1R - 427-164

WORKPLANS

Date:

9-8-11

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

CERTIFIED MAIL
RETURN RECIEPT NO. 7008 1140 0001 3070 5702

September 8th, 2011

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: **ICP Report and Corrective Action Plan (CAP)**
Rice Operating Company – EME SWD System
EME jct. B-7 (1R427-164): UL/B sec. 7 T20S 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 EME Salt Water Disposal (SWD) system. ROC is the service provider (agent) for the EME SWD System and has no ownership of any portion of the pipeline, well, or facility. The system is owned by a consortium of oil producers, System Parties, who provide all operating capital on a percentage/usage basis.

Background and Previous Work

The site is located approximately 3 miles south of Monument, New Mexico at UL/B, Sec. 7, T20S, R37E as shown on the Site Location Map (Figure 1). Groundwater at this site is located approximately 31 +/- feet below ground surface (bgs). In 2004, ROC initiated work on the former EME B-7 junction box prior to it being replaced by a new, watertight junction box at the site. The site was delineated using a backhoe and soil samples were screened at regular intervals for both hydrocarbons and chlorides. The excavation reached dimensions of 25 x 35 x 14 feet bgs where composite samples were collected for laboratory verification. Laboratory tests of the site showed negligible gasoline range organics (GRO) while the diesel range organics (DRO) showed 77.6 mg/kg on the side wall composite, 133 mg/kg on the bottom composite and 132 mg/kg in the remediated backfill. Chlorides at the site showed 1,540 mg/kg for the sidewall composite, 1,200 mg/kg for the bottom composite and 1,380 mg/kg in the remediated backfill. At 6 feet bgs, a clay layer was installed to inhibit further chloride migration. The soils were blended on site and then backfilled into the excavation. 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.

On July 15, 2004, a soil bore was drilled 5 feet north of the center of the former junction box to determine the downward extent of chlorides at the site. Laboratory samples taken at 29 feet bgs showed a chloride concentration of 659 mg/kg. NMOCD was notified of potential groundwater impact on April 7, 2004 and a junction box disclosure report was submitted to NMOCD with all the 2004 junction box closures and disclosures.

ICP Investigative Results

As part of the Investigation and Characterization Plan approved by NMOCD on August 10th, 2010, nine soil bores (SB-2 through SB-10) were advanced through the former junction box site on September 15th, 2010 (Figure 2). ROC personnel field tested the soil for chlorides and each sample was field screened for hydrocarbons using a photo-ionization detector (PID). Representative samples from the bore were taken to a commercial laboratory for confirmation of chloride and hydrocarbon field numbers (Appendix A). Laboratory readings showed chloride numbers ranging from a high of 3,920 mg/kg at 6 ft bgs in SB-4 to a low of 112 mg/kg at 9 ft bgs in SB-8. Laboratory readings for GRO and DRO showed non-detect in all soil bores.

On October 22nd, 2010, three monitor wells were installed at the site (Figure 3). Monitor well MW-1, the source monitor well, was field tested for chlorides and each sample was field screened for hydrocarbons using a photo-ionization detector (PID). Two soil samples from the well were taken to a commercial laboratory for confirmation of field numbers. MW-1 showed laboratory chloride readings of 800 mg/kg at 15 ft bgs and 544 mg/kg at 25 ft bgs. Both samples had non-detect GRO readings and the 25 ft bgs sample had non-detect DRO reading, but the 15 ft bgs sample had a DRO reading of 11.0 mg/kg (Appendix B). MW-2, located approximately 135 ft northwest of MW-1 and on the other side of the lease road, was analyzed to verify background concentrations in the area. MW-2 showed laboratory chloride readings of 672 mg/kg at 15 ft bgs and 816 mg/kg at 25 ft bgs and non-detect readings of GRO and DRO. MW-3 is located approximately 48 ft southeast of MW-1 and soil samples were not collected.

The monitor wells have been sampled quarterly since their installation (Figure 4). Up-gradient monitor well (MW-2) has shown an average chloride concentration of 3,700 mg/L, indicating up-gradient impairment of the groundwater. A Site Location Map (Figure 1) is attached and shows the area up-gradient of this site. Chloride concentrations in the down-gradient monitoring well (MW-3) have averaged 2,690 mg/L and the near-source monitor well (MW-1) has shown an average chloride concentration of 3,933 mg/L. All three monitor wells had BTEX levels of non-detect (Appendix C).

Recommendations

Since the EME junction B-7 is located within a regionally impacted groundwater area (Figure 5), RECS submits the following as a Corrective Action Plan.

Soil Remedy:
The site has an existing clay liner measuring 25 ft x 35 ft at 6 ft bgs. ROC proposes to excavate the site to dimensions of 73 ft x 98 ft and properly seat a 20-mil, reinforced liner at 4 to 5 ft bgs, covering the existing clay barrier (Figure 2). The liner 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 measurement below 100 ppm. Excavated soil will be evaluated for use as backfill, and any soil requiring disposal will be properly disposed of at a NMOCD approved facility.

Upon completion of backfilling, the site will be seeded with native vegetation. The surface soils over and surrounding the site will be prepared with soil amendments as needed and then seeded with a native vegetative mix. Vegetation above the liner will also provide a natural infiltration barrier for the site since plants capture water through their roots thereby reducing the volume of water moving through the vadose zone to groundwater.

Groundwater Remedy:
ROC proposed to remove chloride impacted groundwater from the existing recovery system located at EME A-20. Removed groundwater would be utilized for pipeline and well maintenance. Our estimate conservatively reflects the net impact to groundwater at the site resulting from the former junction box site. It does not take into account other sources or regional groundwater conditions that may exist up gradient of the site.

- **Estimated chloride mass in the vadose zone**
  To determine if residual chlorides in the vadose zone pose a threat to groundwater quality, ROC personnel ran the U.S. Environmental Protection Agency Exposure Assessment Multimedia Model (MULTIMED Version 1.5, 2005). Data inputs and model outputs are included in Attachment D. With the proposed infiltration barrier measuring 73 x 98 ft, the model output concludes that the peak concentration of chlorides in the groundwater contributed by the vadose zone soils would be approximately 244 mg/kg in 94 years. Since the estimated increase in chloride concentrations in groundwater from residual chloride migration is below the WQCC standard of 250 mg/L, no further action is warranted for the vadose zone at this site.

- **Estimated chloride mass in the groundwater**
  The estimated impact area is 7,154 square feet. A value of 65 ft is used for the aquifer thickness, and the porosity of the soil is estimated at 0.25. The volume of the impacted groundwater beneath the site is determined by multiplying the impact area by the aquifer thickness by the porosity. The volume of impacted groundwater beneath the site is then 116,253 cubic feet. The result is then converted to liters giving us 3,291,918 liters. The chloride concentration contributed from the source is the difference between the highest concentration observed in MW-1 and the lowest concentration observed in MW-2 which is determined to be 450 mg/L. The total chloride mass in the groundwater is then determined by multiplying the volume of impacted groundwater beneath the site by the chloride concentration contributed from the site. This is then converted to kilograms. Thus, the total chloride mass beneath the site is 1,481 kg. Based on the chloride concentration of RW-1 located at EME A-20 (4,000 mg/L), approximately 2,328 barrels of groundwater would need to be removed to account for the 1,481 kg of chloride.

Estimate of Chloride Mass in Groundwater			
Parameter	**Unit**	**Value**	**Description**
Impact area	ft^2	7,154	Estimated Area of Impact
Aquifer Thickness	ft	65	Estimation
Porosity	%	0.25	Professional Estimate for Water Saturated Pore Volume
Volume of Impacted Groundwater Below Site	ft^3	116,253	Impact Area x Aquifer Thickness x Porosity
Volume of Impacted Groundwater Below Site	L	3,291,918	Conversion from ft^3 to Liters
Chloride Concentration Contributed from Source	mg/L	450	Difference between Concentrations in Monitor Wells
TOTAL CHLORIDE MASS	**kg**	**1,481**	Volume of Impacted Groundwater Below Site x Chloride Concentration Contributed from Source

- **Groundwater Recovery from EME A-20 RW-1**
  Groundwater recovery began from the existing recovery system located at EME A-20 on April 20th, 2011. As of August 4th, 2011, a total of 3,759 barrels of groundwater have been removed from the A-20 recovery system. Based on the current chloride concentration in RW-1 of 4,000 mg/L (Appendix E), this equates to approximately 2,390 kg of chloride. As such, ROC proposes to plug and abandon MW-1 and MW-3 located at this site using a cement grout with 1-3% bentonite and a 3 foot cap of cement. MW-2, the up-gradient well, will be used to monitor regional groundwater impact in the area.

Upon NMOCD approval, MW-1 and MW-3 will be plugged and abandoned and liner installation will be scheduled. Once the CAP work is complete, ROC will submit a written report which will include a request for "remediation termination" of the regulatory file.

ROC 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 map
Figure 2 – Soil bore installation and Proposed liner plat
Figure 3 – Monitor well soil data plat
Figure 4 – Monitor well sampling plat
Figure 5 – Groundwater Contamination plat

Appendix A – ICP soil bore logs and laboratory confirmation
Appendix B – Monitor well installation logs and laboratory confirmation
Appendix C – Monitor well sampling labs
Appendix D – Chloride Exposure Assessment
Appendix E – EME A-20 RW-1 lab result

