1R - 427-231

REPORTS

DATE:

2-18-11

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

CERTIFIED MAIL
RETURN RECIEPT NO. 7008 1140 0001 3070 7003

February 18th, 2011

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

RE: **ICP REPORT**
Rice Operating Company – EME SWD System
EME P-8-3 boot (1R427-231): UL/P sec. 8 T20S R37E

Mr. Hansen:

RICE Operating Company (ROC) has retained Rice Environmental Consulting and Safety (RECS) to address potential environmental concerns at the above-referenced site in the EME Salt Water Disposal (SWD) system. ROC is the service provider (agent) for the EME SWD System and has no ownership of any portion of the pipeline, well, or facility. The system is owned by a consortium of oil producers, System Parties, who provide all operating capital on a percentage/usage basis.

Background and Previous Work
This site is located approximately 3 miles south of Monument, New Mexico at UL/P sec. 8 T20S R37E as shown on the Site Location Map (Figure 1). NM OSE records indicate that groundwater will likely be encountered at a depth of approximately 23 +/- feet. In 2007 ROC initiated work on the former EME P-8-3 boot junction. The site was delineated using a backhoe to form a trench and soil samples were screened at regular intervals for both hydrocarbons and chlorides. From the excavation trench, the 15 ft bgs sample was collected for laboratory verification. Laboratory tests of the site showed negligible gasoline range organics (GRO) and diesel range organics (DRO). However, chlorides concentrations from the trench did not relent with depth with the 15 foot sample testing at 624 ppm. The soil from the trench was taken to a disposal facility and clean imported soil was used to backfill the site and to contour it to the surrounding landscape. The site was seeded, and an identification plate was placed on the surface of the site to mark its location for future environmental considerations. NMOCD was notified of potential groundwater impact on March 13, 2008 and a junction box disclosure report (Appendix A) was submitted to NMOCD with all the 2007 junction box closures and disclosures.

ICP Investigative Results
As part of the Investigation and Characterization Plan approved by NMOCD on December 22nd, 2010, five soil bores were advanced through the former junction box site to a depth of 21 ft bgs on December 8th and 10th, 2010 (Figure 2). ROC personnel field tested the soil for chlorides and screened in the field with a photo-ionization detector (PID). Representative samples from the bore were taken to a commercial laboratory for confirmation of chloride and hydrocarbon field numbers (Appendix B). Laboratory readings showed chloride numbers ranging from a high of 1,300 mg/kg at 9 ft bgs in soil bore #3 to a low of 272 mg/kg at 21 ft bgs in soil bore #5. Laboratory readings for GRO showed non-detect in all soil bores. However, laboratory DRO readings showed numbers of 77.7 mg/kg at 21 ft bgs in soil bore #1 and 149 mg/kg at 21 ft bgs in soil bore #5. All other DRO readings showed non-detect. Based on these findings, additional lateral delineation is required.

Recommendations
The P-8-3 boot site is possibly located within a regionally impacted groundwater area (Figure 3). To verify groundwater quality, ROC proposes to install a 4 inch, near-source monitor well approximately 25 ft southeast and a 2 inch, up gradient monitor well approximately 100 ft northwest of the former junction box site (Figure 4). Additional monitor wells may be required to fully delineation groundwater quality. ROC proposes to conduct lateral delineation of soils surrounding the former box site. The results of the additional delineation will be evaluated to determine dimensions of a possible infiltration barrier. Upon completion of the proposed work and sufficient quarters of monitor well sampling, a Corrective Action Plan (CAP) will be submitted to NMOCD with recommendations.

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

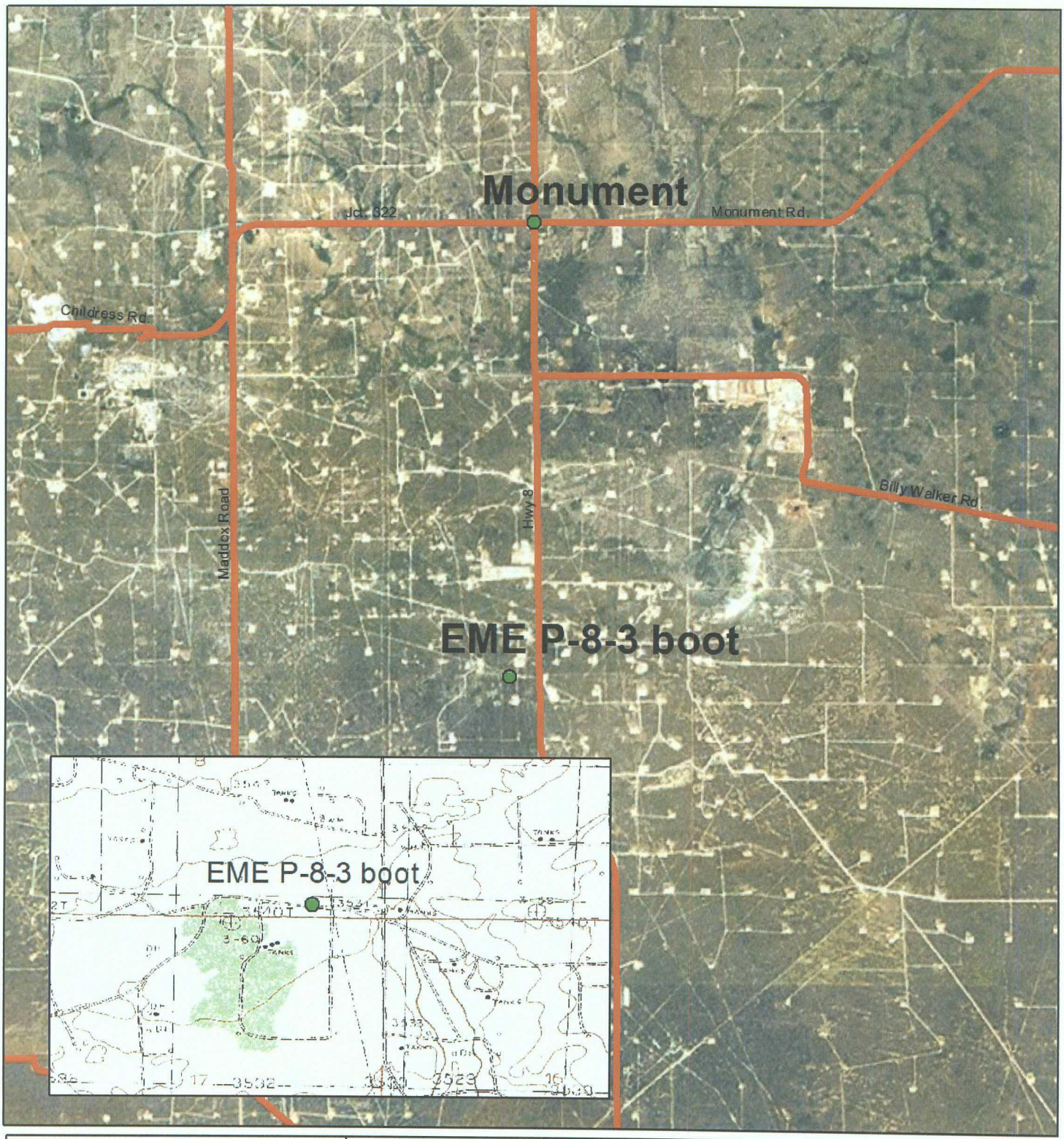
Sincerely,

Lara Weinheimer
Project Scientist
RECS
(575) 441-0431

Attachments:
- Figures – Site location map
  - Site delineation plat
  - Regional groundwater contamination plat
  - Monitor well location plat
- Appendix A – Disclosure report form
- Appendix B – Soil bore log and laboratory analysis

Figures

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



RICE ENVIRONMENTAL CONSULTING & SAFETY, LLC

RECS

EME P-8-3 boot

Legals: UL/P sec. 8
T20S R37E

Case #: 1R427-231

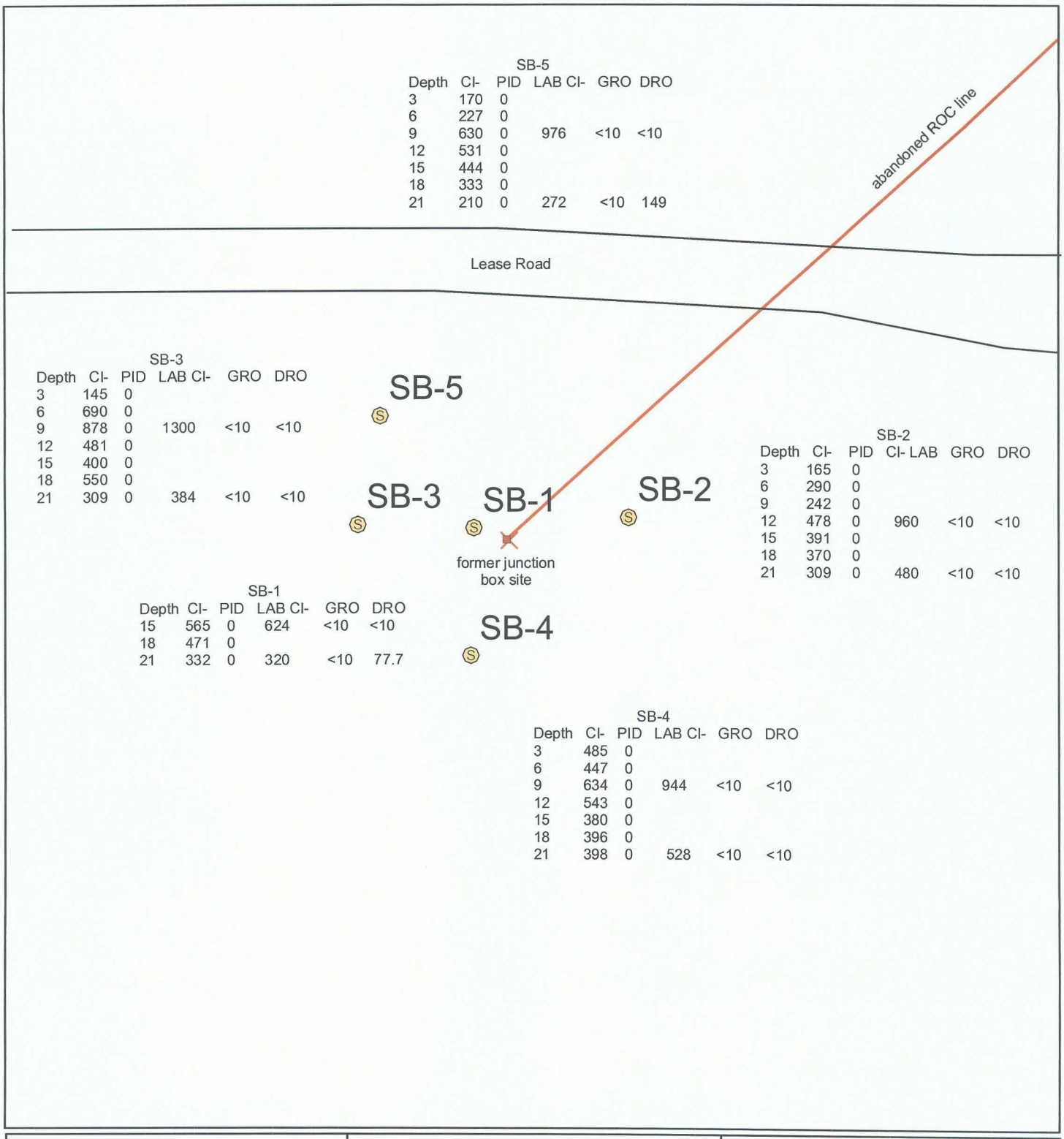
Figure 1

N
W E
S

0 2,300 4,600 9,200
Feet

Drawing date: 11-17-10
Drafted by: L. Weinheimer

Soil bore information



SB-5

Depth	Cl-	PID	LAB Cl-	GRO	DRO
3	170	0			
6	227	0			
9	630	0	976	<10	<10
12	531	0			
15	444	0			
18	333	0			
21	210	0	272	<10	149

SB-3

Depth	Cl-	PID	LAB Cl-	GRO	DRO
3	145	0			
6	690	0			
9	878	0	1300	<10	<10
12	481	0			
15	400	0			
18	550	0			
21	309	0	384	<10	<10

SB-2

Depth	Cl-	PID	Cl- LAB	GRO	DRO
3	165	0			
6	290	0			
9	242	0			
12	478	0	960	<10	<10
15	391	0			
18	370	0			
21	309	0	480	<10	<10

SB-1

Depth	Cl-	PID	LAB Cl-	GRO	DRO
15	565	0	624	<10	<10
18	471	0			
21	332	0	320	<10	77.7

SB-4

Depth	Cl-	PID	LAB Cl-	GRO	DRO
3	485	0			
6	447	0			
9	634	0	944	<10	<10
12	543	0			
15	380	0			
18	396	0			
21	398	0	528	<10	<10

RICE ENVIRONMENTAL CONSULTING & SAFETY, LLC

EME P-8-3 boot

Legals: UL/P sec. 8
T20S R37E

Case #: 1R427-231

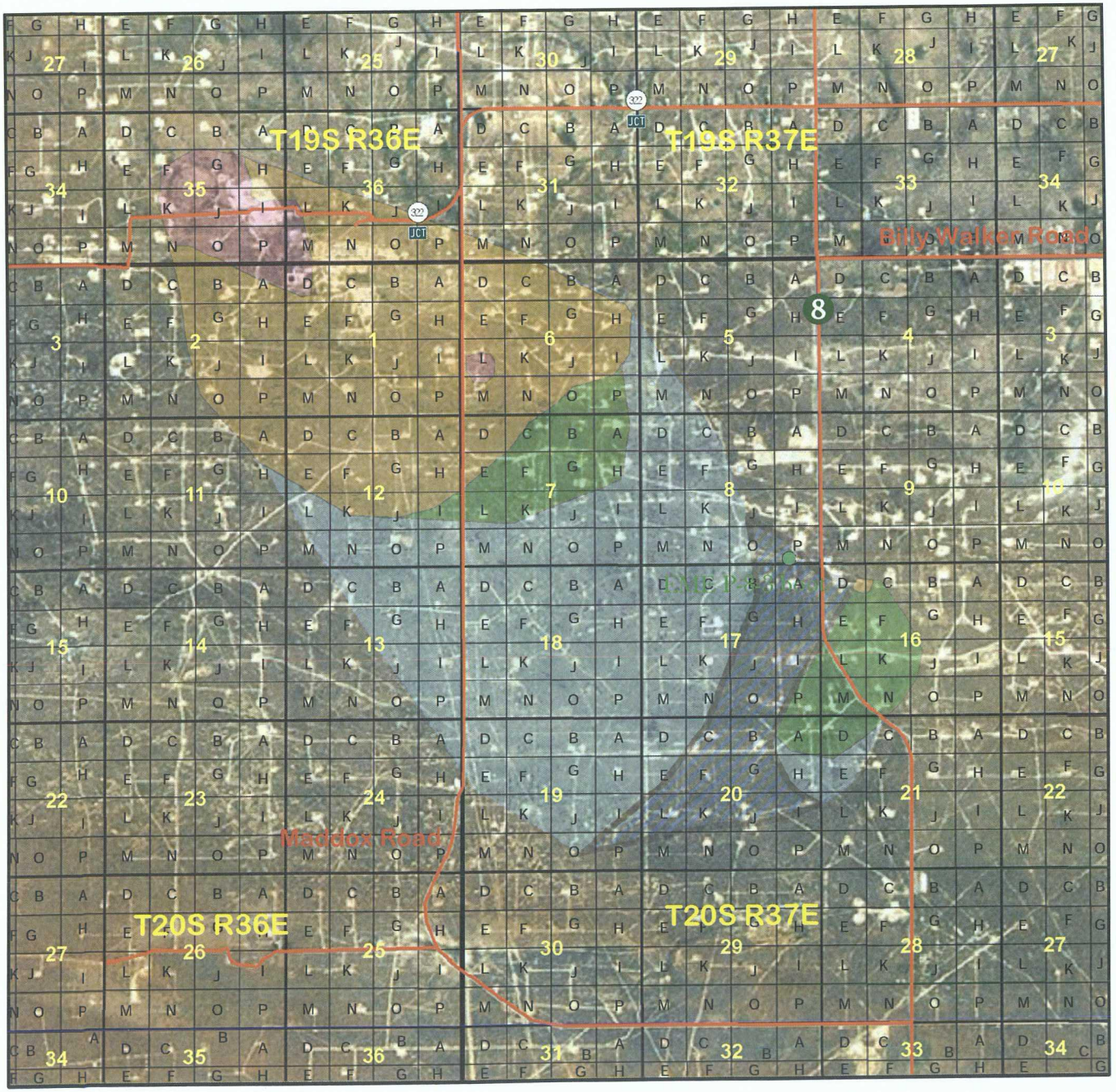
Figure 2

N W E S

0 5 10 20 Feet

Drawing date:12-21-10
Drafted by: L. Weinheimer

EME Groundwater Contamination



RICE OPERATING COMPANY
ROC
SINCE 1955

122 W. Taylor
Hobbs, NM 88240
Phone (575) 393-9174
Fax (575) 397-1471

- Cl- concentration > 10,000
- 10,000 > Cl- concentration > 5,000
- 5,000 > Cl- concentration > 2,000
- 2,000 > Cl- concentration > 700
- Hypothetical Cl- contamination area

N W E S

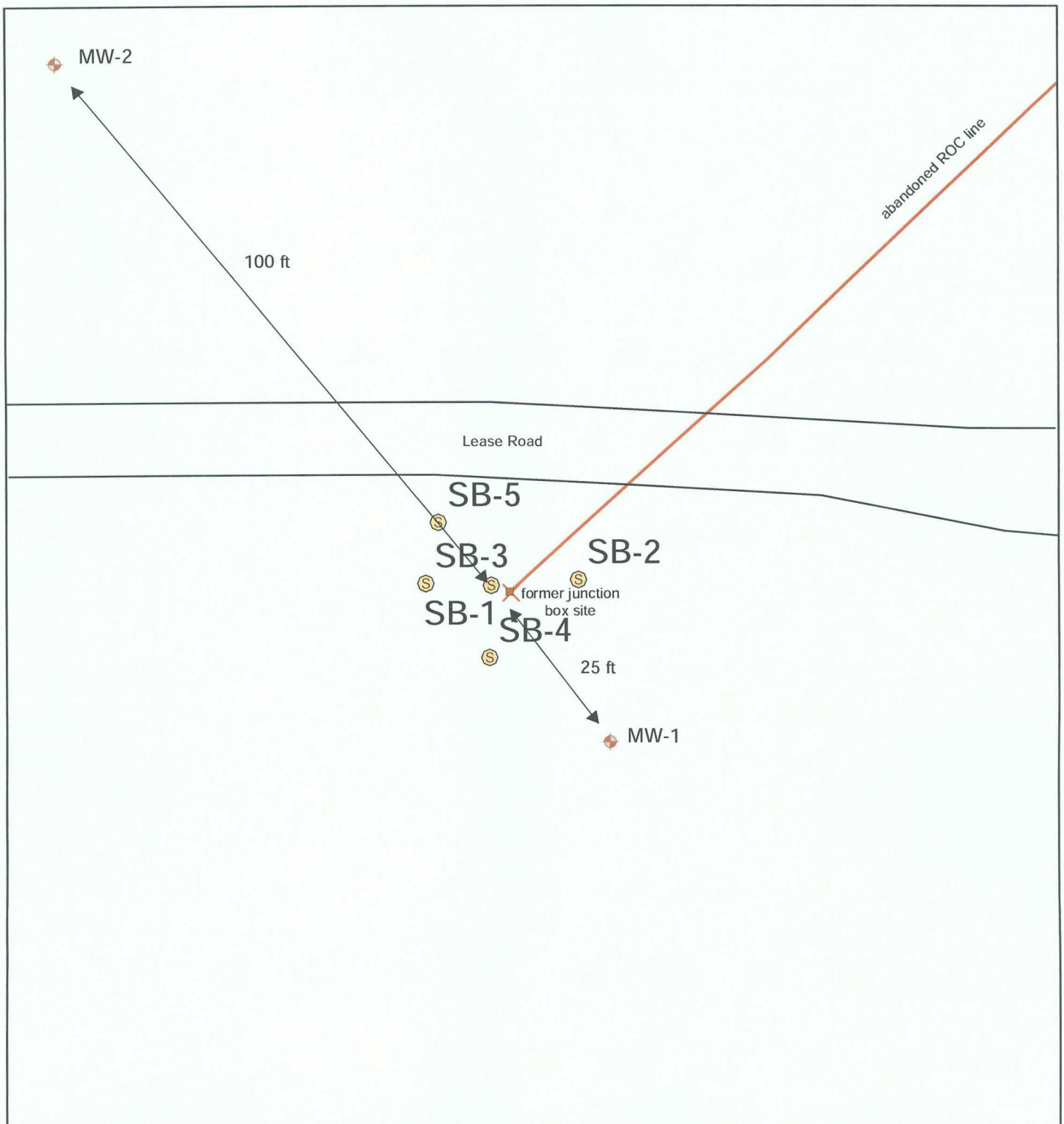
0 0.5 1 Miles

This map was prepared by and for Rice Operating Company. This map represents the known chloride impact concentrations in the groundwater as of 2011. As conditions change and/or new monitor wells are added, the contamination plume will undergo permutations that will be reflected in future maps. Rice Operating Company does not assume any responsibility for the use of this information by others.

Drawing date: 12-15-09
Revision date:1-11-11
Drafted by: Lara Weinheimer

Figure 3

Proposed MW Locations



RICE ENVIRONMENTAL RECS CONSULTING & SAFETY, LLC

EME P-8-3 boot

Legals: UL/P sec. 8
T20S R37E

Case #: 1R427-231

Figure 4

N W E S

0 5 10 20 Feet

Drawing date:12-21-10
Drafted by: L. Weinheimer

Appendix A

Junction Box Disclosure Report

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

RICE OPERATING COMPANY
JUNCTION BOX **DISCLOSURE*** REPORT

BOX LOCATION

SWD SYSTEM	JUNCTION	UNIT	SECTION	TOWNSHIP	RANGE	COUNTY	NEW BOX DIMENSIONS - FEET		
							Length	Width	Depth
Eunice-Monument-Eumont (EME)	jct. P-8-3	P	8	T20S	R37E	Lea	no box; junction eliminated		

LAND TYPE: BLM _____ STATE _____ FEE LANDOWNER Jimmie T. Cooper OTHER _____

Depth to Groundwater 23 feet NMOCD SITE ASSESSMENT RANKING SCORE: 20

Date Started 8/30/2007 Date Completed 12/28/2007 NMOCD Witness no

Soil Excavated 9 cubic yards Excavation Length 5 Width 3 Depth 15 feet

Soil Disposed 12 cubic yards Offsite Facility Sundance Location Eunice, New Mexico

FINAL ANALYTICAL RESULTS: **Sample Date** 12/12/2007 **Sample Depth** 15 ft

TPH and chloride laboratory test results completed by using an approved laboratory and testing procedures pursuant to NMOCD guidelines.

Sample Location	PID (field) ppm	GRO mg/kg	DRO mg/kg	Chloride mg/kg
GRAB @ 15 ft BGS	2.3	<10.0	<10.0	624

CHLORIDE FIELD TESTS

LOCATION	DEPTH (ft)	ppm
vertical delineation trench at former junction site	5	177
	6	169
	7	168
	8	166
	9	262
	10	482
	11	602
	12	720
	13	690
	14	472
	15	683

General Description of Remedial Action:

This junction was eliminated with the pipeline replacement/upgrade program. After the box lumber was removed, a vertical delineation trench 15-ft-deep was made at the site using a backhoe. Soil samples were collected at every foot of depth below the pipeline and field tested for chloride and organic vapors. PID screenings resulted in low concentrations (<100 ppm), but chloride concentrations generally increased with depth. A grab sample from the bottom of the trench was collected for laboratory analysis which confirmed TPH (non-detect concentrations) meets NMOCD guidelines. The excavated soil from the trench was taken to a disposal facility and 24 cubic yards of clean, imported soils were used to backfill the trench and spread on the surface. This soil was then seeded with a blend of native vegetation on 12/28/2007. NMOCD was notified of potential groundwater impact at this site on 3/13/2008.

