



KAPREALIAN ENGINEERING
INCORPORATED

TC405

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January 18, 1994

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

Attention: Ms. Cynthia Chapman

RE: Unocal Service Station #3135
845 - 66th Avenue
Oakland, California

Dear Ms. Chapman:

Per the request of Mr. Tim Howard of Unocal Corporation, enclosed please find our report dated December 15, 1993, 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.

3693

Judy A. Dewey

jad\82

Enclosure

cc: Tim Howard, Unocal Corporation


KAPREALIAN ENGINEERING
INCORPORATED

KEI-P88-1203.QR10
December 15, 1993

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

Attention: Mr. Tim Howard

RE: Quarterly Report
Unocal Service Station #3135
845 - 66th Avenue
Oakland, California

Dear Mr. Howard:

This report presents the results of the most recent quarter of monitoring and sampling of the monitoring wells at the referenced site by Kaprealian Engineering, Inc. (KEI). The wells are currently monitored monthly and sampled on a quarterly basis. This report covers the work performed by KEI from September through November of 1993.

BACKGROUND

The subject site contains a Unocal service station facility. Two underground fuel storage tanks, one waste oil tank, and the product piping were removed from the site in November and December of 1989 during tank replacement activities. During March and April of 1991, approximately 2,000 cubic yards of contaminated soil were excavated from the area in the vicinity of the former (pre-1967) fuel tank pit. The soil excavation was conducted to a depth of approximately 1 foot below ground water (11 feet below grade). Ten monitoring wells, two exploratory borings, and a Hydropunch study (seven probe locations) have been installed/performed at and in the vicinity of the site.

A site description, detailed background information including a summary of all of the soil and ground water subsurface investigation/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 quarterly report (KEI-P88-1203.R14) dated June 10, 1993.

RECENT FIELD ACTIVITIES

The ten monitoring wells (MW1 through MW10) were monitored three times and were sampled once during the quarter. During monitoring, the wells were checked for depth to water and the presence of free

product. Prior to sampling, the wells were also checked for the presence of a sheen. No free product or sheen was noted in any of the wells during the quarter, except for well MW2, in which a sheen was observed on November 11, 1993. The monitoring data collected this quarter are summarized in Table 1.

Ground water samples were collected from all of the wells on November 11, 1993. Prior to sampling, the wells were each purged of between 7 and 11 gallons of water by the use of a surface pump. The samples were collected by the use of 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.

HYDROLOGY

The measured depth to ground water at the site on November 11, 1993, ranged between 8.59 and 10.88 feet. The water levels in all of the wells have shown net decreases ranging from 0.82 to 1.46 feet since August 13, 1993. Based on the water level data gathered during the quarter, the ground water flow direction appeared to be complex, as shown on the attached Potentiometric Surface Maps, Figures 1, 2, and 3. The ground water elevation in well MW9 on October 14, 1993, was 0.47 to 0.92 feet lower than all of the other wells, and was not used in calculation of the ground water flow contours. The hydraulic gradient at the site on November 11, 1993, varied from approximately from 0.005 to 0.0004.

ANALYTICAL RESULTS

The ground water samples collected this quarter were analyzed at Sequoia Analytical Laboratory and were accompanied by properly executed Chain of Custody documentation. The samples were analyzed for total petroleum hydrocarbons (TPH) as gasoline by EPA method 5030/modified 8015, TPH as diesel by EPA method 3510/modified 8015, and benzene, toluene, ethylbenzene, and xylenes by EPA method 8020.

The analytical results of all of the ground water samples collected from the monitoring wells to date are summarized in Table 2. The concentrations of TPH as gasoline, benzene, and TPH as diesel 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.

DISCUSSION AND RECOMMENDATIONS

Based on the analytical results for the ground water samples collected and evaluated to date, and based on no evidence of free product in any of the wells, KEI recommends the continuation of the current ground water monitoring and sampling program. The wells are currently monitored monthly and sampled on a quarterly basis.

DISTRIBUTION

A copy of this report should be sent to Ms. Cynthia Chapman of the Alameda County Health Care Services Agency, and to Mr. Lester Feldman of 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.

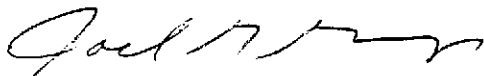
The results of this study are based on the data obtained from the field and laboratory analyses obtained from a state-certified laboratory. We have analyzed these data using what we believe to be currently applicable engineering techniques and principles in the Northern California region. We make no 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.

KEI-P88-1203.QR10
December 15, 1993
Page 4

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

Sincerely,

Kaprealian Engineering, Inc.



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

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



Robert H. Kezerian
Project Manager

/jad

Attachments: Tables 1 & 2
Location Map
Potentiometric Surface Maps - Figures 1, 2 & 3
Concentrations of Petroleum Hydrocarbons - Figure 4
Laboratory Analyses
Chain of Custody documentation

KEI-P88-1203.QR10
December 15, 1993

TABLE 1

SUMMARY OF MONITORING DATA

<u>Well No.</u>	<u>Ground Water Elevation (feet)</u>	<u>Depth to Water (feet)</u>	<u>Product Thickness (feet)</u>	<u>Sheen</u>	<u>Water Purged (gallons)</u>
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(Monitored and Sampled on November 11, 1993)

MW1	-5.81	10.80	0	No	8.5
MW2	-5.65	9.22	0	Yes	9.5
MW3	-5.81	8.92	0	No	9
MW4	-5.95	10.88	0	No	10
MW5	-5.86	10.13	0	No	11
MW6	-5.84	9.87	0	No	11
MW7	-5.85	10.27	0	No	7
MW8	-5.79	10.22	0	No	9
MW9	-5.79	10.39	0	No	9
MW10	-5.90	8.59	0	No	10

(Monitored on October 14, 1993)

MW1	-5.74	10.73	0	--	0
MW2	-5.46	9.03	0	--	0
MW3	-5.78	8.90	0	--	0
MW4	-5.91	10.84	0	--	0
MW5	-5.77	10.04	0	--	0
MW6	-5.72	9.75	0	--	0
MW7	-5.83	10.25	0	--	0
MW8	-5.80	10.23	0	--	0
MW9	-6.38	10.98	0	--	0
MW10	-5.88	8.57	0	--	0

(Monitored on September 13, 1993)

MW1	-5.41	10.40	0	--	0
MW2	-5.43	9.00	0	--	0
MW3	-5.30	8.42	0	--	0
MW4	-5.69	10.62	0	--	0
MW5	-5.61	9.88	0	--	0
MW6	-5.56	9.59	0	--	0
MW7	-5.66	10.08	0	--	0
MW8	-5.97	10.40	0	--	0
MW9	-5.50	10.10	0	--	0
MW10	-6.05	8.74	0	--	0

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December 15, 1993

TABLE 1 (Continued)

SUMMARY OF MONITORING DATA

<u>Well #</u>	<u>Well Cover Elevation in feet above Mean Sea Level (MSL)*</u>
MW1	4.99
MW2	3.57
MW3	3.12
MW4	4.93
MW5	4.27
MW6	4.03
MW7	4.42
MW8	4.43
MW9	4.60
MW10	2.69

-- Sheen determination was not performed.

