KAPREALIAN ENGINEERING, INC.
Consulting Engineers
P. O. BOX 913
BENICIA, CA 94510
(415) 676 - 9100 (707) 746 - 6915

June 2, 1989

Alameda County Department of
Environmental Health
470 27th Street, Room 322
Oakland, CA 94612

Attention: Mr. Larry Seto

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

Dear Mr.Seto:

Per the request of Mr. Tim Ross of Unocal, enclosed please find our report and proposal dated May 16, 1989 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

Judy A. Dewey

Enclosure

cc: Tim Ross, Unocal

KAPREALIAN ENGINEERING, INC.
Consulting Engineers
P. O. BOX 913
BENICIA, CA 94510
(415) 676 - 9100 (707) 746 - 6915

KEI-P88-1204.R2
May 16, 1989

Unocal Corporation
2175 N. California Blvd., Suite 650
Walnut Creek, CA 94569

Attention: Mr. Tim Ross

RE: Preliminary Ground Water Investigation at
Unocal Service Station #2512
1300 Davis Street
San Leandro, California

Dear Mr. Ross:

This report presents the results of KEI's soil and ground water investigation for the referenced site in accordance with proposal KEI-P88-1204.P2 dated February 3, 1989. The purpose of the investigation was to determine the ground water flow direction, and to begin to determine the degree and extent of ground water contamination at the site. The work performed consisted of the following:

Coordination with regulatory agencies.

Drilling and installation of three monitoring wells.

Soil sampling.

Ground water purging and sampling.

Laboratory analyses.

Data analysis, interpretation and report preparation.

SITE DESCRIPTION AND BACKGROUND

The subject site is presently used as a gasoline station. The site vicinity and site details are shown on the attached sketches.

KEI's work at the site began on December 30, 1988 when KEI was asked to install six exploratory borings at the site. The borings were installed on January 3, 1989 to depths ranging from 26.5 to 30. Water was encountered in the borings at depths ranging from 25 to 26.5 feet. Analytical results of selected soil samples collected from the borings showed total petroleum hydrocarbon (TPH) ranging from non-detectable to 73 ppm. Total oil and grease (TOG) in borings EB1 and EB6 ranged from non-detectable to 7,800 ppm, while benzene in water ranged from non-detectable to 8.2 ppb. Based on results of the preliminary investigation, KEI proposed the 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, and the results of the laboratory analyses are summarized in Tables 4 and 5.

FIELD ACTIVITIES

On April 17, 1989, three 2" diameter monitoring wells (designated as MW1, MW2 and MW3 on the attached Site Plan) were installed at the site. The wells were drilled, constructed and completed in accordance with the guidelines of the Regional Water Quality Control Board (RWQCB) and county well standards.

The subsurface materials penetrated and details of the construction of the wells are described in the attached Boring Logs.

The three wells were drilled and completed to a total depth of 33 feet. Ground water was encountered at depths ranging from 17.5 to 18.5 feet beneath the surface during drilling. Soil samples were taken at five foot intervals beginning at five feet below grade until ground water was encountered. The undisturbed soil samples were taken by driving a California-modified split-spoon sampler ahead of the drilling augers. The 2" diameter brass liners holding the samples were sealed with aluminum foil, plastic caps and tape, and stored in a cooled ice chest for delivery to a certified laboratory. Each well casing was installed with a watertight cap and padlock. A round, watertight, flush-mounted well cover was cemented in place over each well casing.

The wells were developed on April 24, 1989. Prior to development, the wells were checked for depth to water table using an electronic water level meter, presence of free product (using gauging paste) and sheen. No free product or sheen was noted in any of the wells. After recording the monitoring data, the wells were purged with a surface pump until the evacuated water was clear and free of suspended sediment. Monitoring and well development data are summarized in Table 1.

The wells were sampled on April 25, 1989. Prior to sampling, monitoring data were collected and water samples were then collected using a clean Teflon bailer. The samples were decanted into clean glass VOA vials and one liter amber bottles, sealed with Teflon lined screw caps, and labeled and stored on ice until delivery to a certified laboratory.

ANALYTICAL RESULTS

Water and selected soil samples were analyzed at Sequoia Analytical Laboratory in Redwood City, California. All samples analyzed were accompanied by properly executed Chain of Custody documentation. The samples were analyzed for TPH as gasoline and diesel by EPA methods 5030 or 3810 and 3550 in conjunction with modified 8015, benzene, toluene, xylenes and ethylbenzene (BTX&E) by EPA methods 5030 and 8020, TOG by EPA method 413.1 and purgeable halocarbons by EPA method 8010.

The soil sample analyses show levels of TPH ranging from non-detectable to 6.2 ppm, and TOG levels ranging from non-detectable to 180 ppm. Water sample analyses show levels of benzene ranging from non-detectable to 0.35 ppb in all samples, and TPH levels ranging from non-detectable to 5,700 ppb.

Results of the soil analyses are summarized in Table 2, and water analyses in Table 3. Copies of the laboratory analyses and Chain of Custody documentation are attached to this report.

HYDROLOGY AND GEOLOGY

The water table stabilized in the monitoring wells at depths ranging from 15.46 to 15.84 feet below the surface. Ground Water in the area is fairly flat and the flow direction appeared to be north-northeasterly (based on water level data collected from the three monitoring wells on April 25, 1989). The slope of the hydraulic gradient was approximately .004 ft/ft.

Subsurface formations detected at the site consist of high plasticity clay, with intermittent silt and minor sand content, to the total depth explored.

DISCUSSION AND RECOMMENDATIONS

KEI presently is in the process of obtaining soil samples from excavation (approximately 15' x 20', as shown on the attached Site Plan). The purpose of the excavation as recommended in KEI's report (KEI-P88-1204.R1 dated February 3, 1989) is to remove as much contaminated soil as possible.

Based on the ongoing soil remediation and based on the analytical results obtained from the monitoring wells, KEI recommends implementation of a monitoring and sampling program. The wells should be monitored on a monthly basis. In addition, the wells should be purged and sampled on a quarterly basis. The proposed program should be conducted for a period of six months. Results of the monitoring program will be documented and evaluated after each monitoring and sampling event. Recommendations for altering the program will be made as needed. Our proposal for this work is attached for your consideration.

Copies of this report should be sent to the Alameda County Department of Environmental Health, to the Alameda County Flood Control District, and to the RWQCB, San Francisco Bay Region.

LIMITATIONS

Soil deposits and rock formations may vary in thickness, lithology, saturation, strength and other properties across any site. In addition, 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 investigations. 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, except that our services have been performed in accordance with generally accepted professional principles and practices existing for such work.

Should 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

Jae Yang, P.E.

