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2011 AGWMR

08/20/2012

EL PASO CGP COMPANY

1001 LOUISIANA STREET
HOUSTON, TX 77002

2011 ANNUAL REPORT
PIT GROUNDWATER REMEDIATION
VOLUME 2: FEE/STATE LANDS

AUGUST 2012

MWH

1801 California Street
Suite 2900
Denver, Colorado 80202
303 291 2222

2011 ANNUAL GROUNDWATER REPORT
NON-FEDERAL SITES VOLUME II

EL PASO CGP COMPANY

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METER or LINE ID	NMOCD CASE NO.	SITE NAME	TOWNSHIP	RANGE	SECTION	UNIT
03906	3RP-179-0	GCU Com A #142E	29N	12W	25	G
93388	3RP-192-0	*Horton #1E	31N	09W	28	H
70194	3RP-201-0	Johnston Fed #4	31N	09W	33	H
LD087	3RP-205-0	K-31 Line Drip	25N	06W	16	N
72556	3RP-207-0	Knight #1	30N	13W	5	A
94967	3RP-214-0	**Lindrith B #24	24N	03W	9	N
70445	3RP-074-0	Standard Oil Com #1	29N	09W	36	N
71669	3RP-239-0	State Gas Com N #1	31N	12W	16	H

*The Horton #1E site was submitted for closure in 2009 and is pending approval from NMOCD. There were no monitoring activities for this site in 2011.

**The Lindrith B#24 site was submitted for closure in 2006 and is pending approval from NMOCD. There were no monitoring activities for this site in 2011.

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L:\San Juan River Basin\SJRB General\GIS\Site_Locations_2011.mxd

LEGEND

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

*Closure Request Pending with the NMOCD.

0 2 4 6 8 Miles

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PROJECT:	SAN JUAN RIVER BASIN
TITLE:	Site Locations
FIGURE:	1

LIST OF ACRONYMS

AMSL	above mean sea level
BTEX	benzene, toluene, ethylbenzene, xylenes
btoc	below top of casing
EPCGP	El Paso CGP Company
ft	foot/feet
GWEL	groundwater elevation
ID	identification
MW	monitoring well
NMWQCC	New Mexico Water Quality Control Commission
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

- Historic free-product recovery data are summarized on Table 2 and presented graphically in Figures 2, 4, and 5.
- The 2011 laboratory report is presented in Attachment 1 (included on CD).
- The 2011 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 2011.

DISPOSITION OF GENERATED WASTES

All purge water was taken to the El Paso Natural Gas Rio Vista Compressor Station. Spent absorbent socks were managed as non-hazardous solid waste.

ISOCONCENTRATION MAPS

No isoconcentration maps were generated for this Site; however, the attached Site map presents the analytical data collected during 2011.

RESULTS

- The groundwater flow direction generally trends to the southeast.
- The annual sample collected from MW-1 had a benzene concentration of 1,590 µg/L. This result was well above the NMWQCC standard of 10 µg/L. Ethylbenzene (1,120 µg/L) and total xylenes (10,600 µg/L) were also above their respective NMWQCC standards. The MW-1 results were generally similar to previous years, with a long-term attenuation trend evident for benzene and toluene.
- Because there was no measurable free-product in MW-1, no product recovery was possible during 2011, leaving the cumulative total volume recovered at 0.42 gallons. Approximately 0.01 gallons of free-product were removed in 2005, the most recent year with recoverable product.
- The annual sample collected from MW-2 had a benzene concentration of 26.6 µg/L. No other BTEX constituent exceeded its respective standard. Benzene concentrations in MW-2 have generally tended to fluctuate inversely with water. The site water levels during 2011 were at their highest recorded elevations.
- The annual sample collected from MW-3 had a benzene concentration of 1,410 µg/L, an ethylbenzene concentration of 1,280 µg/L, and a total xylenes concentration of 12,600 µg/L, all above their respective NMWQCC standards. Concentrations in this well appear to increase with a rising water table. Free product has not been observed in this well since 2004, likely due to the increasing water level trend since that time.

- The laboratory results from the annual sample collected at MW-4 during 2011 indicated a benzene concentration of 534 µg/L, an ethylbenzene concentration of 1,800 µg/L, and a total xylenes concentration of 9,510 µg/L. Toluene was not detected. The significantly elevated benzene, ethylbenzene, and xylenes levels, which were similar to those observed in 2009, coincided with the August 2009 appearance of free-product in this well. Free-product has been recovered since that time, for a total volume recovered of approximately 8.9 gallons (including 2.27 gallons of product recovered in 2011).

- Monitor well MW-5 was sampled in 2011 for the second consecutive year since 2002. MW-5 was originally deemed to be a clean well, but it was recently added back to the annual sampling list in order to improve plume delineation, particularly in light of the 2009 reappearance of free product at the site and the contemporaneous increases in the MW-3 BTEX constituent concentrations. The 2011 groundwater sample from MW-5 exhibited non-detect levels of benzene, toluene and ethylbenzene, and a low-level total xylenes detection of 1.2J (estimated).

