



PACIFIC
ENVIRONMENTAL
GROUP, INC.

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January 13, 1995
Project 310-038.1A

Mr. John Jang
Regional Water Quality Control Board
San Francisco Bay Region
2101 Webster Street, Suite 500
Oakland, California 94612

Re: Unocal Corporation
Quarterly Summary Report
Fourth Quarter 1994

Dear Mr. Jang:

As directed by Mr. Dave Camille of Unocal Corporation, Pacific Environmental Group, Inc. is forwarding the quarterly summary report for the following location:

Service Station

Location

5430

1935 Washington Avenue, San Leandro

If you have questions or comments, please do not hesitate to contact our office at (408) 441-7500.

Sincerely,

Pacific Environmental Group, Inc.



Joseph Muzzio
Project Geologist

Enclosure

cc: Mr. Dave Camille, Unocal Corporation
Mr. Michael Bakaldin, San Leandro Fire Department
Mr. Scott Seery, Alameda County Environmental Health Care Services

Quarterly Summary Report Fourth Quarter 1994

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

County STID #: 1747
County: Alameda

BACKGROUND

Unocal files suggest that a product line leak occurred in June 1976, and that one of the original underground gasoline storage tanks failed a precision test in October 1981. In December 1981, the two original steel gasoline storage tanks were replaced with two fiberglass gasoline storage tanks. Groundwater Monitoring Wells U-1 through U-3 and Borings U-A through U-E were installed by PACIFIC in August 1993. Hydrocarbons were detected in the groundwater samples collected from all wells. Monthly groundwater monitoring and quarterly groundwater sampling of the wells was initiated in December 1993.

RECENT QUARTER ACTIVITIES

Quarterly groundwater monitoring and sampling were performed in December 1994. Unocal submitted a work plan to further delineate the extent of hydrocarbon-impacted groundwater.

NEXT QUARTER ACTIVITIES

First quarter 1995 groundwater monitoring and sampling will be performed. Proposed soil and groundwater investigation will be initiated.

CHARACTERIZATION/REMEDIAL STATUS

Soil contamination delineated? None encountered.
Dissolved groundwater delineated? No.
Free product delineated? Not applicable.
Amount of groundwater contaminant recovered this quarter? None
Soil remediation in progress? Not Applicable.
Anticipated start date? Not Applicable.
Anticipated completion date? Not Applicable.
Dissolved/free product remediation in progress? No.
Anticipated start? Unknown.
Anticipated completion? Unknown.

CONSULTANT: Pacific Environmental Group, Inc.



PACIFIC
ENVIRONMENTAL
GROUP, INC.

ALCO
HAZHAT

95 JAN 01 PM 2:37

January 20, 1995
Project 310-038.1A

Mr. David Camille
Unocal Corporation
2000 Crow Canyon Place, Suite 400
San Ramon, California 94583

Re: Proposed Revisions to Groundwater Monitoring Program
Unocal Service Station 5430
1935 Washington Street
San Leandro, California

Dear Mr. Camille:

This letter presents proposed revisions to the groundwater monitoring program for the Unocal Corporation (Unocal) site referenced above. The original groundwater monitoring program for the site was issued by the Alameda County Health Care Services Agency, in a letter dated January 19, 1994.

Pacific Environmental Group, Inc., PACIFIC recommends that the groundwater monitoring program for the subject site be modified to reflect the amount of historical data available. The most recent quarterly groundwater monitoring report which presents a site map, groundwater elevation data, and historical groundwater analytical data is presented as an attachment. The proposed groundwater monitoring program is described below.

- Quarterly gauging of all monitoring wells to determine groundwater elevations.
- Quarterly sampling of all monitoring wells for total petroleum hydrocarbons (TPH) calculated as gasoline (TPH-g), benzene, toluene, ethylbenzene and xylenes.
- Quarterly sampling of Well U-1 for TPH calculated as diesel.

- Eliminate sampling of Well U-1 for total oil and grease.
- Annual sampling of all monitoring wells for halogenated volatile organic compounds (HVOCs). Newly installed wells will be sampled for HVOCs during the first monitoring event. Based on the analytical results, a sampling frequency will be proposed.

Rationale for the proposed groundwater monitoring program are as follows.


- Monthly groundwater elevation data collected during 1994, indicates that groundwater flow beneath the site is consistently to the west-southwest, at an average hydraulic gradient of approximately 0.003 ft/ft.
- Total oil and grease has not been detected in Well U-1 for 6 consecutive sampling events.
- Because TPH-g is the primary contaminant detected in site wells, the reduced sampling frequency for HVOCs will be sufficient to monitor groundwater quality.

It is PACIFIC's opinion that the proposed monitoring and sampling program will be sufficient to define and monitor the hydrocarbon plume status. All future wells installed at the site will be incorporated into the proposed monitoring program.

PACIFIC proposes to implement this groundwater monitoring program in the first quarter 1995. If you have any questions regarding the contents of this letter, please call.

Sincerely,

Pacific Environmental Group, Inc.


Joseph Muzzio
Project Geologist
CEG 1672



Attachment: MPDS Services Inc. Quarterly Data Report, dated January 3, 1995

cc: Mr. Scott Seery, Alameda County Health Care Services Agency
Mr. Mike Bakaldin, San Leandro Fire Department

MPDS-UN5430-05
January 3, 1995

Unocal Corporation
2000 Crow Canyon Place, Suite 400
P.O. Box 5155
San Ramon, California 94583

Attention: Mr. David J. Camille

RE: Quarterly Data Report
Unocal Service Station #5430
1935 Washington Avenue
San Leandro, California

Dear Mr. Camille:

This data report presents the results of the most recent quarter of monitoring and sampling of the monitoring wells at the referenced site by MPDS Services, Inc.

RECENT FIELD ACTIVITIES

The monitoring wells that were monitored and sampled during this quarter are indicated in Table 1. Prior to sampling, the wells were checked for depth to water and the presence of free product or sheen. The monitoring data and the ground water elevations are summarized in Table 1. The ground water flow directions during the most recent quarter are shown on the attached Figures 1, 2, and 3.

Ground water samples were collected on December 6, 1994. Prior to sampling, the wells were each purged of between 5 and 5.5 gallons of water. During purging operations, the field parameters pH, temperature, and electrical conductivity were recorded and are presented in Table 2. Once the field parameters were observed to stabilize, and where possible, a minimum of approximately four casing volumes had been removed from each well, samples were then collected using a clean Teflon bailer. The samples were decanted into clean VOA vials and/or one-liter amber bottles, as appropriate, which were then sealed with Teflon-lined screw caps, labeled, and stored in a cooler, on ice, until delivery to a state-certified laboratory. MPDS Services, Inc. transported the purged ground water to the Unocal Refinery located in Rodeo, California, for treatment and discharge to San Pablo Bay under NPDES permit.

