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

November 23, 1988

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

Re: Unocal Station #5366
7375 Amador Valley Road
Dublin, California

Gentlemen:

Per the request of Unocal's Mr. Tim Ross, enclosed please find our report dated November 17, 1988 for the above referenced site.

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

Sincerely,

Kaprealian Engineering, Inc.

Judy A. Dewey

Enclosure

cc: Tim Ross

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KEI-P88-025B-2
November 17, 1988

Unocal Corporation
2175 N. California Blvd., #650
Walnut Creek, CA 94596

Attn: Mr. Tim Ross

Re: Ground water Sampling Update Report
Unocal Service Station #5366
7375 Amador Valley Road
Dublin, California

Dear Mr. Ross:

This update report summarizes the results of the most recent period of monitoring and sampling of four monitoring wells at the referenced site. The work was performed according to the recommendations in our proposal dated May 12, 1988.

BACKGROUND

Kaprealian Engineering, Inc.'s (KEI) work at the site began February 18, 1988, and consisted of soil sampling following the removal of three underground fuel storage tanks. Six samples of native soil from the sidewalls of the fuel tank pit, and one ground water sample were collected. The analytical results provided by HAZCAT Mobile Organics Laboratory showed total petroleum hydrocarbon as gasoline (TPH) ranging from non-detectable to 1700 ppm for the soil samples. The benzene level in the ground water sample was 8200 ppb.

KEI recommended the installation of four monitoring wells to begin to determine the lateral and vertical extent of the soil and ground water contamination. The wells were installed by KEI on April 14, 1988. Water samples, initially collected from the four wells, had benzene levels ranging from non-detectable to 960 ppb. KEI proposed a nine month program of monthly monitoring and quarterly sampling of the four wells.

FIELD ACTIVITIES

The four wells were monitored three times and sampled once during the period between July and November, 1988. During monitoring, the wells were checked for depth to water using an electronic sounder, sheen, odor and visual presence of free product. After monitoring, the wells were purged and were allowed to recover.

Monitoring data are summarized in Table 1. No free product, sheen or odor was noted in any of the wells during the period.

Water samples were collected on October 28, 1988. Prior to sampling, the wells were purged at least five well volumes using an acrylic surface bailer. Samples were then collected using a clean Teflon bailer. The samples were decanted into clean VOA vials, which were sealed with Teflon-lined screw caps and stored on ice until delivery to a state certified laboratory.

HYDROLOGY

The gradient has been very flat throughout the period. The trend seems to be easterly, but our data should be tied in with information from other sources to verify the gradient.

ANALYTICAL RESULTS

The water samples were analyzed at Sequoia Analytical Laboratory in Redwood City, California. The samples from MW-1, MW-2, and MW-4 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. The sample from MW-3 was analyzed for TPH as diesel using EPA method 3510 in conjunction with modified 8015 and EPA 8010/8020 Volatile Organic Compounds. The laboratory results show non-detectable levels of all constituents in wells MW-2, MW-3 and MW-4. The benzene level of MW-1 was 150 ppb and the TPH as gasoline level was 5200 ppb. The results are summarized in Table 2. Copies of the laboratory analyses and chain of custody form are attached to this report.

DISCUSSION AND RECOMMENDATIONS

During monitoring and sampling, no free product, odor or sheen was noted in any of the wells.

Wells MW-2, MW-3, and MW-4 have shown non-detectable levels of all constituents for two sampling periods and therefore define the zero line of ground water contamination to the north and west. However, MW-1 continues to show benzene above the action level adopted by the San Francisco Bay Regional Water Quality Control Board (RWQCB). Since the gradient is flat, KEI believes that the contamination seen in MW-1 may be contributed by an off-site source (nearby gasoline stations). KEI proposes to do a research study at the Regional Board and the County to gather information on gradient direction and contaminant levels from the nearby site(s). KEI also proposes to continue monitoring for an additional quarter and to survey other off-site monitoring wells to tie in to our wells for gradient determination.

A copy 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.

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 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.

