PACIFIC
ENVIRONMENTAL
GROUP, INC.

Date December 3, 1993
Project 310-38.01

To [redacted]
Unocal Corporation
2000 Crow Canyon Place, Suite 400
San Ramon, California 94583

We have enclosed:

Copies	Description
1	Soil and Groundwater Investigation Report for
	Unocal Service Station 5430.

For your:
- X Use
- Approval
- Review
- X Information

Comments: Dave, enclosed is the above mentioned report.

Joe Muzzio

cc: Mr. Scott Seery, Alameda County Environmental Health Care Services
Mr. John Jang, Regional Water Quality Control Board - S.F. Bay Region
Mr. Michael Bakaldin, San Leandro Fire Department

93 DEC 8 PM 2:55
ALCO
HAZMAT

2025 Gateway Place, Suite 440, San Jose, California 95110 (408) 441-7500 FAX (408) 441-7539

Soil and Groundwater Investigation Report

Unocal Service Station 5430
1935 Washington Avenue at Castro Street
San Leandro, California
12-2-93

Prepared for

Unocal Corporation

December 2, 1993

Prepared by

Pacific Environmental Group, Inc.
2025 Gateway Place, Suite 440
San Jose, California 95110

Project 310-38.01

PACIFIC ENVIRONMENTAL GROUP, INC.

PROFESSIONAL CERTIFICATION
Soil and Groundwater Investigation Report

Unocal Service Station 5430
1935 Washington Avenue at Castro Street
San Leandro, California
December 2, 1993

Pacific Environmental Group, Inc. (PACIFIC) has performed a soil and groundwater investigation for Unocal Corporation, at Unocal Service Station 5430, located at 1935 Washington Avenue at Castro Street, California.

The *Soil and Groundwater Investigation Report* has been prepared by the staff of PACIFIC under the professional supervision of the project geologist whose seal and signature appear hereon.

Joseph Muzzio
Project Geologist
CEG 1672

EXECUTIVE SUMMARY

This report has been prepared by Pacific Environmental Group, Inc. (PACIFIC) to document the findings of a soil and groundwater investigation performed at Unocal Service Station 5430, located at 1935 Washington Avenue in San Leandro, California. A summary of the site investigation is as follows:

- The site is an operating Unocal retail service station that has been active since 1965. Unleaded gasoline products are currently stored in two 10,000-gallon underground fiberglass gasoline storage tanks, located in a common excavation in the north-central portion of the property. A 280-gallon underground waste oil storage tank is installed in a separate excavation in the southwest portion of the site.
- The current investigation conducted at the site by PACIFIC included the drilling, logging, and sampling of eight borings on August 4 and 5, 1993 to depths ranging from approximately 36 to 46 feet below ground surface (bgs). Groundwater Monitoring Wells U-1, U-2, and U-3 were installed in three of the boring locations.
- The site is underlain primarily by clayey silt and silty clay, with interbeds of fine- and medium-grained sands and silty sands, from the ground surface to the maximum depth explored of 46 feet bgs.
- Groundwater was encountered during drilling at between 30 and 37 feet bgs, and stabilized to approximately 31 feet bgs. Groundwater gradient is approximately 0.001 and was found to flow to the north during the recent sampling event.
- Soil sample analysis from the borings showed total petroleum hydrocarbons calculated as gasoline (TPH-g) concentrations ranging from none detected to 200 parts per million (ppm). The highest concentration was noted at a depth of 31 feet bgs in a sample collected downgradient of the eastern-most product island.

- Groundwater monitoring well analysis from Wells U-1, U-2, and U-3 showed TPH-g ranging from 310 to 23,000 parts per billion (ppb). The highest concentration was noted in Well U-3 located upgradient of the eastern-most product island.

- A limited off-site source search conducted through the files of the RWQCB indicated that two confirmed fuel leak sites are located on properties adjacent to the Unocal site. However, because the potential contaminant at both of these sites was waste oil, and because the subsurface hydrocarbon impact at these sites was relatively minor, they are not considered potential sources for the hydrocarbons detected beneath the Unocal site.

- Additional investigation may be necessary to further evaluate the extent of hydrocarbons in groundwater.

CONTENTS

TABLES AND FIGURES

Tables

Figures

1.0 INTRODUCTION

This report prepared by Pacific Environmental Group, Inc. (PACIFIC) for Unocal Corporation (Unocal) presents the findings of a soil and groundwater investigation conducted at the Unocal Service Station 5430, located at 1935 Washington Avenue at Castro Street in San Leandro, California (Figure 1). The investigation was conducted to complete a property divestment program for the site. The work was performed as described in a PACIFIC *Work Plan* dated July 6, 1993. Eight soil borings were drilled, logged, and sampled. Groundwater monitoring wells were installed in three of the borings. This report includes discussions of the site background, a description of the scope of work performed, the results of the current investigation, the findings of a limited off-site source search, and conclusions and recommendations.

2.0 BACKGROUND

2.1 Site History

The site has been an active Unocal service station since 1965. Unleaded gasoline products are currently stored in two 10,000-gallon underground fiberglass gasoline storage tanks, located in a common excavation in the north-central portion of the property (Figure 2). These tanks were installed in 1981, to replace the tanks originally installed at the time of construction of the service station. The new tanks were installed in the same excavation which contained the original gasoline tanks. During station construction in 1965, a 280-gallon underground waste oil storage tank was installed in a separate excavation in the southwest portion of the site. This waste oil storage tank is apparently still in use at the site. There are two product islands located in the east-central portion of the site, and two service bays located within the station building in the western portion of the site.

2.2 Previous Investigations

According to a Unocal files, an Authority For Expenditure was issued in June, 1976, to fund emergency product piping replacement at the site. The Authority For Expenditure indicated that the work was necessitated by a "serious leak in the regular unleaded system". No additional information concerning the extent of the leak or the subsequent repairs was noted.

The Unocal files for the site also indicated that the original regular unleaded gasoline storage tank failed a tightness test in October, 1981. In December, 1981, the two original 10,000-gallon steel gasoline storage tanks were removed from the site, and two 10,000-gallon fiberglass gasoline storage tanks were installed in the same excavation. No release of product was reported to be associated with the tank test failure, removal, or replacement.

There are five sites listed as Regional Water Quality Control Board (RWQCB) active fuel leak cases located within a 1/4-mile radius of the site. Two of these sites are located adjacent and to the northwest of the Unocal site (Figure 1).

2.3 Regional Setting and Hydrogeology

The site is located on the San Leandro alluvial cone in the gently bayward-sloping alluvial plain of Alameda County. San Leandro Creek is located approximately 3,500 feet north of the site. The area is bounded on the north by the Oakland alluvial plain, on the east by the foothills of the Diablo Range, on the south by the San Lorenzo and Niles alluvial cones, and on the west by the southern end of San Francisco Bay. The geologic structure of the area is dominated by northwest trending, steeply dipping faults such as the Hayward fault. The Hayward fault zone is a well recognized groundwater barrier which lies near the base of the East Bay hills and traverses the alluvial deposits of the San Leandro cone.

The San Leandro alluvial cone is composed of water-bearing Pliocene-Pleistocene alluvial sediments consisting of a mixture of gravels, sands, and clays. Aquifers in the area are composed of gently westward-sloping sand and gravel beds and can be segregated into five distinct zones: (1) shallow aquifers within 50 feet of the land surface, (2) aquifers between approximately 30 and 100 feet below ground surface (bgs), (3) aquifers between 130 and 220 feet bgs, (4) aquifers between 250 and 400 feet bgs, and (5) aquifers deeper than 400 feet bgs. Most of the shallow aquifers exist under perched conditions, though some are confined by thin clay beds. The water-bearing material in the shallow aquifers is usually silty sand deposits. Groundwater recharge to the shallow aquifers occurs by direct infiltration of precipitation, and from irrigation, and streamflow. During periods of drought some of the perched sand lenses may not yield water to wells. In general, regional groundwater flows from the east to the west, toward San Francisco Bay.

3.0 SCOPE OF WORK

The purpose of the investigation was to provide a general assessment of potential hydrocarbon-impacted soils and groundwater at the site. The following work was performed as outlined in PACIFIC's *Work Plan* dated July 6, 1993.

- Subsurface soil and groundwater conditions were explored by drilling, logging, and sampling eight borings on August 4 and 5, 1993 at depths ranging from approximately 36 to 41 feet bgs. The borings were extended at least 10 feet beyond evidence of hydrocarbons in the soil or to the groundwater surface.
- Soil samples were collected from each of the borings in depth intervals of 5 feet, preserved and stored following EPA and DHS guidelines, and submitted to a state-certified laboratory for analysis. Soil samples were selected for analysis of total petroleum hydrocarbons calculated as gasoline (TPH-g) by EPA Method 8015/5030, and benzene, toluene, ethylbenzene, and xylenes (BTEX compounds) by EPA Method 8020. One soil sample (U-1) was collected from the soil boring installed adjacent to the waste oil tank and also analyzed for TPH calculated as diesel (TPH-d) by EPA Method 8015/3550, oil and grease by Standard Method 5520 E&F (gravimetric), volatile organic compounds (VOCs) by EPA Method 8240, semivolatile organic compounds (SVOCs) by EPA Method 8270, ICAP metals, soluble toxicity limit concentration (STLC) lead, and corrosivity, ignitiability, and reactivity.
- Groundwater Monitoring Wells U-1, U-2, and U-3 were installed, developed, and sampled in three of the boring locations based on field evidence that soils within 10 feet of static groundwater level had been impacted by hydrocarbons. The wells were constructed of 2-inch diameter well casing and installed to a depth of 41 feet bgs.
- Groundwater samples were submitted to a state-certified laboratory and analyzed for TPH-g by EPA Method 8015/5030, and BTEX

compounds by EPA Method 8020. The groundwater sample collected from Well U-1 was also analyzed for TPH-d by EPA Method 8015/3550, and oil and grease by Standard Method 5520 E&F (gravimetric).

- Wells U-1, U-2, and U-3 were surveyed for location and elevation to relative to mean sea level from data with an accuracy of +/- 0.01 foot (Table 1). Surveying was performed by a state-licensed surveyor. Depth to water measurements collected during groundwater sampling were combined with well elevations to prepare a groundwater elevation contour map.
- To investigate the possibility that the hydrocarbons detected in groundwater beneath the Unocal site may have originated from an off-site source, PACIFIC performed a limited review of the files of the Regional Water Quality Control Board San Francisco Bay Region (RWQCB).

The drilling, sampling, and well installation procedures were described in PACIFIC's *Work Plan*.

4.0 FINDINGS

4.1 Subsurface Conditions

The site is underlain by surficial clayey silts which are in turn underlain by silty and sandy clays to the maximum depth explored of 46 feet bgs. The clayey silts and silty and sandy clays are interbedded with primarily fine- to medium-grained sands and silty sands containing fine- to medium-grained subangular gravel. The surficial clayey silts ranged in approximate thickness from 7 to 25 feet. Silty sands were encountered underlying the surficial clayey silts. The silty sands were noted in most borings and ranged in approximate thickness of 1/2 foot to 4 feet, and at depths ranging between 8 and 12 feet bgs. Silty and clayey sands were noted in four borings in approximate thickness ranging from 4 to 13 feet, and at depths ranging between 18 to 36 feet bgs. A sand lense ranging in approximate thickness of 3 to 6 feet, and at a depth of between 8 and 20 feet bgs was found in the southern section of the site. Cross-sections A-A' and B-B' showing generalized subsurface conditions are shown on Figures 3 and 4. Field and laboratory procedures are presented as Appendix A and boring logs and well construction details are presented as Appendix B.

Groundwater in the borings was first encountered during drilling at depths of between approximately 30 and 37 feet bgs. Groundwater stabilized to approximately 31 feet bgs. Groundwater appears to be unconfined at this location. Shallow groundwater in the vicinity of the site appears to flow to the north at a gradient of approximately 0.001 (Figure 5). The northly groundwater flow direction encountered on site differs from the easterly flow direction anticipated by regional data. However, the local gradient may be influenced by San Lorenzo Creek, located to the north of the site.

4.2 Organic Vapor Analysis

Concentrations of organic vapors measured with the photo-ionization detector (PID) were found to range from not detectable levels to 290 parts per million (ppm). Primarily, concentrations of organic vapors were noted in the capillary fringe zone, at depths ranging between approximately 20 and 30 feet bgs. Soil organic vapor concentrations greater than 100 ppm were noted in Borings U-3 and U-C at concentrations ranging

between not detectable and 290 ppm in Boring U-3, and 1.0 and 290 ppm in Boring U-C. Borings U-3 and U-C were located in the vicinity of the product island along side the Washington Avenue sidewalk.

4.3 Soil Analytical Results

Soil samples were collected at 5-foot depth intervals from Borings U-1, U-2, U-3, U-A, U-B, U-C, U-D, and U-E. Samples were selected from depths of approximately 11, 21, and 31 feet bgs for each boring and were analyzed for TPH-g and BTEX compounds. A sample taken from Boring U-1 at 9-1/2 feet bgs was also analyzed for TPH-d, oil and grease, VOCs, SVOCs, ICAP metals, STLC lead, and corrosivity, ignitiability, and reactivity.

TPH-g and BTEX compounds were reported for samples from Borings U-A and U-C, located in the vicinity of the product islands, and taken from a depth of approximately 31 feet bgs. In Boring U-A, low levels of TPH-g and benzene were detected at 53 and 0.80 ppm, respectively. In Boring U-C, TPH-g and benzene were detected at 200 and 0.78 ppm, respectively. Low level benzene and ethylbenzene were also reported for a sample taken from Boring U-3 at a depth of approximately 31 feet. No TPH-d, VOCs, and SVOCs were detected in the sample from Boring U-1. This sample did contain low levels of chromium, nickel, lead, and STLC lead. Soil analytical data are summarized on Tables 2 and 3 and shown on Figure 6. Certified analytical reports, chain-of-custody documentation, and field data sheets are presented as Appendix C.

Laboratory results for nearly all soil samples reported low level concentrations of toluene. The detection of toluene in samples may have been caused by cross contamination from the sampling container material to the sample. The tape used to seal the brass ring sampler contained toluene. A sample of the tape was analyzed by a state-certified laboratory to determine a possible level of cross contamination. A certified analytical report of the tape analysis indicated a definite correlation for cross contamination.

4.4 Groundwater Analytical Results

Groundwater samples were collected from Wells U-1, U-2, and U-3 on August 13, 1993 and analyzed for TPH-g and BTEX compounds. A sample taken from Well U-1 on August 17, 1993 was also analyzed for TPH-d and oil and grease.

Concentrations of TPH-g in groundwater were detected in the samples from all wells. Concentrations of TPH-g were detected in Well U-1 at 310 parts per billion (ppb), in Well U-2 at 1,400 ppb, and Well U-3 at 23,000 ppb. Concentrations of benzene were detected in groundwater from Wells U-1 and U-3 at 0.84 and 1,000 ppb, respectively.

Concentrations of TPH-d were also detected in the sample taken from Well U-1 at 50 ppb. However, the TPH-d compound detected in Well U-1 indicated an atypical pattern for diesel that was of a lower boiling hydrocarbon than diesel. Groundwater analytical data are presented on Tables 4 and 5, and shown in Figure 7. Certified analytical reports, chain-of-custody documentation, and field data sheets are presented as Appendix C.

- 24 ppb 1,2-DCA found in U-1

4.5 Limited Off-Site Source Search

To investigate the possibility that the hydrocarbons detected in groundwater beneath the Unocal site may have originated from an off-site source, PACIFIC performed a limited review of the files of the Regional Water Quality Control Board San Francisco Bay Region (RWQCB). The RWQCB fuel leak list indicated two fuel leak sites adjacent to the Unocal facility. The Martin Property is located at 240 Castro Street in San Leandro, directly across Castro Street from the Unocal site (Figure 1). The site of Webber Motors is located at 1940 Washington Avenue in San Leandro, directly across Washington Avenue from the Unocal site.

The RWQCB files document that one underground waste oil storage tank was removed from the Martin Property on June 22, 1990. The tank capacity, construction, or integrity were not specified. One soil sample was collected from the tank excavation; and this sample contained 44 ppm oil and grease, 0.003 ppm benzene, 0.020 ppm toluene, 0.008 ppm ethylbenzene, and 0.042 ppm xylenes. The RWQCB file for the Martin Property indicates that no further action was taken.

The RWQCB files indicate that one underground waste oil storage tank was removed from the Webber Motors site on September 29, 1988. The capacity, construction, and integrity of the removed tank were not documented. One soil sample was collected from the waste oil storage tank excavation. This sample contained 150 ppm oil and grease, but did not contain detectable concentrations of TPH-d, BTEX compounds, or EPA Method 8010 analytes. Correspondence with the City of San Leandro Fire Department (SLFD) determined that at least one soil boring was later drilled at the Webber Motors site, although this information was not available through the RWQCB files. The SLFD informed PACIFIC that the Webber Motors site had been recommended for case closure through the RWQCB, and that case closure is anticipated.

5.0 CONCLUSIONS AND RECOMMENDATIONS

Based on soil analytical data, an on-site source area has not been defined. Concentrations of hydrocarbons were detected only in soils at the approximate depth of the groundwater surface. The highest hydrocarbon concentrations in soils were detected downgradient of the eastern-most product island in Boring U-C at 31 feet bgs (200 ppm TPH-g). TPH-g was also detected at a concentration of 5.3 ppm in Boring U-3 at 31 feet bgs. TPH-g was not detected in any other analyzed soil samples.

The lateral extent of hydrocarbon-impacted groundwater is not defined. Hydrocarbons were detected in the groundwater samples collected from all wells. TPH-g was detected in Well U-3 (23,000 ppb) located upgradient to the eastern most product island. TPH-g was detected in Well U-2 (1,400 ppb) located in the vicinity of the underground fuel storage tanks. TPH-g was also detected in a sample from Well U-1 (310 ppb) located crossgradient of the product islands. Well U-1 also contained 50 ppb of TPH-d with an atypical pattern for the diesel.

The findings of the limited off-site source search indicate that two confirmed fuel leak sites are located on properties adjacent to the Unocal site. However, because the potential contaminant at both of these sites was waste oil, and because the subsurface hydrocarbon impact at these sites was relatively minor, they are not considered potential sources for the hydrocarbons detected beneath the Unocal site.

PACIFIC recommends quarterly groundwater sampling of the wells to establish baseline analytical data for the site. Additional groundwater monitoring well installations may be warranted to further delineate the lateral extent of petroleum hydrocarbons in groundwater in the vicinity of the Unocal site.

REFERENCES

Alameda County Flood Control and Water Conservation District, *Groundwater in the San Leandro and San Lorenzo Alluvial Cones of the East Bay Plain of the Alameda County*, 1984.

