

May 29, 1996

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

Attention: Ms. Susan Hugo

RE: U

Unocal Service Station #3538

411 W. MacArthur Boulevard

1 Flrik

Oakland, California

Dear Ms. Hugo:

Per the request of the Unocal Corporation Project Manager, Ms. Tina R. Berry, enclosed please find our most recent data report 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) 277-2321.

Sincerely,

MPDS Services, Inc.

Jarrel F. Crider

/dr

Enclosure

cc: Ms. Tina R. Berry



MPDS-UN3538-10 May 10, 1996

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

Attention: Ms. Tina R. Berry

RE: Quarterly Data Report

Unocal Service Station #3538 411 W. MacArthur Boulevard Oakland, California

Dear Ms. Berry:

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 April 15, 1996. Prior to sampling, the wells were each purged of between 5 and 7.5 gallons of water. Samples were then collected using a clean Teflon bailer. The samples were decanted into clean VOA vials, which were then sealed with Teflon-lined screw caps, labeled, and stored in a cooler, on ice, until delivery to a state-certified laboratory. Trip blank and Field blank samples (denoted as ES1 and ES3, respectively) were also collected for quality assurance and control. 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 2 and 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.

MPDS-UN3538-10 May 10, 1996 Page 2

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 Mrs. Susan Hugo of the Alameda County Health Care Services Agency.

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

GEO

JOEL G. GREGER No. EG 1633

GEOLOGIST

Sincerely,

MPDS Services, Inc.

Haig (Gary) Tejirian Senior Staff Geologist

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

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

/jfc

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

	Ground Water	Depth to	Total Well	Product		Water
	Elevation	Water	Depth	Thickness		Purged
Well #	(feet)	(fect)∗	(feet)+	(feet)	Sheen	(gallons)
		(Monitored a	nd Sampled on .	April 15, 1996)		
MW1*	54.70	17.40	21.31	0		0
MW2	53.77	17.61	27.99	0	No	7.5
MW3	54.08	17.78	25.08	0	No	5
MW4*	54.29	17.35	28.73	0		0
MW5*	54.01	17.22	30.14	0		0
MW6*	57.44	14.00	30.08	0		0
	•	(Monitored and	d Sampled on Ja	muary 16, 1996)		
MW1*	54.90	17.20	21.33	0		0
MW2	54.80	16.58	28.05	ő	No	8
MW3	53.91	17.95	25.15	Õ	No	6
MW4*	55.19	16.45	28.78	Ō		Ö
MW5*	54.12	17.11	30.18	ō		Ö
MW6*	55.06	16.38	30.11	0		0
		(Monitored and	i Sampled on O	ctober 26, 1995)		
MW1*	53.43	18.67	27.25	0		0
MW2	53.17	18.21	26.93	0	No	6
MW3	53.54	18.32	25.02	0	No	5
MW4*	53.47	18.17	28.74	0		0
MW5*	53.13	18.10	30.02	0		0
MW6*	53.56	17.88	30.17	0		0
		(Monitored a	nd Sampled on	July 19, 1995)		
MW1	54.07	18.03	23.25	0	No	4
MW2	53.37	18.01	28.00	ő	No	7
MW3	53.66	18.20	25.07	ō	No	5
MW4	53.82	17.82	28.71	0	No	7.5
MW5	53.64	17.59	30.12	0	No	9
MW6	59.12	12.32	30.05	0	No	12.5

Table 1
Summary of Monitoring Data

	Well Casing
	Elevation
Well#	(feet)**
MW1	72.10
MW2	71.38
MW3	71.86
MW4	71.64
MW5	71.23
MW6	71.44

- ♦ The depth to water level and total well depth measurements were taken from the top of the well casings.
- * Monitored only.
- ** The elevations of top of well casings are relative to Mean Seal Level (MSL), per the City of Oakland Benchmark #9NW10 (elevation = 75.50 feet MSL).
- -- Sheen determination was not performed.

Table 2
Summary of Laboratory Analyses
Water

Well#	Date	TPH as Gasoline	Benzene	Toluene	Ethyi- Benzene	Xylenes
MW1	9/15/89	ND	ND	0.61	ND	ND
	1/23/90	ND	1.5	2.3	ND	4.3
	4/19/90	ND	ND	ND	ND	ND
	7/17/90	ND	ND	ND	ND	ND
	10/16/90	ND	ND	ND	ND	ND
	1/15/91	ND	ND	ND	ND	ND
	4/12/91	ND	ND	ND	ND	ND
	7/15/91	ND	ND	ND	ND	ND
	7/14/92	ND	ND	ND	ND	ND
	7/14/93	ND	2.2	2.1	1.1	6.2
	7/7/94	ND	ND	ND	ND	ND
	10/5/94	SAMPLED ANN	NUALLY IN JUL	Y		
	7/19/95	ND	ND	ND	ND	ND
MW2	9/15/89	290	ND	12	ND	ND
	1/23/90	400	73	36	10	40
	4/19/90	3,900	550	5.1	91	390
	7/17/90	490	76	0.59	11	46
	10/16/90	1,400	430	2	48	240
	1/15/91	680	170	0.7	19	81
	4/12/91	2,200	160	4.3	23	62
	7/15/91	2,200	770	12	72	370
	10/15/91	140	44	0.56	1.5	12
	1/15/92	220	37	0.52	1.1	7
	4/14/92	150	6.2	ND	ND	1.4
	7/14/92	130	3.7	ND	ND	ND
	10/12/92	370	3.4	0.56	ND	11
	1/8/93	510†	ND	ND	ND	ND
	4/13/93	410††	42	7.7	6.4	28
	7/14/93	110†	6.5	ND	ND	1.1
	10/14/93	230†	5.3	ND	ND	2.1
	1/12/94	300	7.8	3.8	1.8	10
	4/9/94	120	10	0.88	1.1	4.9
	7/7/94	110†	4.4	ND	ND	ND
	10/5/94	720†	20	ND	ND	3.1
	1/9/95	ND	ND	ND	ND	ND
	4/17/95	93	5.6	0.62	1.7	5.5
	7/19/95	77	32	0.58	1.7	4.1
	10/26/95	54††	13	ND	ND	0.72
	1/16/96‡	120	23	ND	ND	0.99
	4/15/96	340	21	ND	2.2	3.7

Table 2
Summary of Laboratory Analyses
Water

			water			
		TPH as			Ethyl-	
Well#	Date	Gasoline	Benzene	Toluene	Benzene	Xylenes

MW3	9/15/89	32	ND	ND	ND	ND
	1/23/90	450	110	1.2	4.4	11
	4/19/90	3,100	600	27	54	220
	7/17/90	4,000	270	48	130	250
	10/16/90	740	210	1.4	2.5	82
	1/15/91	3,200	460	1.5	120	270
	4/12/91	880	170	1.1	34	110
	7/15/91	9,200	1,300	230	490	1,900
	10/15/91	3,100	390	34	150	390
	1/15/92	3,000	590	14	310	750
	4/14/92	14,000	660	48	560	2,000
	7/14/92	21,000	890	200	1,200	4,300
	10/12/92	3,200	160	10	230	540
	1/8/93	1,100††	48	0.99	0.9	93
	4/13/93	12,000††	290	38	760	2,300
	7/14/93	6,300	190	ND	430	1,000
	10/14/93	2,500	52	ND	110	250
	1/12/94	3,800	78	ND	180	390
	4/9/94	1,800	22	ND	140	280
	7/7/94	110†	4.5	ND	ND	ND
	10/5/94	ND	ND	ND	ND	ND
	1/9/95	ND	0.68	ND	ND	ND
	4/17/95	3,700	80	10	270	510
	7/19/95	15,000	330	27	990	2,400
	10/26/95	14,000	420	180	750	1,600
	1/16/96‡	920	38	ND	30	57
	4/15/96	9,700	240	ND	570	860
	D.44 # 100					
MW4	9/15/89	ND	ND	ND	ND	ND
	1/23/90	ND	ND	0.4	ND	ND
	4/19/90	ND	ND	0.48	ND	ND
	7/17/90	ND	ND	ND	ND	ND
	10/16/90	ND	ND	ND	ND	ND
	1/15/91	ND	ND	ND		ND
	4/12/91	ND	ND	ND	ND	ND
	7/15/91 7/14/92	ND ND	ND	ND	ND	ND
	7/14/92 7/14/93	ND	1.3	2.5	ND	1
	7/14/93 7/7/94	ND ND	ND ND	ND ND	ND ND	ND ND
	10/5/94	SAMPLED ANN	ND	ND v	ND	ND
	7/19/95	ND	ND		ND	NID
	בל ולבווו	ND	MD	ND	ND	ND

Table 2
Summary of Laboratory Analyses
Water

		TPH as			Ethy l-	
Well#	Date	Gasoline	Benzene	Tohiene	Benzene	Xylenes
MW5	11/30/92	ND	ND	ND	ND	ND
	1/8/93	ND	ND	ND	ND	ND
	4/13/93	ND	ND	ND	ND	ND
	7/14/93	ND	ND	0.57	ND	ND
	10/14/93	ND	ND	ND	ND	ND
	1/12/94	ND	ND	0.84	ND	1.6
	7/7/94	ND	ND	ND	ND	ND
	10/5/94	SAMPLED ANN	UALLY IN JUL	Y		
	7/19/95	ND	ND	ND	ND	ND
MW6	11/30/92	ND	ND	ND	ND	ND
	1/8/93	ND	ND	ND	ND	ND
	4/13/93	ND	ND	ND	ND	ND
	7/14/93	ND	0.99	2.4	ND	1.9
	10/14/93	ND	ND	0.64	ND	ND
	1/12/94	ND	ND	1.2	ND	2.9
	7/7/94	ND	ND	ND	ND	ND
	10/5/94	SAMPLED ANN				
	7/19/95	ND	ND	ND	ND	ND

- ‡ Sequoia Analytical Laboratory has identified the presence of MTBE at a level above or equal to the taste and odor threshold of 40 µg/L in the sample collected from this well.
- † Sequoia Analytical Laboratory reported that the hydrocarbons detected did not appear to be gasoline.
- †† Sequoia Analytical Laboratory reported that the hydrocarbons detected appeared to be a gasoline and a non-gasoline mixture.

ND = Non-detectable.

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

Note:

The detection limit for results reported as ND by Sequoia Analytical Laboratory is equal to the stated detection limit times the dilution factor indicated on the laboratory analytical sheets.

Prior to August 1, 1995, the total purgeable petroleum hydrocarbon (TPH as gasoline) quantification range used by Sequoia Analytical Laboratory was C4 - C12. Since August 1, 1995, the quantificiation range used by Sequoia Analytical Laboratory was C6 - C12.

Laboratory analyses data prior to January 12, 1994, were provided by Kaprealian Engineering, Inc.

Table 3Summary of Laboratory Analyses
Water

		TPH as	Fotal Oil & Grease		
Well#	Date	Diesel	(mg/L)	Tetrachloroethene*	MTBE
MW1	9/15/89	ND	ND	2.7	
1.1 1	1/23/90	ND	1.5	2.1	
	4/19/90	ND	ND	2.2	
	7/17/90	ND	ND	1.7	
	10/16/90	ND	ND	2	
	1/15/91	ND	ND	2.1	
	4/12/91	ND	ND	2	
	7/15/91	ND	ND	1.8	
	7/14/92			1,4	
	7/14/93			0.95	
	7/7/94			0.83	
	7/19/95			0.52	
MW2	4/13/93				200
	7/14/93				250
	10/26/95				220
	4/15/96				45
MW3	4/13/93				1,400
	7/14/93				860
	10/26/95				4,800
	4/15/96				3,200

^{*} All EPA method 8010 constituents were non-detectable, except for tetrachloroethene as indicated.

MTBE = methyl tert butyl ether.

ND = Non-detectable.

mg/L = milligrams per liter.

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

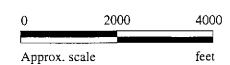
Note: Laboratory analyses data prior to July 14, 1994 were provided by Kaprealian Engineering, Inc.

⁻⁻ Indicates analysis was not performed.



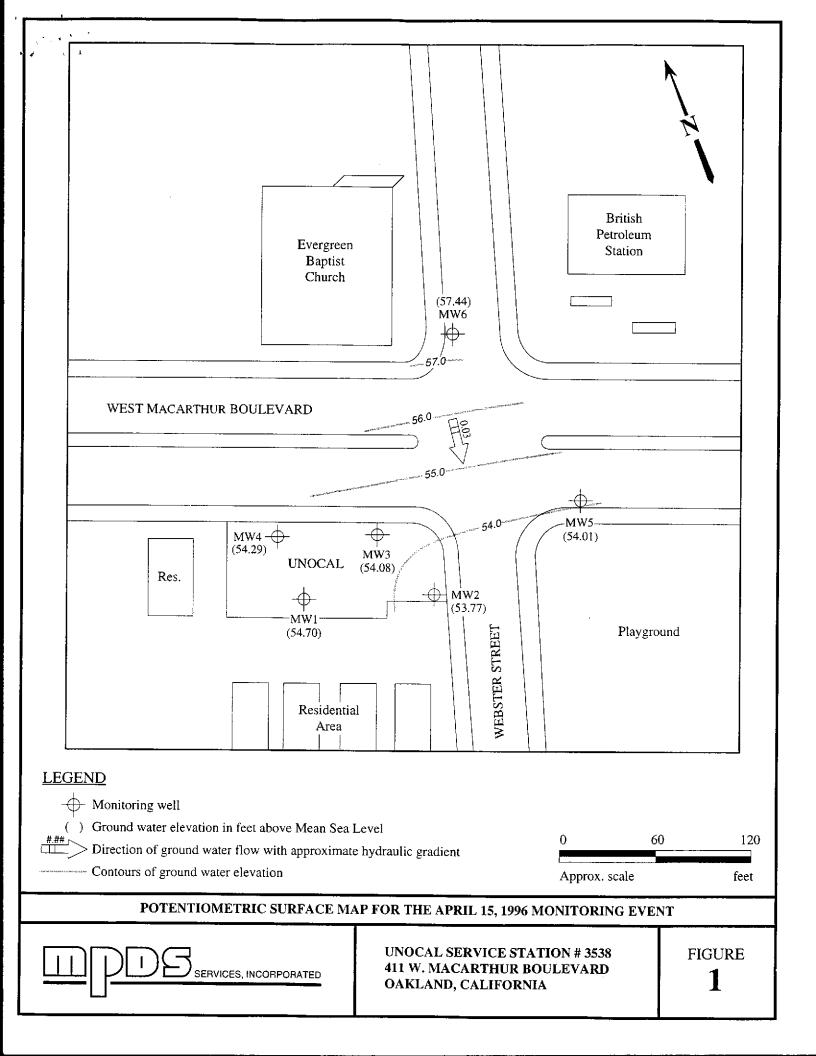


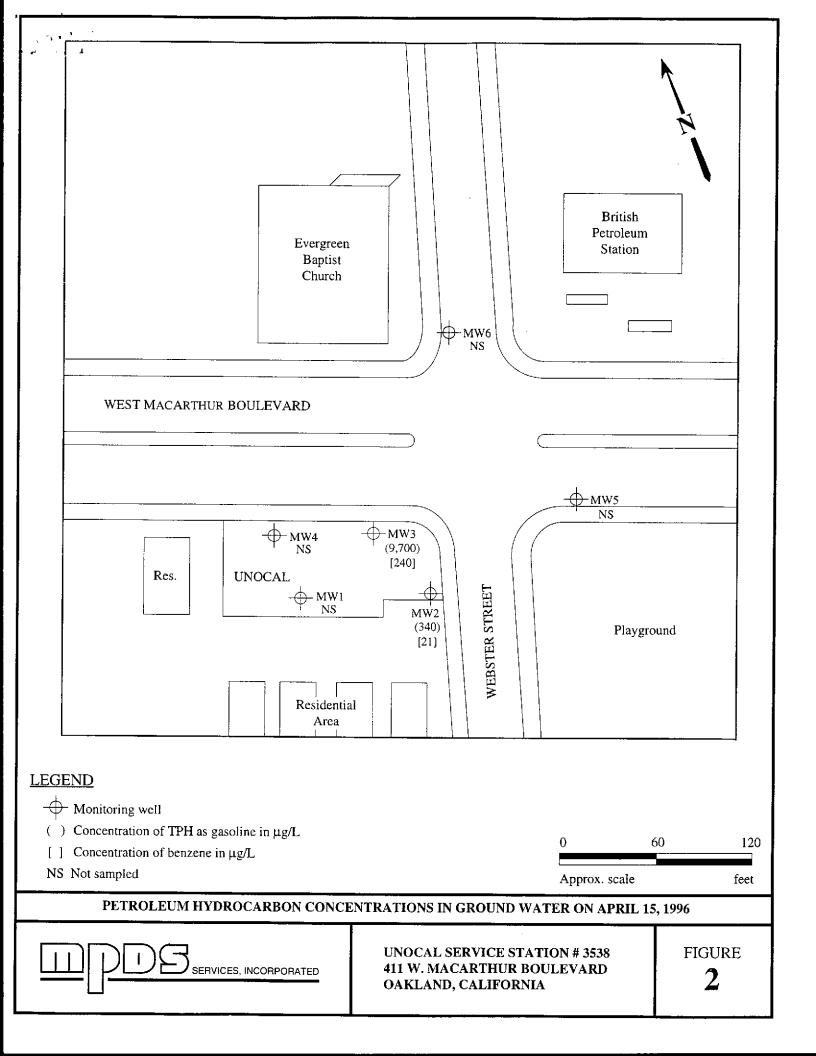
Base modified from 7.5 minute U.S.G.S. Oakland East & West Quadrangles (both photorevised 1980)





UNOCAL SERVICE STATION # 3538 411 W. MACARTHUR BOULEVARD OAKLAND, CALIFORNIA LOCATION MAP







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: Jarrel Crider Client Project ID: Matrix Descript:

Unocal #3538, 411 W. MacArthur Blvd.,

Oakland

Sampled: Apr 15, 1996 Received: Apr 15, 1996

Analysis Method: First Sample #:

EPA 5030/8015 Mod./8020 604-1118

Reported:

May 3, 1996

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Water

Sample Number	Sample Description	Purgeable Hydrocarbons $\mu \mathrm{g}/\mathrm{L}$	Benzene μg/L	Toluene μg/L	Ethyl Benzene μg/L	Total Xylenes μg/L
604-1118	MW2	340	21	ND	2.2	3.7
604-1119	мw-з	9,700	240	ND	570	860
604-1120	ES-1	ND	ND	1.1	ND	ND
604-1121	ES-2	ND	ND	1.1	ND	ND
604-1122	ES-3	ND	ND	0.94	ND	ND

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 & #1894

Signature on File

Alan B. Kemp Project Manager

Page 1 of 2





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

Client Project ID: Matrix Descript:

Unocal #3538, 411 W. MacArthur Blvd.,

Sampled: Oakland

Apr 15, 1996 Apr 15, 1996

Analysis Method: Attention: Jarrel Crider First Sample #:

EPA 5030/8015 Mod./8020

Received: Reported:

May 3, 1996

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Water

604-1118

Sample Number	Sample Description	Chromatogram Pattern	DL Mult. Factor	Date Analyzed	Instrument ID	Surrogate Recovery, % QC Limits: 70-130
604-1118	MW2	Gasoline	1.0	4/26/96	HP-2	70
604-1119	мw-з	Gasoline	100	4/26/96	HP-2	99
604-1120	ES-1		1.0	4/30/96	HP-9	100
604-1121	E\$-2		1.0	4/30/96	HP-9	98
604-1122	ES-3	4 -	1.0	4/30/96	HP-9	88

SEQUOIA ANALYTICAL, #1271 & #1894

Signature on File

Alan B. Kemp Project Manager





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: Jarrel Crider

Client Project ID: Sample Descript: Analysis for:

First Sample #:

Unocal #3538, 411 W. MacArthur Blvd., Sampled: Apr 15, 1996 Unocal #3538, 411 W. MacArthur Blvd., Oakland Water

MTBE (Modified EPA 8020)

604-1118

Received:

Apr 15, 1996

Apr 26, 1996 Analyzed: May 3, 1996 Reported:

LABORATORY ANALYSIS FOR:

MTBE (Modified EPA 8020)

Sample Number	Sample Description	Detection Limit $\mu \mathrm{g/L}$	Sample Result µg/L
604-1118	MW-2	40	4 5
604-1119	MW-3	50	3,200

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

SEQUOIA ANALYTICAL, #1894

Signature on File

Alan B. Kemp Project Manager





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: Jarrel Crider Client Project ID:

Unocal #3538, 411 W. MacArthur Blvd., Oakland

Matrix: Liquid

QC Sample Group: 6041118-122

Reported:

May 3, 1996

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl	Xylenes	
			Benzene		
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020	
Analyst:	L. Huang	L. Huang	L. Huang	L. Huang	
MS/MSD					
Batch#:	6041095	6041095	6041095	6041095	
Date Prepared:	4/30/96	4/30/96	4/30/96	4/30/96	
Date Analyzed:	4/30/96	4/30/96	4/30/96	4/30/96	
Instrument i.D.#:	HP-9	HP-9	HP-9	HP-9	
Conc. Spiked:	20 μg/L	20 μg/L	20 μg/L	60 μg/L	
Matrix Spike					
% Recovery:	110	115	120	118	
Matrix Spike					
Duplicate %					
Recovery:	110	115	115	113	
Relative %					
Difference:	0.0	0.0	4.3	4.3	

LCS Batch#:	9LCS043096	9LCS043096	9LCS043096	9LCS043096
Date Prepared:	4/30/96	4/30/96	4/30/96	4/30/96
Date Analyzed:	4/30/96	4/30/96	4/30/96	4/30/96
Instrument I.D.#:	HP-9	HP-9	HP-9	HP-9
LCS %	115	405	40 =	
Recovery:	115	125	125	123
% Recovery				
Control Limits:	70-130	70-130	70-130	70-130

т.

SEQUOIA ANALYTICAL, #1271

Signature on File

Alan B. Kemp 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 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.



CHAIN OF CUSTODY

©9604249 9604250

SAMPLER			UNOCAL S/S # 3538 CITY: OAKLAND					>		TURN AROUND TIME:						
NICHOLAS PERROW WITHESSING AGENCY				ADDRESS: 411 W. MACARTHUR RIUD.				H-GA EX	TPH- DIRSEL	TOG	8010	MTBE				REGULAR REMARKS
SAMPLE ID NO.	DATE	TIME	WATER	GRAB	COMP	NO. OF CONT.	SAMPUN LOCATIO	TP BT	TIG	Į.	8	Ξ				REMARKS
MW-2	4/15/96	8;15	V	~		4 VOAS	WEU			 		<u></u>			1118	
MW-2 MW-3	11	8:45	~	/		11	11	<u></u>				~		604:	1119	p
																
			<u> </u>													
		<u></u> -														
		*•														
<u> </u>			 													
RELINQUISHED BY: DATE/T		IME	ME RECEIVED BY: DAT				ATE/TIME	TIME THE FOLLOWING MUST BE COMPLETED BY THE LABORATORY ACCEPTING SAMPLES FOR ANALYSES: 1. HAVE ALL SAMPLES RECEIVED FOR ANALYSIS BEEN STORED ON ICE?								
									Į .							
		4/15/9 12:45	(SIGNATURE)				4115 1245	2. WILL SAMPLES REMAIN REFRIGERATED UNTIL ANALYZED? 3. DID ANY SAMPLES RECEIVED FOR ANALYSIS HAVE HEAD SPACE?								
(SIGNATURE)							4. WERE SAMPLES IN APPROPRIATE CONTAINERS AND PROPERLY PACKAGED?									
(SIGNATURE)		· ·	(SIGNATURE)				 									
(SIGNATURE)			(SIGNATURE)					SIGNATURE: DATE: 4/15/96								



CHAIN OF CUSTODY

ANALYSES REQUESTED UNOCAL S/S # 3538 CITY: OAKLAUD SAMPLER TURN AROUND TIME: NICHOLAS PERROW TPH-GAS BTEX ADDRESS: 411 W. HACAKINA BLUB TPH-DIESEL REG. WITHESSING AGENCY TOG SAMPLING WATER GRAB COMP LOCATION DATE TIME NO. OF CONT. SAMPLE ID NO. F-S-1 604**11**20 4/15/96 1 Vot 6041121 ES-2 11 11 6041122 4 F.C-3 11 RECEIVED BY: THE FOLLOWING MUST BE COMPLETED BY THE LABORATORY ACCEPTING SAMPLES FOR ANALYSES: RELINQUISHED BY: DATE/TIME 1. HAVE ALL SAMPLES RECEIVED FOR ANALYSIS BEEN STORED ON ICE? 2. WILL SAMPLES REMAIN REFRIGERATED UNTIL ANALYZED? 41.5/2 (SIGNATURE) SIGNATURE) 12:45 3. DID ANY SAMPLES RECEIVED FOR ANALYSIS HAVE HEAD SPACE? ___ (SIGNATURE) (SIGNATURE) 4. WERE SAMPLES IN APPROPRIATE CONTAINERS AND PROPERLY PACKAGED? (SIGNATURE) TITLE: DATE: SIGNATURE: (SIGNATURE) (SIGNATURE)

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.