QUARTERLY GROUNDWATER MONITORING PROGRAM
OCTOBER 1994
SOUTH SHORE SHOPPING CENTER
2375 SHORELINE DRIVE
ALAMEDA, CALIFORNIA

93-1185002.10
January 9, 1995

QTLYOCT.COV

THE MARK GROUP, INC.
ENGINEERS & GEOLOGISTS

January 3, 1995
93-1185002.10

Alameda County Health Agency
Division of Hazardous Materials
Department of Environmental Health
80 Swan Way, Room 350
Oakland, CA 94621

Attention: Ms. Juliet Shin, Hazardous Materials Specialist

Subject: FINAL REPORT - Quarterly Groundwater Monitoring Program
October 1994
South Shore Shopping Center
2375 Shoreline Drive
Alameda, California

Dear Ms. Shin:

The MARK Group, Inc. (MARK) is pleased to provide you one final copy of the October 1994 Quarterly Groundwater Monitoring Report for the subject site. MARK received final approval for release of the document by Texaco, Kamur, and Harsch on December 20, 1994. If you have any questions on the report, please call Mr. Gregory Baum, Vice President/General Counsel of Harsch Investment Corp. at (503) 242-2900, or the undersigned at (510) 946-1055.

Sincerely,

The MARK Group, Inc.

Alan D. Gibbs, R.G.
Associate

DKR:RSS:scd
QTLYOCT2.LTR

Enclosure(s)

PROFESSIONAL CERTIFICATION

QUARTERLY GROUNDWATER MONITORING PROGRAM
OCTOBER 1994
SOUTH SHORE SHOPPING CENTER
2375 SHORELINE DRIVE
ALAMEDA, CALIFORNIA

January 9, 1995
93-1185002.10

This report has been prepared by the staff of The MARK Group, Inc. under the professional supervision of the Principal and senior staff whose seal(s) and signature(s) appear hereon.

The findings, recommendations, specifications or professional opinions are presented, within the limits prescribed by the client, after being prepared in accordance with generally accepted professional engineering and geologic practice. There is no other warranty, either expressed or implied.

REGISTERED GEOLOGIST
DAVID K. ROGERS
No. 967
CERTIFIED ENGINEERING GEOLOGIST
STATE OF CALIFORNIA
exp 3/31/95

David K. Rogers, P.E., C.E.G.
Principal

REGISTERED GEOLOGIST
ALAN D. GIBBS
expires 11-30-95
NO. 4827
STATE OF CALIFORNIA

Alan D. Gibbs, R.G.
Associate

TABLE OF CONTENTS

Appendices

1.0 INTRODUCTION

1.1 Objective

This Quarterly Monitoring Program Report for October 1994 was prepared by The MARK Group, Inc. (MARK) and summarizes the results of the groundwater sampling and analysis conducted at the South Shore Shopping Center, Alameda, California (Drawing 1-1). This work being conducted is pursuant to the requirements established by the Alameda County Health Care Services Agency (ACHCSA) and is conducted to (1) satisfy the monitoring requirements of the ACHCSA and (2) to report changes in water quality from the previous monitoring quarter.

1.2 Scope of Work

The scope of the work for this Quarterly Monitoring Program consisted of conducting groundwater monitoring and sampling for October 1994. The work was performed utilizing sampling methods and procedures specified in the Quality Assurance Project Plan (MARK, 1994) and revisions outlined in the ACHCSA letter dated October 10, 1994. The scope of work included the following:

- Measuring static water levels in 21 monitoring wells and piezometers (refer to Table 3-1);
- Recording groundwater field parameters (pH, temperature, specific conductance and turbidity) from each of these 21 monitoring wells;
- Purging and sampling five monitoring wells (MW-16, MW-17, MW-19, MW-22 and MW-23) associated with Harsch Investment and Texaco. Two monitoring wells MW-12 and MW-25 were purged and sampled by Soil Tech Engineering;
- Analyzing groundwater samples from these seven wells for the monitoring parameters specified in Section 2; and

- Reporting the results of the groundwater samples collected from the five monitoring wells associated with Harsch Investment and Texaco, and also the results of two monitoring wells (MW-12 and MW-25) associated with Kamur Industries.

2.0 IMPLEMENTATION OF FIELD ACTIVITIES

2.1 Field Activities and Procedures

2.1.1 Groundwater Elevations

Static water levels in 21 wells and piezometers were measured to within 0.01 inch on October 18, 1994 in accordance with the procedures described in the Quality Assurance Project Plan [(QAPP) MARK, 1994]. The water level measured in MW-18 on October 18, 1994 was inconsistent with past monitoring records; hence, on November 11, the water level in MW-18 was remeasured. This second measurement was interpolated with the measurements obtained on October 18, 1994. Water level measurement field logs are included in Appendix A. A groundwater elevation contour map (Drawing 3-1) was constructed using linear interpolation between wells. Groundwater-level monitoring results are discussed in Section 3.0.

2.1.2 Groundwater Sampling

On October 18, 1994, groundwater was sampled from seven wells which are a part of the Harsch, Kamur, and Texaco monitoring network. These groundwater samples were collected in accordance with procedures outlined by the California Regional Water Quality Control Board (RWQCB) and the QAPP (MARK, 1994). Field forms documenting sampling and purging activities are included in Appendix B. In addition, two of the Kamur's monitoring wells (MW-12 and MW-25) were sampled by Soil Tech Engineering. The analytical results for these wells have been incorporated into this monitoring report.

Groundwater sampling and water level measurements for the Harsch and Texaco monitoring network were conducted by Mr. Thomas C Jones, Senior Technician, under the

direct supervision of Mr. Robert S. Spare, Project Environmental Scientist. Mr. Spare has a bachelors degree in Environmental Science and has over eight years experience. Mr. Jones has over three years of experience with groundwater sampling techniques. All employees involved in this project have completed 40 hours of health and safety training in accordance with 29 CFR 1910.120, and are experienced with the general sampling protocols used.

2.2 Analytical Methods

Groundwater samples collected from the Harsch and Texaco monitoring wells were submitted to McCampbell Analytical, Inc, which is certified by the California Department of Toxic Substances Control (DTSC) to conduct the required analyses. These groundwater samples were analyzed for the following constituents:

- EPA Method 8015/8020, for total petroleum hydrocarbon as gasoline (TPH-g) and benzene, toluene, ethylbenzene, and xylenes (BTEX); and
- EPA Method 601, for chlorinated hydrocarbons.

Only the sample from MW-22 was analyzed for the total petroleum hydrocarbon as diesel (TPH-d) using EPA Method 8015. A groundwater sample collected from Kamur's monitoring well, MW-25 was handed over to MARK personnel via chain-of-custody for EPA Method 601 analysis. The remaining analyses for Kamur's wells were conducted by North State Environmental. These analyses included oil and grease (EPA Method 5520) which was performed on a sample from monitoring well MW-12. All laboratory test reports are presented in Appendix C.

2.3 Quality Assurance/Quality Control

The Quality Assurance and Quality Control (QA/QC) program utilized during this

monitoring program reporting period incorporated the following field and laboratory QA/QC methods:

- Chain-of-custody control of samples;
- Laboratory methods:
  - matrix spikes;
  - matrix spike duplicates;
  - method blanks;
  - QC spikes; and
  - QC spike duplicates.

QA/QC laboratory reports are presented in Appendix C.

3.0 RESULTS OF THE SELF-MONITORING PROGRAM

3.1 Groundwater Conditions

There are presently 21 monitoring wells being utilized to evaluate the groundwater flow in the vicinity of and beneath the South Shore Shopping Center. Based on the most recent water elevation data collected during October 1994 (see Table 3-1), groundwater is flowing northwest, west, to southwest direction with a gradient averaging 0.022 feet per foot, except near wells MW-2 and MW-11 where the gradient is much steeper. In general, groundwater appears to be mounded in the eastern portion of the site and flows westerly to southwesterly away from Park Avenue and towards the bay and Shoreline Drive. In addition, although some accuracy was lost by using re-measurements taken on November 11, 1994, the overall groundwater flow direction remained unchanged. Groundwater elevations and flow are illustrated in Drawing 3-1. The groundwater elevations are referenced to City of Alameda datum which is 3.41 feet above mean sea level (MSL).

3.2 Monitoring Program

Analytical results for the seven wells (MW-12, MW-16, MW-17, MW-19, MW-22 MW-23, and MW-25) are presented in Table 3-2 and discussed below. The analytical results from the previous sampling rounds have been included in Appendix D.

- The concentrations of TPH-g in wells MW-16, MW-17, MW-19, MW-22, and MW-23 were below the method detection limit of 0.05 milligrams per liter (mg/L). In well MW-12, the concentration of TPH-g was 77 mg/L. This well also had approximately 0.02 feet of free phase liquid hydrocarbon (FPLH). Drawing 3-2 shows the distribution of gasoline detected in these wells;
- TPH-d was not detected in well MW-22;
- The concentration of benzene in well MW-12 was 5.2 mg/L. Benzene was not detected in the remaining wells. Drawing 3-3 shows the distribution of benzene detected in these wells;

- The concentration of toluene in well MW-12 was 6.2 mg/L. Toluene was not detected in the remaining wells;
- The concentration of xylene in well MW-12 was 22 mg/L. Xylenes were not detected in the remaining wells;
- The concentration of ethylbenzene in well MW-12 was 13 mg/L. Ethylbenzene was not detected in the remaining wells;
- The concentrations of 1,2-dichloroethane ranged from just above the detection limit of 0.0005 mg/L in monitoring well MW-23 to 0.014 mg/L in monitoring well MW-22. The California Primary Maximum Contaminant Level (PMCL) for 1,2-dichloroethane is 0.0005 mg/L. Drawing 3-4 shows the distribution of 1,2-dichloroethane detected in these wells;
- The concentrations of chloroform ranged from 0.00065 mg/L in monitoring well MW-22 to 0.0061 mg/L in monitoring well MW-16;
- 1,1-Dichloroethane, Trans-1,2-dichloroethene, Tetra-chloroethene, and Trichloroethene were not detected in any of the wells; and
- Please note that analytical data reported for monitoring wells MW-24 and MW-25 during the February 1993 and April 1994 sampling event were inadvertently reversed. Table 3-2 has been corrected accordingly.

3.3 Quality Assurance/Quality Control

The QA/QC program was designed to:

- Establish the necessary activities to control the quality of sample collection, analysis, and data validations, and
- Guide assessment of the precision, accuracy, and completeness of the data.

