1R - 427-54

WORKPLANS

Date:
1 - 30 - 12

Rice Environmental Consulting & Safety
P.O. Box 5630 Hobbs, NM 88241
Phone 575.393.4411 Fax 575.393.0293

CERTIFIED MAIL
RETURN RECEIPT NO. 7011 2000 0002 0285 5025

January 30th, 2012

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: **ICP Report and Corrective Action Plan (CAP)**
Rice Operating Company – EME SWD System
EME B-33 (1R427-54): UL/B sec. 33 T20S R36E
(formerly EME C-33)

Mr. Hansen:

RICE Operating Company (ROC) has retained Rice Environmental Consulting and Safety (RECS) to address potential environmental concerns at the above-referenced site in the EME Salt Water Disposal (SWD) system. The site was previously referred to as the EME C-33. However, GIS mapping shows the site to be located in unit letter B (Figure 1). To reflect the geographical location of the site, the name has been changed to the EME B-33. All correspondence will reference EME B-33.

ROC is the service provider (agent) for the EME SWD System and has no ownership of any portion of the pipeline, well, or facility. The system is owned by a consortium of oil producers, System Parties, who provide all operating capital on a percentage ownership/usage basis.

Background and Previous Work

The site is located approximately 8 miles southwest of Monument, New Mexico at UL/B sec. 33 T20S R36E as shown on the Site Location Map (Figure 1). NM OSE records indicate that groundwater would likely be encountered at a depth of approximately 170 +/- feet. However, soil bore installation activities performed at the site showed that there is no groundwater located beneath the site.

In 2003, ROC initiated work on the former EME B-33 junction box. The site was delineated using a backhoe to form a 12 ft x 12 ft x 12 ft deep excavation and soil samples were screened at regular intervals for both hydrocarbons and chlorides. From the vertical at 12 ft bgs, a bottom grab sample was taken to a commercial laboratory for analysis. Laboratory tests showed a chloride reading of 691 mg/kg, a gasoline range

organics (GRO) reading and diesel range organics (DRO) reading of non-detect and a BTEX reading of non-detect. The excavation was backfilled with the excavated soil. A soil bore was advanced on January 13th, 2004, to determine the vertical extent of the chloride impact. The boring was advanced to 75 ft bgs and samples were taken every five – ten feet. The samples were then field tested for chlorides and the 75 ft sample was taken to a commercial laboratory to be analyzed for chlorides. The laboratory analysis showed a chloride reading of 1,695 mg/kg.

An identification plate was placed on the surface of the site to mark its location for future environmental considerations. NMOCD was notified of potential groundwater impact on January 14th, 2004 and a junction box disclosure report was submitted to NMOCD with all the 2003 junction box closures and disclosures.

ICP Investigative Results

As part of the Investigation and Characterization Plan (ICP) approved by NMOCD on December 1st, 2011, one soil bore (SB-2) was advanced near the former junction box site to a depth of 190 ft bgs on December 12th, 2011 (Figure 2). SB-2 was drilled in the area of the highest chloride concentrations found during the junction box investigation. RECS personnel field tested the soil at regular intervals to a depth of 125 ft bgs for chlorides and screened in the field with a photo-ionization detector for hydrocarbons. Representative samples from the bore were taken to a commercial laboratory for confirmation of chloride and hydrocarbon field numbers (Appendix A). Laboratory chloride numbers peaked at 90 ft bgs with a reading of 4,640 mg/kg and declined to 816 mg/kg at 125 ft bgs. GRO and DRO laboratory readings were non-detect throughout the bore. The soil bore was plugged with bentonite to the ground surface.

Red bed clay was encountered at 95 ft bgs which indicated the bottom of the aquifer. Since no groundwater was encountered, the bore was advanced to 190 ft bgs and packed open for 48 hours to allow any possible groundwater to accumulate. On December 14th, 2011, Harrison & Cooper Drilling, Inc. were on site to gauge the bore for groundwater accumulation. They found no water in the bore (Appendix B).

Corrective Action Plan

Since there is no groundwater at the site, the former junction box will in no way contribute to the degradation of groundwater. Vegetation at the site is recovering, but RECS recommends that ROC re-seed the site to help bring it back to normal vegetative capacity. Vegetation will act as an evapo-transpiration barrier which will inhibit the downward movement of chloride and hydrocarbons. Plants capture water through their roots and reduce the amount of water infiltrating below the root zone.

RECS appreciates the opportunity to work with you on this project. Please call Hack Conder at (575) 393-9174 or me if you have any questions or wish to discuss the site.

Sincerely,

Lara Weinheimer
Project Scientist
RECS
(575) 441-0431

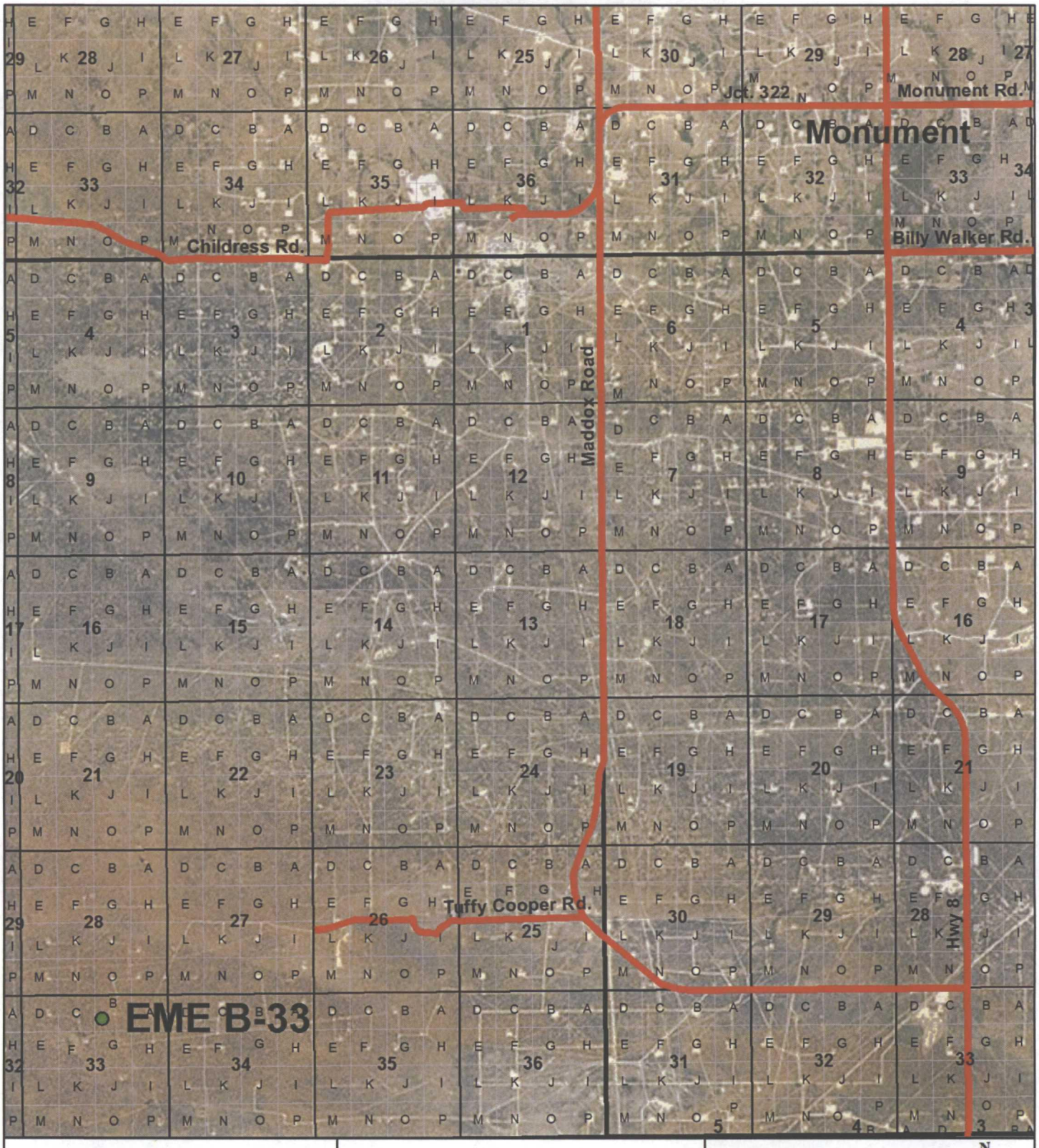
Attachments:

Figure 1 – Site Location Map
Figure 2 – Soil Bore Installation Map
Appendix A – Soil Bore Log and Laboratory Confirmation
Appendix B – Letter of Bore Hole Condition

Figures

RICE Environmental Consulting and Safety (RECS)
P.O. Box 5630 Hobbs, NM 88241
Phone 575.393.4411 Fax 575.393.0293

Site Location



RICE ENVIRONMENTAL RECS CONSULTING & SAFETY, LLC

EME B-33

LEGALS: UL/B sec. 33
T-20-S R-36-E

NMOCD Case #: 1R427-54

Figure 1

N
W E
S

0 0.25 0.5 1
Miles

Drawing date: 11/18/11
Drafted by: L. Weinheimer

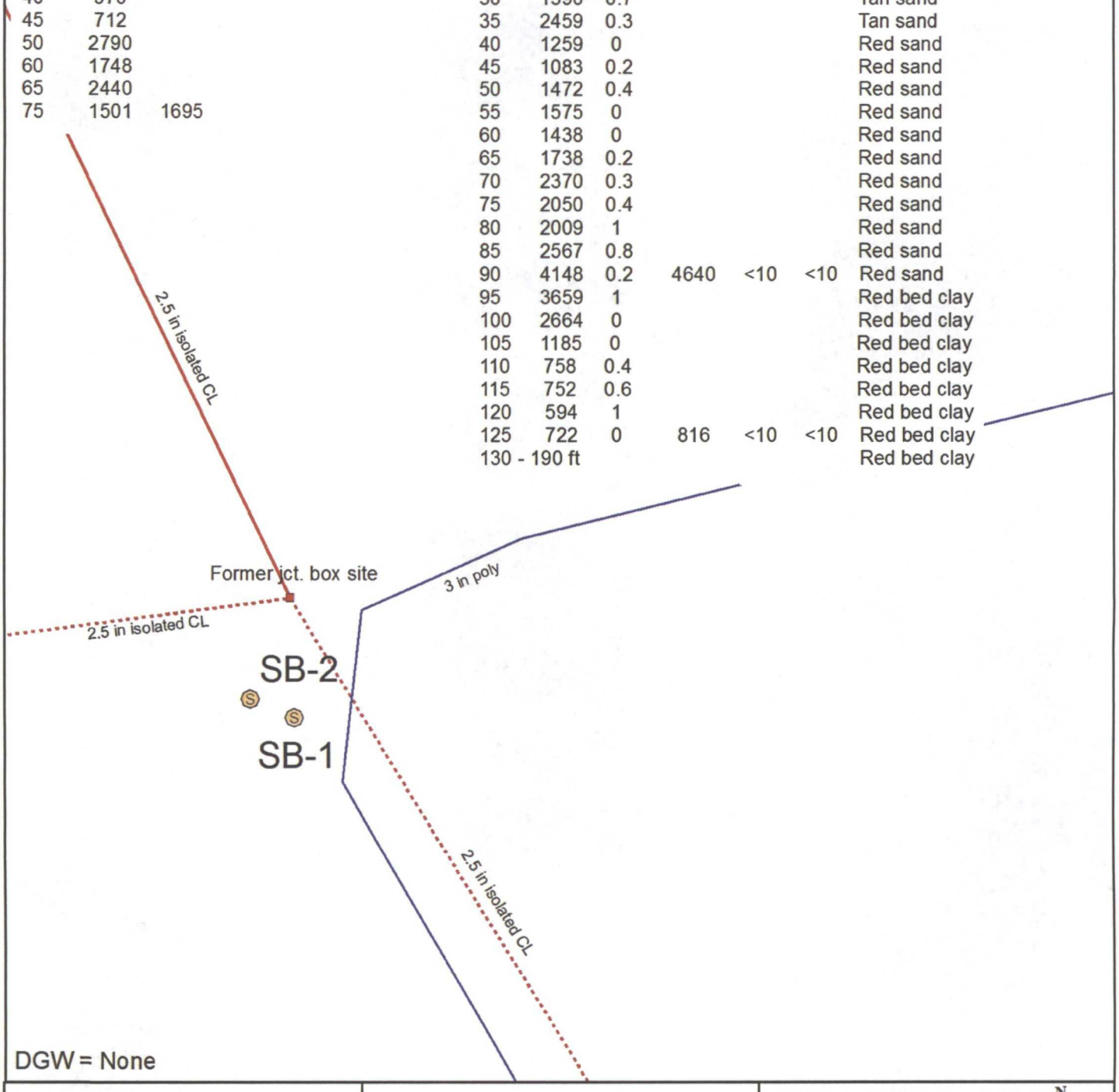
Soil Bore Installation

SB-1

Depth	Cl-	LAB
15	5953	
20	6621	
30	5707	
40	970	
45	712	
50	2790	
60	1748	
65	2440	
75	1501	1695

SB-2

Depth	Cl-	PID	LAB Cl-	GRO	DRO	LITHOLOGY
15	657	0.8				Tan sand with some caliche
20	933	0.6				Tan sand
25	948	0.8				Tan sand
30	1390	0.7				Tan sand
35	2459	0.3				Tan sand
40	1259	0				Red sand
45	1083	0.2				Red sand
50	1472	0.4				Red sand
55	1575	0				Red sand
60	1438	0				Red sand
65	1738	0.2				Red sand
70	2370	0.3				Red sand
75	2050	0.4				Red sand
80	2009	1				Red sand
85	2567	0.8				Red sand
90	4148	0.2	4640	<10	<10	Red sand
95	3659	1				Red bed clay
100	2664	0				Red bed clay
105	1185	0				Red bed clay
110	758	0.4				Red bed clay
115	752	0.6				Red bed clay
120	594	1				Red bed clay
125	722	0	816	<10	<10	Red bed clay
130 - 190 ft						Red bed clay



RICE ENVIRONMENTAL RECS CONSULTING & SAFETY, LLC

EME B-33

LEGALS: UL/B sec. 33
T-20-S R-36-E

NMOCD Case #: 1R427-54

Figure 2

N W E S

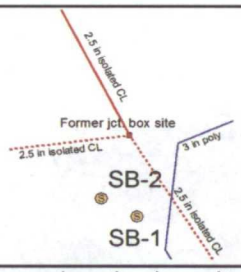
0 3.75 7.5 15 Feet

Drawing date: 12/16/11
Drafted by: L. Weinheimer

Appendix A

Soil Bore Logs and Laboratory Confirmation

RICE Environmental Consulting and Safety (RECS)
P.O. Box 5630 Hobbs, NM 88241
Phone 575.393.4411 Fax 575.393.0293

Logger:	Kyle Norman		**Project Name:** EME B-33 **Well ID:** SB-2
Driller:	Harrison & Cooper, Inc.		**Project Consultant:** RECS
Drilling Method:	Air rotary		
Start Date:	12/12/2011		
End Date:	12/12/2011		

Comments: Located 9 ft southwest of the former junction box site. All samples were from cuttings.
DRAFTED BY: L. Weinheimer
TD = 190 ft GW = None

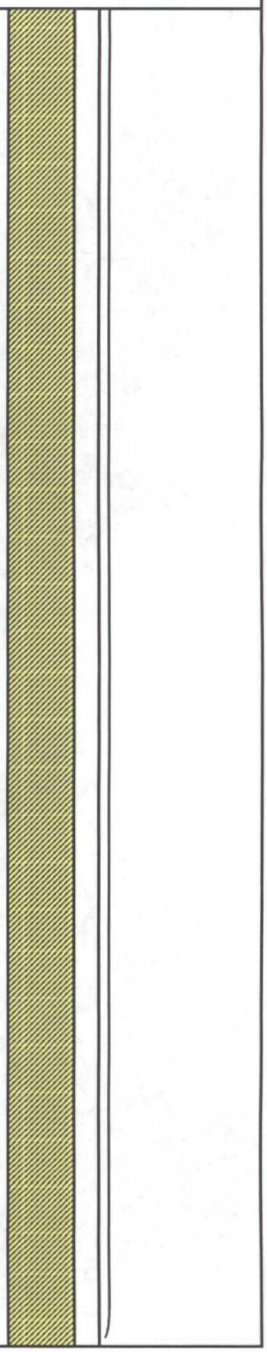
Location: UL/B sec. 33 T20S R36E
Lat: 32°32'4.101"N **Long:** 103°21'31.557"W
County: Lea **State**: NM

Depth (feet)	Chloride field tests	LAB	PID	Description
				Regolith
SS				
5 ft				
				Tan Sand
10 ft				
15 ft	657		0.8	
				Tan Sand With Some Caliche
20 ft	933		0.6	
				Tan Sand
25 ft	948		0.8	
30 ft	1390		0.7	
35 ft	2459		0.3	
40 ft	1259		0.0	
				Red Sand
45 ft	1083		0.2	

Lithology

Well Construction

Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
				Red Sand		bentonite seal
50 ft	1472		0.4			
55 ft	1575		0.0			
60 ft	1438		0.0			
65 ft	1738		0.2			
70 ft	2370		0.3			
75 ft	2050		0.4			
80 ft	2009		1.0			
85 ft	2567		0.8			
90 ft	4148	Cl- 4640	0.2			
		GRO <10				
		DRO <10				
95 ft	3659		1.0			
				Red Bed Clay		
100 ft	2664		0.0			
105 ft	1185		0.0			
110 ft	758		0.4			

Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
				Red Bed Clay		
115 ft	752		0.6			
120 ft	594		1.0			
125 ft	722	Cl-816	0.0			
		GRO <10				
		DRO <10				
130 ft						
140 ft						
150 ft						
160 ft						
170 ft						
180 ft						
190 ft						

CARDINAL Laboratories

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

December 16, 2011

Hack Conder

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: EME B-33

Enclosed are the results of analyses for samples received by the laboratory on 12/12/11 17:00.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-11-3. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

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

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

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

Sincerely,

Celey D. Keene

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

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

Received:	12/12/2011	Sampling Date:	12/12/2011
Reported:	12/16/2011	Sampling Type:	Soil
Project Name:	EME B-33	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SB 2 @ 90' (H102659-01)

Chloride, SM4500Cl-B mg/kg **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**4640**	16.0	12/14/2011	ND	432	108	400	3.77	

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	12/14/2011	ND	183	91.4	200	9.64	
DRO >C10-C28	<10.0	10.0	12/14/2011	ND	214	107	200	6.10	

Surrogate: 1-Chlorooctane	*89.1 %*	*55.5-154*
Surrogate: 1-Chlorooctadecane	*96.8 %*	*57.6-158*

Sample ID: SB 2 @ 125' (H102659-02)

Chloride, SM4500Cl-B mg/kg **Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**816**	16.0	12/14/2011	ND	432	108	400	3.77	

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	12/14/2011	ND	183	91.4	200	9.64	
DRO >C10-C28	<10.0	10.0	12/14/2011	ND	214	107	200	6.10	

Surrogate: 1-Chlorooctane	*89.7 %*	*55.5-154*
Surrogate: 1-Chlorooctadecane	*97.9 %*	*57.6-158*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Company Name: Rice	BILL TO
Project Manager: Hack Conder	P.O. #:
Address:	Company:
City: State: NM Zip:	Attn:
Phone #: Fax #:	Address:
Project #: Project Owner:	City:
Project Name:	State: Zip:
Project Location: EME B-33	Phone #:
Sampler Name: Kyle Norman	Fax #:

FOR LAB USE ONLY				MATRIX						PRESERV.			SAMPLING		ANALYSIS REQUEST										
Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	ACID/BASE	ICE / COOL	OTHER :	DATE	TIME	Chlorides	TPH 8015 M	BTEX	Texas TPH	Complete Cations/Anions	TDS					
H102659																									
1	SB 2 @ 90'	G	1			✓					✓		12-12-11	4:15	✓	✓									
2	SB 2 @ 125'	G	1			✓					✓		12-12-11	4:25	✓	✓									

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: Kyle Norman	Date: 12/13/11 Time: 5:00	Received By: Jodi Henson	Phone Result: ☐ Yes ☑ No Add'l Phone #:
Relinquished By:	Date: Time:	Received By:	Fax Result: ☐ Yes ☑ No Add'l Fax #:
Delivered By: (Circle One) Sampler - UPS - Bus - Other:	Sample Condition Cool: ☑ Yes ☐ No Intact: ☑ Yes ☐ No	CHECKED BY: (Initials)	REMARKS: email results kjones@riceswd.com; knorman@rice-ecs.com; Zconder@rice-ecs.com; Bbaker@rice-ecs.com; hconder@rice-ecs.com; Lweinheimer@rice-ecs.com

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

Appendix B

Letter of Bore Hole Condition

RICE Environmental Consulting and Safety (RECS)
P.O. Box 5630 Hobbs, NM 88241
Phone 575.393.4411 Fax 575.393.0293

HARRISON & COOPER, INC.

Drilling & Pump Professionals

7414 85th Street, Lubbock, Texas 79424-4951

P.O. Box 96, Wolfforth, Texas 79382-0096

Ph: (806) 866-4026 Fax: (806) 866-4044 hcidrill.com

January 5, 2012

Rice Operating
112 W. Taylor
Hobbs, NM 88240

Attn: Lara Weinheimer

RE: EME B-33
Bore Hole Condition

To whom it may concern:

On December 12, 2011, Harrison and Cooper were contracted by Rice Operating to drill and sample a soil boring at the subject site. The soil boring was drilled to approximately 190 feet in an effort to determine whether or not a saturated interval existed. After a forty-eight hour holdover time the moisture content at that depth was NON-detectable.

If any questions arise from this issue, do not hesitate to contact a representative with Harrison and Cooper.

Sincerely,

Kenny Cooper
Operations Manager

Copies: File
Email (Lara Weinheimer)