ANALYTICAL RESULTS

The ground water samples were analyzed at Sequoia Analytical Laboratory and were accompanied by properly executed Chain of Custody documentation. The analytical results of the ground water samples collected to

date are summarized in Tables 3 and 4. The concentrations of Total Petroleum Hydrocarbons (TPH) as gasoline, TPH as diesel, and benzene detected in the ground water samples collected this quarter are shown on the attached Figure 4. Copies of the laboratory analytical results and the Chain of Custody documentation are attached to this report.

LIMITATIONS

Environmental changes, either naturally-occurring or artificially-induced, may cause changes in ground water levels and flow paths, thereby changing the extent and concentration of any contaminants.

DISTRIBUTION

A copy of this report should be sent to Mr. Scott Seery of the Alameda County Environmental Health Care Services, Mr. Michael Bakaldin of the San Leandro Fire Department.

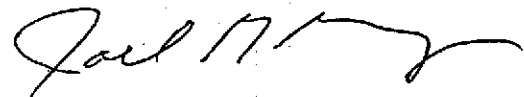
If you have any questions regarding this report, please do not hesitate to call Mr. Nubar Srabian at (510) 602-5120.

Sincerely,

MPDS Services, Inc.



Sarkis A. Karkarian
Staff Engineer



Joel G. Greger, C.E.G.
Senior Engineering Geologist

License No. EG 1633
Exp. Date 8/31/96

/bp

Attachments: Tables 1 through 4
Location Map
Figures 1 through 4
Laboratory Analyses
Chain of Custody documentation

cc: Mr. Joe Muzzio, Pacific Environmental Group, Inc.



TABLE 1

SUMMARY OF MONITORING DATA

Well #	Ground Water Elevation (feet)	Depth to Water (feet)♦	Total Well Depth (feet)♦	Product Thickness (feet)	Sheen	Water Purged (gallons)
--------	-------------------------------	------------------------	--------------------------	--------------------------	-------	------------------------

(Monitored and Sampled on December 6, 1994)

U-1	23.73	32.37	39.64	0	No	5
U-2	23.83	31.44	39.35	0	No	5.5
U-3	23.90	31.34	38.44	0	No	5

(Monitored on November 8, 1994)

U-1	22.05	34.05	★	0	--	0
U-2	22.18	33.09	★	0	--	0
U-3	22.23	33.01	★	0	--	0

(Monitored on October 11, 1994)

U-1	22.85	33.25	39.65	0	--	0
U-2	22.92	32.35	39.33	0	--	0
U-3	23.04	32.20	38.42	0	--	0

(Monitored and Sampled on September 15, 1994)

U-1	22.17	33.93	39.68	0	No	2
U-2	22.27	33.00	39.38	0	No	4.5
U-3	22.40	32.84	38.48	0	No	4

(Monitored and Sampled on June 19, 1994)

U-1	23.84	32.26	39.65	0	No	4
U-2	23.96	31.31	39.36	0	No	5.5
U-3	24.05	31.19	38.46	0	No	5

(Monitored and Sampled on March 25, 1994)

U-1	25.03	31.07	39.62	0	No	6
U-2	25.18	30.09	39.33	0	No	6.5
U-3	25.21	30.03	38.45	0	No	6

TABLE 1 (Continued)

SUMMARY OF MONITORING DATA

<u>Well #</u>	<u>Well Casing Elevation (feet)*</u>
U-1	56.10
U-2	55.27
U-3	55.24

- ◆ The depth to water level and total well depth measurements were taken from the top of the well casings.
- * The elevations of the top of the well casings are relative to Mean Sea Level.
- ★ Total well depth not measured.
- Sheen determination was not performed.

TABLE 2

**RECORD OF THE TEMPERATURE, CONDUCTIVITY, AND pH VALUES
 IN THE MONITORING WELLS DURING PURGING AND PRIOR TO SAMPLING**

(Measured on December 6, 1994)

<u>Well #</u>	<u>Gallons per Casing Volume</u>	<u>Time</u>	<u>Gallons Purged</u>	<u>Casing Volumes Purged</u>	<u>Temper- ature (°F)</u>	<u>Conductivity ([μmhos/cm] x1000)</u>	<u>pH</u>
U-1	1.24	09:30	0	0	43.4	1.61	6.28
			1.25	1.01	54.5	1.18	6.68
			2.5	2.02	62.0	1.02	6.99
			3.75	3.02	63.0	0.95	7.36
			5	4.03	64.0	0.94	7.41
		10:00					
U-2	1.34	10:25	0	0	64.4	0.82	7.89
			1.5	1.12	68.5	0.70	7.46
			3	2.24	69.8	0.67	7.20
			4	2.99	70.1	0.68	7.13
			5.5	4.10	70.5	0.67	7.08
		10:35					
U-3	1.21	11:00	0	0	74.1	0.71	7.70
			1.25	1.03	73.7	0.92	7.08
			2.5	2.07	73.1	0.98	6.97
			3.75	3.10	72.3	0.96	6.95
			5	4.13	72.7	0.98	7.08
		11:10					

TABLE 3

**SUMMARY OF LABORATORY ANALYSES
WATER**

<u>Date</u>	<u>Well#</u>	<u>TPH as Diesel</u>	<u>TPH as Gasoline</u>	<u>Benzene</u>	<u>Toluene</u>	<u>Ethyl-benzene</u>	<u>Xylenes</u>
12/06/94	U-1▲	ND	ND	ND	ND	ND	ND
	U-2	--	250	19	ND	ND	ND
	U-3	--	17,000	390	ND	990	560
9/15/94	U-1▲	83**	ND	0.50	0.85	ND	0.77
	U-2	--	1,000◆◆	44	ND	ND	ND
	U-3	--	12,000	370	ND	970	610
6/19/94	U-1▲	61**	51	ND	1.4	ND	2.7
	U-2	--	180◆	ND	ND	ND	0.86
	U-3	--	17,000	580	ND	1,300	90
3/25/94	U-1▲	57**	58	0.63	0.79	ND	0.65
	U-2	--	130	0.70	0.78	0.65	0.64
	U-3	--	18,000	560	40	1,000	770
12/16/93	U-1▲	130**	ND	ND	ND	ND	ND
	U-2	--	330	1.7	ND	11	8.5
	U-3	--	15,000	570	ND	940	670
8/13/93	U-1▲	50*	310	0.84	ND	2.6	1
	U-2	--	1,400	ND	ND	ND	ND
	U-3	--	23,000	1,000	ND	1,700	1,600

TABLE 3 (Continued)

SUMMARY OF LABORATORY ANALYSES
WATER

- ▲ Total Oil and Grease was non-detectable.
- ◆ Sequoia Analytical Laboratory reported that the hydrocarbons detected appeared to be a gasoline and non-gasoline mixture.
- ◆◆ Sequoia Analytical Laboratory reported that the hydrocarbons detected did not appear to be gasoline.
- * Not a typical diesel pattern; lower boiling hydrocarbons in the boiling range of stoddard calculated as diesel.
- ** Sequoia Analytical Laboratory reported that the hydrocarbons detected did not appear to be diesel.

