

YEAR(S): 20//

# Rice Environmental Consulting & Safety

P.O. Box 5630 Hobbs, NM 88241 Phone 575.393.4411 Fax 575.393.0293

CERTIFIED MAIL RETURN RECIEPT NO. 7008 1140 0001 3070 6228

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**January 20<sup>th</sup>, 2012** 

# Mr. Edward Hansen

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

# RE: Update Report and 2011 Annual Groundwater Monitoring Report Rice Operating Company – BD SWD System BD Santa Rita EOL Release Site (AP-58): UL/A sec. 27 T22S R37E

Mr. Hansen:

RICE Operating Company (ROC) has retained Rice Environmental Consulting and Safety (RECS) to address potential environmental concerns at the above-referenced site in the BD Salt Water Disposal (SWD) system. ROC is the service provider (agent) for the BD SWD System and has no ownership of any portion of the pipeline, well, or facility. The system is owned by a consortium of oil producers, System Parties, who provide all operating capital on a percentage ownership/usage basis.

The site is located approximately 4.5 miles southeast of Eunice, New Mexico at UL/A sec. 27 T22S R37E as shown on the Site Location Map. Groundwater sampling at the site indicates that the depth to groundwater is located at +/- 54 ft bgs.

On November  $22^{nd}$ , 2003, ROC discovered a leak from a 2 inch PVC compression coupling. After initial backhoe characterization, the site was disclosed to NMOCD as a potential groundwater impact site on January 6<sup>th</sup>, 2004. Since groundwater impact was suspected, MW-1 was installed on August 30<sup>th</sup>, 2005. On October 30<sup>th</sup>, 2007, an up gradient well, MW-2, and a down gradient well, MW-3, were installed to fully delineate groundwater. NMOCD approved the Amended Stage 2 Abatement Plan on February 4<sup>th</sup>, 2009. As a result, MW-1 was plugged and abandoned on February 27<sup>th</sup>, 2009, and the excavation for liner installation commenced on March 24<sup>th</sup>, 2009. Two 1 ft thick clay layers, one with dimensions of 40 x 20 ft at 30 ft bgs and one with dimensions of 40 x 50 ft at 12 ft bgs, were installed and a 20-mil plastic liner of equal size was placed above both clay layers. Each plastic liner was padded with a foot of blow sand. The site was backfilled with clean soil, contoured to the surrounding location, and seeded with a native vegetative mix. On June 16<sup>th</sup> and 17<sup>th</sup>, 2009, MW-4 and RW-1 were installed at the site.

Recovery efforts from RW-1 commenced on June 22<sup>nd</sup>, 2010. Since that time, approximately 16,527 barrels of groundwater have been removed which equates to approximately 1,839 kg of chlorides removed from the site. Since pumping efforts

began, quarterly groundwater sampling readings have dropped in the down gradient wells (RW-1, MW-3, and MW-4) for both chlorides and TDS. This indicates that the pumping program at the site has been effective in reducing the chloride load in the groundwater. As such, ROC requests that NMOCD allow the pumping program to continue throughout the 2012 year and then ROC will evaluate the data for continued pumping efficacy. In addition, quarterly groundwater sampling will continue through 2012.

Attached is the Appendix, which contains:

- 1. A site location map.
- 2. A table presenting all laboratory results and depths to groundwater for each well at the site.
- 3. Graphs showing the concentrations of chloride and TDS in groundwater over time.
- 4. A map showing the well locations.
- 5. The laboratory analytical results for the most recent sampling event.
- 6. Recent site photos.

RECS appreciates the opportunity to work with you on this project. Please call Hack Conder at (575) 393-9174 or me if you have any questions or wish to discuss the site.

Sincerely,

Lara Weinheimer Project Scientist RECS (575) 441-0431 Site Location Map



	Donth to						Ethyl	Total				
MW	Water	Sample Date	Cl	TDS	Benzene	Toluene	Benzene	Xylenes	Sulfate			
	vvater	•.		(mg/L)								
	54.04	9/2/2005	4480	7600	<0.001	<0.001	<0.001	<0.001	1380			
	53.85	10/24/2005	7170	16400	<0.001	<0.001	<0.001	<0.001	726			
	53.98	1/23/2006	7450	14300	<0.001	<0.001	<0.001	<0.001	723			
	54.07	4/24/2006	7100	14300	<0.001	<0.001	<0.001	<0.001	675			
	54.08	7/19/2006	6180	14000	<0.001	<0.001	<0.001	<0.001	583			
	53.99	10/11/2006	2100	4560	<0.001	<0.001	<0.001	<0.001	408			
	54.1	1/25/2007	2740	4560	<0.001	<0.001	<0.001	<0.001	449			
MW-1	54.11	4/4/2007	2610	5720	<0.001	<0.001	<0.001	<0.003	314			
	53.8	7/9/2007	363	1470	<0.001	<0.001	<0.001	<0.003	267			
	53.87	11/12/2007	356	1398	<0.001	<0.001	<0.001	<0.003	331			
í .	53.88	1/15/2008	408	1499	<0.001	<0.001	<0.001	<0.003	232			
	53.98	4/7/2008	420	1460	<0.001	<0.001	<0.001	<0.003	346			
	54.06	7/22/2008	440	1460	<0.002	<0.002	<0.002	<0.006	271			
	54.11	10/2/2008	392 ·	1390	<0.001	<0.001	<0.001	< 0.003	281			
	54.08	1/14/2009	352	1250	<0.001	<0.001	<0.001	<0.003	250			
		2/27/2009	Monitor Well Plugged and Abandoned									

BD Santa Rita EOL Release (AP-58)

Depth							Ethyl	Total			
MW	Motor	Sample Date	Cl	TDS	Benzene	Toluene	Benzene	Xylenes	Sulfate		
	vvaler			(mg/L)							
	54.55	11/12/2007	160	930	<0.001	<0.001	<0.001	<0.003	257		
	54.57	1/15/2008	128	1001	<0.001	<0.001	<0.001	<0.003	340		
	54.65	4/7/2008	100	982	<0.001	<0.001	<0.001	<0.003	411		
	54.74	7/22/2008	92	931	<0.002	<0.002	<0.002	<0.006	377		
	54.81	10/2/2008	88	902	<0.001	<0.001	<0.001	<0.003	333		
	54.78	1/14/2009	84	850	<0.001	<0.001	<0.001	<0.003	309		
	54.82	4/14/2009	80	858	<0.001	<0.001	<0.001	<0.003	319		
	54.79	7/13/2009	76	802	<0.001	<0.001	<0.001	<0.003	279		
MW-2	54.79	10/8/2009	64	776	<0.001	<0.001	<0.001	<0.003	244		
	54.83	1/6/2010	60	726	<0.001	<0.001	<0.001	<0.003	268		
	54.85	4/9/2010	52	710	<0.001	<0.001	<0.001	<0.003	250		
	55.1	7/9/2010	52	644	<0.001	<0.001	<0.001	<0.003	201		
	55.05	10/6/2010	40	530	<0.001	<0.001	<0.001	<0.003	115		
	54.82	2/11/2011	88	601	<0.001	<0.001	<0.001	<0.003	123		
	54.92	4/12/2011	40	470	<0.001	<0.001	<0.001	<0.003	117		
	55.23	7/18/2011	36	491	<0.001	<0.001	<0.001	<0.003	106		
	55.33	10/13/2011	44	496	< 0.001	<0.001	<0.001	<0.003	121		

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	Donth to						Ethyl	Total		
MW	Water	Sample Date	CI	TDS	Benzene	Toluene	Benzene	Xylenes	Sulfate	
				(mg/L)						
	53.7	11/12/2007	1210	2596	<0.001	<0.001	<0.001	<0.003	326	
	53.69	1/15/2008	1010	2398	<0.001	<0.001	<0.001	<0.003	269	
	53.73	4/7/2008	1080	2620	<0.001	<0.001	<0.001	<0.003	373	
	53.82	7/22/2008	1030	2890	<0.002	<0.002	<0.002	<0.006	292	
	53.86	10/2/2008	1020	2830	<0.001	<0.001	<0.001	<0.003	280	
	53.83	1/14/2009	1050	2670	<0.001	<0.001	<0.001	<0.003	280	
	53.9	4/14/2009	960	2200	<0.001	<0.001	<0.001	<0.003	294	
	53.88	7/13/2009	900	2080	<0.001	<0.001	<0.001	<0.003	270	
MW-3	53.85	10/8/2009	900	2340	<0.001	<0.001	<0.001	<0.003	254	
	54.04	1/6/2010	910	2170	<0.001	<0.001	<0.001	<0.003	254	
	53.94	4/9/2010	1110	2150	<0.001	< 0.001	<0.001	<0.003	181	
	54.94	7/9/2010	780	1840	<0.001	<0.001	<0.001	<0.003	276	
	54.98	10/6/2010	1000	2360	<0.001	<0.001	<0.001	<0.003	266	
	54.38	2/11/2011	780	1560	<0.001	<0.001	<0.001	<0.003	192	
	55.03	4/12/2011	1080	2350	<0.001	<0.001	<0.001	<0.003	274	
	54.61	7/18/2011	720	1740	<0.001	<0.001	<0.001	<0.003	234	
	54.7	10/13/2011	670	1590	<0.001	<0.001	<0.001	<0.003	247	

	Depth to	Sample Date					Ethyl	Total					
MW	Matar		Cl	TDS	Benzene	Toluene	Benzene	Xylenes	Sulfate				
	· water			(mg/L)									
	52.28	7/13/2009	1040	2260	<0.001	<0.001	<0.001	<0.003	230				
	52.23	10/8/2009	1240	3320	<0.001	<0.001	<0.001	<0.003	233				
	52.23	1/6/2010	1200	2750	<0.001	<0.001	<0.001	<0.003	209				
	52.24	4/9/2010	900	2100	<0.001	<0.001	<0.001	<0.003	313				
	52.76	7/9/2010	1450	2810	<0.001	<0.001	<0.001	<0.003	280				
	52.83	10/6/2010	1040	2320	<0.001	<0.001	<0.001	<0.003	251				
	52.22	2/11/2011	610	1490	<0.001	<0.001	<0.001	<0.003	208				
	52.92	4/12/2011	640	1580	<0.001	<0.001	<0.001	<0.003	238				
	52.95	7/18/2011	640	1530	<0.001	<0.001	<0.001	<0.003	232				
	52.91	10/13/2011	450	1160	<0.001	<0.001	<0.001	<0.003	235				

	Depth to						Ethyl	Total			
MW	Mator	Sample Date	Cl ·	TDS	Benzene	Toluene	Benzene	Xylenes	Sulfate		
	vvalei		(mg/L)								
	53.02	7/13/2009	1340	2750	<0.001	<0.001	<0.001	<0.003	288		
	53.01	10/8/2009	1520	2970	<0.001	<0.001	<0.001	<0.003	251		
	53.04	1/6/2010	1480	2880	<0.001	<0.001	<0.001	<0.003	224		
	53.06	4/9/2010	1300	2620	<0.001	<0.001	<0.001	<0.003	290		
	XXX	7/9/2010	1260	2750	<0.001	<0.001	<0.001	<0.003	291		
	XXX	10/6/2010	930	2360	<0.001	<0.001	<0.001	<0.003	298		
	XXX	2/11/2011	850	1800	<0.001	<0.001	<0.001	<0.003	180		
	XXX	4/12/2011	1000	2190	<0.001	<0.001	<0.001	<0.003	298		
	XXX	7/18/2011	740	1740	<0.001	<0.001	<0.001	<0.001	255		
	XXX	10/13/2011	680	1630	<0.001	<0.001	<0.001	<0.003	199		







# **CARDINAL** Laboratories

October 26, 2011

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

RE: BD SANTA RITA LEAK

Enclosed are the results of analyses for samples received by the laboratory on 10/18/11 11:20.

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 Hydorcarbons

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

Cardinal Laboratories is accreditated 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. Keine

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:	10/18/2011	Sampling Date:	10/13/2011
Reported:	10/26/2011	Sampling Type:	Water
Project Name:	BD SANTA RITA LEAK	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	T22S R37E SEC27 A-LEA CTY., NM		

## Sample ID: MONITOR WELL #2 (H102237-01)

BTEX 8021B	mg/L		Analyze	Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	10/20/2011	ND	0.051	103	0.0500	4.42	
Toluene*	<0.001	0.001	10/20/2011	ND	0.052	104	0.0500	3.67	
Ethylbenzene*	<0.001	0.001	10/20/2011	ND	0.052	104	0.0500	4.79	
Total Xylenes*	<0.003	0.003	10/20/2011	ND	0.154	103	0.150	5.47	
Surrogate: 4-Bromofluorobenzene (PIL	101 9	% 70.7-11	8						
Chloride, SM4500Cl-B	mg/	L	Analyzed By: HM						·
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	44.0	4.00	10/26/2011	ND	112	112	100	3.64	
Sulfate 375.4	mg/	L.	Analyze	d By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate	121	10.0	10/24/2011	ND	23.3	116	20.0	15.2	
TDS 160.1	mg/	mg/L Analyzed By: HM		d By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BŞ	% Recovery	True Value QC	RPD	Qualifier
TDS	496	5.00	10/18/2011	ND	222	92.5	240	2.59	

**Cardinal Laboratories** 

### \*=Accredited Analyte

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Celuz D. Kune

Celey D. Keene, Lab Director/Quality Manager



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# Analytical Results For:

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

Received:	10/18/2011	Sampling Date:	10/13/2011
Reported:	10/26/2011	Sampling Type:	Water
Project Name:	BD SANTA RITA LEAK	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	T22S R37E SEC27 A-LEA CTY., NM		

# Sample ID: MONITOR WELL #3 (H102237-02)

BTEX 8021B	mg/L		Analyze	Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	10/20/2011	ND	0.051	103	0.0500	4.42	
Toluene*	<0.001	0.001	10/20/2011	ND	0.052	104	0.0500	3.67	
Ethylbenzene*	<0.001	0.001	10/20/2011	ND	0.052	104	0.0500	4.79	
Total Xylenes*	<0.003	0.003	10/20/2011	ND	0.154	103	0.150	5.47	
Surrogate: 4-Bromofluorobenzene (PIL	103 %	6 70.7-11	8						
Chloride, SM4500CI-B	CI-B mg/L		Analyzed By: HM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	670	4.00	10/26/2011	ND	112	112	100	3.64	
Sulfate 375.4	mg/	L	Analyze	d By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate	247	10.0	10/24/2011	ND	23.3	116	20.0	15.2	
TDS 160.1 mg/L		Analyzed By: HM							
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS	1590	5.00	10/18/2011	ND	222	92.5	240	2.59	

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Celey D. Keine

Celey D. Keene, Lab Director/Quality Manager

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## Analytical Results For:

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

Received:	10/18/2011	Sampling Date:	10/13/2011
Reported:	10/26/2011	Sampling Type:	Water
Project Name:	BD SANTA RITA LEAK	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	T22S R37E SEC27 A-LEA CTY., NM		

# Sample ID: MONITOR WELL #4 (H102237-03)

BTEX 8021B	mg/	<u>′L</u>	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	10/20/2011	ND	0.051	103	0.0500	4.42	
Toluene*	<0.001	0.001	10/20/2011	ND	0.052	104	0.0500	3.67	
Ethylbenzene*	<0.001	0.001	10/20/2011	ND	0.052	104	0.0500	4.79	
Total Xylenes*	<0.003	0.003	10/20/2011	ND	0.154	103	0.150	5.47	
Surrogate: 4-Bromofluorobenzene (PIL	101 :	% 70.7-11	8						
Chloride, SM4500Cl-B	mg/	′L	Analyze	d By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	450	4.00	10/26/2011	ND	112	112	100	3.64	
Sulfate 375.4	mg/	′L	Analyze	d By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate	235	10.0	10/24/2011	ND	23.3	116	20.0	15.2	
TDS 160.1	mg/	′L	Analyze	d By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS	1160	5.00	10/18/2011	ND	222	92.5	240	2.59	

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Celey D. Keene, Lab Director/Quality Manager

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## Analytical Results For:

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

Received:	10/18/2011	Sampling Date:	10/13/2011
Reported:	10/26/2011	Sampling Type:	Water
Project Name:	BD SANTA RITA LEAK	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	T22S R37E SEC27 A-LEA CTY., NM		

# Sample ID: RECOVERY WELL #1 (H102237-04)

BTEX 8021B	mg/	۲ <b>L</b>	Analyze	d By: MS		. •			
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	10/20/2011	ND	0.051	103	0.0500	4.42	
Toluene*	< 0.001	0.001	10/20/2011	ND	0.052	104	0.0500	3.67	
Ethylbenzene*	<0.001	0.001	10/20/2011	ND	0.052	104	0.0500	4.79	
Total Xylenes*	<0.003	0.003	10/20/2011	ND	0.154	103	0.150	5.47	
Surrogate: 4-Bromofluorobenzene (PIL	104 9	% 70.7-11	8						
Chloride, SM4500CI-B	mg/	L	Analyze	d By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	680	4.00	10/26/2011	ND	112	112	100	3.64	
Sulfate 375.4	mg/	۲ <b>L</b>	Analyze	d By: HM					•
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate	199	10.0	10/24/2011	ND	23.3	116	20.0	15.2	
TDS 160.1	mg/	۲ <b>L</b>	Analyze	d By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS	1630	5.00	10/18/2011	ND .	222	92.5	240	2.59	

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Celing D. Kune

Celey D. Keene, Lab Director/Quality Manager



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## **Notes and Definitions**

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 SM4500CI-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on repor

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