License No. 25337
Exp. Date 12/31/89

Mardo Kaprealian
President

Attachments: Tables 1, 2, 3, 4, & 5
Location Map
Site Plan
Boring Logs
Laboratory Results
Chain of Custody documentation
Proposal

KEI-P88-1204.R2
May 16, 1989

TABLE 1

SUMMARY OF GROUND WATER MONITORING AND DEVELOPMENT DATA

(Monitored and Developed on April 24, 1989)

Well #	Depth (feet)	Product Thickness	Sheen	Gallons Pumped
MW1	15.50	0	None	30
MW2	15.84	0	None	30
MW3	15.46	0	None	30

KEI-P88-1204.R2
May 16, 1989

TABLE 2

SUMMARY OF LABORATORY ANALYSES
SOIL

(Results in ppm)
(Collected on April 17, 1989)

Sample Number	Depth (feet)	TPH as Gasoline	Benzene	Toluene	Xylenes	Ethyl-benzene	TOG
MW1	5	4.0	ND	ND	ND	ND	ND
MW1	10	ND	ND	ND	ND	ND	ND
MW1	15	ND	ND	ND	ND	ND	ND
MW1	17	ND	ND	ND	ND	ND	31
MW2*	5	ND	ND	ND	ND	ND	31
MW2*	10	1.1	ND	ND	ND	ND	60
MW2*	15	ND	ND	ND	ND	ND	71
MW3	5	ND	ND	ND	ND	ND	ND
MW3	10	1.1	ND	ND	ND	ND	ND
MW3	15	1.2	ND	ND	ND	ND	32
MW3	17	6.2	ND	0.21	0.42	ND	180
Detection Limits		1.0	0.05	0.1	0.1	0.1	30.0

* Diesel and 8010 were non-detectable for all samples.

ND = Non-detectable.

KEI-P88-1204.R2
May 16, 1989

TABLE 3

SUMMARY OF LABORATORY ANALYSES
WATER

(Results in ppb)
(Collected on April 25, 1989)

Sample Number	Depth (feet)	TPH as Diesel	TPH as Gasoline	Benzene	Toluene	Xylenes	Ethyl-benzene
MW1*	15.64	100	ND	0.31	ND	ND	ND
MW2*	15.90	ND	32	0.35	ND	ND	ND
MW3*	15.50	5,700	56	ND	ND	0.49	0.31
Detection Limits		50	30	0.3	0.3	0.3	0.3

* TOG for all samples were non-detectable. MW1 showed PCE at 3.3 ppb and TCE at 0.55 ppb for 8010. MW2 showed PCE at 0.68 ppb for 8010. MW3 showed PCE at 1.0 ppb for 8010.

ND = Non-detectable.

KEI-P88-1204.R2
May 16, 1989

TABLE 4

SUMMARY OF LABORATORY ANALYSES
SOIL

(Results in ppm)
(Collected on January 3, 1989)

Sample Number	TPH as Gasoline	TPH as Diesel	Benzene	Toluene	Xylenes	Ethylbenzene
EB1(5)*	---	5.0	ND	0.05	ND	ND
EB1(10)*	---	1.0	ND	ND	ND	ND
EB1(15)*	---	1.0	ND	ND	ND	ND
EB1(25)*	---	2.0	---	---	---	---
EB2(10)	ND	---	ND	ND	ND	ND
EB2(15)	ND	---	ND	ND	ND	ND
EB2(20)	ND	---	ND	ND	ND	ND
EB2(25)	1.9	---	ND	ND	ND	ND
EB3(5)	ND	---	ND	ND	ND	ND
EB3(10)	ND	---	ND	ND	ND	ND
EB3(15)	2.7	---	ND	ND	ND	ND
EB3(20)	2.2	---	ND	ND	ND	ND
EB3(25)	ND	---	ND	ND	ND	ND
EB4(5)	ND	---	ND	ND	ND	ND
EB4(10)	ND	---	ND	ND	ND	ND
EB4(15)	ND	---	ND	ND	ND	ND
EB4(20)	ND	---	ND	ND	ND	ND
EB4(25)	ND	---	ND	ND	ND	ND
EB5(5)	ND	---	ND	ND	ND	ND
EB5(10)	ND	---	ND	ND	ND	ND
EB5(15)	2.0	---	ND	ND	ND	ND
EB5(20)	17	---	0.12	0.15	1.4	0.25
EB5(25)	3.9	---	ND	ND	0.17	ND
EB6(5)**	1.8	10	ND	ND	ND	ND
EB6(10)	73	160	ND	ND	ND	ND
EB6(15)	17	40	0.065	ND	0.21	ND
EB6(25)	ND	3.0	ND	ND	ND	ND
Detection Limits	1.0	1.0	0.05	0.1	0.1	0.1

* TOG and 8010 non-detectable.
** TOG 7800 @ 5', 1200 @ 10', 900 @ 15' and 130 ppm at 25'; 8010 non-detectable.
ND = Non-detectable.

KEI-P88-1204.R2
May 16, 1989

TABLE 5

SUMMARY OF LABORATORY ANALYSES
WATER

(Results in ppb)
(Collected on January 3, 1989)

Sample Number	TPH as Gasoline	TPH as Diesel	Benzene	Toluene	Xylenes	Ethylbenzene
EB1	---	ND	ND	3.5	ND	ND
EB2	ND	---	8.2	7.4	3.3	0.67
EB3	ND	---	ND	ND	ND	ND
EB4	ND	---	ND	ND	ND	0.73
EB5	340	---	ND	ND	ND	0.63
EB6	1,500	---	1.5	1.4	12	8.1
Detection Limits	50	50	0.5	0.5	0.5	0.5

ND = Non-detectable.

KAPREALIAN ENGINEERING, INC.
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P. O. BOX 913
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LOCATION MAP

