AP - 49

STAGE 1 & 2 WORKPLANS

DATE:

Aug. 25, 2003

Highlander Environmental Corp.

Midland, Texas

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SEP 0 8 2003

OIL CONSERVATION DIVISION

August 25, 2003

Mr. Wayne Price
Environmental Bureau
Oil Conservation Division
1220 S. St. Francis Drive
Santa Fe, New Mexico 87505

Re: Work Plan for Monitor Well Drilling, Rice Operating Company, Justis Saltwater Disposal System, SWD Well #H-2, Unit H, Section 2, T-26-S, R-37-E, Lea County, New Mexico

Dear Mr. Price:

Highlander Environmental Corp. (Highlander) has been requested by Rice Operating Company (ROC) to prepare the following work plan for additional monitor well drilling at the ROC, Justis Saltwater Disposal System, SWD Well #H-2, Unit H, Section 2, T-26-S, R-37-E, Lea County, New Mexico (Site). Figure 1 shows the location of the Site.

1.0 Background

ROC is the service provider (operator) for the Justis Salt Water Disposal System and has no ownership of any portion of the pipeline, well or facility. The Justis System is owned by a consortium of oil producers, System Partners, who provide all operating capital on a percentage ownership/usage basis.

The Site currently has three (3) monitor wells, which were installed by Eades Drilling and Pump Service. The monitor wells were placed to evaluate groundwater in the vicinity of the H-2 saltwater flow-through collection and injection facility. Soil samples were collected during tank replacement and sample results prompted the placement of the monitor wells. Originally, two monitor wells, MW-1 and MW-2 exhibited elevated chloride concentrations. These monitor wells have been sampled on a quarterly basis since they were drilled in January 2002, and analyzed for major anions and cations, benzene, toluene, ethylbenzene and xylene (BTEX) and total dissolved solids (TDS). The last three quarters of sampling have shown relatively low chloride concentrations for monitor wells MW-1 and MW-3. The third monitor well, MW-2, continued to exhibit elevated chloride concentrations. As a result, Rice has requested a proposal for additional monitor well locations to

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further delineate chloride impact. Sampling results for the last six (6) quarters are shown on the attached Table 1.

2.0 Monitor Well Installation and Sampling

Based upon the hydraulic gradient, which appears to be in a northerly direction, a total of two (2) to three (3) monitor wells are proposed during this investigation. The proposed monitor well locations are shown on Figure 2. These monitor wells will be constructed using two (2) inch diameter schedule 40 PVC threaded casing and factory slotted screen. The wells will be completed to an approximate depth of 130 to 140 feet below surface and constructed with sufficient well screen to place a minimum of five (5) feet of screen above and fifteen (15) feet below the groundwater. The well screens will be surrounded with graded silica sand to a depth 3 feet above the screen. A layer of bentonite pellets, 3 feet thick, will be placed in the borehole above the sand. The remainder of the annulus will be filled with cement and bentonite grout to about one (1) foot below ground. The well will be secured with a locking steel protector anchored in a concrete pad measuring approximately 3 feet by 3 feet.

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 wells will be placed in appropriate containers (i.e., 55-gallon drums, portable tank, etc.) and retained at the Site until disposal is arranged.

Each 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. If PSH is detected in a monitor well, groundwater samples will not be collected from that well. Once inspected, the wells will be sampled with clean, dedicated, polyethelene bailers and disposable line. The groundwater samples will be shipped to TraceAnalysis Inc. in Lubbock, Texas for analysis of Benzene, Toluene, Ethylbenzene, and Xylene (BTEX) by method EPA 8021B, and chloride by method 300.0. All samples will be delivered to the laboratory via overnight delivery and under chain of custody control. It is not anticipated that soil samples will be collected during monitor well installation. All drill cuttings will be placed on plastic until proper disposal can be arranged.

3.0 Surveying and Reporting

Once all three of the new monitor wells have been completed, a surveyor licensed in the state of New Mexico will survey all of the new and existing monitor wells. Surveying will include location and top of casing elevations. Once the laboratory data has been received and evaluated, a comprehensive report of work performed to date will be prepared, to include a work plan based upon the results of the monitor well placement.

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

Highlander Environmental Corp.

