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WORKPLANS

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TRIDENT ENVIRONMENTAL

CERTIFIED MAIL
RETURN RECIEPT NO. 7099 3400 0017 1737 1872

December 17, 2009

Mr. Edward Hansen
New Mexico Energy, Minerals, & Natural Resources
Oil Conservation Division, Environmental Bureau
1220 S. St. Francis Drive
Santa Fe, New Mexico 87504

RE: **Corrective Action Plan**
EME B-8 Release Site (NMOCD Case No. 1R0480)
T20S-R37E-Section 8, Unit Letter B
Lea County, New Mexico

Mr. Hansen:

As agent for Rice Operating Company (ROC), Trident Environmental (Trident) is submitting this Corrective Action Plan for the above-referenced site in accordance with 19.15.29 NMAC and your email on October 22, 2009 (Attachment A), in which you requested a plan for chloride mass removal in groundwater based on vadose zone loading. A site location map is shown in Figure 1.

Soil Sampling Procedures and Results

On November 11, 2009, six soil borings (SB-1 through SB-6) were conducted using a Geoprobe direct push sampling rig equipped with percussion capability to delineate the chlorides in the vadose zone at the site. Four of the soil borings (SB-1 through SB-4) were spaced at representative intervals along the length of the release in areas where greatest impact had been reported during previous investigations. Two soil borings were advanced to the south (SB-5) and north (SB-6) of the release to determine background conditions. Samples were collected at two-foot intervals and field titrated to analyze for chloride content. Duplicate samples from the intervals with the highest field chloride result and the bottom of the each boring were submitted to Cardinal Laboratories for comparison with field values.

The lithology, depths sampled, and chloride testing results are described on soil boring logs which are included in Attachment B. A map showing the results of the recent vadose zone investigation is depicted in Figure 2. Photo documentation of the soil boring activities is included in Attachment C. Laboratory analytical reports and chain of custody documentation is provided in Attachment D.

USGS Monument South (NM)
Topographic Quadrangle (1975)

TRIDENT ENVIRONMENTAL

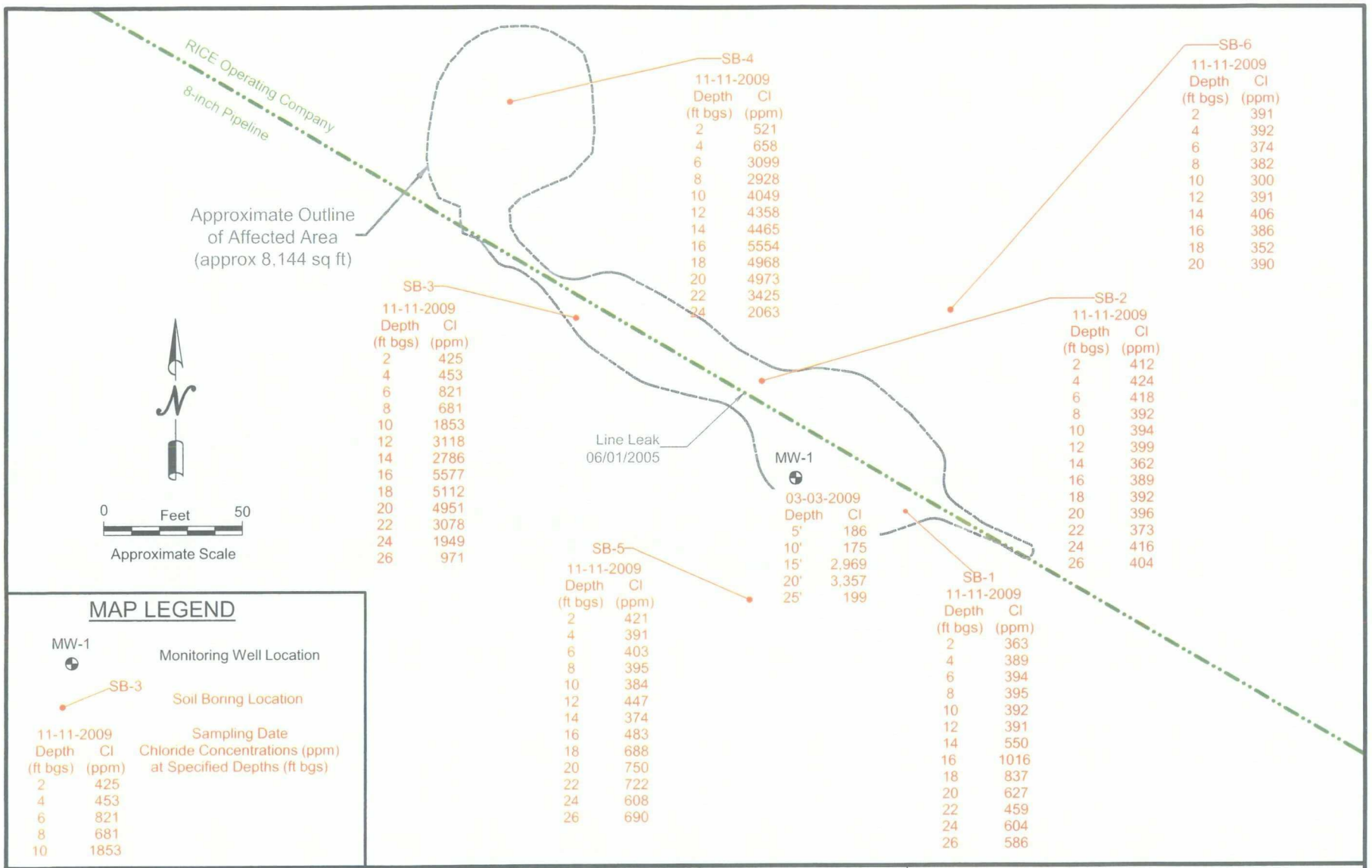
EME B-8 Release Site

T20S - R37E - Section 8 - Unit B

RICE *Operating Company*

FIGURE 1

TOPOGRAPHIC MAP



MAP LEGEND

MW-1 — Monitoring Well Location

SB-3 — Soil Boring Location

11-11-2009 — Sampling Date

Depth (ft bgs) / Cl (ppm) — Chloride Concentrations (ppm) at Specified Depths (ft bgs)

Depth (ft bgs)	Cl (ppm)
2	425
4	453
6	821
8	681
10	1853

TRIDENT ENVIRONMENTAL

EME B-8 Release Site (1R0480)

T20S - R37E - Section 8, Unit B

RICE Operating Company

FIGURE 2

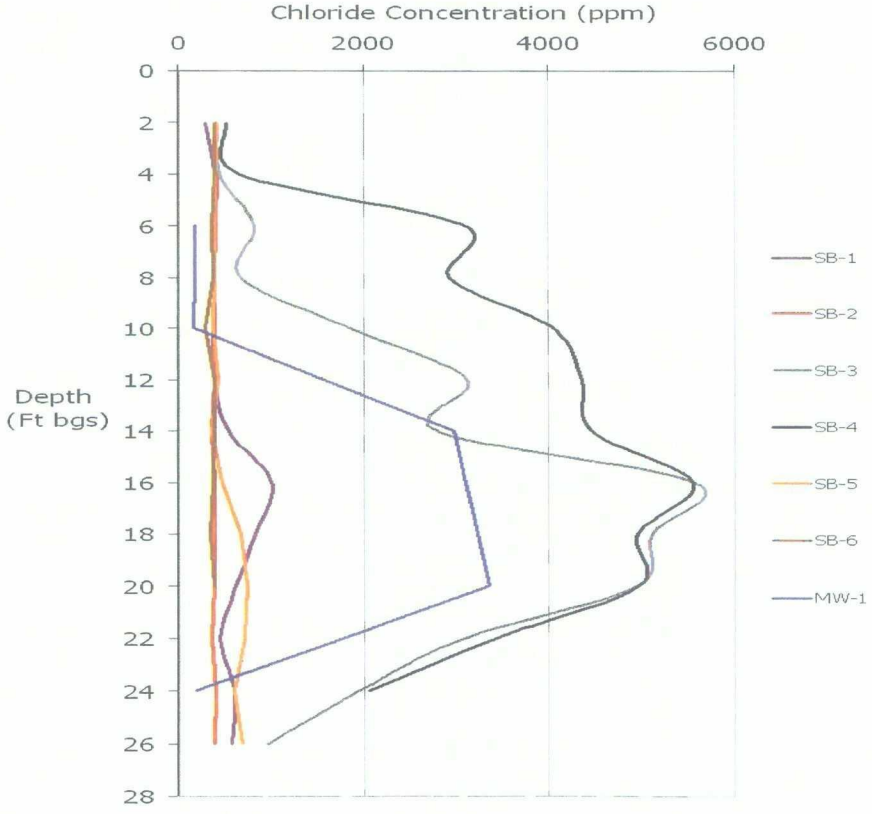
Vadose Zone
Field Chloride Results

The following table and profile summarizes the chloride concentrations from the recent soil borings conducted at the site.

