

**3R - 318**

# **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 03 1998  
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**

Copies: WFS(1)  
Operator (1)  
NMOCD District Office (1)  
NMOCD Santa Fe (1)

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

Operator: Amoco  
Sec: 27 Twn: 29N Rng: 9 W Unit: M  
Canyon: Largo

Vulnerable Class: Original  
OCD Ranking: 30  
Lead Agency: NMOCD

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

### **Activities for Previous Year:**

Between December 1996 and August 1997, PNM ceased performing quarterly groundwater sampling at this site after submitting a request for closure due to elevated total dissolved solids (TDS) concentrations (>10000 ppm) in groundwater in all four wells at the site, and PNM's belief that the high TDS was indicative of general background water quality in the local area. OCD denied closure based upon their own test results on groundwater in the Largo Canyon Wash, located approximately 800 feet to the southwest of the well pad. TDS in groundwater beneath the wash was approximately 3000 ppm.

PNM resumed quarterly sampling on August 20, 1997. Subsequent sampling occurred on November 6, 1997 and January 19, 1998. Water levels were measured in the four monitoring wells at the site. PNM conducted groundwater sampling in each well for chemical analyses of 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. The samples were analyzed for BTEX using EPA Method 8020.

### **Results:**

Figure 1 provides a site map showing benzene, toluene, ethylbenzene and xylenes (BTEX) and a sample portion of total dissolved solids (TDS) analytical data for each monitoring well since groundwater contamination was discovered.

Figure(s) 2, 3 and 4 provide groundwater contour maps for the months of August and November 1997 and January 1998, respectively. The groundwater flow direction is westerly to northwesterly beneath the site. Figure 5 presents a groundwater hydrograph of the site since monitoring began. In each well, the groundwater level has risen over time with the exception of the period between November 1997 and January 1998 when water levels were fairly constant.

### **Further Action:**

PNM will continue to monitor the groundwater gradient and perform quarterly groundwater sampling at the Florance 124.

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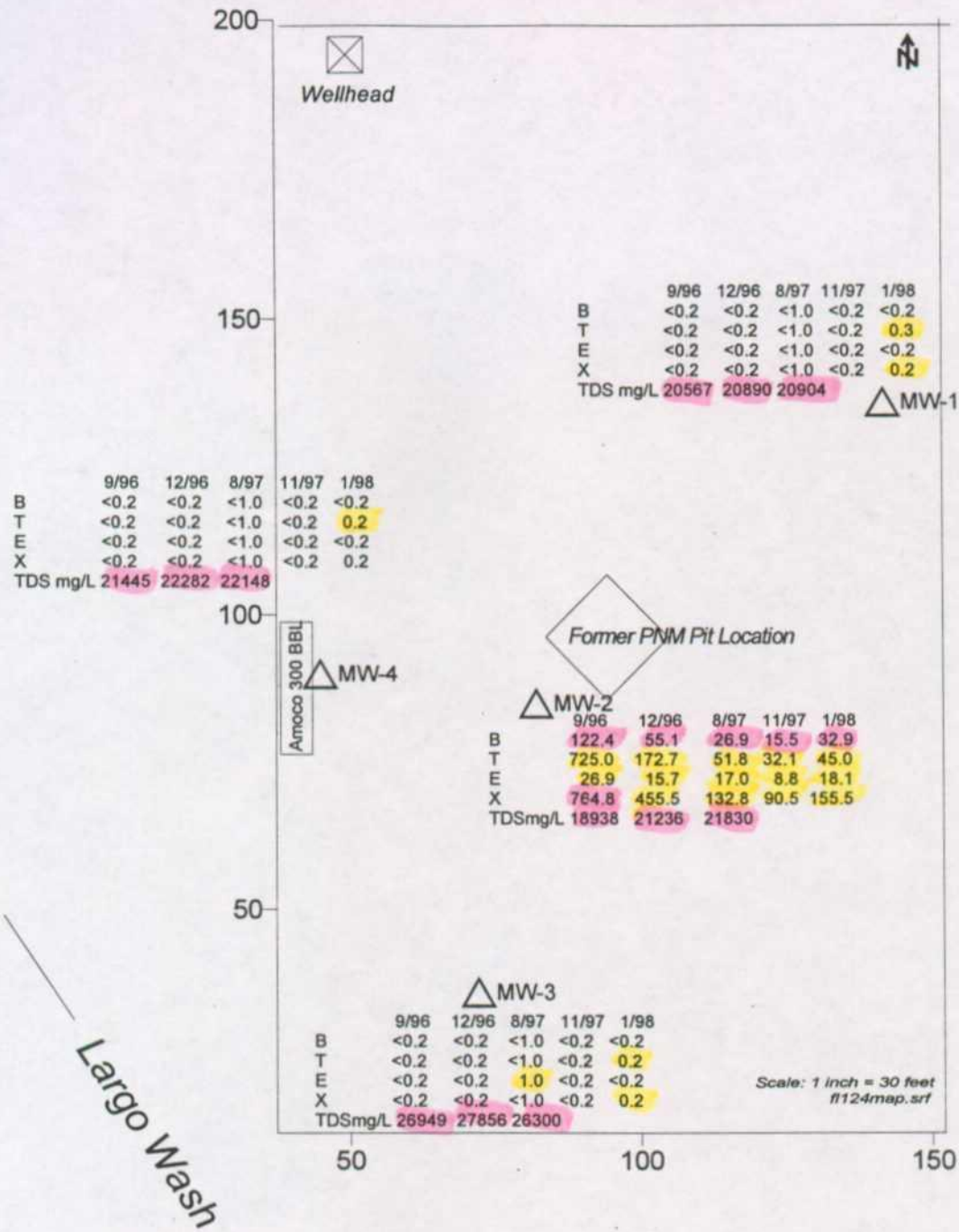
### **Public Service Company of New Mexico - Gas Services**

