

KAPREALIAN ENGINEERING
INCORPORATED

KEI-P93-0603.QR3
October 24, 1995

Paradiso Mechanical, Inc.
P.O. Box 1836
2600 Williams Street
San Leandro, California 94577

Attention: Mr. Rick Montesano

RE: Quarterly Report
Berkeley Land Company
51st Street & Telegraph Avenue
Oakland, California

Dear Mr. Montesano:

This Kaprealian Engineering, Inc. (KEI) report presents the results of the recent quarter of monitoring and sampling of the monitoring wells at the referenced site. The wells are currently monitored and sampled on a quarterly basis. This report covers the work performed by KEI during August and September of 1995.

BACKGROUND

The subject property was reported to have contained a 'street car barn' for the "Key System," a former regional public transit system. All buildings and above ground improvements have been removed from the property. Five on-site monitoring wells (MW1 through MW5) have been installed. Twenty-one exploratory borings (EB1 through EB6A, and EB6B through EB20) were drilled and sampled by KEI at the site on July 26 through July 30, 1993. Soil sampling and excavation was conducted by KEI at and around the locations of seven of these exploratory borings (EB3, EB6A, EB6B, EB8, EB15, EB16, and EB20) during September and October of 1993. Approximately 1,500 gallons of ground water were pumped from the excavation in the vicinity of exploratory boring EB3. The water was properly transported and disposed of off-site.

KEI's extensive file reviews at the Regional Water Quality Control Board (RWQCB) and site reconnaissance indicate that a number of nearby sites, including two dry cleaners, two service stations, and a public utility facility, are situated within 100 to 1,000 feet of the subject Berkeley Land Company (BLC) site. The file reviews indicate that a regional volatile organic compounds (VOC) problem appears to exist in the upgradient vicinity of the subject BLC property.

A site description, detailed background information including a summary of all of the soil and ground water subsurface investiga-

tion/remediation work conducted to date, site hydrogeologic conditions, and tables that summarize all of the soil and ground water sample analytical results are presented in KEI's reports (KEI-P93-0603.R2 and "Site Investigation Summary Report") dated November 9, 1993, and February 8, 1994, respectively.

In a letter dated March 2, 1994, the Alameda County Health Care Services (ACHCS) Agency noted that the site no longer posed a threat to human health. The ACHCS also acknowledged the potential for a regional VOC contaminant plume upgradient of the BLC property and directed the implementation of a quarterly ground water monitoring and sampling plan for the subject site, for one year, in order to address this issue. On March 16, 1994, KEI submitted a work plan/proposal (KEI-P93-0603.P3) for the implementation of a ground water monitoring and sampling program.

RECENT FIELD ACTIVITIES

The five wells (MW1 through MW5) were monitored and sampled three times during the quarter by MPDS Services, Inc. of Concord, California. The water samples collected on the first sampling event (August 24, 1995) were inadvertently not analyzed for total oil and grease (TOG), and therefore the wells were re-sampled on September 8, 1995, and the samples were analyzed for TOG. Following this work, a review of the analytical results for benzene, toluene, ethylbenzene, and xylenes (BTEX) for the first sampling event (August 24, 1995) showed relatively low and consistent concentrations of toluene and xylenes. Due to the fact that the toluene and xylenes concentrations were inconsistent and anomalous with previous results, KEI subsequently again re-sampled the wells on September 18, 1995, and the samples were analyzed for TPH as gasoline and BTEX.

During monitoring, the wells were checked for depth to water and the presence of free product. Prior to sampling, the wells were also checked for the presence of a sheen. No free product or sheen was noted in any of the wells during the quarter. The monitoring data collected this quarter are summarized in Table 1.

Water samples were collected from the wells on August 24, September 8, and September 18, 1995. Prior to sampling, the wells were each purged of between 5.5 and 12 gallons of water by the use of a pump. During purging operations, the field parameters pH, temperature, and electrical conductivity were recorded and are presented in Table 2. Once the field parameters were observed to stabilize and a minimum of approximately four casing volumes had been removed from each well, water samples were then collected by the use of a clean Teflon bailer. The samples were decanted into clean VOA

vials and/or one-liter amber bottles, as appropriate, which were then sealed with Teflon-lined screw caps and stored in a cooler, on ice, until delivery to the state-certified laboratory.

