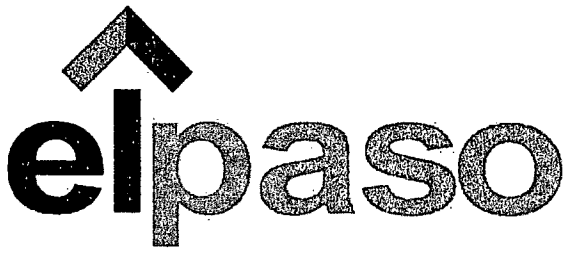
3R - 223

AGWMR

2009



El Paso Tennessee
Pipeline Company

San Juan Basin Pit Program
Groundwater Sites Project

Final 2009 Annual Report
Federal Sites (Volume 1)

April 2010

MWH

1801 California Street, Suite 2900
Denver, Colorado 80202

2009 ANNUAL GROUNDWATER REPORT
FEDERAL SITES VOLUME I

EL PASO TENNESSEE PIPELINE COMPANY

TABLE OF CONTENTS

METER or LINE ID	NMOCD CASE NO	SITE NAME	TOWNSHIP	RANGE	SECTION	UNIT
87640	3RP-155-0	Canada Mesa #2	24N	06W	24	I
89961	3RP-170-0	Fields A#7A	32N	11W	34	E
73220	3RP-068-0	Fogelson 4-1 Com. #14	29N	11W	4	P
89894	3RP-186-0	Hammond #41A	27N	08W	25	O
97213	3RP-190-0	Hamner #9	29N	09W	20	A
94715	3RP-196-0	James F. Bell #1E	30N	13W	10	P
89232	3RP-202-0	Johnston Fed #6A	31N	09W	35	F
LD072	3RP-204-0	K27 LD072	25N	06W	4	E
LD174	3RP-212-0	LAT L 40	28N	04W	13	H
LD151	3RP-213-0	Lat 0-21 Line Drip	30N	09W	12	O
94810	3RP-223-0	Miles Fed 1A	26N	07W	5	F
89620	3RP-235-0	Sandoval GC A #1A	30N	09W	35	C

* The Hamner #9 site was submitted for closure in January 2009 and is pending approval from NMOCD. There were no monitoring activities for this site in 2009.

elpaso MWH

MWH

BUILDING A BETTER WORLD

RECEIVED OCD

2010 APR 19 A 10:39

April 16, 2010

Mr. Glenn von Gonten
New Mexico Oil Conservation Division (NMOCD)
1220 South St., Francis Drive
Santa Fe, New Mexico 87505

RE: El Paso Tennessee Pipeline Company Pit Groundwater Remediation Sites 2009 Annual Reports

Dear Mr. Von Gonten:

MWH Americas, Inc., on behalf of El Paso Tennessee Pipeline Company (EPTPC), is submitting the enclosed 2009 Annual Reports for each of EPTPC's 21 remaining San Juan River Basin pit groundwater remediation sites. The reports present the 2009 sampling and product recovery data and include recommendations for 2010 activities at these sites.

The 2009 Annual Reports are divided into three volumes based on location type. The volumes are as follows:

Volume	Location Type
1	Federal Land
2	Non-Federal Land (Excl. Navajo Nation)
3	Navajo Nation

If you have any questions concerning the enclosed reports, please call either Doug Stavinoha of EPTPC (713-420-5150), Ian Yanagisawa of EPTPC (713-420-7361), or me (303-291-2276).

Sincerely,

Jed Smith
Project Manager

encl.

cc: Bill Freeman – NNEPA, Shiprock, NM (Volume 3 Only)
Bill Liese – BLM, Farmington, NM (Volume 1 Only)
Brandon Powell – NMOCD, Aztec, NM (Volumes 1, 2, and 3)
Doug Stavinoha – EPTPC (Volumes 1, 2, and 3)

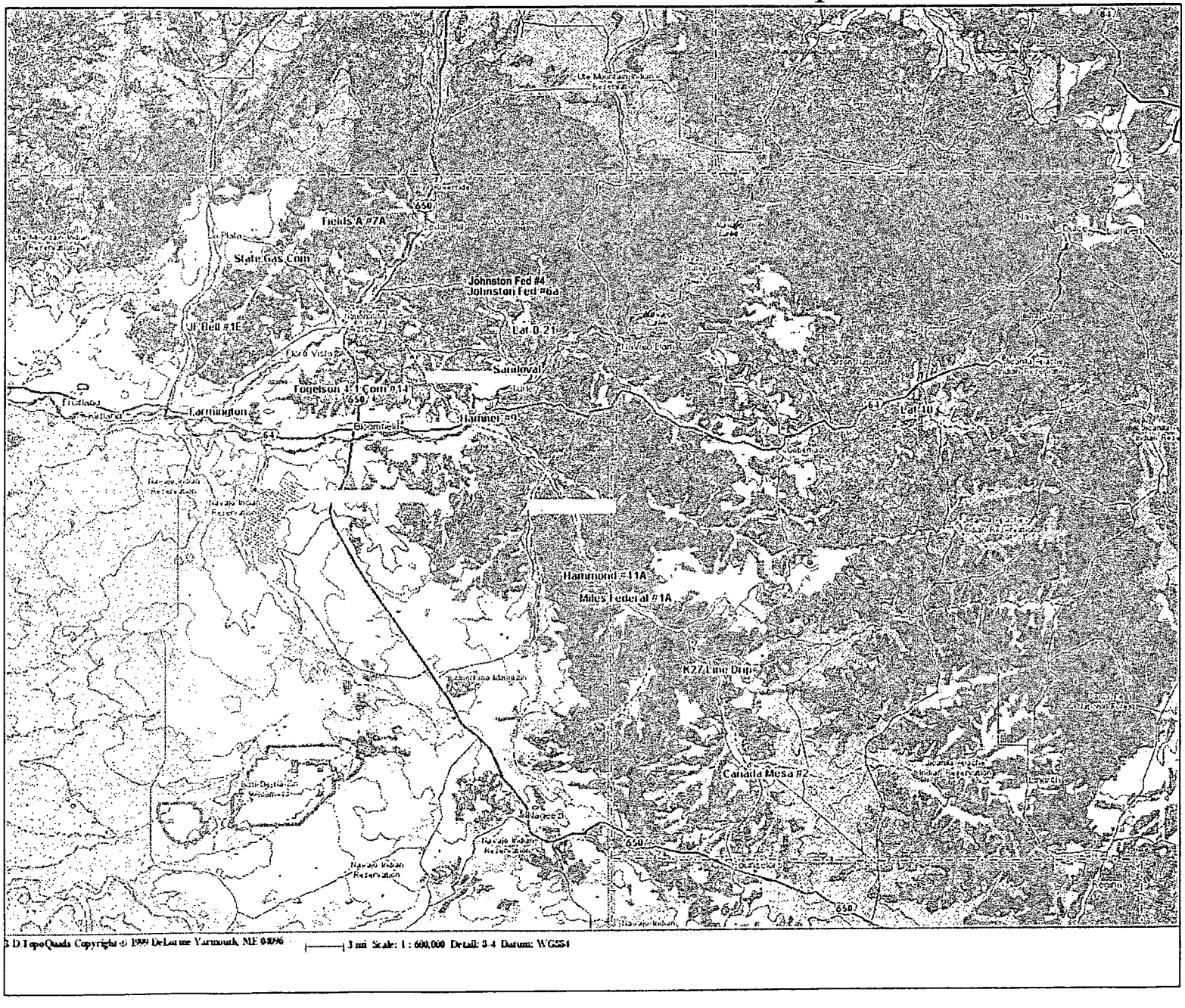
1801 California Street
Suite 2900
Denver, Colorado 80202

