

**3R - 314**

---

# **REPORTS**

**DATE:**

**1998**

---

Public Service Company  
of New Mexico  
Alvarado Square MS 0408  
Albuquerque, NM 87158

April 2, 1998

Mr. William Olson  
Hydrogeologist  
Oil Conservation Division  
2040 So. Pacheco  
Santa Fe, New Mexico 87505

RECEIVED  
APR 13 1998  
Oil Conservation Bureau  
Oil Conservation Division



**RE: 1998 SAN JUAN BASIN ANNUAL GROUNDWATER REPORT**

Dear Bill:

PNM is pleased to submit the 1998 Annual Groundwater Report on Unlined Surface Impoundments in the San Juan Basin. Pursuant to PNM's Groundwater Management Program for Unlined Surface Impoundment Closures, the report details the ongoing investigation/remedial activities at unlined surface impoundments having groundwater contamination as identified by PNM. A list of groundwater sites reported in this document is provided below.

Cozzens B1  
Dogie Compressor Station East Pit  
Dogie Compressor Station North Pit  
Florance 32A  
Florance Z 40 M  
Florance 44  
Florance 47X  
Florance 124  
Hampton 4M  
Honolulu Loop Line Drip  
Ice Canyon Drip  
Jacques 2A  
Mangum 1E  
McClanahan 22  
McClanahan A2E  
McCoy Gas Com A1  
Miles Federal 1E  
Miles Federal 1E Drip  
Randleman 1  
Reid 16 Drip  
Sammons 2  
Turner 1A  
Turner 3  
Zachry 18E

PNM 1998 Groundwater Report

PNM plans to request closure of two of the above sites, the Cozzens B1 and the Sammons 2, in our April 30, 1998 filing of the San Juan Pit Closure Reports to the OCD Santa Fe office. If you have any questions regarding the contents of the report, please contact me at (505) 241-2974.

Sincerely,



Maureen Gannon  
Project Manager

Attachment

cc: Ingrid Deklau, WFS  
Denny Foust, OCD-Aztec Office  
Bill VonDrehle, WFS

**PNM 1998 Groundwater Report**

bcc: Colin Adams (w/o analytical results)  
Kathy Juckes  
Ron Johnson (w/o analytical results)  
Mark Sikelianos

## Groundwater Site Summary Report

Quarter/Year: 2<sup>nd</sup>/97, 3<sup>rd</sup>/97, 4<sup>th</sup>/97 & 1<sup>st</sup>/98

---

<b>Operator:</b> Amoco	<b>Vulnerable Class:</b> Original
<b>Sec:</b> 15 <b>Twn:</b> 30 <b>Rng:</b> 8 <b>Unit:</b> F	<b>OCD Ranking:</b> 30
<b>Canyon:</b> San Juan River	<b>Lead Agency:</b> NMOCD

---

**Topo Map:** previously submitted  
**Well Completion Diagram:** previously submitted  
**Site Map with Analysis:** Figure 1  
**Groundwater Contour Map:** Figure 2 (May 1997), Figure 3 (August 1997), Figure 4 (November 1997), & Figure 5 (January 1998)  
**Groundwater Hydrograph:** Figure 6  
**Full-Suite Groundwater Results:** previously submitted  
**Analytical Results:** attached

### Activities for Previous Year:

PNM conducted quarterly groundwater sampling at the Florance 32A on May 21, August 13 and November 6, 1997, and again on January 28, 1998. PNM collected groundwater samples in all wells except MW-4 for chemical analyses of benzene, toluene, ethylbenzene, and xylenes (BTEX). MW-4 was not sampled since its location to the former pit is similar to MW-3. Prior to sampling, water level measurements were taken in MW-1, -2, -3 and -5. All sampling was performed in strict compliance with EPA protocol. PNM delivered the samples to OnSite Technologies, Farmington, New Mexico for chemical analyses of BTEX using EPA method 8020.

Due to the presence of high BTEX concentrations in MW-2, PNM conducted additional source removal at the site on January 5, 1998. Field crews removed approximately 2000 cubic yards in and around PNM's former pit. MW-2 was removed during the excavation. PNM re-installed MW-2 on January 29, 1998.

### Results:

Figure 1 is a site map of the Florance 32A and includes groundwater analytical results. BTEX concentrations in the area of the former pit remain above standards but show a downward trend. The additional source removal appears to have accelerated the reduction of benzene in this area.

Figure(s) 2, 3, 4 and 5 are groundwater contour maps of the site for May, August and November 1997 and January 1998, respectively. Groundwater tends to flow in a southwesterly direction beneath the site. Figure 6 is the hydrograph of the site. Groundwater elevations were highest in March of 1997, showed a decreasing trend between March and November, and rose again in January 1998.

### Further Action:

PNM will continue to monitor the groundwater gradient and perform quarterly groundwater sampling at the Florance 32A well site.

---

### **Public Service Company of New Mexico - Gas Services**

Environmental Services Division - Alvarado Square, MS-0408  
Albuquerque, NM 87158

**Contact: Maureen Gannon**

**Telephone: 505-241-2974**

Figure 1. Florance 32A: Site Map With Analytical Results  
(Concentrations in ppb)

← San Juan River

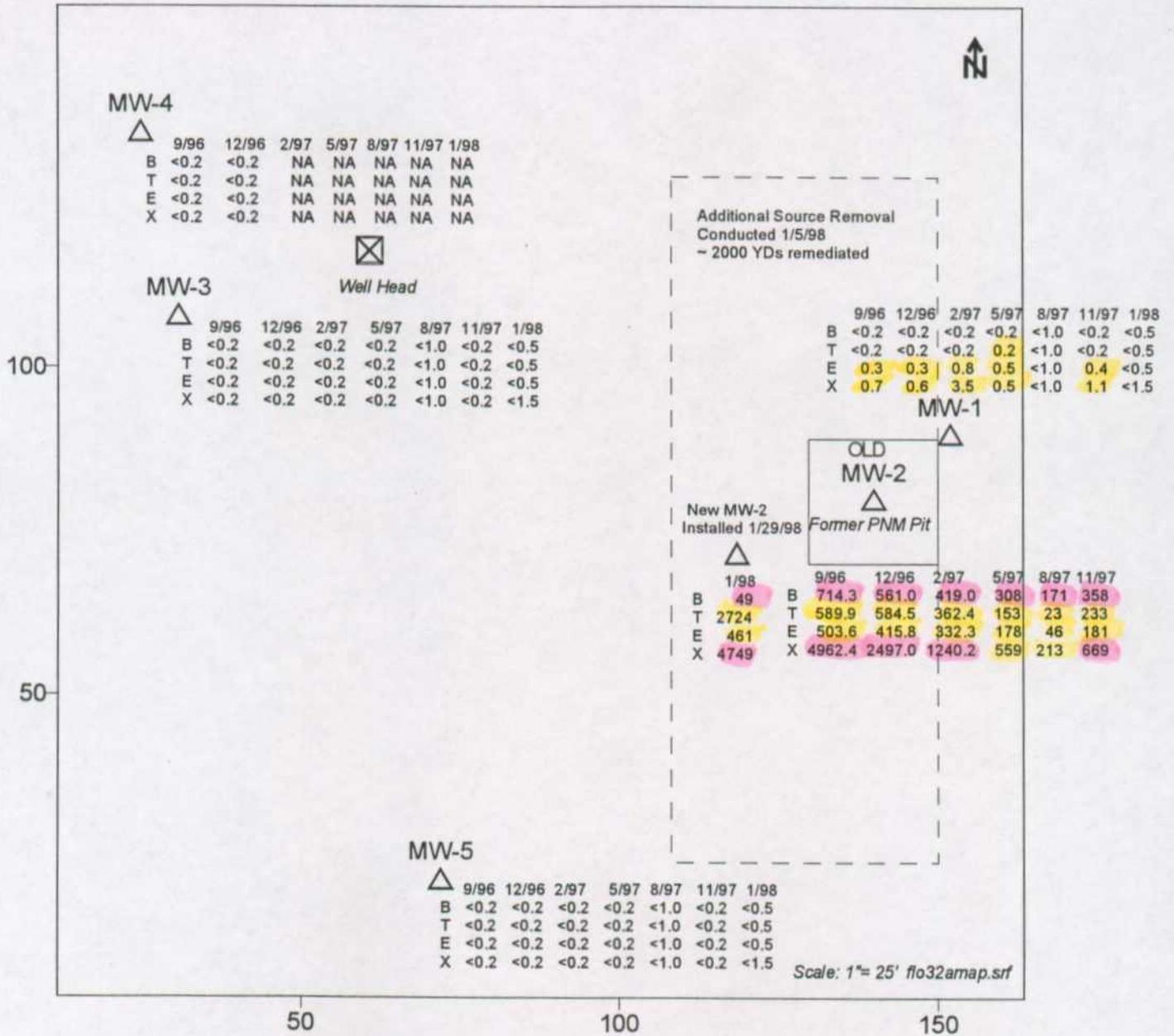


Figure 2. Florance 32A Groundwater Contour Map (May 21, 1997)