Table 1: Summary of Chloride Concentrations in Vadose Zone

Depth (ft bgs)	Chloride Concentrations (ppm)						
	SB-1	SB-2	SB-3	SB-4	SB-5	SB-6	MW-1
2	363	412	425	521	421	391	---
4	389	424	453	658	391	392	---
6	394	418	821	3099	403	374	186
8	395	392	681	2928	395	382	---
10	392	394	1853	4049	384	300	175
12	391	399	3118	4358	447	391	---
14	550	362	2786	4465	374	406	2969
16	1016	389	5577	5554	483	386	---
18	837	392	5112	4968	688	352	---
20	627	396	4951	4973	750	390	3357
22	459	373	3078	3425	722	---	---
24	604	416	1949	2063	608	---	199
26	586	404	971	---	690	---	---

Profile of Chloride Concentrations with Depth



Groundwater Conditions

Depth to groundwater at the site is approximately 29 feet below ground surface (bgs). Table 2 below summarizes the historical groundwater monitoring results (MW-1) at the site.

Table 2: Summary of Groundwater Monitoring Results (MW-1)

Sample Date	Depth to Groundwater (feet BTOC)	Chloride (mg/L)	TDS (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethyl-benzene (mg/L)	Xylene (mg/L)
03/31/09	30.03	512	1,440	< 0.001	< 0.001	< 0.001	<0.003
05/18/09	30.21	900	2,120	< 0.001	< 0.001	< 0.001	<0.003
08/20/09	30.81	960	2,380	< 0.001	< 0.001	< 0.001	<0.003
11/05/09	31.02	890	2,030	< 0.001	< 0.001	< 0.001	<0.003

After four quarters of groundwater sampling and laboratory analysis, it has been confirmed that chloride and total dissolved solids (TDS) exceed the Water Quality Control Commission (WQCC) standards at the site. There has been no indication of hydrocarbon impact in groundwater or the vadose zone; therefore, with concurrence from OCD, sampling and analysis for BTEX will be suspended.

Chloride Load in Vadose Zone

The chloride concentrations measured at the six soil borings conducted on November 11, 2009, along with the soil data obtained for monitoring well MW-1 on March 3, 2009, were used to calculate the chloride loads in the vadose zone to address potential contribution of chlorides from the release. First, the size of the impacted area is conservatively assumed to be 8,144 ft^2 as measured and reported during the initial response to the release. A mass load spreadsheet was used to calculate the total chloride and the background chloride loads per unit area based on equally-weighting the chloride data in Table 1. The near source soil boring chloride values (SB-1, SB-2, SB-3, SB-4, and MW-1) were input for conservatively calculating the total chloride mass. The mass load spreadsheet was also used to compensate for the background chloride load as measured in soil borings SB-5 and SB-6, which are located outside of the release area. Based on these calculations, the resulting chloride mass contributed by the release is 10,725 kg as summarized in the following tables.

Table 3: Estimate of Chloride Mass in Vadose Zone

Soil Sample Identification	Proportional Area Weights	Chloride Load Calculated at Each Soil Boring	Boring Chloride Load times Proportion Of Area
SB-1	0.1429	7.06 kg/m^2	1.01 kg/m^2
SB-2	0.1429	11.32 kg/m^2	1.62 kg/m^2
SB-3	0.1429	30.22 kg/m^2	4.32 kg/m^2
SB-4	0.1429	39.55 kg/m^2	5.65 kg/m^2
SB-5	0.1429	-3.51 kg/m^2	-0.50 kg/m^2
SB-6	0.1429	-1.67 kg/m^2	-0.24 kg/m^2
MW-1	0.1429	16.27 kg/m^2	2.32 kg/m^2
		Total	14.18 kg/m^2
		Averaged Chloride Load Contributed by Release =	1.317 kg/ft^2

Values for soil borings SB-1, SB-2, SB-3, SB-4, and MW-1 represent the total chloride load in vadose zone.
Values for soil borings SB-5 and SB-6 represent background (pre-release) chloride load.

Parameter Type	Value	Parameter Validation (description of equations used)
Release area	8,144 ft^2	As reported during first response to release.
Averaged chloride load	1.317 kg/ft^2	Calculated as summarized in table above.
Total chloride mass	**10,725 kg**	Simple multiplication of two parameters listed above

ROC proposes to use the groundwater recovery system at a nearby site (EME Jct. K-6) which utilizes a solar-powered submersible pump, to extract the chloride mass attributable to the EME B-8 site. Water from the recovery well at the EME Jct. K-6 site is stored on site and will be utilized for pipeline maintenance operations.

At its present location and configuration, the system at the EME Jct. K-6 site is capable of extracting approximately 21 kg per day. At that rate it would take approximately 511 days and the equivalent of 6,746 barrels (bbls) to remove 10,725 kg of chloride mass.

Concurrent with groundwater recovery at the EME Jct. K-6 site, ROC will continue quarterly groundwater monitoring at the EME B-8 site. Since there has been no indication of hydrocarbon impact in groundwater or the vadose zone, ROC requests suspension of sampling and analysis for BTEX constituents. Sampling and analysis for chlorides and TDS would be continued.

Closure and Proposed Schedule of Activities

ROC will continue quarterly groundwater sampling at monitoring well MW-1 and vegetation will be monitored for growth and amendments added if necessary.

At the completion of corrective actions as described herein, a final report will be submitted to the NMOCD with a request for termination of the regulatory file associated with this site.

ROC is the service provider (agent) for the EME Salt Water Disposal System and has no ownership of any portion of the pipelines, wells, or facilities. The EME System is owned by a consortium of oil producers, System Parties, who provide all operating capital on a percentage ownership/usage basis. Environmental remediation projects of this magnitude require System Parties AFE approval and work begins as funds are received.

Please feel free to call me at 432-638-8740 or Hack Conder at 575-393-9174, if you have any questions.

Sincerely,

Gilbert J. Van Deventer, REM, PG
Trident Environmental - Project Manager

cc: Hack Conder (Rice Operating Co., Hobbs NM))
Larry Hill (NMOCD District 1, Hobbs NM)

enclosures: OCD correspondence, lithologic logs and well construction diagram, photo documentation, laboratory analytical reports

Attachment A

NMOCD Correspondence

Gil Van Deventer

From: "Hansen, Edward J., EMNRD" <edwardj.hansen@state.nm.us>
To: "Haskell Conder" <hconder@riceswd.com>
Cc: "Leking, Geoffrey R, EMNRD" <GeoffreyR.Leking@state.nm.us>; "Katie Jones" <kjones@riceswd.com>; "Hill, Larry, EMNRD" <larry.hill@state.nm.us>; "Gil Van Deventer" <gilbertvandeventer@suddenlink.net>
Sent: Thursday, October 22, 2009 9:07 AM
Subject: RE: EME B-8 Release Site (1R0480) - Investigation and Characterization Report - Further Delineation Required

RE: "Investigation and Characterization Report"
for the Rice Operating Company's
EME B-8 Release Site
Unit Letter B, Section 8, T20S, R37E, NMPM, Lea County, New Mexico
Remediation Plan (1R480) Further Delineation Required

Dear Mr. Conder:

The New Mexico Oil Conservation Division (OCD) has received the Investigation and Characterization Report for the EME B-8 Release Site, dated October 19, 2009, and has conducted a review of the report. The report indicates that the Rice Operating Company (ROC) has not completed the delineation requirements in accordance with 19.15.29 NMAC (formerly, Rule 116). Therefore, the OCD cannot accept a request for closure for above-referenced site at this time. Due to the chloride concentrations in the vadose zone and its proximity to groundwater at this site, the OCD is requiring the following:

ROC must submit a plan to the OCD for approval within 60 days for chloride mass removal in groundwater based on vadose zone loading.

If you have any questions regarding this matter, please contact me at 505-476-3489.

dward J. Hansen
Hydrologist
Environmental Bureau

From: Gil Van Deventer [mailto:gilbertvandeventer@suddenlink.net]
Sent: Monday, October 19, 2009 9:46 AM
To: Hansen, Edward J., EMNRD
Cc: Leking, Geoffrey R, EMNRD; Katie Jones; Haskell Conder; Hill, Larry, EMNRD
Subject: EME B-8 Release Site (1R0480) - Investigation and Characterization Report

Attention: Edward Hansen, New Mexico Oil Conservation Division - Environmental Bureau

Subject: Investigation and Characterization Report

Site Name: EME B-8 Release Site

NMOCD Case No.: 1R0480

Site Agent: RICE Operating Company

Site Location: T20S-R37E-Section 8, Unit Letter B, Lea County, New Mexico

Greetings Edward:

Attached is the *Investigation and Characterization Report* for the EME B-8 Release Site (1R0480). One complete hard copy and one copy on compact disk will be sent to you via USPS Certified Mail (# 7099 3400 0017 1737 1865) today. Upon receipt from Trident, ROC will also deliver a hard copy to the NMOCD District 1 office in Hobbs. Please feel free to contact me at 432-638-40, or Hack Conder at ROC (575-393-9174).

Thank you,

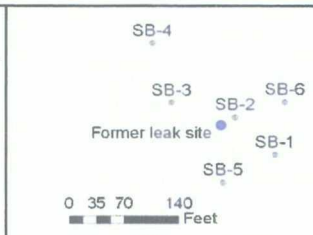
Gil

Gilbert J. Van Deventer, PG, REM
Trident Environmental
P. O. Box 7624, Midland TX 79708
Work/Mobile: 432-638-8740
Fax: 413-403-9968
Home: 432-682-0727

Attachment B

Lithologic Logs
And
Monitoring Well Construction Diagram

Logger:	Gil Van Deventer
Driller:	Harrison & Cooper, Inc. Drilling
Consultant:	Trident Environmental
Drilling Method:	Geo-probe
Start Date:	11/11/2009
End Date:	11/11/2009



Project Name: EME B-8 leak **Well ID:** SB #1

Location: UL/B sec. 8 T20S R37E
Lat: 32°35'31.069"N **County:** Lea
Long: 103°16'23.226"W **State:** NM

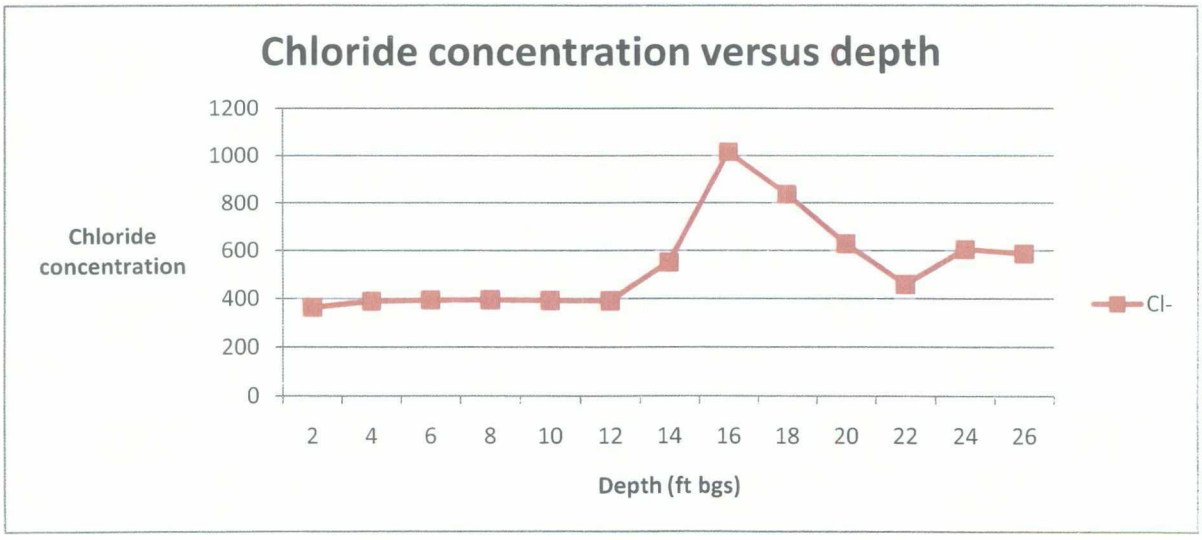
Comments: All samples from split spoon sampling; no hydrocarbon issues.

Drafted by: Lara Weinheimer

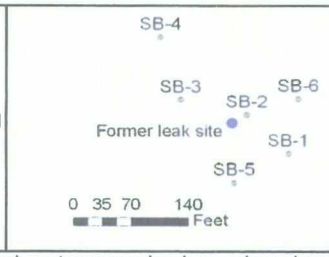
TD = 26 ft GW = 28'8"

Depth (feet)	chloride field tests	LAB	PID	Description	Lithology	Well Construction
2	363			Dune sand, fine to med. grained,well sorted, subrounded, unconsolidated, slightly moist, dark yellowish orange (10YR 6/6)	SW	
4	389			Dune sand, fine to med. grained,well sorted, subrounded, unconsolidated, slightly moist, dark yellowish orange (10YR 6/6)		
6	394			Dune sand, fine to med. grained,well sorted, subrounded, unconsolidated, slightly moist, dark yellowish orange (10YR 6/6)		
8	395			Fine sand with calcium carbonate in matrix, unconsolidated, slightly moist, very pale orange (10YR 8/2)	SM/CAL	bentonite seal
10	392			Fine sand with calcium carbonate in matrix, unconsolidated, slightly moist, very pale orange (10YR 8/2)		
12	391			Fine sand with calcium carbonate in matrix, unconsolidated, slightly moist, greenish yellow (10Y 8/3) & grayish orange (10YR 7/4)	SM/CAL	
14	550			Fine sand with calcium carbonate in matrix, unconsolidated, slightly moist, greenish yellow (10Y 8/3) & grayish orange (10YR 7/4)		

Depth (feet)	chloride field tests	LAB	PID	Description	Lithology	Well Construction
16	1016	Cl- 800		Fine sand with calcium carbonate in matrix, unconsolidated, slightly moist, grayish orange (10YR 7/4)	SM/CAL	bentonite seal
		GRO <10				
		DRO 17.2				
18	837			Fine sand with calcium carbonate in matrix, unconsolidated, slightly moist, grayish orange (10YR 7/4)		
20	627			Fine sand with calcium carbonate in matrix, unconsolidated, slightly moist, very pale orange (10YR 8/2)		
22	459			Fine sand with calcium carbonate in matrix, unconsolidated, slightly moist, very pale orange (10YR 8/2) & pale yellowish brown (10YR 6/2)	SM/CAL	
24	604			Fine sand with calcium carbonate in matrix, unconsolidated, slightly moist, very pale orange (10YR 8/2) & pale yellowish brown (10YR 6/2)		
26	586	Cl- 224		Fine sand with calcium carbonate in matrix, unconsolidated, slightly moist, very pale orange (10YR 8/2) & pale yellowish brown (10YR 6/2)		
		GRO <10				
		DRO 15.0				



Logger:	Gil Van Deventer
Driller:	Harrison & Cooper, Inc. Drilling
Consultant:	Trident Environmental
Drilling Method:	Geo-probe
Start Date:	11/11/2009
End Date:	11/11/2009



RICE OPERATING COMPANY ROC SINCE 1955

Project Name: EME B-8 leak **Well ID:** SB #2

Location: UL/B sec. 8 T20S R37E
Lat: 32°35'31.573"N **County:** Lea
Long: 103°16'23.728"W **State:** NM

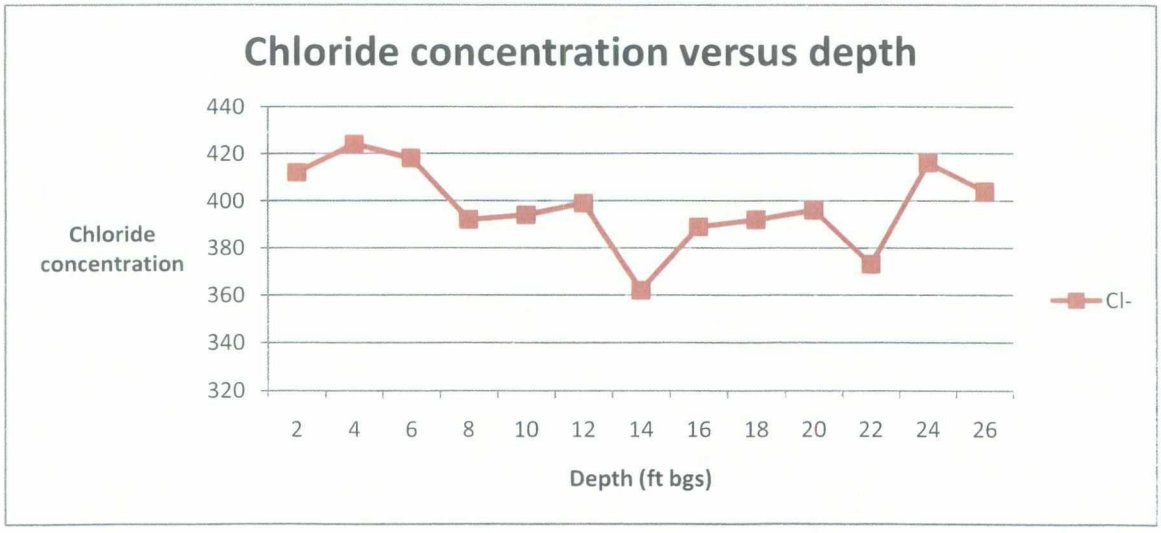
Comments: All samples from air rotary; no hydrocarbon issues.

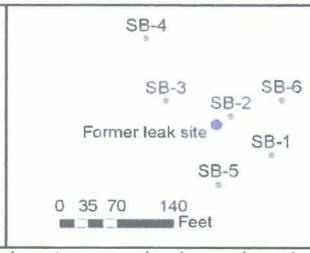
Drafted by: Lara Weinheimer

TD = 26 ft GW = 28'8"

Depth (feet)	chloride field tests	LAB	PID	Description	Lithology	Well Construction
2	412			Dune sand; fine to med. grained, well sorted, subrounded, unconsolidated, slightly moist, grayish orange (10YR 7/4)	SW	
4	424	Cl- 16		Dune sand; fine to med. grained, well sorted, subrounded, unconsolidated, slightly moist, grayish orange (10YR 7/4)		
		GRO <10				
		DRO 14.4				
6	418			Dune sand; fine to med. grained, well sorted, subrounded, unconsolidated, slightly moist, grayish orange (10YR 7/4)		
8	392			Fine sand with slight amount of calcium carbonate in matrix, unconsolidated, slightly moist, greenish yellow (10Y 8/3) & dark yellowish orange (10YR 6/6)	SW/CAL	
10	394			Fine sand with slight amount of calcium carbonate in matrix, unconsolidated, slightly moist, very pale orange (10YR 8/2) & pale greenish yellow (10Y 8/2)		
12	399			Fine sand with slight amount of calcium carbonate in matrix, unconsolidated, slightly moist, very pale orange (10YR 8/2) & grayish orange (10YR 7/4)	SW	
14	362			Fine sand, unconsolidated, slightly moist, greenish yellow (10Y 8/3) & grayish orange (10YR 7/4)		bentonite seal
					SM/CAL	

Depth (feet)	chloride field tests	LAB	PID	Description	Lithology	Well Construction
16	389			Fine sand, unconsolidated, slightly moist, greenish yellow (10Y 8/3) & grayish orange (10YR 7/4)		
18	392			Fine sand with calcium carbonate in matrix, unconsolidated, slightly moist, very pale orange (10YR 8/2)		
20	396			Fine sand with calcium carbonate in matrix, unconsolidated, slightly moist, very pale orange (10YR 8/2)	SM/CAL	
22	373			Fine sand with calcium carbonate in matrix, unconsolidated, slightly moist, very pale orange (10YR 8/2)		
24	416			Fine sand with calcium carbonate in matrix, unconsolidated, slightly moist, very pale orange (10YR 8/2)		
26	404	Cl- 32		Fine sand with calcium carbonate in matrix, unconsolidated, slightly moist, very pale orange (10YR 8/2)		
		GRO <10				
		DRO 24.1				



Logger:	Gil Van Deventer		
Driller:	Harrison & Cooper, Inc. Drilling		
Consultant:	Trident Environmental		
Drilling Method:	Geo-probe		
Start Date:	11/11/2009		
End Date:	11/11/2009		

RICE OPERATING COMPANY ROC SINCE 1955

Project Name: EME B-8 leak **Well ID:** SB #3

Location: UL/B sec. 8 T20S R37E
Lat: 32°35'31.779"N **County:** Lea
Long: 103°16'24.522"W **State:** NM

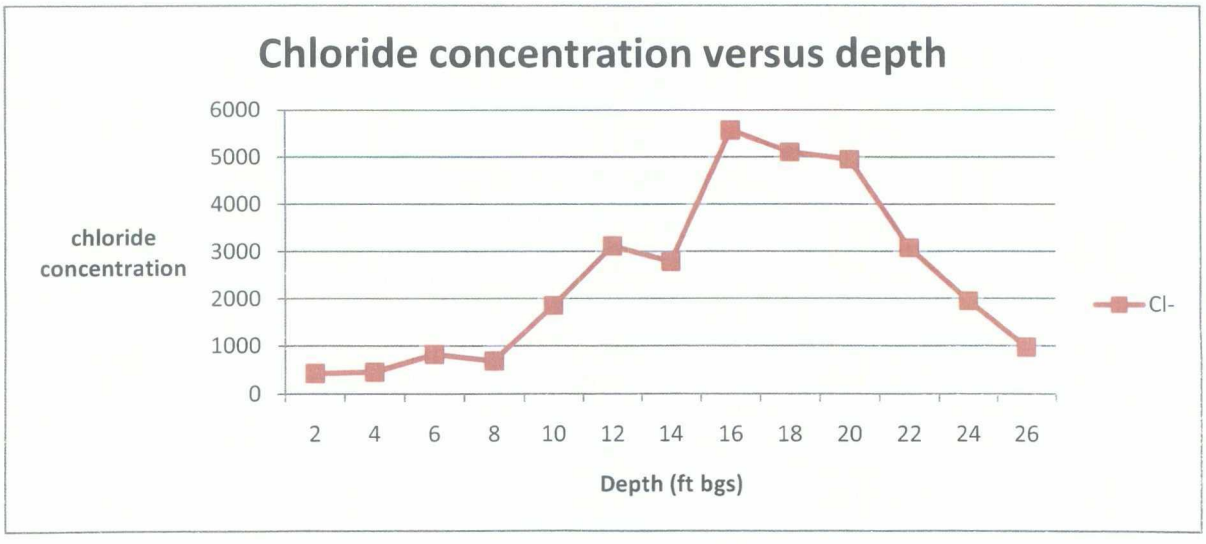
Comments: All samples from air rotary; no hydrocarbon issues.

Drafted by: Lara Weinheimer

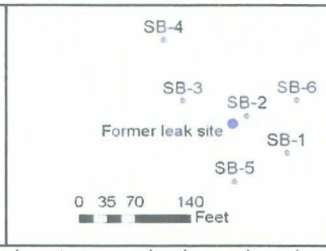
TD = 26 ft GW = 28'8"

Depth (feet)	chloride field tests	LAB	PID	Description	Lithology	Well Construction
2	425			Dune sand; fine to med. grained, well sorted, subrounded, unconsolidated, slightly moist, grayish orange (10YR 7/4)	SW	
4	453			Dune sand; fine to med. grained, well sorted, subrounded, unconsolidated, slightly moist, grayish orange (10YR 7/4)		
6	821			Dune sand; fine to med. grained, well sorted, subrounded, unconsolidated, slightly moist, grayish orange (10YR 7/4)		
8	681			Fine sand with calcium carbonate in matrix, unconsolidated, slightly moist, very pale orange (10YR 8/2)	SM/CAL	
10	1853			Fine - med sand, unconsolidated, slightly moist, dark yellowish orange (10YR 6/6)	SW	
12	3118			Fine - med sand, unconsolidated, slightly moist, grayish orange (10YR 7/4)		
14	2786			Fine - med sand, unconsolidated, slightly moist, grayish orange (10YR 7/4)		bentonite seal

Depth (feet)	chloride field tests	LAB	PID	Description	Lithology	Well Construction
16	5577	Cl- 5920		Fine - med sand, unconsolidated, slightly moist, grayish orange (10YR 7/4)		
		GRO <10				
		DRO <10				
18	5112			Fine sand with calcium carbonate in matrix, unconsolidated, slightly moist, pale greenish yellow (10Y 8/2) and very pale orange (10YR 8/2)		
20	4951			Fine sand with calcium carbonate in matrix, mostly unconsolidated with some indurated caliche, slightly moist, very pale orange (10YR 8/2)	SM/CAL	
22	3078			Fine sand with calcium carbonate in matrix, unconsolidated, slightly moist, very pale orange (10YR 8/2)		
24	1949			Fine sand with calcium carbonate in matrix, unconsolidated, slightly moist, very pale orange (10YR 8/2)		
26	971	Cl- 736		Fine sand with calcium carbonate in matrix, unconsolidated, slightly moist, very pale orange (10YR 8/2)		
		GRO <10				
		DRO 13.8				



Logger:	Gil Van Deventer
Driller:	Harrison & Cooper, Inc. Drilling
Consultant:	Trident Environmental
Drilling Method:	Geo-probe
Start Date:	11/11/2009
End Date:	11/11/2009



RICE OPERATING COMPANY ROC SINCE 1955

Project Name: EME B-8 leak **Well ID:** SB #4

Location: UL/B sec. 8 T20S R37E
Lat: 32°35'32.609"N **County:** Lea
Long: 103°16'24.764"W **State:** NM

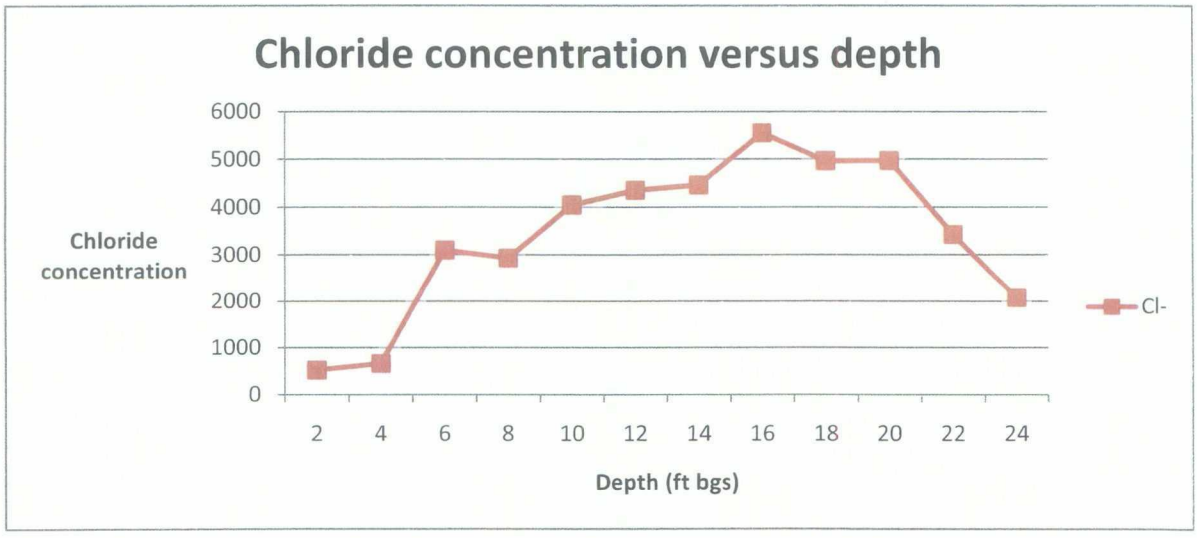
Comments: All samples from air rotary; no hydrocarbon issues.

Drafted by: Lara Weinheimer

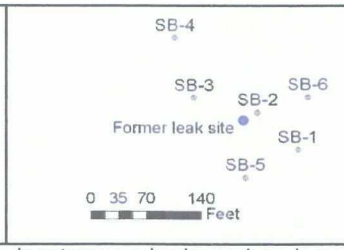
TD = 24 ft GW = 28'8"

Depth (feet)	chloride field tests	LAB	PID	Description	Lithology	Well Construction
2	521			Dune sand; fine to med. grained, well sorted, subrounded, unconsolidated, slightly moist, grayish orange (10YR 7/4)		
4	658			Dune sand; fine to med. grained, well sorted, subrounded, unconsolidated, slightly moist, grayish orange (10YR 7/4) & very pale orange (10YR 8/2)	SW	
6	3099			Fine sand, moderately well sorted, subrounded, unconsolidated, slightly moist, dark yellowish orange (10YR 6/6) & grayish orange (10YR 7/4)		
8	2928			Fine sand, moderately well sorted, subrounded, unconsolidated, slightly moist, grayish orange (10YR 7/4)		
10	4049			Fine sand, moderately well sorted, subrounded, unconsolidated, slightly moist, light brown (5YR 6/4)		
12	4358			Fine sand with slight amount of calcium carbonate in matrix, unconsolidated, slightly moist, very pale orange (10YR 8/2) & pale yellowish brown (10YR 6/2)	SW/CAL	
14	4465			Fine sand with slight amount of calcium carbonate in matrix, unconsolidated, slightly moist, very pale orange (10YR 8/2) & pale yellowish brown (10YR 6/2)		bentonite seal

Depth (feet)	chloride field tests	LAB	PID	Description	Lithology	Well Construction
16	5554	Cl- 6240		Fine sand with calcium carbonate in matrix, unconsolidated, slightly moist, very pale orange (10YR 8/2)	SM/CAL	
		GRO <10				
		DRO 26.2				
18	4968			Fine sand with calcium carbonate in matrix, unconsolidated, slightly moist, very pale orange (10YR 8/2)		
20	4973			Fine sand with calcium carbonate in matrix, unconsolidated, slightly moist, very pale orange (10YR 8/2)		
22	3425			Fine sand with calcium carbonate in matrix, unconsolidated, slightly moist, very pale orange (10YR 8/2)		
24	2063	Cl- 2640		Fine sand with calcium carbonate in matrix, unconsolidated, slightly moist, very pale orange (10YR 8/2)		
		GRO <10				
		DRO <10				



Logger:	Gil Van Deventer
Driller:	Harrison & Cooper, Inc. Drilling
Consultant:	Trident Environmental
Drilling Method:	Geo-probe
Start Date:	11/11/2009
End Date:	11/11/2009



RICE OPERATING COMPANY ROC SINCE 1955

Project Name: EME B-8 leak **Well ID:** SB #5

Location: UL/B sec. 8 T20S R37E
Lat: 32°35'30.684"N **County:** Lea
Long: 103°16'23.883"W **State:** NM

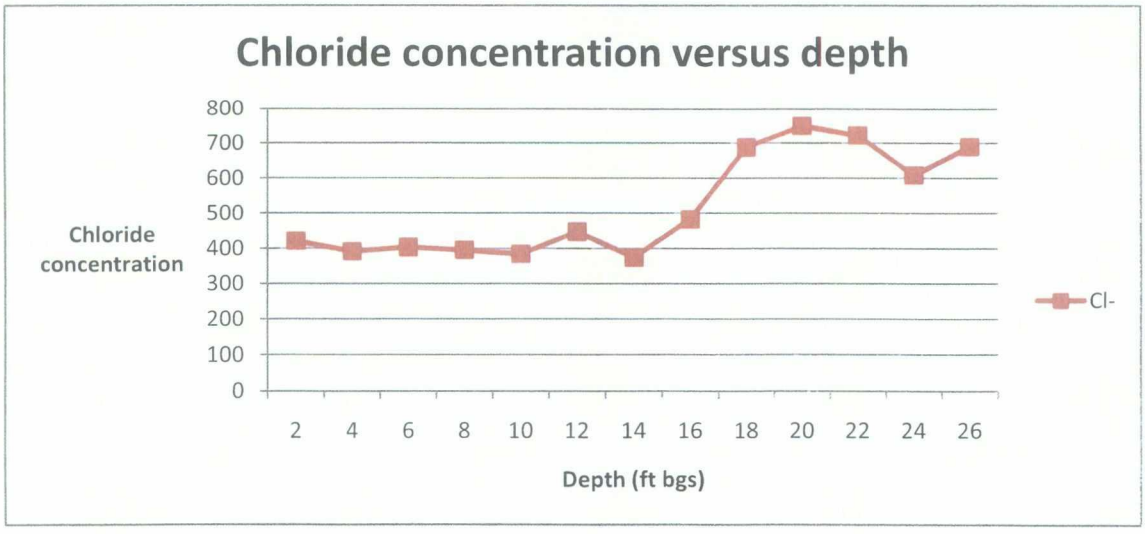
Comments: All samples from air rotary; no hydrocarbon issues.

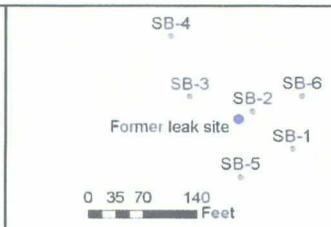
Drafted by: Lara Weinheimer

TD = 26 ft GW = 28'8"

Depth (feet)	chloride field tests	LAB	PID	Description	Lithology	Well Construction
2	421			Dune sand; fine to med. grained, well sorted, subrounded, unconsolidated, dry, grayish orange pink (5YR 7/2)	SW	
4	391			Dune sand; fine to med. grained, well sorted, subrounded, unconsolidated, dry, very pale orange (10YR 8/2)		
6	403			Fine sand with slight amount of calcium carbonate in matrix, unconsolidated, dry, greenish yellow (10Y 8/3)	SM/CAL	
8	395			Fine sand with slight amount of calcium carbonate in matrix, unconsolidated, dry, very pale orange (10YR 8/2)		
10	384			Fine sand with slight amount of calcium carbonate in matrix, unconsolidated, dry, pale yellowish brown (10YR 6/2)		
12	447			Fine sand with slight amount of calcium carbonate in matrix, unconsolidated, dry, very pale orange (10YR 8/2) and pale yellowish brown (10YR 6/2)		
14	374			Fine - med. sand, moderately well sorted, subrounded, unconsolidated, dry, grayish orange (10YR 7/4) and very pale orange (10YR 8/2)	SW	bentonite seal

Depth (feet)	chloride field tests	LAB	PID	Description	Lithology	Well Construction
16	483			Fine - med. sand, moderately well sorted, subrounded, unconsolidated, dry, light brown (5YR 6/4)		
18	688			Fine sand, moderately well sorted, subrounded, unconsolidated, dry, light brown (5YR 6/4) & pale yellowish brown (10YR 6/2)		
20	750	Cl- 448		Fine sand with calcium carbonate in matrix, unconsolidated, dry, very pale orange (10YR 8/2)		
		GRO <10				
		DRO 16.6			SM/CAL	
22	722			Fine sand with calcium carbonate in matrix, unconsolidated, dry, very pale orange (10YR 8/2)		
24	608			Fine sand with calcium carbonate in matrix, unconsolidated, dry, very pale orange (10YR 8/2)		
26	690	Cl- 464		Fine sand with calcium carbonate in matrix, unconsolidated, dry, very pale orange (10YR 8/2)		
		GRO <10				
		DRO 12.0				



Logger:	Gil Van Deventer		**Project Name:** EME B-8 leak
Driller:	Harrison & Cooper, Inc. Drilling		**Well ID:** SB #6
Consultant:	Trident Environmental		**Location:** UL/B sec. 8 T20S R37E
Drilling Method:	Geo-probe		**Lat:** 32°35'31.789"N **County:** Lea
Start Date:	11/11/2009		**Long:** 103°16'23.105"W **State:** NM
End Date:	11/11/2009		

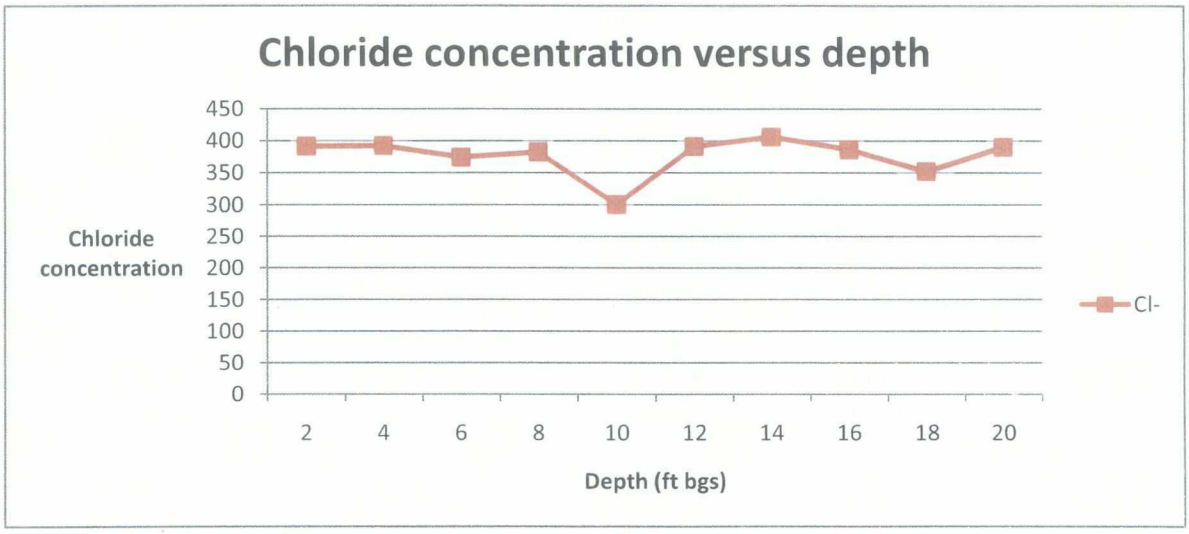
Comments: All samples from air rotary; no hydrocarbon issues. Lost pipe down hole; soil bore abandoned.

Drafted by: Lara Weinheimer

TD = 20 ft GW = 28'8"

Depth (feet)	chloride field tests	LAB	PID	Description	Lithology	Well Construction
2	391			Dune sand; fine to med. grained, well sorted, subrounded, unconsolidated, dry, light brown (5YR 6/4)	SW	
4	392			Dune sand; fine to med. grained, well sorted, subrounded, unconsolidated, dry, very pale orange (10YR 8/2) & pale yellowish brown (10YR 6/2)		
6	374			Dune sand; fine to med. grained, well sorted, subrounded, unconsolidated, dry, very pale orange (10YR 8/2) & pale yellowish brown (10YR 6/2)		
8	382			Fine sand with slight amount of calcium carbonate in matrix, unconsolidated, dry, very pale orange(10YR 8/2)	SW	
10	300			Fine sand with slight amount of calcium carbonate in matrix, unconsolidated, dry, very pale orange(10YR 8/2)		
12	391			Fine sand, moderately well sorted, subrounded, unconsolidated, dry to slightly moist, very pale orange (10YR 8/2) & pale yellowish brown (10YR 6/2)	SM/CAL	bentonite seal
14	406	Cl- <16		Fine sand, moderately well sorted, subrounded, unconsolidated, dry to slightly moist, very pale orange (10YR 8/2) & pale yellowish brown (10YR 6/2)		
		GRO <10			SW	
		DRO 16.2				

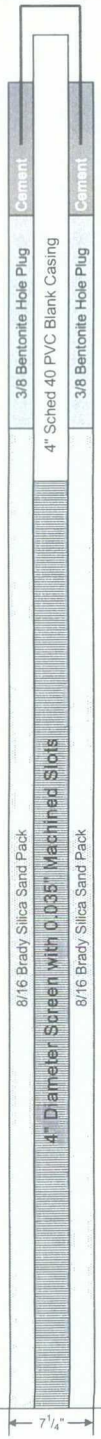
Depth (feet)	chloride field tests	LAB	PID	Description	Lithology	Well Construction
16	386			Fine sand, moderately well sorted, subrounded, unconsolidated, dry to slightly moist, grayish orange (10YR 7/4)	SW	
18	352			Fine sand, moderately well sorted, subrounded, unconsolidated, dry to slightly moist, pale yellowish brown (10YR 6/2) & grayish orange (10YR 7/4)		
20	390	Cl- <16		Fine sand, moderately well sorted, subrounded, unconsolidated, dry to slightly moist, light brown (5YR 6/4)	SM/CAL	
		GRO <10				
		DRO 12.4				



LITHOLOGIC LOG AND MONITORING WELL CONSTRUCTION DIAGRAM

MONITOR WELL NO.: MW - 1
SITE ID: EME B-8 Line Leak
CONTRACTOR: Harrison & Cooper, Inc.
DRILLING METHOD: Air Rotary
START DATE: 03/03/09
COMPLETION DATE: 03/03/09
COMMENTS: Montoring well located approximately 35 ft southeast of leak point.
Photo at left taken near leak point facing southeast .

TOTAL DEPTH: 65 Feet
CLIENT: RICE *Operating Company*
COUNTY: Lea
STATE: New Mexico
LOCATION: T20S-R37E-Sec 8-Unit B
FIELD REP.: G. Van Deventer

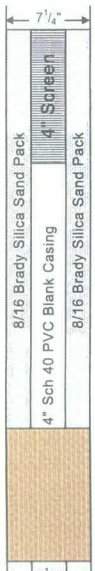


Sample Depth	Sample Time	Sample Type	Chloride (ppm)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION: LITHOLOGY, COLOR, GRAIN SIZE, SORTING, ROUNDING, CONSOLIDATION, DISTINGUISHING FEATURES
		Surface			SW	Light brown (5 YR 6/4) sand, medium-grained, rounded/subrounded, well-sorted, dry
5						Moderate yellowish brown (10YR 5/4) sand, fine to medium-grained, rounded/subrounded, well-sorted, dry
	0920	Split Spoon	186	0.4		
10	0925	Split Spoon	175	0.3		Pale yellowish brown (10YR 6/2) sand, fine-grained, rounded/subrounded, well-sorted, dry
15	0928	Split Spoon	2969	0.3	SM/CAL	Very pale orange (10YR 8/2) sand with calcium carbonate ($CaCO_3$) in matrix (20-50%). Sand is very fine-grained, dry.
20	0931	Split Spoon	3357	0.3		Very pale orange (10YR 8/2) sand with calcium carbonate (CaCO3) in matrix (20-50%). Sand is very fine-grained, dry.
25	0935	Split Spoon	199	0.3	SM	Very pale orange (10YR 8/2) and light brown (5YR 6/4) sand, fine-grained, moderately sorted, subarounded, moist.
▼						Groundwater encountered at ~26 ft bgs
30	0937					Very pale orange (10YR 8/2) and light brown (5YR 6/4) sand, fine-grained, moderately sorted, subrounded/subangular, moist.
35	0939				SW	Light brown (5 YR 6/4) sand, fine- to medium-grained, subrounded, well-sorted, damp.
40	0941					Light brown (5 YR 6/4) sand, fine- to medium-grained, subrounded, well-sorted, damp.
45	09453				SC	Light brown (5 YR 6/4) clayey sand, mostly sand which is fine-grained, wet.
50	0947					Light brown (5 YR 6/4) clayey sand, mostly sand which is fine-grained, wet.

LITHOLOGIC LOG AND MONITORING WELL CONSTRUCTION DIAGRAM

MONITOR WELL NO.: MW - 1
SITE ID: EME B-8 Line Leak
CONTRACTOR: Harrison & Cooper, Inc.
DRILLING METHOD: Air Rotary
START DATE: 03/03/09
COMPLETION DATE: 03/03/09
COMMENTS: Montoring well located approximately 35 ft southeast of leak point. Leak point marked by wood stake near rear wheel of pickup in photo at left.

TOTAL DEPTH: 65 Feet
CLIENT: RICE *Operating Company*
COUNTY: Lea
STATE: New Mexico
LOCATION: T20S-R37E-Sec 8-Unit B
FIELD REP.: G. Van Deventer



Sample Depth	Sample Time	Sample Type	Chloride (ppm)	PID (ppm)	USCS	LITHOLOGIC DESCRIPTION: LITHOLOGY, COLOR, GRAIN SIZE, SORTING, ROUNDING, CONSOLIDATION, DISTINGUISHING FEATURES
55	0949				SW	Light brown (5 YR 6/4) sand,fine-grained, subrounded, well-sorted, wet.
60	0951					Light brown (5 YR 6/4) sand,fine-grained, subrounded, well-sorted, wet.
65	0955				SS	Sandstone (fine-grained) and chert (microcrystalline quartz), very pale orange (10YR 8/2) and light brown (5YR 6/4)
70	1000				GP	Gravel (granule and pebble sized), loose, multi-colored.
					CL	Moderate reddish brown (10R 4/6) clay
75						Total depth of boring at 70 ft bgs but loose gravel caved to fill in bottom 5 ft of open boring. Total depth of monitoring well at 65 ft bgs.
80						
85						
90						
95						
100						

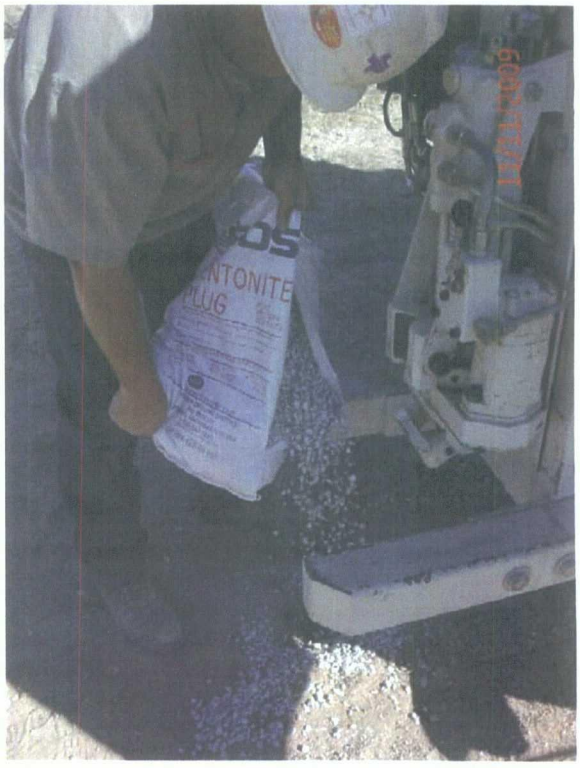
Attachment C

Photo Documentation

EME B-8 leak
Soil bore installations
UL/B sec. 8 T20S R37E

Installation of soil bores

Core samples from the soil bores



Sealing the soil bores in total with bentonite

Completed soil bores

EME B-8 Release Site (1R-0480)

Facing SE: Soil boring SB-1 (background) ~66 ft ESE from release point (wooden stake in foreground).

Facing NE: Soil boring SB-2 located ~8 feet from release point (wooden stake in foreground).

Facing ESE: Soil boring SB-3 (~60 ft WNW of release point)

Facing N: Soil boring SB-4 (~120 ft NW of release point)

Facing north: Soil boring SB-5 (~75 ft south of release point).

Facing north: Soil boring SB-6 (far background) with MW-1 (right-center) and leak point (left-center).

Attachment D

Laboratory Analytical Reports

and

Chain of Custody Documentation

CARDINAL LABORATORIES

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

ANALYTICAL RESULTS FOR
RICE OPERATING COMPANY
ATTN: HACK CONDER
122 W. TAYLOR
HOBBS, NM 88240
FAX TO: (575) 397-1471

Receiving Date: 11/13/09
Reporting Date: 11/17/09
Project Owner: NOT GIVEN
Project Name: EME B-8 LEAK
Project Location: EME B-8 LEAK

Sampling Date: 11/11/09
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: ML
Analyzed By: CK/HM

LAB NUMBER	SAMPLE ID	GRO (C_6-C_{10}) (mg/kg)	DRO (>C_{10}-C_{28}) (mg/kg)	Cl* (mg/kg)
ANALYSIS DATE		11/16/09	11/16/09	11/16/09
H18724-1	SB #1 @ 16'	<10.0	17.2	800
H18724-2	SB #1 @ 26'	<10.0	15.0	224
H18724-3	SB #2 @ 4'	<10.0	14.4	16
H18724-4	SB #2 @ 26'	<10.0	24.1	32
H18724-5	SB #3 @ 16'	<10.0	<10.0	5,920
H18724-6	SB #3 @ 26'	<10.0	13.8	736
H18724-7	SB #4 @ 16'	<10.0	26.2	6,240
H18724-8	SB #4 @ 24'	<10.0	<10.0	2,640
H18724-9	SB #5 @ 20'	<10.0	16.6	448
H18724-10	SB #5 @ 26'	<10.0	12.0	464
H18724-11	SB #6 @ 14'	<10.0	16.2	< 16
H18724-12	SB #6 @ 20'	<10.0	12.4	< 16
Quality Control		457	522	500
True Value QC		500	500	500
% Recovery		91.4	104	100
Relative Percent Difference		0.6	7.7	< 0.1

METHODS: TPH GRO & DRO: EPA SW-846 8015 M; Cl: Std. Methods 4500-Cl B
*Analyses performed on 1:4 w:v aqueous extracts. Reported on wet weight.

Chemist

Date

H18724 TCL RICE

CARDINAL LABORATORIES

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Company Name: Rice Operating Company	**BILL TO**
Project Manager: Hack Conder	**P.O. #:**
Address: 122 West Taylor	**Company:**
City: Hobbs **State:** NM **Zip:** 88240	**Attn:**
Phone #: 393-9174 **Fax #:** 397-1471	**Address:**
Project #: **Project Owner:**	**City:**
Project Name: EME B-8 leak	**State:** **Zip:**
Project Location: EME B-8 leak	**Phone #:**
Sampler Name: Lara 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
H15724-1	SB #1 @ 16'	C	1			✓					✓		11-11-09	9:39	✓	✓		
-2	SB #1 @ 26'	C	1			✓					✓		11-11-09	10:04	✓	✓		
-3	SB #2 @ 4'	C	1			✓					✓		11-11-09	10:16	✓	✓		
-4	SB #2 @ 26'	C	1			✓					✓		11-11-09	10:55	✓	✓		
-5	SB #3 @ 16'	C	1			✓					✓		11-11-09	11:20	✓	✓		
-6	SB #3 @ 26'	C	1			✓					✓		11-11-09	11:45	✓	✓		
-7	SB #4 @ 16'	C	1			✓					✓		11-11-09	2:33	✓	✓		
-8	SB #4 @ 24'	C	1			✓					✓		11-11-09	2:48	✓	✓		
-9	SB #5 @ 20'	C	1			✓					✓		11-11-09	3:08	✓	✓		
-10	SB #5 @ 26'	C	1			✓					✓		11-11-09	3:39	✓	✓		

Relinquished By: L. Weinheimer	**Date:** 11-10-09 **Time:** 8:50	**Received By:** Misty Kelly	
Relinquished By:	**Date:** **Time:**	**Received By:**	

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

Sample Condition Cool	Intact	CHECKED BY: (Initials)
☑ Yes	☑ Yes	MC/AB
☐ No	☐ No	

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

REMARKS:

email results

Hconder@riceswd.com; jpurvis@riceswd.com; Lweinheimer@riceswd.com

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

NEED SAMPLES BACK, PLEASE

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 #:	393-9174	Fax #: 397-1471	Address:
Project #:		Project Owner:	City:
Project Name:	EME B-8 Tank		State: Zip:
Project Location:	EME B-8 Tank		Phone #:
Sampler Name:	Lara 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
H18724-11	SB # 6 @ 14'	G	1			✓					✓		11-11-04	4:15	✓	✓		
-12	SB # 6 @ 20'	G	1			✓					✓		11-11-04	4:19	✓	✓		

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: 11-13-04 Time: 8:50	Received By:	
Relinquished By:	Date: Time:	Received By:	
Delivered By: (Circle One) Sampler - UPS - Bus - Other:	Sample Condition Cool: ☑ Yes ☐ No Intact: ☑ Yes ☐ No	CHECKED BY: (Initials) MCAB	

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

REMARKS:

email results

Hconder@riceswd.com; jpurvis@riceswd.com; Lweinheimer@riceswd.com

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

NEED SAMPLES BACK, PLEASE

CARDINAL LABORATORIES

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

ANALYTICAL RESULTS FOR
RICE OPERATING COMPANY
ATTN: HACK CONDER
122 W. TAYLOR
HOBBS, NM 88240
FAX TO: (575) 397-1471

Receiving Date: 11/06/09
Reporting Date: 11/11/09
Project Number: NOT GIVEN
Project Name: EME B-8 LEAK
Project Location: T20S-R37E-SEC8 B~ LEA CO., NM

Sampling Date: 11/05/09
Sample Type: WATER
Sample Condition: COOL & INTACT
Sample Received By: ML
Analyzed By: ZL

LAB NUMBE SAMPLE ID	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL BENZENE (mg/L)	TOTAL XYLENES (mg/L)
ANALYSIS DATE	11/09/09	11/09/09	11/09/09	11/09/09
H18674-1 MONITOR WELL #1	<0.001	<0.001	<0.001	<0.003
Quality Control	0.053	0.047	0.048	0.148
True Value QC	0.050	0.050	0.050	0.150
% Recovery	106	94.0	96.0	98.7
Relative Percent Difference	8.5	7.1	6.7	7.8

METHOD: EPA SW-846 8021B

TEXAS NELAP CERTIFICATION T104704398-08-TX FOR BENZENE, TOLUENE, ETHYL BENZENE, AND TOTAL XYLENES.

Chemist

Date

H18674WB RICE

CARDINAL LABORATORIES

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

ANALYTICAL RESULTS FOR
RICE OPERATING COMPANY
ATTN: HACK CONDER
122 WEST TAYLOR
HOBBS, NM 88240
FAX TO: (575) 397-1471

Receiving Date: 11/06/09
Reporting Date: 11/13/09
Project Number: NOT GIVEN
Project Name: EME B-8 LEAK
Project Location: T20S-R37E-SEC8 B ~ LEA CO., N.M.

Sampling Date: 11/05/09
Sample Type: WATER
Sample Condition: COOL & INTACT
Sample Received By: ML
Analyzed By: HM

LAB NO.	SAMPLE ID	Cl^- (mg/L)	SO_4 (mg/L)	TDS (mg/L)
Analysis Date:		11/10/09	11/11/09	11/10/09
H18674-1	MONITOR WELL #1	890	206	2,030
Quality Control		490	34.7	NR
True Value QC		500	40.0	NR
% Recovery		98.0	86.7	NR
Relative Percent Difference		2.0	6.1	3.2
METHOD: Standard Methods, EPA		4500-Cl B	375.4	160.1

Not accredited for Chloride, Sulfate and TDS.

Chemist

11/16/09
Date

H18674 RICE

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 B-8 Leak
Project Location: T20S-R37E-Sec8 B ~ Lea County - New Mexico	Sampler Signature: Rozanne Johnson (575)631-9310 rozanne@valornet.com

LAB # (LAB USE ONLY)	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 (2009)	TIME
H18674-1	Monitor Well #1	G	3	X				2				1		11-5	14:55

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	

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Rozanne Johnson	11-6-09	8:55	Cathy Watson	11-6-09	8:56
Relinquished by:	Date:	Time:	Received By: (Laboratory Staff)	Date:	Time:
Cathy Watson	11-6-09	13:30	Nicole LaBeat	11/6/09	1:31

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

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

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

CHECKED BY: (Initials) MCB

REMARKS:

Email Results to: hconder@riceswd.com, lweinheimer@riceswd.com, rozanne@valornet.com