



**KAPREALIAN ENGINEERING, INC.**

Consulting Engineers

P. O. BOX 913

BENICIA, CA 94510

(707) 746-6915

July 7, 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 reports dated June 15 & June 19, 1989, and our proposal dated June 19, 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

Enclosure

cc: Tim Ross, Unocal

7-11-89



## KAPREALIAN ENGINEERING, INC.

Consulting Engineers

P. O. BOX 913

BENICIA, CA 94510

(707) 746-6915

KEI-J88-1204.R4

June 15, 1989

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

Attention: Mr. Tim Ross

RE: Soil Sampling Report  
Unocal Service Station #2512  
1300 Davis Street  
San Leandro, 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), and the Alameda County Health Agency.

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 excavation surrounding exploratory boring EB6.

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. Site vicinity and site descriptions are shown on the attached sketch.

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. Results of the exploratory boring investigation are presented in KEI's report KEI-P88-1204.R1 dated February 3, 1989. Excavation of the area surrounding EB6 was recommended to remove as much contaminated soil as possible.

Based on the results of the preliminary investigation, three 2" diameter monitoring wells (designated as MW1, MW2 and MW3 on the attached Site Plan) were installed at the site on April 17, 1989. The wells were drilled, constructed and completed in accordance with the guidelines of the RWQCB and County well standards. 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 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. Complete results are included in KEI's report (KEI-P88-1204.R2) dated May 16, 1989. A well monitoring and sampling program is in progress.

Ground Water in the area is fairly flat and the flow direction appeared to be northerly (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.

#### FIELD ACTIVITIES

KEI's field work was conducted on May 11, 1989. On this date, the area surrounding exploratory boring EB6 was being excavated.

Water was encountered in the excavation at a depth of 17 feet, thus prohibiting the collection of any soil samples from the excavation bottom. Four soil samples labeled SWA, SWB, SWC and SWD were collected from the sidewalls of the excavation at a depth approximately 16.5 feet (six inches above the water table). 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. Sample point locations are as shown on the attached Site Plan. Soil was excavated to one foot below ground water and stockpiled on-site.

### SUBSURFACE CONDITIONS

Subsurface soils exposed in the excavation consisted primarily of high plasticity clay with intermittent silt and minor sand content, to the total depth excavated.

### ANALYTICAL RESULTS

Soil samples were analyzed by Sequoia Analytical Laboratory in Redwood City, California, and were accompanied by properly executed Chain of Custody documentation. All samples were analyzed for total petroleum hydrocarbon (TPH) as diesel using EPA method 3550 in conjunction with modified 8015, and TOG by 413.1.

Analyses of the oil samples from the excavation indicate TPH as diesel ranging from 16 to 26 ppm, while TOG concentrations ranged from 170 to 850 ppm. The analytical results are summarized in Table 1. Copies of the laboratory analyses and the Chain of Custody documentation are attached to this report.

### DISCUSSION AND RECOMMENDATIONS

The excavated soil stockpiled on-site should be disposed of at an approved Class I disposal site.

According to the guidelines established by the RWQCB, additional work is necessary at the site. To comply with the requirements of the RWQCB, KEI recommends installation of three additional monitoring wells in the downgradient ground water flow direction, and to further define the vertical and lateral extent of the soil and ground water contamination. KEI's proposal for this work is attached for your consideration.

A copy of this report should be sent to the Mr. Larry Seto of the Alameda County Health Agency, the Alameda County Flood Control District, and to the RWQCB, San Francisco Bay Region.

### LIMITATIONS

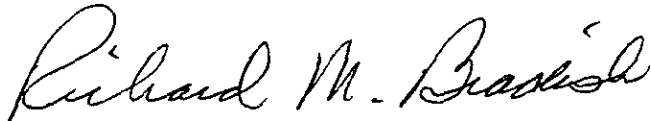
The results of this study are based on the data obtained from the field work and laboratory analyses. We have analyzed this data using what we believe to be currently applicable engineering techniques and principles in the Northern California region. We make no warranty, either expressed or implied, except that our services have been performed in accordance with generally accepted professional principles and practices existing for such work.

KEI-J88-1204.R4  
June 15, 1989  
Page 4

Should you have any questions regarding this report, please feel free to call me at (707) 746-6915.

Sincerely,

Kaprealian Engineering, Inc.



Richard M. Bradish  
Staff Engineer



Hagop Kevork  
Civil Engineer



Mardo Kaprealian  
President

Attachments: Table 1  
Site Plan  
Laboratory Analyses  
Chain of Custody documentation  
Proposal

KEI-J88-1204.R4  
June 15, 1989

TABLE 1

SUMMARY OF LABORATORY ANALYSES  
SOIL  
(Results in ppm)  
(Samples collected on May 11, 1989)

<u>Sample #</u>	<u>TPH as Diesel</u>	<u>TOG</u>
SWA	21	850
SWB	18	580
SWC	26	680
SWD	16	170
Detection Limits	1.0	30.0



# KAPREALIAN ENGINEERING, INC.

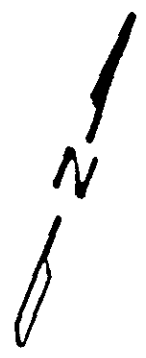
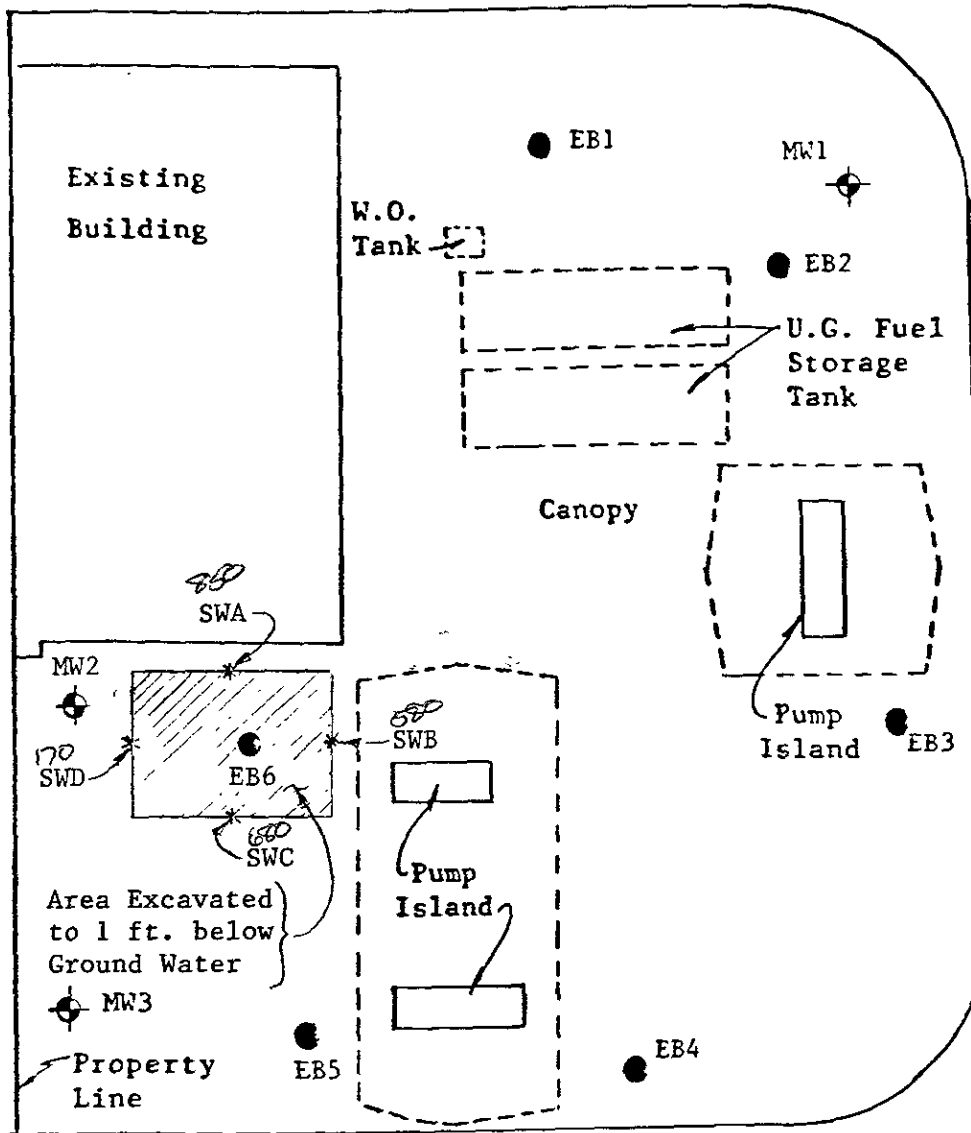
Consulting Engineers

P. O. BOX 913

BENICIA, CA 94510

(415) 676-9100 (707) 746-6915

VIRGINIA STREET

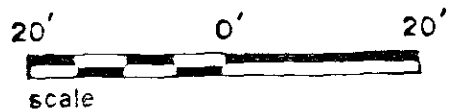


DOUGLAS DRIVE

From TOG @ 16.5' BG

DAVIS STREET

SITE PLAN



- Exploratory Boring
- ⊕ Monitoring Well
- \* Sample Point Location

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



# 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      Sampled: May 11, 1989  
P.O. Box 913      Matrix Descript: Soil      Received: May 11, 1989  
Benicia, CA 94510      Analysis Method: EPA 3550/8015      Analyzed: May 13, 1989  
Attention: Mardo Kaprealian, P.E.      First Sample #: 905-1306      Reported: May 15, 1989

## TOTAL PETROLEUM FUEL HYDROCARBONS (EPA 8015)

Sample Number	Sample Description	High B.P. Hydrocarbons mg/kg (ppm)
905-1306	SWA	21
905-1307	SWB	18
905-1308	SWC	26
905-1309	SWD	16

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

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.

P.O. Box 913

Benicia, CA 94510

Attention: Mardo Kaprealian, P.E.

Client Project ID: Unocal - San Leandro

Matrix Descript: Soil

Analysis Method: EPA 413.1 (Gravimetric)

First Sample #: 905-1306

Sampled: May 11, 1989

Received: May 11, 1989

Extracted: May 12, 1989

Analyzed: May 12, 1989

Reported: May 15, 1989

## TOTAL RECOVERABLE OIL & GREASE

Sample Number	Sample Description	Oil & Grease mg/kg (ppm)
905-1306	SWA	850
905-1307	SWB	580
905-1308	SWC	680
905-1309	SWD	170

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



**KAPREALIAN ENGINEERING, INC.**

Consulting Engineers

P. O. BOX 913

BENICIA, CA 94510

(415) 676-8100 (707) 746-8915

CHAIN OF CUSTODY

R. M. Prasad  
 SAMPLER:  
 (signature)

DATE/TIME OF  
 COLLECTION: 5-11-89

TURN AROUND  
 TIME: 20 HR

SAMPLE DESCRIPTION  
 AND PROJECT NUMBER:

Unocal - San Leandro  
1300 Davis St

SAMPLE #	ANALYSES	GRAB OR COMP.	NUMBER OF CONTAINERS	SOIL/ WATER
SWA	TOG (418.1); TPH-D	G	1	S
SWB	" " "	G	1	S
SWC	" " "	G	1	S
SWD	" " "	G	1	S

RELINQUISHED BY*	TIME/DATE	RECEIVED BY*	TIME/DATE
<u>R. M. Prasad</u>	<u>5-11-89</u> <u>1705</u>	<u>[Signature]</u> #307	<u>5/11/89</u> <u>5:05P</u>
<u>[Signature]</u> #307	<u>5/11/89</u> <u>6:35P</u>	<u>W. Bayter Jackson</u>	<u>6-35</u>

\* STATE AFFILIATION NEXT TO SIGNATURE

REMARKS: \_\_\_\_\_



**KAPREALIAN ENGINEERING, INC.**

Consulting Engineers

P. O. BOX 913

BENICIA, CA 94510

(707) 746-6915

KEI-P88-1204.P4

June 19, 1989

Proposal

to

UNOCAL CORPORATION

for

Unocal Service Station #2512

at

1300 Davis Street

San Leandro, California

Submitted By:

A handwritten signature in cursive script, appearing to read 'Mardo Kaprealian', is written over a horizontal line.

Mardo Kaprealian  
President

## 1.0 INTRODUCTION

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 feet. 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. Results of the exploratory boring investigation are presented in KEI's report (KEI-P88-1204.R1) dated February 3, 1989. Excavation of the area surrounding EB6 was recommended to remove as much contaminated soil as possible.

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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. Complete results are included in KEI's report (KEI-P88-1204.R2) dated May 16, 1989. A well monitoring and sampling program is in progress.

## 2.0 SCOPE OF WORK

Per our recommendations described in KEI's report KEI-J88-1204.R4 dated June 15, 1989, additional investigation is necessary to comply with the State and Local Regulatory Agency regulations. Therefore, per the RWQCB guidelines, KEI proposes to perform the work as outlined below:

New Well Installation:

- 2.1 Coordination with regulatory agencies.
  - 2.2 Installation and construction of three additional monitoring wells as shown on attached Site Plan.
  - 2.3 Collection of soil samples during the well construction. Soil samples will be collected at five foot intervals starting at a depth of five feet. Soil sampling will continue until the first water table is encountered. Selected soil samples will be analyzed for TPH as gasoline, TOG, benzene, toluene, xylenes and ethylbenzene (BTX&E).
  - 2.4 The monitoring wells will be observed for free product and sheen. Water samples will be taken from all monitoring wells and analyzed for TPH as gasoline, TPH as diesel, TOG and BTX&E per the RWQCB guidelines. All analyses will be performed by a state certified laboratory.
  - 2.5 Evaluation of results of the sample analyses as to the current and potential impact on the ground water.
  - 2.6 Preparation and submission of a technical report within 45 days of completion of the soil and water sampling. The report will document the field work performed, chemical analyses of soil/ground water, and offer discussion and recommendations.
- 3.0 SCHEDULING

KEI is prepared to start the work as soon as this proposal is accepted by the client.



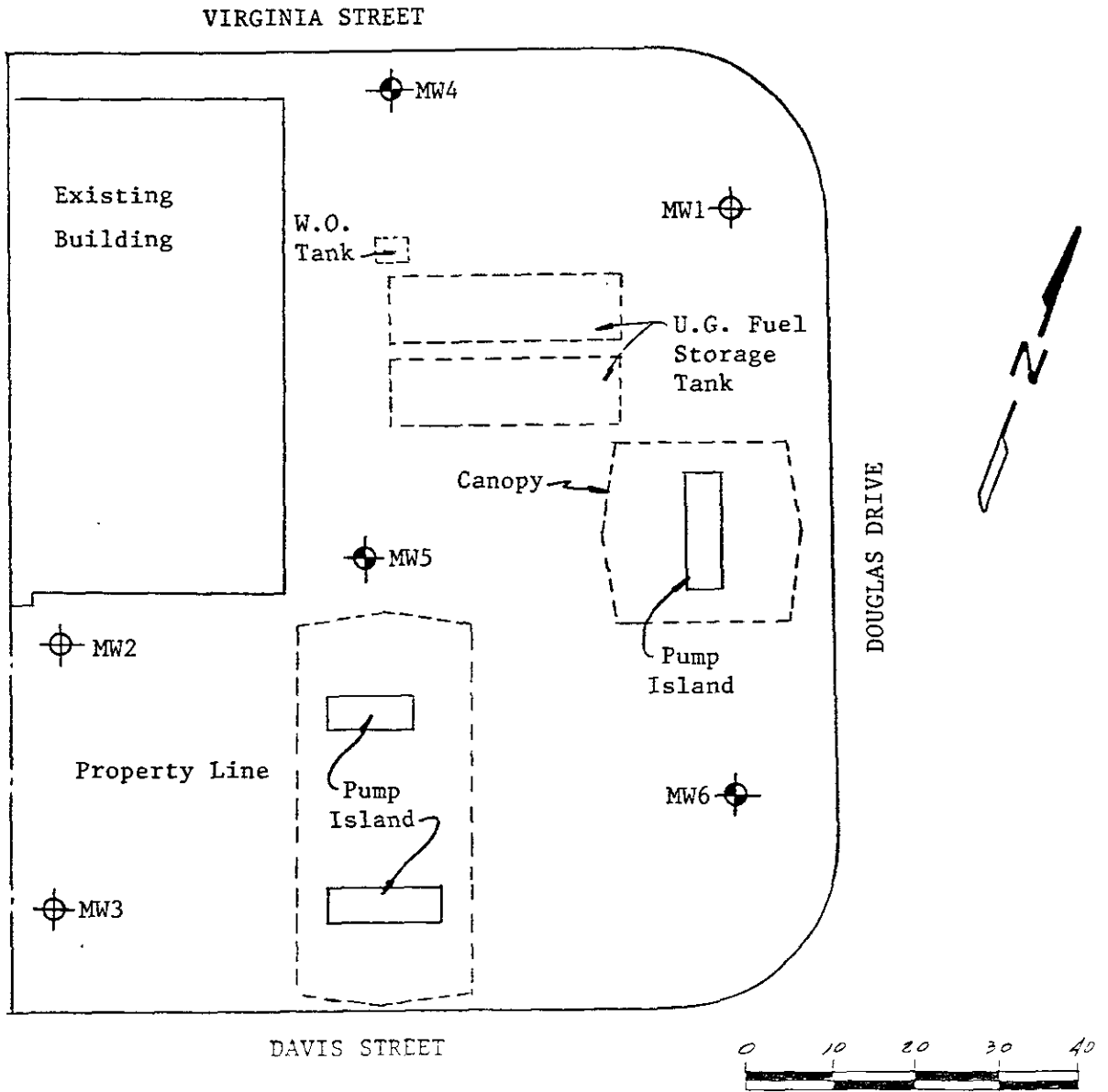
# KAPREALIAN ENGINEERING, INC.

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(415) 676 - 9100 (707) 746 - 6915



SITE PLAN

⊕ Monitoring Well (Proposed)

⊙ Monitoring Well (Existing)

( )

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