Figures

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

Site Map

RICE ENVIRONMENTAL
RECS
CONSULTING & SAFETY, LLC

EME jct. B-7

Legals: UL/B sec. 7
T20S R37E
NMOCD Case #: 1R427-164

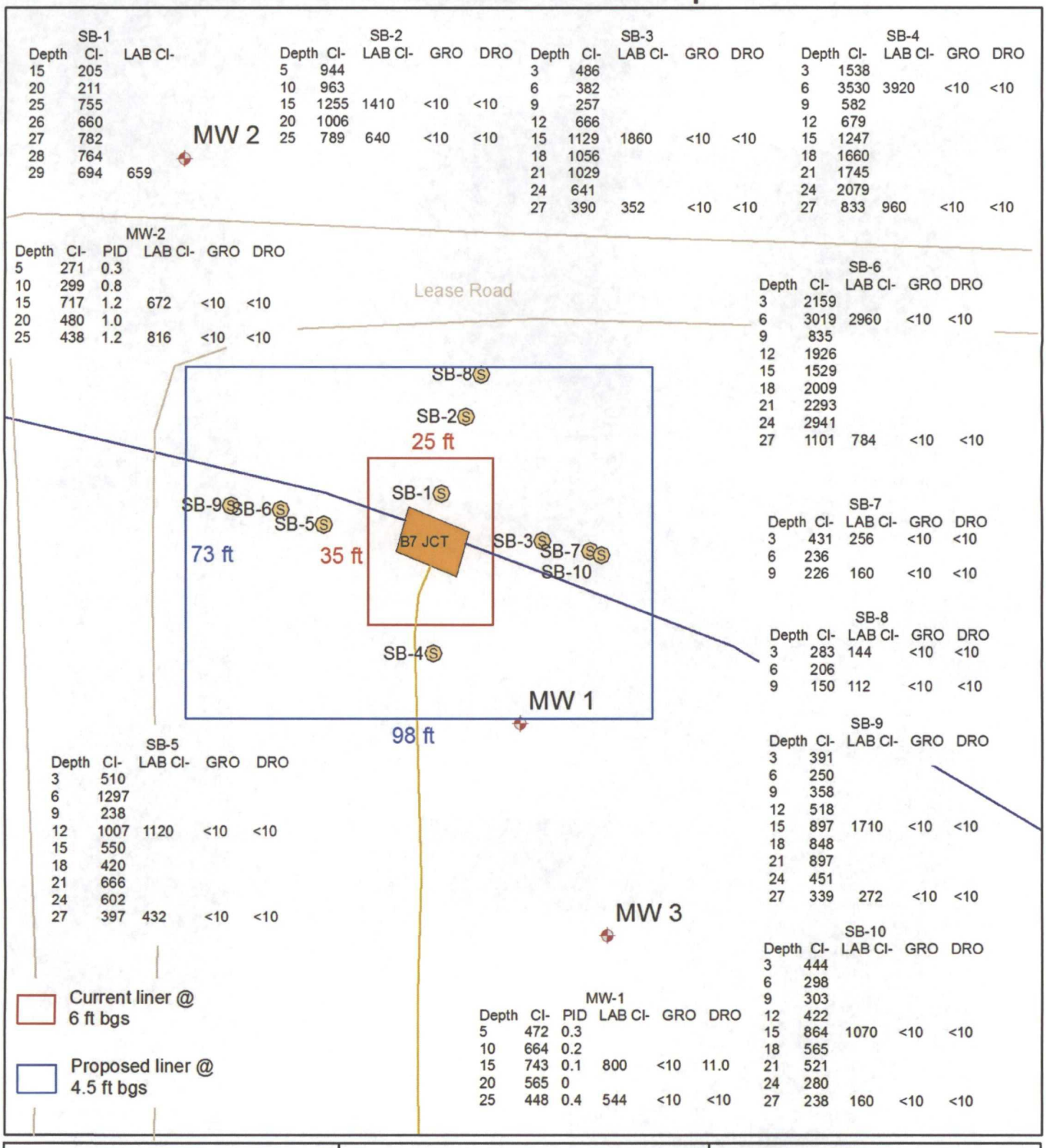
Figure 1

N
W E
S

0 550 1,100 2,200
Feet

Drawing date:9-29-10
Drafted by: L. Weinheimer

Soil bore installation and Proposed liner



RICE ENVIRONMENTAL RECS CONSULTING & SAFETY, LLC

EME jct. B-7

Legals: UL/B sec. 7
T20S R37E
NMOCD Case #: 1R427-164

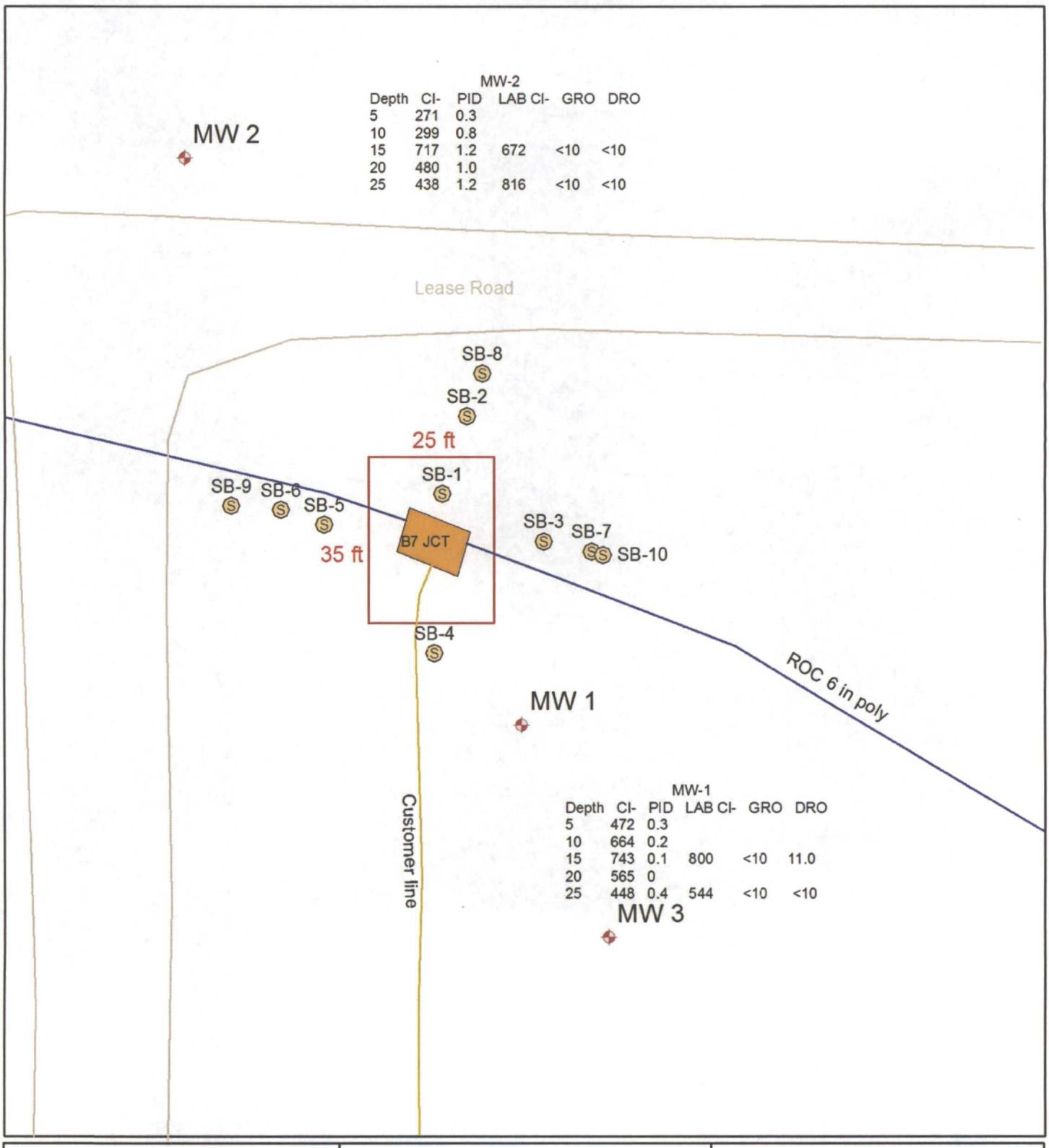
Figure 2

N W E S

0 12.5 25 50 Feet

Drawing date: 6-29-11
Drafted by: L. Weinheimer

Monitor Well Soil Data



RICE ENVIRONMENTAL RECS CONSULTING & SAFETY, LLC

EME jct. B-7

Legals: UL/B sec. 7
T20S R37E
NMOCD Case #: 1R427-164

Figure 3

N W E S

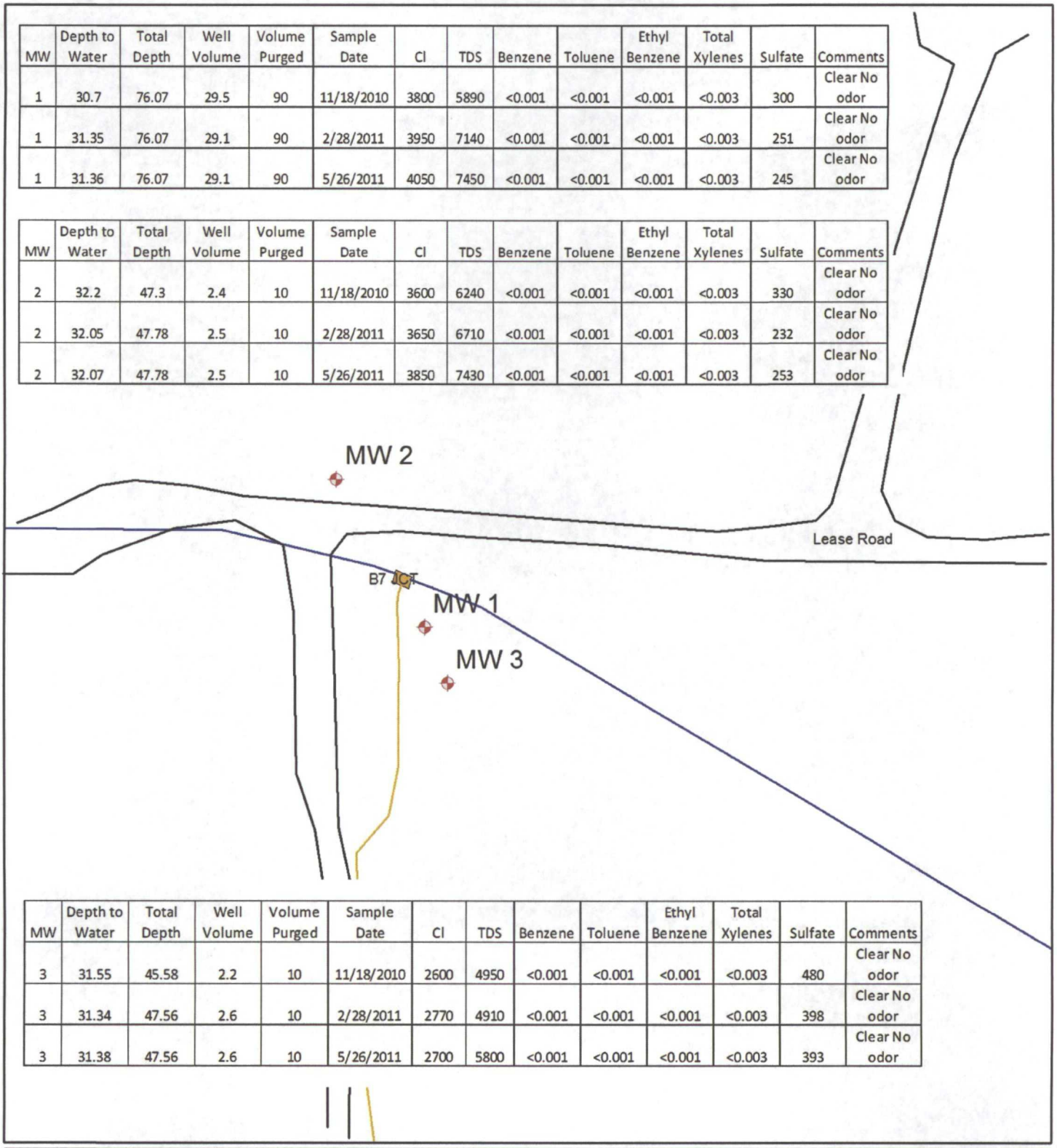
0 12.5 25 50 Feet

Drawing date:9-29-10
Drafted by: L. Weinheimer

Monitor well sampling data

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
1	30.7	76.07	29.5	90	11/18/2010	3800	5890	<0.001	<0.001	<0.001	<0.003	300	Clear No odor
1	31.35	76.07	29.1	90	2/28/2011	3950	7140	<0.001	<0.001	<0.001	<0.003	251	Clear No odor
1	31.36	76.07	29.1	90	5/26/2011	4050	7450	<0.001	<0.001	<0.001	<0.003	245	Clear No odor

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
2	32.2	47.3	2.4	10	11/18/2010	3600	6240	<0.001	<0.001	<0.001	<0.003	330	Clear No odor
2	32.05	47.78	2.5	10	2/28/2011	3650	6710	<0.001	<0.001	<0.001	<0.003	232	Clear No odor
2	32.07	47.78	2.5	10	5/26/2011	3850	7430	<0.001	<0.001	<0.001	<0.003	253	Clear No odor



MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
3	31.55	45.58	2.2	10	11/18/2010	2600	4950	<0.001	<0.001	<0.001	<0.003	480	Clear No odor
3	31.34	47.56	2.6	10	2/28/2011	2770	4910	<0.001	<0.001	<0.001	<0.003	398	Clear No odor
3	31.38	47.56	2.6	10	5/26/2011	2700	5800	<0.001	<0.001	<0.001	<0.003	393	Clear No odor

