

3R - 317

REPORTS

DATE:

1999

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

RECEIVED

April 5, 1999

APR 07 1999

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

ENVIRONMENTAL BUREAU
OIL CONSERVATION DIVISION



RE: 1999 SAN JUAN BASIN ANNUAL GROUNDWATER REPORT

Dear Bill:

PNM is pleased to submit the 1999 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.

Blanco Wash Drip	Mangum 1E
Davis 1	McClanahan 22
Dogie East Pit	McClanahan A 2E
Dogie North Pit	McCoy Gas Com A1
Florance 124	Miles Federal 1E Drip
Florance 32A	O' Shea 1M
Florance 40	Patterson A Com A1
Florance 44	Pritchard 2
Florance M 47X	Randleman 1
Hampton 4M	Reid 16 Drip
Honolulu Drip	Turner 1A
Ice Canyon Drip	Wilmerding 1M
Jacques 2A	Zachry 18E
Jicarilla Contract 147-6	
Linda 1A	

Consistent with PNM's San Juan Basin Groundwater Management Plan, PNM will request closure of four of the above sites, the Florance 32A, Jacques 2A, Mangum 1E and the McClanahan A2E, with the submittal of the 1st Quarter 1999 Pit Closures Report. This request is based upon the analytical data collected over the last two years at each of the sites. BTEX concentrations have been consistently below WQCC standards for four consecutive quarters.

Upon approval of the groundwater closure report, PNM will plug and abandon all of the groundwater monitoring wells at each of the locations. The concrete pad and metal vault surrounding each well will be removed. The well casing will be cut to ground surface and each well will be plugged to the surface

Bill Olson
04/05/99
Page 2

with cement containing 5% bentonite. If you have any questions regarding the contents of the report, please contact me at (505) 241-2974.

Sincerely,



Maureen Gannon
Project Manager

Enclosure

cc: Colin Adams, Esq.
Ingrid Deklau, WFS
Denny Foust, OCD-Aztec Office
Ron Johnson
Mark Sikelianos
Bill VonDrehle, WFS



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APR 07 1999

ENVIRONMENTAL BUREAU
OIL CONSERVATION DIVISION

Annual

Groundwater Report

1999

Volume II

*Unlined Surface Impoundments
San Juan Basin*



Groundwater Site Summary Report

Quarter/Year: 2nd/98, 3rd/98, 4th/98 & 1st/99

Operator: Amoco
Sec: 5 Twn: 30N Rng: 9W Unit: G
Canyon: Crow

Vulnerable Class: Original
OCD Ranking: 10
Lead Agency: NMOCD

Topo Map: previously submitted

Well Completion Diagram: previously submitted

Site Map with Analytical Results: Figure 1

Groundwater Contour Map: Figure 2a (June 1998), Figure 2b (August 1998), Figure 2c (December 1998) & Figure 2d (February 1999)

Hydrograph: Figure 3

Full-Suite Groundwater Sampling Results: previously submitted

Analytical Results: attached

Site Hydrology:

The Florance 47X site lies in the center of Crow Canyon, within a fairly broad valley (more than 1,000 feet wide). Crow Canyon contains a southeast-draining intermittent stream, which joins Pump Canyon about three miles southeast of the site, a few miles northwest of Archuleta, New Mexico. The site lies at an elevation of about 6230 ft.amsl.

The monitor wells at the site (see Figure 1) encountered loose, well-sorted fine to medium sands with minor amounts of silts in the uppermost 20 to 30 feet. Sands with larger proportions of clay and silt were found to depths of about 80 feet below land surface. A hard sandstone unit was encountered, at depths of about 80 to 90 feet below land surface. Most alluvium deposits in the San Juan Basin are reportedly less than 100 feet in thickness (Stone et al., 1983), so the hard sandstone unit may be the Nacimiento Formation contact with alluvium.

Groundwater was encountered from 91 to 100 feet below land surface at the site. Groundwater flows southeastward beneath the site, as shown in Figures 2a, 2b, 2c and 2d. The flow direction is parallel to the regional topographic elevation drop, which is along the valley floor of Crow Canyon.

The hydrograph (Figure 3) shows water level shifts in tandem in all the wells, indicating no seasonal change in groundwater flow direction; this is corroborated by plots of groundwater levels during different time periods (Figures 2a through 2d).

Activities for Previous Year:

PNM conducted quarterly groundwater sampling at the Florance 47X on June 11, August 12 and December 15, 1998, and again on February 9, 1999. Prior to sampling, water level measurements were taken in each of the three wells, and depth of free phase product was also measured where present. PNM was unable to collect groundwater samples in well MW-3, or in well MW-2 for two of the four quarters, due to the presence of free phase product. Samples were analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX). Sampling was performed in strict compliance with EPA protocol. PNM delivered the samples to OnSite Technologies, Farmington, New Mexico for chemical analysis of BTEX using EPA Method 8020.

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

PNMGS Well Site: Florance 47X (continued)

Results:

Figure 1 is a site map of the Florance 47X and includes groundwater analytical results. The benzene concentration in upgradient well MW-1 has been above WQCC standard for the past two years since installation of the well. This indicates that an upgradient source exists that continues to move contaminants southeastward (downgradient) across the site. In MW-2, a small amount (0.01 ft.) of straw-colored free phase product was detected for two quarters but has not been present for the last two quarters. BTEX concentrations in well MW-2 are elevated, however. A darker, brownish free phase was observed and measured (currently at a 1.1' thickness) in MW-3. The different characteristics of these free phase products suggests that different sources are present at or near the site.

PNM prepared a site summary report to the OCD detailing the activities, results and further actions at the Florance 47X under separate cover. The report was titled, "Florance Z 40 M Site - Free Product and Groundwater Contamination," and was submitted to the OCD on April 29, 1998. In response, the OCD issued a letter dated July 15, 1998, acknowledging that upgradient sources affecting well MW-1 are the responsibility of the operator, and requesting that PNM and Amoco work together to effect overall remediation.

Future Actions:

PNM is considering a proposal to install several additional monitor wells at the site, and/or perform soil borings near the surface, with the aim of identifying source areas and characterizing the contamination beneath the site. However, evidence of upgradient contamination sources would prohibit PNM from taking any effective remedial action, so the ultimate goal of any characterization activity is somewhat unclear. In addition, there is an unresolved issue of whether PNM is the owner or responsible party for free phase product at any site (i.e., by contract requirements, dehydrator limitation, etc) or specifically at the Florance 47X site (i.e., due to the location of PNM's former dehydrator pit downgradient of other sources). PNM will continue to perform quarterly monitoring, as we seek resolution of these issues in conjunction with the operator and with OCD.

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 47X Site Map with Analytical Results
(Concentrations in ppb)

