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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



2009 ANNUAL GROUNDWATER REPORT NON-FEDERAL SITES VOLUME II

EL PASO TENNESSEE PIPELINE COMPANY

TABLE OF CONTENTS

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

^{*}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.





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

K-31 Line Drip Meter Code: LD087

SITE DETAILS

Legal Description:

Town: 25N . .

Range: 6W

Sec: 16

Unit: N

NMOCD Haz Ranking:

Land Type: State

Operator: Enterprise

PREVIOUS ACTIVITIES

7/94

40

Excavation:

8/94 (90 cy)

Soil Boring:

9/95

Monitor Well:

Site Assessment:

3/97

Geoprobe:

7/97

Additional MWs:

7/00

Downgradient MWs:

7/00

Replace MW:

NA

Quarterly Initiated:

6/97

ORC Nutrient

Injection:

11/02 **Re-Excavation:** 11/95

PSH Removal

(1786 cy)

Initiated:

PSH Removal in

NA

Annual Initiated:

6/99

Quarterly Resumed: NA

2009?

No

SUMMARY OF 2009 ACTIVITIES

- MW-1: Semiannual water level monitoring (June and November) was performed during 2009.
- MW-2: Semiannual groundwater sampling (June and November) was performed during 2009.
- MW-3: Semiannual water level monitoring (June and November) was performed during 2009.
- MW-4: Semiannual groundwater sampling (June and November) was performed during 2009.
- MW-5: Semiannual groundwater sampling (June and November) was performed during 2009.

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

SITE MAP

Site maps (June and November) are attached as Figures 1 and 2.

EPTPC GROUNDWATER SITES 2009 ANNUAL GROUNDWATER REPORT

K-31 Line Drip Meter Code: LD087

SUMMARY TABLES AND GRAPHS

- Historic analytical and water level data are summarized in Table 1 and presented graphically in Figures 3 through 7.
- The 2009 laboratory reports are 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.

ISOCONCENTRATION MAPS

No isoconcentration maps were generated for this Site; however, the attached Site maps present the analytical data collected during 2009.

RESULTS

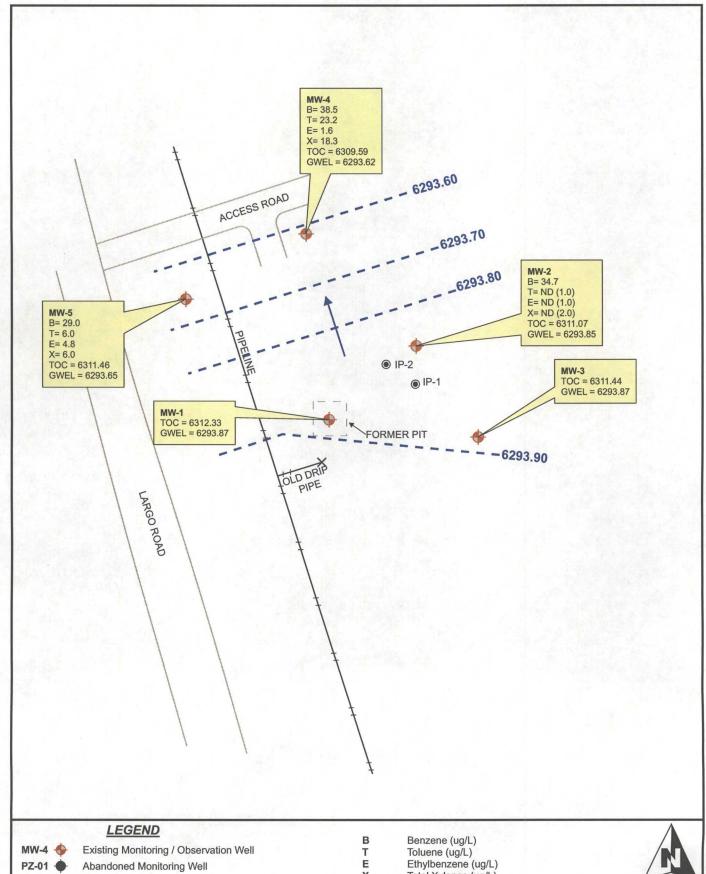
- The groundwater flow direction appears to be north-northwest.
- In November 2002, oxygen releasing compound (ORC) slurry was injected into the subsurface near MW-2. The pre-injection benzene concentrations in MW-2 were 230 and 104 μg/L in March and September 2002, respectively. In 2009, benzene concentrations were 34.7 μg/L in June and 0.51J μg/L in November. These data indicate that long-term attenuation is continuing.
- The samples collected from new downgradient monitoring well MW-4 (installed in November 2006) had benzene concentrations of 38.5 μg/L and 9.3 μg/L, in June and November 2009, respectively. All other BTEX components were well below their respective NMWQCC standards.
- The samples collected from new downgradient monitoring well MW-5 (installed in November 2006) had benzene concentrations of 29.0 µg/L and 15.5 µg/L, in June and November 2009, respectively. All other BTEX components were well below their respective NMWQCC standards.

EPTPC GROUNDWATER SITES 2009 ANNUAL GROUNDWATER REPORT

K-31 Line Drip Meter Code: LD087

RECOMMENDATIONS

- Because sampling at MW-1 has indicated BTEX concentrations below detection limits for four consecutive quarters, EPTPC recommends that this well not be sampled until closure samples are collected.
- EPTPC will continue to sample MW-2 on a semiannual basis until BTEX concentrations approach closure standards. Quarterly sampling will then be initiated.
- Because sampling at MW-3 has indicated BTEX concentrations below detection limits, EPTPC recommends that this well not be sampled until closure samples are collected.
- EPTPC recommends that new monitoring wells MW-4 and MW-5 be sampled in conjunction with MW-2.



Groundwater Flow Direction

6294-Potentiometric Surface Contour (Inferred Where Dashed) X Total Xylenes (ug/L) TOC Top of Casing (ft. AMSL)

GWEL Groundwater Elevation (ft. AMSL)





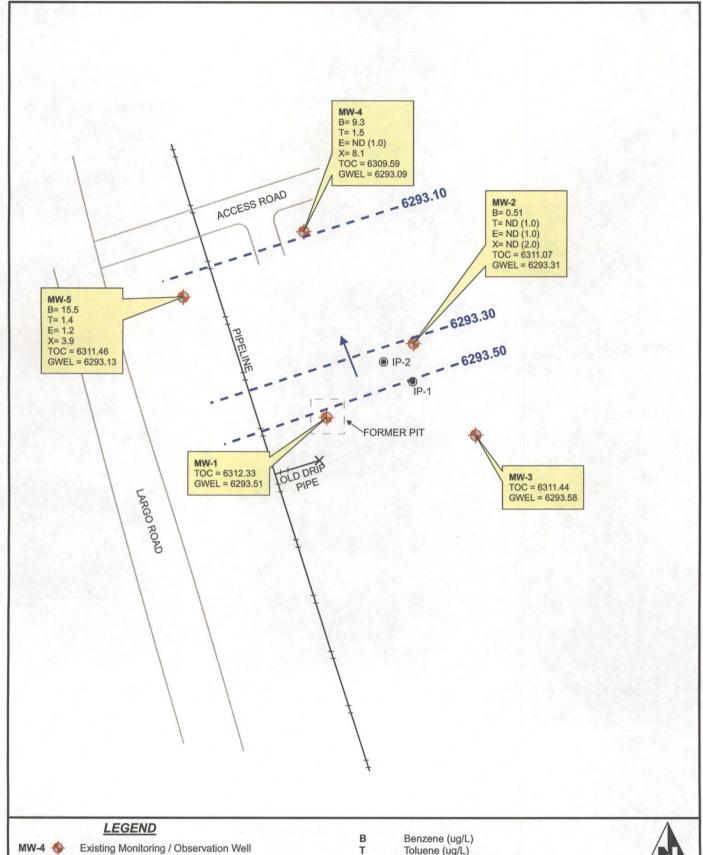
PROJECT:

TITLE:

FIGURE: K-31 LINE DRIP

1

Groundwater Potentiometric Surface Map, and BTEX Concentrations - June 10, 2009



MW-4

Existing Monitoring / Observation Well

Abandoned Monitoring Well **Groundwater Flow Direction**

-6294-

Potentiometric Surface Contour (Inferred Where Dashed)

Toluene (ug/L)

E Ethylbenzene (ug/L) X Total Xylenes (ug/L)

TOC Top of Casing (ft. AMSL) **GWEL** Groundwater Elevation (ft. AMSL)



Not To Scale





PROJECT:

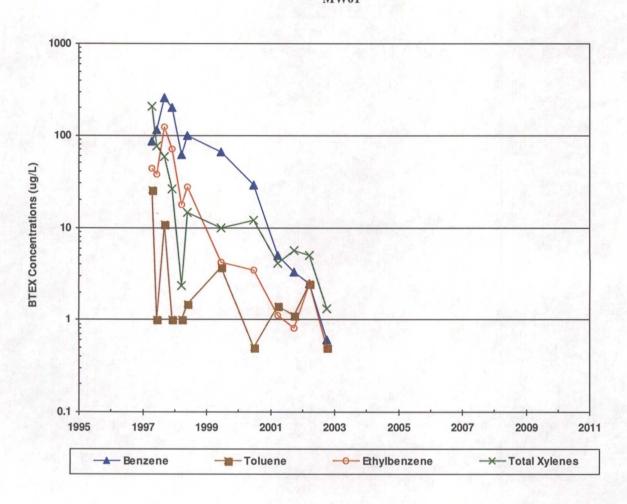
K-31 LINE DRIP

FIGURE:

TITLE: Groundwater Potentiometric Surface Map, and BTEX Concentrations - November 2, 2009

2

FIGURE 3
SUMMARY OF GROUNDWATER BTEX CONCENTRATIONS AND FLUID LEVELS
K-31 LINE DRIP (METER #LD087)
MW01



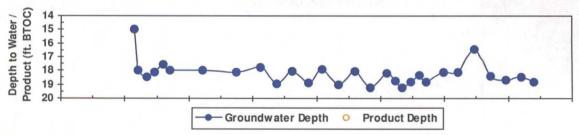
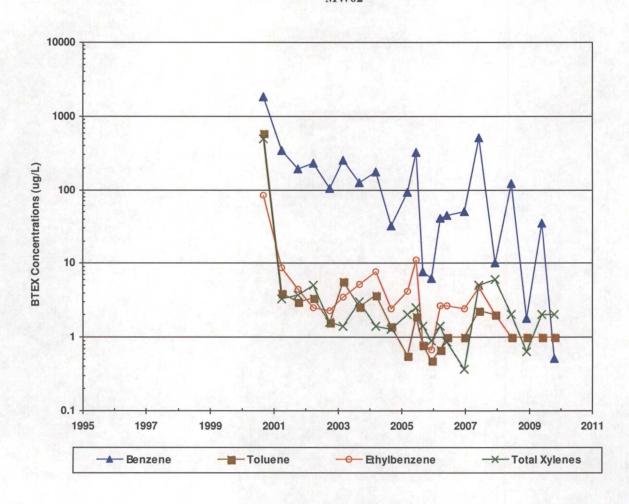


FIGURE 4
SUMMARY OF GROUNDWATER BTEX CONCENTRATIONS AND FLUID LEVELS
K-31 LINE DRIP (METER #LD087)
MW02



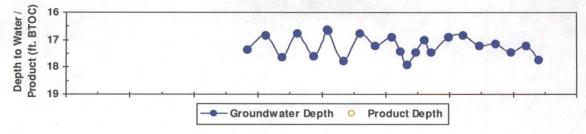
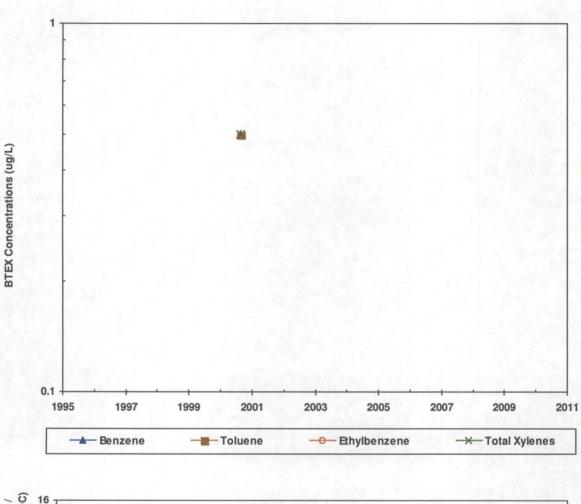


FIGURE 5
SUMMARY OF GROUNDWATER BTEX CONCENTRATIONS AND FLUID LEVELS
K-31 LINE DRIP (METER #LD087)
MW03



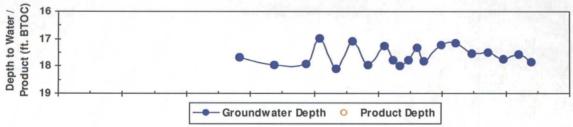


FIGURE 6
SUMMARY OF GROUNDWATER BTEX CONCENTRATIONS AND FLUID LEVELS
K-31 LINE DRIP (METER #LD087)
MW04

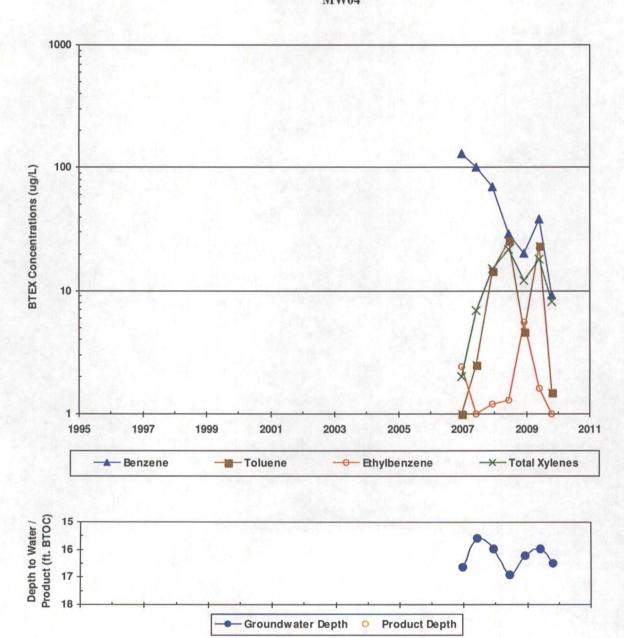
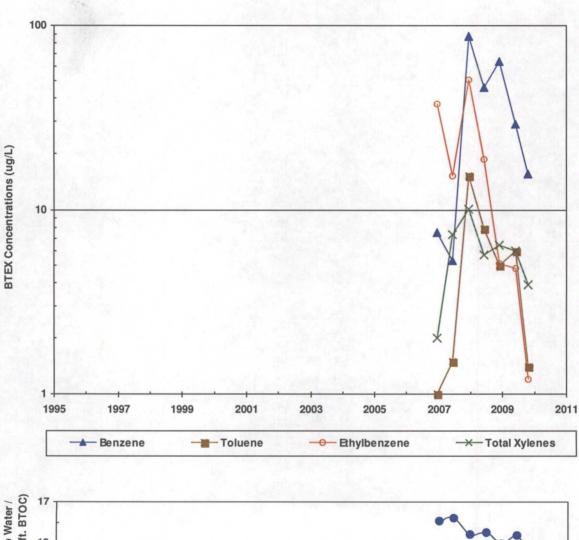


FIGURE 7
SUMMARY OF GROUNDWATER BTEX CONCENTRATIONS AND FLUID LEVELS
K-31 LINE DRIP (METER #LD087)
MW05



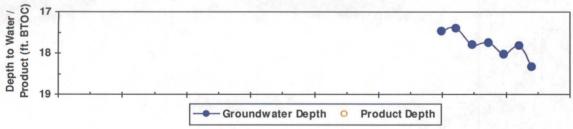


TABLE 1
SUMMARY OF BTEX COMPOUNDS IN GROUNDWATER SAMPLES
K-31 LINE DRIP (METER #LD087)

	Monitor Well	Sample Date	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)	Depth to Water (ft	Corrected GW Elevation
L	NMWQCC	GW Std.:	10	750	750	620	BTOC)	(ft AMSL)
Sept.	MW01	4/16/1997	84.9	25.7	43.6	206	15:00	6297.33
	MW01	6/6/1997	115	<1.0	37.8	76.1	17.99	6294.34
	MW01	9/11/1997	259	10.8	124	58.4	18.48	6293.85
	MW01	12/9/1997	201	<1.0	71.5	25.8	18.09	6294.24
	MW01	3/19/1998	61.2	<1.0	17.8	2.35	17.59	6294.74
	MW01	6/2/1998	98.3	1.48	27.2	14.7	17.98	6294.35
	MW01	6/14/1999	65	3.7	4.2	10	17.98	6294.35
	MW01	6/27/2000	29	<0.5	3.5	12	18.10	6294.23
	MW01	4/3/2001	5.	1.4	1.1	4.1	17.79	6294.54
	MW01	10/1/2001	3.3	1.1	0.8	5.6	18.94	6293.39
	MW01	4/1/2002	<2.5	. <2.5	<2.5	<5.0	18.05	6294.28
	MW01	10/8/2002	0.6	<0.5	<0.5	1.3	18.86	6293.47
ę e	MW02	8/31/2000	1800	590	86	490	17.36	6293.71
Г	MW02	4/3/2001	340	4	8.7	3.3	16.82	6294.25
	MW02	10/1/2001	190	3.0	4.5	3.7	17.63	6293.44
	MW02	4/1/2002	230	3.4	<2.5	<5.0	16.78	6294.29
	MW02	10/8/2002	104	1.6	2.3	1.6	17.61	6293.45
	MW02	3/13/2003	254	5.6	3.5	1.4	16.64	6294.43
	MW02	9/15/2003	125	2.6	5.2	3	17.78	6293.29
	MW02	3/22/2004	176	3.7	7.7	1.4	16.76	6294.31
at the	MW02	9/14/2004	32.2	1.4	a. 2.4	1.3J	17.21	6293.86
	MW02	3/22/2005	93.7	0.56	4.2	<2.0	16.91	6294.16
	MW02	6/24/2005	322	1.9	11.0	2.5	17.44	6293.63
	MW02	9/14/2005	7.6	0.79JJ	0.78JJ	1.4JJ	17.92	6293.15
5 A	MW02	12/14/2005	6.3J	0.48JJ	0.68JJ	0.8911	17.46	6293.61
	MW02	3/28/2006	40.8	0.68J	2.7	1.4J	17.02	6294.05
Pag	MW02	6/7/2006	. 44.3	<1.0	2.7	0.86J	27.47	6293.60
	MW02	12/26/2006	50.8	<1.0	2.4	0.37J	16.90	6294.17
	MW02	6/12/2007	502	2.3	4.7	5,0	16.83	6294.24
	MW02	12/18/2007	10.2	<2.0	<2.0	<6.0	17.22	6293.85
*	MW02	6/16/2008	123	<1.0	<1.0	<2.0	17.15	6293.92
	MW02	12/10/2008	1.8	<1.0	<1.0	0.64J	17.45	6293.62
3	MW02	6/10/2009	34.7	<1.0	<1.0	<2.0	17.22	6293.85
	MW02	11/2/2009	0.51J	<1.0	<1.0	<2.0	17.76	6293.31

TABLE 1 SUMMARY OF BTEX COMPOUNDS IN GROUNDWATER SAMPLES K-31 LINE DRIP (METER #LD087)

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 Sta.:	10	750	750	620	BIOC)	(It AMBE)
MW03	8/31/2000	<0.5	<0.5	<0.5	<0.5	17.69	6293.75
MW04	12/26/2006	131	<1.0	2.4	<2.0	16.64	6292.95
MW04	6/12/2007	99.8	2.5	<1.0	6.9	15.58	6294.01
MW04	12/18/2007	70.1	14.5	1.2J	15.0	15.97	6293.62
MW04	6/16/2008	28.9	25.8	1.3	21.6	16.92	6292.67
MW04	12/10/2008	20.4	4.6	5.5	12.1	16.22	6293.37
MW04	6/10/2009	38.5	23.2	1.6	18.3	15.97	6293.62
MW04	11/2/2009	9.3	1.5		8.1	16.50	6293.09
MW05	12/26/2006	7.5	<1.0	37.3	<2.0	17.46	6294.00
MW05	6/12/2007	5.3	1.5	15.2	7.3	17.39	6294.07
MW05	12/18/2007	87.0	15.3	50.4	10.1	17.78	6293.68
MW05	6/16/2008	45.7	7.9	18.7	5.7	17.75	6293.71
MW05	12/10/2008	63.5	5	5.1	6.4	18.02	6293.44
MW05	6/10/2009	≥ . 29.0	6.0	4.8	6.0	17.81	6293.65
MW05	11/2/2009	15.5	1.4	1.2	3.9	18.33	6293.13

Notes:

Results shown in bold typeface exceed their respective New Mexico Water Quality Control Commission standards.

[&]quot;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.



WELL DEVELOPMENT AND SAMPLING LOG

Project Name: Client: Project Manager:	MWH		- - Sam	Location: Date: pler's Name:	6/10/2009		Well No: Time:	MW-2 11:50
Measuring Point: Well Diameter:	2"	τ	h to Water: otal Depth: mn Height:	23.4	ft		to Product: Thickness:	
	☑ Bottom Va	lve Bailer [Pump □ Peri ck Valve Bailer val ☑ Stabiliza	staltic Pump	☐ Other		bail dry
				Vater Volume	e in Well		:	•
Gal/ft x ft of w	ater	Ga	llons	Oun	ces		Volume	to be removed
6.18 x .16		0.9	9 x 3				2	2.96 gal
Time (military)	pH (su)	SC (ms)	Temp (°F)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac.	Comments/Flow Rate
11:55	6.90	8.23	54.1				0.25	yellow tint
	7.10	8.11	54.1				0.5	rust colored
	7.12	8.04	54.1				0.75	rust colored
	7.12	8.06	54.1				1	rust colored
	7.19	8.08	54.5				1.75	rust colored, silty
								<u> </u>
						<u> </u>	<u> </u>	
	7.20	\$250 BALCO X500 BBBB	54.9					rust colored, silty
COMMENTS:	well bailed	dry during	g purging.				. :	· · · · · · · · · · · · · · · · · · ·
Instrumentation:	☑ pH Meter	☐ DO Mon	itor 🗹 Con	ductivity Meter	☑ Tem	perature Mete	r 🗌 Other	·
Water Disposal:	Rio Vista							
Sample ID:	MW-2		. S	ample Time:	12:10	-		
Analysis Requested:	☑ BTEX ☐ Other	□ VOCs	Alkalinity	□TDS	☐ Cations	Anions C] Nitrate □ I	Nitrite
Trip Blank:	10060	9TB01				Duplica	ate Sample:	



WELL DEVELOPMENT AND SAMPLING LOG

Project Name:		asin		Location:			Well No:	
Client:					6/10/2009		. Time:	12:15
Project Manager:	Ashley Age	r	Samı	pler's Name:	Troy Urbar	1 <u> </u>		
					<u></u>	· · · · · · · · · · · · · · · · · · ·		
Measuring Point: Well Diameter:	2"	T ₁	n to Water: otal Depth: mn Height:	15.97 23.47 7.5	ft		to Product: Thickness:	
Sampling Method: Criteria:	☑ Bottom Va	lve Bailer [Double Chec	Pump □ Peri ck Valve Bailer val ☑ Stabiliz			s 🗹 Other	bail dry
				Vater Volume		1	·	
Gal/ft x ft of v	vater		lons	Oun	ces			to be removed
7.5 x .16		1.2	0 x 3		<u>-</u>	L .		3.6 ga
Time (military)	pH (su)	SC (ms)	Temp (°F)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac.	Comments/Flow Rate
12:20	7.29	6.78	56.7				0.25	gray, silty
	7.31	6.68	56.3				0.5	gray, silty
	7.29	6.68	56.3				0.75	gray, silty
	7.29	6.77	56.1				1	gray, silty
	7.29	6.67	56.5			ļ	2	gray, silty
	7.32	6.64	56.3				3	gray, silty
	7.30	6.62	56.1	<u> </u>			3.5	gray, silty
							<u> </u>	
		<u>:</u>			<u> </u>			
					·			
Final:	7.32	6.59	55.9**				3.75	gray, silty
COMMENTS:								<u> </u>
Instrumentation:		□ DO Mon	itor 🗹 Con	ductivity Meter	☑ Tem	perature Mete	r 🗌 Other	:
water Disposal:	MO VISLA							
Sample ID:	MW-4		. s	ample Time:	12:34	-		
Analysis Requested:	☐ BTEX☐ Other	VOCs	Alkalinity	□TDS	Cations	Anions [Nitrate 🔲 I	Nitrite
Trip Blank:	10060	9TB01				Dunlica	ate Sample:	



WELL DEVELOPMENT AND SAMPLING LOG

Project Name: Client: Project Manager:	MWH		Sam	Location: Date: pler's Name:	6/10/2009		Well No: Time:	
Measuring Point: Well Diameter:	2"	T	h to Water: otal Depth: mn Height:	28.79	ft		to Product: Thickness:	
	☑ Bottom Va	lve Bailer	☐ Centrifugal I ☐ Double Che			Other	; '	bail dry
				Vater Volume	e in Well			
Gal/ft x ft of w 10.98 x .16	~		llons 8 x 3	Oun	ces			o be removed .27 g
Time (military)	pH (su)	SC (ms)	Temp (°F)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac.	Comments/Flow Rate
12:20	7.36 7.41 7.40	4.88 4.84 4.89	57.0 57.2 57.0				0.25 0.5 0.75	gray, silty gray, silty gray, silty
	7.42 7.41 7.43 7.43	4.86 4.87 4.84 4.91	57.0 57.2 57.0 57.0				1 2 3 4	gray, silty gray, silty gray, silty gray, silty
	7.44	4.95	57.0 57.0				5 5.25	gray, silty gray, silty
Final:	7.44	5.05	56.8			•	5.5	gray;silty
COMMENTS:								
Instrumentation:	☑ pH Meter	☐ DO Mon	itor 🗹 Con	ductivity Meter	☑ Tem	perature Mete	r 🗆 Other	
Water Disposal:								
Sample ID:			. S	ample Time:	13:11	-		
Analysis Requested:	☑ BTEX ☐ Other	□ VOCs	Alkalinity	□ TDS	Cations	Anions C	Nitrate N	litrite
Trip Blank:	10060	9TB01				Duplica	ate Sample:	



WATER LEVEL DATA

Project Name: San Juan Basin Groundwater	Date:	06/10/2009
Project Manager: Ashley Ager		
Client: MWH		
Site Name: K-31		

Well	Time	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Volume Removed	Comments
MW-1	########	-	18.46	-	-	
MW-2		-	17.22	-	-	sample BTEX
MW-3		-	17.57	-	-	
MW-4		-	15.97	-	-	sample BTEX
MW-5		-	17.81	-	-	sample BTEX

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



WATER LEVEL DATA

Project Name: San Juan Basin Groundwater

Date:

Project Manager: Ashley Ager

Client: MWH

Site Name: K-31

Well	Time	Depth to Product (ft)	Depth to Water (ft)	Product Thickness (ft)	Volume Removed
MW-1	9:40 AM	-	18.82	-	-
MW-2		-	17.76	-	-
MW-3		-	17.86	-	-
MW-4		-	16.50	-	-
MW-5		-	18.33	-	-

Comments		
		1
		
Signature: Ashley L. Ager	Date:	06/11/2009



WATER LEVEL DATA

11/02/2009

Comm	ents
sample BTEX	
sample BTEX	
sample BTEX	

11/13/09



Technical Report for

Montgomery Watson

San Juan Basin Pit Groundwater Remediation

K-31/WO94293

Accutest Job Number: T41575

Sampling Date: 11/02/09

Report to:

MWH Americas 1801 California St. Suite 2900 Denver, CO 80202 jed.smith@mwhglobal.com

ATTN: Jed Smith

Total number of pages in report: 21



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)

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Sample Summary

Montgomery Watson

Job No:

T41575

San Juan Basin Pit Groundwater Remediation Project No: K-31/ WO94293

Sample Number	Collected Date	Time By	Received	Matr Code		Client Sample ID
T41575-1	11/02/09	07:00 TU	11/05/09	AQ	Trip Blank Water	021109TB01
T41575-2	11/02/09	10:24 TU	11/05/09	AQ	Ground Water	K31 MW-2
T41575-3	11/02/09	10:41 TU	11/05/09	AQ	Ground Water	K31 MW-8
T41575-4	11/02/09	10:54 TU	11/05/09	AQ	Ground Water	K31 MW-4
*T41575-5	11/02/09	11:45 TU	11/05/09	AΩ	Ground Water	*K31 MW-5







SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Montgomery Watson

Job No

T41575

Site:

San Juan Basin Pit Groundwater Remediation

Report Date

11/12/2009 4:38:57 PM

4 Sample(s), 1 Trip Blank(s) and 0 Field Blank(s) were collected on 11/02/2009 and were received at Accutest on 11/05/2009 properly preserved, at 2.4 Deg. C and intact. These Samples received an Accutest job number of T41575. 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 AO

Batch ID: GKK1581

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) T41699-6MS, T41699-6MSD were used as the QC samples indicated.

Matrix AO

Batch ID: GKK1582

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) T41575-2MS, T41575-2MSD were used as the QC samples indicated.
- Matrix Spike Recovery(s) for Benzene are outside control limits. Probable cause due to matrix interference.
- Matrix Spike Duplicate Recovery(s) for Benzene are outside control limits. Probable cause due to matrix interference.

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





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By

FΙ

Client Sample ID: 021109TB01

Lab Sample ID:

T41575-1

Date Sampled: 11/02/09

Matrix: Method: AQ - Trip Blank Water

Date Received: 11/05/09

Prep Batch

SW846 8021B

Percent Solids: n/a

Project:

San Juan Basin Pit Groundwater Remediation

DF

1

Prep Date

n/a

n/a

Analytical Batch

GKK1581

Run #1 Run #2

KK033075.D

Run #1

Purge Volume 5.0 ml

File ID

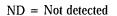
Run #2

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2 108-88-3 100-41-4 1330-20-7 95-47-6	Benzene Toluene Ethylbenzene Xylenes (total) o-Xylene m,p-Xylene	ND ND ND ND ND ND ND	1.0 1.0 1.0 2.0 1.0	0.36 0.28 0.25 0.93 0.36 0.57	ug/l ug/l ug/l ug/l ug/l ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
460-00-4 98-08-8	4-Bromofluorobenzene aaa-Trifluorotoluene	92% 113%			25% 39%	

Analyzed

11/10/09



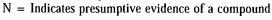
MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank





Page 1 of 1

Client Sample ID: K31 MW-2 Lab Sample ID:

T41575-2

Ву

FI

100

Date Sampled:

11/02/09

Matrix: Method: AQ - Ground Water

DF

1

Date Received:

11/05/09

SW846 8021B

Percent Solids: n/a

Project:

San Juan Basin Pit Groundwater Remediation

Run #1

File ID KK033090.D Analyzed 11/10/09 Prep Date n/a

Prep Batch n/a

Analytical Batch **GKK1582**

Run #2

Purge Volume

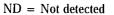
5.0 ml

Run #1

Run #2

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2 108-88-3 100-41-4 1330-20-7 95-47-6	Benzene Toluene Ethylbenzene Xylenes (total) o-Xylene m,p-Xylene	Co. 37 895 525 50 1 1 14 1	1.0 1.0	0.36 0.28 0.25 0.93 0.36 0.57	ug/l ug/l ug/l ug/l ug/l ug/l	J
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
460-00-4 98-08-8	4-Bromofluorobenzene aaa-Trifluorotoluene	88% 109%			.25% .39%	



MDL - Method Detection Limit



E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

Page 1 of 1

Client Sample ID: K31 MW-8 Lab Sample ID:

T41575-3

Date Sampled: 11/02/09

Matrix:

AQ - Ground Water

DF

Date Received: 11/05/09

Method:

Percent Solids: n/a

Project:

SW846 8021B San Juan Basin Pit Groundwater Remediation

File ID KK033091.D

Analyzed Ву 11/10/09

FΙ

Prep Date n/a

Prep Batch n/a

Analytical Batch GKK1582

Run #1 Run #2

Purge Volume

Run #1

5.0 ml

Run #2

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2 108-88-3 100-41-4 1330-20-7 95-47-6	Benzene Toluene Ethylbenzene Xylenes (total) o-Xylene m,p-Xylene	9.5 1.5 ND 8.6 3.3 5.2	1.0 2.0 1.0	0.36 0.28 0.25 0.93 0.36 0.57	ug/l ug/l ug/l ug/l ug/l ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	its	
460-00-4 98-08-8	4-Bromofluorobenzene aaa-Trifluorotoluene	94% 109%		58-13 73-13		

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



Page 1 of 1

Client Sample ID: Lab Sample ID:

K31 MW-4

T41575-4

AQ - Ground Water SW846 8021B

Date Sampled: 11/02/09

Date Received: 11/05/09 Percent Solids: n/a

Method: Project:

Matrix:

San Juan Basin Pit Groundwater Remediation

Prep Batch Analytical Batch

Run #1

File ID KK033092.D DF Analyzed 1 11/11/09

By FΪ

Prep Date n/a

n/a

GKK1582

Run #2

Purge Volume

Run #1 Run #2

5.0 ml

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2 108-88-3 100-41-4 1330-20-7 95-47-6	Benzene Toluene Ethylbenzene Xylenes (total) o-Xylene m,p-Xylene	ND 8.1	1.0 1.0 1.0 2.0 1.0	0.36 0.28 0.25 0.93 0.36 0.57	ug/l ug/l ug/l ug/l ug/l ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
460-00-4 98-08-8	4-Bromofluorobenzene aaa-Trifluorotoluene	95% 110%			25% 39%	

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





Page 1 of 1

Report of Analysis

Client Sample ID: K31 MW-5

Lab Sample ID: T41575-5

Matrix: Method:

Project:

AQ - Ground Water

SW846 8021B

Date Sampled: 11/02/09

Date Received: 11/05/09

San Juan Basin Pit Groundwater Remediation

Percent Solids: n/a

File ID DF Analyzed Ву Prep Date Prep Batch Analytical Batch Run #1 KK033093.D 11/11/09 FΙ n/a n/a GKK1582

Run #2

Purge Volume

Run #1 5.0 ml

Run #2

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2 108-88-3 100-41-4 1330-20-7 95-47-6	Benzene Toluene Ethylbenzene Xylenes (total) o-Xylene m,p-Xylene		1.0 1.0 1.0 2.0 1.0	0.36 0.28 0.25 0.93 0.36 0.57	ug/l ug/l ug/l ug/l ug/l ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
460-00-4 98-08-8	4-Bromofluorobenzene aaa-Trifluorotoluene	88%			25% 39%	

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





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Custody Documents and Other Forms

Includes the following where applicable:

• Chain of Custody



CHAIN OF CUSTODY

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T41575: Chain of Custody Page 1 of 3



	SAMPLE INSP	ECTION FO	RM	45	
Accutest Job Number: T41575	Client: MWH		Date/Time	Received:	15/9
# of Coolers Received: The	rmometer #:K	Te	mperature Ad	justment Facto	or: + 0.4
Cooler Temps: #1: 2.4 #2:	#3:#4:	#5:	#6:	#7:	#8:
Method of Delivery: PEDEX UPS	Accutest Courier		Delivery		
Airbill Numbers: 8706 -	6705-1164				
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 Summary of Discrepancies:	Sample containers received voc vials have headspated sample labels missing of ID on COC does not material point of the sample listed on COC. It is a sample	ved broken ce r illegible ich label(s) atch label(s) t no analysis on COC put not received ested analysis	Number Number	rip Blank on COC rip Blank received rip Blank not Inta eceived Water Trip eceived Soil TB of Encores? of 5035 kits? of lab-filtered me	but not on COC et Blank
TECHNICIAN SIGNATURE/DATE: INFORMATION AND SAMPLE LABELING VE Client Representative Notified: By Accutest Representative: Client Instructions:	Cland	(1 5 09 //-S	9		

T41575: Chain of Custody Page 2 of 3



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COOLER#	SAMPLE ID	FIELD ID	DATE	MATRIX	VOL	BOTTLE #	LOCATION	PRESERV	PH
1		TRIP Blank		W	40ml	1-2	VR	1 (2) 3 4 5 6 7 8	<2 >12
= (=	2	K31 MW-2	11/02/09 10:24			1-3		1 ② 3 4 5 8 7 8	<2 >12
	.3	K31 MW-8	110219, 10:41					1 Ø 3 4 5 6 7 8	<2 >12
	• 4	K31 MW-4	11/02/04 10:54					1 2 3 4 5 6 7 8	<2 >12
	5	K31 MW-5.	11/01/109 11:45	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \			V	1 20 3 4	. <2 >12
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SAMPLE RECEIPT LOG

DATE/TIME RECEIVED:

INITIALS:

PRESERVATIVES: 1: None 2: HCL 3: HNO3 4: H2SO4 5: NAOH 6: DI 7: MeOH 8: Other LOCATION: 1: Walk-In #1 (Walers) 2: Walk-In #2 (Solls) VR: Volatille Fridge M: Metals SUB: Subcontract EF: Encore Freezer

· T41575

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JOB#:

CLIENT:

T41575: Chain of Custody Page 3 of 3



GC Volatiles

QC Data Summaries

Includes the following where applicable:

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



Method Blank Summary Job Number: T41575

Account:

Project:

MWHCODE Montgomery Watson San Juan Basin Pit Groundwater Remediation

Sample	File ID DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GKK1581-MB	KK033063.D1	11/10/09	FI	n/a	n/a	GKK1581

The QC reported here applies to the following samples:

Method: SW846 8021B

T41575-1

CAS No.	Compound	Result	RL	MDL	Units Q
71-43-2 100-41-4 108-88-3 1330-20-7 95-47-6	Benzene Ethylbenzene Toluene Xylenes (total) o-Xylene m,p-Xylene	ND	1.0 1.0 1.0 2.0 1.0	0.36 0.25 0.28 0.93 0.36 0.57	ug/l ug/l ug/l ug/l ug/l ug/l
CAS No.	Surrogate Recoveries		Limit	5	
460-00-4 98-08-8	4-Bromofluorobenzene aaa-Trifluorotoluene	91% 113%	58-12: 73-13:		•



