

MONITORING  
PURGING  
DISPOSING  
SAMPLING

# MPDS

SERVICES, INCORPORATED

ST 10 1120

ENVIRONMENTAL

95 AUG 22 PM 2:04

August 21, 1995

Alameda County Health Care Services  
1131 Harbor Bay Parkway  
Alameda, California 94502

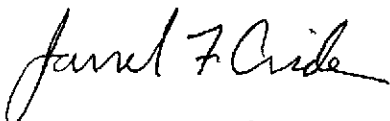
RE: Unocal Service Station #1871  
96 MacArthur Boulevard *94610*  
Oakland, California

Per the request of the Unocal Corporation Project Manager, Mr. Robert A. Boust, enclosed please find our report (MPDS-UN1871-08) dated August 15, 1995 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) 277-2334.

Sincerely,

MPDS Services, Inc.



Jarrel F. Crider

/jfc

Enclosure

cc: Mr. Robert A. Boust

MPDS-UN1871-08  
August 15, 1995

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

Attention: Mr. Robert A. Boust

RE: Quarterly Data Report  
Unocal Service Station #1871  
96 MacArthur Boulevard  
Oakland, California

Dear Mr. Boust:

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 Figure 1.

Ground water samples were collected on July 24, 1995. Prior to sampling, the wells were each purged of between 27 and 39 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 and benzene detected in the ground water samples collected this quarter are shown on the attached Figure 2. 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 the Alameda County Health Care Services Agency.

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.

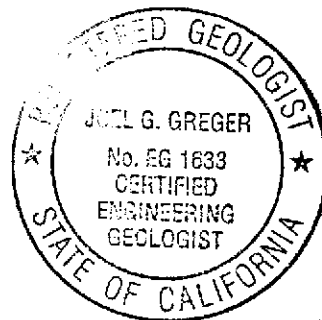


Sarkis A. Karkarian  
Staff Engineer



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

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



/bp

- Attachments: Tables 1, 2 & 3  
Location Map  
Figures 1 & 2  
Laboratory Analyses  
Chain of Custody documentation

cc: Mr. Thomas Berkins, Kaprealian Engineering, 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)
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**(Monitored and Sampled on July 24, 1995)**

MW-1	67.21	13.97	24.17	0	Yes	27
MW-2	66.67	9.94	24.76	0	No	39
MW-3	65.72	11.76	23.73	0	No	32

**(Monitored and Sampled on April 17, 1995)**

MW-1	68.50	12.68	24.14	0	No	30
MW-2	67.71	8.90	24.75	0	No	41.5
MW-3	67.06	10.42	23.72	0	No	35

**(Monitored and Sampled on January 10, 1995)**

MW-1	68.74	12.44	24.15	0	No	30.5
MW-2	67.90	8.71	24.74	0	No	42
MW-3	67.06	10.42	23.70	0	No	35

**(Monitored and Sampled on October 10, 1994)**

MW-1	65.63	15.55	24.05	0	No	16
MW-2	65.13	11.48	24.75	0	No	34
MW-3	64.50	12.98	23.70	0	No	28

Well #	Well Casing Elevation (feet)*
MW-1	81.18
MW-2	76.61
MW-3	77.48

♦ 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 have been surveyed relative to Mean Sea Level.

**TABLE 2**

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

(Measured on July 24, 1995)

Well #	Gallons per Casing Volume	Time	Gallons Purged	Casing Volumes Purged	Temper- ature (°F)	Conductivity ([μmhos/cm] x100)	pH
MW-1	6.63	11:30	0	0	81.3	8.08	6.97
			6.5	0.98	71.8	11.56	6.79
			13	1.96	71.5	11.36	6.66
			20	3.02	71.5	11.46	6.63
			27	4.07	71.7	11.50	6.63
		12:00					
MW-2	9.63	10:45	0	0	72.6	7.11	6.84
			10	1.04	72.7	7.67	6.89
			20	2.08	71.2	6.58	6.95
			30	3.12	71.4	6.59	6.96
			39	4.05	71.6	6.61	6.97
		11:10					
MW-3	7.78	10:15	0	0	70.0	11.07	6.55
			8	1.03	73.2	10.57	6.46
			16	2.06	73.3	11.10	6.52
			24	3.08	73.8	11.68	6.55
			32	4.11	74.6	11.85	6.57
		10:30					

**TABLE 3**

**SUMMARY OF LABORATORY ANALYSES  
 WATER**

Date	Well #	TPH as Gasoline	Benzene	Toluene	Ethyl-benzene	Xylenes
11/03/92	MW-1	260,000	2,300	4,600	3,700	17,000
1/25/93	MW-1	120,000	2,100	4,600	4,900	22,000
4/29/93	MW-1	100,000	850	2,000	4,300	19,000
7/16/93	MW-1	29,000	590	560	980	4,200
10/19/93	MW-1	67,000	1,400	2,600	2,900	5,000
1/20/94	MW-1	92,000	1,200	3,000	3,400	17,000
4/13/94	MW-1	51,000	1,000	2,600	3,200	15,000
7/13/94	MW-1	35,000	550	150	1,400	5,700
10/10/94	MW-1	52,000	1,000	810	3,300	12,000
1/10/95	MW-1	810	16	18	59	250
4/17/95	MW-1	48,000	880	530	2,500	11,000
7/24/95	MW-1	48,000	1,500	420	2,700	9,700
11/03/92	MW-2	140	2.2	ND	ND	2
1/25/93	MW-2	2,100	56	1.1	90	140
4/29/93	MW-2	1,500	290	ND	33	11
7/16/93	MW-2	510*	17	0.6	3.2	2.5
10/19/93	MW-2	670	24	1.1	7.7	23
1/20/94	MW-2	820	97	ND	12	ND
4/13/94	MW-2	550	71	ND	5.1	1.3
7/13/94	MW-2	2,000	490	ND	17	13
10/10/94	MW-2	2,300	340	ND	25	ND
1/10/95	MW-2	850	3.8	ND	8.5	1.3
4/17/95	MW-2	1,300	4.7	ND	8.3	1.2
7/24/95	MW-2	960	20	ND	4.2	6.2
11/03/92	MW-3	2,100	120	15	38	200
1/25/93	MW-3	2,300	80	1	55	52
4/29/93	MW-3	4,500	1,700	ND	200	140
7/16/93	MW-3	4,000*	1,100	28	52	70
10/19/93	MW-3	3,800	42	ND	50	56
1/20/94	MW-3	4,200	11	ND	21	15
4/13/94	MW-3	4,200	210	ND	36	53
7/13/94	MW-3	1,800**	16	16	ND	21
10/10/94	MW-3	4,300	11	ND	12	ND
1/10/95	MW-3	310	4.6	ND	3.5	2.1
4/17/95	MW-3	7,800	ND	4.6	300	450
7/24/95	MW-3	3,200	170	ND	22	16

*upg sed  
low #s*

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**TABLE 3 (Continued)**

SUMMARY OF LABORATORY ANALYSES  
WATER

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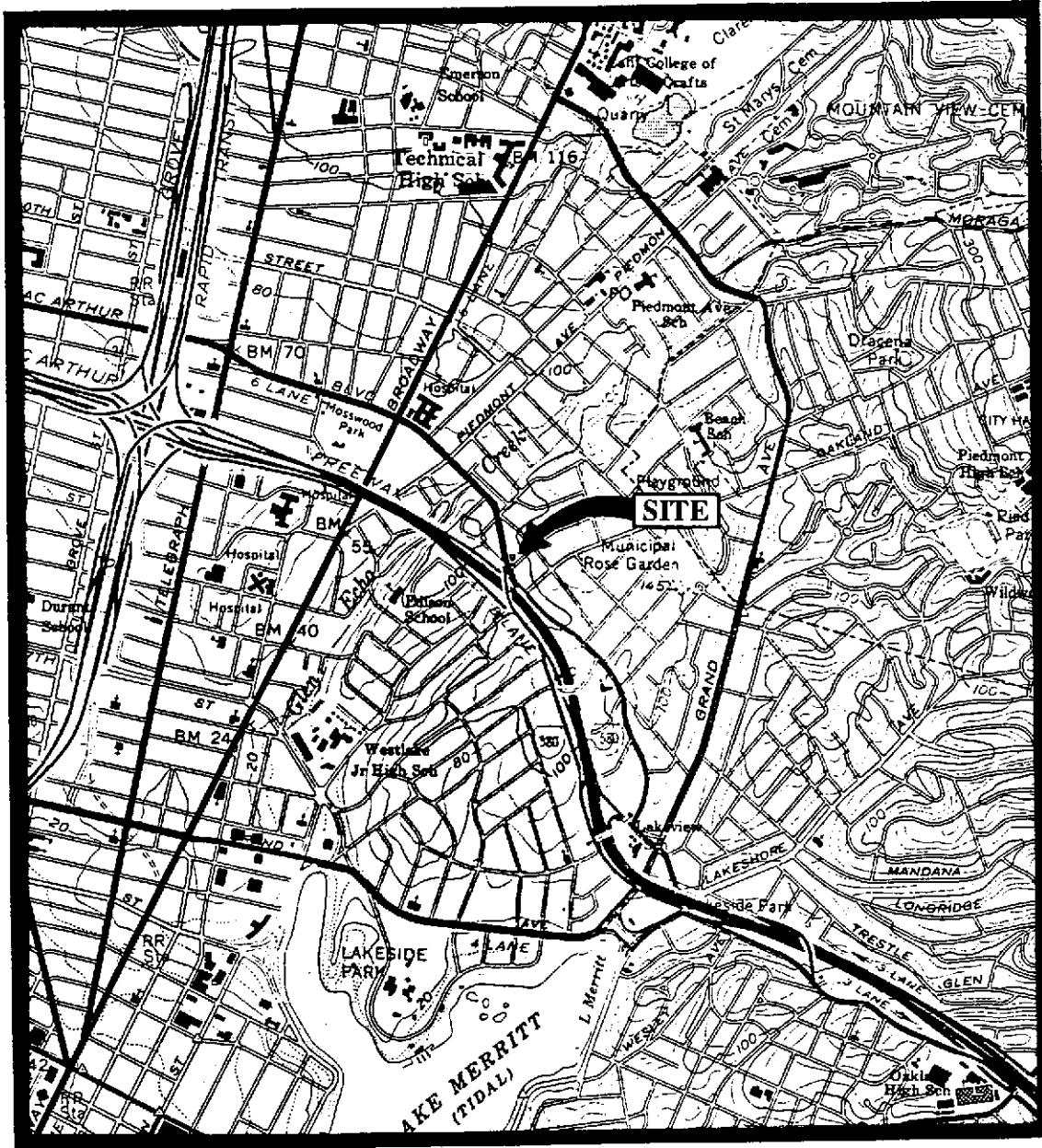
\* Primarily due to the presence of discrete peaks not indicative of gasoline.

\*\* Sequoia Analytical Laboratory reported that the hydrocarbons detected appeared to be a gasoline and non-gasoline mixture.

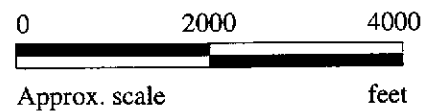
ND = Non-detectable.

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

Note: Laboratory analyses data prior to October 19, 1993, were provided by GeoStrategies, Inc.

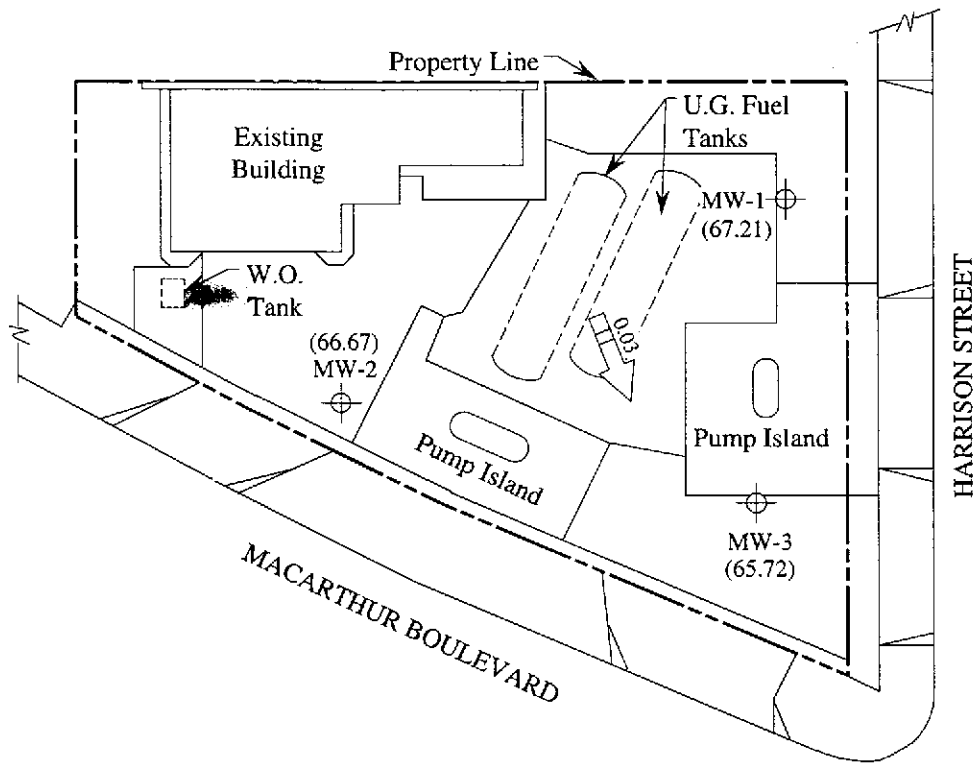
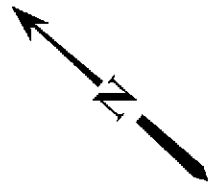


Base modified from 7.5 minute U.S.G.S.  
 Oakland East and West Quadrangles  
 (both photorevised 1980)






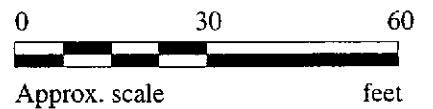
	<p>UNOCAL SERVICE STATION # 1871          96 MACARTHUR BOULEVARD          OAKLAND, CALIFORNIA</p>	<p>LOCATION          MAP</p>
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**LEGEND**

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

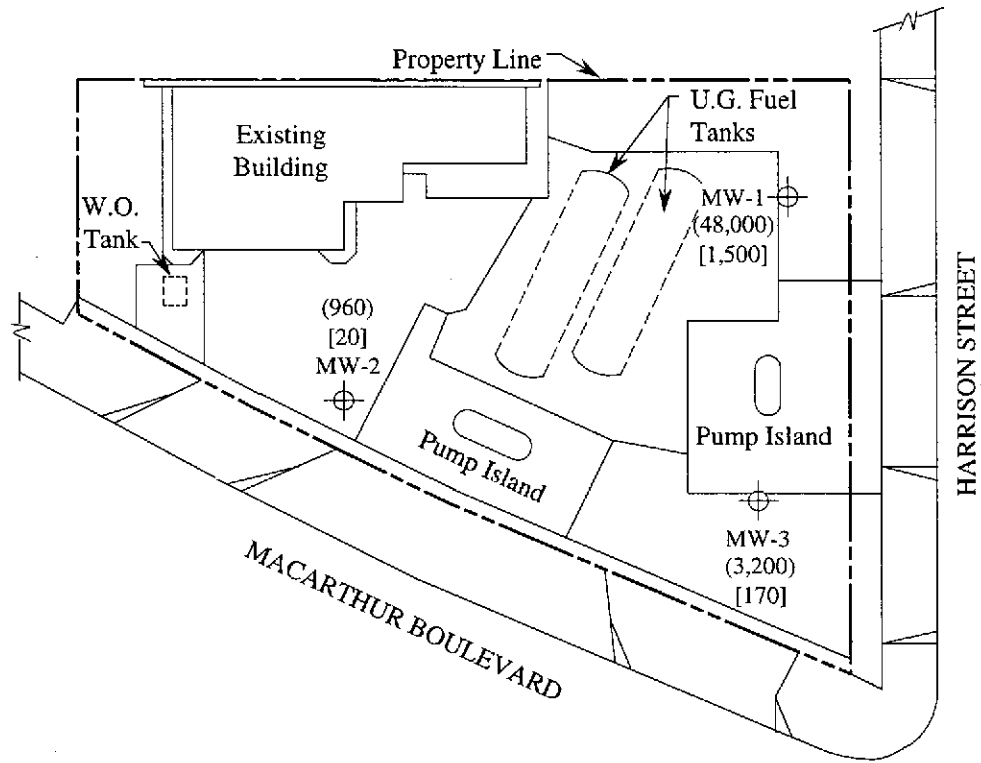
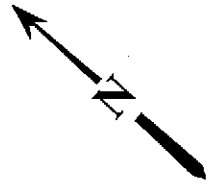


**GROUND WATER FLOW DIRECTION MAP FOR THE JULY 24, 1995 MONITORING EVENT**



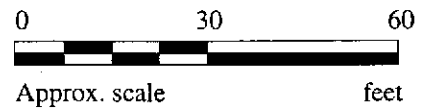
**UNOCAL SERVICE STATION # 1871  
96 MACARTHUR BOULEVARD  
OAKLAND, CALIFORNIA**

**FIGURE  
1**



**LEGEND**

- ⊕ Monitoring well
- ( ) Concentration of TPH as gasoline in  $\mu\text{g/L}$
- [ ] Concentration of benzene in  $\mu\text{g/L}$



**PETROLEUM HYDROCARBON CONCENTRATIONS IN GROUND WATER ON JULY 24, 1995**



**UNOCAL SERVICE STATION # 1871  
96 MACARTHUR BOULEVARD  
OAKLAND, CALIFORNIA**

**FIGURE  
2**



MPDS Services 2401 Stanwell Dr., Ste. 300 Concord, CA 94520 Attention: Sarkis Karkarian	Client Project ID: Unocal #1871, 96 MacArthur Blvd., Oakland Matrix Descript: Water Analysis Method: EPA 5030/8015 Mod./8020 First Sample #: 507-1530	Sampled: Jul 24, 1995 Received: Jul 24, 1995 Reported: Aug 7, 1995
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**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
507-1530	MW-1	48,000	1,500	420	2,700	9,700
507-1531	MW-2	960	20	ND	4.2	6.2
507-1532	MW-3	3,200	170	ND	22	16

<b>Detection Limits:</b>	<b>50</b>	<b>0.50</b>	<b>0.50</b>	<b>0.50</b>	<b>0.50</b>
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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**

680 Chesapeake Drive  
404 N. Wiget Lane  
819 Striker Avenue, Suite 8

Redwood City, CA 94063  
Walnut Creek, CA 94598  
Sacramento, CA 95834

(415) 364-9600  
(510) 988-9600  
(916) 921-9600

FAX (415) 364-9233  
FAX (510) 988-9673  
FAX (916) 921-0100

MPDS Services  
2401 Stanwell Dr., Ste. 300  
Concord, CA 94520  
Attention: Sarkis Karkarian

Client Project ID: Unocal #1871, 96 MacArthur Blvd., Oakland  
Matrix Descript: Water  
Analysis Method: EPA 5030/8015 Mod./8020  
First Sample #: 507-1530

Sampled: Jul 24, 1995  
Received: Jul 24, 1995  
Reported: Aug 7, 1995

### 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
507-1530	MW-1	Gasoline	400	7/28/95	HP-5	90
507-1531	MW-2	Gasoline	5.0	7/28/95	HP-5	75
507-1532	MW-3	Gasoline	20	7/28/95	HP-5	81

**SEQUOIA ANALYTICAL, #1271**

Signature on File

Alan B. Kemp  
Project Manager

5071530.MPD <2>





MPDS Services  
2401 Stanwell Dr., Ste. 300  
Concord, CA 94520  
Attention: Sarkis Karkarian

Client Project ID: Unocal #1871, 96 MacArthur Blvd., Oakland  
Matrix: Liquid

QC Sample Group: 5071530-32

Reported: Aug 7, 1995

### QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl Benzene	Xylenes
<b>Method:</b>	EPA 8020	EPA 8020	EPA 8020	EPA 8020
<b>Analyst:</b>	M. Creusere	M. Creusere	M. Creusere	M. Creusere

<b>MS/MSD Batch#:</b>	5071536	5071536	5071536	5071536
<b>Date Prepared:</b>	7/28/95	7/28/95	7/28/95	7/28/95
<b>Date Analyzed:</b>	7/28/95	7/28/95	7/28/95	7/28/95
<b>Instrument I.D.#:</b>	HP-5	HP-5	HP-5	HP-5
<b>Conc. Spiked:</b>	20 µg/L	20 µg/L	20 µg/L	60 µg/L
<b>Matrix Spike % Recovery:</b>	90	90	85	90
<b>Matrix Spike Duplicate % Recovery:</b>	75	75	75	78
<b>Relative % Difference:</b>	18	18	13	14

<b>LCS Batch#:</b>	3LCS072895	3LCS072895	3LCS072895	3LCS072895
<b>Date Prepared:</b>	7/28/95	7/28/95	7/28/95	7/28/95
<b>Date Analyzed:</b>	7/28/95	7/28/95	7/28/95	7/28/95
<b>Instrument I.D.#:</b>	HP-5	HP-5	HP-5	HP-5
<b>LCS % Recovery:</b>	91	93	92	96

<b>% Recovery Control Limits:</b>	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



**CHAIN OF CUSTODY**

SAMPLER			UNOCAL					ANALYSES REQUESTED							TURN AROUND TIME:	
STEVE BALIAN			S/S # <u>1871</u> CITY: <u>OAKLAND</u>					TPH-GAS BTEX	TPH-DIESEL	TOG	8010					REGULAR
WITNESSING AGENCY			ADDRESS: <u>96 MAC ARTHUR BLV.</u>													
SAMPLE ID NO.	DATE	TIME	WATER	GRAB	COMP	NO. OF CONT.	SAMPLING LOCATION									
MW-1	7-24-95	12:45	X	X		2	WELL	X						5071530	A-B ↓	
MW-2	"	12:25	X	X		2	"	X						5071531		
MW-3	"	12:15	X	X		2	"	X						5071532		
RELINQUISHED BY:	DATE/TIME	RECEIVED BY:		DATE/TIME		THE FOLLOWING MUST BE COMPLETED BY THE LABORATORY ACCEPTING SAMPLES FOR ANALYSES:										
STEVE BALIAN	12:45	<i>[Signature]</i>		13:45		1. HAVE ALL SAMPLES RECEIVED FOR ANALYSIS BEEN STORED ON ICE? <u>YES</u>										
(SIGNATURE)	7-24-95	(SIGNATURE)		7-24-95		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: <i>[Signature]</i> TITLE: <i>[Signature]</i> DATE: <u>7/24/95</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 HN03. All other containers are unpreserved.