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

KEI-J88-025A-1
May 11, 1988

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

Attn: Mr. Don Terry

RE: Subsurface Investigation at
Unocal Service Station #5366
7375 Amador Valley Rd.
Dublin, California

Dear Mr. Terry:

This report presents the results of our investigation for monitoring groundwater in accordance with our recommendations in our report dated February 25, 1988 for the referenced site. The purpose of the investigation was to determine the extent of contamination beneath the subject site. The work performed consisted of the following:

1. Drilling and installation of four monitoring wells.
2. Soil sampling.
3. Groundwater purging/sampling.
4. Laboratory analyses.
5. Data analysis, interpretation and report preparation.

FIELD INVESTIGATION

On April 14, 1988, four (4) two-inch diameter groundwater monitoring wells (designated as MW-1, MW-2, MW-3 and MW-4 on the attached Location Plan) were installed at the site. The wells were drilled, constructed and completed in accordance with the guidelines of the California Regional Water Quality Control Board and the county well standards.

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

The four wells were drilled and completed to a total depth of 20 feet. The borings were terminated after 5 feet of dry clay was intersected beneath the aquifer.

Groundwater was encountered at depths ranging from 14 to 16 feet beneath the surface during drilling. A total of 6 soil samples were taken at depths ranging from 5 to 10 feet. The undisturbed soil samples were taken by driving a California-modified split-spoon sampler ahead of the drilling augers. The brass liners holding the samples were sealed with aluminum foil and plastic caps, and were stored in a cooled ice chest for delivery to the contracted laboratory. The wells were installed with padlocks.

The wells were developed on April 26, 1988. Prior to development and sampling, the wells were checked for depth to water table, presence of odor, and floating product. No floating product odor or sheen was noted in any of the wells. During development, the wells were pumped until the recovered liquid ran clear and showed no signs of suspended materials.

Water samples were collected on April 29, 1988. After purging at least four casing volumes, samples were taken with a clean Teflon bailer, were decanted into clean glass VOA vials with Teflon lined screw caps, and were labeled and stored on ice until delivery to the contracted laboratory.

LABORATORY ANALYSES

All samples were analyzed at HAZCAT Organics Laboratory in San Carlos, California, and were accompanied by chain of custody forms. The soil and water samples were analyzed for total petroleum hydrocarbon (TPH), benzene, toluene, xylene and ethylbenzene (BTXE) concentrations. The samples from boring MW-3 were also analyzed for TPH as diesel and total oil and grease (TOG). Sample MW-3(10') was analyzed for EPA 8010 and 8020 priority pollutants. The results of the soil and water analyses are summarized in Table 1. Copies of the laboratory analyses and chain of custody forms are attached to this report.

GEOLOGY AND HYDROGEOLOGY

Groundwater is present at the site at depths ranging from 10.167 to 10.833 feet below the surface. Groundwater flow direction appears to be in a north-easterly direction. The subsurface formations at the site consist of alternating layers of clay, loam and silty clay to the total depth explored.

DISCUSSION AND RECOMMENDATION

The results of our investigations are as follows:

1. The soil sample results show low to non-detectable levels of TPH and BTXE in all wells except well MW-1 which showed TPH level of 340 parts per million (ppm) in the soil sample collected at a depth of 10 feet.

2. The water analyses show non-detectable levels of TPH and Benzene in MW-3 and MW-4. Benzene levels in MW-1 and MW-2 were 960 ppb and 2.7 ppb, respectively, while TPH levels were 10,000 ppb and 170 ppb, respectively.

Based on the levels of dissolved gasoline constituents found in the wells, KEI recommends that a monitoring and sampling program be implemented at the site. The proposed program should consist of monthly observation of the groundwater, purging and recording water depths. In addition, the wells should be sampled for TPH and BTXE on a quarterly basis. The proposed program should be conducted for a period of nine (9) months. Our proposal for this work is attached for your consideration

Copies of this report should be sent to the Alameda County Department of Health, Mr. Wyman Hong of the Alameda County Flood Control District, and to the Regional Water Quality Control Board.

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 groundwater 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 (415) 676-9100 or (707) 746-6915.

Sincerely,

Kaprealian Engineering, Inc.

Jae Yang, P. E.

License No. 25337
Exp. Date 12/3/89

Mardo Kaprealian
President

Attachments: Table 1
Location Plan
Boring Logs
Laboratory Results
Chain of Custody Forms
Proposal

