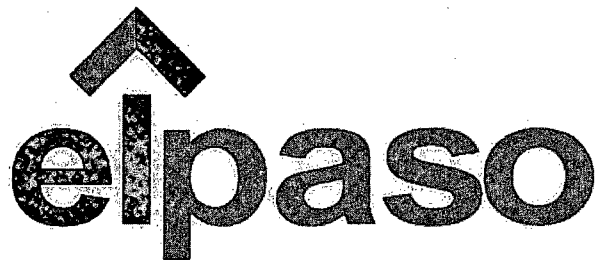


**3R - 407**  
**ANNUAL**  
**MONITORING**  
**REPORT**

**03/2007**



El Paso Tennessee  
Pipeline Company

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San Juan Basin Pit Program  
Groundwater Sites Project

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Final 2006 Annual Report  
Navajo Sites (Volume 3)

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March 2007



**MWH**

1801 California Street, Suite 2900  
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**2006 ANNUAL GROUNDWATER REPORT**  
**NAVAJO SITES VOLUME III**

MAR 06 2007

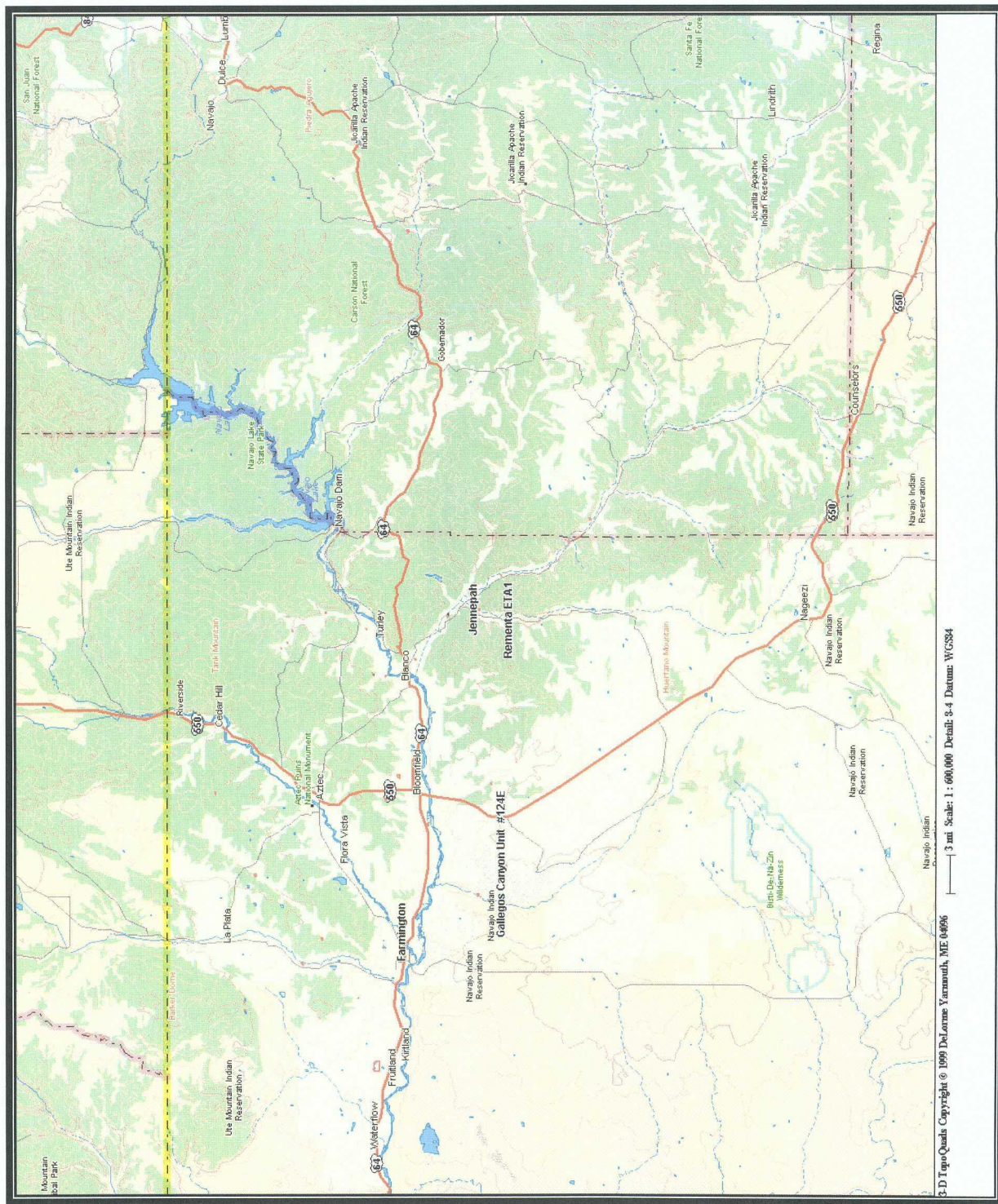
**EL PASO TENNESSEE PIPELINE COMPANY**  
Oil Conservation Division  
Environmental Bureau