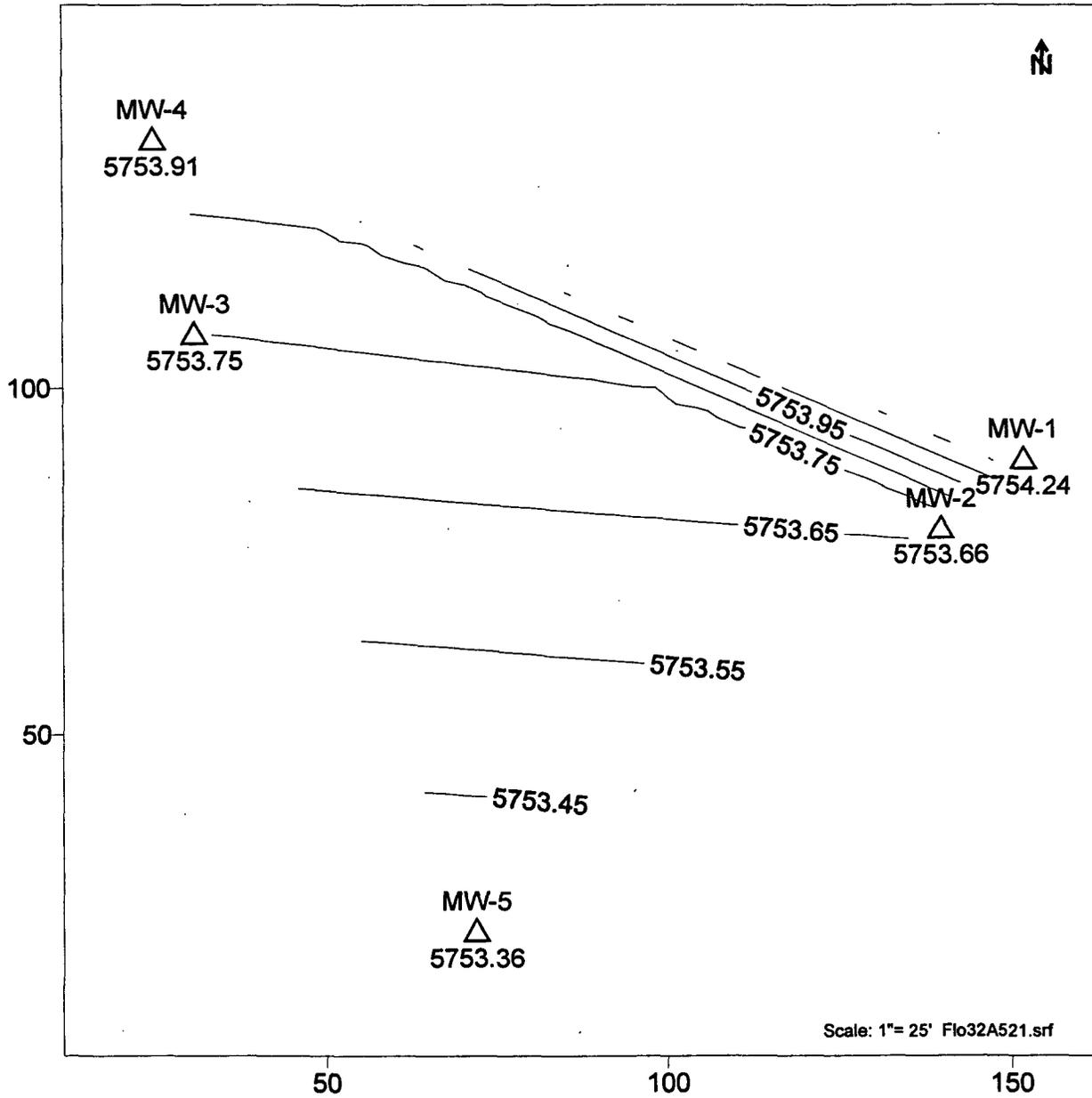


Figure 3. Florance 32A Groundwater Contour Map (August 13, 1997)

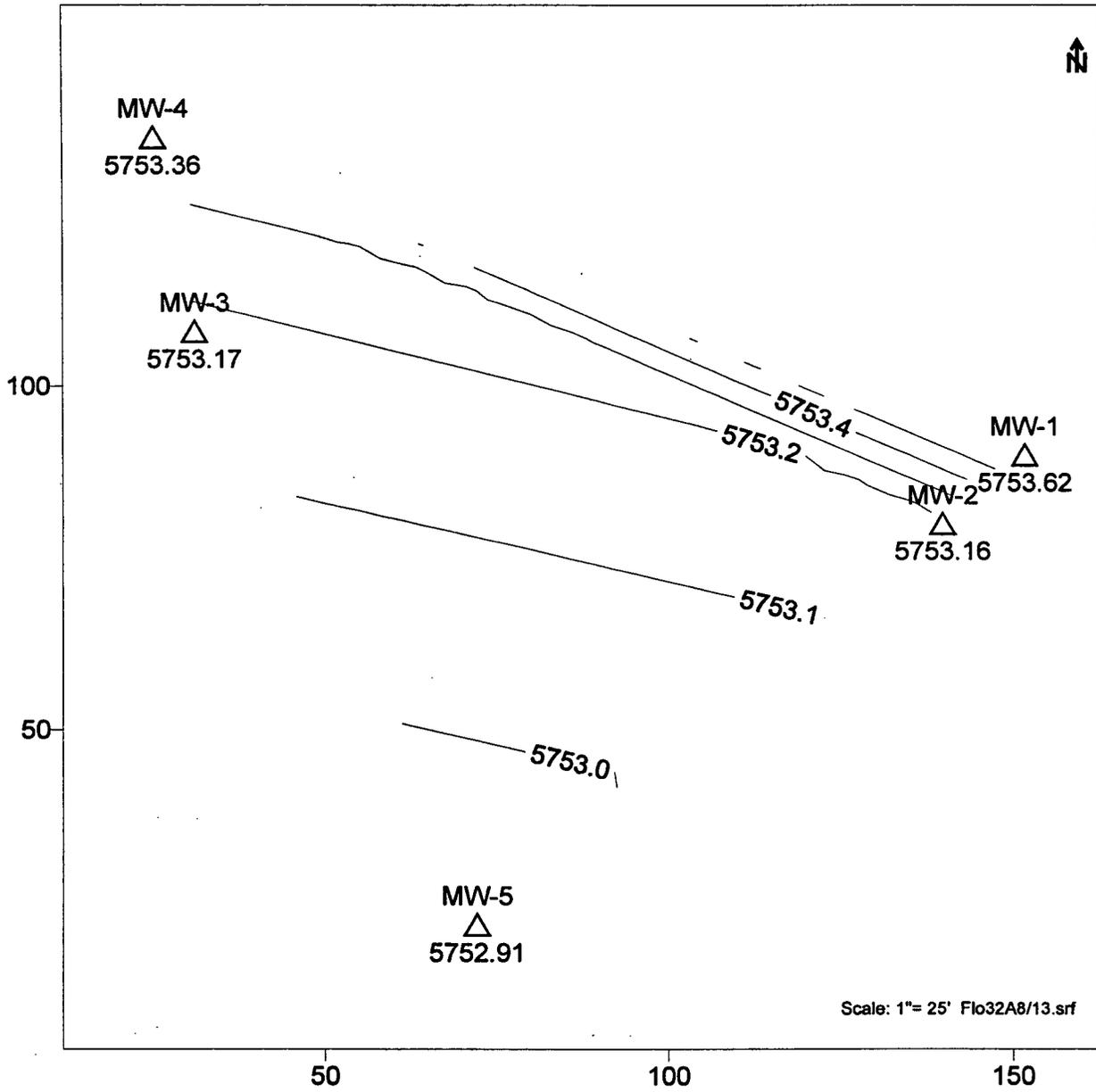


Figure 4. Florance 32A Groundwater Contour Map (November 6, 1997)

