for eventual parking use.

Since results from this investigation indicate that the subsurface petroleum encountered in the Parcel 1 and powerhouse areas is not migrating towards the estuary, long-term ground-water monitoring has been selected by Vintage Properties to allow site development and bio-remediation of diesel-affected soils to proceed.

Figure 6 illustrates the locations of existing and four additional monitoring wells proposed to be installed to provide the basis for long-term monitoring of the petroleum-affected soils in the Parcel 1 and powerhouse areas. Quarterly monitoring of these wells is proposed for a period of two years. The frequency of sampling required for monitoring would be

re-evaluated with the RWQCB at that time. If the monitoring program indicates potential migration of significant quantities of petroleum towards the estuary, additional remediation measures such as a perimeter shoreline drain or cut-off wall, or source removal should be initiated.

Current plans to bio-remediate diesel-affected soils on Parcel 1 involve spreading the soils on the surface in an approximately 2-foot thick layer. Nutrients and moisture-conditioning will be used on an as-needed basis. Off-sets from the shoreline of approximately 25 feet will be used in conjunction with perimeter berms to reduce the potential for surface-water drainage from the treatment areas to reach the estuary. Since the underlying soils contain petroleum product, a leachate control layer will not be placed under the bio-remediating soils.

RWQCB approval will be obtained before proceeding with the above-outlined monitoring and bio-remediation program.

TABLE 1

GROUND-WATER MONITORING WELL CONSTRUCTION DATA

GROUND-WATER SAMPLE ANALYSIS DATA - TOTAL PETROLEUM HYDROCARBONS (TPH)

GROUND-WATER ELEVATION DATA

WELL NO.	WELL DEPTH (ft)*	WELL ~ ELEV. (ft)	GROUND SURFACE ELEV. (ft)	PERFORATION INTERVAL (ft)*	DATE SAMPLED	WATER DEPTH (ft)**	WATER ~ ELEVATION (ft)	TPH (ppm)
LF-6	15	3.58	3.6	5-15	29-Mar-88	6.50	-2.92	<0.05
					21-Apr-88	6.06	-2.48	NA
LF-7	15	4.94	3.7	5-15	29-Mar-88	9.21	-4.27	<0.05
					21-Apr-88	9.16	-4.22	NA
LF-8	15	4.66	2.9	5-15	29-Mar-88	6.75	-2.09	62
					21-Apr-88	6.04	-1.38	NA
LF-9	15	2.08	0.6	5-15	29-Mar-88	5.21	-3.13	54
					21-Apr-88	5.06	-2.98	NA
LF-10	15	4.48	4.7	5-15	29-Mar-88	8.17	-3.69	43
					21-Apr-88	7.28	-2.80	NA
WC-3 @	14	4.44	4.7	7-14	31-Mar-88	8.92	-4.48	<0.05
					21-Apr-88	7.81	-3.37	NA

Notes: Sampling Analysis performed by Anatec Laboratories, using EPA Method 8015 (extraction).

* - Below Ground Surface

** - Below top of well casing

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

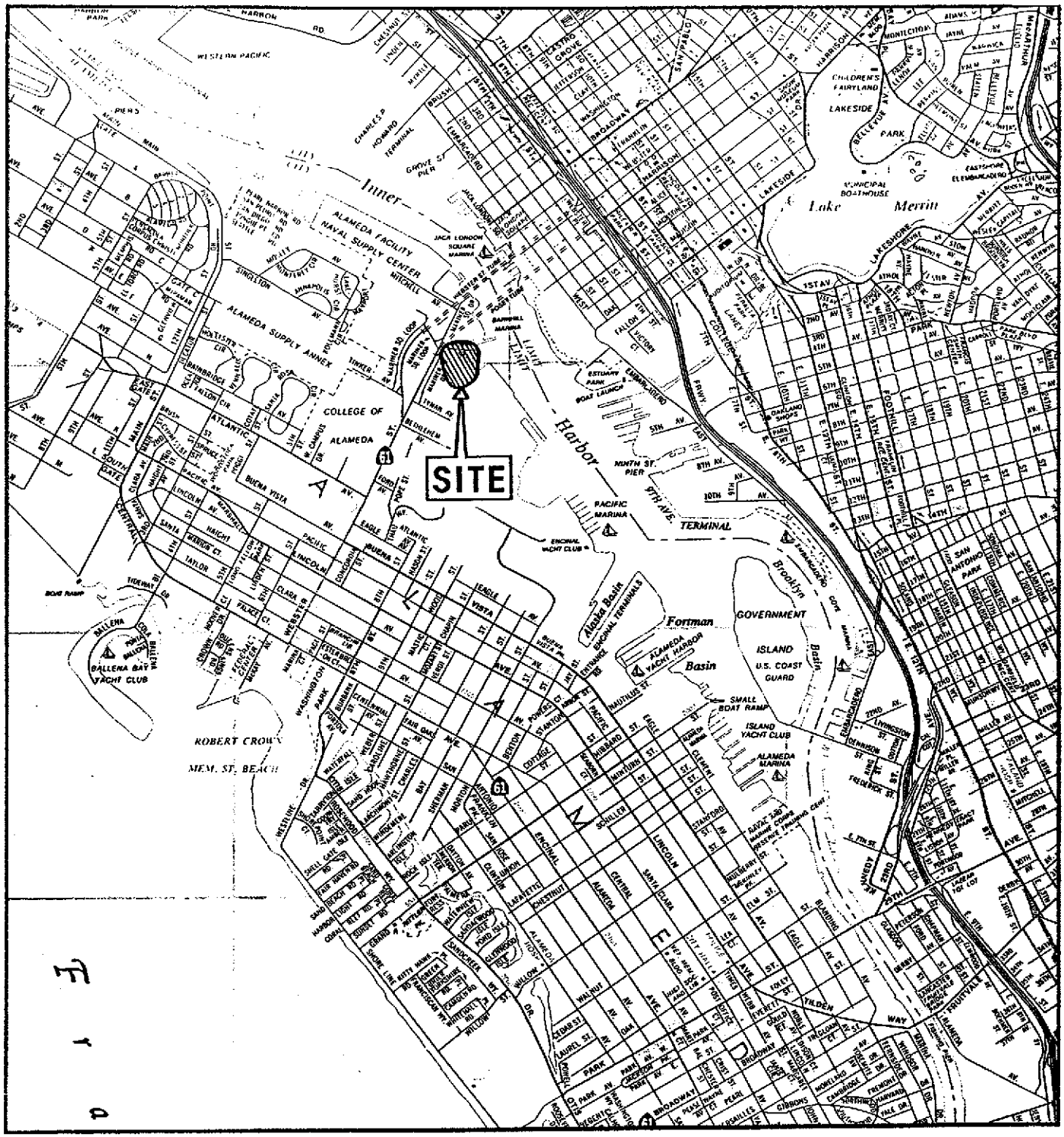
@ - Well drilled by Woodward-Clyde Consultants, 1987

TABLE 2
SOIL SAMPLE CHEMICAL ANALYSIS DATA
TOTAL PETROLEUM HYDROCARBONS (TPH)
(All concentrations expressed in ppm)

Sample No.	Depth (feet)	Date Sampled	TPH
NWPIT2 - 9′	9	3/14/88	<10
NWPIT2 - 9-7′	7 - 9	3/14/88	52
NWPIT4 - 9-10′	9 - 10	3/14/88	260
NWPIT5 - 7.5′	7.5	3/14/88	<10
NWPIT7 - 5-6′	5 - 6	3/14/88	<10
NWPIT8 - 5-6′	5 - 6	3/14/88	<10
NWPIT9 - 4.5′	4.5	3/14/88	110
NWPIT10 - 7′	7	3/14/88	<10
NWPIT11 - 6.5′	6.5	3/15/88	720
NWPIT11 - 8′	8	3/15/88	11,000
NWPIT12 - 6′	6	3/15/88	1,000
WEB *	4-5	2/17/88	<10

Notes: Sampling analyses performed by Anatec Laboratories, using EPA Method 8015 (extraction).

* Sample WEB was analyzed by Med-Tox Associates, using EPA Method 8015.



0 1/2 1 Mile

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

Figure 1 : SITE LOCATION MAP

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EAN09AUG88JM

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ESTUARY

BOAT DOCK

BOAT DOCK

BOAT DOCK

SHIPWAY 1

2 STUDY AREA BOUNDARY

Parking Lot

WC3

Subparcel boundary

6

LF-6

5

Baseline

Shoreline

LF-7

4

petroleum stained sediments at 8.5 to 10 bgs

2

3

1

18

11

NW PIT

17

50-foot grid, provided by Vintage Properties

MARINA VILLAGE PARKWAY

POWER HOUSE

.003 ppm chloroform and .001 ppm PCE > grab gw. sample

RR Tracks

TRAIN STATION

13

12

14

6

Some oily stains

7

15

9

10

Work Street

8

WEB

Free Product

Sediments / gw surface wave slightly to moderately stained w/ black, oily residue.

MARINER SQUARE DRIVE

WEBSTER STREET

0 100 200 feet

(Approximate)

EXPLANATION

LF6 ● Shallow monitoring well, Levine•Fricke, 1988

WC3 ◉ Shallow monitoring well, Woodward-Clyde, 1987

2 □ Test pit

Figure 2:

SITE PLAN SHOWING TEST PIT AND MONITORING WELL LOCATIONS

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CONSULTING ENGINEERS AND HYDROGEOLOGISTS

APR88FAN/jc

105486

ESTUARY

BOAT DOCK

BOAT DOCK

BOAT DOCK

SHIPWAY 1

2 STUDY AREA BOUNDARY

Parking Lot

WC3 -3.37

Subparcel boundary

LF-6 2.48

Shoreline

LF-7 4.22

-4.0

-3.0

PARK WAY

VILLAGE

POWER HOUSE

LF-10 2.80

MARINA

NW PIT

LF-8 1.39

LF-9 2.98

-2.0

RR9

RR8

RR Tracks

TRAIN STATION

WEB

Work Street

MARINER SQUARE DRIVE

WEBSTER STREET

1 2 3 4 5 6 7 8 9 10 11 12 13 13A 14 15 16 17 18

1 2 3 4 5 6 7

0 100 200 feet
(Approximate)

EXPLANATION

LF6 ● Shallow monitoring well, Levine•Fricke, 1988

WC3 ⊙ Shallow monitoring well, Woodward-Clyde, 1987

2 □ Test pit

2.80 Ground-water elevation (feet)

-2.0 Ground-water elevation contour (feet); queried where inferred. Elevations referenced to City of Alameda Datum (6.4 feet above MSL).

