KAPREALIAN ENGINEERING
INCORPORATED

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KEI-P89-0805.QR10
September 24, 1993

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

Attention: Mr. Edward C. Ralston

RE: Quarterly Report
Unocal Service Station #0746
3943 Broadway
Oakland, California

Dear Mr. Ralston:

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 June through August 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 August of 1989 during tank replacement activities. The fuel tank pit was subsequently overexcavated in order to remove contaminated soil. Twelve monitoring wells (seven on-site and five off-site) and one recovery well have been installed at and in the vicinity of the site. In addition, a pilot vapor extraction test was conducted at the site in April of 1993.

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 reports (KEI-P89-0805.R9) dated September 25, 1992, and (KEI-P89-0805.R10) dated May 18, 1993.

RECENT FIELD ACTIVITIES

The 12 monitoring wells (MW1 through MW12) were monitored three times and were sampled once during the quarter, except for wells MW3 and MW5, which were not sampled due to the presence of free product. Well MW8 was inaccessible on the July 22, 1993, monitor-

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

ing event. In addition, wells MW3 and MW5 were monitored and purged three additional times, and well MW8 was monitored and purged two additional times during the quarter. Recovery well RW1 was also monitored five times 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 the free product observed in wells MW3 and MW5 throughout the quarter. The monitoring data collected this quarter are summarized in Table 1.

Ground water samples were collected from all of the wells (except MW3 and MW5) on August 25, 1993. Prior to sampling, the wells were each purged of between 3 and 8.5 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 that 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 August 25, 1993, ranged between 7.66 and 14.10 feet below the well casing. The water levels in all of the wells have shown net decreases ranging from 0.21 to 1.13 feet since May 25, 1993, except for wells MW9 and MW11, which have shown net increases of 0.46 and 0.79 feet, respectively. Based on the water level data gathered during the quarter, the ground water flow direction appeared to be towards the south-southwest, as shown on the attached Potentiometric Surface Maps, Figures 1, 2, and 3. The flow direction has been to the southwest or south-southwest since February of 1990 (12 consecutive quarters). The hydraulic gradient at the site and vicinity on August 25, 1993, ranged from approximately 0.02 to 0.07.

ANALYTICAL RESULTS

The ground water samples collected from the wells 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, 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 and benzene detected in the ground water samples collected this quarter are shown on the

attached Figures 4 and 5, respectively. 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, KEI recommends a modification to the current ground water monitoring and sampling program. Based on the monitoring data collected, a consistent southwesterly ground water flow direction has been established at the site and vicinity (12 consecutive quarters). Therefore, **KEI recommends reducing the sampling frequency of the upgradient wells MW1, MW6, and MW7 from quarterly to semi-annually.**

KEI also recommends the continuation of the bi-weekly purging of monitoring wells MW3, MW5, and MW8 in order to reduce the levels of contamination in the vicinity of these wells. A **continuous surface-skimming free product recovery system has been installed in wells MW3 and MW5.**

DISTRIBUTION

A copy of this report should be sent to 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.

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

Sincerely,

Kaprealian Engineering, Inc.

Talin Kaloustian
Staff Engineer

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

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

Aram Kaloustian
Project Engineer

/bp

Attachments: Tables 1 & 2
Location Map
Potentiometric Surface Maps - Figures 1, 2 & 3
Concentrations of TPH as Gasoline - Figure 4
Concentrations of Benzene - Figure 5
Laboratory Analyses
Chain of Custody documentation

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TABLE 1

SUMMARY OF MONITORING DATA

Well #	Ground Water Elevation (feet)	Depth to Water (feet)	Product Thickness (feet)	Sheen	Water Purged (gallons)	Product Purged (ounces)
(Monitored and Sampled on August 25, 1993)						
MW1	72.54	8.00	0	No	8	0
MW2	71.79	9.53	0	No	7	0
MW3*	71.76**	9.67	0.03	N/A	0	1
MW4	71.84	9.45	0	No	7.5	0
MW5*	71.59**	9.81	0.02	N/A	0	1
MW6	72.28	7.66	0	No	8.5	0
MW7	72.83	8.81	0	No	7.5	0
MW8	70.46	10.95	0	No	7	0
MW9	70.09	10.44	0	No	8	0
MW10	68.83	12.78	0	No	6.5	0
MW11	64.08	14.10	0	No	3.5	0
MW12	66.00	13.61	0	No	3	0
RW1*	71.56	9.07	0	N/A	0	0
(Monitored on August 11, 1993)						
MW3	71.83**	9.59	<0.01	N/A	50	<1
MW5	71.57**	9.84	0.04	N/A	50	<1
MW8	WELL WAS INACCESSIBLE					
RW1	71.63	9.00	0	--	0	0
(Monitored on July 22, 1993)						
MW1	72.67	7.87	0	--	0	0
MW2	71.90	9.42	0	--	0	0
MW3	71.95**	9.47	<0.01	N/A	50	<1
MW4	72.03	9.26	0	--	0	0
MW5	71.77**	9.73	0.16	N/A	50	1.5
MW6	72.41	7.53	0	--	0	0
MW7	72.81	8.83	0	--	0	0
MW8	WELL WAS INACCESSIBLE					
MW9	70.43	10.10	0	--	0	0
MW10	69.12	12.49	0	--	0	0
MW11	62.72	15.46	0	--	0	0
MW12	64.65	14.96	0	--	0	0

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TABLE 1 (Continued)

SUMMARY OF MONITORING DATA

Well #	Ground Water Elevation (feet)	Depth to Water (feet)	Product Thickness (feet)	Sheen	Water Purged (gallons)	Product Purged (ounces)
		(Monitored on July 8, 1993)				
MW3	72.12**	9.31	0.03	N/A	50	0
MW5	71.84**	9.48	0.04	N/A	50	0
MW8	70.86	10.52	0	--	35	0
RW1	71.25	8.69	0	--	0	0
		(Monitored on June 23, 1993)				
MW1	72.88	7.66	0	--	0	0
MW2	72.15	9.17	0	--	0	0
MW3	72.23**	9.20	0.02	N/A	50	<1
MW4	72.39	8.90	0	--	0	0
MW5	72.08**	9.32	0.03	N/A	50	<1
MW6	72.60	7.34	0	--	0	0
MW7	73.17	8.47	0	--	0	0
MW8	71.05	10.36	0	N/A	36	0
MW9	70.75	9.78	0	--	0	0
MW10	69.50	12.11	0	--	0	0
MW11	63.10	15.08	0	--	0	0
MW12	65.05	14.56	0	--	0	0
RW1	72.10	8.53	0	--	0	0
		(Monitored on June 7, 1993)				
MW3	72.48**	8.94	<0.01	N/A	50	<1
MW5	71.64**	9.75	0.01	N/A	50	<1
MW8	71.43	9.98	0	--	50	0
RW1	72.47	8.16	0	--	0	0

