

QUARTERLY GROUNDWATER MONITORING AND SAMPLING REPORT

*DO silica gel clean-up for this/old
next sampling event.*

MLK Property
4629 Martin Luther King Jr. Way
Oakland, California

ENVIRONMENTAL
PROTECTION
99 JUN -4 PM 3:52

June 2, 1999

ADVANCED ASSESSMENT AND REMEDIATION SERVICES

2380 Salvio Street, Suite 202
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June 2, 1999

Ms. Eva Chu
Alameda County Health Agency
Department of Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502

**Subject: Quarterly Groundwater Monitoring and Sampling Report for
4629 Martin Luther King Jr. Way, Oakland, California**

Dear Ms. Chu:

The enclosed report presents the results and findings of the April 1999, quarterly groundwater monitoring and sampling for the above-referenced facility.

Should you have any questions regarding the report please contact Tridib Guha at (925) 363-1999.

Sincerely,

Advanced Assessment and Remediation Services

Tridib K. Guha, R.G., R.E.A.
Principal

cc: Ms. Lynn Nightingale, San Francisco, CA

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QUARTERLY GROUNDWATER MONITORING AND SAMPLING REPORT

For

**MLK Property
4629 Martin Luther King Jr. Way
Oakland, California**

1.0 INTRODUCTION

This report presents the results and findings of the April 1999 quarterly groundwater monitoring and sampling performed at 4629 Martin Luther King Jr. Way, Oakland, California. This report is intended to fulfill quarterly self-monitoring requirements and to establish a groundwater monitoring history for the site. A site vicinity map is shown in Figure 1.

2.0 GROUNDWATER MONITORING WELLS

This section presents the water level monitoring, field observations, sampling and analysis procedures, as well as the analytical results. The location of the monitoring wells is presented in Figure 2. The work and related field sampling activities were conducted in accordance with the guidelines and requirements of the Alameda County Environmental Health Department (ACEHD) and the California Regional Water Quality Control Board, San Francisco Bay Region (RWQCB).

2.1 Groundwater Level Monitoring and Surveying

Groundwater levels in each well were measured to the nearest 0.01 foot from the top of the PVC casing, using an electronic sounder. A groundwater surface elevation map, based on interpretation of groundwater level measurements taken on April 23, 1999, and survey data is presented in Figure 3. The survey data and water level measurements are presented in Table 1.

2.2 Field Observations

The purged water from monitoring, MW-2, MW-3 and MW-4, were clear initially and with continual purging the water turned turbid. The purged water from monitoring well MW-1 was reddish turbid appearance. However, water samples collected at the time of sampling were clear. No floating product was observed in the groundwater samples from the

monitoring wells. However sheen was observed in all four monitoring well groundwater samples. Also, strong petroleum odor was noticed in the groundwater samples.

2.3 Sampling and Analysis Procedures

Groundwater samples were collected on April 23, 1999, following water level measurements. Samples were analyzed by McCampbell Analytical Inc of Pacheco, California which is certified by the California Department of Health Services (DHS) to perform the specified analyses.

Before purging, water levels were measured in all wells with an electronic sounder tape. Purging preceded sampling in order to ensure collection of non-stagnant water. A minimum of three casing volumes were removed before sampling the wells MW-1, MW-2, MW-3 and MW-3. The purged water was monitored for temperature, pH, conductivity and dissolved oxygen. Purging was considered complete when these parameters had stabilized. The wells were sampled after 96 percent recovery or greater. The groundwater monitoring well purge/sampling worksheets are presented Appendix A.

To prevent potential cross-contamination, all measuring, purging and sampling equipment was washed in an Alconox detergent solution, rinsed with tap water, and rinsed finally with distilled water between wells.

The sampling procedure for each monitoring well involved extracting well water with a clean PVC bailer on a clean nylon cord. Groundwater collected for analysis of Total Petroleum Hydrocarbon as gasoline (TPHg) and Benzene, Toluene, Ethylbenzene and total Xylenes (BTEX), Methyl Tertiary Butyl Ether (MTBE) was decanted into two 40-milliliter volatile organic analysis vials with Teflon-lined septa. Groundwater collected for analysis of Total Petroleum Hydrocarbon as diesel (TPHd) and Total Petroleum Hydrocarbon as motor oil (TPHmo) was decanted into one 1-liter amber glass bottles. Samples to be analyzed for TPHg/BTEX/MTBE were preserved using hydrochloric acid to a pH of 2.0. All samples were labeled and placed in a cooler containing blue ice, along with the chain-of-custody document (Appendix B). Samples transported to the laboratory were analyzed within the specified holding time.

