AP - 60

STAGE 1 & 2 REPORTS

DATE:

March 23, 2005

Whole Earth Environmental, Inc.
2103 Arbor Cove
Katy, Texas 77494
281.394.2050
whearth@msn.com

March 23, 2005

CERTIFIED MAIL
RETURN RECEIPT NO. 7004 0750 0003 4825 1433

Mr. Wayne Price
New Mexico Energy, Minerals, & Natural Resources
Oil Conservation Division, Environmental Bureau
1220 South Saint Francis Drive
Santa Fe, New Mexico 87505

Dear Mr. Price:

SUBJECT: INVESTIGATION AND CHARACTERIZATION PLAN
K-33-1 (NMOCD CASE # 1R0427-92) AND
SARAH PHILLIPS EOL
NE ¼ OF SW ¼ SEC. 33, T 19 S, R 37 E
LEA COUNTY, NEW MEXICO

Rice Operating Company (ROC) has retained Whole Earth Environmental, Inc. (Whole Earth) to address potential environmental concerns at the above referenced site. ROC is the service provider (operator) for the EME saltwater disposal system (SWD) 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 type and magnitude require System Partners authorization for expenditure approval and work begins as funds are received. In general, project funding is not forthcoming until agency approval of the work plan is received. Your timely review and approval of this submission is requested.

For all environmental projects, ROC will choose a prognosis 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 the characterization assessment.

2. Upon evaluation of the results from the ICP, a recommended remedy will be submitted as a Corrective Action Plan (CAP).

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

BACKGROUND AND PREVIOUS WORK

Enclosed please find copies of two ROC Junction Box Disclosure Reports describing investigation and remedial actions. Vegetation in the vicinity does not appear stressed.

Jct. K-33-1: The first report regarding Jct. K-33-1 describes attempts to delineate the site vertically and laterally using a backhoe. The Junction Box Disclosure Report also documents the installation of a monitoring well approximately 170 feet southwest of the K-33-1 junction box in January 2002. Quarterly groundwater sampling has confirmed no hydrocarbon impact on the groundwater but has indicated elevated chloride concentrations at depths below 30 feet.

Sarah Phillips EOL: The second report describes work associated with initial investigation of the Sarah Phillips EOL that began in November 2003. Samples were taken using a backhoe to a depth of 14 feet. Chlorides were found to be present and did not decline with depth. A junction box disclosure report was submitted with the 2003 junction box reports.

The work summarized in these reports documents efforts to delineate the extent of the sites by subsurface sampling using a backhoe. While the lateral extent was determined, sampling depth was limited to the reach of the backhoe. Since chloride concentrations did not decline with depth, deeper sampling is warranted.

Due to the close proximity of the two sites (less 200 feet), future investigation of the area will be handled together.

INVESTIGATION AND CHARACTERIZATION PLAN

Previous work (noted above) has indicated groundwater impact by chlorides. Confirmation is proposed as follows.

Task 1: Hydrological Data

A water well inventory will be conducted to encompass a half-mile radius around the site. The inventory will include a review of water well records of the New Mexico Office of the State Engineer W.A.T.E.R.S. database and United States Geologic Survey website. Water wells denoted on the USGS 7.5 minute topographic quadrangle map with the half-mile radius will be inspected.

Task 2: Delineate Impacted Groundwater

Whole Earth proposes to delineate the extent of chloride impact on groundwater by drilling to groundwater depth and evaluating the chloride impact on the groundwater surrounding the suspected source volumes.

Task 3: Evaluate Flux from the Vadose Zone to Groundwater

Upon establishing the area of chloride impact, additional monitoring wells may be required to monitor the dynamics of chloride migration at this site. As part of the ICP, the residual impact to the vadose zone soils will be evaluated to determine what remediation techniques might be required.

The information collected from the three tasks listed above will be evaluated to design a vadose and/or groundwater remedy. The remedy determined to offer the greatest environmental benefit while imposing the least environmental impairment will be selected. Such recommendations and findings will be submitted to the NMOCD in a subsequent CAP.

When evaluating any proposed remedy or investigation, 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 require additional information or wish to discuss information submitted or suggested in this letter, please feel free to contact Mr. Mike Griffin at (713) 376-2790 or me at (713) 775-6350.

Sincerely yours,

Darrell Glueck

Darrell Glueck
Technical Director
Whole Earth Environmental, Inc.