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

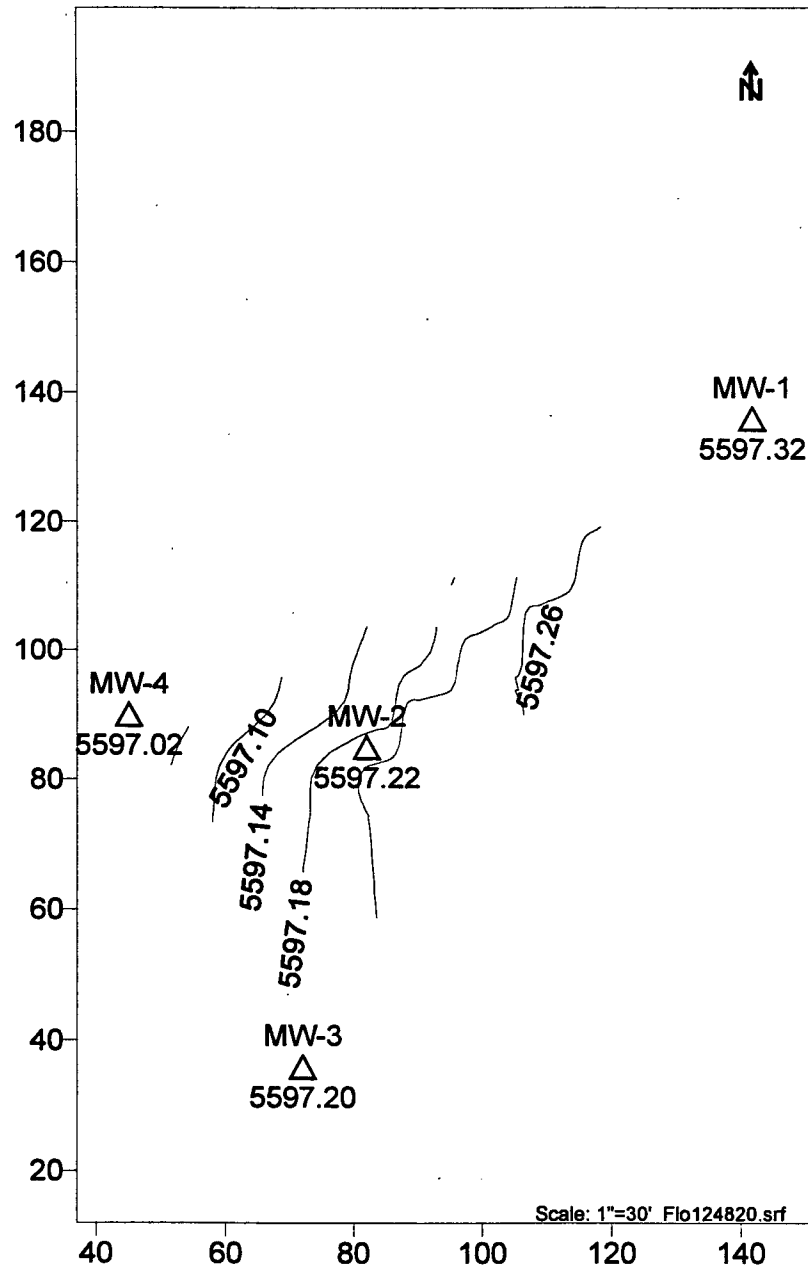
Contact: Maureen Gannon

Telephone: 505-241-2974

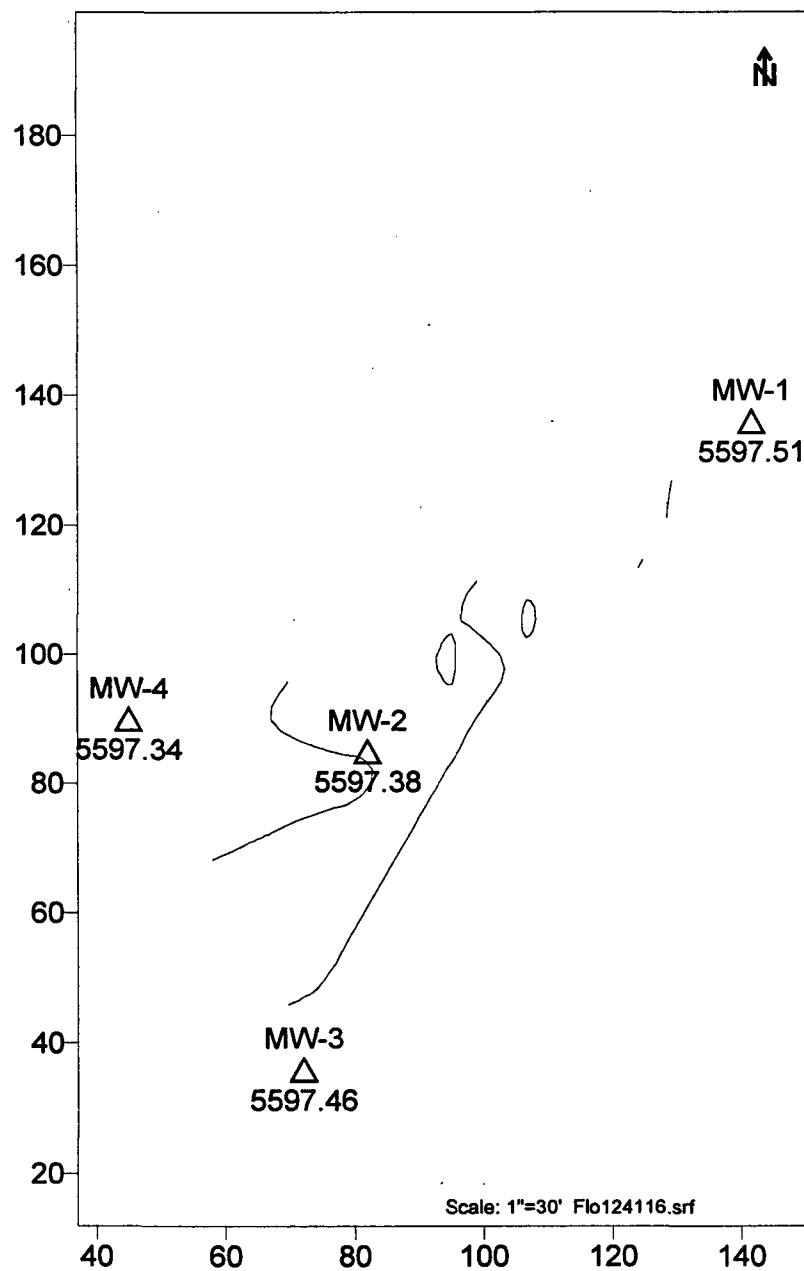
Figure 1. Florance 124: Site Map with Analytical Results  
(concentrations in ppb)



