

1R - 459

# REPORTS

DATE:

9/15/2005



# Highlander Environmental Corp.

Midland, Texas

CERTIFIED MAIL  
RETURN RECEIPT NO. 7004 1160 0000 4840 9424

September 15, 2005

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

1R04509

RECEIVED

OCT 20 2005

OIL CONSERVATION  
DIVISION

RE: **INVESTIGATION & CHARACTERIZATION WORK PLAN  
K-4 LEAK, BD SWD SYSTEM  
UNIT "K", SEC. 4, T22S, R37E**

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 (operator) for the Blinebry Drinkard (BD) SWD System and has no ownership of any portion of the pipeline, well, or facility. The System is owned by a consortium of oil producers, System Partners, who provide all operating capital on a percentage ownership/usage basis. 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. This 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 will be submitted in a Corrective Action Plan (CAP).
3. Finally, after implementing the remedy, a closure report with final documentation will be submitted.

## **BACKGROUND & PREVIOUS WORK**

On February 25, 2004, a leak was discovered, 34' east of the K-4 Junction. According to the Form C-141 (Initial) filed with the NMOCD, the spill was due to heavy rains causing the collapse of previously excavated soil, resulting in the rupture of a 4" PVC line. An estimated 1040 barrels of produced water was spilled, with 1000 barrels of fluid recovered. Regional groundwater information indicates that the depth to groundwater is approximately 90'-100' below ground surface (bgs).

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

## **INVESTIGATION & CHARACTERIZATION PLAN**

As discussed above, existing site data suggest a potential for impairment of groundwater quality. Therefore the work elements described below are designed to assist ROC in selecting an appropriate vadose zone remedy and, if necessary, a groundwater remedy.

### **Task 1      Collect Regional Hydrogeologic Data**

A water well inventory will be performed to encompass a ½ mile radius around the leak site. The inventory will include a review of water well records on the New Mexico Office of the State Engineer W.A.T.E.R.S. database and United States Geologic Survey (USGS) website. Any water wells denoted on the USGS 7.5 minute topographic quadrangle map within the search radius will be inspected. If viable wells are located, they will be evaluated for the possible incorporation of water level measurements and groundwater monitoring.

### **Task 2      Evaluate Concentrations of Constituents of Concern in Soil (and Ground Water)**

Highlander proposes to install one monitoring well at the leak site to further evaluate this site. The monitor well will be placed appropriately to evaluate ground water impact and hydraulic gradient. The monitor well will be constructed according to EPA and industry standards.

Following installation, the well will be developed either by bailing with a rig or hand bailer, or pumping with an electric submersible pump to remove fine grained sediment disturbed during drilling and to ensure collection of representative groundwater samples. Water removed from the well will be disposed of in the BD SWD System.

The well will be inspected for the presence of phase-separated hydrocarbons (PSH) and, if present, a sample will be collected and analyzed by gas chromatography (GC) to determine composition and origin. The well will be properly purged and sampled with a clean, dedicated,



polyethylene bailers and disposable line. Groundwater samples will be submitted to a laboratory for analysis of Benzene, Toluene, Ethylbenzene, and Xylene (BTEX) by method EPA 8021B, and chloride by method 300.0.

**Task 3 Evaluate Flux from the Vadose Zone to Ground Water**

As part of the ICP, the residual impact to vadose zone soils will be evaluated to determine what, if any remediation/isolation techniques will be required at the Site.

The information gathered from tasks 1-3 will be evaluated and utilized to design a groundwater remedy if needed. The groundwater remedy that offers the greatest environmental benefit while causing the least environmental impairment will be selected. If the evaluation demonstrates that residual constituents pose no threat to groundwater quality, only a surface restoration plan will be proposed. Such recommendations and findings will be presented to NMOCD in a subsequent Corrective Action Plan (CAP). 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.

Should you have any questions, please contact me at (432) 682-4559. Your prompt review of this submission is appreciated. Thank you for your attention to this matter.

Highlander Environmental Corp.



