

**3R186**

**2010 AGWMR**

**03/02/2011**



BUILDING A BETTER WORLD

3R 186

March 2, 2011

Mr. Glenn von Gonten  
New Mexico Oil Conservation Division (NMOCD)  
1220 South St., Francis Drive  
Santa Fe, New Mexico 87505

**RE: El Paso Tennessee Pipeline Company Pit Groundwater Remediation Sites  
2010 Annual Reports**

RECEIVED OGD  
2011 MAR -4 P 12:24

Dear Mr. Von Gonten:

MWH Americas, Inc., on behalf of El Paso Tennessee Pipeline Company (EPTPC), is submitting the enclosed 2010 Annual Reports for each of EPTPC's 21 remaining San Juan River Basin pit groundwater remediation sites. The reports present the 2010 sampling and product recovery data and include recommendations for 2011 activities at these sites.

The 2010 Annual Reports are divided into three volumes based on location type. The volumes are as follows:

| <u>Volume</u> | <u>Location Type</u>                   |
|---------------|--|
| 1             | Federal Land                           |
| 2             | Non-Federal Land (Excl. Navajo Nation) |
| 3             | Navajo Nation                          |

If you have any questions concerning the enclosed reports, please call either Ian Yanagisawa of EPTPC (713-420-7361) or myself (303-291-2276).

Sincerely,

Jed Smith  
Project Manager

encl.

cc: Bill Freeman – NNEPA, Shiprock, NM (Volume 3 Only)  
Bill Liese – BLM, Farmington, NM (Volume 1 Only)  
Brandon Powell – NMOCD, Aztec, NM (Volumes 1, 2, and 3)  
Ian Yanagisawa – EPTPC (Volumes 1, 2, and 3 - Electronic)



El Paso Tennessee  
Pipeline Company

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San Juan Basin Pit Program  
Groundwater Sites Project

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Final 2010 Annual Report  
Federal Sites (Volume 1)

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March 2011



**MWH**

1801 California Street, Suite 2900  
Denver, Colorado 80202

**2010 ANNUAL GROUNDWATER REPORT  
FEDERAL SITES VOLUME I  
EL PASO TENNESSEE PIPELINE COMPANY**

**TABLE OF CONTENTS**

| <b>METER or<br/>LINE ID</b> | <b>NMOCD<br/>CASE NO.</b> | <b>SITE NAME</b>      | <b>TOWNSHIP</b> | <b>RANGE</b> | <b>SECTION</b> | <b>UNIT</b> |
|-----------------------------|---------------------------|-----------------------|-----------------|--------------|----------------|-------------|
| 87640                       | 3RP-155-0                 | Canada Mesa #2        | 24N             | 06W          | 24             | I           |
| 89961                       | 3RP-170-0                 | Fields A#7A           | 32N             | 11W          | 34             | E           |
| 73220                       | 3RP-068-0                 | Fogelson 4-1 Com. #14 | 29N             | 11W          | 4              | P           |
| 89894                       | 3RP-186-0                 | Hammond #41A          | 27N             | 08W          | 25             | O           |
| 97213                       | 3RP-190-0                 | Hamner #9             | 29N             | 09W          | 20             | A           |
| 94715                       | 3RP-196-0                 | James F. Bell #1E     | 30N             | 13W          | 10             | P           |
| 89232                       | 3RP-202-0                 | Johnston Fed #6A      | 31N             | 09W          | 35             | F           |
| LD072                       | 3RP-204-0                 | K27 LD072             | 25N             | 06W          | 4              | E           |
| LD174                       | 3RP-212-0                 | LAT L 40              | 28N             | 04W          | 13             | H           |
| LD151                       | 3RP-213-0                 | Lat 0-21 Line Drip    | 30N             | 09W          | 12             | O           |
| 94810                       | 3RP-223-0                 | Miles Fed 1A          | 26N             | 07W          | 5              | F           |
| 89620                       | 3RP-235-0                 | Sandoval GC A #1A     | 30N             | 09W          | 35             | C           |

\* The Hamner #9 site was submitted for closure in January 2009 and is pending approval from NMOCD. There were no monitoring activities for this site in 2010.

