1R-427-318 REPORTS DATE 9-5-12



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

Subject:

ICP Report EME Jct. F-29-2 Unit F, SEC. 29, T19S, R37E, Monument, Lea County, New Mexico NMOCD CASE # 1R427-318

Mr. Hansen:

RICE Operating Company (ROC) has retained ARCADIS U.S., Inc. (ARCADIS) to address potential environmental concerns at the above-referenced site. 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. Environmental projects of this nature require System Party AFE approval prior to work commencing at the site. In general, project funding is not forthcoming until NMOCD approves the work plan. Therefore, your timely review of this submission is greatly appreciated.

On behalf of ROC, ARCADIS respectfully submits this ICP Report and Corrective Action Plan (CAP) for the above-referenced site.

# SITE HISTORY AND BACKGROUND

The site is located approximately one mile northwest of Monument, New Mexico as shown on the Site Location Map. Groundwater at the site will likely be encountered at a depth of 23 feet below ground surface (bgs). The junction box was eliminated and initial delineation was conducted from November 17<sup>th</sup>, 2008 through January 2<sup>nd</sup>, 2009. Initial delineation was completed with the drilling of a soil boring on November 3<sup>rd</sup>, 2009.

ARCADIS U.S., Inc. 1004 North Big Spring Street Suite 300 Midland Texas 79701 Tel 432.687.5400 Fax 432.687.5401 www.arcadis-us.com

Environmental

Date: September 5, 2012

Contact: Sharon Hall

Phone: 432.687.5400

Email: sharon.hall@arcadis-us.co

Our ref: MT001104.0001

ARCADIS U.S., Inc. TX Engineering License # F-533

# ARCADIS

Mr. Ed Hansen September 5, 2012

A backhoe was used to excavate soils from an excavation measuring 30 feet by 30 feet by 12 feet deep around the former junction box. Soil samples were collected at regular intervals and analyzed in the field for chlorides using field-adapted Standard Method 4500-CI B and screened in the field using a photoionization detector (PID).

A five-point wall composite sample was collected from each of the four walls and combined to make a representative four-wall composite sample, and a five-point composite sample was collected from the bottom of the excavation and submitted to Cardinal Laboratories for gasoline range organics (GRO), diesel range organics (DRO) and chloride analysis. DRO was detected at a concentration of 219 milligrams per kilogram (mg/kg) in the four-wall composite sample and 324 mg/kg in the five-point bottom composite sample. Chlorides were detected at a concentration of 272 mg/kg in the four-wall composite sample and 352 mg/kg in the five-point composite bottom sample. GRO was not detected in either of the samples.

Based on the results of the soil sampling analytical results, elevated hydrocarbon concentrations are present at the subject site.

Excavated soils were blended on site with clean imported back soil and backfilled into the excavation to ground surface. The area was contoured to the surrounding landscape.

A sample of the blended backfill material was submitted to Cardinal Laboratories for GRO, DRO and chloride analysis. DRO was detected at a concentration of 474 mg/kg. Chlorides were detected at a concentration of 144 mg/kg. GRO was not detected.

ROC disclosed potential groundwater impact at the site to New Mexico Oil Conservation Division (NMOCD) via e-mail on May 7<sup>th</sup>, 2009.

To further investigate the depth of hydrocarbon impact at the site, a soil boring was advanced 13 feet south of the former junction box location. Soil samples were collected every three feet and analyzed in the field for chlorides using field-adapted Standard Method 4500-CI B and screened in the field using a photoionization detector (PID). Two samples were submitted to Cardinal Laboratories for laboratory analysis. The 15 foot sample was submitted for GRO, DRO and chloride analysis. Chlorides were detected at a concentration of 400 mg/kg. GRO and DRO were not detected. The 19-21 foot sample was submitted for GRO, DRO, benzene, toluene, ethylbenzene, xylenes and chloride analysis. GRO was detected at a concentration

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Mr. Ed Hansen September 5, 2012

of 139 mg/kg and DRO was detected at a concentration of 1,180 mg/kg. Chlorides were detected at a concentration of 352 mg/kg. Benzene was not detected. Toluene, ethylbenzene and xylenes were detected at concentrations of 0.136, 0.310 and 2.52 mg/kg, respectively.

The borehole was plugged with bentonite from surface to total depth.

A disclosure report was submitted to NMOCD in the 2009 junction box closures and disclosures. ROC submitted an ICP to NMOCD on May 30, 2012 and was approved by NMOCD on June 7, 2012.

# **ICP INVESTIGATION RESULTS**

Seven soil borings (SB-2 through SB-8) were drilled at the site. Soil boring (SB-2) was advanced at the former junction box location and the other six soil borings were advanced 20 feet S/SW (SB-3), 25 feet E/SE (SB-4), 28 feet N/NE (SB-5), 23 feet W/NW (SB-6), 32 feet SE (SB-7) and 30 feet NW (SB-8) of the former junction box location.

Five soil borings (SB-2 through SB-6) were drilled July 11 and 12, 2012, and two soil borings (SB-7 and SB-8) were drilled on August 9, 2012. The soil borings were drilled to depths of 6 to 21 feet bgs. Soil samples were collected every three feet and analyzed in the field for chlorides using field-adapted Method 4500-Cl-B and screened in the field using a PID. Two samples from each boring were submitted to Cardinal Laboratories and analyzed for chlorides, GRO and DRO.

SB-2 laboratory analysis resulted in a decrease in chloride concentration from 160 mg/kg at 15 feet bgs to 144 mg/kg at 21 feet bgs. SB-3 concentrations were low throughout, all below 128 mg/kg. SB-4 decreased from 528 mg/kg at 9 feet bgs to 192 mg/kg at 15 feet bgs. SB-5 and SB-6 concentrations were also low, all below 80 mg/kg. SB-7 decreased from 336 mg/kg at 3 feet bgs to 304 mg/kg at 9 feet bgs. SB-8 remained the same with 304 mg/kg at 6 and 9 feet bgs.

GRO was non-detect throughout all borings. SB-2 laboratory analysis resulted in a DRO concentration of 333 mg/kg at 15 feet bgs and 367 mg/kg at 21 feet bgs. SB-3 decreased from 60.8 mg/kg at surface to <50 mg/kg at 6 feet bgs. SB-4 resulted in a DRO concentration of 16.4 mg/kg at 9 feet bgs to 92.5 mg/kg at 15 feet bgs. SB-5 decreased from 16.9 mg/kg at surface to <10 mg/kg at 6 feet bgs. SB-6 decreased from 701 mg/kg at surface to 446 mg/kg at 6 feet bgs. SB-7 decreased from 11.6

# ARCADIS

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mg/kg at 3 feet bgs to <10 mg/kg at 9 feet bgs. SB-8 decreased from 398 mg/kg at 6 feet bgs to 215 mg/kg at 9 feet bgs.

In addition to chloride, GRO and DRO, the sample at SB-2 (15 feet bgs) was submitted for benzene, toluene, ethylbenzene and xylenes (BTEX). BTEX was not detected in the sample (see attached figures and soil boring logs).

ARCADIS recommends analyzing the data to determine the next corrective action. Upon completion of analyzation, a report documenting Corrective Actions based upon these results will be submitted.

# ARCADIS

Mr. Ed Hansen September 5, 2012

Thank you for your consideration concerning this ICP Report. If you have any questions, do not hesitate to contact Hack Conder or me.

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Sincerely,

ARCADIS U.S., Inc.

Sharon & Hall

Sharon E. Hall Associate Vice President

Copies: Hack Conder, ROC

Attachments: Site Location Map Soil Boring Soil Data and Proposed Liner Figure Soil Boring Logs and Laboratory Analysis Photographs

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# Site Location Map



Legals: UL/F sec. 29 T-19-S R-37-E LEA COUNTY, NM Case #: 1R427-318

CONSULTING & SAFETY,

Drawing date: 5-1-12 Drafted by: L. Weinheimer

0

0.125 0.25

0.5

Miles

Logger:Kyle NormanDriller:Harrison & Cooper, Inc.Drilling Method:Air RotaryStart Date:7/11/2012End Date:7/11/2012Comments:Located at the for All samples wer DRAFTED BYTD = 21 ft.			Project Name:       Well ID:         EME Jct. F-29-2       SB-2         Project Consultant: ARCADIS U.S., Inc.         Location: UL/F sec. 29 T-19-S R-37-E         Lat: 32°38'4.595"N         Long: 103°16'31.912"W			
Depth (feet)	Chlorid	e LAB	PID	Description	Lithology	Well Construction
(	Inorta					
SS		-				
1		1				
3 ft						
	-			Regolith		
6 ft	-					
-						
9 ft						
-						
12 ft		-		A C MARKEN AND A COMPANY		
						bentonite
15 ft	196	CI- 160	399.7			seal
B: <0.05	E: <0.05	GRO	500.1			
T: <0.05	X: <0.15	DRO				
18 ft	177		182	Tan Sand with Caliche		
21 ft	166	CI- 144	82.2			
2111	100	GRO <50	02.2			
	1	DRO				
	The state	367				

Logger:Kyle NormanDriller:Harrison & Cooper, Inc.Drilling Method:Air RotaryStart Date:7/11/2012End Date:7/11/2012			SB-5 (3) SB-6	RECS CONSULTING & SAFETY, LLC			
		7/11/2012		SB-2 SB-1 SB-3 SB-3	Project Name: EME Jct. F- Project Consult	Well ID: 29-2 SB-3 ant: ARCADIS U.S., Inc.	
Comme	ents: Locat TD = 6	All sam	ples were	the former junction box site. e from cuttings. <b>: A.C. Ruth</b> GW = 23 ft.		sec. 29 T-19-S R-37-E 9"N <b>County</b> : Lea	
Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction	
				Brown Sand			
SS	121	CI- <16 GRO <50 DRO 60.8	20.4				
3 ft	142	00.0	4.4	Tan Sand with Caliche			
6 ft	157	CI- 128 GRO <50	9.6				
		DRO <50					

Logger: Kyle Norman Driller: Harrison & Cooper, Inc. Drilling Method: Air Rotary Start Date: 7/11/2012 End Date: 7/11/2012			SB-6 SB-2 SB-1 SB-3 SB-3		F	LECS	2	
		2			Project Name: Well ID: EME Jct. F-29-2 SB-4 Project Consultant: ARCADIS U.S., Inc.			
Comme	nts: Loca TD = 1	All samp DR	oles were	he former junction box site. from cuttings. : A.C. Ruth GW = 23 ft.	Loc Lat	ation: UL/F s : 32°38'4.509 ng: 103°16'31	ec. 29 T-1 )"N	
Depth (feet)	Chloride field tests		PID	Description		Lithology	Well	Construction
SS	141		0.9	Brown Sand				
3 ft	146		12.9					
6 ft	420		4.8					bentonite
9 ft	483	CI- 528 GRO <10 DRO 16.4	3.4	Tan Sand with Caliche				seal
12 ft	285		1.6					
15 ft	171	CI- 192 GRO <50	3.6					

Logger: Driller:	На	Kyle Norman Harrison & Cooper, Inc.		SB-5 SB-6		RECS			
Start Date:         7/12           End Date:         7/12		7/12/201: 7/12/201: ated 28 ft. N	Air Rotary 7/12/2012 7/12/2012 d 28 ft. N/NE of the former junction box site.		Project Name: Well ID: EME Jct. F-29-2 SB-5 Project Consultant: ARCADIS U.S., Inc Location: UL/F sec. 29 T-19-S R-37-E				
A.	TD =	DRA		from cuttings. A.C. Ruth GW = 23 ft.		nt: 32°38'4.835 ng: 103°16'31		County: Lea State: NM	
Depth (feet)	Chloride field test		PID	Description		Lithology	Well	Construction	
		-		Brown Sand					
SS	86	CI- <16	11			S. Z. S. S.		10000	
	Sec. al	GRO <10							
		DRO					1/1		
		16.9						bentonite	
3 ft	82		17.6					seal	
	1.			Tan Sand with Caliche			11		
				ran Sanu with Caliche					
6 ft	117	CI- 80	14.5						
		GRO					1/1		
		<10 DRO					11		
		DRO I				and the second			

Logger: Driller:			Harrison & Cooper, Inc. SB-6		RECS			
Drilling Method:     Air Rotary       Start Date:     7/12/2012       End Date:     7/12/2012		SB-2 SB-2 SB-1 SB-4 SB-4 SB-4 SB-4	Project Name: Well ID: EME Jct. F-29-2 SB-6 Project Consultant: ARCADIS U.S., Inc.					
Comme	nts: Loca TD =	All samp DR/		the former junction box site. from cuttings. A.C. Ruth GW = 23 ft.	Location: UL/F si Lat: 32°38'4.669 Long: 103°16'32	eeunity. Loo		
Depth (feet)	Chloride field tests	IIAR	PID	Description	Lithology	Well Construction		
SS	121	CI- <16	9.9	Brown Sand				
		GRO <50 DRO 701				bentonite		
3 ft	3 ft 93 6.2		Tan Sand with Caliche		seal			
<b>6 ft</b> 89	CI- 48 GRO	3.4						
		<50 DRO 446						

Logger:Kyle NormanDriller:Harrison & Cooper, Inc.Drilling Method:Air RotaryStart Date:8/9/2012End Date:8/9/2012		<50 <50 \$B-5 \$B-8 \$	R	ECS		
		SB-2 SB-1 SB-1 SB-3 SB-3		ant: ARCADIS U.S., Inc.		
Comme		All samp	oles wer	e former junction box site. e from cuttings. Amy C. Ruth GW = 23 ft.	Location: UL/F s Lat: 32°38'4.474' Long: 103°16'31	
Depth (feet)	Chlorid field tes	IIAR	PID	Description	Lithology	Well Construction
SS	116		8	Brown Sand		
3 ft	320	CI- 336 GRO	5.5		•	
0.6		<10 DRO 11.6	54.5	Tan Sand With Some Caliche	•	bentonite
6 ft	299		51.5		•	
9 ft	244	CI- 304 GRO <10	39.2		•	
		DRO <10				

Logger: Driller:	Ha	Kyle Norm arrison & Coo		<50 <50 SB-5 SB-8 SB-8 SB-6	RECS SAMUETING & SAFETY, LCC			
Drilling Method:     Air Rotary       Start Date:     8/9/2012       End Date:     8/9/2012		SB-2 SB-1 SB-1 SB-3 SB-3	Project Name: Well ID: EME Jct. F-29-2 SB-8 Project Consultant: ARCADIS U.S., Inc					
Comme	TD =	ated 30 ft. All samp DRAF 9 ft.	Location:         UL/F sec. 29 T-19-S R-37-E           Lat:         32°38'4.685"N         County: Lea           Long:         103°16'32.285"W         State: NM					
Depth (feet)	Chloride field test	ILAR	PID	Description	Lithology	Well Construction		
				Brown Sand				
SS	91		2.6		•			
3 ft	116		4		•	bentonite		
6 ft	331	CI- 304 GRO <50	13.2	Tan Sand With Some Caliche	•	seal		
9 ft	233	DRO 398 CI- 304 GRO	1.4					
	-	<50 DRO 215						

# EME Jct. F-29-2 Unit F, Section 29, T-19-S, R-37-E



Drilling SB-7, facing south

8/9/12



Completed SB-7, facing west

8/9/12



Plugging SB-8 in total with bentonite 8/9/12



Plugging SB-7 in total with bentonite 8/9/12



Drilling SB-8, facing north

8/9/12



Completed SB-8, facing west

8/9/12

# EME Jct. F-29-2 Unit F, Section 29, T-19-S, R-37-E



Drilling SB-2, facing east

7/11/12



Completed SB-2, facing north

7/11/12



Plugging SB-3 in total with bentonite



Plugging SB-2 in total with bentonite 7/11/12



Drilling SB-3, facing west

7/11/12



Completed SB-3, facing west

7/11/12



Drilling SB-4, facing south

7/11/12



Completed SB-4, facing south

7/13/12



Plugging SB-5 in total with bentonite



Plugging SB-4 in total with bentonite 7/11/12



Drilling SB-5, facing south

7/12/12



Completed SB-5, facing south

7/12/12



Drilling SB-6, facing west

7/12/12



Completed SB-6, facing west





Plugging SB-6 in total with bentonite 7/12/12



July 17, 2012 Hack Conder Rice Operating Company 112 W. Taylor Hobbs, NM 88240

RE: EME F-29-2 JCT. 19S/37E

Enclosed are the results of analyses for samples received by the laboratory on 07/11/12 16:40.

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 <a href="https://www.tceq.texas.gov/field/qa/lab\_accred\_certif.html">www.tceq.texas.gov/field/qa/lab\_accred\_certif.html</a>.

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. Kune

Celey D. Keene Lab Director/Quality Manager

Page 1 of 7



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

Received:	07/11/2012	Sampling Date:	07/11/2012
Reported:	07/17/2012	Sampling Type:	Soil
Project Name:	EME F-29-2 JCT. 19S/37E	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

# Sample ID: SB 2 @ 15' (H201587-01)

esult	Reporting Limit	Analyzed						
		-maryzeu	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
0.050	0.050	07/17/2012	ND	1.88	93.9	2.00	2.82	
0.050	0.050	07/17/2012	ND	1.89	94.5	2.00	3.09	
0.050	0.050	07/17/2012	ND	1.94	97.1	2.00	4.36	
0.150	0.150	07/17/2012	ND	5.85	97.4	6.00	4.60	
•	0.050 0.050 0.050 0.150	0.050 0.050 0.050 0.050	0.050         0.050         07/17/2012           0.050         0.050         07/17/2012	0.050 0.050 07/17/2012 ND 0.050 0.050 07/17/2012 ND	0.050         0.050         07/17/2012         ND         1.89           0.050         0.050         07/17/2012         ND         1.94	0.050         0.050         07/17/2012         ND         1.89         94.5           0.050         0.050         07/17/2012         ND         1.94         97.1	0.050         0.050         07/17/2012         ND         1.89         94.5         2.00           0.050         0.050         07/17/2012         ND         1.94         97.1         2.00	0.050         0.050         07/17/2012         ND         1.89         94.5         2.00         3.09           0.050         0.050         07/17/2012         ND         1.94         97.1         2.00         4.36

Surrogate: 4-Bromofluorobenzene (PID 104 % 89.4-126

Chloride, SM4500Cl-B	mg,	/kg	Analyze	d By: AP			<u></u>		
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride.	160	16.0	07/13/2012	ND	400	100	400	0.00	
TPH 8015M	mg/kg		Analyzed By: AM					S-04	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<50.0	50.0	07/13/2012	ND	164	82.2	200	0.261	
DRO >C10-C28	333	50.0	07/13/2012	ND	166	83.0	200	0.729	
Surrogate: 1-Chlorooctane	61.3	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	124	% 63.6-15	4						

#### **Cardinal Laboratories**

\*=Accredited Analyte

PLEXE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any daim 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 valved unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be kable for incidental or consequential damages, including, without limitation, business interruptions, loss of uses of profits incurred by client, its subsidianes, affiliates or successors ansing out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claims based on any of the solve state/ reservoirs or otherwise. Results relate only to the sample identified above. This report shall not expected except in full with vitter approval of Cardinal Laboratories.

Celuz D. Keine

Celey D. Keene, Lab Director/Quality Manager

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

Received:	07/11/2012	Sampling Date:	07/11/2012	
Reported:	07/17/2012	Sampling Type:	Soil	
Project Name:	EME F-29-2 JCT. 19S/37E	Sampling Condition:	Cool & Intact	
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson	
Project Location:	NOT GIVEN			
	(			

# Sample ID: SB 2 @ 21' (H201587-02)

Chloride, SM4500CI-B mg/kg Analyzed By: AP

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value OC	RPD	Qualifier
			•						(
Chloride TPH 8015M	<b>144</b> 16.0 mg/kg		07/13/2012 ND Analyzed By: AM		400	100	400	0.00	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value OC	RPD	Qualifier
GRO C6-C10	<50.0	50.0	07/13/2012	ND	164	82.2	200	0.261	•
DRO >C10-C28	367	50.0	07/13/2012	ND	166	83.0	200	0.729	

Surrogate: 1-Chlorooctadecane 140 % 63.6-154

# Sample ID: SB 3 @ SURFACE (H201587-03)

mg/kg		Analyzed By: AP					<del></del>	
Result	Reporting Limit	Analyzed	Method Blank	BS	, % Recovery	True Value QC	RPD	Qualifier
<16.0	16.0	07/13/2012	ND	400	100	400	0.00	
PH 8015M mg/kg		Analyzed By: AM						
Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
<50.0	50.0	07/13/2012	ND	164	82.2	200	0.261	
60.8	50.0	07/13/2012	ND	166	83.0	200	0.729	
68.4	% 65.2-14	0						
105	63.6-15	4						
	Result <16.0 mg, Result <50.0 60.8 68.4	Result         Reporting Limit           <16.0	Result         Reporting Limit         Analyzed           <16.0	Result         Reporting Limit         Analyzed         Method Blank           <16.0	Result         Reporting Limit         Analyzed         Method Blank         BS           <16.0	Result         Reporting Limit         Analyzed         Method Blank         BS         % Recovery           <16.0	Result         Reporting Limit         Analyzed         Method Blank         BS         % Recovery         True Value QC           <16.0	Result         Reporting Limit         Analyzed         Method Blank         BS         % Recovery         True Value QC         RPD           <16.0

#### **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 valved 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 incidential or consequential damages, including, without kimitation, business interruptions, loss of profits incurred by client, its subsidiaries, attiliates on successors arising out of related to the performance of the services hereunder by Cardinal, regardless of whether such chain is based upon any of the biox statier essention or otherwise. Results relate on the tamples limited above that in estimates at the applicable service.

Celey D. Kune

Celey D. Keene, Lab Director/Quality Manager

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

Received:	07/11/2012	Sampling Date:	07/11/2012
Reported:	07/17/2012	Sampling Type:	Soil
Project Name:	EME F-29-2 JCT. 19S/37E	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

# Sample ID: SB 3 @ 6' (H201587-04)

Chloride, SM4500Cl-B mg/kg		/kg	Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	128	16.0	07/13/2012	ND	400	100	400	0.00	
TPH 8015M mg/kg		/kg	Analyzed By: AM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD ·	Qualifier
GRO C6-C10	<50.0	50.0	07/13/2012	ND	164	82.2	200	0.261	
DRO >C10-C28	<50.0	50.0	07/13/2012	ND	166	83.0	200	0.729	
Surrogate: 1-Chlorooctane	73.7	% 65.2-14	0			····			
Surrogate: 1-Chlorooctadecane	102	63.6-15	4						

# Sample ID: SB 4 @ 9' (H201587-05)

Chloride, SM4500Cl-B	mg,	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	528	16.0	07/13/2012	ND	400	100	400	0.00	
TPH 8015M	mg/kg		Analyzed By: AM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	07/13/2012	ND	164	82.2	200	0.261	
DR0 >C10-C28	16.4	10.0	07/13/2012	ND	166	83.0	200	0.729	
Surrogate: 1-Chlorooctane	86.5	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	110	63.6-15	4						

#### **Cardinal Laboratories**

#### \*=Accredited Analyte

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Celey D. Keine

Celey D. Keene, Lab Director/Quality Manager

Page 4 of 7



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

	07/11/2012
Sampling Type:	Soil
Sampling Condition:	Cool & Intact
Sample Received By:	Jodi Henson
	Sampling Condition:

# Sample ID: SB 4 @ 15' (H201587-06)

Chloride, SM4500Cl-B	mg,	/kg	Analyze	d By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	192	16.0	07/13/2012	ND	400	100	400	0.00	
TPH 8015M	mg,	/kg	Analyzed By: AM				·		
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<50.0	50.0	07/13/2012	ND	164	82.2	200	0.261	
DR0 >C10-C28	. 92.5	50.0	07/13/2012	ND	166	83.0	200	0.729	
Surrogate: 1-Chlorooctane	72.8	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	112	% 63.6-15	4				<b>.</b> •		

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Celey D. Kune

Celey D. Keene, Lab Director/Quality Manager

Page 5 of 7



## **Notes and Definitions**

S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
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. Keine

Celey D. Keene, Lab Director/Quality Manager

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# CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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: ANALYSIS REQUEST BILL TO Project Manager: Hack Conder P.O. #: Address: Company: Cations/Anions City: Hobbs State: NM Zip: 88240 Atin: Phone #: Fax #: Address:  $\geq$ Project#: Project Owner: City: Texas TPH Chlorides PH 8015 Project Name: State: Zip: BTEX TDS Project Location: EME 5-29-0 Sca. 198-375 Phone #: Sampler Name: Kyle Norman Fax #: FOR LAB USE ONLY MATRIX PRESERV. SAMPLING omplete (G)RAB OR (C)OMP 1----GROUNDWATER # CONTAINERS VASTEWAŤER Sample I.D. Lab I.D. ACID/BASE SLUDGE OTHER : Õ OTHER H20156 SOIL TIME DATE  $\leq \beta \geq \beta$ 15 R 1 11 1 Ż 24  $G \rightarrow$ 2.11 9.4 S 1 3 21:5 (*E*, 2, 1.2 الإن تي آياس و ک . 1 37 45 56, 5, G' 220 120 ĺ۶.  $\overline{\mathbb{Q}}_{l}$ Gr! CB 4 0.130 10  $t_{i}$ 15 7 14:30 6 6.4 12 1. PLEASE NOTE: Liability and Damages. Candinal's hability and clent's exclusive remedy for any claim aising whether based in contract or tott, shall be limited to the amount paid by the client for the

anälyses. Al claims including litose for negligence and any other cause withits over shall be deemed waived unless made in writing and received by Cardinal writing 30 days after completion to the applicable service. In no event shall Cardinal be fable for incidental or consequential damages, including writing timitation, business interruptors, loss of tao, or loss of profix incurred by client, its subsidiaries antibibles of secretors arising out of or rehead to the performance of services hereunder by Cardinal, repartless of the here of the client of the applicable antibibles of secretors arising out of or rehead to the performance of services hereunder by Cardinal, repartless of the here of the days the classons or otherwise.

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Relinquished By:	Date: R	Received By:	Phone Result: 🖾 Yes 🖾 No 🛛 Add'l Phone #:
17 1	7-11-12	Avail to the sa	Fax Result: 🛛 Yes 🖾 No 🛛 Add'I Fax #:
1 Myl M	TE:40 (	Icai denson	REMARKS:
Relinquished By:	Date: R	ceived By:	email results: zconder@rice-ecs.com
	Time:		Knorman@rice-ecs.com; lpena@riceswd.com
Delivered By: (Circle One)	<u> </u>	Sample Condition CHECKED BY:	Kjones@riceswd.com; Bbaker@rice-ecs.com;
Sampler - UPS - Bus - Other:		Cool Intact Yes Yes No No	hconder@rice-ecs.com; Lweinheimer@rice-ecs.com

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



July 17, 2012

Hack Conder

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: EME F-29-2 JCT. 19S/37E

Enclosed are the results of analyses for samples received by the laboratory on 07/12/12 15:26.

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,

Celing D. Kune

Celey D. Keene Lab Director/Quality Manager

Page 1 of 5



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

Received:	. 07/12/2012	Sampling Date:	07/12/2012
Reported:	07/17/2012	Sampling Type:	Soil
Project Name:	EME F-29-2 JCT. 19S/37E	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

# Sample ID: SB 5 @ SURFACE (H201595-01)

Chloride, SM4500Cl-B mg/kg Analyzed By: AP Result Reporting Limit Analyzed Method Blank BS True Value QC RPD Qualifier Analyte % Recovery Chloride <16.0 16.0 07/16/2012 ND 416 104 400 3.92 TPH 8015M mg/kg Analyzed By: AM Analyte Result **Reporting Limit** Analyzed Method Blank BS True Value QC RPD Qualifier % Recovery GRO C6-C10 <10.0 10.0 07/16/2012 ND 174 87.0 200 0.184 DRO >C10-C28 16.9 10.0 07/16/2012 ND 185 92.6 200 5.08 Surrogate: 1-Chlorooctane 79.1% 65.2-140 Surrogate: 1-Chlorooctadecane 104 % 63.6-154

#### Sample ID: SB 5 @ 6' (H201595-02) \_ .....

Chloride, SM4500Cl-B	mg,	, /kg	Analyze	Analyzed By: AP					
Anatyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	80.0	16.0	07/16/2012	ND	416	104	400	3.92	
TPH 8015M	mg/kg		Analyzed By: AM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	8S	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	07/16/2012	ND	174	87.0	200	0.184	
DRO >C10-C28	<10.0	10.0	07/16/2012	ND	185	92.6	200	5.08	
Surrogate: 1-Chlorooctane	75.7	% 65.2-14	0						
Surrogate: I-Chlorooctadecane	95.6	% 63.6-15	4						

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#### \*=Accredited Analyte

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Celey D. Keine

Celey D. Keene, Lab Director/Quality Manager



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

Received:	07/12/2012	Sampling Date:	07/12/2012
Reported:	07/17/2012	Sampling Type:	Soil
Project Name:	EME F-29-2 JCT. 195/37E	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

# Sample ID: SB 6 @ SURFACE (H201595-03)

Chloride, SM4500Cl-B mg/kg Analyzed By: AP Analyte Result Reporting Limit Analyzed Method Blank 8S % Recovery True Value QC RPD Qualifier Chloride <16.0 16.0 07/16/2012 ND 416 104 400 3.92 **TPH 8015M** mg/kg Analyzed By: AM S-06 Analyte Result Reporting Limit Analyzed Method Blank BS % Recovery True Value QC RPD Qualifier GRO C6-C10 <50.0 50.0 07/16/2012 ND 174 87.0 200 0.184 DRO >C10-C28 701 50.0 07/16/2012 ND 200 5.08 185 92.6 Surrogate: 1-Chlorooctane 59.9 % 65.2-140 Surrogate: 1-Chlorooctadecane 175 % 63.6-154

ma/ka

# Sample ID: SB 6 @ 6' (H201595-04)

	mg/	кg	Analyze	a By: AP	<u></u>					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	48.0	16.0	07/16/2012	ND	416	104	400	3.92		
TPH 8015M	mg/kg		Analyzed By: AM						S-04	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<50.0	50.0	07/16/2012	ND	174	87.0	200	0.184		
DRO >C10-C28	446	50.0	07/16/2012	ND	185	92.6	200	5.08		
Surrogate: 1-Chlorooctane	64.0 %	65.2-14	0				×			
Surrogate: I-Chlorooctadecane	130 %	63.6-15	4							
Surrogate: 1-Chlorooctadecane	130 %	63.6-15	4							

Apply and By AD

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Celey D. Kune

Celey D. Keene, Lab Director/Quality Manager



# **Notes and Definitions**

S-06	The recovery of this surrogate is outside control limits due to sample dilution required from high analyte concentration and/or matrix interference's.
S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
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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Page 4 of 5

# CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

ARDINAL LABORATORIES

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

Company Name	Bice									B	ILL	TO	•					ANAI	YSIS	S RE	QUE	S.T			
Project Manage	r: Hack Conder							Ρ.	0. #:					1											
Address:					·•···			00	Company:			ľ			S										
City: Hobbs	City: Hobbs State: NM Zip: 88240					At	in:									ō									
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† Cardinal cannot accept verbal changes. Please fax written changes to 505-393-2476

#26



August 14, 2012

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

RE: EME F-29-2 JCT. 19S/37E

Enclosed are the results of analyses for samples received by the laboratory on 08/09/12 15:50.

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 <a href="https://www.tceq.texas.gov/field/qa/lab\_accred\_certif.html">www.tceq.texas.gov/field/qa/lab\_accred\_certif.html</a>.

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. Kune

Celey D. Keene Lab Director/Quality Manager

Page 1 of 5



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

Received:	08/09/2012	Sampling Date:	08/09/2012
Reported:	08/14/2012	Sampling Type:	Soil
Project Name:	EME F-29-2 JCT. 19S/37E	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		·

# Sample ID: SB 7 @ 3' (H201852-01)

Chloride, SM4500Cl-B mg/kg Analyzed By: HM Reporting Limit Analyte Result · Analyzed Method Blank BS % Recovery True Value QC RPD Qualifier Chloride 16.0 08/13/2012 400 400 3.92 336 ND 100 TPH 8015M mg/kg Analyzed By: MS Reporting Limit Analyte True Value QC RPD Qualifier Result Analyzed Method Blank BS % Recovery 0.729 GRO C6-C10 <10.0 10.0 08/13/2012 ND 188 94.1 200 DRO >C10-C28 0.877 11.6 10.0 08/13/2012 ND 190 95.1 200 Surrogate: 1-Chlorooctane 89.7 % 65.2-140 Surrogate: 1-Chlorooctadecane 91.4% 63.6-154

# Sample ID: SB 7 @ 9' (H201852-02)

Chloride, SM4500Cl-B	mg,	/kg	Analyze	d By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	304	16.0	08/13/2012	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	08/13/2012	ND	188	94.1	200	0.729	
DRO >C10-C28	<10.0	10.0	08/13/2012	ND	190	95.1	200	0.877	
Surrogate: 1-Chlorooctane	91.7	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	90.8	% 63.6-15	4						

#### **Cardinal Laboratories**

#### \*=Accredited Analyte

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Celey D. Keena

Celey D. Keene, Lab Director/Quality Manager

Page 2 of 5



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

Received:	08/09/2012	Sampling Date:	08/09/2012
Reported:	08/14/2012	Sampling Type:	Soil
Project Name:	EME F-29-2 JCT. 19S/37E	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN	· ·	

# Sample ID: SB 8 @ 6' (H201852-03)

Chloride, SM4500CI-B	mg,	/kg	Analyze	d By: HM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	304	16.0	08/13/2012	ND	400	100	400	3.92		
TPH 8015M	mg	/kg	Analyze	d By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<50.0	50.0	08/13/2012	ND	188	94.1	200	0.729		
DRO >C10-C28	398	50.0	08/13/2012	ND	190	95.1	200	0.877		
Surrogate: 1-Chlorooctane	76.6	% 65.2-14	0							
Surrogate: 1-Chlorooctadecane	128	% 63.6-15	4							

128 % Surrogate: 1-Chlorooctadecane

# Sample ID: SB 8 @ 9' (H201852-04)

Chloride, SM4500CI-B	mg	/kg	Analyze	d By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	304	16.0	08/13/2012	ND	400	100	400	3.92	
TPH 8015M	mg	/kg	Analyze	d By: MS					<u></u>
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<50.0	50.0	08/13/2012	ND	188	94.1	200	0.729	
DRO >C10-C28	215	50.0	08/13/2012	ND	190	95.1	200	0.877	
Surrogate: 1-Chlorooctane	78.0	% 65.2-14	0						
Surrogate: 1-Chlorooctadecane	116	% 63.6-15	4						
							•		

#### **Cardinal Laboratories**

#### \*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any daim 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 (20) days after completion of the applicable service. In no event shall Cardinal be liable for incidential or consequential damages, including, whout limitation, business interruptions, 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 clians based upon any of the above stated reasons or otherwise. Resulter claims of the amplicable cardinal busines.

Celez D. Keine

Celey D. Keene, Lab Director/Quality Manager

Page 3 of 5



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# **Notes and Definitions**

QM-4X	The spike recovery was outside of QC acceptance limits for the MS and/or MSD due to analyte concentration at 4 times or greater the spike concentration. The QC batch was accepted based on LCS and/or LCSD recoveries within the acceptance 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 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

#### **Cardinal Laboratories**

\*=Accredited Analyte

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Celey D. Kerne

Celey D. Keene, Lab Director/Quality Manager

# CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

ARDINAL LABORATORIES

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(505) 393-2326 FAX (505) 393-2476	(325) 673-7001 FAX (325)673-7020

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