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 conditions must be achieved:

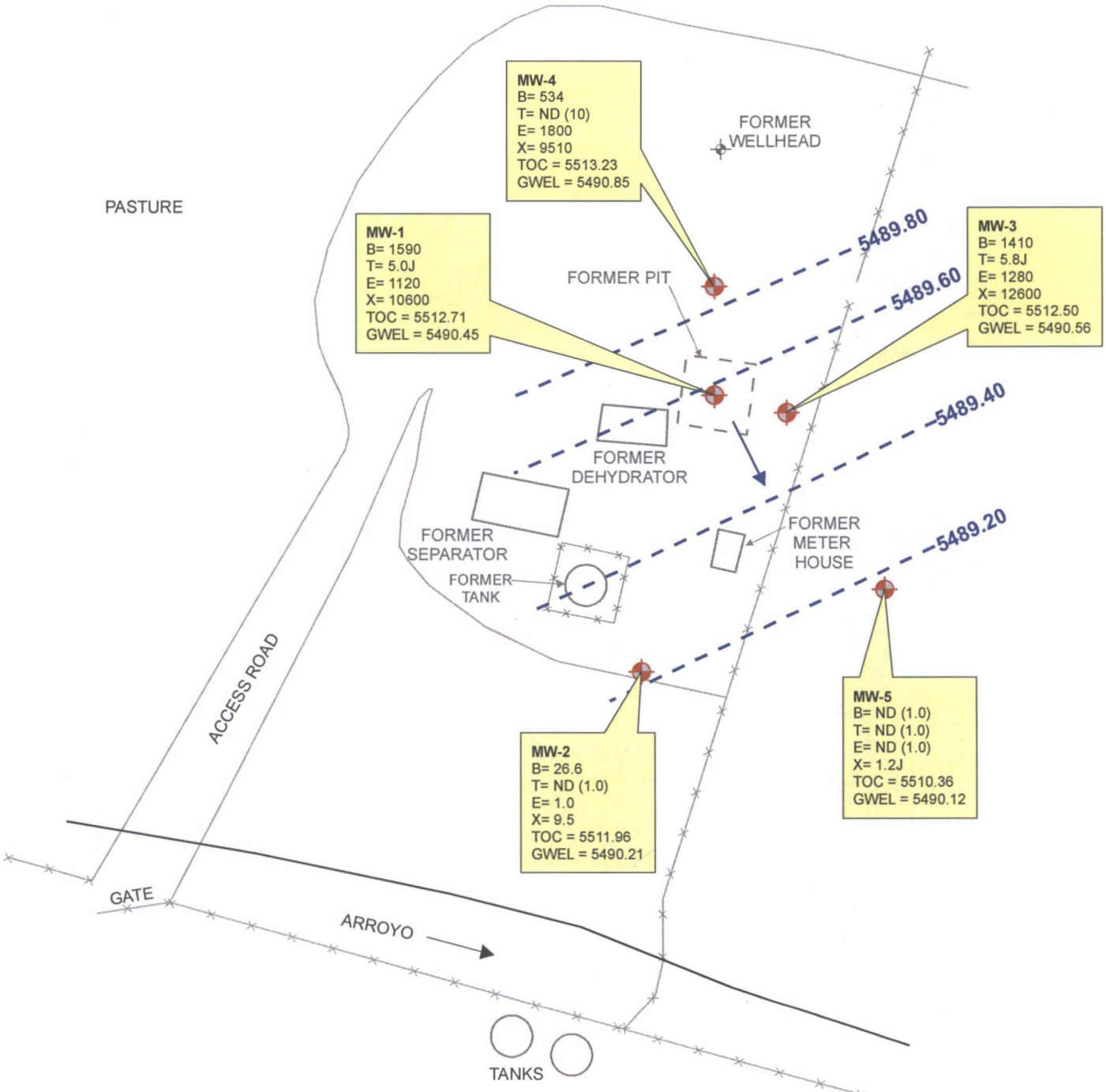
    1. Recoverable free-product must be removed from the subsurface. Generally, this corresponds with an absence of measurable free-product in the monitor wells. Currently, product recovery efforts are required at MW-4.

    2. 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, all the monitor wells require additional monitoring. The remaining applicable standards are:

Constituent	NMWQCC GW Standard (µg/L)
Benzene	10
Toluene	750
Ethylbenzene	750
Total Xylenes	620

RECOMMENDATIONS

- EPCGP recommends annual sampling and quarterly water level gauging at MW-1. Free-product recovery will again be implemented if measurable free-product thicknesses reappear.
- EPCGP recommends annual sampling and quarterly water level gauging at MW-2.
- EPCGP recommends annual sampling and quarterly water level gauging at MW-3. Free-product recovery will again be implemented if measurable free-product thicknesses reappear.
- EPCGP recommends annual sampling and quarterly product recovery at MW-4.
- EPCGP recommends continuing annual sampling at MW-5, along with quarterly water level monitoring.
- EPCGP is planning to further evaluate potential impacts related to the high Bradenhead test pressures recorded in 2006 prior to the operator's well plugging activities. Additional soil characterization activities may be undertaken in order to check for operator-sourced impacts.



Product Removed (Gallons)	2/2/11	5/4/11	9/22/11	9/30/11	11/11/11
MW-4	0.23	0.23	0.23	1.25	0.33

LEGEND

- **MW-1** — Existing Monitoring / Observation Well
- Groundwater Flow Direction
- —5486— Potentiometric Surface Contour (Inferred Where Dashed)
- **ND** — Not Detected; Reporting Limit Shown In Parenthesis

- **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. AMSL)
- **J** — Result Flagged as Estimated

Not To Scale

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PROJECT: KNIGHT #1

TITLE: Groundwater Potentiometric Surface Map, and BTEX Concentrations - September 30, 2011

