1R - 427-343

REPORTS

DATE:

3-22-11

IR427-343

EME Jct. N-14

2010

CLOSURE

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 etux. 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'	176
	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

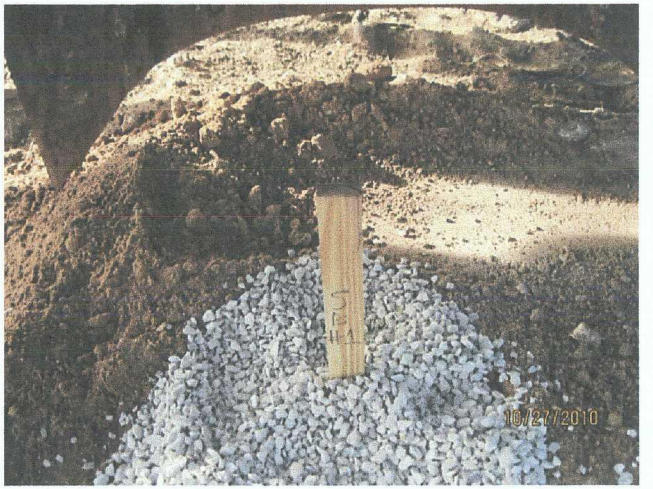
Collecting samples 6/11/2010

Seeding site 8/26/2010

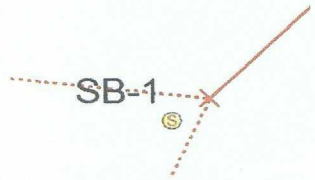
Covering seed 8/26/2010

Soil bore 10/27/2010

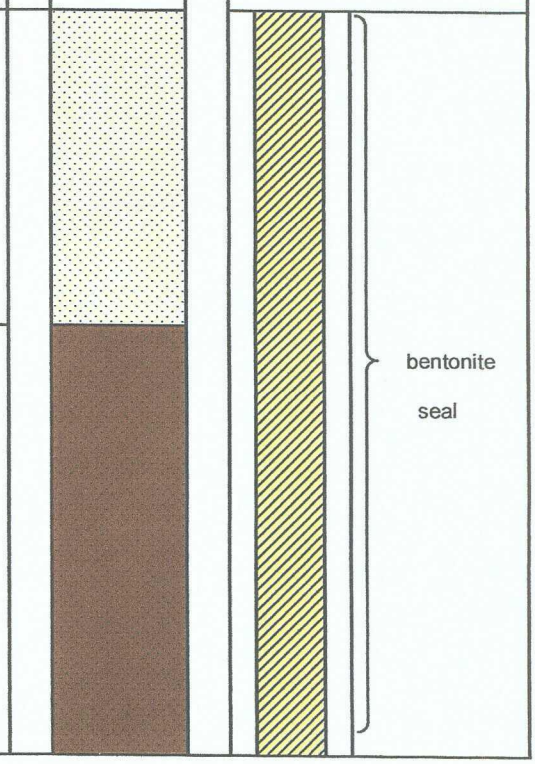
Plugging soil bore 10/27/2010



Soil bore complete 10/27-2010

Logger:	Jordan Woodfin		RICE ENVIRONMENTAL RECS CONSULTING & SAFETY, LLC
Driller:	Harrison & Cooper, Inc.		**Project Name:** EME jct. N-14 **Well ID:** SB-1
Drilling Method:	Air rotary		**Project Consultant:** Junction box plan
Start Date:	10/27/2010		
End Date:	10/27/2010		
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*

COPY

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

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						
H21165-1	SB # 1 @ 15ft		1			✓					✓		10/27/10	09:00	✓	✓								
2	SB # 1 @ 24ft		1			✓					✓		10/27/10	09:20	✓	✓								

COPY

Relinquished By: Jordan Woodfin	Date: 10/28/10 Time: 7:30 #	Received By:	Phone Result: ☐ Yes ☑ No	Add'l Phone #:	
Relinquished By:	Date: 10/28/10 Time: 8:25	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

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 Worth 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-Cl B
*Analyses performed on 1:4 w:v aqueous extracts.
Reported on wet weight.

Chemist

06/25/10
Date

H20166 TCL 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 Company	BILL TO
Project Manager: Bruce Baker	P.O. #:
Address: 122 W. 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 JET N-14 (20136)	State: Zip:
Project Location:	Phone #:
Sampler Name: Joe Gatts	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			CL	TPH 6015M								
H20164	SpT Bottom Comp @ 12'	C	1			✓					✓		6-18-10	11:20			✓	✓								
-2	4-Wall Comp	C	1			✓					✓		6-18-10	11:18			✓	✓								
-3	Blended backfill	C	1			✓					✓		6-18-10	11:50			✓	✓								

Relinquished By: Joe Gatts	Date: 06/18/10 Time: 4:12	Received By: Hope S. Moreno	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) HSM	REMARKS: E-Mail Results To: KJones@RiceSWD.com BBaker " " REgans " "

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

#20

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 : 928547	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
5pt. 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: Joe Gant 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

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:	Bruce Baker	P.O. #:	
Address:	122 W. Taylor	Company:	
City:	Hobbs State: NM Zip: 88240	Attn:	
Phone #:	575-393-9174 Fax #: 575-397-1471	Address:	
Project #:	Project Owner:	City:	
Project Name:		State: Zip:	
Project Location:	EME Sct N-14 20/36	Phone #:	
Sampler Name:	J. Gatts	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	Cl.	TPH 8015													
H20715-1	Blended Backfill w/ Imported 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:		Phone Result: ☐ Yes ☐ No	Add'l Phone #:
	Time:			Fax Result: ☐ Yes ☐ No	Add'l Fax #:
Relinquished By:	Date: 8/24/10	Received By:		REMARKS: E-Mail Results To:	
	Time: 4:25			KJones@RiceSwd.com	
Delivered By: (Circle One)	Sample Condition Cool: Yes / No Intact: Yes / No	CHECKED BY: (Initials)		BBaker " " "	
Sampler - UPS - Bus - Other: 8.5°C				Regans " " "	
				jgatts	

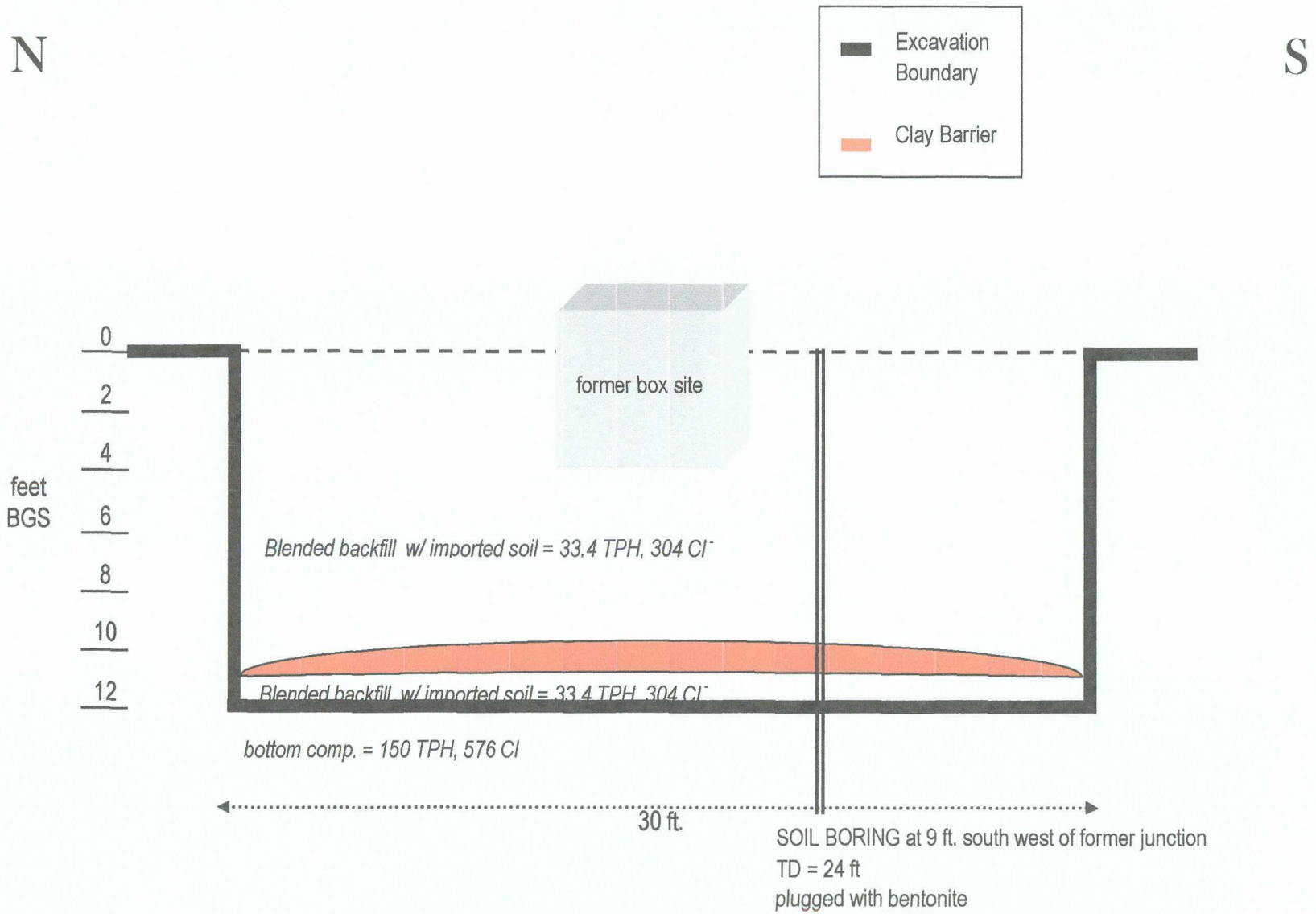
† Cardinal cannot accept verbal changes. Please fax written changes to 505-393-2476

#26

* Samples just taken not enough time to reach temp. CK

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

Control Density: 103.0
ASTM: D 698

Optimum Moisture: 20.0%

Required Compaction: 90-95%

Densometer ID: 5071

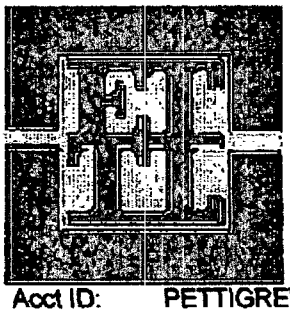
Lab No.: 10 8720-8721

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
Page 1 of 2

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 Rdg at		Equilibrium	1.8	cm3
Sample:	9880	aa =	0.787120 cm2			Pipet Rp	6.7	cm3
Depth (ft):		M1 =	0.030180	C =	0.00045027	Annulus Ra	1.5	cm3
Other Location:	Cooper Pit	M2 =	1.040953	T =	0.203776994			