TABLE 1 (Continued)

SUMMARY OF MONITORING DATA

Well	Well Casing Elevation*** (feet)
MW1	80.54
MW2	81.32
MW3	81.41
MW4	81.29
MW5	81.38
MW6	79.94
MW7	81.64
MW8	81.41
MW9	80.53
MW10	81.61
MW11	78.18
MW12	79.61
RW1	80.63

* Monitored only.

** Ground water elevation corrected due to the presence of free product.

*** Per the City of Oakland Benchmark BM #1336 (elevation = 82.28 Mean Sea Level.

N/A = Not applicable.

-- Sheen determination was not performed.

NOTE: Depth to water measurements as of June 7, 1993, were from the tops of the well casings. Prior to this date, depth to water measurements were taken from the tops of the well covers.

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TABLE 2

SUMMARY OF LABORATORY ANALYSES
WATER

Date	Well #	TPH as Gasoline	Benzene	Toluene	Ethyl-benzene	Xylenes
8/25/93	MW1	ND	ND	ND	ND	ND
	MW2	190♦	ND	ND	ND	ND
	MW3	NOT SAMPLED DUE TO THE PRESENCE OF FREE PRODUCT				
	MW4	640	100	1.1	100	22
	MW5	NOT SAMPLED DUE TO THE PRESENCE OF FREE PRODUCT				
	MW6	ND	ND	ND	ND	ND
	MW7	ND	ND	ND	ND	ND
	MW8	1,800	11	17	8.9	29
	MW9	220	10	ND	6.8	1.4
	MW10	ND	ND	ND	ND	ND
	MW11	ND	ND	ND	ND	ND
	MW12	ND	ND	ND	ND	ND
5/25/93	MW1	260	27	4.9	2.6	54
	MW2*	1,300♦	ND	ND	ND	ND
	MW3	NOT SAMPLED DUE TO THE PRESENCE OF FREE PRODUCT				
	MW4	74	10	ND	4.6	1.8
	MW5	NOT SAMPLED DUE TO THE PRESENCE OF FREE PRODUCT				
	MW6	ND	ND	ND	ND	ND
	MW7	ND	ND	ND	ND	ND
	MW8	1,200	5.4	ND	9.0	21
	MW9	160	6.1	ND	7.4	1.1
	MW10	ND	ND	ND	ND	ND
	MW11	ND	ND	0.75	ND	1.0
	MW12	ND	ND	ND	ND	ND
2/24/93	MW1	1,100	280	4.9	120	140
	MW2	11,000♦	ND	ND	ND	ND
	MW3	NOT SAMPLED DUE TO THE PRESENCE OF FREE PRODUCT				
	MW4	140	12	0.64	9.4	3.7
	MW5	NOT SAMPLED DUE TO THE PRESENCE OF FREE PRODUCT				
	MW6	ND	ND	ND	ND	ND
	MW7	ND	ND	ND	ND	ND
	MW8	WELL WAS INACCESSIBLE				
	MW9	WELL WAS INACCESSIBLE				
	MW10	ND	ND	ND	ND	ND
	MW11	ND	ND	ND	ND	ND
	MW12	ND	ND	ND	ND	ND

TABLE 2 (Continued)

SUMMARY OF LABORATORY ANALYSES
WATER

Date	Well #	TPH as Gasoline	Benzene	Toluene	Ethyl-benzene	Xylenes
11/20/92	MW1	ND	0.75	ND	ND	ND
	MW2	510♦	ND	ND	ND	ND
	MW3	1,100,000♦♦	1,800	6,400	3,000	15,000
	MW4	ND	6.2	ND	1.2	0.52
	MW5	NOT SAMPLED DUE TO THE PRESENCE OF FREE PRODUCT				
	MW6	ND	ND	ND	ND	ND
	MW7	ND	ND	ND	ND	ND
	MW8	WELL WAS INACCESSIBLE				
	MW9	WELL WAS INACCESSIBLE				
	MW10	ND	ND	ND	ND	ND
	MW11	ND	ND	ND	ND	ND
	MW12	ND	ND	ND	ND	ND
8/26/92	MW1	ND	ND	ND	ND	ND
	MW2	ND	ND	ND	ND	ND
	MW3	20,000	690	1,900	1,300	5,700
	MW4	120	86	0.52	0.57	1.6
	MW5	NOT SAMPLED DUE TO THE PRESENCE OF FREE PRODUCT				
	MW6	ND	ND	ND	ND	ND
	MW7	ND	ND	ND	0.73	ND
	MW8	1,800	12	8.0	4.0	13
	MW9	250	13	ND	8.6	3.8
	MW10	ND	ND	ND	ND	ND
	MW11	ND	ND	ND	ND	ND
	MW12	ND	ND	ND	ND	ND
5/23/92	MW1	ND	ND	ND	ND	ND
	MW2	ND	ND	ND	ND	ND
	MW3	25,000	300	130	880	4,900
	MW4	ND	ND	ND	ND	ND
	MW5	NOT SAMPLED DUE TO THE PRESENCE OF FREE PRODUCT				
	MW6	ND	ND	ND	ND	ND
	MW7	ND	ND	ND	ND	ND
	MW8	2,100	8.6	1.6	1.7	28
	MW9	460	18	0.66	1.4	3.2
	MW10	ND	ND	ND	ND	ND
	MW11	ND	ND	ND	ND	ND

TABLE 2 (Continued)

