1R - 376

REPORTS

DATE:

2004

Remediacon Incorporated
Geological and Engineering Services
mstewart@remediacon.com

PO Box 302, Evergreen, Colorado 80437
Telephone: 303.674.4370
Facsimile:720.528.8132

April 15, 2004

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

Re: Summary of Groundwater Sampling Results and A Proposed Monitoring Program 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:

The first part of this letter summarizes the March 11, 2004 groundwater sampling episode conducted at the C-1 Pipeline/U-Bar Ranch Site in Lea County, New Mexico. The final part proposes a groundwater monitoring program to evaluate the benzene decrease in well MW-1.

The study area is located south of Lovington, New Mexico on land owned by Mr. Darr Angell doing business as the U-Bar Ranch. The approximate coordinates are 32 degrees 50 minutes north and 103 degrees 19 minutes west. Well MW-1, the only well containing hydrocarbons, is located in Unit H, Section 14, Township 17 South, Range 36 East.

SUMMARY OF THE MARCH 2004 GROUNDWATER SAMPLING ACTIVITIES

Three wells are located in the study area (Figure 1). All three wells were sampled on March 11, 2004.

The depth to water was first measured in each well. Casing volumes were then derived based upon the calculated thickness. The depth to water in each well is summarized in Table 1 along with the historic measurements. The water level declined approximately 0.3 feet between January 2003 and March 2004.

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 for three consecutive readings. Unfiltered samples were collected from each well upon stabilization for analysis for BTEX. 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 laboratory analytical

report is attached. All development and purge water was disposed of at an approved OCD facility.

The results of the March 11, 2004 sampling episode are summarized in Table 2 along with the previous sampling results. Constituents that exceed the New Mexico Water Quality Control Commission (NMWQCC) Groundwater Standards are highlighted.

Examination of Table 2 indicates the following:

- The duplicate benzene results from MW-1 had a relative percentage difference of 9.2 percent indicating good agreement between the two samples.
- The benzene concentration in MW-1 declined from 0.033 mg/l to an average value of 0.024 between January 2003 and March 2004.
- Trace concentrations of toluene, ethylbenzene and xylenes were also measured in MW-1. These concentrations are substantially below any NMWQCC Groundwater Standards
- None of the BTEX constituents were measured in wells MW-2 and MW-3.

The 27 percent benzene decline in MW-1 is considered substantial; however, the data are insufficient to conclude whether this decline originates from degradation or from temporal variation.

RECOMMENDED MONITORING PROGRAM

Remediacon recommends that all three wells be sampled in June 2004 and September 2004 so that sample results are available from all four seasons. A report will then be prepared following the receipt and validation of the September 2004 results. The report will summarize the sampling results, conclude upon the origin(s) in sample variation and recommend appropriate additional periodical monitoring and/or additional characterization activities for OCD review and approval.

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,
REMEDIACON INCORPORATED

Michael H. Stewart, P.E.
Principal Engineer

TABLES

Table 2 - Groundwater Monitoring Results

NMWQCCGWS		Benzene 0.01	Toluene 0.75	Ethylbenzene 0.75	Xylenes 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-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-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
Windmill	12/12/2002	<0.001	<0.001	<0.001	<0.001

Notes: Units in mg/l

NMWQCCGWS New Mexico Water Quality Control Commission Groundwater Standards

FIGURES

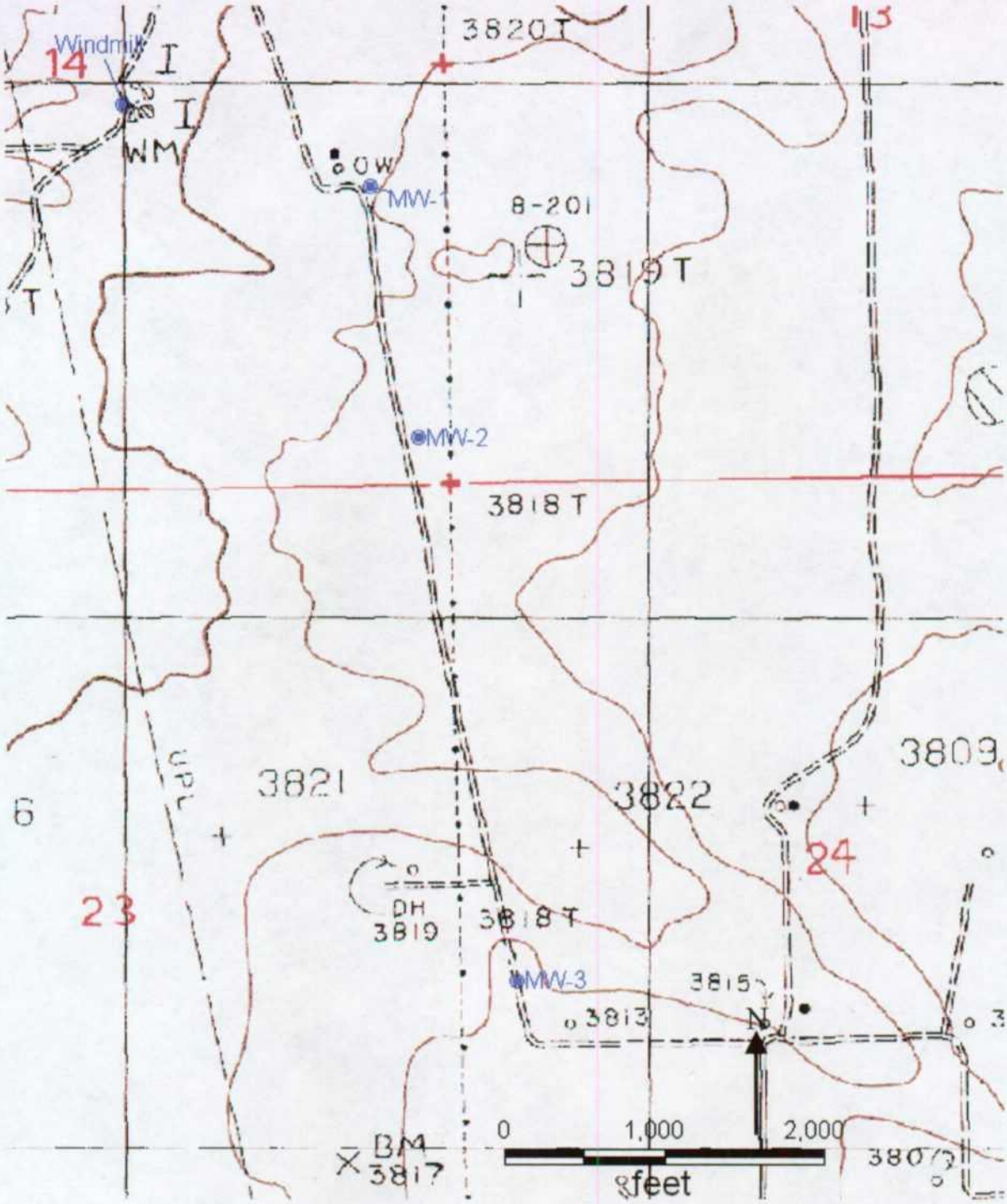

Figure 1 – Monitoring Well Locations
U-Bar Ranch Groundwater Characterization

Duke Energy Field Services

DRAWN BY: MHS
REVISED:
DATE: 4/04

MARCH 2004 ANALYTICAL LABORATORY REPORT

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 (U Bar Ranch)

