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Oil Conservation Division
Environmental Bureau

El Paso Tennessee
Pipeline Company

San Juan Basin Pit Program
Groundwater Sites Project

Final 2006 Annual Report
Federal Sites (Volume 1)

March 2007



MWH

1801 California Street, Suite 2900
Denver, Colorado 80202

**2006 ANNUAL GROUNDWATER REPORT
FEDERAL SITES VOLUME I**

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EL PASO TENNESSEE PIPELINE COMPANY

MAR 06 2007

**Oil Conservation Division
Environmental Bureau**

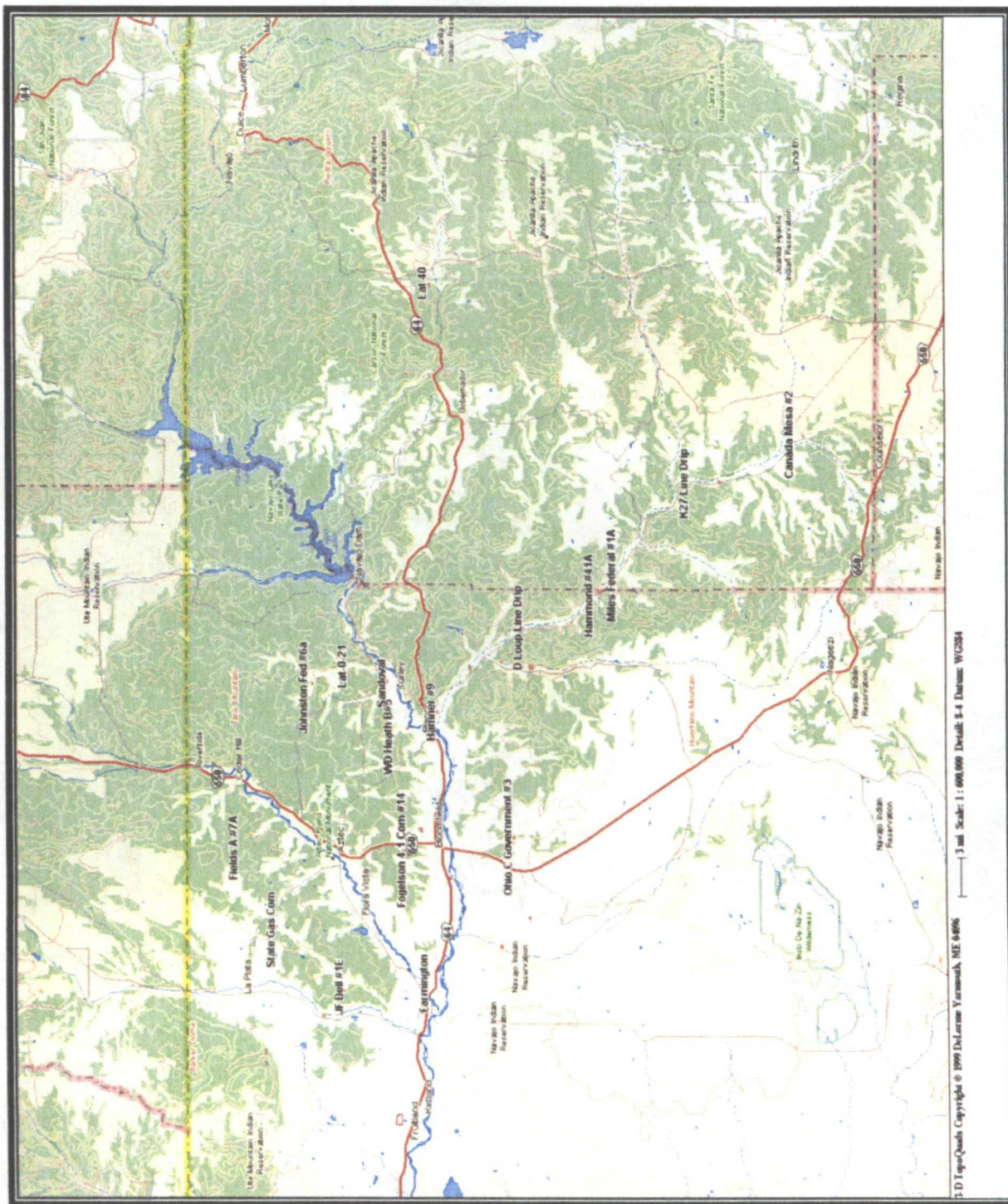
TABLE OF CONTENTS

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
70194	Johnston Fed #4	31N	09W	33	H



MWH

Federal Groundwater Site Map



LIST OF ACRONYMS

B	benzene
btoc	below top of casing
E	ethylbenzene
EPTPC	El Paso Tennessee Pipeline Company
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

**EPTPC GROUNDWATER SITES
2006 ANNUAL GROUNDWATER REPORT**

**Johnston Fed #4
Meter Code: 70194**

SITE DETAILS

Legal Description: **Town:** 31N **Range:** 09W **Sec:** 33 **Unit:** H
NMOCD Haz Ranking: 40 **Land Type:** Fee **Operator:** Burlington Resources

PREVIOUS ACTIVITIES

Site Assessment:	8/94	Excavation:	9/94 (60 cy)	Soil Boring:	8/95
Monitor Well:	8/95	Geoprobe:	9/97	Additional MWs:	12/95
Downgradient MWs:	12/95	Replace MW:	NA	Quarterly Initiated:	NA
ORC Nutrient Injection:	NA	Re-Excavation:	NA	PSH Removal Initiated:	9/97
Annual Initiated:	6/01	Quarterly Resumed:	NA		

SUMMARY OF 2006 ACTIVITIES

MW-1: Quarterly free-product recovery and water level monitoring were performed during 2006.

