Mobil Oil Corporation

3800 WEST ALAMEDA AVENUE, SUITE 700
BURBANK, CALIFORNIA 91505-4331

April 25, 1988

Mr. Greg Zetner
Regional Water Quality Control Board
1111 Jackson Street, Room 6040
Oakland, California 94607

MOBIL OIL CORPORATION
S/S #10-EYD
1541 PARK STREET
ALAMEDA, CALIFORNIA

Dear Mr. Zetner:

Attached is our consultant's report for the referenced location.

During the installation of three groundwater monitoring wells, soil and water samples were obtained for analyses. Detectable levels of Total Petroleum Hydrocarbon and BTX concentrations were present in the soil and groundwater at well MW-1. Soil and groundwater samples obtained from wells MW-2 and MW-3 exhibited non-detectable levels of TPH and BTX concentrations.

Based on the data obtained, a monthly monitoring and quarterly sampling program will be implemented. Upon completion of the first quarter the program will be evaluated and additional investigation will be conducted if necessary.

Should you have any questions, please contact Jane Keith at (818) 953-2519.

Sincerely,

L. A. Miller

for R. J. Edwards
Region Environmental Manager

JMK:ars
attachment
11360

cc: Mr. T. M. Gerow
Alameda County
Environmental Health Department
470 27th Street, Room 324
Oakland, California 94612

Captain Marvin Helms
Alameda Fire Department
1300 Park Street
Alameda, California 94501

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

KEI-P87-097A-1
March 4, 1988

Mobil Oil Corporation
P.O. Box 127
Richmond, CA 94807

Attn: Mr. M. Younger

RE: Subsurface Investigation at
Mobil Service Station #10-EYD
1541 Park Street
Alameda, California

Dear Mr. Younger:

This report presents the results of our investigation for monitoring groundwater in accordance with our proposal dated October 13, 1987 for the referenced site. The purpose of the investigation was to assess the quality of the subsurface soil and groundwater at the site. The work performed consisted of the following:

1. Drilling and installation of three monitoring wells.

2. Soil sampling.

3. Groundwater purging/sampling.

4. Laboratory analyses.

5. Data analysis, interpretation and report preparation.

FIELD INVESTIGATION

On February 9, 1988, three (3) two-inch diameter groundwater monitoring wells (designated as MW-1, MW-2 and MW-3 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 three wells were drilled and completed to a total depth of 25 feet. Groundwater was encountered at depths ranging from 10.5 to 13 feet beneath the surface. One soil sample was taken at a depth of approximately 10 feet in each of the borings. 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 locking caps and padlocks.

The wells were developed and sampled on February 11, 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. After the monitoring data were collected, the wells were pumped dry and were allowed to recover. Twenty-five gallons of liquid was pumped from each of the wells. Water samples were collected after purging using a clean Teflon bailer. The samples 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) as gasoline, benzene, toluene, xylene and ethylbenzene (BTXE) concentrations using EPA methods 5020, 8015 and 8020. The soil sample from MW-3 was additionally analyzed for total oil and grease (TOG). The water sample from MW-3 was also analyzed for TPH as diesel and EPA 601 and 602 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 9.46 to 10.71 feet below the surface. Groundwater flow direction was calculated to be in an easterly direction. The subsurface formations at the site consist of fill to a depth of about 2.5 feet, followed by fine grained sand 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 the wells.**

2. **The water analyses show non-detectable levels of all constituents analyzed in MW-2 and MW-3. The water sample from MW-1 showed elevated levels of TPH as gasoline (95 ppm) and Benzene (2 ppm).**

Based on the levels of dissolved gasoline constituents found in well MW-1, KEI recommends the following:

1. Initiate immediately monthly monitoring and quarterly sampling of the wells for the next six months. The information gathered from this proposed monitoring/sampling program will assist in determining a need for further investigation and documenting potential degradation of the dissolved plume.

2. Water samples will be analyzed for total petroleum hydrocarbons (TPH), benzene, toluene and xylene (BTX).

3. Submit quarterly progress report.

Our proposal for monitoring/sampling of the wells is attached for your consideration.

Copies of this report should be sent to the Alameda County Department of Health, to 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

cc: Ms. J. Keith

TABLE - 1

Results of Soil Analyses - Parts Per Million (ppm)

Sample Number	Depth (feet)	TPH	Benzene	Toluene	Xylene	Ethylbenzene
MW-1	10	2.4	0.1	0.2	0.7	<0.1
MW-2	10	<1.0	<0.1	<0.1	<0.1	<0.1
MW-3	10	<1.0	<0.1	<0.1	<0.1	<0.1

Results of Water Analyses - parts per billion (ppb)

Sample Number	Depth (feet)	TPH	Benzene	Toluene	Xylene	Ethylbenzene
MW-1	9.50	95,000	2000	5900	10,000	1100
MW-2	10.208	<50	<0.5	<0.5	<0.5	<0.5
MW-3+	10.667	<50	<0.5	<0.5	<0.5	<0.5

* TPH = Total Petroleum Hydrocarbon

\+ MW-3 (water) had TPH diesel <50 ppb; TOG <50 ppb; EPA 601 and 602 constituents all non-dedectable.

