KAPREALIAN ENGINEERING
INCORPORATED

November 8, 1993

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

Attention: Mr. Scott Seery

RE: Unocal Service Station #7004
15599 Hesperian Boulevard
San Leandro, California

Dear Mr. Seery:

Per the request of Mr. Adadu Yemane of Unocal Corporation, enclosed please find our report dated November 4, 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.

Judy A. Dewey

jad\82

Enclosure

cc: Adadu Yemane, Unocal Corporation

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

KAPREALIAN ENGINEERING
INCORPORATED

KEI-P90-1003.QR8
November 4, 1993

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

Attention: Mr. Adadu Yemane

RE: Quarterly Report
Unocal Service Station #7004
15599 Hesperian Boulevard
San Leandro, California

Dear Mr. Yemane:

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 wells MW3 and MW5 are sampled on a quarterly basis. Monitoring wells MW1, MW2, MW4, and MW6 are sampled on a semi-annual basis. This report covers the work performed by KEI from August through October 1993.

BACKGROUND

The subject site contains a Unocal service station facility. Three underground gasoline storage tanks and the product piping were removed from the site in October of 1990 during tank replacement activities. The fuel tank pit and the product pipe trenches were subsequently overexcavated in order to remove contaminated soil. Six monitoring wells and one aquifer testing well have been installed at the site. An aquifer pumping test has also been conducted.

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 report (KEI-P90-1003.R6) dated May 29, 1992.

RECENT FIELD ACTIVITIES

The six existing monitoring wells (MW1 through MW6) were monitored three times and were sampled once during the quarter. **Wells MW1, MW2, MW4, and MW6 are sampled semi-annually, and thus were not sampled this quarter.** During monitoring, the wells were checked for depth to water and the presence of free product. Prior to

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

sampling, monitoring wells MW3 and MW5 were also checked for the presence of a sheen. No free product or sheen was noted in any of the wells during the quarter. The monitoring data collected this quarter are summarized in Table 1.

Ground water samples were collected from wells MW3 and MW5 on October 6, 1993. Prior to sampling, these wells were each purged of between 7 and 8 gallons of water by the use of a surface pump. 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 October 6, 1993, ranged between 14.17 and 15.75 feet. The water levels in all of the wells have shown net decreases ranging from 0.97 to 1.03 foot since July 22, 1993. Based on the water level data gathered during the quarter, the ground water flow direction appeared to be to the west-southwest, as shown on the attached Potentiometric Surface Maps, Figures 1, 2, and 3. The flow direction reported this quarter is relatively similar to the predominant flow directions reported since May 1991. The average hydraulic gradient at the site on October 6, 1993, was approximately 0.0025.

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 ground water samples collected from wells MW3 and MW5 were analyzed for total petroleum hydrocarbons (TPH) as gasoline by EPA method 5030/modified 8015, benzene, toluene, ethylbenzene, and xylenes (BTEX), by EPA method 8020, and methyl tert butyl ether (MTBE) by EPA method 8020/modified.

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 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 monitoring data collected and evaluated to date, KEI recommends a modification to the current monthly ground water

monitoring program. The ground water flow direction has been predominantly to the west-southwest and southwest during the past 11 consecutive quarters of monitoring. In addition, no free product or sheen has been detected in any well to date. Therefore, KEI recommends that the monitoring frequency for all of the wells be reduced from monthly to quarterly. KEI also recommends the continuation of the quarterly sampling of wells MW3 and MW5, and semi-annual sampling of wells MW1, MW2, MW4, and MW6. The ground water samples collected from all of the wells are analyzed for TPH as gasoline and BTEX.

In April of 1993, the Alameda County Health Care Services (ACHCS) Agency requested that Unocal analyze the ground water samples collected from all of the monitoring wells for MTBE for two consecutive sampling events. As indicated in Table 2, the ground water samples collected from all six monitoring wells were analyzed for MTBE during the April 23, 1993, and July 22, 1993, sampling events. Therefore, KEI recommends that the analyses for MTBE be discontinued, unless required by the regulatory agencies.

