GET

Geo Environmental Technology

Quarterly Groundwater Monitoring
First Quarter 2003

For

Livermore Gas and Mini Mart
160 Holmes Street
Livermore, California

Prepared by

Geo Environmental Tech
343 Soquel Avenue, #33
Santa Cruz, CA 95062

4/14/03

Costas Orountiotis
Project Manager

Date

REGISTERED PROFESSIONAL ENGINEER
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4/14/03

Kenneth L. Meleen
Senior Engineer

Date

April 2003

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GET

Geo Environmental Technology

GROUNDWATER MONITORING REPORT
FIRST QUARTER 2003

Livermore Gas and Mini Mart
160 Holmes Street
Livermore, California

1.0 INTRODUCTION

This report documents the results of the 3/14/03 quarterly groundwater monitoring performed at the Livermore Gas and Mini Mart, located at 160 Holmes Street in Livermore, California (site). A site vicinity map is presented as Figure 1 and site details are shown on the Site Plan, Figure 2.

The Livermore Gas and Mini Mart had been serviced by three 10,000-gallon gasoline and one 10,000-gallon diesel Underground Storage Tanks (USTs). The USTs, piping and dispensers were removed on 4/5/99 under permit from the Livermore-Pleasanton Fire Department (LPFD). Analysis of soil and groundwater samples collected at the time of the UST removal, indicated that the site has been impacted by a release of petroleum hydrocarbons and MTBE.

The Alameda County Environmental Health Services (ACEHS) has directed quarterly groundwater monitoring for this site.

2.0 PAST WORK ON SITE

On 2/26/99, a soil boring was advanced in the northern section of the property, about 10 feet from the edge of First Street sidewalk, to log the soil profile and determine depth to groundwater. A groundwater grab sample was collected and analyzed for Total Petroleum Hydrocarbons as gasoline (TPHg), benzene, toluene, ethyl-benzene, total xylenes (BTEX) and methyl tertiary butyl ether (MTBE). The sample was found to be impacted by petroleum hydrocarbons (TPHg: 100,000 ug/l, Benzene: 6,100 ug/l, MTBE: 60,000 ug/L). The results were communicated to the Livermore-Pleasanton Fire Department (LPFD) and a UST Unauthorized Release Report was generated.

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Fax: (831) 423-8827

On 4/5/99, three gasoline and one diesel USTs, associated dispensers and piping were removed, manifested and disposed, under permit by the LPFD. The pit was over-excavated and samples were collected from native soil beneath the USTs; sample analysis indicated the presence of petroleum hydrocarbons in soil. Total Petroleum Hydrocarbons as diesel (TPHd) were detected at low levels (61 mg/kg) in the soil stockpile, but not beneath the diesel tank; Total Petroleum Hydrocarbons as gasoline (TPHg) concentrations ranged from undetectable to 80 mg/kg in all samples; MTBE concentrations ranged from 24 to 110 mg/kg.

On 5/20/99 soil samples were collected beneath the dispenser islands. TPHg was found beneath the east dispenser island in varying concentrations ranging from 32 mg/kg to 6,500 mg/kg; TPHd beneath the diesel dispenser was detected at 1300 mg/kg; no MTBE was detected beneath the dispenser islands.

On 7/26/00, three soil borings were drilled onsite to an approximate depth of 30' below ground surface (bgs). Soil samples were collected for analyses. Upon completion of drilling activities, the soil borings were converted to groundwater monitoring wells (MW1, MW2 and MW3) by installing 2-inch diameter, Schedule 40, factory threaded polyvinyl chloride (PVC) slotted 0.010-inch. The slotted interval extends from 15 to 30 feet bgs. The wells were sampled on 8/11/00 and analyzed for TPHd, TPHg, BTEX and MTBE. The sample results indicated significant hydrocarbon impact in the groundwater. Directly downgradient well MW1 had concentrations of TPHg and MTBE of 170,000 ug/L and 320,000 ug/L respectively. A "Well Installation Report" was issued by ETIC Engineering on 9/22/00.

On 10/19/00 groundwater samples were collected as part of quarterly monitoring at the site. Samples were analyzed for TPHd, TPHg, BTEX and MTBE. The sample results confirmed the presence of significant hydrocarbon impact in the groundwater. Directly downgradient well MW1 had concentrations of TPHg and MTBE of 170,000 ug/L and 200,000 ug/L respectively. Geo Environmental Technologies (GET) issued a "Quarterly Monitoring Report" on 1/31/01.

On 02/22/01 groundwater samples were collected and analyzed for TPHd, TPHg BTEX and MTBE. The sample results confirmed significant hydrocarbon impact in the groundwater. Directly downgradient well MW1 had concentrations of TPHg and MTBE of 11,000 ug/L and 190,000 ug/L respectively. GET issued a "Quarterly Monitoring Report" on 3/31/01.

On 05/30/01 groundwater samples were not collected because all three monitoring wells were found to be dry. The monitoring wells also were dry in August 2001.

On 11/14/01 groundwater samples were collected during the installation of an onsite extraction well and three off-site monitoring wells. Monitoring wells MW1, MW2 and MW3 were all dry. Groundwater samples were collected from the four newly installed wells. Samples were analyzed for TPHd, TPHg, BTEX and MTBE. The sample results confirmed the presence of significant hydrocarbon concentrations offsite and an areal impact to the groundwater. Directly downgradient extraction well EX1 contained concentrations of TPHg and MTBE of 2,000 ug/L and 2,200 ug/L respectively. GET issued a "Quarterly Monitoring Report" on 3/31/02. Construction details of all wells are presented in Table 1.

On 5/7/02 groundwater samples were collected and analyzed for TPHd, TPHg/BTEX and MTBE. Directly downgradient extraction well EX1 contained concentrations of TPHg and MTBE of 7,700 ug/L and 6,200 ug/L respectively. GET issued a "Quarterly Monitoring Report" on May 28, 2002.

On 9/11/02 groundwater samples were collected and analyzed for TPHg/BTEX and MTBE. Directly downgradient wells EX1 and MW1 contained TPHg concentrations of 2,800 and 130,000 ug/L and MTBE of 2,500 and <5,000 ug/L respectively. GET issued a "Quarterly Monitoring Report" on December 13, 2002.

On 12/1/02 groundwater samples were collected and analyzed for TPHg/BTEX and MTBE. Directly downgradient well EX1 contained concentrations of TPHg at 3,000 ug/L and MTBE 1,200 ug/L. Downgradient well MW1 was dry and therefore was not sampled. GET issued a "Quarterly Monitoring Report" on February 2003.

3.0 SITE CONTACTS

The following is a listing of site contacts, addresses and phone numbers.

UST Operator:	Livermore Gas and Mini Mart Attention: Manwel and Samira Shuwayhat 160 Holmes Street Livermore, CA 94520
Local Oversight Agency:	ACEHS Attention: Eva Chu 1131 Harbor Bay Parkway, Suite 250 Alameda, CA 94502 Phone: (510) 567-6700
Environmental engineers:	Geo Environmental Technologies Attention: Costas Orountiotis 343 Soquel Avenue, #33 Santa Cruz, CA 95062 Phone: (831) 423-8780

4.0 METHODS AND PROCEDURES

4.1 Sample Collection and Analysis

Groundwater was sampled on 3/14/03. Depth to groundwater (DTW) was measured in each of the monitoring wells prior to purging and sampling. DTW data is summarized in Table 2. A sample of static groundwater was collected from each well using a clean, clear plastic bailer to visually assess for the presence of floating product or product sheen. No floating product or sheen was found.

To maximize the possibility of sampling fresh, inflowing groundwater, individual wells were purged of four well casing volumes of groundwater prior to sample collection. Purged groundwater was stored in a steel, 55-gallon, DOT 17H drum. After ascertaining that a minimum 80 percent recovery of the initial casing volume had occurred in the well, the monitoring wells were sampled. Field purge data is presented in Appendix A.

Groundwater samples were collected using new, clean, disposable plastic bailers. Water was decanted from the bailer into 40-ml VOA vials with caps equipped with Teflon-lined septa, in such a manner that neither headspace nor air bubbles were allowed to remain in the containers. Samples were labeled and placed in a pre-cooled container on ice, to minimize potential loss of volatile constituents. Labels contained project name, sample number, date and time of collection.

Sample collection information was entered onto a Chain of Custody (COC) document that accompanied the samples during site time and during transport to Entech Analytical Labs, Inc., a State certified laboratory for hazardous materials analysis, for the requisite analyses.

Groundwater samples were analyzed for TPHd, TPHg, BTEX and MTBE using EPA Methods 8015 MOD and 8020.

4.2 Results

Downgradient monitoring well MW1 remains impacted. TPHd was detected at 3,800 ug/l, TPHg at 180,000 and MTBE at 220,000 ug/l. BTEX concentrations were 7,100, 3,200, 4,300, and 6,000 ug/l respectively.

Crossgradient well MW2 contained concentration levels of 110 ug/l TPHd, 830 ug/l TPHg, and 1,200 ug/l MTBE; Benzene was detected at 56 ug/l; Toluene, Ethylbenzene and Xylenes levels were below laboratory detection limits.

Upgradient well MW3 contained no detectable concentrations of TPHd, TPHg, BTEX, or MTBE

Offsite monitoring wells MW4, and MW6 contained no detectable concentrations of TPHg, TPHd, MTBE or BTEX.

Offsite monitoring well MW5 contained TPHg concentrations of 110 ug/l; TPHd and BTEX were below laboratory detection limits. MTBE concentrations were detected at 170 ug/l.

Extraction well EX1 contained 50 μg/L TPHd, 750 ug/l TPHg and 1,200 ug/L MTBE; Ethyl-Benzene was found at 7.7 ug/l and Xylenes at 13 ug/L, Benzene and Toluene concentrations were both below laboratory detection limits.

Cumulative groundwater analytical results are presented in Table 2. Copies of the Laboratory analysis report and COC documentation for this monitoring event are presented in Appendix B.

4.3 Groundwater Flow and Gradient

DTW measurements taken on 3/14/03 were used to calculate the groundwater gradient and flow direction. Groundwater flow direction was northeasterly, consistent with general area direction of flow. The gradient was 0.0133 ft/ft. This information is presented graphically in Figure 4.

5.0 RECOMMENDATIONS

Based on the results of this groundwater monitoring episode and directives of the ACEHS the following course of action will be pursued:

- Continue quarterly groundwater sampling and depth to water data collection. Next monitoring date within a 15-day window of opportunity, is 6/20/03.
- Perform the pending soil vapor extraction (SVE) test. The test has been scheduled for 4/22/03.
- Forward a copy of this report to:

  ACEHS
  Attention: Eva Chu
  1131 Harbor Bay Parkway, Suite 250
  Alameda, CA 94502

TABLE 1 - Well Construction Details

Livermore Gas and Minimart, 160 Holmes, Livermore, California

Well Number	Date Installed	TOC (feet)	Total Depth (feet bgs)	Borehole Diameter (inches)	Casing Diameter (inches)	Slot (inch)	Interval					DTW 3/14/03 (feet)
							Screen (feet)	Blank Casing (feet)	Sand Pack (feet)	Bentonite Seal (feet)	Cement Grout (feet)	
MW-1	07/26/00	465.04	30	8	2	0.01	30-15	15-0.5	30-13	13-11	11-1.0	22.63
MW-2	07/26/00	464.96	30	8	2	0.01	30-15	15-0.5	30-13	13-11	11-1.0	22.41
MW-3	07/26/00	465.86	30	8	2	0.01	30-15	15-0.5	30-13	13-11	11-1.0	23.04
MW-4	10/30/01	465.25	50	8	2	0.01	50-20	20-0.5	50-18	18-16	16-0.5	23.14
MW-5	10/30/01	464.74	50	8	2	0.01	50-20	20-0.5	50-18	18-16	16-0.5	24.26
MW-6	10/30/01	464.23	50	8	2	0.01	50-20	20-0.5	50-18	18-16	16-0.5	23.46
EX1	10/30/01	465.39	55	10	6	0.01	55-30	30-0.5	55-28	28-26	26-0.5	23.02

Notes:

bgs	Below ground surface
DTW	Depth to water
TOC	Top of Casing Elevation

TABLE 2 - Groundwater Analytical Results

Livermore Gas and Minimart, 160 Holmes, Livermore, California

Well ID.	Date	DTW (feet)	TPHd (µg/L)	TPHg (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)
MW1	08/11/00		57,000	170,000	6,400	7,600	4,200	9,700	320,000
	10/19/00	21.94	17,000	170,000	8,400	3,200	2,700	10,000	200,000
	02/22/01	22.91	11,000	82,000	5,100	1,000	13,000	8,700	190,000
	05/30/01	Dry							
	11/14/01	Dry							
	05/07/02	Dry							
	09/11/02	26.16	NA	130,000	7,700	1,100	4,500	1,500	<5000
	12/01/02	27.55	NS	NS	NS	NS	NS	NS	NS
	03/14/03	22.63	3,800	180,000	7,100	3,200	4,300	6,000	220,000
MW2	08/11/00		1,900	4,500	220	52	160	170	3,000
	10/19/00	21.80	1,300	3,400	150	21	100	70	1,900
	02/22/01	22.87	880	7,600	25	< 10	69	25	2,200
	05/30/01	Dry	not sampled						
	11/14/01	Dry	not sampled						
	05/07/02	26.70	86	400	5.4	<0.50	1.9	2.3	230
	09/11/02	25.96	NA	260	1.3	<0.50	0.57	0.77	200
	12/11/02	27.56	120	250	7.9	1.6	13	9.9	180
	03/14/03	22.41	110	830	56	<0.50	<0.50	<1.0	1,200
MW3	08/11/00		260	59	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0
	10/19/00	22.45	< 65	< 50	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0
	02/22/01	23.51	100	< 50	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0
	05/30/01	Dry	not sampled						
	11/14/01	Dry	not sampled						
	05/07/02	Dry	not sampled						
	09/11/02	26.61	NA	< 50	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0
	12/11/02	28.18	Dry						
	03/14/03	23.04	<50	< 50	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0
MW-4	11/14/01	33.84	90	510	4	< 0.50	< 0.50	< 0.50	14
	05/07/02	26.75	< 50	150	3.5	0.5	< 0.50	< 0.50	48
	09/11/02	26.66	NA	< 50	< 0.50	< 0.50	< 0.50	< 0.50	15
	12/11/02	28.39	< 50	< 50	< 0.50	< 0.50	< 0.50	< 0.50	24
	03/14/03	23.14	< 50	< 50	< 0.50	< 0.50	< 0.50	< 0.50	< 1.0
MW-5	11/14/01	34.94	< 66	< 50	< 0.50	< 0.50	< 0.50	< 0.50	8.2
	05/07/02	27.90	< 50	140	< 0.50	< 0.50	< 0.50	< 0.50	110
	09/11/02	27.99	NA	< 50	< 0.50	< 0.50	< 0.50	< 0.50	6.3
	12/11/02	29.50	< 50	73	< 0.50	< 0.50	< 0.50	< 0.50	160
	03/14/03	24.26	< 50	110	< 0.50	< 0.50	< 0.50	< 0.50	170
MW-6	11/14/01	33.88	< 50	< 50	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0
	05/07/02	27.01	< 67	< 50	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0
	09/11/02	27.03	NA	< 50	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0
	12/11/02	28.77	< 50	< 50	< 0.50	< 0.50	< 0.50	< 0.50	< 1.0
	03/14/03	23.46	< 50	< 50	< 0.50	< 0.50	< 0.50	< 1.0	< 1.0

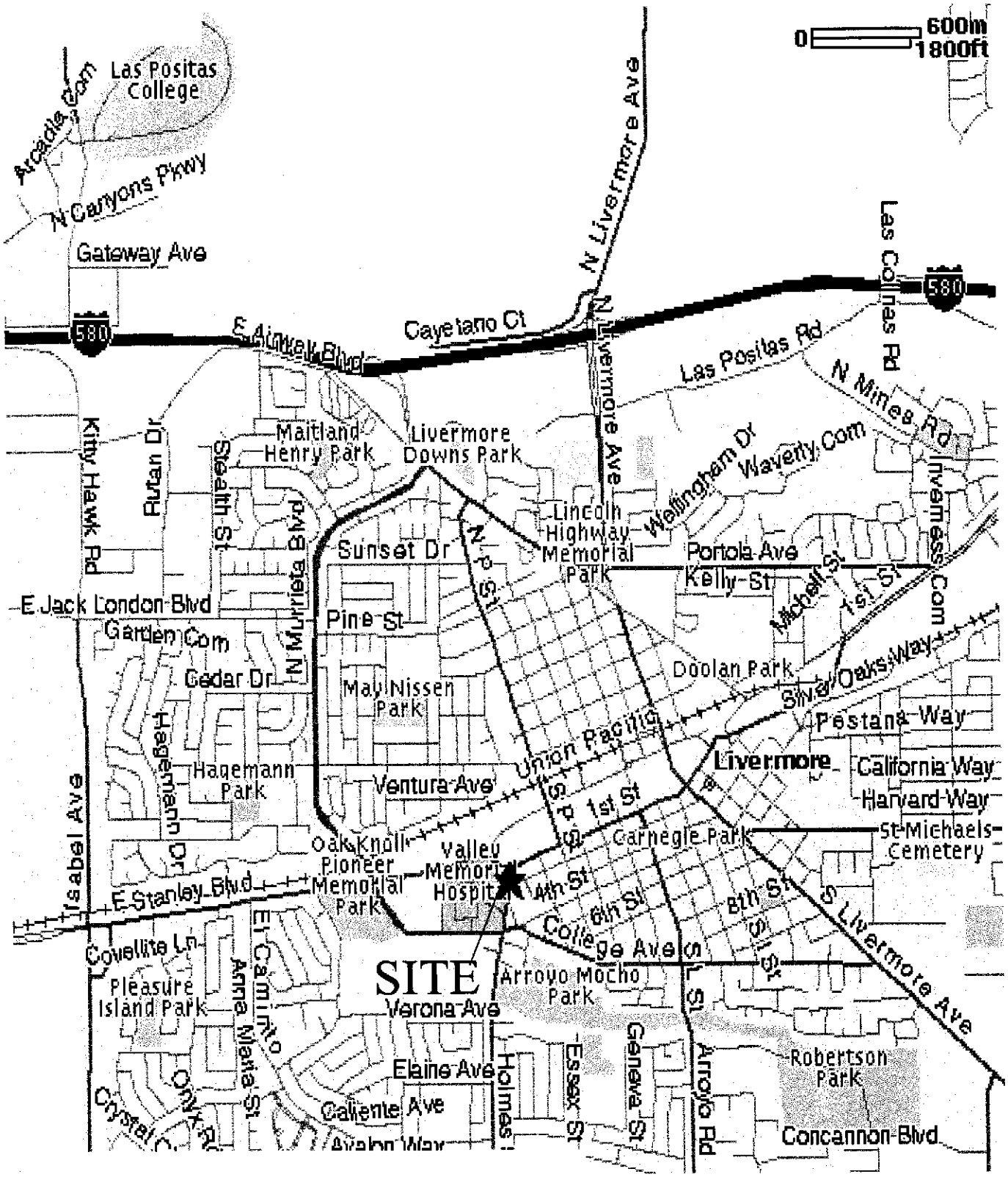
TABLE 2 - Groundwater Analytical Results

Livermore Gas and Minimart, 160 Holmes, Livermore, California

Well ID.	Date	DTW (feet)	TPHd (µg/L)	TPHg (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)
EX1	11/14/01	33.41	2,000	13,000	180	1,000	330	3,200	2,200
	05/07/02	27.58	560	7,700	320	< 25	66	150	6,200
	09/11/02	NM	NA	2,800	32	< 13	14	< 13	2,500
	12/11/02	27.98	100	3,000	81	< 0.50	44	< 1	4,800
	03/14/03	23.02	50	750	< 0.50	< 0.50	7.7	13	1,200

Notes:

DTW: Depth to Groundwater
NM: Not Measured
NA: Not Analyzed
TPHg: Total Petroleum Hydrocarbons as gasoline
TPHd: Total Petroleum Hydrocarbons as diesel
MTBE: Methyl tertiary Butyl Ether
µg/L: Micrograms per liter



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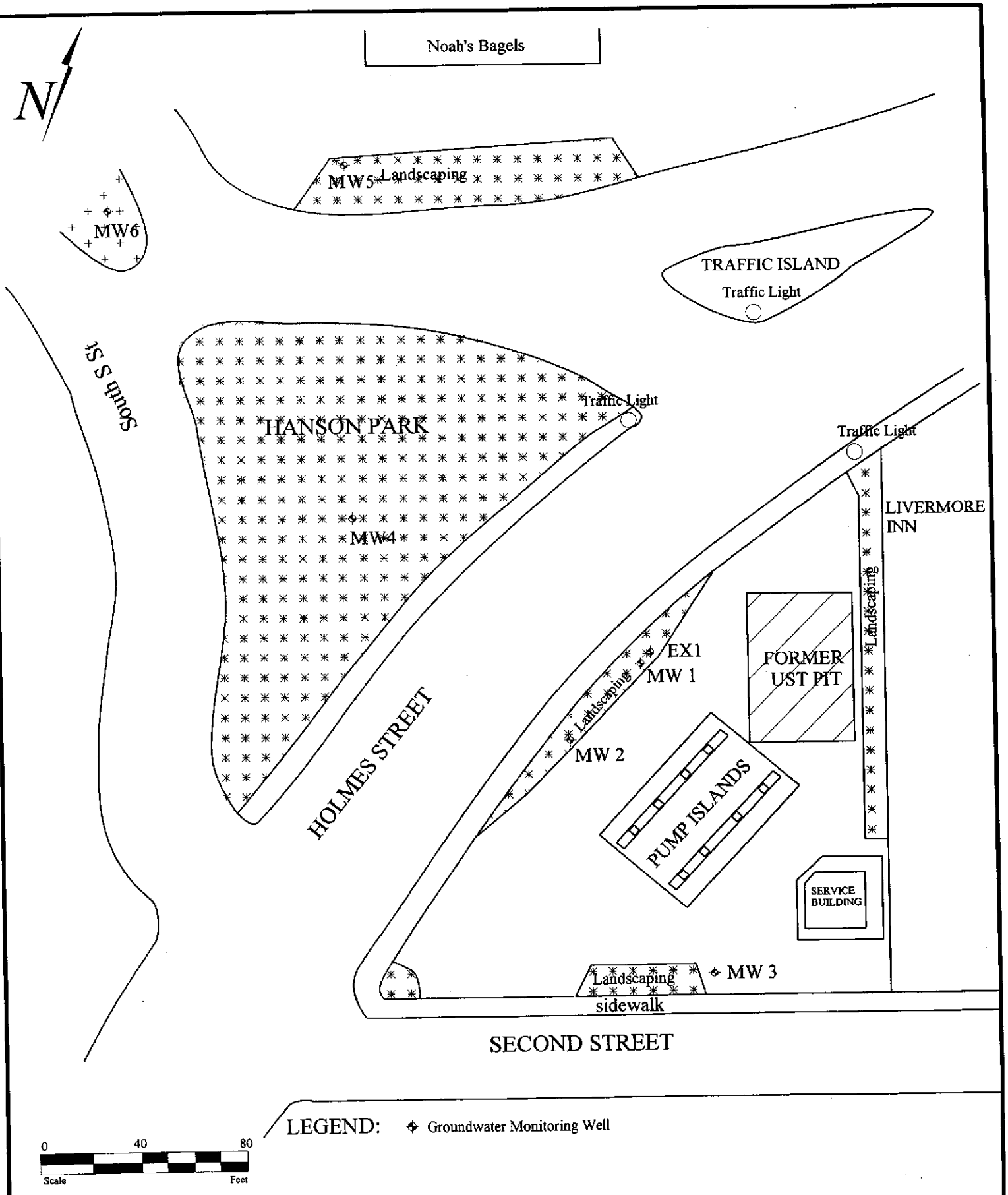
Site Vicinity Map

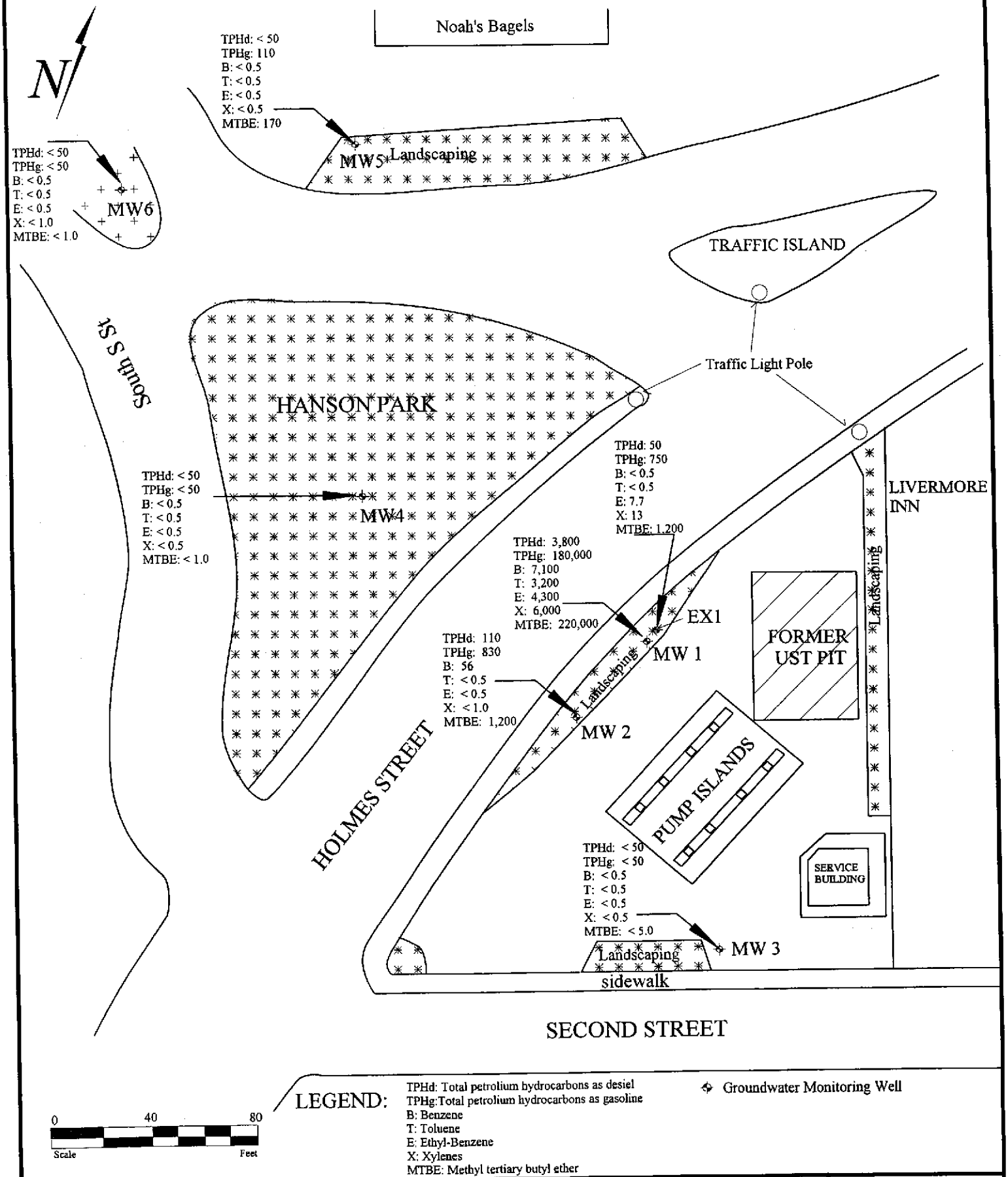
Livermore Gas and Mini Mart
160 Holmes Street
Livermore, California

Figure No.
1

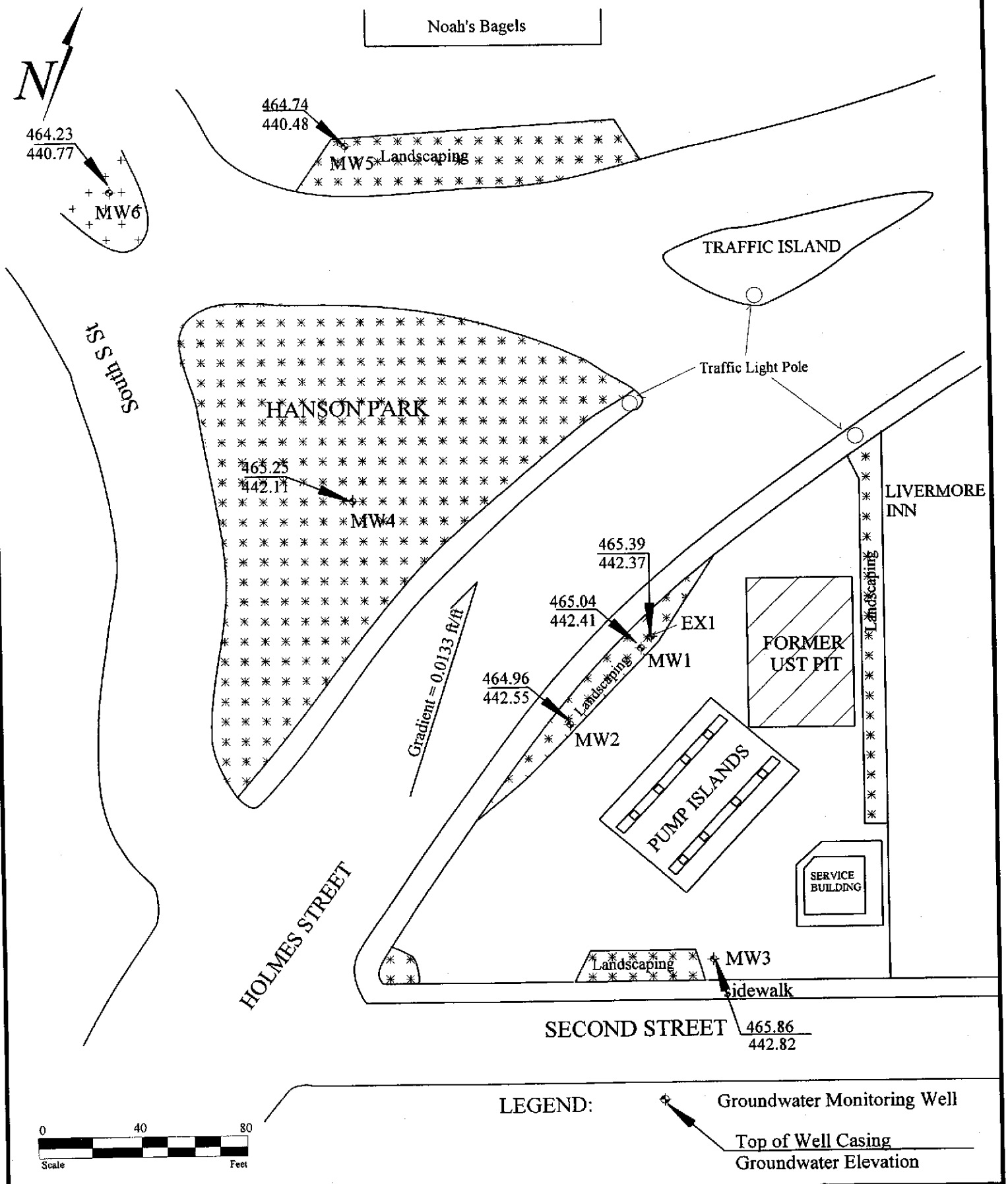
Project
MANWEL



Geo Environmental Technologies	Site Plan 3/14/03 Livermore Gas and Minimart 160 Homes Street, Livermore, CA	Figure No. 2 Project Manwel



Geo Environmental Technologies	Groundwater Analyticals 3/14/03 Livermore Gas and Minimart 160 Homes Street, Livermore, CA	Figure No. 3 Project Manwel



Geo Environmental Technologies	Groundwater Direction and Gradient 12/11/02 Livermore Gas and Minimart 160 Homes Street, Livermore, CA	Figure No. 4 Project Manwel

Appendix A

Field Data Sheet

GET
343 Soquel Avenue, Suite 33
Santa Cruz, CA 95062

Phone: (831) 423-8780
Fax: (831) 423-8827

Well Evaluation Field Data Sheet

Date: 03/14/03
Technician: GW
Project: Maxwell
Task Description: 1st 2003 GW Monitoring

Well Number	Date Measured	Pressure Y	Pressure N	Sheen Y	Sheen N	Odor Y	Odor N	Free Product Y	Free Product N	Free Product Thickness	Depth to Product	Depth to Water	Comments
MW1	03/14/03		N		N	N						22.63	Purged 10 gal.
MW2			N		N	Y						22.41	
MW3			N		N		N					23.04	
MW4			N		N		N					23.14	
MW5			N		N		N					24.26	
MW6			N		N		N					23.46	
EX1		Y		Y		Y						23.01	

Appendix B

Laboratory report and COC documentation

Entech Analytical Labs, Inc.

3334 Victor Court • Santa Clara, CA 95054 • (408) 588-0200 • Fax (408) 588-0201

April 03, 2003

Costas Orountiotis
Geo Environmental Tech
343 Soquel Ave, #33
Santa Cruz, CA 95062

Order: 33678
Project Name: Manwel
Project Number:
Project Notes:

Date Collected: 3/14/2003
Date Received: 3/17/2003
P.O. Number: First 2003

On March 17, 2003, samples were received under documentented chain of custody. Results for the following analyses are attached:

Matrix	Test	Method
Liquid	TPH as Diesel	EPA 8015 MOD. (Extractable)

Case Narrative: Report amended on 04/03/03 to correct QC Batch ID's for samples 33678-001 through 33678-007. Original Batch reported were DW4326B. The correct QC Batch ID is DW4326A. No data was effected by these changes.

Chemical analysis of these samples has been completed. Summaries of the data are contained on the following pages. USEPA protocols for sample storage and preservation were followed.

Entech Analytical Labs, Inc. is certified by the State of California (#2346). If you have any questions regarding procedures or results, please call me at 408-588-0200.

Sincerely,

Patti Sandrock
QA/QC Manager

Entech Analytical Labs, Inc.

3334 Victor Court • Santa Clara, CA 95054 • (408) 588-0200 • Fax (408) 588-0201

Geo Environmental Tech
343 Soquel Ave, #33
Santa Cruz, CA 95062
Attn: Costas Orountiotis

Date: 04/03/03
Date Received: 3/17/2003
Project Name: Manwel
Project Number:
P.O. Number: First 2003
Sampled By: GN

Certified Analytical Report

Order ID: 33678 **Lab Sample ID:** 33678-001 **Client Sample ID:** MW-1
Sample Time: 12:30 PM **Sample Date:** 3/14/2003 **Matrix:** Liquid

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
TPH as Diesel	3800	x	5	50	250	µg/L	3/18/2003	3/24/2003	DW4326A	EPA 8015 MOD. (Extractable)

Surrogate	Surrogate Recovery	Control Limits (%)
o-Terphenyl	68.0	21 - 142

Comment: Not a TPH as Diesel pattern. Possible gasoline compounds in the TPH as Diesel range.

Order ID: 33678 **Lab Sample ID:** 33678-002 **Client Sample ID:** MW-2
Sample Time: 12:30 PM **Sample Date:** 3/14/2003 **Matrix:** Liquid

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
TPH as Diesel	110	x	1	50	50	µg/L	3/18/2003	3/21/2003	DW4326A	EPA 8015 MOD. (Extractable)

Surrogate	Surrogate Recovery	Control Limits (%)
o-Terphenyl	55.0	21 - 142

Comment: Not a TPH as Diesel pattern; Value due to an unknown hydrocarbon (C8 - C24), in the Diesel quantitation range.

Order ID: 33678 **Lab Sample ID:** 33678-003 **Client Sample ID:** MW-3
Sample Time: 12:30 PM **Sample Date:** 3/14/2003 **Matrix:** Liquid

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
TPH as Diesel	ND		1	50	50	µg/L	3/18/2003	3/21/2003	DW4326A	EPA 8015 MOD. (Extractable)

Surrogate	Surrogate Recovery	Control Limits (%)
o-Terphenyl	84.0	21 - 142

DF = Dilution Factor ND = Not Detected DLR = Detection Limit Reported PQL = Practical Quantitation Limit

Analysis performed by Entech Analytical Labs, Inc. (CA ELAP #2346)

Patti Sandrock, QA/QC Manager

Environmental Analysis Since 1983

Entech Analytical Labs, Inc.

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Geo Environmental Tech
343 Soquel Ave, #33
Santa Cruz, CA 95062
Attn: Costas Orountiotis

Date: 04/03/03
Date Received: 3/17/2003
Project Name: Manwel
Project Number:
P.O. Number: First 2003
Sampled By: GN

Certified Analytical Report

Order ID: 33678 **Lab Sample ID:** 33678-004 **Client Sample ID:** MW-4
Sample Time: 12:30 PM **Sample Date:** 3/14/2003 **Matrix:** Liquid

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
TPH as Diesel	ND		1	50	50	µg/L	3/18/2003	3/21/2003	DW4326A	EPA 8015 MOD. (Extractable)

Surrogate	Surrogate Recovery	Control Limits (%)
o-Terphenyl	74.0	21 - 142

Order ID: 33678 **Lab Sample ID:** 33678-005 **Client Sample ID:** MW-5
Sample Time: 12:30 PM **Sample Date:** 3/14/2003 **Matrix:** Liquid

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
TPH as Diesel	ND		1	50	50	µg/L	3/18/2003	3/21/2003	DW4326A	EPA 8015 MOD. (Extractable)

Surrogate	Surrogate Recovery	Control Limits (%)
o-Terphenyl	50.0	21 - 142

Order ID: 33678 **Lab Sample ID:** 33678-006 **Client Sample ID:** MW-6
Sample Time: 12:30 PM **Sample Date:** 3/14/2003 **Matrix:** Liquid

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
TPH as Diesel	ND		1	50	50	µg/L	3/18/2003	3/21/2003	DW4326A	EPA 8015 MOD. (Extractable)

Surrogate	Surrogate Recovery	Control Limits (%)
o-Terphenyl	66.0	21 - 142

DF = Dilution Factor ND = Not Detected DLR = Detection Limit Reported PQL = Practical Quantitation Limit

Analysis performed by Entech Analytical Labs, Inc. (CA ELAP #2346)

Patti Sandrock, QA/QC Manager

Environmental Analysis Since 1983

Entech Analytical Labs, Inc.

3334 Victor Court • Santa Clara, CA 95054 • (408) 588-0200 • Fax (408) 588-0201

Geo Environmental Tech
343 Soquel Ave, #33
Santa Cruz, CA 95062
Attn: Costas Orountiotis

Date: 04/03/03
Date Received: 3/17/2003
Project Name: Manwel
Project Number:
P.O. Number: First 2003
Sampled By: GN

Certified Analytical Report

Order ID: 33678 **Lab Sample ID:** 33678-007 **Client Sample ID:** EX-1

Sample Time: 12:30 PM **Sample Date:** 3/14/2003 **Matrix:** Liquid

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
TPH as Diesel	50	x	1	50	50	µg/L	3/18/2003	3/21/2003	DW4326A	EPA 8015 MOD. (Extractable)

Surrogate	Surrogate Recovery	Control Limits (%)
o-Terphenyl	80.0	21 - 142

Comment: Not a TPH as Diesel pattern; Value due to an unknown hydrocarbon (C8 - C18), in the Diesel quantitation range.

DF = Dilution Factor ND = Not Detected DLR = Detection Limit Reported PQL = Practical Quantitation Limit

Analysis performed by Entech Analytical Labs, Inc. (CA ELAP #2346)

Patti Sandrock, QA/QC Manager

Environmental Analysis Since 1983

Entech Analytical Labs, Inc.

3334 Victor Court • Santa Clara, CA 95054 • (408) 588-0200 • Fax (408) 588-0201

March 27, 2003

Costas Orountiotis
Geo Environmental Tech
343 Soquel Ave, #33
Santa Cruz, CA 95062

Order: 33678
Project Name: Manwel
Project Number:
Project Notes:

Date Collected: 3/14/2003
Date Received: 3/17/2003
P.O. Number: First 2003

On March 17, 2003, samples were received under documentented chain of custody. Results for the following analyses are attached:

Matrix	Test	Method
Liquid	Gas/BTEX/MTBE	EPA 8015 MOD. (Purgeable)
		EPA 8020
	TPH as Diesel	EPA 8015 MOD. (Extractable)

Chemical analysis of these samples has been completed. Summaries of the data are contained on the following pages. USEPA protocols for sample storage and preservation were followed.

Entech Analytical Labs, Inc. is certified by the State of California (#2346). If you have any questions regarding procedures or results, please call me at 408-588-0200.

Sincerely,

Patti Sandrock
QA/QC Manager

Entech Analytical Labs, Inc.

3334 Victor Court • Santa Clara, CA 95054 • (408) 588-0200 • Fax (408) 588-0201

Geo Environmental Tech
343 Soquel Ave, #33
Santa Cruz, CA 95062
Attn: Costas Orountiotis

Date: 3/27/03
Date Received: 3/17/2003
Project Name: Manwel
Project Number:
P.O. Number: First 2003
Sampled By: GN

Certified Analytical Report

Order ID: 33678 **Lab Sample ID:** 33678-001 **Client Sample ID:** MW-1

Sample Time: 12:30 PM **Sample Date:** 3/14/2003 **Matrix:** Liquid

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
Benzene	7100		1250	0.5	625	µg/L	N/A	3/21/2003	WGC42790	EPA 8020
Toluene	3200		1250	0.5	625	µg/L	N/A	3/21/2003	WGC42790	EPA 8020
Ethyl Benzene	4300		1250	0.5	625	µg/L	N/A	3/21/2003	WGC42790	EPA 8020
Xylenes, Total	6000		1250	1	1250	µg/L	N/A	3/21/2003	WGC42790	EPA 8020

Surrogate	Surrogate Recovery	Control Limits (%)
4-Bromofluorobenzene	98.9	65 - 135

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
Methyl-t-butyl Ether	220000		1250	1	1250	µg/L	N/A	3/21/2003	WGC42790	EPA 8020

Surrogate	Surrogate Recovery	Control Limits (%)
4-Bromofluorobenzene	98.9	65 - 135

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
TPH as Diesel	3800	x	5	50	250	µg/L	3/18/2003	3/24/2003	DW4326B	EPA 8015 MOD. (Extractable)

Surrogate	Surrogate Recovery	Control Limits (%)
o-Terphenyl	68.0	21 - 142

Comment: Not a TPH as Diesel pattern. Possible gasoline compounds in the TPH as Diesel range.

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
TPH as Gasoline	180000		1250	50	62500	µg/L	N/A	3/21/2003	WGC42790	EPA 8015 MOD. (Purgeable)

Surrogate	Surrogate Recovery	Control Limits (%)
4-Bromofluorobenzene	97.3	65 - 135

DF = Dilution Factor ND = Not Detected DLR = Detection Limit Reported PQL = Practical Quantitation Limit

Analysis performed by Entech Analytical Labs, Inc. (CA ELAP #2346)

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Geo Environmental Tech
343 Soquel Ave, #33
Santa Cruz, CA 95062
Attn: Costas Orountiotis

Date: 3/27/03
Date Received: 3/17/2003
Project Name: Manwel
Project Number:
P.O. Number: First 2003
Sampled By: GN

Certified Analytical Report

Order ID: 33678 **Lab Sample ID:** 33678-002 **Client Sample ID:** MW-2

Sample Time: 12:30 PM **Sample Date:** 3/14/2003 **Matrix:** Liquid

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
Benzene	56		10	0.5	5	µg/L	N/A	3/19/2003	WGC42787	EPA 8020
Toluene	ND		10	0.5	5	µg/L	N/A	3/19/2003	WGC42787	EPA 8020
Ethyl Benzene	ND		10	0.5	5	µg/L	N/A	3/19/2003	WGC42787	EPA 8020
Xylenes, Total	ND		10	1	10	µg/L	N/A	3/19/2003	WGC42787	EPA 8020

Surrogate	Surrogate Recovery	Control Limits (%)
4-Bromofluorobenzene	99.8	65 - 135

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
Methyl-t-butyl Ether	1200		10	1	10	µg/L	N/A	3/19/2003	WGC42787	EPA 8020

Surrogate	Surrogate Recovery	Control Limits (%)
4-Bromofluorobenzene	99.8	65 - 135

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
TPH as Diesel	110	x	1	50	50	µg/L	3/18/2003	3/21/2003	DW4326B	EPA 8015 MOD. (Extractable)

Surrogate	Surrogate Recovery	Control Limits (%)
o-Terphenyl	55.0	21 - 142

Comment: Not a TPH as Diesel pattern; Value due to an unknown hydrocarbon (C8 - C24), in the Diesel quantitation range.

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
TPH as Gasoline	830	x	10	50	500	µg/L	N/A	3/19/2003	WGC42787	EPA 8015 MOD. (Purgeable)

Surrogate	Surrogate Recovery	Control Limits (%)
4-Bromofluorobenzene	92.1	65 - 135

Comment: Report TPH as Gasoline value is the result of high concentrations of a discrete peak(MTBE) within the TPH as Gasoline quantitation range.

DF = Dilution Factor ND = Not Detected DLR = Detection Limit Reported PQL = Practical Quantitation Limit

Analysis performed by Entech Analytical Labs, Inc. (CA ELAP #2346)

Patti Sandrock, QA/QC Manager

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Geo Environmental Tech
343 Soquel Ave, #33
Santa Cruz, CA 95062
Attn: Costas Orountiotis

Date: 3/27/03
Date Received: 3/17/2003
Project Name: Manwel
Project Number:
P.O. Number: First 2003
Sampled By: GN

Certified Analytical Report

Order ID: 33678 **Lab Sample ID:** 33678-003 **Client Sample ID:** MW-3

Sample Time: 12:30 PM **Sample Date:** 3/14/2003 **Matrix:** Liquid

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
Benzene	ND		1	0.5	0.5	µg/L	N/A	3/19/2003	WGC62786B	EPA 8020
Toluene	ND		1	0.5	0.5	µg/L	N/A	3/19/2003	WGC62786B	EPA 8020
Ethyl Benzene	ND		1	0.5	0.5	µg/L	N/A	3/19/2003	WGC62786B	EPA 8020
Xylenes, Total	ND		1	1	1	µg/L	N/A	3/19/2003	WGC62786B	EPA 8020

Surrogate	Surrogate Recovery	Control Limits (%)
4-Bromofluorobenzene	95.2	65 - 135

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
Methyl-t-butyl Ether	ND		1	1	1	µg/L	N/A	3/19/2003	WGC62786B	EPA 8020

Surrogate	Surrogate Recovery	Control Limits (%)
4-Bromofluorobenzene	95.2	65 - 135

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
TPH as Diesel	ND		1	50	50	µg/L	3/18/2003	3/21/2003	DW4326B	EPA 8015 MOD. (Extractable)

Surrogate	Surrogate Recovery	Control Limits (%)
o-Terphenyl	84.0	21 - 142

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
TPH as Gasoline	ND		1	50	50	µg/L	N/A	3/19/2003	WGC62786B	EPA 8015 MOD. (Purgeable)

Surrogate	Surrogate Recovery	Control Limits (%)
4-Bromofluorobenzene	80.7	65 - 135

DF = Dilution Factor ND = Not Detected DLR = Detection Limit Reported PQL = Practical Quantitation Limit

Analysis performed by Entech Analytical Labs, Inc. (CA ELAP #2346)

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343 Soquel Ave, #33
Santa Cruz, CA 95062
Attn: Costas Orountiotis

Date: 3/27/03
Date Received: 3/17/2003
Project Name: Manwel
Project Number:
P.O. Number: First 2003
Sampled By: GN

Certified Analytical Report

Order ID: 33678 **Lab Sample ID:** 33678-004 **Client Sample ID:** MW-4

Sample Time: 12:30 PM **Sample Date:** 3/14/2003 **Matrix:** Liquid

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
Benzene	ND		1	0.5	0.5	µg/L	N/A	3/19/2003	WGC62786B	EPA 8020
Toluene	ND		1	0.5	0.5	µg/L	N/A	3/19/2003	WGC62786B	EPA 8020
Ethyl Benzene	ND		1	0.5	0.5	µg/L	N/A	3/19/2003	WGC62786B	EPA 8020
Xylenes, Total	ND		1	1	1	µg/L	N/A	3/19/2003	WGC62786B	EPA 8020

Surrogate	Surrogate Recovery	Control Limits (%)
4-Bromofluorobenzene	92.6	65 - 135

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
Methyl-t-butyl Ether	ND		1	1	1	µg/L	N/A	3/19/2003	WGC62786B	EPA 8020

Surrogate	Surrogate Recovery	Control Limits (%)
4-Bromofluorobenzene	92.6	65 - 135

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
TPH as Diesel	ND		1	50	50	µg/L	3/18/2003	3/21/2003	DW4326B	EPA 8015 MOD. (Extractable)

Surrogate	Surrogate Recovery	Control Limits (%)
o-Terphenyl	74.0	21 - 142

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
TPH as Gasoline	ND		1	50	50	µg/L	N/A	3/19/2003	WGC62786B	EPA 8015 MOD. (Purgeable)

Surrogate	Surrogate Recovery	Control Limits (%)
4-Bromofluorobenzene	80.5	65 - 135

DF = Dilution Factor ND = Not Detected DLR = Detection Limit Reported PQL = Practical Quantitation Limit

Analysis performed by Entech Analytical Labs, Inc. (CA ELAP #2346)

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Date: 3/27/03
Date Received: 3/17/2003
Project Name: Manwel
Project Number:
P.O. Number: First 2003
Sampled By: GN

Certified Analytical Report

Order ID: 33678 **Lab Sample ID:** 33678-005 **Client Sample ID:** MW-5

Sample Time: 12:30 PM **Sample Date:** 3/14/2003 **Matrix:** Liquid

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
Benzene	ND		1	0.5	0.5	µg/L	N/A	3/21/2003	WGC42790	EPA 8020
Toluene	ND		1	0.5	0.5	µg/L	N/A	3/21/2003	WGC42790	EPA 8020
Ethyl Benzene	ND		1	0.5	0.5	µg/L	N/A	3/21/2003	WGC42790	EPA 8020
Xylenes, Total	ND		1	1	1	µg/L	N/A	3/21/2003	WGC42790	EPA 8020

Surrogate	Surrogate Recovery	Control Limits (%)
4-Bromofluorobenzene	94.5	65 - 135

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
Methyl-t-butyl Ether	170		1	1	1	µg/L	N/A	3/21/2003	WGC42790	EPA 8020

Surrogate	Surrogate Recovery	Control Limits (%)
4-Bromofluorobenzene	94.5	65 - 135

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
TPH as Diesel	ND		1	50	50	µg/L	3/18/2003	3/21/2003	DW4326B	EPA 8015 MOD. (Extractable)

Surrogate	Surrogate Recovery	Control Limits (%)
o-Terphenyl	50.0	21 - 142

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
TPH as Gasoline	110	x	1	50	50	µg/L	N/A	3/21/2003	WGC42790	EPA 8015 MOD. (Purgeable)

Surrogate	Surrogate Recovery	Control Limits (%)
4-Bromofluorobenzene	91.6	65 - 135

Comment: TPH as Gasoline reported value is the result of MTBE concentration present in the TPH as Gasoline quantitation range.

DF = Dilution Factor ND = Not Detected DLR = Detection Limit Reported PQL = Practical Quantitation Limit

Analysis performed by Entech Analytical Labs, Inc. (CA ELAP #2346)

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343 Soquel Ave, #33
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Attn: Costas Orountiotis

Date: 3/27/03
Date Received: 3/17/2003
Project Name: Manwel
Project Number:
P.O. Number: First 2003
Sampled By: GN

Certified Analytical Report

Order ID: 33678 **Lab Sample ID:** 33678-006 **Client Sample ID:** MW-6

Sample Time: 12:30 PM **Sample Date:** 3/14/2003 **Matrix:** Liquid

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
Benzene	ND		1	0.5	0.5	µg/L	N/A	3/19/2003	WGC62786B	EPA 8020
Toluene	ND		1	0.5	0.5	µg/L	N/A	3/19/2003	WGC62786B	EPA 8020
Ethyl Benzene	ND		1	0.5	0.5	µg/L	N/A	3/19/2003	WGC62786B	EPA 8020
Xylenes, Total	ND		1	1	1	µg/L	N/A	3/19/2003	WGC62786B	EPA 8020

Surrogate	Surrogate Recovery	Control Limits (%)
4-Bromofluorobenzene	90.9	65 - 135

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
Methyl-t-butyl Ether	ND		1	1	1	µg/L	N/A	3/19/2003	WGC62786B	EPA 8020

Surrogate	Surrogate Recovery	Control Limits (%)
4-Bromofluorobenzene	90.9	65 - 135

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
TPH as Diesel	ND		1	50	50	µg/L	3/18/2003	3/21/2003	DW4326B	EPA 8015 MOD. (Extractable)

Surrogate	Surrogate Recovery	Control Limits (%)
o-Terphenyl	66.0	21 - 142

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
TPH as Gasoline	ND		1	50	50	µg/L	N/A	3/19/2003	WGC62786B	EPA 8015 MOD. (Purgeable)

Surrogate	Surrogate Recovery	Control Limits (%)
4-Bromofluorobenzene	79.2	65 - 135

DF = Dilution Factor ND = Not Detected DLR = Detection Limit Reported PQL = Practical Quantitation Limit

Analysis performed by Entech Analytical Labs, Inc. (CA ELAP #2346)

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Geo Environmental Tech
343 Soquel Ave, #33
Santa Cruz, CA 95062
Attn: Costas Orountiotis

Date: 3/27/03
Date Received: 3/17/2003
Project Name: Manwel
Project Number:
P.O. Number: First 2003
Sampled By: GN

Certified Analytical Report

Order ID: 33678 **Lab Sample ID:** 33678-007 **Client Sample ID:** EX-1

Sample Time: 12:30 PM **Sample Date:** 3/14/2003 **Matrix:** Liquid

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
Benzene	ND		10	0.5	5	µg/L	N/A	3/21/2003	WGC42790	EPA 8020
Toluene	ND		10	0.5	5	µg/L	N/A	3/21/2003	WGC42790	EPA 8020
Ethyl Benzene	7.7		10	0.5	5	µg/L	N/A	3/21/2003	WGC42790	EPA 8020
Xylenes, Total	13		10	1	10	µg/L	N/A	3/21/2003	WGC42790	EPA 8020

Surrogate	Surrogate Recovery	Control Limits (%)
4-Bromofluorobenzene	99.6	65 - 135

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
Methyl-t-butyl Ether	1200		10	1	10	µg/L	N/A	3/21/2003	WGC42790	EPA 8020

Surrogate	Surrogate Recovery	Control Limits (%)
4-Bromofluorobenzene	99.6	65 - 135

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
TPH as Diesel	50	x	1	50	50	µg/L	3/18/2003	3/21/2003	DW4326B	EPA 8015 MOD. (Extractable)

Surrogate	Surrogate Recovery	Control Limits (%)
o-Terphenyl	80.0	21 - 142

Comment: Not a TPH as Diesel pattern; Value due to an unknown hydrocarbon (C8 - C18), in the Diesel quantitation range.

Parameter	Result	Flag	DF	PQL	DLR	Units	Extraction Date	Analysis Date	QC Batch ID	Method
TPH as Gasoline	750	x	10	50	500	µg/L	N/A	3/21/2003	WGC42790	EPA 8015 MOD. (Purgeable)

Surrogate	Surrogate Recovery	Control Limits (%)
4-Bromofluorobenzene	94.9	65 - 135

Comment: Report TPH as Gasoline value contains the result of high concentrations of MTBE within the TPH as Gasoline quantitation range.

DF = Dilution Factor ND = Not Detected DLR = Detection Limit Reported PQL = Practical Quantitation Limit

Analysis performed by Entech Analytical Labs, Inc. (CA ELAP #2346)

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STANDARD LAB QUALIFIERS (FLAGS)

All Entech lab reports now reference standard lab qualifiers. These qualifiers are noted in the adjacent column to the analytical result and are adapted from the U.S. EPA CLP program. The current qualifier list is as follows:

Qualifier (Flag)	Description
U	Compound was analyzed for but not detected
J	Estimated value for tentatively identified compounds or if result is below PQL but above MDL
N	Presumptive evidence of a compound (for Tentatively Identified Compounds)
B	Analyte is found in the associated Method Blank
E	Compounds whose concentrations exceed the upper level of the calibration range
D	Multiple dilutions reported for analysis; discrepancies between analytes may be due to dilution
X	Results within quantitation range; chromatographic pattern not typical of fuel
Y	PQL is reported below MDL but verified against a standard analyzed at the client requested reporting limit of 0.5 ppb
C	Reported results affected by contaminated reagent materials. See narrative for futher explanation

Entech Analytical Labs, Inc.

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Quality Control Results Summary

QC Batch #: WGC42787 **Units:** µg/L

Matrix: Liquid **Date Analyzed:** 3/19/2003

Parameter	Method	Blank Result	Spike Sample ID	Spike Amount	Sample Result	Spike Result	QC Type	% Recovery	RPD	RPD Limits	Recovery Limits
Test: TPH as Gasoline											
TPH as Gasoline	EPA 8015 M	ND		250		238.	LCS	95.2			65.0 - 135.0
Surrogate			**Surrogate Recovery**			**Control Limits (%)**					
4-Bromofluorobenzene			78.5			65 - 135					
Test: BTEX											
Benzene	EPA 8020	ND		8		7.92	LCS	99.0			65.0 - 135.0
Ethyl Benzene	EPA 8020	ND		8		8.15	LCS	101.9			65.0 - 135.0
Toluene	EPA 8020	ND		8		7.96	LCS	99.5			65.0 - 135.0
Xylenes, total	EPA 8020	ND		24		24.6	LCS	102.5			65.0 - 135.0
Surrogate			**Surrogate Recovery**			**Control Limits (%)**					
4-Bromofluorobenzene			97.4			65 - 135					
Test: TPH as Gasoline											
TPH as Gasoline	EPA 8015 M	ND		250		268.	LCSD	107.2	11.86	25.00	65.0 - 135.0
Surrogate			**Surrogate Recovery**			**Control Limits (%)**					
4-Bromofluorobenzene			89.5			65 - 135					
Test: BTEX											
Benzene	EPA 8020	ND		8		8.57	LCSD	107.1	7.88	25.00	65.0 - 135.0
Ethyl Benzene	EPA 8020	ND		8		8.76	LCSD	109.5	7.21	25.00	65.0 - 135.0
Toluene	EPA 8020	ND		8		8.56	LCSD	107.0	7.26	25.00	65.0 - 135.0
Xylenes, total	EPA 8020	ND		24		26.4	LCSD	110.0	7.06	25.00	65.0 - 135.0
Surrogate			**Surrogate Recovery**			**Control Limits (%)**					
4-Bromofluorobenzene			94.3			65 - 135					

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Quality Control Results Summary

QC Batch #: WGC42790 **Units:** µg/L
Matrix: Liquid **Date Analyzed:** 3/2 1/2003

Parameter	Method	Blank Result	Spike Sample ID	Spike Amount	Sample Result	Spike Result	QC Type	% Recovery	RPD	RPD Limits	Recovery Limits
Test: TPH as Gasoline											
TPH as Gasoline	EPA 8015 M	ND		250		238.2	LCS	95.3			65.0 - 135.0
Surrogate			**Surrogate Recovery**			**Control Limits (%)**					
4-Bromofluorobenzene			78.8			65 - 135					
Test: BTEX											
Benzene	EPA 8020	ND		8		8.57	LCS	107.1			65.0 - 135.0
Ethyl Benzene	EPA 8020	ND		8		8.89	LCS	111.1			65.0 - 135.0
Toluene	EPA 8020	ND		8		8.66	LCS	108.3			65.0 - 135.0
Xylenes, total	EPA 8020	ND		24		26.8	LCS	111.7			65.0 - 135.0
Surrogate			**Surrogate Recovery**			**Control Limits (%)**					
4-Bromofluorobenzene			96.5			65 - 135					
Test: MTBE by EPA 8020											
Methyl-t-butyl Ether	EPA 8020	ND		8		8.48	LCS	106.0			65.0 - 135.0
Surrogate			**Surrogate Recovery**			**Control Limits (%)**					
4-Bromofluorobenzene			96.5			65 - 135					
Test: TPH as Gasoline											
TPH as Gasoline	EPA 8015 M	ND		250		244.2	LCSD	97.7	2.49	25.00	65.0 - 135.0
Surrogate			**Surrogate Recovery**			**Control Limits (%)**					
4-Bromofluorobenzene			80.0			65 - 135					
Test: BTEX											
Benzene	EPA 8020	ND		8		8.66	LCSD	108.3	1.04	25.00	65.0 - 135.0
Ethyl Benzene	EPA 8020	ND		8		9.01	LCSD	112.6	1.34	25.00	65.0 - 135.0
Toluene	EPA 8020	ND		8		8.74	LCSD	109.3	0.92	25.00	65.0 - 135.0
Xylenes, total	EPA 8020	ND		24		27.2	LCSD	113.3	1.48	25.00	65.0 - 135.0
Surrogate			**Surrogate Recovery**			**Control Limits (%)**					
4-Bromofluorobenzene			96.6			65 - 135					
Test: MTBE by EPA 8020											
Methyl-t-butyl Ether	EPA 8020	ND		8		8.14	LCSD	101.8	4.09	25.00	65.0 - 135.0
Surrogate			**Surrogate Recovery**			**Control Limits (%)**					
4-Bromofluorobenzene			96.6			65 - 135					

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Quality Control Results Summary

QC Batch #: WGC62786B
Matrix: Liquid
Units: µg/L
Date Analyzed: 3/19/2003

Parameter	Method	Blank Result	Spike Sample ID	Spike Amount	Sample Result	Spike Result	QC Type	% Recovery	RPD	RPD Limits	Recovery Limits
Test: TPH as Gasoline											
TPH as Gasoline	EPA 8015 M	ND		250		224.75	LCS	89.9			65.0 - 135.0
Surrogate			**Surrogate Recovery**			**Control Limits (%)**					
4-Bromofluorobenzene			81.7			65 - 135					
Test: BTEX											
Benzene	EPA 8020	ND		8		7.15	LCS	89.4			65.0 - 135.0
Ethyl Benzene	EPA 8020	ND		8		7.52	LCS	94.0			65.0 - 135.0
Toluene	EPA 8020	ND		8		7.26	LCS	90.8			65.0 - 135.0
Xylenes, total	EPA 8020	ND		24		22.33	LCS	93.0			65.0 - 135.0
Surrogate			**Surrogate Recovery**			**Control Limits (%)**					
4-Bromofluorobenzene			88.0			65 - 135					
Test: MTBE by EPA 8020											
Methyl-t-butyl Ether	EPA 8020	ND		8		7.02	LCS	87.8			65.0 - 135.0
Surrogate			**Surrogate Recovery**			**Control Limits (%)**					
4-Bromofluorobenzene			88.0			65 - 135					
Test: TPH as Gasoline											
TPH as Gasoline	EPA 8015 M	ND		250		240.57	LCSD	96.2	6.80	25.00	65.0 - 135.0
Surrogate			**Surrogate Recovery**			**Control Limits (%)**					
4-Bromofluorobenzene			86.2			65 - 135					
Test: BTEX											
Benzene	EPA 8020	ND		8		7.91	LCSD	98.9	10.09	25.00	65.0 - 135.0
Ethyl Benzene	EPA 8020	ND		8		8.01	LCSD	100.1	6.31	25.00	65.0 - 135.0
Toluene	EPA 8020	ND		8		7.61	LCSD	95.1	4.71	25.00	65.0 - 135.0
Xylenes, total	EPA 8020	ND		24		24.2	LCSD	100.8	8.04	25.00	65.0 - 135.0
Surrogate			**Surrogate Recovery**			**Control Limits (%)**					
4-Bromofluorobenzene			93.7			65 - 135					
Test: MTBE by EPA 8020											
Methyl-t-butyl Ether	EPA 8020	ND		8		8.25	LCSD	103.1	16.11	25.00	65.0 - 135.0
Surrogate			**Surrogate Recovery**			**Control Limits (%)**					
4-Bromofluorobenzene			93.7			65 - 135					

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Quality Control Results Summary

QC Batch #: DW4326A
Matrix: Liquid
Units: µg/L
Date Analyzed: 3/19/03

Parameter	Method	Blank Result	Spike Sample ID	Spike Amount	Sample Result	Spike Result	QC Type	% Recovery	RPD	RPD Limits	Recovery Limits
Test: TPH as Diesel											
TPH as Diesel	EPA 8015 M	ND		1000		865.33	LCS	86.5			51.7 - 126.0
Surrogate			**Surrogate Recovery**			**Control Limits (%)**					
o-Terphenyl			93.0			21 - 142					
Test: TPH as Diesel											
TPH as Diesel	EPA 8015 M	ND		1000		877.22	LCSD	87.7	1.36	25.00	51.7 - 126.0
Surrogate			**Surrogate Recovery**			**Control Limits (%)**					
o-Terphenyl			89.0			21 - 142					

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Chain of Custody / Analysis Request

Attention to: C OROUNTIOTIS	Phone No.: 831-423-8780	Purchase Order No (Reqd).: 1st 2003	Send Invoice to (if Different) / Phone
Company Name: GET	Fax No.: 8827	Project Number: Manwel	Company
Mailing Address: 343 Soquel Ave, #33	email:	Project Name: Manwel	Billing Address (if Different)
City: Santa Cruz.	State: CA Zip: 95062	Project Location: Livermore	City: / State / Zip

Sampler: GN
Field Org. Code:
Global ID:

Turn Around Time
- ☐ Same Day
- ☐ 1 Day
- ☐ 2 Day
- ☐ 3 Day
- ☐ 4 Day
- ☐ 5 Day
- ☒ Standard (10 Day)

Order ID:

Client ID:	Field PT	Lab. No.	Sampling Date	Sampling Time	Matrix	Composite	Grab	Containers
mw-1	33678-001		03/14/03	12:30			X	3
mw-2		002					X	3
mw-3		003					X	3
mw-4		004					X	3
mw-5		005					X	3
mw-6		006					X	3
EX-1		007					X	3

Preservative

Volatile Organics by GCMS: 601/602 ☐ 624 ☐ 8010 by 8260 ☐ 8260B ☐ Fuel Oxygenates by 8260 ☐ 8260B ☐ MTBE by 8260B ☐ Pesticides-8081 ☐ PCBs - 8082 ☐ TPH as Gas/BTEX ☐ TPH as Gas/BTEX/MTBE/N ☐ Base/Neutral/Acid Organics 8270 ☐ 8270-SIM ☐ PNA ☐ Fuel Scan Extractable ☐ Purgeable ☐ Diesel ☒ Moto Oil ☐ w/ Si-gel Standard Cleanup ☐ w/ Si-gel Column Cleanup ☐ pH CN TRPH ☐ Oil & Grease ☐ Metals - Circle Below Total ☐ Dissolved ☐ STLC TTLC

Remarks

Relinquished by:	Received by: Michael	Date: 03/17/03	Time: 17:30
Relinquished by:	Received by:	Date:	Time:
Relinquished by:	Received by:	Date:	Time:
Relinquished by:	Received by:	Date:	Time:

Special Instructions or Comments

- ☐ NPDES Detection Limits
- ☐ EDD Report Required
- ☐ EDF Report Required
- ☐ PDF File Required

Metals:
Al, As, Sb, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Hg, Mo, Ni, K, Si, Ag, Na, Se, Sr, Tl, Sn, Ti, V, Zn, W : RCRA-8 ☐ CAM-17 ☐ Plating ☐ PPM-13 ☐ LUFT-5 ☐