**Figure 2. Florance 124 Groundwater Contour Map (August 20, 1997)**



**Figure 3. Florance 124 Groundwater Contour Map (November 6, 1997)**





**Figure 4. Florance 124 Groundwater Contour Map (January 19, 1998)**

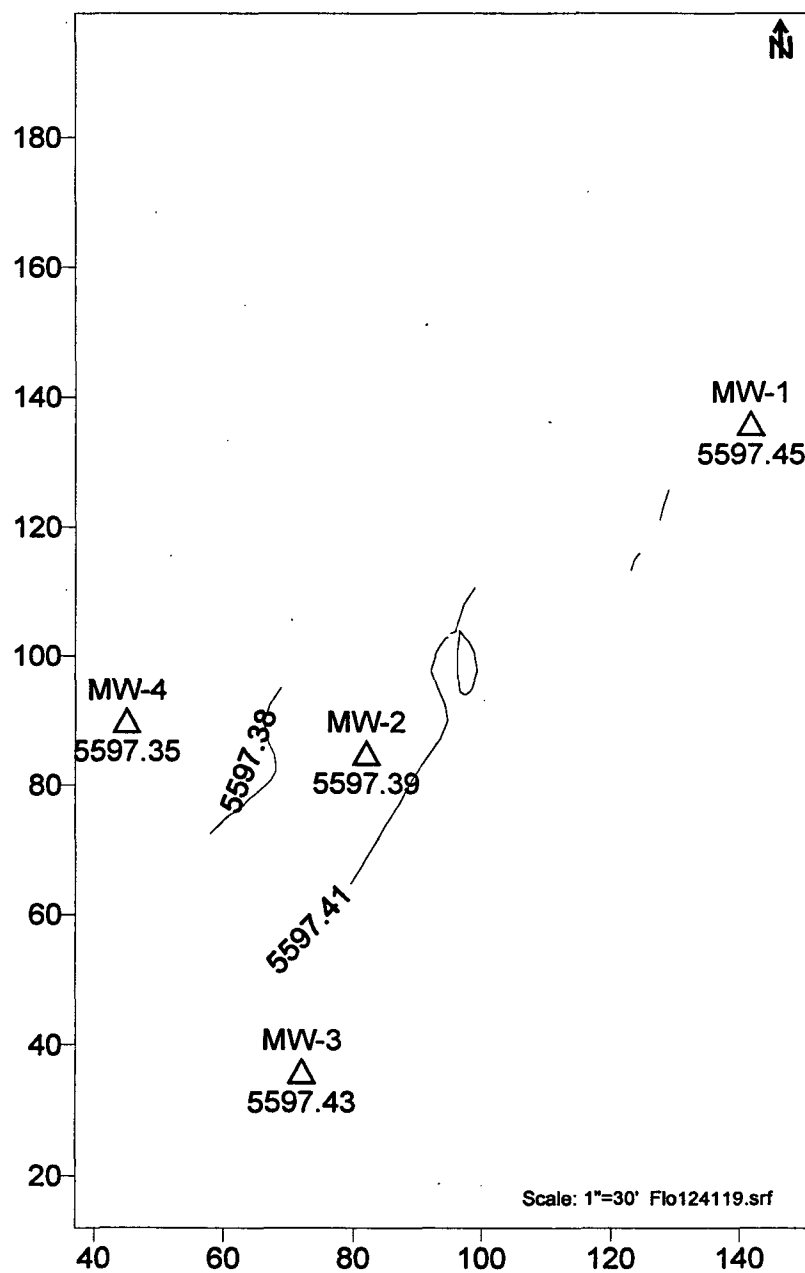
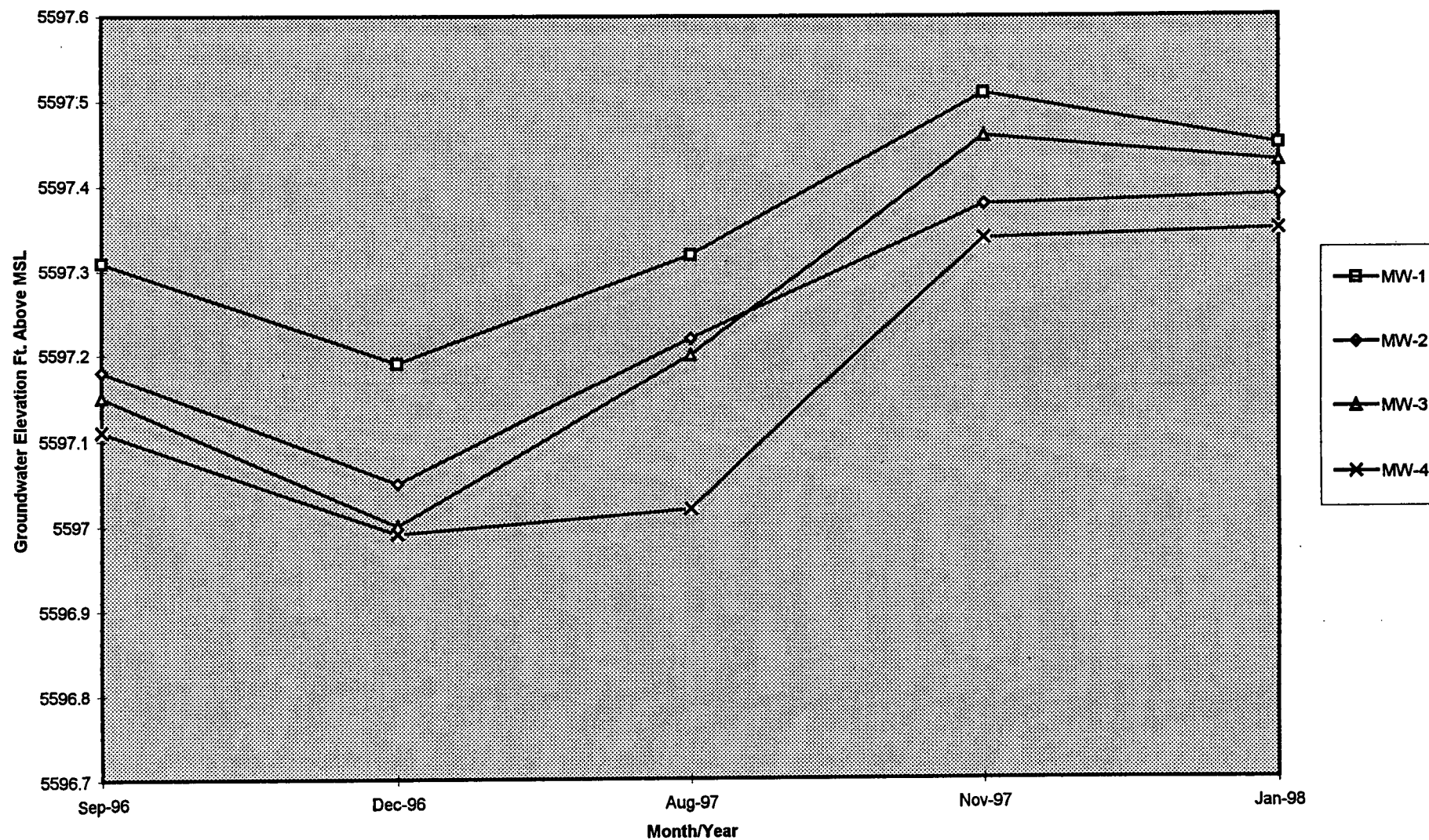


Figure 5. Florance 124 Hydrograph





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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.: *5650*  
Sample No.: *15841*  
Job No.: *2-1000*

Project Name: *PNM Gas Services - Florance 124*

Project Location: *9708201300; MW-1*

Sampled by: *MG/MS*

Date: *20-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*

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### ANALYTICAL REPORT

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

Date: *3-Sep-97*  
 COC No.: *5650*  
 Sample ID.: *15841*  
 Job No.: *2-1000*

Project Name: *PNM Gas Services - Florance 124*Project Location: *9708201300; MW-1*Sampled by: *MS/MG*Date: *20-Aug-97* Time: *13:00*Analyzed by: *HR*Date: *2-Sep-97*

### Laboratory Analysis

| Parameter   | Results as Received | Unit of Measure |  | Results as Received | Unit of Measure |  |
|---|---------------------|-----------------|--|---------------------|-----------------|--|
| <i>Cations</i>  |                     |                 |  |                     |                 |  |
| <i>Sodium Na</i>  | 5875                | mg/L            |  | 255.55              | me/L            |  |
| <i>Calcium Ca</i>   | 360                 | mg/L            |  | 17.96               | me/L            |  |
| <i>Magnesium Mg</i>   | 120                 | mg/L            |  | 9.87                | me/L            |  |
| <i>Potassium K</i>  | 25.3                | mg/L            |  | 0.65                | me/L            |  |
| <i>Anions</i>   |                     |                 |  |                     |                 |  |
| <i>Chloride Cl</i>  | 131                 | mg/L            |  | 3.70                | me/L            |  |
| <i>Sulfate SO4</i>  | 12752               | mg/L            |  | 265.49              | me/L            |  |
| <i>Carbonate CO3 as CaCO3</i>                                 | < 1                 | mg/L            |  | < 0.01              | me/L            |  |
| <i>Bicarbonate HCO3 as CaCO3</i>                              | 432                 | mg/L            |  | 7.08                | me/L            |  |
| <i>Hydroxide OH as CaCO3</i>                                  | < 1                 | mg/L            |  | < 0.01              | me/L            |  |
|   |                     |                 |  |                     |                 |  |
| <i>Total Dissolved Solids Calculated, Sum of Cation/Anion</i> | 19695               | mg/L            | <div style="text-align: right;"> <i>Cation-Anion Balance</i><br/> <hr/> 7.77 <i>Difference Cation-Anion, me/L</i><br/> <hr/> 560.30 <i>Total Cation-Anion, me/L</i><br/> <hr/> 1.4 % <i>Difference Cation-Anion</i><br/> <hr/> <i>Comments</i><br/> <hr/> </div> |                     |                 |  |
| <i>Total Dissolved Solids Dried @ 180 C</i>                   | 20904               | mg/L            |  |                     |                 |  |
| <i>pH</i>   | 7.46                |                 |  |                     |                 |  |
| <i>Conductivity @ 25 C</i>                                    | 22000               | uS/cm           |  |                     |                 |  |
| <i>Total Hardness as CaCO3</i>                                | 1393                | mg/L            |  |                     |                 |  |
|   |                     |                 |  |                     |                 |  |