DISTRIBUTION

A copy of this report should be sent to the ACHCS, Mr. Michael Bakaldin of the City of San Leandro Fire Department, 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 at (510) 602-5100.

Sincerely,

Kaprealian Engineering, Inc.

Thomas J. Berkins
Senior Environmental Engineer

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

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

Aram B. Kaloustian
Project Engineer

/bp

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
Chromatograms

KEI-P90-1003.QR8
November 4, 1993

TABLE 1

SUMMARY OF MONITORING DATA

Well #	Ground Water Elevation (feet)	Depth to Water (feet)♦	Product Thickness (feet)	Sheen	Water Purged (gallons)
(Monitored and Sampled on October 6, 1993)					
MW1	21.52	14.87	0	--	0
MW2	21.58	15.49	0	--	0
MW3	21.38	15.41	0	No	7
MW4	21.27	14.17	0	--	0
MW5	21.20	15.61	0	No	8
MW6	21.38	15.75	0	--	0
(Monitored on September 13, 1993)					
MW1	21.83	14.56	0	--	0
MW2	21.89	15.18	0	--	0
MW3	21.69	15.10	0	--	0
MW4	21.59	13.85	0	--	0
MW5	21.52	15.29	0	--	0
MW6	21.69	15.44	0	--	0
(Monitored on August 13, 1993)					
MW1	22.21	14.18	0	--	0
MW2	22.27	14.80	0	--	0
MW3	22.07	14.72	0	--	0
MW4	21.96	13.48	0	--	0
MW5	21.87	14.94	0	--	0
MW6	22.04	15.09	0	--	0

TABLE 1 (Continued)

SUMMARY OF MONITORING DATA

Well #	Top of Casing Elevation in feet above Mean Sea Level (MSL)*
MW1	36.39
MW2	37.07
MW3	36.79
MW4	35.44
MW5	36.81
MW6	37.13

♦ The depth to water level measurement was taken from the top of the well casing. Prior to August 13, 1993, the water level measurement was taken from the top of the well cover.

-- Sheen determination was not performed.

* Based on the City of San Leandro Benchmark (elevation = 36.04 MSL).

KEI-P90-1003.QR8
November 4, 1993

TABLE 2

SUMMARY OF LABORATORY ANALYSES
WATER

Date	Sample Number	TPH as Gasoline	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE
10/06/93	MW1	SAMPLED SEMI-ANNUALLY					
	MW2	SAMPLED SEMI-ANNUALLY					
	MW3	24,000	4,100	ND	3,600	2,000	ND
	MW4	SAMPLED SEMI-ANNUALLY					
	MW5	150	1.1	ND	3.1	0.85	57
	MW6	SAMPLED SEMI-ANNUALLY					
7/22/93	MW1	ND	ND	ND	ND	ND	77
	MW2	62*	ND	ND	ND	ND	42
	MW3	16,000	4,500	17	3,600	1,900	440
	MW4	ND	ND	ND	ND	ND	54
	MW5	59**	ND	ND	2.6	ND	42
	MW6	ND	ND	ND	ND	ND	ND
4/20/93	MW1	--	--	--	--	--	56
&	MW2	--	--	--	--	--	80
4/23/93	MW3	18,000	3,700	11	2,300	1,300	410
	MW4	--	--	--	--	--	65
	MW5	99*	ND	ND	ND	ND	120
	MW6	--	--	--	--	--	ND
1/21/93	MW1	ND	ND	ND	ND	ND	42
	MW2	ND	ND	ND	ND	ND	17
	MW3	12,000	2,800	11	1,600	590	--
	MW4	ND	ND	ND	ND	ND	--
	MW5	100*	ND	ND	ND	ND	160
	MW6	ND	ND	ND	ND	ND	--
10/28/92	MW1	SAMPLED SEMI-ANNUALLY					
	MW2	SAMPLED SEMI-ANNUALLY					
	MW3	15,000	4,400	15	2,400	800	--
	MW4	SAMPLED SEMI-ANNUALLY					
	MW5	ND	ND	ND	ND	ND	45
	MW6	SAMPLED SEMI-ANNUALLY					
7/09/92	MW1	70*	ND	ND	ND	ND	130
	MW2	ND	ND	ND	ND	ND	49
	MW3	13,000	3,200	12	1,900	1,100	--
	MW4	ND	ND	ND	ND	ND	--
	MW5	ND	ND	ND	ND	ND	71
	MW6	ND	ND	ND	ND	ND	--