**TABLE OF CONTENTS**

METER or LINE ID	SITE NAME	TOWNSHIP	RANGE	SECTION	UNIT
95608	Gallegos Canyon Unit #124E	28N	12W	35	N



# Navajo 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**

**GCU #124E  
Meter Code: 95608**

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**SITE DETAILS**

<b>Legal Description:</b>	<b>Town:</b>	28N	<b>Range:</b>	12W	<b>Sec:</b>	35	<b>Unit:</b>	N
<b>NMOCD Haz Ranking:</b>	20	<b>Land Type:</b>	Navajo	<b>Operator:</b>	BP / Amoco Production			

**PREVIOUS ACTIVITIES**

<b>Site Assessment:</b>	Jan/95	<b>Excavation:</b>	Oct/95 (196 cy)	<b>Soil Boring:</b>	Mar/98
<b>Monitor Well:</b>	Jun/98	<b>Geoprobe:</b>	NA	<b>Additional MWs:</b>	*
<b>Downgradient MWs:</b>	*	<b>Replace MW:</b>	NA	<b>Quarterly Initiated:</b>	Jun/98
<b>ORC Nutrient Injection:</b>	NA	<b>Re-Excavation:</b>	NA	<b>PSH Removal Initiated:</b>	Apr/99
<b>Annual Initiated:</b>	NA	<b>Quarterly Resumed:</b>	NA		

\* Attempts were made in November 2000 to install additional wells that resulted in dry holes.

**SUMMARY OF 2006 ACTIVITIES**

**MW-1:** Water level gauging and groundwater sampling were performed in 2006.

**Site-Wide Activities:** No other activities were performed at this site in 2006.

**SITE MAP**

Site maps (January, April, June, and October) are attached as Figures 1-4.

**SUMMARY TABLES AND GRAPHS**

- Analytical data are summarized in Table 1 and presented graphically in Figure 5.
- Product removal data are summarized in Table 2 and presented graphically in Figure 6.
- Laboratory analytical data are presented in Attachment 1 (included on CD).
- Field documentation is presented in Attachment 2 (included on CD).

**EPTPC GROUNDWATER SITES  
2006 ANNUAL GROUNDWATER REPORT**

**GCU #124E  
Meter Code: 95608**

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**GEOLOGIC LOGS AND WELL COMPLETION DIAGRAMS**

No subsurface activities were performed at this site during 2006.

**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 generated for this site. However, the attached site maps present the 2006 water level and analytical data.

**CONCLUSIONS**

- Quarterly gauging at MW-1 did not detect any free product in the well in 2006. Free product has not been detected in the well since 2003. The majority of free-product was removed from MW-1 by 2002 (approximately 19 gallons); between 2003 and 2005, a total of only 0.03 gallons of product were removed, and an oily sheen was periodically detected on the water.
- Benzene concentrations were above the applicable standards for all four quarters of 2006. The quarterly results were 77.9 µg/L, 45.1 µg/L, 60.8 µg/L, and 21.1 µg/L for January, April, July, and October 2006, respectively.
- Total xylene concentrations were slightly above the NMWQCC standard in January 2006 (656 µg/L), but below the standard during the remainder of 2006. Total xylene concentrations were below the NNEPA/USEPA standards during all sampling events.
- Toluene and ethylbenzene concentrations were below all applicable standards during 2006.

**RECOMMENDATIONS**

- Because the BTEX concentrations in MW-1 are approaching their respective groundwater standards, EPTPC will continue to sample MW-1 quarterly.
- Sampling will continue on a quarterly basis until BTEX concentrations are below the applicable NNEPA/USEPA standards for three consecutive quarters and NMWQCC standards for four consecutive quarters.
- Following approval for closure by both the NNEPA/USEPA and the NMOCD, the monitoring well will be removed in accordance with the approved EPTPC Monitoring Well Abandonment Plan.