KAPREALIAN ENGINEERING, INC.
Consulting Engineers
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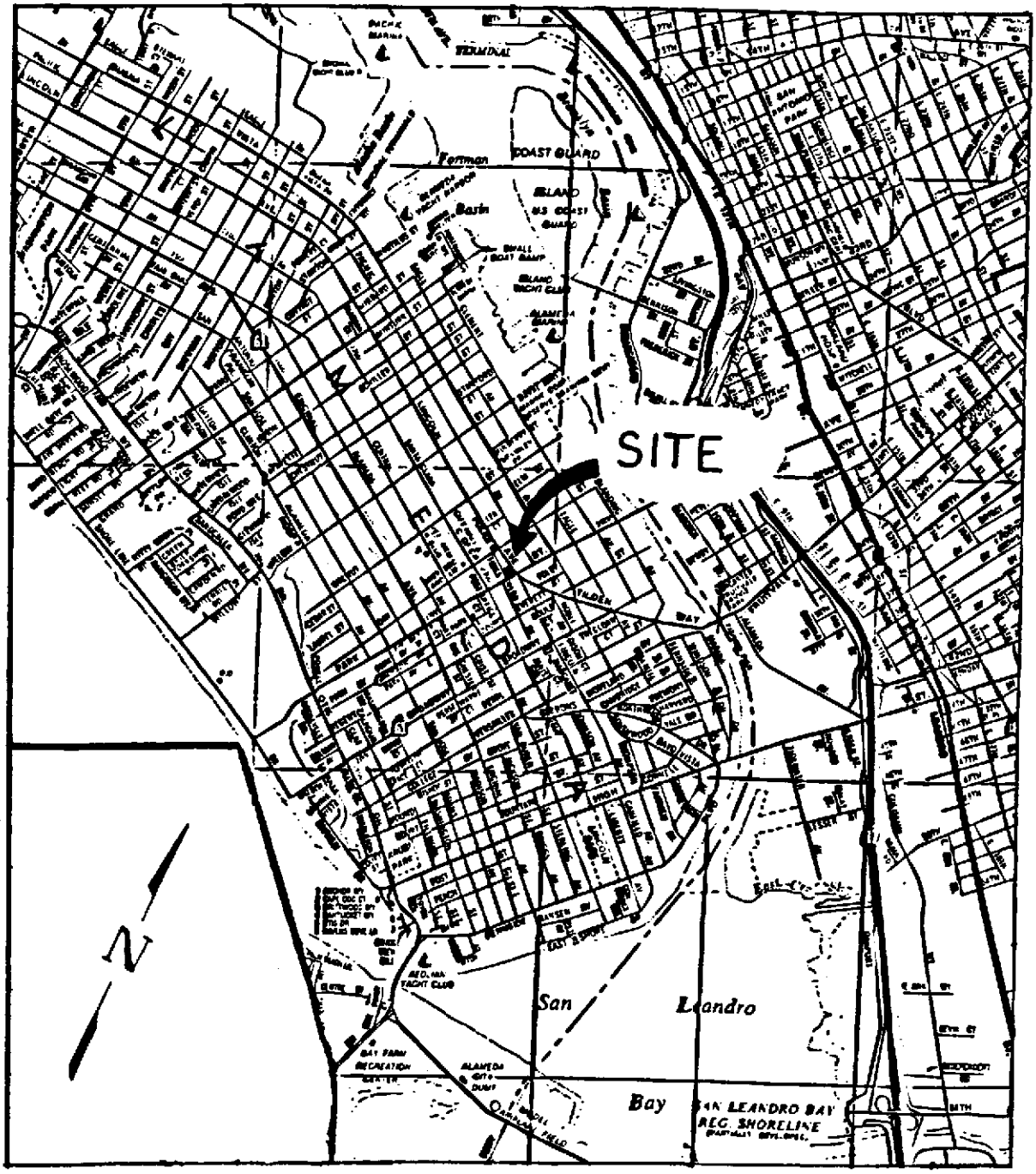
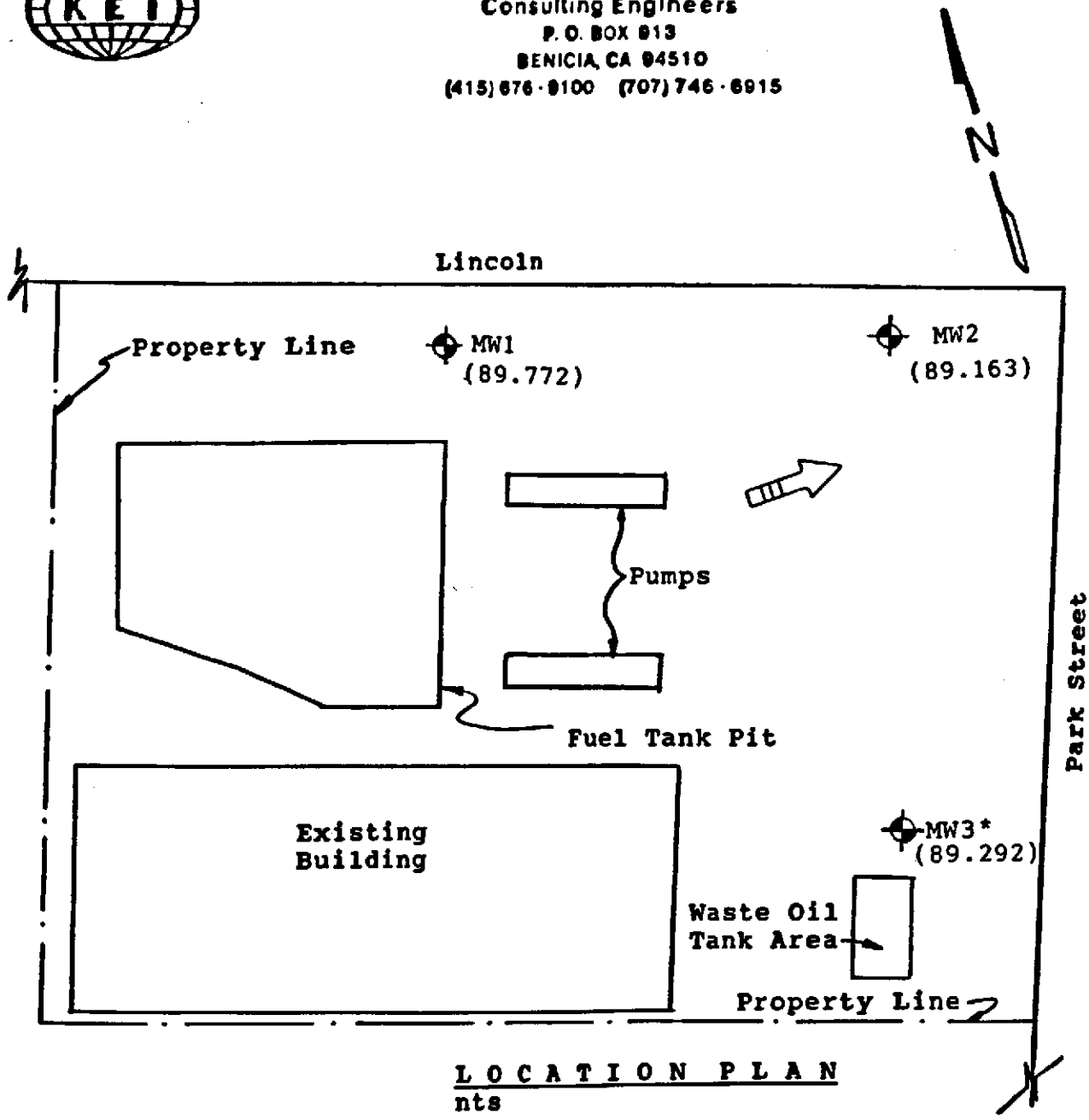


