



KAPREALIAN ENGINEERING, INC.
Consulting Engineers

P.O. BOX 996 • BENICIA, CA 94510
(707) 746-6915 • (707) 746-6916 • FAX: (707) 746-5581

January 23, 1991

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

Attention: Mr. Larry Seto

RE: Unocal Service Station #2512
1300 Davis Street
San Leandro, California

Dear Mr. Seto:

Per the request of Mr. Rick Sisk of Unocal Corporation, enclosed please find our report dated January 9, 1990, for the above referenced site.

Should you have any questions, please feel free to call our office at (707) 746-6915.

Sincerely,

Kaprealian Engineering, Inc.

Judy A. Dewey

jad\82

Enclosure

cc: Rick Sisk, Unocal Corporation



KAPREALIAN ENGINEERING, INC.
Consulting Engineers

P.O. BOX 996 • BENICIA, CA 94510
(707) 746-6915 • (707) 746-6916 • FAX: (707) 746-5581

KEI-P88-1204.QR6
January 9, 1991

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

Attention: Mr. Rick Sisk

RE: Quarterly Report
Unocal Service Station #2512
1300 Davis Street
San Leandro, California

Dear Mr. Sisk:

This report presents the results of the sixth quarter of monitoring and sampling of the monitoring wells at the referenced site by Kaprealian Engineering, Inc. (KEI), per proposal (KEI-P88-1204.P3) dated May 16, 1989. The wells are currently monitored monthly and sampled on a quarterly basis. This report covers the work performed by KEI from September through November, 1990.

BACKGROUND

The subject site is presently used as a gasoline station. The site is situated on gently sloping, westward trending topography, and is located approximately 2 miles east-northeast of the present shoreline of San Francisco Bay. Also, the site is located approximately 2,000 feet south of San Leandro Creek. A Location Map, Site Vicinity Map and Site Plans are attached to this report.

Per Unocal Corporation's procedure for site divestments, KEI's work at the site began on December 30, 1988, when KEI was asked to install exploratory borings. On January 3, 1989, six exploratory borings, designated as EB1 through EB6 on the attached Site Plan, Figure 2, were drilled at the site. The six borings were drilled to depths ranging from 26.5 to 30 feet and ground water was encountered at depths ranging from 25 to 26.5 feet beneath the surface. Analytical results of soil samples collected from EB1 through EB5 indicated levels of total petroleum hydrocarbons (TPH) as gasoline ranging from non-detectable to 17 ppm. Benzene was detected only in samples EB5(20) and EB6(15) at concentrations of 0.12 ppm and 0.065 ppm, respectively. Analyses of soil samples collected from EB6 indicated levels of TPH as diesel ranging from

3 ppm to 160 ppm, and total oil and grease (TOG) levels to 7,800 ppm. Results of the soil sample analyses are summarized in Table 3. Based on the results of the exploratory boring investigation, KEI proposed installation of three monitoring wells. Results of the exploratory boring investigation are presented in KEI's report (KEI-P88-1204.R1) dated February 3, 1989.

On April 17, 1989, three two-inch diameter monitoring wells (designated as MW1, MW2 and MW3 on the attached Site Plan, Figure 1) were drilled to a total depth of 33 feet each. Ground water was encountered during drilling at depths of 17.5 to 18.5 feet.

Water and selected soil samples were analyzed by Sequoia Analytical Laboratory in Redwood City, California. The samples were analyzed for TPH as gasoline by EPA method 5030 in conjunction with modified 8015, TPH as diesel by EPA methods 3550 (soil) and 3510 (water) in conjunction with modified 8015, benzene, toluene, xylenes and ethylbenzene (BTX&E) by EPA method 8020, TOG by EPA method 413.1, and purgeable halocarbons by EPA method 8010.

Analytical results of the soil samples indicated levels of TPH as gasoline ranging from non-detectable to 6.2 ppm, and levels of TOG ranging from non-detectable to 180 ppm. Benzene, TPH as diesel and EPA method 8010 constituents were non-detectable in all samples. Analytical results of water samples collected on April 25, 1989 showed levels of TPH as gasoline ranging from non-detectable to 56 ppb, TPH as diesel levels ranging from non-detectable to 5,700 ppb, and levels of benzene ranging from non-detectable to 0.35 ppb. Results of the soil analyses are summarized in Table 3, and water analyses in Table 2. For more detailed information, refer to KEI's report (KEI-P88-1204.R2) dated May 16, 1990.

On May 11, 1989 at KEI's recommendation, the area surrounding exploratory boring EB6 (shown on the attached Site Plan, Figure 2) was excavated. Four soil samples, labeled SWA, SWB, SWC and SWD, were collected from the sidewalls of the excavation at a depth of approximately 16.5 feet (six inches above the water table). The samples were analyzed for TPH as diesel using EPA method 3550 in conjunction with modified 8015, and TOG by EPA method 413.1. Analytical results of the excavation soil samples indicated levels of TPH as diesel ranging from 16 ppm to 26 ppm, while TOG concentrations ranged from 170 ppm to 850 ppm. The analytical results are summarized in Table 3. Based on the results of the excavation soil samples and ground water contamination detected in the monitoring wells, KEI recommended installation of three additional monitoring wells. Results of the excavation investigation are presented in KEI's report (KEI-J88-1204.R4) dated June 15, 1989.

On August 16, 1989, three additional two-inch diameter monitoring wells (designated as MW4, MW5, and MW6 on the attached Site Plan, Figure 1) were installed at the site to total depths of 33 feet. Ground water was encountered at depths of approximately 19.8 to 22 feet below grade during drilling. The soil samples from MW4, MW5 and MW6 were analyzed for TPH as gasoline using EPA method 5030 in conjunction with modified 8015, BTX&E using EPA method 8020, and TOG using method 418.1. The soil sample analyses showed non-detectable levels of TPH as gasoline and benzene in all samples, except in MW4(5), MW5(15) and MW5(22), which showed levels of TPH as gasoline at 3.3 ppm, 20 ppm and 2.1 ppm, respectively. Levels of TOG in all soil samples were less than 50 ppm. The ground water samples from all wells were analyzed for TPH as gasoline and TPH as diesel using EPA method 5030 and 3510 in conjunction with modified 8015, BTX&E using EPA method 8020, halogenated volatile organics using EPA method 8010, and TOG using method 503A&E. Analytical results of the water samples, collected from MW1, MW2 and MW6 showed non-detectable levels of TPH as diesel, while samples collected from MW3, MW4 and MW5 indicated levels of TPH as diesel at 860 ppb, 120 ppb and 100 ppb, respectively. TPH as gasoline and benzene were detected only in MW3 at levels of 3,200 ppb and 73 ppb, respectively. Analytical results of the water samples are summarized in Table 2, and the soil samples in Table 3. Based on the analytical results, KEI recommended continuation of the monthly monitoring and quarterly sampling program of all wells per KEI's proposal (KEI-P88-1204.P3) dated May 16, 1989. Documentation for the installation of monitoring wells MW4 through MW6, as well as results of the first quarter of monitoring and sampling of wells MW1 through MW6, were presented in KEI's report (KEI-P88-1204.QR1) dated September 27, 1989. All wells have been monitored monthly and sampled quarterly since June, 1989.

FIELD ACTIVITIES

Wells MW1 through MW6 were monitored three times and sampled once during the quarter. During monitoring, the wells were checked for depth to water and presence of free product and sheen. Except for sheen observed in MW3 on November 6, 1990, no free product or sheen was noted in any of the wells during the quarter. Monitoring data are summarized in Table 1.

Water samples were collected from the wells on November 6, 1990. The wells were each purged of 15 to 55 gallons using a surface pump and samples were then collected using a clean Teflon bailer. The samples were decanted into clean VOA vials and one liter amber bottles, sealed with Teflon-lined screw caps and stored on ice in a cooler until delivery to a state certified laboratory.

HYDROLOGY

Based on the water level data gathered from the six monitoring wells during the quarter, the ground water flow direction appeared to be generally due west to west-southwest on November 6, 1990, relatively unchanged from the previous quarter (see the attached Site Plan, Figure 1). The hydraulic gradient on November 9, 1990, ranged between 0.002 and 0.003. In addition, water levels have fluctuated during the quarter, but show a net decrease of 0.47 to 0.56 feet in all wells since the previous quarter (August 9, 1990). The measured depth to ground water at the site on November 6, 1990 ranged between 17.23 to 18.05 feet.

ANALYTICAL RESULTS

Ground water samples were analyzed at Sequoia Analytical Laboratory in Concord, California, and were accompanied by properly executed Chain of Custody documentation. The samples were analyzed for TPH as gasoline using EPA method 5030 in conjunction with modified 8015, and BTX&E using EPA method 8020, TPH as diesel using EPA method 3510 in conjunction with modified 8015, TOG using EPA method 503A&E, and halogenated volatile organics using EPA method 8010.

Analytical results of ground water samples indicate non-detectable levels of TPH as gasoline, TPH as diesel, benzene, and TOG in all wells except in MW3, which showed levels of TPH as diesel at 940 ppb, TPH as gasoline at 16,000 ppb, and benzene at 820 ppb, and in MW6, which showed benzene at 1.6 ppb. Tetrachloroethene (PCE) was detected in wells MW1, MW4, MW5 and MW6 at levels ranging from 0.76 ppb to 4.8 ppb. Results of the water analyses are summarized in Table 2. Copies of the analytical results and Chain of Custody documentation are attached to this report.

DISCUSSION AND RECOMMENDATIONS

Based on the analytical results collected and evaluated to date and no evidence of free product in any of the wells, KEI recommends the continuation of the current monitoring and sampling program of the existing wells per KEI's proposal (KEI-P88-1204.P3) dated May 16, 1989. Ground water contamination appears to be presently limited to the vicinity of well MW3 only, based on the analytical results of the ground water samples collected from all six monitoring wells on November 6, 1990. However, ground water contamination has also been intermittently detected in wells MW2, MW4 and MW5 since August 29, 1989.

and MW6

A field reconnaissance of the subject site on August 24, 1990 revealed the presence of soil borings within the existing asphalt parking area at the adjacent property located southwest of the site (see the attached Site Vicinity Map, Figure 3). KEI has reviewed a report prepared by Applied Geosystems (AGS) of San Jose, California, dated April 30, 1990 (AGS #60004-1), documenting this work. Soil and ground water samples were collected from five borings (B1 through B5) on the adjacent property. Analytical results of soil samples indicated non-detectable levels of petroleum hydrocarbons in all samples except for 200 ppm of TOG and 0.058 ppm of toluene detected at 16 feet in boring B5 located immediately southwest of MW3. Also, tetrachloroethene was detected in borings B2, B3 and B4 at depths of 15 to 17.5 feet at levels ranging from 0.0052 ppm to 0.0460 ppm. TPH as gasoline was detected in water samples taken from borings B2 and B3 at levels of 220 ppb and 50 ppb, respectively, which are located near a former dry cleaning operation (see the attached Site Vicinity Map, Figure 3). Also, tetrachloroethene (PCE) was detected in the water samples from all five borings at levels ranging from 2.2 ppb to 540 ppb with the greatest concentrations obtained from borings B2, B3 and B4 located near the former dry cleaning operation.

In addition, based on a site inspection conducted on December 27, 1990, one existing monitoring well was observed near the former dry cleaner operation. Communication with Unocal Corporation on January 2, 1991 indicates that this well was not installed at the request of Unocal corporation and details of well installation are presently unknown.

The extent of ground water contamination (TPH as gasoline and benzene) downgradient from monitoring wells MW2 and MW3 has not yet been fully defined. However, prior to recommending an off-site monitoring well, KEI suggests that an evaluation of the existing off-site monitoring well (see Site Vicinity Map, Figure 3) installation details and water sample analytical results be conducted.

Additionally, KEI recommends the continuation of water analyses for halogenated volatile organic compounds per EPA method 8010 for all monitoring wells.

DISTRIBUTION

A copy of this report should be sent to the Mr. Larry Seto of the Alameda County Health Agency, to the City of San Leandro, and to the Regional Water Quality Control Board (RWQCB), 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.

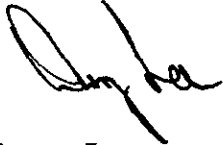
The results of this study are based on the data obtained from the field and laboratory analyses obtained from a state certified laboratory. We have analyzed this data using what we believe to be currently applicable engineering techniques and principles in the Northern California region. We make no warranty, 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-P88-1204.QR6
January 9, 1991
Page 7

If you have any questions regarding this report, please do not hesitate to call me at (707) 746-6915.

Sincerely,

Kaprealian Engineering, Inc.



Doug Lee
Geologist



Thomas J. Berkins
Environmental Engineer



Don R. Braun
Certified Engineering Geologist

License No. 1310
Exp. Date 6/30/92

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Attachments: Tables 1, 2 & 3
Location Map
Site Plans - Figures 1 & 2
Site Vicinity Map - Figure 3
Laboratory Analyses
Chain of Custody documentation

KEI-P88-1204.QR6
January 9, 1991

TABLE 1
SUMMARY OF MONITORING DATA

<u>Date</u>	<u>Well No.</u>	<u>Ground Water Elevation* (feet)</u>	<u>Depth to Water (feet)</u>	<u>Product Thickness</u>	<u>Sheen</u>	<u>Water Bailed (gallons)</u>
11/06/90	MW1	82.04	17.96	0	None	15
	MW2	81.80	18.52	0	None	15
	MW3	81.83	18.20	0	Yes	55
	MW4	81.90	17.76	0	None	15
	MW5	81.91	18.41	0	None	15
	MW6	82.02	18.48	0	None	15
10/04/90	MW1	81.85	18.15	0	None	0
	MW2	81.60	18.72	0	None	0
	MW3	81.75	18.28	0	None	40
	MW4	81.88	17.78	0	None	0
	MW5	81.90	18.42	0	None	0
	MW6	82.00	18.50	0	None	0
9/07/90	MW1	82.22	17.78	0	None	0
	MW2	81.97	18.35	0	None	0
	MW3	82.03	18.00	0	None	55
	MW4	82.11	17.55	0	None	0
	MW5	82.16	18.16	0	None	0
	MW6	82.27	18.23	0	None	0

* Top of MW1 well cover assumed 100.00 feet as datum.

KEI-P88-1204.QR6
January 9, 1991

TABLE 2
SUMMARY OF LABORATORY ANALYSES
WATER

<u>Date</u>	<u>Sample Well #</u>	<u>TPH as Diesel</u>	<u>TPH as Gasoline</u>	<u>Benzene</u>	<u>Toluene</u>	<u>Xylenes</u>	<u>Ethyl-benzene</u>
11/06/90	MW1*	ND	ND	ND	ND	ND	ND
	MW2*	ND	ND	ND	0.42	1.4	ND
	MW3*	940	16,000	820	1,500	770	2,200
	MW4*	ND	ND	ND	0.36	0.98	ND
	MW5*	ND	ND	ND	ND	ND	ND
	MW6*	ND	ND	1.6	0.35	ND	ND
8/09/90	MW1**	ND	ND	ND	ND	ND	ND
	MW2**	ND	ND	ND	ND	ND	ND
	MW3**	500	1,900	56	140	140	31
	MW4**	ND	ND	ND	ND	ND	ND
	MW5**	ND	ND	ND	ND	ND	ND
	MW6**	ND	ND	ND	ND	ND	ND
5/10/90	MW1**	ND	ND	ND	ND	ND	ND
	MW2**	ND	43	ND	1.0	ND	ND
	MW3***	850	6,200	94	460	540	160
	MW4**	88	54	ND	2.0	0.37	ND
	MW5**	83	ND	ND	ND	0.31	ND
	MW6**	ND	ND	ND	1.2	ND	ND
2/23/90	MW1**	ND	ND	ND	ND	ND	ND
	MW2**	ND	44	ND	ND	ND	ND
	MW3****	350	ND	0.32	ND	ND	ND
	MW4**	ND	ND	ND	ND	ND	ND
	MW5**	ND	ND	ND	ND	ND	ND
	MW6**	ND	ND	ND	ND	ND	ND
11/21/89	MW1+	ND	ND	ND	ND	ND	ND
	MW2+	ND	48	ND	0.51	ND	ND
	MW3+	110	1,900	ND	ND	ND	ND
	MW4**	ND	ND	ND	ND	ND	ND
	MW5**	70	ND	ND	ND	ND	ND
	MW6**	ND	ND	ND	ND	ND	ND
8/11/89 & 8/29/89	MW1**	ND	ND	ND	ND	ND	ND
	MW2**	ND	ND	ND	0.39	ND	ND
	MW3**	860	3,200	73	140	240	35
	MW4**	120	ND	ND	ND	ND	ND
	MW5**	100	ND	ND	0.94	ND	0.30
	MW6**	ND	ND	ND	ND	ND	ND

KEI-P88-1204.QR6
January 9, 1991

TABLE 2 (Continued)

SUMMARY OF LABORATORY ANALYSES
WATER

<u>Date</u>	<u>Sample Well #</u>	<u>TPH as Diesel</u>	<u>TPH as Gasoline</u>	<u>Benzene</u>	<u>Toluene</u>	<u>Xylenes</u>	<u>Ethyl-benzene</u>
4/25/89	MW1++	100	ND	0.31	ND	ND	ND
	MW2++	ND	32	0.35	ND	ND	ND
	MW3++	5,700	56	ND	ND	0.49	0.31
Detection Limits		50	30	0.3	0.3	0.3	0.3

* TOG was non-detectable. EPA method 8010 constituents were non-detectable, except in MW1, MW4, MW5, and MW6, where tetrachloroethene was detected at 4.8 ppb, 2.9 ppb, 0.76 ppb, and 1.2 ppb, respectively.

** TOG was non-detectable.

*** TOG was detected at 2.8 ppm.

**** TOG was detected at 1.3 ppm.

+ TOG was detected at concentrations of 8.9 ppm, 1.6 ppm and 3.8 ppm in MW1, MW2 and MW3, respectively.

++ MW1 showed PCE at 3.3 ppb and TCE at 0.55 ppb for EPA method 8010. MW2 showed PCE at 0.68 ppb for EPA method 8010. MW3 showed PCE at 1.0 ppb for EPA method 8010.

ND = Non-detectable.

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

KEI-P88-1204.QR6
January 9, 1991

TABLE 3

SUMMARY OF LABORATORY ANALYSES
SOIL

<u>Sample Number</u>	<u>Depth (feet)</u>	<u>TPH as Diesel</u>	<u>TPH as Gasoline</u>	<u>Benzene</u>	<u>Toluene</u>	<u>Xylenes</u>	<u>Ethyl-benzene</u>	<u>TOG</u>
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(Collected on August 16, 1989)

MW4	5	--	3.3	ND	ND	0.11	ND	<50
MW4	10	--	ND	ND	ND	ND	ND	<50
MW4	15	--	ND	ND	ND	ND	ND	<50
MW4	19	--	ND	ND	ND	ND	ND	<50
MW5	5	--	ND	ND	ND	ND	ND	<50
MW5	10	--	ND	ND	ND	ND	ND	<50
MW5	15	--	ND	ND	ND	ND	ND	<50
MW5	20	--	20	ND	ND	ND	ND	<50
MW5	22	--	ND	ND	ND	ND	ND	<50
MW6	5	--	ND	ND	ND	ND	ND	<50
MW6	10	--	ND	ND	ND	ND	ND	<50
MW6	15	--	ND	ND	ND	ND	ND	<50
MW6	20	--	ND	ND	ND	ND	ND	<50

(Collected on May 11, 1989)

SWA	16.5	21	--	--	--	--	--	850
SWB	16.5	18	--	--	--	--	--	580
SWC	16.5	26	--	--	--	--	--	680
SWD	16.5	16	--	--	--	--	--	170

(Collected on April 17, 1989)

MW1	5	ND	4.0	ND	ND	ND	ND	ND
MW1	10	ND	ND	ND	ND	ND	ND	ND
MW1	15	ND	ND	ND	ND	ND	ND	ND
MW1	17	ND	ND	ND	ND	ND	ND	31
MW2*	5	ND	ND	ND	ND	ND	ND	31
MW2*	10	ND	1.1	ND	ND	ND	ND	60
MW2*	15	ND	ND	ND	ND	ND	ND	71
MW3	5	ND	ND	ND	ND	ND	ND	ND
MW3	10	ND	1.1	ND	ND	ND	ND	ND
MW3	15	ND	1.2	ND	ND	ND	ND	32
MW3	17	ND	6.2	ND	0.21	0.42	ND	180