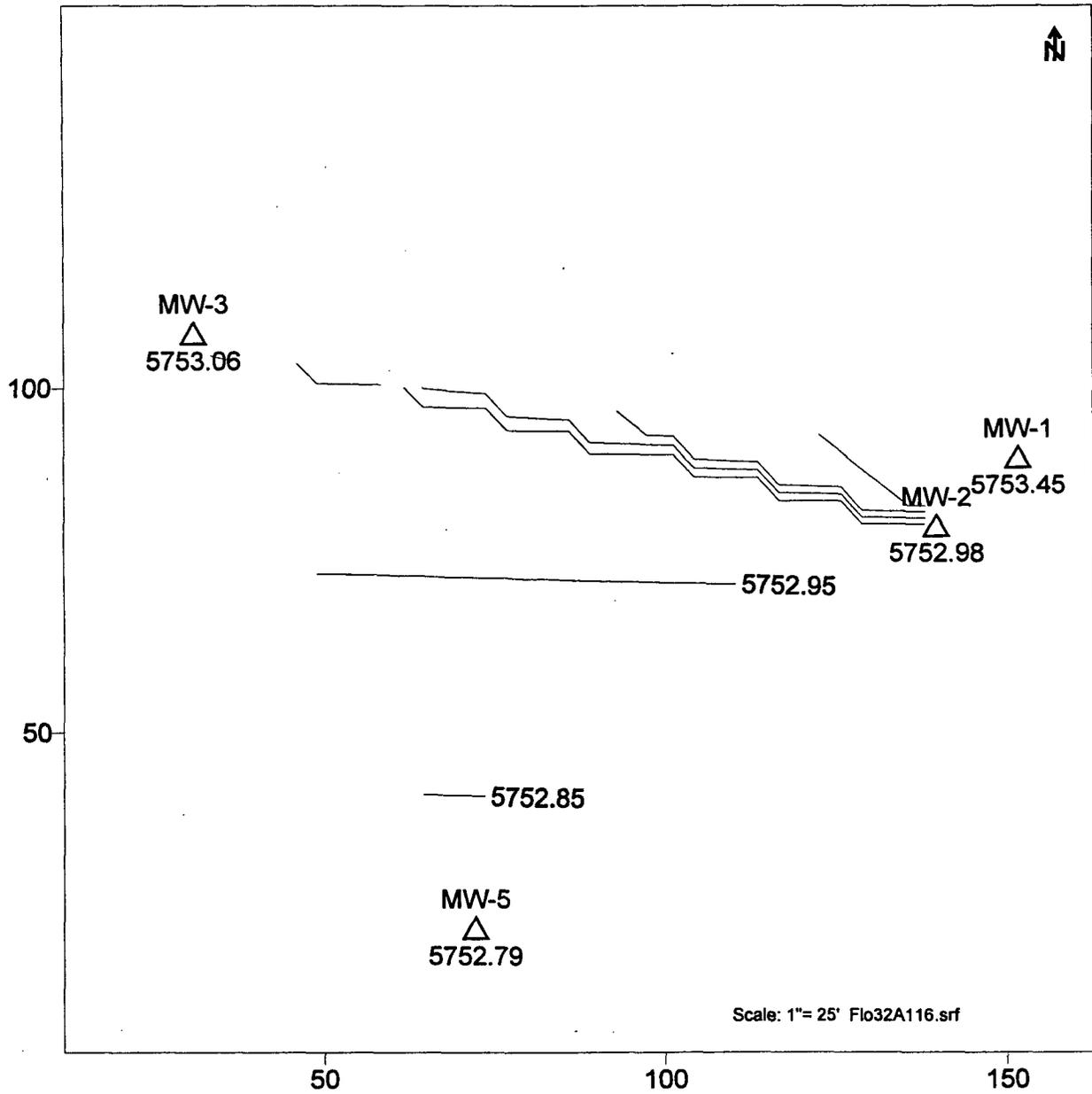


Figure 5. Florance 32A Groundwater Contour Map (January 29, 1998)

