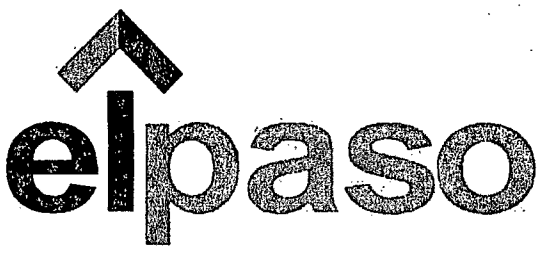
3R - 239

AGWMR

2009



El Paso Tennessee
Pipeline Company

San Juan Basin Pit Program
Groundwater Sites Project

Final 2009 Annual Report
Non-Federal Sites (Volume 2)

April 2010

MWH

1801 California Street, Suite 2900
Denver, Colorado 80202

2009 ANNUAL GROUNDWATER REPORT
NON-FEDERAL SITES VOLUME II

EL PASO TENNESSEE PIPELINE COMPANY

TABLE OF CONTENTS

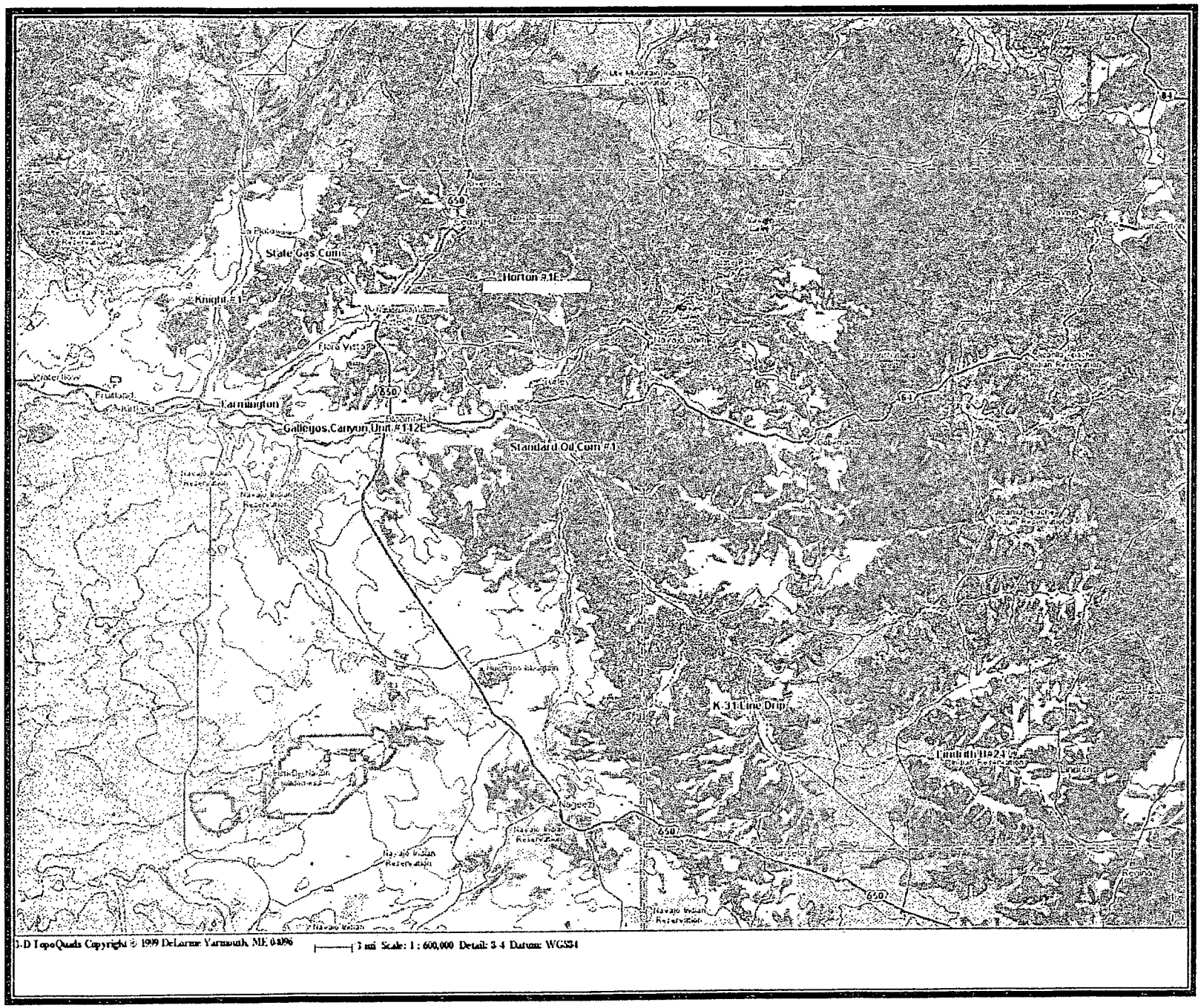
*The Lindrith B#24 site was submitted for closure in 2006 and is pending approval from NMOCD. There were no monitoring activities for this site in 2009.

elpaso MWH

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

Non-Federal Groundwater Site Map



EPTPC GROUNDWATER SITES
2009 ANNUAL GROUNDWATER REPORT

State Gas Com N #1
Meter Code: 71669

SITE DETAILS

Legal Description: **Town:** 31N **Range:** 12W **Sec:** 16 **Unit:** H

NMOCD Haz Ranking: 30 **Land Type:** State **Operator:** BP / Amoco Production Company

PREVIOUS ACTIVITIES

Site Assessment:	3/94	**Excavation:**	5/94 (80 cy)	**Soil Boring:**	10/95
Monitor Well:	10/95	**Geoprobe:**	NA	**Additional MWs:**	11/06
Downgradient MWs:	11/95	**Replace MW:**	NA	**Quarterly Initiated:**	NA
ORC Nutrient Injection:	NA	**Re-Excavation:**	NA	**PSH Removal Initiated:**	7/97
Annual Initiated:	NA	**Quarterly Resumed:**	NA	**PSH Removal in 2009?**	Yes

SUMMARY OF 2009 ACTIVITIES

MW-1: Annual groundwater sampling (August) and quarterly water level monitoring were performed during 2009.

MW-2: Annual groundwater sampling (August) and quarterly product recovery were performed during 2009.

MW-3: Annual groundwater sampling (August) and quarterly water level monitoring were performed during 2009.

MW-4: Annual groundwater sampling (August) and quarterly product recovery were performed during 2009.

MW-5: Annual groundwater sampling (August) and quarterly product recovery were performed during 2009.

MW-6: Monthly product recovery (through June) and quarterly product recovery (remainder of 2009) were performed during 2009.

MW-7: Annual groundwater sampling (August) and quarterly product recovery were performed in 2009.

MW-8: This well has been dry since its installation in November 2006. The well was damaged during the summer of 2008.

MW-9: Annual groundwater sampling (August) and quarterly water level monitoring were performed during 2009.

Site-Wide Activities: No other activities were performed at this Site during 2009.

EPTPC GROUNDWATER SITES
2009 ANNUAL GROUNDWATER REPORT

State Gas Com N #1
Meter Code: 71669

SITE MAP

A Site map (August) is attached as Figure 1.

SUMMARY TABLES AND GRAPHS

- Historic analytical and water level data are summarized in Table 1 and presented graphically in Figures 2 through 9. Where applicable, static water level elevations were corrected for measurable thicknesses of free-product (specific gravity of 0.8).
- Historic free-product recovery data are summarized in Table 2 and presented graphically in Figures 2 through 8.
- The 2009 laboratory report is presented in Attachment 1 (included on CD).
- The 2009 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 2009.

DISPOSITION OF GENERATED WASTES

All purge water was taken to the El Paso Natural Gas Rio Vista Compressor Station. Spent absorbent socks were disposed of 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 the September 2009 annual sampling event.

RESULTS

- The groundwater flow direction at this Site trends toward the south.
- MW-1 has not contained measurable free-product since 2003, and no significant recovery has been possible since 2001. Laboratory results from the annual groundwater sample collected from MW-1 indicated that BTEX concentrations remain elevated at this well. The benzene concentration was 12,600 µg/L. Toluene (8,470 µg/L), ethylbenzene (973 µg/L), and total xylenes (8,670 µg/L) also exceeded their respective NMWQCC standards. As a long-term trend, the BTEX concentrations in this well appear to be gradually attenuating.
- Measurable free-product was found in MW-2 during 2009 and 0.75 gallons of product was recovered via oil-absorbing socks. MW-2 had not contained measurable free-product since 2004, and the reappearance of free-product may be

correlated with a general decrease in static water levels since early 2007. Sampling was attempted at MW-2 in August 2009 but a clear groundwater sample could not be obtained. Previous annual sampling results for this well indicated persistent elevated BTEX concentrations, consistent with the observed presence of free-product.

- Free-product was not observed in MW-3 during 2009. Product recovery activities were suspended in September 2005, and MW-3 was added to the annual sampling list in 2008. In the 2009 groundwater sample, concentrations of benzene (20,100 µg/L), ethylbenzene (936 µg/L), and total xylenes (4,690 µg/L) exceeded their respective NMWQCC standards. These results are similar to historic sampling results at this well.

- Laboratory results from the annual groundwater sample collected from MW-4 indicate that BTEX concentrations remain elevated at this well. The concentrations of benzene (17,000 µg/L), toluene (14,400 µg/L), ethylbenzene (934 µg/L), and total xylenes (11,000 µg/L) all exceeded their respective standards. Free-product was observed in MW-4 in December 2008, and approximately 0.14 gallons of free-product was recovered from MW-4 during 2009.

- Laboratory results from the annual groundwater sample collected from MW-5 indicate that BTEX concentrations remain elevated at this well. The concentrations of benzene (19,800 µg/L), ethylbenzene (1,280 µg/L), and total xylenes (2,470 µg/L) exceeded their respective standards. BTEX concentrations in this well appear to be gradually attenuating. A thin layer of free-product was observed in MW-5 in June 2009. An oil-absorbing sock was installed, recovering 0.13 gallons of product over the next two months. Measurable free-product was not subsequently observed in MW-5.

- Free-product recovery efforts at MW-6 resulted in removal of approximately 0.58 gallons of free-phase hydrocarbons during 2009, bringing the cumulative total volume removed to 7.08 gallons.

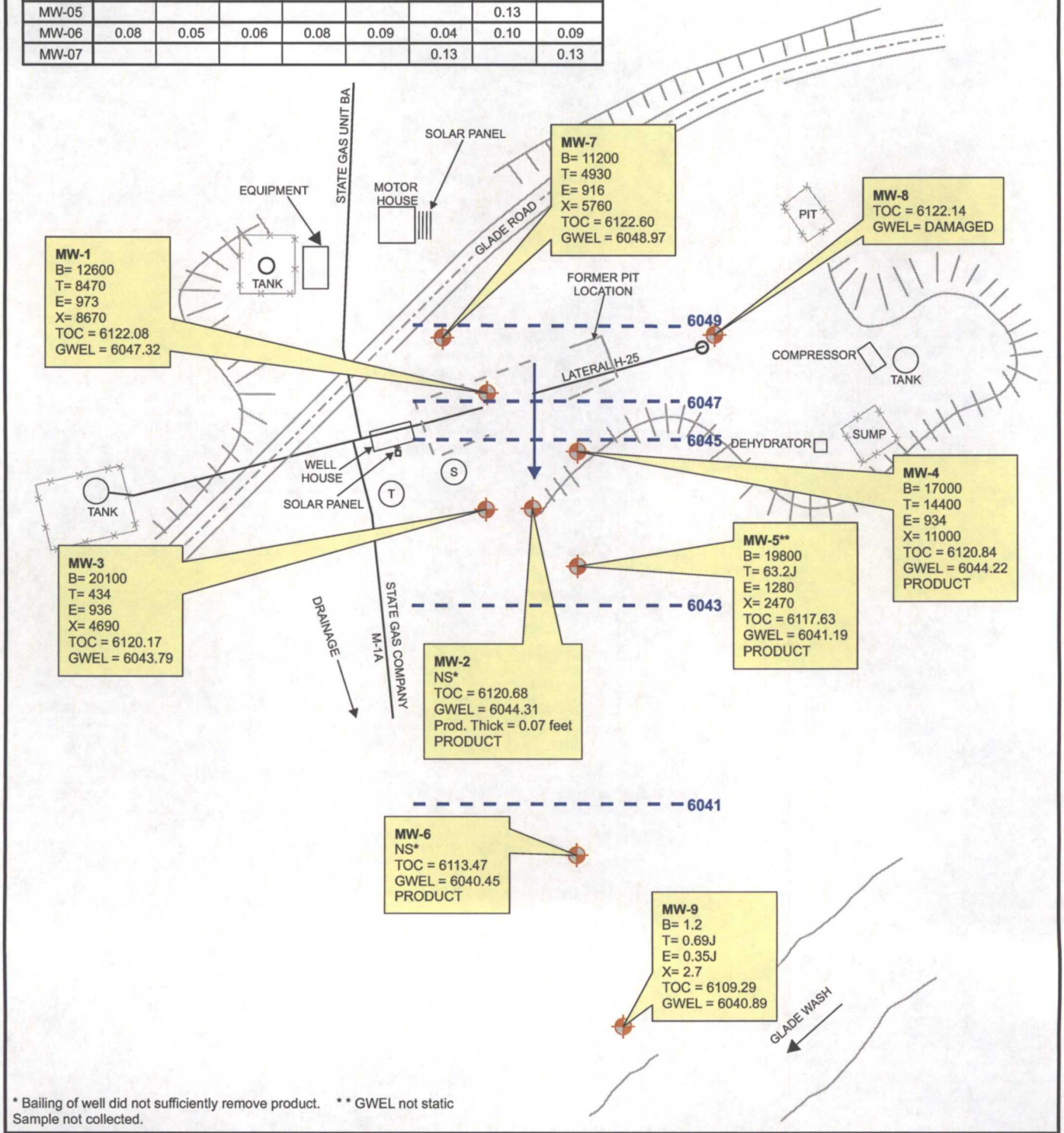
- Monitor well MW-7 was sampled for the second time in August 2009. The concentrations of benzene (11,200 µg/L), toluene (4,930 µg/L), ethylbenzene (916 µg/L), and total xylenes (5,760 µg/L) all exceeded their respective standards. This well has contained free-product since September 2008. Product recovery via oil-absorbing socks totaled 0.33 gallons in 2009.

- The annual sample from the downgradient well, MW-9, indicated that BTEX constituents were only present at trace levels near the laboratory reporting limits. This well appears to be clean.

RECOMMENDATIONS

- EPTPC recommends annual groundwater sampling at all monitor wells.
- EPTPC recommends quarterly water level measurements at all monitor wells.
- EPTPC recommends continuing free-product recovery efforts, as needed, at monitor wells MW-2, MW-4, MW-5, MW-6, and MW-7.
- EPTPC recommends that MW-8 be plugged and abandoned. This upgradient well was dry, and the surface completion has been destroyed.

Product Removed (Gallons)	January	Febuary	March	April	May	June	August	November
MW-02							0.38	0.38
MW-04			0.08			0.03	0.03	
MW-05							0.13	
MW-06	0.08	0.05	0.06	0.08	0.09	0.04	0.10	0.09
MW-07						0.13		0.13



* Bailing of well did not sufficiently remove product. * * GWEL not static
Sample not collected.

