

3R - 170

**ANNUAL  
MONITORING  
REPORTS  
DATE:**

---

3/2006

**2005 ANNUAL GROUNDWATER REPORT** **RECEIVED**  
**FEDERAL SITES VOLUME I**

**EL PASO TENNESSEE PIPELINE COMPANY** MAR 17 2006

Oil Conservation Division  
Environmental Bureau

**TABLE OF CONTENTS**

METER or LINE ID	SITE NAME	TOWNSHIP	RANGE	SECTION	UNIT
89961	Fields A#7A	32N	11W	34	E
89232	Johnston Fed #6A	31N	09W	35	F
94715	James F. Bell #1E	30N	13W	10	P
89620	Sandoval GC A #1A	30N	09W	35	C
LD151	Lat 0-21 Line Drip	30N	09W	12	O
73220	Fogelson 4-1 Com. #14	29N	11W	4	P
97213	Hamner #9	29N	09W	20	A
LD174	LAT L 40	28N	04W	13	H
89894	Hammond #41A	27N	08W	25	O
94810	Miles Fed 1A	26N	07W	5	F
LD072	K27 LD072	25N	06W	4	E
87640	Canada Mesa #2	24N	06W	24	I

3R170

3R202

3R196

3R235

3R213

3R068

3R190

3R212

3R186

3R223

3R204?

3R155



**MWH**

MONTGOMERY WATSON HARZA

## LIST OF ACRONYMS

B	benzene
btoc	below top of casing
E	ethylbenzene
EPFS	El Paso Field Services
ft	foot/feet
GWEL	groundwater elevation
ID	identification
MW	monitoring well
PSH	phase-separated hydrocarbons
NMWQCC	New Mexico Water Quality Control Commission
T	toluene
TOC	top of casing
NA	not applicable
NE	not established
NM	not measured
NMOCD	New Mexico Oil Conservation Division
NS	not sampled
ORC	oxygen-releasing compound
ppb	parts per billion
µg/L	micrograms per liter
X	total xylenes

3-D TopoQuests Copyright © 1999 DeLorme Yarmouth, ME 04096  
 3 mi Scale: 1 : 600,000 Details 3:4 Datum: WGS84



3R170

**EPTPC GROUNDWATER SITES  
2005 ANNUAL GROUNDWATER REPORT**

**Fields A#7A  
Meter Code: 89961**

---

**SITE DETAILS**

<b>Legal Description:</b>	<b>Town:</b> 32n	<b>Range:</b> 11w	<b>Sec:</b> 34	<b>Unit:</b> E
<b>NMOCD Haz Ranking:</b> 40	<b>Land Type:</b>	Federal	<b>Operator:</b>	BP \ Amoco Production Company

**PREVIOUS ACTIVITIES**

<b>Site Assessment:</b>	8/94	<b>Excavation:</b>	9/94 (70cy)	<b>Soil Boring:</b>	7/95
<b>Monitor Well:</b>	7/95	<b>Geoprobe:</b>	NA	<b>Additional MWs:</b>	12/95
<b>Downgradient MWs:</b>	12/95	<b>Replace MW:</b>	NA	<b>Quarterly Initiated:</b>	NA
<b>ORC Nutrient Injection:</b>	NA	<b>Re-Excavation:</b>	NA	<b>PSH Removal Initiated:</b>	8/97
<b>Annual Initiated:</b>	4/97	<b>Quarterly Resumed:</b>	NA		

**SUMMARY OF 2005 ACTIVITIES**

**MW-1:** Semi-annual monitoring was conducted at this well for free-product recovery. No free-product was detected during quarterly monitoring. Groundwater samples were collected in April and October 2005.

**MW-2:** Quarterly water level monitoring was performed during 2005. An annual groundwater sample was collected in April 2005.

**MW-3:** Quarterly water level monitoring was performed during 2005. An annual groundwater sample was collected in April 2005.

**MW-4:** Quarterly monitoring was conducted at this well for free-product recovery. This well was dry during each event.

**Site-Wide Activities:** Evaluation of additional areas of investigation to include: additional monitoring wells, natural attenuation potential, and upgradient sources were performed for this site in 2005. Access grant applications for groundwater monitoring well installation were prepared for submission in 2006.

**SITE MAPS**

Site maps (April, October, and showing the location of TMW-5) are attached in Figures 1, 2 and 3.

**EPTPC GROUNDWATER SITES  
2005 ANNUAL GROUNDWATER REPORT**

**Fields A#7A  
Meter Code: 89961**

---

**SUMMARY TABLES AND GRAPHS**

- Analytical data from 2005 are presented in Table 1, and historic groundwater data are presented graphically in Figures 4 through 7.
- Free-product recovery data for 2005 are summarized in Table 2, and historic data are presented graphically in Figures 8 and 9.
- Laboratory reports are presented in Attachment 1 (included on CD).
- 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 2005.

**DISPOSITION OF GENERATED WASTES**

All purge water was taken to the El Paso Natural Gas Rio Vista Compressor Station. Phase separated hydrocarbons are stored in a 55 gallon drum and are periodically picked up by Mesa Oil for recycling.

**ISOCONCENTRATION MAPS**

No isoconcentration maps were prepared for this site, however, the attached site maps present the water level data collected during 2005.

**CONCLUSIONS**

- The groundwater flow direction at this site is to the southwest, based on water level measurements from the April 2005 sampling event.
- No free-product was recovered from MW-1 in 2005.
- No free-product was recovered from MW-4 in 2005. This well was dry during each event.
- Based on the technology review and free-product removal data for this site, it was concluded that MW-1 should continue to be monitored, only.
- BTEX concentrations in MW-1 were substantially lower than in 1997 (benzene 951 µg/L), when the first phase of sampling ceased. However, benzene concentrations were 108 and 180 µg/L in April and October, respectively, which are above NMWQCC standards and slightly elevated from concentrations in 2003, when sampling was re-started. All other BTEX constituents were below standards.