TEL 303 291 2222
FAX 303 291 2221
www.mwhglobal.com

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

Federal Groundwater Site Map



EPTPC GROUNDWATER SITES
2009 ANNUAL GROUNDWATER REPORT

Miles Fed 1A
Meter Code: 94810

SITE DETAILS

Legal Description:	**Town:**	26N	**Range:**	7W	**Sec:**	5	**Unit:** F
NMOCD Haz Ranking:	40	**Land Type:**	Federal	**Operator:**		XTO	

PREVIOUS ACTIVITIES

Site Assessment:	5/94	**Excavation:**	6/94	**Soil Boring:**	9/95
Monitor Well:	9/95	**Geoprobe:**	2/97	**Additional MWs:**	10/99
Downgradient MWs:	10/99	**Replace MW:**	NA	**Quarterly Initiated:**	NA
ORC Nutrient Injection:	NA	**Re-Excavation:**	NA	**PSH Removal Initiated:**	2/99
Annual Initiated:	10/99	**Quarterly Resumed:**	NA	**PSH Removal in 2009?**	No

SUMMARY OF 2009 ACTIVITIES

MW-1: Annual groundwater sampling (April) and quarterly product recovery (April, August, and November) were performed during 2009.

MW-2: Annual groundwater sampling (April) and quarterly water level monitoring were performed during 2009.

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

Site-Wide Activities: The Site was inspected quarterly for hydrocarbon seeps. No seeps were detected.

SITE MAP

A Site map (April) 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 4. 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 on Table 2 and presented graphically in Figure 2.

- 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 product recovery socks were disposed of as non-hazardous solid waste.

ISOCONCENTRATION MAPS

No isoconcentration maps were prepared for this Site; however, the attached Site map presents the analytical data and potentiometric surface contours from the April 2009 sampling event.

RESULTS

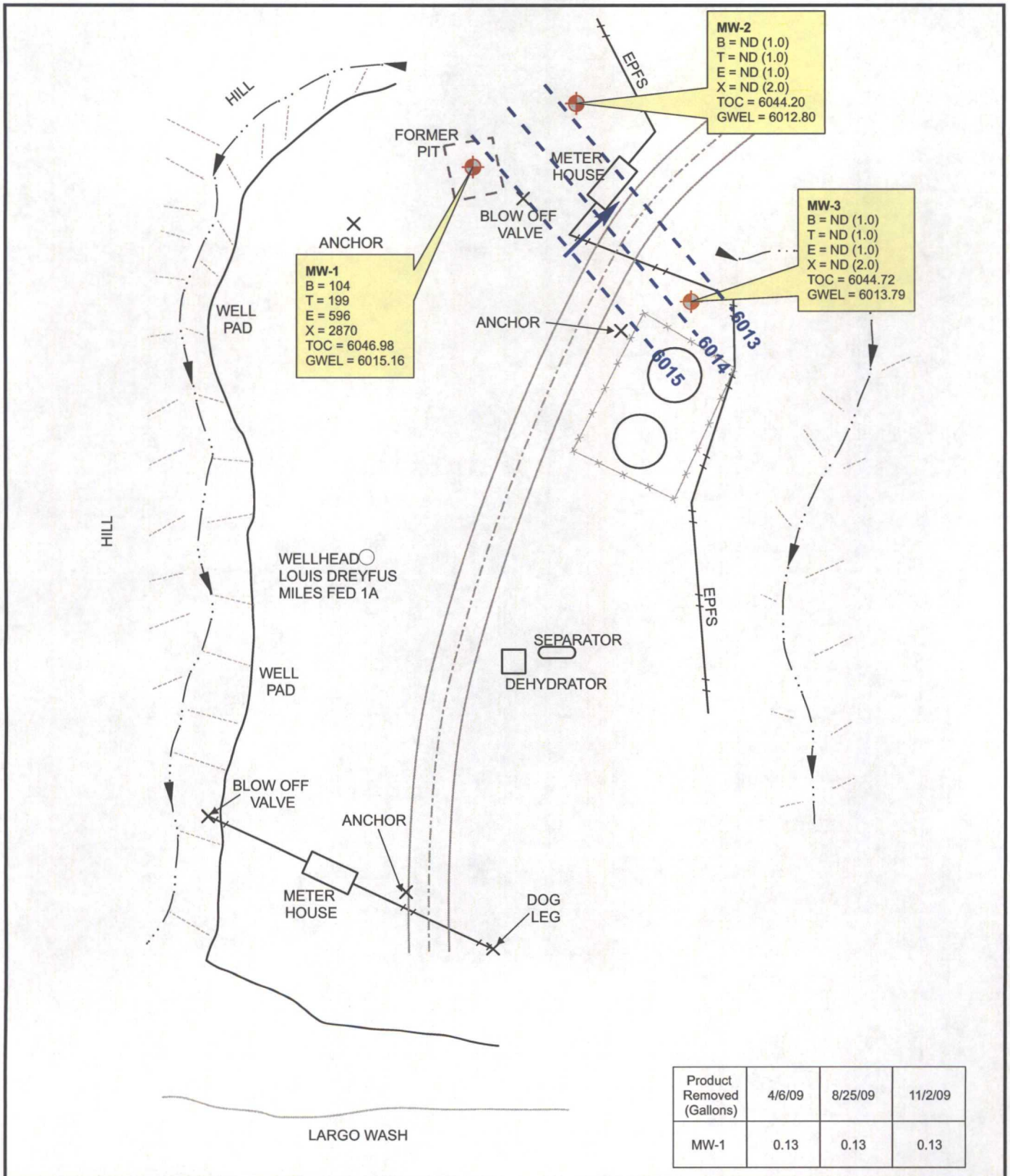
- The groundwater flow direction at this Site is toward the northeast.
- Following the reappearance of measurable free-product in MW-1 in January 2009, 0.40 gallons of free-product was removed via passive recovery. The cumulative total free-product recovered to date is approximately 12.38 gallons. Water levels at the site have been gradually declining from a mid-2006 high water period. As depicted on Figure 2, the current water levels are now similar to those recorded from 2001 until early 2006, when free-product was last observed.
- The benzene and total xylenes concentrations in the MW-1 groundwater sample were 104 µg/L and 2,870 µg/L, respectively, both in excess of their NMWQCC standards. Toluene and ethylbenzene were detected, but were below their respective standards. Overall, it appears that benzene and toluene have attenuated by approximately one order of magnitude since 1996; while ethylbenzene and total xylenes have remained at steady levels. This pattern fits with the expected natural attenuation based on relative solubility and volatility.
- BTEX constituents were not detected in the MW-2 or MW-3 groundwater samples. These results are consistent with the historical data for these two wells.
- Site-wide decreases in BTEX concentrations provide evidence that natural attenuation is occurring at the Site. The residual free-product in the MW-1 area (i.e., beneath the former pit) appears to be highly weathered.
- No seeps along the well pad slopes were noted during 2009.