Page 1 of 1

T41575 Job Number:

Account:

MWHCODE Montgomery Watson

Project:

San Juan Basin Pit Groundwater Remediation

Sample	File ID DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GKK1582-MB	KK033089.D1	11/10/09	FI	n/a	n/a	GKK1582

The QC reported here applies to the following samples:

Method: SW846 8021B

T41575-2, T41575-3, T41575-4, T41575-5

CAS No.	Compound	Result	RL	MDL	Units Q
71-43-2 100-41-4 108-88-3 1330-20-7 95-47-6	Benzene Ethylbenzene Toluene Xylenes (total) o-Xylene m,p-Xylene	ND ND ND ND ND	1.0 1.0 1.0 2.0 1.0	0.36 0.25 0.28 0.93 0.36 0.57	ug/l ug/l ug/l ug/l ug/l ug/l
CAS No.	Surrogate Recoveries		Limi	ts	
460-00-4 98-08-8	4-Bromofluorobenzene aaa-Trifluorotoluene	84% 112%	58-12 73-13		



Account:

MWHCODE Montgomery Watson

Project:

San Juan Basin Pit Groundwater Remediation

Sample	File ID DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GKK1581-BS	KK033059.D1	11/10/09	FI	n/a	n/a	GKK1581

The QC reported here applies to the following samples:

Method: SW846 8021B

T41575-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2 100-41-4 108-88-3 1330-20-7 95-47-6	Benzene Ethylbenzene Toluene Xylenes (total) o-Xylene m,p-Xylene	20 20 20 60 20 40	21.8 20.7 20.9 62.4 20.9 41.5	105 104 105	81-116 87-117 85-115
CAS No. 460-00-4 98-08-8	Surrogate Recoveries 4-Bromofluorobenzene aaa-Trifluorotoluene	BSP 91% 115%	58-	mits -125% -139%	



Page 1 of 1

Blank Spike Summary Job Number: T41575

Account:

MWHCODE Montgomery Watson

Project:

San Juan Basin Pit Groundwater Remediation

Sample	File ID I	OF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GKK1582-BS	KK033085.D1	l	11/10/09	FI	n/a	n/a	GKK1582

The QC reported here applies to the following samples:

Method: SW846 8021B

T41575-2, T41575-3, T41575-4, T41575-5

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2 100-41-4 108-88-3 1330-20-7 95-47-6	00-41-4 Ethylbenzene 08-88-3 Toluene 330-20-7 Xylenes (total)		21.5 20.6 20.5 62.2 20.8 41.5	108 103 103 104 104	86-121 81-116 87-117 85-115 87-116 84-116
CAS No. 460-00-4 98-08-8	Surrogate Recoveries 4-Bromofluorobenzene aaa-Trifluorotoluene	BSP 95%) 58	mits -125% -139%	



Matrix Spike/Matrix Spike Duplicate Summary

Job Number: T41575

Account:

MWHCODE Montgomery Watson

Project:

San Juan Basin Pit Groundwater Remediation

Sample File ID DF T41699-6MS KK033070.D1 T41699-6MSD KK033071.D1 T41699-6 KK033068.D1	Analyzed B 11/10/09 F 11/10/09 F 11/10/09 F	n/a n/a	Prep Batch n/a n/a n/a	Analytical Batch GKK1581 GKK1581 GKK1581
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The QC reported here applies to the following samples:

Method: SW846 8021B

T41575-1

CAS No.	Compound	T41699-6 ug/l Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2 100-41-4 108-88-3 1330-20-7 95-47-6	Benzene Ethylbenzene Toluene Xylenes (total) o-Xylene m,p-Xylene	ND ND ND ND ND ND	20 20 20 60 20 40	23.7 22.5 22.8 66.9 22.2 44.7	113 114 112 111 112	23.3 22.0 22.1 65.7 21.8 43.8	117 110 111 110 109 110	2 3 2 2	86-121/19 81-116/14 87-117/16 85-115/12 87-116/16 84-116/13
CAS No.	Surrogate Recoveries	MS	MSD	T41	699-6	Limits			
460-00-4 98-08-8	4-Bromofluorobenzene aaa-Trifluorotoluene	94% 119%	94% 119%	95% 118°	Francisco de la compansión de la compans	58-125% 73-139%			



Page 1 of 1

Matrix Spike/Matrix Spike Duplicate Summary Job Number: T41575 Account: MWHCODE Montgomery Watson

Page 1 of 1

Project:

San Juan Basin Pit Groundwater Remediation

Sample	File ID DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
T41575-2MS	KK033096.D1	11/11/09	FĪ	n/a	n/a ¯	GKK1582
T41575-2MSD	KK033097.D1	11/11/09	FI	n/a	n/a	GKK1582
T41575-2	KK033090.D1	11/10/09	FI	n/a	n/a	GKK1582

The QC reported here applies to the following samples:

Method: SW846 8021B

T41575-2, T41575-3, T41575-4, T41575-5

CAS No.	Compound	T4157: ug/l	5-2 Q	Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	0.51	J	20	25.4	124*		126*	1	86-121/19
100-41-4	Ethylbenzene	ND		20	22.5	113	22.4	112	.0	81-116/14
108-88-3	Toluene	ND		20	22.8	114	22.9	115	.0	87-117/16
1330-20-7	Xylenes (total)	ND		60	66.9	112	66.9	112	0	85-115/12
95-47-6	o-Xylene	ND		20	22.2	111	22.2	111	0.	87-116/16
	m,p-Xylene	ND		40	44.7	112	44.7	112	0	84-116/13
CAS No.	Surrogate Recoveries	MS		MSD	T 4	11575-2	Limits			
460-00-4 98-08-8	4-Bromofluorobenzene aaa-Trifluorotoluene	91% 111%	~v, 3	91% 112%	Marketon 1	% 19%	58-1259 73-1399			



06/16/09



Technical Report for

Montgomery Watson

San Juan Basin Pit Groundwater Remediation 2008-2009

Accutest Job Number: T30983

Sampling Date: 06/10/09

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: 16





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 Canevaro Laboratory Director

Paul K Carrevaro

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)

This report shall not be reproduced, except in its entirety, without the written approval of Accutest Laboratories. Test results relate only to samples analyzed.

Gulf Coast • 10165 Harwin Drive • Suite 150 • Houston, TX 77036 • tel: 713-271-4700 • fax: 713-271-4770 • http://www.accutest.com



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Sample Summary

Montgomery Watson

San Juan Basin Pit Groundwater Remediation 2008-2009

Job No:

T30983

Sample Number	Collected Date	Time By	Received	Matr Code		Client Sample ID
T30983-1	06/10/09	12:10 TU	06/11/09	AQ	Ground Water	K-31 MW-2
T30983-2.	06/10/09	12:34 TU	06/11/09	AQ	Ground Water	K-31 MW-4
T30983-3	06/10/09	13:11 TU	06/11/09	AQ	Ground Water	K-31 MW/5







SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: Montgomery Watson

Job No

T30983

Site:

San Juan Basin Pit Groundwater Remediation 2008-2009

Report Date

6/15/2009 5:05:45 PM

3 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were collected on 06/10/2009 and were received at Accutest on 06/11/2009 properly preserved, at 3.1 Deg. C and intact. These Samples received an Accutest job number of T30983. 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: GKK1503

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) T30983-1MS, T30983-1MSD 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





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Ву

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Page 1 of 1

Client Sample ID: K-31 MW-2

Lab Sample ID:

T30983-1

Date Sampled:

06/10/09

Matrix:

AQ - Ground Water

DF

1

Date Received:

Method:

SW846 8021B

06/11/09

Project:

San Juan Basin Pit Groundwater Remediation 2008-2009

Percent Solids: n/a

Analytical Batch

Run #1

File ID KK031270.D Analyzed 06/12/09

Prep Date n/a

Prep Batch n/a

GKK1503

Run #2

Purge Volume

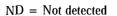
Run #1

5.0 ml

Run #2

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2 108-88-3 100-41-4 1330-20-7 95-47-6	Benzene Toluene Ethylbenzene Xylenes (total) o-Xylene m,p-Xylene	34.7 ND ND ND ND ND	1.0 1.0 1.0 2.0 1.0	0.21 0.23 0.35 0.55 0.55 0.66	ug/l ug/l ug/l ug/l ug/l ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Lim	its	
460-00-4 98-08-8	4-Bromofluorobenzene aaa-Trifluorotoluene	75% 81%	:		25% 39%	



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



Ву

FI

Page 1 of 1

Client Sample ID: K-31 MW-4 Lab Sample ID:

T30983-2

Date Sampled:

06/10/09

Matrix: Method: AQ - Ground Water SW846 8021B

DF

1

Date Received:

06/11/09

Project:

San Juan Basin Pit Groundwater Remediation 2008-2009

Percent Solids: n/a

Prep Date

n/a

Analyzed

06/12/09

Prep Batch n/a

Analytical Batch GKK1503

Run #1 Run #2

Purge Volume

KK031271.D

File ID

 $5.0 \, ml$

Run #1

Run #2

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2 108-88-3 100-41-4 1330-20-7 95-47-6	Benzene Toluene Ethylbenzene Xylenes (total) o-Xylene m,p-Xylene	38.5 23.2 1.6 18.3 4.7	1.0 1.0 1.0 2.0 1.0	0.21 0.23 0.35 0.55 0.55 0.66	ug/l ug/l ug/l ug/l ug/l ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	its	
460-00-4 98-08-8	4-Bromofluorobenzene aaa-Trifluorotoluene	85% 85%		58-1 73-1		

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





Ву

FΪ

Client Sample ID: K-31 MW-5

Lab Sample ID:

T30983-3

Date Sampled:

06/10/09

Matrix:

AQ - Ground Water

DF

1

Date Received:

06/11/09

Method:

SW846 8021B

Prep Date

n/a

Percent Solids: n/a

Project:

San Juan Basin Pit Groundwater Remediation 2008-2009

Analyzed

06/12/09

Prep Batch n/a

Analytical Batch GKK1503

Run #1 Run #2

Purge Volume

KK031272.D

Run #1

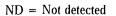
5.0 ml

File ID

Run #2

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2 108-88-3 100-41-4 1330-20-7 95-47-6	Benzene Toluene Ethylbenzene Xylenes (total) o-Xylene m,p-Xylene	6.0	1.0 1.0 1.0 2.0 1.0	0.21 0.23 0.35 0.55 0.55 0.66	ug/l ug/l ug/l ug/l ug/l ug/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limi	its	
460-00-4 98-08-8	4-Bromofluorobenzene aaa-Trifluorotoluene	81% 83%		58-1 73-1		



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





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Custody Documents and Other Forms

Includes the following where applicable:

• Chain of Custody



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T30983: Chain of Custody

Page 1 of 3



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SAMPLE INSPECTION FORM

Accutest Job Number: T30 983 Client: NWH	Da	e/Time Received:_	06/11/09 1000
# of Coolers Received: Thermometer #:	70Tempera	ture Adjustment F	actor: - 0 · 3
Cooler Temps: #1: 3. #2: #3: #4:	#5: #6	: #7:	#8:
Method of Delivery: FROFX UPS Accutest Courier	Greyhound De	ivery Other	
Airbill Númbers:			44
Custody scal 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 Summary of Discrepancies: Sample containers rec VOC vials have heads Sample labels missing ID on COC does not no D/T on COC does not Sample/Bottles revol Sample Usted on COC Analyses unclear or missing Bottles missing for rec Insufficient volume for Sample received impressionable and the containers received impressional containers received in the containers rec	pace yor illegible natch label(s) match label(s) match label(s) put no analysis on COC , but not received quested analysis r analysis operly preserved	Trip Blank on Trip Blank rec Trip Blank not Received Wate Received Soil 1 Number of Encores? Number of 5035 kits Number of lab-filtere	Trip Blank B 7 d metals?
TECHNICIAN SIGNATURE/DATE: INFORMATION AND SAMPLE LABELING VERIFIED BY:	U		
· · · · · · · · · · · · CORRI	ECTIVE ACTIONS		
Client Representative Notified:		Date:	
By Accutest Representative: Client Instructions:		Via: Phone	
Havallondormianouslandananana			••••••••••••

T30983: Chain of Custody Page 2 of 3



4.

OB #:		T30983			DATE/TIME	RECEIVED		111/09	1000		
LIENT:		NWH					: <i>FF</i>		· · · · · · · · · · · · · · · · · · ·		
OOLER#	SAMPLE ID	FIELD ID	DA	TE	MATRIX	VOL	BOTTLE #	LOCATION	PRESERV	P	Н
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T30983: Chain of Custody Page 3 of 3



GC Volatiles

QC Data Summaries

Includes the following where applicable:

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





Account:

MWHCODE Montgomery Watson

Project:

San Juan Basin Pit Groundwater Remediation 2008-2009

Sample File ID DF	Analyzed By 06/12/09 FI	Prep Date	Prep Batch	Analytical Batch
GKK1503-MB KK031268.D1		n/a	n/a	GKK1503

The QC reported here applies to the following samples:

Method: SW846 8021B

T30983-1, T30983-2, T30983-3

CAS No.	Compound	Result	MDL	Units Q	
71-43-2 100-41-4 108-88-3 1330-20-7 95-47-6	Benzene Ethylbenzene Toluene Xylenes (total) o-Xylene m,p-Xylene	ND ND ND ND ND ND	1.0 1.0 1.0 2.0 1.0	0.21 0.35 0.23 0.55 0.55 0.66	ug/l ug/l ug/l ug/l ug/l ug/l
CAS No.	Surrogate Recoveries		Limits		
460-00-4 98-08-8	4-Bromofluorobenzene aaa-Trifluorotoluene	76% 58-125% 73-139%			



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
GKK1503-BS	KK031264.D1	06/12/09	FI	n/a	n/a	GKK1503

The QC reported here applies to the following samples:

Method: SW846 8021B

T30983-1, T30983-2, T30983-3

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2 100-41-4	Benzene Ethylbenzene	20 20	17.6 17.6	88 88	86-121 81-116
108-88-3 1330-20-7	Toluene Xylenes (total)	20 60	17.7 52.4	89 87	
95-47-6	o-Xylene	20	17.6	88	87-116
•	m,p-Xylene	40	34.8	87	84-116
CAS No.	Surrogate Recoveries	BSP	Li	mits	
460-00-4 98-08-8	4-Bromofluorobenzene aaa-Trifluorotoluene	81% 85%	5.7	-125% -139%	



Matrix Spike/Matrix Spike Duplicate Summary Job Number: T30983

Page 1 of 1

Account:

MWHCODE Montgomery Watson

Project:

San Juan Basin Pit Groundwater Remediation 2008-2009

Sample	File ID DF	Analyzed	Ву	Prep Date	Prep Batch	Analytical Batch
T30983-1MS	KK031274.D1	06/12/09	FΪ	n/a	n/a ¯	GKK1503
T30983-1MSD	KK031275.D1	06/12/09	FI	n/a	n/a	GKK1503
T30983-1	KK031270.D1	06/12/09	FI	n/a	n/a	GKK1503

The QC reported here applies to the following samples:

Method: SW846 8021B

T30983-1, T30983-2, T30983-3

CAS No.	Compound	T30983-1 ug/l (Spike ug/l	MS ug/l	MS %	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	34.7	20	54.2	98	53.5	94	1700	86-121/19
100-41-4	Ethylbenzene	ND	20	20.3	102	19.5	98	4	81-116/14
108-88-3	Toluene	ND	20	19.7	99	19.5	98	1	87-117/16
1330-20-7	Xylenes (total)	ND	60	60.6	101	57.8	96	5	85-115/12
95-47-6	o-Xylene	ND	20	19.9	100	19.1	96	4	87-116/16
55 11 0	m,p-Xylene	ND	40	40.7		38.7	97	5	84-116/13
CAS No.	Surrogate Recoveries	MS	MSD	T3	30983-1	Limits			
460-00-4 98-08-8	4-Bromofluorobenzene aaa-Trifluorotoluene	83% 87%	80% 82%	75 81	% %	58-125 73-139			





WELL DEVELOPMENT AND SAMPLING LOG

Project Name: Client: Project Manager:	MWH		Sam	Location: K-31 Well No			Well No: Time:	
Measuring Point: Well Diameter:	2"	. т	h to Water: otal Depth: mn Height:	23.46	ft		to Product: t Thickness:	
Sampling Method: Criteria:	✓ Bottom Va	alve Bailer	of Water Remo	neck Valve Bailer oval 📝 Stabi				_{er} bail dry
		,		Water Volum	e in Well			
Gal/ft x ft of v	vater	Gal	lons	Oun	ces		Volume t	to be removed
5.7 x .16		0.9) x 3			4	1.4	2.7 gal
		•				•		
Time (military)	pH (su)	SC (ms)	Temp (°C)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac.	Comments/Flow Rate
10:05	7.03	8.19	55.9				0.25	clear
	7.07	8.17	55.8				0.5	tan, silty
	7.07	8.18	55.9				0.75	tan, silty
	7.10	8.18	55.9				1	tan, silty, bailing down
								<u> </u>
								
				-				
-								
						 	· · · · · · ·	
				<u> </u>				
-		-						
Final: 10:30	7.19	8.18	55.4				1.4	tan, silty, balled dry
COMMENTS:	well bailed	dry during	purging.		<u> </u>	·	·	
Instrumentation:	✓ pH Meter	□ DO Mo	nitor 🗹 C	Conductivity Mete	r	mperature Met	er 🗌 Oth	er
Water Disposal:	Rio Vista							
Sample ID:	MW-2		S	iample Time:	10:24	-	;	
Analysis Requested:	☑ BTEX ☐ Other	☐ vocs	Alkalinity	y TDS	Cations	Anions	Nitrate	Nitrite Metals
Trin Blank:	11020	QTRO1	•			Dunlic	ata Samnla:	



WELL DEVELOPMENT AND SAMPLING LOG

Project Name:		isin	Location: K-31			Well No: MW-4			
Client:	MWH			Date:	11/2/2009		Time:	10:32	
Project Manager:	Ashley Ager	r	Samı	pler's Name:	Troy Urbar	1			
Measuring Point:	тос	Depth	n to Water:	16.5	ft	Depth	to Product:	ft	
Well Diameter:			otal Depth:	23.47			t Thickness:		
			mn Height:	6.97				·	
Sampling Method:	_		Centrifuga		Peristaltic Pum	np U Othe	<u> </u>		
	☑ Bottom Va	lve Bailer	Double Ch	eck Valve Bailer					
Criteria:	✓ 3 to 5 Cas	ing Volumes o	of Water Remo	val 🗹 Stabi	lization of Indi	icator Paramete	ers 🗹 Othe	bail dry	
			- V	Water Volume	e in Well				
Gal/ft x ft of w	ater	Gal	lons	Oun			Volume t	o be removed	
6.95 x .16		1.1	1 x 3				3.	37 ga	
						<u> </u>	· · · · · · · · · · · · · · · · · · ·		
Time	pН	sc	Temp	ORP	D.O.	Turbidity	Vol Evac.		
(military)	(su)	(ms)	(°C)	(millivolts)	(mg/L)	(NTU)		Comments/Flow Rate	
				(11111111111111111111111111111111111111	(1116/ -/	(1410)	gal		
10:40	7.32	6.15	58.5			!	0.25	light gray	
· · · · · · · · · · · · · · · · · · ·	7.36	6.25	58.8			<u> </u>	0.5	dark gray, silty	
	7.37	6.27	58.8				0.75	dark gray, silty	
	7.37	6.24	58.5			 	1	dark gray, silty	
	7.37	6.32	58.6				2	dark gray, silty	
	7.37	6.30	58.8			ļ	3	dark gray, silty	
	7.37	6.26	58.6				3.25	dark gray, silty, bailing dry	
· · · · · · · · · · · · · · · · · · ·							 		
Final:	7:36	· 6.30	58.8				3.5	dark/gray, silty	
			,	Street.			3.3		
***************************************		AL AND CHECKERS	***************************************	Action 10 10 10 10 10 10 10 10 10 10 10 10 10		y	20 N - Mill annibus M. S. A.		
COMMENTS:	* ,,*	•				-	 		
				<u>_</u>		t			
Instrumentation:	✓ pH Meter	DO Moi	nitor 🗹 C	onductivity Mete	r 🗸 Te	mperature Met	er 🗌 Othe	er,	
Water Disposal:	Rio Vista								
Sample ID:	MW-4		S	ample Time:	10:41	_			
Analysis Requested:	✓ BTEX	☐ vocs	Alkalinity	TDS	Cations	Anions	☐ Nitrate	Nitrite Metals	
	Other						· · · · · · · · · · · · · · · · · · ·		
Trip Blank:	110209	9TB01				Duplica	ate Sample:	MW-8 @ 10:41	



WELL DEVELOPMENT AND SAMPLING LOG

Project Name: Client: Project Manager:	MWH		Sam	Location: K-31 Date: 11/2/2009 Sampler's Name: Troy Urban			Well No: Time:			
Measuring Point: Well Diameter:	Ź"	To	n to Water: otal Depth: mn Height:	28.79	ft		to Product: t Thickness:			
Sampling Method: Criteria:	Bottom Va	alve Bailer	_	al Pump	Peristaltic Pum lization of Ind			_{er} bail dry		
			1	Nater Volum	e in Well					
	Gal/ft x ft of water Gallons			Oun	ces		Volume t	o be removed		
10.46 x .16	5	1.67	7 x 3				5.	5.02 gal		
Time (military)	pH (su)	SC (ms)	Temp (°C)	ORP (millivolts)	D.O. (mg/L)	Turbidity (NTU)	Vol Evac.	Comments/Flow Rate		
11:17	7.41	4.64	59.7	LT		·	0.25	dark gray, HC odor		
	7.33	4.59	59.9				0.5	dark gray, HC odor		
	7.50	5.01	58.8				0.75	dark gray, HC odor		
	7.47	4.99	58.5				1	dark gray, HC odor		
	7.45	5.05	59.4				2	dark gray, HC odor		
	7.49	5.01	59.0				3	dark gray, HC odor		
	7.51	4.99	58.6	<u> </u>			4 .	dark gray, HC odor		
	7.51	5.04	58.5				4.75	dark gray, silty		
	7.51	5.17	58.5				5	dark gray, silty		
	7.31	3.17	36.3					dank gray, sirty		
Final:	7.52	5.21	58:8		and the second second	PERSONAL SECURITION	5.25	dark gray, silty		
COMMENTS:						_				
Instrumentation:	✓ pH Meter	DO Mor	nitor 🗹 C	onductivity Mete	r 🗸 Te	mperature Met	er 🗌 Oth	er		
Water Disposal:	Rio Vista						i			
Sample ID:	MW-5		S	ample Time:	11:45	-				
Analysis Requested:	BTEX Other	☐ VOCs	Alkalinity	/ □TDS	Cations	Anions	Nitrate	Nitrite Metals		
Trip Blank:	11020	9TB01				Duplic	ate Sample:			