MW-2: Annual groundwater sampling (June) and quarterly water level monitoring were performed during 2006.

MW-3: Quarterly free-product recovery and water level monitoring were performed during 2006.

MW-4: This well was installed in November 2006.

TMW-5: This well was installed in November 2006.

Site-Wide Activities: Geoprobe soil and groundwater investigation activities were performed in January 2006, and MW-4 and TMW-5 were installed in November 2006. A right of way permit and the access grant for additional monitoring well installation were acquired in 2006. All wells were surveyed in January 2007.

SITE MAPS

Site maps (one for the June 2006 sampling data and one depicting site characterization activities) are attached as Figures 1 and 2.

**EPTPC GROUNDWATER SITES
2006 ANNUAL GROUNDWATER REPORT**

**Johnston Fed #4
Meter Code: 70194**

SUMMARY TABLES AND GRAPHS

- Groundwater analytical data for 2006 are included in Table 1 and historic data are presented graphically in Figures 3 through 5.
- Free-product recovery data are included in Table 2 and are presented graphically in Figures 6 and 7.
- 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

Geoprobe logs, soil boring logs, and well completion diagrams are presented in Attachment 3.

DISPOSITION OF GENERATED WASTES

All purge water was taken to the El Paso Natural Gas Rio Vista Compressor Station. Recovered free-product is stored in a 55 gallon drum and 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 and analytical data collected during 2006.

CONCLUSIONS

- The groundwater flow direction at this site trends toward the northeast.
- Monitoring wells MW-2 and MW-3 are located cross-gradient of the former pit. The presence of hydrocarbon contamination in MW-2 suggests an alternative, upgradient source of contamination at the site. In 1997, a temporary monitoring well, PH-2, contained BTEX concentrations well above that at MW-1, with benzene at 9,620 µg/L, toluene at 21,900 µg/L, ethylbenzene at 1,290 µg/L, and total xylenes at 15,000 µg/L.
- Free-product recovery efforts at MW-1 resulted in the removal of approximately 0.13 gallons of free-phase hydrocarbons during 2006, bringing the cumulative total volume recovered to date to approximately 10.73 gallons.
- The benzene concentration in the annual groundwater sample collected at MW-2 decreased from 283 µg/L in June 2005 to 92.1 µg/L in June 2006.

**EPTPC GROUNDWATER SITES
2006 ANNUAL GROUNDWATER REPORT**

**Johnston Fed #4
Meter Code: 70194**

- Free-product recovery efforts at MW-3 resulted in the removal of approximately 0.85 gallons of free-phase hydrocarbons during 2006, bringing the cumulative total volume recovered to 8.68 gallons.
- An oil absorbent sock in MW-1 was installed during the March 2006 monitoring event. The sock was not re-installed in subsequent monitoring events as there was not a significant accumulation of measurable product during these events.
- A new, higher-capacity, absorbent sock system was installed in MW-3 in December 2006.
- Geoprobe soil and groundwater sampling was conducted at this site in January 2006 to investigate the extent of current downgradient contamination. GP-1, located adjacent to the proposed MW-4, was dry. GP-3, located northwest of MW-1 was below NMOCD standards. GP-4, GP-5, and GP-6, located upgradient of MW-1, were well above standards.
- Based on the Geoprobe investigation, MW-4 and TMW-5 were installed in November 2006 to facilitate additional upgradient and downgradient monitoring. The soil boring log from the TMW-5 installation indicated potentially significant groundwater impact in that location, with little to no vadose zone impact. TMW-5 is approximately 75 feet upgradient of MW-1.

RECOMMENDATIONS

- EPTPC will continue quarterly free-product recovery efforts at these wells; however, the frequency of monitoring may be adjusted based on the amount of product recovered during the monitoring visits.
- EPTPC will continue annual sampling and quarterly water level monitoring at MW-2 until analytical results indicate that BTEX concentrations are approaching closure criteria. This well will then be scheduled for quarterly sampling until closure criteria have been met.
- Monitoring wells MW-4 and TMW-5 will be sampled in conjunction with MW-2 in June 2007. Subsequent to this sampling event, EPTPC may continue to evaluate the source of the apparent upgradient impacts in the vicinity of TMW-5.