Table 1
Groundwater Elevation Data

Unocal Service Station 5430
1935 Washington Avenue at Castro Street
San Leandro, California

Well Number	Date Gauged	Well Elevation (feet, MSL)	Depth to Water (feet, TOB)	Groundwater Elevation (feet, MSL)
U-1	09/07/93	56.58	31.60	24.98
U-2	09/07/93	55.77	30.87	24.90
U-3	09/07/93	55.66	30.70	24.96

MSL = Mean sea level
TOB = Top of box

Table 2
Soil Analytical Data
Total Petroleum Hydrocarbons
(TPH as Gasoline and BTEX Compounds)

Unocal Service Station 5430
1935 Washington Avenue at Castro Street
San Leandro, California

Boring Number	Sample Depth (feet)	Date Sampled	TPH as Gasoline (ppm)	Benzene (ppm)	Toluene (ppm)	Ethyl-benzene (ppm)	Xylenes (ppm)
U-1	9.5-11	08/04/93	<1.0	<0.005	0.079	<0.005	<0.005
	19.5 - 21		<1.0	<0.005		<0.005	<0.005
	29.5 - 31		<1.0	<0.005	0.029	<0.005	<0.005
U-2	9.5 - 11	08/05/93	<1.0	<0.005	0.041	<0.005	<0.005
	19.5 - 21		<1.0	<0.005	0.1	<0.005	<0.005
	29.5 - 31		<1.0	<0.005	<0.005	<0.005	<0.005
U-3	9.5 - 11	08/05/93	<1.0	<0.005	0.040	<0.005	<0.005
	19.5 - 21		<1.0	<0.005	0.059	<0.005	<0.005
	29.5 - 31		<1.0	0.006	0.007	0.034	<0.005
U-A	9.5 - 11	08/04/93	<1.0	<0.005	0.008	<0.005	<0.005
	19.5 - 21		<1.0	<0.005	0.025	<0.005	<0.005
	29.5 - 31		53	0.80	0.62	1.5	5.3
U-B	9.5 - 11	08/04/93	<1.0	<0.005	0.09	<0.005	<0.005
	19.5 - 21		<1.0	<0.005	0.16	<0.005	<0.005
	29.5 - 31		<1.0	<0.005	0.14	<0.005	<0.005
U-C	9.5 - 11	08/04/93	<1.0	<0.005	0.026	<0.005	<0.005
	19.5 - 21		<1.0	<0.005		<0.005	<0.005
	29.5 - 31		200	0.78	13	4.2	20
U-D	9.5 - 11	08/04/93	<1.0	<0.005	0.049	<0.005	<0.005
	19.5 - 21		<1.0	<0.005	0.13	<0.005	<0.005
	29.5 - 31		<1.0	<0.005	0.01	<0.005	<0.005
U-E	9.5 - 11	08/04/93	<1.0	<0.005	0.07	<0.005	<0.005
	19.5 - 21		<1.0	<0.005	0.18	<0.005	<0.005
	29.5 - 31		<1.0	<0.005	0.028	<0.005	<0.005
SPA,B,C,D		08/05/93	<1.0	<0.005	0.12	<0.005	<0.005

ppm = Parts per million

Table 3
Soil Analytical Data
Metals

Unocal Service Station 5430
1935 Washington Avenue at Castro Street
San Leandro, California

Boring Number	Sample Depth (feet)	Date Sampled	TPH as Diesel (ppm)	TOG (ppm)	VOC (ppb)	SVOC (ppb)	Chromium (ppm)	Nickel (ppm)	Lead (ppm)	Zinc (ppm)	STLC Lead (ppm)
U-1	9.5 - 11	08/04/93	<1.0	<50	ND	ND	41	47	8.4	42	0.11

TOG = Total Oil and Grease – Standard Method 5520 B&F (gravimetric)
VOC = Volatile Organic Compounds – EPA Method 8240
SVOC = Semivolatile Organic Compounds – EPA Method 8270
STLC = Soluble Toxicity Limit Concentration
ppm = Parts per million
ppb = Parts per billion
ND = Not detected

Table 4
Groundwater Analytical Data
Total Petroleum Hydrocarbons
(TPH as Gasoline and BTEX Compounds)

Unocal Service Station 5430
1935 Washington Avenue at Castro Street
San Leandro, California

Well Number	Date Sampled	TPH as Gasoline (ppb)	Benzene (ppb)	Toluene (ppb)	Ethyl-benzene (ppb)	Xylenes (ppb)
U-1	08/13/93	310	0.84	<50	2.6	1
U-2	08/13/93	1,400	<1.0	<1.0	<1.0	<5.0
U-3	08/13/93	23,000	1,000	<50	1,700	1,600

ppb = Parts per billion

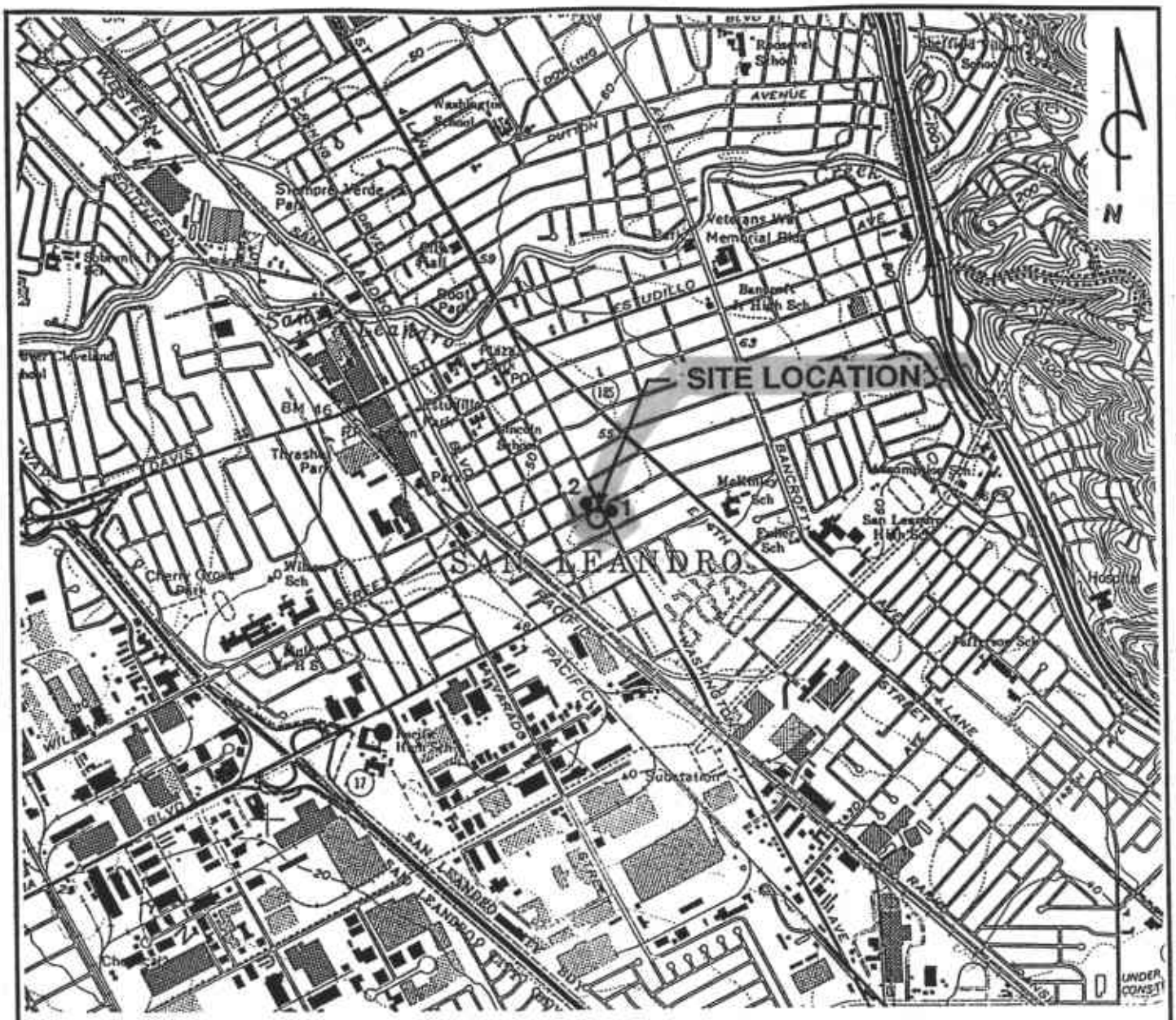
1, 2 - DCA
24

Table 5
Groundwater Analytical Data
Total Petroleum Hydrocarbons
(TPH as Diesel and Total Oil and Grease)

Unocal Service Station 5430
1935 Washington Avenue at Castro Street
San Leandro, California

Well Number	Date Sampled	TPH as Diesel (ppb)	Total Oil and Grease (ppb)
U-1	08/13/93	50 a	<1,000

ppb = Parts per billion
a. Not a typical diesel pattern; lower boiling hydrocarbons in the boiling range of Stoddard calculated as diesel.



QUADRANGLE LOCATION

LEGEND

1 ● LOCATION OF ADJACENT ACTIVE FUEL LEAK SITE, WEBBER MOTERS

2 ● LOCATION OF ADJACENT ACTIVE FUEL LEAK SITE, MARTIN PROPERTY

REFERENCES:
USGS 7.5 MIN. TOPOGRAPHIC MAP
TITLED: SAN LEANDRO CALIFORNIA
DATED: 1959 REVISED: 1980

SCALE IN FEET

2000 0 2000

PACIFIC ENVIRONMENTAL GROUP, INC.

UNOCAL SERVICE STATION 5430
1935 Washington Avenue at Castro Street
San Leandro, California

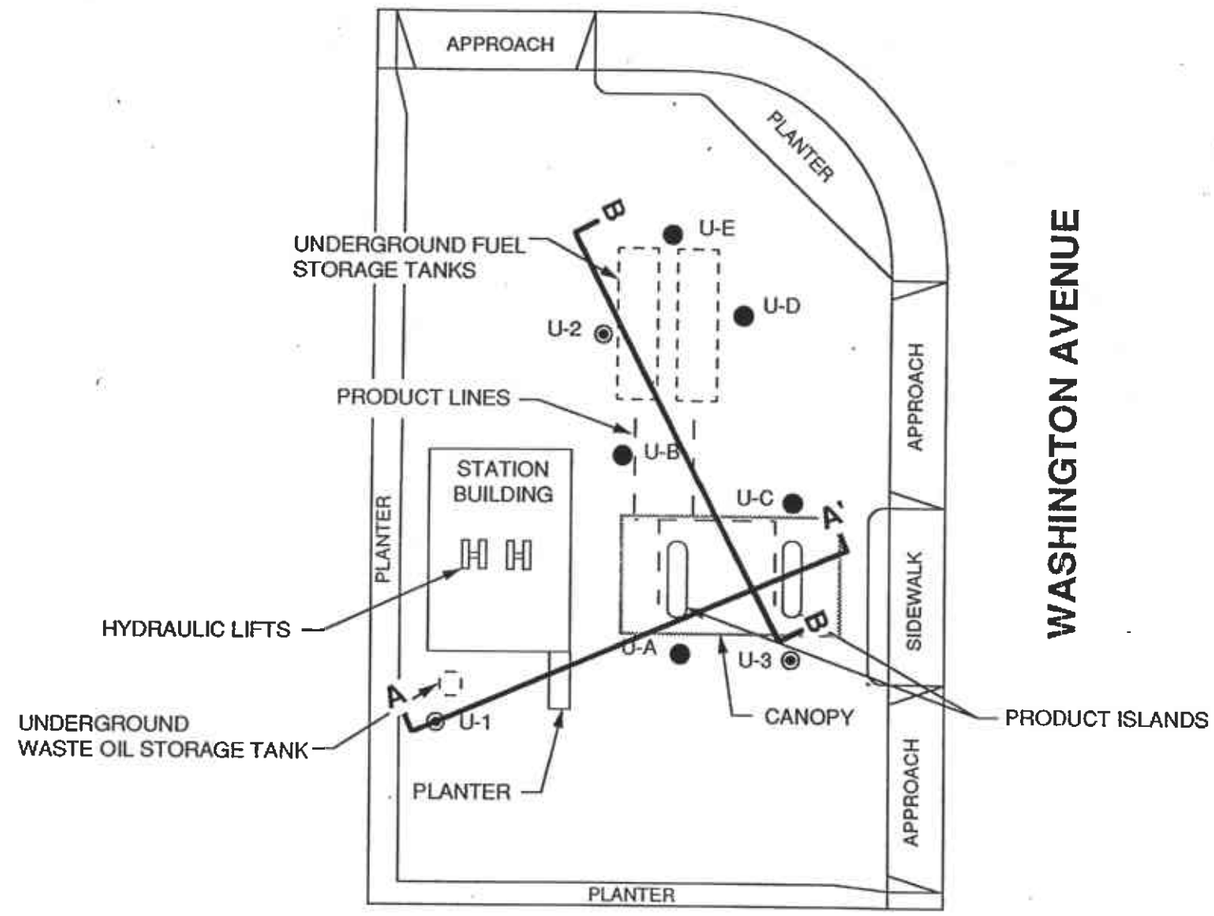
SITE LOCATION MAP

FIGURE: 1

PROJECT: 310-38.01

N

CASTRO STREET



WASHINGTON AVENUE

LEGEND

U-2 ◉ GROUNDWATER MONITORING WELL LOCATION

U-D ● EXPLORATORY SOIL BORING LOCATION AND DESIGNATION

A A' LINE OF GEOLOGIC CROSS-SECTION

APPROXIMATE DIRECTION OF GROUNDWATER FLOW

PACIFIC ENVIRONMENTAL GROUP, INC.

SCALE

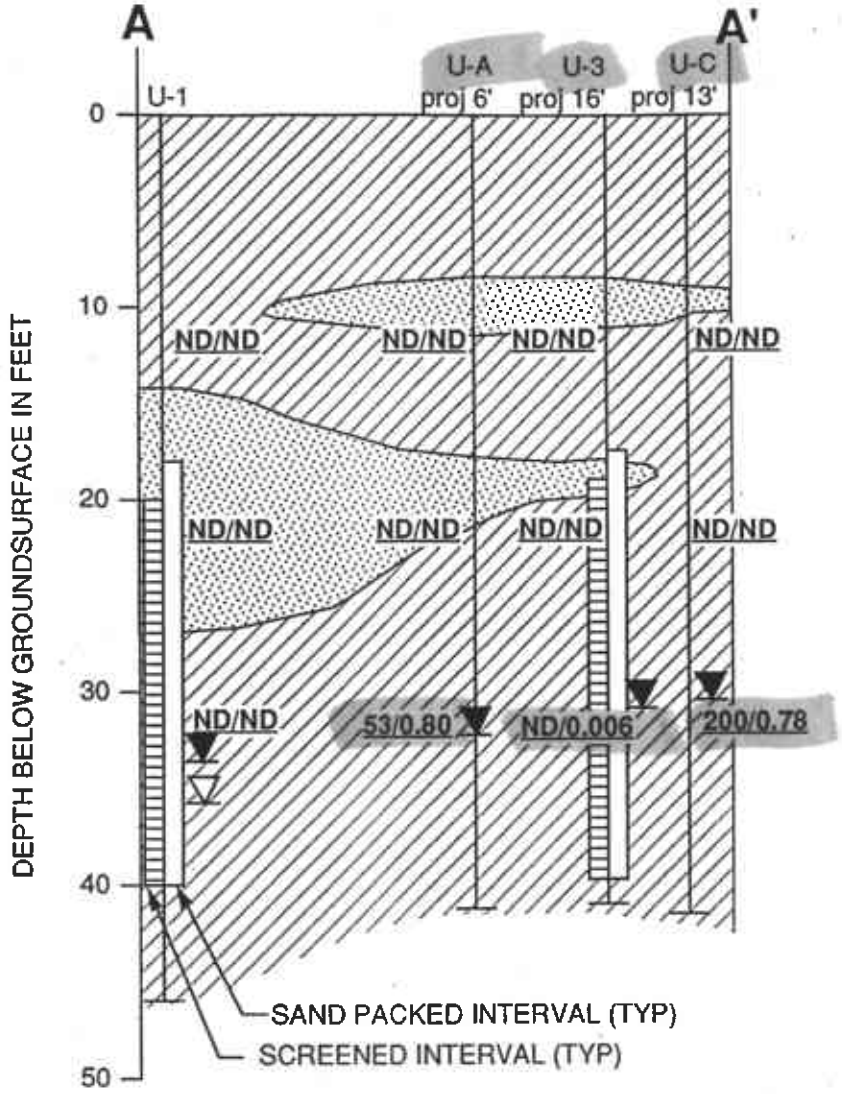
0 30 60 FEET

UNOCAL SERVICE STATION 5430
1935 Washington Avenue at Castro Street
San Leandro, California

SITE MAP

FIGURE: 2

PROJECT: 310-38.01



LEGEND

- PRIMARILY FINE GRAINED DEPOSITS - SILT AND CLAY
- PRIMARILY COARSE GRAINED DEPOSITS - SAND AND GRAVEL
- U-1 GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION
- U-A SOIL BORING LOCATION AND DESIGNATION
- proj PROJECTED ONTO LINE OF SECTION IN FEET
- ▽ FIRST ENCOUNTERED WATER LEVEL
- ▼ STATIC WATER LEVEL
- 200/0.78 TPH-g/BENZENE CONCENTRATION IN SOIL, IN PARTS PER MILLION, 8-6-93
- ND NOT DETECTED

SCALE

HORIZONTAL : 1" = 30'
VERTICAL : 1" = 10'

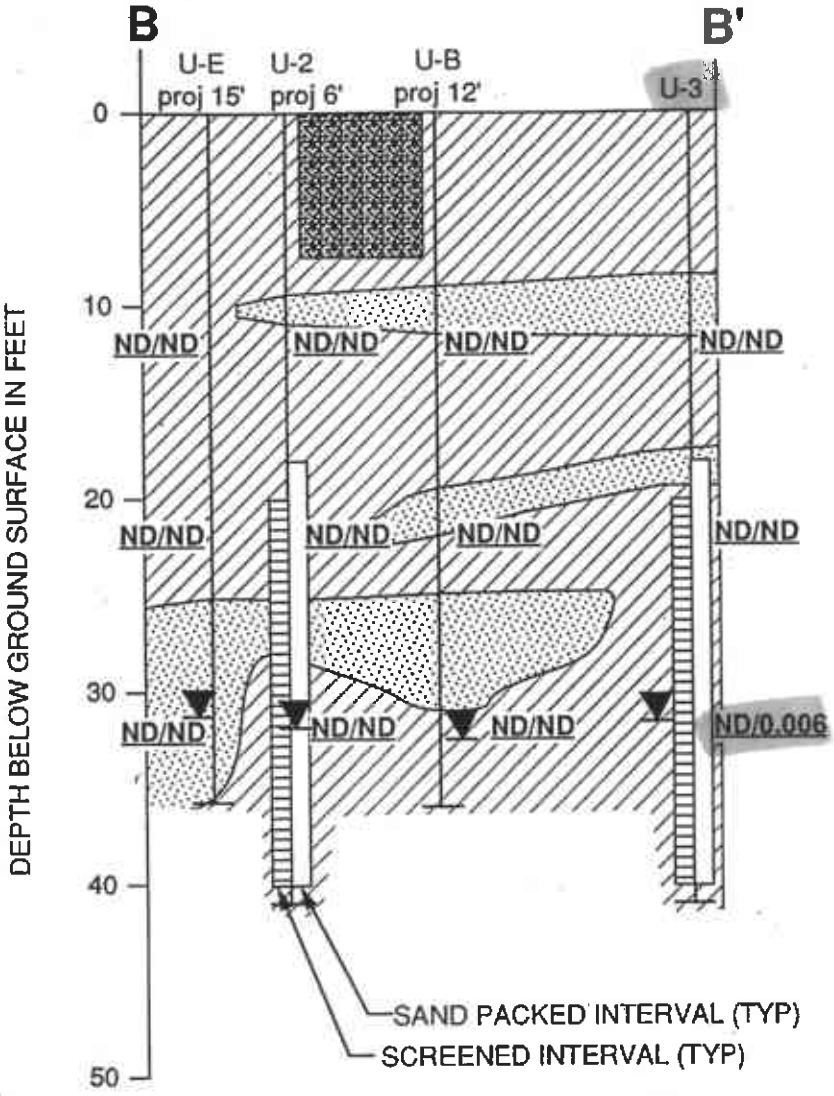
PACIFIC ENVIRONMENTAL GROUP, INC.

