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**Refining & Supply Company**  
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Oakland, CA 94611  
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Jennifer C. Sedlachek  
Project Manager

120386

**ExxonMobil**  
*Refining & Supply*

July 14, 2005

Mr. Amir Gholami  
Alameda County Health Care Services Agency  
1131 Harbor Bay Parkway, 2<sup>nd</sup> Floor  
Alameda, California 94502

Alameda County  
JUL 20 2005  
Environmental Health

Subject: Former Mobil Station 04-334, 2492 Castro Valley Boulevard, Castro Valley, California

Dear Mr. Gholami:

Attached for your review and comment is a copy of the *Report of Groundwater Monitoring, Second Quarter 2005* for the above-referenced site. The report, prepared by ETIC Engineering, Inc. of Pleasant Hill, California, details the results of the May 2005 sampling event.

If you have any questions or comments, please contact me at 510.547.8196.

Sincerely,



Jennifer C. Sedlachek  
Project Manager

Attachment: ETIC Groundwater Monitoring Report dated July 2005

- c: w/ attachment:  
Ms. Paula Floeck – Jiffy Lube International  
Mr. Dan McQuillen – Jiffy Lube Remediation Coordinator  
Mr. William Slautterback – Cal Lube Real Estate Limited Partnership  
Mr. William Peterson – Owner of Castro Valley Lumber Company
- c: w/o attachment:  
Ms. Christa Marting - ETIC Engineering, Inc.



**Report of Groundwater Monitoring  
Second Quarter 2005**

**Former Mobil Station 04-334  
2492 Castro Valley Boulevard  
Castro Valley, California**

Prepared for

ExxonMobil Oil Corporation  
4096 Piedmont Avenue #194  
Oakland, California 94611

Alameda County  
JUL 20 2005  
Environmental Health

Prepared by

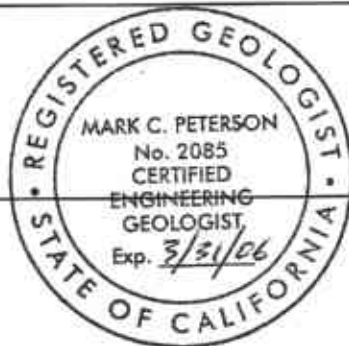
ETIC Engineering, Inc.  
2285 Morello Avenue  
Pleasant Hill, California 94523  
(925) 602-4710

*Sherris Prall*  
Sherris Prall  
Project Manager

*July 11, 2005*  
Date

*Mark C. Peterson*  
Mark C. Peterson, C.E.G. #2085  
Senior Geologist

*7/13/05*  
Date



July 2005

## SITE CONTACTS

Station Number: Former Mobil Station 04-334

Station Address: 2492 Castro Valley Boulevard  
Castro Valley, California

ExxonMobil Project Manager: Jennifer C. Sedlachek  
ExxonMobil Refining and Supply Company  
4096 Piedmont Avenue #194  
Oakland, California 94611  
(510) 547-8196

Consultant to ExxonMobil: ETIC Engineering, Inc.  
2285 Morello Avenue  
Pleasant Hill, California 94523  
(925) 602-4710

ETIC Project Manager: Sherris Prall

Regulatory Oversight: Amir Gholami  
Alameda County Health Care Services Agency  
1131 Harbor Bay Parkway, 2<sup>nd</sup> Floor  
Alameda, California 94502  
(510) 567-6700

## INTRODUCTION

At the request of ExxonMobil Oil Corporation, ETIC Engineering, Inc. has prepared this report of groundwater monitoring for former Mobil Station 04-334. This report presents the results for the most recent groundwater monitoring conducted at the site and summarizes recent site activities. This report covers site activities from 16 February 2004, the date of the last monitoring event, through 16 May 2005, the date of the recent monitoring event. Groundwater monitoring results, well construction details, and a groundwater monitoring plan are provided in the attached figures and tables. Groundwater monitoring protocols, field data, and analytical results are provided in the attached appendixes.

## GENERAL SITE INFORMATION

<b>Site name:</b>	Former Mobil Station 04-334
<b>Site address:</b>	2492 Castro Valley Boulevard, Castro Valley, California
<b>Current property owner:</b>	Cal Lube Real Estate Limited Partnership I
<b>Current site use:</b>	Jiffy Lube Oil Change facility
<b>Current phase of project:</b>	Groundwater monitoring
<b>Tanks at site:</b>	Four former underground storage tanks removed 1983
<b>Number of wells:</b>	4 (3 onsite, 1 offsite)

## GROUNDWATER MONITORING SUMMARY

<b>Gauging and sampling date:</b>	16 May 2005
<b>Wells gauged and sampled:</b>	MW1-MW4
<b>Wells gauged only:</b>	None
<b>Groundwater flow direction:</b>	South-southeast
<b>Groundwater gradient:</b>	0.02
<b>Well screens submerged:</b>	MW3
<b>Well screens not submerged:</b>	MW1, MW2, MW4
<b>Liquid-phase hydrocarbons:</b>	Not observed or detected
<b>Laboratory:</b>	TestAmerica, Inc., Nashville, Tennessee

### Analyses performed:

- Total Petroleum Hydrocarbons as gasoline and as diesel by EPA Method 8015B
- Benzene, toluene, ethylbenzene, and total xylenes by EPA Method 8021B
- Methyl t-butyl ether by EPA Method 8260B

## **ADDITIONAL ACTIVITIES PERFORMED AT SITE**

No additional activities were performed at the site.

## **WORK PROPOSED FOR NEXT QUARTER**

Groundwater will be monitored in accordance with the attached groundwater monitoring plan.