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

KAPREALIAN ENGINEERING, INC.
Consulting Engineers
P. O. BOX 913
BENICIA, CA 94510
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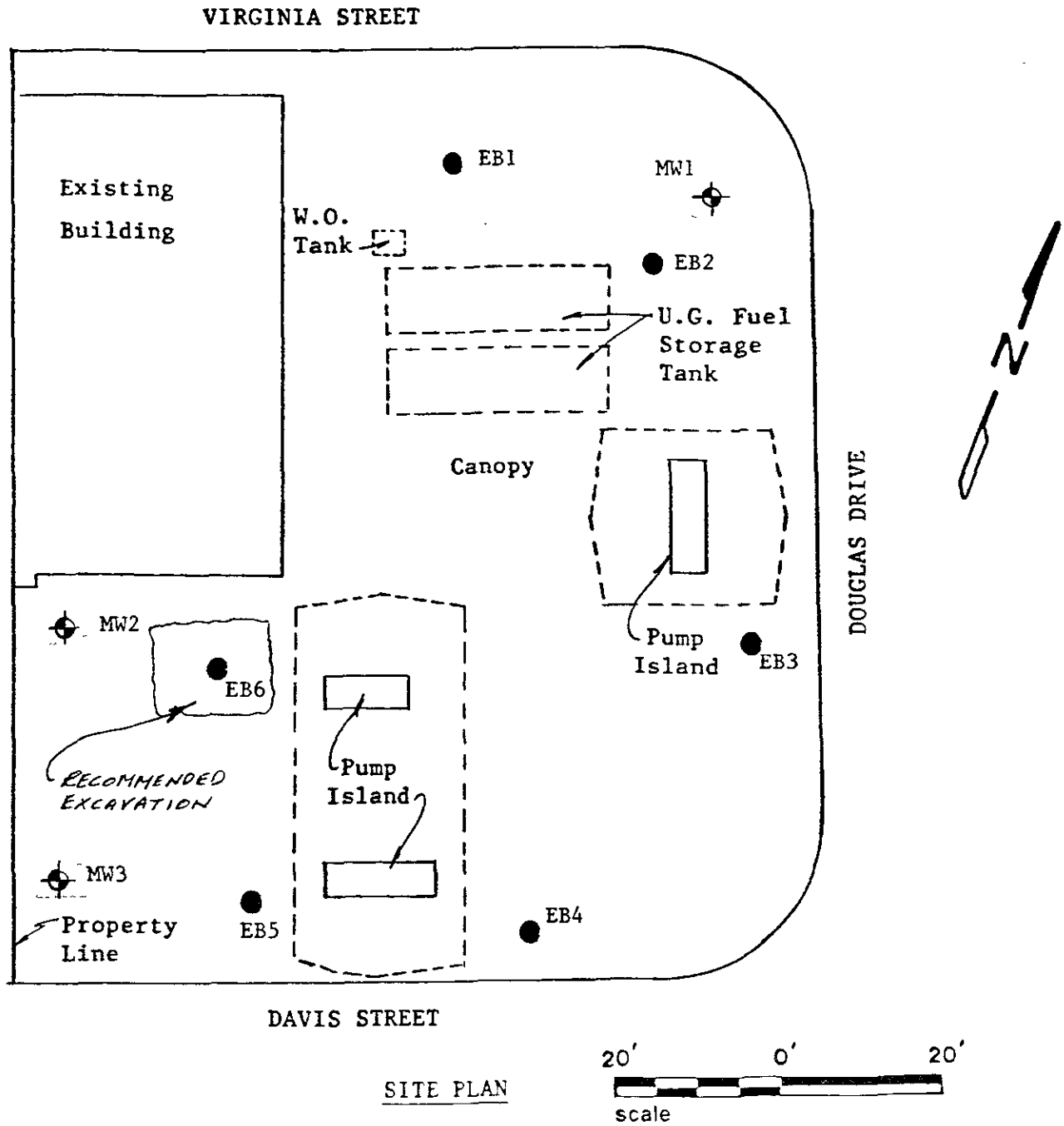


SITE PLAN

● Exploratory Boring

⊕ Monitoring Well

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

B O R I N G L O G

Project No. KEI-P88-1204	**Boring & Casing Diameter** 9" 2"	**Logged By** Doug Lee
Project Name Unocal Davis St./San Leandro	**Well Head Elevation** N/A	**Date Drilled** 4/17/89
Boring No. MW1	**Drilling Method** Hollow-stem Auger	**Drilling Company** EGI

Penetration blows/6"	G. W. level	Depth (ft) Samples	Stratigraphy USCS	Description
		0		Clay, sand and gravel: fill
				Clay, high plasticity, very dark gray, stiff, moist.
9/12/15		5		
			ML	Clayey fine sand, with silt, dark grayish brown, firm, moist, moderate plasticity.
8/9/13		10		Clay, high plasticity, trace sand, very dark gray, very stiff, moist.
7/11/15		15		Clay with coarse sand, high plasticity, dark grayish brown, & brown, mottled, stiff, moist, greenish gray below 16.5'.
14/24/28	▼			
		20	CH	Clay, high plasticity, dark grayish brown & gray, mottled very stiff, moist, with cemented root holes.
		25		Clay, high plasticity, some silt, dark yellowish brown, very stiff, moist.
		30		Color change at 31' to black.
				TOTAL DEPTH 33'

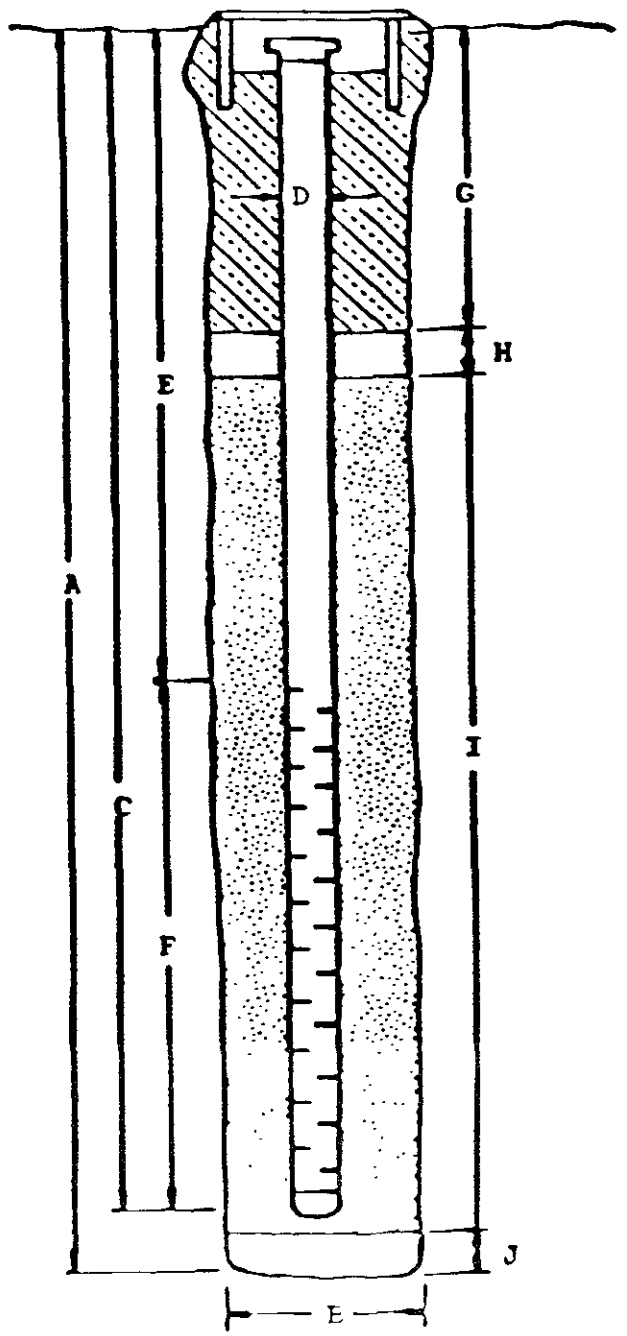
WELL COMPLETION DIAGRAM

PROJECT NAME: Unocal - Davis St. - San Leandro BORING/WELL NO. MW1

PROJECT NUMBER: KEI-P88-1204

WELL PERMIT NO.:

Flush-mounted Well Cover



A. Total Depth: 33'

B. Boring Diameter*: 9"

Drilling Method: Hollow Stem Auger

C. Casing Length: 33'

Material: Schedule 40 PVC

D. Casing Diameter: OD = 2.375"
ID = 2.067"

E. Depth to Perforations: 13'

F. Perforated Length: 20'

Perforation Type: Machined Slot

Perforation Size: 0.020"

G. Surface Seal: 9'

Seal Material: Concrete

H. Seal: 2'

Seal Material: Bentonite

I. Gravel Pack: 22'

Pack Material: RMC Lonestar Sand

Size: #3

J. Bottom Seal: None

Seal Material: N/A

*Boring diameter can vary from 8-1/4" to 9" depending on bit wear.

B O R I N G L O G

Project No. KEI-P88-1204	**Boring & Casing Diameter** 9" 2"	**Logged By** Doug Lee
Project Name Unocal Davis St./San Leandro	**Well Head Elevation** N/A	**Date Drilled** 4/17/89
Boring No. MW2	**Drilling Method** Hollow-stem Auger	**Drilling Company** EGI

Penetration blows/6"	G. W. level	Depth (ft) Samples	Stratigraphy USCS	Description
		0		Clayey sand, gravel: fill
7/11/19		5		Clay, high plasticity, black, stiff, moist, dark brownish gray below 8.5'.
9/10/13		10		Silty clay, trace fine sand, high plasticity, dark grayish brown, firm, moist.
10/15/19	▼	15	CH	Clay, with sand and gravel, high plasticity, dark grayish brown, very stiff, moist, with root holes, gravel to 1/4".
5/12/14		20		Clay, high plasticity, 10% sand & silt, dark grayish brown, firm to stiff, moist.
20/33/44		25		Clay, 15% silt, dark yellowish brown and dark grayish brown, mottled, very stiff, slightly moist, with small iron oxide nodules.
12/19/24		30		
				TOTAL DEPTH 33'

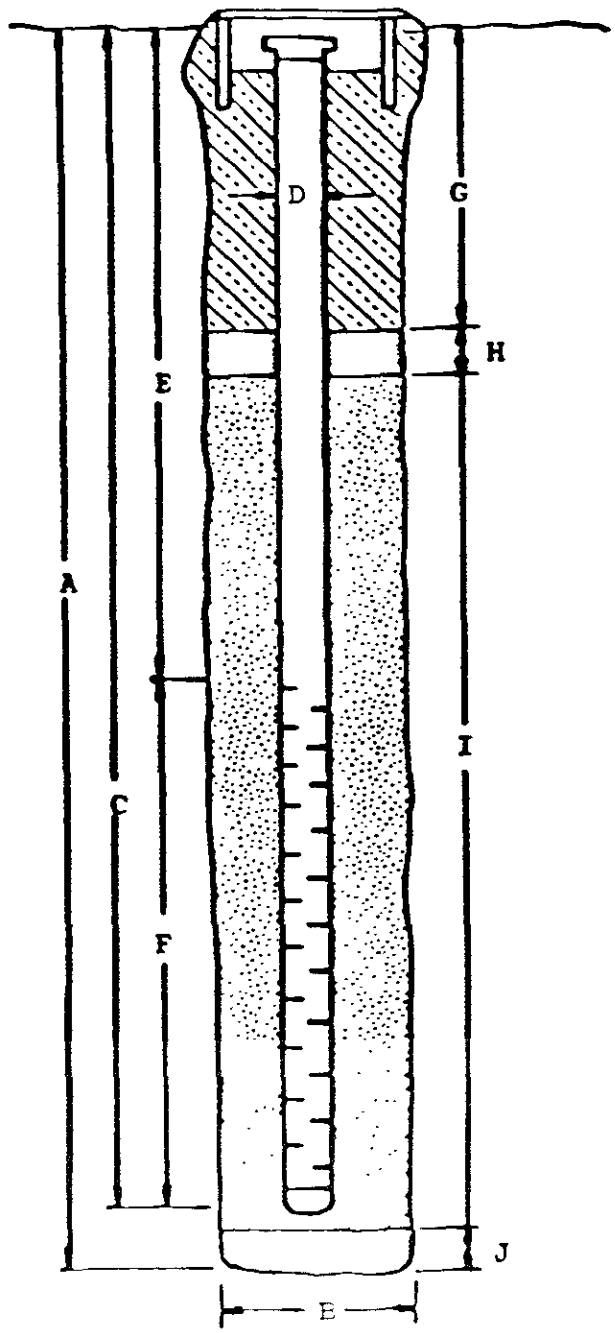
WELL COMPLETION DIAGRAM

PROJECT NAME: Unocal - Davis St. - San Leandro BORING/WELL NO. MW2

PROJECT NUMBER: KEI-P88-1204

WELL PERMIT NO.:

Flush-mounted Well Cover



A. Total Depth: 33'

B. Boring Diameter*: 9"

Drilling Method: Hollow Stem Auger

C. Casing Length: 33'

Material: Schedule 40 PVC

D. Casing Diameter: OD = 2.375" ID = 2.067"

E. Depth to Perforations: 13'

F. Perforated Length: 20'

Perforation Type: Machined Slot

Perforation Size: 0.010"

G. Surface Seal: 9'

Seal Material: Concrete

H. Seal: 2'

Seal Material: Bentonite

I. Gravel Pack: 22'

Pack Material: RMC Lonestar Sand

Size: #3

J. Bottom Seal: None

Seal Material: N/A

*Boring diameter can vary from 8-1/4" to 9" depending on bit wear.

