

MONITORING
PURGING
DISPOSING
SAMPLING

MPDS

SERVICES, INCORPORATED

ALCO
HAZMAT
94 JUN 22 PM 12:39

June 20, 1994

Mr. Scott Seery
Alameda County Health Care Services
80 Swan Way, Room 200
Oakland, CA 94621

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

Per the request of the Unocal Corporation Project Manager, Mr. David J. Camille, enclosed please find our report (MPDS-UN5430-02) dated April 21, 1994, for the above referenced site.

Should you have any questions regarding the reporting of data, please feel free to call our office at (510) 602-5120. Any other questions may be directed to the Project Manager at (510) 277-2335.

Sincerely,

MPDS Services, Inc.


Brenda Pepito

/bp

Enclosure

cc: Mr. David J. Camille



PACIFIC
ENVIRONMENTAL
GROUP, INC.

ALCO
HAZMAT
94 APR 18 PM 1:26

April 14, 1994
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
First 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:

<u>Service Station</u>	<u>Location</u>
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

Enclosures

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 First 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

Alameda County Department of Environmental Health (ACDEH) issued a January 19, 1994 review letter which addressed PACIFIC's December 2, 1993 Soil and groundwater Investigation report. The ACDEH review letter recommended monthly groundwater monitoring and quarterly sampling in all wells. An MPDS Services report dated January 17, 1994 documenting the fourth quarter 1993 groundwater monitoring activities was submitted. First quarter 1994 groundwater monitoring performed by MPDS Services on March 25, 1994.

NEXT QUARTER ACTIVITIES

Quarterly groundwater monitoring and sampling will be performed by MPDS Services in June 1994. A report documenting the first quarter 1994 groundwater monitoring and sampling event will be submitted.

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.

MPDS

SERVICES, INCORPORATED

MPDS-UN5430-02
April 21, 1994

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 direction during the most recent quarter is shown on the attached Figures 1, 2, and 3.

Ground water samples were collected on March 25, 1994. Prior to sampling, the wells were each purged of between 6 and 6.5 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 Table 3. 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.

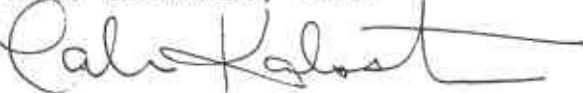
DISTRIBUTION

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.

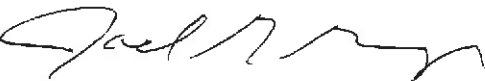
If you have any questions regarding this report, please do not hesitate to call at (510) 602-5120.

Sincerely,

MPDS Services, Inc.



Talin Kaloustian
Staff Engineer



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



License No. EG 1633
Exp. Date 6/30/94

/dlh

Attachments: Tables 1, 2 & 3
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)♦	Product Thickness (feet)	Sheen	Water Purged (gallons)	Total Well Depth (feet)♦
--------	-------------------------------	------------------------	--------------------------	-------	------------------------	--------------------------

(Monitored and Sampled on March 25, 1994)

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

(Monitored on February 9, 1994)

U-1	23.40	32.70	0	--	0	
U-2	21.77	33.50	0	--	0	
U-3	21.42	33.82	0	--	0	

(Monitored on January 13, 1994)

U-1	23.04	33.06	0	--	0	
U-2	23.14	32.13	0	--	0	
U-3	23.26	31.98	0	--	0	

(Monitored and Sampled on December 16, 1993)

U-1	22.91	33.19	0	No	2.5	39.56
U-2	23.08	32.19	0	No	5	39.28
U-3	23.16	32.08	0	No	4.5	38.38

(Monitored and Sampled on August 13, 1993)

U-1	24.98	31.60				
U-2	24.90	30.87				
U-3	24.96	30.70				

Well #	Well Cover Elevation (feet)*	Well Casing Elevation (feet)**
U-1	56.58	56.10
U-2	55.77	55.27
U-3	55.66	55.24

TABLE 1 (Continued)

SUMMARY OF MONITORING DATA

- ◆ The depth to water level and total well depth measurements were taken from the top of the well casings. Prior to December 16, 1993, the depth to water level and total well depth measurements were taken from the top of the well covers.
- * The elevations of the top of the well covers have been surveyed relative to Mean Sea Level (MSL).
- ** Relative to MSL.

