1R - 376

REPORTS

DATE:

2004

AEC AMERICAN ENVIRONMENTAL CONSULTING, LLC

December 8, 2004

Mr. Stephen Weathers
Duke Energy Field Services, LP
370 Seventeenth Street, Suite 2500
Denver, Colorado 80202

Re: Summary of Groundwater Sampling Results for the C-1 Pipeline/U-Bar Ranch Site, Lea County, New Mexico (Case #1R376)
Unit H, Section 14, Township 17 South, Range 36 East

Dear Mr. Weathers:

This letter summarizes the October 18, 2004 groundwater sampling episode conducted at the C-1 Pipeline Site in Lea County, New Mexico. The study area is located south of Lovington, New Mexico. The approximate coordinates are 32 degrees 50 minutes north and 103 degrees 19 minutes west in Unit H, Section 14, Township 17 South, Range 36 East.

All three monitoring wells in the study area were sampled. The well locations are shown on Figure 1. The depth to water was first measured in each well. The depth to water in each well is summarized in Table 1 along with the historic measurements. Hydrographs for each well are included in Figure 2. Casing volumes were then derived based upon the calculated thickness of the water column.

A minimum of three casing volumes was removed from each well using a disposable bailer. Bailing continued until the temperature, pH and conductivity stabilized to within 10 percent and pH readings remain within 0.2 pH units. Unfiltered samples were then collected upon the stabilization of each well. A duplicate sample was collected from MW-1 to evaluate data quality.

All of samples were placed in an ice-filled chest immediately upon collection. The samples were delivered directly to the analytical laboratory Environmental Labs of Texas in Midland Texas using standard chain-of-custody protocol. The three samples were analyzed for benzene, toluene, ethylbenzene and xylenes (BTEX). The laboratory analytical report is attached. All development and purge water was disposed of at an approved OCD facility.

The results of the October 18, 2004 sampling episode are summarized in Table 2 along with the previous sampling results. The New Mexico Water Quality Control Commission (NMWQCC) Groundwater Standards are included. Examination of Table 2 indicates the following:

- The duplicate benzene results from MW-1 had a relative percentage difference of 6.3 percent at concentrations slightly above the reporting limit.

- The benzene concentration of 0.0079 in MW-1 remains below the New Mexico Water Quality Control Commission Standard of 0.01 for the second consecutive monitoring episode.

- Trace concentrations of toluene, ethylbenzene and xylenes were also measured in MW-1.

- None of the BTEX constituents were detected in wells MW-2 and MW-3.

The next monitoring episode is scheduled for December 2004. Thank you for the opportunity to complete this work. Do not hesitate to contact me if you have any questions or comments on this report.

Respectfully Submitted,
AMERICAN ENVIRONMENTAL CONSULTING, LLC

Michael H. Stewart

Michael H. Stewart, P.E.
Principal Engineer

TABLES

Table 1 – Summary of Measured Depths to Water in Study Area Wells

Date	MW-1	MW-2	MW-3
12/13/02	41.14	34.79	39.78
1/10/03	41.18	34.82	39.81
1/23/03	41.19	34.82	39.81
3/11/04	41.55	35.12	40.12
6/25/04	41.66	34.93	40.16
10/18/04	40.46	33.21	39.09

Notes: Units in feet
Water table elevations could not be calculated because the wells have not been surveyed.