The sampling methods and protocols have been specified in the QAPP. Relevant sections of the QAPP specify the methods and protocols for the groundwater sample collection, handling, and shipment; water level measurements; purging; and analytical methods.

Laboratory in-house QA/QC results indicate that all matrix spikes, matrix spike duplicates, method blanks, QC spike, and QC spike duplicate results are within acceptable laboratory limits.

Table 3-1: Groundwater Elevations South Shore Shopping Center Texaco, Harsch, and Kamur				
Well ID	Date Measured	TOPVC Elevation (feet)	Measured Depth of Groundwater below TOPVC (feet)	Groundwater Elevations (feet) City of Alameda Datum
Texaco Wells				
MW-2	04/26/94 10/18/94	7.44 7.44	5.77 7.27	1.67 0.17
MW-3	04/26/94 10/18/94	6.78 6.78	5.39 6.68	1.39 0.10
MW-5B	04/26/94 10/18/94	5.08 5.08	4.00 5.07	1.08 0.01
MW-14	04/26/94 10/18/94	5.76 5.76	5.06 5.98	0.7 -0.22
MW-15	04/26/94 10/18/94	4.47 4.47	3.46 4.85	1.01 -0.38
MW-22	04/26/94 10/18/94	7.81 7.81	7.57 8.16	0.24 -0.35
Harsch Wells				
MW-7B	04/26/94 10/18/94	5.52 5.52	4.43 5.44	1.09 0.08
MW-8B	04/26/94 10/18/94	6.15 6.15	6.33 6.54	-0.18 -0.39
MW-16	04/26/94 10/18/94	3.52 3.52	2.93 3.85	0.59 -0.33
MW-17	04/26/94 10/18/94	3.32 3.32	3.38 3.76	-0.06 -0.44
MW-18	04/26/94 11/04/94	4.72 4.72	4.84 4 65	-0.12 0 07
MW-19	04/26/94 10/18/94	5.28 5.28	5.09 5 58	0.19 -0.30

HARSCH2.TBL

Table 3-1: Groundwater Elevations South Shore Shopping Center Texaco, Harsch, and Kamur				
Well ID	Date Measured	TOPVC Elevation (feet)	Measured Depth of Groundwater below TOPVC (feet)	Groundwater Elevations (feet) City of Alameda Datum
MW-20	04/26/94 10/18/94	6.66 6.66	7.11 7.61	-0.45 -0.95
MW-21	04/26/94 10/18/94	6.48 6.48	6.6 7.11	-0.12 -0.63
MW-23	04/26/94 10/18/94	7.09 7.09	4.45 6.54	2.64 0.55
Kamur Wells				
MW-10	04/26/94 10/18/94	7.97 7.97	6.58 7.69	1.39 0.28
MW-11	04/26/94 10/18/94	6.96 6.96	5.54 6.68	1.42 0.28
MW-12	04/26/94 10/18/94	8.31 8.31	6.41 8.00	1.9 0.31
MW-24	04/26/94 10/18/94	9.19 9.19	8.49 9.10	0.70 0.09
MW-25	04/26/94 10/18/94	9.41 9.41	9.15 9.55	0.26 -0.14

Explanation:

TOPVC = top of PVC casing, City of Alameda datum
NA = Not Available

Table 3-2: Groundwater Analytical Results
South Shore Shopping Center
Texaco, Harsch, and Kamur

Well No.	Date Sample	TPH as Diesel	TPH as Gasoline	Benzene	Toluene	Xylenes	Ethyl-Benzene	Chloro-benzene	1,2-Dichloro-ethane	1,1-Dichloro-ethene	Trans-1,2-Dichloro-ethene	Tetra-chloro-ethene	Trichloro-ethene	Chloro-form	Cis 1,2-Dichloro-ethene
Texaco Wells															
MW-22	4/28/94 10/88/94	<0.05 <0.05	<0.05 <0.05	<0.0005 <0.0005	<0.0005 <0.0005	<0.0005 <0.0005	<0.0005 <0.0005	<0.001 <0.0005	0.015 0.014	<0.002 <0.0005	<0.001 <0.0005	<0.001 <0.0005	<0.002 <0.0005	<0.001 0.00065	NT <0.0005
Harsch Wells															
MW-16	5/2/94 10/18/94	<0.05 NT	<0.05 <0.05	<0.0005 <0.0005	<0.0005 <0.0005	<0.0005 <0.0005	<0.0005 <0.0005	<0.001 <0.0005	0.002 <0.0005	<0.002 <0.0005	<0.001 <0.0005	<0.001 <0.0005	<0.002 <0.0005	<0.001 0.0061	NT <0.0005
MW-17	4/29/94 10/18/94	<0.05 NT	<0.05 <0.05	<0.0005 <0.0005	<0.0005 <0.0005	<0.0005 <0.0005	<0.0005 <0.0005	<0.001 <0.0005	<0.002 <0.0005	<0.002 <0.0005	<0.001 <0.0005	0.0024 <0.0005	<0.002 <0.0005	<0.001 0.004	NT <0.0005
MW-19	4/29/94 10/18/94	<0.05 NT	<0.05 <0.05	<0.0005 <0.0005	<0.0005 <0.0005	<0.0005 <0.0005	<0.0005 <0.0005	<0.001 <0.0005	<0.002 <0.0005	<0.002 <0.0005	<0.001 <0.0005	0.0011 <0.0005	<0.002 <0.0005	<0.001 0.0046	NT <0.0005
MW-23	5/2/94 10/18/94	<0.05 NT	<0.05 <0.05	<0.0005 <0.0005	<0.0005 <0.0005	<0.0005 <0.0005	<0.0005 <0.0005	<0.001 <0.0005	<0.002 0.00053	<0.002 <0.0005	<0.001 <0.0005	<0.001 <0.0005	<0.002 <0.0005	<0.001 <0.0005	NT <0.0005
Kamur Wells															
MW-12	4/27/94 10/18/94	NT NT	160 77.0	1.3 5.2	6.3 6.2	12.0 22.0	1.4 13.0	<0.001 NT	<0.002 NT	<0.002 NT	<0.001 NT	0.0039 NT	<0.002 NT	<0.001 NT	NT <0.0005
MW-25	4/27/94 10/18/94	NT NT	<0.05 <0.05	<0.0005 <0.0005	<0.0005 <0.0005	<0.0005 <001	<0.0005 <0.0005	<0.001 <0.0005	0.0093 0.0052	<0.002 <0.0005	<0.001 <0.0005	0.00390 <0.0005	<0.002 <0.0005	<0.001 0.0013	NT <0.0005
PMCL		NA	NA	0.001	1.0	1.75	0.68	0.03	0.0005	0.006	0.01	0.005	0.005	0.1	0.006

Explanation

All results are in milligrams per liter
NT = Not tested
NA = Not available
TPH as Gasoline = Total Petroleum Hydrocarbons as Gasoline analyzed using EPA methods 5030 and TPH LUFT. Benzene, toluene, xylenes and ethylbenzene analyzed using method 602.
TPH as Diesel = Total Petroleum Hydrocarbons as Diesel analyzed using EPA methods 3510 and TPH LUFT. Priority pollutants analyzed using EPA methods 5030 and 601.
PMCL = Primary Maximum Contaminant Level

HARSCH TBL

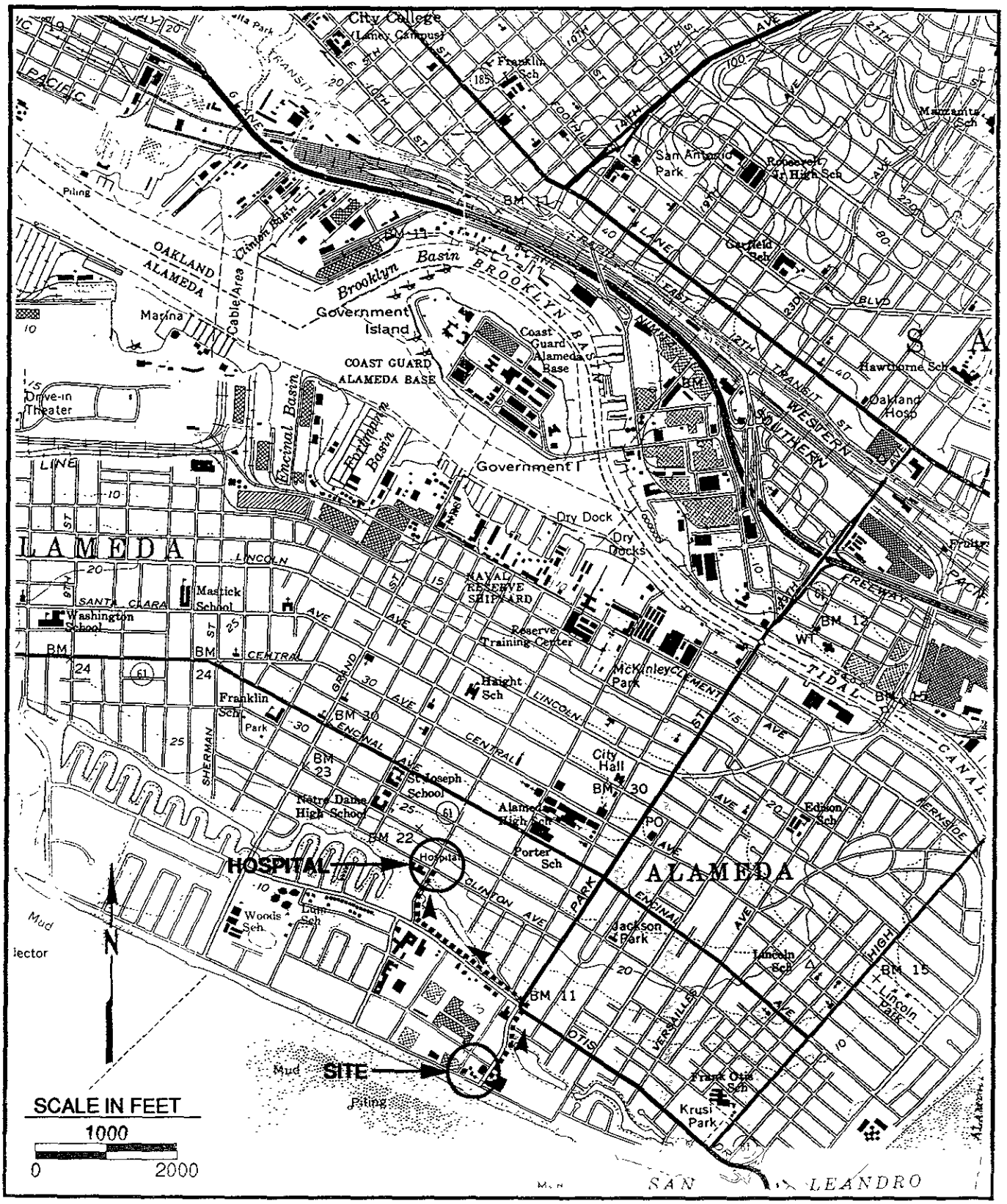
4.0 CONCLUSION

4.1 Groundwater Impacts

During this monitoring period, seven monitoring wells were sampled. The results indicate that groundwater is continuing to flow towards the north and west with steep gradients observed in the vicinity of wells MW-2 and MW-11 possibly due to surface water infiltration from landscaping.