TABLE 1

SUMMARY OF BTEX COMPOUNDS IN GROUNDWATER SAMPLES  
GCU #124E (METER #95608)

Site Name	Sample Date	Monitoring Well	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)	Depth to Water (feet)
GCU #124E	6/25/98	MW-1	340	271	111	510	27.21
GCU #124E	9/14/98	MW-1	410	251	68.3	220	27.50
GCU #124E	12/15/98	MW-1	710	1300	160	940	28.16
GCU #124E	3/16/99	MW-1	2960	5130	367	2890	29.02
GCU #124E	4/19/05	MW-1	38.8	1	142	1160	25.45
GCU #124E	7/20/05	MW-1	125	11.4	371	2640	24.73
GCU #124E	10/20/05	MW-1	86.8	11.3	125	864	24.85
GCU #124E	1/19/06	MW-1	77.9	12	101	656	24.53
GCU #124E	4/24/06	MW-1	45.1	3.5	56.1	377	24.25
GCU #124E	7/31/06	MW-1	60.8	1.5	79.3	524	25.68
GCU #124E	10/24/06	MW-1	21.1	1	56.6	349	24.94

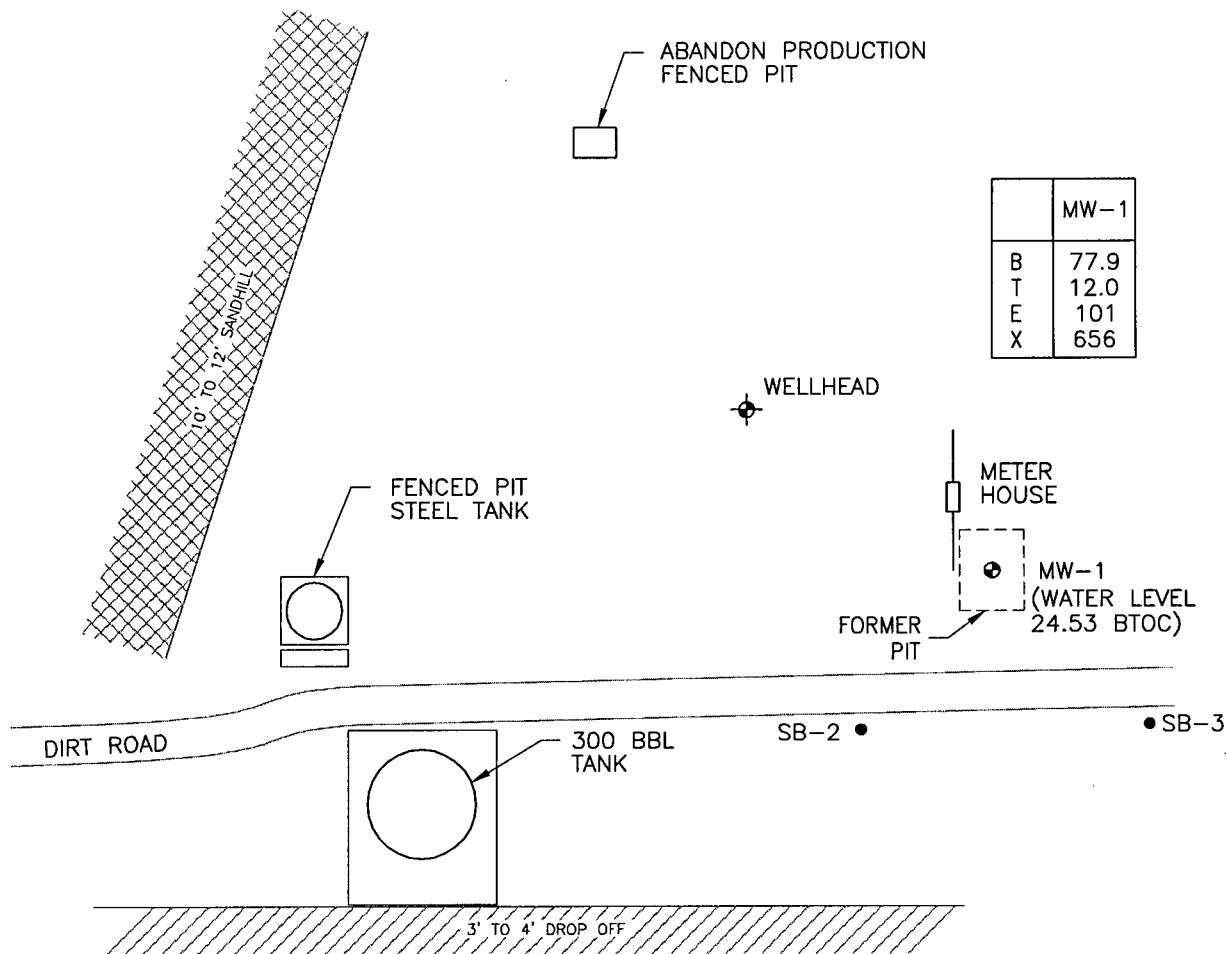
1 = Analyte Not Detected





TABLE 2

**SUMMARY OF FREE-PRODUCT REMOVAL**  
**GCU #124E (METER #95608)**

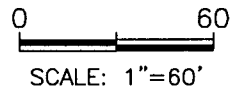
Site Name	Monitoring Well	Removal Date	Depth to Product (feet) btoc	Depth to Water (feet) btoc	Product Thickness (feet)	Volume of Product Removed (gallons)	Cumulative Volume of Product Removed (gallons)
GCU #124E	MW-1	1/2/02	28.85	28.96	0.11	0.16	18.01
GCU #124E	MW-1	1/7/02	28.94	28.99	0.05	0.38	18.39
GCU #124E	MW-1	1/23/02	26.35	29.35	3.00	0.11	18.50
GCU #124E	MW-1	1/30/02	29.22	29.24	0.02	0.01	18.51
GCU #124E	MW-1	2/7/02	29.66	29.70	0.04	0.38	18.89
GCU #124E	MW-1	2/14/02	29.28	29.29	0.01	0.01	18.90
GCU #124E	MW-1	2/20/02	29.75	29.76	0.01	0.01	18.91
GCU #124E	MW-1	3/4/02		29.30	0.00	0.01	18.92
GCU #124E	MW-1	3/11/02		29.17	0.00	0.01	18.93
GCU #124E	MW-1	3/21/02		29.47	0.00	0.01	18.94
GCU #124E	MW-1	3/28/02		29.33	0.00	0.01	18.95