TABLE 1

SUMMARY OF BTEX COMPOUNDS IN GROUNDWATER SAMPLES
JOHNSTON FED #4 (METER #70194)

Site Name	Sample Date	Monitoring Well	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)	Depth to Water (feet)
Johnston Fed #4	8/8/1995	MW-1	590	2040	137	1764	50.08
Johnston Fed #4	1/4/1996	MW-1	7380	20900	1480	14600	50.23
Johnston Fed #4	12/17/1996	MW-1	762	1930	107	1270	50.50
Johnston Fed #4	3/6/1997	MW-1	483	1110	66.1	678	50.38
Johnston Fed #4	1/4/1996	MW-2	1104	5107	479	4640	48.71
Johnston Fed #4	12/17/1996	MW-2	5900	8970	197	4670	48.84
Johnston Fed #4	3/6/1997	MW-2	4500	6480	236	4920	48.94
Johnston Fed #4	6/22/2001	MW-2	2800	180	41	140	48.62
Johnston Fed #4	6/3/2002	MW-2	370	11	24	18	49.15
Johnston Fed #4	6/18/2003	MW-2	186	1	34.9	16.8	49.62
Johnston Fed #4	6/22/2004	MW-2	88.9	24	32.9	15.2	49.82
Johnston Fed #4	6/23/2005	MW-2	283	9.4	27.7	64.5	49.87
Johnston Fed #4	6/7/2006	MW-2	92.1	18.4	4.4	5.9	49.67
Johnston Fed #4	3/19/1996	MW-3	3660	5410	436	3730	49.81
Johnston Fed #4	12/17/1996	MW-3	3910	8210	530	5020	49.84
Johnston Fed #4	3/6/1997	MW-3	6670	12700	759	7020	49.87

1 = Not Detected

TABLE 2

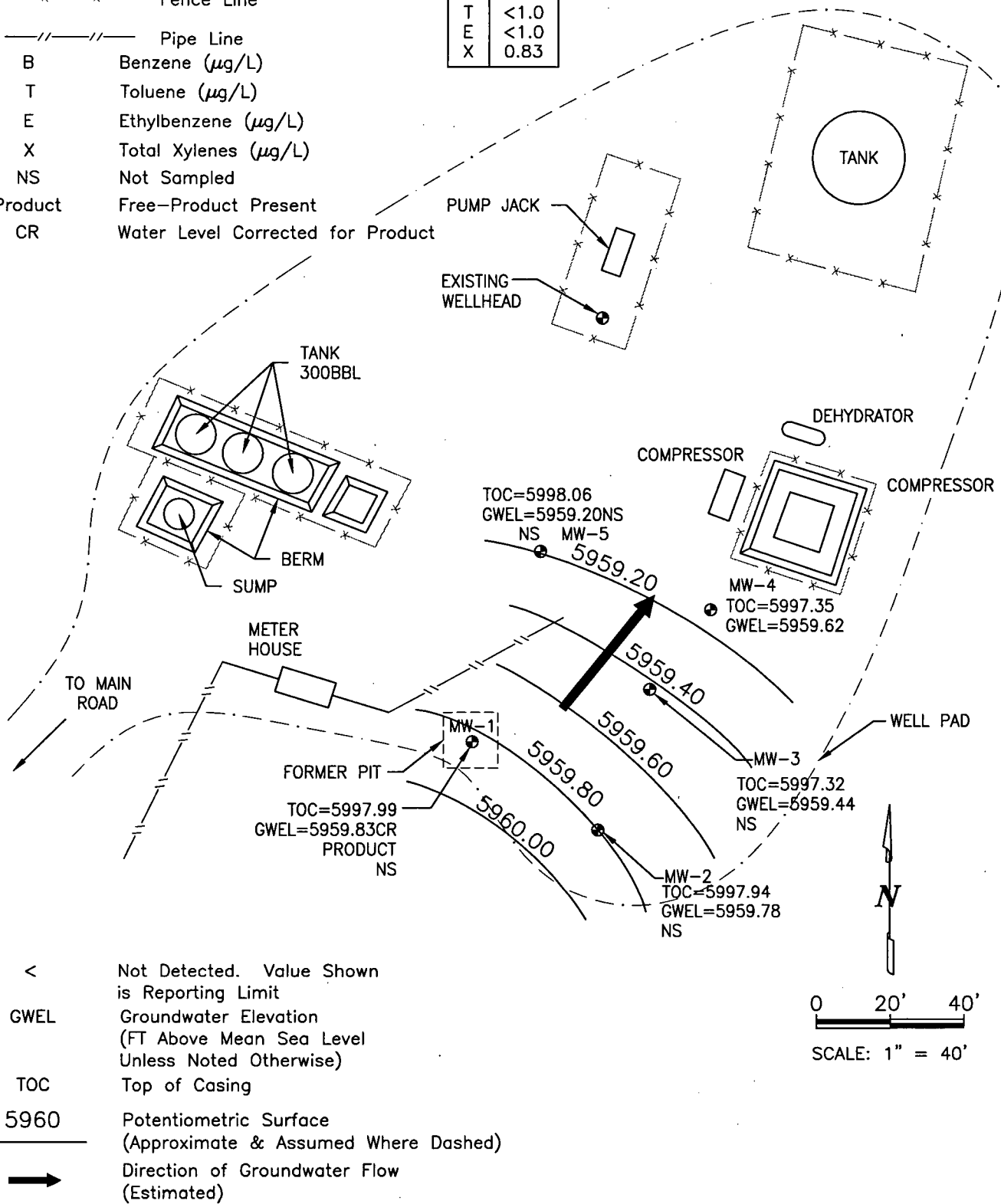
**SUMMARY OF FREE-PRODUCT REMOVAL
JOHNSTON FED #4 (METER #70194)**