1,2 Dichloroethane was found in monitoring wells MW-23, and MW-25 located along the eastern and northern portion of the site, respectively. Chloroform was detected at trace concentrations in five monitoring wells, MW-16, MW-17, MW-19, MW-22, and MW-25. The presence of chloroform in these water samples may be due to laboratory contamination rather than the presence of chloroform in the groundwater. Subsequent sampling and analysis should help assess the reported presence during this period of analysis. In general, except for trace detections of chloroform, no significant changes were observed in groundwater quality in the vicinity of these wells. The next sampling round is scheduled for January 1994.

Drawings



SITE LOCATION MAP

PREPARED BY RSS REVIEWED BY ADG DATE 6/22/94

THE MARK GROUP, INC.
ENGINEERS & GEOLOGISTS

Quarterly Groundwater Monitoring Program
Southshore Shopping Center
Corner of Shoreline Drive & Park Avenue
Alameda, California

PROJECT NO
93-1175306

DRAWING NO
1-1

TRLCK (5/28/92)

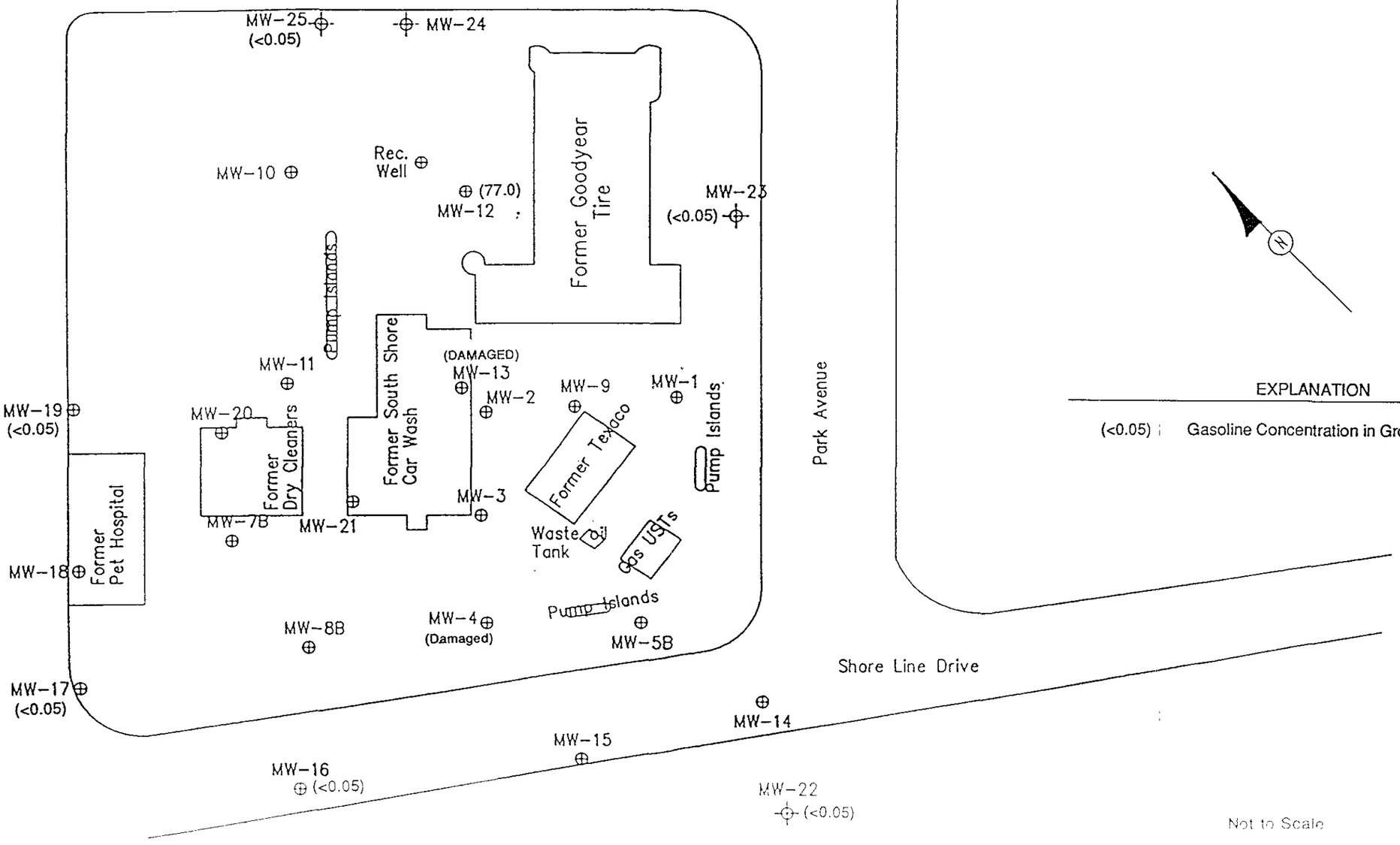
Date 11/26/94

RSS

Approved By

JHN

Prepared By



EXPLANATION

(<0.05) Gasoline Concentration in Groundwater, (mg/L)

Not to Scale

GASOLINE CONCENTRATION FOR SAMPLED WELLS

THE MARK GROUP, INC.
ENGINEERS & GEOLOGISTS

SOUTH SHORE SHOPPING CENTER
CORNER OF SHORELINE DRIVE & PARK AVENUE
ALAMEDA, CALIFORNIA

PROJECT NO
93-1185002.10

DRAWING NO
3-2

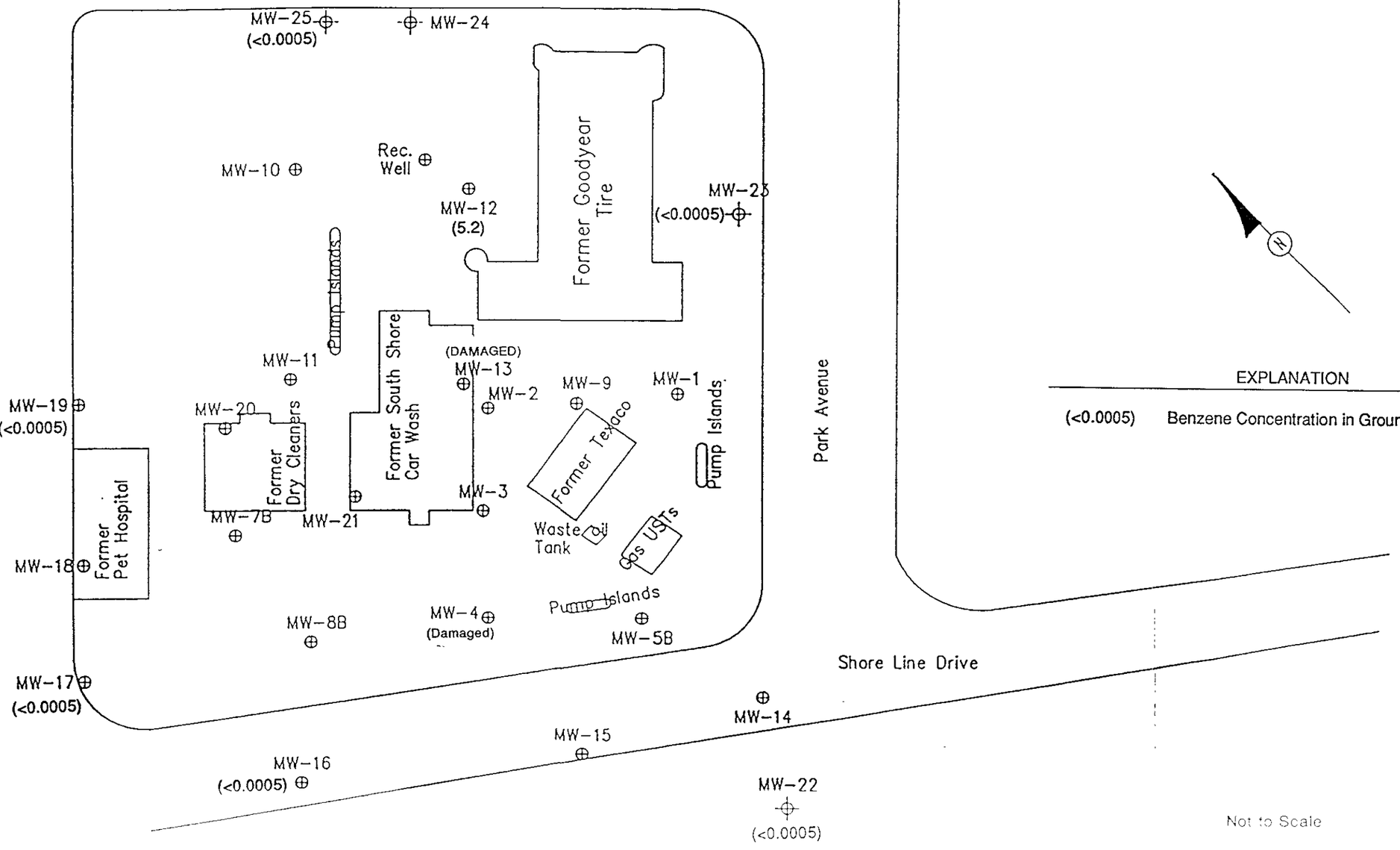
Date 11/26/94

RSS

Approved By

JHN

Prepared By



N

EXPLANATION

(<0.0005) Benzene Concentration in Groundwater, (mg/L)