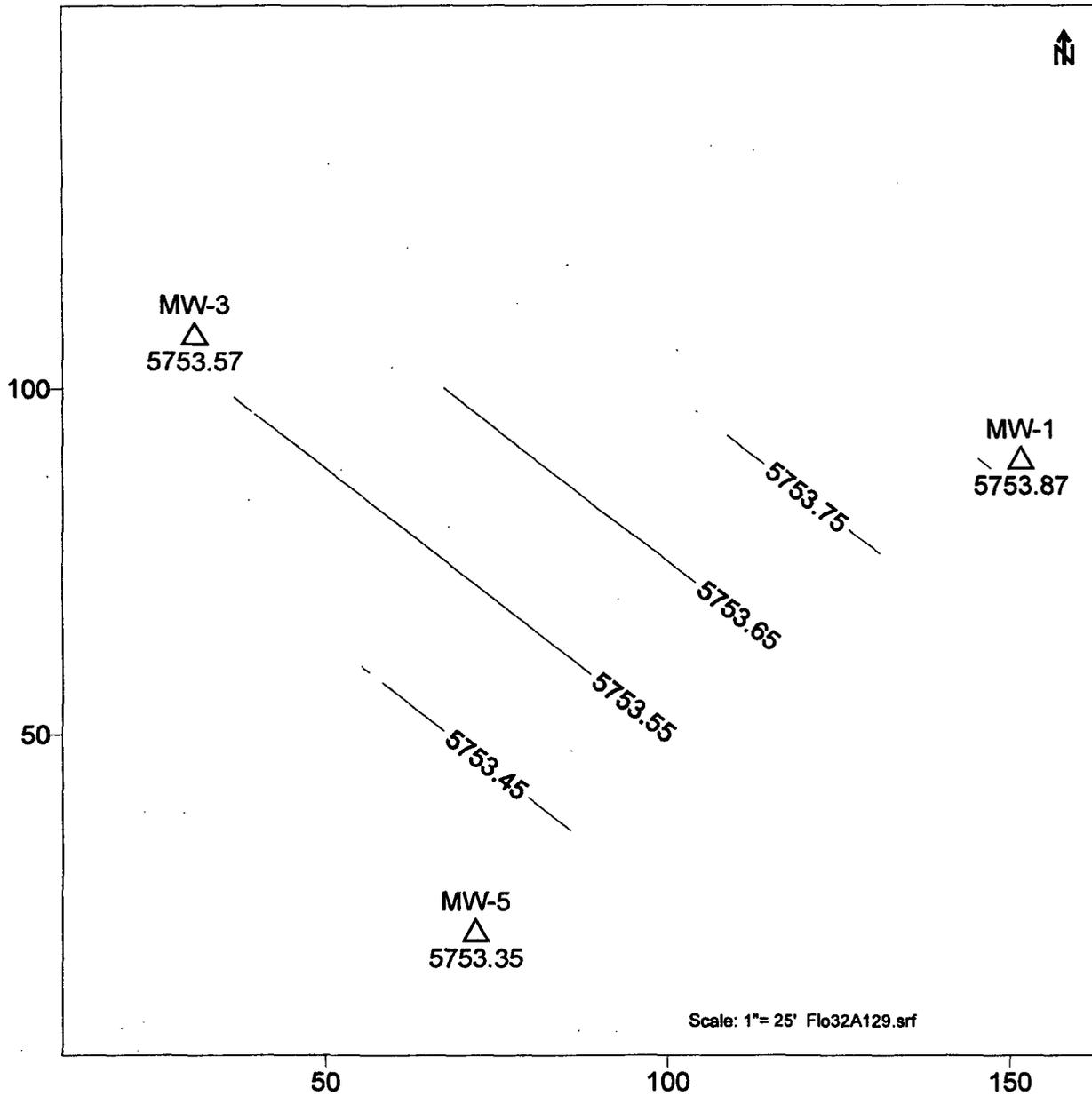
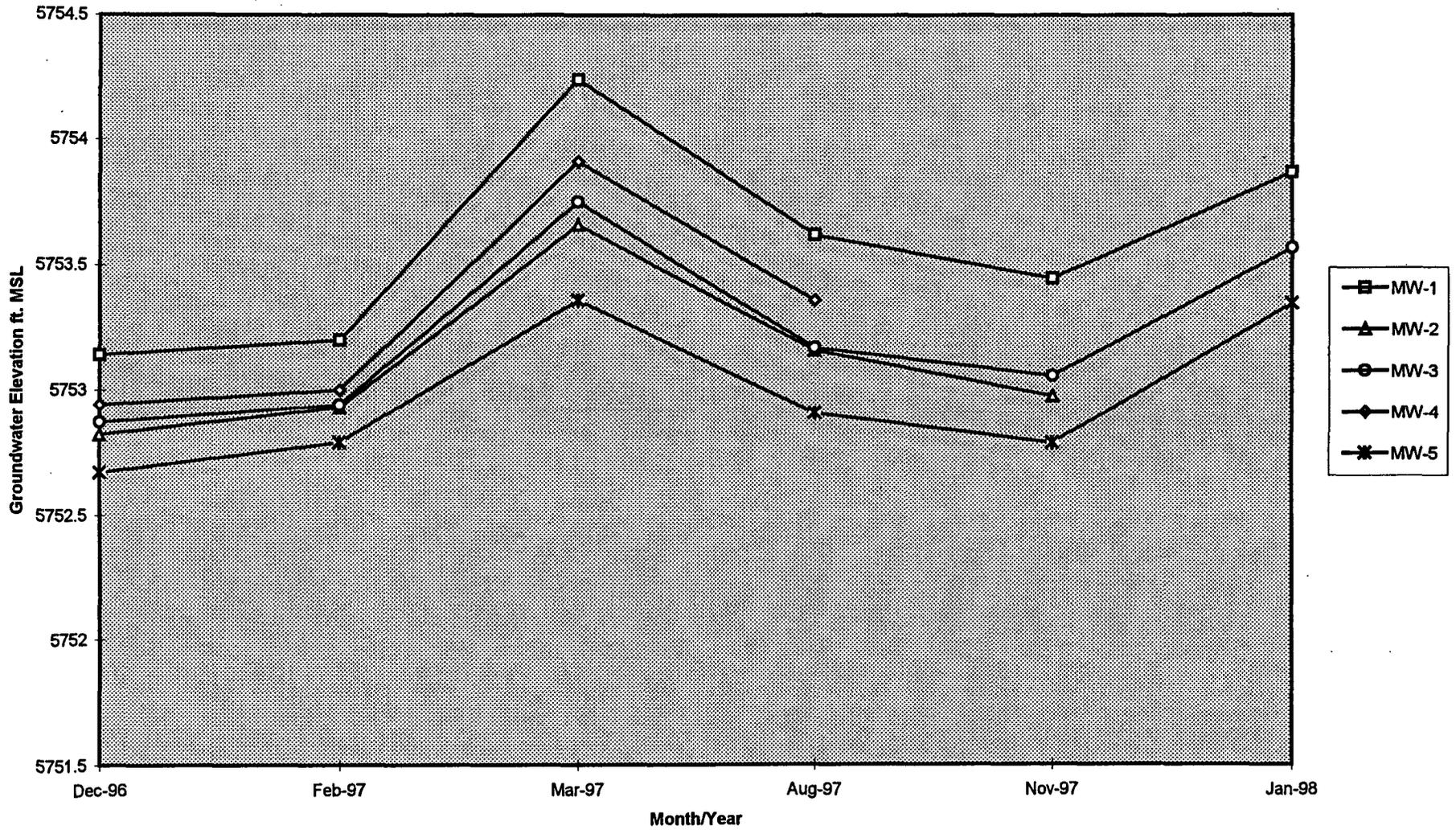


Figure 6. Florance 32A Hydrograph  
(Water Level vs. Time)





OFF: (505) 325-5667

# ON SITE

TECHNOLOGIES, LTD.

LAB: (505) 325-1556

## ANALYTICAL REPORT

Attn: *Denver Bearden*  
Company: *PNM Gas Services*  
Address: *603 W. Elm*  
City, State: *Farmington, NM 87401*

Date: *28-May-97*  
COC No.: *5558*  
Sample No.: *14672*  
Job No.: *2-1000*

Project Name: *PNM Gas Services - Florance 32A*

Project Location: *9705211030; MW-1*

Sampled by: *MS/MG* Date: *21-May-97* Time: *10:30*

Analyzed by: *DC* Date: *22-May-97*

Sample Matrix: *Liquid*

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
<i>Benzene</i>	ND	ug/L	0.2	ug/L
<i>Toluene</i>	0.2	ug/L	0.2	ug/L
<i>Ethylbenzene</i>	0.5	ug/L	0.2	ug/L
<i>m,p-Xylene</i>	0.5	ug/L	0.2	ug/L
<i>o-Xylene</i>	ND	ug/L	0.2	ug/L
<i>TOTAL</i>	1.2	ug/L		

ND - Not Detected at Limit of Quantitation

Method - *SW-846 EPA Method 8020A Aromatic Volatile Organics by Gas Chromatography*

Approved By: \_\_\_\_\_

Date: \_\_\_\_\_

OFF: (505) 325-5667



LAB: (505) 325-1556

**ANALYTICAL REPORT**

Attn: *Denver Bearden*  
 Company: *PNM Gas Services*  
 Address: *603 W. Elm*  
 City, State: *Farmington, NM 87401*

Date: *28-May-97*  
 COC No.: *5558*  
 Sample No.: *14673*  
 Job No.: *2-1000*

Project Name: *PNM Gas Services - Florance 32A*  
 Project Location: *9705211100; MW-2*  
 Sampled by: *MS/MG* Date: *21-May-97* Time: *11:00*  
 Analyzed by: *DC* Date: *22-May-97*  
 Sample Matrix: *Liquid*

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
<i>Benzene</i>	308	ug/L	2	ug/L
<i>Toluene</i>	153	ug/L	2	ug/L
<i>Ethylbenzene</i>	178	ug/L	2	ug/L
<i>m,p-Xylene</i>	388	ug/L	2	ug/L
<i>o-Xylene</i>	171	ug/L	2	ug/L
<i>TOTAL</i>	1198	ug/L		

ND - Not Detected at Limit of Quantitation

**Method** - *SW-846 EPA Method 8020A Aromatic Volatile Organics by Gas Chromatography*

Approved By: \_\_\_\_\_  
 Date: \_\_\_\_\_

OFF: (505) 325-5667

# ON SITE

TECHNOLOGIES, LTD.

LAB: (505) 325-1556

## ANALYTICAL REPORT

Attn: *Denver Bearden*  
Company: *PNM Gas Services*  
Address: *603 W. Elm*  
City, State: *Farmington, NM 87401*

Date: *28-May-97*  
COC No.: *5558*  
Sample No.: *14674*  
Job No.: *2-1000*

Project Name: *PNM Gas Services - Florance 32A*

Project Location: *9705211130; MW-3*

Sampled by: *MS/MG* Date: *21-May-97* Time: *11:30*

Analyzed by: *DC* Date: *22-May-97*

Sample Matrix: *Liquid*

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
<i>Benzene</i>	ND	ug/L	0.2	ug/L
<i>Toluene</i>	ND	ug/L	0.2	ug/L
<i>Ethylbenzene</i>	ND	ug/L	0.2	ug/L
<i>m,p-Xylene</i>	ND	ug/L	0.2	ug/L
<i>o-Xylene</i>	ND	ug/L	0.2	ug/L
<i>TOTAL</i>	ND	ug/L		

ND - Not Detected at Limit of Quantitation

Method - *SW-846 EPA Method 8020A Aromatic Volatile Organics by Gas Chromatography*

Approved By: \_\_\_\_\_

Date: \_\_\_\_\_

OFF: (505) 325-5667

# ON SITE

TECHNOLOGIES, LTD.

LAB: (505) 325-1556

## ANALYTICAL REPORT

Attn: *Denver Bearden*  
Company: *PNM Gas Services*  
Address: *603 W. Elm*  
City, State: *Farmington, NM 87401*

Date: *28-May-97*  
COC No.: *5558*  
Sample No.: *14675*  
Job No.: *2-1000*

Project Name: *PNM Gas Services - Florance 32A*  
Project Location: *9705211200; MW-5*  
Sampled by: *MS/MG* Date: *21-May-97* Time: *12:00*  
Analyzed by: *DC* Date: *22-May-97*  
Sample Matrix: *Liquid*

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
<i>Benzene</i>	ND	ug/L	0.2	ug/L
<i>Toluene</i>	ND	ug/L	0.2	ug/L
<i>Ethylbenzene</i>	ND	ug/L	0.2	ug/L
<i>m,p-Xylene</i>	ND	ug/L	0.2	ug/L
<i>o-Xylene</i>	ND	ug/L	0.2	ug/L
<i>TOTAL</i>	ND	ug/L		

ND - Not Detected at Limit of Quantitation

Method - SW-846 EPA Method 8020A Aromatic Volatile Organics by Gas Chromatography

Approved By: \_\_\_\_\_  
Date: \_\_\_\_\_

OFF: (505) 325-5667



LAB: (505) 325-1556

### ANALYTICAL REPORT

Attn: *Denver Bearden*  
 Company: *PNM Gas Services*  
 Address: *603 W. Elm*  
 City, State: *Farmington, NM 87401*

Date: *28-May-97*  
 COC No.: *5558*  
 Sample No.: *14676*  
 Job No.: *2-1000*

Project Name: *PNM Gas Services - Florance 32A*

Project Location: *9705211230; MW-6*

Sampled by: *MS/MG* Date: *21-May-97* Time: *12:30*

Analyzed by: *DC* Date: *22-May-97*

Sample Matrix: *Liquid*

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
<i>Benzene</i>	ND	ug/L	0.2	ug/L
<i>Toluene</i>	0.2	ug/L	0.2	ug/L
<i>Ethylbenzene</i>	0.5	ug/L	0.2	ug/L
<i>m,p-Xylene</i>	0.5	ug/L	0.2	ug/L
<i>o-Xylene</i>	ND	ug/L	0.2	ug/L
<i>TOTAL</i>	1.2	ug/L		

ND - Not Detected at Limit of Quantitation

Method - SW-846 EPA Method 8020A Aromatic Volatile Organics by Gas Chromatography

Approved By: \_\_\_\_\_  
 Date: *5/28/97*



**QUALITY ASSURANCE REPORT**  
for EPA Method 8020

Date Analyzed: 22-May-97

Internal QC No.: 0527-STD  
Surrogate QC No.: 0528-STD  
Reference Standard QC No.: 0529/30-QC

**Method Blank**

Parameter	Result	Unit of Measure
Average Amount of All Analytes In Blank	<0.2	ppb

**Calibration Check**

Parameter	Unit of Measure	True Value	Analyzed Value	% Diff	Limit
Benzene	ppb	20.0	17.7	11	15%
Toluene	ppb	20.0	18.1	9	15%
Ethylbenzene	ppb	20.0	18.3	9	15%
m,p-Xylene	ppb	40.0	35.0	13	15%
o-Xylene	ppb	20.0	18.2	9	15%

**Matrix Spike**

Parameter	1- Percent Recovered	2 - Percent Recovered	Limit	%RSD	Limit
Benzene	96	80	(39-150)	7	20%
Toluene	97	85	(46-148)	7	20%
Ethylbenzene	95	83	(32-160)	6	20%
m,p-Xylene	94	81	(35-145)	6	20%
o-Xylene	95	83	(35-145)	6	20%

**Surrogate Recoveries**

Laboratory Identification	S1 Percent Recovered	S2 Percent Recovered	Laboratory Identification	S1 Percent Recovered	S2 Percent Recovered
Limit Percent Recovered	(70-130)		Limit Percent Recovered	(70-130)	
14672-5558	95				
14673-5558	97				
14674-5558	95				
14675-5558	95				
14676-5558	95				

S1: Fluorobenzene

# CHAIN OF CUSTODY RECORD

558

**ON SITE**

TECHNOLOGIES, LTD.

657 W. Maple • P. O. Box 2606 • Farmington NM 87499  
LAB: (505) 325-5667 • FAX: (505) 325-6256

Date: 5/21/97

Page 1 of 1

Purchase Order No.:		Job No.:		Name: <b>Maureen Gannon</b>		Title:							
SEND INVOICE TO	Name: <b>Denver Bearden</b>		Company: <b>PNM Gas Services</b>		Company: <b>PNM Gas Services</b>		Mailing Address: <b>Alverado Square, Mail Stop 0408</b>						
	Company: <b>PNM Gas Services</b>		Dept. <b>324-3763</b>		Mailing Address: <b>Alverado Square, Mail Stop 0408</b>		City, State, Zip: <b>Albuquerque, NM 87158</b>						
	Address: <b>603 W. Elm Street</b>		City, State, Zip: <b>Farmington, NM 87401</b>		Telephone No.: <b>505-848-2974</b>		Telefax No.:						
	City, State, Zip: <b>Farmington, NM 87401</b>												
Sampling Location: <b>FLORANCE 32A</b>				ANALYSIS REQUESTED									
Sampler: <i>Maureen Gannon / Mark Okelians</i>				Number of Containers <i>BTX 500 x 20</i>									
SAMPLE IDENTIFICATION		SAMPLE DATE						SAMPLE TIME		MATRIX		PRES.	
												LAB ID	
<b>9705211030 MW1</b>										<b>H2O HCO</b>		<b>2</b>	
<b>9705211100 MW2</b>										↓ ↓		<b>2</b>	
<b>9705211130 MW3</b>										↓ ↓		<b>2</b>	
<b>9705211200 MW5</b>						↓ ↓		<b>2</b>					
<b>9705211230 MW6</b>						<b>H2O HCO</b>		<b>2</b>					
Relinquished by: <i>M. Gannon</i>				Date/Time: <b>14:57 5/21/97</b>		Received by: <i>[Signature]</i>		Date/Time: <b>5/21/97 14:57</b>					
Relinquished by:				Date/Time:		Received by:		Date/Time:					
Relinquished by:				Date/Time:		Received by:		Date/Time:					
Method of Shipment:				Rush		24-48 Hours		10 Working Days					
Authorized by: _____ Date: _____								<b>Results to be sent to both parties.</b>					
(Client Signature Must Accompany Request)													

OFF: (505) 325-5667



LAB: (505) 325-1556

### ANALYTICAL REPORT

Attn: *Denver Bearden*  
 Company: *PNM Gas Services*  
 Address: *603 W. Elm*  
 City, State: *Farmington, NM 87401*

Date: *27-Aug-97*  
 COC No.: *5647*  
 Sample No.: *15764*  
 Job No.: *2-1000*

Project Name: *PNM Gas Services - Florance 32A*

Project Location: *9708131100; MW-1*

Sampled by: *MG/MS* Date: *13-Aug-97* Time: *11:00*

Analyzed by: *DC* Date: *22-Aug-97*

Sample Matrix: *Liquid*

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
<i>Benzene</i>	ND	ug/L	1.0	ug/L
<i>Toluene</i>	ND	ug/L	1.0	ug/L
<i>Ethylbenzene</i>	ND	ug/L	1.0	ug/L
<i>m,p-Xylene</i>	ND	ug/L	1.0	ug/L
<i>o-Xylene</i>	ND	ug/L	1.0	ug/L
<i>TOTAL</i>	ND	ug/L		

ND - Not Detected at Limit of Quantitation

**Method** - *SW-846 EPA Method 8020A Aromatic Volatile Organics by Gas Chromatography*

Approved By: *[Signature]*  
 Date: *8/20/97*

P.O. BOX 2606 • FARMINGTON, NM 87499

TECHNOLOGICAL RESEARCH INDUSTRIES, INC.

OFF: (505) 325-5667



LAB: (505) 325-1556

**ANALYTICAL REPORT**

Attn: *Denver Bearden*  
 Company: *PNM Gas Services*  
 Address: *603 W. Elm*  
 City, State: *Farmington, NM 87401*

Date: *27-Aug-97*  
 COC No.: *5647*  
 Sample No.: *15765*  
 Job No.: *2-1000*

Project Name: ***PNM Gas Services - Florance 32A***  
 Project Location: ***9708131130; MW-2***  
 Sampled by: *MG/MS* Date: *13-Aug-97* Time: *11:30*  
 Analyzed by: *DC* Date: *22-Aug-97*  
 Sample Matrix: *Liquid*

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
<i>Benzene</i>	171	ug/L	10	ug/L
<i>Toluene</i>	23	ug/L	10	ug/L
<i>Ethylbenzene</i>	46	ug/L	10	ug/L
<i>m,p-Xylene</i>	117	ug/L	10	ug/L
<i>o-Xylene</i>	96	ug/L	10	ug/L
<i>TOTAL</i>	453	ug/L		

ND - Not Detected at Limit of Quantitation

**Method** - *SW-846 EPA Method 8020A Aromatic Volatile Organics by Gas Chromatography*

Approved By: *[Signature]*  
 Date: *8/28/97*

OFF: (505) 325-5667



LAB: (505) 325-1556

**ANALYTICAL REPORT**

Attn: *Denver Bearden*  
 Company: *PNM Gas Services*  
 Address: *603 W. Elm*  
 City, State: *Farmington, NM 87401*

Date: *27-Aug-97*  
 COC No.: *5647*  
 Sample No.: *15766*  
 Job No.: *2-1000*

Project Name: *PNM Gas Services - Florance 32A*

Project Location: *9708131200; MW-3*

Sampled by: *MG/MS* Date: *13-Aug-97* Time: *12:00*

Analyzed by: *DC* Date: *22-Aug-97*

Sample Matrix: *Liquid*

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
<i>Benzene</i>	ND	ug/L	1.0	ug/L
<i>Toluene</i>	ND	ug/L	1.0	ug/L
<i>Ethylbenzene</i>	ND	ug/L	1.0	ug/L
<i>m,p-Xylene</i>	ND	ug/L	1.0	ug/L
<i>o-Xylene</i>	ND	ug/L	1.0	ug/L
<i>TOTAL</i>	ND	ug/L		

5/21/97  
 ND  
 ND  
 ND  
 ND  
 ND

ND - Not Detected at Limit of Quantitation

Method - SW-846 EPA Method 8020A Aromatic Volatile Organics by Gas Chromatography

Approved By: *[Signature]*  
 Date: *8/28/97*

P.O. BOX 2606 • FARMINGTON, NM 87499

OFF: (505) 325-5667



LAB: (505) 325-1556

### ANALYTICAL REPORT

Attn: *Denver Bearden*  
 Company: *PNM Gas Services*  
 Address: *603 W. Elm*  
 City, State: *Farmington, NM 87401*

Date: *27-Aug-97*  
 COC No.: *5647*  
 Sample No.: *15767*  
 Job No.: *2-1000*

Project Name: *PNM Gas Services - Florance 32A*  
 Project Location: *9708131230; MW-5*  
 Sampled by: *MG/MS* Date: *13-Aug-97* Time: *12:30*  
 Analyzed by: *DC* Date: *22-Aug-97*  
 Sample Matrix: *Liquid*

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure	
<i>Benzene</i>	ND	ug/L	1.0	ug/L	ND
<i>Toluene</i>	ND	ug/L	1.0	ug/L	ND
<i>Ethylbenzene</i>	ND	ug/L	1.0	ug/L	ND
<i>m,p-Xylene</i>	ND	ug/L	1.0	ug/L	ND
<i>o-Xylene</i>	ND	ug/L	1.0	ug/L	ND
<i>TOTAL</i>	ND	ug/L			

*5-21-97*

ND - Not Detected at Limit of Quantitation

**Method** - SW-846 EPA Method 8020A Aromatic Volatile Organics by Gas Chromatography

Approved By: *[Signature]*  
 Date: *8/26/97*

P.O. BOX 2606 • FARMINGTON, NM 87499

OFF: (505) 325-5667



LAB: (505) 325-1556

### ANALYTICAL REPORT

Attn: *Denver Bearden*  
 Company: *PNM Gas Services*  
 Address: *603 W. Elm*  
 City, State: *Farmington, NM 87401*

Date: *27-Aug-97*  
 COC No.: *5647*  
 Sample No.: *15768*  
 Job No.: *2-1000*

Project Name: *PNM Gas Services - Florance 32A*  
 Project Location: *9708131300; MW-6*  
 Sampled by: *MG/MS* Date: *13-Aug-97* Time: *13:00*  
 Analyzed by: *DC* Date: *22-Aug-97*  
 Sample Matrix: *Liquid*

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
<i>Benzene</i>	ND	ug/L	1.0	ug/L
<i>Toluene</i>	ND	ug/L	1.0	ug/L
<i>Ethylbenzene</i>	ND	ug/L	1.0	ug/L
<i>m,p-Xylene</i>	ND	ug/L	1.0	ug/L
<i>o-Xylene</i>	ND	ug/L	1.0	ug/L
<i>TOTAL</i>	ND	ug/L		

ND - Not Detected at Limit of Quantitation

Method - SW-846 EPA Method 8020A Aromatic Volatile Organics by Gas Chromatography

Approved By: *[Signature]*  
 Date: *8/28/97*

P.O. BOX 2606 • FARMINGTON, NM 87499

TECHNICAL SERVICES DIVISION



**QUALITY ASSURANCE REPORT**  
for EPA Method 8020

Date Analyzed: 22-Aug-97

Internal QC No.: 0527-STD  
Surrogate QC No.: 0528-STD  
Reference Standard QC No.: 0529/30-QC

**Method Blank**

Parameter	Result	Unit of Measure
Average Amount of All Analytes In Blank	< 1.0	ppb

**Calibration Check**

Parameter	Unit of Measure	True Value	Analyzed Value	RPD	Limit
Benzene	ppb	20.0	19.7	2	15%
Toluene	ppb	20.0	20.4	2	15%
Ethylbenzene	ppb	20.0	20.6	3	15%
m,p-Xylene	ppb	40.0	39.4	2	15%
o-Xylene	ppb	20.0	20.4	2	15%

**Matrix Spike**

Parameter	1 - Percent Recovered	2 - Percent Recovered	Limit	RPD	Limit
Benzene	96	91	(39-150)	3	20%
Toluene	100	97	(46-148)	3	20%
Ethylbenzene	100	97	(32-160)	3	20%
m,p-Xylene	96	93	(35-145)	3	20%
o-Xylene	99	96	(35-145)	2	20%

**Surrogate Recoveries**

Laboratory Identification	S1 Percent Recovered	S2 Percent Recovered	Laboratory Identification	S1 Percent Recovered	S2 Percent Recovered
Limit Percent Recovered	(70-130)		Limit Percent Recovered	(70-130)	
15764-5647	97				
15765-5647	97				
15766-5647	97				
15767-5647	96				
15768-5647	96				
				JHK 8/29/97	(12) 8/28/97

S1: Fluorobenzene



OFF: (505) 325-5667



LAB: (505) 325-1556

**ANALYTICAL REPORT**

Attn: *Denver Bearden*  
Company: *PNM Gas Services*  
Address: *603 W. Elm*  
City, State: *Farmington, NM 87401*