Groundwater produced during purging and sampling was contained in 55-gallon steel drums. The drummed water was labelled with the source (i.e. well number) and date.

2.4 Analytical Methods

Samples were analyzed for TPHg by Modified EPA SW-846 Methods 5030/8015 modified, for TPHd-TPHmo by EPA Methods 3510/8015 modified, and for BTEX/MTBE by EPA SW-846 Methods 5030/8020.

A summary of the analytical results of groundwater samples from the monitoring wells is presented in Table 2. The certified analytical reports for these sampling events are included in Appendix B.

3.0 INTERPRETATION OF RESULTS

The results of water level measurements and groundwater sampling are discussed in the following sections.

3.1 Groundwater Elevations and Gradients

A relative groundwater elevation contours for April 23, 1999, is presented in Figure 3. The flow direction, based on groundwater level data, was toward the southwest with an average hydraulic gradient of 0.033 foot per foot for this monitoring period. The average depth to stabilized groundwater in these wells was approximately 19 feet below ground surface.

3.2 Analytical Results

The analytical results for groundwater samples from four monitoring wells (MW-1 through MW-4) are presented in Table 2, which also includes the groundwater sampling results from the previous site investigation. Groundwater samples from four monitoring wells MW-1, MW-2, MW-3 and MW-4 were found to contain TPHg ranging 55 to 5100 parts per billion (ppb). TPHd concentrations ranging from 240 to 2900 ppb were measured in groundwater samples MW-1 through MW-4. TPHmo was detected in one sample MW-1, at 360 ppb. Benzene was detected only in groundwater samples from MW-1, MW-3 and MW-4, at concentrations ranging from 6.2 to 160 ppb. Toluene, ethylbenzene, and xylenes concentrations ranging from 1.6 to 31 ppb were measured in groundwater samples from MW-1, MW-3 and MW-4. MTBE was detected in groundwater samples from MW-3 and MW-4, at concentrations 8.3 and 24 respectively. Previously, MTBE was not detected in groundwater samples from any four monitoring wells. The source of MTBE is unknown at this time. Figure 4 shows the distribution of dissolved-phase petroleum hydrocarbons at the site.

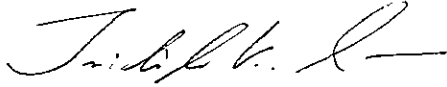
4.0 SELF-MONITORING PROGRAM SCHEDULE AND RECOMMENDATIONS

The next monitoring event scheduled for the site is July, 1999. In the next sampling event groundwater samples will be analyzed by using EPA Method 8260 to confirm the validity of MTBE. The report for the next monitoring event will contain tabulated data for all monitoring events for the site.

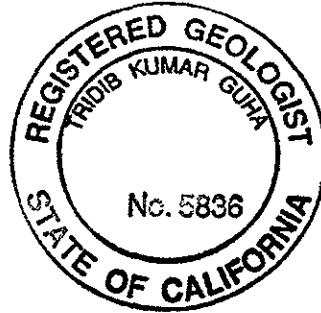
5.0 CERTIFICATION

The information provided in this report is based on the groundwater sampling activities conducted at the site. All data presented in this report is believed to be factual and accurate, unless proven otherwise. Any conclusions or recommendations provided within are based on our expertise and experience conducting work for a similar nature.

Advanced Assessment and Remediation Services



Tridib K. Guha, R.G. 5836



TABLES

TABLE 1: SURVEY AND WATER LEVEL MONITORING DATA
MLK Property
4629 Martin Luther King Jr. Way
Oakland, California

Well No.	Date of Measurement	Top of Casing Elevation (Feet - Relative)	Depth to Groundwater (Feet)	Product Thickness (Feet)	Groundwater Elevation (Feet - Relative)
MW-1	12-18-98	101.15	19.49	0.00	81.66
	4-23-99	101.15	18.64	0.00	82.51
MW-2	12-18-98	101.29	20.59	0.00	80.70
	4-23-99	101.29	19.36	0.00	81.93
MW-3	12-18-98	100.95	20.80	0.00	80.15
	4-23-99	100.95	20.03	0.00	80.92
MW-4	12-18-98	100.90	18.93	0.00	81.97
	4-23-99	100.90	18.22	0.00	82.68