UNOCAL SERVICE STATION 5430
1935 Washington Avenue at Castro Street
San Leandro, California

GEOLOGIC CROSS-SECTION A-A'

FIGURE: 3
PROJECT: 310-38.01

12/02/93



LEGEND

- TANK COMPLEX BACKFILL
- PRIMARILY FINE GRAINED DEPOSITS - SILT AND CLAY
- PRIMARILY COARSE GRAINED DEPOSITS - SAND AND GRAVEL
- U-1 GROUNDWATER MONITORING WELL LOCATION AND DESIGNATION
- U-A SOIL BORING LOCATION AND DESIGNATION
- proj PROJECTED ONTO LINE OF SECTION
- STATIC WATER LEVEL
- ND/0.006 TPH-g/BENZENE CONCENTRATION IN SOIL, IN PARTS PER MILLION, 8-6-93
- ND NOT DETECTED

SCALE

HORIZONTAL : 1" = 30'
VERTICAL : 1" = 10'

PACIFIC ENVIRONMENTAL GROUP, INC.

UNOCAL SERVICE STATION 5430
1935 Washington Avenue at Castro Street
San Leandro, California

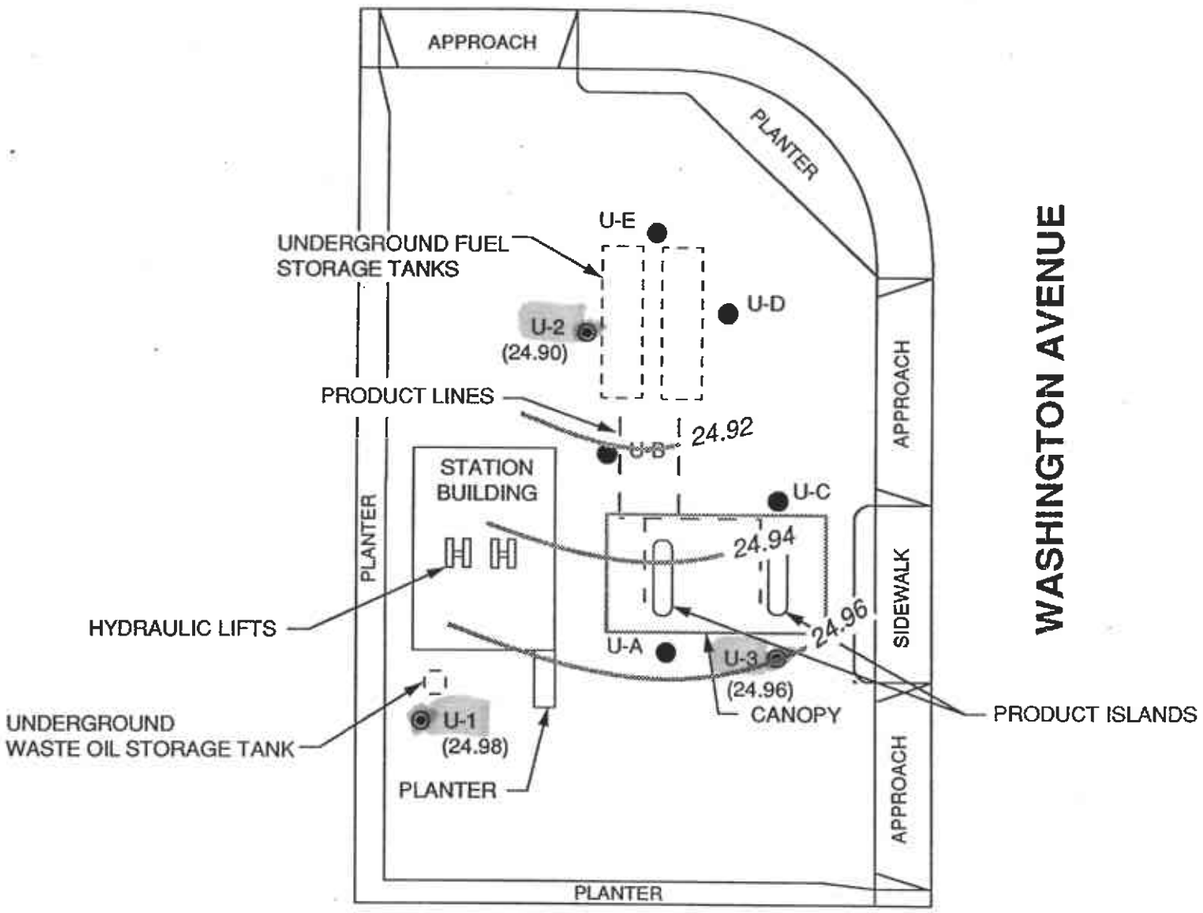
GEOLOGIC CROSS-SECTION B-B'

FIGURE: **4**
PROJECT: 310-38.01

12/02/93

N

CASTRO STREET



WASHINGTON AVENUE

LEGEND

U-2 ● GROUNDWATER MONITORING WELL LOCATION

U-D ● EXPLORATORY SOIL BORING LOCATION AND DESIGNATION

(24.90) GROUNDWATER ELEVATION IN FEET - MSL, 8-6-93

24.92 GROUNDWATER ELEVATION CONTOUR IN FEET - MSL, 8-6-93

APPROXIMATE DIRECTION OF GROUNDWATER FLOW

PACIFIC ENVIRONMENTAL GROUP, INC.

SCALE

0 30 60 FEET

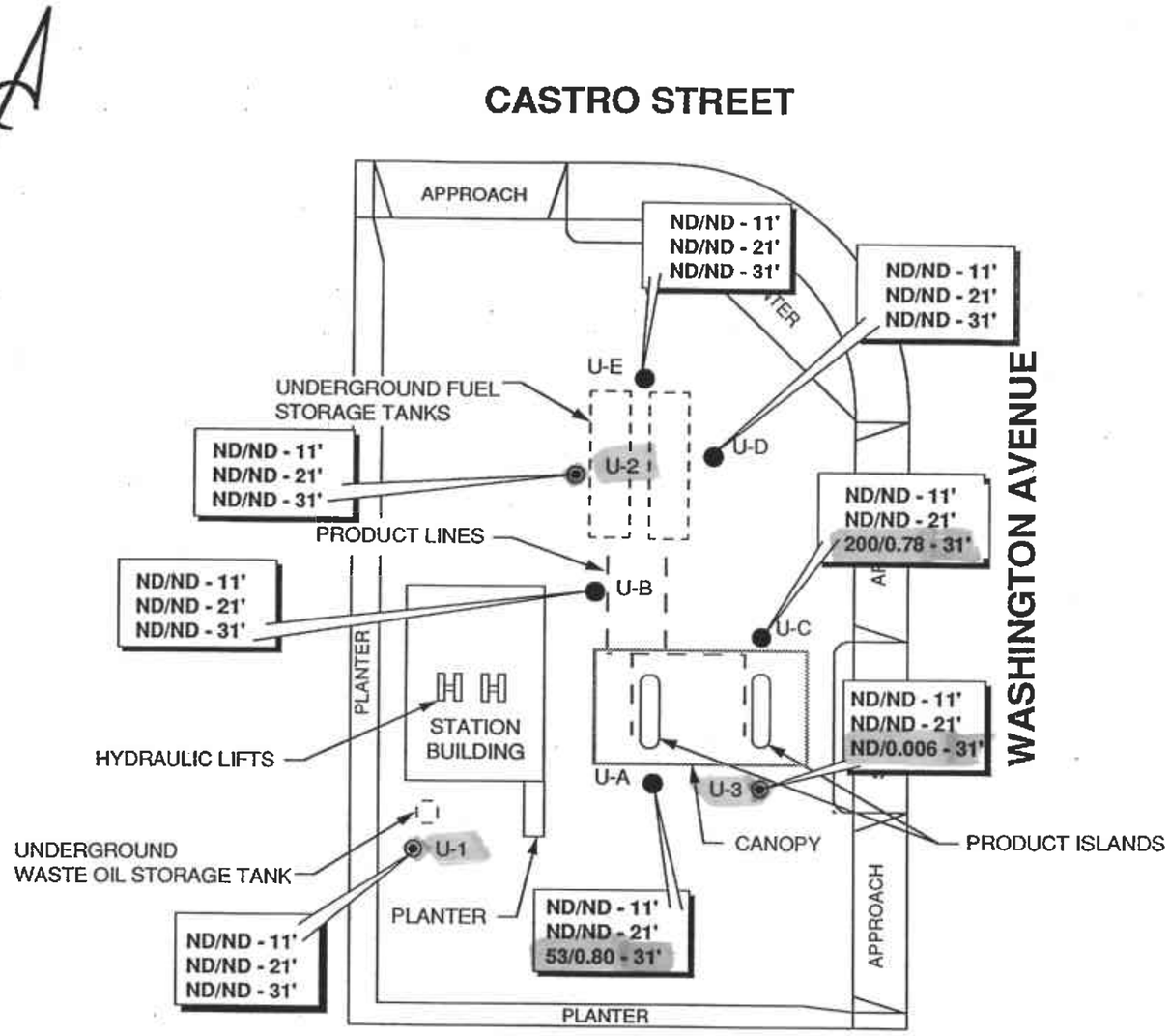
UNOCAL SERVICE STATION 5430
1935 Washington Avenue at Castro Street
San Leandro, California

GROUNDWATER ELEVATON CONTOUR MAP

FIGURE: 5

PROJECT: 310-38.01

11/17/93



LEGEND

U-2 ● GROUNDWATER MONITORING WELL LOCATION

U-D ● EXPLORATORY SOIL BORING LOCATION AND DESIGNATION

200/0.78 - 31' TPH-g/BENZENE CONCENTRATION IN SOIL, IN PARTS PER MILLION, 8-6-93

ND NOT DETECTED

APPROXIMATE DIRECTION
OF GROUNDWATER FLOW

PACIFIC
ENVIRONMENTAL
GROUP, INC.

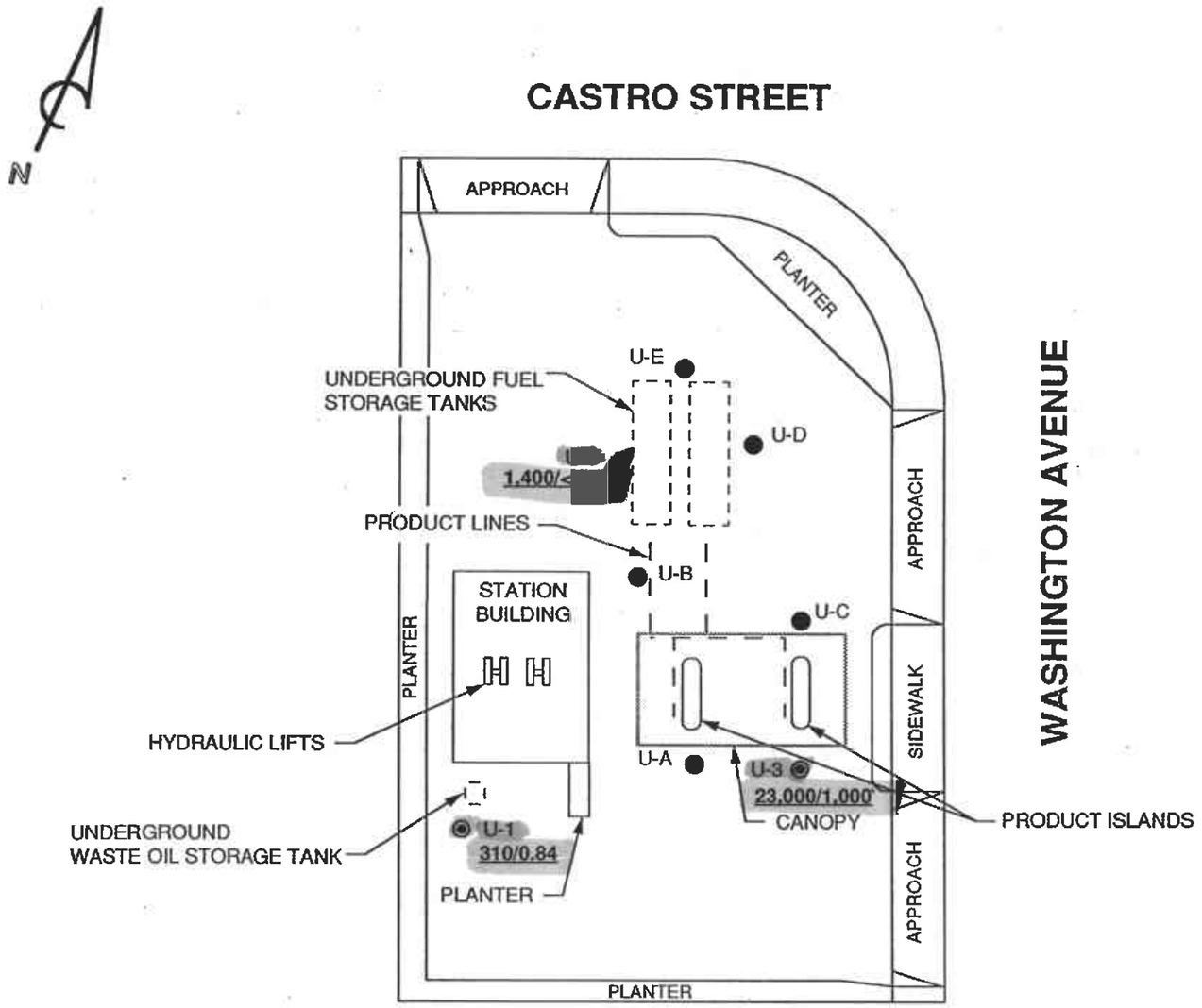
SCALE
0 30 60 FEET

UNOCAL SERVICE STATION 5430
1935 Washington Avenue at Castro Street
San Leandro, California

TPH-g/BENZENE CONCENTRATION IN SOIL

FIGURE:
6
PROJECT:
310-38.01

11/17/93



LEGEND

U-2 ◉ GROUNDWATER MONITORING WELL LOCATION

U-D ● EXPLORATORY SOIL BORING LOCATION AND DESIGNATION

23,000/1,000 TPH-g/BENZENE CONCENTRATION IN GROUNDWATER, IN PARTS PER BILLION, 8-6-93

APPROXIMATE DIRECTION OF GROUNDWATER FLOW

PACIFIC ENVIRONMENTAL GROUP, INC.

SCALE
0 30 60 FEET

UNOCAL SERVICE STATION 5430
1935 Washington Avenue at Castro Street
San Leandro, California

TPH-g/BENZENE CONCENTRATION MAP

FIGURE: 7
PROJECT: 310-38.01

11/17/93

APPENDIX A

FIELD AND LABORATORY PROCEDURES

APPENDIX A
FIELD AND LABORATORY PROCEDURES

Exploratory Soil Boring and Monitoring Well Installation Procedures

The soil borings were drilled using 8-inch diameter hollow-stemmed auger drilling equipment, and logged by a Pacific Environmental Group, Inc. geologist using the Unified Soil Classification System and standard geologic techniques. Soil samples for logging and chemical analysis were collected at maximum depth intervals of 5 feet by advancing a California-modified split-spoon sampler with brass sample liners into undisturbed soil beyond the tip of the auger. The sampler was driven a maximum of 18 inches using a 140-pound hammer with a 30-inch drop. Soil samples for chemical analysis were retained in the brass liners, capped with Teflon sheets and plastic end caps, and sealed in plastic bags. Selected samples were placed on ice and transported to the laboratory accompanied by the appropriate chain-of-custody documentation. The drilling equipment was steam-cleaned prior to, and following the drilling of the boring.

Borings not selected for well installation were backfilled with grout to the ground surface. Selected borings were converted to groundwater monitoring wells by the installation of 2-inch diameter flush-threaded Schedule 40 PVC casing with 0.020-inch factory-slotted screen. Graded 2/12 sand pack was placed in the annular space across the screened interval of each well, and extending approximately 2 feet above the top of the screened interval. A bentonite and concrete seal was placed from the top of the sand pack in each well to the ground surface. A locking cap and protective vault box were installed on the top of each well. Following well completion, the well elevations were surveyed to the nearest 0.01 foot relative to mean sea level datum by a licensed surveyor.

Organic Vapor Analysis

Soil samples collected during drilling were analyzed in the field for ionizable organic compounds using the HNU Model PI-101 photo-ionization detector with a 10.2 eV lamp. The test procedure involves measuring approximately 30 grams from an undis-

turbed soil sample, placing this subsample in a clean glass jar, and sealing the jar with aluminum foil secured under a ring-type threaded lid. The jar is warmed for approximately 20 minutes, then the foil is pierced and the head-space within the jar is tested for total organic vapor, measured in parts per million as benzene (ppm; volume/volume). The instrument was previously calibrated using a 100-ppm isobutylene standard (in air) and a sensitivity factor of 0.55, which relates the photo-ionization sensitivity of benzene (10.0 ppm) to the ionization potential of isobutylene (5.5 ppm). Results of these tests were used to assist in selection of samples for laboratory analysis.

Groundwater Sampling Procedures

The groundwater sampling was performed using techniques approved by the Regional Water Quality Control Board. The sampling procedure consists of first measuring the water level in each well, and checking each well for the presence of separate-phase hydrocarbons (SPH) using an optic probe or a clear Teflon bailer. If no SPH are detected, the wells are purged of a minimum of four casing volumes of water, or until dryness. During purging, temperature, pH, and electrical conductivity are monitored in order to ensure that a representative sample is obtained. After the water levels partially recover, groundwater samples are collected using a Teflon bailer and placed into appropriate EPA-approved containers. The samples are labeled, and transported on ice to the laboratory, accompanied by appropriate chain-of-custody documentation.

Laboratory Procedures

Selected soil and groundwater samples were analyzed in the laboratory for the presence of total petroleum hydrocarbons calculated as gasoline (TPH-g), and benzene, toluene, ethylbenzene, and xylenes (BTEX compounds). Extraction was performed by the purge and trap technique, EPA Method 5030. Analysis of TPH-g was performed according to the DHS LUFT method, and analysis for BTEX compounds was by EPA Method 8020. Final detection was by gas chromatography using a flame-ionization detector and photo-ionization detector. A soil sample collected from the boring of Well U-1 was analyzed for TPH as diesel (TPH-d), total oil and grease, volatile organic compounds by EPA Method 8240, semivolatile organic compounds by EPA Method 8270, and chromium, nickel, lead, zinc, and STLC lead. The groundwater sample collected for Well U-1 was also analyzed for TPH-d and total oil and grease. All analyses were performed by a California State-certified laboratory.

APPENDIX B

BORING LOGS AND WELL CONSTRUCTION DETAILS

WELL LOG
KEY TO ABBREVIATIONS

Drilling Method

HSA - Hollow stem auger
CFA - Continous flight auger
Air - Reverse air circulation

Gravel Pack

CA - Coarse aquarium sand

Sampling Method

Cal. Mod. - California modified split-spoon sampler (2" inner diameter) driven 18" by a 140-pound hammer having a 30" drop. Where penetration resistance is designated "P", sampler was instead pushed by drill rig.
Disturbed - Sample taken from drill-return materials as they surfaced.
Shelby - Shelby Tube thin-walled sampler (3" diameter), where sampler is pushed by drill-rig.