Date: *17-Nov-97*  
COC No.: *7081*  
Sample No.: *16788*  
Job No.: *2-1000*

Project Name: *PNM Gas Services - Florance 32A*  
Project Location: *9711061100; MW-1*  
Sampled by: *MG/MS* Date: *6-Nov-97* Time: *11:00*  
Analyzed by: *DC* Date: *13-Nov-97*  
Sample Matrix: *Liquid*

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
<i>Benzene</i>	ND	ug/L	0.2	ug/L
<i>Toluene</i>	ND	ug/L	0.2	ug/L
<i>Ethylbenzene</i>	0.4	ug/L	0.2	ug/L
<i>m,p-Xylene</i>	0.8	ug/L	0.2	ug/L
<i>o-Xylene</i>	0.3	ug/L	0.2	ug/L
<i>TOTAL</i>	1.4	ug/L		

ND - Not Detected at Limit of Quantitation

Method - *SW-846 EPA Method 8020A Aromatic Volatile Organics by Gas Chromatography*

Approved By: *[Signature]*  
Date: *11/17/97*

P.O. BOX 2606 • FARMINGTON, NM 87499

OFF: (505) 325-5667



LAB: (505) 325-1556

**ANALYTICAL REPORT**

Attn: *Denver Bearden*  
 Company: *PNM Gas Services*  
 Address: *603 W. Elm*  
 City, State: *Farmington, NM 87401*

Date: *17-Nov-97*  
 COC No.: *7081*  
 Sample No.: *16789*  
 Job No.: *2-1000*

Project Name: *PNM Gas Services - Florance 32A*  
 Project Location: *9711061130; MW-2*  
 Sampled by: *MS/MG* Date: *6-Nov-97* Time: *11:30*  
 Analyzed by: *DC* Date: *12-Nov-97*  
 Sample Matrix: *Liquid*

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
<i>Benzene</i>	<i>358</i>	<i>ug/L</i>	<i>1</i>	<i>ug/L</i>
<i>Toluene</i>	<i>233</i>	<i>ug/L</i>	<i>1</i>	<i>ug/L</i>
<i>Ethylbenzene</i>	<i>181</i>	<i>ug/L</i>	<i>1</i>	<i>ug/L</i>
<i>m,p-Xylene</i>	<i>511</i>	<i>ug/L</i>	<i>1</i>	<i>ug/L</i>
<i>o-Xylene</i>	<i>158</i>	<i>ug/L</i>	<i>1</i>	<i>ug/L</i>
<i>TOTAL</i>	<i>1440</i>	<i>ug/L</i>		

ND - Not Detected at Limit of Quantitation

**Method** - *SW-846 EPA Method 8020A Aromatic Volatile Organics by Gas Chromatography*

Approved By: *[Signature]*  
 Date: *11/17/97*

OFF: (505) 325-5667



LAB: (505) 325-1556

### ANALYTICAL REPORT

Attn: *Denver Bearden*  
 Company: *PNM Gas Services*  
 Address: *603 W. Elm*  
 City, State: *Farmington, NM 87401*

Date: *17-Nov-97*  
 COC No.: *7081*  
 Sample No.: *16790*  
 Job No.: *2-1000*

Project Name: *PNM Gas Services - Florance 32A*  
 Project Location: *9711061200; MW-3*  
 Sampled by: *MS/MG* Date: *6-Nov-97* Time: *12:00*  
 Analyzed by: *DC* Date: *12-Nov-97*  
 Sample Matrix: *Liquid*

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
<i>Benzene</i>	ND	ug/L	0.2	ug/L
<i>Toluene</i>	ND	ug/L	0.2	ug/L
<i>Ethylbenzene</i>	ND	ug/L	0.2	ug/L
<i>m,p-Xylene</i>	ND	ug/L	0.2	ug/L
<i>o-Xylene</i>	ND	ug/L	0.2	ug/L
<i>TOTAL</i>	ND	ug/L		

ND - Not Detected at Limit of Quantitation

Method - *SW-846 EPA Method 8020A Aromatic Volatile Organics by Gas Chromatography*

Approved By: *JAC*  
 Date: *11/17/97*

OFF: (505) 325-5667



LAB: (505) 325-1556

### ANALYTICAL REPORT

Attn: *Denver Bearden*  
 Company: *PNM Gas Services*  
 Address: *603 W. Elm*  
 City, State: *Farmington, NM 87401*

Date: *17-Nov-97*  
 COC No.: *7081*  
 Sample No.: *16791*  
 Job No.: *2-1000*

Project Name: *PNM Gas Services - Florance 32A*  
 Project Location: *9711061230; MW-5*  
 Sampled by: *MS/MG* Date: *6-Nov-97* Time: *12:30*  
 Analyzed by: *DC* Date: *12-Nov-97*  
 Sample Matrix: *Liquid*

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
<i>Benzene</i>	ND	ug/L	0.2	ug/L
<i>Toluene</i>	ND	ug/L	0.2	ug/L
<i>Ethylbenzene</i>	ND	ug/L	0.2	ug/L
<i>m,p-Xylene</i>	ND	ug/L	0.2	ug/L
<i>o-Xylene</i>	ND	ug/L	0.2	ug/L
<i>TOTAL</i>	ND	ug/L		

ND - Not Detected at Limit of Quantitation

Method - SW-846 EPA Method 8020A Aromatic Volatile Organics by Gas Chromatography

Approved by: *[Signature]*  
 Date: *11/17/97*

P.O. BOX 2606 • FARMINGTON, NM 87499



**QUALITY ASSURANCE REPORT**  
for EPA Method 8020

Date Analyzed: 12-Nov-97

Internal QC No.: 0559-STD  
Surrogate QC No.: 0556-STD  
Reference Standard QC No.: 0529/30-QC

**Method Blank**

Parameter	Result	Unit of Measure
Average Amount of All Analytes In Blank	< 0.2	ppb

**Calibration Check**

Parameter	Unit of Measure	True Value	Analyzed Value	RPD	Limit
Benzene	ppb	20.0	19.7	1	15%
Toluene	ppb	20.0	20.4	2	15%
Ethylbenzene	ppb	20.0	20.6	3	15%
m,p-Xylene	ppb	40.0	39.3	2	15%
o-Xylene	ppb	20.0	20.7	4	15%

**Matrix Spike**

Parameter	1 - Percent Recovered	2 - Percent Recovered	Limit	RPD	Limit
Benzene	96	103	(39-150)	3	20%
Toluene	99	113	(46-148)	7	20%
Ethylbenzene	97	101	(32-160)	2	20%
m,p-Xylene	94	99	(35-145)	2	20%
o-Xylene	95	99	(35-145)	2	20%

**Surrogate Recoveries**

Laboratory Identification	S1 Percent Recovered	S2 Percent Recovered	Laboratory Identification	S1 Percent Recovered	S2 Percent Recovered
Limit Percent Recovered	(70-130)		Limit Percent Recovered	(70-130)	
16789-7081	95				
16790-7081	95				
16971-7081	95				
				JK	(110)
				11/21/97	11/17/97

S1: Fluorobenzene





OFF: (505) 325-5667



LAB: (505) 325-1556

### ANALYTICAL REPORT

Attn: *Denver Bearden*  
 Company: *PNM Gas Services*  
 Address: *603 W. Elm*  
 City, State: *Farmington, NM 87401*

Date: *3-Feb-98*  
 COC No.: *7171*  
 Sample No.: *17442*  
 Job No.: *2-1000*

Project Name: *PNM Gas Services - Florance 32A*  
 Project Location: *9801291300; MW-1*  
 Sampled by: *MS/RD* Date: *29-Jan-98* Time: *13:00*  
 Analyzed by: *DC* Date: *31-Jan-98*  
 Sample Matrix: *Liquid*

