



**KAPREALIAN ENGINEERING, INC.**  
*Consulting Engineers*

P.O. BOX 996 • BENICIA, CA 94510  
(707) 746-6915 • (707) 746-6916 • FAX: (707) 746-5581

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9:49 am, Jun 09, 2009

Alameda County  
Environmental Health

KEI-P89-0111.QR4  
June 4, 1990

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

Attention: Mr. Ron Bock

RE: Quarterly Report  
Unocal Service Station #5487  
28250 Hesperian Blvd.  
Hayward, California

Dear Mr. Bock:

This report presents the results of the fourth quarter of monitoring and sampling of the monitoring wells at the referenced site by Kaprealian Engineering, Inc. (KEI), per proposal KEI-P89-0111.P2 dated May 18, 1989. The wells are currently monitored monthly and sampled on a quarterly basis. This report covers the work performed by KEI from March through May, 1990.

BACKGROUND

The subject site is presently used as a gasoline station. A Location Map and detailed Site Plan are attached to this report.

KEI's work at the site began on January 30, 1989 when KEI was asked to collect soil samples following the removal of two underground fuel storage tanks and one waste oil tank at the site. Water was encountered in the excavation at a depth of 10.5 feet. Soil and water samples were analyzed by Sequoia Analytical Laboratory in Redwood City, California, for total petroleum hydrocarbons (TPH) as gasoline, and benzene, toluene, xylenes and ethylbenzene (BTX&E). The waste oil sample was also analyzed for TPH as diesel, total oil and grease (TOG), EPA method 8010 and EPA method 8270 constituents, and metals (cadmium, chromium, lead and zinc). After additional excavation, soil sample analyses from the fuel tank pit showed less than 2 ppm of TPH as gasoline for all samples representing the final pit excavation. After additional excavation in the waste oil pit, soil samples analyses showed low residual levels of contamination, indicating that the majority of contaminated soil has been excavated.

On February 14, 1989, in preparation for setting of the new fuel storage tanks, approximately 17,500 gallons of water was pumped from the fuel tank pit. On February 17, 1989, additional soil

was excavated from the waste oil tank pit and 4,500 gallons of water was pumped and disposed of by H&H Haulers. Based on the results of the laboratory analyses, and in order to comply with the requirements of the regulatory agencies, KEI proposed installation of five monitoring wells. Documentation of sample collection and results of the soil and ground water samples collected in January and February, 1989, are summarized in KEI's report (KEI-J89-0111.R2) dated March 1, 1989.

Five monitoring wells, designated as MW1 through MW5, were installed on April 20 and 21, 1989. Analytical results of the water samples, collected from MW1 and MW4, showed benzene levels of 2.1 ppb and 0.33 ppb, respectively. Analytical results of all other samples indicated non-detectable levels of all constituents analyzed. KEI proposed a monthly monitoring and quarterly sampling program of the existing wells. Documentation of the installation, development and sampling of the monitoring wells is presented in KEI's report (KEI-P89-0111.R5) dated May 18, 1989.

The monthly monitoring and quarterly sampling program was initiated in June, 1989. The results of the first quarter are presented in KEI's report (KEI-P89-0111.QR1) dated October 17, 1989.

#### FIELD ACTIVITIES

The five wells were monitored three times and sampled once during the quarter. During monitoring, the wells were checked for depth to water and presence of free product and sheen. No free product or sheen was noted in any of the wells during the quarter. Monitoring data are summarized in Table 1.

Water samples were collected from the wells on May 16, 1990. Prior to sampling, the wells were each purged of 15 gallons. Samples were then collected using a clean Teflon bailer. Samples were decanted into clean VOA vials and/or one liter amber bottles as appropriate which were sealed with Teflon-lined screw caps and stored in a cooler on ice until delivery to the state certified laboratory.