TABLE - 1

Results of Soil Analyses - Parts Per Million

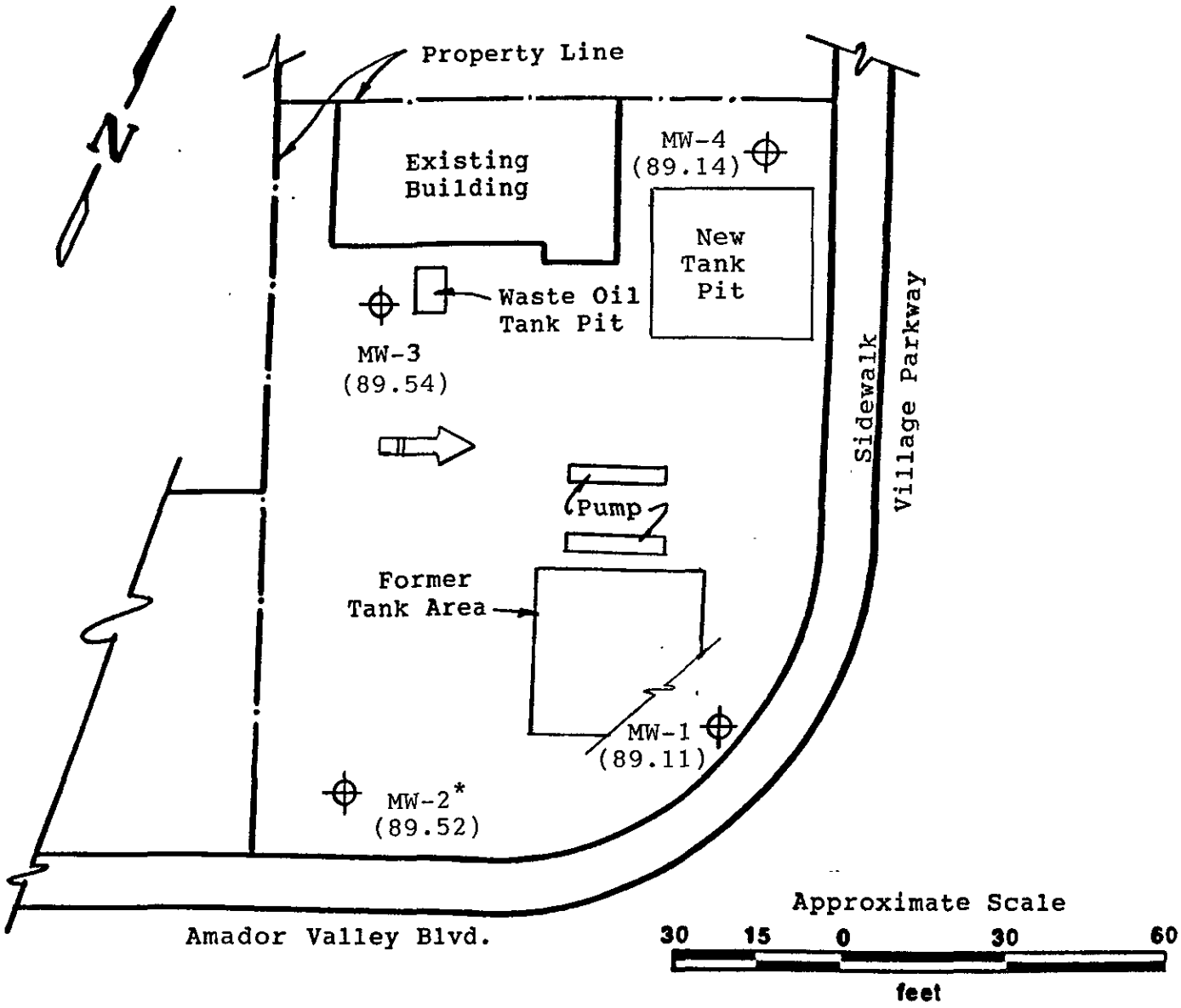
Sample Number	Depth (feet)	TPH	Benzene	Toluene	Xylene	Ethylbenzene
MW-1	10	340	<0.1	<0.1	<0.1	<0.1
MW-1	15	11	<0.1	<0.1	<0.1	<0.1
MW-2	10	<1.0	<0.1	<0.1	<0.1	<0.1
MW-3*	5	<1.0	<0.1	<0.1	<0.1	<0.1
MW-4	10	4.9	<0.1	<0.1	<0.1	<0.1

Results of Water Analyses - parts per billion

Sample Number	Depth (feet)	TPH	Benzene	Toluene	Xylene	Ethylbenzene
MW-1	10.250	10,000	960	17	1500	870
MW-2	10.479	170	2.7	0.6	13	<0.5
MW-3	10.604	<50	<0.5	<0.5	<0.5	<0.5
MW-4	10.542	<50	<0.5	<0.5	<0.5	<0.5

* MW-3(5') and MW-3(10') showed non-detectable levels of TOG and TPH as diesel. MW-3(10') had non-detectable levels of 8010 and 8020 priority pollutants.

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



LOCATION PLAN

⊕ Monitoring Well

( ) Groundwater Elevation in feet (4-29-88)

⇨ Direction of Groundwater flow

* Surface Elevation of MW-2 Assumed 100' as datum

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

Exploratory Boring Log

Project No. KEI-P88-025A	Boring & Casing Diameter 8 inch, 2in. csg.	Logged By P. Morrill
Project Name Unocal Dublin, Amador Vly. Blvd.	Casing Elevation	Date Drilled 4/14/88
Boring No. MW-1	Hollow-stem Flight Auger	Depth to Groundwater 16 feet

Penetration blows/ft	G. W. level	Depth (ft) Samples	Litho-graphy USCS	Description
		0	SC	ASPHALT SANDY CLAY LOAM: 7.5YR 3/0, very dark gray, mod. plastic,stiff, v. fine sands
			CL	CLAY LOAM: 7.5YR 2/0, black, stiff, mod. plastic, slightly moist, 5 to 10% gravels and rounded cobbles
			CH	CLAY: 7.5YR 3/0, very dark gray, stiff, plastic, moist
		5	ML/ CL	LOAM: 2.5Y 3/0, very dark gray, firm, mod. plastic, very fine sands, few small gravels
		10		
21			CL	CLAY: 7.5YR 3/0, very dark gray, stiff, plastic, moist, $CaCO_3$ concretions, slightly effervescent
		15	CH	SILTY CLAY: 5Y 4/1, stiff, plastic, slightly moist
17	▼		CH	SILTY CLAY: 5Y 4/1, dark gray, firm, plastic, wet, 10 to 15% subrounded gravels up to ¼ inch in size
			CH	SILTY CLAY: 5Y 4/1, dark gray, very stiff, slightly moist, plastic, up to 10% gravels as above
		20		