KEI-P88-1204.QR6
January 9, 1991

TABLE 3 (Continued)

SUMMARY OF LABORATORY ANALYSES
SOIL

<u>Sample Number</u>	<u>Depth (feet)</u>	<u>TPH as Diesel</u>	<u>TPH as Gasoline</u>	<u>Benzene</u>	<u>Toluene</u>	<u>Xylenes</u>	<u>Ethyl-benzene</u>	<u>TOG</u>
(Collected on January 3, 1989)								
EB1(5)*	5	5.0	--	<0.005	0.05	<0.005	<0.005	--
EB1(10)*	10	1.0	--	<0.005	<0.005	<0.005	<0.005	--
EB1(15)*	15	1.0	--	<0.005	<0.005	<0.005	<0.005	--
EB1(25)*	25	2.0	--	--	--	--	--	--
EB2(10)	10	--	<1.0	<0.05	<0.1	<0.1	<0.1	--
EB2(15)	15	--	<1.0	<0.05	<0.1	<0.1	<0.1	--
EB2(20)	20	--	<1.0	<0.05	<0.1	<0.1	<0.1	--
EB2(25)	25	--	1.9	<0.05	<0.1	<0.1	<0.1	--
EB3(5)	5	--	<1.0	<0.05	<0.1	<0.1	<0.1	--
EB3(10)	10	--	<1.0	<0.05	<0.1	<0.1	<0.1	--
EB3(15)	15	--	2.7	<0.05	<0.1	<0.1	<0.1	--
EB3(20)	20	--	2.2	<0.05	<0.1	<0.1	<0.1	--
EB3(25)	25	--	<1.0	<0.05	<0.1	<0.1	<0.1	--
EB4(5)	5	--	<1.0	<0.05	<0.1	<0.1	<0.1	--
EB4(10)	10	--	<1.0	<0.05	<0.1	<0.1	<0.1	--
EB4(15)	15	--	<1.0	<0.05	<0.1	<0.1	<0.1	--
EB4(20)	20	--	<1.0	<0.05	<0.1	<0.1	<0.1	--
EB4(25)	25	--	<1.0	<0.05	<0.1	<0.1	<0.1	--
EB5(5)	5	--	<1.0	<0.05	<0.1	<0.1	<0.1	--
EB5(10)	10	--	<1.0	<0.05	<0.1	<0.1	<0.1	--
EB5(15)	15	--	2.0	<0.05	<0.1	<0.1	<0.1	--
EB5(20)	20	--	17	0.12	0.15	1.4	0.25	--
EB5(25)	25	--	3.9	<0.05	<0.1	0.17	<0.1	--
EB6(5)	5	10	1.8	<0.05	<0.1	<0.1	<0.1	7,800
EB6(10)	10	160	73	<0.05	<0.1	<0.1	<0.1	1,200
EB6(15)	15	40	17	0.065	<0.1	0.21	<0.1	900
EB6(25)	25	3.0	<1.0	<0.05	<0.1	<0.1	<0.1	130

-- Indicates analysis not performed.

ND = Non-detectable.

* TOG and EPA method 8010 constituents were non-detectable.

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



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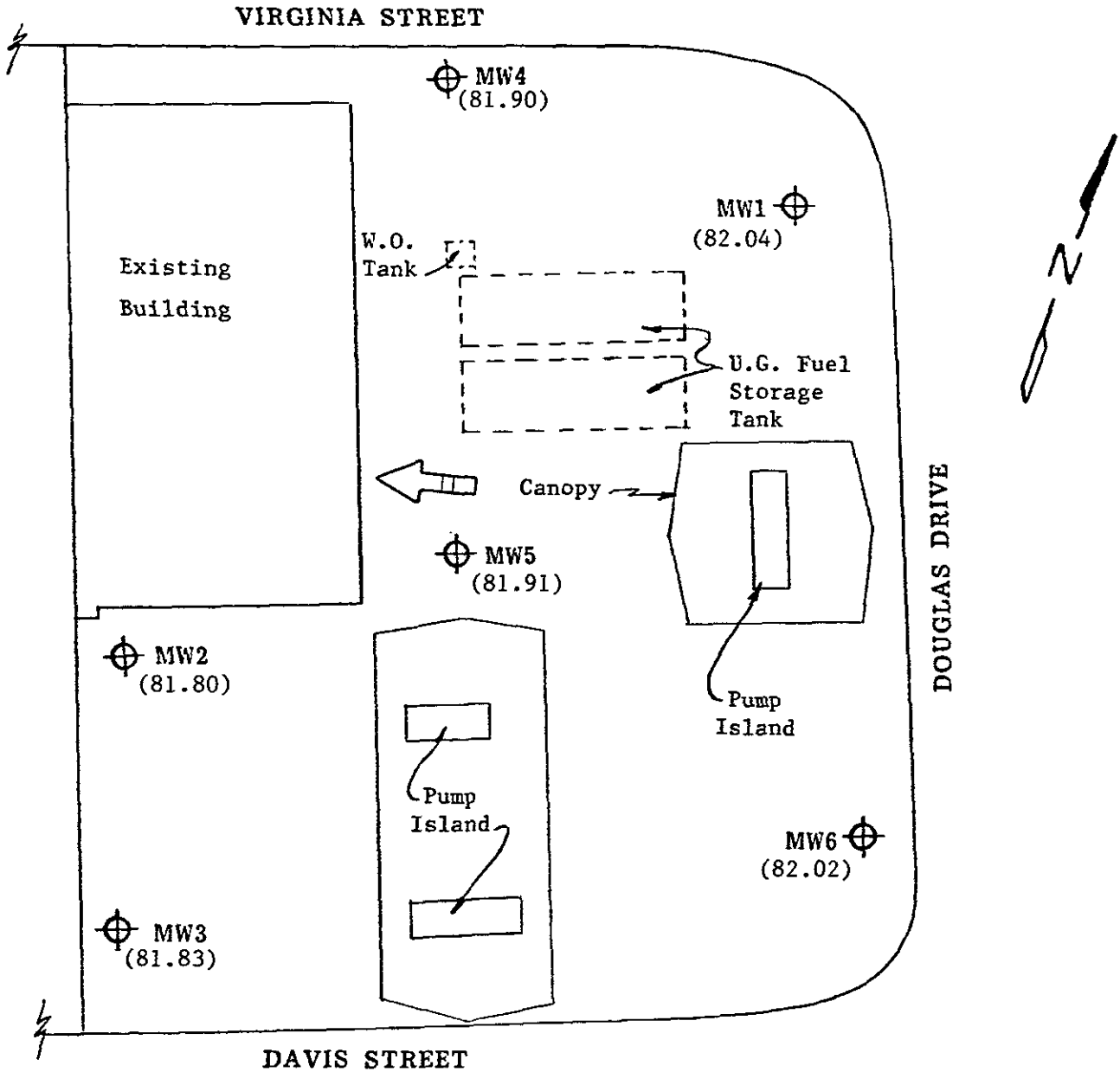
LOCATION MAP

Unocal S/S #2512
1300 Davis Street
San Leandro, CA

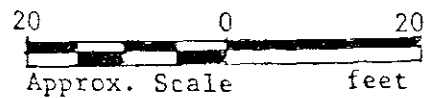


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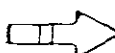


SITE PLAN
Figure 1



LEGEND

-  Monitoring Well
- () Ground water elevation in feet on 11/6/90. Top of MW1 well cover assumed 100.00 feet as datum.

