

AP - 27

# ANNUAL MONITORING REPORT

YEAR(S):

2010



**TETRA TECH**

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March 25, 2011

Mr. Edward Hansen  
New Mexico Energy, Minerals, & Natural Resources Dept.  
Oil Conservation Division, Environmental Bureau  
1220 S. St. Francis Drive  
Santa Fe, New Mexico 87505

**Re: 2010 Annual Groundwater Summary Report & Project Status Report, Rice Operating Company, E-15 Release, BD SWD System, Unit D&E, Section 15, T-22-S, R-37-E, Lea County, New Mexico, NMOCD CASE #AP-027**

Mr. Hansen:

Tetra Tech Inc. (Tetra Tech) submits the following 2010 Annual Groundwater Summary Report for the Rice Operating Company (ROC), E-15 Release, located in the BD Salt Water Disposal System. This report consists of the following sections:

1. A figure presenting the location of the monitoring wells and most recent groundwater sampling results.
2. Tables summarizing all laboratory results and depths to groundwater at the site, including the current year (2010).
3. Graphs depicting the concentration of chlorides, total dissolved solids (TDS), and sulfates over time.
4. Laboratory results for the most recent groundwater sampling event.

In 2005, a groundwater remediation system was installed at the site to address the chloride impacts to the groundwater. Due to low volumes, silting, and equipment problems, the system was discontinued in 2007. Several of the silted or dry monitor wells were permanently abandoned. Since 2005, the four active monitor wells (MW-1 through MW-4) have been sampled on a quarterly basis. On January 6, 2011, ROC submitted a work plan detailing the installation of three additional monitor wells at the site (2 of which are temporary wells adjacent to currently dry wells) in order to further delineate groundwater quality and to determine if groundwater exists throughout the entire site. If the two wells to be installed adjacent to the current dry wells are also dry, they will be plugged and abandoned after 48 hours of installation. The work plan was approved via email by the NMOCD on February 17, 2011. For 2011, the three proposed monitor wells will be installed and the site will continued to be monitored and sampled on a quarterly basis.

**Tetra Tech**

1910 North Big Spring, Midland, TX 79705

Tel 432.682.4559

Fax 432.682.3946

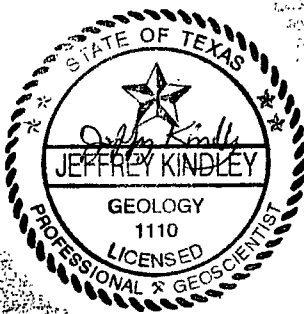
www.tetrattech.com



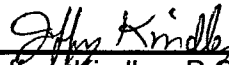
**TETRA TECH**

ROC is the service provider (agent) for the BD Salt Water Disposal System and has no ownership of any portion of the pipeline, well or facility. The BD SWD system is owned by a consortium of oil producers, System Parties, who provide all operating capital on a percentage ownership/usage basis.

Thank you for your consideration of this annual summary information. If you have any questions, please contact me at (432) 682-4559, or Hack Conder of ROC at (575) 393-9174.



Respectfully Submitted,  
Tetra Tech, Inc.

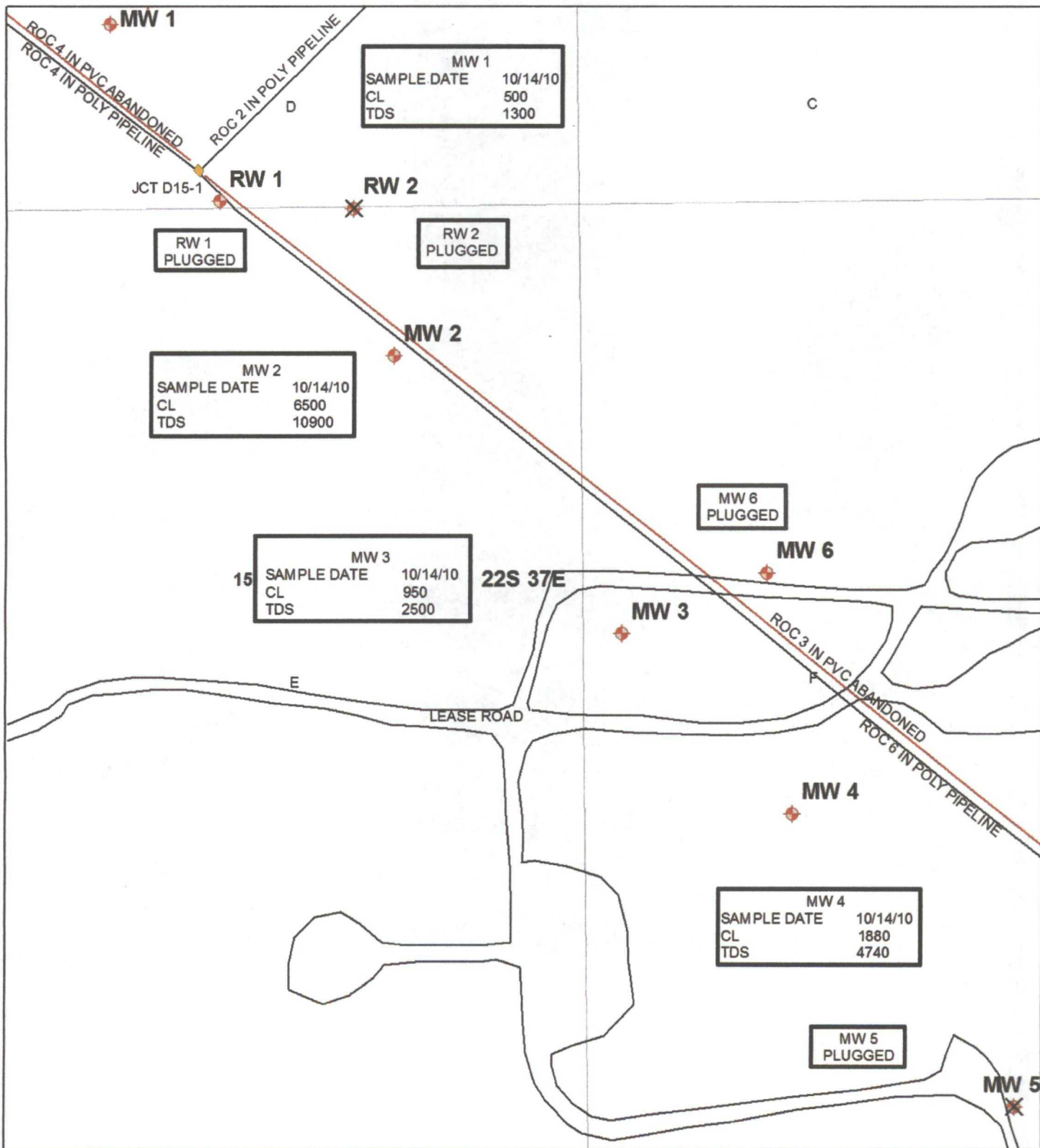
  
\_\_\_\_\_  
Jeffrey Kindley, P.G.  
Senior Project Manager

cc: Hack Conder –ROC

Enclosures: Figure, Tables, Graphs, and Lab Results

## FIGURES

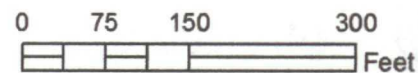
# MW SAMPLING DATA



## BD E-15 LEAK

Legals: UL E SEC 15  
 T-22-S R-37-E

Case #: AP 27



Drawing date: 3/9/11  
 Drafted by: T. GRIECO

## **TABLES**

Table 1

Rice Operating Company

BD E-15

Lea County, New Mexico

[illegible]

Graph 1  
Rice Operating Company  
MW-1  
BD E-15  
Lea County, New Mexico

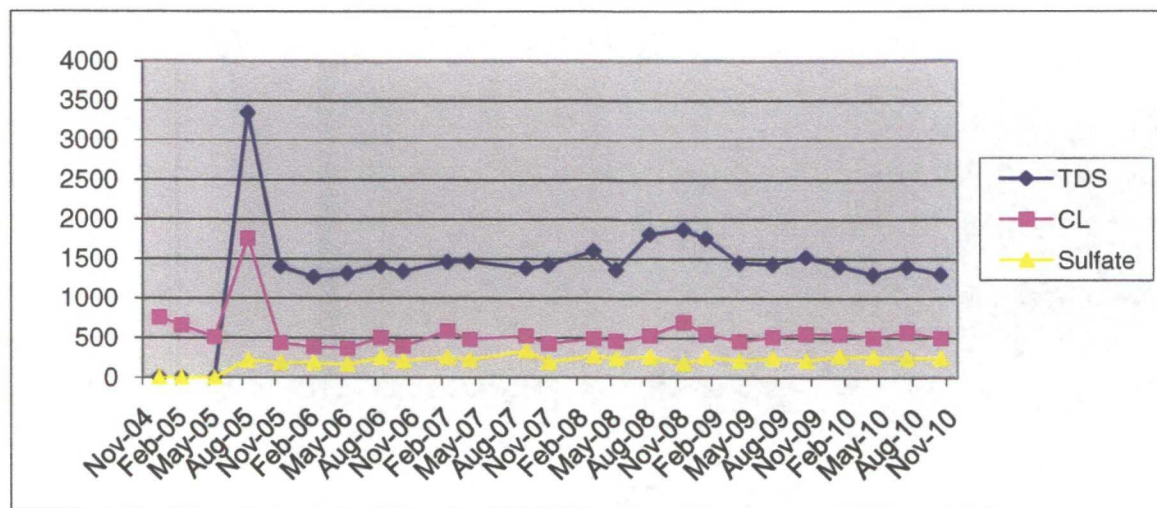




Table 2  
Rice Operating Company  
BD E-15  
Lea County, New Mexico

[illegible]

Graph 2  
Rice Operating Company  
MW-2  
BD E-15  
Lea County, New Mexico

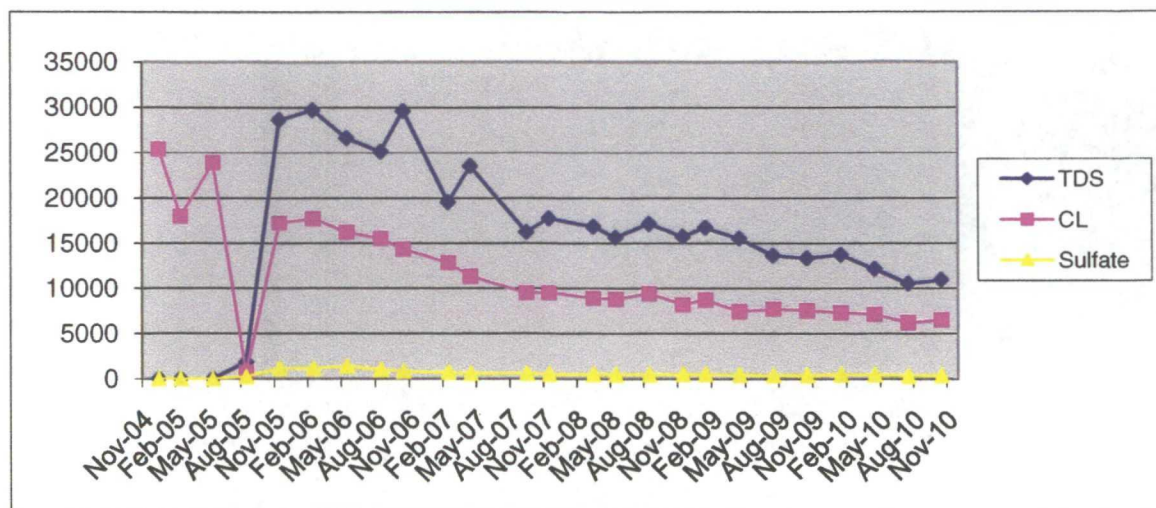


Table 3  
Rice Operating Company  
BD E-15  
Lea County, New Mexico

[illegible]

Graph 3  
Rice Operating Company  
MW-3  
BD E-15  
Lea County, New Mexico

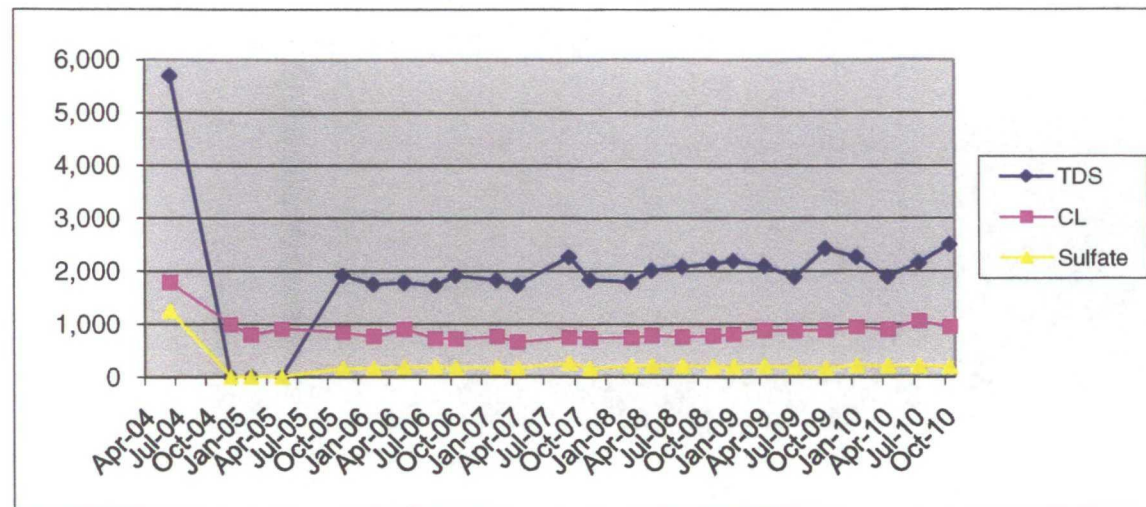
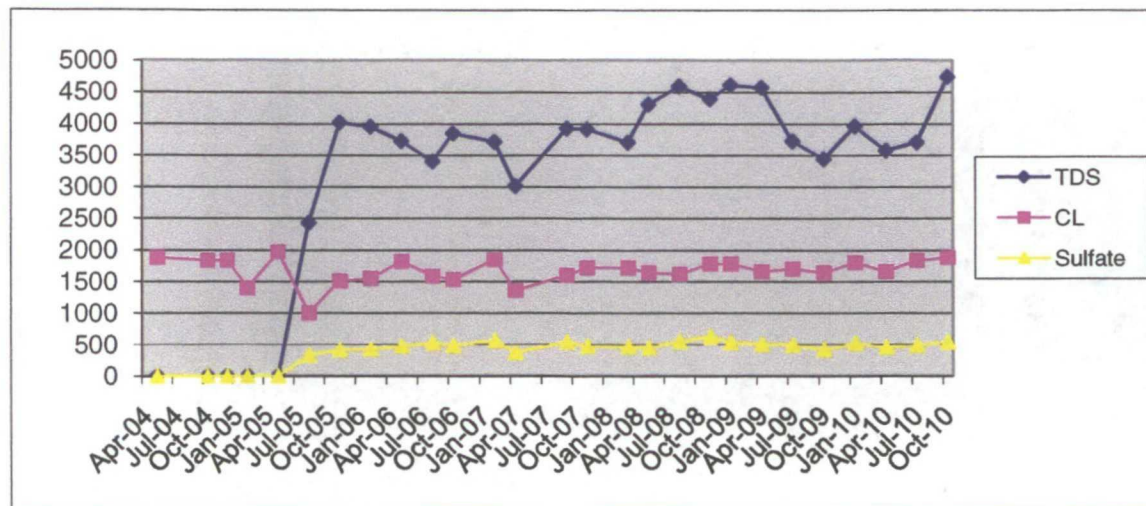


Table 4  
Rice Operating Company  
BD E-15  
Lea County, New Mexico

[illegible]

Graph 4  
Rice Operating Company  
MW-4  
BD E-15  
Lea County, New Mexico



## **APPENDIX A**



October 28, 2010

Hack Conder  
Rice Operating Company  
112 W. Taylor  
Hobbs, NM 88240

RE: BD E-15 LEAK

Enclosed are the results of analyses for samples received by the laboratory on 10/19/10 10:40.

Cardinal Laboratories is accredited through Texas NELAP for:

Method SW-846 8021	Benzene, Toluene, Ethyl Benzene, and Total Xylenes
Method SW-846 8260	Benzene, Toluene, Ethyl Benzene, and Total Xylenes
Method TX 1005	Total Petroleum Hydrocarbons

Certificate number T104704398-08-TX. Accreditation applies to solid and chemical materials and non-potable water matrices.

Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene  
Lab Director/Quality Manager



**Analytical Results For:**

Rice Operating Company  
Hack Conder  
112 W. Taylor  
Hobbs NM, 88240  
Fax To: (575) 397-1471

Received: 10/19/2010  
Reported: 10/28/2010  
Project Name: BD E-15 LEAK  
Project Number: NONE GIVEN  
Project Location: T22S-R37E-SEC15E - LEA CTY., NM

Sampling Date: 10/14/2010  
Sampling Type: Water  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson

**Sample ID: MONITOR WELL #1 (H021097-01)**

BTX 8021B		mg/L		Analyzed By: cms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	10/21/2010	ND	0.055	109	0.0500		
Toluene*	<0.001	0.001	10/21/2010	ND	0.051	103	0.0500		
Ethylbenzene*	<0.001	0.001	10/21/2010	ND	0.052	104	0.0500		
Total Xylenes*	<0.003	0.003	10/21/2010	ND	0.161	107	0.150		

Surrogate: 4-Bromofluorobenzene (PIL) 103 % 80-120

Chloride, SM4500Cl-B		mg/L		Analyzed By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	500	4.00	10/21/2010	ND	108	108	100	3.77	

Sulfate 375.4		mg/L		Analyzed By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate	243	10.0	10/20/2010	ND	37.8	94.5	40.0	4.75	

TDS 160.1		mg/L		Analyzed By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS	1300	5.00	10/20/2010	ND				1.40	

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 Rice Operating Company  
 Hack Conder  
 112 W. Taylor  
 Hobbs NM, 88240  
 Fax To: (575) 397-1471

 Received: 10/19/2010  
 Reported: 10/28/2010  
 Project Name: BD E-15 LEAK  
 Project Number: NONE GIVEN  
 Project Location: T22S-R37E-SEC15E - LEA CTY., NM

 Sampling Date: 10/14/2010  
 Sampling Type: Water  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: MONITOR WELL #2 (H021097-02)**

BTX 8021B		mg/L		Analyzed By: cms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	10/22/2010	ND	0.055	109	0.0500		
Toluene*	<0.001	0.001	10/22/2010	ND	0.051	103	0.0500		
Ethylbenzene*	<0.001	0.001	10/22/2010	ND	0.052	104	0.0500		
Total Xylenes*	<0.003	0.003	10/22/2010	ND	0.161	107	0.150		

Surrogate: 4-Bromofluorobenzene (PIL) 99.1 % 80-120

Chloride, SM4500Cl-B		mg/L		Analyzed By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	6500	4.00	10/21/2010	ND	108	108	100	3.77	

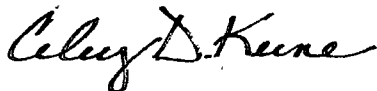
Sulfate 375.4		mg/L		Analyzed By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate	385	10.0	10/20/2010	ND	37.8	94.5	40.0	4.75	

TDS 160.1		mg/L		Analyzed By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS	10900	5.00	10/20/2010	ND				1.40	

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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

Rice Operating Company  
Hack Conder  
112 W. Taylor  
Hobbs NM, 88240  
Fax To: (575) 397-1471

Received: 10/19/2010  
Reported: 10/28/2010  
Project Name: BD E-15 LEAK  
Project Number: NONE GIVEN  
Project Location: T22S-R37E-SEC15E - LEA CTY., NM

Sampling Date: 10/14/2010  
Sampling Type: Water  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson

**Sample ID: MONITOR WELL #3 (H021097-03)**

BTEX 8021B		mg/L		Analyzed By: cms				S-04	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	10/27/2010	ND	0.055	109	0.0500		
Toluene*	<0.001	0.001	10/27/2010	ND	0.051	103	0.0500		
Ethylbenzene*	<0.001	0.001	10/27/2010	ND	0.052	104	0.0500		
Total Xylenes*	<0.003	0.003	10/27/2010	ND	0.161	107	0.150		

Surrogate: 4-Bromofluorobenzene (PIL) 121 % 80-120

Chloride, SM4500Cl-B		mg/L		Analyzed By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	950	4.00	10/21/2010	ND	108	108	100	3.77	

Sulfate 375.4		mg/L		Analyzed By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate	193	10.0	10/20/2010	ND	37.8	94.5	40.0	4.75	

TDS 160.1		mg/L		Analyzed By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS	2500	5.00	10/20/2010	ND				1.40	

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 Rice Operating Company  
 Hack Conder  
 112 W. Taylor  
 Hobbs NM, 88240  
 Fax To: (575) 397-1471

 Received: 10/19/2010  
 Reported: 10/28/2010  
 Project Name: BD E-15 LEAK  
 Project Number: NONE GIVEN  
 Project Location: T22S-R37E-SEC15E - LEA CTY., NM

 Sampling Date: 10/14/2010  
 Sampling Type: Water  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: MONITOR WELL #4 (H021097-04)**

BTX 8021B		mg/L		Analyzed By: cms				S-04	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	10/27/2010	ND	0.055	109	0.0500		
Toluene*	<0.001	0.001	10/27/2010	ND	0.051	103	0.0500		
Ethylbenzene*	<0.001	0.001	10/27/2010	ND	0.052	104	0.0500		
Total Xylenes*	<0.003	0.003	10/27/2010	ND	0.161	107	0.150		

Surrogate. 4-Bromofluorobenzene (PIL) 123 % 80-120

Chloride, SM4500Cl-B		mg/L		Analyzed By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1880	4.00	10/21/2010	ND	108	108	100	3.77	

Sulfate 375.4		mg/L		Analyzed By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate	536	10.0	10/20/2010	ND	37.8	94.5	40.0	4.75	

TDS 160.1		mg/L		Analyzed By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS	4740	5.00	10/20/2010	ND				1.40	

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Celey D. Keene, Lab Director/Quality Manager

**Notes and Definitions**

- S-04            The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
- ND             Analyte NOT DETECTED at or above the reporting limit
- RPD            Relative Percent Difference
- \*\*              Samples not received at proper temperature of 6°C or below.
- \*\*\*             Insufficient time to reach temperature.
- Chloride by SM4500Cl-B does not require samples be received at or below 6°C  
Samples reported on an as received basis (wet) unless otherwise noted on report

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\* = Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