**EPTPC GROUNDWATER SITES  
2005 ANNUAL GROUNDWATER REPORT**

**Fields A#7A  
Meter Code: 89961**

---

- Annual groundwater samples were scheduled to be collected from MW-4 during 2005. This well was not sampled due to insufficient quantity of water; MW-4 has been dry since May 2002.

**RECOMMENDATIONS**

- Assuming that free-product continues to be absent from MW-1, this well will be sampled semi-annually (April and October) until BTEX concentrations approach NMWQCC standards. MW-1 will then be scheduled for quarterly sampling until BTEX concentrations are below standards for four, consecutive quarters, at which time this site will be submitted for closure.
- EPTPC will attempt semi-annual groundwater level measurements and annual groundwater sampling in April at MW-2, MW-3 and MW-4. Based on the April sampling results, groundwater sampling may be performed again in October 2005 at these wells.
- EPTPC will sample MW-2 for parameters to assess natural attenuation potential at this site in April 2006.
- In order to assess possible upgradient sources, EPTPC will attempt to install TMW-5 (shown in Figure 3) upgradient of MW-1 in 2006.

**EPTPC GROUNDWATER SITES  
2005 ANNUAL GROUNDWATER REPORT**

**Canada Mesa #2  
Meter Code: 87640**

---

**SITE DETAILS**

<b>Legal Description:</b>	<b>Town:</b>	24N	<b>Range:</b>	6W	<b>Sec:</b>	24	<b>Unit:</b>	I
<b>NMOCD Haz Ranking:</b>	40	<b>Land Type:</b>	Federal	<b>Operator:</b>	Merrion Oil & Gas Company			

**PREVIOUS ACTIVITIES**

<b>Site Assessment:</b>	7/94	<b>Excavation:</b>	8/94	<b>Soil Boring:</b>	8/95
<b>Monitor Well:</b>	8/95	<b>Geoprobe:</b>	NA	<b>Additional MWs:</b>	10/00
<b>Downgradient MWs:</b>	10/00	<b>Replace MW:</b>	NA	<b>Quarterly Initiated:</b>	8/95
<b>ORC Nutrient Injection:</b>	NA	<b>Re-Excavation:</b>	NA	<b>PSH Removal Initiated:</b>	8/97
<b>Annual Initiated:</b>	11/00	<b>Quarterly Resumed:</b>	NA		

**SUMMARY OF 2005 ACTIVITIES**

**MW-1:** Quarterly free-product recovery was conducted at this well in 2005.

**MW-2:** Annual groundwater sampling was performed in December 2005. Quarterly water level monitoring was performed.

**MW-3:** Annual groundwater sampling was performed in December 2005. Quarterly water level monitoring was performed.

**Site-Wide Activities:** A technology review and data assessment to evaluate free-product removal was performed in 2005.