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
<i>Benzene</i>	ND	ug/L	0.5	ug/L
<i>Toluene</i>	ND	ug/L	0.5	ug/L
<i>Ethylbenzene</i>	ND	ug/L	0.5	ug/L
<i>m,p-Xylene</i>	ND	ug/L	1.0	ug/L
<i>o-Xylene</i>	ND	ug/L	0.5	ug/L
<i>TOTAL</i>	ND	ug/L		

ND - Not Detected at Limit of Quantitation

**Method** - *SW-846 EPA Method 8020A Aromatic Volatile Organics by Gas Chromatography*

Approved By: *[Signature]*  
 Date: *2/3/98*

OFF: (505) 325-5667



LAB: (505) 325-1556

### ANALYTICAL REPORT

Attn: *Denver Bearden*  
 Company: *PNM Gas Services*  
 Address: *603 W. Elm*  
 City, State: *Farmington, NM 87401*

Date: *3-Feb-98*  
 COC No.: *7171*  
 Sample No.: *17443*  
 Job No.: *2-1000*

Project Name: *PNM Gas Services - Florance 32A*  
 Project Location: *9801291320; MW-2*  
 Sampled by: *MS/RD* Date: *29-Jan-98* Time: *13:20*  
 Analyzed by: *DC* Date: *2-Feb-98*  
 Sample Matrix: *Liquid*

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
<i>Benzene</i>	<i>49</i>	<i>ug/L</i>	<i>5</i>	<i>ug/L</i>
<i>Toluene</i>	<i>2724</i>	<i>ug/L</i>	<i>10</i>	<i>ug/L</i>
<i>Ethylbenzene</i>	<i>461</i>	<i>ug/L</i>	<i>5</i>	<i>ug/L</i>
<i>m,p-Xylene</i>	<i>3871</i>	<i>ug/L</i>	<i>20</i>	<i>ug/L</i>
<i>o-Xylene</i>	<i>878</i>	<i>ug/L</i>	<i>5</i>	<i>ug/L</i>
<i>TOTAL</i>	<i>7983</i>	<i>ug/L</i>		

ND - Not Detected at Limit of Quantitation

Method - *SW-846 EPA Method 8020A Aromatic Volatile Organics by Gas Chromatography*

Approved By: *[Signature]*  
 Date: *2/3/98*

OFF: (505) 325-5667



LAB: (505) 325-1556

**ANALYTICAL REPORT**

Attn: *Denver Bearden*  
 Company: *PNM Gas Services*  
 Address: *603 W. Elm*  
 City, State: *Farmington, NM 87401*

Date: *3-Feb-98*  
 COC No.: *7171*  
 Sample No.: *17444*  
 Job No.: *2-1000*

Project Name: *PNM Gas Services - Florance 32A*  
 Project Location: *9801291340; MW-3*  
 Sampled by: *MS/RD* Date: *29-Jan-98* Time: *13:40*  
 Analyzed by: *DC* Date: *31-Jan-98*  
 Sample Matrix: *Liquid*

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
<i>Benzene</i>	ND	ug/L	0.5	ug/L
<i>Toluene</i>	ND	ug/L	0.5	ug/L
<i>Ethylbenzene</i>	ND	ug/L	0.5	ug/L
<i>m,p-Xylene</i>	ND	ug/L	1.0	ug/L
<i>o-Xylene</i>	ND	ug/L	0.5	ug/L
<i>TOTAL</i>	ND	ug/L		

ND - Not Detected at Limit of Quantitation

**Method** - *SW-846 EPA Method 8020A Aromatic Volatile Organics by Gas Chromatography*

Approved By: *DAG*  
 Date: *2/3/98*

OFF: (505) 325-5667



LAB: (505) 325-1556

**ANALYTICAL REPORT**

Attn: *Denver Bearden*  
 Company: *PNM Gas Services*  
 Address: *603 W. Elm*  
 City, State: *Farmington, NM 87401*

Date: *3-Feb-98*  
 COC No.: *7171*  
 Sample No.: *17445*  
 Job No.: *2-1000*

Project Name: *PNM Gas Services - Florance 32A*  
 Project Location: *9801291420; MW-5*  
 Sampled by: *MS/RD* Date: *29-Jan-98* Time: *14:20*  
 Analyzed by: *DC* Date: *31-Jan-98*  
 Sample Matrix: *Liquid*

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
<i>Benzene</i>	ND	ug/L	0.5	ug/L
<i>Toluene</i>	ND	ug/L	0.5	ug/L
<i>Ethylbenzene</i>	ND	ug/L	0.5	ug/L
<i>m,p-Xylene</i>	ND	ug/L	1.0	ug/L
<i>o-Xylene</i>	ND	ug/L	0.5	ug/L
<i>TOTAL</i>	ND	ug/L		

ND - Not Detected at Limit of Quantitation

**Method** - SW-846 EPA Method 8020A Aromatic Volatile Organics by Gas Chromatography

Approved By: *Jag*  
 Date: *2/3/98*

OFF: (505) 325-5667



LAB: (505) 325-1556

### ANALYTICAL REPORT

Attn: *Denver Bearden*  
 Company: *PNM Gas Services*  
 Address: *603 W. Elm*  
 City, State: *Farmington, NM 87401*

Date: *3-Feb-98*  
 COC No.: *7171*  
 Sample No.: *17446*  
 Job No.: *2-1000*

Project Name: *PNM Gas Services - Florance 32A*  
 Project Location: *9801291440; MW-6*  
 Sampled by: *MS/RD* Date: *29-Jan-98* Time: *14:40*  
 Analyzed by: *DC* Date: *2-Feb-98*  
 Sample Matrix: *Liquid*

Parameter	Results as Received	Unit of Measure	Limit of Quantitation	Unit of Measure
<i>Benzene</i>	<i>46</i>	<i>ug/L</i>	<i>5</i>	<i>ug/L</i>
<i>Toluene</i>	<i>2751</i>	<i>ug/L</i>	<i>10</i>	<i>ug/L</i>
<i>Ethylbenzene</i>	<i>438</i>	<i>ug/L</i>	<i>5</i>	<i>ug/L</i>
<i>m,p-Xylene</i>	<i>3950</i>	<i>ug/L</i>	<i>20</i>	<i>ug/L</i>
<i>o-Xylene</i>	<i>837</i>	<i>ug/L</i>	<i>5</i>	<i>ug/L</i>
<i>TOTAL</i>	<i>8022</i>	<i>ug/L</i>		

ND - Not Detected at Limit of Quantitation

Method - SW-846 EPA Method 8020A Aromatic Volatile Organics by Gas Chromatography

Approved By: *[Signature]*  
 Date: *2/3/98*



**QUALITY ASSURANCE REPORT**  
for EPA Method 8020

Date Analyzed: 31-Jan-98

Internal QC No.: 0559-STD

Surrogate QC No.: 0567-STD

Reference Standard QC No.: 0529/30-QC

**Method Blank**

Parameter	Result	Unit of Measure
Average Amount of All Analytes In Blank	< 0.2	ppb

**Calibration Check**

Parameter	Unit of Measure	True Value	Analyzed Value	RPD	Limit
Benzene	ppb	20.0	22.1	10	15%
Toluene	ppb	20.0	22.3	11	15%
Ethylbenzene	ppb	20.0	23.1	14	15%
m,p-Xylene	ppb	40.0	43.3	8	15%
o-Xylene	ppb	20.0	22.3	11	15%

**Matrix Spike**

Parameter	1 - Percent Recovered	2 - Percent Recovered	Limit	RPD	Limit
Benzene	100	94	(39-150)	3	20%
Toluene	105	100	(46-148)	4	20%
Ethylbenzene	104	100	(32-160)	3	20%
m,p-Xylene	100	97	(35-145)	3	20%
o-Xylene	105	103	(35-145)	2	20%

**Surrogate Recoveries**

Laboratory Identification	S1 Percent Recovered	S2 Percent Recovered	Laboratory Identification	S1 Percent Recovered	S2 Percent Recovered
Limit Percent Recovered	(70-130)		Limit Percent Recovered	(70-130)	
17442-7171	101				
17443-7171	102				
17444-7171	101				
17445-7171	101				
17446-7171	102			2/3/98	(m) 2/3/98

S1: Fluorobenzene