TABLE 2 (Continued)

SUMMARY OF LABORATORY ANALYSES
WATER

Date	Sample Number	TPH as Gasoline	Benzene	Toluene	Ethylbenzene	Xylenes	MTBE
4/14/92	MW1	76*	ND	ND	ND	ND	--
	MW2	45*	ND	ND	ND	ND	--
	MW3	16,000	3,400	19	1,400	1,300	--
	MW4	ND	ND	ND	ND	ND	--
	MW5	86*	ND	ND	ND	ND	--
	MW6	ND	ND	ND	ND	ND	--
1/14/92	MW1	ND	ND	ND	ND	ND	--
	MW2	ND	ND	ND	ND	ND	--
	MW3	13,000	6,600	19	2,600	1,800	--
	MW4	ND	ND	ND	ND	ND	--
	MW5	60*	ND	ND	ND	ND	--
	MW6	ND	ND	ND	ND	ND	--
10/14/91	MW1	ND	ND	ND	ND	ND	--
	MW2	ND	ND	ND	ND	ND	--
	MW3	25,000	6,300	78	2,000	1,400	--
	MW4	ND	ND	ND	ND	ND	--
	MW5	140	0.72	ND	1.3	0.89	--
	MW6	ND	ND	ND	ND	ND	--
7/23/91	MW1	ND	ND	ND	ND	ND	--
	MW2	ND	ND	ND	ND	ND	--
	MW3	17,000	5,500	26	1,800	2,800	--
	MW4	ND	ND	ND	ND	ND	--
	MW5	260	1.2	0.39	10	0.71	--
	MW6	ND	ND	ND	ND	ND	--
5/04/91	MW1	ND	ND	ND	ND	ND	--
	MW2	ND	ND	ND	ND	ND	--
	MW3	34,000	6,100	32	1,200	6,100	--

TABLE 2 (Continued)