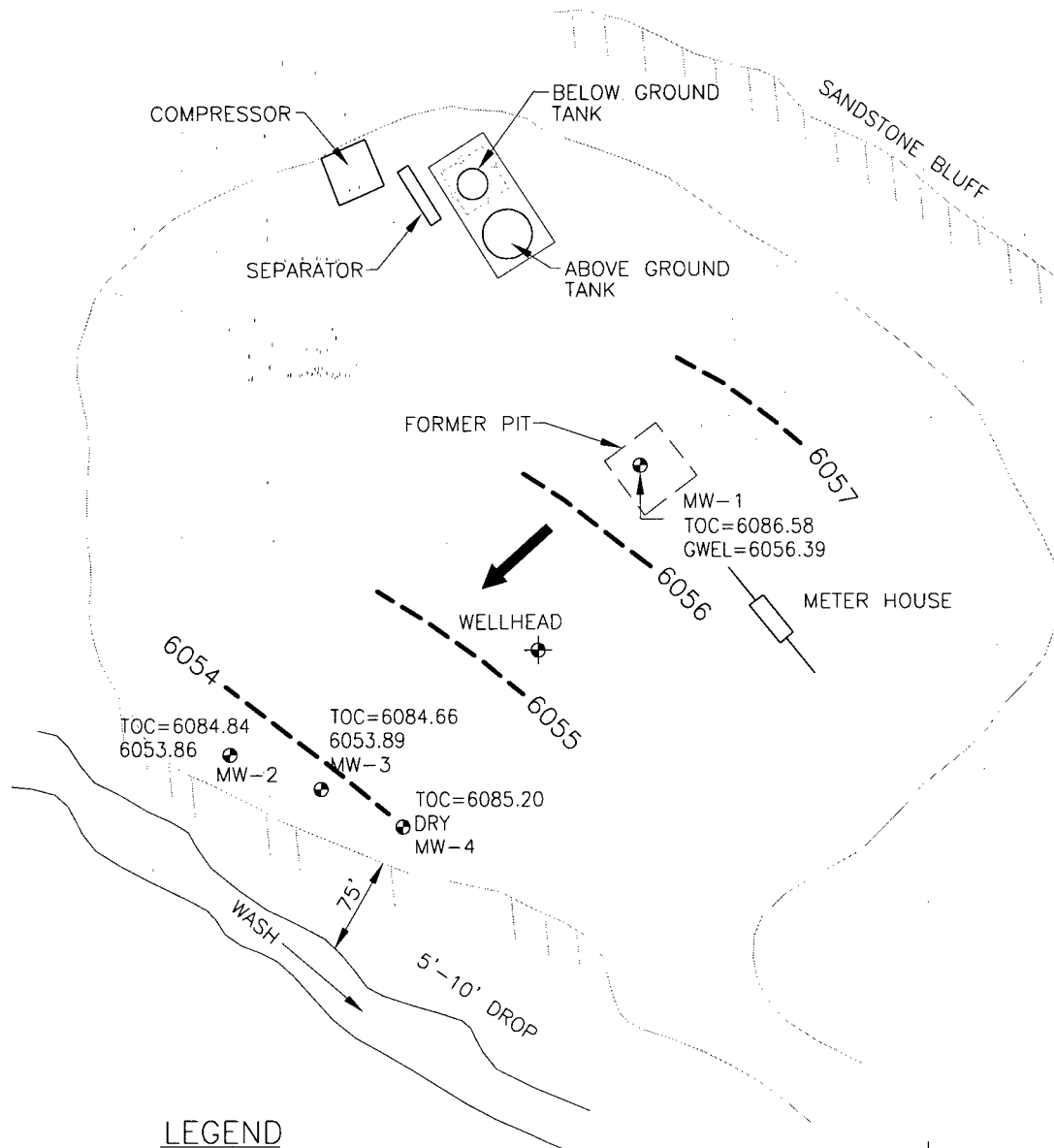
**SITE MAPS**

A site map (December) is attached in Figure 1.

**SUMMARY TABLES AND GRAPHS**

- Groundwater analytical data for 2005 are summarized in Table 1, and historic data are presented graphically in Figures 2 through 4.
- Free-product recovery data in 2005 from MW-1 are summarized in Table 2 and are presented graphically in Figure 5.





### LEGEND

- ⊙ MW-1 Approximate Monitoring Well Location and Number
- GWEL Groundwater Elevation (FT Above Mean Sea Level Unless Noted Otherwise)
- Potentiometric Surface (Dashed where inferred)
- ← Direction of Groundwater Flow (Estimated)
- NS Not Sampled
- TOC Top of Casing

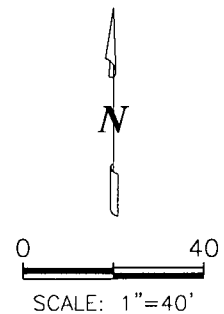
	MW-1	MW-2	MW-3
B	108	<1.0	<1.0
T	29.0	<1.0	<1.0
E	14.2	<1.0	<1.0
X	274	<2.0	<2.0

B Benzene ( $\mu\text{g/L}$ )

T Toluene ( $\mu\text{g/L}$ )

E Ethylbenzene (g/L)

X Total Xylenes (g/L)