Jean Semansky
Geologist

Gary S. Johnson
Registered Geologist

Lic. #4315
Exp. Date 6/30/90

Attachments: Tables 1 & 2
Site Plan
Laboratory Analyses
Chain of Custody

KEI-P88-025B-2
November 17, 1988

TABLE 1
SUMMARY OF MONITORING DATA

Date	Well No.	Depth to Water (feet)	Sheen	Odor	Water Bailed (gallons)
8/26/88	MW-1	10.92	None	None	0
	MW-2	10.21	None	None	0
	MW-3	10.54	None	None	0
	MW-4	10.17	None	None	0
10/06/88	MW-1	10.20	None	Moderate	10
10/28/88	MW-1	10.98	None	Moderate	25
	MW-2	11.25	None	None	25
	MW-3	11.45	None	None	25
	MW-4	11.34	None	None	25

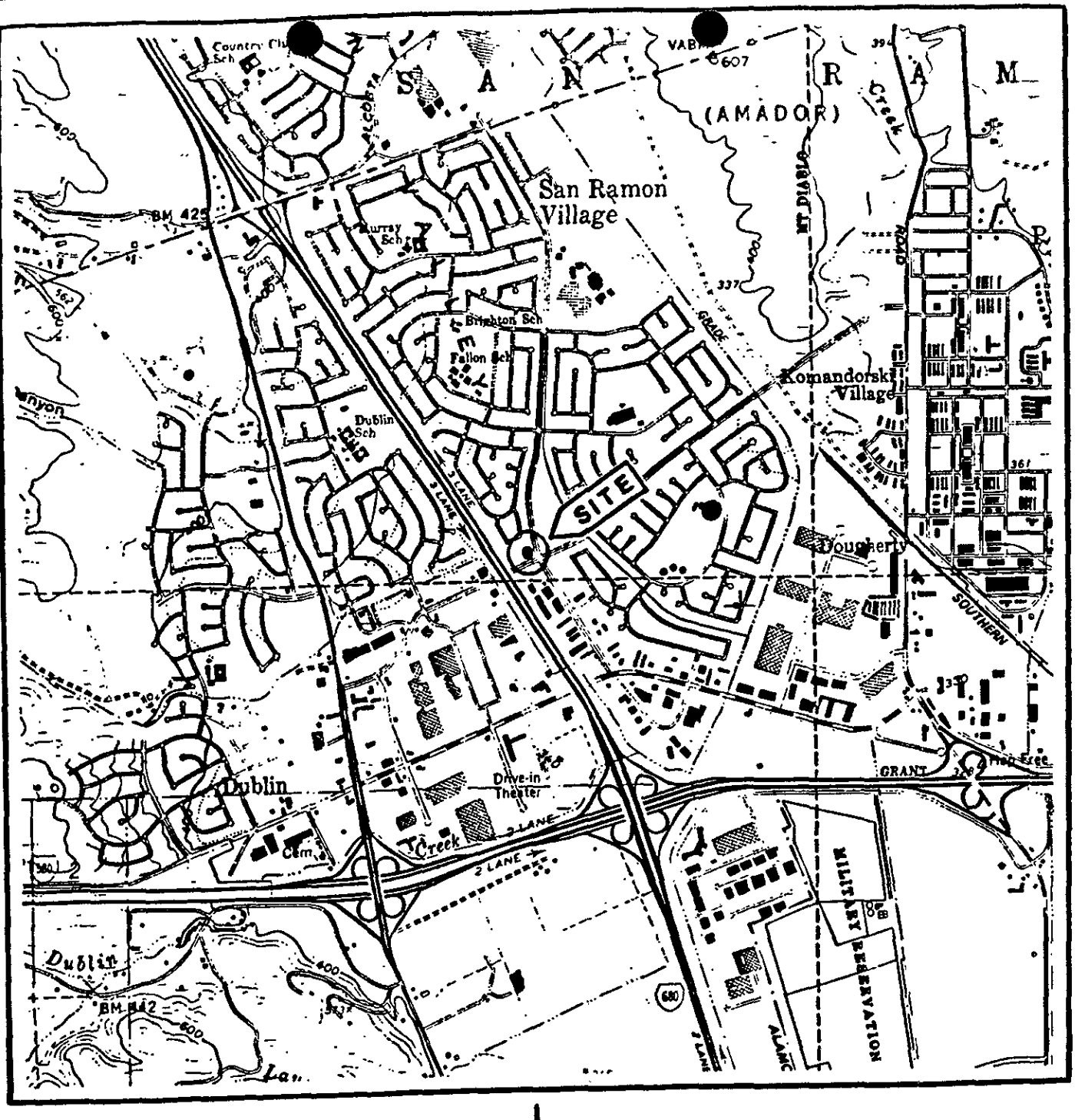
KEI-P88-025B-2
November 17, 1988

TABLE 2
SUMMARY OF LABORATORY ANALYSES

(parts per billion)

Date	Sample Well #	Depth (feet)	TPH Gasoline	TPH Diesel	Benzene	Toluene	Xylenes
10/28/88	MW-1	10.88	5200	---	150	ND	12
	MW-2	11.17	ND	---	ND	ND	ND
	MW-3	11.25	--	ND	ND	ND	ND
	MW-4	11.25	ND	---	ND	ND	ND
7/25/88	MW-1	10.88	6100	---	170	2.1	94
	MW-2	11.09	ND	---	ND	ND	ND
	MW-3*	11.25	--	ND	ND	ND	ND
	MW-4	11.08	ND	---	ND	ND	ND
4/29/88	MW-1	10.25	10,000	---	960	17	1500
	MW-2	10.48	170	---	2.7	0.6	13
	MW-3	10.60	ND	---	ND	ND	ND
	MW-4	10.54	ND	---	ND	ND	ND
Detection Limit			50	50	0.5	0.5	0.5