* The elevations of the tops of the well covers have been surveyed relative to MSL, per the City of Oakland Benchmark No. 3881 (elevation = 4.72 MSL).

KEI-P88-1203.QR10
 December 15, 1993

TABLE 2

SUMMARY OF LABORATORY ANALYSES
 WATER

<u>Sample Number</u>	<u>TPH as Diesel</u>	<u>TPH as Gasoline</u>	<u>Benzene</u>	<u>Toluene</u>	<u>Ethyl-benzene</u>	<u>Xylenes</u>	<u>TOG</u>
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(Collected on November 11, 1993)

MW1	160♦♦	930	7.3	ND	25	19	--
MW2	7,000♦♦	36,000	4,800	970	3,000	8,100	--
MW3	51	ND	ND	ND	ND	ND	--
MW4	4,000♦	16,000	110	12	1,800	3,800	--
MW5	ND	ND	ND	ND	ND	ND	--
MW6	650♦♦	3,000	470	ND	220	270	--
MW7	66	ND	ND	ND	ND	ND	--
MW8	ND	ND	ND	ND	ND	ND	--
MW9	ND	ND	ND	ND	ND	ND	--
MW10	88♦♦	1,600*	ND	ND	ND	ND	--

(Collected on August 13, 1993)

MW1	170♦♦	860	3.5	ND	17	20	--
MW2	2,800♦♦	44,000	5,100	600	2,900	8,500	--
MW3	ND	ND	ND	ND	ND	ND	--
MW4	2,000♦♦	19,000	ND	ND	1,600	4,100	--
MW5	ND	ND	ND	ND	ND	ND	--
MW6	440♦♦	2,300	330	ND	95	40	--
MW7	ND	ND	ND	ND	ND	ND	--
MW8	ND	ND	ND	ND	ND	ND	--
MW9	ND	ND	ND	ND	ND	ND	--
MW10	97♦♦	1,500**	ND	ND	41	21	--

(Collected on May 17, 1993)

MW1	490♦♦	960**	39	ND	57	60	--
MW2	5,500♦♦	46,000	4,400	510	2,900	9,900	--
MW3	53	ND	ND	ND	ND	ND	--
MW4	3,100♦	2,500	ND	ND	170	410	--
MW5	ND	ND	ND	ND	ND	ND	--
MW6	1,400♦	4,900	890	46	210	530	--
MW7	ND	ND	ND	ND	ND	ND	--
MW8	ND	ND	ND	ND	ND	ND	--
MW9	ND	ND	ND	ND	ND	ND	--
MW10	ND	1,200*	ND	ND	ND	ND	--

KEI-P88-1203.QR10
 December 15, 1993

TABLE 2 (Continued)

SUMMARY OF LABORATORY ANALYSES
 WATER

Sample Number	TPH as Diesel	TPH as Gasoline	Benzene	Toluene	Ethylbenzene	Xylenes	TOG
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(Collected on February 3, 1993)

MW1	ND	94**	ND	ND	1.4	1.6	--
MW2	3,900♦	9,300	780	68	830	1,200	ND
MW3	ND	ND	ND	ND	ND	ND	--
MW4	720♦♦	370	2.6	ND	1.2	53	--
MW5	ND	ND	ND	ND	ND	ND	--
MW6	ND	ND	1.2	ND	ND	ND	ND
MW8	ND	ND	ND	ND	ND	ND	--
MW9	ND	ND	ND	ND	ND	ND	--
MW10	ND	1,200*	ND	ND	ND	ND	--

(Collected on November 3, 1992)

MW1	400♦	1,100	28	ND	80	78	--
MW2	9,600♦	40,000	5,600	130	3,000	6,100	ND
MW3	52♦	ND	ND	ND	ND	ND	--
MW4	8,300♦	36,000	69	ND	3,000	7,400	--
MW5	ND	ND	ND	ND	ND	ND	--
MW6	220♦	920	45	0.76	12	110	ND
MW8	ND	ND	ND	ND	ND	ND	--
MW9	ND	ND	ND	ND	ND	ND	--
MW10	160♦	740	11	2.1	32	56	--

(Collected on August 3, 1992)

MW1	220♦	980	22	0.69	77	82	--
MW2	3,300♦♦	37,000	4,500	480	3,300	9,700	ND
MW3	58	ND	ND	ND	ND	ND	--
MW4	2,400♦	24,000	61	ND	2,100	5,400	--
MW5	ND	ND	ND	ND	ND	ND	--
MW6	170♦	1,100	180	1.1	62	78	ND

(Collected on May 5, 1992)

MW1	120	310	5.7	ND	7.1	15	--
MW2	4,600	26,000	2,300	110	2,700	6,900	ND
MW3	56	ND	ND	ND	0.43	1.8	--
MW4	3,200	15,000	82	12	2,000	5,600	--
MW5	72	ND	ND	ND	0.42	1.4	--
MW6	47	ND	ND	ND	ND	1.3	ND

KEI-P88-1203.QR10
 December 15, 1993

TABLE 2 (Continued)

SUMMARY OF LABORATORY ANALYSES
 WATER

<u>Sample Number</u>	<u>TPH as Diesel</u>	<u>TPH as Gasoline</u>	<u>Benzene</u>	<u>Toluene</u>	<u>Ethyl-benzene</u>	<u>Xylenes</u>	<u>TOG</u>
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(Collected on February 7, 1992)

MW1	ND	220	2.1	ND	10	16	--
MW2	2,300	11,000	1,400	30	1,900	1,400	ND
MW3	ND	ND	ND	ND	ND	ND	--
MW4	2,300	8,100	24	4.9	1,800	3,200	--
MW5	ND	ND	ND	ND	0.36	0.94	--
MW6	ND	180	22	0.68	22	20	ND

