1R - 425-103

REPORTS

DATE:

10-23-13

Rice Environmental Consulting & Safety
P.O. Box 2948, Hobbs, NM 88241
Phone 575.393.2967

CERTIFIED MAIL
RETURN RECEIPT NO. 7007 2560 0003 0323 8974

October 23rd, 2013

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: **CAP Report and Termination Request**
Rice Operating Company – Vacuum SWD System
Vacuum C-36 EOL (1R425-103): UL/C sec. 36 T17S R34E

Mr. Hansen:

RICE Operating Company (ROC) has retained Rice Environmental Consulting and Safety (RECS) to address potential environmental concerns at the above-referenced site in the abandoned Vacuum Salt Water Disposal (SWD) system. ROC is the service provider (agent) for the Vacuum 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 and Previous Work

The site is located approximately 0.8 miles southwest of Buckeye, New Mexico in Unit C, Section 36, T17S, R34E as shown on the Site Location Map and Geographical Location Map (Figure 1 and Figure 2). NM OSE records indicate that groundwater will likely be encountered at a depth of approximately 107 +/- feet.

In 2010, ROC initiated work on the former Vacuum C-36 EOL junction box. A backhoe was used to collect soil samples at regular intervals creating a 5 x 3 x 4-ft deep excavation. The backhoe was unable to excavate the site deeper than 4 ft below ground surface (bgs) due to extremely compacted subsoil material. The excavated soil was properly disposed of at a NMOCD approved facility, and clean, imported soil was used to backfill the excavation to ground surface. On October 11th, 2010, the site was seeded with a blend of native vegetation.

To further investigate the depth of chloride contamination at the site, a soil bore was initiated on July 25th, 2011 at the source of the former junction box. Soil samples were field tested for chlorides and hydrocarbons to a depth of 12 ft bgs. Laboratory analysis of the 12 ft sample resulted in a chloride concentration of 1,880 mg/kg and a gasoline range organics (GRO) and diesel range organics (DRO) concentration of non-detect. The bore hole was plugged in total with bentonite to the ground surface.

NMOCD was notified of potential groundwater impact on April 10th, 2012, and a junction box disclosure report was submitted to NMOCD with all the 2011 junction box closures and disclosures.

On February 20th, 2013, ROC submitted an Investigation and Characterization Plan (ICP) to NMOCD which was approved on March 4th, 2013. As part of the ICP, RECS personnel were on site April 8th and 9th, 2013 to install soil bores. A total of five soil bores (SB-2 through SB-6) were advanced and four surface samples were taken at this site. As the bores were advanced, samples were taken at regular intervals and field tested for chlorides and hydrocarbons. Representative samples from each bore were taken to a commercial laboratory for analysis of chlorides and TPH. Laboratory analysis showed that the chloride levels in each bore dropped to below 250 mg/kg between 25 ft and 35 ft and GRO and DRO values were non-detect.

Two surface samples were taken outside SB-3, west, and two outside of SB-4, south. These samples were field tested for chlorides and hydrocarbons and returned high chloride readings and very low hydrocarbon readings.

A Corrective Action Plan (CAP) was submitted to NMOCD on May 31st, 2013 and approved on July 24th, 2013. The site surrounds the base of an old heater-treater which indicates the presence of an old tank battery at the site. A series of historical photos were created of the site and from the photos, particularly the 1978 historical photo, it is evident that the C-36 EOL junction box sat inside a tank battery. There are also numerous non-ROC steel lines located south of the site, and a non-ROC poly line located west of the site. This suggests that the elevated chloride concentrations observed in the surface samples were contributed from past operations of the non-ROC facility and not the former junction box.

From the analysis of the soil bore data, residual chlorides and TPH at the site have not affected groundwater. In order to protect groundwater from residual soil chlorides, RECS recommended that ROC install a 20-mil reinforced poly liner at the site with dimensions of 30 ft x 39 ft at a depth of 3.5 ft bgs (Figure 3). The liner will inhibit the downward migration of residual constituents to groundwater. The junction box investigation, conducted in 2010, showed an extremely hard rock layer to be located at approximately 4 ft bgs. Lithology description of the soil samples collected while drilling soil bores also showed a caliche/sandstone layer beginning at a depth of approximately 4 ft bgs. The soils placed above the liner would have a laboratory chloride reading no greater than 500 mg/kg and a field PID measurement below 100 ppm. Excavated soil would be evaluated for use as backfill and any soil requiring disposal would be properly disposed of at a NMOCD approved facility. The soils over and surrounding the site would then be prepared with soil amendments as necessary and seeded with a native vegetative mix. Vegetation above the liner will also provide a natural infiltration barrier for the site since plants capture water through their roots thereby reducing the volume of water moving through the vadose zone to groundwater.

Corrective Action Plan Report

Beginning on August 27th, 2013, REC personnel were on site to begin excavating for liner installation. The site was excavated to 30 ft x 39 ft to a depth of 3 to 3.5 ft bgs. The site could not be excavated any deeper, due the caliche/sandstone layer. As the site was excavated, the excavated soil was screened to remove the rock. The rock was stored on site to use as backfill and 200 yards of residual, excavated soil was taken to a NMOCD approved facility for disposal. 192 yards of soil were imported to the site from two sources to use as backfill. Soil samples from each source were field tested for hydrocarbons and returned readings of 2.4 ppm and 1.5 ppm. The samples were then taken to a commercial laboratory for analysis and returned chloride values of non-detect.

The base of the excavation was padded with 6 inches of blow sand to protect the liner from punctures. A 20-mil reinforced poly liner was installed and properly seated into the base of the excavation and was padded with an additional 6 inches of blow sand. The screened rock was then backfilled into the excavation and the remaining imported soil was used to backfill the site to ground surface. The site was contoured to the surrounding location and a silt net fence was placed around the excavation to prevent erosion and maintain seed integrity. On September 10th, 2013, soil amendments were added to the site and the site was seeded with a blend of native vegetation. Documentation of these activities can be found in Appendix A.

Since the CAP actions have been completed, ROC respectfully requests 'remediation termination' or similar site closure status for the site. ROC acknowledges they have met the requirements of 19.15.29 NMAC, and no further action is required.

RECS appreciates the opportunity to work with you on this project. Please call Hack Conder at (575) 393-2967 or me if you have any questions or wish to discuss the site.

Sincerely,

Lara Weinheimer
Project Scientist
RECS
(575) 441-0431

Attachments:

- Figure 1 – Site Location Map
- Figure 2 – Geographical Location Map
- Figure 3 – NMOCD Approved Liner
- Appendix A – CAP Activities Documentation

Figures

RICE Environmental Consulting and Safety (RECS)
P.O. Box 2948, Hobbs, NM 88241
Phone 575.393.2967

Site Location Map

RICE ENVIRONMENTAL RECS CONSULTING & SAFETY, LLC

Vacuum C-36 EOL

Legals: UL/ C, Section 36, T17S, R34E
Lea County, NM

NMOCD Case #: 1R425-103

Figure 1

N W E S

0 295 590 1,180 Feet

Drawing date: 2-8-13

Geographical Location Map

RICE ENVIRONMENTAL RECS CONSULTING & SAFETY, LLC

Vacuum C-36 EOL

Legals: UL/ C, Section 36, T17S, R34E
Lea County, NM

NMOCD Case #: 1R425-103

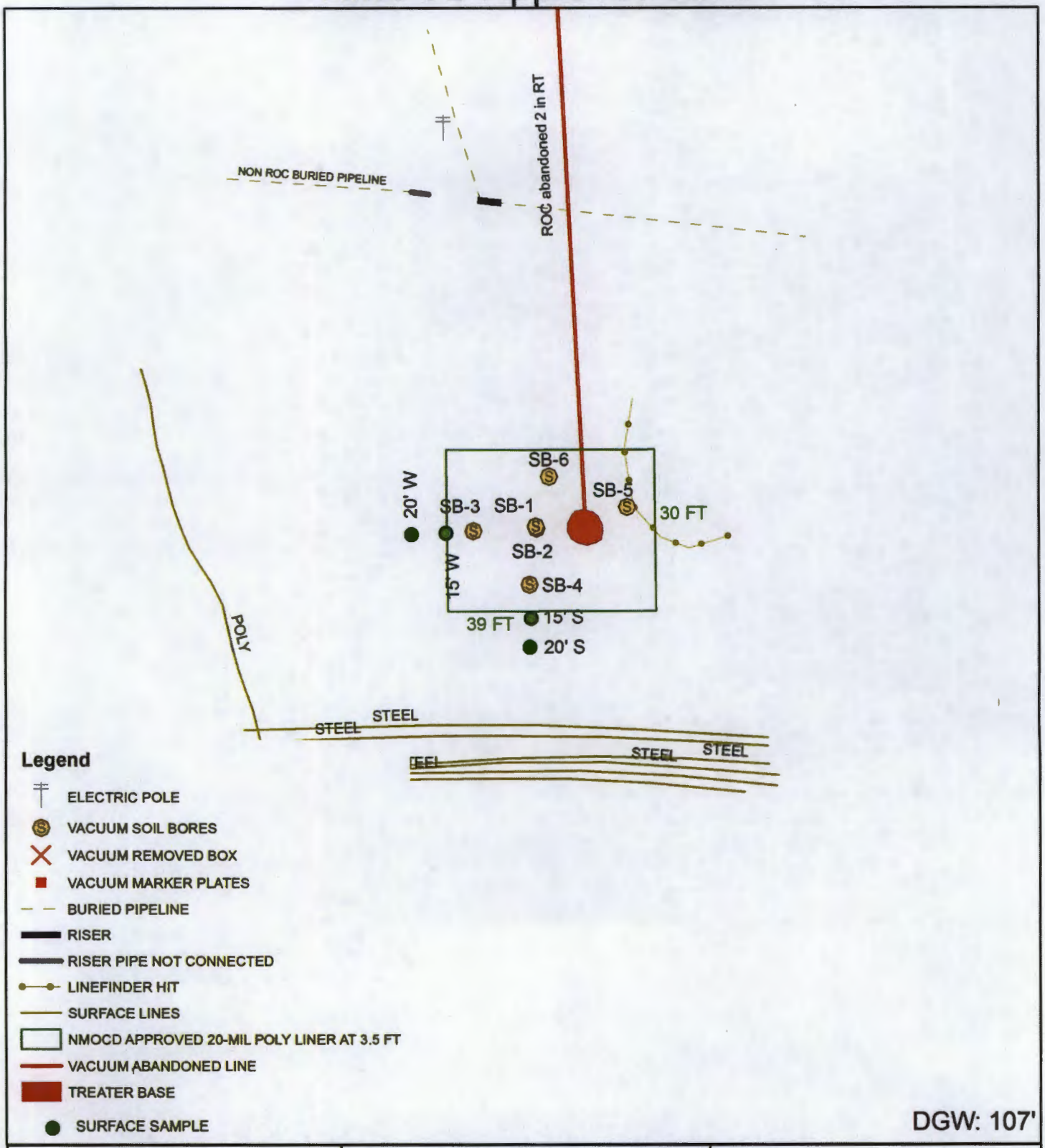
Figure 2

N
W E
S

0 180 360 720
Feet

Drawing date: 10-8-13

NMOCD Approved Liner



RICE ENVIRONMENTAL RECS CONSULTING & SAFETY, LLC

Vacuum C-36 EOL

Legals: UL/ C, Section 36, T17S, R34E
Lea County, NM

NMOCD Case #: 1R425-103

Figure 3

N W E S

0 5 10 20 Feet

Drawing date: 10/8/13
Drawn by: L. Weinheimer

Appendix A

CAP Activities Documentation

RICE Environmental Consulting and Safety (RECS)
P.O. Box 2948 Hobbs, NM 88241
Phone 575.393.2967

RICE ENVIRONMENTAL CONSULTING & SAFETY

122 West Taylor Hobbs, NM 88240
PHONE: (505) 393-9174 FAX: (505) 397-1471

PID METER CALIBRATION & FIELD REPORT FORM

CK. MODEL NO.			
		MODEL: PGM 7300	SERIAL NO: 590-000508
		MODEL: PGM 7300	SERIAL NO: 590-000504
		MODEL: PGM 7320	SERIAL NO: 592-903318
	X	MODEL: PGM 7300	SERIAL NO: 590-902431

GAS COMPOSITION: ISOBUTYLENE 100PPM / AIR: BALANCE

LOT# IAM 248-100-6	EXP: 7/1/2015
METER READING:100 PPM	

ACCURACY : +/- 2%

COMPANY
RICE

SITE	UNIT	SECTION	TOWN SHIP	RANGE
Vacuum C-36 EOL	C	36	17S	34E

SAMPLE ID	PID	SAMPLE ID	PID
Pond Bottom	2.4		

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

SIGNATURE: Tracy Sees DATE:9-4-13

RICE ENVIRONMENTAL CONSULTING & SAFETY

122 West Taylor Hobbs, NM 88240
PHONE: (505) 393-9174 FAX: (505) 397-1471

PID METER CALIBRATION & FIELD REPORT FORM

CK. MODEL NO.	MODEL	SERIAL NO
	MODEL: PGM 7300	SERIAL NO: 590-000508
	MODEL: PGM 7300	SERIAL NO: 590-000504
	MODEL: PGM 7320	SERIAL NO: 592-903318
X	MODEL: PGM 7300	SERIAL NO: 590-! 902431

GAS COMPOSITION: ISOBUTYLENE 100PPM / AIR: BALANCE

LOT# IAM 248-100-6	EXP: 7/1/2015
METER READING:100 PPM	

ACCURACY : +/-2%

COMPANY
RICE

SITE	UNIT	SECTION	TOWN SHIP	RANGE
Vacuum C-36 EOL	C	36	17S	34E

SAMPLE ID	PID	SAMPLE ID	PID
Blow Sand	1.5		

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

SIGNATURE: [signature]

DATE:9-3-13

CARDINAL Laboratories

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

September 10, 2013

KYLE NORMAN

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: VACUUM C-36 EOL (17/34)

Enclosed are the results of analyses for samples received by the laboratory on 09/04/13 16:35.

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,

Celey D. Keene

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

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

Received:	09/04/2013	Sampling Date:	09/04/2013
Reported:	09/10/2013	Sampling Type:	Soil
Project Name:	VACUUM C-36 EOL (17/34)	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: POND BOTTOM (H302140-01)

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	09/06/2013	ND	416	104	400	3.77	

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

101 East Marland, Hobbs, NM 88240
(575) 393-2326 FAX (575) 393-2476

Company Name:	Rice	BILL TO	
Project Manager:	Kyle Norman	P.O. #:	
Address:		Company:	
City:	State: NM Zip:	Attn:	
Phone #:	Fax #:	Address:	
Project #:	Project Owner:	City:	
Project Name:		State:	Zip:
Project Location:	Vacuum C-36 EOL	Phone #:	
Sampler Name:	KARANJA LEWIS	Fax #:	

FOR LAB USE ONLY				MATRIX						PRESERV.			SAMPLING		ANALYSIS REQUEST
Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	ACID/BASE:	ICE / COOL	OTHER :	DATE	TIME	Chlorides
H302140															
1	Pond Bottom	G	1			✓					✓		9-4-13	10:44	✓

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 the client for the 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 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 services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Relinquished By:	Date: 9-4-13	Received By:	Phone Result: ☐ Yes ☐ No Add'l Phone #:
Karanja Lewis	Time: 4:35	Jodi Henson	Fax Result: ☐ Yes ☐ No Add'l Fax #:
Relinquished By:	Date:	Received By:	REMARKS: email results to hconder@riceswd.com Knorman@rice-ecs.com lpena@riceswd.com lwernhermer@rice-ecs.com klewis@rice-ecs.com
	Time:		

Delivered By: (Circle One)
Sampler - UPS - Bus - Other:

Sample Condition: Cool ☑ Yes ☐ No; Intact ☑ Yes ☐ No

CHECKED BY: (Initials)

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

#54

CARDINAL Laboratories

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

September 06, 2013

KYLE NORMAN

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: VACUUM C-36 EOL (17/34)

Enclosed are the results of analyses for samples received by the laboratory on 09/06/13 8:25.

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,

Celey D. Keene

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

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

Received:	09/06/2013	Sampling Date:	09/05/2013
Reported:	09/06/2013	Sampling Type:	Soil
Project Name:	VACUUM C-36 EOL (17/34)	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: BLOW SAND (H302152-01)

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	09/06/2013	ND	416	104	400	3.77	

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

101 East Marland, Hobbs, NM 88240
(575) 393-2326 FAX (575) 393-2476

Company Name:	Rice	BILL TO	
Project Manager:	Kyle Norman	P.O. #:	
Address:		Company:	
City:	State: Zip:	Attn:	
Phone #:	Fax #:	Address:	
Project #:	Project Owner:	City:	
Project Name:		State: Zip:	
Project Location:	Vacuum C-36 EOL	Phone #:	
Sampler Name:	KARANJA LEWIS	Fax #:	

FOR LAB USE ONLY Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER:	PRESERV.: ACID/BASE:	ICE / COOL	OTHER:	SAMPLING: DATE	TIME	ANALYSIS REQUEST: Chlorides
H302152															
1	Blow Sand	G	1			✓					✓		9-5-13		✓

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 the client for the 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 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 services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Relinquished By: KARANJA LEWIS	Date: 9-6-13 Time: 8:35	Received By: Jodi Henson	
Relinquished By:	Date: Time:	Received By:	
Delivered By: (Circle One) Sampler - UPS - Bus - Other:	Sample Condition: Cool: Yes / No; Intact: Yes / No	CHECKED BY: (Initials)	

Phone Result: ☐ Yes ☐ No Add'l Phone #:
Fax Result: ☐ Yes ☐ No Add'l Fax #:
REMARKS: email results
kconder@riceswd.com
knorman@rice-ecs.com
lpena@riceswd.com
klewis@rice-ecs.com
lweinheimer@rice-ecs.com

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

#54

PO Box 2498
Hobbs, NM 88241
Phone: (575) 393-2967
Fax: (575) 393-0293

VEGETATION FORM

1. General Information

Site name:	Vacuum C-36 EOL					
U/L	Section	Township	Range	County	Latitude	Longitude
C	36	17S	34E	Lea	N 32 47' 47.379"	W 103 31' 0.197"
Contact Name:	Hack Conder					
Email:	hconder@riceswd.com					
Site size:	53'x64'		square feet:	3,392		

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

Salvaged from site		Bioremediated	X	Imported		Blended		Depth (in)		
Texture:	Sandy			Describe soil & subsoil:		Pond Bottom below and Pond Bottom/Blow Sand blend on top				
Soil prep methods:	Rip		Depth (in)		Disc	X	Depth (in)	3"	Rollerpack	
Date completed:	9/5/2013									

3. Bioremediation

Fertilizer		Hay		Other	X
Type:				Describe: 3 bags of Restore Nhance, 10 bags of potting soil, 1 bag of manure, 10 bags of Pete Moss	
Lbs/acre:					

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

Custom Seed Mix	X	Prescribed Mix		Seed Mix Name:	5 lbs.side oats 5 lbs. blue grama, 5lbs. Sudan	Date:	9/10/2013
Broadcast	Push Broadcast Seeder				Method	With Broadcast Seeder	
Soil conditions during seed:	Dry	X	Damp		Wet		
Observations:	The seed and amendments were raked into the 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:	Karanja Lewis	Title:	Enviromental Tech	Date:	9/10/2013
Signature:	Karanja Lewis				

Vacuum C-36 EOL (1R425-103)
Unit Letter C, Section 36, T17S, R34E

Site prior to excavation, facing east 6/25/2013

Excavating, facing south 8/28/2013

Exporting soil, facing east 8/30/2013

Padding the completed excavation, facing southeast 9/3/2013

Installing liner, facing south 9/3/2013

Importing, facing west 9/3/2013

Vacuum C-36 EOL (1R425-103)
Unit Letter C, Section 36, T17S, R34E

Padding above the liner, facing southwest 9/3/2013

Backfilling excavation, facing west 9/4/2013

Spreading amendments, facing northwest 9/10/2013

Spreading seed, facing northwest 9/10/2013

Raking seed, facing west 9/10/2013

Site complete, facing east 9/10/2013