RECOMMENDATIONS

- On a quarterly basis, EPTPC will gauge water levels at the Site and inspect the well pad slopes for evidence of seeps. If free-product is observed, recovery activities will be re-initiated. If a seep is found, photographic documentation will be made and the seep will be sampled.

- EPTPC will continue quarterly free-product recovery at MW-1, and sampling will be conducted on an annual basis until sample results approach closure criteria. The well will then be scheduled for quarterly sampling until closure criteria are met.

- MW-2 and MW-3 will be sampled annually in conjunction with MW-1.



Product Removed (Gallons)	4/6/09	8/25/09	11/2/09
MW-1	0.13	0.13	0.13

LEGEND

MW-4	Existing Monitoring / Observation Well
	Drainage
	Groundwater Flow Direction
—1275—	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)

N

Not To Scale

MWH

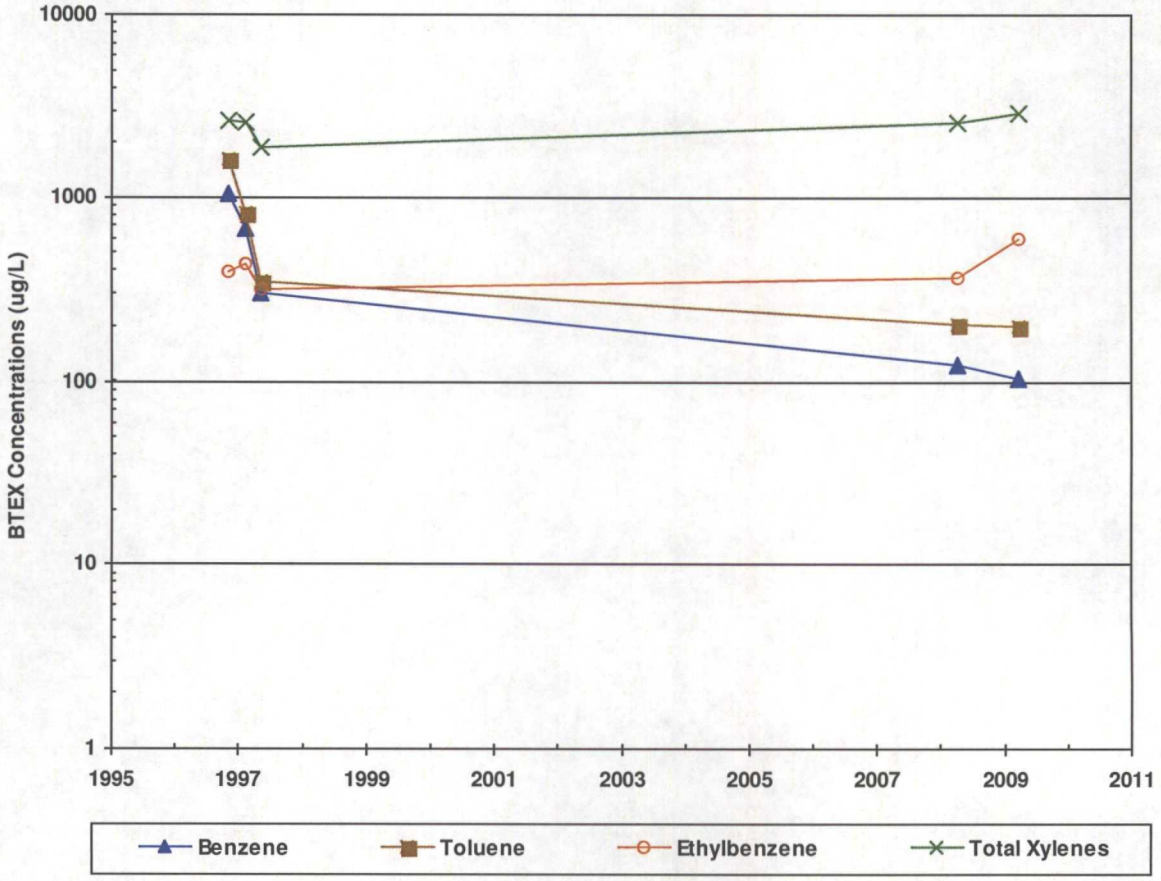
elpaso

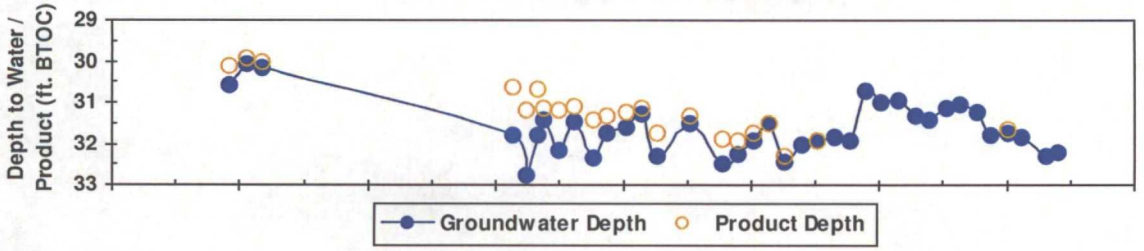
PROJECT: MILES FEDERAL #1A

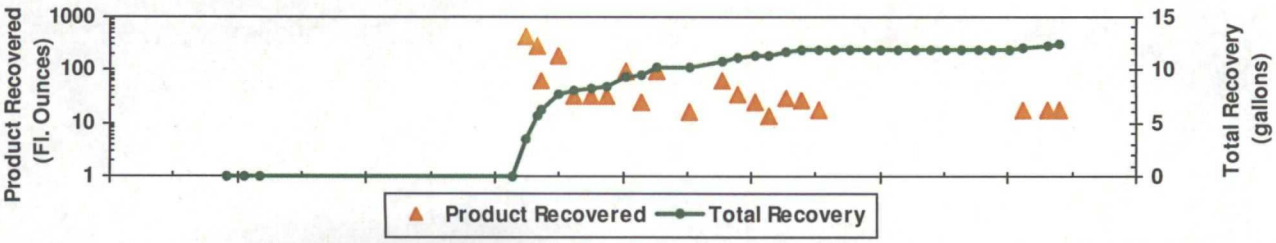
TITLE: Groundwater Potentiometric Surface Map, and BTEX Concentrations - April 6, 2009

FIGURE: 1

FIGURE 2
SUMMARY OF GROUNDWATER BTEX CONCENTRATIONS, FLUID LEVELS, AND PRODUCT RECOVERY
MILES FED 1A (METER #94810)
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 AND FLUID LEVELS
MILES FED 1A (METER #94810)
MW02