SUMMARY OF LABORATORY ANALYSES
WATER

Date	Well #	TPH as Gasoline	Benzene	Toluene	Ethyl-benzene	Xylenes
2/06/92	MW1	ND	ND	ND	ND	ND
	MW2	ND	0.36	0.66	ND	0.62
	MW3	24,000	600	1,800	1,200	5,800
	MW4	5,700	2,200	140	57	980
	MW5	NOT SAMPLED DUE TO THE PRESENCE OF FREE PRODUCT				
	MW6	ND	ND	ND	ND	ND
	MW7	ND	ND	ND	ND	ND
	MW8	2,600	4.1	7.0	31	93
	MW9	660	41	1.0	33	15
	MW10	ND	ND	ND	ND	ND
	MW11	ND	ND	ND	ND	ND
11/19/91	MW1	ND	ND	ND	ND	ND
	MW2	ND	ND	ND	ND	ND
	MW3	22,000	250	440	660	3,000
	MW4	55	9.2	4.5	1.4	6.7
	MW5	NOT SAMPLED DUE TO THE PRESENCE OF FREE PRODUCT				
	MW6	ND	ND	ND	ND	ND
	MW7	32	ND	ND	ND	ND
	MW8	1,600	8.1	1.8	19	52
	MW9	360	17	0.45	15	11
8/28/91	MW1	ND	ND	ND	ND	ND
	MW2	ND	ND	ND	ND	ND
	MW3	16,000	650	2,200	1,100	5,400
	MW4	2,000	1,500	20	120	300
	MW5	NOT SAMPLED DUE TO THE PRESENCE OF FREE PRODUCT				
	MW6	ND	ND	ND	ND	ND
	MW7	ND	ND	ND	ND	ND
	MW8	1,800	3.2	1.9	19	74
	MW9	450	17	0.9	13	14
5/28/91	MW1	ND	ND	ND	ND	ND
	MW2	ND	ND	ND	ND	ND
	MW3	24,000	570	1,100	810	4,200
	MW4	38	ND	ND	ND	1.9
	MW5	24,000	2,300	3,400	1,300	6,000
	MW6	ND	ND	ND	ND	0.42
	MW7	39	ND	ND	ND	0.73
	MW8	4,800	4.2	1.3	5.1	170
	MW9	590	6.0	0.43	6.8	1.4

TABLE 2 (Continued)

SUMMARY OF LABORATORY ANALYSES
WATER

♦ Sequoia Analytical Laboratory reported that the hydrocarbons detected did not appear to be gasoline.

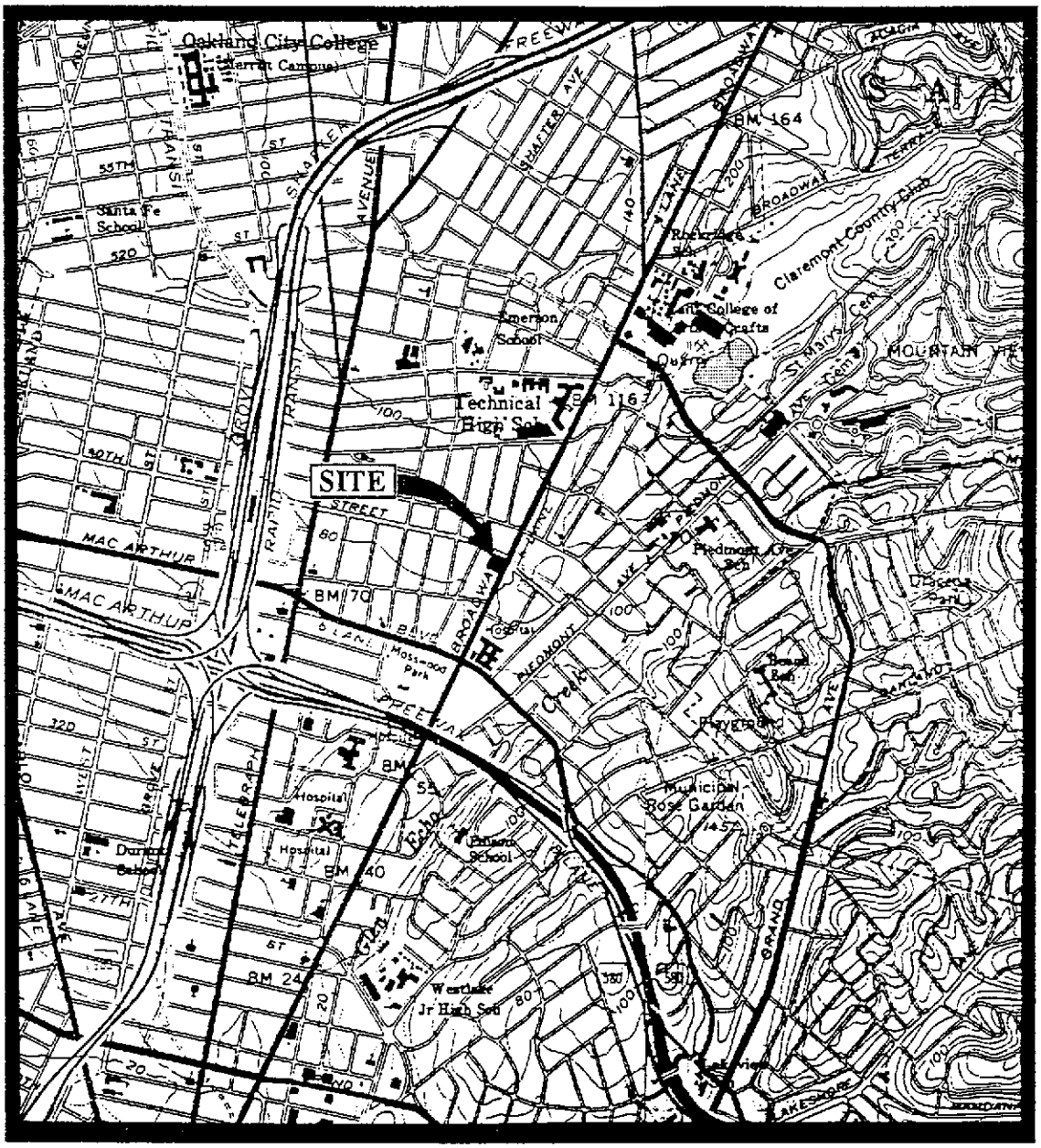
♦♦ Sequoia Analytical Laboratory reported that the hydrocarbons detected appeared to be gasoline and non-gasoline mixture.