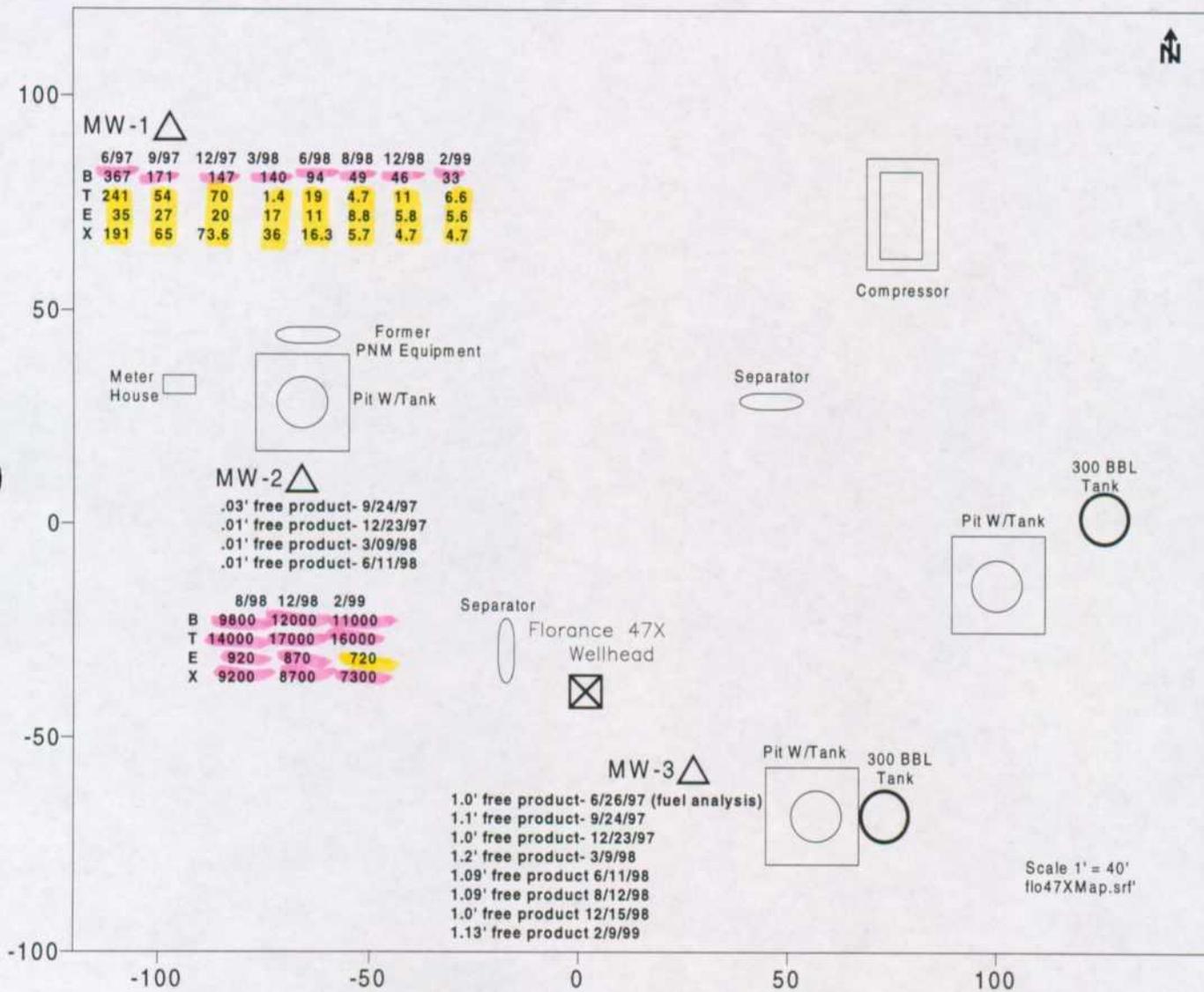
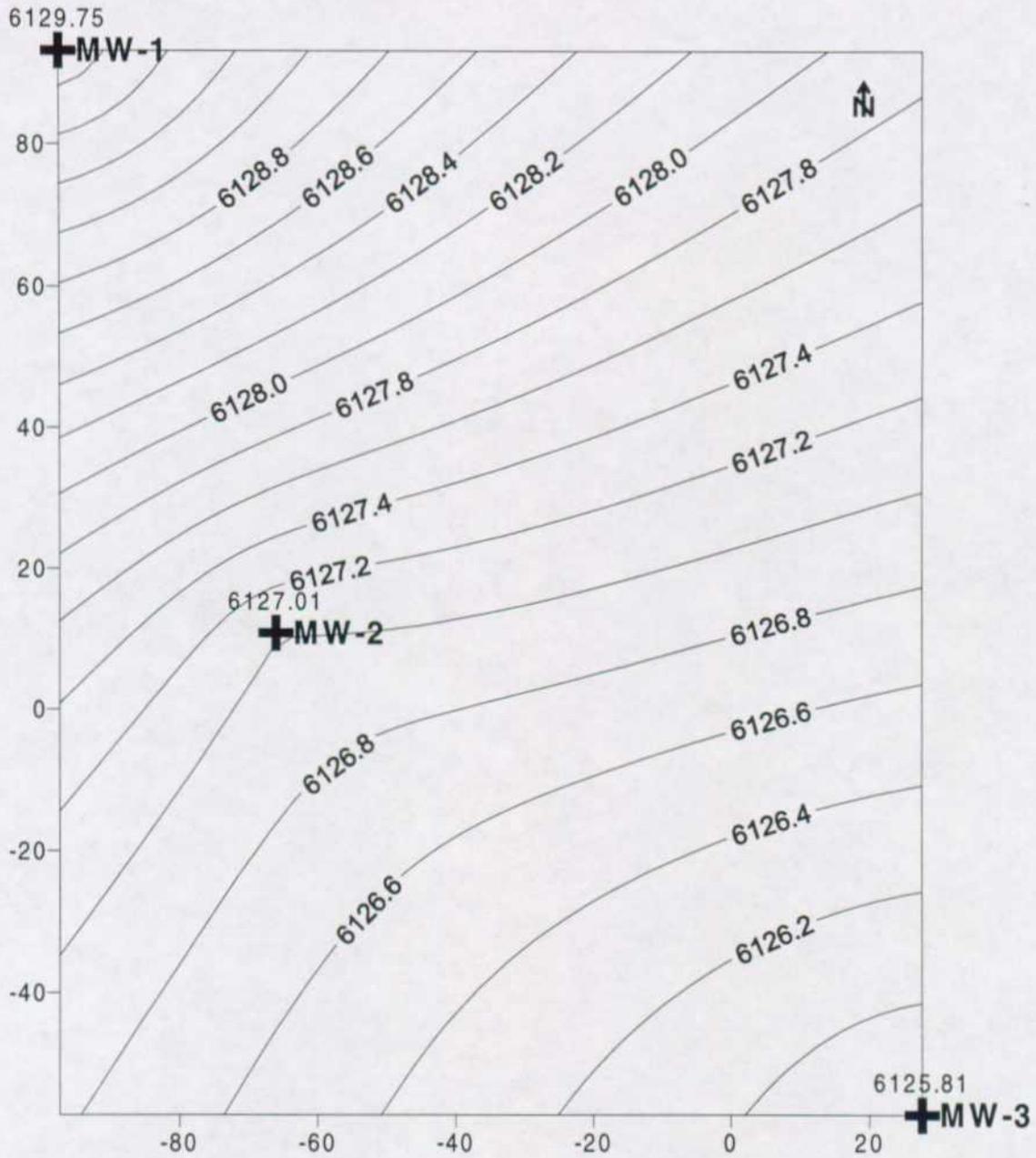
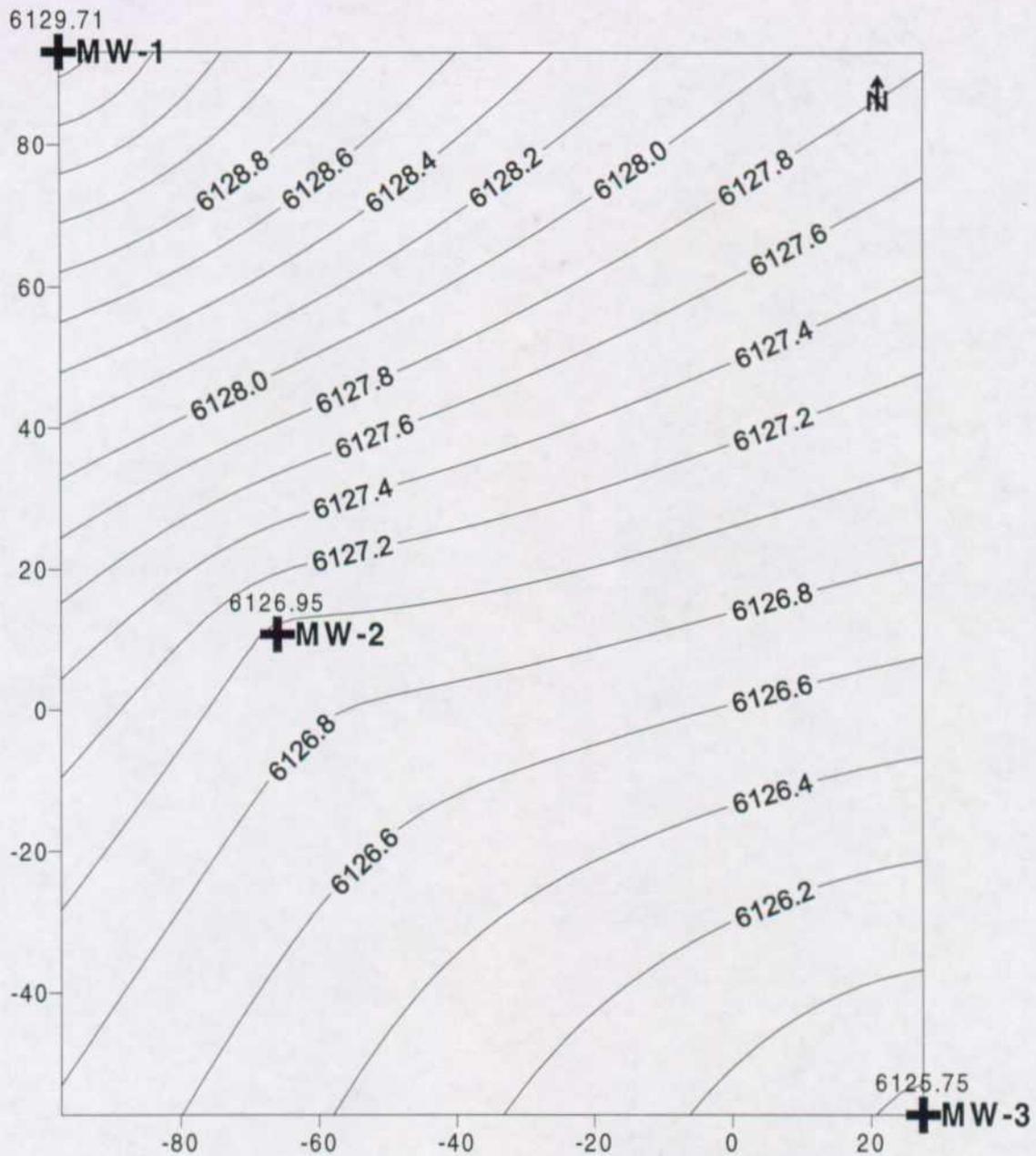


Figure 2a.
Florance 47X Groundwater Contour Map
(June 11, 1998)



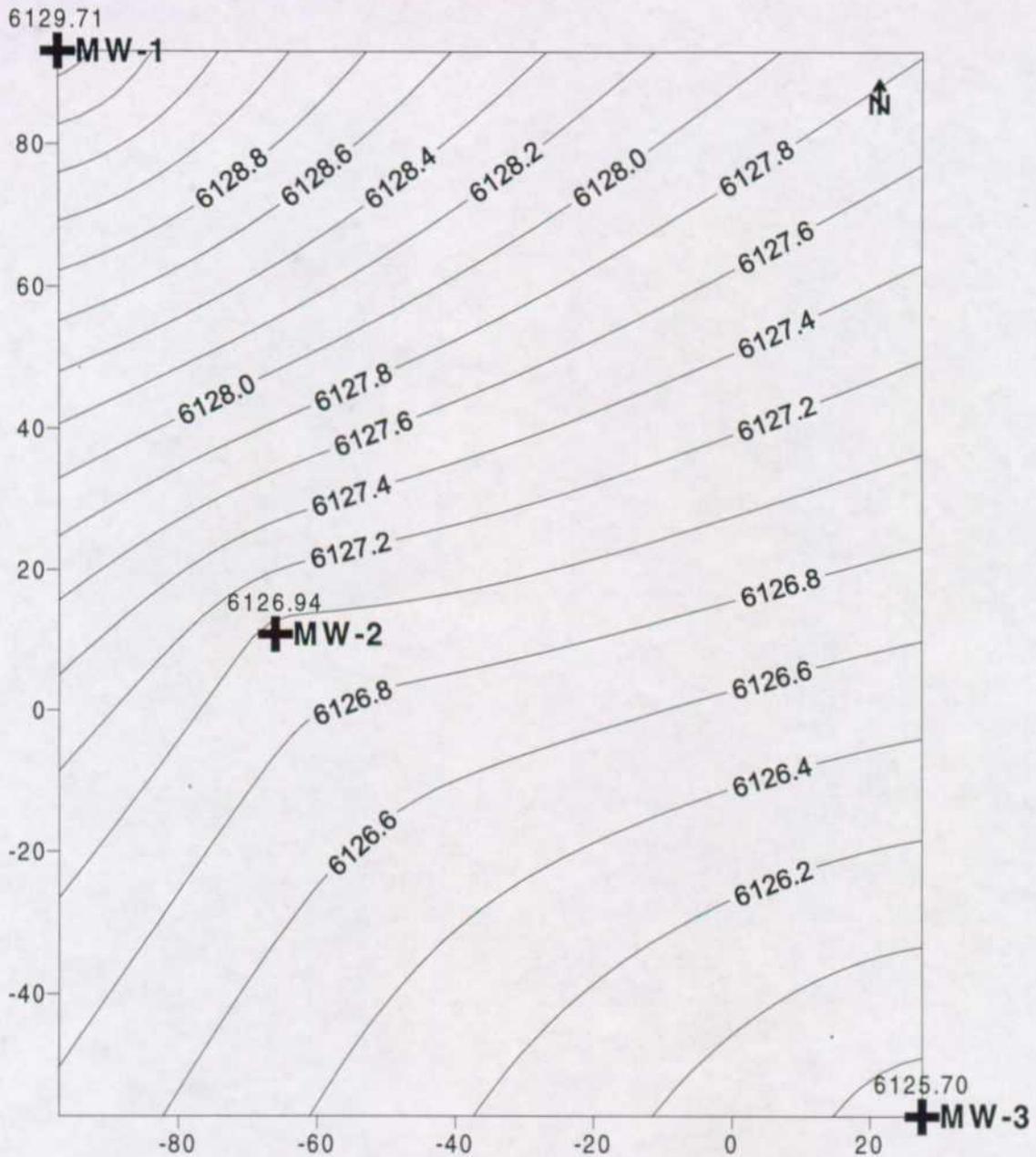
SCALE IN FEET
(X-axis = Easting, Y-axis = Northing)

