

1R - 376

# REPORTS

**DATE:**

2004

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# Remediakon Incorporated

Geological and Engineering Services  
mstewart@remediakon.com

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

July 16, 2004

JUL 19 2004

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

Oil Conservation Division  
Environmental Bureau

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 June 25, 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 June 25, 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 14 percent at concentrations slightly above the method detection limit.

Mr. Stephen Weathers  
July 16, 2004  
Page 2

- The benzene concentration in MW-1 declined from 0.024 mg/l to an average value of 0.00338 mg/l between March 2004 and June 2004.
- Trace concentrations of toluene and xylenes were also measured in MW-1.
- Benzene was measured in MW-2 at an estimated concentration of 0.00035 mg/l. No other BTEX constituents were detected in wells MW-2 and MW-3.
- None of the wells contain BTEX above the NMWQCC Groundwater Standards. In fact, the residual concentrations in MW-1 are approaching, or are below, the method detection limits. This continued decline verifies that natural attenuation is lowering the concentrations in the groundwater.

The next monitoring episode is scheduled for September 2004. The results will be analyzed after that event to evaluate modification of the groundwater monitoring program.

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*

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

Notes: Units in feet

Water table elevations could not be calculated because the wells have not been surveyed.

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	<b>0.041</b>	0.004	0.006	0.003
MW-1T	1/10/2003	<b>0.050</b>	0.0043	0.005	0.0034
MW-1	1/23/2003	<b>0.033</b>	0.004	0.006	0.005
MW-1	3/11/2004	<b>0.025/0.0228</b>	<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-2	12/13/2002	<b>0.02</b>	<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-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

Windmill	12/12/2002	<0.001	<0.001	<0.001	<0.001
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Notes:

- 1) Units in mg/l
- 2) Results that exceed the NMWQCCGWS New Mexico Water Quality Control Commission Groundwater Standards are bolded