### **Attachments:**

Figure 1: Site Plan Showing Groundwater Elevations and Analytical Results

Table 1: Well Construction Details

Table 2: Groundwater Monitoring Data

Table 3: Groundwater Monitoring Plan

Appendix A: Field Protocols

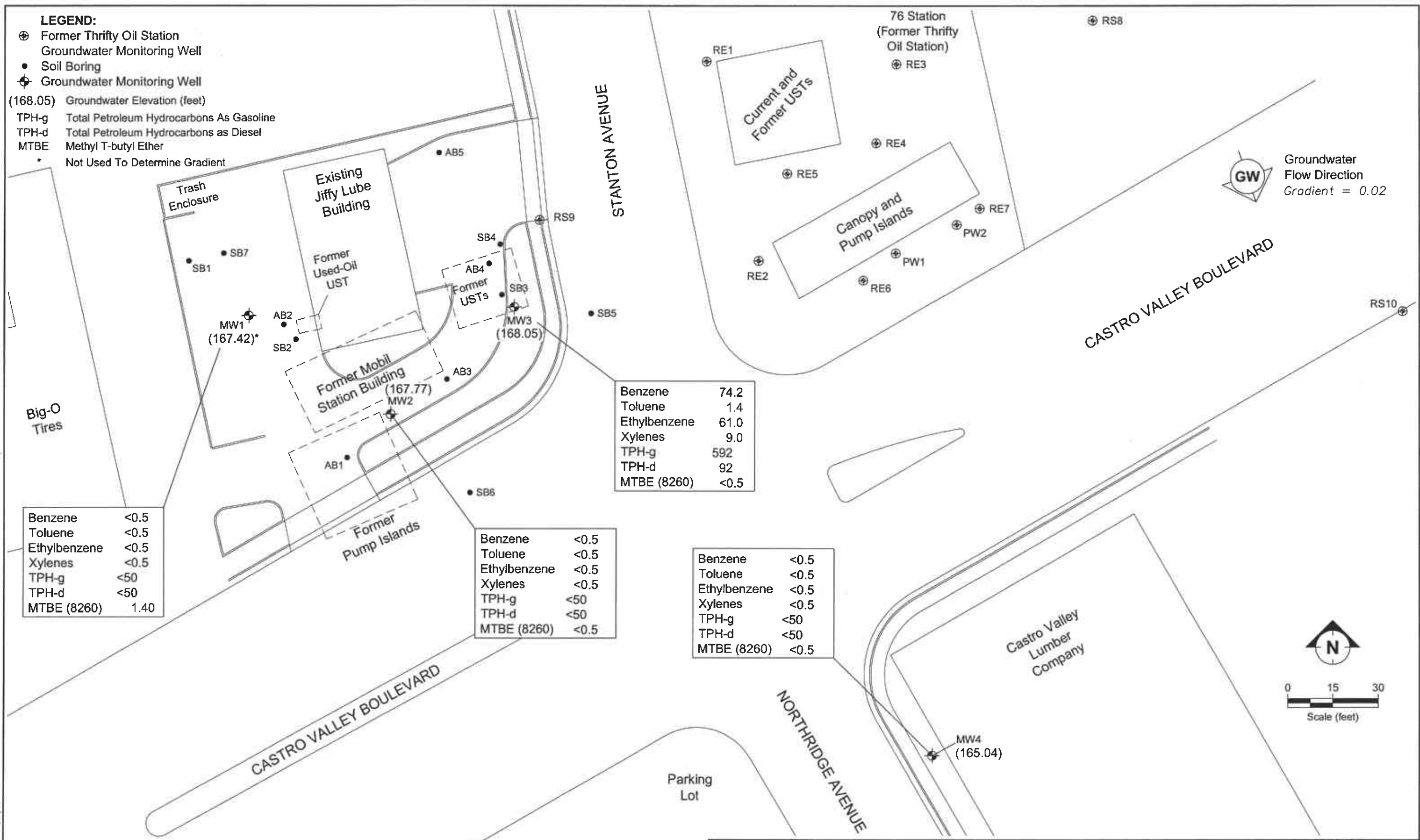
Appendix B: Field Documents

Appendix C: Laboratory Analytical Reports

**LEGEND:**

- ⊕ Former Thrifty Oil Station Groundwater Monitoring Well
- Soil Boring
- ⊕ Groundwater Monitoring Well

- (168.05) Groundwater Elevation (feet)
- TPH-g Total Petroleum Hydrocarbons As Gasoline
- TPH-d Total Petroleum Hydrocarbons as Diesel
- MTBE Methyl T-butyl Ether
- \* Not Used To Determine Gradient



GW  
Groundwater Flow Direction  
Gradient = 0.02

Benzene	74.2
Toluene	1.4
Ethylbenzene	61.0
Xylenes	9.0
TPH-g	592
TPH-d	92
MTBE (8260)	<0.5

Benzene	<0.5
Toluene	<0.5
Ethylbenzene	<0.5
Xylenes	<0.5
TPH-g	<50
TPH-d	<50
MTBE (8260)	1.40

Benzene	<0.5
Toluene	<0.5
Ethylbenzene	<0.5
Xylenes	<0.5
TPH-g	<50
TPH-d	<50
MTBE (8260)	<0.5

Benzene	<0.5
Toluene	<0.5
Ethylbenzene	<0.5
Xylenes	<0.5
TPH-g	<50
TPH-d	<50
MTBE (8260)	<0.5

Note:  
Concentrations In Micrograms Per Liter (ug/L).