HYDROLOGY

The measured depth to ground water at the site on September 18, 1995, ranged between 11.85 and 17.12 feet below the top of the well casings. Based on the water level data gathered on that date, the ground water flow direction appeared to be complex, but generally to the west, as shown on the attached Figure 1. The flow direction reported this quarter is generally similar to the previous flow directions. The hydraulic gradient at the central part of the site on September 18, 1995, was approximately 0.008 in the predominant direction of flow, based on the water level data collected from the monitoring wells prior to purging.

ANALYTICAL RESULTS

The ground water samples were analyzed at Sequoia Analytical Laboratory and were accompanied by properly executed Chain of Custody documentation. The samples were analyzed for total petroleum hydrocarbons (TPH) as gasoline by EPA method 5030/modified 8015, BTEX by EPA method 8020, TOG by Standard Methods 5520B&F, and for EPA method 8010 constituents.

The ground water sample analytical results are summarized in Tables 3 and 4. Copies of the laboratory analytical results and Chain of Custody documentation are attached to this report.

DISCUSSION AND RECOMMENDATIONS

Based on the analytical results of the ground water samples collected and evaluated to date, and no evidence of free product or sheen in any of the wells, KEI recommends the continuation of the current monitoring and sampling program. The five wells (MW1 through MW5) are monitored and sampled quarterly. Ground water samples are analyzed for TPH as gasoline, BTEX, TOG, and EPA method 8010 constituents.

Berkeley Land Company is currently in the process of commercial development of the subject property with the building of a shopping center. Redevelopment of this property was previously approved by the ACHCS in their letter dated March 2, 1994. The architectural plans required the grading of the property. The locations of the five existing monitoring wells have been accurately surveyed. In the event the wells are buried or damaged, they can be relocated for repair or proper destruction and replaced as required. As a

further contingency measure, ground water monitoring and sampling was conducted earlier in the fourth quarter than previously scheduled. This was done in accordance with the verbal recommendations by Ms. Madhulla Logan of the ACHCS.

It is KEI's understanding that during site grading activities, at least two underground fuel storage tanks were encountered by the contractor. The tanks were subsequently removed, and soil samples were collected by another consulting firm. Once the data is received, it is KEI's understanding that the consulting firm that collected the soil samples will submit a technical report summarizing the results.

DISTRIBUTION

A copy of this report should be sent to Ms. Madhulla Logan of the ACHCS, and to the RWQCB, San Francisco Bay Region.

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 analyses obtained from a state-certified laboratory. We have analyzed these 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, regarding the above, including laboratory analyses, except that our services have been performed in accordance with generally accepted professional principles and practices existing for such work.

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If you have any questions regarding this report, please do not hesitate to call me at (510) 602-5100.

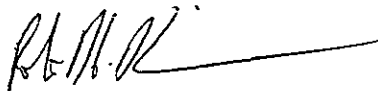
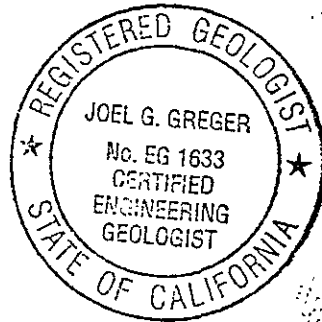
Sincerely,

Kaprealian Engineering, Inc.



Joel G. Greger, C.E.G.
Senior Engineering Geologist

License No. EG 1633
Exp. Date 8/31/96



Robert H. Kezerian
Project Manager

/jad

Attachments: Tables 1 through 4
Location Map
Figures 1 & 2
Laboratory Analyses
Chain of Custody documentation