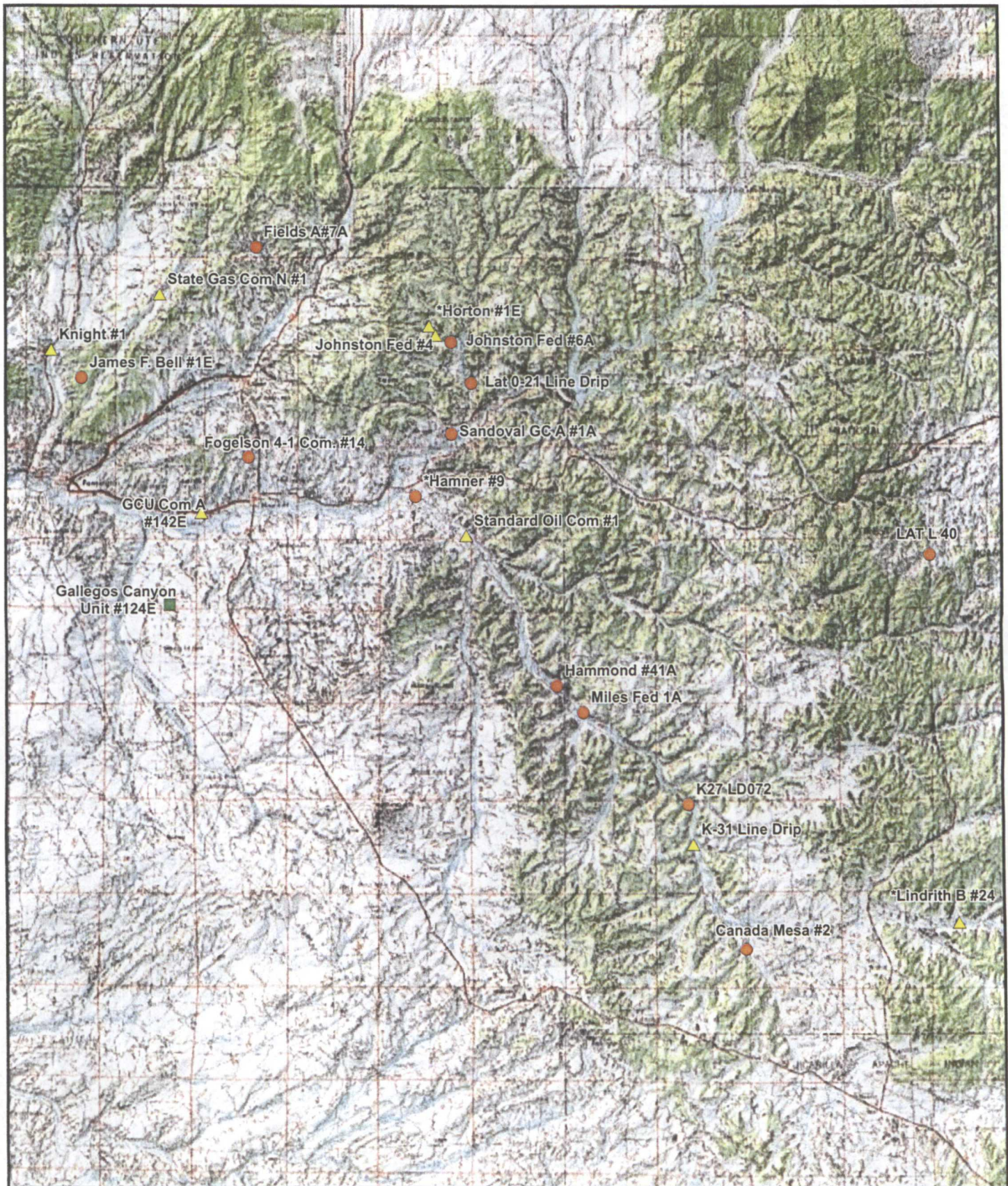


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## **LIST OF ACRONYMS**

|        |   |
|--------|---|
| AMSL   | above mean sea level                        |
| B      | benzene                                     |
| btoc   | below top of casing                         |
| E      | ethylbenzene                                |
| EPTPC  | El Paso Tennessee Pipeline Company          |
| ft     | foot/feet                                   |
| GWEL   | groundwater elevation                       |
| ID     | identification                              |
| MW     | monitor well                                |
| NMWQCC | New Mexico Water Quality Control Commission |
| T      | toluene                                     |
| TOC    | top of casing                               |
| NA     | not applicable                              |
| NMOCD  | New Mexico Oil Conservation Division        |
| NS     | not sampled                                 |
| ORC    | oxygen-releasing compound                   |
| µg/L   | micrograms per liter                        |
| X      | total xylenes                               |

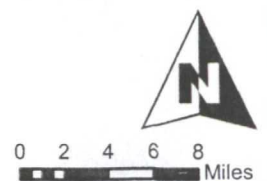




# **LEGEND**

- Sites on Federal Land
- Sites on Navajo Nation Land
- ▲ Sites on State/Fee "Non-Federal" Lands

\*Closure Request Pending with the NMOCD.



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PROJECT: SAN JUAN RIVER BASIN

TITLE: Site Locations, February 2011

FIGURE:

**1**



**EPTPC GROUNDWATER SITES  
2010 ANNUAL GROUNDWATER REPORT**

**Hammond #41A  
Meter Code: 89894**

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**SITE DETAILS**

|                              |                   |                  |                  |                      |
|------------------------------|-------------------|------------------|------------------|----------------------|
| <b>Legal Description:</b>    | <b>Town:</b> 27N  | <b>Range:</b> 8W | <b>Sec:</b> 25   | <b>Unit:</b> O       |
| <b>NMOCD Haz Ranking:</b> 40 | <b>Land Type:</b> | Federal          | <b>Operator:</b> | M&G Drilling Company |

**PREVIOUS ACTIVITIES**

|                                |      |                           |       |                               |      |
|--------------------------------|------|---------------------------|-------|-------------------------------|------|
| <b>Site Assessment:</b>        | 6/94 | <b>Excavation:</b>        | 7/94  | <b>Soil Boring:</b>           | 7/95 |
| <b>Monitor Well:</b>           | 5/97 | <b>Geoprobe:</b>          | 11/96 | <b>Additional MWs:</b>        | 9/99 |
| <b>Downgradient MWs:</b>       | 9/99 | <b>Replace MW:</b>        | NA    | <b>Quarterly Initiated:</b>   | 6/97 |
| <b>ORC Nutrient Injection:</b> | 7/98 | <b>Re-Excavation:</b>     | 5/97  | <b>PSH Removal Initiated:</b> | NA   |
| <b>Annual Initiated:</b>       | 9/99 | <b>Quarterly Resumed:</b> | NA    | <b>PSH Removal in 2010?</b>   | No   |

**SUMMARY OF 2010 ACTIVITIES**

**MW-1:** Semiannual water level monitoring (February and September) was performed during 2010.

**MW-2:** Semiannual water level monitoring (February and September) was performed during 2010.

**MW-3:** Semiannual water level monitoring (February and September) was performed during 2010.

**TMW-1:** Semiannual groundwater sampling (February and September) was performed during 2010.

**Site-Wide Activities:** No other activities were performed at this Site during 2010.

**SITE MAPS**

Site maps (February and September) are attached as Figures 1 and 2.

**SUMMARY TABLES AND GRAPHS**

- Historic analytical and water level data are summarized in Table 1 and presented graphically in Figures 3 through 6.
- The 2010 laboratory reports are presented in Attachment 1 (included on CD).

**EPTPC GROUNDWATER SITES  
2010 ANNUAL GROUNDWATER REPORT**

**Hammond #41A  
Meter Code: 89894**

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- The 2010 field documentation is presented in Attachment 2 (included on CD).

**GEOLOGIC LOGS AND WELL COMPLETION DIAGRAMS**

No subsurface activities were performed at this Site during 2010.

**DISPOSITION OF GENERATED WASTES**

All purge water was taken to the El Paso Natural Gas Rio Vista Compressor Station.

**ISOCONCENTRATION MAPS**

No isoconcentration maps were prepared for this Site; however, the attached Site maps present both the water level and analytical data collected during 2010.

**RESULTS**

- Groundwater flow at the Site is generally to the northwest.
- The low-level (i.e., close to or below the NMWQCC standards) BTEX concentrations remain steady in TMW-1. Benzene concentrations at TMW-1 were 13.8 µg/L and 2.7 µg/L in February and September 2010, respectively. These results straddled the NMWQCC benzene standard. Toluene, ethylbenzene, and total xylenes concentrations were below their respective standards during each sample event in 2010.
- As of 2002, wells MW-1, MW-2 and MW-3 have met four consecutive quarters of BTEX concentrations below NMWQCC standards. TMW-1 was installed in 2003, as requested by NMOCD.

