



KAPREALIAN ENGINEERING
I N C O R P O R A T E D

KEI-P91-1004.QR2
December 29, 1992

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 #5043
449 Hegenberger Road
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), per KEI's proposal (KEI-P91-1004.P2) dated July 7, 1992. 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 1992.

BACKGROUND

The subject site contains a Unocal service station facility. Six monitoring wells have been installed at 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 report (KEI-P91-1004.R4) dated October 12, 1992.

RECENT FIELD ACTIVITIES

The six wells (MW1 through MW6) were monitored three times and were sampled once during the quarter, except for well MW1, which was not sampled due to the presence of free product. 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 in MW1 where free product was observed during the three monitoring events. The monitoring data collected this quarter are summarized in Table 1.

Water samples were collected from the wells on November 30, 1992. Prior to sampling, the wells were each purged of between 4 and 7 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 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 30, 1992, ranged between 3.36 and 7.27 feet below grade. The water levels in all of the wells have shown net decreases ranging from 0.12 to 0.67 feet since August 31, 1992, except in MW6, which showed a net increase of 0.81 feet. Based on the water level data gathered during the quarter, the ground water flow direction varied from westerly over the majority of the site, to southeasterly at the northwestern portion of the site, as shown on the attached Potentiometric Surface Maps, Figures 1, 2, and 3. The predominant westerly flow direction reported this quarter is similar to the flow directions reported since February 18, 1992. The southeasterly flow direction observed in the northwestern section of the site is the result of a ground water elevation high point at well MW4. The average hydraulic gradient across the site during the quarter varied from 0.02 to 0.06.

ANALYTICAL RESULTS

The ground water samples 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, xylenes, and ethylbenzene (BTX&E) by EPA method 8020. In addition, the ground water sample collected from monitoring well MW5 was analyzed for TOG by Standard Methods 5520B&F. The ground water samples were also analyzed for total dissolved solids (TDS) except for the sample collected from monitoring well MW5, which was not analyzed due to insufficient sample volume.

The ground water sample analytical results are summarized in Tables 2 and 3. 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 Figures 4, 5, and 6, respectively. Copies of the laboratory analytical results and the Chain of Custody documentation are attached to this report.

68-16

*Maintain High Quality of
waters in state*

DISCUSSION AND RECOMMENDATIONS

As previously noted, the ground water samples collected from monitoring wells MW2, MW3, MW4, and MW6 were analyzed for TDS. The analytical results of the water samples indicated concentrations of TDS of 6,400 ppm, 6,500 ppm, 3,800 ppm, and 9,800 ppm, respectively, in MW2, MW3, MW4, and MW6. As stated in Resolution 88-63 of the California State Water Resources Control Board (SWRCB), all surface and ground waters of the State are considered suitable or potentially suitable for municipal or domestic water supply "with the exception of surface or ground waters where the total dissolved solids (TDS) exceed 3,000 mg/L and it is not reasonably expected by the Regional Boards to supply a public water system."

Due to the fact that each of the TDS analyses exceeds the SWRCB maximum TDS concentration, the ground water at the subject site is not considered suitable (or potentially suitable) for domestic or municipal supply, and no further contamination delineation nor remediation work at the site appears to be warranted. KEI does, however, recommend the continuation of the current ground water monitoring and sampling program, per KEI's proposal (KEI-P91-1004.P2) dated July 7, 1993. The wells are currently monitored monthly and sampled quarterly. The results of the monitoring and sampling program will be documented and evaluated after each monitoring and sampling event. Recommendations for altering or terminating the program will be made as warranted.

DISTRIBUTION

A copy of this report should be sent to 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.

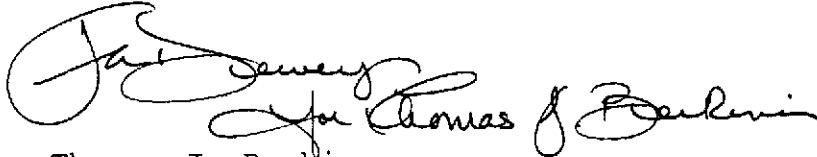
The results of this study are based on the data obtained from the field and laboratory analyses obtained from a state-certified laboratory. We have analyzed these data using what we believe to be currently applicable engineering techniques and principles in the Northern California region. We make no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

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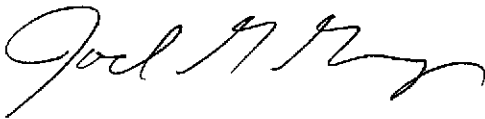
If you have any questions regarding this report, please do not hesitate to call at (510) 602-5100.

Sincerely,

Kaprealian Engineering, Inc.

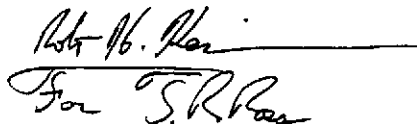


Thomas J. Berkins
Senior Environmental Engineer



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

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



Timothy R. Ross
Project Manager

/bp

Attachments: Tables 1, 2 & 3
Location Map
Potentiometric Surface Maps - Figures 1, 2 & 3
Concentrations of TPH as Gasoline - Figure 4
Concentrations of Benzene - Figure 5
Concentrations of TPH as Diesel - Figure 6
Laboratory Analyses
Chain of Custody documentation

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December 29, 1992

TABLE 1

SUMMARY OF GROUND WATER MONITORING AND PURGING DATA

<u>Well #</u>	<u>Ground Water Elevation (feet)</u>	<u>Depth to Water (feet)</u>	<u>Product Thickness (feet)</u>	<u>Sheen</u>	<u>Water Pumped (gallons)</u>
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(Monitored and Sampled on November 30, 1992)

MW1	4.42	3.36	Trace	N/A	0
MW2	4.99	3.97	0	No	7
MW3	2.65	5.19	0	No	6
MW4	3.02	5.98	0	No	5
MW5	2.00	7.27	0	No	4
MW6	2.13	6.99	0	No	4

(Monitored on October 26, 1992)

MW1	4.26*	3.55	0.04	N/A	0
MW2	4.78	4.18	0	--	0
MW3	2.57	5.27	0	--	0
MW4	3.02	5.98	0	--	0
MW5	1.85	7.42	0	--	0
MW6	1.56	7.56	0	--	0

(Monitored on September 28, 1992)

MW1	4.26	3.52	Trace	N/A	0
MW2	4.96	4.00	0	--	0
MW3	2.54	5.30	0	--	0
MW4	3.44	5.56	0	--	0
MW5	2.17	7.10	0	--	0
MW6	0.32	8.80	0	--	0

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TABLE 1 (Continued)

SUMMARY OF GROUND WATER MONITORING AND PURGING DATA

<u>Well #</u>	<u>Surface Elevation** (feet)</u>
MW1	7.78
MW2	8.96
MW3	7.84
MW4	9.00
MW5	9.27
MW6	9.12

-- Sheen determination was not performed.