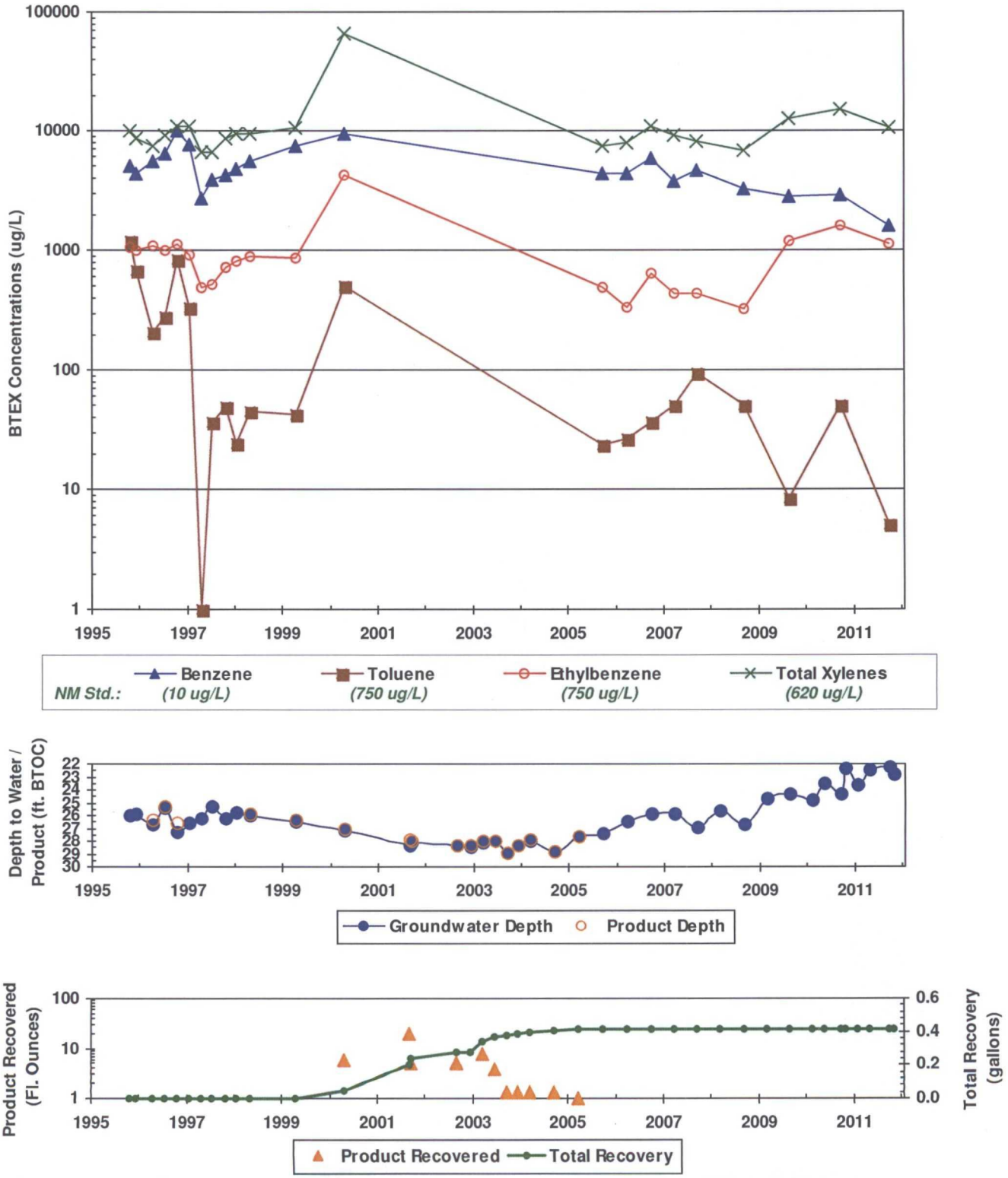
FIGURE: 1

FIGURE 2

SUMMARY OF GROUNDWATER BTEX CONCENTRATIONS, FLUID LEVELS, AND PRODUCT RECOVERY

KNIGHT #1 (METER #72556)

MW-1



*In some cases, older recovery event data are not available. However, the cumulative totals still include all historic recovery.