* MTBE was detected at 2,700 ppb.

ND = Non-detectable.

-- Indicates analysis was not performed.

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

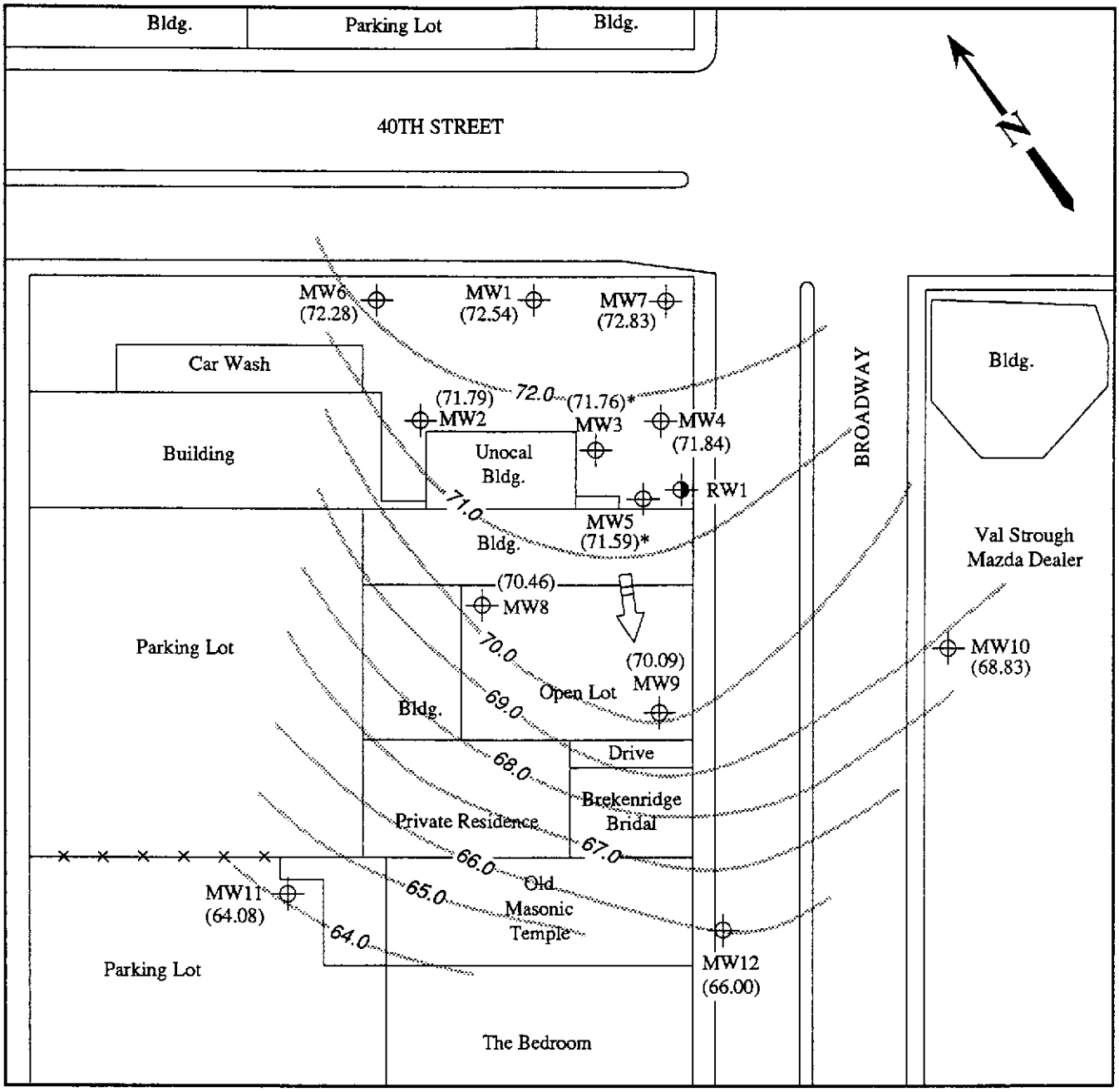


Base modified from 7.5 minute U.S.G.S. Oakland East and West Quadrangles (both photorevised 1980)

0 2000 4000

Approx. scale feet

KAPREALIAN ENGINEERING INCORPORATED	UNOCAL SERVICE STATION #0746 3943 BROADWAY OAKLAND, CA	LOCATION MAP



LEGEND

- Monitoring well
- 6-inch diameter recovery well
- ( ) Ground water elevation in feet above Mean Sea Level
- Direction of ground water flow
- Contours of ground water elevation
- * Ground water elevation corrected due to the presence of free product

0 60 120

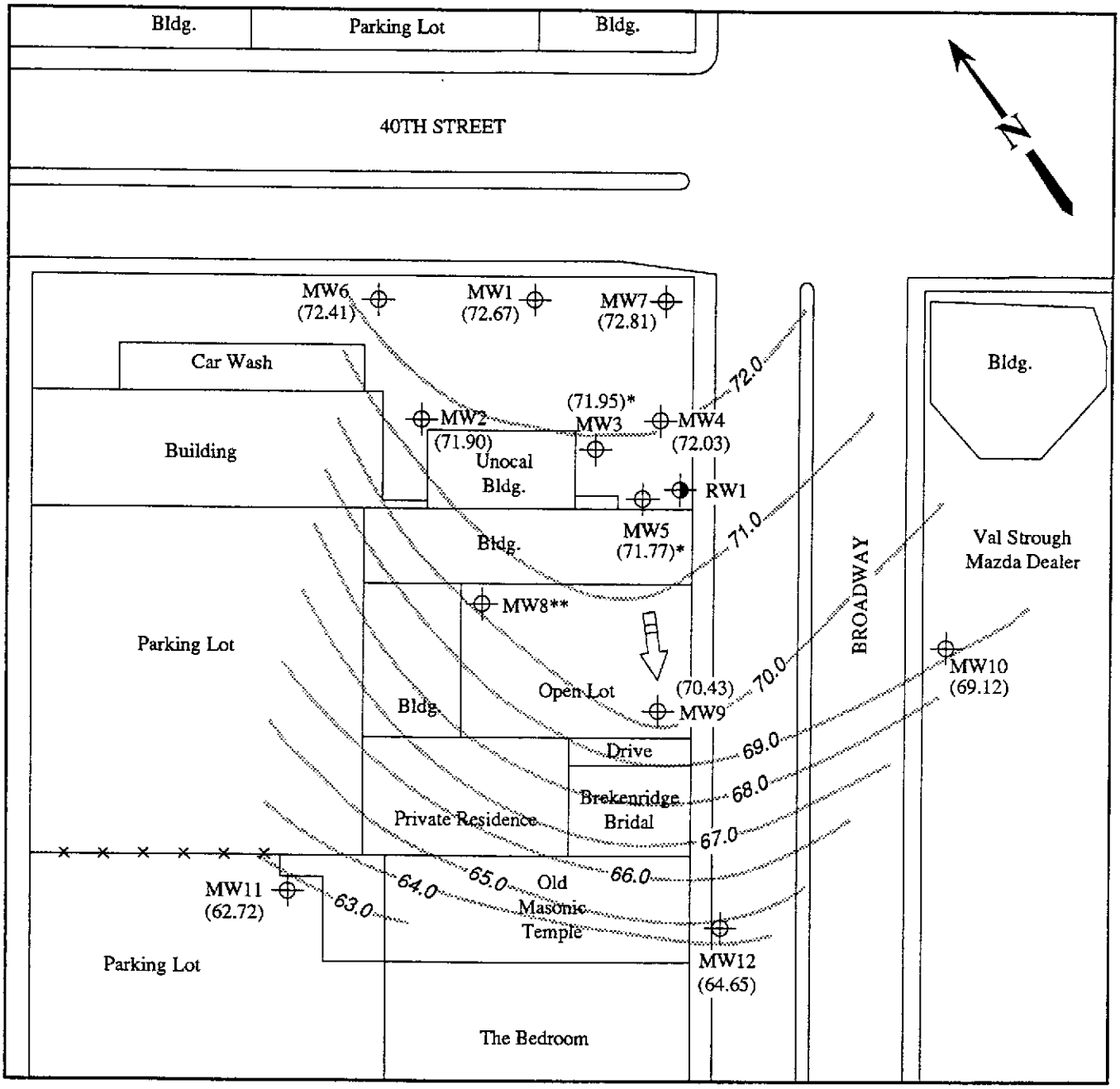
Approx. scale feet

POTENTIOMETRIC SURFACE MAP FOR THE AUGUST 23, 1993 MONITORING EVENT

KAPREALIAN ENGINEERING
INCORPORATED

UNOCAL SERVICE STATION #0746
3943 BROADWAY
OAKLAND, CALIFORNIA

FIGURE
1



LEGEND

- Monitoring well
- 6-inch diameter recovery well
- ( ) Ground water elevation in feet above Mean Sea Level
- Direction of ground water flow
- Contours of ground water elevation

* Ground water elevation corrected due to the presence of free product

** Well was inaccessible.

0 60 120

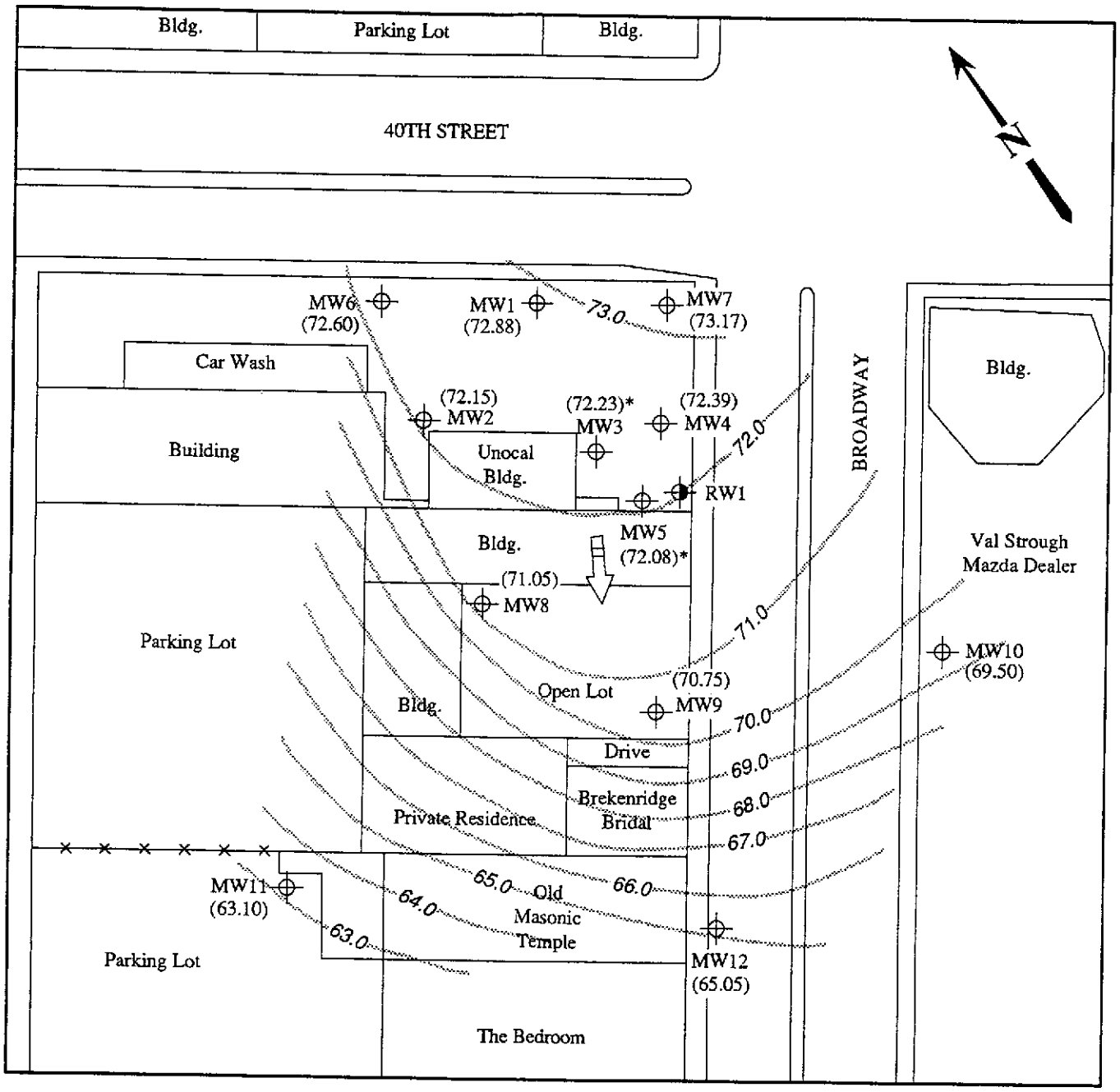
Approx. scale feet

POTENTIOMETRIC SURFACE MAP FOR THE JULY 22, 1993 MONITORING EVENT

KAPREALIAN ENGINEERING INCORPORATED

UNOCAL SERVICE STATION #0746
3943 BROADWAY
OAKLAND, CALIFORNIA

FIGURE
2



LEGEND

- Monitoring well
- 6-inch diameter recovery well
- ( ) Ground water elevation in feet above Mean Sea Level
- Direction of ground water flow
- Contours of ground water elevation
- * Ground water elevation corrected due to the presence of free product

0 60 120

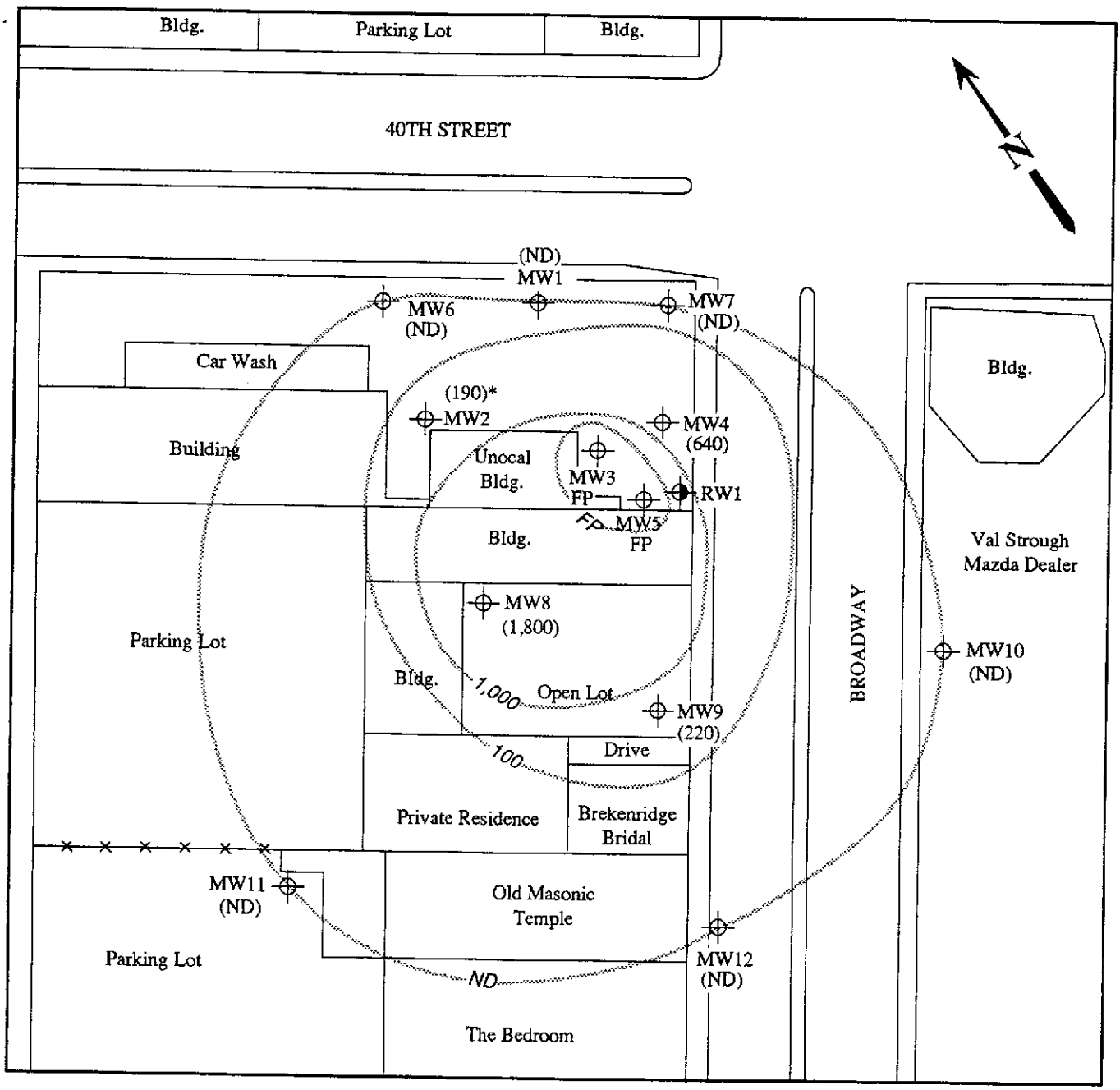
Approx. scale feet

POTENTIOMETRIC SURFACE MAP FOR THE JUNE 23, 1993 MONITORING EVENT

KAPREALIAN ENGINEERING
INCORPORATED

UNOCAL SERVICE STATION #0746
3943 BROADWAY
OAKLAND, CALIFORNIA

FIGURE
3



LEGEND

- Monitoring well
- 6-inch diameter recovery well
- ( ) Concentration of TPH as gasoline in ppb
- Approximate iso-concentration contours of TPH as gasoline contamination in ground water in ppb

ND = Non-detectable, FP = Free product,

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

0 60 120

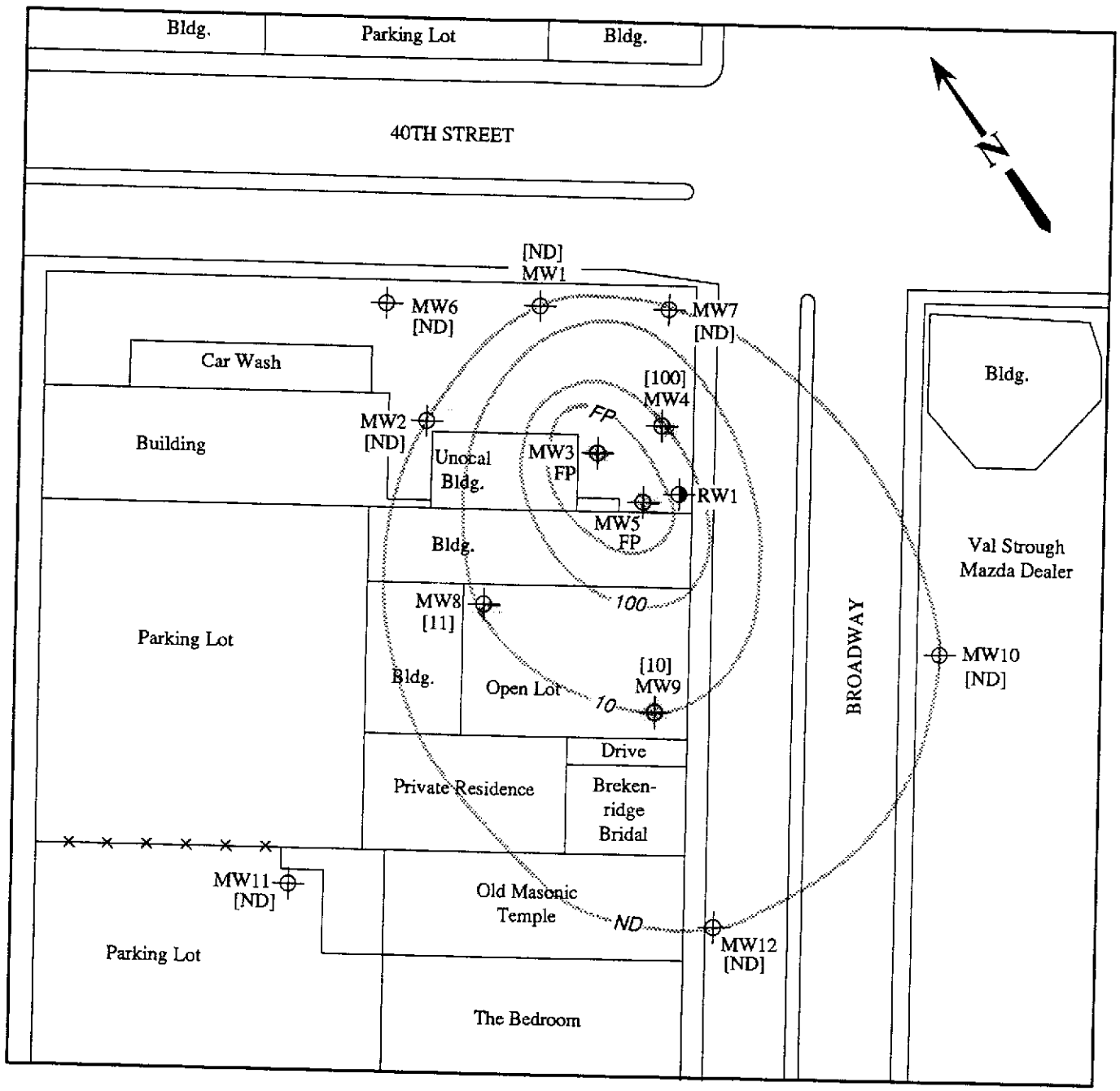
Approx. scale feet

CONCENTRATIONS OF TPH AS GASOLINE IN GROUND WATER ON AUGUST 25, 1993

KAPREALIAN ENGINEERING
INCORPORATED

UNOCAL SERVICE STATION #0746
3943 BROADWAY
OAKLAND, CALIFORNIA

FIGURE
4



LEGEND

- Monitoring well
- 6-inch diameter recovery well
- [ ] Concentration of benzene in ppb
- Approximate iso-concentration contours of benzene contamination in ground water in ppb

ND = Non-detectable, FP = Free product

0 60 120

Approx. scale feet

CONCENTRATIONS OF BENZENE IN GROUND WATER ON AUGUST 25, 1993

KAPREALIAN ENGINEERING
INCORPORATED

UNOCAL SERVICE STATION #0746
3943 BROADWAY
OAKLAND, CALIFORNIA

FIGURE
5

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

Kaprealian Engineering, Inc.	Client Project ID:	Unocal #0746, 3943 Broadway, Oakland	Sampled:	Aug 25, 1993
2401 Stanwell Dr., Ste. 400	Sample Matrix:	Water	Received:	Aug 25, 1993
Concord, CA 94520	Analysis Method:	EPA 5030/8015/8020	Reported:	Sep 9, 1993
Attention: Avo Avedessian	First Sample #:	308-1084		

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit µg/L	Sample I.D. 308-1084 MW-1	Sample I.D. 308-1085 MW-2*	Sample I.D. 308-1086 MW-4	Sample I.D. 308-1087 MW-6	Sample I.D. 308-1088 MW-7	Sample I.D. 308-1089 MW-8
Purgeable Hydrocarbons	50	N.D.	190	640	N.D.	N.D.	1,800
Benzene	0.5	N.D.	N.D.	100	N.D.	N.D.	11
Toluene	0.5	N.D.	N.D.	1.1	N.D.	N.D.	17
Ethyl Benzene	0.5	N.D.	N.D.	100	N.D.	N.D.	8.9
Total Xylenes	0.5	N.D.	N.D.	22	N.D.	N.D.	29
Chromatogram Pattern:		--	Discrete Peak	Gasoline	--	--	Gasoline

Quality Control Data

Report Limit Multiplication Factor:	1.0	1.0	1.0	1.0	1.0	20
Date Analyzed:	9/2/93	9/2/93	9/2/93	9/2/93	9/2/93	9/2/93
Instrument Identification:	HP-2	HP-2	HP-2	HP-2	HP-5	HP-5
Surrogate Recovery, %: (QC Limits = 70-130%)	102	103	106	102	99	93

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

Please Note: * Discrete Peak refers to unidentified peak in the MTBE range.

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

Kaprealian Engineering, Inc.	Client Project ID:	Unocal #0746, 3943 Broadway, Oakland	Sampled:	Aug 25, 1993
2401 Stanwell Dr., Ste. 400	Sample Matrix:	Water	Received:	Aug 25, 1993
Concord, CA 94520	Analysis Method:	EPA 5030/8015/8020	Reported:	Sep 9, 1993
Attention: Avo Avedessian	First Sample #:	308-1090		

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit µg/L	Sample I.D. 308-1090 MW-9	Sample I.D. 308-1091 MW-10	Sample I.D. 308-1092 MW-11	Sample I.D. 308-1093 MW-12	Sample I.D. Matrix Blank
Purgeable Hydrocarbons	50	220	N.D.	N.D.	N.D.	
Benzene	0.5	10	N.D.	N.D.	N.D.	
Toluene	0.5	N.D.	N.D.	N.D.	N.D.	
Ethyl Benzene	0.5	6.8	N.D.	N.D.	N.D.	
Total Xylenes	0.5	1.4	N.D.	N.D.	N.D.	
Chromatogram Pattern:		Gasoline	--	--	--	

Quality Control Data

Report Limit Multiplication Factor:	2.0	1.0	1.0	1.0	1.0
Date Analyzed:	9/2/93	9/2/93	9/2/93	9/2/93	9/2/93
Instrument Identification:	HP-5	HP-5	HP-5	HP-5	HP-5
Surrogate Recovery, %: (QC Limits = 70-130%)	91	101	99	104	108

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.	Client Project ID:	Unocal #0746, 3943 Broadway, Oakland
2401 Stanwell Dr., Ste. 400	Matrix:	Water
Concord, CA 94520		
Attention: Avo Avedessian	QC Sample Group: 3081084-93	Reported: Sep 9, 1993

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl-Benzene	Xylenes
Method:	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Analyst:	J.F.	J.F.	J.F.	J.F.
Conc. Spiked:	20	20	20	60
Units:	µg/L	µg/L	µg/L	µg/L
LCS Batch#:	1LCS090293	1LCS090293	1LCS090293	1LCS090293
Date Prepared:	9/2/93	9/2/93	9/2/93	9/2/93
Date Analyzed:	9/2/93	9/2/93	9/2/93	9/2/93
Instrument I.D.#:	HP-2	HP-2	HP-2	HP-2
LCS % Recovery:	97	96	98	100
Control Limits:	70-130	70-130	70-130	70-130
MS/MSD Batch #:	3081339	3081339	3081339	3081339
Date Prepared:	9/2/93	9/2/93	9/2/93	9/2/93
Date Analyzed:	9/2/93	9/2/93	9/2/93	9/2/93
Instrument I.D.#:	HP-2	HP-2	HP-2	HP-2
Matrix Spike % Recovery:	100	100	100	100
Matrix Spike Duplicate % Recovery:	105	100	100	103
Relative % Difference:	4.9	0.0	0.0	2.9

SEQUOIA ANALYTICAL

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 LCS % recovery data is used for validation of sample batch results. Due to matrix effects, the QC limits for MS/MSD's are advisory only and are not used to accept or reject batch results.

KAPREALIAN ENGINEERING
INCORPORATED

CHAIN OF CUSTODY (1)

SAMPLER: Ray
WITNESSING AGENCY:

SITE NAME & ADDRESS: UNOCAL # 0746
OAKLAND - 3943 BROADWAY

ANALYSES REQUESTED: TPH(G) BTXE

TURN AROUND TIME: REGULAR

SAMPLE ID NO.	DATE	TIME	SOIL	WATER	GRAB	COMP	NO. OF CONT.	SAMPLING LOCATION	TPH(G) BTXE							REMARKS
MW1	8/25			X	X		2	VOA	X		3081	084	AR			(VOA's Preserved)
MW2	"			X	X		X	"	X			1085	AR			
MW4	"			X	X		X	"	X			1086	AR			
MW6	"			X	X		X	"	X			1087	AR			
MW7	"			X	X		X	"	X			1088	AR			
MW8	"			X	X		"	"	X			1089	AR			
MW9	"			X	X		X	"	X			1090	AR			
MW10	"			X	X		X	"	X			1091	AR			
MW11	"			X	X		X	"	X			1092	AR			

Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Ray	8-25-93	Mandaco 1848 8-25-93
[illegible]	8/26/93 1300	[illegible]
[illegible]	8-26-93 2pm	Melissa Cruell
Relinquished by: (Signature)	Date/Time	Received by: (Signature)

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

1. Have all samples received for analysis been stored in ice? Yes
2. Will samples remain refrigerated until analyzed? Yes
3. Did any samples received for analysis have head space? No
4. Were samples in appropriate containers and properly packaged? Yes

Signature | Title | Date

2401 Stanwell Drive, Suite 400
Concord, California 94520
Tel: 510/602-5100 Fax: 510/687-0602

KAPREALIAN ENGINEERING
INCORPORATED

(2)

CHAIN OF CUSTODY

SAMPLER	SITE NAME & ADDRESS	ANALYSES REQUESTED	TURN AROUND TIME:
Ray	UNOCAL # 0746		REGULAR
WITNESSING AGENCY	OAKLAND - 3943 BROADWAY		

SAMPLE ID NO.	DATE	TIME	SOIL	WATER	GRAB	COMP	NO. OF CONT.	SAMPLING LOCATION	TPH G/BTEX							REMARKS
MW12	8.25			x	x		2	VOA's	x		308109					VOA's (Preserved)

Relinquished by: (Signature)	Date/Time	Received by: (Signature)
	1848 8/25/93	Mandell
Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received by: (Signature)

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Signature Title Date

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Concord, California 94520
Tel 510 602 5100 Fax 510 687 0602