Site Name	Monitoring Well	Removal Date	Depth to Product (feet btoc)	Depth to Water (feet btoc)	Product Thickness (feet)	Volume of Product Removed (gallons)	Cumulative Volume of Product Removed (gallons)
Johnston Fed #4	MW-1	8/8/95		50.08	0.00	0.00	
Johnston Fed #4	MW-1	1/4/96		50.23	0.00	0.00	
Johnston Fed #4	MW-1	12/17/96		50.50	0.00	0.00	
Johnston Fed #4	MW-1	3/6/97		50.38	0.00	0.00	
Johnston Fed #4	MW-1	6/22/01	49.82	49.96	0.14	0.10	7.75
Johnston Fed #4	MW-1	9/4/01	49.94	50.05	0.09	0.10	7.85
Johnston Fed #4	MW-1	3/4/02	50.23	50.40	0.17	0.05	7.90
Johnston Fed #4	MW-1	6/3/02	50.31	50.50	0.19	0.25	8.15
Johnston Fed #4	MW-1	9/10/02	50.51	50.70	0.20	0.16	8.31
Johnston Fed #4	MW-1	12/12/02	50.60	50.83	0.23	0.13	8.43
Johnston Fed #4	MW-1	3/14/03	50.73	50.9	0.17	0.26	8.69
Johnston Fed #4	MW-1	6/18/03	50.74	51.28	0.57	0.50	9.19
Johnston Fed #4	MW-1	9/16/03	50.78	51.7	0.92	1.00	10.19
Johnston Fed #4	MW-1	12/17/03	50.92	51.15	0.23	0.06	10.25
Johnston Fed #4	MW-1	3/16/04	50.98	51.14	0.16	0.06	10.32
Johnston Fed #4	MW-1	6/22/04	51.02	51.15	0.13	0.02	10.33
Johnston Fed #4	MW-1	9/22/04	51.06	51.18	0.12	0.09	10.43
Johnston Fed #4	MW-1	12/21/04	51.08	51.15	0.07	0.06	10.49
Johnston Fed #4	MW-1	3/23/05	51.13	51.15	0.02	0.02	10.50
Johnston Fed #4	MW-1	6/23/05	0.00	51.09	0.00	0.00	10.50
Johnston Fed #4	MW-1	12/15/05	0.00	51.02	0.00	0.10	10.60
Johnston Fed #4	MW-1	3/27/06	0.00	51.86	0.00	0.11	10.71
Johnston Fed #4	MW-1	6/7/06	0.00	50.91	0.00	0.02	10.73
Johnston Fed #4	MW-1	9/25/06		51.09	0.00	0.00	10.73
Johnston Fed #4	MW-3	12/7/06		51.06	0.00	0.00	10.73
Johnston Fed #4	MW-3	6/22/01	49.58	49.66	0.08	0.08	0.08
Johnston Fed #4	MW-3	9/4/01	49.70	49.76	0.06	0.00	0.08
Johnston Fed #4	MW-3	3/4/02	49.91	50.35	0.44	0.25	0.33
Johnston Fed #4	MW-3	6/3/02	49.96	50.62	0.66	0.50	0.83
Johnston Fed #4	MW-3	9/10/02	50.12	50.79	0.68	0.25	1.08
Johnston Fed #4	MW-3	12/12/02	50.25	50.95	0.70	1.50	2.58
Johnston Fed #4	MW-3	3/14/03	50.34	51.03	0.69	1.00	3.58
Johnston Fed #4	MW-3	6/18/03	50.45	51.16	0.71	1.50	5.08
Johnston Fed #4	MW-3	9/16/03	50.585	51.3	0.715	0.25	5.33
Johnston Fed #4	MW-3	12/17/03	50.6	51.08	0.48	0.35	5.68
Johnston Fed #4	MW-3	3/16/04	50.68	51.10	0.42	0.31	5.99
Johnston Fed #4	MW-3	6/22/04	50.68	51.22	0.54	0.09	6.09
Johnston Fed #4	MW-3	9/22/04	50.69	51.30	0.61	0.50	6.59
Johnston Fed #4	MW-3	12/21/04	50.71	51.32	0.61	0.63	7.21
Johnston Fed #4	MW-3	3/23/05	50.76	51.31	0.55	0.61	7.82
Johnston Fed #4	MW-3	6/23/05	50.76	51.20	0.44	0.00	7.82
Johnston Fed #4	MW-3	12/15/05	50.92	51.32	0.40	0.00	7.82
Johnston Fed #4	MW-3	3/27/06	50.58	50.92	0.34	0.22	8.04
Johnston Fed #4	MW-3	6/7/06	50.56	51.01	0.45	0.22	8.26
Johnston Fed #4	MW-3	9/25/06	50.80	51.27	0.47	0.22	8.48
Johnston Fed #4	MW-3	12/7/06	50.77	51.07	0.31	0.20	8.68

LEGEND

- MW-1 Approximate Monitoring Well Location and Number
- x—x— Fence Line
- //—//— Pipe Line
- B Benzene ($\mu\text{g/L}$)
- T Toluene ($\mu\text{g/L}$)
- E Ethylbenzene ($\mu\text{g/L}$)
- X Total Xylenes ($\mu\text{g/L}$)
- NS Not Sampled
- Product Free-Product Present
- CR Water Level Corrected for Product

