

1R - 426-15
426-16

WORKPLANS

Date:

10-17-13

Rice Environmental Consulting & Safety

P.O. Box 2948, Hobbs, NM 88241
Phone 575.393.2967

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2013 OCT 21 P 1: 55

October 17th, 2013

Mr. Edward Hansen

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

**RE: Corrective Action Plan (CAP)
Rice Operating Company – BD SWD System
BD F-29 (1R426-16)
BD F-29-1 (1R426-15)
UL/F sec. 29 T21S R37E**

Mr. Hansen:

RICE Operating Company (ROC) has retained Rice Environmental Consulting and Safety (RECS) to address potential environmental concerns at the above-referenced sites in the BD Salt Water Disposal (SWD) system. ROC is the service provider (agent) for the BD 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 BD F-29 site is located 25 ft south from the BD F-29-1 site. As such, the two sites were delineated together. The two sites are located approximately 1.5 miles northwest of Eunice, New Mexico at UL/F sec. 29 T21S R37E as shown on the Site Location Map and Geographical Location Map (Figure 1 and 2). Soil bore installation at the sites show groundwater to be located at 100 +/- feet.

BD F-29 Backhoe Delineation

In 2003, ROC initiated work on the former BD F-29 junction box. The site was delineated using a backhoe to form a 25 ft x 10 ft x 14 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 1,260 mg/kg, a gasoline range organics (GRO) readings of non-detect and a diesel range organics (DRO) reading of 43.2 mg/kg. The bottom composite showed a chloride laboratory reading of 4,080 mg/kg, a GRO reading of non-detect and a DRO reading of 48.5 mg/kg. BTEX readings for both samples were non-detect. The site

was backfilled, the area was contoured to the surrounding landscape, and an identification plate was placed on the surface of the site to mark its location for future environmental considerations. NMOCD was notified of potential groundwater impact on March 26th, 2003 and a junction box disclosure report was submitted to NMOCD with all the 2003 junction box closures and disclosures.

BD F-29-1 Backhoe Delineation

In 2003, ROC initiated work on the former BD F-29-1 junction. The site was delineated using a backhoe to form a 20 ft x 10 ft x 6 ft deep excavation and soil samples were screened at regular intervals for both hydrocarbons and chlorides. From the excavation, the bottom composite was taken to a commercial laboratory for analysis. Laboratory testing on the bottom composite showed a chloride laboratory reading of 1,060 mg/kg, a GRO reading of non-detect and a DRO reading of 26.6 mg/kg. BTEX readings returned a result of non-detect. The site was backfilled, the area was contoured to the surrounding landscape, and an identification plate was placed on the surface of the site to mark its location for future environmental considerations. NMOCD was notified of potential groundwater impact on March 26th, 2003 and a junction box closure report was submitted to NMOCD with all the 2003 junction box closures and disclosures.

Investigation and Characterization Plan (ICP)

An ICP was submitted for each site on July 2nd, 2013 and approved the same day. A total of 18 soil bores were installed at the two sites (Figure 3). 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). The interior bores (SB 1-9, 11 and 14-16) located close to the former boxes, showed evidence of elevated chlorides throughout each bore. Although the laboratory chloride readings decrease with depth in each bore, the bottom samples at 95 ft bgs are still above 250 mg/kg. The most outer bores (SB 12, 13, 17 and 18) at the two sites showed laboratory chloride readings that decrease to below 250 mg/kg before reaching the capillary fringe. SB-12 returned a laboratory chloride reading of 160 mg/kg at 35 ft bgs. SB-13 returned a laboratory chloride reading of 176 mg/kg at 45 ft bgs. SB-17 returned a laboratory chloride reading of 128 mg/kg at 35 ft bgs and SB-18 returned a laboratory chloride reading of 160 mg/kg at 55 ft bgs. GRO and DRO readings were non-detect in all bores at all depths.

On September 30th, 2013, an ICP Report was submitted for each site with maps showing the locations of each soil bore and its representative data.

Corrective Action Plan

Based on the soil bore installation data, RECS recommends that ROC install a 20-mil reinforced poly liner measuring 247 ft x 106 ft at a depth of approximately 4-5 ft bgs (Figure 3). The liner will extend 5 ft beyond the furthest soil bores, and will provide a barrier that will inhibit the downward migration of chlorides to groundwater. The soils

placed above the liner will have a laboratory chloride reading no greater than 500 mg/kg and a field PID reading below 100 ppm. Excavated soil will be evaluated for use as backfill and any soils requiring disposal will be properly disposed of at a NMOCD approved facility. Upon completion of backfilling, the site will be seeded with a native vegetative mix and soil amendments will be added as necessary. Vegetation provides an infiltration barrier for the site, since plants capture water through their roots thereby reducing the amount of water traveling through the vadose zone to groundwater.

In order to determine what affect the residual chlorides may have had on the groundwater quality below the site, RECS recommends that ROC install a near-source monitor well (MW-1) located just outside the liner. To determine if there is an up-gradient source of contaminates coming onto the site, MW-2 will be installed approximately 130 ft up-gradient of the two sites. The monitor wells will be installed after the liner installation is completed. The monitor wells will be sampled quarterly. Once the monitor wells at the site have been analyzed for chloride and TPH readings, ROC will either submit a groundwater remedy to NMOCD to address groundwater quality at the site or submit a 'remediation termination' request for 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,



Lara Weinheimer
Project Scientist
RECS
(575) 441-0431

Attachments:

- Figure 1 – Site Location Map
- Figure 2 – Geographical Location Map
- Figure 3 – Soil Bore Installation, Proposed Liner and Proposed MW Locations
- Appendix A – Soil Bore Installation Documentation

Figures

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

Site Location Map



Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

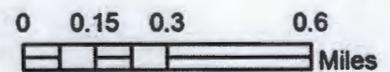


BD F-29
NMOCD Case #: 1R426-16

BD F-29-1
NMOCD Case #: 1R426-15

**LEGALS: UL/F sec. 29
T21S R37E**

Figure 1



Drawing date: 10/7/13
Drafted by: L. Weinheimer

Geographical Location Map

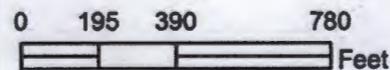


Source: Esri, DigitalGlobe, GeoEye, Iacubed, USDA, USGS, AeroGRID, IGN, IGP, swisstopo, and the GIS User Community



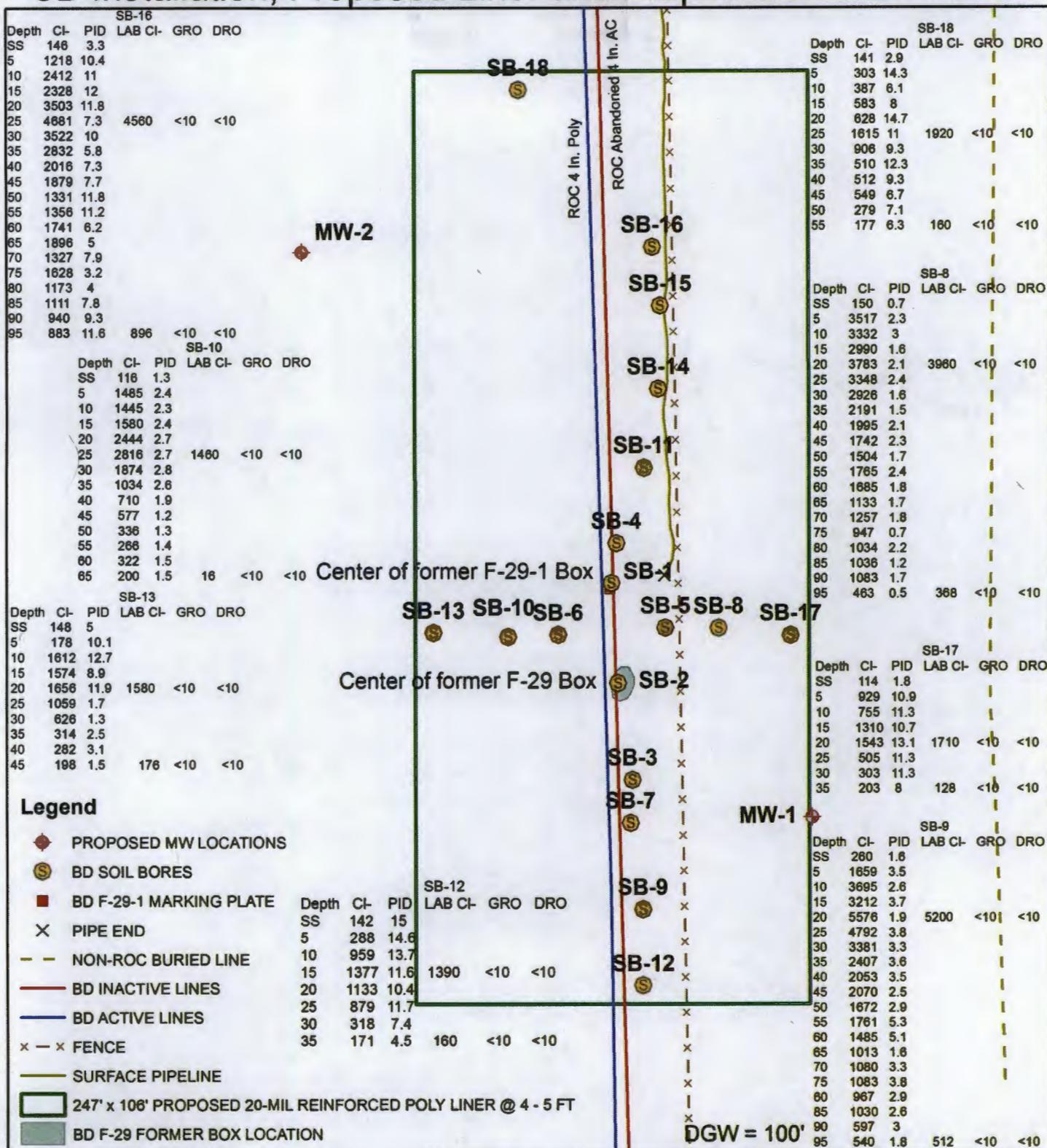
BD F-29
NMOCD Case #: 1R426-16
BD F-29-1
NMOCD Case #: 1R426-15
LEGALS: UL/F sec. 29
T21S R37E

Figure 2



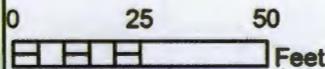
Drawing date: 10/7/13
Drafted by: L. Weinheimer

SB Installation, Proposed Liner and Proposed MW Locations

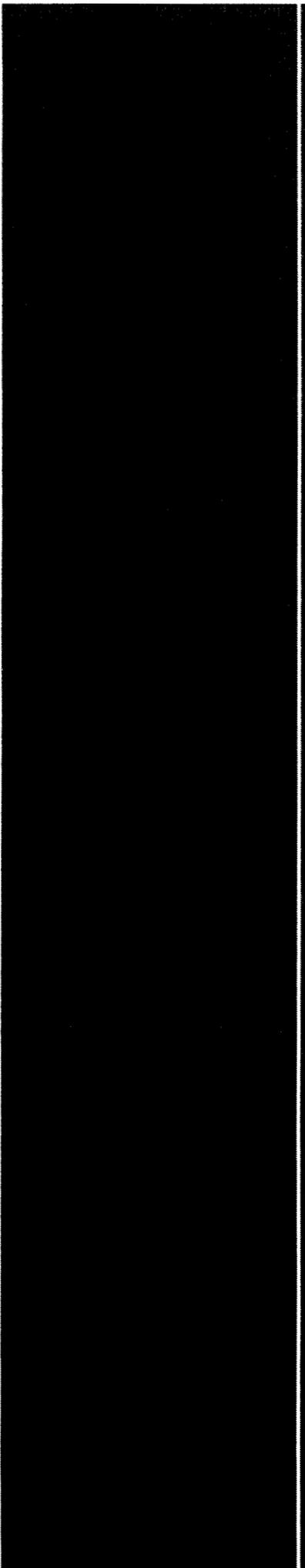


BD F-29
 NMOCD Case #: 1R426-16
BD F-29-1
 NMOCD Case #: 1R426-15
 LEGALS: UL/F sec. 29
 T21S R37E

Figure 3



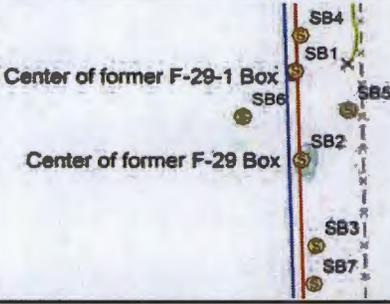
GPS date: 8/26/13 TG
 Drawing date: 9/18/13 rev 10/7/13
 Drafted by: L. Weinheimer rev T. Grieco



Appendix A

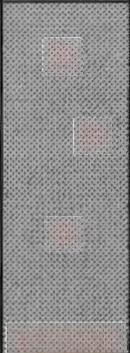
Soil Bore Installation Documentation

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

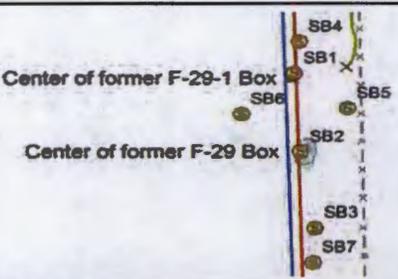
Logger:	Edward Cesareo		
Driller:	Harrison & Cooper, Inc.		
Drilling Method:	Air Rotary		
Start Date:	7/22/2013		
End Date:	7/22/2013		
Project Name: BD F-29 & F-29-1 Well ID: SB-1			
Project Consultant: RECS			
Location: UL/F sec. 29 T21S R37E			
Comments: SB-1 is located at the source of the former F-29-1 junction box site. All samples were from cuttings. DRAFTED BY: L. Weinheimer TD = 95 ft GW = 100 ft		Lat: 32°27'2.242"N County: Lea Long: 103°11'6.564"W State: NM	

Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
SS				REGOLITH		
5 ft						
10 ft	952		20.7	RED SAND		
15 ft	1121		19.5			
20 ft	1581		7.2	RED SAND WITH SOME CALICHE		
25 ft	2159	Cl-3120 GRO <10 DRO <10	14.2	TAN SAND		
30 ft	1662		8.4			
35 ft	1496		6.5			

Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
40 ft	1463		34.7			
45 ft	1637		14.7			
50 ft	1407		57.6	TAN SAND		bentonite seal
55 ft	1480		41			
60 ft	1311		88.4			
65 ft	1059		39.8			
70 ft	1269		6.9	TAN SAND WITH SANDSTONE		
75 ft	1175		39.3			
80 ft	1328		4.9			

Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
				TAN SAND		
85 ft	1311		8.4			
90 ft	1500		2.8			
				TAN SAND		
95 ft	471	Cl- 416	6.5			
		GRO <10				
		DRO <10				

Logger: Edward Cesareo
Driller: Harrison & Cooper, Inc.
Drilling Method: Air Rotary
Start Date: 7/22/2013
End Date: 7/22/2013



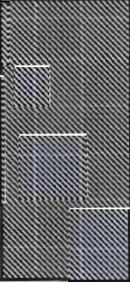
Project Name: BD F-29 & F-29-1
Well ID: SB-2
Project Consultant: RECS

Comments: SB-2 is located at the source of the former F-29 junction box site. All samples were from cuttings.
DRAFTED BY: L. Weinheimer
 TD = 95 ft GW = 100 ft

Location: UL/F sec. 29 T21S R37E
Lat: 32°27'1.981"N **County:** Lea
Long: 103°11'6.539"W **State:** NM

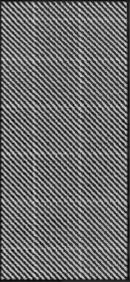
Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
				REGOLITH		
SS						
5 ft						
10 ft						
15 ft	260		3.1	RED SAND WITH CLAY		
20 ft	1682		4.2			
25 ft	2970	Cl-1660 GRO <10 DRO <10	4.4	TAN SAND WITH SANDSTONE		
30 ft	2596		4.3			
35 ft	1951		5.5			

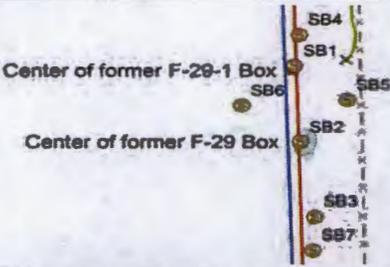
Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
				TAN SAND WITH SANDSTONE		
40 ft	1937		4.9			
45 ft	1801		6.8			bentonite seal
50 ft	1888		3.4	TAN SAND		
55 ft	1800		4.0			
60 ft	1685		1.6			
65 ft	1250		1.4			
70 ft	866		2.6			
75 ft	831		3.2	TAN SAND WITH SANDSTONE		
80 ft	1104		2.0			
85 ft	851		2.0			
90 ft	797		1.8			

Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
				TAN SAND WITH SANDSTONE		
95 ft	670	Cl- 800	2.2			
		GRO <10				
		DRO <10				

Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
40 ft	1988		4	TAN SAND		
45 ft	2067		4.4			
50 ft	1593		4			
55 ft	1817		3.2			
60 ft	1758		3.7	TAN SAND WITH SANDSTONE		
65 ft	1928		2.2			
70 ft	1606		5.5			
75 ft	1354		5			
80 ft	1366		0.8			
85 ft	1311		1.3			
90 ft	1363		1.4			

bentonite seal

Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
				TAN SAND WITH SANDSTONE		
95 ft	1004	CI-1120	1.5			
		GRO <10				
		DRO <10				

Logger:	Edward Cesareo		
Driller:	Harrison & Cooper, Inc.		
Drilling Method:	Air Rotary		
Start Date:	7/23/2013		
End Date:	7/23/2013		
Project Name: BD F-29 & F-29-1 Well ID: SB-4			
Project Consultant: RECS			

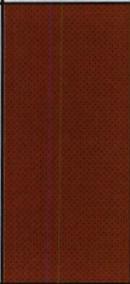
Comments: SB-4 is located 12 ft north of the former F-29-1 junction box site. All samples were from cuttings.
DRAFTED BY: L. Weinheimer
 TD = 95 ft GW = 100 ft

Location: UL/F sec. 29 T21S R37E
Lat: 32°27'2.35"N **County:** Lea
Long: 103°11'6.542"W **State:** NM

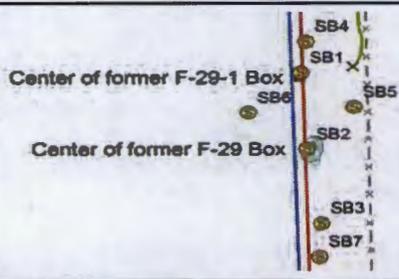
Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
SS	226		2.9	RED SAND WITH CLAY		
5 ft	864		3.2			
				TAN SAND		
10 ft	900		3.3			
15 ft	1003		10.7			
20 ft	1706		9.2			
				TAN SAND WITH SANDSTONE		
25 ft	3206		22.2			
30 ft	3389	Cl-3440	8.5			
		GRO <10				
		DRO <10				
35 ft	2419		6.4			

Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
				TAN SAND WITH SANDSTONE		
40 ft	2097		8.0			
45 ft	1958		3.7			
50 ft	1188		2.1			
55 ft	1864		5.0			
60 ft	1854		3.1			
65 ft	1219		4.2			
70 ft	1354		2.6			
75 ft	1196		7.7			
80 ft	1239		4.2			
85 ft	1217		6.3			
90 ft	888		4.3			
				RED SAND		

bentonite seal

Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
				RED SAND		
95 ft	752	CI-800	3.0			
		GRO <10				
		DRO <10				

Logger: Edward Cesareo
Driller: Harrison & Cooper, Inc.
Drilling Method: Air Rotary
Start Date: 7/23/2013
End Date: 7/23/2013



Project Name: BD F-29 & F-29-1
Well ID: SB-5
Project Consultant: RECS

Comments: SB-5 is located 20 ft northeast of the former F-29 junction box site. All samples were from cuttings.
DRAFTED BY: L. Weinheimer
 TD = 95 ft GW = 100 ft

Location: UL/F sec. 29 T21S R37E
Lat: 32°27'2.124"N **County:** Lea
Long: 103°11'6.389"W **State:** NM

Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
				RED SAND		
SS	144		5.0			
				RED SAND WITH CLAY		
5 ft	911		6.2			
				TAN SAND		
10 ft	1823		3.0			
15 ft	1232		4.6			
				RED SAND		
20 ft	2886		1.7			
				TAN SAND WITH SANDSTONE		
25 ft	2859		1.2			
30 ft	2822		1.0			
35 ft	2913	CI-2960	1.3			

Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
		GRO <10		TAN SAND WITH SANDSTONE		
		DRO <10				
40 ft	2249		1.0			
45 ft	1877		1.5	RED SAND		
50 ft	1836		3.9			
55 ft	1728		2.2			
60 ft	1841		2.4			
65 ft	1847		4.4			
70 ft	1428		3.4			
75 ft	1384		2.5			
80 ft	1231		2.5			
85 ft	723		2.2			
90 ft	871	Cl- 960	2.1			

bentonite seal

Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
		GRO <10		RED SAND		
		DRO <10				
95 ft	679		2.0			

Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
		GRO <10		RED SAND		
		DRO <10				
40 ft	2046		1.3			
45 ft	1830		3.4			
50 ft	1805		2.6			
55 ft	1853		1.4			
60 ft	1915		1.2			
65 ft	1717		1.7			
70 ft	1682		1.7			
75 ft	1616		1.8			
80 ft	1272		2.9			
85 ft	1290		1.5			
90 ft	1299		3.0			

bentonite
seal

Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
				RED SAND		
95 ft	726	CI-880	2.4			
		GRO <10				
		DRO <10				

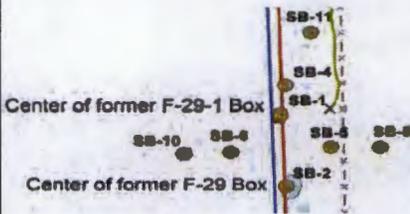
Logger:	Edward Cesareo		
Driller:	Harrison & Cooper, Inc.		
Drilling Method:	Air Rotary		
Start Date:	7/23/2013		
End Date:	7/23/2013		

Project Name: BD F-29 & F-29-1 Well ID: SB-7
 Project Consultant: RECS
 Location: UL/F sec. 29 T21S R37E
 Lat: 32°27'1.622"N County: Lea
 Long: 103°11'6.502"W State: NM

Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
SS	144		1.0			
				RED SAND WITH SANDSTONE		
5 ft	816		0.8			
10 ft	836		1.8			
15 ft	906		1.3	RED SAND		
20 ft	627		2.0			
25 ft	1294		1.2			
				TAN SAND		
30 ft	3329		1.0			
35 ft	2104	CI-2720	1.2			

Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
				RED SAND		
85 ft	783		1.4			
90 ft	852		1.6			
95 ft	468	Cl- 624	0.9			
		GRO <10				
		DRO <10				

Logger: Edward Cesareo
Driller: Harrison & Cooper, Inc.
Drilling Method: Air Rotary
Start Date: 8/19/2013
End Date: 8/19/2013



Project Name: BD F-29 & F-29-1
Well ID: SB-8
Project Consultant: RECS

Comments: SB-8 is located 31 ft SSE of the former F-29-1 junction box site. All samples were from cuttings.
DRAFTED BY: L. Weinheimer
 TD = 95 ft GW = 100 ft

Location: UL/F sec. 29 T21S R37E
Lat: 32°27'2.116"N **County:** Lea
Long: 103°11'6.23"W **State:** NM

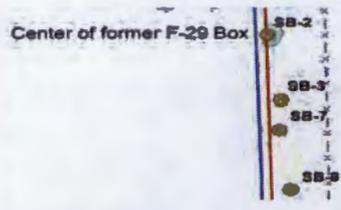
Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
				Brown Sand	[Dark Brown Layer]	[Green Hatched Layer]
SS	150		0.7			
				Red Sand	[Red Layer]	[Green Hatched Layer]
5 ft	3517		2.3			
10 ft	3332		3			
				Tan Sand	[Tan Layer]	[Green Hatched Layer]
15 ft	2990		1.6			
20 ft	3783	CI-3960	2.1			
		GRO <10				
		DRO <10				
25 ft	3348		2.4			
				Tan Sand	[Tan Layer]	[Green Hatched Layer]
30 ft	2926		1.6			
35 ft	2191		1.5			

Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
40 ft	1995		2.1			
45 ft	1742		2.3			
50 ft	1504		1.7			
55 ft	1765		2.4			
60 ft	1685		1.8			
				Tan Sand		
65 ft	1133		1.7			
70 ft	1257		1.8			
75 ft	947		0.7			
80 ft	1034		2.2			
85 ft	1036		1.2			
90 ft	1083		1.7			

bentonite seal

Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
				Tan Sand		
95 ft	463	CI-368	0.5			
		GRO <10				
		DRO <10				

Logger: Edward Cesareo
Driller: Harrison & Cooper, Inc.
Drilling Method: Air Rotary
Start Date: 8/19/2013
End Date: 8/19/2013



Project Name: BD F-29 & F-29-1
Well ID: SB-9
Project Consultant: RECS
Location: UL/F sec. 29 T21S R37E
Lat: 32°27'1.391"N **County:** Lea
Long: 103°11'6.475"W **State:** NM

Comments: SB-9 is located 87 ft south of the former F-29-1 junction box site. All samples were from cuttings.
DRAFTED BY: L. Weinheimer
 TD = 95 ft GW = 100 ft

Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
				Brown Sand		
SS	260		1.6			
				Red Sand		
5 ft	1659		3.5			
10 ft	3695		2.6			
15 ft	3212		3.7			
				Tan Sand		
20 ft	5576	Cl-5200 GRO <10 DRO <10	1.9			
25 ft	4792		3.8			
30 ft	3381		3.3			
35 ft	2407		3.6			

Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
40 ft	2053		3.5			
45 ft	2070		2.5			
50 ft	1672		2.9			
55 ft	1761		5.3			
60 ft	1485		5.1			
				Tan Sand		
65 ft	1013		1.6			
70 ft	1080		3.3			
75 ft	1083		3.8			
80 ft	967		2.9			
85 ft	1030		2.6			
90 ft	597		3.0			

bentonite seal

Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
95 ft	540	Cl- 512	1.8	Tan Sand		
		GRO <10				
		DRO <10				

Logger: Edward Cesareo
Driller: Harrison & Cooper, Inc.
Drilling Method: Air Rotary
Start Date: 8/19/2013
End Date: 8/19/2013



Project Name: BD F-29 & F-29-1
Well ID: SB-10
Project Consultant: RECS
Location: UL/F sec. 29 T21S R37E
Lat: 32°27'2.105"N
County: Lea
Long: 103°11'6.882"W
State: NM

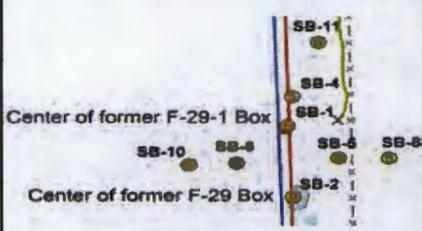
Comments: SB-10 is located 31 ft SW of the former F-29-1 junction box site. All samples were from cuttings.
DRAFTED BY: L. Weinheimer
 TD = 65 ft GW = 100 ft

Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
				Brown Sand		
SS	116		1.3			
5 ft	1485		2.4	Red Sand		
10 ft	1445		2.3			
15 ft	1580		2.4			
20 ft	2444		2.7			
25 ft	2816	Cl-1460	2.7	Tan Sand		
		GRO <10				
		DRO <10				
30 ft	1874		2.8			bentonite seal
35 ft	1034		2.6			

Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
40 ft	710		1.9			
45 ft	577		1.2			
50 ft	336		1.3			
55 ft	266		1.4			
60 ft	322		1.5			
65 ft	200	CI-16	1.5			
		GRO <10				
		DRO <10				

Tan Sand

Logger: Edward Cesareo
Driller: Harrison & Cooper, Inc.
Drilling Method: Air Rotary
Start Date: 8/19/2013
End Date: 8/19/2013



Project Name: BD F-29 & F-29-1
Well ID: SB-11
Project Consultant: RECS
Location: UL/F sec. 29 T21S R37E
Lat: 32°27'2.549"N **County:** Lea
Long: 103°11'6.455"W **State:** NM

Comments: SB-11 is located 32 ft NNE of the former F-29-1 junction box site. All samples were from cuttings.
DRAFTED BY: L. Weinheimer
 TD = 95 ft GW = 100 ft

Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
				Brown Sand	[Dark Brown]	[Hatched Yellow]
SS	150		0.7			
				Red Sand	[Red]	[Hatched Yellow]
5 ft	1110		2.3			
10 ft	1127		1.4			
				Tan Sand	[Tan]	[Hatched Yellow]
15 ft	3177		1.2			
20 ft	2893		2.4			
25 ft	3519	CI-4080 GRO <10 DRO <10	2.2			
30 ft	3170		1.9			
35 ft	2673		1.5			

Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
40 ft	2404		2.1			
45 ft	2177		2.3			
50 ft	1628		1.2			
55 ft	1505		2.1			
60 ft	1875		2.3			
65 ft	1704		0.8	Tan Sand		
70 ft	1188		2.5			
75 ft	1187		2.3			
80 ft	1183		2.2			
85 ft	1529		2.6			
90 ft	1341		2.3			

bentonite seal

Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
95 ft	662	Cl- 640	2.2	Tan Sand		
		GRO <10				
		DRO <10				

Logger:	Edward Cesareo		
Driller:	Harrison & Cooper, Inc.		
Drilling Method:	Air rotary		
Start Date:	8/26/2013		
End Date:	8/26/2013		
Project Name: BD F-29 and F-291 Well ID: SB-12 Project Consultant: RECS			

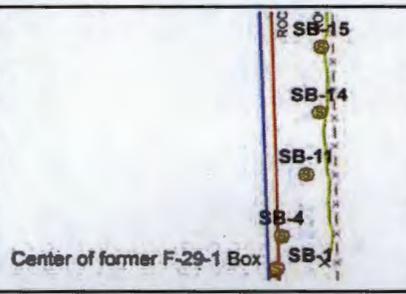
Comments: All samples were from cuttings. SB-12 located 81 ft south of the former F-29 junction box site.
 DRAFTED BY: L. Weinheimer
 TD = 35 ft GW = 100 ft

Location: UL/F sec. 29 T21S R37E
Lat: 32°27'1.185"N **County:** Lea
Long: 103°11'6.479"W **State:** NM

Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
				BROWN SAND		
SS	142		15			
				RED SAND		
5 ft	288		14.6			
10 ft	959		13.7			
15 ft	1377	Cl- 1390	11.6			bentonite seal
		GRO <10				
		DRO <10				
20 ft	1133		10.4			
				TAN SAND		
25 ft	879		11.7			
30 ft	318		7.4			
35 ft	171	Cl- 160	4.5			
		GRO <10				
		DRO <10				

Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
40 ft	282		3.1			
				TAN SAND		
45 ft	198	Cl- 176	1.5			
		GRO <10				
		DRO <10				

Logger: Edward Cesareo
Driller: Harrison & Cooper, Inc.
Drilling Method: Air rotary
Start Date: 8/26/2013
End Date: 8/26/2013



Project Name: BD F-29 and F-291
Well ID: SB-14
Project Consultant: RECS

Comments: All samples were from cuttings. SB-14 located 54 ft NNE of the former F-29-1 junction box site.
DRAFTED BY: L. Weinheimer
 TD = 95 ft GW = 100 ft

Location: UL/F sec. 29 T21S R37E
Lat: 32°27'2.749"N **County:** Lea
Long: 103°11'6.409"W **State:** NM

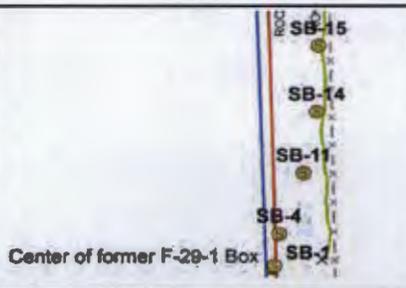
Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
				BROWN SAND		
SS	140		0.2			
				RED SAND		
5 ft	942		0.8			
10 ft	1411		0.8			
15 ft	3019		0.6			
20 ft	3222	CI-3240	0.9	TAN SAND WITH SOME CALICHE		
		GRO <10				
		DRO <10				
25 ft	3029		1.9			
30 ft	1988		2.1			
35 ft	1782		0.6			

Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
40 ft	1498		0.7			
45 ft	1464		2.8			
50 ft	1307		5.6			
55 ft	1524		5.7			
60 ft	1437		3.5			
				TAN SAND WITH SOME CALICHE		
65 ft	1342		1.9			
70 ft	1007		3.2			
75 ft	1010		2.4			
80 ft	1118		2.2			
85 ft	864		2.5			

bentonite seal

Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
				TAN SAND WITH SOME CALICHE		
90 ft	717		1.4			
95 ft	803	Cl- 735	0.5			
		GRO <10				
		DRO <10				

Logger: Edward Cesareo
Driller: Harrison & Cooper, Inc.
Drilling Method: Air rotary
Start Date: 8/26/2013
End Date: 8/26/2013



Project Name: BD F-29 and F-291
Well ID: SB-15
Project Consultant: RECS

Comments: All samples were from cuttings. SB-15 located 75 ft NNE of the former F-29-1 junction box site.
DRAFTED BY: L. Weinheimer
 TD = 95 ft GW = 100 ft

Location: UL/F sec. 29 T21S R37E
Lat: 32°27'2.968"N **County:** Lea
Long: 103°11'6.406"W **State:** NM

Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
				BROWN SAND		
SS	146		1.0			
				RED SAND		
5 ft	1196		10.2			
10 ft	1956		14.9			
15 ft	2436		15.5			
20 ft	3586		13.2	TAN SAND WITH SOME CALICHE		
25 ft	3812	Cl- 3600	13.6			
		GRO <10				
		DRO <10				
30 ft	2814		13.3			
35 ft	2308		12.9			

Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
				TAN SAND WITH SOME CALICHE		
40 ft	2013		16.2			
45 ft	1247		16.6			
50 ft	1118		15.3			
55 ft	1003		15.0			
60 ft	1579		10.7			
65 ft	651		13.6			
70 ft	660		15.6			
75 ft	658		14.0			
80 ft	686		13.6			
85 ft	752		16.0			

bentonite seal

Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
				TAN SAND WITH SOME CALICHE	[Grey shaded area]	[Yellow hatched area]
90 ft	681		13.0			
95 ft	633	CI-608	13.4			
		GRO <10				
		DRO <10				

Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
40 ft	2016		7.3			
45 ft	1879		7.7			
50 ft	1331		11.8			
55 ft	1356		11.2			
60 ft	1741		6.2	BROWN SAND		
65 ft	1896		5			
70 ft	1327		7.9			
75 ft	1628		3.2			
80 ft	1173		4			
85 ft	1111		7.8			

bentonite seal

Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
				BROWN SAND	[Dark brown vertical bar]	[Yellow hatched vertical bar]
90 ft	940		9.3			
95 ft	883	Cl- 896	11.6			
		GRO <10				
		DRO <10				

Logger: Edward Cesareo
Driller: Harrison & Cooper, Inc.
Drilling Method: Air rotary
Start Date: 8/27/2013
End Date: 8/27/2013



Project Name: BD F-29 and F-291
Well ID: SB-18
Project Consultant: RECS

Comments: SB-18 is located 134 ft NNW of the former F-29-1 junction box site. All samples were from cuttings.
DRAFTED BY: L. Weinheimer
 TD = 55 ft GW = 100 ft

Location: UL/F sec. 29 T21S R37E
Lat: 32°27'3.536"N **County:** Lea
Long: 103°11'6.838"W **State:** NM

Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
				BROWN SAND		
SS	141		2.9			
				RED SAND WITH SOME CLAY		
5 ft	303		14.3			
				RED SAND WITH SOME CALICHE		
10 ft	387		6.1			
				RED SAND		
15 ft	583		8			
				RED SAND		
20 ft	628		14.7			
				TAN SAND WITH SOME PEA STONE		
25 ft	1615	Cl-1920	11			bentonite
		GRO <10				seal
		DRO <10				
30 ft	906		9.3			
35 ft	510		12.3			

Depth (feet)	Chloride field tests	LAB	PID	Description	Lithology	Well Construction
				TAN SAND WITH SOME PEA STONE		
40 ft	512		9.3			
45 ft	549		6.7			
50 ft	279		7.1			
55 ft	177	Cl- 160	6.3			
		GRO <10				
		DRO <10				



July 29, 2013

Hack Conder
Rice Operating Company
112 W. Taylor
Hobbs, NM 88240

RE: BD F-29-1, F-29

Enclosed are the results of analyses for samples received by the laboratory on 07/23/13 8:25.

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

Cardinal Laboratories is accredited 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,

A handwritten signature in black ink that reads "Celey D. Keene".

Celey D. Keene
Lab Director/Quality Manager

Analytical Results For:

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

Received:	07/23/2013	Sampling Date:	07/22/2013
Reported:	07/29/2013	Sampling Type:	Soil
Project Name:	BD F-29-1, F-29	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SB #1 25' (H301715-01)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	3120	16.0	07/23/2013	ND	416	104	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	07/23/2013	ND	173	86.3	200	2.47		
DRO >C10-C28	<10.0	10.0	07/23/2013	ND	184	92.0	200	3.52		
<i>Surrogate: 1-Chlorooctane</i>		77.9 %	65.2-140							
<i>Surrogate: 1-Chlorooctadecane</i>		97.6 %	63.6-154							

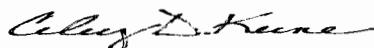
Sample ID: SB #1 95' (H301715-02)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	416	16.0	07/23/2013	ND	416	104	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	07/23/2013	ND	173	86.3	200	2.47		
DRO >C10-C28	<10.0	10.0	07/23/2013	ND	184	92.0	200	3.52		
<i>Surrogate: 1-Chlorooctane</i>		71.4 %	65.2-140							
<i>Surrogate: 1-Chlorooctadecane</i>		92.5 %	63.6-154							

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

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

Received:	07/23/2013	Sampling Date:	07/22/2013
Reported:	07/29/2013	Sampling Type:	Soil
Project Name:	BD F-29-1, F-29	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SB #2 25' (H301715-03)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	1660	16.0	07/23/2013	ND	416	104	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	07/24/2013	ND	173	86.7	200	1.54		
DRO >C10-C28	<10.0	10.0	07/24/2013	ND	174	86.9	200	0.263		

Surrogate: 1-Chlorooctane 83.6 % 65.2-140

Surrogate: 1-Chlorooctadecane 103 % 63.6-154

Sample ID: SB #2 95' (H301715-04)

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	07/23/2013	ND	416	104	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	07/24/2013	ND	173	86.7	200	1.54		
DRO >C10-C28	<10.0	10.0	07/24/2013	ND	174	86.9	200	0.263		

Surrogate: 1-Chlorooctane 85.5 % 65.2-140

Surrogate: 1-Chlorooctadecane 106 % 63.6-154

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

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

Received:	07/23/2013	Sampling Date:	07/22/2013
Reported:	07/29/2013	Sampling Type:	Soil
Project Name:	BD F-29-1, F-29	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SB #3 30' (H301715-05)

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	07/23/2013	ND	416	104	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	07/24/2013	ND	173	86.7	200	1.54		
DRO >C10-C28	<10.0	10.0	07/24/2013	ND	174	86.9	200	0.263		

Surrogate: 1-Chlorooctane 81.1 % 65.2-140
 Surrogate: 1-Chlorooctadecane 99.5 % 63.6-154

Sample ID: SB #3 95' (H301715-06)

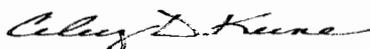
Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	1120	16.0	07/23/2013	ND	432	108	400	3.77		
TPH 8015M		mg/kg		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	07/24/2013	ND	173	86.7	200	1.54		
DRO >C10-C28	<10.0	10.0	07/24/2013	ND	174	86.9	200	0.263		

Surrogate: 1-Chlorooctane 85.7 % 65.2-140
 Surrogate: 1-Chlorooctadecane 105 % 63.6-154

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Celey D. Keene, Lab Director/Quality Manager

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

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Celey D. Keene, Lab Director/Quality Manager



CARDINAL LABORATORIES

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

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Company Name: ROC		BILL TO		ANALYSIS REQUEST																						
Project Manager: Hack Conder		P.O. #:		Chlorides TPH 8015 M BTEX Texas TPH Complete Cations/Anions TDS																						
Address:		Company:																								
City: Hobbs State: NM Zip: 88240		Attn:																								
Phone #: Fax #:		Address:																								
Project #: Project Owner:		City:																								
Project Name:		State: Zip:																								
Project Location: BDF-29-1, F-29		Phone #:																								
Sampler Name: Kyle Norman / EDWARD CESAREO		Fax #:																								
FOR LAB USE ONLY																										
Lab I.D.	Sample I.D.	(GRAB OR C/COMP.)	# CONTAINERS	MATRIX					PRESERV.		SAMPLING															
				GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER:	ACID/BASE:	ICE/COOL	OTHER:	DATE	TIME												
H301715																										
	1 SB#1 25'	G	1			/				/			7-22-13	11:00	/	/										
	2 SB#1 95'	G	1			/				/				11:15	/	/										
	3 SB#2 25'	G	1			/				/				2:25	/	/										
	4 SB#2 95'	G	1			/				/				2:30	/	/										
	5 SB#3 30'	G	1			/				/				3:40	/	/										
	6 SB#3 95'	G	1			/				/				3:45	/	/										

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Relinquished By: <i>Edward Cesareo</i>	Date: 7-22-13	Received By: <i>Jodi Henson</i>	Phone Result: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Add'l Phone #:
	Time: 8:25		Fax Result: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Add'l Fax #:
Relinquished By:	Date:	Received By:	REMARKS:	
	Time:		email results: zconder@rice-ecs.com Knorman@rice-ecs.com; lpena@riceswd.com Kjones@riceswd.com; Bbaker@rice-ecs.com; hconder@rice-ecs.com; Lweinheimer@rice-ecs.com	
Delivered By: (Circle One)	Sample Condition	CHECKED BY: <i>JH</i>		
Sampler - UPS - Bus - Other:	Cool <input checked="" type="checkbox"/> Intact <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/>	(Initials)		

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

#54



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

July 26, 2013

KYLE NORMAN

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: BD F-29-1, F-29

Enclosed are the results of analyses for samples received by the laboratory on 07/24/13 8:15.

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

Cardinal Laboratories is accredited 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,

A handwritten signature in black ink, appearing to read "Mike Snyder".

Mike Snyder

Organic Supervisor

Analytical Results For:

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

Received:	07/24/2013	Sampling Date:	07/23/2013
Reported:	07/26/2013	Sampling Type:	Soil
Project Name:	BD F-29-1, F-29	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SB 4 @ 30' (H301731-01)

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	3440	16.0	07/25/2013	ND	416	104	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	07/25/2013	ND	168	84.2	200	6.00		
DRO >C10-C28	<10.0	10.0	07/25/2013	ND	173	86.4	200	7.47		
<i>Surrogate: 1-Chlorooctane</i>	<i>83.9 %</i>	<i>65.2-140</i>								
<i>Surrogate: 1-Chlorooctadecane</i>	<i>103 %</i>	<i>63.6-154</i>								

Sample ID: SB 4 @ 95' (H301731-02)

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	800	16.0	07/25/2013	ND	416	104	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	07/25/2013	ND	168	84.2	200	6.00		
DRO >C10-C28	<10.0	10.0	07/25/2013	ND	173	86.4	200	7.47		
<i>Surrogate: 1-Chlorooctane</i>	<i>75.4 %</i>	<i>65.2-140</i>								
<i>Surrogate: 1-Chlorooctadecane</i>	<i>89.7 %</i>	<i>63.6-154</i>								

Cardinal Laboratories

*=Accredited Analyte

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Mike Snyder, Organic Supervisor

Analytical Results For:

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

Received:	07/24/2013	Sampling Date:	07/23/2013
Reported:	07/26/2013	Sampling Type:	Soil
Project Name:	BD F-29-1, F-29	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SB 5 @ 35' (H301731-03)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	2960	16.0	07/25/2013	ND	416	104	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	07/25/2013	ND	168	84.2	200	6.00		
DRO >C10-C28	<10.0	10.0	07/25/2013	ND	173	86.4	200	7.47		
<i>Surrogate: 1-Chlorooctane</i>	<i>71.7 %</i>	<i>65.2-140</i>								
<i>Surrogate: 1-Chlorooctadecane</i>	<i>84.8 %</i>	<i>63.6-154</i>								

Sample ID: SB 5 @ 90' (H301731-04)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	960	16.0	07/25/2013	ND	416	104	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	07/25/2013	ND	168	84.2	200	6.00		
DRO >C10-C28	<10.0	10.0	07/25/2013	ND	173	86.4	200	7.47		
<i>Surrogate: 1-Chlorooctane</i>	<i>75.4 %</i>	<i>65.2-140</i>								
<i>Surrogate: 1-Chlorooctadecane</i>	<i>87.5 %</i>	<i>63.6-154</i>								

Cardinal Laboratories

*=Accredited Analyte

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Mike Snyder, Organic Supervisor

Analytical Results For:

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

Received:	07/24/2013	Sampling Date:	07/23/2013
Reported:	07/26/2013	Sampling Type:	Soil
Project Name:	BD F-29-1, F-29	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SB 6 @ SURFACE (H301731-05)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	3920	16.0	07/25/2013	ND	416	104	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	07/25/2013	ND	168	84.2	200	6.00		
DRO >C10-C28	<10.0	10.0	07/25/2013	ND	173	86.4	200	7.47		
<i>Surrogate: 1-Chlorooctane</i>	<i>76.6 %</i>	<i>65.2-140</i>								
<i>Surrogate: 1-Chlorooctadecane</i>	<i>89.1 %</i>	<i>63.6-154</i>								

Sample ID: SB 6 @ 35' (H301731-06)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	1960	16.0	07/25/2013	ND	416	104	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	07/25/2013	ND	168	84.2	200	6.00		
DRO >C10-C28	<10.0	10.0	07/25/2013	ND	173	86.4	200	7.47		
<i>Surrogate: 1-Chlorooctane</i>	<i>79.2 %</i>	<i>65.2-140</i>								
<i>Surrogate: 1-Chlorooctadecane</i>	<i>97.7 %</i>	<i>63.6-154</i>								

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* = Accredited Analyte

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Mike Snyder, Organic Supervisor

Analytical Results For:

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

Received:	07/24/2013	Sampling Date:	07/23/2013
Reported:	07/26/2013	Sampling Type:	Soil
Project Name:	BD F-29-1, F-29	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SB 6 @ 95' (H301731-07)

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	880	16.0	07/25/2013	ND	416	104	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	07/25/2013	ND	186	92.8	200	5.17		
DRO >C10-C28	<10.0	10.0	07/25/2013	ND	195	97.5	200	7.65		
<i>Surrogate: 1-Chlorooctane</i>		<i>65.3 %</i>	<i>65.2-140</i>							
<i>Surrogate: 1-Chlorooctadecane</i>		<i>78.5 %</i>	<i>63.6-154</i>							

Sample ID: SB 7 @ 35' (H301731-08)

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	2720	16.0	07/25/2013	ND	416	104	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	07/25/2013	ND	186	92.8	200	5.17		
DRO >C10-C28	<10.0	10.0	07/25/2013	ND	195	97.5	200	7.65		
<i>Surrogate: 1-Chlorooctane</i>		<i>90.4 %</i>	<i>65.2-140</i>							
<i>Surrogate: 1-Chlorooctadecane</i>		<i>109 %</i>	<i>63.6-154</i>							

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*=Accredited Analyte

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Mike Snyder, Organic Supervisor

Analytical Results For:

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

Received:	07/24/2013	Sampling Date:	07/23/2013
Reported:	07/26/2013	Sampling Type:	Soil
Project Name:	BD F-29-1, F-29	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SB 7 @ 95' (H301731-09)

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	07/25/2013	ND	416	104	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	07/25/2013	ND	186	92.8	200	5.17		
DRO >C10-C28	<10.0	10.0	07/25/2013	ND	195	97.5	200	7.65		
<i>Surrogate: 1-Chlorooctane</i>	<i>81.1 %</i>	<i>65.2-140</i>								
<i>Surrogate: 1-Chlorooctadecane</i>	<i>95.7 %</i>	<i>63.6-154</i>								

Cardinal Laboratories

*=Accredited Analyte

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Mike Snyder, Organic Supervisor

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

Cardinal Laboratories

*=Accredited Analyte

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Mike Snyder, Organic Supervisor

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Company Name: ROC				BILL TO				ANALYSIS REQUEST																							
Project Manager: Kyle Norman				P.O. #:																											
Address:				Company:																											
City:		State:		Zip:		Attn:																									
Phone #:		Fax #:		Address:																											
Project #:		Project Owner:		City:																											
Project Name:				State:		Zip:																									
Project Location: BD F-29, F-29-1 T-21-S R-37-E				Phone #:																											
Sampler Name: Kyle Schnaidt				Fax #:																											
FOR LAB USE ONLY																															
Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX																PRESERV.			SAMPLING		DATE	TIME	CI-	TPH			
				GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER:	ACID/BASE	ICE / COOL	OTHER:																			
H301731																															
1	SB4 @ 30'	1		X						X			7-23-13	9:50	X	X															
2	SB4 @ 95'	1		X						X				9:55	X	X															
3	SB5 @ 35'	1		X						X				11:15	X	X															
4	SB5 @ 90'	1		X						X				11:20	X	X															
5	SB6 @ surface	1		X						X				2:00	X	X															
6	SB6 @ 35'	1		X						X				2:05	X	X															
7	SB6 @ 95'	1		X						X				2:10	X	X															
8	SB7 @ 35'	1		X						X				3:00	X	X															
9	SB7 @ 95'	1		X						X				3:05	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 claims are based upon any of the above stated reasons or otherwise.

Relinquished By: Kyle Schnaidt		Date: 7/24/13	Received By: [Signature]	Phone Result: <input type="checkbox"/> Yes <input type="checkbox"/> No	Add'l Phone #:
Relinquished By: [Signature]		Time: 7:15	Received By: Jodi Newson	Fax Result: <input type="checkbox"/> Yes <input type="checkbox"/> No	Add'l Fax #:
Delivered By: (Circle One) Sampler - UPS - Bus - Other:		Date: 7/24/13	Time: 8:15	REMARKS: Knorman@rice-ecs.com hcondor@ricesud.com lweinheimer@rice-ecs.com kschnaidt@rice-ecs.com kjones@riceswd.com	
		Sample Condition Cool Intact <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		CHECKED BY: [Signature]	

#54



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

August 27, 2013

Hack Conder
Rice Operating Company
112 W. Taylor
Hobbs, NM 88240

RE: BD F-29-1, F-29

Enclosed are the results of analyses for samples received by the laboratory on 08/20/13 8:35.

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

Cardinal Laboratories is accredited 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,

A handwritten signature in cursive script that reads "Celey D. Keene".

Celey D. Keene
Lab Director/Quality Manager

Analytical Results For:

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

Received:	08/20/2013	Sampling Date:	08/19/2013
Reported:	08/27/2013	Sampling Type:	Soil
Project Name:	BD F-29-1, F-29	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SB #8 20' (H301978-01)

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	3960	16.0	08/21/2013	ND	416	104	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	08/22/2013	ND	214	107	200	7.90		
DRO >C10-C28	<10.0	10.0	08/22/2013	ND	221	111	200	7.69		
<i>Surrogate: 1-Chlorooctane</i>	<i>93.8 %</i>	<i>65.2-140</i>								
<i>Surrogate: 1-Chlorooctadecane</i>	<i>99.2 %</i>	<i>63.6-154</i>								

Sample ID: SB #8 95' (H301978-02)

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	368	16.0	08/21/2013	ND	416	104	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	08/22/2013	ND	214	107	200	7.90		
DRO >C10-C28	<10.0	10.0	08/22/2013	ND	221	111	200	7.69		
<i>Surrogate: 1-Chlorooctane</i>	<i>81.3 %</i>	<i>65.2-140</i>								
<i>Surrogate: 1-Chlorooctadecane</i>	<i>86.9 %</i>	<i>63.6-154</i>								

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

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

Received:	08/20/2013	Sampling Date:	08/19/2013
Reported:	08/27/2013	Sampling Type:	Soil
Project Name:	BD F-29-1, F-29	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SB #9 20' (H301978-03)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	5200	16.0	08/21/2013	ND	416	104	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	08/22/2013	ND	214	107	200	7.90		
DRO >C10-C28	<10.0	10.0	08/22/2013	ND	221	111	200	7.69		

Surrogate: 1-Chlorooctane 72.4 % 65.2-140

Surrogate: 1-Chlorooctadecane 73.8 % 63.6-154

Sample ID: SB #9 95' (H301978-04)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	512	16.0	08/21/2013	ND	416	104	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	08/22/2013	ND	214	107	200	7.90		
DRO >C10-C28	<10.0	10.0	08/22/2013	ND	221	111	200	7.69		

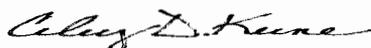
Surrogate: 1-Chlorooctane 82.6 % 65.2-140

Surrogate: 1-Chlorooctadecane 87.6 % 63.6-154

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

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

Received:	08/20/2013	Sampling Date:	08/19/2013
Reported:	08/27/2013	Sampling Type:	Soil
Project Name:	BD F-29-1, F-29	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SB #10 25' (H301978-05)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	1460	16.0	08/21/2013	ND	416	104	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	08/22/2013	ND	214	107	200	7.90		
DRO >C10-C28	<10.0	10.0	08/22/2013	ND	221	111	200	7.69		

Surrogate: 1-Chlorooctane 84.4 % 65.2-140

Surrogate: 1-Chlorooctadecane 91.4 % 63.6-154

Sample ID: SB #10 65' (H301978-06)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	16.0	16.0	08/21/2013	ND	416	104	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	08/22/2013	ND	214	107	200	7.90		
DRO >C10-C28	<10.0	10.0	08/22/2013	ND	221	111	200	7.69		

Surrogate: 1-Chlorooctane 81.1 % 65.2-140

Surrogate: 1-Chlorooctadecane 85.5 % 63.6-154

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*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

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

Received:	08/20/2013	Sampling Date:	08/19/2013
Reported:	08/27/2013	Sampling Type:	Soil
Project Name:	BD F-29-1, F-29	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SB #11 25' (H301978-07)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	4080	16.0	08/21/2013	ND	416	104	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	08/22/2013	ND	214	107	200	7.90		
DRO >C10-C28	<10.0	10.0	08/22/2013	ND	221	111	200	7.69		
<i>Surrogate: 1-Chlorooctane</i>	<i>82.7 %</i>	<i>65.2-140</i>								
<i>Surrogate: 1-Chlorooctadecane</i>	<i>89.1 %</i>	<i>63.6-154</i>								

Sample ID: SB #11 95' (H301978-08)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	640	16.0	08/21/2013	ND	416	104	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	08/22/2013	ND	214	107	200	7.90		
DRO >C10-C28	<10.0	10.0	08/22/2013	ND	221	111	200	7.69		
<i>Surrogate: 1-Chlorooctane</i>	<i>81.5 %</i>	<i>65.2-140</i>								
<i>Surrogate: 1-Chlorooctadecane</i>	<i>86.9 %</i>	<i>63.6-154</i>								

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* = Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

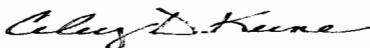
Notes and Definitions

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

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Celey D. Keene, Lab Director/Quality Manager



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

September 03, 2013

KATIE JONES

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: BD SYSTEM F-29 & F-29-1

Enclosed are the results of analyses for samples received by the laboratory on 08/27/13 10:20.

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

Cardinal Laboratories is accredited 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,

A handwritten signature in black ink that reads "Celey D. Keene". The signature is fluid and cursive.

Celey D. Keene

Lab Director/Quality Manager

Analytical Results For:

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

Received:	08/27/2013	Sampling Date:	08/26/2013
Reported:	09/03/2013	Sampling Type:	Soil
Project Name:	BD SYSTEM F-29 & F-29-1	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SB # 12 15' (H302061-01)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	1390	16.0	08/30/2013	ND	400	100	400	3.92		
TPH 8015M		mg/kg		Analyzed By: AR/						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	08/30/2013	ND	210	105	200	4.91		
DRO >C10-C28	<10.0	10.0	08/30/2013	ND	205	102	200	5.30		

Surrogate: 1-Chlorooctane 97.0 % 65.2-140

Surrogate: 1-Chlorooctadecane 98.4 % 63.6-154

Sample ID: SB # 12 35' (H302061-02)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	160	16.0	08/30/2013	ND	400	100	400	3.92		
TPH 8015M		mg/kg		Analyzed By: AR/						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	08/30/2013	ND	210	105	200	4.91		
DRO >C10-C28	<10.0	10.0	08/30/2013	ND	205	102	200	5.30		

Surrogate: 1-Chlorooctane 91.3 % 65.2-140

Surrogate: 1-Chlorooctadecane 92.8 % 63.6-154

Cardinal Laboratories

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

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

Received:	08/27/2013	Sampling Date:	08/26/2013
Reported:	09/03/2013	Sampling Type:	Soil
Project Name:	BD SYSTEM F-29 & F-29-1	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SB # 13 20' (H302061-03)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	1580	16.0	08/30/2013	ND	400	100	400	3.92		
TPH 8015M		mg/kg		Analyzed By: AR/						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	08/30/2013	ND	210	105	200	4.91		
DRO >C10-C28	<10.0	10.0	08/30/2013	ND	205	102	200	5.30		
<i>Surrogate: 1-Chlorooctane</i>	89.6 %	65.2-140								
<i>Surrogate: 1-Chlorooctadecane</i>	92.1 %	63.6-154								

Sample ID: SB # 13 45' (H302061-04)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	176	16.0	08/30/2013	ND	400	100	400	3.92		
TPH 8015M		mg/kg		Analyzed By: AR/						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	08/30/2013	ND	210	105	200	4.91		
DRO >C10-C28	<10.0	10.0	08/30/2013	ND	205	102	200	5.30		
<i>Surrogate: 1-Chlorooctane</i>	98.7 %	65.2-140								
<i>Surrogate: 1-Chlorooctadecane</i>	99.9 %	63.6-154								

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*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

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

Received:	08/27/2013	Sampling Date:	08/26/2013
Reported:	09/03/2013	Sampling Type:	Soil
Project Name:	BD SYSTEM F-29 & F-29-1	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SB # 14 20' (H302061-05)

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	3240	16.0	08/30/2013	ND	400	100	400	3.92		
TPH 8015M		mg/kg		Analyzed By: AR/						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	08/31/2013	ND	195	97.4	200	0.475		
DRO >C10-C28	<10.0	10.0	08/31/2013	ND	192	96.0	200	0.588		

Surrogate: 1-Chlorooctane 90.9 % 65.2-140

Surrogate: 1-Chlorooctadecane 94.4 % 63.6-154

Sample ID: SB # 14 95' (H302061-06)

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	735	16.0	08/30/2013	ND	400	100	400	3.92		
TPH 8015M		mg/kg		Analyzed By: AR/						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	08/31/2013	ND	195	97.4	200	0.475		
DRO >C10-C28	<10.0	10.0	08/31/2013	ND	192	96.0	200	0.588		

Surrogate: 1-Chlorooctane 106 % 65.2-140

Surrogate: 1-Chlorooctadecane 109 % 63.6-154

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

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

Received:	08/27/2013	Sampling Date:	08/26/2013
Reported:	09/03/2013	Sampling Type:	Soil
Project Name:	BD SYSTEM F-29 & F-29-1	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SB # 15 25' (H302061-07)

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	3600	16.0	08/30/2013	ND	400	100	400	3.92		
TPH 8015M		mg/kg		Analyzed By: AR/						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	08/31/2013	ND	195	97.4	200	0.475		
DRO >C10-C28	<10.0	10.0	08/31/2013	ND	192	96.0	200	0.588		

Surrogate: 1-Chlorooctane 103 % 65.2-140

Surrogate: 1-Chlorooctadecane 106 % 63.6-154

Sample ID: SB # 15 95' (H302061-08)

Chloride, SM4500CI-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	608	16.0	08/30/2013	ND	400	100	400	3.92		
TPH 8015M		mg/kg		Analyzed By: AR/						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	08/31/2013	ND	195	97.4	200	0.475		
DRO >C10-C28	<10.0	10.0	08/31/2013	ND	192	96.0	200	0.588		

Surrogate: 1-Chlorooctane 103 % 65.2-140

Surrogate: 1-Chlorooctadecane 106 % 63.6-154

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*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

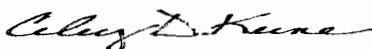
Notes and Definitions

- S-06 The recovery of this surrogate is outside control limits due to sample dilution required from high analyte concentration and/or matrix interference's.
- S-04 The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
- QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
- 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

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Celey D. Keene, Lab Director/Quality Manager



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

September 03, 2013

KATIE JONES

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: BD F-29-1, F-29

Enclosed are the results of analyses for samples received by the laboratory on 08/27/13 16:00.

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

Cardinal Laboratories is accredited 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,

A handwritten signature in black ink that reads "Celey D. Keene". The signature is written in a cursive style with a large, prominent initial "C".

Celey D. Keene

Lab Director/Quality Manager

Analytical Results For:

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

Received:	08/27/2013	Sampling Date:	08/27/2013
Reported:	09/03/2013	Sampling Type:	Soil
Project Name:	BD F-29-1, F-29	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SB #16 25' (H302067-01)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	4560	16.0	09/03/2013	ND	416	104	400	0.00		

TPH 8015M		mg/kg		Analyzed By: AR/						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	08/31/2013	ND	195	97.4	200	0.475		
DRO >C10-C28	<10.0	10.0	08/31/2013	ND	192	96.0	200	0.588		

Surrogate: 1-Chlorooctane 92.0 % 65.2-140

Surrogate: 1-Chlorooctadecane 95.8 % 63.6-154

Sample ID: SB #16 95' (H302067-02)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	896	16.0	09/03/2013	ND	416	104	400	0.00		

TPH 8015M		mg/kg		Analyzed By: AR/						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	08/31/2013	ND	195	97.4	200	0.475		
DRO >C10-C28	<10.0	10.0	08/31/2013	ND	192	96.0	200	0.588		

Surrogate: 1-Chlorooctane 102 % 65.2-140

Surrogate: 1-Chlorooctadecane 106 % 63.6-154

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

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

Received:	08/27/2013	Sampling Date:	08/27/2013
Reported:	09/03/2013	Sampling Type:	Soil
Project Name:	BD F-29-1, F-29	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SB #17 20' (H302067-03)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	1710	16.0	09/03/2013	ND	416	104	400	0.00		
TPH 8015M		mg/kg		Analyzed By: AR/						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	08/31/2013	ND	195	97.4	200	0.475		
DRO >C10-C28	<10.0	10.0	08/31/2013	ND	192	96.0	200	0.588		
<i>Surrogate: 1-Chlorooctane</i>		<i>95.5 %</i>	<i>65.2-140</i>							
<i>Surrogate: 1-Chlorooctadecane</i>		<i>97.1 %</i>	<i>63.6-154</i>							

Sample ID: SB #17 35' (H302067-04)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	128	16.0	09/03/2013	ND	416	104	400	0.00		
TPH 8015M		mg/kg		Analyzed By: AR/						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	08/31/2013	ND	195	97.4	200	0.475		
DRO >C10-C28	<10.0	10.0	08/31/2013	ND	192	96.0	200	0.588		
<i>Surrogate: 1-Chlorooctane</i>		<i>98.4 %</i>	<i>65.2-140</i>							
<i>Surrogate: 1-Chlorooctadecane</i>		<i>101 %</i>	<i>63.6-154</i>							

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

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

Received:	08/27/2013	Sampling Date:	08/27/2013
Reported:	09/03/2013	Sampling Type:	Soil
Project Name:	BD F-29-1, F-29	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: SB #18 25' (H302067-05)

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	09/03/2013	ND	416	104	400	0.00		
TPH 8015M		mg/kg		Analyzed By: AR/						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	08/31/2013	ND	195	97.4	200	0.475		
DRO >C10-C28	<10.0	10.0	08/31/2013	ND	192	96.0	200	0.588		
<i>Surrogate: 1-Chlorooctane</i>		<i>87.7 %</i>	<i>65.2-140</i>							
<i>Surrogate: 1-Chlorooctadecane</i>		<i>89.2 %</i>	<i>63.6-154</i>							

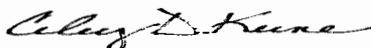
Sample ID: SB #18 55' (H302067-06)

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	160	16.0	09/03/2013	ND	416	104	400	0.00		
TPH 8015M		mg/kg		Analyzed By: AR/						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10	<10.0	10.0	08/31/2013	ND	195	97.4	200	0.475		
DRO >C10-C28	<10.0	10.0	08/31/2013	ND	192	96.0	200	0.588		
<i>Surrogate: 1-Chlorooctane</i>		<i>95.6 %</i>	<i>65.2-140</i>							
<i>Surrogate: 1-Chlorooctadecane</i>		<i>99.3 %</i>	<i>63.6-154</i>							

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Celey D. Keene, Lab Director/Quality Manager

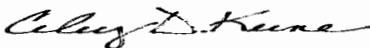
Notes and Definitions

- QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
- 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

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Celey D. Keene, Lab Director/Quality Manager