Enclosures
Area Map
Junction Box Disclosure Report, EME K-33-1, 1/21/2003
Junction Box Disclosure Report, EME Sarah Phillips EOL, 12/30/03
Photographs: EME K-33-1 Junction Box and Monitoring Well

CC:
Ms. Kristin Farris
Rice Operating Company
122 West Taylor
Hobbs, New Mexico 88240

Ms. Carolyn Haynes
Rice Operating Company
122 West Taylor
Hobbs, New Mexico 88240

Mr. Mike Griffin
Whole Earth Environmental, Inc.
2103 Arbor Cove
Katy, Texas 77494

 1000 ft Scale: 1 : 25,000 Detail: 13-0 Datum: WGS84

RICE OPERATING COMPANY
JUNCTION BOX DISCLOSURE FORM

BOX LOCATION

SWD SYSTEM	JUNCTION	UNIT	SECTION	TOWNSHIP	RANGE	COUNTY	BOX DIMENSIONS - FEET		
							Length	Width	Depth
EME	K-33-1	K	33	19S	37E	Lea	Box Has Not Been Built Yet		

LAND TYPE: BLM _____ STATE _____ FEE LANDOWNER Sarah Phillips et. al OTHER _____

Depth to Groundwater 37 feet NMOCD SITE ASSESSMENT RANKING SCORE: 20

Date Started 9/20/2001 Date Completed not complete OCD Witness No

Soil Excavated 270 cubic yards Excavation Length 28 Width 24 Depth 11 feet

Soil Disposed 108 cubic yards Offsite Facility Sundance Location Eunice, NM

FINAL ANALYTICAL RESULTS: **Sample Date** n/a **Sample Depth** n/a

Procure 5-point composite sample of bottom and 4-point composite sample of sidewalls. TPH, BTEX and Chloride laboratory test results completed by using an approved lab and testing procedures pursuant to NMOCD guidelines.

Sample Location	Benzene mg/kg	Toluene mg/kg	Ethyl Benzene mg/kg	Total Xylenes mg/kg	GRO mg/kg	DRO mg/kg	Chlorides mg/kg
Vadose Zone Samples Will Be Included With Final Closure Report							

General Description of Remedial Action: Site was delineated vertically and laterally with a backhoe. Chloride impact was consistent vertically, while TPH was minimal at the location The site was bored on 10/3/02 and chloride was found to impact groundwater. A cased monitor well was installed and the groundwater has been sampled and analyzed quarterly (see annual groundwater report for results). ROC has contracted a hydrologic consultant to assist ROC in developing a remediation plan for the vadose zone at groundwater-impacted sites with the ultimate objective being final closure.

CHLORIDE FIELD TESTS

LOCATION	DEPTH (ft)	ppm
Vertical	10	900
	12	950
	14	850
Soil Bore	5	600
	10	850
	15	800
	18	750
	20	700
	22	1000

I HEREBY CERTIFY THAT THE INFORMATION ABOVE IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

DATE 1/21/2003 PRINTED NAME Kristin Farris

SIGNATURE Kristin Farris TITLE Project Scientist

COPY

RICE OPERATING COMPANY
JUNCTION BOX DISCLOSURE* REPORT

BOX LOCATION

SWD SYSTEM	JUNCTION	UNIT	SECTION	TOWNSHIP	RANGE	COUNTY	BOX DIMENSIONS - FEET		
							Length	Width	Depth
EME	Sarah Phillips EOL	K	33	19S	37E	Lea	Box Eliminated		

LAND TYPE: BLM _____ STATE _____ FEE LANDOWNER Sarah Phillips OTHER _____

Depth to Groundwater 33 feet NMOCD SITE ASSESSMENT RANKING SCORE: 20 *

* A water well is located 1192 ft east of this site

Date Started 11/3/2003 Date Completed 11/5/2003 OCD Witness No

Soil Excavated 300 cubic yards Excavation Length 30 Width 30 Depth 12 feet

Soil Disposed 0 cubic yards Offsite Facility n/a Location n/a

FINAL ANALYTICAL RESULTS: **Sample Date** 11/5/2003 **Sample Depth** 12 ft bgs

Sample Location	PID ppm	GRO mg/kg	DRO mg/kg	Chloride mg/kg
Vertical @ 12 ft	0.0	<10.0	<10.0	4880

TPH and Chloride laboratory test results completed by using an approved lab and testing procedures pursuant to NMOCD guidelines.