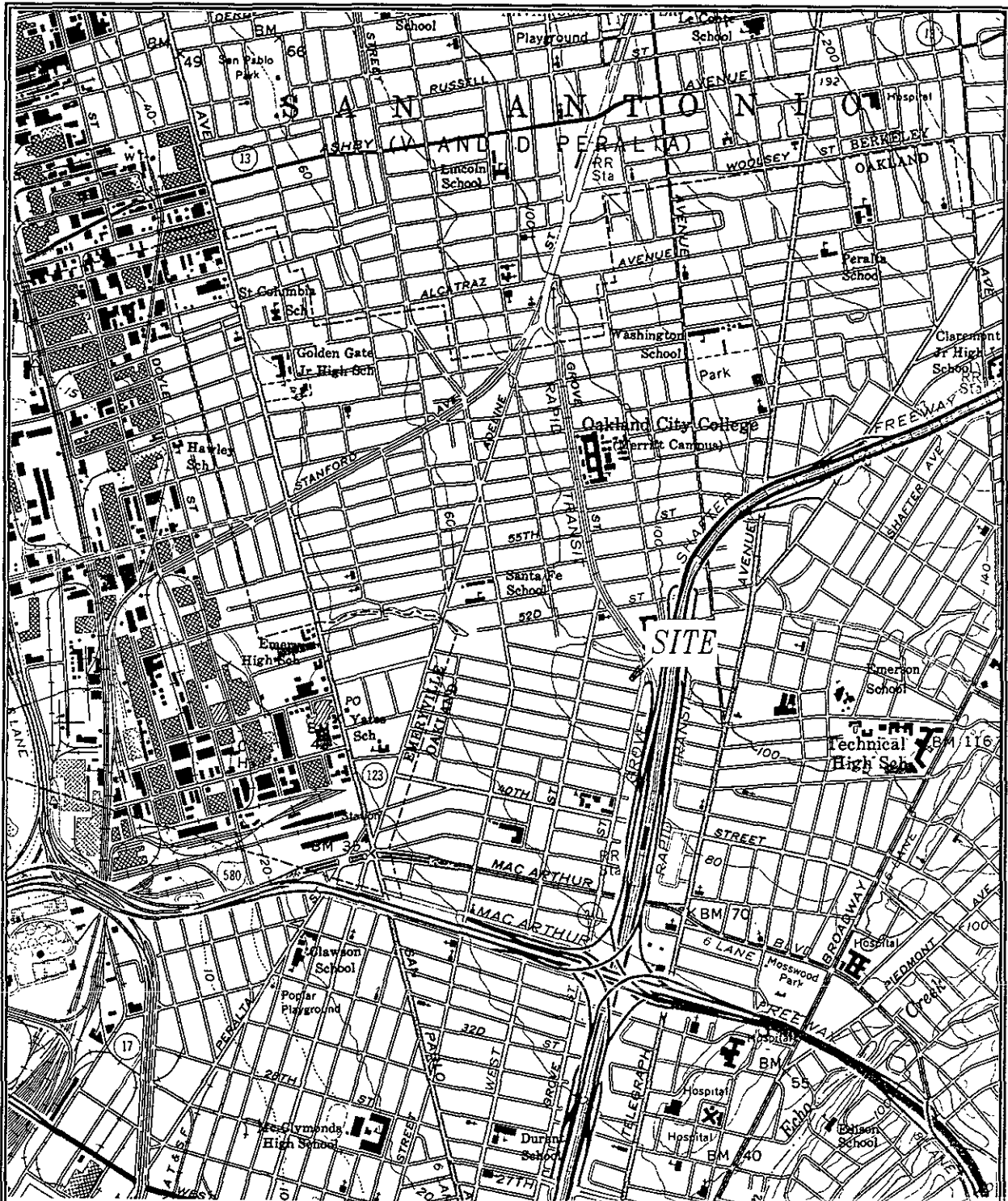
Note: A bench mark, with an assumed elevation of 100.00 feet (Above Mean Sea Level), was established on top of the south curb at the 47th Street entrance to the center of the building; all well elevations are relative to this.

**TABLE 2: SUMMARY OF ANALYTICAL RESULTS OF GROUNDWATER SAMPLING
MLK Property
4629 Martin Luther King Jr. Way
Oakland, California**

Sample ID	Date of Sampling	TPHg (µg/L)	MTBE (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Xylenes (µg/L)	TPHd µg/L	TPHmo µg/L
MW1-GW	11/15/95	220	NA	2.3	ND	ND	0.68	20,000	NA
	12/17/98	480	ND	12	1.9	ND	2.9	590	ND
	4/23/99	390	ND	6.2	1.6	ND	2.0	670	360
MW2-GW	12/18/98	ND	ND	ND	ND	ND	ND	730	ND
	4/23/99	55	ND	ND	ND	ND	ND	240	ND
MW3-GW	12/17/98	840	ND	3.6	1.1	1.0	2.2	720	ND
	4/23/99	1,800	8.3	54	4.7	1.7	5.8	980	ND
MW4-GW	12/17/98	4,000	ND	11	3.7	10	2.9	4,300	ND
	4/23/99	5,100	24	160	11	31	10	2,900	ND
RL	4/26-5/3/99	50	5	0.5	0.5	0.5	0.5	50	250