LEGEND

MW-4	Existing Monitoring / Observation Well
→	Groundwater Flow Direction
—6045—	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. AMSL)
J	Result Flagged as Estimated

N

0 30 60 90 Feet

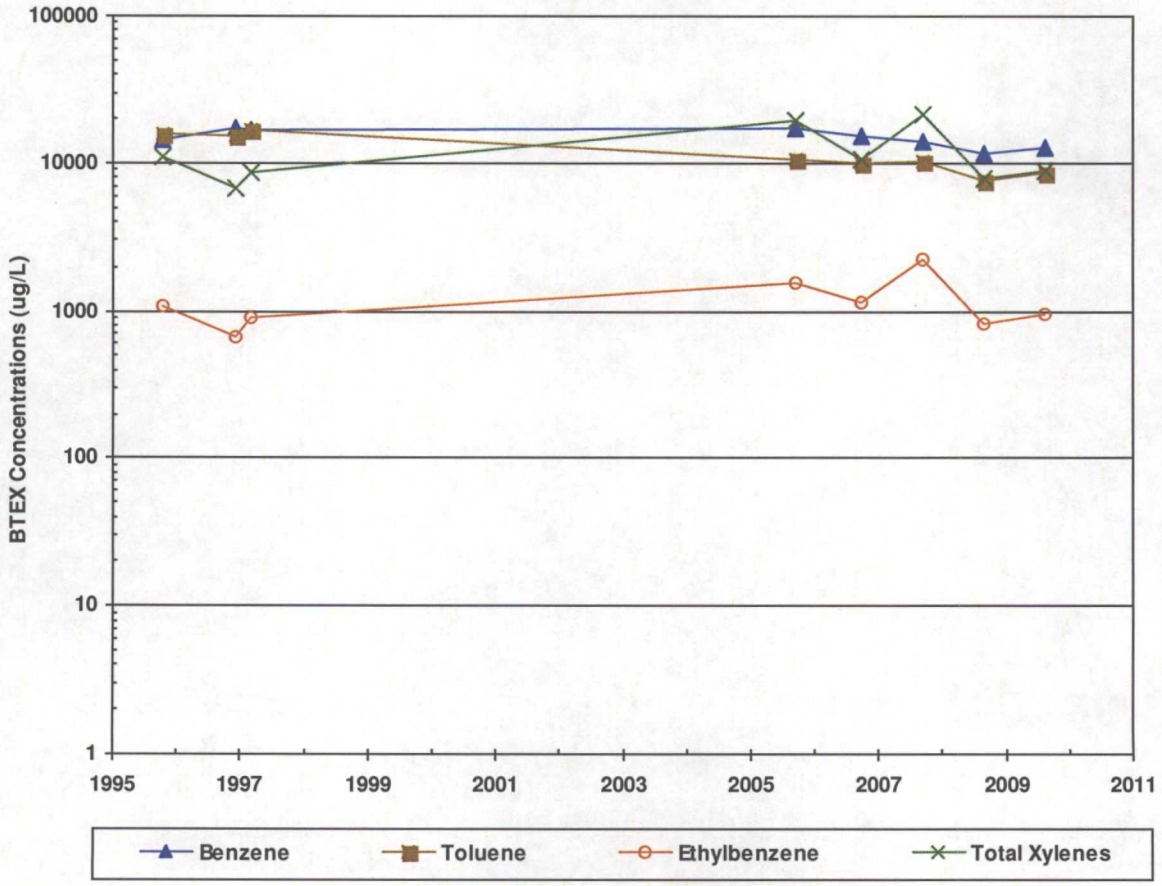
MWH elpaso

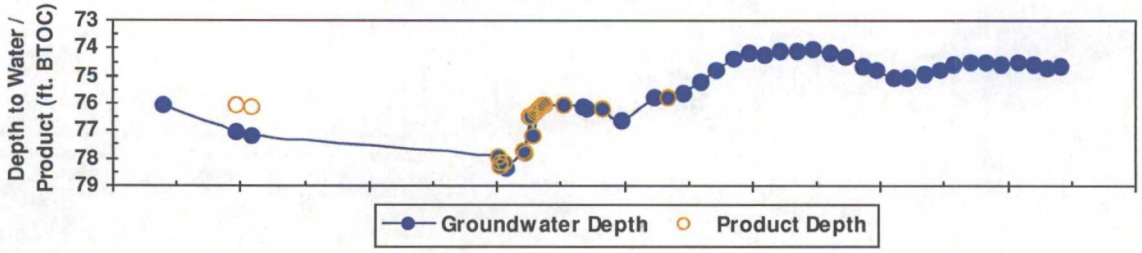
PROJECT: STATE GAS COM N #1

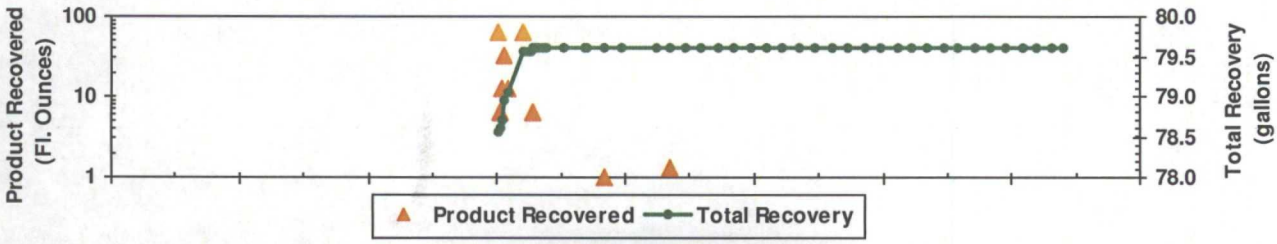
TITLE: Groundwater Potentiometric Surface Map, and BTEX Concentrations - August 26, 2009

FIGURE: 1

FIGURE 2
SUMMARY OF GROUNDWATER BTEX CONCENTRATIONS, FLUID LEVELS, AND PRODUCT RECOVERY
STATE GAS COM N #1 (METER #71669)
MW01

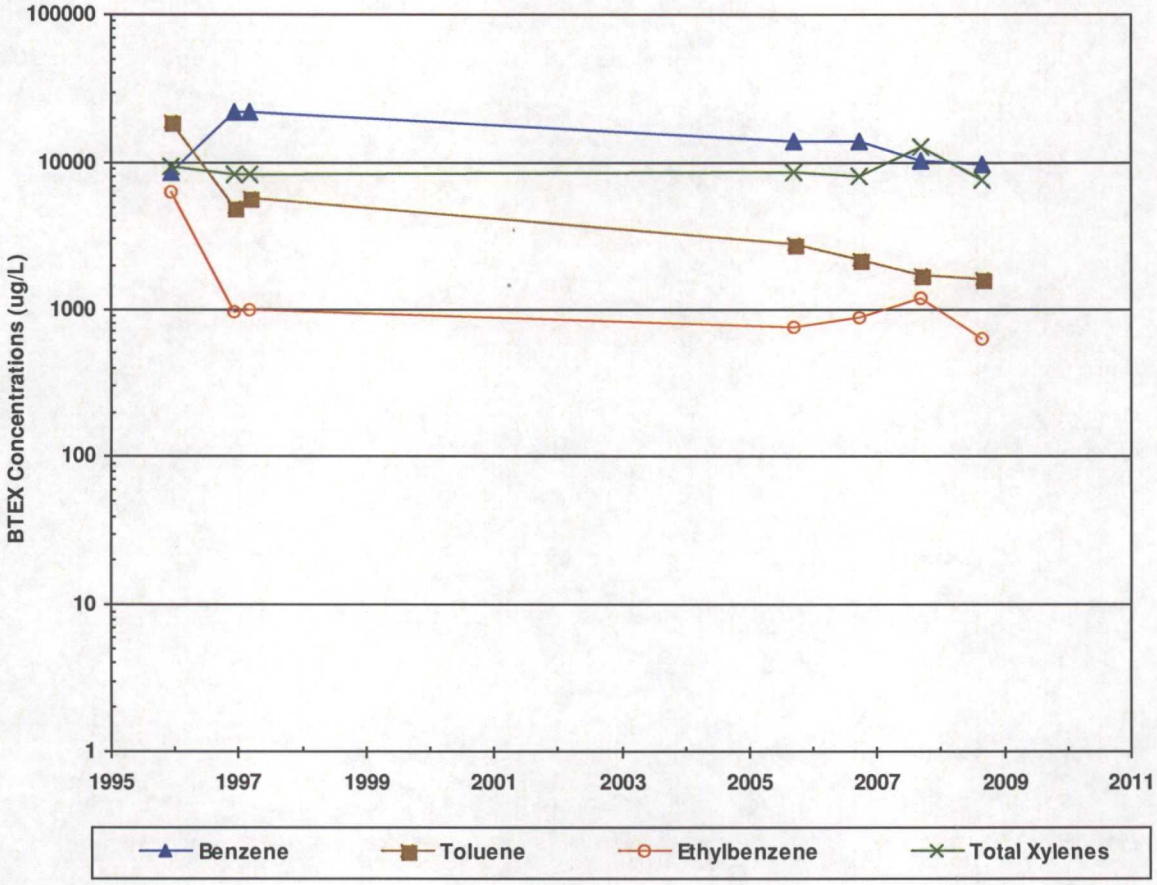


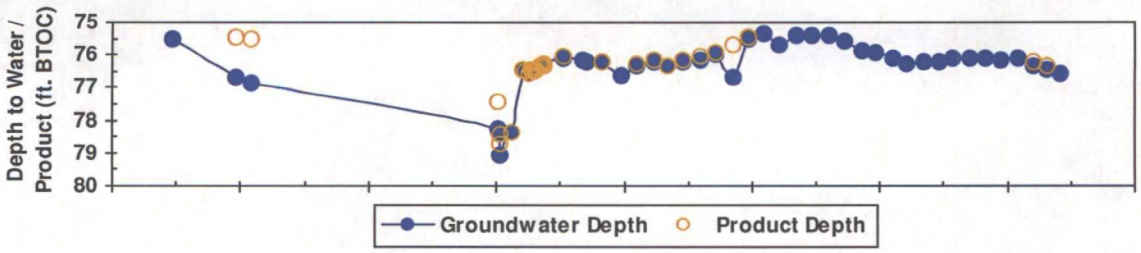


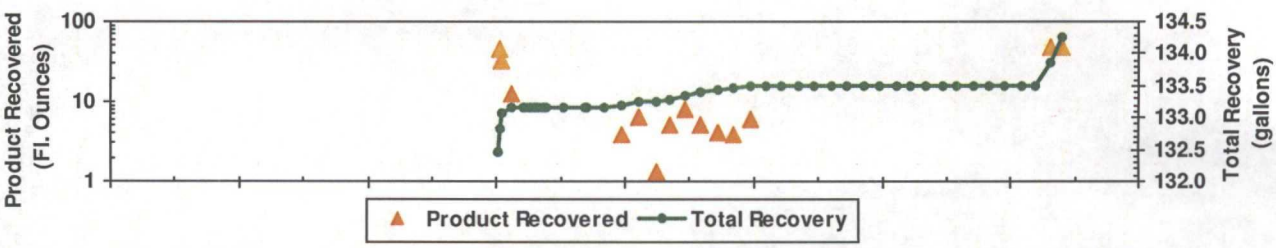


**In some cases, older recovery event data are not available. However, the cumulative totals still include all historic recovery.*

FIGURE 3
SUMMARY OF GROUNDWATER BTEX CONCENTRATIONS, FLUID LEVELS, AND PRODUCT RECOVERY
STATE GAS COM N #1 (METER #71669)
MW02

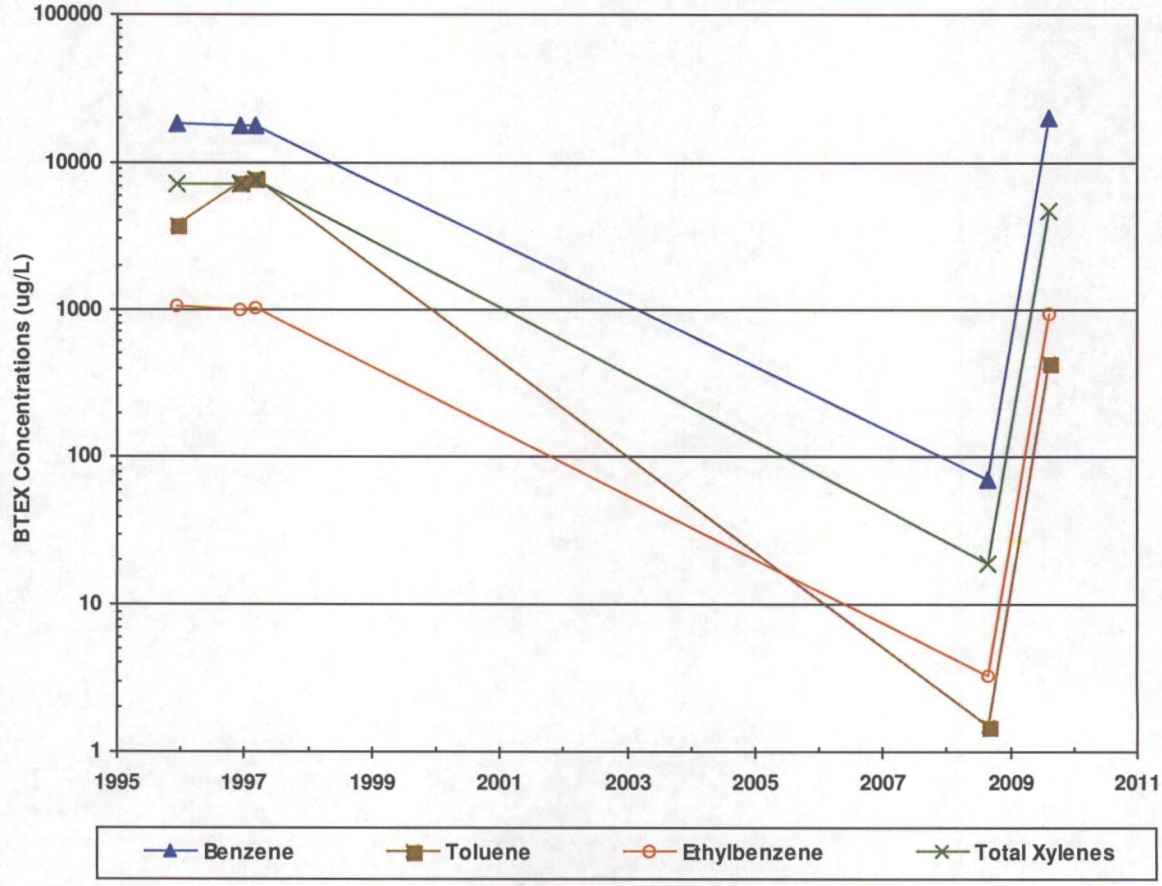


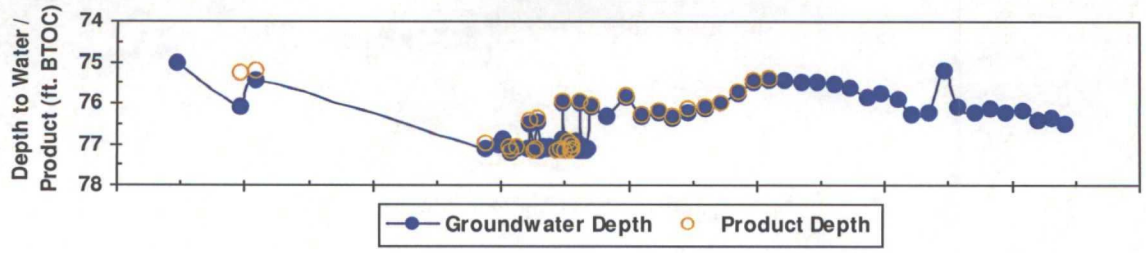


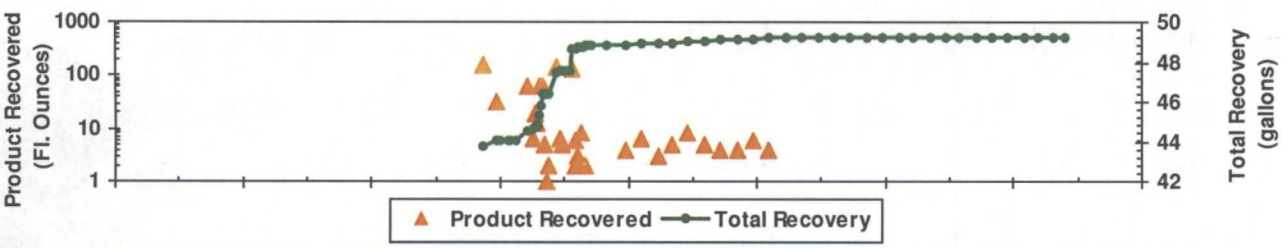


**In some cases, older recovery event data are not available. However, the cumulative totals still include all historic recovery.*