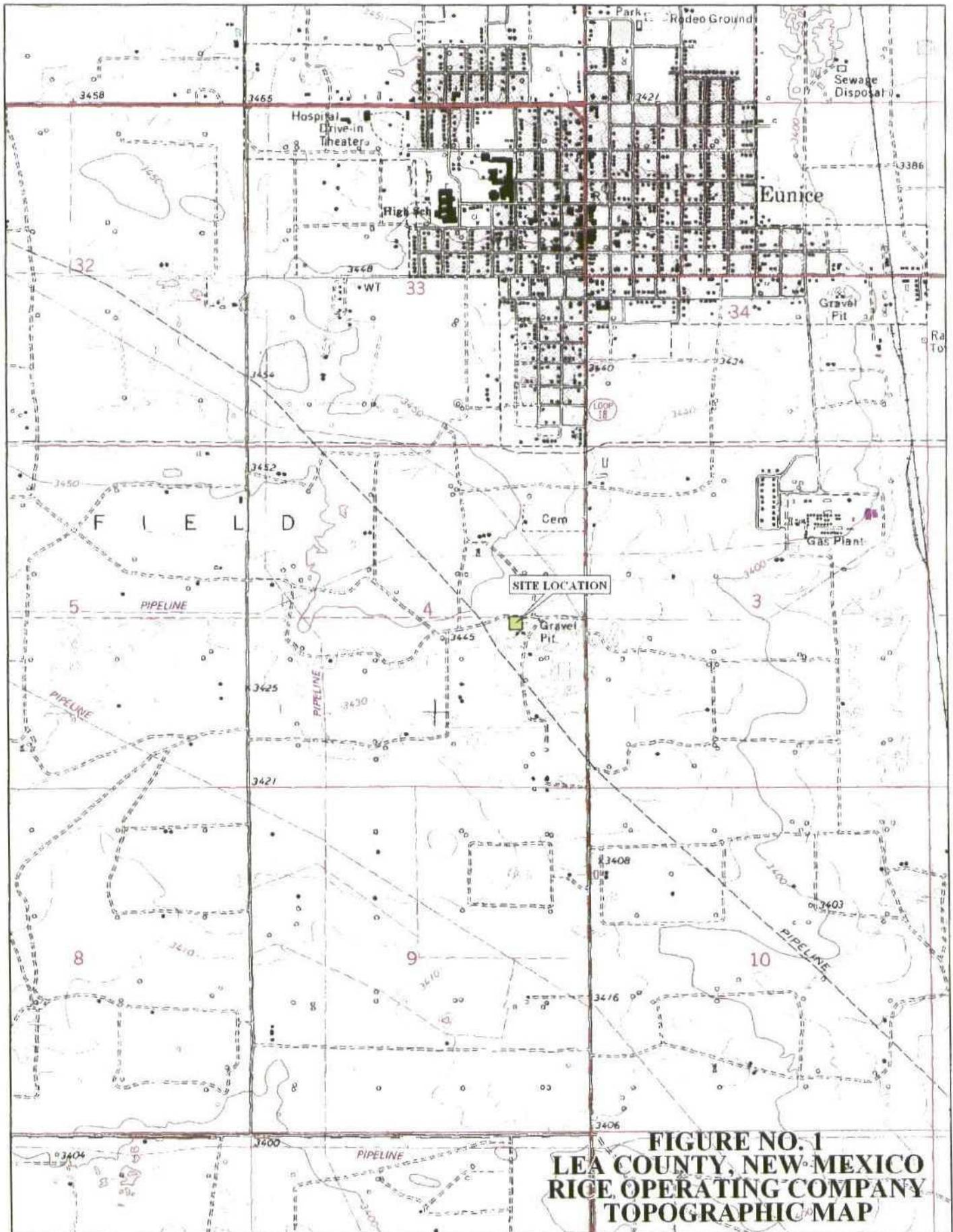
Timothy M. Reed, P.G.  
Vice President

cc: CDH, KFP, file  
Daniel Sanchez - NMOCD

enclosures: site map, photos, C-141 (Initial), soil boring log



**FIGURES**



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

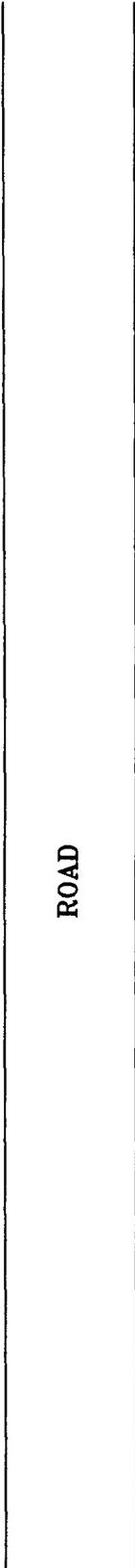
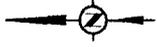


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www.delorme.com

Scale 1 : 24,000

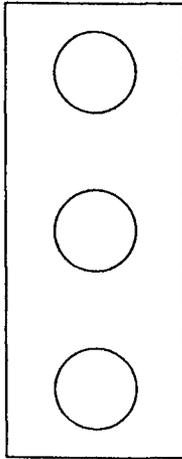
1" = 2000 ft



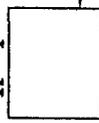


ROAD

TANK BATTERY

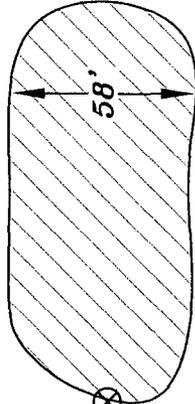


JUNCTION  
K-4



LEAK

34'



110'

 SPILL AREA

FIGURE NO. 2

LEA COUNTY, NEW MEXICO  
RICE OPERATING COMPANY  
BD K-4 JUNCTION  
SITE MAP  
HIGHLANDER ENVIRONMENTAL CORP.  
MIDLAND, TEXAS

DATE: 3/16/05  
OWN BY: JJ  
FILE: 05-15306  
SITE MAP

NOT TO SCALE

PHOTOGRAPHS



BD K-4 Jct 3-11-04



BD K-4 Jct 3-11-04



BD K-4 Jct 3-11-04



BD K-4 Jct 3-11-04

**APPENDIX A**

**C-141 (Initial)**

District I  
P.O. Box 1980, Hobbs, NM 88241-1980  
District II  
811 South First, Artesia, NM 88210  
District III  
1000 Rio Brazos, Aztec, NM 87410  
District IV  
2040 South Pacheco, Santa Fe, NM 87505

State of New Mexico  
Energy, Minerals & Natural Resources Department  
**OIL CONSERVATION DIVISION**  
2040 South Pacheco  
Santa Fe, NM 87505  
**OPERATOR'S MONTHLY REPORT**

Form C-141  
Originated 2/13/97

Submit 2 copies to  
Appropriate District  
Office in accordance  
with Rule 116 on  
back side of form

**Release Notification and Corrective Action  
OPERATOR**

Initial Report     Final Report

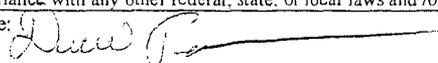
Name Rice Operating Company	Contact Drew Parker
Address 122 West Taylor                      Hobbs, NM 88240	Telephone No. 505-393-9174
Facility Name B-D	Facility Type SWD Disposal Line

Surface Owner Priscilla West	Mineral Owner	Lease No.
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**LOCATION OF RELEASE**

Unit Letter	Section	Township	Range	Feet from the	North/South line	Feet from the	East/West Line	County
K	4	22s	37E			34 ft	East	Lea

**NATURE OF RELEASE**

Type of Release Produced Water	Volume of Release 1040 bbls	Volume Recovered 1000
Source of Release Pipeline	Date and Hour of Occurrence Unknown	Date and Hour of Discovery 02/25/04 12:00pm
Was Immediate Notice Given? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom? Paul Sheeley	
By Whom? Joe Gatts	Date and Hour 02/25/04 2:10pm	
Was a Watercourse Reached? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse.	
If a Watercourse was Impacted, Describe Fully. (Attach Additional Sheets If Necessary)		
Describe Cause of Problem and Remedial Action Taken. (Attach Additional Sheets If Necessary)		
Heavy rains caused collapse of previously excavated soil causing 4" pvc line to rupture 3" poly line looped from jct. box		
Describe Area Affected and Cleanup Action Taken. (Attach Additional Sheets If Necessary)		
6,380 square feet pasture land was affected however the release was contained naturally by road and natural embankment. ROC will remediate according to the Generic spill and leak plan or submit RBCA plan to NMOCD for approval.		
I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and /or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and /or regulations.		
Signature: 	<b>OIL CONSERVATION DIVISION</b>	
Printed Name: Drew Parker	Approved by District Supervisor:	
Title: Environmental Technician	Approval Date:	Expiration Date:
Date: 03/04 /04                      Phone: 505-393-9174	Conditions of Approval:	Attached <input type="checkbox"/>

**APPENDIX B**

**Soil Boring Log**

Atkins Engineering  
Associates, Inc.

2904 W. 2nd St., Roswell, NM 88202-3156

LOG OF BORING BD K-4

(Page 1 of 1)

Rice Operating Co.  
122 W. Taylor  
Hobbs, NM 88240

Contact: Roy Rascon

Job#: RICEOPR.DRL.04

Date : 07-14-04  
Drill Start/End : 0825/1310  
Boring Location : N ede of line E of  
: tank batteries ±100'

Site Location : Unit K, Sec. 4,  
: T22S, R37E  
Auger Type : Hollow Stem  
Logged By : Mort Bates

Well: BD K-4

Depth in Feet	GRAPHIC	USCS	Samples	DESCRIPTION	Lab No.
0		SM		Silty Sand, Loose, Redish Tan, Dry	
5		SM		Silty Sand w/Clay, Redish Tan, Damp	
10		CL	1	Sandy Clay, Loose, Redish Tan, Damp	
15		SP	2	Poorly Graded Sand w/Small Amount of Caliche, Loose, Redish Tan & White, Damp	
20		SM	3	Caliche w/Silty Sand, Hard, Tan, Dry	
25		SP	4	Poorly Graded Sand, Loose, Tan, Damp	
30		SS	5	Silty Sand w/Cemented Sandstone, Hard, Light Tan, Dry	
35		SP	6	Poorly Graded Sand, Loose, Tan, Dry	
40		SP	7	Poorly Graded Sand, Loose, Tan, Damp	
45		SP	8	Poorly Graded Sand, Loose, Tan, Damp	
50		SP	9	Poorly Graded Sand, Loose, Tan, Damp	
55		SP	10	Poorly Graded Sand, Loose, Tan, Damp	
60		SS	11	Cemented Sandstone, Silty Sand, Hard, Tan, Dry	
65		SP	12	Poorly Graded Sand, Loose, Tan, Damp	
70		SP	13	Poorly Graded Sand, Loose, Tan, Damp	
75		SP	14	Poorly Graded Sand, Loose, Tan, Damp	
80		SP	15	Poorly Graded Sand, Loose, Tan, Damp	
85		SP	16	Poorly Graded Sand, Loose, Tan, Damp	
				Total Depth 81'	



07-21-2004 C:\MTECH\61\RICE2\bok4.bor