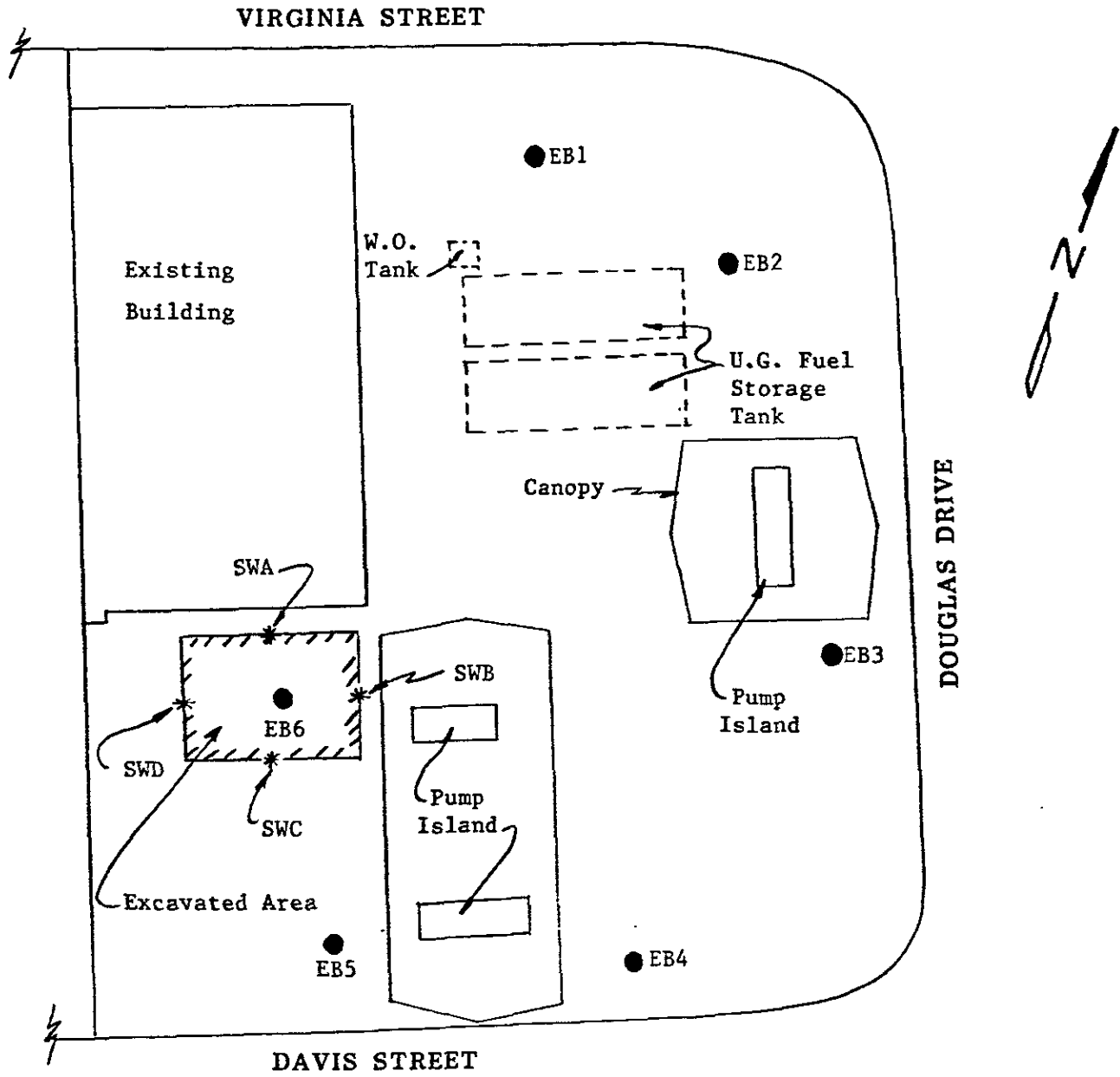
 Direction of ground water flow.

Unocal Service Station #2512
1300 Davis Street
San Leandro, California

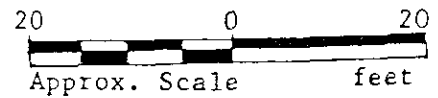


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SITE PLAN
Figure 2



LEGEND

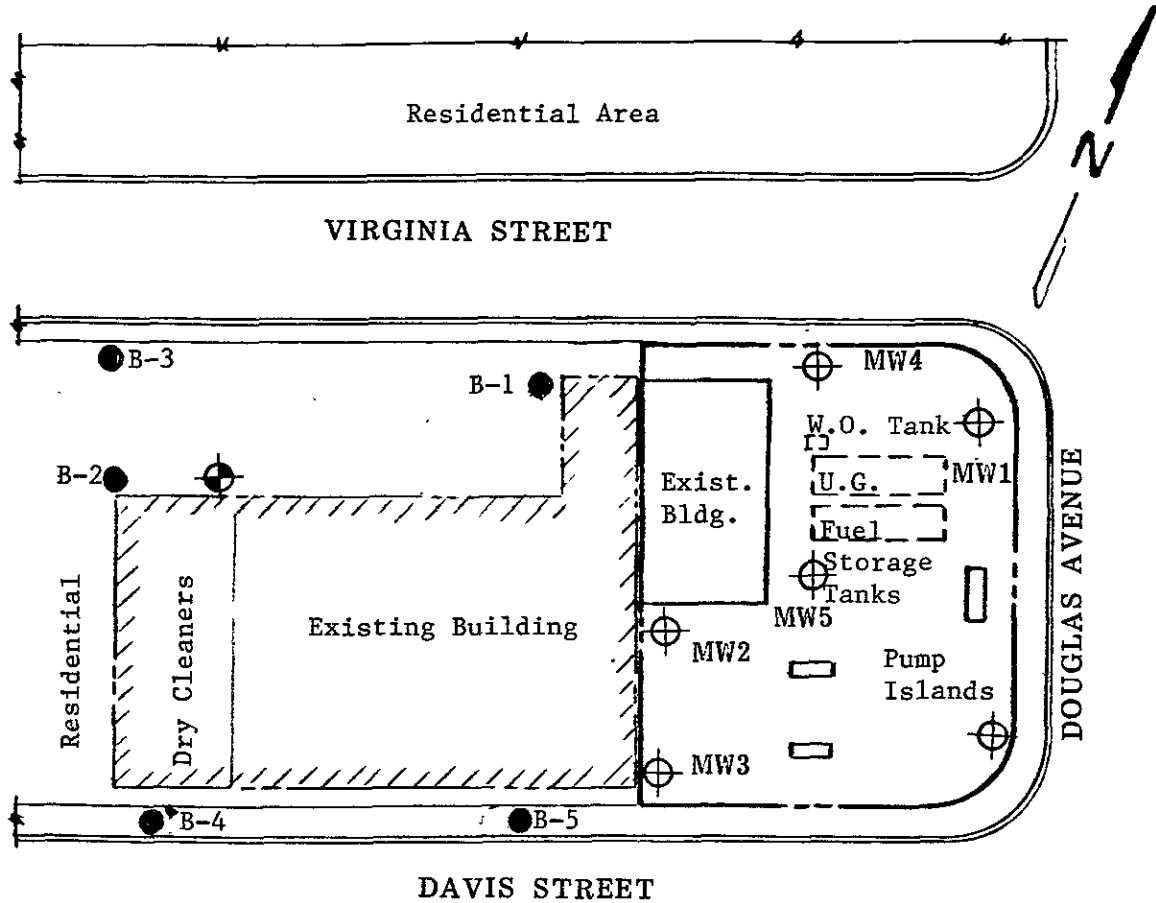
- Exploratory Boring
- * Sample Point Location

Unocal Service Station #2512
1300 Davis Street
San Leandro, California






KAPREALIAN ENGINEERING, INC.
Consulting Engineers

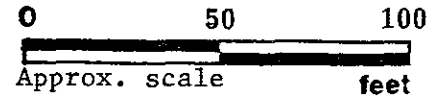
P.O. BOX 996 • BENICIA, CA 94510
(707) 746-6915 • (707) 746-6916 • FAX: (707) 746-5581



SITE VICINITY MAP
Figure 3

LEGEND

-  Existing Monitoring Well (by KEI)
-  Existing Monitoring Well (by others)
-  Approximate location of existing off-site Soil Borings (by AGS)



Unocal S/S #2512
1300 Davis Street
San Leandro, CA



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1900 Bates Avenue • Suite LM • Concord, California 94520
(415) 686-9600 • FAX (415) 686-9689

Kaprealian Engineering, Inc.
P.O. Box 996
Benicia, CA 94510
Attention: Mardo Kaprealian, P.E.

Client Project ID: Unocal, 1300 Davis St., San Leandro
Matrix Descript: Water
Analysis Method: EPA 5030/8015/8020
First Sample #: 011-0283 A-D

Sampled: Nov 6, 1990
Received: Nov 6, 1990
Analyzed: Nov 19, 1990
Reported: Nov 21, 1990

TOTAL PETROLEUM FUEL HYDROCARBONS with BTEX DISTINCTION (EPA 8015/8020)

Sample Number	Sample Description	Low/Medium B.P. Hydrocarbons			Ethyl Benzene Xylenes	
		$\mu\text{g/L}$ (ppb)	$\mu\text{g/L}$ (ppb)	$\mu\text{g/L}$ (ppb)	$\mu\text{g/L}$ (ppb)	$\mu\text{g/L}$ (ppb)
011-0283 A	MW-1	N.D.	N.D.	N.D.	N.D.	N.D.
011-0284 A	MW-2	N.D.	N.D.	0.42	N.D.	1.4
011-0285 A	MW-3	16,000	820	1,500	2,200	770
011-0286 A	MW-4	N.D.	N.D.	0.36	N.D.	0.98
011-0287 A	MW-5	N.D.	N.D.	N.D.	N.D.	N.D.
011-0288 A	MW-6	N.D.	1.6	0.35	N.D.	N.D.

Detection Limits:

30

0.30

0.30

0.30

0.30

Low to Medium Boiling Point Hydrocarbons are quantitated against a gasoline standard
Analytes reported as N.D. were not present above the stated limit of detection

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Belinda C Vega
Belinda C Vega
Laboratory Director



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Kaprealian Engineering, Inc.
P.O. Box 996
Benicia, CA 94510
Attention: Mardo Kaprealian, P.E.

Client Project ID: Unocal, 1300 Davis St., San Leandro
Matrix Descript: Water
Analysis Method: EPA 3510/8015
First Sample #: 011-0283 C

Sampled: Nov 6, 1990
Received: Nov 6, 1990
Extracted: Nov 9, 1990
Analyzed: Nov 13, 1990
Reported: Nov 21, 1990

TOTAL PETROLEUM FUEL HYDROCARBONS (EPA 8015)

Sample Number	Sample Description	High B.P. Hydrocarbons $\mu\text{g/L}$ (ppb)
011-0283 C	MW-1	N.D.
011-0284 C	MW-2	N.D.
011-0285 C	MW-3	940
011-0286 C	MW-4	N.D.
011-0287 C	MW-5	N.D.
011-0288 C	MW-6	N.D.

Detection Limits:

50

High Boiling Point Hydrocarbons are quantitated against a diesel fuel standard
Analytes reported as N.D. were not present above the stated limit of detection.

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Please Note

The above samples do not appear to contain diesel.



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Kaprealian Engineering, Inc.
P.O. Box 996
Benicia, CA 94510
Attention: Mardo Kaprealian, P.E.

Client Project ID: Unocal, 1300 Davis St., San Leandro
Matrix Descript: Water
Analysis Method: SM 503 A&E (Gravimetric)
First Sample #: 011-0283 D

Sampled: Nov 6, 1990
Received: Nov 6, 1990
Extracted: Nov 11, 1990
Analyzed: Nov 19, 1990
Reported: Nov 21, 1990

TOTAL RECOVERABLE PETROLEUM OIL

Sample Number	Sample Description	Oil & Grease mg/L (ppm)
011-0283 D	MW-1	N.D.
011-0284 D	MW-2	N.D.
011-0285 D	MW-3	N.D.
011-0286 D	MW-4	N.D.
011-0287 D	MW-5	N.D.
011-0288 D	MW-6	N.D.

Detection Limits:

5.0

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

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Laboratory Director

110283 KE1 <3>



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Kaprealian Engineering, Inc.	Client Project ID: Unocal, 1300 Davis St., San Leandro	Sampled: Nov 6, 1990
P.O. Box 996	Sample Descript: Water, MW-1	Received: Nov 6, 1990
Benicia, CA 94510	Analysis Method: EPA 5030/8010	Analyzed: Nov 17, 1990
Attention: Mardo Kaprealian, P.E.	Lab Number: 011-0283 B	Reported: Nov 21, 1990

HALOGENATED VOLATILE ORGANICS (EPA 8010)

Analyte	Detection Limit µg/L	Sample Results µg/L
Bromodichloromethane.....	1.0	N.D.
Bromoform.....	1.0	N.D.
Bromomethane.....	1.0	N.D.
Carbon tetrachloride.....	1.0	N.D.
Chlorobenzene.....	1.0	N.D.
Chloroethane.....	5.0	N.D.
2-Chloroethylvinyl ether.....	1.0	N.D.
Chloroform.....	0.50	N.D.
Chloromethane.....	0.50	N.D.
Dibromochloromethane.....	0.50	N.D.
1,2-Dichlorobenzene.....	2.0	N.D.
1,3-Dichlorobenzene.....	2.0	N.D.
1,4-Dichlorobenzene.....	2.0	N.D.
1,1-Dichloroethane.....	0.50	N.D.
1,2-Dichloroethane.....	0.50	N.D.
1,1-Dichloroethene.....	1.0	N.D.
Total 1,2-Dichloroethene.....	1.0	N.D.
1,2-Dichloropropane.....	0.50	N.D.
cis-1,3-Dichloropropene.....	5.0	N.D.
trans-1,3-Dichloropropene.....	5.0	N.D.
Methylene chloride.....	2.0	N.D.
1,1,2,2-Tetrachloroethane.....	0.50	N.D.
Tetrachloroethene.....	0.50	4.8
1,1,1-Trichloroethane.....	0.50	N.D.
1,1,2-Trichloroethane.....	0.50	N.D.
Trichloroethene.....	0.50	N.D.
Trichlorofluoromethane.....	1.0	N.D.
Vinyl chloride.....	2.0	N.D.

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

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Kaprealian Engineering, Inc.	Client Project ID: Unocal, 1300 Davis St., San Leandro	Sampled: Nov 6, 1990
P.O. Box 996	Sample Descript: Water, MW-2	Received: Nov 6, 1990
Benicia, CA 94510	Analysis Method: EPA 5030/8010	Analyzed: Nov 17, 1990
Attention: Mardo Kaprealian, P.E.	Lab Number: 011-0284 B	Reported: Nov 21, 1990

HALOGENATED VOLATILE ORGANICS (EPA 8010)

Analyte	Detection Limit µg/L	Sample Results µg/L
Bromodichloromethane.....	1.0	N.D.
Bromoform.....	1.0	N.D.
Bromomethane.....	1.0	N.D.
Carbon tetrachloride.....	1.0	N.D.
Chlorobenzene.....	1.0	N.D.
Chloroethane.....	5.0	N.D.
2-Chloroethylvinyl ether.....	1.0	N.D.
Chloroform.....	0.50	N.D.
Chloromethane.....	0.50	N.D.
Dibromochloromethane.....	0.50	N.D.
1,2-Dichlorobenzene.....	2.0	N.D.
1,3-Dichlorobenzene.....	2.0	N.D.
1,4-Dichlorobenzene.....	2.0	N.D.
1,1-Dichloroethane.....	0.50	N.D.
1,2-Dichloroethane.....	0.50	N.D.
1,1-Dichloroethene.....	1.0	N.D.
Total 1,2-Dichloroethene.....	1.0	N.D.
1,2-Dichloropropane.....	0.50	N.D.
cis-1,3-Dichloropropene.....	5.0	N.D.
trans-1,3-Dichloropropene.....	5.0	N.D.
Methylene chloride.....	2.0	N.D.
1,1,2,2-Tetrachloroethane.....	0.50	N.D.
Tetrachloroethene.....	0.50	N.D.
1,1,1-Trichloroethane.....	0.50	N.D.
1,1,2-Trichloroethane.....	0.50	N.D.
Trichloroethene.....	0.50	N.D.
Trichlorofluoromethane.....	1.0	N.D.
Vinyl chloride.....	2.0	N.D.

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

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Kaprealian Engineering, Inc.	Client Project ID: Unocal, 1300 Davis St., San Leandro	Sampled: Nov 6, 1990
P.O. Box 996	Sample Descript: Water, MW-3	Received: Nov 6, 1990
Benicia, CA 94510	Analysis Method: EPA 5030/8010	Analyzed: Nov 17, 1990
Attention: Mardo Kaprealian, P.E.	Lab Number: 011-0285 B	Reported: Nov 21, 1990

HALOGENATED VOLATILE ORGANICS (EPA 8010)

Analyte	Detection Limit µg/L	Sample Results µg/L
Bromodichloromethane.....	1.0	N.D.
Bromoform.....	1.0	N.D.
Bromomethane.....	1.0	N.D.
Carbon tetrachloride.....	1.0	N.D.
Chlorobenzene.....	1.0	N.D.
Chloroethane.....	5.0	N.D.
2-Chloroethylvinyl ether.....	1.0	N.D.
Chloroform.....	0.50	N.D.
Chloromethane.....	0.50	N.D.
Dibromochloromethane.....	0.50	N.D.
1,2-Dichlorobenzene.....	2.0	N.D.
1,3-Dichlorobenzene.....	2.0	N.D.
1,4-Dichlorobenzene.....	2.0	N.D.
1,1-Dichloroethane.....	0.50	N.D.
1,2-Dichloroethane.....	0.50	N.D.
1,1-Dichloroethene.....	1.0	N.D.
Total 1,2-Dichloroethene.....	1.0	N.D.
1,2-Dichloropropane.....	0.50	N.D.
cis-1,3-Dichloropropene.....	5.0	N.D.
trans-1,3-Dichloropropene.....	5.0	N.D.
Methylene chloride.....	2.0	N.D.
1,1,2,2-Tetrachloroethane.....	0.50	N.D.
Tetrachloroethene.....	0.50	N.D.
1,1,1-Trichloroethane.....	0.50	N.D.
1,1,2-Trichloroethane.....	0.50	N.D.
Trichloroethene.....	0.50	N.D.
Trichlorofluoromethane.....	1.0	N.D.
Vinyl chloride.....	2.0	N.D.

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

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Kaprealian Engineering, Inc.	Client Project ID: Unocal, 1300 Davis St., San Leandro	Sampled: Nov 6, 1990
P.O. Box 996	Sample Descript: Water, MW-4	Received: Nov 6, 1990
Benicia, CA 94510	Analysis Method: EPA 5030/8010	Analyzed: Nov 17, 1990
Attention: Mardo Kaprealian, P.E.	Lab Number: 011-0286 B	Reported: Nov 21, 1990

HALOGENATED VOLATILE ORGANICS (EPA 8010)

Analyte	Detection Limit µg/L	Sample Results µg/L
Bromodichloromethane.....	1.0	N.D.
Bromoform.....	1.0	N.D.
Bromomethane.....	1.0	N.D.
Carbon tetrachloride.....	1.0	N.D.
Chlorobenzene.....	1.0	N.D.
Chloroethane.....	5.0	N.D.
2-Chloroethylvinyl ether.....	1.0	N.D.
Chloroform.....	0.50	N.D.
Chloromethane.....	0.50	N.D.
Dibromochloromethane.....	0.50	N.D.
1,2-Dichlorobenzene.....	2.0	N.D.
1,3-Dichlorobenzene.....	2.0	N.D.
1,4-Dichlorobenzene.....	2.0	N.D.
1,1-Dichloroethane.....	0.50	N.D.
1,2-Dichloroethane.....	0.50	N.D.
1,1-Dichloroethene.....	1.0	N.D.
Total 1,2-Dichloroethene.....	1.0	N.D.
1,2-Dichloropropane.....	0.50	N.D.
cis-1,3-Dichloropropene.....	5.0	N.D.
trans-1,3-Dichloropropene.....	5.0	N.D.
Methylene chloride.....	2.0	N.D.
1,1,2,2-Tetrachloroethane.....	0.50	N.D.
Tetrachloroethene.....	0.50	2.9
1,1,1-Trichloroethane.....	0.50	N.D.
1,1,2-Trichloroethane.....	0.50	N.D.
Trichloroethene.....	0.50	N.D.
Trichlorofluoromethane.....	1.0	N.D.
Vinyl chloride.....	2.0	N.D.

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

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Kaprealian Engineering, Inc.	Client Project ID: Unocal, 1300 Davis St., San Leandro	Sampled: Nov 6, 1990
P.O. Box 996	Sample Descript: Water, MW-5	Received: Nov 6, 1990
Benicia, CA 94510	Analysis Method: EPA 5030/8010	Analyzed: Nov 17, 1990
Attention: Mardo Kaprealian, P.E.	Lab Number: 011-0287 B	Reported: Nov 21, 1990

HALOGENATED VOLATILE ORGANICS (EPA 8010)

Analyte	Detection Limit µg/L	Sample Results µg/L
Bromodichloromethane.....	1.0	N.D.
Bromoform.....	1.0	N.D.
Bromomethane.....	1.0	N.D.
Carbon tetrachloride.....	1.0	N.D.
Chlorobenzene.....	1.0	N.D.
Chloroethane.....	5.0	N.D.
2-Chloroethylvinyl ether.....	1.0	N.D.
Chloroform.....	0.50	N.D.
Chloromethane.....	0.50	N.D.
Dibromochloromethane.....	0.50	N.D.
1,2-Dichlorobenzene.....	2.0	N.D.
1,3-Dichlorobenzene.....	2.0	N.D.
1,4-Dichlorobenzene.....	2.0	N.D.
1,1-Dichloroethane.....	0.50	N.D.
1,2-Dichloroethane.....	0.50	N.D.
1,1-Dichloroethene.....	1.0	N.D.
Total 1,2-Dichloroethene.....	1.0	N.D.
1,2-Dichloropropane.....	0.50	N.D.
cis-1,3-Dichloropropene.....	5.0	N.D.
trans-1,3-Dichloropropene.....	5.0	N.D.
Methylene chloride.....	2.0	N.D.
1,1,2,2-Tetrachloroethane.....	0.50	N.D.
Tetrachloroethene.....	0.50	0.76
1,1,1-Trichloroethane.....	0.50	N.D.
1,1,2-Trichloroethane.....	0.50	N.D.
Trichloroethene.....	0.50	N.D.
Trichlorofluoromethane.....	1.0	N.D.
Vinyl chloride.....	2.0	N.D.

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

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Kaprealian Engineering, Inc.	Client Project ID: Unocal, 1300 Davis St., San Leandro	Sampled: Nov 6, 1990
P.O. Box 996	Sample Descript: Water, MW-6	Received: Nov 6, 1990
Benicia, CA 94510	Analysis Method: EPA 5030/8010	Analyzed: Nov 17, 1990
Attention: Mardo Kaprealian, P.E.	Lab Number: 011-0288 B	Reported: Nov 21, 1990

HALOGENATED VOLATILE ORGANICS (EPA 8010)

Analyte	Detection Limit µg/L	Sample Results µg/L
Bromodichloromethane.....	1.0	N.D.
Bromoform.....	1.0	N.D.
Bromomethane.....	1.0	N.D.
Carbon tetrachloride.....	1.0	N.D.
Chlorobenzene.....	1.0	N.D.
Chloroethane.....	5.0	N.D.
2-Chloroethylvinyl ether.....	1.0	N.D.
Chloroform.....	0.50	N.D.
Chloromethane.....	0.50	N.D.
Dibromochloromethane.....	0.50	N.D.
1,2-Dichlorobenzene.....	2.0	N.D.
1,3-Dichlorobenzene.....	2.0	N.D.
1,4-Dichlorobenzene.....	2.0	N.D.
1,1-Dichloroethane.....	0.50	N.D.
1,2-Dichloroethane.....	0.50	N.D.
1,1-Dichloroethene.....	1.0	N.D.
Total 1,2-Dichloroethene.....	1.0	N.D.
1,2-Dichloropropane.....	0.50	N.D.
cis-1,3-Dichloropropene.....	5.0	N.D.
trans-1,3-Dichloropropene.....	5.0	N.D.
Methylene chloride.....	2.0	N.D.
1,1,2,2-Tetrachloroethane.....	0.50	N.D.
Tetrachloroethene.....	0.50	1.2
1,1,1-Trichloroethane.....	0.50	N.D.
1,1,2-Trichloroethane.....	0.50	N.D.
Trichloroethene.....	0.50	N.D.
Trichlorofluoromethane.....	1.0	N.D.
Vinyl chloride.....	2.0	N.D.

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

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Belinda C. Vega
Laboratory Director



KAPREALIAN ENGINEERING, INC.

CHAIN OF CUSTODY

SAMPLER		SITE NAME & ADDRESS							ANALYSES REQUESTED				TURN AROUND TIME:		
TOE		Unocal / San Leandro 1300 Davis st							TPHG, BTXE 8010 TOG (S2004F) TPHD				Regular		
WITNESSING AGENCY													REMARKS		
SAMPLE ID NO.	DATE	TIME	SOIL	WATER	GRAB	COMP	NO. OF CONT.	SAMPLING LOCATION	TPHG, BTXE	8010	TOG (S2004F)	TPHD			
MW1	11/6/90	3:00 PM	✓	✓	✓	✓	4	MW	✓	✓	✓	✓	283		
" 2	"	"	✓	✓	✓	✓	"	"	✓	✓	✓	✓	284		
" 3	"	3:00 PM	✓	✓	✓	✓	"	"	✓	✓	✓	✓	285		
" 4	"	"	✓	✓	✓	✓	"	"	✓	✓	✓	✓	286		
" 5	"	11:30	✓	✓	✓	✓	"	"	✓	✓	✓	✓	287		
" 6	"	"	✓	✓	✓	✓	"	"	✓	✓	✓	✓	288		
Relinquished by: (Signature)		Date/Time		Received by: (Signature)							The following MUST BE completed by the laboratory accepting samples for analysis:				
Joe Ramirez		11/6/90 16:50		K. N. Hill							1. Have all samples received for analysis been stored in ice? yes				
Michelle J. Ferrera		11/7/90 1:40		V. Q. Ferrera							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				
Relinquished by: (Signature)		Date/Time		Received by: (Signature)							Signature		Title		Date
											K. N. Hill		Sample Control		11/8