FIGURE 3
SUMMARY OF GROUNDWATER BTEX CONCENTRATIONS AND FLUID LEVELS
KNIGHT #1 (METER #72556)
MW-2

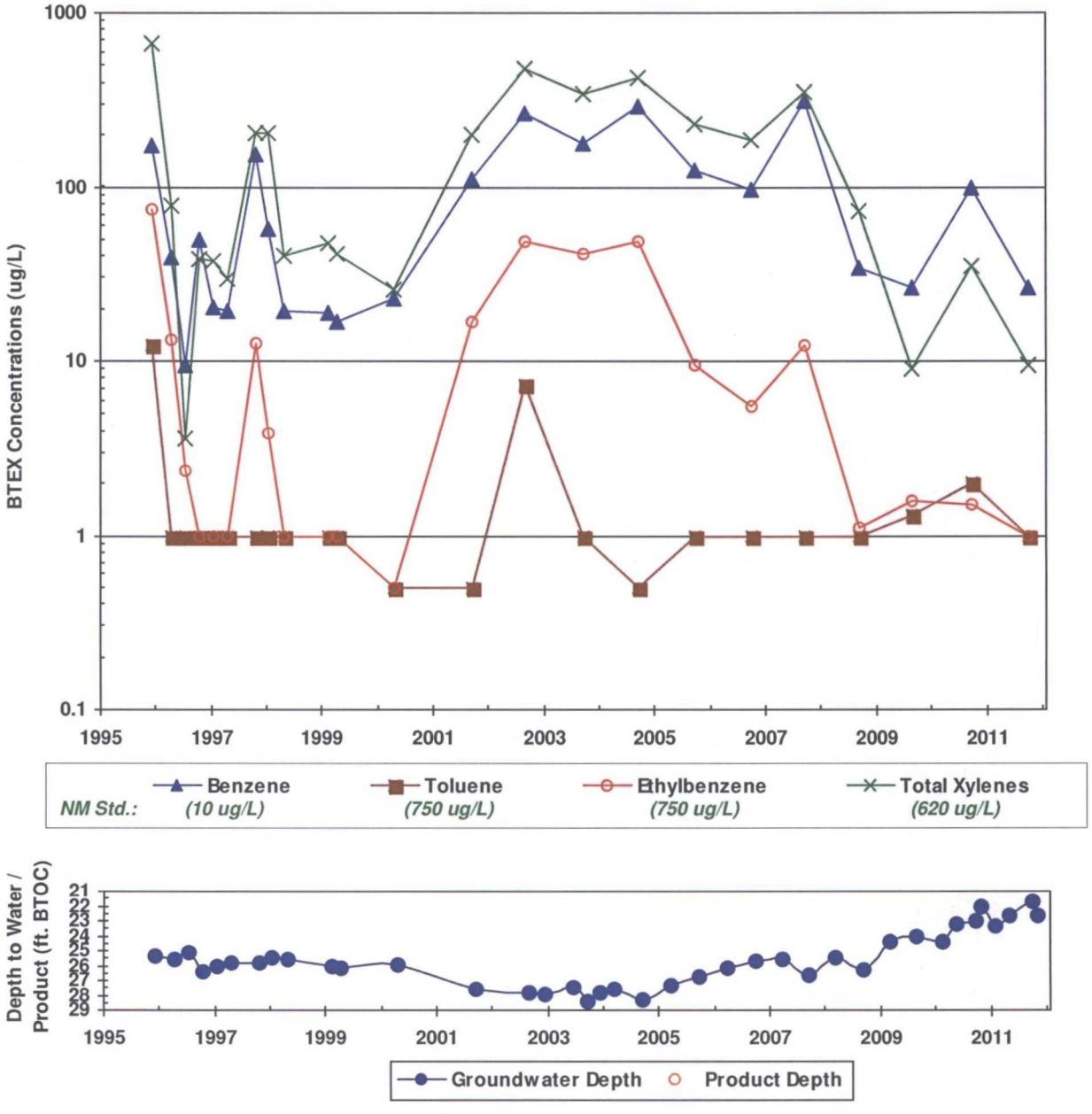
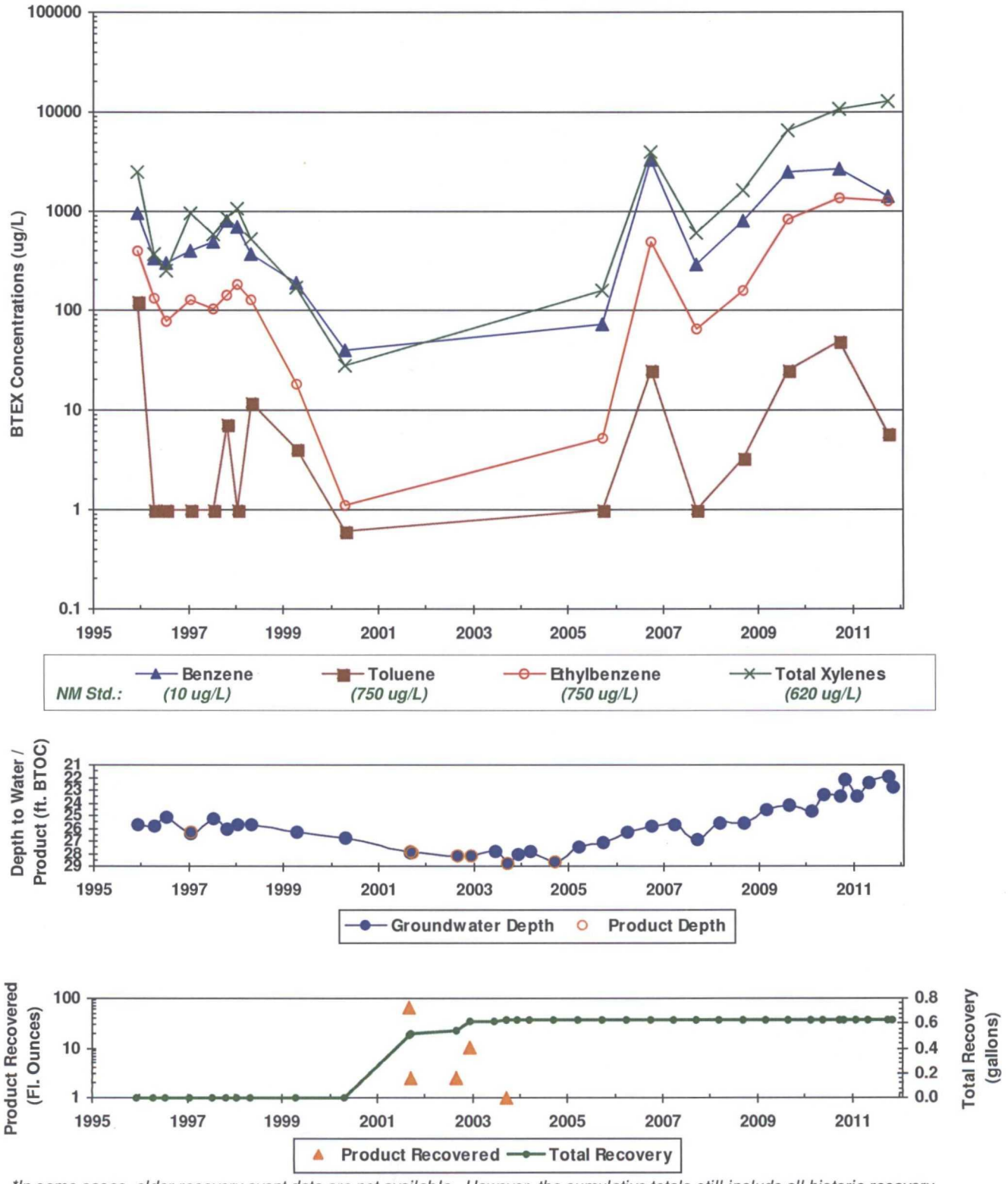