* The ground water elevation was corrected for the presence of free product by the use of a specific gravity of 0.77.

** The elevations of the tops of the well covers were surveyed relative to Mean Sea Level (MSL), per the City of Oakland Benchmark #3880 (elevation = 20.37 MSL).

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TABLE 2

SUMMARY OF LABORATORY ANALYSES
WATER

<u>Date</u>	<u>Sample Number</u>	<u>TPH as Diesel</u>	<u>TPH as Gasoline</u>	<u>Benzene</u>	<u>Toluene</u>	<u>Xylenes</u>	<u>Ethyl-benzene</u>
11/30/92	MW1	NOT SAMPLED DUE TO THE PRESENCE OF FREE PRODUCT					
	MW2	5,700♦	29,000	2,000	3,400	6,900	1,200
	MW3	94	790*	ND	ND	ND	ND
	MW4	61	420*	ND	ND	ND	ND
	MW5	470♦♦	930	70	0.79	14	290
	MW6	1,400♦	9,200	550	ND	1,600	740
8/31/92	MW1	8,900♦	64,000	13,000	12,000	22,000	2,500
	MW2	1,600♦	9,000	1,800	640	2,000	140
	MW3	92♦♦	210*	1.0	ND	ND	ND
	MW4	90♦♦	240*	ND	ND	0.54	ND
	MW5	690♦	78	0.89	ND	13	ND
	MW6	750♦♦	ND	ND	ND	ND	ND
5/20/92	MW1	NOT SAMPLED DUE TO THE PRESENCE OF FREE PRODUCT					
	MW2	4,300♦	24,000	2,200	7,600	11,000	630
	MW3	WELL WAS INACCESSIBLE FOR SAMPLING					
2/18/92	MW1	13,000	150,000	17,000	26,000	26,000	5,200
	MW2	4,300	29,000	1,000	5,300	7,900	260
	MW3	ND	230	4.8	22	33	1.8

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

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

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

ND = Non-detectable.

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

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TABLE 3

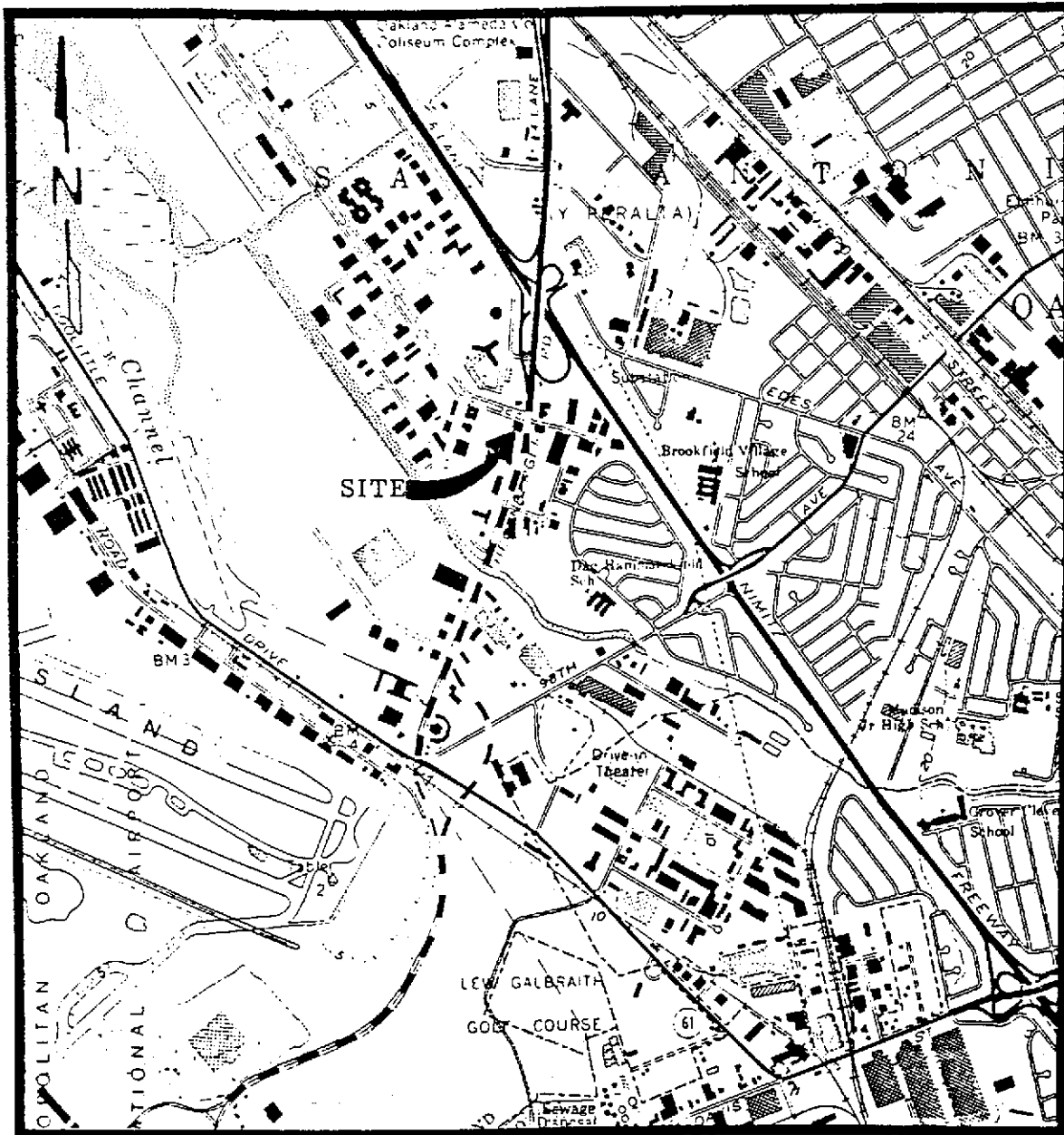
SUMMARY OF LABORATORY ANALYSES
WATER

<u>Date</u>	<u>Sample Number</u>	<u>TOG</u>	<u>TDS</u>
11/30/92	MW1	NOT SAMPLED	DUE TO PRESENCE OF FREE PRODUCT
	MW2	--	6,400
	MW3	--	6,500
	MW4	--	3,800
	MW5	ND	*
	MW6	--	9,800

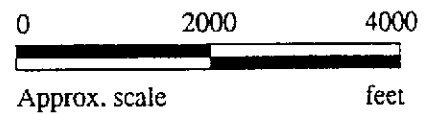
-- Indicates analysis was not performed.