Lab Order Number: 4C12012

Report Date: 03/18/04

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	03/18/04 17:44

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
(MW-3) 0403111050	4C12012-01	Water	03/11/04 10:50	03/12/04 16:25
(MW-2) 0403111135	4C12012-02	Water	03/11/04 11:35	03/12/04 16:25
(MW-1) 0403111225	4C12012-03	Water	03/11/04 12:25	03/12/04 16:25
(Duplicate) 0403112000	4C12012-04	Water	03/11/04 20:00	03/12/04 16:25
Trip Blank	4C12012-05	Water	03/11/04 00:00	03/12/04 16:25

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

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	03/18/04 17:44

Organics by GC

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
(MW-3) 0403111050 (4C12012-01)									
Benzene	ND	0.00100	mg/L	1	EC41830	03/16/04	03/16/04	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		*120 %*	*80-120*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*88.5 %*	*80-120*		"	"	"	"	
(MW-2) 0403111135 (4C12012-02)									
Benzene	ND	0.00100	mg/L	1	EC41830	03/16/04	03/16/04	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		*113 %*	*80-120*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*81.0 %*	*80-120*		"	"	"	"	
(MW-1) 0403111225 (4C12012-03)									
Benzene	**0.0250**	0.00100	mg/L	1	EC41830	03/16/04	03/16/04	EPA 8021B	
Toluene	ND	0.00100	"	"	"	"	"	"	
Ethylbenzene	**0.00290**	0.00100	"	"	"	"	"	"	
Xylene (p/m)	**0.00180**	0.00100	"	"	"	"	"	"	
Xylene (o)	ND	0.00100	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*116 %*	*80-120*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*80.0 %*	*80-120*		"	"	"	"	
(Duplicate) 0403112000 (4C12012-04)									
Benzene	**0.0228**	0.00100	mg/L	1	EC41830	03/16/04	03/18/04	EPA 8021B	
Toluene	ND	0.00100	"	"	"	"	"	"	
Ethylbenzene	**0.00296**	0.00100	"	"	"	"	"	"	
Xylene (p/m)	**0.00246**	0.00100	"	"	"	"	"	"	
Xylene (o)	J [0.000701]	0.00100	"	"	"	"	"	"	J
Surrogate: a,a,a-Trifluorotoluene		*118 %*	*80-120*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*85.5 %*	*80-120*		"	"	"	"	

Environmental Lab of Texas

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Quality Assurance Review

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

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	03/18/04 17:44

Organics by GC

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Trip Blank (4C12012-05)									
Benzene	ND	0.00100	mg/L	1	EC41830	03/16/04	03/16/04	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		*114 %*		*80-120*	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*84.5 %*		*80-120*	"	"	"	"	

Quality Assurance Review

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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	03/18/04 17:44

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 EC41830 - EPA 5030C (GC)										
Blank (EC41830-BLK1)				Prepared & Analyzed: 03/16/04						
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	*23.4*		*ug/l*	*20.0*		*117*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*16.7*		"	*20.0*		*83.5*	*80-120*			
LCS (EC41830-BS1)				Prepared & Analyzed: 03/16/04						
Benzene	86.3		ug/l	100		86.3	80-120			
Toluene	87.4		"	100		87.4	80-120			
Ethylbenzene	87.6		"	100		87.6	80-120			
Xylene (p/m)	182		"	200		91.0	80-120			
Xylene (o)	92.3		"	100		92.3	80-120			
Surrogate: a,a,a-Trifluorotoluene	*16.8*		"	*20.0*		*84.0*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*16.7*		"	*20.0*		*83.5*	*80-120*			
Calibration Check (EC41830-CCV1)				Prepared & Analyzed: 03/16/04						
Benzene	89.6		ug/l	100		89.6	80-120			
Toluene	92.5		"	100		92.5	80-120			
Ethylbenzene	92.8		"	100		92.8	80-120			
Xylene (p/m)	190		"	200		95.0	80-120			
Xylene (o)	99.1		"	100		99.1	80-120			
Surrogate: a,a,a-Trifluorotoluene	*19.7*		"	*20.0*		*98.5*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*17.3*		"	*20.0*		*86.5*	*80-120*			
Duplicate (EC41830-DUP1)	**Source: 4C12012-03**			Prepared: 03/16/04 Analyzed: 03/18/04						
Benzene	0.0204	0.00100	mg/L		0.0250			20.3	20	
Toluene	ND	0.00100	"		ND				20	
Ethylbenzene	0.00265	0.00100	"		0.00290			9.01	20	
Xylene (p/m)	0.00190	0.00100	"		0.00180			5.41	20	
Xylene (o)	ND	0.00100	"		ND				20	
Surrogate: a,a,a-Trifluorotoluene	*21.6*		*ug/l*	*20.0*		*108*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*16.5*		"	*20.0*		*82.5*	*80-120*			