MW-4	
B	0.39
T	<1.0
E	<1.0
X	0.83

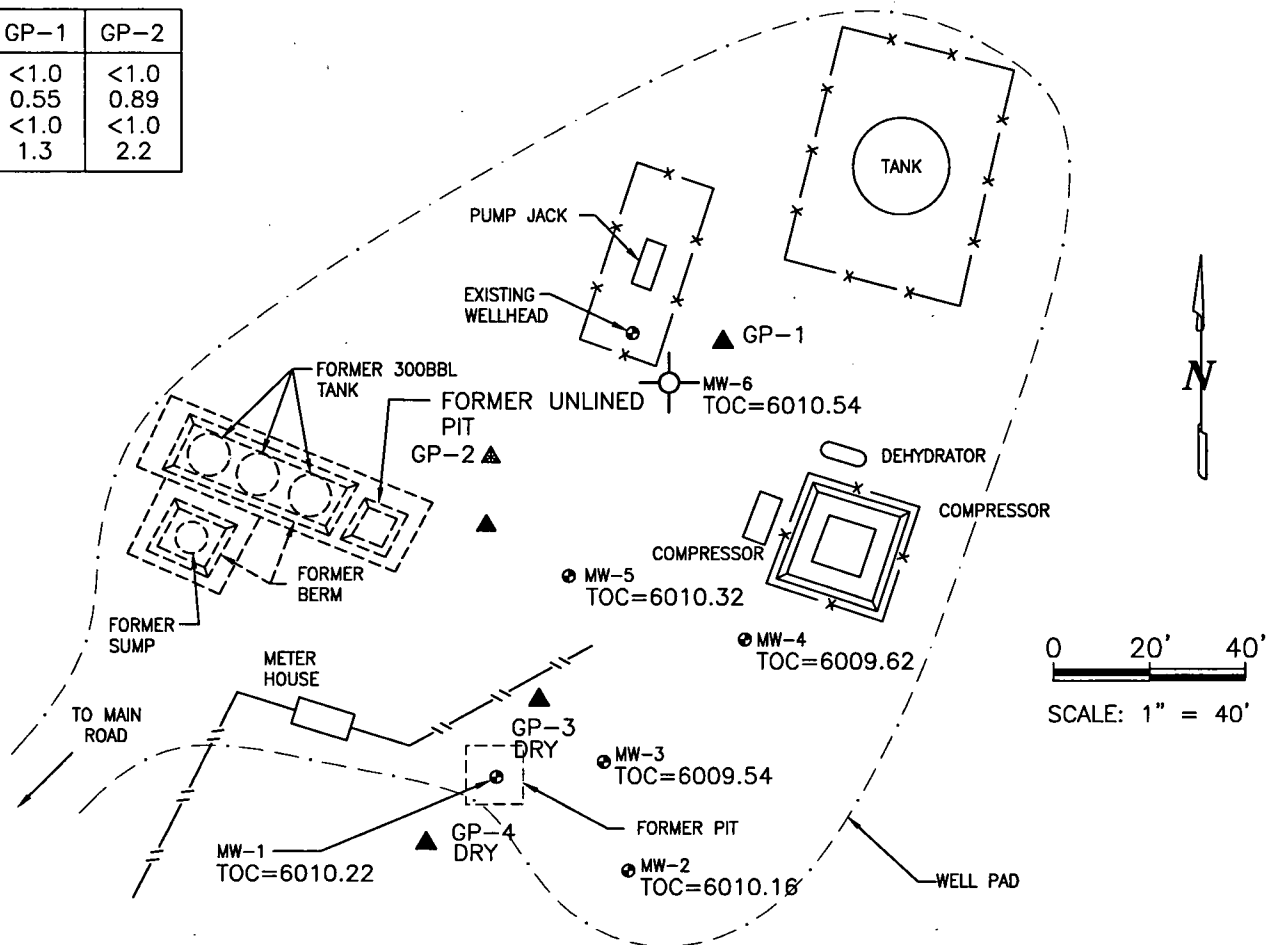


JOHNSTON FEDERAL #6A, METER 70194
MARCH 2006

GROUNDWATER SITES
EL PASO TENNESSEE PIPELINE COMPANY

FIGURE 1

1/5/06	GP-1	GP-2
B	<1.0	<1.0
T	0.55	0.89
E	<1.0	<1.0
X	1.3	2.2



LEGEND

● MW-1	Monitoring Well Location and Number	<	Not Detected. Reporting limit Shown
⊙ MW-6	New Monitoring Well Location and Number	B	Benzene (μg/L)
▲ GP-1	Geoprobe Location	T	Toluene (μg/L)
—x—x—	Fence Line	E	Ethylbenzene (μg/L)
—//—//—	Pipe Line	X	Total Xylenes (μg/L)
— — —	Centerline of Road		
TOC	Top of Casing		