FIGURES

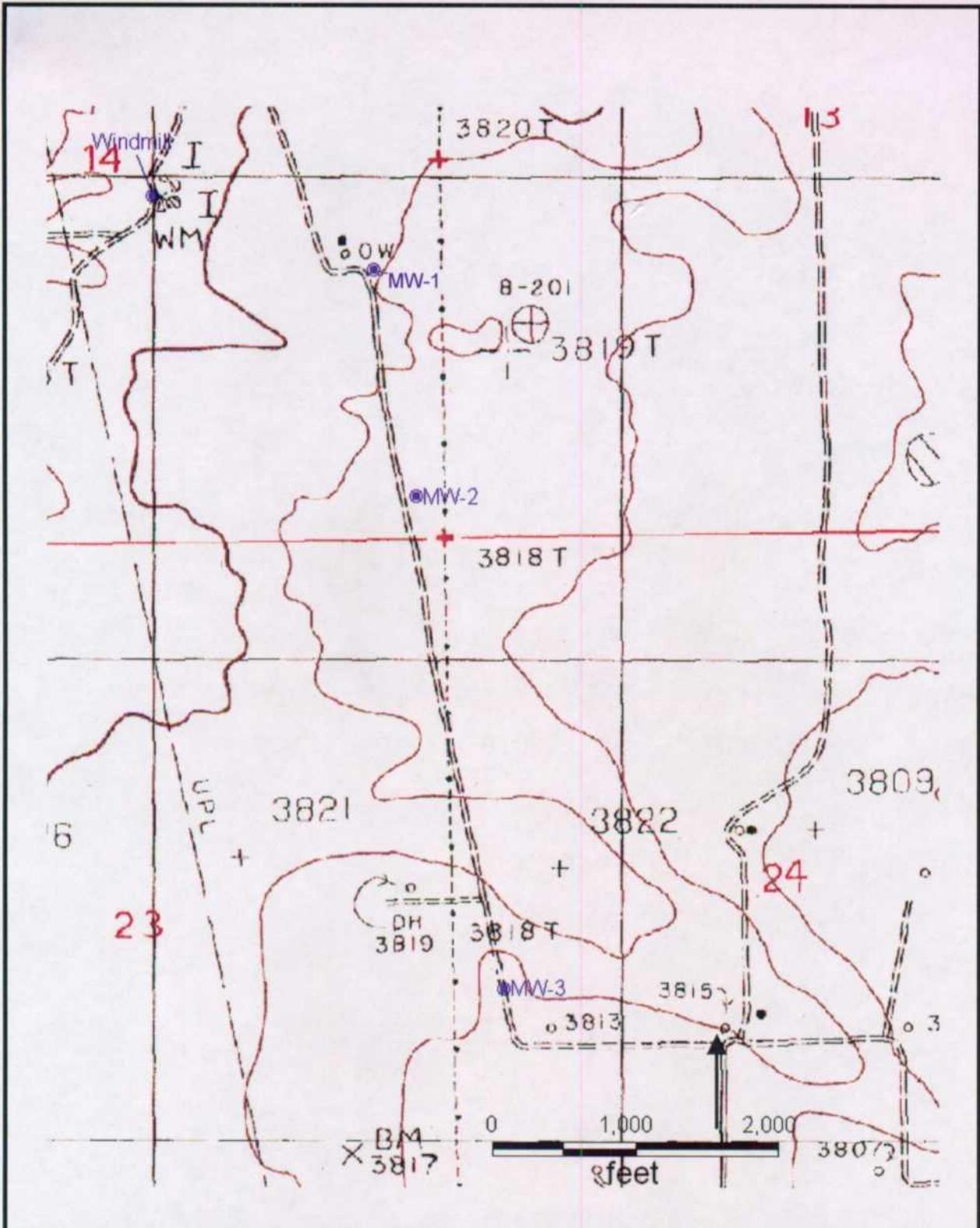


Figure 1 – Monitoring Well Locations  
U-Bar Ranch Groundwater Characterization



DRAWN BY: MHS

REVISED:

DATE: 7/04



Figure 2 - C-1 Monitoring Well Hydrographs

U-Bar Ranch Groundwater Characterization



DRAWN BY: MHS

DATE: 7/04

JUNE 2004 FIELD MEASUREMENTS AND  
ANALYTICAL LABORATORY REPORT

## WELL SAMPLING DATA FORM

CLIENT: Duke Energy Field Services      WELL ID: MW-1  
 SITE NAME: C-1 Line (U Bar Ranch)      DATE: 6/25/2004  
 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:      41.66 Feet

HEIGHT OF WATER COLUMN:      10.31 Feet

WELL DIAMETER:      2.0 Inch

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

TIME	VOLUME PURGED	TEMP. °F	COND. m S/cm	pH	DO mg/L	Turb	PHYSICAL APPEARANCE AND REMARKS
18:32	--	--	--	--	--	--	Begin Hand Bailing
18:36	2	70.9	0.770	7.16	4.5	-	
18:39	4	68.8	0.630	7.19	5.0	-	
18:42	6	68.6	0.630	7.18	4.8	-	
18:45	7	68.3	0.620	7.21	5.3	-	
<b>0:13</b> :Total Time (hr:min)		<b>7</b> :Total Vol (gal)		<b>0.54</b> :Flow Rate (gal/min)			

SAMPLE NO.:      Collected Sample No.: 040625 1850

ANALYSES:      BTEX (8021-B)

COMMENTS:      Collected Duplicate Sample No.: 0406252000 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: 6/25/2004  
 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:      34.93 Feet

HEIGHT OF WATER COLUMN:      9.72 Feet

WELL DIAMETER:      2.0 Inch

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

TIME	VOLUME PURGED	TEMP. °F	COND. mS/cm	pH	DO mg/L	Turb	PHYSICAL APPEARANCE AND REMARKS
18:08	--	--	--	--	--	--	Begin Hand Bailing
18:11	2	70.8	2.73	6.95	5.6	-	
18:14	4	68.5	2.78	6.95	5.8	-	
18:17	6	67.7	2.80	6.96	5.9	-	
<b>0:09</b>	:Total Time (hr:min)		<b>6</b>	:Total Vol (gal)		<b>0.66</b>	:Flow Rate (gal/min)

SAMPLE NO.:      Collected Sample No.: 040625 1820

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: 6/25/2004  
 PROJECT NO. F-108      SAMPLER: J. Ferguson

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:      40.16 Feet

HEIGHT OF WATER COLUMN:      9.92 Feet

WELL DIAMETER:      2.0 Inch

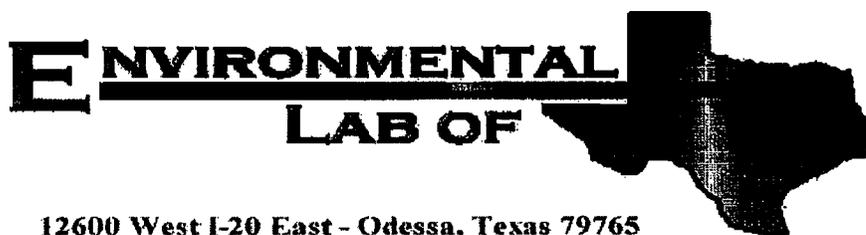
4.9 Minimum Gallons to  
purge 3 well volumes  
(Water Column Height x 0.49)

TIME	VOLUME PURGED	TEMP. °F	COND. mS/cm	pH	DO mg/L	Turb	PHYSICAL APPEARANCE AND REMARKS
17:36	--	--	--	--	--	--	Begin Hand Bailing
17:41	2	71.9	0.510	7.45	8.5	-	
17:44	4	69.6	0.500	7.47	8.6	-	
17:48	6	69.1	0.500	7.49	8.6	-	
0:12 :Total Time (hr:min)		6 :Total Vol (gal)		0.50 :Flow Rate (gal/min)			

SAMPLE NO.: Collected Sample No.: 040625 1750

ANALYSES: BTEX (8021-B)

COMMENTS: Collected MS/MSD Samples



12600 West I-20 East - Odessa, Texas 79765

## Analytical Report

**Prepared for:**

Michael Stewart

REMEDIACON

P.O. Box 302

Evergreen, CO 80437

Project: DEFS C-1 Line (U Bar Ranch)

Project Number: [none]

Location: Lea County, New Mexico

Lab Order Number: 4F28005

Report Date: 07/07/04

REMEDIACON  
P.O. Box 302  
Evergreen CO, 80437

Project: DEFS C-1 Line (U Bar Ranch)  
Project Number: [none]  
Project Manager: Michael Stewart

Fax: 720-528-8132  
Reported:  
07/07/04 14:58

**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
0406251750 (MW-3)	4F28005-01	Water	06/25/04 17:50	06/28/04 14:00
0406251820 (MW-2)	4F28005-03	Water	06/25/04 18:20	06/28/04 14:00
0406251850 (MW-1)	4F28005-04	Water	06/25/04 18:50	06/28/04 14:00
0406252000 (Duplicate)	4F28005-05	Water	06/25/04 20:00	06/28/04 14:00
Trip Blank	4F28005-06	Water	06/25/04 00:00	06/28/04 14:00

REMEDIACON P.O. Box 302 Evergreen CO, 80437	Project: DEFS C-1 Line (U Bar Ranch) Project Number: [none] Project Manager: Michael Stewart	Fax: 720-528-8132 Reported: 07/08/04 10:28
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**Organics by GC**  
**Environmental Lab of Texas**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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**0406251750 (MW-3) (4F28005-01) Water**

Benzene	ND	0.00100	mg/L	1	EG40702	07/06/04	07/06/04	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		115 %	80-120	"	"	"	"	"	
Surrogate: 4-Bromofluorobenzene		83.0 %	80-120	"	"	"	"	"	

**0406251820 (MW-2) (4F28005-03) Water**

Benzene	J [0.000351]	0.00100	mg/L	1	EG40702	07/06/04	07/06/04	EPA 8021B	J
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		83.0 %	80-120	"	"	"	"	"	

**0406251850 (MW-1) (4F28005-04) Water**

Benzene	0.00314	0.00100	mg/L	1	EG40702	07/06/04	07/06/04	EPA 8021B	
Toluene	ND	0.00100	"	"	"	"	"	"	
Ethylbenzene	0.00153	0.00100	"	"	"	"	"	"	
Xylene (p/m)	0.00166	0.00100	"	"	"	"	"	"	
Xylene (o)	J [0.000178]	0.00100	"	"	"	"	"	"	J

Surrogate: a,a,a-Trifluorotoluene		135 %	80-120	"	"	"	"	"	S-04
Surrogate: 4-Bromofluorobenzene		82.0 %	80-120	"	"	"	"	"	

**0406252000 (Duplicate) (4F28005-05) Water**

Benzene	0.00362	0.00100	mg/L	1	EG40702	07/06/04	07/06/04	EPA 8021B	
Toluene	ND	0.00100	"	"	"	"	"	"	
Ethylbenzene	0.00174	0.00100	"	"	"	"	"	"	
Xylene (p/m)	0.00180	0.00100	"	"	"	"	"	"	
Xylene (o)	J [0.000212]	0.00100	"	"	"	"	"	"	J

Surrogate: a,a,a-Trifluorotoluene		132 %	80-120	"	"	"	"	"	S-04
Surrogate: 4-Bromofluorobenzene		97.0 %	80-120	"	"	"	"	"	

Environmental Lab of Texas

The results in this report apply to the samples analyzed in accordance with the samples received in the laboratory. This analytical report must be reproduced in its entirety, with written approval of Environmental Lab of Texas.

REMEDIACON  
 P.O. Box 302  
 Evergreen CO, 80437

Project: DEFS C-1 Line (U Bar Ranch)  
 Project Number: [none]  
 Project Manager: Michael Stewart

Fax: 720-528-8132  
 Reported:  
 07/07/04 14:58

**Organics by GC**  
**Environmental Lab of Texas**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Trip Blank (4F28005-06) Water</b>									
Benzene	ND	0.00100	mg/l.	1	EG40702	07/06/04	07/06/04	EPA 8021B	
Toluene	ND	0.00100	"	"	"	"	"	"	
Ethylbenzene	ND	0.00100	"	"	"	"	"	"	
Xylene (p/m)	ND	0.00100	"	"	"	"	"	"	
Xylene (o)	ND	0.00100	"	"	"	"	"	"	
<i>Surrogate: a,a,a-Trifluorotoluene</i>		120 %	80-120	"	"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		90.5 %	80-120	"	"	"	"	"	

REMEDIACON P.O. Box 302 Evergreen CO, 80437	Project: DEFS C-1 Line (U Bar Ranch) Project Number: [none] Project Manager: Michael Stewart	Fax: 720-528-8132 Reported: 07/07/04 14:58
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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
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**Batch EG40702 - EPA 5030C (GC)**

**Blank (EG40702-BLK1)**

Prepared & Analyzed: 07/06/04

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	23.3		ug/l	20.0		116	80-120			
Surrogate: 4-Bromofluorobenzene	19.4		"	20.0		97.0	80-120			

**LCS (EG40702-BS1)**

Prepared & Analyzed: 07/06/04

Benzene	94.2		ug/l	100		94.2	80-120			
Toluene	101		"	100		101	80-120			
Ethylbenzene	103		"	100		103	80-120			
Xylene (p/m)	216		"	200		108	80-120			
Xylene (o)	101		"	100		101	80-120			
Surrogate: a,a,a-Trifluorotoluene	21.1		"	20.0		106	80-120			
Surrogate: 4-Bromofluorobenzene	18.6		"	20.0		93.0	80-120			

**Calibration Check (EG40702-CCV1)**

Prepared & Analyzed: 07/06/04

Benzene	85.5		ug/l	100		85.5	80-120			
Toluene	93.4		"	100		93.4	80-120			
Ethylbenzene	87.9		"	100		87.9	80-120			
Xylene (p/m)	186		"	200		93.0	80-120			
Xylene (o)	87.1		"	100		87.1	80-120			
Surrogate: a,a,a-Trifluorotoluene	78.6		"	20.0		93.0	80-120			
Surrogate: 4-Bromofluorobenzene	17.8		"	20.0		89.0	80-120			

**Matrix Spike (EG40702-MS1)**

Source: 4F28004-06

Prepared & Analyzed: 07/06/04

Benzene	114		ug/l	100	ND	114	80-120			
Toluene	117		"	100	ND	117	80-120			
Ethylbenzene	118		"	100	ND	118	80-120			
Xylene (p/m)	239		"	200	ND	120	80-120			
Xylene (o)	116		"	100	ND	116	80-120			
Surrogate: a,a,a-Trifluorotoluene	23.0		"	20.0		115	80-120			
Surrogate: 4-Bromofluorobenzene	22.0		"	20.0		110	80-120			

REMEDIACON  
P.O. Box 302  
Evergreen CO, 80437

Project: DEFS C-1 Line (U Bar Ranch)  
Project Number: [none]  
Project Manager: Michael Stewart

Fax: 720-528-8132  
Reported:  
07/07/04 14:58

**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
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**Batch EG40702 - EPA 5030C (GC)**

Matrix Spike (EG40702-MS2)		Source: 4F28005-01		Prepared & Analyzed: 07/06/04						
Benzene	112		ug/l	100	ND	112	80-120			
Toluene	114		"	100	ND	114	80-120			
Ethylbenzene	114		"	100	ND	114	80-120			
Xylene (p/m)	233		"	200	ND	116	80-120			
Xylene (o)	108		"	100	ND	108	80-120			
Surrogate: a,a,a-Trifluorotoluene	23.3		"	20.0		116	80-120			
Surrogate: 4-Bromofluorobenzene	19.6		"	20.0		98.0	80-120			

Matrix Spike Dup (EG40702-MSD1)		Source: 4F28004-06		Prepared & Analyzed: 07/06/04						
Benzene	103		ug/l	100	ND	103	80-120	10.1	20	
Toluene	110		"	100	ND	110	80-120	6.17	20	
Ethylbenzene	106		"	100	ND	106	80-120	10.7	20	
Xylene (p/m)	216		"	200	ND	108	80-120	10.5	20	
Xylene (o)	102		"	100	ND	102	80-120	12.8	20	
Surrogate: a,a,a-Trifluorotoluene	22.5		"	20.0		112	80-120			
Surrogate: 4-Bromofluorobenzene	21.0		"	20.0		105	80-120			

Matrix Spike Dup (EG40702-MSD2)		Source: 4F28005-01		Prepared & Analyzed: 07/06/04						
Benzene	112		ug/l	100	ND	112	80-120	0.00	20	
Toluene	117		"	100	ND	117	80-120	2.60	20	
Ethylbenzene	116		"	100	ND	116	80-120	1.74	20	
Xylene (p/m)	235		"	200	ND	118	80-120	1.71	20	
Xylene (o)	114		"	100	ND	114	80-120	5.41	20	
Surrogate: a,a,a-Trifluorotoluene	23.0		"	20.0		115	80-120			
Surrogate: 4-Bromofluorobenzene	23.6		"	20.0		118	80-120			

REMEDIACON  
P.O. Box 302  
Evergreen CO, 80437

Project: DEFS C-1 Line (U Bar Ranch)  
Project Number: [none]  
Project Manager: Michael Stewart

Fax: 720-528-8132  
Reported:  
07/07/04 14:58

### 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: 7-08-04

Raland K. Tuttle, QA Officer

James L. Hawkins, Chemist/Geologist

Celey D. Keene, Lab Director, Org. Tech Director

Sara Molina, Chemist

Jeanne Mc Murrey, Inorg. Tech Director

Sandra Biezugbe, Lab Tech.

This material is intended only for the use of the individual (s) or entity to whom it is addressed, and may contain information that is privileged and confidential.

If you have received this material in error, please notify us immediately at 432-563-1800.

Environmental Lab of Texas

*The results in this report apply to the samples analyzed in accordance with the samples received in the laboratory. This analytical report must be reproduced in its entirety, with written approval of Environmental Lab of Texas.*

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