(Collected on November 5, 1991)

MW1	260	4,900	80	ND	150	160	--
MW2	3,900	110,000	4,200	200	3,400	8,600	78
MW3	ND	31	ND	ND	ND	0.65	--
MW4	7,700	140,000	320	ND	4,800	13,000	--
MW5	ND	ND	ND	ND	ND	ND	--
MW6	300	7,100	200	ND	190	580	ND

(Collected on August 5, 1991)

MW1	200	1,200	95	6.2	230	80	--
MW2	4,200	33,000	2,900	190	3,400	7,900	ND
MW3	63	ND	ND	ND	ND	ND	--
MW4	6,200	37,000	310	70	3,600	9,700	--
MW5	ND	ND	ND	ND	ND	ND	--
MW6	130	860	130	11	92	150	ND

(Collected on February 21, 1991)

MW1	690	26,000	280	39	1,200	1,900	--
MW2	7,000	3,400	160	61	200	490	ND
MW3	--	ND	ND	ND	ND	0.64	--
MW4	4,100	33,000	210	21	3,800	12,000	--
MW5	--	56	ND	ND	ND	4.7	--
MW6	160	750	77	14	23	140	ND
MWD	--	740	74	12	33	140	--

(MW6 duplicate)

TABLE 2 (Continued)

SUMMARY OF LABORATORY ANALYSES
 WATER

Sample Number	TPH as Diesel	TPH as Gasoline	Benzene	Toluene	Ethyl-benzene	Xylenes	TOG
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(Collected on November 26, 1990)

MW1	--	2,900	160	2.3	330	320	--
MW2	3,800	15,000	1,600	450	1,100	2,100	ND
MW3	--	ND	ND	ND	ND	ND	--
MW4	--	49,000	360	36	3,800	11,000	--
MW5	--	ND	ND	ND	ND	ND	--
MW6	320	4,800	1,000	200	340	650	ND
MW7	--	4,000	800	120	250	440	--

(MW6 duplicate)

(Collected on August 28, 1990)

MW1	--	1,700	140	1.4	180	150	--
MW2	3,100	27,000	2,600	1,300	1,900	3,000	ND
MW3	--	ND	ND	ND	ND	0.70	--
MW4	--	62,000	810	72	4,400	4,600	--
MW5	--	ND	ND	ND	ND	1.2	--
MW6	1,000	12,000	1,700	1,400	230	2,100	16
MW7	--	2,600	180	3.0	810	270	--

(MW1 duplicate)

(Collected on May 11, 1990)

MW1	--	22,000	590	42	1,200	3,600	--
MW2	--	65,000	3,300	3,300	4,100	12,000	--
MW3	--	ND	ND	ND	ND	ND	--

* 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 non-gasoline mixture.

◆ Sequoia Analytical Laboratory reported that the hydrocarbons detected did not appear to be diesel.

KEI-P88-1203.QR10
December 15, 1993

TABLE 2 (Continued)

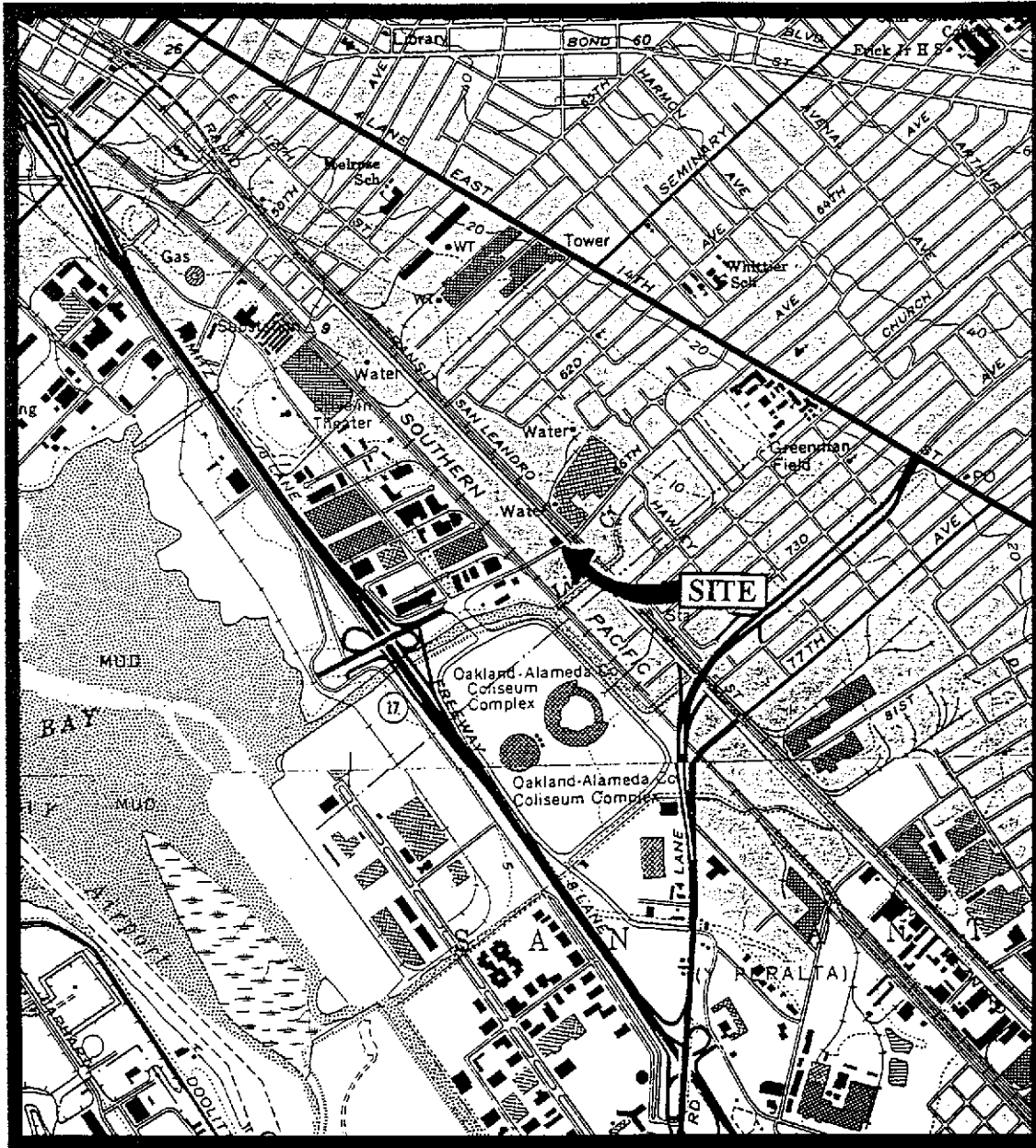
SUMMARY OF LABORATORY ANALYSES
WATER

♦♦ Sequoia Analytical Laboratory reported that the hydrocarbons detected appeared to be a diesel and non-diesel mixture.