LOCATION PLAN

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



LOCATION PLAN
nts

Monitoring Well

Direction of groundwater flow (2-11-88)

( ) Groundwater elevation (feet)

* Surface elevation at top of MW3 assumed 100' as datum

MOBIL Service Station
1541 Park Street
Alameda, California

HAZCAT Mobile Organics Lab

733 Dartmouth Avenue
San Carlos, CA 94070 • (415) 591-5820

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

Date Sampled: 02-09-88
Date Received: 02-11-88
Date Reported: 02-16-88

Sample Number	Sample Description
028053	Mobil-Alameda Park & Lincoln MW-1 (10 Ft.) SOIL

ANALYSIS

	Detection Limit	Sample Results
	ppm	ppm
Total Petroleum Hydrocarbons as Gasoline	1	2.4
Benzene	0.1	0.1
Toluene	0.1	0.2
Xylenes	0.1	0.7
Ethylbenzene	0.1	<0.1

Note: Analysis was performed using EPA methods 5020 and 8015 with method 8020 used for BTX distinction.

HAZCAT

Ronald G. Evans
Lab Director

HAZCAT Mobile Organics Lab

733 Dartmouth Avenue
San Carlos, CA 94070 • (415) 591-5820

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

Date Sampled:02-09-88
Date Received:02-11-88
Date Reported:02-16-88

Sample Number	Sample Description
028054	Mobil-Alameda Park & Lincoln MW-2 (10 Ft.) SOIL

ANALYSIS

	Detection Limit	Sample Results
	ppm	ppm
Total Petroleum Hydrocarbons as Gasoline	1	<1.0
Benzene	0.1	<0.1
Toluene	0.1	<0.1
Xylenes	0.1	<0.1
Ethylbenzene	0.1	<0.1

Note: Analysis was performed using EPA methods 5020 and 8015 with method 8020 used for BTX distinction.

HAZCAT

Ronald G. Evans
Lab Director

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

Date Sampled: 02-09-88
Date Received: 02-11-88
Date Reported: 02-16-88

Sample Number	Sample Description
028055	Mobil-Alameda Park & Lincoln MW-3 (10 Ft.) SOIL

ANALYSIS

	Detection Limit	Sample Results
	ppm	ppm
Total Petroleum Hydrocarbons as Gasoline	1	<1.0
Benzene	0.1	<0.1
Toluene	0.1	<0.1
Xylenes	0.1	<0.1
Ethylbenzene	0.1	<0.1

Note: Analysis was performed using EPA methods 5020 and 8015 with method 8020 used for BTX distinction.

HAZCAT

Ronald G. Evans
Lab Director

HAZCAT Mobile Organics Lab

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

Date Sampled: 02-09-88
Date Received: 02-11-88
Date Reported: 02-29-88

Sample Number	Sample Description	Detection Limit	Gravimetric Waste Oil as Petroleum Oil
		ppm	ppm
	Mobil-Alameda Park & Lincoln		
028055	MW-3 (10 ft.)	50	<50

Note: Analysis was performed using EPA extraction method 3550 with Trichlorotrifluoroethane as solvent, and gravimetric determination by standard methods 503e

HAZCAT

Ronald G. Evans
Lab Director

RAPREALIAN ENGINEERING, INC.

CHAIN OF CUSTODY

SAMPLER: Jean Semandy (signature) DATE/TIME OF COLLECTION: 2/9/88 TURNAROUND TIME: 10 Days

SAMPLE DESCRIPTION AND PROJECT NUMBER: Mobil Alameda
Park & Lincoln

SAMPLE #	ANALYSIS	GRAB OR COMP.	NUMBER OF CONTAINERS	SOIL/ WATER
mw-1(10')	TPH, BTX	grab	1	S
mw-2(10')	TPH, BTX	grab	1	S
mw-3(10')	TPH BTX	grab	1	S

RELINQUISHED BY*	TIME/DATE	RECEIVED BY*	TIME/DATE
1. Jean Semandy KEI	2/9/88 @10:30	Bob Fisher Hargeat	10:35 2/11/88
2. B Fisher	12:20 2/11/88	R. Evans Hargeat	2/11/88 1220 PM
3.			
4.			

* STATE AFFILIATION NEXT TO SIGNATURE

REMARKS:

HAZCAT Mobile Organics Lab

733 Dartmouth Avenue
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Kaprealian Engineering Inc.
P.O. BOX 913
Benicia, CA 94510
Attn: Mardo Kaprealian
President

Date Sampled: 02-17-88
Date Received: 02-17-88
Date Reported: 02-18-88

Sample Number	Sample Description
028091	Mobil-Alameda Park & Lincoln MW-1 WATER

ANALYSIS

	Detection Limit	Sample Results
	ppb	ppb
Total Petroleum Hydrocarbons as Gasoline	50	95,000
Benzene	0.5	2,000
Toluene	0.5	5,900
Xylenes	0.5	10,000
Ethylbenzene	0.5	1,100

Note: Analysis was performed using EPA methods 5030 and 602.