Environmental Lab of Texas

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Quality Assurance Review

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

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	03/18/04 17:44

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 EC41830 - EPA 5030C (GC)										
Matrix Spike (EC41830-MS1)	**Source: 4C12012-05**			Prepared: 03/16/04 Analyzed: 03/18/04						
Benzene	88.6		ug/l	100	ND	88.6	80-120			
Toluene	89.6		"	100	ND	89.6	80-120			
Ethylbenzene	93.4		"	100	ND	93.4	80-120			
Xylene (p/m)	184		"	200	ND	92.0	80-120			
Xylene (o)	94.1		"	100	ND	94.1	80-120			
Surrogate: a,a,a-Trifluorotoluene	*22.3*		*"*	*20.0*		*112*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*18.8*		*"*	*20.0*		*94.0*	*80-120*			

Environmental Lab of Texas

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Quality Assurance Review

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

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	03/18/04 17:44

Notes and Definitions

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

Quality Assurance Review

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

Environmental Lab of Texas

12600 West I-20 East
Odessa, Texas 79765
Phone: 432-563-1800
Fax: 432-563-1713

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Mike Stewart
Company Name: Remediacon, Inc.
Company Address: P.O. Box 302
City/State/Zip: Evergreen, CO 80437
Telephone No: 303-674-4370
Fax No: 720-528-8132
Sampler Signature: John Ferguson

Project Name: Duke Energy Field Services
Project #:
Project Loc: C-1 Line CU Bar Ranch
PO #:

4C12012
~~4C01~~ KA

LAB # (lab use only)	FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Preservative: Ice	Preservative: HNO_3	Preservative: HCl	Preservative: NaOH	Preservative: H_2SO_4	Preservative: None	Preservative: Other (Specify)	Matrix: Water	Matrix: Sludge	Matrix: Soil	Matrix: Other (specify)	Analyze For: TCLP: TPH: 418.1 8015M 1005 1006	Analyze For: TOTAL: Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, CO3, HCO3)	SAR / ESP / CEC	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	BTEX 8021B/5030 or BTEX 8260	RCI	NORM	RUSH TAT (Pre-Scheduled) STANDARD TAT
01	(MW-3) 040311 1050	3/11/04	1050	2	✓		✓					✓											✓			✓
02	(MW-2) 040311 1135	3/11/04	1135	2	✓		✓					✓											✓			✓
03	(MW-1) 040311 1225	3/11/04	1225	2	✓		✓					✓											✓			✓
04	(Duplicate) 040311 2000	3/11/04	2000	2	✓		✓					✓											✓			✓
05	Trip Blank			2-3 JHH	✓		✓					✓											✓			✓

Special Instructions: Invoice to: Steve Weathers
Duke Energy Field Services

Sample Containers Intact? (Y) N
Temperature Upon Receipt: -2.5°C
Laboratory Comments: 40 mL Vom

Relinquished by:	Date	Time	Received by:	Date	Time
John Ferguson	3/12/04	1625			
Relinquished by:	Date	Time	Received by ELOT:	Date	Time
			Tami Anderson	3-12-04	1625

Mar 18 04 07:40p