TABLE 1
 SUMMARY OF MONITORING DATA

<u>Well #</u>	<u>Ground Water Elevation (feet)</u>	<u>Depth to Water (feet)♦</u>	<u>Product Thickness (feet)</u>	<u>Sheen</u>	<u>Water Purged (gallons)</u>	<u>Well Depth (feet)♦</u>
(Monitored and Sampled on September 18, 1995)						
MW1	99.12	16.04	0	No	5.5	23.45
MW2	96.07	14.70	0	No	6.5	24.00
MW3	94.72	17.12	0	No	8.5	28.94
MW4	96.15	11.85	0	No	12	29.07
MW5	93.87	13.09	0	No	10.5	28.59
(Monitored and Sampled on September 8, 1995)						
MW1	99.41	15.75	0	No	6	23.97
MW2	96.24	14.53	0	No	6	24.10
MW3	95.79	16.05	0	No	5.5	28.63
MW4	96.84	11.16	0	No	12	29.06
MW5	94.84	12.12	0	No	11.5	28.63
(Monitored and Sampled on August 24, 1995)						
MW1	99.18	15.98	0	No	6	23.85
MW2	96.13	14.64	0	No	6.5	23.92
MW3	94.34	17.50	0	No	8	28.91
MW4	96.77	11.23	0	No	12	29.11
MW5	93.91	13.05	0	No	12	28.57
(Monitored and Sampled on May 23, 1995)						
MW1	99.13	16.03	0	No	5.5	23.87
MW2	96.25	14.52	0	No	6.5	23.97
MW3	94.88	16.96	0	No	8.5	28.94
MW4	97.13	10.87	0	No	12.5	29.13
MW5	94.06	12.90	0	No	11	28.58
(Monitored and Sampled on February 25, 1995)						
MW1	99.24	15.92	0	No	5.5	23.86
MW2	96.84	13.92	0	No	7.0	23.92
MW3	94.95	16.89	0	No	8.5	28.91
MW4	97.64	10.86	0	No	13.0	29.11
MW5	94.08	12.88	0	No	11.0	28.56

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TABLE 1 (Continued)
SUMMARY OF MONITORING DATA

<u>Well #</u>	<u>Top of Casing Elevation (feet)*</u>
MW1	115.16
MW2	110.77
MW3	111.84
MW4	108.00
MW5	106.96

- ◆ The depth to water level and total well depth measurements were taken from the top of the well casings.
- * Based on the City of Oakland Benchmark #2874 (elevation = 116.41 feet MSL).

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TABLE 2

RECORD OF THE TEMPERATURE, CONDUCTIVITY, AND pH VALUES
 IN THE MONITORING WELLS DURING PURGING AND PRIOR TO SAMPLING

(Measured on September 18, 1995)

<u>Well #</u>	<u>Gallons per Casing Volume</u>	<u>Time</u>	<u>Gallons Purged</u>	<u>Casing Volumes Purged</u>	<u>Temperature (°F)</u>	<u>Conductivity ([μmhos/cm]x100)</u>	<u>pH</u>
MW1	1.26	13:45	0	0	86.8	5.73	7.21
			1.5	1.19	80.4	5.24	7.30
			2.5	1.98	74.5	5.24	7.28
			4	3.17	71.8	4.96	7.23
			5.5	4.37	71.4	4.93	7.22
		13:50					
MW2	1.58	10:45	0	0	76.4	8.23	6.67
			1.5	0.95	75.6	3.97	6.86
			3	1.90	71.5	3.42	6.78
			4.5	2.85	70.6	3.35	6.72
			6.5	4.11	70.2	3.31	6.64
		10:50					
MW3	2.01	11:25	0	0	88.6	5.38	6.53
			2	1.00	77.2	6.53	6.55
			4	1.99	73.6	6.25	6.57
			6	2.99	72.4	5.97	6.54
			8.5	4.23	72.3	5.87	6.53
		11:30					
MW4	2.93	12:05	0	0	79.6	6.92	6.80
			3	1.02	72.9	6.21	6.85
			6	2.05	71.7	5.99	6.77
			9	3.07	71.2	5.84	6.65
			12	4.10	71.4	5.94	6.61
		12:15					
MW5	2.64	12:55	0	0	79.6	6.73	6.64
			2.5	0.95	80.9	7.07	6.78
			5	1.89	82.3	7.17	6.84
			7.5	2.84	84.7	7.44	6.84
			10.5	3.98	85.5	7.61	6.90
		13:05					