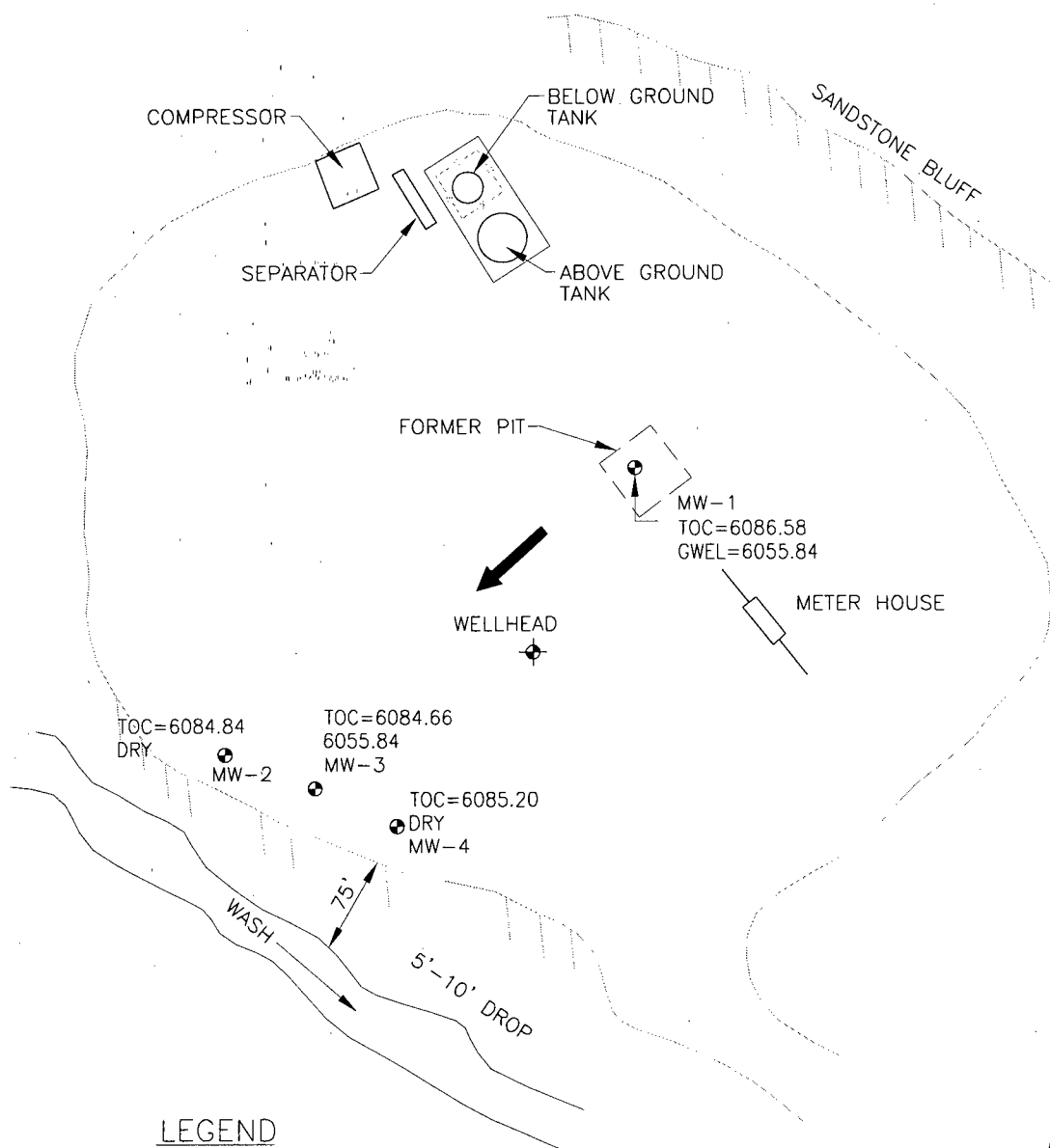
FIELDS A#7A, METER 89961/97546

APRIL 2005

GROUNDWATER SITES

EL PASO TENNESSEE PIPELINE COMPANY

FIGURE 1

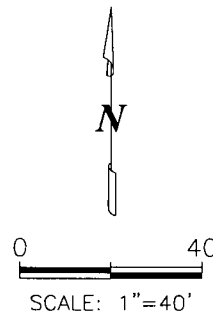


### LEGEND

- MW-1 Approximate Monitoring Well Location and Number
- GWEL Groundwater Elevation (FT Above Mean Sea Level Unless Noted Otherwise)
- Potentiometric Surface (Dashed where inferred)
- Direction of Groundwater Flow (Estimated)
- NS Not Sampled
- TOC Top of Casing

	MW-1
B	180
T	69.2
E	6.3
X	154

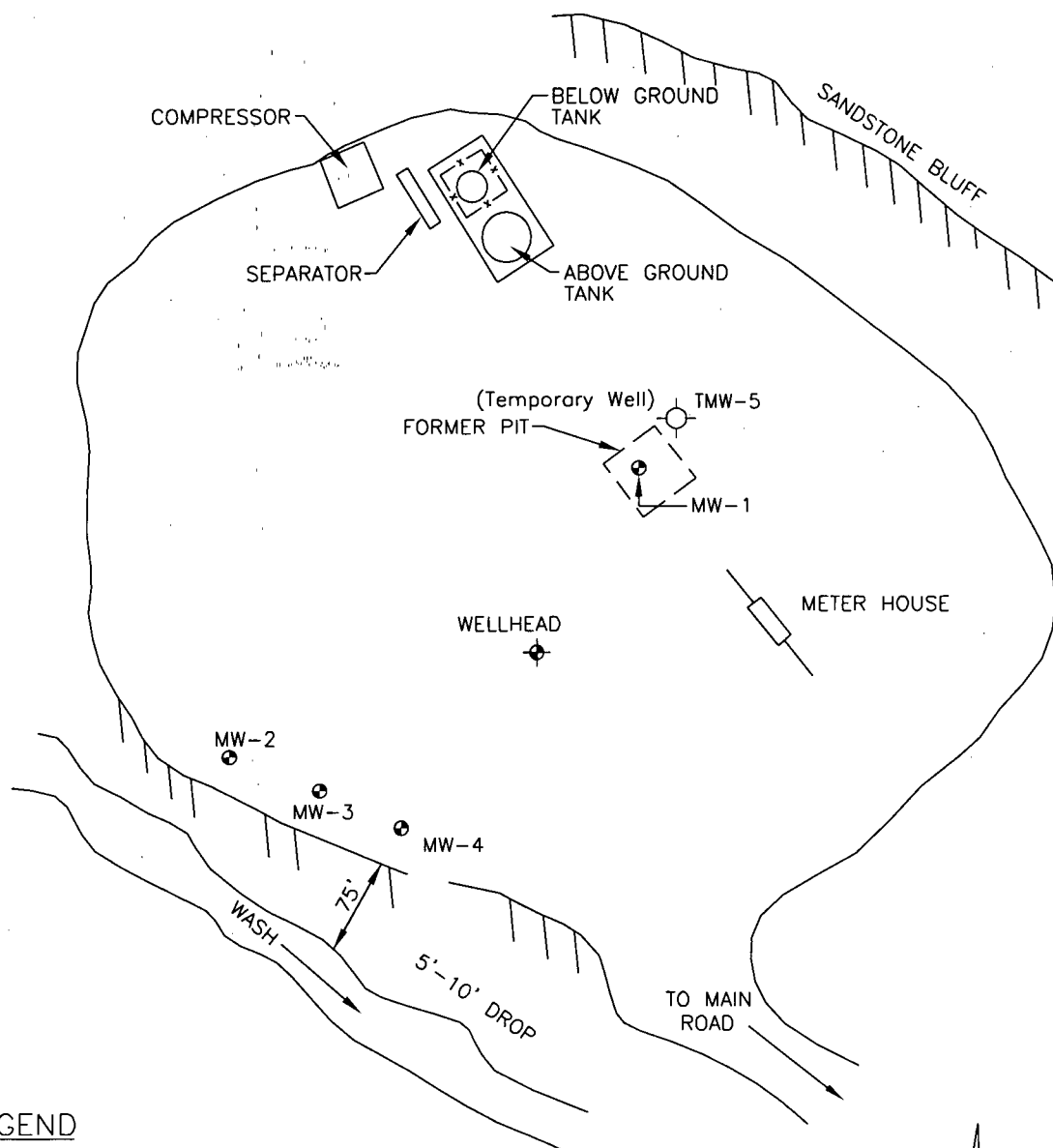
- B Benzene ( $\mu\text{g/L}$ )
- T Toluene ( $\mu\text{g/L}$ )
- E Ethylbenzene (g/L)
- X Total Xylenes (g/L)



