1R - 459

WORK PLANS

DATE:

04-23-2007

1R459
Work Plan
4-23-07

Highlander Environmental Corp.

Midland, Texas

CERTIFIED MAIL
RETURN RECIEPT NO. 7004 1160 0000 4840 9790

April 23, 2007

RECEIVED
MAY - 3 2007
Environmental Bureau
Oil Conservation Division

Mr. Wayne Price
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 (CAP)**
OCD CASE # 1R0459
K-4 RELEASE, BD SWD SYSTEM
UNIT "K", SEC. 4, T22S, R37E
LEA COUNTY, NEW MEXICO

Mr. Price:

RICE Operating Company (ROC) has retained Highlander Environmental Corp. (Highlander) to address potential environmental concerns at the above-referenced site. ROC is the service provider (agent) for the BD SWD System (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 Partners, who provide all operating capital on a percentage ownership/usage basis. Environmental projects of this magnitude require System Partner AFE approval and work begins as funds are received. In general, project funding is not forthcoming until NMOCD approves the work plan. Therefore, your timely review of this submission is requested.

For all environmental projects, ROC will choose a path forward that:

- protects public health,
- provides the greatest net environmental benefit,
- complies with NMOCD Rules, and
- is supported by good science.

Each site shall have three submissions or a combination of:

1. An **Investigation and Characterization Plan** (ICP) is a proposal for data gathering and site characterization and assessment.

2. Upon evaluating the data and results from the ICP, a recommended remedy is submitted in this **Corrective Action Plan** (CAP).

3. Finally, after implementing the remedy, a **Closure Report** with final documentation will be submitted.

1.0 BACKGROUND & PREVIOUS WORK

On February 25, 2004, a leak was discovered, 34 feet east of the K-4 junction box. According to the form C-141 (Initial) filed with the NMOCD, the spill was due to the rupture of a 4-inch PVC line. An estimated 1,040 barrels of produced water was discharged, with 1,000 barrels of fluid recovered. Regional groundwater information indicates that the depth to groundwater is approximately 90 to 100 feet below ground surface (bgs).

Initial soil sampling performed in April 2004, indicated a residual subsurface chloride impact. On July 14, 2004, a hollow-stem auger unit was utilized to install one soil boring at the release source area at the site. The soil boring was advanced to a depth of 80 feet bgs. Field chloride analysis was performed on soil samples at five foot increments. Results of field chloride testing and laboratory analysis indicated that chloride impacts extend to a depth of greater than 80 feet bgs. The soil boring was backfilled with bentonite and drill cuttings.

Between October 12 and October 19, 2006, Highlander personnel were onsite to oversee the installation of three monitor wells (MW-1 through MW-3) within and up and down gradient of the release source area. The wells were drilled to a maximum depth ranging from 92 to 95 feet bgs. The wells were completed with 0.020 slotted 2 inch PVC screen placed 15 feet below and 5 feet above the water table to EPA and industry standards. The wells were completed with monument style risers.

During drilling activities, soil samples were collected every 10 feet for monitor well MW-1 and 5 feet for monitor wells MW-2 and MW-3. Samples were collected utilizing a split spoon sampler, placed into laboratory supplied containers and delivered to the laboratory under chain-of-custody control for chloride analysis by EPA method 300.0. Soil samples were field screened for chlorides with a field sampling kit. Specific samples were selected to the laboratory for analysis of chlorides. The split spoons were decontaminated between samples utilizing an Alconox© and deionized water wash followed by a deionized water rinse. Copies of laboratory analyses and chain-of-custody documentation are included in Appendix A. The monitor well locations are shown on Figure 2. The soil boring logs and monitor well completion diagrams are included in Appendix B. The results of the sampling are summarized in Table 1.

Referring to Table 1, monitor well MW-1 was shown to be impacted with chloride concentrations above 250 mg/kg throughout the soil column. Monitor well MW-2 and MW-3 had soil concentrations of less than 25 mg/kg at the vadose zone approximately 80 feet bgs.

Following installation of the monitor wells, the wells were gauged and developed by handbailing to remove fine grain sediment disturbed during drilling and to ensure collection of representative groundwater samples. Upon development of the monitor wells, personnel were

onsite November 13, 2006 to collect representative groundwater samples from each of the monitor wells for chloride and BTEX analysis by EPA Method 300.0 and 602/8021B, respectively. The gauging data is summarized in Table 2, while the results of the laboratory data is summarized in Table 3

Referring to Table 3, MW-1 was shown to have a chloride concentration 1,040 mg/L and TDS of 2,120 mg/L. The remaining two wells (MW-2 and MW-3) had chlorides of 77 and 148 mg/L and TDS of 542 and 622 mg/L, respectively.

2.0 COLLECTED REGIONAL HYDROGEOLOGIC DATA

Groundwater was encountered at approximately 83 feet bgs in the three installed monitor wells. The groundwater gradient in the area is to the southeast.

3.0 EVALUATION

When evaluating any proposed remedy or investigative work, ROC will confirm that there is a reasonable relationship between the benefits created by the proposed remedy or assessment and the economic and social costs.

4.0 PROPOSED REMEDY

Soils

In evaluating the documented levels of chlorides within the soil, it was determined that an unconsolidated clay barrier be placed within the impacted zone in order to inhibit further vertical migration of the chlorides.

Based on a visual survey of the site, the release area measures approximately 58 feet by 110 feet. The site will be excavated to a depth of 3.0 feet below surface (below root zone) and the soil stockpiled adjacent to the excavation. It is estimated that the barrier will be approximately 68 feet by 120 feet in order to provide proper coverage of the edges. The barrier area is shown on Figure 3. Once the barrier is placed, the excavation will be backfilled with soils which will support vegetation. The disturbed area will be seeded with a blend of native vegetation and monitored for growth.

Groundwater

Groundwater will be withdrawn from the monitor well (MW-1) near the source to determine if limited pumping will effectively attenuate chloride concentrations. We anticipate withdrawing as much water as the well will deliver over the course of (approximately) a few hours twice weekly for about a month. We will monitor groundwater chloride concentrations during each pumping event to determine if this effort is successful in substantially attenuating chloride levels, or if further pumping or another remedy seems warranted. All chloride-laden groundwater removed from the well will be disposed in the BD SWD system.

If a few rounds of aggressive pumping effectively diminish groundwater chlorides near the junction box, this will demonstrate that the groundwater impact has been minor and localized. If chloride levels do not substantially diminish, the information gained during this effort will be nevertheless be useful in developing subsequent corrective measures.

If you require any additional information or have any questions or comments, please call.

Highlander Environmental Corp.