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TABLE 3
 SUMMARY OF LABORATORY ANALYSES
 WATER

<u>Date</u>	<u>Sample Number</u>	<u>TOG</u>	<u>TPH as Gasoline</u>	<u>Benzene</u>	<u>Toluene</u>	<u>Ethyl-benzene</u>	<u>Xylenes</u>
9/08/95 & 9/18/95▲	MW1	ND	81♦	ND	ND	ND	ND
	MW2	ND	ND	ND	ND	ND	ND
	MW3	ND	ND	ND	ND	ND	ND
	MW4	ND	ND	ND	ND	ND	ND
	MW5	ND	ND	ND	ND	ND	ND
8/24/95▲	MW1	--	63	ND	1.1	ND	0.86
	MW2	--	ND	ND	0.57	ND	0.56
	MW3	--	ND	ND	0.50	ND	0.70
	MW4	--	ND	ND	0.53	ND	0.60
	MW5	--	ND	ND	0.81	ND	0.72
5/23/95	MW1	ND	100♦	ND	ND	ND	ND
	MW2	ND	ND	ND	ND	ND	ND
	MW3	ND	ND	ND	ND	ND	ND
	MW4	ND	ND	ND	ND	ND	ND
	MW5	ND	ND	ND	ND	ND	ND
2/25/95	MW1	ND	81♦	ND	ND	ND	ND
	MW2	ND	ND	ND	ND	ND	ND
	MW3	ND	ND	ND	ND	ND	ND
	MW4	ND	ND	ND	ND	ND	ND
	MW5	ND	ND	ND	ND	ND	ND
6/29/93	MW1*	ND	76♦	ND	ND	ND	ND
	MW2*	ND	ND	ND	ND	ND	ND
	MW3*	ND	ND	ND	ND	ND	ND
	MW4*	ND	ND	ND	ND	ND	ND
	MW5*	ND	ND	0.64	ND	ND	ND

TABLE 3 (Continued)

SUMMARY OF LABORATORY ANALYSES
WATER

- ◆ Sequoia Analytical Laboratory reported that the hydrocarbons detected did not appear to be gasoline.
- * TPH as diesel and all EPA method 8270 constituents were non-detectable.
- ▲ TOG was analyzed on September 8, 1995, instead of August 24, 1995. Furthermore, the analytical results of the ground water samples (Toluene and Xylenes) collected on August 24, 1995, were inconsistent with the previous analytical results for these wells. Therefore, the wells were re-sampled on September 18, 1995.

ND = Non-detectable.

-- Indicates analysis was not performed.

Results are in micrograms per liter ($\mu\text{g/L}$), except for TOG, which is in milligrams per liter (mg/L).

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TABLE 4
SUMMARY OF LABORATORY ANALYSES
WATER

<u>Date</u>	<u>Sample Number</u>	<u>cis-1,2-Dichloro-ethene</u>	<u>Tetrachloro-ethene</u>	<u>Trichloro-ethene</u>	<u>Vinyl Chloride</u>	<u>Chloroform</u>
8/24/95	MW1	3.4	240	5.0	ND	3.2
	MW2▲	ND	28	1.1	ND	15
	MW3▲▲	5.1	50	9	ND	0.78
	MW4	ND	9.7	ND	ND	2.4
	MW5▲▲	17	49	11	ND	ND
5/23/95	MW1	ND	450	ND	ND	ND
	MW2	ND	45	ND	ND	ND
	MW3	5.1	74	9.1	ND	ND
	MW4	ND	8.8	ND	ND	ND
	MW5	16	58	11	ND	ND
6/29/93	MW1	ND	250	ND	ND	ND
	MW2	ND	78	ND	ND	ND
	MW3	5.5	130	11	ND	ND
	MW4	ND	16	0.68	ND	ND
	MW5	24	17	5.9	3.0	ND
2/25/95	MW1	ND	360	ND	ND	ND
	MW2	ND	41	1.9	ND	ND
	MW3	6.9	52	9.4	ND	ND
	MW4	ND	6.4	ND	ND	ND
	MW5	8.3	25	6.6	ND	ND

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TABLE 4 (Continued)

