AP - 44

STAGE 1 & 2 WORKPLANS

DATE: March 17, 2005

Highlander Environmental Corp.

Midland, Texas

CERTIFIED MAIL
RETURN RECIEPT NO. 7004 1160 0000 4840 9479

March 17, 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

RE: **INVESTIGATION & CHARACTERIZATION WORK PLAN**
H-13 LEAK, EME SWD SYSTEM
UNIT "H", SEC. 13, T20S, R36E
NMOCD Case #1R0429

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.

BACKGROUND & PREVIOUS WORK

ROC discovered an accidental discharge at the above referenced site on July 3, 2002. The soil had settled underneath a 4" asbestos/concrete system line causing it to break. According to the C-141 form (Initial) filed on July 11, 2002, the total volume spilled was 10 barrels with 5 barrels recovered and disposed of into the EME SWD system. The pipeline leak was permanently repaired to minimize the potential for further impairment.

Two delineation trenches were excavated on July 22, 2002, one on the east side of the system line and one on the west side of the line. Chloride concentrations in the east trench decreased to 254 mg/kg at a depth of 8' below ground surface, while the west trench exhibited elevated chloride levels to 12' below ground surface (bgs). A soil boring was installed on September 25, 2002 to further delineate the depth of impact. Based upon the chloride concentrations and relatively shallow groundwater (~31' bgs), this soil boring was completed as a monitoring well. The well was completed to a total depth of 41' bgs.

The monitoring well has been sampled on a quarterly basis since October 2002. The most recent sampling was performed on November 24, 2004, and the data was submitted to the NMOCD most recently on January 14, 2005, in the Annual Ground Water Report. In the nine (9) quarterly sampling events to date, the only constituent of concern observed was chloride, with concentrations ranging from 177 mg/L to 2600 mg/L. Total dissolved solid concentrations have ranged from 751 mg/L to 5600 mg/L.

INVESTIGATION & CHARACTERIZATION PLAN

As discussed above, existing site data document 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 ground water remedy.

Task 1 Collect Regional Hydrogeologic Data

A water well inventory will be performed to encompass a ½ mile radius around the facility. 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.

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

Highlander proposes to install soil borings in the vicinity of the leak, in order to further delineate the vertical and horizontal extent of vadose zone impact. Highlander also proposes to install two additional monitoring wells. The monitor wells will be placed appropriately to evaluate ground water impact and hydraulic gradient. The monitor wells will be constructed according to EPA and industry standards.

Following installation, the wells 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 wells 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 wells will be properly purged and sampled with clean, dedicated, polyethylene bailers and disposable line. The 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 by various methods 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 ground water remedy that offers the greatest environmental benefit while causing the least environmental impairment will be selected. 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.

Tim Reed

Timothy M. Reed, P.G.
Vice President

cc: CDH, KFP, file

enclosures: site maps, photos, disclosure package

FIGURES

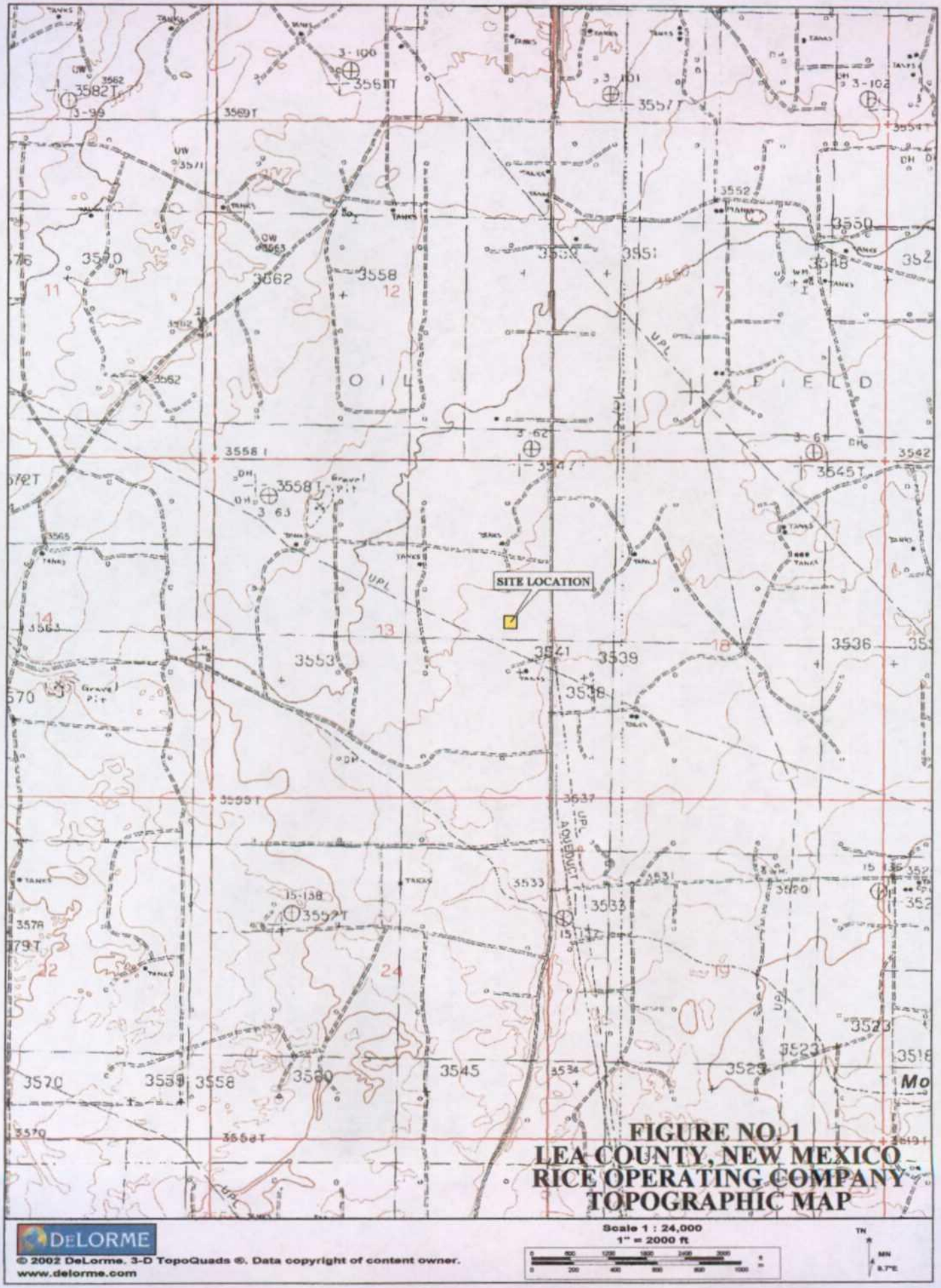


FIGURE NO. 1
LEA COUNTY, NEW MEXICO
RICE OPERATING COMPANY
TOPOGRAPHIC MAP

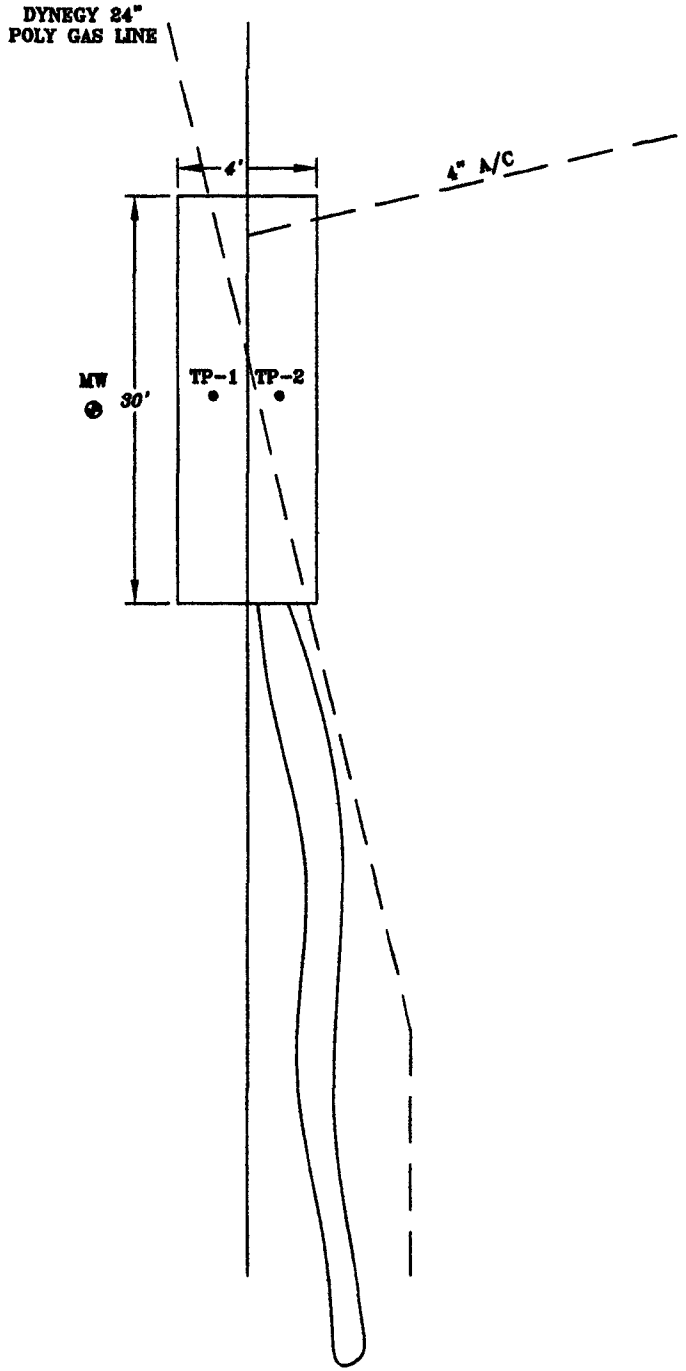


FIGURE NO. 2

LEA COUNTY, NEW MEXICO

RICE OPERATING COMPANY
EME H-13 LEAK
SITE MAP

DATE: 3/16/05
DRN. BY: JJ
FILE: C:\WGE\2007 SITE MAP

HIGHLANDER ENVIRONMENTAL CORP.
MIDLAND, TEXAS

PHOTOGRAPHS


H-13 Leak Site
Monitor well #1,
Looking North


H-13 Leak Site
Monitor Well #1
Looking East

APPENDIX A

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

July 11, 2002

Sylvia Dickey
NMOCD Hobbs Office
1625 N. French Dr.
Hobbs, NM 88240

Re: EME SWD System
UL-H Sec 13 T20S R36E
Lea County, New Mexico

Dear Ms. Sylvia Dickey:

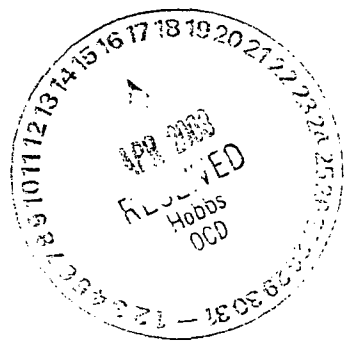
Rice Operating Company (ROC) discovered an accidental discharge at the above referenced site on July 3, 2002. The soil settled underneath a 4" A/C system line causing it to break. 10 bbls were released out onto the pasture affecting 152 square feet. 5 bbls were recovered and hauled to an EME SWD disposal facility. ROC will delineate the site as well as develop a remediation plan.

ROC requests approval of this C-141 form as an initial report. If you have any questions, please do not hesitate to call me at the above number.

Sincerely,

Chris Rodriguez
Environmental Technician

Enclosed: C-141 Initial Report
Drawing
Generic Spill and Leak Remediation Work Plan Sheet



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	Contact
Rice Operating Company	Chris Rodriguez
Address: 122 West Taylor Hobbs, NM 88240	Telephone No.: 505-393-9174
Facility Name: EME SWD System	Facility Type: System Line

Surface Owner	Mineral Owner	Lease No.
State		

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South line	Feet from the	East/West Line	County
H	13	20S	36E	1000' N Jct I-13				LEA

NATURE OF RELEASE

Type of Release	Volume of Release	Volume Recovered
Produced water	10 bbls	5 bbls
Source of Release	**Date and Hour of Occurrence**	**Date and Hour of Discovery**
4" A/C line	7-3-02 11:00 am	7-3-02 11:00 am
Was Immediate Notice Given? ☐ Yes ☒ No	If YES, To Whom?	
By Whom?	Date and Hour	
Was a Watercourse Reached? ☐ Yes ☒ 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).
The soil settled underneath a Rice Operating Company 4" A/C line causing it to break.
No remedial action was taken at the time.

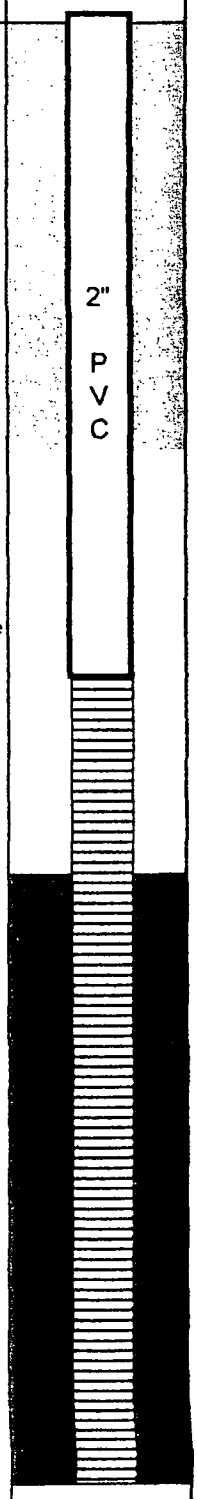
Describe Area Affected and Cleanup Action Taken. (Attach Additional Sheets If Necessary)
152' square feet was affected.
Rice Operating Company recovered 5 bbls and hauled it to an EME SWD disposal facility.
Rice Operating Company will delineate the site as well as develop a remediation plan.

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: Chris Rodriguez	OIL CONSERVATION DIVISION
Printed Name: Chris Rodriguez	Approved by District Supervisor: Paul Sheel
Title: Environmental Technician	Approval Date: 4-16-03 Expiration Date: ENVIRONMENTAL ENGINEER
Date: July 3, 2002 505 393-9174	Conditions of Approval: Attached ☐

DRILLING LOG	Site Name/Location	BORING/WELL INFORMATION			Logged by: Eades
RICE *Operarting Company*	**H-13**	Well No. SB-1/MW	Date Drilled: 9/25/02	Driller: Eades	Completion:
122 West Taylor	**13-T20S-R36E**	Well Depth:	Boring Depth: 41'	Well Material:	Plugged
Hobbs, New Mexico 88240	**EME SWD System**	Casing Length	Boring Diameter: 4.75"	Casing Size:	with
(505) 393-9174	**Lea County, NM**	Screen Length:	Drilling Method: Air Rotary	Slot Size:	cuttings.

DEPTH	SUBSURFACE LITHOLOGY	SAMPLE TYPE	Test Results (ppm) Cl⁻	TPH	REMARKS	Boring
0	Ground surface		Titrate	EPA 418.1		
8	Topsoil				cuttings	
19					bentonite	
20	Caliche Dry Sand	Grab	1503			
25	Damp Sand	Grab	557			
28					screen	
30	Damp Sand	Grab	370			
31	Sand					
34					water	
40					rathole	
41	Sand and Clay					



Generic Spill and Leak Remediation Work Plan
SWD Systems Operated by Rice Operating Company

Rice Operating Company (ROC) realizes that a remediation work plan is required for significant spill and leak discharges to demonstrate that contaminants have not and will not migrate vertically so as to cause groundwater to exceed standards. In the future, C-141 reports describing significant discharges will be accompanied with this generic remediation work plan. It is understood that each spill and leak site must be handled as a unique event, therefore this generic plan is subject to alteration when appropriate for specific event sites.

1. C-141 completed and filed pursuant to NMOCD guidelines and Rule 116.

2. Site assessment for groundwater depth, area water sources, etc. as is defined with NMOCD's site assessment guidelines.

3. Notification to NMOCD 24 hours in advance of major site delineation activities.

4. Perimeter and center delineation of the visibly impacted area to define vertical extent of TPH and Chloride impact.

5. Confirmation of field results by a certified laboratory.

6. Delineation results reported to NMOCD within 60 days of spill or leak discovery accompanied by an estimated timeline for remediation activities.

7. Excavation and proper disposal/blending of highly impacted soils as is practical.

8. Compacted clay layer application as is practical for impeding the downward migration of any remaining contaminants.

9. Backfill and if necessary, enhanced surface remediation consisting of basic application of gypsum, fertilizer, etc. to enhance re-growth of natural vegetation or re-seeding as needed. Topsoils of major chloride impact may require replacement with same before re-seeding.

10. Final report of remediation activities to be filed with NMOCD.

ROC is the service provider (operator) for Seven Salt Water Disposal Systems in Lea County, New Mexico: Eunice-Monument-Eumont (EME) SWD System, Blinebry Drinkard (BD) SWD System, Justis SWD System, Abo SWD System, Vacuum SWD System, Hobbs SWD System, and Hobbs East SWD System. ROC has no ownership of any portion of pipelines, wells, equipment or facilities. Each System is owned by a unique consortium of oil producers called System Partners, who provide all operating capital on a percentage ownership/usage basis.

Major projects require System Partner AFE approval and work begins as funds are received. Any environmental projects that require extensive remediation involvement must have System Partner approval and funding prior to commencement of work.