**REMAINING CLOSURE REQUIREMENTS**

- This site is being managed per the procedures set forth in the document entitled, "Remediation Plan for Groundwater Encountered During Pit Closure Activities" (El Paso Natural Gas Company / El Paso Field Services Company, 1995). This remediation plan was conditionally approved by the New Mexico Oil Conservation Division (OCD) in correspondence dated November 30, 1995; and the OCD approval conditions were adopted into El Paso's program methods.
- In order to meet the remaining closure requirements at this site, the following condition must be achieved: groundwater contaminant concentrations in the monitor wells must meet the NMWQCC standards for at least 4 consecutive quarters. Alternatively, concentrations must be reduced to below background levels; however, there are no established background concentrations for the remaining constituents of concern. Currently, TMW-1 requires additional monitoring. The remaining applicable standards are:



**EPTPC GROUNDWATER SITES  
2010 ANNUAL GROUNDWATER REPORT,**

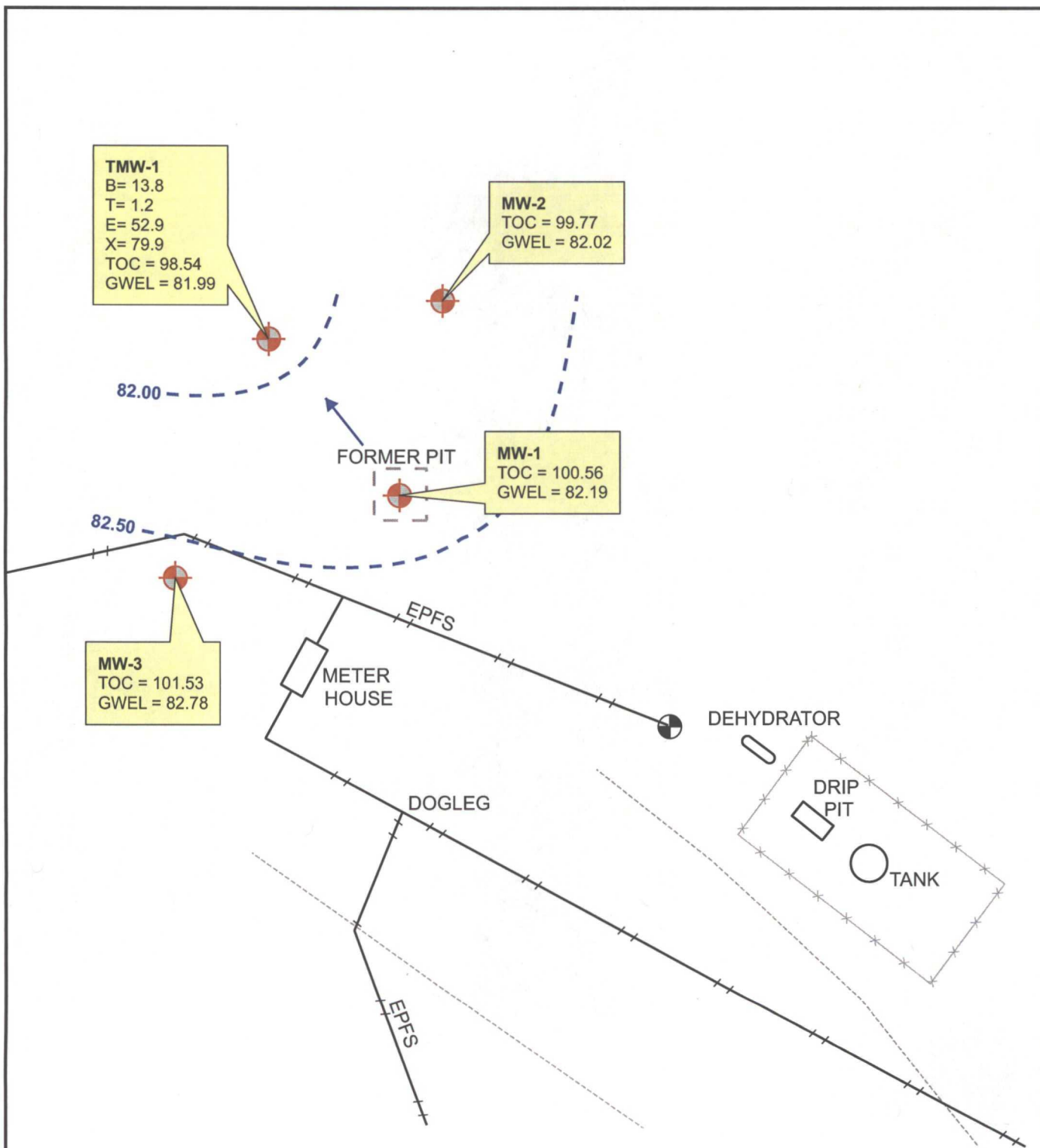
**Hammond #41A  
Meter Code: 89894**

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| Constituent   | NMWQCC GW<br>Standard (µg/L) |
|---------------|------------------------------|
| Benzene       | 10                           |
| Toluene       | 750                          |
| Ethylbenzene  | 750                          |
| Total Xylenes | 620                          |

**RECOMMENDATIONS**

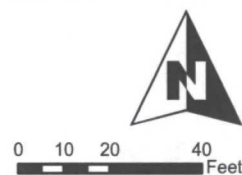
- EPTPC recommends conducting semiannual sampling of TMW-1 until BTEX concentrations fall beneath their respective NMWQCC closure standards. At that time, quarterly sampling will be conducted until four clean quarters have been observed and the Site can be submitted for closure.
- Because historic samples indicated that MW-1, MW-2, and MW-3 have achieved closure standards, these wells will be sampled again only during final closure sampling.



# **LEGEND**

- MW-4 Existing Monitoring / Observation Well
- Groundwater Flow Direction
- 1275 Potentiometric Surface Contour (Inferred Where Dashed)

B Benzene (ug/L)  
 T Toluene (ug/L)  
 E Ethylbenzene (ug/L)  
 X Total Xylenes (ug/L)  
 TOC Top of Casing (ft. AMSL)  
 GWEL Groundwater Elevation (ft. \*)  
 \* = Elevations in feet relative to a 100 ft benchmark.



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PROJECT:

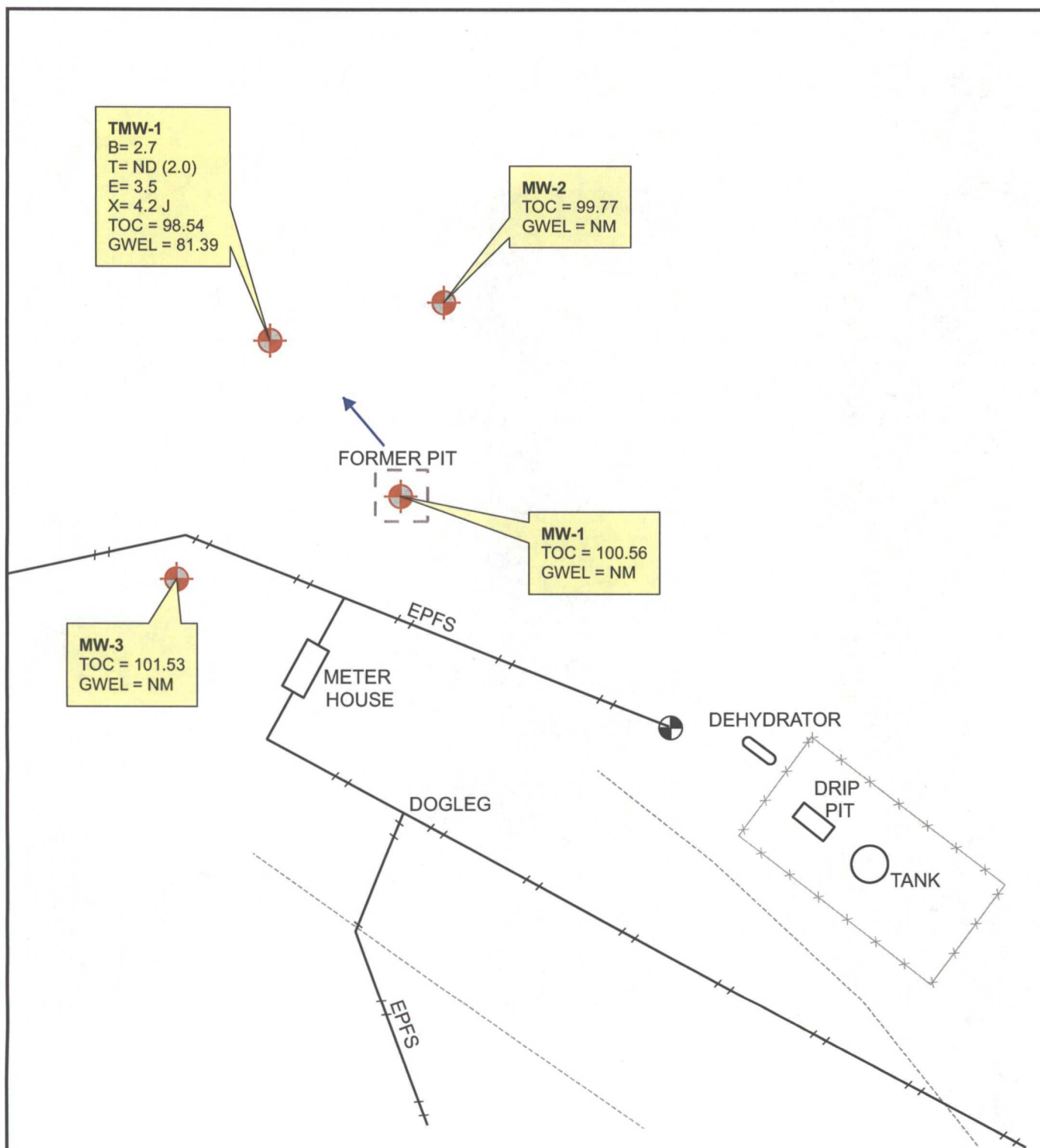
HAMMOND #41A

TITLE:

Groundwater Potentiometric Surface Map,  
and BTEX Concentrations - February 16, 2010

FIGURE:

1



| LEGEND |  |   |  |
|--------|--|---|--|
| MW-4   |  | Existing Monitoring / Observation Well                    | B Benzene (ug/L)                                       |
|        |  | Historic Groundwater Flow Direction                       | T Toluene (ug/L)                                       |
| NM     |  | Wells were obstructed by roots during gauging activities. | E Ethylbenzene (ug/L)                                  |
| ND     |  | Not Detected; Reporting Limit Shown In Parenthesis        | X Total Xylenes (ug/L)                                 |
| J      |  | Result Flagged as Estimated                               | TOC Top of Casing (ft. AMSL)                           |
|        |  |   | GWEL Groundwater Elevation (ft. *)                     |
|        |  |   | * = Elevations in feet relative to a 100 ft benchmark. |



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PROJECT:

HAMMOND #41A

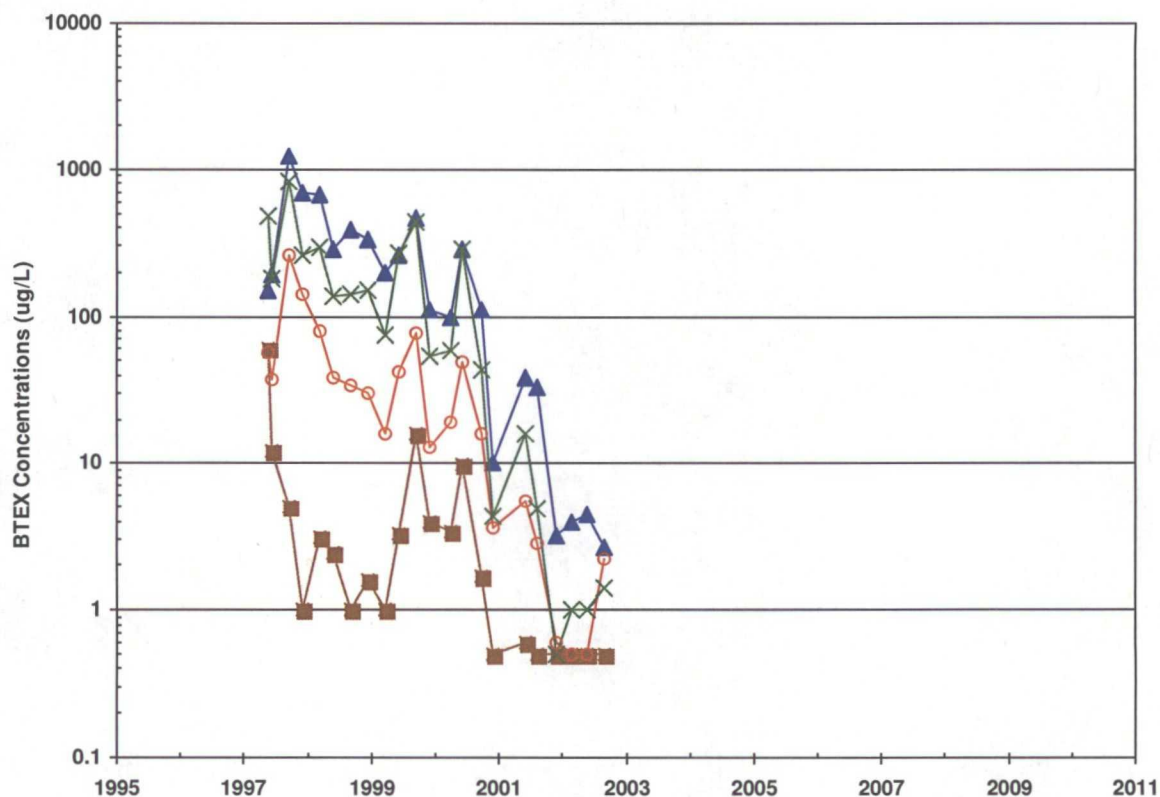
TITLE:

Groundwater Potentiometric Surface Map,  
and BTEX Concentrations - September 27, 2010

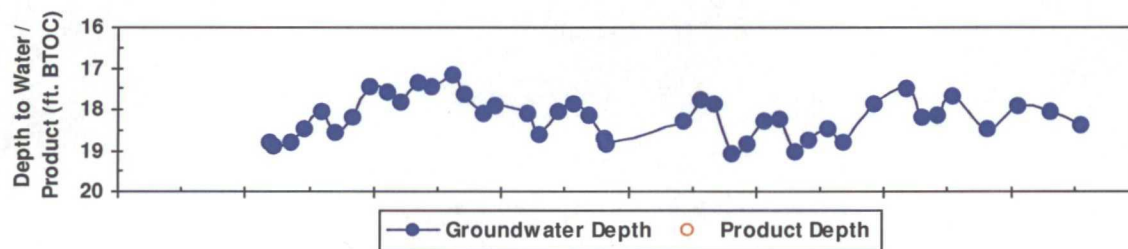
FIGURE:

2

**FIGURE 3**  
**SUMMARY OF GROUNDWATER BTEX CONCENTRATIONS AND FLUID LEVELS**  
**HAMMOND #41A (METER #89894)**  
**MW01**

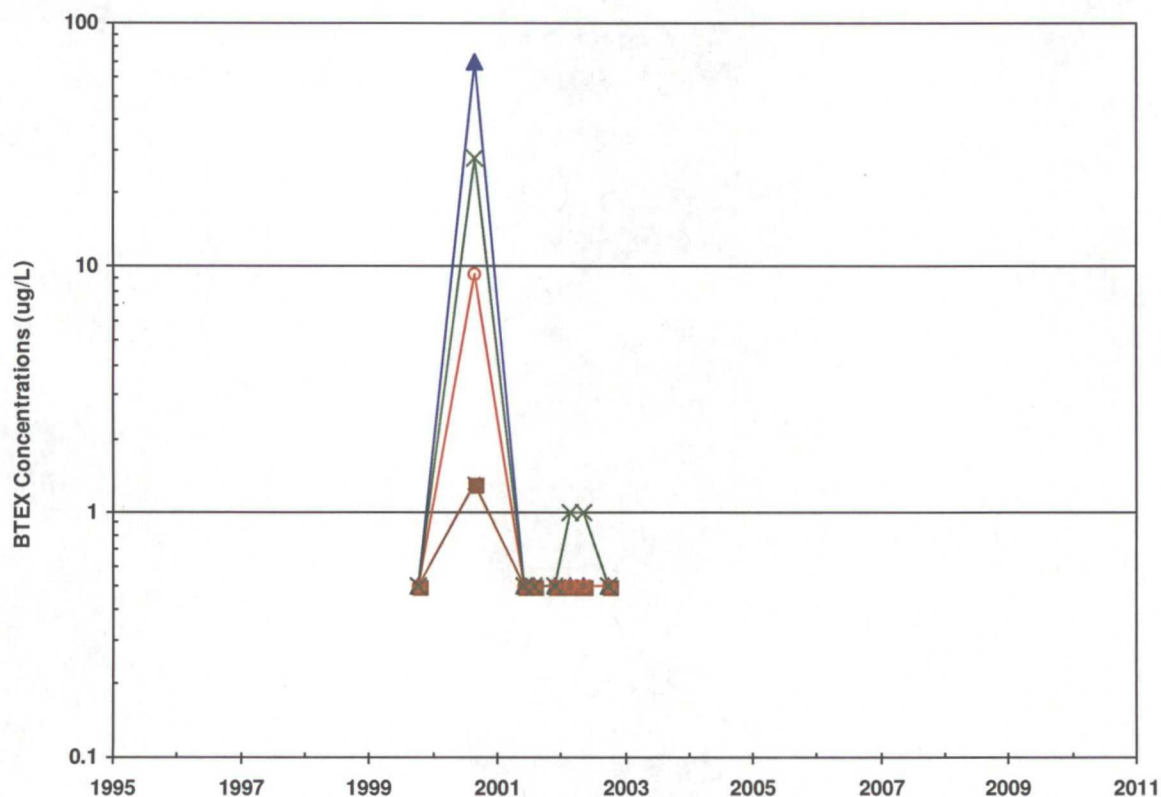


|                    |             |                  |                   |
|--------------------|-------------|------------------|-------------------|
| —▲— Benzene        | —■— Toluene | —○— Ethylbenzene | —×— Total Xylenes |
| NM Std.: (10 ug/L) | (750 ug/L)  | (750 ug/L)       | (620 ug/L)        |

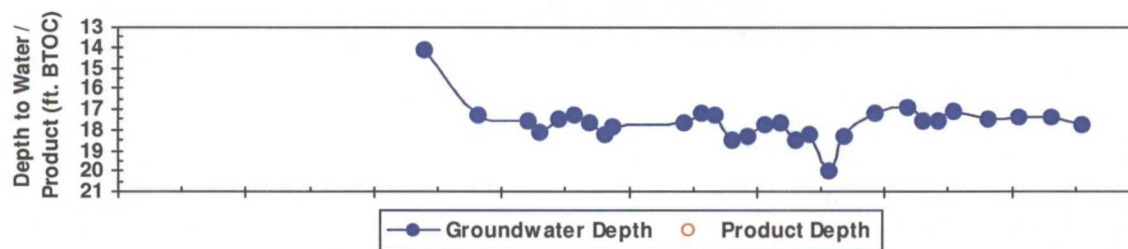


|                       |                   |
|-----------------------|-------------------|
| —●— Groundwater Depth | —○— Product Depth |
|-----------------------|-------------------|

**FIGURE 4**  
**SUMMARY OF GROUNDWATER BTEX CONCENTRATIONS AND FLUID LEVELS**  
**HAMMOND #41A (METER #89894)**  
**MW02**



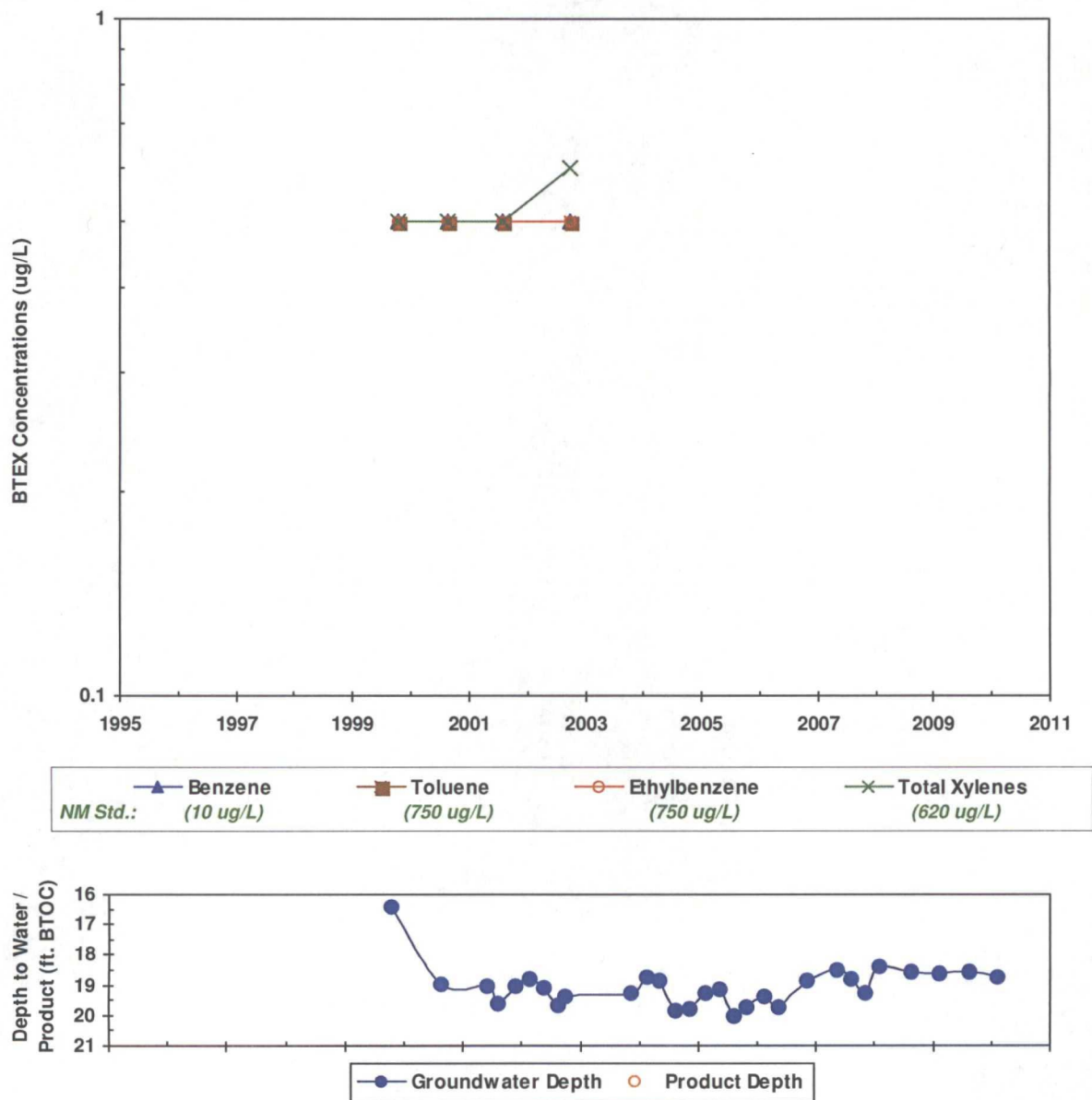
|                    |             |                  |                   |
|--------------------|-------------|------------------|-------------------|
| —▲— Benzene        | —■— Toluene | —○— Ethylbenzene | —×— Total Xylenes |
| NM Std.: (10 ug/L) | (750 ug/L)  | (750 ug/L)       | (620 ug/L)        |