SUMMARY OF LABORATORY ANALYSES
WATER

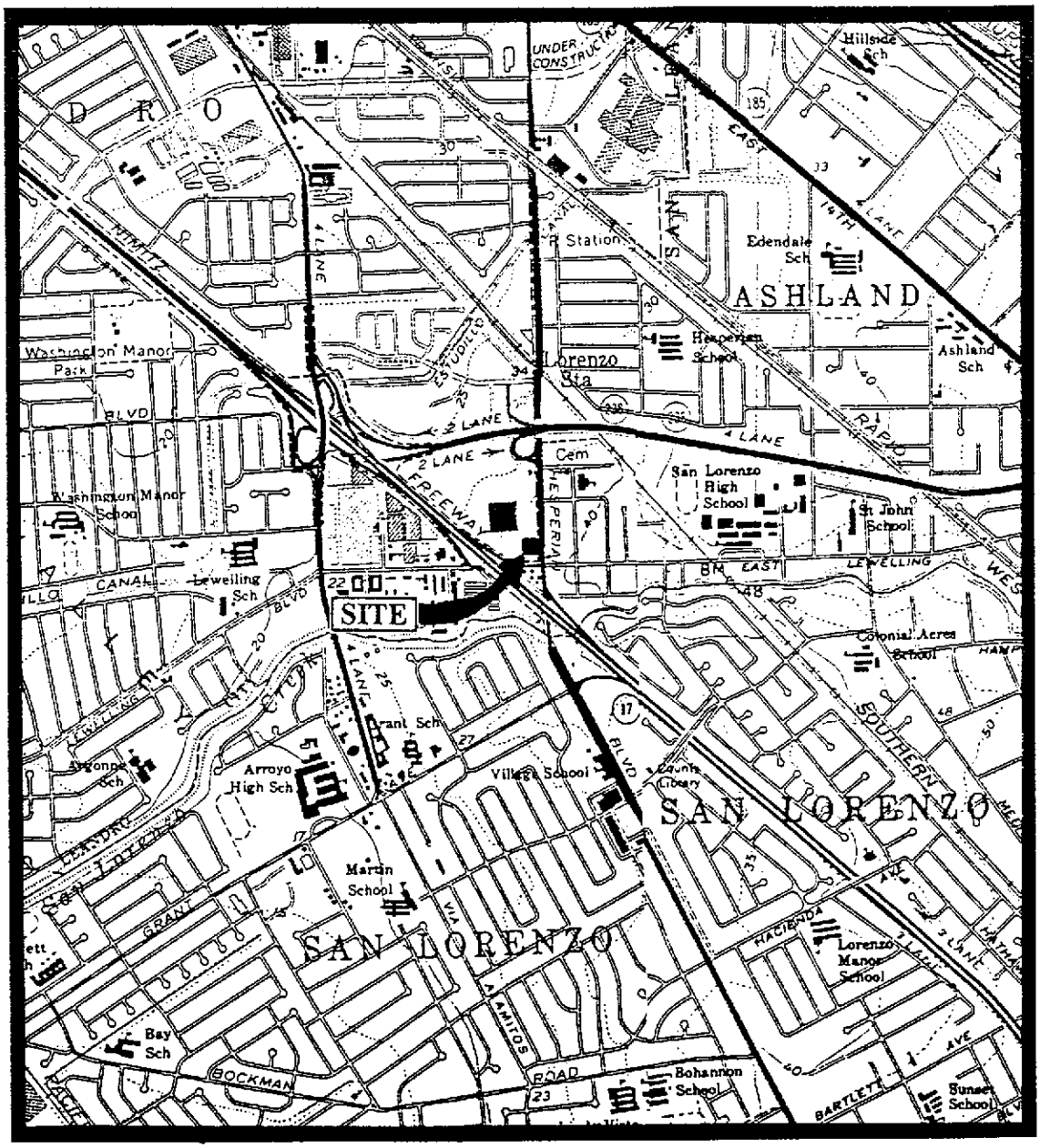
* Sequoia Analytical Laboratory reported that the hydrocarbons detected did not appear to be gasoline.

** Sequoia Analytical Laboratory reported that the hydrocarbons detected appear to be a gasoline and non-gasoline 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. Hayward and San Leandro Quadrangles (both photorevised 1980)