B O R I N G L O G

Project No. KEI-P88-1204	**Boring & Casing Diameter** 9" 2"	**Logged By** Doug Lee
Project Name Unocal Davis St./San Leandro	**Well Head Elevation** N/A	**Date Drilled** 4/17/89
Boring No. MW3	**Drilling Method** Hollow-stem Auger	**Drilling Company** EGI

Penetration blows/6"	G. W. level	Depth (ft) Samples	Stratigraphy USCS	Description
		0		Clayey sand, gravel: fill
5/8/11		5	CH	Clay, high plasticity, very dark grayish brown, firm, moist, with root holes, dark grayish brown below 8.5'.
6/7/9		10	MH	Clayey silt, some fine sand, high plasticity, dark grayish brown, firm, moist, with root holes.
9/17/14		15		Silty clay, trace fine sand, high plasticity, dark grayish brown, stiff, moist, with cemented root holes.
14/18/24	▼			
		20		Clay, grayish brown & gray, mottled, very stiff, moist, high plasticity.
			CH	
		25		Clay, 15% silt, high plasticity, dark yellowish brown and dark grayish brown, mottled, very stiff, slightly moist.
		30		Color change at 31' to black.
				TOTAL DEPTH 33'

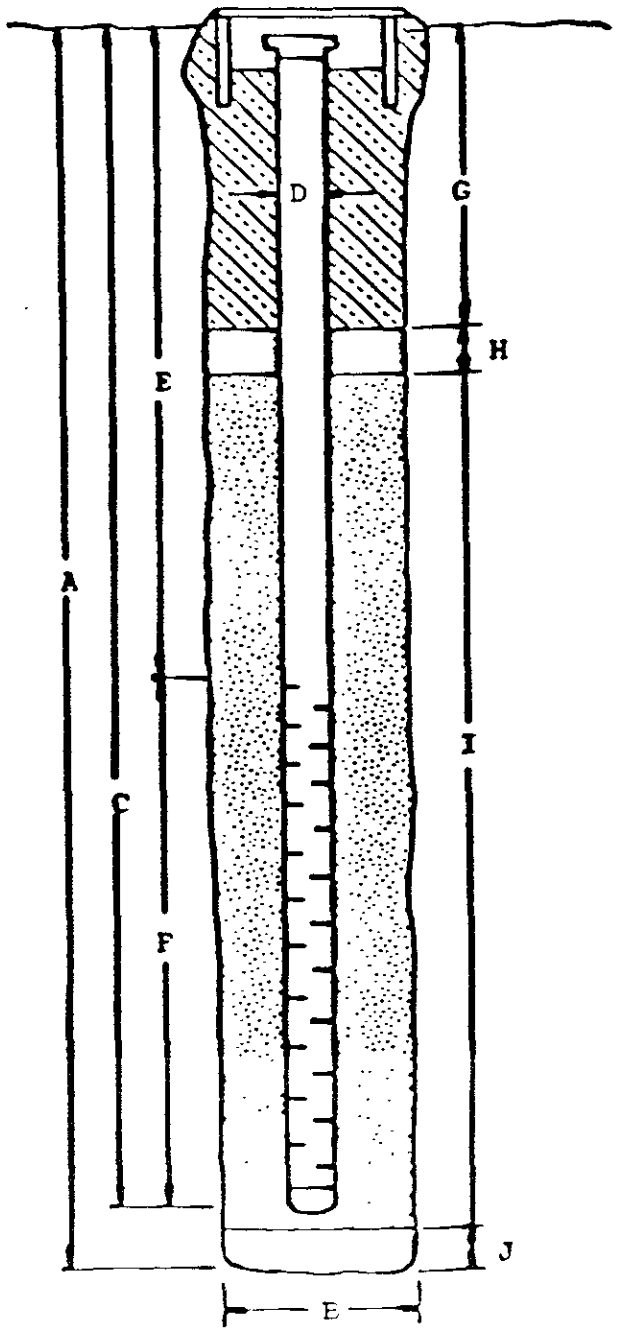
WELL COMPLETION DIAGRAM

PROJECT NAME: Unocal - Davis St. - San Leandro BORING/WELL NO. MW3

PROJECT NUMBER: KEI-P88-1204

WELL PERMIT NO.:

Flush-mounted Well Cover



A. Total Depth: 33'

B. Boring Diameter*: 9"

Drilling Method: Hollow Stem Auger

C. Casing Length: 33'

Material: Schedule 40 PVC

D. Casing Diameter: OD = 2.375" ID = 2.067"

E. Depth to Perforations: 13'

F. Perforated Length: 20'

Perforation Type: Machined Slot

Perforation Size: 0.010"

G. Surface Seal: 9'

Seal Material: Concrete

H. Seal: 2'

Seal Material: Bentonite

I. Gravel Pack: 22'

Pack Material: RMC Lonestar Sand

Size: #3

J. Bottom Seal: None

Seal Material: N/A

*Boring diameter can vary from 8-1/4" to 9" depending on bit wear.

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Kaprealian Engineering, Inc.	Client Project ID:	Unocal, San Leandro, Davis	Sampled:	Apr 17, 1989
P.O. Box 913	Matrix Descript:	Soil	Received:	Apr 18, 1989
Benicia, CA 94510	Analysis Method:	EPA 5030/8015/8020	Analyzed:	Apr 25, 1989
Attention: Mardo Kaprealian, P.E.	First Sample #:	904-1846	Reported:	Apr 28, 1989

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

Sample Number	Sample Description	Low/Medium B.P. Hydrocarbons mg/kg (ppm)	Benzene mg/kg (ppm)	Toluene mg/kg (ppm)	Ethyl Benzene mg/kg (ppm)	Xylenes mg/kg (ppm)
904-1846	MW-1 (5)	4.0	N.D.	N.D.	N.D.	N.D.
904-1847	MW-1 (10)	N.D.	N.D.	N.D.	N.D.	N.D.
904-1848	MW-1 (15)	N.D.	N.D.	N.D.	N.D.	N.D.
904-1849	MW-1 (17)	N.D.	N.D.	N.D.	N.D.	N.D.
904-1853	MW-3 (5)	N.D.	N.D.	N.D.	N.D.	N.D.
904-1854	MW-3 (10)	1.1	N.D.	N.D.	N.D.	N.D.
904-1855	MW-3 (15)	1.2	N.D.	N.D.	N.D.	N.D.
904-1856	MW-3 (17)	6.2	N.D.	0.21	N.D.	0.42
Detection Limits:		**1.0**	**0.05**	**0.1**	**0.1**	**0.1**

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.