FIGURE 4

SUMMARY OF GROUNDWATER BTEX CONCENTRATIONS, FLUID LEVELS, AND PRODUCT RECOVERY

KNIGHT #1 (METER #72556)

MW-3



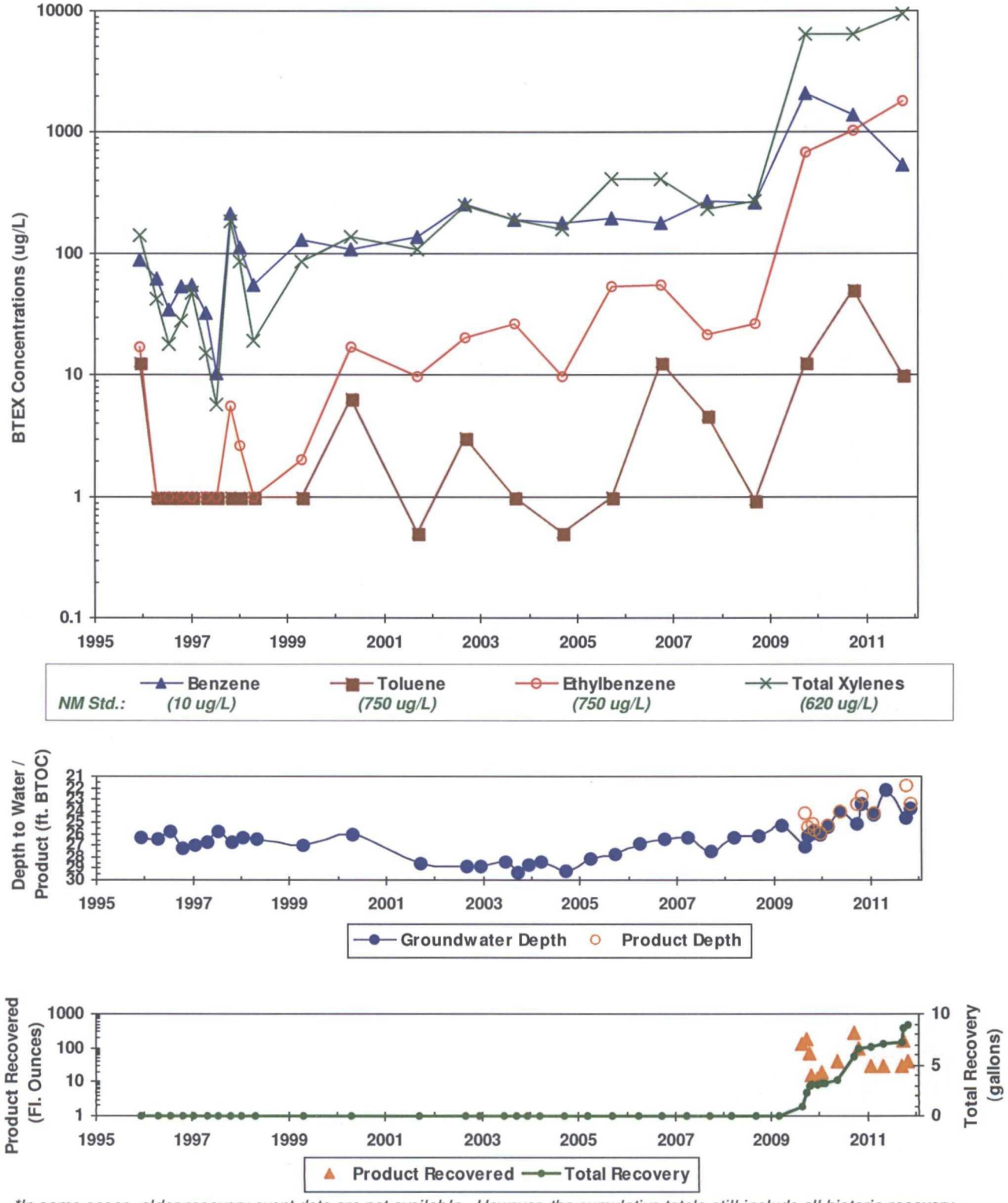
*In some cases, older recovery event data are not available. However, the cumulative totals still include all historic recovery.

FIGURE 5

SUMMARY OF GROUNDWATER BTEX CONCENTRATIONS, FLUID LEVELS, AND PRODUCT RECOVERY

KNIGHT #1 (METER #72556)

MW-4



**In some cases, older recovery event data are not available. However, the cumulative totals still include all historic recovery.*