ND = Non-detectable.

-- Indicates analysis was not performed.

Results are in micrograms per liter ($\mu\text{g/L}$), unless otherwise indicated.

Note: Laboratory analyses data prior to December 16, 1993, were provided by Pacific Environmental Group, Inc.

TABLE 4
SUMMARY OF LABORATORY ANALYSES
WATER

Date	Well #	1,2-Dichloro- benzene	1,2-Dichloro- ethane
12/06/94	U-1	ND	5.8
	U-2	ND	ND
	U-3	ND	430
9/15/94	U-1	ND	9.5
	U-2	ND	0.66
	U-3	ND	420
6/19/94	U-1	ND	7.4
	U-2	ND	0.54
	U-3	ND	410
3/25/94	U-1	ND	11
	U-2	ND	ND
	U-3	ND	480

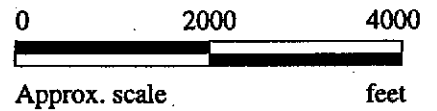
ND = Non-detectable.

Results are in micrograms per liter ($\mu\text{g/L}$), unless otherwise indicated.

Note: All EPA method 8010 constituents were non-detectable, except as indicated above.



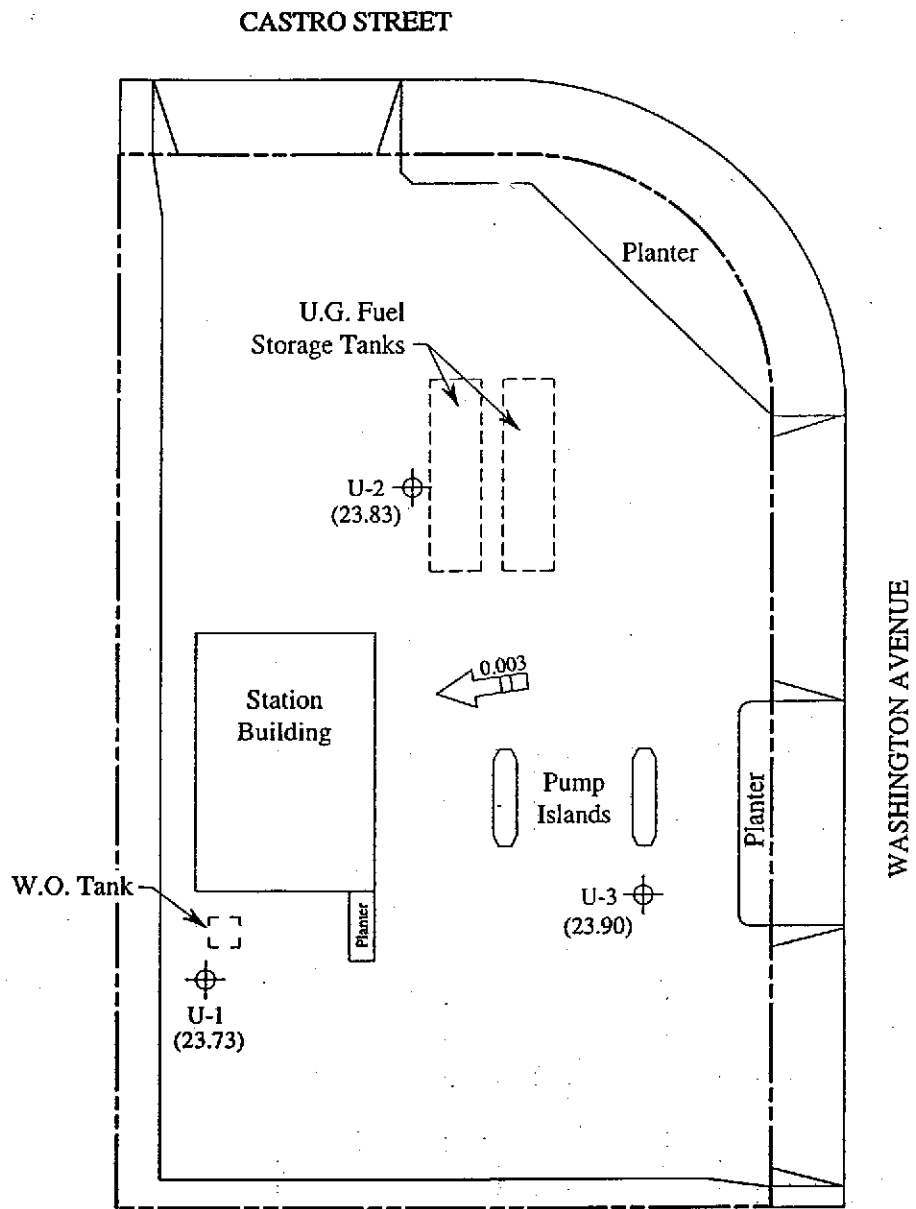
Base modified from 7.5 minute U.S.G.S. San Leandro Quadrangle
(photorevised 1980)



mpds SERVICES, INCORPORATED

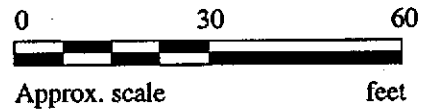
**UNOCAL SERVICE STATION #5430
1935 WASHINGTON AVENUE
SAN LEANDRO, CALIFORNIA**

**LOCATION
MAP**



LEGEND

- ⊕ Monitoring well
- () Ground water elevation in feet above Mean Sea Level
- ### → Direction of ground water flow with approximate hydraulic gradient