Notes
 ND- Not Detected RL- Reporting Limit NA- Not Analyzed
 mg/L- Milligram per liter (parts per million)
 µg/L - Microgram per liter (parts per billion)
 TPHg- Total petroleum hydrocarbon as gasoline (EPA method modified 8015)
 TPHd- Total petroleum hydrocarbon as diesel (EPA method modified 8015)
 TPHmo- Total petroleum hydrocarbon as motor oil (EPA method modified 8015)
 MTBE- Methyl Tertiary Butyl Ether (EPA method 8020)
 Benzene, toluene, ethylbenzene, and total xylenes (EPA method 8020)

FIGURES



Source: U.S.G.S. Map Oakland West Quadrangle, California
 7.5 Minute Series (Topographic)
 Photographed 1959
 Photorevised 1980

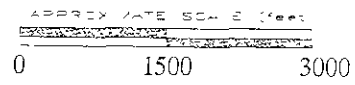


FIGURE 1: SITE VICINITY MAP
 4629 Martin Luther King Jr. Way
 Oakland, California

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 Concord, California 94520

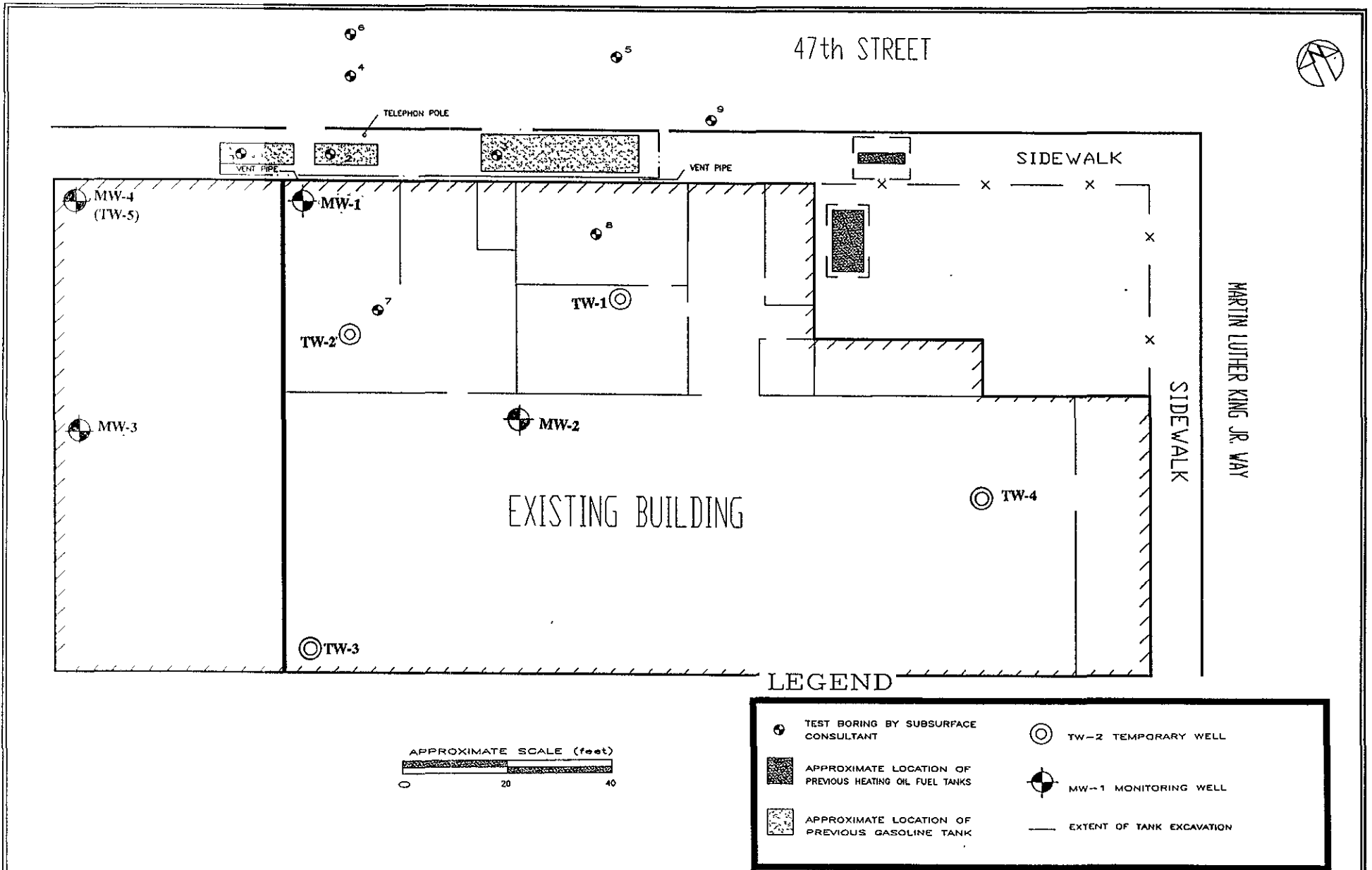
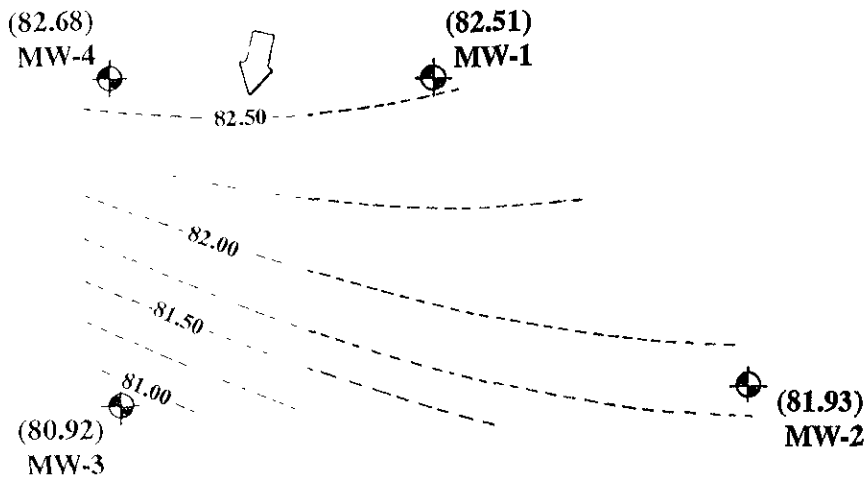