GCU #124E	MW-1	4/3/02		29.33	0.00	0.01	18.96
GCU #124E	MW-1	4/12/02		29.70	0.00	0.00	18.96
GCU #124E	MW-1	4/18/02		29.31	0.00	0.00	18.96
GCU #124E	MW-1	4/25/02		30.11	0.00	0.00	18.96
GCU #124E	MW-1	5/3/02		30.18	0.00	0.00	18.96
GCU #124E	MW-1	5/10/02		30.25	0.00	0.00	18.96
GCU #124E	MW-1	5/17/02		29.57	0.00	0.00	18.96
GCU #124E	MW-1	5/24/02		29.70	0.00	0.00	18.96
GCU #124E	MW-1	5/31/02		29.54	0.00	0.00	18.96
GCU #124E	MW-1	6/7/02		29.42	0.00	0.00	18.96
GCU #124E	MW-1	6/12/02		29.21	0.00	0.00	18.96
GCU #124E	MW-1	6/21/02		30.12	0.00	0.00	18.96
GCU #124E	MW-1	6/27/02		30.18	0.00	0.00	18.96
GCU #124E	MW-1	7/2/02	29.98	29.99	0.01	0.00	18.96
GCU #124E	MW-1	7/11/02		30.06	0.00	0.00	18.96
GCU #124E	MW-1	7/15/02		29.63	0.00	0.01	18.97
GCU #124E	MW-1	10/16/02	29.24	29.65	0.41	0.01	18.98
GCU #124E	MW-1	1/15/03		28.63	0.00	0.00	18.98
GCU #124E	MW-1	5/5/03	27.69	27.72	0.03	0.02	18.99
GCU #124E	MW-1	7/18/03	27.06	27.08	0.02	0.01	19.00
GCU #124E	MW-1	10/28/03		25.56	0.00	0.00	19.00
GCU #124E	MW-1	1/29/04		25.40	0.00	0.00	19.00
GCU #124E	MW-1	4/15/04		24.98	0.00	0.004	19.00
GCU #124E	MW-1	7/26/04		24.50	0.00	0.004	19.01
GCU #124E	MW-1	10/15/04		24.98	0.00	0.00	19.01
GCU #124E	MW-1	1/17/05		25.49	0.00	0.00	19.01
GCU #124E	MW-1	4/19/05		25.45	0.00	0.00	19.01
GCU #124E	MW-1	7/20/05		24.73	0.00	0.00	19.01
GCU #124E	MW-1	10/20/05		24.85	0.00	0.00	19.01
GCU #124E	MW-1	1/19/06		24.53	0.00	0.00	19.01
GCU #124E	MW-1	4/24/06		24.25	0.00	0.00	19.01
GCU #124E	MW-1	7/31/06		25.68	0.00	0.00	19.01
GCU #124E	MW-1	10/24/06		24.94	0.00	0.00	19.01



# LEGEND

-  MW-1      Approximate Monitoring Well Location and Number
-       Dry 2000 Borehole
- BTOC      Below Top of Casing (ft.)