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

SAMPLE DATA

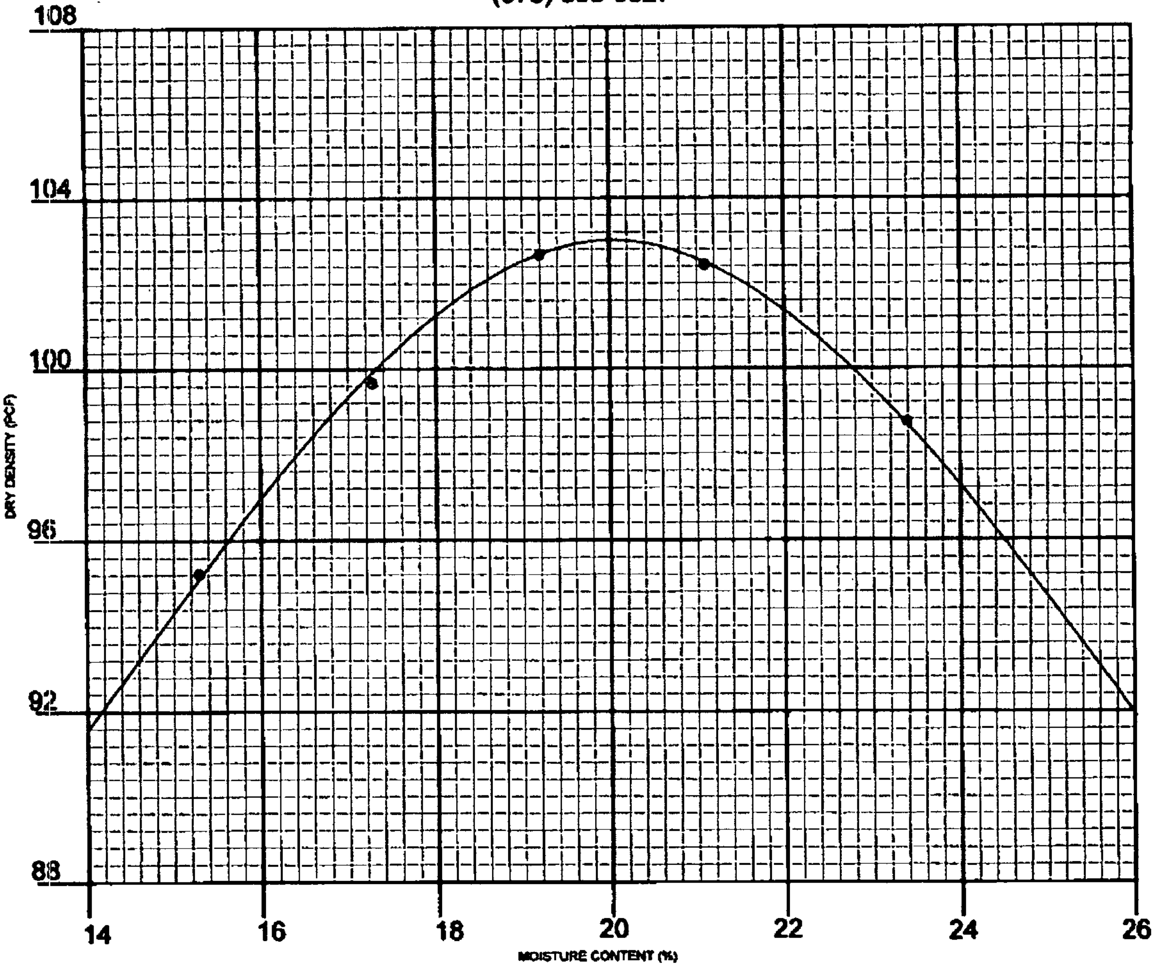
					Before Test		After Test	
Wet Wt. sample + ring or tare :			512.33	g				
Tare or ring Wt. :			0.0	g	Tare No.:	T 7	Tare No.:	T 11
Wet Wt. of Sample :			512.33	g	Wet Wt.+tare:	881.97	Wet Wt.+tare	753.77
Diameter :	2.71	in	8.90	cm2	Dry Wt.+tare:	753.55	Dry Wt.+tare	647.11
Length :	2.76	in	7.02	cm	Tare Wt:	221.20	Tare Wt:	219.29
Area:	5.79	in^2	37.34	cm2	Dry Wt.:	532.35	Dry Wt.:	427.82
Volume :	16.00	in^3	262.14	cm3	Water Wt.:	128.42	Water Wt.:	106.66
Unit Wt.(wet):	121.96	pcf	1.95	g/cm^3	% moist.:	24.1	% moist.:	24.9
Unit Wt.(dry):	98.26	pcf	1.57	g/cm^3				

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

BY: [signature] for Debra Hicks, PE

COPIES: Rice Operating

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.