1R - 428-60

REPORTS

DATE:

9-2-11

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

September 2nd, 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: **Corrective Action Plan Report and Termination Request**
Rice Operating Company – Hobbs SWD System
Hobbs Jct A-25. T-18-S, R-37-E, Sec 25, UL A
NMOCD Case Number 1R428-60

Sent via E-mail and U.S. Mail Certified Return Receipt No. 7008 1830 0004 2694 4309

Mr. Hansen:

Rice Operating Company (ROC) has completed the additional soil boring and analyses that you requested in your e-mail letter of June 21st, 2010 approving of the Corrective Action Plan (CAP) for this project. Please find attached a Corrective Action Plan Report and Termination Request.

ROC is the service provider (agent) for the Hobbs 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.

Thank you for your consideration.

Sincerely

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

Attachment: Corrective Action Plan Report and Termination Request

Copy: Rice Operating Company

Corrective Action Plan Report and Termination Request
Rice Operating Company
Hobbs SWD Jct A-25
NMOCD Case Number 1R428-60

Background and Project History

The Hobbs Junction A-25 site is located northwest of the city of Hobbs at T-18-S, R-37-E, Section 25, Unit A, east of the corner of a large former tank battery site (Figure 1). The junction box was part of the Hobbs SWD system operated by Rice Operating Company (ROC). The Hobbs SWD system is no longer in service. The junction box was removed on October 18, 2002 and soil samples recovered from the resulting 4-foot deep excavation indicated a maximum chloride concentration of 188 mg/kg and "light" TPH levels.

An Investigation Characterization Plan (ICP), dated February 19th, 2009, was approved by the NMOCD on April 22nd, 2009 with fieldwork undertaken in September of 2009. An Initial Characterization Report (ICR) and Corrective Action Plan (CAP) was submitted to NMOCD by RT Hicks Consultants on June 8th, 2010. The ICR indicated that the site posed essentially no risk of groundwater contamination and recommended that the surface be restored through the removal of large rocks and asphaltic soils, backfilling with clean topsoil and seeding to native vegetation. NMOCD approved the CAP on June 21st, 2010 with the stipulation for an additional soil boring and analyses of petroleum hydrocarbons (Appendix A). This additional work was completed by ROC in June of 2011 by installing SB-2 approximately 3 ft southeast of SB-1. A collective summary of soil sampling and analyses is presented in the following discussions.

Results of Soil Sampling and Analyses

The locations of two soil borings, SB-1 & SB-2, taken at the subject site are given in Figure 2 along with a brief summary of field and laboratory results. Lithology logs and analytical results are given in Figures 3 and 4 and laboratory reports are given in Appendices B1 & B2 for SB-1 and SB-2, respectively.

Chlorides were found to be less than 250 mg/kg throughout the depth (35 ft bgs) of SB-1 and were therefore ruled out as a chemical of concern. However, significant residual hydrocarbons as diesel-range organics (DRO) were found at 15 ft bgs, measuring 2,330 mg/kg in a sample sent to Cardinal Laboratories. This was associated with a field PID reading of 166 ppm and a strong hydrocarbon odor and low, but detectable BTEX concentrations (total BTEX was 4.1 mg/kg with benzene being below laboratory detection limits). Gasoline-range organics (GRO) were below laboratory detection limits in the same sample. DRO declined to 116 mg/kg in a soil sample taken at 35 ft bgs where GRO was also below detection limits. Field PID readings declined to 21.8 ppm at 35 ft bgs.

Field PID readings at SB-2 were 1,148 ppm at 15 ft bgs, declining to 1,029 mg/kg at 17 ft bgs and 918 ppm at 19 ft bgs. Laboratory-measured DRO similarly dropped from 5,010 mg/kg at 15 ft bgs, to 3,760 mg/kg at 17 ft bgs and 2,120 mg/kg at 19 ft bgs. GRO was 151 mg/kg at 15 ft bgs but below detection at the other two depths. Laboratory-measured benzene was below detection in all three samples. Total BTEX was 8.71 mg/kg at 15 ft bgs, 7.9 mg/kg at 17 ft bgs and 3.8 mg/kg at 19 ft bgs.

These data are indicative of residual asphaltic petroleum hydrocarbons that are essentially immobile and are naturally attenuating in place. The absence of detectable benzene, the low levels of total BTEX, the low to non-detectable levels of GRO, and the fact that groundwater occurs at an estimated depth of 48 ft bgs indicates that these residual hydrocarbons pose no significant threat to groundwater quality.

Summary of Surface Restoration

In December of 2009, approximately nine cubic yards of asphaltine and oil contaminated soils were removed and disposed at Sundance Services. Approximately 40 tons of clean blow sand was backfilled into the excavation. The upper soil material was leveled to natural ground contours and blended with organic compost and seeded to natural vegetation. Silt net fencing was installed in July 2010. Photographs of this work are given in Figure 5 and the revegetation for is given in Figure 6.

Conclusions and Recommendation

The Hobbs Jct A-25 location was found to have significant residual hydrocarbons at 15 ft bgs. However, these were heavy, DRO asphaltic compounds with negligible benzene, low total BTEX and low GRO. Moreover, the laboratory-measured concentrations of all hydrocarbons decreased steadily from 15 ft to 19 ft bgs. Given that the solubility of these residual hydrocarbons is low and that groundwater is approximately 30+ ft below these depths it is unlikely that these pose a significant threat to groundwater quality. Rather, the residual soil hydrocarbons will likely continue to attenuate in-place due to natural, microbially-mediated bio-remediation.

As there is negligible residual sodicity in these soils (as measured by low residual chloride levels) the restoration of near-surface soils will ultimately support natural revegetation and the development of a natural evaporative barrier to groundwater infiltration.

The restorative actions undertaken by ROC together with the absence of significant soil chlorides and the limited presence of residual asphaltic hydrocarbons ensure that groundwater and future surface ecological conditions will be unaffected by the present condition of this closed facility. We therefore recommend, and respectfully request from NMOCD, remediation termination or similar regulatory closure status.

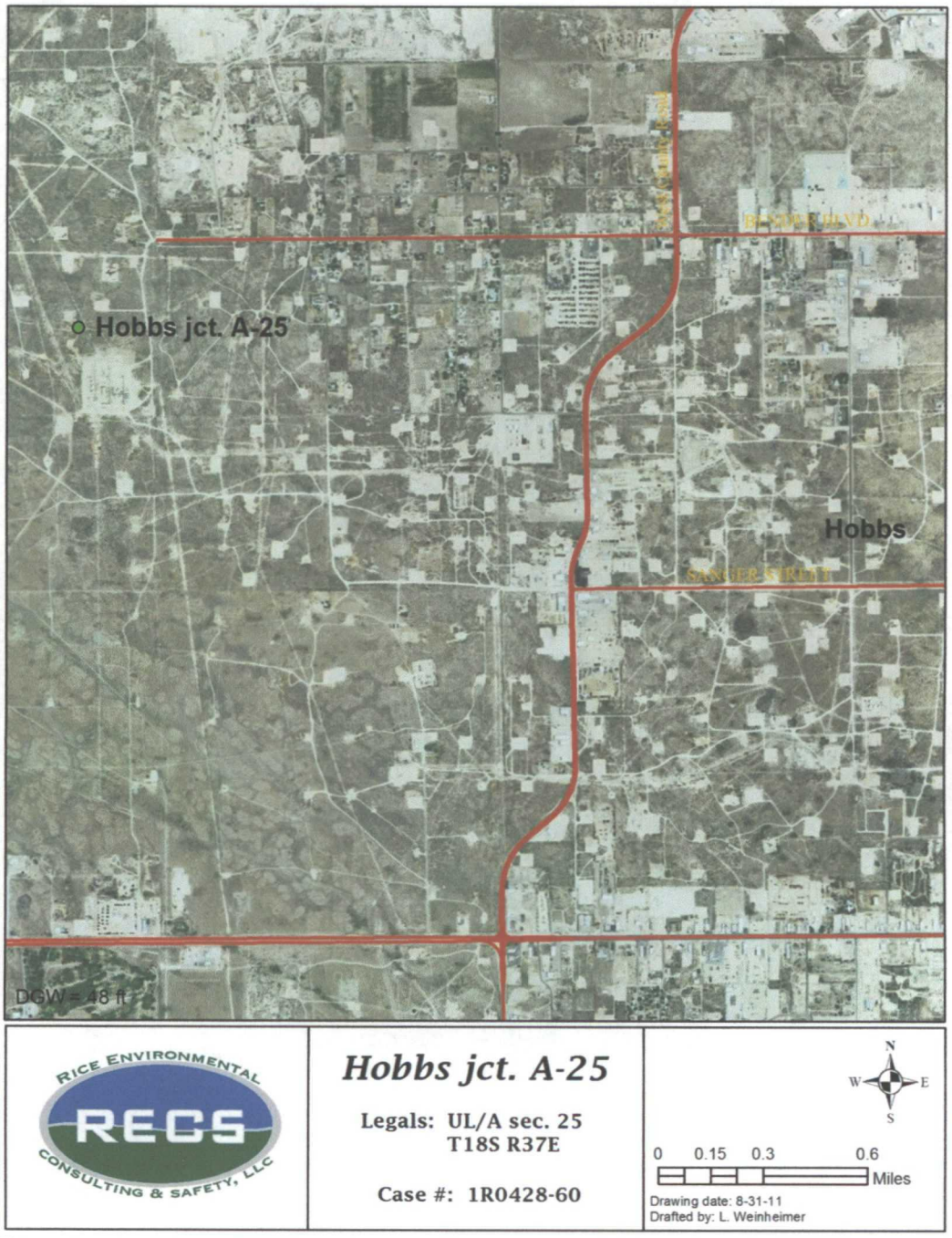


Figure 1 – Hobbs Jct A-25 site location.

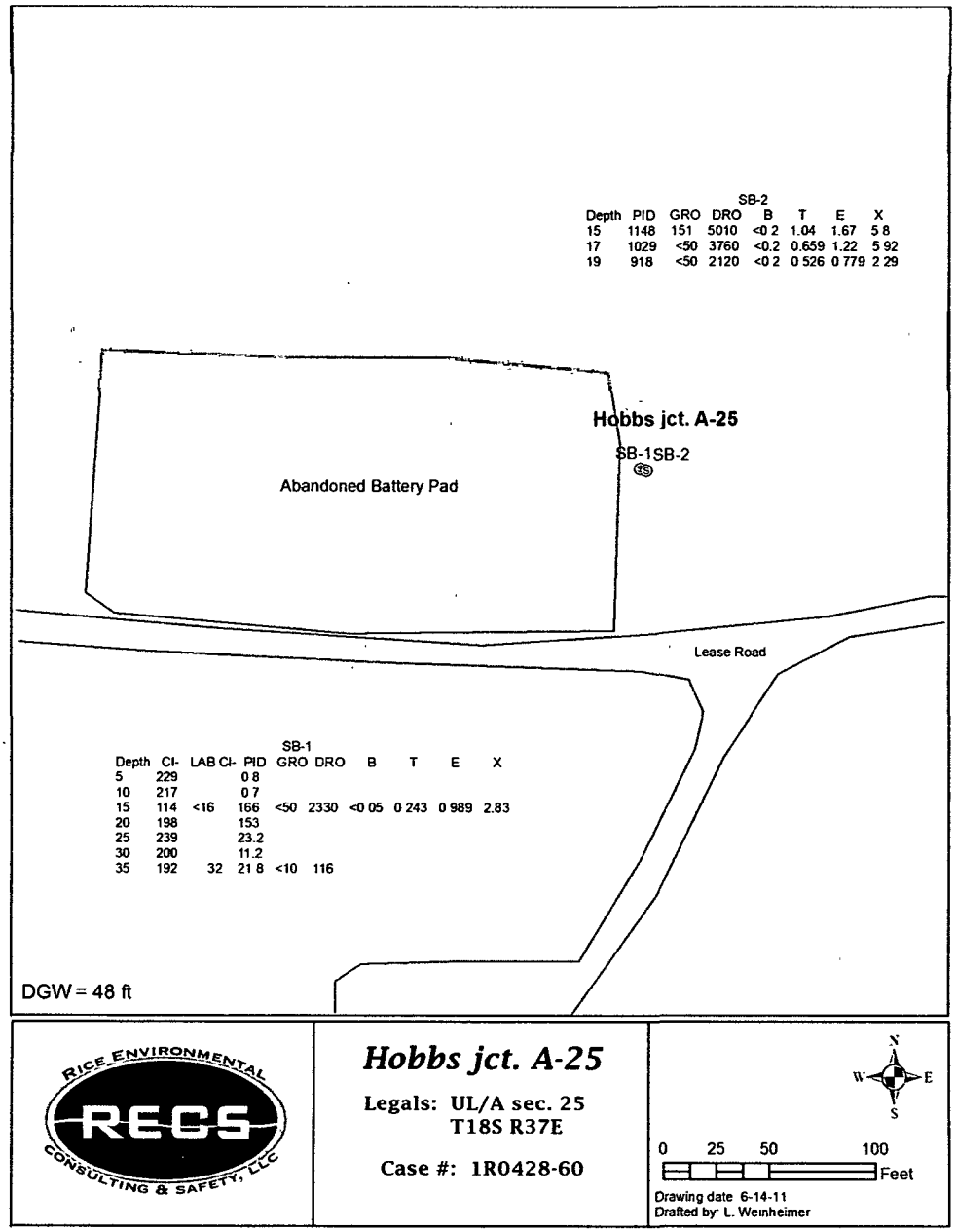


Figure 2 – Location of soil bores and summaries of field and laboratory analytical results.

Logger:	Dale Littlejohn
Driller:	Harrison & Cooper, Inc. Drilling
Consultant:	R.T. Hicks, Consultants
Drilling Method:	Air rotary
Start Date:	9/23/2009
End Date:	9/23/2009

RICE OPERATING COMPANY ROC SINCE 1955

Project Name: Hobbs jct. A-25 **Well ID:** SB #1

Comments: split spoon sampling at 10 ft. All other were from air rotary cuttings (soil was rocky)

DRAFTED BY: Lara Weinheimer, ROC

TD = 35 ft GW = 48 ft

Location: UL/A sec. 25 T18S R37E

Lat: N32°43'20.023" **County:** Lea

Long: W103°12'0.515" **State:** NM

Depth (feet)	chloride field tests	LAB	PID	Description
				0 - 5 ft
				SILT
5	229		0.8	dark brown, possible fill
				5 - 10 ft
				SILT WITH CALICHE
10	217		0.7	grayish-brown, hydrocarbon odor
				10 - 15 ft
				SILT, VERY FINE SAND, CALICHE
15	114	Cl- <16	166	gray, strong hydrocarbon odor
	B <0.05 T 0.243	GRO <50		15 - 25 ft
	E 0.989 X 2.83	DRO 2330		SILT AND VERY FINE SAND
20	198		153	grayish-brown, mod. hydrocarbon odor
25	239		23.2	
				25 - 30 ft
				SILT AND SILTY SAND WITH CALICHE
30	200		11.2	grayish-brown, mod. hydrocarbon odor
				30 - 35 ft
				VERY FINE SAND, SMALL GRAVEL
35	192	Cl- 32	21.8	brown, poorly sorted, angular
		GRO <10		slight hydrocarbon odor
		DRO 116		

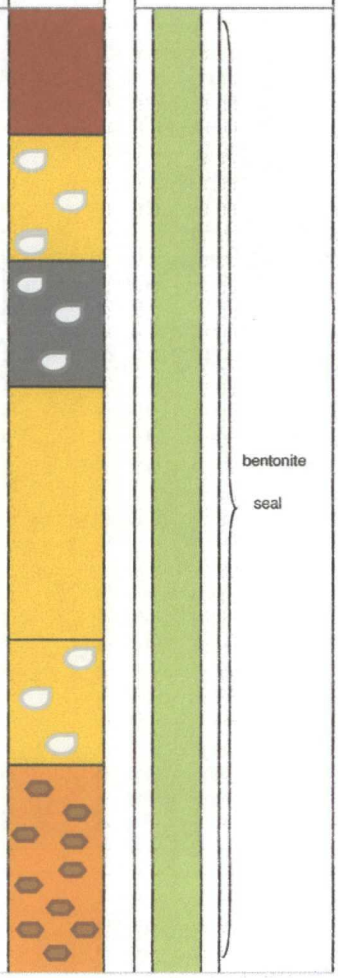


Figure 3 - Soil Bore # 1 lithology and results of field chloride and PID measurements and lab analyses of chloride and petroleum hydrocarbons.

Logger:	Jordan Woodfin	SB-1 Hobbs jct. A-25 SB-2		RECS	
Driller:	Harrison & Cooper, Inc.				
Drilling Method:	Air rotary			Project Name: Hobbs jct. A-25	Well ID: SB-2
Start Date:	6/7/2011				
End Date:	6/7/2011			Project Consultant: R.T. Hicks	
[illegible]				[illegible]	
TD = 19 ft		GW = 48 ft		Long: [illegible]	State: NM

Depth	chloride field tests	LAB	PID	Description	Lithology	Well Construction
15 ft	B <0.200 T 1.04	GRO 151	1148			
	E 1.67 X 5.80	DRO 5010		Grey fine sand with some small caliche		bentonite seal
17 ft	B <0.200 T 0.659	GRO <50	1029			
	E 1.22 X 5.92	DRO 3760				
				(did not field test for chlorides)		
19 ft	B <0.200 T 0.526	GRO <50	918			
	E 0.779 X 2.29	DRO 2120				

Figure 4 – Soil Bore # 2 lithology and results of field PID measurements and lab analyses of petroleum hydrocarbons.

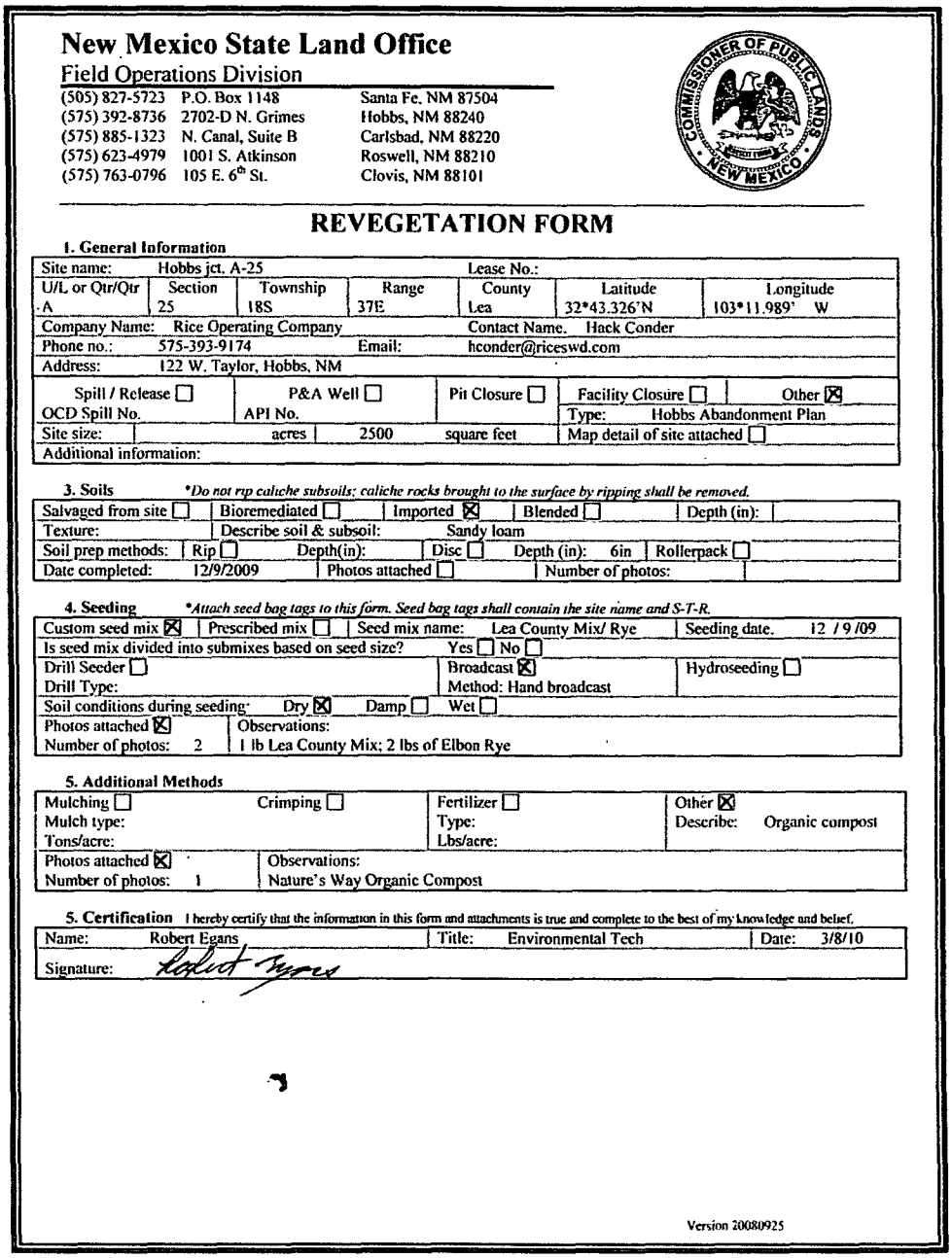
Figure 5 – Surface Restoration Photos

Adding organic compost to the backfilled site

Chaining the seed into the soil

Seeding the backfilled site

Site complete with silt net fencing



New Mexico State Land Office

Field Operations Division

(505) 827-5723	P.O. Box 1148	Santa Fe, NM 87504
(575) 392-8736	2702-D N. Grimes	Hobbs, NM 88240
(575) 885-1323	N. Canal, Suite B	Carlsbad, NM 88220
(575) 623-4979	1001 S. Atkinson	Roswell, NM 88210
(575) 763-0796	105 E. 6th St.	Clovis, NM 88101

REVEGETATION FORM

1. General Information

Site name:	Hobbs jct. A-25			Lease No.:		
U/L or Qtr/Qtr	Section	Township	Range	County	Latitude	Longitude
A	25	18S	37E	Lea	32°43.326'N	103°11.989' W
Company Name:	Rice Operating Company			Contact Name.	Hack Conder	
Phone no.:	575-393-9174		Email:	hconder@riceswd.com		
Address:	122 W. Taylor, Hobbs, NM					

Spill / Release ☐	P&A Well ☐	Pit Closure ☐	Facility Closure ☐	Other ☒
OCD Spill No.	API No.		Type: Hobbs Abandonment Plan	
Site size:	acres	2500 square feet	Map detail of site attached ☐	
Additional information:				

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

Salvaged from site ☐	Bioremediated ☐	Imported ☒	Blended ☐	Depth (in):	
Texture:	Describe soil & subsoil:	Sandy loam			
Soil prep methods:	Rip ☐ Depth(in):	Disc ☐	Depth (in): 6in	Rollerpack ☐	
Date completed:	12/9/2009	Photos attached ☐	Number of photos:		

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

Custom seed mix ☒	Prescribed mix ☐	Seed mix name: Lea County Mix/ Rye		Seeding date. 12 / 9 /09
Is seed mix divided into submixes based on seed size?		Yes ☐ No ☐		
Drill Seeder ☐ Drill Type:		Broadcast ☒ Method: Hand broadcast		Hydroseeding ☐
Soil conditions during seeding:	Dry ☒	Damp ☐	Wet ☐	
Photos attached ☒ Number of photos: 2	Observations: 1 lb Lea County Mix; 2 lbs of Elbon Rye			

5. Additional Methods

Mulching ☐ Crimping ☐		Fertilizer ☐	Other ☒
Mulch type:		Type:	Describe: Organic compost
Tons/acre:		Lbs/acre:	
Photos attached ☒ Number of photos: 1	Observations: Nature's Way Organic Compost		

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: Robert Egans		Title: Environmental Tech	Date: 3/8/10
Signature:	Robert Egans		

Version 20080925

Figure 6 – Revegetation Form

APPENDICES

- **APPENDIX A** - OCD letter approving CAP and requesting additional soil boring.
- **APPENDIX B1** - Cardinal Laboratories analyses of Soil Boring # 1.
- **APPENDIX B2** - Cardinal Laboratories analyses of Soil Boring # 2.

APPENDIX A

From: Hansen, Edward J., EMNRD [mailto:edwardj.hansen@state.nm.us]
Sent: Monday, June 21, 2010 4:47 PM
To: Hack Conder
Cc: Leking, Geoffrey R, EMNRD; Katie Jones; Dale Littlejohn
Subject: Corrective Action Plan (1R428-60) Approval - ROC Hobbs SWD Jct A-25 Site

RE: Initial Characterization Report and Corrective Action Plan
for the Rice Operating Company's
Hobbs SWD Jct A-25 Site
Unit Letter A, Section 25, T18S, R37E, NMPM, Lea County, New Mexico
Corrective Action Plan (1R428-60) Approval

Dear Mr. Conder:

The New Mexico Oil Conservation Division (OCD) has received the Corrective Action Plan for the Hobbs SWD Jct A-25 Site, dated June 8, 2010, and has conducted a review of the Corrective Action Plan. The Plan indicates that Rice Operating Company (ROC) has substantially met the requirements of 19.15.29 NMAC (Part 29; formerly, Rule 116) for a remediation plan. Therefore, the OCD hereby conditionally approves the Corrective Action Plan as proposed for above-referenced site in accordance with 19.15.29 NMAC.

ROC must obtain soil samples and analyze for DRO at depths of 15', 17' and 19' bgs within 5 feet of SB-1 between 11 and 13 months from today.

ROC must submit to the OCD a report of the corrective actions within 90 days of obtaining the above-referenced soil samples.

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

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

Edward J. Hansen
Hydrologist
Environmental Bureau

APPENDIX B-1 – Laboratory analyses of soil samples from SB-1

CARDINAL LABORATORIES

[redacted]

Rice Operating Company
122 West Taylor
Hobbs, NM 88240

Re: Hobbs Jct. A-25

Enclosed are the results of analyses for sample number H18304, received by the laboratory on 09/23/09 at 5:00 pm.

Cardinal Laboratories is accredited through Texas NELAP for:

Method SW-846 8021	Benzene, Toluene, Ethyl Benzene, and Total Xylenes
[redacted]	[redacted]
Method TX 1005	Total Petroleum Hydrocarbons

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

Cardinal Laboratories is accredited though 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)
[redacted]	[redacted]

[redacted]

Total Number of Pages of Report: 4 (includes Chain of Custody)

Sincerely,

Celey D. Keene
Laboratory Director

This report conforms with NELAP requirements.

CARDINAL LABORATORIES

ANALYTICAL RESULTS FOR
RICE OPERATING COMPANY
ATTN: HACK CONDER
122 W TAYLOR
HOBBS, NM 88240
FAX TO: (575) 397-1471

Receiving Date: 09/23/09
Reporting Date: 09/25/09
Project Owner: NOT GIVEN
Project Name: HOBBS JCT. A-25
Project Location: HOBBS JCT. A-25

Sampling Date: 09/23/09
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: ML
Analyzed By: AB/HM

LAB NUMBER SAMPLE ID	GRO (C_6-C_{10}) (mg/kg)	DRO (>C_{10}-C_{28}) (mg/kg)	Cl* (mg/kg)
ANALYSIS DATE	09/25/09	09/25/09	09/24/09
H18304-1 SS #1 @ 15'	<50.0	2,320	<10
H18304-2 SS #1 @ 35'	<10.0	116	32
Quality Control	438	443	490
True Value QC	500	500	500
% Recovery	87.6	88.6	98.0
Relative Percent Difference	0.6	1.8	2.0

METHODS: TPH GRO & DRO: EPA SW-846 8015 M; Cl: Std. Methods 4500-ClB
*Analysis performed on 1:4 w:v aqueous extract. Reported on wet weight.
Not accredited for GRO/DRO and Chloride.

Chemist

09/25/09
Date

H18304 TCL RICE

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 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.

CARDINAL LABORATORIES

[redacted]

ANALYTICAL RESULTS FOR
RICE OPERATING COMPANY
ATTN: HACK CONDER
122 W. TAYLOR
HOBBS, NM 88240
FAX TO: (575) 397-1471

Receiving Date: 09/23/09
Reporting Date: 09/24/09
[redacted]
Project Location: HOBBS, NM

Sampling Date: 09/23/09
Sample Type: SOIL
[redacted]

LAB NO.	SAMPLE ID	BENZENE (mg/kg)	TOLUENE (mg/kg)	ETHYL BENZENE (mg/kg)	TOTAL XYLENES (mg/kg)
ANALYSIS DATE:		09/24/09	09/24/09	09/24/09	09/24/09
H18304-1	SB#1 @ 15'	<0.050	0.243	0.989	2.83
Quality Control:		0.050	0.048	0.048	0.148
True Value QC:		0.050	0.050	0.050	0.150
% Recovery:		100	96.0	96.0	98.7
Relative Percent Difference		3.9	3.9	3.9	2.7

METHODS: BTEX - EPA 8021B

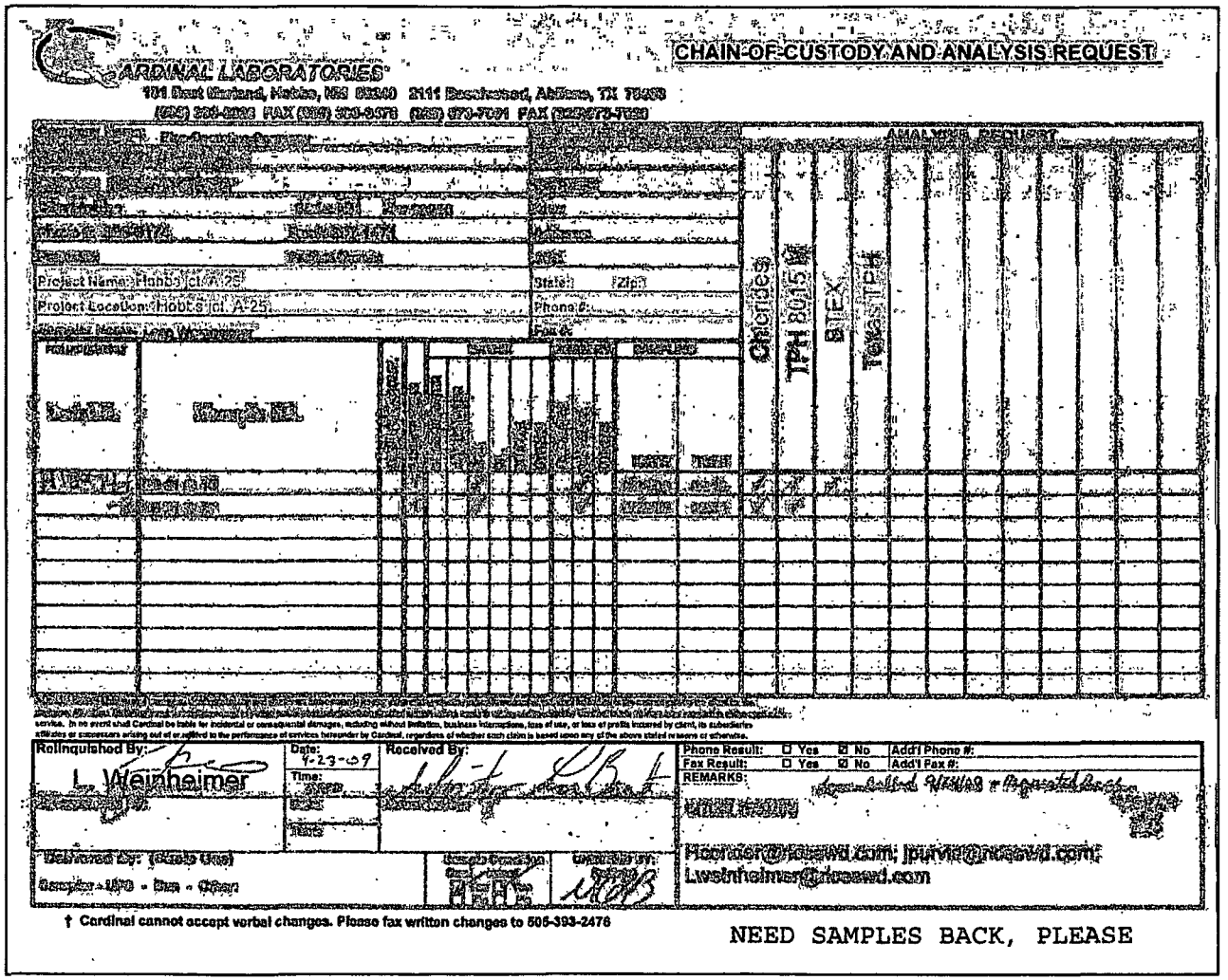
TEXAS NELAP ACCREDITATION T104704398-08-TX FOR BENZENE, TOLUENE, ETHYL BENZENE, AND TOTAL XYLENES. Reported on wet weight.

Lab Director

09/25/09
Date

H18304 B.RICE

[redacted]



CARDINAL LABORATORIES

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Project Name: Hobbs Jct A-25

Project Location: Hobbs Jct. A-25

ANALYSIS REQUEST

Chlorides

TPH 8015 M

BTEX

Tot. TPH

Relinquished By: L. Weinheimer

Date: 4-23-09

Time:

Received By:

Phone Result: ☐ Yes ☑ No Add'l Phone #:

Fax Result: ☐ Yes ☑ No Add'l Fax #:

REMARKS:

Lwsthelmer@chevron.com

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

NEED SAMPLES BACK, PLEASE

APPENDIX B-2 – Laboratory analyses of soil samples from SB-2

CARDINAL Laboratories

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

June 14, 2011

Hack Conder

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: HOBBS JCT A-25

Enclosed are the results of analyses for samples received by the laboratory on 06/07/11 16:12.

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. Keene

Celey D. Keene

Lab Director/Quality Manager

Page 1 of 5

CARDINAL Laboratories

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:	06/07/2011	Sampling Date:	06/07/2011
Reported:	06/14/2011	Sampling Type:	Soil
Project Name:	HOBBS JCT A-25	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	HOBBS JCT A-25		

Sample ID: SB 2 @ 15' (H101177-01)

TPH 8015M mg/kg **Analyzed By: AB**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	**151**	50.0	06/11/2011	ND	209	105	200	1.94	
DRO >C10-C28	**5010**	50.0	06/11/2011	ND	189	94.5	200	2.13	

Surrogate: 1-Chlorooctane	*121 %*	*70-130*
Surrogate: 1-Chlorooctadecane	*119 %*	*70-130*

Sample ID: SB 2 @ 17' (H101177-02)

TPH 8015M mg/kg **Analyzed By: AB**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<50.0	50.0	06/13/2011	ND	209	105	200	1.94	
DRO >C10-C28	**3760**	50.0	06/13/2011	ND	189	91.5	200	2.13	

Surrogate: 1-Chlorooctane	*110 %*	*70-130*
Surrogate: 1-Chlorooctadecane	*121 %*	*70-130*

Cardinal Laboratories *=Accredited Analyte

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

Received:	06/07/2011	Sampling Date:	06/07/2011
Reported:	06/14/2011	Sampling Type:	Soil
Project Name:	HOBBS JCT A-25	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	HOBBS JCT A-25		

Sample ID: SB 2 @ 19' (H101177-03)

TPH 8015M mg/kg **Analyzed By: AB**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<50.0	50.0	06/13/2011	ND	209	105	200	1.94	
DRO >C10-C28	**2120**	50.0	06/13/2011	ND	189	94.5	200	2.13	

Surrogate: 1-Chlorooctane	*118 %*	*76-136*
Surrogate: 1-Chlorooctadecane	*116 %*	*79-130*

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

Celey D. Keene, Lab Director/Quality Manager

Page 3 of 5

CARDINAL Laboratories

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

Notes and Definitions

Z-01	One or more surrogates above historical limits.
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

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

[illegible] FAX [illegible] [illegible] FAX [illegible]

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Company Name: [illegible] Operating Company	[illegible]
Project Manager: [illegible]	P.O. #:
Address: [illegible] West [illegible]	Company:
City: Hobbs State: NM Zip: 88240	Attn:
Phone #: 575-[illegible] Fax #: 575-[illegible]-1471	Address:
Project #: Project Owner:	City:
Project Name: Hobbs Jct A-25	State: Zip:
Project Location: Hobbs Jct A-25	Phone #:
Sampler Name: Jordan Woodfin	Fax #:

ANALYSIS REQUEST: Chlorides | TPH 8015 M | BTEX | Texas TPH | Complete Cations/Anions | TPH 8015 M Extended Thru C40

Lab I.D.	Sample I.D.	[illegible]	[illegible]	Matrix	Preserv.	Sampling Date	Sampling Time	Chlorides	TPH 8015 M	BTEX	Texas TPH	Complete Cations/Anions	TPH 8015 M Extended Thru C40
1	[illegible]	[illegible]	1	✓	✓	[illegible]	[illegible]		✓				
2	[illegible]	[illegible]	1	✓	✓	[illegible]	[illegible]		✓				
3	[illegible]	[illegible]	1	✓	✓	[illegible]	[illegible]		✓				

[illegible fine print]

Relinquished By:	Date:	Received By:	Phone Result: ☐ Yes ☐ No Add'l Phone #:
Jordan Woodfin	[illegible]	[signature]	Fax Result: ☐ Yes ☐ No Add'l Fax #:
Relinquished By:	Date: Time:	Received By:	REMARKS: email results
[illegible]			[illegible]

[illegible]

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CARDINAL Laboratories

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

June 09, 2011

Hack Condor

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: HOBBS JCT A-25

Enclosed are the results of analyses for samples received by the laboratory on 06/07/11 16:12.

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 T101704398-08-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. 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
Hack Conder
112 W Taylor
Hobbs NM, 88240
Fax To: (575) 397-1471

Received:	06/07/2011	Sampling Date:	06/07/2011
Reported:	06/09/2011	Sampling Type:	Soil
Project Name:	HOBBS JCT A-25	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	HOBBS JCT A-25		

Sample ID: SB 2 @ 15' (H101178-01)

BTEX 8021B mg/kg Analyzed By: CMS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.200	0.200	06/08/2011	ND	2.07	104	2.00	2.80	
Toluene*	**1.04**	0.200	06/08/2011	ND	2.02	101	2.00	3.31	
Ethylbenzene*	**1.67**	0.200	06/08/2011	ND	2.11	106	2.00	2.37	
Total Xylenes*	**5.80**	0.600	06/08/2011	ND	6.14	102	6.00	3.01	

Surrogate: 4-Bromofluorobenzene (PID 128 % 79-136

Sample ID: SB 2 @ 17' (H101178-02)

BTEX 8021B mg/kg Analyzed By: CMS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.200	0.200	06/08/2011	ND	2.07	104	2.00	2.80	
Toluene*	**0.659**	0.200	06/08/2011	ND	2.02	101	2.00	3.31	
Ethylbenzene*	**1.22**	0.200	06/08/2011	ND	2.11	106	2.00	2.37	
Total Xylenes*	**5.92**	0.600	06/08/2011	ND	6.14	102	6.00	3.01	

Surrogate: 4-Bromofluorobenzene (PID 129 % 79-136

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 theory 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

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

Received:	06/07/2011	Sampling Date:	06/07/2011
Reported:	06/09/2011	Sampling Type:	Soil
Project Name:	HOBBS JCT A-25	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	HOBBS JCT A-25		

Sample ID: SB 2 @ 19' (H101178-03)

BTEX 8021B mg/kg Analyzed By: CMS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.200	0.200	06/08/2011	ND	2.07	104	2.00	2.60	
Toluene*	**0.526**	0.200	06/08/2011	ND	2.02	101	2.00	3.31	
Ethylbenzene*	**0.779**	0.200	06/08/2011	ND	2.11	106	2.00	2.37	
Total Xylenes*	**2.29**	0.600	06/08/2011	ND	6.14	102	6.00	3.01	

Surrogate: 4-Bromofluorobenzene (PID 115 %* 79-136

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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

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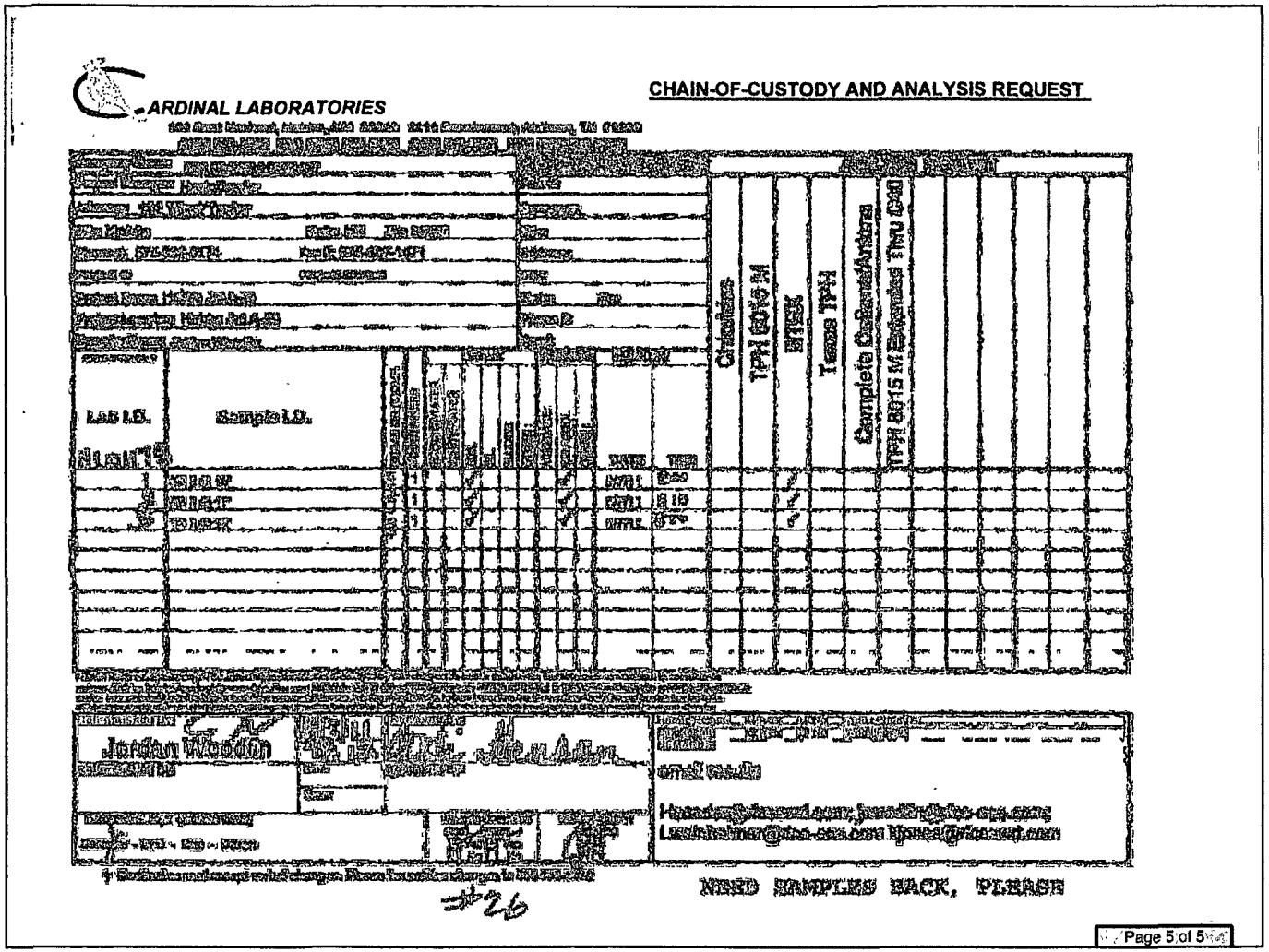
Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager



CARDINAL LABORATORIES

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Chlorides
TPH 8015 M
BTEX
Texas TPH
Complete Cation/Anions
TPH 8015 M Extended (C35)

Lab I.D.
Sample I.D.

Jordan Weddon

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Hansen, Edward J., EMNRD

From: Katie Jones [kjones@riceswd.com]
Sent: Wednesday, September 07, 2011 3:54 PM
To: Hansen, Edward J., EMNRD
Cc: Hack Conder; L Peter Galusky
Subject: RE: Rice Operating Company - Hobbs SWD Jct A-25 - NMOCD Case No. 1R428-60

Mr. Hansen,

A groundwater study resulted in no wells located within a half-mile radius of this site. There is one well listed on the NMOSE website in section 25 with a depth to groundwater of 84 ft below ground surface (bgs). ROC data from monitoring wells and one USGS well located within section 29 average a depth to groundwater of 57 ft bgs. Averaging the ROC data from section 29 with the OSE well data located in section 25 estimates a depth to groundwater of approximately 70 ft bgs. Let me know if you have any questions.

Thank you.

Katie Jones
Environmental Project Manager
RICE *Operating Company*

From: Hansen, Edward J., EMNRD [mailto:edwardj.hansen@state.nm.us]
Sent: Wednesday, September 07, 2011 2:08 PM
To: Katie Jones
Cc: L Peter Galusky Jr
Subject: RE: Rice Operating Company - Hobbs SWD Jct A-25 - NMOCD Case No. 1R428-60

Katie,
Can you give me a more recent approximation of the depth to groundwater at this site (based on data you have from other nearby sites). My research indicates that the dtw may be closer to 68' (v. 48' as noted in one of the earlier reports).
Thanks,
Edward J. Hansen
505-476-3489

From: L Peter Galusky Jr [mailto:lpgalusky@alumni.virginia.edu]
Sent: Friday, September 02, 2011 11:17 AM
To: Hansen, Edward J., EMNRD
Cc: Katie Jones
Subject: Rice Operating Company - Hobbs SWD Jct A-25 - NMOCD Case No. 1R428-60

Edward,

Please find attached (in .pdf format) a Corrective Action Plan Report and Termination Request for the above-referenced project.

I will follow this with a hard copy in the U.S. mail.

Thank you for your consideration.

Sincerely,

Pete G.

--

L Peter (Pete) Galusky, Jr. Ph.D.
Texerra

Cell: 719-339-6791

Texerra e-mail: lpg@texerra.com
Texerra website: www.texerra.com

Personal e-mail: lpgalusky@alumni.virginia.edu