Moisture Content

Dry - Dry
Dp - Damp
Mst - Moist
Wt - Wet
Sat - Saturated

Sorting

PS - Poorly sorted
MS - Moderately sorted
WS - Well sorted

Plasticity

L - Low
M - Moderate
H - High

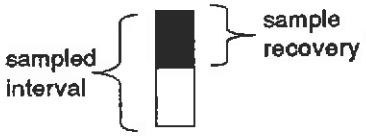
H-NU (ppm)

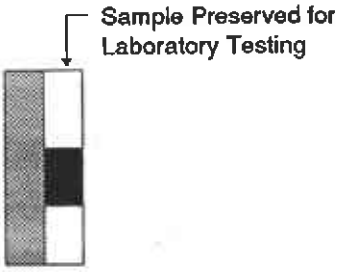
ND - No detection

Symbols

▽ - First encountered ground water

▼ - Static ground water level





Density (Blows/Foot - Cal Mod Sampler)

Sands and gravels

0 - 5	- Very Loose
5 - 13	- Loose
13 - 38	- Medium dense
38 - 63	- Dense
over 63	- Very dense

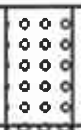
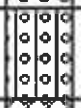
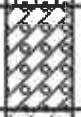
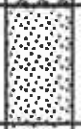
Silts and Clays

0 - 2	- Very Soft
2 - 4	- Soft
4 - 9	- Firm
9 - 17	- Stiff
17 - 37	- Very Stiff
37 - 72	- Hard
over 72	- Very Hard

GRAIN - SIZE SCALE

GRADE LIMITS U.S. Standard inch	sieve size	GRADE NAME
12.0		Boulders
3.0	3.0 in.	Cobbles
0.19	No. 4	Gravels
0.08	No. 10	coarse
	No. 40	medium Sand
	No. 200	fine
		Silt
		Clay Size

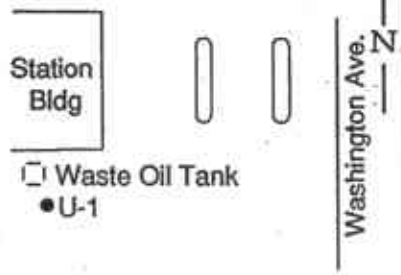
PACIFIC ENVIRONMENTAL GROUP, INC.

Primary Divisions			Group Symbol	Graphic	Typical Names
COARSE GRAINED SOILS more than half is larger than #200 sieve	GRAVELS half of coarse fraction larger than #4 sieve	CLEAN GRAVELS (less than 5% fines)	GW		Well graded gravels, gravel-sand mixtures; little or no fines
			GP		Poorly graded gravels or gravel-sand mixtures; little or no fines
		GRAVEL WITH FINES	GM		Silty gravels, gravel-sand-silt mixtures
			GC		Clayey gravels, gravel-sand-clay mixtures
	SANDS half of coarse fraction smaller than #4 sieve	CLEAN SANDS (less than 5% fines)	SW		Well graded sands, gravelly sands, little or no fines
			SP		Poorly graded sands or gravelly sands; little or no fines
		SANDS WITH FINES	SM		Silty sands, sand-silt mixtures
			SC		Clayey sands, sand-clay mixtures, plastic fines
FINE GRAINED SOILS more than half is smaller than #200 sieve	SILTS AND CLAYS liquid limit less than 50%		ML		Inorganic silts and very fine sand, rock flour, silty or clayey fine sands or clayey silts, with slight plasticity
			CL		Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
			OL		Organic silts and organic silty clays of low plasticity
	SILTS AND CLAYS liquid limit more than 50%		MH		Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
			CH		Inorganic clays of high plasticity, fat clays
			OH		Organic clays of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS			Pt		Peat and other highly organic soils

PACIFIC ENVIRONMENTAL GROUP, INC.

Unified Soil Classification System

LOCATION MAP



PACIFIC ENVIRONMENTAL GROUP, INC.

WELL NO. U-1
PAGE 1 OF 3

PROJECT NO. 310-38.01
LOGGED BY: DA
DRILLER: WEST HAZMAT
DRILLING METHOD: HSA
SAMPLING METHOD: CAL MOD
CASING TYPE: Sch 40 PVC
SLOT SIZE: 0.02"
GRAVEL PACK: 2X12

CLIENT: UNOCAL
DATE DRILLED: 8-4-93
LOCATION: 1935 Washington Ave.
HOLE DIAMETER: 8"
HOLE DEPTH: 46'
WELL DIAMETER: 2"
WELL DEPTH: 40'
CASING STICKUP: NA

WELL COMPLETION	MOISTURE CONTENT	PID	PENETRATION (BLOWS/FT)	DEPTH (FEET)	RECOVERY / SAMPLE INTERVAL	GRAPHIC	SOIL TYPE	LITHOLOGY / REMARKS
				1				ASPHALT and BASEROCK
GROUT				1			ML	CLAYEY SILT: dark brown; <.5mm rootholes; stiff; no product odor.
				2				
				3				
				4				
	Dp	ND	14	5				
				6				
				7				
				8				
				9				
	Dp	ND	16	10				@9.5': dark yellowish brown; 15-25% very fine sand; 20% clay; stiff; no product odor.
				11				
				12				
				13				
				14				
BENTONITE	Dp	ND	22	15			SP	SAND: dark yellowish brown; <5% fines; very fine grained; medium dense; no product odor.
				16				
				17				
				18				
				19				
SAND	Dp	ND	23	20			SM	SILTY SAND: dark yellowish brown; 20-30% silt; very fine to fine grained; <5% coarse sand; medium dense; no product odor.
				21				
				22				

LOCATION MAP

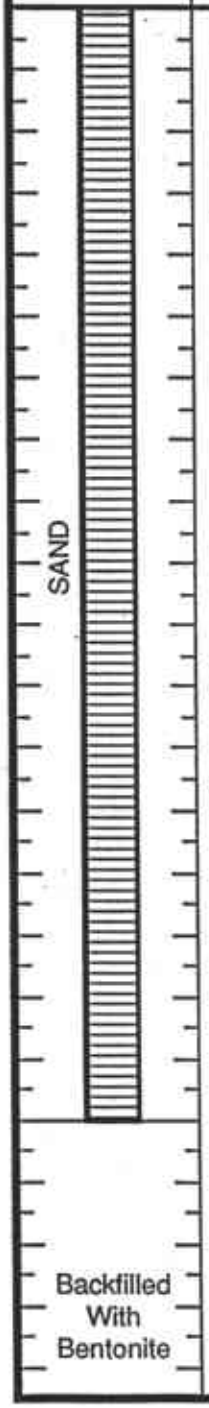
See Page One

PACIFIC ENVIRONMENTAL GROUP, INC.

WELL NO. U-1
PAGE 2 OF 3

PROJECT NO. 310-38.01
LOGGED BY:
DRILLER:
DRILLING METHOD:
SAMPLING METHOD:
CASING TYPE:
SLOT SIZE:
GRAVEL PACK:

CLIENT: UNOCAL
DATE DRILLED:
LOCATION:
HOLE DIAMETER:
HOLE DEPTH:
WELL DIAMETER:
WELL DEPTH:
CASING STICKUP:



DEPTH (FEET)	MOISTURE CONTENT	PID	PENETRATION (BLOWS/FT)	SOIL TYPE	LITHOLOGY / REMARKS
23				SM	SILTYSAND - continued.
24				CL	SANDY CLAY: dark brown; 25% very fine sand; <.5mm rootholes; no product odor.
25	Wt	8	26	SM	SILTY SAND: dark yellowish brown; fine to coarse grained; 5% subrounded fine to grained gravel; medium dense; no product odor.
26					
27				CL	SILTY CLAY: brown; trace sand; <.5mm rootholes; very stiff; no product odor.
28					
29	Wt				
30		ND	37	SC	CLAYEY SAND: dark yellowish brown; 35-45% clay; fine to medium grained; medium dense; no product odor.
31	Wt-Sat				
32					
33					
34					
35	Wt	ND	33	CL	SILTY CLAY: dark yellowish brown; 20-25% silt; <.5mm rootholes; very stiff; no product odor.
36					
37					
38					
39					
40	Mst	ND	31		@40': light olive brown; very stiff; no product odor.
41					
42					
43					
44					

LOCATION MAP

See Page One

PACIFIC ENVIRONMENTAL GROUP, INC.

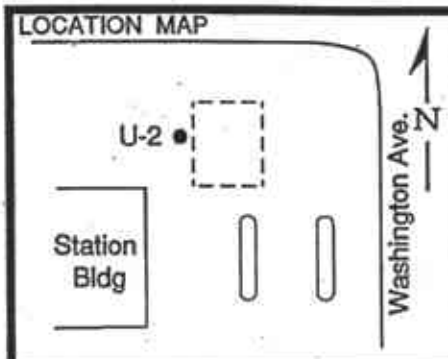
WELL NO. U-1
PAGE 3 OF 3

PROJECT NO. 310-38.01
LOGGED BY:
DRILLER:
DRILLING METHOD:
SAMPLING METHOD:
CASING TYPE:
SLOT SIZE:
GRAVEL PACK:

CLIENT: UNOCAL
DATE DRILLED:
LOCATION:
HOLE DIAMETER:
HOLE DEPTH:
WELL DIAMETER:
WELL DEPTH:
CASING STICKUP:

WELL COMPLETION	MOISTURE CONTENT	PID	PENETRATION (BLOWS/FT)	DEPTH (FEET)	RECOVERY / SAMPLE INTERVAL	GRAPHIC	SOIL TYPE	LITHOLOGY / REMARKS
Backfilled With Bentonite	Wt	ND	29	45–46			CL	SILTY CLAY: dark olive brown; 30-40% silt; very stiff; no product odor.
								BOTTOM OF BORING 46'
				47–66				

LOCATION MAP



PACIFIC ENVIRONMENTAL GROUP, INC.

WELL NO. U-2
PAGE 1 OF 2

PROJECT NO. 310-38.01
LOGGED BY: DA
DRILLER: WEST HAZMAT
DRILLING METHOD: HSA
SAMPLING METHOD: CAL MOD
CASING TYPE: Sch 40 PVC
SLOT SIZE: .02"
GRAVEL PACK: 2X12

CLIENT: UNOCAL
DATE DRILLED: 8-5-93
LOCATION: 1935 Washington Ave.
HOLE DIAMETER: 8"
HOLE DEPTH: 41'
WELL DIAMETER: 2"
WELL DEPTH: 40'
CASING STICKUP: NA

WELL COMPLETION	MOISTURE CONTENT	PID	PENETRATION (BLOWS/FT)	DEPTH (FEET)	RECOVERY / SAMPLE INTERVAL	GRAPHIC	SOIL TYPE	LITHOLOGY / REMARKS
GROUT				1–4			ML	ASPHALT and BASEROCK CLAYEY SILT: dark yellowish brown; low plasticity; <.5mm rootholes; stiff; no product odor.
	Dp	ND	15	5–8				
	Dp	ND	19	9–12			SM	SILTY SAND: dark yellowish brown; 20-30% silt; very fine grained; medium dense; no product odor.
BENTONITE	Dp	ND	20	13–16			CL	SANDY CLAY: dark yellowish brown; silty; 15-20% fine sand; very stiff; no product odor.
SAND	Dp	ND	23	17–22				@19.5': very stiff; no product odor.

LOCATION MAP

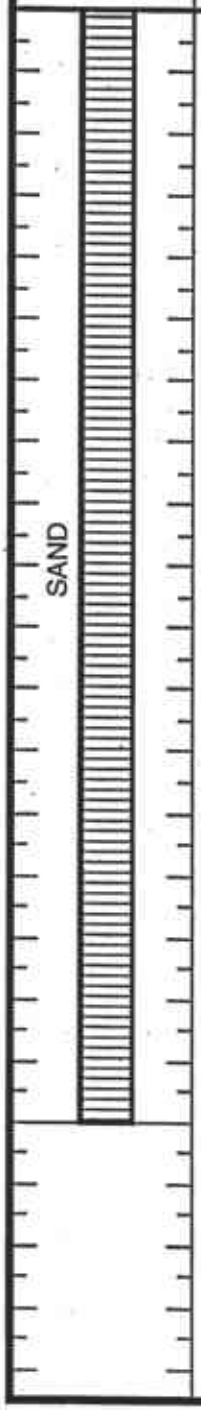
See Page One

PACIFIC ENVIRONMENTAL GROUP, INC.

WELL NO. U-2
PAGE 2 OF 2

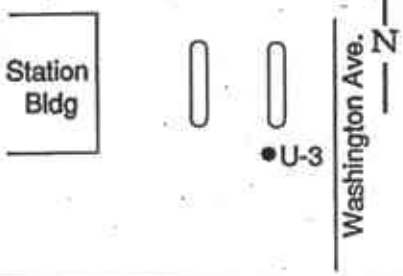
PROJECT NO. 310-38.01
LOGGED BY:
DRILLER:
DRILLING METHOD:
SAMPLING METHOD:
CASING TYPE:
SLOT SIZE:
GRAVEL PACK:

CLIENT: UNOCAL
DATE DRILLED:
LOCATION:
HOLE DIAMETER:
HOLE DEPTH:
WELL DIAMETER:
WELL DEPTH:
CASING STICKUP:



MOISTURE CONTENT	PID	PENETRATION (BLOWS/FT)	DEPTH (FEET)	SOIL TYPE	LITHOLOGY / REMARKS
			23	CL	SILTY CLAY: trace rounded gravel; rootholes; brown staining; very stiff; no product odor.
			24		
Dp	ND	30	25		
			26	SM	SILTY SAND: dark brown; medium to coarse grained; 5% rounded medium gravel; medium dense; no product odor.
			27		
			28		
			29		
Mst	ND	37	30	CL	SANDY CLAY: olive brown; 25-30% very fine sand; very stiff; moderate plasticity; brown roothole staining; <.5mm rootholes.
			31		
			32		
			33		
			34		
Wt-Sat	ND	30	35		@34.5': dark yellowish brown; very stiff; no product odor.
			36		
			37		
			38		
			39		
Sat	ND	22	40		@39.5': very stiff; no product odor.
			41		
			42		BOTTOM OF BORING AT 41'
			43		
			44		

LOCATION MAP



PACIFIC ENVIRONMENTAL GROUP, INC.

WELL NO. U-3
PAGE 1 OF 2

PROJECT NO. 310-38.01
LOGGED BY: DA
DRILLER: WEST HAZMAT
DRILLING METHOD: HSA
SAMPLING METHOD: CAL MOD
CASING TYPE: Sch 40 PVC
SLOT SIZE: 0.02"
GRAVEL PACK: 2X12

CLIENT: UNOCAL
DATE DRILLED: 8-5-93
LOCATION: 1935 Washington Ave.
HOLE DIAMETER: 8"
HOLE DEPTH: 41'
WELL DIAMETER: 2"
WELL DEPTH: 40'
CASING STICKUP: NA

WELL COMPLETION	MOISTURE CONTENT	PID	PENETRATION (BLOWS/FT)	DEPTH (FEET)	RECOVERY / SAMPLE INTERVAL	GRAPHIC	SOIL TYPE	LITHOLOGY / REMARKS
								ASPHALT and BASEROCK
GROUT				1–4			ML	CLAYEY SILT: dark yellowish brown; low plasticity; 30-40% clay; <.5mm rootholes; stiff; no product odor.
	Dp	ND	15	5–8				
	Dp	ND	20	9–12			SM	SILTY SAND: dark yellowish brown; very fine to fine grained; 35-40% fines; <.5mm rootholes; medium dense; no product odor.
BENTONITE	Dp	ND	21	13–16			ML	CLAYEY SILT: dark yellowish brown; 30-40% clay; very stiff; <.5 mm rootholes; no product odor.
				17–18			SP	SAND: dark yellowish brown; 10% fines; medium to fine grained; trace subangular gravel; no produot odor.
SAND	Dp-Mst	290	27	19–22			CL	SILTY CLAY: dark yellowish brown; moderate plasticity; 5-10% angular gravel; very stiff; <.5 mm rootholes; no product odor.

LOCATION MAP

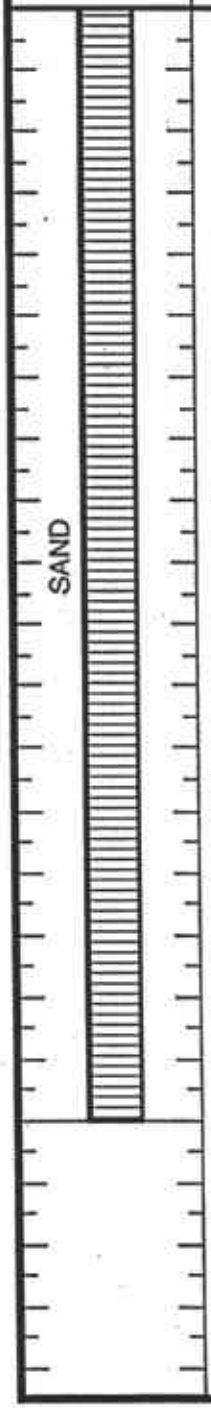
See Page One

PACIFIC ENVIRONMENTAL GROUP, INC.

WELL NO. U-3
PAGE 2 OF 2

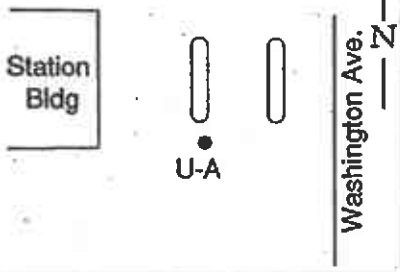
PROJECT NO. 310-38.01
LOGGED BY:
DRILLER:
DRILLING METHOD:
SAMPLING METHOD:
CASING TYPE:
SLOT SIZE:
GRAVEL PACK:

CLIENT: UNOCAL
DATE DRILLED:
LOCATION:
HOLE DIAMETER:
HOLE DEPTH:
WELL DIAMETER:
WELL DEPTH:
CASING STICKUP:



DEPTH (FEET)	MOISTURE CONTENT	PID	PENETRATION (BLOWS/FT)	SOIL TYPE	LITHOLOGY / REMARKS
23–24				CL	SILTY CLAY: 30-40% silt; organic matter; very stiff; no product odor.
25	Mst	90	20		
26–29					
29.5	Mst	120	28		@29.5': 20-30% silt; organic matter; grey roothole staining; very stiff; faint to moderate product odor.
30–34					
34.5	Wet	30	32		@34.5': very stiff; faint to moderate product odor.
35–39					
39.5	Wet	25	33		@39.5': very stiff; no to faint product odor.
40–44					BOTTOM OF BORING AT 41'

LOCATION MAP



PACIFIC ENVIRONMENTAL GROUP, INC.

BORING [redacted]

PROJECT NO. 310-38.01
LOGGED BY: DA
DRILLER: WEST HAZMAT
DRILLING METHOD: HSA
SAMPLING METHOD: CAL MOD
CASING TYPE: NA
SLOT SIZE: NA
GRAVEL PACK: NA

CLIENT: UNOCAL
DATE DRILLED: 8-4-93
LOCATION: 1935 Washington Ave.
HOLE DIAMETER: 8"
HOLE DEPTH: 41'
WELL DIAMETER: NA
WELL DEPTH: NA
CASING STICKUP: NA

WELL COMPLETION	MOISTURE CONTENT	PID	PENETRATION (BLOWS/FT)	DEPTH (FEET)	RECOVERY / SAMPLE INTERVAL / GRAPHIC	SOIL TYPE	LITHOLOGY / REMARKS
		ND		0			ASPHALT and BASEROCK
Backfilled With Grout				1		ML	CLAYEY SILT: dark yellowish brown; low plasticity; <.5mm rootholes; stiff; no product odor.
				2			
				3			
				4			
	Dp	ND	16	5			
				6			
				7			
				8			
				9			
	Dp	ND	16	10		SP	[redacted]dark yellowish brown; very fine grained; medium dense; no product odor.
				11			
				12			
				13			
				14			
	Mst	ND	17	15		ML	CLAYEY SILT: dark yellowish brown; 30-40% clay; stiff; no product odor.
				16			
				17			
				18			
				19			
	Wt	ND	20	20		SM	SILTY SAND: dark yellowish brown; 20-25% silt; fine to medium grained; trace gravel; medium dense; no product odor.
				21			
				22		CL	SILTY CLAY: see next page.

LOCATION MAP

See Page One

PACIFIC ENVIRONMENTAL GROUP, INC.

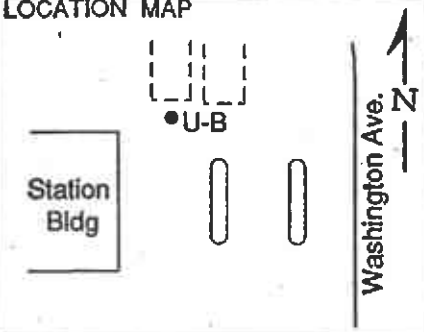
BORING NO. U-A
PAGE 2 OF 2

PROJECT NO. 310-38.01
LOGGED BY:
DRILLER:
DRILLING METHOD:
SAMPLING METHOD:
CASING TYPE:
SLOT SIZE:
GRAVEL PACK:

CLIENT: UNOCAL
DATE DRILLED:
LOCATION:
HOLE DIAMETER:
HOLE DEPTH:
WELL DIAMETER:
WELL DEPTH:
CASING STICKUP:

WELL COMPLETION	MOISTURE CONTENT	PID	PENETRATION (BLOWS/FT)	DEPTH (FEET)	RECOVERY / SAMPLE INTERVAL	GRAPHIC	SOIL TYPE	LITHOLOGY / REMARKS
Backfilled With Grout	Mst	ND	30	23–25			CL	SILTY CLAY: dark yellowish brown; moderate plasticity; 5% fine sand; very stiff; no product odor.
	Wt	5.3	14	26–30				@29.5': very dark gray; moderate to high plasticity; stiff; faint product odor.
	Wt	15	20	31–35				@34.5': olive brown; moderate plasticity; 20-25% silt; stiff; moderate product odor.
	Sat	3.5	25	36–40				@39.5': olive brown; moderate plasticity; 30-35% silt; trace fine sand; very stiff; strong product odor.
				41				(Water has strong product odor.)
				42–44				BOTTOM OF BORING AT 41'

LOCATION MAP



PACIFIC ENVIRONMENTAL GROUP, INC.

BORING NO. U-B
PAGE 1 OF 2

PROJECT NO. 310-38.01
LOGGED BY: DA
DRILLER: WEST HAZMAT
DRILLING METHOD: HSA
SAMPLING METHOD: CAL MOD
CASING TYPE: NA
SLOT SIZE: NA
GRAVEL PACK: NA

CLIENT: UNOCAL
DATE DRILLED: 8-4-93
LOCATION: 1935 Washington Ave.
HOLE DIAMETER: 8"
HOLE DEPTH: 36'
WELL DIAMETER: NA
WELL DEPTH: NA
CASING STICKUP: NA

WELL COMPLETION	MOISTURE CONTENT	PID	PENETRATION (BLOWS/FT)	DEPTH (FEET)	RECOVERY / SAMPLE INTERVAL	GRAPHIC	SOIL TYPE	LITHOLOGY / REMARKS
Backfilled With Grout				1				ASPHALT
				1			ML	CLAYEY SILT: dark brown; low plasticity; <.5mm rootholes; stiff; no product odor.
				2				
				3				
				4				
	Dp	ND	14	5				
				6				
				7				
				8				
				9				
	Dp	ND	16	10			SM	SILTY SAND: dark brown; 20-30% silt; very fine grained; massive; medium dense; no product odor.
				11				
				12				
				13				
				14				
	Mst	ND	17	15			ML	CLAYEY SILT: dark brown; low plasticity; 10-15% clay; <.5mm rootholes; very stiff; no product odor.
				16				
				17				
				18				
				19				
	Mst	ND	20	20			SM	SILT[redacted] dark yellowish brown; 20-30% silt; medium grained; 20-30% silt: 10% subangular gravel; medium dense; no product odor.
				21				
				22				

LOCATION MAP

See Page One

PACIFIC ENVIRONMENTAL GROUP, INC.

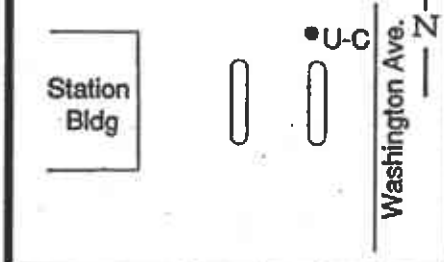
BORING NO. U-8
PAGE 2 OF 2

PROJECT NO. 310-38.01
LOGGED BY:
DRILLER:
DRILLING METHOD:
SAMPLING METHOD:
CASING TYPE:
SLOT SIZE:
GRAVEL PACK:

CLIENT: UNOCAL
DATE DRILLED:
LOCATION:
HOLE DIAMETER:
HOLE DEPTH:
WELL DIAMETER:
WELL DEPTH:
CASING STICKUP:

WELL COMPLETION	MOISTURE CONTENT	PID	PENETRATION (BLOWS/FT)	DEPTH (FEET)	RECOVERY / SAMPLE INTERVAL	GRAPHIC	SOIL TYPE	LITHOLOGY / REMARKS
Backfilled With Grout				23			SM	SILTY SAND: continued.
				24			ML	CLAYEY SILT: dark brown; stiff; no product odor.
	Dp	ND	31	25			SM	SILT[redacted] dark brown; medium to coarse grained; 5% subrounded gravel; medium dense; no product odor.
				26				
				27				
				28				
				29				
	Wt	25	32	30				@29.5': olive gray; faint product odor.
				31				
▼				32				
▽				33				
				34				
	Sat	ND	52	35			CL	SILTY CLAY: olive brown; moderate plasticity; 30-40% silt; massive; hard; faint product odor.
				36				BOTTOM OF BORING AT 36'
				37				
				38				
				39				
				40				
				41				
				42				
				43				
				44				

LOCATION MAP



PACIFIC ENVIRONMENTAL GROUP, INC.

BORING NO. [redacted]

PROJECT NO. 310-38.01
LOGGED BY: DA
DRILLER: WEST HAZMAT
DRILLING METHOD: HSA
SAMPLING METHOD: CAL MOD
CASING TYPE: NA
SLOT SIZE: NA
GRAVEL PACK: NA

CLIENT: UNOCAL
DATE DRILLED: 8-4-93
LOCATION: 1935 Washington Ave.
HOLE DIAMETER: 8"
HOLE DEPTH: 41'
WELL DIAMETER: NA
WELL DEPTH: NA
CASING STICKUP: NA

WELL COMPLETION	MOISTURE CONTENT	PID	PENETRATION (BLOWS/FT)	DEPTH (FEET)	RECOVERY / SAMPLE INTERVAL	GRAPHIC	SOIL TYPE	LITHOLOGY / REMARKS
Backfilled With Grout				1				ASPHALT
				2			ML	CLAYEY SILT: dark brown; low plasticity; <.5mm rootholes; stiff; no product odor.
				3				
				4				
	Dp	1.0	15	5				
				6				
				7				
				8				
				9				
	Dp	1.0	20	10				@9.5': same as above.
				11			SM	SILT[redacted]10% coarse subrounded fine gravel; medium dense; no product odor.
				12			ML	CLAYEY SILT: dark brown; low plasticity; 20% clay; stiff; no product odor.
				13				
				14				
	Mst	6.8	23	15			CL	SILTY CLAY: very dark grayish brown; 30-40% silt; 5% medium sand; trace gravel; very stiff[redacted]
				16				
				17				
				18				
				19				
	Dp	56	21	20				@19.5': charcoal/organic matter; trace of grave[redacted] moderate product odor.
				21				
				22				

LOCATION MAP

See Page One

PACIFIC ENVIRONMENTAL GROUP, INC.

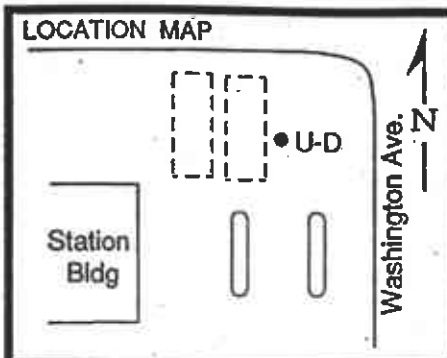
BORING NO. U-C
PAGE 2 OF 2

PROJECT NO. 310-38.01
LOGGED BY:
DRILLER:
DRILLING METHOD:
SAMPLING METHOD:
CASING TYPE:
SLOT SIZE:
GRAVEL PACK:

CLIENT: UNOCAL
DATE DRILLED:
LOCATION:
HOLE DIAMETER:
HOLE DEPTH:
WELL DIAMETER:
WELL DEPTH:
CASING STICKUP:

WELL COMPLETION	MOISTURE CONTENT	PID	PENETRATION (BLOWS/FT)	DEPTH (FEET)	RECOVERY / SAMPLE INTERVAL	GRAPHIC	SOIL TYPE	LITHOLOGY / REMARKS
Backfilled With Grout	Mst	180	23	25			CL	SILTY CLAY: very dark grayish brown; 25-35% silt; very stiff; roothole stained with hydrocarbons; strong product odor.
	Mst	58	20	30				@29.5': dark yellowish brown; roothole stained with hydrocarbon; strong product odor.
	Wt	14	26	35				@34.5': very stiff; faint product odor.
	Wt	8.4	17	40				@39.5': stiff; no to faint product odor.
								BOTTOM OF BORING AT 41'

LOCATION MAP



PACIFIC ENVIRONMENTAL GROUP, INC.

BORING NO. U-D
PAGE 1 OF 2

PROJECT NO. 310-38.01
LOGGED BY: DA
DRILLER: WEST HAZMAT
DRILLING METHOD: HSA
SAMPLING METHOD: CAL MOD
CASING TYPE: NA
SLOT SIZE: NA
GRAVEL PACK: NA

CLIENT: UNOCAL
DATE DRILLED: 8-4-93
LOCATION: 1935 Washington Ave.
HOLE DIAMETER: 8"
HOLE DEPTH: 41'
WELL DIAMETER: NA
WELL DEPTH: NA
CASING STICKUP: NA

WELL COMPLETION	MOISTURE CONTENT	PID	PENETRATION (BLOWS/FT)	DEPTH (FEET)	RECOVERY / SAMPLE INTERVAL	GRAPHIC	SOIL TYPE	LITHOLOGY / REMARKS
Backfilled With Grout				1				ASPHALT
				1			ML	CLAYEY SILT: dark brown; low plasticity; <.5mm rootholes; stiff; no product odor.
				2				
				3				
				4				
	Dp	ND	17	5				
				6				
				7				
				8				
				9				
	Dp	ND	15	10			ML	CLAYEY SANDY SILT: dark brown; low plasticity; 25-35% very fine sand; stiff; no product odor.
				11				
				12				
				13				
				14				
	Mst	ND	14	15			ML	CLAYEY SILT: dark brown; low plasticity; <.5mm rootholes, 30-40% clay; stiff; no product odor.
				16				
				17				
				18				
				19				
	Mst	ND	22	20				@19.5': trace fine sand; stiff; no product odor.
				21				
				22				

LOCATION MAP

See Page One

PACIFIC ENVIRONMENTAL GROUP, INC.

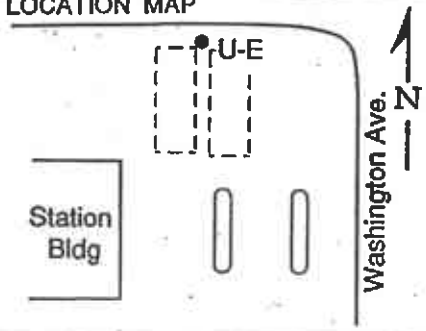
BORING NO. U-D
PAGE 2 OF 2

PROJECT NO. 310-38.01
LOGGED BY:
DRILLER:
DRILLING METHOD:
SAMPLING METHOD:
CASING TYPE:
SLOT SIZE:
GRAVEL PACK:

CLIENT: UNOCAL
DATE DRILLED:
LOCATION:
HOLE DIAMETER:
HOLE DEPTH:
WELL DIAMETER:
WELL DEPTH:
CASING STICKUP:

WELL COMPLETION		MOISTURE CONTENT	PID	PENETRATION (BLOWS/FT)	DEPTH (FEET)	RECOVERY	SAMPLE INTERVAL	GRAPHIC	SOIL TYPE	LITHOLOGY / REMARKS
Backfilled With Grout					23				ML	CLAYEY SILT: continued.
					24					
		Mst	ND	29	25				SM	SITL[redacted]ark brown; 15-25% silt; fine to coarse grained; medium dense; no product odor.
					26					
					27					
					28					
					29					
	▼	Mst	2.0	40	30				ML	CLAYEY SILT: olive gray; low plasticity; 20-30% clay; staining in rootholes; hard; [redacted]
					31					
					32					
					33					
					34					
	▽	Wt-Sat	1.0	37	35					@34.5': dark yellowish brown; very stiff; roothole stained with hydrocarbon[redacted]
					36					
					37					
					38					
					39					
		Sat	ND	18	40					@39.5': stiff; moderate product odor.
					41					
					42					
					43					BOTTOM OF BORING AT 41'
					44					

LOCATION MAP



PACIFIC ENVIRONMENTAL GROUP, INC.

BORING NO. U-E
PAGE 1 OF 2

PROJECT NO. 310-38.01
LOGGED BY: DA
DRILLER: WEST HAZMAT
DRILLING METHOD: HSA
SAMPLING METHOD: CAL MOD
CASING TYPE: NA
SLOT SIZE: NA
GRAVEL PACK: NA

CLIENT: UNOCAL
DATE DRILLED: 8-4-93
LOCATION: 1935 Washington Ave.
HOLE DIAMETER: 8"
HOLE DEPTH: 36'
WELL DIAMETER: NA
WELL DEPTH: NA
CASING STICKUP: NA

WELL COMPLETION	MOISTURE CONTENT	PID	PENETRATION (BLOWS/FT)	DEPTH (FEET)	RECOVERY / SAMPLE INTERVAL	GRAPHIC	SOIL TYPE	LITHOLOGY / REMARKS
Backfilled With Grout				1				ASPHALT
				2			ML	CLAYEY SILT: dark yellowish brown; <.5mm rootholes; stiff; no product odor.
				3				
				4				
	Dp	ND	14	5				
				6				
				7				
				8				
				9				
	Dp	ND	19	10			ML	SANDY SILT: dark yellowish brown; 20% very fine sand; very stiff; no product odor.
				11				
				12				
				13				
				14				
	Dp	ND	18	15			CL	SILTY CLAY: dark yellowish brown; 30-40% silt; <.5mm rootholes; very stiff; no product odor.
				16				
				17				
				18				
				19				
	Dp	ND	25	20				@19.5': 5% coarse sand; very stiff; no product odor.
				21				
				22				

LOCATION MAP

See Page One

PACIFIC ENVIRONMENTAL GROUP, INC.

BORING NO. U-E
PAGE 2 OF 2

PROJECT NO. 310-38.01
LOGGED BY:
DRILLER:
DRILLING METHOD:
SAMPLING METHOD:
CASING TYPE:
SLOT SIZE:
GRAVEL PACK:

CLIENT: UNOCAL
DATE DRILLED:
LOCATION:
HOLE DIAMETER:
HOLE DEPTH:
WELL DIAMETER:
WELL DEPTH:
CASING STICKUP:

WELL COMPLETION	MOISTURE CONTENT	PID	PENETRATION (BLOWS/FT)	DEPTH (FEET)	RECOVERY / SAMPLE INTERVAL	GRAPHIC	SOIL TYPE	LITHOLOGY / REMARKS
Backfilled With Grout				23			CL	CLAY: continued.
				24				
	Mst	ND	32	25			SC	CLAYEY SAND: brown; 30-40% clay; fine grained; 5% rounded coarse sand; <.5mm rootholes; medium dense; no to faint product odor.
				26				
				27				
				28				
				29				
	Wt	ND	38	30				@29.5': olive gray; 20-30% clay; staining in rootholes; medium dense; faint product odor.
				31				
				32				
				33				
				34				
	Sat	1.8	26	35				@34.5': same as above; no product odor.
				36				BOTTOM OF BORING AT 36'
				37				
				38				
				39				
				40				
				41				
				42				
				43				
				44				

APPENDIX C

CERTIFIED ANALYTICAL REPORTS, CHAIN-OF-CUSTODY DOCUMENTATION, AND FIELD DATA SHEETS

AN / EN Inc

Analytical & Environmental Chemistry

08/15/93

A/E1781

PACIFIC ENVIRONMENTAL GROUP, INC.
2025 GATEWAY PLACE, SUITE 440
SAN JOSE, CA 95110

Attention: MAREE DODEN

This is the **CERTIFICATE OF ANALYSIS** for the following samples as received.

Client Project ID:	**310-38.01**
Date Received by Lab:	08/06/93
Total Number of Samples:	21 ANALYZED/7 ON HOLD
Sample Matrix:	SOIL

Benzene, Toluene, Ethylbenzene, and Xylenes (total of three isomers) are analyzed in accordance with EPA Test Methods for Evaluating Solid Waste, (SW846), Third edition, November 1986. Method 5030 (Purge and Trap) is used for the sample preparation/introduction, and Method 8020 (Aromatic Volatile Organics) is used for the analysis.

Total Volatile Petroleum Hydrocarbons as Gasoline is analyzed in accordance with the California State Water Resources Control Board Leaking Underground Fuel Tank (LUFT) Field Manual, Last Revision October 1989. Method 5030 (Purge and Trap) is used for the sample preparation and introduction.

Total Semi & Non-volatile Petroleum Hydrocarbons as Diesel is analyzed in accordance with the California State Water Resources Control Board Leaking Underground Fuel Tank (LUFT) Field Manual, Last Revision October 1989. EPA Method 3550 (Sonication) is used for sample extraction/preparation.

AN/EN, Inc. is accredited by the California Department of Health Services; Certificate Number 1183, issued May 7,1990. The DHS-Environmental Laboratory Accreditation Program can be reached at (510) 540-2800.

Reviewed and Approved

Laurie Glantz-Murphy
Laboratory Manager

AN / EN Inc
Analytical & Environmental Chemistry

Laboratory Numbers: A/E1781

Project: 310-38.01

Sample Matrix: SOIL
Date Received: 08/06/93
Sample Received: Brass liners; <4°C; No headspace.

Date of BTEX/Gas Analysis: 08/09/93 - 08/14/93

Concentration in Sample expressed as mg/kg (ppm)

Analyte	U-2 (9.5-11)	U-2 (19.5-21)	U-2 (29.5-31)	U-3 (9.5-11)	U-3 (19.5-21)	U-3 (29.5-31)	PQL
Benzene	ND	ND	ND	ND	ND	0.006	0.005
Toluene	0.041	0.10	ND	0.040	0.059	0.007	0.005
Ethylbenzene	ND	ND	ND	ND	ND	0.034	0.005
Xylenes	ND	ND	ND	ND	ND	ND	0.005
Gasoline	ND	ND	ND	ND	ND	ND	1.0

Analyte	U-A (9.5-11)	U-A (19.5-21)	U-A (29.5-31)	U-B (9.5-11)	U-B (19.5-21)	U-B (29.5-31)	PQL
Benzene	ND	ND	0.80	ND	ND	ND	0.005
Toluene	0.008	0.025	0.62	0.090	0.16	0.14	0.005
Ethylbenzene	ND	ND	1.5	ND	ND	ND	0.005
Xylenes	ND	ND	5.3	ND	ND	ND	0.005
Gasoline	ND	ND	53.	ND	ND	ND	1.0

PQL = Practical Quantitation Limit (ppm).
ND = None Detected at or above the PQL.

SOIL MS/MSD	MS %REC	MSD %REC	RPD	% REC 3s	RPD 3s	SAMPLE ID
Benzene	90	90	0.0	55 - 133	20.	A/E1774-01
Toluene	86	89	3.4	56 - 122	21.	
Ethylbenzene	90	95	5.4	56 - 122	21.	
Xylenes	87	91	4.5	54 - 123	25.	

455 RESERVATION ROAD, SUITE G • MARINA, CA 93933 • (408) 883-0123 • FAX (408) 883-0122

AN / EN Inc
Analytical & Environmental Chemistry

Laboratory Numbers: A/E1781

Project: 310-38.01

Sample Matrix: [redacted]
Date Received: 08/[redacted]/93
Sample Received: Brass liners; <4°C; No headspace.

Date of BTEX/Gas Analysis: 08/09/93 - 08/14/93

Concentration in Sample expressed as mg/kg (ppm)

Analyte	U-C (9.5-11)	U-C (19.5-21)	U-C (29.5-31)	U-D (9.5-11)	U-D (19.5-21)	U-D (29.5-31)	PQL
Benzene	ND	ND	0.78	ND	ND	ND	0.005
Toluene	0.026	0.082	13.	0.049	0.13	0.010	0.005
Ethylbenzene	ND	ND	4.2	ND	ND	ND	0.005
Xylenes	ND	ND	20.	ND	ND	ND	0.005
Gasoline	ND	ND	200.	ND	ND	ND	1.0

Analyte	U-E (9.5-11)	U-E (19.5-21)	U-E (29.5-31)	PQL
Benzene	ND	ND	ND	0.005
Toluene	0.077	0.18	0.028	0.005
Ethylbenzene	ND	ND	ND	0.005
Xylenes	ND	ND	ND	0.005
Gasoline	ND	ND	ND	1.0

PQL = Practical Quantitation Limit (ppm).
ND = None Detected at or above the PQL.

SOIL MS/MSD	MS %REC	MSD %REC	RPD	% REC 3s	RPD 3s	SAMPLE ID
Benzene	99	100	1.0	55 - 133	20.	A/E1772-01
Toluene	99	101	2.0	56 - 122	21.	
Ethylbenzene	99	100	1.0	56 - 122	21.	
Xylenes	100	101	1.0	54 - 123	25.	

Chain of Custody

Pacific Environmental Group, Inc.
2025 Gateway Place #440, San Jose CA 95110
Phone 408 441 7790 Fax 408 441 7539

PROJECT No. 310-38.01

Facility No. UNOCAL SS 5430 | Facility Address: 1935 WASHINGTON AVE. & CASTRO ST., SAN LEANDRO | Billing Refence Number: 22842

CLIENT engineer: DAVE CAMILLE | PACIFIC Point of Contact: JOHN BALDWIN | Sampler: DOUG ANDREWS | Laboratory Name: AN/EN

A/E 1781 (1/3)

Sample I.D.	Cont. No.	Container Size (ml)	Sample Preserv.	Matrix (W=water, S=soil, A=air)	Type (G=grab, D=disc., C=comp.)	Sampling Date	Sampling Time	BTEX/ VPHgas (8015/ 8020)	TPH Diesel (8015)	Oil and Grease (5520)	Total Dislvd. Metals	VOC (EPA 624/ 8240)	SVOC (EPA 627/ 8270)	HVOC (EPA 601/ 8010)			
U-2 (9½-11)	01	BRASS	ICED	S	D	08/05/93		X									
U-2 (19½-21)	02							X									
U-2 (29½-31)	03							X									
U-2 (34½-36)	04																
U-3 (9½-11)	05							X									
U-3 (19½-21)	06							X									
U-3 (29½-31)	09							X									
U-3 (34½-36)	08	↓	↓	↓	↓	↓											

Comments:

A/E 1781
113

1 of 3

Condition of Sample:

Temperature Received:

Relinquished by	Date	Time	Received by	Date	Time
[signature] for Doug Andrews	08/06/93	11:30	[signature]	8/6/93	1150
[signature]	8/6/93	1155	Diane Niesen	8/6/93	1155
Relinquished by	Date	Time	Received by	Date	Time
Relinquished by	Date	Time	Received by laboratory	Date	Time

Mail original Analytical Report to:
Pacific Environmental Group
2025 Gateway Place #440, San Jose, CA 95110 ☒
820 Contra Costa Blvd. #209, Pleasant Hill, CA 94523 ☐
25725 Jeronimo Rd. #576C, Mission Viejo, CA 92622 ☐
4020 148th Ave NE #B, Redmond, WA 98052 ☐

Turnaround Time:
Priority Rush (1 day) ☐
Rush (2 days) ☐
Expedited (5 days) ☐
Standard (10 days) ☒
As Contracted ☐

Chain of Custody

Pacific Environmental Group, Inc.
2025 Gateway Place #440, San Jose CA 95110
Phone 408 441 7790 Fax 408 441 7539

PROJECT No. 310-38.01

Facility No. UNOCAL SS 5430 | Facility Address: 1935 WASHINGTON AVE. @ CASTRO ST., SAN LEANDRO | Billing Refence Number: 22842

CLIENT engineer: DAVE CAMILLE | PACIFIC Point of Contact: JOHN BALDWIN | Sampler: DOUG ANDREWS | Laboratory Name: AN/EN

A/E 1781 (2/3)

Sample I.D.	Cont. No.	Container Size (ml)	Sample Preserv.	Matrix (W=water, S=soil, A=air)	Type (G=grab, D=disc, C=comp.)	Sampling Date	Sampling Time	BTEX/ VPHgas (8015/ 8020)	TPH Diesel (8015)	Oil and Grease (5520)	Total Distvd. Metals	VOC (EPA 624/ 8240)	SVOC (EPA 627/ 8270)	HVOC (EPA 601/ 8010)	
J-A (9½-11)	09	BRASS	ICED	S	D	08/04/93		X							
J-A (19½-21)	10							X							
J-A (29½-31)	11							X							
J-A (34½-36)	12														
J-B (9½-11)	13							X							
J-B (19½-21)	14							X							
J-B (29½-31)	15							X							
J-B (34½-36)	16														
J-C (9½-11)	17							X							
J-C (19½-21)	18	↓	↓	↓	↓	↓		X							

Comments:

A/E 1781
2/3

2 of 3

Condition of Sample:

Temperature Received:

Relinquished by	Date	Time	Received by	Date	Time
[signature] Doug Andrews	08/06/93	11:30A	[signature]	8/6/93	1150
[signature]	8/6/93	1155	[signature]	8/6/93	1155
Relinquished by	Date	Time	Received by	Date	Time
Relinquished by	Date	Time	Received by laboratory	Date	Time

Mail original Analytical Report to:

Pacific Environmental Group
- [x] 2025 Gateway Place #440, San Jose, CA 95110
- [ ] 620 Contra Costa Blvd. #209, Pleasant Hill, CA 94523
- [ ] 25725 Jeronimo Rd. #576C, Mission Viejo, CA 92622
- [ ] 4020 148th Ave NE #B, Redmond, WA 98052

Turnaround Time:

- [ ] Priority Rush (1 day)
- [ ] Rush (2 days)
- [ ] Expedited (5 days)
- [x] Standard (10 days)
- [ ] As Contracted

Chain of Custody

Pacific Environmental Group, Inc.
2025 Gateway Place #440, San Jose CA 95110
Phone 408 441 7790 Fax 408 441 7539

PROJECT No. 310-38.01

Facility No. UNOCAL SS 5430 | Facility Address: 1935 WASHINGTON AVE. & CASTRO ST., SAN LEANDRO | Billing Refence Number: 22842

CLIENT engineer: DAVE CAMILLE | PACIFIC Point of Contact: JOHN BALDWIN | Sampler: DOUG ANDREWS | Laboratory Name: AN/EN

A/E 1781 (3/3)

Sample I.D.	Cont. No.	Container Size (ml)	Sample Preserv.	Matrix (W=water, S=soil, A=air)	Type (G=grab, D=disc, C=comp.)	Sampling Date	Sampling Time	BTEX/ VPHgas (8015/ 8020)	TPH Diesel (8015)	Oil and Grease (5520)	Total Dislvd. Metals	VOC (EPA 624/ 8240)	SVOC (EPA 627/ 8270)	HVOC (EPA 601/ 8010)				
U-C (29½-31)	19	BRASS	ICED	S	D	08/04/93		X										
U-C (34½-36)	20																	
U-D (9½-11)	21							X										
U-D (19½-21)	22							X										
U-D (29½-31)	23							X										
U-D (34½-36)	24																	
U-E (9½-11)	25							X										
U-E (19½-21)	26							X										
U-E (29½-31)	27							X										
U-E (34½-36)	28	↓	↓	↓	↓	↓												

Comments:

A/E 1781
3/3

3 of 3

Condition of Sample:

Temperature Received:

Relinquished by	Date	Time	Received by	Date	Time
for Doug Andrews	08/06/93	11:30A		8/6/93	1150
	Date	Time	Received by	Date	Time
	8/6/93	1155	Marie Thesen	8/6/93	1155
Relinquished by	Date	Time	Received by	Date	Time
Relinquished by	Date	Time	Received by laboratory	Date	Time

Mail original Analytical Report to:
Pacific Environmental Group
2025 Gateway Place #440 ☒
San Jose, CA 95110
620 Contra Costa Blvd. #209 ☐
Pleasant Hill, CA 94523
25725 Jeronimo Rd. #576C ☐
Mission Viejo, CA 92622
4020 148th Ave NE #B ☐
Redmond, WA 98052

Turnaround Time:
Priority Rush (1 day) ☐
Rush (2 days) ☐
Expedited (5 days) ☐
Standard (10 days) ☒
As Contracted ☐

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Pacific Environmental Group	Client Project ID:	310-38.01/Unocal 5430, San Leandro	Sampled: Aug 4-5, 1993
2025 Gateway Place, Suite 440	Sample Matrix:	Soil	Received: Aug 6, 1993
San Jose, CA 95110	Analysis Method:	EPA 5030/8015/8020	Reported: Aug 19, 1993
Attention: John Baldwin	First Sample #:	3H23401	

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit mg/kg	Sample I.D. 3H23401 U-1 (9.5-11)	Sample I.D. 3H23402 U-1 (19.5-21)	Sample I.D. 3H23403 U-1 (29.5-31)	Sample I.D. 3H23405 SP-A,B,C,D Comp
Purgeable Hydrocarbons	1.0	N.D.	N.D.	N.D.	N.D.
Benzene	0.0050	N.D.	N.D.	N.D.	N.D.
Toluene	0.0050	0.079	0.20	0.029	0.12
Ethyl Benzene	0.0050	N.D.	N.D.	N.D.	N.D.
Total Xylenes	0.0050	N.D.	N.D.	N.D.	N.D.
Chromatogram Pattern:		Discrete Peak	Discrete Peak	Discrete Peak	Discrete Peak

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0	1.0	1.0
Date Analyzed:	8/11/93	8/11/93	8/11/93	8/11/93
Instrument Identification:	GCHP-6	GCHP-6	GCHP-6	GCHP-6
Surrogate Recovery, %: (QC Limits = 70-130%)	117	99	97	101

Purgeable Hydrocarbons are quantitated against a fresh gasoline standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

SEQUOIA ANALYTICAL

Eileen A. Manning
Project Manager

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680 Chesapeake Drive • Redwood City, CA 94063
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Pacific Environmental Group	Client Project ID:	310-38.01/Unocal 5430, San Leandro	Sampled:	Aug 4, 1993
2025 Gateway Place, Suite 440	Sample Matrix:	Soil	Received:	Aug 6, 1993
San Jose, CA 95110	Analysis Method:	EPA 3550/8015	Reported:	Aug 19, 1993
Attention: John Baldwin	First Sample #:	3H23401		

TOTAL EXTRACTABLE PETROLEUM HYDROCARBONS

Analyte	Reporting Limit mg/kg	Sample I.D. 3H23401 U-1 (9.5-11)
Extractable Hydrocarbons	1.0	N.D.
Chromatogram Pattern:		--

Quality Control Data

Report Limit Multiplication Factor:	1.0
Date Extracted:	8/12/93
Date Analyzed:	8/12/93
Instrument Identification:	GCHP-5

Extractable Hydrocarbons are quantitated against a fresh diesel standard.
Analytes reported as N.D. were not detected above the stated reporting limit.

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Eileen A. Manning
Project Manager

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Pacific Environmental Group	Client Project ID:	310-38.01/Unocal 5430, San Leandro	Sampled:	Aug 4, 1993
2025 Gateway Place, Suite 440	Matrix Descript:	Soil	Received:	Aug 6, 1993
San Jose, CA 95110	Analysis Method:	SM 5520 E&F (Gravimetric)	Extracted:	Aug 10, 1993
Attention: John Baldwin	First Sample #:	3H23401	Analyzed:	Aug 11, 1993
			Reported:	Aug 19, 1993

TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Sample Number	Sample Description	Oil & Grease mg/kg
3H23401	U-1 (9.5-11)	N.D.

Detection Limits:	50

Analytes reported as N.D. were not present above the stated limit of detection.

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Eileen A. Manning
Project Manager

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Pacific Environmental Group	Client Project ID:	310-38.01/Unocal 5430, San Leandro	Sampled:	Aug 4, 1993
2025 Gateway Place, Suite 440	Sample Descript:	Soil, U-1 (9.5-11)	Received:	Aug 6, 1993
San Jose, CA 95110	Analysis Method:	EPA 8240	Analyzed:	Aug 17, 1993
Attention: John Baldwin	Lab Number:	3H23401	Reported:	Aug 19, 1993

VOLATILE ORGANICS by GC/MS (EPA 8240)

Analyte	Detection Limit µg/kg	Sample Results µg/kg
Acetone	500	N.D.
Benzene	100	N.D.
Bromodichloromethane	100	N.D.
Bromoform	100	N.D.
Bromomethane	100	N.D.
2-Butanone	500	N.D.
Carbon disulfide	100	N.D.
Carbon tetrachloride	100	N.D.
Chlorobenzene	100	N.D.
Chloroethane	100	N.D.
2-Chloroethyl vinyl ether	500	N.D.
Chloroform	100	N.D.
Chloromethane	100	N.D.
Dibromochloromethane	100	N.D.
1,1-Dichloroethane	100	N.D.
1,2-Dichloroethane	100	N.D.
1,1-Dichloroethene	100	N.D.
cis-1,2-Dichloroethene	100	N.D.
trans-1,2-Dichloroethene	100	N.D.
1,2-Dichloropropane	100	N.D.
cis-1,3-Dichloropropene	100	N.D.
trans-1,3-Dichloropropene	100	N.D.
Ethylbenzene	100	N.D.
2-Hexanone	500	N.D.
Methylene chloride	250	N.D.
4-Methyl-2-pentanone	500	N.D.
Styrene	100	N.D.
1,1,2,2-Tetrachloroethane	100	N.D.
Tetrachloroethene	100	N.D.
Toluene	100	N.D.
1,1,1-Trichloroethane	100	N.D.
1,1,2-Trichloroethane	100	N.D.
Trichloroethene	100	N.D.
Trichlorofluoromethane	100	N.D.
Vinyl acetate	100	N.D.
Vinyl chloride	100	N.D.
Total Xylenes	100	N.D.

Analytes reported as N.D. were not present above the stated limit of detection.

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Eileen A. Manning
Project Manager

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Pacific Environmental Group	Client Project ID:	310-38.01/Unocal 5430, San Leandro	Sampled:	Aug 4, 1993
2025 Gateway Place, Suite 440	Sample Descript:	Soil, U-1 (9.5-11)	Received:	Aug 6, 1993
San Jose, CA 95110	Analysis Method:	EPA 8270	Extracted:	Aug 11, 1993
Attention: John Baldwin	Lab Number:	3H23401	Analyzed:	Aug 18, 1993
			Reported:	Aug 19, 1993

SEMI-VOLATILE ORGANICS by GC/MS (EPA 8270)

Analyte	Detection Limit µg/kg	Sample Results µg/kg
Acenaphthene	100	N.D.
Acenaphthylene	100	N.D.
Anthracene	100	N.D.
Benzoic Acid	500	N.D.
Benzo(a)anthracene	100	N.D.
Benzo(b)fluoranthene	100	N.D.
Benzo(k)fluoranthene	100	N.D.
Benzo(g,h,i)perylene	100	N.D.
Benzo(a)pyrene	100	N.D.
Benzyl alcohol	100	N.D.
Bis(2-chloroethoxy)methane	100	N.D.
Bis(2-chloroethyl)ether	100	N.D.
Bis(2-chloroisopropyl)ether	100	N.D.
Bis(2-ethylhexyl)phthalate	500	N.D.
4-Bromophenyl phenyl ether	100	N.D.
Butyl benzyl phthalate	100	N.D.
4-Chloroaniline	100	N.D.
2-Chloronaphthalene	100	N.D.
4-Chloro-3-methylphenol	100	N.D.
2-Chlorophenol	100	N.D.
4-Chlorophenyl phenyl ether	100	N.D.
Chrysene	100	N.D.
Dibenz(a,h)anthracene	100	N.D.
Dibenzofuran	100	N.D.
Di-N-butyl phthalate	500	N.D.
1,3-Dichlorobenzene	100	N.D.
1,4-Dichlorobenzene	100	N.D.
1,2-Dichlorobenzene	100	N.D.
3,3-Dichlorobenzidine	500	N.D.
2,4-Dichlorophenol	100	N.D.
Diethyl phthalate	100	N.D.
2,4-Dimethylphenol	100	N.D.
Dimethyl phthalate	100	N.D.
4,6-Dinitro-2-methylphenol	500	N.D.
2,4-Dinitrophenol	500	N.D.
2,4-Dinitrotoluene	100	N.D.
2,6-Dinitrotoluene	100	N.D.

SEQUOIA ANALYTICAL

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Pacific Environmental Group	Client Project ID:	310-38.01/Unocal 5430, San Leandro	Sampled:	Aug 4, 1993
2025 Gateway Place, Suite 440	Sample Descript:	Soil, U-1 (9.5-11)	Received:	Aug 6, 1993
San Jose, CA 95110	Analysis Method:	EPA 8270	Extracted:	Aug 11, 1993
Attention: John Baldwin	Lab Number:	3H23401	Analyzed:	Aug 18, 1993
			Reported:	Aug 19, 1993

SEMI-VOLATILE ORGANICS by GC/MS (EPA 8270)

Analyte	Detection Limit µg/kg	Sample Results µg/kg
Di-N-octyl phthalate	100	N.D.
Fluoranthene	100	N.D.
Fluorene	100	N.D.
Hexachlorobenzene	100	N.D.
Hexachlorobutadiene	100	N.D.
Hexachlorocyclopentadiene	100	N.D.
Hexachloroethane	100	N.D.
Indeno(1,2,3-cd)pyrene	100	N.D.
Isophorone	100	N.D.
2-Methylnaphthalene	100	N.D.
2-Methylphenol	100	N.D.
4-Methylphenol	100	N.D.
Naphthalene	100	N.D.
2-Nitroaniline	500	N.D.
3-Nitroaniline	500	N.D.
4-Nitroaniline	500	N.D.
Nitrobenzene	100	N.D.
2-Nitrophenol	100	N.D.
4-Nitrophenol	500	N.D.
N-Nitrosodiphenylamine	100	N.D.
N-Nitroso-di-N-propylamine	100	N.D.
Pentachlorophenol	500	N.D.
Phenanthrene	100	N.D.
Phenol	100	N.D.
Pyrene	100	N.D.
1,2,4-Trichlorobenzene	100	N.D.
2,4,5-Trichlorophenol	500	N.D.
2,4,6-Trichlorophenol	100	N.D.