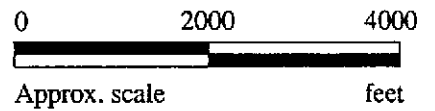
ND = Non-detectable.

-- Indicates analysis was not performed.

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



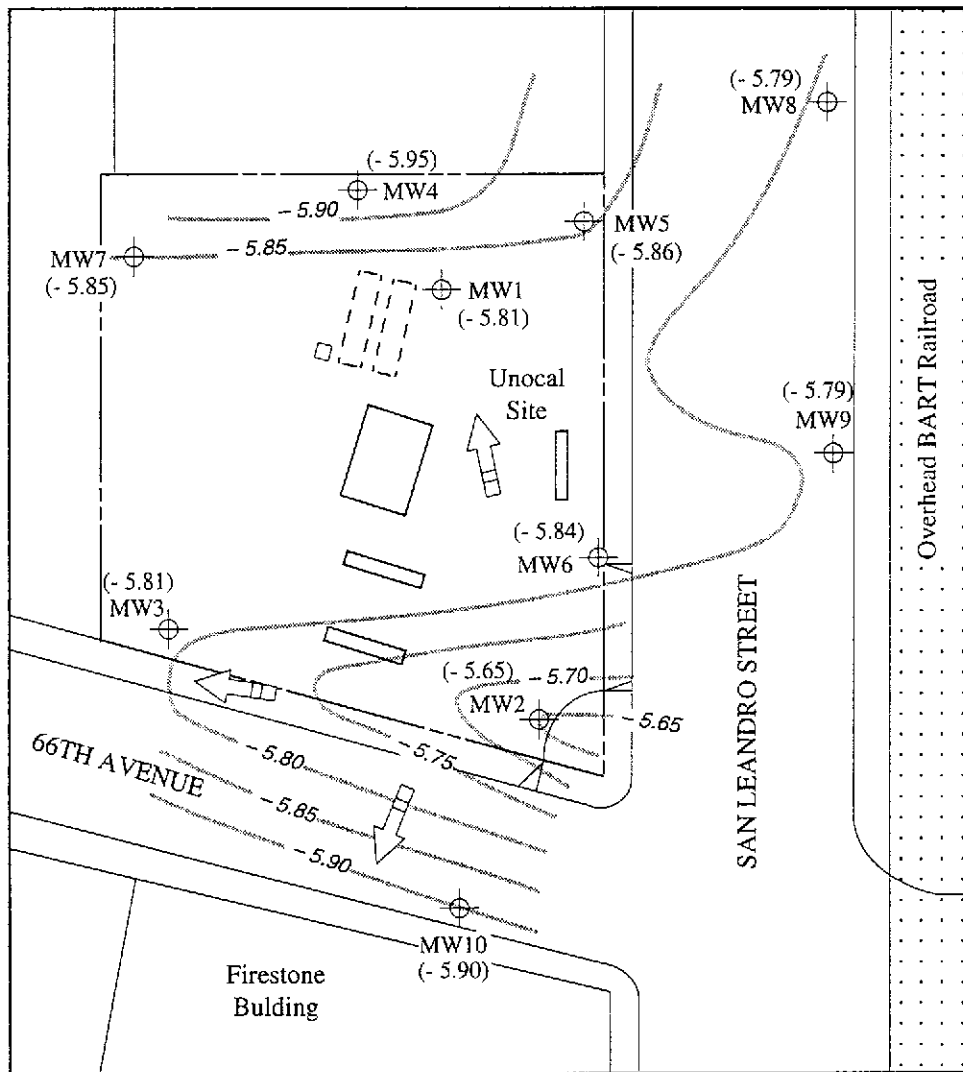
Base modified from 7.5 minute U.S.G.S.
 Oakland East and San Leandro Quadrangles
 (both photorevised 1980)