HAZCAT

Ronald G. Evans

Ronald G. Evans
Lab Director

HAZCAT Mobile Organics Lab

733 Dartmouth Avenue
San Carlos, CA 94070 • (415) 591-5820

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

Date Sampled: 02-17-88
Date Received: 02-17-88
Date Reported: 02-28-88

Sample Number	Sample Description
028092	Mobil-Alameda Park & Lincoln W-2 WATER

ANALYSIS

	Detection Limit	Sample Results
	ppb	ppb
Total Petroleum Hydrocarbons as Gasoline	50	<50
Benzene	0.5	<0.5
Toluene	0.5	<0.5
Xylenes	0.5	<0.5
Ethylbenzene	0.5	<0.5

Note: Analysis was performed using EPA methods 5030 and 602.

HAZCAT

Ronald G. Evans
Lab Director

HAZCAT Mobile Organics Lab

733 Dartmouth Avenue
San Carlos, CA 94070 • (415) 591-5820

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

Date Sampled: 02-17-88
Date Received: 02-17-88
Date Reported: 02-28-88

Sample Number	Sample Description
028093	Mobil-Alameda Park & Lincoln W-3 WATER

ANALYSIS

	Detection Limit	Sample Results
	ppb	ppb
Total Petroleum Hydrocarbons as Gasoline	50	<50
Benzene	0.5	<0.5
Toluene	0.5	<0.5
Xylenes	0.5	<0.5
Ethylbenzene	0.5	<0.5

Note: Analysis was performed using EPA methods 5030 and 602.

HAZCAT

Ronald G. Evans
Lab Director

HAZCAT Mobile Organics Lab

733 Dartmouth Avenue
San Carlos, CA 94070 • (415) 591-5820

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

Date Sampled: 02-17-88
Date Received: 02-27-88
Date Reported: 02-29-88

Sample Number	Sample Description	Detection Limit	Total Petroleum Hydrocarbons as Diesel
		ppb	ppb
	Mobil-Alameda Park & Lincoln		
028093	MW-3	50	<50

Note: Analysis was performed using EPA methods 3510 and 8015

HAZCAT

Ronald G. Evans
Lab Director

HAZCAT Mobile Organics Lab

733 Dartmouth Avenue
San Carlos, CA 94070 • (415) 591-5820

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

Date Sampled: 02-17-88
Date Received: 02-17-88
Date Reported: 02-29-88

Sample Number	Sample Description	Detection Limit	Gravimetric Waste Oil as Petroleum Oil
		ppm	ppm
	Mobil-Alameda Park & Lincoln		
028093	MW-3	50	<50

Note: Analysis was performed using EPA extraction method 3510 with Trichlorotrifluoroethane as solvent, and gravimetric determination by standard methods 503e

HAZCAT

Ronald G. Evans

Ronald G. Evans
Lab Director

HAZCAT Mobile Organics Lab

733 Dartmouth Avenue
San Carlos, CA 94070 • (415) 591-5820

Kaprealian Engineering Inc.
P.O. BOX 913
Benicia, CA 94010
Attn: Mardo Kaprealian
President

Date Sampled:02-17-88
Date Received:02-17-88
Date Reported:02-28-88

Sample Number	Sample Description
028093	Mobil-Alameda Park & Lincoln MW-3 WATER

PRIORITY POLLUTANTS

VOLATILE ORGANIC COMPOUNDS

results in ppb

Benzene	<0.5	trans-1,2-Dichloroethane	<0.5
Bromomethane	<0.5	1,2-Dichloropropane	<0.5
Bromodichloromethane	<0.5	1,3-Dichloropropene	<0.5
Bromoform	<0.5	Ethylbenzene	<0.5
Carbon tetrachloride	<0.5	Methylene chloride	<0.5
Chlorobenzene	<0.5	1,1,2,2-Tetrachloroethane	<0.5
Cloroethane	<0.5	Tetrachloroethane	<0.5
2-Chloroethylvinyl ether	<0.5	1,1,1-Trichloroethane	<0.5
Chloroform	<0.5	1,1,2-Trichloroethane	<0.5
Chloromethane	<0.5	Trichloroethene	<0.5
Dibromochloromethane	<0.5	Toluene	<0.5
1,1-Dichloroethane	<0.5	Vinyl chloride	<0.5
1,2-Dichloroethane	<0.5	1,2-Dichlorobenzene	<0.5
1,1-Dichloroethene	<0.2	1,3-Dichlorobenzene	<0.5
		1,4-Dichlorobenzene	<0.5

HAZCAT

Ronald G. Evans
Lab Director

NOTE: Analysis was performed using EPA methods 601 and 602

RAPREALIAN ENGINEERING, INC.

CHAIN OF CUSTODY

SAMPLER: Ray (KEI) (signature) DATE/TIME OF COLLECTION: 2/17/88 TURNAROUND TIME: 10 DAYS

SAMPLE DESCRIPTION AND PROJECT NUMBER: MOBIL ALAMEDA PARK / LINCOLN

SAMPLE #	ANALYSIS	GRAB OR COMP.	NUMBER OF CONTAINERS	SOIL/ WATER
MW 1	TPH, BTX	Grab	2	W
MW 2	TPH, BTX	Grab	2	W
MW 3	TPH, BTX	Grab	4 + 1 Liter	W
	TPH as Diesel			
	601 - 602			
	TOG			

RELINQUISHED BY*	TIME/DATE	RECEIVED BY*	TIME/DATE
1. Ray KEI	17:15 2/17/88	Gregory Hagar	2/17/88 1315
2.			
3.			
4.			