Not to Scale

BENZENE CONCENTRATION FOR SAMPLED WELLS

THE MARK GROUP, INC.
ENGINEERS & GEOLOGISTS

SOUTH SHORE SHOPPING CENTER
CORNER OF SHORELINE DRIVE & PARK AVENUE
ALAMEDA, CALIFORNIA

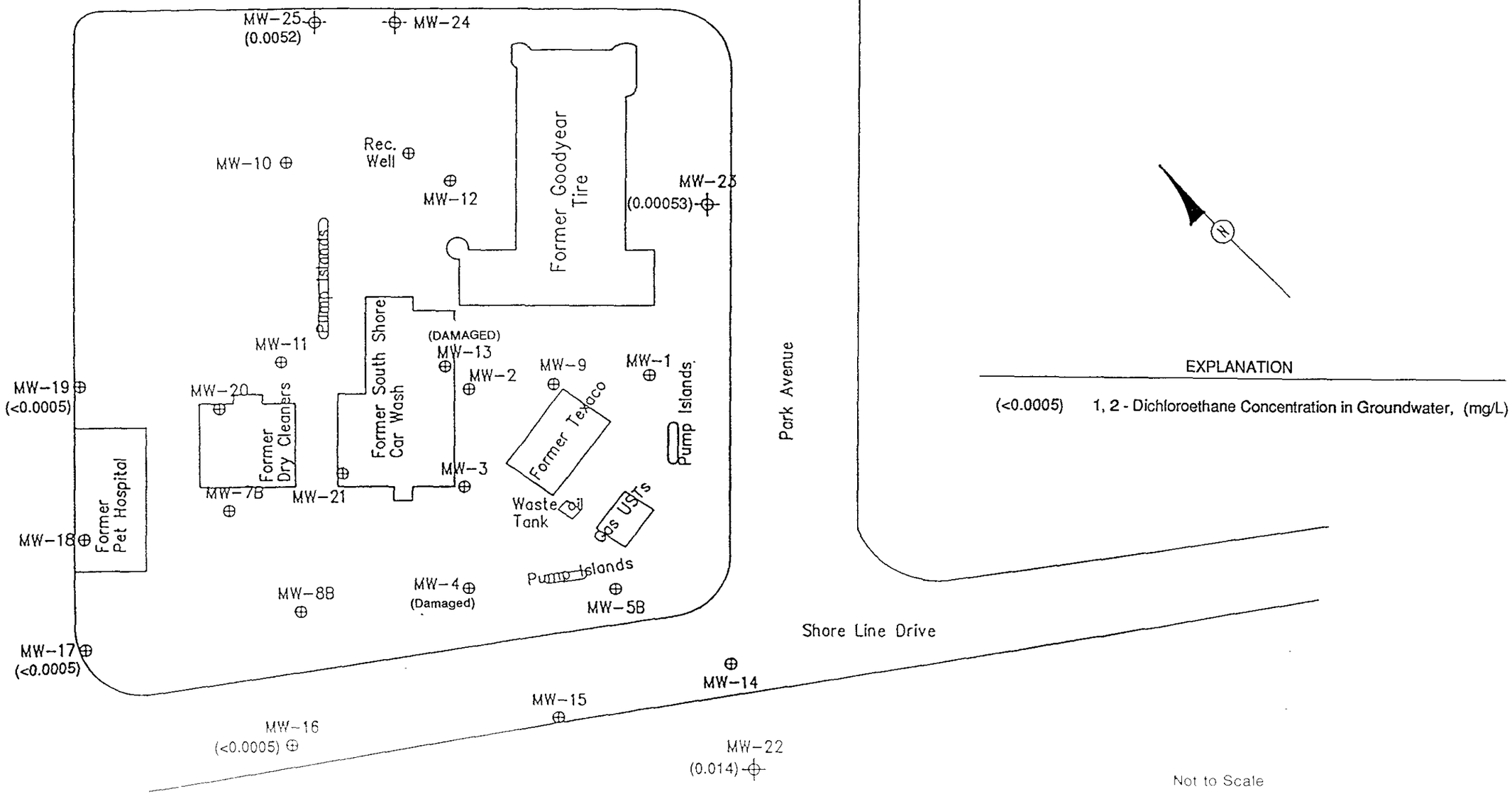
PROJECT NO
93-1185002 10

DRAWING NO
3-3

Date 11/26/94

Approved By RSS

Prepared By JHN



EXPLANATION

(<0.0005) 1, 2 - Dichloroethane Concentration in Groundwater, (mg/L)

Not to Scale

1, 2-DICHLOROETHANE CONCENTRATION FOR SAMPLED WELLS

THE MARK GROUP, INC.
ENGINEERS & GEOLOGISTS

SOUTH SHORE SHOPPING CENTER
CORNER OF SHORELINE DRIVE & PARK AVENUE
ALAMEDA, CALIFORNIA

PROJECT NO
93-1185002.10

DRAWING NO
3-4

Appendix A

THE MARK GROUP
ENGINEERS & GEOLOGISTS, INC.

Field Water Level Measurements

DATE: 10-18-94

PERSONNEL: T. Jones
G. Mitchel

WEATHER: Sunny, Nice

PROJECT No.: 421175306

HOW MEASURED/DEVICE: Electronic Sounder

LAST CALIBRATION DATE: Factory

COMMENTS:

Time	Well No.	Predicted or Measured Tide Level*	Top of Casing Elevation (Measuring Point)	Depth Below Top of Casing (MP)	Water Level Elevation
11:27	MW-2		7.44	7.27'	0.17
10:43	MW-3		6.78	6.68'	0.10
11:40	MW-5B		5.08	5.07'	~~0.00~~ 0.01
11:36	MW-9			DRY	
11:53	MW-14		5.76	5.89'	- 0.13
12:25	MW-15		4.47	4.85'	- 0.37
12:02	MW-22		7.81	8.16'	- 0.35
11:04	MW-7B		5.52	5.44'	0.08
11:08	MW-8B		6.15	6.54'	-0.39
12:29	MW-16		3.52	3.85'	-0.33
11:23	MW-17		3.32	3.76'	-0.44
11:19	MW-18		4.72	8.23'	-3.51
11:21	MW-19		5.28	5.58'	-0.30
10:59	MW-20		6.66	7.61'	-0.95
10:33	MW-21		6.72	7.11'	-0.39
12:06	MW-23		7.24	6.54'	0.70
10:59	MW-10		7.97	7.69'	0.28
4:59	MW-11		6.16	6.08'	0.08

* TIDE TABLE REFERENCE:

THE MARK GROUP
ENGINEERS & GEOLOGISTS, INC.

Field Water Level Measurements

DATE: 10-18-94

PROJECT No.: 92-1175-306

PERSONNEL: T. Jones
G. Mitchel

HOW MEASURED/DEVICE: electronic sounder

LAST CALIBRATION DATE: factory

WEATHER: Sunny, Nice

COMMENTS:

Time	Well No.	Predicted or Measured Tide Level*	Top of Casing Elevation (Measuring Point)	Depth Below Top of Casing (MP)	Water Level Elevation
11:29	MW12		8.31		
10:06	MW24		9.19	9.10'	0.09
10:16	MW25		9.41	9.55'	-0.14

* TIDE TABLE REFERENCE:

THE MARK GROUP
ENGINEERS & GEOLOGISTS, INC.

Field Water Level Measurements

DATE: 11/11/94

PROJECT No.: 92117>306

PERSONNEL: J. Nam
GA Fielder

HOW MEASURED/DEVICE: Electronic Sounder

LAST CALIBRATION DATE: factory

WEATHER: Sunny

COMMENTS:

Time	Well No.	Predicted or Measured Tide Level*	Top of Casing Elevation (Measuring Point)	Depth Below Top of Casing (MP)	Water Level Elevation
	MW9			6.24'	
	MW7B		5.52	4.61'	0.91'
	MW18		4.72	4.65'	0.07
	MW19		5.28	5.04'	0.24
	MW20		6.66	6.37'	0.29
	MW11		6.46	6.14'	0.32
	MW12		8.31	7.25'	1.06

* TIDE TABLE REFERENCE:

Appendix B

THE MARK GROUP
ENGINEERS & GEOLOGISTS, INC.

Water Purging & Sampling Log

Date 10-18-94 Sample Location MW2

Project Name South Shore Project No. 921175306

Weather Conditions Sunny

Observations/Comments

Samples Collected By TJ, GM

QUALITY CONTROL

Purging/Sampling Method Hand Bailed

Method to Measure Water Level E Tape

Pump Lines or Bailer Ropes: (new) cleaned dedicated

Method of Cleaning Bailer/Pump Liquinox wash / DI Rinse

pH Meter No. PH3 Date Calibrated 10-18-94

Sp Conductance Meter No. YSI04 Date Calibrated 10-18-94

PURGING AND SAMPLING DATA

Water Level (below MP) Start 7.27 End

Measuring Point (MP)

Time	Pump Rate (gpm)	Discharge (gallons)	pH	Temp. (°C)	Sp Cond (µmhos/cm)	Color	Odor	Turbidity
11:27			7.3	22.0	1210	Clear		

Total Discharge Casing Volumes

Method of Disposal of Discharge Water

Sheet ___ of ___

THE MARK GROUP
ENGINEERS & GEOLOGISTS, INC.

Water Purging & Sampling Log

Date 10-18-94 Sample Location MW3

Project Name South Shore Project No. 9211 75306

Weather Conditions Sunny

Observations/Comments

Samples Collected By TT, GM

QUALITY CONTROL

Purging/Sampling Method Hand Bailed

Method to Measure Water Level E tape

Pump Lines or Bailer Ropes: (new) cleaned dedicated

Method of Cleaning Bailer/Pump Liquinox ~~tot~~ wash / DI Rinse

pH Meter No. PH3 Date Calibrated 10-18-94

Sp Conductance Meter No. YSI 04 Date Calibrated 10-18-94

PURGING AND SAMPLING DATA

Water Level (below MP) Start 6.68' End

Measuring Point (MP)

Time	Pump Rate (gpm)	Discharge (gallons)	pH	Temp (°C)	Sp Cond (µmhos/cm)	Color	Odor	Turbidity
10:30			7.27	24	1250	clear	none	Slight

Total Discharge Casing Volumes

Method of Disposal of Discharge Water

Sheet ___ of ___

THE MARK GROUP
ENGINEERS & GEOLOGISTS, INC.

Water Purging & Sampling Log

Date 10-18-94 Sample Location MW-3B

Project Name South Shore Project No. 921175306

Weather Conditions Sunny

Observations/Comments

Samples Collected By TJ, GM

QUALITY CONTROL

Purging/Sampling Method Hand Bailed

Method to Measure Water Level E tape

Pump Lines or Bailer Ropes: (new) cleaned dedicated

Method of Cleaning Bailer/Pump Liquinox Wash / DI Rinse

pH Meter No. pH3 Date Calibrated 10-18-94

Sp Conductance Meter No. YS104 Date Calibrated 10-18-94

PURGING AND SAMPLING DATA

Water Level (below MP) Start 7.08 End

Measuring Point (MP)

Time	Pump Rate (gpm)	Discharge (gallons)	pH	Temp (°C)	Sp Cond (µmhos/cm)	Color	Odor	Turbidity
11:40			7.08	21.5	3520	Clear		

Total Discharge Casing Volumes

Method of Disposal of Discharge Water

Sheet ___ of ___

THE MARK GROUP
ENGINEERS & GEOLOGISTS, INC.