SEQUOIA ANALYTICAL

Arthur G Burton
Laboratory Director

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Kaprealian Engineering, Inc.	Client Project ID:	Unocal, San Leandro, Davis	Sampled:	Apr 17, 1989
P.O. Box 913	Matrix Descript:	Soil	Received:	Apr 18, 1989
Benicia, CA 94510	Analysis Method:	EPA 5030/8015/8020	Analyzed:	Apr 25, 1989
Attention: Mardo Kaprealian, P.E.	First Sample #:	904-1850	Reported:	Apr 28, 1989

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

Sample Number	Sample Description	Low/Medium B.P. Hydrocarbons mg/kg (ppm)	Benzene mg/kg (ppm)	Toluene mg/kg (ppm)	Ethyl Benzene mg/kg (ppm)	Xylenes mg/kg (ppm)
904-1850	MW2 (5)	N.D.	N.D.	N.D.	N.D.	N.D.
904-1851	MW2 (10)	1.1	N.D.	N.D.	N.D.	N.D.
904-1852	MW2 (15)	N.D.	N.D.	N.D.	N.D.	N.D.
Detection Limits:		**1.0**	**0.05**	**0.1**	**0.1**	**0.1**

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

SEQUOIA ANALYTICAL

Arthur G Burton
Laboratory Director

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Kaprealian Engineering, Inc.	Client Project ID:	Unocal, San Leandro, Davis	Sampled:	Apr 17, 1989
P.O. Box 913	Matrix Descript:	Soil	Received:	Apr 18, 1989
Benicia, CA 94510	Analysis Method:	EPA 413.1 (Gravimetric)	Extracted:	Apr 25, 1989
Attention: Mardo Kaprealian, P.E.	First Sample #:	904-1846	Analyzed:	Apr 26, 1989
			Reported:	Apr 28, 1989

TOTAL RECOVERABLE OIL & GREASE

Sample Number	Sample Description	Oil & Grease mg/kg (ppm)
904-1846	MW1 (5)	N.D.
904-1847	MW1 (10)	N.D.
904-1848	MW1 (15)	N.D.
904-1849	MW1 (17)	31
904-1850	MW2 (5)	31
904-1851	MW2 (10)	60
904-1852	MW2 (15)	71
904-1853	MW3 (5)	N.D.
904-1854	MW3 (10)	N.D.

Detection Limits:	30.0

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

SEQUOIA ANALYTICAL

Arthur G. Burton
Laboratory Director

SEQUOIA ANALYTICAL

680 Chesapeake Drive • Redwood City, CA 94063
(415) 364-9600 • FAX (415) 364-9233

Kaprealian Engineering, Inc.	Client Project ID:	Unocal, San Leandro, Davis	Sampled:	Apr 17, 1989
P.O. Box 913	Matrix Descript:	Soil	Received:	Apr 18, 1989
Benicia, CA 94510	Analysis Method:	EPA 413.1 (Gravimetric)	Extracted:	Apr 25, 1989
Attention: Mardo Kaprealian, P.E.	First Sample #:	904-1855	Analyzed:	Apr 26, 1989
			Reported:	Apr 28, 1989

TOTAL RECOVERABLE OIL & GREASE

Sample Number	Sample Description	Oil & Grease mg/kg (ppm)
904-1855	MW3 (15)	32
904-1856	MW3 (17)	180

Detection Limits:	30.0

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

SEQUOIA ANALYTICAL

Arthur G Burton
Laboratory Director

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Kaprealian Engineering, Inc.	Client Project ID:	Unocal, San Leandro, Davis	Sampled:	Apr 17, 1989
P.O. Box 913	Matrix Descript:	Soil	Received:	Apr 18, 1989
Benicia, CA 94510	Analysis Method:	EPA 3550/8015	Analyzed:	Apr 26, 1989
Attention: Mardo Kaprealian, P.E.	First Sample #:	904-1850	Reported:	Apr 28, 1989

TOTAL PETROLEUM FUEL HYDROCARBONS (EPA 8015)

Sample Number	Sample Description	High B.P. Hydrocarbons mg/kg (ppm)
904-1850	MW2 (5)	N.D.
904-1851	MW2 (10)	N.D.
904-1852	MW2 (15)	N.D.

Detection Limits:	1.0

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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Laboratory Director

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Kaprealian Engineering, Inc.	Client Project ID:	Unocal, San Leandro, Davis	Sampled:	Apr 17, 1989
P.O. Box 913	Sample Descript:	Soil, MW2 (5)	Received:	Apr 18, 1989
Benicia, CA 94510	Analysis Method:	EPA 5030/8010	Analyzed:	Apr 26, 1989
Attention: Mardo Kaprealian, P.E.	Lab Number:	904-1850	Reported:	Apr 28, 1989

HALOGENATED VOLATILE ORGANICS (EPA 8010)

Analyte	Detection Limit µg/kg	Sample Results µg/kg
Bromodichloromethane	5.0	N.D.
Bromoform	5.0	N.D.
Bromomethane	5.0	N.D.
Carbon tetrachloride	5.0	N.D.
Chlorobenzene	5.0	N.D.
Chloroethane	25.0	N.D.
2-Chloroethylvinyl ether	5.0	N.D.
Chloroform	5.0	N.D.
Chloromethane	5.0	N.D.
Dibromochloromethane	5.0	N.D.
1,2-Dichlorobenzene	10.0	N.D.
1,3-Dichlorobenzene	10.0	N.D.
1,4-Dichlorobenzene	10.0	N.D.
1,1-Dichloroethane	5.0	N.D.
1,2-Dichloroethane	5.0	N.D.
1,1-Dichloroethene	5.0	N.D.
trans-1,2-Dichloroethene	5.0	N.D.
1,2-Dichloropropane	5.0	N.D.
cis-1,3-Dichloropropene	5.0	N.D.
trans-1,3-Dichloropropene	5.0	N.D.
Methylene chloride	10.0	N.D.
1,1,2,2-Tetrachloroethane	5.0	N.D.
Tetrachloroethene	5.0	N.D.
1,1,1-Trichloroethane	5.0	N.D.
1,1,2-Trichloroethane	5.0	N.D.
Trichloroethene	5.0	N.D.
Trichlorofluoromethane	5.0	N.D.
Vinyl chloride	10.0	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, San Leandro, Davis	Sampled:	Apr 17, 1989
P.O. Box 913	Sample Descript:	Soil, MW2 (10)	Received:	Apr 18, 1989
Benicia, CA 94510	Analysis Method:	EPA 5030/8010	Analyzed:	Apr 26, 1989
Attention: Mardo Kaprealian, P.E.	Lab Number:	904-1851	Reported:	Apr 28, 1989

HALOGENATED VOLATILE ORGANICS (EPA 8010)

