425-80 1R -

REPORTS

DATE:

2-11

RECEIVED OCD

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

Texerra

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

August 8th, 2011

Mr. Edward Hansen

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

RE: INVESTIGATION & CHARACTERIZATION PLAN (ICP) REPORT Rice Operating Company – Vacuum SWD System Vacuum Jct D-31-2: UL/D, Sec. 31, T17S, R35E (formerly Vacuum Jct C-31-2) NMOCD Case Number: 1R425-80

Sent via Certified U.S. Mail w/ Return Receipt No. 7008 1830 0004 2694 4293

Mr. Hansen:

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 work to date completed per the OCD-approved Investigation and Characterization Plan of May 2nd, 2011 for this site.

The location of the Vacuum Jct D-31-2 site is given in Figure 1. A summary of soil boring analyses from samples taken in June 2011 are given in Figure 2. Representative photographs of this work are given in the Appendix, as are copies of laboratory analyses.

Residual soil chlorides were elevated throughout each of the four soil borings drilled at the site. The depth to groundwater at this site is approximately 83 ft below ground surface (bgs). In contrast, residual soil petroleum hydrocarbons were essentially insignificant (PID readings < 100 ppm) in all soil borings except for SB-4 (approx. 25 ft southwest of the former junction box location) at 15 ft bgs where the PID reading measured 1,136 ppm.

It is clear from this initial investigation that further sampling and analyses are needed in order to characterize and delineate the extent of residual soil chlorides. Once the site is fully delineated, a report with recommendations will be submitted to the NMOCD.

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.

We appreciate your consideration of this ICP report. Please do not hesitate to contact either Katie Jones of Rice Operating Company or myself if you have any questions or need additional information.

Sincerely,

L. Peter Galusky, Jr. Ph.D.

Copy: Rice Operating Company

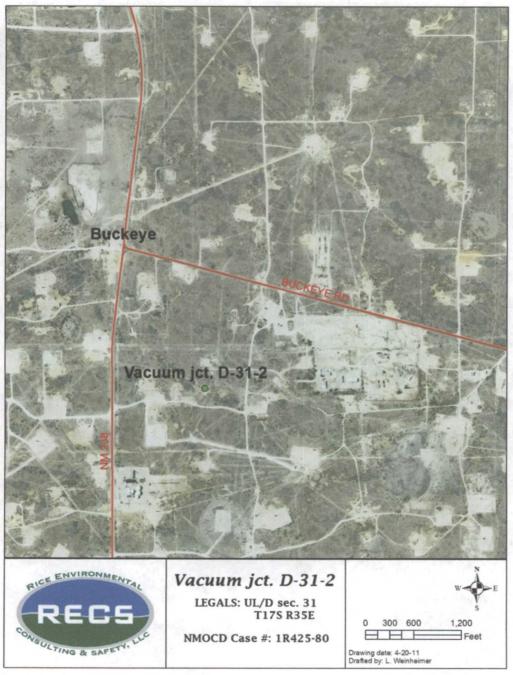
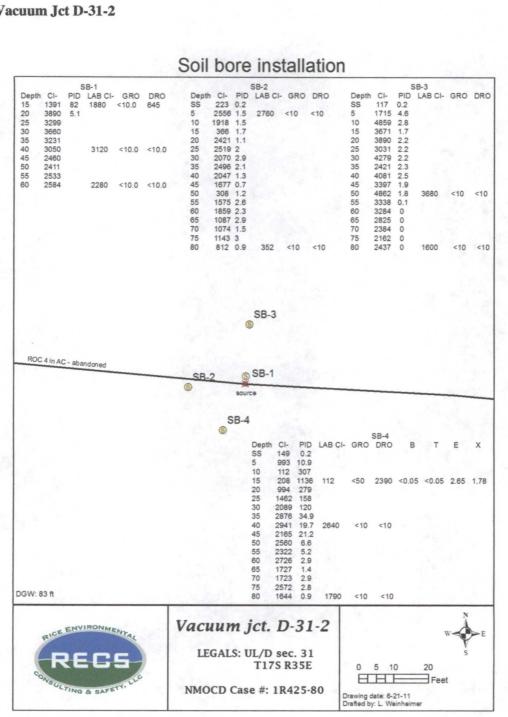
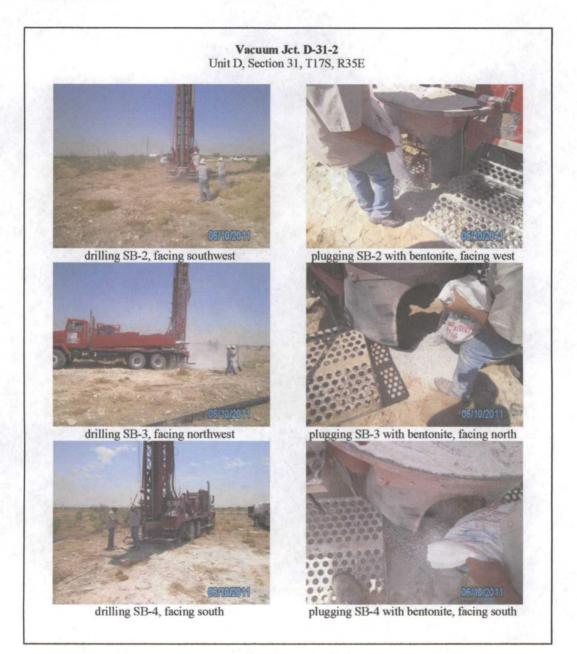


Figure 1 – Vacuum Jct D-31-2 location.



Soil bore installation

Figure 2 - Vacuum Jct D-31-2 soil boring locations and analytical results.



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June 17, 2011

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

RE: VACUUM JCT D-31-2

Enclosed are the results of analyses for samples received by the laboratory on 06/10/11 16:20.

Cardinal Laboratories is accredited through Texas NELAP for:

Method SW-846 8021	Benzene, Toluene, Ethyl Benzene, and Total Xylenes
Method SW-846 8260	Benzene, Toluene, Ethyl Benzene, and Total Xylenes
Method TX 1005	Total Petroleum Hydorcarbons

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

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

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V2, V3)

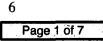
Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keine

Celey D. Keene Lab Director/Quality Manager





Analytical Results For:

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

Received:	06/10/2011	Sampling Date:	06/10/2011
Reported:	06/17/2011	Sampling Type:	Soil
Project Name:	VACUUM JCT D-31-2	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		1

Sample ID: SB 2 @ 5' (H101213-01)

Chloride, SM4500Cl-B	mg,	/kg	Analyze	d By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chioride	2760	16.0	06/15/2011	ND	432	108	400	3.64	
TPH 8015M	mg,	/kg	Analyze	d By: AB					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	06/16/2011	ND	206	103	200	5.32	
DRO >C10-C28	<10.0	10.0	06/16/2011	ND	187	93.3	200	5.61	
Surrogate: 1-Chlorooctane	90.8	% 70-130)						<u> </u>
Surrogate: 1-Chlorooctadecane	111	% 70-130)						

Sample ID: SB 2 @ 80' (H101213-02)

Chloride, \$M4500Cl-B	mg/	/kg	Analyze	d By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	352	16.0	06/15/2011	ND	432	108	400	3.64	
TPH 8015M	mg/	'kg	Analyze	d 8y: AB					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	06/16/2011	ND	206	103	200	5.32	
DRO >C10-C28	<10.0	10.0	06/16/2011	ND	187	93.3	200	5.61	
Surrogate: 1-Chlorooctane	83.9	% 70-130	1						
Surrogate: 1-Chlorooctadecane	99.1	% 70-130	•						

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*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

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Analytical Results For:

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

Received:	06/10/2011	Sampling Date:	06/10/2011
Reported:	06/17/2011	Sampling Type:	Soil
Project Name:	VACUUM JCT D-31-2	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN	2 	

Sample ID: SB 3 @ 50' (H101213-03)

Chloride, SM4500Cl-B mg/kg Analyzed By: HM Analyte Result Reporting Limit Analyzed Method Blank True Value QC Qualifier BS % Recovery RPD Chloride 3680 16.0 06/15/2011 ND 432 108 400 3.64 TPH 8015M mg/kg Analyzed By: AB Analyte Result **Reporting Limit** Anaiyzed Method Blank ÐS True Value QC RPD Qualifier % Recovery GRO C6-C10 <10.0 10.0 06/16/2011 ND 206 103 200 5.32 DRO >C10-C28 <10.0 10.0 06/16/2011 ND 187 93.3 200 5.61 Surrogate: 1-Chlorooctane 89.3 % 70-130 Surrogate: 1-Chlorooctadecane 103 % 70-130

Sample ID: SB 3 @ 80' (H101213-04)

Chloride, SM4500Cl-B	mg/	kg	Analyze	d By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1600	16.0	06/15/2011	ND	432	108	400	3.64	
TPH 8015M	mg/	kg	Analyze	d By: AB					
Analyte	Result	Reporting Limit	Anatyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	06/16/2011	ND	206	103	200	5.32	
DRO >C10-C28	<10.0	10.0	06/16/2011	ND	187	93.3	200	5.61	
Surrogate: 1-Chlorooctane	91.9	% 70-130]	<u></u>					
Surrogate: 1-Chlorooctadecane	107 9	% 70-130	I	,					

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Celey D. Keene, Lab Director/Quality Manager

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Analytical Results For:

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

Received:	06/10/2011	Sampling Date:	06/10/2011
Reported:	06/17/2011	Sampling Type:	Soil
Project Name:	VACUUM JCT D-31-2	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN	÷ .	

Sample ID: SB 4 @ 15' (H101213-05)

BTEX 8260B	mg,	kg	Analyze	d By: CMS				-	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	06/14/2011	ND	2.21	111	2.00	7.93	
Toluene*	<0.050	0.050	06/14/2011	ND	2.24	112	2.00	7.82	
Ethylbenzene*	2.65	0.050	06/14/2011	ND 3	2.32	116	2.00	8.13	
Total Xylenes*	1.78	0.150	06/14/2011	ND	6.54	109	6.00	8.53	
Surrogate: Dibromofluoromethane	90.9	% 80-120							
Surrogate: Toluene-d8	<i>95.2</i>	% 80-120		4					
Surrogate: 4-Bromofluorobenzene	110	% 80-120		ì					
Chloride, SM4500Cl-B	mg/	kg	Analyze	d By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	112	16.0	06/15/2011	ND	432	108	400	3.64	
TPH 8015M	mg/	kg	Analyze	d By: AB					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<50.0	50.0	06/16/2011	ND	206	103	200	5.32	
DRO >C10-C28	2390	50.0	06/16/2011	ND	187	93.3	200	5.61	
Surrogate: 1-Chlorooctane	117 9	% 70-130							
Surrogate: 1-Chlorooctadecane	103 9	% 70-130							

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Celey D. Keene, Lab Director/Quality Manager

Page 4 of 7

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

Analytical Results For:

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

Received:	06/10/2011	Sampling Date:	06/10/2011
Reported:	06/17/2011	Sampling Type:	Soil
Project Name:	VACUUM JCT D-31-2	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SB 4 @ 40' (H101213-06)

Chloride, SM4500Cl-B mg/kg Analyzed By: HM Analyte Result Reporting Limit Analyzed Method Blank BS True Value QC RPD Oualifier % Recovery Chloride 2640 16.0 06/15/2011 ND 432 108 400 3.64 TPH 8015M mg/kg Analyzed By: AB Analyte Result Reporting Limit Analyzed Method Blank 8S RPD Qualifier % Recovery True Value QC GRO C6-C10 <10.0 10.0 06/16/2011 ND 206 103 200 5.32 DRO >C10-C28 <10.0 10.0 06/16/2011 ND 187 93.3 200 5.61 Surrogate: 1-Chlorooctane 94.6 % 70-130 Surrogate: 1-Chlorooctadecane 104 % 70-130

Sample ID: SB 4 @ 80' (H101213-07)

Chloride, SM4500Cl-B	mg/	/kg	Analyze	d By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chioride	1790	16.0	06/15/2011	ND	432	108	400	3.64	
TPH 8015M	mg,	kg	Analyze	d By: AB			·····		
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	06/16/2011	ND	206	103	200	5.32	
DRO >C10-C28	<10.0	10.0	06/16/2011	ND	187	93.3	200	5.61	
Surrogate: 1-Chlorooctane	90.7	% 70-130)			,			
Surrogate: 1-Chlorooctadecane	112	% 70-130	I						

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

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Celey D. Keene, Lab Director/Quality Manager

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† Cardinal cannot accept verbal changes. Please fax written changes to 505-393-2446

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city: Hobbs	State: NM Zip: 88240	Attn:						on	rú							
Phone #: 575-393-9174	Fax #: 575-397-1471	Address:						١n	Th		-			<u> </u>		
Project #:	Project Owner:	City:		3	М		Н	s/A	ed i			<u> </u>			<u>.</u>	
Project Name: Vacuum Jct D-31-2	, And a sub-state of the sub-state of the state of the sub-state of the sub-state of the sub-state of the sub-	State: Zip:		les	15	X	ΓP	on	nde	•						
Project Location: Vacuum Jct D-31-2	2	Phone #:		oric	301	Έ	s 1	atio	ter							
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Jordan Woodfin			Phone Result: Fax Result: REMARKS:	s: t:			N N N	Add'l Phone #: Add'l Fax #:	Phone Fax #:	· .				1	•	·
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CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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