ND = Not Detected



Source: U.S. Geological Survey
7.5-Minute Quadrangle
Dublin
Photorevised 1980

Approximate Scale

2000 1000 0 2000 4000

feet

UNOCAL SERVICE STATION #5366
7375 Amador Valley Blvd.
Dublin, California

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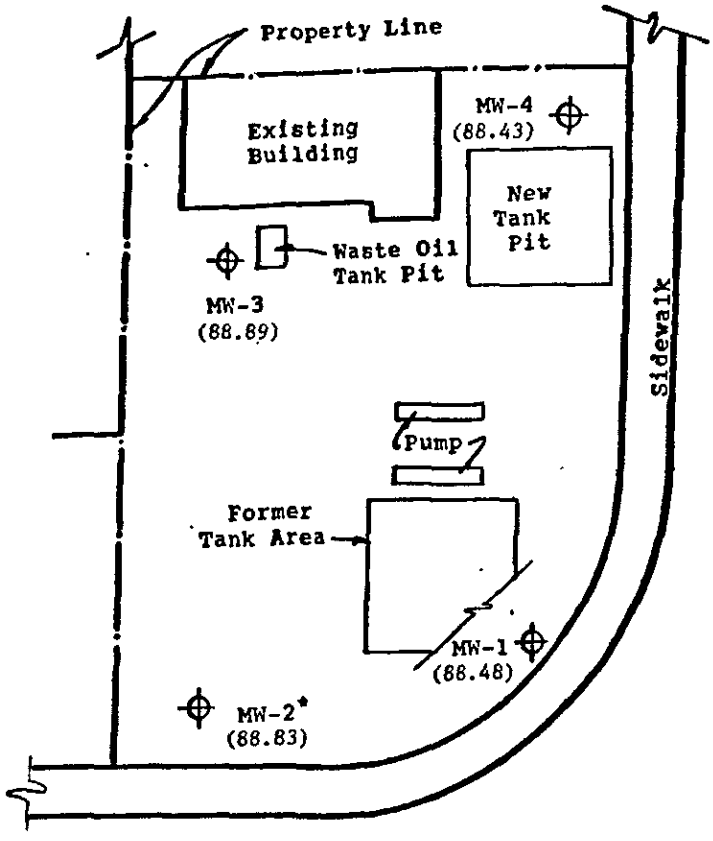
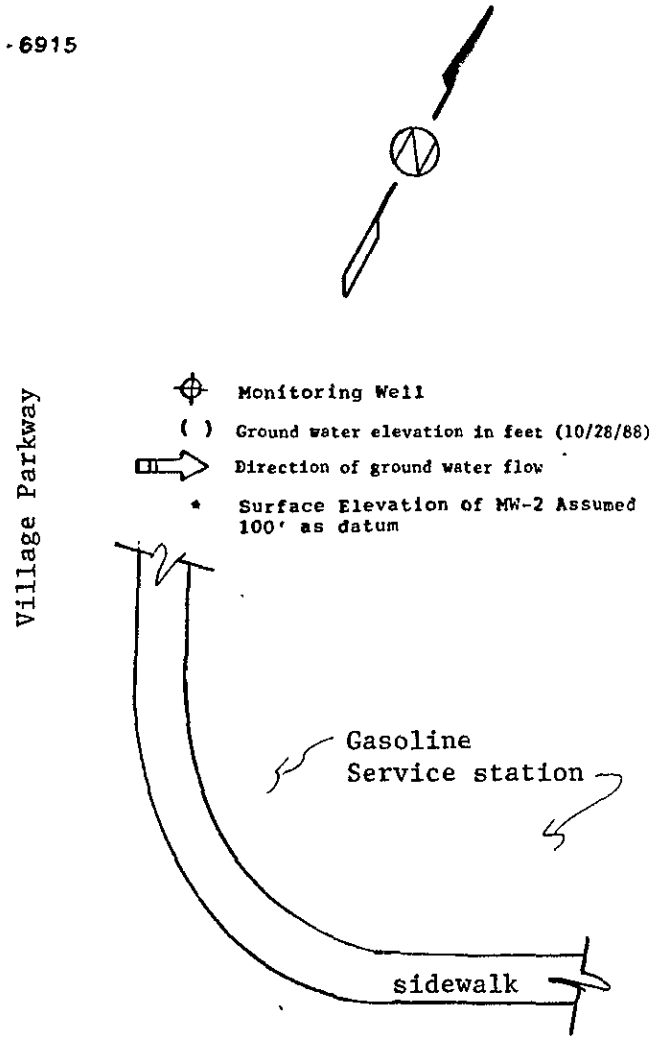
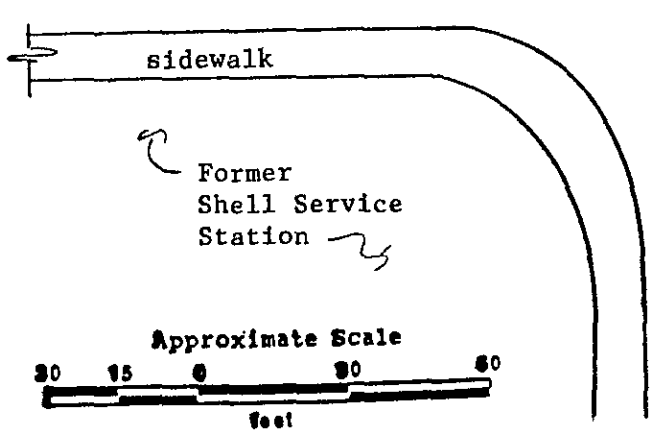
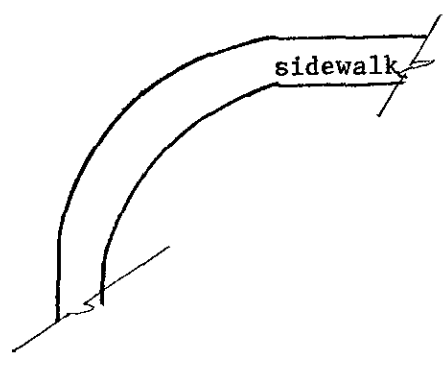




Amador Valley Blvd.