Approved by: *[Signature]*  
 Date: *9/4/97*

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.: *5650*  
Sample No.: *15842*  
Job No.: *2-1000*

Project Name: *PNM Gas Services - Florance 124*  
Project Location: *9708201330; MW-2*  
Sampled by: *MG/MS* Date: *20-Aug-97* Time: *13:30*  
Analyzed by: *DC* Date: *25-Aug-97*  
Sample Matrix: *Liquid*

| Parameter           | Results as Received | Unit of Measure | Limit of Quantitation | Unit of Measure |
|---------------------|---------------------|-----------------|-----------------------|-----------------|
| <i>Benzene</i>      | <i>26.9</i>         | <i>ug/L</i>     | <i>0.2</i>            | <i>ug/L</i>     |
| <i>Toluene</i>      | <i>51.8</i>         | <i>ug/L</i>     | <i>0.2</i>            | <i>ug/L</i>     |
| <i>Ethylbenzene</i> | <i>17.0</i>         | <i>ug/L</i>     | <i>0.2</i>            | <i>ug/L</i>     |
| <i>m,p-Xylene</i>   | <i>109.0</i>        | <i>ug/L</i>     | <i>0.2</i>            | <i>ug/L</i>     |
| <i>o-Xylene</i>     | <i>33.8</i>         | <i>ug/L</i>     | <i>0.2</i>            | <i>ug/L</i>     |
| <i>TOTAL</i>        | <i>238.5</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: *8/28/97*

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**ANALYTICAL REPORT**

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

Date: *3-Sep-97*  
 COC No.: *5650*  
 Sample ID.: *15842*  
 Job No.: *2-1000*

Project Name: ***PNM Gas Services - Florance 124***Project Location: ***9708201330; MW-2***Sampled by: ***MS/MG***Date: ***20-Aug-97*** Time: ***13:30***Analyzed by: ***HR***Date: ***2-Sep-97*****Laboratory Analysis**

| Parameter   | Results as Received | Unit of Measure |   | Results as Received | Unit of Measure |  |
|---|---------------------|-----------------|---|---------------------|-----------------|--|
| <i>Cations</i>  |                     |                 |   |                     |                 |  |
| Sodium <i>Na</i>  | 6375                | mg/L            |   | 277.30              | me/L            |  |
| Calcium <i>Ca</i>   | 385                 | mg/L            |   | 19.21               | me/L            |  |
| Magnesium <i>Mg</i>                                       | 126                 | mg/L            |   | 10.37               | me/L            |  |
| Potassium <i>K</i>  | 28.6                | mg/L            |   | 0.73                | me/L            |  |
| <i>Anions</i>   |                     |                 |   |                     |                 |  |
| Chloride <i>Cl</i>  | 116                 | mg/L            |   | 3.27                | me/L            |  |
| Sulfate <i>SO4</i>  | 13512               | mg/L            |   | 281.31              | me/L            |  |
| Carbonate <i>CO3 as CaCO3</i>                             | < 1                 | mg/L            |   | < 0.01              | me/L            |  |
| Bicarbonate <i>HCO3 as CaCO3</i>                          | 550                 | mg/L            |   | 9.01                | me/L            |  |
| Hydroxide <i>OH as CaCO3</i>                              | < 1                 | mg/L            |   | < 0.01              | me/L            |  |
|   |                     |                 |   |                     |                 |  |
| Total Dissolved Solids<br>Calculated, Sum of Cation/Anion | 21093               | mg/L            | Cation-Anion Balance<br>14.01 Difference Cation-Anion, me/L<br>601.21 Total Cation-Anion, me/L<br>2.3 % Difference Cation-Anion<br><br>Comments |                     |                 |  |
| Total Dissolved Solids<br>Dried @ 180 C                   | 21830               | mg/L            |   |                     |                 |  |
| pH  | 7.45                |                 |   |                     |                 |  |
| Conductivity @ 25 C                                       | 22600               | uS/cm           |   |                     |                 |  |
| Total Hardness as CaCO3                                   | 1480                | mg/L            |   |                     |                 |  |

Approved by: *DeG*  
 Date: *9/4/97*

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**ANALYTICAL REPORT**

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

Date: *27-Aug-97*  
COC No.: *5650*  
Sample No.: *15843*  
Job No.: *2-1000*

Project Name: *PNM Gas Services - Florance 124*  
Project Location: *9708201400; MW-3*  
Sampled by: *MG/MS* Date: *20-Aug-97* Time: *14:00*  
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*

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## ANALYTICAL REPORT

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

Date: *3-Sep-97*  
 COC No.: *5650*  
 Sample ID.: *15843*  
 Job No.: *2-1000*

Project Name: *PNM Gas Services - Florance 124*  
 Project Location: *9708201400; MW-3*

Sampled by: *MS/MG* Date: *20-Aug-97* Time: *14:00*  
 Analyzed by: *HR* Date: *2-Sep-97*

### Laboratory Analysis

| Parameter                              | Results as Received | Unit of Measure |  | Results as Received | Unit of Measure |  |
|--|---------------------|-----------------|--|---------------------|-----------------|--|
| <i>Cations</i>                         |                     |                 |  |                     |                 |  |
| <i>Sodium Na</i>                       | 7000                | mg/L            |  | 304.48              | me/L            |  |
| <i>Calcium Ca</i>                      | 373                 | mg/L            |  | 18.61               | me/L            |  |
| <i>Magnesium Mg</i>                    | 170                 | mg/L            |  | 13.99               | me/L            |  |
| <i>Potassium K</i>                     | 32.5                | mg/L            |  | 0.83                | me/L            |  |
| <i>Anions</i>                          |                     |                 |  |                     |                 |  |
| <i>Chloride Cl</i>                     | 125                 | mg/L            |  | 3.53                | me/L            |  |
| <i>Sulfate SO4</i>                     | 13630               | mg/L            |  | 283.77              | me/L            |  |
| <i>Carbonate CO3 as CaCO3</i>          | < 1                 | mg/L            |  | < 0.01              | me/L            |  |
| <i>Bicarbonate HCO3 as CaCO3</i>       | 473                 | mg/L            |  | 7.75                | me/L            |  |
| <i>Hydroxide OH as CaCO3</i>           | < 1                 | mg/L            |  | < 0.01              | me/L            |  |
|  |                     |                 |  |                     |                 |  |
| <i>Total Dissolved Solids</i>          |                     |                 | <div style="text-align: center;"> <i>Cation-Anion Balance</i><br/> <hr/> 42.87 <i>Difference Cation-Anion, me/L</i><br/> <hr/> 632.97 <i>Total Cation-Anion, me/L</i><br/> <hr/> 6.8 % <i>Difference Cation-Anion</i><br/> <hr/> <br/> <i>Comments</i><br/> <hr/> </div> |                     |                 |  |
| <i>Calculated, Sum of Cation/Anion</i> | 21804               | mg/L            |  |                     |                 |  |
| <i>Total Dissolved Solids</i>          |                     |                 |  |                     |                 |  |
| <i>Dried @ 180 C</i>                   | 26300               | mg/L            |  |                     |                 |  |
| <i>pH</i>                              | 7.37                |                 |  |                     |                 |  |
| <i>Conductivity @ 25 C</i>             | 26300               | uS/cm           |  |                     |                 |  |
| <i>Total Hardness as CaCO3</i>         | 1631                | mg/L            |  |                     |                 |  |