SITE PLAN SHOWING GROUNDWATER ELEVATIONS AND ANALYTICAL RESULTS  
FORMER MOBIL STATION 04-334  
2492 CASTRO VALLEY BOULEVARD, CASTRO VALLEY, CALIFORNIA  
16 MAY 2005

FIGURE:  
**1**

FILENAME: 202005.DWG 06/27/05

**TABLE 1 WELL CONSTRUCTION DETAILS, FORMER MOBIL STATION 04-334, 2492 CASTRO VALLEY BOULEVARD, CASTRO VALLEY, CALIFORNIA**

Well Number	Well Installation Date	Elevation TOC (feet)	Casing Material	Total Depth (feet)	Well Depth (feet)	Borehole Diameter (inches)	Casing Diameter (inches)	Screened Interval (feet)	Slot Size (inches)	Filter Pack Interval (feet)	Filter Pack Material
MW1	a 06/24/04	173.23	PVC	20	20	8.25	2	5 - 20	0.010	4.5 - 20	#2/12 Sand
MW2	a 06/25/04	173.63	PVC	20	20	8.25	2	5 - 20	0.010	4.5 - 20	#2/12 Sand
MW3	a 06/25/04	171.91	PVC	20	20	8.25	2	5 - 20	0.010	4.5 - 20	#2/12 Sand
MW4	a 06/24/04	170.48	PVC	15	14	8.25	2	4 - 14	0.010	3.5 - 15	#2/12 Sand

a Well surveyed on 12 July 2004 by Morrow Surveying.

PVC Polyvinyl chloride.

TOC Top of casing.

TABLE 2 GROUNDWATER MONITORING DATA, FORMER MOBIL STATION 04-334, 2492 CASTRO VALLEY BOULEVARD, CASTRO VALLEY, CALIFORNIA

Well ID	Date	Top of Casing	Depth to	Groundwater	Benzene (µg/L)	Toluene (µg/L)	Ethyl- benzene (µg/L)	Total Xylenes (µg/L)	TPH-g (µg/L)	TPH-d (µg/L)	MTBE (µg/L)
		Elevation (feet)	Water (feet)	Elevation (feet)							
MW1	a 08/13/04	173.23	7.32	165.91	<0.5	0.7	<0.5	1.0	<50	71	1.20 <sup>b</sup>
MW1	11/09/04	173.23	6.96	166.27	<0.5	0.9	<0.5	0.9	<50	63	1.50 <sup>b</sup>
MW1	02/16/05	173.23	6.10	167.13	<0.5	1.0	<0.5	1.5	<50	78	1.30 <sup>b</sup>
<b>MW1</b>	<b>05/16/05</b>	<b>173.23</b>	<b>5.81</b>	<b>167.42</b>	<b>&lt;0.50</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;50</b>	<b>&lt;50</b>	<b>1.40<sup>b</sup></b>
MW2	a 08/13/04	173.63	6.96	166.67	<0.5	0.8	<0.5	1.0	<50	57	<0.5 <sup>b</sup>
MW2	11/09/04	173.63	6.44	167.19	<0.5	1.1	<0.5	1.2	<50	<50	<0.5 <sup>b</sup>
MW2	02/16/05	173.63	5.21	168.42	<0.5	0.9	<0.5	1.4	<50	55	<0.5 <sup>b</sup>
<b>MW2</b>	<b>05/16/05</b>	<b>173.63</b>	<b>5.86</b>	<b>167.77</b>	<b>&lt;0.50</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;50</b>	<b>&lt;50</b>	<b>&lt;0.5<sup>b</sup></b>
MW3	a 08/13/04	171.91	5.36	166.55	100	2.0	187	59.6	1,440	352	<0.5 <sup>b</sup>
MW3	11/09/04	171.91	4.80	167.11	188	3.6	242	20.0	1,690	461	<0.5 <sup>b</sup>
MW3	02/16/05	171.91	3.10	168.81	66.2	1.4	61.1	12.6	575	269	<0.5 <sup>b</sup>
<b>MW3</b>	<b>05/16/05</b>	<b>171.91</b>	<b>3.86</b>	<b>168.05</b>	<b>74.2</b>	<b>1.4</b>	<b>61.0</b>	<b>9.0</b>	<b>592</b>	<b>92</b>	<b>&lt;0.5<sup>b</sup></b>
MW4	a 08/13/04	170.48	6.10	164.38	<0.5	0.8	<0.5	1.1	<50	72	2.80 <sup>b</sup>
MW4	11/09/04	170.48	5.54	164.94	<0.5	2.3	0.7	1.5	<50	<50	2.10 <sup>b</sup>
MW4	02/16/05	170.48	5.11	165.37	<0.5	1.1	<0.5	1.7	<50	<50	<0.5 <sup>b</sup>
<b>MW4</b>	<b>05/16/05</b>	<b>170.48</b>	<b>5.44</b>	<b>165.04</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;0.5</b>	<b>&lt;50</b>	<b>&lt;50</b>	<b>&lt;0.5<sup>b</sup></b>

a Top-of-casing elevation surveyed by Morrow Surveying on 12 July 2004.

b Analyzed by EPA Method 8260.

Depth-to-water-level measurements in feet from top-of-casing.

TPH-g Total Petroleum Hydrocarbons as gasoline.

TPH-d Total Petroleum Hydrocarbons as diesel.

MTBE Methyl tertiary butyl ether.

µg/L Micrograms per liter.



TABLE 3 GROUNDWATER MONITORING PLAN,  
 FORMER MOBIL STATION 04-334, 2492 CASTRO VALLEY BOULEVARD, CASTRO VALLEY, CALIFORNIA

Well Number	Groundwater Gauging Frequency	Groundwater Sampling and Analysis Frequency	
		BTEX, TPH-g, and TPH-d	MTBE
MW1	Q	Q	Q
MW2	Q	Q	Q
MW3	Q	Q	Q
MW4	Q	Q	Q

Q = Quarterly

BTEX = Benzene, toluene, ethylbenzene, total xylenes.

MTBE = Methyl tertiary butyl ether.

TPH-g = Total Petroleum Hydrocarbons as gasoline.

TPH-d = Total Petroleum Hydrocarbons as diesel.

**Appendix A**  
**Field Protocols**

## **PROTOCOLS FOR QUARTERLY GROUNDWATER MONITORING**

### **GROUNDWATER GAUGING**

Wells are opened prior to gauging to allow the groundwater level in the wells to equilibrate with atmospheric pressure. The depth to groundwater and depth to liquid-phase hydrocarbons, if present, are then measured to the nearest 0.01 feet using an electronic water level meter or optical interface probe. The measurements are made from a permanent reference point at the top of the well casing. If less than 1 foot of water is measured in a well, the water is bailed from the well and, if the well does not recover, the well is considered "functionally dry." Wells with a sheen or measurable liquid-phase hydrocarbons are generally not purged or sampled.

