1R - 427-343

APPROVALS

YEAR(S):

2013

Hansen, Edward J., EMNRD

From: Hansen, Edward J., EMNRD
Sent: Wednesday, May 22, 2013 6:04 PM
To: Hack Conder (hconder@riceswd.com)
Cc: Leking, Geoffrey R, EMNRD; Laura Pena (lpena@riceswd.com); Katie Jones <kjones@riceswd.com> (kjones@riceswd.com); Scott Curtis (scurtis@riceswd.com)
Subject: Remediation Plan (1R427-343) Termination - ROC EME Jct N-14 Site

RE: Termination Request
for the Rice Operating Company's
EME Jct N-14 Site
Unit Letter N, Section 14, T20S, R36E, NMPM, Lea County, New Mexico
Remediation Plan (1R427-343) Termination

Dear Mr. Conder:

The New Mexico Oil Conservation Division (OCD) has received Rice Operating Company's report and request to close the above-referenced site, dated May 8, 2013 (received May 20, 2013). The reports are acceptable to the OCD.

The above-referenced report, submitted in accordance with 19.15.29 NMAC (Rule 29; formally, Rule 116), indicates that Rice Operating Company has met the requirements of 19.15.29 NMAC; therefore, the OCD approves the report and hereby notifies you that the remediation plan (1R427-343) is terminated in accordance with 19.15.29 NMAC.

Please be advised that OCD approval of this report does not relieve the owner/operator of responsibility should operations pose a threat to ground water, surface water, human health or the environment. In addition, OCD approval does not relieve the owner/operator of responsibility for compliance with any OCD, federal, state, or local laws and/or regulations.

If you have any questions regarding this matter, please contact me at 505-476-3489.

Edward J. Hansen
Hydrologist
Environmental Bureau

RICE *Operating Company*
122 West Taylor • Hobbs, New Mexico 88240
Phone: (575) 393-9174 • Fax: (575) 397-1471

CERTIFIED MAIL
RETURN RECEIPT NO. 7007 2560 0000 4569 9231

May 8, 2013

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: Termination Request
EME Jct. N-14 (1R427-343): UL/N, Sec. 14, T20S, R36E
RICE Operating Company – Eunice Monument Eumont SWD System

Mr. Hansen:

Rice Operating Company (ROC) is the service provider (agent) for the EME Saltwater Disposal (SWD) System and has no ownership of any portion of the pipeline, well, or facility. The System is owned by a consortium of oil producers, System Parties, who provide all operating capital on a percentage ownership/usage basis.

Background
In 2010, ROC initiated work on the former N-14 junction box. The site is located in UL/N, Sec. 14, T20S, R36E. NM OSE records indicate that groundwater would likely be encountered at a depth of approximately 30 +/- feet. The site was delineated using a backhoe to collect soil samples at regular intervals, creating a 30x30x12 ft deep excavation. Each sample was field titrated for chlorides and field screened using a PID for hydrocarbons, resulting in slightly elevated chloride concentrations. The excavated soil was blended on site and representative composite samples of the excavation walls, bottom and remediated backfill were sent to a commercial for analysis of chloride and TPH, resulting in a 4-wall chloride concentration of 368 mg/kg, a gasoline range organics (GRO) concentration below detectable limits and a diesel range organics (DRO) concentration of 70 mg/kg. The bottom composite resulted in a chloride concentration of 576 mg/kg, a GRO concentration below detectable limits and a DRO concentration of 150 mg/kg. The blended backfill resulted in a chloride concentration of 320 mg/kg, a GRO concentration below detectable limits and a DRO concentration of 305 mg/kg. A total of 132 yards of blended backfill was hauled to a NMOCD approved facility. The remaining blended backfill was blended with clean imported soil and a sample was sent to a commercial laboratory for analysis of chloride and TPH, resulting in a chloride

concentration of 304 mg/kg, a GRO concentration below detectable limits and a DRO concentration of 33.4 mg/kg. The excavation was backfilled with the blended backfill with clean imported soil to 11 ft below ground surface (BGS). From 11 – 10 ft BGS, a one foot thick clay layer was installed with a compaction test performed on 8/25/2010. The clay layer will provide a barrier that will inhibit the downward migration of chlorides to groundwater. The remaining excavation was backfilled with the blended backfill with clean imported soil to ground surface and contoured to the surrounding area. On 8/26/2010, the site was seed with a blend of native vegetation. A junction box is no longer needed at the site.

To further investigate the depth of the chloride and TPH presence, a soil boring was initiated on 10/27/2010 at 9 ft southwest of the former junction box. Each sample was field titrated for chlorides and field screened using a PID for hydrocarbons, resulting in low concentrations of both. The 15 ft and 24 ft samples were taken to a commercial laboratory for analysis of chloride and TPH, resulting in a 15 ft chloride concentration of 32 mg/kg and concentrations of GRO and DRO below detectable limits. The 24 ft sample resulted in a chloride concentration of 32 mg/kg and concentrations of GRO and DRO below detectable limits. The entire bore hole was plugged with bentonite to ground surface.

On 4/18/2013, RECS personnel were on site to conduct surface restoration. Imported top soil was used to promote vegetative growth. A sample of the imported top soil was field titrated for chlorides and field screened using a PID for hydrocarbons, resulting in low concentrations of both. A representative sample was taken to a commercial laboratory for analysis of chloride, resulting in a concentration below detectable limits. On 4/24/2013, soil amendments were added to the site and the site was seeded with a blend of native vegetation. Vegetation will act as an evapo-transpiration barrier that will also inhibit the downward migration of chlorides and hydrocarbons. Plants capture water through their roots and so reduce the amount of water infiltrating below the root zone. The site revegetation form, laboratory analysis, PID sheet and photos of these activities are attached.

The junction box site location map, area map, final report, photodocumentation, soil bore log, laboratory analysis, PID sheet, cross-section diagram, clay compaction test, hydraulic conductivity, proctor, chloride graph, revegetation form, laboratory analysis, PID sheet and seeding photodocumentation are attached.

Recommendations

Site investigation demonstrates that residual chloride and hydrocarbons in the vadose zone will not with reasonable probability contaminate groundwater in excess of NMOCD standards. This site meets the requirements of the NMOCD-approved Revised Junction Box Upgrade Work Plan (July 16, 2003). As such, ROC request termination of the regulatory file, or similar closure status.

Please contact me at (575)393-9174 if you have any questions or wish to discuss this site. Thank you for your time and consideration.