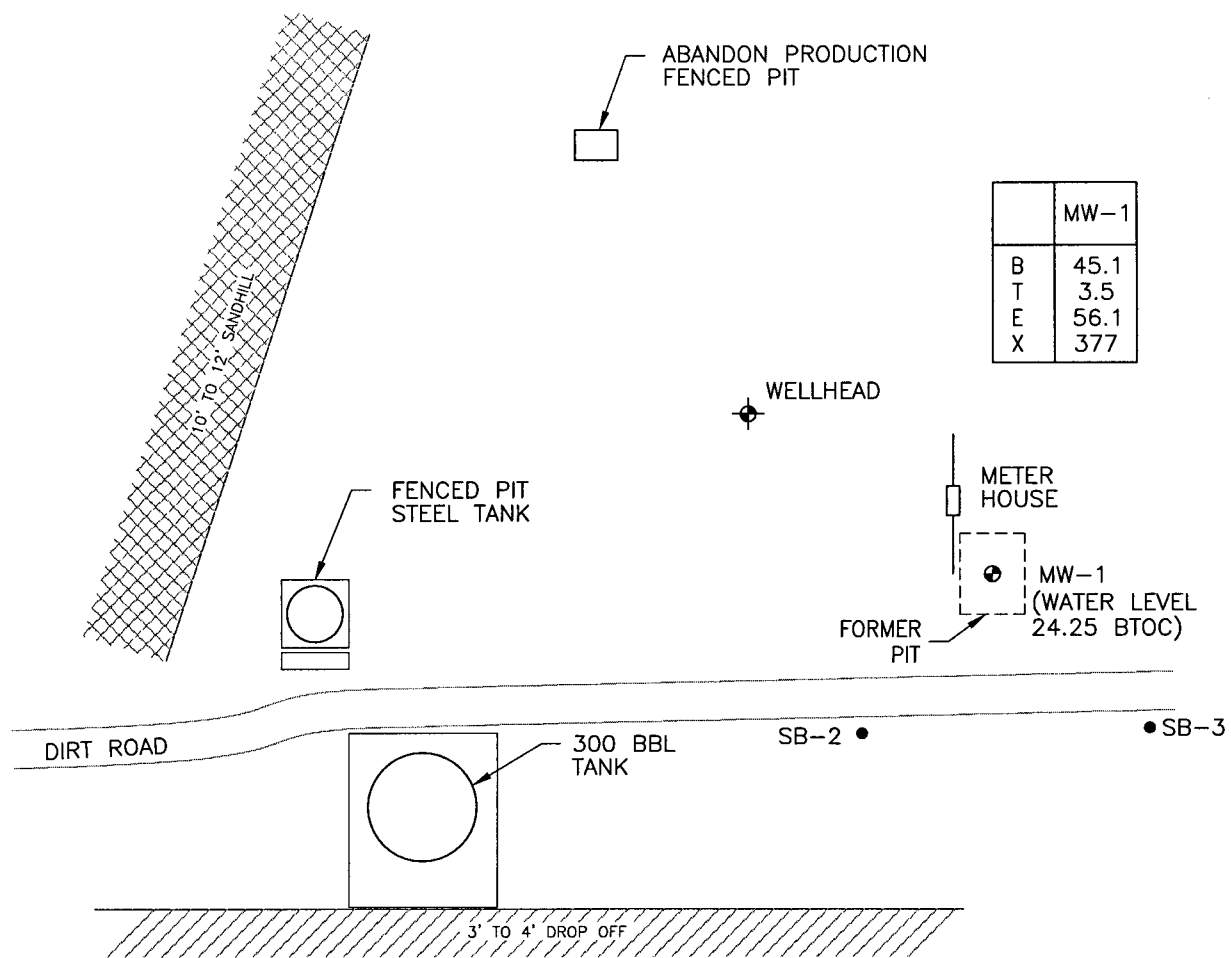
- B      Benzene      ( $\mu\text{g/L}$ )
- T      Toluene      ( $\mu\text{g/L}$ )
- E      Ethylbenzene      ( $\mu\text{g/L}$ )
- X      Total Xylenes      ( $\mu\text{g/L}$ )



GALLEGOS CANYON UNIT 124E METER 95608  
JANUARY 2006

GROUNDWATER SITES  
EL PASO TENNESSEE PIPELINE COMPANY

FIGURE 1



# LEGEND

- MW-1 Approximate Monitoring Well Location and Number
- Dry 2000 Borehole
- BTOC Below Top of Casing (ft.)