### **WELL PURGING**

After the wells are gauged, each well is purged of approximately 3 well casing volumes of water to provide representative groundwater samples for analysis. Field parameters of pH, temperature, and electrical conductance are measured during purging to ensure that these parameters have stabilized before groundwater in a well is sampled. Groundwater in each well is purged using an inertial pump (WaTerra), an electric submersible pump, or a bailer. After the well is purged, the water level is checked to ensure that the well has recharged to at least 80 percent of its original water level.

### **GROUNDWATER SAMPLING**

After purging, groundwater in each well is sampled using dedicated tubing and an inertial pump (WaTerra) or a factory-cleaned disposable bailer. Samples from extraction wells are typically collected from sample ports associated with the groundwater remediation system. Samples collected for volatile organic analysis are placed in Teflon septum-sealed 40-milliliter glass vials. Samples collected for diesel analysis are placed in 1-liter amber glass bottles. Each sample bottle is labeled with the site name, well number, date, sampler's initials, and preservative. The samples are placed in a cooler with ice for delivery to a state-certified laboratory. The information for each sample is entered on a chain-of-custody form prior to transport to the laboratory.

**Appendix B**

**Field Documents**





Engineering, Inc.

### GROUNDWATER PURGE AND SAMPLE

Project Name: Exxon 04-334 Well No: MW1 Date: 5/16/05  
 Project No: UP04-334.1 Personnel: C. Mitchell

#### GAUGING DATA

Water Level Measuring Method: WLM / IP

Measuring Point Description: TOC

WELL PURGE VOLUME CALCULATION	Total Depth (feet)	Depth to Water (feet)	Water Column (feet)	Multiplier for Casing Diameter				Casing Volume (gal)	Total Purge Volume (gal)
				1	2	4	6		
	19.93	5.91	14.02	0.04	0.16	0.64	1.44	2.24	6.73

#### PURGING DATA

Purge Method: WATERRA / BAILER / SUB

Purge Rate: GPM

Time	9:38	9:39	9:40			
Volume Purge (gal)	2	4	6			
Temperature (C)	19.9°C	19.7°C	19.5°C			
pH	7.59	7.46	7.36			
Spec. Cond (umhos)	1086µS	1087µS	1089µS			
Turbidity/Color	S. 1/2 / Turb	S. 1/2 / Turb	S. 1/2 / Turb			
Odor (Y/N)	N	N	N			
Casing Volumes	1	2	3			
Dewatered (Y/N)	N	N	N			

Comments/Observations:

#### SAMPLING DATA

Time Sampled: 9:45

Approximate Depth to Water During Sampling: 6 (feet)

Comments:

Sample Number	Number of Containers	Container Type	Perservative	Volume Filled (mL or L)	Turbidity/ Color	Analysis Method
MW1	6	Voa	HCL	40 ml	/	TPH-g, BTEX, MTBE
MW1	2	AMBERS	HCL	1L	/	TPH-D

Total Purge Volume: 6 (gallons) Disposal: SYSTEM

Weather Conditions: BOLTS (Y) I N

Condition of Well Box and Casing at Time of Sampling: No rock CAP & LOCK (Y) I (N) - Lock

Well Head Conditions Requiring Correction: Box Broken - Box Substituted GROUT Y I (N)

Problems Encountered During Purging and Sampling: None WELL BOX (Y) I N - sticky

Comments: SECURED (Y) I N



Engineering, Inc.

### GROUNDWATER PURGE AND SAMPLE

Project Name: Exxon 04-334

Well No: MW2

Date: 5/16/05

Project No: UP04-334.1

Personnel: C. M. Fehle

#### GAUGING DATA

Water Level Measuring Method: WLM / IP

Measuring Point Description: TOC

WELL PURGE VOLUME CALCULATION	Total Depth (feet)	Depth to Water (feet)	Water Column (feet)	Multiplier for Casing Diameter				Casing Volume (gal)	Total Purge Volume (gal)
	20.07	5.86	14.21	X 1	2	4	6	2.27	6.82
				0.04	0.15	0.64	1.44		

#### PURGING DATA

Purge Method: WATERRA / BAILER / SUB

Purge Rate:

GPM

Time	10:04	10:05	10:06			
Volume Purge (gal)	2	4	6			
Temperature (C)	19.4°C	19.1°C	18.9°C			
pH	7.75	7.49	7.37			
Spec Cond (umhos)	911.9 μS	942.9 μS	965.2 μS			
Turbidity/Color	S. Hy/Bur	S. Hy/Bur	S. Hy/Bur			
Odor (Y/N)	N	N	N			
Casing Volumes	1	2	3			
Dewatered (Y/N)	N	N	N			

Comments/Observations:

#### SAMPLING DATA

Time Sampled: 10:10

Approximate Depth to Water During Sampling: 6 (feet)

Comments:

Sample Number	Number of Containers	Container Type	Perservative	Volume Filled (mL or L)	Turbidity/ Color	Analysis Method
MW2	6	Voa	HCL	40 ml	/	TPH-g, BTEX, MTBE
MW2	2	AMBERS	HCL	1L	/	TPH-D
					/	

Total Purge Volume: 6 (gallons)

Disposal:

SYSTEM

Weather Conditions:

BOLTS (Y) / N

Condition of Well Box and Casing at Time of Sampling: No Lock

CAP & LOCK (Y) / (N) - Lock

Well Head Conditions Requiring Correction:

GROUT (Y) / N

Problems Encountered During Purging and Sampling: None

WELL BOX. (Y) / N

Comments:

SECURED (Y) / N

**GROUNDWATER PURGE AND SAMPLE**

Project Name: Exxon 04-334

Well No: MW3

Date: 5/16/05

Project No: UP04-334.1

Personnel: C. M. ...