TOTAL DEPTH 20 FEET

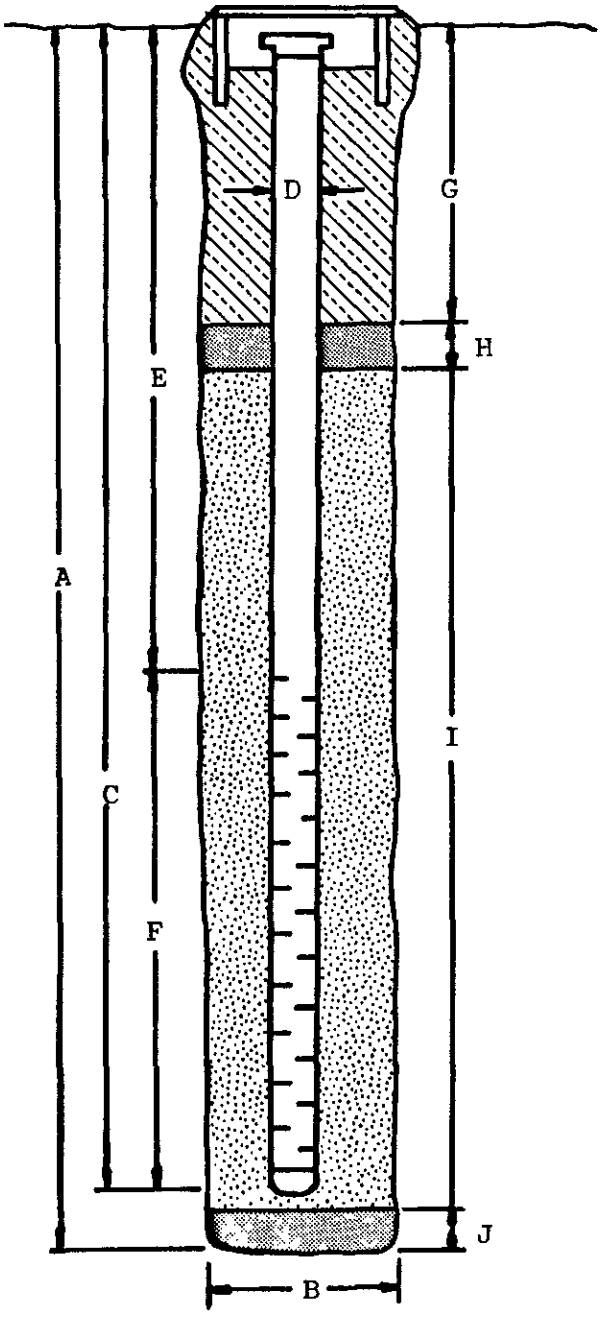
WELL DETAILS

PROJECT NAME: Unocal, Dublin, Amador Vly. Blvd. BORING/WELL NO. MW-1

PROJECT NUMBER: KEI-P88-025A CASING ELEVATION: _____

WELL PERMIT NO.: 88107 Alameda Co. Flood Control SURFACE ELEVATION: _____

G-5 Vault Box



A. Total Depth: 20 feet

B. Boring Diameter: 8 inch

Drilling method: Hollow Stem Auger

C. Casing Length: 20 feet

Material: PVC Schedule 40

D. Casing Diameter: 2 inch

E. Depth to Perforations: 10 feet

F. Perforated Length: 10 feet

Perforated Interval: 20 to 10 feet

Perforation Type: Schedule 40

Perforation Size: 0.02

G. Surface Seal: 8 to 0 feet

Seal Material: concrete

H. Seal: 9 to 8 feet

Seal Material: bentonite

I. Gravel Pack: 20 to 9 feet

Pack Material: Monterey sand

Size: 6 X 12

J. Bottom Seal: None

Seal Material: -

Exploratory Boring Log

Project No.	Boring & Casing Diameter	Logged By
KEI-P88-025A	8 inch, 2 in. csg.	P. Morrill
Project Name Unocal Dublin, Amador Vly Blvd.	Casing Elevation	Date Drilled 4/14/88
Boring No. MW-2	Hollow-stem Flight Auger	Depth to Groundwater 15 feet

Penetration blows/ft	G. W. level	Depth (ft) Samples	Lithography USCS	Description
		0		ASPHALT
			GC	GRAVELLY SANDY LOAM FILL: Brown, Dry
			CH	CLAY: 7.5 YR 2/0, black, stiff, very plastic, slightly moist
			CL	CLAY LOAM: 7.5YR 2/0, mod. plastic, firm
			CH	CLAY: 7.5YR 2/0, black, stiff, plastic slightly moist
		5	ML/ CL	LOAM: 5Y 3/1, very dark gray, firm, mod. plastic, moist, very fine sands
		10	CL	CLAY: 7.5YR 3/0, very dark gray, stiff, plastic, moist, $CaCO_3$ concretions, slightly effervescent
16				
	▼	15	CH	SILTY CLAY 5Y 4/1, dark gray, firm, plastic, wet, 10 to 15% subrounded gravels up to ¼ inch in size
			CH	SILTY CLAY: 5Y 4/1, dark gray, very stiff, plastic, gravels as above, moist
		20		

TOTAL DEPTH 20 FEET

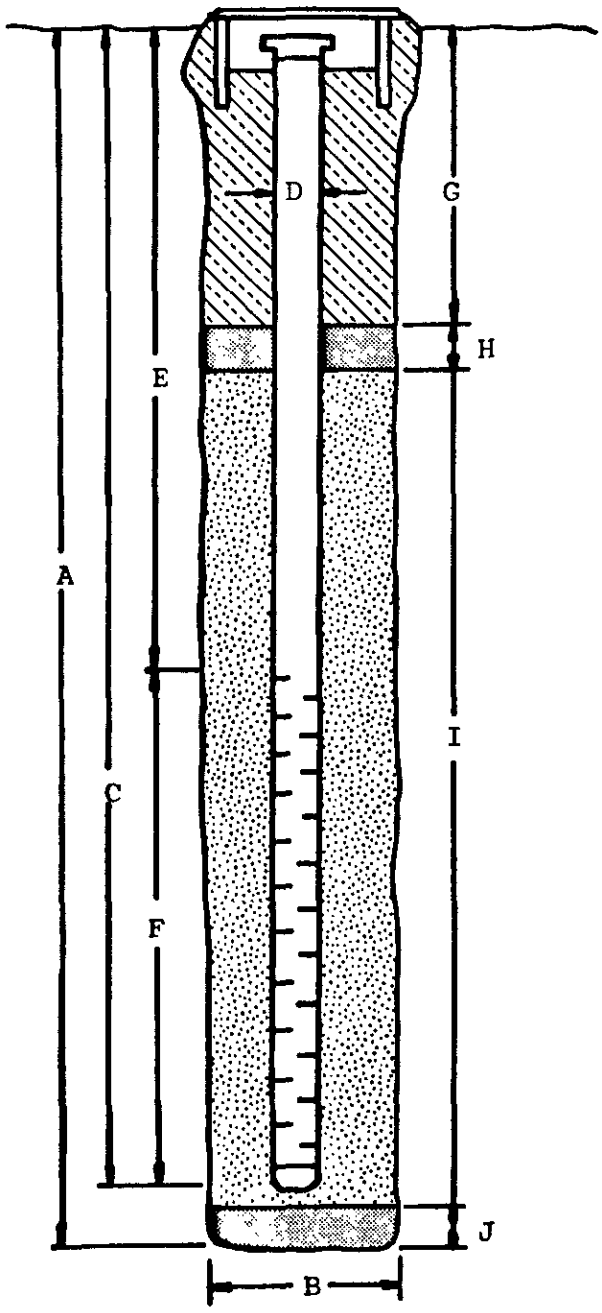
WELL DETAILS

PROJECT NAME: Unocal, Dublin, Amador Vly. Blvd. BORING/WELL NO. MW-2

PROJECT NUMBER: KEI-P88-025A CASING ELEVATION:

WELL PERMIT NO.: 88107 Alameda Co. Flood Control SURFACE ELEVATION:

G-5 Vault Box



A. Total Depth: 20 feet

B. Boring Diameter: 8 inches

Drilling method: Hollow stem flight auger

C. Casing Length: 20 feet

Material: PVC Schedule 40

D. Casing Diameter: 2 inches

E. Depth to Perforations: 6 feet

F. Perforated Length: 14 feet

Perforated Interval: 20 to 6 feet

Perforation Type: Schedule 40

Perforation Size: 0.02 .

G. Surface Seal: 4 to 0 feet

Seal Material: concrete

H. Seal: 5 to 4 feet

Seal Material: bentonite

I. Gravel Pack: 20 to 5 feet

Pack Material: Monterey sand

Size: 6 X 12

J. Bottom Seal: none

Seal Material:

Exploratory Boring Log

Project No.	Boring & Casing Diameter	Logged By
KEI-P88-025A	8 in. 2 in. csg.	P. Morrill
Project Name Unocal Dublin, Amador Vly. Blvd.	Casing Elevation	Date Drilled 4/14/88
Boring No. MW-3	Hollow-stem Flight Auger	Depth to Groundwater 14 feet

Penetration blows/ft	G. W. level	Depth (ft) Samples	Lithography USCS	Description
		0	CL	ASPHALT CLAY LOAM: 10YR 3/1, very dark gray, stiff, mod. plastic, slightly moist
			CL	CLAY LOAM: 7.5 YR 2/0, black, firm, mod. plastic, slightly moist
			CH	CLAY: black, plastic, stiff
		5		
14			ML/CL	LOAM: 5Y 3/1, firm, mod. plastic, moist, very fine sands
			CL	CLAY: 7.5YR 3/0, very dark gray, stiff plastic, moist, $CaCO_3$ concretions, slightly effervescent
		10		
19				
	▼		CH	SILTY CLAY: 5Y 4/1, dark gray, plastic firm, wet, 10 to 15% gravels up to ¼ inch
		15		
			CH	SILTY CLAY: 5Y 4/1, dark gray, plastic very stiff, moist, 10 to 15% gravels up to ¼ inch
		20		