FIGURE 6
SUMMARY OF GROUNDWATER BTEX CONCENTRATIONS AND FLUID LEVELS
KNIGHT #1 (METER #72556)
MW-5

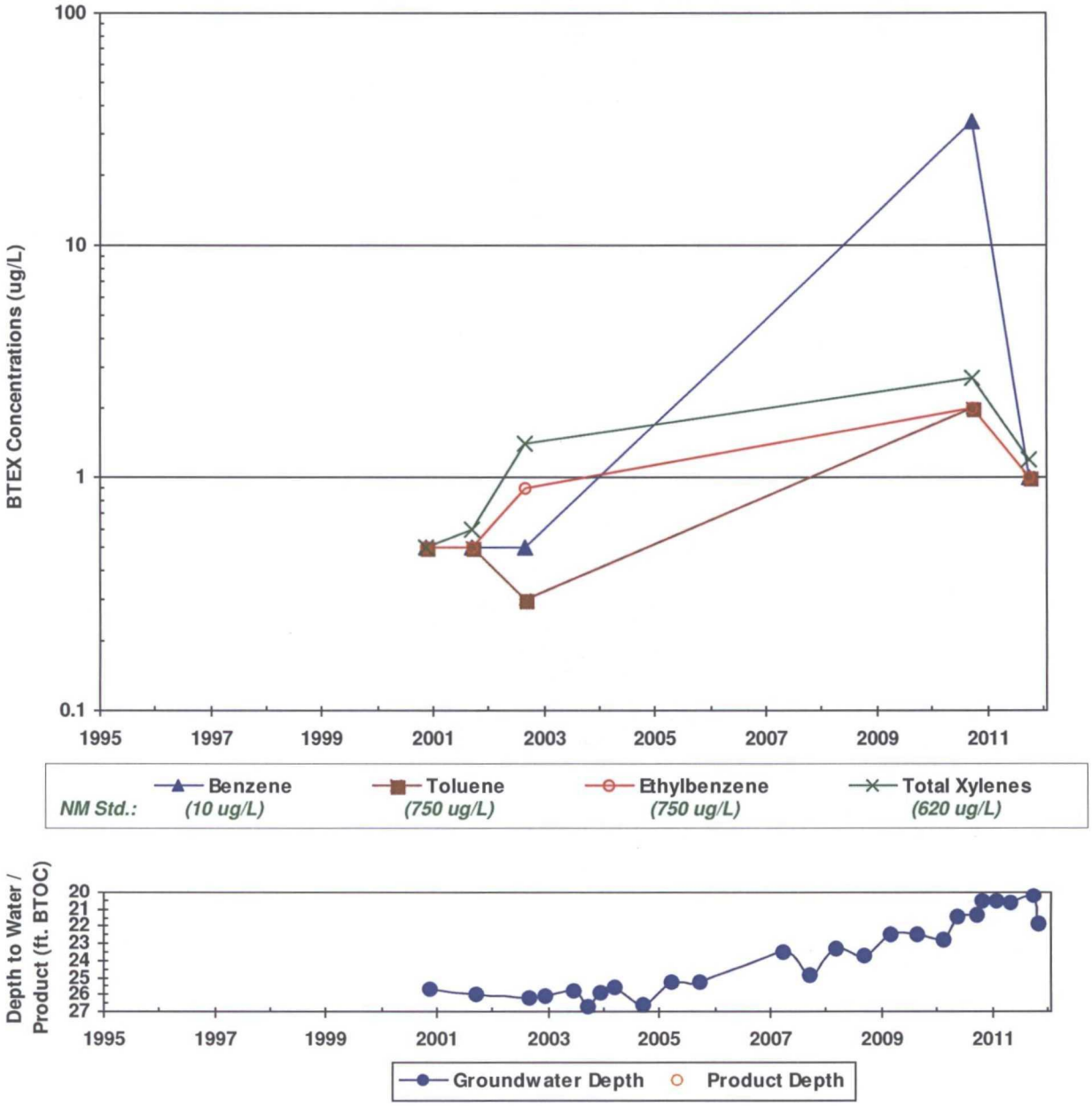


TABLE 1

SUMMARY OF BTEX COMPOUNDS IN GROUNDWATER
KNIGHT #1 (METER #72556)

Monitor Well	Sample Date	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes	Depth to Water (ft BTOC)	Corr. GW Elevation (ft AMSL)
NMWQCC GW Std.:		10	750	750	620		
MW-1	10/16/1995	5080	1180	1050	9970	26.03	5486.68
MW-1	12/12/1995	4330	679	1010	8560	25.91	5486.80
MW-1	4/9/1996	5490	208	1100	7370	26.71	5486.30
MW-1	7/17/1996	6450	279	990	9060	25.39	5487.35
MW-1	10/15/1996	9870	840	1120	10900	27.35	5485.96
MW-1	1/13/1997	7760	332	914	10900	26.53	5486.18
MW-1	4/22/1997	2700	<1.0	492	6690	26.23	5486.48
MW-1	7/14/1997	3900	36.7	530	6700	25.25	5487.46
MW-1	10/22/1997	4270	48.7	728	8580	26.22	5486.49
MW-1	1/9/1998	4750	24.2	819	9480	25.82	5486.89
MW-1	4/24/1998	5610	44.7	898	9530	26.01	5486.81
MW-1	4/16/1999	7340	42.8	853	10600	26.52	5486.29
MW-1	4/19/2000	9400	510	4300	66000	27.14	5485.63
MW-1	9/19/2005	4430	23.7	487	7370	27.47	5485.24
MW-1	3/27/2006	4410	26.6J	337	7860	26.49	5486.22
MW-1	9/26/2006	5880	36.5	633	11000	25.91	5486.80
MW-1	3/28/2007	3740	<50	441	9210	25.87	5486.84
MW-1	9/17/2007	4640	93.3	444	8180	26.94	5485.77
MW-1	9/9/2008	3230	<50	324	6780	26.68	5486.03
MW-1	8/27/2009	2790	8.3J	1190	12500	24.30	5488.41
MW-1	9/29/2010	2910	<50	1600	15000	24.33	5488.38
MW-1	9/30/2011	1590	5.0J	1120	10600	22.26	5490.45
MW-2	12/12/1995	175	<12.5	74.3	671	25.37	5486.59
MW-2	4/9/1996	39.2	<1.0	13.4	77.9	25.58	5486.38
MW-2	7/17/1996	9.55	<1.0	2.39	3.65	25.09	5486.87
MW-2	10/15/1996	49.7	<1.0	<1.0	38.4	26.36	5485.60
MW-2	1/13/1997	20.3	<1.0	<1.0	37.3	26.05	5485.91
MW-2	4/22/1997	19.4	<1.0	<1.0	29.8	25.82	5486.14
MW-2	10/22/1997	155	<1.0	12.6	204	25.86	5486.10
MW-2	1/9/1998	58.0	<1.0	3.85	207	25.50	5486.46
MW-2	4/24/1998	19.4	<1.0	<1.0	40.7	25.60	5486.36
MW-2	2/9/1999	19.0	<1.0	<1.0	48	26.05	5485.91
MW-2	4/16/1999	16.7	<1.0	<1.0	41	26.16	5485.80
MW-2	4/19/2000	23.0	0.5	<0.5	26	25.92	5486.04