Figure 2b.
Florance 47X Groundwater Contour Map
(August 12, 1998)



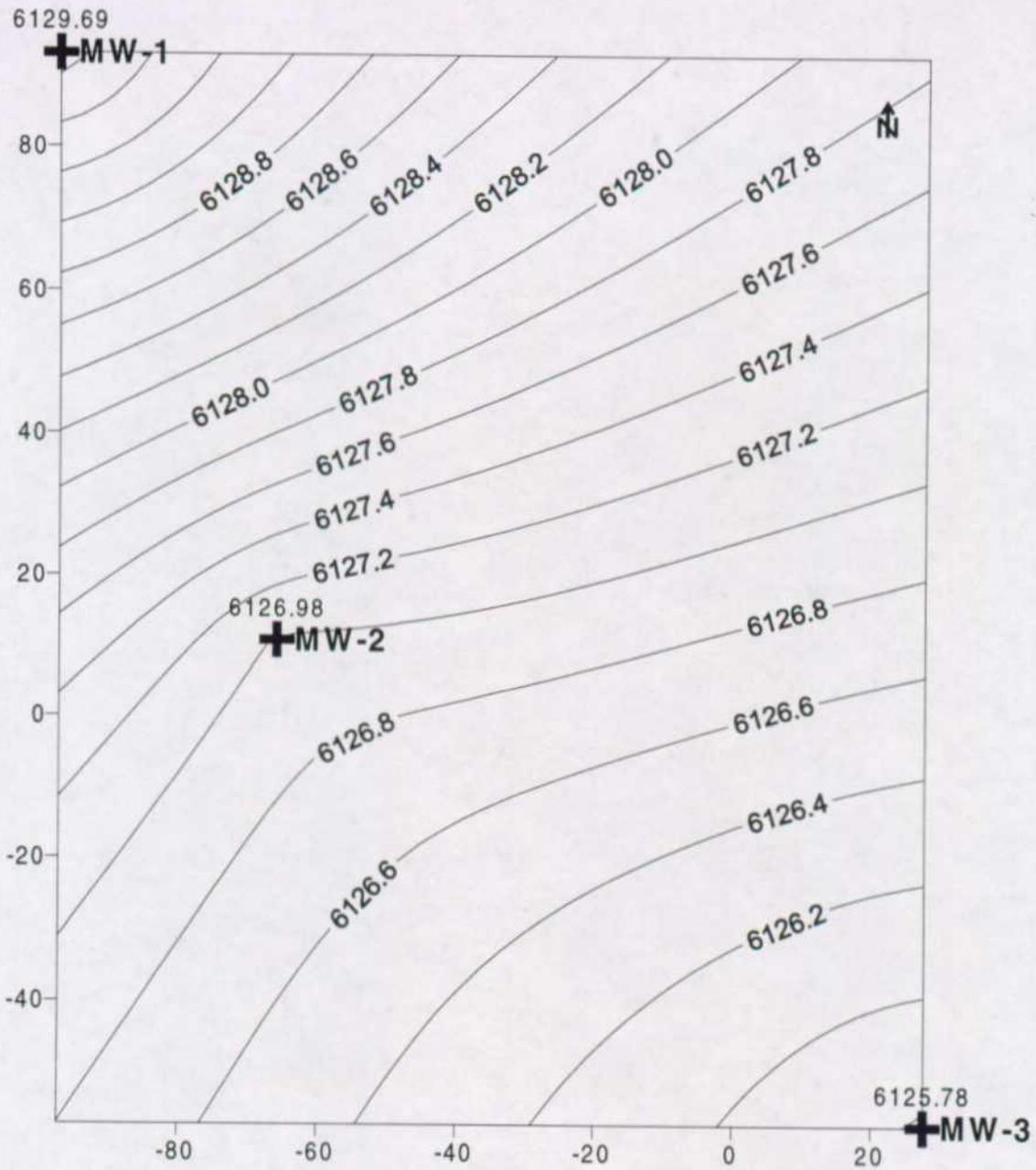
SCALE IN FEET
(X-axis = Easting, Y-axis = Northing)

Figure 2c.
Florance 47X Groundwater Contour Map
(December 15, 1998)



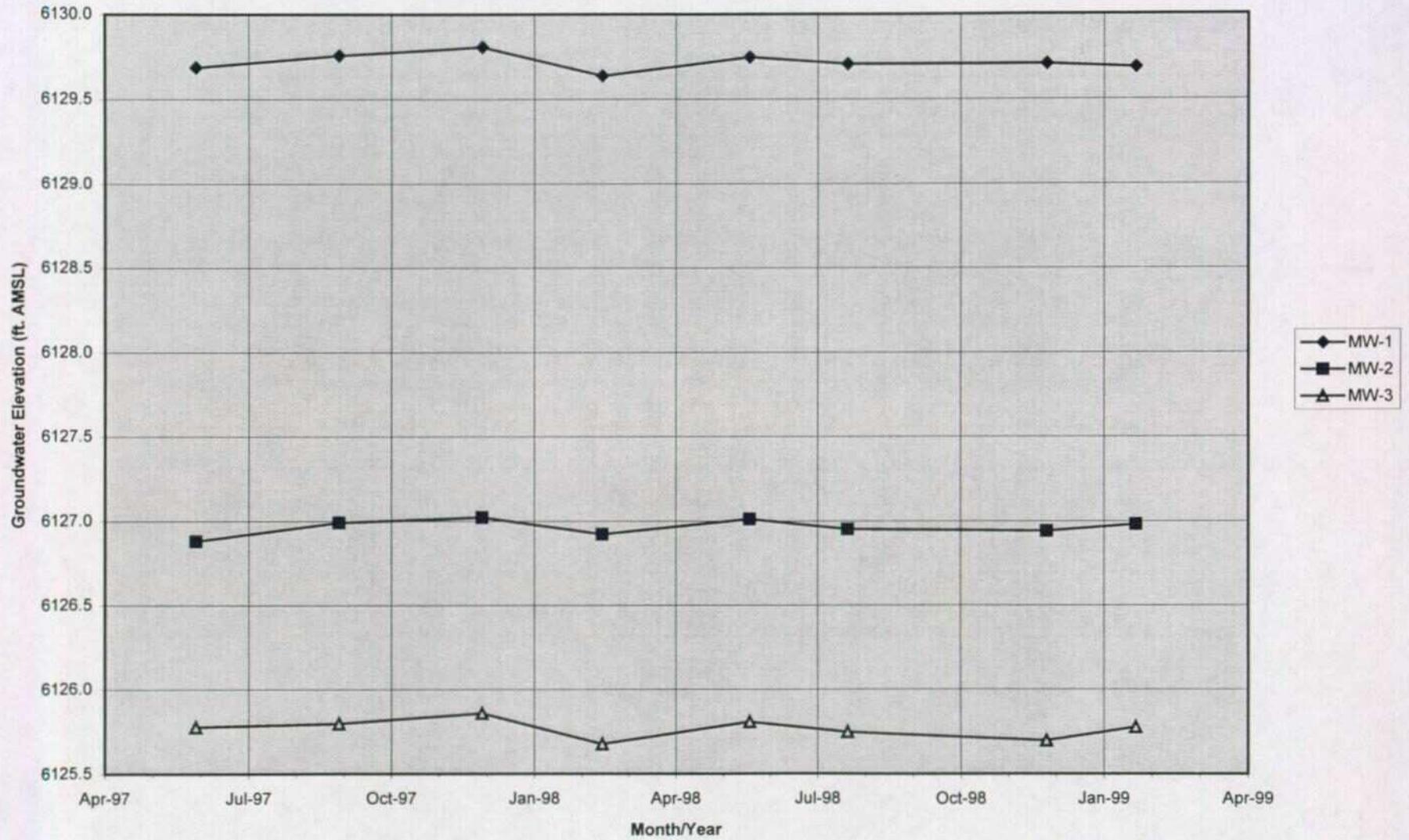
SCALE IN FEET
(X-axis = Easting, y-axis = Northing)

Figure 2d.
Florance 47X Groundwater Contour Map
(February 9, 1999)



SCALE IN FEET
(X-axis = Easting, Y-axis = Northing)

Figure 3. Florance 47X Hydrograph
(Water Level vs. Time)



OFF: (505) 325-5667



LAB: (505) 325-1556

June 18, 1998

Maureen Gannon
PNM - Public Service Company of NM
Alvarado Square Mail Stop 0408
Albuquerque, NM 87158
TEL: (505) 241-2974
FAX (505) 241-2340

2nd Quarter 98

Rec. 6/24/98

RE: Florance 47X

Order No.: 9806045

Dear Maureen Gannon,

On Site Technologies, LTD. received 1 sample on 6/11/98 for the analyses presented in the following report.

The Samples were analyzed for the following tests:
BTEX (SW8020A)

There were no problems with the analyses and all data for associated QC met EPA or laboratory specifications except where noted in the Case Narrative.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,


David Cox



OFF: (505) 325-5667

LAB: (505) 325-1556

On Site Technologies, LTD.

Date: 18-Jun-98

CLIENT: PNM - Public Service Company of NM
Project: Florance 47X
Lab Order: 9806045

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, 3rd Edition

All method blanks, laboratory spikes, and/or matrix spikes met quality assurance objectives.

