1R-427-365

WORKPLANS

Date: 5-30-12



Sent Certified Mail Return Receipt No. 7002 2410 0001 5813 3968

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:

Γ.

INVESTIGATION & CHARACTERIZATION PLAN (ICP) EME Jct. C-13 (NMOCD Case #: not yet assigned) Unit C, SEC. 13, T20S, R36E, Monument, Lea County, New Mexico

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.

For all such environmental projects, ROC will choose the path forward that:

- Protects public health;
- Provides the greatest net environmental benefit;
- Complies with NMOCD rules; and
- Is supported by good science.

Each site shall generally have three submissions:

- 1. This <u>Investigation and Characterization Plan</u> (ICP) is proposed for gathering data and site characterization and assessment.
- 2. Upon evaluating the data and results from the ICP, a recommended remedy will be submitted in a <u>Corrective Action Plan</u> (CAP), if warranted.

IR427-365

RECEIVED OCD

2012 JUN -1 P 12:33

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: May 30, 2012

Contact: Sharon Hall

Phone: 432.687.5400

Email: sharon.hall@arcadis-us.cor

Our ref: MT001106.0001

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

Imagine the result

Page: 1/4

ARCADIS

3. Finally, after implementing the remedy, a <u>Termination Request</u> with final documentation will be submitted.

Background and Previous Work

The site is located approximately 3.5 miles southwest of Monument, New Mexico as shown on the Site Location Map. Groundwater at the site will likely be encountered at a depth of 31 feet below ground surface (bgs). The junction box was eliminated and initial delineation was conducted from August 4th, 2011 through August 31st, 2011.

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. Chlorides were detected at a concentration of 992 mg/kg in the four-wall composite sample and 960 mg/kg in the five-point composite bottom sample. GRO and DRO were not detected in either of the samples.

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

Approximately 204 cubic yards of excavated soil was properly disposed of at a NMOCD approved facility. The remaining excavated soils were blended on site with clean imported soil and backfilled into the excavation to a depth of five feet below ground surface. A 20-mil poly liner was installed at five feet below ground surface and the remaining excavation was backfilled with blended soil to ground surface. The area was contoured to the surrounding landscape.

A sample of the blended backfill material was submitted to Cardinal Laboratories for chloride analysis. Chlorides were detected at a concentration of 288 mg/kg.

ROC disclosed potential groundwater impact at the site to New Mexico Oil Conservation Division (NMOCD) via e-mail on March 13, 2012. A disclosure report

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was submitted to NMOCD with the 2011 junction box closures and disclosures (Appendix A).

ROC proposes additional investigative work at the site to determine if there is a potential for hydrocarbon impacts to groundwater.

Proposed Work Elements

- Conduct vertical and lateral delineation of residual soil chloride and hydrocarbons from samples taken using a drilling rig, hand auger, and/or backhoe.
 - a) Vertical sampling will be conducted until the following criteria are met in the field:
 - i) Three samples in which the chloride concentration decreases and the third sample has a chloride concentration of \leq 250 mg/kg; and,
 - ii) Three samples in which PID readings decrease and the third sample has a PID reading of \leq 100 ppm; or,
 - iii) The sampling reaches the capillary fringe.
 - b) Lateral sampling will be conducted until the following criteria are met in the field:
 - i) A decrease is observed in chloride concentrations between lateral bores at similar depths; and,
 - ii) A chloride reading of \leq 250 mg/kg is observed in a lateral surface sample; or,
 - iii) Safety concerns impede further lateral delineation.
- If warranted, install a monitor well to provide direct measurement of the potential groundwater impact at the site. (All monitor wells will be installed by EPA, NMOCD and industry standards.)
- 3) Evaluate the risk of groundwater impact based on information obtained.
- If the evaluation of the site shows no potential impact to groundwater from residual chlorides, only a vadose zone remedy will be undertaken. However, if groundwater

ARCADIS

shows impact from residual chlorides, a CAP will be developed to address these concerns.

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

Sincerely,

ARCADIS U.S., Inc.