Analyte	Detection Limit µg/kg	Sample Results µg/kg
Bromodichloromethane	5.0	N.D.
Bromoform	5.0	N.D.
Bromomethane	5.0	N.D.
Carbon tetrachloride	5.0	N.D.
Chlorobenzene	5.0	N.D.
Chloroethane	25.0	N.D.
2-Chloroethylvinyl ether	5.0	N.D.
Chloroform	5.0	N.D.
Chloromethane	5.0	N.D.
Dibromochloromethane	5.0	N.D.
1,2-Dichlorobenzene	10.0	N.D.
1,3-Dichlorobenzene	10.0	N.D.
1,4-Dichlorobenzene	10.0	N.D.
1,1-Dichloroethane	5.0	N.D.
1,2-Dichloroethane	5.0	N.D.
1,1-Dichloroethene	5.0	N.D.
trans-1,2-Dichloroethene	5.0	N.D.
1,2-Dichloropropane	5.0	N.D.
cis-1,3-Dichloropropene	5.0	N.D.
trans-1,3-Dichloropropene	5.0	N.D.
Methylene chloride	10.0	N.D.
1,1,2,2-Tetrachloroethane	5.0	N.D.
Tetrachloroethene	5.0	N.D.
1,1,1-Trichloroethane	5.0	N.D.
1,1,2-Trichloroethane	5.0	N.D.
Trichloroethene	5.0	N.D.
Trichlorofluoromethane	5.0	N.D.
Vinyl chloride	10.0	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, San Leandro, Davis	Sampled:	Apr 17, 1989
P.O. Box 913	Sample Descript:	Soil, MW2 (15)	Received:	Apr 18, 1989
Benicia, CA 94510	Analysis Method:	EPA 5030/8010	Analyzed:	Apr 26, 1989
Attention: Mardo Kaprealian, P.E.	Lab Number:	904-1852	Reported:	Apr 28, 1989

HALOGENATED VOLATILE ORGANICS (EPA 8010)

Analyte	Detection Limit µg/kg	Sample Results µg/kg
Bromodichloromethane	5.0	N.D.
Bromoform	5.0	N.D.
Bromomethane	5.0	N.D.
Carbon tetrachloride	5.0	N.D.
Chlorobenzene	5.0	N.D.
Chloroethane	25.0	N.D.
2-Chloroethylvinyl ether	5.0	N.D.
Chloroform	5.0	N.D.
Chloromethane	5.0	N.D.
Dibromochloromethane	5.0	N.D.
1,2-Dichlorobenzene	10.0	N.D.
1,3-Dichlorobenzene	10.0	N.D.
1,4-Dichlorobenzene	10.0	N.D.
1,1-Dichloroethane	5.0	N.D.
1,2-Dichloroethane	5.0	N.D.
1,1-Dichloroethene	5.0	N.D.
trans-1,2-Dichloroethene	5.0	N.D.
1,2-Dichloropropane	5.0	N.D.
cis-1,3-Dichloropropene	5.0	N.D.
trans-1,3-Dichloropropene	5.0	N.D.
Methylene chloride	10.0	N.D.
1,1,2,2-Tetrachloroethane	5.0	N.D.
Tetrachloroethene	5.0	N.D.
1,1,1-Trichloroethane	5.0	N.D.
1,1,2-Trichloroethane	5.0	N.D.
Trichloroethene	5.0	N.D.
Trichlorofluoromethane	5.0	N.D.
Vinyl chloride	10.0	N.D.

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

SEQUOIA ANALYTICAL

Arthur G. Burton
Laboratory Director

KAPREALIAN ENGINEERING, INC.
Consulting Engineers
P. O. BOX 913
BENICIA, CA 94510
(415) 676-9100 (707) 746-6915

CHAIN OF CUSTODY

SAMPLER: _____ (Signature)

DATE/TIME OF COLLECTION: 4-17-89

TURN AROUND TIME: REGULAR (See Note)

SAMPLE DESCRIPTION AND PROJECT NUMBER: Unocal/San Leandro/Davis
KEI-888-1204

	SAMPLE #	ANALYSES	GRAB OR COMP.	NUMBER OF CONTAINERS	SOIL/ WATER
1846	MW-1-(5)	TPH-G/BTXE	G	1	S
1847	MW-1-(10)	TPH-G/BTXE	G	1	S
1848	MW-1-(15)	TPH-G/BTXE	G	1	S
1849	MW-1-(17)	TPH-G/BTXE	G	1	S
1850	MW-2-(5)	TPH-G/BTXE/TPH-D/8010/TOG(413.1)	G	1	S
1851	MW-2-(10)	TPH-G/BTXE/TPH-D/8010/TOG(413.1)	G	1	S
1852	MW-2-(15)	TPH-G/BTXE/TPH-D/8010/TOG(413.1)	G	1	S
1853	MW-3-(5)	TPH-G/BTXE	G	1	S

	RELINQUISHED BY*	TIME/DATE	RECEIVED BY*	TIME/DATE
1.	_____ (KEI)	9:15 4/18/89	Tim McLain	9:15 4/18/89
2.	Tim McLain	11:00 4/18	_____	11:00 4/18/89
3.				

* STATE AFFILIATION NEXT TO SIGNATURE

NOTE: SOIL ANALYSES MUST BE COMPLETED WITHIN 14 CALENDAR DAYS OF SAMPLE COLLECTION. WATER ANALYSES MUST BE COMPLETED WITHIN 7 CALENDAR DAYS FOR BTX&E (UNLESS SAMPLE HAS BEEN PRESERVED), AND 14 CALENDAR DAYS FOR TPH AS GASOLINE; EXTRACT TPH AS DIESEL WITHIN 14 CALENDAR DAYS.

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Consulting Engineers
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CHAIN OF CUSTODY

SAMPLER: Way Lee (Signature)
DATE/TIME OF COLLECTION: 4-17-89
TURN AROUND TIME: REGULAR (See Note)

SAMPLE DESCRIPTION AND PROJECT NUMBER: Unocal/San Leandro/Davis KEI-P88-1204

SAMPLE #	ANALYSES	GRAB OR COMP.	NUMBER OF CONTAINERS	SOIL/ WATER
1854 MW-3-(10)	TPH-G / BTX&E	G	1	S
1855 MW-3-(15)	TPH-G / BTX&E	G	1	S
1856 MW-3-(17)	TPH-G / BTX&E	G	1	S

RELINQUISHED BY*	TIME/DATE	RECEIVED BY*	TIME/DATE
1. Way Lee (KEI)	9:15 4/18/89	Terri McLain	915 4/18/89
2. Terri McLain	11⁰⁰ 4/18	[signature]	11:00 4/18/89
3.			

* STATE AFFILIATION NEXT TO SIGNATURE

NOTE: SOIL ANALYSES MUST BE COMPLETED WITHIN 14 CALENDAR DAYS OF SAMPLE COLLECTION. WATER ANALYSES MUST BE COMPLETED WITHIN 7 CALENDAR DAYS FOR BTX&E (UNLESS SAMPLE HAS BEEN PRESERVED), AND 14 CALENDAR DAYS FOR TPH AS GASOLINE; EXTRACT TPH AS DIESEL WITHIN 14 CALENDAR DAYS.