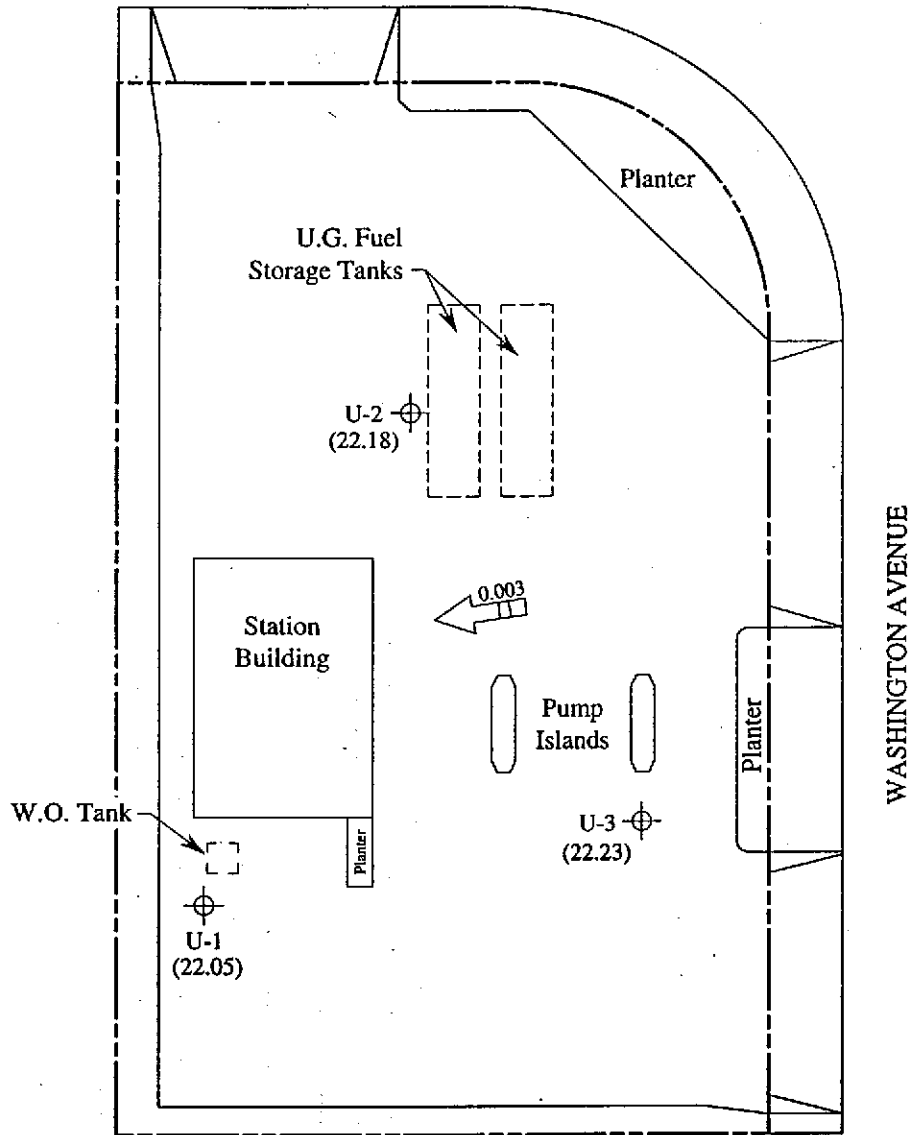
GROUND WATER FLOW DIRECTION MAP FOR THE DECEMBER 6, 1994 MONITORING EVENT

mpds SERVICES, INCORPORATED

**UNOCAL SERVICE STATION #5430
1935 WASHINGTON AVENUE
SAN LEANDRO, CALIFORNIA**

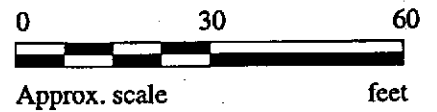
**FIGURE
1**

CASTRO STREET



LEGEND

- Monitoring well
- Ground water elevation in feet above Mean Sea Level
- Direction of ground water flow with approximate hydraulic gradient