Sincerely,
RICE Operating Company

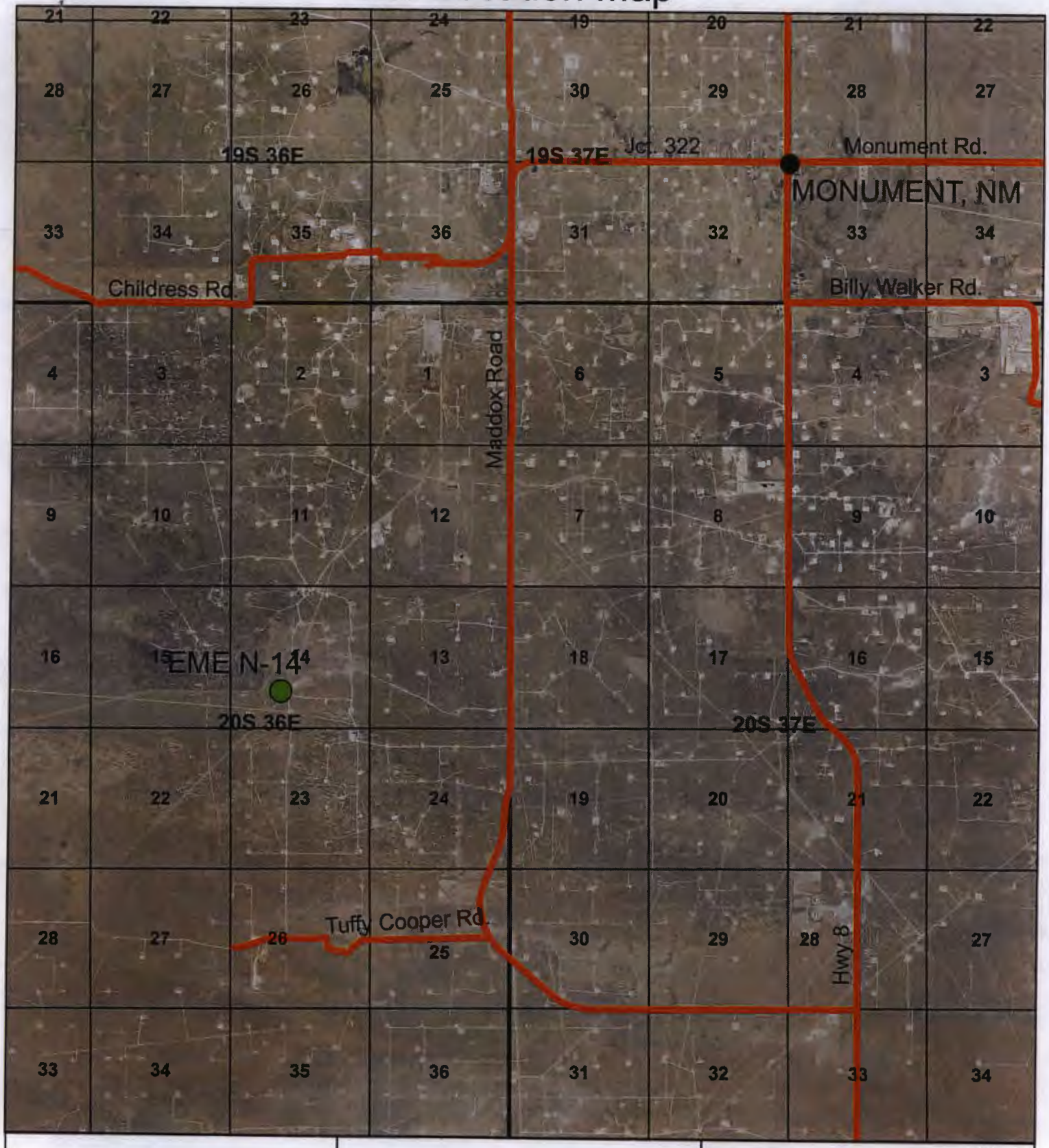
Hack Conder
Environmental Manager

enclosures

Site Maps

RICE *Operating Company* (ROC)
112 West Taylor Hobbs, NM 88240
Phone: (575) 393-9174 Fax: (575) 397-1471

Site Location Map



RICE ENVIRONMENTAL RECS CONSULTING & SAFETY, LLC

EME Jct. N-14 (1R427-343)

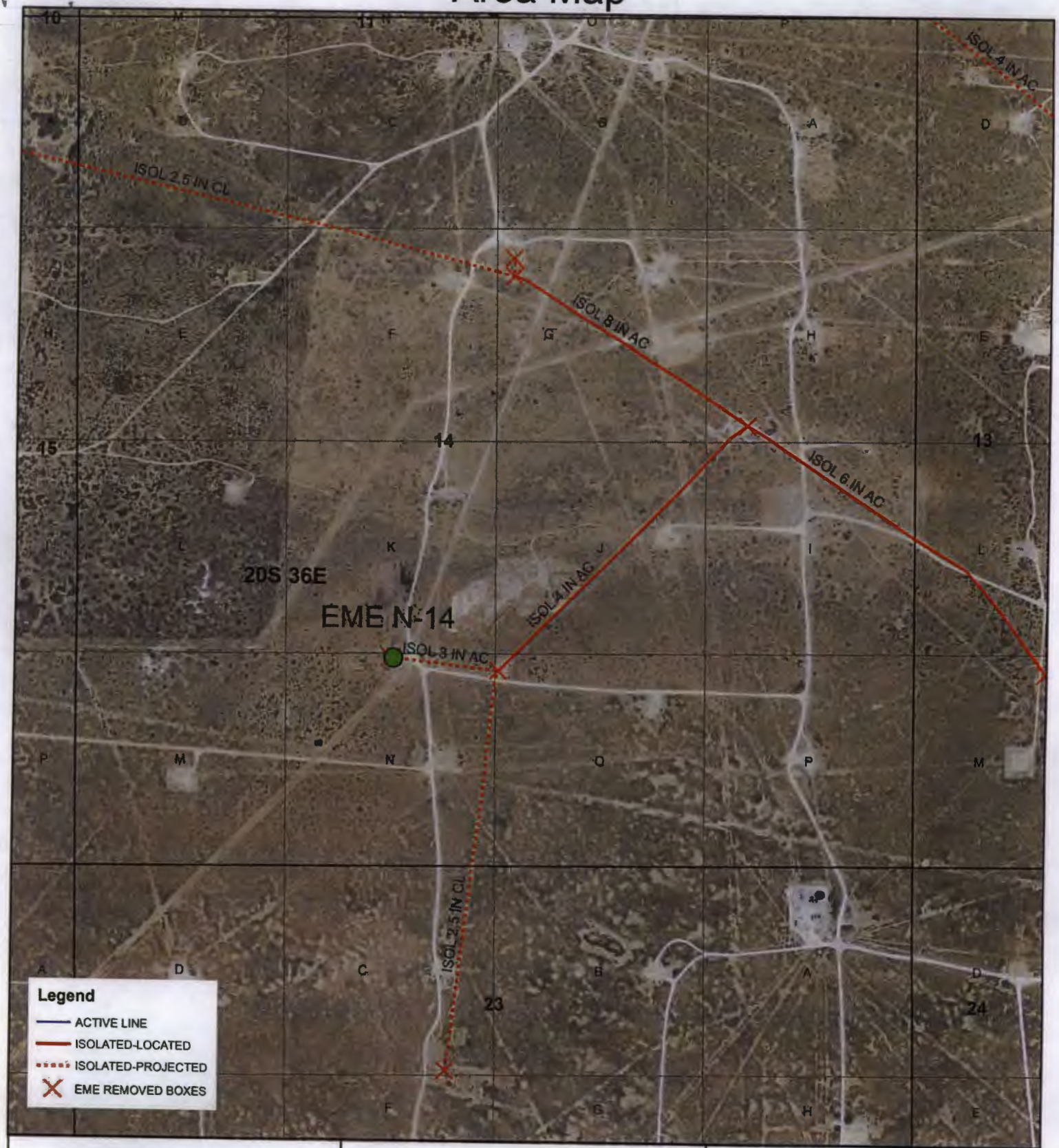
UL/N SECTION 14
T20S, R36E
LEA COUNTY, NM

N
W E
S

0 0.5 1
Miles

Drawing date: 5/3/13

Area Map



RICE ENVIRONMENTAL CONSULTING & SAFETY, LLC

RECS

EME Jct. N-14 (1R427-343)

UL/N SECTION 14
T20S, R36E
LEA COUNTY, NM

N
W E
S

0 500 1,000
Feet

Drawing date: 5/3/13

Junction Box Report

RICE *Operating Company* (ROC)
112 West Taylor Hobbs, NM 88240
Phone: (575) 393-9174 Fax: (575) 397-1471

RICE OPERATING COMPANY
JUNCTION BOX FINAL REPORT

BOX LOCATION

SWD SYSTEM	JUNCTION	UNIT	SECTION	TOWNSHIP	RANGE	COUNTY	BOX DIMENSIONS - FEET		
							Length	Width	Depth
Eunice Monument Eumont	Jct. N-14	N	14	20S	36E	Lea	eliminated		

LAND TYPE: BLM ___ STATE ___ FEE LANDOWNER Jimmie T. Cooper et ux, Betty B.-J.T. Trust OTHER ___

Depth to Groundwater 30 feet NMOCD SITE ASSESSMENT RANKING SCORE: 20

Date Started 6/11/2010 Date Completed 10/27/2010 OCD Witness no

Soil Excavated 400.0 cubic yards Excavation Length 30 Width 30 Depth 12 feet

Soil Disposed 132 cubic yards Offsite Facility C and C Land farm Location Monument, NM

FINAL ANALYTICAL RESULTS: Sample Date 6/18/2010, 8/24/2010, 10/27/2010 Sample Depth 12 ft , 15 ft , 24 ft

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 Location	PID (field) ppm	GRO mg/kg	DRO mg/kg	Chlorides mg/kg
4-WALL COMP.	1 1	<10 0	70	368
BOTTOM COMP.	2 3	<10 0	150	576
BACKFILL COMP.	20.1	<10 0	305	320
Blended backfill with imported soil comp.	n/a	<10 0	33.4	304
SB # 1 @ 15 ft.	1.5	<10.0	<10 0	32
SB # 1 @ 24 ft.	1.2	<10.0	<10.0	32

CHLORIDE FIELD TESTS

LOCATION	DEPTH	mg/kg
4-wall comp	n/a	362
bottom comp.	12'	333
backfill comp.	n/a	196
background	6"	84
SB #1 at 9 ft. south west of the former junction (source)	15'	176
	18'	178
	21'	171
	24'	169

General Description of Remedial Action: This junction and line were 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. deep excavation. Chloride field test performed on each samples did not relent with regards to depth. Organic vapors were measured using a PID, which yielded low concentrations. The excavated soil was blended on site and representative samples were collected from the blended backfill, the bottom of the excavation, and the excavation walls. The representative samples were sent to a commercial laboratory for analysis of chloride and TPH. 132 yards of blended backfill was hauled to a NMOCD approved facility. The remaining blended backfill was blended on site with clean imported soil. A representative sample of the blended backfill with clean imported soil was sent to a commercial laboratory which yielded low concentrations of chloride and TPH. The blended backfill with clean imported soil was returned to the excavation to 11 ft. below ground surface (BGS). At 11-10 ft. BGS, a 1-ft. thick clay barrier was installed with compaction test performed on 8/25/2010. The remaining excavation was backfilled with the blended backfill with clean imported soil to ground surface and contoured to the surrounding area. On 8/26/2010, the site was seeded with a blend of native vegetation and is expected to return to a productive capacity at a normal rate. To further investigate the depth of chloride and TPH presence, a soil bore was initiated on 10/27/2010, at 9 ft. south west of the former junction box. The boring was advanced to a depth of 24 ft. BGS with soil samples collected every 3 ft. between 15 ft. and 24 ft. Chloride field test performed on each sample yielded low concentrations. Organic vapors were measured using a PID, which yielded low concentrations. The 15 ft. and 24 ft. samples were taken to a commercial laboratory for analysis of chloride and TPH, which confirmed low concentrations of each. The entire bore hole was plugged with benonite to ground surface.

enclosures: photos, boring log, lab results, PID (field) screenings, cross-section, compaction test, hydraulic conductivity, proctor, chloride curve

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

SITE SUPERVISOR Joe Gatts SIGNATURE not available COMPANY RICE OPERATING COMPANY

REPORT ASSEMBLED BY Larry Bruce Baker Jr. INITIAL LBB

PROJECT LEADER Larry Bruce Baker Jr. SIGNATURE Larry Bruce Baker Jr DATE 3-22-11

EME Jct. N-14

Unit N, Section 14, T20S, R36E

Delineation trench being excavated 6/11/2010

Collecting samples 6/11/2010

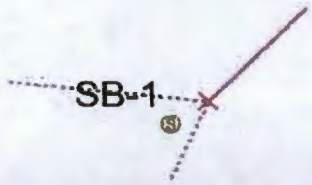
Seeding site 8/26/2010

Covering seed 8/26/2010

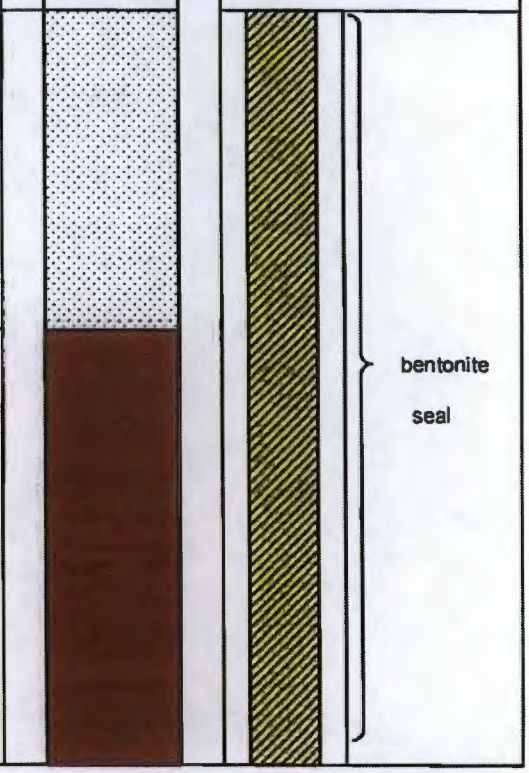
Soil bore 10/27/2010

Plugging soil bore 10/27/2010

Soil bore complete 10/27-2010

Logger:	Jordan Woodfin		RICE ENVIRONMENTAL RECS CONSULTING & SAFETY, LLC
Driller:	Harrison & Cooper, Inc.		
Drilling Method:	Air rotary		**Project Name:** EME jct. N-14 **Well ID:** SB-1
Start Date:	10/27/2010		
End Date:	10/27/2010		**Project Consultant:** Junction box plan
Comments: Located 9 ft south west of the former junction box site.			**Location:** UL/N sec. 14 T20S R36E
DRAFTED BY: L. Weinheimer			**Lat:** 32°34'9.413"N **County:** LEA
TD = 24 ft	GW = 30 ft		**Long:** 103°19'30.143"W **State:** NM

Depth (feet)	chloride field tests	LAB	PID	Description
				Tan to light brown very fine sand with some caliche fragments
15 ft	176	Cl- 32	1.5	
		GRO <10		
		DRO <10		
18 ft	176		1.6	
				Brown very fine silty sand
21 ft	171		1	
24 ft	169	Cl- 32	1.2	
		GRO <10		
		DRO <10		



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:	10/28/2010	Sampling Date:	10/27/2010
Reported:	11/02/2010	Sampling Type:	Soil
Project Name:	EME JCT N-14 (20/36)	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	EME JCT N-14 20/36		

Sample ID: SB #1 @ 15 FT (H021165-01)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	10/29/2010	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	10/30/2010	ND	179	89.3	200	16.0	
DRO >C10-C28	<10.0	10.0	10/30/2010	ND	168	84.2	200	24.1	

Surrogate: 1-Chlorooctane	*103 %*	*70-130*
Surrogate: 1-Chlorooctadecane	*105 %*	*70-130*

Sample ID: SB #1 @ 24 FT (H021165-02)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	10/29/2010	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	10/30/2010	ND	179	89.3	200	16.0	
DRO >C10-C28	<10.0	10.0	10/30/2010	ND	168	84.2	200	24.1	

Surrogate: 1-Chlorooctane	*96.1 %*	*70-130*
Surrogate: 1-Chlorooctadecane	*96.6 %*	*70-130*

Cardinal Laboratories

*=Accredited Analyte

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 N-14	State: Zip:
Project Location: EME Jct N-14	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							
112165-1	SB # 1 @ 15ft		1			✓					✓		10/27/10	09:00	✓	✓									
2	SB # 1 @ 24ft		1			✓					✓		10/27/10	09:20	✓	✓									

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: Jordan Woodfin	Date: 10/28/10 Time: 8:30	Received By:	Phone Result: ☐ Yes ☑ No	Add'l Phone #:	
Relinquished By:	Date: 10/28/10 Time: 8:35	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

NEED SAMPLES BACK, PLEASE

#2

RICE OPERATING COMPANY

122 West Tayor Hobbs, NM 88240
PHONE: (575) 393-9174 FAX: (575) 397-1471
PID METER CALIBRATION & FIELD REPORT FORM

Check Model Number:

	Model: PGM 7300	Serial No: 590-000183			Model: PGM 7600	Serial No: 110-023920
	Model: PGM 7300	Serial No: 590-000508			Model: PGM 7600	Serial No: 110-013744
X	Model: PGM 7300	Serial No: 590-000504			Model: PGM 7600	Serial No: 110-013676

GAS COMPOSITION: ISOBUTYLENE 100PPM / AIR: BALANCE

LOT NO : 924503	EXPIRATION DATE: 7-5-12
FILL DATE: 7-6-09	METER READING ACCURACY: 100

ACCURACY : +/- 2%

SYSTEM	JUNCTION	UNIT	SECTION	TOWN SHIP	RANGE
EME	N-14	N	14	20S	36E

SAMPLE ID	PID	SAMPLE ID	PID
SB#1			
15'	1.5		
18'	1.6		
21'	1.0		
24'	1.2		

I verify that I have calibrated the above instrument in accordance to the manufacture operation manual.

SIGNATUE: Jordan Woody DATE: 10-27-10

CARDINAL LABORATORIES

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

ANALYTICAL RESULTS FOR
RICE OPERATING COMPANY
ATTN: BRUCE BAKER
112 W. TAYLOR
HOBBS, NM 88240

Receiving Date: 06/18/10
Reporting Date: 06/23/10
Project Number: NOT GIVEN
Project Name: EME JCT N-14 (20/36)
Project Location: EME JCT N-14 (20/36)

Sampling Date: 06/18/10
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: HM
Analyzed By: AB/CK/HM

LAB NUMBE	SAMPLE ID	GRO (C_6-C_{10}) (mg/kg)	DRO (>C_{10}-C_{28}) (mg/kg)	Cl* (mg/kg)
ANALYSIS DATE		06/22/10	06/22/10	06/21/10
H20166-1	5PT BOTTOM COMP @ 12'	<10.0	150	576
H20166-2	4-WALL COMP	<10.0	70.0	368
H20166-3	BLENDED BACKFILL	<10.0	305	320
Quality Control		468	550	490
True Value QC		500	500	500
% Recovery		93.6	110	98.0
Relative Percent Difference		5.1	5.1	3.9

METHODS: TPH GRO & DRO EPA SW-846 8015 M; Cl: Std. Methods 4500-ClB
*Analyses performed on 1:4 w:v aqueous extracts
Reported on wet weight.

Chemist

6/25/10
Date

H20166 TCL RICE

CARDINAL LABORATORIES

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

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

		BILL TO	
Company Name: Rice Operating Company		P.O. #:	
Project Manager: Bruce Baker		Company:	
Address: 122 W. Taylor		Attn:	
City: Hobbs	State: NM Zip: 88240	Address:	
Phone #: 575-393-9174	Fax #: 575-397-1471	City:	
Project #:	Project Owner:	State:	Zip:
Project Name: EME [illegible] N-14 ([illegible])		Phone #:	
Project Location:		Fax #:	
Sampler Name: [illegible]			

Lab I.D. (FOR LAB USE ONLY)	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	MATRIX: WASTEWATER	MATRIX: SOIL	MATRIX: OIL	MATRIX: SLUDGE	MATRIX: OTHER:	PRESERV: ACID/BASE:	PRESERV: ICE / COOL	PRESERV: OTHER:	SAMPLING: DATE	SAMPLING: TIME	ANALYSIS REQUEST: CL	ANALYSIS REQUEST: TPH 8015M
H[illegible]-1	5pT Bottom Comp @ 12'	C	1			✓					✓		6-18-10	11:25	✓	✓
-2	4-Wall Comp	C	1			✓					✓		6-18-10	11:18	✓	✓
-3	Blended backfill	C	1			✓					✓		6-18-10	11:37	✓	✓

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: Joe Gatts	Date: 06/18/10 Time: 4:12	Received By: [illegible signature]	Phone Result: ☐ Yes ☐ No Add'l Phone #:
			Fax Result: ☐ Yes ☐ No Add'l Fax #:
Relinquished By:	Date: Time:	Received By:	REMARKS: E-Mail Results To: KJones @RiceSWD.com; BBaker " " " "; REgans " " " "
Delivered By: (Circle One) Sampler - UPS - Bus - Other:	Sample Condition: Cool ☑ Yes ☐ No; Intact ☑ Yes ☐ No	CHECKED BY: (Initials) [illegible]	

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

RICE OPERATING COMPANY

122 West Tayor Hobbs, NM 88240
PHONE: (575) 393-9174 FAX: (575) 397-1471

PID METER CALIBRATION & FIELD REPORT FORM

Check Model Number:

	Model: PGM 7300	Serial No: 590-000183		Model: PGM 7600	Serial No: 110-023920
	Model: PGM 7300	Serial No: 590-000508		Model: PGM 7600	Serial No: 110-013744
	Model: PGM 7300	Serial No: 590-000504	✓	Model: PGM 7230	Serial No: 592-903318

GAS COMPOSITION: ISOBUTYLENE 100PPM / AIR: BALANCE

LOT NO: 920547	EXPIRATION DATE: 2/04/2013
FILL DATE:	METER READING ACCURACY: 100.1

ACCURACY : +/- 2%

SYSTEM	JUNCTION	UNIT	SECTION	TOWN SHIP	RANGE
EME	N-14	N	14	20	36

SAMPLE ID	PID	SAMPLE ID	PID
Spl. Bottom @ 12'	2.3		
4 WALL comp	1.1		
Blended Backfill	20.1		

I verify that I have calibrated the above instrument in accordance to the manufacture operation manual.

SIGNATUE: [signature]

DATE: 6/18/10

CARDINAL Laboratories

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

Analytical Results For:

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

Received:	08/24/2010	Sampling Date:	08/24/2010
Reported:	09/07/2010	Sampling Type:	Soil
Project Name:	EME JCT N-14 (20/36)	Sampling Condition:	** (See Notes)
Project Number:	NONE GIVEN	Sample Received By:	Celey D. Keene
Project Location:	EME JCT N-14 20/36		

Sample ID: BLENDED BF W/ IMPORTED SOIL (H020715-01)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**304**	16.0	08/26/2010	ND	432	108	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	09/04/2010	ND	188	94.0	200	0.203	
DRO >C10-C28	**33.4**	10.0	09/04/2010	ND	209	105	200	17.8	

Surrogate: 1-Chlorooctane	*95.9 %*	*70-130*
Surrogate: 1-Chlorooctadecane	*71.3 %*	*70-130*

Cardinal Laboratories

*=Accredited Analyte

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
Project Manager:	Bruce Baker
Address:	122 W. Taylor
City:	Hobbs State: NM Zip: 88240
Phone #:	575-393-9174 Fax #: 575-397-4471
Project #:	Project Owner:
Project Name:	
Project Location:	EME Sec N-14 20/36
Sampler Name:	J. Gatts

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	SAMPLING TIME	C.L.	TPH 8015									
H20715-1	Blended Rockhill Impacted Soil	C	1			X					X		8/24/10	2:00	X	X									

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:	Date:	Received By:	
	Time:		
Relinquished By:	Date: 8/24/10	Received By:	
	Time: 4:25		
Delivered By: (Circle One)	Sample Condition: Cool: Yes / No; Intact: Yes / No	CHECKED BY: (Initials)	
Sampler - UPS - Bus - Other:	3.5°C	CPL	

Phone Result: ☐ Yes ☐ No Add'l Phone #:
Fax Result: ☐ Yes ☐ No Add'l Fax #:
REMARKS: E-Mail Results To:
KJones@ricesud.com
Bbaker " " "
Regans " " "
jgatts

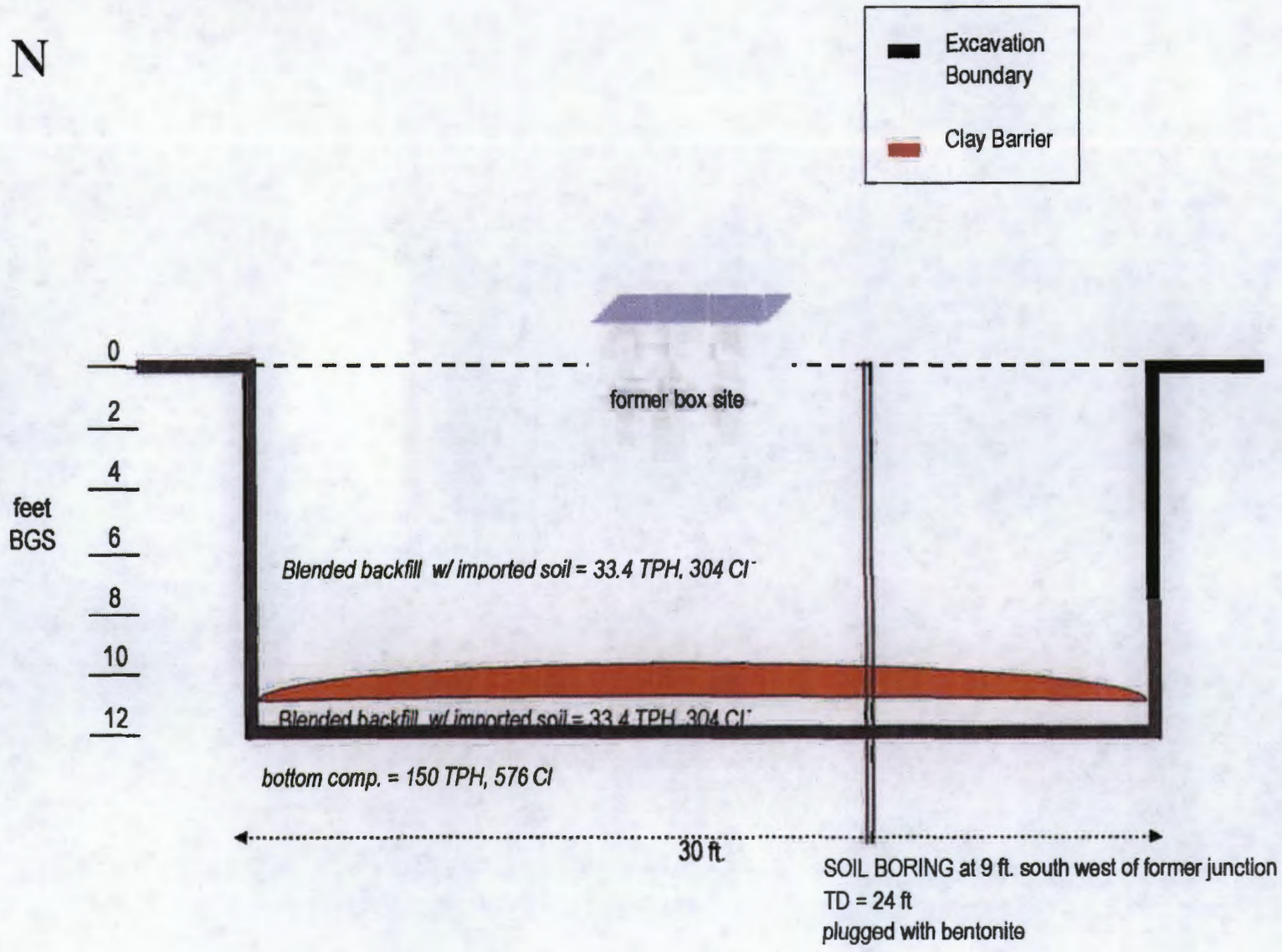
† Cardinal cannot accept verbal changes. Please fax written changes to 505-393-2476

#26

* Samples just taken not enough time to reach temp. C.L.

EME Jct. N-14
Unit 'N', Sec. 14, T20S, R36E

Excavation Cross-Section



LABORATORY TEST REPORT

PETTIGREW & ASSOCIATES, P.A.

1110 N. GRIMES
HOBBS, NM 88240
(575) 393-9827

AASHTO R18

DEBRA P. HICKS, P.E./L.S.I.
WILLIAM M. HICKS, III, P.E./P.S.

To: Rice Operating Company
122 W. Taylor
Hobbs, NM 88240

Material: Cooper Red Clay

Test Method: ASTM: D 2922

Project: EME N 14 (20/36)
Project No. 2010.1253

Date of Test: August 25, 2010

Depth: See Below

Depth of Probe: 6"

Test No.	Location	Dry Density % Max	% Moisture	Depth
SG 1	10' S. & 8' W. of NE Corner	92.4	14.2	11' Below Natural Ground

COPY

Control Density: 103.0
ASTM: D 698

Optimum Moisture: 20.0%

Required Compaction: 90-95%

Densometer ID: 5071

Lab No.: 10 8720-8721

Copies To: Rice Operating

PETTIGREW & ASSOCIATES

BY: Erica Hunt

BY: for Debra Hicks **P.E.**

Home Office - 1717 East Erwin Street
Tyler, Texas 75702-6398
Office: (903) 595-4421 Lab: (903) 595-6402 Fax: (903) 595-6113

Area Offices

210 Beech Street	Texarkana, AR 71854	(870) 772-0013
707 West Cotton St.	Longview, TX 75604	(903) 758-0402

Acct ID: PETTIGREW File ID: C4535-101 Date Sampled: 08/19/2010

Report Date: 08/27/2010 Sampled By: Client

Project: Pettigrew Associates - Project #2010.1026, Hobbs, NM By Order Of: Erica Hart

Location: Material Origin: Cooper Pit, Sample Location: N/G Order Number:

Client: Pettigrew & Associates, Hobbs, NM

Contractor: Not Given

REPORT: **FLEXIBLE WALL PERMEAMETER** LAB NO: 9880

Test Method: See Below

TEST RESULTS Report No: 1-1201-000004

HYDRAULIC CONDUCTIVITY DETERMINATION
FLEXIBLE WALL PERMEAMETER - CONSTANT VOLUME
(Mercury Permometer Test)

Project : Rice Operating Project 2010.1026 for Pettigrew & Associates. P.A., Hobbs, NM

Date: 8/25/2010 Panel Number : P 1; ASTM D 5084

Project No. : C 4535-101 Permometer Data

Boring No.:		ap =	0.031416 cm2			Set Mercury to Pipet Rp at	Equilibrium	1.6	cm3
Sample:	9880	aa =	0.767120 cm2				Pipet Rp	6.7	cm3
Depth (ft):		M 1 =	0 030180	C =	0.00045027		Annulus Ra	1.5	cm3
Other Location:	Cooper Pit	M 2 =	1 040953	T =	0.203776994				

Material Description : Red Clay (Clients Sample No 10 5902-5903) Lab Molded @~95% ASTM D 698

SAMPLE DATA

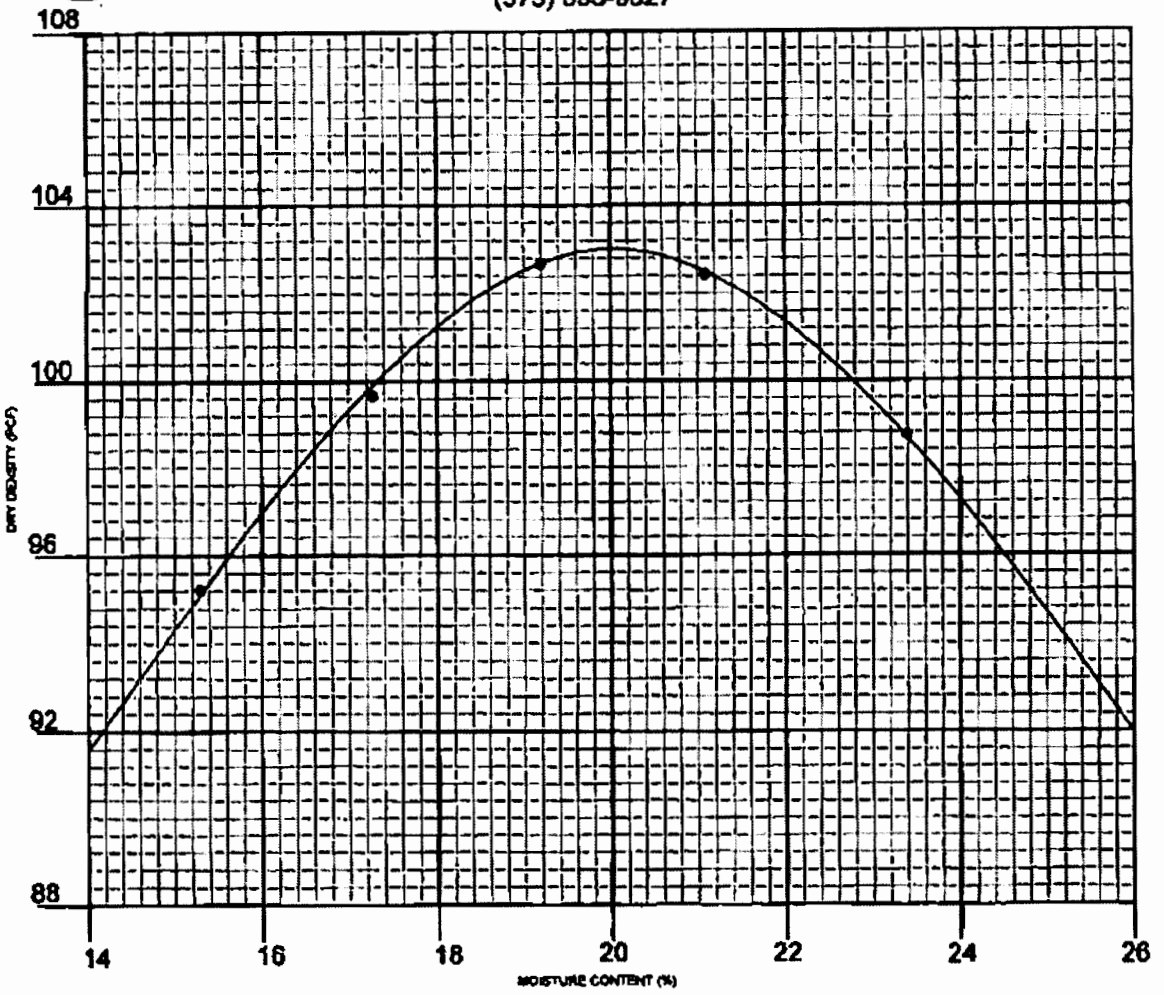
Wet Wt. sample + ring or tare :			512.33	g					
Tare or ring Wt. :			0.0	g	Before Test			After Test	
Wet Wt. of Sample :			512.33	g	Tare No.:	T 7		Tare No.:	T 11
Diameter :	2.71	in	6.90	cm2	Wet Wt.+tare:	881.87		Wet Wt.+tare	753.77
Length :	2.76	in	7.02	cm	Dry Wt.+tare:	753.55		Dry Wt.+tare	647.11
Area:	5.79	in^2	37.34	cm2	Tare Wt:	221.20		Tare Wt:	219.29
Volume :	16.00	in^3	262.14	cm3	Dry Wt.:	532.35		Dry Wt.:	427.82
Unit Wt.(wet):	121.96	pcf	1.95	g/cm^3	Water Wt.:	128.42		Water Wt.:	106.66
Unit Wt.(dry):	98.28	pcf	1.57	g/cm^3	% moist.:	24.1		%. moist.:	24.9

Assumed Specific Gravity.	2.70	Max Dry Density (pcf) =	103	OMC =	20
		% of max =	95.4	+/- OMC =	4.12
Calculated % saturation:	94 07	Void ratio (e) =	0.72	Porosity (n)=	0.42

COPY

Charge: Pettigrew & Associates Attn: Erica Hart
Orig: Pettigrew & Associates, Hobbs, NM Attn: Erica Hart
1-ec Pettigrew & Associates, Hobbs, NM Attn: Erica Hart
E-Mail. ehart@pettigrew.us

PETTIGREW & ASSOCIATES, P.A.
1110 N. GRIMES ST.
HOBBS, NM 88240
(575) 393-9827



General Information

CLIENT: Rice Operating PROJECT: Project No. 2010.1026

SAMPLE LOCATION: Cooper Pit

SOIL DESCRIPTION: Cooper Red Clay

SOIL CLASSIFICATION: ____ TEST METHOD: ASTM: D 698

ATTERBERG: LL ___ PI ___ Sampled & Delivered 8/13/10

DATE: 8/13/10 LAB NO. 10 5902-5903

DRY WEIGHT LB/CU. FT. 103.0 MOISTURE CONTENT % 20.0

SIEVE ANALYSIS - % PASSING									

PETTIGREW & ASSOCIATES

COPY

BY: Erica M. Hart

COPIES: Rice Operating

BY: [signature] ASSOCIATE

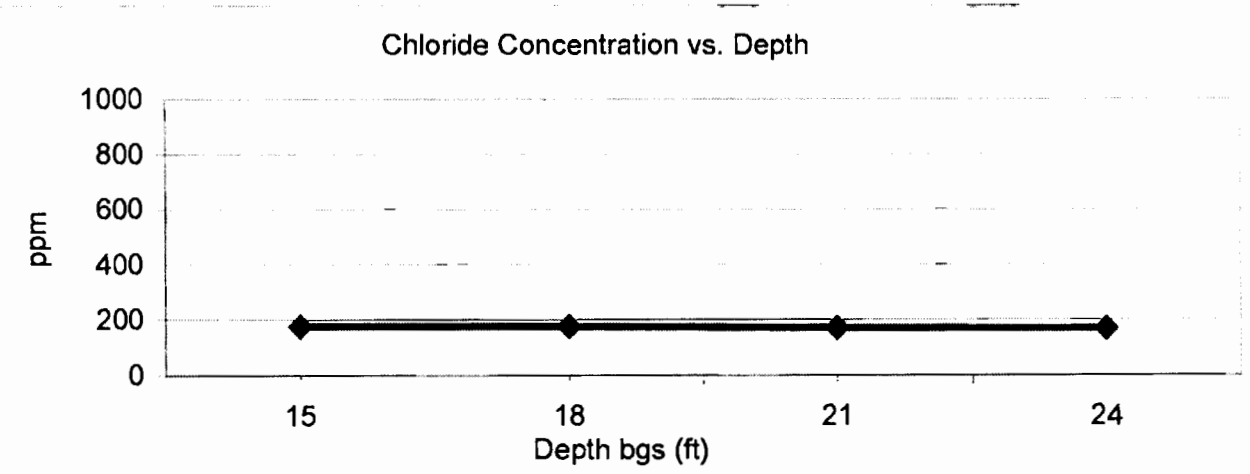
EME Jct. N-14

Unit 'N', Sec. 14, T20S, R36E

Soil bore 9 ft. south west of former junction box (source)

Depth bgs (ft)	[Cl⁻] ppm
15	176
18	176
21	171
24	169

Groundwater = 30 ft.



Revegetation Documentation

RICE *Operating Company* (ROC)
112 West Taylor Hobbs, NM 88240
Phone: (575) 393-9174 Fax: (575) 397-1471

RICE ENVIRONMENTAL
RECS
CONSULTING & SAFETY, LLC

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

REVEGETATION FORM

1. General Information

Site name: EME Jct. N-14						
U/L N	Section 14	Township T-20-S	Range R-36-E	County Lea	Latitude N32*34.147	Longitude W103*19.507
Contact Name: Hack Conder						
Email: hconder@rice-ecs.com						
Site size: 8,000 square feet			Map detail of site attached ☐			
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):
Texture: Sandy	Describe soil & subsoil:	Tan Sand		
Soil prep methods:	Rip ☐ Depth(in):	Disc ☒ Depth (in): 3"	Rollerpack ☐	
Date completed: 10/27/2013				

3. Bioremediation

Fertilizer ☐	Hay ☐	Other ☒ 16 Bags of Bio Nhance
Type:		Describe: 2 Bags of Manure
Lbs/acre:		5 Bags of Potting Soil

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: 8 lbs. Lea Co. Mix, 8 lbs. Side Oats and 8 lbs. Blue Grama	Seeding date: 4/24/2013
Broadcast ☒ Method: Mechanical Seeder			
Soil conditions during seeding: Dry ☒ Damp ☐ Wet ☐			
Photos attached ☐ Number of photos:	Observations: The Seed Was Tilled into the top Soil.		

5. Certification I hereby certify that the information in this form and attachments is true and complete to the best of my knowledge and belief.

Name: Kyle Norman	Title: Environmental Tech	Date: 4/24/2013
Signature: Kyle Norman		

CARDINAL Laboratories

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

April 22, 2013

Hack Conder

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: EME JCT N-14

Enclosed are the results of analyses for samples received by the laboratory on 04/19/13 11:05.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-11-3. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

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

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

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

Sincerely,

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:	04/19/2013	Sampling Date:	04/18/2013
Reported:	04/22/2013	Sampling Type:	Soil
Project Name:	EME JCT N-14	Sampling Condition:	** (See Notes)
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	EME JCT N-14 20/36		

Sample ID: IMPORTED TOP SOIL (H300932-01)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	04/22/2013	ND	432	108	400	3.77	

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, 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		BILL TO	
Project Manager: Hack Conder		P.O. #:	
Address:		Company:	
City: Hobbs	State: NM Zip: 88240	Attn:	
Phone #:	Fax #:	Address:	
Project #:	Project Owner:	City:	
Project Name:		State: Zip:	
Project Location: EME Jct, N-14		Phone #:	
Sampler Name: Kyle Norman		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	TDS					
H30089																									
1	Imported Top Soil	G	1			✓							4-18-13	8:30AM	✓										

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Relinquished By: Kyle	Date: 4-19-13 Time: 11:05	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: zconder@rice-ecs.com Knorman@rice-ecs.com; lpena@riceswd.com Kjones@riceswd.com; Bbaker@rice-ecs.com; hconder@rice-ecs.com; Lweinheimer@rice-ecs.com

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

#54

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. MODEL NO.			
	MODEL: PGM 7300	SERIAL NO: 590-000508
x	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	EXPIRATION DATE: 7/01/2015
METER READING ACCURACY: 99.9 PPM	

ACCURACY : +/- 2%

COMPANY
Rice

SITE	UNIT	SECTION	TOWN SHIP	RANGE
EME Jct. N-14	N	14	T-20-S	R-36-E

SAMPLE ID	PID	SAMPLE ID	PID
Cooper Pit Top Soil	2		

I verify that I have calibrated the above instrument in accordance to the manufacture operation manual.

SIGNATURE: Kyle A

DATE: 4-18-2013

EME Jct. N-14 (1R427-343)

Unit Letter N, Section 14, T20S, R36E

Site prior to seeding, facing west 4/24/2013

Spreading amendments, facing west 4/24/2013

Seeding site, facing north 4/24/2013

Site completed, facing west 4/24/2013