Jeffrey Kindley, P.G.
Senior Environmental Geologist

cc: ROC
Edward Hansen-NMOCD
Larry Johnson-NMOCD

enclosures: site maps, data tables, lab results, figures

Figures

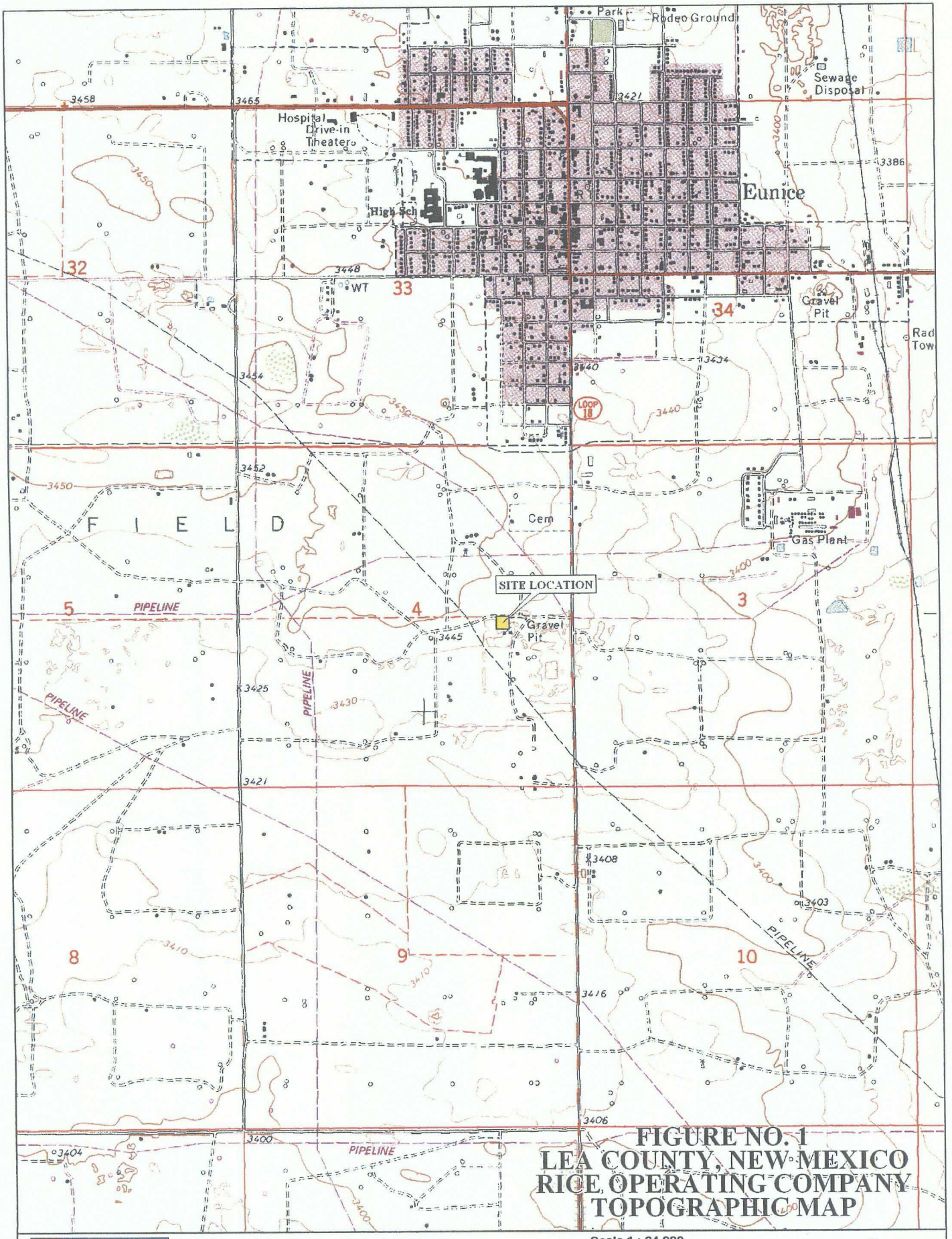


FIGURE NO. 1
LEA COUNTY, NEW MEXICO
RICE OPERATING COMPANY
TOPOGRAPHIC MAP

Scale 1 : 24,000
1" = 2000 ft

0 600 1200 1800 2400 3000 ft
0 200 400 600 800 1000 m

TN
MN
8.7°E

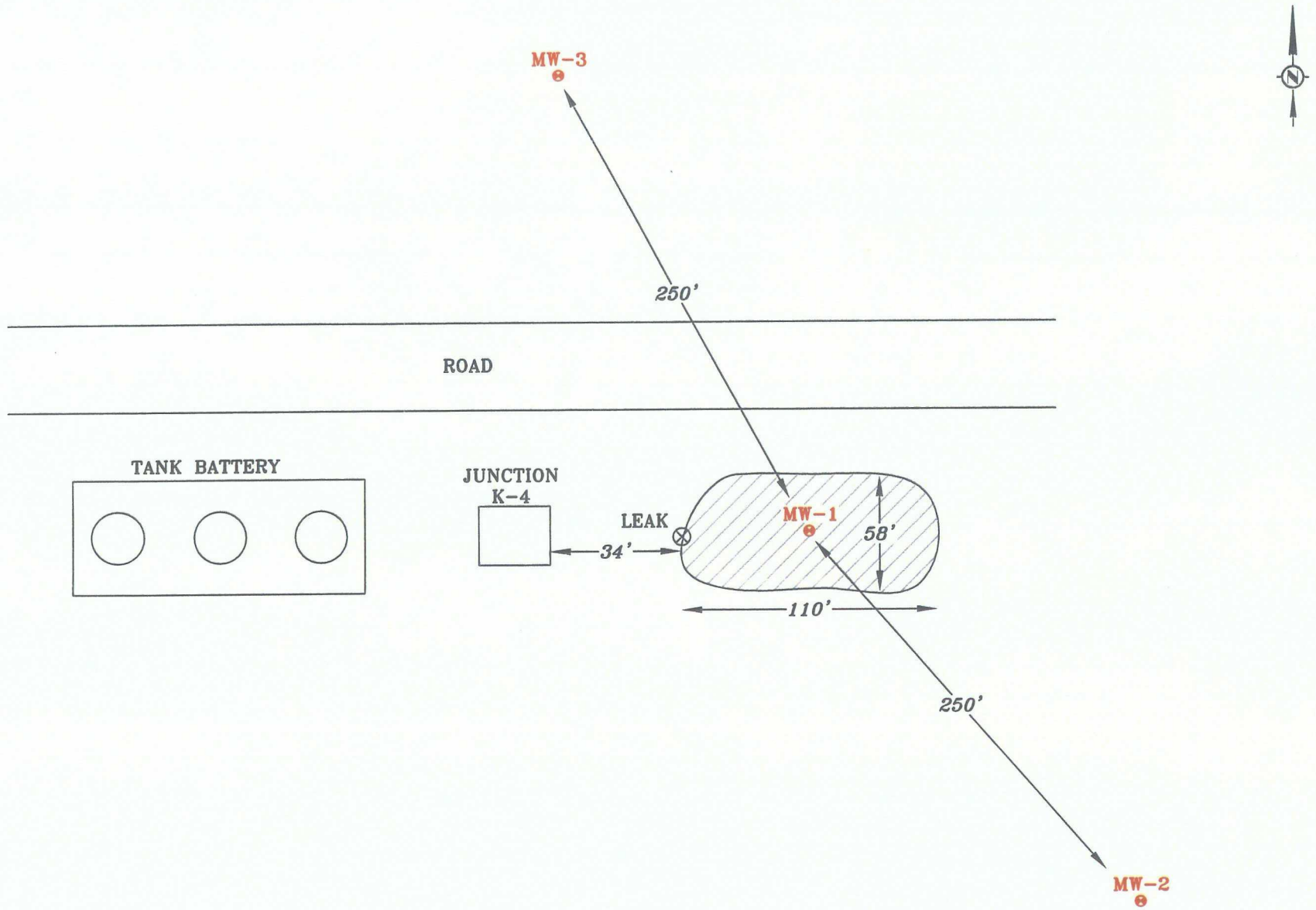
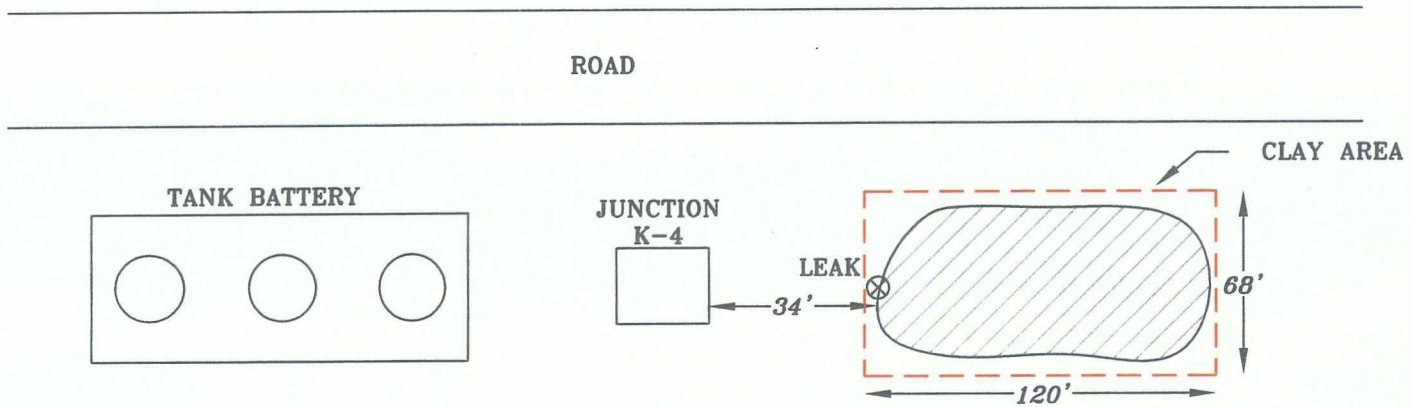


FIGURE NO. 2

LEA COUNTY, NEW MEXICO

RICE OPERATING COMPANY
BD K-4 JUNCTION
MONITOR WELL LOCATIONS

HIGHLANDER ENVIRONMENTAL CORP.
MIDLAND, TEXAS



☐ SPILL AREA

NOT TO SCALE

FIGURE NO. 3

LEA COUNTY, NEW MEXICO

RICE OPERATING COMPANY
BD K-4 JUNCTION
CAP AREA

DATE: 2/26/07
DWN. BY: JJ
FILE: C:\RICE\2306 SITE MAP

HIGHLANDER ENVIRONMENTAL CORP.
MIDLAND, TEXAS

Tables

Table 1

Rice Operating

Soil Sample Analysis

K-4

Lea County, New Mexico

Sample ID	Date Sampled	Sample Depth (ft)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	Total BTEX (mg/kg)	Chlorides Field (mg/kg)	Chlorides (mg/kg)	TPH (mg/kg)			
										C6-C12	C12-C28	C-28-C35	Total
MW-1	10/12/06	8-10'	NA	NA	NA	NA	NA	NA	**830**	NA	NA	NA	NA
MW-1	10/12/06	18-20'	NA	NA	NA	NA	NA	NA	**2,130**	NA	NA	NA	NA
MW-1	10/12/06	28-30'	NA	NA	NA	NA	NA	NA	**2,550**	NA	NA	NA	NA
MW-1	10/12/06	38-40'	NA	NA	NA	NA	NA	NA	**830**	NA	NA	NA	NA
MW-1	10/12/06	48-50'	NA	NA	NA	NA	NA	NA	**468**	NA	NA	NA	NA
MW-1	10/12/06	58-60'	NA	NA	NA	NA	NA	NA	**1,150**	NA	NA	NA	NA
MW-1	10/12/06	68-70'	NA	NA	NA	NA	NA	430	**1,060**	NA	NA	NA	NA
MW-1	10/12/06	78-80'	NA	NA	NA	NA	NA	459	**978**	NA	NA	NA	NA
MW-2	10/19/06	78-80'	NA	NA	NA	NA	NA	28	<20.0	NA	NA	NA	NA
MW-3	10/19/06	78-80'	NA	NA	NA	NA	NA	60	<20.0	NA	NA	NA	NA

Table 2
Rice Operating
Groundwater Gauging Data
K-4
Lea County, New Mexico

Monitor Well	Date Gauged	Date of Well Installation	Top of Casing Elevation (ft)	Total Depth of Well (bgs in ft)	Water Level Below TOC (ft)	Groundwater Elevation (ft)
MW-1	11/13/06	10/12/06	3,440.18	93.63	85.02	3355.16
MW-2	11/13/06	10/19/06	3,438.28	94.10	83.35	3354.93
MW-3	11/13/06	10/19/06	3,441.93	94.60	86.45	3355.48

Table 3

Rice Operating

Groundwater Sample Analysis

K-4

Lea County, New Mexico

Sample ID	Date Sampled	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Total Xylenes (mg/L)	Total BTEX (mg/L)	Chlorides (mg/L)	Sulfate (mg/L)	TDS (mg/L)
MW-1	11/13/06	<0.001	<0.001	<0.001	<0.001	<0.001	**1,040**	152	**2,120**
MW-2	11/13/06	<0.001	<0.001	<0.001	<0.001	<0.001	77	85	542
MW-3	11/13/06	<0.001	<0.001	<0.001	<0.001	<0.001	148	97.6	622

Appendix A

ENVIRONMENTAL LAB OF

12600 West I-20 East - Odessa, Texas 79765

Analytical Report

Prepared for:

Tim Reed

Highlander Environmental Corp.

1910 N. Big Spring St.

Midland, TX 79705

Project: Rice/ K-4 Leak

Project Number: 2306

Location: None Given

Lab Order Number: 6J20014

Report Date: 10/25/06

Highlander Environmental Corp.	Project: Rice/ K-4 Leak	Fax: (432) 682-3946
1910 N. Big Spring St.	Project Number: 2306	
Midland TX, 79705	Project Manager: Tim Reed	

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-2 78-80	6J20014-01	Soil	10/19/06 00:00	10-20-2006 15:10
MW-3 78-80	6J20014-02	Soil	10/19/06 00:00	10-20-2006 15:10

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

Highlander Environmental Corp.	Project: Rice/ K-4 Leak	Fax: (432) 682-3946
1910 N. Big Spring St.	Project Number: 2306	
Midland TX, 79705	Project Manager: Tim Reed	

General Chemistry Parameters by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-2 78-80 (6J20014-01) Soil									
Chloride	ND	20.0	mg/kg Wet	2	EJ62505	10/24/06	10/25/06	SW 846 9253	
MW-3 78-80 (6J20014-02) Soil									
Chloride	ND	20.0	mg/kg Wet	2	EJ62505	10/24/06	10/25/06	SW 846 9253	

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Highlander Environmental Corp.	Project: Rice/ K-4 Leak	Fax: (432) 682-3946
1910 N. Big Spring St.	Project Number: 2306	
Midland TX, 79705	Project Manager: Tim Reed	

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EJ62505 - Water Extraction										
Blank (EJ62505-BLK1)				Prepared: 10/24/06 Analyzed: 10/25/06						
Chloride	ND	20.0	mg/kg Wet							
LCS (EJ62505-BS1)				Prepared: 10/24/06 Analyzed: 10/25/06						
Chloride	92.5	5.00	mg/kg Wet	100		92.5	80-120			
Matrix Spike (EJ62505-MS1)		**Source: 6J19027-01**		Prepared: 10/24/06 Analyzed: 10/25/06						
Chloride	500	20.0	mg/kg Wet	500	0.00	100	80-120			
Matrix Spike Dup (EJ62505-MSD1)		**Source: 6J19027-01**		Prepared: 10/24/06 Analyzed: 10/25/06						
Chloride	510	20.0	mg/kg Wet	500	0.00	102	80-120	1.98	20	
Reference (EJ62505-SRM1)				Prepared: 10/24/06 Analyzed: 10/25/06						
Chloride	51.0		mg/kg	50.0		102	80-120			

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Highlander Environmental Corp.	Project: Rice/ K-4 Leak	Fax: (432) 682-3946
1910 N. Big Spring St.	Project Number: 2306	
Midland TX, 79705	Project Manager: Tim Reed	

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
LCS	Laboratory Control Spike
MS	Matrix Spike
Dup	Duplicate

Report Approved By: Raland K Tuttle Date: 10/25/2006

Raland K. Tuttle, Lab Manager
Celey D. Keene, Lab Director, Org. Tech Director
Peggy Allen, QA Officer
Jeanne Mc Murrey, Inorg. Tech Director
LaTasha Cornish, Chemist
Sandra Sanchez, Lab Tech.

Analysis Request and Chain of Custody Record

PAGE: 1 OF: 1

HIGHLANDER ENVIRONMENTAL CORP.

1910 N. Big Spring St.
Midland, Texas 79705
(432) 682-4559 Fax (432) 682-3946

CLIENT NAME: Rio Engineering
SITE MANAGER: Tim Reed
PROJECT NO.: 2306
PROJECT NAME: K-4

ANALYSIS REQUEST (Circle or Specify Method No.)

LAB I.D. NUMBER 651004	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	HCL	HNO3	ICE	NONE	BTEX 8020/602	MTBE 8020/602	TPH 418.1 8015 MOD. TX1005	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Cr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	BOD, TSS, pH, TDS, Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)
-01	10/19/06		S		✓	MW-2 (78-80)	1				✓	✓														✓			
-02	10/19/06		S		✓	MW-3 (78-80)	1				✓	✓														✓			

RELINQUISHED BY: (Signature) [signature]	Date: 10/20/06 Time: 3:10	RECEIVED BY: (Signature)	Date: Time:
RELINQUISHED BY: (Signature)	Date: Time:	RECEIVED BY: (Signature)	Date: Time:
RELINQUISHED BY: (Signature)	Date: Time:	RECEIVED BY: (Signature)	Date: Time:

RECEIVING LABORATORY: Env. Lab of Tx
ADDRESS:
CITY: Odessa STATE: TX ZIP:
CONTACT: PHONE:
RECEIVED BY: (Signature) [signature]
DATE: 10/20/06 TIME: 15:10

SAMPLED BY: (Print & Sign) [signature] Date: October 19, 2006 Time: 1600

SAMPLE SHIPPED BY: (Circle) FEDEX BUS AIRBILL #
HAND DELIVERED (circled) UPS OTHER:

HIGHLANDER CONTACT PERSON: Tim Reed

Results by:

RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED:

MATRIX: W-Water A-Air SD-Solid S-Soil (circled) SL-Sludge O-Other

REMARKS: 3.0 4oz glass w/ label

Please Fill out all copies - Laboratory retains yellow copy - Return original copy to Highlander Enviromental Corp. - Project Manager retains pink copy - Accounting receives Gold copy.

Environmental Lab of Texas

Variance/ Corrective Action Report- Sample Log-In

Client: Highlander

Date/ Time: 10/20/06 15:10

Lab ID # : 60520018

Initials: CK

Sample Receipt Checklist

					Client Initials
1	Temperature of container/ cooler?	Yes	No	3.0 °C	
2	Shipping container in good condition?	~~Yes~~	No		
3	Custody Seals intact on shipping container/ cooler?	Yes	No	~~Not Present~~	
4	Custody Seals intact on sample bottles/ container?	Yes	No	~~Not Present~~	
5	Chain of Custody present?	~~Yes~~	No		
6	Sample instructions complete of Chain of Custody?	~~Yes~~	No		
7	Chain of Custody signed when relinquished/ received?	~~Yes~~	No		
8	Chain of Custody agrees with sample label(s)?	~~Yes~~	No	ID written on Cont./ Lid	
9	Container label(s) legible and intact?	~~Yes~~	No	Not Applicable	
10	Sample matrix/ properties agree with Chain of Custody?	Yes	No		
11	Containers supplied by ELOT?	Yes	~~No~~		
12	Samples in proper container/ bottle?	~~Yes~~	No	See Below	
13	Samples properly preserved?	~~Yes~~	No	See Below	
14	Sample bottles intact?	~~Yes~~	No		
15	Preservations documented on Chain of Custody?	~~Yes~~	No		
16	Containers documented on Chain of Custody?	~~Yes~~	No		
17	Sufficient sample amount for indicated test(s)?	~~Yes~~	No	See Below	
18	All samples received within sufficient hold time?	~~Yes~~	No	See Below	
19	VOC samples have zero headspace?	Yes	No	~~Not Applicable~~	

Variance Documentation

Contact: _____ Contacted by: _____ Date/ Time: _____

Regarding: _____

Corrective Action Taken:

Check all that Apply:

- ☐ See attached e-mail/ fax
- ☐ Client understands and would like to proceed with analysis
- ☐ Cooling process had begun shortly after sampling event

ENVIRONMENTAL LAB OF

12600 West I-20 East - Odessa, Texas 79765

Analytical Report

Prepared for:

Tim Reed

Highlander Environmental Corp.