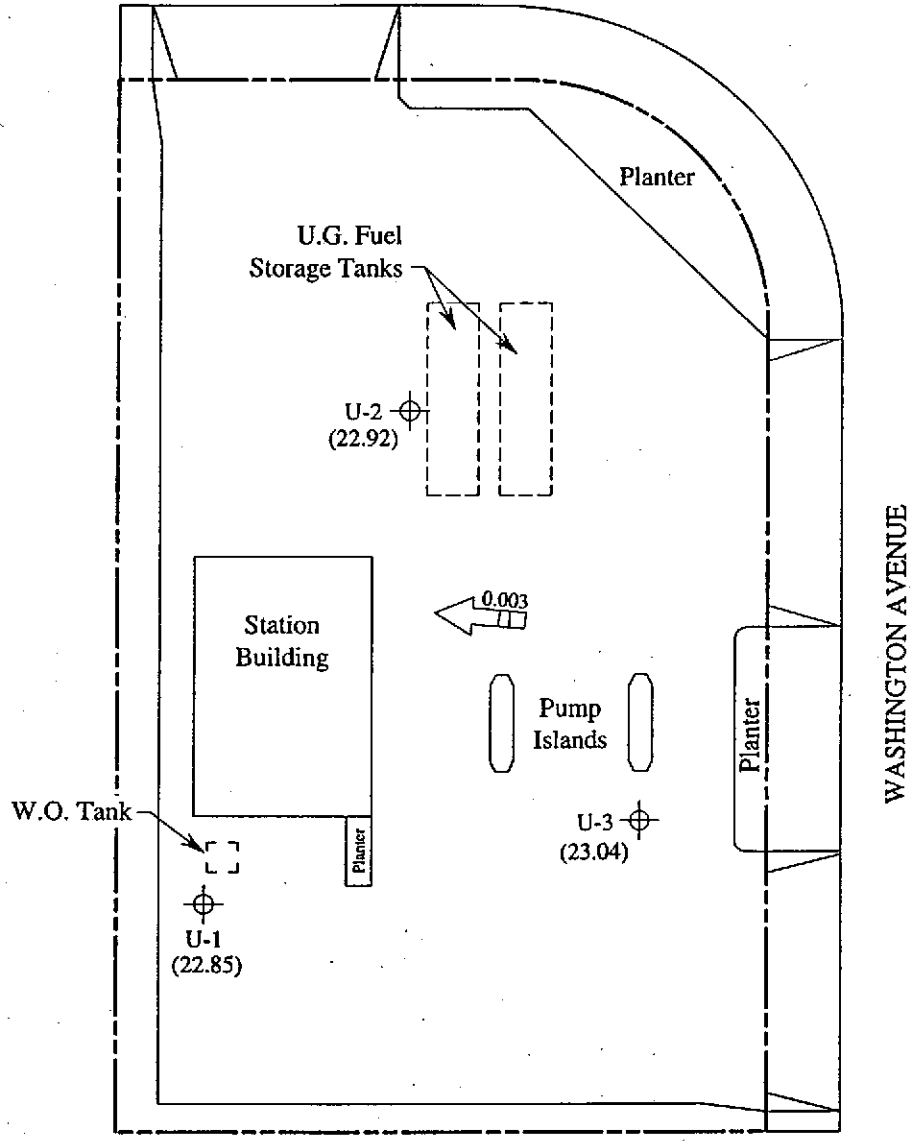
GROUND WATER FLOW DIRECTION MAP FOR THE NOVEMBER 8, 1994 MONITORING EVENT



**UNOCAL SERVICE STATION #5430
1935 WASHINGTON AVENUE
SAN LEANDRO, CALIFORNIA**

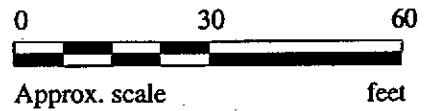
**FIGURE
2**

CASTRO STREET



LEGEND

- Monitoring well
- () Ground water elevation in feet above Mean Sea Level
- ### → Direction of ground water flow with approximate hydraulic gradient



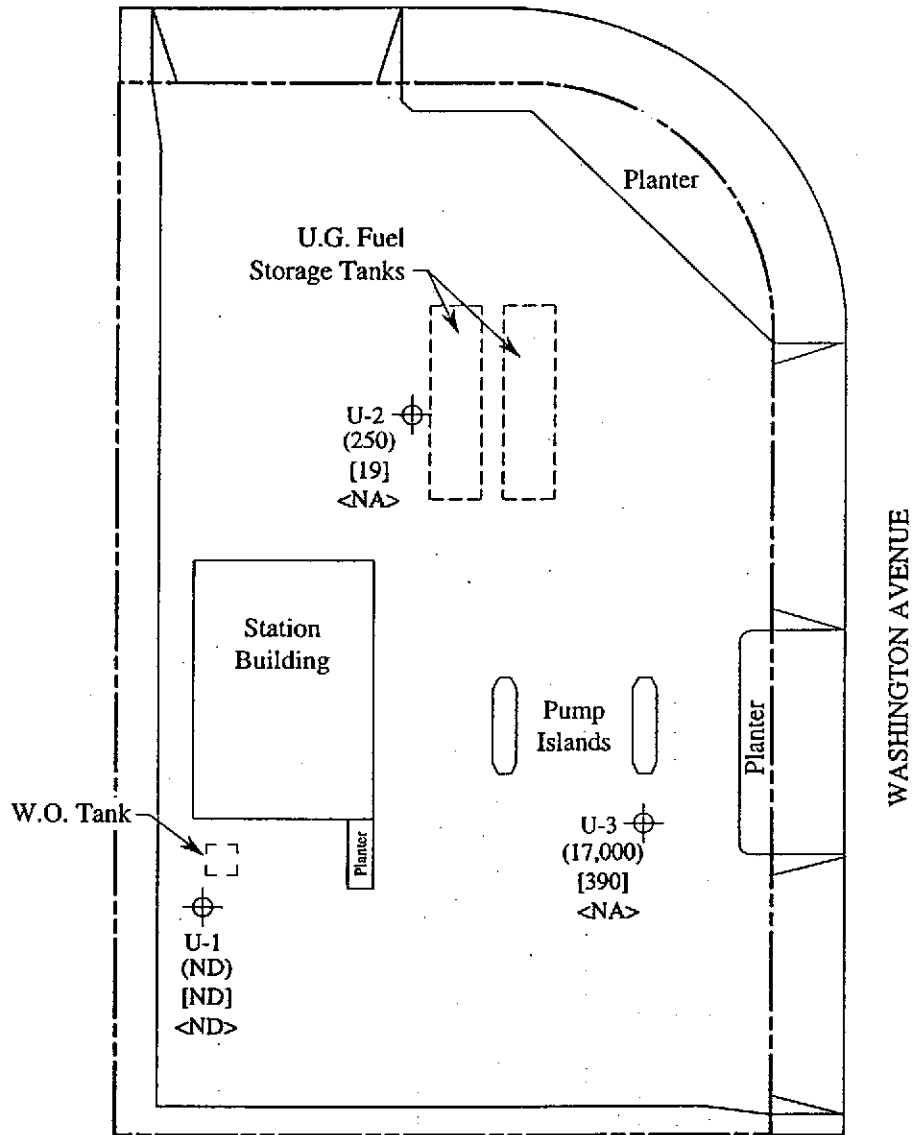
GROUND WATER FLOW DIRECTION MAP FOR THE OCTOBER 11, 1994 MONITORING EVENT

MPDS
SERVICES, INCORPORATED

UNOCAL SERVICE STATION #5430
1935 WASHINGTON AVENUE
SAN LEANDRO, CALIFORNIA

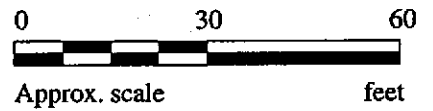
FIGURE
3

CASTRO STREET



LEGEND

- ⊕ Monitoring well
- () Concentration of TPH as gasoline in $\mu\text{g/L}$
- [] Concentration of benzene in $\mu\text{g/L}$
- < > Concentration of TPH as diesel in $\mu\text{g/L}$
- ND = Non-detectable, NA = Not analyzed



PETROLEUM HYDROCARBON CONCENTRATIONS IN GROUND WATER ON DECEMBER 6, 1994



**UNOCAL SERVICE STATION #5430
1935 WASHINGTON AVENUE
SAN LEANDRO, CALIFORNIA**

**FIGURE
4**



MPDS Services 2401 Stanwell Dr., Ste. 400 Concord, CA 94520 Attention: Avo Avedissian	Client Project ID: Unocal #5430, 1935 Washington Ave., Matrix Descript: Water Analysis Method: EPA 5030/8015/8020 First Sample #: 412-0445	San Leandro Sampled: Dec 6, 1994 Received: Dec 6, 1994 Reported: Dec 22, 1994
--	---	--

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Sample Number	Sample Description	Purgeable Hydrocarbons µg/L	Benzene µg/L	Toluene µg/L	Ethyl Benzene µg/L	Total Xylenes µg/L
412-0445	U-1	ND	ND	ND	ND	ND
412-0446	U-2	250	19	ND	ND	ND
412-0447	U-3	17,000	390	ND	990	560

Detection Limits:	50	0.50	0.50	0.50	0.50
--------------------------	-----------	-------------	-------------	-------------	-------------

Total Purgeable Petroleum Hydrocarbons are quantitated against a fresh gasoline standard.
Analytes reported as ND were not present above the stated limit of detection.