TOTAL DEPTH 20 FEET

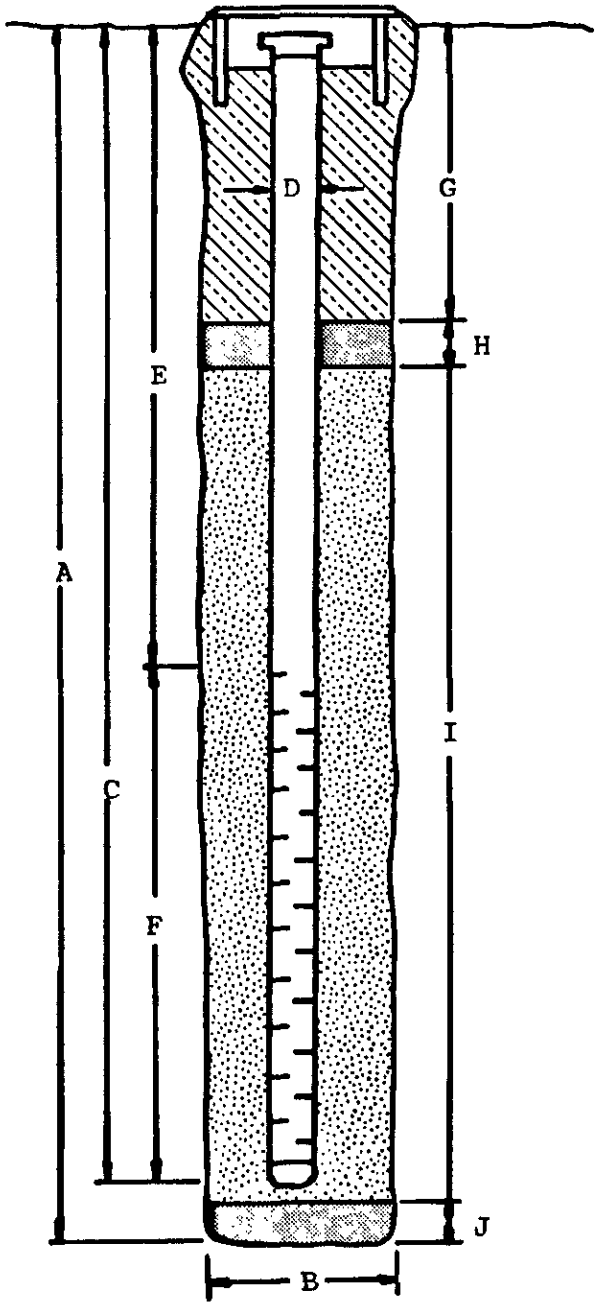
WELL DETAILS

PROJECT NAME: Unocal, Dublin, Amador Vly. Blvd. BORING/WELL NO.: MW-3

PROJECT NUMBER: KEI-P88-025A CASING ELEVATION: _____

WELL PERMIT NO.: 88107 Alameda Co. Flood Control SURFACE ELEVATION: _____

G-5 Vault Box



A. Total Depth: 20 feet

B. Boring Diameter: 8 inches

Drilling method: Hollow stem flight auger

C. Casing Length: 20 feet

Material: PVC Schedule 40

D. Casing Diameter: 2 inches

E. Depth to Perforations: 6 feet

F. Perforated Length: 14 feet

Perforated Interval: 20 to 6 feet

Perforation Type: Schedule 40

Perforation Size: 0.02

G. Surface Seal: 4 to 0 feet

Seal Material: concrete

H. Seal: 5 to 4 feet

Seal Material: bentonite

I. Gravel Pack: 20 to 5 feet

Pack Material: Monterey sand

Size: 6 X 12

J. Bottom Seal: none

Seal Material: -

Exploratory Boring Log

Project No.	Boring & Casing Diameter	Logged By
KEI-P88-025A	8 in. 2 in. csg.	P. Morrill
Project Name Unocal Dublin, Amador Vly. Blvd.	Casing Elevation	Date Drilled 4/14/88
Boring No. MW-4	Hollow-stem Flight Auger	Depth to Groundwater 16 feet

Penetration blows/ft	G. W. level	Depth (ft) Samples	Litho-graphy USCS	Description
		0		ASPHALT
			GC	GRAVELLY SANDY LOAM FILL: brown, dry
			CL	CLAY: 7.5 YR 2/0, black, very stiff, plastic, slightly moist, $CaCO_3$ concretions
			CL	CLAY LOAM: 7.5 YR 3/0, very dark gray, firm, plastic, slightly moist, 5 to 10% gravels and cobbles
		5	ML/ CL	LOAM: 5Y 3/1, very dark gray, firm, mod. plastic, slightly moist, very fine sands
		10	CL	CLAY: 7.5 YR 3/0, very dark gray, slightly moist, stiff, plastic, $CaCO_3$ concretions, slightly effervescent
15				
	▼	15	CH	SILTY CLAY: 5Y 4/1, dark gray, firm, plastic, wet, 10 to 15% gravels up to ¼ inch
			CH	SILTY CLAY: 5Y 4/1, dark gray, plastic, very stiff, slightly moist, approx. 10% gravels as above
		20		

