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

KEI-J89-0111.R1
February 6, 1989

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

Attention: Mr. Tim Ross

RE: Partial Soil Sampling Report & Recommendations
Unocal Service Station #5487
28250 Hesperian Blvd.
Hayward, California

Dear Mr. Ross:

This report summarizes the soil sampling performed by Kaprealian Engineering, Inc. (KEI) at the referenced site. All work was performed in compliance with the guidelines established by the Regional Water Quality Control Board (RWQCB), the City of Hayward Fire Department and the Alameda County Health Department.

The scope of the work performed by KEI consisted of the following:

Coordination with regulatory agencies.

Collection of samples of native soil from the sidewalls of the fuel storage tank pit.

Collection of samples of native soil from the bottom and sidewalls of the waste oil tank pit.

Delivery of soil samples, including proper Chain of Custody documentation, to a certified analytical laboratory.

Technical review and preparation of this report.

SITE DESCRIPTION AND BACKGROUND

The subject site is presently used as a gasoline station.

FIELD ACTIVITIES

KEI's field work began on January 30, 1989. Three underground storage tanks were removed from the site. The tanks consisted of two 10,000 gallon gasoline storage tanks and one 280 gallon waste oil tank. The two large tanks were made of steel and no apparent holes or cracks were observed. The steel waste oil tank lacked integrity due to corrosion. Tank removal and soil sampling were performed in the presence of Mr. Mark Bowman and Mr. Hugh Murphy of the Hayward Fire Department.

Water was encountered in the fuel tank pit at a depth of 10.5 feet, thus prohibiting the collection of any soil samples from immediately beneath the tanks. Ten soil samples labeled SW1, SW2, SW2A, SW3, SW3A, SW4, SW5, SW5A, SW6 and SW6A were collected from the sidewalls of the fuel tank pit at a depth approximately six inches above the water table. The samples SW2A, SW3A, SW5A and SW6A were collected from the sidewalls after additional excavation (see Site Plan, Sketch 1). One sample, labeled WO-1, was collected of native soil from beneath the waste oil tank at a depth of nine feet (see Sketch 1). The undisturbed soil samples were collected from bulk material excavated by backhoe. Soil samples were placed in clean, 2" diameter brass tubes, sealed with aluminum foil, plastic caps and tape, and stored in a cooled ice chest for delivery to a state certified laboratory.

After the soil sampling was completed, approximately 2,000 gallons of ground water was pumped from the fuel tank pit.

SUBSURFACE CONDITIONS

Subsurface soils exposed in the excavation consisted exclusively of low plasticity clay. Excavated soil was stockpiled on the site.

ANALYTICAL RESULTS

Selected soil samples were analyzed by Sequoia Analytical Laboratory in Redwood City, California, and were accompanied by properly executed Chain of Custody documentation. Selected samples from the fuel tank pit were analyzed for total petroleum hydrocarbon (TPH) as gasoline using EPA method 5030 in conjunction with modified 8015, and benzene, toluene, xylenes and ethylbenzene (BTX&E) using EPA methods 5030 and 8020. Soil samples SW2, SW3 and SW6 were not analyzed because these locations showed subjective evidence of contamination, and therefore were excavated during tank removal (see Sketch 1). The sample from the waste oil tank pit (labeled WO-1) will be analyzed for

TPH as gasoline, TPH as diesel using EPA method 3550 in conjunction with modified 8015, BTX&E, total oil and grease (TOG) by 413.1, EPA 8010 constituents, EPA 8270 constituents, and metals (Cd, Cr, Zn, Pb).

Selected soil sample analyses from the fuel tank pit indicate less than 2 ppm of TPH as gasoline for all samples except sample SW5, which had 130 ppm of TPH as gasoline.

On February 2, 1989, the waste oil tank pit was excavated laterally on all sides. The side nearest the existing building was excavated approximately one foot laterally while the other three sides were excavated approximately ten feet laterally each. The present pit is now approximately 21 feet by 29 feet. Four sidewall samples (labeled SWA, SWB, SWC and SWD) were collected (see attached Sketch 2). Analyses of soil samples collected from the sidewalls of the present waste oil pit show low residual levels of contamination except SW-C on the northeast sidewall, which has 500 ppm TOG, 110 ppm TPH as gasoline and 180 ppm TPH as diesel.

In addition, three soil samples were collected from the pipe trenches (labeled P1, P2 and P3, as shown on Sketch 2). The analytical results show 7.8 to 12 ppm of TPH as gasoline.

The stockpiled soil (approximately 350 cu.yds.) excavated from the fuel tank pit was sampled on February 2, 1989. Seven composite samples, labeled Comp A through Comp G, were collected. Each composite sample consisted of four individual grab samples composited as one in the laboratory. Locations of the samples are shown on Sketch 3. The sample analyses shown TPH levels ranging from 1.2 to 38 ppm.

All analytical results are summarized in Table 1. Copies of the laboratory analyses and the Chain of Custody documentation are attached to this report.

RECOMMENDATIONS

After receiving and reviewing partial analytical results, KEI recommends the following:

1. Additional soil excavation laterally out from the waste oil tank on the pit wall represented by sample SW-C. Additional sample will be collected to verify that most of the contaminated soil has been removed.

2. Collection of water samples from the fuel tank and waste oil tank pits and analysis for TPH as gasoline and diesel, BTX&E, TOG and EPA 601.

3. Disposal of soil excavated from the waste oil tank pit at a Class I landfill.

4. Aeration and disposal of soil excavated from the fuel tank pit and piping trenches at a Class III landfill.

5. Installation of at least three monitoring wells to determine the ground water flow direction, and to begin to define the extent of the contamination. Future site investigation and remediation should not be prevented by installation of new tanks at the site.

A copy of this report should be sent to Mr. Hugh Murphy of the Hayward Fire Department, and to the RWQCB, San Francisco Bay Region.

LIMITATIONS

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 feel free to call me at (707) 746-6915.

Sincerely,

Kaprealian Engineering, Inc.

Gary S. Johnson
Registered Geologist

License No. 4315
Exp. Date 6/30/90

Attachments: Table 1
Site Plan - Sketch 1
- Sketch 2
- Sketch 3
Laboratory Analyses
Chain of Custody documentation

KEI-J89-0111.R1
February 6, 1989

TABLE 1

SUMMARY OF LABORATORY ANALYSES

(Results in ppm)
(Samples collected on January 30 and February 2, 1989)

Sample #	Depth (feet)	TPH as Gasoline	TPH as Diesel	Benzene	Toluene	Xylenes	Ethyl-benzene
SW-1	10	1.4	---	0.14	<0.1	<0.1	<0.1
SW-2A	10	1.1	---	<0.05	<0.1	<0.1	<0.1
SW-3A	10	<1.0	---	<0.05	<0.1	<0.1	<0.1
SW-4	10	<1.0	---	<0.05	<0.1	<0.1	<0.1
SW-5	10	130	---	1.1	4.6	18	3.7
SW-5A	10	<1.0	---	<0.05	<0.1	<0.1	<0.1
SW-6A	10	<1.0	---	<0.05	<0.1	<0.1	<0.1
P-1	3.5	7.8	---	2.0	<0.1	2.4	0.53
P-2	3.5	12	---	1.9	0.91	0.70	3.0
P-3	3.5	11	---	0.37	0.36	0.29	1.7
SW-A*	10	<1.0	1.0	<0.05	<0.1	<0.1	<0.1
SW-B*	10	1.1	2.4	<0.05	<0.1	<0.1	<0.1
SW-C*	10	110	180	0.68	<0.1	5.6	1.9
SW-D*	10	<1.0	<1.0	<0.05	<0.1	<0.1	<0.1
WO-1**	9						
Comp A	---	5.4	---	<0.05	0.17	0.16	0.61
Comp B	---	32	---	0.40	0.44	0.52	2.9
Comp C	---	38	---	0.068	0.22	0.291	2.7
Comp D	---	22	---	0.082	0.77	0.49	2.7
Comp E	---	1.2	---	<0.05	<0.1	<0.1	<0.1
Comp F	---	30	---	0.33	1.2	0.83	5.3
Comp G	---	3.9	---	<0.05	0.1	0.1	0.51

* TOG for SWA was 35 ppm, SWB was 44 ppm, SWC was 500 ppm, and SWD was 77 ppm.
**Analysis not completed yet.

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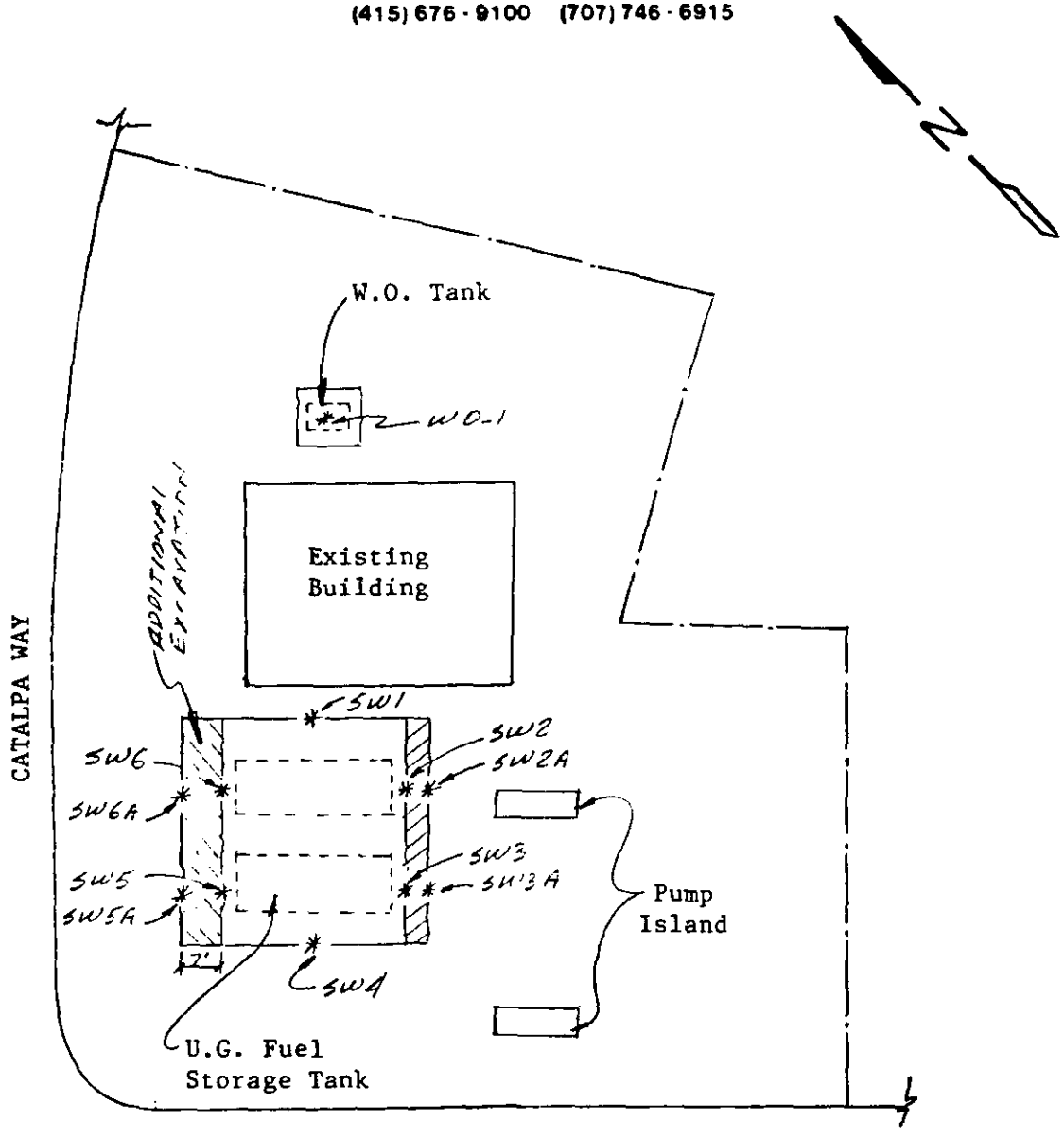

SITE PLAN
n.t.s.

Unocal Service Station #5487
28250 Hesperian
Hayward, California

* Soil Sample Location

SKETCH 1

KAPREALIAN ENGINEERING, INC.
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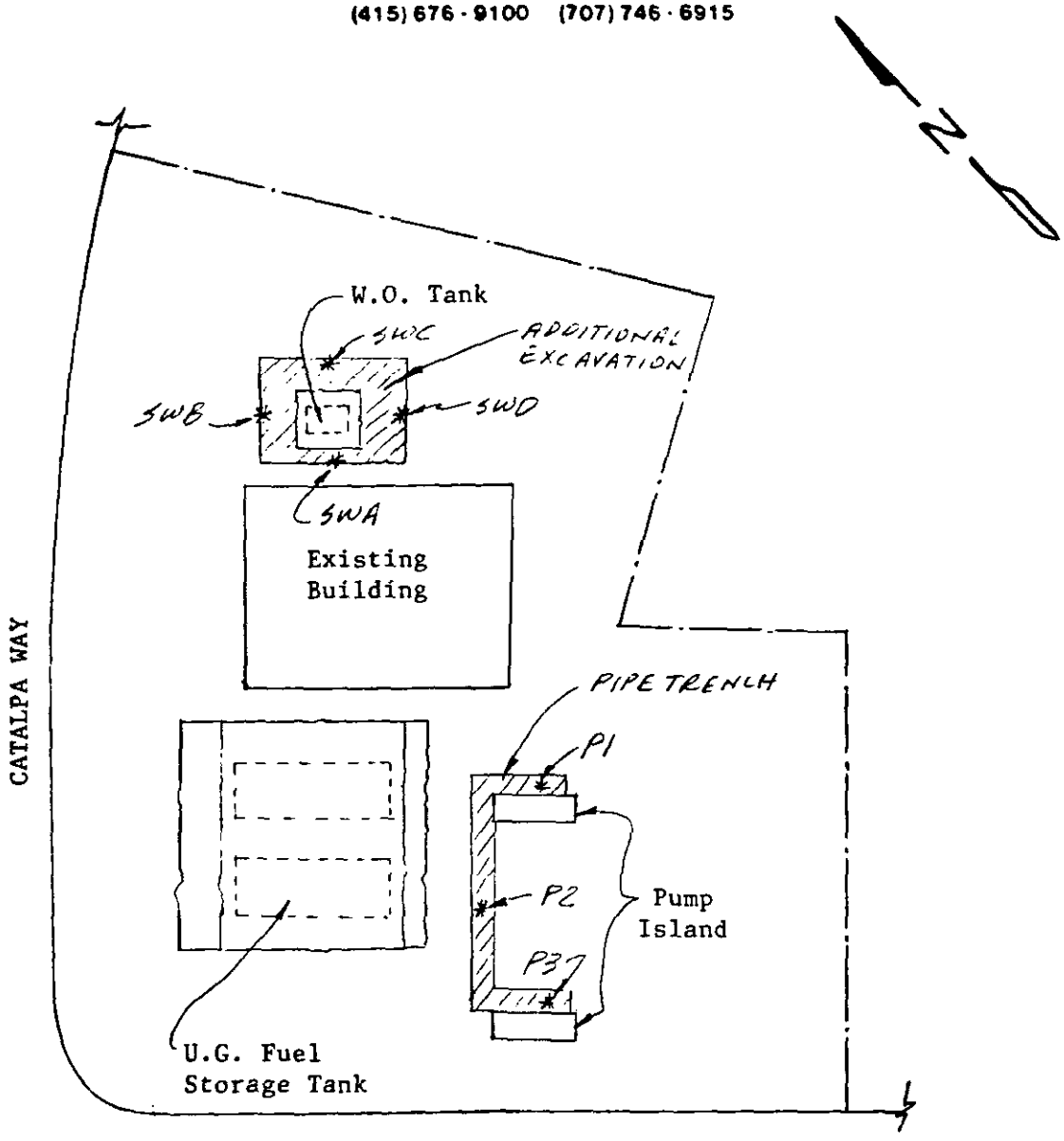

SITE PLAN
n.t.s.

Unocal Service Station #5487
28250 Hesperian
Hayward, California

* Soil Sample Location

SKETCH 2

KAPREALIAN ENGINEERING, INC.
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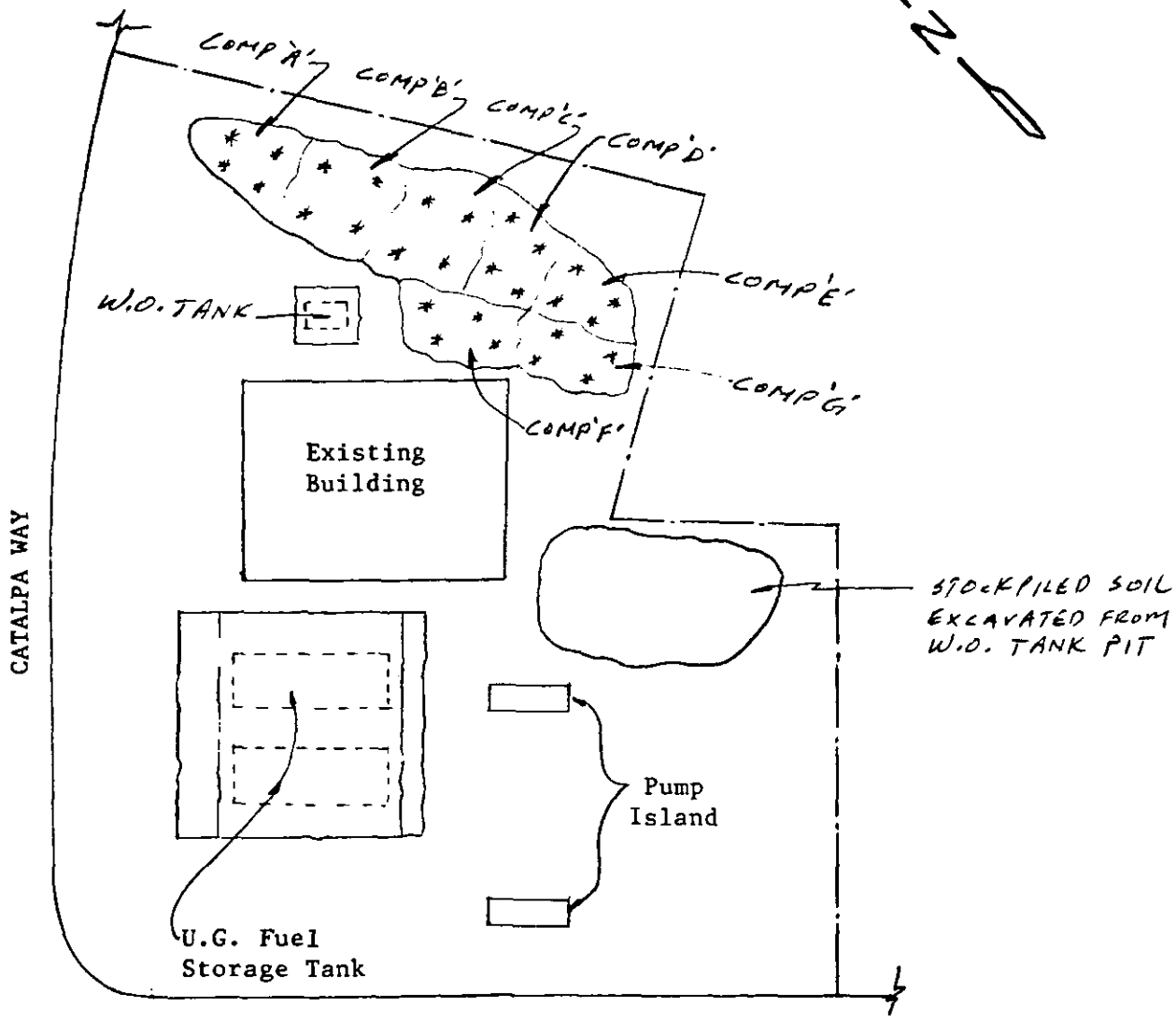
(415) 676 - 9100 (707) 746 - 6915



SITE PLAN
n.t.s.

Unocal Service Station #5487
28250 Hesperian
Hayward, California

* Soil Sample Location

SKETCH 3

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

Kaprealian Engineering, Inc.	Client Project ID:	Unocal, Hayward, Hesperian/Catalpa	Sampled:	Jan 30, 1989
P.O. Box 913	Matrix Descript:	Soil	Received:	Jan 31, 1989
Benicia, CA 94510	Analysis Method:	EPA 5030 or 3810/8015/8020	Analyzed:	Feb 1, 1989
Attention: Mardo Kaprealian, P.E.	First Sample #:	901-3159	Reported:	Feb 1, 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)
901-3159	SW-1	1.4	0.14	N.D.	N.D.	N.D.
901-3160	SW-2A	1.1	N.D.	N.D.	N.D.	N.D.
901-3161	SW-3A	N.D.	N.D.	N.D.	N.D.	N.D.
901-3162	SW-4	N.D.	N.D.	N.D.	N.D.	N.D.
901-3163	SW-5A	N.D.	N.D.	N.D.	N.D.	N.D.
901-3164	SW-6A	N.D.	N.D.	N.D.	N.D.	N.D.
901-3165	SW-5	130	1.1	4.6	3.7	18
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

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Kapreallan Engineering, Inc.	Client Project ID:	Unocal, Hayward, Hesperian/Catalpa	Sampled:	Feb 1, 1989
P.O. Box 913	Matrix Descript:	Soil	Received:	Feb 2, 1989
Benicia, CA 94510	Analysis Method:	EPA 5030 or 3810/8015/8020	Analyzed:	Feb 2, 1989
Attention: Mardo Kapreallan, P.E.	First Sample #:	902-0077	Reported:	Feb 3, 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)
902-0077	SW A	N.D.	N.D.	N.D.	N.D.	N.D.
902-0078	SW B	1.1	N.D.	N.D.	N.D.	N.D.
902-0079	SW C	110	0.68	N.D.	1.9	5.6
902-0080	SW D	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

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Kaprealian Engineering, Inc.	Client Project ID:	Unocal, Hayward, Hesperian/Catalpa	Sampled:	2/1
P.O. Box 913	Matrix Descript:	Soil	Received:	Feb 2, 1989
Benicia, CA 94510	Analysis Method:	EPA 3550/8015	Analyzed:	Feb 2, 1989
Attention: Mardo Kaprealian, P.E.	First Sample #:	902-0077	Reported:	Feb 3, 1989

TOTAL PETROLEUM FUEL HYDROCARBONS (EPA 8015)

Sample Number	Sample Description	High B.P. Hydrocarbons mg/kg (ppm)
902-0077	SW A	1.0
902-0078	SW B	2.4
902-0079	SW C	180
902-0080	SW D	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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Kapreelian Engineering, Inc.	Client Project ID:	Unocal, Hayward, Hesperian/Catalpa	Sampled: Feb 1, 1989
P.O. Box 913	Matrix Descript:	Soil	Received: Feb 2, 1989
Benicia, CA 94510	Analysis Method:	EPA 5030 or 3810/8015/8020	Analyzed: Feb 2, 1989
Attention: Mardo Kapreelian, P.E.	First Sample #:	902-0067	Reported: Feb 3, 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)
902-0067	P1	7.8	2.0	N.D.	0.53	2.4
902-0068	P2	12	1.9	0.91	0.7	3.0
902-0069	P3	11	0.37	0.36	0.29	1.7
902-0070	Composite A	5.4	N.D.	0.17	0.16	0.81
902-0071	Composite B	32	0.4	0.44	0.52	2.9
902-0072	Composite C	38	0.068	0.22	0.29	2.7
902-0073	Composite D	22	0.082	0.77	0.49	2.7
902-0074	Composite E	1.2	N.D.	N.D.	N.D.	N.D.
902-0075	Composite F	30	0.33	1.2	0.83	5.3
902-0076	Composite G	3.9	N.D.	0.1	0.1	0.51
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.

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Laboratory Director

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Kaprealian Engineering, Inc.	Client Project ID:	Unocal, Hayward, Hesperian/Catalpa	Sampled:	Feb 1, 1989
P.O. Box 913	Matrix Descript:	Soil	Received:	Feb 2, 1989
Benicia, CA 94510	Analysis Method:	EPA 413.1 (Gravimetric)	Extracted:	Feb 2, 1989
Attention: Mardo Kaprealian, P.E.	First Sample #:	902-0077	Analyzed:	Feb 2, 1989
			Reported:	Feb 3, 1989

TOTAL RECOVERABLE OIL & GREASE

Sample Number	Sample Description	Oil & Grease mg/kg (ppm)
902-0077	SW A	35
902-0078	SW B	44
902-0079	SW C	500
902-0080	SW D	77

Detection Limits:	30.0

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

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CHAIN OF CUSTODY

SAMPLER: R.M. Bradish (signature) DATE/TIME OF COLLECTION: 1-30-89 TURN AROUND TIME: 24 HR

SAMPLE DESCRIPTION AND PROJECT NUMBER: Chevron - Hayward
Hesperian & Catalpa

SAMPLE #	ANALYSES	GRAB OR COMP.	NUMBER OF CONTAINERS	SOIL/ WATER
SW1	TPH-G & BTXE	G	1	S
SW 2A	" "	G	1	S
SW 3A	" "	G	1	S
SW4	" "	G	1	S
SW 5A	" "	G	1	S
SW 6A	" "	G	1	S
SW 5	" "	G	1	S

RELINQUISHED BY*	TIME/DATE	RECEIVED BY*	TIME/DATE
1. R.M. Bradish	1-31-89 1025	Tim McLain	1025 1/31/89
2. Tim McLain	1-31-89 240	C Smith	1/31/89 245 pm
3.			
4.			

* STATE AFFILIATION NEXT TO SIGNATURE

REMARKS:

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Consulting Engineers
P. O. BOX 913
BENICIA, CA 94510
(415) 676 · 9100 (707) 746 · 6915

For office use only

CHAIN OF CUSTODY

SAMPLER: R.M. Bradish (signature) DATE/TIME OF COLLECTION: 2-1-89 TURN AROUND TIME: 24 HR

SAMPLE DESCRIPTION AND PROJECT NUMBER: Unocal - Hayward
Hesperian & Catalpa

SAMPLE #	ANALYSES	GRAB OR COMP.	NUMBER OF CONTAINERS	SOIL/ WATER
SW A	TPH-G & BTXE	G	1	S
	TPH-D; TOG (413.1)			
SW B	TPH-G & BTXE	G	1	S
	TPH-D; TOG (413.1)			
SW C	TPH-G & BTXE	G	1	S
	TPH-D; TOG (413.1)			
SW D	TPH-G & BTXE	G	1	S
	TPH-D; TOG (413.1			

RELINQUISHED BY*	TIME/DATE	RECEIVED BY*	TIME/DATE
1. R.M. Bradish	2-2-89 0910	Tim McLain	2/2/89
2.			
3.			
4.			

* STATE AFFILIATION NEXT TO SIGNATURE

REMARKS:

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CHAIN OF CUSTODY

SAMPLER: R. M. Bradish (signature) DATE/TIME OF COLLECTION: 2-1-89 TURN AROUND TIME: 24 HR

SAMPLE DESCRIPTION AND PROJECT NUMBER: Unocal - Hayward
Hesperian & Catalpa

SAMPLE #	ANALYSES	GRAB OR COMP.	NUMBER OF CONTAINERS	SOIL/ WATER
Comp A	TPH-G & BTXE	C	2	S
" B	" "	C	2	S
" C	" "	C	2	S
" D	" "	C	2	S
" E	" "	C	2	S
" F	" "	C	2	S
" G	" "	C	2	S

RELINQUISHED BY*	TIME/DATE	RECEIVED BY*	TIME/DATE
1. R. M. Bradish	2-2-89 0910	Tom McLaughlin	910 2/2/89
2.			
3.			
4.			

* STATE AFFILIATION NEXT TO SIGNATURE

REMARKS:

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CHAIN OF CUSTODY

SAMPLER: R. M. Bradish (signature) DATE/TIME OF COLLECTION: 2-1-89 TURN AROUND TIME: 24 HR

SAMPLE DESCRIPTION AND PROJECT NUMBER: Chevron - Hayward
Hesperian & Calaroga

SAMPLE #	ANALYSES	GRAB OR COMP.	NUMBER OF CONTAINERS	SOIL/ WATER
P1	TPH-G & BTXE	G	1	S
P2	" "	#G	1	S
P3	" "	#G	1	S

RELINQUISHED BY*	TIME/DATE	RECEIVED BY*	TIME/DATE
1. R. M. Bradish	2-2-89 0910	Tom McLaughlin	9:45 2/2/89
2.			
3.			
4.			

* STATE AFFILIATION NEXT TO SIGNATURE

REMARKS: _____