FIGURE 4
SUMMARY OF GROUNDWATER BTEX CONCENTRATIONS, FLUID LEVELS, AND PRODUCT RECOVERY
STATE GAS COM N #1 (METER #71669)
MW03

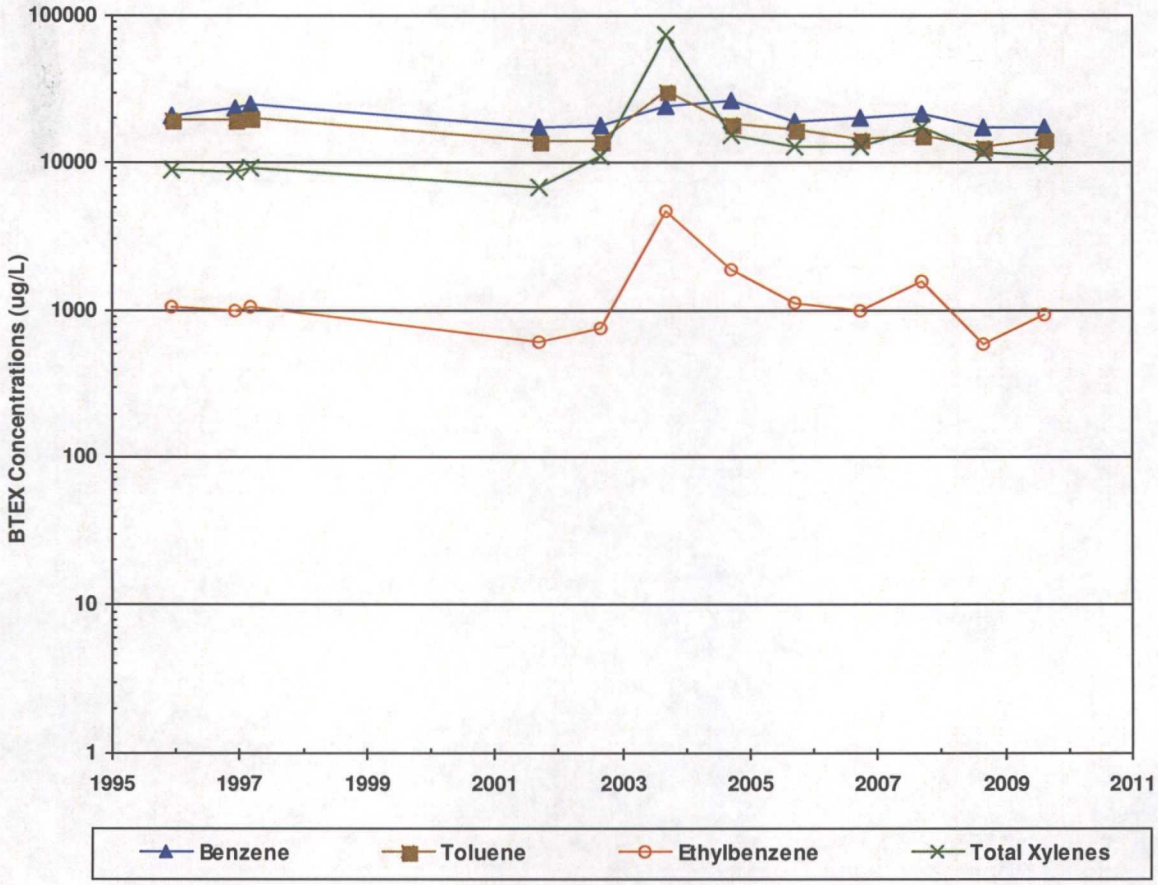


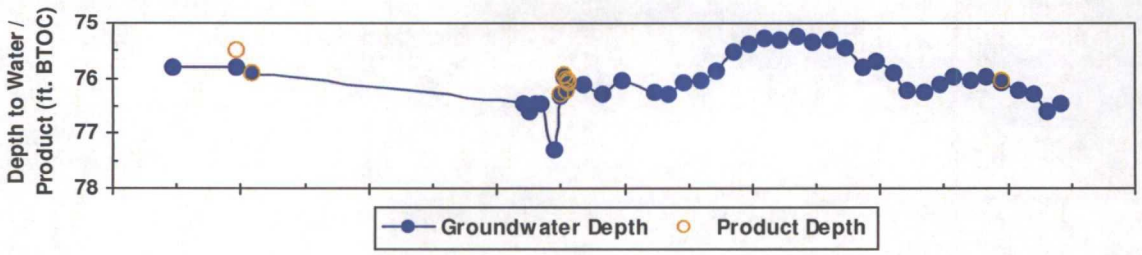


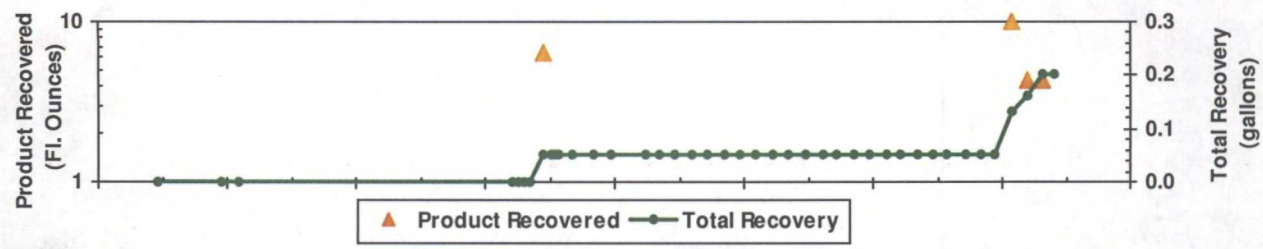


**In some cases, older recovery event data are not available. However, the cumulative totals still include all historic recovery.*

FIGURE 5
SUMMARY OF GROUNDWATER BTEX CONCENTRATIONS, FLUID LEVELS, AND PRODUCT RECOVERY
STATE GAS COM N #1 (METER #71669)
MW04

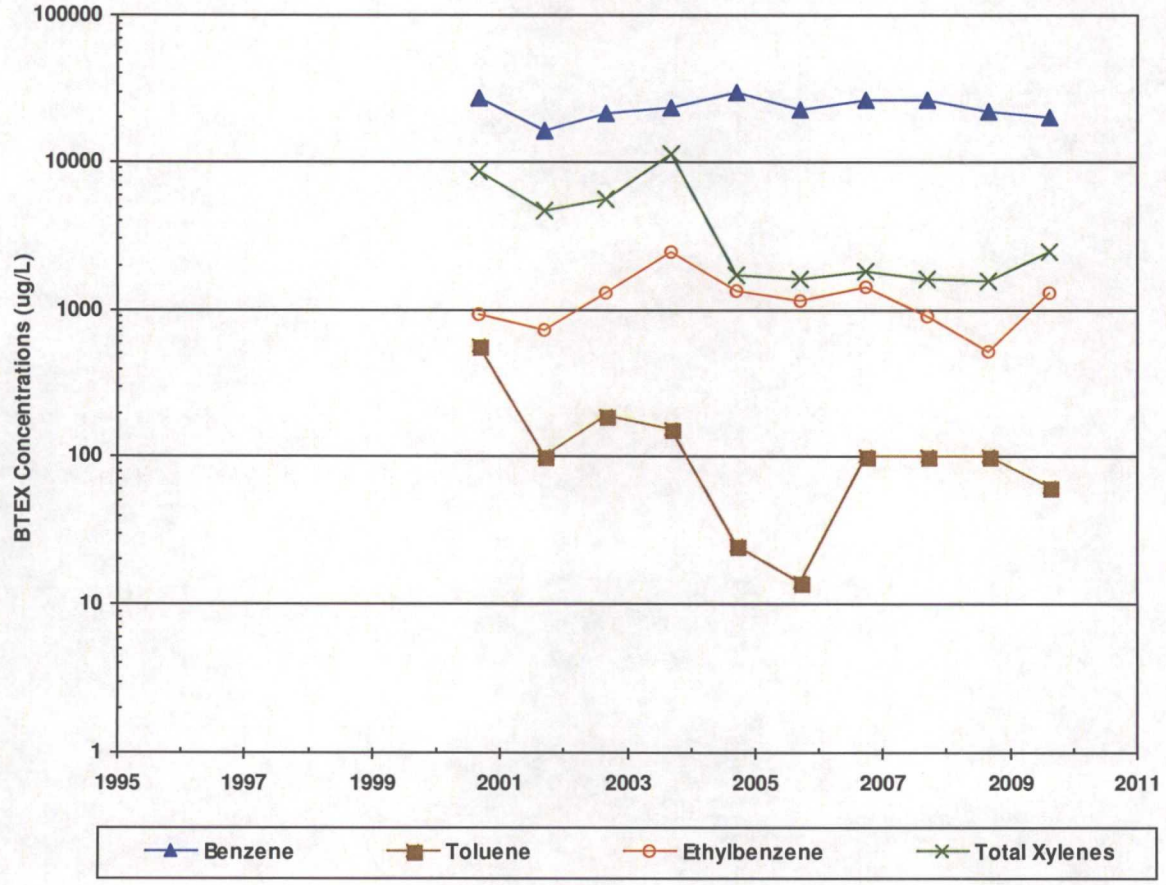


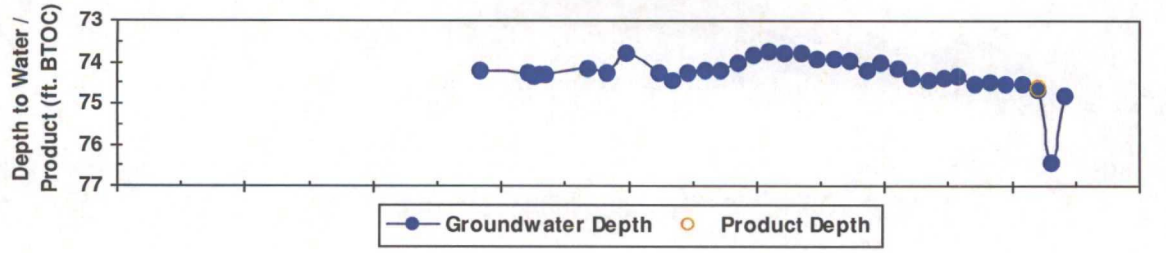


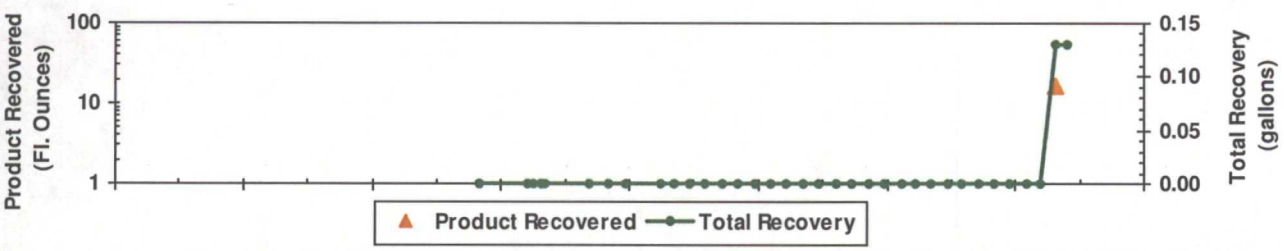


**In some cases, older recovery event data are not available. However, the cumulative totals still include all historic recovery.*

FIGURE 6
SUMMARY OF GROUNDWATER BTEX CONCENTRATIONS, FLUID LEVELS, AND PRODUCT RECOVERY
STATE GAS COM N #1 (METER #71669)
MW05

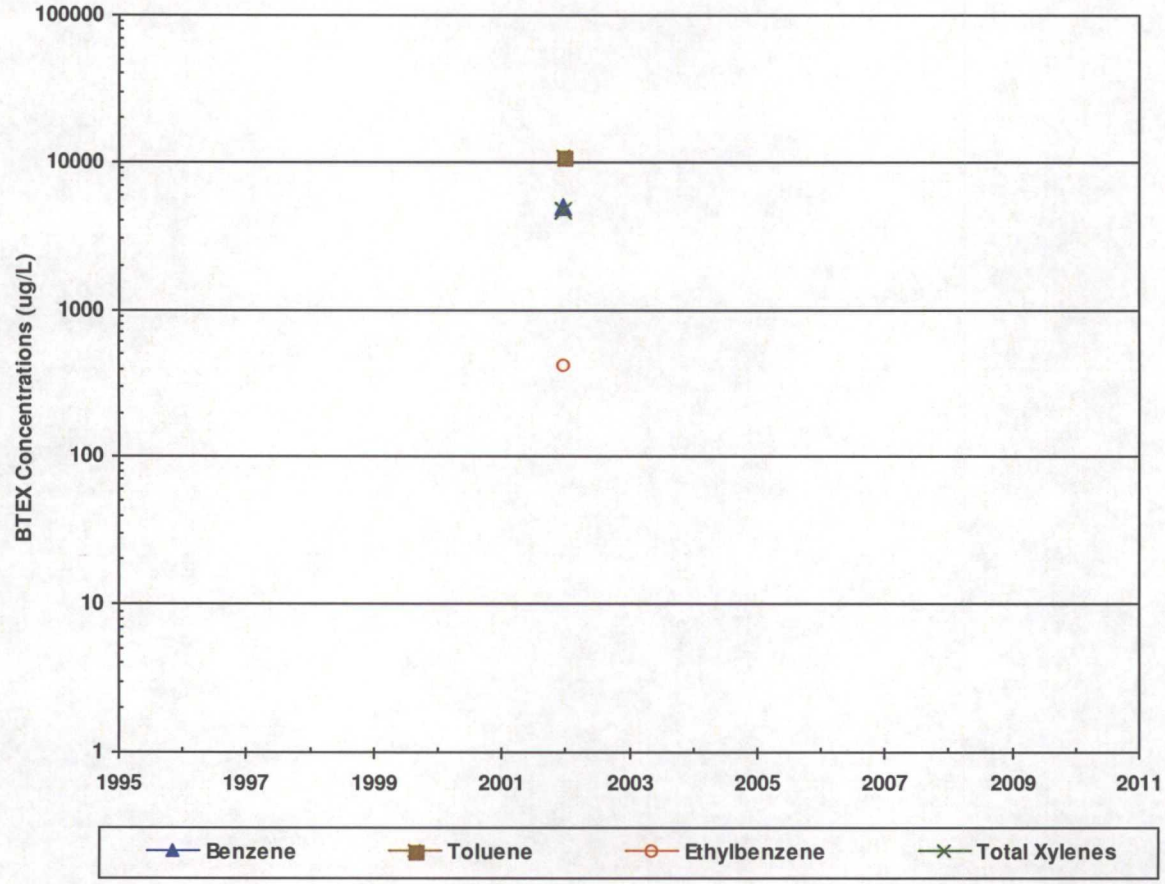


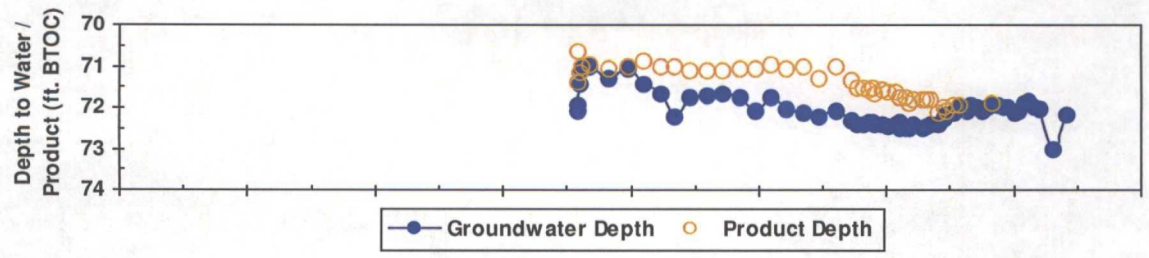


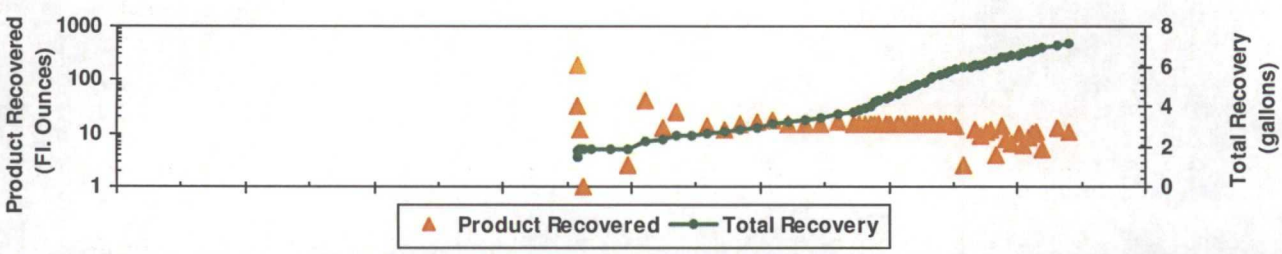


**In some cases, older recovery event data are not available. However, the cumulative totals still include all historic recovery.*

