KAPREALIAN ENGINEERING
INCORPORATED

94619

September 14, 1992

Alameda County Health Care Services
80 Swan Way, Room 200
Oakland, CA 94621

Attention: Mr. Barney Chan

RE: Unocal Service Station #5781
3535 Pierson Street
Oakland, California

Dear Mr. Chan:

Per the request of Mr. Ed Ralston of Unocal Corporation, enclosed please find our reports, both dated September 2, 1992, for the above referenced site.

If you should have any questions, please feel free to call our office at (510) 602-5100.

Sincerely,

Kaprealian Engineering, Inc.

Brenda M. Pepito

bmp\82

Enclosure

cc: Ed Ralston, Unocal Corporation

2401 Stanwell Drive, Suite 400
Concord, California 94520
Tel: 510.602.5100 Fax: 510.687.0602

KAPREALIAN ENGINEERING
INCORPORATED

KEI-P89-1204.QR5
September 2, 1992

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

Attention: Mr. Bob Boust

RE: Semi-Annual Report
Unocal Service Station #5781
3535 Pierson Street
Oakland, California

Dear Mr. Boust:

This report presents the results of the most recent monitoring and sampling of the monitoring well at the referenced site by Kapreal-ian Engineering, Inc. (KEI), per KEI's work plan/proposal (KEI-P89-1204.P4) dated January 21, 1991, and as modified in KEI's quarterly report (KEI-P89-1204.QR4) dated March 4, 1992. The well is currently monitored and sampled on a semi-annual basis. This report covers the work performed by KEI from March through August of 1992.

BACKGROUND

The subject site contains a Unocal service station facility. Two underground gasoline storage tanks and one waste oil tank were removed from the site on December 14, 1989. The waste oil tank pit was subsequently overexcavated in order to remove contaminated soil. One monitoring well and five exploratory borings have been installed on the site.

A site description, detailed background information including a summary of all of the soil and ground water subsurface investiga-tion/remediation work conducted to date, site hydrogeologic conditions, and tables that summarize all of the soil and ground water sample analytical results are presented in KEI's report (KEI-P89-1204.QR4) dated March 4, 1992.

RECENT FIELD ACTIVITIES

Monitoring well MWA was monitored twice and was sampled once during the semi-annual period. During monitoring, the well was checked for depth to water and the presence of free product. Prior to sampling, the well was also checked for the presence of a sheen. No free product or sheen was noted in the well during the semi-annual period. The monitoring data collected during this period are summarized in Table 1.

2401 Stanwell Drive, Suite 400
Concord, California 94520
Tel: 510.602.5100 Fax: 510.687.0602

A water sample was collected from the well on August 4, 1992. Prior to sampling, the well was purged of 18 gallons of water by the use of a surface pump. The sample was collected by the use of a clean Teflon bailer. The sample was then decanted into clean VOA vials and/or one-liter amber bottles, as appropriate, which were then sealed with Teflon-lined screw caps and stored in a cooler, on ice, until delivery to the state-certified laboratory.

HYDROLOGY

The measured depth to ground water at the site on August 4, 1992, was 18.95 feet below grade. The water level in the well has shown a net increase of 0.93 feet since February 6, 1992.

ANALYTICAL RESULTS

The ground water sample was analyzed at Sequoia Analytical Laboratory and was accompanied by properly executed Chain of Custody documentation. The sample was analyzed for total petroleum hydrocarbons (TPH) as gasoline by EPA method 5030/modified 8015, and benzene, toluene, xylenes, and ethylbenzene (BTX&E) by EPA method 8020. In addition, the sample was also analyzed for TPH as diesel by EPA method 3510/modified 8015, TOG by Standard Methods 5520B&F, and for EPA method 8010 constituents.

The ground water sample analytical results are summarized in Table 2. Copies of the laboratory analytical results and Chain of Custody documentation are attached to this report.

DISCUSSION AND RECOMMENDATIONS

Based on the analytical results for the ground water samples collected and evaluated to date, and no evidence of free product or sheen in the well, KEI recommends the continuation of the current monitoring and sampling program, per KEI's work plan/proposal (KEI-P89-1204.P4) dated January 21, 1991, and as modified in KEI's quarterly report (KEI-P89-1204.QR4) dated March 4, 1992.

DISTRIBUTION

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

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 these 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.

If you have any questions regarding this report, please do not hesitate to call me at (510) 602-5100.

Sincerely,

Kaprealian Engineering, Inc.

Teresa Trinh
Staff Engineer

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

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

Timothy R. Ross
Project Manager

/bp

Attachments: Tables 1 & 2
Location Map
Well and Exploratory Boring Location Map
Laboratory Analyses
Chain of Custody documentation

KEI-P89-1204.QR5
September 2, 1992

TABLE 1

SUMMARY OF MONITORING DATA

Well No.	Depth to Water (feet)	Product Thickness (feet)	Sheen	Water Purged (gallons)
(Monitored and Sampled on August 4, 1992)				
MWA	18.95	0	No	18
(Monitored on March 4, 1992)				
MWA	24.81	0	--	0

-- Sheen determination was not performed.

KEI-P89-1204.QR5
September 2, 1992

TABLE 2

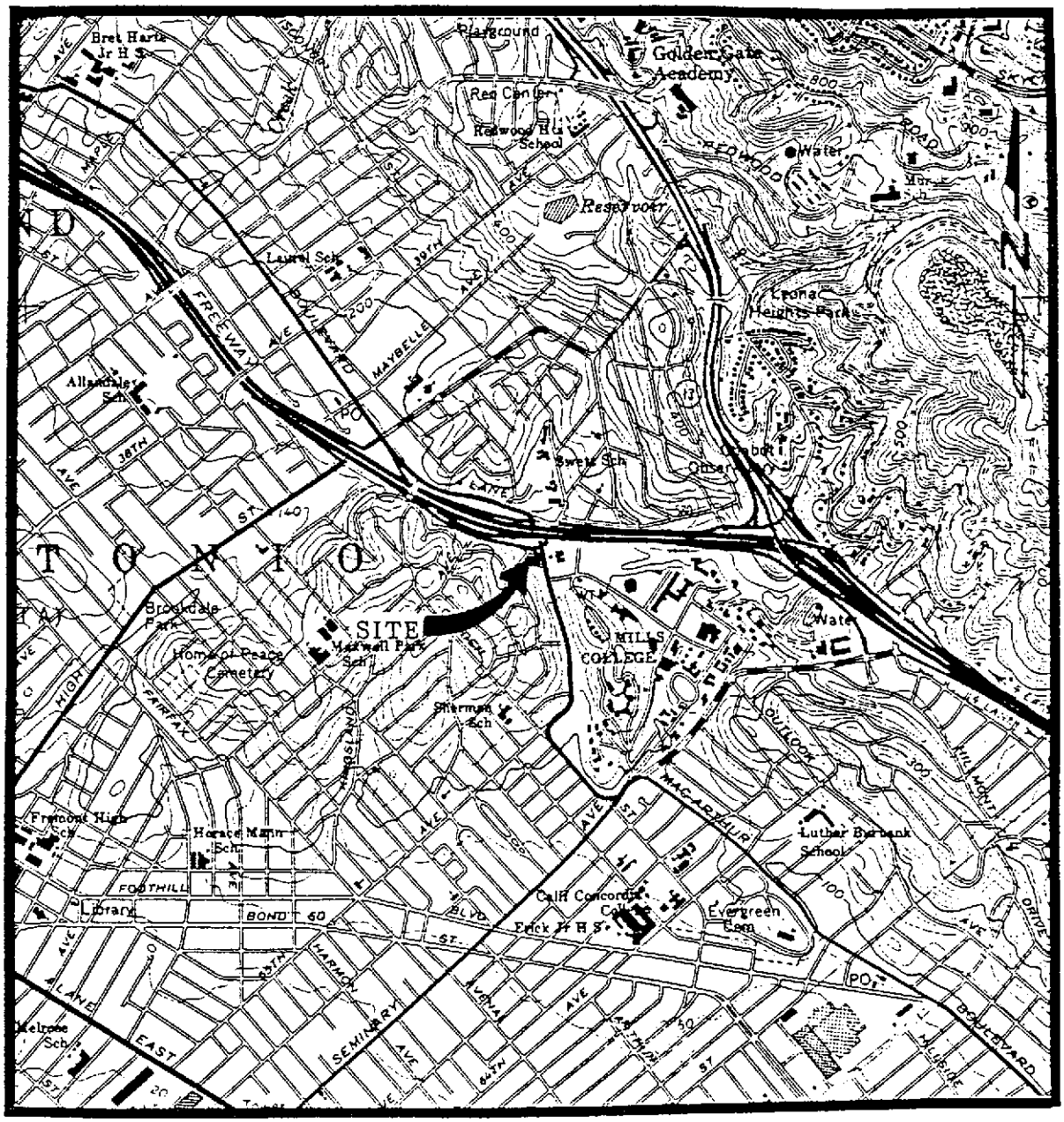
SUMMARY OF LABORATORY ANALYSES
WATER

Date	Sample Well #	TPH as Diesel	TPH as Gasoline	Benzene	Toluene	Xylenes	Ethyl-benzene
8/04/92	MWA*	ND	ND	ND	ND	0.51	ND
2/06/92	MWA*	ND	ND	ND	ND	ND	ND
11/08/91	MWA*	ND	ND	ND	ND	ND	ND
8/07/91	MWA*	ND	ND	ND	ND	ND	ND
5/03/91	MWA*	ND	ND	ND	ND	ND	ND
12/18/90	MWA*	73	ND	ND	ND	ND	ND

* TOG and all EPA method 8010 compounds were non-detectable.

ND = Non-detectable.

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

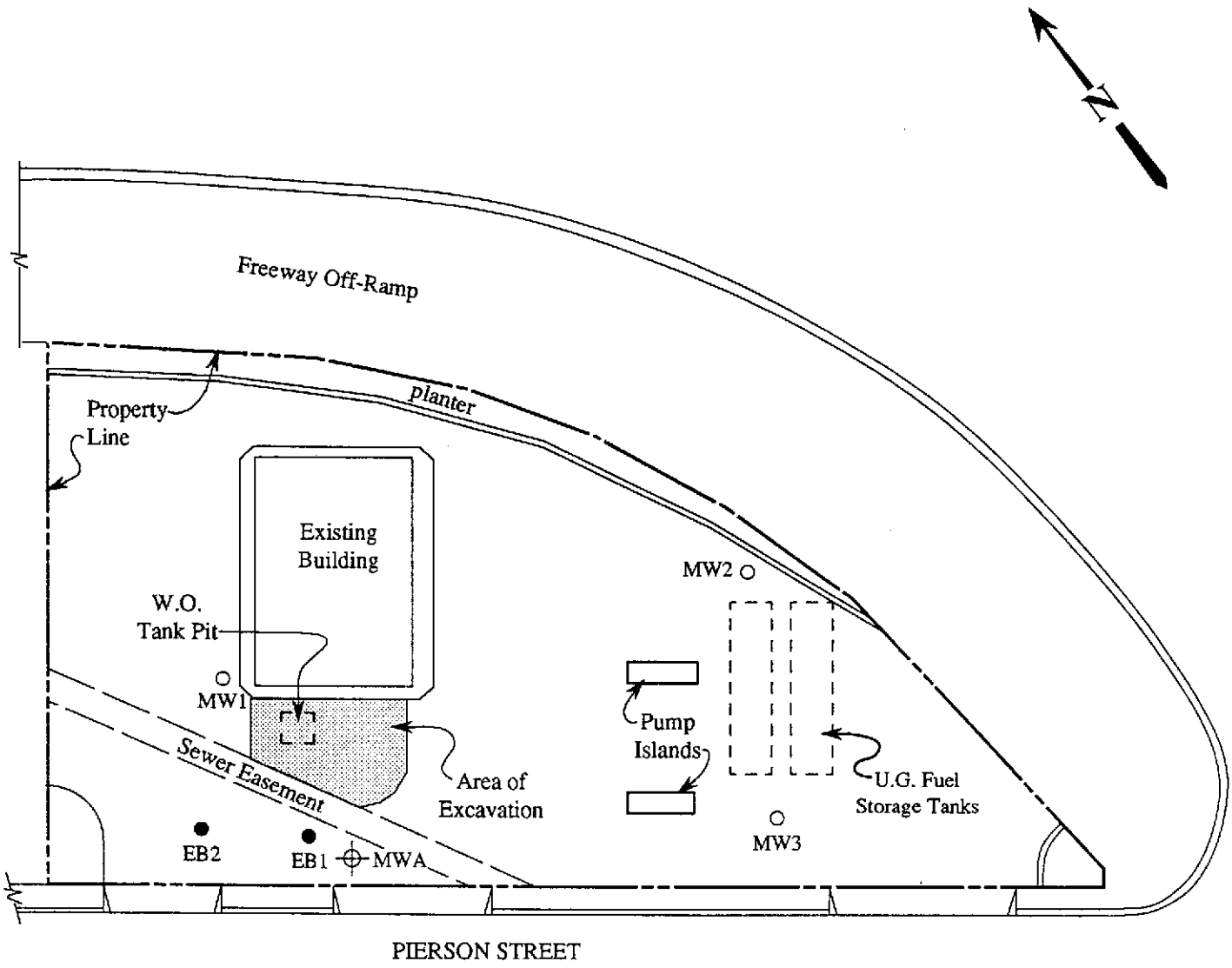


Base modified from 7.5 minute U.S.G.S. Oakland East Quadrangle
(photorevised 1980)

0 2000 4000

Approx. scale feet

KAPREALIAN ENGINEERING INCORPORATED	UNOCAL SERVICE STATION #5781 3535 PIERSON STREET OAKLAND, CA	LOCATION MAP



LEGEND

- Monitoring well
- Exploratory boring (drilled 7/5 & 7/6/90)
- Exploratory boring (drilled 4/9 & 4/10/90)

0 30 60

Approx. scale feet

WELL AND EXPLORATORY BORING LOCATION MAP

KAPREALIAN ENGINEERING
INCORPORATED

UNOCAL SERVICE STATION #5781
3535 PIERSON STREET
OAKLAND, CA

SEQUOIA ANALYTICAL

1900 Bates Avenue • Suite LM • Concord, California 94520
(510) 686-9600 • FAX (510) 686-9689

Kaprealian Engineering, Inc.	Client Project ID:	Unocal, 3535 Pierson St., Oakland	Sampled:	Aug 4, 1992
2401 Stanwell Drive, Suite 400	Sample Matrix:	Water	Received:	Aug 5, 1992
Concord, CA 94520	Analysis Method:	EPA 5030/8015/8020	Reported:	Aug 18, 1992
Attention: Mardo Kaprealian, P.E.	First Sample #:	208-0178		

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit µg/L	Sample I.D. 208-0178 MW A	Sample I.D. Matrix Blank
Purgeable Hydrocarbons	50	N.D.	
Benzene	0.5	N.D.	
Toluene	0.5	N.D.	
Ethyl Benzene	0.5	N.D.	
Total Xylenes	0.5	0.51	
Chromatogram Pattern:		--	

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0
Date Analyzed:	8/11/92	8/11/92
Instrument Identification:	ML-2	ML-2
Surrogate Recovery, %: (QC Limits = 70-130%)	91	99

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

SEQUOIA ANALYTICAL

Scott A. Chieffo
Project Manager

SEQUOIA ANALYTICAL

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Kaprealian Engineering, Inc.	Client Project ID:	Unocal, 3535 Pierson St., Oakland	Sampled:	Aug 4, 1992
2401 Stanwell Drive, Suite 400	Sample Matrix:	Water	Received:	Aug 5, 1992
Concord, CA 94520	Analysis Method:	EPA 3510/3520/8015	Reported:	Aug 18, 1992
Attention: Mardo Kaprealian, P.E.	First Sample #:	208-0178		

TOTAL EXTRACTABLE PETROLEUM HYDROCARBONS

Analyte	Reporting Limit µg/L	Sample I.D. 208-0178 MW A	Sample I.D. Matrix Blank
Extractable Hydrocarbons	50	N.D.	
Chromatogram Pattern:		--	

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0
Date Extracted:	8/8/92	8/8/92
Date Analyzed:	8/12/92	8/12/92
Instrument Identification:	HP-3A	HP-3A

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

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Scott A. Chieffo
Project Manager

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Kaprealian Engineering, Inc.	Client Project ID:	Unocal, 3535 Pierson St., Oakland	Sampled:	Aug 4, 1992
2401 Stanwell Drive, Suite 400	Matrix Descript:	Water	Received:	Aug 5, 1992
Concord, CA 94520	Analysis Method:	SM 5520 B&F (Gravimetric)	Extracted:	Aug 6, 1992
Attention: Mardo Kaprealian, P.E.	First Sample #:	208-0178	Analyzed:	Aug 11, 1992
			Reported:	Aug 18, 1992

TOTAL RECOVERABLE PETROLEUM OIL

Sample Number	Sample Description	Oil & Grease mg/L (ppm)
208-0178	MW A	N.D.

Detection Limits:	5.0

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

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Scott A. Chieffo
Project Manager

2080178.KEI <3>

SEQUOIA ANALYTICAL

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Kaprealian Engineering, Inc.	Client Project ID:	Unocal, 3535 Pierson St., Oakland	Sampled:	Aug 4, 1992
2401 Stanwell Drive, Suite 400	Sample Descript:	Water, MW A	Received:	Aug 5, 1992
Concord, CA 94520	Analysis Method:	EPA 5030/8010	Analyzed:	8/12 & 8/17/92
Attention: Mardo Kaprealian, P.E.	Lab Number:	208-0178	Reported:	Aug 18, 1992

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	0.50	N.D.
Carbon tetrachloride	0.50	N.D.
Chlorobenzene	0.50	N.D.
Chloroethane	0.50	N.D.
2-Chloroethylvinyl ether	0.50	N.D.
Chloroform	0.50	N.D.
Chloromethane	0.50	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	0.50	N.D.

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

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Project Manager

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Kapreallan Engineering, Inc.
2401 Stanwell Drive, Suite 400
Concord, CA 94520
Attention: Mardo Kaprealian, P.E.

Client Project ID: Unocal, 3535 Pierson St., Oakland
QC Sample Group: 208-0178
Reported: Aug 18, 1992

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl-Benzene	Xylenes	Diesel	Oil and Grease
Method:	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020	EPA8015	SM5520
Analyst:	J. Dinsay	J. Dinsay	J. Dinsay	J. Dinsay	K.Wimer	D. Newcomb
Reporting Units:	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L
Date Analyzed:	Aug 11, 1992	Aug 11, 1992	Aug 11, 1992	Aug 11, 1992	Aug 12, 1992	Aug 11, 1992
QC Sample #:	Matrix Blank	Matrix Blank	Matrix Blank	Matrix Blank	Matrix Blank	Matrix Blank
Sample Conc.:	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.
Spike Conc. Added:	10	10	10	30	300	100
Conc. Matrix Spike:	9.4	9.1	11	32	304	94
Matrix Spike % Recovery:	94	91	109	105	101	94
Conc. Matrix Spike Dup.:	9.5	9.4	9.8	29	260	94
Matrix Spike Duplicate % Recovery:	95	94	98	97	87	94
Relative % Difference:	1.0	3.2	10	8.6	16	0.0

Laboratory blank contained the following analytes: None Detected

SEQUOIA ANALYTICAL

Scott A. Chieffo
Project Manager

% 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

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Kaprealian Engineering, Inc. Client Project ID: Unocal, 3535 Pierson St., Oakland
2401 Stanwell Drive, Suite 400
Concord, CA 94520
Attention: Mardo Kaprealian, P.E. QC Sample Group: 208-0178 Reported: Aug 18, 1992

QUALITY CONTROL DATA REPORT

ANALYTE	1,1-Dichloroethene	Trichloro-ethene	Chloro-benzene
Method:	EPA 8010	EPA 8010	EPA 8010
Analyst:	K.Nill	K.Nill	K.Nill
Reporting Units:	µg/L	µg/L	µg/L
Date Analyzed:	Aug 17, 1992	Aug 17, 1992	Aug 17, 1992
QC Sample #:	Matrix Blank	Matrix Blank	Matrix Blank
Sample Conc.:	N.D.	N.D.	N.D.
Spike Conc. Added:	10	10	10
Conc. Matrix Spike:	13	8.6	9.8
Matrix Spike % Recovery:	130	86	98
Conc. Matrix Spike Dup.:	11	7.4	8.3
Matrix Spike Duplicate % Recovery:	110	74	83
Relative % Difference:	17	15	17

Quality Assurance Statement: All standard operating procedures and quality control requirements have been met.
Laboratory Blank contained the following analytes: None detected.

SEQUOIA ANALYTICAL

Scott A. Chieffo
Project Manager

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

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Kaprealian Engineering, Inc.
2401 Stanwell Drive, Suite 400
Concord, CA 94520
Attention: Mardo Kaprealian, P.E.

Client Project ID: Unocal, 3535 Pierson St., Oakland
QC Sample Group: 208-0178
Reported: Aug 18, 1992

QUALITY CONTROL DATA REPORT

SURROGATE

Method:	EPA 8015	EPA 8015
Analyst:	K. Wimer	K. Wimer
Reporting Units:	µg/L	µg/L
Date Analyzed:	Aug 12, 1992	Aug 12, 1992
Sample #:	208-0178	Matrix Blank
Surrogate % Recovery:	95	88

SEQUOIA ANALYTICAL

Scott A. Chieffo
Project Manager

% 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

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Kaprealian Engineering, Inc. Client Project ID: Unocal, 3535 Pierson St., Oakland
2401 Stanwell Drive, Suite 400
Concord, CA 94520
Attention: Mardo Kaprealian, P.E. QC Sample Group: 208-0178 Reported: Aug 18, 1992

QUALITY CONTROL DATA REPORT

SURROGATE

Method:	EPA 8010	EPA 8010
Analyst:	K. Nill	K. Nill
Reporting Units:	µg/L	µg/L
Date Analyzed:	Aug 17, 1992	Aug 17, 1992
Sample #:	208-0178	Matrix Blank
Surrogate #1 % Recovery:	75	85
Surrogate #2 % Recovery:	125	120

SEQUOIA ANALYTICAL

Scott A. Chieffo
Project Manager

% 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

KAPREALIAN ENGINEERING, INC.

CHAIN OF CUSTODY

SAMPLER	SITE NAME & ADDRESS	ANALYSES REQUESTED	TURN AROUND TIME:
Vartkes	Unocal / Oakland 3535 Pierson str.	TPHG & BTXE; TPH D; TOG (5520 B&F); 8010	Regular
WITNESSING AGENCY			

SAMPLE ID NO.	DATE	TIME	SOIL	WATER	GRAB	COMP	NO. OF CONT.	SAMPLING LOCATION	TPHG & BTXE	TPH D	TOG (5520 B&F)	8010				REMARKS
MW A	8/4/92	10:35 A.M.		✓	✓		6	Monitoring Well	✓	✓	✓	✓				2080178AF

Relinquished by: (Signature)	Date/Time	Received by: (Signature)
W. Tkalatza [signature]	8/4/92 5:00	Tim [signature]
Sophie Patuga [signature]	8-5-92 14:12	[signature]
[signature]	8-5-92 1541	[signature]

The following MUST BE completed by the laboratory accepting samples for analysis:

1. Have all samples received for analysis been stored in ice? Y
2. Will samples remain refrigerated until analyzed? Y
3. Did any samples received for analysis have head space? N
4. Were samples in appropriate containers and properly packaged? Y

J.C.	Analyst.	8.5.92
Signature	Title	Date