

# REPORTS

# DATE: 9-26-13

# **Texerra LLC**

# RECEIVED OCD RECEIVED OCD

2013 SEP 30 P 2: 129055 Laredo Lans Monuments Colorado 80132 Tel: 719-339-6791 E-mail: <u>lpg@texerra.com</u>

#### September 26<sup>th</sup>, 2013

#### Mr. Edward Hansen

Oil Conservation Division, Environmental Bureau 1220 S. St. Francis Drive Santa Fe, New Mexico 87505

#### Re: **Rice Operating Company**

Groundwater Recovery Corrective Action Plan (CAP) Progress Report & Termination Request BD N-18 Below Grade Tanks (BGT) - East BGT and West BGT NMOCD Case No. 1R-500 UL-N, Sec 18, T22S, R37E

Sent via E-mail and U.S. Certified Mail w/ Return Receipt No. 7007 2560 0001 9729 0737

Mr. Hansen,

This letter is to summarize remedial work completed for the Rice Operating Company (ROC) BD N-18 BGT project. This project is located approximately 4 miles southwest of Eunice.

#### Background

Rice Operating Company utilized Palmer of Texas to complete an integrity test of the two belowgrade tanks at the BD N-18 SWD system in July 2009 and ROC completed a preliminary soils investigation in October 2009. The tanks were found to have integrity, and based on analysis of soils near and adjacent to the tanks, it was concluded that the hydrocarbon found in the excavated soils was from surface overflow rather than tank leakage.

Between October 5 and December 21, 2010, ROC personnel were onsite to oversee the installation of eight soil bores and three monitor wells (MW-1 through MW-3) located within, up and down gradient of the former tank location. These wells have been sampled on a quarterly basis since installation. Quarterly monitoring well sampling confirmed that an up- gradient source is contributing to the degradation of groundwater quality.

On July 1, 2011, ROC submitted a Corrective Action Plan (CAP) for the site and was approved by NMOCD on July 13, 2011. The CAP addressed elevated levels of chlorides within the soil which included placement of a barrier at 30 feet bgs, a second liner at 5 feet bgs, and importing caliche for pad repair. The former below grade tank location is still an active facility pad; therefore, seeding was not required. In addition, the CAP proposed a chloride mass removal from MW-1. NMOCD's approval required ROC to recalculate the amount of groundwater to be recovered (based on the chloride concentration in the recovered groundwater) on a bi-weekly basis; as well as, recover a sufficient amount of groundwater to remove the calculated amount of chloride as specified in the plan or to create a significant reduction in chloride concentration in the groundwater.

#### BD N-18 BGT

Beginning November 2011, the site was excavated to a depth of 27 ft bgs, where rock was encountered. A CAP Addendum was submitted to NMOCD requesting to install the liner at 27 ft bgs, which NMOCD approved on January 23, 2012. The bottom of the excavation was padded with six inches of blow sand, and a 98 ft x 98 ft liner was installed and properly seated. The liner was then padded with six inches of blow sand and the site was backfilled with blended soil to 5 feet bgs. At 5 feet bgs, a second 108 ft x 108 ft liner was installed with a blow sand pad below and above the liner. The remainder of the excavation was backfilled with blended soil. Clean caliche was imported to the site to complete backfill, contour the site to the surrounding area and repair the pad. ROC submitted a CAP Progress Report on March 6, 2012 and received NMOCD approval and Soil Closure on June 26, 2012.

#### Groundwater Recovery Efforts

Groundwater recovery began on June 7, 2012 from MW-1 and continued through early August 2013. During that time, 2,766 barrels of groundwater were extracted. A lab sample was collected each month and used to calculate the number of kilograms (kg) removed based on the volume of groundwater removed that month. The total chloride removed from MW-1 is 2,058 kg. A summary of the groundwater withdrawal and a lab result from each month is attached. ROC extracted the required 1,927 kg of chlorides from the groundwater as approved by NMOCD in the CAP.

ROC acknowledges they have met the requirements of 19.15.29 NMAC, and respectfully requests termination or similar closure status of the regulatory file (1R-500). ROC also acknowledges they have met the requirements of 19.15.17 NMAC, and requests termination or similar closure status for the east BGT and west BGT previously located at this site. Upon NMOCD approval, ROC will plug and abandon all three monitoring wells (MW-1, MW-2, and MW-3) with a 1-3% cement grout and 3 ft of cement at the surface.

Rice Operating Company (ROC) is the service provider (agent) for the BD Saltwater Disposal (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.

We appreciate your review of this report and your consideration of our request for termination. Please contact either myself or Rice Operating Company if you have any questions or need additional information.

Sincerely,

L. Peter Galusky, Jr. Ph.D. Principal

Copy: Rice Operating Company

#### BD N-18 BGT

### Attachments:

# Figures

- ✓ Site location map
- ✓ Survey of monitor well locations

# Appendix A

- ✓ Summary of groundwater chloride withdrawals
- ✓ Monthly groundwater sample from MW-1

# Appendix B

- ✓ East BGT C-144
- ✓ West BGT C-144

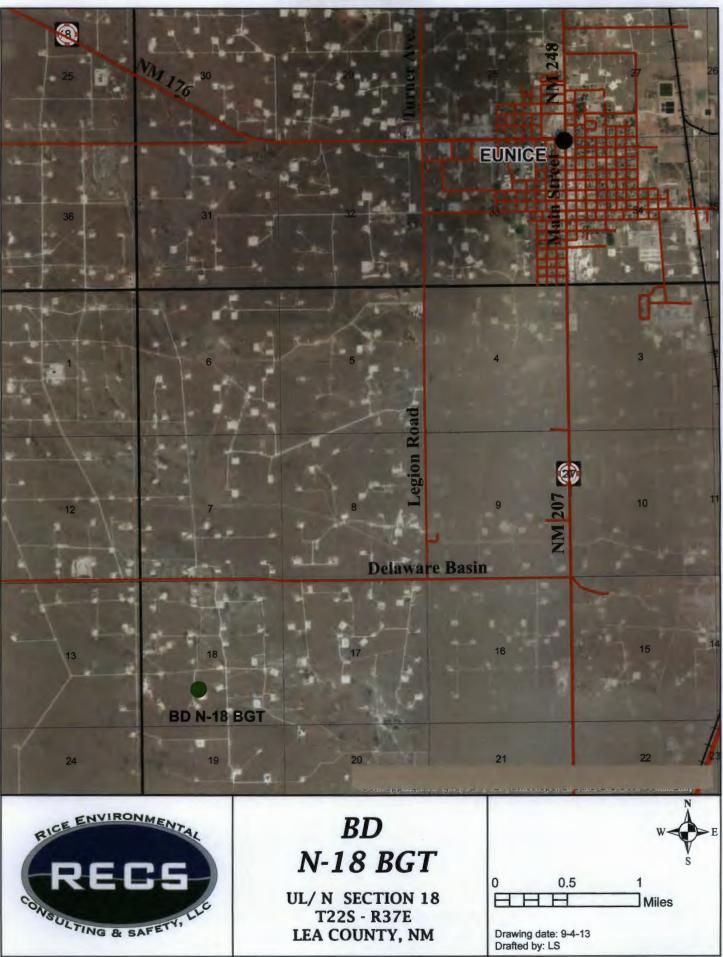
# Appendix C

✓ East BGT and West BGT C-144 documentation

# Appendix D

✓ Final C-141

# SITE MAP





OWNER: STATE OF NEW MEXICO LESSEE: MILLARD DECK, EST

SITE

مستنف والمناقب والمتعلق

NOTE: ELEVATIONS ARE ON BLACK MARK ON NORTH SIDE OF PVC CASING.

WW

#### NEW MEXICO STATE PLANE COORDINATES (NAD83)

WELL	NORTHING	EASTING	LATITUDE	LONGITUDE	ELEV. PVC	ELEV. CON	ELEV. GRND.
MW-1	506668.399	890250948	N.: 3223'16.2"	W.: 10372'10.8"	3423.82'	3421.73'	3421.5'
MW-2	506772.761	890143.492	N.: 32*23'17.2"	W.: 10372'12.1"	3424.75'	3422.60'	3422.2'
MW-3	506519.399	890391.843	N.: 32°23'14.7"	W.: 10372'09.2"	3421.51'	3419.22'	3418.9'

I HEREBY CERTIFY HALL HIS MELAT WAS REPARED	100 0 100 200 FEET HHHHH SCALE: 1" = 100'
FROM FIELD NOTES OF AN OFFICE COUPLET AND MEETS OR EXCEEDS ALL REQUIREMENTS FOR LAND SURVEYS AS SPECIFIED BY THIS STATE.	RICE OPERATING COMPANY REF: BD N-18 BGT SITE
GARY L. JONES TASK TO THE TOTAL STATES TO TAKES TO THE TOTAL STATES TO TOTAL STATES TO TAL STATES TOTAL STATES TOTAL STATES TO	MONITOR WELLS LOCATED IN SECTION 18, TOWNSHIP 22 SOUTH, RANGE 37 EAST,
BASIN SURVEYS P.O. BOX 1786-HOBBS, NEW MEXICO	N.M.P.M., LEA COUNTY, NEW MEXICO.
W.O. Number: 23954 Drawn By: K. GOAD	
Date: 03-15-2011 Disk: KJG - 23954MW.DWG	Survey Date: 03-14-2011 Sheet 2 of 2 Sheets

# **APPENDIX A**

Groundwater Withdrawal Log Monthly Lab Results

Total			2,766	2,058					
August	2013	3,850	210	129					
July	2013	4,050	140	90					
June	2013	3,800	200	121					
May	2013	5,300	402	339					
April	2013	5,100	282	229					
October	2012	3,950	270	170					
September	2012	4,650	310	229					
August	2012	5,100	263	213					
July	2012	4,450	345	244					
June	2012	5,400	344	295					
Month	Year	ear Groundwater Cl- Groundwater Chloride Concentration Removed (bbls) Removed (kg) (mg/L)							
BE N-18 BOT - Summary Record of Groundwater Chloride Removal									
BD N-18 BGT - Summary Record of Groundwater Chloride Removal									
Rice Operating Company									



June 26, 2012

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

RE: BD N-18 BGT

Enclosed are the results of analyses for samples received by the laboratory on 06/21/12 15:45.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-11-3. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab\_accred\_certif.html.

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 (V1, 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,

Celeg D. Keine

Celey D. Keene Lab Director/Quality Manager



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

Received:	06/21/2012	Sampling Date:	06/21/2012
Reported:	06/26/2012	Sampling Type:	Water
Project Name:	BD N-18 BGT	Sampling Condition:	** (See Notes)
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	T22S R37E SEC 18 N ~ LEA COUNTY, NM		

#### Sample ID: MONITOR WELL #1 (H201416-01)

Chloride, SM4500Cl-B mg/L		Analyze	d By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	5400	4.00	06/26/2012	ND	100	100	100	0.00	

#### **Cardinal Laboratories**

#### \*=Accredited Analyte

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Celey D. Kune

Celey D. Keene, Lab Director/Quality Manager



#### **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 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. Kune

Celey D. Keene, Lab Director/Quality Manager

#### CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

ARDINAL LABORATORIES

101 East Marland, Hobbs, NM 88240 2111 Beechwood, Abilene, TX 79603

(505) 393-2326 FAX (505) 393-2476 (325) 673-7001 FAX (325)673-7020

Company Name: Kick			BILL TO					/	ANAL	-YSIS	REQU	EST	 	
Project Manager: Hack Co	onder		P.O. #:											
Address:			Company:						SC					
City: Hobbs	State: NM	Zip: 88240	Atin:						Cations/Anions					
Phone #:	Fax #:		Address:	-					An					
Project #:	Project Owner		City:		S	Σ		I	ls/					
Project Name:			Stale: Zip:		qe	15	$\times$		Ы	S				
Project Location: $13 f_{c}$ ;	<u>V-18-156-1</u>		Phone #:		Chlorides	8	BTEX	Texas TPH	at	Ĕ				
Sampler Name: Kyle Norm	nan		Fax #:		Ĕ	I	m	X		-				
FOR LAB USE ONLY Lab I.D. S H201416	ample I.D.	XILLTAN (G)RAB OR (C)OMP CONTAINERS CON		TIME	V	TPH 8015			Complete					
analyses. All claims including those for negline	nal's liability and client's exclusive remedy for ai ence and any other cause whalsoever shall be d	eemed waived unless made in writing and	d received by Cardinal within 30 days after	completion of the	applicabl	le								
affikates or successors arising out of er related	rincidental or consequental damages, including to the performance of services hereunder by Ca	rdinal, regardless of whether such claim		sons or otherwise.		CI V		No	Add'l F	hone			 	
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Relinquished By:	Date: Time:	Received By:		email r Knorm	an@	Drice	e-ecs	s.cor	n; lp	ena(	@rices			
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† Cardinal cannot accept vorbal changes. Please fax written changes to 505-393-2476



August 08, 2012

Hack Conder Rice Operating Company 112 W. Taylor

Hobbs, NM 88240

RE: BD N-18 BGT

Enclosed are the results of analyses for samples received by the laboratory on 07/31/12 14:26.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-11-3. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at <a href="https://www.tceq.texas.gov/field/qa/lab\_accred\_certif.html">www.tceq.texas.gov/field/qa/lab\_accred\_certif.html</a>.

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Sincerely,

Celeg D. Kune

Celey D. Keene Lab Director/Quality Manager



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

Received:	07/31/2012	Sampling Date:	07/26/2012
Reported:	08/08/2012	Sampling Type:	Water
Project Name:	BD N-18 BGT	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	T22S R37E SEC 18 N ~ LEA COUNTY, №		

#### Sample ID: MONITOR WELL #1 (H201767-01)

BTEX 8021B	mg/	L	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	08/02/2012	ND	0.045	90.8	0.0500	2.52	
Toluene*	<0.001	0.001	08/02/2012	ND	0.047	94.2	0.0500	1.93	
Ethylbenzene*	< 0.001	0.001	08/02/2012	ND	0.048	95.1	0.0500	3.25	
Total Xylenes*	<0.003	0.003	08/02/2012	ND	0.142	<del>9</del> 4.7	0.150	3.29	
Surrogate: 4-Bromofluorobenzene (PIL	99.3	89.5-12	6						
Chloride, SM4500CI-B	mg/	L	Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	4450	4.00	08/07/2012	ND	104	104	100	3.92	
Sulfate 375.4	mg/	L	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	509	10.0	08/06/2012	ND	23.6	118	20.0	3.84	
TDS 160.1	mg/	L	Analyze	d By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	7700	5.00	08/01/2012	ND	227	94.6	240	2.32	

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\*=Accredited Analyte

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Celey Di Keine

Celey D. Keene, Lab Director/Quality Manager



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

Received:	07/31/2012	Sampling Date:	07/26/2012
Reported:	08/08/2012	Sampling Type:	Water
Project Name:	BD N-18 BGT	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	T22S R37E SEC 18 N ~ LEA COUNTY, NM		

#### Sample ID: MONITOR WELL #2 (H201767-02)

BTEX 8021B	mg/	/L	Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	< 0.001	0.001	08/02/2012	ND	0.045	90.8	0.0500	2.52	
Toluene*	<0.001	0.001	08/02/2012	ND	0.047	94.2	0.0500	1.93	
Ethylbenzene*	< 0.001	0.001	08/02/2012	ND	0.048	95.1	0.0500	3.25	
Total Xylenes*	< 0.003	0.003	08/02/2012	ND	0.142	<b>94</b> .7	0.150	3.29	
Surrogate: 4-Bromofluorobenzene (PIL	98.7	% 89.5-12	6						
Chloride, SM4500Cl-B	mg,	/L	Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	1340	4.00	08/07/2012	ND	104	104	100	3.92	
Sulfate 375.4	mg,	/L	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	455	10.0	08/06/2012	ND	23.6	118	20.0	3.84	
TDS 160.1	mg,	/L	Analyze	d By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	3430	5.00	08/01/2012	ND	227	94.6	240	2.32	

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Celey L. Kune

Celey D. Keene, Lab Director/Quality Manager



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

Received:	07/31/2012	Sampling Date:	07/26/2012
Reported:	08/08/2012	Sampling Type:	Water
Project Name:	BD N-18 BGT	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	T22S R37E SEC 18 N ~ LEA COUNTY, NM		

#### Sample ID: MONITOR WELL #3 (H201767-03)

BTEX 8021B	mg/	mg/L Ana		d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	08/02/2012	ND	0.045	90.8	0.0500	2.52	
Toluene*	<0.001	0.001	08/02/2012	ND	0.047	94.2	0.0500	1.93	
Ethylbenzene*	<0.001	0.001	08/02/2012	ND	0.048	95.1	0.0500	3.25	
Total Xylenes*	<0.003	0.003	08/02/2012	ND	0.142	94.7	0.150	3.29	
Surrogate: 4-Bromofluorobenzene (PIL	99.3	% 89.5-12	6						
Chloride, SM4500CI-B	mg/	/L	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifie
Chloride*	1640	4.00	08/07/2012	ND	104	104	100	3.92	
Sulfate 375.4	mg/	/L	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifie
Sulfate*	368	10.0	08/06/2012	ND	23.6	118	20.0	3.84	
TDS 160.1	mg/	/L	Analyze	d By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifie
TDS*	3420	5.00	08/01/2012	ND	235	97.9	240	2.17	

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Celey D. Kune

Celey D. Keene, Lab Director/Quality Manager



#### **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 report

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Celey D. Kune

Celey D. Keene, Lab Director/Quality Manager

Page\_\_1\_\_of\_\_1\_\_

Project #: Project Name: BD N-18 Below Grade Toppet Location T22S R37E Sec18 N ~ Lea County New Mex	B F 11 (( (#: 75) 3 Tank kico	307- 307- 4	Or Taylo	Com Dera Addr Phor Sam Sam	pany: ating ess: eet ~ H ne#:	Con lobbs	npa , Nev	any w Mes	(Str kico I	F eet. C 88240 F ( ( e Johr	0# ty, Zip ax#: 575) son (5	) 397-1 •75)631-	9310 2015			TPH 418.1/TX1005 / TX1005 Extended (C35)	Cr Ph Se Ho 60108/200 7	r Pb Se Hg	Orde AN (Circl	ALY	/SI		Meth					3)			SI
Company Name: RICE Operating Company Project Manager: Hack Conder Address: (Street. City. Zip) 122 W Taylor Street ~ Hobbs, New Mexico 88240 Phone #: Fax (575) 393-9174 (5 Project #: Project Name: BD N-18 Below Grade T Project Location: T22S R37E Sec18 N ~ Lea County New Mex LAB # FIELD CODE	75) 3 Tank	RICE 22 W 575) 397- 4	Taylo	Addr or Stre Phon 3-9 1 Sam	nting ess: eet ~ H he# 174	nobbs.	, Nev	w Mex	anne SEF	eet. C 88240 F ( (	ty, Zip ax#: 575) son (5	397-1 .75)631-	9310 2015			005 Extended (C35)	Ph Se Ho						Meth					3)			SI
Project Manager. Hack Conder Address: (Street City. Zip) 122 W Taylor Street ~ Hobbs, New Mexico 88240 Phone #: Fax (575) 393-9174 (5' Project #: Project Name: BD N-18 Below Grade T Project Location: T22S R37E Sec18 N ~ Lea County New Mex LAB # LAB # FIELD CODE	11 ( ( ( ( ( ( ( ( ( ( ( ( ( ( ( ( ( (	22 W (575) 397- K	Taylo	Addro Phon 03-9 1 Samj	ess: eet ~ H ne#: 174	nobbs.	, Nev	w Mex	anne SEF	88240 F ( e Johr	ax#: 575) son (t	397-1 .75)631-	9310 2015			005 Extended (C35)	Ph Se Ho						Meth					3)			SI
Hack Conder         Address:       (Street City. Zip)         122 W Taylor Street ~ Hobbs, New Mexico 88240         Phone #:       Fax         (575) 393-9174       (5)         Project #:       Project Name.         BD N-18 Below Grade       Project Location:         T22S R37E Sec18 N ~ Lea County New Mex         LAB #       FIELD CODE         (LAB USE ONLY       (S)	(#) 75) 3 Tank (ico	397- K	Taylo	Phon 93-9 1 Sam	eet ~ H he# 174	) gnatu	re	PRE	anne SEF	88240 F ( e Johr	ax#: 575) son (t	397-1 .75)631-	9310 2015			005 Extended (C35)	Ph Se Ho											3)			SI
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August 22, 2012

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

RE: BD N-18 BGT

Enclosed are the results of analyses for samples received by the laboratory on 08/16/12 15:40.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-11-3. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at <a href="https://www.tceq.texas.gov/field/qa/lab">www.tceq.texas.gov/field/qa/lab</a> accredited certif.html.

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 (V1, 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,

Celeg D. Keine

Celey D. Keene Lab Director/Quality Manager



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

Received:	08/16/2012	Sampling Date:	08/16/2012
Reported:	08/22/2012	Sampling Type:	Water
Project Name:	BD N-18 BGT	Sampling Condition:	** (See Notes)
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	T22S R37E SEC 18 N ∼ LEA COUNTY, NN		

#### Sample ID: MONITOR WELL #1 (H201926-01)

Chloride, SM4500Cl-B	500Cl-B mg/L		Analyze	d By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	5100	4.00	08/21/2012	ND	100	100	100	7.69	

#### **Cardinal Laboratories**

#### \*=Accredited Analyte

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Celey Di treene-

Celey D. Keene, Lab Director/Quality Manager

Page D of 4



#### **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 report

#### **Cardinal Laboratories**

#### \*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whetscever shall be deemed waived unless made in writing and received by claims, including those for angularity and thin thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidential or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subscitairies, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such climits based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be erroduced except in full with writem approval of Cardinal laboratories.

Celey Di Keine

Celey D. Keene, Lab Director/Quality Manager

Page □ of 4

# CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

ARDINAL LABORATORIES

101 East Marland, Hobbs, NM 88240 2111 Beechwood, Abilene, TX 79603 (505) 393 2326 EAX (505) 393 2476 (325) 573 7001 EAX (325)573 7020

Company Name:		(1)					Ţ		Statement of the local division of the local	LL TO						ANAI	YSIS	RE	QUE	ST			
Project Manager:	Hack Conder							P.O. #:				1											
Address:							ł (	Compa	iny:							S							
City: Hobbs	Sta	ate: NM	Zip:	8824	40			Atin:								Ъ							
Phone #:	Fax	#:						Addres	ss:			_				, L							
Project#:	Pro	ject Owner:						City:				- 0	Σ		r	s//							
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† Cardinal cannot accept verbal changes. Please fax written changes to 505-393-2476

#26



September 27, 2012

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

RE: BD N-18 BGT

Enclosed are the results of analyses for samples received by the laboratory on 09/19/12 15:50.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-11-3. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at <a href="https://www.tceq.texas.gov/field/qa/lab">www.tceq.texas.gov/field/qa/lab</a> accredited certif.html.

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 (V1, 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



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

Received:	09/19/2012	Sampling Date:	09/19/2012
Reported:	09/27/2012	Sampling Type:	Water
Project Name:	BD N-18 BGT	Sampling Condition:	** (See Notes)
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	T22S R37E SEC 18 N ∼ LEA COUNTY, N		
-			

#### Sample ID: MONITOR WELL #1 (H202287-01)

Chloride, SM4500Cl-B	mg/L		Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	4650	4.00	09/26/2012	ND	100	100	100	0.00	

#### Cardinal Laboratories

#### \*=Accredited Analyte

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Celey Z. Keine-

Celey D. Keene, Lab Director/Quality Manager



#### **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 report

#### **Cardinal Laboratories**

#### \*=Accredited Analyte

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Celey Di Kiene

Celey D. Keene, Lab Director/Quality Manager

#### ARDINAL LABORATORIES

#### CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

101 East Marland, Hobbs, NM 88240 2111 Beechwood, Abilene, TX 79603

(505) 393-2326 FAX (505) 393-2476 (325) 673-7001 FAX (325)673-7020

Company Name: Rice			BILL TO				ļ	ANALY	SIS RE	QUEST		
Project Manager: Hack Co	nder		P.O. #:									
Address:	agente de la companya		Company:					S				
City: Hobbs	State: NM	Zip: 88240	Atin:					<u>p</u>				
Phone #:	Fax #:	Parameters and a second s	Address:					4				
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Project Location: BD 10	1-18 BGT	an and house the state of the	Phone #:			BTEX	'ω	iai i	รา			
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† Cardinal cannot accept verbal changes. Please fax written changes to 505-393-2476

#26



October 31, 2012

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

RE: BD N-18 BGT

Enclosed are the results of analyses for samples received by the laboratory on 10/25/12 16:40.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-11-3. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at <a href="https://www.tceq.texas.gov/field/qa/lab">www.tceq.texas.gov/field/qa/lab</a> accredited certif.html.

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 (V1, 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



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

Received:	10/25/2012	Sampling Date:	10/23/2012
Reported:	10/31/2012	Sampling Type:	Water
Project Name:	BD N-18 BGT	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	T22S R37E SEC 18 N ∼ LEA COUNTY, NN		

#### Sample ID: MONITOR WELL #1 (H202610-01)

BTEX 8021B	mg/	L	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	< 0.001	0.001	10/29/2012	ND	0.020	101	0.0200	3.82	
Toluene*	< 0.001	0.001	10/29/2012	ND	0.022	110	0.0200	4.89	
Ethylbenzene*	<0.001	0.001	10/29/2012	ND	0.022	109	0.0200	5.48	
Total Xylenes*	<0.003	0.003	10/29/2012	ND	0.066	110	0.0600	5.90	
Total BTEX	<0.006	0.006	10/29/2012	ND					
Surrogate: 4-Bromofluorobenzene (PIL	109 9	89.5-12	6						
Chloride, SM4500Cl-B	mg/	L	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	3950	4.00	10/29/2012	ND	100	100	100	3.92	
Sulfate 375.4	mg/	L	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	456	10.0	10/30/2012	ND	16.2	81.1	20.0	21.2	
TDS 160.1	mg/	L	Analyze	d By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	7070	5.00	10/29/2012	ND	234	97.5	240	1.43	

#### Cardinal Laboratories

\*=Accredited Analyte

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Celey L. Kune

Celey D. Keene, Lab Director/Quality Manager



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

Received:	10/25/2012	Sampling Date:	10/23/2012
Reported:	10/31/2012	Sampling Type:	Water
Project Name:	BD N-18 BGT	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	T22S R37E SEC 18 N ∼ LEA COUNTY, NN		

#### Sample ID: MONITOR WELL #2 (H202610-02)

BTEX 8021B	mg/	L	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	10/29/2012	ND	0.020	101	0.0200	3.82	
Toluene*	< 0.001	0.001	10/29/2012	ND	0.022	110	0.0200	4.89	
Ethylbenzene*	<0.001	0.001	10/29/2012	ND	0.022	109	0.0200	5.48	
Total Xylenes*	<0.003	0.003	10/29/2012	ND	0.066	110	0.0600	5.90	
Total BTEX	<0.006	0.006	10/29/2012	ND					
Surrogate: 4-Bromofluorobenzene (PIL	108 9	89.5-12	6						
Chloride, SM4500CI-B	mg/	L	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	1240	4.00	10/29/2012	ND	100	100	100	3.92	
Sulfate 375.4	mg/	L	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	430	10.0	10/30/2012	ND	16.2	81.1	20.0	21.2	
TDS 160.1	mg/	L	Analyze	d By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	2960	5.00	10/29/2012	ND	234	97.5	240	1.43	

#### **Cardinal Laboratories**

#### \*=Accredited Analyte

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Celey D. Keine

Celey D. Keene, Lab Director/Quality Manager



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

Received:	10/25/2012	Sampling Date:	10/23/2012
Reported:	10/31/2012	Sampling Type:	Water
Project Name:	BD N-18 BGT	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	T22S R37E SEC 18 N ~ LEA COUNTY, N№		

#### Sample ID: MONITOR WELL #3 (H202610-03)

BTEX 8021B	mg/	L	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	10/29/2012	ND	0.020	101	0.0200	3.82	
Toluene*	<0.001	0.001	10/29/2012	ND	0.022	110	0.0200	4.89	
Ethylbenzene*	<0.001	0.001	10/29/2012	ND	0.022	109	0.0200	5.48	
Total Xylenes*	<0.003	0.003	10/29/2012	ND	0.066	110	0.0600	5.90	
Total BTEX	<0.006	0.006	10/29/2012	ND					
Surrogate: 4-Bromofluorobenzene (PIL	108 %	6 89.5-12	6						
Chloride, SM4500Cl-B	mg/	L	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	1100	4.00	10/29/2012	ND	100	100	100	3.92	
Sulfate 375.4	mg/	L	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	331	10.0	10/30/2012	ND	16.2	81.1	20.0	21.2	
TDS 160.1	mg/	L	Analyze	d By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	2520	5.00	10/29/2012	ND	234	97.5	240	1.43	

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\*=Accredited Analyte

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Celey D. Kune

Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

#### **Notes and Definitions**

QR-02	The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.
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 & Kune

Celey D. Keene, Lab Director/Quality Manager

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May 03, 2013

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

RE: BD N-18 BGT

Enclosed are the results of analyses for samples received by the laboratory on 04/29/13 8:46.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-11-3. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at <a href="https://www.tceq.texas.gov/field/qa/lab">www.tceq.texas.gov/field/qa/lab</a> accredited analytes and matrices visit the TCEQ website at <a href="https://www.tceq.texas.gov/field/qa/lab">www.tceq.texas.gov/field/qa/lab</a> accredited analytes and matrices visit the TCEQ website at <a href="https://www.tceq.texas.gov/field/qa/lab">www.tceq.texas.gov/field/qa/lab</a> accredited analytes and matrices visit the TCEQ website at <a href="https://www.tceq.texas.gov/field/qa/lab">www.tceq.texas.gov/field/qa/lab</a> accredited certif.html.

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 (V1, 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,

Celeg D. Keine

Celey D. Keene Lab Director/Quality Manager



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

Received:	04/29/2013	Sampling Date:	04/25/2013
Reported:	05/03/2013	Sampling Type:	Water
Project Name:	BD N-18 BGT	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	T22S R37E SEC 18 N ~ LEA COUNTY, NN		

#### Sample ID: MONITOR WELL #1 (H301000-01)

BTEX 8021B	mg/	L	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	05/01/2013	ND	0.055	110	0.0500	5.58	
Toluene*	<0.001	0.001	05/01/2013	ND	0.049	98.2	0.0500	4.19	
Ethylbenzene*	<0.001	0.001	05/01/2013	ND	0.052	104	0.0500	5.63	
Total Xylenes*	<0.003	0.003	05/01/2013	ND	0.159	106	0.150	6.99	
Total BTEX	<0.006	0.006	05/01/2013	ND					
Surrogate: 4-Bromofluorobenzene (PIL	103 %	% 89.5-12	6				<b>.</b>		
Chloride, SM4500Cl-B	mg/	L	Analyzed By: DW						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	5100	4.00	04/29/2013	ND	108	108	100	0.00	
Sulfate 375.4	mg/	L	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	466	83.3	04/29/2013	ND	19.0	95.1	20.0	9.30	
TDS 160.1	mg/	L	Analyze	d By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	8040	5.00	05/01/2013	ND	242	101	240	0.263	

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#### \*=Accredited Analyte

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Celey D. Kune

Celey D. Keene, Lab Director/Quality Manager



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

Received:	04/29/2013	Sampling Date:	04/25/2013
Reported:	05/03/2013	Sampling Type:	Water
Project Name:	BD N-18 BGT	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	T22S R37E SEC 18 N ∼ LEA COUNTY, NN		

#### Sample ID: MONITOR WELL #2 (H301000-02)

BTEX 8021B	mg/L		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	05/01/2013	ND	0.055	110	0.0500	5.58	
Toluene*	<0.001	0.001	05/01/2013	ND	0.049	98.2	0.0500	4.19	
Ethylbenzene*	<0.001	0.001	05/01/2013	ND	0.052	104	0.0500	5.63	
Total Xylenes*	<0.003	0.003	05/01/2013	ND	0.159	106	0.150	6.99	
Total BTEX	<0.006	0.006	05/01/2013	ND					
Surrogate: 4-Bromofluorobenzene (PIL	103 %	6 89.5-12	6						
Chloride, SM4500CI-B	mg/L		Analyzed By: DW						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	1340	4.00	04/29/2013	ND	108	108	100	0.00	
Sulfate 375.4 mg		L	Analyze	d By: AP				_	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	488	83.3	04/29/2013	ND	19.0	95.1	20.0	9.30	
TDS 160.1	mg/L		Analyzed By: CK						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	2920	5.00	05/01/2013	ND	242	101	240	0.263	

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Celez D. Keine

Celey D. Keene, Lab Director/Quality Manager



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

Received:	04/29/2013	Sampling Date:	04/25/2013
Reported:	05/03/2013	Sampling Type:	Water
Project Name:	BD N-18 BGT	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	T22S R37E SEC 18 N ~ LEA COUNTY, NM		

#### Sample ID: MONITOR WELL #3 (H301000-03)

BTEX 8021B	mg/L		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	05/01/2013	ND	0.055	110	0.0500	5.58	
Toluene*	<0.001	0.001	05/01/2013	ND	0.049	98.2	0.0500	4.19	
Ethylbenzene*	<0.001	0.001	05/01/2013	ND	0.052	104	0.0500	5.63	
Total Xylenes*	<0.003	0.003	05/01/2013	ND	0.159	106	0.150	6.99	
Total BTEX	<0.006	0.006	05/01/2013	ND					
Surrogate: 4-Bromofluorobenzene (PIL	104 %	6 89.5-12	6						
Chloride, SM4500Cl-B	mg/L		Analyzed By: DW						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	1140	4.00	04/29/2013	ND	108	108	100	0.00	
Sulfate 375.4	mg/	L	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	517	83.3	04/29/2013	ND	19.0	95.1	20.0	9.30	
TDS 160.1	mg/L		Analyzed By: CK						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	2620	5.00	05/01/2013	ND	242	101	240	0.263	

#### Cardinal Laboratories

#### \*=Accredited Analyte

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Celey D. Keine

Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

#### **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 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. Kune

Celey D. Keene, Lab Director/Quality Manager

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May 14, 2013

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

RE: BD N-18 BGT

Enclosed are the results of analyses for samples received by the laboratory on 05/13/13 16:06.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-11-3. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at <a href="https://www.tceq.texas.gov/field/qa/lab">www.tceq.texas.gov/field/qa/lab</a> accredited analytes and matrices visit the TCEQ website at <a href="https://www.tceq.texas.gov/field/qa/lab">www.tceq.texas.gov/field/qa/lab</a> accredited analytes and matrices visit the TCEQ website at <a href="https://www.tceq.texas.gov/field/qa/lab">www.tceq.texas.gov/field/qa/lab</a> accredited analytes and matrices visit the TCEQ website at <a href="https://www.tceq.texas.gov/field/qa/lab">www.tceq.texas.gov/field/qa/lab</a> accredited analytes and matrices visit the TCEQ website at <a href="https://www.tceq.texas.gov/field/qa/lab">www.tceq.texas.gov/field/qa/lab</a> accredited analytes and matrices visit the TCEQ website at <a href="https://www.tceq.texas.gov/field/qa/lab">www.tceq.texas.gov/field/qa/lab</a> accredited analytes and matrices visit the TCEQ website at <a href="https://www.tceq.texas.gov/field/qa/lab">www.tceq.texas.gov/field/qa/lab</a> accredited analytes and matrices visit the TCEQ website at <a href="https://www.tceq.texas.gov/field/qa/lab">www.tceq.texas.gov/field/qa/lab</a> accredited analytes are denoted by <a href="https://www.tceq.texas.gov/field/qa/lab">www.tceq.texas.gov/field/qa/lab</a> accredited analytes are denoted by <a href="https://www.tceq.texas.gov/field/qa/lab">www.tceq.texas.gov/field/qa/lab</a> accredited analytes are denoted analytes are denoted by <a href="https://www.tceq.texas.gov/field/qa/lab">www.tceq.texas.gov/field/qa/lab</a> accredited analytes are denoted by <a href="https://www.tceq.texas.gov/field/qa/lab">www.tceq.texas.gov/field/qa/lab</a> accredited analytes are denoted by <a href="https://www.tceq.texas.gov/field/qa/lab"/>www.tceq.texas.gov/field/

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 (V1, 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,

Celeg 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:	05/13/2013	Sampling Date:	05/13/2013
Reported:	05/14/2013	Sampling Type:	Water
Project Name:	BD N-18 BGT	Sampling Condition:	** (See Notes)
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	T22S R37E SEC 18 N ~ LEA COUNTY, №		

#### Sample ID: MONITOR WELL #1 (H301138-01)

Chloride, SM4500Cl-B	mg	/L	Analyze	d By: DW					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	5300	4.00	05/14/2013	ND	104	104	100	3.77	

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#### \*=Accredited Analyte

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Celey Di Kiene

Celey D. Keene, Lab Director/Quality Manager



#### **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 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 Di Kune

Celey D. Keene, Lab Director/Quality Manager

Page 🗆 of 4

# CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Page 4 of 4

RDINAL LABORATORIES

101 East Marland, Hobbs, NM 88240 2111 Beechwood, Abilene, TX 79603 (505) 393-2326 FAX (505) 393-2476 (325) 673-7001 FAX (325)673-7020

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FOR LAB USE ONLY					MA	TRI	(	F	RE	SER	<u>v</u>	SAMPLI	NG	10	ā		e B	fe							
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#54



June 18, 2013

KATIE JONES Rice Operating Company 112 W. Taylor Hobbs, NM 88240

RE: BD N-18 BGT

Enclosed are the results of analyses for samples received by the laboratory on 06/14/13 15:07.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-11-3. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at <a href="https://www.tceq.texas.gov/field/qa/lab">www.tceq.texas.gov/field/qa/lab</a> accredited analytes and matrices visit the TCEQ website at <a href="https://www.tceq.texas.gov/field/qa/lab">www.tceq.texas.gov/field/qa/lab</a> accredited certif.html

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 (V1, 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,

Celeg D. Keine

Celey D. Keene Lab Director/Quality Manager



#### Analytical Results For:

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

Received:	06/14/2013	Sampling Date:	06/14/2013
Reported:	06/18/2013	Sampling Type:	Water
Project Name:	BD N-18 BGT	Sampling Condition:	** (See Notes)
Project Number:	NONE GIVEN	Sample Received By:	Celey D. Keene
Project Location:	T22S R37E SEC 18 N ∼ LEA COUNTY, №		

#### Sample ID: MONITOR WELL #1 (H301386-01)

Chloride, SM4500CI-B	mg/	/L	Analyze	d By: DW					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	3800	4.00	06/17/2013	ND	108	108	100	0.00	

#### Cardinal Laboratories

#### \*=Accredited Analyte

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Celey Kuna

Celey D. Keene, Lab Director/Quality Manager

Page 2 of 4



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

#### **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 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

#### Cardinal Laboratories

#### \*=Accredited Analyte

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Celey D. Keine

Celey D. Keene, Lab Director/Quality Manager



Sampler - UPS - Bus - Other:

## CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

101 East Marland, Hobbs, NM 88240 2111 Beechwood, Abilene, TX 79603

(505) 393-2326 FAX (505) 393-2476 (325) 673-7001 FAX (325)673-7020

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Project Locatio	1: BD / N-18								Ph	one	#:				Chlorides	8015	BTEX	Texas TPH	ati	TDS						
Sampler Name:	Edward Cesareo								Fax	¢#:					듣		E E	Xa	Õ	Ē						
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† Cardinal cannot accept verbal changes. Please fax written changes to 505-393-2476

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#54

Cool Intact



August 01, 2013

KYLE NORMAN Rice Operating Company 112 W. Taylor Hobbs, NM 88240

RE: BD N-18 BGT

Enclosed are the results of analyses for samples received by the laboratory on 07/26/13 16:40.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-11-3. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at <a href="https://www.tceq.texas.gov/field/qa/lab">www.tceq.texas.gov/field/qa/lab</a> accredited certif.html.

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 (V1, 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,

Whe Sigh

Mike Snyder Organic Supervisor



### Analytical Results For:

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

Received:	07/26/2013	Sampling Date:	07/26/2013
Reported:	08/01/2013	Sampling Type:	Water
Project Name:	BD N-18 BGT	Sampling Condition:	** (See Notes)
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	T22S R37E SEC 18 N ∼ LEA COUNTY, NM		

#### Sample ID: MONITOR WELL #1 (H301772-01)

Chloride, SM4500Cl-B	mg,	۲L	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	4050	4.00	07/31/2013	ND	104	104	100	3.92	

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#### \*=Accredited Analyte

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marc Sigh

Mike Snyder, Organic Supervisor

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of 4



#### **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 SM4500Cl-B does not require samples be received at or below $6^{\circ}$ C
	Samples reported on an as received basis (wet) unless otherwise noted on report

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Whe Singh

Mike Snyder, Organic Supervisor



# CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Page 4 of 4

101 East Marland, Hobbs, NM 88240

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† Cardinal cannot accept verbal changes. Please fax written changes to (575) 393-2326 G

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August 12, 2013

KYLE NORMAN Rice Operating Company 112 W. Taylor Hobbs, NM 88240

RE: BD N-18

Enclosed are the results of analyses for samples received by the laboratory on 08/09/13 15:40.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-11-3. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at <a href="https://www.tceq.texas.gov/field/qa/lab">www.tceq.texas.gov/field/qa/lab</a> accredited certif.html.

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Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, 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. Kune

Celey D. Keene Lab Director/Quality Manager



#### Analytical Results For:

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

Received:	08/09/2013	Sampling Date:	08/09/2013
Reported:	08/12/2013	Sampling Type:	Water
Project Name:	BD N-18	Sampling Condition:	** (See Notes)
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		
-			

#### Sample ID: MW #1 (H301892-01)

Chloride, SM4500CI-B	mg	/L	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	3850	4.00	08/12/2013	ND	104	104	100	3.92	

#### Cardinal Laboratories

#### \*=Accredited Analyte

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Celey Di Kiene-

Celey D. Keene, Lab Director/Quality Manager



#### **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 report

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Celey Di Kiene

Celey D. Keene, Lab Director/Quality Manager

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## CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

101 East Marland, Hobbs, NM 88240

	(575) 393-2326 FAX (575) 393-24	76																											
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KED BY: 9 evanse rice sud.com Kath) Kschnaidt@rice-ecs.com

† Cardinal cannot accept verbal changes. Please fax written changes to (575) 393/232

Sampler - UPS - Bus - Other:

Cool Intact Yes Yes No No

# **APPENDIX B**

BD N-18 East BGT C-144 BD N-18 West BGT C-144 District 1 1625 N. French Dr., Hobbs, NM 88240 District II 1301 W. Grand Avenue, Artesia, NM 88210 District III 1000 Rio Brazos Road, Aztec, NM 87410 District IV 1220 S. St. Francis Dr., Santa Fe, NM 87505 State of New Mexico Energy Minerals and Natural Resources Department Oil Conservation Division 1220 South St. Francis Dr. Santa Fe, NM 87505 Form C-144 July 21, 2008

For temporary pits, closed-loop systems, and below-grade tanks, submit to the appropriate NMOCD District Office. For permanent pits and exceptions submit to the Santa Fe Environmental Bureau office and provide a copy to the appropriate NMOCD District Office.

## <u>Pit, Closed-Loop System, Below-Grade Tank, or</u> <u>Proposed Alternative Method Permit or Closure Plan Application</u>

Type of action:

Permit of a pit, closed-loop system, below-grade tank, or proposed alternative method
 Closure of a pit, closed-loop system, below-grade tank, or proposed alternative method
 Modification to an existing permit

Closure plan only submitted for an existing permitted or non-permitted pit, closed-loop system, below-grade tank, or proposed alternative method

Instructions: Please submit one application (Form C-144) per individual pit, closed-loop system, below-grade tank or alternative request

Please be advised that approval of this request does not relieve the operator of liability should operations result in pollution of surface water, ground water or the environment. Nor does approval relieve the operator of its responsibility to comply with any other applicable governmental authority's rules, regulations or ordinances.

1. Operator: <u>Rice Operating Company</u> OGRID #:
Address: 122 West Taylor, Hobbs NM 88240
Facility or well name:BD N-18 EAST TANK
API Number: none 30-025-256/6 OCD Permit Number: none
U/L or Qtr/Qtr N Section 18 Township 22S Range 37E County: Lea
Center of Proposed Design: Latitude 32° 23' 286" Longitude 103° 12' 186" NAD: XAD: XAD: XAD: XAD: XAD: XAD: XAD: X
Surface Owner: 🗍 Federal 🗋 State 🖾 Private 🗋 Tribal Trust or Indian Allotment
2.
<b><u>Pit</u>:</b> Subsection F or G of 19.15.17.11 NMAC
Temporary: 🗌 Drilling 🔲 Workover
Permanent Emergency Cavitation P&A
Lined Unlined Liner type: Thicknessmil LLDPE HDPE PVC Other
String-Reinforced
Liner Seams: Welded Factory Other Volume: bbl Dimensions: L x W x D
3
Closed-loop System: Subsection H of 19.15.17.11 NMAC
Type of Operation: P&A Drilling a new well Workover or Drilling (Applies to activities which require prior approval of a permit or notice of intent)
Drying Pad Data Above Ground Steel Tanks Haul-off Bins Other
Lined Unlined Liner type: Thicknessmil LLDPE HDPE PVC Other
Liner Seams: Welded Factory Other
4.
Below-grade tank: Subsection I of 19.15.17.11 NMAC
Volume: two_400_bbl tanks Type of fluid: Produced Water
Tank Construction material: Fiberglass
Secondary containment with leak detection 🗌 Visible sidewalls, liner, 6-inch lift and automatic overflow shut-off
□ Visible sidewalls and liner □ Visible sidewalls only 🛛 Other Buried 4 feet below grade
Liner type: Thickness <u>none</u> mil HDPE PVC Other
Alternative Method:
Submittal of an exception request is required. Exceptions must be submitted to the Santa Fe Environmental Bureau office for consideration of approval.

Fencing: Subsection D of 19.15.17.11 NMAC (Applies to permanent pits, temporary pits, and below-grade tanks)

Chain link, six feet in height, two strands of barbed wire at top (Required if located within 1000 feet of a permanent residence, school, hospital, institution or church)

Four foot height, four strands of barbed wire evenly spaced between one and four feet

Alternate. Please specify

6

8.

10

Netting: Subsection E of 19.15.17.11 NMAC (Applies to permanent pits and permanent open top tanks)

Screen Netting Other\_

Monthly inspections (If netting or screening is not physically feasible)

Signs: Subsection C of 19.15.17.11 NMAC

12"x 24", 2" lettering, providing Operator's name, site location, and emergency telephone numbers

Signed in compliance with 19.15.3.103 NMAC

#### Administrative Approvals and Exceptions:

Justifications and/or demonstrations of equivalency are required. Please refer to 19.15.17 NMAC for guidance.

Please check a box if one or more of the following is requested, if not leave blank:

Administrative approval(s): Requests must be submitted to the appropriate division district or the Santa Fe Environmental Bureau office for consideration of approval.

Exception(s): Requests must be submitted to the Santa Fe Environmental Bureau office for consideration of approval.

#### Siting Criteria (regarding permitting): 19.15.17.10 NMAC

Instructions: The applicant must demonstrate compliance for each siting criteria below in the application. Recommendations of acceptable source material are provided below. Requests regarding changes to certain siting criteria may require administrative approval from the appropriate district office or may be considered an exception which must be submitted to the Santa Fe Environmental Bureau office for consideration of approval. Applicant must attach justification for request. Please refer to 19.15.17.10 NMAC for guidance. Siting criteria does not apply to drying pads or above-grade tanks associated with a closed-loop system.

Ground water is less than 50 feet below the bottom of the temporary pit, permanent pit, or below-grade tank. - NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells	Yes No
<ul> <li>Within 300 feet of a continuously flowing watercourse, or 200 feet of any other significant watercourse or lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark).</li> <li>Topographic map; Visual inspection (certification) of the proposed site</li> </ul>	🗌 Yes 🗌 No
<ul> <li>Within 300 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application.</li> <li>(Applies to temporary, emergency, or cavitation pits and below-grade tanks)</li> <li>Visual inspection (certification) of the proposed site; Aerial photo; Satellite image</li> </ul>	☐ Yes ☐ No ☐ NA
Within 1000 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application. (Applies to permanent pits) - Visual inspection (certification) of the proposed site; Aerial photo; Satellite image	☐ Yes ☐ No ☐ NA
Within 500 horizontal feet of a private, domestic fresh water well or spring that less than five households use for domestic or stock watering purposes, or within 1000 horizontal feet of any other fresh water well or spring, in existence at the time of initial application. - NM Office of the State Engineer - iWATERS database search; Visual inspection (certification) of the proposed site	🗋 Yes 🗌 No
<ul> <li>Within incorporated municipal boundaries or within a defined municipal fresh water well field covered under a municipal ordinance adopted pursuant to NMSA 1978, Section 3-27-3, as amended.</li> <li>Written confirmation or verification from the municipality; Written approval obtained from the municipality</li> </ul>	🗋 Yes 🗌 No
Within 500 feet of a wetland.         -       US Fish and Wildlife Wetland Identification map; Topographic map; Visual inspection (certification) of the proposed site	🗌 Yes 🗌 No
<ul> <li>Within the area overlying a subsurface mine.</li> <li>Written confirmation or verification or map from the NM EMNRD-Mining and Mineral Division</li> </ul>	🗌 Yes 🗌 No
<ul> <li>Within an unstable area.</li> <li>Engineering measures incorporated into the design; NM Bureau of Geology &amp; Mineral Resources; USGS; NM Geological Society; Topographic map</li> </ul>	🗌 Yes 🗌 No
Within a 100-year floodplain. - FEMA map	🗌 Yes 🗌 No

Temporary Pits, Emergency Pits, and Below-grade Tanks Permit Application Attachment Checklist: Subsection B of 19.15.17.9 NMAC Instructions: Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the documents are
attached.         Image: Hydrogeologic Report (Below-grade Tanks) - based upon the requirements of Paragraph (4) of Subsection B of 19.15.17.9 NMAC         Image: Hydrogeologic Data (Temporary and Emergency Pits) - based upon the requirements of Paragraph (2) of Subsection B of 19.15.17.9 NMAC         Image: Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC         Image: Design Plan - based upon the appropriate requirements of 19.15.17.12 NMAC         Image: Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.12 NMAC
Closure Plan (Please complete Boxes 14 through 18, if applicable) - based upon the appropriate requirements of Subsection C of 19.15.17.9 NMAC and 19.15.17.13 NMAC
Previously Approved Design (attach copy of design) API Number: or Permit Number:
<ul> <li>12.</li> <li><u>Closed-loop Systems Permit Application Attachment Checklist</u>: Subsection B of 19.15.17.9 NMAC</li> <li>Instructions: Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the documents are attached.</li> <li>Geologic and Hydrogeologic Data (only for on-site closure) - based upon the requirements of Paragraph (3) of Subsection B of 19.15.17.9</li> <li>Siting Criteria Compliance Demonstrations (only for on-site closure) - based upon the appropriate requirements of 19.15.17.10 NMAC</li> <li>Design Plan - based upon the appropriate requirements of 19.15.17.12 NMAC</li> <li>Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.12 NMAC</li> <li>Closure Plan (Please complete Boxes 14 through 18, if applicable) - based upon the appropriate requirements of Subsection C of 19.15.17.9 NMAC</li> </ul>
Previously Approved Design (attach copy of design) API Number:
Previously Approved Operating and Maintenance Plan API Number: (Applies only to closed-loop system that use
above ground steel tanks or haul-off bins and propose to implement waste removal for closure)
13.         Permanent Pits Permit Application Checklist:       Subsection B of 19.15.17.9 NMAC         Instructions:       Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the documents are attached.         Hydrogeologic Report - based upon the requirements of Paragraph (1) of Subsection B of 19.15.17.9 NMAC         Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC         Climatological Factors Assessment         Certified Engineering Design Plans - based upon the appropriate requirements of 19.15.17.11 NMAC         Dike Protection and Structural Integrity Design - based upon the appropriate requirements of 19.15.17.11 NMAC         Leak Detection Design - based upon the appropriate requirements of 19.15.17.11 NMAC         Quality Control/Quality Assurance Construction and Installation Plan         Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.11 NMAC         Reregency Response Plan         Oil Field Waste Stream Characterization         Monitoring and Inspection Plan         Erosion Control Plan         Closure Plan - based upon the appropriate requirements of 19.15.17.9 NMAC and 19.15.17.13 NMAC
Proposed Closure:       19.15.17.13 NMAC         Instructions:       Please complete the applicable boxes, Boxes 14 through 18, in regards to the proposed closure plan.         Type:       Drilling       Workover         Alternative       Permanent Pit       Below-grade Tank         Proposed Closure Method:       Waste Excavation and Removal         Waste Removal (Closed-loop systems only)       On-site Closure Method (Only for temporary pits and closed-loop systems)         In-place Burial       On-site Trench Burial         Alternative Closure Method (Exceptions must be submitted to the Santa Fe Environmental Bureau for consideration)
<ul> <li>15.</li> <li>Waste Excavation and Removal Closure Plan Checklist: (19.15.17.13 NMAC) Instructions: Each of the following items must be attached to the closure plan. Please indicate, by a check mark in the box, that the documents are attached.</li> <li></li></ul>

Waste Removal Closure For Closed-loop Systems That Utilize Above Ground Steel Tanks or Haul-off Bins Only: (19.15.17.13.D N Instructions: Please indentify the facility or facilities for the disposal of liquids, drilling fluids and drill cuttings. Use attachment if more facilities are required.	NMAC) <i>re than two</i>									
Disposal Facility Name: <u>Sundance Sevices</u> Disposal Facility Permit Number: <u>NM-01-0003</u>										
Disposal Facility Name: Disposal Facility Permit Number:										
Will any of the proposed closed-loop system operations and associated activities occur on or in areas that <i>will not</i> be used for future servic Yes (If yes, please provide the information below) No										
Required for impacted areas which will not be used for future service and operations: Soil Backfill and Cover Design Specifications based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC Re-vegetation Plan - based upon the appropriate requirements of Subsection I of 19.15.17.13 NMAC Site Reclamation Plan - based upon the appropriate requirements of Subsection G of 19.15.17.13 NMAC										
<sup>17.</sup> <u>Siting Criteria (regarding on-site closure methods only)</u> : 19.15.17.10 NMAC Instructions: Each siting criteria requires a demonstration of compliance in the closure plan. Recommendations of acceptable source provided below. Requests regarding changes to certain siting criteria may require administrative approval from the appropriate distric considered an exception which must be submitted to the Santa Fe Environmental Bureau office for consideration of approval. Justific demonstrations of equivalency are required. Please refer to 19.15.17.10 NMAC for guidance.	ct office or may be									
	Yes No									
- NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells	Yes No									
Ground water is more than 100 feet below the bottom of the buried waste. - NM Office of the State Engineer - iWATERS database search; USGS: Data obtained from nearby wells	□ Yes □ No □ NA									
Within 300 feet of a continuously flowing watercourse, or 200 feet of any other significant watercourse or lakebed, sinkhole, or playa       [         lake (measured from the ordinary high-water mark).       -       Topographic map: Visual inspection (certification) of the proposed site	🗌 Yes 🗌 No									
Within 300 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application.         -       Visual inspection (certification) of the proposed site; Aerial photo; Satellite image	🗌 Yes 🗌 No									
Within 500 horizontal feet of a private, domestic fresh water well or spring that less than five households use for domestic or stock watering purposes, or within 1000 horizontal feet of any other fresh water well or spring, in existence at the time of initial application. - NM Office of the State Engineer - iWATERS database; Visual inspection (certification) of the proposed site	🗌 Yes 🗌 No									
Within incorporated municipal boundaries or within a defined municipal fresh water well field covered under a municipal ordinance adopted pursuant to NMSA 1978, Section 3-27-3, as amended.       -         Written confirmation or verification from the municipality; Written approval obtained from the municipality	🗌 Yes 🗌 No									
Within 500 feet of a wetland.         -       US Fish and Wildlife Wetland Identification map; Topographic map: Visual inspection (certification) of the proposed site	🗌 Yes 🗌 No									
Within the area overlying a subsurface mine.         -       Written confirmation or verification or map from the NM EMNRD-Mining and Mineral Division	🗌 Yes 🗌 No									
<ul> <li>Within an unstable area.</li> <li>Engineering measures incorporated into the design; NM Bureau of Geology &amp; Mineral Resources; USGS; NM Geological Society; Topographic map</li> </ul>	🗌 Yes 🗌 No									
	🗌 Yes 🗌 No									
18.       On-Site Closure Plan Checklist: (19.15.17.13 NMAC) Instructions: Each of the following items must be attached to the closure plan         by a check mark in the box, that the documents are attached.										

Site Reclamation Plan - based upon the appropriate requirements of Subsection G of 19.15.17.13 NMAC

19. <u>Operator Application Certification</u> :	accurate and complete to the best of my knowledge and balief
I hereby certify that the information submitted with this application is true, Name (Print): <u>Hack Conder</u>	
æill i	
Signature: Tot Lavor	Date: <u>12/12/08</u>
e-mail address: <u>hconder@riceswd.com</u>	Telephone: <u>575-393-3174</u>
20. OCD Approval: Permit Application (including closure plan) Cos	ure Plan (only) OCD Conditions (see attachment)
OCD Representative Signature: Edward He	Approval Date: / - /3-09
Title: Hydrologist	OCD Permit Number:
Closure Report (required within 60 days of closure completion): Subset	prior to implementing any closure activities and submitting the closure report. As of the completion of the closure activities. Please do not complete this
section of the form and an approved closare plan has been bolaned and	Closure Completion Date:
22.	
Closure Method: Waste Excavation and Removal On-Site Closure Method A If different from approved plan, please explain.	Alternative Closure Method 🔲 Waste Removal (Closed-loop systems only)
<sup>23.</sup> Closure Report Regarding Waste Removal Closure For Closed-loop Sy Instructions: Please indentify the facility or facilities for where the liquid two facilities were utilized.	stems That Utilize Above Ground Steel Tanks or Haul-off Bins Only: ls, drilling fluids and drill cuttings were disposed. Use attachment if more than
Disposal Facility Name:	Disposal Facility Permit Number:
Disposal Facility Name:	
Were the closed-loop system operations and associated activities performed Yes (If yes, please demonstrate compliance to the items below)	
Required for impacted areas which will not be used for future service and on         Site Reclamation (Photo Documentation)         Soil Backfilling and Cover Installation         Re-vegetation Application Rates and Seeding Technique	perations:
24. <u>Closure Report Attachment Checklist</u> : Instructions: Each of the follow mark in the box, that the documents are attached.	ving items must be attached to the closure report. Please indicate, by a check
<ul> <li>Proof of Closure Notice (surface owner and division)</li> <li>Proof of Deed Notice (required for on-site closure)</li> </ul>	
Plot Plan (for on-site closures and temporary pits)	
Confirmation Sampling Analytical Results (if applicable) Waste Material Sampling Analytical Results (required for on-site clo	sure)
Disposal Facility Name and Permit Number	
Soil Backfilling and Cover Installation Re-vegetation Application Rates and Seeding Technique	
Site Reclamation (Photo Documentation)	Longitude NAD: 1927 [] 1983
25.	
<b>Operator Closure Certification:</b> I hereby certify that the information and attachments submitted with this clobelief. I also certify that the closure complies with all applicable closure re-	
Name (Print): 441K Condre	Title: Environmental Mariager
97/1	Date: 09/18/2013
e-mail address: heander @ficeswd. com	Telephone: 575-631-6432
e-mail address: noor der La Ceswa. Corri	

District I 1625 N. French Dr., Hobbs, NM 88240 District II 1301 W. Grand Avenue, Artesia, NM 88210 District III 1000 Rio Brazos Road, Aztec, NM 87410 District IV 1220 S. St. Francis Dr., Santa Fe, NM 87505 State of New Mexico Energy Minerals and Natural Resources Department Oil Conservation Division 1220 South St. Francis Dr. Santa Fe, NM 87505 Form C-144 July 21, 2008

For temporary pits, closed-loop systems, and below-grade tanks, submit to the appropriate NMOCD District Office. For permanent pits and exceptions submit to the Santa Fe Environmental Bureau office and provide a copy to the appropriate NMOCD District Office.

# Pit, Closed-Loop System, Below-Grade Tank, or Proposed Alternative Method Permit or Closure Plan Application

Type of action:

Permit of a pit, closed-loop system, below-grade tank, or proposed alternative method
 Closure of a pit, closed-loop system, below-grade tank, or proposed alternative method
 Modification to an existing permit

Closure plan only submitted for an existing permitted or non-permitted pit, closed-loop system, below-grade tank, or proposed alternative method

Instructions: Please submit one application (Form C-144) per individual pit, closed-loop system, below-grade tank or alternative request

Please be advised that approval of this request does not relieve the operator of liability should operations result in pollution of surface water, ground water or the environment. Nor does approval relieve the operator of its responsibility to comply with any other applicable governmental authority's rules, regulations or ordinances.

Operator: <u>Rice Operating Company</u> OGRID #:
Address: 122 West Taylor, Hobbs NM 88240
Facility or well name:BD_N-18_WEST TANK
API Number: OCD Permit Number: none
U/L or Qtr/Qtr <u>N</u> Section <u>18</u> Township <u>22S</u> Range <u>37E</u> County: <u>Lea</u>
Center of Proposed Design: Latitude <u>32° 23' 286</u> " Longitude <u>103° 12' 186"</u> NAD: XAD: X1927 [] 1983
Surface Owner: 🔲 Federal 🗌 State 🛛 Private 🗌 Tribal Trust or Indian Allotment
2.
Pit: Subsection F or G of 19.15.17.11 NMAC
Temporary: Drilling Workover
Permanent Emergency Cavitation P&A
Lined Unlined Liner type: Thickness mil LLDPE HDPE PVC Other
String-Reinforced
Liner Seams: Welded Factory Other Volume: bbl Dimensions: L x W x D
3. Closed-loop System: Subsection H of 19.15.17.11 NMAC
Type of Operation: P&A Drilling a new well Workover or Drilling (Applies to activities which require prior approval of a permit or notice of intent)
Drying Pad Above Ground Steel Tanks Haul-off Bins Other
Lined Unlined Liner type: Thicknessmil LLDPE HDPE PVC Other
Liner Seams: Welded Factory Other
4.
Below-grade tank: Subsection I of 19.15.17.11 NMAC
Volume:400bbl tanks Type of fluid:Produced Water
Tank Construction material: Fiberglass
Secondary containment with leak detection 🗌 Visible sidewalls, liner, 6-inch lift and automatic overflow shut-off
Visible sidewalls and liner Visible sidewalls only Other Buried 4 feet below grade
Liner type: Thickness <u>none</u> mil HDPE PVC Other
Alternative Method:
Submittal of an exception request is required. Exceptions must be submitted to the Santa Fe Environmental Bureau office for consideration of approval.

Fencing: Subsection D of 19.15.17.11 NMAC (Applies to permanent pits, temporary pits, and below-grade tanks)

Chain link, six feet in height, two strands of barbed wire at top (Required if located within 1000 feet of a permanent residence, school, hospital, institution or church)

X Four foot height, four strands of barbed wire evenly spaced between one and four feet

Alternate. Please specify

6.

7.

Netting: Subsection E of 19.15.17.11 NMAC (Applies to permanent pits and permanent open top tanks)

Screen Netting Other

Monthly inspections (If netting or screening is not physically feasible)

Signs: Subsection C of 19.15.17.11 NMAC

12"x 24", 2" lettering, providing Operator's name, site location, and emergency telephone numbers

Signed in compliance with 19.15.3.103 NMAC

#### Administrative Approvals and Exceptions:

Justifications and/or demonstrations of equivalency are required. Please refer to 19.15.17 NMAC for guidance.

Please check a box if one or more of the following is requested, if not leave blank:

Administrative approval(s): Requests must be submitted to the appropriate division district or the Santa Fe Environmental Bureau office for consideration of approval.

Exception(s): Requests must be submitted to the Santa Fe Environmental Bureau office for consideration of approval.

#### Siting Criteria (regarding permitting): 19.15.17.10 NMAC

Instructions: The applicant must demonstrate compliance for each siting criteria below in the application. Recommendations of acceptable source material are provided below. Requests regarding changes to certain siting criteria may require administrative approval from the appropriate district office or may be considered an exception which must be submitted to the Santa Fe Environmental Bureau office for consideration of approval. Applicant must attach justification for request. Please refer to 19.15.17.10 NMAC for guidance. Siting criteria does not apply to drying pads or above-grade tanks associated with a closed-loop system.

Ground water is less than 50 feet below the bottom of the temporary pit, permanent pit, or below-grade tank. - NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells	🗌 Yes 🗌 No
<ul> <li>Within 300 feet of a continuously flowing watercourse, or 200 feet of any other significant watercourse or lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark).</li> <li>Topographic map; Visual inspection (certification) of the proposed site</li> </ul>	Yes No
<ul> <li>Within 300 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application.</li> <li>(Applies to temporary, emergency, or cavitation pits and below-grade tanks)</li> <li>Visual inspection (certification) of the proposed site; Aerial photo; Satellite image</li> </ul>	☐ Yes ☐ No ☐ NA
Within 1000 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application. (Applies to permanent pits) - Visual inspection (certification) of the proposed site: Aerial photo; Satellite image	Yes No
<ul> <li>Within 500 horizontal feet of a private, domestic fresh water well or spring that less than five households use for domestic or stock watering purposes, or within 1000 horizontal feet of any other fresh water well or spring, in existence at the time of initial application.</li> <li>NM Office of the State Engineer - iWATERS database search; Visual inspection (certification) of the proposed site</li> </ul>	🔲 Yes 🗌 No
<ul> <li>Within incorporated municipal boundaries or within a defined municipal fresh water well field covered under a municipal ordinance adopted pursuant to NMSA 1978, Section 3-27-3, as amended.</li> <li>Written confirmation or verification from the municipality; Written approval obtained from the municipality</li> </ul>	🗌 Yes 🗌 No
<ul> <li>Within 500 feet of a wetland.</li> <li>US Fish and Wildlife Wetland Identification map; Topographic map; Visual inspection (certification) of the proposed site</li> </ul>	Yes No
Within the area overlying a subsurface mine. - Written confirmation or verification or map from the NM EMNRD-Mining and Mineral Division	Yes No
<ul> <li>Within an unstable area.</li> <li>Engineering measures incorporated into the design; NM Bureau of Geology &amp; Mineral Resources; USGS; NM Geological Society; Topographic map</li> </ul>	🗋 Yes 🗌 No
Within a 100-year floodplain. - FEMA map	Yes No

11.	and the second
Temporary Pits, Emergency Pits, and Below-grade Tanks Permit Application Attachment Checklist Instructions: Each of the following items must be attached to the application. Please indicate, by a che	
attached.         Hydrogeologic Report (Below-grade Tanks) - based upon the requirements of Paragraph (4) of Subs         Hydrogeologic Data (Temporary and Emergency Pits) - based upon the requirements of Paragraph (         Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.1         Design Plan - based upon the appropriate requirements of 19.15.17.1	2) of Subsection B of 19.15.17.9 NMAC
<ul> <li>Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.12 NMAC</li> <li>Closure Plan (Please complete Boxes 14 through 18, if applicable) - based upon the appropriate requirements of 19.15.17.13 NMAC</li> </ul>	uirements of Subsection C of 19.15.17.9 NMAC
Previously Approved Design (attach copy of design) API Number: or	Permit Number:
12.	
Closed-loop Systems Permit Application Attachment Checklist: Subsection B of 19.15.17.9 NMAC Instructions: Each of the following items must be attached to the application. Please indicate, by a checklist	eck mark in the box, that the documents are
attached.	
<ul> <li>Geologic and Hydrogeologic Data (only for on-site closure) - based upon the requirements of Parag</li> <li>Siting Criteria Compliance Demonstrations (only for on-site closure) - based upon the appropriate requirements of 19.15.17.11 NMAC</li> </ul>	requirements of 19.15.17.10 NMAC
<ul> <li>Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.12 NMAC</li> <li>Closure Plan (Please complete Boxes 14 through 18, if applicable) - based upon the appropriate requirements of 19.15.17.13 NMAC</li> </ul>	
Previously Approved Design (attach copy of design) API Number:	
Previously Approved Operating and Maintenance Plan API Number:	(Applies only to closed-loop system that use
above ground steel tanks or haul-off bins and propose to implement waste removal for closure)	
13. <u>Permanent Pits Permit Application Checklist</u> : Subsection B of 19.15.17.9 NMAC Instructions: Each of the following items must be attached to the application. Please indicate, by a checkling items and the statement of the	eck mark in the box, that the documents are
attached.	
<ul> <li>Hydrogeologic Report - based upon the requirements of Paragraph (1) of Subsection B of 19.15.17</li> <li>Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.</li> </ul>	
Climatological Factors Assessment	
Certified Engineering Design Plans - based upon the appropriate requirements of 19.15.17.11 NMA	
<ul> <li>Dike Protection and Structural Integrity Design - based upon the appropriate requirements of 19.15</li> <li>Leak Detection Design - based upon the appropriate requirements of 19.15.17.11 NMAC</li> </ul>	0.17.11 NMAC
Liner Specifications and Compatibility Assessment - based upon the appropriate requirements of I	9.15.17.11 NMAC
Quality Control/Quality Assurance Construction and Installation Plan	
<ul> <li>Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.12 NMAC</li> <li>Freeboard and Overtopping Prevention Plan - based upon the appropriate requirements of 19.15.17</li> </ul>	
Nuisance or Hazardous Odors, including H <sub>2</sub> S, Prevention Plan	
Emergency Response Plan	
<ul> <li>Oil Field Waste Stream Characterization</li> <li>Monitoring and Inspection Plan</li> </ul>	
Erosion Control Plan	
Closure Plan - based upon the appropriate requirements of Subsection C of 19.15.17.9 NMAC and	1 19.15.17.13 NMAC
14. <u>Proposed Closure</u> : 19.15.17.13 NMAC	
Instructions: Please complete the applicable boxes, Boxes 14 through 18, in regards to the proposed cliptype: Drilling Workover Emergency Cavitation P&A Permanent Pit Below	-
Alternative Proposed Closure Method: X Waste Excavation and Removal	
Waste Removal (Closed-loop systems only)	
On-site Closure Method (Only for temporary pits and closed-loop system)	is)
In-place Burial On-site Trench Burial Alternative Closure Method (Exceptions must be submitted to the Santa l	Fe Environmental Bureau for consideration)
15.	
<u>Waste Excavation and Removal Closure Plan Checklist</u> : (19.15.17.13 NMAC) Instructions: Each of closure plan. Please indicate, by a check mark in the box, that the documents are attached.	j ine jouowing aems musi de allachea lo ine
Protocols and Procedures - based upon the appropriate requirements of 19.15.17.13 NMAC	
<ul> <li>Confirmation Sampling Plan (if applicable) - based upon the appropriate requirements of Subsection</li> <li>Disposal Facility Name and Permit Number (for liquids, drilling fluids and drill cuttings)</li> </ul>	on F of 19.15.17.13 NMAC
Soil Backfill and Cover Design Specifications - based upon the appropriate requirements of Subsec	ction H of 19.15.17.13 NMAC
Re-vegetation Plan - based upon the appropriate requirements of Subsection 1 of 19.15.17.13 NMA Site Reclamation Plan - based upon the appropriate requirements of Subsection G of 19.15.17.13 NMA	

16. <u>Waste Removal Closure For Closed-loop Systems That Utilize Above Ground Steel Tanks or Haul-off Bins Only</u> : (19.15.17.1 Instructions: Please indentify the facility or facilities for the disposal of liquids, drilling fluids and drill cuttings. Use attachment facilities are required							
facilities are required.           Disposal Facility Name:         Sundance Sevices           Disposal Facility Permit Number:         NM-01-0002							
Disposal Facility Name: Disposal Facility Permit Number:							
Will any of the proposed closed-loop system operations and associated activities occur on or in areas that <i>will not</i> be used for future service and operations? Yes (If yes, please provide the information below) No							
Required for impacted areas which will not be used for future service and operations:         Soil Backfill and Cover Design Specifications based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC         Re-vegetation Plan - based upon the appropriate requirements of Subsection I of 19.15.17.13 NMAC         Site Reclamation Plan - based upon the appropriate requirements of Subsection G of 19.15.17.13 NMAC							
<sup>17.</sup> Siting Criteria (regarding on-site closure methods only): 19.15.17.10 NMAC Instructions: Each siting criteria requires a demonstration of compliance in the closure plan. Recommendations of acceptable source material are provided below. Requests regarding changes to certain siting criteria may require administrative approval from the appropriate district office or may be considered an exception which must be submitted to the Santa Fe Environmental Bureau office for consideration of approval. Justifications and/or demonstrations of equivalency are required. Please refer to 19.15.17.10 NMAC for guidance.							
Ground water is less than 50 feet below the bottom of the buried waste. - NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells	Yes No						
Ground water is between 50 and 100 feet below the bottom of the buried waste - NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells	☐ Yes ☐ No ☐ NA						
Ground water is more than 100 feet below the bottom of the buried waste. - NM Office of the State Engineer - iWATERS database search; USGS: Data obtained from nearby wells	☐ Yes ☐ No ☐ NA						
<ul> <li>Within 300 feet of a continuously flowing watercourse, or 200 feet of any other significant watercourse or lakebed, sinkhole, or play lake (measured from the ordinary high-water mark).</li> <li>Topographic map; Visual inspection (certification) of the proposed site</li> </ul>	a 🗌 Yes 🗌 No						
Within 300 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application.         -       Visual inspection (certification) of the proposed site; Aerial photo; Satellite image	🗌 Yes 🗌 No						
Within 500 horizontal feet of a private, domestic fresh water well or spring that less than five households use for domestic or stock watering purposes, or within 1000 horizontal feet of any other fresh water well or spring, in existence at the time of initial application - NM Office of the State Engineer - iWATERS database; Visual inspection (certification) of the proposed site	n.						
Within incorporated municipal boundaries or within a defined municipal fresh water well field covered under a municipal ordinance adopted pursuant to NMSA 1978, Section 3-27-3, as amended. - Written confirmation or verification from the municipality; Written approval obtained from the municipality	🗌 Yes 🗍 No						
Within 500 feet of a wetland.         -       US Fish and Wildlife Wetland Identification map; Topographic map; Visual inspection (certification) of the proposed site	🗌 Yes 🛄 No						
Within the area overlying a subsurface mine.         -       Written confirmation or verification or map from the NM EMNRD-Mining and Mineral Division	🗌 Yes 🗌 No						
<ul> <li>Within an unstable area.</li> <li>Engineering measures incorporated into the design; NM Bureau of Geology &amp; Mineral Resources; USGS; NM Geological Society; Topographic map</li> </ul>	🗌 Yes 🗌 No						
Within a 100-year floodplain. - FEMA map	🗌 Yes 🗌 No						
18.         On-Site Closure Plan Checklist: (19.15.17.13 NMAC) Instructions: Each of the following items must be attached to the closure plan. Please indicate, by a check mark in the box, that the documents are attached.							

. <del>\*</del>

Operator Application Certification:							
I hereby certify that the information submitted with this application is true, accurate and complete to the best of my knowledge and belief.							
Name (Print): <u>Hack Conder</u> Title: <u>Environmental Manager</u>							
Signature: Date: Date:							
e-mail address: <u>hconder@riceswd.com</u> Telephone: <u>575-393-3174</u>							
20. <u>OCD Approval:</u> Permit Application (including closure plan) Closure Plan (only) OCD Conditions (see attachment)							
OCD Representative Signature: Approval Date: Approval Date:							
Title:         Hydrologist         V         OCD Permit Number:							
21. <u>Closure Report (required within 60 days of closure completion)</u> : Subsection K of 19.15.17.13 NMAC Instructions: Operators are required to obtain an approved closure plan prior to implementing any closure activities and submitting the closure report. The closure report is required to be submitted to the division within 60 days of the completion of the closure activities. Please do not complete this section of the form until an approved closure plan has been obtained and the closure activities have been completed. Closure Completion Date:							
22. Closure Method: Waste Excavation and Removal On-Site Closure Method Alternative Closure Method Waste Removal (Closed-loop systems only) If different from approved plan, please explain.							
<sup>23.</sup> <u>Closure Report Regarding Waste Removal Closure For Closed-loop Systems That Utilize Above Ground Steel Tanks or Haul-off Bins Only:</u> Instructions: Please indentify the facility or facilities for where the liquids, drilling fluids and drill cuttings were disposed. Use attachment if more than two facilities were utilized.							
Disposal Facility Name: Disposal Facility Permit Number:							
Disposal Facility Name: Disposal Facility Permit Number:							
Were the closed-loop system operations and associated activities performed on or in areas that <i>will not</i> be used for future service and operations? Yes (If yes, please demonstrate compliance to the items below) No							
Required for impacted areas which will not be used for future service and operations:         Site Reclamation (Photo Documentation)         Soil Backfilling and Cover Installation         Re-vegetation Application Rates and Seeding Technique							
24.         Closure Report Attachment Checklist: Instructions: Each of the following items must be attached to the closure report. Please indicate, by a check mark in the box, that the documents are attached.							
25. Operator Closure Certification:							
I hereby certify that the information and attachments submitted with this closure report is true, accurate and complete to the best of my knowledge and							
Name (Print): <u>HALK</u> <u>Condrik</u> Title: <u>Erivironmerital Mariager</u>							
Signature: 09/18/2013							
e-mail address: hcorder @ cicesud.corri Telephone: 575-631-6432							

# **APPENDIX C**

# **Closure Report Attachment Checklist:**

Proof of Closure Notice (surface owner and division)

11/14/11 ROC Work Schedule, Below Grade Tank Remediation Work Plan

Proof of Deed Notice (required for on-site closure)

Plot Plan (for on-site closures and temporary pits)

Confirmation Sampling Analytical Results (if applicable)

## Site Summary and CAP with NMOCD approval

## CAP Addendum with NMOCD approval

**Soil Bore Lab Results** 

- Waste Material Sampling Analytical Results (for on-site closure)
- Disposal Facility Name and Permit Number

## Sundance Services Permit Number NM-01-0003

Soil Backfilling and Cover Installation

## **Corrective Action Plan Progress Report with NMOCD approval**

Re-vegetation Application Rates and Seeding Technique

## Email of ROC's intent to reclaim the lease pad upon abandonment

Site Reclamation (Photo Documentation)

**Corrective Action Plan Progress Report with NMOCD approval** 

From:	Zac Conder
To:	avilla@slo.state.nm.us; daniel.sanchez@state.nm.us; edwardj.hansen@state.nm.us; mharrison@slo.state.nm.us; wsonnamaker@slo.state.nm.us; GeoffreyR.Leking@state.nm.us
Cc:	Bruce Baker; Hack Conder; Israel Juarez; Jon Rampone; Katie Jones
Subject:	Work Schedule for the week of 11-14-11
Date:	Wednesday, November 16, 2011 4:35:14 PM
Attachments:	OCD 11-14-11 Work Schedule.xisx

Please find the attached work schedule for this week. As field conditions may be unpredictable, please call ROC for verification of a more specific time frame for any particular site.

## Zach Conder

Field Foreman Rice Environmental Consulting & Safety 122 W. Taylor Hobbs, NM 88240 Cell: (575)631-5075

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					R	JC	E OF	terating Company		
Work Schedule for Week of 11-14-2011										
Day	System	Location	UL	Sec	T	R	GW	Driving Directions	Work Scheduled	
11/14/2011	еме	G-9 EOL	G	9	205	36E	35'	From Monument at the intersection of highways 8 and 322, take highway 322 WEST 3 miles to Childress Road. Turn RIGHT and follow Childress Road for 2.6 miles. Turn LEFT (SOUTH) and travel 0.15 miles. Tturn RIGHT (WEST) and travel 0.35 miles. Turn LEFT (SOUTH) and travel 0.75 miles. Turn RIGHT (WEST) onto a 2 track road and travel 0.2 miles to the end of the road, the site is on the right, immediately off of the road	Junction box delineation	
11/14/2011	EME	N-35 EOL	N	35	195	36E	64'	From Monument at the intersection of Highways 8 and 322, go WEST on 322 for 3 miles to Childress Road. Turn RIGHT and go WEST on Childress Road for 1.2 miles, turn LEFT (SOUTH) on the lease road and go 250 feet, the location is to the EAST of the lease road 175 ft.	Junction box delineation	
11/1 <mark>4/2</mark> 011	EME	L-5 EOL	L	5	215	36E	162'	From the intersection of Hwy 8 and Maddox Rd., go west on Maddox for 2.5 miles. Turn left on lease rd. for 1.5 miles. Turn left again for .2 of a mile. Turn right and go .5 of a mile. Turn left and go approx. 100 yards. Site is on the right hand side.	Junction box delineation	
11/14/2011	EME	C-5 EOL	с	5	215	36E	162'	From the intersection of Hwy 8 and Maddox Rd., go west on Maddox for 2.5 miles. Turn left on lease rd. for 1.5 miles. Turn left again for .3 of a mile. Turn left once more for approx. 40 yards. Site is on the right hand side.	Junction box delineation	
11/14/2011	EME	Jct. K-8-1	к	8	205	37E	30'	From the intersection of Hwy 8 and Jct. 322 in Monument, go south on Hwy 8 for 2.7 miles. Turn right and go west 0.5 miles to a 'Y' intersection. Take the left hand road and continue west for 0.1 miles. Turn left and go south 0.18 miles. The sites are located north of the tank battery.	Liner installation per CAP submitted to the NMOCD on July 15, 2011 and approved by the NMOCD on August 18, 2011	
11/14/2011	EME	B-7	в	7	205	37E	29'	From the intersection of Hwy 8 and Jct. 322 in Monument, go west on Jct. 322 for 2.6 miles to Maddox Road. Go south on Maddox Road for 1.6 miles to the Cooper 'B' Battery. Turn left and go east on the lease road for 0.5 miles to the site located on the south side of the road.	Liner installation per ICP Report and CAP submitted to the NMOCD on September 8, 2011 an approved by the NMOCD on September 28, 2011 and Plug and abandon MW-1 and MW-3 per the NMOCD approved ICP Report and CAP on 9/28/1	
11/14/2011	еме	C-1 EOL	С	1	205	36E	37'	From the intersection of Hwy 8 and Jct. 322 in Monument, go west on Jct. 322 2.9 miles to Brady Road. Turn left and go south on Brady Road for 0.4 miles. Turn right and follow the lease road for 0.1 miles. Continue through the cattle guard and stay on the lease road until you come to the Apache St. D. Battery. The former junction box site is on the east side of the battery.	Liner installation per CAP submitted to the NMOCD on July 21, 2011 and approved by the NMOCD on August 23, 2011	

11/14/2011	BD	N-18 BGT	N	18	225	37E		From Eunice, go south on Main Street to Delaware Basin Rd. Turn right on Delaware Basin Rd and go west 2.4 miles. Turn left through the cattle guard and go south 0.6 miles. Turn right and go west 0.3 miles. Turn left and go south 0.1 miles. Turn left and continue to site.	Liner installation per CAP submitted to the NMOCD on July 1, 2011 and approved by the NMOCD on July 13, 2011
11/14/2011	Hobbs	G-9 vent	G	9	195	38E	28'	From the intersection of Grimes and Stanolind Road in Hobbs, go west on Stanolind 0.4 miles. Turn left through the cattle guard and go south 0.1 miles to the second caliche road on the left. Turn left and go east 0.1 miles to a Y intersection. Take the right fork and go southeast through the pump jack pad. The site is 20 feet south of the edge of the pump jack pad.	Liner installation per CAP and CAP Addendum submitted to the NMOCD on July 19, 2011 and approved by the NMOCD on August 4, 2011

**RICE** Operating Company

122 West Taylor • Hobbs, New Mexico 88240 Phone: (575) 393-9174 • Fax: (575) 397-1471

January 26<sup>th</sup>, 2010

## Mr. Edward Hansen

New Mexico Energy, Minerals, & Natural Resources Oil Conservation Division, Environmental Bureau 1220 S. St. Francis Drive Santa Fe, New Mexico 87504

Re: BD N-18 SWD System - East and West Tanks UL-N, Sec 18, T22S, R37E Below-Grade Tank Remediation Work Plan

Sent via E-mail and U.S. Certified Mail w/ Return Receipt No. 7008 1140 0001 3072 4543

## Mr. Hansen:

ROC submits this Below-Grade Tank Remediation Work Plan in reference to the NMOCD approved Modifications to the Closure Plan for the BD N-18 SWD facility. 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. Environmental projects of this magnitude require System Party AFE approval, and work begins as funds are received. In general, project funding is not forthcoming until NMOCD approves the work plan. Therefore, your timely review of this submission would be greatly appreciated.

For all such environmental projects, ROC will choose a path forward that:

- protects public health,
- · provides the greatest net environmental benefit,
- · complies with NMOCD Rules, and
- is supported by good science.

## **Background and Previous Work**

The BD N-18 SWD facility is located approximately 4 miles southwest of Eunice, New Mexico. Over the course of 2009, ROC conducted an evaluation of the BD N-18 SWD facility to determine if past or continued operation of the below-grade tanks have or would pose a threat to groundwater quality. This work entailed a tank integrity evaluation conducted by Palmer of Texas, followed by a soil evaluation directed and overseen by Texerra on October 6<sup>th</sup>, 2009. This evaluation found that the tanks have integrity but that soil underneath and surrounding them were affected by residual chloride and petroleum hydrocarbons and further evaluation is warranted. On November 10, 2009, ROC subsequently submitted to NMOCD modifications to the Tank Closure Plan for this facility (attached). Among the work items specified in the (modified) Tank Closure Plan are an Investigation and Characterization Plan

(ICP) to evaluate soils beneath the existing below-grade tanks and a Tank Replacement Plan. These are given, below.

## **Proposed Work Elements**

The purpose of the Work Plan is to determine if there is potential for groundwater degradation from residual soil hydrocarbons and/or chlorides. Key tasks are described below.

- 1. To fulfill the objective of removing and remediating two below-grade tanks at the N-18 SWD. A new salt water disposal terminal facility will be constructed in the SW corner of the existing easement (Figure 1). The N-18 facility currently handles 24,000 bpd of production water; the first step in remediating the BGT at this site is to construct the terminal facility. This will allow for a safe transition to the above ground tanks without any environmental impact. The new facility will have two fiberglass receiving tanks, one fiberglass overflow tank and one fiberglass unloading tank with the necessary plumbing and fittings. The tanks will be installed within a lined secondary containment. A facility pad will be extended and access road will be constructed. The gathering system pipeline will be connected to the new facility and placed into operation prior to removal of the BGT on site. The below grades tanks will be evaluated once removed from current location for beneficial use or disposal.
- 2. ROC will evaluate soils beneath the existing tanks (once they are removed from the site) to determine the depth-distribution of residual soil chlorides and petroleum hydrocarbons. If warranted, a groundwater monitor well will be installed to provide a direct measurement of potential groundwater impact.
- Data will be analyzed in light of available hydro-geological information and the ICP report will be submitted to OCD for review.

If this work indicates a risk of impacting groundwater quality due to leakage from the existing SWD tanks then a Corrective Action Plan (CAP) will be developed and proposed to OCD. The objective of the CAP would be to protect groundwater quality as the site is returned to active use as an SWD facility.

Thank you for your consideration.

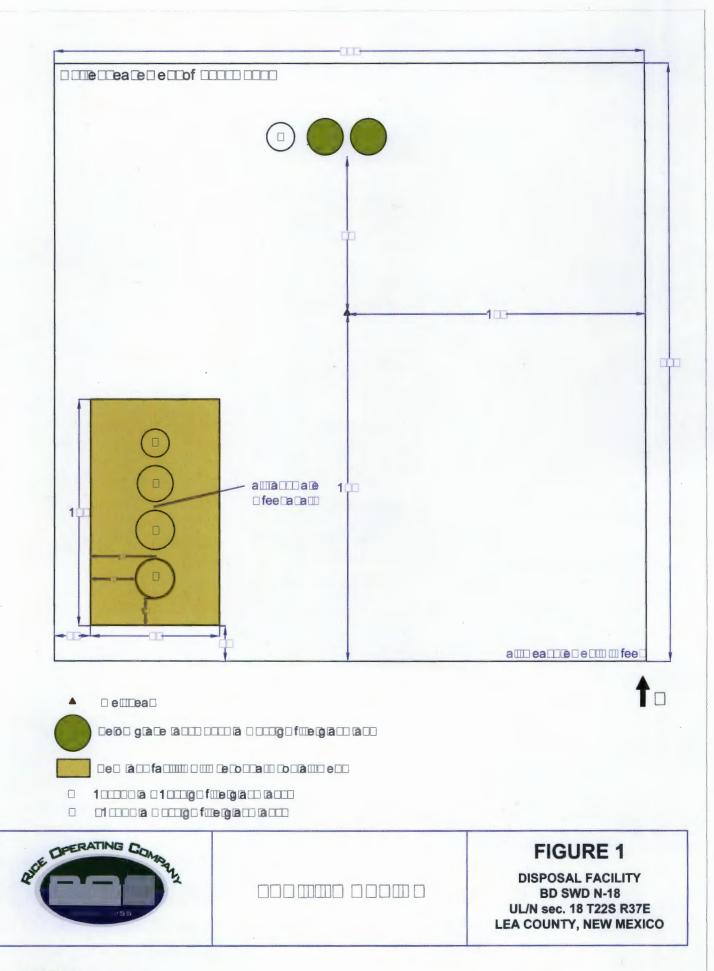
Sincerely,

1

Hack Conder Environmental Manager

Attachments: Figure 1 Modifications to Tank Closure Plan

Copy: Texerra



**RICE** Operating Company

122 West Taylor • Hobbs, New Mexico 88240 Phone: (575) 393-9174 • Fax: (575) 397-1471

November 10<sup>th</sup>, 2009

#### Mr. Edward Hansen

New Mexico Energy, Minerals, & Natural Resources Oil Conservation Division, Environmental Bureau 1220 S. St. Francis Drive Santa Fe, New Mexico 87504

#### RE: Modifications to the Closure Plans Rice Operating Company – BD SWD System BD N-18 SWD – East and West Tanks UL-N, Sec 18, T22S, R37E

Mr. Hansen:

This letter and accompanying documentation are to serve as a modification to the C-144 forms and Closure Plans for the two below-grade tanks at the BD N-18 SWD facility.

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. Environmental projects of this magnitude require System Party AFE approval, and work begins as funds are received. In general, project funding is not forthcoming until NMOCD approves the work plan. Therefore, your timely review of this submission would be greatly appreciated.

Over the course of this past summer, Rice Operating Company conducted an evaluation of the BD N-18 SWD facility to determine if past or continued operation of the belowgrade tanks have or would pose a threat to groundwater quality. This work entailed a tank integrity evaluation conducted by Palmer of Texas, followed by a soil evaluation directed and overseen by Texerra on October 6<sup>th</sup>, 2009. The results of these efforts are given as an attachment. In brief, it was found that <u>the tanks have integrity</u> but that the <u>soils underneath and surrounding them were affected by residual chloride and petroleum</u> hydrocarbons and that further evaluation is warranted.

In light of these facts Rice Operating Company (ROC) proposes the following modifications to the Closure Plans for both tanks (east and west) at this facility:

- 1. ROC will provide NMOCD with a plan for the replacement of the existing belowgrade tanks with above-grade tanks by January 31<sup>st</sup>, 2010. This plan will include:
  - a. An Investigation and Characterization Plan (ICP) to more fully determine the extent of soil contamination by chlorides or petroleum hydrocarbons exists.

- b. Details regarding the layout and design of temporary above-grade replacement SWD tanks or permanent above-grade replacement SWD tanks on the existing caliche pad or on clean, compacted backfill in the optimal location within the existing BD N-18 SWD facility.
  - i. Until the installation of temporary or permanent above-grade replacement SWD tanks, the existing tank excavations will be diked appropriately to prevent run-off water from entering the excavation.
  - ii. Spoil piles from the current excavation will be stored on site with a facility dike surrounding. The spoil piles will be blended to a chloride concentration of 250 mg/kg or less and utilized for backfill of the existing excavation.

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- 2. If significant contamination is found, ROC will work with NMOCD to develop and implement a Corrective Action Plan (CAP).
- 3. Following the completion of the ICP and CAP (if the latter is warranted) ROC will install the permanent above-grade tanks by December 31<sup>st</sup>, 2010. The temporary above-grade tanks will then be removed from the site.
- 4. ROC will continue to use this location as an active SWD facility until its eventual closure at some future date. Ecological restoration of the ground surface will not occur until the facility is ultimately closed.

We submit this information for your review and consideration.

Thank you.

Sincerely,

Hack Conder Environmental Manager

- Copy: Pete Galusky (Texerra) Katie Jones (ROC) file
- Attachments: Report of tank integrity and soil testing. C-144 forms. Tank Closure Plans.

#### **Rice Operating Company BD N-18 SWD Results of Tank Integrity and Soil Testing** 10/30/09

#### **Background and Scope**

In follow-up to a June 8<sup>th</sup>, 2009 meeting with Brad Jones and Edward Hansen of NMOCD, Rice Operating Company (ROC) completed an integrity test of the two below-grade tanks at the BD N-18 SWD system and completed a preliminary soils investigation on October 12<sup>th</sup>, 2009. The purpose of this work was to determine if the past or continued operation of the below-grade tanks at this SWD facility poses a threat to groundwater quality.

The site is located approximately 4 miles southwest of Eunice, New Mexico (Figure 1). The depth to groundwater is believed to be greater than 100 ft.

#### Results

Palmer of Texas conducted a tank integrity test of the BD N-18 facilities in July of 2009 and found no evidence of leakage (Figure 2).

Rice Operating Company personnel subsequently took soil samples from beneath the tanks and from the soils excavated from around the tanks, analyzing them for chlorides and petroleum hydrocarbons. A soil sample was also collected from an apparently unaffected adjacent area to provide a natural "background" soil chloride measurement. Soil samples were taken from depths of approximately 2 to 3 ft using a hand-auger at an approximate angle of 45 degrees, boring below the lip of the tank at the approximate locations shown in Figure 3. Soil samples were composited to provide representative sample areas. This work was supervised by L. Peter Galusky, Jr. of Texerra<sup>1</sup>.

The natural background soil chloride concentration, as measured from a sample taken in a grassy area adjacent to the facility was 194 ppm (as measured by field titration). The composite chloride concentration taken from multiple, representative points from the excavated soil material was 432 ppm. The composite soil chloride concentration taken from the east tank was 720 ppm and that from the west tank was 1,580 ppm. Soil hydrocarbon concentrations for gasoline range organics (GRO) and diesel range organics (DRO) were below laboratory detection limits (< 10 ppm) for both tank composite samples. Diesel range organics (DRO) measured 310 ppm in the excavated soil pile. These values are shown in Figure 3 and given in Figures 4 & 5. Recent photographs of the site are given in the Appendix.

The fact that the tanks have integrity and that hydrocarbons were only found in the excavated soil indicates that the source of all contaminants was from surface overflow rather than tank leakage.

<sup>&</sup>lt;sup>1</sup> Contact: L. Peter Galusky, Jr. E-mail: <u>lpg@texerra.com</u>, Cell: 432-634-9257. Web: <u>www.texerra.com</u> .

These data indicate that the BD N-18 SWD location has been affected by SWD operations. Although the site likely does not pose an immediate threat to groundwater quality in the near term <u>further evaluation is warranted</u>.



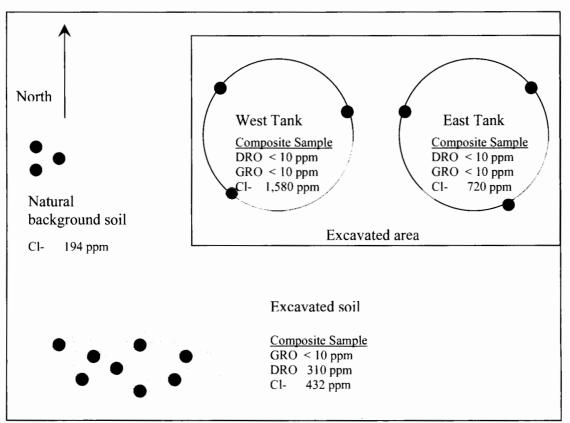
Figure 1 - BD N-18 SWD location (denoted by the letter "A").



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PALMER OF TEXAS - P.O. Box 1069 - Andrews, Texas 79714 - 1-800-367-4550

Figure 2 – Results of tank-integrity inspection at BD N-18.



**Figure 3** – BD N-18 approximate soil sampling locations and laboratory results. Map is not to scale. Drawing is not to scale.

Reporting Date: 10/12/09       Sample Type: SOIL         Project Owner: NOT GIVEN       Sample Condition: COOL & INTACT         Project Name: EAST TANK B.D. N-18 WELL       Sample Received By: ML         Project Location: B.D. N-18 WELL       Analyzed By: AB/HM         GRO       DRO         (CerCtip) (>C100 C28)       CI*         LAB NUMBER SAMPLE ID       (mg/kg)       (mg/kg)         ANALYSIS DATE       10/12/09       10/12/09       10/09/09         H18457-1       EAST TANK 3FT. BOTTOM       <10.0       720         COMPOSIT @ 3FT.       <10.0       310       432         Quality Control       506       543       500         True Value QC       500       500       500         % Recovery       101       109       100         Relative Percent Difference       8.7       1.9       <0.1         METHODS: TPH GR0 & DRO: EPA SW-846 8015 M; CI: Std. Methods 4500-CI'B       *Analysis performed on a 1.4 w:v aqueous extract. Reported on wet weight.       ************************************	RICE OPERATING COMPANY ATTN: HACK CONDER 122 W. TAYLOR HOBBS, NM 88240 FAX TO: (575) 397-1471Receiving Date: 10/09/09 Reporting Date: 10/12/09 Project Owner: NOT GIVEN Project Name: EAST TANK B.D. N-18 WELL Project Location: B.D. N-18 WELLSample Condition: COOL & INTACT Sample Received By: ML Analyzed By: AB/HMGRO DRO ( $C_e^-C_{10}$ ) (>C1°-C28)C1°ANALYSIS DATE H18457-110/12/0910/12/09ANALYSIS DATE COMPOSITE10/12/0910/09/09H18426-4** COMPOSITESPOIL PILE 8 PT. S00<10.0310432 COMPOSITE506543500True Value QC % Recovery500500500% Recovery101109100Relative Percent Difference8.71.9<0.1METHODS: TPH GRO & DRO: EPA SW-846 8015 M; CI: Std. Methods 4500-CI B *Analysis performed on a 1.4 w:v aqueous extract. Reported on wet weight. **GRO/DRO analyzed on 10/08/09 and Chloride on 10/07/09.			PHONE (575)	393-2326 • 101	E. MARLAND • HO	DBBS, NM 88240	
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		**GRO/DRO analyzed on	10/08/09 and Chlor	ide on 10/07	/09.	7		
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118457 TCL RICE	18457 TCL RICE	118457 TCL RICE						

Figure 4 –East tank and spoil pile composite soil lab test results.

	PHONE (575)	393-2326 • 101	E. MARLAND . HOBBS, M	IM 88240
ANALYTICAL RES				
RICE OPERATING ATTN: HACK COI				
122 W. TAYLOR				
HOBBS, NM 8824				
FAX TO: (575) 39 eceiving Date: 10/09/09		Samolina D	ate: 10/08/09	
eporting Date: 10/12/09		Sample Typ		
roject Owner: NOT GIVEN		•	ndition: COOL & I	NTACT
roject Name: WEST TANK B.D. N-18 WELL roject Location: B.D. N-18 WELL		Sample Re Analyzed B	ceived By: ML	
OJECT ECCATION. B.D. N-18 WELL	,	Analyzeu D	y. Abrina	
	GRO	DRO		
		$>C_{10}-C_{28}$	Cl*	
LAB NUMBER SAMPLE ID	(mg/kg)	(mg/kg)	(mg/kg)	
ANALYSIS DATE	· · · · ·	10/12/09	10/09/09	
H18458-1 WEST TANK 3FT, BOTTOM	<10.0	<10.0	1,580	
COMPOSITE @ 3FT.	-			
H18426-4** SPOIL PILE 8 PT.	<10.0	310	432	
COMPOSITE				
Quality Control	506	543	500	
True Value QC	500	500	500	
% Recovery	101	109	100	
Relative Percent Difference METHODS: TPH GRO & DRO: EPA SW-84	8.7	1.9 Std Meth	<0.1	
*Analysis performed on a 1:4 w:v aqueous ex	xtract. Repor	ted on wet		
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8458 TCL RICE				

Figure 5 – West tank and spoil pile composite soil lab test results.

# **APPENDIX** – Photographs



Photograph A - View of BD N-18 SWD near entrance to site.



Photograph B- View during soil augering under east tank, looking northwest.



Photograph C – View of "natural background" soil sampling area.



Photograph D - View east toward BD N-18 SWD. Excavated soil is on the right.

From:	Hack Conder
То:	Katie Jones;
Subject:	FW: ROC Below-Grade Tank Closure Plan Approvals
Date:	Thursday, February 19, 2009 2:07:39 PM

Hack Conder Enviromental Manager Rice Operating Company 575-393-9174 fax 575-397-1471

From: Hansen, Edward J., EMNRD [mailto:edwardj.hansen@state.nm.us]
Sent: Tuesday, January 13, 2009 3:16 PM
To: Hack Conder
Cc: Price, Wayne, EMNRD; Johnson, Larry, EMNRD; Katie Lee
Subject: ROC Below-Grade Tank Closure Plan Approvals

RE: Below-Grade Tank Closure Plan Approvals
for the Rice Operating Company's
BD SWD N-18 Site (East Tank and West Tank)

Unit Letter B, Section 18, T22S, R37E, Lea County, New Mexico

EME SWD G-8 Site (East Tank and West Tank)

Unit Letter G, Section 8, T20S, R37E, Lea County, New Mexico

Justis SWD B-12 Site (North Tank and South Tank)

Unit Letter B, Section 12, T25S, R37E, Lea County, New Mexico

Dear Mr. Conder:

The New Mexico Oil Conservation Division (OCD) has received the revised Closure Plans for the BD SWD N-18 Site (East Tank and West Tank), the EME SWD G-8 Site (East Tank and West Tank) and the Justis SWD B-12 Site (North Tank and South Tank), dated December 16, 2008, and has conducted a review of the Plans. The Plans, submitted for the abovereferenced sites, indicates that Rice Operating Company (ROC) has substantially met the requirements of OCD Part 17 for closure plans. However, due to the integrity issues with the fiberglass tanks used by ROC, the OCD has concerns regarding the safety of public health and the environment. Therefore, the OCD hereby conditionally approves the Closure Plans for above-referenced below-grade tanks in accordance with 19.15.17 NMAC:

ROC shall close the above-referenced below-grade tanks within one year in accordance with Subsection A of 19.15.17.13 NMAC.

ROC shall not retrofit the above-referenced below-grade tanks in accordance with Paragraph (6) Subsection I of 19.15.17.11 NMAC nor pursue a permit or permit modification in accordance with Subsection D of 19.15.17.17 NMAC.

ROC shall use EPA method 418.1 to determine TPH concentrations (not EPA method 300.1 as specified in the item 5.c of the Closure Plans) in accordance with Subsection E of 19.15.17.13 NMAC.

ROC shall construct the soil cover to the sites' existing grade in accordance with Subsection H of 19.15.17.13 NMAC.

Since ROC is not requesting any Administrative Approvals under 19.15.17 NMAC (contrary to the "Administrative Approval(s)" box that is checked on each of the Form C-144s), no Administrative Approvals are being granted by the OCD for these Closure Plans.

Please be advised that OCD approval of these Plans does not relieve the owner/operator of responsibility should operations pose a threat to ground water, surface water, human health or the environment. In addition, OCD approval does not relieve the owner/operator of responsibility for compliance with any OCD, federal, state, or local laws and/or regulations.

If you have any questions regarding this matter, please contact me at 505-476-3489.

Edward J. Hansen Hydrologist Environmental Bureau Confidentiality Notice: This e-mail, including all attachments is for the sole use of the intended recipient(s) and may contain confidential and privileged information. Any unauthorized review, use, disclosure or distribution is prohibited unless specifically provided under the New Mexico Inspection of Public Records Act. If you are not the intended recipient, please contact the sender and destroy all copies of this message. -- This email has been scanned by the Sybari - Antigen Email System.

# R. T. HICKS CONSULTANTS, LTD.

901 Rio Grande Blvd NW ▲ Suite F-142 ▲ Albuquerque, NM 87104 ▲ 505.266.5004 ▲ Fax: 505.266-0745

December 15, 2008

Edward J. Hansen NMOCD Environmental Bureau 1220 South St. Francis Drive Santa Fe, New Mexico 87505 Via E-mail

#### RE: Closure Plan for two Below Grade Tanks at BD N-18, Unit N, Section 18, T 22S, R 37E

Dear Mr. Hansen:

On behalf of Rice Operating Company, R.T. Hicks Consultants, Ltd. is pleased to submit the attached Closure Plan for ROC Below-Grade Tanks in response to your November 25<sup>th</sup>, 2008 letter requesting additional information and modifications. Attached here, please find a revised Closure Plan and separate C-144 forms for each of the two tanks at this site.

These below-grade tanks will be replaced with above grade tanks in keeping with industry practice.

Sincerely, R.T. Hicks Consultants, Ltd.

Katie Lee

Katie Lee Project Scientist

Copy: Rice Operating Company

# R. T. HICKS CONSULTANTS, LTD.

901 Rio Grande Blvd NW ▲ Suite F-142 ▲ Albuquerque, NM 87104 ▲ 505.266.5004 ▲ Fax: 505.266-0745

# **Closure Plan for ROC Below-Grade Tanks**

Pursuant to Closure Requirements: NMAC Subsection E, 19.15.17.13 This is ROC's standard procedure for all below-grade tanks. A separate plan will be submitted for any below-grade tank that does not conform to this plan.

# Schedule

- ROC shall close below-grade tanks within the time periods provided in 19.15.17.13 NMAC, or by an earlier date that the division requires because of imminent danger to fresh water, public health or the environment.
- ROC shall close either of these below-grade tanks if they do not meet the requirements of Paragraphs (1) through (4) of Subsection I of 19.15.17.11 NMAC within five years after June 16, 2008, if not retrofitted to comply with Paragraphs (1) through (4) of Subsection I of 19.15.17.11 NMAC.
- ROC shall close these tanks by June 16, 2013 and within 60 days of cessation of the below-grade tanks' operation, or as required by the transitional provisions of Subsection B of 19.15.17.17 NMAC in accordance with a closure plan that the appropriate division district office approves along with a filed C-144 form.

# **Closure Method**

- 1. ROC shall obtain prior approval from OCD to dispose, recycle, reuse, or reclaim the below-grade tanks and provide documentation of the final disposition of the below-grade tank in the closure report.
- 2. ROC shall remove liquids and sludge from the tanks prior to implementing the closure and shall dispose of the liquids and sludge in a NMOCD-approved facility (Sundance Services, Facility number: NM-01-0003).
- 3. ROC shall remove the below-grade tanks and recycle, reuse, or reclaim them if possible.
- 4. ROC shall remove any on-site equipment associated with the below grade tanks, unless the equipment is required for some other purpose.
- 5. ROC shall test the soils beneath the below-grade tanks to determine whether a release has occurred. ROC will collect a five point, composite sample and individual grab samples for any area that is wet, discolored, or showing other evidence of a release and analyze for: BTEX, TPH and chlorides to determine if samples meet NMOCD requirements, as determined by approved methods, specifically:
  - a. Benzene does not exceed 0.2 mg/kg, as determined by EPA SW-846 methods 8021B or 8260B
  - b. Total BTEX does not exceed 50 mg/kg, as determined by EPA SW-846 methods 8021B or 8260B
  - c. TPH concentration does not exceed 100 mg/kg, as determined by EPA method 300.1
  - d. Chloride concentration does not exceed 250 mg/kg, as determined by EPA method 300.1, or the background concentration, whichever is greater.

ROC will notify NMOCD of results on form C-141.

ROC Below-Grade Tank Closure Plan Page 2

- 6. If ROC determines that a release has occurred, ROC shall comply with 19.15.3.116 NMAC and 19.15.1.19 NMAC as appropriate.
- 7. If the sampling program demonstrates that a release has not occurred or that any release does not exceed the concentrations specified in Paragraph (4) of Subsection E of 19.15.17.13 NMAC, then ROC shall backfill the excavation with compacted, non-waste containing, earthen material. If the site will not be used for future service and operations, ROC will construct a division-prescribed soil cover; re-contour and re-vegetate the site.
- 8. The soil cover, re-contouring and re-vegetation shall comply with Subsections G, H, and I of 19.15.17.13 NMAC as described below. However, currently ROC does plan to continue to use the site for operations.
  - a. Site Reclamation –ROC will, upon closure of the below-grade tanks, reclaim the below-grade tank locations and all areas associated with them. Soil placed over the site shall be re-contoured to a contour that approximates the original contour and blends with surrounding topography.
  - b. Soil cover design the soil cover for closure, after the below-grade tanks are removed, shall consist of the background thickness of topsoil or one foot of suitable material to establish vegetation at the site, whichever is greater. The soil cover shall be graded to prevent ponding of water and erosion of the cover material.
  - c. ROC will seed the disturbed areas in the first growing season after closing the below-grade tank areas. ROC shall accomplish seeding by drilling on the contour whenever practical or by other division-approved methods and shall obtain vegetative cover that equals 70% of the native perennial vegetative cover consisting of at least three native plan species, including at least one grass and not including noxious weeds, and maintain that cover through two successive growing seasons. During the two growing seasons that prove viability, there shall be no artificial irrigation of the vegetation. ROC shall repeat seeding until it successfully achieves the required vegetative cover and shall notify NMOCD when successful re-vegetation is achieved.

## Notice

Notice of Closure operations will be given to the Hobbs Division District I office verbally or by other means at least 72 hours, but not more than one week prior to any closure operation. The notice shall include:

- Operator's name,
- Location to be closed by unit letter, section, township and range,
- Well name and API number, if closure is associated with a particular well

The surface owner shall be notified by certified mail, return receipt requested, of plans to close the below-grade tank. Evidence of mailing of the notice to the address of the surface owner shown in the county tax records will be retained to demonstrate, if need be, compliance with this requirement.

ROC Below-Grade Tank Closure Plan Page 3

# Reporting

Within 60 days of closure completion, ROC shall submit a closure report on form C-144 and certify that all information in the report and attachments is correct and that ROC has complied with all applicable closure requirements and conditions specified in the approved closure plan, with necessary attachments to document all closure activities including:

- Sampling results,
- Information required by 19.15.17 NMAC such as, where applicable:
  - Proof of closure notice to division and surface owner,
  - Disposal facility name and permit number,
  - Inspection reports,
  - Re-vegetation application rates and seeding techniques,
  - o Photo documentation of the site reclamation,
- A plot plan
- Details on backfilling, capping and covering where applicable

From:	Hansen, Edward J., EMNRD
То:	Hack Conder;
cc:	Leking, Geoffrey R, EMNRD; Katie Jones; L Peter Galusky Jr @ Texerra;
Subject:	"Remediation Work Plan" Approval for BD SWD N-18 Site (East Tank and West Tank)
Date:	Thursday, January 28, 2010 2:46:11 PM

# RE: "Remediation Work Plan" Approval for the Rice Operating Company's BD SWD N-18 Site (East Tank and West Tank) Unit Letter B, Section 18, T22S, R37E, NMPM, Lea County, New Mexico

Dear Mr. Conder:

The New Mexico Oil Conservation Division (OCD) has received the Remediation Work Plan for the BD SWD N-18 Site (East Tank and West Tank), dated January 26, 2010, and has conducted a review of the Plan. The Plan, submitted for the abovereferenced sites, indicates that Rice Operating Company (ROC) has substantially met the requirements of 19.15.17 NMAC (Part 17) for a closure plan. Therefore, the OCD hereby conditionally approves the Remediation Work Plan for above-referenced belowgrade tanks in accordance with 19.15.17 NMAC:

ROC must begin implementation of the Plan within 180 days.

ROC must comply with 19.15.29 NMAC (Part 29) (including the submittal of a Form C-141) if applicable.

Please be advised that OCD approval of this Plan does not relieve the owner/ operator of responsibility should operations pose a threat to ground water, surface water, human health or the environment. In addition, OCD approval does not relieve the owner/operator of responsibility for compliance with any OCD, federal, state, or local laws and/or regulations.

If you have any questions regarding this matter, please contact me at 505-476-3489.

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627 Forest View Way Monument, Colorado 80132 Tel: 719-339-6791 E-mail: lpg@texerra.com

July 1st, 2011

#### 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: Rice Operating Company Site Summary and Corrective Action Plan BD N-18 Below Grade Tanks UL-N, Sec 18, T22S, R37E NMOCD Case No. 1R-500

Sent via E-mail and U.S. Certified Mail w/ Return Receipt No. 7011 0110 0001 5863 4813

Mr. Hansen,

This report is to serve as a summary of the history and investigative activities associated with Rice Operating Company's BD N-18 Below Grade Tank (BGT) site and to present a Corrective Action Plan (CAP) to remediate and protect groundwater quality at this location. The site is located approximately 4 miles southwest of Eunice, New Mexico (Figures 1 & 2). The depth to groundwater is approximately 100 ft below ground surface (bgs).

#### History of Site Characterization Activities

In follow-up to a June 8<sup>th</sup>, 2009 meeting with Brad Jones and Edward Hansen of NMOCD, Rice Operating Company (ROC) completed an integrity test of the two below-grade tanks at the BD N-18 SWD system and completed a preliminary soils investigation on October 12<sup>th</sup>, 2009. The purpose of this work was to determine if the past or continued operation of these below grade tanks pose a threat to groundwater quality. Palmer of Texas conducted a tank integrity test of the BD N-18 tanks in July of 2009 and found the tanks have integrity. The natural background soil chloride concentration, as measured from a sample taken in a grassy area adjacent to the facility was 194 ppm. The composite/average chloride concentration taken from multiple, representative points from the excavated soil material was 432 ppm. The composite/average soil chloride concentration taken from the east tank was 720 ppm and that from the west tank was 1,580 ppm. Soil hydrocarbon concentrations for gasoline range organics (GRO) and diesel range organics (DRO) were below laboratory detection limits (< 10 ppm) for both tank composite samples. Diesel range organics (DRO) measured 310 ppm in the excavated soil pile. The fact that the tanks have integrity and that hydrocarbons were only found in the excavated soil indicates that the source of all contaminants was from surface overflow rather than tank leakage.

Subsequent to this initial investigation, ROC conducted further soil sampling and analyses, installed monitor wells and sampled groundwater. This work, which is briefly summarized below, was

presented in Texerra's site characterization report of April 29<sup>th</sup>, 2011 and subsequently approved by OCD on May 4<sup>th</sup>, 2011.

ROC analyzed soils for chlorides and petroleum hydrocarbons at varying depths from near the surface (5 ft bgs) to the groundwater capillary fringe (approximately 100 ft bgs) beneath the former tanks (these having been removed and replaced in 2010 with new above-ground tanks located to the southwest on the lease pad) and in areas exhibiting apparent surface evidence of historical impacts (Figure 3). ROC also installed groundwater monitor wells at BD N-18 BGT and at up-gradient and down-gradient locations, and sampled groundwater for chlorides and BTEX (Figure 4).

It is clear from the high groundwater chloride concentration in the up-gradient monitor well (MW-2: 1,220 ppm) that the on-coming regional, base-line groundwater is not pristine but has been degraded by historical impacts from up-gradient sources and not caused by activities at the BD N-18 BGT location (see Figure 2). Nevertheless, historical activities at the subject site do appear to have caused a moderate increase in down-gradient groundwater chlorides, as evidenced by the elevated groundwater chloride concentration beneath the site (MW-1: 2,400 ppm) and a down-gradient concentration that is moderately elevated above that of the on-coming (up- gradient) groundwater (MW-3: 1,720 ppm). This is supported by the generally elevated levels of soil chlorides measured at and across the affected area. It should be pointed out that no petroleum hydrocarbons (either as BTEX in groundwater or PID in soils) were found in this investigation.

#### Further Site Analysis and Modeling

The estimated extent (in plan view) of the affected area that has contributed chlorides to groundwater is given in Figure 3. The estimated, calculated mass of groundwater chloride contributed from historical operations of these former below grade tanks is approximately 1,927 kg (Table 1).

The model Multi-Med was run to anticipate the potential movement of residual, contributed soil chlorides into groundwater. Using an infiltration rate of 1.5 inches/yr (and other parameter values as summarized in Table 2) the maximum projected increase in groundwater chloride was projected to be less than 200 mg/kg (Figure 5).

These estimates and projections support the Corrective Action Plan proposed below.

#### Proposed Corrective Action Plan

#### Saturated Zone (groundwater) Remedy

We propose to remedy the contributed mass of groundwater chlorides (1,927 kg) by pumping water from the near-source well (MW-1) to remove an equivalent mass of chlorides. Our calculations indicate that this will be accomplished through the removal of approximately 4,400 bbls of groundwater from MW-1 (Table 1) and that this will over the course of approximately 64 days (depending upon the actual well yield and the actual, measured concentration of the pumped groundwater).

#### Vadose (unsaturated) Zone Remedy

Although Multi-Med modeling indicates that residual, contributed soil chlorides do not pose a threat to groundwater quality without any remedy, we nevertheless propose to install a synthetic doubleliner system across the former tank area to preclude any possibility of potential future groundwater impacts (Figure 3). The bottom liner will be installed at an approximate depth of 30 ft bgs and encompass an area of approximately 98 ft by 98 ft. Excavated soil material having a chloride concentration less than 2,000 mg/kg chloride and 100 PID (petroleum hydrocarbons) will be placed on top of this lower liner. The upper liner will be installed approximately 4 to 5 ft bgs and encompass an area of approximately 108 ft by 108 ft. Soil material having a chloride concentration of less than 500 mg/kg and 100 PID will be placed on top of the upper liner and graded to the natural ground contour. Excavated soil will be evaluated for use as backfill and any soil requiring disposal will be properly disposed of at a NMOCD approved facility. The ground surface above the liner system will be covered with caliche as the site will remain part of an active and operating SWD system.

Upon the removal of the equivalent, contributed chloride mass and the installation of the double liner system, we will submit a report to OCD documenting this work and request remediation termination or similar closure status.

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. Environmental projects of this magnitude require System Party AFE approval, and work begins as funds are received. In general, project funding is not forthcoming until NMOCD approves the work plan. Therefore, your timely review of this submission would be greatly appreciated.

Please do not hesitate to contact either myself or Katie Jones at Rice Operating Company if you have any questions or need additional information.

Thank you.

Sincerely,

L. Peter Galusky, Jr. Ph.D. Principal

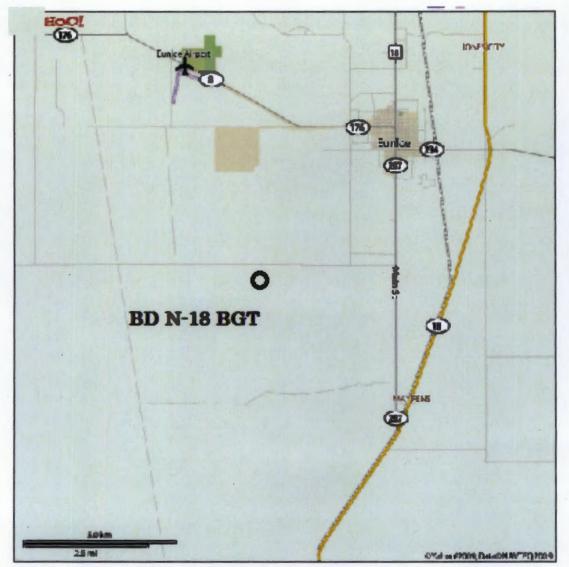


Figure 1 – BD N-18 BGT site location.

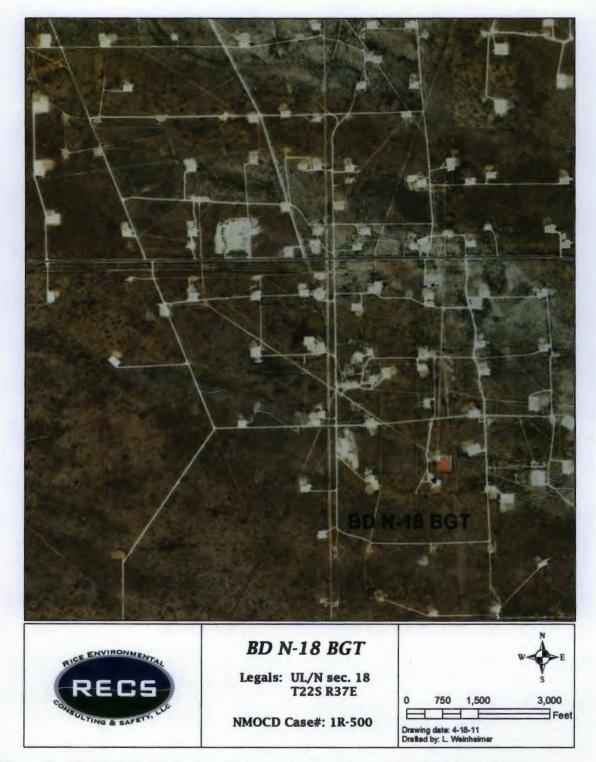


Figure 2 - BD N-18 BGT location relative to nearby and up-gradient oil-field operations.

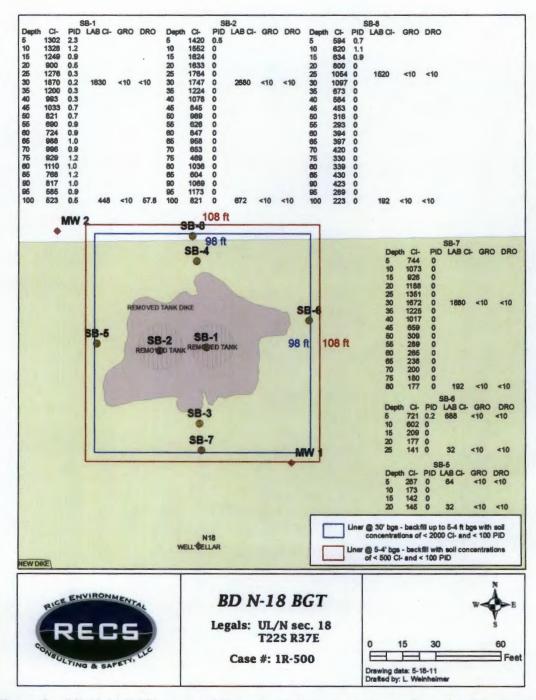
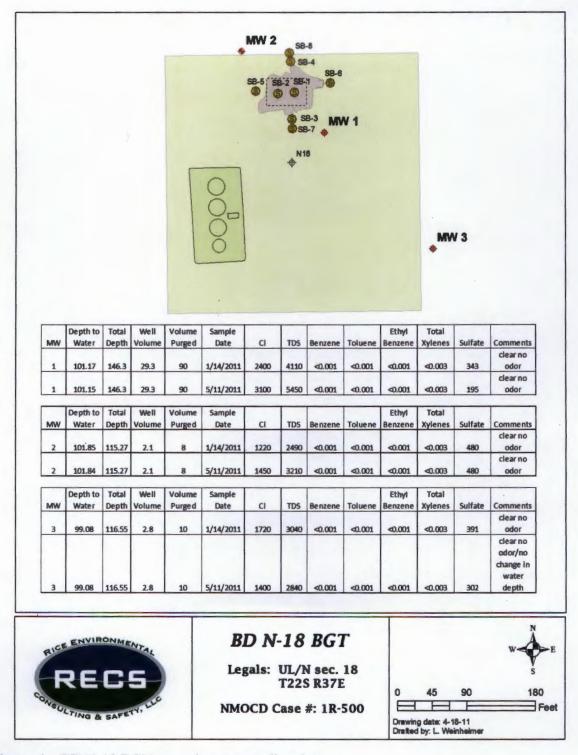


Figure 3 - BD N-18 BGT proposed liners in relation to monitor wells and soil borings.

6



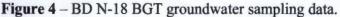


Table 1 – BD N-18 BGT estimated mass of chloride	es in groundwater contributed by past operation
of the former below grade tanks.	·····
Soil & Groundwater Chloride Calculator	
Estimated Mass of Contributed, Residual Chloride	
from Saturated Zone Groundwater	
Site:	BD N-18 BGT
This estimate prepared by:	L. Peter Galusky, Jr.
Date:	6/29/2011
Model Inputs	Notes
the state of the s	00 actimated
length of affected area (ft)	98 estimated
width of affected area (ft)	98 estimated
depth to water table (ft)	100 measured
sat zone affected thickness (ft)	20 prescribed by NMOCD
sat zone porosity	25% estimated
CI- conc of affected groundwater (ppm)	2,750 avg of two measurements
CI- conc of up-gradient groundwater (ppm)	1,335 avg of two measurement
sat zone mass density (lbs/cu yd)	3,000 estimated
CI- conc of recovery well (ppm)	2,750 MW-1 on location
avg daily pumping rate of recover well (gpm)	2.0 anticipated
Intermediate (calculated) Parameters	
affected area (sq ft)	9,604 calculated
volume of affected groundwater (cu ft)	48,020 calculated
mass of affected groundwater (lbs)	2,995,641 calculated
mass of contributed CI- in affected groundwater (lbs)	4,239 calculated
avg daily pumping rate of recovery well (bbls/day)	68.6 calculated
CI- conc of recovery well (lbs/bbl)	1.0 calculated

# **Table 1** - BD N-18 BGT estimated mass of chlorides in groundwater contributed by past operation

#### Estimated Contributed CI- Mass and Equivalent Pumping Volume & Time

mass of contributed CI- in affected groundwater (kg) approx volume of groundwater to be removed (bbls) # acre feet ... approx # of days pumping required to remove contributed

Cl- conc of recovery well (kg/bbl)

1,927 calculated 4,400 calculated ... see note, below 0.57 calculated 64 anticipated

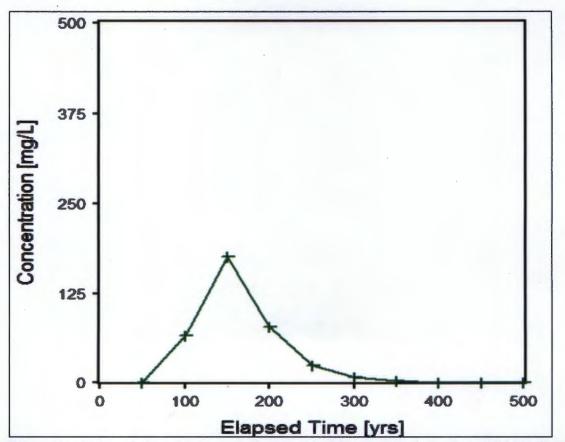
0.4 calculated

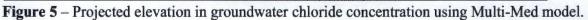
Notes

The actual volume of groundwater to be removed will depend upon the measured chloride concentration of the groundwater as it is removed during the course of pumping.

 Table 2 – Multi-Med model key input parameter estimates

MultiMed Input Parameter Est	timates		
Key Parameters			
			Notes
Source area length	98 ft	29.8704 m	
Source area width	98 ft	29.8704 m	
Infiltration rate	1.5 in/yr	0.0381 m/yr	
wtable depth	100 ft	30.48 m	
bottom depth of liner	30 ft bgs	9.144 m	
dist from liner to water table	85 ft	25.908 m	
aquifer thickness	20 ft	6.096 m	assumed





From:	Hansen, Edward J., EMNRD
То:	Hack Conder
Cc:	Leking, Geoffrey R, EMNRD; Katie Jones; lpg@texerra.com
Subject:	Corrective Action Plan (1R-500) Approval - ROC BD N-18 BGT Site
Date:	Wednesday, July 13, 2011 3:07:17 PM

#### RE: Site Summary and Corrective Action Plan for the Rice Operating Company's BD N-18 BGT Site Unit Letter N, Section 18, T22S, R37E, NMPM, Lea County, New Mexico Corrective Action Plan (1R-500) Approval

Dear Mr. Conder:

The New Mexico Oil Conservation Division (OCD) has received the Site Summary and Corrective Action Plan for the BD N-18 BGT Site, dated July 1, 2011 and has conducted a review of the plan. The plan indicates that Rice Operating Company (ROC) has substantially met the requirements of 19.15.29 NMAC (Part 29; formerly, Rule 116) for a remediation plan. Therefore, the OCD hereby conditionally approves the plan for above-referenced site in accordance with 19.15.29 NMAC:

ROC must recalculate the amount of groundwater to be recovered (based on the chloride concentration in the recovered groundwater) on a bi-weekly basis.

ROC must recover a sufficient amount of groundwater to remove the calculated amount of chloride as specified in the plan or to create a significant reduction in chloride concentration in the groundwater, whichever occurs later. (However, if the chloride concentration in the groundwater at the site is reduced to the background concentration, then no further groundwater recovery will be required.)

ROC must submit to the OCD the proposed report regarding remediation within 180 days.

Please be advised that OCD approval of this plan does not relieve the owner/operator of responsibility should operations pose a threat to ground water, surface water, human health or the environment. In addition, OCD approval does not relieve the owner/operator of responsibility for compliance with any OCD, federal, state, or local laws and/or regulations.

If you have any questions regarding this matter, please contact me at 505-476-3489.

Edward J. Hansen Hydrologist Environmental Bureau

From:	Katie Jones
То:	Hansen, Edward J., EMNRD
Cc:	Hack Conder; L Peter Galusky; Laura Pena
Subject:	BD N-18 BGT (1R-500) CAP Addendum
Date:	Monday, January 23, 2012 10:40:29 AM
Attachments:	<u>BD N-18 BGT - spoil pile lab.pdf</u> BD N-18 BGT excavating to 30 ft, facing NW 1.17.12.JPG

#### Mr. Hansen:

The following is an Addendum to the BD N-18 BGT (1R-500) Corrective Action Plan (CAP) submitted to the NMOCD on July 1, 2011 and approved on July 13, 2011.

The site has been excavated to dimensions of 98x98 ft to a depth of 27 ft below ground surface (bgs) with a 4-5 ft deep shelf extending 5 ft north, south, east, and west. Personnel began excavating the site to 30 ft bgs, and an unexpected rock layer was encountered making excavating almost impossible. An area of approximately 15x15 ft required almost 4 days of field work to reach the depth of 30 ft bgs. A photograph showing progress as of January 17, 2012 is attached. Excavated soil has also yielded unexpectedly low chloride concentrations that meet backfill requirements, as approved by the NMOCD. A composite sample from each of the four spoil piles was analyzed by Cardinal Laboratories and yielded concentrations of 304 mg/kg, 608 mg/kg, 352 mg/kg, and 464 mg/kg (lab analysis is attached). A bottom composite sample was also field titrated this morning, January 23, 2012, and yielded a chloride concentration of 855 mg/kg. Based on the unexpected rock layer and the lower concentrations of chloride encountered at depth, ROC proposes installing the synthetic liner at 27 ft bgs as noted in the following Addendum to the NMOCD approved CAP.

Page 3, paragraph 1: *Vadose (unsaturated) Zone Remedy*; red lettering will be deleted from the paragraph and blue lettering will be added to the paragraph.

"Although Multi-Med modeling indicates that residual, contributed soil chlorides do not pose a threat to groundwater quality without any remedy, we nevertheless propose to install a synthetic double liner system across the former tank area to preclude any possibility of potential future groundwater impacts (Figure 3). The bottom liner will be installed at an approximate depth of <del>30</del>27 ft bgs and encompass an area of approximately 98 ft by 98 ft. Excavated soil material having a chloride concentration less than 2,000 mg/kg chloride and 100 PID (petroleum hydrocarbons) will be placed on top of this lower liner. The upper liner will be installed approximately 4 to 5 ft bgs and encompass an area of approximately 108 ft by 108 ft. Soil material having a chloride concentration of less than 500 mg/kg and 100 PID will be placed on top of the upper liner and graded to the natural ground contour. Excavated soil will be evaluated for use as backfill and any soil requiring disposal will be properly disposed of at a NMOCD approved facility. The ground surface above the liner system will be covered with caliche as the site will remain part of an active and operating SWD system." If you have any questions or require any additional information, please contact myself at (575)393-9174 or Hack Conder at (575)631-6432.

Thank you.

Katie Jones Environmental Project Manager RICE *Operating Company* 

From:	Katie Jones
То:	Laura Pena
Subject:	FW: CAP (1R-500) Addendum Approval - ROC BD N-18 BGT Site
Date:	Friday, January 27, 2012 10:15:37 AM

From: Hansen, Edward J., EMNRD [mailto:edwardj.hansen@state.nm.us]
Sent: Monday, January 23, 2012 2:10 PM
To: Katie Jones
Cc: Leking, Geoffrey R, EMNRD; Hack Conder; L Peter Galusky; Laura Pena
Subject: CAP (1R-500) Addendum Approval - ROC BD N-18 BGT Site

#### RE: Corrective Action Plan (1R-500) Addendum Approval for the Rice Operating Company's BD N-18 BGT Site Unit Letter N, Section 18, T22S, R37E, NMPM, Lea County, New Mexico

Dear Ms. Jones:

The New Mexico Oil Conservation Division (OCD) has received the Corrective Action Plan Addendum, dated January 23, 2012 and has conducted a review of the proposed CAP Addendum. The Addendum indicates that Rice Operating Company (ROC) has met the requirements of 19.15.29 NMAC (Rule 29; formerly, Rule 116) for a remediation plan. Therefore, the OCD hereby approves the Corrective Action Plan Addendum as proposed for above-referenced site in accordance with 19.15.29 NMAC.

Please be advised that OCD approval of this addendum does not relieve the owner/operator of responsibility should operations pose a threat to ground water, surface water, human health or the environment. In addition, OCD approval does not relieve the owner/operator of responsibility for compliance with any OCD, federal, state, or local laws and/or regulations.

If you have any questions regarding this matter, please contact me at 505-476-3489.

Edward J. Hansen Hydrologist Environmental Bureau

627 Forest View Way Monument, Colorado 80132 Tel: 719-339-6791 E-mail: lpg@texerra.com

March 6<sup>th</sup>, 2012

Mr. Edward Hansen Oil Conservation Division, Environmental Bureau 1220 S. St. Francis Drive Santa Fe, New Mexico 87505

Re: Rice Operating Company Corrective Action Plan Progress Report BD N-18 Below Grade Tanks NMOCD Case No. 1R-500 UL-N, Sec 18, T22S, R37E

Sent via E-mail and U.S. Certified Mail w/ Return Receipt No. 7011 0110 0001 5863 4844

Mr. Hansen,

This letter summarizes progress made in implementing the OCD approved Corrective Action Plan (CAP) of July 1<sup>st</sup>, 2011 and CAP Addendum of January 23<sup>rd</sup>, 2012 for Rice Operating Company's BD N-18 Below Grade Tank (BGT) project (Figures 1&2).

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 key elements of this CAP are summarized, below:

CAP Corrective Actions Planned

Vadose (unsaturated) Zone Remedy

The removal of chloride impacted soils and the installation of a synthetic double-liner system across the former tank area to preclude any possibility of potential future groundwater impacts (Figure 3). The bottom liner would be installed at an approximate depth of 30 ft bgs and encompass an area of approximately 98 ft by 98 ft. Excavated soil material having a chloride concentration less than 2,000 mg/kg chloride and 100 PID will be placed on top of the lower liner. The upper liner would be installed approximately 4 to 5 bgs and encompass an area of approximately 108 ft x 108 ft. Soil material having a chloride concentration of less than 500 mg/kg and 100 PID will be placed on top of the upper liner and contoured to ground surface. Excavated soil will be evaluated for use as backfill, and any soil requiring disposal will be properly disposed of at a NMOCD approved facility. Ground surface above the liner will be covered with caliche.

#### BD N-18 BGT

#### Saturated Zone (groundwater) Remedy

The removal of the estimated mass of chlorides (1,927 kg) from the near-source well (MW-1), or approximately 4,400 bbls of groundwater. NMOCD approved the chloride mass with the condition that the amount of groundwater to be recovered be recalculated on a bi-weekly basis based on the chloride concentration in the recovered groundwater. Also, a sufficient amount of groundwater must be recovered to remove the calculated chloride mass or to create a significant reduction in chloride concentration in the groundwater, whichever occurs later. (However, if the chloride concentration in the groundwater at the site is reduced to the background concentration, then no further groundwater recovery will be required.)

#### Corrective Action Progress

ROC removed the two below-grade tanks in 2010 and began excavating beneath them to install the double-liner system in November 2011. Although the initial design was to install the 98 ft by 98 ft lower synthetic liner at 30 ft bgs, rock was encountered at 27 ft bgs. An eight-point composite soil sample from that depth tested 1,060 mg/kg for chlorides (Appendix A-1) and 45.9 ppm for PID hydrocarbons (Appendix A-2). ROC subsequently submitted a CAP Addendum to install the liner at 27 ft bgs and this was approved by OCD on January 23<sup>rd</sup>, 2012.

The bottom of the excavation was padded with 6 inches of blow sand, and the 98 ft by 98 ft, 20 mil reinforced synthetic liner was properly seated. A 6 inch blow sand pad was then placed above the liner. The excavation was backfilled in 3 ft lifts with the previously excavated soil from Stockpile B, which had a laboratory chloride result of 608 mg/kg and a PID of 6.3 ppm, and from the 8 Pt Comp Spoil Pile, which had a laboratory chloride result of 464 mg/kg and a PID of 2.4 ppm (Appendix A-3, A-4). Once the excavation was backfilled up to 5 ft bgs, 6 inches of blow sand were used to pad the excavation. The second, near-surface 108 ft by 108 ft, 20 mil reinforced synthetic liner was installed and properly seated at 4.5 ft bgs with a 6-inch pad of clean blow sand carefully placed above it. The remaining excavation was backfilled with previously excavated soil from Stockpile A, which had a laboratory chloride reading of 304 mg/kg and a PID of 0.6 ppm, and from 8 Pt Comp Stockpile C, which had a laboratory chloride result of 352 mg/kg and a PID of 2.7 ppm, to within approximately 2 ft of the surface (Appendix A-3, A-4). The remaining volume was backfilled with clean, imported caliche, which tested 96 mg/kg and 144 mg/kg for chlorides (Appendix A-5) and 0.6 ppm and 1.6 ppm for PID hydrocarbons (Appendix A-6).

Over the course of this work, which was completed on February 15<sup>th</sup>, 2012, a total of 806 cu yards of chloride-impacted soil material was removed and taken to Sundance Services for proper disposal. A total of approximately 1,456 cu yards of clean caliche were brought to the site to complete backfill and prepare a pad so that the site could be returned to normal use. A photographic chronology of the course of this work is given in Figures 4a-4c. Laboratory reports for soil chloride analyses and field PID reports are given in the Appendix.

#### BD N-18 BGT

#### Conclusion

ROC has completed the vadose (unsaturated) zone remedy specified in the OCD-approved Corrective Action Plan for this location. *We therefore request that OCD grant remedial closure status for the vadose zone for this project.* 

ROC is presently planning work to address the saturated (groundwater) zone remedy specified in the Corrective Action Plan. We will report progress and results of these efforts to OCD upon their completion.

We appreciate your review of this report and your consideration of our request for remedial closure for the unsaturated zone. Please contact either myself or Rice Operating Company if you have any questions or need additional information.

Sincerely,

L. Peter Galusky, Jr. Ph.D. Principal

Copy: Rice Operating Company



Figure 1 – BD N-18 BGT site location.

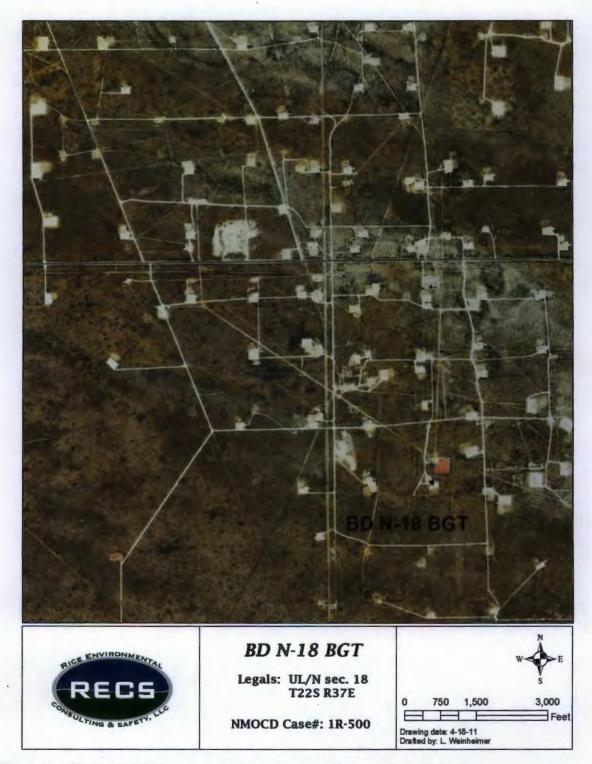


Figure 2 - BD N-18 BGT location relative to nearby and up-gradient oil-field operations.

**BD N-18 BGT** 

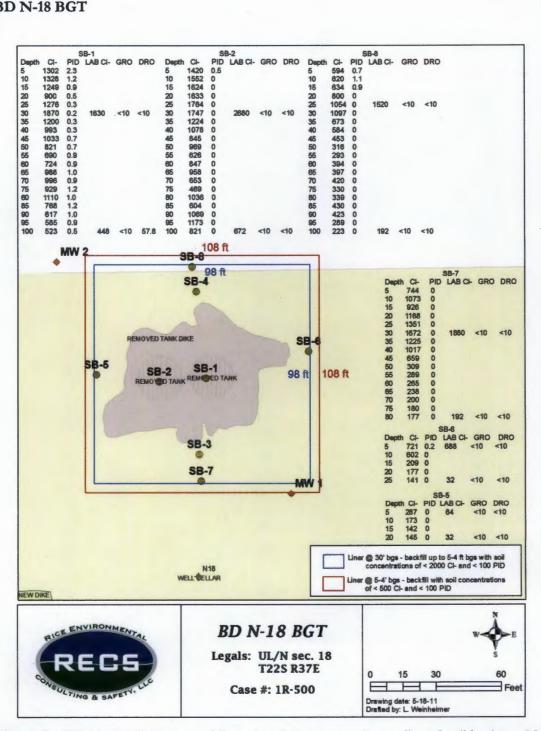


Figure 3 - BD N-18 BGT approved liners in relation to monitor wells and soil borings. Note that the deeper liner was installed at 27 ft bgs (rather than at 30 ft bgs as indicated here) due to the presence of impenetrable rock. This modification was approved by NMOCD on January 23rd, 2012.

#### BD N-18 BGT (1R-500) Unit N, Section 18, T-22-S, R-37-E



excavating the site, facing east





exporting excavated soil, facing south





excavating the 98'x98' area to 30' bgs, facing northwest 1/20/2012



excavation complete to 27' bgs with a 6" blow sand pad installed, facing southeast 1/23/2012



98'x98' 20 mil reinforced liner installed at 26.5', facing northeast 1/24/2012



facing northeast 1/24/2012

Figure 4a - Photographic record of soil excavation and installation of double synthetic liner system.



backfilling the excavation, facing northeast

1/26/2012



6" blow sand pad installed at 5' bgs, 2/3/2012 facing northeast



roller packing the backfilled site, facing northwest 1/26/2012





108'x108' 20 mil reinforced liner at 4.5' bgs, facing northeast 2/3/2012 facing northeast





facing northwest

2/6/2012

Figure 4b - Photographic record of soil excavation and installation of double synthetic liner system.



roller packing the backfilled excavation, facing northwest 2/6/2012



roller packing the backfilled site, facing east 2/7/2012



importing caliche, facing north

2/7/2012



importing base coarse caliche, facing southeast 2/9/2012

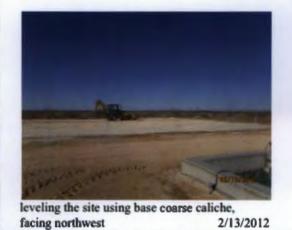




Figure 4c – Photographic record of soil excavation and installation of double synthetic liner system.

# APPENDIX - Soil Chloride and Hydrocarbon Analytical Data

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January 24, 2012		
ZACH CONDER		
Rice Operating Compar	ny	
112 W. Taylor		
Hobbs, NM 88240		
RE: BD N-18 BGT		
Enclosed are the result	ts of analyses for samples received by the labor	atory on 01/23/12 17:05.
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Cardinal Laboratories is	s accreditated through the State of Colorado De	partment 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 (V1, V2, V3)	
Accreditation applies to	o public drinking water matrices.	
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Sincerely,		
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Lab Director/Quality M	lanager	

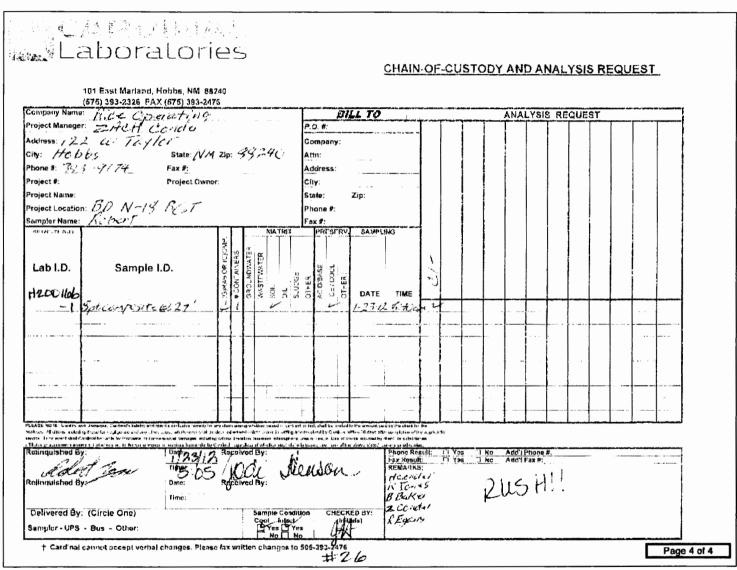
Appendix A-1 – Soil chloride concentration from a composite sample at 27 ft bgs.

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Appendix A-1 – Soil chloride concentration from a composite sample at 27 ft bgs.

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***	Insufficient time to reach temperature.	
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Appendix A-1 – Soil chloride concentration from a composite sample at 27 ft bgs.



Appendix A-1 – Soil chloride concentration from a composite sample at 27 ft bgs.

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Appendix A-2 – Soil PID hydrocarbon concentration from a composite sample at 27 ft bgs.

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January 14, 2012		
Hack Conder		
Rice Operating Compar	١¥	
112 W. Taylor		
Hobbs, NM 68240		
RE: 8D N-18 BGT		
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Sincerely,		
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Appendix A-3 – Soil chloride concentrations from excavated soil material.

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Appendix A-3 – Soil chloride concentrations from excavated soil material.

	<b>CARDINAL</b> Laboratories	PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240
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RPD:	Relative Percent Difference	
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	Chloride by SM4500Cl B does not require samples be received at or	helds 6%
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Appendix A-3 – Soil chloride concentrations from excavated soil material.

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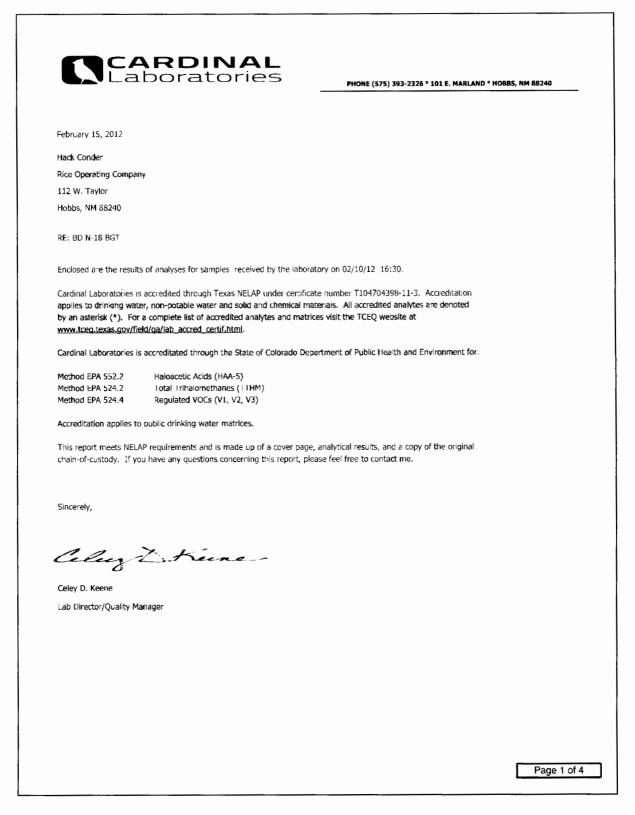
Appendix A-3 – Soil chloride concentrations from excavated soil material.

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Appendix A-4 – Soil PID hydrocarbon concentrations from excavated soil material.

	12		Lobbs, NM 88240	LTING & SA	
	PHONE:	(505) 393-9174	FAX: (505) 397-1471		
CK. X MODEL NO.	MODEL: PGM 7300 MODEL: PGM 7300 MODEL: PGM 7320 MODEL: PGM 7300	SERIAL SERIAL	NO: 590-001413 NO: 590-000504 NO: 592-903318 NO: 590-000183		
	GAS COMPOSITIO	ON: ISOBUTY	LENE 100PPM / AIR: E	BALANCE	
OT NO :HAL-248			EXPIRATION DATE:	7-1-2015	
CCURACY : +/- 2		IER READING	ACCURACY:100		
			MPANY		
	· · · · · · · · · · · · · · · · · · ·	RICE	OPERATING		
SYSTEM	JUNCTION	UNIT	SECTION	TOWN SHIP	RANGE
BD	N-18-BGT	N	18	228	37E
		• • • • • • • • • • • • • • • • • • • •			
SA	MPLE ID	PID	SA	MPLE ID	PID
SI	POIL PILE	2.4			
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Appendix A-4 – Soil PID hydrocarbon concentrations from excavated soil material.



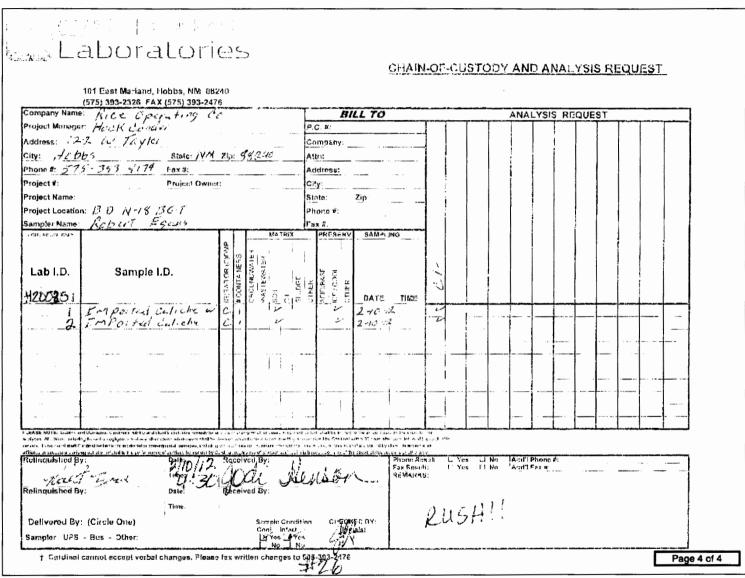
Appendix A-5 - Soil chloride concentrations from imported caliche.

		<b>VAL</b> ories	-	PHON	IE (575) 3	93-2326 ° 101 (	E. MARLAND ° HOE	BS, NM 882	240
		Analy	rtical Resul	ts For:					
			e Operating Co	mpany					
			tk Conder 2 W. Taylor						
			bbs NM, 88240						
		Fax	To: (575)	397-1471					
Received:	02/10/20	012		San	npling Da	ite:	02/10/2	012	
Reported:	02/15/20				pling Ty		Soil		
Project Name:	3D N-18				npling Co		Cool & I		
Project Number: Project Location:	NONE GI			San	ipie keci	eived By:	Jodi Her	nson	
ample ID: IMPORTED CALI	CHE W (H2	00351-01)							
hloride, SM4500Cl-B	mg,	-	Analyze	d By: AP			-		
Analyte	Result	Reporting Limit	Analyzed	Method Blank	<b>B</b> S	*% Recovery	True Value QC	RPD	Qualifier
hloride	96.0	16.0	02/13/2012	ND	432	108	400	7.69	
ample ID: IMPORTED CALI	CHE (H200	351-02)							
hloride, SM4500Cl-B	mg,	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
hloride	144	16.0	02/13/2012	ND	432	108	400	7.69	
Cardinal Laboratories								*=Accredit	ted Analyte
Cardinal Laboratories	ent and the consider of the test of the constant	काम, मार क्रमेल, चार्ट में सांच्या हो के बीच	ndina with 101% (%). Giù saltar neo attitua	itan din conduction d' n' chi tacanata dinata di	ate la a de nets actent	o service - Ar Is, a wa Bi is - Ne Ne Archia (n.	ent in industry of the turb fieldert ne ender:	ine is una he	n ki asalar ki Shikarti Tug

Appendix A-5 – Soil chloride concentrations from imported caliche.

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RID       Rélative Norman Différence         **       Services en totobrid à la proper hempertane o de C or beavy,         **       Unitative tries tourne totegreauxie         **       Chrintel by SM4500018 does not necelule samples be recolved at or odious de C         Samples reported on ail is recolved badig (wet) ailles otherwise noted on report	ND	Analyte NOT DETECTED at or above the reporting limit	
••• Insufficient their to reach tangentiate:   ••• Create Market is a set of the set of			
<ul> <li>Chinace by SMSDBCD B does not receive samples be received at or advor 4PC</li> <li>Samples reported on an as received back (wet) unless otherwise noted on report</li> </ul>	**	Samples not received at proper temperature of 6°C or below.	
Samples reported an an as received basis (vet) unless otherwise noted on report Samples reported an an as received basis (vet) unless otherwise noted on report	***	Insufficient time to reach temperature.	
Cardinal Laboracries     *=Accredited Analytee  Raid of 2, -41 + 2 Second Cardinal Second Secon	•		
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	C.e	leg 2 there -	

 $\label{eq:Appendix A-5-Soil chloride concentrations from imported caliche.$ 



Appendix A-5 – Soil chloride concentrations from imported caliche.

Texerra

	12:	2 West Taylor I	lobbs. NM 88240 FAX: (505) 397-147	LTING & SA	
			N & FIELD REPORT F		
CK. X MODEL NO.	MODEL: PGM 7300 MODEL: PGM 7300 MODEL: PGM 7320 MODEL: PGM 7300	SERIAL SERIAL	NO: 590-001413 NO: 590-000504 NO: 592-903318 NO: 590-000183		
		ON: ISOBUTY	LENE 100PPM / AIR: I		
LOT NO :HAL-248			EXPIRATION DATE: ACCURACY:100	:7-1-2015	
ACCURACY : +/- 2		EK KEADING	ACCORACTION		
	· · · · · · · · · · · · · · · · · · ·	60			
			MPANY		
		1	OPERATING		
SYSTEM	JUNCTION	UNIT	SECTION	TOWN SHIP	RANGE
BD	N-18 BGT	N	18	228	37E
	<u></u>				
S.A	MPLE ID	PID	SA	MPLE ID	PID
IMPORTE	ED CALICHE (W)	0.6			
IMPOR	TED CALICHE	1.6			
	····				
l ve	rify that I have calibrated the	e above instrum	ent in accordance to the	e manufacture operation man	ual.
	lalect Jan,				

Appendix A-6 – Soil PID hydrocarbon concentrations from imported caliche.

From:	Hansen, Edward J., EMNRD
To:	Hack Conder
Cc:	Leking, Geoffrey R, EMNRD; Laura Pena; pg@texerra.com
Subject:	Soil Closure Approval (1R-500) - ROC BD N-18 BGT Site
Date:	Tuesday, June 26, 2012 5:17:02 PM

#### RE: Corrective Action Plan Progress Report for the Rice Operating Company's BD N-18 BGT Site Unit Letter N, Section 18, T22S, R37E, Lea County, New Mexico Soil Closure Approval (1R-500)

Dear Mr. Conder:

The New Mexico Oil Conservation Division (OCD) has received the Rice Operating Company's (ROC) the report for vadose zone remediation for the Remediation Plan (1R-500) for the BD N-18 BGT Site, dated March 6, 2012. The above-referenced report, submitted in fulfillment of 19.15.29 NMAC (Rule 29, formally, Rule 116), indicates that Rice Operating Company (ROC) has partially met the requirements of 19.15.29 NMAC for this site. Therefore, the OCD hereby conditionally approves the soil closure for the BD N-18 BGT Site and no further soil remediation is required for this site:

The BD N-18 BGT Site is still active under Remediation Plan, 1R-500, and ROC must submit a groundwater remediation report to the OCD within 120 days.

Please be advised that OCD partial approval of this request does not relieve the owner/operator of responsibility should operations pose a threat to ground water, surface water, human health or the environment. In addition, OCD approval does not relieve the owner/operator of responsibility for compliance with any OCD, federal, state, or local laws and/or regulations.

Thank you for your cooperation in this matter. If you have any questions regarding this matter, please contact at 505-476-3489.

Edward J. Hansen Hydrologist Environmental Bureau

From:	Katie Jones
To:	"Edward J. Hansen, EMNRD"
Cc:	Hack Conder; Laura Pena
Subject:	BD N-18 BGT (1R-500)
Date:	Wednesday, September 25, 2013 7:48:00 PM

Mr. Hansen,

The former BD N-18 below grade tanks (BGT) were located within the active caliche lease pad of the BD N-18 SWD facility. ROC has 2.5 acre lease agreement for this facility. Once the facility is abandoned, ROC will follow the guidelines of the lease agreement and the lease pad area, including the former below grade tank area, will be reclaimed and seeded, if necessary. If you have any questions or require any additional information, please contact me or Hack Conder at (575)393-2967.

Thank you.

Katie Jones Environmental Project Manager RICE *Operating Company* 

# **APPENDIX D**

.

Final C-141

District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

# State of New Mexico Energy Minerals and Natural Resources

Oil Conservation Division 1220 South St. Francis Dr. Santa Fe, NM 87505 Form C-141 Revised October 10, 2003

Submit 2 Copies to appropriate District Office in accordance with Rule 116 on back side of form

Attached 🔲

# **Release Notification and Corrective Action**

	OPERATOR	Initial Report	$\boxtimes$	Final Report
Name of Company RICE Operating Company	Contact Hack Conder			
Address 112 West Taylor Hobbs, NM 88240	Telephone No. (575) 393-9174			
Facility Name BD N-18 below grade tanks (BGT)	Facility Type SWD			

Surface Owner State	Mineral Owner	API No.	30-025-25616

#### LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
N	18	225	37E					Lea

Latitude <u>32\*23'16.72: N</u> Longitude <u>103\*12'11.328:W</u>

# NATURE OF RELEASE

Type of Release produced water	Volume of Release unknown	Volume Recovered unknown			
Source of Release unknown	Date and Hour of Occurrence	Date and Hour of Discovery			
	unknown	soil investigation began in October			
		2010 and was complete in December			
		2010			
Was Immediate Notice Given?	If YES, To Whom?				
🗌 Yes 🛛 No 🔲 Not Required					
By Whom?	Date and Hour				
Was a Watercourse Reached?	If YES, Volume Impacting the Wat	ercourse			
Yes X No	If TES, Volume impacting the wat	cicourse.			
If a Watercourse was Impacted, Describe Fully.*	·				
Describe Cause of Problem and Remedial Action Taken.*					
The below grade tanks located at this site were removed according to 19.1	5.17 NMAC. Upon removal of the fo	ormer tanks and investigation of the soils			
beneath the tanks, impact was evident.	-				
Describe Area Affected and Olever Artise Tales *					
Describe Area Affected and Cleanup Action Taken.*					
Use of the BD N-18 below grade tanks (BGT) was discontinued and a new	w facility was built on location. An air	r-rotary drilling rig was utilized to			
investigate soils located beneath the former below grade tanks. Soil samp					
volatile organic compounds (VOCs) using a PID meter. Laboratory analysis confirmed chloride concentrations above 250 mg/kg and low concentrations					
of TPH (<10 mg/kg). Near-source (MW-1), up-gradient (MW-2), and down-gradient (MW-3) monitoring wells were installed to verify impact to					
groundwater. Chloride impact to groundwater was confirmed in all three monitoring wells. Depth to groundwater 101 ft below ground surface (bgs).					
Groundwater and vadose zone remedial actions were completed according to the CAP, approved by the NMOCD on July 13, 2011, and the Addendum					
approved by the NMOCD on January 23, 2012. The corrective action for the vadose zone included installing a 20-mil reinforced liner at 27 ft bgs and also					
at 4.5 ft bgs. The site is located on a caliche pad, so seeding was not required. NMOCD granted 'soil closure' on June 26, 2012. The remedial action for					
the groundwater included removing a chloride mass of 1,980 kg from MW-1. ROC acknowledges they have met the requirements of 19.15.29 NMAC and					
19.15.17 NMAC.					
I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and					
regulations all operators are required to report and/or file certain release n	atifications and perform corrective act	tions for releases which may endenger			
regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger					
public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability					
should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other					
federal, state, or local laws and/or regulations.	ses not reneve the operator of respons	source with any outer			
rederar, state, or local laws augrou regulations.	OUL CONSERV				
Signature:	<u>OIL CONSERV</u>	<u>ATION DIVISION</u>			
Signature.					
Printed Name: Hack Conder		Alexand the m			
rinicu Ivanic. nack Conuer	Approved by District Supervisor: 40	monder M rever			
	Approval Date: 10-1-13	U ·			
Title: Environmental Manager	Approval Date: $10 - 1 - 1 > 1$	Expiration Date:			

Conditions of Approval:

Phone: (575) 393-9174

Date: 9/18/2013 \* Attach Additional Sheets If Necessary

E-mail Address: hconder@riceswd.com

# Hansen, Edward J., EMNRD

Katie Jones <kjones@riceswd.com></kjones@riceswd.com>
Wednesday, September 25, 2013 7:48 PM
Hansen, Edward J., EMNRD
Hack Conder; Laura Pena
BD N-18 BGT (1R-500)

Mr. Hansen,

The former BD N-18 below grade tanks (BGT) were located within the active caliche lease pad of the BD N-18 SWD facility. ROC has 2.5 acre lease agreement for this facility. Once the facility is abandoned, ROC will follow the guidelines of the lease agreement and the lease pad area, including the former below grade tank area, will be reclaimed and seeded, if necessary. If you have any questions or require any additional information, please contact me or Hack Conder at (575)393-2967.

Thank you.

Katie Jones Environmental Project Manager RICE Operating Company