TABLE 1

SUMMARY OF BTEX COMPOUNDS IN GROUNDWATER
KNIGHT #1 (METER #72556)

Monitor Well	Sample Date	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes	Depth to Water (ft BTOC)	Corr. GW Elevation (ft AMSL)
NMWQCC GW Std.:		10	750	750	620		
MW-2	9/11/2001	**110**	<0.5	17	200	27.60	5484.36
MW-2	9/4/2002	**269**	7.4	48.9	482.4	27.88	5484.08
MW-2	9/17/2003	**177**	<1.0	41	343	28.42	5483.54
MW-2	9/15/2004	**291**	<0.5	48.9	431	28.25	5483.71
MW-2	9/19/2005	**126**	<1.0	9.5	231	26.80	5485.16
MW-2	9/26/2006	**95.8**	<1.0	5.5	189	25.66	5486.30
MW-2	9/17/2007	**317**	<1.0	12.5	354	26.63	5485.33
MW-2	9/9/2008	**34.3**	<1.0	1.1	71.9	26.30	5485.66
MW-2	8/27/2009	**26.6**	1.3	1.6	9.0	24.00	5487.96
MW-2	9/29/2010	**100**	<2.0	1.5J	34.8	23.00	5488.96
MW-2	9/30/2011	**26.6**	<1.0	1.0	9.5	21.75	5490.21
MW-3	12/12/1995	**979**	<125	398	**2540**	25.67	5486.83
MW-3	4/9/1996	**328**	<1.0	132	369	25.78	5486.72
MW-3	7/17/1996	**299**	<1.0	76.7	251	25.15	5487.35
MW-3	1/13/1997	**395**	<1.0	126	**955**	26.41	5486.22
MW-3	7/14/1997	**499**	<1.0	104	583	25.21	5487.29
MW-3	10/22/1997	**817**	7.22	141	**869**	26.01	5486.49
MW-3	1/9/1998	**702**	<1.0	185	**1080**	25.69	5486.81
MW-3	4/24/1998	**377**	11.8	126	525	25.76	5486.74
MW-3	4/16/1999	**191**	4.11	18.1	169	26.30	5486.20
MW-3	4/19/2000	**40**	0.6	1.1	28	26.75	5485.75
MW-3	9/19/2005	**73.8**	<1.0	5.2	158	27.16	5485.34
MW-3	9/26/2006	**3370**	<25	498	**3960**	25.83	5486.67
MW-3	9/17/2007	**288**	<1.0	65.4	599	26.85	5485.65
MW-3	9/9/2008	**805**	3.3	160	**1630**	25.62	5486.88
MW-3	8/27/2009	**2490**	<25	**842**	**6560**	24.13	5488.37
MW-3	9/29/2010	**2710**	<50	**1390**	**10600**	23.42	5489.08
MW-3	9/30/2011	**1410**	5.8J	**1280**	**12600**	21.94	5490.56
MW-4	12/12/1995	**90.1**	<12.5	16.8	144	26.27	5486.96
MW-4	4/9/1996	**63.1**	<1.0	<1.0	42.5	26.40	5486.83
MW-4	7/17/1996	**35**	<1.0	<1.0	17.8	25.77	5487.46
MW-4	10/15/1996	**53.5**	<1.0	<1.0	28.4	27.26	5485.97
MW-4	1/13/1997	**56.2**	<1.0	<1.0	48.4	26.96	5486.27
MW-4	4/22/1997	**32.8**	<1.0	<1.0	15.2	26.69	5486.54

TABLE 1

SUMMARY OF BTEX COMPOUNDS IN GROUNDWATER
KNIGHT #1 (METER #72556)

Monitor Well	Sample Date	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes	Depth to Water (ft BTOC)	Corr. GW Elevation (ft AMSL)
NMWQCC GW Std.:		10	750	750	620		
MW-4	7/14/1997	10.4	<1.0	<1.0	5.79	25.78	5487.45
MW-4	10/22/1997	**215**	<1.0	5.5	184	26.72	5486.51
MW-4	1/9/1998	**114**	<1.0	2.66	85.7	26.34	5486.89
MW-4	4/24/1998	**55.4**	<1.0	<1.0	19.3	26.44	5486.79
MW-4	4/16/1999	**129**	<1.0	2.03	87.3	26.97	5486.26
MW-4	4/19/2000	**110**	6.5	17	140	26.09	5487.14
MW-4	9/11/2001	**140**	<0.5	9.6	110	28.48	5484.75
MW-4	9/4/2002	**261**	3.1	20.1	246.5	28.75	5484.48
MW-4	9/17/2003	**192**	<1.0	26.3	194	29.36	5483.87
MW-4	9/15/2004	**182**	<0.5	9.8	161	29.20	5484.03
MW-4	9/19/2005	**199**	<1.0	53.8	416	27.74	5485.49
MW-4	9/26/2006	**180**	12.5	55.9	417	26.45	5486.78
MW-4	9/17/2007	**272**	4.7	21.3	236	27.44	5485.79
MW-4	9/9/2008	**265**	0.94J	26.5	274	26.15	5487.08
MW-4	9/23/2009	**2110**	12.6J	676	**6440**	26.15	5487.72
MW-4	9/29/2010	**1400**	<50	**1020**	**6410**	25.05	5489.54
MW-4	9/30/2011	**534**	<10	**1800**	**9510**	24.52	5490.85
MW-5	11/15/2000	<0.5	<0.5	<0.5	<0.5	25.62	5484.74
MW-5	9/11/2001	<0.5	<0.5	<0.5	0.6	25.94	5484.42
MW-5	9/4/2002	<0.5	0.3	0.9	1.4	26.20	5484.15
MW-5	9/29/2010	**34.1**	<2.0	<2.0	2.7J	21.33	5489.03
MW-5	9/30/2011	<1.0	<1.0	<1.0	1.2J	20.24	5490.12