Table 2 - Groundwater Monitoring Results

		Benzene	Toluene	Ethylbenzene	Xylenes
NMWQCCGWS		0.01	0.75	0.75	0.62
MW-1	12/13/2002	0.003	<0.001	<0.001	<0.001
MW-1	1/10/2003	**0.041**	0.004	0.006	0.003
MW-1T	1/10/2003	**0.050**	0.0043	0.005	0.0034
MW-1	1/23/2003	**0.033**	0.004	0.006	0.005
MW-1	3/11/2004	**0.025/0.0228**	<0.001/<0/001	0.0029/0.00296	0.0018/0.00246
MW-1	6/25/2004	0.00314/0.00362	<0.001/<0.001	0.000153/0.000174	0.00184/0.00201
MW-1	10/18/2004	0.0081/0.0076	0.00016J/0.00015J	0.0024/0.0023	0.0015/0.0015
MW-2	12/13/2002	**0.02**	<0.001	0.002	0.002
MW-2	1/10/2003	0.001	<0.001	<0.001	<0.001
MW-2T	1/10/2003	<0.001	<0.001	<0.001	<0.001
MW-2	1/23/2003	0.001	0.001	<0.001	0.001
MW-2	3/11/2004	<0.001	<0.001	<0.001	<0.001
MW-2	6/25/2004	0.000351J	<0.001	<0.001	<0.001
MW-2	10/18/2004	<0.001	<0.001	<0.001	<0.001
MW-3	12/13/2002	<0.001	<0.001	<0.001	<0.001
MW-3	1/10/2003	<0.001	<0.001	<0.001	<0.001
MW-3T	1/10/2003	<0.005	<0.005	<0.005	<0.005
MW-3	1/23/2003	<0.001	<0.001	<0.001	<0.001
MW-3	3/11/2004	<0.001	<0.001	<0.001	<0.001
MW-3	6/25/2004	<0.001	<0.001	<0.001	<0.001
MW-3	10/18/2004	<0.001	<0.001	<0.001	<0.001
Windmill	12/12/2002	<0.001	<0.001	<0.001	<0.001

Notes:

1) Units in mg/l
2) Results that exceed the NMWQCCGWS New Mexico Water Quality Control Commission Groundwater Standards are bolded
3) J value indicates result is between the method detection limit and the reporting limit.