SUMMARY OF LABORATORY ANALYSES
WATER

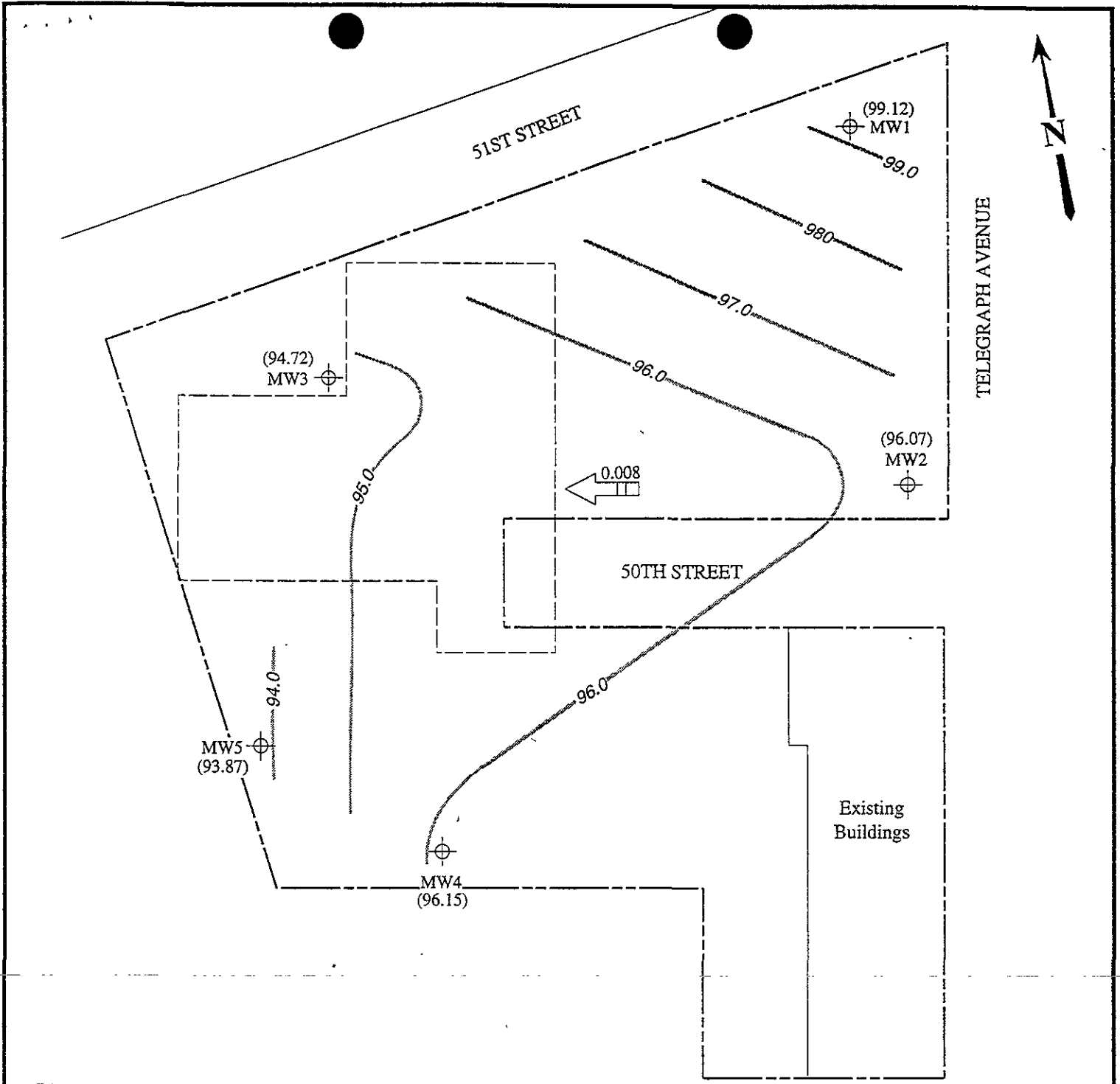
All EPA method 8010 constituents were non-detectable, except for the above compounds.

▲ 1,1,1-Trichlorethane was detected at a concentration of 0.73 $\mu\text{g/L}$.



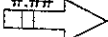

▲▲ Trans-1,2-Dichlorethene was detected at concentrations of 0.59 $\mu\text{g/L}$ and 0.76 $\mu\text{g/L}$ in MW3 and MW5, respectively.

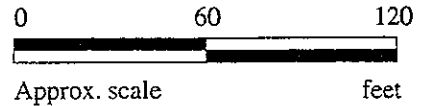
ND = Non-detectable.

Results are in micrograms per liter ($\mu\text{g/L}$), unless otherwise indicated.



LEGEND

-  Monitoring well
-  () Ground water elevation in feet above Mean Sea Level
-  ### Direction of ground water flow with approximate hydraulic gradient
-  Contours of ground water elevation



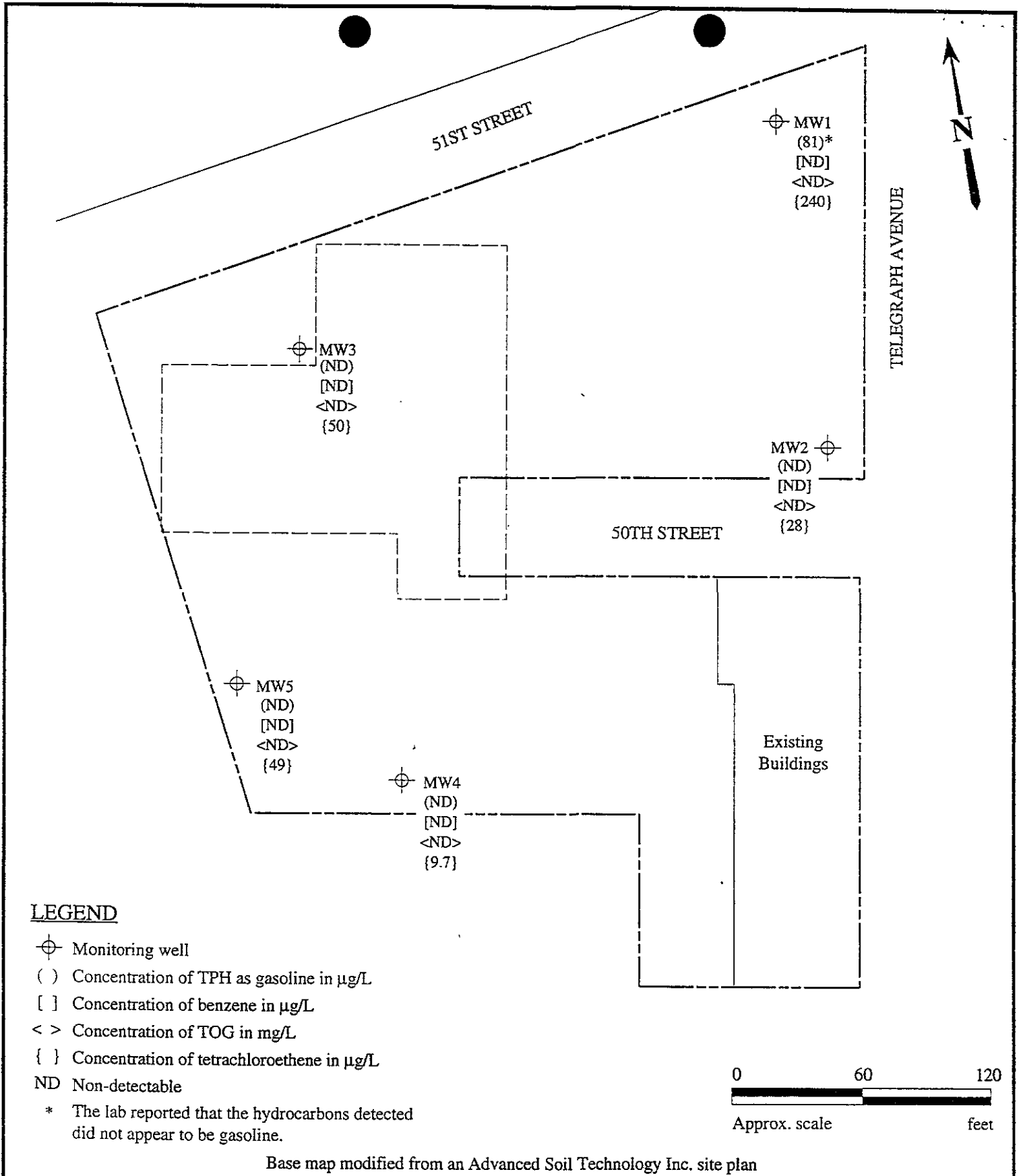
Base map modified from an Advanced Soil Technology Inc. site plan

POTENTIOMETRIC SURFACE MAP FOR THE SEPTEMBER 18, 1995 MONITORING EVENT



**BERKELEY LAND COMPANY
51ST STREET & TELEGRAPH AVE.
OAKLAND, CALIFORNIA**

**FIGURE
1**



PETROLEUM HYDROCARBON CONCENTRATIONS IN GROUND WATER ON SEPTEMBER 18, 1995



**BERKELEY LAND COMPANY
51ST STREET & TELEGRAPH AVE.
OAKLAND, CALIFORNIA**

**FIGURE
2**