Shan E. Hall

Sharon E. Hall Associate Vice President

Copies: Hack Conder, ROC

Attachments:

Site Location Map Appendix A- Junction Box Disclosure Report

Site Location Map





EME jct. C-13

Legals: UL/C sec. 13 T-20-S R-36-E LEA COUNTY, NM

			W E
0	0.3	0.6	1.2
			Miles
Drawin Drafted	g date: 5 by: L. W	-2-12 leinheimer	

RICE OPERATING COMPANY JUNCTION BOX DISCLOSURE* REPORT

				BOX LOCA	TION						
SWD SYSTEM	JUNCTION	UNIT	SECTION	TOWNSHIP	RANGE	COUN	ITY	BOX DI	MENSIONS	- FEET	
Eunice Monument	1-1-0-40		40	200	0.05			Length 4'	Width 3'	Depth	3'
Eumont (EME)	JCt. C-13	ں ر	13	205	30E	Lea	4 	····	Eliminated		
LAND TYPE:	BLM	STATE X	FEE LAI	NDOWNER				OTHER_			
Depth to Grou	ndwater	31	feet	NN	IOCD SITE	E ASSESSI	WENT	RANKING S	CORE:	20	
Date Started	8/4/2	2011	Date Co	mpleted	8/31/20)11	OCD	Nitness	No		
Soil Excavated	400.0	cubic yard	ts Exc	cavation Le	ength	30	Width	30	Depth	12	feet
Soil Disposed	204	cubic yard	ts O	ffsite Facility	C& Sundar	C Landfarm & nce Services, II	nc	Location_	Monume Eunio	ent, NM & ce, NM	
INAL ANALYTIC		JLTS:	Samp	ole Daté	B/12/2011,	8/30/2011		Sample Dep	oth	12'	

Procure 5-point composite sample of bottom and 4-point composite sample of sidewalls. TPH and Chloride laboratory test results completed by using an approved lab and testing procedures pursuant to NMOCD guidelines.

Sample	PID (field)	GRÔ	DRO	Chloride
Location	ppm	mg/kg	mg/kg	mg/kg
4-WALL COMP.	1.8	<10.0	<10.0	992
BOTTOM COMP.	1.5	<10.0	<10.0	960
BLENDED BACKFILL	0.9	-		288

General Description of Remedial Action:

This junction was eliminated during the

pipeline replacement/upgrade program. After the former junction box was removed, an investigation was conducted using a backhoe to collect soil samples at regular intervals producing a 30x30x12-ft excavation. Chloride field tests performed on each sample yielded elevated concentrations that did not relent with depth. Organic vapors were measured using a PID which yielded low concentrations. Representative composite samples were collected from

the excavation bottom and excavation walls and sent to a commercial laboratory for analysis of

chloride and TPH. Approximately 204 cubic yards of excavated soil was properly disposed of at an NMOCD approved facility. The remaining

excavated soil was blended with clean imported soil and a composite sample was sent to a commercial laboratory for analysis of chloride and

TPH. The blended backfill was returned to the excavation to a depth of 5-ft BGS. On 8/30/2011, a 20-mil reinforced liner was installed at 5-ft. BGS

and the excavation was backfilled with the remaining blended soil to ground surface and contoured to the surrounding area. On 8/31/2011, the

site was seeded with a blend of native vegetation and is expected to return to a productive capacity at a normal rate. NMOCD was notified of groundwater impact on 3/13/2012.

ADDITIONAL EVALUATION IS HIGH PRIORITY

		enclosures: photos, lab results, PID (field) screenings, cross-section, chloride curve, revegetation form
I HEREBY CERTIF	Y THAT THE INFORM	ATION ABOVE IS THE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF.
<i></i>		
SITE SUPERVISOR	Oscar Frayre	
PEDORT		$\wedge \mathcal{M} (\nabla \mathcal{I} - \mathcal{I})$
ASSEMBLED BY	Laura Peña	SIGNATURE FULL FOR COMPANY RICE OPERATING COMPANY
-		
PROJECT LEADER	Zach Conder	SIGNATURE DATE 4-10-12
	2401 0011001	

CHLORIDE FIELD TESTS

LOCATION	DEPTH	mg/kg
4-wall comp.	N/A	707
bottom comp.	12'	561
blended backfill	N/A	591
background	6"	56
	2'	58
	4'	1,505
delineation trench	6'	1,265
at 10' south of	8'	1,447
source	10'	616
	12'	1,110

EME Jct. C-13 Unit C, Section 13, T20S, R36E



Excavating the former junction box, facing south 8.8.11



Collecting a soil sample, facing north 8.30.11



Excavation prior to installation of plastic liner up to 5-ft. BGS, facing west 8.30.11



Installing a 30x30-ft., 20-mil reinforced liner at 5-ft. BGS, facing east 8.30.11



Backfilling site above liner, facing north 8.30.11



Seeding site, facing west

8.31.11

S Laboratories

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

August 18, 2011

BRUCE BAKER

RICE ENVIRONMENTAL CONSULTING & SAFETY LLC

112 W. TAYLOR

HOBBS, NM 88240

RE: EME JCT. C-13

Enclosed are the results of analyses for samples received by the laboratory on 08/12/11 16:07.

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,

Lope S. Moreno

Hope Moreno Inorganic Technical Director





Analytical Results For:

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

Received:	08/12/2011	Sampling Date:	08/12/2011
Reported:	08/18/2011	Sampling Type:	Soil
Project Name:	EME JCT. C-13	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NONE GIVEN		

Sample ID: 5 PT BTM COMP (H101705-01)

Chloride, SM4500Cl-B Analyzed By: HM mg/kg Analyte Result Reporting Limit Analyzed Method Blank BS % Recovery True Value QC RPD Qualifier Chloride 960 16.0 08/15/2011 ND 416 104 400 0.00 TPH 8015M mg/kg Analyzed By: ab Analyte Result Reporting Limit Analyzed Method Blank BS % Recovery True Value QC RPD Qualifier GR0 C6-C10 <10.0 10.0 08/16/2011 ND 205 102 200 0.954 180 90.0 200 DRO >C10-C28 <10.0 10.0 08/16/2011 ND 0.324 Surrogate: 1-Chlorooctane 105 % 70-130 70-130 Surrogate: 1-Chlorooctadecane 115 %

Sample ID: 4 WALL COMP (H101705-02)

Chloride, SM4500CI-B	mg/	kg	Analyze	d By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	992	16.0	08/15/2011	ND	416	104	400	0.00	
TPH 8015M	mg/	kg	Analyze	d By: ab					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	85	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	08/16/2011	ND	205	102	200	0.954	
DRO >C10-C28	<10.0	10.0	08/16/2011	ND	180	90.0	200	0.324	
Surrogate: 1-Chlorooctane	103 9	70-130	· · · · · · · · · · · · · · · · · · ·						- <i>Ci</i>
Surrogate · 1-Chlorooctadecane	107 \$	% 70-130	I				(\mathbf{C}^{+})	* * ·	- 11

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages, Cardinal's flability and observes exclusive remedy for any claim ansung, whether based in contract or tent, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any obser cause whatseever uhall be deemed walved unless, made in working and received by Cardinal within Unity (20) days after completion of the applicable service. In no event shall Cardinal be bible for incidental or consequential damages, including, without limitation, business indemuptions, loss of use, or loss of profiles nouried by client, affiliates or successors anising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such dama is based upon any of the abortwate Research values trade to be performance of the services hereunder by Cardinal, regardless of whether such dama is based upon any of the abortwate. Research value to the services in the constructions.

Apper S. Moreno-

Hope Moreno, Inorganic Technical Director

Page 2 of 4



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

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*=Accredited Analyte

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Abper S. Moreno-

Hope Moreno, Inorganic Technical Director

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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Page 4 of 4

RICE ENVIRONMENTAL CONSULTING & SAFETY

122 West Taylor Hobbs, NM 88240 PHONE: (505) 393-9174 FAX: (505) 397-1471 PID METER CALIBRATION & FIELD REPORT FORM

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MODEL		
NO.		

MODEL: PGM 7300	SERIAL NO:	590-000508
MODEL: PGM 7300	SERIAL NO:	590-000504
MODEL: PGM 7320	SERIAL NO:	592-903318
MODEL: PGM 7300	SERIAL NO:	590-000183

GAS COMPOSITION: ISOBUTYLENE 100PPM / AIR: BALANCE

LOT NO :HAL-248-100-1

METER READING ACCURACY: 100 PPM

EXPIRATION DATE: 7-1-2011

ACCURACY : +/- 2%

	COMPANY	
·	RICE	

SYSTEM	JUNCTION	UNIT	SECTION	TOWN SHIP	RANGE
EME	C-13 JCT	С	13	208	36E

SAMPLE ID	PID	SAMPLE ID	PID	
5 PT. BOTTOM COMPOSITE	1.5			
4 WALL COMPOSITE	1.8			
				1
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I verify that I have calibrated the above instrument in accordance to the manufacture operation manual.

SIGNATURE: Plalet Inc

DATE: 8/12/2011



September 01, 2011

Hack Conder

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: EME JCT C-13

Enclosed are the results of analyses for samples received by the laboratory on 08/30/11 16:15.

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.

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Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
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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,

Celeg 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:	08/30/2011
Reported:	09/01/2011
Project Name:	EME JCT C-13
Project Number:	NONE GIVEN
Project Location:	NOT GIVEN

Sampling Date:	08/30/2011
Sampling Type:	Soil
Sampling Condition:	** (See Notes)
Sample Received By:	Jodi Henson

Sample ID: BLENDED BACKFILL (H101843-01)

Chloride, SM4500CI-B	ng/	'kg	Analyze	d By: HM					
, Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	288	16.0	08/31/2011	ND	415	104	400	3.77	

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*=Accredited Analyte

REASE NOTE: Liability and Damages. Candona's lability and cleret's endualive remotity for any claim anising, whether based in controct or tort, shall be limited to the amount paid by cleret for analyses. All claims, including those for negligence and any other cause whatebower shall be deemed walved wheles made in writing and received by Cardinal websin thiny (32) days after completion of the applicable service. In no event shall Cardinal be lable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incidental dors consequential damages, damin shared upon any of the above stated nations or otherwise. Results returned the samplet above framework of the services hereinder by Candinal, regardless of whether such damin shared upon any of the above stated nations or otherwise. Results returned to be samplet above.

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Celey D. Keene, Lab Director/Quality Manager



Notes and Definitions

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- *** 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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*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

CARDINAL VLaboratories

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

101 East Marland, Hobbs, NM 88240 (575) 393-2326 FAX (575) 393-2476

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Cool Intact

Page 4 of 4

RICE ENVIRONMENTAL CONSULTING & SAFETY

122 West Taylor Hobbs, NM 88240 PHONE: (505) 393-9174 FAX: (505) 397-1471 PID METER CALIBRATION & FIELD REPORT FORM

CK.	X	
MODEL		
NO.		

MODEL: PGM 7300 SERIAL NO: 590-000508 MODEL: PGM 7300 SERIAL NO: 590-000504 MODEL: PGM 7320 SERJAL NO: 592-903318 MODEL: PGM 7300 SERIAL NO: 590-000183

GAS COMPOSITION: ISOBUTYLENE 100PPM / AIR: BALANCE

LOT NO :HAL-248-100-1

METER READING ACCURACY: 100 PPM

EXPIRATION DATE: 7-1-2011

ACCURACY : +/- 2%

СО	MPANY
· · · · · · · · · · · · · · · · · · ·	RICE

SYSTEM	JUNCTION	UNIT	SECTION	TOWN SHIP	RANGE
EME	C-13 JCT	С	13	205	36E

SAMPLE ID	PID	SAMPLE ID	PID
BLENDED BACKFILL	0.9		
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I verify that I have calibrated the above instrument in accordance to the manufacture operation manual.

SIGNATURE: Parkat Gran

DATE: 8/22/2011

EME Jct. C-13 Unit 'C', Sec. 13, T20S, R36E



S

30 ft.

CHLORIDE CONCENTRATION CURVE

RICE Operating Company

EME Jct. C-13

Unit 'C', Sec. 13, T20S, R36E



Backhoe samples at 10 ft South of the junction (source)

Groundwater = 31 ft



PO Box 5630 Hobbs, NM 88241 Phone: (575) 393-4411 Fax: (575) 393-0293

VEGETATION FORM

1. General Information Site name: EME C-13 JCT U/L Longitude Section Township Range County Latitude С 103°18.696' 13 20S 36E Lea 32° 34.649' Contact Name: Bruce Baker Email: bbaker@rice-ecs.com Site size: 15,367 Map detail of site attached square feet Additional information: 2. Soils *Do not rip caliche subsoils: caliche rocks brought to the surface by ripping shall be removed. Salvaged from site [Bioremediated Imported 🛛 Blended 🛛 Depth (in): Describe soil & subsoil: Blow sand and subsoil caliche Texture: Sandy Soil prep methods: | Rip] Depth(in): Disc Depth (in): Rollerpack [Date completed: 3. Bioremediation Fertilizer Hay 🗌 Other Type: Describe: Lbs/acre: 4. Seeding *Attach seed bag tags to this form. Seed bag tags shall contain the site name and S-T-R. Custom seed mix 🛛 Prescribed mix Seed mix name: Sandy Mix Grass Seed Seeding date: 8/31/2011 Broadcast 🛛 Method: Hand Broadcast Soil conditions during seeding: Dry 🛛 Damp Wet Photos attached X Observations: 15 lbs of sandy mix Number of photos: 11 5. Certification-Lhereby certify that the information in this form and attachments is true and complete to the best of my knowledge and belief. Name: Oscar Frayre Title: Environmental Tech. Date: 8/31/2011 Signature/ 30P