By: Tim Reed

Timothy M. Reed, REM, CAPM
Vice President

cc: Carolyn Doran Haynes – ROC
Chris Williams – NMOCD District I

Table I
Rice Operating Co.
Justis SWD #H-2
Sample Analysis

MW#	Sample Date	Chlorides	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes
1 (5")	3/1/02	301	971	-	-	-	-
	6/10/02	173	-	0.001	0.008	0.01	0.066
	8/16/02	111	619	<0.001	<0.001	<0.001	<0.001
	11/12/02	257	971	<0.001	0.001	<0.001	<0.001
	2/13/03	97.5	647	<0.001	<0.001	<0.001	<0.001
	5/20/03	102	682	<0.001	<0.001	<0.001	<0.001
2	3/1/02	700	1780	-	-	-	-
	5/23/02	904	2710	<0.001	<0.001	<0.001	<0.001
	8/16/02	1040	3390	<0.001	<0.001	<0.001	<0.001
	11/12/02	1130	2600	0.002	0.003	<0.001	<0.002
	2/13/03	1110	2780	<0.001	<0.001	<0.001	<0.001
	5/20/03	1130	3600	<0.001	<0.001	<0.001	<0.001
3	3/1/02	37.2	561	-	-	-	-
	5/16/02	35.4	570	<0.001	<0.001	<0.001	<0.001
	8/16/02	93.1	631	<0.001	<0.001	<0.001	<0.001
	11/12/02	97.5	688	0.030	0.014	0.002	0.003
	2/13/03	102	666	<0.001	<0.001	<0.001	<0.001
	5/20/03	168	885	<0.001	<0.001	<0.001	<0.001