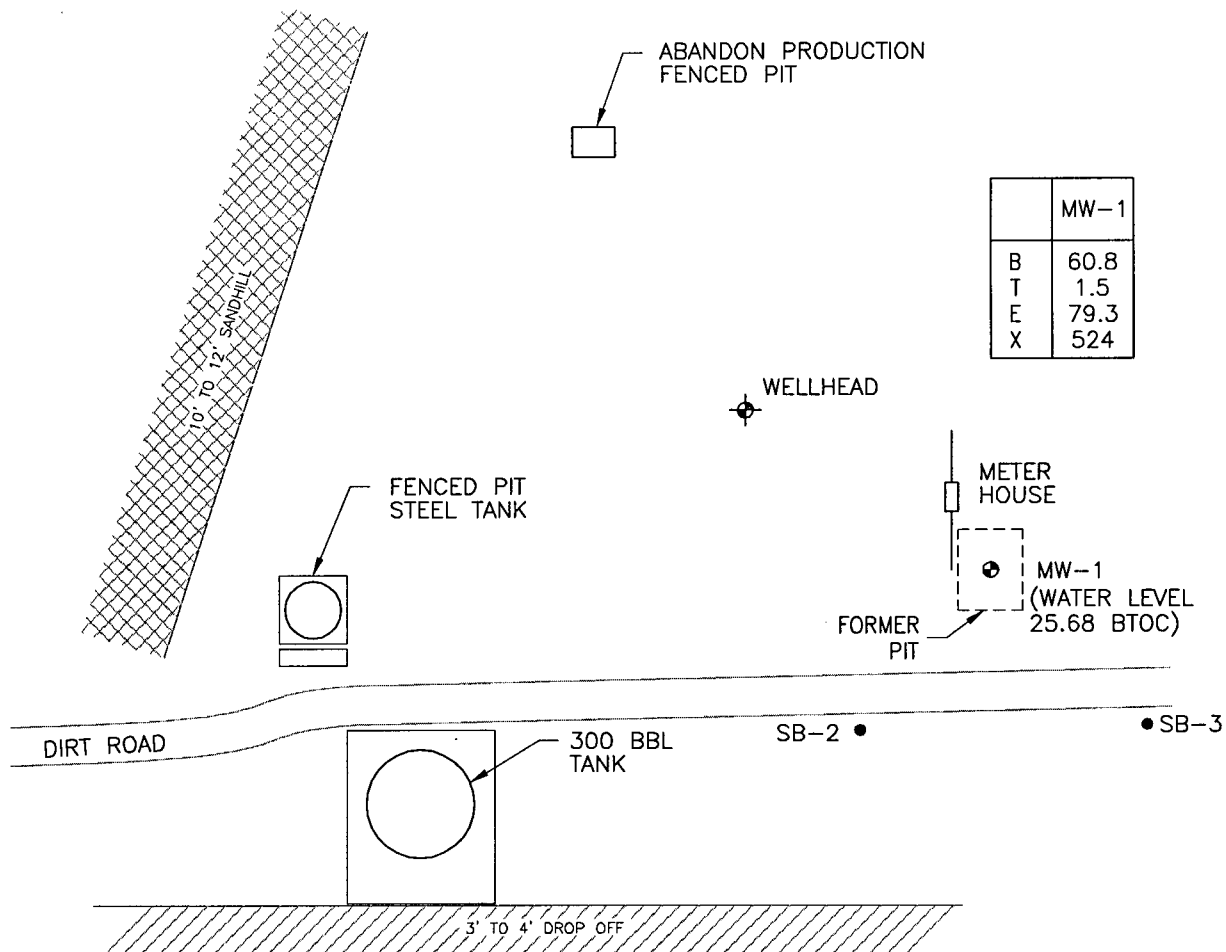
- B Benzene ( $\mu\text{g/L}$ )
- T Toluene ( $\mu\text{g/L}$ )
- E Ethylbenzene ( $\mu\text{g/L}$ )
- X Total Xylenes ( $\mu\text{g/L}$ )

0 60  
SCALE: 1"=60'

GALLEGOS CANYON UNIT 124E METER 95608  
APRIL 2006

GROUNDWATER SITES  
EL PASO TENNESSEE PIPELINE COMPANY

FIGURE 2



## LEGEND

- MW-1      Approximate Monitoring Well  
             Location and Number  
 •          Dry 2000 Borehole  
 BTOC      Below Top of Casing (ft.)