OFF: (505) 325-5667



LAB: (505) 325-1556

ANALYTICAL REPORT

Date: 18-Jun-98

Client:	PNM - Public Service Company of NM	Client Sample Info:	Florance 47X
Work Order:	9806045	Client Sample ID:	9806111500; MW-1
Lab ID:	9806045-01A	Matrix:	AQUEOUS
Project:	Florance 47X	Collection Date:	6/11/98 3:00:00 PM
		COC Record:	7260

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
BTEX		SW8020A				Analyst: DC
Benzene	94	0.5		µg/L	1	6/16/98
Toluene	19	0.5		µg/L	1	6/16/98
Ethylbenzene	11	0.5		µg/L	1	6/16/98
m,p-Xylene	12	1		µg/L	1	6/16/98
o-Xylene	4.3	0.5		µg/L	1	6/16/98

Qualifiers:	PQL - Practical Quantitation Limit	S - Spike Recovery outside accepted recovery limits
	ND - Not Detected at Practical Quantitation Limit	R - RPD outside accepted recovery limits
	J - Analyte detected below Practical Quantitation Limit	E - Value above quantitation range
	B - Analyte detected in the associated Method Blank	Surr: - Surrogate

On Site Technologies, LTD.

Date: 18-Jun-98

CLIENT: PNM - Public Service Company of NM
Work Order: 9806045
Project: Florance 47X

QC SUMMARY REPORT
Method Blank

Sample ID: MB1	Batch ID: GC-1_980616	Test Code: SW8020A	Units: µg/L	Analysis Date: 6/16/98	Prep Date:						
Client ID:	9806045	Run ID: GC-1_980616A	SeqNo: 3136								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	.0478	0.5									J
Ethylbenzene	ND	0.5									
m,p-Xylene	.1193	1									J
Methyl tert-Butyl Ether	ND	1									
o-Xylene	ND	0.5									
Toluene	.0988	0.5									J

Qualifiers:

ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

On Site Technologies, LTD.

Date: 18-Jun-98

CLIENT: PNM - Public Service Company of NM
 Work Order: 9806045
 Project: Florance 47X

QC SUMMARY REPORT
 Sample Matrix Spike

Sample ID: 9806052-02AMS Batch ID: GC-1_980616 Test Code: SW8020A Units: µg/L Analysis Date: 6/16/98 Prep Date:
 Client ID: 9806045 Run ID: GC-1_980616A SeqNo: 3137

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	1823	10	800	1021	100.3%	56	128				
Ethylbenzene	1178	10	800	404.6	96.7%	78	107				
m,p-Xylene	2263	20	1600	739.2	95.2%	67	118				
Methyl tert-Butyl Ether	776.8	20	800	22.28	94.3%	70	130				
o-Xylene	1042	10	800	243.9	99.8%	78	107				
Toluene	1298	10	800	507.9	98.8%	74	116				

Sample ID: 9806052-02AMSD Batch ID: GC-1_980616 Test Code: SW8020A Units: µg/L Analysis Date: 6/16/98 Prep Date:
 Client ID: 9806045 Run ID: GC-1_980616A SeqNo: 3138

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	1771	10	800	1021	93.8%	56	128	1823	2.9%	12	
Ethylbenzene	1146	10	800	404.6	92.7%	78	107	1178	2.7%	11	
m,p-Xylene	2188	20	1600	739.2	90.6%	67	118	2263	3.3%	10	
Methyl tert-Butyl Ether	760.7	20	800	22.28	92.3%	70	130	776.8	2.1%	15	
o-Xylene	1026	10	800	243.9	97.8%	78	107	1042	1.5%	14	
Toluene	1264	10	800	507.9	94.5%	74	116	1298	2.7%	14	

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limits B - Analyte detected in the associated Method Blank
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits

On Site Technologies, LTD.

Date: 18-Jun-98

CLIENT: PNM - Public Service Company of NM

Work Order: 9806045

Project: Florance 47X

QC SUMMARY REPORT

Laboratory Control Spike - generic

Sample ID: LCS WATER	Batch ID: GC-1_980616	Test Code: SW8020A	Units: µg/L	Analysis Date: 6/16/98	Prep Date:						
Client ID:	9806045	Run ID: GC-1_980616A	SeqNo: 3135								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	41.01	0.5	40	0.0478	102.4%	56	128				
Ethylbenzene	41.79	0.5	40	0	104.5%	78	107				
m,p-Xylene	79.51	1	80	0.1193	99.2%	67	118				
Methyl tert-Butyl Ether	44.96	1	40	0	112.4%	70	130				
o-Xylene	40.79	0.5	40	0	102.0%	78	107				
Toluene	40.42	0.5	40	0.0988	100.8%	74	116				

Qualifiers:

ND - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

On Site Technologies, LTD.

Date: 18-Jun-98

CLIENT: PNM - Public Service Company of NM
Work Order: 9806045
Project: Florance 47X

QC SUMMARY REPORT
Continuing Calibration Verification Standard

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	21.71	0.5	20	0	108.5%	85	115				
Ethylbenzene	22.4	0.5	20	0	112.0%	85	115				
m,p-Xylene	42.29	1	40	0	105.7%	85	115				
Methyl tert-Butyl Ether	23.12	1	20	0	115.6%	85	115				S
o-Xylene	21.74	0.5	20	0	108.7%	85	115				
Toluene	21.52	0.5	20	0	107.6%	85	115				
1,4-Difluorobenzene	93.47	0	100	0	93.5%	70	130				
4-Bromochlorobenzene	85.45	0	100	0	85.4%	70	130				
Fluorobenzene	93.66	0	100	0	93.7%	70	130				

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	20.55	0.5	20	0	102.8%	85	115				
Ethylbenzene	21.3	0.5	20	0	106.5%	85	115				
m,p-Xylene	39.94	1	40	0	99.9%	85	115				
Methyl tert-Butyl Ether	21.29	1	20	0	106.5%	85	115				
o-Xylene	21.45	0.5	20	0	107.2%	85	115				
Toluene	20.47	0.5	20	0	102.3%	85	115				
1,4-Difluorobenzene	93.62	0	100	0	93.6%	70	130				
4-Bromochlorobenzene	83.56	0	100	0	83.6%	70	130				
Fluorobenzene	93.34	0	100	0	93.3%	70	130				

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: PNM - Public Service Company of NM
Work Order: 9806045
Project: Florance 47X

QC SUMMARY REPORT
 Continuing Calibration Verification Standard

Sample ID: CCV3 QC0529/30 Batch ID: GC-1_980616 Test Code: SW8020A Units: µg/L Analysis Date: 6/16/98 Prep Date:
 Client ID: 9806045 Run ID: GC-1_980616A SeqNo: 3134

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	40.28	0.5	40	0	100.7%	85	115				
Ethylbenzene	40.18	0.5	40	0	100.5%	85	115				
m,p-Xylene	77.38	1	80	0	96.7%	85	115				
Methyl tert-Butyl Ether	37.36	1	40	0	93.4%	85	115				
o-Xylene	40.35	0.5	40	0	100.9%	85	115				
Toluene	40.24	0.5	40	0	100.6%	85	115				
1,4-Difluorobenzene	92.6	0	100	0	92.6%	70	130				
4-Bromochlorobenzene	80.3	0	100	0	80.3%	70	130				
Fluorobenzene	93.09	0	100	0	93.1%	70	130				

Qualifiers:

ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
 R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: PNM - Public Service Company of NM
 Work Order: 9806045
 Project: Florance 47X
 Test No: SW8020A

**QC SUMMARY REPORT
 SURROGATE RECOVERIES**

BTEX

Sample ID	14FBZ	4BCBZ	FLBZ				
9806014-03A	92.3	86.2	93				
9806014-04A	91.9	86.7	92.8				
9806014-05A	92	86.3	93.2				
9806043-03A	93.3	84	94.6				
9806043-04A	93.2	82.9	94.6				
9806044-03A	93.8	86.5	94				
9806044-04A	92.3	85.8	95.6				
9806044-05A	93.3	86.1	94.2				
9806045-01A	90.2	84.9	91.2				
9806052-01A	90.4	83.2	90.4				
9806052-02A	92.4	75.5	93.2				
9806052-02AMS	91.9	86.3	92.5				
9806052-02AMSD	92.4	85.4	92.6				
9806052-03A	93.5	85.8	94.6				
9806053-01A	99.2	103	125				
9806053-02A	93.4	82.8	94.1				
9806053-03A	93.5	82.4	94.1				
9806054-01A	93.3	82.3	94.3				
9806054-02A	93.6	81.9	94				
9806055-01A	94	81.1	93.8				
9806055-02A	91.8	81.8	93.8				
9806058-01A	93.8	85.9	94.1				
9806058-02A	97.8	82.9	93.9				
9806063-01A	94.8	84	94.4				
9806063-02A	93.6	87.3	94.6				
CCV1 QC0529/30	93.5	85.4	93.7				
CCV2 QC0529/30	93.6	83.6	93.3				

Acronym	Surrogate	QC Limits
14FBZ	= 1,4-Difluorobenzene	70-130
4BCBZ	= 4-Bromochlorobenzene	70-130
FLBZ	= Fluorobenzene	70-130

* Surrogate recovery outside acceptance limits

CLIENT: PNM - Public Service Company of NM
Work Order: 9806045
Project: Florance 47X
Test No: SW8020A

QC SUMMARY REPORT SURROGATE RECOVERIES

BTEX

Sample ID	14FBZ	4BCBZ	FLBZ					
CCV3 QC0529/30	92.6	80.3	93.1					
LCS WATER	93.8	85.4	93.7					
MB1	93.6	84.4	94.4					

Acronym	Surrogate	QC Limits
14FBZ	= 1,4-Difluorobenzene	70-130
4BCBZ	= 4-Bromochlorobenzene	70-130
FLBZ	= Fluorobenzene	70-130

* Surrogate recovery outside acceptance limits



CHAIN OF CUSTODY RECORD

Date: 6/11/98

Page: 1 of 1

612 E. Murphy Dr. • P.O. Box 2606 • Farmington, NM 87499
 LAB: (505) 325-5667 • FAX: (505) 325-6256

Purchase Order No.:		Job No.:		REPORT RESULTS TO	Name	Maureen Gannon	Title	
SEND INVOICE TO	Name	Denver Bearden			Company	PNM Gas Services		
	Company	PNM Gas Services	Dept. 324-3763		Mailing Address	Alverado Square, Mail Stop 0408		
	Address	603 W. Elm Street			City, State, Zip	Albuquerque, NM 87158		
	City, State, Zip	Farmington, NM 87401			Telephone No.	505-848-2974	Telefax No.	
Sampling Location: <u>Florance 47 X</u>				Number of Containers	ANALYSIS REQUESTED			
Sampler: <u>RD MS.</u>					<div style="border: 1px solid black; padding: 5px; transform: rotate(-45deg); display: inline-block;"> BTEX 8020 </div>			
SAMPLE IDENTIFICATION		SAMPLE		MATRIX	PRES.	LAB ID		
	DATE	TIME						
<u>9806111500</u>			<u>MW-1</u>	<u>H2O HCL</u>	<u>2</u>	<u>X</u>	<u>9806045-01A</u>	
Relinquished by: <u>[Signature]</u>		Date/Time <u>6/11/98 1630</u>		Received by: <u>[Signature]</u>		Date/Time <u>6/11/98 1630</u>		
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	Special Instructions:	
Authorized by: <u>[Signature]</u> Date <u>6/11/98</u>				Results to be sent to both parties.				
(Client Signature Must Accompany Request)								

OFF: (505) 325-5667



LAB: (505) 325-1556

August 20, 1998

Maureen Gannon
PNM - Public Service Company of NM
Alvarado Square Mail Stop 0408
Albuquerque, NM 87158
TEL: (505) 241-2974
FAX (505) 241-2340

3rd Quarter 98

RE: Florance 47X

Order No.: 9808025

Dear Maureen Gannon,

On Site Technologies, LTD. received 2 samples on 8/12/98 for the analyses presented in the following report.