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Eileen A. Manning
Project Manager

SEQUOIA ANALYTICAL

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Pacific Environmental Group	Client Project ID:	310-38.01/Unocal 5430, San Leandro	Sampled:	Aug 4, 1993
2025 Gateway Place, Suite 440	Sample Descript:	Soil, U-1 (9.5-11)	Received:	Aug 6, 1993
San Jose, CA 95110			Analyzed:	see below
Attention: John Baldwin	Lab Number:	3H23401	Reported:	Aug 19, 1993

LABORATORY ANALYSIS

Analyte	Date Analyzed	Detection Limit mg/kg	Sample Result mg/kg
Cadmium	8/10/93	0.50	N.D.
Chromium	8/10/93	0.50	41
Nickel	8/10/93	2.5	47
Lead	8/10/93	5.0	8.4
Zinc	8/10/93	0.50	42

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Eileen A. Manning
Project Manager

SEQUOIA ANALYTICAL

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Pacific Environmental Group	Client Project ID:	310-38.01/Unocal 5430, San Leandro	Sampled:	Aug 5, 1993
2025 Gateway Place, Suite 440	Sample Descript:	Soil, SP-A,B,C,D Comp	Received:	Aug 6, 1993
San Jose, CA 95110			Analyzed:	see below
Attention: John Baldwin	Lab Number:	3H23405	Reported:	Aug 19, 1993

LABORATORY ANALYSIS

Analyte	Date Analyzed	Detection Limit mg/kg	Sample Result mg/kg
STLC Lead	8/16/93	0.010	0.11

Analytes reported as N.D. were not present above the stated limit of detection.

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Eileen A. Manning
Project Manager

SEQUOIA ANALYTICAL

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Pacific Environmental Group	Client Project ID:	310-38.01/Unocal 5430, San Leandro	Sampled:	Aug 5, 1993
2025 Gateway Place, Suite 440	Sample Descript:	Soil, SP-A,B,C,D	Received:	Aug 6, 1993
San Jose, CA 95110			Analyzed:	Aug 6-12, 1993
Attention: John Baldwin	Lab Number:	3H23405	Reported:	Aug 19, 1993

CORROSIVITY, IGNITABILITY, AND REACTIVITY

Analyte	Detection Limit	Sample Results
Corrosivity:		
pH	N.A.	9.6
Ignitability:		
Flashpoint (Pensky-Martens), °C	25	> 100 °C
Reactivity:		
Sulfide, mg/kg	13	N.D.
Cyanide, mg/kg	0.50	N.D.
Reaction with water	N.A.	Negative

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Eileen A. Manning
Project Manager

SEQUOIA ANALYTICAL

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Pacific Environmental Group	Client Project ID:	310-38.01/Unocal 5430, San Leandro
2025 Gateway Place, Suite 440	Matrix:	Soil
San Jose, CA 95110		
Attention: John Baldwin	QC Sample Group: 3H23401-03, 05	Reported: Aug 19, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl-Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	E. Cunanan	E. Cunanan	E. Cunanan	E. Cunanan
Conc. Spiked:	0.20	0.20	0.20	0.60
Units:	mg/kg	mg/kg	mg/kg	mg/kg
LCS Batch#:	GBLK081193	GBLK081193	GBLK081193	GBLK081193
Date Prepared:	8/11/93	8/11/93	8/11/93	8/11/93
Date Analyzed:	8/11/93	8/11/93	8/11/93	8/11/93
Instrument I.D.#:	GCHP-18	GCHP-18	GCHP-18	GCHP-18
LCS % Recovery:	95	100	100	98
Control Limits:	60-140	60-140	60-140	60-140
MS/MSD Batch #:	3H26502	3H26502	3H26502	3H26502
Date Prepared:	8/11/93	8/11/93	8/11/93	8/11/93
Date Analyzed:	8/11/93	8/11/93	8/11/93	8/11/93
Instrument I.D.#:	GCHP-18	GCHP-18	GCHP-18	GCHP-18
Matrix Spike % Recovery:	95	95	95	97
Matrix Spike Duplicate % Recovery:	100	105	105	103
Relative % Difference:	5.1	10	10	6.0

SEQUOIA ANALYTICAL

Eileen A. Manning
Project Manager

Please Note:
The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation and analytical methods employed for the samples. The LCS % recovery data is used for validation of sample batch results. Due to matrix effects, the QC limits for MS/MSD's are advisory only and are not used to accept or reject batch results.

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Pacific Environmental Group	Client Project ID:	310-38.01/Unocal 5430, San Leandro
2025 Gateway Place, Suite 440	Matrix:	Liquid
San Jose, CA 95110		
Attention: John Baldwin	QC Sample Group: 3H23405	Reported: Aug 19, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Lead

Method:	EPA 239.2
Analyst:	J. Martinez
Conc. Spiked:	0.050
Units:	mg/L
LCS Batch#:	BLK081393
Date Prepared:	8/13/93
Date Analyzed:	8/16/93
Instrument I.D.#:	MV-1
LCS % Recovery:	107
Control Limits:	75-125

MS/MSD Batch #:	3H41102
Date Prepared:	8/13/93
Date Analyzed:	8/16/93
Instrument I.D.#:	MV-1
Matrix Spike % Recovery:	111
Matrix Spike Duplicate % Recovery:	109
Relative % Difference:	1.8

SEQUOIA ANALYTICAL

Eileen A. Manning
Project Manager

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Pacific Environmental Group	Client Project ID:	310-38.01/Unocal 5430, San Leandro
2025 Gateway Place, Suite 440	Matrix:	Soil
San Jose, CA 95110		
Attention: John Baldwin	QC Sample Group: 3H23405	Reported: Aug 19, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Flashpoint	Reactive Sulfide	pH	Reactive Cyanide
Method:	EPA 1010	SW 846	EPA 9045	SW 846
Analyst:	K. Newberry	K. Newberry	Y. Arteaga	A. Savva
Units:	°C	N.A.	pH units	N.A.
Date:	8/9/93	8/6/93	8/6/93	8/6/93
Sample #:	3H35104	3H15401	3H22108	3H15401
Sample Concentration:	>100	N.D.	8.7	N.D.
Sample Duplicate Concentration:	>100	N.D.	8.7	N.D.
% RPD:	0.0	0.0	0.0	0.0
Control Limits:	±20	±20	0-30	20

SEQUOIA ANALYTICAL

Eileen A. Manning
Project Manager

SEQUOIA ANALYTICAL

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Pacific Environmental Group	Client Project ID:	310-38.01/Unocal 5430, San Leandro
2025 Gateway Place, Suite 440	Matrix:	Soil
San Jose, CA 95110		
Attention: John Baldwin	QC Sample Group: 3H23401	Reported: Aug 19, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Diesel	Total Recoverable Petroleum Hydrocarbons
Method:	EPA 8015	SM 5520 EF
Analyst:	C. Lee	M. Shkidt
Conc. Spiked:	15	1000
Units:	mg/kg	mg/kg
LCS Batch#:	DBLK081293	BLK080493
Date Prepared:	8/12/93	8/4/93
Date Analyzed:	8/12/93	8/4/93
Instrument I.D.#:	GCHP-5	N.A.
LCS % Recovery:	67	91
Control Limits:	50-150	70-110
MS/MSD Batch #:	3H44003	3GF0001
Date Prepared:	8/12/93	8/4/93
Date Analyzed:	8/12/93	8/4/93
Instrument I.D.#:	GCHP-5	N.A.
Matrix Spike % Recovery:	73	85
Matrix Spike Duplicate % Recovery:	80	86
Relative % Difference:	9.2	1.2

SEQUOIA ANALYTICAL

Eileen A. Manning
Project Manager

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The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation and analytical methods employed for the samples. The LCS % recovery data is used for validation of sample batch results. Due to matrix effects, the QC limits for MS/MSD's are advisory only and are not used to accept or reject batch results.

SEQUOIA ANALYTICAL

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Pacific Environmental Group	Client Project ID:	310-38.01/Unocal 5430, San Leandro
2025 Gateway Place, Suite 440	Matrix:	Soil
San Jose, CA 95110		
Attention: John Baldwin	QC Sample Group: 3H23401	Reported: Aug 19, 1993

QUALITY CONTROL DATA REPORT

ANALYTE:	1,1-Dichloro-ethene	Trichloroethene	Benzene	Toluene	Chloro-benzene
Method:	EPA 8240	EPA 8240	EPA 8240	EPA 8240	EPA 8240
Analyst:	S. Hoffmann	S. Hoffmann	S. Hoffmann	S. Hoffmann	S. Hoffmann
Conc. Spiked:	2500	2500	2500	2500	2500
Units:	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
LCS Batch#:	BLK081293	BLK081293	BLK081293	BLK081293	BLK081293
Date Prepared:	8/12/93	8/12/93	8/12/93	8/12/93	8/12/93
Date Analyzed:	8/12/93	8/12/93	8/12/93	8/12/93	8/12/93
Instrument I.D.#:	F2	F2	F2	F2	F2
LCS % Recovery:	84	88	96	88	96
Control Limits:	59-172	62-137	66-142	59-139	60-133
MS/MSD Batch #:	3H17602	3H17602	3H17602	3H17602	3H17602
Date Prepared:	8/12/93	8/12/93	8/12/93	8/12/93	8/12/93
Date Analyzed:	8/12/93	8/12/93	8/12/93	8/12/93	8/12/93
Instrument I.D.#:	F2	F2	F2	F2	F2
Matrix Spike % Recovery:	72	72	80	76	76
Matrix Spike Duplicate % Recovery:	80	80	88	84	88
Relative % Difference:	11	11	9.5	10	15

Please Note:
The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation and analytical methods employed for the samples. The LCS % recovery data is used for validation of sample batch results. Due to matrix effects, the QC limits for MS/MSD's are advisory only and are not used to accept or reject batch results.

SEQUOIA ANALYTICAL

Eileen A. Manning
Project Manager

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Pacific Environmental Group	Client Project ID:	310-38.01/Unocal 5430, San Leandro
2025 Gateway Place, Suite 440	Matrix:	Soil
San Jose, CA 95110		
Attention: John Baldwin	QC Sample Group: 3H23401	Reported: Aug 19, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Beryllium	Cadmium	Chromium	Nickel
Method:	EPA 6010	EPA 6010	EPA 6010	EPA 6010
Analyst:	C. Medefesser	C. Medefesser	C. Medefesser	C. Medefesser
Conc. Spiked:	100	100	100	100
Units:	mg/kg	mg/kg	mg/kg	mg/kg
LCS Batch#:	BLK080993	BLK080993	BLK080993	BLK080993
Date Prepared:	8/9/93	8/9/93	8/9/93	8/9/93
Date Analyzed:	8/9/93	8/9/93	8/9/93	8/9/93
Instrument I.D.#:	MTJA-2	MTJA-2	MTJA-2	MTJA-2
LCS % Recovery:	93	94	94	93
Control Limits:	75-125	75-125	75-125	75-125
MS/MSD Batch #:	3H23401	3H23401	3H23401	3H23401
Date Prepared:	8/9/93	8/9/93	8/9/93	8/9/93
Date Analyzed:	8/9/93	8/9/93	8/9/93	8/9/93
Instrument I.D.#:	MTJA-2	MTJA-2	MTJA-2	MTJA-2
Matrix Spike % Recovery:	88	88	93	87
Matrix Spike Duplicate % Recovery:	89	89	93	87
Relative % Difference:	1.1	1.1	0.0	0.0

SEQUOIA ANALYTICAL

Eileen A. Manning
Project Manager

Please Note:
The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation and analytical methods employed for the samples. The LCS % recovery data is used for validation of sample batch results. Due to matrix effects, the QC limits for MS/MSD's are advisory only and are not used to accept or reject batch results.

SEQUOIA ANALYTICAL
680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Pacific Environmental Group	Client Project ID:	310-38.01/Unocal 5430, San Leandro
2025 Gateway Place, Suite 440	Matrix:	Soil
San Jose, CA 95110		
Attention: John Baldwin	QC Sample Group: 3H23401	Reported: Aug 23, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Phenol	2-Chlorophenol	1,4-Dichloro-benzene	N-Nitroso-Di-N-propylamine	1,2,4-Trichloro-benzene	4-Chloro-3-Methylphenol
Method:	EPA 8270	EPA 8270	EPA 8270	EPA 8270	EPA 8270	EPA 8270
Analyst:	G. Meyer	G. Meyer	G. Meyer	G. Meyer	G. Meyer	G. Meyer
Conc. Spiked:	100	100	50	50	50	100
Units:	ng	ng	ng	ng	ng	ng
LCS Batch#:	BLK081193	BLK081193	BLK081193	BLK081193	BLK081193	BLK081193
Date Prepared:	8/11/93	8/11/93	8/11/93	8/11/93	8/11/93	8/11/93
Date Analyzed:	8/19/93	8/19/93	8/19/93	8/19/93	8/19/93	8/19/93
Instrument I.D.#:	H5	H5	H5	H5	H5	H5
LCS % Recovery:	52	53	52	56	56	56
Control Limits:	26-90	25-102	28-104	41-126	38-107	26-103
MS/MSD Batch #:	3H23401	3H23401	3H23401	3H23401	3H23401	3H23401
Date Prepared:	8/11/93	8/11/93	8/11/93	8/11/93	8/11/93	8/11/93
Date Analyzed:	8/19/93	8/19/93	8/19/93	8/19/93	8/19/93	8/19/93
Instrument I.D.#:	H5	H5	H5	H5	H5	H5
Matrix Spike % Recovery:	78	76	74	86	78	75
Matrix Spike Duplicate % Recovery:	73	71	76	82	76	72
Relative % Difference:	6.6	6.8	2.7	4.8	2.6	4.1

SEQUOIA ANALYTICAL

Eileen A. Manning
Project Manager

Please Note:
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SEQUOIA ANALYTICAL
680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Pacific Environmental Group	Client Project ID:	310-38.01/Unocal 5430, San Leandro
2025 Gateway Place, Suite 440	Matrix:	Soil
San Jose, CA 95110		
Attention: John Baldwin	QC Sample Group: 3H23401	Reported: Aug 23, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Acenaphthene	4-Nitrophenol	2,4-Dinitro-toluene	Pentachloro-phenol	Pyrene
Method:	EPA 8270	EPA 8270	EPA 8270	EPA 8270	EPA 8270
Analyst:	G. Meyer	G. Meyer	G. Meyer	G. Meyer	G. Meyer
Conc. Spiked:	100	100	50	50	50
Units:	ng	ng	ng	ng	ng
LCS Batch#:	BLK081193	BLK081193	BLK081193	BLK081193	BLK081193
Date Prepared:	8/11/93	8/11/93	8/11/93	8/11/93	8/11/93
Date Analyzed:	8/19/93	8/19/93	8/19/93	8/19/93	8/19/93
Instrument I.D.#:	H5	H5	H5	H5	H5
LCS % Recovery:	58	38	54	27	58
Control Limits:	31-137	11-114	28-89	17-109	35-142
MS/MSD Batch #:	3H23401	3H23401	3H23401	3H23401	3H23401
Date Prepared:	8/11/93	8/11/93	8/11/93	8/11/93	8/11/93
Date Analyzed:	8/19/93	8/19/93	8/19/93	8/19/93	8/19/93
Instrument I.D.#:	H5	H5	H5	H5	H5
Matrix Spike % Recovery:	82	59	74	57	82
Matrix Spike Duplicate % Recovery:	78	57	72	59	84
Relative % Difference:	5.0	3.4	2.7	3.4	2.4

SEQUOIA ANALYTICAL

Eileen A. Manning
Project Manager

Please Note:
The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation and analytical methods employed for the samples. The LCS % recovery data is used for validation of sample batch results. Due to matrix effects, the QC limits for MS/MSD's are advisory only and are not used to accept or reject batch results.

SEQUOIA ANALYTICAL — SAMPLE RECEIPT

CLIENT NAME: PEG
REC. BY (PRINT): S. G.

MASTER LOG NO. / PAGE: 9308234
DATE OF LOG-IN: 8/6/93

CIRCLE THE APPROPRIATE RESPONSE

1. Custody Seal(s): Present / (Absent) — Intact / Broken*
2. Custody Seal Nos.:
3. Chain-of-Custody Records: (Present) / Absent*
4. Traffic Reports or Packing List: Present / (Absent)
5. Airbill: Airbill / Sticker — Present / (Absent)
6. Airbill No.:
7. Sample Tags: (Present) / Absent* — Sample Tag Nos.: (Listed) / Not Listed on Chain-of-Custody
8. Sample Condition: (Intact) / Broken* / Leaking*
9. Does information on custody reports, traffic reports and sample tags agree? (Yes) / No*
10. Proper Preservatives Used: (Yes) / No*
11. Date Rec. at Lab: 8/6/93
12. Time Rec. at Lab: 1620

* If Circled, contact Project Manager and attach record of resolution

LAB SAMPLE #	DASH #	CLIENT IDENTIFICATION	CONTAINER DESCRIPTION	SAMPLE MATRIX	DATE SAMP.	REMARKS: CONDITION (ETC)
01	A	U-1 (9½-11)	Core	Soil	8/5	
02		U-1 (19½-21)				
03		U-1 (29½-31)				HOLD
04		U-1 (34½-36)			8/5	
05	A	SP-A				
	n	SP-B				
	c	SP-C				
	b	SP-D				

Chain of Custody

Pacific Environmental Group, Inc.
2025 Gateway Place #440, San Jose CA 95110
Phone 408 441 7790 Fax 408 441 7539

OJECT No. 310 - 38.01

ility No. UNOCAL SS 5430 | Facility Address: 1935 WASHINGTON AVE @ CASTRO ST., SAN LEANDRO | Billing Refence Number: 22843

ENT engineer: DAVE CAMILLE | PACIFIC Point of Contact: JOHN BALDWIN | Sampler: DOUG ANDREWS | Laboratory Name: SEQUOIA

Sample I.D.	Cont. No.	Container Size (ml)	Sample Preserv.	Matrix (W=water, S=soil, A=air)	Type (G=grab, D=disc, C=comp.)	Sampling Date	Sampling Time	BTEX/ VPHgas (8015/ 8020)	TPH Diesel (8015)	Oil and Grease (5520)	Total Dslvd. Metals	VOC (EPA 624/ 8240)	SVOC (EPA 627/ 8270)	HVOC (EPA 601/ 8010)	ICAP METALS: Cd, Cr, Ni, Pb, Zn,	RCI	STLC Pb		Comments:
-1 (9½-11)		BRASS	ICED	S	D	08/04/93		X	X	X		X	X		X	9308234			01
-1 (19½-21)								X											02
-1 (29½-31)								X											03
-1 (34½-36)																			
P-A						08/05/93													05
P-B					C (4→1)			X								X	X		
P-C																			
P-D																			

dition of Sample:

Temperature Received:

Mail original Analytical Report to:

Turnaround Time:

Relinquished by	Date	Time	Received by	Date	Time
for Doug Andrews	08/06/93	1130Am		8/6/93	11:30
	8/6/93	1430		8/6/93	14:30
	8/6/93	16:20			
			Received by laboratory	8/6/93	1620

Pacific Environmental Group
- [X] 2025 Gateway Place #440, San Jose, CA 95110
- [ ] 620 Contra Costa Blvd. #209, Pleasant Hill, CA 94523
- [ ] 25725 Jeronimo Rd. #576C, Mission Viejo, CA 92622
- [ ] 4020 148th Ave NE #B, Redmond, WA 98052

Turnaround Time:
- [ ] Priority Rush (1 day)
- [ ] Rush (2 days)
- [ ] Expedited (5 days)
- [X] Standard (10 days)
- [ ] As Contracted

AN / EN Inc
Analytical & Environmental Chemistry

08/23/93

A/E1805

PACIFIC ENVIRONMENTAL GROUP, INC.
2025 GATEWAY PLACE, SUITE 440
SAN JOSE, CA 95110

Attention: MAREE DODEN

This is the **CERTIFICATE OF ANALYSIS** for the following samples as received.

Client Project ID:	**310-38.01**
Date Received by Lab:	08/16/93
Total Number of Samples:	4
Sample Matrix:	WATER

Benzene, Toluene, Ethylbenzene, and Xylenes (total of three isomers) are analyzed in accordance with EPA Test Methods for Evaluating Solid Waste, (SW846), Third edition, November 1986. Method 5030 (Purge and Trap) is used for the sample preparation/introduction. Method 8020 (Aromatic Volatile Organics) is used for the analysis.