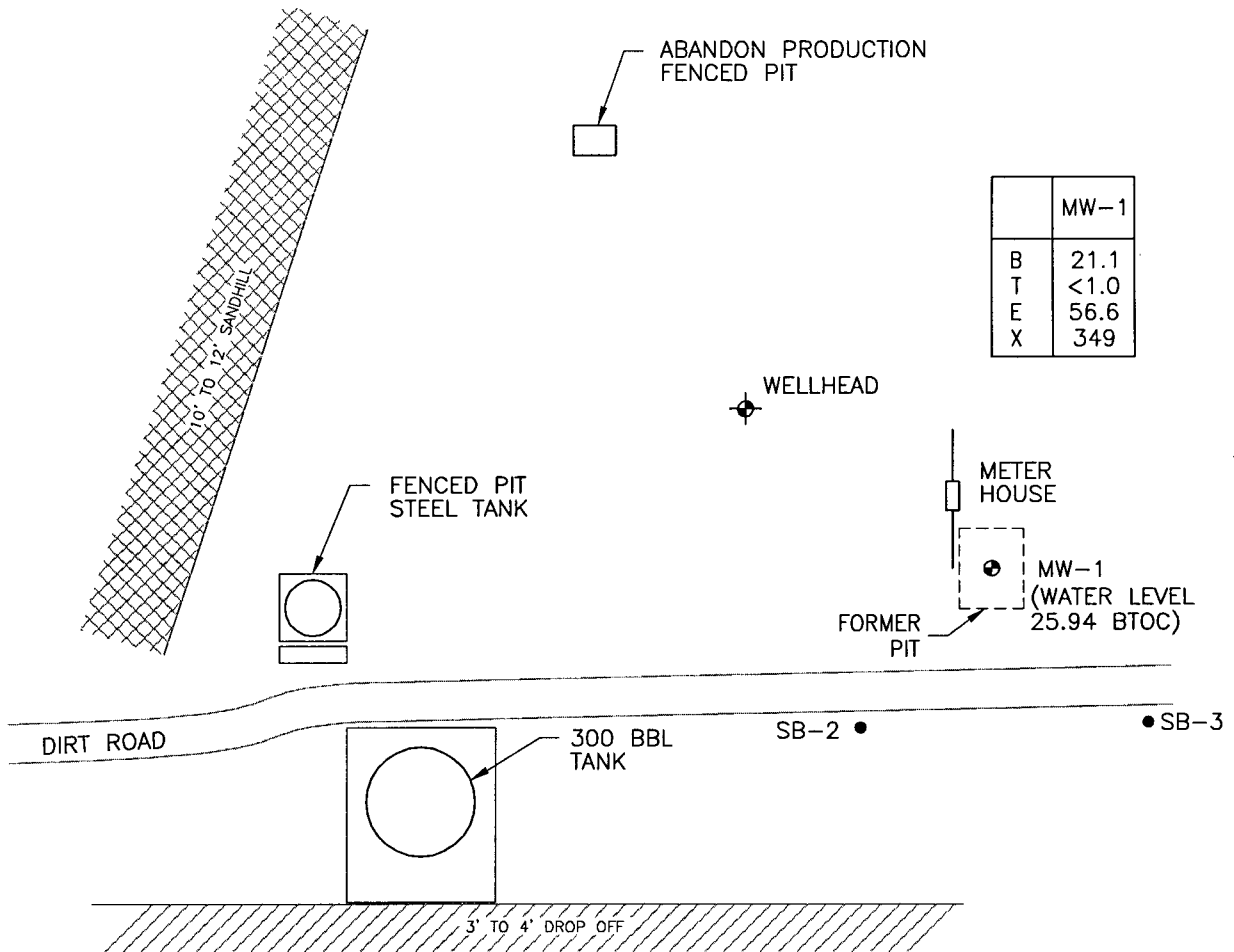
- B      Benzene ( $\mu\text{g/L}$ )  
 T      Toluene ( $\mu\text{g/L}$ )  
 E      Ethylbenzene ( $\mu\text{g/L}$ )  
 X      Total Xylenes ( $\mu\text{g/L}$ )

0 60  
SCALE: 1"=60'

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JULY 2006

GROUNDWATER SITES  
EL PASO TENNESSEE PIPELINE COMPANY

FIGURE 3



	MW-1
B	21.1
T	<1.0
E	56.6
X	349

## LEGEND

- MW-1 Approximate Monitoring Well Location and Number
- Dry 2000 Borehole
- BTOC Below Top of Casing (ft.)