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

TABLE 2

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

(Measured on March 25, 1994)

Well #	Gallons per Casing Volume	Time	Gallons Purged	Casing Volumes Purged	Temper- ature (°F)	Conductivity ([μmhos/cm] x100)	pH
U-1	1.45	10:08	0	0	60.8	5.73	7.98
			1.5	1.03	63.0	6.30	7.61
			3	2.07	64.0	6.18	7.38
			4.5	3.10	63.6	6.08	7.24
			6	4.14	63.8	6.02	7.19
U-2	1.57	10:45	0	0	63.8	4.39	7.60
			1.5	0.96	65.2	4.55	7.32
			3	1.91	65.6	4.57	7.20
			4.5	2.87	65.6	4.54	7.18
			6	3.82	65.7	4.47	7.15
			6.5	4.14			
U-3	1.43	11:47	0	0	67.6	6.90	7.46
			1.5	1.05	68.0	6.95	7.20
			3	2.10	68.2	6.76	7.03
			4.5	3.15	68.0	6.67	6.91
			6	4.20			
		12:05					

TABLE 3

**SUMMARY OF LABORATORY ANALYSES
WATER**

Date	Well#	TPH as Diesel	TPH as Gasoline	Benzene	Toluene	Ethyl-benzene	Xylenes	Total Oil & Grease (mg/L)
3/25/94	U-1	57**	58	0.63	0.79	ND	0.65	ND
	U-2	--	15	0.70	0.78	0.65	0.64	--
	U-3	--	15	560	40	1,000	770	--
12/16/93	U-1	130**	ND	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	ND
	U-2	--	1,400	ND	ND	ND	ND	--
	U-3	--	23,000	1,000	ND	1,700	1,600	--

EPA method 8010 constituents were non-detectable in all three wells, except for 1,2-Dichloroethane, which was detected in well U-1 at 11 µg/L and well U-3 at 480 µg/L.

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.

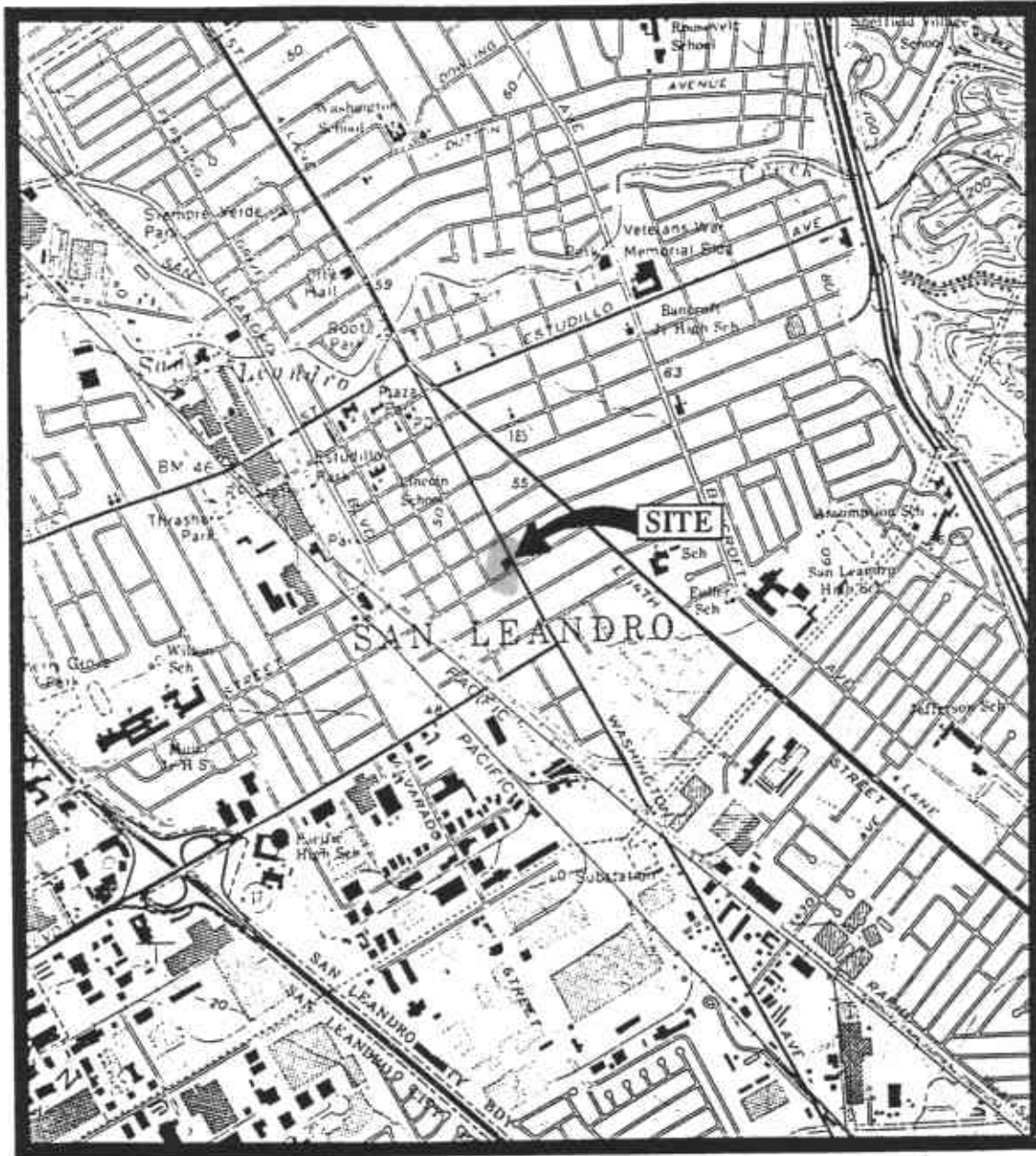
ND = Non-detectable.