Figure 3:

GROUND-WATER ELEVATION CONTOURS
(APRIL 21, 1988. FALLING TIDE)

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EAN10AUG88JM

105486

ESTUARY

BOAT DOCK

BOAT DOCK

BOAT DOCK

SHIPWAY 1

2 STUDY AREA BOUNDARY

Parking Lot

WC3

6 NA

Subparcel boundary

LF-6

5

5 ND (7.5)

ESTIMATED BOUNDARY OF PETROLEUM-AFFECTED AREA

Shoreline

LF-7

4 260 (9'-10")

.038 ppm TCE

2 52 (7'-7")

1 <10(?)

3 NA

NA

18 NA

1

NA

11 NW PIT

No 8270 VOCs

720 (6.5') 1,000 (8')

LF-8

1000 (6')

12

LF-9

NA 16

17 NA

6

MARINA

VILLAGE PARKWAY

POWER HOUSE

LF-10

RR9 NA

RR8 NA

RR Tracks

TRAIN STATION

ESTIMATED BOUNDARY OF SOILS CONTAINING TPH CONCENTRATIONS OF 1000 ppm OR GREATER (PARCEL 1)

NA 13A NA

13

14

15

7 ND (5'-6')

8 ND (5'-6')

9 110 (4.5')

10 ND (7')

Work Street

WEB ND (4')

MARINER SQUARE DRIVE

WEBSTER STREET

0 100 200 feet

(Approximate)

EXPLANATION

LF6 ● Shallow monitoring well, Levine•Fricke, 1988

WC3 ◉ Shallow monitoring well, Woodward-Clyde, 1987

2 □ Test Pit

52 (7') Total Petroleum Hydrocarbon (TPH) concentration in ppm with depth of sample indicated (feet)

ND Not detected

NA Not analyzed

—?— Estimated boundary of petroleum-affected area; queried where inferred

Figure 4:

TOTAL PETROLEUM HYDROCARBON ANALYSIS DATA FOR TEST PIT SOIL SAMPLES

Project No. 1245

LEVINE•FRICKE

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EAN12AUG88jd

105486

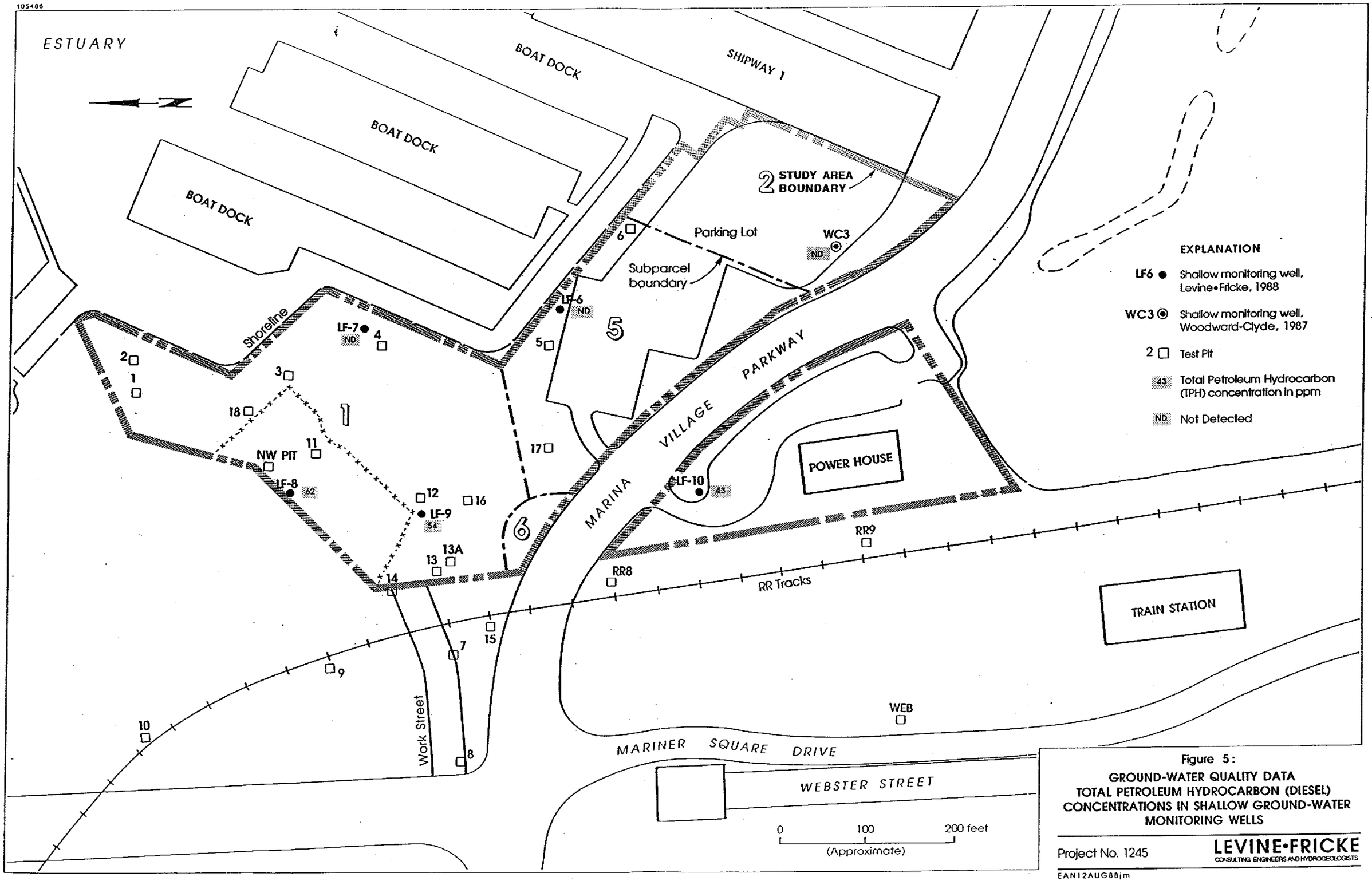

Figure 5:
GROUND-WATER QUALITY DATA
TOTAL PETROLEUM HYDROCARBON (DIESEL)
CONCENTRATIONS IN SHALLOW GROUND-WATER
MONITORING WELLS

Project No. 1245

LEVINE•FRICKE
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EAN12AUG88jm

105486

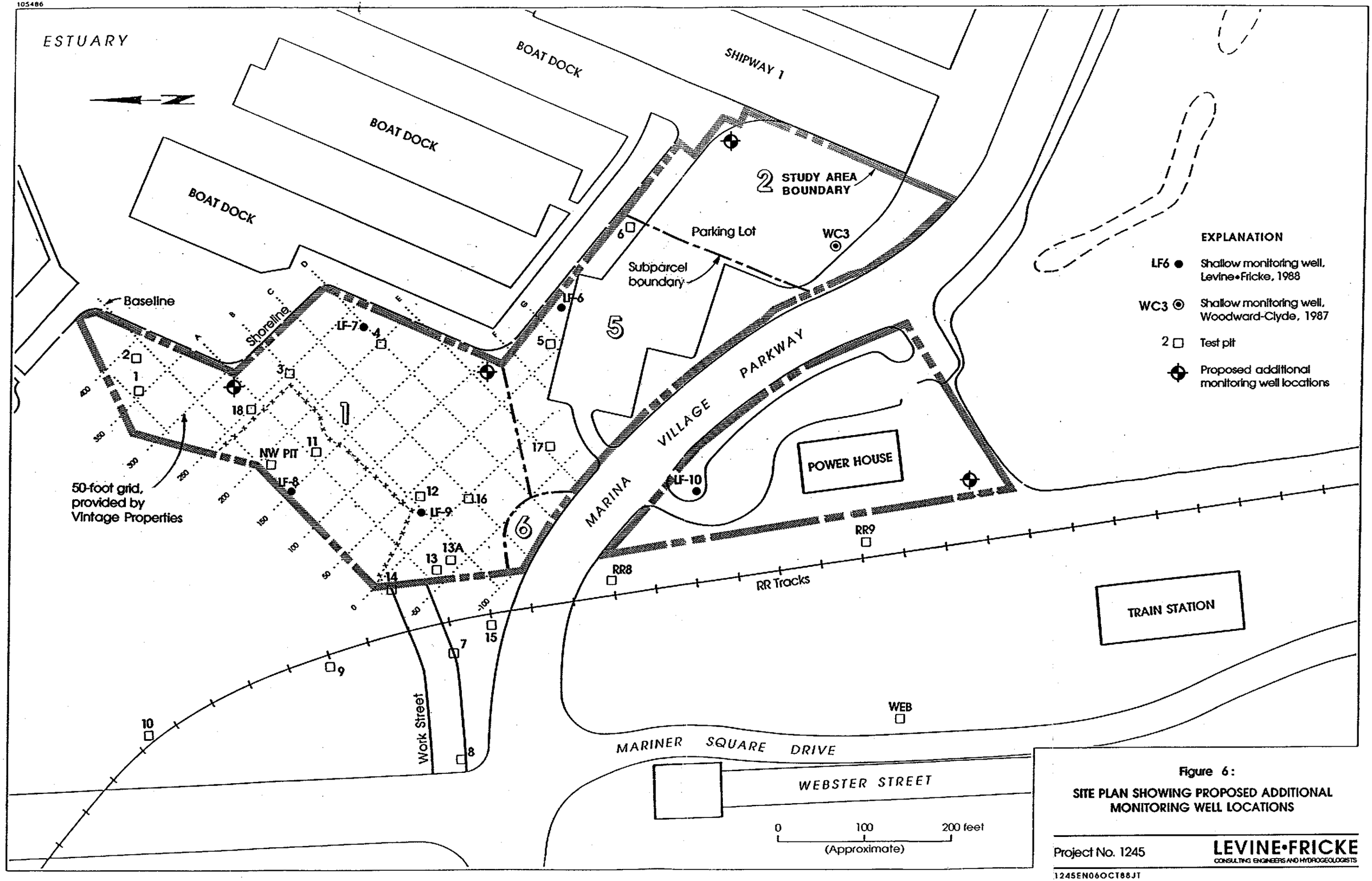


Figure 6:

SITE PLAN SHOWING PROPOSED ADDITIONAL MONITORING WELL LOCATIONS

Project No. 1245

LEVINE•FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

1245EN06OCT88JT

APPENDIX A

TEST PIT DESCRIPTIONS

APPENDIX A

TEST PIT DESCRIPTIONS

Test Pit RR8:
(2/17/88)

Excavation of this pit was observed by a Vintage Properties (VP) representative. Observations reported by VP were that the ground-water level was at a depth of 4 to 5 feet. Sediments at this depth were stained with black, oily residue. Intermittent patches of viscous, black oily material were observed floating on the ground water after the pit had been left open for a short time. Excavation depth was 6 feet.