FIGURE 2: SITE PLAN





MLK PROPERTY
 4629 Martin Luther King Jr. Way
 Oakland, California

ADVANCED ASSESSMENT AND REMEDIATION SERVICES

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 Concord, California 94520



LEGEND

-  MW-1 MONITORING WELL
-  (81.93) RELATIVE GROUNDWATER ELEVATION
-  -82.00- GROUNDWATER ELEVATION CONTOUR
-  GENERAL DIRECTION OF GROUNDWATER FLOW

NOTE:
 1. WATER LEVELS IN MONITORING WELLS MEASURED ON APRIL 23, 1999
 2. CONTOUR INTERVAL = 0.25 FOOT
 3. HYDRAULIC GRADIENT = 0.033 FOOT/FOOT


Scale:
 Approximately 1 inch = 30 feet

FIGURE 3: GROUNDWATER SURFACE ELEVATIONS (4/23/99)
 MLK PROPERTY
 4629 Martin Luther King Jr. Way
 Oakland, California


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TPHg 5100
 MIBF 24
 B 160
 I 11
 L 31
 X 10
 TPHd 2900


MW-4 

TPHg 390
 B 6.2
 T 1.6
 X 2.0
 TPHd 670
 TPHmo 360

MW-1 

MW-3 

TPHg	1800
MTBE	8.3
B	54
T	4.7
E	1.7
X	5.8
TPHd	980

MW-2 

TPHg	55
TPHd	240

LEGEND

 MW-1 MONITORING WELL

TPHg TOTAL PETROLEUM HYDROCARBONS
 GASOLINE
 MTBE METHYL TERTIARY BUTYL ETHER
 B BENZENE
 T TOLUENE
 E ETHYLBENZENE
 X XYLENES
 TPHd TOTAL PETROLEUM HYDROCARBONS
 DIESEL
 TPHmo TOTAL PETROLEUM HYDROCARBONS
 MOTOR OIL

NOTE:
 1. ALL CONCENTRATIONS ARE IN MICROGRAMS PER LITER (PARTS PER BILLION)
 2. HYDROCARBON CONSTITUENTS WHICH WERE NOT DETECTED ARE NOT LISTED

SCALE

Approx. 1 inch = 30 feet

FIGURE 4: DISTRIBUTION OF DISSOLVED-PHASE HYDROCARBONS
 MLK PROPERTY
 4629 Martin Luther King Jr. Way
 Oakland, California

ADVANCED ASSESSMENT AND REMEDIATION SERVICES
 2380 Salvio Street, Suite 202
 Concord, California 94520