TOTAL DEPTH 20 FEET

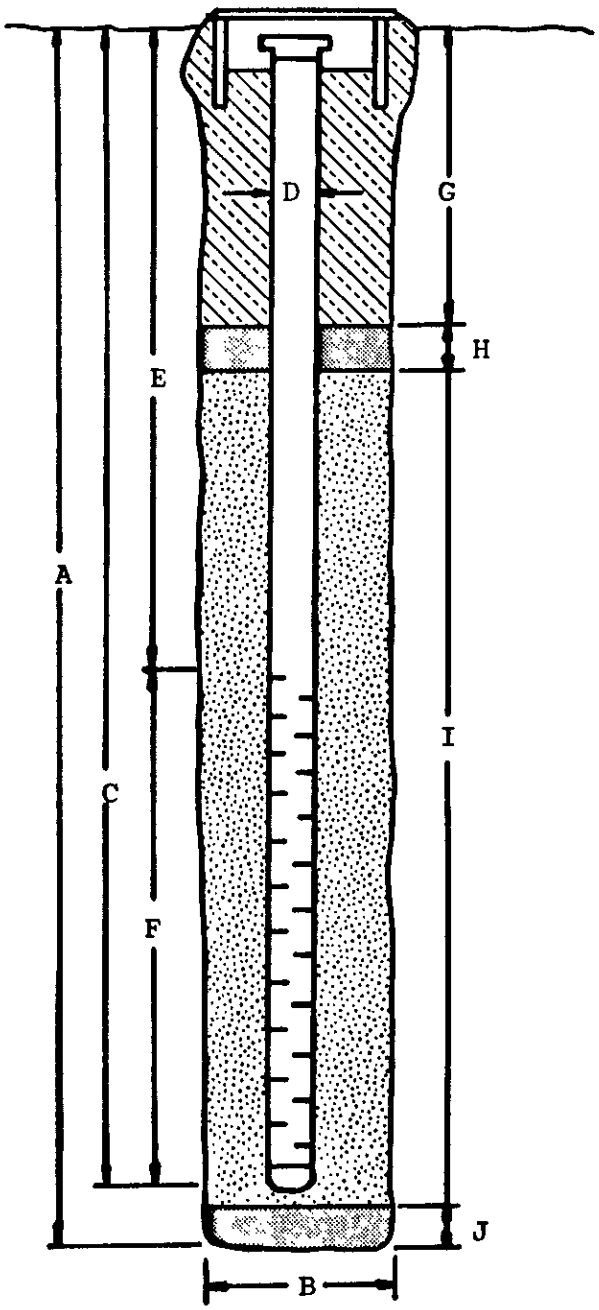
WELL DETAILS

PROJECT NAME: Unocal, Dublin, Amador Vly. Blvd. BORING/WELL NO. MW-4

PROJECT NUMBER: KEI-P88-025A CASING ELEVATION: _____

WELL PERMIT NO.: 88107 Alameda Co. Flood Control SURFACE ELEVATION: _____

G-5 Vault Box



A. Total Depth: 20 feet

B. Boring Diameter: 8 inches

Drilling method: Hollow stem flight auger

C. Casing Length: 20 feet

Material: PVC Schedule 40

D. Casing Diameter: 2 inches

E. Depth to Perforations: 7 feet

F. Perforated Length: 13 feet

Perforated Interval: 20 to 7 feet

Perforation Type: Schedule 40

Perforation Size: 0.02 inch

G. Surface Seal: 5 to 0 feet

Seal Material: concrete

H. Seal: 6 to 5 feet

Seal Material: bentonite

I. Gravel Pack: 20 to 6 feet

Pack Material: Monterey sand

Size: 6 X 12

J. Bottom Seal: none

Seal Material: -

SEQUOIA Analytical Laboratory
2549 Middlefield Road
Redwood City, CA 94063 • (415) 364-9222

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

Date Sampled: 04/15/88
Date Received: 04/19/88
Date Reported: 05/03/88

Project: Unocal, Amador Valley/
Village Parkway, Dublin

TOTAL PETROLEUM FUEL HYDROCARBONS WITH BTX DISTINCTION

Sample Number	Sample Description
8041314	Soil, MW-1 (10)

	Detection Limit ppm	Sample Results ppm
Low to Medium Boiling Point Hydrocarbons	1	340
Benzene	0.1	< 0.1
Toluene	0.1	< 0.1
Xylenes	0.1	< 0.1
Ethylbenzene	0.1	< 0.1

Method of Analysis: EPA 5020/8015/8020

SEQUOIA ANALYTICAL LABORATORY

Arthur G. Burton
Laboratory Director

SEQUOIA Analytical Laboratory
2549 Middlefield Road
Redwood City, CA 94063 • (415) 364-9222

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

Date Sampled: 04/15/88
Date Received: 04/19/88
Date Reported: 05/03/88

Project: Unocal, Amador Valley/ Village Parkway, Dublin

TOTAL PETROLEUM FUEL HYDROCARBONS WITH BTX DISTINCTION

Sample Number	Sample Description
8041315	Soil, MW-1 (15)

	Detection Limit ppm	Sample Results ppm
Low to Medium Boiling Point Hydrocarbons	1	11
Benzene	0.1	< 0.1
Toluene	0.1	< 0.1
Xylenes	0.1	< 0.1
Ethylbenzene	0.1	< 0.1

Method of Analysis: EPA 5020/8015/8020

SEQUOIA ANALYTICAL LABORATORY

Arthur G. Burton
Laboratory Director

SEQUOIA Analytical Laboratory
2549 Middlefield Road
Redwood City, CA 94063 • (415) 364-9222

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

Date Sampled: 04/15/88
Date Received: 04/19/88
Date Reported: 05/03/88

Project: Unocal, Amador Valley/ Village Parkway, Dublin

TOTAL PETROLEUM FUEL HYDROCARBONS WITH BTX DISTINCTION

Sample Number	Sample Description
8041316	Soil, MW-2 (10)

	Detection Limit ppm	Sample Results ppm
Low to Medium Boiling Point Hydrocarbons	1	< 1.0
Benzene	0.1	< 0.1
Toluene	0.1	< 0.1
Xylenes	0.1	< 0.1
Ethylbenzene	0.1	< 0.1