ADDITIONAL EVALUATION IS HIGH PRIORITY

enclosures: photos, lab results, PID field screenings, chloride graph, disposal manifest

I HEREBY CERTIFY THAT THE INFORMATION ABOVE IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

SITE SUPERVISOR L. Bruce Baker SIGNATURE Bruce Baker COMPANY RICE Operating Company

REPORT ASSEMBLED BY Kristin Farris Pope SIGNATURE Kristin Farris Pope

DATE 3/13/2008 TITLE Project Scientist

**** This site is a "DISCLOSURE." It will be placed on a prioritized list of similar sites for further consideration.***

EME P-8-3 boot

Unit P, Section 8, T20S, R37E

undisturbed junction box during initial investigation 8/29/2007

collecting samples from delineation trench 12/11/2007

seeding topsoil spread on site 12/28/2007

close-up of identification plate on backfilled surface 12/28/2007

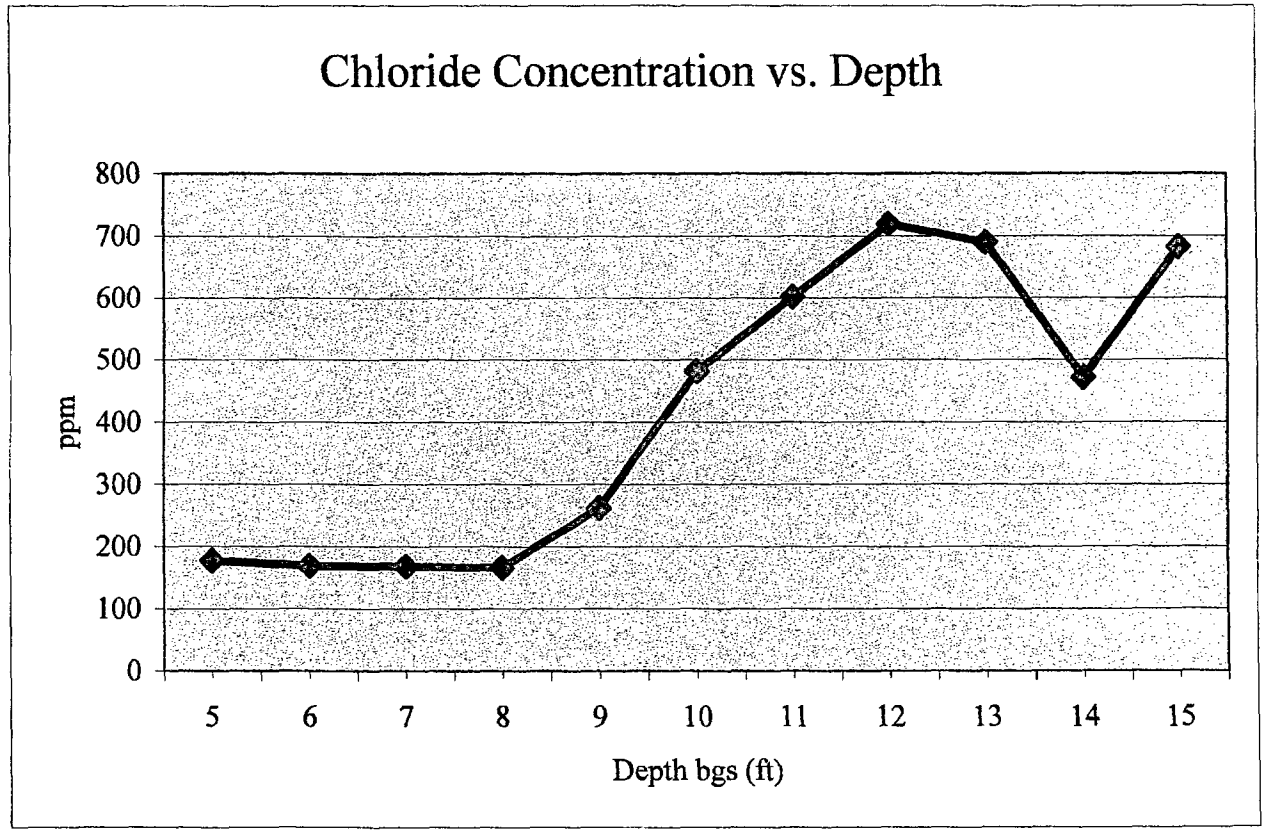
EME jct. P-8-3

unit 'P', Sec. 8, T20S, R37E

Backhoe samples at junction
(source)

Depth bgs (ft)	[Cl⁻] ppm
5	177
6	169
7	168
8	166
9	262
10	482
11	602
12	720
13	690
14	472
15	683

Groundwater = 23 ft



CARDINAL LABORATORIES

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

COPY

ANALYTICAL RESULTS FOR
RICE OPERATING COMPANY
ATTN: BRUCE BAKER
122 W. TAYLOR
HOBBS, NM 88240
FAX TO: (575) 397-1471

Receiving Date: 12/13/07
Reporting Date: 12/17/07
Project Owner: NOT GIVEN
Project Name: EME P-8-3 BOOT
Project Location: EME P-8-3 BOOT

Sampling Date: 12/12/07
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: MI
Analyzed By: CK/KS

LAB NUMBER	SAMPLE ID	GRO (C_6-C_{12}) (mg/kg)	DRO (>C_{12}-C_{28}) (mg/kg)	Cl* (mg/kg)
ANALYSIS DATE		12/14/07	12/14/07	12/13/07
H13906-1	SOURCE @ 15' GRAB	<10.0	<10.0	624
Quality Control		526	410	500
True Value QC		500	500	500
% Recovery		105	82.0	100
Relative Percent Difference		<0.1	6.3	<0.1

METHODS: TPH GRO & DRO: EPA SW-846 8015 M; Std. Methods 4500-Cl B
*Analysis performed on a 1:4 w:v aqueous extract.

Chemist

12/17/07
Date

H13906TCL RICE

CARDINAL LABORATORIES

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Company Name:	Rice Operating Co
Project Manager:	Bruce Baker
Address:	122 W. Taylor
City:	Hobbs State: NM Zip: 88240
Phone #:	393-9174 Fax #: 397-1471
Project #:	Project Owner:
Project Name:	EME P-8-3 Boot
Project Location:	EME P-8-3 Boot
Sampler Name:	Bruce Baker

BILL TO

P.O. #:	
Company:	
Attn:	
Address:	
City:	
State: Zip:	
Phone #:	
Fax #:	

ANALYSIS REQUEST

FOR LAB USE ONLY Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	PRESERV.: ACID/BASE:	ICE / COOL	OTHER :	SAMPLING: DATE	TIME	Cl-	TPH 8015M
H13906-1	Source @ 15'	G	1			✓					✓		12-12-07	2:26pm	✓	✓

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Relinquished By: Bruce Baker	Date: 12-13-07 Time:	Received By: Misty LeBeau	
Relinquished By:	Date: Time:	Received By:	

Delivered By: (Circle One) Sampler - UPS - Bus - Other:

Sample Condition: Cool: ☑ Yes ☐ No Intact: ☑ Yes ☐ No

CHECKED BY: (Initials) CdV

Phone Result: ☐ Yes ☐ No Add'l Phone #:
Fax Result: ☐ Yes ☐ No Add'l Fax #:

REMARKS:
Email to bbaker@ricesud.com
CC # to jpuris@ricesud.com

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

Sundance Services, Inc.

P.O. Box 1737 ★ Eunice, New Mexico 88231

(575) 394-2511

COPY

Ticket # 71288

Lease Operator/Shipper/Company: Rice

Lease Name: Fme Boyd D 38 (P-8-3 Boot) BB

Transporter Company: Sundance Time _____ AM/PM

Date: 12/27/07 Vehicle No. 700 Driver No. _____

Charge To: Rice

TYPE OF MATERIAL

☐ Produced Water	☐ Drilling Fluids	☐ Completion Fluids
☐ Tank Bottoms	☒ Contaminated Soil	☐ C-117 No.:
☐ Other Materials	☐ BS&W Content:	

Description: Pit Liner ☐ JETOUT ☐ CALLOUT

VOLUME OF MATERIAL BBLS. 12 YARDS

AS A CONDITION TO SUNDANCE SERVICES, INC.'S ACCEPTANCE OF THE MATERIALS SHIPPED WITH THIS JOB TICKET, OPERATOR/SHIPPER REPRESENTS AND WARRANTS THAT THE WASTE MATERIAL SHIPPED HEREWITH IS MATERIAL EXEMPT FROM THE RESOURCE, CONSERVATION AND RECOVERY ACT OF 1976, AS AMENDED FROM TIME TO TIME, 40 U.S.C. 6901, ET SEQ., THE NM HEALTH AND SAF. CODE 361.001 ET SEQ., AND REGULATIONS RELATED THERETO, BY VIRTUE OF THE EXEMPTION AFFORDED DRILLING FLUIDS, PRODUCED WATERS, AND OTHER WASTE ASSOCIATED WITH THE EXPLORATION, DEVELOPMENT OR PRODUCTION OF CRUDE OIL OR NATURAL GAS OR GEOTHERMAL ENERGY.

ALSO AS A CONDITION TO SUNDANCE SERVICES, INC.'S ACCEPTANCE OF THE MATERIALS SHIPPED WITH THIS JOB TICKET, TRANSPORTER REPRESENTS AND WARRANTS THAT ONLY THE MATERIAL DELIVERED BY OPERATOR/SHIPPER TO TRANSPORTER IS NOW DELIVERED BY TRANSPORTER TO SUNDANCE SERVICES, INC.'S FACILITY FOR DISPOSAL.

THIS WILL CERTIFY that the above Transporter loaded the material represented by this Transporter Statement at the above described location, and that it was tendered by the above described shipper. This will certify that no additional materials were added to this load, and that the material was delivered without incident.

DRIVER: _____

FACILITY REPRESENTATIVE: _____

RICE OPERATING COMPANY

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

CK.	✓	MODEL: PGM 7600	SERIAL NO: 110-013676
MODEL		MODEL: PGM 7600	SERIAL NO: 110-013744
NO.		MODEL: PGM 7600	SERIAL NO: 110-12383
		MODEL: PGM 7600	SERIAL NO: 110-012920

GAS COMPOSITION: ISOBUTYLENE 100PPM / AIR: BALANCE

LOT NO: 07-3353	EXPIRATION DATE: 4/08/09
FILL DATE: 10/08/07	METER READING ACCURACY: 100 ppm

ACCURACY : +/- 2%

SYSTEM	JUNCTION	UNIT	SECTION	TOWN SHIP	RANGE
EME	Jct. P-8-3 Boot	P	8	20S	37E

Source

SAMPLE ID	PID	SAMPLE ID	PID
13'	1.9		
14'	59.7		
15'	2.3		

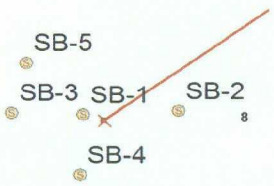
I verify that I have calibrated the above insrument in accordance to the namufacture operation manual.

SIGNATUE: Bruce Baker DATE: 12-12-07

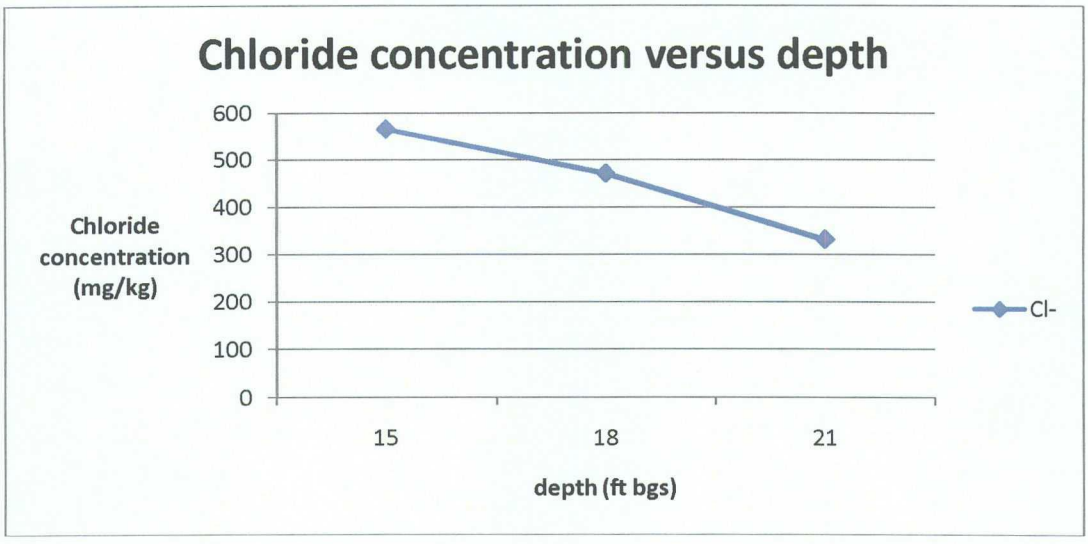
Appendix B

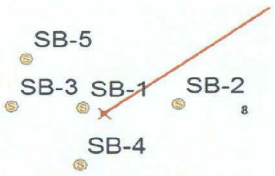
ICP soil bore installation

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

Logger:	Jordan Woodfin		RICE ENVIRONMENTAL RECS CONSULTING & SAFETY, LLC
Driller:	Harrison & Cooper, Inc.		
Drilling Method:	Air rotary		**Project Name:** EME P-8-3 boot **Well ID:** SB-1
Start Date:	12/8/2010		
End Date:	12/8/2010		**Project Consultant:** RECS
Comments: Located at the source of the former junction box site.			**Location:** UL/P sec. 8 T20S R37E
DRAFTED BY: L. Weinheimer			**Lat:** 32°34'51.143"N **County**: LEA
TD = 21 ft	GW = 23 ft		**Long:** 103°16'5.578"W **State**: NM

Depth (feet)	chloride field tests	LAB	PID	Description	Lithology	Well Construction
				Tan very fine silty sand with small caliche fragments		bentonite seal
15 ft	565	Cl- 624	0			
		GRO <10				
		DRO <10				
18ft	471		0			
21 ft	332	Cl- 320	0			
		GRO <10				
		DRO 77.7				

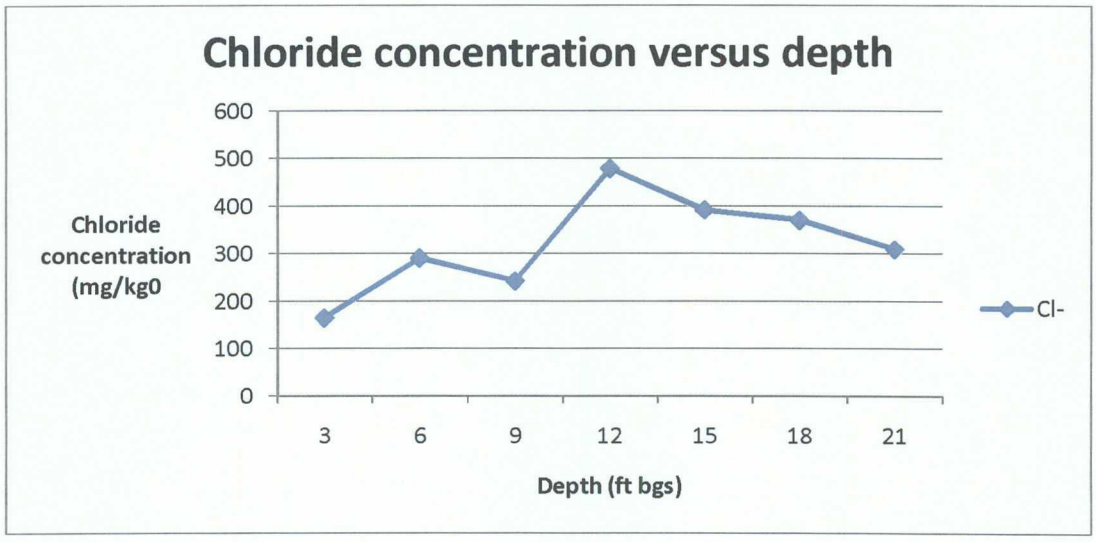

Chloride concentration versus depth
Chloride concentration (mg/kg)
600
500
400
300
200
100
0
15
18
21
depth (ft bgs)
Cl-

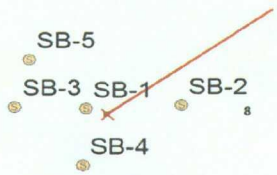
Logger:	Jordan Woodfin		**Project Name:** EME P-8-3 boot **Well ID:** SB-2
Driller:	Harrison & Cooper, Inc.		**Project Consultant:** RECS
Drilling Method:	Air rotary		
Start Date:	12/8/2010		
End Date:	12/8/2010		
Comments: Located 10 ft east of the former junction box site.			**Location:** UL/P sec. 8 T20S R37E
DRAFTED BY: L. Weinheimer			**Lat:** 32°34'51.149"N **County**: LEA
TD = 21 ft		GW = 23 ft	**Long:** 103°16'5.43"W **State**: NM

Depth (feet)	chloride field tests	LAB	PID	Description
				Brown very fine sand
3 ft	165		0	
				Tan very fine silty sand
6 ft	290		0	
9 ft	242		0	
				Tan very fine sand with very small caliche fragments
12 ft	478	Cl- 960	0	
		GRO <10		
		DRO <10		
15 ft	391		0	
18 ft	370		0	
21 ft	309	Cl- 480	0	
		GRO <10		
		DRO <10		

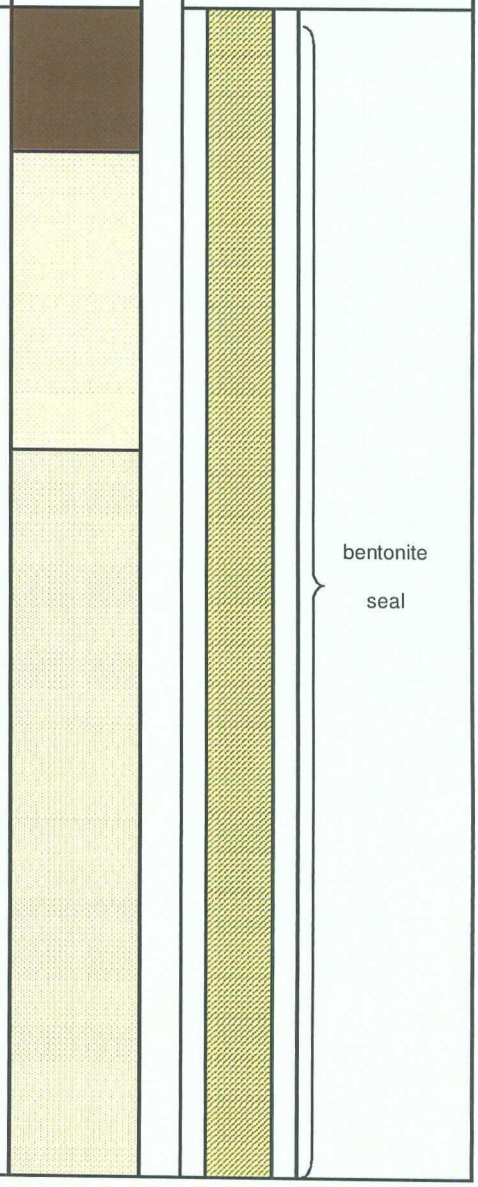
Lithology

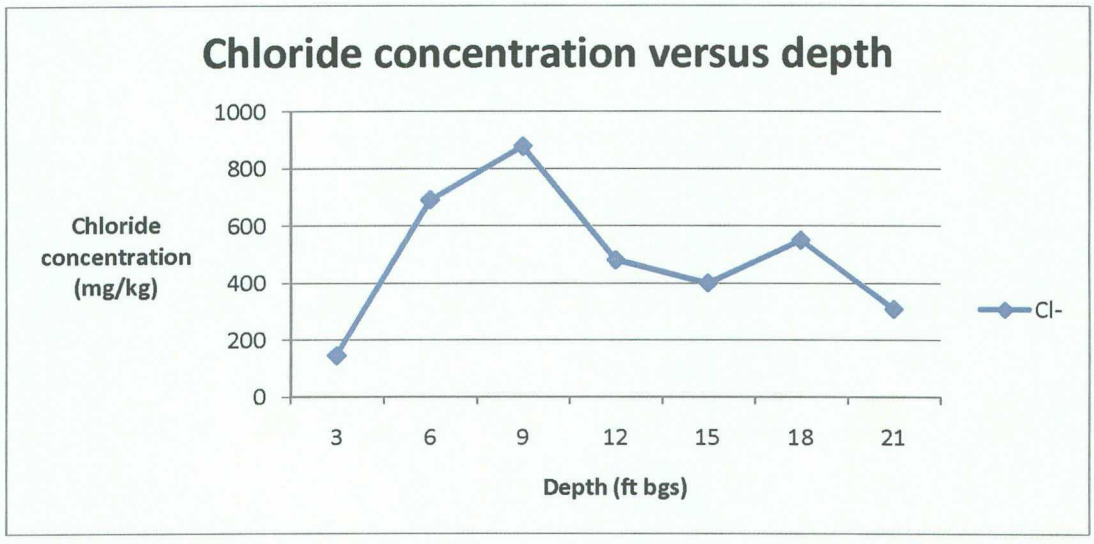
Well Construction: bentonite seal

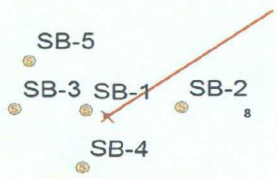

Chloride concentration versus depth
Chloride concentration (mg/kg0
600
500
400
300
200
100
0
3
6
9
12
15
18
21
Depth (ft bgs)
Cl-

Logger:	Jordan Woodfin		RICE ENVIRONMENTAL RECS CONSULTING & SAFETY, LLC
Driller:	Harrison & Cooper, Inc.		**Project Name:** EME P-8-3 boot **Well ID:** SB-3
Drilling Method:	Air rotary		**Project Consultant:** RECS
Start Date:	12/8/2010		
End Date:	12/8/2010		
Comments: Located 12 ft west of the former junction box site.			**Location:** UL/P sec. 8 T20S R37E
DRAFTED BY: L. Weinheimer			**Lat:** 32°34'51.147"N **County**: LEA
TD = 21 ft	GW = 23 ft		**Long:** 103°16'5.687"W **State**: NM

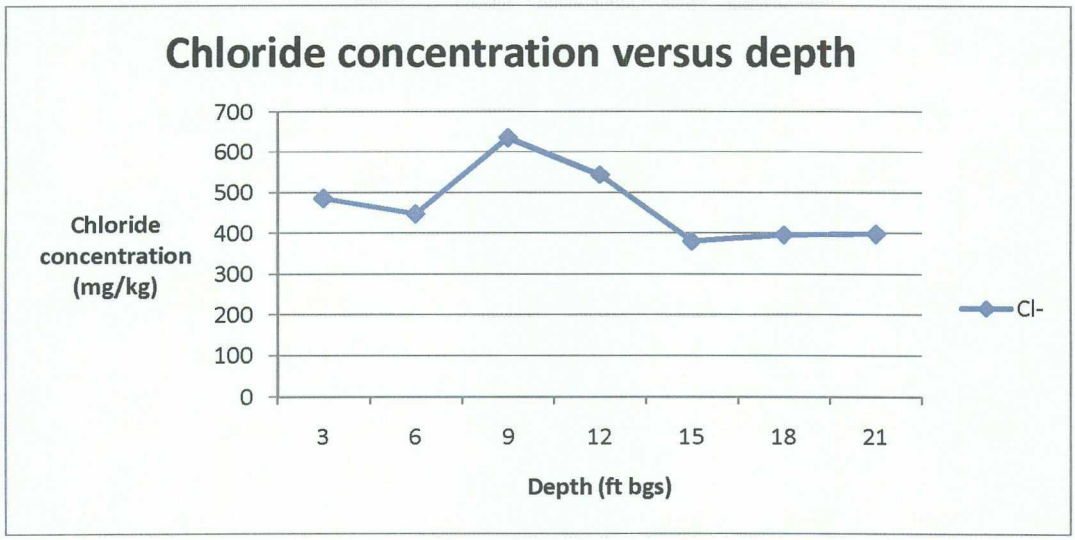
Depth (feet)	chloride field tests	LAB	PID	Description
				Brown very fine sand slightly consolidated
3 ft	145		0	
				Tan fine silty sand
6 ft	690		0	
9 ft	878	Cl- 1300	0	
		GRO <10		Tan very fine silty sand with caliche fragments
		DRO <10		
12 ft	481		0	
15 ft	400		0	
18 ft	550		0	
21 ft	309	Cl- 384	0	
		GRO <10		
		DRO <10		

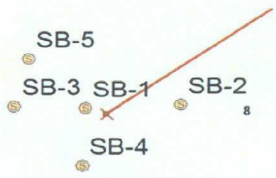



Chloride concentration versus depth
Chloride concentration (mg/kg)
1000
800
600
400
200
0
3
6
9
12
15
18
21
Depth (ft bgs)
Cl-

Logger:	Jordan Woodfin		RICE ENVIRONMENTAL RECS CONSULTING & SAFETY, LLC
Driller:	Harrison & Cooper, Inc.		**Project Name:** EME P-8-3 boot **Well ID:** SB-4
Drilling Method:	Air rotary		**Project Consultant:** RECS
Start Date:	12/8/2010		
End Date:	12/8/2010		
Comments: Located 10 ft south of the former junction box site.			**Location:** UL/P sec. 8 T20S R37E
DRAFTED BY: L. Weinheimer			**Lat:** 32°34'51.041"N **County**: LEA
TD = 21 ft	GW = 23 ft		**Long:** 103°16'5.582"W **State**: NM

Depth (feet)	chloride field tests	LAB	PID	Description	Lithology	Well Construction
				Tan silty sand with small caliche fragments		bentonite seal
3 ft	485		0			
6 ft	447		0			
9 ft	634	Cl-944	0			
		GRO <10		Tan very fine silty sand with small caliche fragments		
		DRO <10				
12 ft	543		0			
15 ft	380		0			
18 ft	396		0			
21 ft	398	Cl-528	0			
		GRO <10				
		DRO <10				

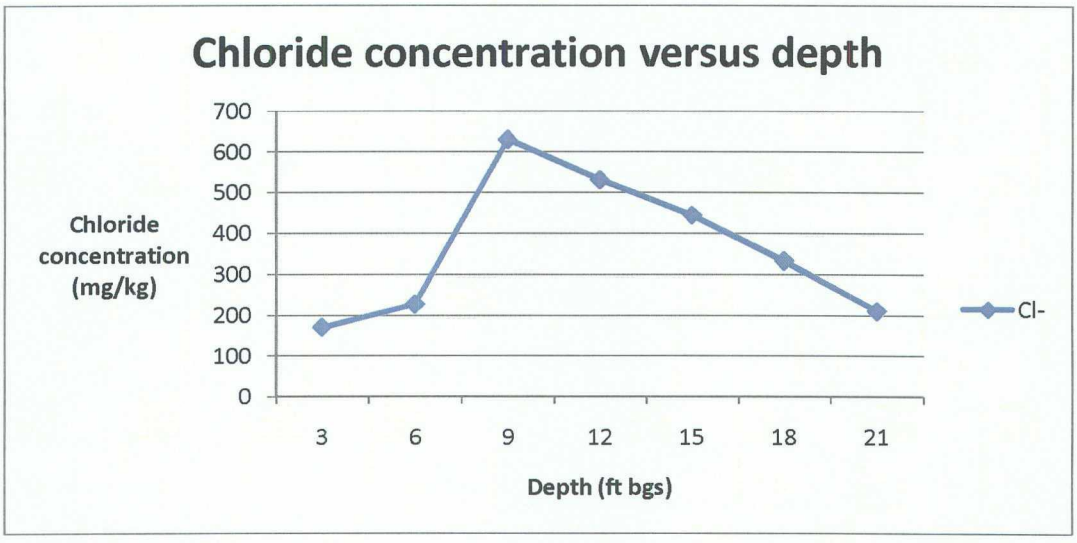

Chloride concentration versus depth
Chloride concentration (mg/kg)
700
600
500
400
300
200
100
0
3
6
9
12
15
18
21
Depth (ft bgs)
Cl-

Logger:	Jordan Woodfin		RICE ENVIRONMENTAL RECS CONSULTING & SAFETY, LLC
Driller:	Harrison & Cooper, Inc.		**Project Name:** EME P-8-3 boot **Well ID:** SB-5
Drilling Method:	Air rotary		**Project Consultant:** RECS
Start Date:	12/10/2010		
End Date:	12/10/2010		
Comments: Located 14 ft north west of the former junction box site.			**Location:** UL/P sec. 8 T20S R37E
DRAFTED BY: L. Weinheimer			**Lat:** 32°34'51.233"N **County**: LEA
TD = 21 ft	GW = 23 ft		**Long:** 103°16'5.665"W **State**: NM

Depth (feet)	chloride field tests	LAB	PID	Description
				Brown very fine sand (slightly consolidated)
3 ft	170		0	
				Tan silty sand with caliche fragments
6 ft	227		0	
				Light brown fine silty sand with caliche fragments
9 ft	630	Cl- 976	0	
		GRO <10		
		DRO <10		
12 ft	531		0	
15 ft	444		0	
18 ft	333		0	
21 ft	210	Cl- 272	0	
		GRO <10		
		DRO 149		

Lithology

Well Construction: bentonite seal


Chloride concentration versus depth
Chloride concentration (mg/kg)
700
600
500
400
300
200
100
0
3
6
9
12
15
18
21
Depth (ft bgs)
Cl-

CARDINAL Laboratories

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

December 13, 2010

Hack Conder

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: EME JCT P-8-3

Enclosed are the results of analyses for samples received by the laboratory on 12/09/10 9:50.

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. Keene

Celey D. Keene
Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

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

Received:	12/09/2010	Sampling Date:	12/08/2010
Reported:	12/13/2010	Sampling Type:	Soil
Project Name:	EME JCT P-8-3	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NONE GIVEN		

Sample ID: SB #1 @ 15' (H021480-01)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**624**	16.0	12/10/2010	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
GRO C6-C10	<10.0	10.0	12/10/2010	ND	164	81.9	200	3.76	
DRO >C10-C28	<10.0	10.0	12/10/2010	ND	163	81.3	200	2.60	

Surrogate: 1-Chlorooctane	*87.7 %*	*70-130*
Surrogate: 1-Chlorooctadecane	*92.5 %*	*70-130*

Sample ID: SB #1 @ 21' (H021480-02)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**320**	16.0	12/10/2010	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
GRO C6-C10	<10.0	10.0	12/10/2010	ND	164	81.9	200	3.76	
DRO >C10-C28	**77.7**	10.0	12/10/2010	ND	163	81.3	200	2.60	

Surrogate: 1-Chlorooctane	*102 %*	*70-130*
Surrogate: 1-Chlorooctadecane	*105 %*	*70-130*

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

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

Received:	12/09/2010	Sampling Date:	12/08/2010
Reported:	12/13/2010	Sampling Type:	Soil
Project Name:	EME JCT P-8-3	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NONE GIVEN		

Sample ID: SB #2 @ 12' (H021480-03)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**960**	16.0	12/10/2010	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
GRO C6-C10	<10.0	10.0	12/10/2010	ND	164	81.9	200	3.76	
DRO >C10-C28	<10.0	10.0	12/10/2010	ND	163	81.3	200	2.60	

Surrogate: 1-Chlorooctane	*90.9 %*	*70-130*
Surrogate: 1-Chlorooctadecane	*94.4 %*	*70-130*

Sample ID: SB #2 @ 21' (H021480-04)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**480**	16.0	12/10/2010	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
GRO C6-C10	<10.0	10.0	12/10/2010	ND	164	81.9	200	3.76	
DRO >C10-C28	<10.0	10.0	12/10/2010	ND	163	81.3	200	2.60	

Surrogate: 1-Chlorooctane	*89.7 %*	*70-130*
Surrogate: 1-Chlorooctadecane	*92.7 %*	*70-130*

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

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

Received:	12/09/2010	Sampling Date:	12/08/2010
Reported:	12/13/2010	Sampling Type:	Soil
Project Name:	EME JCT P-8-3	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NONE GIVEN		

Sample ID: SB #3 @ 9' (H021480-05)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1300**	16.0	12/10/2010	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
GRO C6-C10	<10.0	10.0	12/10/2010	ND	164	81.9	200	3.76	
DRO >C10-C28	<10.0	10.0	12/10/2010	ND	163	81.3	200	2.60	

Surrogate: 1-Chlorooctane	*88.0 %*	*70-130*
Surrogate: 1-Chlorooctadecane	*99.1 %*	*70-130*

Sample ID: SB #3 @ 21' (H021480-06)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**384**	16.0	12/10/2010	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
GRO C6-C10	<10.0	10.0	12/10/2010	ND	164	81.9	200	3.76	
DRO >C10-C28	<10.0	10.0	12/10/2010	ND	163	81.3	200	2.60	

Surrogate: 1-Chlorooctane	*98.3 %*	*70-130*
Surrogate: 1-Chlorooctadecane	*103 %*	*70-130*

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

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

Received:	12/09/2010	Sampling Date:	12/08/2010
Reported:	12/13/2010	Sampling Type:	Soil
Project Name:	EME JCT P-8-3	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NONE GIVEN		

Sample ID: SB #4 @ 9' (H021480-07)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**944**	16.0	12/10/2010	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
GRO C6-C10	<10.0	10.0	12/10/2010	ND	164	81.9	200	3.76	
DRO >C10-C28	<10.0	10.0	12/10/2010	ND	163	81.3	200	2.60	

Surrogate: 1-Chlorooctane	*111 %*	*70-130*
Surrogate: 1-Chlorooctadecane	*114 %*	*70-130*

Sample ID: SB #4 @ 21' (H021480-08)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**528**	16.0	12/10/2010	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
GRO C6-C10	<10.0	10.0	12/10/2010	ND	190	95.1	200	14.3	
DRO >C10-C28	<10.0	10.0	12/10/2010	ND	187	93.7	200	5.04	

Surrogate: 1-Chlorooctane	*85.4 %*	*70-130*
Surrogate: 1-Chlorooctadecane	*90.1 %*	*70-130*

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Notes and Definitions

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

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL LABORATORIES

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Company Name: Rice Operating Company	BILL TO
Project Manager: Hack Conder	P.O. #:
Address: 122 West Taylor	Company:
City: Hobbs State: NM Zip: 88240	Attn:
Phone #: 575-393-9174 Fax #: 575-397-1471	Address:
Project #: Project Owner:	City:
Project Name: EME JCT P-8-3	State: Zip:
Project Location: EME JCT P-8-3	Phone #:
Sampler Name: Jordan Woodfin	Fax #:

FOR LAB USE ONLY Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	PRESERV.: ACID/BASE	ICE / COOL	OTHER :	SAMPLING: DATE	TIME	Chlorides	TPH 8015 M	BTEX	Texas TPH	Complete Cations/Anions	TPH 8015 M Extended Thru C40
H21480-1	SB # 1 @15'		1			✓					✓		12/8/10	02:00	✓	✓				
2	SB # 1 @ 21'		1			✓					✓			02:15	✓	✓				
3	SB # 2 @ 12'		1			✓					✓			02:30	✓	✓				
4	SB # 2 @ 21'		1			✓					✓			02:45	✓	✓				
5	SB # 3 @ 9'		1			✓					✓			03:00	✓	✓				
6	SB # 3 @ 21'		1			✓					✓			03:15	✓	✓				
7	SB # 4 @ 9'		1			✓					✓			03:45	✓	✓				
8	SB # 4 @ 21'		1			✓					✓			04:00	✓	✓				

Relinquished By: Jordan Woodfin	Date: 12/9/10 Time: 9:30	Received By:	Phone Result: ☐ Yes ☑ No Add'l Phone #:
Relinquished By:	Date: 12/9/10 Time: 9:50	Received By: Jodi Henson	Fax Result: ☐ Yes ☑ No Add'l Fax #:
Delivered By: (Circle One) Sampler - UPS - Bus - Other:	Sample Condition Cool: ☐ Yes ☐ No Intact: ☐ Yes ☐ No	CHECKED BY: (Initials)	REMARKS: email results Hconder@riceswd.com; jwoodfin@riceswd.com; Lweinheimer@riceswd.com kjones@riceswd.com

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

#26

NEED SAMPLES BACK, PLEASE

CARDINAL Laboratories

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

December 15, 2010

Hack Conder

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: EME JCT P-8-3

Enclosed are the results of analyses for samples received by the laboratory on 12/10/10 16:45.

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. Keene

Celey D. Keene
Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

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

Received:	12/10/2010	Sampling Date:	12/10/2010
Reported:	12/15/2010	Sampling Type:	Soil
Project Name:	EME JCT P-8-3	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NONE GIVEN		

Sample ID: SB #5 @ 9' (H021499-01)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**976**	16.0	12/13/2010	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	12/14/2010	ND	213	106	200	6.74	
DRO >C10-C28	<10.0	10.0	12/14/2010	ND	226	113	200	5.87	

Surrogate: 1-Chlorooctane	*90.0 %*	*70-130*
Surrogate: 1-Chlorooctadecane	*90.1 %*	*70-130*

Sample ID: SB #5 @ 21' (H021499-02)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**272**	16.0	12/13/2010	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	12/14/2010	ND	213	106	200	6.74	
DRO >C10-C28	**149**	10.0	12/14/2010	ND	226	113	200	5.87	

Surrogate: 1-Chlorooctane	*92.6 %*	*70-130*
Surrogate: 1-Chlorooctadecane	*92.3 %*	*70-130*

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Notes and Definitions

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

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL LABORATORIES

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Company Name: Rice Operating Company	BILL TO
Project Manager: Hack Conder	P.O. #:
Address: 122 West Taylor	Company:
City: Hobbs State: NM Zip: 88240	Attn:
Phone #: 575-393-9174 Fax #: 575-397-1471	Address:
Project #: Project Owner:	City:
Project Name: EME Jct P-8-3	State: Zip:
Project Location: EME Jct P-8-3	Phone #:
Sampler Name: Jordan Woodfin	Fax #:

FOR LAB USE ONLY				MATRIX						PRESERV.			SAMPLING		ANALYSIS REQUEST										
Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	ACID/BASE:	ICE / COOL	OTHER :	DATE	TIME	Chlorides	TPH 8015 M	BTEX	Texas TPH	Complete Cations/Anions	TPH 8015 M Extended Thru C40					
H21499-1	SB # 5 @ 9'	G	1			✓					✓		12/10/10	08:15	✓	✓									
-2	SB # 5 @ 21'	G	1			✓					✓		12/10/10	08:30	✓	✓									

Relinquished By: Jordan Woodfin	Date: 12/10/10 Time: 4:45	Received By: Jodi Henson	Phone Result: ☐ Yes ☑ No Add'l Phone #:
Relinquished By:	Date: Time:	Received By:	Fax Result: ☐ Yes ☑ No Add'l Fax #:
Delivered By: (Circle One) Sampler - UPS - Bus - Other:	Sample Condition Cool ☑ Yes ☐ No Intact ☑ Yes ☐ No	CHECKED BY: (Initials)	REMARKS: email results Hconder@riceswd.com; jwoodfin@riceswd.com; Lweinheimer@riceswd.com kjones@riceswd.com

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

#26

NEED SAMPLES BACK, PLEASE