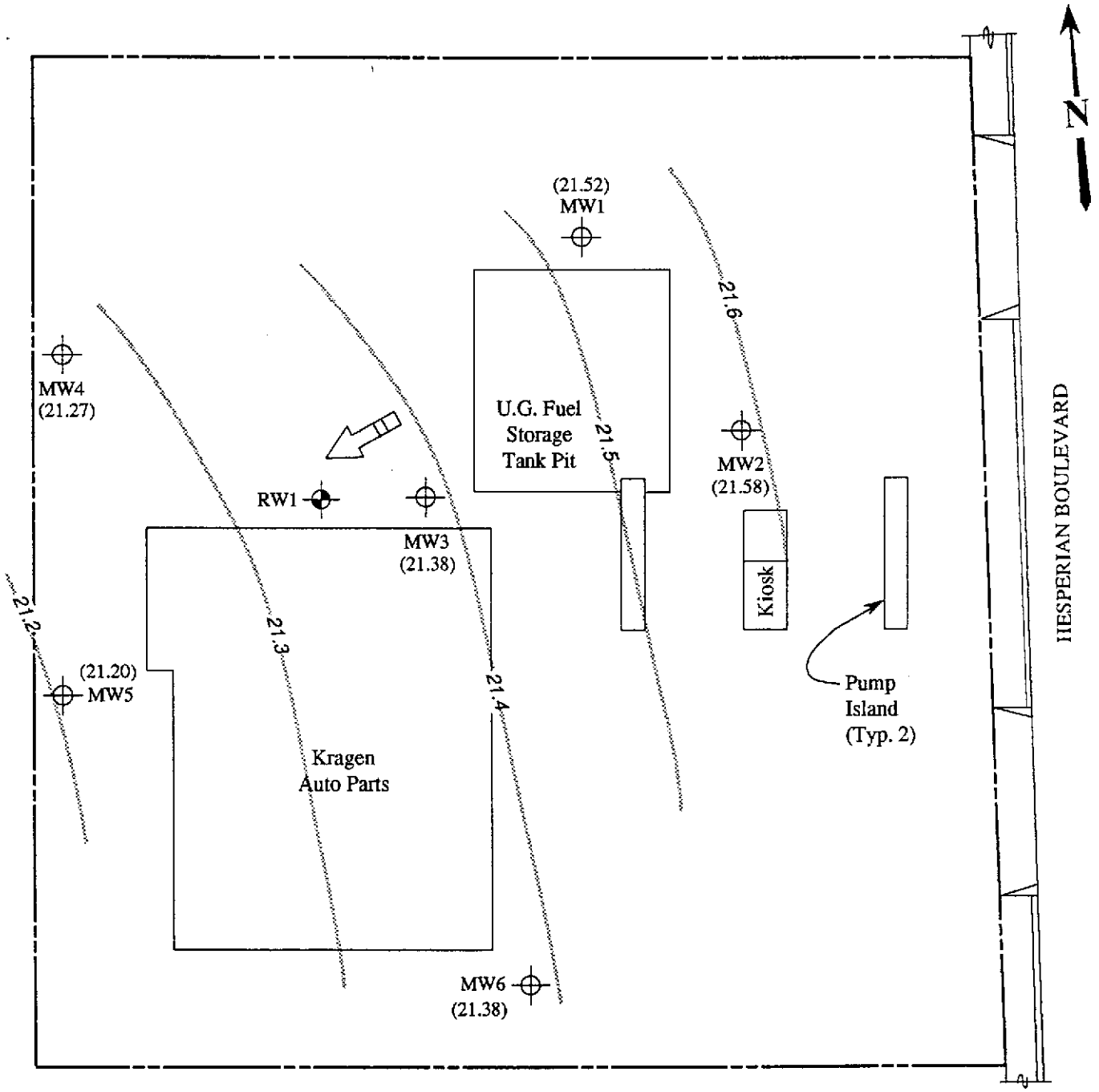
0 2000 4000

Approx. scale feet

KAPREALIAN ENGINEERING INCORPORATED

UNOCAL SERVICE STATION #7004
15599 HESPERIAN BOULEVARD
SAN LEANDRO, CA

LOCATION MAP



LEGEND

- Monitoring well
- Aquifer testing well
- ( ) Ground water elevation in feet above Mean Sea Level
- Direction of ground water flow
- Contours of ground water elevation

0 30 60

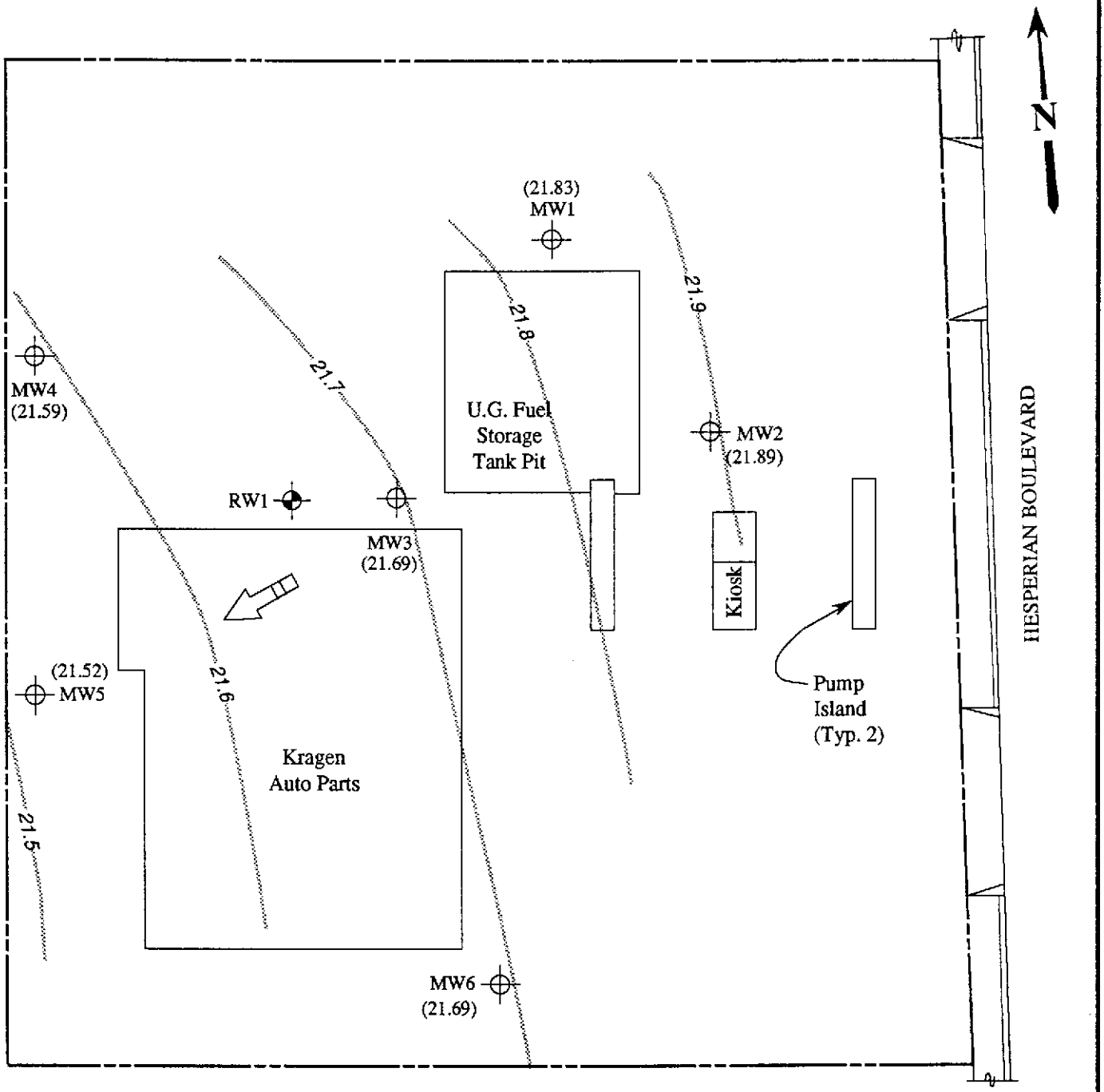
Approx. scale feet

POTENTIOMETRIC SURFACE MAP FOR THE OCTOBER 6, 1993 MONITORING EVENT

KAPREALIAN ENGINEERING
INCORPORATED

UNOCAL SERVICE STATION #7004
15599 HESPERIAN BOULEVARD
SAN LEANDRO, CALIFORNIA

FIGURE
1



LEGEND

- Monitoring well
- Aquifer testing well
- ( ) Ground water elevation in feet above Mean Sea Level
- Direction of ground water flow
- Contours of ground water elevation