A soil sample (RR8-(-400)) was collected by VP from the oil-stained sediments (not analyzed).

Test Pit RR9:
(2/17/88)

Excavation of this pit was observed by a VP representative. Observations reported by VP were that the ground-water level was at a depth of about 4 to 5 feet. Sediments at this depth contained light to moderate black staining. After the pit had been left open for a short time, a transparent, oily sheen developed on the surface of the ground water. Excavation depth was about 6 feet.

A ground-water sample (RR9-(-200)-W) was collected by VP from the open pit and submitted for analysis.

Test Pit WEB:
(2/17/88)

Excavation of this pit was observed by a VP representative. This pit was dug primarily to obtain a background soil sample. A soil sample was collected at the depth of the ground-water table (sample WEB) and submitted for analysis.

Test Pit 1:
(3/14/88)

Approximately 3.5 feet of brown, silt and sand fill overlay a 4-foot thick layer of dark grey sand fill. At a 7.5-foot depth, grey-green clay (Bay Mud) was encountered. The ground-water table was at approximately the 5.5-foot depth. The dark grey

sand layer contained abundant wood and large rocks at the 5.5 to 6.5-foot depth. The sand layer was moderately stained with black, oil residue from 5.5 to 7.5 feet (bottom of pit).

No samples were collected.

Test Pit 2:
(3/14/88)

Approximately 6 feet of brown fill consisting of silty clay and clayey sand with rocks and asphalt pieces overlay 3 feet of dark grey-green sandy fill. At a 9-foot depth, soft, grey-green clay (Bay Mud) was encountered. The ground-water table was at a 6-foot depth. Sands between 6 and 9 feet were mottled with black staining. Clays at the 9-foot depth also contained a small amount of black mottling. After excavation had remained open for a couple of hours, a slight sheen on the water surface was observed. Depth of the pit was 9 feet.

Soil sample NWPIT2-7-9 was composited from sands between a 7 and 9-foot depth and submitted for analysis.
Soil sample NWPIT2-9 was collected from the clay unit at a depth of 9 feet and submitted for analysis.

Test Pit 3:
(3/14/88)

Approximately 4 feet of brown fill consisting of silty clay and clayey sand overlay grey, sandy fill with some sandy clay. The grey, sandy fill contained abundant wood and rocks. The ground-water table was at a depth of about 6 feet. Intermittent oil-staining began at a depth of 5.5 feet, with staining mostly associated with the wood and rock pieces. At a depth of 6 feet, oil content in the fill materials increased. Fill had a sulphur odor. After water in hole had been standing a few minutes, a sheen developed on the water surface. The depth of the pit was 6.5 feet.

No samples were collected.

Test Pit 4:
(3/14/88)

Approximately 3.5 feet of brown, silty and clayey fill overlay green, silty and sandy clay fill to the bottom of the pit (10 feet). The ground-water table was at a depth of about 8.5 feet. Green, silty and sandy clay fill contained abundant debris

including cables, wood pieces and rock. At a depth between 8.5 to 10 feet, fill was a saturated and loose and was moderately stained with oil.

Soil sample NWPIT4-9-10 was composited from oily sludge between a depth of 8.5 and 10 feet and submitted for analysis.

Test Pit 5:
(3/14/88)

Approximately 7.5 feet of brown, silty and sandy fill with large rocks and wood pieces (lesser wood than in pits 1,2,3 and 4) overlay grey-green sandy fill. Ground-water table was at a depth of about 7 feet. Sediments appeared free of petroleum product. Depth of the pit was 9 feet.

Soil sample NWPIT5-7.5 was collected at 7.5 feet.

Test Pit 6:
(3/14/88)

Brown fill material similar to test pit 5 was encountered to a depth of about 10 feet. Grey, sandy fill occurred under the brown fill at the bottom of the pit (10 feet). The depth of ground-water was approximately 9 feet. Sediments appeared free of petroleum product.

Soil sample NWPIT6-10 was collected from soils at a depth of 10 feet (not analyzed).

Test Pit 7:
(3/14/88)

Approximately 4 feet of brown, silty and sandy fill overlay grey, sandy fill. Grey sandy fill extended to the bottom of pit at a depth of 6.5 feet. Ground-water was encountered at a depth of 4.5 feet. Sands below the ground-water table contained slight dark, mottled coloration.

Soil sample NWPIT7-5-6 was composited from soils at a depth of 5 to 6 feet and submitted for analysis.

Test Pit 8:
(3/14/88)

The sediment sequence was similar to test pit 7. Grey sand fill was encountered at 3.5 feet, and ground water was encountered at a depth of 5 feet. Sediments appeared free of petroleum product.

Soil sample NWPIT8-5-6 was collected from soils between the 5 and 6-foot depths and submitted for analysis.

Test Pit 9:
(3/14/88)

Surface gravels were underlain by brown, silty, sandy, and clayey fill to a depth of about 4 feet. From a depth of 4 to 8 feet, sediments consisted of brown and grey mottled sand. Ground-water was encountered at a depth of about 4 feet. A narrow zone of sand at about the 4-feet depth contained a moderate amount of black oil-staining. Sediments had a sulphur-like odor.

Soil sample NWPIT9-4.5 was collected from soils containing black staining.

Test Pit 10:
(3/14/88)

Surface gravels were underlain by brown sandy fill containing rocks to 6.5 feet. Grey sands were encountered from 6.5 feet to the bottom of the pit at a depth of 7.5 feet. The ground-water table was at a depth of 7 feet. Sediments appeared free of petroleum product.

Soil sample NWPIT7-5-6 was composited from soils at a depth between 5 and 6 feet.

Test Pit 11:
(3/15/88)

Brown, clayey sand with abundant debris (asphalt, wood, brick) extended from the ground surface to a depth of about 4 feet. Green, sandy clay and grey sands containing abundant shells were encountered at about 4 to 6.5 feet. At 6.5 feet, a horizontal plank of wood was present, underneath which was oily sludge. Other debris, including metal piping, other metal objects and wood was present. The ground-water table was at a depth of about 5 feet. Sands from 5.5 to 6.5 feet were saturated with

oil, and had a strong odor of diesel and possibly creosote. Once the wooden plank was exposed, oil was observed seeping upward through the top of the plank. Underneath the wood, free oil was abundant. An oily film was observed on the ground-water surface. The bottom of the pit was at a depth of 8.5 feet.

Soil sample NWPIT11-6 was collected from grey sand with abundant oily material at a depth of 6 feet. Soil sample NWPIT11-8 was collected from oily sludge at a depth of 8 feet and submitted for analysis.

Test Pit 12:
(3/15/88)

The top 2 feet of the pit contained abundant concrete and asphalt. An old asphalt surface was encountered at 2.5 feet. Underneath the asphalt, sands and gravels extended to 7.5 feet, where grey-green silty clay (Bay Mud) was encountered. Ground water was present at a depth of approximately 4 feet. At a depth of 5 feet, a 4-inch diameter clay pipe, appearing to be in place and oriented east-west, was present. The pipe appeared to be abandoned. Abundant pieces of wood were also present. Gravels surrounding the pipe, from approximately 5 to 7.5 feet, contained abundant free petroleum product. Sediments inside the clay pipe were oil-saturated. Oil seeped freely into the excavation from sidewalls. Localized blobs of floating black petroleum product and an effervescent sheen were observed on the surface of the ground-water in the excavation hole.

Soil sample NWPIT12-6 was collected from oily sludge at a depth of 6 feet and submitted for analysis.

Test Pit 13:
(3/15/88)

Several small-diameter (less than 4-inches) pipes were encountered near the surface (less than a depth of 1 foot) in the vicinity of Pit 13 (and Pit 13A). These pipes appeared to be abandoned. Underneath the pipes, at a depth of approximately 3 feet, a vertical wooden pile was encountered. A small pool of black, oil fluid accumulated around the piling during excavation. Black, oily fluid was observed seeping from the sediments at a depth of 3 feet. Ground water was encountered at a depth of about 3 feet. It was not clear whether the water level was an artificially high elevation caused by local storm drain pipes and landscaping sprinkler systems. Due to the fast inflow of water

into the excavation, depths to the end of the oily zone and to the underlying Bay Mud were not assessed. The surface of the water developed a thin, oily film during excavation. The thickness of the oily film did not increase after the excavation had remained open for several hours.

No samples were collected.

Test Pit 13A:
(3/15/88)

Sediments in this pit were similar to those encountered in Test Pit 13. Oily sludge was encountered at a depth of about 3 to 6 feet. At 6 feet, grey-green clay (Bay Mud) was present. The ground-water level was about 3 feet.

No samples were collected.

Test Pit 14:
(3/14/88)

Sediments in this pit appeared free of petroleum product. A 2-foot diameter water pipe was encountered at a depth of 4 feet, and was later confirmed to be an EBMUD water pipe. A copper pipe was present at a depth of 4.5 feet. The status of this pipe was not apparent, but appeared to be not in use. Excavation depth was 5.5 feet.

No samples were collected.

Test Pit 15:
(3/15/88)
Silty sands encountered in the excavation appeared free of petroleum product. Ground-water depth was approximately 3 feet below the ground surface. Depth of the excavation was 6 feet.

No samples were collected.

Test Pit 16:
(6/23/88)

The top 2 feet of the pit contained abundant concrete and asphalt debris. Several feet of green, sandy fill under the debris overlay soft, green Bay Mud. Ground-water depth was about 4 feet. Free product was observed seeping from the excavation sidewalls from the sandy unit above the Bay Mud. Excavation depth was about 8 feet.

No samples were collected.

Test Pit 17:
(6/23/88)

Several feet of silty and sandy fill materials containing rocks and other debris overlay green, sandy fill. Soft, green Bay Mud was encountered at a depth of about 6 feet. Ground-water depth was about 6 feet. Sediments at this depth, and the top foot of the Bay Mud were moderately mottled with black. The darker sediments, however, did not appear to be oily, and they did not have a hydrocarbon odor. Excavation depth was 9 feet.

No samples were collected.

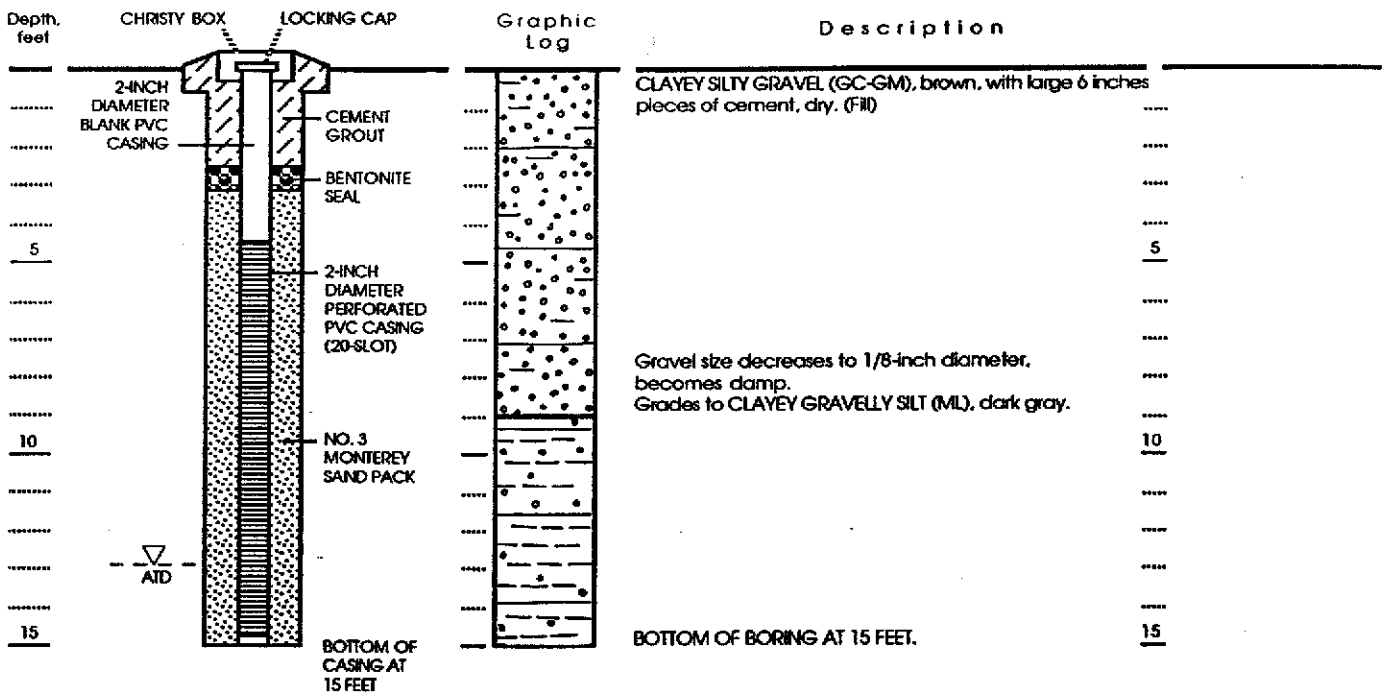
Test Pit 18:
(6/23/88)

Sediments encountered in this pit were similar to those described in test pit 3. Black, oily material was encountered at a depth of 5 to 7 feet and seemed to be associated with abundant wood debris. Free product was not observed in the pit.

No samples were collected.

APPENDIX B

SOIL BORING AND WELL LOGS



Well Permit No. 88063

Date well drilled: 23 March 1988

LF Geologist: Scott Seyfried

EXPLANATION

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

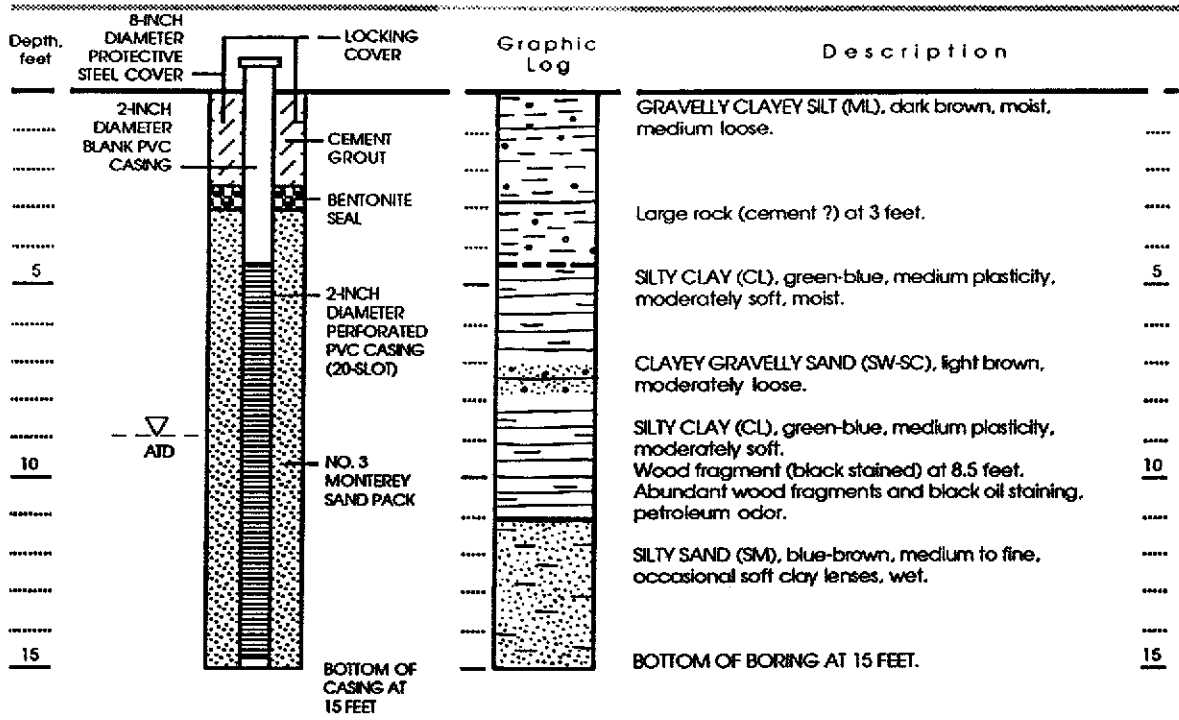
Approved by: 4767

Figure B1 : WELL CONSTRUCTION AND LITHOLOGY FOR WELL LF-6

Project No. 1245

LEVINE•FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

SS9AUG88em



Well Permit No. 88063

Date well drilled: 22 March 1988

LF Geologist: Scott Seyfried

EXPLANATION

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

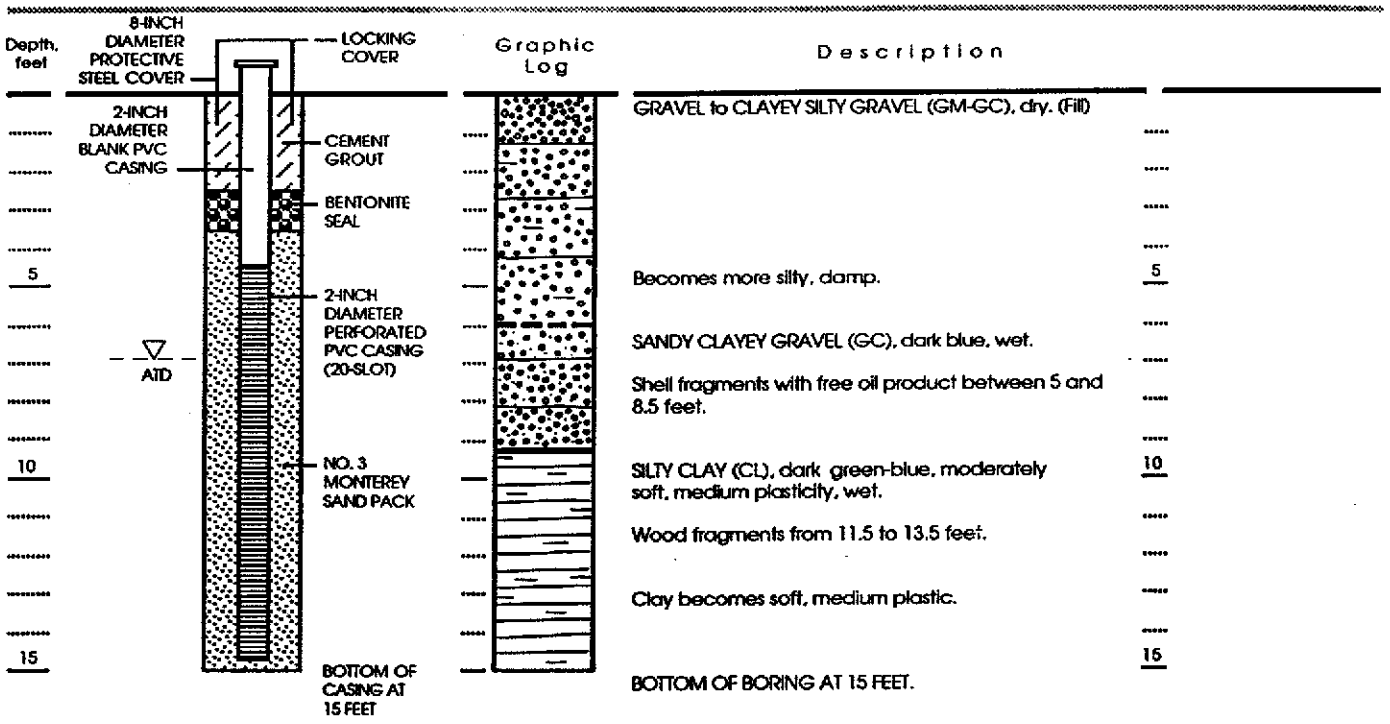
Approved by: 4267

Figure B2 : WELL CONSTRUCTION AND LITHOLOGY FOR WELL LF-7

Project No. 1245

LEVINE•FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

SS9AUG88em



Well Permit No. 88063

Date well drilled: 22 March 1988

LF Geologist: Scott Seyfried

EXPLANATION

Clay

Silt

Sand

Gravel

ATD Water level at time of drilling

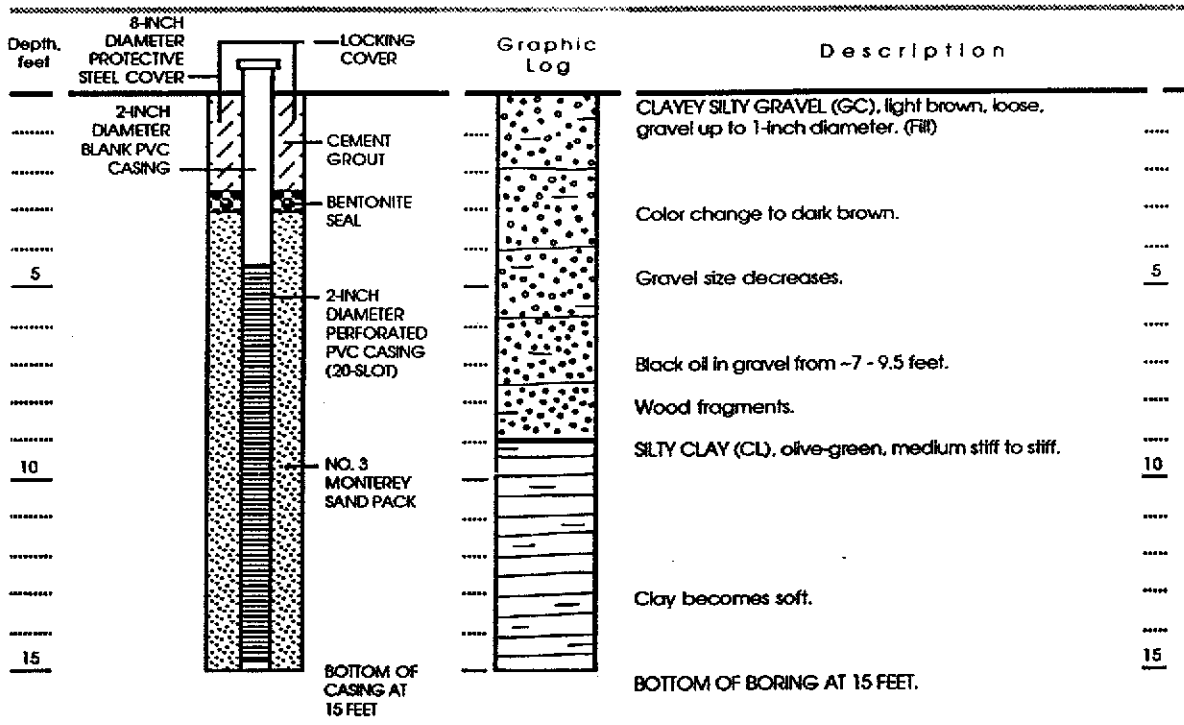
Approved by: 4267

Figure B3 : WELL CONSTRUCTION AND LITHOLOGY FOR WELL LF-8

Project No. 1245

LEVINE•FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

SS9AUG88em



EXPLANATION

Clay

Silt

Sand

Gravel

Well Permit No. 88063

Date well drilled: 22 March 1988

LF Geologist: Scott Seyfried

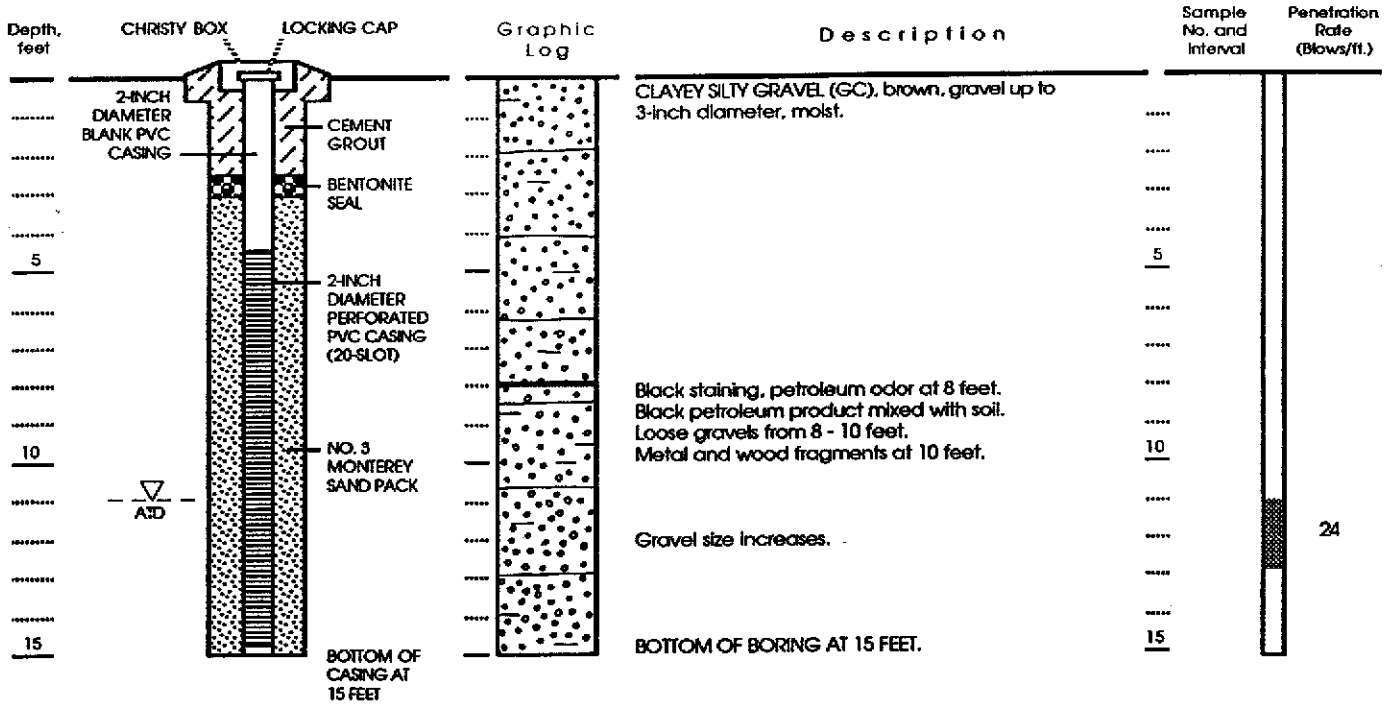
Approved by: 4267

Figure B4 : WELL CONSTRUCTION AND LITHOLOGY FOR WELL LF-9

Project No. 1245

LEVINE•FRICKE
CONSULTING ENGINEERS AND HYDROGEOLOGISTS

SS9AUG88em



Well Permit No. 88063

Date well drilled: 23 March 1988

LF Geologist: Scott Seyfried

EXPLANATION

Clay

Silt

Sand

Gravel

ATD Water level at time of drilling

Approved by: 4267

Figure B5 : WELL CONSTRUCTION AND LITHOLOGY FOR WELL LF-10

APPENDIX C

LABORATORY CERTIFICATES

EAN

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 7, 1988
ANATEC Log No: **2589** (1-12)
Series No: 430/027
Client Ref: Proj. #1245

Subject: Transmittal of Results for Eight Soil Samples Identified as "Alameda Marina Village, Project #1245" Received March 15, 1988.

TABLE 1. SUMMARIZED ANALYTICAL RESULTS - EXTRACTABLE PETROLEUM HYDROCARBONS

ANATEC Lab No.	Descriptor		Extractable Petroleum Hydrocarbons, as Motor Oil (mg/Kg)[a]
-6661	NWPIT2 - 9'	3/14/88	<10
-6662	NWPIT2 - 7-9'	3/14/88	52
-6664	NWPIT4 - 9-10'	3/14/88	260
-6666	NWPIT5 - 7.5'	3/14/88	<10
-6669	NWPIT7 - 5-6'	3/14/88	<10
-6670	NWPIT8 - 5-6'	3/14/88	<10
-6671	NWPIT9 - 4.5'	3/14/88	110
-6672	NWPIT10 - 7'	3/14/88	<10

[a]mg/Kg--Data are expressed as milligrams analyte per kilogram sample, as-received basis.

Purgeable organic compounds measurements are presented in Table 2. Please feel welcome to contact us should you have questions regarding procedures or results.

