1R427-285

ICP/CAP

Approved
January 2015

From: Lowe, Leonard, EMNRD
To: "Katie Jones"; "Kyle Norman"; "Hack Conder"
Cc: "Ed Hansen"
Subject: APPROVED EME Jct. C-12 (1R427-285) CAP Addendum
Date: Friday, January 23, 2015 2:17:00 PM
Importance: High

RECS,

Correction Action Plan (CAP) Addendum
Rice Operating Company (ROC) – EME SWD System
EME Jct. C-12 (1R427-285): UL/C, Sec. 12, T20S, R37E

OCD has reviewed the submitted addendum for **EME Jct. C - 13 (1R – 427 – 285)**, on January 23, 2015. OCD approves the addendum.

Please be advised that OCD approval of this plan 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.

Leonard Lowe
Environmental Engineer
[Environmental Bureau]
Oil **C**onservation **D**ivision
Energy **M**inerals and **N**atural **R**esources **D**epartment
1220 South St. Frances
Santa Fe, New Mexico 87004
Office: 505-476-3492
Fax: 505-476-3462
E-mail: leonard.lowe@state.nm.us
Website: http://www.emnrd.state.nm.us/ocd/

From: Ed Hansen [mailto:ehansen@rice-ecs.com]
Sent: Friday, January 23, 2015 9:59 AM
To: Lowe, Leonard, EMNRD
Cc: 'Katie Jones'; 'Hack Conder'; 'Kyle Norman'
Subject: EME Jct. C-12 (1R427-285) CAP Addendum

Correction Action Plan (CAP) Addendum
Rice Operating Company (ROC) – EME SWD System
EME Jct. C-12 (1R427-285): UL/C, Sec. 12, T20S, R37E

Dear Mr. Lowe:

Rice Operating Company (ROC) is requesting approval of an addendum to a Corrective Action Plan (CAP), dated December 4, 2014. The CAP was approved by the Oil Conservation Division on January 13, 2015. The addendum to the CAP would involve bifurcating the proposed liner. The bifurcation of the liner would be approximately two feet on either side an on-site active fiberglass crude oil pipeline while maintaining the originally proposed areal extent of the liner (see attached site plat). Due to the fragility of the active fiberglass pipeline, digging under the pipeline would substantially increase the risk of pipeline breakage. Also, tapping into the fiberglass pipeline for a by-pass around the site would also increase the risk of pipeline breakage. Therefore, the proposed actions in the addendum would maintain the integrity of the pipeline, preventing a crude oil release, while still ensuring environmental protection since the two separate liners are relatively large and the separation between the liners is relatively small.

Sincerely,

Edward J. Hansen
Senior Hydrologist
Basin Environmental Service Technologies

From: Lowe, Leonard, EMNRD
To: "Laura Flores"
Cc: "Hack Conder"; "Katie Jones"
Subject: Approved ROC - EME Jct. C-12 (1R427-285) ICP Report and Corrective Action Plan (CAP)
Date: Tuesday, January 13, 2015 9:35:00 AM
Importance: High

Laura Flores
Project Manager
RECS

OCD has reviewed the submitted ICP Report/CAP for **EME JCT. C – 12 (1R427 – 285)**, dated December 4, 2014 and approves the submitted Corrective Action Plan.

OCD shall await the written report in reference to the CAP. The written report shall be reviewed and termination shall be determined at that time.

Please be advised that OCD approval of this plan 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.

Leonard Lowe
Environmental Engineer
[Environmental Bureau]
Oil **C**onservation **D**ivision
Energy **M**inerals and **N**atural **R**esources **D**epartment
1220 South St. Frances
Santa Fe, New Mexico 87004
Office: 505-476-3492
Fax: 505-476-3462
E-mail: leonard.lowe@state.nm.us
Website: http://www.emnrd.state.nm.us/ocd/

From: Laura Flores [mailto:lflores@rice-ecs.com]
Sent: Thursday, December 04, 2014 9:27 AM
To: Lowe, Leonard, EMNRD
Cc: 'Hack Conder'; 'Katie Jones'
Subject: ROC - EME Jct. C-12 (1R427-285) ICP Report and Corrective Action Plan (CAP)

Mr. Lowe,

Attached is the ICP Report and CAP for the EME Jct. C-12 (1R427-285) site.

If you have any questions or require any additional information, please contact Hack Conder, Katie Jones or me.

Thank you,

Laura Flores
Project Manager
Rice Environmental Consulting & Safety (RECS)

RECS
RICE ENVIRONMENTAL
CONSULTING & SAFETY
PO Box 2948 | Hobbs, NM 88241 | Phone 575.393.2967

December 4, 2014

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

RE: **ICP Report & Corrective Action Plan (CAP)**
Rice Operating Company – EME SWD System
EME Jct. C-12 (1R427-285): UL/C, Sec. 12, T20S, R37E

Mr. Lowe:

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 ownership/usage basis.

Background and Previous Work

The site is located approximately 3.9 miles southeast of Monument, New Mexico at UL/C, Sec. 12, T20S, R37E as shown on the Geographical Location Map (Figure 1). NM OSE records indicate that groundwater will likely be encountered at a depth of approximately 67 feet; however, soil bore installation determined there is no groundwater located beneath the site.

In 2006, ROC initiated work on the former EME C-12 junction box. The site was delineated using a backhoe to form a 30 ft x 30 ft x 12 ft deep excavation and soil samples were screened at regular intervals for both hydrocarbons and chlorides. From the excavation, the four-wall composite and the bottom composite were taken to a commercial laboratory for analysis. Laboratory tests of the four-wall composite showed a chloride reading of 1,700 mg/kg, and a Gasoline Range Organics (GRO) and Diesel Range Organics (DRO) reading of non-detect. The bottom composite showed a chloride laboratory reading of 2,860 mg/kg, and a GRO reading and a DRO reading of non-detect. To further investigate the depth of chloride presence, a 30 ft bgs soil bore (SB-1) was installed 20 ft south of the former junction box site on December 15, 2006. Soil samples were collected every 5 ft and field titrated for chlorides, resulting in elevated

concentrations that did not sufficiently decrease with depth. The 20 ft sample was sent to a commercial laboratory for analysis, resulting in a chloride concentration of 5,090 mg/kg and a GRO and DRO reading of non-detect.

Sixty cubic yards of excavated soil was exported to an NMOCD approved facility for disposal and 103 cubic yards of clean soil was imported to the site and blended with the remaining excavated soil. The excavation was backfilled with the blended backfill up to 6 ft bgs, and a clay barrier was installed from 6-5 ft bgs. The remaining backfill was returned to the excavation to ground surface and contoured to the surrounding area. An identification marker was placed on the surface noting the location of the installed clay barrier for future environmental considerations. On December 22nd, 2006, the site was seeded with a blend of native vegetation. NMOCD was notified of potential groundwater impact on July 17th, 2008 and a junction box disclosure report was submitted to NMOCD with all the 2008 junction box closures and disclosures.

As part of the Investigation and Characterization Plan (ICP) submitted to NMOCD on June 19th, 2014, five soil bores were installed at the site on July 16th, 2014. As the bores were advanced, soil samples were taken at regular intervals and field tested for chlorides and hydrocarbons. Representative samples from each bore were taken to a commercial laboratory for analysis (Appendix A). Laboratory analysis of SB-2 returned chloride concentrations of 1,760 mg/kg at 15 ft bgs and 3,480 mg/kg at 20 ft bgs. SB-3 returned chloride concentrations of 1,620 mg/kg at 12 ft bgs, 2,800 mg/kg at 18 ft bgs, and 2,120 mg/kg at 21 ft bgs. SB-4 returned chloride concentrations of 5,600 mg/kg at 15 ft bgs and 5,840 mg/kg at 21 ft bgs. SB-5 returned chloride concentrations of 1,310 mg/kg at 6 ft bgs, 2,360 mg/kg at 18 ft bgs, and 5,120 mg/kg at 21 ft bgs GRO and DRO analysis returned values of non-detect in all bores. The bore holes were plugged in total with bentonite to the ground surface (Figure 3A).

On September 9th, 2014 and September 10th, 2014, five more soil bores were installed to a depth of 21 ft bgs, with the exception of SB-12, which was installed to 6 ft bgs. Soil samples were taken at regular intervals and tested for chlorides and hydrocarbons. Representative samples from each bore were taken to a commercial laboratory for analysis. Laboratory analysis of SB-7 returned chloride values of 2,240 mg/kg at 6 ft bgs, 2,400 mg/kg at 18 ft bgs, and 4,480 mg/kg at 21 ft bgs. SB-8 returned chloride values of 1,420 mg/ kg at 6 ft bgs, 5,440 mg/kg at 18 ft bgs, and 5,520 mg/kg at 21 ft bgs. SB-9 returned chloride values of 576 mg/kg at 3 ft bgs, 1,920 mg/kg at 15 ft bgs, and 4,720 mg/kg at 18 ft bgs. SB-10 returned chloride values of 624 mg/kg at 9 ft bgs, 800 mg/kg at 18 ft bgs, and 1,650 mg/kg at 21 ft bgs. SB-11 returned chloride values of 2,000 mg/kg at 9 ft bgs, 4,720 mg/kg at 18 ft bgs and 5,120 mg/kg at 21 ft bgs. SB-12 returned chloride values of 80 mg/kg at the surface, 320 mg/kg at 3 ft bgs and 208 mg/kg at 6 ft bgs. Gasoline Range Organics (GRO) and Diesel Range Organics (DRO) returned values of non-detect in all bores and depths. The bore holes were plugged in total with bentonite to the ground surface (Figure 3B).

Red bed clay was encountered at 23 ft bgs in SB-2, which indicated the bottom of the aquifer. Since no groundwater was encountered, SB-2 was drilled to a depth of 40 ft bgs.

The soil bore was packed open for 48 hours to allow for any possible groundwater accumulation. On July 18, 2014, Arc Environmental, LLC was on site to gauge the bore for groundwater accumulation, and no moisture was found in the bore (Appendix B). The bore was plugged with bentonite to the ground surface.

Corrective Action Plan

To stop any further migration of residual chloride through the vadose zone, RECS recommends that ROC install a 20-mil reinforced poly liner at the site with dimensions of 113 ft x 104 ft at a depth of 5 ft bgs (Figure 3B). The soils placed above the liner will have a laboratory chloride reading no greater than 500 mg/kg and a field PID measurement below 100 ppm. Excavated soils will be evaluated for use as backfill and any soils requiring disposal will be properly disposed of at a NMOCD approved facility. The excavation will be backfilled to ground surface and contoured to the surrounding location. The soils over and surrounding the site will then be prepared with soil amendments as necessary and seeded with a native vegetative mix. Vegetation above the liner will also provide a natural infiltration barrier for the site since plants capture water through their roots thereby reducing the volume of water moving through the vadose zone.

Once the CAP work is completed by installing the 20-mil reinforced poly liner and seeding the site, ROC will submit a written report that will include a request for 'remediation termination' and site closure.

RECS appreciates the opportunity to work with you on this project. Please call Hack Conder at (575) 393-2967 or me if you have any questions or wish to discuss the site.

Sincerely,

L Flores

Laura Flores
Rice Environmental Consulting & Safety (RECS)
Project Manager

Attachments:

Figure 1 – Geographical Location Map
Figure 2 – Site Location Map
Figure 3A – Soil Bore Installation (SBs 1-6) and Proposed Liner
Figure 3B – Soil Bore Installation (SBs 7-12) and Proposed Liner
Appendix A – Soil Bore Installation Documentation
Appendix B – Letter of No Groundwater

Figures

RICE Environmental Consulting and Safety (RECS)
P.O. Box 2948, Hobbs, NM 88241
Phone 575.393.2967

Geographical Location Map

RECS
RICE ENVIRONMENTAL
CONSULTING & SAFETY

EME Jct. C-12

LEGALS: UL/ C sec. 12,
T-20-S R-37-E
LEA COUNTY, NM

NMOCD Case #: 1R427-285

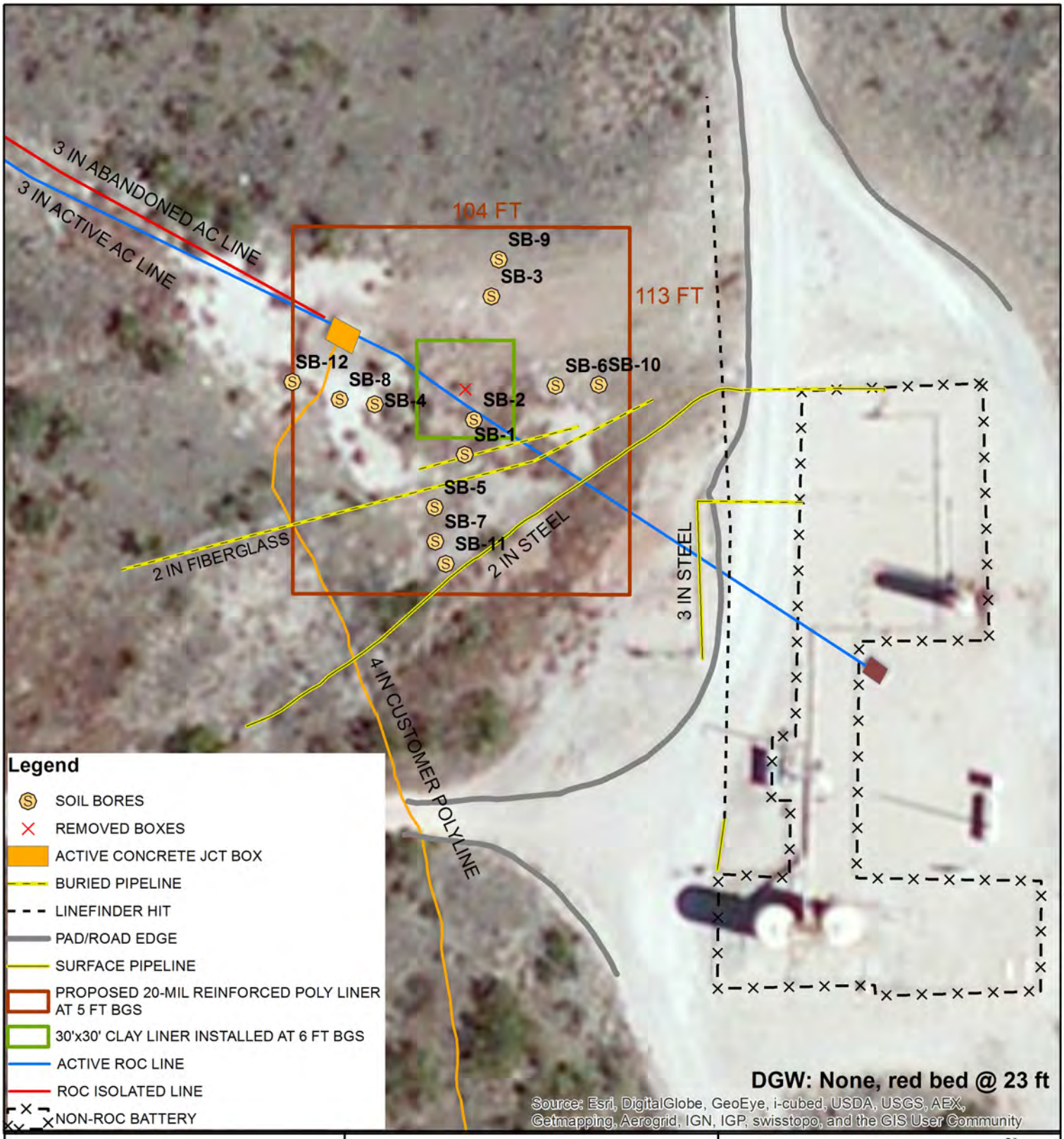
Figure 1

N
W E
S

0 0.5 1
Miles

Drawing date: 5/2/14
Drafted by: L. Flores

Site Location Map



RECS
RICE ENVIRONMENTAL
CONSULTING & SAFETY

EME Jct. C-12

Unit Letter C, Section 12
T-20-S R-37-E
Lea County, NM

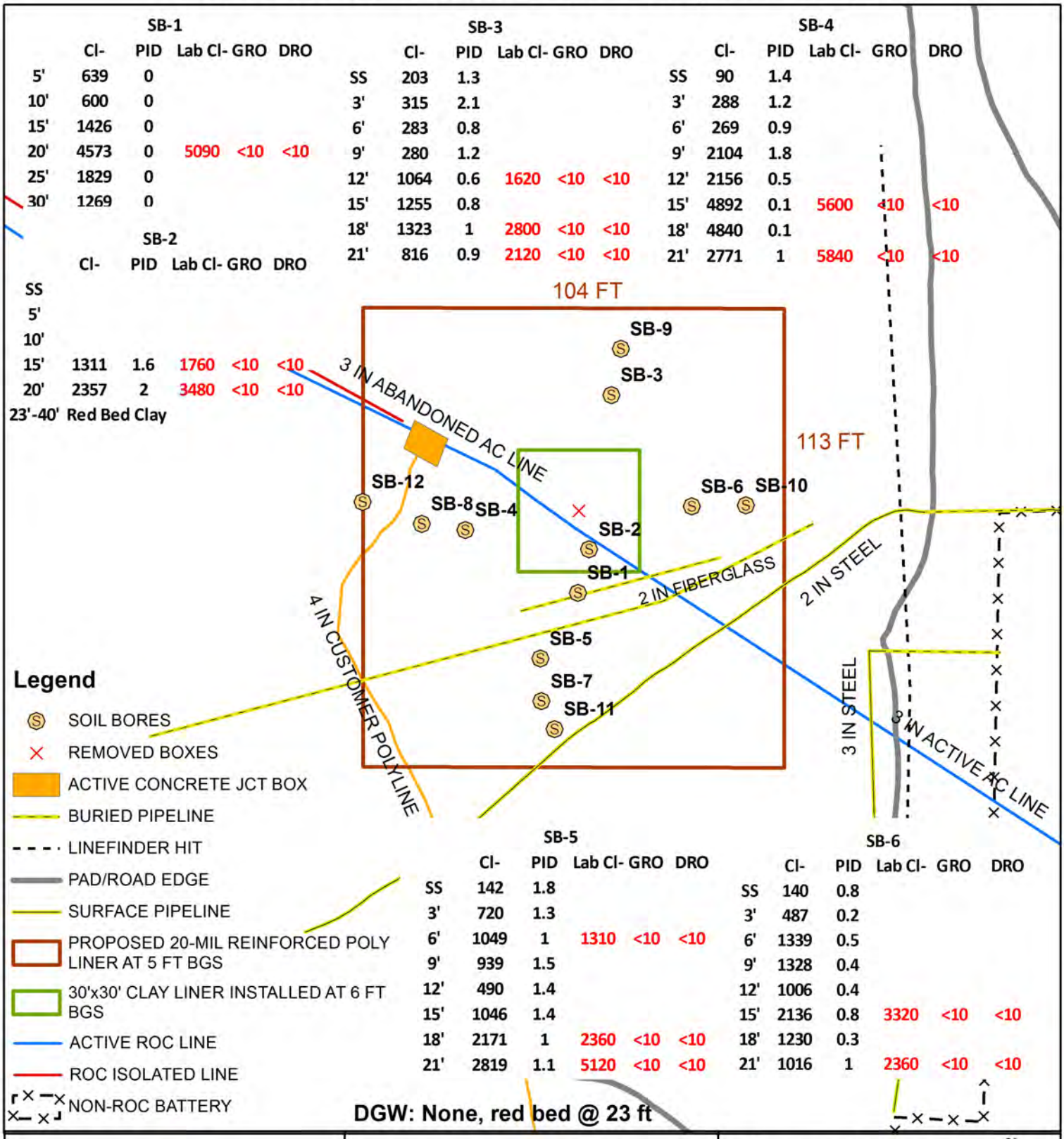
Figure 2

N
W E
S

0 30 60
Feet

GPS Date: 5/13/14
Drawing date: 11/7/14
Drafted by: L. Weinheimer

Soil Bore Installation and Proposed Liner



RECS
RICE ENVIRONMENTAL
CONSULTING & SAFETY

EME Jct. C-12

Unit Letter C, Section 12
T-20-S R-37-E
Lea County, NM

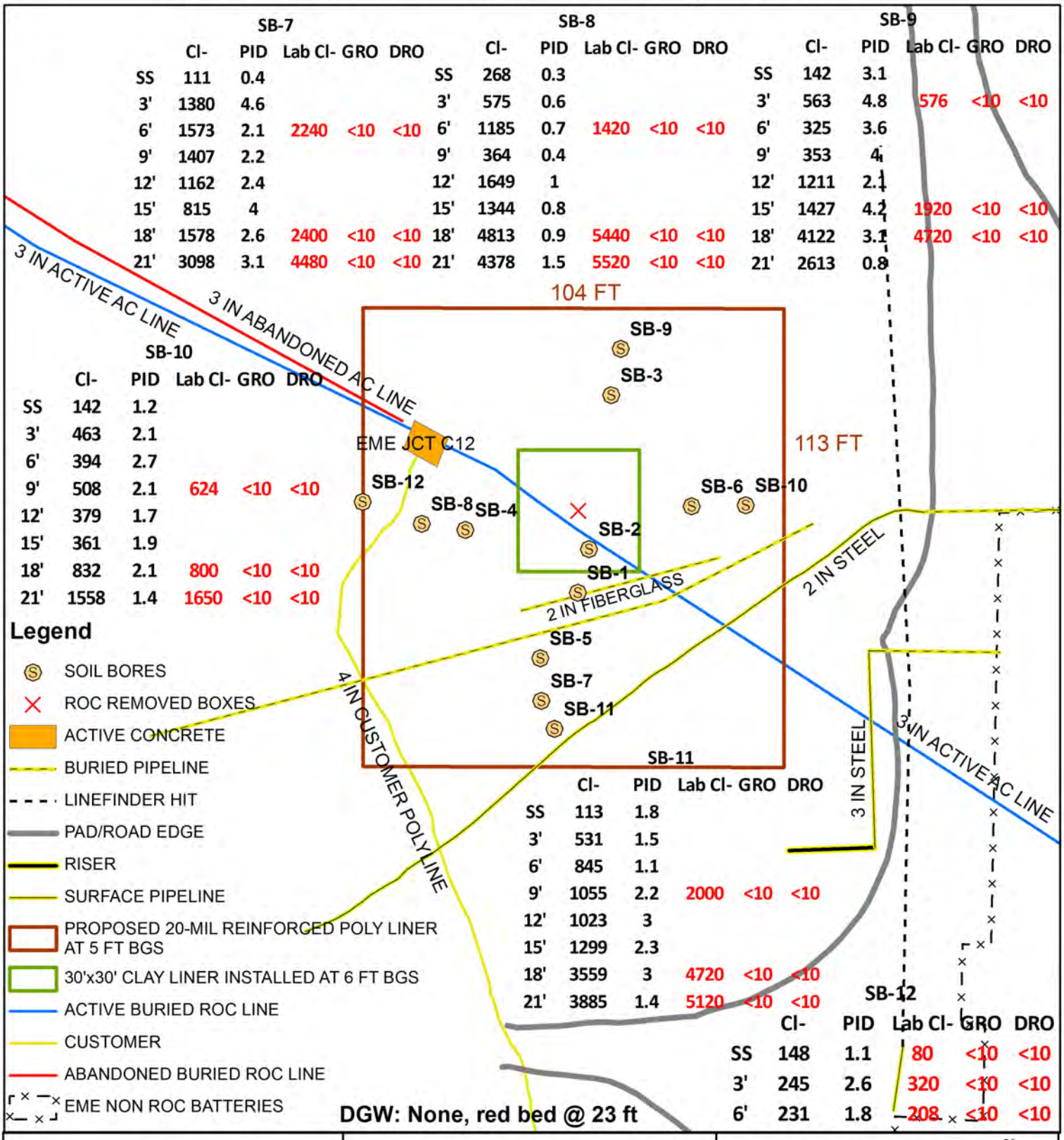
Figure 3A

N W E S

0 25 50
Feet

GPS Date: 5/13/14
Drawing date: 11/7/14
Drafted by: L. Weinheimer

Soil Bore Installation and Proposed Liner



RECS
RICE ENVIRONMENTAL
CONSULTING & SAFETY

EME Jct. C-12

Unit Letter C, Section 12
T-20-S R-37-E
Lea County, NM

Figure 3B

N W E S

0 25 50 Feet

GPS Date: 9/10/14 AG
Drawing date: 11/7/14
Drafted by: L. Weinheimer

Appendix A

Soil Bore Installation Documentation

RICE Environmental Consulting and Safety (RECS)
P.O. Box 2948 Hobbs, NM 88241
Phone 575.393.2967

Logger:	Amber Groves		RECS RICE ENVIRONMENTAL CONSULTING & SAFETY
Driller:	Harrison&Cooper Inc		**Project Name:** EME Jct. C-12 **Well ID:** SB-2
Drilling Method:	Air Rotary		**Project Consultant:** RECS
Start Date:	7/16/2014		
End Date:	7/18/2014		
Comments: All samples were taken from cuttings. SB-2 was installed 5 ft south of the former junction box. **DRAFTED BY:** C. Uršanić TD = 40' GW = None			**Location:** U/L C Sec. 12 T-20-S R-37E **Lat:** 32°35'35.675"N **Long:** 103°12'31.405"W **County**:Lea **State**:NM

Depth (feet)	Chloride field tests	LAB	PID	Description
SS				Brown/Red Sand/Caliche
5 ft				Tan Sand/Caliche
10 ft				
15 ft	1311	Cl- 1760	1.6	
		GRO <10		
		DRO <10		
20 ft	2357	Cl- 3480	2	
		GRO <10		
		DRO <10		
23 ft				Red Bed
30 ft				
35 ft				
40 ft				

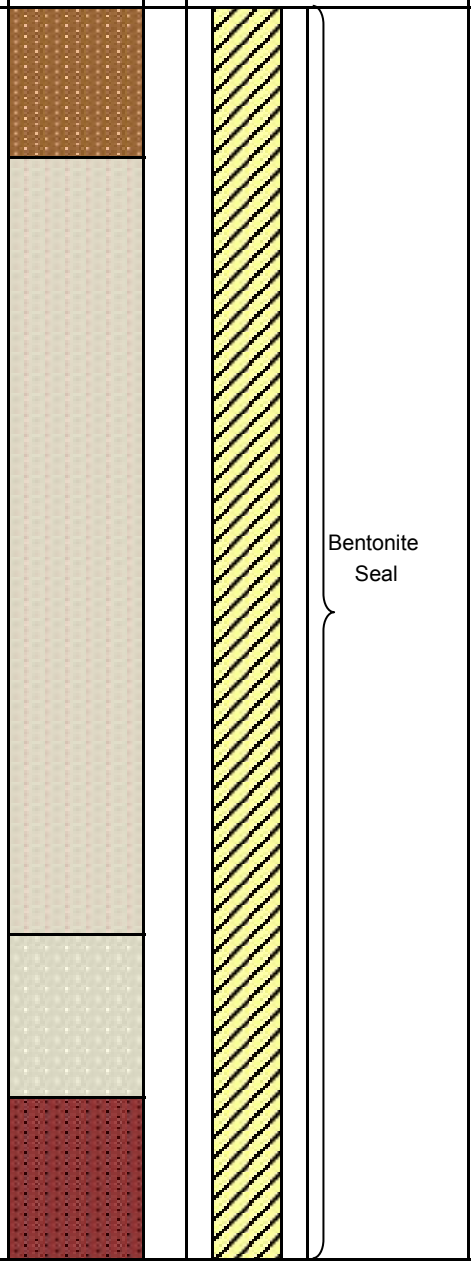
Lithology

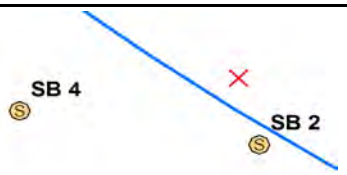
Well Construction

Bentonite Seal

Logger:	Amber Groves		RECS RICE ENVIRONMENTAL CONSULTING & SAFETY
Driller:	Harrison&Cooper Inc		
Drilling Method:	Air Rotary		**Project Name:** EME Jct. C-12 **Well ID:** SB-3
Start Date:	7/16/2014		
End Date:	7/16/2014		**Project Consultant:** RECS
Comments:All samples were taken from cuttings. SB-3 was installed 25 ft north of the former junction box. **DRAFTED BY:** C. Uršanić			**Location:** U/L C Sec. 12 T-20-S R-37-E
TD = 21'	GW = None		Lat: 32°35'36.036"N **County**:Lea
			Long:103°12'31.327"W **State**:NM

Depth (feet)	Chloride field tests	LAB	PID	Description
SS	203		1.3	Brown Sand/Caliche
3 ft	315		2.1	Caliche/Tan Sand
6 ft	283		0.8	
9 ft	280		1.2	
12 ft	1,064	Cl- 1620	0.6	
		GRO <10		
		DRO <10		
15 ft	1,255		0.8	
18 ft	1,323	Cl- 2800	1	Caliche/Tan Sand/Gravel
		GRO <10		
		DRO <10		
21 ft	816	Cl- 2120	0.9	Sand/Clay
		GRO <10		
		DRO <10		



Logger:	Amber Groves		RECS RICE ENVIRONMENTAL CONSULTING & SAFETY
Driller:	Harrison&Cooper Inc		**Project Name:** EME Jct. C-12 **Well ID:** SB-4
Drilling Method:	Air Rotary		**Project Consultant:** RECS
Start Date:	7/16/2014		
End Date:	7/16/2014		

Comments: All samples were taken from cuttings.SB-4 was installed 25 ft west of the former junction box.

DRAFTED BY: C. Uršanić

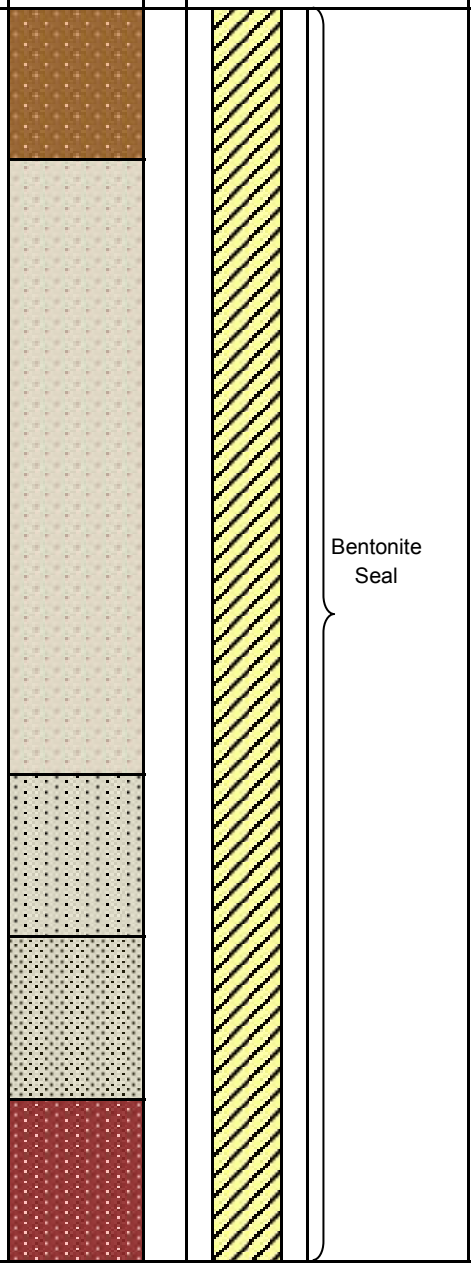
TD = 21' GW = None

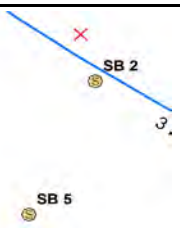
Location: U/L C Sec 12 T-20-S R-37-E

Lat: 32°35'35.713"N **Long:**103°12'31.758"W

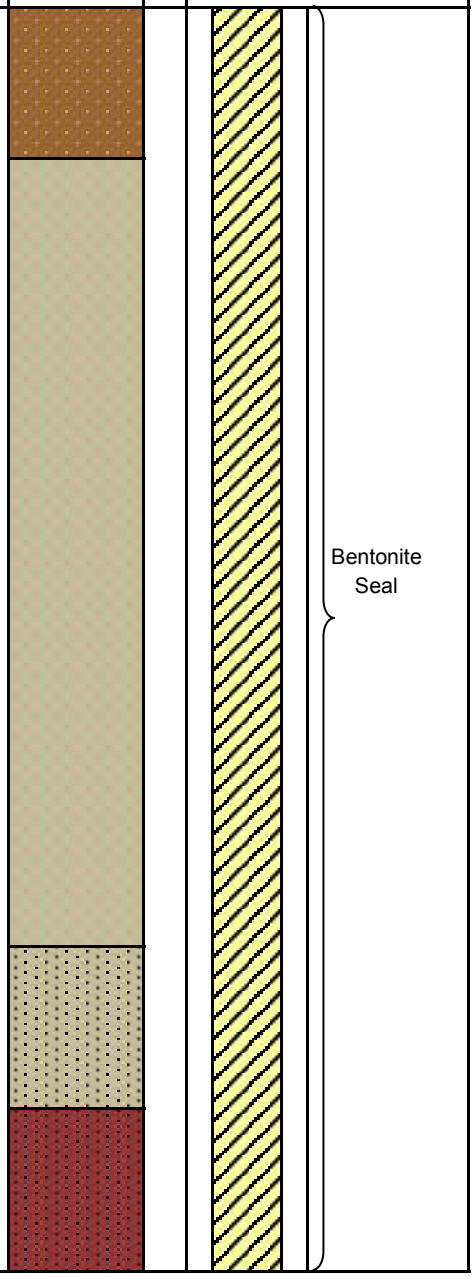
County:Lea **State**:NM

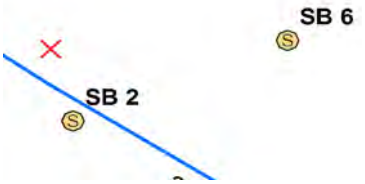
Depth (feet)	Chloride field tests	LAB	PID	Description
SS	90		1.4	Brown Sand/Caliche
3 ft	288		1.2	Tan Sand/Caliche
6 ft	269		0.9	
9 ft	2104		1.8	
12 ft	2156		0.5	
15 ft	4892	Cl- 5600	0.1	Tan Sand/Some Caliche
		GRO <10		
		DRO <10		
18 ft	4840		0.1	Tan Sand
21 ft	2771	Cl- 5840	1	Sandy clay
		GRO <10		
		DRO <10		



Logger:	Amber Groves		RECS RICE ENVIRONMENTAL CONSULTING & SAFETY
Driller:	Harrison&Cooper Inc.		**Project Name:** EME Jct. C-12 **Well ID:** SB-5
Drilling Method:	Air Rotary		**Project Consultant:** RECS
Start Date:	7/16/2014		
End Date:	7/16/2014		
Comments:All samples were taken from cuttings. SB-5 was installed 37 ft south of the former junction box. **DRAFTED BY:** C. Uršanić TD = 21' GW = None			**Location:** UL/C Sec. 12 T-20-S R-37-E **Lat:** 32°35'35.396"N **Long:**103°12'31.549"W **County**:Lea **State**:NM

Depth (feet)	Chloride field tests	LAB	PID	Description
SS	142		1.8	Brown Sand/Caliche
3 ft	720		1.3	Tan Sand/Caliche
6 ft	1049	Cl- 1310	1	
		GRO <10		
		DRO <10		
9 ft	939		1.5	
12 ft	490		1.4	
15 ft	1046		1.4	
18 ft	2171	Cl- 2360	1	Tan Sand
		GRO <10		
		DRO <10		
21 ft	2819	Cl- 5120	1.1	Sandy Clay
		GRO <10		
		DRO <10		



Logger:	Amber Groves		RECS RICE ENVIRONMENTAL CONSULTING & SAFETY
Driller:	Harrison&Cooper inc.		**Project Name:** EME Jct. C-12 **Well ID:** SB-6
Drilling Method:	Air Rotary		**Project Consultant:** RECS
Start Date:	7/16/2014		
End Date:	7/16/2014		

Comments:All samples were taken from cuttings. SB-6 was installed 25 ft east of the former junction box.

DRAFTED BY: C. Uršanić

TD = 21' GW = None

Location: UL/C Sec. 12 T-20-S R-37-E

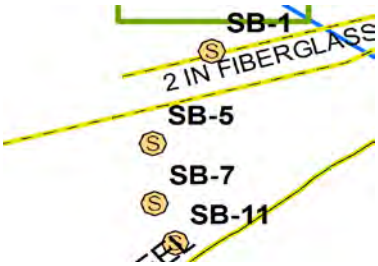
Lat: 32°35'35.769"N **Long:**103°12'31.112"W

County:Lea **State**:NM

Depth (feet)	Chloride field tests	LAB	PID	Description
SS	140		0.8	Brown Sand/Caliche
3 ft	487		0.2	Tan Sand/Caliche
6 ft	1339		0.5	
9 ft	1328		0.4	Tan Sand/Caliche/Gravel
12 ft	1006		0.4	
15 ft	2136	Cl- 3320	0.8	
		GRO <10		
		DRO <10		
18 ft	1230		0.3	Reddish Tan Sand/Caliche
21 ft	1016	Cl- 2360	1	Sandy Clay
		GRO <10		
		DRO <10		

Lithology

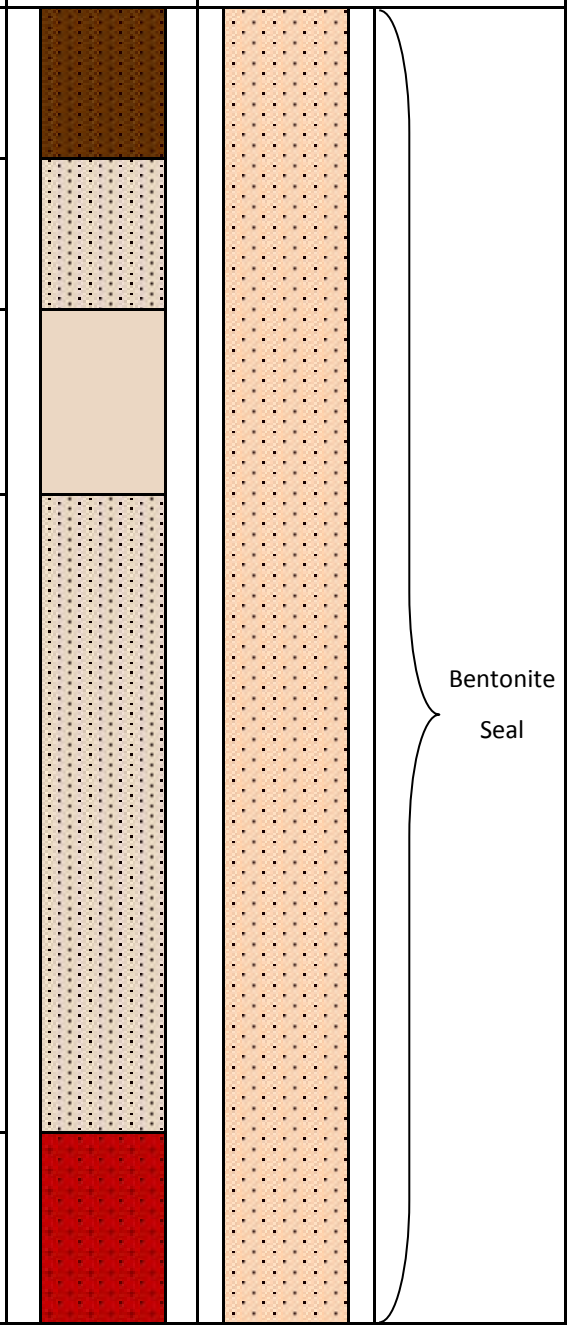
Well Construction: Bentonite Seal

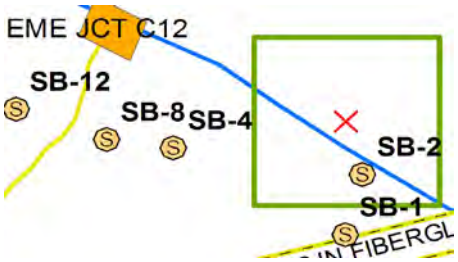
Logger:	Amber Groves		RECS RICE ENVIRONMENTAL CONSULTING & SAFETY
Driller:	Harrison & Cooper, Inc		**Company:** ROC
Drilling Method:	Air Rotary		**Project Name:** EME Jct C-12 **Well ID:** SB-7
Start Date:	9/9/2014		**Project Consultant:** RECS
End Date:	9/9/2014		

Comments: All samples taken from cuttings. SB-7 is located 48 FT S of the former junction box.
DRAFTED BY: Brian Cooper
TD = 21 FT GW = None

Location: UL/C, sec. 12, T-20-S, R-37-E
Lat: 32.593139 **County**: Lea
Long: -103.208762 **State**: NM

Depth (feet)	Chloride field tests	LAB	PID	Description
SS	111		0.4	Brown sand with caliche rock
3 ft	1380		4.6	Tan sand with caliche rock
6 ft	1573	Cl- 2240	2.1	Tan Sand
		GRO <10		
		DRO <10		
9 ft	1407		2.2	Tan sand with caliche rock
12 ft	1162		2.4	
15 ft	815		4	
18 ft	1578	Cl- 2400	2.6	
		GRO <10		
		DRO <10		
21 ft	3098	Cl- 4480	3.1	Sandy clay
		GRO <10		
		DRO <10		

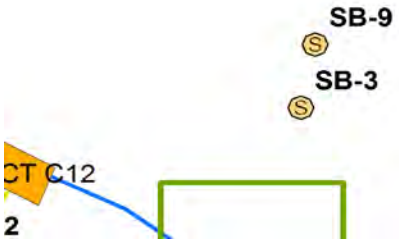


Logger:	Amber Groves		RECS RICE ENVIRONMENTAL CONSULTING & SAFETY
Driller:	Harrison & Cooper, Inc		**Company:** ROC
Drilling Method:	Air Rotary		**Project Name:** EME Jct C-12 **Well ID:** SB-8
Start Date:	9/10/2014		**Project Consultant:** RECS
End Date:	9/10/2014		

Comments: All samples taken from cuttings. SB-8 is located 39 FT W of former junction box.
DRAFTED BY: Brian Cooper
TD = 21 FT GW = None

Location: UL/C, sec. 12, T-20-S, R-37-E
Lat: 32.593259 **County**: Lea
Long: -103.208859 **State**: NM

Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
SS	268		0.3	Tan sand with caliche rock		Bentonite Seal
3 ft	575		0.6			
6 ft	1185	Cl- 1420	0.7			
		GRO <10				
		DRO <10				
9 ft	364		0.4			
12 ft	1649		1			
15 ft	1344		0.8			
18 ft	4813	Cl- 5440	0.9			
		GRO <10				
		DRO <10				
21 ft	4378	Cl- 5520	1.5			
		GRO <10				
		DRO <10				

Logger:	Amber Groves		**Company:** ROC
Driller:	Harrison & Cooper, Inc		**Project Name:** EME Jct C-12 **Well ID:** SB-9
Drilling Method:	Air Rotary		**Project Consultant:** RECS
Start Date:	9/10/2014		
End Date:	9/10/2014		

Comments: All samples taken from cuttings. SB-9 is located 41 FT N of former junction box.
DRAFTED BY: Brian Cooper
TD = 21 FT GW = None

Location: UL/C, sec. 12, T-20-S, R-37-E
Lat: 32.593378 **County**: Lea
Long: -103.208696 **State**: NM

Depth (feet)	Chloride field tests	LAB	PID	Description
SS	142		3.1	Brown sand with caliche rock
3 ft	563	Cl-576	4.8	Tan sand with caliche rock
		GRO <10		
		DRO <10		
6 ft	325		3.6	
9 ft	353		4	
12 ft	1211		2.1	
15 ft	1427	Cl-1920	4.2	Red sand with caliche rock
		GRO <10		
		DRO <10		
18 ft	4122	Cl-4720	3.1	Red sandy clay with caliche rock
		GRO <10		
		DRO <10		
21 ft	2613		0.8	

Lithology

Well Construction

Bentonite Seal

Logger:	Amber Groves		RECS RICE ENVIRONMENTAL CONSULTING & SAFETY
Driller:	Harrison & Cooper, Inc		**Company:** ROC
Drilling Method:	Air Rotary		**Project Name:** EME Jct C-12 **Well ID:** SB-10
Start Date:	9/10/2014		**Project Consultant:** RECS
End Date:	9/10/2014		

Comments: All samples taken from cuttings. SB-10 is located 41 FT E of former junction box.

DRAFTED BY: Brian Cooper

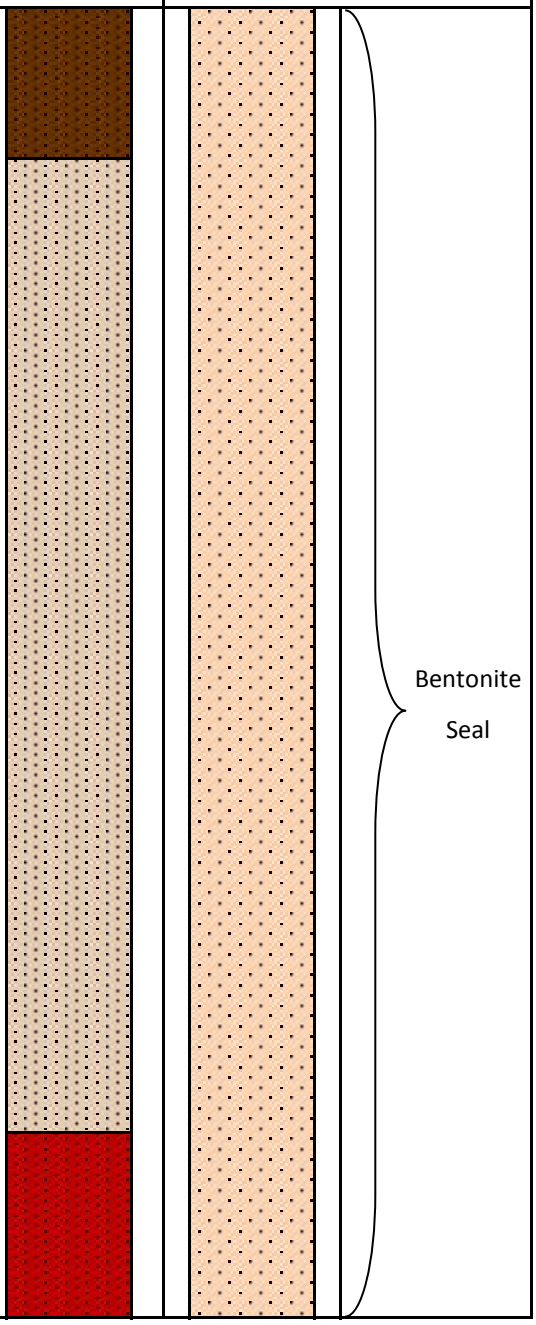
TD = 21 FT GW = None

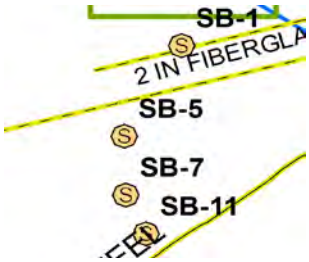
Location: UL/C, sec. 12, T-20-S, R-37-E

Lat: 32.593270 **County**: Lea

Long: -103.208597 **State**: NM

Depth (feet)	Chloride field tests	LAB	PID	Description
SS	142		1.2	Brown sand with caliche
3 ft	463		2.1	Tan sand with caliche
6 ft	394		2.7	
9 ft	508	Cl- 624	2.1	
		GRO <10		
		DRO <10		
12 ft	379		1.7	
15 ft	361		1.9	
18 ft	832	Cl- 800	2.1	
		GRO <10		
		DRO <10		
21 ft	1558	Cl- 1650	1.4	Red sandy clay with caliche
		GRO <10		
		DRO <10		

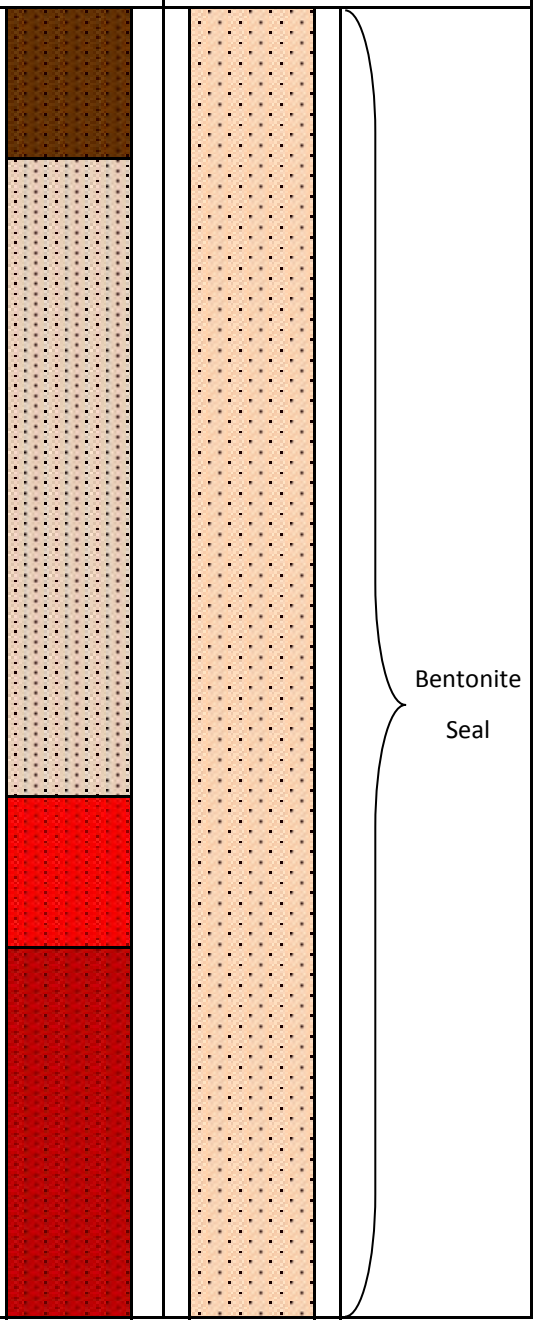


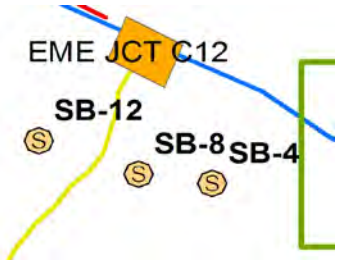
Logger:	Amber Groves		RECS RICE ENVIRONMENTAL CONSULTING & SAFETY
Driller:	Harrison & Cooper, Inc		**Company:** ROC
Drilling Method:	Air Rotary		**Project Name:** EME Jct C-12 **Well ID:** SB-11
Start Date:	9/10/2014		**Project Consultant:** RECS
End Date:	9/10/2014		

Comments: All samples taken from cuttings. SB-11 is located 54 FT S of former junction box.
DRAFTED BY: Brian Cooper
TD = 21 FT GW = None

Location: UL/C, sec. 12, T-20-S, R-37-E
Lat: 32.593120 **County**: Lea
Long: -103.208752 **State**: NM

Depth (feet)	Chloride field tests	LAB	PID	Description
SS	113		1.8	Brown sand with caliche
3 ft	531		1.5	Tan sand with caliche
6 ft	845		1.1	
9 ft	1055	Cl- 2000	2.2	
		GRO <10		
		DRO <10		
12 ft	1023		3	
15 ft	1299		2.3	Red sand with caliche
18 ft	3559	Cl- 4720	3	Red sandy clay with caliche
		GRO <10		
		DRO <10		
21 ft	3885	Cl- 5120	1.4	
		GRO <10		
		DRO <10		



Logger:	Amber Groves		RECS RICE ENVIRONMENTAL CONSULTING & SAFETY
Driller:	Harrison & Cooper, Inc		**Company:** ROC
Drilling Method:	Air Rotary		**Project Name:** EME Jct C-12 **Well ID:** SB-12
Start Date:	9/10/2014		**Project Consultant:** RECS
End Date:	9/10/2014		

Comments: All samples taken from cuttings. SB-12 is located 53 FT W of former junction.

DRAFTED BY: Brian Cooper

TD = 6 FT GW = None

Location: UL/C, sec. 12, T-20-S, R-37-E

Lat: 32.593275 **County**: Lea

Long: -103.208903 **State**: NM

Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
SS	148	Cl- 80	1.1	Caliche		
		GRO <10				
		DRO <10				
3 ft	245	Cl- 320	2.6	Tan sand with caliche		Bentonite Seal
		GRO <10				
		DRO <10				
6 ft	231	Cl- 208	1.8			
		GRO <10				
		DRO <10				

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 ____	SERIAL NO: _____

GAS COMPOSITION: ISOBUTYLENE 100PPM / AIR: BALANCE

LOT NO : GAM-248-1004	EXPIRATION DATE: 6-7-16
METER READING ACCURACY: 100ppm	

COMPANY
Rice

SITE	UNIT	SECTION	TOWN SHIP	RANGE
EME Jct. C-12	C	12	20	37

SAMPLE ID	PID	SAMPLE ID	PID
SB2 @ 15'	1.6	SB4 @ 6'	0.9
SB2 @ 20'	2	SB4 @ 9'	1.8
SB3 @ Surface	1.3	SB4 @ 12'	0.5
SB3 @ 3'	2.1	SB4 @ 15'	0.1
SB3 @ 6'	0.8	SB4 @ 18'	0.1
SB3 @ 9'	1.2	SB4 @ 21'	1
SB3 @ 12'	0.6	SB5 @ Surface	1.8
SB3 @ 15'	0.8	SB5 @ 3'	1.3
SB3 @ 18'	1	SB5 @ 6'	1
SB3 @ 21'	0.9	SB5 @ 9'	1.5
SB4 @ Surface	1.4	SB5 @ 12'	1.4
SB4 @ 3'	1.2	SB5 @ 15'	1.4

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

SIGNATURE: Amber Graves DATE: 7/14/14

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 ____	SERIAL NO: _____

GAS COMPOSITION: ISOBUTYLENE 100PPM / AIR: BALANCE

LOT NO : GAM-248-1004	EXPIRATION DATE: 6-7-16
METER READING ACCURACY: 100ppm	

COMPANY
Rice

SITE	UNIT	SECTION	TOWN SHIP	RANGE
EME Jct. C-12	C	12	20	37

SAMPLE ID	PID	SAMPLE ID	PID
SB5 @ 18'	1		
SB5 @ 21'	1.1		
SB6 @ Surface	0.8		
SB6 @ 3'	0.2		
SB6 @ 6'	0.5		
SB6 @ 9'	0.4		
SB6 @ 12'	0.4		
SB6 @ 15'	0.8		
SB6 @ 18'	0.3		
SB6 @ 21'	1		

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

SIGNATURE: Amber Groves DATE: 7/16/14

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 _____	SERIAL NO: _____

GAS COMPOSITION: ISOBUTYLENE 100PPM / AIR: BALANCE

LOT NO : GAM-248-1004	EXPIRATION DATE: 6-7-16
METER READING ACCURACY: 100ppm	

COMPANY
Rice

SITE	UNIT	SECTION	TOWN SHIP	RANGE
EME Jct. C-12	C	12	20	37

SAMPLE ID	PID	SAMPLE ID	PID
SB7 @ Surface	0.4		
SB7 @ 3'	4.6		
SB7 @ 6'	2.1		
SB7 @ 9'	2.2		
SB7 @ 12'	2.4		
SB7 @ 15'	4		
SB7 @ 18'	2.6		
SB7 @ 21'	3.1		

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

SIGNATURE: Amber Chaves DATE: 9/9/14

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: PGM 7300	SERIAL NO: 590-000508
MODEL	X	MODEL: PGM 7300	SERIAL NO: 590-000504
NO.		MODEL: PGM 7320	SERIAL NO: 592-903318
		MODEL: PGM _____	SERIAL NO: _____

GAS COMPOSITION: ISOBUTYLENE 100PPM / AIR: BALANCE

LOT NO : GAM-248-1004	EXPIRATION DATE: 6-7-16
METER READING ACCURACY: 100ppm	

COMPANY
Rice

SITE	UNIT	SECTION	TOWN SHIP	RANGE
EME Jct. C-12	C	12	20	37

SAMPLE ID	PID	SAMPLE ID	PID
SB8 @ Surface	0.3	SB9 @ 12'	2.1
SB8 @ 3'	0.6	SB9 @ 15'	4.2
SB8 @ 6'	0.7	SB9 @ 18'	3.1
SB8 @ 9'	0.4	SB9 @ 21'	0.8
SB8 @ 12'	1	SB10 @ Surface	1.2
SB8 @ 15'	0.8	SB10 @ 3'	2.1
SB8 @ 18'	0.9	SB10 @ 6'	2.7
SB8 @ 21'	1.5	SB10 @ 9'	2.1
SB9 @ Surface	3.1	SB10 @ 12'	1.7
SB9 @ 3'	4.8	SB10 @ 15'	1.9
SB9 @ 6'	3.6	SB10 @ 18'	2.1
SB9 @ 9'	4	SB10 @ 21'	1.4

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

SIGNATURE: Amber Groves DATE: 9/10/14

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 _____	SERIAL NO: _____

GAS COMPOSITION: ISOBUTYLENE 100PPM / AIR: BALANCE

LOT NO : GAM-248-1004	EXPIRATION DATE: 6-7-16
METER READING ACCURACY: 100ppm	

COMPANY
Rice

SITE	UNIT	SECTION	TOWN SHIP	RANGE
EME Jct. C-12	C	12	20	37

SAMPLE ID	PID	SAMPLE ID	PID
SB11 @ Surface	1.8		
SB11 @ 3'	1.5		
SB11 @ 6'	1.1		
SB11 @ 9'	2.2		
SB11 @ 12'	3		
SB11 @ 15'	2.3		
SB11 @ 18'	3		
SB11 @ 21'	1.4		
SB12 @ Surface	1.1		
SB12 @ 3'	2.6		
SB12 @ 6'	1.8		

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

SIGNATURE: Amber Groves DATE: 9/10/14

CARDINAL Laboratories

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

July 21, 2014

KYLE NORMAN

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: EME JCT. C-12

Enclosed are the results of analyses for samples received by the laboratory on 07/16/14 15:50.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-13-5. 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
KYLE NORMAN
112 W. Taylor
Hobbs NM, 88240
Fax To: (575) 397-1471

Received:	07/16/2014	Sampling Date:	07/16/2014
Reported:	07/21/2014	Sampling Type:	Soil
Project Name:	EME JCT. C-12	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SB 2 @ 15' (H402165-01)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1760**	16.0	07/21/2014	ND	400	100	400	3.92	

TPH 8015M mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	07/18/2014	ND	189	94.3	200	2.51	
DRO >C10-C28	<10.0	10.0	07/18/2014	ND	210	105	200	4.14	

Surrogate: 1-Chlorooctane	*103 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*110 %*	*63.6-154*

Sample ID: SB 2 @ 20' (H402165-02)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**3480**	16.0	07/21/2014	ND	400	100	400	3.92	

TPH 8015M mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	07/18/2014	ND	189	94.3	200	2.51	
DRO >C10-C28	<10.0	10.0	07/18/2014	ND	210	105	200	4.14	

Surrogate: 1-Chlorooctane	*102 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*112 %*	*63.6-154*

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
KYLE NORMAN
112 W. Taylor
Hobbs NM, 88240
Fax To: (575) 397-1471

Received:	07/16/2014	Sampling Date:	07/16/2014
Reported:	07/21/2014	Sampling Type:	Soil
Project Name:	EME JCT. C-12	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SB 3 @ 12' (H402165-03)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1620**	16.0	07/21/2014	ND	432	108	400	3.77	

TPH 8015M mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	07/18/2014	ND	189	94.3	200	2.51	
DRO >C10-C28	<10.0	10.0	07/18/2014	ND	210	105	200	4.14	

Surrogate: 1-Chlorooctane	*101 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*107 %*	*63.6-154*

Sample ID: SB 3 @ 18' (H402165-04)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**2800**	16.0	07/21/2014	ND	432	108	400	3.77	

TPH 8015M mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	07/18/2014	ND	189	94.3	200	2.51	
DRO >C10-C28	<10.0	10.0	07/18/2014	ND	210	105	200	4.14	

Surrogate: 1-Chlorooctane	*97.8 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*108 %*	*63.6-154*

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
KYLE NORMAN
112 W. Taylor
Hobbs NM, 88240
Fax To: (575) 397-1471

Received:	07/16/2014	Sampling Date:	07/16/2014
Reported:	07/21/2014	Sampling Type:	Soil
Project Name:	EME JCT. C-12	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SB 3 @ 21' (H402165-05)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**2120**	16.0	07/21/2014	ND	432	108	400	3.77	

TPH 8015M **mg/kg** **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	07/18/2014	ND	189	94.3	200	2.51	
DRO >C10-C28	<10.0	10.0	07/18/2014	ND	210	105	200	4.14	

Surrogate: 1-Chlorooctane	*103 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*108 %*	*63.6-154*

Sample ID: SB 4 @ 15' (H402165-06)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**5600**	16.0	07/21/2014	ND	432	108	400	3.77	

TPH 8015M **mg/kg** **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	07/18/2014	ND	189	94.3	200	2.51	
DRO >C10-C28	<10.0	10.0	07/18/2014	ND	210	105	200	4.14	

Surrogate: 1-Chlorooctane	*109 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*113 %*	*63.6-154*

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
KYLE NORMAN
112 W. Taylor
Hobbs NM, 88240
Fax To: (575) 397-1471

Received:	07/16/2014	Sampling Date:	07/16/2014
Reported:	07/21/2014	Sampling Type:	Soil
Project Name:	EME JCT. C-12	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SB 4 @ 21' (H402165-07)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**5840**	16.0	07/21/2014	ND	432	108	400	3.77	

TPH 8015M mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	07/18/2014	ND	189	94.3	200	2.51	
DRO >C10-C28	<10.0	10.0	07/18/2014	ND	210	105	200	4.14	

Surrogate: 1-Chlorooctane	*106 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*110 %*	*63.6-154*

Sample ID: SB 5 @ 6' (H402165-08)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1310**	16.0	07/21/2014	ND	432	108	400	3.77	

TPH 8015M mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	07/18/2014	ND	189	94.3	200	2.51	
DRO >C10-C28	<10.0	10.0	07/18/2014	ND	210	105	200	4.14	

Surrogate: 1-Chlorooctane	*100 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*107 %*	*63.6-154*

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
KYLE NORMAN
112 W. Taylor
Hobbs NM, 88240
Fax To: (575) 397-1471

Received:	07/16/2014	Sampling Date:	07/16/2014
Reported:	07/21/2014	Sampling Type:	Soil
Project Name:	EME JCT. C-12	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SB 5 @ 18' (H402165-09)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**2360**	16.0	07/21/2014	ND	432	108	400	3.77	

TPH 8015M mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	07/18/2014	ND	189	94.3	200	2.51	
DRO >C10-C28	<10.0	10.0	07/18/2014	ND	210	105	200	4.14	

Surrogate: 1-Chlorooctane	*109 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*115 %*	*63.6-154*

Sample ID: SB 5 @ 21' (H402165-10)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**5120**	16.0	07/21/2014	ND	432	108	400	3.77	

TPH 8015M mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	07/18/2014	ND	189	94.3	200	2.51	
DRO >C10-C28	<10.0	10.0	07/18/2014	ND	210	105	200	4.14	

Surrogate: 1-Chlorooctane	*111 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*117 %*	*63.6-154*

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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
KYLE NORMAN
112 W. Taylor
Hobbs NM, 88240
Fax To: (575) 397-1471

Received:	07/16/2014	Sampling Date:	07/16/2014
Reported:	07/21/2014	Sampling Type:	Soil
Project Name:	EME JCT. C-12	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SB 6 @ 15' (H402165-11)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**3320**	16.0	07/21/2014	ND	432	108	400	3.77	

TPH 8015M mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	07/18/2014	ND	189	94.3	200	2.51	
DRO >C10-C28	<10.0	10.0	07/18/2014	ND	210	105	200	4.14	

Surrogate: 1-Chlorooctane	*106 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*111 %*	*63.6-154*

Sample ID: SB 6 @ 21' (H402165-12)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**2360**	16.0	07/21/2014	ND	432	108	400	3.77	

TPH 8015M mg/kg **Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	07/18/2014	ND	189	94.3	200	2.51	
DRO >C10-C28	<10.0	10.0	07/18/2014	ND	210	105	200	4.14	

Surrogate: 1-Chlorooctane	*109 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*114 %*	*63.6-154*

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

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Company Name: RICE	BILL TO
Project Manager: Kyle Norman	P.O. #:
Address:	Company:
City: Hobbs State: NM Zip: 88240	Attn:
Phone #: Fax #:	Address:
Project #: Project Owner:	City:
Project Name: Eme Ict. C12	State: Zip:
Project Location:	Phone #:
Sampler Name: Amber Groves	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					
H402165																									
1	SB2@ 15ft	G	1			✓					✓		7-16-14	9:00	✓	✓									
2	SB2@ 20ft	G	1			✓					✓		7-16-14	9:05	✓	✓									
3	SB3@ 12ft	G	1			✓					✓		7-16-14	10:00	✓	✓									
4	SB3@ 18ft	G	1			✓					✓		7-16-14	10:10	✓	✓									
5	SB3@ 21ft	G	1			✓					✓		7-16-14	10:15	✓	✓									
6	SB4@ 15ft	G	1			✓					✓		7-16-14	11:00	✓	✓									
7	SB4@ 21ft	G	1			✓					✓		7-16-14	11:15	✓	✓									
8	SB5@ 6ft	G	1			✓					✓		7-16-14	1:00	✓	✓									
9	SB5@ 18ft	G	1			✓					✓		7-16-14	1:10	✓	✓									
10	SB5@ 21ft	G	1			✓					✓		7-16-14	1:15	✓	✓									

Relinquished By: Amber Groves	Date: 7-16-14	Received By: Jodi Henson	Phone Result: ☐ Yes ☑ No Add'l Phone #:
	Time: 3:50		Fax Result: ☐ Yes ☑ No Add'l Fax #:
Relinquished By:	Date:	Received By:	REMARKS: email results Knorman@rice-ecs.com Kjones@riceswd.com; jkamplain@rice-ecs.com hconder@rice-ecs.com; Lweinheimer@rice-ecs.com; sedwards@rice-ecs.com; lflores@rice-ecs.com; agroves@rice-ecs.com
	Time:		
Delivered By: (Circle One) Sampler - UPS - Bus - Other:		Sample Condition Cool ☑ Yes ☐ No Intact ☑ Yes ☐ No	CHECKED BY: (Initials)

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

#54

pg 1 of 2

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Company Name: RICE	**BILL TO**
Project Manager: Kyle Norman	P.O. #:
Address:	Company:
City: Hobbs State: NM Zip: 88240	Attn:
Phone #: Fax #:	Address:
Project #: Project Owner:	City:
Project Name: EME 24-C-12	State: Zip:
Project Location:	Phone #:
Sampler Name: Amber Groves	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	SAMPLING TIME	Chlorides	TPH 8015 M	BTEX	Texas TPH	Complete Cations/Anions	TDS
H402165																				
11	SB1@15ft	G	1			✓							7-16-14	2:00	✓	✓				
12	SB1@21ft	G	1			✓							7-16-14	2:15	✓	✓				

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: Amber Groves	Date: 7-16-14 Time: 3:50	Received By: Jodi Henson	
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)	

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

email results
Knorman@rice-ecs.com
Kjones@riceswd.com; jkamplain@rice-ecs.com
hconder@rice-ecs.com; Lweinheimer@rice-ecs.com;
sedwards@rice-ecs.com; lflores@rice-ecs.com; agroves@rice-ecs.com

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Pg 2 of 2 #54

CARDINAL Laboratories

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

September 16, 2014

KYLE NORMAN

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: EME JCT. C-12

Enclosed are the results of analyses for samples received by the laboratory on 09/10/14 16:10.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-13-5. 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
KYLE NORMAN
112 W. Taylor
Hobbs NM, 88240
Fax To: (575) 397-1471

Received:	09/10/2014	Sampling Date:	09/09/2014
Reported:	09/16/2014	Sampling Type:	Soil
Project Name:	EME JCT. C-12	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SB 7 @ 6' (H402810-01)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**2240**	16.0	09/12/2014	ND	400	100	400	0.00	

TPH 8015M mg/kg **Analyzed By: ms**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	09/12/2014	ND	182	91.1	200	3.51	
DRO >C10-C28	<10.0	10.0	09/12/2014	ND	192	96.2	200	4.51	

Surrogate: 1-Chlorooctane	*104 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*109 %*	*63.6-154*

Sample ID: SB 7 @ 18' (H402810-02)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**2400**	16.0	09/12/2014	ND	400	100	400	0.00	

TPH 8015M mg/kg **Analyzed By: ms**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	09/12/2014	ND	182	91.1	200	3.51	
DRO >C10-C28	<10.0	10.0	09/12/2014	ND	192	96.2	200	4.51	

Surrogate: 1-Chlorooctane	*105 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*108 %*	*63.6-154*

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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
KYLE NORMAN
112 W. Taylor
Hobbs NM, 88240
Fax To: (575) 397-1471

Received:	09/10/2014	Sampling Date:	09/09/2014
Reported:	09/16/2014	Sampling Type:	Soil
Project Name:	EME JCT. C-12	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SB 7 @ 21' (H402810-03)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**4480**	16.0	09/12/2014	ND	400	100	400	0.00	

TPH 8015M **mg/kg** **Analyzed By: ms**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	09/12/2014	ND	182	91.1	200	3.51	
DRO >C10-C28	<10.0	10.0	09/12/2014	ND	192	96.2	200	4.51	

Surrogate: 1-Chlorooctane	*106 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*110 %*	*63.6-154*

Sample ID: SB 8 @ 6' (H402810-04)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1420**	16.0	09/12/2014	ND	400	100	400	0.00	

TPH 8015M **mg/kg** **Analyzed By: ms**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	09/12/2014	ND	182	91.1	200	3.51	
DRO >C10-C28	<10.0	10.0	09/12/2014	ND	192	96.2	200	4.51	

Surrogate: 1-Chlorooctane	*108 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*123 %*	*63.6-154*

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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
KYLE NORMAN
112 W. Taylor
Hobbs NM, 88240
Fax To: (575) 397-1471

Received:	09/10/2014	Sampling Date:	09/10/2014
Reported:	09/16/2014	Sampling Type:	Soil
Project Name:	EME JCT. C-12	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SB 8 @ 18' (H402810-05)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**5440**	16.0	09/12/2014	ND	400	100	400	0.00	

TPH 8015M **mg/kg** **Analyzed By: ms**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	09/12/2014	ND	182	91.1	200	3.51	
DRO >C10-C28	<10.0	10.0	09/12/2014	ND	192	96.2	200	4.51	

Surrogate: 1-Chlorooctane	*102 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*113 %*	*63.6-154*

Sample ID: SB 8 @ 21' (H402810-06)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**5520**	16.0	09/12/2014	ND	400	100	400	0.00	

TPH 8015M **mg/kg** **Analyzed By: ms**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	09/13/2014	ND	182	91.1	200	3.51	
DRO >C10-C28	<10.0	10.0	09/13/2014	ND	192	96.2	200	4.51	

Surrogate: 1-Chlorooctane	*110 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*115 %*	*63.6-154*

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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
KYLE NORMAN
112 W. Taylor
Hobbs NM, 88240
Fax To: (575) 397-1471

Received:	09/10/2014	Sampling Date:	09/10/2014
Reported:	09/16/2014	Sampling Type:	Soil
Project Name:	EME JCT. C-12	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SB 9 @ 3' (H402810-07)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**576**	16.0	09/12/2014	ND	400	100	400	0.00	

TPH 8015M **mg/kg** **Analyzed By: ms**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	09/13/2014	ND	182	91.1	200	3.51	
DRO >C10-C28	<10.0	10.0	09/13/2014	ND	192	96.2	200	4.51	

Surrogate: 1-Chlorooctane	*106 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*116 %*	*63.6-154*

Sample ID: SB 9 @ 15' (H402810-08)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1920**	16.0	09/12/2014	ND	400	100	400	0.00	

TPH 8015M **mg/kg** **Analyzed By: ms**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	09/13/2014	ND	182	91.1	200	3.51	
DRO >C10-C28	<10.0	10.0	09/13/2014	ND	192	96.2	200	4.51	

Surrogate: 1-Chlorooctane	*107 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*123 %*	*63.6-154*

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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
KYLE NORMAN
112 W. Taylor
Hobbs NM, 88240
Fax To: (575) 397-1471

Received:	09/10/2014	Sampling Date:	09/10/2014
Reported:	09/16/2014	Sampling Type:	Soil
Project Name:	EME JCT. C-12	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SB 9 @ 18' (H402810-09)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**4720**	16.0	09/12/2014	ND	400	100	400	0.00	

TPH 8015M mg/kg **Analyzed By: ms**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	09/13/2014	ND	182	91.1	200	3.51	
DRO >C10-C28	<10.0	10.0	09/13/2014	ND	192	96.2	200	4.51	

Surrogate: 1-Chlorooctane	*106 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*118 %*	*63.6-154*

Sample ID: SB 10 @ 9' (H402810-10)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**624**	16.0	09/12/2014	ND	400	100	400	0.00	

TPH 8015M mg/kg **Analyzed By: ms**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	09/13/2014	ND	182	91.1	200	3.51	
DRO >C10-C28	<10.0	10.0	09/13/2014	ND	192	96.2	200	4.51	

Surrogate: 1-Chlorooctane	*109 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*123 %*	*63.6-154*

Cardinal Laboratories *=Accredited Analyte

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
KYLE NORMAN
112 W. Taylor
Hobbs NM, 88240
Fax To: (575) 397-1471

Received:	09/10/2014	Sampling Date:	09/10/2014
Reported:	09/16/2014	Sampling Type:	Soil
Project Name:	EME JCT. C-12	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SB 10 @ 18' (H402810-11)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**800**	16.0	09/12/2014	ND	400	100	400	0.00	

TPH 8015M mg/kg **Analyzed By: ms**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	09/13/2014	ND	182	91.1	200	3.51	
DRO >C10-C28	<10.0	10.0	09/13/2014	ND	192	96.2	200	4.51	

Surrogate: 1-Chlorooctane	*103 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*116 %*	*63.6-154*

Sample ID: SB 10 @ 21' (H402810-12)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1650**	16.0	09/12/2014	ND	400	100	400	0.00	

TPH 8015M mg/kg **Analyzed By: ms**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	09/13/2014	ND	182	91.1	200	3.51	
DRO >C10-C28	<10.0	10.0	09/13/2014	ND	192	96.2	200	4.51	

Surrogate: 1-Chlorooctane	*98.8 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*119 %*	*63.6-154*

Cardinal Laboratories *=Accredited Analyte

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
KYLE NORMAN
112 W. Taylor
Hobbs NM, 88240
Fax To: (575) 397-1471

Received:	09/10/2014	Sampling Date:	09/10/2014
Reported:	09/16/2014	Sampling Type:	Soil
Project Name:	EME JCT. C-12	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SB 11 @ 9' (H402810-13)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**2000**	16.0	09/12/2014	ND	400	100	400	0.00	

TPH 8015M **mg/kg** **Analyzed By: ms**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	09/13/2014	ND	182	91.1	200	3.51	
DRO >C10-C28	<10.0	10.0	09/13/2014	ND	192	96.2	200	4.51	

Surrogate: 1-Chlorooctane	*105 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*122 %*	*63.6-154*

Sample ID: SB 11 @ 18' (H402810-14)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**4720**	16.0	09/12/2014	ND	400	100	400	0.00	

TPH 8015M **mg/kg** **Analyzed By: ms**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	09/13/2014	ND	182	91.1	200	3.51	
DRO >C10-C28	<10.0	10.0	09/13/2014	ND	192	96.2	200	4.51	

Surrogate: 1-Chlorooctane	*103 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*108 %*	*63.6-154*

Cardinal Laboratories *=Accredited Analyte

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
KYLE NORMAN
112 W. Taylor
Hobbs NM, 88240
Fax To: (575) 397-1471

Received:	09/10/2014	Sampling Date:	09/10/2014
Reported:	09/16/2014	Sampling Type:	Soil
Project Name:	EME JCT. C-12	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SB 11 @ 21' (H402810-15)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**5120**	16.0	09/12/2014	ND	400	100	400	0.00	

TPH 8015M mg/kg **Analyzed By: ms**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	09/13/2014	ND	182	91.1	200	3.51	
DRO >C10-C28	<10.0	10.0	09/13/2014	ND	192	96.2	200	4.51	

Surrogate: 1-Chlorooctane	*102 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*121 %*	*63.6-154*

Sample ID: SB 12 @ SURFACE (H402810-16)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**80.0**	16.0	09/12/2014	ND	400	100	400	0.00	

TPH 8015M mg/kg **Analyzed By: ms**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	09/13/2014	ND	182	91.1	200	3.51	
DRO >C10-C28	<10.0	10.0	09/13/2014	ND	192	96.2	200	4.51	

Surrogate: 1-Chlorooctane	*96.0 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*105 %*	*63.6-154*

Cardinal Laboratories *=Accredited Analyte

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
KYLE NORMAN
112 W. Taylor
Hobbs NM, 88240
Fax To: (575) 397-1471

Received:	09/10/2014	Sampling Date:	09/10/2014
Reported:	09/16/2014	Sampling Type:	Soil
Project Name:	EME JCT. C-12	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SB 12 @ 3' (H402810-17)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**320**	16.0	09/12/2014	ND	400	100	400	0.00	

TPH 8015M **mg/kg** **Analyzed By: ms**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	09/13/2014	ND	182	91.1	200	3.51	
DRO >C10-C28	<10.0	10.0	09/13/2014	ND	192	96.2	200	4.51	

Surrogate: 1-Chlorooctane	*99.4 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*114 %*	*63.6-154*

Sample ID: SB 12 @ 6' (H402810-18)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**208**	16.0	09/12/2014	ND	400	100	400	0.00	

TPH 8015M **mg/kg** **Analyzed By: ms**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	09/13/2014	ND	182	91.1	200	3.51	
DRO >C10-C28	<10.0	10.0	09/13/2014	ND	192	96.2	200	4.51	

Surrogate: 1-Chlorooctane	*106 %*	*65.2-140*
Surrogate: 1-Chlorooctadecane	*121 %*	*63.6-154*

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

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Company Name: RICE	BILL TO
Project Manager: Kyle Norman	P.O. #:
Address:	Company:
City: Hobbs State: NM Zip: 88240	Attn:
Phone #: Fax #:	Address:
Project #: Project Owner:	City:
Project Name: EME JCT. C-12	State: Zip:
Project Location:	Phone #:
Sampler Name: Amber Groves	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							
H40288 10																											
1	SB7@ 6ft	G	1			✓					✓		9-9-14	2:00	✓	✓											
2	SB7@ 18ft	G	1			✓					✓		9-9-14	2:15	✓	✓											
3	SB7@ 21ft	G	1			✓					✓		9-9-14	2:20	✓	✓											
4	SB8@ 6ft	G	1			✓					✓		9-10-14	7:45	✓	✓											
5	SB8@ 18ft	G	1			✓					✓		9-10-14	7:50	✓	✓											
6	SB8@ 21ft	G	1			✓					✓		9-10-14	7:55	✓	✓											
7	SB9@ 3ft	G	1			✓					✓		9-10-14	8:30	✓	✓											
8	SB9@ 15ft	G	1			✓					✓		9-10-14	8:35	✓	✓											
9	SB9@ 18ft	G	1			✓					✓		9-10-14	8:40	✓	✓											
10	SB10@ 9ft	G	1			✓					✓		9-10-14	9:30	✓	✓											

Relinquished By: Amber Groves	Date: 9-10-14 Time: 4:10	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: -7.6°c	Sample Condition Cool: ☑ Yes ☐ No Intact: ☑ Yes ☐ No	CHECKED BY: (Initials)	REMARKS: email results Knorman@rice-ecs.com Kjones@riceswd.com; jkamplain@rice-ecs.com hconder@rice-ecs.com; Lweinheimer@rice-ecs.com; sedwards@rice-ecs.com; lflores@rice-ecs.com; agroves@rice-ecs.com

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

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CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Company Name: RICE	BILL TO
Project Manager: Kyle Norman	P.O. #:
Address:	Company:
City: Hobbs State: NM Zip: 88240	Attn:
Phone #: Fax #:	Address:
Project #: Project Owner:	City:
Project Name: EME Oct. C-12	State: Zip:
Project Location:	Phone #:
Sampler Name: Amber Groves	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	TDS
H402810																				
11	SB10 @ 18ft	G	1			✓					✓		9-10-14	8:35	✓	✓				
12	SB10 @ 21ft	G	1			✓					✓		9-10-14	9:40	✓	✓				
13	SB11 @ 6ft	G	1			✓					✓		9-10-14	11:15	✓	✓				
14	SB11 @ 18ft	G	1			✓					✓		9-10-14	11:20	✓	✓				
15	SB11 @ 21ft	G	1			✓					✓		9-10-14	11:25	✓	✓				
16	SB12 @ surface	G	1			✓					✓		9-10-14	1:00	✓	✓				
17	SB12 @ 3ft	G	1			✓					✓		9-10-14	1:15	✓	✓				
18	SB12 @ 6ft	G	1			✓					✓		9-10-14	1:20	✓	✓				

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: Amber Groves	Date: 9-10-14	Received By: Jodi Henson	
	Time: 4:10		
Relinquished By:	Date:	Received By:	
	Time:		

Delivered By: (Circle One)
Sampler - UPS - Bus - Other: -7.6

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

CHECKED BY: (Initials)

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

REMARKS:
email results
Knorman@rice-ecs.com
Kjones@riceswd.com; jkamplain@rice-ecs.com
hconder@rice-ecs.com; Lweinheimer@rice-ecs.com;
sedwards@rice-ecs.com; lflores@rice-ecs.com; agroves@rice-ecs.com

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

Pg 2052 #54

EME Jct C-12
Unit C, Section 12, T-20-S, R-37-E

Drilling SB-2, facing northeast 07-16-14

Gauging SB-2, facing north 07-18-14

Plugging SB-2 in total with bentonite 07-18-14

Completed SB-2 07-18-14

Drilling SB-3, facing north 07-16-14

Plugging SB-3 in total with bentonite 07-16-14

Completed SB-3 07-16-14

Drilling SB-4, facing west 07-16-14

Plugging SB-4 in total with bentonite 07-16-14

Completed SB-4 07-16-14

Drilling SB-5, facing northeast 07-16-14

Plugging SB-5 in total with bentonite 07-16-14

Completed SB-5 07-16-14

Plugging SB-6 in total with bentonite 07-16-14

SB-6 Completed 09-16-14

Drilling SB-7, facing south 09-09-14

Plugging SB-7 in total with bentonite 09-9-14

SB-7 completed 09-09-14

Drilling SB-8, facing northwest 09-09-14

Plugging SB-8 in total with bentonite 09-09-14

SB-8 completed 09-09-14

Drilling SB-9, facing west 09-10-14

Plugging SB-9 in total with bentonite 09-10-14

SB-9 completed 09-10-14

Drilling SB-10, facing west 09-10-14

Plugging SB-10 in total with bentonite 09-10-14

SB-10 completed 09-10-14

Drilling SB-11, facing east 09-10-14

Plugging SB-11 in total with bentonite 09-10-14

SB-11 completed 09-10-14

Drilling SB-12, facing northeast 09-10-14

Plugging SB-12 in total with bentonite 09-10-14

SB-12 Completed 09-10-14

Appendix B

Letter of No Groundwater

RICE Environmental Consulting and Safety (RECS)
P.O. Box 2948 Hobbs, NM 88241
Phone 575.393.2967

Arc Environmental, LLC
P. O. Box 1772
Lovington, New Mexico 88260
(575) 631-9310
Rozanne Johnson ~ rozanne11@windstream.net

July 19, 2014

Mr. Hack Conder
RICE Operating Company
112 West Taylor
Hobbs, New Mexico 88240

Re: EME Junction C-12

Mr. Conder,

On Friday July 18, 2014 soil bore #2 at the EME Junction C-12, Lea County T20S, R37E, Sec 12 Unit Letter C was checked with a Solinist Water Level Meter for water accumulation within the borehole. The meter indicated no water within the borehole at a total depth of 39.62 feet.

Sincerely,
Arc Environmental

Rozanne Johnson
Rozanne Johnson

Electronic Copy: Hack Conder
Katie Jones
Kyle Norman