

1R - 489

WORKPLANS

DATE:

7-21-06



Highlander Environmental Corp.

Midland, Texas

CERTIFIED MAIL
RETURN RECEIPT NO. 7005 1160 0005 3780 5989

July 21, 2006

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: **INVESTIGATION & CHARACTERIZATION WORK PLAN
A-2 LEAK, EME SWD SYSTEM
UNIT "A", SEC. 2, T20S, R36E**

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 Eunice Monument Eumont (EME) SWD System and has no ownership of any portion of the pipeline, well, or facility. The System is owned by a consortium of oil producers, System 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.

1R427-62
No!

BACKGROUND & PREVIOUS WORK

On August 26, 2003, a leak was discovered, 1055' west of the A-2 Junction. According to the Form C-141 (Initial) filed with the NMOCD, the spill was due to a crack on a 6" asbestos/concrete line. An estimated 15 barrels of produced water was spilled, and none was recovered. Regional groundwater information indicates that the depth to groundwater is approximately 50'-90' below ground surface (bgs). A copy of the Form C-141 (Initial) is included in Appendix A.

Initial soil sampling performed in April, 2004, indicated residual subsurface chloride impact. On January 2, 2004, a hollow-stem auger unit was utilized to conduct one soil boring at the leak source area at this site. Chloride concentrations did not decline with depth, and the site was disclosed to the OCD as a site with potential groundwater impact on January 14, 2004. The soil boring was backfilled with bentonite and drill cuttings. A copy of the soil boring log is included in Appendix B. A copy of the potential groundwater impact disclosure is included in Appendix C.

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 groundwater 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 EME 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,



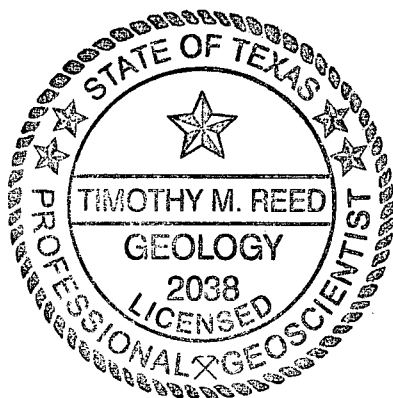
polyethylene bailers and disposable line. Groundwater samples will be submitted to a laboratory for analysis of Benzene, Toluene, Ethylbenzene, and Xylene (BTEX) by method EPA 8021B, and chloride by method 300.0.

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.

A handwritten signature in black ink that reads "Tim Reed".

Timothy M. Reed, P.G.
Vice President

cc: CDH, KFP, file
Daniel Sanchez - NMOCD

enclosures: potential groundwater impact disclosure, site map, photos, C-141 (Initial), soil boring log



FIGURES

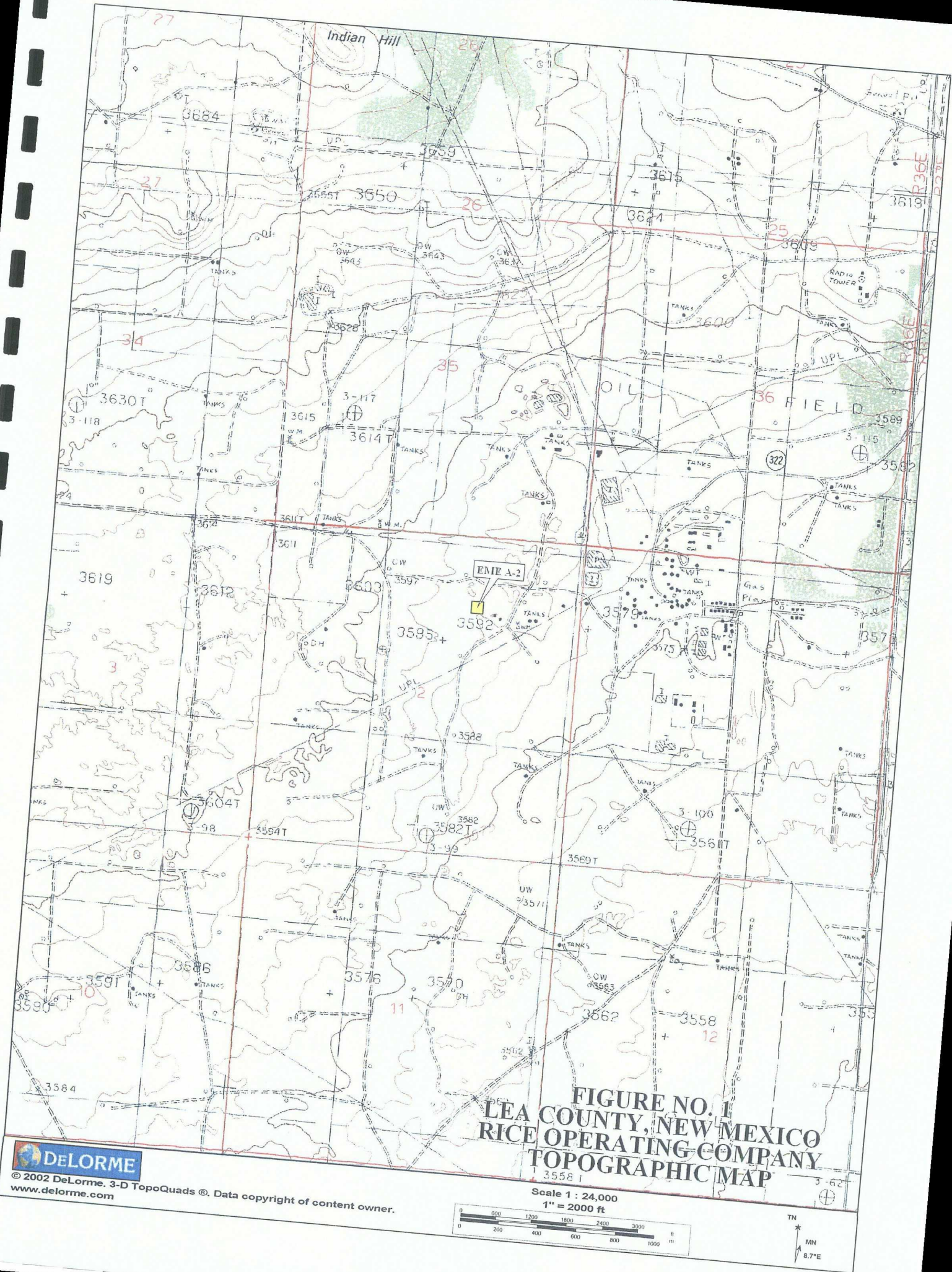
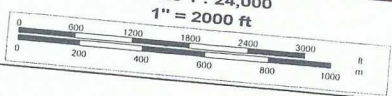


FIGURE NO. 1
LEA COUNTY, NEW MEXICO
RICE OPERATING COMPANY
TOPOGRAPHIC MAP



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www.delorme.com





TANK BATTERY

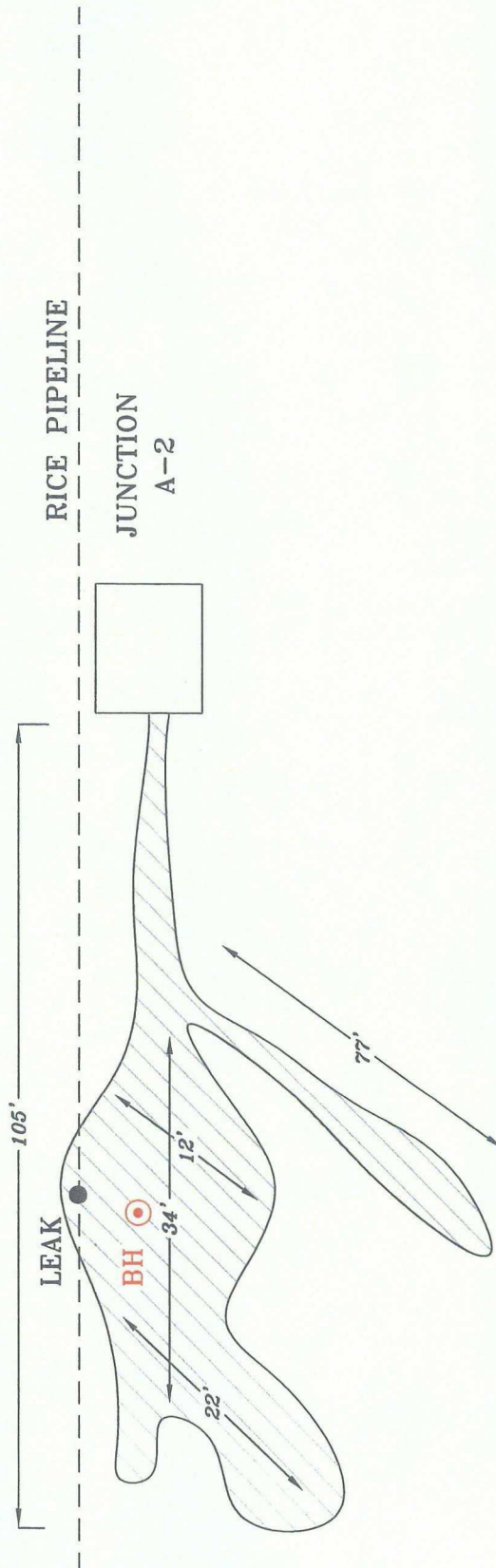
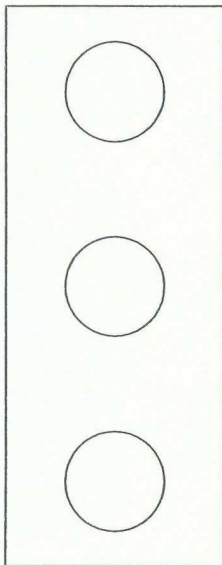


FIGURE NO. 2

LEA COUNTY, NEW MEXICO

RICE OPERATING COMPANY
EME A-2 JUNCTION
SITE MAP

HIGHLANDER ENVIRONMENTAL CORP.
MIDLAND, TEXAS

DATE:
5/25/06

DRAWN BY:
JU

FILE:
C:\PROJECTS\2843
SITE MAP

NOT TO SCALE

○ APPROX. BOREHOLE LOCATION

□ SPILL AREA

PHOTOGRAPHS

PHOTOGRAPHIC DOCUMENTATION

Rice Operating Company

EME A-2 Site

Lea County, New Mexico



1. EME A-2 Site - leak.



2. EME A-2 Site - spill area looking west.

PHOTOGRAPHIC DOCUMENTATION

Rice Operating Company

EME A-2 Site

Lea County, New Mexico



3. EME A-2 Site - spill area looking south.



4. EME A-2 Site - spill area looking north.

PHOTOGRAPHIC DOCUMENTATION

Rice Operating Company

EME A-2 Site

Lea County, New Mexico



5. EME A-2 Site - conducting soil boring.

APPENDIX A

Notifications of Spill

RICE Operating Company

122 West Taylor • Hobbs, New Mexico 88240
Phone: (505)393-9174 • Fax: (505) 397-1471

August 28, 2003

Paul Sheeley
NMOCD Hobbs Office
1625 N. French Drive
Hobbs, New Mexico

Re: EME SWD System
UL A-Sec 2 T20S R36E
Lea County, New Mexico

Dear Mr. Paul Sheeley:

Rice Operating Company (ROC) discovered an accidental discharge at the above referenced site the occurred on August 26, 2003. The failure occurred when a 6" A/C cracked due to unknown reasons. The release consisted of 15 bbls of produced water affecting 2,096 square feet. No bbls were recovered. ROC is evaluating the site to determine the remedial plan of action.

ROC requests approval of this C-141 form as an initial report. If you have any questions, please call me at the above number.

Sincerely,



Joe Gatts
Environmental Technician

Enclosed: C-141 Initial Report
Copy of Initial Spill

COPY

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

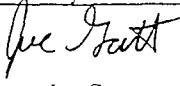
Name Rice Operating Company	Contact Joe Gatts
Address 122 West Taylor Hobbs, NM 88240	Telephone No. 505-393-9174
Facility Name EME	Facility Type SWD Disposal Line

Surface Owner State leased to Climax Co.	Mineral Owner	Lease No.
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LOCATION OF RELEASE

Unit Letter A	Section 2	Township 20s	Range 36e	Feet from the 1055 west A-2	North/South line	Feet from the	East/West Line	County LEA
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NATURE OF RELEASE

Type of Release Produced Water	Volume of Release 15 bbls	Volume Recovered None
Source of Release Pipeline	Date and Hour of Occurrence Unknown	Date and Hour of Discovery 8-26-03 1:00 pm
Was Immediate Notice Given? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Required	If YES, To Whom?	
By Whom?	Date and Hour	
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) Crack on 6" A/C line, the cause has been determined unknown. No immediate remedial action was taken.		
Describe Area Affected and Cleanup Action Taken. (Attach Additional Sheets If Necessary) 1326 square feet affected Rice's right of way. 770 square feet affected the pasture.		
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: 	OIL CONSERVATION DIVISION	
Printed Name: Joe Gatts	Approved by District Supervisor:	
Title: Environmental Technician	Approval Date:	Expiration Date:
Date: 8-28-03 Phone: 505-393-9174	Conditions of Approval:	Attached <input type="checkbox"/>

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 Joe Gatts
Address 122 West Taylor Hobbs, NM 88240	Telephone No. 505-393-9174
Facility Name EME	Facility Type SWD Disposal Line

Surface Owner State leased to Climax Co.	Mineral Owner	Lease No.
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LOCATION OF RELEASE

Unit Letter A	Section 2	Township 20s	Range 36e	Feet from the 1055 west A-2	North/South line	Feet from the	East/West Line	County LEA
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NATURE OF RELEASE

Type of Release Produced Water	Volume of Release 15 bbls	Volume Recovered None
Source of Release Pipeline	Date and Hour of Occurrence Unknown	Date and Hour of Discovery 8-26-03 1:00 pm
Was Immediate Notice Given? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not Required	If YES, To Whom?	
By Whom?	Date and Hour	
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)
Crack on 6" A/C line, the cause has been determined unknown. No immediate remedial action was taken.

Describe Area Affected and Cleanup Action Taken. (Attach Additional Sheets If Necessary)
326 square feet affected Rice's right of way. 770 square feet affected the pasture.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOC 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 NMOC 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, NMOC 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: <i>Joe Gatts</i>	OIL CONSERVATION DIVISION	
Printed Name: Joe Gatts	Approved by District Supervisor: <i>Emmanuel Ego</i>	<i>Chadley</i>
Title: Environmental Technician	Approval Date: 10-1-03	Expiration Date:
Date: 8-28-03 Phone: 505-393-9174	Conditions of Approval:	Attached <input type="checkbox"/>

APPENDIX B

Log of Boring A-2 (Test Hole)

Atkins Engineering
Associates, Inc.

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

LOG OF BORING A-2 (Test Hole)

(Page 1 of 1)

Rice Operating Company
122 West Taylor
Hobbs, NM 88240

Contact: Roy Roscon

Job #: RICEOPC.THD.03

Date : 1/2/04

Drill Start : 0815

Drill End : 1030

Boring Location :

Site Location

: Sec.2, T.20S., R36E.

Auger Type

: Hollow Stem

Logged By

: Mort Bates

Well: A-2

Depth
in
Feet

GRAPHIC

USCS

Samples

DESCRIPTION

Lab mg/kg

0

5

10

15

20

25

30

35

40

45

50

SM

SP

1

2

3

SM

4

SM

5

SM

6

SM

Silty Sand, Loose, Tan, Dry

Poorly Graded Sand, Gray to Black, Damp

Caliche, Loose, Gray, Tan, Damp

Caliche w/Some Sand, Loose, Tan, Damp

Silty Sand, Loose, Redish Tan, Damp

Silty Sand Partially Cemented, Firm, Tan, Dry

Silty Sand, Loose, Tan, Moist

Silty Sand Partially Cemented, Firm, Tan, Damp

Backfill w/drill cuttings

TD = 45 Feet

APPENDIX C

**Rice Operating Company
Cumulative Accidental Discharge Disclosures:
Potential Groundwater Impact**

RICE Operating Company

Cumulative Accidental Discharge Disclosures: Potential Groundwater Impact

These accidental discharge sites are hereby disclosed to NMOCD due to significant TPH or salt impact discovered during initial delineation. ROC has deemed the site remediation to be outside the scope of the Rice Operating Company Generic Spill and Leak Remediation Work Plan. Each of these sites has the potential for groundwater impact, based on delineation results. These sites are being evaluated for risk-based corrective action and plans will be submitted to the NMOCD.

Location	SWD System	Unit Letter	Legal Description	Feet to GW	Monitor Well	Landowner	Comments	Date Disclosed
leak A-12	EME	A	Sec. 12, T20S, R37E	27		Jimmy Cooper	TPH & cl- impact >21 ft	4/1/2003
leak A-2	EME	A	Sec. 2, T20S, R36E	30		NM	Cl- impact > 35 ft	1/16/2004
leak J-1	EME	J	Sec. 1, T20S, R36E	26		NM	Cl- impact	1/16/2004
Santa Rita EOL leak	BD	A	Sec. 27, T22S, R37E	50		Irvin Boyd	Cl- impact > 12 ft	1/16/2004
M-26 leak	Vacuum	M	Sec. 26, T17S, R35E	76		NM	TPH & cl- impact >12 ft	1/16/2004