APPENDIX A

Monitoring Well Purge/Sample Worksheet

GROUNDWATER MONITORING WELL PURGE/SAMPLING WORKSHEET

PROJECT NAME: MLK Property PROJECT NUMBER: 99006

SITE ADDRESS: 4629 Martin Luther King Jr. Way, Oakland, CA

WELL NUMBER: MW1 WELL CASING DIA.: 2" DATE: 4/23/99

Stagnant Volume Calculation

Total Well Depth (ft) - Initial Depth to Water = Water Column Height (ft) - Time: 9:00
 30 - 18.64 = 11.36

Water column Height (ft) x Gallons/Linear Foot = Stagnant Volume (Gallons)
 11.36 x 0.17 = 1.93

(Gallons/Linear Foot: 2" dia. = 0.17; 4" dia. = 0.66; 6" dia. = 1.5)

Groundwater Inspection

Floating Product (ft. or in.): Sheen/Iridescence: YES Odor: YES

Time	Volume Purged (gal)	Dissolved Oxygen (ppm)	Temperature (degrees F)	pH	Conductivity μ S	Color/Turbidity/Other
10:40	0	5.9	63.0	6.99	590	REDDISH TURBID
10:50	2	5.4	62.8	6.96	575	" "
11:00	4	5.4	62.9	7.00	628	" "
11:10	6	5.4	62.8	7.02	649	" "

Purged Water Containment

Purge Method Used:

6 gals stored in 1 55 gal (drums); Any previous drums? 1 Capacity 55

Groundwater Sampling

Water Level Recovery (Depth to groundwater in feet)

(P) After purging: 22.16 (I) Initially: 18.64 (S) Before sampling: 18.78 Time: 12:48

(P-S)/P-I x 100 = 100 % Total Recovery: 96%

SAMPLE TIME 12:50

Sample Containers (How many? Preservatives?)

1 liter amber glass: 1; 40 ml VOA: 3; 500 ml polypropylene: _____

REMARKS:

SAMPLER: TRIDIB GUHA
 (Print)

SIGNATURE: 

GROUNDWATER MONITORING WELL PURGE/SAMPLING WORKSHEET

PROJECT NAME: MLK Property PROJECT NUMBER: 99006
 SITE ADDRESS: 4629 Martin Luther King Jr. Way, Oakland, CA
 WELL NUMBER: MW 2 WELL CASING DIA.: 2" DATE: 4/23/99

Stagnant Volume Calculation

Total Well Depth (ft) - Initial Depth to Water = Water Column Height (ft) - Time: 8.55
30 19.36 10.64

Water column Height (ft) x Gallons/Linear Foot = Stagnant Volume (Gallons)
10.64 0.17 1.81

(Gallons/Linear Foot: 2" dia. = 0.17; 4" dia. = 0.66; 6" dia. = 1.5)

Groundwater Inspection

Floating Product (ft. or in.): _____ Sheen/Iridescence: YES Odor: YES

Time	Volume Purged (gal)	Dissolved Oxygen (ppm)	Temperature (degrees F)	pH	Conductivity μ S	Color/Turbidity/Other
10:05	0	5.7	62.8	6.93	813	CLEAR
10:15	2	5.5	62.4	6.94	852	SLIGHTLY TURBID
10:25	4	5.5	62.5	6.94	831	SLIGHTLY TURBID
10:35	6	5.5	62.6	6.93	827	TURBID

Purged Water Containment

Purge Method Used:

6 gals stored in 1 55 gal (drums); Any previous drums? 1 Capacity 55

Groundwater Sampling

Water Level Recovery (Depth to groundwater in feet)

(P) After purging: 22.20 (I) Initially: 19.36 (S) Before sampling: 19.42 Time: 12:38


(P-S)/P-I x 100 = 100 % Total Recovery: 98 % SAMPLE TIME 12:40

Sample Containers (How many? Preservatives?)

1 liter amber glass: 1; 40 ml VOA: 3; 500 ml polypropylene: _____

REMARKS:

SAMPLER: TRIDIB GUHA

SIGNATURE: 

(Print)

GROUNDWATER MONITORING WELL PURGE/SAMPLING WORKSHEET

PROJECT NAME: MLK Property

PROJECT NUMBER: 99006

SITE ADDRESS: 4629 Martin Luther King Jr. Way, Oakland, CA

WELL NUMBER: MW3 WELL CASING DIA.: 2" DATE: 4/23/99

Stagnant Volume Calculation

Total Well Depth (ft) - Initial Depth to Water = Water Column Height (ft) - Time: 8.51
 30 20.03 9.97