Method of Analysis: EPA 5020/8015/8020

SEQUOIA ANALYTICAL LABORATORY

Arthur G. Burton
Laboratory Director

SEQUOIA Analytical Laboratory
2549 Middlefield Road
Redwood City, CA 94063 • (415) 364-9222

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

Date Sampled: 04/15/88
Date Received: 04/19/88
Date Reported: 05/03/88

Project: Unocal, Amador Valley/
Village Parkway, Dublin

TOTAL PETROLEUM FUEL HYDROCARBONS WITH BTX DISTINCTION

Sample Number	Sample Description
8041317	Soil, MW-3 (5)

	Detection Limit ppm	Sample Results ppm
Low to Medium Boiling Point Hydrocarbons	1	< 1.0
Benzene	0.1	< 0.1
Toluene	0.1	< 0.1
Xylenes	0.1	< 0.1
Ethylbenzene	0.1	< 0.1

Method of Analysis: EPA 5020/8015/8020

SEQUOIA ANALYTICAL LABORATORY

Arthur G. Burton
Laboratory Director

SEQUOIA Analytical Laboratory
2549 Middlefield Road
Redwood City, CA 94063 • (415) 364-9222

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

Date Sampled: 04/15/88
Date Received: 04/19/88
Date Reported: 05/03/88

Project: Unocal, Amador Valley/
Village Parkway, Dublin

TOTAL OIL AND GREASE

Sample Number	Sample Description Soil,	Detection Limit ppm	Gravimetric Petroleum Oil ppm
8041317	MW-3 (5)	30	< 30
8041318	MW-3 (10)	30	< 30

Method of Analysis: EPA 3550 with trichlorotrifluoroethane and gravimetric determination.

SEQUOIA ANALYTICAL LABORATORY

Arthur G. Burton
Laboratory Director

SEQUOIA Analytical Laboratory
2549 Middlefield Road
Redwood City, CA 94063 • (415) 364-9222

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

Date Sampled: 04/15/88
Date Received: 04/19/88
Date Reported: 05/03/88

Project: Unocal, Amador Valley/
Village Parkway, Dublin

TOTAL PETROLEUM HYDROCARBONS

Sample Number	Sample Description Soil,	Detection Limit ppm	High Boiling Point Hydrocarbons ppm
8041317	MW-3 (5)	1	< 1.0
8041318	MW-3 (10)	1	< 1.0

Method of Analysis: EPA 3550/8015

SEQUOIA ANALYTICAL LABORATORY

Arthur G. Burton
Laboratory Director

SEQUOIA Analytical Laboratory
2549 Middlefield Road
Redwood City, CA 94063 • (415) 364-9222

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

Date Sampled: 04/15/88
Date Received: 04/19/88
Date Analyzed: 04/29/88
Date Reported: 05/03/88

Project: Unocal, Amador Valley/ Village Parkway, Dublin

Sample Number	Sample Description
8041318	Soil, MW-3 (10)

PRIORITY POLLUTANTS

PURGEABLE HALOCARBONS & AROMATICS
results in ppb

Benzene	< 50	1,2-Dichloropropane	< 50
Bromomethane	< 50	1,3-Dichloropropane	< 50
Bromodichloromethane	< 50	Ethylbenzene	< 50
Bromoform	< 50	Methylene chloride	< 50
Carbon tetrachloride	< 50	1,1,2,2-Tetrachloroethane	< 50
Chlorobenzene	< 50	Tetrachloroethene	< 50
Chloroethane	< 50	1,1,1-Trichloroethane	< 50
2-Chloroethylvinyl ether	< 50	1,1,2-Trichloroethane	< 50
Chloroform	< 50	Trichloroethene	< 50
Chloromethane	< 50	Toluene	< 50
Dibromochloromethane	< 50	Vinyl chloride	< 50
1,1-Dichloroethane	< 50	1,2-Dichlorobenzene	< 50
1,2-Dichloroethane	< 50	1,3-Dichlorobenzene	< 50
1,1-Dichloroethene	< 50	1,4-Dichlorobenzene	< 50
trans-1,2-Dichloroethene	< 50		

Method of Analysis: EPA 8010/8020

SEQUOIA ANALYTICAL LABORATORY

Arthur G. Burton
Laboratory Director

SEQUOIA Analytical Laboratory
2549 Middlefield Road
Redwood City, CA 94063 • (415) 364-9222

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

Date Sampled: 04/15/88
Date Received: 04/19/88
Date Reported: 05/03/88

Project: Unocal, Amador Valley/ Village Parkway, Dublin

TOTAL PETROLEUM FUEL HYDROCARBONS WITH BTX DISTINCTION

Sample Number	Sample Description
8041319	Soil, MW-4 (10)

	Detection Limit ppm	Sample Results ppm
Low to Medium Boiling Point Hydrocarbons	1	4.9
Benzene	0.1	< 0.1
Toluene	0.1	< 0.1
Xylenes	0.1	< 0.1
Ethylbenzene	0.1	< 0.1

Method of Analysis: EPA 5020/8015/8020

SEQUOIA ANALYTICAL LABORATORY

Arthur G. Burton
Laboratory Director

KAPREALIAN ENGINEERING, INC.

CHAIN OF CUSTODY

SAMPLER: Dennis L. Morrell (signature) DATE/TIME OF COLLECTION: 4/15/88 TURNAROUND TIME: 10 days

SAMPLE DESCRIPTION AND PROJECT NUMBER: Unocal - Dublin - Amador Valley and Village Parkway.