FIGURE 7
SUMMARY OF GROUNDWATER BTEX CONCENTRATIONS, FLUID LEVELS, AND PRODUCT RECOVERY
STATE GAS COM N #1 (METER #71669)
MW06

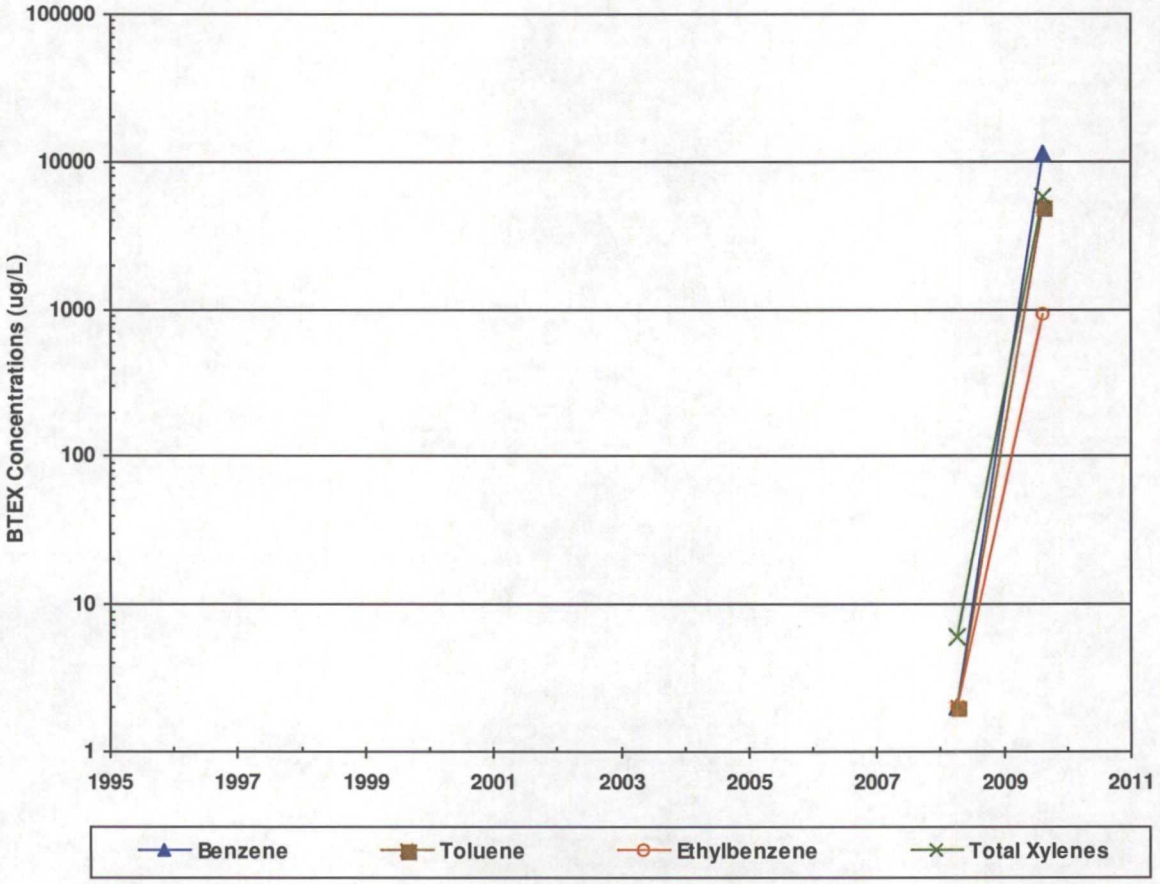


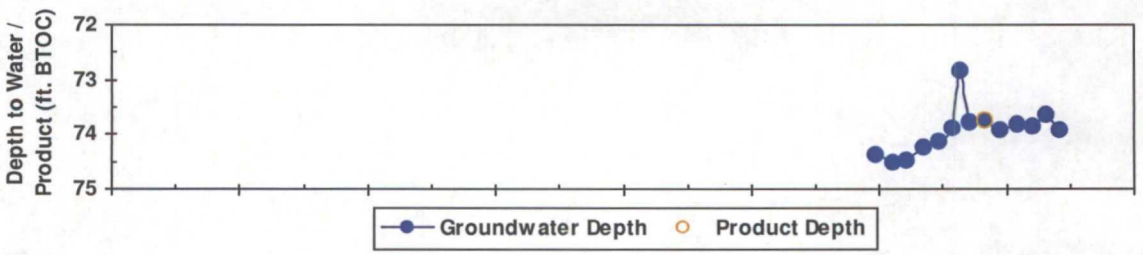


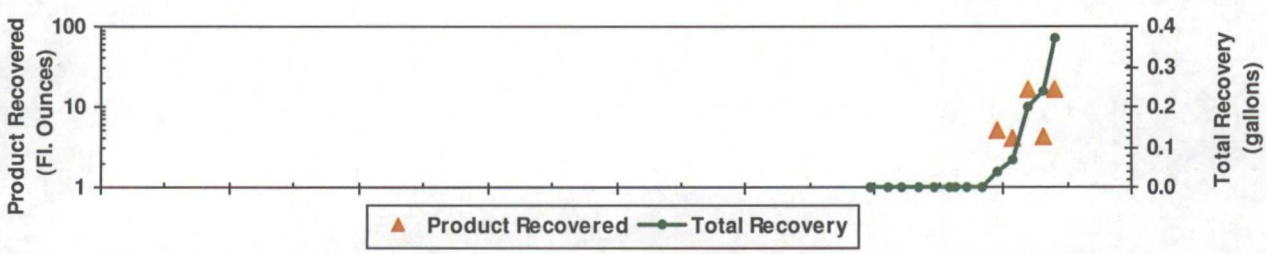


**In some cases, older recovery event data are not available. However, the cumulative totals still include all historic recovery.*

FIGURE 8
SUMMARY OF GROUNDWATER BTEX CONCENTRATIONS, FLUID LEVELS, AND PRODUCT RECOVERY
STATE GAS COM N #1 (METER #71669)
MW07







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

FIGURE 9
SUMMARY OF GROUNDWATER BTEX CONCENTRATIONS AND FLUID LEVELS
STATE GAS COM N #1 (METER #71669)
MW09

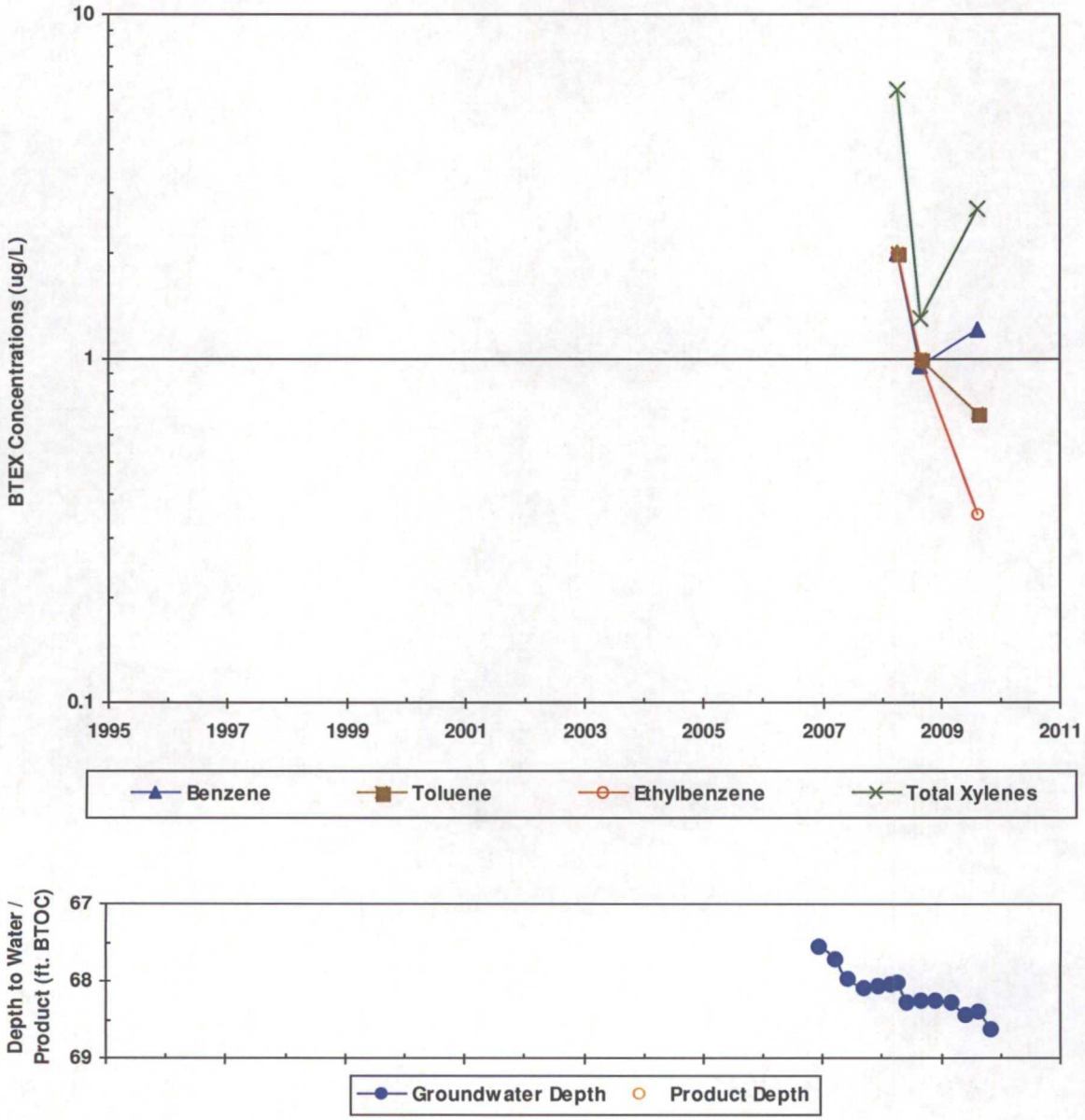


TABLE 1

SUMMARY OF BTEX COMPOUNDS IN GROUNDWATER SAMPLES
STATE GAS COM N #1 (METER #71669)

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 (ft AMSL)
NMWQCC GW Std.:		10	750	750	620		
MW01	10/17/1995	14200	15600	1090	11000	76.08	6046.00
MW01	12/3/1996	17200	15200	673	6670	77.02	6045.80
MW01	3/7/1997	16900	16600	904	8420	77.20	6045.74
MW01	9/15/2005	17300	10700	1560	19600	74.09	6047.99
MW01	9/27/2006	15100	9990	1150	10700	74.65	6047.43
MW01	9/18/2007	13800	10100	2260	21200	74.92	6047.16
MW01	9/8/2008	11700	7560	815	7740	74.55	6047.53
MW01	8/26/2009	12600	8470	973	8670	74.76	6047.32
MW02	12/7/1995	8540	18900	6230	9240	75.50	6045.18
MW02	12/3/1996	21700	5000	967	8310	76.66	6044.99
MW02	3/7/1997	22100	5680	992	8360	76.88	6044.90
MW02	9/15/2005	13700	2770	762	8610	75.38	6045.30
MW02	9/27/2006	13800	2150	880	8130	75.85	6044.83
MW02	9/18/2007	10100	1730	1200	12700	76.24	6044.44
MW02	9/8/2008	9780	1610	617	7670	76.10	6044.58
MW03	12/7/1995	18000	3760	1050	7070	75.03	6045.14
MW03	12/3/1996	17700	7310	983	7200	76.10	6044.74
MW03	3/7/1997	17700	7780	1020	7550	75.42	6044.93
MW03	9/8/2008	70.3	1.5	3.3	19.1	76.14	6044.03
MW03	8/26/2009	20100	434	936	4690	76.38	6043.79
MW04	12/7/1995	20300	19600	1040	8880	75.81	6045.03
MW04	12/3/1996	23600	19600	1000	8600	75.80	6045.30
MW04	3/7/1997	24800	20100	1040	9080	75.92	6044.92
MW04	9/10/2001	17000	14000	610	6700	76.45	6044.39
MW04	9/4/2002	17800	13900	750	10870	76.28	6044.56
MW04	9/14/2003	24000	30800	4670	73200	76.28	6044.56
MW04	9/16/2004	26300	18500	1870	15200	75.54	6045.30
MW04	9/15/2005	18600	16900	1120	12800	75.26	6045.58
MW04	9/27/2006	19800	14200	978	12500	75.80	6045.04
MW04	9/18/2007	21100	15400	1560	17000	76.27	6044.57
MW04	9/8/2008	17000	12700	598	11700	75.99	6044.85
MW04	8/26/2009	17000	14400	934	11000	76.62	6044.22
MW05	8/30/2000	27000	570	930	8600	74.19	6043.44
MW05	9/10/2001	16000	100	720	4600	74.30	6043.33

TABLE 1

SUMMARY OF BTEX COMPOUNDS IN GROUNDWATER SAMPLES
STATE GAS COM N #1 (METER #71669)

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 (ft AMSL)
NMWQCC GW Std.:		10	750	750	620		
MW05	9/4/2002	**21100**	190	**1310**	**5560**	74.24	6043.39
MW05	9/14/2003	**23100**	157	**2480**	**11300**	74.42	6043.21
MW05	9/16/2004	**29400**	<25	**1320**	**1690**	74.00	6043.63
MW05	9/15/2005	**22800**	14.0	**1160**	**1620**	73.80	6043.83
MW05	9/27/2006	**26000**	<100	**1440**	**1800**	74.20	6043.43
MW05	9/18/2007	**26300**	<100	**914**	**1590**	74.46	6043.17
MW05	9/8/2008	**21600**	<100	522	**1580**	74.47	6043.16
MW05	8/26/2009	**19800**	63.2J	**1280**	**2470**	76.44	6041.19
MW06	12/20/2001	**5000**	**11000**	420	**4600**	NA	NA
MW07	4/15/2008	<2.0	<2.0	<2.0	<6.0	72.82	6049.78
MW07	8/26/2009	**11200**	**4930**	**916**	**5760**	73.63	6048.97
MW09	4/15/2008	<2.0	<2.0	<2.0	<6.0	68.03	6041.26
MW09	9/8/2008	0.95J	<1.0	<1.0	1.3J	68.25	6041.04
MW09	8/26/2009	1.2	0.69J	0.35J	2.7	68.40	6040.89

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.