RICE ENVIRONMENTAL RECS CONSULTING & SAFETY, LLC

EME jct. B-7

Legals: UL/B sec. 7
T20S R37E

Case #: 1R427-164

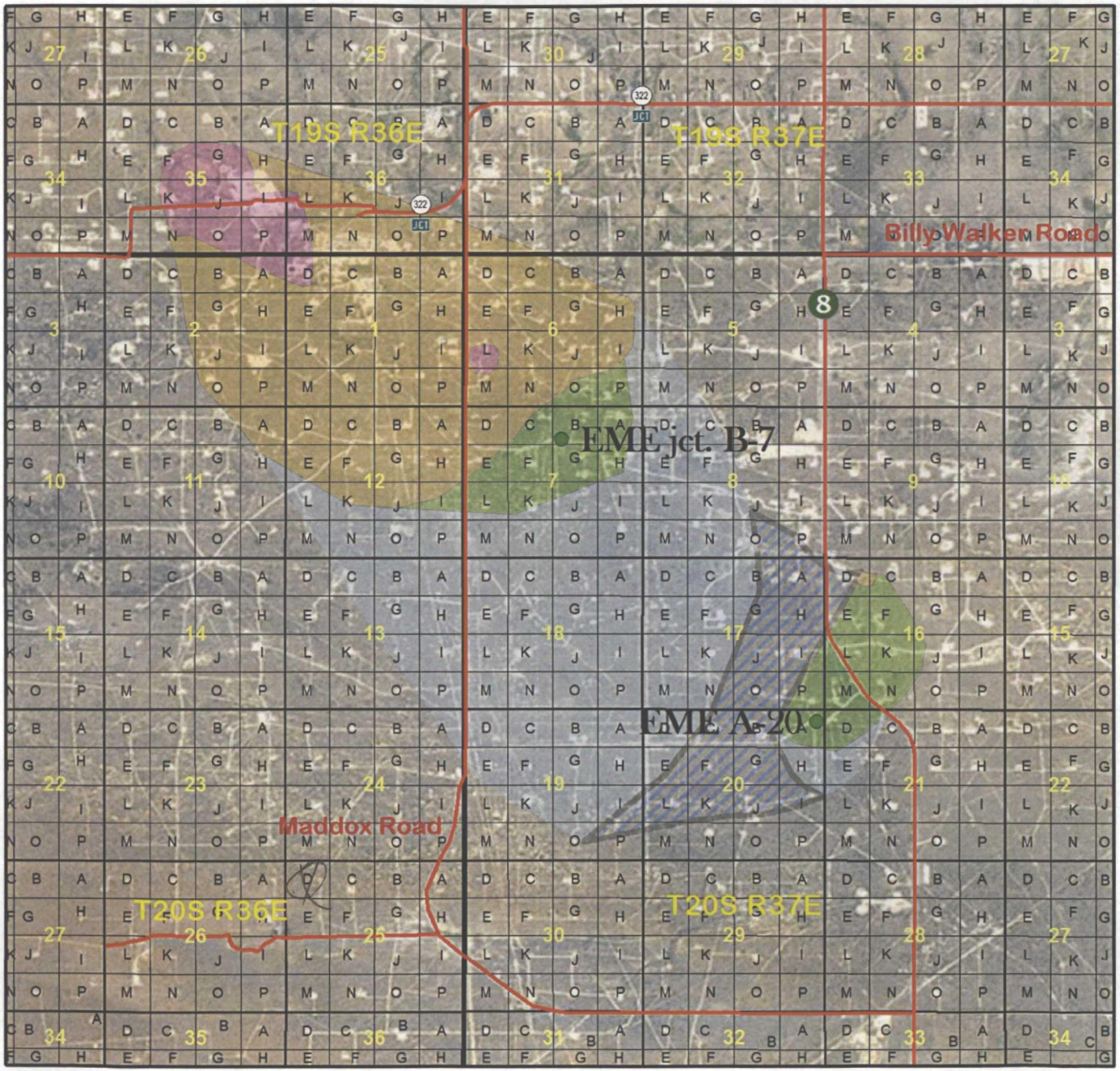
Figure 4

N W E S

0 50 100 200 Feet

Drawing date:5-16-11
Drafted by: L. Weinheimer

EME Groundwater Contamination



RICE ENVIRONMENTAL CONSULTING & SAFETY, LLC

122 W. Taylor
Hobbs, NM 88240
Phone (575) 393-9174
Fax (575) 397-1471

- Cl- concentration > 10,000
- 10,000 > Cl- concentration > 5,000
- 5,000 > Cl- concentration > 2,000
- 2,000 > Cl- concentration > 700
- Hypothetical Cl- contamination area

N W E S

0 0.5 1 Miles

This map was prepared by and for Rice Operating Company. This map represents the known chloride impact concentrations in the groundwater as of 2011. As conditions change and/or new monitor wells are added, the contamination plume will undergo permutations that will be reflected in future maps. Rice Operating Company does not assume any responsibility for the use of this information by others.

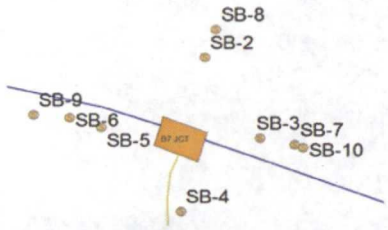
Drawing date: 12-15-09
Revision date:1-11-11
Drafted by: Lara Weinheimer

Figure 5

Appendix A

ICP soil bore logs and laboratory confirmation

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

Logger:	Lara Weinheimer		**Project Name:** EME jct. B-7 **Well ID:** SB-2
Driller:	Harrison & Cooper Inc.		**Project Consultant:** RECS
Drilling Method:	Air rotary		
Start Date:	9/15/2010		
End Date:	9/15/2010		

Comments: Located 26' north of the former junction box site.
All samples from cuttings.
DRAFTED BY: Lara Weinheimer
TD = 25 ft GW = 29 ft

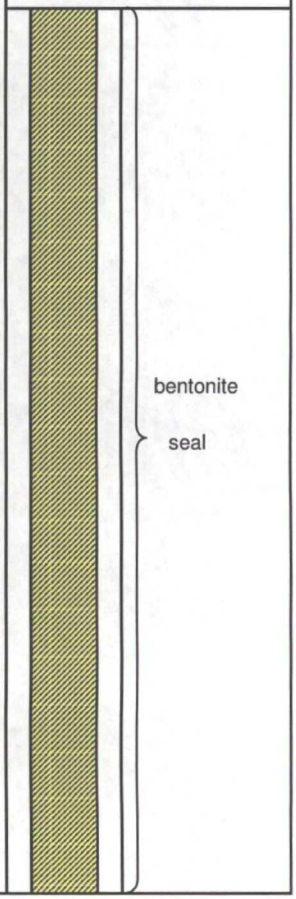
Location: UL/B sec. 7 T20S R37E

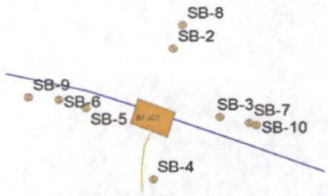
Lat: 32°35'29.916"N **Long:** 103°17'24.291"W **County**: LEA **State**: NM

Depth (feet)	chloride field tests	LAB	PID	Description
				Light brown very fine sand. Slightly moist. No odor.
5 ft	944		0	
				Light brown very fine sand with caliche. Slightly moist. No odor.
10 ft	963		0	
15 ft	1255	Cl- 1410	0	
		GRO <10		Light brown very fine sand with consolidated rock. Slightly moist. No odor.
		DRO <10		
20 ft	1006		0.2	
				Yellowish brown very fine sand with consolidated rock. Slightly moist. No odor.
25 ft	789	Cl- 640	0	
		GRO <10		
		DRO <10		

Lithology

Well Construction

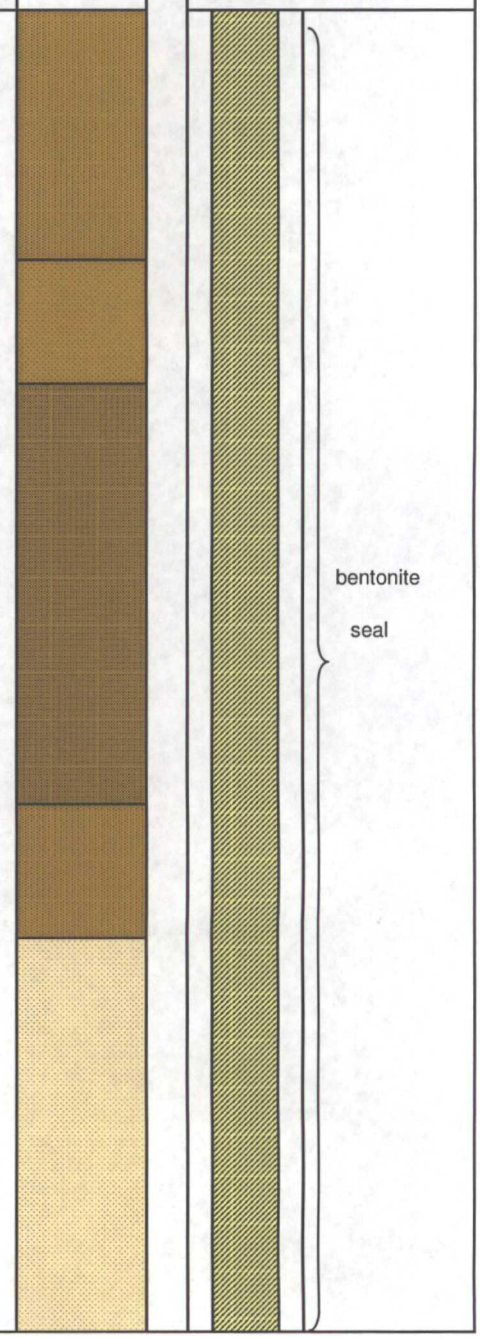


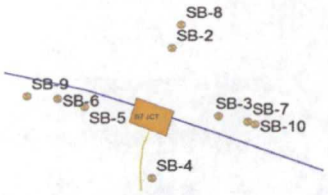
Logger:	Lara Weinheimer		
Driller:	Harrison & Cooper Inc.		
Drilling Method:	Air rotary		**Project Name:** EME jct. B-7 **Well ID:** SB-3
Start Date:	9/15/2010		
End Date:	9/15/2010		**Project Consultant:** RECS

Comments: Located 22 ft east of the former junction box site.
All samples from cuttings.
DRAFTED BY: Lara Weinheimer
TD = 27 ft GW = 29 ft

Location: UL/B sec. 7 T20S R37E
Lat: 32°35'29.661"N **County**: LEA
Long: 103°17'24.109"W **State**: NM

Depth (feet)	chloride field tests	LAB	PID	Description
				Light brown very fine sand with caliche. Dry. No odor.
3 ft	486		0	
6 ft	382		0	
				Light brown very fine sand. Slightly moist. No odor.
9 ft	257		0	
				Light brown very fine sand with consolidated rock. Slightly moist. No odor.
12 ft	666		0	
15 ft	1,129	Cl- 1860	0	
		GRO <10		
		DRO <10		
18 ft	1,056		0	
				Light brown very fine sand with caliche particles. Slightly moist. No odor.
21 ft	1,029		0	
				Yellowish brown very fine sand with consolidated rock. Slightly moist. No odor.
24 ft	641		0	
27 ft	390	Cl- 352	0	
		GRO <10		
		DRO <10		



Logger:	Lara Weinheimer		
Driller:	Harrison & Cooper Inc.		
Drilling Method:	Air rotary		**Project Name:** EME jct. B-7 **Well ID:** SB-4
Start Date:	9/15/2010		
End Date:	9/15/2010		**Project Consultant:** RECS

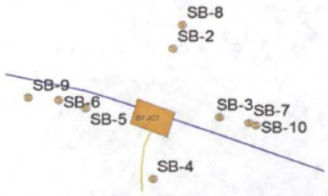
Comments: Located 23 ft south of the former junction box site.
All samples from cuttings.
DRAFTED BY: Lara Weinheimer
TD = 27 ft GW = 29 ft

Location: UL/B sec. 7 T20S R37E

Lat: 32°35'29.432"N **County**: LEA
Long: 103°17'24.379"W **State**: NM

Depth (feet)	chloride field tests	LAB	PID	Description	Lithology	Well Construction
				Light brown very fine sand. Dry. No odor.		
3 ft	1538		0			
6 ft	3530	Cl- 3920	0			
		GRO <10		Light brown very fine sand. Slightly moist. No odor.		
		DRO <10				
9 ft	582		0			
				Light brown very fine sand with consolidated rock. Slightly moist. No odor.		
12 ft	679		0			
15 ft	1247		0			
18 ft	1660		0			
21 ft	1745		0			
				Light brown very fine sand with caliche particles. Slightly moist. No odor.		
24 ft	2079		0			
				Light brown very fine sand. Slightly moist. No odor.		
27 ft	833	Cl- 960	0			
		GRO <10				
		DRO <10				

bentonite seal

Logger:	Lara Weinheimer		
Driller:	Harrison & Cooper Inc.		
Drilling Method:	Air rotary		**Project Name:** EME jct. B-7 **Well ID:** SB-5
Start Date:	9/15/2010		**Project Consultant:** RECS
End Date:	9/15/2010		

Comments: Located 23 ft west of the former junction box site.
All samples from cuttings.
DRAFTED BY: Lara Weinheimer

TD = 27 ft GW = 29 ft

Location: UL/B sec. 7 T20S R37E

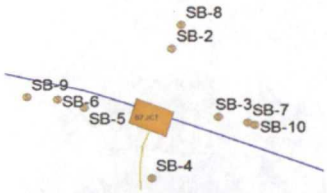
Lat: 32°25'29.698"N **County**: LEA
Long: 103°17'24.638"W **State**: NM

Depth (feet)	chloride field tests	LAB	PID	Description
				Light brown very fine sand. Dry. No odor.
3 ft	510		0	
6 ft	1297		0	
				Light brown very fine sand. Slightly moist. No odor.
9 ft	238		0	
12 ft	1007	Cl- 1120	0	
		GRO <10		Light brown very fine sand with caliche. Slightly moist. No odor.
		DRO <10		
15 ft	550		0	
18 ft	420		0	
				Light brown very fine sand with caliche particles and rock. Slightly moist. No odor.
21 ft	666		0	
				Light brown very fine sand. Slightly moist. No odor.
24 ft	602		0	
27 ft	397	Cl- 432	0	
		GRO <10		
		DRO <10		

Lithology

Well Construction

bentonite seal

Logger:	Lara Weinheimer		RICE ENVIRONMENTAL RECS CONSULTING & SAFETY, LLC
Driller:	Harrison & Cooper Inc.		**Project Name:** EME jct. B-7 **Well ID:** SB-6
Drilling Method:	Air rotary		**Project Consultant:** RECS
Start Date:	9/15/2010		
End Date:	9/15/2010		

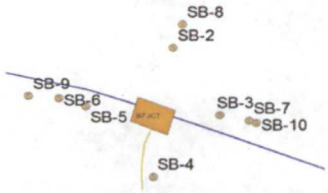
Comments: Located 31 ft west of the former junction box site.
All samples from cuttings.
DRAFTED BY: Lara Weinheimer
TD = 27 ft GW = 29 ft