General Description of Remedial Action: This EOL box is located next to an inactive production battery that has been dismantled. Delineation with a backhoe yielded elevated chloride concentrations that did not decline with depth. All PID readings were 0.0 ppm and lab results confirmed that TPH concentrations are well below guidelines. The excavation produced no lateral or vertical declines in chloride concentrations so the hole was backfilled and the box is identified with a marker for further consideration at a later date. A new box is not required here as the adjoining battery has been abandoned and dismantled. The surrounding surface has healthy vegetation. There is a monitor well 170 ft southwest of this site that ROC installed due to groundwater impact discovered during a junction box delineation. The final remediation of these two sites will be conducted together. ROC will continue to monitor the groundwater quality at the K-33-1 monitor well (analysis is enclosed).

ADDITIONAL EVALUATION IS *LOW* PRIORITY.

enclosures: chloride graph, PID reading, photos, lab results, monitor well water analysis table

CHLORIDE FIELD TESTS

LOCATION	DEPTH (ft)	ppm
Vertical	6	916
	7	862
	8	1398
	9	2434
	10	2316
	11	2264
	12	2554
	13	2434
	14	3441

I HEREBY CERTIFY THAT THE INFORMATION ABOVE IS TRUE AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

DATE 12/30/03 PRINTED NAME Kristin Farris

SIGNATURE Kristin Farris TITLE Project Scientist

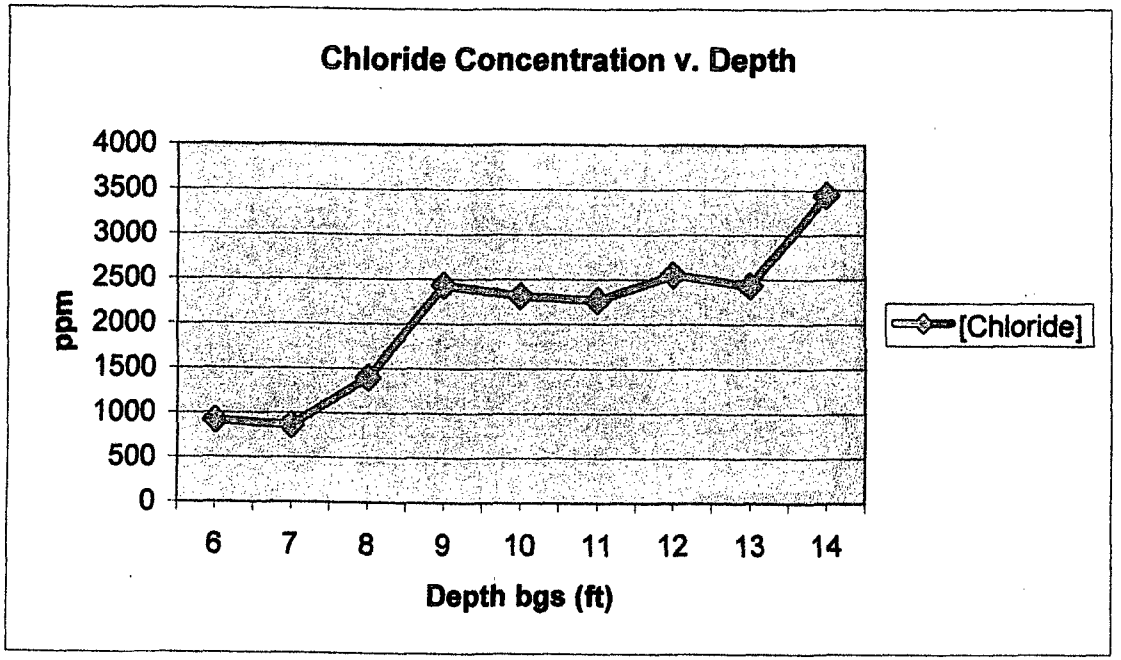
**** This site is a "DISCLOSURE." It will be placed on a prioritized list of similar sites for further consideration.***

EME Sarah Phillips EOL

Unit 'K', Sec. 33, T19S, R37E

Depth bgs (ft)	[Cl] ppm
6	916
7	862
8	1398
9	2434
10	2316
11	2264
12	2554
13	2434
14	3441

Groundwater = 33 ft



1

ETGI Jct box final Report

SITE EXCAVATION INFORMATION

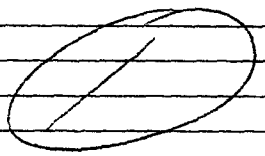
Sarah Phillips

DATE	DEPTH	CL	PID	TPH	SOIL COMPOSITION
11-3-03	6'	916		no odor	Light brown sand
	7'	864			
	8'	1398			
	9'	2434			white caliche
	10'	2316			
	11'	2264			
	12'	2554			
	13'	2434			
	14'	3441			

Vertical dig 14'