Approved by: *[Signature]*  
 Date: *9/4/97*

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**ANALYTICAL REPORT**

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

Date: *27-Aug-97*  
COC No.: *5650*  
Sample No.: *15844*  
Job No.: *2-1000*

Project Name: *PNM Gas Services - Florance 124*  
Project Location: *9708201430; MW-4*  
Sampled by: *MG/MS* Date: *20-Aug-97* Time: *14:30*  
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            |
| <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*

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LAB: (505) 325-1556

## ANALYTICAL REPORT

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

Date: *3-Sep-97*  
 COC No.: *5650*  
 Sample ID.: *15844*  
 Job No.: *2-1000*

Project Name: *PNM Gas Services - Florance 124*  
 Project Location: *9708201430; MW-4*

Sampled by: *MS/MG* Date: *20-Aug-97* Time: *14:30*  
 Analyzed by: *HR* Date: *2-Sep-97*

### Laboratory Analysis

| Parameter   | Results as Received | Unit of Measure | Results as Received   | Unit of Measure |
|---|---------------------|-----------------|---|-----------------|
| <i>Cations</i>  |                     |                 |   |                 |
| <i>Sodium Na</i>  | <i>5900</i>         | <i>mg/L</i>     | <i>256.64</i>   | <i>me/L</i>     |
| <i>Calcium Ca</i>   | <i>385</i>          | <i>mg/L</i>     | <i>19.21</i>  | <i>me/L</i>     |
| <i>Magnesium Mg</i>   | <i>127</i>          | <i>mg/L</i>     | <i>10.45</i>  | <i>me/L</i>     |
| <i>Potassium K</i>  | <i>28.1</i>         | <i>mg/L</i>     | <i>0.72</i>   | <i>me/L</i>     |
| <i>Anions</i>   |                     |                 |   |                 |
| <i>Chloride Cl</i>  | <i>117</i>          | <i>mg/L</i>     | <i>3.30</i>   | <i>me/L</i>     |
| <i>Sulfate SO4</i>  | <i>13097</i>        | <i>mg/L</i>     | <i>272.67</i>   | <i>me/L</i>     |
| <i>Carbonate CO3 as CaCO3</i>                                 | <i>&lt; 1</i>       | <i>mg/L</i>     | <i>&lt; 0.01</i>  | <i>me/L</i>     |
| <i>Bicarbonate HCO3 as CaCO3</i>                              | <i>492</i>          | <i>mg/L</i>     | <i>8.06</i>   | <i>me/L</i>     |
| <i>Hydroxide OH as CaCO3</i>                                  | <i>&lt; 1</i>       | <i>mg/L</i>     | <i>&lt; 0.01</i>  | <i>me/L</i>     |
| <i>Total Dissolved Solids Calculated, Sum of Cation/Anion</i> | <i>20146</i>        | <i>mg/L</i>     | <i>Cation-Anion Balance</i><br><i>2.98 Difference Cation-Anion, me/L</i><br><i>571.05 Total Cation-Anion, me/L</i><br><i>0.5 % Difference Cation-Anion</i><br><br><i>Comments</i> |                 |
| <i>Total Dissolved Solids Dried @ 180 C</i>                   | <i>22148</i>        | <i>mg/L</i>     |   |                 |
| <i>pH</i>   | <i>7.51</i>         |                 |   |                 |
| <i>Conductivity @ 25 C</i>                                    | <i>23100</i>        | <i>uS/cm</i>    |   |                 |
| <i>Total Hardness as CaCO3</i>                                | <i>1484</i>         | <i>mg/L</i>     |   |                 |

Approved by: *[Signature]*Date: *9/4/97*

P.O. BOX 2606 • FARMINGTON, NM 87499

TECHNOLOGIES, LTD. BLENDING INDUSTRY WITH THE ENVIRONMENT

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: *27-Aug-97*  
COC No.: *5650*  
Sample No.: *15845*  
Job No.: *2-1000*

Project Name: *PNM Gas Services - Florance 124*

Project Location: *9708201500; MW-5*

Sampled by: *MG/MS* Date: *20-Aug-97* Time: *15:00*

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: *Jack*  
Date: *8/20/97*

P.O. BOX 2606 • FARMINGTON, NM 87499





OFF: (505) 325-5667



LAB: (505) 325-1556

**QUALITY ASSURANCE REPORT***Cation/Anion Balance*

Date: 2-Sep-97

**Quality Control Sample**

| <i>Parameter</i>             | <i>Laboratory Identification</i> | <i>True Value</i> | <i>Analyzed Value</i> | <i>Unit of Measure</i> | <i>% Diff</i> | <i>Limit % Diff</i> |
|------------------------------|----------------------------------|-------------------|-----------------------|------------------------|---------------|---------------------|
| Sodium, Na                   | 0451-QC                          | 2.32              | 2.31                  | mg/L                   | 0             | 10                  |
| Calcium, Ca                  | 0465-QC                          | 2.18              | 2.22                  | mg/L                   | 2             | 10                  |
| Magnesium, Mg                | 0465-QC                          | 1.14              | 1.23                  | mg/L                   | 8             | 10                  |
| Potassium, K                 | 0451-QC                          | 1.33              | 1.34                  | mg/L                   | 1             | 10                  |
| Chloride, Cl                 | 0437-QC                          | 200               | 207                   | mg/L                   | 4             | 10                  |
| Sulfate, SO <sub>4</sub>     | 0541-QC                          | 78                | 81                    | mg/L                   | 4             | 10                  |
| Alkalinity                   | 0541-QC                          | 159               | 167                   | mg/L                   | 5             | 10                  |
| pH                           | 0541-QC                          | 9.13              | 9.29                  |                        | 2             | 10                  |
| Conductivity                 | 0541-QC                          | 740               | 735                   | uS/cm                  | -1            | 15                  |
| Total Dissolved Solids, 180C | 0541-QC                          | 642               | 622                   | uS/cm                  | -3            | 15                  |

**Matrix Spike**

| <i>Parameter</i> | <i>Laboratory Identification</i> | <i>Analyzed Value</i> | <i>Matrix Spike</i> | <i>Spike Value</i> | <i>Unit of Measure</i> | <i>Spike Recovery</i> |
|------------------|----------------------------------|-----------------------|---------------------|--------------------|------------------------|-----------------------|
| Sodium, Na       | 15843-5650                       | 1.40                  | 0.50                | 1.93               | mg/L                   | 102%                  |
| Calcium, Ca      | 15843-5650                       | 1.86                  | 0.50                | 2.50               | mg/L                   | 106%                  |
| Magnesium, Mg    | 15853-5652                       | 0.81                  | 0.50                | 1.36               | mg/L                   | 104%                  |
| Potassium, K     | 15853-5652                       | 1.46                  | 0.50                | 2.00               | mg/L                   | 102%                  |