JOHNSTON FEDERAL #6A, METER 89232
GEOPROBE AND NEW
MONITORING WELL LOCATION

GROUNDWATER SITES
EL PASO TENNESSEE PIPELINE COMPANY

FIGURE 2

FIGURE 3
HISTORIC BTEX CONCENTRATIONS AND GROUNDWATER ELEVATIONS
JOHNSTON FED #4
MW-1

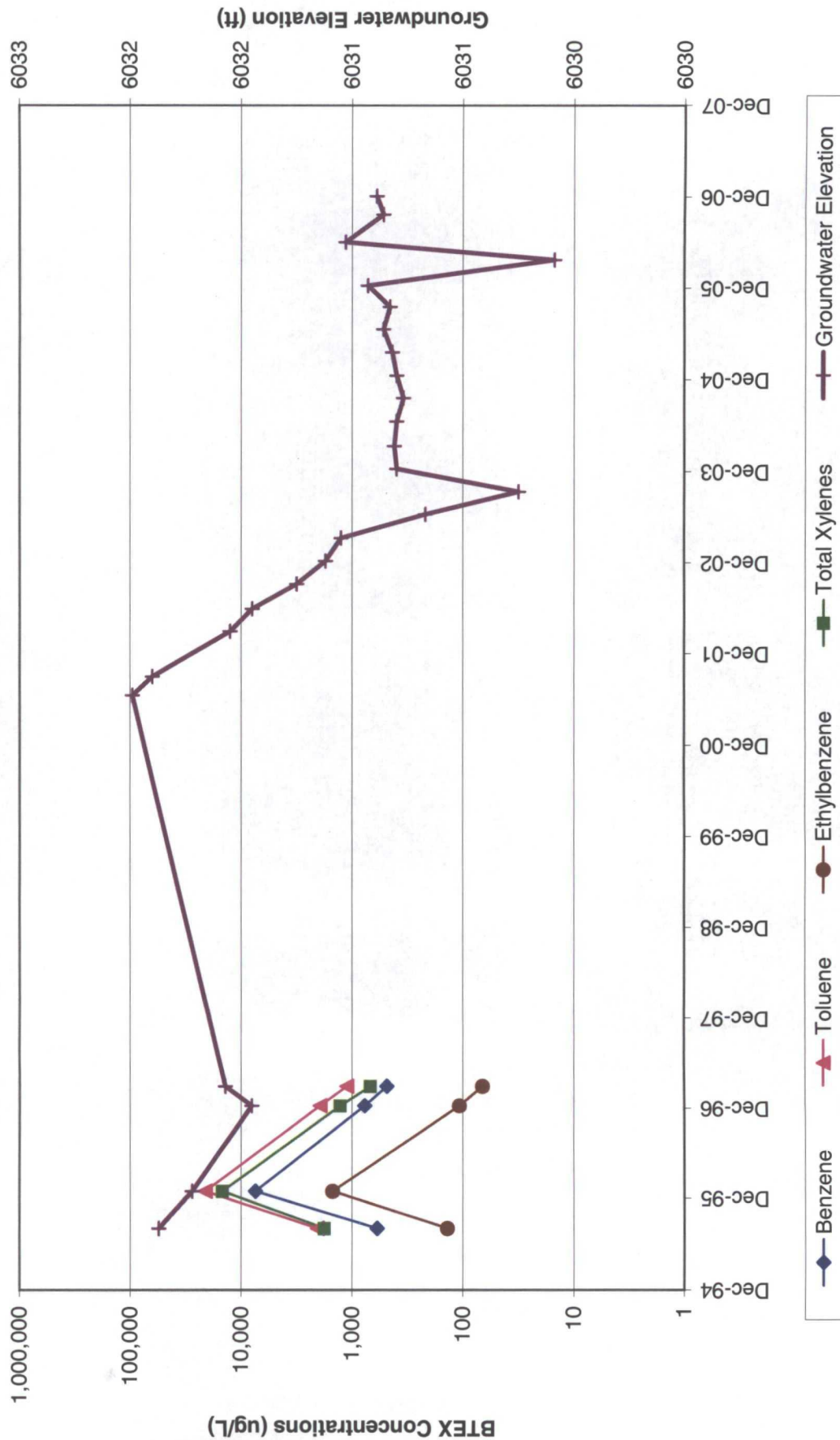
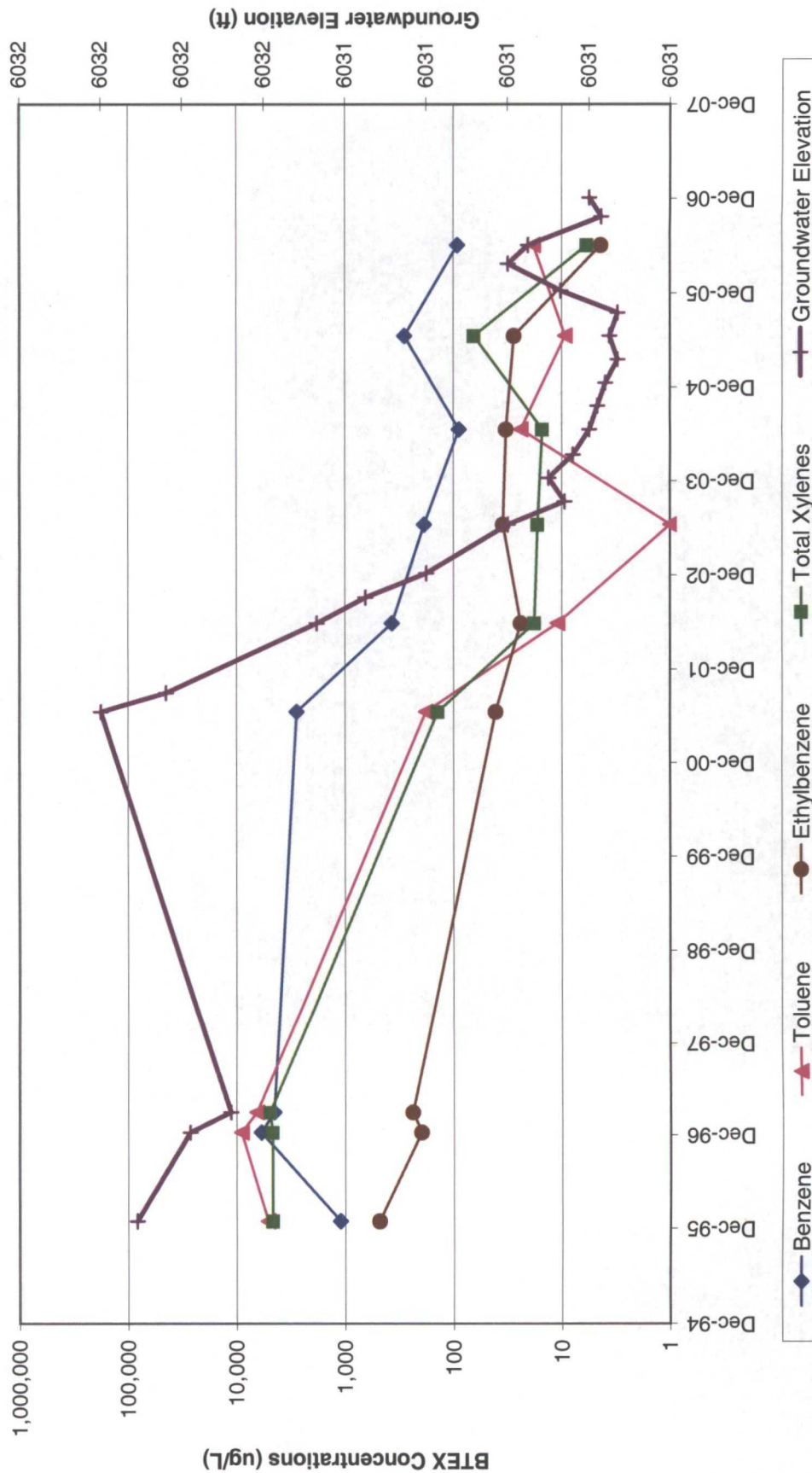