1910 N. Big Spring St.

Midland, TX 79705

Project: Rice/ K-4 Leak

Project Number: 2306

Location: None Given

Lab Order Number: 6J13020

Report Date: 10/23/06

Highlander Environmental Corp.	Project: Rice/ K-4 Leak	Fax: (432) 682-3946
1910 N. Big Spring St.	Project Number: 2306	
Midland TX, 79705	Project Manager: Tim Reed	

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1 83-85'	6J13020-01	Soil	10/12/06 00:00	10-13-2006 16:20
MW-1 8-10'	6J13020-02	Soil	10/12/06 00:00	10-13-2006 16:20
MW-1 18-20'	6J13020-03	Soil	10/12/06 00:00	10-13-2006 16:20
MW-1 28-30'	6J13020-04	Soil	10/12/06 00:00	10-13-2006 16:20
MW-1 38-40'	6J13020-05	Soil	10/12/06 00:00	10-13-2006 16:20
MW-1 48-50'	6J13020-06	Soil	10/12/06 00:00	10-13-2006 16:20
MW-1 58-60'	6J13020-07	Soil	10/12/06 00:00	10-13-2006 16:20
MW-1 68-70'	6J13020-08	Soil	10/12/06 00:00	10-13-2006 16:20
MW-1 78-80'	6J13020-09	Soil	10/12/06 00:00	10-13-2006 16:20

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Highlander Environmental Corp.	Project: Rice/ K-4 Leak	Fax: (432) 682-3946
1910 N. Big Spring St.	Project Number: 2306	
Midland TX, 79705	Project Manager: Tim Reed	

General Chemistry Parameters by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
MW-1 83-85' (6J13020-01) Soil									
Chloride	**372**	20.0	mg/kg Wet	2	EJ62015	10/20/06	10/22/06	SW 846 9253	
MW-1 8-10' (6J13020-02) Soil									
Chloride	**830**	20.0	mg/kg Wet	2	EJ62015	10/20/06	10/22/06	SW 846 9253	
MW-1 18-20' (6J13020-03) Soil									
Chloride	**2130**	20.0	mg/kg Wet	2	EJ62015	10/20/06	10/22/06	SW 846 9253	
MW-1 28-30' (6J13020-04) Soil									
Chloride	**2550**	20.0	mg/kg Wet	2	EJ62015	10/20/06	10/22/06	SW 846 9253	
MW-1 38-40' (6J13020-05) Soil									
Chloride	**830**	20.0	mg/kg Wet	2	EJ62015	10/20/06	10/22/06	SW 846 9253	
MW-1 48-50' (6J13020-06) Soil									
Chloride	**468**	20.0	mg/kg Wet	2	EJ62015	10/20/06	10/22/06	SW 846 9253	
MW-1 58-60' (6J13020-07) Soil									
Chloride	**1150**	20.0	mg/kg Wet	2	EJ62015	10/20/06	10/22/06	SW 846 9253	
MW-1 68-70' (6J13020-08) Soil									
Chloride	**1060**	20.0	mg/kg Wet	2	EJ62015	10/20/06	10/22/06	SW 846 9253	
MW-1 78-80' (6J13020-09) Soil									
Chloride	**978**	20.0	mg/kg Wet	2	EJ62018	10/20/06	10/22/06	SW 846 9253	

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

Highlander Environmental Corp.
1910 N. Big Spring St.
Midland TX, 79705

Project: Rice/ K-4 Leak
Project Number: 2306
Project Manager: Tim Reed

Fax: (432) 682-3946

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EJ62015 - Water Extraction										
Blank (EJ62015-BLK1)				Prepared: 10/20/06 Analyzed: 10/22/06						
Chloride	ND	20.0	mg/kg Wet							
LCS (EJ62015-BS1)				Prepared: 10/20/06 Analyzed: 10/22/06						
Chloride	91.5	5.00	mg/kg Wet	100		91.5	80-120			
Matrix Spike (EJ62015-MS1)		**Source: 6J13017-23**		Prepared: 10/20/06 Analyzed: 10/22/06						
Chloride	638	20.0	mg/kg Wet	500	128	102	80-120			
Matrix Spike Dup (EJ62015-MSD1)		**Source: 6J13017-23**		Prepared: 10/20/06 Analyzed: 10/22/06						
Chloride	649	20.0	mg/kg Wet	500	128	104	80-120	1.71	20	
Reference (EJ62015-SRM1)				Prepared: 10/20/06 Analyzed: 10/22/06						
Chloride	52.1		mg/kg	50.0		104	80-120			
Batch EJ62018 - Water Extraction										
Blank (EJ62018-BLK1)				Prepared: 10/20/06 Analyzed: 10/22/06						
Chloride	ND	20.0	mg/kg Wet							
LCS (EJ62018-BS1)				Prepared: 10/20/06 Analyzed: 10/22/06						
Chloride	93.6	5.00	mg/kg Wet	100		93.6	80-120			
Matrix Spike (EJ62018-MS1)		**Source: 6J13018-01**		Prepared: 10/20/06 Analyzed: 10/22/06						
Chloride	1190	20.0	mg/kg Wet	500	681	102	80-120			
Matrix Spike Dup (EJ62018-MSD1)		**Source: 6J13018-01**		Prepared: 10/20/06 Analyzed: 10/22/06						
Chloride	1210	20.0	mg/kg Wet	500	681	106	80-120	1.67	20	

Highlander Environmental Corp.	Project: Rice/ K-4 Leak	Fax: (432) 682-3946
1910 N. Big Spring St.	Project Number: 2306	
Midland TX, 79705	Project Manager: Tim Reed	

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EJ62018 - Water Extraction										
Reference (EJ62018-SRM1)				Prepared: 10/20/06 Analyzed: 10/22/06						
Chloride	51.0		mg/kg	50.0		102	80-120			

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

Highlander Environmental Corp.	Project: Rice/ K-4 Leak	Fax: (432) 682-3946
1910 N. Big Spring St.	Project Number: 2306	
Midland TX, 79705	Project Manager: Tim Reed	

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
LCS	Laboratory Control Spike
MS	Matrix Spike
Dup	Duplicate

Report Approved By: Raland K Tuttle Date: 10/23/2006

Raland K. Tuttle, Lab Manager
Celey D. Keene, Lab Director, Org. Tech Director
Peggy Allen, QA Officer
Jeanne Mc Murrey, Inorg. Tech Director
LaTasha Cornish, Chemist
Sandra Sanchez, Lab Tech.

Analysis Request and Chain of Custody Record

HIGHLANDER ENVIRONMENTAL CORP.

1910 N. Big Spring St.
Midland, Texas 79705

(432) 682-4559 Fax (432) 682-3946

PAGE: OF:

CLIENT NAME: Rice Engineering
SITE MANAGER: Tim Read
PROJECT NO.: 2306
PROJECT NAME: K-4 Leak

LAB I.D. NUMBER	DATE	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE
01 13020	10/12/06		S			MW-1 (83-85)	1				✓	✓
02	10/12/06		S			MW-1 (8-10)	1				✓	✓
03	10/12/06		S			MW-1 (18-20)	1				✓	✓
04	10/12/06		S			MW-1 (28-30)	1				✓	✓
05	10/12/06		S			MW-1 (38-40)	1				✓	✓
06	10/12/06		S			MW-1 (48-50)	1				✓	✓
07	10/12/06		S			MW-1 (58-60)	1				✓	✓
08	10/12/06		S			MW-1 (68-70)	1				✓	✓
09	10/12/06		S			MW-1 (78-80)	1				✓	✓

ANALYSIS REQUEST (Circle or Specify Method No.)

BTEX 8020/602	MTBE 8020/602	TPH 418.1 8015 MOD. TX1005	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Cr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC/MS Vol. 8240/8260/624	GC/MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	BOD, TSS, pH, TDS, (Chloride)	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)
													✓			
													✓			
													✓			
													✓			
													✓			
													✓			
													✓			
													✓			
													✓			

RELINQUISHED BY: (Signature) Date: 10/13/06 Time: 4:20
RECEIVED BY: (Signature) Date: Time:
SAMPLED BY: (Print & Sign) Jeffrey Kindle Jeffrey Kindle Date: 10/12/06 Time: 1900

RELINQUISHED BY: (Signature) Date: Time:
RECEIVED BY: (Signature) Date: Time:
SAMPLE SHIPPED BY: (Circle) FEDEX BUS AIRBILL #: HAND DELIVERED UPS OTHER:

RELINQUISHED BY: (Signature) Date: Time:
RECEIVED BY: (Signature) Date: Time:

RECEIVING LABORATORY: Environmental Lab of TX
ADDRESS:
CITY: Odessa STATE: TX ZIP:
CONTACT: PHONE:
RECEIVED BY: (Signature)
DATE: 10/13/06 TIME: 4:20

HIGHLANDER CONTACT PERSON: Tim Read

Results by:
RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED: Ice glass 4.0 N lobe

MATRIX: W-Water A-Air SD-Solid (S-Soil) SL-Sludge O-Other

REMARKS:

Please fill out all copies – Laboratory retains yellow copy – Return original copy to Highlander Environmental Corp. – Project Manager retains pink copy – Accounting receives Gold copy.

Environmental Lab of Texas

Variance/ Corrective Action Report- Sample Log-In

Client: Highlander

Date/ Time: 10/13/06 4:20

Lab ID #: 105130-20

Initials: CK

Sample Receipt Checklist

					Client Initials
#1	Temperature of container/ cooler?	Yes	No	3.0 °C	
#2	Shipping container in good condition?	~~Yes~~	No		
#3	Custody Seals intact on shipping container/ cooler?	Yes	No	Not Present	
#4	Custody Seals intact on sample bottles/ container?	Yes	No	~~Not Present~~	
#5	Chain of Custody present?	~~Yes~~	No		
#6	Sample instructions complete of Chain of Custody?	~~Yes~~	No		
#7	Chain of Custody signed when relinquished/ received?	~~Yes~~	No		
#8	Chain of Custody agrees with sample label(s)?	~~Yes~~	No	ID written on Cont./ Lid	
#9	Container label(s) legible and intact?	~~Yes~~	No	Not Applicable	
#10	Sample matrix/ properties agree with Chain of Custody?	~~Yes~~	No		
#11	Containers supplied by ELOT?	~~Yes~~	No		
#12	Samples in proper container/ bottle?	~~Yes~~	No	See Below	
#13	Samples properly preserved?	~~Yes~~	No	See Below	
#14	Sample bottles intact?	~~Yes~~	No		
#15	Preservations documented on Chain of Custody?	~~Yes~~	No		
#16	Containers documented on Chain of Custody?	~~Yes~~	No		
#17	Sufficient sample amount for indicated test(s)?	~~Yes~~	No	See Below	
#18	All samples received within sufficient hold time?	~~Yes~~	No	See Below	
#19	VOC samples have zero headspace?	Yes	No	~~Not Applicable~~	

Variance Documentation

Contact: _____ Contacted by: _____ Date/ Time: _____

Regarding: _____

Corrective Action Taken: _____

Check all that Apply:

- ☐ See attached e-mail/ fax
- ☐ Client understands and would like to proceed with analysis
- ☐ Cooling process had begun shortly after sampling event

ENVIRONMENTAL LAB OF

12600 West I-20 East - Odessa, Texas 79765

Analytical Report

Prepared for:

Kristin Farris-Pope

Rice Operating Co.

122 W. Taylor

Hobbs, NM 88240

Project: BD K-4 Leak

Project Number: None Given

Location: T22S R37E Sec.4 K- Lea County, NM

Lab Order Number: 6K15005

Report Date: 12/01/06

Rice Operating Co.	Project: BD K-4 Leak	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Monitor Well #1	6K15005-01	Water	11/13/06 14:05	11-15-2006 08:10
Monitor Well #2	6K15005-02	Water	11/13/06 13:10	11-15-2006 08:10
Monitor Well #3	6K15005-03	Water	11/13/06 12:15	11-15-2006 08:10

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Rice Operating Co.	Project: BD K-4 Leak	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

Organics by GC

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (6K15005-01) Water									
Benzene	ND	0.00100	mg/L	1	EK61614	11/16/06	11/19/06	EPA 8021B	
Toluene	ND	0.00100	"	"	"	"	"	"	
Ethylbenzene	ND	0.00100	"	"	"	"	"	"	
Xylene (p/m)	ND	0.00100	"	"	"	"	"	"	
Xylene (o)	ND	0.00100	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*103 %*	*80-120*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*81.0 %*	*80-120*		"	"	"	"	
Monitor Well #2 (6K15005-02) Water									
Benzene	ND	0.00100	mg/L	1	EK61614	11/16/06	11/20/06	EPA 8021B	
Toluene	ND	0.00100	"	"	"	"	"	"	
Ethylbenzene	ND	0.00100	"	"	"	"	"	"	
Xylene (p/m)	ND	0.00100	"	"	"	"	"	"	
Xylene (o)	ND	0.00100	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*119 %*	*80-120*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*98.2 %*	*80-120*		"	"	"	"	
Monitor Well #3 (6K15005-03) Water									
Benzene	ND	0.00100	mg/L	1	EK61614	11/16/06	11/17/06	EPA 8021B	
Toluene	ND	0.00100	"	"	"	"	"	"	
Ethylbenzene	ND	0.00100	"	"	"	"	"	"	
Xylene (p/m)	ND	0.00100	"	"	"	"	"	"	
Xylene (o)	ND	0.00100	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*118 %*	*80-120*		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		*93.5 %*	*80-120*		"	"	"	"	

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Rice Operating Co.	Project: BD K-4 Leak	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

General Chemistry Parameters by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (6K15005-01) Water									
Total Alkalinity	**186**	2.00	mg/L	1	EK61605	11/17/06	11/17/06	EPA 310.1M	
Chloride	**1040**	25.0	"	50	EK61507	11/15/06	11/15/06	EPA 300.0	
Total Dissolved Solids	**2120**	10.0	"	1	EK61611	11/15/06	11/16/06	EPA 160.1	
Sulfate	**152**	25.0	"	50	EK61507	11/15/06	11/15/06	EPA 300.0	
Monitor Well #2 (6K15005-02) Water									
Total Alkalinity	**230**	2.00	mg/L	1	EK61605	11/17/06	11/17/06	EPA 310.1M	
Chloride	**77.0**	5.00	"	10	EK61507	11/15/06	11/15/06	EPA 300.0	
Total Dissolved Solids	**542**	10.0	"	1	EK61611	11/15/06	11/16/06	EPA 160.1	
Sulfate	**85.0**	5.00	"	10	EK61507	11/15/06	11/15/06	EPA 300.0	
Monitor Well #3 (6K15005-03) Water									
Total Alkalinity	**202**	2.00	mg/L	1	EK61605	11/17/06	11/17/06	EPA 310.1M	
Chloride	**148**	5.00	"	10	EK61507	11/15/06	11/15/06	EPA 300.0	
Total Dissolved Solids	**622**	10.0	"	1	EK61611	11/15/06	11/16/06	EPA 160.1	
Sulfate	**97.6**	5.00	"	10	EK61507	11/15/06	11/15/06	EPA 300.0	

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Rice Operating Co.	Project: BD K-4 Leak	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

Total Metals by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Monitor Well #1 (6K15005-01) Water									
Calcium	**368**	4.05	mg/L	50	EK61703	11/17/06	11/17/06	EPA 6010B	
Magnesium	**106**	1.80	"	"	"	"	"	"	
Potassium	**10.9**	0.600	"	10	"	"	"	"	
Sodium	**424**	2.15	"	50	"	"	"	"	
Monitor Well #2 (6K15005-02) Water									
Calcium	**55.3**	0.810	mg/L	10	EK61703	11/17/06	11/17/06	EPA 6010B	
Magnesium	**24.1**	0.360	"	"	"	"	"	"	
Potassium	**5.50**	0.600	"	"	"	"	"	"	
Sodium	**109**	2.15	"	50	"	"	"	"	
Monitor Well #3 (6K15005-03) Water									
Calcium	**65.5**	0.810	mg/L	10	EK61703	11/17/06	11/17/06	EPA 6010B	
Magnesium	**30.1**	0.360	"	"	"	"	"	"	
Potassium	**5.81**	0.600	"	"	"	"	"	"	
Sodium	**120**	2.15	"	50	"	"	"	"	

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Rice Operating Co.	Project: BD K-4 Leak	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

Organics by GC - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EK61614 - EPA 5030C (GC)										
Blank (EK61614-BLK1)				Prepared: 11/16/06 Analyzed: 11/17/06						
Benzene	ND	0.00100	mg/L							
Toluene	ND	0.00100	"							
Ethylbenzene	ND	0.00100	"							
Xylene (p/m)	ND	0.00100	"							
Xylene (o)	ND	0.00100	"							
Surrogate: a,a,a-Trifluorotoluene	*47.8*		*ug/l*	*40.0*		*120*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*40.5*		"	*40.0*		*101*	*80-120*			
LCS (EK61614-BS1)				Prepared: 11/16/06 Analyzed: 11/17/06						
Benzene	0.0594	0.00100	mg/L	0.0500		119	80-120			
Toluene	0.0562	0.00100	"	0.0500		112	80-120			
Ethylbenzene	0.0458	0.00100	"	0.0500		91.6	80-120			
Xylene (p/m)	0.0949	0.00100	"	0.100		94.9	80-120			
Xylene (o)	0.0499	0.00100	"	0.0500		99.8	80-120			
Surrogate: a,a,a-Trifluorotoluene	*46.1*		*ug/l*	*40.0*		*115*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*44.2*		"	*40.0*		*110*	*80-120*			
Calibration Check (EK61614-CCV1)				Prepared: 11/16/06 Analyzed: 11/20/06						
Benzene	54.7		ug/l	50.0		109	80-120			
Toluene	48.5		"	50.0		97.0	80-120			
Ethylbenzene	42.1		"	50.0		84.2	80-120			
Xylene (p/m)	83.0		"	100		83.0	80-120			
Xylene (o)	43.3		"	50.0		86.6	80-120			
Surrogate: a,a,a-Trifluorotoluene	*41.4*		"	*40.0*		*104*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*37.0*		"	*40.0*		*92.5*	*80-120*			
Matrix Spike (EK61614-MS1)	**Source: 6K13007-01**			Prepared: 11/16/06 Analyzed: 11/17/06						
Benzene	0.0551	0.00100	mg/L	0.0500		110	80-120			
Toluene	0.0498	0.00100	"	0.0500		99.6	80-120			
Ethylbenzene	0.0401	0.00100	"	0.0500		80.2	80-120			
Xylene (p/m)	0.0844	0.00100	"	0.100		84.4	80-120			
Xylene (o)	0.0442	0.00100	"	0.0500		88.4	80-120			
Surrogate: a,a,a-Trifluorotoluene	*41.1*		*ug/l*	*40.0*		*103*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*42.4*		"	*40.0*		*106*	*80-120*			

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Rice Operating Co.	Project: BD K-4 Leak	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

Organics by GC - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EK61614 - EPA 5030C (GC)										
Matrix Spike Dup (EK61614-MSD1)	**Source: 6K13007-01**			Prepared: 11/16/06 Analyzed: 11/17/06						
Benzene	0.0580	0.00100	mg/L	0.0500		116	80-120	5.31	20	
Toluene	0.0550	0.00100	"	0.0500		110	80-120	9.92	20	
Ethylbenzene	0.0421	0.00100	"	0.0500		84.2	80-120	4.87	20	
Xylene (p/m)	0.0909	0.00100	"	0.100		90.9	80-120	7.42	20	
Xylene (o)	0.0455	0.00100	"	0.0500		91.0	80-120	2.90	20	
Surrogate: a,a,a-Trifluorotoluene	*46.3*		*ug/l*	*40.0*		*116*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*42.0*		*"*	*40.0*		*105*	*80-120*			

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Rice Operating Co.	Project: BD K-4 Leak	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EK61507 - General Preparation (WetChem)										
Blank (EK61507-BLK1)				Prepared & Analyzed: 11/15/06						
Sulfate	0.579	0.500	mg/L							B
Chloride	ND	0.500	"							
LCS (EK61507-BS1)				Prepared & Analyzed: 11/15/06						
Sulfate	10.9	0.500	mg/L	10.0		109	80-120			
Chloride	11.1	0.500	"	10.0		111	80-120			
Calibration Check (EK61507-CCV1)				Prepared & Analyzed: 11/15/06						
Chloride	10.7		mg/L	10.0		107	80-120			
Sulfate	12.0		"	10.0		120	80-120			
Duplicate (EK61507-DUP1)	**Source: 6K15004-01**			Prepared & Analyzed: 11/15/06						
Sulfate	79.9	5.00	mg/L		79.8			0.125	20	
Chloride	232	5.00	"		234			0.858	20	
Duplicate (EK61507-DUP2)	**Source: 6K15006-07**			Prepared & Analyzed: 11/15/06						
Sulfate	78.2	5.00	mg/L		78.1			0.128	20	
Chloride	37.9	5.00	"		43.7			14.2	20	
Matrix Spike (EK61507-MS1)	**Source: 6K15004-01**			Prepared & Analyzed: 11/15/06						
Chloride	345	5.00	mg/L	100	234	111	80-120			
Sulfate	175	5.00	"	100	79.8	95.2	80-120			
Matrix Spike (EK61507-MS2)	**Source: 6K15006-07**			Prepared & Analyzed: 11/15/06						
Chloride	142	5.00	mg/L	100	43.7	98.3	80-120			
Sulfate	175	5.00	"	100	78.1	96.9	80-120			

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Rice Operating Co.	Project: BD K-4 Leak	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EK61605 - General Preparation (WetChem)										
Blank (EK61605-BLK1)				Prepared & Analyzed: 11/17/06						
Total Alkalinity	ND	2.00	mg/L							
Blank (EK61605-BLK2)				Prepared & Analyzed: 11/17/06						
Total Alkalinity	ND	2.00	mg/L							
LCS (EK61605-BS1)				Prepared & Analyzed: 11/17/06						
Bicarbonate Alkalinity	172		mg/L	200		86.0	85-115			
LCS (EK61605-BS2)				Prepared & Analyzed: 11/17/06						
Bicarbonate Alkalinity	172		mg/L	200		86.0	85-115			
Hydroxide Alkalinity	0.00	0.100	"				85-115			
Duplicate (EK61605-DUP1)	**Source: 6K15001-01**			Prepared & Analyzed: 11/17/06						
Total Alkalinity	238	2.00	mg/L		238			0.00	20	
Carbonate Alkalinity	0.00	0.100	"		0.00				20	
Bicarbonate Alkalinity	0.00	2.00	"		0.00				20	
Hydroxide Alkalinity	0.00	0.100	"		0.00				20	
Duplicate (EK61605-DUP2)	**Source: 6K16005-01**			Prepared & Analyzed: 11/17/06						
Total Alkalinity	296	2.00	mg/L		300			1.34	20	
Carbonate Alkalinity	0.00	0.100	"		0.00				20	
Bicarbonate Alkalinity	0.00	2.00	"		300				20	
Hydroxide Alkalinity	0.00	0.100	"		0.00				20	
Reference (EK61605-SRM1)				Prepared & Analyzed: 11/17/06						
Total Alkalinity	238		mg/L	250		95.2	90-110			
Reference (EK61605-SRM2)				Prepared & Analyzed: 11/17/06						
Total Alkalinity	238		mg/L	250		95.2	90-110			

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Rice Operating Co.	Project: BD K-4 Leak	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EK61611 - Filtration Preparation										
Blank (EK61611-BLK1)				Prepared: 11/15/06 Analyzed: 11/16/06						
Total Dissolved Solids	ND	10.0	mg/L							
Duplicate (EK61611-DUP1)		**Source: 6K15001-01**		Prepared: 11/15/06 Analyzed: 11/16/06						
Total Dissolved Solids	14000	10.0	mg/L		13200			5.88	5	QR-03
Duplicate (EK61611-DUP2)		**Source: 6K15005-03**		Prepared: 11/15/06 Analyzed: 11/16/06						
Total Dissolved Solids	586	10.0	mg/L		622			5.96	5	QR-03

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

Rice Operating Co.	Project: BD K-4 Leak	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

Total Metals by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EK61703 - 6010B/No Digestion										
Blank (EK61703-BLK1)				Prepared & Analyzed: 11/17/06						
Calcium	ND	0.0810	mg/L							
Magnesium	ND	0.0360	"							
Potassium	ND	0.0600	"							
Sodium	ND	0.0430	"							
Calibration Check (EK61703-CCV1)				Prepared & Analyzed: 11/17/06						
Calcium	2.17		mg/L	2.00		108	85-115			
Magnesium	2.21		"	2.00		110	85-115			
Potassium	1.74		"	2.00		87.0	85-115			
Sodium	1.88		"	2.00		94.0	85-115			
Duplicate (EK61703-DUP1)	**Source: 6K15001-01**			Prepared & Analyzed: 11/17/06						
Calcium	1300	40.5	mg/L		1340			3.03	20	
Magnesium	461	3.60	"		461			0.00	20	
Potassium	55.7	0.600	"		53.2			4.59	20	
Sodium	2890	21.5	"		3100			7.01	20	

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Rice Operating Co.	Project: BD K-4 Leak	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	
Hobbs NM, 88240	Project Manager: Kristin Farris-Pope	

Notes and Definitions

QR-03	The RPD value for the sample duplicate or MS/MSD was outside of QC acceptance limits due to matrix interference. QC batch accepted based on LCS and/or LCSD recovery and/or RPD values.
B	Analyte is found in the associated blank as well as in the sample (CLP B-flag).
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
LCS	Laboratory Control Spike
MS	Matrix Spike
Dup	Duplicate

Report Approved By: Raland K Tuttle Date: 12/1/2006

Raland K. Tuttle, Lab Manager
Celey D. Keene, Lab Director, Org. Tech Director
Peggy Allen, QA Officer
Jeanne Mc Murrey, Inorg. Tech Director
LaTasha Cornish, Chemist
Sandra Sanchez, Lab Tech.

Environmental Lab of Texas

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

12600 West I-20 East
Odessa, Texas 79765

Phone: 432-563-1800
Fax: 432-563-1713

Project Manager: Kristin Farris Pope kpope@riceswd.com

Company Name: RICE Operating Company

Company Address: 122 W. Taylor Street

City/State/Zip: Hobbs, New Mexico 88240

Telephone No: (505) 393-9174 Fax No: (505) 397-1471

Sampler Signature: Rozanne Johnson (505)631-9310 e-mail: rozanne@valornet.com

Project Name: BD K-4 Leak

Project #:

Project Loc: T22S R37E Sec4 K ~ Lea County New Mexico

PO #:

Report Format: [X] Standard [ ] TRRP [ ] NPDES

(lab use only)
ORDER #: 6K1505

LAB # (lab use only)	FIELD CODE	Beginning Depth	Ending Depth	Date Sampled	Time Sampled	Field Filtered	Total #. of Containers	Preservation & # of Containers: Ice	HNO_3	HCl (2) 40 ml glass vials	H_2SO_4	NaOH	$Na_2S_2O_3$	None (1) 1 Liter HDPE	Other (Specify)	Matrix: DW=Drinking Water SL=Sludge	GW = Groundwater S=Soil/Solid	NP=Non-Potable Specify Other	Analyze For: TCLP: TPH: 418.1 8015M TPH: TX 1005 TX 1006	TOTAL: Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, Alkalinity)	SAR / ESP / CEC	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles (BTEX-N 8260)	Semivolatiles	BTEX 8021B/5030 or BTEX 8260	RCI	N.O.R.M.	Total Dissolved Solids	RUSH TAT (Pre-Schedule) 24, 48, 72 hrs	Standard TAT
01	Monitor Well #1			11/13/2006	14:05		3	X		2				1			GW			X	X				X	X			X		X
02	Monitor Well #2			11/13/2006	13:10		3	X		2				1			GW			X	X				X	X			X		X
03	Monitor Well #3			11/13/2006	12:15		3	X		2				1			GW			X	X				X	X			X		X

Special Instructions:
Please email to : kpope@riceswd.com mfranks@riceswd.com rozanne@valornet.com

Relinquished by:	Date	Time	Received by:	Date	Time
Rozanne Johnson	11/14/06	20:00	James Johnson	11/14/06	20:01
James Johnson	11/15/06	8:10			
Relinquished by:	Date	Time	Received by ELOT:	Date	Time
			Laura Lopez	11/15/06	8:10

Laboratory Comments:

Sample Containers Intact?	Y	N
VOCs Free of Headspace?	Y	N
Labels on container(s)	Y	N
Custody seals on container(s)	Y	N
Custody seals on cooler(s)	Y	N
Sample Hand Delivered by Sampler/Client Rep. ?	Y	N

by Courier? UPS DHL FedEx Lone Star

Temperature Upon Receipt: 0.5 °C

Environmental Lab of Texas

Variance/ Corrective Action Report- Sample Log-In

ient: RICO Op.

ate/ Time: 11/15/06 8:10

ıb ID # : 6K15005

tials: CK

Sample Receipt Checklist

				Client Initials
Temperature of container/ cooler?	Yes	No	0.5 °C	
Shipping container in good condition?	Yes	No		
Custody Seals intact on shipping container/ cooler?	Yes	No	Not Present	
Custody Seals intact on sample bottles/ container?	Yes	No	Not Present	
Chain of Custody present?	Yes	No		
Sample instructions complete of Chain of Custody?	Yes	No		
Chain of Custody signed when relinquished/ received?	Yes	No		
Chain of Custody agrees with sample label(s)?	Yes	No	ID written on Cont./ Lid	
Container label(s) legible and intact?	Yes	No	Not Applicable	
0 Sample matrix/ properties agree with Chain of Custody?	Yes	No		
1 Containers supplied by ELOT?	Yes	No		
2 Samples in proper container/ bottle?	Yes	No	See Below	
3 Samples properly preserved?	Yes	No	See Below	
4 Sample bottles intact?	Yes	No		
5 Preservations documented on Chain of Custody?	Yes	No		
6 Containers documented on Chain of Custody?	Yes	No		
7 Sufficient sample amount for indicated test(s)?	Yes	No	See Below	
8 All samples received within sufficient hold time?	Yes	No	See Below	
9 Subcontract of sample(s)?	Yes	No	Not Applicable	
0 VOC samples have zero headspace?	Yes	No	Not Applicable	

Variance Documentation

ntact: _____ Contacted by: _____ Date/ Time: _____

garding: _____

rective Action Taken:

_____

_____

_____

ck all that Apply:

- ☐ See attached e-mail/ fax
- ☐ Client understands and would like to proceed with analysis
- ☐ Cooling process had begun shortly after sampling event

Appendix B

SAMPLE LOG

Boring/Well: MW-1
Project Number: 2306
Client: Rice Engineering
Site Location: BD - K-4
Location: Lea County, New Mexico
Total Depth 95
Date Installed: 10/12/06

DEPTH (in feet)	OVM	CHLORIDES (in mg/Kg)	SAMPLE DESCRIPTION
8-10	0	--	Tan fine grain sand
18-20	0	--	Buff fine grain sandy limestone
28-30	0	--	Tan buff fine grain calcareous sand
38-40	0	--	Tan fine grain sand
48-50	0	--	Tan fine grain sand
58-60	0	--	Tan fine grain sand
68-70	0	--	Tan fine grain sand
78-80	0	--	Tan fine grain sand
83-85	0	430	Tan fine grain sand (wet)
93-95	0	459	Tan fine grain sand (wet)

Boring completed at 95 feet bgs Groundwater encountered at 83 feet

SAMPLE LOG

Boring/Well: MW-2
Project Number: 2306
Client: Rice Engineering
Site Location: BD - K-4
Location: Lea County, New Mexico
Total Depth 95
Date Installed: 10/19/06

DEPTH (in feet)	OVM	CHLORIDES (in mg/Kg)	SAMPLE DESCRIPTION
3-5	0	88	Brown fine grain sandy clay of high plasticity
8-10	1	114	Tan brown fine grain calcareous sand
13-15	1	87	Tan brown fine grain calcareous sand
18-20	1	57	Buff tan fine grain calcareous sand
23-25	1	84	Tan fine grain calcareous sand
28-30	4	86	Tan fine grain calcareous sand
33-35	4	115	Tan fine grain calcareous sand
38-40	3	86	Tan fine grain calcareous sand
43-45	4	60	Tan fine grain sand
48-50	2	55	Tan fine grain sand
53-55	3	56	Tan fine grain sand
58-60	3	59	Tan fine grain sand
63-65	4	59	Tan fine grain sand
68-70	3	29	Tan buff fine grain calcareous sand
73-75	4	28	Tan fine grain sand
78-80	4	45	Tan fine grain sand
83-85	0	--	Tan fine grain sand (wet)
88-90	0	--	Tan fine grain sand (wet)
93-95	0	--	Tan fine grain sand (wet)

Boring completed at 95 feet bgs Groundwater encountered at 83 feet

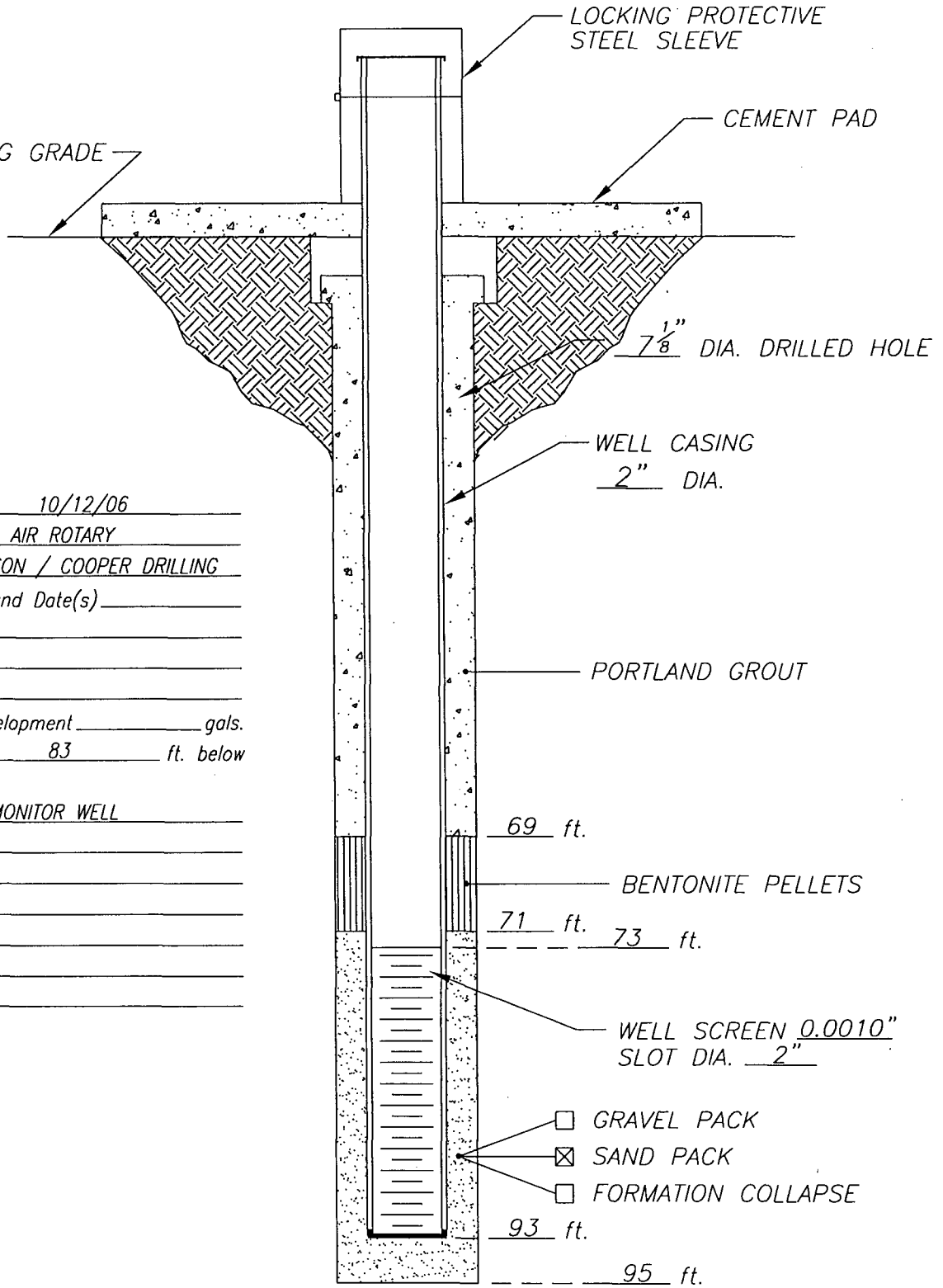
SAMPLE LOG

Boring/Well: MW-3
Project Number: 2306
Client: Rice Engineering
Site Location: BD - K-4
Location: Lea County, New Mexico
Total Depth 92
Date Installed: 10/19/06

DEPTH (in feet)	OVM	CHLORIDES (in mg/Kg)	SAMPLE DESCRIPTION
3-5	1	55	Brown fine grain clayey sand
8-10	0	55	Buff fine grain sandy limestone
13-15	1	55	Buff fine grain sandy limestone
18-20	1	115	Buff fine grain sandy limestone
23-25	0	111	Buff fine grain sandy limestone
28-30	0	114	Buff tan fine grain calcareous sand
33-35	0	55	Buff tan fine grain calcareous sand
38-40	0	87	Buff tan fine grain calcareous sand
43-45	0	59	Tan fine grain calcareous sand
48-50	0	59	Tan fine grain calcareous sand
53-55	0	58	Tan fine grain calcareous sand
58-60	0	56	Tan fine grain calcareous sand
63-65	1	54	Tan fine grain calcareous sand
68-70	5	55	Tan fine grain calcareous sand
73-75	0	55	Tan fine grain calcareous sand
78-80	0	60	Tan fine grain calcareous sand
83-85	2	--	Tan fine grain sand (wet)
88-90	0	--	Tan fine grain sand (wet)

Boring completed at 92 feet bgs Groundwater encountered at 83 feet

WELL CONSTRUCTION LOG



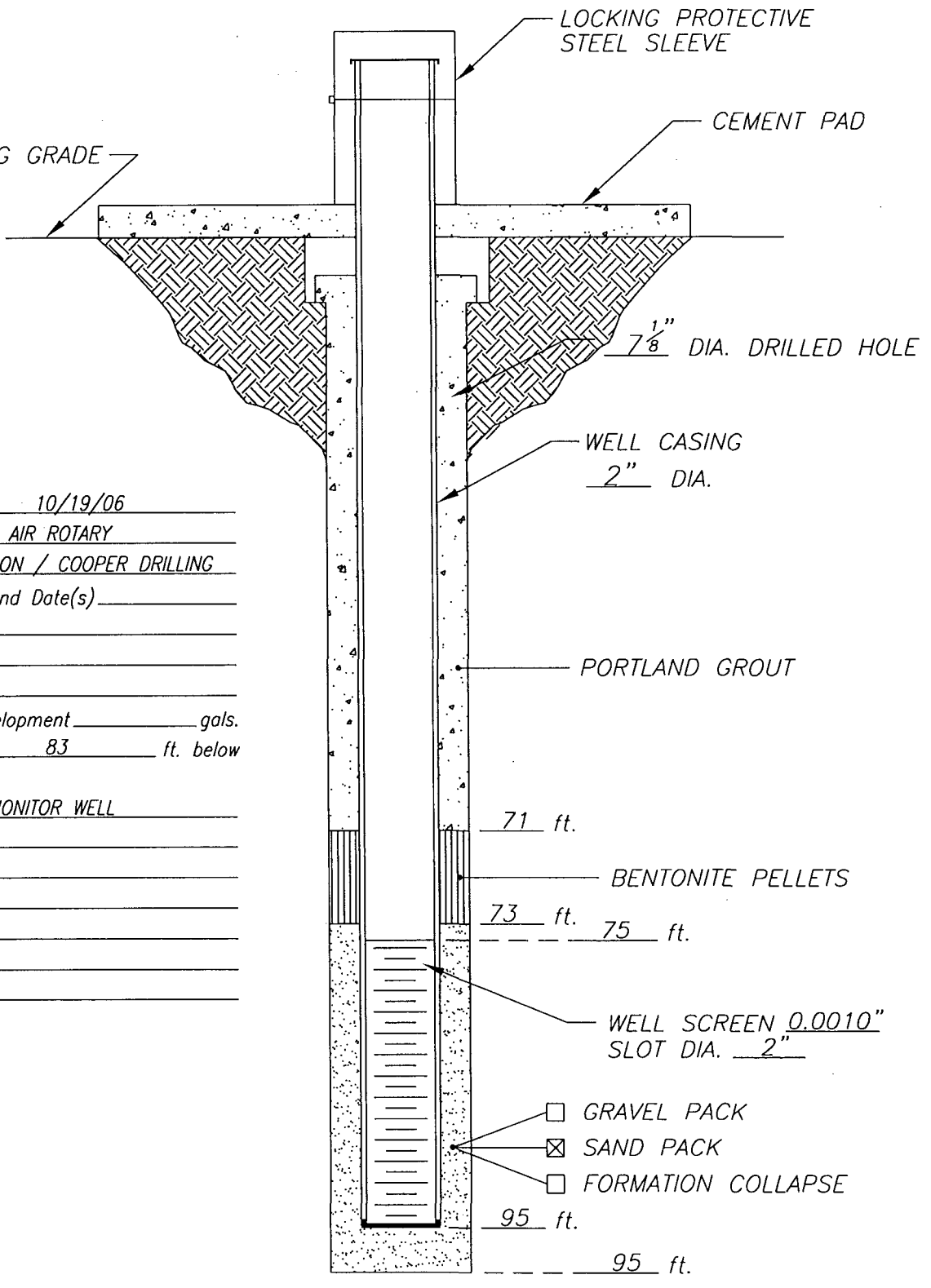
Installation Date(s) 10/12/06
Drilling Method AIR ROTARY
Drilling Contractor HARRISON / COOPER DRILLING
Development Technique(s) and Date(s) _____

Water Removed During Development _____ gals.
Static Depth to Water 83 ft. below Ground Level
Well Purpose MONITOR WELL

Remarks _____

DATE: 11/9/06	CLIENT: RICE OPERATING	WELL NO.
Highlander Environmental	PROJECT: BD-K-4	MW-1
	LOCATION: LEA COUNTY, NEW MEXICO	

WELL CONSTRUCTION LOG



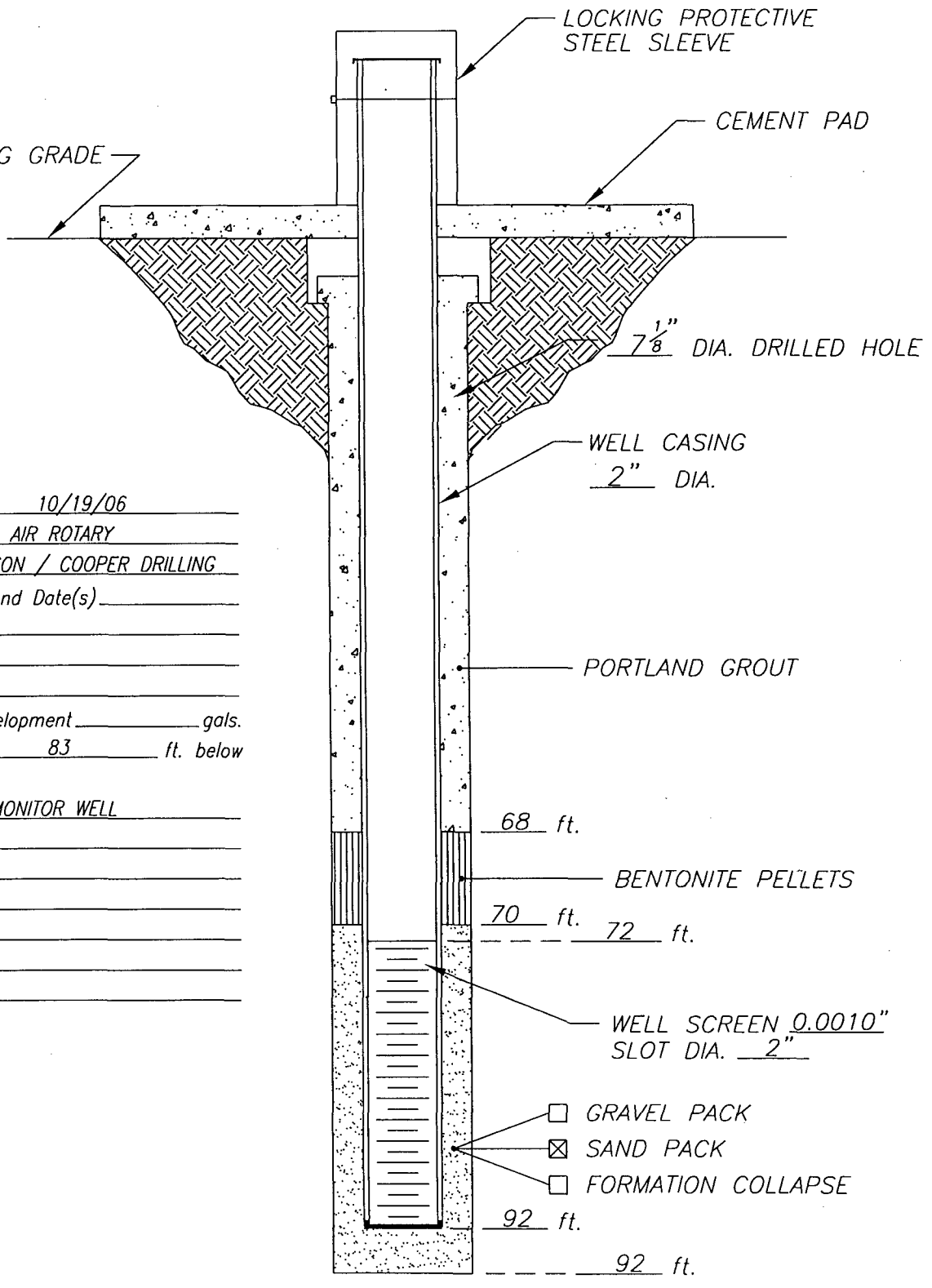
Installation Date(s) 10/19/06
Drilling Method AIR ROTARY
Drilling Contractor HARRISON / COOPER DRILLING
Development Technique(s) and Date(s) _____

Water Removed During Development _____ gals.
Static Depth to Water 83 ft. below Ground Level
Well Purpose MONITOR WELL

Remarks _____

DATE: 11/9/06 *Highlander Environmental*	CLIENT: *RICE OPERATING* PROJECT: *BD-K-4* LOCATION: *LEA COUNTY, NEW MEXICO*	WELL NO. MW-2

WELL CONSTRUCTION LOG



Installation Date(s) 10/19/06
Drilling Method AIR ROTARY
Drilling Contractor HARRISON / COOPER DRILLING
Development Technique(s) and Date(s) _____

Water Removed During Development _____ gals.
Static Depth to Water 83 ft. below Ground Level
Well Purpose MONITOR WELL

Remarks _____

DATE: 11/9/06	CLIENT: RICE OPERATING	WELL NO.
Highlander Environmental	PROJECT: BD-K-4	MW-3
	LOCATION: LEA COUNTY, NEW MEXICO	