1R - 426-259

REPORTS

DATE:

5-29-12

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

CERTIFIED MAIL
RETURN RECEIPT NO. 7007 2560 0000 4569 9620

May 29th, 2012

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 Report for Vadose Zone Remediation**
Rice Operating Company – BD SWD System
BD N-11 boot (1R426-259): UL/N sec. 11 T22S R37E

Mr. Hansen:

RICE Operating Company (ROC) has retained Rice Environmental Consulting and Safety (RECS) to address potential environmental concerns at the above-referenced site in the 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.

The site is located approximately 2.5 miles southeast of Eunice, New Mexico at UL/N sec. 11 T22S R37E as shown on the Site Location Map (Figure 1). Monitor well sampling at the site establishes groundwater at a depth of +/- 44 feet.

Between 2005 and 2008, ROC initiated work on the former BD N-11 boot. The site was delineated using a backhoe to form a trench and soil samples were screened at regular intervals for both hydrocarbons and chlorides. The site was excavated to 30 ft x 10 ft x 12 ft. From the excavation, composite samples were collected for laboratory analysis. Laboratory tests of the site showed negligible gasoline range organics (GRO). The diesel range organics (DRO) in the 4-wall composite was 39.7 mg/kg and in the bottom composite was 16.5 mg/kg. Chlorides concentrations from the excavation read 1,152 mg/kg in the 4-wall composite and 1,232 mg/kg in the bottom composite. The site was backfilled with clean, imported soil to 4 feet below ground surface where a 1 ft thick clay layer was installed. A clay compaction test was performed on June 3rd, 2008. The site was brought up to ground surface with the remaining imported soil. The area was contoured to the surrounding landscape, seeded, and an identification plate was placed on the surface of the site to mark its location for future environmental considerations.

NMOCD was notified of potential groundwater impact on July 16th, 2010 and a junction box disclosure report was submitted to NMOCD via email on August 6th, 2010 with all the 2010 junction box closures and disclosures.

ICP Investigative Results

As part of the Investigation and Characterization Plan (ICP) approved by NMOCD on September 1st, 2010, six soil bores were advanced through the former junction box site on October 6th, 2010. ROC personnel field tested the soil for chlorides and screened in the field with a photo-ionization detector for hydrocarbons. Representative samples from the bore were taken to a commercial laboratory for confirmation of chloride and hydrocarbon field numbers. In all the soil bores, except for SB-3, laboratory chloride readings decreased with depth to near background levels as they reached the capillary fringe. However, in SB-3, the laboratory chloride reading at the capillary fringe was 816 mg/kg; although, the chloride levels did decreased with depth. GRO readings were non-detect at all depths throughout the bores, and DRO readings were non-detect at all depths in all bores except for the readings in SB-1 and SB-4. In SB-1, the DRO reading at 30 ft bgs was non-detect and at 40 ft bgs was 27.3 mg/kg. In SB-4, the DRO reading at 5 ft bgs was 702 mg/kg and at 40 ft bgs was 32.4 mg/kg.

To determine what affect the vadose zone chloride and hydrocarbon levels may have had on the groundwater below the site, three monitor wells were installed on November 9th, 2010. MW-1, the near-source monitor well, and MW-3, the down gradient monitor well, were not sampled as they were advanced. However, MW-2, the up gradient monitor well, was sampled to determine background levels of chlorides and hydrocarbons. Representative samples from MW-2 were taken to a commercial laboratory for confirmation of chloride and hydrocarbon field numbers. At 15 ft bgs, the laboratory chloride reading was 864 mg/kg and at 40 ft bgs it was 160 mg/kg. GRO and DRO readings throughout the bore were non-detect.

Since installation, the monitor wells have been sampled quarterly (Figure 2). From the sampling data, it is evident that groundwater quality is impaired from an up gradient source. During the last sampling event that occurred on January 19th, 2011, MW-2, the up gradient monitor well, showed a chloride concentration of 2,300 mg/L. The near-source monitoring well, MW-1, showed a chloride concentration of 3,500 mg/L and the chloride concentration in the down gradient monitor well, MW-3, was 2,200 mg/L. All three monitor wells had BTEX levels of non-detect (Appendix A).

As part of the ICP Report and Corrective Action Plan (CAP) approved by NMOCD on January 31st, 2012, ROC proposed to excavate the site to dimensions of 46 ft x 51 ft and properly seat a 20-mil, reinforced poly liner at approximately 20 ft bgs. In addition, a 10 ft x 10 ft area surrounding SB-3 would be excavated an additional 10 ft to a total depth of 30 ft bgs and an additional 20-mil reinforced poly liner would be installed and properly seated (Figure 3). Excavating the area surrounding SB-3 would remove the highest soil chloride concentrations from the site, and the two liners would provide a barrier that would inhibit the downward migration of chloride and hydrocarbons to groundwater.

The soils placed above each liner would have a laboratory chloride reading no greater than 500 mg/kg and a field PID measurement below 100 ppm. Excavated soil would be evaluated for use as backfill and any soil requiring disposal would be properly disposed of at a NMOCD approved facility.

Upon completion of backfilling, the site would be seeded with a native vegetative mix. The surface soils over and surrounding the site would be prepared with soil amendments as needed and then seeded. 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 to groundwater.

ROC proposed to remove chloride impacted groundwater from the site using the 4 inch monitor well, MW-1. A groundwater recovery system would be placed at the site to facilitate groundwater pumping and recovery. Removed water would be used for pipeline and well maintenance or re-vegetation of the site. A chloride mass calculation was generated as part of the CAP which determined that the recovery system would need to extract a total of 445 barrels of groundwater equating to 186 kg of chloride.

On February 9th, 2012, ROC submitted an amendment to the ICP Report and CAP which was approved by NMOCD on the same day. The amendment requested a shifting of the 46 ft x 51 ft liner approximately 4 feet to the west to exclude MW-1 from the excavation. The 10 ft x 10 ft liner surrounding SB-3 would not be affected.

CAP Report for Vadose Zone Remediation

Beginning on February 15th, 2012, RECS personnel were on site to begin excavating for liner installation. The site was excavated to 46 ft x 51 ft x 20 ft bgs, and an additional 10 ft x 10 ft x 10 ft deep area surrounding SB-3 was excavated at the base of the 46 ft x 51 ft excavation to a total depth of 30 ft bgs. A total of 2,532 yards of soil was taken to a NMOCD approved facility for disposal. Clean sand was imported to the site to serve as padding for the liners. A six inch sand pad was installed at the base of the 10 ft x 10 ft excavation and a 20-mil reinforced poly liner was installed and properly seated at the base of the excavation. A six inch sand pad was installed over the liner and then the excavation was backfilled with imported caliche to the base of the 46 ft x 51 ft excavation. At the base of the 46 ft x 51 ft excavation, another six inch sand pad was installed and a 20-mil reinforced poly liner was installed and properly seated throughout the excavation. A six inch sand pad was installed over the liner and the excavation was backfilled with imported caliche to 4 ft bgs. The caliche was roller-packed in three foot lifts to prevent the excavation from settling over time. The remaining excavation was backfilled with imported sand from 4 ft bgs to ground surface and contoured to the surrounding location.

A sample of the imported blow sand and imported caliche was field tested for hydrocarbons with a photo-ionization detector (PID). The blow sand returned a PID result of 3.1 ppm and the caliche returned a PID result of 2.5 ppm. The samples of sand and caliche were then taken to a commercial laboratory for analysis of chlorides and both

imported samples returned results of non-detect. A total of 948 yards of sand and 1,380 yards of caliche was imported to the site to serve as backfill and to pad the liners.

The site was seeded with a blend of native vegetation and a silt net fence was placed around the site to maintain seed integrity. Documentation for these activities can be found in Appendix B.

The vadose zone remediation portion of the CAP is completed. However, ROC still needs to address the groundwater remedy by pumping a total of 186 kg of chlorides from the site. Once the groundwater pumping program is completed with the removal of 186 kg of chlorides, ROC will submit a written report which will include a request for 'remediation termination' and the closure of the regulation file.

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

Sincerely,

Lara Weinheimer
Project Scientist
RECS
(575) 441-0431

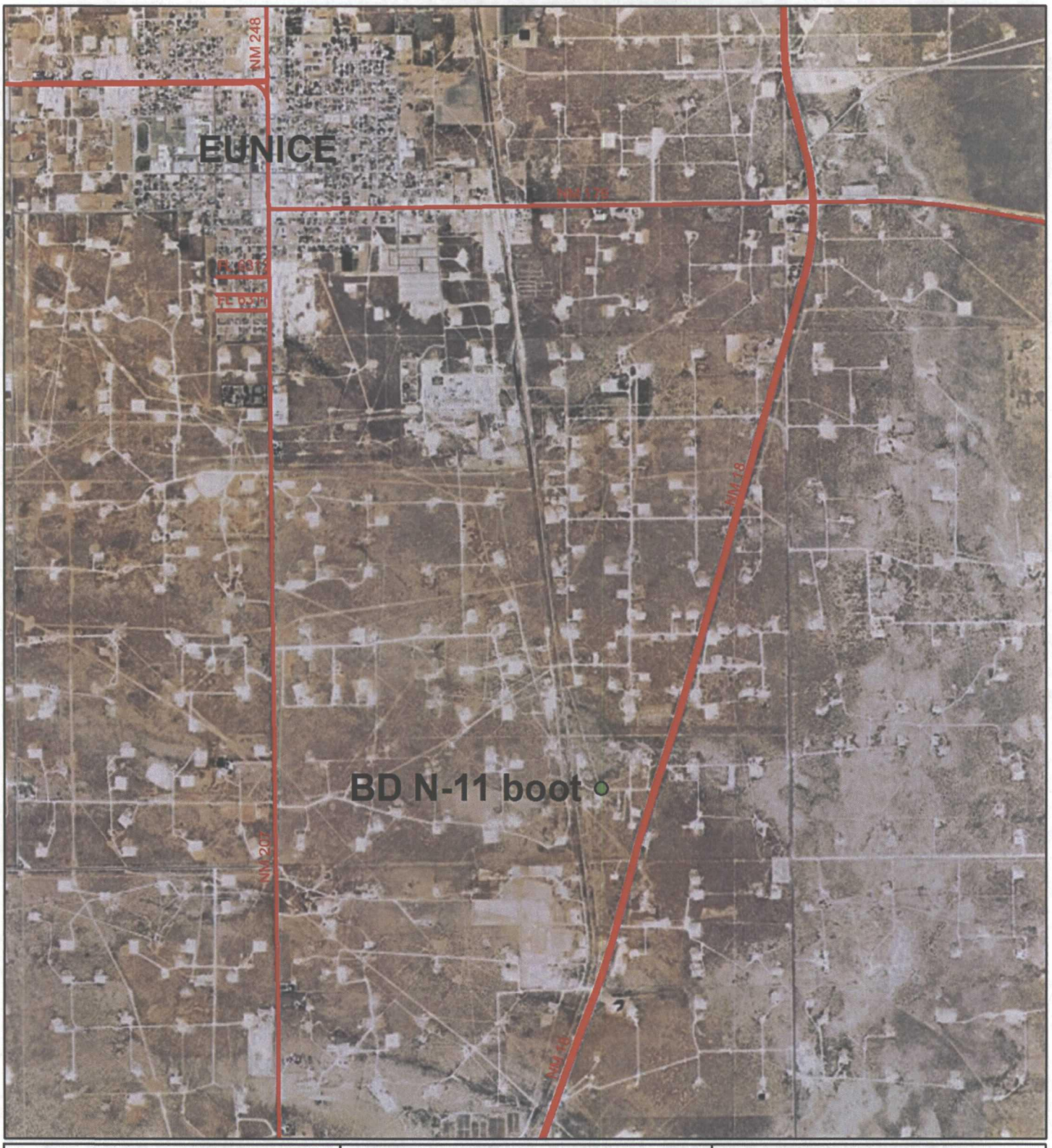
Attachments:

Figure 1 – Site Location Map
Figure 2 – Monitor Well Sampling Data
Figure 3 – NMOCD Approved Liner
Appendix A – MW Sampling Lab
Appendix B – Liner Installations Documentation

Figures

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

Site Location Map



RICE ENVIRONMENTAL CONSULTING & SAFETY, LLC
RECS

BD N-11 boot

Case #: 1R426-259

Legals: UL/N sec. 11
T22S R37E

Figure 1

N
W E
S

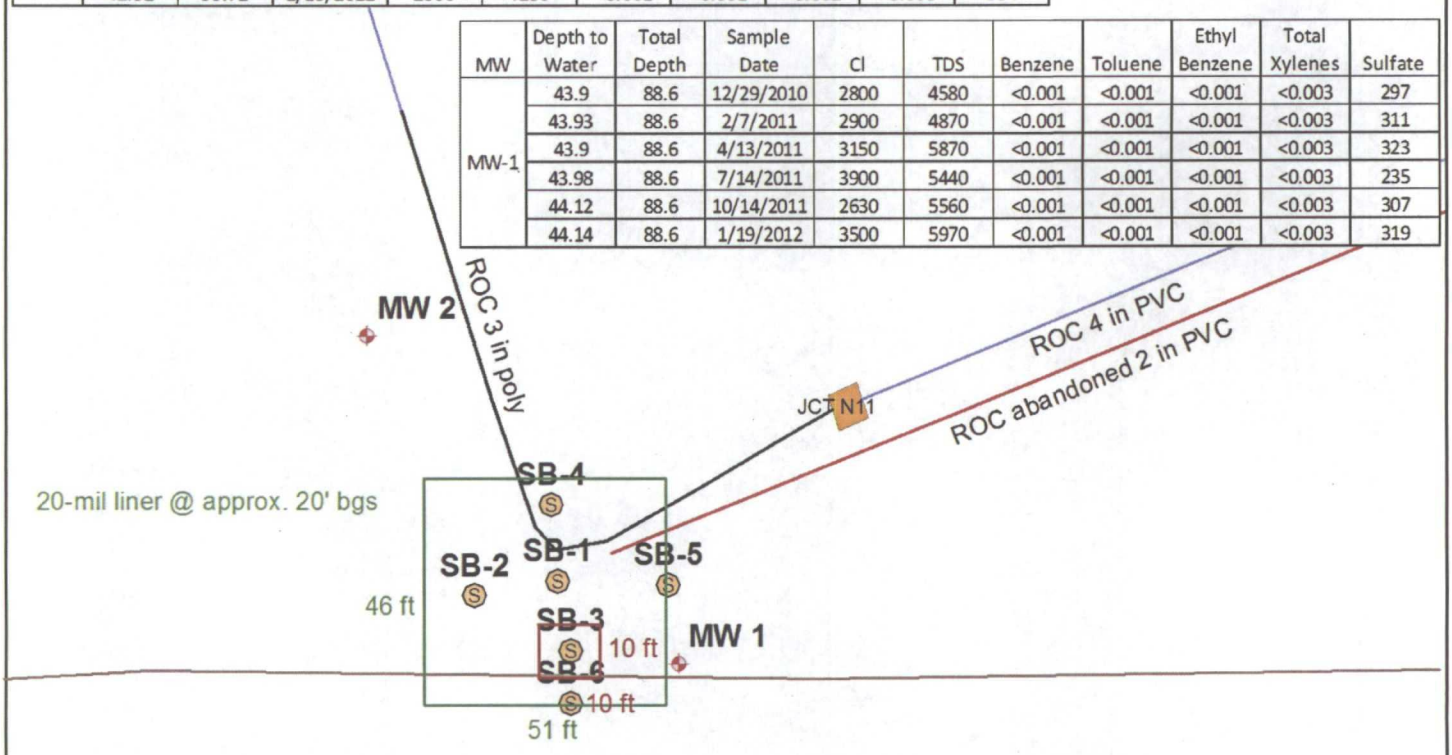
0 0.25 0.5 1
Miles

Drawing date: 1-19-12
Drafted by: L. Weinheimer

Monitor Well Sampling Data

MW	Depth to Water	Total Depth	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate
MW-2	42.63	59.72	12/29/2010	1680	3060	<0.001	<0.001	<0.001	<0.003	294
	42.67	59.72	2/7/2011	2250	4010	<0.001	<0.001	<0.001	<0.003	318
	42.62	59.72	4/13/2011	2250	4420	<0.001	<0.001	<0.001	<0.003	319
	42.77	59.72	7/14/2011	2950	4430	<0.001	<0.001	<0.001	<0.003	304
	42.9	59.72	10/14/2011	2070	4150	<0.001	<0.001	<0.001	<0.003	327
	42.92	59.72	1/19/2012	2300	4230	<0.001	<0.001	<0.001	<0.003	334

MW	Depth to Water	Total Depth	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate
MW-1	43.9	88.6	12/29/2010	2800	4580	<0.001	<0.001	<0.001	<0.003	297
	43.93	88.6	2/7/2011	2900	4870	<0.001	<0.001	<0.001	<0.003	311
	43.9	88.6	4/13/2011	3150	5870	<0.001	<0.001	<0.001	<0.003	323
	43.98	88.6	7/14/2011	3900	5440	<0.001	<0.001	<0.001	<0.003	235
	44.12	88.6	10/14/2011	2630	5560	<0.001	<0.001	<0.001	<0.003	307
	44.14	88.6	1/19/2012	3500	5970	<0.001	<0.001	<0.001	<0.003	319



MW	Depth to Water	Total Depth	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate
MW-3	44.93	55.95	12/29/2010	1700	3030	<0.001	<0.001	<0.001	<0.003	193
	44.98	59.56	2/7/2011	1820	3060	<0.001	<0.001	<0.001	<0.003	199
	44.97	59.56	4/13/2011	1950	3760	<0.001	<0.001	<0.001	<0.003	203
	45.11	59.56	7/14/2011	2450	3870	<0.001	<0.001	<0.001	<0.003	160
	45.23	59.56	10/14/2011	2130	3740	<0.001	<0.001	<0.001	<0.003	233
	45.3	59.56	1/19/2012	2200	3940	<0.001	<0.001	<0.001	<0.003	213

DGW = 44 ft

RICE ENVIRONMENTAL RECS CONSULTING & SAFETY, LLC

BD N-11 boot

Legals: UL/N sec. 11
T22S R37E

Case #: 1R426-259

Figure 2

N W E S

0 15 30 60 Feet

Drawing date: 5-11-12
Drafted by: L. Weinheimer

NMOCD Approved Liner

MW-2

Depth	Cl-	LAB Cl-	GRO	DRO
5	184			
10	317			
15	637	864	<10	<10
20	506			
25	608			
30	391			
35	310			
40	169	160	<10	<10

SB-4

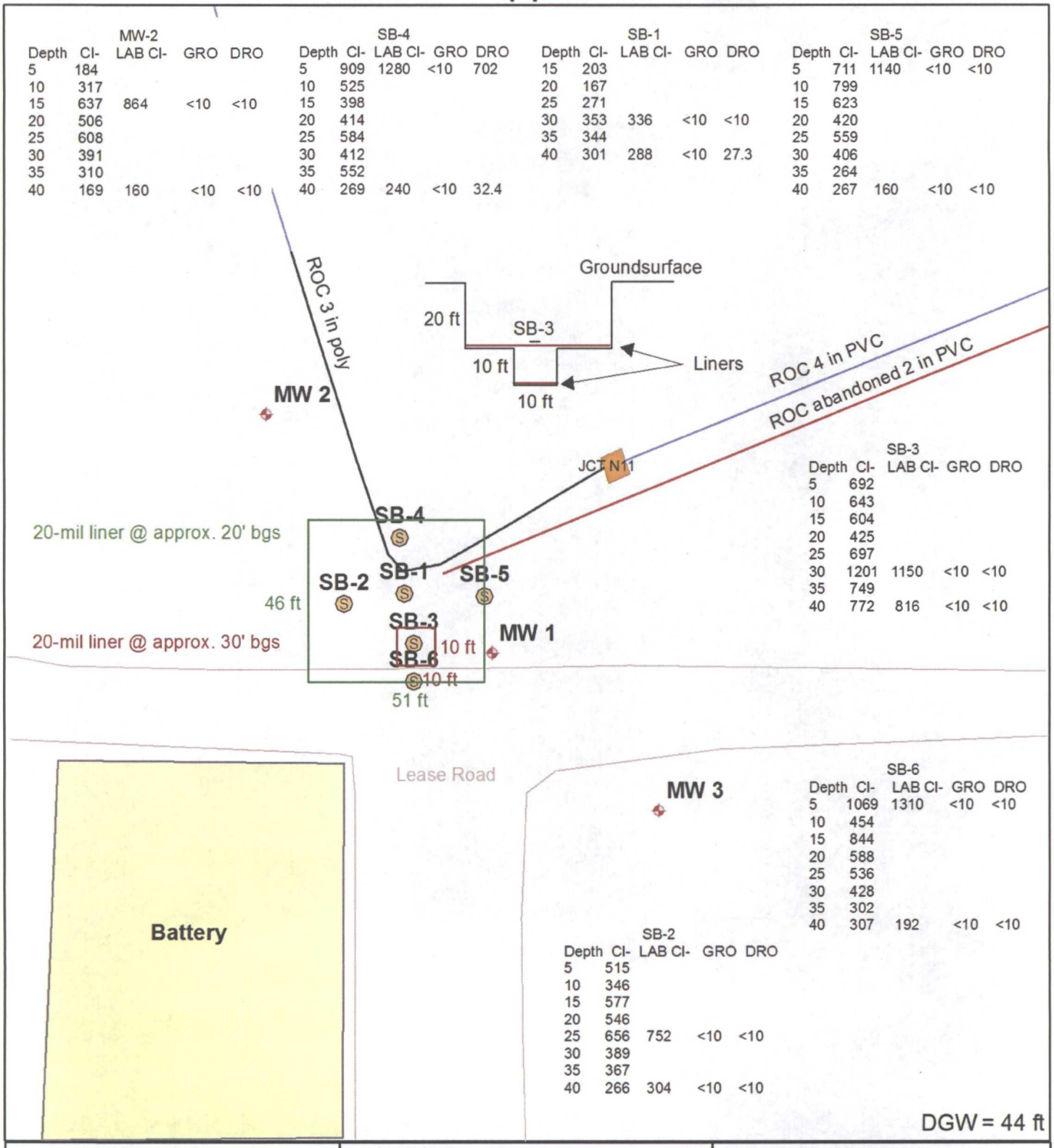
Depth	Cl-	LAB Cl-	GRO	DRO
5	909	1280	<10	702
10	525			
15	398			
20	414			
25	584			
30	412			
35	552			
40	269	240	<10	32.4

SB-1

Depth	Cl-	LAB Cl-	GRO	DRO
15	203			
20	167			
25	271			
30	353	336	<10	<10
35	344			
40	301	288	<10	27.3

SB-5

Depth	Cl-	LAB Cl-	GRO	DRO
5	711	1140	<10	<10
10	799			
15	623			
20	420			
25	559			
30	406			
35	264			
40	267	160	<10	<10



SB-3

Depth	Cl-	LAB Cl-	GRO	DRO
5	692			
10	643			
15	604			
20	425			
25	697			
30	1201	1150	<10	<10
35	749			
40	772	816	<10	<10

SB-6

Depth	Cl-	LAB Cl-	GRO	DRO
5	1069	1310	<10	<10
10	454			
15	844			
20	588			
25	536			
30	428			
35	302			
40	307	192	<10	<10

SB-2

Depth	Cl-	LAB Cl-	GRO	DRO
5	515			
10	346			
15	577			
20	546			
25	656	752	<10	<10
30	389			
35	367			
40	266	304	<10	<10

DGW = 44 ft

RICE ENVIRONMENTAL RECS CONSULTING & SAFETY, LLC

BD N-11 boot

Case #: 1R426-259

Legals: UL/N sec. 11 T22S R37E

Figure 3

N W E S

0 15 30 60 Feet

Drawing date: 1-18-12
Drafted by: L. Weinheimer

Appendix A

MW Sampling Lab

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

CARDINAL Laboratories

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

January 26, 2012

Hack Conder

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: BD JUNCTION N-11 BOOT

Enclosed are the results of analyses for samples received by the laboratory on 01/23/12 11:10.

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

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

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

Accreditation applies to public drinking water matrices.

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

Sincerely,

Celey D. Keene

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

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

Received:	01/23/2012	Sampling Date:	01/19/2012
Reported:	01/26/2012	Sampling Type:	Water
Project Name:	BD JUNCTION N-11 BOOT	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	T22S R37E SEC 11 N~ LEA CTY NM		

Sample ID: MONITOR WELL #1 (H200155-01)

BTEX 8260B mg/L Analyzed By: CMS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	01/25/2012	ND	0.022	110	0.0200	10.1	
Toluene*	<0.001	0.001	01/25/2012	ND	0.019	97.0	0.0200	10.4	
Ethylbenzene*	<0.001	0.001	01/25/2012	ND	0.020	100	0.0200	10.1	
Total Xylenes*	<0.003	0.003	01/25/2012	ND	0.060	100	0.0600	10.7	

Surrogate: Dibromofluoromethane	*123 %*	*59.8-161*
Surrogate: Toluene-d8	*91.3 %*	*75.2-115*
Surrogate: 4-Bromofluorobenzene	*88.6 %*	*53.7-120*

Chloride, SM4500Cl-B mg/L Analyzed By: AP

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	**3500**	4.00	01/24/2012	ND	104	104	100	7.41	

Sulfate 375.4 mg/L Analyzed By: AP

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	**319**	83.3	01/24/2012	ND	19.3	96.6	20.0	11.4	

TDS 160.1 mg/L Analyzed By: CK

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	**5970**	5.00	01/23/2012	ND	223	92.9	240	0.498	

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

Received:	01/23/2012	Sampling Date:	01/19/2012
Reported:	01/26/2012	Sampling Type:	Water
Project Name:	BD JUNCTION N-11 BOOT	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	T22S R37E SEC 11 N~ LEA CTY NM		

Sample ID: MONITOR WELL #2 (H200155-02)

BTEX 8260B mg/L Analyzed By: CMS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	01/25/2012	ND	0.022	110	0.0200	10.1	
Toluene*	<0.001	0.001	01/25/2012	ND	0.019	97.0	0.0200	10.4	
Ethylbenzene*	<0.001	0.001	01/25/2012	ND	0.020	100	0.0200	10.1	
Total Xylenes*	<0.003	0.003	01/25/2012	ND	0.060	100	0.0600	10.7	

Surrogate: Dibromofluoromethane	*122 %*	*59.8-161*
Surrogate: Toluene-d8	*90.9 %*	*75.2-115*
Surrogate: 4-Bromofluorobenzene	*88.0 %*	*53.7-120*

Chloride, SM4500Cl-B mg/L Analyzed By: AP

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	**2300**	4.00	01/24/2012	ND	104	104	100	7.41	

Sulfate 375.4 mg/L Analyzed By: AP

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	**334**	50.0	01/24/2012	ND	19.3	96.6	20.0	11.4	

TDS 160.1 mg/L Analyzed By: CK

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	**4230**	5.00	01/23/2012	ND	223	92.9	240	0.498	

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

Received:	01/23/2012	Sampling Date:	01/19/2012
Reported:	01/26/2012	Sampling Type:	Water
Project Name:	BD JUNCTION N-11 BOOT	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	T22S R37E SEC 11 N~ LEA CTY NM		

Sample ID: MONITOR WELL #3 (H200155-03)

BTEX 8260B mg/L Analyzed By: CMS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	01/25/2012	ND	0.022	110	0.0200	10.1	
Toluene*	<0.001	0.001	01/25/2012	ND	0.019	97.0	0.0200	10.4	
Ethylbenzene*	<0.001	0.001	01/25/2012	ND	0.020	100	0.0200	10.1	
Total Xylenes*	<0.003	0.003	01/25/2012	ND	0.060	100	0.0600	10.7	

Surrogate: Dibromofluoromethane	*125 %*	*59.8-161*
Surrogate: Toluene-d8	*92.0 %*	*75.2-115*
Surrogate: 4-Bromofluorobenzene	*88.0 %*	*53.7-120*

Chloride, SM4500Cl-B mg/L Analyzed By: AP

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	**2200**	4.00	01/24/2012	ND	104	104	100	7.41	

Sulfate 375.4 mg/L Analyzed By: AP

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	**213**	50.0	01/24/2012	ND	19.3	96.6	20.0	11.4	

TDS 160.1 mg/L Analyzed By: CK

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	**3940**	5.00	01/23/2012	ND	223	92.9	240	0.498	

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

101 East Marland - Hobbs, New Mexico 88240
Tel (575) 393-2326
Fax (575) 393-2476

Cardinal Laboratories, Inc.

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

LAB Order ID # _____

Company Name: RICE Operating Company	BILL TO Company: RICE Operating Company PO#
Project Manager: Hack Conder	Address: (Street, City, Zip) 122 W Taylor Street ~ Hobbs, New Mexico 88240
Address: (Street, City, Zip) 122 W Taylor Street ~ Hobbs, New Mexico 88240	Phone#: (575) 393-9174 Fax#: (575)397-1471
Phone #: (575) 393-9174	Fax #: (575) 397-1471
Project #:	Project Name: BD Junction N-11 Boot
Project Location: T22S R37E Sec11 N ~ Lea County New Mexico	Sampler Signature: Rozanne Johnson (575)631-9310 rozanne@valornet.com

ANALYSIS REQUEST
(Circle or Specify Method No.)

LAB # (LAB USE ONLY) H200155	FIELD CODE	(G)rab or (C)omp	# CONTAINERS	MATRIX: WATER	SOIL	AIR	SLUDGE	PRESERVATIVE METHOD: HCL (2 40ml VOA)	HNO_3	$NaHSO_4$	H_2SO_4	ICE (1-1Liter HDPE)	NONE	SAMPLING: DATE (2012)	TIME	MTBE 8021B/602	BTEX 8021B/602	TPH 418.1/TX1005 / TX1005 Extended (C35)	PAH 8270C	Total Metals Ag As Ba Cd Cr Pb Se Hg 6010B/200.7	TCLP Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Volatiles	TCLP Semi Volatiles	TCLP Pesticides	RCI	GC/MS Vol. 8260B/624	GC/MS Semi. Vol. 8270C/625	PCB's 8082/608	Pesticides 8081A/608	BOD, TSS, pH	Moisture Content	Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, CO3, HCO3)	Sulfates	Total Dissolved Solids	Chlorides	Turn Around Time ~ 24 Hours
1	Monitor Well #1	G	3	X				2				1		1-19	12:35		X																X	X	X	
2	Monitor Well #2	G	3	X				2				1		1-19	9:05		X																X	X	X	
3	Monitor Well #3	G	3	X				2				1		1-19	10:10		X																X	X	X	

Relinquished by: Rozanne Johnson	Date: 1-23-2012	Time: 11:10	Received by: [signature]
Relinquished by:	Date:	Time:	Received By: (Laboratory Staff)
Delivered By: (Circle One) Sampler - UPS - Bus - Other:	Sample Condition: Cool: Yes / Intact: Yes	CHECKED BY: (Initials)	

Phone Results: Yes / No
Fax Results: Yes / No Additional Fax Number:

REMARKS:

Email Results to: hconder@riceswd.com
lwainheimer@rice-ees.com
klones@riceswd.com
rozanne@valornet.com

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Appendix B

Liner Installations Documentation

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

CARDINAL Laboratories

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

February 28, 2012

Hack Conder

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: BD N-11 BOOT (22/37)

Enclosed are the results of analyses for samples received by the laboratory on 02/24/12 14:45.

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

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

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

Accreditation applies to public drinking water matrices.

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

Sincerely,

Celey D. Keene

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

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

Received:	02/24/2012	Sampling Date:	02/24/2012
Reported:	02/28/2012	Sampling Type:	Soil
Project Name:	BD N-11 BOOT (22/37)	Sampling Condition:	** (See Notes)
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	NOT GIVEN		

Sample ID: IMPORTED CALICHE (H200497-01)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	02/27/2012	ND	416	104	400	0.00	

Sample ID: IMPORTED BLOWSAND (H200497-02)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	02/27/2012	ND	416	104	400	0.00	

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Notes and Definitions

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

Celey D. Keene, Lab Director/Quality Manager

CARDINAL LABORATORIES

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Company Name:	Rice Operating Company	BILL TO	
Project Manager:	Hack Conder	P.O. #:	
Address:	122 West Taylor	Company:	
City:	Hobbs	State: NM Zip: 88240	Attn:
Phone #:	575-393-9174	Fax #: 575-397-1471	Address:
Project #:		Project Owner:	City:
Project Name:			State: Zip:
Project Location:	BO N-11 Boot (2-2/37)		Phone #:
Sampler Name:	Robert Egans		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							
H20497																									
-1	Imported Caliche	C	1			✓							2-24-12		✓										
-2	Imported Blow Sand	C	1			✓							2-24-12		✓										

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

Relinquished By:	Date: 2-24-11	Received By:	Phone Result:	☐ Yes	☑ No
Robert Egans	Time: 2:15		Fax Result:	☐ Yes	☑ No
Relinquished By:	Date: 2-24-11	Received By:	REMARKS:		
	Time: 3:45	Jodi Henson	email results		
Delivered By: (Circle One)	Sample Condition	CHECKED BY:	bbaker@riceswd.com; regans@riceswd.com; Lweinheimer@riceswd.com zconder@riceswd.com		
Sampler - UPS - Bus - Other:	Cool: ☐ Yes ☐ No Intact: ☑ Yes ☐ No	(Initials)			

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

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NEED SAMPLES BACK, PLEASE

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.	
	X

MODEL: PGM 7300 SERIAL NO: 590-000508
MODEL: PGM 7300 SERIAL NO: 590-000504
MODEL: PGM 7320 SERIAL NO: 592-903318
MODEL: PGM 7600 SERAIL NO: 110-013744

GAS COMPOSITION: ISOBUTYLENE 100PPM / AIR: BALANCE

LOT NO : HAL-248-100-1	EXPIRATION: 7-1-2015
METER READING ACCURACY: 100 PPM	

ACCURACY : +/- 2%

COMPANY
Rice Operating Company

SYSTEM	JUNCTION	UNIT	SECTION	TOWN SHIP	RANGE
BD	N-11 boot	N	11	22E	37E

SAMPLE ID	PID	SAMPLE ID	PID
IMPORTED BLOW SAND	3.1		
IMPORTED CALICHE	2.5		

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

SIGNATURE: Robert Evans DATE: 2/24/2012

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

REVEGETATION FORM

1. General Information

Site name	BD N-11 Boot					
U/L N	Section 11	Township 22S	Range 37E	County Lea	Latitude 32°24'11.259"	Longitude 103°8'16.597"
Contact Name:	Bruce Baker					
Email:	bbaker@rice-ecs.com					
Site size:	5,320 square feet		Map detail of site attached ☒			
Additional information:						

2. Soils **Do not rip caliche subsoils; caliche rocks brought to the surface by ripping shall be removed.*

Salvaged from site ☐	Bioremediated ☐	Imported ☒	Blended ☐	Depth (in):
Texture: Sandy	Describe soil & subsoil:	Sand fill above caliche subsoil		
Soil prep methods:	Rip ☐ Depth(in):	Disc ☐ Depth (in):	Rollerpack ☐	
Date completed: 3/5/2012				

3. Bioremediation

Fertilizer ☐	Hay ☐	Other ☐
Type:		Describe:
Lbs/acre:		

4. Seeding **Attach seed bag tags to this form. Seed bag tags shall contain the site name and S-T-R.*

Custom seed mix ☒	Prescribed mix ☐	Seed mix name: 50 lbs. Hoarse Oats, 10 lbs. Side Oats Grama, and 6.67 lbs. Black Grama	Seeding date: 4/9/2012
Broadcast ☒ Method: Broadcast spreader/tiller			
Soil conditions during seeding: Dry ☒ Damp ☐ Wet ☐			
Photos attached ☐ Number of photos:	Observations: Seed tilled in to a depth of 2 inches		

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

Name: Angel Sanchez	Title: Environmental Tech	Date: 4/9/2012
Signature: Angel Sanchez		

BD N-11 Boot (1R426-259)
Unit N, Section 11, T-22-S, R-37-E

Beginning excavation, facing south 2/15/12

Exporting soil, facing southwest 2/17/12

46'x51' excavation at 20' bgs, facing northwest 2/22/12

Excavating 10'x10' area surrounding SB-3, facing south 2/24/12

Installed liner above a 6" sand pad, facing northwest 2/24/12

Installing sand pad above liner, facing northwest 2/24/12

Backfilling with caliche, facing north 2/24/12

Bottom 6" sand pad installed, facing northwest 2/27/12

Installing the 46'x51' 20-mil reinforced liner, facing northwest 2/27/12

Installing 6" sand pad above liner, facing northeast 2/27/12

Importing caliche, facing east 2/27/12

Roller packing first 3' lift, facing north 2/27/12

Backfilling excavation with caliche, facing south 2/28/12

Roller packing site to 4' bgs, facing east 3/1/12

Installing sand to ground surface, facing west 3/1/12

Site backfilled and leveled, facing southeast 3/7/12

Seeding and tilling, facing east 4/9/12

Site complete, facing west 4/9/12

Hansen, Edward J., EMNRD

From: Hansen, Edward J., EMNRD
Sent: Tuesday, June 26, 2012 3:27 PM
To: Hack Conder (hconder@riceswd.com)
Cc: Leking, Geoffrey R, EMNRD; Laura Pena (lpena@riceswd.com); Lara Weinheimer (lweinheimer@rice-ecs.com)
Subject: Soil Closure Approval (1R426-259) - ROC BD N-11 Boot Site

RE: Corrective Action Plan Report and Vadose Zone Remediation for the Rice Operating Company's BD N-11 Boot Site Unit Letter N, Section 11, T22S, R37E, Lea County, New Mexico Soil Closure Approval (1R426-259)

Dear Mr. Conder:

The New Mexico Oil Conservation Division (OCD) has received the Rice Operating Company's (ROC) the report for Vadose Zone Remediation for the Remediation Plan (1R426-259) for the BD N-11 Boot Site, dated May 29, 2012. The above-referenced report, submitted in fulfillment of 19.15.29 NMAC (Rule 29, formally, Rule 116), indicates that Rice Operating Company (ROC) has partially met the requirements of 19.15.29 NMAC for this site. Therefore, the OCD hereby conditionally approves the soil closure for the BD N-11 Boot Site and no further soil remediation is required for this site:

The BD N-11 Boot Site is still active under Remediation Plan, 1R426-259, and ROC must submit a groundwater remediation report to the OCD within 120 days.

Please be advised that OCD partial approval of this request 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.

Thank you for your cooperation in this matter. If you have any questions regarding this matter, please contact at 505-476-3489.

Edward J. Hansen
Hydrologist
Environmental Bureau