-- Indicates analysis was not performed.

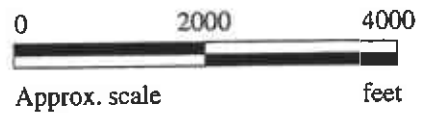
mg/L = milligrams per liter.

Results are in micrograms per liter (µg/L), unless otherwise indicated.

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



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

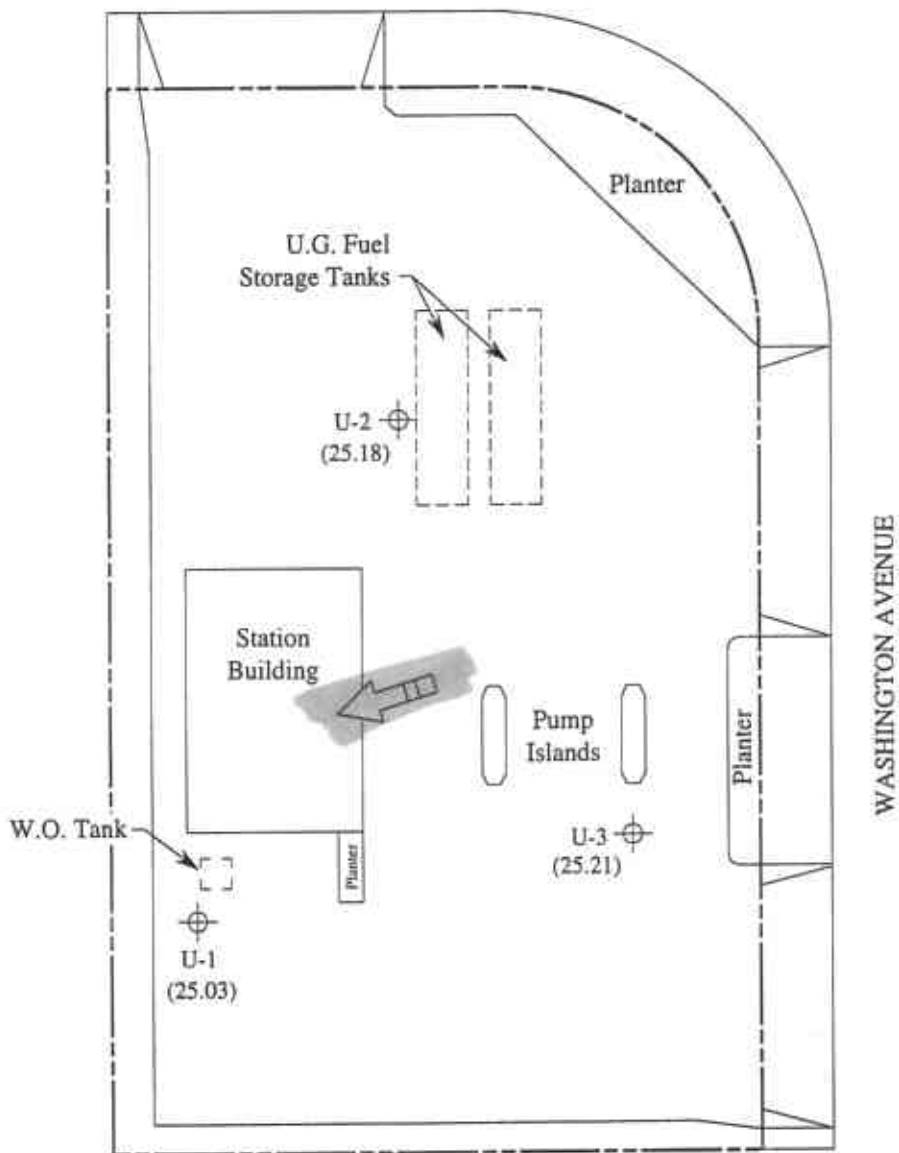


MPDS
SERVICES, INC.