Submitted by:

Kim Hansard
Project Chemist

Approved by:

William G. Rotz
Project Manager

/hs
Enc: Sample Custody Document

NATIONAL ENVIRONMENTAL TESTING, INC. NET Laboratory Group

received APR 8 1988

TABLE 2. SUMMARIZED RESULTS FOR ANALYSIS BY EPA METHOD 8240

Analyte	MDL[b] (ug/Kg)	Descriptor, Lab No. & Results (ug/Kg)[a] NWPIT4 - 9-10' 3/14/88 (-6664)	NWPIT5 - 7.5' 3/14/88 (-6666)
Benzene	25	ND[c]	ND
Bromodichloromethane	10	ND	ND
Bromoform	25	ND	ND
Bromomethane	15	ND	ND
Carbon tetrachloride	15	ND	ND
Chlorobenzene	25	ND	ND
Chloroethane	15	ND	ND
2-Chloroethylvinyl ether	35	ND	ND
Chloroform	10	ND	ND
Chloromethane	15	ND	ND
Dibromochloromethane	15	ND	ND
1,2-Dichlorobenzene	25	ND	ND
1,3-Dichlorobenzene	25	ND	ND
1,4-Dichlorobenzene	25	ND	ND
1,1-Dichloroethane	20	ND	ND
1,2-Dichloroethane	15	ND	ND
1,1-Dichloroethene	15	ND	ND
trans-1,2-Dichloroethene	10	ND	ND
1,2-Dichloropropane	25	ND	ND
cis-1,3-Dichloropropene	20	ND	ND
trans-1,3-Dichloropropene	25	ND	ND
Ethyl benzene	30	ND	ND
Methylene chloride	15	ND	ND
1,1,2,2-Tetrachloroethane	30	ND	ND
Tetrachloroethene	20	ND	ND
Toluene	25	ND	ND
1,1,1-Trichloroethane	20	ND	ND
1,1,2-Trichloroethane	25	ND	ND
Trichloroethene	10	38	ND
Trichlorofluoromethane	15	ND	ND
Vinyl chloride	15	ND	ND

[a]Data expressed in units of micrograms analyte per kilogram sample, as-received basis.
[b]MDL--Method detection limit.
[c]ND--Not detected at the listed method detection limit.

CHAIN OF CUSTODY / ANALYSES REQUEST FORM

Project No.: 1245	Field Logbook No.:	Date: 3/15/88	Serial No.: Nº 2831
Project Name: Alameda Marina Village	Project Location: Alameda		
Sampler (Signature): Elaine Thiss			Samplers: E. Nixon

SAMPLES						ANALYSES								
SAMPLE NO.	DATE	TIME	LAB SAMPLE NO.	NO. OF CONTAINERS	SAMPLE TYPE	EPA 601	EPA 624	TPH-modified 8440				HOLD	RUSH	REMARKS
NWPIT2-9'	3/14/88			1	Soil			X						Bay mud
NWPIT2-7.9				1	soil			X						Fill - 7'-9'
NWPIT2-W				1	water							X		
NWPIT4-9-10				1	soil			X	X					composite sludge - 8½-10'
NWPIT4-W				3	water							X		
NWPIT5-7½				1	soil			X	X					in Satury. fill - ≈1' below w.T.
NWPIT5-W				3	water							X		
NWPIT6-10				1	soil							X		10' depth ≈ 1' below water T.
NWPIT7-5-6				1	soil			X						≈ 1' below w.T.
NWPIT8-5-6				1	soil			X						" "
NWPIT9-4½				1	soil			X						oily zone, at water table
NWPIT10-7	↓			1	soil			X						sand at w.T.
														9/Tub composite soil sample
								REGULAR TAT						for TPH analysis

RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature) Elaine Thiss	DATE 3/15/88	TIME
RELINQUISHED BY: (Signature) Elaine Thiss	DATE 3/15/88	TIME 5:40	RECEIVED BY: (Signature) Greg Shaw	DATE 3/15/88	TIME 1745
RELINQUISHED BY: (Signature) Greg Shaw	DATE 3-15-88	TIME 2055	RECEIVED BY: (Signature) K Temple	DATE 3/15/88	TIME 2055
METHOD OF SHIPMENT:	DATE	TIME	LAB COMMENTS:		

SAMPLE COLLECTOR: (check one)

☒ LEVINE·FRICKE
629 Oakland Avenue
Oakland, CA 94611-4567
(415) 652-4500

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

Analytical Laboratory: ANATEC

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

FORM NO. 86/COC/ARF

1245

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 25, 1988
ANATEC Log No: **2590** (1-4)
Series No: 430/028
Client Ref: Project #1245

Subject: Transmittal of Results for Three of Four Soil Samples Identified as "Alameda Marina Village" (Received March 15, 1988.)

Dear Ms. Nixon:

Analysis of the samples referenced above has been completed. Samples were delivered to the laboratory under documented chain-of-custody. On receipt, sample custody was transferred to ANATEC sample control personnel who subsequently documented receipt and condition of the samples and placed them in secured storage at 4 °C until analysis commenced.

One sample, "NWPIT11-6" 3/15/88" was placed on "hold" (placed in secure storage at 4°C; not analyzed).

Results for the remaining three samples are presented in Tables 1-3. Results of quality control analyses are summarized in Table 4. 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

/hs
Enc. Sample custody document

TABLE 1. SUMMARIZED ANALYTICAL RESULTS - EXTRACTABLE PETROLEUM HYDROCARBONS

Lab No.	Descriptor		Extractable Petroleum Hydrocarbons, as Diesel Fuel (mg/Kg)[a]
-6674	NWPIT11-6.5'	3/15/88	720
-6675	NWPIT11-8'	3/15/88	11,000
-6676	NWPIT12-6'	3/15/88	1,000

[a]mg/Kg--Data are expressed as milligrams analyte per kilogram sample, as-received basis.

TABLE 2. SUMMARIZED RESULTS FOR ANALYSIS BY EPA METHOD 8240 - "NWPIT11-8' 3/15/88"

Analyte	MDL[b] (ug/Kg)	Results (ug/Kg)[a] (-6675)[c]
Benzene	25	ND[d]
Bromodichloromethane	10	ND
Bromoform	25	ND
Bromomethane	15	ND
Carbon tetrachloride	15	ND
Chlorobenzene	25	ND
Chloroethane	15	ND
2-Chloroethylvinyl ether	35	ND
Chloroform	10	ND
Chloromethane	15	ND
Dibromochloromethane	15	ND
1,2-Dichlorobenzene	25	ND
1,3-Dichlorobenzene	25	ND
1,4-Dichlorobenzene	25	ND
1,1-Dichloroethane	20	ND
1,2-Dichloroethane	15	ND
1,1-Dichloroethene	15	ND
trans-1,2-Dichloroethene	10	ND
1,2-Dichloropropane	25	ND
cis-1,3-Dichloropropene	20	ND
trans-1,3-Dichloropropene	25	ND
Ethyl benzene	30	ND
Methylene chloride	15	ND
1,1,2,2-Tetrachloroethane	30	ND
Tetrachloroethene	20	ND
Toluene	25	ND
1,1,1-Trichloroethane	20	ND
1,1,2-Trichloroethane	25	ND
Trichloroethene	10	ND
Trichlorofluoromethane	15	ND
Vinyl chloride	15	ND

[a]Data expressed in units of micrograms analyte per kilogram sample, as-received basis.
[b]MDL--Method detection limit.
[c]The detection limits for this sample were 10x the listed MDLs.
[d]ND--Not detected at the listed method detection limit.

TABLE 3. SUMMARIZED RESULTS FOR ANALYSIS BY EPA METHOD 8270 - "NWPIT11-8' 3/15/88"

Analyte	MDL[b] (ug/Kg)	Results (ug/Kg)[a] (-6675)[c]
Acenaphthene	33	ND[d]
Acenaphthylene	33	ND
Aldrin	33	ND
Anthracene	33	ND
Benzidine	33	ND
Benzo(a)anthracene	33	ND
Benzo(b)fluoranthene	33	ND
Benzo(k)fluoranthene	33	ND
Benzo(a)pyrene	33	ND
Benzo(ghi)perylene	33	ND
Benzyl butyl phthalate	33	ND
delta-BHC	33	ND
gamma-BHC	33	ND
Bis(2-chloroethyl)ether	33	ND
Bis(2-chloroethoxy)methane	33	ND
Bis(2-chloroisopropyl)ether	33	ND
Bis(2-ethylhexyl)phthalate	3,300	ND
4-Bromophenyl phenyl ether	33	ND
2-Chloronaphthalene	33	ND
4-Chlorophenyl phenyl ether	33	ND
Chrysene	33	ND
4,4'-DDD	33	ND
4,4'-DDE	33	ND
4,4'-DDT	33	ND
Dibenzo(a,h)anthracene	33	ND
Di-n-butyl phthalate	1,650	ND
1,2-Dichlorobenzene	33	ND
1,3-Dichlorobenzene	33	ND
1,4-Dichlorobenzene	33	ND
3,3'-Dichlorobenzidine	33	ND
Dieldrin	33	ND
Diethyl phthalate	33	ND
Dimethyl phthalate	825	ND
2,4-Dinitrotoluene	33	ND
2,6-Dinitrotoluene	33	ND
Di-n-octylphthalate	33	ND
Endrin aldehyde	33	ND
Fluoranthene	33	ND
Fluorene	33	ND
Heptachlor	33	ND
Heptachlor epoxide	33	ND
Hexachlorobenzene	33	ND
Hexachlorobutadiene	33	ND
Hexachlorocyclopentadiene	33	ND
Hexachloroethane	33	ND
Indeno(1,2,3-cd)pyrene	33	ND
Isophorone	33	ND
Naphthalene	33	ND
Nitrobenzene	33	ND
N-Nitrosodi-n-propylamine	1,320	ND
Phenanthrene	33	ND
Pyrene	33	ND
1,2,4-Trichlorobenzene	33	ND
4-Chloro-3-methylphenol	33	ND
2-Chlorophenol	33	ND
2,4-Dichlorophenol	33	ND
2,4-Dimethylphenol	33	ND
2,4-Dinitrophenol	825	ND
2-Methyl-4,6-dinitrophenol	1,650	ND
2-Nitrophenol	33	ND
4-Nitrophenol	825	ND
Pentachlorophenol	33	ND
Phenol	33	ND
2,4,6-Trichlorophenol	33	ND

[a] ug/Kg--Data are expressed in units of micrograms analyte per kilogram sample, as-received basis.
[b] MDL--Method detection limit.
[c] The detection limits for this sample were 600x the listed MDLs.
[d] ND--Not detected at the listed method detection limit.