* STATE AFFILIATION NEXT TO SIGNATURE

REMARKS:

Exploratory Boring Log

Project No.	Boring & Casing Diameter	Logged By
KEI-P87-097A	8 in. 2 in csg.	JS
Project Name	**Casing Elevation**	**Date Drilled**
Mobil #10-EYD		2-9-88
Boring No.	**Hollow-stem Flight Auger**	**Depth to Groundwater**
MW-1		10.5 ft.

Penetration blows/ft	G. W. level	Depth (ft) Samples	Litho-graphy USCS	Description
		0		ASPHALT & BASEROCK
				FILL
			SW	SAND: fine grained, very well sorted, little to no fines, dry
		5		
			SC	clayey sand at 8', low plasticity
31	▼	10		moderate odor in sample, dark greenish grey 5GY 4/1
		15		
		20		

Exploratory Boring Log

Project No. KEI-P87-097A	Boring & Casing Diameter	Logged By
Project Name Mobil #10-EYD	Casing Elevation	Date Drilled 2-9-88
Boring No. MW-1	Hollow-stem Flight Auger	Depth to Groundwater

Penetration blows/ft	G. W. level	Depth (ft) Samples	Lithography USCS	Description
		20		SAND: as above
		25		TOTAL DEPTH 25 FEET
		30		
		35		
		40		

WELL DETAILS

PROJECT NAME: Mobil S/S #10-EYD 1541 Park Ave. Alameda, CA

BORING/WELL NO. MW-1

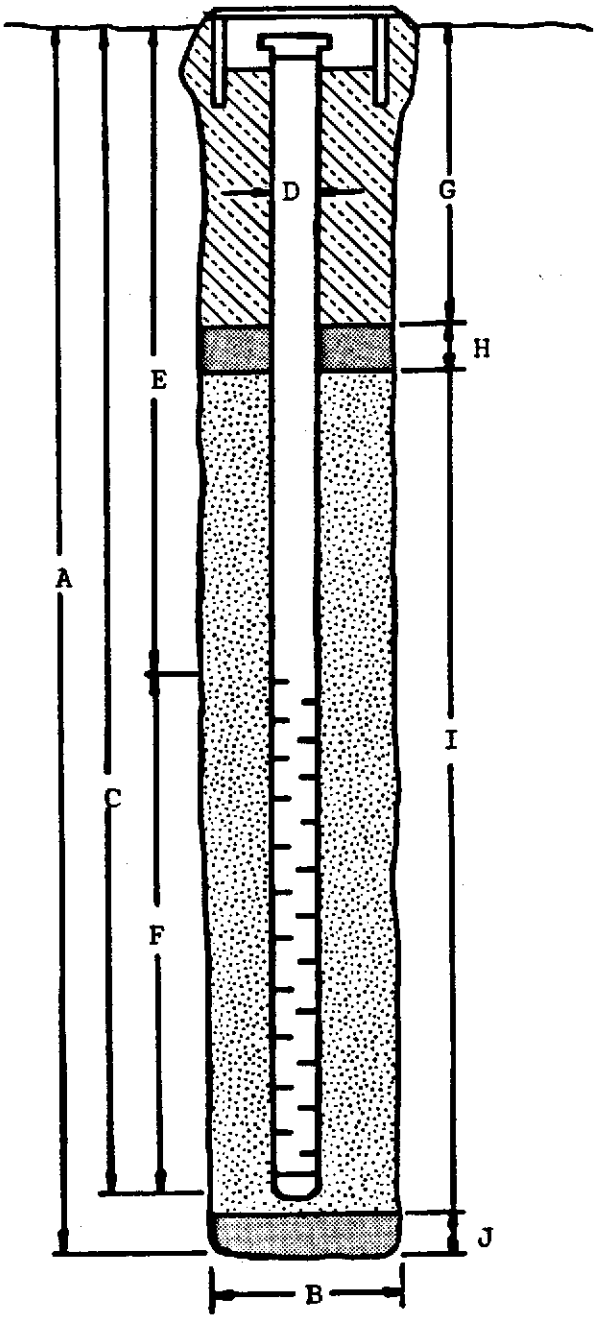
PROJECT NUMBER: KEI-P87-097A

CASING ELEVATION: _____

WELL PERMIT NO.: 88010

SURFACE ELEVATION: _____

G-5 Vault Box



A. Total Depth: 25'

B. Boring Diameter: 8"

Drilling method: Hollow stem

C. Casing Length: 25 '

Material: Schedule 40 PVC

D. Casing Diameter: 2 in.

E. Depth to Perforations: 8 ft.

F. Perforated Length: 17 ft.

Perforated Interval: 25 to 8 ft.

Perforation Type: slot

Perforation Size: 0.02 in.

G. Surface Seal: 6 to 0 ft.

Seal Material: concrete

H. Seal: 7 to 6 ft.

Seal Material: bentonite

I. Gravel Pack: 25 to 7 ft.

Pack Material: Monterey sand

Size: No. 3

J. Bottom Seal: none

Seal Material: _____

Exploratory Boring Log

Project No.	Boring & Casing Diameter	Logged By
KEI-P87-097A	8 in. 2 in. csg.	JS
Project Name	**Casing Elevation**	**Date Drilled**
Mobil #10-EGY		2-9-88
Boring No.	**Hollow-stem Flight Auger**	**Depth to Groundwater**
MW-2		11 ft.

