

L Peter Galusky, Jr PE

Texerra LLC

May 15th, 2015

Dr. Tomas Oberding

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

RE: **Corrective Action Plan (CAP)**
Rice Operating Company – Vacuum SWD System
Vacuum Jct. A-36: UL A, Sec. 36, T17S, R34E
NMOCD Case Number: 1R425-83

Sent via Email

Dr. Oberding:

RICE Operating Company (ROC) has retained Texerra to address potential environmental concerns at the above-referenced site in the abandoned Vacuum Salt Water Disposal (SWD) system. This report summarizes investigative work done to date to determine the lateral and vertical extent of residual soil chlorides and hydrocarbons and presents a Corrective Action Plan (CAP) to ensure that groundwater quality is protected.

Background and Previous Work

This site is located approximately ¼ mile SSE of Buckeye, New Mexico in UL A, Sec. 36, T17S, R34E as shown on the Site Location Map (Figure 1). Soil bore installation indicated groundwater is located at a depth of approximately 102 +/- feet.

In 2009, ROC initiated work on the former Vacuum A-36 junction box as part of the system abandonment. The former junction box and surrounding soil was removed from an excavation of approximately dimensions 10 ft by 10 ft by 12 ft deep. Soils samples were field analyzed at regular intervals for chloride and hydrocarbon. The 12 ft sample 5 ft west, east, north and south of the source were analyzed by a commercial laboratory. Residual soil hydrocarbons were below detectable limits for all these samples. However, elevated residual soil chlorides (ranging from 672 to 3,200 mg/kg) were found in these bottom lateral samples. The excavated soil was blended (testing 47.7 mg/kg TPH and 2,200 mg/kg chloride) and returned to the excavation. A 1 ft thick compacted clay barrier was installed from 4 to 5 ft bgs. Clean, imported soil was installed above the clay barrier and the surface was returned to the natural contour and seeded. NMOCD was notified of potential groundwater impact on March 12th, 2010 and a Junction Box Disclosure Report was submitted with all the 2009 junction box closures and disclosures.

ROC initiated soil sampling and analysis as indicated in our Investigation and Characterization Plan (ICP) of February 15th, 2013. As part of the ICP, personnel were on site May 7th to conduct soil bore installations. One soil bore was installed at the closest possible distance, 30 feet north of the source, due to safety concerns. There are numerous safety hazards surrounding this site, including overhead power lines directly over the source and underground non-ROC pipelines. The overhead power line in combination with the non-ROC pipeline prevented a bore from being drilled south or east of the site. ROC was required to remain at least 30 ft away from the overhead power line as well as a safe distance away from the non-ROC line (at least 10 ft). As the bore was advanced, samples were field tested for chlorides and hydrocarbons. Representative samples from the bore were taken to a commercial laboratory for analysis of chlorides and hydrocarbons. SB-1 returned laboratory chloride readings of 3,280 mg/kg at 30 ft bgs and decreased to 1,180 mg/kg at 95 ft bgs. GRO and DRO results were non-detect throughout the bore (Figure 2). The soil bore was plugged with bentonite to the ground surface.

Texerra submitted an ICP Report to OCD on June 3rd, 2013 which summarized soil characterization work done to date. ROC has since (in July and November 2014) drilled and sampled soils from two additional soil bores within the study area. As the bores were advanced, samples were field tested for chlorides and hydrocarbons. Representative samples from each bore were taken to a commercial laboratory for analysis of chlorides and hydrocarbons. SB-2 returned laboratory chloride readings of 64 mg/kg at the surface, 1,180 mg/kg at 25 ft bgs, which decreased to 80 mg/kg at 50 ft bgs. SB-3 returned laboratory chloride readings of 2,680 mg/kg at 15 ft bgs and 944 mg/kg at 95 ft bgs. GRO and DRO results were non-detect throughout each bore. The soil bores were plugged with bentonite to the ground surface. This data is summarized in the attached Soil Bore and Vertical Data plat (Figure 2) and the attached soil bore logs (Appendix).

Three verticals were excavated on March 24th, 2014. The 15 ft north vertical returned laboratory chloride readings below 250 mg/kg to a depth of 3 ft bgs. GRO and DRO results were non-detect. The 15 ft east vertical returned a laboratory chloride reading of 5,920 mg/kg at the surface, 3,440 mg/kg at 2 ft bgs, and 1,840 mg/kg at 8 ft bgs. GRO laboratory readings resulted in 286 mg/kg at the surface, non-detect at 2 ft bgs, and 198 mg/kg at 8 ft bgs. DRO laboratory readings were below detectable limit. The 15 ft south vertical returned a laboratory chloride reading of 240 mg/kg at the surface, 1,470 mg/kg at 1 ft bgs, 528 mg/kg at 2 ft bgs, and 416 mg/kg at 3 ft bgs. GRO laboratory readings resulted in 300 mg/kg at 1 ft bgs, 15.1 mg/kg at 2 ft, and non-detect at the surface and 3 ft bgs. These verticals could not be excavated any deeper due to the presence of hard rock. A surface sample was collected to the west of the former junction box, resulting in a laboratory chloride, GRO, and DRO readings below detectable limits. To further delineate the area to the west, an additional vertical was excavated on March 22nd, 2015, resulting in laboratory chloride reading below detectable limit in the surface, 512 mg/kg at 1 ft bgs, and 80 mg/kg at 2 ft bgs. GRO and DRO results were non-detect throughout this vertical. This data is summarized in Figure 2.

The area of elevated residual soil chlorides is encompassed and delineated by the proposed sub-surface liner (blue box) having modified dimensions of 70 by 42 ft. ROC proposes to excavate soil within this area to a depth of approximately 3.5 ft bgs due to presence of hard rock in the area, add and level approximately 6 inches of clean blow sand, carefully install and seat a 20 mil

Vacuum Jct. A-36

synthetic liner, carefully add 6 inches of clean blow sand over top of the liner, return the native soil and grade to original contours. The soils placed above the liner will have a laboratory chloride reading no greater than 500 mg/kg and a field PID measurement below 100 ppm. Excavated soils will be evaluated for use as backfill and any soils that do not meet requirements will be properly disposed of at a NMOCD approved facility. ROC will then prepare the soil and reseed with a native seed mixture.

ROC also proposes to install an up-gradient and a near-source monitor well approximately as shown in the attached plat. These will provide a means to assess current and future groundwater quality. Additional monitoring wells may be required to fully delineate groundwater quality.

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/usage basis.

Please contact either myself or Katie Jones Davis with ROC if you have any questions or need additional information.

Thank you.

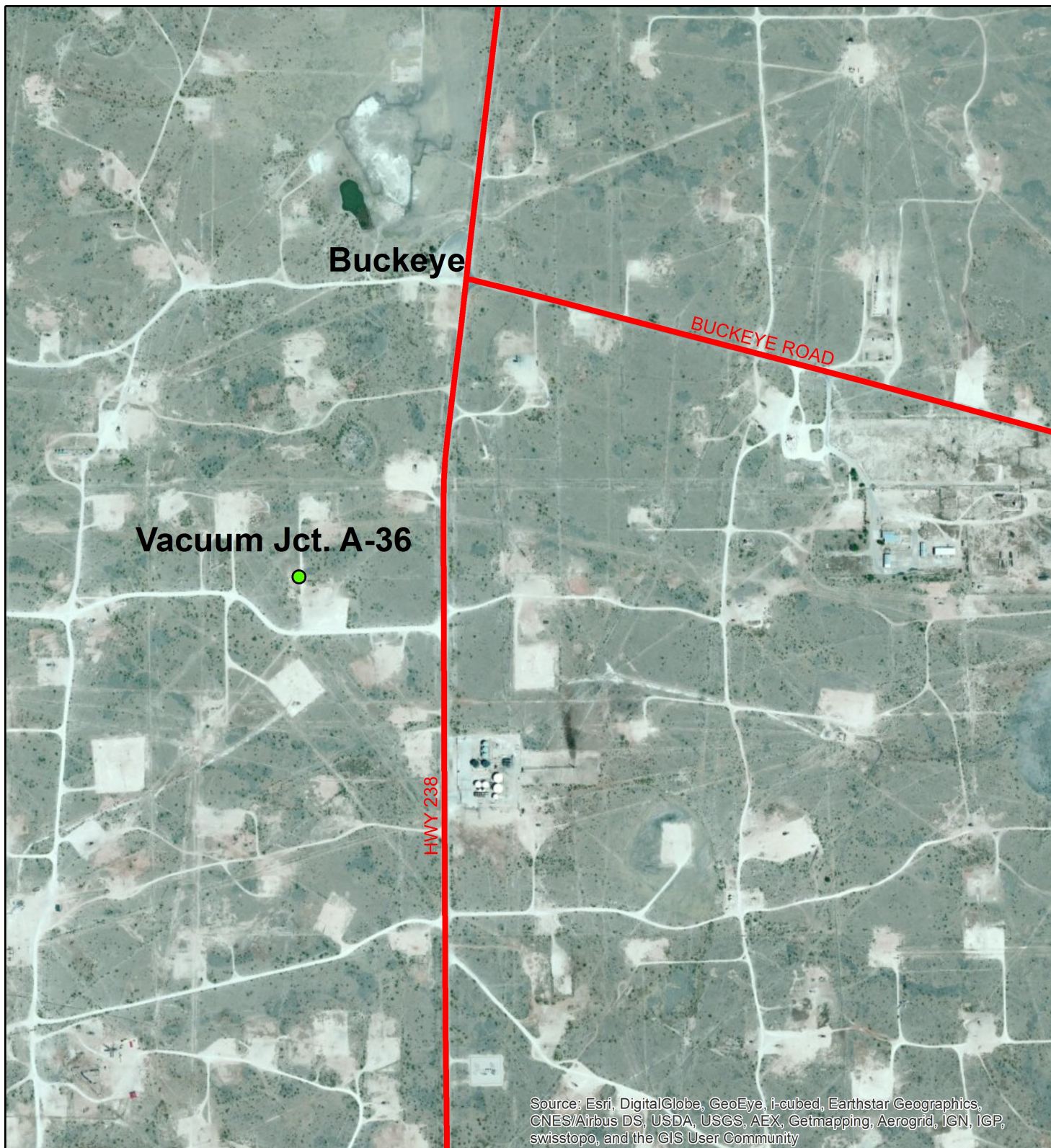
Sincerely,

A handwritten signature in black ink, appearing to read 'L. Peter Galusky, Jr.', with a stylized, cursive script.

L. Peter Galusky, Jr. P.E.
NM Prof. Engineer No. 22561

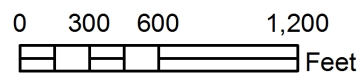
Copy: Rice Operating Company

Attachments: as noted



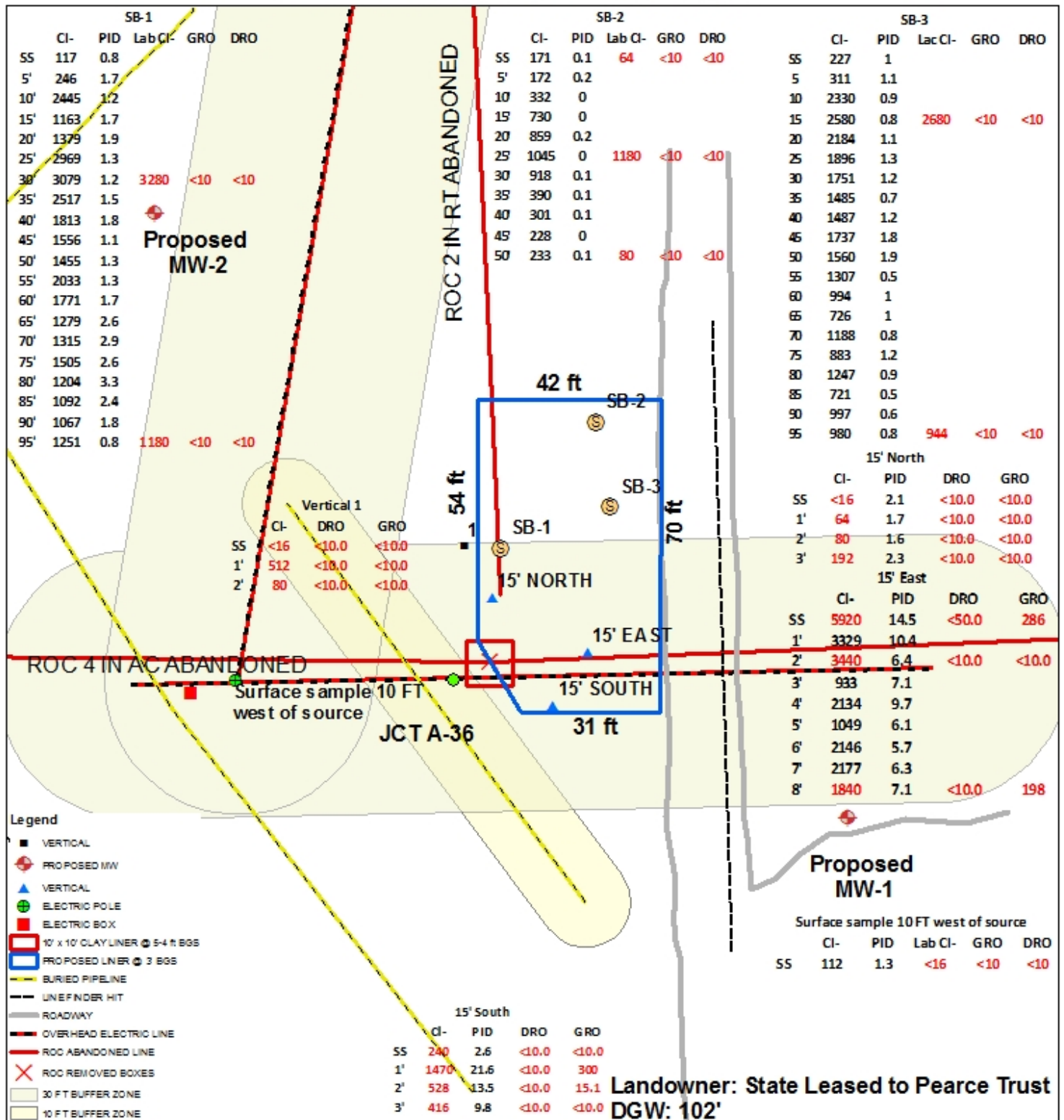
Vacuum Jct. A-36
Unit A, Section 36, T17S, R34E
NMOCD Case #: 1R425-83

Figure 1



Drawing date: 2-8-13

Soil Bore and Vertical Data

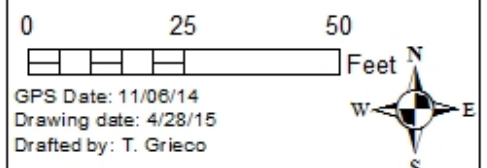


Landowner: State Leased to Pearce Trust
DGW: 102'



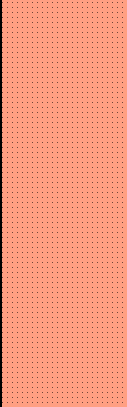



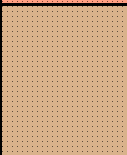



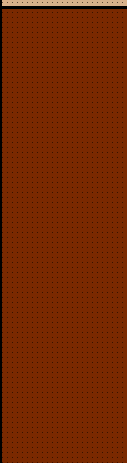



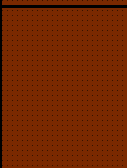



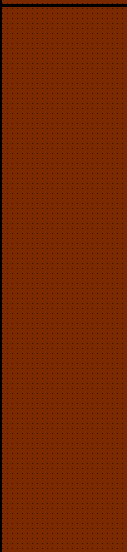



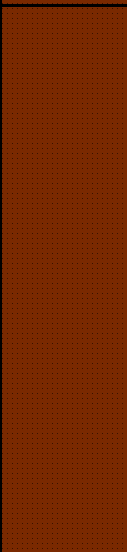



VACUUM
JCT A-36
UL A SECTION 36
T-17-S R-34-E
LEA COUNTY, NM
NMOCD CASE # 1R425-83

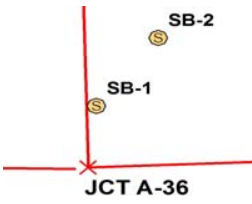

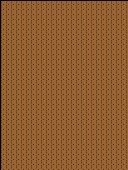
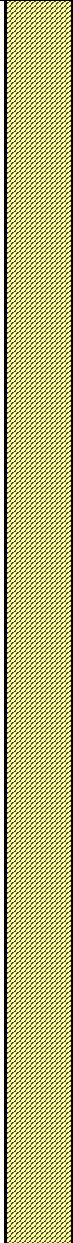


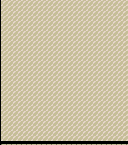
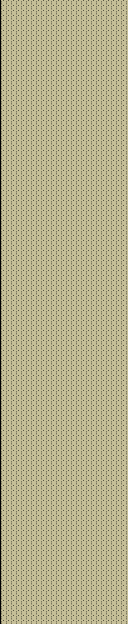
Figure 2

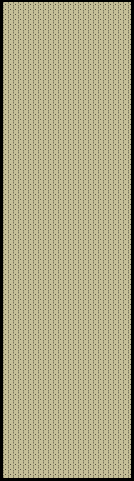



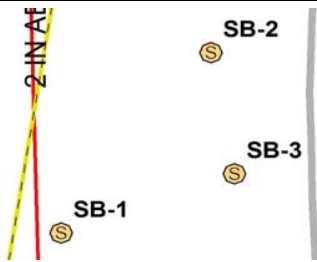

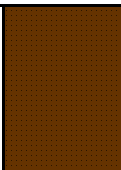
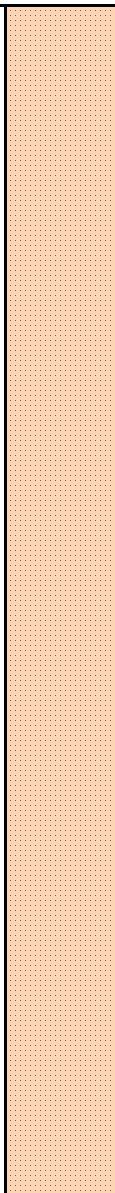
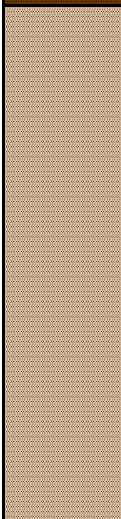
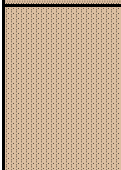
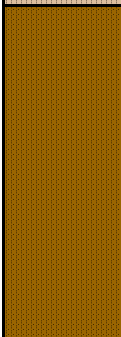
Logger:	Kyle Norman			
Driller:	Harrison & Cooper, Inc.			
Drilling Method:	Air Rotary			
Start Date:	5/7/2013			
End Date:	5/7/2013		Project Name: Vacuum Jct. A-36 Well ID: SB-1 Project Consultant: Texerra	
Comments: SB-1 is located 30 ft north of the former junction box site. All samples were from cuttings. DRAFTED BY: L. Peña TD = 95 ft GW = 102 ft			Location: UL A, Sec. 36, T17S, R34E Lat: 32°47'50.911"N County: Lea Long: 103°30'29.693"W State: NM	

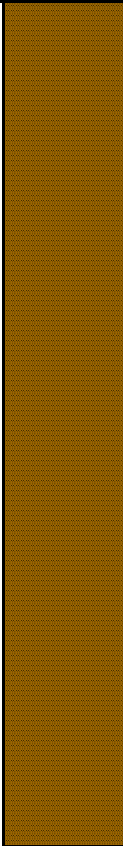
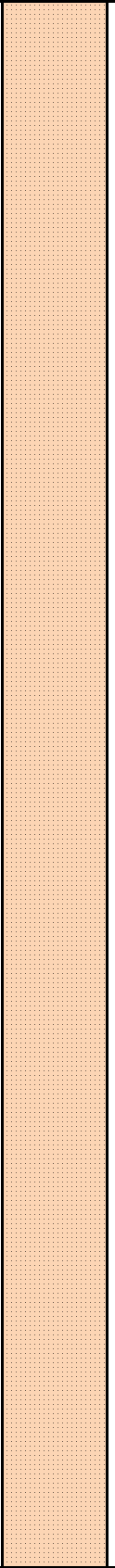

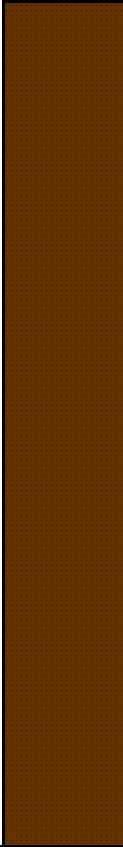
Depth	Field	LAB		PID	Description	Lithology	Well Construction	
	Cl ⁻ (mg/kg)	Cl ⁻ (mg/kg)	TPH (mg/kg)					
SS	117			0.8	Brown Sand Caliche Mix			
5 ft	246			1.7	Clay With Caliche Damp			
10 ft	2,445			1.2	Caliche			
15 ft	1,163			1.7	Caliche With Some Sandstone			
20 ft	1,379			1.9	Caliche With Some Sandstone			
25 ft	2,969			1.3	Red/Tan Sand			
30 ft	3,079	3,280	GRO <10 DRO <10	1.2	Red/Tan Sand			
35 ft	2,517			1.5	Red/Tan Sand			
40 ft	1,813			1.8	Red/Tan Sand			

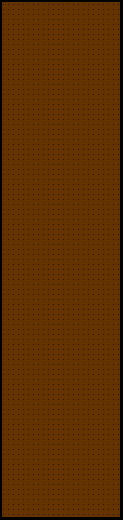
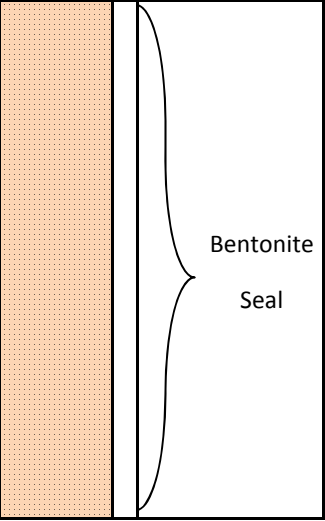
					Red/Tan Sand					bentonite seal
45 ft	1,556			1.1						
50 ft	1,455			1.3	Tan Sand					
55 ft	2,033			1.3	Moist Red Sand					
60 ft	1,771			1.7						
65 ft	1,279			2.6	Moist Red Sand With Some Sandstone					
70 ft	1,315			2.9	Moist Red Sand					
75 ft	1,505			2.6						
80 ft	1,204			3.3	Moist Red Sand					
85 ft	1,092			2.4						
90 ft	1,067			1.8						
95 ft	1,251	1,180	GRO <10 DRO <10	0.8						

Logger:		Amber Groves									
Driller:		Harrison&Cooper Inc.									
Drilling Method:		Air Rotary									
Start Date:		7/18/2014									
End Date:		7/18/2014		Project Name:		Well ID:					
						Vacuum Jct. A-36		SB-2			
Project Consultant: RECS											
Comments: All samples were taken from cuttings. SB-2 was installed 60' northeast of the former junction box. DRAFTED BY: C. Uršanić TD = 50' GW = 102'						Location: UL/A Sec. 36 T-17-S R-34-E					
						Lat: 32°47'51.232"N				County: Lea	
						Long: 103°30'29.402"W				State: NM	
Depth (feet)	Chloride field tests	LAB	PID	Description		Lithology		Well Construction			
SS	171	CI-64	0.1	Brown Sand					Bentonite Seal		
		GRO <10									
		DRO <10									
5 ft	172		0.2	Caliche							
10 ft	332		0	Tan Sand/Caliche							
15 ft	730		0	Tan Sand/Caliche/Sandstone							
20 ft	859		0.2	Tan sand							
25 ft	1045	CI-1180	0								
		GRO <10									
		DRO <10									
30 ft	918		0.1								
35 ft	390		0.1								

Depth (feet)	Chloride field tests	LAB	PID	Description		Lithology		Well Construction
40 ft	301		0.1	Tan sand				 Bentonite Seal
45 ft	228		0					
50 ft	233	CI- 80	0.1					
		GRO <10						
		DRO <10						

Logger:	Amber Groves						
Driller:	Harrison & Cooper Inc.						
Drilling Method:	Air Rotary			Company: ROC		Well ID:	
Start Date:	11/6/2014			Project Name: Vacuum Jct. A-36		SB-3	
End Date:	11/6/2014	Project Consultant: Texerra					
Comments: All samples taken from cuttings. SB-3 is located 44 FT northeast of the source. DRAFTED BY: Brian Cooper TD = 95 FT GW = 102 FT				Location: UL/ A Sec.36 T17S R34E Lat: 32.797511 County: Lea Long: -103.508157 State: NM			
Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction	
SS	227		1	Brown topsoil		 Bentonite Seal	
5 ft	311		1.1	Tan sand with sandstone			
10 ft	2330		0.9	Tan sand with sandstone			
15 ft	2580	CI-2680	0.8	Tan sand with sandstone			
		GRO <10					
		DRO <10					
20 ft	2184		1.1	Tan sand with caliche			
25 ft	1896		1.3	Brownish tan sand with caliche			
30 ft	1751		1.2	Brownish tan sand with caliche			

Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction		
35 ft	1485		0.7	Brownish tan sand with sandstone				Bentonite Seal
40 ft	1487		1.2					
45 ft	1737		1.8					
50 ft	1560		1.9					
55 ft	1307		0.5	Brown sand				
60 ft	994		1					
65 ft	726		1					
70 ft	1188		0.8					
75 ft	883		1.2					
80 ft	1247		0.9					

Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
85 ft	721		0.5	Brown sand		
90 ft	997		0.6			
95 ft	980	Cl- 944	0.8			
		GRO <10				
		DRO <10				

May 09, 2013

Hack Conder

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: VACUUM JCT. A-36 17S/34E

Enclosed are the results of analyses for samples received by the laboratory on 05/07/13 16:15.

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

Received:	05/07/2013	Sampling Date:	05/07/2013
Reported:	05/09/2013	Sampling Type:	Soil
Project Name:	VACUUM JCT. A-36 17S/34E	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SB 1 @ 30' (H301085-01)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: DW					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	3280	16.0	05/08/2013	ND	432	108	400	3.77	
TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	05/08/2013	ND	201	101	200	1.94	
DRO >C10-C28	<10.0	10.0	05/08/2013	ND	198	98.8	200	2.58	
Surrogate: 1-Chlorooctane	98.0 %	65.2-140							
Surrogate: 1-Chlorooctadecane	102 %	63.6-154							

Sample ID: SB 1 @ 95' (H301085-02)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: DW					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1180	16.0	05/08/2013	ND	432	108	400	3.77	
TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	05/08/2013	ND	201	101	200	1.94	
DRO >C10-C28	<10.0	10.0	05/08/2013	ND	198	98.8	200	2.58	
Surrogate: 1-Chlorooctane	105 %	65.2-140							
Surrogate: 1-Chlorooctadecane	114 %	63.6-154							

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



CARDINAL 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

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Company Name: <u>Rice</u>				BILL TO				ANALYSIS REQUEST																					
Project Manager: <u>Hack Conder</u>				P.O. #:				<div style="display: flex; flex-direction: column; align-items: center;"> <div>Chlorides</div> <div>TPH 8015 M</div> <div>BTEX</div> <div>Texas TPH</div> <div>Complete Cations/Anions</div> <div>TDS</div> </div>																					
Address:				Company:																									
City: <u>Hobbs</u> State: <u>NM</u> Zip: <u>88240</u>				Attn:																									
Phone #: Fax #:				Address:																									
Project #: Project Owner:				City:																									
Project Name:				State: Zip:																									
Project Location: <u>Vacuum Jct A36 175-34E</u>				Phone #:																									
Sampler Name: <u>Kyle Norman</u>				Fax #:																									
FOR LAB USE ONLY																													
Lab I.D.		Sample I.D.		(G)RAB OR (C)OMP.		# CONTAINERS		MATRIX				PRESERV.		SAMPLING															
								GROUNDWATER																					
								WASTEWATER																					
								SOIL																					
								OIL																					
								SLUDGE																					
								OTHER:																					
								ACID/BASE:																					
								ICE / COOL																					
								OTHER:																					
												DATE		TIME															
<u>H301088</u>		<u>SB1 @ 30'</u>		<u>G</u>		<u>1</u>								<u>5-7-13</u>		<u>1:00</u>		<u>✓</u>											
		<u>SB1 @ 95'</u>		<u>G</u>		<u>1</u>								<u>"</u>		<u>2:15</u>		<u>✓</u>											

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: <u>Kyle Norman</u>		Date: <u>5-7-13</u>		Received By: <u>Jodi Benson</u>		Phone Result: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Add'l Phone #:	
Time: <u>4:15</u>		Time: <u>4:15</u>		Time: <u>4:15</u>		Fax Result: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Add'l Fax #:	
Relinquished By:		Date:		Received By:		REMARKS: email results: zconder@rice-ecs.com Knorman@rice-ecs.com; lpena@riceswd.com KJones@riceswd.com; Bbaker@rice-ecs.com; hconder@rice-ecs.com; Lweinheimer@rice-ecs.com			
Time:		Time:		Time:					
Delivered By: (Circle One)		Sample Condition		CHECKED BY:					
Sampler - UPS - Bus - Other:		Cool Intact		<u>(Signature)</u>					
		<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No							

† Cardinal cannot accept verbal changes. Please fax written changes to 505-393-2476

154

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.	<input type="checkbox"/>	MODEL: PGM 7300	SERIAL NO: 590-000508
MODEL	<input checked="" type="checkbox"/>	MODEL: PGM 7300	SERIAL NO: 590-000504
NO.	<input type="checkbox"/>	MODEL: PGM 7320	SERIAL NO: 592-903318
	<input type="checkbox"/>	MODEL: PGM 7300	SERIAL NO: 590-000183

GAS COMPOSITION: ISOBUTYLENE 100PPM / AIR: BALANCE

LOT NO : HAL-248-100-1	EXPIRATION DATE: 7/01/2015
METER READING ACCURACY: 99.9 PPM	

ACCURACY : +/- 2%

COMPANY
Rice

SITE	UNIT	SECTION	TOWN SHIP	RANGE
Vacuum Jct. A-36	A	36	T-17-S	R-34-E

SAMPLE ID	PID	SAMPLE ID	PID
Soil Bore #1 @ Surface	0.8	Soil Bore #1 @ 60'	1.7
Soil Bore #1 @ 5'	1.7	Soil Bore #1 @ 65'	2.6
Soil Bore #1 @ 10'	1.2	Soil Bore #1 @ 70'	2.9
Soil Bore #1 @ 15'	1.7	Soil Bore #1 @ 75'	2.6
Soil Bore #1 @ 20'	1.9	Soil Bore #1 @ 80'	3.3
Soil Bore #1 @ 25'	1.3	Soil Bore #1 @ 85'	2.4
Soil Bore #1 @ 30'	1.2	Soil Bore #1 @ 90'	1.8
Soil Bore #1 @ 35'	1.5	Soil Bore #1 @ 95'	0.8
Soil Bore #1 @ 40'	1.8		
Soil Bore #1 @ 45'	1.1		
Soil Bore #1 @ 50'	1.3		
Soil Bore #1 @ 55'	1.3		

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

SIGNATURE: 

DATE: 5-7-2013

July 23, 2014

KYLE NORMAN

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: VACUUM JCT A-36

Enclosed are the results of analyses for samples received by the laboratory on 07/18/14 12:30.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-13-5. 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 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:	07/18/2014	Sampling Date:	07/18/2014
Reported:	07/23/2014	Sampling Type:	Soil
Project Name:	VACUUM JCT A-36	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	T-17S R-36E		

Sample ID: SB 2 @ SURFACE (H402195-01)

Chloride, SM4500Cl-B		mg/kg	Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	64.0	16.0	07/22/2014	ND	416	104	400	3.77	
TPH 8015M		mg/kg	Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	07/19/2014	ND	174	86.9	200	5.90	
DRO >C10-C28	<10.0	10.0	07/19/2014	ND	187	93.5	200	6.11	
Surrogate: 1-Chlorooctane	108 %	65.2-140							
Surrogate: 1-Chlorooctadecane	116 %	63.6-154							

Sample ID: SB 2 @ 25' (H402195-02)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1180	16.0	07/22/2014	ND	416	104	400	3.77	
TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	07/19/2014	ND	174	86.9	200	5.90	
DRO >C10-C28	<10.0	10.0	07/19/2014	ND	187	93.5	200	6.11	
Surrogate: 1-Chlorooctane	107 %	65.2-140							
Surrogate: 1-Chlorooctadecane	111 %	63.6-154							

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

Analytical Results For:

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

Received:	07/18/2014	Sampling Date:	07/18/2014
Reported:	07/23/2014	Sampling Type:	Soil
Project Name:	VACUUM JCT A-36	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	T-17S R-36E		

Sample ID: SB 2 @ 50' (H402195-03)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	80.0	16.0	07/22/2014	ND	416	104	400	3.77		
TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	07/19/2014	ND	174	86.9	200	5.90		
DRO >C10-C28	<10.0	10.0	07/19/2014	ND	187	93.5	200	6.11		

Surrogate: 1-Chlorooctane 108 % 65.2-140
 Surrogate: 1-Chlorooctadecane 118 % 63.6-154

Cardinal Laboratories

*=Accredited Analyte

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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

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Celey D. Keene, Lab Director/Quality Manager



CARDINAL 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

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Company Name: Rice				BILL TO				ANALYSIS REQUEST											
Project Manager: Kyle Norman				P.O. #:				<div style="display: flex; flex-direction: column; align-items: center;"> <div>Chlorides</div> <div>TPH 8015 M</div> <div>BTEX</div> <div>Texas TPH</div> <div>Complete Cations/Anions</div> <div>TDS</div> </div>											
Address:				Company:															
City: Hobbs State: NM Zip: 88240				Attn:															
Phone #: Fax #:				Address:															
Project #: Project Owner:				City:															
Project Name: Vacuum Jet. A-36				State: Zip:															
Project Location:				Phone #:															
Sampler Name: Amber Groves				Fax #:															
FOR LAB USE ONLY																			
Lab I.D.	Sample I.D.	(G)IRAB OR (C)OMP.	# CONTAINERS	MATRIX				PRESERV.		SAMPLING									
				GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER:	ACID/BASE:	ICE / COOL	OTHER:	DATE	TIME					
H402198																			
	1 SB2 @ surface	G	1			✓				✓			7-18-14	7:45	✓	✓			
	2 SB2 @ 25ft	G	1			✓				✓			7-18-14	7:55	✓	✓			
	3 SB2 @ 50ft	G	1			✓				✓			7-18-14	8:10	✓	✓			

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: Amber Groves	Date: 7-18-14	Received By: Jodi Benson	Phone Result: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Add'l Phone #:
	Time: 12:30		Fax Result: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Add'l Fax #:
Relinquished By:	Date:	Received By:	REMARKS:	
	Time:		email results	
Delivered By: (Circle One)		Sample Condition	CHECKED BY: JJA	
Sampler - UPS - Bus - Other:		Cool Intact <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> No <input type="checkbox"/> No		

† Cardinal cannot accept verbal changes. Please fax written changes to 505-393-2476

#54

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.	<input type="checkbox"/>	MODEL: PGM 7300	SERIAL NO: 590-000508
MODEL	<input checked="" type="checkbox"/>	MODEL: PGM 7300	SERIAL NO: 590-000504
NO.	<input type="checkbox"/>	MODEL: PGM 7320	SERIAL NO: 592-903318
	<input type="checkbox"/>	MODEL: PGM _____	SERIAL NO: _____

GAS COMPOSITION: ISOBUTYLENE 100PPM / AIR: BALANCE

LOT NO : GAM-248-1004	EXPIRATION DATE: 6-7-16
METER READING ACCURACY: 100ppm	

COMPANY
Rice

SITE	UNIT	SECTION	TOWN SHIP	RANGE
Vacuum Jct. A-36	A	36	17	34

SAMPLE ID	PID	SAMPLE ID	PID
SB2 @ Surface	0.11		
SB2 @ 5'	0.2		
SB2 @ 10'	0		
SB2 @ 15'	0.1		
SB2 @ 20'	0.2		
SB2 @ 25'	0		
SB2 @ 30'	0.1		
SB2 @ 35'	0.1		
SB2 @ 40'	0.1		
SB2 @ 45'	0		
SB2 @ 50'	0.1		

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

SIGNATURE: *Amber Graves*

DATE: 7/18/14

November 12, 2014

Hack Conder

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: VACUUM JCT. A-36 17S/34E

Enclosed are the results of analyses for samples received by the laboratory on 11/06/14 14:30.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-13-5. 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 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
 Hack Conder
 112 W. Taylor
 Hobbs NM, 88240
 Fax To: (575) 397-1471

Received:	11/06/2014	Sampling Date:	11/06/2014
Reported:	11/12/2014	Sampling Type:	Soil
Project Name:	VACUUM JCT. A-36 17S/34E	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SB 3 @ 15' (H403428-01)

Chloride, SM4500Cl-B		mg/kg	Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	2680	16.0	11/10/2014	ND	400	100	400	3.92	
TPH 8015M		mg/kg	Analyzed By: ms						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	11/08/2014	ND	200	99.8	200	0.972	
DRO >C10-C28	<10.0	10.0	11/08/2014	ND	212	106	200	1.95	
Surrogate: 1-Chlorooctane	101 %	47.2-157							
Surrogate: 1-Chlorooctadecane	110 %	52.1-176							

Sample ID: SB 3 @ 95' (H403428-02)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	944	16.0	11/10/2014	ND	400	100	400	3.92	
TPH 8015M		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	11/08/2014	ND	200	99.8	200	0.972	
DRO >C10-C28	<10.0	10.0	11/08/2014	ND	212	106	200	1.95	
Surrogate: 1-Chlorooctane	103 %	47.2-157							
Surrogate: 1-Chlorooctadecane	109 %	52.1-176							

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

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

Received:	11/06/2014	Sampling Date:	11/06/2014
Reported:	11/12/2014	Sampling Type:	Soil
Project Name:	VACUUM JCT. A-36 17S/34E	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SURFACE 10' WEST OF SOURCE (H403428-03)

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	11/10/2014	ND	400	100	400	3.92		
TPH 8015M		mg/kg		Analyzed By: ms						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	11/08/2014	ND	200	99.8	200	0.972		
DRO >C10-C28	<10.0	10.0	11/08/2014	ND	212	106	200	1.95		
<hr/>										
Surrogate: 1-Chlorooctane	97.0 %	47.2-157								
Surrogate: 1-Chlorooctadecane	105 %	52.1-176								

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

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Celey D. Keene, Lab Director/Quality Manager



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

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

[illegible]

† Cardinal cannot accept verbal changes. Please fax written changes to 505-393-2476

RICE ENVIRONMENTAL CONSULTING & SAFETY

419 West Cain Hobbs, NM 88240
PHONE: (575) 393-2967 FAX: (575) 393-0293
PID METER CALIBRATION & FIELD REPORT FORM

CK.	<input type="checkbox"/>
MODEL	<input checked="" type="checkbox"/>
NO.	<input type="checkbox"/>
	<input type="checkbox"/>

MODEL: PGM 7300	SERIAL NO: 590-000508
MODEL: PGM 7300	SERIAL NO: 590-000504
MODEL: PGM 7320	SERIAL NO: 592-903318
MODEL: PGM _____	SERIAL NO: _____

GAS COMPOSITION: ISOBUTYLENE 100PPM / AIR: BALANCE

LOT NO : GAM-248-1004	EXPIRATION DATE: 6-7-16
METER READING ACCURACY: 100ppm	

COMPANY
Rice

SITE	UNIT	SECTION	TOWN SHIP	RANGE
Vacuum Jct. A-36	A	36	17S	34E

SAMPLE ID	PID	SAMPLE ID	PID
SB3 @ Surface	1	SB3 @ 60'	1
SB3 @ 5'	1.1	SB3 @ 65'	1
SB3 @ 10'	0.9	SB3 @ 70'	0.8
SB3 @ 15'	0.8	SB3 @ 75'	1.2
SB3 @ 20'	1.1	SB3 @ 80'	0.9
SB3 @ 25'	1.3	SB3 @ 85'	0.5
SB3 @ 30'	1.2	SB3 @ 90'	0.6
SB3 @ 35'	0.7	SB3 @ 95'	0.8
SB3 @ 40'	1.2		
SB3 @ 45'	1.8		
SB3 @ 50'	1.9		
SB3 @ 55'	0.5		

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

SIGNATURE: *Amber Groves*

DATE: 11/16/14

RICE ENVIRONMENTAL CONSULTING & SAFETY

419 West Cain Hobbs, NM 88240
PHONE: (575) 393-2967 FAX: (575) 393-0293
PID METER CALIBRATION & FIELD REPORT FORM

CK.	<input type="checkbox"/>
MODEL	<input checked="" type="checkbox"/>
NO.	<input type="checkbox"/>
	<input type="checkbox"/>

MODEL: PGM 7300	SERIAL NO: 590-000508
MODEL: PGM 7300	SERIAL NO: 590-000504
MODEL: PGM 7320	SERIAL NO: 592-903318
MODEL: PGM _____	SERIAL NO: _____

GAS COMPOSITION: ISOBUTYLENE 100PPM / AIR: BALANCE

LOT NO: GAM-248-1004	EXPIRATION DATE: 6-7-16
METER READING ACCURACY: 100ppm	

COMPANY
Rice

SITE	UNIT	SECTION	TOWN SHIP	RANGE
Vacuum Jct. A-36	A	36	17S	34E

SAMPLE ID	PID	SAMPLE ID	PID
Surface 10 ft. West of Source	1.3		

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

SIGNATURE: *Amber Groves*

DATE: 11/16/14



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

April 04, 2014

KYLE NORMAN

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: VACUUM JCT A-36

Enclosed are the results of analyses for samples received by the laboratory on 03/28/14 15:45.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-13-5. 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 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,

A handwritten signature in black ink that reads "Celey D. Keene". The signature is written in a cursive style with a large, stylized 'C' and 'K'.

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:	03/28/2014	Sampling Date:	03/24/2014
Reported:	04/04/2014	Sampling Type:	Soil
Project Name:	VACUUM JCT A-36	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	T-17S R-36E		

Sample ID: VERTICAL 15' N. @ SURFACE (H400945-01)

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	04/02/2014	ND	400	100	400	3.92	
TPH 8015M		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	04/01/2014	ND	208	104	200	5.39	
DRO >C10-C28	<10.0	10.0	04/01/2014	ND	217	109	200	2.49	
Surrogate: 1-Chlorooctane	118 %	65.2-140							
Surrogate: 1-Chlorooctadecane	110 %	63.6-154							

Sample ID: VERTICAL 15' N. @ 1' (H400945-02)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	64.0	16.0	04/02/2014	ND	400	100	400	3.92	
TPH 8015M		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	04/01/2014	ND	208	104	200	5.39	
DRO >C10-C28	<10.0	10.0	04/01/2014	ND	217	109	200	2.49	
<hr/>									
Surrogate: 1-Chlorooctane	113 %	65.2-140							
Surrogate: 1-Chlorooctadecane	108 %	63.6-154							

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*=Accredited Analyte

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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:	03/28/2014	Sampling Date:	03/24/2014
Reported:	04/04/2014	Sampling Type:	Soil
Project Name:	VACUUM JCT A-36	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	T-17S R-36E		

Sample ID: VERTICAL 15' N. @ 2' (H400945-03)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	80.0	16.0	04/02/2014	ND	400	100	400	3.92	
TPH 8015M		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	04/01/2014	ND	208	104	200	5.39	
DRO >C10-C28	<10.0	10.0	04/01/2014	ND	217	109	200	2.49	

Surrogate: 1-Chlorooctane 117 % 65.2-140

Surrogate: 1-Chlorooctadecane 111 % 63.6-154

Sample ID: VERTICAL 15' N. @ 3' (H400945-04)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	192	16.0	04/02/2014	ND	400	100	400	3.92	
TPH 8015M		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	04/01/2014	ND	208	104	200	5.39	
DRO >C10-C28	<10.0	10.0	04/01/2014	ND	217	109	200	2.49	

Surrogate: 1-Chlorooctane 108 % 65.2-140

Surrogate: 1-Chlorooctadecane 99.8 % 63.6-154

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Analytical Results For:

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

Received:	03/28/2014	Sampling Date:	03/24/2014
Reported:	04/04/2014	Sampling Type:	Soil
Project Name:	VACUUM JCT A-36	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	T-17S R-36E		

Sample ID: VERTICAL 15' E. @ SURFACE (H400945-05)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	5920	16.0	04/02/2014	ND	400	100	400	3.92	
TPH 8015M		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<50.0	50.0	04/01/2014	ND	208	104	200	5.39	
DRO >C10-C28	286	50.0	04/01/2014	ND	217	109	200	2.49	

Surrogate: 1-Chlorooctane 115 % 65.2-140

Surrogate: 1-Chlorooctadecane 112 % 63.6-154

Sample ID: VERTICAL 15' E. @ 2' (H400945-06)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	3440	16.0	04/02/2014	ND	400	100	400	3.92	
TPH 8015M		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	04/01/2014	ND	208	104	200	5.39	
DRO >C10-C28	<10.0	10.0	04/01/2014	ND	217	109	200	2.49	

Surrogate: 1-Chlorooctane 114 % 65.2-140

Surrogate: 1-Chlorooctadecane 106 % 63.6-154

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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:	03/28/2014	Sampling Date:	03/24/2014
Reported:	04/04/2014	Sampling Type:	Soil
Project Name:	VACUUM JCT A-36	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	T-17S R-36E		

Sample ID: VERTICAL 15' E. @ 8' (H400945-07)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1840	16.0	04/02/2014	ND	400	100	400	3.92	
TPH 8015M		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	04/01/2014	ND	208	104	200	5.39	
DRO >C10-C28	198	10.0	04/01/2014	ND	217	109	200	2.49	

Surrogate: 1-Chlorooctane 91.9 % 65.2-140

Surrogate: 1-Chlorooctadecane 104 % 63.6-154

Sample ID: VERTICAL 15' S. @ SURFACE (H400945-08)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	240	16.0	04/02/2014	ND	400	100	400	3.92	
TPH 8015M		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	04/01/2014	ND	208	104	200	5.39	
DRO >C10-C28	<10.0	10.0	04/01/2014	ND	217	109	200	2.49	

Surrogate: 1-Chlorooctane 93.8 % 65.2-140

Surrogate: 1-Chlorooctadecane 91.0 % 63.6-154

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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:	03/28/2014	Sampling Date:	03/24/2014
Reported:	04/04/2014	Sampling Type:	Soil
Project Name:	VACUUM JCT A-36	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	T-17S R-36E		

Sample ID: VERTICAL 15' S. @ 1' (H400945-09)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1470	16.0	04/02/2014	ND	400	100	400	3.92	
TPH 8015M		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	04/02/2014	ND	187	93.4	200	1.94	
DRO >C10-C28	300	10.0	04/02/2014	ND	216	108	200	2.56	

Surrogate: 1-Chlorooctane 76.8 % 65.2-140

Surrogate: 1-Chlorooctadecane 100 % 63.6-154

Sample ID: VERTICAL 15' S. @ 2' (H400945-10)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	528	16.0	04/02/2014	ND	400	100	400	3.92	
TPH 8015M		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	04/02/2014	ND	187	93.4	200	1.94	
DRO >C10-C28	15.1	10.0	04/02/2014	ND	216	108	200	2.56	

Surrogate: 1-Chlorooctane 98.8 % 65.2-140

Surrogate: 1-Chlorooctadecane 97.7 % 63.6-154

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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: 03/28/2014
 Reported: 04/04/2014
 Project Name: VACUUM JCT A-36
 Project Number: NONE GIVEN
 Project Location: T-17S R-36E

Sampling Date: 03/24/2014
 Sampling Type: Soil
 Sampling Condition: Cool & Intact
 Sample Received By: Jodi Henson

Sample ID: VERTICAL 15' S. @ 3' (H400945-11)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	416	16.0	04/02/2014	ND	400	100	400	3.92	
TPH 8015M		mg/kg		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	04/02/2014	ND	187	93.4	200	1.94	
DRO >C10-C28	<10.0	10.0	04/02/2014	ND	216	108	200	2.56	

Surrogate: 1-Chlorooctane 94.1 % 65.2-140

Surrogate: 1-Chlorooctadecane 93.2 % 63.6-154

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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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Celey D. Keene, Lab Director/Quality Manager



ORDINAL 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

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

[illegible]

† Cardinal cannot accept verbal changes. Please fax written changes to 505-393-2476

#54



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

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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<small>analyses. All claims including those for negligence and any other cause whatsoever shall be limited to the amount paid by the client for the 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.</small>					
Relinquished By: <i>Kyle Schmidt</i>		Date: 3-24-14 Time: 3:45	Received By: <i>Jodi Benson</i>		Phone Result: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Add'l Phone #:
Relinquished By:		Date:	Received By:		Fax Result: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Add'l Fax #:
		Time:			REMARKS:
Delivered By: (Circle One) Sampler - UPS - Bus - Other:			Sample Condition Cool Intact <input type="checkbox"/> Yes <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> No	CHECKED BY: (Initials) <i>[Signature]</i>	email results Knorman@rice-ecs.com s.edwards@rice-ecs.com Kjones@riceswd.com; jkamplain@rice-ecs.com hconder@rice-ecs.com; Lweinheimer@rice-ecs.com

† Cardinal cannot accept verbal changes. Please fax written changes to 505-393-2476

#54

April 23, 2015

KYLE NORMAN

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: VACUUM JCT A-36

Enclosed are the results of analyses for samples received by the laboratory on 04/22/15 16:00.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-13-5. 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 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:	04/22/2015	Sampling Date:	04/22/2015
Reported:	04/23/2015	Sampling Type:	Soil
Project Name:	VACUUM JCT A-36	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	T-17S R-34E		

Sample ID: VERTICAL 1 @ SS (H501044-01)

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	04/23/2015	ND	432	108	400	7.69		
TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	04/22/2015	ND	200	99.9	200	5.98		
DRO >C10-C28	<10.0	10.0	04/22/2015	ND	214	107	200	9.62		

Surrogate: 1-Chlorooctane 98.3 % 47.2-157

Surrogate: 1-Chlorooctadecane 94.6 % 52.1-176

Sample ID: VERTICAL 1 @ 1' (H501044-02)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	512	16.0	04/23/2015	ND	432	108	400	7.69		
TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	04/22/2015	ND	200	99.9	200	5.98		
DRO >C10-C28	<10.0	10.0	04/22/2015	ND	214	107	200	9.62		

Surrogate: 1-Chlorooctane 102 % 47.2-157

Surrogate: 1-Chlorooctadecane 99.4 % 52.1-176

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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: 04/22/2015
Reported: 04/23/2015
Project Name: VACUUM JCT A-36
Project Number: NONE GIVEN
Project Location: T-17S R-34E

Sampling Date: 04/22/2015
Sampling Type: Soil
Sampling Condition: Cool & Intact
Sample Received By: Jodi Henson

Sample ID: VERTICAL 1 @ 2' (H501044-03)

Chloride, SM4500Cl-B			mg/kg							
			Analyzed By: AP							
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	80.0	16.0	04/23/2015	ND	432	108	400	7.69		
TPH 8015M			mg/kg							
			Analyzed By: MS							
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	04/22/2015	ND	200	99.9	200	5.98		
DRO >C10-C28	<10.0	10.0	04/22/2015	ND	214	107	200	9.62		

Surrogate: 1-Chlorooctane 104 % 47.2-157
Surrogate: 1-Chlorooctadecane 98.5 % 52.1-176

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*=Accredited Analyte

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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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Celey D. Keene, Lab Director/Quality Manager



* Rust *

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

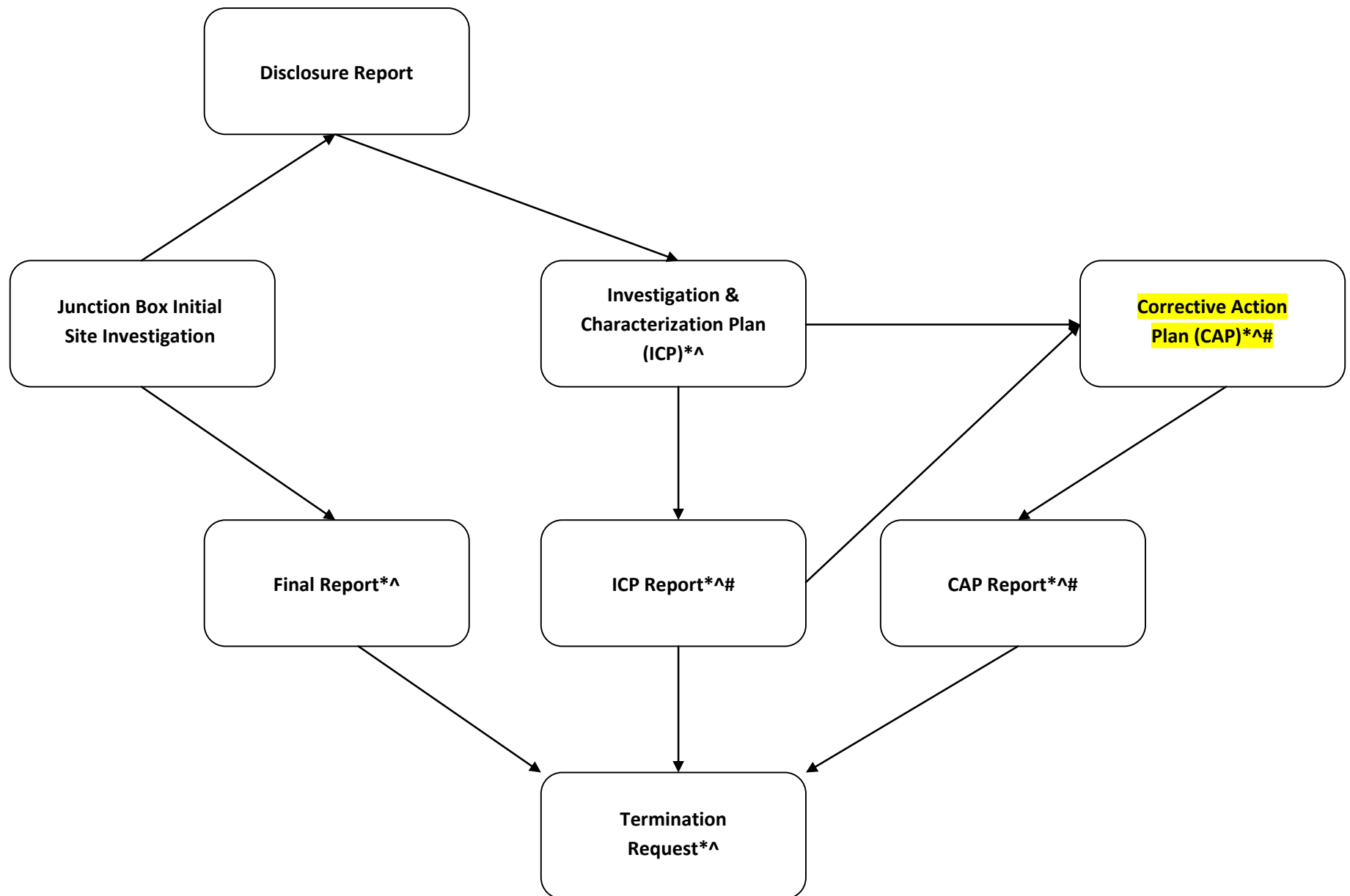
101 East Marland, Hobbs, NM 88240
(575) 393-2326 FAX (575) 393-2476

[illegible]

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Relinquished By: <i>ah</i> <i>ph</i> Date: <i>4-25</i> Time: <i>9:00</i>		Received By: <i>Jodi Benson</i> Date: _____ Time: _____		Phone Result: <input type="checkbox"/> Yes <input type="checkbox"/> No Fax Result: <input type="checkbox"/> Yes <input type="checkbox"/> No Add'l Phone #: _____ Add'l Fax #: _____ REMARKS:	
Relinquished By: _____ Date: _____ Time: _____		Received By: _____ Date: _____ Time: _____		email <i>All</i>	
Delivered By: (Circle One) Sampler - UPS - Bus - Other:		Sample Condition Cool Intact <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No CHECKED BY: <i>JH</i> (Initials)			

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



*Reports must have OCD approval for the completion of the report status and before the next step can begin.

^OCD can request additional information or further investigation during any point in remediation activities.

#ROC may submit an extension request due to resource management issues or safety concerns in the field.