Water Purging & Sampling Log

Date 10-18-94 Sample Location MW7B

Project Name South shore Project No. 921175306

Weather Conditions Sunny

Observations/Comments

Samples Collected By TJ, GM

QUALITY CONTROL

Purging/Sampling Method Hand Bailed

Method to Measure Water Level E tape

Pump Lines or Bailer Ropes: (new) cleaned dedicated

Method of Cleaning Bailer/Pump Siquinox/Wash / DI Water

pH Meter No. PH3 Date Calibrated 10-18-94

Sp Conductance Meter No. 45104 Date Calibrated 10-18-94

PURGING AND SAMPLING DATA

Water Level (below MP) Start 5.44 End

Measuring Point (MP)

Time	Pump Rate (gpm)	Discharge (gallons)	pH	Temp (°C)	Sp Cond (µmhos/cm)	Color	Odor	Turbidity
11:04			7.45	23.5	1520	clear		

Total Discharge Casing Volumes

Method of Disposal of Discharge Water

Sheet ___ of ___

THE MARK GROUP
ENGINEERS & GEOLOGISTS, INC.

Water Purging & Sampling Log

Date 10-18-94 Sample Location MW 8B

Project Name South Shore Project No. 921175306

Weather Conditions Sunny

Observations/Comments

Samples Collected By JS, GM

QUALITY CONTROL

Purging/Sampling Method Hand Bailed

Method to Measure Water Level E-tape

Pump Lines or Bailer Ropes: (new) cleaned dedicated

Method of Cleaning Bailer/Pump Liquinox Wash / DI water

pH Meter No. PH 3 Date Calibrated 10-18-94

Sp Conductance Meter No. YSI04 Date Calibrated 10-18-94

PURGING AND SAMPLING DATA

Water Level (below MP) Start 6.54 End

Measuring Point (MP)

Time	Pump Rate (gpm)	Discharge (gallons)	pH	Temp (°C)	Sp Cond (µmhos/cm)	Color	Odor	Turbidity
11:08			8.28	21.5	2990	Clear		

Total Discharge Casing Volumes

Method of Disposal of Discharge Water

Sheet ___ of ___

THE MARK GROUP
ENGINEERS & GEOLOGISTS, INC.

Water Purging & Sampling Log

Date 10-18-94 Sample Location MW-10

Project Name Southshore Project No. 921175306

Weather Conditions Sunny

Observations/Comments

Samples Collected By IJ, GM

QUALITY CONTROL

Purging/Sampling Method Hand bailed

Method to Measure Water Level E tape

Pump Lines or Bailer Ropes: (new) cleaned dedicated

Method of Cleaning Bailer/Pump Liquinox Wash / DI Rinse

pH Meter No. PH 3 Date Calibrated 10-18-94

Sp Conductance Meter No. YSI 04 Date Calibrated 10-18-94

PURGING AND SAMPLING DATA

Water Level (below MP) Start 7.69' End

Measuring Point (MP)

Time	Pump Rate (gpm)	Discharge (gallons)	pH	Temp. (°C)	Sp Cond (µmhos/cm)	Color	Odor	Turbidity
10:13			7.0	22.5	2600	Grey	Strong	Clear w/ small cloudy spot

Total Discharge Casing Volumes

Method of Disposal of Discharge Water

Sheet ___ of ___

THE MARK GROUP
ENGINEERS & GEOLOGISTS, INC.

Water Purging & Sampling Log

Date 10-18-94 Sample Location MW-11

Project Name South Shore Project No. 921175306

Weather Conditions Sunny

Observations/Comments

Samples Collected By TJ, GM

QUALITY CONTROL

Purging/Sampling Method hand bailed

Method to Measure Water Level E tape

Pump Lines or Bailer Ropes: (new) cleaned dedicated

Method of Cleaning Bailer/Pump Liquinox wash / DI Rinse

pH Meter No. PH3 Date Calibrated 10-18-94

Sp Conductance Meter No. ysi 04 Date Calibrated 10-18-94

PURGING AND SAMPLING DATA

Water Level (below MP) Start 6.68' End 6.68'

Measuring Point (MP)

Time	Pump Rate (gpm)	Discharge (gallons)	pH	Temp (°C)	Sp Cond (µmhos/cm)	Color	Odor	Turbidity
10:04			6.95	22	1875	Clear	-	Slightly cloudy

Total Discharge Casing Volumes

Method of Disposal of Discharge Water

Sheet ___ of ___

THE MARK GROUP
ENGINEERS & GEOLOGISTS, INC.

Water Purging & Sampling Log

Date 10-18-94 Sample Location MW-14

Project Name South Shore Project No. 921175.306

Weather Conditions Sunny

Observations/Comments

Samples Collected By IJ, GM

QUALITY CONTROL

Purging/Sampling Method Hand Bailed

Method to Measure Water Level E tape

Pump Lines or Bailer Ropes: (new) cleaned dedicated

Method of Cleaning Bailer/Pump Liquinox Wash / DI Water

pH Meter No. PH3 Date Calibrated 10-18-94

Sp Conductance Meter No. 4510 Date Calibrated 10-18-94

PURGING AND SAMPLING DATA

Water Level (below MP) Start 5.89 End

Measuring Point (MP)

Time	Pump Rate (gpm)	Discharge (gallons)	pH	Temp (°C)	Sp Cond (µmhos/cm)	Color	Odor	Turbidity
11:53			7.79	23	1450	clear		

Total Discharge Casing Volumes

Method of Disposal of Discharge Water

Sheet ___ of ___

THE MARK GROUP
ENGINEERS & GEOLOGISTS, INC.

Water Purging & Sampling Log

Date 10-18-94 Sample Location MW15

Project Name South shore Project No. 921175306

Weather Conditions Sunny

Observations/Comments

Samples Collected By TJ, GM

QUALITY CONTROL

Purging/Sampling Method Hand Bailed

Method to Measure Water Level E tape

Pump Lines or Bailer Ropes: (new) cleaned dedicated

Method of Cleaning Bailer/Pump Liquinox Wash / DI Rinse

pH Meter No. PH3 Date Calibrated 10-18-94

Sp Conductance Meter No. YSI04 Date Calibrated 10-18-94

PURGING AND SAMPLING DATA

Water Level (below MP) Start 4.85' End

Measuring Point (MP)

Time	Pump Rate (gpm)	Discharge (gallons)	pH	Temp (°C)	Sp Cond (µmhos/cm)	Color	Odor	Turbidity
12:30			8.1	23.5	1750	clear	None	Slight

Total Discharge Casing Volumes

Method of Disposal of Discharge Water

Sheet ___ of ___

THE MARK GROUP
ENGINEERS & GEOLOGISTS, INC.

Water Purging & Sampling Log

Date 10-18-94 Sample Location MW-16

Project Name South Shore Project No. 921175306

Weather Conditions Sunny

Observations/Comments

Samples Collected By TH QM

QUALITY CONTROL

Purging/Sampling Method Hand Bailed

Method to Measure Water Level E tape

Pump Lines or Bailer Ropes: (new) cleaned dedicated

Method of Cleaning Bailer/Pump Liquinox wash/DI Rinse

pH Meter No. PH 3 Date Calibrated 10-17-94

Sp Conductance Meter No. Ypi 04 Date Calibrated 10-17-94

TD-30.12

PURGING AND SAMPLING DATA

Water Level (below MP) Start 3.85 End 5.78

4.36/13g. 14:50

Measuring Point (MP) Top of Casing

Time	Pump Rate (gpm)	Discharge (gallons)	pH	Temp (°C)	Sp Cond (mmhos/cm)	Color	Odor	Turbidity
						slight yellow tint		
14:19	2.0	2.0	7.70	22.5°	26000	clear	org	low
14:23	2.0	4.0	7.44	20.25°	33,400	"	"	"
14:29	2.0	6.0	7.37	20.5°	33,200	Cloudy	"	"
14:32	2.0	8.0	7.40	20°	33,200	Cloudy/clear	"	"
14:37	2.0	10.0	7.37	20°	33,200	"	"	"
14:43	3.0	13.0	7.41	20°	33,200	clear	"	"
Sample								
14:48	600ml		7.37	20°	33,200	"	"	"

Total Discharge 13gal Casing Volumes 3cv

Method of Disposal of Discharge Water on site 55g. drums

THE MARK GROUP
ENGINEERS & GEOLOGISTS, INC.

Water Purging & Sampling Log

Date 10-18-94 Sample Location MW17

Project Name South Shore Project No. 9211 75306

Weather Conditions Sunny

Observations/Comments

Samples Collected By TJ GM

QUALITY CONTROL

Purging/Sampling Method hand purged & sampled

Method to Measure Water Level E-tape

Pump Lines or Bailer Ropes: (new) cleaned dedicated

Method of Cleaning Bailer/Pump Liquinox wash / D.I Rinse

pH Meter No. PH 3 Date Calibrated 10-18-94

Sp Conductance Meter No. Ypsi 04 Date Calibrated 10-18-94

TD 24.8'

PURGING AND SAMPLING DATA

Water Level (below MP) Start 3.76' End 7.19 - 15:53

3.5/10.59

Measuring Point (MP) Top of casing

Time	Pump Rate (gpm)	Discharge (gallons)	pH	Temp (°C)	Sp Cond (umhos/cm)	Color	Odor	Turbidity
						slight yellow tint		
15:30	2.0	2.0	7.71	21.5°	24000	clear	org	low
15:34	2.0	4.0	7.55	20.5°	27,950	"	"	"
15:39	2.0	6.0	7.58	20.5°	26,600	"	"	"
15:42	2.0	8.0	7.57	20.5°	26050	"	"	"
15:47	2.0	10.0	7.58	20.5°	27100	"	"	"

Sample 600ml
15:50

Total Discharge 10g Casing Volumes 3cv.

Method of Disposal of Discharge Water onsite 55 gal drums

THE MARK GROUP
ENGINEERS & GEOLOGISTS, INC.