Penetration blows/ft	G. W. level	Depth (ft) Samples	Lithography USCS	Description
		0		ASPHALT & BASEROCK FILL
			SW	SAND: brown 10YR 4/3, fine grained, very well sorted, no fines, dry
		5		
39		10		poor sample recovery
				brown 10YR 5/7
		15		
		20		

Exploratory Boring Log

Project No. KEI-P87-097A	Boring & Casing Diameter	Logged By
Project Name Mobil #10-EGY	Casing Elevation	Date Drilled 2-9-88
Boring No. MW-2	Hollow-stem Flight Auger	Depth to Groundwater

Penetration blows/ft	G. W. level	Depth (ft) Samples	Lithography USCS	Description
		20		SAND : as above
		25		TOTAL DEPTH 25 FEET
		30		
		35		
		40		

WELL DETAILS

PROJECT NAME: MOBIL S/S #10-EGY 1541 Park Ave Alameda, CA

BORING/WELL NO. MW-2

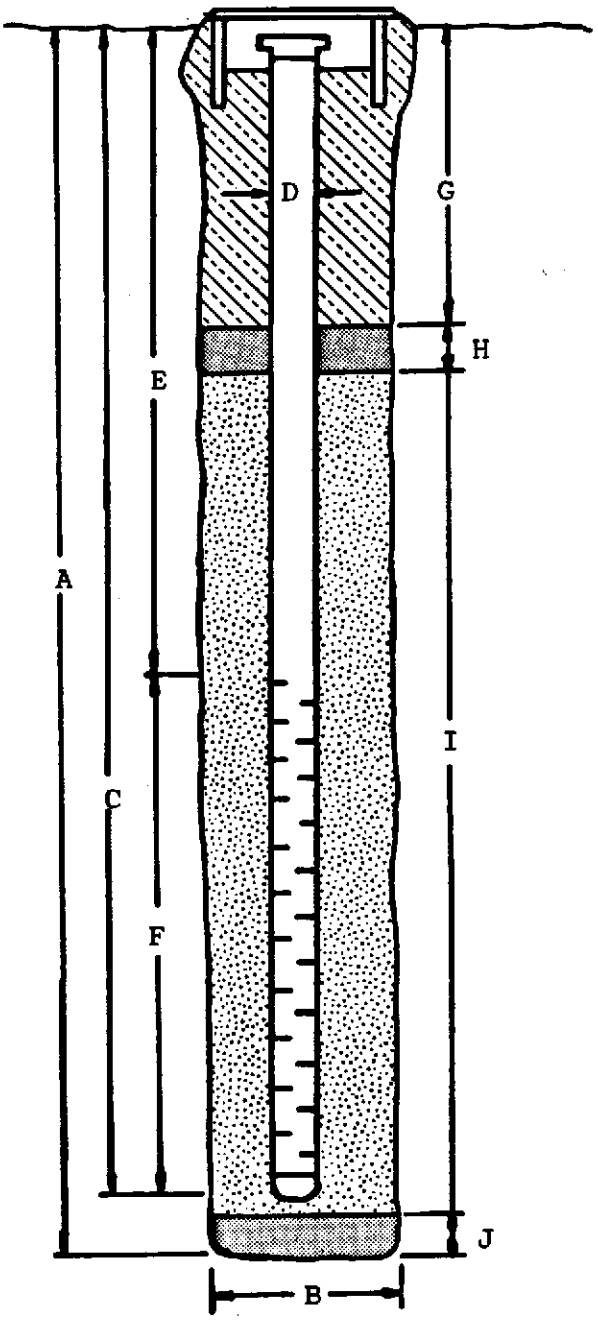
PROJECT NUMBER: KEI-P87-097A

CASING ELEVATION:

WELL PERMIT NO.: 88010

SURFACE ELEVATION:

G-5 Vault Box



A. Total Depth: 25 ft.

B. Boring Diameter: 8 in.

Drilling method: Hollow stem

C. Casing Length: 25 ft.

Material: Schedule 40 PVC

D. Casing Diameter: 2 in.

E. Depth to Perforations: 8 ft.

F. Perforated Length: 17 ft.

Perforated Interval: 25 to 8 ft.

Perforation Type: slot

Perforation Size: 0.02 in.

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Seal Material: concrete

H. Seal: 7 to 6 ft.

Seal Material: bentonite

I. Gravel Pack: 25 to 7 ft.

Pack Material: Monterey sand

Size: No. 3

J. Bottom Seal: none

Seal Material:

Exploratory Boring Log

Project No.	Boring & Casing Diameter	Logged By
KEI-P87-097A	8 in. 2 in. csg.	JS
Project Name	**Casing Elevation**	**Date Drilled**
Mobil #10-EDG		2-9-88
Boring No.	**Hollow-stem Flight Auger**	**Depth to Groundwater**
MW-3		13.5

Penetration blows/ft	G. W. level	Depth (ft) Samples	Lithography USCS	Description
		0		ASPHALT & BASEROCK FILL
			SW	SAND: dark reddish brown 5YR 3/3, fine grained, very well sorted, no fines, dry
		5		
45		10		no odor
	▼			
		15		
		20		

Exploratory Boring Log

Project No.	Boring & Casing Diameter	Logged By
KEI-P87-097A	8 in. 2 in. csg.	JS
Project Name	**Casing Elevation**	**Date Drilled**
Mobil #10-EGY		2-9-88
Boring No.	**Hollow-stem Flight Auger**	**Depth to Groundwater**
MW-3		

Penetration blows/ft	G. W. level	Depth (ft) Samples	Litho-graphy USCS	Description
		20		SAND : as above
		25		TOTAL DEPTH 25 FEET
		30		
		35		
		40		