0 30 60

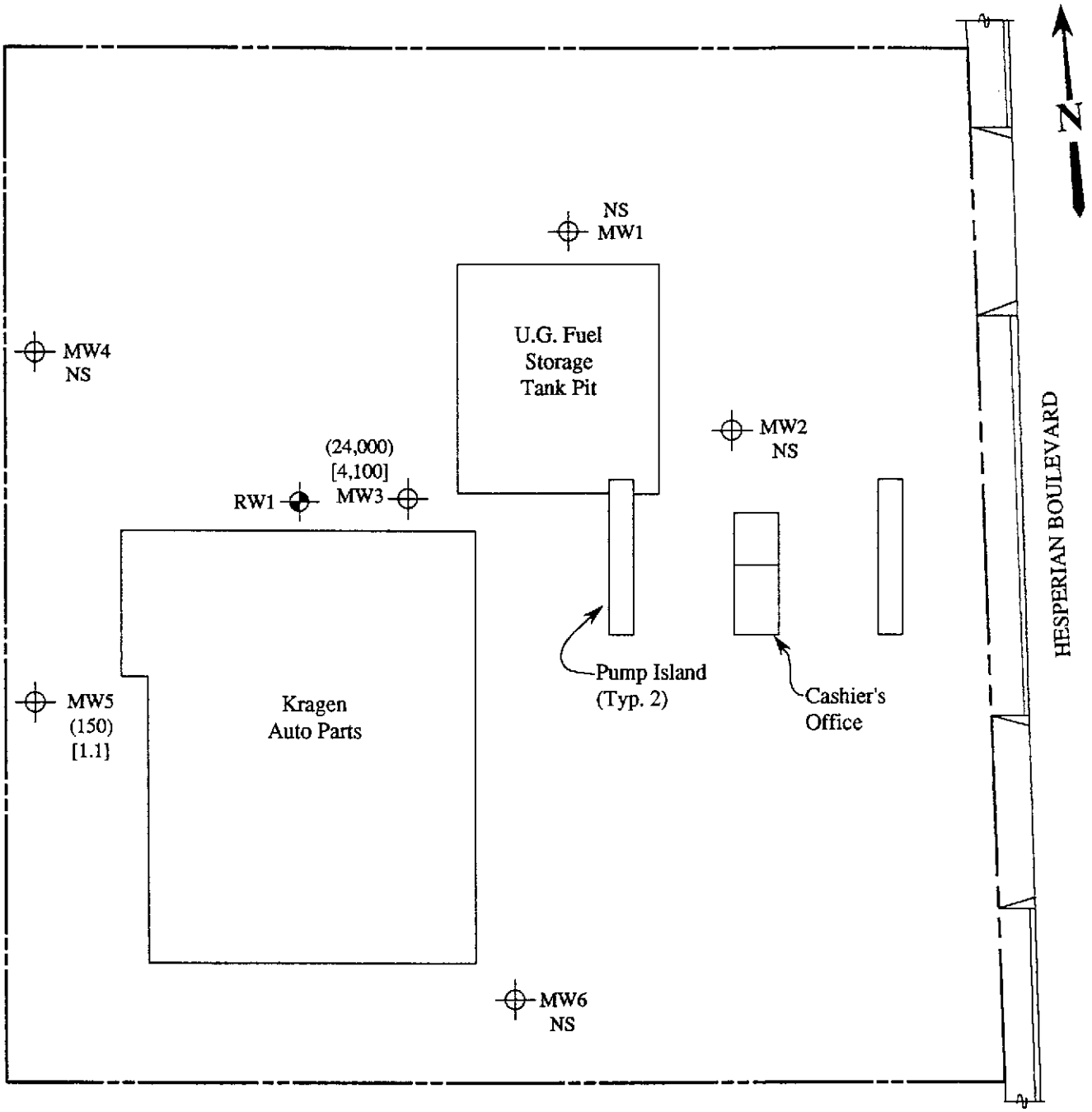
Approx. scale feet

POTENTIOMETRIC SURFACE MAP FOR THE SEPTEMBER 13, 1993 MONITORING EVENT

KAPREALIAN ENGINEERING
INCORPORATED

UNOCAL SERVICE STATION #7004
15599 HESPERIAN BOULEVARD
SAN LEANDRO, CALIFORNIA

FIGURE
2



LEGEND

- Monitoring well
- Aquifer testing well
- ( ) Concentration of TPH as gasoline in ppb
- [ ] Concentration of benzene in ppb
- NS = Not sampled

0 30 60

Approx. scale feet

PETROLEUM HYDROCARBON CONCENTRATIONS IN GROUND WATER ON OCTOBER 6, 1993

KAPREALIAN ENGINEERING
INCORPORATED

UNOCAL SERVICE STATION #7004
15599 HESPERIAN BOULEVARD
SAN LEANDRO, CALIFORNIA

FIGURE
4

SEQUOIA ANALYTICAL

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

Kaprealian Engineering, Inc.	Client Project ID:	Unocal #7004, 15599 Hesperian Blvd.,	Sampled:	Oct 6, 1993
2401 Stanwell Dr., Ste. 400	Sample Matrix:	Water San Leandro	Received:	Oct 6, 1993
Concord, CA 94520	Analysis Method:	EPA 5030/8015/8020	Reported:	Oct 19, 1993
Attention: Avo Avedessian	First Sample #:	310-0361		

TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit µg/L	Sample I.D. 310-0361 MW 3	Sample I.D. 310-0362 MW 5	Sample I.D. Matrix Blank
Purgeable Hydrocarbons	50	24,000	150	
Benzene	0.5	4,100	1.1	
Toluene	0.5	N.D.	N.D.	
Ethyl Benzene	0.5	3,600	3.1	
Total Xylenes	0.5	2,000	0.85	
Chromatogram Pattern:		Gasoline	Gasoline	

Quality Control Data

Report Limit Multiplication Factor:	50	1.0	1.0
Date Analyzed:	10/12/93	10/12/93	10/12/93
Instrument Identification:	HP-2	HP-2	HP-2
Surrogate Recovery, %: (QC Limits = 70-130%)	113	101	106

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 #7004, 15599 Hesperian Blvd., San Leandro	Sampled: Oct 6, 1993
2401 Stanwell Dr., Ste. 400	Sample Descript:	Water	Received: Oct 6, 1993
Concord, CA 94520	Analysis for:	MTBE (Modified EPA 8020)	
Attention: Avo Avedessian	First Sample #:	310-0361	Analyzed: Oct 12, 1993
			Reported: Oct 19, 1993

LABORATORY ANALYSIS FOR: MTBE

Sample Number	Sample Description	Detection Limit µg/L	Sample Result µg/L
310-0361	MW 3	0.60	N.D.
310-0362	MW 5	0.60	57

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

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 #7004, 15599 Hesperian Blvd., San Leandro
2401 Stanwell Dr., Ste. 400	Matrix:	Water
Concord, CA 94520		
Attention: Avo Avedessian	QC Sample Group: 3100361-62	Reported: Oct 19, 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#:	1LCS101293	1LCS101293	1LCS101293	1LCS101293
Date Prepared:	10/12/93	10/12/93	10/12/93	10/12/93
Date Analyzed:	10/12/93	10/12/93	10/12/93	10/12/93
Instrument I.D.#:	HP-2	HP-2	HP-2	HP-2
LCS % Recovery:	109	104	104	106
Control Limits:	70-130	70-130	70-130	70-130
MS/MSD Batch #:	3100365	3100365	3100365	3100365
Date Prepared:	10/12/93	10/12/93	10/12/93	10/12/93
Date Analyzed:	10/12/93	10/12/93	10/12/93	10/12/93
Instrument I.D.#:	HP-2	HP-2	HP-2	HP-2
Matrix Spike % Recovery:	110	105	105	107
Matrix Spike Duplicate % Recovery:	115	110	110	113
Relative % Difference:	4.4	4.6	4.6	5.6

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, INC.

CHAIN OF CUSTODY

SAMPLER: Vakkas

WITNESSING AGENCY:

S/S# 7004 SITE NAME & ADDRESS: Unocal / San Leandro, 15599 Hesperian Blvd.

ANALYSES REQUESTED: TPHG + BTXE; MTBE

TURN AROUND TIME: Regular

SAMPLE ID NO.	DATE	TIME	SOIL	WATER	GRAB	COMP	NO. OF CONT.	SAMPLING LOCATION	TPHG + BTXE	MTBE	REMARKS
MW3	10/6/93	10:45 am.		X	X		4	Monitoring well	X	X	3100361 A-D ↓ 362 ↓
MW5	"	10:15 am.		X	X		4	" "	X	X	

Relinquished by: (Signature)	Date/Time	Received by: (Signature)
W. Rakhshan	10/6/93 5:00	L. Stenstrom
John Wilson	10-7-93 1000	
	10-7-93 1135	Melissa Crumm

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

LMS (Signature) ____ (Title) 10/6 (Date)