

1R - 427-04

# WORKPLANS

Date:

1-13-12

# Rice Environmental Consulting & Safety

P.O. Box 5630 Hobbs, NM 88241

Phone 575.393.4411 Fax 575.393.0293

RECEIVED OGD

2012 JAN 17 P 2:01

CERTIFIED MAIL

RETURN RECEIPT NO. 7008 1140 0001 3070 6181

**January 13<sup>th</sup>, 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 L-34 (1R427-04): UL/L sec. 34 T20S R36E**

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. 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/L sec. 34 T20S R36E as shown on the Site Location Map (Figure 1). NM OSE records indicate that groundwater will likely be encountered at a depth of approximately +/- 122 feet. However, soil bore installation activities performed at the site showed that there was no groundwater located beneath the site.

In 2003, ROC initiated work on the former EME L-34 junction box. The site was delineated using a backhoe to form a 20 ft x 20 ft x 12 ft deep excavation and soil samples were screened at regular intervals for both hydrocarbons and chlorides. From the excavation, the four-wall composite, the bottom composite and the remediated backfill were taken to a commercial laboratory for analysis. Laboratory tests of the four wall composite showed a chloride reading of 1,770 mg/kg and non-detect for gasoline range organics (GRO), diesel range organics (DRO) and BTEX. The bottom composite showed a chloride laboratory reading of 1,860 mg/kg and non-detect for GRO, DRO and BTEX. The soil was blended on site and backfilled into the excavation to 4 ft bgs. At 4 ft bgs, a 20-mil poly liner was installed throughout the excavation and then the site was backfilled with the remaining remediated soil. Laboratory analysis of the remediated

backfill showed a chloride reading of 744 mg/kg and non-detect for GRO, DRO and BTEX.

The area was contoured to the surrounding landscape, seeded and 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 August 14<sup>th</sup>, 2003 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 November 17<sup>th</sup>, 2011, one soil bore was advanced through the former junction box site to a depth of 120 ft bgs on December 13<sup>th</sup>, 2011 (Figure 2). RECS personnel field tested the soil at regular intervals to a depth of 70 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 15 ft bgs with a reading of 1,800 mg/kg and declined to 96 mg/kg at 70 ft bgs. GRO and DRO laboratory readings were non-detect throughout the bore. Even though the bore attained appropriate chloride levels at 70 ft bgs, the bore was advanced to 120 ft to determine depth to groundwater. Red bed clay was encountered at approximately 100 ft bgs which indicated the bottom of the aquifer. Since no groundwater was encountered, the bore was advanced to approximately 120 ft bgs and packed open for 48 hours to allow any possible groundwater to accumulate. On December 15<sup>th</sup>, 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. The site has an existing 20x20 ft poly liner installed at 4 ft bgs, which will impede migration of residual chlorides and hydrocarbons. 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 also inhibit the downward movement of chloride and hydrocarbons. Plants capture water through their roots and so reduce the amount of water infiltrating below the root zone.

Upon completion of the CAP work, we anticipate ROC will submit a written report which will include a request for "remediation termination" of the regulatory file.

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,

A handwritten signature in black ink, appearing to read 'J.C.W.', followed by a long, horizontal, wavy line that extends to the right.

Lara Weinheimer  
Project Scientist  
RECS  
(575) 441-0431

Attachments:

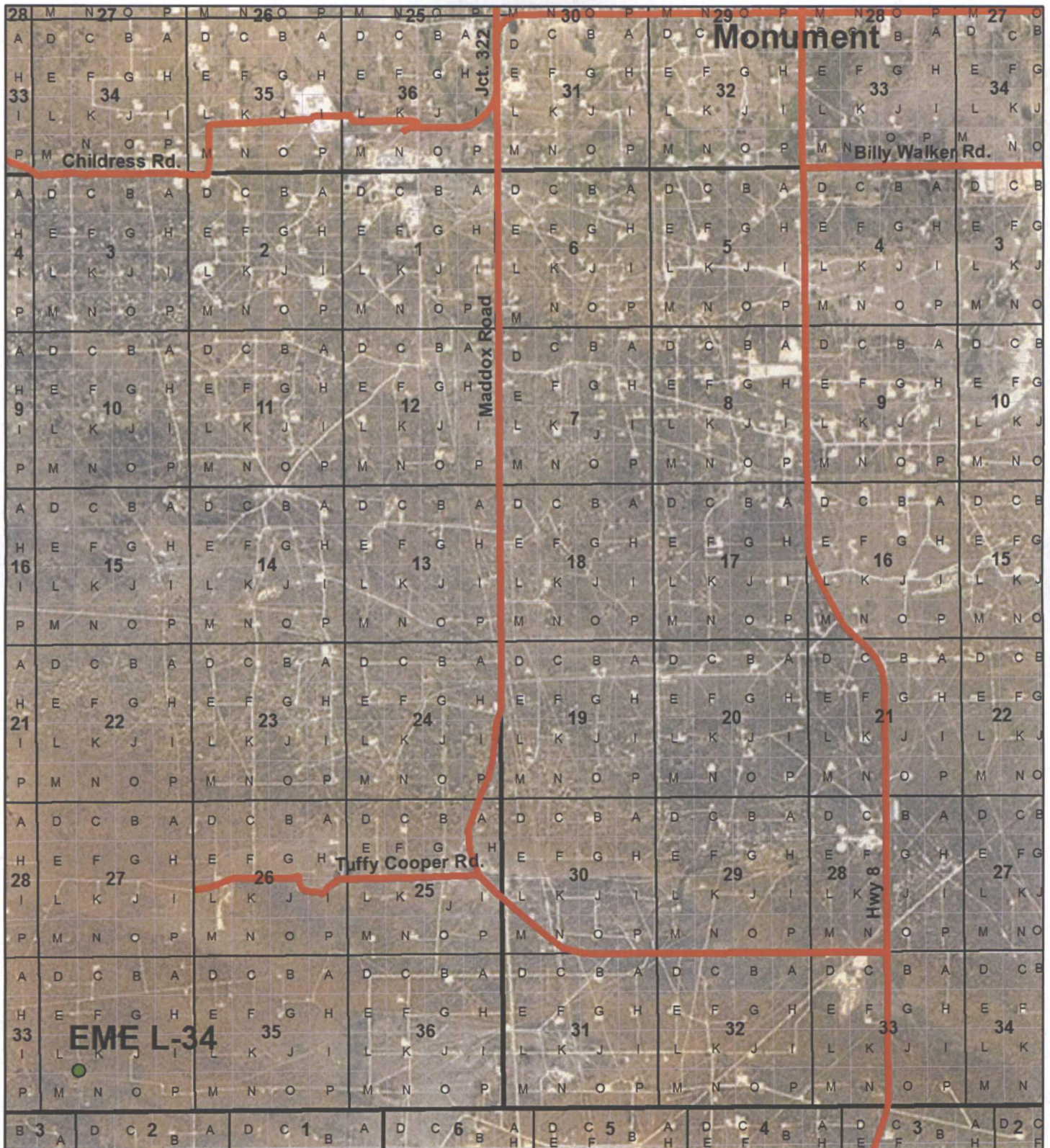
- Figure 1 – Site Location Map
- Figure 2 – Soil Bore Installation Map
- Appendix A – Soil Bore Log and Laboratory Confirmation
- Appendix B – Letter of Bore Hole Condition



# Figures

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

# Site Location



**EME L-34**

LEGALS: UL/L sec. 34  
T-20-S R-36-E

NMOCD Case #: 1R427-04

**Figure 1**



0 0.25 0.5 1  
Miles

Drawing date: 11/1/11  
Drafted by: L. Weinheimer

# Soil Bore Installation

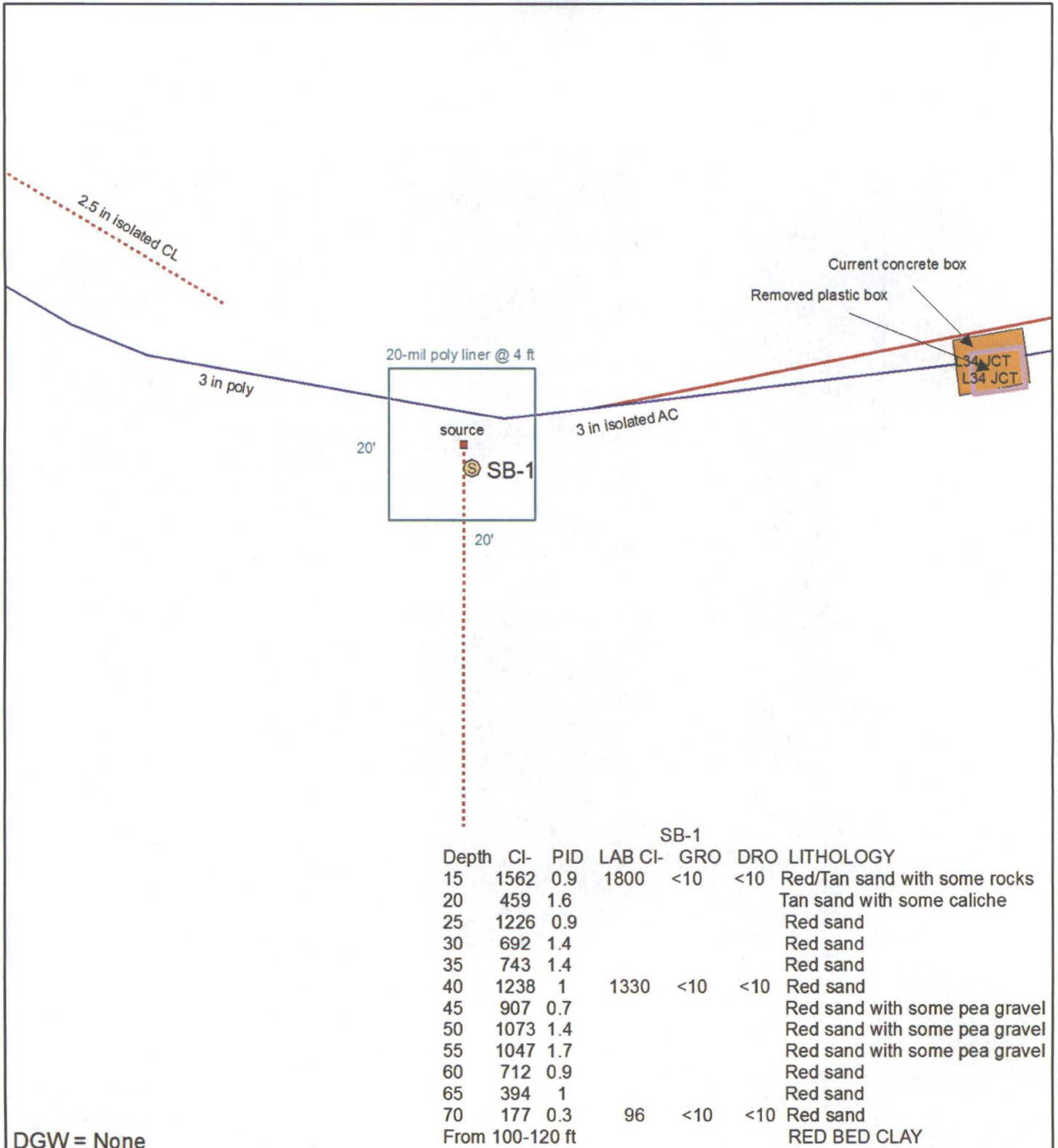


Figure 2



0 5 10 20  
Feet

Drawing date: 12/20/11  
Drafted by: L. Weinheimer



**EME L-34**

LEGALS: UL/L sec. 34  
T-20-S R-36-E

NMOCD Case #: 1R427-04



# Appendix A


## Soil Bore Log and Laboratory Confirmation

**RICE Environmental Consulting and Safety (RECS)**

P.O. Box 5630 Hobbs, NM 88241  
Phone 575.393.4411 Fax 575.393.0293

<b>Logger:</b>	Kyle Norman					
<b>Driller:</b>	Harrison & Cooper, Inc.					
<b>Drilling Method:</b>	Air rotary					
<b>Start Date:</b>	12/13/2011					
<b>End Date:</b>	12/13/2011					
<b>Comments:</b> SB-1 is located 3 ft south of the former junction box site. All samples were from cuttings. TD = 120 ft      GW = None		<b>Project Name:</b> EME L-34 <b>Well ID:</b> SB-1 <b>Project Consultant:</b> RECS <b>Location:</b> UL/L sec. 34 T20S R36E <b>Lat:</b> 32°31'34.417"N <b>County:</b> Lea <b>Long:</b> 103°20'47.332"W <b>State:</b> NM				
Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
SS				Regolith		
5 ft						
10 ft				Red Sand		
15 ft	1562	CI-1800	0.9			
		GRO <10				
		DRO <10		Red / Tan Sand With Some Rocks		
20 ft	459		1.6			
				Tan Sand With Some Caliche		
25 ft	1226		0.9			
30 ft	692		1.4	Red Sand		
35 ft	743		1.4			
40 ft	1238	CI-1330	1.0			

Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
		GRO <10		Red Sand		
		DRO <10				
45 ft	907		0.7			
				Red Sand With Some Pea Gravel		
50 ft	1073		1.4			
55 ft	1047		1.7			
60 ft	712		0.9	Red Sand		
65 ft	394		1.0			
70 ft	177	Cl- 96	0.3	NO SAMPLES TAKEN		
		GRO <10				
		DRO <10				
75 ft						
80 ft						
85 ft						
90 ft						
95 ft						

Depth (feet)	Chloride field tests	LAB	PID	Description		Lithology		Well Construction		
100 ft				NO SAMPLES TAKEN; RED BED CLAY ENCOUNTERED AT 100 FT BGS AND CONTINUED TO 120 FT BGS						
105 ft										
110 ft										
115 ft										
120 ft										

December 16, 2011

Hack Conder

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: EME L-34 20S - 36E

Enclosed are the results of analyses for samples received by the laboratory on 12/13/11 15:37.

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](http://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: 12/13/2011  
 Reported: 12/16/2011  
 Project Name: EME L-34 20S - 36E  
 Project Number: NONE GIVEN  
 Project Location: NOT GIVEN

 Sampling Date: 12/13/2011  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Jodi Henson

**Sample ID: SB - 1 @ 15' (H102676-01)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1800	16.0	12/15/2011	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 96.9 % 55.5-154

Surrogate: 1-Chlorooctadecane 105 % 57.6-158

**Sample ID: SB - 1 @ 40' (H102676-02)**

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1330	16.0	12/15/2011	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	

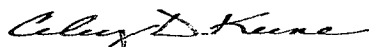
Surrogate: 1-Chlorooctane 106 % 55.5-154

Surrogate: 1-Chlorooctadecane 112 % 57.6-158

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

Received: 12/13/2011  
Reported: 12/16/2011  
Project Name: EME L-34 20S - 36E  
Project Number: NONE GIVEN  
Project Location: NOT GIVEN

Sampling Date: 12/13/2011  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Jodi Henson

**Sample ID: SB - 1 @ 70' (H102676-03)****Chloride, SM4500Cl-B****mg/kg****Analyzed By: AP**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<b>Chloride</b>	<b>96.0</b>	16.0	12/15/2011	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	12/15/2011	ND	183	91.4	200	9.64	
DRO >C10-C28	<10.0	10.0	12/15/2011	ND	214	107	200	6.10	

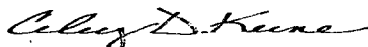
Surrogate: 1-Chlorooctane 101 % 55.5-154

Surrogate: 1-Chlorooctadecane 112 % 57.6-158

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**

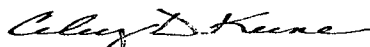
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received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

# 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

\* 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 85<sup>th</sup> Street, Lubbock, Texas 79424-4951

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

Ph: (806) 866-4026

Fax: (806) 866-4044

[hcidrill.com](http://hcidrill.com)

January 5, 2012

Rice Operating  
112 W. Taylor  
Hobbs, NM 88240

Attn: Lara Weinheimer

**RE: EME L-34  
Bore Hole Condition**

To whom it may concern:

On December 13, 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 120 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)

Regulated by: Texas Dept. of Licensing & Regulation, Water Well Division, P.O. Box 12157, Austin, TX 78711, (800) 803-9202