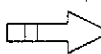

KEI
 KAPREALIAN ENGINEERING
 INCORPORATED

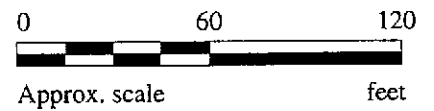
UNOCAL SERVICE STATION #3135
845 - 66TH AVENUE
OAKLAND, CALIFORNIA

LOCATION
MAP



LEGEND

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

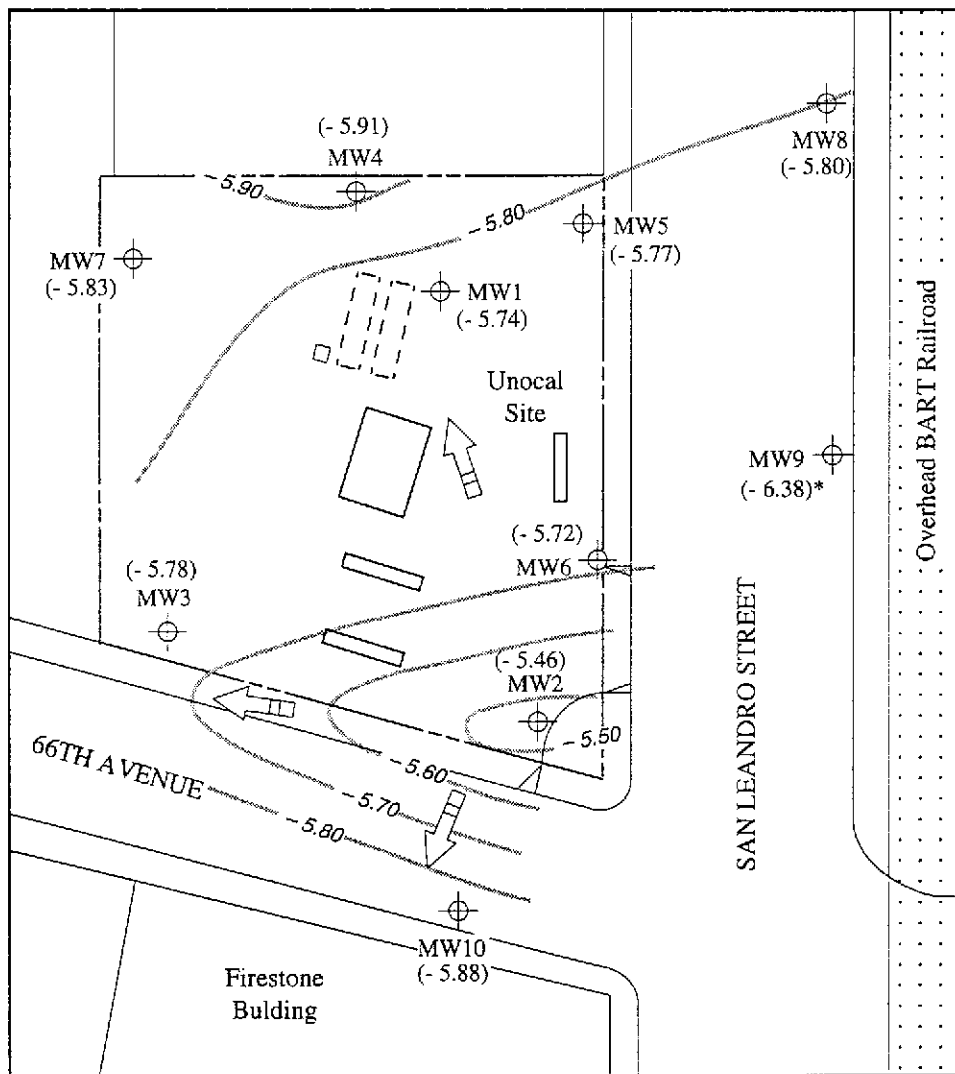


POTENTIOMETRIC SURFACE MAP FOR THE NOVEMBER 11, 1993 MONITORING EVENT


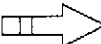


**KAPREALIAN ENGINEERING
 INCORPORATED**

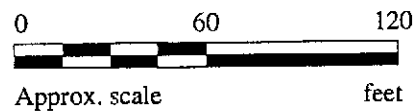
**UNOCAL SERVICE STATION #3135
 845 - 66TH AVENUE
 OAKLAND, CALIFORNIA**

**FIGURE
 1**



LEGEND

-  Monitoring well
-  Direction of ground water flow
- () Ground water elevation in feet relative to Mean Sea Level
-  Contours of ground water elevation
- * Elevations not used in contouring

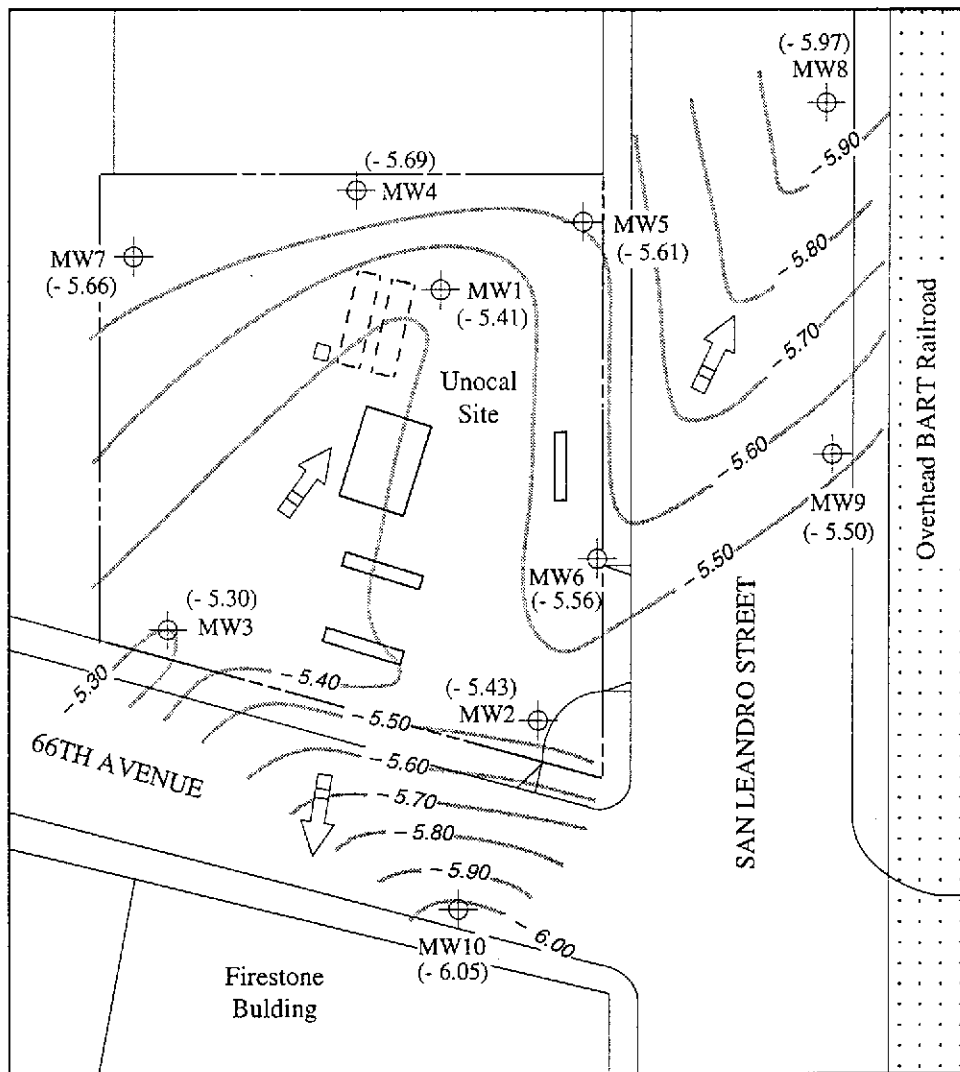


POTENTIOMETRIC SURFACE MAP FOR THE OCTOBER 14, 1993 MONITORING EVENT



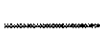


**UNOCAL SERVICE STATION #3135
845 - 66TH AVENUE
OAKLAND, CALIFORNIA**

**FIGURE
2**



LEGEND

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

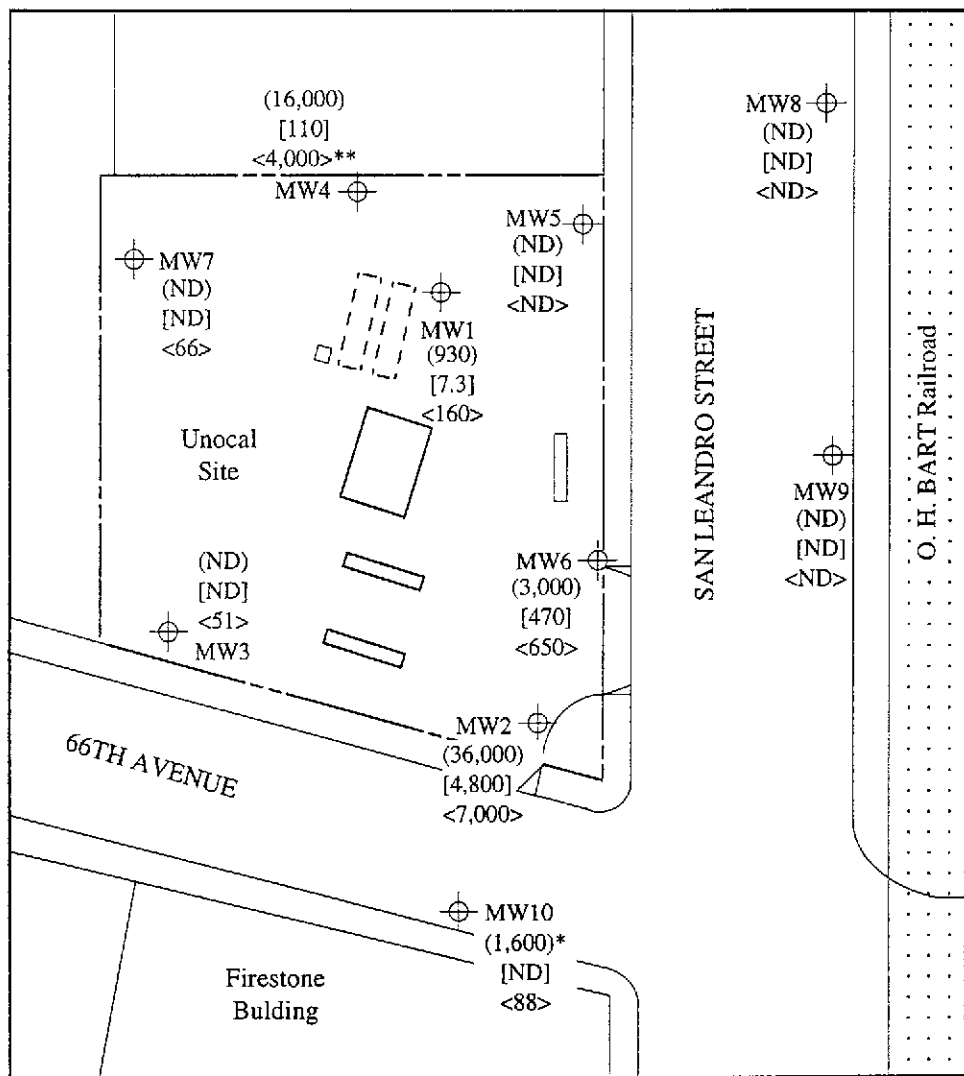


POTENTIOMETRIC SURFACE MAP FOR THE SEPTEMBER 13, 1993 MONITORING EVENT



**UNOCAL SERVICE STATION #3135
845 - 66TH AVENUE
OAKLAND, CALIFORNIA**

**FIGURE
3**

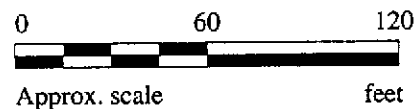


LEGEND

- ⊕ Monitoring well
- () Concentration of TPH as gasoline in ppb
- [] Concentration of benzene in ppb
- < > Concentration of TPH as diesel in ppb
- ND= Non-detectable

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

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



PETROLEUM HYDROCARBON CONCENTRATIONS IN GROUND WATER ON NOVEMBER 11, 1993



**UNOCAL SERVICE STATION #3135
845 - 66TH AVENUE
OAKLAND, CALIFORNIA**

**FIGURE
4**



SEQUOIA ANALYTICAL

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

Kaprealian Engineering, Inc.
2401 Stanwell Dr., Ste. 400
Concord, CA 94520
Attention: Avo Avedissian

Client Project ID: Unocal #3135, 845 66th Ave., Oakland
Sample Matrix: Water
Analysis Method: EPA 5030/8015/8020
First Sample #: 311-1088

Sampled: Nov 11, 1993
Received: Nov 12, 1993
Reported: Nov 30, 1993

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

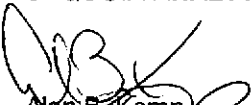
Analyte	Reporting Limit µg/L	Sample I.D. 311-1088 MW-1	Sample I.D. 311-1089 MW-2	Sample I.D. 311-1090 MW-3	Sample I.D. 311-1091 MW-4	Sample I.D. 311-1092 MW-5	Sample I.D. 311-1093 MW-6
Purgeable Hydrocarbons	50	930	36,000	N.D.	16,000	N.D.	3,000
Benzene	0.5	7.3	4,800	N.D.	110	N.D.	470
Toluene	0.5	N.D.	970	N.D.	12	N.D.	N.D.
Ethyl Benzene	0.5	25	3,000	N.D.	1,800	N.D.	220
Total Xylenes	0.5	19	8,100	N.D.	3,800	N.D.	270
Chromatogram Pattern:		Gasoline	Gasoline	--	Gasoline	--	Gasoline

Quality Control Data

Report Limit Multiplication Factor:	10	100	1.0	20	1.0	20
Date Analyzed:	11/16/93	11/16/93	11/16/93	11/16/93	11/16/93	11/17/93
Instrument Identification:	HP-5	HP-5	HP-5	HP-5	HP-5	HP-2
Surrogate Recovery, %: (QC Limits = 70-130%)	93	93	98	87	102	107

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

SEQUOIA ANALYTICAL


Alan B. Kemp
Project Manager



SEQUOIA ANALYTICAL

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

Kaprealian Engineering, Inc. 2401 Stanwell Dr., Ste. 400 Concord, CA 94520 Attention: Avo Avedissian	Client Project ID: Unocal #3135, 845 66th Ave., Oakland Sample Matrix: Water Analysis Method: EPA 5030/8015/8020 First Sample #: 311-1094	Sampled: Nov 11, 1993 Received: Nov 12, 1993 Reported: Nov 30, 1993
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TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

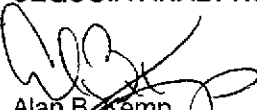
Analyte	Reporting Limit µg/L	Sample I.D.	Sample I.D.	Sample I.D.	Sample I.D.	Sample I.D.
		311-1094 MW-7	311-1095 MW-8	311-1096 MW-9	311-1097 MW-10*	Matrix Blank
Purgeable Hydrocarbons	50	N.D.	N.D.	N.D.	1,600	
Benzene	0.5	N.D.	N.D.	N.D.	N.D.	
Toluene	0.5	N.D.	N.D.	N.D.	N.D.	
Ethyl Benzene	0.5	N.D.	N.D.	N.D.	N.D.	
Total Xylenes	0.5	N.D.	N.D.	N.D.	N.D.	
Chromatogram Pattern:		--	--	--	Discrete Peak	--

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0	1.0	20	1.0
Date Analyzed:	11/17/93	11/17/93	11/16/93	11/19/93	11/16/93
Instrument Identification:	HP-2	HP-5	HP-4	HP-4	HP-4
Surrogate Recovery, %: (QC Limits = 70-130%)	104	107	96	99	104

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

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Alan B. Kemp
Project Manager

Please Note:

* Discrete Peak refers to an unidentified peak in the MTBE range.



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Kaprealian Engineering, Inc. 2401 Stanwell Dr., Ste. 400 Concord, CA 94520 Attention: Avo Avedissian	Client Project ID: Unocal #3135, 845 66th Ave., Oakland Sample Matrix: Water Analysis Method: EPA 3510/3520/8015 First Sample #: 311-1088	Sampled: Nov 11, 1993 Received: Nov 12, 1993 Reported: Nov 30, 1993
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TOTAL EXTRACTABLE PETROLEUM HYDROCARBONS

Analyte	Reporting Limit µg/L	Sample I.D. 311-1088 MW-1*	Sample I.D. 311-1089 MW-2*	Sample I.D. 311-1090 MW-3	Sample I.D. 311-1091 MW-4*	Sample I.D. 311-1092 MW-5	Sample I.D. 311-1093 MW-6*
Extractable Hydrocarbons	50	160	7,000	51	4,000	N.D.	650
Chromatogram Pattern:		Diesel and Non-Diesel Mixture (<C14)	Diesel and Non-Diesel Mixture (<C14)	Diesel	Non-Diesel Mixture (<C14)	--	Diesel and Non-Diesel Mixture (<C14)

Quality Control Data

Report Limit Multiplication Factor:	1.0	10	1.0	10	1.0	1.0
Date Extracted:	11/17/93	11/17/93	11/17/93	11/17/93	11/17/93	11/17/93
Date Analyzed:	11/22/93	11/23/93	11/22/93	11/23/93	11/22/93	11/22/93
Instrument Identification:	HP-3B	HP-3A	HP-3B	HP-3A	HP-3B	HP-3B

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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Alan B. Kemp
Project Manager

Please Note:

* Non-Diesel Mixture <C14 is probably Gasoline.



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Kaprealian Engineering, Inc. 2401 Stanwell Dr., Ste. 400 Concord, CA 94520 Attention: Avo Avedissian	Client Project ID: Unocal #3135, 845 66th Ave., Oakland Sample Matrix: Water Analysis Method: EPA 3510/3520/8015 First Sample #: 311-1094	Sampled: Nov 11, 1993 Received: Nov 12, 1993 Reported: Nov 30, 1993
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TOTAL EXTRACTABLE PETROLEUM HYDROCARBONS

Analyte	Reporting Limit μg/L	Sample I.D. 311-1094 MW-7	Sample I.D. 311-1095 MW-8	Sample I.D. 311-1096 MW-9	Sample I.D. 311-1097 MW-10*	Sample I.D. Matrix Blank
Extractable Hydrocarbons	50	66	N.D.	N.D.	88	
Chromatogram Pattern:		Diesel	--	--	Diesel and Non-Diesel Mixture (<C14)	

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0	1.0	1.0	1.0
Date Extracted:	11/17/93	11/17/93	11/17/93	11/17/93	11/17/93
Date Analyzed:	11/22/93	11/22/93	11/22/93	11/22/93	11/22/93
Instrument Identification:	HP-3B	HP-3B	HP-3B	HP-3B	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

Alan B. Kemp
Project Manager

Please Note:

* Non-Diesel Mixture <C14 is probably Gasoline.



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Kaprealian Engineering, Inc.
2401 Stanwell Dr., Ste. 400
Concord, CA 94520
Attention: Avo Avedissian

Client Project ID: Unocal #3135, 845 66th Ave., Oakland
Matrix: Liquid

QC Sample Group: 3111088-97

Reported: Dec 7, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl Benzene	Xylenes	Diesel
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020	EPA 8015
Analyst:	J.F.	J.F.	J.F.	J.F.	K. Wimer

MS/MSD	Benzene	Toluene	Ethyl Benzene	Xylenes	Diesel
Batch#:	3111041	3111041	3111041	3111041	BLK111793
Date Prepared:	11/16/93	11/16/93	11/16/93	11/16/93	11/17/93
Date Analyzed:	11/16/93	11/16/93	11/16/93	11/16/93	11/22/93
Instrument I.D.#:	HP-5	HP-5	HP-5	HP-5	HP-3B
Conc. Spiked:	20 µg/L	20 µg/L	20 µg/L	60 µg/L	300 µg/L
Matrix Spike % Recovery:	120	110	110	107	95
Matrix Spike Duplicate % Recovery:	115	115	105	107	101
Relative % Difference:	4.3	4.4	4.4	0.0	6.8

LCS Batch#:	3LCS111693	3LCS111693	3LCS111693	3LCS111693	BLK111793
Date Prepared:	11/16/93	11/16/93	11/16/93	11/16/93	11/17/93
Date Analyzed:	11/16/93	11/16/93	11/16/93	11/16/93	11/22/93
Instrument I.D.#:	HP-5	HP-5	HP-5	HP-5	HP-3B
LCS % Recovery:	127	118	111	109	95

% Recovery Control Limits:	71-133	72-128	72-130	71-120	28-122
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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.

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Alan B. Kemp
Project Manager



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Kaprealian Engineering, Inc.
2401 Stanwell Dr., Ste. 400
Concord, CA 94520
Attention: Avo Avedissian

Client Project ID: Unocal #3135, 845 66th Ave., Oakland

QC Sample Group: 3111088-94

Reported: Dec 7, 1993

QUALITY CONTROL DATA REPORT

SURROGATE

	EPA 8015	EPA 8015	EPA 8015	EPA 8015	EPA 8015	EPA 8015	EPA 8015
Method:	EPA 8015	EPA 8015	EPA 8015	EPA 8015	EPA 8015	EPA 8015	EPA 8015
Analyst:	K. Wimer	K. Wimer	K. Wimer	K. Wimer	K. Wimer	K. Wimer	K. Wimer
Reporting Units:	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Date Analyzed:	11/22/93	11/23/93	11/22/93	11/23/93	11/22/93	11/22/93	11/22/93
Sample #:	311-1088	311-1089	311-1090	311-1091	311-1092	311-1093	311-1094

Surrogate % Recovery:	97	105	95	77	97	95	94
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SEQUOIA ANALYTICAL

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


Alan B. Kemp
Project Manager



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Kaprealian Engineering, Inc.
2401 Stanwell Dr., Ste. 400
Concord, CA 94520
Attention: Avo Avedissian

Client Project ID: Unocal #3135, 845 66th Ave., Oakland

QC Sample Group: 3111095-97

Reported: Dec 7, 1993

QUALITY CONTROL DATA REPORT

SURROGATE

Method:	EPA 8015	EPA 8015	EPA 8015	EPA 8015
Analyst:	K. Wimer	K. Wimer	K. Wimer	K. Wimer
Reporting Units:	µg/L	µg/L	µg/L	µg/L
Date Analyzed:	11/22/93	11/22/93	11/22/93	11/22/93
Sample #:	311-1095	311-1096	311-1097	Matrix Blank

Surrogate				
% Recovery:	97	100	97	100

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Alan B. Kemp
Project Manager

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



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 819 Striker Ave., Suite 8 • Sacramento, CA 95834 • (916) 921-9600
 1900 Bates Ave., Suite LM • Concord, CA 94520 • (510) 686-9600

18939 120th Ave., N.E., Suite 101 • Bothell, WA 98011 • (206) 401-9200
 East 11115 Montgomery, Suite B • Spokane, WA 99206 • (509) 924-9200
 15055 S.W. Sequoia Pkwy, Suite 110 • Portland, OR 97222 • (503) 624-9800

Company Name: <u>KAPREALIAN ENGINEERING, INC.</u>		Project Name: <u>845 - 66th AVE, OAKLAND</u>	
Address: <u>2401 STANWELL DRIVE, SUITE 400</u>		UNOCAL Project Manager:	
City: <u>CONCORD</u>	State: <u>CA</u>	Zip Code: <u>94583</u>	
Telephone: <u>(510) 602-5100</u>		FAX #: <u>(510) 687-0602</u>	
Report To: <u>AVO AVEISSIAN</u>		Sampler: <u>STEVE</u>	
		Site #: <u>UNOCAL SERVICE STATION # 3135</u>	
		QC Data: <input checked="" type="checkbox"/> Level A (Standard) <input type="checkbox"/> Level B <input type="checkbox"/> Level C <input type="checkbox"/> Level D	

Turnaround 10 Working Days 2 Working Days
 Time: 5 Working Days 24 Hours
 3 Working Days 2 - 8 Hours

Drinking Water
 Waste Water
 Other

Analyses Requested

Client Sample I.D.	Date/Time Sampled	Matrix Desc.	# of Cont.	Cont. Type	Laboratory Sample #	Analyses Requested										Comments	
						TPH-G	BTEX	TPH-D									
1. <u>MW-1</u>	<u>11-11-93</u>		<u>3</u>	<u>A-VOL</u>		<u>X</u>	<u>X</u>										<u>B111088 A-C</u>
2. <u>MW-2</u>	<u>"</u>		<u>3</u>	<u>"</u>		<u>X</u>	<u>X</u>										<u>1089</u>
3. <u>MW-3</u>	<u>"</u>		<u>3</u>	<u>"</u>		<u>X</u>	<u>X</u>										<u>1090</u>
4. <u>MW-4</u>	<u>"</u>		<u>3</u>	<u>"</u>		<u>X</u>	<u>X</u>										<u>1091</u>
5. <u>MW-5</u>	<u>"</u>		<u>3</u>	<u>"</u>		<u>X</u>	<u>X</u>										<u>1092</u>
6. <u>MW-6</u>	<u>"</u>		<u>3</u>	<u>"</u>		<u>X</u>	<u>X</u>										<u>1093</u>
7. <u>MW-7</u>	<u>"</u>		<u>3</u>	<u>"</u>		<u>X</u>	<u>X</u>										<u>1094</u>
8. <u>MW-8</u>	<u>"</u>		<u>3</u>	<u>"</u>		<u>X</u>	<u>X</u>										<u>1095</u>
9. <u>MW-9</u>	<u>"</u>		<u>3</u>	<u>"</u>		<u>X</u>	<u>X</u>										<u>1096</u>
10. <u>MW-10</u>	<u>"</u>		<u>3</u>	<u>"</u>		<u>X</u>	<u>X</u>										<u>1097</u>

Relinquished By: <u>STEVE</u>	Date: <u>11/12/93</u>	Time: <u>1700</u>	Received By: <u>Tim Vonnard</u>	Date: <u>11/12/93</u>	Time: <u>1700</u>
Relinquished By: _____	Date: _____	Time: _____	Received By: _____	Date: _____	Time: _____
Relinquished By: _____	Date: _____	Time: _____	Received By Lab: _____	Date: _____	Time: _____

Were Samples Received in Good Condition? Yes No Samples on Ice? Yes No Method of Shipment SAL Page of

To be completed upon receipt of report:

1) Were the analyses requested on the Chain of Custody reported? Yes No If no, what analyses are still needed? _____

2) Was the report issued within the requested turnaround time? Yes No If no, what was the turnaround time? _____

Approved by: _____ Signature: _____ Company: _____ Date: _____

Pink - Client

Yellow - Sequoia

White - Sequoia