SEQUOIA ANALYTICAL, #1271

Signature on File

Alan B. Kemp
Project Manager





**Sequoia
Analytical**



880 Chesapeake Drive
1900 Bates Avenue, Suite L
819 Striker Avenue, Suite 8

Redwood City, CA 94063
Concord, CA 94520
Sacramento, CA 95834



(415) 364-9600
(510) 686-9600
(916) 921-9600

FAX (415) 364-9233
FAX (510) 686-9689
FAX (916) 921-0100

MPDS Services

2401 Stanwell Dr., Ste. 400
Concord, CA 94520
Attention: Avo Avedissian

Client Project ID: Unocal #5430, 1935 Washington Ave.,

Matrix Descript: Water

Analysis Method: EPA 5030/8015/8020

First Sample #: 412-0445

San Leandro

Sampled: Dec 6, 1994

Received: Dec 6, 1994

Reported: Dec 22, 1994

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Sample Number	Sample Description	Chromatogram Pattern	DL Mult. Factor	Date Analyzed	Instrument ID	Surrogate Recovery, % QC Limits: 70-130
412-0445	U-1	--	1.0	12/13/94	HP-5	95
412-0446	U-2	Gasoline	1.0	12/13/94	HP-5	93
412-0447	U-3	Gasoline	20	12/14/94	HP-4	73

SEQUOIA ANALYTICAL, #1271

Signature on File

Alan B. Kemp
Project Manager

4120445.MPD <2>





**Sequoia
Analytical**



880 Chesapeake Drive
1900 Bates Avenue, Suite L
819 Striker Avenue, Suite 8

Redwood City, CA 94063
Concord, CA 94520
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FAX (415) 364-9233
FAX (510) 686-9689
FAX (916) 921-0100

MPDS Services
2401 Stanwell Dr., Ste. 400
Concord, CA 94520
Attention: Avo Avedissian

Client Project ID: Unocal #5430, 1935 Washington Ave.,
Sample Matrix: Water San Leandro
Analysis Method: EPA 3510/3520/8015
First Sample #: 412-0445

Sampled: Dec 6, 1994
Received: Dec 6, 1994
Reported: Dec 22, 1994

TOTAL EXTRACTABLE PETROLEUM HYDROCARBONS

Analyte	Reporting Limit µg/L	Sample I.D. 412-0445 U-1
Extractable Hydrocarbons	50	N.D.

Chromatogram Pattern: --

Quality Control Data

Report Limit Multiplication Factor:	1.0
Date Extracted:	12/13/94
Date Analyzed:	12/14/94
Instrument Identification:	HP-3A

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

SEQUOIA ANALYTICAL, #1271

Signature on File

Alan B. Kemp
Project Manager





**Sequoia
Analytical**



80 Chesapeake Drive
1900 Bates Avenue, Suite L
819 Striker Avenue, Suite 8

Redwood City, CA 94063
Concord, CA 94520
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FAX (510) 686-9689
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MPDS Services
2401 Stanwell Dr., Ste. 400
Concord, CA 94520
Attention: Avo Avedissian

Client Project ID: Unocal #5430, 1935 Washington Ave.,
Matrix Descript: Water San Leandro
Analysis Method: SM 5520 B&F (Gravimetric)
First Sample #: 412-0445

Sampled: Dec 6, 1994
Received: Dec 6, 1994
Extracted: Dec 7, 1994
Analyzed: Dec 8, 1994
Reported: Dec 22, 1994

TOTAL RECOVERABLE PETROLEUM OIL

Sample Number	Sample Description	Oil & Grease mg/L (ppm)	Detection Limit Multiplication Factor
412-0445	U-1	N.D.	1.0

Detection Limits:

5.0

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

SEQUOIA ANALYTICAL, #1271

Signature on File

Alan B. Kemp
Project Manager





**Sequoia
Analytical**

880 Chesapeake Drive
1900 Bates Avenue, Suite L
819 Striker Avenue, Suite 8

Redwood City, CA 94063 (415) 364-9600
Concord, CA 94520 (510) 686-9600
Sacramento, CA 95834 (916) 921-9600

FAX (415) 364-9233
FAX (510) 686-9689
FAX (916) 921-0100

MPDS Services 2401 Stanwell Dr., Ste. 400 Concord, CA 94520 Attention: Avo Avedissian	Client Project ID: Unocal #5430, 1935 Washington Ave., Sample Descript: Water, U-1 Analysis Method: EPA 5030/8010 Lab Number: 412-0445	San Leandro Sampled: Dec 6, 1994 Received: Dec 6, 1994 Analyzed: Dec 9, 1994 Reported: Dec 22, 1994
---	---	--

HALOGENATED VOLATILE ORGANICS (EPA 8010)

Analyte	Detection Limit µg/L	Sample Results µg/L
Bromodichloromethane.....	0.50	N.D.
Bromoform.....	0.50	N.D.
Bromomethane.....	1.0	N.D.
Carbon tetrachloride.....	0.50	N.D.
Chlorobenzene.....	0.50	N.D.
Chloroethane.....	1.0	N.D.
2-Chloroethylvinyl ether.....	1.0	N.D.
Chloroform.....	0.50	N.D.
Chloromethane.....	1.0	N.D.
Dibromochloromethane.....	0.50	N.D.
1,3-Dichlorobenzene.....	0.50	N.D.
1,4-Dichlorobenzene.....	0.50	N.D.
1,2-Dichlorobenzene.....	0.50	N.D.
1,1-Dichloroethane.....	0.50	N.D.
1,2-Dichloroethane.....	0.50	5.8
1,1-Dichloroethene.....	0.50	N.D.
cis-1,2-Dichloroethene.....	0.50	N.D.
trans-1,2-Dichloroethene.....	0.50	N.D.
1,2-Dichloropropane.....	0.50	N.D.
cis-1,3-Dichloropropene.....	0.50	N.D.
trans-1,3-Dichloropropene.....	0.50	N.D.
Methylene chloride.....	5.0	N.D.
1,1,2,2-Tetrachloroethane.....	0.50	N.D.
Tetrachloroethene.....	0.50	N.D.
1,1,1-Trichloroethane.....	0.50	N.D.
1,1,2-Trichloroethane.....	0.50	N.D.
Trichloroethene.....	0.50	N.D.
Trichlorofluoromethane.....	0.50	N.D.
Vinyl chloride.....	1.0	N.D.