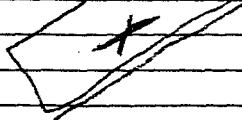
at source

NT



North 1

at source



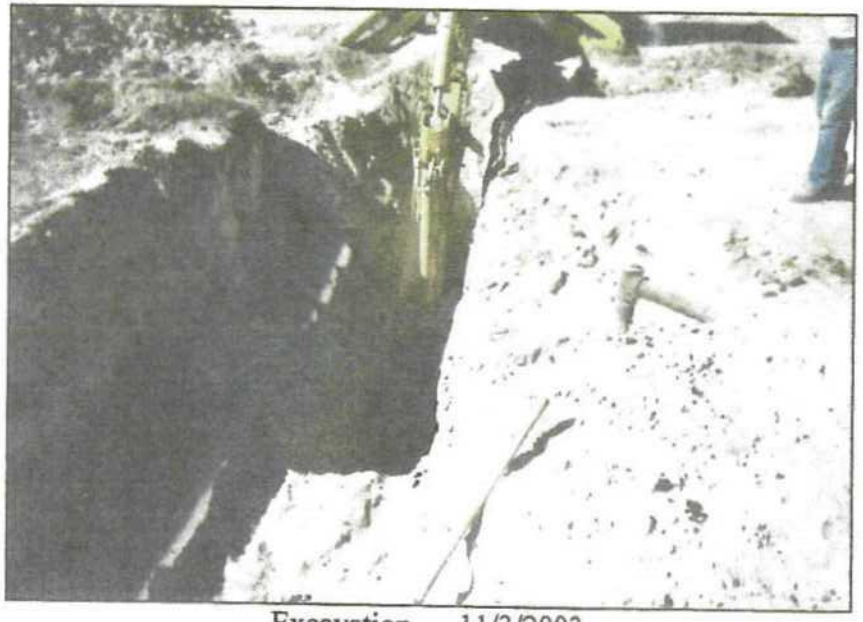
5" PVC Line

GARY STARK
ETGI - HOBBS

EME Sarah Phillips EOL

Box Site Without Lumber; Prior to Excavation 10/22/2003

Close-up of Site Prior to Excavation



Excavation 11/3/2003

Backfilled Excavation with Identification Plate (looking South)

CARDINAL LABORATORIES

PHONE (325) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
RICE OPERATING CO.
ATTN: KRISTIN FARRIS
122 W. TAYLOR
HOBBS, NM 88240
FAX TO: (505) 397-1471

Receiving Date: 11/05/03
Reporting Date: 11/07/03
Project Number: NOT GIVEN
Project Name: SARAH PHILLIPS
Project Location: LEA CO., NM

Sampling Date: 11/05/03
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: BC
Analyzed By: BC/AH

LAB NUMBER	SAMPLE ID	GRO (C_6-C_{10}) (mg/Kg)	DRO (>C_{10}-C_{28}) (mg/Kg)	Cl* (mg/Kg)
ANALYSIS DATE		11/05/03	11/05/03	11/06/03
H8145-1	BOTTOM 12'	<10.0	<10.0	4880
Quality Control		779	818	950
True Value QC		800	800	1000
% Recovery		97.4	102	95.0
Relative Percent Difference		1.5	1.1	6.9

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

Chemist

11/7/03
Date

H8145.XLS

CHAIN OF-CUSTODY AND ANALYSIS REQUEST

CARDINAL LABORATORIES, INC.

2111 Beechwood, Abilene, TX 79603 (915) 673-7001 Fax (915) 673-7020
101 East Marland, Hobbs, NM 88240 (505) 393-2326 Fax (505) 393-2476

Page ____ of ____

Company Name:	RICE Operating Company	BILL TO P.O. #:	
Project Manager:	Kristin Farris	Company:	RICE
Address:	122 W. Taylor	Attn:	
City:	Hobbs, State: NM Zip: 88240	Address:	
Phone #:	393-9174 Fax #: 397-1471	City:	
Project #:	Project Owner:	State: Zip:	
Project Name:	Sarah Phillips	Phone #:	
Project Location:	Lea	Fax #:	
Sampler Name:	Gary Stark		

FOR LAB USE ONLY Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	CRUDE OIL	SLUDGE	OTHER :	PRESERV: ACID/BASE:	ICE / COOL	OTHER :	SAMPLING: DATE	TIME	ANALYSIS REQUEST: Total BTEX	Chloride
61451	Section 12'	G	6			X					X		11/5	8:31	X	X

CASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analyses. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

Terms and Conditions: Interest will be charged on all accounts more than 30 days past due at the rate of 24% per annum from the original date of invoice, and all costs of collection, including attorney's fees.