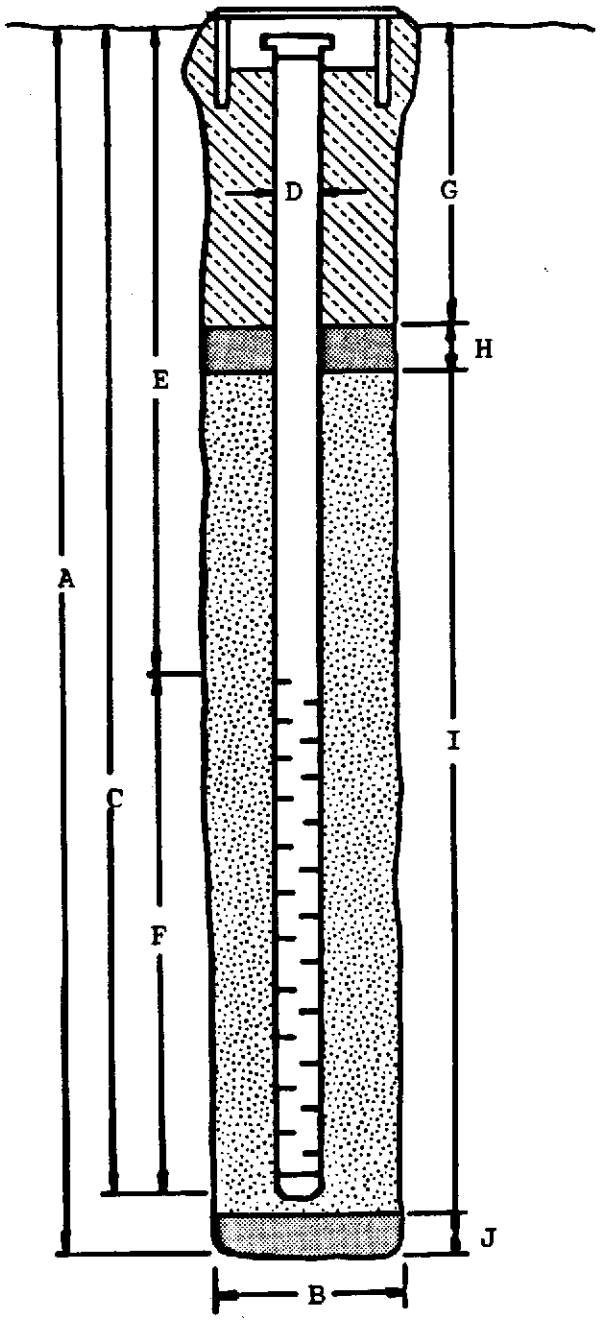
WELL DETAILS

PROJECT NAME: Mobil S/S #10-EGY BORING/WELL NO.MW-

PROJECT NUMBER: KEI-P87-097A CASING ELEVATION:

WELL PERMIT NO.: 88010 SURFACE ELEVATION:

G-5 Vault Box



A. Total Depth: 25 feet

B. Boring Diameter: 8 in.

Drilling method: Hollow stem

C. Casing Length: 25 ft.

Material: Schedule 40 PVC

D. Casing Diameter: 2 in.

E. Depth to Perforations: 10 ft.

F. Perforated Length: 15 ft.

Perforated Interval: 25 to 10 ft.

Perforation Type: slot

Perforation Size: 0.02 in.

G. Surface Seal: 7 to 0 ft.

Seal Material: concrete

H. Seal: 8 to 7 ft.

Seal Material: bentontie

I. Gravel Pack: 25 to 8 ft.

Pack Material: Monterey sand

Size: No. 3

J. Bottom Seal: none

Seal Material:

Key To Boring Logs

PRIMARY DIVISIONS			GROUP SYMBOL	SECONDARY DIVISIONS
COARSE GRAINED SOILS — MORE THAN HALF OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVELS — MORE THAN HALF OF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE	CLEAN GRAVELS (LESS THAN 5% FINES)	GW	Well graded gravels, gravel-sand mixtures, little or no fines
			GP	Poorly graded gravels or gravel-sand mixtures, little or no fines.
		GRAVEL WITH FINES	GM	Silty gravels, gravel-sand-silt mixtures, non-plastic fines.
			GC	Clayey gravels, gravel-sand-clay mixtures, plastic fines.
	SANDS — MORE THAN HALF OF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE	CLEAN SANDS (LESS THAN 5% FINES)	SW	Well graded sands, gravelly sands, little or no fines.
			SP	Poorly graded sands or gravelly sands, little or no fines.
		SANDS WITH FINES	SM	Silty sands, sand-silt mixtures, non-plastic fines.
			SC	Clayey sands, sand-clay mixtures, plastic fines.
FINE GRAINED SOILS — MORE THAN HALF OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS — LIQUID LIMIT IS LESS THAN 50%		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity.
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
			OL	Organic silts and organic silty clays of low plasticity.
	SILTS AND CLAYS — LIQUID LIMIT IS GREATER THAN 50%		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts.
			CH	Inorganic clays of high plasticity, fat clays.
			OH	Organic clays of medium to high plasticity, organic silts.
HIGHLY ORGANIC SOILS			Pt	Peat and other highly organic soils.

DEFINITION OF TERMS

	U.S. STANDARD SERIES SIEVE				CLEAR SQUARE SIEVE OPENINGS			
	200	40	10	4	3/4"	3"	12"	
SILTS AND CLAYS	SAND			GRAVEL		COBBLES	BOULDERS	
	FINE	MEDIUM	COARSE	FINE	COARSE			

GRAIN SIZES

SANDS AND GRAVELS	BLOWS/FOOT†
VERY LOOSE	0 - 4
LOOSE	4 - 10
MEDIUM DENSE	10 - 30
DENSE	30 - 50
VERY DENSE	OVER 50

RELATIVE DENSITY

SILTS AND CLAYS	STRENGTH‡	BLOWS/FOOT†
VERY SOFT	0 - 1/4	0 - 2
SOFT	1/4 - 1/2	2 - 4
FIRM	1/2 - 1	4 - 8
STIFF	1 - 2	8 - 16
VERY STIFF	2 - 4	16 - 32
HARD	OVER 4	OVER 32

CONSISTENCY

†Number of blows of 140 pound hammer falling 30 inches to drive a 2 inch O.D. (1-3/8 inch I.D.) split spoon (ASTM D-1586).

‡Unconfined compressive strength in tons/sq. ft. as determined by laboratory testing or approximated by the standard penetration test (ASTM D-1586), pocket penetrometer, torvane, or visual observation.