Water Purging & Sampling Log

Date 10-18-94 Sample Location MW18

Project Name South Shore Project No. 921175306

Weather Conditions Sunny

Observations/Comments

Samples Collected By TJ, GM

QUALITY CONTROL

Purging/Sampling Method hand bailed

Method to Measure Water Level Etape

Pump Lines or Bailer Ropes: (new) cleaned dedicated

Method of Cleaning Bailer/Pump Liquinox Wash / DI Rinse

pH Meter No. PH3 Date Calibrated 10/18/94

Sp Conductance Meter No. YSI 0 Date Calibrated 10/18/94

PURGING AND SAMPLING DATA

Water Level (below MP) Start 8.23 End

Measuring Point (MP)

Time	Pump Rate (gpm)	Discharge (gallons)	pH	Temp (°C)	Sp Cond (µmhos/cm)	Color	Odor	Turbidity
11:19			7.39	22	27,800	clear/yellow		

Total Discharge Casing Volumes

Method of Disposal of Discharge Water

Sheet ___ of ___

THE MARK GROUP
ENGINEERS & GEOLOGISTS, INC.

Water Purging & Sampling Log

Date 10-18-94 Sample Location MW19

Project Name South Shore Project No. 921175306

Weather Conditions Sunny

Observations/Comments —

Samples Collected By TJ + QM

QUALITY CONTROL

Purging/Sampling Method hand purged & sampled

Method to Measure Water Level E-tape

Pump Lines or Bailer Ropes: (new) cleaned dedicated

Method of Cleaning Bailer/Pump Liquinox wash / DI Rinse

pH Meter No. PH 3 Date Calibrated 10-18-94

Sp Conductance Meter No. YSI 04 Date Calibrated 10-18-94

TD 24.92'

PURGING AND SAMPLING DATA

Water Level (below MP) Start 5.58 End 7.67 - 16:25

2x.16 - 3.2/9.6g.

Measuring Point (MP) top of casing

Time	Pump Rate (gpm)	Discharge (gallons)	pH	Temp (°C)	Sp Cond (µmhos/cm)	Color	Odor	Turbidity
						grayish tint		
16:06	2.5	2.5	7.52	21°	26,500	clear	org	low
16:09	2.5	5.0	7.53	21°	26,500	"	"	"
16:15	2.5	7.5	7.53	21°	27,800	"	"	"
16:20	2.5	10.0	7.48	21°	27,900	"	"	"
Sample 16:21	↓	↓	↓	↓	↓	↓	↓	↓

Total Discharge 10g Casing Volumes ≥ 3cv

Method of Disposal of Discharge Water onsite 55g. drums

Sheet 1 of 1

THE MARK GROUP
ENGINEERS & GEOLOGISTS, INC.

Water Purging & Sampling Log

Date 10-18-94 Sample Location MW20

Project Name South Shore Project No. 921175306

Weather Conditions Sunny

Observations/Comments

Samples Collected By IS, GM

QUALITY CONTROL

Purging/Sampling Method hand bailed

Method to Measure Water Level E-tape

Pump Lines or Bailer Ropes: (new) cleaned dedicated

Method of Cleaning Bailer/Pump Liquinox Wash / DI Rinse

pH Meter No. 813 Date Calibrated 10/18/94

Sp Conductance Meter No. YSI 04 Date Calibrated 10/18/94

PURGING AND SAMPLING DATA

Water Level (below MP) Start 7.61 End

Measuring Point (MP)

Time	Pump Rate (gpm)	Discharge (gallons)	pH	Temp (°C)	Sp Cond (µmhos/cm)	Color	Odor	Turbidity
10:54			7.6	22	1100	clear		

Total Discharge Casing Volumes

Method of Disposal of Discharge Water

Sheet ___ of ___

THE MARK GROUP
ENGINEERS & GEOLOGISTS, INC.

Water Purging & Sampling Log

Date 10-18-94 Sample Location MW 22

Project Name South Shore Project No. 921175306

Weather Conditions Sunny

Observations/Comments

Samples Collected By TH QM

QUALITY CONTROL

Purging/Sampling Method hand purged & sampled

Method to Measure Water Level E-tape

Pump Lines or Bailer Ropes: (new) cleaned dedicated

Method of Cleaning Bailer/Pump Liquinox wash / DI Rinse

pH Meter No. PH 3 Date Calibrated 10-18-94

Sp Conductance Meter No. Ysi 04 Date Calibrated 10-18-94

TD 24.135'

PURGING AND SAMPLING DATA

Water Level (below MP) Start 8.16 End 8.54

2.65 / 7.95g 3:20

Measuring Point (MP) Top of casing

Time	Pump Rate (gpm)	Discharge (gallons)	pH	Temp (°C)	Sp Cond (xmhos/cm)	Color	Odor	Turbidity
3:04		2 gal	7.85	20°	2325	Grayish	None	Cloudy
3:08		4 gal	7.85	20°	2875	"	"	"
3:12		6 gal	7.82	20°	3000	"	"	"
3:14		8 gal	7.76	20°	3000			
3:15 Sampling								

Water in Roots in Bailer

Total Discharge 8 gal Casing Volumes 3 CV

Method of Disposal of Discharge Water onsite 55g drums

THE MARK GROUP
ENGINEERS & GEOLOGISTS, INC.

Water Purging & Sampling Log

Date 10-18-94 Sample Location MW23

Project Name South Shore Project No. 921175306

Weather Conditions Sunny

Observations/Comments

Samples Collected By TJ gm

QUALITY CONTROL

Purging/Sampling Method hand purged & sampled

Method to Measure Water Level E-tape

Pump Lines or Bailer Ropes: (new) cleaned dedicated

Method of Cleaning Bailer/Pump Liquinox wash/DI Rinse

pH Meter No. PH 3 Date Calibrated 10-18-94

Sp Conductance Meter No. Ypsi04 Date Calibrated 10-18-94

PURGING AND SAMPLING DATA

TD 18.55'

Water Level (below MP) Start 6.54' End 7:80 (visual)

2". .166 = 1.99/5.98q. 1:00 1:19

Measuring Point (MP) Top of casing

Time	Pump Rate (gpm)	Discharge (gallons)	pH	Temp (°C)	Sp Cond (µmhos/cm)	Color	Odor	Turbidity
1:00		½ gal	~~8.03~~ 8.03	21	200	Lt Gray	none	Slight
1:02		1 gal	8.11	~~21~~ 22	200	"	"	"
1:04		1½ gal	8.04	21	200	Gray-Tan	"	"
1:07		4 gal	8.03	21	210	"	"	"
1:13		6 gal	8.04	21	210	"	"	"

Sampling 1:15

Total Discharge 6 gl Casing Volumes 3 CV

Method of Disposal of Discharge Water onsite 55 gal drums

Sheet 1 of 1

THE MARK GROUP
ENGINEERS & GEOLOGISTS, INC.

Water Purging & Sampling Log

Date 10-18-94 Sample Location MW-23

Project Name South shore Project No. 921175306

Weather Conditions Sunny

Observations/Comments

Samples Collected By TJ, GM

QUALITY CONTROL

Purging/Sampling Method Hand bailed

Method to Measure Water Level E tape

Pump Lines or Bailer Ropes: (new) cleaned dedicated

Method of Cleaning Bailer/Pump Liquinox Wash / DI Rinse

pH Meter No. PH3 Date Calibrated 10-18-94

Sp Conductance Meter No. YSI04 Date Calibrated 10-18-94

PURGING AND SAMPLING DATA

Water Level (below MP) Start 6.54' End

Measuring Point (MP)

Time	Pump Rate (gpm)	Discharge (gallons)	pH	Temp (°C)	Sp Cond (µmhos/cm)	Color	Odor	Turbidity
10:37			7.54	22	3150	Lt Yellow	None	slight

Total Discharge Casing Volumes

Method of Disposal of Discharge Water

Sheet ___ of ___

THE MARK GROUP
ENGINEERS & GEOLOGISTS, INC.

Water Purging & Sampling Log

Date 10-18-94 Sample Location MW-24

Project Name South Shore Project No. 92.1175306

Weather Conditions Sunny

Observations/Comments

Samples Collected By TJ, GM

QUALITY CONTROL

Purging/Sampling Method Hand bailed

Method to Measure Water Level E tape

Pump Lines or Bailer Ropes: (new) cleaned dedicated

Method of Cleaning Bailer/Pump Liquinox Wash / DI Rinse

pH Meter No. PH3 Date Calibrated 10-18-94

Sp Conductance Meter No. YSI 04 Date Calibrated 10-18-94

PURGING AND SAMPLING DATA

Water Level (below MP) Start 9.10' End

Measuring Point (MP)

Time	Pump Rate (gpm)	Discharge (gallons)	pH	Temp (°C)	Sp Cond (µmhos/cm)	Color	Odor	Turbidity
10:10			7.50	24	2900	Lt Yellow Gray	-	Lt Gray Slightly Cloudy

Total Discharge Casing Volumes

Method of Disposal of Discharge Water

Sheet ___ of ___

THE MARK GROUP
ENGINEERS & GEOLOGISTS, INC.

Water Purging & Sampling Log

Date 10-18-94 Sample Location MW 25

Project Name South Shore Project No. 921175306

Weather Conditions Sunny

Observations/Comments

Samples Collected By TJ GM

QUALITY CONTROL

Purging/Sampling Method Hand Bailed

Method to Measure Water Level Stupl

Pump Lines or Bailer Ropes: (new) cleaned dedicated

Method of Cleaning Bailer/Pump Liquinox / DI Rinse

pH Meter No. pH3 Date Calibrated 10-18-94

Sp Conductance Meter No. 95104 Date Calibrated 10-18-94

PURGING AND SAMPLING DATA

Water Level (below MP) Start 9.55 End

Measuring Point (MP)

Time	Pump Rate (gpm)	Discharge (gallons)	pH	Temp (°C)	Sp Cond (µmhos/cm)	Color	Odor	Turbidity
10:20			7.63	23	4800	Lt Yellow	Organic	Slight

Total Discharge Casing Volumes

Method of Disposal of Discharge Water

Sheet ___ of ___

THE MARK GROUP
ENGINEERS & GEOLOGISTS, INC.

Conductivity Meter Calibration Log

Meter No. 4404

Date	Temp (°C)	Standard/Actual	Standard/Actual	Standard/Actual	Project No.	Operator	Comments
10-18		1K / 800	10K / 9,500	— / —	921175206	TJ	

THE MARK GROUP
ENGINEERS & GEOLOGISTS, INC.

pH Meter Calibration Log
Meter No. PH 3

Date	Temp (°C)	Standard/Actual	Standard/Actual	Standard/Actual	Project No.	Operator	Comments
10-18	18°	—	7.00/7.05	10.00/10.07	921175306	TS	Recalibrated to 7 & 10

Appendix C

McCAMPBELL ANALYTICAL INC.

110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

10/28/94

Dear Bob:

Enclosed are:

1). the results of 6 samples from your # **921175306; South Shore** project,

2). a QC report for the above samples

3). a copy of the chain of custody, and

4). a bill for analytical services.

If you have any questions please contact me. McCampbell Analytical Laboratories strives for excellence in quality, service and cost. Thank you for your business and I look forward to working with you again.

Yours truly,

Edward Hamilton

McCAMPBELL ANALYTICAL INC.
110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

The Mark Group Hookston Square, # 120 3480 Buskirk Avenue Pleasant Hill, CA 94523	Client Project ID: # 921175306; South Shore	Date Sampled: 10/18/94
		Date Received: 10/18/94
	Client Contact: Robert Spare	Date Extracted: 10/19-10/21/94
	Client P.O:	Date Analyzed: 10/19-10/21/94

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline*, with BTEX*

EPA methods 5030, modified 8015, and 8020 or 602; California RWQCB (SF Bay Region) method GCFID(5030)

Lab ID	Client ID	Matrix	TPH(g)+	Benzene	Toluene	Ethylben-zene	Xylenes	% Rec. Surrogate
41685	MW22	W	ND	ND	ND	ND	ND	107
41686	MW23	W	ND	ND	ND	ND	ND	109
41687	MW19	W	ND	ND	ND	ND	ND	107
41688	MW17	W	ND	ND	ND	ND	ND	108
41689	MW16	W	ND	ND	ND	ND	ND	110
Detection Limit unless other-wise stated; ND means Not Detected		W	50 ug/L	0.5	0.5	0.5	0.5	
		S	1.0 mg/kg	0.005	0.005	0.005	0.005	

*water samples are reported in ug/L, soil samples in mg/kg, and all TCLP extracts in mg/L

+ cluttered chromatogram, sample peak co-elutes with surrogate peak

The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified gasoline is significant; b) heavier gasoline range compounds are significant(aged gasoline?); c) lighter gasoline range compounds (the most mobile fraction) are significant, d) gasoline range compounds are significant, no recognizable pattern, e) TPH pattern that does not appear to be derived from gasoline (?), f) one to a few isolated peaks present, g) strongly aged gasoline or diesel range compounds are significant, h) lighter than water immiscible phase is present

DHS Certification No 1644

Edward Hamilton, Lab Director

McCAMPBELL ANALYTICAL INC. | 110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

The Mark Group Hookston Square, # 120 3480 Buskirk Avenue Pleasant Hill, CA 94523	Client Project ID: # 921175306; South Shore	Date Sampled: 10/18/94
		Date Received: 10/18/94
	Client Contact: Robert Spare	Date Extracted: 10/21/94
	Client P.O:	Date Analyzed: 10/21-10/22/94

Diesel Range (C10-C23) Extractable Hydrocarbons as Diesel *

EPA methods modified 8015, and 3550 or 3510; California RWQCB (SF Bay Region) method GCFID(3550) or GCFID(3510)

Lab ID	Client ID	Matrix	TPH(d)+	% Recovery Surrogate
41685	MW22	W	ND	103
Detection Limit unless otherwise stated; ND means Not Detected		W	50 ug/L	
		S	10 mg/kg	

*water samples are reported in ug/L, soil samples in mg/kg, and all TCLP extracts in mg/L

cluttered chromatogram; surrogate and sample peaks co-elute or surrogate peak is on elevated baseline

+ The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified diesel is significant, b) diesel range compounds are significant, no recognizable pattern; c) modified diesel?; light(c_L) or heavy(c_H) diesel compounds are significant), d) gasoline range compounds are significant; e) medium boiling point pattern that does not match diesel(?); f) one to a few isolated peaks present; g) oil range compounds are significant; h) lighter than water immiscible phase is present

DHS Certification No. 1644

Edward Hamilton, Lab Director

McCAMPBELL ANALYTICAL INC. | 110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

The Mark Group	Client Project ID: # 921175306; South Shore	Date Sampled: 10/18/94
Hookston Square, # 120		Date Received: 10/18/94
3480 Buskirk Avenue	Client Contact: Robert Spare	Date Extracted: 10/21/94
Pleasant Hill, CA 94523	Client P.O:	Date Analyzed: 10/21-10/22/94/94

Volatile Halocarbons

EPA method 601 or 8010

Lab ID	41685	41686	41687	41688
Client ID	MW22	MW23	MW19	MW17
Matrix	W	W	W	W
Compound[1]	Concentration*	Concentration*	Concentration*	Concentration*
Bromodichloromethane	ND	ND	ND	ND
Bromoform[2]	ND	ND	ND	ND
Bromomethane	ND	ND	ND	ND
Carbon Tetrachloride[3]	ND	ND	ND	ND
Chlorobenzene	ND	ND	ND	ND
Chloroethane	ND	ND	ND	ND
2-Chloroethyl Vinyl Ether[4]	ND	ND	ND	ND
Chloroform[5]	0.65	ND	4.6	4.0
Chloromethane	ND	ND	ND	ND
Dibromochloromethane	ND	ND	ND	ND
1,2-Dichlorobenzene	ND	ND	ND	ND
1,3-Dichlorobenzene	ND	ND	ND	ND
1,4-Dichlorobenzene	ND	ND	ND	ND
1,1-Dichloroethane	ND	ND	ND	ND
1,2-Dichloroethane	14	0.53	ND	ND
1,1-Dichloroethene	ND	ND	ND	ND
cis 1,2-Dichloroethene	ND	ND	ND	ND
trans 1,2-Dichloroethene	ND	ND	ND	ND
1,2-Dichloropropane	ND	ND	ND	ND
cis 1,3-Dichloropropene	ND	ND	ND	ND
trans 1,3-Dichloropropene	ND	ND	ND	ND
Methylene Chloride[6]	ND	ND	ND	ND
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND
Tetrachloroethene[7]	ND	ND	ND	ND
1,1,1-Trichloroethane	ND	ND	ND	ND
1,1,2-Trichloroethane	ND	ND	ND	ND
Trichloroethene	ND	ND	ND	ND
Trichlorofluoromethane	ND	ND	ND	ND
Vinyl Chloride[8]	ND	ND	ND	ND
% Recovery Surrogate	106	109	102	107
Comments				

Detection limit unless otherwise stated water, ND< 0.5ug L, soil, ND< 10ug kg

* water samples are reported in ug L, soil samples in ug kg and all TCLP extracts in ug L

(1) IUPAC allows "ylene" or "ene" ex ethylene or ethene, (2) tribromomethane (3) tetrachloromethane (4) (2-chloroethoxy) ethene, (5) trichlormethane, (6) dichloromethane, (7) perchlorethylene PCE or perclor (8) chloroethene, (9) unidentified peak(s) present

DHS Certification No 1644

Edward Hamilton, Lab Director

McCAMPBELL ANALYTICAL INC. | 110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

The Mark Group	Client Project ID: # 921175306; South Shore	Date Sampled: 10/18/94
Hookston Square, # 120		Date Received: 10/18/94
3480 Buskirk Avenue	Client Contact: Robert Spare	Date Extracted: 10/21/94
Pleasant Hill, CA 94523	Client P.O:	Date Analyzed: 10/21-10/22/94

Volatile Halocarbons

EPA method 601 or 8010

Lab ID	41689	41690		
Client ID	MW16	MW25		
Matrix	W	W		
Compound[1]	Concentration*	Concentration*	Concentration*	Concentration*
Bromodichloromethane	ND	ND		
Bromoform[2]	ND	ND		
Bromomethane	ND	ND		
Carbon Tetrachloride[3]	ND	ND		
Chlorobenzene	ND	ND		
Chloroethane	ND	ND		
2-Chloroethyl Vinyl Ether[4]	ND	ND		
Chloroform[5]	6.1	1.3		
Chloromethane	ND	ND		
Dibromochloromethane	ND	ND		
1,2-Dichlorobenzene	ND	ND		
1,3-Dichlorobenzene	ND	ND		
1,4-Dichlorobenzene	ND	ND		
1,1-Dichloroethane	ND	ND		
1,2-Dichloroethane	ND	5.2		
1,1-Dichloroethene	ND	ND		
cis 1,2-Dichloroethene	ND	0.88		
trans 1,2-Dichloroethene	ND	ND		
1,2-Dichloropropane	ND	ND		
cis 1,3-Dichloropropene	ND	ND		
trans 1,3-Dichloropropene	ND	ND		
Methylene Chloride[6]	ND	ND		
1,1,2,2-Tetrachloroethane	ND	ND		
Tetrachloroethene[7]	ND	ND		
1,1,1-Trichloroethane	ND	ND		
1,1,2-Trichloroethane	ND	ND		
Trichloroethene	ND	ND		
Trichlorofluoromethane	ND	ND		
Vinyl Chloride[8]	ND	ND		
% Recovery Surrogate	104	104		
Comments				

Detection limit unless otherwise stated: water, ND< 0.5ug/L, soil, ND< 10ug/kg

* water samples are reported in ug/L, soil samples in ug/kg and all TCLP extracts in ug/L

(1) IUPAC allows "diene" or "ene", ex. ethylene or ethene (2) tribromomethane, (3) tetrachloromethane, (4) (2-chloroethoxy) ethene (5) trichlormethane (6) dichloromethane, (7) perchlorethylene PCE or perclor (8) chloroethene, (9) unidentified peak(s) present

DHS Certification No. 1644

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QC REPORT FOR HYDROCARBON ANALYSES

Date: 10/19/94 Matrix: Water

Analyte	Concentration (ug/L)			Amount Spiked	% Recovery		RPD
	Sample	MS	MSD		MS	MSD	
TPH (gas)	0.0	99.5	101.7	100	99.5	101.7	2.2
Benzene	0	11	11.3	10	110.0	113.0	2.7
Toluene	0	10.9	11.1	10	109.0	111.0	1.8
Ethyl Benzene	0	10.7	11	10	107.0	110.0	2.8
Xylenes	0	33.8	34.6	30	112.7	115.3	2.3
TPH (diesel)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TRPH (oil & grease)	7300	27000	27100	23700	83	84	0.4

% Rec. = (MS - Sample) / amount spiked x 100

RPD = (MS - MSD) / (MS + MSD) x 2 x 100

McCAMPBELL ANALYTICAL INC.
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Tele: 510-798-1620 Fax: 510-798-1622