Total Volatile Petroleum Hydrocarbons as Gasoline is analyzed in accordance with the California State Water Resources Control Board Leaking Underground Fuel Tank (LUFT) Field Manual, Last Revision October 1989. Method 5030 (Purge and Trap) is used for the sample preparation and introduction.

Total Semi & Non-volatile Petroleum Hydrocarbons as Diesel is analyzed in accordance with the California State Water Resources Control Board Leaking Underground Fuel Tank (LUFT) Field Manual, Last Revision October 1989. EPA Method 3550 (Sonication) is used for sample extraction/preparation.

AN/EN, Inc. is accredited by the California Department of Health Services; Certificate Number 1183, issued May 7,1990. The DHS-Environmental Laboratory Accreditation Program can be reached at (510) 540-2800.

Reviewed and Approved

Laurie Glantz-Murphy
Laboratory Manager

AN / EN Inc
Analytical & Environmental Chemistry

Laboratory Numbers: A/E1805

Project: 310-38.01

Sample Matrix: WATER
Date Received: 08/16/93
Sample Received: 40mL VOA bottles; <4°C; HCl preserved; No headspace.

Date of BTEX/Gas Analysis: 08/19/93 - 08/20/93

Concentration in Sample expressed as ug/L (ppb)

Analyte	U-1	U-2	U-3	TB-1	PQL
Benzene	0.84	<1.0	1,000.	ND	0.50
Toluene	ND	<1.0	ND	ND	0.50
Ethylbenzene	2.6	<1.0	1,700.	ND	0.50
Xylenes	1.0	<5.0	1,600.	ND	0.50
Gasoline	310.	1,400.	23,000.	ND	50.

PQL = Practical Quantitation Limit (ppb).
ND = None Detected at or above the PQL.
< = None detected at or above the increased PQL.
-- = Not requested/analyzed.

SOIL MS/MSD	MS %REC	MSD %REC	RPD	% REC 3s	RPD 3s	SAMPLE ID
Benzene	98	100	2.0	55 - 133	20.	A/E1798-03
Toluene	96	100	4.1	56 - 122	21.	
Ethylbenzene	94	95	1.1	56 - 122	21.	
Xylenes	99	105	5.6	54 - 123	25.	

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Chain of Custody

Pacific Environmental Group, Inc.
2025 Gateway Place #440, San Jose CA 95110
Phone 408 441 7790 Fax 408 441 7539

PROJECT No. 310-38.01

Facility No. UNOCAL 5430 | Facility Address: 1935 WASHINGTON @ CASTRO SAN LEANDRO | Billing Refence Number: 22868

CLIENT engineer: DAVE CAMILLE | PACIFIC Point of Contact: M. DODEN | Sampler: J RANSOME | Laboratory Name: AN/EN

AIE1805

	Sample I.D.	Cont. No.	Container Size (ml)	Sample Preserv.	Matrix (W=water, S=soil, A=air)	Type (G=grab, D=disc, C=comp.)	Sampling Date	Sampling Time	BTEX/ VPHgas (8015/ 8020)	TPH Diesel (8015)	Oil and Grease (5520)	Total Dislvd. Metals	VOC (EPA 624/ 8240)	SVOC (EPA 627/ 8270)	HVOC (EPA 601/ 8010)	Comments
1	U-1	3	40	HCl	W	G	8/13/93	1845	X							AIE1805
2	U-2	3	40	HCl	W	G	8/13/93	1629	X							
3	U-3	3	40	HCl	W	G	8/13/93	1800	X							
	~~LRB~~	1	1000	NP	W	G	8/13/93	1803		X						EB 8/16/93
	~~HRB~~	2	1000	H_2SO_4	W	G	8/13/93	1804			X					EB
4	TB-1	2	40	HCl	W	D	8/13/93	NA	X							

Condition of Sample:

Temperature Received:

Relinquished by	Date	Time	Received by	Date	Time
John Ransome	8/15/93	1550	M Doden	8/16/93	0930
M Doden	8/16/93	1352	Diane Nelson	8/16/93	1352
Relinquished by	Date	Time	Received by	Date	Time
Relinquished by	Date	Time	Received by laboratory	Date	Time

Mail original Analytical Report to:

Pacific Environmental Group
- [x] 2025 Gateway Place #440, San Jose, CA 95110
- [ ] 620 Contra Costa Blvd. #209, Pleasant Hill, CA 94523
- [ ] 25725 Jeronimo Rd. #576C, Mission Viejo, CA 92622
- [ ] 4020 148th Ave NE #B, Redmond, WA 98052

Turnaround Time:

- [ ] Priority Rush (1 day)
- [ ] Rush (2 days)
- [ ] Expedited (5 days)
- [ ] Standard (10 days)
- [x] As Contracted

AN / EN Inc

Analytical Environmental Chemistry

08/25/93

A/E1817

PACIFIC ENVIRONMENTAL GROUP, INC.
2025 GATEWAY PLACE, SUITE 440
SAN JOSE, CA 95110

Attention: MAREE DODEN

This is the **CERTIFICATE OF ANALYSIS** for the following samples as received.

Client Project ID: **310-38.01**
Date Received by Lab: 08/19/93
Number/Matrix of Samples: 2 / WATER

Benzene, Toluene, Ethylbenzene, and Xylenes (total of three isomers) are analyzed in accordance with EPA Test Methods for Evaluating Solid Waste, (SW846), Third edition, November 1986. Method 5030 (Purge and Trap) is used for the sample preparation/introduction, and Method 8020 (Aromatic Volatile Organics) is used for the analysis.

Total Volatile Petroleum Hydrocarbons as Gasoline is analyzed in accordance with the California State Water Resources Control Board Leaking Underground Fuel Tank (LUFT) Field Manual, Last Revision October 1989. Method 5030 (Purge and Trap) is used for the sample preparation and introduction.

Total Semi & Non-volatile Petroleum Hydrocarbons as Diesel is analyzed in accordance with the California State Water Resources Control Board Leaking Underground Fuel Tank (LUFT) Field Manual, Last Revision October 1989. EPA Method 3550 (Sonication) is used for sample extraction/preparation.

Total recoverable trichlorotrifluoroethane soluble compounds (Oil & Grease) are analyzed under the guidelines of Standard Methods 18th Edition (1992) - Method 5520, Sections B (Partition-Gravimetric), and F (Petroleum Hydrocarbons). Sonication is used for soil preparation.

AN/EN, Inc. is accredited by the California Department of Health Services; Certificate Number 1183, issued May 7,1990. The DHS-Environmental Laboratory Accreditation Program can be reached at (510) 540-2800.

Reviewed and Approved

Laurie Glantz-Murphy
Laboratory Manager

AN / EN Inc
Analytical & Environmental Chemistry

Laboratory Numbers: A/E1817

Project: **310-38.01**

Sample Matrix: WATER

Date Received: 08/19/93

Sample Received: 1 Liter amber; H_2SO_4; <4°C.
1 Liter amber; <4°C.

Date of Semi & Non-volatile Analysis: 08/20/93
Date of Oil & Grease Analysis: 08/24/93

Concentration in Sample expressed as ug/L (ppb)

Analyte	U-1	PQL (ppb)
Diesel	50.[a]	50.
Oil & Grease	ND	1000.

a Not a typical Diesel pattern; lower boiling hydrocarbons in the boiling range of Stoddard calculated as Diesel.

PQL = Practical Quantitation Limit (ppb).
ND = None Detected at or above the PQL.

WATER MS/MSD	MS %REC	MSD %REC	RPD	% REC 3s	RPD 3s	SAMPLE ID
Diesel	100	94	6.2	38 - 128	36.	A/E1791-06
Oil & Grease	73	--	---	42 - 123	---	A/E1817-ST

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Chain of Custody

Pacific Environmental Group, Inc.
2025 Gateway Place #440, San Jose CA 95110
Phone 408 441 7790 Fax 408 441 7539

PROJECT No. 310-38.01

Facility No. 5430 | Facility Address: 1935 WASHINGTON @ CASTRO, San Leandro | Billing Refence Number: 22868

CLIENT engineer: Dave Camille | PACIFIC Point of Contact: M. DODEN | Sampler: C. GRAU | Laboratory Name: AN/EN

A/E 1817

Sample I.D.	Cont. No.	Container Size (ml)	Sample Preserv.	Matrix (W=water, S=soil, A=air)	Type (G=grab, D=disc., C=comp.)	Sampling Date	Sampling Time	BTEX/ VPHgas (8015/ 8020)	TPH Diesel (8015)	Oil and Grease (5520)	Total Dislvd. Metals	VOC (EPA 624/ 8240)	SVOC (EPA 627/ 8270)	HVOC (EPA 601/ 8010)	TOTAL 08G	Comments:
U-1 -01	2	1L	~~H2SO4~~ CG	W	G	8/17/93	1145								✓	
U-1 -01	2	1L	NP	W	G	8/17/93	1145		✓							

Condition of Sample:

Temperature Received:

Relinquished by	Date	Time	Received by	Date	Time
[signature]	8/17/93	1330	M Doden	8/17/93	1330
M Doden	8/19/93	10:00	Diane Treesan	8-19-93	1000
Relinquished by	Date	Time	Received by	Date	Time
Relinquished by	Date	Time	Received by laboratory	Date	Time

Mail original Analytical Report to:
Pacific Environmental Group
2025 Gateway Place #440 ☑
San Jose, CA 95110
620 Contra Costa Blvd. #209 ☐
Pleasant Hill, CA 94523
25725 Jeronimo Rd. #576C ☐
Mission Viejo, CA 92622
4020 148th Ave NE #B ☐
Redmond, WA 98052

Turnaround Time:
Priority Rush (1 day) ☐
Rush (2 days) ☐
Expedited (5 days) ☐
Standard (10 days) ☑
As Contracted ☐

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Pacific Environmental Group	Client Project ID:	310-38.01/5430, 1935 Washington	Sampled:	Aug 17, 1993
2025 Gateway Place, Suite 440	Sample Descript:	Water, U-1	Received:	Aug 17, 1993
San Jose, CA 95110			Analyzed:	see below
Attention: Maree Doden	Lab Number:	3HA8201	Reported:	Aug 30, 1993

LABORATORY ANALYSIS

Analyte	Date Analyzed	Detection Limit mg/L	Sample Result mg/L
Cadmium	8/24/93	0.010	0.020
Chromium	8/24/93	0.010	1.0
Nickel	8/24/93	0.050	1.4
Zinc	8/24/93	0.010	1.2
Lead	8/25/93	0.010	0.092

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Eileen A. Manning
Project Manager

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Pacific Environmental Group	Client Project ID:	310-38.01/6430, 1935 Washington	Sampled: Aug 17, 1993
2025 Gateway Place, Suite 440	Sample Descript:	Water, U-1	Received: Aug 17, 1993
San Jose, CA 95110	Analysis Method:	EPA 8240	Analyzed: Aug 25, 1993
Attention: Maree Doden	Lab Number:	3HA8201	Reported: Aug 30, 1993

VOLATILE ORGANICS by GC/MS (EPA 8240)

Analyte	Detection Limit µg/L	Sample Results µg/L
Acetone	10	N.D.
Benzene	2.0	N.D.
Bromodichloromethane	2.0	N.D.
Bromoform	2.0	N.D.
Bromomethane	2.0	N.D.
2-Butanone	10	N.D.
Carbon disulfide	2.0	N.D.
Carbon tetrachloride	2.0	N.D.
Chlorobenzene	2.0	N.D.
Chloroethane	2.0	N.D.
2-Chloroethyl vinyl ether	10	N.D.
Chloroform	2.0	N.D.
Chloromethane	2.0	N.D.
Dibromochloromethane	2.0	N.D.
1,1-Dichloroethane	2.0	N.D.
1,2-Dichloroethane	2.0	[illegible]
1,1-Dichloroethene	2.0	N.D.
cis-1,2-Dichloroethene	2.0	N.D.
trans-1,2-Dichloroethene	2.0	N.D.
1,2-Dichloropropane	2.0	N.D.
cis-1,3-Dichloropropene	2.0	N.D.
trans-1,3-Dichloropropene	2.0	N.D.
Ethylbenzene	2.0	2.2
2-Hexanone	10	N.D.
Methylene chloride	5.0	N.D.
4-Methyl-2-pentanone	10	N.D.
Styrene	2.0	N.D.
1,1,2,2-Tetrachloroethane	2.0	N.D.
Tetrachloroethene	2.0	N.D.
Toluene	2.0	N.D.
1,1,1-Trichloroethane	2.0	N.D.
1,1,2-Trichloroethane	2.0	N.D.
Trichloroethene	2.0	N.D.
Trichlorofluoromethane	2.0	N.D.
Vinyl acetate	2.0	N.D.
Vinyl chloride	2.0	N.D.
Total Xylenes	2.0	N.D.

Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Eileen A. Manning
Project Manager

SEQUOIA ANALYTICAL
680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Pacific Environmental Group
2025 Gateway Place, Suite 440
San Jose, CA 95110
Attention: Maree Doden

Client Project ID: 310-38.01/5430, 1935 Washington
Matrix: Water
QC Sample Group: 3HA8201

Reported: Aug 30, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Beryllium	Cadmium	Chromium	Nickel
Method:	EPA 200.7	EPA 200.7	EPA 200.7	EPA 200.7
Analyst:	M. Mistry	M. Mistry	M. Mistry	M. Mistry
Conc. Spiked:	1.0	1.0	1.0	1.0
Units:	mg/L	mg/L	mg/L	mg/L
LCS Batch#:	BLK082493	BLK082493	BLK082493	BLK082493
Date Prepared:	8/24/93	8/24/93	8/24/93	8/24/93
Date Analyzed:	8/24/93	8/24/93	8/24/93	8/24/93
Instrument I.D.#:	MTJA-2	MTJA-2	MTJA-2	MTJA-2
LCS % Recovery:	97	91	95	97
Control Limits:	75-125	75-125	75-125	75-125
MS/MSD Batch #:	3H80501	3H80501	3H80501	3H80501
Date Prepared:	8/24/93	8/24/93	8/24/93	8/24/93
Date Analyzed:	8/24/93	8/24/93	8/24/93	8/24/93
Instrument I.D.#:	MTJA-2	MTJA-2	MTJA-2	MTJA-2
Matrix Spike % Recovery:	91	87	90	94
Matrix Spike Duplicate % Recovery:	97	92	95	97
Relative % Difference:	6.4	5.6	5.4	3.1

SEQUOIA ANALYTICAL

Eileen A. Manning
Project Manager

Please Note:
The LCS is a control sample of known, interferent free matrix that is analyzed using the same reagents, preparation and analytical methods employed for the samples. The LCS % recovery data is used for validation of sample batch results. Due to matrix effects, the QC limits for MS/MSD's are advisory only and are not used to accept or reject batch results.

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Pacific Environmental Group	Client Project ID:	310-38.01/5430, 1935 Washington
2025 Gateway Place, Suite 440	Matrix:	Water
San Jose, CA 95110		
Attention: Maree Doden	QC Sample Group: 3HA8201	Reported: Aug 30, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Lead
Method:	EPA 239.2
Analyst:	J. Martinez
Conc. Spiked:	0.050
Units:	mg/L
LCS Batch#:	BLK082493
Date Prepared:	8/24/93
Date Analyzed:	8/24/93
Instrument I.D.#:	MV-1
LCS % Recovery:	115
Control Limits:	75-125

MS/MSD Batch #:	3H89801
Date Prepared:	8/24/93
Date Analyzed:	8/24/93
Instrument I.D.#:	MV-1
Matrix Spike % Recovery:	70
Matrix Spike Duplicate % Recovery:	67
Relative % Difference:	4.4

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Pacific Environmental Group	Client Project ID:	310-38.01/5430, 1935 Washington
2025 Gateway Place, Suite 440	Matrix:	Water
San Jose, CA 95110		
Attention: Maree Doden	QC Sample Group: 3HA8201	Reported: Aug 20, 1993

QUALITY CONTROL DATA REPORT

ANALYTE:	1,1-Dichloro-ethene	Trichloroethene	Benzene	Toluene	Chloro-benzene
Method:	EPA 8240	EPA 8240	EPA 8240	EPA 8240	EPA 8240
Analyst:	S Hoffmann	S Hoffmann	S Hoffmann	S Hoffmann	S Hoffmann
Conc. Spiked:	50	50	50	50	50
Units:	µg/L	µg/L	µg/L	µg/L	µg/L
LCS Batch#:	VBLK082593	VBLK082593	VBLK082593	VBLK082593	VBLK082593
Date Prepared:	8/25/93	8/25/93	8/25/93	8/25/93	8/25/93
Date Analyzed:	8/25/93	8/25/93	8/25/93	8/25/93	8/25/93
Instrument I.D.#:	MSH-6	MSH-6	MSH-6	MSH-6	MSH-6
LCS % Recovery:	94	88	90	92	90
Control Limits:	61-145	71-120	76-127	76-125	75-130
MS/MSD Batch #:	3Ha8201	3Ha8201	3Ha8201	3Ha8201	3Ha8201
Date Prepared:	8/25/93	8/25/93	8/25/93	8/25/93	8/25/93
Date Analyzed:	8/25/93	8/25/93	8/25/93	8/25/93	8/25/93
Instrument I.D.#:	MSH-6	MSH-6	MSH-6	MSH-6	MSH-6
Matrix Spike % Recovery:	98	96	98	102	100
Matrix Spike Duplicate % Recovery:	100	96	100	100	100
Relative % Difference:	2.0	0.0	2.0	2.0	0.0

Please Note:
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SEQUOIA ANALYTICAL

Eileen A. Manning
Project Manager

Chain of Custody

2025 Gateway Place #440, San Jose
Phone 408 441 7790 Fax 408 441 7539

PROJECT No. 310-38.01

Facility No. 5430 | Facility Address: 1935 WASHINGTON @ CASTRO | Billing Refence Number:

CLIENT engineer: DAVE Camille | PACIFIC Point of Contact: M. DODEN | Sampler: C. GRAVES | Laboratory Name: SEQUOIA

Sample I.D.	Cont. No.	Container Size (ml)	Sample Preserv.	Matrix (W=water, S=soil, A=air)	Type (G=grab, D=disc., C=comp.)	Sampling Date	Sampling Time	BTEX/ VPHgas (8015/ 8020)	TPH Diesel (8015)	Oil and Grease (5520)	Total Dslvd. Metals	VOC (EPA 624/ 8240)	SVOC (EPA 627/ 8270)	HVOC (EPA 601/ 8010)	Cd, Cr, Pb, Zn, Ni:			
U-1	1	1L	HNO_3	W	G	8/17/93	11:45								✓			
U-1	3	40ml	HCL	W	G	8/17/93	11:45					✓						

Comments: 9308A82

Condition of Sample:

Temperature Received:

Relinquished by	Date	Time	Received by	Date	Time
Charlie Graves	8/17/93	1305			
Relinquished by	Date	Time	Received by	Date	Time
Relinquished by	Date	Time	Received by	Date	Time
Relinquished by	Date	Time	Received by laboratory	Date	Time
			J. Mendoza	8/17/93	1308

Mail original Analytical Report to:

Pacific Environmental Group

- 2025 Gateway Place #440, San Jose, CA 95110 ☑
- 620 Contra Costa Blvd. #209, Pleasant Hill, CA 94523 ☐
- 25725 Jeronimo Rd. #576C, Mission Viejo, CA 92622 ☐
- 4020 148th Ave NE #B, Redmond, WA 98052 ☐

Turnaround Time:

- Priority Rush (1 day) ☐
- Rush (2 days) ☐
- Expedited (5 days) ☐
- Standard (10 days) ☑
- As Contracted ☐