**Method Blank**

| <i>Parameter</i>         | <i>Laboratory Identification</i> | <i>Analyzed Value</i> | <i>Unit of Measure</i> |
|--------------------------|----------------------------------|-----------------------|------------------------|
| Sodium, Na               | LF-Blank                         | <0.2                  | mg/L                   |
| Calcium, Ca              | LF-Blank                         | <0.05                 | mg/L                   |
| Magnesium, Mg            | LF-Blank                         | <0.05                 | mg/L                   |
| Potassium, K             | LF-Blank                         | <0.05                 | mg/L                   |
| Chloride, Cl             | LF-Blank                         | <3 X DL               | mg/L                   |
| Sulfate, SO <sub>4</sub> | LF-Blank                         | <1                    | mg/L                   |
| Conductivity             | LF-Blank                         | <2                    | uS/cm                  |

(pc) WR  
9/4/97 9/4/97



# CHAIN OF CUSTODY RECORD

550

Date: 8-20-97Page 1 of 1

TECHNOLOGIES, LTD.

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

|   |  |         |                                 |                                  |  |                                 |   |                 |  |   |  |  |  |  |  |
|---|--|---------|---------------------------------|----------------------------------|--|---------------------------------|---|-----------------|--|---|--|--|--|--|--|
| Purchase Order No.:   |  | Job No. |                                 | Name <b>Maureen Gannon</b>       |  | Title                           |   |                 |  |   |  |  |  |  |  |
| SEND<br>INVOICE<br>TO   | Name <b>Denver Bearden</b>                   |         | Company <b>PNM Gas Services</b> |                                  | Mailing Address <b>Alverado Square, Mail Stop 0408</b> |                                 | City, State, Zip <b>Albuquerque, NM 87158</b> |                 |  |   |  |  |  |  |  |
|   | Company <b>PNM Gas Services</b>              |         | Dept. <b>324-3763</b>           |                                  | Telephone No. <b>505-848-2974</b>                      |                                 | Telefax No.                                   |                 |  |   |  |  |  |  |  |
|   | Address <b>603 W. Elm Street</b>             |         |                                 |                                  |  |                                 |   |                 |  |   |  |  |  |  |  |
|   | City, State, Zip <b>Farmington, NM 87401</b> |         |                                 |                                  |  |                                 |   |                 |  |   |  |  |  |  |  |
| Sampling Location:<br><b>FLORANCE 124</b>   |  |         |                                 | ANALYSIS REQUESTED               |  |                                 |   |                 |  |   |  |  |  |  |  |
| Sampler:<br><b>M. Sikelianos / M. Gannon</b>  |  |         |                                 | Number of Containers             |  |                                 |   |                 |  |   |  |  |  |  |  |
| SAMPLE IDENTIFICATION   |  |         |                                 | SAMPLE<br>DATE TIME MATRIX PRES. |  | LAB ID                          |   |                 |  |   |  |  |  |  |  |
| 9708201300 MW1  |  |         |                                 | 8/20/97 - H <sub>2</sub> O HCL   |  | 15841-5650                      |   |                 |  |   |  |  |  |  |  |
| * 9708201330 MW2  |  |         |                                 | ↓ ↓ ↓ ↓                          |  | 15842-                          |   |                 |  |   |  |  |  |  |  |
| 9708201400 MW3  |  |         |                                 | ↓ ↓ ↓ ↓                          |  | 15843-                          |   |                 |  |   |  |  |  |  |  |
| 9708201430 MW4  |  |         |                                 | ↓ ↓ ↓ ↓                          |  | 15844-                          |   |                 |  |   |  |  |  |  |  |
| 9708201500 MW5  |  |         |                                 | 8-20-97 - H <sub>2</sub> O HCL   |  | 15845- ✓                        |   |                 |  |   |  |  |  |  |  |
| Relinquished by: <b>Maureen Gannon</b>  |  |         |                                 | Date/Time <b>8-20-97</b>         |  | Received by: <b>[Signature]</b> |   |                 |  | Date/Time <b>8/20/97 1540</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 |  | Special Instructions:<br><b>Results to be sent to both parties.</b> |  |  |  |  |  |
| Authorized by: <b>M. Gannon</b><br>(Client Signature <u>Must</u> Accompany Request) |  |         |                                 | Date <b>8-20-97</b>              |  |                                 |   |                 |  |   |  |  |  |  |  |

Distribution: White - On Site Yellow - LAB Pink - Sampler Goldenrod - Client

4-11-97 SAMPLE



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.: *7082*  
Sample No.: *16792*  
Job No.: *2-1000*

Project Name: *PNM Gas Services - Florance 124*  
Project Location: *9711061330; MW-1*  
Sampled by: *MG*  
Analyzed by: *DC*  
Sample Matrix: *Liquid*

Date: *6-Nov-97* Time: *13:30*  
Date: *12-Nov-97*

| 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*

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.: *7082*  
Sample No.: *16792*  
Job No.: *2-1000*

Project Name: *PNM Gas Services - Florance 124*  
Project Location: *9711061330; MW-1*  
Sampled by: *MG* Date: *6-Nov-97* Time: *13:30*  
Analyzed by: *HR* Date: *17-Nov-97*  
Sample Matrix: *Liquid*

#### *Laboratory Analysis*

| Parameter                          | Results as Received | Limit of Quantitation | Unit of Measure | Method                  |
|------------------------------------|---------------------|-----------------------|-----------------|-------------------------|
| <i>Total Dissolved Solids. TDS</i> | <i>1130</i>         | <i>10</i>             | <i>mg/L</i>     | <i>EPA Method 160.1</i> |

#### *Quality Assurance Report*

##### *Quality Control Sample*

| Parameter                     | LAB ID No.      | True Value | Analyzed Value | Unit of Measure | RPD      | Limit RPD |
|-------------------------------|-----------------|------------|----------------|-----------------|----------|-----------|
| <i>Total Dissolved Solids</i> | <i>0563-STD</i> | <i>732</i> | <i>788</i>     | <i>mg/L</i>     | <i>7</i> | <i>10</i> |

##### *Duplication*

| Laboratory Identification | RPD         | Limit RPD   |
|---------------------------|-------------|-------------|
| <i>16830-6576</i>         | <i>12.8</i> | <i>15.0</i> |

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.: *7082*  
Sample No.: *16793*  
Job No.: *2-1000*

Project Name: *PNM Gas Services - Florance 124*  
Project Location: *9711061400; MW-2*  
Sampled by: *MG*  
Analyzed by: *DC*  
Sample Matrix: *Liquid*

Date: *6-Nov-97* Time: *14:00*  
Date: *12-Nov-97*

| Parameter           | Results as Received | Unit of Measure | Limit of Quantitation | Unit of Measure |
|---------------------|---------------------|-----------------|-----------------------|-----------------|
| <i>Benzene</i>      | <i>15.5</i>         | <i>ug/L</i>     | <i>0.2</i>            | <i>ug/L</i>     |
| <i>Toluene</i>      | <i>32.1</i>         | <i>ug/L</i>     | <i>0.2</i>            | <i>ug/L</i>     |
| <i>Ethylbenzene</i> | <i>8.8</i>          | <i>ug/L</i>     | <i>0.2</i>            | <i>ug/L</i>     |
| <i>m,p-Xylene</i>   | <i>64.0</i>         | <i>ug/L</i>     | <i>0.2</i>            | <i>ug/L</i>     |
| <i>o-Xylene</i>     | <i>26.5</i>         | <i>ug/L</i>     | <i>0.2</i>            | <i>ug/L</i>     |
| <i>TOTAL</i>        | <i>146.9</i>        | <i>ug/L</i>     |                       |                 |