FIGURES

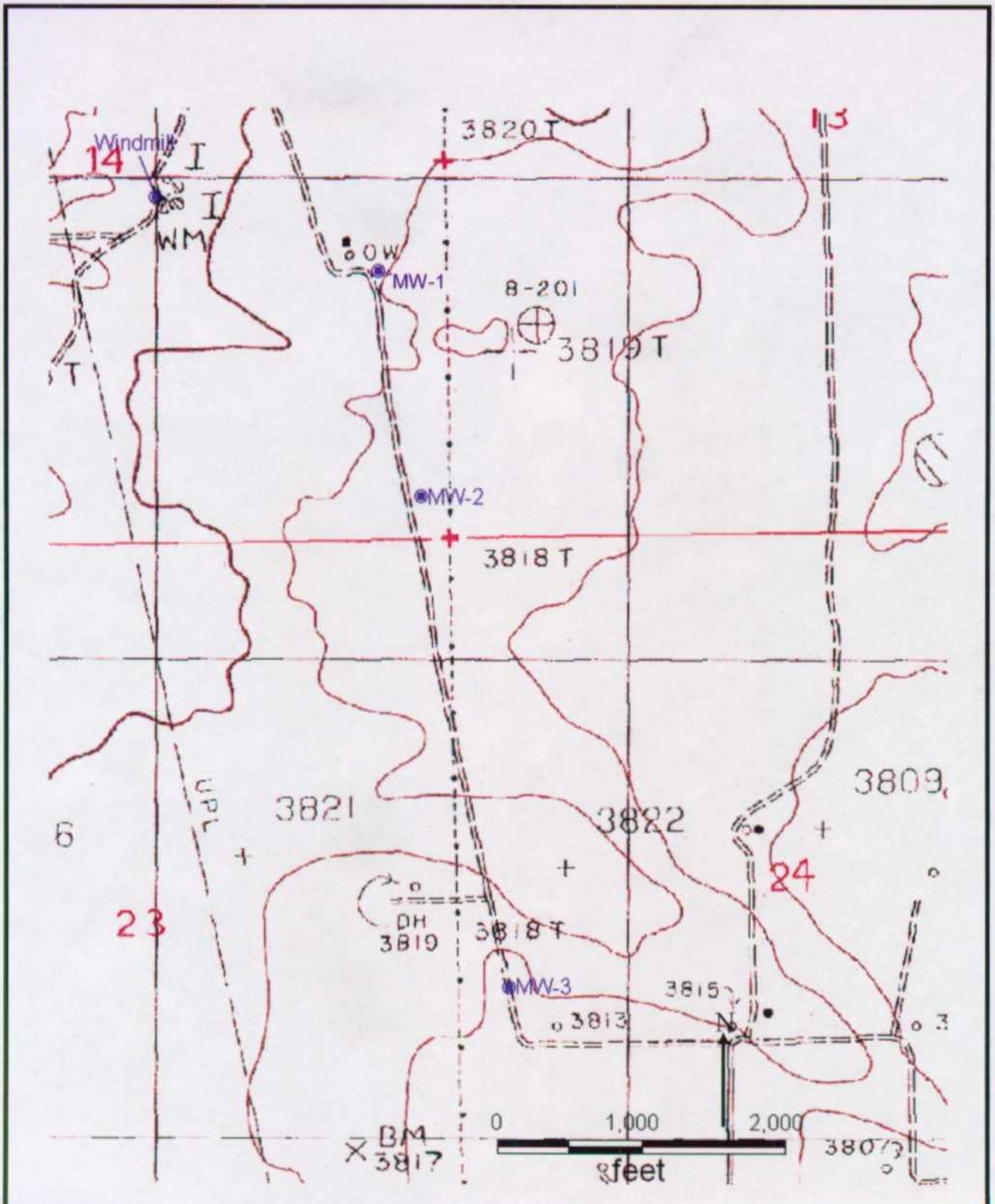

Figure 1 – Monitoring Well Locations
U-Bar Ranch Groundwater Characterization

Duke Energy Field Services

DRAWN BY: MHS
REVISED:
DATE: 7/04

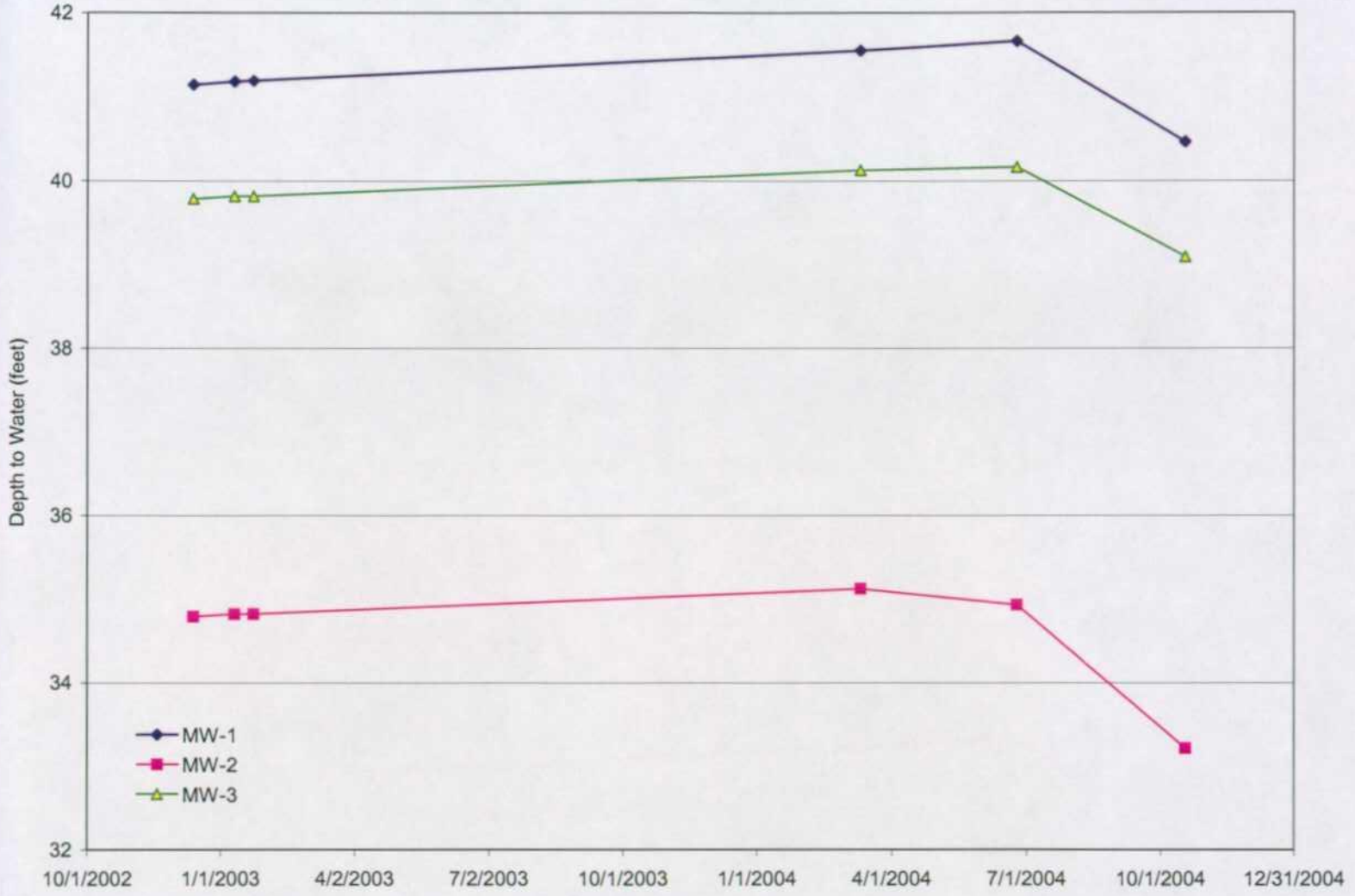

Figure 2 – C-1 Monitoring Well Hydrographs

U-Bar Ranch Groundwater Characterization

Duke Energy Field Services

DRAWN BY: MHS

DATE: 7/04

OCTOBER 2004 LABORATORY REPORT

WELL SAMPLING DATA FORM

CLIENT: Duke Energy Field Services
WELL ID: **MW-1**
SITE NAME: C-1 Line (U Bar Ranch)
DATE: 10/18/2004
PROJECT NO. F-108
SAMPLER: J. Fergerson

PURGING METHOD: ☑ Hand Bailed ☐ Pump If Pump, Type: _____

SAMPLING METHOD: ☑ Disposable Bailer ☐ Direct from Discharge Hose ☐ Other: _____

DESCRIBE EQUIPMENT DECONTAMINATION METHOD BEFORE SAMPLING THE WELL:

☑ Gloves ☐ Alconox ☐ Distilled Water Rinse ☐ Other: _____

DISPOSAL METHOD OF PURGE WATER: ☐ Surface Discharge ☐ Drums ☑ Disposal Facility

TOTAL DEPTH OF WELL: 51.97 Feet
DEPTH TO WATER: 40.46 Feet