NOTE: - denotes not analyzed

FIGURES

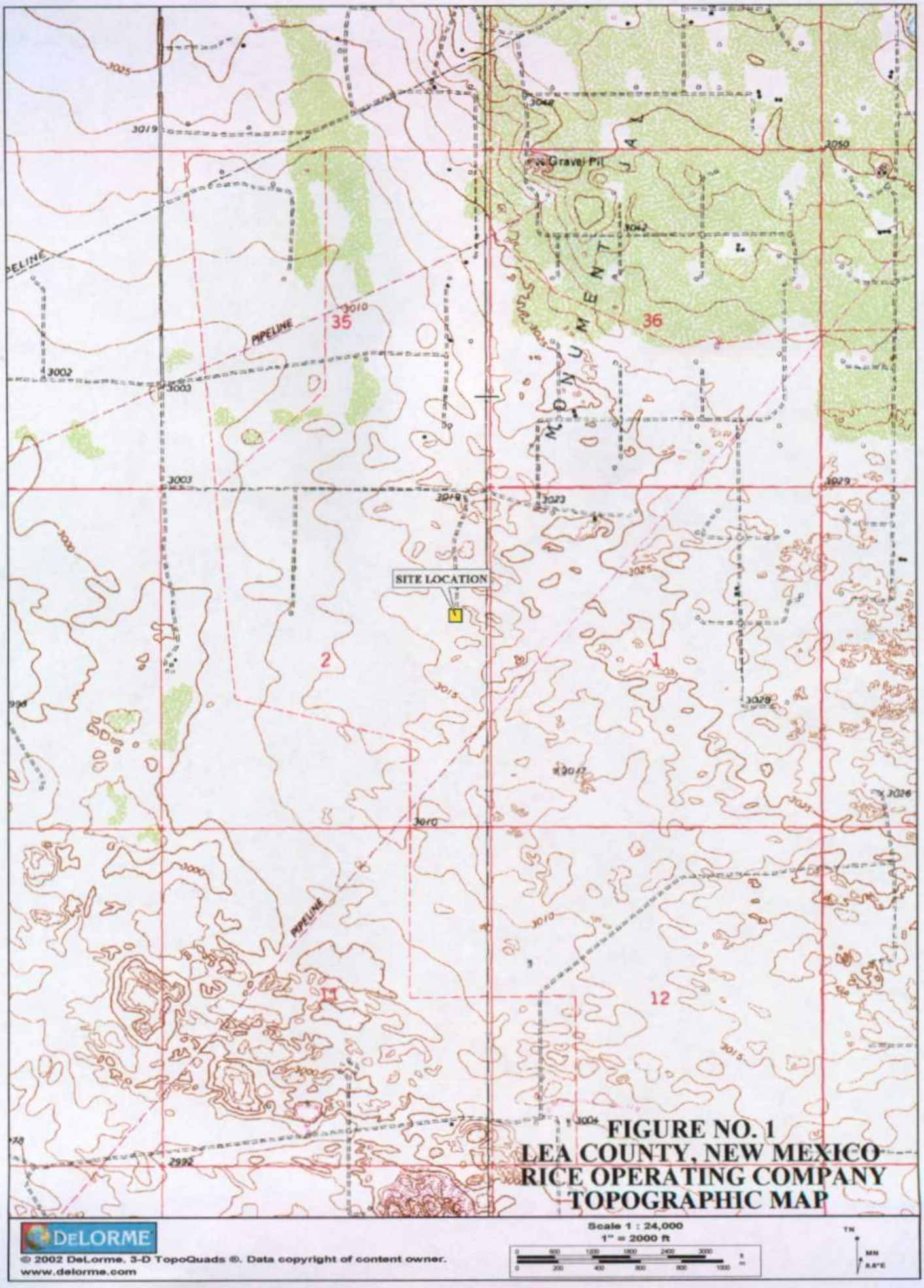
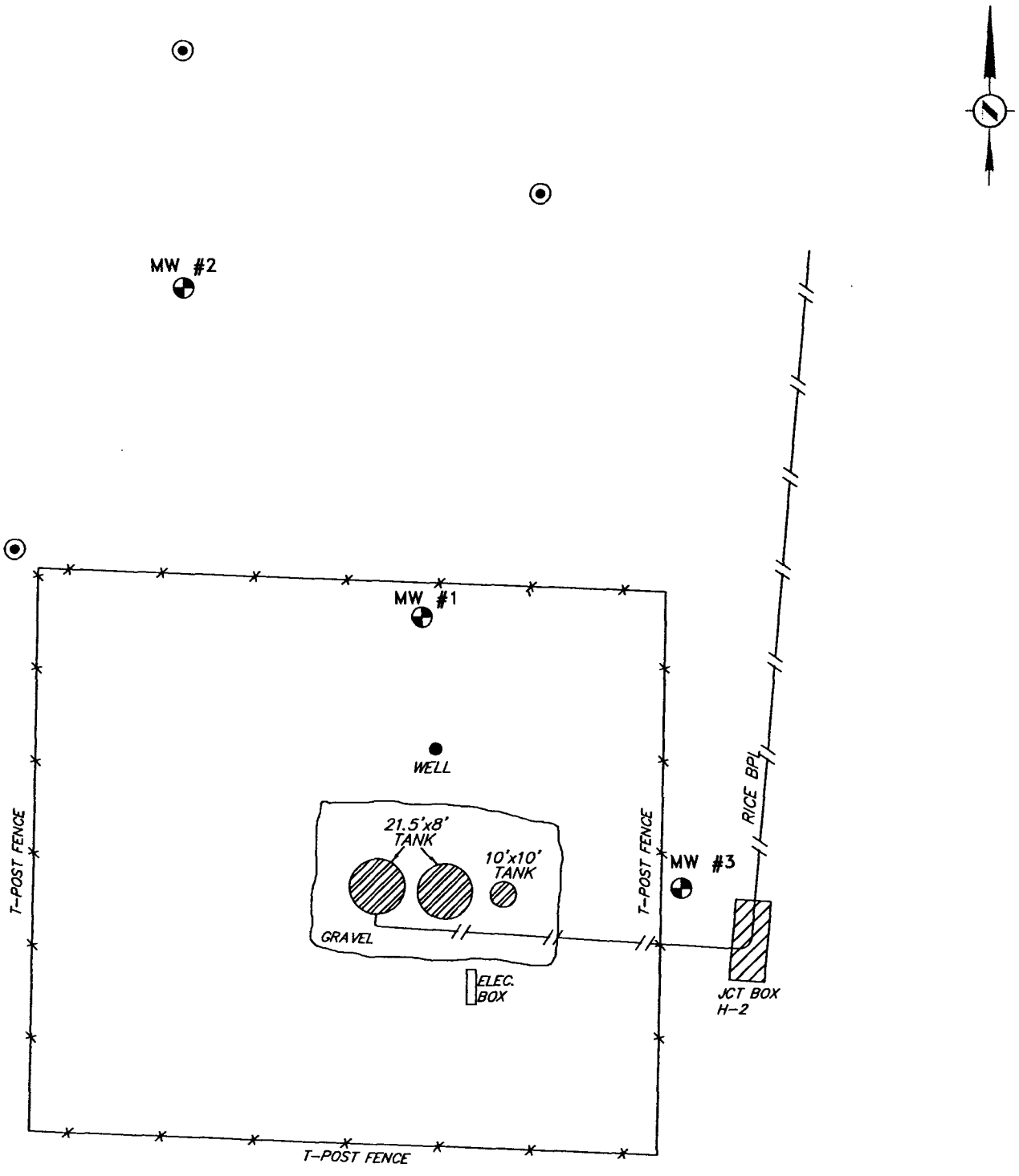


FIGURE NO. 1
LEA COUNTY, NEW MEXICO
RICE OPERATING COMPANY
TOPOGRAPHIC MAP

DeLORME

Scale 1 : 24,000
1" = 2000 ft

TN
MN
8.6°E



WELL#	ELEVATION
MW #1	3024.25' (TOP PVC 4' ABOVE GRND)
MW #2	3023.03' (TOP STEEL LID)
MW #3	3020.13' (TOP BRASS CAP)

SCALE: 1"=60'

60 0 60

MONITOR WELL LOCATION

PROPOSED MONITOR WELL LOCATIONS

FIGURE NO. 2

LEA COUNTY, NEW MEXICO

RICE OPERATING COMPANY

SITE MAP

HIGHLANDER ENVIRONMENTAL CORP.
MIDLAND, TEXAS

DATE: 8/27/03
DWG. BY: JDA
FILE: C:\POGO\SITE MAP 8-03