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

SEQUOIA ANALYTICAL, #1271

Signature on File

Alan B. Kemp
Project Manager

4120445.MPD <5>





**Sequoia
Analytical**

680 Chesapeake Drive
1900 Bates Avenue, Suite L
819 Striker Avenue, Suite 8

Redwood City, CA 94063 (415) 364-9600
Concord, CA 94520 (510) 686-9600
Sacramento, CA 95834 (916) 921-9600

FAX (415) 364-9233
FAX (510) 686-9689
FAX (916) 921-0100

MPDS Services
2401 Starwell Dr., Ste. 400
Concord, CA 94520
Attention: Avo Avedissian

Client Project ID: Unocal #5430, 1935 Washington Ave.,
Sample Descript: Water, U-2 San Leandro
Analysis Method: EPA 5030/8010
Lab Number: 412-0446

Sampled: Dec 6, 1994
Received: Dec 6, 1994
Analyzed: Dec 9, 1994
Reported: Dec 22, 1994

HALOGENATED VOLATILE ORGANICS (EPA 8010)

Analyte	Detection Limit µg/L	Sample Results µg/L
Bromodichloromethane.....	0.50	N.D.
Bromoform.....	0.50	N.D.
Bromomethane.....	1.0	N.D.
Carbon tetrachloride.....	0.50	N.D.
Chlorobenzene.....	0.50	N.D.
Chloroethane.....	1.0	N.D.
2-Chloroethylvinyl ether.....	1.0	N.D.
Chloroform.....	0.50	N.D.
Chloromethane.....	1.0	N.D.
Dibromochloromethane.....	0.50	N.D.
1,3-Dichlorobenzene.....	0.50	N.D.
1,4-Dichlorobenzene.....	0.50	N.D.
1,2-Dichlorobenzene.....	0.50	N.D.
1,1-Dichloroethane.....	0.50	N.D.
1,2-Dichloroethane.....	0.50	N.D.
1,1-Dichloroethene.....	0.50	N.D.
cis-1,2-Dichloroethene.....	0.50	N.D.
trans-1,2-Dichloroethene.....	0.50	N.D.
1,2-Dichloropropane.....	0.50	N.D.
cis-1,3-Dichloropropene.....	0.50	N.D.
trans-1,3-Dichloropropene.....	0.50	N.D.
Methylene chloride.....	5.0	N.D.
1,1,2,2-Tetrachloroethane.....	0.50	N.D.
Tetrachloroethene.....	0.50	N.D.
1,1,1-Trichloroethane.....	0.50	N.D.
1,1,2-Trichloroethane.....	0.50	N.D.
Trichloroethene.....	0.50	N.D.
Trichlorofluoromethane.....	0.50	N.D.
Vinyl chloride.....	1.0	N.D.

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

SEQUOIA ANALYTICAL, #1271

Signature on File

Alan B. Kemp
Project Manager





**Sequoia
Analytical**



680 Chesapeake Drive
1900 Bates Avenue, Suite L
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MPDS Services
2401 Stanwell Dr., Ste. 400
Concord, CA 94520
Attention: Avo Avedissian

Client Project ID: Unocal #5430, 1935 Washington Ave.,
Sample Descript: Water, U-3 San Leandro
Analysis Method: EPA 5030/8010
Lab Number: 412-0447

Sampled: Dec 6, 1994
Received: Dec 6, 1994
Analyzed: Dec 9-12, 1994
Reported: Dec 22, 1994

HALOGENATED VOLATILE ORGANICS (EPA 8010)

Analyte	Detection Limit µg/L	Sample Results µg/L
Bromodichloromethane.....	50	N.D.
Bromoform.....	50	N.D.
Bromomethane.....	100	N.D.
Carbon tetrachloride.....	50	N.D.
Chlorobenzene.....	50	N.D.
Chloroethane.....	100	N.D.
2-Chloroethylvinyl ether.....	100	N.D.
Chloroform.....	50	N.D.
Chloromethane.....	100	N.D.
Dibromochloromethane.....	50	N.D.
1,3-Dichlorobenzene.....	50	N.D.
1,4-Dichlorobenzene.....	50	N.D.
1,2-Dichlorobenzene.....	50	N.D.
1,1-Dichloroethane.....	50	N.D.
1,2-Dichloroethane.....	50	430
1,1-Dichloroethene.....	50	N.D.
cis-1,2-Dichloroethene.....	50	N.D.
trans-1,2-Dichloroethene.....	50	N.D.
1,2-Dichloropropane.....	50	N.D.
cis-1,3-Dichloropropene.....	50	N.D.
trans-1,3-Dichloropropene.....	50	N.D.
Methylene chloride.....	500	N.D.
1,1,2,2-Tetrachloroethane.....	50	N.D.
Tetrachloroethene.....	50	N.D.
1,1,1-Trichloroethane.....	50	N.D.
1,1,2-Trichloroethane.....	50	N.D.
Trichloroethene.....	50	N.D.
Trichlorofluoromethane.....	50	N.D.
Vinyl chloride.....	100	N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

SEQUOIA ANALYTICAL, #1271

Signature on File

Alan B. Kemp
Project Manager

4120445.MPD <7>





MPDS Services
2401 Stanwell Dr., Ste. 400
Concord, CA 94520
Attention: Avo Avedissian

Client Project ID: Unocal #5430, 1935 Washington Ave., San Leandro
Matrix: Liquid

QC Sample Group: 4120445-47

Reported: Dec 22, 1994

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl Benzene	Xylenes	Diesel	Oil & Grease
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020	EPA 8015 Mod.	SM 5520 BF
Analyst:	A. Tuzon	A. Tuzon	A. Tuzon	A. Tuzon	K.V.S.	D. Newcomb

MS/MSD Batch#:	4120441	4120441	4120441	4120441	BLK121394	BLK120794
Date Prepared:	12/14/94	12/14/94	12/14/94	12/14/94	12/13/94	12/7/94
Date Analyzed:	12/14/94	12/14/94	12/14/94	12/14/94	12/14/94	12/8/94
Instrument I.D.#:	HP-4	HP-4	HP-4	HP-4	HP-3B	Manual
Conc. Spiked:	20 µg/L	20 µg/L	20 µg/L	60 µg/L	300 µg/L	5,000 mg/L
Matrix Spike % Recovery:	85	90	95	95	79	95
Matrix Spike Duplicate % Recovery:	90	95	100	98	76	87
Relative % Difference:	5.7	5.4	5.1	3.1	3.9	8.8

LCS Batch#:	2LCS121494	2LCS121494	2LCS121494	2LCS121494	BLK121394	BLK120794
Date Prepared:	12/14/94	12/14/94	12/14/94	12/14/94	12/13/94	12/7/94
Date Analyzed:	12/14/94	12/14/94	12/14/94	12/14/94	12/14/94	12/7/94
Instrument I.D.#:	HP-4	HP-4	HP-4	HP-4	HP-3B	Manual
LCS % Recovery:	82	93	93	94	79	95

% Recovery Control Limits:	71-133	72-128	72-130	71-120	28-122	75-125
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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 matrix spike is an aliquot of sample fortified with known quantities of specific compounds and subjected to the entire analytical procedure. If the recovery of analytes from the matrix spike does not fall within specified control limits due to matrix interference, the LCS recovery is to be used to validate the batch.