QC REPORT FOR HYDROCARBON ANALYSES

Date: 10/21-10/22/94 Matrix: Water

Analyte	Concentration (ug/L)			Amount Spiked	% Recovery		RPD
	Sample	MS	MSD		MS	MSD	
TPH (gas)	0.0	97.1	92.5	100	97.1	92.5	4.8
Benzene	0	10.1	10.3	10	101.0	103.0	2.0
Toluene	0	9.9	10	10	99.0	100.0	1.0
Ethyl Benzene	0	9.8	9.7	10	98.0	97.0	1.0
Xylenes	0	30.7	30.6	30	102.3	102.0	0.3
TPH (diesel)	0	166	167	150	111	112	1.0
TRPH (oil & grease)	0	26110	26300	23700	110	111	0.7

% Rec. = (MS - Sample) / amount spiked x 100

RPD = (MS - MSD) / (MS + MSD) x 2 x 100

McCAMPBELL ANALYTICAL INC.
110 2nd Avenue South, #D7, Pacheco, CA 94553
Tele: 510-798-1620 Fax: 510-798-1622

QC REPORT FOR EPA 8010/8020/EDB

Date: 10/22/94 Matrix: Water

Analyte	Concentration (ug/L)				% Recovery		RPD
	Sample	MS	MSD	Amount Spiked	MS	MSD	
1,1-DCE	0.0	4.4	4.4	5.0	88	87	0.7
Trichloroethene	0.0	4.8	4.8	5.0	96	97	0.6
EDB	0.0	3.6	3.6	5.0	72	73	0.3
Chlorobenzene	0.0	5.1	5.0	5.0	102	100	1.6
Benzene	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Toluene	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chlorobz (PID)	N/A	N/A	N/A	N/A	N/A	N/A	N/A

% Rec. = (MS - Sample) / amount spiked x 100

RPD = (MS - MSD) / (MS + MSD) x 2 x 100

THE MARK GROUP
ENGINEERS & GEOLOGISTS, INC.

Chain Of Custody Record

3091AMG65

Project No. 921175306

Date 10-18-94

Sample Point: South Shore

TIME	SAMPLE NUMBER	CONTAINER SIZE	ANALYZE FOR	PRESERVATIVE	HOLDING TIME	REMARKS
15:15	MW22	3x40ml	TPHgas BTEX 601 TPH diesel	HCL ICE		41685
13:15	MW23	3x40ml	TPHgas BTEX 601	HCL		41686
16:21	MW19	3x40ml	TPHgas BTEX 601	HCL		41687
15:50	MW17	3x40ml	TPHgas BTEX 601	HCL		41688
14:48	MW16	3x40ml	TPHgas BTEX 601	HCL		41689
	MW25	3x40ml	601 only	HCL		41690
15:15	MW22	1qt	*NOTE			
13:15	MW23	1qt	Hold & contact			
16:21	MW19	1qt	Bob Spare!			
15:50	MW17	1qt	all are for			analyses finalized 10-19 Bob Spare
14:48	MW16	1qt	TPH Diesel/TDS			

ICE/T ✓
GOOD CONDITION ✓
HEAD SPACE ABSENT ✓
PRESERVATIVE ✓
APPROPRIATE
CONTAINERS ✓

Relinquished by: (signature)	Date/Time	Received by: (signature)	Receiver represents:
Thomas C Jones	10-18-94 18:04		18:04 10-18-94 MAI
Relinquished by: (signature)	Date/Time	Received by: (signature)	Receiver represents

Expected analytical turn around time	24-hr RUSH	48-hr RUSH	7-day RUSH	14-day GUARANTEE	NORMAL (21 days)

Hookston Square, Suite 120 3480 Buskirk Avenue Pleasant Hill, CA 94523 (510) 946-1055

Shipping Copy (White) File Copy (Yellow) Field Copy (Pink)

Appendix D

Table 3-2: Groundwater Analytical Results - April 1994
South Shore Shopping Center
Texaco, Harsch, and Kamur

Well No	Date Sampled	TDS	TPH as Diesel	TPH as Gasoline	Benzene	Toluene	Xylenes	Ethyl-benzene	Chloro-benzene	1,2-Dichloro-ethane	1,1-Dichloro-ethene	trans-1,2-Di-chloroethene	Tetra-chloroethene	Trichloro-ethene
Texaco Wells														
MW-2	04/27/94	650	<0.05	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.002	<0.002	<0.001	<0.001	<0.002
MW-3	04/27/94	850	<0.05	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.002	<0.002	<0.001	0.0082	0.0014
MW-5B	04/28/94	2,700	<0.05	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.002	<0.002	0.014	0.0012	0.01
MW-9	04/28/94	920	<0.05	1.9	0.52	0.0028	<0.0005	0.035	<0.001	<0.002	<0.002	<0.001	<0.001	<0.002
MW-14	04/27/94	840	<0.05	0.053	0.00095	<0.0005	0.015	0.0033	<0.001	0.0084	<0.002	<0.001	<0.001	<0.002
MW-14B	04/27/94	1,800	<0.05	0.054	0.00096	<0.0005	0.015	0.0034	<0.001	0.0097	<0.002	<0.001	<0.001	<0.002
MW-15	04/27/94	1,500	<0.05	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.002	<0.002	<0.001	<0.001	<0.002
MW-22	04/28/94	2,000	<0.05	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	0.015	<0.002	<0.001	<0.001	<0.002
Harsch Wells														
MW-7B	04/29/94	1,300	<0.05	5.6	0.19	<0.0005	0.027	<0.0005	0.031	<0.002	0.0058	0.013	0.19	0.012
MW-8B	05/02/94	2,900	<0.05	0.14	0.0092	<0.0005	<0.0005	<0.0005	<0.001	<0.002	<0.002	0.023	0.07	0.057
MW-16	05/02/94	25,000	<0.05	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.002	<0.002	<0.001	<0.001	<0.002
MW-17	04/29/94	18,000	<0.05	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.002	<0.002	<0.001	0.0024	<0.002
MW-18	04/29/94	19,000	<0.05	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.002	<0.002	<0.001	0.0014	<0.002
MW-19	04/29/94	20,000	<0.05	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.002	<0.002	<0.001	0.0011	<0.002
MW-20	04/29/94	13,000	<0.05	0.057	0.021	<0.0005	<0.0005	<0.0005	<0.001	<0.002	<0.002	0.058	0.057	0.032
MW-21	04/29/94	20,000	<0.05	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.002	<0.002	<0.001	<0.001	<0.002
MW-23	05/02/94	54	<0.05	<0.05	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.002	<0.002	<0.001	<0.001	<0.002
Kamur Wells														
MW-10	04/27/94	2,570	NT	90	3.6	3.2	5.3	1.2	<0.001	0.013	<0.002	0.002	0.0039	<0.002
MW-11	04/27/94	1,230	NT	<0.050	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.002	<0.002	0.0015	0.0025	0.0042
MW-12	04/27/94	510	NT	160	1.3	6.3	12	1.4	<0.001	<0.002	<0.002	<0.001	0.0039	<0.002
MW-24	04/27/94	560	NT	<0.050	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	0.0065	<0.002	0.0018	0.0039	<0.002
MW-25	04/27/94	2,550	NT	38	3.0	1.2	2.0	0.71	<0.001	0.0093	<0.002	<0.001	0.0039	<0.002
Regulatory Limits														
PMCL		NA	NA	NA	0.001	1.0	1.75	0.68	0.03	0.0005	0.006	0.07	0.005	0.005

Explanation
All results are in milligrams per liter.
NT - Not tested
NA - Not available
TDS - Total Dissolved Solids Method 160.1
TPH as Gasoline - Total Petroleum Hydrocarbons as Gasoline analyzed using EPA methods 5030 and TPH LUFT.
Benzene, Toluene, Xylenes and Ethylbenzene analyzed using method 602
TPH as Diesel - Total Petroleum Hydrocarbons as Diesel analyzed using EPA method 3510 and TPH LUFT
Priority Pollutants analyzed using EPA methods 5030 and 601
PMCL - Primary Maximum Contaminant Level
MW-14B - Duplicate sample of MW-14

★ **Note that analytical data shown for monitoring wells MW-24 and MW-25 appears to be reversed based on MARK and Kamur october 1994 field notes and laboratory data**

Table 3-3

Analytical Summary for Groundwater Samples Collected in February 1993
All Concentrations in Micrograms per Liter (µg/l)

Sample I.D	PCE	TCE	1,2-DCA	1,2-DCE	Benzene	Toluene	Xylenes	Ethylbenzene	Gas	Diesel	Oil & Grease	TDS	DTW	W.E.	C.E.
MW-5B	ND	3.4	0.4	5.0	210	4.2	2.0	1.9	640	2,400	NA	1,400	2.42	+2.66	5.08
MW-7B	5,800	540	ND	150	NA	NA	NA	NA	NA	NA	NA	1,100	3.33	+2.19	5.52
MW-8B	5.0	14	ND	9.0	NA	NA	NA	NA	NA	NA	NA	930	4.92	+1.23	6.15
MW-10	ND	9.5	ND	ND	210	480	1,200	510	66,000	NA	NA	NA	6.04	+2.06	8.10
MW-11	5 8	2.0	ND	ND	NA	NA	NA	NA	NA	NA	NA	630	4.95	+2.26	7.01
MW-12	ND	2.4	ND	ND	620	1,900	6,000	2,200	330,000	NA	3,900	NA	5.92	+2.41	8.33
MW-13	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.75	+2.70	7.45
MW-14	ND	ND	3.4	ND	ND	ND	ND	ND	ND	660	NA	2,000	3.42	+2.35	5.77
MW-15	ND	ND	ND	ND	ND	ND	ND	ND	ND	200	NA	880	3.50	+0.96	4.46
MW-16	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	24,000	0.42	+3.10	3.52
MW-17	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	18,000	2.50	+0.82	3.32
MW-18	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	19,000	4.38	+0.34	4.72
MW-19	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.46	+0.82	5.28
MW-20	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	5.71	+0.95	6.66
MW-21	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	6.48
MW-22	ND	ND	22	ND	ND	ND	ND	ND	ND	120	NA	2,100	6.33	NA	NA
MW-23	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	160	3.42	NA	NA
MW-24	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA
MW-25	ND	11	ND	ND	100	230	500	270	33,000	NA	NA	NA	NA	NA	NA
MCL	5	5	0.5	6.0	1.0	NP	1,750	680	NP	NP	NP	---	---	---	---

- ND Not detected at or above analytical detection limits
- NA Not analyzed
- DTW Depth to water
- W.E. Water elevation

★ Note that **analytical data shown for monitoring wells MW-24 and MW-25 appears to be reversed based on MARK and Kamur october 1994 field notes and laboratory data.**