TABLE 2

SUMMARY OF FREE-PRODUCT REMOVAL
STATE GAS COM N #1 (METER #71669)

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)
MW01	12/3/1996	76.09	77.02	0.93	NA	NA	6045.80
MW01	3/7/1997	76.12	77.20	1.08	NA	NA	6045.74
MW01	1/16/2001	77.95	77.96	0.01	0.50	78.55	6044.13
MW01	1/24/2001	78.27	78.28	0.01	0.05	78.60	6043.81
MW01	1/31/2001	78.15	78.16	0.01	0.10	78.70	6043.93
MW01	2/19/2001	78.18	78.19	0.01	0.25	78.95	6043.90
MW01	3/5/2001	NA	78.34	78.34	0.10	79.05	6106.41
MW01	6/5/2001	77.71	77.71	0.00	0.50	79.55	6044.37
MW01	6/15/2001	77.83	77.83	0.00	--	79.55	6044.25
MW01	7/13/2001	76.51	76.52	0.01	--	79.55	6045.57
MW01	7/20/2001	76.46	76.47	0.01	--	79.55	6045.62
MW01	8/1/2001	77.22	77.22	0.00	0.05	79.60	6044.86
MW01	8/8/2001	76.37	76.37	0.00	--	79.60	6045.71
MW01	8/16/2001	76.35	76.35	0.00	--	79.60	6045.73
MW01	8/20/2001	76.28	76.28	0.00	--	79.60	6045.80
MW01	9/5/2001	76.20	76.20	0.00	--	79.60	6045.88
MW01	9/19/2001	76.14	76.14	0.00	--	79.60	6045.94
MW01	9/26/2001	76.09	76.09	0.00	--	79.60	6045.99
MW01	10/3/2001	76.06	76.06	0.00	--	79.60	6046.02
MW01	10/11/2001	76.04	76.04	0.00	--	79.60	6046.04
MW01	1/23/2002	76.07	76.08	0.01	--	79.60	6046.01
MW01	9/4/2002	76.20	76.21	0.01	0.01	79.61	6045.88
MW01	9/14/2003	75.77	75.79	0.02	0.01	79.62	6046.31
MW02	12/3/1996	75.45	76.66	1.21	NA	NA	6044.99
MW02	3/7/1997	75.51	76.88	1.37	NA	NA	6044.90
MW02	1/16/2001	77.43	78.26	0.83	--	132.46	6043.08
MW02	1/24/2001	78.72	79.06	0.34	0.35	132.81	6041.89
MW02	1/30/2001	78.44	78.45	0.01	0.25	133.06	6042.24
MW02	4/2/2001	78.36	78.36	0.00	0.10	133.16	6042.32
MW02	6/5/2001	76.46	76.46	0.00	--	133.16	6044.22
MW02	6/15/2001	76.54	76.54	0.00	--	133.16	6044.14
MW02	7/13/2001	76.56	76.56	0.00	--	133.16	6044.12
MW02	7/20/2001	76.48	76.48	0.00	--	133.16	6044.20
MW02	8/1/2001	76.51	76.51	0.00	--	133.16	6044.17

TABLE 2

SUMMARY OF FREE-PRODUCT REMOVAL
STATE GAS COM N #1 (METER #71669)

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)
MW02	8/8/2001	76.50	76.50	0.00	--	133.16	6044.18
MW02	8/16/2001	76.46	76.46	0.00	--	133.16	6044.22
MW02	8/20/2001	76.43	76.43	0.00	--	133.16	6044.25
MW02	9/5/2001	76.38	76.38	0.00	--	133.16	6044.30
MW02	9/19/2001	76.34	76.34	0.00	--	133.16	6044.34
MW02	9/26/2001	76.35	76.35	0.00	--	133.16	6044.33
MW02	10/3/2001	76.31	76.31	0.00	--	133.16	6044.37
MW02	10/11/2001	76.29	76.29	0.00	--	133.16	6044.39
MW02	1/23/2002	76.07	76.08	0.01	--	133.16	6044.61
MW02	9/4/2002	76.20	76.21	0.01	--	133.16	6044.48
MW02	12/17/2002	--	76.63	0.00	0.03	133.19	6044.05
MW02	3/20/2003	76.28	76.32	0.04	0.05	133.24	6044.39
MW02	6/26/2003	76.19	76.22	0.03	0.01	133.25	6044.48
MW02	9/14/2003	76.31	76.35	0.04	0.04	133.29	6044.36
MW02	12/9/2003	76.15	76.22	0.07	0.06	133.35	6044.52
MW02	3/15/2004	76.07	76.14	0.07	0.04	133.39	6044.60
MW02	6/17/2004	75.93	75.98	0.05	0.03	133.42	6044.74
MW02	9/16/2004	75.72	76.66	0.94	0.03	133.45	6044.77
MW02	12/20/2004	75.46	75.50	0.04	0.05	133.50	6045.21
MW02	6/3/2009	76.24	76.35	0.11	--	133.50	6044.42
MW02	8/25/2009	NA	NA	NA	0.38	133.87	NA
MW02	8/26/2009	76.36	76.43	0.07	--	133.87	6044.31
MW02	11/5/2009	--	76.58	0.00	0.38	134.25	6044.10
MW03	12/3/1996	75.26	76.10	0.84	NA	NA	6044.74
MW03	3/7/1997	75.19	75.42	0.23	NA	NA	6044.93
MW03	10/3/2000	76.97	77.12	0.15	1.25	43.80	6043.17
MW03	12/20/2000	--	77.00	0.00	0.25	44.05	6043.17
MW03	2/19/2001	77.06	77.08	0.02	--	44.05	6043.11
MW03	3/5/2001	77.17	77.20	0.03	--	44.05	6042.99
MW03	4/2/2001	77.09	77.11	0.02	--	44.05	6043.08
MW03	6/5/2001	--	77.11	0.00	0.50	44.55	6043.06
MW03	6/15/2001	76.44	76.50	0.06	--	44.55	6043.72
MW03	7/13/2001	77.14	77.17	0.03	0.05	44.60	6043.02
MW03	7/20/2001	77.13	77.14	0.01	0.15	44.75	6043.04

TABLE 2

SUMMARY OF FREE-PRODUCT REMOVAL
STATE GAS COM N #1 (METER #71669)

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)
MW03	8/1/2001	76.38	76.47	0.09	--	44.75	6043.77
MW03	8/8/2001	--	77.15	0.00	0.10	44.85	6043.02
MW03	8/16/2001	--	77.15	0.00	0.50	45.35	6043.02
MW03	8/20/2001	--	77.13	0.00	0.50	45.85	6043.04
MW03	9/5/2001	--	77.08	0.00	0.50	46.35	6043.09
MW03	9/19/2001	--	77.11	0.00	0.04	46.39	6043.06
MW03	9/26/2001	--	77.10	0.00	0.01	46.40	6043.07
MW03	10/3/2001	--	77.08	0.00	0.02	46.41	6043.09
MW03	11/21/2001	77.15	77.18	0.03	1.10	47.51	6043.01
MW03	12/13/2001	77.10	77.12	0.02	0.05	47.56	6043.07
MW03	12/21/2001	--	76.88	0.00	0.04	47.60	6043.29
MW03	12/28/2001	75.97	75.99	0.02	--	47.60	6044.20
MW03	1/7/2002	77.14	77.15	0.01	--	47.60	6043.03
MW03	1/23/2002	76.93	76.94	0.01	--	47.60	6043.24
MW03	1/31/2002	77.00	77.01	0.01	--	47.60	6043.17
MW03	2/7/2002	77.16	77.17	0.01	--	47.60	6043.01
MW03	2/14/2002	77.02	77.03	0.01	1.00	48.60	6043.15
MW03	2/20/2002	77.11	77.12	0.01	--	48.60	6043.06
MW03	3/6/2002	--	76.97	0.00	0.02	48.62	6043.20
MW03	3/11/2002	--	76.94	0.00	0.05	48.67	6043.23
MW03	3/21/2002	--	77.15	0.00	0.02	48.69	6043.02
MW03	4/3/2002	75.95	75.99	0.04	--	48.69	6044.21
MW03	4/12/2002	--	77.15	0.00	0.06	48.75	6043.02
MW03	4/19/2002	--	77.09	0.00	0.02	48.77	6043.08
MW03	4/25/2002	--	77.08	0.00	0.02	48.78	6043.09
MW03	5/3/2002	--	77.18	0.00	0.02	48.80	6042.99
MW03	5/10/2002	--	77.12	0.00	0.02	48.81	6043.05
MW03	6/7/2002	76.03	76.07	0.04	--	48.81	6044.13
MW03	12/17/2002	75.81	75.85	0.04	0.03	48.85	6044.35
MW03	3/20/2003	76.28	76.32	0.04	0.05	48.90	6043.88
MW03	6/26/2003	76.19	76.22	0.03	0.02	48.92	6043.97
MW03	9/14/2003	76.31	76.36	0.05	0.04	48.96	6043.85
MW03	12/9/2003	76.15	76.22	0.07	0.06	49.02	6044.01
MW03	3/15/2004	76.07	76.13	0.06	0.04	49.06	6044.09

TABLE 2

SUMMARY OF FREE-PRODUCT REMOVAL
STATE GAS COM N #1 (METER #71669)

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)
MW03	6/17/2004	75.98	76.02	0.04	0.03	49.09	6044.18
MW03	9/16/2004	75.72	75.75	0.03	0.03	49.12	6044.44
MW03	12/20/2004	75.46	75.50	0.04	0.05	49.17	6044.70
MW03	3/17/2005	75.39	75.43	0.04	0.03	49.20	6044.77
MW04	12/3/1996	75.48	75.80	0.32	--	0.00	6045.30
MW04	3/7/1997	75.92	75.92	0.00	--	0.00	6044.92
MW04	12/4/2001	--	77.29	0.00	0.05	0.05	6043.55
MW04	1/7/2002	76.30	76.31	0.01	--	0.05	6044.54
MW04	1/23/2002	75.95	75.96	0.01	--	0.05	6044.89
MW04	1/31/2002	76.01	76.02	0.01	--	0.05	6044.83
MW04	2/7/2002	76.21	76.22	0.01	--	0.05	6044.63
MW04	2/14/2002	76.05	76.06	0.01	--	0.05	6044.79
MW04	2/20/2002	76.09	76.10	0.01	--	0.05	6044.75
MW04	12/3/2008	76.04	76.08	0.04	--	0.05	6044.79
MW04	3/10/2009	--	76.23	0.00	0.08	0.13	6044.61
MW04	6/3/2009	--	76.30	0.00	0.03	0.16	6044.54
MW04	8/25/2009	NA	NA	NA	0.03	0.20	NA
MW05	6/3/2009	74.65	74.67	0.02	--	0.00	6042.98
MW05	8/25/2009	NA	NA	NA	0.13	0.13	NA
MW06	3/6/2002	70.64	72.09	1.45	1.50	1.50	6042.54
MW06	3/11/2002	71.38	71.95	0.57	0.25	1.75	6041.98
MW06	3/21/2002	71.17	71.44	0.27	0.09	1.84	6042.25
MW06	4/3/2002	71.04	71.06	0.02	0.01	1.85	6042.43
MW06	5/17/2002	70.97	71.04	0.07	--	1.85	6042.49
MW06	9/4/2002	71.05	71.28	0.23	--	1.85	6042.37
MW06	12/17/2002	71.03	71.06	0.03	0.02	1.87	6042.43
MW06	3/20/2003	70.90	71.43	0.53	0.33	2.20	6042.46
MW06	6/26/2003	71.04	71.66	0.62	0.10	2.30	6042.31
MW06	9/14/2003	71.04	72.25	1.21	0.20	2.50	6042.19
MW06	12/9/2003	71.10	71.75	0.65	--	2.50	6042.24
MW06	3/15/2004	71.11	71.74	0.63	0.11	2.61	6042.23
MW06	6/17/2004	71.11	71.68	0.57	0.09	2.71	6042.25
MW06	9/16/2004	71.05	71.79	0.74	0.12	2.83	6042.27
MW06	12/20/2004	71.05	72.09	1.04	0.13	2.95	6042.21

TABLE 2

SUMMARY OF FREE-PRODUCT REMOVAL
STATE GAS COM N #1 (METER #71669)

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)
MW06	3/17/2005	70.96	71.79	0.83	0.14	3.09	6042.34
MW06	6/17/2005	71.05	72.05	1.00	0.12	3.21	6042.22
MW06	9/15/2005	71.04	72.14	1.10	0.12	3.33	6042.21
MW06	12/22/2005	71.30	72.22	0.92	0.12	3.44	6041.99
MW06	3/27/2006	71.02	72.10	1.08	0.13	3.57	6042.23
MW06	6/19/2006	71.34	72.33	0.99	0.12	3.69	6041.93
MW06	7/21/2006	71.54	72.44	0.90	0.12	3.80	6041.75
MW06	8/24/2006	71.54	72.42	0.88	0.12	3.92	6041.75
MW06	9/27/2006	71.57	72.37	0.80	0.12	4.04	6041.74
MW06	10/22/2006	71.53	72.35	0.82	0.12	4.15	6041.78
MW06	11/7/2006	71.66	72.43	0.77	0.12	4.27	6041.66
MW06	12/20/2006	71.60	72.41	0.81	0.12	4.39	6041.71
MW06	1/16/2007	71.62	72.45	0.83	0.12	4.51	6041.68
MW06	2/26/2007	71.65	72.41	0.76	0.12	4.62	6041.67
MW06	3/26/2007	71.76	72.50	0.74	0.12	4.74	6041.56
MW06	4/30/2007	71.77	72.49	0.72	0.12	4.86	6041.56
MW06	5/24/2007	71.91	72.50	0.59	0.12	4.97	6041.44
MW06	6/14/2007	71.83	72.42	0.59	0.12	5.09	6041.52
MW06	7/31/2007	71.83	72.49	0.66	0.12	5.21	6041.51
MW06	8/29/2007	71.82	72.47	0.65	0.12	5.33	6041.52
MW06	9/18/2007	71.82	72.43	0.61	0.12	5.44	6041.53
MW06	10/31/2007	72.12	72.40	0.28	0.12	5.56	6041.29
MW06	11/30/2007	72.02	72.27	0.25	0.12	5.68	6041.40
MW06	12/17/2007	72.11	72.18	0.07	0.12	5.80	6041.35
MW06	1/23/2008	71.96	72.13	0.17	0.11	5.91	6041.48
MW06	3/5/2008	71.94	71.95	0.01	0.02	5.93	6041.53
MW06	5/8/2008	--	71.94	0.00	0.09	6.02	6041.53
MW06	6/12/2008	--	72.02	0.00	0.07	6.09	6041.45
MW06	7/17/2008	--	72.07	0.00	0.08	6.17	6041.40
MW06	8/12/2008	--	72.02	0.00	0.09	6.26	6041.45
MW06	9/8/2008	71.91	71.92	0.01	0.03	6.28	6041.56
MW06	10/9/2008	--	71.97	0.00	0.11	6.40	6041.50
MW06	11/7/2008	--	71.98	0.00	0.06	6.46	6041.49
MW06	12/3/2008	--	72.00	0.00	0.05	6.51	6041.47

TABLE 2

SUMMARY OF FREE-PRODUCT REMOVAL
STATE GAS COM N #1 (METER #71669)

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)
MW06	1/16/2009	--	72.15	0.00	0.08	6.58	6041.32
MW06	2/6/2009	--	72.09	0.00	0.05	6.63	6041.38
MW06	3/10/2009	--	71.92	0.00	0.06	6.69	6041.55
MW06	4/1/2009	--	71.84	0.00	0.08	6.77	6041.63
MW06	5/1/2009	--	72.00	0.00	0.09	6.86	6041.47
MW06	6/3/2009	--	72.06	0.00	0.04	6.90	6041.41
MW06	8/25/2009	NA	NA	NA	0.10	7.00	NA
MW06	11/5/2009	--	72.18	0.00	0.09	7.08	6041.29
MW07	9/8/2008	73.75	73.76	0.01	--	0.00	6048.85
MW07	12/3/2008	--	73.92	0.00	0.04	0.04	6048.68
MW07	3/10/2009	--	73.83	0.00	0.03	0.07	6048.77
MW07	6/3/2009	--	73.85	0.00	0.13	0.20	6048.75
MW07	8/25/2009	NA	NA	NA	0.03	0.24	NA
MW07	11/5/2009	--	73.92	0.00	0.13	0.37	6048.68

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.

Lodestar Services, Incorporated
PO Box 4465, Durango, CO 81302 Office (970) 946-1093

WATER LEVEL DATA

Project Name: San Juan Basin Groundwater **Date:**
Project Manager: Ashley Ager
Client: MWH
Site Name: State Gas Com

Well	Time	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Volume Removed
MW-1	11:57 AM	-	74.56	-	-
MW-2		-	76.13	-	-
MW-3		-	76.20	-	-
MW-4		-	76.23	-	-
MW-5		-	74.53	-	-
MW-6		-	71.92	-	-
MW-7		-	73.83	-	-
MW-8		-	-	-	-
MW-9		-	68.28	-	-

Comments
Operator: XTO Energy
Reviewed site map (changes attached), made site photos

Signature: *Ashley L. Ager* Date: 03/11/2009

Lodestar Services, Incorporated
PO Box 4465, Durango, CO 81302 Office (970) 946-1093

WATER LEVEL DATA

Project Name: San Juan Basin Groundwater **Date:** 04/01/2009
Project Manager: Ashley Ager
Client: MWH
Site Name: State Gas Com

Well	Time	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Volume Removed	Comments
MW-1	########	-	-	-	-	
MW-2		-	-	-	-	
MW-3		-	-	-	-	
MW-4		-	-	-	-	
MW-5		-	-	-	-	
MW-6		-	71.84	-	-	Recovered 10 oz product, set new sock
MW-7		-	-	-	-	
MW-8		-	-	-	-	
MW-9		-	-	-	-	

Comments

Signature: *Ashley L. Ager* Date: 04/02/2009

✦ Lodestar Services, Incorporated
PO Box 4465, Durango, CO 81302 Office 970-946-1093

WATER LEVEL DATA

Project Name	**San Juan Basin Ground Water**	**Project No.**	**30001.0**
Project Manager	**Ashley Ager**		
Client Company	**MWH**	**Date**	**01/16/09**
Site Name	**State Gas Com**		

Well	Time	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Volume Removed
MW-1		-		-	
MW-2		-		-	
MW-3		-		-	
MW-4		-		-	
MW-5		-		-	
MW-6	1237	-	72.15	-	Replaced sock, 10 oz recovered
MW-7		-		-	
MW-8		-		-	
MW-9		-		-	

Comments

Signature: Ashley Ager Date: 01/18/09

Lodestar Services, Incorporated
PO Box 4465, Durango, CO 81302 Office (970) 946-1093

WELL DEVELOPMENT AND SAMPLING LOG

Project Name: San Juan Basin | Location: State GC | Well No: MW-1
Client: MWH | Date: 8/26/2009 | Time: 14:16
Project Manager: Ashley Ager | Sampler's Name: Troy Urban

Measuring Point: TOC | Depth to Water: 74.76 ft | Depth to Product: ft
Well Diameter: 4" | Total Depth: 83.8 ft | Product Thickness: ft
Water Column Height: 9.04 ft

Sampling Method: ☐ Submersible Pump ☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Other
☑ Bottom Valve Bailer ☐ Double Check Valve Bailer

Criteria: ☑ 3 to 5 Casing Volumes of Water Removal ☑ Stabilization of Indicator Parameters ☑ Other bail dry

Water Volume in Well			
Gal/ft x ft of water	Gallons	Ounces	Volume to be removed
9.04 x .65	5.88 x 3		17.62 gal

Time (military)	pH (su)	SC (ms)	Temp (°F)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. gal	Comments/Flow Rate
14:16	6.92	5.97	64.8				1	yellow, sheen
	6.94	5.99	63.9				2	yellow, sheen
	6.89	5.98	62.8				3	yellow, sheen
	6.91	6.05	62.1				5	yellow, sheen, HC odor, bailing
Final: 14:50	6.83	6.04	63					grayish yellow, bailed dry

st+A1

COMMENTS: Well bailed dry after purging.

Instrumentation: ☑ pH Meter ☐ DO Monitor ☑ Conductivity Meter ☑ Temperature Meter ☐ Other

Water Disposal: Rio Vista

Sample ID: MW-1 | Sample Time: 14:45

Analysis Requested: ☐ BTEX ☐ VOCs ☐ Alkalinity ☐ TDS ☐ Cations ☐ Anions ☐ Nitrate ☐ Nitrite ☐ Metals
☐ Other

Trip Blank: 29082009TB02 | Duplicate Sample:

Lodestar Services, Incorporated
PO Box 4465, Durango, CO 81302 Office (970) 946-1093

WELL DEVELOPMENT AND SAMPLING LOG

Project Name: San Juan Basin | Location: State GC | Well No: MW-3
Client: MWH | Date: 8/26/2009 | Time: 15:08
Project Manager: Ashley Ager | Sampler's Name: Troy Urban

Measuring Point: TOC | Depth to Water: 76.38 ft | Depth to Product: ____ ft
Well Diameter: 4" | Total Depth: 83.57 ft | Product Thickness: ____ ft
Water Column Height: 7.19 ft

Sampling Method: ☐ Submersible Pump ☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Other ____
☑ Bottom Valve Bailer ☐ Double Check Valve Bailer

Criteria: ☑ 3 to 5 Casing Volumes of Water Removal ☑ Stabilization of Indicator Parameters ☑ Other bail dry

Water Volume in Well			
Gal/ft x ft of water	Gallons	Ounces	Volume to be removed
7.19 x .65	4.67 x 3		14.02 gal

Time (military)	pH (su)	SC (ms)	Temp (°F)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. gal	Comments/Flow Rate
15:08	6.76	8.06	64.9				1	clear, sheen
	6.74	8.07	63.3				2	clear, sheen
	6.74	8.09	63.7				3	light gray, sheen
	6.74	8.04	63.3				5	light gray, sheen
Final: 15:42	6.85	7.94	63.1				6.75	dark gray, sheen, well bailed dry

COMMENTS: Well bailed dry after purging. Sample is unpreserved due to reaction between groundwater and HCl preservative

Instrumentation: ☑ pH Meter ☐ DO Monitor ☑ Conductivity Meter ☑ Temperature Meter ☐ Other ____

Water Disposal: Rio Vista

Sample ID: MW-3 | Sample Time: 15:40

Analysis Requested: ☑ BTEX ☐ VOCs ☐ Alkalinity ☐ TDS ☐ Cations ☐ Anions ☐ Nitrate ☐ Nitrite ☐ Metals
☐ Other ____

Trip Blank: 29082009TB02 | Duplicate Sample: ____

Lodestar Services, Incorporated
PO Box 4465, Durango, CO 81302 Office (970) 946-1093

WELL DEVELOPMENT AND SAMPLING LOG

Project Name: San Juan Basin | Location: State GC | Well No: MW-4
Client: MWH | Date: 8/26/2009 | Time: 16:02
Project Manager: Ashley Ager | Sampler's Name: Troy Urban

Measuring Point: TOC | Depth to Water: 76.62 ft | Depth to Product: ft
Well Diameter: 4" | Total Depth: 82.67 ft | Product Thickness: ft
Water Column Height: 6.05 ft

Sampling Method: ☐ Submersible Pump ☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Other
☑ Bottom Valve Bailer ☐ Double Check Valve Bailer

Criteria: ☑ 3 to 5 Casing Volumes of Water Removal ☑ Stabilization of Indicator Parameters ☑ Other bail dry

Water Volume in Well			
Gal/ft x ft of water	Gallons	Ounces	Volume to be removed
6.05 x .65	3.93 x 3		11.8 gal

Time (military)	pH (su)	SC (ms)	Temp (°F)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. gal	Comments/Flow Rate
16:07	6.81	4.27	64.6				1	clear
	6.84	4.31	64.4				2	tan
	6.85	4.34	63.9				3	gray, sheen
	6.85	4.29	63.5				5	gray, sheen
Final: 16:30	6.96	4.29	63.5				7.1	gray, sheen, bailed dry

COMMENTS: Well bailed dry after purging. Sample is unpreserved due to reaction between groundwater and HCl preservative

Instrumentation: ☑ pH Meter ☐ DO Monitor ☑ Conductivity Meter ☑ Temperature Meter ☐ Other

Water Disposal: Rio Vista

Sample ID: MW-4 | Sample Time: 16:26

Analysis Requested: ☑ BTEX ☐ VOCs ☐ Alkalinity ☐ TDS ☐ Cations ☐ Anions ☐ Nitrate ☐ Nitrite ☐ Metals
☐ Other

Trip Blank: 29082009TB02 | Duplicate Sample:

Lodestar Services, Incorporated
PO Box 4465, Durango, CO 81302 Office (970) 946-1093

WELL DEVELOPMENT AND SAMPLING LOG

Project Name: San Juan Basin | Location: State GC | Well No: MW-5
Client: MWH | Date: 8/26/2009 | Time: 16:44
Project Manager: Ashley Ager | Sampler's Name: Troy Urban

Measuring Point: TOC | Depth to Water: 76.44 ft | Depth to Product: ____ ft
Well Diameter: 2" | Total Depth: 82.05 ft | Product Thickness: ____ ft
Water Column Height: 5.61 ft

Sampling Method: ☐ Submersible Pump ☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Other ____
☑ Bottom Valve Bailer ☐ Double Check Valve Bailer

Criteria: ☑ 3 to 5 Casing Volumes of Water Removal ☑ Stabilization of Indicator Parameters ☑ Other bail dry

Water Volume in Well			
Gal/ft x ft of water	Gallons	Ounces	Volume to be removed
5.61 x .16	0.90 x 3		2.69 gal

Time (military)	pH (su)	SC (ms)	Temp (°F)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. gal	Comments/Flow Rate
16:55	6.97	5.81	64.0				0.25	clear
	6.82	5.90	63.3				0.5	light gray
	6.81	6.56	63.0				0.75	light gray
	6.83	6.36	63.0				1	gray, silty
	6.83	6.14	63.1				2	gray, silty
	6.83	6.07	63.0				2.25	gray, silty
	6.83	5.97	62.6				2.5	gray, silty
Final: 17:20	6.85	6.03	62.2				2.75	gray, silty

COMMENTS:

Instrumentation: ☑ pH Meter ☐ DO Monitor ☑ Conductivity Meter ☑ Temperature Meter ☐ Other ____

Water Disposal: Rio Vista

Sample ID: MW-5 | Sample Time: 17:22

Analysis Requested: ☑ BTEX ☐ VOCs ☐ Alkalinity ☐ TDS ☐ Cations ☐ Anions ☐ Nitrate ☐ Nitrite ☐ Metals
☐ Other ____

Trip Blank: 29082009TB02 | Duplicate Sample: ____

Lodestar Services, Incorporated
PO Box 4465, Durango, CO 81302 Office (970) 946-1093

WELL DEVELOPMENT AND SAMPLING LOG

Project Name: San Juan Basin | Location: State GC | Well No: MW-7
Client: MWH | Date: 8/26/2009 | Time: 13:25
Project Manager: Ashley Ager | Sampler's Name: Troy Urban

Measuring Point: TOC | Depth to Water: 73.63 ft | Depth to Product: ft
Well Diameter: 2" | Total Depth: 87.83 ft | Product Thickness: ft
Water Column Height: 14.2 ft

Sampling Method: ☐ Submersible Pump ☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Other
☑ Bottom Valve Bailer ☐ Double Check Valve Bailer

Criteria: ☑ 3 to 5 Casing Volumes of Water Removal ☑ Stabilization of Indicator Parameters ☑ Other bail dry

Water Volume in Well			
Gal/ft x ft of water	Gallons	Ounces	Volume to be removed
14.2 x .16	2.27 x 3		6.81 gal

Time (military)	pH (su)	SC (ms)	Temp (°F)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. gal	Comments/Flow Rate
13:25	6.78	3.97	64.6				0.25	clear, white ppt
	7.02	4.05	63.1				0.5	gray, white ppt
	7.02	3.95	63.0				0.75	gray, HC odor
	7.00	4.01	62.9				1	gray, HC odor
	7.01	4.08	62.4				2	gray, HC odor
14:00	6.99	4.06	63.5				3	black, HC odor, product
Final:								

COMMENTS: Stopped bailing and taking readings after observing product in bailer. Able to obtain sample. Sample is unpreserved due to reaction between groundwater and HCl preservative.

Instrumentation: ☑ pH Meter ☐ DO Monitor ☑ Conductivity Meter ☑ Temperature Meter ☐ Other

Water Disposal: Rio Vista

Sample ID: MW-7 | Sample Time: 14:02

Analysis Requested: ☑ BTEX ☐ VOCs ☐ Alkalinity ☐ TDS ☐ Cations ☐ Anions ☐ Nitrate ☐ Nitrite ☐ Metals
☐ Other

Trip Blank: 29082009TB02 | Duplicate Sample:

Lodestar Services, Incorporated
PO Box 4465, Durango, CO 81302 Office (970) 946-1093

WELL DEVELOPMENT AND SAMPLING LOG

Project Name: San Juan Basin | Location: State GC | Well No: MW-9
Client: MWH | Date: 8/26/2009 | Time: 17:32
Project Manager: Ashley Ager | Sampler's Name: Troy Urban

Measuring Point: TOC | Depth to Water: 68.4 ft | Depth to Product: ft
Well Diameter: 2" | Total Depth: 81.84 ft | Product Thickness: ft
Water Column Height: 13.44 ft

Sampling Method: ☐ Submersible Pump ☐ Centrifugal Pump ☐ Peristaltic Pump ☐ Other
☑ Bottom Valve Bailer ☐ Double Check Valve Bailer

Criteria: ☑ 3 to 5 Casing Volumes of Water Removal ☑ Stabilization of Indicator Parameters ☑ Other bail dry

Water Volume in Well			
Gal/ft x ft of water	Gallons	Ounces	Volume to be removed
13.44 x .16	2.15 x 3		6.45 gal

Time (military)	pH (su)	SC (ms)	Temp (°F)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. gal	Comments/Flow Rate
17:40	7.69	6.43	60.4				0.25	tan, silty
	7.63	6.53	59.5				0.5	tan, silty
	7.63	6.45	59.5				0.75	tan, silty
	7.61	6.68	59.2				1	tan, silty
	7.44	6.49	59.7				2	tan, silty
	7.58	6.59	59.9				3	tan, silty
	7.60	6.77	59.9				4	tan, silty
	7.63	6.79	59.5				5	tan, silty
	7.65	6.83	60.4				6	tan, silty
	7.65	6.86	58.6				6.25	tan, silty
Final: 17:55	7.65	6.89	58.1				6.5	tan, silty

COMMENTS:

Instrumentation: ☑ pH Meter ☐ DO Monitor ☑ Conductivity Meter ☑ Temperature Meter ☐ Other

Water Disposal: Rio Vista

Sample ID: MW-7 | Sample Time: 17:58

Analysis Requested: ☑ BTEX ☐ VOCs ☐ Alkalinity ☐ TDS ☐ Cations ☐ Anions ☐ Nitrate ☐ Nitrite ☐ Metals
☐ Other

Trip Blank: 29082009TB02 | Duplicate Sample:

Lodestar Services, Incorporated
PO Box 4465, Durango, CO 81302 Office 970-946-1093

Site Visit Memo

To: Jed Smith

From: Ashley Ager

CC: File

Date: August 25, 2009

Re: State GC Site Visit

08:12, Pulled absorbent socks from MW-2, MW-4, MW-5, MW-6 and MW-7 for static water levels.