FIELDS A #7A, METER 89961/97546  
OCTOBER 2005

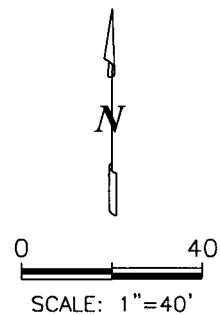
GROUNDWATER SITES  
EL PASO TENNESSEE PIPELINE COMPANY

FIGURE 2



# LEGEND

- MW-1      Approximate Monitoring Well Location and Number
- TMW-5      Proposed New Monitoring Well/Boring Location and Number



FIELDS A #7A, METER 89961/97546  
 PROPOSED NEW MONITORING WELL LOCATION

GROUNDWATER SITES  
 EL PASO TENNESSEE PIPE LINE COMPANY

FIGURE 3

TABLE 1

SUMMARY OF BTEX COMPOUNDS IN 2005 GROUNDWATER SAMPLES  
FIELDS A#7A (METER #89961)

Site Name	Sample Date	Monitoring Well	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)	Depth to Water (ug/L)
Fields A#7A	4/18/05	MW-1	108	29	14.2	274	30.19
Fields A#7A	10/22/05	MW-1	180	69.2	6.3	154	30.74
Fields A#7A	4/18/05	MW-2	1	1	1	2	30.98
Fields A#7A	4/18/05	MW-3	1	1	1	2	30.77

TABLE 2

**SUMMARY OF FREE-PRODUCT REMOVAL DURING 2005  
FIELDS A#7A (METER #89961)**

Site Name	Monitoring Well	Removal Date	Depth to Product (feet bgs)	Depth to Water (feet bgs)	Product Thickness (feet)	Volume of Product Removed (gallons)	Cumulative Volume of Product Removed (gallons)
Fields A#7A	MW-1	1/25/05	NA	31.15	0.00	0.00	12.36
Fields A#7A	MW-1	4/18/05	NA	30.19	0.00	0.00	12.36
Fields A#7A	MW-4	1/25/05	dry	dry	0.00	0.00	1.36
Fields A#7A	MW-4	4/18/05	dry	dry	0.00	0.00	1.36
Fields A#7A	MW-4	10/22/05	dry	dry	0.00	0.00	1.36