**GAUGING DATA**

Water Level Measuring Method: WLM IP

Measuring Point Description: TOC

WELL PURGE VOLUME CALCULATION	Total Depth (feet)	Depth to Water (feet)	Water Column (feet)	Multiplier for Casing Diameter				Casing Volume (gal)	Total Purge Volume (gal)
	19.58 - 3.86 = 16.02 × 1 (2) 4 8 0.04 0.16 0.64 1.44								2.56 = 7.69

**PURGING DATA**

Purge Method: WATERRA / BAILER / SUB

Purge Rate:

GPM

Time	9:11	9:13	9:15			
Volume Purge (gal)	3	6	9			
Temperature (C)	18.8°C	18.3°C	18.4°C			
pH	8.10	7.38	7.25			
Spec Cond (umhos)	1196 μS	1207 μS	1233 μS			
Turbidity/Color	S. Hy / Bun	S. Hy / Bun	S. Hy / Bun			
Odor (Y/N)	Y	Y	Y			
Casing Volumes	1	2	3			
Dewatered (Y/N)	N	N	N			

Comments/Observations:

**SAMPLING DATA**

Time Sampled: 9:20

Approximate Depth to Water During Sampling: 4 (feet)

Comments:

Sample Number	Number of Containers	Container Type	Perservative	Volume Filled (mL or L)	Turbidity/ Color	Analysis Method
MW3	6	Voa	HCL	40 ml	/	TPH-g, BTEX, MTBE
MW3	2	AMBERS	HCL	1L	/	TPH-D

Total Purge Volume: 9 (gallons)

Disposal:

SYSTEM

Weather Conditions:

BOLTS (Y) / (N)

Condition of Well Box and Casing at Time of Sampling: OK No lock

CAP & LOCK (Y) / (N) + Lock

Well Head Conditions Requiring Correction:

GROUT (Y) / (N)

Problems Encountered During Purging and Sampling: None

WELL BOX. (Y) / (N)

Comments:

SECURED (Y) / (N)





Engineering, Inc.

### GROUNDWATER PURGE AND SAMPLE

Project Name: Exxon 04-334

Well No: MW4

Date: 5/16/05

Project No: UP04-334.1

Personnel: C. M. Lohell

#### GAUGING DATA

Water Level Measuring Method: WLM / IP

Measuring Point Description: TOC

WELL PURGE VOLUME CALCULATION	Total Depth (feet)	Depth to Water (feet)	Water Column (feet)	Multiplier for Casing Diameter				Casing Volume (gal)	Total Purge Volume (gal)
	14.50	5.44	9.06	1	2	4	6	1.45	4.34
				0.04	0.16	0.64	1.44		

#### PURGING DATA

Purge Method: WATERRA / BAILER / SUB

Purge Rate:

GPM

Time	10:35	10:36	10:37			
Volume Purge (gal)	1	2	3			
Temperature (°C)	17.2°C	17.2°C	17.2°C			
pH	7.60	7.55	7.54			
Spec. Cond (umhos)	827.0 <sub>u</sub>	842.0 <sub>u</sub>	916.1 <sub>u</sub>			
Turbidity/Color	5.1 <sub>u</sub> /B <sub>u</sub>	5.1 <sub>u</sub> /B <sub>u</sub>	5.1 <sub>u</sub> /B <sub>u</sub>			
Odor (Y/N)	N	N	N			
Casing Volumes	1	2	3			
Dewatered (Y/N)	N	N	N			

Comments/Observations:

#### SAMPLING DATA

Time Sampled: 10:45

Approximate Depth to Water During Sampling: 6 (feet)

Comments:

Sample Number	Number of Containers	Container Type	Perservative	Volume Filled (mL or L)	Turbidity/ Color	Analysis Method
MW4	6	Voa	HCL	40 ml	/	TPH-g, BTEX, MTBE
MW4	2	AMBERS	HCL	1L	/	TPH-D
					/	

Total Purge Volume: 3 (gallons)

Disposal:

SYSTEM

Weather Conditions:

BOLTS (Y) / (N)

Condition of Well Box and Casing at Time of Sampling: No Lock

CAP & LOCK (Y) / (N) - Lock

Well Head Conditions Requiring Correction:

GROUT (Y) / (N)

Problems Encountered During Purging and Sampling: None

WELL BOX. (Y) / (N)

Comments:

SECURED (Y) / (N)

**Appendix C**

**Laboratory Analytical Reports**

# TestAmerica

ANALYTICAL TESTING CORPORATION

2960 FOSTER CREIGHTON DRIVE • NASHVILLE, TENNESSEE 37204  
800-765-0980 • 615-726-3404 FAX

5/25/05

**ETIC ENGINEERING 10236**  
**Sherris Prall**  
**2285 MORELLO AVENUE**  
**PLEASANT HILL, CA 94523**

This report includes the analytical certificates of analysis for all samples listed below. These samples relate to your project identified below:

Project Name: EXXONMOBIL 04-334  
Project Number: .  
Laboratory Project Number: 416543.

An executed copy of the chain of custody, the project quality control data, and the sample receipt form are also included as an addendum to this report. Any QC recoveries outside laboratory control limits are flagged individually with an #. Sample specific comments and quality control statements are included in the Laboratory notes section of the analytical report for each sample report. If you have any questions relating to this analytical report, please contact your Laboratory Project Manager at 1-800-765-0980. Any opinions, if expressed, are outside the scope of the Laboratory's accreditation.

Sample Identification	Lab Number	Page 1 Collection Date
MW1	05-A70993	5/16/05
MW2	05-A70994	5/16/05
MW3	05-A70995	5/16/05
MW4	05-A70996	5/16/05

Sample Identification  
-----

Lab Number  
-----

Page 2  
Collection Date  
-----

These results relate only to the items tested.  
This report shall not be reproduced except in full and with  
permission of the laboratory.

Report Approved By:

Gail A. Lage

Report Date: 5/24/05

Johnny A. Mitchell, Laboratory Director  
Michael H. Dunn, M.S., Technical Director  
Pamela A. Langford, Senior Project Manager  
Eric S. Smith, QA/QC Director  
Sandra McMillin, Technical Services

Gail A. Lage, Senior Project Manager  
Glenn L. Norton, Technical Services  
Kelly S. Comstock, Technical Services  
Roxanne L. Connor, Senior Project Manager  
Mark Hollingsworth, Director of Project

Laboratory Certification Number: 01168CA

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# TestAmerica

ANALYTICAL TESTING CORPORATION

2960 FOSTER CREECHTON DRIVE • NASHVILLE, TENNESSEE 37204  
800-765-0980 • 615-726-3404 FAX

## ANALYTICAL REPORT

ETIC ENGINEERING 10236  
Sherris Prall  
2285 MORELLO AVENUE  
PLEASANT HILL, CA 94523

Lab Number: 05-A70993  
Sample ID: MW1  
Sample Type: Water  
Site ID: 04-334

Project:  
Project Name: EXXONMOBIL 04-334  
Sampler: CHRISTOPHER L. MITCHELL

Date Collected: 5/16/05  
Time Collected: 9:45  
Date Received: 5/18/05  
Time Received: 8:00

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analysis Analyst	Analysis Method	Batch
*ORGANIC PARAMETERS*									
**Benzene	ND	ug/l	0.50	1.0	5/22/05	2:05	F.Gundi	8021B	4010
**Ethylbenzene	ND	ug/l	0.5	1.0	5/22/05	2:05	F.Gundi	8021B	4010
**Toluene	ND	ug/l	0.5	1.0	5/22/05	2:05	F.Gundi	8021B	4010
**Xylenes (Total)	ND	ug/l	0.5	1.0	5/22/05	2:05	F.Gundi	8021B	4010
**TPH (Gasoline Range)	ND	ug/l	50.0	1.0	5/22/05	2:05	F.Gundi	8015B	4010
**TPH (Diesel Range)	ND	ug/l	50.	1.0	5/21/05	12:07	B. Yanna	8015B/3510	4113
*VOLATILE ORGANICS*									
**Methyl-t-butyl ether	1.40	ug/l	0.50	1.0	5/24/05	1:40	C. Wani	8260B	5120

Silica Gel Cleanup performed for TPH-DRO analysis.

### Sample Extraction Data

Parameter	Wt/Vol		Date	Time	Analyst	Method
	Extracted	Extract Vol				
EPH	1000 ml	1.00 ml	5/20/05		K. Turner	3510

Surrogate	% Recovery	Target Range
TPH Hi Surr., o-Terphenyl	98.	52. - 132.
BTEX/GRO Surr., a,a,a-TFT	84.	63. - 134.
VOA Surr 1,2-DCA-d4	115.	70. - 130.
VOA Surr Toluene-d8	98.	78. - 121.
VOA Surr, 4-BFB	104.	78. - 126.
VOA Surr, DBFM	103.	79. - 122.

## ANALYTICAL REPORT

Laboratory Number: 05-A70993  
Sample ID: MW1

Page 2

### LABORATORY COMMENTS:

ND = Not detected at the report limit.

B = Analyte was detected in the method blank.

J = Estimated Value below Report Limit.

E = Estimated Value above the calibration limit of the instrument.

# = Recovery outside Laboratory historical or method prescribed limits.

\*\* = NELAC E87358 Certified Analyte

# TestAmerica

ANALYTICAL TESTING CORPORATION

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## ANALYTICAL REPORT

ETIC ENGINEERING 10236  
Sherris Prall  
2285 MORELLO AVENUE  
PLEASANT HILL, CA 94523

Lab Number: 05-A70994  
Sample ID: MW2  
Sample Type: Water  
Site ID: 04-334

Project:  
Project Name: EXXONMOBIL 04-334  
Sampler: CHRISTOPHER L. MITCHELL

Date Collected: 5/16/05  
Time Collected: 10:10  
Date Received: 5/18/05  
Time Received: 8:00

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analysis Analyst	Analysis Method	Batch
*ORGANIC PARAMETERS*									
**Benzene	ND	ug/l	0.50	1.0	5/22/05	2:30	F.Gundi	8021B	4010
**Ethylbenzene	ND	ug/l	0.5	1.0	5/22/05	2:30	F.Gundi	8021B	4010
**Toluene	ND	ug/l	0.5	1.0	5/22/05	2:30	F.Gundi	8021B	4010
**Xylenes (Total)	ND	ug/l	0.5	1.0	5/22/05	2:30	F.Gundi	8021B	4010
**TPH (Gasoline Range)	ND	ug/l	50.0	1.0	5/22/05	2:30	F.Gundi	8015B	4010
**TPH (Diesel Range)	ND	ug/l	50.	1.0	5/21/05	12:27	B. Yanna	8015B/3510	4113
*VOLATILE ORGANICS*									
**Methyl-t-butyl ether	ND	ug/l	0.50	1.0	5/24/05	2:07	C. Wani	8260B	5120

Silica Gel Cleanup performed for TPH-DRO analysis.

### Sample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Time	Analyst	Method
EPH	1000 ml	1.00 ml	5/20/05		K. Turner	3510

Surrogate	% Recovery	Target Range
TPH Hi Surr., o-Terphenyl	107.	52. - 132.
BTEX/GRO Surr., a,a,a-TFT	84.	63. - 134.
VOA Surr 1,2-DCA-d4	113.	70. - 130.
VOA Surr Toluene-d8	101.	78. - 121.
VOA Surr, 4-BFB	104.	78. - 126.
VOA Surr, DBFM	102.	79. - 122.

Sample report continued . . .

**ANALYTICAL REPORT**

Laboratory Number: 05-A70994  
Sample ID: MW2

Page 2

LABORATORY COMMENTS:

ND = Not detected at the report limit.

B = Analyte was detected in the method blank.

J = Estimated Value below Report Limit.

E = Estimated Value above the calibration limit of the instrument.

# = Recovery outside Laboratory historical or method prescribed limits.

\*\* = NELAC E87358 Certified Analyte



## ANALYTICAL REPORT

ETIC ENGINEERING 10236  
Sherris Prall  
2285 MORELLO AVENUE  
PLEASANT HILL, CA 94523

Lab Number: 05-A70995  
Sample ID: MW3  
Sample Type: Water  
Site ID: 04-334

Project:  
Project Name: EXXONMOBIL 04-334  
Sampler: CHRISTOPHER L. MITCHELL

Date Collected: 5/16/05  
Time Collected: 9:20  
Date Received: 5/18/05  
Time Received: 8:00

Analyte	Result	Units	Report	Dil	Analysis		Analyst	Method	Batch
			Limit	Factor	Date	Time			
*ORGANIC PARAMETERS*									
**Benzene	74.2	ug/l	0.50	1.0	5/22/05	2:54	F.Gundi	8021B	4010
**Ethylbenzene	61.0	ug/l	0.5	1.0	5/22/05	2:54	F.Gundi	8021B	4010
**Toluene	1.4	ug/l	0.5	1.0	5/22/05	2:54	F.Gundi	8021B	4010
**Xylenes (Total)	9.0	ug/l	0.5	1.0	5/22/05	2:54	F.Gundi	8021B	4010
**TPH (Gasoline Range)	592.	ug/l	50.0	1.0	5/22/05	2:54	F.Gundi	8015B	4010
**TPH (Diesel Range)	92.	ug/l	50.	1.0	5/21/05	12:48	B. Yanna	8015B/3510	4113
*VOLATILE ORGANICS*									
**Methyl-t-butyl ether	ND	ug/l	0.50	1.0	5/24/05	2:35	C. Wani	8260B	5120

Silica Gel Cleanup performed for TPH-DRO analysis.

### Sample Extraction Data

Parameter	Wt/Vol		Date	Time	Analyst	Method
	Extracted	Extract Vol				
EPH	1000 ml	1.00 ml	5/20/05		K. Turner	3510

Surrogate	% Recovery	Target Range
TPH Hi Surr., o-Terphenyl	89.	52. - 132.
BTEX/GRO Surr., a,a,a-TFT	86.	63. - 134.
VOA Surr 1,2-DCA-d4	103.	70. - 130.
VOA Surr Toluene-d8	108.	78. - 121.
VOA Surr, 4-BFB	109.	78. - 126.
VOA Surr, DBFM	97.	79. - 122.

## ANALYTICAL REPORT

Laboratory Number: 05-A70995  
Sample ID: MW3

Page 2

### LABORATORY COMMENTS:

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B = Analyte was detected in the method blank.  
J = Estimated Value below Report Limit.  
E = Estimated Value above the calibration limit of the instrument.  
# = Recovery outside Laboratory historical or method prescribed limits.  
\*\* = NELAC E87358 Certified Analyte

## ANALYTICAL REPORT

ETIC ENGINEERING 10236  
 Sherris Prall  
 2285 MORELLO AVENUE  
 PLEASANT HILL, CA 94523

Lab Number: 05-A70996  
 Sample ID: MW4  
 Sample Type: Water  
 Site ID: 04-334

Project:  
 Project Name: EXXONMOBIL 04-334  
 Sampler: CHRISTOPHER L. MITCHELL

Date Collected: 5/16/05  
 Time Collected: 10:45  
 Date Received: 5/18/05  
 Time Received: 8:00

Analyte	Result	Units	Report Limit	Dil Factor	Analysis Date	Analysis Time	Analyst	Method	Batch
*ORGANIC PARAMETERS*									
**Benzene	ND	ug/l	0.50	1.0	5/22/05	3:18	F.Gundi	8021B	4010
**Ethylbenzene	ND	ug/l	0.5	1.0	5/22/05	3:18	F.Gundi	8021B	4010
**Toluene	ND	ug/l	0.5	1.0	5/22/05	3:18	F.Gundi	8021B	4010
**Xylenes (Total)	ND	ug/l	0.5	1.0	5/22/05	3:18	F.Gundi	8021B	4010
**TPH (Gasoline Range)	ND	ug/l	50.0	1.0	5/22/05	3:18	F.Gundi	8015B	4010
**TPH (Diesel Range)	ND	ug/l	50.	1.0	5/21/05	13:08	B. Yanna	8015B/3510	4113
*VOLATILE ORGANICS*									
**Methyl-t-butyl ether	ND	ug/l	0.50	1.0	5/24/05	3:02	C. Wani	8260B	5120

Silica Gel Cleanup performed for TPH-DRO analysis.

Sample Extraction Data

Parameter	Wt/Vol		Date	Time	Analyst	Method
	Extracted	Extract Vol				
EPH	1000 ml	1.00 ml	5/20/05		K. Turner	3510

Surrogate	% Recovery	Target Range
TPH Hi Surr., o-Terphenyl	102.	52. - 132.
BTEX/GRO Surr., a,a,a-TFT	88.	63. - 134.
VOA Surr 1,2-DCA-d4	114.	70. - 130.
VOA Surr Toluene-d8	102.	78. - 121.
VOA Surr, 4-BFB	109.	78. - 126.
VOA Surr, DBFM	104.	79. - 122.

**ANALYTICAL REPORT**

Laboratory Number: 05-A70996  
Sample ID: MW4

Page 2

LABORATORY COMMENTS:

ND = Not detected at the report limit.  
B = Analyte was detected in the method blank.  
J = Estimated Value below Report Limit.  
E = Estimated Value above the calibration limit of the instrument.  
# = Recovery outside Laboratory historical or method prescribed limits.  
\*\* = NELAC E87358 Certified Analyte

**PROJECT QUALITY CONTROL DATA**

Project Number:

Project Name: **EXXONMOBIL 04-334**

Page: 1

Laboratory Receipt Date: **5/18/05**

Matrix Spike Recovery

Note: If Blank is referenced as the sample spiked, insufficient volume was received for the defined analytical batch for MS/MSD analysis on a true sample matrix. Laboratory reagent water was used for QC purposes.