Location: UL/B sec. 7 T20S R37E
Lat: 32°35'29.728"N **County**: LEA
Long: 103°17'24.745"W **State**: NM

Depth (feet)	chloride field tests	LAB	PID	Description
				Light brown very fine sand. Dry. No odor.
3 ft	2159		0.2	
6 ft	3019	Cl- 2960	0.3	
		GRO <10		Light brown very fine sand. Slightly moist. No odor.
		DRO <10		
9 ft	835		0.2	
12 ft	1926		0.2	
				Light brown very fine sand with caliche and consolidated rock. Slightly moist. No odor.
15 ft	1529		0.2	
18 ft	2009		0.2	
				Light brown very fine sand with caliche particles. Slightly moist. No odor.
21 ft	2293		0	
				Light yellowish brown very fine sand with caliche. Slightly moist. No odor.
24 ft	2941		0.1	
				Light brown very fine sand. Slightly moist. No odor.
27 ft	1101	Cl- 784	0.2	
		GRO <10		
		DRO <10		

Lithology

Well Construction: bentonite seal

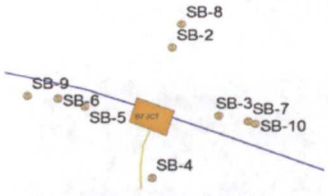
Logger:	Lara Weinheimer		RICE ENVIRONMENTAL CONSULTING & SAFETY, LLC — RECS
Driller:	Harrison & Cooper Inc.		**Project Name:** EME jct. B-7 **Well ID:** SB-7
Drilling Method:	Air rotary		**Project Consultant:** RECS
Start Date:	9/15/2010		
End Date:	9/15/2010		
Comments: Located 32 ft east of the former junction box site. All samples from cuttings. **DRAFTED BY: Lara Weinheimer** TD = 9 ft GW = 29 ft			**Location:** UL/B sec. 7 T20S R37E **Lat:** 32°35'29.635"N **Long:** 103°17'23.994"W **County**: LEA **State**: NM

Depth (feet)	chloride field tests	LAB	PID	Description
				Light brown very fine sand. Dry. No odor.
3 ft	431	Cl- 256	0.8	
		GRO <10		Light brown very fine sand with substantial caliche. Dry. No odor.
		DRO <10		
6 ft	236		0.6	
				Light brown very fine sand. Slightly moist. No odor.
9 ft	226	Cl- 160	0.5	
		GRO <10		
		DRO <10		

Lithology

Well Construction

bentonite seal

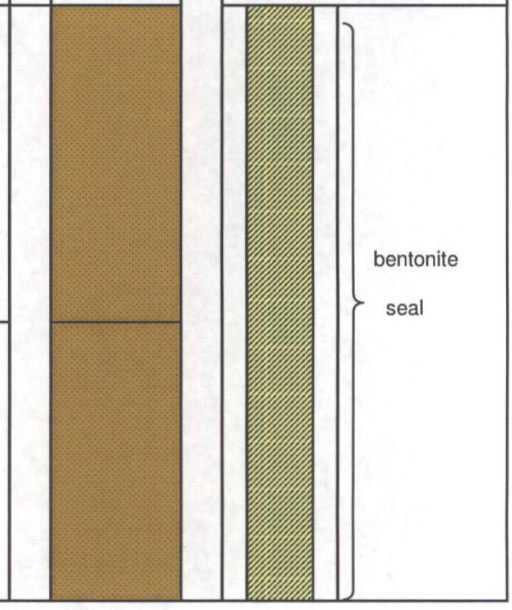
Logger:	Lara Weinheimer		RICE ENVIRONMENTAL CONSULTING & SAFETY, LLC — RECS
Driller:	Harrison & Cooper Inc.		
Drilling Method:	Air rotary		**Project Name:** EME jct. B-7 **Well ID:** SB-8
Start Date:	9/15/2010		**Project Consultant:**
End Date:	9/15/2010		

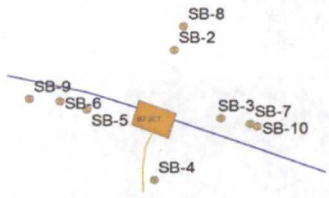
Comments: Located 35 ft north of the former junction box site.
All samples from cuttings.
DRAFTED BY: Lara Weinheimer
TD = 9 ft GW = 29 ft

Location: UL/B sec. 7 T20S R37E

Lat: 32°35'30"N **Long:** 103°17'24.251"W **County**: LEA **State**: NM

Depth (feet)	chloride field tests	LAB	PID	Description
				Light brown very fine sand with substantial caliche. Dry. No odor.
3 ft	283	Cl- 144	0.6	
		GRO <10		
		DRO <10		
6 ft	206		0.5	
				Light brown very fine sand. Slightly moist. No odor.
9 ft	150	Cl- 112	0.5	
		GRO <10		
		DRO <10		



Logger:	Lara Weinheimer		**Project Name:** EME jct. B-7 **Well ID:** SB-9
Driller:	Harrison & Cooper Inc.		**Project Consultant:** RECS
Drilling Method:	Air Rotary		
Start Date:	9/15/2010		
End Date:	9/15/2010		

Comments: Located 42 ft west of the former junction box site.
All samples from cuttings.
DRAFTED BY: Lara Weinheimer

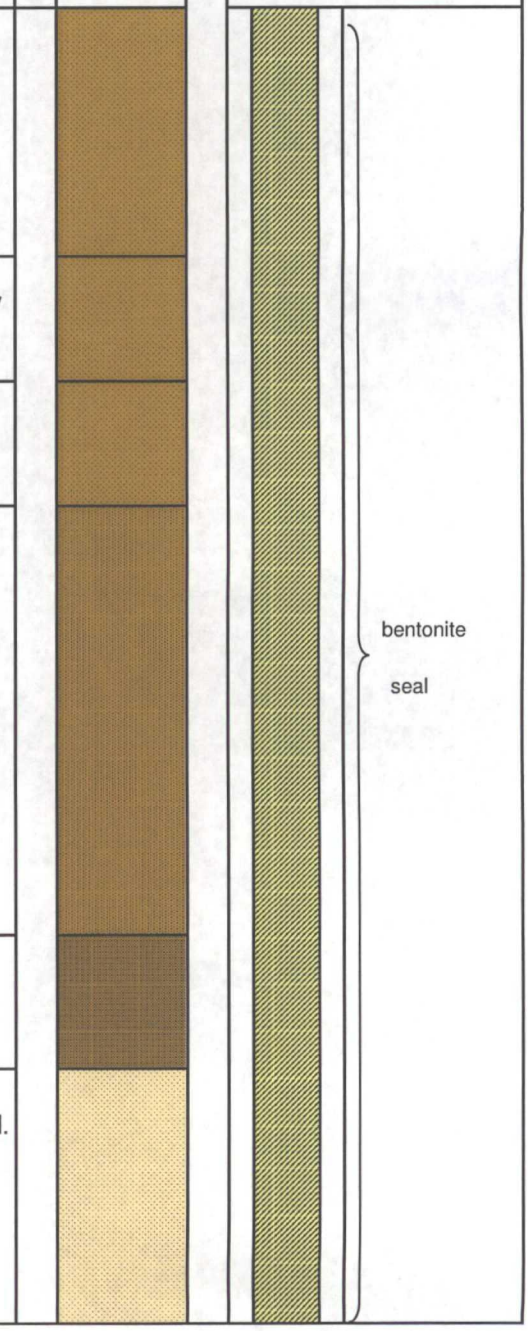
TD = 27 ft GW = 29 ft

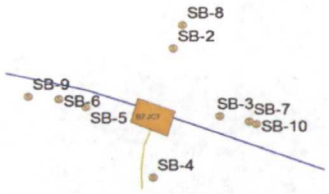
Location: UL/B sec. 7 T20S R37E

Lat: 32°35'29.738"N **County**: LEA

Long: 103°17'24.867"W **State**: NM

Depth (feet)	chloride field tests	LAB	PID	Description
				Light brown very fine sand with caliche. Dry. No odor.
3 ft	391		0.8	
6 ft	250		1.2	
				Light brown very fine sand. Slightly moist. No odor.
9 ft	358		0.7	
				Light brown very fine sand with caliche. Dry. No odor.
12 ft	518		0.9	
				Light brown very fine sand with caliche and consolidated rock.
15 ft	897	Cl- 1710	0.4	
		GRO <10		
		DRO <10		
18 ft	848		0.3	
21 ft	897		0.4	
				Light brown very fine sand with caliche. Slightly moist. No odor.
24 ft	451		0.6	
				Light yellowish brown very fine sand. Slightly moist. No odor.
27 ft	339	Cl- 272	0.4	
		GRO <10		
		DRO <10		



Logger:	Lara Weinheimer		**Project Name:** EME jct. B-7 **Well ID:** SB-10
Driller:	Harrison & Cooper Inc.		**Project Consultant:** RECS
Drilling Method:	Air rotary		
Start Date:	9/15/2010		
End Date:	9/15/2010		

Comments: Located 35 ft east of the former junction box site.
All samples from cuttings.
DRAFTED BY: Lara Weinheimer
TD = 27 ft GW = 29 ft

Location: UL/B sec. 7 T20S R37E

Lat: 32°35'29.629"N **Long:** 103°17'23.961"W **County:** LEA **State:** NM

Depth (feet)	chloride field tests	LAB	PID	Description
				Light brown very fine sand. Dry. No odor.
3 ft	444		0.7	
				Light brown very fine sand with substantial caliche. Dry. No odor.
6 ft	298		0.5	
				Light brown very fine sand. Dry. No odor.
9 ft	303		0.6	
				Light brown very fine sand with caliche and consolidated rock. Dry. No odor.
12 ft	422		0.4	
				Light orangey brown very fine sand with caliche particles. Dry. No odor.
15 ft	864	Cl- 1070	0.5	
		GRO <10		Light brown very sand with substantial consolidated rock. Slightly moist. No odor.
		DRO <10		
18 ft	565		0.4	
				Tan very fine sand with caliche. Dry. No odor.
21 ft	521		0.3	
				Light yellowish brown very fine sand. Slightly moist. No odor.
24 ft	280		0.2	
27 ft	238	Cl- 160	0.2	
		GRO <10		
		DRO <10		

Lithology

Well Construction

bentonite seal

CARDINAL Laboratories

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

September 20, 2010

HACK CONDER

RICE ENVIRONMENTAL CONSULTING & SAFETY LLC

112 W. TAYLOR

HOBBS, NM 88240

RE: EME JCT B-7

Enclosed are the results of analyses for samples received by the laboratory on 09/16/10 10:45.

Cardinal Laboratories is accredited through Texas NELAP for:

Method SW-846 8021	Benzene, Toluene, Ethyl Benzene, and Total Xylenes
Method SW-846 8260	Benzene, Toluene, Ethyl Benzene, and Total Xylenes
Method TX 1005	Total Petroleum Hydorcarbons

Certificate number T104704398-08-TX. Accreditation applies to solid and chemical materials and non-potable water matrices.

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 (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 ENVIRONMENTAL CONSULTING & SAFETY
HACK CONDER
112 W. TAYLOR
HOBBS NM, 88240
Fax To: (575) 397-1471

Received:	09/16/2010	Sampling Date:	09/15/2010
Reported:	09/20/2010	Sampling Type:	Soil
Project Name:	EME JCT B-7	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Jodi Henson
Project Location:	EME JCT B-7		

Sample ID: SB - 2 @ 15' (H020864-01)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1410**	16.0	09/17/2010	ND	464	116	400	3.51	

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	09/18/2010	ND	165	82.5	200	2.83	
DRO >C10-C28	<10.0	10.0	09/18/2010	ND	164	82.1	200	0.607	

Surrogate: 1-Chlorooctane	*92.6 %*	*70-130*
Surrogate: 1-Chlorooctadecane	*97.9 %*	*70-130*

Sample ID: SB - 2 @ 25' (H020864-02)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**640**	16.0	09/17/2010	ND	464	116	400	3.51	

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	09/18/2010	ND	165	82.5	200	2.83	
DRO >C10-C28	<10.0	10.0	09/18/2010	ND	164	82.1	200	0.607	

Surrogate: 1-Chlorooctane	*89.1 %*	*70-130*
Surrogate: 1-Chlorooctadecane	*113 %*	*70-130*

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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Analytical Results For:

RICE ENVIRONMENTAL CONSULTING & SAFETY
HACK CONDER
112 W. TAYLOR
HOBBS NM, 88240
Fax To: (575) 397-1471

Received:	09/16/2010	Sampling Date:	09/15/2010
Reported:	09/20/2010	Sampling Type:	Soil
Project Name:	EME JCT B-7	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Jodi Henson
Project Location:	EME JCT B-7		

Sample ID: SB - 3 @ 15' (H020864-03)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1860**	16.0	09/17/2010	ND	432	108	400	0.00	

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	09/18/2010	ND	165	82.5	200	2.83	
DRO >C10-C28	<10.0	10.0	09/18/2010	ND	164	82.1	200	0.607	

Surrogate: 1-Chlorooctane	*90.5 %*	*70-130*
Surrogate: 1-Chlorooctadecane	*103 %*	*70-130*

Sample ID: SB - 3 @ 27' (H020864-04)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**352**	16.0	09/17/2010	ND	432	108	400	0.00	

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	09/18/2010	ND	165	82.5	200	2.83	
DRO >C10-C28	<10.0	10.0	09/18/2010	ND	164	82.1	200	0.607	

Surrogate: 1-Chlorooctane	*93.8 %*	*70-130*
Surrogate: 1-Chlorooctadecane	*124 %*	*70-130*

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Analytical Results For:

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HACK CONDER
112 W. TAYLOR
HOBBS NM, 88240
Fax To: (575) 397-1471

Received:	09/16/2010	Sampling Date:	09/15/2010
Reported:	09/20/2010	Sampling Type:	Soil
Project Name:	EME JCT B-7	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Jodi Henson
Project Location:	EME JCT B-7		

Sample ID: SB - 4 @ 6' (H020864-05)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**3920**	16.0	09/17/2010	ND	432	108	400	0.00	

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	09/18/2010	ND	165	82.5	200	2.83	
DRO >C10-C28	<10.0	10.0	09/18/2010	ND	164	82.1	200	0.607	

Surrogate: 1-Chlorooctane	*92.3 %*	*70-130*
Surrogate: 1-Chlorooctadecane	*103 %*	*70-130*

Sample ID: SB - 4 @ 27' (H020864-06)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**960**	16.0	09/17/2010	ND	432	108	400	0.00	

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	09/18/2010	ND	165	82.5	200	2.83	
DRO >C10-C28	<10.0	10.0	09/18/2010	ND	164	82.1	200	0.607	

Surrogate: 1-Chlorooctane	*91.2 %*	*70-130*
Surrogate: 1-Chlorooctadecane	*112 %*	*70-130*

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Analytical Results For:

RICE ENVIRONMENTAL CONSULTING & SAFETY
HACK CONDER
112 W. TAYLOR
HOBBS NM, 88240
Fax To: (575) 397-1471

Received:	09/16/2010	Sampling Date:	09/15/2010
Reported:	09/20/2010	Sampling Type:	Soil
Project Name:	EME JCT B-7	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Jodi Henson
Project Location:	EME JCT B-7		

Sample ID: SB - 5 @12' (H020864-07)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1120**	16.0	09/17/2010	ND	432	108	400	0.00	

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	09/18/2010	ND	165	82.5	200	2.83	
DRO >C10-C28	<10.0	10.0	09/18/2010	ND	164	82.1	200	0.607	

Surrogate: 1-Chlorooctane	*90.6 %*	*70-130*
Surrogate: 1-Chlorooctadecane	*105 %*	*70-130*

Sample ID: SB - 5 @ 27' (H020864-08)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**432**	16.0	09/17/2010	ND	432	108	400	0.00	

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	09/18/2010	ND	165	82.5	200	2.83	
DRO >C10-C28	<10.0	10.0	09/18/2010	ND	164	82.1	200	0.607	

Surrogate: 1-Chlorooctane	*92.3 %*	*70-130*
Surrogate: 1-Chlorooctadecane	*127 %*	*70-130*

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Analytical Results For:

RICE ENVIRONMENTAL CONSULTING & SAFETY
HACK CONDER
112 W. TAYLOR
HOBBS NM, 88240
Fax To: (575) 397-1471

Received:	09/16/2010	Sampling Date:	09/15/2010
Reported:	09/20/2010	Sampling Type:	Soil
Project Name:	EME JCT B-7	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Jodi Henson
Project Location:	EME JCT B-7		

Sample ID: SB - 6 @ 6' (H020864-09)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**2960**	16.0	09/17/2010	ND	432	108	400	0.00	

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	09/18/2010	ND	165	82.5	200	2.83	
DRO >C10-C28	<10.0	10.0	09/18/2010	ND	164	82.1	200	0.607	

Surrogate: 1-Chlorooctane	*94.1 %*	*70-130*
Surrogate: 1-Chlorooctadecane	*103 %*	*70-130*

Sample ID: SB - 6 @ 27' (H020864-10)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**784**	16.0	09/17/2010	ND	432	108	400	0.00	

TPH 8015M mg/kg **Analyzed By: AB** **S-04**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	09/18/2010	ND	165	82.5	200	2.83	
DRO >C10-C28	<10.0	10.0	09/18/2010	ND	164	82.1	200	0.607	

Surrogate: 1-Chlorooctane	*88.0 %*	*70-130*
Surrogate: 1-Chlorooctadecane	*111 %*	*70-130*

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Analytical Results For:

RICE ENVIRONMENTAL CONSULTING & SAFETY
HACK CONDER
112 W. TAYLOR
HOBBS NM, 88240
Fax To: (575) 397-1471

Received:	09/16/2010	Sampling Date:	09/15/2010
Reported:	09/20/2010	Sampling Type:	Soil
Project Name:	EME JCT B-7	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Jodi Henson
Project Location:	EME JCT B-7		

Sample ID: SB - 7 @ 3' (H020864-11)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**256**	16.0	09/17/2010	ND	432	108	400	0.00	

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	09/18/2010	ND	168	84.0	200	1.01	
DRO >C10-C28	<10.0	10.0	09/18/2010	ND	164	81.9	200	3.91	

Surrogate: 1-Chlorooctane	*92.8 %*	*70-130*
Surrogate: 1-Chlorooctadecane	*113 %*	*70-130*

Sample ID: SB - 7 @9' (H020864-12)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**160**	16.0	09/17/2010	ND	432	108	400	0.00	

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	09/18/2010	ND	168	84.0	200	1.01	
DRO >C10-C28	<10.0	10.0	09/18/2010	ND	164	81.9	200	3.91	

Surrogate: 1-Chlorooctane	*90.4 %*	*70-130*
Surrogate: 1-Chlorooctadecane	*122 %*	*70-130*

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Celey D. Keene, Lab Director/Quality Manager

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Analytical Results For:

RICE ENVIRONMENTAL CONSULTING & SAFETY
HACK CONDER
112 W. TAYLOR
HOBBS NM, 88240
Fax To: (575) 397-1471

Received:	09/16/2010	Sampling Date:	09/15/2010
Reported:	09/20/2010	Sampling Type:	Soil
Project Name:	EME JCT B-7	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Jodi Henson
Project Location:	EME JCT B-7		

Sample ID: SB - 8 @ 3' (H020864-13)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**144**	16.0	09/17/2010	ND	432	108	400	0.00	

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	09/18/2010	ND	168	84.0	200	1.01	
DRO >C10-C28	<10.0	10.0	09/18/2010	ND	164	81.9	200	3.91	

Surrogate: 1-Chlorooctane	*92.6 %*	*70-130*
Surrogate: 1-Chlorooctadecane	*111 %*	*70-130*

Sample ID: SB - 8 @ 9' (H020864-14)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**112**	16.0	09/17/2010	ND	432	108	400	0.00	

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	09/18/2010	ND	168	84.0	200	1.01	
DRO >C10-C28	<10.0	10.0	09/18/2010	ND	164	81.9	200	3.91	

Surrogate: 1-Chlorooctane	*89.6 %*	*70-130*
Surrogate: 1-Chlorooctadecane	*106 %*	*70-130*

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Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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Analytical Results For:

RICE ENVIRONMENTAL CONSULTING & SAFETY
HACK CONDER
112 W. TAYLOR
HOBBS NM, 88240
Fax To: (575) 397-1471

Received:	09/16/2010	Sampling Date:	09/15/2010
Reported:	09/20/2010	Sampling Type:	Soil
Project Name:	EME JCT B-7	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Jodi Henson
Project Location:	EME JCT B-7		

Sample ID: SB - 9 @ 15' (H020864-15)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1710**	16.0	09/17/2010	ND	432	108	400	0.00	

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	09/18/2010	ND	168	84.0	200	1.01	
DRO >C10-C28	<10.0	10.0	09/18/2010	ND	164	81.9	200	3.91	

Surrogate: 1-Chlorooctane	*90.4 %*	*70-130*
Surrogate: 1-Chlorooctadecane	*120 %*	*70-130*

Sample ID: SB - 9 @ 27' (H020864-16)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**272**	16.0	09/17/2010	ND	432	108	400	0.00	

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	09/19/2010	ND	168	84.0	200	1.01	
DRO >C10-C28	<10.0	10.0	09/19/2010	ND	164	81.9	200	3.91	

Surrogate: 1-Chlorooctane	*88.3 %*	*70-130*
Surrogate: 1-Chlorooctadecane	*126 %*	*70-130*

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 ENVIRONMENTAL CONSULTING & SAFETY
HACK CONDER
112 W. TAYLOR
HOBBS NM, 88240
Fax To: (575) 397-1471

Received:	09/16/2010	Sampling Date:	09/15/2010
Reported:	09/20/2010	Sampling Type:	Soil
Project Name:	EME JCT B-7	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Jodi Henson
Project Location:	EME JCT B-7		

Sample ID: SB - 10 @ 15' (H020864-17)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1070**	16.0	09/17/2010	ND	432	108	400	0.00	

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	09/19/2010	ND	168	84.0	200	1.01	
DRO >C10-C28	<10.0	10.0	09/19/2010	ND	164	81.9	200	3.91	

Surrogate: 1-Chlorooctane	*87.8 %*	*70-130*
Surrogate: 1-Chlorooctadecane	*118 %*	*70-130*

Sample ID: SB - 10 @ 27' (H020864-18)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**160**	16.0	09/17/2010	ND	432	108	400	0.00	

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	09/19/2010	ND	168	84.0	200	1.01	
DRO >C10-C28	<10.0	10.0	09/19/2010	ND	164	81.9	200	3.91	

Surrogate: 1-Chlorooctane	*88.4 %*	*70-130*
Surrogate: 1-Chlorooctadecane	*109 %*	*70-130*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Notes and Definitions

S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
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 Environmental Consulting and Safety	BILL TO
Project Manager: Hack Conder	P.O. #:
Address: 112 West Taylor	Company:
City: Hobbs State: NM Zip: 88240	Attn:
Phone #: 393-9174 Fax #: 397-1471	Address:
Project #: Project Owner:	City:
Project Name: EME jct. B-7	State: Zip:
Project Location: EME jct B-7	Phone #:
Sampler Name: L. Weinheimer	Fax #:

FOR LAB USE ONLY				MATRIX						PRESERV			SAMPLING		ANALYSIS REQUEST									
Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	ACID/BASE:	ICE / COOL	OTHER :	DATE	TIME	Chlorides	TPH 8015 M	BTEX	Texas TPH	Complete Cations/Anions	TDS				
H20864 1	SB-2 e 15'	G	1			✓					✓		9-15-10	8:06	✓	✓								
2	SB-2 C 25'	G	1			✓					✓		"	8:09	✓	✓								
3	SB-3 e 15'	G	1			✓					✓		"	8:18	✓	✓								
4	SB-3 e 27'	G	1			✓					✓		"	8:21	✓	✓								
5	SB-4 e 6'	G	1			✓					✓		"	9:16	✓	✓								
6	SB-4 e 27'	G	1			✓					✓		"	9:22	✓	✓								
7	SB-5 C 12'	G	1			✓					✓		"	9:49	✓	✓								
8	SB-5 e 27'	G	1			✓					✓		"	9:54	✓	✓								
9	SB-6 C 6'	G	1			✓					✓		"	10:32	✓	✓								
10	SB-6 e 27'	G	1			✓					✓		"	10:39	✓	✓								

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: L. Weinheimer	Date: 9-15-10 Time: 4:45	Received By:	Phone Result: ☐ Yes ☑ No	Add'l Phone #:	
Relinquished By:	Date: 9/16/10 Time: 10:45	Received By:	Fax Result: ☐ Yes ☑ No	Add'l Fax #:	
Delivered By: (Circle One) Sampler - UPS - Bus - Other:		Sample Condition Cool: ☑ Yes ☐ No Intact: ☑ Yes ☐ No	CHECKED BY: (Initials)	REMARKS: email results Hconder@riceswd.com; kjones@riceswd.com Lweinheimer@rice-ecs.com	

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

#26

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 Environmental Consulting and Safety	BILL TO
Project Manager: Hack Conder	P.O. #:
Address: 112 West Taylor	Company:
City: Hobbs State: NM Zip: 88240	Attn:
Phone #: 393-9174 Fax #: 397-1471	Address:
Project #: Project Owner:	City:
Project Name: EME Jct B-7	State: Zip:
Project Location: EME Jct B-7	Phone #:
Sampler Name: L. Weinheimer	Fax #:

FOR LAB USE ONLY Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER:	PRESERV: ACID/BASE:	ICE / COOL	OTHER:	SAMPLING: DATE	TIME	Chlorides	TPH 8015 M	BTEX	Texas TPH	Complete Cations/Anions	TDS
H20864-11	SB-7 @ 3'	G	1			✓					✓		9-15-10	11:02	✓	✓				
12	SB-7 @ 9'	G	1			✓					✓		"	11:04	✓	✓				
13	SB-8 @ 3'	G	1			✓					✓		"	11:35	✓	✓				
14	SB-8 @ 9'	G	1			✓					✓		"	11:36	✓	✓				
15	SB-9 @ 15'	G	1			✓					✓		"	1:58	✓	✓				
16	SB-9 @ 27'	G	1			✓					✓		"	2:06	✓	✓				
17	SB-10 @ 15'	G	1			✓					✓		"	2:42	✓	✓				
18	SB-10 @ 27'	G	1			✓					✓		"	2:50	✓	✓				

Relinquished By: L. Weinheimer	Date: 9-15-10 Time: 4:45	Received By:	Phone Result: ☐ Yes ☑ No Add'l Phone #:
Relinquished By:	Date: 9/16/10 Time: 10:45	Received By:	Fax Result: ☐ Yes ☑ No Add'l Fax #:
Delivered By: (Circle One) Sampler - UPS - Bus - Other:	Sample Condition Cool ☑ Yes ☐ No Intact ☑ Yes ☐ No	CHECKED BY: (Initials)	REMARKS: email results Hconder@riceswd.com; kjones@riceswd.com Lweinheimer@rice-ecs.com

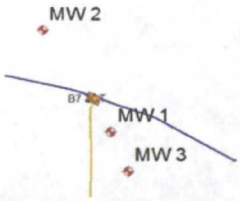
† Cardinal cannot accept verbal changes. Please fax written changes to 505-393-2476

#26

Appendix B

Monitor well installation logs and laboratory confirmation

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

Logger:	Jordan Woodfin		RICE ENVIRONMENTAL RECS CONSULTING & SAFETY, LLC
Driller:	Harrison & Cooper, Inc.		
Drilling Method:	Air rotary		**Project Name:** EME jct. B-7 **Well ID:** MW-1
Start Date:	10/22/2010		**Project Consultant:** RECS
End Date:	10/22/2010		

Comments: Located 41 ft south east of the former junction box site.

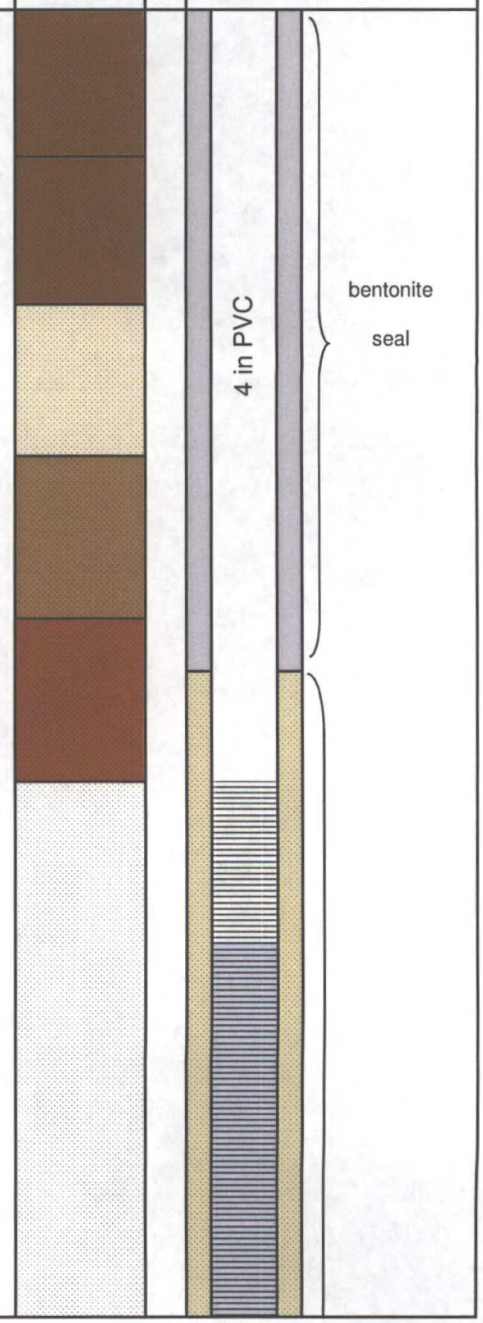
DRAFTED BY: L. Weinheimer

TD = 75 ft GW = 29 ft

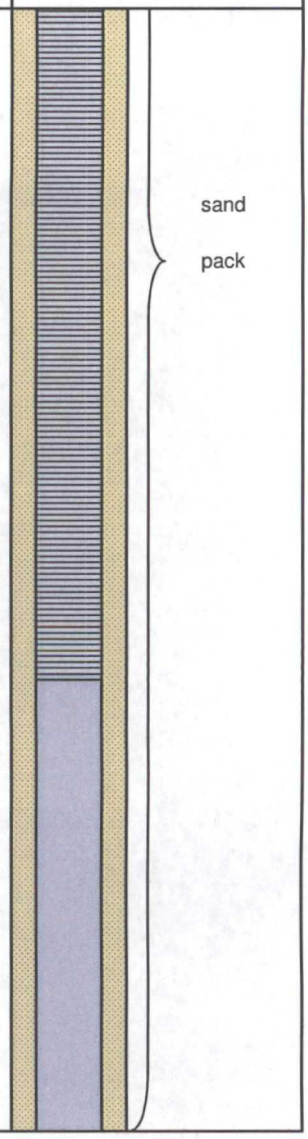
Location: UL/B sec. 7 T20S R37E

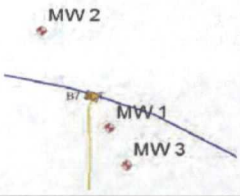
Lat: 32°35'29.29"N **Long:** 103°17'24.164"W **County**: LEA **State**: NM

Depth (feet)	chloride field tests	LAB	PID	Description
				Compacted brown fine grain sand
5 ft	472		0.3	
				Brown fine grain sand slightly compacted
10 ft	664		0.2	
				Tan sandy loam
15 ft	743	Cl- 800	0.1	
		GRO <10		Light brown fine sand with large caliche fragments
		DRO 11.0		
20 ft	565		0.0	
				Reddish brown fine sandy loam
25 ft	448	Cl- 544	0.4	
		GRO <10		NO SAMPLES TAKEN
		DRO <10		
30 ft				
35 ft				
40 ft				



Depth (feet)	chloride field tests	LAB	PID	Description		Lithology		Well Construction
45 ft								
50 ft								
55 ft								
60 ft								
65 ft								
70 ft								
75 ft								



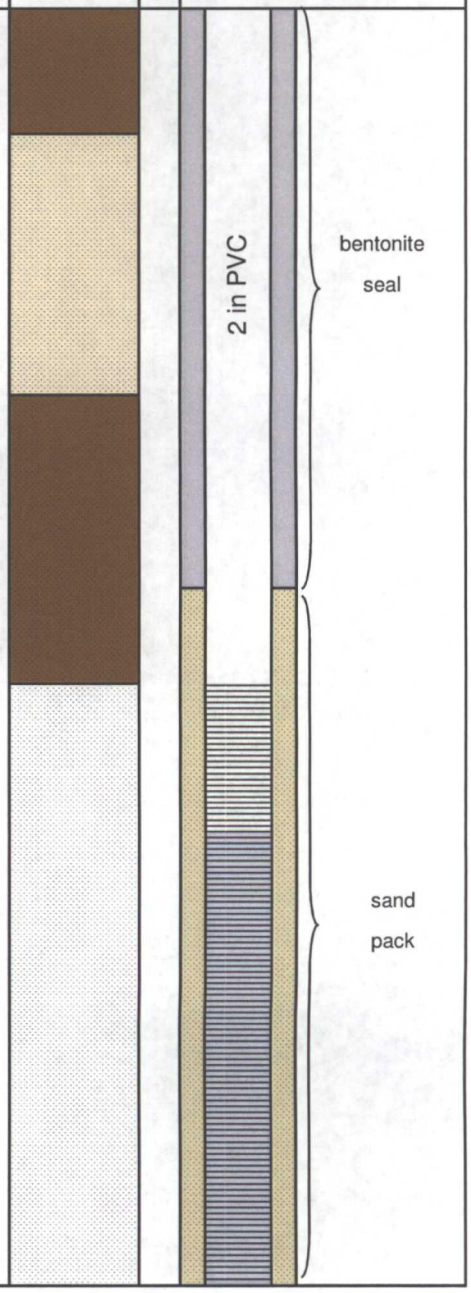
Logger:	Jordan Woodfin		**Project Name:** EME jct. B-7 **Well ID:** MW-2
Driller:	Harrison & Cooper, Inc.		**Project Consultant:** RECS
Drilling Method:	Air rotary		**Location:** UL/B sec. 7 T20S R37E
Start Date:	10/22/2010		**Lat:** 32°35'30.457"N **County**: LEA
End Date:	10/22/2010		**Long:** 103°17'24.974"W **State**: NM

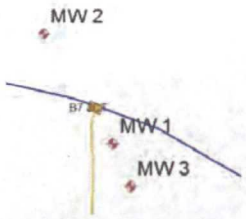
Comments: Located 96 ft north west of the former junction box site.

DRAFTED BY: L. Weinheimer

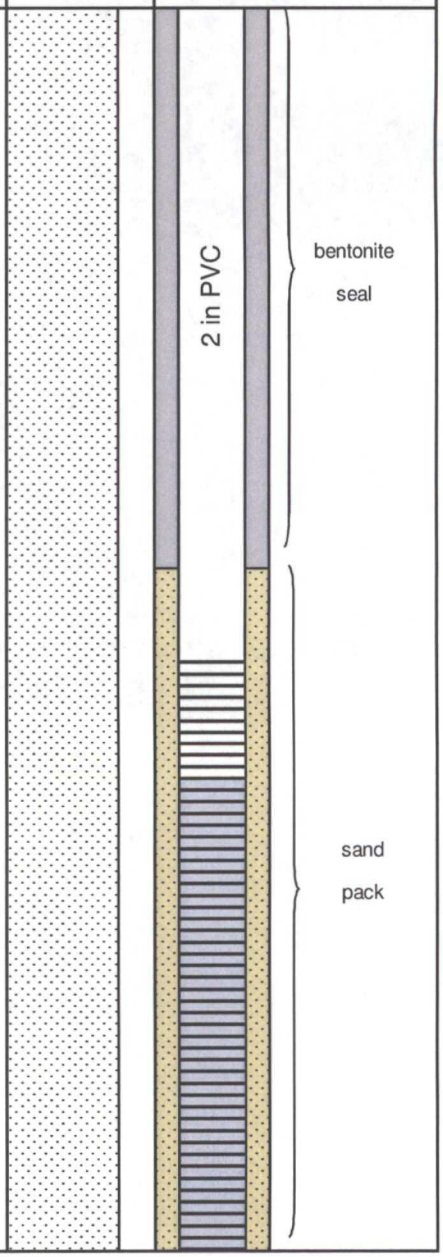
TD = 45 ft GW = 29 ft

Depth (feet)	chloride field tests	LAB	PID	Description
				Brown fine sand with small caliche fragments
5 ft	271		0.3	
				Tan very fine sandy loam
10 ft	299		0.8	
				Tan very fine sandy loam
15 ft	717	Cl- 672	1.2	
		GRO <10		Brown fine sand with caliche fragments
		DRO <10		
20 ft	480		1.0	
25 ft	438	Cl- 816	1.2	
		GRO <10		NO SAMPLES TAKEN
		DRO <10		
30 ft				
35 ft				
40 ft				
45 ft				



Logger:	Jordan Woodfin		RICE ENVIRONMENTAL RECS CONSULTING & SAFETY, LLC
Driller:	Harrison & Cooper, Inc.		**Project Name:** EME jct. B-7 **Well ID:** MW-3
Drilling Method:	Air rotary		**Project Consultant:** RECS
Start Date:	10/22/2010		
End Date:	10/22/2010		
Comments: Located 89 ft south east of the former junction box site.			**Location:** UL/B sec. 7 T20S R37E
DRAFTED BY: L. Weinheimer			**Lat:** 32°35'28.857"N **County**: LEA
TD = 45 ft	GW = 29 ft		**Long:** 103°17'23.956"W **State**: NM

Depth (feet)	chloride field tests	LAB	PID	Description
				NO SAMPLES TAKEN
5 ft				
10 ft				
15 ft				
20 ft				
25 ft				
30 ft				
35 ft				
40 ft				
45 ft				



CARDINAL Laboratories

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

October 27, 2010

Hack Conder

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: EME JCT B-7

Enclosed are the results of analyses for samples received by the laboratory on 10/25/10 8:19.

Cardinal Laboratories is accredited through Texas NELAP for:

Method SW-846 8021	Benzene, Toluene, Ethyl Benzene, and Total Xylenes
Method SW-846 8260	Benzene, Toluene, Ethyl Benzene, and Total Xylenes
Method TX 1005	Total Petroleum Hydorcarbons

Certificate number T104704398-08-TX. Accreditation applies to solid and chemical materials and non-potable water matrices.

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 (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:	10/25/2010	Sampling Date:	10/22/2010
Reported:	10/27/2010	Sampling Type:	Soil
Project Name:	EME JCT B-7	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	EME JCT B-7		

Sample ID: MW - 1 @ 15' (H021139-01)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**800**	16.0	10/25/2010	ND	416	104	400	3.92	

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	10/26/2010	ND	170	85.2	200	12.2	
DRO >C10-C28	**11.0**	10.0	10/26/2010	ND	194	96.8	200	12.2	

Surrogate: 1-Chlorooctane	*95.5 %*	*70-130*
Surrogate: 1-Chlorooctadecane	*99.7 %*	*70-130*

Sample ID: MW - 1 @ 25' (H021139-02)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**544**	16.0	10/25/2010	ND	416	104	400	3.92	

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	10/26/2010	ND	170	85.2	200	12.2	
DRO >C10-C28	<10.0	10.0	10/26/2010	ND	194	96.8	200	12.2	

Surrogate: 1-Chlorooctane	*90.9 %*	*70-130*
Surrogate: 1-Chlorooctadecane	*95.0 %*	*70-130*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

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

Received:	10/25/2010	Sampling Date:	10/22/2010
Reported:	10/27/2010	Sampling Type:	Soil
Project Name:	EME JCT B-7	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	EME JCT B-7		

Sample ID: MW - 2 @ 15' (H021139-03)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**672**	16.0	10/25/2010	ND	416	104	400	3.92	

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	10/26/2010	ND	170	85.2	200	12.2	
DRO >C10-C28	<10.0	10.0	10/26/2010	ND	194	96.8	200	12.2	

Surrogate: 1-Chlorooctane	*99.8 %*	*70-130*
Surrogate: 1-Chlorooctadecane	*102 %*	*70-130*

Sample ID: MW - 2 @ 25' (H021139-04)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**816**	16.0	10/25/2010	ND	416	104	400	3.92	

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	10/26/2010	ND	170	85.2	200	12.2	
DRO >C10-C28	<10.0	10.0	10/26/2010	ND	194	96.8	200	12.2	

Surrogate: 1-Chlorooctane	*93.5 %*	*70-130*
Surrogate: 1-Chlorooctadecane	*99.7 %*	*70-130*

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
(505) 393-2326 FAX (505) 393-2476

Company Name:	ROC	BILL TO	
Project Manager:	Hack Conder	P.O. #:	
Address:		Company:	
City:	State: Zip:	Attn:	
Phone #:	Fax #:	Address:	
Project #:	Project Owner:	City:	
Project Name:	EME jet B-7	State: Zip:	
Project Location:	EME jet B-7	Phone #:	
Sampler Name:	Jordan Woodfin	Fax #:	

FOR LAB USE ONLY				MATRIX						PRESERV			SAMPLING		ANALYSIS REQUEST											
Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	ACID/BASE:	ICE / COOL	OTHER :	DATE	TIME	GRO - DRO - ORO - MRO	TPH 8015M										
H21139-1	MW-1 @ 15'	G	1			✓					✓		10-22-10	9:12	✓	✓										
2	MW-1 @ 25'	G	1			✓					✓		"	9:15	✓	✓										
3	MW-2 @ 15'	G	1			✓					✓		"	10:06	✓	✓										
4	MW-2 @ 25'	G	1			✓					✓		"	10:13	✓	✓										

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: 10-25-10	Received By:	Phone Result:	☐ Yes	☐ No Add'l Phone #:
Jordan Woodfin	Time: 5:20		Fax Result:	☐ Yes	☐ No Add'l Fax #:
Relinquished By:	Date: 10/25/10	Received By:	REMARKS:		
	Time: 5:19	Jodi Henson			
Delivered By: (Circle One)	Sample Condition: Cool: ☑ Yes ☐ No; Intact: ☑ Yes ☐ No	CHECKED BY: (Initials)			
Sampler - UPS - Bus - Other:					

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

#26

Appendix C

Monitor well sampling labs

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

June 04, 2011

Hack Conder

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: EME JUNCTION B-7

Enclosed are the results of analyses for samples received by the laboratory on 05/31/11 11:47.

Cardinal Laboratories is accredited through Texas NELAP for:

Method SW-846 8021	Benzene, Toluene, Ethyl Benzene, and Total Xylenes
Method SW-846 8260	Benzene, Toluene, Ethyl Benzene, and Total Xylenes
Method TX 1005	Total Petroleum Hydorcarbons

Certificate number T104704398-08-TX. Accreditation applies to solid and chemical materials and non-potable water matrices.

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 (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:	05/31/2011	Sampling Date:	05/26/2011
Reported:	06/04/2011	Sampling Type:	Water
Project Name:	EME JUNCTION B-7	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Celey D. Keene
Project Location:	T20S-R37E-SEC7 B-LEA CTY., NM		

Sample ID: MONITOR WELL #1 (H101108-01)

BTEX 8021B mg/L Analyzed By: CMS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	05/31/2011	ND	0.053	107	0.0500	0.563	
Toluene*	<0.001	0.001	05/31/2011	ND	0.052	104	0.0500	0.686	
Ethylbenzene*	<0.001	0.001	05/31/2011	ND	0.053	106	0.0500	0.987	
Total Xylenes*	<0.003	0.003	05/31/2011	ND	0.157	105	0.150	1.05	

Surrogate: 4-Bromofluorobenzene (PIL *95.7 %* *80-120*

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**4050**	4.00	06/03/2011	ND	104	104	100	0.00	

Sulfate 375.4 mg/L Analyzed By: HM

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate	**245**	10.0	06/03/2011	ND	44.3	111	40.0	1.99	

TDS 160.1 mg/L Analyzed By: HM

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS	**7450**	5.00	05/31/2011	ND				1.16	

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

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

Received:	05/31/2011	Sampling Date:	05/26/2011
Reported:	06/04/2011	Sampling Type:	Water
Project Name:	EME JUNCTION B-7	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Celey D. Keene
Project Location:	T20S-R37E-SEC7 B-LEA CTY., NM		

Sample ID: MONITOR WELL #2 (H101108-02)

BTEX 8021B mg/L Analyzed By: CMS

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	05/31/2011	ND	0.053	107	0.0500	0.563	
Toluene*	<0.001	0.001	05/31/2011	ND	0.052	104	0.0500	0.686	
Ethylbenzene*	<0.001	0.001	05/31/2011	ND	0.053	106	0.0500	0.987	
Total Xylenes*	<0.003	0.003	05/31/2011	ND	0.157	105	0.150	1.05	

Surrogate: 4-Bromofluorobenzene (PIL *94.2 %* *80-120*

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**3850**	4.00	06/03/2011	ND	104	104	100	0.00	

Sulfate 375.4 mg/L Analyzed By: HM

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate	**253**	10.0	06/03/2011	ND	44.3	111	40.0	1.99	

TDS 160.1 mg/L Analyzed By: HM

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS	**7430**	5.00	05/31/2011	ND				1.16	

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

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

Received:	05/31/2011	Sampling Date:	05/26/2011
Reported:	06/04/2011	Sampling Type:	Water
Project Name:	EME JUNCTION B-7	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Celey D. Keene
Project Location:	T20S-R37E-SEC7 B-LEA CTY., NM		

Sample ID: MONITOR WELL #3 (H101108-03)

BTEX 8021B mg/L **Analyzed By: CMS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	05/31/2011	ND	0.053	107	0.0500	0.563	
Toluene*	<0.001	0.001	05/31/2011	ND	0.052	104	0.0500	0.686	
Ethylbenzene*	<0.001	0.001	05/31/2011	ND	0.053	106	0.0500	0.987	
Total Xylenes*	<0.003	0.003	05/31/2011	ND	0.157	105	0.150	1.05	

Surrogate: 4-Bromofluorobenzene (PIL *91.8 %* *80-120*

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**2700**	4.00	06/03/2011	ND	104	104	100	0.00	

Sulfate 375.4 mg/L **Analyzed By: HM**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate	**393**	10.0	06/03/2011	ND	44.3	111	40.0	1.99	

TDS 160.1 mg/L **Analyzed By: HM**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS	**5800**	5.00	05/31/2011	ND				1.16	

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: EME Junction B-7
Project Location: T20S-R37E-Sec 7 B ~ Lea County New Mexico	Sampler Signature: Rozanne Johnson (575)631-9310 rozanne@valornet.com

LAB # (LAB USE ONLY) H101108-	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 (2011)	TIME
A→C 01	Monitor Well #1	G	3	X				2				1		5-26	10:50
02	Monitor Well #2	G	3	X				2				1		5-26	7:25
03	Monitor Well #3	G	3	X				2				1		5-26	8:20

ANALYSIS REQUEST
(Circle or Specify Method No.)

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
	X																	X	X	X	
	X																	X	X	X	
	X																	X	X	X	

Relinquished by: Rozanne Johnson	Date: 05-31-2011	Time: 11:45	Received by: [signature] Date: 05-31-2011 Time: 11:47
Relinquished by:	Date:	Time:	Received By: (Laboratory Staff) Date: Time:

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

REMARKS:

Email Results to: hconder@riceswd.com, lweinheimer@rice-ecs.com, kjones@riceswd.com, rozanne@valornet.com

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

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

CHECKED BY: (Initials) CDK

#26

Appendix D

Chloride Exposure Assessment

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

MULTIMED V1.01 DATE OF CALCULATIONS: 12-AUG-2011 TIME: 15:14:14

U. S. ENVIRONMENTAL PROTECTION AGENCY

EXPOSURE ASSESSMENT

MULTIMEDIA MODEL

MULTIMED (Version 1.50, 2005)

1
Run options
--- -------

Chemical simulated is Chloride

Option Chosen Saturated and unsaturated zone models
Run was DETERMIN
Infiltration Specified By User: 3.300E-02 m/yr
Run was transient
Well Times: Entered Explicitly
Reject runs if Y coordinate outside plume
Reject runs if Z coordinate outside plume
Gaussian source used in saturated zone model
1
1
UNSATURATED ZONE FLOW MODEL PARAMETERS
(input parameter description and value)

NP	- Total number of nodal points	240
NMAT	- Number of different porous materials	1
KPROP	- Van Genuchten or Brooks and Corey	1
IMSHGN	- Spatial discretization option	1
NVFLAYR	- Number of layers in flow model	1

OPTIONS CHOSEN
------- ------
Van Genuchten functional coefficients
User defined coordinate system
1

Layer information

LAYER NO.	LAYER THICKNESS	MATERIAL PROPERTY
1	9.14	1

DATA FOR MATERIAL 1
---- --- --------
VADOSE ZONE MATERIAL VARIABLES

VARIABLE NAME	UNITS	DISTRIBUTION	PARAMETERS MEAN	STD DEV	LIMITS MIN	MAX
Saturated hydraulic conductivity	cm/hr	CONSTANT	3.60	-999.	-999.	-999.
Unsaturated zone porosity	--	CONSTANT	0.250	-999.	-999.	-999.
Air entry pressure head	m	CONSTANT	0.700	-999.	-999.	-999.
Depth of the unsaturated zone	m	CONSTANT	9.14	0.000	0.000	0.000

DATA FOR MATERIAL 1

VADOSE ZONE FUNCTION VARIABLES

VARIABLE NAME	UNITS	DISTRIBUTION	PARAMETERS MEAN	STD DEV	LIMITS MIN	MAX
Residual water content	--	CONSTANT	0.116	-999.	-999.	-999.
Brook and Corey exponent,EN	--	CONSTANT	-999.	-999.	-999.	-999.
ALFA coefficient	1/cm	CONSTANT	0.500E-02	-999.	-999.	-999.
Van Genuchten exponent, ENN	--	CONSTANT	1.09	-999.	-999.	-999.

1

UNSATURATED ZONE TRANSPORT MODEL PARAMETERS

NLAY	- Number of different layers used		1
NTSTPS	- Number of time values concentration calc		40
DUMMY	- Not presently used		1
ISOL	- Type of scheme used in unsaturated zone		2
N	- Stehfest terms or number of increments		18
NTEL	- Points in Lagrangian interpolation		3
NGPTS	- Number of Gauss points		104
NIT	- Convolution integral segments		2
IBOUND	- Type of boundary condition		2
ITSGEN	- Time values generated or input		1
TMAX	- Max simulation time	--	0.0
WTFUN	- Weighting factor	--	1.2

OPTIONS CHOSEN

Convolution integral approach
Nondecaying pulse source
Computer generated times for computing concentrations

1

DATA FOR LAYER 1

VADOSE TRANSPORT VARIABLES

VARIABLE NAME	UNITS	DISTRIBUTION	PARAMETERS MEAN	STD DEV	LIMITS MIN	MAX
Thickness of layer	m	CONSTANT	9.14	-999.	-999.	-999.
Longitudinal dispersivity of layer	m	DERIVED	-999.	-999.	-999.	-999.
Percent organic matter	--	CONSTANT	0.000	-999.	-999.	-999.
Bulk density of soil for layer	g/cc	CONSTANT	1.83	-999.	-999.	-999.

Biological decay coefficient	1/yr	CONSTANT	0.000	-999.	-999.	-999.

1

CHEMICAL SPECIFIC VARIABLES

VARIABLE NAME	UNITS	DISTRIBUTION	PARAMETERS MEAN	PARAMETERS STD DEV	LIMITS MIN	LIMITS MAX
Solid phase decay coefficient	1/yr	CONSTANT	0.000	-999.	-999.	-999.
Dissolved phase decay coefficient	1/yr	CONSTANT	0.000	-999.	-999.	-999.
Overall chemical decay coefficient	1/yr	CONSTANT	0.000	-999.	-999.	-999.
Acid catalyzed hydrolysis rate	l/M-yr	CONSTANT	0.000	-999.	-999.	-999.
Neutral hydrolysis rate constant	1/yr	CONSTANT	0.000	-999.	-999.	-999.
Base catalyzed hydrolysis rate	l/M-yr	CONSTANT	0.000	-999.	-999.	-999.
Reference temperature	C	CONSTANT	25.0	-999.	-999.	-999.
Normalized distribution coefficient	ml/g	CONSTANT	0.000	-999.	-999.	-999.
Distribution coefficient	--	DERIVED	-999.	-999.	-999.	-999.
Biodegradation coefficient (sat. zone)	1/yr	CONSTANT	0.000	-999.	-999.	-999.
Air diffusion coefficient	cm2/s	CONSTANT	-999.	-999.	-999.	-999.
Reference temperature for air diffusion	C	CONSTANT	-999.	-999.	-999.	-999.
Molecular weight	g/M	CONSTANT	-999.	-999.	-999.	-999.
Mole fraction of solute	--	CONSTANT	-999.	-999.	-999.	-999.
Vapor pressure of solute	mm Hg	CONSTANT	-999.	-999.	-999.	-999.
Henry's law constant	atm-m^3/M	CONSTANT	-999.	-999.	-999.	-999.
Overall 1st order decay sat. zone	1/yr	DERIVED	0.000	0.000	0.000	1.00
Not currently used		CONSTANT	0.000	0.000	0.000	0.000
Not currently used		CONSTANT	0.000	0.000	0.000	0.000

1

SOURCE SPECIFIC VARIABLES

VARIABLE NAME	UNITS	DISTRIBUTION	PARAMETERS MEAN	PARAMETERS STD DEV	LIMITS MIN	LIMITS MAX
Infiltration rate	m/yr	CONSTANT	0.330E-01	-999.	-999.	-999.
Area of waste disposal unit	m^2	DERIVED	0.139E+04	-999.	-999.	-999.
Duration of pulse	yr	CONSTANT	50.0	-999.	-999.	-999.
Spread of contaminant source	m	DERIVED	-999.	-999.	-999.	-999.
Recharge rate	m/yr	CONSTANT	0.000	-999.	-999.	-999.
Source decay constant	1/yr	CONSTANT	0.000	0.000	0.000	0.000
Initial concentration at landfill	mg/l	CONSTANT	265.	-999.	-999.	-999.
Length scale of facility	m	CONSTANT	22.3	-999.	-999.	-999.
Width scale of facility	m	CONSTANT	29.9	-999.	-999.	-999.
Near field dilution		DERIVED	1.00	0.000	0.000	1.00

1

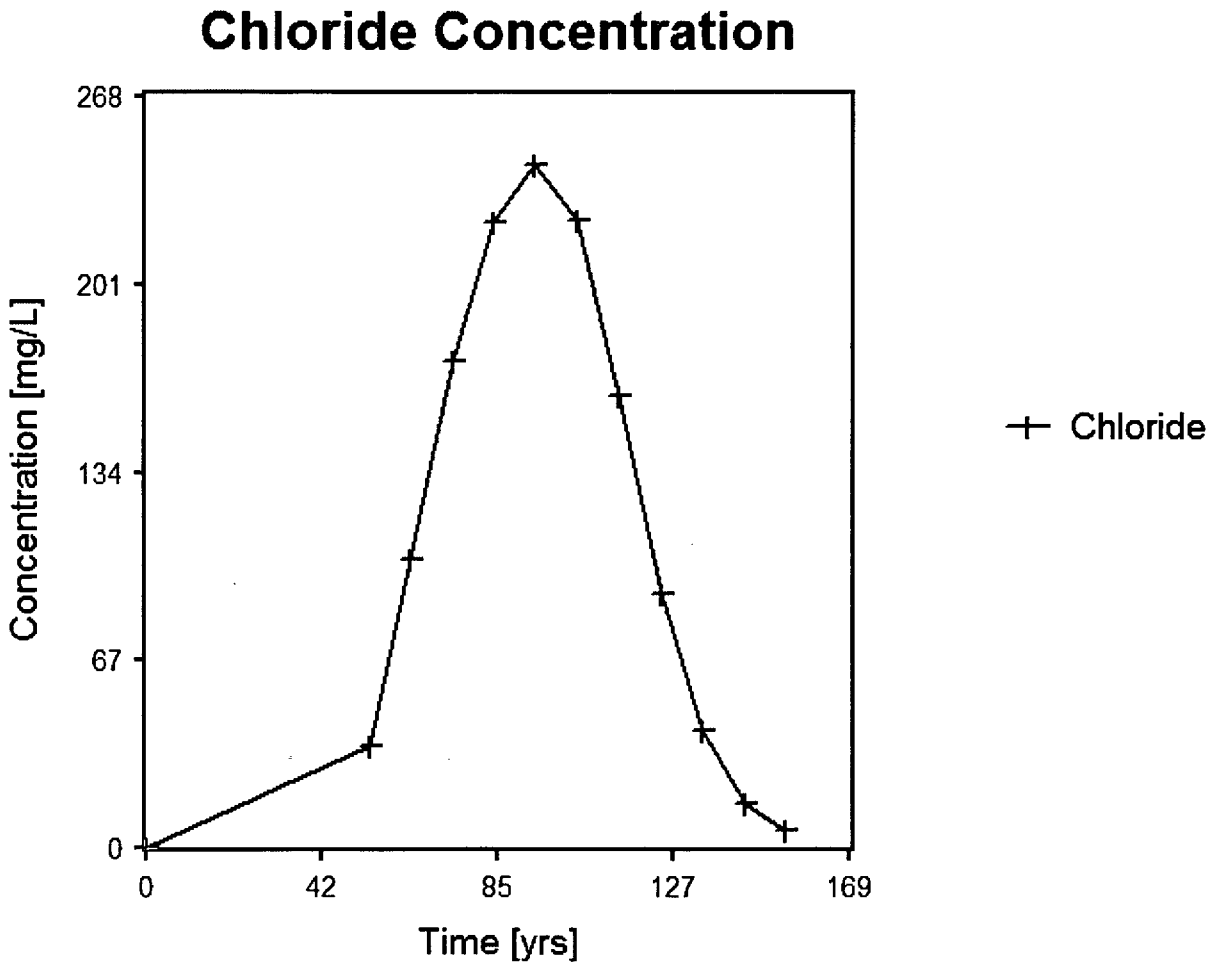
AQUIFER SPECIFIC VARIABLES

VARIABLE NAME	UNITS	DISTRIBUTION	PARAMETERS MEAN	PARAMETERS STD DEV	LIMITS MIN	LIMITS MAX
Particle diameter	cm	CONSTANT	-999.	-999.	-999.	-999.
Aquifer porosity	--	CONSTANT	0.300	-999.	-999.	-999.
Bulk density	g/cc	CONSTANT	1.70	-999.	-999.	-999.
Aquifer thickness	m	CONSTANT	19.8	-999.	-999.	-999.
Source thickness (mixing zone depth)	m	DERIVED	3.00	-999.	-999.	-999.
Conductivity (hydraulic)	m/yr	CONSTANT	30.0	-999.	-999.	-999.
Gradient (hydraulic)		CONSTANT	0.300E-02	-999.	-999.	-999.

Groundwater seepage velocity	m/yr	DERIVED	-999.	-999.	-999.	-999.
Retardation coefficient	--	DERIVED	-999.	-999.	-999.	-999.
Longitudinal dispersivity	m	FUNCTION OF X	-999.	-999.	-999.	-999.
Transverse dispersivity	m	FUNCTION OF X	-999.	-999.	-999.	-999.
Vertical dispersivity	m	FUNCTION OF X	-999.	-999.	-999.	-999.
Temperature of aquifer	C	CONSTANT	20.0	-999.	-999.	-999.
pH	--	CONSTANT	7.00	-999.	-999.	-999.
Organic carbon content (fraction)		CONSTANT	0.000	-999.	-999.	-999.
Well distance from site	m	CONSTANT	1.00	-999.	-999.	-999.
Angle off center	degree	CONSTANT	0.000	-999.	-999.	-999.
Well vertical distance	m	CONSTANT	0.000	-999.	-999.	-999.

1

TIME	CONCENTRATION
0.000E+00	0.00000E+00
0.540E+02	0.36632E+02
0.640E+02	0.10268E+03
0.740E+02	0.17343E+03
0.840E+02	0.22290E+03
0.940E+02	0.24392E+03
0.104E+03	0.22400E+03
0.114E+03	0.16126E+03
0.124E+03	0.90885E+02
0.134E+03	0.41533E+02
0.144E+03	0.15448E+02
0.154E+03	0.58641E+01


Chloride Concentration
268
201
134
67
0
Concentration [mg/L]
0
42
85
127
169
Time [yrs]
Chloride

Appendix E

EME A-20 RW-1 lab result

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

July 19, 2011

Hack Conder

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: EME A-20

Enclosed are the results of analyses for samples received by the laboratory on 07/15/11 16:40.

Cardinal Laboratories is accredited through Texas NELAP for:

Method SW-846 8021	Benzene, Toluene, Ethyl Benzene, and Total Xylenes
Method SW-846 8260	Benzene, Toluene, Ethyl Benzene, and Total Xylenes
Method TX 1005	Total Petroleum Hydorcarbons

Certificate number T104704398-08-TX. Accreditation applies to solid and chemical materials and non-potable water matrices.

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 (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:	07/15/2011	Sampling Date:	07/15/2011
Reported:	07/19/2011	Sampling Type:	Water
Project Name:	EME A-20	Sampling Condition:	** (See Notes)
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	EME A-20		

Sample ID: WATER FROM RW-1 (H101475-01)

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

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**4000**	4.00	07/18/2011	ND	112	112	100	3.64	

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: EME A-20	State: Zip:
Project Location: EME A-20	Phone #:
Sampler Name: Jordan Woodfin	Fax #:

FOR LAB USE ONLY				MATRIX						PRESERV.			SAMPLING		ANALYSIS REQUEST										
Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	ACID/BASE:	ICE / COOL	OTHER :	DATE	TIME	Chlorides	TPH 8015 M	BTEX	Texas TPH	Complete Cations/Anions	TPH 8015 M Extended Thru C40						
H1D1475 -1	Water from RW-1		1	✓									7/15/11	1130	✓										

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

Relinquished By: Jordan Woodfin	Date: 7/15/11 Time: 4:40	Received By: Jodi Henson	Phone Result: ☐ Yes ☑ No Add'l Phone #:
Relinquished By:	Date: Time:	Received By:	Fax Result: ☐ Yes ☑ No Add'l Fax #:
Delivered By: (Circle One) Sampler - UPS - Bus - Other:	Sample Condition Cool: ☐ Yes ☑ No Intact: ☑ Yes ☐ No	CHECKED BY: (Initials)	REMARKS: email results

Hconder@riceswd.com; jwoodfin@rice-ecs.com; Lweinheimer@rice-ecs.com kjones@riceswd.com

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

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NEED SAMPLES BACK, PLEASE