* Not analyzed due to insufficient sample volume.

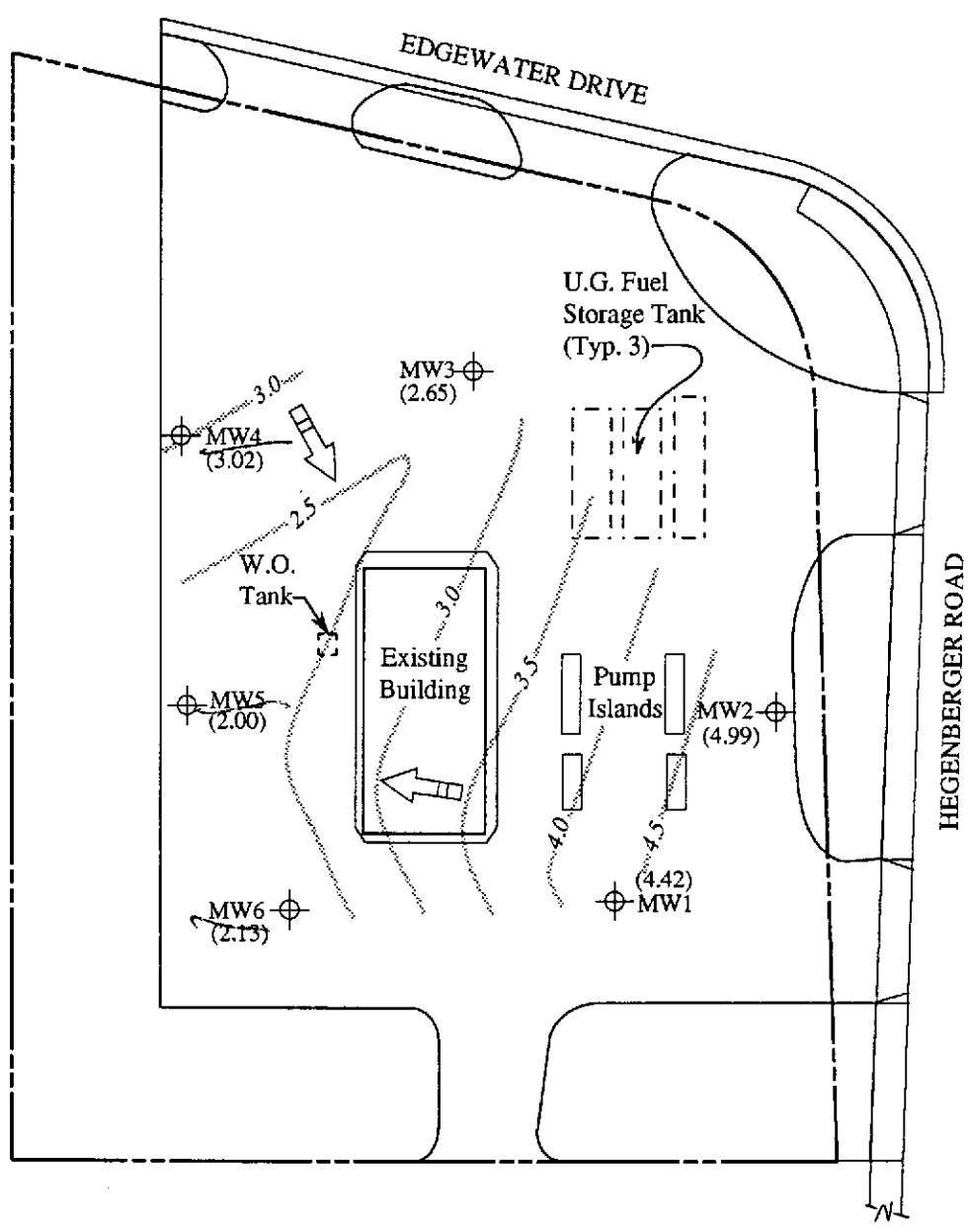
Results in parts per million (ppm), unless otherwise indicated.






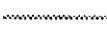
Base modified from 7.5 minute U.S.G.S. San Leandro Quadrangle
(photorevised 1980)

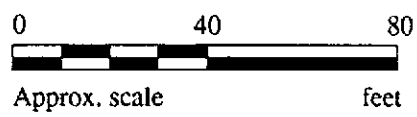


 <p>KAPREALIAN ENGINEERING INCORPORATED</p>	<p>UNOCAL SERVICE STATION #5043 449 HEGENBERGER ROAD OAKLAND, CA</p>	<p>LOCATION MAP</p>
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LEGEND