FIGURE 4
HISTORIC BTEX CONCENTRATIONS AND GROUNDWATER ELEVATIONS
JOHNSTON FED #4
MW-2



Note: A value of 1 indicates parameter not detected.

FIGURE 5
HISTORIC BTEX CONCENTRATIONS AND GROUNDWATER ELEVATIONS
JOHNSTON FED #4
MW-3

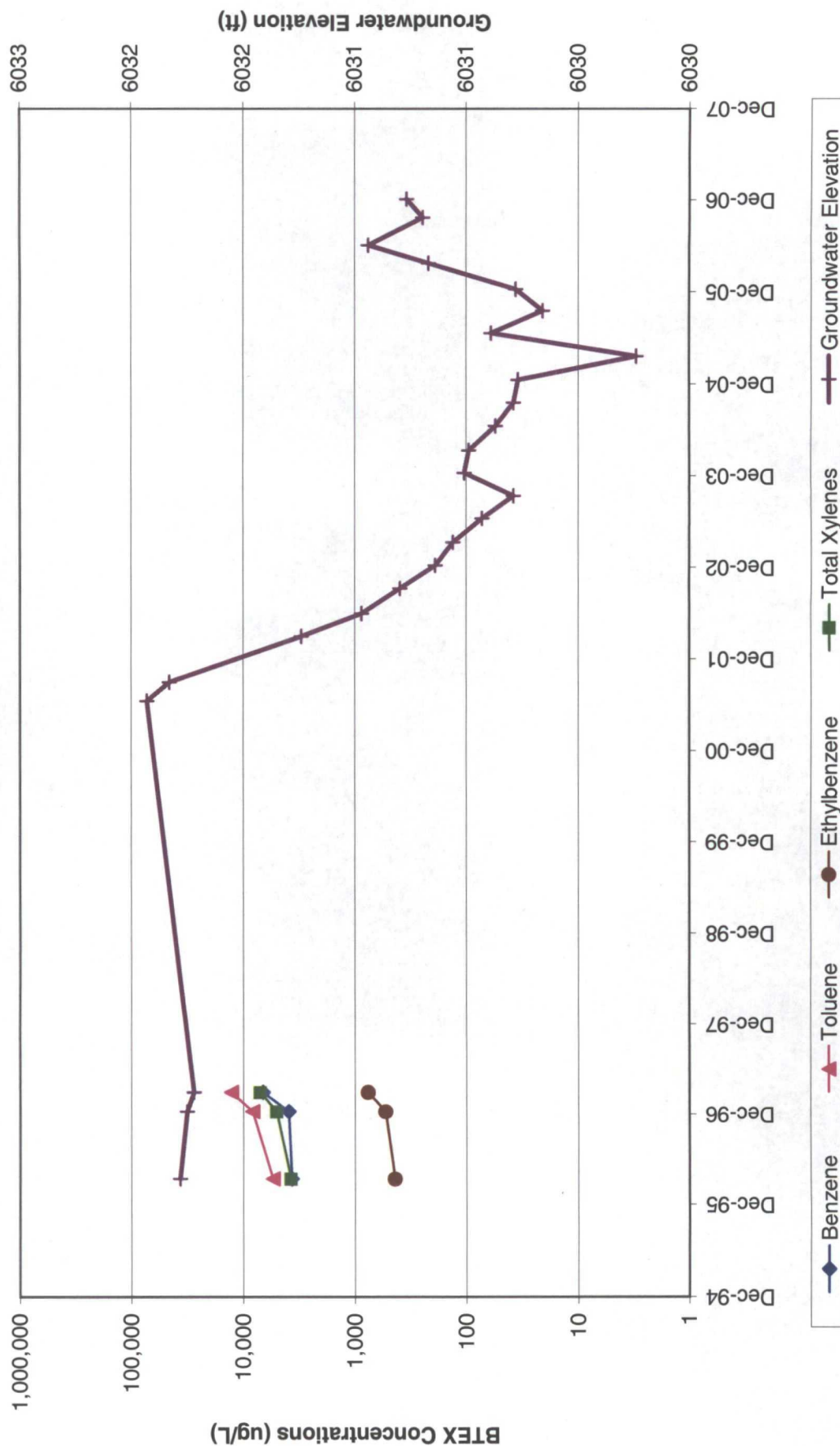


FIGURE 6
HISTORIC FREE-PRODUCT RECOVERY
JOHNSTON FED #4
MW-1

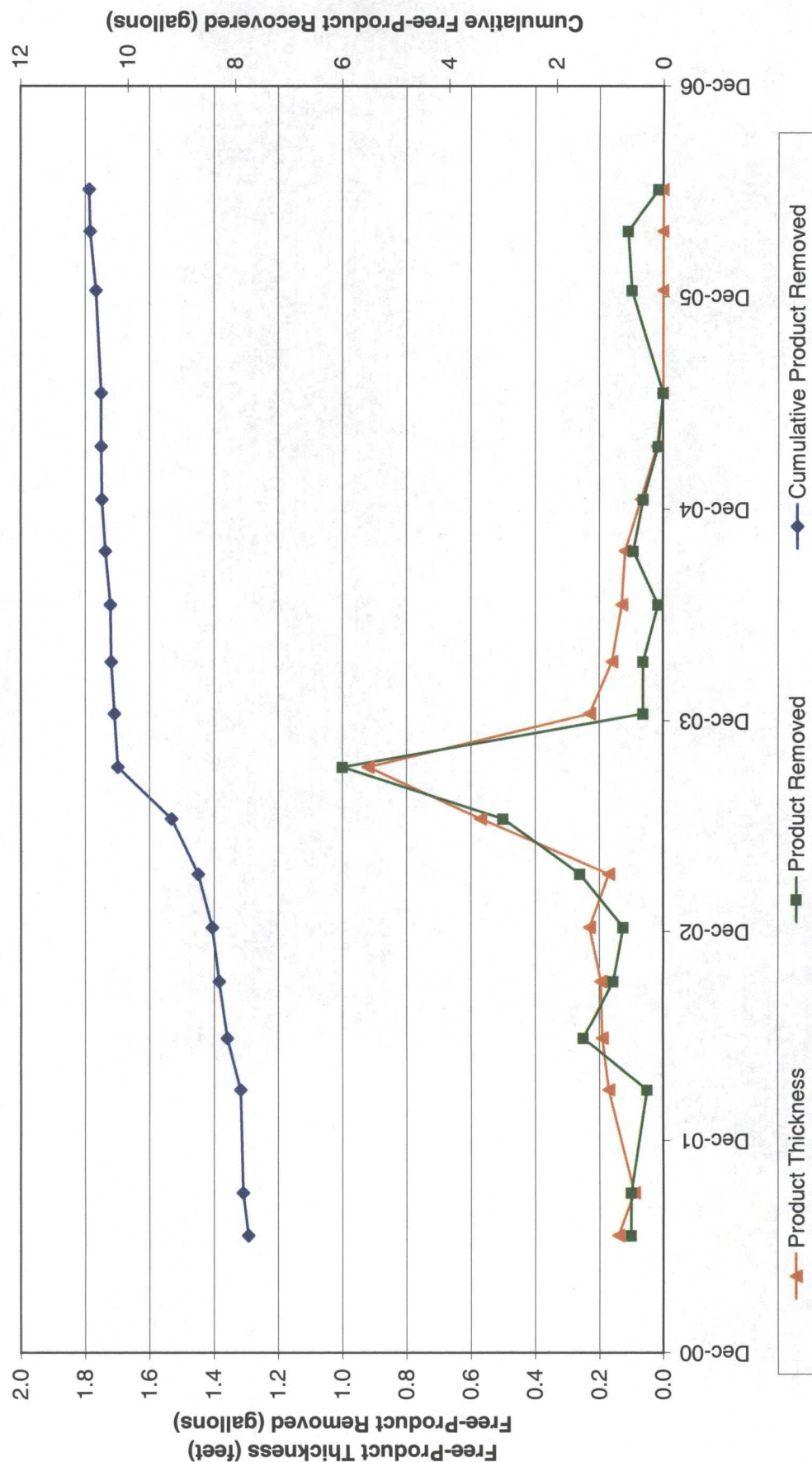


FIGURE 7
HISTORIC FREE-PRODUCT RECOVERY
JOHNSTON FED #4
MW-3