FIGURE 4  
HISTORIC BTEX CONCENTRATIONS AND GROUNDWATER ELEVATIONS  
FIELDS A #7A  
MW-1

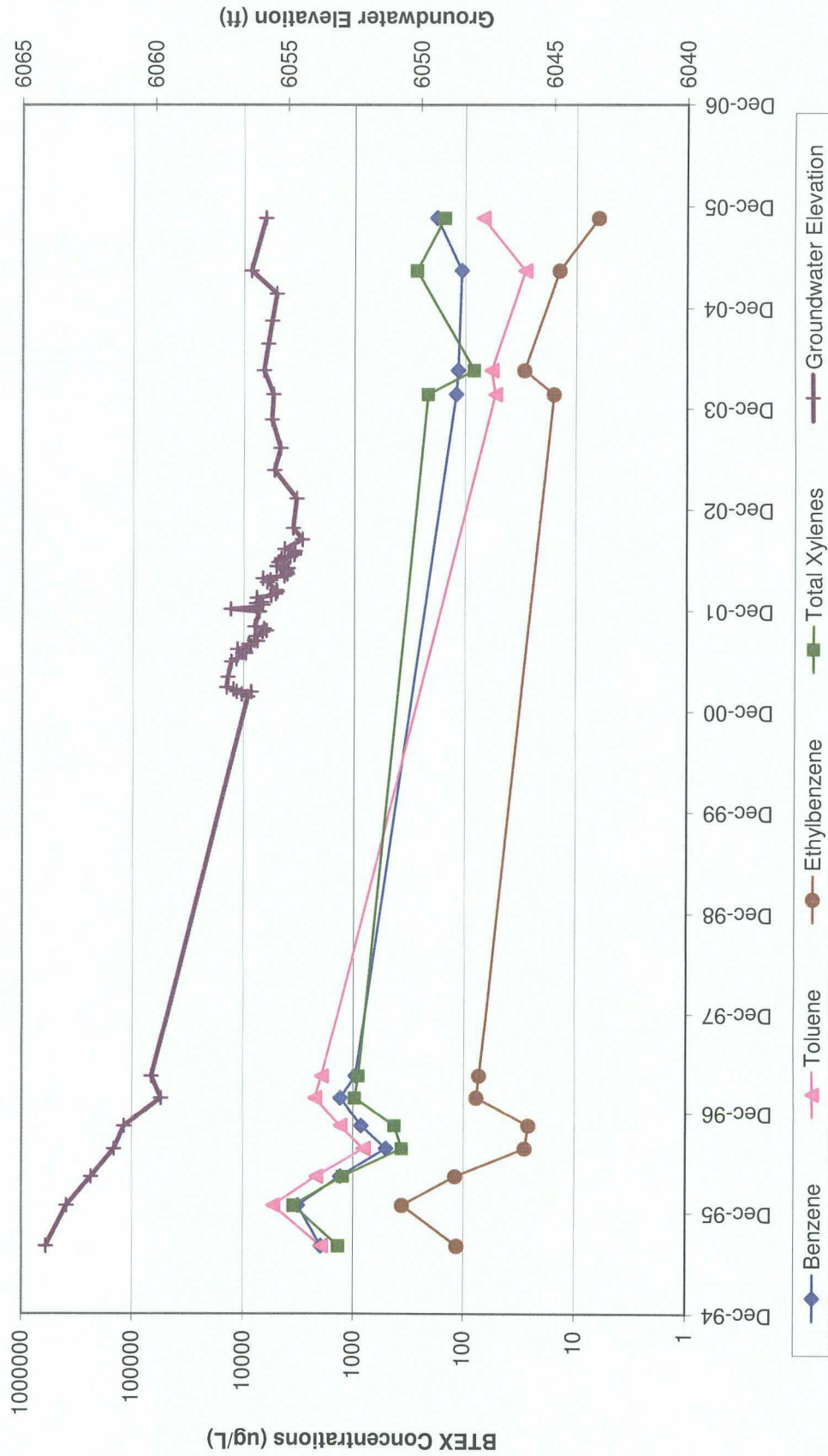




FIGURE 5  
HISTORIC BTEX CONCENTRATIONS AND GROUNDWATER ELEVATIONS  
FIELDS A #7A  
MW-2