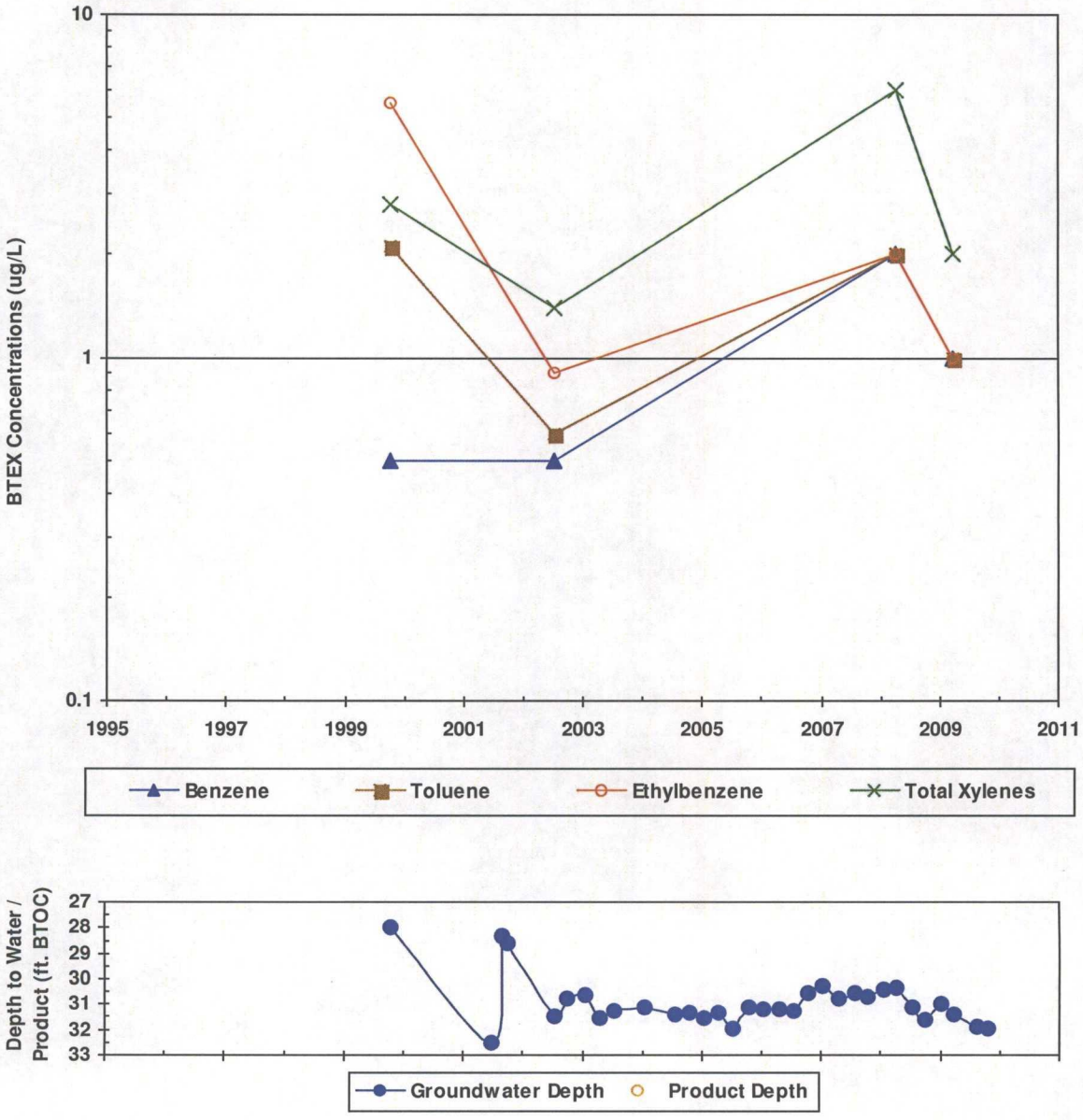


FIGURE 4
SUMMARY OF GROUNDWATER BTEX CONCENTRATIONS AND FLUID LEVELS
MILES FED 1A (METER #94810)
MW03

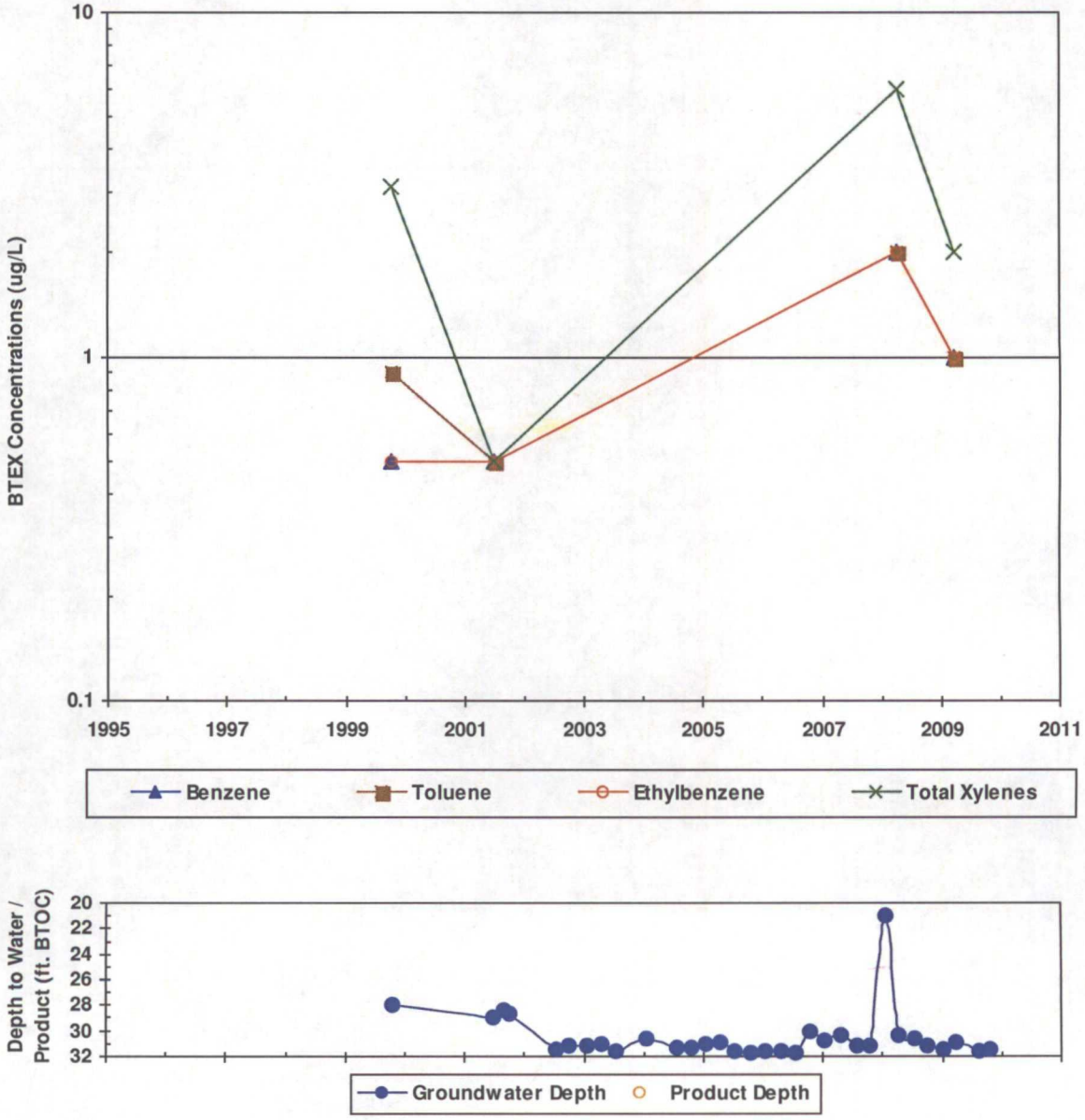


TABLE 1

SUMMARY OF BTEX COMPOUNDS IN GROUNDWATER SAMPLES
MILES FED 1A (METER #94810)

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	11/5/1996	**1050**	**1630**	391	**2620**	30.58	6016.78
MW01	2/7/1997	**671**	**809**	439	**2550**	30.05	6017.04
MW01	5/6/1997	**300**	350	320	**1880**	30.18	6016.91
MW01	4/17/2008	**122**	203	369	**2550**	31.04	6015.94
MW01	4/6/2009	**104**	199	596	**2870**	31.82	6015.16
MW02	10/15/1999	<0.5	2.1	5.5	2.8	27.97	6016.23
MW02	7/15/2002	<0.5	0.6	0.9	1.4	31.46	6012.74
MW02	4/17/2008	<2.0	<2.0	<2.0	<6.0	30.36	6013.84
MW02	4/6/2009	<1.0	<1.0	<1.0	<2.0	31.40	6012.80
MW03	10/15/1999	<0.5	0.9	<0.5	3.1	27.92	6016.80
MW03	7/3/2001	<0.5	<0.5	<0.5	<0.5	28.97	6015.75
MW03	4/17/2008	<2.0	<2.0	<2.0	<6.0	30.36	6014.36
MW03	4/6/2009	<1.0	<1.0	<1.0	<2.0	30.93	6013.79

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
MILES FED 1A (METER #94810)

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	11/5/1996	30.10	30.58	0.48	--	0.00	6016.78
MW01	2/7/1997	29.91	30.05	0.14	--	0.00	6017.04
MW01	5/6/1997	30.04	30.18	0.14	--	0.00	6016.91
MW01	4/11/2001	30.61	31.81	1.20	--	0.00	6016.13
MW01	7/3/2001	31.18	32.76	1.58	3.50	3.50	6015.48
MW01	9/4/2001	30.68	31.80	1.12	2.25	5.75	6016.08
MW01	10/1/2001	31.16	31.41	0.25	0.50	6.25	6015.77
MW01	1/2/2002	31.20	32.17	0.97	1.50	7.75	6015.59
MW01	4/1/2002	31.09	31.45	0.36	0.25	8.00	6015.82
MW01	7/15/2002	31.43	32.35	0.92	0.25	8.25	6015.37
MW01	10/8/2002	31.33	31.73	0.40	0.25	8.50	6015.57
MW01	1/27/2003	31.21	31.59	0.38	0.75	9.25	6015.69
MW01	4/26/2003	31.16	31.30	0.14	0.20	9.45	6015.79
MW01	7/17/2003	31.73	32.31	0.58	0.75	10.20	6015.13
MW01	1/19/2004	31.32	31.49	0.17	0.13	10.33	6015.63
MW01	7/27/2004	31.89	32.47	0.58	0.50	10.83	6014.97
MW01	10/20/2004	31.95	32.24	0.29	0.27	11.10	6014.97
MW01	1/25/2005	31.75	31.91	0.16	0.19	11.29	6015.20
MW01	4/14/2005	31.52	31.52	0.00	0.11	11.40	6015.46
MW01	7/19/2005	32.32	32.43	0.11	0.23	11.63	6014.64
MW01	10/21/2005	--	32.02	0.00	0.21	11.84	6014.96
MW01	1/23/2006	31.92	31.93	0.01	0.14	11.98	6015.06
MW01	1/16/2009	31.66	31.74	0.08	--	11.98	6015.30
MW01	4/6/2009	--	31.82	0.00	0.13	12.11	6015.16
MW01	8/25/2009	--	32.30	0.00	0.13	12.25	6014.68
MW01	11/2/2009	--	32.20	0.00	0.13	12.38	6014.78