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

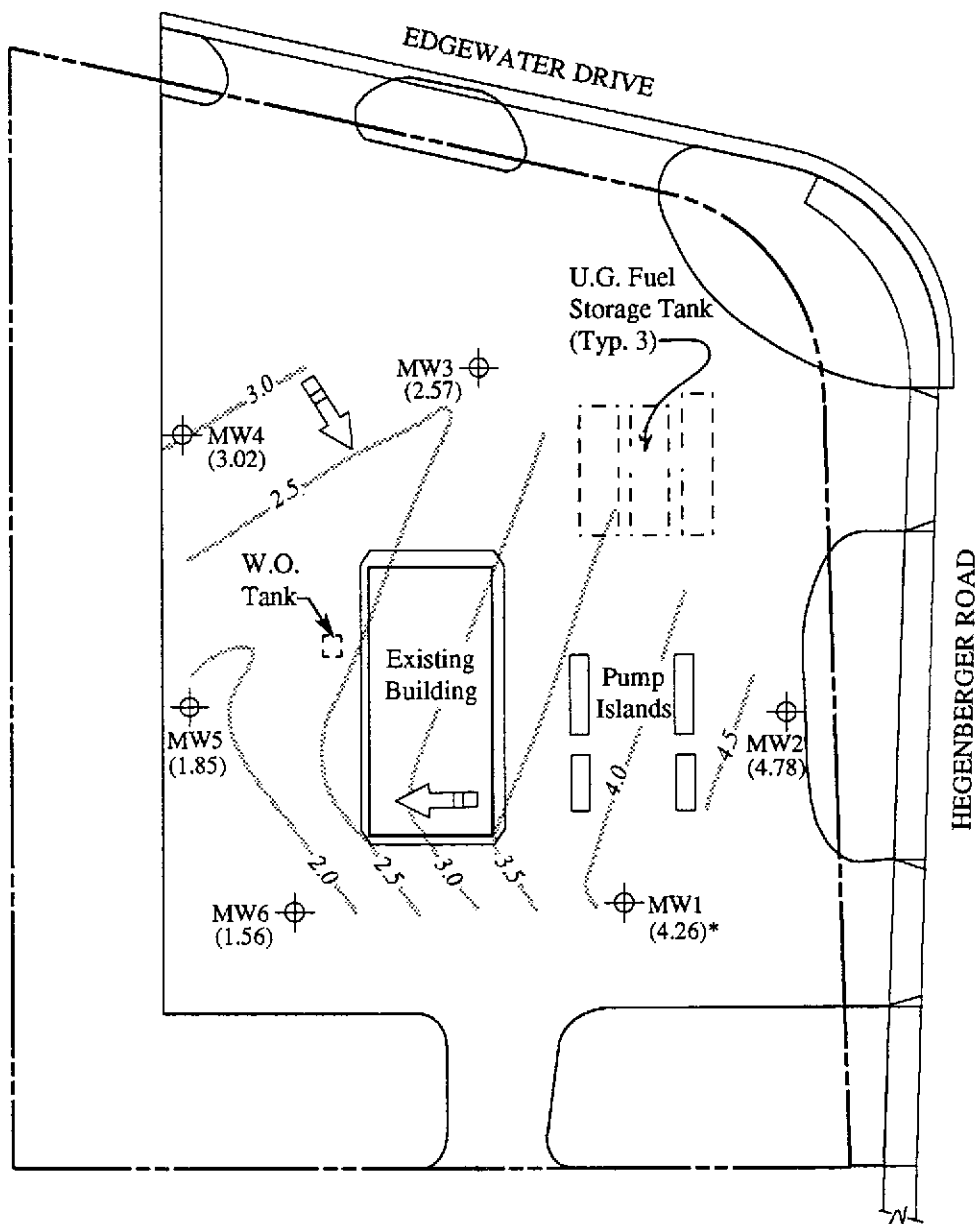


POTENTIOMETRIC SURFACE MAP FOR THE NOVEMBER 30, 1992 MONITORING EVENT




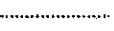


**UNOCAL SERVICE STATION #5043
449 HEGENBERGER ROAD
OAKLAND, CA**

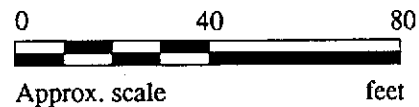
**FIGURE
1**



LEGEND

-  Monitoring 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.