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 (some historic data were reported at the detection limit)..
Static groundwater elevations have been corrected for product thickness where applicable. Specific gravity of 0.8 used.

TABLE 2

SUMMARY OF FREE-PRODUCT REMOVAL
KNIGHT #1 (METER #72556)

Monitor Well	Removal Date	Depth to Product (ft BTOC)	Depth to Water (ft BTOC)	Product Thickness (feet)	Volume Removed (gallons)	Cumulative Removal (gallons)	Corrected GW Elevation (ft AMSL)
MW-1	4/9/1996	26.34	26.71	0.37	--	0.00	5486.30
MW-1	7/17/1996	25.35	25.39	0.04	--	0.00	5487.35
MW-1	10/15/1996	26.60	27.35	0.75	--	0.00	5485.96
MW-1	4/24/1998	25.87	26.01	0.14	--	0.00	5486.81
MW-1	4/16/1999	26.40	26.52	0.12	--	0.00	5486.29
MW-1	4/19/2000	27.07	27.14	0.07	0.05	0.05	5485.63
MW-1	9/5/2001	27.93	28.32	0.39	0.15	0.20	5484.70
MW-1	9/11/2001	28.05	28.10	0.05	0.04	0.24	5484.65
MW-1	9/4/2002	28.31	28.39	0.08	0.04	0.28	5484.38
MW-1	12/10/2002	28.31	28.47	0.16	--	0.28	5484.37
MW-1	3/20/2003	28.05	28.14	0.09	0.06	0.34	5484.64
MW-1	6/19/2003	28.00	28.02	0.02	0.03	0.37	5484.71
MW-1	9/17/2003	28.95	28.97	0.01	0.01	0.38	5483.76
MW-1	12/9/2003	28.30	28.32	0.02	0.01	0.39	5484.41
MW-1	3/15/2004	27.89	27.99	0.10	0.01	0.40	5484.80
MW-1	9/15/2004	28.77	28.78	0.01	0.01	0.41	5483.94
MW-1	3/16/2005	27.67	27.67	0.00	0.01	0.42	5485.04
MW-3	1/13/1997	26.25	26.41	0.16	--	0.00	5486.22
MW-3	9/5/2001	27.84	27.91	0.07	0.50	0.50	5484.65
MW-3	9/11/2001	27.89	27.91	0.02	0.02	0.52	5484.61
MW-3	9/4/2002	28.16	28.17	0.01	0.02	0.54	5484.34
MW-3	12/10/2002	28.17	28.20	0.03	0.08	0.62	5484.32
MW-3	9/17/2003	28.76	28.79	0.03	0.01	0.63	5483.73
MW-3	9/15/2004	28.60	28.60	0.00	--	0.63	5483.90
MW-4	8/27/2009	24.13	27.10	2.97	1.00	1.00	5488.51
MW-4	9/23/2009	25.35	26.15	0.80	1.38	2.38	5487.72
MW-4	10/19/2009	25.15	25.70	0.55	0.53	2.91	5487.97
MW-4	11/5/2009	25.69	25.95	0.26	0.13	3.03	5487.49
MW-4	12/21/2009	25.85	26.05	0.20	0.10	3.13	5487.34
MW-4	1/25/2010	NA	NA	NA	0.15	3.28	NA
MW-4	2/11/2010	25.28	25.40	0.12	--	3.28	5487.93
MW-4	5/21/2010	24.03	24.05	0.02	0.32	3.60	5489.20
MW-4	9/29/2010	23.35	25.05	1.70	2.25	5.85	5489.54
MW-4	11/2/2010	22.74	23.38	0.64	0.73	6.58	5490.36

TABLE 2

SUMMARY OF FREE-PRODUCT REMOVAL
KNIGHT #1 (METER #72556)

Monitor Well	Removal Date	Depth to Product (ft BTOC)	Depth to Water (ft BTOC)	Product Thickness (feet)	Volume Removed (gallons)	Cumulative Removal (gallons)	Corrected GW Elevation (ft AMSL)
MW-4	2/2/2011	24.18	24.37	0.19	0.23	6.82	5489.01
MW-4	5/4/2011	--	22.13	0.00	0.23	7.05	5491.10
MW-4	9/22/2011	NA	NA	NA	0.23	7.29	NA
MW-4	9/30/2011	21.85	24.52	2.67	1.25	8.54	5490.85
MW-4	11/11/2011	23.40	23.74	0.34	0.33	8.87	5489.76

Notes:

"--" indicates either that product was not measurably detected or that product was not recovered.

"NA" indicates that the respective data point is not available.

Groundwater elevations may not be static due to removal of equipment. Corrections for product thickness utilize SG of 0.8.