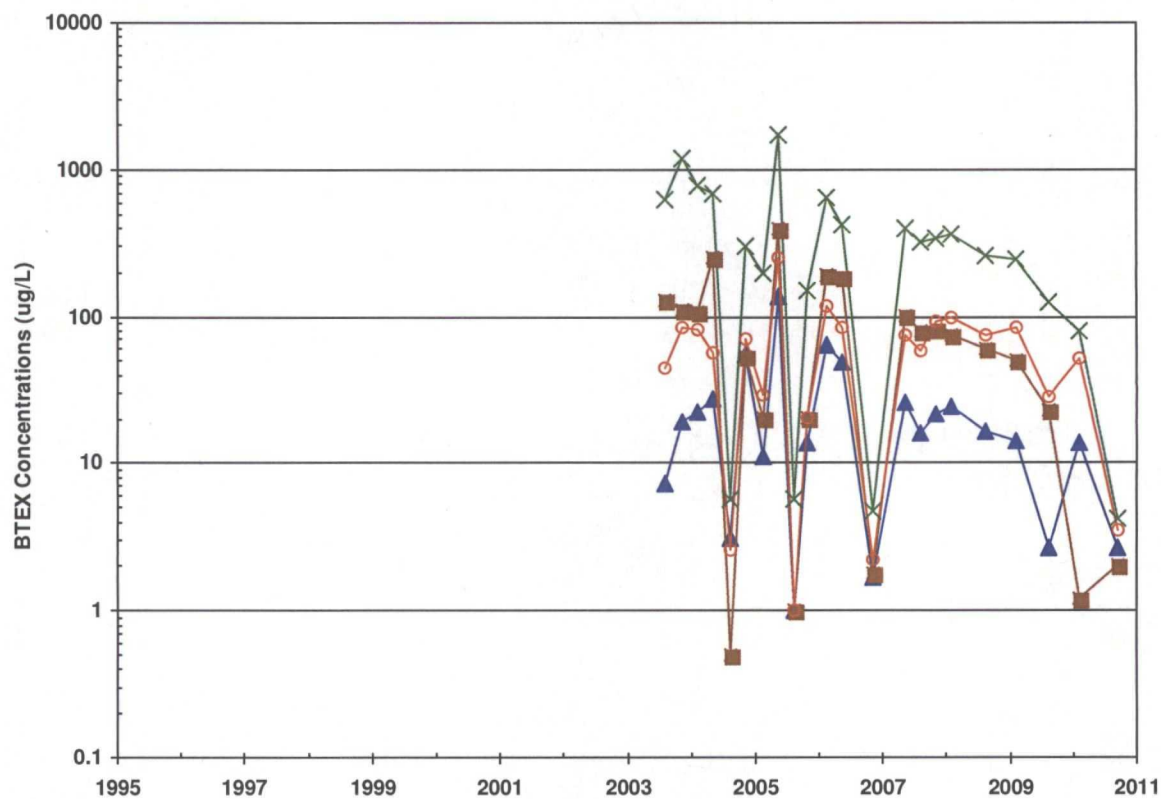
|                       |                   |
|-----------------------|-------------------|
| —●— Groundwater Depth | —○— Product Depth |
|-----------------------|-------------------|



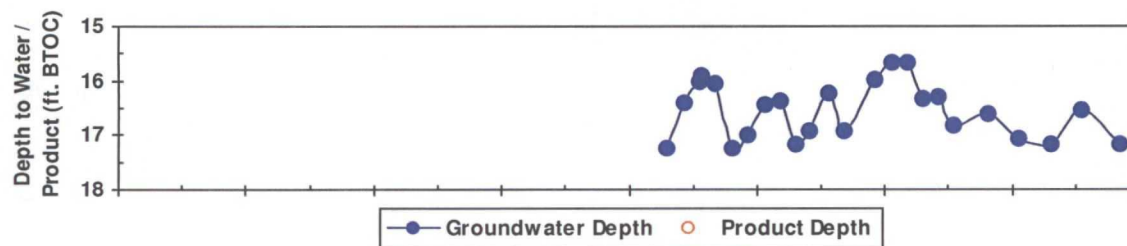
**FIGURE 5**  
**SUMMARY OF GROUNDWATER BTEX CONCENTRATIONS AND FLUID LEVELS**  
**HAMMOND #41A (METER #89894)**  
**MW03**



**FIGURE 6**  
**SUMMARY OF GROUNDWATER BTEX CONCENTRATIONS AND FLUID LEVELS**  
**HAMMOND #41A (METER #89894)**  
**TMW01**



|                    |            |              |               |
|--------------------|------------|--------------|---------------|
| Benzene            | Toluene    | Ethylbenzene | Total Xylenes |
| NM Std.: (10 ug/L) | (750 ug/L) | (750 ug/L)   | (620 ug/L)    |



|                   |               |
|-------------------|---------------|
| Groundwater Depth | Product Depth |
|-------------------|---------------|

TABLE 1

**SUMMARY OF BTEX COMPOUNDS IN GROUNDWATER SAMPLES  
HAMMOND #41A (METER #89894)**

| Monitor Well    | Sample Date | Benzene (ug/L) | Toluene (ug/L) | Ethylbenzene (ug/L) | Total Xylenes (ug/L) | Depth to Water (ft BTOC) | Corrected GW Elevation (Feet*) |
|-----------------|-------------|----------------|----------------|---------------------|----------------------|--------------------------|--------------------------------|
| NMWQCC GW Std.: |             | 10             | 750            | 750                 | 620                  |                          |                                |
| MW01            | 5/21/1997   | 150            | 60.1           | 56.7                | 484                  | 18.79                    | 81.77                          |
| MW01            | 6/9/1997    | 190            | 12.3           | 36.9                | 181                  | 18.89                    | 81.67                          |
| MW01            | 9/17/1997   | 1230           | <5.0           | 263                 | 830                  | 18.79                    | 81.77                          |
| MW01            | 12/9/1997   | 685            | <1.0           | 141                 | 261                  | 18.47                    | 82.09                          |
| MW01            | 3/20/1998   | 662            | 3.06           | 78.7                | 292                  | 18.05                    | 82.51                          |
| MW01            | 6/4/1998    | 286            | 2.43           | 38.4                | 140                  | 18.54                    | 82.02                          |
| MW01            | 9/10/1998   | 391            | <1.0           | 34.0                | 144                  | 18.19                    | 82.37                          |
| MW01            | 12/17/1998  | 330            | 1.6            | 30                  | 150                  | 17.42                    | 83.14                          |
| MW01            | 3/23/1999   | 197            | <1.0           | 15.8                | 74.1                 | 17.56                    | 83.00                          |
| MW01            | 6/11/1999   | 260            | 3.3            | 42.0                | 270                  | 17.80                    | 82.76                          |
| MW01            | 9/20/1999   | 460            | 16             | 78.0                | 440                  | 17.36                    | 83.20                          |
| MW01            | 12/9/1999   | 110            | 3.9            | 13.0                | 53                   | 17.42                    | 83.14                          |
| MW01            | 3/31/2000   | 98             | 3.4            | 19.0                | 59                   | 17.15                    | 83.41                          |
| MW01            | 6/9/2000    | 290            | 9.7            | 49.0                | 290                  | 17.64                    | 82.92                          |
| MW01            | 9/21/2000   | 110            | 1.7            | 16.0                | 44                   | 18.10                    | 82.46                          |
| MW01            | 12/5/2000   | 10             | <0.5           | 3.6                 | 4.3                  | 17.91                    | 82.65                          |
| MW01            | 6/4/2001    | 39             | 0.6            | 5.5                 | 16                   | 18.09                    | 82.47                          |
| MW01            | 8/7/2001    | 33             | <0.5           | 2.8                 | 4.9                  | 18.62                    | 81.94                          |
| MW01            | 11/27/2001  | 3.2            | <0.5           | 0.6                 | <0.5                 | 18.06                    | 82.50                          |
| MW01            | 2/25/2002   | 3.9            | <0.5           | 0.5                 | <1.0                 | 17.86                    | 82.70                          |
| MW01            | 5/21/2002   | 4.4            | <0.5           | <0.5                | <1.0                 | 18.16                    | 82.40                          |
| MW01            | 9/5/2002    | 2.7            | 0.5            | 2.2                 | 1.4                  | 18.82                    | 81.74                          |
| MW02            | 10/15/1999  | <0.5           | <0.5           | <0.5                | <0.5                 | 14.12                    | 85.65                          |
| MW02            | 8/28/2000   | 69             | 1.3            | 9.4                 | 28                   | 17.32                    | 82.45                          |
| MW02            | 6/4/2001    | <0.5           | <0.5           | <0.5                | <0.5                 | 17.54                    | 82.23                          |
| MW02            | 8/7/2001    | <0.5           | <0.5           | <0.5                | <0.5                 | 18.08                    | 81.69                          |
| MW02            | 11/27/2001  | <0.5           | <0.5           | <0.5                | <0.5                 | 17.47                    | 82.30                          |
| MW02            | 2/25/2002   | <0.5           | <0.5           | <0.5                | <1.0                 | 17.30                    | 82.47                          |
| MW02            | 5/21/2002   | <0.5           | <0.5           | <0.5                | <1.0                 | 17.62                    | 82.15                          |
| MW02            | 10/8/2002   | <0.5           | <0.5           | <0.5                | 0.5                  | 17.80                    | 81.97                          |
| MW03            | 10/15/1999  | <0.5           | <0.5           | <0.5                | <0.5                 | 16.43                    | 85.10                          |
| MW03            | 8/28/2000   | <0.5           | <0.5           | <0.5                | <0.5                 | 18.96                    | 82.57                          |
| MW03            | 8/7/2001    | <0.5           | <0.5           | <0.5                | <0.5                 | 19.58                    | 81.95                          |
| MW03            | 10/8/2002   | <0.5           | <0.5           | <0.5                | 0.6                  | 19.38                    | 82.15                          |