Water column Height (ft) x Gallons/Linear Foot = Stagnant Volume (Gallons)
 9.97 0.17 1.7

(Gallons/Linear Foot: 2" dia. = 0.17; 4" dia. = 0.66; 6" dia. = 1.5)

Groundwater Inspection

Floating Product (ft. or in.): Sheen/Iridescence: YES Odor: YES

Time	Volume Purged (gal)	Dissolved Oxygen (ppm)	Temperature (degrees F)	pH	Conductivity μ S	Color/Turbidity/Other
9:10	0	5.5	62.8	6.69	798	CLEAR
9:20	2	5.4	62.5	6.72	1183	SLIGHTLY TURBID
9:30	4	5.5	62.6	6.76	1211	" "
9:40	6	5.4	62.5	6.78	1255	" "

Purged Water Containment

Purge Method Used:

6 gals stored in 1 55 gal (drums); Any previous drums? 1 Capacity 55

Groundwater Sampling

Water Level Recovery (Depth to groundwater in feet)

(P) After purging: 22.92 (I) Initially: 20.03 (S) Before sampling: 20.06 Time: 12:15

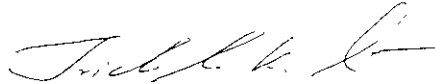
(P-S)/P-I x 100 = 100 % Total Recovery: 99% SAMPLE TIME 12:20

Sample Containers (How many? Preservatives?)

1 liter amber glass: 1; 40 ml VOA: 3; 500 ml polypropylene: _____

REMARKS:

SAMPLER: TRIDIB GUHA

SIGNATURE: 

(Print)

GROUNDWATER MONITORING WELL PURGE/SAMPLING WORKSHEET

PROJECT NAME: MLK Property

PROJECT NUMBER: 99006

SITE ADDRESS: 4629 Martin Luther King Jr. Way, Oakland, CA

WELL NUMBER: MW 4 WELL CASING DIA.: 2"

DATE: 4/23/99

Stagnant Volume Calculation

Total Well Depth (ft) - Initial Depth to Water = Water Column Height (ft) - Time: 8:49
 30 18.22 11.78

Water column Height (ft) x Gallons/Linear Foot = Stagnant Volume (Gallons)
 11.78 0.17 2

(Gallons/Linear Foot: 2" dia. = 0.17; 4" dia. = 0.66; 6" dia. = 1.5)

Groundwater Inspection

Floating Product (ft. or in.):

Sheen/Iridescence: YES

Odor: YES

Time	Volume Purged (gal)	Dissolved Oxygen (ppm)	Temperature (degrees F)	pH	Conductivity μ S	Color/Turbidity/Other
9:40	0	5.6	62.9	6.88	1088	CLEAR
9:50	2	5.7	62.6	6.91	1158	SLIGHTLY TURBID
10:00	4	5.7	62.5	6.92	1176	TURBID GREENISH
10:10	6	5.7	62.6	6.92	1174	MUDDY

Purged Water Containment

Purge Method Used:

6 gals stored in 1 55 gal (drums); Any previous drums? 1 Capacity 55

Groundwater Sampling

Water Level Recovery (Depth to groundwater in feet)

(P) After purging: 21.73 (I) Initially: 18.22 (S) Before sampling: 18.26 Time: 12:17

(P-S)/P-I x 100 = 100 % Total Recovery: 99.1

SAMPLE TIME 12:30

Sample Containers (How many? Preservatives?)

1 liter amber glass: 1; 40 ml VOA: 3; 500 ml polypropylene: _____

REMARKS:

SAMPLER: TRIDIB GUHA

(Print)

SIGNATURE: 

ADVANCED ASSESSMENT AND REMEDIATION SERVICES

APPENDIX B

Certified Analytical Reports and Chain-of-Custody Documents



McCAMPBELL ANALYTICAL INC.

110 2nd Avenue South, #D7, Pacheco, CA 94553-5560
Telephone : 925-798-1620 Fax : 925-798-1622
<http://www.mccampbell.com> E-mail: main@mccampbell.com

Advanced Assessment & Remediation Services 2380 Salvio St. Suite 202 Concord, CA 94520	Client Project ID: MLK Property	Date Sampled: 04/23/99
		Date Received: 04/23/99
	Client Contact: Tridib Guha	Date Extracted: 04/23/99
	Client P.O:	Date Analyzed: 04/23/99


04/30/99

Dear Tridib:

Enclosed are:

- 1). the results of 4 samples from your **MLK Property** project,
- 2). a QC report for the above samples
- 3). a copy of the chain of custody, and
- 4). a bill for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits. 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, Lab Director



McCAMPBELL ANALYTICAL INC.

110 2nd Avenue South, #D7, Pacheco, CA 94553-5560
 Telephone : 925-798-1620 Fax : 925-798-1622
<http://www.mccampbell.com> E-mail: main@mccampbell.com

Advanced Assessment & Remediation Services 2380 Salvio St. Suite 202 Concord, CA 94520	Client Project ID: MLK Property	Date Sampled: 04/23/99
		Date Received: 04/23/99
	Client Contact: Tridib Guha	Date Extracted: 05/01/99
	Client P.O:	Date Analyzed: 05/01-05/03/99

Gasoline Range (C6-C12) Volatile Hydrocarbons as Gasoline*, with Methyl tert-Butyl Ether* & 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) [†]	MTBE	Benzene	Toluene	Ethylbenzene	Xylenes	% Recovery Surrogate
09796	MW1-GW	W	390,a	ND	6.2	1.6	ND	2.0	104
09797	MW2-GW	W	55,b	ND	ND	ND	ND	ND	97
09798	MW3-GW	W	1800,a	8.3	54	4.7	1.7	5.8	---#
09799	MW4-GW	W	5100,a	24	160	11	31	10	---#
Reporting Limit unless otherwise stated; ND means not detected above the reporting limit	W		50 ug/L	5.0	0.5	0.5	0.5	0.5	
	S		1.0 mg/kg	0.05	0.005	0.005	0.005	0.005	

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

cluttered chromatogram, sample peak coclutes 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 having broad chromatographic peaks are significant, biologically altered gasoline?, 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 sheen is present, i) liquid sample that contains greater than ~5 vol % sediment, j) no recognizable pattern

QC REPORT FOR HYDROCARBON ANALYSES

Date: 04/27/99

Matrix: WATER

Analyte	Concentration (ug/L)			Amount Spiked	% Recovery		
	Sample (#09710)	MS	MSD		MS	MSD	RPD
TPH (gas)	0.0	106.0	107.9	100.0	106.0	107.9	1.8
Benzene	0.0	9.7	9.8	10.0	97.0	98.0	1.0
Toluene	0.0	10.0	10.0	10.0	100.0	100.0	0.0
Ethyl Benzene	0.0	10.2	10.3	10.0	102.0	103.0	1.0
Xylenes	0.0	30.5	30.6	30.0	101.7	102.0	0.3
TPH(diesel)	0.0	8422	8158	7500	112	109	3.2
TRPH (oil & grease)	0	23700	24000	23700	100	101	1.3

$$\% \text{ Rec.} = (\text{MS} - \text{Sample}) / \text{amount spiked} \times 100$$

$$\text{RPD} = (\text{MS} - \text{MSD}) / (\text{MS} + \text{MSD}) \times 2 \times 100$$

QC REPORT FOR HYDROCARBON ANALYSES

Date: 04/28/99

Matrix: WATER

Analyte	Concentration (ug/L)			Amount Spiked	% Recovery		
	Sample (#09710)	MS	MSD		MS	MSD	RPD
TPH (gas)	0.0	104.4	107.1	100.0	104.4	107.1	2.6
Benzene	0.0	10.0	10.6	10.0	100.0	106.0	5.8
Toluene	0.0	10.3	11.0	10.0	103.0	110.0	6.6
Ethyl Benzene	0.0	10.5	10.7	10.0	105.0	107.0	1.9
Xylenes	0.0	31.4	32.3	30.0	104.7	107.7	2.8
TPH(diesel)	0.0	8289	8169	7500	111	109	1.5
TRPH (oil & grease)	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

QC REPORT FOR HYDROCARBON ANALYSES

Date: 04/30/99-05/01/99

Matrix: WATER

Analyte	Concentration (ug/L)			Amount Spiked	% Recovery		RPD
	Sample (#09710)	MS	MSD		MS	MSD	
TPH (gas)	0.0	104.6	101.9	100.0	104.6	101.9	2.7
Benzene	0.0	10.3	10.1	10.0	103.0	101.0	2.0
Toluene	0.0	10.6	10.3	10.0	106.0	103.0	2.9
Ethyl Benzene	0.0	10.5	10.4	10.0	105.0	104.0	1.0
Xylenes	0.0	31.6	31.2	30.0	105.3	104.0	1.3
TPH(diesel)	0.0	8289	8169	7500	111	109	1.5
TRPH (oil & grease)	0	26200	27500	23700	111	116	4.8

$$\% \text{ Rec.} = (\text{MS} - \text{Sample}) / \text{amount spiked} \times 100$$

$$\text{RPD} = (\text{MS} - \text{MSD}) / (\text{MS} + \text{MSD}) \times 2 \times 100$$