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:** 04/06/2009
Project Manager: Ashley Ager
Client: MWH
Site Name: Miles Federal

Well	Time	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Volume Removed	Comments
MW-1	9:20 AM	-	31.82	-	17 oz	replaced sock, sampled for BTEX
MW-2		-	31.40	-	-	sampled for BTEX
MW-3		-	30.93	-	-	sampled for BTEX

Comments
No evidence of seep.
Current Operator: XTO Energy. Take site photos, revise site map.

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

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	**Miles Federal**		

Well	Time	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Volume Removed
MW-1	**1042**	**31.66**	**31.74**	**0.08**	
MW-2		**-**	**30.98**	**-**	
MW-3		**-**	**31.47**	**-**	

Comments
no evidence of seep; installed PR sock in MW-1

Signature: Ashley Ager Date: January 18, 2009

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

WELL DEVELOPMENT AND SAMPLING LOG

Project Name: San Juan Basin | Location: Miles Federal | Well No: MW-3
Client: MWH | Date: 4/6/2009 | Time: 11:27
Project Manager: Ashley Ager | Sampler's Name: Troy Urban

Measuring Point: TOC | Depth to Water: 30.93 ft | Depth to Product: ft
Well Diameter: 2" | Total Depth: 36.85 ft | Product Thickness: ft
Water Column Height: 5.92 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
5.92 x .16	0.95 x 3		2.84 gal

Time (military)	pH (su)	SC (ms)	Temp (°C)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. gal	Comments/Flow Rate
11:32	7.22	7.63	56.8				0.25	clear
	7.23	7.61	57.0				0.5	light tan, roots
	7.28	7.67	57.4				0.75	light gray, silty
	7.23	7.80	57.2				1	light gray, silty
	7.25	7.72	57.0				2	light gray, silty, bailing down
	7.26	7.68	57.4				2.5	light gray, silty, bailing down
	7.27	7.81	57.7				2.75	bailing down, gray, silty
Final:	7.3	7.76	57.7				3	gray, silty

COMMENTS:

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

Water Disposal: Rio Vista

Sample ID: MW-3 | Sample Time: 11:50

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

Trip Blank: 06042009TB01 | Duplicate Sample:

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

WATER LEVEL DATA

Project Name: San Juan Basin Groundwater **Date:** 08/25/2009
Project Manager: Ashley Ager
Client: MWH
Site Name: Miles Federal

Well	Time	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Volume Removed	Comments
MW-1	1:12 PM	-	32.30	-	17 oz	replaced sock, recovered 16.2 oz
MW-2		-	31.85	-	-	
MW-3		-	31.60	-	-	

Comments

Signature: *Ashley L. Ager* Date: 08/25/2009

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

WATER LEVEL DATA

Project Name: San Juan Basin Groundwater **Date:** 11/02/2009
Project Manager: Ashley Ager
Client: MWH
Site Name: Miles Federal

Well	Time	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Volume Removed	Comments
MW-1	12:33 PM	-	32.20	-	17 oz	replaced sock
MW-2		-	31.93	-	-	
MW-3		-	31.47	-	-	

Comments

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

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

WELL DEVELOPMENT AND SAMPLING LOG

Project Name: San Juan Basin | Location: Miles Federal | Well No: MW-1
Client: MWH | Date: 4/6/2009 | Time: 9:40
Project Manager: Ashley Ager | Sampler's Name: Troy Urban

Measuring Point: TOC | Depth to Water: 31.82 ft | Depth to Product: ft
Well Diameter: 4" | Total Depth: 35.84 ft | Product Thickness: ft
Water Column Height: 4.02 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
4.02 x .65	2.61 x 3		7.84 gal

Time (military)	pH (su)	SC (ms)	Temp (°C)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. gal	Comments/Flow Rate
10:00	7.21	7.24	56.3				1	dark gray, sheen
	7.36	7.20	55.9				1.75	dark gray, sheen, HC odor, bailing down
Final:	7.34	7.05	55.4				2	dark gray, sheen, HC odor

COMMENTS: well bailed dry during sampling. Collected duplicate sample.

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

Water Disposal: Rio Vista

Sample ID: MW-1 | Sample Time: 10:15

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

Trip Blank: 06042009TB01 | Duplicate Sample: MW-5 at 09:50

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

WELL DEVELOPMENT AND SAMPLING LOG

Project Name: San Juan Basin | Location: Miles Federal | Well No: MW-2
Client: MWH | Date: 4/6/2009 | Time: 10:40
Project Manager: Ashley Ager | Sampler's Name: Troy Urban

Measuring Point: TOC | Depth to Water: 31.4 ft | Depth to Product: ft
Well Diameter: 2" | Total Depth: 36.85 ft | Product Thickness: ft
Water Column Height: 5.45 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
5.45 x .16	0.87 x 3		2.61 gal

Time (military)	pH (su)	SC (ms)	Temp (°C)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac. gal	Comments/Flow Rate
10:50	7.17	7.45	56.7				0.25	tan, silty, roots
	7.26	7.27	56.3				0.5	tan, silty, roots
	7.27	7.41	56.7				0.75	tan, silty, roots
	7.27	7.23	56.1				1	tan, silty, roots
	7.25	7.37	56.3				2	tan, silty
	7.29	7.31	56.5				2.25	gray, silty
	7.31	7.44	56.8				2.5	gray, silty
Final:	7.3	7.37	56.7				2.75	gray, silty

COMMENTS:

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

Water Disposal: Rio Vista

Sample ID: MW-2 | Sample Time: 11:12

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

Trip Blank: 06042009TB01 | Duplicate Sample:

Gulf Coast ACCUTEST Laboratories

IT'S ALL IN THE CHEMISTRY

04/10/09

Technical Report for

Montgomery Watson

San Juan Basin Pit Groundwater Remediation 2008-2009

WEST-ALAB-GROUND REM 007

Accutest Job Number: T26712

Sampling Date: 04/06/09

Report to:

MWH Americas
1801 California St. Suite 2900
Denver, CO 80202
jed.smith@mwhglobal.com; daniel.a.wade@mwhglobal.com;
craig.moore@mwhglobal.com; ala@lodestarservices.com
ATTN: Jed Smith

Total number of pages in report: **18**

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

ACCUTEST LABORATORIES 50 YEARS 1956-2006

Client Service contact: William Reeves 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 5

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Sample Summary

Montgomery Watson

Job No: T26712

San Juan Basin Pit Groundwater Remediation 2008-2009
Project No: WEST-ALAB-GROUND REM 007

Sample Number	Collected Date	Time By	Received	Matrix Code	Matrix Type	Client Sample ID
T26712-1	04/06/09	10:15 TU	04/07/09	AQ	Ground Water	MILES FEDERAL MW-1
T26712-2	04/06/09	11:12 TU	04/07/09	AQ	Ground Water	MILES FEDERAL MW-2
T26712-3	04/06/09	11:50 TU	04/07/09	AQ	Ground Water	MILES FEDERAL MW-3
T26712-4	04/06/09	07:00 TU	04/07/09	AQ	Ground Water	060409TB02
T26712-5	04/06/09	09:50 TU	04/07/09	AQ	Ground Water	MILES FEDERAL MW-5

ACCUTEST Laboratories

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client:	Montgomery Watson	**Job No**	T26712
Site:	San Juan Basin Pit Groundwater Remediation 2008-2009	**Report Date**	4/9/2009 5:07:26 PM

5 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were collected on 04/06/2009 and were received at Accutest on 04/07/2009 properly preserved, at 0.6 Deg. C and intact. These Samples received an Accutest job number of T26712. 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 GC By Method SW846 8021B

Matrix AQ **Batch ID:** GKK1469

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) T26715-1MS, T26715-1MSD 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

Accutest Laboratories

Report of Analysis

Client Sample ID:	MILES FEDERAL MW-1		
Lab Sample ID:	T26712-1	Date Sampled:	04/06/09
Matrix:	AQ - Ground Water	Date Received:	04/07/09
Method:	SW846 8021B	Percent Solids:	n/a
Project:	San Juan Basin Pit Groundwater Remediation 2008-2009		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK030466.D	25	04/08/09	FI	n/a	n/a	GKK1469
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	104	25	5.2	ug/l	
108-88-3	Toluene	199	25	5.6	ug/l	
100-41-4	Ethylbenzene	596	25	8.7	ug/l	
1330-20-7	Xylenes (total)	2870	50	14	ug/l	
95-47-6	o-Xylene	975	25	14	ug/l	
	m,p-Xylene	1890	25	17	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	116%		58-125%
98-08-8	aaa-Trifluorotoluene	83%		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:	MILES FEDERAL MW-2		
Lab Sample ID:	T26712-2	Date Sampled:	04/06/09
Matrix:	AQ - Ground Water	Date Received:	04/07/09
Method:	SW846 8021B	Percent Solids:	n/a
Project:	San Juan Basin Pit Groundwater Remediation 2008-2009		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK030461.D	1	04/08/09	FI	n/a	n/a	GKK1469
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	1.0	0.21	ug/l	
108-88-3	Toluene	ND	1.0	0.23	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.35	ug/l	
1330-20-7	Xylenes (total)	ND	2.0	0.55	ug/l	
95-47-6	o-Xylene	ND	1.0	0.55	ug/l	
	m,p-Xylene	ND	1.0	0.66	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	86%		58-125%
98-08-8	aaa-Trifluorotoluene	77%		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:	MILES FEDERAL MW-3		
Lab Sample ID:	T26712-3	Date Sampled:	04/06/09
Matrix:	AQ - Ground Water	Date Received:	04/07/09
Method:	SW846 8021B	Percent Solids:	n/a
Project:	San Juan Basin Pit Groundwater Remediation 2008-2009		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK030462.D	1	04/08/09	FI	n/a	n/a	GKK1469
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	1.0	0.21	ug/l	
108-88-3	Toluene	ND	1.0	0.23	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.35	ug/l	
1330-20-7	Xylenes (total)	ND	2.0	0.55	ug/l	
95-47-6	o-Xylene	ND	1.0	0.55	ug/l	
	m,p-Xylene	ND	1.0	0.66	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	91%		58-125%
98-08-8	aaa-Trifluorotoluene	77%		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:	060409TB02		
Lab Sample ID:	T26712-4	Date Sampled:	04/06/09
Matrix:	AQ - Ground Water	Date Received:	04/07/09
Method:	SW846 8021B	Percent Solids:	n/a
Project:	San Juan Basin Pit Groundwater Remediation 2008-2009		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK030463.D	1	04/08/09	FI	n/a	n/a	GKK1469
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	1.0	0.21	ug/l	
108-88-3	Toluene	ND	1.0	0.23	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.35	ug/l	
1330-20-7	Xylenes (total)	ND	2.0	0.55	ug/l	
95-47-6	o-Xylene	ND	1.0	0.55	ug/l	
	m,p-Xylene	ND	1.0	0.66	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	87%		58-125%
98-08-8	aaa-Trifluorotoluene	74%		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:	MILES FEDERAL MW-5		
Lab Sample ID:	T26712-5	Date Sampled:	04/06/09
Matrix:	AQ - Ground Water	Date Received:	04/07/09
Method:	SW846 8021B	Percent Solids:	n/a
Project:	San Juan Basin Pit Groundwater Remediation 2008-2009		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	KK030467.D	25	04/08/09	FI	n/a	n/a	GKK1469
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	106	25	5.2	ug/l	
108-88-3	Toluene	221	25	5.6	ug/l	
100-41-4	Ethylbenzene	426	25	8.7	ug/l	
1330-20-7	Xylenes (total)	1840	50	14	ug/l	
95-47-6	o-Xylene	629	25	14	ug/l	
	m,p-Xylene	1210	25	17	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
460-00-4	4-Bromofluorobenzene	101%		58-125%
98-08-8	aaa-Trifluorotoluene	81%		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

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 ___ of

FED-EX Tracking # 869388512590 | Bottle Order Control # | Accutest Quote # | Accutest Job # T26712