TABLE 1

**SUMMARY OF BTEX COMPOUNDS IN GROUNDWATER SAMPLES  
HAMMOND #41A (METER #89894)**

| Monitor Well    | Sample Date | Benzene (ug/L) | Toluene (ug/L) | Ethylbenzene (ug/L) | Total Xylenes (ug/L) | Depth to Water (ft BTOC) | Corrected GW Elevation (Feet*) |
|-----------------|-------------|----------------|----------------|---------------------|----------------------|--------------------------|--------------------------------|
| NMWQCC GW Std.: |             | 10             | 750            | 750                 | 620                  |                          |                                |
| TMW01           | 8/13/2003   | 7.3            | 128            | 44.8                | 625                  | 17.22                    | 81.32                          |
| TMW01           | 11/15/2003  | 19.2           | 113            | 84.6                | 1200                 | 16.40                    | 82.14                          |
| TMW01           | 2/17/2004   | 22.3           | 109            | 83.2                | 774                  | 16.01                    | 82.53                          |
| TMW01           | 5/11/2004   | 27.2           | 255            | 56.6                | 685                  | 16.03                    | 82.51                          |
| TMW01           | 8/19/2004   | 3.1            | <0.5           | 2.6                 | 5.6                  | 17.24                    | 81.30                          |
| TMW01           | 11/16/2004  | 55.2           | 53.3           | 70.7                | 306                  | 17.00                    | 81.54                          |
| TMW01           | 2/21/2005   | 11.2           | 20.2           | 28.9                | 196                  | 16.43                    | 82.11                          |
| TMW01           | 5/18/2005   | 140            | 398            | 252                 | 1710                 | 16.35                    | 82.19                          |
| TMW01           | 8/23/2005   | <1.0           | <1.0           | <1.0                | 5.6                  | 17.18                    | 81.36                          |
| TMW01           | 11/8/2005   | 13.9           | 20.1           | 20.1                | 149                  | 16.91                    | 81.63                          |
| TMW01           | 2/23/2006   | 64.2           | 195            | 118                 | 641                  | 16.23                    | 82.31                          |
| TMW01           | 5/23/2006   | 49.2           | 188            | 85.1                | 429                  | 16.92                    | 81.62                          |
| TMW01           | 11/8/2006   | 1.7            | 1.8            | 2.2                 | 4.7                  | 15.97                    | 82.57                          |
| TMW01           | 5/24/2007   | 25.8           | 103            | 74.3                | 399                  | 15.66                    | 82.88                          |
| TMW01           | 8/21/2007   | 15.9           | 81.0           | 59.6                | 322                  | 16.33                    | 82.21                          |
| TMW01           | 11/13/2007  | 21.7           | 83.0           | 93.4                | 343                  | 16.30                    | 82.24                          |
| TMW01           | 2/12/2008   | 24.2           | 74.5           | 99.1                | 362                  | 16.81                    | 81.73                          |
| TMW01           | 8/26/2008   | 16.7           | 60.6           | 74.7                | 258                  | 16.62                    | 81.92                          |
| TMW01           | 2/17/2009   | 14.3           | 50.6           | 85.3                | 246                  | 17.06                    | 81.48                          |
| TMW01           | 8/25/2009   | 2.7            | 23.1           | 28.3                | 127                  | 17.17                    | 81.37                          |
| TMW01           | 2/16/2010   | 13.8           | 1.2            | 52.9                | 79.9                 | 16.55                    | 81.99                          |
| TMW01           | 9/27/2010   | 2.7            | <2.0           | 3.5                 | 4.2J                 | 17.15                    | 81.39                          |

**Notes:**

Results shown in bold typeface exceed their respective New Mexico Water Quality Control Commission standards.

"J" = result is qualified as estimated. See laboratory report and/or supplemental data validation report for further detail.

"<" = analyte was not detected at the indicated reporting limit.

Static groundwater elevations have been corrected for product thickness where applicable. Specific gravity of 0.8 used.