Analyte	units	Orig. Val.	MS Val	Spike Conc	Recovery	Target Range	Q.C. Batch	Spike Sample
<b>**UST ANALYSIS**</b>								
Benzene	mg/l	< 0.00050	0.0594	0.0500	119	50. - 160.	4010	'70993
Toluene	mg/l	< 0.0005	0.0571	0.0500	114	51. - 157.	4010	'70993
Ethylbenzene	mg/l	< 0.0005	0.0583	0.0500	117	47. - 159.	4010	'70993
Xylenes (Total)	mg/l	< 0.0005	0.110	0.100	110	51. - 152.	4010	'70993
TPH (Gasoline Range)	mg/l	< 0.0500	0.869	1.00	87	43. - 150.	4010	'70993
TPH (Diesel Range)	mg/l	< 0.050	0.653	1.00	65	35. - 124.	4113	blank
BTEX/GRO Surr., a,a,a-TFT	% Recovery				86	63 - 134	4010	
VOA Surr 1,2-DCA-d4	% Rec				107	70 - 130	5120	
VOA Surr Toluene-d8	% Rec				105	78 - 121	5120	
VOA Surr, 4-BFB	% Rec				97	78 - 126	5120	
VOA Surr, DBFM	% Rec				103	79 - 122	5120	

Matrix Spike Duplicate

Analyte	units	Orig. Val.	Duplicate	RPD	Limit	Q.C. Batch
<b>**UST PARAMETERS**</b>						
Benzene	mg/l	0.0594	0.0583	1.87	30.	4010
Toluene	mg/l	0.0571	0.0560	1.95	37.	4010
Ethylbenzene	mg/l	0.0583	0.0568	2.61	38.	4010
Xylenes (Total)	mg/l	0.110	0.107	2.76	33.	4010
TPH (Gasoline Range)	mg/l	0.869	0.992	13.22	27.	4010
TPH (Diesel Range)	mg/l	0.653	0.708	8.08	36.	4113
BTEX/GRO Surr., a,a,a-TFT	% Recovery		87.			4010
VOA Surr 1,2-DCA-d4	% Rec		96.			5120
VOA Surr Toluene-d8	% Rec		110.			5120
VOA Surr, 4-BFB	% Rec		98.			5120
VOA Surr, DBFM	% Rec		98.			5120

**PROJECT QUALITY CONTROL DATA**

Project Number:

Project Name: **EXXONMOBIL 04-334**

Page: 2

Laboratory Receipt Date: **5/18/05**

Laboratory Control Data

Analyte	units	Known Val.	Analyzed Val	% Recovery	Target Range	Q.C. Batch
<b>**UST PARAMETERS**</b>						
Benzene	mg/l	0.100	0.0911	91	72 - 118	4010
Toluene	mg/l	0.100	0.0878	88	72 - 119	4010
Ethylbenzene	mg/l	0.100	0.0884	88	71 - 119	4010
Xylenes (Total)	mg/l	0.200	0.168	84	70 - 117	4010
TPH (Gasoline Range)	mg/l	1.00	0.869	87	64 - 130	4010
BTEX/GRO Surr., a,a,a-TFT	% Recovery			88	63 - 134	4010
<b>**UST PARAMETERS**</b>						
TPH (Diesel Range)	mg/l	1.00	0.654	65	41 - 120	4113
<b>**VOA PARAMETERS**</b>						
Methyl-t-butyl ether	mg/l	0.0500	0.0527	105	69 - 136	5120
VOA Surr 1,2-DCA-d4	% Rec			100	70 - 130	5120
VOA Surr Toluene-d8	% Rec			110	78 - 121	5120
VOA Surr, 4-BFB	% Rec			97	78 - 126	5120
VOA Surr, DBFM	% Rec			100	79 - 122	5120

Duplicates

Analyte	units	Orig. Val.	Duplicate	RPD	Limit	Q.C. Batch	Sample Dup'd
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Blank Data

Analyte	Blank Value	Units	Q.C. Batch	Date Analyzed	Time Analyzed
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<b>**UST PARAMETERS**</b>					
Benzene	< 0.00050	mg/l	4010	5/21/05	21:38
Toluene	< 0.0005	mg/l	4010	5/21/05	21:38
Ethylbenzene	< 0.0005	mg/l	4010	5/21/05	21:38

## PROJECT QUALITY CONTROL DATA

Project Number:

Project Name: **EXXONMOBIL 04-334**

Page: 3

Laboratory Receipt Date: **5/18/05**

### Blank Data

Analyte	Blank Value	Units	Q.C. Batch	Analysis Date	Analysis Time
Xylenes (Total)	< 0.0005	mg/l	4010	5/21/05	21:38
TPH (Gasoline Range)	< 0.0500	mg/l	4010	5/21/05	21:38
TPH (Diesel Range)	< 0.050	mg/l	4113	5/21/05	8:58
BTEX/GRO Surr., a,a,a-TFT	85.	% Recovery	4010	5/21/05	21:38
**VOA PARAMETERS**					
Methyl-t-butyl ether	< 0.00023	mg/l	5120	5/23/05	19:10
VOA Surr 1,2-DCA-d4	101.	% Rec	5120	5/23/05	19:10
VOA Surr Toluene-d8	110.	% Rec	5120	5/23/05	19:10
VOA Surr, 4-BFB	103.	% Rec	5120	5/23/05	19:10
VOA Surr, DBEM	97.	% Rec	5120	5/23/05	19:10

# = Value outside Laboratory historical or method prescribed QC limits.