Recovered Product Amounts are as follows:
MW-2 48 oz
MW-4 4.25 oz
MW-5 17 oz
MW-6 12.75 oz
MW-7 4.25 oz

✦ Lodestar Services, Incorporated
PO Box 4465, Durango, CO 81302 Office 970-946-1093

WATER LEVEL DATA

Project Name	**San Juan Basin Ground Water**	**Project No.**	**30001.0**
Project Manager	**Ashley Ager**		
Client Company	**MWH**	**Date**	**02/06/09**
Site Name	**State Gas Com**		

Well	Time	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Volume Removed
MW-1		-		-	
MW-2		-		-	
MW-3		-		-	
MW-4		-		-	
MW-5		-		-	
MW-6	1112	-	72.09	-	Replaced sock, 6 oz recovered
MW-7		-		-	
MW-8		-		-	
MW-9		-		-	

Comments

Signature: Ashley Ager Date: 02/06/09

Lodestar Services, Incorporated
PO Box 4465, Durango, CO 81302 Office (970) 946-1093

WATER LEVEL DATA

Project Name: San Juan Basin Groundwater **Date:** 05/01/2009
Project Manager: Ashley Ager
Client: MWH
Site Name: State Gas Com

Well	Time	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Volume Removed	Comments
MW-1	7:48 AM	-	-	-	-	
MW-2		-	-	-	-	
MW-3		-	-	-	-	
MW-4		-	-	-	-	
MW-5		-	-	-	-	
MW-6		-	72.00	-	-	Recovered 11 oz product, set new sock
MW-7		-	-	-	-	
MW-8		-	-	-	-	
MW-9		-	-	-	-	

Comments

Signature: *Ashley L. Ager* Date: 05/04/2009

Lodestar Services, Incorporated
PO Box 4465, Durango, CO 81302 Office (970) 946-1093

WATER LEVEL DATA

Project Name: San Juan Basin Groundwater **Date:** 06/03/2009
Project Manager: Ashley Ager
Client: MWH
Site Name: State Gas Com

Well	Time	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Volume Removed	Comments
MW-1	12:17 PM	-	74.59	-	-	
MW-2		76.24	76.35	0.11	-	install 4" PR sock
MW-3		-	76.43	-	-	
MW-4		-	76.30	-	-	Recovered 4.25 oz product, set new sock
MW-5		74.65	74.67	0.02	-	install 2" PR sock
MW-6		-	72.06	-	-	Recovered 5 oz of product, set new sock
MW-7			73.85	-	-	Recovered 17 oz of product, set new sock
MW-8		-	-	-	-	well is damaged, cannot get water level
MW-9		-	68.44	-	-	

Comments
Product present in MW-2 and MW-5.

Signature: Ashley L. Ager Date: 06/04/2009

Lodestar Services, Incorporated
PO Box 4465, Durango, CO 81302 Office (970) 946-1093

WATER LEVEL DATA

Project Name: San Juan Basin Groundwater **Date:** 11/05/2009
Project Manager: Ashley Ager
Client: MWH
Site Name: State Gas Com

Well	Time	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Volume Removed	Comments
MW-1	8:15 AM	-	74.66	-	-	
MW-2		-	76.58	#VALUE!	-	48 oz recovered, set new sock
MW-3		-	76.53	-	-	
MW-4		-	76.47	-	-	
MW-5		-	74.83	-	-	
MW-6		-	72.18	-	-	11 oz recovered; set new sock
MW-7			73.92	-	-	17 oz recovered; set new sock
MW-8		-	-	-	-	well is damaged, cannot get water level
MW-9		-	68.62	-	-	

Comments

Signature: *Ashley L. Ager* Date: 11/06/2009

Lodestar Services, Incorporated
PO Box 4465, Durango, CO 81302 Office (970) 946-1093

WATER LEVEL DATA

Project Name: San Juan Basin Groundwater **Date:** 08/26/2009
Project Manager: Ashley Ager
Client: MWH
Site Name: State Gas Com

Well	Time	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Volume Removed	Comments
MW-1	1:12 PM	-	74.76	-	-	sampled for BTEX
MW-2		76.36	76.43	0.07	-	48 oz recovered, set new sock
MW-3		-	76.38	-	-	sampled for BTEX
MW-4		-	76.62	-	-	4.25 oz recovered; sample for BTEX
MW-5		-	76.44	-	-	17 oz recovered; sample for BTEX
MW-6		-	73.02	-	-	12.75 oz recovered; set new sock
MW-7			73.63	-	-	4.25 oz recovered; sample for BTEX; set new sock
MW-8		-	-	-	-	well is damaged, cannot get water level
MW-9		-	68.40	-	-	sampled for BTEX

Comments

Signature: *Ashley L. Ager* Date: 08/27/2009

Gulf Coast ACCUTEST. Laboratories

LET'S ALL IN THE CHEMISTRY

09/18/09

Technical Report for

Montgomery Watson

San Juan Basin Pit Groundwater Remediation

2009-2010 West-ALAB-Ground Rem-007

Accutest Job Number: T36563

Sampling Dates: 08/25/09 - 08/27/09

Report to:

MWH Americas

jed.smith@mwhglobal.com

ATTN: Jed Smith

Total number of pages in report: **22**

ACCUTEST LABORATORIES 50 YEARS 1956-2006

ACCREDITED IN ACCORDANCE WITH nelac

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Paul K Canevaro

Paul Canevaro
Laboratory Director

Client Service contact: Georgia Jones 713-271-4700

Certifications: TX (T104704220-06-TX) AR (88-0756) FL (E87628) KS (E-10366) LA (85695/04004) OK (9103) UT(7132714700)

Test results relate only to samples analyzed.

Sections: 1 2 3 4

Table of Contents

Sample Summary

Montgomery Watson

Job No: T36563

San Juan Basin Pit Groundwater Remediation
Project No: 2009-2010 West-ALAB-Ground Rem-007

Sample Number	Collected Date	Time	By	Received	Matrix Code	Matrix Type	Client Sample ID
T36563-1	08/25/09	16:27	TU	08/28/09	AQ	Ground Water	GCU 124E MW-1
T36563-2	08/26/09	14:02	TU	08/28/09	AQ	Ground Water	STATE GAS COM MW-7
T36563-3	08/26/09	14:45	TU	08/28/09	AQ	Ground Water	STATE GAS COM MW-1
T36563-4	08/26/09	15:40	TU	08/28/09	AQ	Ground Water	STATE GAS COM MW-3
T36563-5	08/26/09	16:26	TU	08/28/09	AQ	Ground Water	STATE GAS COM MW-4
T36563-6	08/26/09	17:22	TU	08/28/09	AQ	Ground Water	STATE GAS COM MW-5
T36563-7	08/26/09	17:58	TU	08/28/09	AQ	Ground Water	STATE GAS COM MW-9
T36563-8	08/27/09	10:18	TU	08/28/09	AQ	Ground Water	KNIGHT MW-1
T36563-9	08/27/09	11:03	TU	08/28/09	AQ	Ground Water	KNIGHT MW-3
T36563-10	08/27/09	12:03	TU	08/28/09	AQ	Ground Water	KNIGHT MW-2
T36563-11	08/25/09	07:00	TU	08/28/09	AQ	Trip Blank Water	250809TB03

ACCUTEST Laboratories

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client:	Montgomery Watson	**Job No**	T36563
Site:	San Juan Basin Pit Groundwater Remediation 2008-2009	**Report Date**	9/10/2009 4:32:21 PM

10 Sample(s), 1 Trip Blank(s) and 0 Field Blank(s) were collected on between 08/25/2009 and 08/27/2009 and were received at Accutest on 08/28/2009 properly preserved, at 0.8 Deg. C and intact. These Samples received an Accutest job number of T36563. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

Volatiles by GCMS By Method SW846 8260B

Matrix AQ **Batch ID:** VF3540

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) T36890-11MS, T36890-11MSD were used as the QC samples indicated.

Volatiles by GC By Method SW846 8021B

Matrix AQ **Batch ID:** GKK1547

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) T36641-2MS, T36641-2MSD were used as the QC samples indicated.
- Matrix Spike Recovery(s) for m,p-Xylene, o-Xylene, Xylenes (total) are outside control limits. Probable cause due to matrix interference.

Matrix AQ **Batch ID:** GKK1548

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) T36548-2MS, T36548-2MSD were used as the QC samples indicated.

Accutest Laboratories Gulf Coast (ALGC) certifies that this report meets the project requirements for analytical data produced for the samples as received at ALGC and as stated on the COC. ALGC certifies that the data meets the Data QualityObjectives for precision, accuracy and completeness as specified in the ALGC Quality Manual except as noted above. This report is to be used in its entirety. ALGC is not responsible for any assumptions of data quality if partial data packages are used

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	GCU 124E MW-1		
Lab Sample ID:	T36563-1	Date Sampled:	08/25/09
Matrix:	AQ - Ground Water	Date Received:	08/28/09
Method:	SW846 8021B	Percent Solids:	n/a
Project:	San Juan Basin Pit Groundwater Remediation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK032351.D	10	09/02/09	FI	n/a	n/a	GKK1548
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	57.9	10	3.6	ug/l	
108-88-3	Toluene	8.8	10	2.8	ug/l	J
100-41-4	Ethylbenzene	58.4	10	2.5	ug/l	
1330-20-7	Xylenes (total)	298	20	9.3	ug/l	
95-47-6	o-Xylene	91.7	10	3.6	ug/l	
	m,p-Xylene	206	10	5.7	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	105%		58-125%
98-08-8	aaa-Trifluorotoluene	123%		73-139%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	STATE GAS COM MW-7		
Lab Sample ID:	T36563-2	Date Sampled:	08/26/09
Matrix:	AQ - Ground Water	Date Received:	08/28/09
Method:	SW846 8021B	Percent Solids:	n/a
Project:	San Juan Basin Pit Groundwater Remediation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK032322.D	100	09/01/09	FI	n/a	n/a	GKK1547
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	11200	100	36	ug/l	
108-88-3	Toluene	4930	100	28	ug/l	
100-41-4	Ethylbenzene	916	100	25	ug/l	
1330-20-7	Xylenes (total)	5760	200	93	ug/l	
95-47-6	o-Xylene	1670	100	36	ug/l	
	m,p-Xylene	4090	100	57	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	117%		58-125%
98-08-8	aaa-Trifluorotoluene	119%		73-139%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	STATE GAS COM MW-1		
Lab Sample ID:	T36563-3	Date Sampled:	08/26/09
Matrix:	AQ - Ground Water	Date Received:	08/28/09
Method:	SW846 8021B	Percent Solids:	n/a
Project:	San Juan Basin Pit Groundwater Remediation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK032323.D	100	09/01/09	FI	n/a	n/a	GKK1547
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	12600	100	36	ug/l	
108-88-3	Toluene	8470	100	28	ug/l	
100-41-4	Ethylbenzene	973	100	25	ug/l	
1330-20-7	Xylenes (total)	8670	200	93	ug/l	
95-47-6	o-Xylene	1900	100	36	ug/l	
	m,p-Xylene	6770	100	57	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	119%		58-125%
98-08-8	aaa-Trifluorotoluene	118%		73-139%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	STATE GAS COM MW-3		
Lab Sample ID:	T36563-4	Date Sampled:	08/26/09
Matrix:	AQ - Ground Water	Date Received:	08/28/09
Method:	SW846 8021B	Percent Solids:	n/a
Project:	San Juan Basin Pit Groundwater Remediation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK032321.D	200	09/01/09	FI	n/a	n/a	GKK1547
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	20100	200	72	ug/l	
108-88-3	Toluene	434	200	56	ug/l	
100-41-4	Ethylbenzene	936	200	50	ug/l	
1330-20-7	Xylenes (total)	4690	400	190	ug/l	
95-47-6	o-Xylene	817	200	71	ug/l	
	m,p-Xylene	3870	200	110	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	116%		58-125%
98-08-8	aaa-Trifluorotoluene	121%		73-139%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	STATE GAS COM MW-4		
Lab Sample ID:	T36563-5	Date Sampled:	08/26/09
Matrix:	AQ - Ground Water	Date Received:	08/28/09
Method:	SW846 8021B	Percent Solids:	n/a
Project:	San Juan Basin Pit Groundwater Remediation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK032325.D	200	09/02/09	FI	n/a	n/a	GKK1547
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	17000	200	72	ug/l	
108-88-3	Toluene	14400	200	56	ug/l	
100-41-4	Ethylbenzene	934	200	50	ug/l	
1330-20-7	Xylenes (total)	11000	400	190	ug/l	
95-47-6	o-Xylene	2300	200	71	ug/l	
	m,p-Xylene	8650	200	110	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	118%		58-125%
98-08-8	aaa-Trifluorotoluene	116%		73-139%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	STATE GAS COM MW-5		
Lab Sample ID:	T36563-6	Date Sampled:	08/26/09
Matrix:	AQ - Ground Water	Date Received:	08/28/09
Method:	SW846 8021B	Percent Solids:	n/a
Project:	San Juan Basin Pit Groundwater Remediation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK032324.D	100	09/01/09	FI	n/a	n/a	GKK1547
Run #2	KK032341.D	200	09/02/09	FI	n/a	n/a	GKK1548

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	19800 [a]	200	72	ug/l	
108-88-3	Toluene	63.2	100	28	ug/l	J
100-41-4	Ethylbenzene	1280	100	25	ug/l	
1330-20-7	Xylenes (total)	2470	200	93	ug/l	
95-47-6	o-Xylene	59.5	100	36	ug/l	J
	m,p-Xylene	2410	100	57	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	118%	115%	58-125%
98-08-8	aaa-Trifluorotoluene	105%	115%	73-139%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	STATE GAS COM MW-9		
Lab Sample ID:	T36563-7	Date Sampled:	08/26/09
Matrix:	AQ - Ground Water	Date Received:	08/28/09
Method:	SW846 8021B	Percent Solids:	n/a
Project:	San Juan Basin Pit Groundwater Remediation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK032339.D	1	09/02/09	FI	n/a	n/a	GKK1548
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	1.2	1.0	0.36	ug/l	
108-88-3	Toluene	0.69	1.0	0.28	ug/l	J
100-41-4	Ethylbenzene	0.35	1.0	0.25	ug/l	J
1330-20-7	Xylenes (total)	2.7	2.0	0.93	ug/l	
95-47-6	o-Xylene	0.47	1.0	0.36	ug/l	J
	m,p-Xylene	2.2	1.0	0.57	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	106%		58-125%
98-08-8	aaa-Trifluorotoluene	110%		73-139%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	KNIGHT MW-1		
Lab Sample ID:	T36563-8	Date Sampled:	08/27/09
Matrix:	AQ - Ground Water	Date Received:	08/28/09
Method:	SW846 8021B	Percent Solids:	n/a
Project:	San Juan Basin Pit Groundwater Remediation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK032328.D	25	09/02/09	FI	n/a	n/a	GKK1547
Run #2	KK032348.D	500	09/02/09	FI	n/a	n/a	GKK1548

	Purge Volume
Run #1	5.0 ml
Run #2	5.0 ml

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	2790	25	9.0	ug/l	
108-88-3	Toluene	8.3	25	7.1	ug/l	J
100-41-4	Ethylbenzene	1190	25	6.3	ug/l	
1330-20-7	Xylenes (total)	12500 [a]	1000	460	ug/l	
95-47-6	o-Xylene	29.8	25	8.9	ug/l	
	m,p-Xylene	12500 [a]	500	280	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	121%	105%	58-125%
98-08-8	aaa-Trifluorotoluene	119%	114%	73-139%