*26.9*  
*51.8*  
*17.0*  
*109.0*  
*33.8*  

---

*238.5*

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.: *7082*  
Sample No.: *16793*  
Job No.: *2-1000*

Project Name: *PNM Gas Services - Florance 124*  
Project Location: *9711061400; MV:-2*  
Sampled by: *MG* Date: *6-Nov-97* Time: *14:00*  
Analyzed by: *HR* Date: *17-Nov-97*  
Sample Matrix: *Liquid*

#### *Laboratory Analysis*

| Parameter                          | Results as Received | Limit of Quantitation | Unit of Measure | Method                  |
|------------------------------------|---------------------|-----------------------|-----------------|-------------------------|
| <i>Total Dissolved Solids, TDS</i> | <i>700</i>          | <i>10</i>             | <i>mg/L</i>     | <i>EPA Method 160.1</i> |

#### *Quality Assurance Report*

##### *Quality Control Sample*

| Parameter                     | LAB ID No.      | True Value | Analyzed Value | Unit of Measure | RPD      | Limit RPD |
|-------------------------------|-----------------|------------|----------------|-----------------|----------|-----------|
| <i>Total Dissolved Solids</i> | <i>0563-STD</i> | <i>732</i> | <i>788</i>     | <i>mg/L</i>     | <i>7</i> | <i>10</i> |

##### *Duplication*

| Laboratory Identification | RPD         | Limit RPD   |
|---------------------------|-------------|-------------|
| <i>16830-6576</i>         | <i>12.8</i> | <i>15.0</i> |

Approved by:

Date:

*JAC*  
*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.: *7082*  
Sample No.: *16794*  
Job No.: *2-1000*

Project Name: *PNM Gas Services - Florance 124*  
Project Location: *9711061430; MW-3*  
Sampled by: *MG*  
Analyzed by: *DC*  
Sample Matrix: *Liquid*

Date: *6-Nov-97* Time: *14:30*  
Date: *12-Nov-97*

| 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>   | 0.2                 | ug/L            | 0.2                   | ug/L            |
| <i>o-Xylene</i>     | ND                  | ug/L            | 0.2                   | ug/L            |
| <i>TOTAL</i>        | 0.2                 | 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*

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.: *7082*  
Sample No.: *16794*  
Job No.: *2-1000*

Project Name: *PNM Gas Services - Florance 124*  
Project Location: *9711061430; MW-3*  
Sampled by: *MG*  
Analyzed by: *HR*  
Sample Matrix: *Liquid*

Date: *6-Nov-97* Time: *14:30*  
Date: *17-Nov-97*

#### Laboratory Analysis

| Parameter                          | Results as Received | Limit of Quantitation | Unit of Measure | Method                  |
|------------------------------------|---------------------|-----------------------|-----------------|-------------------------|
| <i>Total Dissolved Solids, TDS</i> | <i>26900</i>        | <i>10</i>             | <i>mg/L</i>     | <i>EPA Method 160.1</i> |

#### Quality Assurance Report

##### Quality Control Sample

| Parameter                     | LAB ID No.      | True Value | Analyzed Value | Unit of Measure | RPD      | Limit RPD |
|-------------------------------|-----------------|------------|----------------|-----------------|----------|-----------|
| <i>Total Dissolved Solids</i> | <i>0563-STD</i> | <i>732</i> | <i>788</i>     | <i>mg/L</i>     | <i>7</i> | <i>10</i> |

##### Duplication

| Laboratory Identification | RPD         | Limit RPD   |
|---------------------------|-------------|-------------|
| <i>16830-6576</i>         | <i>12.8</i> | <i>15.0</i> |

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.: *7082*  
Sample No.: *16795*  
Job No.: *2-1000*

Project Name: *PNM Gas Services - Florance 124*  
Project Location: *9711061500; MW-4*  
Sampled by: *MG* Date: *6-Nov-97* Time: *15:00*  
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: *JAG*  
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.: *7082*  
Sample No.: *16795*  
Job No.: *2-1000*

Project Name: *PNM Gas Services - Florance 124*  
Project Location: *9711061500; MV-4*  
Sampled by: *MG* Date: *6-Nov-97* Time: *15:00*  
Analyzed by: *HR* Date: *17-Nov-97*  
Sample Matrix: *Liquid*

#### Laboratory Analysis

| Parameter                          | Results as Received | Limit of Quantitation | Unit of Measure | Method                  |
|------------------------------------|---------------------|-----------------------|-----------------|-------------------------|
| <i>Total Dissolved Solids, TDS</i> | <i>22300</i>        | <i>10</i>             | <i>mg/L</i>     | <i>EPA Method 160.1</i> |

#### Quality Assurance Report

##### Quality Control Sample

| Parameter                     | LAB ID No.      | True Value | Analyzed Value | Unit of Measure | RPD      | Limit RPD |
|-------------------------------|-----------------|------------|----------------|-----------------|----------|-----------|
| <i>Total Dissolved Solids</i> | <i>0563-STD</i> | <i>732</i> | <i>788</i>     | <i>mg/L</i>     | <i>7</i> | <i>10</i> |

##### Duplication

| Laboratory Identification | RPD         | Limit RPD   |
|---------------------------|-------------|-------------|
| <i>16830-6576</i>         | <i>12.8</i> | <i>15.0</i> |

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



## for EPA Method 8020

Reference Standard QC No.: 0529/30-QC

| <i>Parameter</i>                               | <i>Result</i> | <i>Unit of Measure</i> |
|--|---------------|------------------------|
| <i>Average Amount of All Analytes In Blank</i> | < 0.2         | ppb                    |

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

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

|                           | S1<br>Percent<br>Recovered | S2<br>Percent<br>Recovered |                           | S1<br>Percent<br>Recovered | S2<br>Percent<br>Recovered |
|---------------------------|----------------------------|----------------------------|---------------------------|----------------------------|----------------------------|
| Laboratory Identification |                            |                            | Laboratory Identification |                            |                            |
| Limit Percent Recovered   | (70-130)                   |                            | Limit Percent Recovered   | (70-130)                   |                            |
|                           |                            |                            |                           |                            |                            |
| 16792-7082                | 95                         |                            |                           |                            |                            |
| 16793-7082                | 87                         |                            |                           |                            |                            |
| 16794-7082                | 95                         |                            |                           |                            |                            |
| 16795-7082                | 95                         |                            |                           |                            |                            |
|                           |                            |                            |                           | 412                        | (DC)                       |
|                           |                            |                            |                           | 11/24/97                   | 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: *23-Jan-98*  
COC No.: *7134*  
Sample No.: *17366*  
Job No.: *2-1000*