HEIGHT OF WATER COLUMN: 11.51 Feet
WELL DIAMETER: 2.0 Inch

5.6 Minimum Gallons to purge 3 well volumes (Water Column Height x 0.49)

TIME	VOLUME PURGED	TEMP. °C	COND. *m*S/cm	pH	DO mg/L	Turb	PHYSICAL APPEARANCE AND REMARKS
16:36	--	--	--	--	--	--	Begin Hand Bailing
16:39	2	18.9	1.71	7.06	1.1	-	
16:42	4	18.9	1.72	6.96	0.7	-	
16:44	6	18.9	1.71	6.92	0.3	-	
0:08	:Total Time (hr:min)		**6**	:Total Vol (gal)		**0.75**	:Flow Rate (gal/min)

SAMPLE NO.: Collected Sample No.: 041018 1645

ANALYSES: BTEX (8021-B)

COMMENTS: Collected Duplicate Sample No.: 0410182000 for BTEX 8021-B

WELL SAMPLING DATA FORM

CLIENT: Duke Energy Field Services
WELL ID: **MW-2**
SITE NAME: C-1 Line (U Bar Ranch)
DATE: 10/18/2004
PROJECT NO. F-108
SAMPLER: J. Fergerson

PURGING METHOD: ☑ Hand Bailed ☐ Pump If Pump, Type: _____

SAMPLING METHOD: ☑ Disposable Bailer ☐ Direct from Discharge Hose ☐ Other: _____

DESCRIBE EQUIPMENT DECONTAMINATION METHOD BEFORE SAMPLING THE WELL:

☑ Gloves ☐ Alconox ☐ Distilled Water Rinse ☐ Other: _____

DISPOSAL METHOD OF PURGE WATER: ☐ Surface Discharge ☐ Drums ☑ Disposal Facility

TOTAL DEPTH OF WELL: 44.65 Feet
DEPTH TO WATER: 33.21 Feet
HEIGHT OF WATER COLUMN: 11.44 Feet
WELL DIAMETER: 2.0 Inch

5.6 Minimum Gallons to purge 3 well volumes (Water Column Height x 0.49)

TIME	VOLUME PURGED	TEMP. °C	COND. *m*S/cm	pH	DO mg/L	Turb	PHYSICAL APPEARANCE AND REMARKS
16:15	--	--	--	--	--	--	Begin Hand Bailing
16:18	2	18.9	2.32	6.94	6.3	-	
16:20	4	18.6	2.20	6.94	6.4	-	
16:23	6	18.8	2.14	6.96	6.6	-	

0:08 :Total Time (hr:min) **6** :Total Vol (gal) **0.75** :Flow Rate (gal/min)

SAMPLE NO.: Collected Sample No.: 041018 1625
ANALYSES: BTEX (8021-B)
COMMENTS: _____

WELL SAMPLING DATA FORM

CLIENT: Duke Energy Field Services
WELL ID: **MW-3**
SITE NAME: C-1 Line (U Bar Ranch)
DATE: 10/18/2004
PROJECT NO. F-108
SAMPLER: J. Fergerson

PURGING METHOD: ☑ Hand Bailed ☐ Pump If Pump, Type: _____

SAMPLING METHOD: ☑ Disposable Bailer ☐ Direct from Discharge Hose ☐ Other: _____

DESCRIBE EQUIPMENT DECONTAMINATION METHOD BEFORE SAMPLING THE WELL:

☑ Gloves ☐ Alconox ☐ Distilled Water Rinse ☐ Other: _____

DISPOSAL METHOD OF PURGE WATER: ☐ Surface Discharge ☐ Drums ☑ Disposal Facility

TOTAL DEPTH OF WELL: 50.08 Feet
DEPTH TO WATER: 39.09 Feet
HEIGHT OF WATER COLUMN: 10.99 Feet
WELL DIAMETER: 2.0 Inch

5.4 Minimum Gallons to purge 3 well volumes (Water Column Height x 0.49)

TIME	VOLUME PURGED	TEMP. °C	COND. *m*S/cm	pH	DO mg/L	Turb	PHYSICAL APPEARANCE AND REMARKS
15:50	--	--	--	--	--	--	Begin Hand Bailing
15:53	2	18.8	0.53	7.40	7.7	-	
15:55	4	18.4	0.52	7.33	7.8	-	
15:58	6	18.4	0.52	7.28	7.7	-	
0:08	:Total Time (hr:min)		**6**	:Total Vol (gal)		**0.75**	:Flow Rate (gal/min)

SAMPLE NO.: Collected Sample No.: 041018 1600

ANALYSES: BTEX (8021-B)

COMMENTS: _____

ENVIRONMENTAL LAB OF

12600 West I-20 East - Odessa, Texas 79765

Analytical Report

Prepared for:

Michael Stewart

REMEDIACON

P.O. Box 302

Evergreen, CO 80437

Project: Duke Energy Field Services

Project Number: None Given

Location: C 1 Line (UBar Ranch)

Lab Order Number: 4J19004

Report Date: 10/22/04

REMEDIACON	Project: Duke Energy Field Services	Fax: 720-528-8132
P.O. Box 302	Project Number: None Given	**Reported:**
Evergreen CO, 80437	Project Manager: Michael Stewart	10/22/04 18:51

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-3 (0410181600)	4J19004-01	Water	10/18/04 16:00	10/19/04 10:20
MW-2 (0410181625)	4J19004-02	Water	10/18/04 16:25	10/19/04 10:20
MW-1 (0410181645)	4J19004-03	Water	10/18/04 16:45	10/19/04 10:20
Duplicate (0410182000)	4J19004-04	Water	10/18/04 20:00	10/19/04 10:20
Trip Blank	4J19004-05	Water	10/18/04 00:00	10/19/04 10:20

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REMEDIACON	Project: Duke Energy Field Services	Fax: 720-528-8132
P.O. Box 302	Project Number: None Given	**Reported:**
Evergreen CO, 80437	Project Manager: Michael Stewart	10/22/04 18:51