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	KNIGHT MW-3		
Lab Sample ID:	T36563-9	Date Sampled:	08/27/09
Matrix:	AQ - Ground Water	Date Received:	08/28/09
Method:	SW846 8021B	Percent Solids:	n/a
Project:	San Juan Basin Pit Groundwater Remediation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK032329.D	25	09/02/09	FI	n/a	n/a	GKK1547
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	2490	25	9.0	ug/l	
108-88-3	Toluene	ND	25	7.1	ug/l	
100-41-4	Ethylbenzene	842	25	6.3	ug/l	
1330-20-7	Xylenes (total)	6560	50	23	ug/l	
95-47-6	o-Xylene	13.0	25	8.9	ug/l	J
	m,p-Xylene	6550	25	14	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	119%		58-125%
98-08-8	aaa-Trifluorotoluene	110%		73-139%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Accutest Laboratories

Report of Analysis

Client Sample ID:	KNIGHT MW-2		
Lab Sample ID:	T36563-10	Date Sampled:	08/27/09
Matrix:	AQ - Ground Water	Date Received:	08/28/09
Method:	SW846 8021B	Percent Solids:	n/a
Project:	San Juan Basin Pit Groundwater Remediation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK032340.D	1	09/02/09	FI	n/a	n/a	GKK1548
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	26.6	1.0	0.36	ug/l	
108-88-3	Toluene	1.3	1.0	0.28	ug/l	
100-41-4	Ethylbenzene	1.6	1.0	0.25	ug/l	
1330-20-7	Xylenes (total)	9.0	2.0	0.93	ug/l	
95-47-6	o-Xylene	0.40	1.0	0.36	ug/l	J
	m,p-Xylene	8.6	1.0	0.57	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	103%		58-125%
98-08-8	aaa-Trifluorotoluene	118%		73-139%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	250809TB03		
Lab Sample ID:	T36563-11	Date Sampled:	08/25/09
Matrix:	AQ - Trip Blank Water	Date Received:	08/28/09
Method:	SW846 8260B	Percent Solids:	n/a
Project:	San Juan Basin Pit Groundwater Remediation		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	F019528.D	1	09/05/09	AP	n/a	n/a	VF3540
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	2.0	0.50	ug/l	
108-88-3	Toluene	ND	2.0	0.43	ug/l	
100-41-4	Ethylbenzene	ND	2.0	0.55	ug/l	
1330-20-7	Xylene (total)	ND	6.0	1.7	ug/l	
95-47-6	o-Xylene	ND	2.0	0.53	ug/l	
	m,p-Xylene	ND	4.0	1.1	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	101%		79-122%
17060-07-0	1,2-Dichloroethane-D4	98%		75-121%
2037-26-5	Toluene-D8	100%		87-119%
460-00-4	4-Bromofluorobenzene	93%		80-133%

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

CHAIN OF CUSTODY

ACCUTEST Laboratories

10165 Harwin, Suite 150 - Houston, TX 77036 - 713-271-4700 fax: 713-271-4770

Page 1 of 3

FED-EX Tracking # 8706 6705 8890 | Bottle Order Control #

Accutest Quote # | Accutest Job # T36563

Client / Reporting Information | **Project Information** | **Requested Analyses** | **Matrix Codes**

Client / Reporting Information		Project Information	
Company Name: MWH		Project Name / No.: EPTPC San Juan Basin Pit GW Remediation 2009-2010	
Project Contact: Jed Smith	E-Mail: jed.smith@mwhglobal.com	Bill to: El Paso Corp	Invoice Attn.: Norma Ramos
Address: 1801 California Street, Suite 2900		Address: 1001 Louisiana Street, Rm S1904B	
City: Denver	State: CO	Zip: 80202	City: Hou	State: TX	Zip: 77002
Phone No.: 303-291-2276	Fax No.:	Phone No.:	Fax No.:
Sampler's Name: Troy Urban		Client Purchase Order #: West-ALAB-Ground Rem-007	

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Wastewater; SO - Soil; SL - Sludge; OI - Oil; LIQ - Liquid; SOL - Other Solid

Accutest Sample #	Field ID / Point of Collection	Collection Date	Collection Time	Matrix	# of bottles	Number of preserved bottles: HCl	MeOH	HNO3	H2SO4	ENCORE	NaHSO4	MEOH	None	BTEX (8021B) include m, p, & o-xylene	LAB USE ONLY
1	GCU 124E MW-1	082509	1627	GW	3	X								X	
	~~DP~~ 250809TB03	082509	0700	GW	2	X								X	

Turnaround Time (Business days) | Data Deliverable Information | Comments / Remarks

- [X] 10 Day STANDARD — Approved By:/ Date:
- [ ] 7 Day
- [ ] 4 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY
- [ ] Other

Real time analytical data available via Labilink

- [ ] Commercial "A"
- [X] Commercial "B"
- [ ] Reduced Tier 1
- [ ] Full Data Package
- [ ] TRRP-13
- [ ] EDD Format
- [ ] Other

Commercial "A" = Results Only

Commercial "B" = Results & Standard QC

If samples are received unpreserved, please notify MWH regarding holding time!!!

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING COURIER DELIVERY

	Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1	Troy Urban	9/27/09 1330	1	2 Fred Fed	9/25/09 0930	2
3			3	4		4
5			5	Custody Seal #	Preserved where applicable ☐	On Ice ☐ Cooler Temp. 0.8

4.1 A

T36563: Chain of Custody
Page 1 of 5

CHAIN OF CUSTODY

ACCUTEST Laboratories
10165 Harwin, Suite 150 - Houston, TX 77036 - 713-271-4700 fax: 713-271-4770

FED-EX Tracking # 8706 6705 8890 | Bottle Order Control #
Accutest Quote # | Accutest Job # T36563

Client / Reporting Information			Project Information			Requested Analyses	Matrix Codes
Company Name: MWH			Project Name / No.: EPTPC San Juan Basin Pit GW Remediation 2009-2010			BTEX (8021B) Include m, p, & o-xylene	DW - Drinking Water; GW - Ground Water; WW - Wastewater; SO - Soil; SL - Sludge; OI - Oil; LIQ - Liquid; SOL - Other Solid
Project Contact: Jed Smith	E-Mail: jed.smith@mwhglobal.com		Bill to: El Paso Corp	Invoice Attn: Norma Ramos			
Address: 1801 California Street, Suite 2900			Address: 1001 Louisiana Street, Rm S1904B				
City: Denver	State: CO	Zip: 80202	City: Hou	State: TX	Zip: 77002		
Phone No.: 303-291-2276	Fax No.:		Phone No.:	Fax No.:			
Samplers's Name: Troy Urban			Client Purchase Order #: WO#-ALAB-Ground Rem-007				

Accutest Sample #	Field ID / Point of Collection	Collection Date	Collection Time	Matrix	# of bottles	Number of preserved bottles: HCl	HNO3	H2SO4	EnCore	NaHSO4	NaOH	None	BTEX (8021B) Include m, p, & o-xylene	LAB USE ONLY
2	State Gas Com mw-7	082609	1402	GW	3							X	X	
3	State Gas Com mw-1	082609	1445	GW	3	X							X	
4	State Gas Com mw-3	082609	1540	GW	3							X	X	
5	State Gas Com mw-4	082609	1626	GW	3							X	X	
6	State Gas Com mw-5	082609	1722	GW	3	X							X	
7	State Gas Com mw-9	082609	1758	GW	3	X							X	

Turnaround Time (Business days)

- [X] 10 Day STANDARD — Approved By / Date:
- [ ] 7 Day
- [ ] 4 Day *RUSH*
- [ ] 3 Day *EMERGENCY*
- [ ] 2 Day *EMERGENCY*
- [ ] 1 Day *EMERGENCY*
- [ ] Other

Real time analytical data available via Lablink

Data Deliverable Information

- [ ] Commercial "A"
- [X] Commercial "B"
- [ ] Reduced Tier 1
- [ ] Full Data Package
- [ ] TRRP-13
- [ ] EDD Format
- [ ] Other

Commercial "A" = Results Only
Commercial "B" = Results & Standard QC

Comments / Remarks

If samples are received unpreserved, please notify MWH regarding holding time!!!

possible product in several samples

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING COURIER DELIVERY

Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1 Troy Urban 9/27/09	1330	1	2		2
Relinquished by:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
3		3	4		4
Relinquished by:	Date Time:	Received By:	Custody Seal #	Preserved where applicable	On Ice / Cooler Temp.
5		5		☐	☐

4.1 4

T36563: Chain of Custody
Page 2 of 5

ACCUTEST Laboratories T36563

CHAIN OF CUSTODY

ACCUTEST Laboratories
10165 Harwin, Suite 150 - Houston, TX 77036 - 713-271-4700 fax: 713-271-4770

FED-EX Tracking # 8706 6705 8890 | Bottle Order Control # | Accutest Quote # | Accutest Job # T36563

Client / Reporting Information

Company Name: MWH
Project Contact: Jed Smith | E-Mail: jed.smith@mwhglobal.com
Address: 1801 California Street, Suite 2900
City: Denver | State: CO | Zip: 80202
Phone No.: 303-291-2276 | Fax No.:
Samplers's Name: Troy Urban

Project Information

Project Name / No.: EPTPC San Juan Basin Plt GW Remediation 2009-2010
Bill to: El Paso Corp | Invoice Attn.: Norma Ramos
Address: 1001 Louisiana Street, Rm S1904B
City: Hou | State: TX | Zip: 77002
Phone No.: | Fax No.:
Client Purchase Order #: West - ALAB-Ground Rem - 007

Requested Analyses

BTEX (8021B) Include m, p, & o-xylene

Matrix Codes

DW - Drinking Water
GW - Ground Water
WW - Wastewater
SO - Soil
SL - Sludge
OI - Oil
LIQ - Liquid
SOL - Other Solid

Accutest Sample #	Field ID / Point of Collection	Collection Date	Collection Time	Matrix	# of bottles	Number of preserved bottles: HCl	H2SO4	NaOH	HNO3	DI Water	MeOH	NONE	BTEX (8021B) Include m, p, & o-xylene	LAB USE ONLY
8	Knight MW-1	082709	1018	GW	3	X							X	
	~~Knight MW-~~	~~082709~~	~~1018~~	~~GW~~										
9	Knight MW-3	082709	1103	GW	3	X							X	
10	Knight MW-2	082709	1203	GW	3	X							X	

Turnaround Time (Business days)

- [X] 10 Day STANDARD
- [ ] 7 Day
- [ ] 4 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY
- [ ] Other

Approved By:/ Date:

Real time analytical data available via Lablink

Data Deliverable Information

- [ ] Commercial "A"
- [ ] TRRP-13
- [X] Commercial "B"
- [ ] EDD Format
- [ ] Reduced Tier 1
- [ ] Other
- [ ] Full Data Package

Commercial "A" = Results Only
Commercial "B" = Results & Standard QC

Comments / Remarks

If samples are received unpreserved, please notify MWH regarding holding time!!!

SAMPLE CUSTODY MUST BE DOCUMENTED BELOW EACH TIME SAMPLES CHANGE POSSESSION, INCLUDING COURIER DELIVERY

	Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1	Troy Urban	8/27/09 1330	1	2		2
3	Relinquished by:	Date Time:	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
5	Relinquished by:	Date Time:	Received By: 5	Custody Seal #	Preserved where applicable ☐	On Ice ☐ Cooler Temp.

4.1

SAMPLE INSPECTION FORM

Accutest Job Number: T36563 Client: MWH Date/Time Received: 8/20/09 0940

# of Coolers Received: 1 Thermometer #: IR-1 Temperature Adjustment Factor: +0.4

Cooler Temps: #1: 0.8 #2: _____ #3: _____ #4: _____ #5: _____ #6: _____ #7: _____ #8: _____

Method of Delivery: FEDEX UPS Accutest Courier Greyhound Delivery Other

Airbill Numbers: _____

COOLER INFORMATION

- [ ] Custody seal missing or not intact
- [ ] Temperature criteria not met
- [ ] Wet ice received in cooler

CHAIN OF CUSTODY

- [ ] Chain of Custody not received
- [ ] Sample D/T unclear or missing
- [ ] Analyses unclear or missing
- [ ] COC not properly executed

SAMPLE INFORMATION

- [ ] Sample containers received broken
- [ ] VOC vials have headspace
- [ ] Sample labels missing or illegible
- [ ] ID on COC does not match label(s)
- [ ] D/T on COC does not match label(s)
- [ ] Sample/Bottles rcvd but no analysis on COC
- [ ] Sample listed on COC, but not received
- [ ] Bottles missing for requested analysis
- [ ] Insufficient volume for analysis
- [ ] Sample received improperly preserved

TRIP BLANK INFORMATION

- [ ] Trip Blank on COC but not received
- [ ] Trip Blank received but not on COC
- [ ] Trip Blank not intact
- [ ] Received Water Trip Blank
- [ ] Received Soil TB

Number of Encores? _____
Number of 5035 kits? _____
Number of lab-filtered metals? _____

Summary of Discrepancies:

TECHNICIAN SIGNATURE/DATE: _____

INFORMATION AND SAMPLE LABELING VERIFIED BY: _____

CORRECTIVE ACTIONS

Client Representative Notified: _____ **Date:** _____

By Accutest Representative: _____ **Via:** Phone Email

Client Instructions:

I:\mwalker\forms\samplemanagement

4.1 4

SAMPLE RECEIPT LOG

JOB #: T36563 DATE/TIME RECEIVED: 08/28/09 0940

CLIENT: MWH INITIALS: CF

COOLER#	SAMPLE ID	FIELD ID	DATE	MATRIX	VOL	BOTTLE #	LOCATION	PRESERV	PH	
1	1	GCU 12E MW-1	8/25/09 1627	W	40ml	1-3	VR	1 (2) 3 4 5 6 7 8	<2	>12
	2	State Gas Com MW-7	8/26/09 1402					(1) 2 3 4 5 6 7 8	<2	>12
	3	MW-1	1445					1 (2) 3 4 5 6 7 8	<2	>12
	4	MW-3	1540					1 (2) 3 4 5 6 7 8	<2	>12
	5	MW-4	1626					(1) 2 3 4 5 6 7 8	<2	>12
	6	MW-5	1725					(1) 2 3 4 5 6 7 8	<2	>12
	7	MW-9	1758					1 (2) 3 4 5 6 7 8	<2	>12
	8	Knight MW-1	8/27/09 1019					1 (2) 3 4 5 6 7 8	<2	>12
	9	MW-3	1103					1 (2) 3 4 5 6 7 8	<2	>12
	10	MW-2	1253					1 (2) 3 4 5 6 7 8	<2	>12
	11	Trip Blank				1-2		1 (2) 3 4 5 6 7 8	<2	>12
								1 2 3 4 5 6 7 8	<2	>12
								1 2 3 4 5 6 7 8	<2	>12
								1 2 3 4 5 6 7 8	<2	>12
								1 2 3 4 5 6 7 8	<2	>12
			FF	8/26/09				1 2 3 4 5 6 7 8	<2	>12
								1 2 3 4 5 6 7 8	<2	>12
								1 2 3 4 5 6 7 8	<2	>12
								1 2 3 4 5 6 7 8	<2	>12
								1 2 3 4 5 6 7 8	<2	>12
								1 2 3 4 5 6 7 8	<2	>12

PRESERVATIVES: 1: None 2: HCL 3: HNO3 4: H2SO4 5: NAOH 6: DI 7: MeOH 8: Other

LOCATION: 1: Walk-In #1 (Waters) 2: Walk-In #2 (Soils) VR: Volatile Fridge M: Metals SUB: Subcontract EF: Encore Freezer

Rev 8/13/01 ewp

4.1 4

T36563: Chain of Custody
Page 5 of 5

ACCUTEST Laboratories T36563