SEQUOIA ANALYTICAL, #1271

Signature on File
Alan B. Kemp
Project Manager





MPDS Services
2401 Stanwell Dr., Ste. 400
Concord, CA 94520
Attention: Avo Avedissian

Client Project ID: Unocal #5430, 1935 Washington Ave., San Leandro
Matrix: Liquid

QC Sample Group: 4120445-47

Reported: Dec 22, 1994

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	A. Tuzon	A. Tuzon	A. Tuzon	A. Tuzon

MS/MSD	Benzene	Toluene	Ethyl Benzene	Xylenes
Batch#:	4120445	4120445	4120445	4120445
Date Prepared:	12/13/94	12/13/94	12/13/94	12/13/94
Date Analyzed:	12/13/94	12/13/94	12/13/94	12/13/94
Instrument I.D.#:	HP-5	HP-5	HP-5	HP-5
Conc. Spiked:	20 µg/L	20 µg/L	20 µg/L	60 µg/L
Matrix Spike % Recovery:	110	105	100	100
Matrix Spike Duplicate % Recovery:	105	105	105	100
Relative % Difference:	4.7	0.0	4.9	0.0

LCS Batch#:	3LCS121394	3LCS121394	3LCS121394	3LCS121394
Date Prepared:	12/13/94	12/13/94	12/13/94	12/13/94
Date Analyzed:	12/13/94	12/13/94	12/13/94	12/13/94
Instrument I.D.#:	HP-5	HP-5	HP-5	HP-5
LCS % Recovery:	106	106	106	103

% Recovery Control Limits:	71-133	72-128	72-130	71-120
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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 matrix spike is an aliquot of sample fortified with known quantities of specific compounds and subjected to the entire analytical procedure. If the recovery of analytes from the matrix spike does not fall within specified control limits due to matrix interference, the LCS recovery is to be used to validate the batch.

SEQUOIA ANALYTICAL, #1271

Signature on File

Alan B. Kemp
Project Manager





MPDS Services
2401 Stanwell Dr., Ste. 400
Concord, CA 94520
Attention: Avo Avedissian

Client Project ID: Unocal #5430, 1935 Washington Ave., San Leandro
Matrix: Liquid

QC Sample Group: 4120445-47

Reported: Dec 22, 1994

QUALITY CONTROL DATA REPORT

ANALYTE	1,1-Dichloro-ethene	Trichloro-ethene	Chloro-benzene
Method:	EPA 8010	EPA 8010	EPA 8010
Analyst:	K. Nill	K. Nill	K. Nill

MS/MSD			
Batch#:	4120414	4120414	4120414
Date Prepared:	12/9/94	12/9/94	12/9/94
Date Analyzed:	12/9/94	12/9/94	12/9/94
Instrument I.D.#:	HP5890/6	HP5890/6	HP5890/6
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L
Matrix Spike % Recovery:	94	105	100
Matrix Spike Duplicate % Recovery:	99	109	102
Relative % Difference:	5.2	3.7	2.0

LCS Batch#:	LCS120994	LCS120994	LCS120994
Date Prepared:	12/9/94	12/9/94	12/9/94
Date Analyzed:	12/9/94	12/9/94	12/9/94
Instrument I.D.#:	HP5890/6	HP5890/6	HP5890/6
LCS % Recovery:	127	107	94

% Recovery Control Limits:	28-167	35-146	38-150
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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 matrix spike is an aliquot of sample fortified with known quantities of specific compounds and subjected to the entire analytical procedure. If the recovery of analytes from the matrix spike does not fall within specified control limits due to matrix interference, the LCS recovery is to be used to validate the batch.

SEQUOIA ANALYTICAL, #1271

Signature on File

Alan B. Kemp
Project Manager



CHAIN OF CUSTODY

5°c

SAMPLER			UNOCAL					ANALYSES REQUESTED							TURN AROUND TIME:		
NICHOLAS PERROW			S/S # <u>5430</u> CITY: <u>SAN LEANDRO</u>					TPH-GAS BTEX	TPH- DIESEL	TOG	8010						REGULAR
			ADDRESS: <u>1935 WASHINGTON BLVD</u> <u>WK</u>														REMARKS
SAMPLE ID NO.	DATE	TIME	WATER	GRAB	COMP	NO. OF CONT.	SAMPLING LOCATION										
U-1	12/6/94	10:10	✓	✓		4 VGAS 2 ABBERJ	WELL	✓	✓	✓	✓			4120445		A-F	
U-2	"	10:50	✓	✓		4 VGAS	"	✓			✓			4120446		AD	
U-3	"	11:20	✓	✓		4 VGAS	"	✓			✓			4120447		↓	
RELINQUISHED BY:		DATE/TIME	RECEIVED BY:		DATE/TIME	THE FOLLOWING <u>MUST BE</u> COMPLETED BY THE LABORATORY ACCEPTING SAMPLES FOR ANALYSES:											
(SIGNATURE)			(SIGNATURE)			1. HAVE ALL SAMPLES RECEIVED FOR ANALYSIS BEEN STORED ON ICE? <u>YES (50)</u>											
(SIGNATURE)			(SIGNATURE)			2. WILL SAMPLES REMAIN REFRIGERATED UNTIL ANALYZED? <u>YES</u>											
(SIGNATURE)			(SIGNATURE)			3. DID ANY SAMPLES RECEIVED FOR ANALYSIS HAVE HEAD SPACE? <u>NO</u>											
(SIGNATURE)			(SIGNATURE)			4. WERE SAMPLES IN APPROPRIATE CONTAINERS AND PROPERLY PACKAGED? <u>YES</u>											
(SIGNATURE)			(SIGNATURE)			SIGNATURE: <u>Profi</u> TITLE: <u>DM</u> DATE: <u>12-06-94</u>											

*Note: All water containers to be sampled for TPHG/BTEX, 8010 & 8240 are preserved with HCL. All water containers to be sampled for Lead or Metals are preserved with HNO3. All other containers are unpreserved.