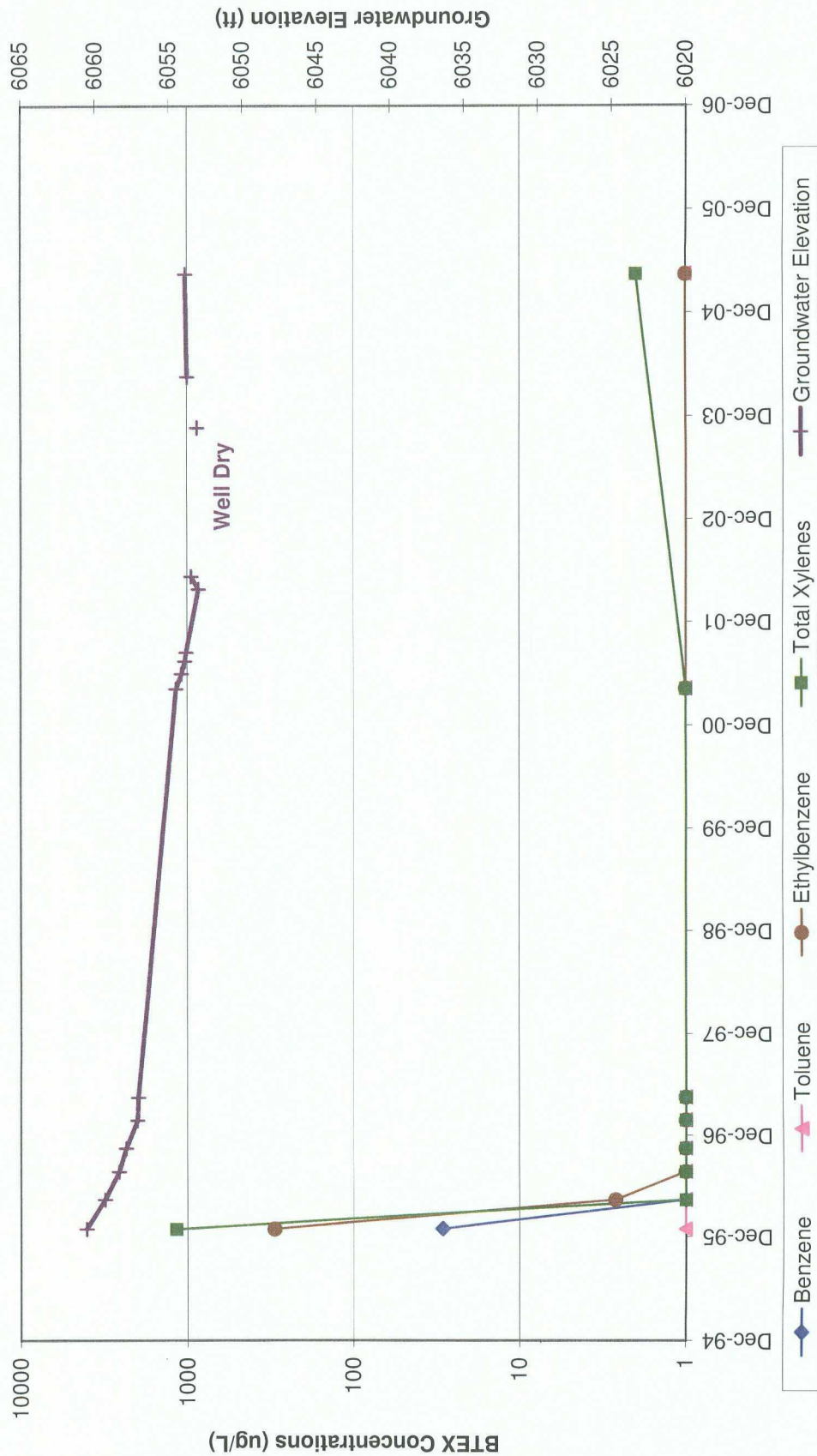


FIGURE 6  
HISTORIC BTEX CONCENTRATIONS AND GROUNDWATER ELEVATIONS  
FIELDS A #7A  
MW-3

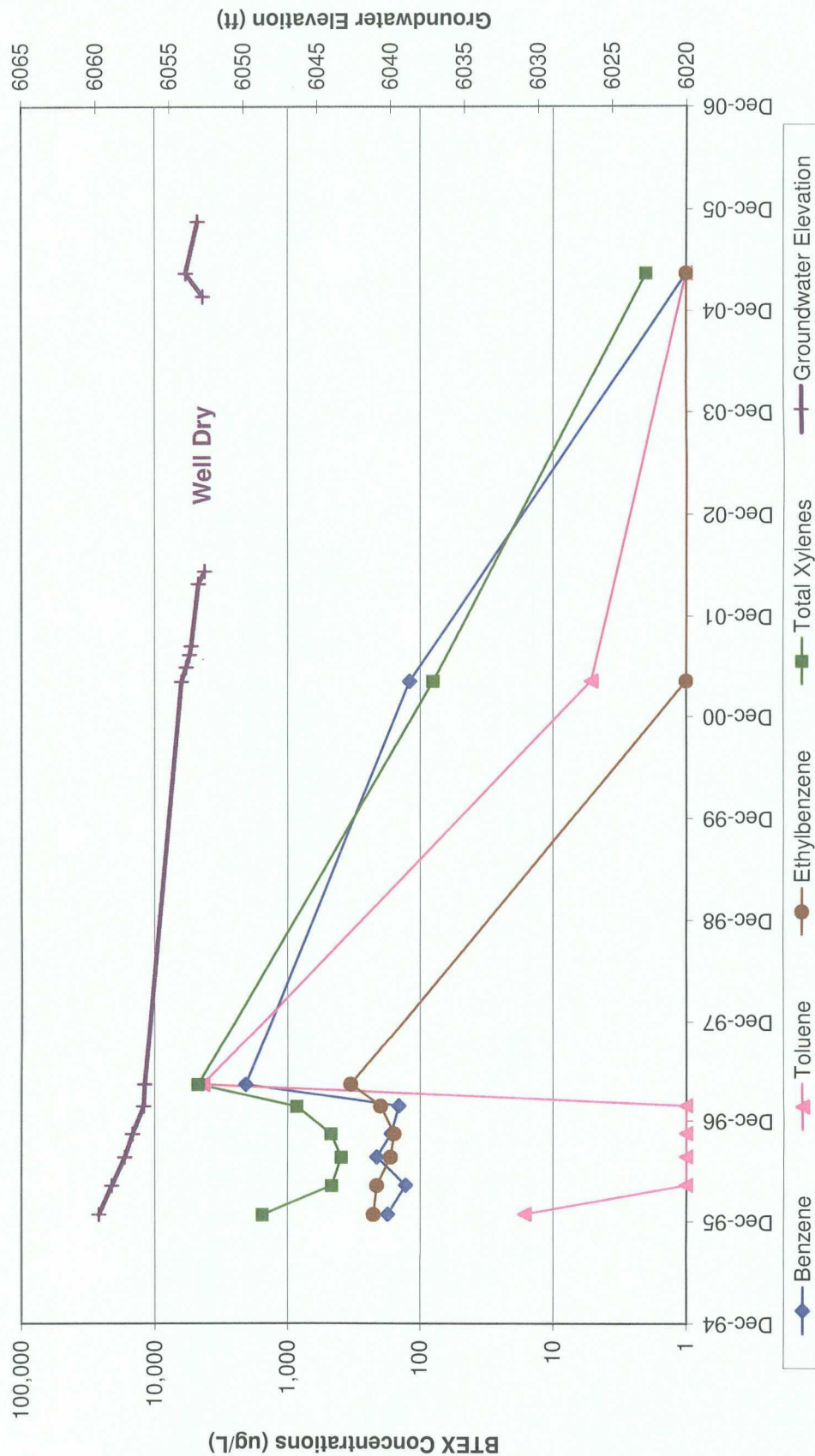


FIGURE 7  
HISTORIC BTEX CONCENTRATIONS AND GROUNDWATER ELEVATIONS  