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

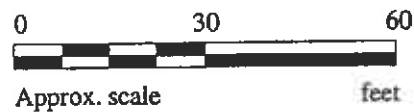
LOCATION
MAP

CASTRO STREET



LEGEND

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



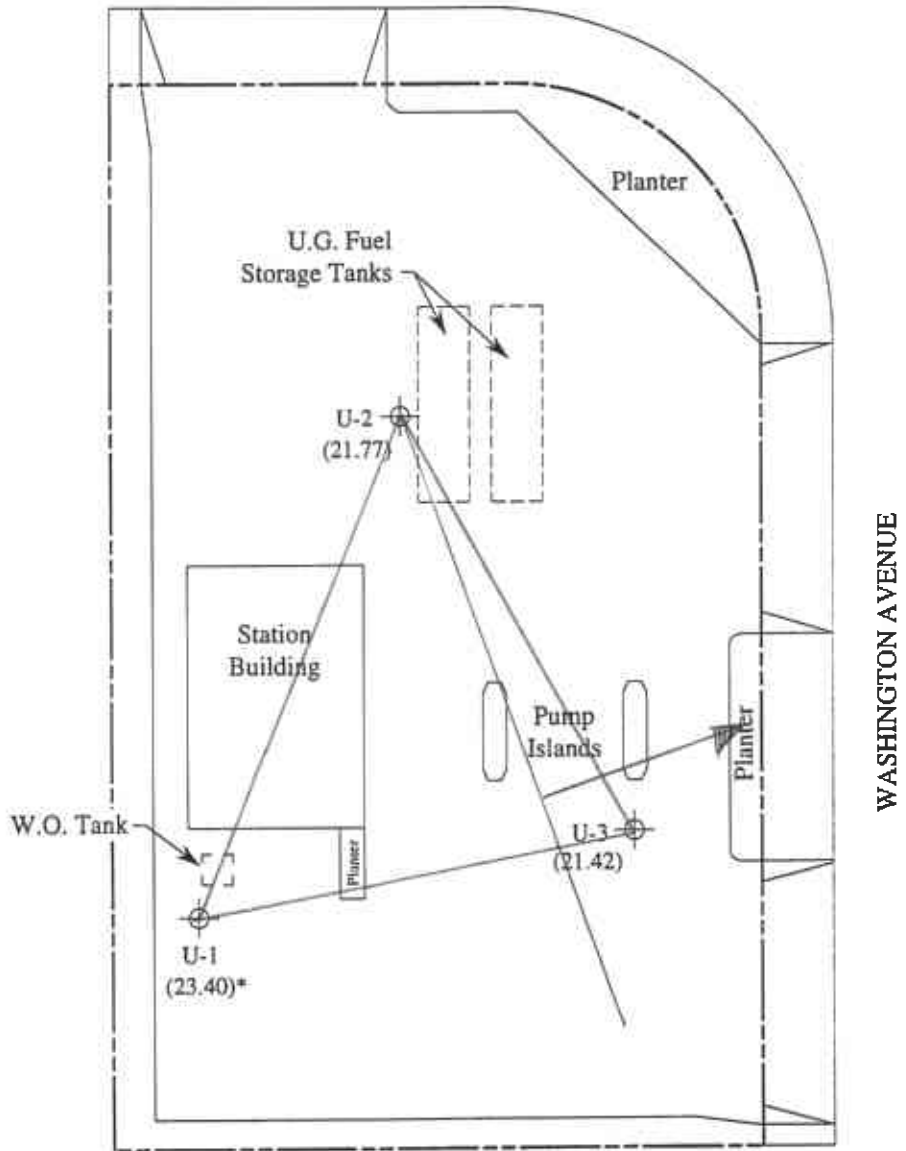
GROUND WATER FLOW DIRECTION MAP FOR THE [REDACTED]

MPDS
SERVICES, INC.

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

FIGURE
1

CASTRO STREET

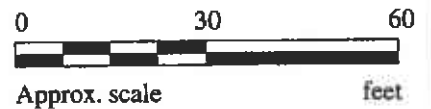


LEGEND

⊕ Monitoring well

() Ground water elevation in feet above Mean Sea Level

* Elevation was not used to determine ground water flow direction.