UNOCAL STATION # 5366
7375 Amador Valley Blvd.
Dublin, California

SEQUOIA ANALYTICAL
680 Chesapeake Drive · Redwood City, CA 94063
(415) 364-9222 · FAX (415) 364-9233

Kaprealian Engineering, Inc.
P.O. Box 913
Benicia, CA 94510
Attn: Mardo Kaprealian, P.E.

Date Sampled: 10/28/88
Date Received: 10/28/88
Date Analyzed: 11/03/88
Date Reported: 11/07/88

Project: Unocal, Dublin, Amador/Village Pkway

TOTAL PETROLEUM FUEL HYDROCARBONS WITH BTEX DISTINCTION

Sample Number	Sample Description Water	Low to Medium Boiling Point Hydrocarbons ppb	Benzene ppb	Toluene ppb	Ethyl Benzene ppb	Xylenes ppb
8102488	MW1	5200	150	N.D.	250	12
8102489	MW2	N.D.	N.D.	N.D.	N.D.	N.D.
8102491	MW4	N.D.	N.D.	N.D.	N.D.	N.D.
Detection Limits:		50	0.5	0.5	0.5	0.5

Method of Analysis: EPA 5030/8015/8020

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

SEQUOIA ANALYTICAL LABORATORY

Arthur G. Burton
Laboratory Director

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Date Sampled: 10/28/88
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Date Reported: 11/07/88

Project: Unocal, Dublin,
Amador/Village Pkwy

TOTAL PETROLEUM HYDROCARBONS

Sample Number	Sample Description	Detection Limit	High Boiling Point Hydrocarbons
	Water	ppb	ppb
8102490	MW3	50	N.D.

Method of Analysis: EPA 3510/8015

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

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Attn: Mardo Kaprealian, P.E.

Date Sampled: 10/28/88
Date Received: 10/28/88
Date Analyzed: 11/02/88
Date Reported: 11/07/88
Project: Unocal, Dublin, Amador/Village Pkwy

HALOGENATED VOLATILE ORGANICS

Sample Number: 88102490

Sample Description: Water, MW3

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	N.D.
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.

Method of Analysis: EPA 5030/8010
Analytes reported as N.D. were not present above the stated limit of detection.

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Attn: Mardo Kaprealian, P.E.

Date Sampled: 10/28/88
Date Received: 10/28/88
Date Analyzed: 11/02/88
Date Reported: 11/07/88

Project: Unocal, Dublin, Amador/Village Pkwy

AROMATIC VOLATILE ORGANICS

Sample Number: 8102490

Sample Description: Water, MW3

Analyte	Detection Limit µg/L	Sample Results µg/L
Benzene	0.5	N.D.
Chlorobenzene	1.0	N.D.
1,4-Dichlorobenzene	2.0	N.D.
1,3-Dichlorobenzene	2.0	N.D.
1,2-Dichlorobenzene	2.0	N.D.
Ethyl Benzene	0.5	N.D.
Toluene	0.5	N.D.
Xylenes	0.5	N.D.

Method of Analysis: EPA 5030/8020

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

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CHAIN OF CUSTODY

SAMPLER: Ray (KEI) (signature) DATE/TIME OF COLLECTION: 10/28/88 TURN AROUND TIME: 1 Week

SAMPLE DESCRIPTION AND PROJECT NUMBER: UNOCAL DUBLIN AMADOR / VILLAGE PKWY

SAMPLE #	ANALYSES	GRAB OR COMP.	NUMBER OF CONTAINERS	SOIL/ WATER
MW1	TPHG. BTXE	Grab	2V	W
MW2	" "	Grab	2V	W
MW3	TPH as Diesel	Grab	1L.	W
	601 - 602		4V	W
MW4	TPHG. BTXE	Grab	2V	W

RELINQUISHED BY*	TIME/DATE	RECEIVED BY*	TIME/DATE
1. Ray (KEI) 10/28/88	4:45	Ken Flynn	4:40 PM 10/28/88
2.			
3.			
4.			

* STATE AFFILIATION NEXT TO SIGNATURE

REMARKS: