

GROUND WATER SAMPLING REPORT
DECEMBER, 1990
FOR
MILLS COLLEGE CORPORATION YARD
OAKLAND, CALIFORNIA



Kaldveer Associates
Geoscience Consultants

Oakland, CA • San Jose, CA • Bellevue, WA • Tacoma, WA

January 17, 1991
KE1025-7A-509, 17788

Mills College
5000 MacArthur Boulevard
Oakland, California 94621

Attention: Mr. David Johnson

RE: GROUND WATER SAMPLING
REPORT - DECEMBER, 1990
MILLS COLLEGE CORPORATION
YARD
OAKLAND, CALIFORNIA

Dear Mr. Johnson:

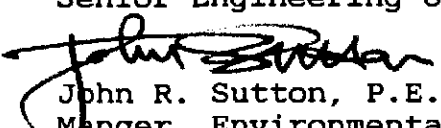
Enclosed is our December, 1990 ground water sampling report for the Mills College Corporation Yard. We appreciate the opportunity to provide services to you on this project and trust this report meets your needs at this time. If you have any questions, or require additional information, please do not hesitate to call.

Very truly yours,

KALDVEER ASSOCIATES, INC.



Dennis Laduzinsky, C.E.G.
Senior Engineering Geologist



John R. Sutton, P.E./G.E.
Manger, Environmental/Hazardous
Waste Services
Associate

DL/JRS:pv
Copies: Addressee (4)

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 1737 North First Street, Suite 300, San Jose, CA 95112 (408) 436-5703 FAX: 408-436-5735

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GROUND WATER SAMPLING REPORT
DECEMBER, 1990

For
MILLS COLLEGE CORPORATION YARD
OAKLAND, CALIFORNIA

To
Mills College
5000 MacArthur Boulevard
Oakland, California 94621



January, 1991


Dennis Laduzinsky, C.E.G.
Senior Engineering Geologist



John R. Sutton, P.E./G.E.
Manager, Environmental/Hazardous
Waste Services
Associate

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Letter of Transmittal

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GROUND WATER SAMPLING REPORT
DECEMBER, 1990
MILLS COLLEGE CORPORATION YARD
OAKLAND, CALIFORNIA

I. INTRODUCTION

This report presents the results of a ground water sampling study at the Mills College Corporation Yard in Oakland, California. The project location is shown on the Site Location Map, Figure 1. The scope of services provided during this investigation consisted of collecting and analyzing ground water samples from three monitoring wells. Ground water samples were analyzed for total petroleum hydrocarbons as gasoline and purgeable aromatic compounds. Well locations are shown on the Site Plan, Figure 2.

II. FIELD INVESTIGATION

A. Well Sampling

Three ground water monitoring wells were sampled on December 20, 1990. Following an initial ground water level measurement, a minimum of four well-casing volumes of water was purged from each well using a teflon bailer. Purging consisted of the rapid removal of water from the well until physical parameters such as pH, temperature and specific conductivity had stabilized. Following purging, samples were collected using the teflon bailer, placed in appropriate sample containers, labeled, and placed in refrigerated storage for transport to the laboratory under chain-of-custody control. All sampling equipment was thoroughly cleaned with trisodium phosphate detergent and rinsed with distilled water prior to sampling each well. Monitoring well sampling logs are attached to this report as Appendix A.

B. Ground Water Gradient

Well-top elevations were surveyed by our firm during a previous investigation at the site. Well-top elevations, depth to water measured during this investigation, and calculated water-surface elevations are presented in Table 1. These data are used to generate the Ground Water Elevation Contour map presented on Figure 3. Ground water elevation data collected during this investigation indicate a general southwesterly flow of ground water at an approximate gradient of 0.0025 ft/ft.

III. ANALYTICAL RESULTS

A. Laboratory Procedures

Ground water samples were analyzed by Med-Tox Associates of Pleasant Hill, California. Samples from each well were analyzed for total petroleum hydrocarbons as gasoline using EPA Method 8015, and for purgeable aromatic compounds using EPA Method 8020.

B. Analytical Results

The results of the chemical analyses are presented on Table 2 and laboratory certificates are attached to this report as Appendix B. Hydrocarbons as gasoline were measured in the water sampled from Well MW-1 at a concentration of 2.5 parts per million (ppm). Benzene, toluene, ethylbenzene, and xylenes (BTEX) concentrations were measured at 0.40, 0.21, 0.056, and 0.31 ppm, respectively. This well also contained a slight hydrocarbon film on the water surface when first bailed.

The water sample collected from Well MW-2 did not contain hydrocarbons in detectable quantities. The sample collected from Well MW-3 contained 0.05 ppm hydrocarbons as gasoline and 0.011 ppm benzene; other purgeable aromatic compounds were not detected.

The results indicate a reduction of hydrocarbon levels in Well MW-1 from the 11 ppm last measured in July, 1989. Monitoring Well MW-3 showed an increase of hydrocarbon levels from non-detectable in July, 1989 to 0.05 ppm measured during this sampling round. Water sampled from well MW-2 remained the same at non-detect for petroleum hydrocarbons.

IV. LIMITATIONS

This report has been prepared according to generally accepted geologic and environmental practices. No other warranty, either expressed or implied is made. The analysis, conclusions and recommendations contained in this report are based on site conditions as they existed at the time of our investigation; review of previous reports relevant to the site conditions; and laboratory results from an outside analytical laboratory.

Changes in the information or data gained from any of these sources could result in changes in our conclusions or recommendations. If such changes do occur, we should be advised so that we can review our report in light of these changes.

* * * * *

TABLE 1

GROUND WATER ELEVATION DATA
(All Measurements in Feet)

<u>Well Number</u>	<u>Well-Top Elevation (1)</u>	<u>Depth to Water</u>	<u>Relative Ground Water Elevation</u>
MW-1	100.00	22.05	77.95
MW-2	99.98	21.96	78.02
MW-3	100.01	22.00	78.01

Note:

- (1) Relative well-top elevation based on an arbitrary datum of 100.00 feet at MW-1.

TABLE 2

SUMMARY OF GROUND WATER SAMPLE ANALYSES
(reported in parts per million, mg/l)

<u>Constituent</u>	<u>MW-1</u>	<u>MW-2</u>	<u>MW-3</u>	<u>Detection Limit</u>
TPH Gasoline	2.5	ND	0.05	0.05
Benzene	0.40	ND	0.011	0.0003
Toluene	0.21	ND	ND	0.0003
Ethylbenzene.	0.056	ND	ND	0.0003
Xylenes	0.31	ND	ND	0.001



Approximate Scale in Miles



Base: Provided by Thomas Brothers Maps, Dated 1988

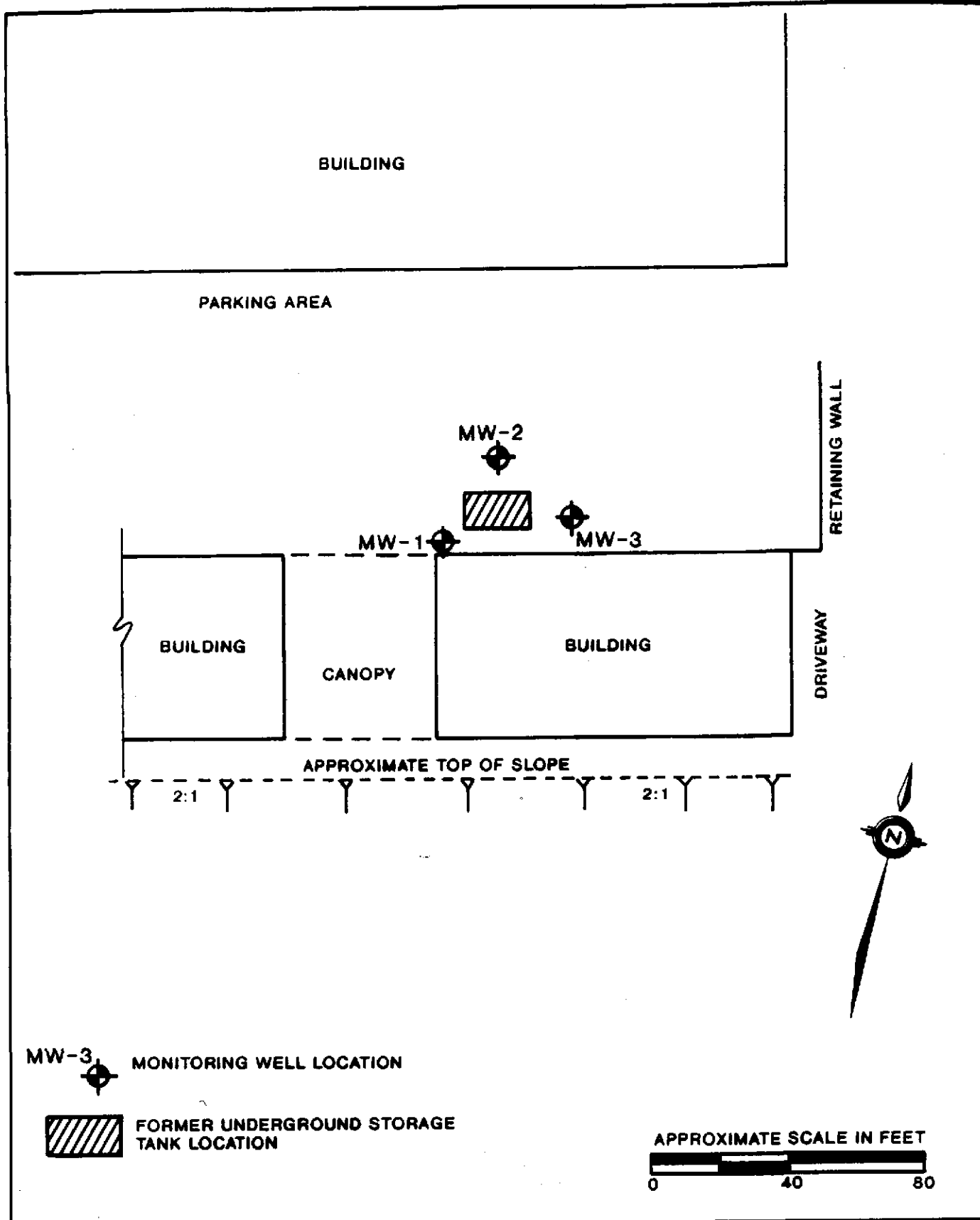


Kaldveer Associates
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 A California Corporation

SITE VICINITY MAP

**MILLS COLLEGE
 CORPORATION YARD FACILITY
 Oakland, California**

PROJECT NO.	DATE	Figure 1
KE1025-7A-509	January 1991	



MW-3  MONITORING WELL LOCATION

 FORMER UNDERGROUND STORAGE TANK LOCATION

APPROXIMATE SCALE IN FEET

 0 40 80



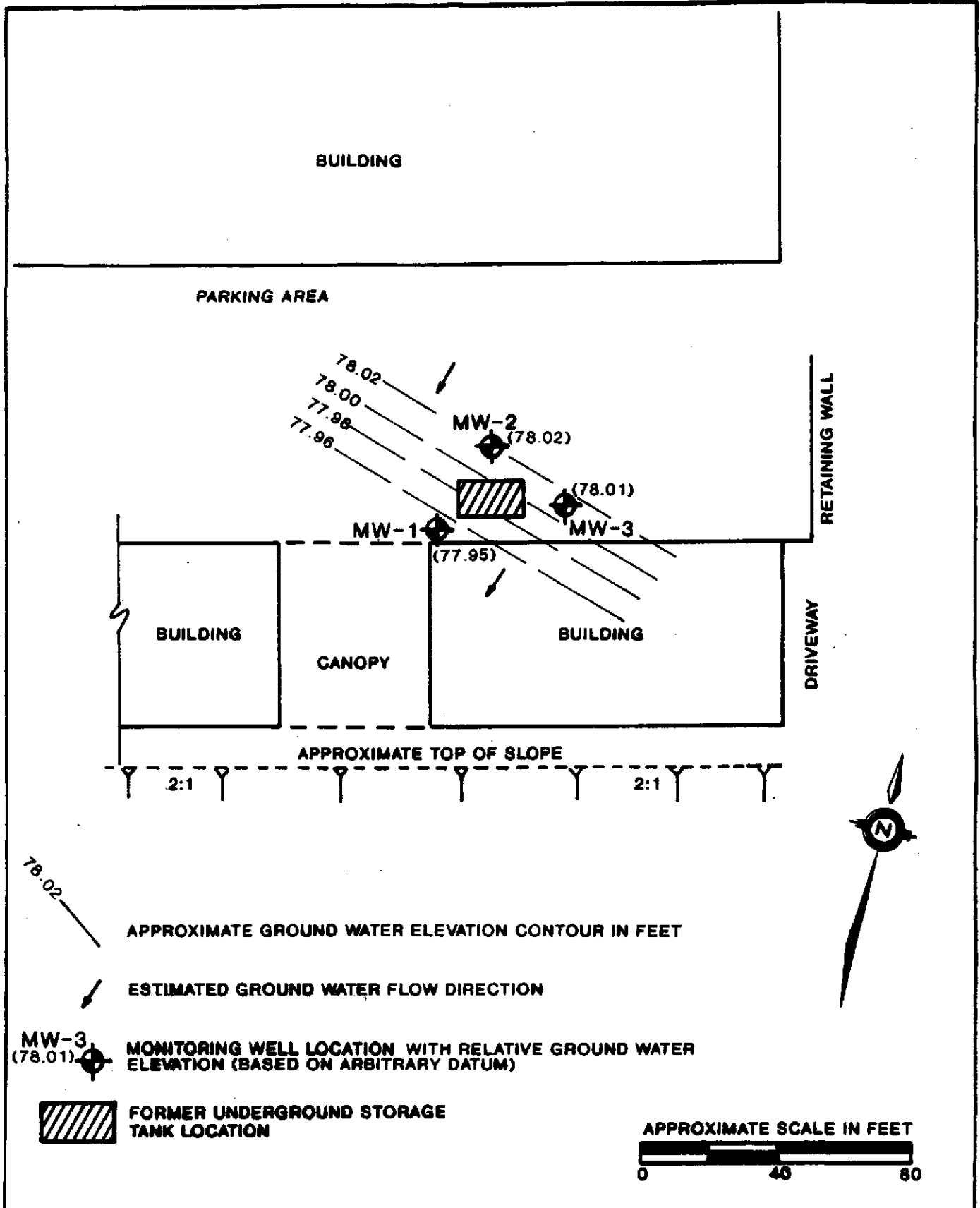
Kaldveer Associates
 Geoscience Consultants
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SITE PLAN

**MILLS COLLEGE
 CORPORATION YARD FACILITY
 Oakland, California**

PROJECT NO.	DATE
KE1025-7A-509	January 1991

Figure 2



Kaldveer Associates
Geoscience Consultants
A California Corporation

GROUND WATER ELEVATION CONTOURS

MILLS COLLEGE
CORPORATION YARD FACILITY
Oakland, California

PROJECT NO.	DATE
KE1025-7A-509	January 1991

Figure 3

WATER SAMPLE LOG

Project Name: Mills Corporation Yard Date: 12/20/90
 Project Number: KE1025-7-509 Sampler: IF
 Well Number: MW-1 Weather: Cold
 Well Location: Adjacent to building - West of MW-2 and MW-3

Well Construction:

Date Completed: 6-1-89
 Total Depth of Well: 34 feet
 Diameter: 2 inches
 Well Elevation & Reference: _____
100.00 (arbitrary datum)

Groundwater Levels:

Initial: _____
 Final: _____
 Reference Point: Top of PVC
 Well Volume of Water: 14(.17) = 2.4g

Sampling Equipment & Cleaning

Sampler Type: Teflon Bailer
 Method of Cleaning: Liquinox/Rinse
 Pump or Bailer Type: N/A
 Method of Cleaning: N/A
 pH Meter: Hydac
 Conductivity Meter: Hydac
 Comments: _____

SAMPLING MEASUREMENTS

Time	Discharge (gal.)		pH	Temp (°C)	Spec. Conductance (umhos/cm)		Color/Turbidity	Odor
	Per Time Period	Cummulative			Field	@ 25°C		
0930								
0943		2.5	6.73	59.7	912			Gas
0954		5.0	6.50	63.8	920			
1010		10.0	6.55	63.0	925			
1015	Sample							

Total Discharge: 10 gallons
 Casing Volumes Removed: 4
 Method of Disposal: pavement surface

Comments: *Only product on water sample surface



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WATER SAMPLE LOG MW-1

MILLS COLLEGE
 Oakland, California

PROJECT NO.	DATE	Figure B-1
KE1025-7A-509	January 1991	

WATER SAMPLE LOG

Project Name: Mills Corporation Yard Date: 12/20/90
 Project Number: KE1025-7-509 Sampler: JF
 Well Number: MW-2 Weather: Clear Cool Calm
 Well Location: North of former tank

Well Construction:

Date Completed: 6-2-89
 Total Depth of Well: 35
 Diameter: 2 inches
 Well Elevation & Reference: _____
99.98' (arbitrary datum)

Groundwater Levels:

Initial: NA
 Final: NA
 Reference Point: _____
 Well Volume of Water: 10(.17) = 1.7g

Sampling Equipment & Cleaning

Sampler Type: Bailer
 Method of Cleaning: _____
 Pump or Bailer Type: Teflon
 Method of Cleaning: Liquinox/Water
 pH Meter: Hydac
 Conductivity Meter: Hydac
 Comments: _____

SAMPLING MEASUREMENTS

Time	Discharge (gal.)		pH	Temp (°C)	Spec. Conductance (umhos/cm)		Color/Turbidity	Odor
	Per Time Period	Cummulative			Field	@ 25°C		
1040	Begin							
1048		2.5	8.00	65.1	494		light brown/Slight	None
1055		5.0	7.74	67.0	517		"	"
1110		10.0	7.71	67.7	491		"	"

Total Discharge: 10 gallons
 Casing Volumes Removed: 5
 Method of Disposal: pavement surface

Comments: _____



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 A California Corporation

WATER SAMPLE LOG MW-2

MILLS COLLEGE
 Oakland, California

PROJECT NO.	DATE	Figure B-2
KE1025-7A-509	January 1991	

WATER SAMPLE LOG

Project Name: Mills Corporation Yard Date: 12/20/90
 Project Number: KE1025-7-509 Sampler: JF
 Well Number: MW-3 Weather: Clear/Cold
 Well Location: East of former tank

Well Construction:

Date Completed: 6/2/90
 Total Depth of Well: 34 feet
 Diameter: 2 inches
 Well Elevation & Reference: _____
100.01 (arbitraty datum)

Groundwater Levels:

Initial: NA
 Final: NA
 Reference Point: _____
 Well Volume of Water: 9 (.17) = 1.5 gal

Sampling Equipment & Cleaning

Sampler Type: Bailer
 Method of Cleaning: _____
 Pump or Bailer Type: Teflon
 Method of Cleaning: Liquinox/Water
 pH Meter: Hydac
 Conductivity Meter: Hydac
 Comments: _____

SAMPLING MEASUREMENTS

Time	Discharge (gal.)		pH	Temp (°C)	Spec. Conductance (umhos/cm)		Color/Turbidity	Odor
	Per Time Period	Cummulative			Field	@ 25°C		
1130	Begin							
1143		3	7.32	68.8	354		Gray-Green Silty	None
1153		6	7.43	66.5	355		Gray-Brown Silty	None
1210		12	7.49	66.2	366		Gray-Brown Cloudy	None
1215	Sampled							

Total Discharge: 12 gallons
 Casing Volumes Removed: 8
 Method of Disposal: pavement surface

Comments: _____



Kaldveer Associates
 Geoscience Consultants
 A California Corporation

WATER SAMPLE LOG MW-3

MILLS COLLEGE
 Oakland, California

PROJECT NO.

DATE

Figure B-3

KE1025-7A-509

January 1991

APPENDIX B

LABORATORY REPORTS,
MED-TOX ASSOCIATES,
PLEASANT HILL, CALIFORNIA

ENVIRONMENTAL & OCCUPATIONAL HEALTH SERVICES

3440 Vincent Road Pleasant Hill, CA 94523 • (415) 930-9090 • FAX# (415) 930-0256

LABORATORY ANALYSIS REPORT

KALDVEER ASSOCIATES, INC.
425 ROLAND WAY
OAKLAND, CA 94621

ATTN: DENNIS LADUZINSKY

CLIENT REF.: KE1025-7

REPORT DATE: 01/14/91


DATE SAMPLED: 12/20/90

DATE RECEIVED: 12/20/90

MED-TOX JOB NO: 9012134

ANALYSIS OF: WATER SAMPLES

See attached for results


Andrew Bradeen, Manager
Organic Laboratory

Results FAXed to Dennis Laduzinsky 01/09/91

KALDVEER ASSOCIATES, INC.

CLIENT ID: MW-1
 CLIENT JOB NO: KE1025-7
 DATE SAMPLED: 12/20/90
 DATE RECEIVED: 12/20/90
 REPORT DATE: 01/14/91

MED-TOX LAB NO: 9012134-01A
 MED-TOX JOB NO: 9012134
 DATE ANALYZED: 12/27/90-01/2/91
 INSTRUMENT: F

BTEX AND HYDROCARBONS

METHOD: EPA 8020, 5030 GCFID

	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
Benzene	400	0.3
Toluene	210	0.3
Ethylbenzene.	56	0.3
Xylenes, Total.	310	1
PURGEABLE HYDROCARBONS AS:		
Gasoline	2.5 mg/L	0.05 mg/L

ND = Not Detected

KALDVEER ASSOCIATES, INC.

CLIENT ID: MW-2
CLIENT JOB NO: KE1025-7
DATE SAMPLED: 12/20/90
DATE RECEIVED: 12/20/90
REPORT DATE: 01/14/91

MED-TOX LAB NO: 9012134-02A
MED-TOX JOB NO: 9012134
DATE ANALYZED: 12/27/90-01/4/91
INSTRUMENT: F

BTEX AND HYDROCARBONS

METHOD: EPA 8020, 5030 GCFID

	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
Benzene	ND	0.3
Toluene	ND	0.3
Ethylbenzene.	ND	0.3
Xylenes, Total.	ND	1

PURGEABLE HYDROCARBONS AS:

Gasoline ND mg/L 0.05 mg/L

ND = Not Detected

KALDVEER ASSOCIATES, INC.

CLIENT ID: MW-3
CLIENT JOB NO: KE1025-7
DATE SAMPLED: 12/20/90
DATE RECEIVED: 12/20/90
REPORT DATE: 01/14/91

MED-TOX LAB NO: 9012134-03A
MED-TOX JOB NO: 9012134
DATE ANALYZED: 12/27/90
INSTRUMENT: F

BTEX AND HYDROCARBONS

METHOD: EPA 8020, 5030 GCFID

	CONCENTRATION (ug/L)	DETECTION LIMIT (ug/L)
Benzene	11	0.3
Toluene	ND	0.3
Ethylbenzene.	ND	0.3
Xylenes, Total.	ND	1

PURGEABLE HYDROCARBONS AS:

Gasoline 0.05 mg/L 0.05 mg/L

ND = Not Detected

DATE ANALYZED: 12/27/90

MED-TOX JOB NO: 9012134

INSTRUMENT: F

CLIENT REF: KE1025-7

MATRIX SPIKE RECOVERY SUMMARY
METHOD TPHBTW
5030 W/GCFID/8020

ANALYTE	Spike Conc. (ug/L)	Sample Result (ug/L)	MS Result (ug/L)	MSD Result (ug/L)	Average Percent Recovery	RPD
Benzene	16.2	ND	17.0	14.6	97.5	15.2
Toluene	52.8	ND	56.5	50.2	101.0	11.8
Hydrocarbons as Gasoline	505	ND	508	505	100.4	0.5

CURRENT QC LIMITS (Revised 11/12/90)

<u>Analyte</u>	<u>Percent Recovery</u>	<u>RPD</u>
Benzene	(118-83)	18
Toluene	(111-89)	15
Gasoline	(108-76)	17

MS = Matrix Spike
MSD = Matrix Spike Duplicate
RPD = Relative Percent Difference
ND = Not Detected

R-3,S-4

CHAIN-OF-CUSTODY RECORD

Project Number
KE1025-7

Project Name
CORP YARD

Location
MILLS

Sampler's Name (printed)
JEFF FIEDLER

Analytical Tests	Method 8015 - TPH as Gasoline														
	Method 8015 - TPH as Diesel														
	Method 8240 - Volatile Organics														
	Method 8270 - Semi-Volatile Organics														
	Method 8010 - Heavy Metals														
	Method 8080 - Organochlorine Pesticides & PCB's														
	Waste Oil														
	Metals														

Method 8020 BTEX

KA Sample I.D. Number	Lab Sample I.D. Number	Date	Soil	Water	Number/Type of Container											
<u>MW-1</u>	<u>01A, B</u>	<u>12/20</u>		<u>X</u>	<u>2 x 40m l</u>	<u>X</u>										
<u>MW-2</u>	<u>02A, B</u>	<u>↓</u>		<u>X</u>	<u>↓</u>	<u>X</u>										
<u>MW-3</u>	<u>03A, B</u>	<u>↓</u>		<u>X</u>	<u>↓</u>	<u>X</u>										

Remarks

SAMPLES PRESERVED w/HCl

Relinquished by: (Signature) <u>Dennis Lauzinski</u>	Date/Time <u>12/24/90 1520</u>	Received by: (Signature) <u>Dennis Lauzinski</u>
Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature) <u>Dennis Lauzinski</u>	Date/Time <u>12/29/90 1620</u>	Received for Laboratory by: (Signature) <u>Dennis Harrington</u>

Ship To: Med-Tox Pleasant Hill

Attention: _____

Phone No: _____

Requested Turnaround Time: Standard

Kaldveer Assoc. Contact: DENNIS LAUZINSKI

Remarks:

Please address correspondence and return cooler # _____ to:

Kaldveer Associates, Inc.
425 Roland Way
Oakland, California 94621
(415) 568-4001