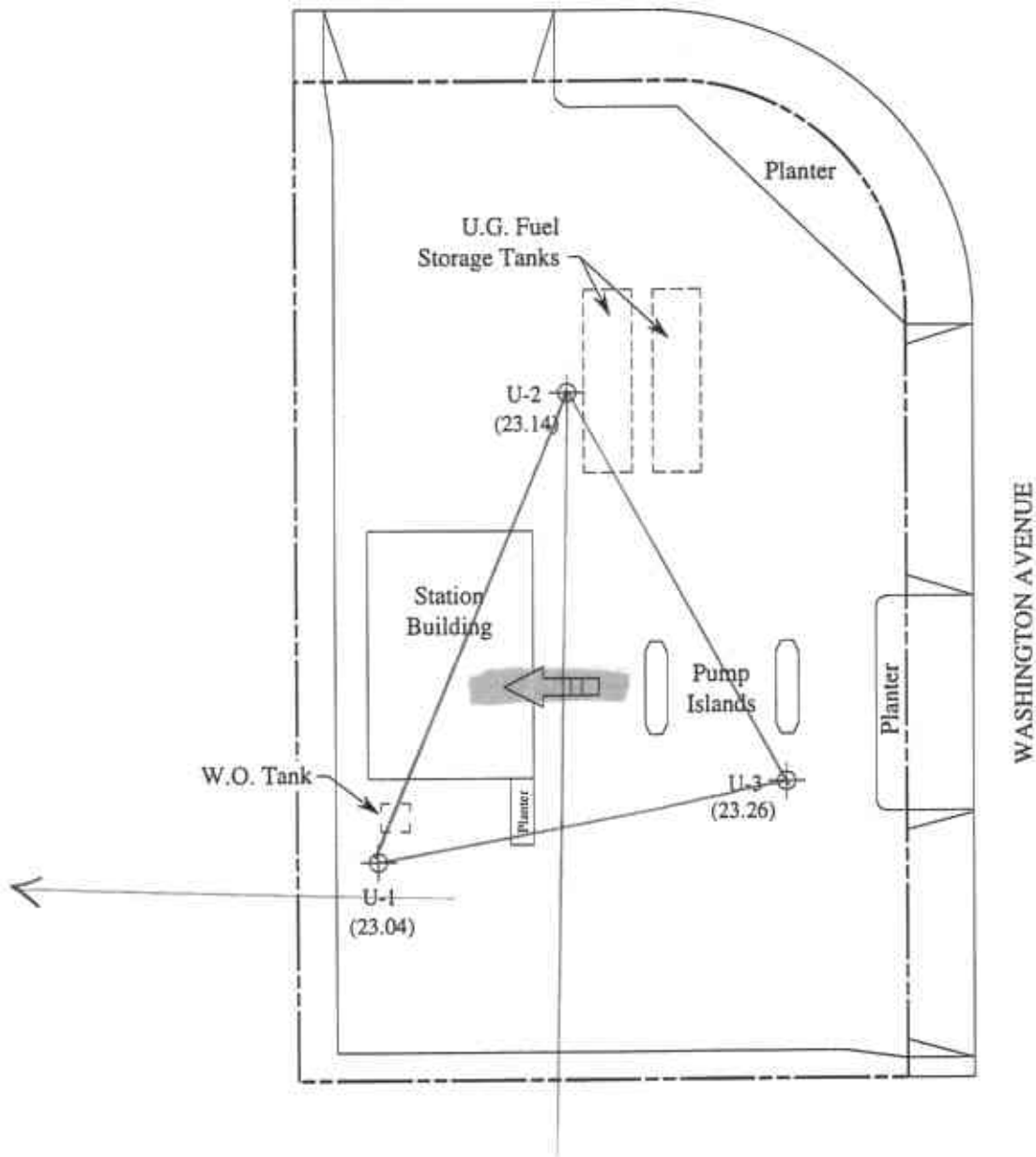
GROUND WATER ELEVATION MAP FOR T [REDACTED]

MPDS
SERVICES, INC.

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

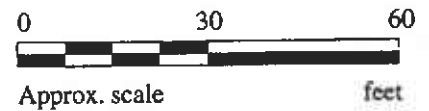
FIGURE
2

CASTRO STREET



LEGEND

- Monitoring well
- () Ground water elevation in feet above Mean Sea Level
- Direction of ground water flow

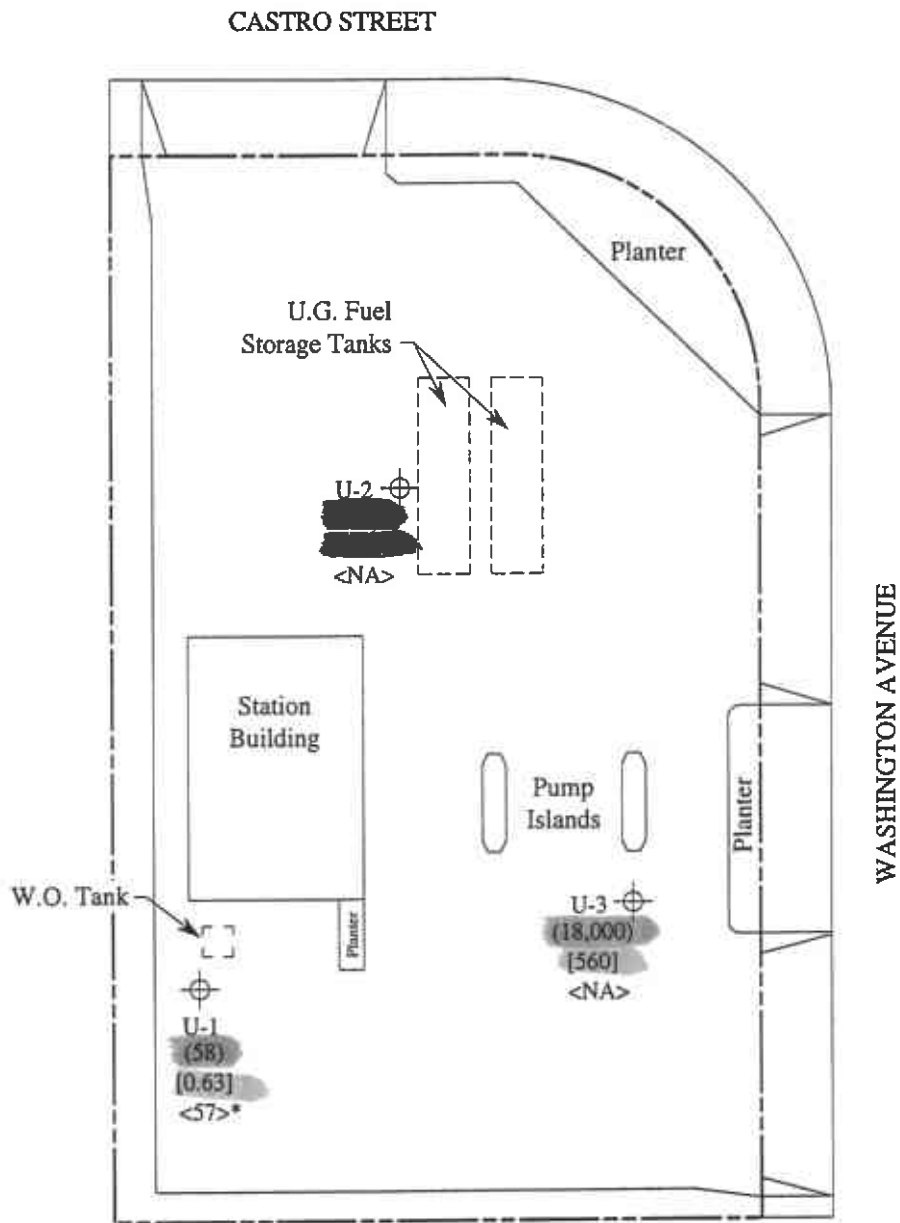


GROUND WATER FLOW DIRECTION MAP FOR THE JANUARY 13, 1994 MONITORING EVENT

MPDS
SERVICES, INC.

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

FIGURE
3

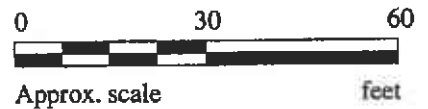


LEGEND

- ⊕ 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 $\mu\text{g/L}$

NA = Not analyzed

* The lab reported that the hydrocarbons detected did not appear to be diesel.



PETROLEUM HYDROCARBON CONCENTRATIONS IN GROUND WATER ON MARCH 25, 1994

MPDS
SERVICES, INC.

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

FIGURE
4



MPDS Services, Inc.
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 5030/8015/8020
First Sample #: 403-1267

Sampled: Mar 25, 1994
Received: Mar 25, 1994
Reported: Apr 8, 1994

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit µg/L	Sample I.D. 403-1267 U1	Sample I.D. 403-1268 U2	Sample I.D. 403-1269 U3	Sample I.D. Matrix Blank
Purgeable Hydrocarbons	50	58	130	18,000	
Benzene	0.5	0.63	0.70	560	
Toluene	0.5	0.79	0.78	40	
Ethyl Benzene	0.5	N.D.	0.65	1,000	
Total Xylenes	0.5	0.65	0.64	770	
Chromatogram Pattern:		Gasoline	Gasoline	Gasoline	

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0	100	1.0
Date Analyzed:	3/30/94	3/30/94	3/31/94	3/30/94
Instrument Identification:	HP-5	HP-5	HP-4	HP-5
Surrogate Recovery, %: (QC Limits = 70-130%)	97	114	85	105

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

SEQUOIA ANALYTICAL, #1271

Alan B. Kemp
Project Manager





MPDS Services, Inc. 2401 Stanwell Dr., Ste. 400 Concord, CA 94520 Attention: Avo Avedissian	Client Project ID: Unocal #5430, 1935 Washington Ave., Sample Matrix: Water Analysis Method: EPA 3510/3520/8015 First Sample #: 403-1267	San Leandro Reported: Apr 8, 1994	Sampled: Mar 25, 1994 Received: Mar 25, 1994
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TOTAL EXTRACTABLE PETROLEUM HYDROCARBONS

Analyte	Reporting Limit µg/L	Sample I.D. 403-1267 U1*	Sample I.D. Matrix Blank	<i>nPH-diesel</i>
Extractable Hydrocarbons	50	57		

Chromatogram Pattern: Unidentified Hydrocarbons <C14

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0
Date Extracted:	3/31/94	3/31/94
Date Analyzed:	4/4/94	4/4/94
Instrument Identification:	HP-3A	HP-3B

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

Alan B. Kemp
Alan B. Kemp
Project Manager

Please Note:

* This sample does not appear to contain diesel. "Unidentified Hydrocarbons <C14" are probably gasoline.





MPDS Services, Inc. 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 #: 403-1267	Sampled: Mar 25, 1994 Received: Mar 25, 1994 Extracted: Mar 29, 1994 Analyzed: Mar 30, 1994 Reported: Apr 8, 1994
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TOTAL RECOVERABLE PETROLEUM OIL

Sample Number	Sample Description	Oil & Grease mg/L (ppm)
403-1267	U1	N.D.

Detection Limits:

5.0

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

SEQUOIA ANALYTICAL, #1271


Alan B. Kemp
Project Manager





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

Client Project ID: Unocal #5430, 1935 Washington Ave.,
Sample Descript: **Water, U1** San Leandro
Analysis Method: EPA 5030/8010
Lab Number: 403-1267

Sampled: Mar 25, 1994
Received: Mar 25, 1994
Analyzed: Mar 29, 1994
Reported: Apr 8, 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	11
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


Alan B. Kemp
Project Manager





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

Client Project ID: Unocal #5430, 1935 Washington Ave.,
Sample Descript: **Water, U2** San Leandro
Analysis Method: EPA 5030/8010
Lab Number: 403-1268

Sampled: Mar 25, 1994
Received: Mar 25, 1994
Analyzed: Mar 29, 1994
Reported: Apr 8, 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


Alan B. Kemp
Project Manager





MPDS Services, Inc. 2401 Stanwell Dr., Ste. 400 Concord, CA 94520 Attention: Avo Avedissian	Client Project ID: Unocal #5430, 1935 Washington Ave., Sample Descript: Water, U3 San Leandro Analysis Method: EPA 5030/8010 Lab Number: 403-1269	Sampled: Mar 25, 1994 Received: Mar 25, 1994 Analyzed: Apr 5, 1994 Reported: Apr 8, 1994
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HALOGENATED VOLATILE ORGANICS (EPA 8010)

Analyte	Detection Limit µg/L	Sample Results µg/L
Bromodichloromethane.....	20	N.D.
Bromoform.....	20	N.D.
Bromomethane.....	40	N.D.
Carbon tetrachloride.....	20	N.D.
Chlorobenzene.....	20	N.D.
Chloroethane.....	40	N.D.
2-Chloroethylvinyl ether.....	40	N.D.
Chloroform.....	20	N.D.
Chloromethane.....	40	N.D.
Dibromochloromethane.....	20	N.D.
1,3-Dichlorobenzene.....	20	N.D.
1,4-Dichlorobenzene.....	20	N.D.
1,2-Dichlorobenzene.....	20	N.D.
1,1-Dichloroethane.....	20	N.D.
1,2-Dichloroethane.....	20	480
1,1-Dichloroethene.....	20	N.D.
cis-1,2-Dichloroethene.....	20	N.D.
trans-1,2-Dichloroethene.....	20	N.D.
1,2-Dichloropropane.....	20	N.D.
cis-1,3-Dichloropropene.....	20	N.D.
trans-1,3-Dichloropropene.....	20	N.D.
Methylene chloride.....	200	N.D.
1,1,2,2-Tetrachloroethane.....	20	N.D.
Tetrachloroethene.....	20	N.D.
1,1,1-Trichloroethane.....	20	N.D.
1,1,2-Trichloroethane.....	20	N.D.
Trichloroethene.....	20	N.D.
Trichlorofluoromethane.....	20	N.D.
Vinyl chloride.....	40	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


 Alan B. Kemp
 Project Manager





MPDS Services, Inc.
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: 4031267-69

Reported: Apr 8, 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:	J. Fontecha	J. Fontecha	J. Fontecha	J. Fontecha	K. Wimer	K. Wimer

MS/MSD Batch#:	4031284	4031284	4031284	4031284	BLK033194	BLK032994
Date Prepared:	3/30/94	3/30/94	3/30/94	3/30/94	3/31/94	3/29/94
Date Analyzed:	3/30/94	3/30/94	3/30/94	3/30/94	4/4/94	3/30/94
Instrument I.D.#:	HP-5	HP-5	HP-5	HP-5	HP-3B	N.A.
Conc. Spiked:	20 µg/L	20 µg/L	20 µg/L	60 µg/L	300 µg/L	5,000 mg/L
Matrix Spike % Recovery:	135	115	125	115	75	98
Matrix Spike Duplicate % Recovery:	125	110	105	103	78	93
Relative % Difference:	7.7	4.4	17	11	2.7	5.2