The Samples were analyzed for the following tests:
BTEX (SW8020A)

There were no problems with the analyses and all data for associated QC met EPA or laboratory specifications except where noted in the Case Narrative.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

A handwritten signature in black ink, appearing to read "David Cox", written in a cursive style.

David Cox

OFF: (505) 325-5667



LAB: (505) 325-1556

On Site Technologies, LTD.

Date: 20-Aug-98

CLIENT: PNM - Public Service Company of NM

Project: Florance 47X

Lab Order: 9808025

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, 3rd Edition

All method blanks, laboratory spikes, and/or matrix spikes met quality assurance objectives.



ANALYTICAL REPORT

Date: 20-Aug-98

Client:	PNM - Public Service Company of NM	Client Sample Info:	Florance 47X
Work Order:	9808025	Client Sample ID:	9808121400; MW-1
Lab ID:	9808025-01A	Matrix:	AQUEOUS
Project:	Florance 47X	Collection Date:	8/12/98 2:00:00 PM
		COC Record:	7289

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
BTEX						Analyst: DC
		SW8020A				
Benzene	49	0.5		µg/L	1	8/17/98
Toluene	4.7	0.5		µg/L	1	8/17/98
Ethylbenzene	8.8	0.5		µg/L	1	8/17/98
m,p-Xylene	5.7	1		µg/L	1	8/17/98
o-Xylene	ND	0.5		µg/L	1	8/17/98

Qualifiers:	PQL - Practical Quantitation Limit	S - Spike Recovery outside accepted recovery limits
	ND - Not Detected at Practical Quantitation Limit	R - RPD outside accepted recovery limits
	J - Analyte detected below Practical Quantitation Limit	E - Value above quantitation range
	B - Analyte detected in the associated Method Blank	Surr: - Surrogate

OFF: (505) 325-5667



LAB: (505) 325-1556

ANALYTICAL REPORT

Date: 20-Aug-98

Client:	PNM - Public Service Company of NM	Client Sample Info:	Florance 47X
Work Order:	9808025	Client Sample ID:	9808121430; MW-2
Lab ID:	9808025-02A	Matrix:	AQUEOUS
Project:	Florance 47X	Collection Date:	8/12/98 2:30:00 PM
		COC Record:	7289

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
BTEX		SW8020A				Analyst: DC
Benzene	9800	0.5		µg/L	100	8/17/98
Toluene	14000	0.5		µg/L	100	8/17/98
Ethylbenzene	920	0.5		µg/L	100	8/17/98
m,p-Xylene	7400	1		µg/L	100	8/17/98
o-Xylene	1800	0.5		µg/L	100	8/17/98

Qualifiers:	PQL - Practical Quantitation Limit	S - Spike Recovery outside accepted recovery limits
	ND - Not Detected at Practical Quantitation Limit	R - RPD outside accepted recovery limits
	J - Analyte detected below Practical Quantitation Limit	E - Value above quantitation range
	B - Analyte detected in the associated Method Blank	Surr: - Surrogate

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1 of 1

On Site Technologies, LTD.

Date: 20-Aug-98

CLIENT: PNM - Public Service Company of NM
Work Order: 9808025
Project: Florance 47X

QC SUMMARY REPORT
Method Blank

Sample ID: MB1	Batch ID: GC-1_980817	Test Code: SW8020A	Units: µg/L	Analysis Date: 8/17/98	Prep Date:						
Client ID:	9808025	Run ID: GC-1_980817A	SeqNo: 5534								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	.0317	0.5									J
Ethylbenzene	ND	0.5									
m,p-Xylene	ND	1									
Methyl tert-Butyl Ether	ND	1									
o-Xylene	ND	0.5									
Toluene	.075	0.5									J

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

On Site Technologies, LTD.

Date: 20-Aug-98

CLIENT: PNM - Public Service Company of NM
 Work Order: 9808025
 Project: Florance 47X

QC SUMMARY REPORT

Sample Matrix Spike

Sample ID: 9808023-04AMS	Batch ID: GC-1_980817	Test Code: SW8020A	Units: µg/L	Analysis Date 8/17/98	Prep Date:						
Client ID: 9808025	Run ID: GC-1_980817A	SeqNo: 5535									
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	2451	0.5	2000	659.5	89.6%	56	128				
Ethylbenzene	1900	0.5	2000	76.6	91.2%	78	107				
m,p-Xylene	4119	1	4000	672.4	86.2%	67	118				
Methyl tert-Butyl Ether	1881	1	2000	39.05	92.1%	70	130				
o-Xylene	1940	0.5	2000	145	89.7%	78	107				
Toluene	3668	0.5	2000	1814	92.7%	74	116				

Sample ID: 9808023-04AMSD	Batch ID: GC-1_980817	Test Code: SW8020A	Units: µg/L	Analysis Date 8/17/98	Prep Date:						
Client ID: 9808025	Run ID: GC-1_980817A	SeqNo: 5536									
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	2302	0.5	2000	659.5	82.1%	56	128	2451	6.3%	12	
Ethylbenzene	1782	0.5	2000	76.6	85.3%	78	107	1900	6.5%	11	
m,p-Xylene	3867	1	4000	672.4	79.9%	67	118	4119	6.3%	10	
Methyl tert-Butyl Ether	1792	1	2000	39.05	87.7%	70	130	1881	4.8%	15	
o-Xylene	1838	0.5	2000	145	84.6%	78	107	1940	5.4%	14	
Toluene	3430	0.5	2000	1814	80.8%	74	116	3668	6.7%	14	

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
 R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

On Site Technologies, LTD.

Date: 20-Aug-98

CLIENT: PNM - Public Service Company of NM

Work Order: 9808025

Project: Florance 47X

QC SUMMARY REPORT

Laboratory Control Spike - generic

Sample ID: LCS WATER	Batch ID: GC-1_980817	Test Code: SW8020A	Units: µg/L	Analysis Date 8/17/98	Prep Date:						
Client ID:	9808025	Run ID: GC-1_980817A	SeqNo: 5533								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	37.02	0.5	40	0.0317	92.5%	56	128				
Ethylbenzene	37.94	0.5	40	0	94.8%	78	107				
m,p-Xylene	71.68	1	80	0	89.6%	67	118				
Methyl tert-Butyl Ether	42.6	1	40	0	106.5%	70	130				
o-Xylene	37.04	0.5	40	0	92.6%	78	107				
Toluene	36.46	0.5	40	0.075	91.0%	74	116				

Qualifiers:

ND - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

On Site Technologies, LTD.

Date: 20-Aug-98

CLIENT: PNM - Public Service Company of NM
 Work Order: 9808025
 Project: Florance 47X

QC SUMMARY REPORT
 Continuing Calibration Verification Standard

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	20.51	0.5	20	0	102.6%	85	115				
Ethylbenzene	20.55	0.5	20	0	102.8%	85	115				
m,p-Xylene	39.03	1	40	0	97.6%	85	115				
Methyl tert-Butyl Ether	23.05	1	20	0	115.2%	85	115				S
o-Xylene	20.29	0.5	20	0	101.5%	85	115				
Toluene	20.17	0.5	20	0	100.8%	85	115				
1,4-Difluorobenzene	86.45	0	100	0	86.5%	70	130				
4-Bromochlorobenzene	92.22	0	100	0	92.2%	70	130				
Fluorobenzene	83.4	0	100	0	83.4%	70	130				

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	18.51	0.5	20	0	92.6%	85	115				
Ethylbenzene	19.8	0.5	20	0	99.0%	85	115				
m,p-Xylene	36.02	1	40	0	90.0%	85	115				
Methyl tert-Butyl Ether	20.23	1	20	0	101.1%	85	115				
o-Xylene	20.54	0.5	20	0	102.7%	85	115				
Toluene	18.44	0.5	20	0	92.2%	85	115				
1,4-Difluorobenzene	85.77	0	100	0	85.8%	70	130				
4-Bromochlorobenzene	85.5	0	100	0	85.5%	70	130				
Fluorobenzene	81.73	0	100	0	81.7%	70	130				

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
 R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: PNM - Public Service Company of NM
Work Order: 9808025
Project: Florance 47X

QC SUMMARY REPORT
 Continuing Calibration Verification Standard

Sample ID: CCV3 QC0606/07		Batch ID: GC-1_980817		Test Code: SW8020A		Units: µg/L		Analysis Date 8/17/98		Prep Date:	
Client ID: 9808025		Run ID: GC-1_980817A		SeqNo: 5532							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	37.36	0.5	40	0	93.4%	85	115				
Ethylbenzene	38	0.5	40	0	95.0%	85	115				
m,p-Xylene	72.35	1	80	0	90.4%	85	115				
Methyl tert-Butyl Ether	38.12	1	40	0	95.3%	85	115				
o-Xylene	37.64	0.5	40	0	94.1%	85	115				
Toluene	37.58	0.5	40	0	93.9%	85	115				
1,4-Difluorobenzene	85.32	0	100	0	85.3%	70	130				
4-Bromochlorobenzene	84.5	0	100	0	84.5%	70	130				
Fluorobenzene	81.92	0	100	0	81.9%	70	130				

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
 R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: PNM - Public Service Company of NM
Work Order: 9808025
Project: Florance 47X
Test No: SW8020A

**QC SUMMARY REPORT
 SURROGATE RECOVERIES**

BTEX

Sample ID	14FBZ	4BCBZ	FLBZ				
9808008-01A	95	74.3	96.4				
9808012-06A	85.8	86.7	82.5				
9808012-07A	78.2	52.7 *	75				
9808016-01A	79.3	72.4	76.7				
9808016-02A	80.5	84.3	77.6				
9808023-01A	86	90.2	83.2				
9808023-02A	83.6	75.5	80.2				
9808023-03A	82.7	76.6	79.6				
9808023-04A	84.6	82.5	81.4				
9808023-04AMS	83.1	79.9	80				
9808023-04AMSD	83.3	81.5	80.2				
9808023-05A	84.5	84	81				
9808024-01A	86.9	84.2	82.6				
9808024-02A	83.7	86.2	80.8				
9808024-03A	83.3	81	80.4				
9808024-04A	86.5	80.9	82.9				
9808024-05A	86.6	81.7	82.3				
9808024-06A	87	81	82.9				
9808025-01A	84.8	78.2	80.9				
9808025-02A	83	82.9	80				
CCV1 QC0606/07	86.4	92.2	83.4				
CCV2 QC0606/07	85.8	85.5	81.7				
CCV3 QC0606/07	85.3	84.5	81.9				
LCS WATER	86.4	93.2	82.6				
MB1	87.6	91.4	83.9				

Acronym	Surrogate	QC Limits
14FBZ	= 1,4-Difluorobenzene	70-130
4BCBZ	= 4-Bromochlorobenzene	70-130
FLBZ	= Fluorobenzene	70-130

* Surrogate recovery outside acceptance limits

OFF: (505) 325-5667



LAB: (505) 325-1556

December 23, 1998

Maureen Gannon
PNM - Public Service Company of NM
Alvarado Square Mail Stop 0408
Albuquerque, NM 87158
TEL: (505) 241-2974
FAX (505) 241-2340

4th Qtr. 1998

RE: Florance 47X

Order No.: 9812041

Dear Maureen Gannon,

On Site Technologies, LTD. received 3 samples on 12/15/98 for the analyses presented in the following report.

The Samples were analyzed for the following tests:
BTEX (SW8021B)

There were no problems with the analyses and all data for associated QC met EPA or laboratory specifications except where noted in the Case Narrative.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

A handwritten signature in black ink, appearing to read "David Cox".

David Cox

OFF: (505) 325-5667



LAB: (505) 325-1556

On Site Technologies, LTD.

Date: 23-Dec-98

CLIENT: PNM - Public Service Company of NM
Project: Florance 47X
Lab Order: 9812041

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, 3rd Edition

All method blanks, laboratory spikes, and/or matrix spikes met quality assurance objectives.

OFF: (505) 325-5667



LAB: (505) 325-1556

ANALYTICAL REPORT

Date: 23-Dec-98

Client:	PNM - Public Service Company of NM	Client Sample Info:	Florance 47X
Work Order:	9812041	Client Sample ID:	9812151445 MW-1
Lab ID:	9812041-01A	Matrix:	AQUEOUS
Project:	Florance 47X	Collection Date:	12/15/98 2:45:00 PM
		COC Record:	7529

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
BTEX		SW8021B				Analyst: HR
Benzene	46	1		µg/L	1	12/22/98
Toluene	11	1		µg/L	1	12/22/98
Ethylbenzene	5.8	1		µg/L	1	12/22/98
m,p-Xylene	4.7	2		µg/L	1	12/22/98
o-Xylene	ND	1		µg/L	1	12/22/98

Qualifiers:	PQL - Practical Quantitation Limit	S - Spike Recovery outside accepted recovery limits
	ND - Not Detected at Practical Quantitation Limit	R - RPD outside accepted recovery limits
	J - Analyte detected below Practical Quantitation Limit	E - Value above quantitation range
	B - Analyte detected in the associated Method Blank	Surr: - Surrogate

OFF: (505) 325-5667



LAB: (505) 325-1556

ANALYTICAL REPORT

Date: 23-Dec-98

Client:	PNM - Public Service Company of NM	Client Sample Info:	Florance 47X
Work Order:	9812041	Client Sample ID:	9812151500 MW-4 <i>MW-1 Duplicate</i>
Lab ID:	9812041-02A	Matrix:	AQUEOUS
Project:	Florance 47X	Collection Date:	12/15/98 3:00:00 PM
		COC Record:	7529

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
BTEX		SW8021B				Analyst: HR
Benzene	44	1		µg/L	1	12/22/98
Toluene	11	1		µg/L	1	12/22/98
Ethylbenzene	5.8	1		µg/L	1	12/22/98
m,p-Xylene	4.8	2		µg/L	1	12/22/98
o-Xylene	ND	1		µg/L	1	12/22/98

Qualifiers:	PQL - Practical Quantitation Limit	S - Spike Recovery outside accepted recovery limits
	ND - Not Detected at Practical Quantitation Limit	R - RPD outside accepted recovery limits
	J - Analyte detected below Practical Quantitation Limit	E - Value above quantitation range
	B - Analyte detected in the associated Method Blank	Surr: - Surrogate

1 of 1

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- TECHNOLOGY BLENDING INDUSTRY WITH THE ENVIRONMENT -

OFF: (505) 325-5667



LAB: (505) 325-1556

ANALYTICAL REPORT

Date: 23-Dec-98

Client:	PNM - Public Service Company of NM	Client Sample Info:	Florance 47X
Work Order:	9812041	Client Sample ID:	9812151515 MW-2
Lab ID:	9812041-03A	Matrix:	AQUEOUS
Project:	Florance 47X	Collection Date:	12/15/98 3:15:00 PM
		COC Record:	7529

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
BTEX		SW8021B				Analyst: HR
Benzene	12000	100		µg/L	100	12/22/98
Toluene	17000	100		µg/L	100	12/22/98
Ethylbenzene	870	100		µg/L	100	12/22/98
m,p-Xylene	6900	200		µg/L	100	12/22/98
o-Xylene	1800	100		µg/L	100	12/22/98

Qualifiers:	PQL - Practical Quantitation Limit	S - Spike Recovery outside accepted recovery limits
	ND - Not Detected at Practical Quantitation Limit	R - RPD outside accepted recovery limits
	J - Analyte detected below Practical Quantitation Limit	E - Value above quantitation range
	B - Analyte detected in the associated Method Blank	Surr: - Surrogate

On Site Technologies, LTD.

Date: 23-Dec-98

CLIENT: PNM - Public Service Company of NM

Work Order: 9812041

Project: Florance 47X

QC SUMMARY REPORT

Method Blank

Sample ID: MB1	Batch ID: GC-1_981222	Test Code: SW8021B	Units: µg/L	Analysis Date: 12/22/98	Prep Date:						
Client ID:	9812041	Run ID: GC-1_981222A	SeqNo: 9740								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	.1373	1									J
Ethylbenzene	.211	1									J
m,p-Xylene	.5428	2									J
Methyl tert-Butyl Ether	ND	1									
o-Xylene	.244	1									J
Toluene	.2765	1									J

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

On Site Technologies, LTD.

Date: 23-Dec-98

CLIENT: PNM - Public Service Company of NM
Work Order: 9812041
Project: Florance 47X

QC SUMMARY REPORT
Sample Matrix Spike

Sample ID: 9812035-01AMS	Batch ID: GC-1_981222	Test Code: SW8021B	Units: µg/L	Analysis Date 12/22/98	Prep Date:						
Client ID: 9812041	Run ID: GC-1_981222A	SeqNo: 9741									
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	187.6	5	200	0.6055	93.5%	56	128				
Ethylbenzene	195.6	5	200	2.26	96.7%	78	107				
m,p-Xylene	389.8	10	400	4.374	96.4%	67	118				
Methyl tert-Butyl Ether	184.1	5	200	0	92.0%	70	130				
o-Xylene	209.5	5	200	1.841	103.9%	78	107				
Toluene	197.4	5	200	2.739	97.3%	74	116				

Sample ID: 9812035-01AMSD	Batch ID: GC-1_981222	Test Code: SW8021B	Units: µg/L	Analysis Date 12/22/98	Prep Date:						
Client ID: 9812041	Run ID: GC-1_981222A	SeqNo: 9742									
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	190.9	5	200	0.6055	95.1%	56	128	187.6	1.7%	12	
Ethylbenzene	198.8	5	200	2.26	98.2%	78	107	195.6	1.6%	11	
m,p-Xylene	386.4	10	400	4.374	95.5%	67	118	389.8	0.9%	10	
Methyl tert-Butyl Ether	181.1	5	200	0	90.6%	70	130	184.1	1.6%	15	
o-Xylene	195.6	5	200	1.841	96.9%	78	107	209.5	6.9%	14	
Toluene	197.2	5	200	2.739	97.2%	74	116	197.4	0.1%	14	

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

On Site Technologies, LTD.

Date: 23-Dec-98

CLIENT: PNM - Public Service Company of NM

Work Order: 9812041

Project: Florance 47X

QC SUMMARY REPORT
Laboratory Control Spike - generic

Sample ID: LCS WATER	Batch ID: GC-1_981222	Test Code: SW8021B	Units: µg/L	Analysis Date: 12/22/98	Prep Date:						
Client ID: 9812041	Run ID: GC-1_981222A	SeqNo: 9739									
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	37.57	1	40	0.1373	93.6%	56	128				
Ethylbenzene	39.37	1	40	0.211	97.9%	78	107				
m,p-Xylene	76.89	2	80	0.5428	95.4%	67	118				
Methyl tert-Butyl Ether	37.32	1	40	0	93.3%	70	130				
o-Xylene	39.78	1	40	0.244	98.9%	78	107				
Toluene	38.65	1	40	0.2765	95.9%	74	116				

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

On Site Technologies, LTD.

Date: 23-Dec-98

CLIENT: PNM - Public Service Company of NM
Work Order: 9812041
Project: Florance 47X

QC SUMMARY REPORT
Continuing Calibration Verification Standard

Sample ID: CCV1 QC0606/07	Batch ID: GC-1_981222	Test Code: SW8021B	Units: µg/L	Analysis Date 12/22/98	Prep Date:						
Client ID: 9812041	Run ID: GC-1_981222A	SeqNo: 9736									
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	19.72	1	20	0	98.6%	85	115				
Ethylbenzene	20.66	1	20	0	103.3%	85	115				
m,p-Xylene	40.12	2	40	0	100.3%	85	115				
Methyl tert-Butyl Ether	19.5	1	20	0	97.5%	85	115				
o-Xylene	20.92	1	20	0	104.6%	85	115				
Toluene	20.31	1	20	0	101.5%	85	115				
1,4-Difluorobenzene	88.17	0	100	0	88.2%	70	130				
4-Bromochlorobenzene	101.7	0	100	0	101.7%	70	130				
Fluorobenzene	85.26	0	100	0	85.3%	70	130				

Sample ID: CCV2 QC0606/07	Batch ID: GC-1_981222	Test Code: SW8021B	Units: µg/L	Analysis Date 12/22/98	Prep Date:						
Client ID: 9812041	Run ID: GC-1_981222A	SeqNo: 9737									
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	20.12	1	20	0	100.6%	85	115				
Ethylbenzene	21.04	1	20	0	105.2%	85	115				
m,p-Xylene	40.62	2	40	0	101.5%	85	115				
Methyl tert-Butyl Ether	19.26	1	20	0	96.3%	85	115				
o-Xylene	21.19	1	20	0	106.0%	85	115				
Toluene	20.66	1	20	0	103.3%	85	115				
1,4-Difluorobenzene	88.39	0	100	0	88.4%	70	130				
4-Bromochlorobenzene	102.6	0	100	0	102.6%	70	130				
Fluorobenzene	84.99	0	100	0	85.0%	70	130				

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: PNM - Public Service Company of NM
Work Order: 9812041
Project: Florance 47X

QC SUMMARY REPORT
 Continuing Calibration Verification Standard

Sample ID: CCV3 QC0606/07		Batch ID: GC-1_981222		Test Code: SW8021B		Units: µg/L		Analysis Date: 12/22/98		Prep Date:	
Client ID: 9812041		Run ID: GC-1_981222A		SeqNo: 9738							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	39.02	1	40	0	97.6%	85	115				
Ethylbenzene	40.7	1	40	0	101.8%	85	115				
m,p-Xylene	79.27	2	80	0	99.1%	85	115				
Methyl tert-Butyl Ether	38.29	1	40	0	95.7%	85	115				
o-Xylene	41.02	1	40	0	102.6%	85	115				
Toluene	40.08	1	40	0	100.2%	85	115				
1,4-Difluorobenzene	88.08	0	100	0	88.1%	70	130				
4-Bromochlorobenzene	100.8	0	100	0	100.9%	70	130				
Fluorobenzene	85.21	0	100	0	85.2%	70	130				

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
 R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: PNM - Public Service Company of NM
Work Order: 9812041
Project: Florance 47X
Test No: SW8021B

**QC SUMMARY REPORT
 SURROGATE RECOVERIES**

BTEX

Sample ID	14FBZ	4BCBZ	FLBZ
9812028-01A	81.9	94	80.5
9812029-01A	88.1	101	85.6
9812031-01A	89.4	101	86.9
9812031-03A	89.4	100	88.4
9812032-01A	88.4	99.2	84.6
9812035-01AMS	88.8	102	85.7
9812035-01AMSD	87.2	100	84
9812035-02A	84.9	96.8	85.8
9812035-03A	83.5	94.1	86.6
9812036-01A	88.6	103	85.2
9812037-13A	87.8	102	85.2
9812037-18A	100	101	90.5
9812037-24A	93.3	101	87.6
9812037-26A	86.1	99.4	88.6
9812040-01A	88.7	103	85.8
9812041-01A	87.3	102	84.3
9812041-02A	87.7	102	85.2
9812041-03A	87.2	101	84.6
9812044-01A	88.4	102	85.1
CCV1 QC0606/07	88.2	102	85.3
CCV2 QC0606/07	88.4	102	85
CCV3 QC0606/07	88.1	101	85.2
LCS WATER	88.1	101	85.1
MB1	88.7	98.5	85.4

Acronym	Surrogate	QC Limits
14FBZ	= 1,4-Difluorobenzene	70-130
4BCBZ	= 4-Bromochlorobenzene	70-130
FLBZ	= Fluorobenzene	70-130

* Surrogate recovery outside acceptance limits



CHAIN OF CUSTODY RECORD

Date: 12/15/93

Page: 1 of 1

612 E. Murphy Dr. • P.O. Box 2606 • Farmington, NM 87499
 LAB: (505) 325-5667 • FAX: (505) 325-6256

Purchase Order No.:		Job No.:		REPORT RESULTS TO	Name: Maureen Gannon		Title:		
SEND INVOICE TO	Name: Denver Bearden				Company: PNM Gas Services		Mailing Address: Alverado Square, Mail Stop 0408		
	Company: PNM Gas Services		Dept. 324-3763		Mailing Address: Alverado Square, Mail Stop 0408		City, State, Zip: Albuquerque, NM 87158		
	Address: 603 W. Elm Street				City, State, Zip: Albuquerque, NM 87158		Telephone No. 505-848-2974		Telefax No.:
	City, State, Zip: Farmington, NM 87401				Telephone No. 505-848-2974		Telefax No.:		
Sampling Location: Florange 47X				Number of Containers	ANALYSIS REQUESTED				
Sampler: Mark S. Kalianos					<div style="border: 1px solid black; padding: 5px; display: inline-block; transform: rotate(-45deg);"> 12/15/93 9000 </div>				
SAMPLE IDENTIFICATION			SAMPLE		LAB ID				
		DATE	TIME	MATRIX		PRES.			
9312151445				H ₂ O	H ₂ O	2	X		
9312151500				↓	↓	2	X		
9312151515				↓	↓	2	X		
Relinquished by: <i>[Signature]</i>				Date/Time: <u>12/15/93 1600</u>		Received by: <i>[Signature]</i>		Date/Time: <u>12/17/93 1600</u>	
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: <i>[Signature]</i>				Date: <u>12/15/93</u>				Results to be sent to both parties.	
				(Client Signature Must Accompany Request)					

OFF: (505) 325-5667



LAB: (505) 325-1556

February 23, 1999

Maureen Gannon
PNM - Public Service Company of NM
Alvarado Square Mail Stop 0408
Albuquerque, NM 87158
TEL: (505) 241-2974
FAX (505) 241-2340

1st Quarter 1999

RE: Florance M 47X

Order No.: 9902055

Dear Maureen Gannon,

On Site Technologies, LTD. received 3 samples on 2/11/99 for the analyses presented in the following report.

The Samples were analyzed for the following tests:
BTEX (SW8021B)

There were no problems with the analyses and all data for associated QC met EPA or laboratory specifications except where noted in the Case Narrative.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

A handwritten signature in black ink, appearing to read "David Cox", written in a cursive style.

David Cox

**PLEASE PAY FROM
THIS INVOICE**

OFF: (505) 325-5667



LAB: (505) 325-1556

On Site Technologies, LTD.

Date: 23-Feb-99

CLIENT: PNM - Public Service Company of NM

Project: Florance M 47X

Lab Order: 9902055

CASE NARRATIVE

Samples were analyzed using the methods outlined in the following references:

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, 3rd Edition

All method blanks, laboratory spikes, and/or matrix spikes met quality assurance objectives.

OFF: (505) 325-5667



LAB: (505) 325-1556

ANALYTICAL REPORT

Date: 23-Feb-99

Client:	PNM - Public Service Company of NM	Client Sample Info:	Florance M 47X
Work Order:	9902055	Client Sample ID:	9902091015; MW-1
Lab ID:	9902055-01A	Matrix:	AQUEOUS
Project:	Florance M 47X	Collection Date:	2/9/99 10:15:00 AM
		COC Record:	7470

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
BTEX		SW8021B				Analyst: HR
Benzene	33	0.5		µg/L	1	2/15/99
Toluene	6.6	0.5		µg/L	1	2/15/99
Ethylbenzene	5.6	0.5		µg/L	1	2/15/99
m,p-Xylene	4.1	1		µg/L	1	2/15/99
o-Xylene	0.6	0.5		µg/L	1	2/15/99

Qualifiers:	PQL - Practical Quantitation Limit	S - Spike Recovery outside accepted recovery limits
	ND - Not Detected at Practical Quantitation Limit	R - RPD outside accepted recovery limits
	J - Analyte detected below Practical Quantitation Limit	E - Value above quantitation range
	B - Analyte detected in the associated Method Blank	Surr: - Surrogate

1 of 1

P.O. BOX 2606 • FARMINGTON, NM 87499

- TECHNOLOGY BLENDING INDUSTRY WITH THE ENVIRONMENT -

OFF: (505) 325-5667



LAB: (505) 325-1556

ANALYTICAL REPORT

Date: 23-Feb-99

Client:	PNM - Public Service Company of NM	Client Sample Info:	Florance M 47X
Work Order:	9902055	Client Sample ID:	9902091100; MW-2
Lab ID:	9902055-02A	Matrix:	AQUEOUS
Project:	Florance M 47X	Collection Date:	2/9/99 11:00:00 AM
		COC Record:	7470

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
BTEX		SW8021B				Analyst: HR
Benzene	11000	50		µg/L	100	2/15/99
Toluene	16000	50		µg/L	100	2/15/99
Ethylbenzene	720	50		µg/L	100	2/15/99
m,p-Xylene	5800	100		µg/L	100	2/15/99
o-Xylene	1500	50		µg/L	100	2/15/99

Qualifiers:

PQL - Practical Quantitation Limit	S - Spike Recovery outside accepted recovery limits
ND - Not Detected at Practical Quantitation Limit	R - RPD outside accepted recovery limits
J - Analyte detected below Practical Quantitation Limit	E - Value above quantitation range
B - Analyte detected in the associated Method Blank	Surr: - Surrogate

P.O. BOX 2606 • FARMINGTON, NM 87499

- TECHNOLOGY BLENDING INDUSTRY WITH THE ENVIRONMENT -

OFF: (505) 325-5667



LAB: (505) 325-1556

ANALYTICAL REPORT

Date: 23-Feb-99

Client: PNM - Public Service Company of NM **Client Sample Info:** Florance M 47X
Work Order: 9902055 **Client Sample ID:** 9902091145; MW-4
Lab ID: 9902055-03A **Matrix:** AQUEOUS **Collection Date:** 2/9/99 11:45:00 AM
Project: Florance M 47X **COC Record:** 7470

Duplicate
of
MW-2

Parameter	Result	PQL	Qual	Units	DF	Date Analyzed
BTEX		SW8021B				Analyst: HR
Benzene	11000	50		µg/L	100	2/15/99
Toluene	16000	50		µg/L	100	2/15/99
Ethylbenzene	730	50		µg/L	100	2/15/99
m,p-Xylene	5800	100		µg/L	100	2/15/99
o-Xylene	1500	50		µg/L	100	2/15/99

Qualifiers: PQL - Practical Quantitation Limit S - Spike Recovery outside accepted recovery limits
 ND - Not Detected at Practical Quantitation Limit R - RPD outside accepted recovery limits
 J - Analyte detected below Practical Quantitation Limit E - Value above quantitation range
 B - Analyte detected in the associated Method Blank Surr: - Surrogate

On Site Technologies, LTD.