Sampler Relinquished:	Date:	Received By:	
	Time:		
Relinquished By: Gary Stark	Date: 11-5-03 Time: 7:15	Received By: (Lab Staff) Burgett A Cook	
Delivered By: (Circle One) Sampler - UPS - Bus - Other:	Sample Condition: Cool: Yes / No; Intact: Yes / No	CHECKED BY: (Initials)	

Phone Result: ☐ Yes ☐ No Add'l Phone #:
Fax Result: ☐ Yes ☐ No Add'l Fax #:
REMARKS: Fax copy to Rice

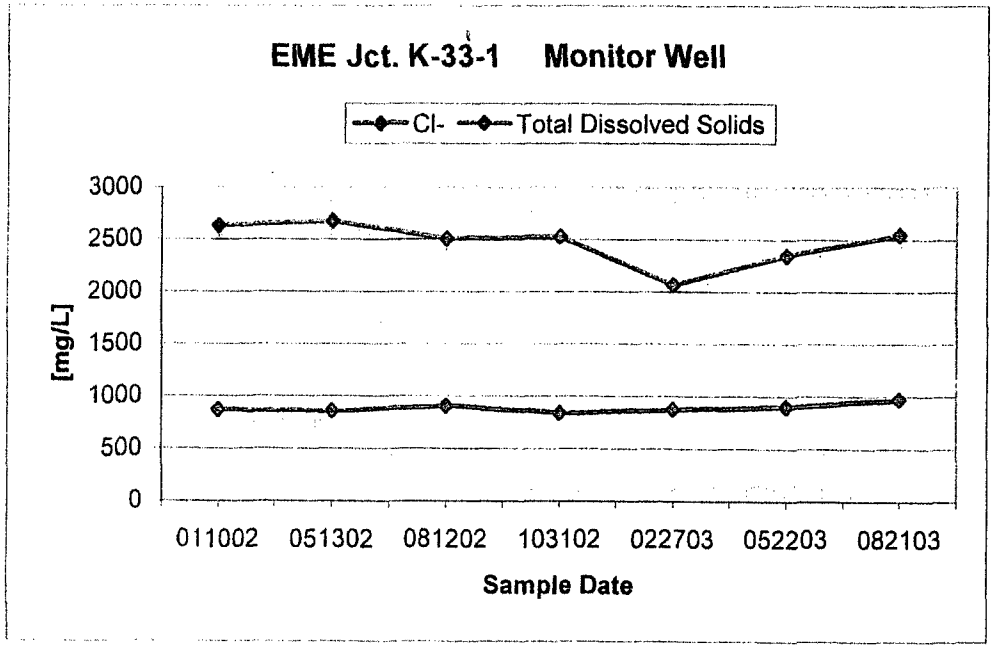
† Cardinal cannot accept verbal changes. Please fax written changes to 505-393-2476.

EME Jct. K-33-1
K, 33-1, 19S, 37E

Rice Operating Co. Monitor Well Data Sheet

All parameter concentrations are in mg/L.

MW #	WATER LEVEL * (ft)	TOTAL DEPTH	WELL VOLUME (gal)	VOLUME BAILED	SAMPLE DATE	TIME	CL-	TDS	BENZENE	TOLUENE	ETHYL BENZENE	TOTAL XYLENES
1	36.90	41.00	0.700	2.00	011002	1140	872	2635	<0.002	<0.002	<0.002	<0.006
1	36.88	40.78	0.624	2.90	051302	1010	860	2680	<0.001	<0.001	<0.001	<0.001
1	37.20	40.79	0.574	1.75	081202	1200	913	2510	<0.001	<0.001	<0.001	<0.001
1	37.11	40.77	0.586	1.75	103102	1315	842	2530	<0.001	<0.001	<0.001	<0.001
1	37.10	40.77	0.580	1.70	022703	1500	877	2070	<0.001	<0.001	<0.001	0.001
1	31.10	41.20	1.616	4.80	052203	1314	904	2350	<0.001	<0.001	<0.001	<0.001
1	37.29	40.04	0.440	1.32	082103	1206	975	2550	<0.001	<0.001	<0.001	<0.001
1	37.40	40.78	0.540	1.60	111903	1500	869	2470	<0.001	<0.001	<0.001	<0.001



** Depth to water is measured from the top of the casing*

Casing is 3.021 ft

Monitoring Well
Southeast View from
K-33-1 Junction Box
(February 2005)

EME K-33-1 Junction Box
East View toward Junction Box
And Monitoring Well
(February 2005)