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

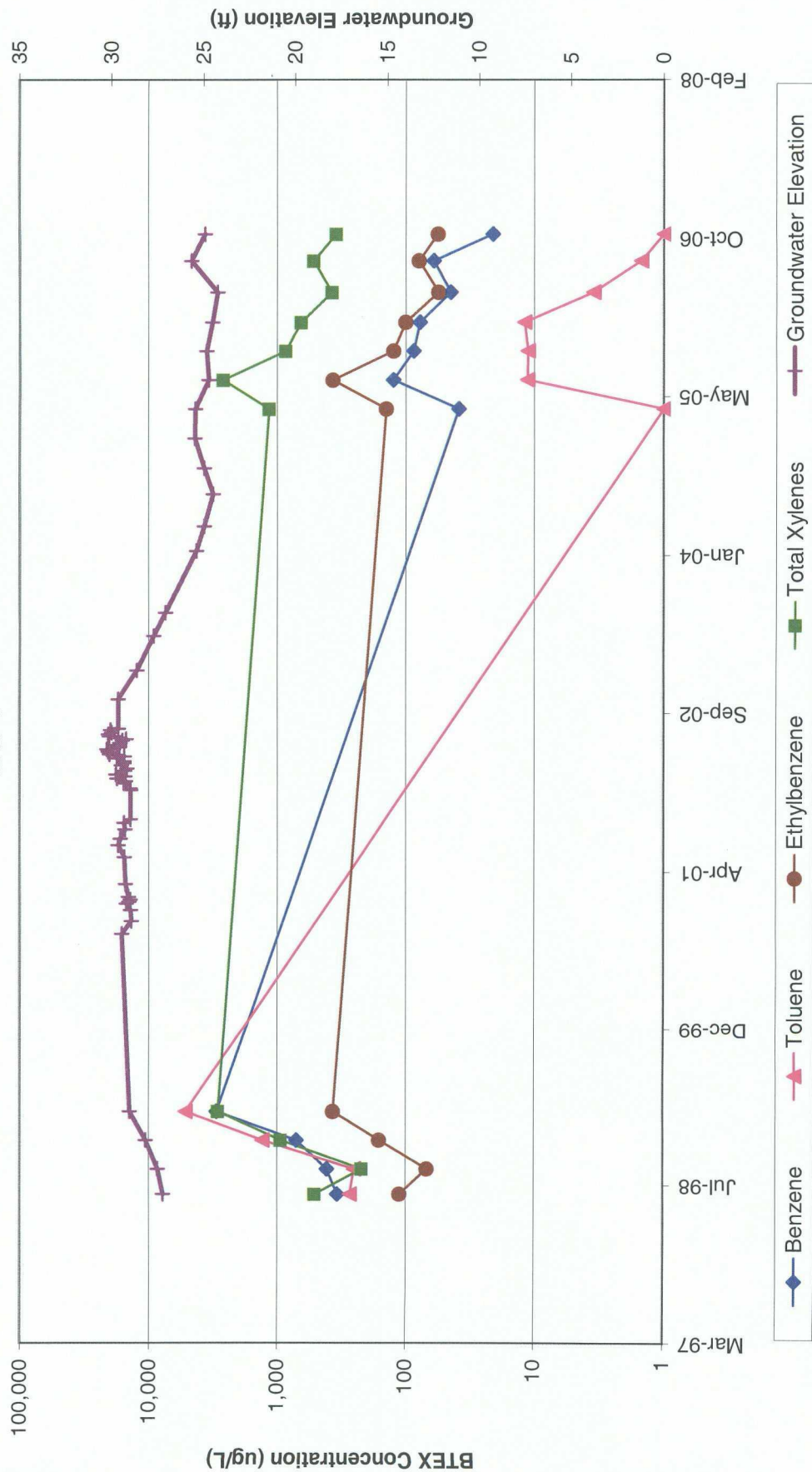
0 60  
SCALE: 1"=60'

GALLEGOS CANYON UNIT 124E METER 95608  
OCTOBER 2006

GROUNDWATER SITES  
EL PASO TENNESSEE PIPELINE COMPANY

FIGURE 4

**FIGURE 5**  
**HISTORIC BTEX CONCENTRATIONS AND GROUNDWATER ELEVATIONS**  
**GCU #124E**  
**MW-1**



A concentration of 1 indicates parameter not detected.

FIGURE 6  
HISTORIC FREE-PRODUCT RECOVERY  
GCU #124E  
MW-1