FIELDS A #7A  
MW-4

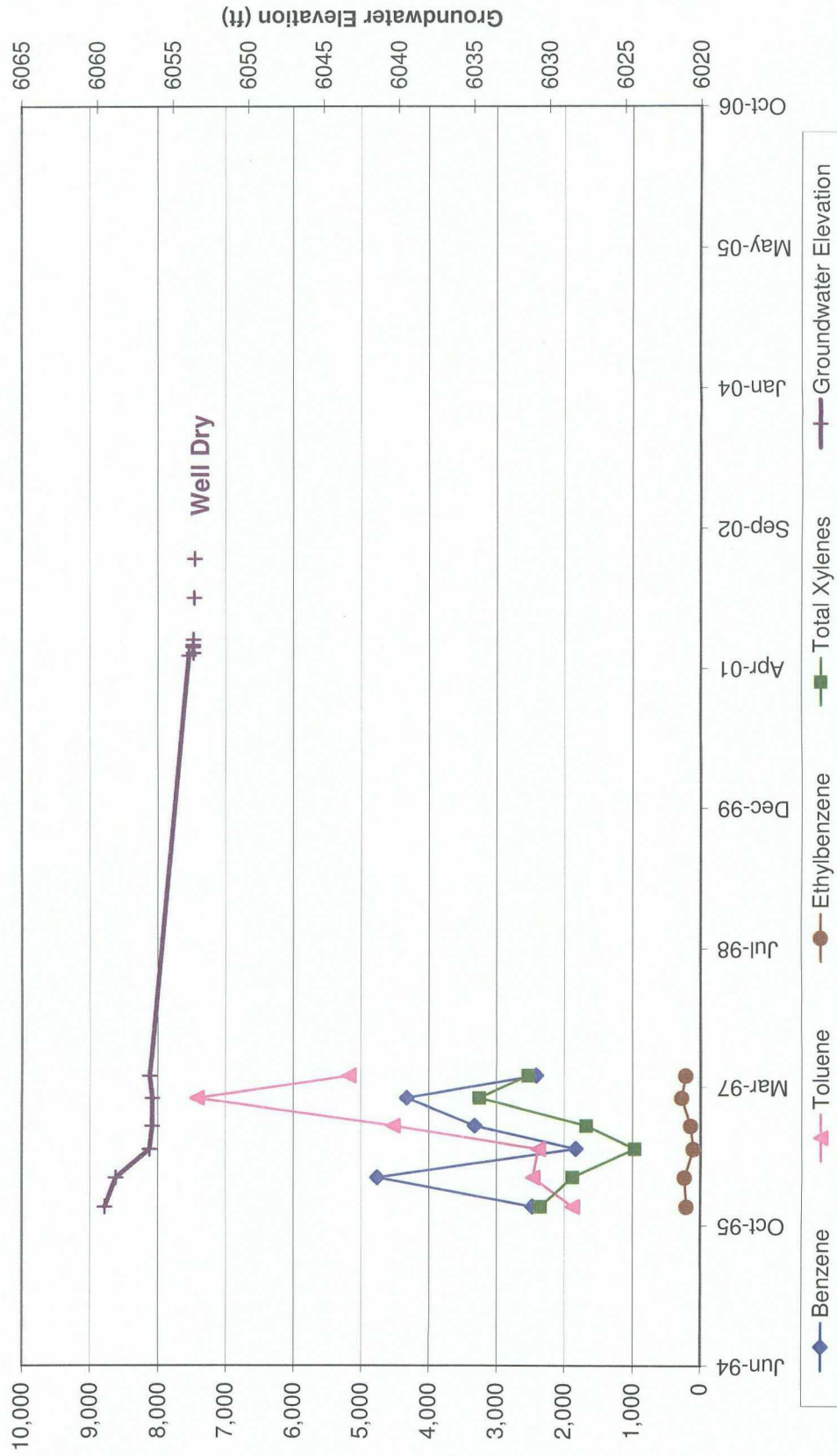


FIGURE 8  
HISTORIC FREE-PRODUCT RECOVERY  
FIELDS A #7A  
MW-1

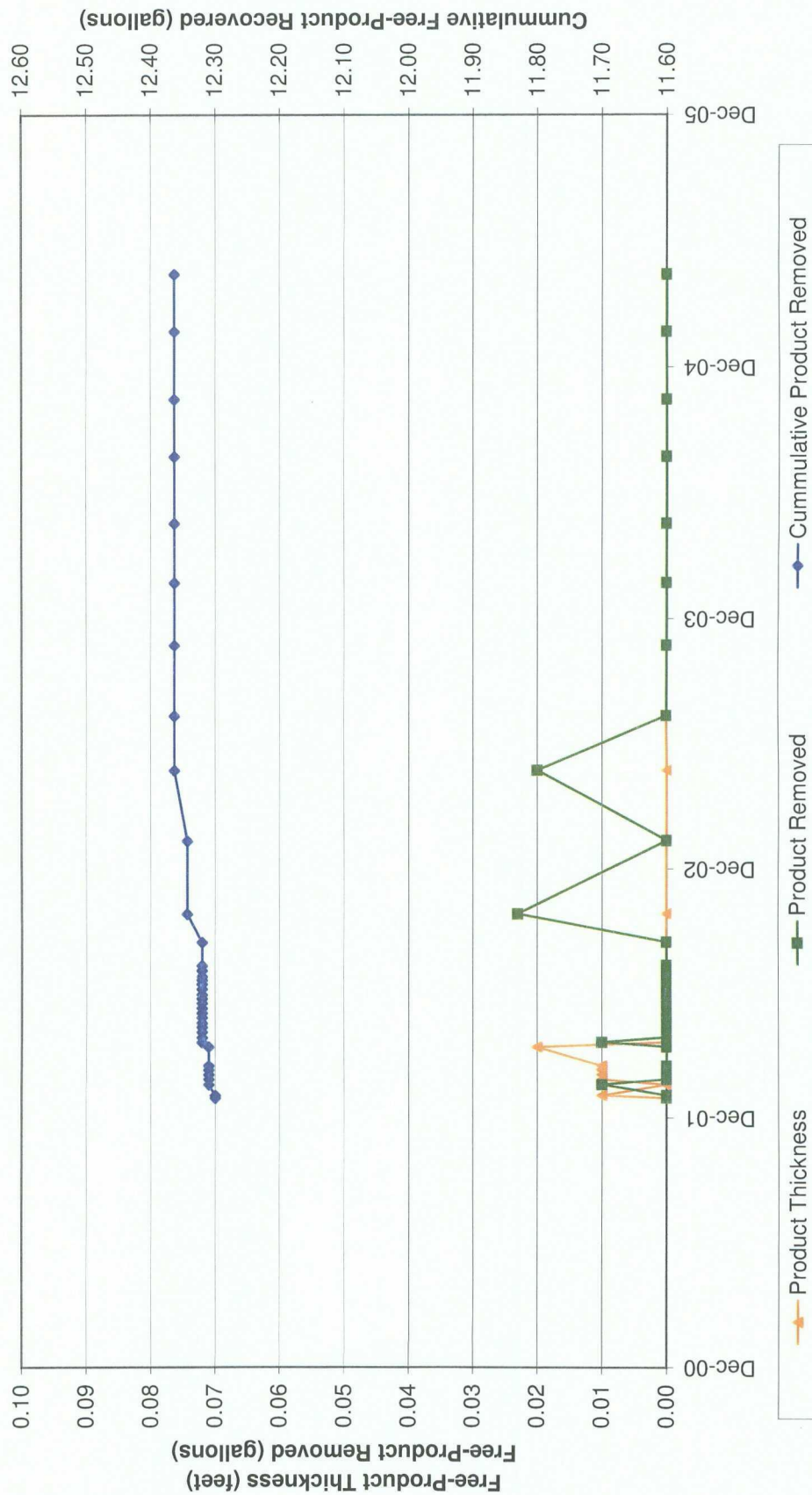




FIGURE 9  
HISTORIC FREE-PRODUCT RECOVERY  
FIELDS A #7A  
MW-4