Organics by GC

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-3 (0410181600) (4J19004-01) Water									
Benzene	ND	0.00100	mg/L	1	EJ42206	10/21/04	10/22/04	EPA 8021B	
Toluene	ND	0.00100	"	"	"	"	"	"	
Ethylbenzene	ND	0.00100	"	"	"	"	"	"	
Xylene (p/m)	ND	0.00100	"	"	"	"	"	"	
Xylene (o)	ND	0.00100	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*112 %*	*80-120*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*86.5 %*	*80-120*		"	"	"	"	
MW-2 (0410181625) (4J19004-02) Water									
Benzene	ND	0.00100	mg/L	1	EJ42206	10/21/04	10/22/04	EPA 8021B	
Toluene	ND	0.00100	"	"	"	"	"	"	
Ethylbenzene	ND	0.00100	"	"	"	"	"	"	
Xylene (p/m)	ND	0.00100	"	"	"	"	"	"	
Xylene (o)	ND	0.00100	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*118 %*	*80-120*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*91.0 %*	*80-120*		"	"	"	"	
MW-1 (0410181645) (4J19004-03) Water									
Benzene	**0.00810**	0.00100	mg/L	1	EJ42206	10/21/04	10/22/04	EPA 8021B	
Toluene	**J [0.000155]**	0.00100	"	"	"	"	"	"	J
Ethylbenzene	**0.00238**	0.00100	"	"	"	"	"	"	
Xylene (p/m)	**0.00146**	0.00100	"	"	"	"	"	"	
Xylene (o)	**J [0.000262]**	0.00100	"	"	"	"	"	"	J
Surrogate: a,a,a-Trifluorotoluene		*125 %*	*80-120*		"	"	"	"	*S-04*
Surrogate: 4-Bromofluorobenzene		*88.0 %*	*80-120*		"	"	"	"	
Duplicate (0410182000) (4J19004-04) Water									
Benzene	**0.00764**	0.00100	mg/L	1	EJ42206	10/21/04	10/22/04	EPA 8021B	
Toluene	**J [0.000147]**	0.00100	"	"	"	"	"	"	J
Ethylbenzene	**0.00228**	0.00100	"	"	"	"	"	"	
Xylene (p/m)	**0.00147**	0.00100	"	"	"	"	"	"	
Xylene (o)	**J [0.000328]**	0.00100	"	"	"	"	"	"	J
Surrogate: a,a,a-Trifluorotoluene		*124 %*	*80-120*		"	"	"	"	*S-04*
Surrogate: 4-Bromofluorobenzene		*86.0 %*	*80-120*		"	"	"	"	

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REMEDIACON	Project: Duke Energy Field Services	Fax: 720-528-8132
P.O. Box 302	Project Number: None Given	**Reported:**
Evergreen CO, 80437	Project Manager: Michael Stewart	10/22/04 18:51

Organics by GC

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Trip Blank (4J19004-05) Water									
Benzene	ND	0.00100	mg/L	1	EJ42206	10/21/04	10/22/04	EPA 8021B	
Toluene	ND	0.00100	"	"	"	"	"	"	
Ethylbenzene	ND	0.00100	"	"	"	"	"	"	
Xylene (p/m)	ND	0.00100	"	"	"	"	"	"	
Xylene (o)	ND	0.00100	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*106 %*		*80-120*		"	"	"	
Surrogate: 4-Bromofluorobenzene		*83.0 %*		*80-120*		"	"	"	

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Organics by GC - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EJ42206 - EPA 5030C (GC)										
Blank (EJ42206-BLK1)				Prepared & Analyzed: 10/21/04						
Benzene	ND	0.00100	mg/L							
Toluene	ND	0.00100	"							
Ethylbenzene	ND	0.00100	"							
Xylene (p/m)	ND	0.00100	"							
Xylene (o)	ND	0.00100	"							
Surrogate: a,a,a-Trifluorotoluene	*23.8*		*ug/l*	*20.0*		*119*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*17.6*		*"*	*20.0*		*88.0*	*80-120*			
LCS (EJ42206-BS1)				Prepared & Analyzed: 10/21/04						
Benzene	82.9		ug/l	100		82.9	80-120			
Toluene	93.3		"	100		93.3	80-120			
Ethylbenzene	92.3		"	100		92.3	80-120			
Xylene (p/m)	200		"	200		100	80-120			
Xylene (o)	98.3		"	100		98.3	80-120			
Surrogate: a,a,a-Trifluorotoluene	*20.9*		*"*	*20.0*		*104*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*19.0*		*"*	*20.0*		*95.0*	*80-120*			
LCS Dup (EJ42206-BSD1)				Prepared & Analyzed: 10/21/04						
Benzene	95.5		ug/l	100		95.5	80-120	14.1	20	
Toluene	111		"	100		111	80-120	17.3	20	
Ethylbenzene	109		"	100		109	80-120	16.6	20	
Xylene (p/m)	233		"	200		116	80-120	14.8	20	
Xylene (o)	110		"	100		110	80-120	11.2	20	
Surrogate: a,a,a-Trifluorotoluene	*23.9*		*"*	*20.0*		*120*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*21.6*		*"*	*20.0*		*108*	*80-120*			
Calibration Check (EJ42206-CCV1)				Prepared: 10/21/04 Analyzed: 10/22/04						
Benzene	87.4		ug/l	100		87.4	80-120			
Toluene	96.7		"	100		96.7	80-120			
Ethylbenzene	98.6		"	100		98.6	80-120			
Xylene (p/m)	204		"	200		102	80-120			
Xylene (o)	101		"	100		101	80-120			
Surrogate: a,a,a-Trifluorotoluene	*22.6*		*"*	*20.0*		*113*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*19.0*		*"*	*20.0*		*95.0*	*80-120*			

REMEDIACON	Project: Duke Energy Field Services	Fax: 720-528-8132
P.O. Box 302	Project Number: None Given	**Reported:**
Evergreen CO, 80437	Project Manager: Michael Stewart	10/22/04 18:51

Organics by GC - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EJ42206 - EPA 5030C (GC)										
Matrix Spike (EJ42206-MS1)	**Source: 4J19003-08**			Prepared: 10/21/04 Analyzed: 10/22/04						
Benzene	87.1		ug/l	100	ND	87.1	80-120			
Toluene	100		"	100	ND	100	80-120			
Ethylbenzene	93.8		"	100	ND	93.8	80-120			
Xylene (p/m)	208		"	200	ND	104	80-120			
Xylene (o)	97.0		"	100	ND	97.0	80-120			
Surrogate: a,a,a-Trifluorotoluene	*20.7*		"	*20.0*		*104*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*20.7*		"	*20.0*		*104*	*80-120*			
Matrix Spike Dup (EJ42206-MSD1)	**Source: 4J19003-08**			Prepared: 10/21/04 Analyzed: 10/22/04						
Benzene	89.9		ug/l	100	ND	89.9	80-120	3.16	20	
Toluene	101		"	100	ND	101	80-120	0.995	20	
Ethylbenzene	100		"	100	ND	100	80-120	6.40	20	
Xylene (p/m)	209		"	200	ND	104	80-120	0.00	20	
Xylene (o)	95.2		"	100	ND	95.2	80-120	1.87	20	
Surrogate: a,a,a-Trifluorotoluene	*23.0*		"	*20.0*		*115*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*19.1*		"	*20.0*		*95.5*	*80-120*			

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REMEDIACON	Project: Duke Energy Field Services	Fax: 720-528-8132
P.O. Box 302	Project Number: None Given	**Reported:**
Evergreen CO, 80437	Project Manager: Michael Stewart	10/22/04 18:51

Notes and Definitions

S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag).
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
LCS	Laboratory Control Spike
MS	Matrix Spike
Dup	Duplicate

Report Approved By: Raland K Tuttle Date: 10/22/04

Raland K. Tuttle, Lab Manager
Celey D. Keene, Lab Director, Org. Tech Director
Peggy Allen, QA Officer
Jeanne Mc Murrey, Inorg. Tech Director
James L. Hawkins, Chemist/Geologist
Sandra Biezugbe, Lab Tech.

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