UNIFIED SOIL CLASSIFICATION SYSTEM
(ASTM D-2487)

Soil Color derived from the MUNSELL Soil Color Charts

KAPREALIAN ENGINEERING, INC.
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BENICIA, CA 94510
(415) 676 - 9100 (707) 746 - 6915

KEI-P87-097A
October 13, 1987

Proposal

To

MOBIL OIL CORPORATION

For

Mobil S/S #10-EYD

At

1541 Park Street

Alameda, California

Submitted By:

Mardo Kaprealian
President

1.0 INTRODUCTION

Kaprealian Engineering, Inc. (KEI) is pleased to submit this proposal for a preliminary subsurface investigation for the Mobil Service Station located at 1541 Park Street, Alameda, California. The proposed investigation will be conducted in accordance with the California Regional Water Quality Control Board (CRWQCB) Fuel Leak Guidelines.

2.0 SCOPE OF WORK

Per our recommendations described in our report dated September 18, 1987, additional investigation is necessary to comply with the State and Local Regulatory Agencies regulation. Therefore, per the CRWQCB guidelines, KEI proposes to perform the work as outlined below:

2.1 Coordination with the Local Agencies

2.2 Installation and construction of three (3) monitoring wells as shown on attached sketch.

2.3 During the well construction, soil samples will be collected at five foot intervals starting at a depth of ten (10) feet. Soil sampling will continue until the first water table is encountered.

2.4 Three monitoring wells (two inch diameter) will be installed. The monitoring wells will be observed for free product, sheen and odor. Water samples will be taken and analyzed for total hydrocarbons, Benzene, Toluene and Xylene per the CRWQCB guidelines.

2.5 Results of the samples will be evaluated as to the current and potential impact on the ground water.

2.6 A technical report will be submitted within thirty (30) days of completion of the soil and water sampling. The report will document the field work performed, chemical analyses of soil/groundwater, conclusions and recommendations.

3.0 SCHEDULING

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

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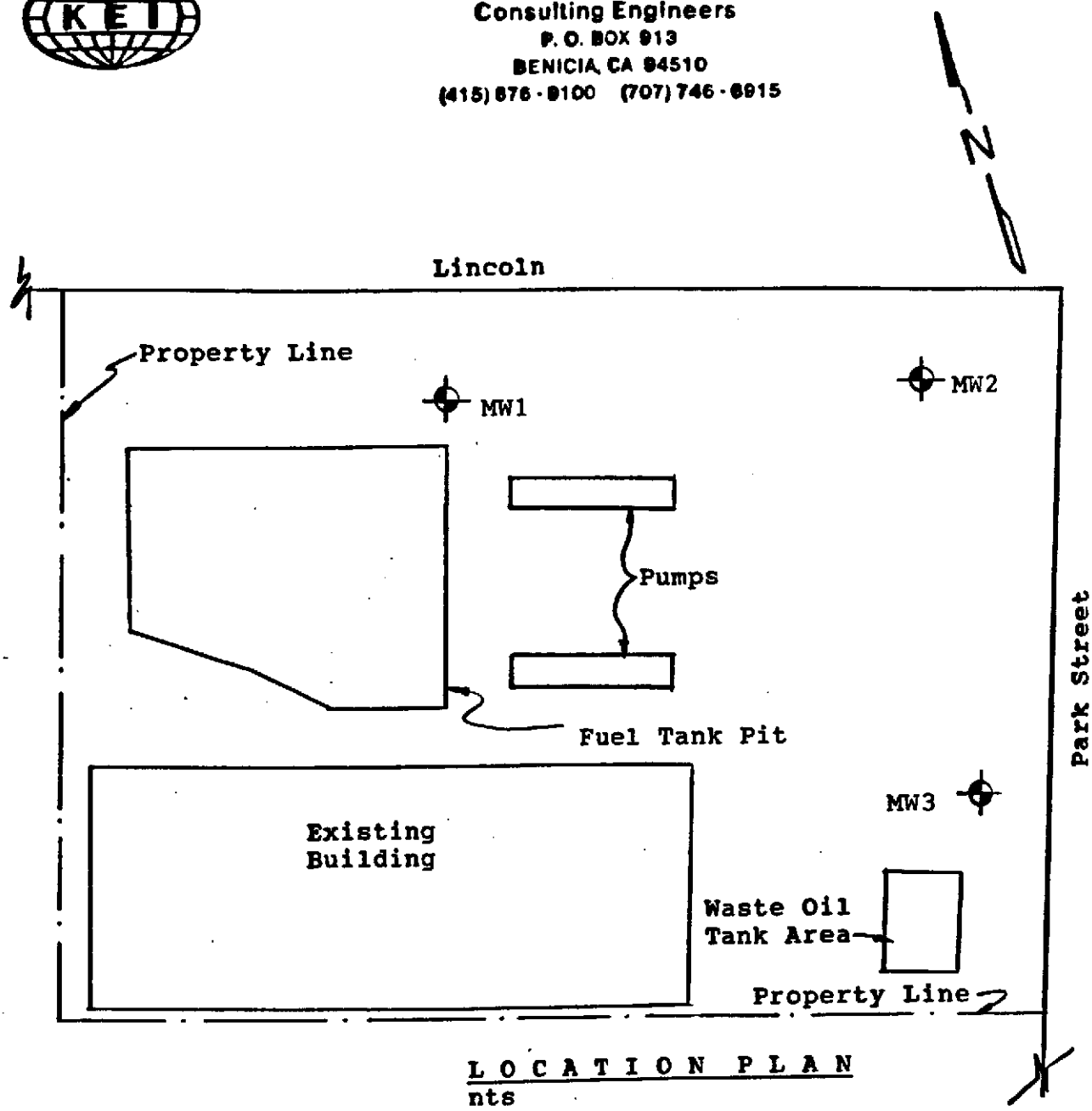

LOCATION PLAN
nts

Monitoring Well

MOBIL Service Station
1541 Park Street
Alameda, California