SEQUOIA ANALYTICAL

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Kaprealian Engineering, Inc.	Client Project ID:	Unocal, San Leandro, Davis	Sampled:	Apr 25, 1989
P.O. Box 913	Matrix Descript:	Water	Received:	Apr 25, 1989
Benicia, CA 94510	Analysis Method:	EPA 5030/8015/8020	Analyzed:	Apr 28, 1989
Attention: Mardo Kaprealian, P.E.	First Sample #:	904-2534 A-B	Reported:	May 4, 1989

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

Sample Number	Sample Description	Low/Medium B.P. Hydrocarbons µg/L (ppb)	Benzene µg/L (ppb)	Toluene µg/L (ppb)	Ethyl Benzene µg/L (ppb)	Xylenes µg/L (ppb)
904-2534	MW1	N.D.	0.31	N.D.	N.D.	N.D.
904-2535	MW2	32	0.35	N.D.	N.D.	N.D.
904-2536	MW3	56	N.D.	N.D.	0.31	0.49
Detection Limits:		**30.0**	**0.3**	**0.3**	**0.3**	**0.3**

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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Arthur G Burton
Laboratory Director

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Kaprealian Engineering, Inc.	Client Project ID:	Unocal, San Leandro, Davis	Sampled:	Apr 25, 1989
P.O. Box 913	Matrix Descript:	Water	Received:	Apr 25, 1989
Benicia, CA 94510	Analysis Method:	EPA 3510/8015	Analyzed:	May 2, 1989
Attention: Mardo Kaprealian, P.E.	First Sample #:	904-2534 C	Reported:	May 4, 1989

TOTAL PETROLEUM FUEL HYDROCARBONS (EPA 8015)

Sample Number	Sample Description	High B.P. Hydrocarbons µg/L (ppb)
9042534 C	MW1	100
9042535 C	MW2	N.D.
9042536 C	MW3	5,700

Detection Limits:	50.0

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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Arthur G Burton
Laboratory Director

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Kaprealian Engineering, Inc.	Client Project ID:	Unocal, San Leandro, Davis	Sampled:	Apr 25, 1989
P.O. Box 913	Matrix Descript:	Water	Received:	Apr 25, 1989
Benicia, CA 94510	Analysis Method:	EPA 413.1 (Gravimetric)	Extracted:	May 3, 1989
Attention: Mardo Kaprealian, P.E.	First Sample #:	904-2534 D	Analyzed:	May 3, 1989
			Reported:	May 4, 1989

TOTAL RECOVERABLE OIL & GREASE

Sample Number	Sample Description	Oil & Grease mg/L (ppm)
9042534 D	MW1	N.D.
9042535 D	MW2	N.D.
9043536 D	MW3	N.D.

Detection Limits:	5.0

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

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Arthur G. Burton
Laboratory Director

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Kaprealian Engineering, Inc.	Client Project ID:	Unocal, San Leandro, Davis	Sampled:	Apr 25, 1989
P.O. Box 913	Sample Descript:	Water, MW1	Received:	Apr 25, 1989
Benicia, CA 94510	Analysis Method:	EPA 5030/8010	Analyzed:	May 3, 1989
Attention: Mardo Kaprealian, P.E.	Lab Number:	904-2534 E-F	Reported:	May 4, 1989

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	0.5	N.D.
Chloromethane	0.5	N.D.
Dibromochloromethane	0.5	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	0.5	N.D.
1,2-Dichloroethane	0.5	N.D.
1,1-Dichloroethene	1.0	N.D.
trans-1,2-Dichloroethene	1.0	N.D.
1,2-Dichloropropane	0.5	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	0.5	N.D.
Tetrachloroethene	**0.5**	**3.3**
1,1,1-Trichloroethane	0.5	N.D.
1,1,2-Trichloroethane	0.5	N.D.
Trichloroethene	**0.5**	**0.55**
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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Laboratory Director

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Kaprealian Engineering, Inc.	Client Project ID:	Unocal, San Leandro, Davis	Sampled:	Apr 25, 1989
P.O. Box 913	Sample Descript:	Water, MW2	Received:	Apr 25, 1989
Benicia, CA 94510	Analysis Method:	EPA 5030/8010	Analyzed:	May 3, 1989
Attention: Mardo Kaprealian, P.E.	Lab Number:	904-2535 E-F	Reported:	May 4, 1989

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	0.5	N.D.
Chloromethane	0.5	N.D.
Dibromochloromethane	0.5	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	0.5	N.D.
1,2-Dichloroethane	0.5	N.D.
1,1-Dichloroethene	1.0	N.D.
trans-1,2-Dichloroethene	1.0	N.D.
1,2-Dichloropropane	0.5	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	0.5	N.D.
Tetrachloroethene	**0.5**	**0.68**
1,1,1-Trichloroethane	0.5	N.D.
1,1,2-Trichloroethane	0.5	N.D.
Trichloroethene	0.5	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, San Leandro, Davis	Sampled:	Apr 25, 1989
P.O. Box 913	Sample Descript:	Water, MW3	Received:	Apr 25, 1989
Benicia, CA 94510	Analysis Method:	EPA 5030/8010	Analyzed:	May 3, 1989
Attention: Mardo Kaprealian, P.E.	Lab Number:	904-2536 E-F	Reported:	May 4, 1989

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	0.5	N.D.
Chloromethane	0.5	N.D.
Dibromochloromethane	0.5	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	0.5	N.D.
1,2-Dichloroethane	0.5	N.D.
1,1-Dichloroethene	1.0	N.D.
trans-1,2-Dichloroethene	1.0	N.D.
1,2-Dichloropropane	0.5	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	0.5	N.D.
Tetrachloroethene	**0.5**	**1.0**
1,1,1-Trichloroethane	0.5	N.D.
1,1,2-Trichloroethane	0.5	N.D.
Trichloroethene	0.5	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

SEQUOIA ANALYTICAL

Arthur G. Burton
Laboratory Director

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BENICIA, CA 94510
(415) 676 - 9100 (707) 746 - 6915

CHAIN OF CUSTODY

SAMPLER: Ray (KEI) (signature) DATE/TIME OF COLLECTION: 4/25/89 TURN AROUND TIME: 1 Week

SAMPLE DESCRIPTION AND PROJECT NUMBER: UNOCAL SAN LEANDRO
DAVIS ST.

SAMPLE #	ANALYSES	GRAB OR COMP.	NUMBER OF CONTAINERS	SOIL/ WATER
MW1	TPHG. BTXE	Grab	2V	
MW2	601	"	"	
MW3	TOG (413.1)	"	1L	
	TPHD as Diesel	"	1L	
	"			
	All Same analyses "			

RELINQUISHED BY*	TIME/DATE	RECEIVED BY*	TIME/DATE
1. Ray (KEI)	4:00 PM 4/25/89	[signature]	4:00P 4/25/89
2.			
3.			
4.			

* STATE AFFILIATION NEXT TO SIGNATURE

REMARKS: