1R -WORKPLANS

Date: -/5-//

Hansen, Edward J., EMNRD

From: Sent:	Katie Jones [kjones@riceswd.com] Monday, December 19, 2011 10:39 AM
То:	Leking, Geoffrey R, EMNRD
Cc:	Hansen, Edward J., EMNRD; VonGonten, Glenn, EMNRD; Hack Conder
Subject:	ROC - EME K-6 leak (1RP-2552) Update Report and Corrective Action Plan to Groundwater
Attachments:	EME K-6 leak (1RP-2552) Update Report and Corrective Action to Groundwater.pdf

Mr. Leking,

Attached is an Update Report and Corrective Action Plan (CAP) to Groundwater for the EME K-6 leak (1RP-2552) site. If you have any questions or require any additional information, please contact myself or Hack Conder at (575) 393-9174.

Thank you.

Katie Jones Environmental Project Manager RICE Operating Company

RICE Operating Company 122 West Taylor • Hobbs, New Mexico 88240

Phone: (575) 393-9174 • Fax: (575) 397-1471

CERTIFIED MAIL RETURN RECIEPT NO. 7008 1140 0001 3070 6082

December 15th, 2011

Mr. Geoffrey Leking

New Mexico Energy, Minerals, & Natural Resources Oil Conservation Division, Environmental Bureau 1625 N. French Drive Hobbs, New Mexico 88240

RE: Update Report and Corrective Action to Groundwater Rice Operating Company – EME SWD System EME K-6 leak (1RP-2552): UL/K sec. 6 T20S R37E

Mr. Leking:

RICE Operating Company (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.

The site is located approximately 2 miles southwest of Monument, New Mexico at UL/K sec. 6 T20S R37E as shown on the Site Location Map (Figure 1). Groundwater in the area is located at a depth of approximately 34 ft bgs. The K-6 leak is located within a regionally impacted groundwater area with chlorides coming onto the site averaging 10,700 mg/kg (Figure 2).

On June 7th, 2010, ROC discovered a leak from the EME K-6 junction box. The leaking valve connection was repaired and NMOCD and BLM were notified of the leak by ROC (Appendix A). The standing fluid was removed from the site by vacuum truck, and the wet soil was scraped and properly disposed of at an NMOCD approved facility. On July 1^{st} , 2010 and August $18^{th} - 20^{th}$, 2010, fourteen soil bores were installed at the site (Figure 3 and 4). The soil bores were installed by GeoProbe and ROC personnel field tested the soil at regular intervals. Representative samples from each bore were taken to a commercial laboratory for analysis to confirm field data numbers (Appendix B). Chloride concentrations were elevated in each bore drilled within the leak area but decreased with depth to concentrations similar to background. Chloride concentrations in SB-9 decreased from 5,360 mg/kg at 10 ft bgs to 128 mg/kg at 28 ft bgs, and chloride

concentrations in SB-11 which decreased from 4,400 mg/kg at 10 ft bgs to 272 mg/kg at 16 ft bgs. The soil bores installed during August 2010 were analyzed for Gasoline Range Organics (GRO) and Diesel Range Organics (DRO). GRO and DRO readings were non-detect in each bore drilled within the leak area, except SB-8 which yielded a DRO reading of 821 mg/kg at 30 ft bgs.

Three soil bores (SB-5, SB-12 and SB-14) were completed outside the leak area to determine background concentrations of chlorides and hydrocarbons. In SB-5 and SB-14, chloride values increased with depth with low chloride numbers in the top eight feet of the bore, while DRO and GRO readings were below detectable limits. SB-12 had laboratory chloride readings of non-detect throughout and elevated concentrations of TPH and BTEX. Complete laboratory analyses of the background soil bores can be found in Figures 3 and 4 and Appendix B.

ROC received verbal approval from the NMOCD - District 1 office and notified BLM of the path forward via email on November 29th, 2011. BLM approved the proposed path forward on November 30th, 2010 (Appendix C). The path forward included the installation of a 20-mil reinforced liner and contouring the site to the surrounding area through folding over of the surrounding dunes. Starting on December 6th, 2010, the site was excavated to approximately 4.5 ft bgs to install a 20-mil reinforced liner throughout the leak area (Figure 5). The excavated soil (576 yards) was disposed of at an NMOCD approved facility. Approximately 216 yards of clean sand was imported to the site to lay a 6 inch pad both above and below the liner to prevent the liner from puncturing. Once the liner was padded, the surrounding sand dunes were scraped of their top four inches and stockpiled to use as a nutritive layer after the site was backfilled. The remainder of the sand dunes was then pushed into the excavation as backfill. An additional 156 yards of clean, imported sand was used to complete the backfill. 36 yards of clean, imported sand was mixed with soil amendments and then blended with the stockpiled nutritive layer from the sand dunes. This was spread over the site to contour it to the surrounding area, and the site was seeded with a native vegetative mix (Appendix D). Silt net fencing was positioned around the site to maintain seed placement. Photo documentation of these activities will be found in Appendix E.

Groundwater Remedy

ROC proposes to remove chloride impacted groundwater from the existing recovery system located at EME K-6. Removed groundwater will be utilized for pipeline and well maintenance. Our estimate conservatively reflects the net impact to groundwater at the site resulting from the leak. It does not take into account other sources or regional groundwater conditions that may exist up gradient from the site.

The estimated impact area is 6,560 square feet. ROC installed a 20-mil plastic liner throughout the leak area which will stop the further migration of residual chlorides to groundwater. Therefore, only the bottom 10 feet of the vadose zone will have the potential to affect the groundwater beneath the site. The volume of impacted vadose zone is determined by multiplying the two values together to achieve a volume of 65,600

cubic feet. To determine the mass of the impacted soil, this number is then multiplied by the mass density of soil to attain the mass of 2,978,240 kg. The chloride concentration added to the soil is determined by averaging the chloride concentrations of the bottom 10 feet of the soil bores located within the leak area. This returns a result of 808 mg/kg. To determine the chloride mass of leak, the mass of the impacted vadose zone is multiplied by the chloride concentration added to the soil. This gives a total chloride mass of 2,406 kg.

Parameter	Unit	Value	Description
Impact area	ft²	6,560	Estimated Area of Impact
Affected Vadose Zone Thickness	ft	10	Bottom 10 ft of Vadose Zone
Volume of İmpacted Vadose Zone	ft ³	65,600	Impact Area x Vadose Zone Thickness
Mass of Impacted Vadose Zone	kg	2,978,240	Volume of Impacted Vadose Zone x Mass Density (1 ft ³ of soil weighs approximately 45.4 kg or 100 lb/ft ³)
Chloride Concentration Added to Soil From Leak	mg/kg	808	Average Soil Chloride Concentrations in the Bottom 10 ft of Soil Bores Located Within the Leak Area
TOTAL CHLORIDE MASS	kg	2,406	Mass of Impacted Vadose Zone x Chloride Concentration Added to the Soil from Source

Estimate of Chloride Mass in the Vadose Zone

The chloride mass will be removed from the existing groundwater extraction system located at the nearby EME K-6. The groundwater concentration of RW-1 at the site is 10,900 mg/L. Assuming a pumping rate of one gallon a minute for ten hours a day, we can expect an extraction rate of approximately 25 kg/day. Since the total chloride mass is 2,406 mg/kg, it would take approximately 97 days to remove the chloride impact resulting from the leak. The volume of water that needs to be removed is determined by multiplying the pumping rate by the estimated removal time. This gives us a total of approximately 1,389 barrels that need to be removed from the site.

Estimated Groundwater Recovery System Removal at the EME K-6

Parameter	Unit	Value	Description						
Groundwater									
Concentration	ˈ mg/L	10,900	Groundwater Concentration from RW-1						
Groundwater									
Concentration	kg/gal	0.04126131	Conversion from mg/L to kg/gal						
Pumping Rate	gals/min	1	Given						
			Pumping rate x Groundwater						
Extraction Rate	kg/min	0.04126131	Concentration (kg/gal)						
Extraction Rate	kg/day	24.7567854	Conversion from kg/min to kg/day						

Representative Total			
Chloride Mass	kg	2,406	From above
			Pumping rate x Estimated Removal Time x
Volume Removal	gals	58,321	60 min/hour x 10 hr/day
Volume Removal	bbis	1,389	Conversion from gals to bbls
ESTIMATED			Representative Total Chloride
REMOVAL TIME	day	97	Mass/Extraction Rate

The corrective actions on the vadose zone are complete. Once the corrective actions on the groundwater are complete, a final report will be submitted to NMOCD with a termination request of the regulatory file.

ROC appreciates the opportunity to work with you on this project. Please call me if you have any questions or wish to discuss the site.

Sincerely,

Hack Conder Environmental Manager Rice Operating Company (575) 631-6432

Copy: Glenn von Gonten (NMOCD – Santa Fe) Edward Hansen (NMOCD – Santa Fe)

Attachments:

Figure 1 – Site Location Map

Figure 2 – EME Groundwater Contamination Map

Figure 3 – Soil Bore Installation Map (Page 1)

Figure 4 – Soil Bore Installation Map (Page 2)

Figure 5 – NMOCD Approved Liner Installation Map

Appendix A – Initial C-141

Appendix B – Soil Bore Installation Logs and Lab Confirmation

Appendix C – Path Forward Submission and Approval by BLM

Appendix D – Re-vegetation Form

Appendix E – Photo Documentation

Figures

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

Site Location Map





Soil Bore Installation



Soil Bore Installation



Drafted by: L. Weinheimer

NMOCD Approved Liner



Appendix A Initial C-141

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

State of New Mexico **Energy Minerals and Natural Resources**

Oil Conservation Division 1220 South St. Francis Dr. Santa Fe, NM 87505

JUNU 0 5 ZU District Office in accordance with Rule 116 on back

RECEIVED Revised October 10, 2003

HOBBSUUD

side of form

Form C-141

Release Notification and Corrective Action

		OPERATOR	🛛 Initial Report	Final Report
Name of Company RICE Operati	ng Company	Contact Hack Conder		
Address 122 W. Taylor St., Hobb	s, NM 88240	Telephone No. (575) 393-9174		
Facility Name K-6		Facility Type Salt Water Gatl	hering System	
Surface Owner: BLM	Mineral Owner		Lease No.	

Surface Owner: BLM

Section

6

Township

20S

Range

37Ĕ

Unit Letter

K

Lease No API Number 30-025-12800_

LOCATION OF RELEASE Feet from the North/South Line

Feet from the East/West Line County

WTR 30'

LEA

NATURE OF RELEASE

Latitude: 32°35'939" Longitude: 103°17'585" (NAD 83)

Type of Release: PRODUCED WATER	Volume of Release: 700	Volume Recovered: 600
Source of Release: Junction Box	Date and Hour of Occurrence	Date and Hour of Discovery
· · · · · · · · · · · · · · · · · · ·	6/7/2010	6/7/2010 8:55 AM
Was Immediate Notice Given?	If YES, To Whom?	
Yes 🗌 No 🗌 Not Required	Message left with Larry Johnson	, NMOCD
By Whom? Hack Conder	Date and Hour 6/7/2010	
Was a Watercourse Reached?	If YES, Volume Impacting the Wate	ercourse.
Yes 🖾 No		
If a Watercourse was Impacted, Describe Fully.*		
		· · ·
Describe Cause of Problem and Remedial Action Taken.*		· · · · · · · · · · · · · · · · · · ·
A valve connection failure in the K-6 junction caused the box to fill a	nd overflow. Vacuum trucks were d	ispatched immediately to remove and
properly dispose of the released water. The connection was permane	ntly repaired.	
Describe Area Affected and Cleanup Action Taken *		· • • • • • • • • • • • • • • • • • • •
8,100 sq ft of pasture was affected. Wet soil is being scrapped and ha	uled to an NMOCD approved facilit	v
		J
Therefore and Grate states in Grand street in the state of the street street is the street stre		
I nereby certify that the information given above is true and complete to the regulations all operators are required to report and/or file contain release a	he best of my knowledge and understan	nd that pursuant to NMOCD rules and
public health or the environment. The acceptance of a C-141 report by the	NMOCD marked as "Final Report" d	lons for releases which may endanger
should their operations have failed to adequately investigate and remediat	te contamination that nose a threat to m	round water surface water human health
or the environment. In addition, NMOCD acceptance of a C-141 report of	loes not relieve the operator of respons	ibility for compliance with any other
federal, state, or local laws and/or regulations.		, , , , , , , , , , , , , , , , , , ,
	OIL CONSERV	ATION DIVISION
	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Johnson
Signature: Children Contraction		(churdes be
Printed Name: Hack Conder	Approved by District EMERIEONMI	ENTAL ENGINEER
	6.8.10	·····
Title: Environmental Manager	Approval Date:	Expiration Date: 8.9. (D
E mail Address, handar Origon, to		
E-mail Address: nconder@riceswa.com	Conditions of Approval:	Attached
Date: 6/7/2010 Phone: (575) 393-9174	SUBMITFINAL CILLI W/DO	5 By IRP. 10.6.2552

* Attach Additional Sheets If Necessary

NCWJ 1346 1559 PLus

## Appendix B Soil Bore Installation Logs and Lab Confirmation

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

Log Dril Consu	ger: ler: ultant:	Jordan Harrison N	Wood & Coo	lfin oper			ALLE OPER		Ans al
Drilling Start	Method Date:	Geo-l 7/1/2	Probe 2010	• 			611	NCE 1955	
End i	Date: ents:	7/1/2 Locate	2010 ed 7	5 ft SS	W of the current junction box site.	Pro	ject Name: EME K-6 lea	V	Vell ID: SB-1
	TD :	c = 22 ft	Drafte	ed by: L	ara Weinheimer DGW = 35 ft	Loc Lat Lor	cation: UL :N32°35.926' ng:W103°17.5	/K sec. 6 07' 5	T20S R37E County: Lea State: NM
Depth (feet)	chlorid field tes	le sts LA	νв	PID	Description		Lithology	Well C	onstruction
					_				h
					·4 - 8 ft				
6 ft	581	CI- !	528	0.7	SAND				
					brown, wet, no odor				
					· · · · ·				
8 ft	555			0					
					8 - 14 ft				
10 ft	572			0	CALICHE				
	0/2			0	white, no odor				
10.64	465								
1211	405								
	·			<u>-</u>	· · ·				
14 ft	1590			0	14.40.5				seal
			1-		CALICHE				
16 ft	3541	312	20	0.1	mixed brown, no odor				
<u>1</u> 8 ft	. 778			0.1	· 16 - 22 ft				
					CALICHE				
					tan, no odor				
20 ft	2303			0.1					
	2000		-+	0.1					
		CI	-						
22 ft	1198	160	00	0					
									<u> </u>

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Log Dril Consu Drilling	ger: H ler: H ultant: Method	Jordan Woo arrison & Co N/A Geo-Prob	dfin Doper e		ACE COPERATING COMPANY
Start	Date:	7/1/2010		BURGERST THE R	Droiget Name: Woll ID:
	ents:	Located	15 ft N	W of the current junction box site.	EME K-6 leak SB-2
	TD = 2	Draft 24 ft	ed by: L	ara Weinheimer DGW = 35 ft	Location:   UL/K sec. 6 T20S R37E     Lat:   N32°35.942'   County: Lea     Long:   W103°17.594'   State:   NM
Depth (feet)	chloride field tests	LAB	PID	Description	Lithology Well Construction
				4 - 6 ft	
				SAND	
6 ft	6349	CI- 6960	0	brown, no odor	
				6 - 8 ft	
				SAND	
8 ft	3370		0	light brown, no odor	
				8 - 10 ft	
				CLAY	
<u>10 ft</u>	1997		0	gray, wet, no odor	
<u> </u>				10 - 12 ft	
				CALICHE AND CLAY	
12 ft	2547	3280	0	interbedded, tan, no odor	
14 ft	1402		0	12 - 18 ft	
				CALICHE	bentonite
<u> </u>	·			tan, no odor	seal
16 ft	1099		0		
<b>-</b>		_			
<u>18 ft</u>	1059		0		
				10 00 #	
				10 - 22 IL SAND	
<u>20 ft</u>	930		0	brown no odor	
22 ft	606				
				22 - 24 ft	
	450			SAND	
<u>24 ft</u>	456	CI- 368	U U	light brown, no odor	

Log	ger:	Jordan Woo	dfin		~	PERATING CA.
Dril	ler:	Harrison & Co	ooper		L CE	- AND RI
Consu	ultant:	N/A			Q Q	
Drilling	Method	Geo-Prob	e			
Start	Date:	7/1/2010				
End	Date:	7/1/2010			Project Name:	Well ID:
Comme	<u>ents:</u>	Located 7	'5 ft W8	SW of the current junction box site.	EME K-6 I	eak SB-3
	TD =	Drafi 20 ft	ed by: L	ara Weinheimer DGW = 35 ft	Location: U Lat: N32°35.943 Long: W103°17	IL/K sec. 6 120S R37E <b>County:</b> Lea .608' <b>State:</b> NM
Depth (feet)	chloride field test	LAB	PID	Description	Lithology	Well Construction
6 ft	2 5 1 8	CI- 3760	04	4 - 10 ft		
<u> </u>	2,010	0.00	0.1	SAND		
				GAND		
				brown, no odor		
8 ft	1 158		0			
0 11	1,100					
10.0	4 000	CI-				
10 ft	1,096	/04				
= 121						
10 #	004		0	10 - 16 ft		
1211	094					
				GALICHE		bentonite
				tan, no odor		seal
1 4 44	740					
14 IL	/43		<u> </u>	4		
				1		
16 ft	785		0			
				16 - 20 ft	and the second	
18 ft	710		0			
				red, no odor	and the second s	
		CL			8	
20 ft	592	576	0		State State State	
	1					
		_				
		1			Star and Star	

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Log	ger:	Lara Weinhe	eimer		E ENVIRONMENT
Driller: Harrison & Cooper			ooper		
Consultant: RECS				REGS	
Drilling	Method Date:	Geo-prot	<u>0</u>		ONSULTING & BAFETVILLC
End I	Date:	8/18/201	0	Constant of the second	Project Name: Well ID:
Comm	ents:	Sampling	began	at top of scraped area at 4 ft bgs.	EME K-6 leak SB-4
		Located	42 ft N	W of the current junction box site.	Location: UL/K sec. 6 T20S R37E
	<b>. 6 b a</b> 1 <b>a</b>	Draf	ted by: L	ara Weinheimer	Lat: 32°35'57.178"N County: Lea
ID = 2a		scraped ar		Estimated depth to GW = 35 ft	Long: 103-17-36.618"W State: NM
Depth (feet)	field test	e ts	PID	Description	Lithology Well Construction
		•		Dark aranges brown serve fine cand	
				Moist. No odor.	
surface	451		0		
				Orangey dark brown fine sand	
				Moist. No odor.	
2 ft	290		0.4		
				Dark brown very fine sand Moist	
				No odor.	
4 ft	1562	_	0.5		
				Orangey brown very fine sand	
				Moist. No odor.	
<u>6 ft</u>	3064		0		
			<u> </u>	Light orangev brown very fine sand.	
	 			Slightly moist. No odor.	
8 ft_	3720		0		
			<b> </b>		
10 ft	6689	8700	0		
		GRO <10			bentonite
		DRO <10		sandstone. Dry. No odor.	seal
12 ft	2241		0		
14 ft	1023		0		
				Orangey brown very fine sand	
				Slightly moist. No odor.	
16 ft	869		0		

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Depth (feet)	chloride field tests	LAB	PID	Description	 Lithology	Well Construction
•						
				Light brown very fine sand. Slightly moist. No odor.		
18 ft	615		0			
				Slightly moist. No odor.		
20 ft	424		0			
22 ft	953	Cl- 784	0			
	•	GRO <10				
		DRO <10				

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Logg Drill Consu Drilling I Start [	ger: er: Itant: Method Date:	Laı Harı	a Weinhe rison & Co RECS Geo-prob 8/18/2010	imer coper e			CONSULTING & SAFETY, LLL		
End D	ate:	10	8/18/2010	0 .9 ft W/1	NW of the current junction box site	Pr	oject Name: EME K-61	Well ID:	
	<u>TD = 2</u>	6 ft	Draft	ed by: L	ara Weinheimer Estimated depth to GW = 35 ft	Lo La Lo	cation: L t: 32°35'56.81 ng: 103°17'3	JL/K sec. 6 T20S R37E 7"N County: Lea 7.084"W State: NM	
Depth (feet)	chlori field te	ide ests	LÂB	PID	Description		Lithology	Well Construction	
surface	77			0.2	Dark brown very fine sand. Dry. No				
2 ft	73			0.2	odor.				
4 ft	78			0.3					
					Orangey brown very fine sand. Clayey. Dry. No odor.				
6 ft	97			0.4					
8 ft	245	5		0.5					
					Orangey brown very fine sand. Clayey with sandstone. Slightly moist. No odor.				
10 ft	615	5		0.6	Light brown very fine sand with some sandstone. Slightly moist. No				
12 ft	879	)	CI- 784 GRO <10 DRO	0.7	odor.			bentonite	
14 ft	- 610	)	< 10	0.6				seal	
	-				Orangey brown very fine sand. Slightly moist. No odor.				
16 ft	815	5		0.4					

					. •
chloride field tests	LAB	PID	Description	Lithology	Well Construction
	,		Light orangey brown very fine sand		
			with sandstone. Slightly moist. No		
439		0.2	odor.		
			· · · · · · · · · · · · · · · · · · ·		
			Orangey brown very fine sand.		
403		0.3	Silgnily moist. No odor.		
+03		0.5			
				(	
613		0.3			
			Light brown very fine sand with		
			sandstone. Dry. No odor.	al in the second second	
962	<u> </u>	0.5			
			Orangey brown very fine sand with		
	CL		sandstone. Slightly moist. No odor.		
1230	1520	0.3			
	GRO <10				
	DRO				
	chloride field tests 439 403 613 962 1230	chloride field tests   LAB     /   /     439   /     439   /     403   /     403   /     613   /     962   /     962   /     1230   CI-     1520   GRO     <10	chloride field tests   LAB   PID     I   I   I     439   I   I     439   0.2   I     439   I   I     439   I   I     403   I   I     403   I   I     613   I   I     613   I   I     962   0.5   I     962   I   I     1230   I   I     GRO <10	Chloride field testsLABPIDDescriptionIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	chloride field tests LAB PID Description Lithology   Image: Second structure <t< td=""></t<>

Logg	ger: ler:	La Har	ra Weinhe rison & Co	imer ooper			RICE	NVIRONM	ENTAL		
Consu	Consultant: RECS Drilling Method Geo-probe						EE	5			
Drilling			e			CONSULS TV. LLC					
Start	Date:		8/18/2010	0		<b></b>		ING & SAF			
End	Date:		8/18/2010	o		Pro	oject Name:		Well ID:		
Comme	ents:	Sa	ampling	began	at top of scraped area at 4 ft bgs.		EME K-6 I	eak	SB-6		
		L	Drafed	34 TT We	est of the current junction box site.	LO	cation: U	L/K SEC.	6 120S R3/E		
TD = 24	1 ft belo [,]	w scra	aped ar	ea by. L	Estimated depth to $GW = 35$ ft	Lo	na: 103°17'36	5574"N	State: NM		
Denth	chlor	ido				1		1			
(feet)	field t	chloride LAB		ests LAB		PID	Description	1	Lithology	Wel	I Construction
(1001)					· · · · · · · · · · · · · · · · · · ·	+					
					Dark brown very fine sand with						
					caliche Slightly moist No odor						
	150	6		0							
SULIACE	108	<u></u>		<u> </u>		-					
						1					
2 ft	58	1	-	0							
					Orangey brown very fine sand.						
					Clayey. Slightly moist. No odor.						
4 ft	286	6		0							
				l							
				<u> </u>							
	·		<u> </u>	┣━━━							
6 ft	289	8	1980	0			n de la constante La constante de la constante La constante de la constante d				
			GRO			1					
			<10								
			<10				a second				
							1.000 C				
8 11	326			0			an and the second				
					Light brown very fine sand with						
					sandstone. Dry. No odor.						
10 ft	65	5		0							
									bentonite		
12 ft	171	9		0					seal		
						1					
					Orangey brown very fine sand with						
	L				sandstone. Dry. No odor.						
14 ft	68.	7		0							
1411		, 		<u> </u>		-					
			1	L							
			_		Light orangey brown very fine sand						
				<u> </u>	with chert. Dry. No odor.						
16 ft	418	8		0							

Depth (feet)	chloride field tests	LAB	PID	Description	Lithology	Well Construction
				No sample		
10.4						
18 11	ł ·					
				Light brown very fine sand. Slightly	C.	
				moist. No odor.		
20 ft	1579		0			
					ing official and the second	
				Light brown very fine sand with		
00.4	1000			Sandstone. Dry. No odor.		
22 11	1683		0			
	· · ·					
24 ft	1320	1710	0			
		GRO			a chann lui se airte Albert in status Albert in status	
	<u> </u>	DRO			and the state of the second seco	
		<10				

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Log Drii Consu Driiling Start	ger: ler: Iltant: Method Date:	Jordan Woo Harrison & Co RECS Geo-prob 8/19/2010	dfin ooper e		Solve of	EBS
End I	Date:	8/19/2010	)		Project Name:	Well ID:
Comm	ents:	Sampling	began	at top of scraped area at 4 ft bgs.	EME K-6 le	ak SB-7
	I	Localed T	/ IL We: ed by: L	ara Weinheimer	Location: 01	_/K sec. 6 1205 R37E B"N County: Lea
TD = 18	3 ft below s	craped are	ea - j	Estimated depth to GW = 35 ft	Long: 103°17'35.	915"W State: NM
Depth (feet)	chloride field test	LAB	PID	Description	Lithology	Well Construction
		CI-				
2 ft	4792	4960	0.1			
ł		GHO <10				
		DRO		Brownish green fine sand. Moist		
		<10		<b>.</b>		
4 ft	4185		0			
		_				
<u>6 ft</u>	3738		0			
8 ft	2473		0			
		·		Ded fine courd and top collabor		
				Red line sand and tan caliche		
10 ft	1311		0			bentonite
						seal
10 ()	4500					
12 ft	1560		0			
1/ 44	802		0			
1411	002		U			
<u> </u>	<u>├</u>			Light red fine sand		
16 #	602		0.1			
	002		0.1			
<u> </u>				Prownich red fire cond	and the second	
<u> </u>				Brownish red fine sand		
18 ft	583	CI- 528	0.2			
		GRO <10				
		DRO				
		<10			1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	

Logg	ger:	Jo	rdan Woo	dfin		BICEE	NVIBONMENTAL
Consu	Itant:	nafi	RECS	-shei			
Drilling	Method		Geo-prob	e		CONIE	life
Start I	Date:		8/19/2010	)		ULTI	NG & SAFET
End [	)ate:		8/19/2010	)	The second se	Project Name:	Well ID:
Comme	ents:	Sa	ampling	began	at top of scraped area at 4 ft bgs.	EME K-6 le	ak SB-8
		Loc	ated 13	3 ft nort	h from the current junction box site.	Location: UL	/K sec. 6 T20S R37
			Draft	ed by: L	ara Weinheimer	Lat: 32°35'56.829	"N County: L
TD = 26	6 ft belo	w scra	aped ar	ea	Estimated depth to GW = 35 ft	Long: 103°17'35.	399"W State: NN
Depth (feet)	chlo field t	ride tests	LAB	PID	Description	Lithology	Well Construct
2 ft	22(	03		0.5			
					Brownish green fine sand Moist		
4 ft	36	53		0			
6 ft	44	42	CI- 6080	. 0			
			GRO				
			<10				
			<10				
		~ ~					
8 ft	32	80		0			
					Tan caliche		
10 ft	17	94		0			
					1		
	ļ			· · · · · · · · · · · · · · · · · · ·	4		
12 ft	25	19		0			
	1			· - ·			
		_			4		
					J		benton
1/ 4+	4 4	10		0	]	the descent of the	
1411		10			1		
					1		
					Red fine sand and tan caliche		
					4		
16 ft	11	17		0			
					4		
					1		
10 4	7			_ م			
1011		. 1	L		L		

Depth (feet)	chloride field tests	LAB	PID	Description	Lithology	Well Construction
				Red fine sand and tan caliche	an a	
20 ft	818		0			
				·	900 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 10000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 1000 - 10	
22 ft	900		0			
		L.				
24 ft	606		0			
				Brown fine sand		
26 ft	741	Cl- 416	28.7			
		GRO <50				
		DRO 821				

Lon	ger:	Jordan Woo	dfin		-E EN	WIRONMENT-
Dril	ler:	Harrison & Co	oper		BIS	
Consu	iltant:	RECS				ECS
Drilling	Method	Geo-prob	e		CONSUL	Y. LLE
Start	Date:	8/19/2010	8/19/2010		TIN	G & SAFE
End	Date:	8/19/2010	)		Project Name:	Well ID:
Commo	ents:	Sampling	began	at top of scraped area at 4 ft bgs.	EME K-6 lea	ak SB-9
		Located /		are Weinheimer	Location: UL	N Sec. 6 1205 R3/E
TD = 24	4 ft below s	scraped ar	ea by. L ea	Estimated depth to $GW = 35$ ft	Lona: 103°17'35.	566"W State: NM
Denth	chloride	a				
(feet)	field test	ts LAB	PID	Description	Lithology	Well Construction
<u></u>	,					
2 ft	1.072		1			
	.,,,,,,		<u> </u>			
				Brownish green fine sand moist		
∆ f+	1 767		07			
-+ 11	4,707		0.7	1		
				4		
		CI-		1		
6 ft	5,327	5360 GRO	0.3			
		<10		ļ		
		DRO		Tan caliche		
		<10		4		
8 ft	3,861		0.2	4		
				1		
	1			1		
				4		
10 ft	4,153		0.2			
				]	1.2	
40 **	0.401			1		
12 ft	3,194		0.1	4	Solar Barrier	
	ļ			ļ		bentonite
				Red fine sand and tan caliche		seal
114	0.007	1		1		
14 11	2,287			4		
				4		
					a and a second	
40.0	1 70 1	_1		1		
76 ft	1,784			4	an a	
				1		
				1		
<u>18 ft</u>	1,115		0			

Depth (feet)	chloride field tests	LAB	PID	Description	Lithology	Well Construction
					20 8	
20 ft	821		0			
<u> </u>						
22 ft	478		0			
				Tan fine sand		
24 ft	273	CI- 128	0	· · ·		
		GRO <10				
		DRO <10				

sint Date:   a with a low of scaped area at 4 ft bgs. Located 16 ft south west from the current junction box site. Drated by: Lar Weinheimer TD = 20 ft below scraped area   Project Name:   Well ID: SB-10 Location:     Date:   Date:   SB-10 Located 16 ft south west from the current junction box site. Drated by: Lar Weinheimer D = 20 ft below scraped area   Estimated depth to GW = 35 ft Estimated depth to GW = 35 ft   Litchology   Vell Construction Lat: 32'35'56.015'N County: Lat: 32'35'S6.015'N County: Lat: 32'35'S6.015'N County: Lat: 32'35'S6.015'N County: Lat: 32'35'N County:	Logg Drill Consu Drilling	ger: Ju ler: Ha Itant: Method	ordan Woo rrison & Co RECS Geo-prob	dfin boper e		RECS			
Depth (feet)   chloride field tests   LAB   PID   Description   Lithology   Well Construction     -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   -   - <t< th=""><th colspan="2">End Date: Comments: Locate TD = 20 ft below s</th><th>8/19/2010 8/19/2010 ampling 16 ft sou Draft aped ar</th><th>began th west ed by: L ea</th><th>at top of scraped area at 4 ft bgs. t from the current junction box site. ara Weinheimer Estimated depth to GW = 35 ft</th><th colspan="4">Project Name:   Well ID:     EME K-6 leak   SB-10     Location:   UL/K sec. 6 T20S R37     Lat:   32°35'56.015"N   County: Long:     Long:   103°17'35 657"W   State:</th></t<>	End Date: Comments: Locate TD = 20 ft below s		8/19/2010 8/19/2010 ampling 16 ft sou Draft aped ar	began th west ed by: L ea	at top of scraped area at 4 ft bgs. t from the current junction box site. ara Weinheimer Estimated depth to GW = 35 ft	Project Name:   Well ID:     EME K-6 leak   SB-10     Location:   UL/K sec. 6 T20S R37     Lat:   32°35'56.015"N   County: Long:     Long:   103°17'35 657"W   State:			
Image: constraint of the stant in	Depth (feet)	chloride field tests	LAB	PID	Description	Lithology	Well Constructio		
411 2219 0.4   - - -   - - -   6 ft 1962 0.3   - - -   6 ft 1962 0.3   - - -   10 ft 949 0   - - -   10 ft 949 0   - - -   110 ft 949 0   - - -   12 ft 1106 0   - - -   12 ft 1106 0   - - -   13 ft 745 0   - - -   16 ft 735 0   - - -   18 ft 693 0   - - -   20 ft 454 0	2 ft	3109	CI- 3720 GRO <10 DRO <10	0.9	Brownish green fine sand. Moist.				
8 ft 1013 0.2   8 ft 1013 0.2   - - -   10 ft 949 0   - - -   10 ft 949 0   - - -   110 ft 949 0   - - -   12 ft 1106 0   - - -   12 ft 1106 0   - - -   12 ft 1106 0   - - -   13 ft 745 0   - - -   16 ft 735 0   - - -   18 ft 693 0   - - -   20 ft 454 464   0 - -   3800 - -	6 ft	1962		0.4	Tan caliche				
12 ft 1106 0   12 ft 1106 0   12 ft 1106 0   14 ft 745 0   16 ft 735 0   18 ft 693 0   20 ft 454 464   GR0 GR0 GR0	8 ft	949	· · · · · · · · · · · · · · · · · · ·	0.2	Red fine sand				
14 ft 745 0   14 ft 745 0   16 ft 735 0   16 ft 735 0   18 ft 693 0   18 ft 693 0   0 0 0   18 ft 693 0   0 0 0   0 0 0   0 0 0   0 0 0   0 0 0   0 0 0   0 0 0   0 0 0   0 0 0   0 0 0   0 0 0   0 0 0   0 0 0   0 0 0   0 0 0   0 0 0   0 0 0	12 ft	1106		0	Dod fine cond and tap colliphe		bentonit seal		
16 ft 735 0   16 ft 735 0   18 ft 693 0   18 ft 693 0   20 ft 454 464   GRO GRO 1	14 ft	745		0					
18 ft 693 0   18 ft 693 0   20 ft 454 464 0   GRO GRO 6 6	16 ft	735		0					
20 ft 454 464 0 GRO	18 ft	693		0	· · ·				
	20 ft	454	Cl- 464 GRO	0					

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Log	ger:	Jordan Wo	odfin		Γ	BISEE	NVIRONME	NTAL .
Const	iltent:	Harrison & C	Jooper					
Drilling	Method	George						
Start	Date:	8/19/20	10			NBULTI	NO & SAFET	and the
End	Date:	8/10/20	10	and the second s	Dre	niect Name		Well ID:
Comm	ents:	Samplin	n began	at top of scraped area at 4 ft bos		FMF K-6 le	ak	SB-11
		Located 4	1 ft SSV	N from the current junction box site.	Lo	cation: UL	_/K sec. 6	T20S R37E
		Dra	fted by: L	ara Weinheimer	La	t: 32°35'55.188	3"N	County: Lea
TD = 12	2 ft below	scraped a	rea	Estimated depth to GW = 35 ft	Lo	<b>ng:</b> 103°17'35.	905"W	State: NM
Depth (feet)	chlorid field tes	e ts LAB	PID	Description	Γ	Lithology	Well	Construction
<u>,                                    </u>					<u> </u>			<u> </u>
	<u>}</u>		+		1			
		·		Brown fine sand. Moist.				
2 ft	2127		16					
			+					
			-l	· · · · · · · · · · · · · · · · · · ·				
	0000				1			
<u>4 ft</u>	3203		0.7	······	-			
				Tan caliche				
6 ft	4649	4400	0.3					
		GRO	1		1	3-2-2-2-2-2		11
		<10						bentonite
		DRO		Red fine sand and tan caliche				1
		<10				an a		seal
8 ft	1402		0.1					
					1	an Sigat a const		
					1	ersen de contratere Statistica de la contratere		
					1	San		
10 ft	252	T						
10 11	303		+ 0.1		-			
					1			
				Grav rust fine sand. Clavev				
		CL						
12 ft	265	272	0		1			
		GRO	1	1				
		<10	1					
		DRO						
	1		1	I	1 I	Participation (1997)		17

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Log	ger:	Jordan Woo	odfin		RICEEM	VIRONMENT
Drill	ler: H	larrison & Co	ooper		and the	
Consu	iltant:	RECS				
Drilling	Method	Geo-prob	e -		ONSULTIN	D. TAFETT, LUC
Start	Date:	8/19/2010	°			
End C	Date:	8/19/2010			Project Name:	Well ID:
Comme	ents: L	located 3	/ ft SSE	from the current junction box site.	EME K-6 lea	K 5B-12
	TD = 1	Draft 24 ft	ted by: La	ara Weinheimer Estimated deoth to GW = 35 ft	Lat: 32°35'55.223"	N County: Lea 61"W State: NM
Depth	chloride			Description		Well Construction
(feet)	field test	S LAD	PID	Description	Littiology	
				Asshalting		
		_		Asphaline		
2 ft	209		1		1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	
					1000 C	
	1					
			<u> </u>			
4 ft	153		0.7			
					and the second second	
				Dark grey fine sand		
~ ~ ~				0, 1		
6 ft	149	_	280	·		
				Dark brown fine sand. Moist		
		CI-				
8 ft	153	<16	987			
B 0 07	76 T 0.968	213				
0.0.0	0 1 0.000	DRO				
E 0.5	87 X 5.05	1520				
10 ft	139		1740			
				·····		
				Dark tan fine sand		
104	1 4 7		1005			
14 11	14/		1903			
						bentonite
		Cl-				
14 ft	143	<16	5000			
<b>D</b> 0 0		GRO				
В 0.3	iuu I 4.01	181		<b>.</b>		
E 0.8	29 X 7.26	1350		Gray fine sand and tan caliche		
		-				
16 ft	121		5000			
			<u> </u> ]			
18 ft	118		5000			

Depth (feet)	chloride field tests	LAB	PID	Description	Lithology	Well Construction
20 ft	115		3384			
2011			0004			
				Brown fine sand and tan caliche		
22 ft	151		3940			
04.4	140	CI-	44.00			
24 II	148	<16	4128			
B 0.5	529 T 5.00	459				
		DRO				
E 0.9	47 X 8.21	506				

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Log Dril	ger: ler:	Lara Weinhe Harrison & C	imer ooper		RICE ENVIRONMENTAL			
Consultant:		RECS			RECS			
Drilling Start	Drilling Method Start Date:		ре 0					
End Date:		8/20/2010			Project Name: Well ID:			
Comme	ents: L	ocated 29	۶ ft NN۱	W from the current junction box site.	EME K-6 leak SB-14			
	TD =	Draf 26 ft	ted by: L	ara Weinheimer Estimated depth to GW = 35 ft	Location: 01/ Sec. 6 1203 A372 Lat: 32°35'57.341"N County: Lea Long: 103°17'35.561"W State: NM			
Depth (feet)	chloride field test	s LAB	PID	Description	Lithology Well Construction			
				Dark brown very fine sand. Slightly				
2 ft	153		0.1					
4 ft	141		0					
				Orangey brown very fine sand. Dry.				
6 ft	333		0					
				Light brown very fine sand. Dry. No odor.				
-8 ft	147		0					
				Light brown very fine sand with caliche particles Dry No odor				
10 ft	477		0.1					
12 ft	633	CI- 768	0					
		<10 <10 DRO <10		Light brown very fine sand. Dry. No	bentonite			
14 ft	583		0		seal			
16 ft	596		0	-				
				Light brown very fine sand with				
18 ft	389		0.7	Sanustone. Dry. No odor				

Depth (feet)	chloride field tests	LAB	PID	Description	Lithology	Well Construction
20 ft	463		0.5			
				Light orangey brown very fine sand with sandstone particles. Dry. No		
22 ft	715		0.2	odor.		
				Orangey brown very fine sand with sandstone particles. Dry. No odor.		
24 ft	769		0.2			
				Orangey brown very fine sand. Very slightly moist. No odor		
26 ft	858	Cl- 928	0.1	Signity moist. No oddi,	34 3	
		GRO <10			and the second sec	
		DRO <10				

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Logger: Driller:		Lara Weinheimer Harrison & Cooper					RICE ENVIRONMENTAL			
Consu	Consultant:		RECS							
Drilling	Method		Geo-probe			Constant of the second s				
Start	Start Date:		8/20/2010				SULTING & SAFETT,			
End (	End Date: 8/20/2010		0	(Uzrazi)		oject Name:	Well ID:			
Comm	ents:	Sa	ampling	began	at top of scraped area at 4 ft bgs.		EME K-6 lea	ak SB-15		
			Locale	0 28 IU led by: I	ara Weinheimer		ocation: UL	N County: Lea		
TD = 26	6 ft belov	v scra	aped ar	ea	Estimated depth to GW = 35 ft Long		ong: 103°17'35.7	783"W State: NM		
Depth	chlori	de				Ī	I I			
(feet)	field te	ests	LAB	PID	Description		Lithology	Well Construction		
1										
					Light orangey brown very fine sand.					
			<u> </u>		Clayey. Slightly moist. No odor.					
2 ft	341	1	3440	1.4						
			GRO			1				
			<10							
			<10							
A #	242	7		0.6						
41(	-243	/		0.6	·	-				
					Light brown very fine sand Slightly					
					moist. No odor					
6 ft	804	1		0.5						
	034		· ·	0.5		1	and a state of the second s			
	ļ						andre and Andre andre andr Andre andre and			
					· .					
Q ft	900			0.7						
	800	,		0.7						
<u> </u>					Light brown very fine sand with					
					sandstone. Slightly moist. No odor.					
10 ft	620	)		04						
	020			0.7			alet ha ta sheriya da Marana Aletta a ta 196 Aletta Galilla a ta 196			
12 ft	624			0.4						
					1					
					4					
	[			L				bentonite		
14 ft	545	;		0.3				seal		
					h	1				
				ļ	Light orangey brown very fine sand					
					with sandstone. Slightly moist. No					
16 4	EOE			0.2	odor.					
1011	505	)		0.2		+				
					Orangey brown verv fine with		to a second			
					sandstone particles. Slightly moist.					
}					No odor.		الاراج تمريحان			
18 ft	602	2		0.8		-				
Depth (feet)	chloride field tests	LAB	PID	Description	Lithology	Well Construction				
-----------------	-------------------------	------	-----	----------------------------------------	-------------------------------------------	-------------------				
				linkt opposite bootstand find opposite						
				with sandstone particles. Slightly						
00.44	745			moist. No odor.						
20 11	/45		0.6							
				Orangey brown very fine sand with						
				sandstone. Slightly moist. No odor.						
22 ft	738		0.5	Û Ĵ	ینی موجود کاریکی مرکز موجود میکارد.					
24 ft	600		0.3							
				Light orongov brown yory find cond						
				with sandstone. Slightly moist. No						
		CI-		odor.						
26 ft	1487	1490	0.3							
		GRO								
		<10								
		DHO								

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

July 9, 2010

Hack Conder Rice Operating Company 112 West Taylor Hobbs, NM 88240

Re: EME K-6 Leak

Enclosed are the results of analyses for sample number H20261, received by the laboratory on 07/01/10 at 4:35 pm.

Cardinal Laboratories is accredited through Texas NELAP for:

Method SW-846 8021 Method SW-846 8260 Method TX 1005 Benzene, Toluene, Ethyl Benzene, and Total Xylenes Benzene, Toluene, Ethyl Benzene, and Total Xylenes 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 Method EPA 524.2 Method EPA 524.2 Haloacetic Acids (HAA-5) Total Trihalomethanes (TTHM) Regulated VOCs (V2, V3)

Accreditation applies to public drinking water matrices.

Total Number of Pages of Report: 3 (includes Chain of Custody)

Sincerely.

Celey D. Keene Laboratory Director



ANALYTICAL RESULTS FOR RICE OPERATING COMPANY ATTN: HACK CONDER 112 WEST TAYLOR HOBBS, NM 88240 FAX TO: (575) 397-1471

Receiving Date: 07/01/10 Reporting Date: 07/06/10 Project Owner: NOT GIVEN Project Name: EME K-6 LEAK Project Location: EME K-6 LEAK Analysis Date: 07/02/10 Sampling Date: 07/01/10 Sample Type: SOIL Sample Condition: INTACT Sample Received By: JH Analyzed By: CK

	· ·	CI
LAB NO.	SAMPLE ID	(mg/kg)
H20261-1	SB #1 @ 6 FT	528
H20261-2	SB #1 @ 16 FT	3,120
H20261-3	SB #1 @ 22 FT	1,600
H20261-4	SB #2 @ 6 FT	6,960
H20261-5	SB #2 @ 12 FT	3,280
H20261-6	SB #2 @ 24 FT	368
H20261-7	SB #3 @ 6 FT	3,760
H20261-8	SB #3 @ 10 FT	704
H20261-9	SB #3 @ 20 FT	576
Quality Con	itrol	500
True Value	QC	500
% Recover	Y	100
<b>Relative</b> Pe	ercent Difference	< 0.1

METHOD: Standard Methods Note: Analyses performed on 1:4 w:v aqueous extracts. Not accredited for Chloride.

Chemist

4500-CI'B

H20261 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 disemad waived untess 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 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. Result relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

	DRATOF	HODDS, NM
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# CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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August 24, 2010

HACK CONDER

RICE ENVIRONMENTAL CONSULTING & SAFETY LLC

112 W. TAYLOR

HOBBS, NM 88240

RE: EME K-6 LEAK

Enclosed are the results of analyses for samples received by the laboratory on 08/19/10 10:37.

Cardinal Laboratories is accredited through Texas NELAP for:

Method SW-846 8021Benzene, Toluene, Ethyl Benzene, and Total XylenesMethod SW-846 8260Benzene, Toluene, Ethyl Benzene, and Total XylenesMethod TX 1005Total 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,

Celuy D. Keine

Celey D. Keene Lab Director/Quality Manager

### Analytical Results For:

RICE ENVIRONMENTAL CONSULTING & SAFETY HACK CONDER 112 W. TAYLOR HOBBS NM, 88240 Fax To: (575) 397-1471

Received:	08/19/2010	Sampling Date:	08/18/2010
Reported:	08/24/2010	Sampling Type:	Soil
Project Name:	EME K-6 LEAK	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Jodi Henson
Project Location:	EME K-6 LEAK		

### Sample ID: SB-4 @ 10' (H020669-01)

Chloride, SM4500CI-B	mg/	kg	Analyze	d By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	8700	16.0	08/19/2010	ND	448	112	400	3.64	
TPH 8015M	mg/kg		Analyzed By: AB						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/20/2010	ND	162	80.8	200	0.274	
DRO >C10-C28	<10.0	10.0	08/20/2010	ND	168	83.8	200	0.232	
Surrogate: 1-Chlorooctane	96.4	% 70-130	•			<b>1</b>			
Surrogate: 1-Chlorooctadecane	91.4	% 70-130							

### Sample ID: SB-4 @ 22' (H020669-02) Chloride, SM4500Cl-B

Chloride, SM4500CI-B	mg/	kg	Analyze	d By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	784	16.0	08/20/2010	ND	416	104	400	3.77	
TPH 8015M	mg/kg		Analyzed By: AB						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/20/2010	ND	162	80.8	200	0.274	
DRO >C10-C28	<10.0	10.0	08/20/2010	ND	168	83.8	200	0.232	
Surrogate: 1-Chlorooctane	83.6	% 70-130							,
Surrogate: 1-Chlorooctadecane	79.2	% 70-130						•	

### Cardinal Laboratories

### *=Accredited Analyte

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Celus D. Kune

Celey D. Keene, Lab Director/Quality Manager

Page 2 of 6

### Analytical Results For:

RICE ENVIRONMENTAL CONSULTING & SAFETY HACK CONDER 112 W. TAYLOR HOBBS NM, 88240 Fax To: (575) 397-1471

Received:	08/19/2010	Sampling Date:	08/18/2010
Reported:	08/24/2010	Sampling Type:	Soil
Project Name:	EME K-6 LEAK	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Jodi Henson
Project Location:	EME K-6 LEAK		

### Sample ID: SB-5 @ 12' (H020669-03)

Chloride, SM4500Cl-B	mg/l	kg	Analyze	d By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	784	16.0	08/20/2010	ND	416	104	400	3.77	
TPH 8015M	mg/kg		Analyzed By: AB						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/20/2010	ND	162	80.8	200	0.274	
DRO >C10-C28	<10.0	10.0	08/20/2010	ND	168	83.8	200	0.232	
Surrogate: 1-Chlorooctane	85.7%	6 70-130							
Surrogate: 1-Chlorooctadecane	82.2 %	6 70-130							

### Sample ID: SB-5 @ 26' (H020669-04)

Chloride, SM4500CI-B	mg	/kg	Analyze	d By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1520	16.0	08/20/2010	ND	416	104	400	3.77	
TPH 8015M	mg/kg		Analyzed By: AB						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/20/2010	ND	162	80.8	200	0.274	
DRO >C10-C28	<10.0	10.0	08/20/2010	ND	168	83.8	200	0.232	
Surrogate: 1-Chlorooctane	84.5	% 70-130	1						
Surrogate: 1-Chlorooctadecane	82.4	% 70-130	I						

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### *=Accredited Analyte

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Celunt une

Celey D. Keene, Lab Director/Quality Manager

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

### Analytical Results For:

RICE ENVIRONMENTAL CONSULTING & SAFETY HACK CONDER 112 W. TAYLOR HOBBS NM, 88240 Fax To: (575) 397-1471

Received:	08/19/2010	Sampling Date:	08/18/2010
Reported:	08/24/2010	Sampling Type:	Soil
Project Name:	EME K-6 LEAK	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Jodi Henson
Project Location:	EME K-6 LEAK		

### Sample ID: SB-6 @ 6' (H020669-05)

Chloride, SM4500CI-B	mg/l	kg	Analyze	d By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1980	16.0	08/20/2010	ND	416	104	400	3.77	
TPH 8015M	mg/l	kg	Analyze	d By: AB					<b>.</b> .
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/20/2010	ND	162	80.8	200	0.274	
DRO >C10-C28	<10.0	10.0	08/20/2010	ND	168	83.8	200	0.232	
Surrogate: 1-Chlorooctane	88.7 %	6 70-130							
Surrogate: 1-Chlorooctadecane	86.2 %	6 70-130				•			

### Sample ID: SB-6 @ 24' (H020669-06)

Chloride, SM4500Cl-B	mg/	kg	Analyze	d By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	, RPD	Qualifier
Chloride	1710	16.0	08/20/2010	ND	416	104	400	3.77	
TPH 8015M	mg/	kg	Analyze	d By: AB					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/20/2010	ND	162	. 80.8	200	0.274	
DRO >C10-C28	<10.0	10.0	08/20/2010	ND	168	83.8	200	0.232	
Surrogate: 1-Chlorooctane	88.6	% 70-130							
Surrogate: 1-Chlorooctadecane	87.5	% 70-130					•		

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Celey & Keine

Celey D. Keene, Lab Director/Quality Manager

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 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. Keine

Celey D. Keene, Lab Director/Quality Manager

Page 6 of 6

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September 02, 2010 Hack Conder Rice Operating Company 112 W. Taylor Hobbs, NM 88240

RE: EME K-6

Enclosed are the results of analyses for samples received by the laboratory on 08/23/10 9:46.

Cardinal Laboratories is accredited through Texas NELAP for:

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

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

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

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

Accreditation applies to public drinking water matrices.

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

Sincerely,

Celey D. Keine

Celey D. Keene Lab Director/Quality Manager

### Analytical Results For:

Rice Opera	ting Company
Hack Cond	er
112 W. Tay	/lor
Hobbs NM,	88240
Fax To:	(575) 397-1471

Received:	08/23/2010	Sampling Date:	08/19/2010
Reported:	09/02/2010	Sampling Type:	Soil
Project Name:	EME K-6	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Jodi Henson
Project Location:	EME K-6 LEAK		

### Sample ID: SB 7 @ 2' (H020694-01)

Chloride, SM4500CI-B	mg/	kg	Analyze	d By: HM			<u>-</u>		
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	4960	16.0	08/24/2010	ND	416	104	400	3.77	
TPH 8015M	mg/	kg	Analyze	d By: AB					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	09/01/2010	ND	163	81.7	200	2.10	
DRO >C10-C28	<10.0	10.0	09/01/2010	ND	181	90.7	200	4.83	
Surrogate: 1-Chlorooctane	96.5	% 70-130	I	· · ·					
Surrogate: 1-Chlorooctadecane	. 106 9	⁷⁰⁻¹³⁰	I						

### Sample ID: SB 7 @ 18' (H020694-02)

	ing.	/ ~ 9		Analyze	a by. ma					
Analyte	Result	Re	porting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	528		16.0	08/24/2010	ND	416	104	400	3.77	
TPH 8015M	mg	/kg		Analyze	d By: AB					S-04
Analyte	Result	Re	porting Limit	Analyzed	Method Blank	BŞ	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0		10.0	09/01/2010	ND	163	81.7	200	2.10	
DRO >C10-C28	<10.0		10.0 ,	09/01/2010	ND	181	90.7	200	4.83	
Surrogate: 1-Chlorooctane	97.8	%	70-130							
Surrogate: 1-Chlorooctadecane	131	%	70-130							

Applyzod By: HM

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Celey D. Keine

Celey D. Keene, Lab Director/Quality Manager

Page 2 of 11

### Analytical Results For:

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

Received:	08/23/2010	Sampling Date:	08/19/2010
Reported:	09/02/2010	Sampling Type:	Soil
Project Name:	EME K-6	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Jodi Henson
Project Location:	EME K-6 LEAK		

### Sample ID: SB 8 @ 6' (H020694-03)

Chloride, SM4500Cl-B	mg,	/kg	Analyze	d By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	6080	16.0	08/24/2010	ND	416	104	400	3.77	
TPH 8015M	mg	/kg	Analyze	d By: AB					S-04
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	09/01/2010	ND	163	81.7	200	2.10	
DRO >C10-C28	<10.0	10.0	09/01/2010	ND	181	90.7	200	4.83	
Surrogate: 1-Chlorooctane	94.2	% 70-130					· · ·		
Surrogate: 1-Chlorooctadecane	139	% 70-130							

### Sample ID: SB 8 @ 26' (H020694-04)

Chloride, SM4500CI-B	mg/	kg	Analyze	d By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	416	16.0	08/24/2010	ND	416	104	400	3.77	
TPH 8015M	mg/kg		Analyze	d By: AB					S-06
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<50.0	50.0	09/01/2010	ND	163	81.7	200	2.10	
DRO >C10-C28	821	50.0	09/01/2010	ND	181	90.7	200	4.83	
Surrogate: 1-Chlorooctane	21.2 9	% 70-130							
Surrogate: 1-Chlorooctadecane	36.5 9	% 70-130							

### **Cardinal Laboratories**

### *=Accredited Analyte

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Celuy D.1 une

Celey D. Keene, Lab Director/Quality Manager

Page 3 of 11

### Analytical Results For:

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

Received:	08/23/2010	Sampling Date:	08/19/2010
Reported:	09/02/2010	Sampling Type:	Soil
Project Name:	EME K-6	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Jodi Henson
Project Location:	EME K-6 LEAK		

### Sample ID: SB 9 @ 6' (H020694-05)

Chloride, SM4500CI-B	mg/kg		Analyze	Analyzed By: HM		• • • • • • • • • • • • • • • • • • • •			
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	5360	16.0	08/24/2010	ND	416	104	400	3.77	
TPH 8015M	mg/1	kg	Analyze	d By: AB					
Analyte	Result	Reporting Limit	Analyzed	· Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	09/01/2010	ND	163	81.7	200	2.10	
DRO >C10-C28	<10.0	10.0	09/01/2010	ND	181	90.7	200	4.83	
Surrogate: 1-Chlorooctane	92.3 %	% 70-130							<u> </u>
Surrogate: 1-Chlorooctadecane	113%	6 70-130							

### Sample ID: SB 9 @ 24' (H020694-06)

Chloride, SM4500Cl-B	mg/	kg	Analyze	d By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	128	16.0	08/24/2010	ND	416	104	400	3.77	
TPH 8015M	mg/	kg	Analyze	d By: AB					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	09/01/2010	ND	180	89.9	200	3.28	
DRO >C10-C28	<10.0	10.0	09/01/2010	ND	200	99.9	200	2.66	
Surrogate: 1-Chlorooctane	103 %	% 70-130	1						
Surrogate: 1-Chlorooctadecane	1219	% 70-130	•						

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Celey D. Keine

Celey D. Keene, Lab Director/Quality Manager

### Analytical Results For:

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

Received:	08/23/2010	Sampling Date:	08/19/2010
Reported:	09/02/2010	Sampling Type:	Soil
Project Name:	EME K-6	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Jodi Henson
Project Location:	EME K-6 LEAK		

### Sample ID: SB 10 @ 2' (H020694-07)

Chloride, SM4500Cl-B	mg/kg		Analyzed By: HM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	3720	16.0	08/24/2010	ND	416	104	400	3.77	
TPH 8015M	mg/	kg	Analyze	d By: AB					S-04
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	09/01/2010	ND	180	89.9	200	3.28	
DRO >C10-C28	<10.0	10.0	09/01/2010	ND	200	99.9	200	2.66	
Surrogate: 1-Chlorooctane	1159	6 70-130							
Surrogate: 1-Chlorooctadecane	149%	6 70-130							

### Sample ID: SB 10 @ 20' (H020694-08)

Chloride, SM4500CI-B	mg/kg		Analyzed By: HM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	464	16.0	08/24/2010	ND	416	104	400	3.77	
TPH 8015M	mg	/kg	Analyze	ed By: AB					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	09/01/2010	ND	180	89.9	200	3.28	
DRO >C10-C28	<10.0	10.0	09/01/2010	ND	200	99.9	200	2.66	
Surrogate: 1-Chlorooctane	102 9	% 70-130	)						
Surrogate: 1-Chlorooctadecane	124 9	% 70-130	)						

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Celey D. Keene, Lab Director/Quality Manager

Page 5 of 11

### Analytical Results For:

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

Received:	08/23/2010	Sampling Date:	08/19/2010
Reported:	09/02/2010	Sampling Type:	Soil
Project Name:	EME K-6	Sampling Condition:	Cool & Intact
Project Number: Project Location:	NOT GIVEN EME K-6 LEAK	Sample Received By:	Jodi Henson

### Sample ID: SB 11 @ 6' (H020694-09)

Chloride, SM4500CI-B	mg/kg		Analyze	Analyzed By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	4400	16.0	08/24/2010	ND	416	104	400	3.77	
TPH 8015M mg/kg		kg	Analyzed By: AB						S-04
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	09/01/2010	ND	180	89.9	200	3.28	
DRO >C10-C28	<10.0	10.0	09/01/2010	ND	200	99.9	200	2.66	
Surrogate: 1-Chlorooctane	121 %	6 70-130	••••••••••••••••••••••••••••••••••••••						
Surrogate: 1-Chlorooctadecane	135%	6 70-130							

### Sample ID: SB 11 @ 12' (H020694-10)

Chloride, SM4500Cl-B mg/kg Analyzed By: HM Reporting Limit RPD Analyte Result Analyzed Method Blank BS % Recoverv True Value QC Qualifier Chloride 272 16.0 08/24/2010 ND 416 104 400 3.77 **TPH 8015M** mg/kg Analyzed By: AB RPD Analyte Result Reporting Limit Analyzed Method Blank BS % Recoverv True Value QC Qualifier GRO C6-C10 09/01/2010 <10.0 10.0 ND 180 89.9 200 3.28 09/01/2010 DRO >C10-C28 <10.0 10.0 ND 99.9 200 2.66 200 Surrogate: 1-Chlorooctane 115 % 70-130 Surrogate: 1-Chlorooctadecane 126 % 70-130

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Page 6 of 11

### Analytical Results For:

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

Received:	08/23/2010	Sampling Date:	08/20/2010
Reported:	09/02/2010	Sampling Type:	Soil
Project Name:	EME K-6	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Jodi Henson
Project Location:	EME K-6 LEAK		

### Sample ID: SB 14 @ 12' (H020694-11)

Chloride, SM4500CI-B	mg/kg		Analyze	Analyzed By: HM				•	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	768	16.0	08/24/2010	ND	416	104	400	3.77	
TPH 8015M	mg/k	g	Analyze	d By: AB					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	09/01/2010	ND	180	89.9	200	3.28	
DRO >C10-C28	<10.0	10.0	09/01/2010	ND	200	99.9	200	2.66	
Surrogate: 1-Chlorooctane	99.1 %	6 70-130							
Surrogate: 1-Chlorooctadecane	121 %	5 70-130							

### Sample ID: SB 14 @ 26' (H020694-12)

Chloride, SM4500Cl-B	mg/kg		Analyze	Analyzed By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BŞ	% Recovery	True Value QC	RPD	Qualifier
Chloride	928	16.0	08/24/2010	ND	416	104	400	3.77	
TPH 8015M	mg	/kg	Analyze	d By: AB					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	09/01/2010	ND	180	89.9	200	3.28	
DRO >C10-C28	<10.0	10.0	09/01/2010	ND	200	99.9	200	2.66	
Surrogate: 1-Chlorooctane	108	% 70-130	)						
Surrogate: 1-Chlorooctadecane	115	% 70-130	)						

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Celey D. Keene, Lab Director/Quality Manager

Page 7 of 11

### Analytical Results For:

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

Received:	08/23/2010	Sampling Date:	08/19/2010
Reported:	09/02/2010	Sampling Type:	Soil
Project Name:	EME K-6	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Jodi Henson
Project Location:	EME K-6 LEAK		

### Sample ID: SB 15 @ 2' (H020694-13)

Chloride, SM4500Cl-B	mg/	'kg	Analyze	d By: HM			·		
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	3440	16.0	08/24/2010	ND	416	104	400	3.77	
TPH 8015M	mg/	/kg	Analyze	d By: AB		·		<u> </u>	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	09/01/2010	ND	180	89.9	200	3.28	
DRO >C10-C28	<10.0	10.0	09/01/2010	ND	200	99.9	200	2.66	
Surrogate: 1-Chlorooctane	100 :	% 70-130							
Surrogate: 1-Chlorooctadecane	113 9	% 70-130	1						

### Sample ID: SB 15 @ 26' (H020694-14)

Chloride, SM4500Cl-B	mg,	/kg	Analyze	d By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	1490	16.0	08/24/2010	ND	416	104	400	3.77	
TPH 8015M	mg,	/kg	Analyze	d By: AB					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	09/01/2010	ND	180	89.9	200	3.28	
DRO >C10-C28	<10.0	10.0	09/01/2010	ND	200	99.9	200	2.66	
Surrogate: 1-Chlorooctane	99.0	% 70-130	)	,					
Surrogate: 1-Chlorooctadecane	III	% 70-130	)						

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Celey D. Keene, Lab Director/Quality Manager

Page 8 of 11

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

### **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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Celey D. Keene, Lab Director/Quality Manager

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ARDINAL LABORATORIES

**CHAIN-OF-CUSTODY AND ANALYSIS REQUEST** 

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CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

September 02, 2010

Hack Conder Rice Operating Company 112 W. Taylor

Hobbs, NM 88240

RE: EME K-6

Enclosed are the results of analyses for samples received by the laboratory on 08/23/10 9:47.

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. Kune

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:	08/23/2010	Sampling Date:	08/19/2010
Reported:	09/02/2010	Sampling Type:	Soil
Project Name:	EME K-6	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Jodi Henson
Project Location:	EME K-6 LEAK		

### Sample ID: SB 12 @ 8' (H020696-01)

BTEX 8021B	mg/l	kg	Analyze	d By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	0.076	0.050	08/26/2010	ND	0.835	83.5	1.00	2.08	
Toluene*	0.968	0.050	08/26/2010	ND	0.885	88.5	1.00	0.968	
Ethylbenzene*	0.587	0.050	08/26/2010	ND	0.933	93.3	1.00	0.570	
Total Xylenes*	5.05	0.150	08/26/2010	ND	2.75	91.6	3.00	0.441	
Surrogate: 4-Bromofluorobenzene (PIL	103 %	6 80-120				· · · · · · · · · · · · · · · · · · ·			
Chloride, SM4500Cl-B	mg/l	(g	Analyze	d By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	08/24/2010	ND	416	104	400	3.77	
TPH 8015M	mg/l	(g	Analyze	d By: AB					QM-07, S-06
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	213	50.0	09/01/2010	ND	171	85.6	200	4.59	
DRO >C10-C28	1520	50.0	09/01/2010	ND	207	103	200	7.76	
Surrogate: 1-Chlorooctane	20.6 %	6 70-130							
Surrogate: 1-Chlorooctadecane	25.6%	6 70-130							

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Celey D. Keene, Lab Director/Quality Manager

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1350

50.0

50.0

### Analytical Results For:

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

Received:	08/23/2010	Sampling Date:	08/19/2010
Reported:	09/02/2010	Sampling Type:	Soil
Project Name:	EME K-6	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Jodi Henson
Project Location:	EME K-6 LEAK		

### Sample ID: SB 12 @ 14' (H020696-02)

BTEX 8021B	mg/	'kg	Analyze	d By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	0.300	0.100	08/26/2010	ND	0.835	83.5	1.00	2.08	
Toluene*	4.01	0.100	08/26/2010	ND	0.885	88.5	1.00	0.968	
Ethylbenzene*	0.829	0.100	08/26/2010	ND	0.933	93.3	1.00	0.570	
Total Xylenes*	7.26	0.300	08/26/2010	ND	2.75	91.6	3.00	0.441	
Surrogate: 4-Bromofluorobenzene (PIL	91.0	% 80-120	)						
Chloride, SM4500Cl-B	mg/	′kg	Analyze	d By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	08/24/2010	ND	416	104	400	3.77	
TPH 8015M	mg/	/kg	Analyze	d By: AB					QM-07, S-06
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier

ND

ND

171

207

85.6

103

200

200

4.59

7.76

Surrogate: 1-Chlorooctane23.0 %70-130Surrogate: 1-Chlorooctadecane26.2 %70-130

09/01/2010

09/01/2010

**Cardinal Laboratories** 

:

GRO C6-C10

DRO >C10-C28

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Celey D. Keene, Lab Director/Quality Manager

Page 3 of 6

### Analytical Results For:

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

Received: Reported:	08/23/2010	Sampling Date:	08/19/2010 Soil
Project Name:	EME K-6	Sampling Condition:	Cool & Intact
Project Number: Project Location:	NOT GIVEN EME K-6 LEAK	Sample Received By:	Jodi Henson

### Sample ID: SB 12 @ 24' (H020696-03)

BTEX 8021B	mg	/kg	Analyze	d By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	0.529	0.100	08/26/2010	ND	0.835	83.5	1.00	2.08	
Toluene*	5.00	0.100	08/26/2010	ND	0.885	88.5	1.00	0.968	
Ethylbenzene*	0.947	0.100	08/26/2010	ND	0.933	93.3	1.00	0.570	
Total Xylenes*	8.21	0.300	08/26/2010	ND	2.75	91.6	3.00	0.441	
Surrogate: 4-Bromofluorobenzene (PIL	87.7	% 80-120	)						
Chloride, SM4500Cl-B	mg,	/kg	Analyze	d By: HM		<u></u>			
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	08/24/2010	ND	416	104	400	3.77	
TPH 8015M	mg,	/kg	Analyze	d By: AB					QM-07, S-06
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	459	50.0	09/01/2010	ND	171	85.6	200	4.59	
DRO >C10-C28	506	50.0	09/01/2010	ND	207	103	200	7.76	

70-130

70-130

 Surrogate: 1-Chlorooctane
 21.8 %

 Surrogate: 1-Chlorooctadecane
 24.8 %

**Cardinal Laboratories** 

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Celey D. Keene, Lab Director/Quality Manager

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

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### **Notes and Definitions**

5-06	The recovery of this surrogate is outside control limits due to sample dilution required from high analyte concentration and/or matrix interference's.
QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
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**

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Celey D. Keene, Lab Director/Quality Manager

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ARDINAL LABORATORIES

# CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Company Name	Rice Operating Company		BILL TO	Statistical Story Statistics				NAI.	210	PEOLIECT		
Project Manage	r: Hack Conder		P.O. #:									
Address: 122	West Taylor		Company:					S				
city: Hobbs	State: NM Zi	p: 88240	Attn:	VID MAXIMUM DISAMONANA				suc				
Phone #: 393-5	174 Fax#: 397-1471		Address:	And the second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second se				Siu		<u> </u>		
Project #:	Project Owner:		city:	ana sharan jaran maran na maran ka jara na mara ta m		M	1	∀/				
Project Name:	ERE K-6 LOCK		State: Zlo:	van	sə		ЧЧ	su				
Project Location	" EME K-6 lext		Phone #:	constant actor account of	bin	EX 01	T a	oiti			<u>.</u>	
Sampler Name:	J. Woodfin		Fax #:		0	8 T8	SB	sC				
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Sampler - UPS	- Bus - Other:		(Initiats)	Lweinh	ieime	r@rice	swd.	com				
t Cardinal	cannot accept verbal changes. Please fa	x written changes to 5	05-395-2476									]

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

From:	Katie Jones
То:	"Paul_Evans@nm.blm.gov"
Cc:	Hack Conder
Subject:	EME K-6 leak (1RP-2552) Path Forward
Date:	Monday, November 29, 2010 1:42:00 PM

Mr. Evans,

During the July 2010, geo-probe delineation of the EME K-6 leak (1RP-2552) located in unit letter K, section 6, T2OS, R37E, ROC discussed and agreed with you on the installation of a 20-mil reinforced liner and contouring the site to the surrounding area through folding over the surrounding dunes. ROC discussed this path forward with the NMOCD-District 1 office and received verbal approval; however, NMOCD requested we receive approval from the BLM on this path forward as well. A reply to this email stating you agree with this path forward will be sufficient to allow ROC to continue with the proposed work. If you have any questions or require any additional information, please contact myself or Hack Conder at (575)631-6432.

Thank you.

Katie Jones Environmental Project Coordinator RICE Operating Company 11/30/10

Rice Operting Company ATT: Katie Jones 122 West Tayor Hobbs, NM 88240

Re: EME K-6 Release Lee County, New Mexico Unit K, Sec. 06, T20S, R37E

Ms Katie Jones:

The Bureau of Land Management (BLM) reviewed the Work Plan submitted for Rice Operting Company and referenced above. The proposal is hereby approved according to the information provided.

Please be advised that BLM approval does not relieve Rice Operting Company of any liability should operations result in pollution of surface water, ground water, or the environment. In addition, BLM approval does not relieve Rice Operting Company of responsibility for compliance with other federal, state or local laws and/or regulations.

If you have any questions or need any assistance call (505) 234-5977 or E-Mail: Paul_Evans@nm.blm.gov

Sincerely, Paul R Evans

Bureau of Land Management Environmental Protection Specialist

Paul R Evans Bureau of Land Management Realty Environmental Protection Specialist Office 575-234-5972 Direct Line 575-234-5977 Mobile 575-361-7548 Fax 575-234-5927

"Katie Jones"

<kjones@riceswd.c om> To <Paul_Evans@nm.blm.gov> 11/29/2010 01:42 cc PM "Hack Conder" <hconder@riceswd.com> Subject EME K-6 leak (1RP-2552) Path Forward

Mr. Evans,

During the July 2010, geo-probe delineation of the EME K-6 leak (1RP-2552) located in unit letter K, section 6, T20S, R37E, ROC discussed and agreed with you on the installation of a 20-mil reinforced liner and contouring the site to the surrounding area through folding over the surrounding dunes. ROC discussed this path forward with the NMOCD-District 1 office and received verbal approval; however, NMOCD requested we receive approval from the BLM on this path forward as well. A reply to this email stating you agree with this path forward will be sufficient to allow ROC to continue with the proposed work. If you have any questions or require any additional information, please contact myself or Hack Conder at (575)631-6432.

Thank you.

Katie Jones Environmental Project Coordinator RICE Operating Company

# Appendix D Re-vegetation Form

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



112 West Taylor Hobbs, NM 88240 Phone: (575) 393-9174 Fax: (575) 393-0293

### **REVEGETATION FORM**

1. Gener	al Information					
Site Name: EN	ME K-6 leak					
U/L	Section	Township	Range	County	Latitude	Longitude
K	6	20S	37E	Lea	N 32.59890	W 103.29281
Contact Name	: Bruce Baker					
Email: bbaker	@riceswd.com				<u></u>	-
Site size: (200	x96) 19,200 squ	are feet	Map d	etail of site attac	ched 🔲	
Additional info	ormation:			sr. ===		

### 2. Soils

Salvaged from site 🛛	Bioreme	diated 🛛	Imported 🗌	Blended	Depth (in.):
Texture: sandy	Describe se	oil and subsoil:	sand		
Soil prep methods:	Rip 🗌 🛛 I	Depth (in.):	Disc 🖂	Depth (in.): 5 inches	Rollerpack
Date complete: 2/16/2	.011				

### 3. **Bioremediation**

Fertilizer	Hay 🔀	Other 🛛
Туре:		Describe: 750 lbs bioNhance
Lbs/acre:		

4. Seeding		
Custom seed mix Prescribed mix	Seed mix name:	Seeding date:
Broadcast 🖂		
Method: portable seeder		
Soil conditions during seeding: Dry 🖂	Damp 🗌 Wet 🗌	
Photos attached	Observations: 35 lbs of BLM #2	seed mix, 3 lbs winter wheat

### 5. Certification

Name: Robert Harrison	Title: Environmental Tech	Date: 2/16/2011
Signature: not available		

# Appendix E Photo Documentation

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

EME K-6 leak Unit Letter K, Section 6, T20S, R37E



excavating the site



excavating the site



installing the plastic liner



hauling excavated soil to Sundance for disposal



importing blow sand



installing the plastic liner



seaming the liners together



padding the liner with blow sand



backfill the site with surrounding dunes



seaming the liners together



padding the liner with blow sand



scraping the vegetation from the sand dunes


placing the fence with silk netting around site





seeding the backfilled site



completed site work