SAMPLE #	ANALYSIS	GRAB OR COMP.	NUMBER OF CONTAINERS	SOIL/ WATER
MW-1 (10)	TPH - BTX E	Grab	1	S
MW-1 (15)	TPH - BTXE	"	1	S
MW-2 (10)	TPH - BTXE	"	1	S
MW-3 (5)	TPH as diesel, TOG, BTXE	"	1	S
MW-3 (10)	TPH as diesel, TOG, [illegible], 8010, 8020	"	1	S
MW-4 (10)	TPH - BTX E	"	1	S

RELINQUISHED BY*	TIME/DATE	RECEIVED BY*	TIME/DATE
1. Dennis L. Morrell (KEI)	7:40 p 4/15/88	Chris Lecce KEI	7:40 p.m. 4-15-88
2. Chris Lecce KEI	4-19-88 1:27	Anthony Shailey Imperial Carriers	4-19-88 1:28 PM
3.			
4.			

* STATE AFFILIATION NEXT TO SIGNATURE

REMARKS: ______

SEQUOIA Analytical Laboratory
2549 Middlefield Road
Redwood City, CA 94063 • (415) 364-9222

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

Date Sampled: 04/29/88
Date Received: 04/29/88
Date Reported: 05/06/88

Project: Unocal, Village Parkway/Amador Valley Rd
Dublin

TOTAL PETROLEUM FUEL HYDROCARBONS WITH BTX DISTINCTION

Sample Number	Sample Description
8042176	Water, MW-1

	Detection Limit ppb	Sample Results ppb
Low to Medium Boiling Point Hydrocarbons	50	10,000
Benzene	0.5	960
Toluene	0.5	17
Xylenes	0.5	1,500
Ethylbenzene	0.5	870

Method of Analysis: EPA 5030/602/8015

SEQUOIA ANALYTICAL LABORATORY

Arthur G. Burton
Laboratory Director

SEQUOIA Analytical Laboratory
2549 Middlefield Road
Redwood City, CA 94063 • (415) 364-9222

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

Date Sampled: 04/29/88
Date Received: 04/29/88
Date Reported: 05/06/88

Project: Unocal, Village Parkway/Amador Valley Rd
Dublin

TOTAL PETROLEUM FUEL HYDROCARBONS WITH BTX DISTINCTION

Sample Number	Sample Description
8042177	Water, MW-2

	Detection Limit ppb	Sample Results ppb
Low to Medium Boiling Point Hydrocarbons	50	170
Benzene	0.5	2.7
Toluene	0.5	0.6
Xylenes	0.5	13
Ethylbenzene	0.5	< 0.5

Method of Analysis: EPA 5030/602/8015

SEQUOIA ANALYTICAL LABORATORY

Arthur G. Burton
Laboratory Director

SEQUOIA Analytical Laboratory
2549 Middlefield Road
Redwood City, CA 94063 • (415) 364-9222

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

Date Sampled: 04/29/88
Date Received: 04/29/88
Date Reported: 05/06/88

Project: Unocal, Village Parkway/Amador Valley Rd
Dublin

TOTAL PETROLEUM FUEL HYDROCARBONS WITH BTX DISTINCTION

Sample Number	Sample Description
8042178	Water, MW-3

	Detection Limit ppb	Sample Results ppb
Low to Medium Boiling Point Hydrocarbons	50	< 50
Benzene	0.5	< 0.5
Toluene	0.5	< 0.5
Xylenes	0.5	< 0.5
Ethylbenzene	0.5	< 0.5

Method of Analysis: EPA 5030/602/8015

SEQUOIA ANALYTICAL LABORATORY

Arthur G. Burton
Laboratory Director

SEQUOIA Analytical Laboratory
2549 Middlefield Road
Redwood City, CA 94063 • (415) 364-9222

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

Date Sampled: 04/29/88
Date Received: 04/29/88
Date Reported: 05/06/88

Project: Unocal, Village Parkway/Amador Valley Rd
Dublin

TOTAL PETROLEUM FUEL HYDROCARBONS WITH BTX DISTINCTION

Sample Number	Sample Description
8042179	Water, MW-4

	Detection Limit ppb	Sample Results ppb
Low to Medium Boiling Point Hydrocarbons	50	< 50
Benzene	0.5	< 0.5
Toluene	0.5	< 0.5
Xylenes	0.5	< 0.5
Ethylbenzene	0.5	< 0.5

Method of Analysis: EPA 5030/602/8015

SEQUOIA ANALYTICAL LABORATORY

Scot Cocanour

Arthur G. Burton
Laboratory Director

KAPREALIAN ENGINEERING, INC.

CHAIN OF CUSTODY

SAMPLER: Ray (KE1) (signature) DATE/TIME OF COLLECTION: 4/29/88 TURNAROUND TIME: 1 Week

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

SAMPLE #	ANALYSIS	GRAB OR COMP.	NUMBER OF CONTAINERS	SOIL/ WATER
MW1	TPH, BTXE	Grab	2	W
MW2	" "	"	2	W
MW3	" "	"	2	W
MW4	" "	"	2	W

RELINQUISHED BY*	TIME/DATE	RECEIVED BY*	TIME/DATE
1. Ray (KE1)	4:45 PM 4/29/88	Pat Burke	4:45 4/29/88
2.			
3.			
4.			

* STATE AFFILIATION NEXT TO SIGNATURE

REMARKS: