

7
1R-496-331

BD J-30 EOL

2013

CLOSURE

RICE *Operating Company*

122 West Taylor • Hobbs, New Mexico 88240

Phone: (575) 393-9174 • Fax: (575) 397-1471

April 1, 2014

Mr. Leonard Lowe

New Mexico Energy, Minerals, & Natural Resources

Oil Conservation Division, Environmental Bureau

1220 S. St. Francis Drive

Santa Fe, New Mexico 87505

RE: Termination Request

BD J-30 EOL: UL/J, Sec. 30, T22S, R38E

RICE Operating Company – Blinbry-Drinkard SWD System

Mr. Lowe:

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.

Background

In 2013, ROC initiated work on the former J-30 EOL. The site is located in UL/J, Sec. 30, T22S, R38E. NM OSE records indicate that groundwater would likely be encountered at a depth of approximately 77 +/- feet. The site was delineated using a backhoe to collect soil samples at regular intervals, creating a 3x7x14-ft deep excavation. Each sample was field titrated for chlorides and field screened using a PID for hydrocarbons, resulting in concentrations that decreased with depth. The 13 and 14 ft samples were sent to a commercial laboratory for analysis of chloride, resulting in a concentration of 48 mg/kg at 13 ft and 16 mg/kg at 14 ft. The excavation was backfilled with clean, imported soil to ground surface and contoured to the surrounding area. On 11/1/2013, the site was seeded with a blend of native vegetation and is expected to return to a productive capacity at a normal rate. The junction box site map, area map, final report, photo documentation, laboratory analysis, PID sheet, chloride graph and revegetation form are attached.

Recommendations

Site investigation demonstrates that residual chloride and hydrocarbons in the vadose zone will not with reasonable probability contaminate groundwater in excess of NMOCD standards. This site meets the requirements of the NMOCD-approved Revised Junction

Box Upgrade Work Plan (July 16, 2003). As such, ROC request termination of the regulatory file, or similar closure status.

Please contact me at (575)393-2967 if you have any questions or wish to discuss this site. Thank you for your time and consideration.

Sincerely,
RICE Operating Company

A handwritten signature in black ink, appearing to read 'H. Conder', with a stylized, sweeping flourish extending to the right.

Hack Conder
Environmental Manager

enclosures

**RICE OPERATING COMPANY
JUNCTION BOX FINAL REPORT**

BOX LOCATION

SWD SYSTEM	JUNCTION	UNIT	SECTION	TOWNSHIP	RANGE	COUNTY	BOX DIMENSIONS - FEET		
Blinebry-Drinkard (BD)	J-30 EOL	J	30	22S	38E	Lea	Length	Width	Depth
							Eliminated		

LAND TYPE: BLM _____ STATE _____ FEE LANDOWNER _____ Walco Ranch _____ OTHER _____

Depth to Groundwater _____ 77' _____ feet NMOCD SITE ASSESSMENT RANKING SCORE: _____ 10

Date Started _____ 9/5/2013 _____ Date Completed _____ 10/22/2013 _____ OCD Witness _____ No

Soil Excavated _____ 10.9 _____ cubic yards Excavation Length _____ 3 _____ Width _____ 7 _____ Depth _____ 14 _____ feet

Soil Disposed _____ 12 _____ cubic yards Offsite Facility _____ Sundance _____ Location _____ Eunice, NM

FINAL ANALYTICAL RESULTS: Sample Date _____ 9/16/2013 _____ Sample Depth _____ 14' _____

TPH and Chloride laboratory test results completed by using an approved lab and testing procedures pursuant to NMOCD guidelines.

Sample Location	PID (field) ppm	GRO mg/kg	DRO mg/kg	Chloride mg/kg
Source @ 13'	0			48
Source @ 14'	0			16

CHLORIDE FIELD TESTS		
LOCATION	DEPTH	mg/kg
Background	6"	163
vertical delineation trench at the junction (source)	2'	534
	3'	416
	4'	541
	5'	704
	6'	479
	7'	580
	8'	413
	9'	373
	10'	277
	11'	221
	12'	359
	13'	166
	14'	133

General Description of Remedial Action: This junction and line were eliminated during the pipeline replacement/upgrade program. After the former junction box was removed, an investigation was conducted using a backhoe to collect soil samples at regular intervals, creating a 3x7x14 ft deep excavation. Chloride field tests performed on each sample yielded concentrations that decreased with depth. Organic vapors were measured using a PID which yielded low concentrations. The 13 and 14 ft. samples were sent to a commercial laboratory for analysis of chloride, which confirmed low concentrations. The excavation was backfilled with clean, imported soil to the ground surface and contoured to the surrounding area. On 11/1/2013, the site was seeded with a blend of native vegetation and is expected to return to a productive capacity at a normal rate.

enclosures: site location map, area map, photos, lab results, PID (field) screenings, chloride graph, revegetation form

I HEREBY CERTIFY THAT THE INFORMATION ABOVE IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

REPORT

ASSEMBLED BY _____ Laura Flores _____

SIGNATURE _____

Laura Flores

COMPANY _____

Rice Environmental Consulting & Safety

SITE SUPERVISOR _____ Dyllan Yarbrough _____

SIGNATURE _____

Not Available

COMPANY _____

Rice Environmental Consulting & Safety

PROJECT LEADER _____ Kyle Norman _____

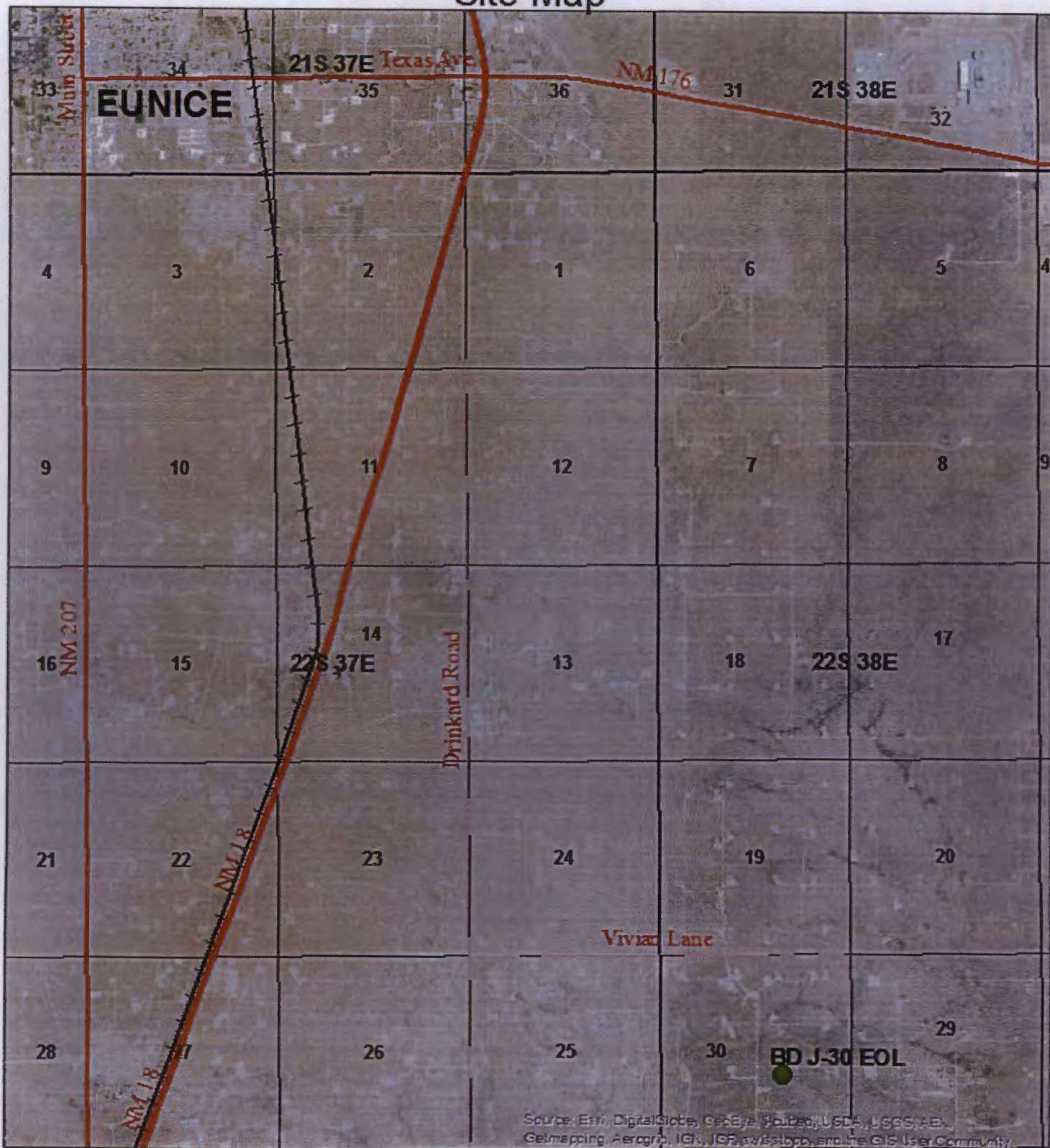
SIGNATURE _____

Kyle Norman

DATE _____

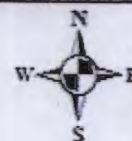
3-3-14

Site Map



BD J-30 EOL

UL/J Section 30
T-22-S R-38-E



0 2,500 5,000
Feet

Drawing date: January 16, 2014
Drafted by: C. Ursanic

Area Map



BD J-30 EOL

UL/J Section 30
T-22-S R-38-E



0 620 1,240
Feet

Drawing date: January 16, 2014
Drafted by: C. Ursanic

BD J-30 EOL

Unit J, Section 30, T22S, R38E



Digging initial, facing east

9.06.13



Collecting a sample, facing east

9.16.13



Spreading seed, facing northwest

11.1.13



Site complete, facing east

11.1.13



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

September 20, 2013

KYLE NORMAN

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: BD J-30 EOL

Enclosed are the results of analyses for samples received by the laboratory on 09/17/13 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 www.tceq.texas.gov/field/ga/lab/accred_certif.html.

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

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (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. 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: 09/17/2013
Reported: 09/20/2013
Project Name: BD J-30 EOL
Project Number: NONE GIVEN
Project Location: T22S R38E

Sampling Date: 09/16/2013
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Jodi Henson

Sample ID: VERTICAL @ 13' (H302255-01)

Chloride, SM4500Cl-B			mg/kg							Analyzed By: AP	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier		
Chloride	48.0	16.0	09/19/2013	ND	416	104	400	0.00			

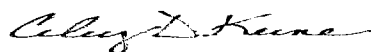
Sample ID: VERTICAL @ 14' (H302255-02)

Chloride, SM4500Cl-B			mg/kg							Analyzed By: AP	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier		
Chloride	16.0	16.0	09/19/2013	ND	416	104	400	0.00			

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 whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

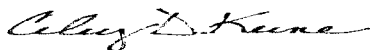
Notes and Definitions

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

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 whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

Page 4 of 4

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

[illegible]

RICE ENVIRONMENTAL CONSULTING & SAFETY

419 West Cain Hobbs, NM 88240
PHONE: (575) 393-9174 FAX: (575) 397-1471
PID METER CALIBRATION & FIELD REPORT FORM

CK.		MODEL: PGM 7300	SERIAL NO: 590-000508
MODEL		MODEL: PGM 7300	SERIAL NO: 590-000504
NO.		MODEL: PGM 7320	SERIAL NO: 592-903318
		MODEL: PGM 7300	SERIAL NO: 590-000183

GAS COMPOSITION: ISOBUTYLENE 100PPM / AIR: BALANCE

LOT NO: HAL-248-100-1	EXPIRATION DATE: 7/1/2015
METER READING ACCURACY: 100	

ACCURACY : +/- 2%

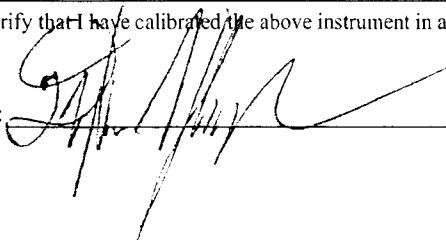
COMPANY
RICE OPERATING

SYSTEM	JUNCTION	UNIT	SECTION	TOWN SHIP	RANGE
BD	J-30	J	30	22S	38E

SAMPLE ID	PID	SAMPLE ID	PID
Background @ 6"	2.1		
Source @ 2'	0.0		
Source @ 3'	0.4		
Source @ 4'	0.8		
Source @ 5'	1.2		
Source @ 6'	0.6		
Source @ 7'	1.5		
Source @ 8'	0.8		
Source @ 9'	0.0		
Source @ 10'	0.7		
Source @ 11'	1.9		
Source @ 12'	0.9		

I verify that I have calibrated the above instrument in accordance to the manufacture operation manual.

SIGNATURE:



DATE: 9/6/2013

RICE ENVIRONMENTAL CONSULTING & SAFETY

419 West Cain Hobbs, NM 88240
PHONE: (575) 393-9174 FAX: (575) 397-1471
PID METER CALIBRATION & FIELD REPORT FORM

CK.		MODEL: PGM 7300	SERIAL NO: 590-000508
MODEL		MODEL: PGM 7300	SERIAL NO: 590-000504
NO.	X	MODEL: PGM 7320	SERIAL NO: 592-903318
		MODEL: PGM 7300	SERIAL NO: 590-000183

GAS COMPOSITION: ISOBUTYLENE 100PPM / AIR: BALANCE

LOT NO: HAL-248-100-1	EXPIRATION DATE: 7/1/2015
METER READING ACCURACY: 100	

ACCURACY : +/- 2%

COMPANY
RICE OPERATING

SYSTEM	JUNCTION	UNIT	SECTION	TOWN SHIP	RANGE
BD	J-30	J	30	22S	38E

SAMPLE ID	PID	SAMPLE ID	PID
Source @ 13'	0		

I verify that I have calibrated the above instrument in accordance to the manufacture operation manual.

SIGNATURE: 

DATE: 9/16/2013

RICE ENVIRONMENTAL CONSULTING & SAFETY

419 West Cain Hobbs, NM 88240
PHONE: (575) 393-9174 FAX: (575) 397-1471
PID METER CALIBRATION & FIELD REPORT FORM

CK.		MODEL: PGM 7300	SERIAL NO: 590-000508
MODEL		MODEL: PGM 7300	SERIAL NO: 590-000504
NO.	X	MODEL: PGM 7320	SERIAL NO: 592-903318
		MODEL: PGM 7300	SERIAL NO: 590-000183

GAS COMPOSITION: ISOBUTYLENE 100PPM / AIR: BALANCE

LOT NO: HAL-248-100-I	EXPIRATION DATE: 7/1/2015
METER READING ACCURACY: 100	

ACCURACY : +/- 2%

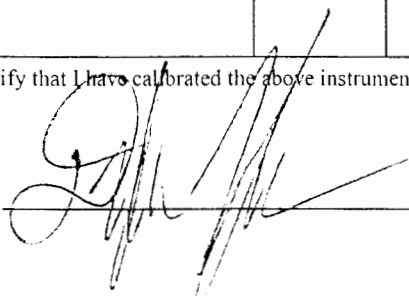
COMPANY
RICE OPERATING

SYSTEM	JUNCTION	UNIT	SECTION	TOWN SHIP	RANGE
BD	J-30	J	30	22S	38E

SAMPLE ID	PID	SAMPLE ID	PID
Source @ 14'	0		

I verify that I have calibrated the above instrument in accordance to the manufacture operation manual.

SIGNATURE:



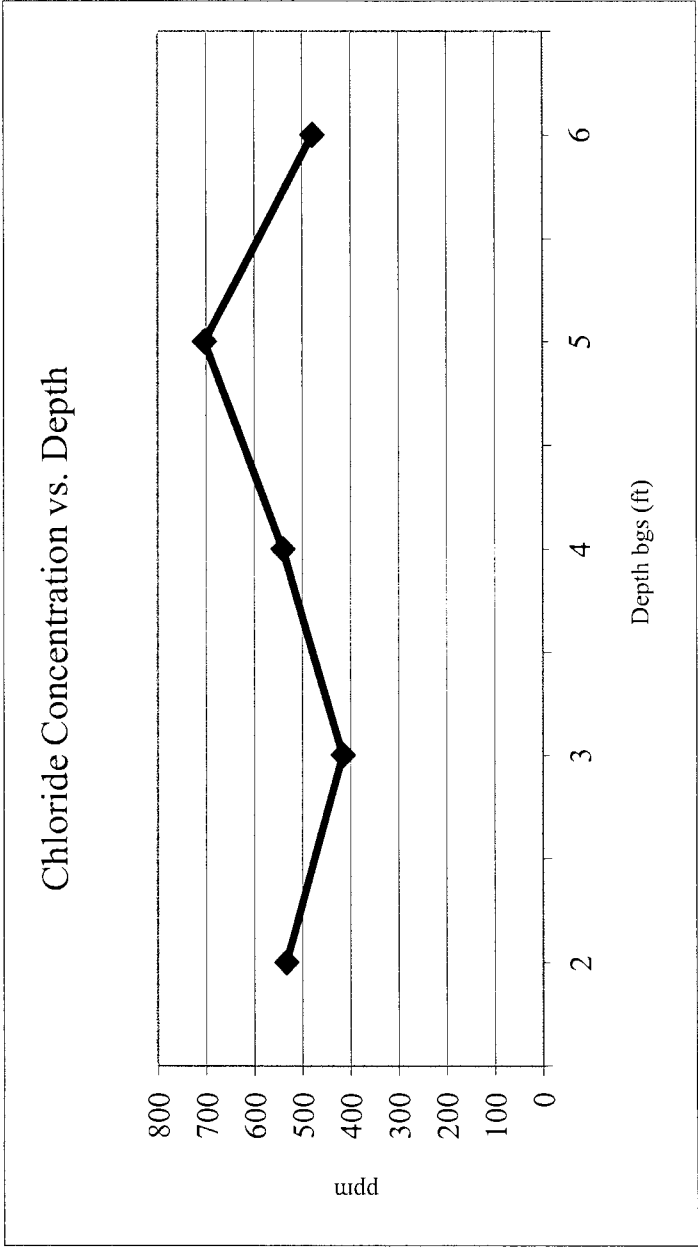
DATE: 9/17/2013

BD J-30 EOL

Unit 'J', Sec. 30, T22S, R38E

Backhoe samples at junction (source)

Depth bgs (ft)	Cl ⁻ ppm
2	534
3	416
4	541
5	704
6	479
7	580
8	413
9	373
10	277
11	221
12	359
13	166
14	133



Groundwater = 77 ft.



PO Box 5630
Hobbs, NM 88241
Phone: (575) 393-4411
Fax: (575) 393-0293

VEGETATION FORM

1. General Information

Site name: BD J-30 EOL						
U/L J	Section 30	Township 22S	Range 38E	County Lea	Latitude N 32° 21'34.897	Longitude W 103° 5'55.184
Contact Name: Hack Conder						
Email: hacker@rice-recs.com						
Site size:						

2. Soils

**Do not rip caliche subsoils; caliche rocks brought to the surface by ripping shall be removed.*

Salvaged from site	Bioremediated	<input checked="" type="checkbox"/>	Imported	<input type="checkbox"/>	Blended	<input type="checkbox"/>	Depth (in)	<input type="text"/>
Texture:	Top Soil		Describe soil & subsoil: Light Brown Fine Sand					
Soil prep methods:	Rip	<input checked="" type="checkbox"/>	Depth (in)	<input type="text"/>	Disc	<input type="text"/>	Depth (in)	<input type="text"/>
Date completed:	10/22/2013							

3. Bioremediation

Fertilizer	Hay	Other	<input checked="" type="checkbox"/>
Type:	Describe: 4 bags RestorNHance, 4 bags		
Lbs/acre:	Potting Mix, 1 bag Manure		

4. Seeding

**Attach seed bag tags to this form. Seed bag tags shall contain the site name and S-T-R.*

Custom Seed Mix	<input checked="" type="checkbox"/>	Prescribed Mix	<input type="checkbox"/>	Seed Mix Name:	5 lbs Blue Grama, 5 lbs Sideoats Grama	Date:	11/1/2013
Broadcast	Mechanical			Method:	Push Seeder		
Soil conditions during seed:	Dry	<input checked="" type="checkbox"/>	Damp	<input type="checkbox"/>	Wet	<input type="checkbox"/>	
Observations:	Seeded and raked amendments thoroughly into soil.						

5. Certification

I hereby certify that the information in this form and attachments is true and complete to the best of my knowledge and belief.

Name:	Dyllan Yarbrough	Title:	Environmental Tech	Date:	11/1/2013
Signature:					

RICE *Operating Company*

122 West Taylor • Hobbs, New Mexico 88240

Phone: (575) 393-9174 • Fax: (575) 397-1471

April 1, 2014

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

RE: JUNCTION BOX UPGRADE REPORT for 2013
BD SWD SYSTEM
Lea County, New Mexico

Mr. Lowe:

Rice Operating Company (ROC) takes this opportunity to submit the Junction Box Upgrade results for the year 2013. Enclosed is a list of the completed junction boxes and their respective closure/disclosure dates. These boxes are located in the Blinebry-Drinkard (BD) Salt Water Disposal (SWD) System located in the vicinity of Eunice, New Mexico.

ROC completed 12 junction boxes in 2013. Junction box upgrades in 2014 will be conducted in conjunction with scheduled pipeline replacements.

Enclosed are the 2008 results (17 sites evaluated with 22 sampling locations) from the PID/BTEX study described in the NMOCD-approved Revised Junction Box Upgrade Work Plan (July 16, 2003). A third-party analysis, conducted by Peter Galusky, Jr. Ph.D. of Texerra, concluded from the data collected thus far that field-composited values tend to produce slightly higher BTEX numbers above the point at which BTEX concentrations become significant. This is likely due to the fact that BTEX is volatile and quickly biodegradable. This analysis was submitted to NMOCD on March 12, 2009. An appropriate number of sample sites could not be obtained to conduct a 2013 BTEX comparison analysis. Peter Galusky, Jr. Ph.D. of Texerra also compared ROC's 2013 chloride field tests to chloride laboratory analyses; the analysis is also enclosed. The study of this data continues to validate the accuracy of the chloride field tests employed by ROC.

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.

Replacement/closure projects of this magnitude require System Party AFE approval and work begins as funds are received.

Thank you for your consideration of this Junction Box Upgrade Report for 2013.

RICE OPERATING COMPANY

A handwritten signature in black ink, appearing to read 'H. Conder', with a long horizontal flourish extending to the right.

Hack Conder
Environmental Manager

enclosures as stated

cc: SC, file, Mr. Geoffrey Leking
NMOCD, District I Office
1625 N. French Drive
Hobbs, NM 88240

Rice Operating Company
BD SWD System Junction Box Upgrade Project
2013 Completed Boxes

		Legal Description							
	Jct Box Name	Unit	Sec	T	R	Completion Date	OCD Assessment Score	Report Status	Case Number
1	G-29 EOL	G	29	22S	38E	1/7/2014	0	Disclosure	
2	Jct. G-31	G	31	22S	38E	1/7/2014	20	Disclosure	
3	JCT. M-29	M	29	22S	38E	11/1/2013	0	Disclosure	
4	JCT. N-29	N	29	22S	38E	9/11/2013	0	Disclosure	
5	JCT. N-30	N	30	22S	38E	8/19/2013	10	Disclosure	
6	O-29-1 VENT	O	29	22S	38E	7/26/2013	0	Disclosure	
7	O-30 VENT	O	30	22S	38E	11/6/2013	10	Disclosure	
8	Jct. P-14	P	14	22S	37E	8/21/2012	10	Disclosure	
9	J-29 Vent	J	29	22S	38E	n/a	0	Closure	
10	J-30 EOL	J	30	22S	38E	10/22/2013	10	Closure	
11	JCT. J-29	J	29	22S	38E	n/a	0	Closure	
12	M-28 EOL	M	28	22S	38E	11/5/2013	0	Closure	

L. Peter Galusky, Jr. Ph.D., P.G.

Texerra

505 N Big Spring, Suite 404 Midland, Texas 79701

Tel: 432-634-9257 E-mail: lpg@texerra.com

March 10th, 2009

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

Re: Comparison of Field versus Lab Compositing of BTEX soil samples
Rice Operating Company, Junction Box Upgrade Work Plan

Sent via Certified Mail w/ Return Receipt No. 7006 0100 0001 2438 3944

Dear Mr. Jones:

On behalf of Rice Operating Company (ROC) I am submitting the attached comparison and analysis of field versus laboratory soil compositing for soil BTEX samples. This is to address the question of whether it is better to mix multiple samples in the field or to do so in the laboratory in order to produce a composite, representative sample for analysis. This work was undertaken in support of ROC's Junction Box Upgrade Work Plan to ensure the quality of their field analysis program.

In brief, this work indicates that field compositing of soil samples generally gives rise to *slightly* higher BTEX values than does laboratory compositing of multiple samples. This is presumably due to the likelihood that field compositing and packaging of soil samples better preserves sample integrity. It would therefore appear that field compositing would represent the better method of procuring soil samples for subsequent analysis of BTEX.

Please call me if you have any questions or wish to discuss any of the details of this study.

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

Sincerely,



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

Copy: Rice Operating Company,
Edward Hansen (NMOCD) sent certified mail w/ return receipt
No. 7006 0100 0001 2438 3937

Attachment: As noted, above.

Rice Operating Company

Comparison of Field Compositing versus Laboratory Compositing of Soil BTEX Samples¹

The careful mixing of multiple soil samples is critical in order to produce a representative, composite sample from a respective study area (such as an excavation face or bottom). Field technicians typically take four or five “grab” samples from excavation walls and/or bottom and send each of these to a laboratory for analysis of the composite, or mixed, sample. It would be far simpler, however, to composite such samples in the field. This study was undertaken to determine if field compositing produced results substantially different than laboratory compositing for the analysis of BTEX. Data were provided by Rice Operating Company encompassing 22 sampling locations over the period of 2004 through 2008.

A comparison of lab-composited soil samples versus field-composited soil samples revealed a close correspondence for total BTEX between the two methods (Figure 1).

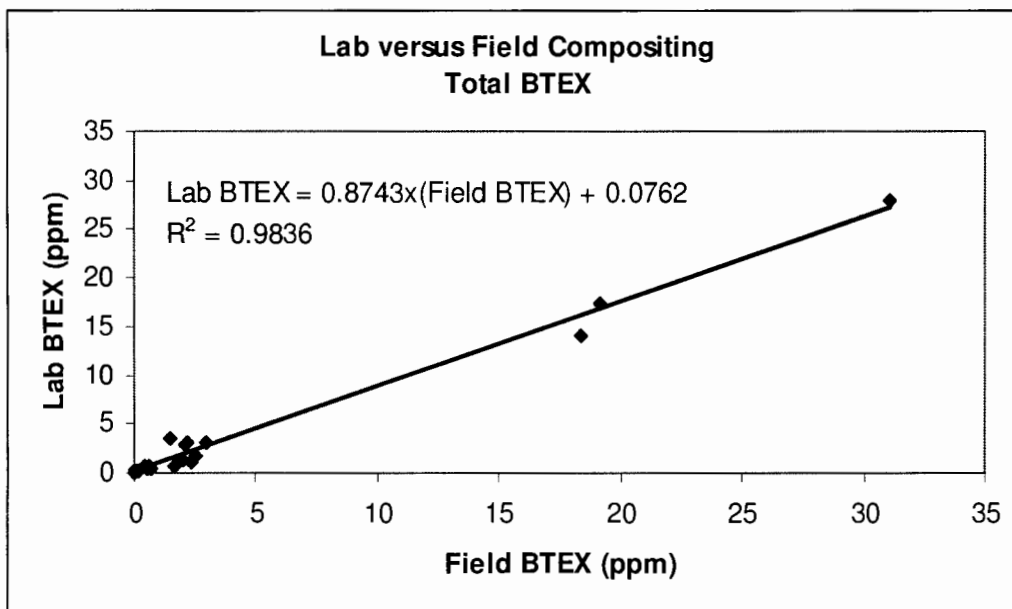


Figure 1 - Laboratory versus field-composited soil samples analyzed for BTEX.

The high R² value (0.9836) of the best-fit statistical regression line indicates a high degree of reliability in using the field-compositing method over the range of values observed. Below a “field-composited BTEX” value of 0.61 ppm the “lab-composited BTEX” values are slightly lower. However, above a field-composited BTEX value of 0.61 the lab-composited values run slightly lower. In other words, the field-composited values tended to produce slightly higher BTEX numbers above the point at which BTEX concentrations become significant.

There is a reason for this. BTEX is volatile and quickly biodegradable. The compositing and “packaging” of soil samples in the field minimize the handling and aeration that occur in the laboratory. Thus, field-composited soil samples lose less BTEX to evaporation and/or biodegradation prior to laboratory analysis. In other words, the field compositing and packaging of soil samples better preserves sample integrity, and for this reasons would appear to represent the better method of procuring soil samples for subsequent analysis of BTEX.

¹ Prepared 03-12-09 by L. Peter Galusky, Jr. of Texerra.

L. Peter Galusky, Jr. Ph.D., P.G.

Texerra LLC

20055 Laredo Lane Monument, CO 80132

Tel: 719-339-6791 E-mail: lpg@texerra.com

March 25th, 2014

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

Re: Comparison of 2013 Laboratory versus Field Measured Soil Chloride Values
Rice Operating Company, Junction Box Upgrade Work Plan

Mr. Lowe:

The attached comparison and analysis of 2013 laboratory versus field measured soil chloride values is submitted in support of Rice Operating Company's (ROC's) Junction Box Upgrade Work Plan to ensure the quality of their field analysis program.

In brief, this work indicates that Rice's 2013 field chloride measurement efforts provided a reasonable qualitative approximation of the laboratory-measured (and presumed true) values.

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

Please call me if you have any questions or wish to discuss this study.

Sincerely,



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

Copy: Glenn VonGonten, NMOCD; Rice Operating Company
Attachment: As noted, above.

Rice Operating Company
Comparison of Laboratory to Field Measured Soil Chloride Concentrations
Based upon 2013 Field Data

A representative sample of 29 pairs of laboratory versus field measured soil chloride values was compared to determine how well field measurements matched laboratory measurements. It is assumed that laboratory measurements better represent the “true” values due to the controlled environment that a laboratory provides. A simple plot of the laboratory versus field measured soil chloride values is given below (Figure 1).

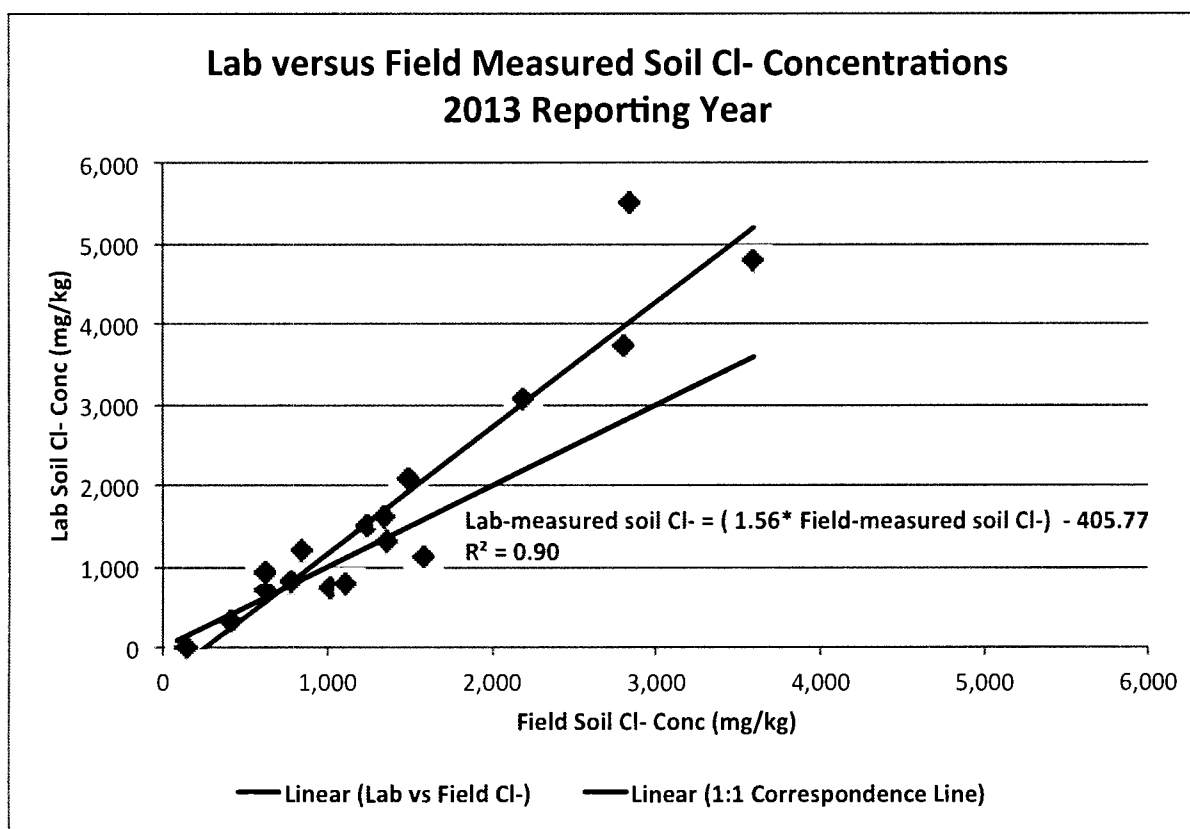


Figure 1 – Laboratory versus field measured soil chloride measurements (n = 29 paired sets).

A straight line fit to the data confirms a general linear trend over a wide range of soil chloride concentrations, and the R^2 value (0.90) indicates that field measurements provide a reliable approximation of laboratory-measured values. Based on the best-fit line of lab vs field measured values, field measured values overestimate lab measure values below a field measured value of 723 mg/kg and above this underestimate the lab-measured values. This is indicated in the graph where the (blue) best-fit line of lab vs field measured chlorides crosses the (black) line which would indicate a 1:1 correspondence.