CHAIN OF CUSTODY / ANALYSES REQUEST FORM

Project No.: 1295	Field Logbook No.:	Date: 3/15/88	Serial No.: № 2836
Project Name: Alameda Marina Village	Project Location: Alameda		
Sampler (Signature): [signature]			Samplers: E. Nixon

SAMPLE NO.	DATE	TIME	LAB SAMPLE NO.	NO. OF CON-TAINERS	SAMPLE TYPE	EPA 601	EPA 624	TPH water	~~8010~~	8270-BNA	8240	HOLD	RUSH	REMARKS
NWPIT11-6'	3/15			1	soil						X			oily sand in shells
NWPIT11-6½	↓			1	soil		X							Top of wood
NWPIT11-8	↓			1	soil				X	X				oily sludge underneath wood
NWPIT12-6'	↓			1	soil		X							oily gravel ~~[illegible]~~ sand around clay pipe

8270 - Base neutral & acid extractable.

Identify any foreign substances

Regular TAT

RELINQUISHED BY: (Signature) Elizabeth Nixon	DATE 3/15/88	TIME	RECEIVED BY: (Signature) Lena Totten	DATE 3/15/88	TIME
RELINQUISHED BY: (Signature) Lena Totten	DATE 3/15/88	TIME 3:45	RECEIVED BY: (Signature) Greg Sloan	DATE 3/15/88	TIME 1745
RELINQUISHED BY: (Signature) Greg Sloan	DATE 3-15-88	TIME 2055	RECEIVED BY: (Signature) K Temple	DATE 3/15/88	TIME 2055
METHOD OF SHIPMENT:	DATE	TIME	LAB COMMENTS:		

SAMPLE COLLECTOR: (check one)

☒ LEVINE·FRICKE
629 Oakland Avenue
Oakland, CA 94611-4567
(415) 652-4500

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

Analytical Laboratory: ANATEC

2590

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

FORM NO. 86/COC/ARF

MED-TOX ASSOCIATES, INC.

MED-TOX JOB NO: 8802091
CLIENT ID: 1245

REPORT 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)
WEB-1	06A	ND	ND
Detection Limit		25	50

ND = Not Detected

Linnea M. Nowak for MJJ
Michael J. Jaeger, Manager
Organic Laboratory

Results reported verbally to Elizabeth Nixon 02/25/88

ANATEC LABORATORIES INC.

03/29/88
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 25, 1988
ANATEC Log No: **2718 (1-7)**
Series No: 430/029
Client Ref: Project #1245

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

Dear Ms. Nixon:

Analysis of the samples referenced above has been completed. Samples were delivered to the laboratory under documented chain-of-custody. On receipt, sample custody was transferred to ANATEC sample control personnel who subsequently documented receipt and condition of the samples and placed them in secured storage at 4 °C until analysis commenced.

One sample, "LF10FP 3/29" was placed on "hold" (placed in secure storage at 4°C; not analyzed).

Results for the remaining six samples are presented in Tables 1-3. Results of quality control analyses are summarized in Table 4. 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

/hs
Enc. Sample custody document

TABLE 1. SUMMARIZED ANALYTICAL RESULTS - EXTRACTABLE PETROLEUM HYDROCARBONS

Lab No.	Descriptor		Extractable Petroleum Hydrocarbons, as Diesel Fuel (mg/L)[a]
-7390	LF6	3/29	<0.05
-7391	LF7	3/29	<0.05
-7392	LF8	3/29	62
-7393	LF9	3/29	54
-7394	LF10	3/29	43

[a]mg/L--Data are expressed in units of milligrams analyte per liter sample.

Received MAY 17 1988

TABLE 2. SUMMARIZED RESULTS FOR ANALYSIS BY EPA METHOD 624

Analyte	MDL[b] (ug/L)	Site Name, Lab No. & Results (ug/L)[a] LF6 3/29 (-7390)	LF7 3/29 (-7391)	LF8 3/29 (-7392)	LF9 3/29 (-7393)	LF10 3/29 (-7394)	LF6 BLANK (-7395)
Benzene	4.4	ND[c]	ND	ND	ND	ND	ND
Bromodichloromethane	2.2	ND	ND	ND	ND	ND	ND
Bromoform	4.7	ND	ND	ND	ND	ND	ND
Bromomethane	5.0	ND	ND	ND	ND	ND	ND
Carbon tetrachloride	2.8	ND	ND	ND	ND	ND	ND
Chlorobenzene	6.0	ND	ND	ND	ND	ND	ND
Chloroethane	5.0	ND	ND	ND	ND	ND	ND
2-Chloroethylvinyl ether	7.0	ND	ND	ND	ND	ND	ND
Chloroform	1.6	ND	ND	ND	ND	ND	ND
Chloromethane	5.0	ND	ND	ND	ND	ND	ND
Dibromochloromethane	3.1	ND	ND	ND	ND	ND	ND
1,2-Dichlorobenzene	6.0	ND	ND	ND	ND	ND	ND
1,3-Dichlorobenzene	6.0	ND	ND	ND	ND	ND	ND
1,4-Dichlorobenzene	6.0	ND	ND	ND	ND	ND	ND
1,1-Dichloroethane	4.7	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	2.8	ND	ND	ND	ND	ND	ND
1,1-Dichloroethene	2.8	ND	ND	ND	ND	ND	ND
trans-1,2-Dichloroethene	1.6	ND	ND	ND	ND	ND	ND
1,2-Dichloropropane	6.0	ND	ND	ND	ND	ND	ND
cis-1,3-Dichloropropene	5.0	ND	ND	ND	ND	ND	ND
trans-1,3-Dichloropropene	5.0	ND	ND	ND	ND	ND	ND
Ethyl benzene	7.2	ND	ND	ND	ND	ND	ND
Methylene chloride	2.8	ND	ND	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	6.9	ND	ND	ND	ND	ND	ND
Tetrachloroethene	4.1	ND	ND	ND	ND	ND	ND
Toluene	6.0	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	3.8	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	5.0	ND	ND	ND	ND	ND	ND
Trichloroethene	1.9	ND	ND	ND	ND	ND	ND
Trichlorofluoromethane	5.0	ND	ND	ND	ND	ND	ND
Vinyl chloride	5.0	ND	ND	ND	ND	ND	ND

[a] ug/L--Data are expressed in units of micrograms analyte per liter sample.
[b] MDL--Method detection limit.
[c] ND--Not detected at the listed method detection limit.

TABLE 3. SUMMARIZED RESULTS FOR ANALYSIS BY EPA METHOD 625 - "LF8 3/29"

Parameter	MDL[b]	Results (ug/L)[a] (-7392)
Acenaphthene	1	ND[c]
Acenaphthylene	1	ND
Aldrin	1	ND
Anthracene	1	ND
Benzidine	1	ND
Benzo(a)anthracene	1	ND
Benzo(b)fluoranthene	1	ND
Benzo(k)fluoranthene	1	ND
Benzo(a)pyrene	1	ND
Benzo(ghi)perylene	1	ND
Benzyl butyl phthalate	1	ND
delta-BHC	1	ND
gamma-BHC	1	ND
Bis(2-chloroethyl)ether	1	ND
Bis(2-chloroethoxy)methane	1	ND
Bis(2-chloroisopropyl)ether	1	ND
Bis(2-ethylhexyl)phthalate	100	ND
4-Bromophenyl phenyl ether	1	ND
2-Chloronaphthalene	1	ND
4-Chlorophenyl phenyl ether	1	ND
Chrysene	1	ND
4,4'-DDD	1	ND
4,4'-DDE	1	ND
4,4'-DDT	1	ND
Dibenzo(a,h)anthracene	1	ND
Di-n-butyl phthalate	50	ND
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
3,3'-Dichlorobenzidine	1	ND
Dieldrin	1	ND
Diethyl phthalate	1	ND
Dimethyl phthalate	25	ND
2,4-Dinitrotoluene	1	ND
2,6-Dinitrotoluene	1	ND
Di-n-octylphthalate	1	ND
Endrin aldehyde	1	ND
Fluoranthene	1	ND
Fluorene	1	ND
Heptachlor	1	ND
Heptachlor epoxide	1	ND
Hexachlorobenzene	1	ND
Hexachlorobutadiene	1	ND
Hexachlorocyclopentadiene	1	ND
Hexachloroethane	1	ND
Indeno(1,2,3-cd)pyrene	1	ND
Isophorone	1	ND
Naphthalene	1	ND
Nitrobenzene	1	ND
N-Nitrosodi-n-propylamine	40	ND
Phenanthrene	1	ND
Pyrene	1	ND
1,2,4-Trichlorobenzene	1	ND
4-Chloro-3-methylphenol	1	ND
2-Chlorophenol	1	ND
2,4-Dichlorophenol	1	ND
2,4-Dimethylphenol	1	ND
2,4-Dinitrophenol	25	ND
2-Methyl-4,6-dinitrophenol	50	ND
2-Nitrophenol	1	ND
4-Nitrophenol	25	ND
Pentachlorophenol	1	ND
Phenol	1	ND
2,4,6-Trichlorophenol	1	ND

[a] ug/L--Data expressed in units of micrograms analyte per liter sample.
[b] MDL--Method detection limit.
[c] ND--Not detected at the method detection limit.