### HYDROLOGY

Based on the water level data gathered during the quarter, ground water flow direction generally appeared to be to the north on May 16, 1990, slightly changed from the previous quarter, which was previously toward the northeast. Water levels have fluctuated during the quarter, showing a net decrease of between 0.29 and 0.48 feet in all of the wells since the previous quarter. The measured depth to ground water at the site on May 16, 1990 ranged between 7.18 and 8.24 feet.

### ANALYTICAL RESULTS

Water samples were analyzed at Sequoia Analytical Laboratory in Redwood City, California, and were accompanied by properly executed Chain of Custody documentation. The samples were analyzed for TPH as gasoline using EPA method 5030 in conjunction with modified 8015, and BTX&E using EPA method 8020. In addition, samples from MW1 and MW2 were analyzed for TPH as diesel using EPA method 3510 in conjunction with modified 8015, TOG using EPA method 418.1 with clean up, and halogenated volatile organics using EPA method 8010.

The analytical results of the water samples indicate non-detectable levels of all constituents analyzed in all wells, except well MW5. Analytical results of the ground water sample, collected from MW5, indicate levels of TPH as gasoline at 1,100 ppb and benzene at 310 ppb. Results of the analyses are summarized in Table 2. Copies of the analytical results and Chain of Custody documentation are attached to this report.

### DISCUSSION AND RECOMMENDATIONS

Based on the analytical results collected and evaluated to date, it appears that contamination is localized in the vicinity of monitoring well MW5. Therefore, KEI recommends that MW5 be pumped every two weeks for a period of three months. In addition, KEI recommends an extension of the current monitoring and sampling program of the existing wells for an additional six months. Our proposal for this work is attached for your review and consideration.

### DISTRIBUTION

A copy of this report should be sent to the Alameda County Department of Public Health, and to the Regional Water Quality Control Board, San Francisco Bay Region.

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#### 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.

Our studies assume that the field and laboratory data are reasonably representative of the site as a whole, and assume that subsurface conditions are reasonably conducive to interpolation and extrapolation.

The results of this study are based on the data obtained from the field and laboratory analyses obtained from a state certified laboratory. We have analyzed this data using what we believe to be currently applicable engineering techniques and principles in the Northern California region. We make no warranty, either expressed or implied, regarding the above, including laboratory analyses, except that our services have been performed in accordance with generally accepted professional principles and practices existing for such work.

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June 4, 1990  
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If you have any questions regarding this report, please do not hesitate to call me at (707) 746-6915.

Sincerely,

Kaprealian Engineering, Inc.



Michael E. Heckathorn  
Environmental Engineer



Don R. Braun  
Certified Engineering Geologist

License No. 1310  
Exp. Date 6/30/90



Mardo Kaprealian  
President

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Attachments: Tables 1 and 2  
Location Map  
Site Plan  
Laboratory Analyses  
Chain of Custody documentation  
Proposal

KEI-P89-0111.QR4  
June 4, 1990

TABLE 1

SUMMARY OF MONITORING DATA

<u>Date</u>	<u>Well No.</u>	<u>Depth to Water (feet)</u>	<u>Product Thickness</u>	<u>Sheen</u>	<u>Water Bailed (gallons)</u>
5/16/90	MW1	7.89	0	None	15
	MW2	8.24	0	None	15
	MW3	7.91	0	None	15
	MW4	7.63	0	None	15
	MW5	7.18	0	None	15
4/16/90	MW1	7.68	0	None	0
	MW2	7.85	0	None	0
	MW3	7.72	0	None	0
	MW4	7.50	0	None	0
	MW5	6.85	0	None	0
3/21/90	MW1	7.42	0	None	0
	MW2	7.90	0	None	0
	MW3	7.54	0	None	0
	MW4	7.26	0	None	0
	MW5	6.71	0	None	0

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TABLE 2

SUMMARY OF LABORATORY ANALYSES

<u>Sample Well #</u>	<u>TPH as Diesel</u>	<u>TPH as Gasoline</u>	<u>Benzene</u>	<u>Toluene</u>	<u>Xylenes</u>	<u>Ethyl- benzene</u>
<b>(Collected on May 16, 1990)</b>						
MW1*	ND	ND	ND	ND	ND	ND
MW2*	ND	ND	ND	ND	ND	ND
MW3	--	ND	ND	ND	ND	ND
MW4	--	ND	ND	ND	ND	ND
MW5	--	1,100	310	2.8	110	70
<b>(Collected on February 16, 1990)</b>						
MW1*	ND	ND	ND	ND	ND	ND
MW2	--	ND	ND	ND	ND	ND
MW3	--	ND	ND	ND	ND	ND
MW4	--	ND	ND	ND	ND	ND
MW5	--	ND	ND	ND	ND	ND
<b>(Collected on November 14, 1989)</b>						
MW1*	ND	ND	ND	ND	ND	ND
MW2*	ND	ND	ND	ND	ND	ND
MW3	--	ND	ND	ND	ND	ND
MW4	--	ND	ND	ND	ND	ND
MW5	--	73	4.7	0.97	16	2.9
<b>(Collected on August 16, 1989)</b>						
MW1**	ND	ND	ND	ND	ND	ND
MW2**	ND	ND	ND	ND	ND	ND
MW3	--	ND	ND	ND	ND	ND
MW4	--	ND	ND	ND	ND	ND
MW5	--	4,400	1,400	84	950	200

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TABLE 2 (Continued)

SUMMARY OF LABORATORY ANALYSES

<u>Sample Well #</u>	<u>TPH as Diesel</u>	<u>TPH as Gasoline</u>	<u>Benzene</u>	<u>Toluene</u>	<u>Xylenes</u>	<u>Ethyl- benzene</u>
(Collected on August 31, 1989)						
MW5	--	910	120	7.1	53	50

\* TOG and EPA method 8010 constituents were non-detectable.

\*\* TOG for these samples were 23 ppm and 7.4 ppm, respectively. EPA method 8010 constituents were non-detectable for both samples.

-- Indicates analysis not performed.

ND = Non-detectable.

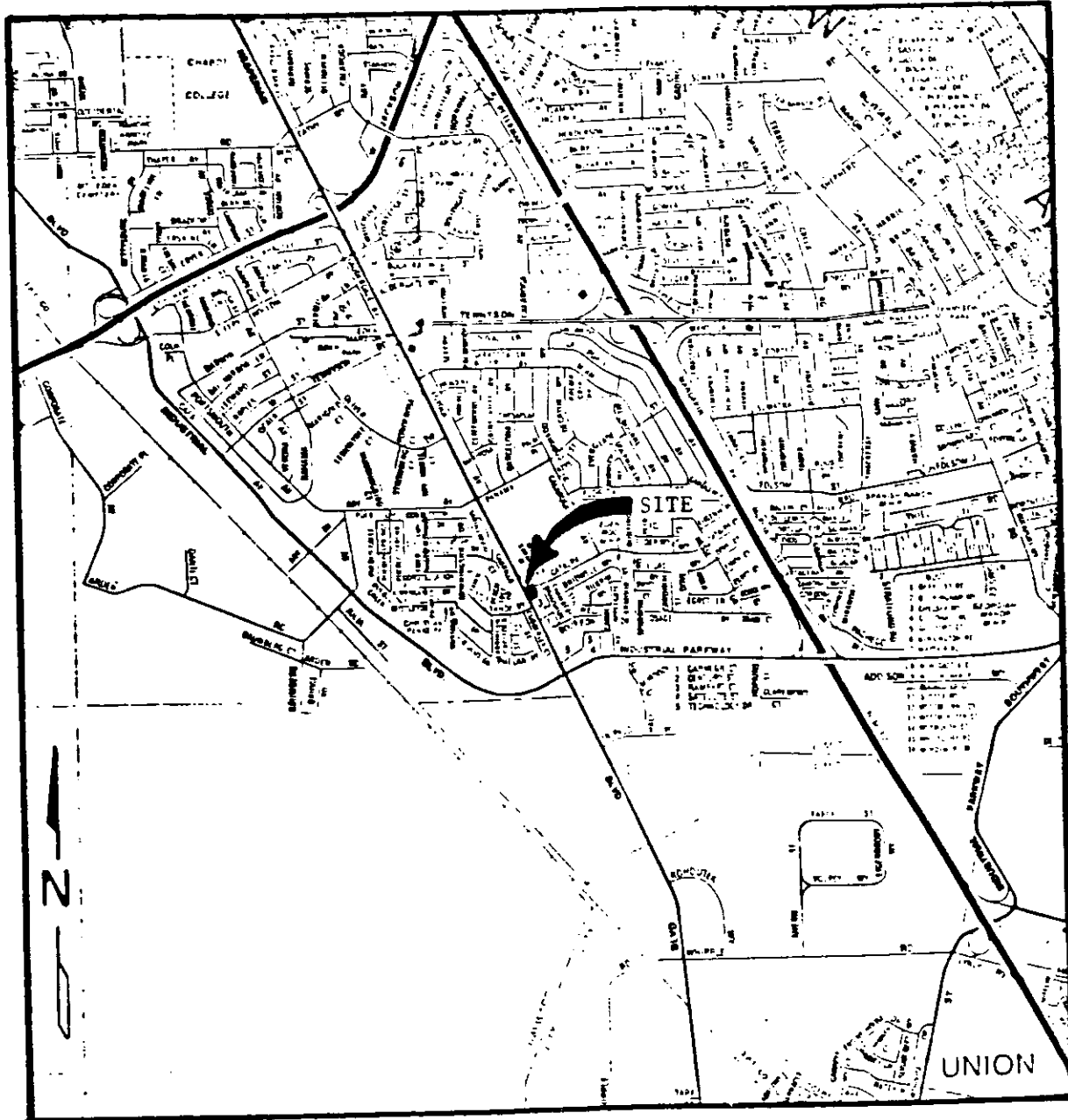
Results in parts per billion (ppb), unless otherwise indicated.





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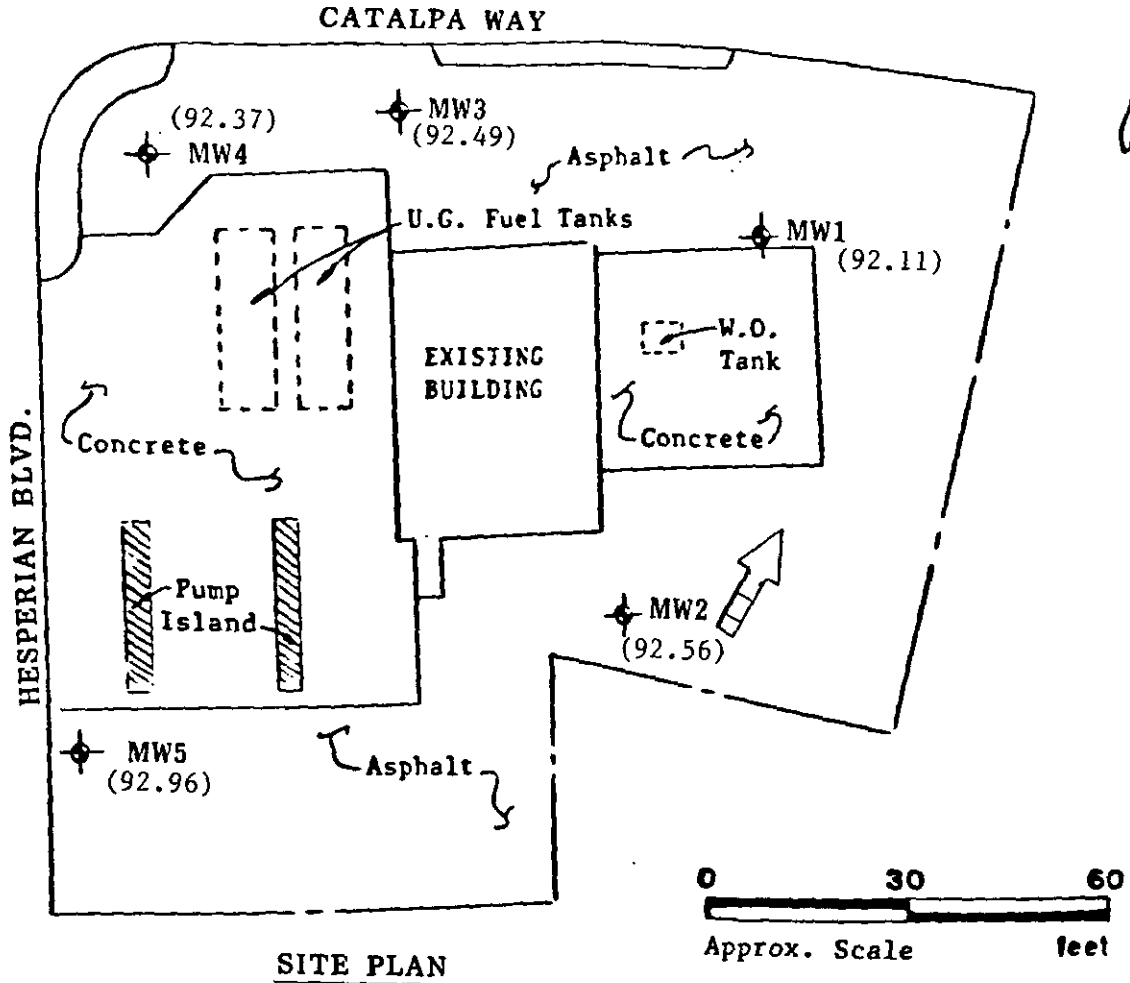
LOCATION MAP

Unocal Service Station #5487  
28250 Hesperian Blvd.  
Hayward, California



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**LEGEND**



Monitoring Well



Water table elevation in feet on 5/16/90. MW1 well cover assumed 100.00 feet as datum.



Direction of ground water flow.

Unocal Service Station #5487  
28250 Hesperian Blvd.  
Hayward, California



# SEQUOIA ANALYTICAL

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

Kaprealian Engineering, Inc.	Client Project ID: Unocal, Hayward, 28250 Hesperian	Sampled: May 16, 1990
P.O. Box 996	Matrix Descript: Water	Received: May 16, 1990
Benicia, CA 94510	Analysis Method: EPA 5030/8015/8020	Analyzed: May 18, 1990
Attention: Mardo Kaprealian, P.E.	First Sample #: 005-2481 A-B	Reported: May 24, 1990

## TOTAL PETROLEUM FUEL HYDROCARBONS with BTEX DISTINCTION (EPA 8015/8020)

Sample Number	Sample Description	Low/Medium B.P. Hydrocarbons	Benzene	Toluene	Ethyl Benzene	Xylenes
		$\mu\text{g/L}$ (ppb)	$\mu\text{g/L}$ (ppb)	$\mu\text{g/L}$ (ppb)	$\mu\text{g/L}$ (ppb)	$\mu\text{g/L}$ (ppb)
0052481 A-B	MW1	N.D.	N.D.	N.D.	N.D.	N.D.
0052482 A-B	MW2	N.D.	N.D.	N.D.	N.D.	N.D.
0052483 A-B	MW3	N.D.	N.D.	N.D.	N.D.	N.D.
0052484 A-B	MW4	N.D.	N.D.	N.D.	N.D.	N.D.
0052485 A-B	MW5	1,100	310	2.8	70	110

<b>Detection Limits:</b>	<b>30</b>	<b>0.30</b>	<b>0.30</b>	<b>0.30</b>	<b>0.30</b>
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Low to Medium Boiling Point Hydrocarbons are quantitated against a gasoline standard.  
Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Belinda C. Vega  
Project Manager



# SEQUOIA ANALYTICAL

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

Kaprealian Engineering, Inc. P.O. Box 996 Benicia, CA 94510 Attention: Mardo Kaprealian, P.E.	Client Project ID: Unocal, Hayward, 28250 Hesperian Matrix Descript: Water Analysis Method: EPA 3510/8015 First Sample #: 005-2481 E	Sampled: May 16, 1990 Received: May 16, 1990 Extracted: May 21, 1990 Analyzed: May 22, 1990 Reported: May 24, 1990
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## TOTAL PETROLEUM FUEL HYDROCARBONS (EPA 8015)

Sample Number	Sample Description	High B.P. Hydrocarbons $\mu\text{g/L}$ (ppb)
0052481 E	MW1	N.D.
0052482 E	MW2	N.D.

Detection Limits:

50

High Boiling Point Hydrocarbons are quantitated against a diesel fuel standard.  
Analytes reported as N.D. were not present above the stated limit of detection.

SEQUOIA ANALYTICAL

Belinda C. Vega  
Project Manager

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Kaprealian Engineering, Inc. P.O. Box 996 Benicia, CA 94510 Attention: Mardo Kaprealian, P.E.	Client Project ID: Unocal, Hayward, 28250 Hesperian Matrix Descript: Water Analysis Method: EPA 418.1 (I.R. with clean-up) First Sample #: 005-2481 F	Sampled: May 16, 1990 Received: May 16, 1990 Extracted: May 22, 1990 Analyzed: May 23, 1990 Reported: May 24, 1990
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## TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

Sample Number	Sample Description	Petroleum Oil mg/L (ppm)
0052481 F	MW1	N.D.
0052482 F	MW2	N.D.

Detection Limits:

1.0

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

SEQUOIA ANALYTICAL

*Belinda C. Vega*  
Belinda C. Vega  
Project Manager

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# SEQUOIA ANALYTICAL

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Kaprealian Engineering, Inc.	Client Project ID: Unocal, Hayward, 28250 Hesperian	Sampled: May 16, 1990
P.O. Box 996	Sample Descript: Water, MW1	Received: May 16, 1990
Benicia, CA 94510	Analysis Method: EPA 5030/8010	Analyzed: May 17, 1990
Attention: Mardo Kaprealian, P.E.	Lab Number: 005-2481 C-D	Reported: May 24, 1990

## HALOGENATED VOLATILE ORGANICS (EPA 8010)

Analyte	Detection Limit µg/L	Sample Results µg/L
Bromodichloromethane.....	1.0	N.D.
Bromoform.....	1.0	N.D.
Bromomethane.....	1.0	N.D.
Carbon tetrachloride.....	1.0	N.D.
Chlorobenzene.....	1.0	N.D.
Chloroethane.....	5.0	N.D.
2-Chloroethylvinyl ether.....	1.0	N.D.
Chloroform.....	0.50	N.D.
Chloromethane.....	0.50	N.D.
Dibromochloromethane.....	0.50	N.D.
1,2-Dichlorobenzene.....	2.0	N.D.
1,3-Dichlorobenzene.....	2.0	N.D.
1,4-Dichlorobenzene.....	2.0	N.D.
1,1-Dichloroethane.....	0.50	N.D.
1,2-Dichloroethane.....	0.50	N.D.
1,1-Dichloroethene.....	1.0	N.D.
Total 1,2-Dichloroethene.....	1.0	N.D.
1,2-Dichloropropane.....	0.50	N.D.
cis-1,3-Dichloropropene.....	5.0	N.D.
trans-1,3-Dichloropropene.....	5.0	N.D.
Methylene chloride.....	2.0	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.....	1.0	N.D.
Vinyl chloride.....	2.0	N.D.

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

SEQUOIA ANALYTICAL

Belinda C. Vega  
Project Manager



# SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063  
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Kaprealian Engineering, Inc.	Client Project ID: Unocal, Hayward, 28250 Hesperian	Sampled: May 16, 1990
P.O. Box 996	Sample Descript: Water, MW2	Received: May 16, 1990
Benicia, CA 94510	Analysis Method: EPA 5030/8010	Analyzed: May 17, 1990
Attention: Mardo Kaprealian, P.E.	Lab Number: 005-2482 C-D	Reported: May 24, 1990

## HALOGENATED VOLATILE ORGANICS (EPA 8010)

Analyte	Detection Limit µg/L	Sample Results µg/L
Bromodichloromethane.....	1.0	N.D.
Bromoform.....	1.0	N.D.
Bromomethane.....	1.0	N.D.
Carbon tetrachloride.....	1.0	N.D.
Chlorobenzene.....	1.0	N.D.
Chloroethane.....	5.0	N.D.
2-Chloroethylvinyl ether.....	1.0	N.D.
Chloroform.....	0.50	N.D.
Chloromethane.....	0.50	N.D.
Dibromochloromethane.....	0.50	N.D.
1,2-Dichlorobenzene.....	2.0	N.D.
1,3-Dichlorobenzene.....	2.0	N.D.
1,4-Dichlorobenzene.....	2.0	N.D.
1,1-Dichloroethane.....	0.50	N.D.
1,2-Dichloroethane.....	0.50	N.D.
1,1-Dichloroethene.....	1.0	N.D.
Total 1,2-Dichloroethene.....	1.0	N.D.
1,2-Dichloropropane.....	0.50	N.D.
cis-1,3-Dichloropropene.....	5.0	N.D.
trans-1,3-Dichloropropene.....	5.0	N.D.
Methylene chloride.....	2.0	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.....	1.0	N.D.
Vinyl chloride.....	2.0	N.D.

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

SEQUOIA ANALYTICAL

*Belinda C. Vega*  
 Belinda C. Vega  
 Project Manager



# KAPREALIAN ENGINEERING, INC.

## CHAIN OF CUSTODY

SAMPLER <b>RAY (KEI)</b>		SITE NAME & ADDRESS <b>UNOCAL HAYWARD 28250 HESPERIAN</b>							ANALYSES REQUESTED <b>TPH G BTEX TPH Das Diesel TOG (418.1) EPA 601</b>					TURN AROUND TIME: <b>1 week</b>
WITNESSING AGENCY													REMARKS	
SAMPLE ID NO.	DATE	TIME	SOIL	WATER	GRAB	COMP	NO. OF CONT.	SAMPLING LOCATION	TPH G	BTEX	TPH Das Diesel	TOG (418.1)	EPA 601	REMARKS
MW1	5-16	15:50		X	X		4 UOA 2 AMB		X	X	X	X	X	
MW2	"	"		X	X		"		X	X	X	X	X	
MW3	"	"		X	X		2 UOA		X	X				
MW4	"	"		X	X		"		X	X				
MW5	"	"		X	X		"		X	X				
Relinquished by: (Signature) <b>Ray (KEI)</b>		Date/Time <b>5-16-90</b>	Received by: (Signature)		The following MUST BE completed by the laboratory accepting samples for analysis:									
Relinquished by: (Signature)		Date/Time	Received by: (Signature)		1. Have all samples received for analysis been stored in ice? <b>yes</b>									
Relinquished by: (Signature)		Date/Time	Received by: (Signature)		2. Will samples remain refrigerated until analyzed? <b>yes</b>									
Relinquished by: (Signature)		Date/Time	Received by: (Signature)		3. Did any samples received for analysis have head space? <b>no</b>									
Relinquished by: (Signature)		Date/Time <b>5/16/90 1550</b>	Received by: (Signature) <b>Josh Stanger</b>		4. Were samples in appropriate containers and properly packaged? <b>yes</b>									
					Signature <b>[Signature]</b>		Title <b>Logan</b>		Date <b>5/16/90</b>					