Project Name: *PNM Gas Services - Florance 124*  
Project Location: *9801191011; MW-1*  
Sampled by: *RD* Date: *19-Jan-98* Time: *10:11*  
Analyzed by: *DC* Date: *21-Jan-98*  
Sample Matrix: *Liquid*

| Parameter           | Results as Received | Unit of Measure | Limit of Quantitation | Unit of Measure |
|---------------------|---------------------|-----------------|-----------------------|-----------------|
| <i>Benzene</i>      | ND                  | ug/L            | 0.2                   | ug/L            |
| <i>Toluene</i>      | 0.3                 | ug/L            | 0.2                   | ug/L            |
| <i>Ethylbenzene</i> | ND                  | ug/L            | 0.2                   | ug/L            |
| <i>m,p-Xylene</i>   | 0.3                 | ug/L            | 0.2                   | ug/L            |
| <i>o-Xylene</i>     | ND                  | ug/L            | 0.2                   | ug/L            |
| <i>TOTAL</i>        | 0.5                 | 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: *2/2/98*

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: *23-Jan-98*  
COC No.: *7134*  
Sample No.: *17367*  
Job No.: *2-1000*

Project Name: *PNM Gas Services - Florance 124*  
Project Location: *9801191031; MW-2*  
Sampled by: *RD* Date: *19-Jan-98* Time: *10:31*  
Analyzed by: *DC* Date: *21-Jan-98*  
Sample Matrix: *Liquid*

| Parameter           | Results as Received | Unit of Measure | Limit of Quantitation | Unit of Measure |
|---------------------|---------------------|-----------------|-----------------------|-----------------|
| <i>Benzene</i>      | 32.9                | ug/L            | 0.2                   | ug/L            |
| <i>Toluene</i>      | 45.2                | ug/L            | 0.2                   | ug/L            |
| <i>Ethylbenzene</i> | 18.1                | ug/L            | 0.2                   | ug/L            |
| <i>m,p-Xylene</i>   | 114.1               | ug/L            | 0.2                   | ug/L            |
| <i>o-Xylene</i>     | 41.4                | ug/L            | 0.2                   | ug/L            |
| <i>TOTAL</i>        | 251.5               | 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: *2/2/98*

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: *23-Jan-98*  
COC No.: *7134*  
Sample No.: *17368*  
Job No.: *2-1000*

Project Name: *PNM Gas Services - Florance 124*  
Project Location: *9801191046; MW-3*  
Sampled by: *RD* Date: *19-Jan-98* Time: *10:46*  
Analyzed by: *DC* Date: *21-Jan-98*  
Sample Matrix: *Liquid*

| Parameter           | Results as Received | Unit of Measure | Limit of Quantitation | Unit of Measure |
|---------------------|---------------------|-----------------|-----------------------|-----------------|
| <i>Benzene</i>      | ND                  | ug/L            | 0.2                   | ug/L            |
| <i>Toluene</i>      | 0.2                 | ug/L            | 0.2                   | ug/L            |
| <i>Ethylbenzene</i> | ND                  | ug/L            | 0.2                   | ug/L            |
| <i>m,p-Xylene</i>   | 0.2                 | ug/L            | 0.2                   | ug/L            |
| <i>o-Xylene</i>     | ND                  | ug/L            | 0.2                   | ug/L            |
| <i>TOTAL</i>        | 0.4                 | 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: *2/2/98*

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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: *23-Jan-98*  
COC No.: *7134*  
Sample No.: *17369*  
Job No.: *2-1000*

Project Name: *PNM Gas Services - Florance 124*  
Project Location: *9801191103; MW-4*  
Sampled by: *RD* Date: *19-Jan-98* Time: *11:03*  
Analyzed by: *DC* Date: *21-Jan-98*  
Sample Matrix: *Liquid*

| Parameter           | Results as Received | Unit of Measure | Limit of Quantitation | Unit of Measure |
|---------------------|---------------------|-----------------|-----------------------|-----------------|
| <i>Benzene</i>      | ND                  | ug/L            | 0.2                   | ug/L            |
| <i>Toluene</i>      | 0.2                 | ug/L            | 0.2                   | ug/L            |
| <i>Ethylbenzene</i> | ND                  | ug/L            | 0.2                   | ug/L            |
| <i>m,p-Xylene</i>   | 0.2                 | ug/L            | 0.2                   | ug/L            |
| <i>o-Xylene</i>     | ND                  | ug/L            | 0.2                   | ug/L            |
| <i>TOTAL</i>        | 0.4                 | 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: *2/2/98*

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### ANALYTICAL REPORT

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

Date: *23-Jan-98*  
COC No.: *7134*  
Sample No.: *17370*  
Job No.: *2-1000*

Project Name: *PNM Gas Services - Florance 124*  
Project Location: *9801191121; MW-5*  
Sampled by: *RD* Date: *19-Jan-98* Time: *11:21*  
Analyzed by: *DC* Date: *21-Jan-98*  
Sample Matrix: *Liquid*

| Parameter           | Results as Received | Unit of Measure | Limit of Quantitation | Unit of Measure |
|---------------------|---------------------|-----------------|-----------------------|-----------------|
| <i>Benzene</i>      | <i>21.2</i>         | <i>ug/L</i>     | <i>0.2</i>            | <i>ug/L</i>     |
| <i>Toluene</i>      | <i>30.7</i>         | <i>ug/L</i>     | <i>0.2</i>            | <i>ug/L</i>     |
| <i>Ethylbenzene</i> | <i>12.4</i>         | <i>ug/L</i>     | <i>0.2</i>            | <i>ug/L</i>     |
| <i>m,p-Xylene</i>   | <i>72.1</i>         | <i>ug/L</i>     | <i>0.2</i>            | <i>ug/L</i>     |
| <i>o-Xylene</i>     | <i>26.0</i>         | <i>ug/L</i>     | <i>0.2</i>            | <i>ug/L</i>     |
| <i>TOTAL</i>        | <i>162.4</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: *2/2/98*

P.O. BOX 2606 • FARMINGTON, NM 87499

OFF: (505) 325-5667



LAB: (505) 325-1556

**QUALITY ASSURANCE REPORT**  
for EPA Method 8200

Date Analyzed: 21-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             | 30.0       | 30.6           | 2   | 15%   |
| Toluene      | ppb             | 30.0       | 30.8           | 3   | 15%   |
| Ethylbenzene | ppb             | 30.0       | 31.4           | 5   | 15%   |
| m,p-Xylene   | ppb             | 60.0       | 59.7           | 0   | 15%   |
| o-Xylene     | ppb             | 30.0       | 31.1           | 4   | 15%   |

**Matrix Spike**

| Parameter    | 1 - Percent Recovered | 2 - Percent Recovered | Limit    | RPD | Limit |
|--------------|-----------------------|-----------------------|----------|-----|-------|
| Benzene      | 102                   | 92                    | (39-150) | 2   | 20%   |
| Toluene      | 108                   | 105                   | (46-148) | 2   | 20%   |
| Ethylbenzene | 108                   | 105                   | (32-160) | 3   | 20%   |
| m,p-Xylene   | 104                   | 102                   | (35-145) | 3   | 20%   |
| o-Xylene     | 110                   | 107                   | (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)             |                      |
| 17366-7134                | 101                  |                      |                           |                      |                      |
| 17367-7134                | 92                   |                      |                           |                      |                      |
| 17368-7134                | 102                  |                      |                           |                      |                      |
| 17369-7134                | 102                  |                      |                           |                      |                      |
| 17370-7134                | 92                   |                      |                           |                      |                      |
|                           |                      |                      |                           | 2/12<br>1/26/98      | (nc)<br>2/2/98       |

S1: Fluorobenzene