CHAIN OF CUSTODY / ANALYSES REQUEST FORM

Project No.: 1245	Field Logbook No.:	Date: 3/29/88	Serial No.: Nº 2803
Project Name: MARINA VILLAGE	Project Location: ALAMEDA Hold for FN		
Sampler (Signature):			Samplers: 830 Scott SEFFRIED

ANALYSES

SAMPLE NO.	DATE	TIME	LAB SAMPLE NO.	NO. OF CONTAINERS	SAMPLE TYPE	EPA 601	EPA 624	*TPH (Extraction)	625	8020	TPH (Gas)	HOLD to be RUSH 3/30	REMARKS
LF 6	3/29			6	water			X					Normal 2 week turnaround. We will call you to tell you what other analyses to do besides TPH extraction.
LF 6 Blank				2									
LF 7				6				X					
LF 8				6				X					
LF 9				6				X					
LF 10				6				X					
LF 10 FP				1									

2718

*TPH (extraction) for waste oil

RELINQUISHED BY: (Signature)	DATE 3-29-88	TIME 1910	RECEIVED BY: (Signature)	DATE 3-29-88	TIME 1910
RELINQUISHED BY: (Signature)	DATE 3-29-88	TIME 2100	RECEIVED BY: (Signature)	DATE 3/29/88	TIME 2100
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME
METHOD OF SHIPMENT:	DATE	TIME	LAB COMMENTS:		

SAMPLE COLLECTOR: (check one)

☒ LEVINE·FRICKE
629 Oakland Avenue
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(415) 652-4500

☐ LEVINE·FRICKE
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Analytical Laboratory: ANATEC
(707) 526-9623
435 Tesconi Circle
Santa Rosa CA 95401

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FORM NO. 86/COC/AP

1245

03/31/88

ANATEC LABORATORIES INC.

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

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

April 22, 1988
ANATEC Log No: 2751 (-1,2)
Series No: 430/030
Client Ref: Proj. #1245

Subject: Transmittal of Results for Two Liquid Samples Identified as "Alameda Marina Village, Project #1245" (Received March 31, 1988.)

TABLE 1. ANALYTICAL RESULTS FOR "ALAMEDA MARINE VILLAGE" SAMPLES - EXTRACTABLE PETROLEUM HYDROCARBONS

ANATEC Lab No.	Descriptor	Extractable Petroleum Hydrocarbons, as Diesel Fuel (mg/L)[a]
-7559	WC3-3 3/31/88	<0.05
-7560	WC3-W 3/31/88 0930	<0.05

[a]mg/L--Data are expressed in units of milligrams analyte per liter sample.

Table 2 present results for purgeable organic compounds. 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

/hs

received
MAY 9 1988

TABLE 2. SUMMARIZED RESULTS FOR ANALYSIS BY EPA METHOD 624

Analyte	MDL[b] (ug/L)	Descriptor, Lab No. & Results (ug/L)[a] WC3-3 3/31/88 (-7559)	WC3-W 3/31/88 0930 (-7560)
Benzene	4.4	ND[c]	ND
Bromodichloromethane	2.2	ND	ND
Bromoform	4.7	ND	ND
Bromomethane	5.0	ND	ND
Carbon tetrachloride	2.8	ND	ND
Chlorobenzene	6.0	ND	ND
Chloroethane	5.0	ND	ND
2-Chloroethylvinyl ether	7.0	ND	ND
Chloroform	1.6	ND	ND
Chloromethane	5.0	ND	ND
Dibromochloromethane	3.1	ND	ND
1,2-Dichlorobenzene	6.0	ND	ND
1,3-Dichlorobenzene	6.0	ND	ND
1,4-Dichlorobenzene	6.0	ND	ND
1,1-Dichloroethane	4.7	ND	ND
1,2-Dichloroethane	2.8	ND	ND
1,1-Dichloroethene	2.8	ND	ND
trans-1,2-Dichloroethene	1.6	ND	ND
1,2-Dichloropropane	6.0	ND	ND
cis-1,3-Dichloropropene	5.0	ND	ND
trans-1,3-Dichloropropene	5.0	ND	ND
Ethyl benzene	7.2	ND	ND
Methylene chloride	2.8	ND	ND
1,1,2,2-Tetrachloroethane	6.9	ND	ND
Tetrachloroethene	4.1	ND	ND
Toluene	6.0	ND	ND
1,1,1-Trichloroethane	3.8	ND	ND
1,1,2-Trichloroethane	5.0	ND	ND
Trichloroethene	1.9	ND	ND
Trichlorofluoromethane	5.0	ND	ND
Vinyl chloride	5.0	ND	ND

[a]ug/L--Data are expressed in units of micrograms analyte per liter sample.
[b]MDL--Method detection limit.
[c]ND--Not detected at the listed method detection limit.

CHAIN OF CUSTODY / ANALYSES REQUEST FORM

Project No.:	Field Logbook No.:	Date:	Serial No.:
Project Name:	Project Location:		2412
Sampler (Signature):			Samplers:

SAMPLES						ANALYSES								
SAMPLE NO.	DATE	TIME	LAB SAMPLE NO.	NO. OF CONTAINERS	SAMPLE TYPE	EPA 601	EPA 624					HOLD	RUSH	REMARKS

Data Recd 5/9/88

RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME
	5/11/88			5-31-88	
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME
METHOD OF SHIPMENT:	DATE	TIME	LAB COMMENTS:		

SAMPLE COLLECTOR: (check one)

☒ LEVINE·FRICKE
629 Oakland Avenue
Oakland, CA 94611-4567
(415) 652-4500

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

Analytical Laboratory:

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FORM NO. 86/COC/ARF

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)
RR9(-200)-W	09A	ND	1	ND	ND	ND
Detection Limit		0.5	0.5	0.5	2	0.1

ND = Not Detected

METHOD: 8015 (EXTRACTION)

Sample Identification Client	Lab No.	Total Petroleum Hydrocarbons As Diesel (mg/L)	Total Petroleum Hydrocarbons As Waste Oil (mg/L)
RR9 (-200)-W	09A	ND	ND
Detection Limit		5	10

ND = Not Detected

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: 02/29/88

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

BROWN AND CALDWELL LABORATORIES
1255 POWELL STREET EMERYVILLE, CA 94608 • (415) 428-2300

ANALYTICAL REPORT

LOG NO: E88-09-198

Received: 09 SEP 88
Reported: 23 SEP 88

Dr. Akali Igbene
Levine - Fricke
1900 Powell Street 12th Floor
Emeryville, California 94608

Project: 1245

REPORT OF ANALYTICAL RESULTS

LOG NO	SAMPLE DESCRIPTION, SOIL SAMPLES	DATE SAMPLED
09-198-1	PHF-46	09 SEP 88
09-198-2	PHF-47	09 SEP 88
09-198-3	PHF-49	09 SEP 88
09-198-4	PHF-48	09 SEP 88

PARAMETER	09-198-1	09-198-2	09-198-3	09-198-4
Sample Held, Not Analyzed	---	---	---	HELD
Total Fuel Hydrocarbons				
Date Analyzed	09.19.88	09.19.88	09.19.88	---
Total Fuel Hydrocarbons, mg/kg	<10	<10	<10	---
Other Total Fuel Hydrocarbons	---	---	---	---

Results reported verbally to E.Nixon 9/23/88 by L.Penfold.

Hedy J. Ficklin for
Sim D. Lessley, Ph.D., Laboratory Director

RECEIVED
SEP 27 1988
LEVINE-FRICKE

CHAIN OF CUSTODY / ANALYSES REQUEST FORM

88-09-198

Project No.: 1245	Field Logbook No.:	Date: 9/9/88	Serial No.: Nº 3488
Project Name: Marina Village	Project Location: Alameda		
Sampler (Signature): E. Nixon			

SAMPLES						ANALYSES								Samplers: E. NIXON
SAMPLE NO.	DATE	TIME	LAB SAMPLE NO.	NO. OF CONTAINERS	SAMPLE TYPE	EPA 601	EPA 624	8015-Extractable Diesel/WS				HOLD	RUSH	REMARKS
PHF-46	9/9/88			1	soil			X						
PHF-47	〃			〃	〃			X						
PHF-48	〃			〃	〃							X		
PHF-49	〃			〃	〃			X						
														Standard 2-wk TAT

RELINQUISHED BY: (Signature) Elizabeth Nixon	DATE 9/9/88	TIME 11:45	RECEIVED BY: (Signature) Monika Dutta	DATE 9-9-88	TIME 11:48
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME
METHOD OF SHIPMENT:	DATE	TIME	LAB COMMENTS:		

SAMPLE COLLECTOR: (check one)

☒ LEVINE·FRICKE
629 Oakland Avenue
Oakland, CA 94611-4567
(415) 652-4500

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

Analytical Laboratory: Brown & Caldwell
Attn: Larry Penfold

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FORM NO. 86/COC/ARF

APPENDIX D

SURVEYOR NOTES FOR GRID PATTERN

Marina Village Alameda, Ca. CW/SL Mar 9, 1987 1/1

Job 282

"Set Grid For Test Holes"

(Rod) TRC Head-1, BS=Head-2, Hi.=

	Horz ∠	H. DIST.	+/-	Desc.
BS Head-2 (A-67)	0°00'00"	204.22	+1.18	Fnd. Chsld. "+"
FS Fnc. Cor.	19°23'50"	782.42	-22.00	Fnd. Fnc. Cor. (0+00) 0.0' (set)
FS Fnc Cor.	210°08'10"	818.56	-20.12	Fnd. Fnc. ∠.
FS (Trib-Twr)	243°21'10"	—	—	
	18°52'20"	687.94		
	"Z" -1+00	TO -0+50	50' Lt.	
	"A" -0+50	TO 3+00	50' Rt.	
	"B" -1+00	TO 2+50	100' Rt.	
	"C" -1+00	TO 2+50	150' Rt.	
	"D" -1+00	TO 2+50	200' Rt.	
	"E" -1+00	TO 1+50	250' Rt.	
	"F" -1+00	TO 0+50	300' Rt.	
	"G"	TO 1+00	359' Rt.