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 Pit GW Remediation 2008-2009
Bill to: El Paso Corp | Invoice Attn.: Norma Ramos
Address: 1001 Louisiana Street, Rm S1904B
City: Houstor | State: TX | Zip: 77002
Phone No.: | Fax No.:
Client Purchase Order #: West-ALAB Ground Rem 007

Requested Analyses

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	NaOH	HNO3	H2SO4	ENCORE	NaHSO4	MEOH	NONE	BTEX (8021B)	LAB USE ONLY
1	Miles Federal MW-1	040609	1015	GW	3	X								X	
2	Miles Federal MW-2	040609	1112	GW	3	X								X	
3	Miles Federal MW-3	040609	1150	GW	3	X								X	
4	060409TB02	040609	0700	GW	2	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

please copy results to ala@lodestarservices.com

* Custody seal on trip blank was broken upon reciept TU

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 TU 1555 4/6/09	TU 1555	1	2		2
3		Date Time:	3	4	Date Time:	4
5	Relinquished by: FedEx	Date Time: 4.7.09 915	Received By: 5 Ivan	Custody Seal #	Preserved where applicable ☐	On Ice ☒ Cooler Temp. .6

4.1

4

T26712: Chain of Custody
Page 1 of 3

SAMPLE INSPECTION FORM

Accutest Job Number: T26712 Client: MWH Date/Time Received: 4.7.09 915

# of Coolers Received: 1 Thermometer #: 110 Temperature Adjustment Factor: -.5

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

Method of Delivery: FEDEX UPS Accutest Courier Greyhound Delivery Other

Airbill Numbers: 869388512590

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)
- [x] 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
- [x] Received Water Trip Blank
- [ ] Received Soil TB

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

Summary of Discrepancies:
Received Miles Federal MW-5 but not listed on COC.

TECHNICIAN SIGNATURE/DATE: [signature] 4.7.09

INFORMATION AND SAMPLE LABELING VERIFIED BY: GL 4/7/09

CORRECTIVE ACTIONS

Client Representative Notified: Jed Smith **Date:** 4/8/09

By Accutest Representative: William Reeves **Via:** Phone Email

Client Instructions:

Proceed with analysis on Miles Federal MW-5 per Jed's email. (WR)

I:\mwalker\forms\samplemanagement

T26712: Chain of Custody

Page 2 of 3

SAMPLE RECEIPT LOG

JOB #: T26712 DATE/TIME RECEIVED: 4-7-09 0915

CLIENT: MWH INITIALS: IT

COOLER#	SAMPLE ID	FIELD ID	DATE	MATRIX	VOL	BOTTLE #	LOCATION	PRESERV	PH
1	1	Miles Federal MW-1	4-6-09 1015	GW	40ml	1-3	VR	1 2 3 4 5 6 7 8	<2 >12
↓	2	↓ MW-2	↓ 1112	↓	↓	↓	↓	1 2 3 4 5 6 7 8	<2 >12
	3	MW-3	1150					1 2 3 4 5 6 7 8	<2 >12
	4	Trip Blank	—	DI		1-2		1 2 3 4 5 6 7 8	<2 >12
↓	5	Miles Federal MW-5	4-6-09 9:21	GW	↓	1-3	↓	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
		4-7-09						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
								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
								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

T26712: Chain of Custody
Page 3 of 3

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: T26712
Account: MWHCODE Montgomery Watson
Project: San Juan Basin Pit Groundwater Remediation 2008-2009

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GKK1469-MB	KK030451.D	1	04/08/09	FI	n/a	n/a	GKK1469

The QC reported here applies to the following samples: Method: SW846 8021B

T26712-1, T26712-2, T26712-3, T26712-4, T26712-5

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.21	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.35	ug/l	
108-88-3	Toluene	ND	1.0	0.23	ug/l	
1330-20-7	Xylenes (total)	ND	2.0	0.55	ug/l	
95-47-6	o-Xylene	ND	1.0	0.55	ug/l	
	m,p-Xylene	ND	1.0	0.66	ug/l	

CAS No.	Surrogate Recoveries		Limits
460-00-4	4-Bromofluorobenzene	83%	58-125%
98-08-8	aaa-Trifluorotoluene	75%	73-139%

Blank Spike Summary

Job Number: T26712
Account: MWHCODE Montgomery Watson
Project: San Juan Basin Pit Groundwater Remediation 2008-2009

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GKK1469-BS	KK030447.D	1	04/08/09	FI	n/a	n/a	GKK1469

The QC reported here applies to the following samples: Method: SW846 8021B

T26712-1, T26712-2, T26712-3, T26712-4, T26712-5

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	20	20.0	100	86-121
100-41-4	Ethylbenzene	20	19.2	96	81-116
108-88-3	Toluene	20	19.8	99	87-117
1330-20-7	Xylenes (total)	60	57.4	96	85-115
95-47-6	o-Xylene	20	19.0	95	87-116
	m,p-Xylene	40	38.4	96	84-116

CAS No.	Surrogate Recoveries	BSP	Limits
460-00-4	4-Bromofluorobenzene	96%	58-125%
98-08-8	aaa-Trifluorotoluene	78%	73-139%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: T26712
Account: MWHCODE Montgomery Watson
Project: San Juan Basin Pit Groundwater Remediation 2008-2009

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
T26715-1MS	KK030457.D	1	04/08/09	FI	n/a	n/a	GKK1469
T26715-1MSD	KK030458.D	1	04/08/09	FI	n/a	n/a	GKK1469
T26715-1	KK030452.D	1	04/08/09	FI	n/a	n/a	GKK1469

The QC reported here applies to the following samples: Method: SW846 8021B

T26712-1, T26712-2, T26712-3, T26712-4, T26712-5

CAS No.	Compound	T26715-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	1.0	U	20	22.6	113	22.0	110	3	86-121/19
100-41-4	Ethylbenzene	1.0	U	20	21.7	109	21.2	106	2	81-116/14
108-88-3	Toluene	1.0	U	20	22.1	111	21.6	108	2	87-117/16
1330-20-7	Xylenes (total)	2.0	U	60	63.9	107	62.7	105	2	85-115/12
95-47-6	o-Xylene	1.0	U	20	21.0	105	20.6	103	2	87-116/16
	m,p-Xylene	1.0	U	40	42.9	107	42.1	105	2	84-116/13

CAS No.	Surrogate Recoveries	MS	MSD	T26715-1	Limits
460-00-4	4-Bromofluorobenzene	91%	91%	80%	58-125%
98-08-8	aaa-Trifluorotoluene	75%	75%	74%	73-139%