Date: 23-Feb-99

CLIENT: PNM - Public Service Company of NM
Work Order: 9902055
Project: Florance M 47X

QC SUMMARY REPORT
Method Blank

Sample ID: MB1	Batch ID: GC-1_990215	Test Code: SW8021B	Units: µg/L	Analysis Date 2/15/99	Prep Date:						
Client ID:	9902055	Run ID: GC-1_990215A		SeqNo: 11056							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	.0508	0.5									J
Ethylbenzene	.0611	0.5									J
m,p-Xylene	.1669	1									J
Methyl tert-Butyl Ether	ND	1									
o-Xylene	.1145	0.5									J
Toluene	.1432	0.5									J

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

On Site Technologies, LTD.

Date: 23-Feb-99

CLIENT: PNM - Public Service Company of NM

Work Order: 9902055

Project: Florance M 47X

QC SUMMARY REPORT

Sample Matrix Spike

Sample ID: 9902056-01AMS	Batch ID: GC-1_990215	Test Code: SW8021B	Units: µg/L	Analysis Date 2/15/99	Prep Date:						
Client ID: 9902055	Run ID: GC-1_990215A	SeqNo: 11057									
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	7278	50	4000	3380	97.4%	73	115				
Ethylbenzene	5030	50	4000	1074	98.9%	74	117				
m,p-Xylene	21430	100	8000	14630	84.9%	76	112				E
Methyl tert-Butyl Ether	4639	100	4000	0	116.0%	62	122				
o-Xylene	7734	50	4000	3930	95.1%	83	112				
Toluene	9077	50	4000	5290	94.7%	71	120				

Sample ID: 9902056-01AMSD	Batch ID: GC-1_990215	Test Code: SW8021B	Units: µg/L	Analysis Date 2/15/99	Prep Date:						
Client ID: 9902055	Run ID: GC-1_990215A	SeqNo: 11058									
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	7270	50	4000	3380	97.2%	73	115	7278	0.1%	8	
Ethylbenzene	5053	50	4000	1074	99.5%	74	117	5030	0.5%	9	
m,p-Xylene	21500	100	8000	14630	85.8%	76	112	21430	0.3%	9	E
Methyl tert-Butyl Ether	4699	100	4000	0	117.5%	62	122	4639	1.3%	7	
o-Xylene	7768	50	4000	3930	95.9%	83	112	7734	0.4%	9	
Toluene	9096	50	4000	5290	95.1%	71	120	9077	0.2%	9	

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
 R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

On Site Technologies, LTD.

Date: 23-Feb-99

CLIENT: PNM - Public Service Company of NM

Work Order: 9902055

Project: Florance M 47X

QC SUMMARY REPORT
Laboratory Control Spike - generic

Sample ID: LCS WATER	Batch ID: GC-1_990215	Test Code: SW8021B	Units: µg/L	Analysis Date: 2/15/99	Prep Date:						
Client ID:	9902055	Run ID: GC-1_990215A	SeqNo: 11055								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	42.15	0.5	40	0.0508	105.3%	84	110				
Ethylbenzene	42.43	0.5	40	0.0611	105.9%	86	113				
m,p-Xylene	80.09	1	80	0.1669	99.9%	81	114				
Methyl tert-Butyl Ether	47.84	1	40	0	119.6%	69	129				
o-Xylene	41.43	0.5	40	0.1145	103.3%	86	112				
Toluene	41.62	0.5	40	0.1432	103.7%	85	111				

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

On Site Technologies, LTD.

Date: 23-Feb-99

CLIENT: PNM - Public Service Company of NM
Work Order: 9902055
Project: Florance M 47X

QC SUMMARY REPORT
Continuing Calibration Verification Standard

Sample ID: CCV1 QC0606/07	Batch ID: GC-1_990215	Test Code: SW8021B	Units: µg/L	Analysis Date 2/15/99	Prep Date:						
Client ID: 9902055	Run ID: GC-1_990215A	SeqNo: 11052									
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	20.76	0.5	20	0	103.8%	85	115				
Ethylbenzene	21.41	0.5	20	0	107.0%	85	115				
m,p-Xylene	40.37	1	40	0	100.9%	85	115				
Methyl tert-Butyl Ether	24.16	1	20	0	120.8%	85	115				S
o-Xylene	20.94	0.5	20	0	104.7%	85	115				
Toluene	20.93	0.5	20	0	104.6%	85	115				
1,4-Difluorobenzene	95.93	0	100	0	95.9%	90	102				
4-Bromochlorobenzene	99.7	0	100	0	99.7%	93	102				
Fluorobenzene	94.14	0	100	0	94.1%	84	103				

Sample ID: CCV2 QC0606/07	Batch ID: GC-1_990215	Test Code: SW8021B	Units: µg/L	Analysis Date 2/15/99	Prep Date:						
Client ID: 9902055	Run ID: GC-1_990215A	SeqNo: 11053									
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	21.22	0.5	20	0	106.1%	85	115				
Ethylbenzene	21.3	0.5	20	0	106.5%	85	115				
m,p-Xylene	39.92	1	40	0	99.8%	85	115				
Methyl tert-Butyl Ether	23.56	1	20	0	117.8%	85	115				S
o-Xylene	20.78	0.5	20	0	103.9%	85	115				
Toluene	20.9	0.5	20	0	104.5%	85	115				
1,4-Difluorobenzene	97.32	0	100	0	97.3%	90	102				
4-Bromochlorobenzene	101.3	0	100	0	101.3%	93	102				
Fluorobenzene	94.39	0	100	0	94.4%	84	103				

Qualifiers: ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: PNM - Public Service Company of NM
Work Order: 9902055
Project: Florance M 47X

QC SUMMARY REPORT
 Continuing Calibration Verification Standard

Sample ID: CCV3 QC0606/07		Batch ID: GC-1_990215		Test Code: SW8021B		Units: µg/L		Analysis Date 2/15/99		Prep Date:	
Client ID: 9902055		Run ID: GC-1_990215A		SeqNo: 11054							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Benzene	41.22	0.5	40	0	103.1%	85	115				
Ethylbenzene	42.21	0.5	40	0	105.5%	85	115				
m,p-Xylene	79.36	1	80	0	99.2%	85	115				
Methyl tert-Butyl Ether	46.41	1	40	0	116.0%	85	115				S
o-Xylene	41.5	0.5	40	0	103.7%	85	115				
Toluene	41.73	0.5	40	0	104.3%	85	115				
1,4-Difluorobenzene	96.22	0	100	0	96.2%	90	102				
4-Bromochlorobenzene	99.94	0	100	0	99.9%	93	102				
Fluorobenzene	93.9	0	100	0	93.9%	84	103				

Qualifiers: ND - Not Detected at the Reporting Limit
 J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits
 R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: PNM - Public Service Company of NM
Work Order: 9902055
Project: Florance M 47X
Test No: SW8021B

**QC SUMMARY REPORT
 SURROGATE RECOVERIES**

BTEX

Sample ID	14FBZ	4BCBZ	FLBZ
9902048-02A	97.4	101	95
9902051-01A	94.6	99.2	92.4
9902053-01A	92.8	99.9	90.6
9902055-01A	94	101	91.9
9902055-02A	93.9	101	92.3
9902055-03A	94.6	100	92.2
9902056-01A	95.9	99.7	94.3
9902056-01AMS	95.2	100	93.3
9902056-01AMSD	95	101	93.3
9902056-02A	95.7	99.5	94.7
9902057-01A	94.5	97.8	95.6
9902057-02A	93.5	97.3	94.7
9902058-01A	92.2	98.2	90.7
9902058-02A	97	101	95.3
9902058-03A	94.6	101	93.3
9902059-01A	96.9	100	94.2
9902059-02A	96	98.6	92.7
9902059-03A	95.2	98.4	94.1
9902059-04A	90.1	97.5	88.9
9902059-06A	94.7	100	92.9
CCV1 QC0606/07	95.9	99.7	94.1
CCV2 QC0606/07	97.3	101	94.4
CCV3 QC0606/07	96.2	99.9	93.9
LCS WATER	96.8	100	94.1
MB1	97.1	97.3	94.2

Acronym	Surrogate	QC Limits
14FBZ	= 1,4-Difluorobenzene	90-102
4BCBZ	= 4-Bromochlorobenzene	93-102
FLBZ	= Fluorobenzene	84-103

* Surrogate recovery outside acceptance limits



CHAIN OF CUSTODY RECORD

Date: 2/9/99

Page: 1 of 1

612 E. Murphy Dr. • P.O. Box 2606 • Farmington, NM 87499
 LAB: (505) 325-5667 • FAX: (505) 325-6256

Purchase Order No.:		Job No.:		REPORT RESULTS TO	Name: Maureen Gannon		Title:					
SEND INVOICE TO	Name: Denver Bearden		Company: PNM Gas Services		Company: PNM Gas Services							
	Company: PNM Gas Services		Dept. 324-3763		Mailing Address: Alverado Square, Mail Stop 0408							
	Address: 603 W. Elm Street				City, State, Zip: Albuquerque, NM 87158							
	City, State, Zip: Farmington, NM 87401				Telephone No. 505-848-2974		Telefax No.:					
Sampling Location: F Torrance #47X				Number of Containers	ANALYSIS REQUESTED							
Sampler: R Dedrick					/							
SAMPLE IDENTIFICATION			SAMPLE		MATRIX		PRES.		LAB ID			
		DATE	TIME									
9902091015	nw1	2/9/99	10:52		11.0	HL1	✓					
9902091100	nw2	2/9/99	11:00	11.0	HL1	✓						
9902091145	nw4	2/9/99	11:45	11.0	HL1	✓						
Relinquished by: Ronald H. Dedrick				Date/Time: 2/10/99 1652		Received by: [Signature]				Date/Time: 2/10/99 1652		
Relinquished by:				Date/Time:		Received by:				Date/Time:		
Relinquished by:				Date/Time:		Received by:				Date/Time:		
Method of Shipment: Hand Delivered						Rush		24-48 Hours		10 Working Days		
Authorized by: Ronald H. Dedrick Date: 2/9/99										Results to be sent to both parties.		
(Client Signature Must Accompany Request)												