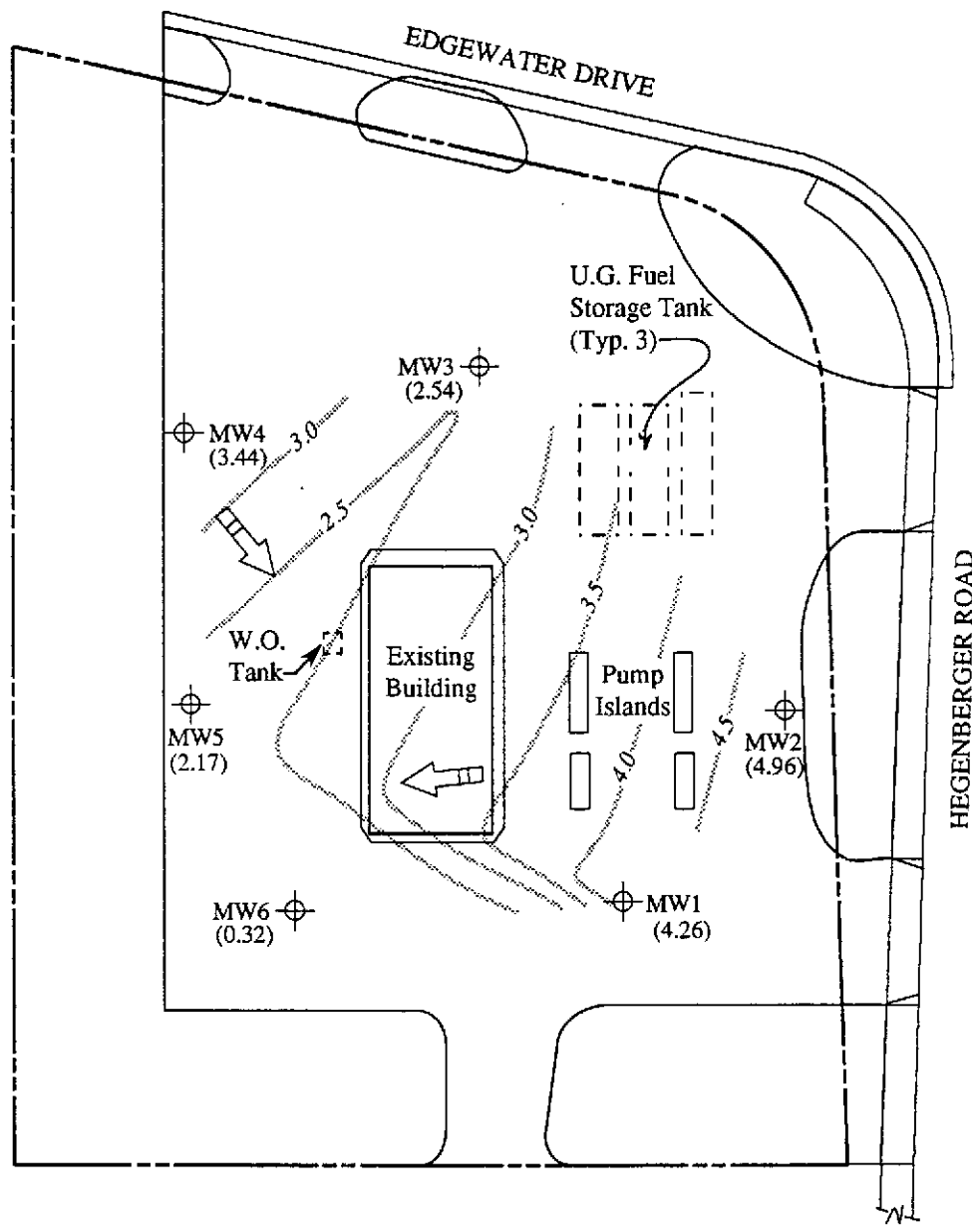


POTENTIOMETRIC SURFACE MAP FOR THE OCTOBER 26, 1992 MONITORING EVENT



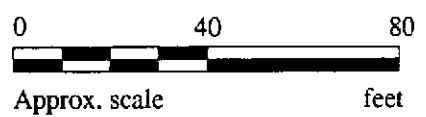
UNOCAL SERVICE STATION #5043
449 HEGENBERGER ROAD
OAKLAND, CA

FIGURE
2



LEGEND

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

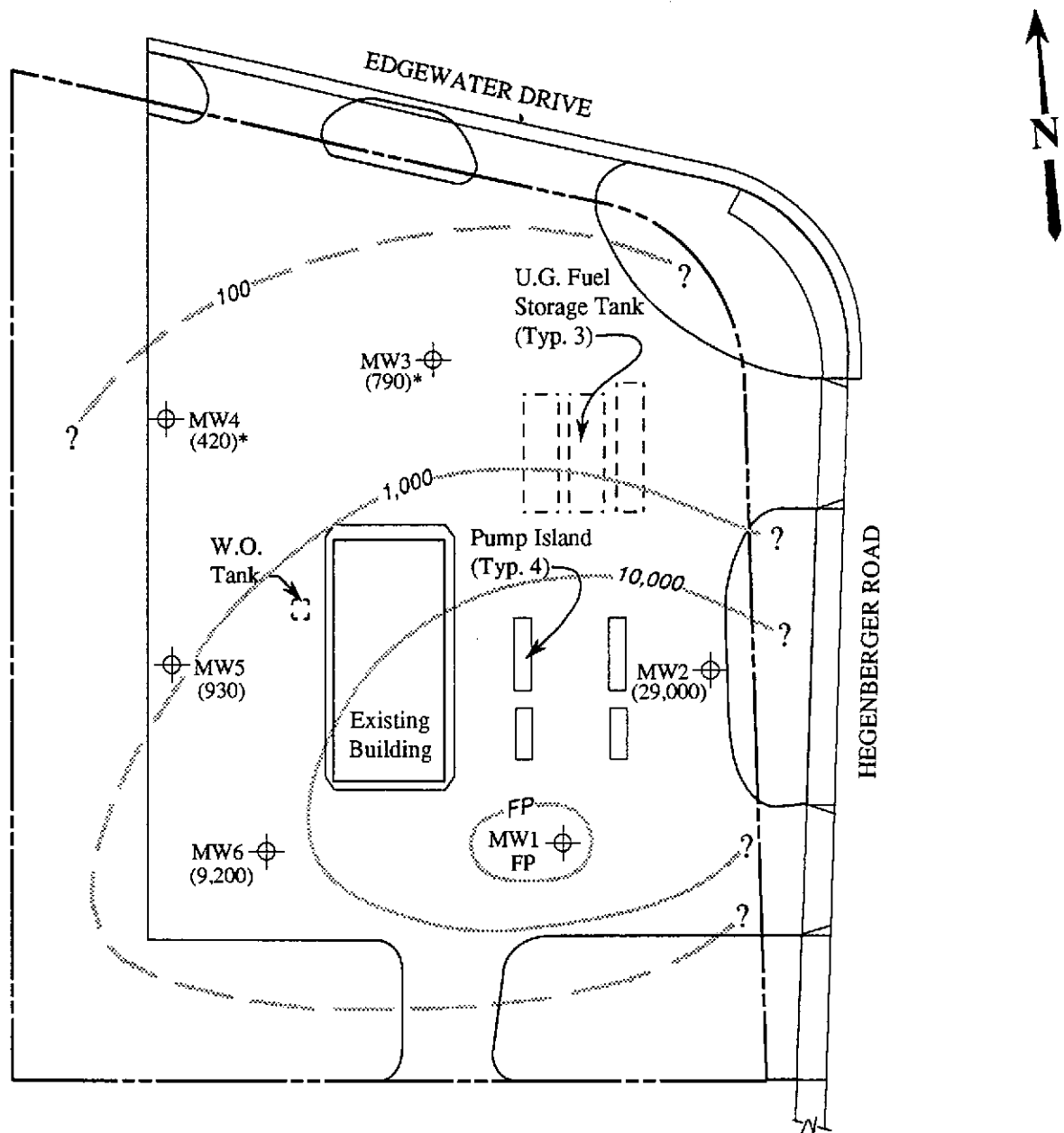


POTENTIOMETRIC SURFACE MAP FOR THE SEPTEMBER 28, 1992 MONITORING EVENT



**UNOCAL SERVICE STATION #5043
449 HEGENBERGER ROAD
OAKLAND, CA**

**FIGURE
3**



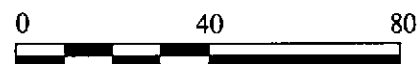
LEGEND

- ⊕ Monitoring well
- () Concentrations of TPH as gasoline in ppb
- Iso-concentration contours in ppb

ND = Non-detectable

FP = Free product

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



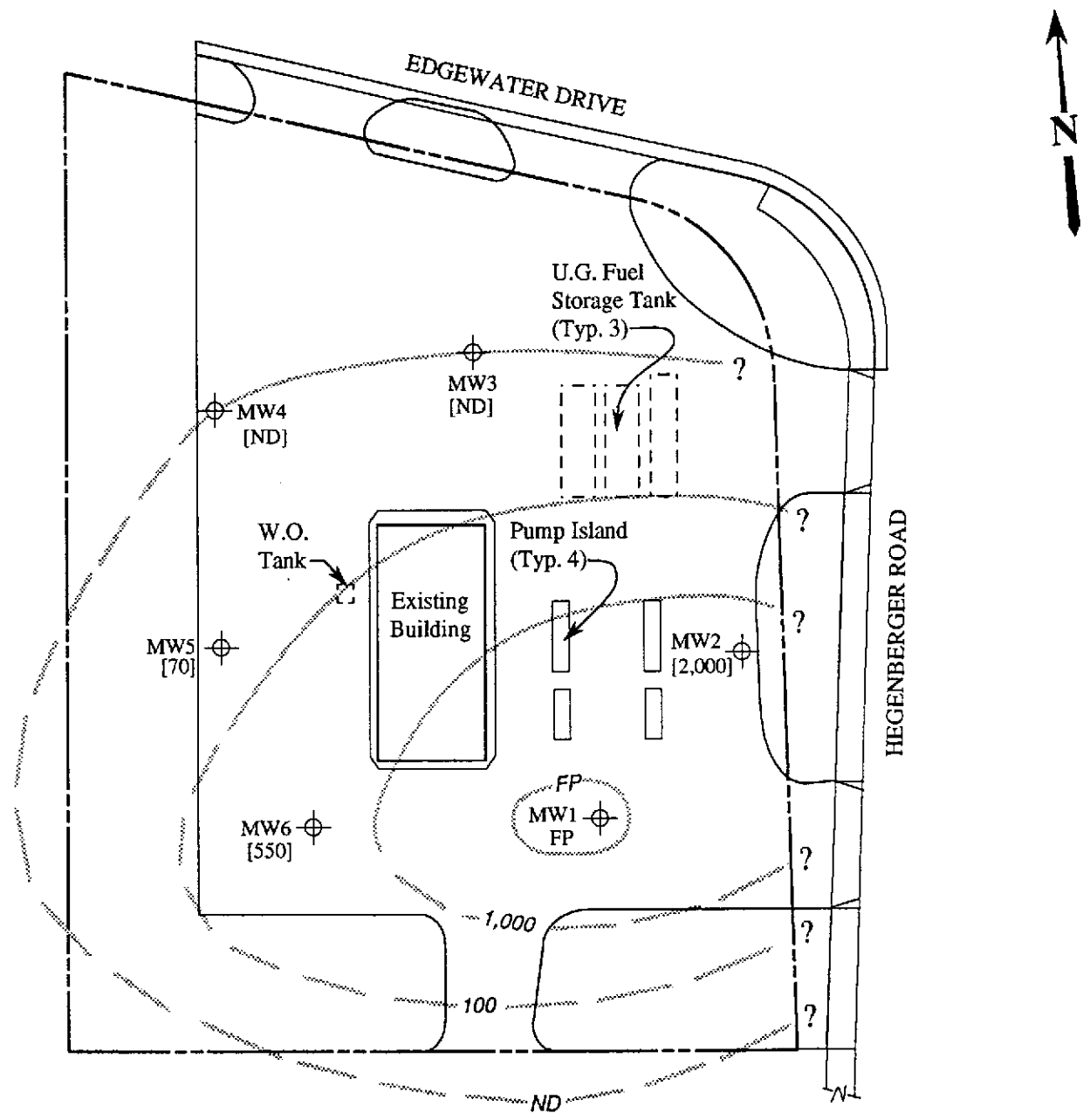
Approx. scale feet

TPH AS GASOLINE CONCENTRATIONS IN GROUND WATER ON NOVEMBER 30, 1992



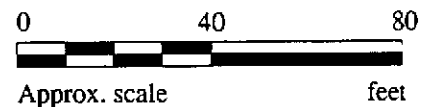
**UNOCAL SERVICE STATION #5043
449 HEGENBERGER ROAD
OAKLAND, CA**

**FIGURE
4**



LEGEND

- ⊕ Monitoring well
- [] Concentrations of benzene in ppb
- Iso-concentration contours in ppb
- ND = Non-detectable
- FP = Free product

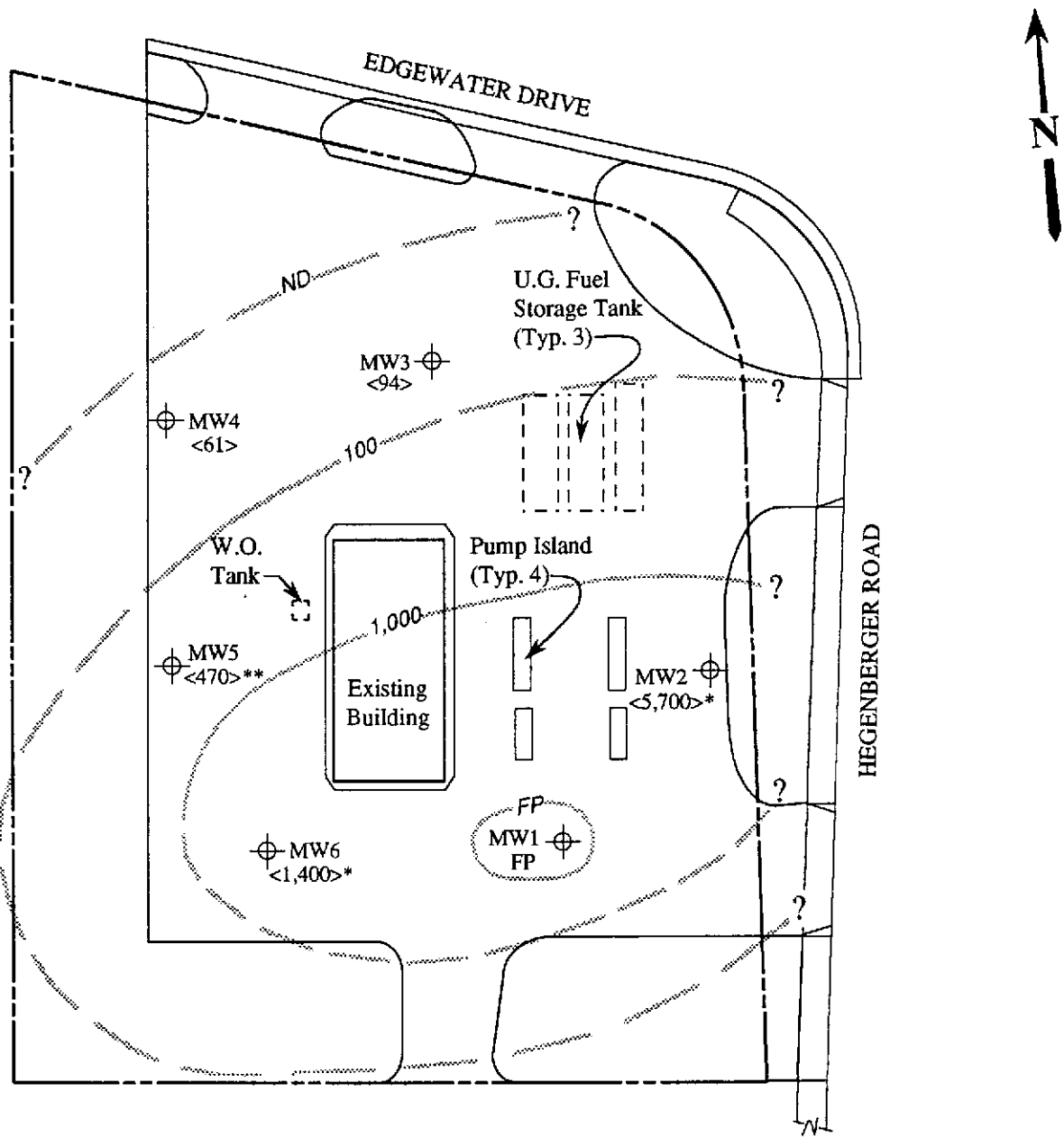


BENZENE CONCENTRATIONS IN GROUND WATER ON NOVEMBER 30, 1992

**KAPREALIAN ENGINEERING
INCORPORATED**

**UNOCAL SERVICE STATION #5043
449 HEGENBERGER ROAD
OAKLAND, CA**

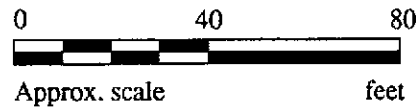
**FIGURE
5**



LEGEND

- ⊕ Monitoring well
- < > Concentrations of TPH as diesel in ppb
- Iso-concentration contours in ppb
- ND = Non-detectable
- FP = Free product

* The lab reported that the hydrocarbons detected did not appear to be diesel.
 ** The lab reported that the hydrocarbons detected are a diesel and non-diesel mixture.



TPH AS DIESEL CONCENTRATIONS IN GROUND WATER ON NOVEMBER 30, 1992



**UNOCAL SERVICE STATION #5043
 449 HEGENBERGER ROAD
 OAKLAND, CA**

**FIGURE
 6**



SEQUOIA ANALYTICAL

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

Kaprealian Engineering, Inc. 2401 Stanwell Drive, Suite 400 Concord, CA 94520 Attention: Mardo Kaprealian, P.E.	Client Project ID: Unocal, 449 Hegenberger Rd., Oakland Sample Matrix: Water Analysis Method: EPA 5030/8015/8020 First Sample #: 212-0032	Sampled: Nov 30, 1992 Received: Nov 30, 1992 Reported: Dec 11, 1992
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TOTAL PURGEABLE PETROLEUM HYDROCARBONS with BTEX DISTINCTION

Analyte	Reporting Limit µg/L	Sample I.D. 212-0032 MW2	Sample I.D. 212-0033 MW3*	Sample I.D. 212-0034 MW4*	Sample I.D. 212-0035 MW5	Sample I.D. 212-0036 MW6	Sample I.D. Matrix Blank
Purgeable Hydrocarbons	50	29,000	790	420	930	9,200	
Benzene	0.5	2,000	N.D.	N.D.	70	550	
Toluene	0.5	3,400	N.D.	N.D.	0.79	N.D.	
Ethyl Benzene	0.5	1,200	N.D.	N.D.	290	740	
Total Xylenes	0.5	6,900	N.D.	N.D.	14	1,600	
Chromatogram Pattern:		Gasoline	Discrete Peak	Discrete Peak	Gasoline	Gasoline	

Quality Control Data

Report Limit Multiplication Factor:	100	10	5.0	1.0	1.0	1.0
Date Analyzed:	12/4/92	12/3/92	12/4/92	12/3/92	12/4/92	12/3/92
Instrument Identification:	HP-5	HP-2	HP-5	HP-2	HP-5	HP-2
Surrogate Recovery, %: (QC Limits = 70-130%)	102	100	108	100	98	100

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

Please Note: * The above samples do not appear to contain gasoline. Purgeable Hydrocarbons are due to an unidentified peak in the MTBE range.



SEQUOIA ANALYTICAL

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(510) 686-9600 • FAX (510) 686-9689

Kaprealian Engineering, Inc. 2401 Stanwell Drive, Suite 400 Concord, CA 94520 Attention: Mardo Kaprealian, P.E.	Client Project ID: Unocal, 449 Hegenberger Rd., Oakland Sample Matrix: Water Analysis Method: EPA 3510/3520/8015 First Sample #: 212-0032	Sampled: Nov 30, 1992 Received: Nov 30, 1992 Reported: Dec 11, 1992
--------------------------------------------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------

TOTAL EXTRACTABLE PETROLEUM HYDROCARBONS

Analyte	Reporting Limit µg/L	Sample I.D. 212-0032 MW2	Sample I.D. 212-0033 MW3	Sample I.D. 212-0034 MW4	Sample I.D. 212-0035 MW5	Sample I.D. 212-0036 MW6	Sample I.D. Matrix Blank
Extractable Hydrocarbons	50	5,700	94	61	470	1,400	
Chromatogram Pattern:		Non Diesel Mixture (<C16)	Diesel	Diesel	Diesel & Non Diesel Mixture (<C16)	Non Diesel Mixture (<C16)	

Quality Control Data

Report Limit Multiplication Factor:	10	1.0	1.0	1.0	1.0	1.0
Date Extracted:	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92	12/7/92
Date Analyzed:	12/9/92	12/8/92	12/8/92	12/8/92	12/8/92	12/8/92
Instrument Identification:	HP-3B	HP-3A	HP-3A	HP-3A	HP-3A	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

Scott A. Chierfo
Scott A. Chierfo
Project Manager



SEQUOIA ANALYTICAL

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

Kaprealian Engineering, Inc.
2401 Stanwell Drive, Suite 400
Concord, CA 94520

Attention: Mardo Kaprealian, P.E.

Client Project ID: Unocal, 449 Hegenberger Rd., Oakland

Matrix Descript: Water

Analysis Method: SM 5520 B&F (Gravimetric)

First Sample #: 212-0035

Sampled: Nov 30, 1992

Received: Nov 30, 1992

Extracted: Dec 3, 1992

Analyzed: Dec 7, 1992

Reported: Dec 11, 1992

TOTAL RECOVERABLE PETROLEUM OIL

Sample Number	Sample Description	Oil & Grease mg/L (ppm)
212-0035	MW5	N.D.

Detection Limits:

5.0

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

SEQUOIA ANALYTICAL


Scott A. Chieffo
Project Manager

2120032.KEI <3>



SEQUOIA ANALYTICAL

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

Kaprealian Engineering, Inc. 2401 Stanwell Drive, Suite 400 Concord, CA 94520 Attention: Mardo Kaprealian, P.E.	Client Project ID: Unocal, 449 Hegenberger Rd., Oakland Sample Descript: Water Analysis for: Total Dissolved Solids First Sample #: 212-0032	Sampled: Nov 30, 1992 Received: Nov 30, 1992 Extracted: Dec 3, 1992 Analyzed: Dec 3, 1992 Reported: Dec 11, 1992
--------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------

LABORATORY ANALYSIS FOR: Total Dissolved Solids

Sample Number	Sample Description	Detection Limit mg/L	Sample Result mg/L
212-0032	MW2	1.0	6,400
212-0033	MW3	1.0	6,500
212-0034	MW4	1.0	3,800
212-0036	MW6	1.0	9,800

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

SEQUOIA ANALYTICAL


Scott A. Chieffo
Project Manager



SEQUOIA ANALYTICAL

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

Kaprealian Engineering, Inc.
2401 Stanwell Drive, Suite 400
Concord, CA 94520

Client Project ID: Unocal, 449 Hegenberger Rd., Oakland

Attention: Mardo Kaprealian, P.E. QC Sample Group: 2120032-36

Reported: Dec 11, 1992

QUALITY CONTROL DATA REPORT

ANALYTE	Benzene	Toluene	Ethyl-Benzene	Xylenes	Diesel	Oil and Grease	Total Dissolved Solids
	Method:	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020	EPA 8015/8020	EPA 8015	SM 5520
Analyst:	J.F.	J.F.	J.F.	J.F.	K.Wimer	D. Newcomb	B.Pascalli
Reporting Units:	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L
Date Analyzed:	Dec 3, 1992	Dec 3, 1992	Dec 3, 1992	Dec 3, 1992	Dec 8, 1992	Dec 3, 1992	Dec 3, 1992
QC Sample #:	211-1303	211-1303	211-1303	211-1303	Matrix Blank	Matrix Blank	212-0036
Sample Conc.:	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	9800
Spike Conc. Added:	20	20	20	60	300	100	1000
Conc. Matrix Spike:	22	21	21	66	294	95	11000
Matrix Spike % Recovery:	110	105	105	110	98	95	120
Conc. Matrix Spike Dup.:	21	20	20	63	299	96	11000
Matrix Spike Duplicate % Recovery:	105	100	100	105	100	96	120
Relative % Difference:	4.7	4.9	4.9	4.7	1.7	1.0	0.0

Laboratory blank contained the following analytes: None Detected

SEQUOIA ANALYTICAL


Scott A. Chieffo
Project Manager

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



SEQUOIA ANALYTICAL

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(510) 686-9600 • FAX (510) 686-9689

Kaprealian Engineering, Inc.
2401 Stanwell Drive, Suite 400
Concord, CA 94520

Client Project ID: Unocal, 449 Hegenberger Rd., Oakland

Attention: Mardo Kaprealian, P.E. QC Sample Group: 2120032-36

Reported: Dec 11, 1992

QUALITY CONTROL DATA REPORT

SURROGATE

Method:	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
Reporting Units:	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Date Analyzed:	Dec 9, 1992	Dec 8, 1992	Dec 8, 1992	Dec 8, 1992	Dec 8, 1992	Dec 8, 1992
Sample #:	212-0032	212-0033	212-0034	212-0035	212-0036	Blank

Surrogate	101	97	88	99	97	118
% Recovery:						

SEQUOIA ANALYTICAL

Scott A. Chieffo
Scott A. Chieffo
Project Manager

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



KAPREALIAN ENGINEERING, INC.

CHAIN OF CUSTODY

SAMPLER		SITE NAME & ADDRESS						ANALYSES REQUESTED				TURN AROUND TIME:	
Vartkes		Unocal / Oakland 449 Hegenberger Rd.						TPH	GH	BTX			Regular
WITNESSING AGENCY								TPH	GH	BTX	TDS	REMARKS	
SAMPLE ID NO.	DATE	TIME	SOIL	WATER	GRAB	COMP	NO. OF CONT.	SAMPLING LOCATION	TPH	GH	BTX	TDS	
MW 2	11/30/92	2:10 pm.		X	X		4	Monitoring Well	X	X		X	
MW 3	"			X	X		4	" "	X	X		X	
MW 4	"			X	X		4	" "	X	X		X	
MW 5	"			X	X		4	" "	X	X	X		
MW 6	"	5:00 pm.		X	X		4	" "	X	X		X	
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? 2. Will samples remain refrigerated until analyzed? 3. Did any samples received for analysis have head space? 4. Were samples in appropriate containers and properly packaged?								
W. Vardolov		11/30/92 6:15	7/11/11 11/30/92 1815										
Relinquished by: (Signature)		Date/Time	Received by: (Signature)										
Jim Little		12-1-92 1400	[Signature]										
Relinquished by: (Signature)		Date/Time	Received by: (Signature)										
[Signature]		12-1-92	[Signature]										
Relinquished by: (Signature)		Date/Time	Received by: (Signature)										
					Signature		Title		Date				

2120032A
033A
034A
035A
036A

MW5: unable to sample for TDS, not enough water.