LCS Batch#:	3LCS033094	3LCS033094	3LCS033094	3LCS033094	BLK033194	BLK032994
Date Prepared:	3/30/94	3/30/94	3/30/94	3/30/94	3/31/94	3/29/94
Date Analyzed:	3/30/94	3/30/94	3/30/94	3/30/94	4/4/94	3/30/94
Instrument I.D.#:	HP-5	HP-5	HP-5	HP-5	HP-3B	N.A.
LCS % Recovery:	117	110	106	106	75	98

% 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

Alan B. Kemp
Project Manager





MPDS Services, Inc. Client Project ID: Unocal #5430, 1935 Washington Ave., San Leandro
 2401 Stanwell Dr., Ste. 400 Matrix: Liquid
 Concord, CA 94520
 Attention: Avo Avedissian QC Sample Group: 4031267-69 Reported: Apr 8, 1994

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	J. Fontecha	J. Fontecha	J. Fontecha	J. Fontecha

MS/MSD Batch#:	4031276	4031276	4031276	4031276
Date Prepared:	3/31/94	3/31/94	3/31/94	3/31/94
Date Analyzed:	3/31/94	3/31/94	3/31/94	3/31/94
Instrument I.D.#:	HP-4	HP-4	HP-4	HP-4
Conc. Spiked:	20 µg/L	20 µg/L	20 µg/L	60 µg/L
Matrix Spike % Recovery:	95	95	95	97
Matrix Spike Duplicate % Recovery:	100	95	95	97
Relative % Difference:	5.1	0.0	0.0	0.0

LCS Batch#:	2LCS033194	2LCS033194	2LCS033194	2LCS033194
Date Prepared:	3/31/94	3/31/94	3/31/94	3/31/94
Date Analyzed:	3/31/94	3/31/94	3/31/94	3/31/94
Instrument I.D.#:	HP-4	HP-4	HP-4	HP-4
LCS % Recovery:	100	100	101	102

% 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

 Alan B. Kemp
 Project Manager





MPDS Services, Inc. Client Project ID: Unocal #5430, 1935 Washington Ave., San Leandro
 2401 Stanwell Dr., Ste. 400 Matrix: Liquid
 Concord, CA 94520
 Attention: Avo Avedissian QC Sample Group: 403-1267 Reported: Apr 8, 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#:	4031228	4031228	4031228
Date Prepared:	3/29/94	3/29/94	3/29/94
Date Analyzed:	3/29/94	3/29/94	3/29/94
Instrument I.D.#:	HP5890/6	HP5890/6	HP5890/6
Conc. Spiked:	10 µg/L	10 µg/L	10 µg/L
Matrix Spike			
% Recovery:	71	90	91
Matrix Spike Duplicate %			
Recovery:	69	94	94
Relative %			
Difference:	1.4	4.3	3.2

LCS Batch#:	LCS032994	LCS032994	LCS032994
Date Prepared:	3/29/94	3/29/94	3/29/94
Date Analyzed:	3/29/94	3/29/94	3/29/94
Instrument I.D.#:	HP5890/6	HP5890/6	HP5890/6
LCS %			
Recovery:	71	91	89

% Recovery			
Control Limits:	28-167	35-146	38-150

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


 Alan B. Kemp
 Project Manager





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

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

QC Sample Group: 403-1267

Reported: Apr 8, 1994

QUALITY CONTROL DATA REPORT

SURROGATE

	EPA	EPA
Method:	8015 Mod.	8015 Mod.
Analyst:	K. Wimer	K. Wimer
Reporting Units:	µg/L	µg/L
Date Analyzed:	4/4/94	4/4/94
Sample #:	403-1267	Matrix Blank

Surrogate		
% Recovery:	85	86

SEQUOIA ANALYTICAL, #1271

% Recovery:	$\frac{\text{Conc. of M.S.} - \text{Conc. of Sample}}{\text{Spike Conc. Added}} \times 100$
Relative % Difference:	$\frac{\text{Conc. of M.S.} - \text{Conc. of M.S.D.}}{(\text{Conc. of M.S.} + \text{Conc. of M.S.D.}) / 2} \times 100$


 Afan B. Kemp
 Project Manager





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2401 Stanwell Dr., Ste. 400
Concord, CA 94520
Attention: Avo Avedissian QC Sample Group: 403-1267 Reported: Apr 8, 1994

QUALITY CONTROL DATA REPORT

SURROGATE

Table with 5 columns: Method, Analyst, Reporting Units, Date Analyzed, Sample #. Rows include EPA 8010, K.Nill, ug/L, 3/29/94, 403-1267 and Matrix Blank.

Surrogate #1
% Recovery: 93 94 93 89

Surrogate #2
% Recovery: 120 104 99 107

SEQUOIA ANALYTICAL, #1271

% Recovery: (Conc. of M.S. - Conc. of Sample) / Spike Conc. Added x 100
Relative % Difference: (Conc. of M.S. - Conc. of M.S.D.) / (Conc. of M.S. + Conc. of M.S.D.) / 2 x 100

Alan B. Kemp
Project Manager



