July 11, 2005

INVESTIGATION & CHARACTERIZATION PLAN – AMENDMENT

BD A-27 Release Site
T22S, R37E, Section 27, Unit Letter A
Lea County, New Mexico

Prepared for:

RICE *Operating Company*
122 West Taylor
Hobbs, New Mexico 88240

R. T. HICKS CONSULTANTS, LTD.
1909 Brunson Ave. ▲ Midland, TX 79701-6924 ▲ 432.638.8740 ▲ Fax: 413.403.9968

R. T. HICKS CONSULTANTS, LTD.

1909 Brunson Ave. ▲ Midland TX 79701-6924 ▲ 432.638.8740 ▲ Fax: 413.403.9968

CERTIFIED MAIL
RETURN RECIEPT NO. 7099 3400 0017 1737 2121

July 13, 2005

Mr.Paul Sheeley
New Mexico Energy, Minerals, & Natural Resources
Oil Conservation Division
1625 North French Drive
Hobbs, New Mexico 88240

RE: **INVESTIGATION & CHARACTERIZATION PLAN - AMENDMENT**
BD A-27 Release Site
T22S-R37E-Section 27, Unit Letter A

Mr. Sheeley:

RICE Operating Company (ROC) has retained R.T. Hicks Consultants, Ltd. (Hicks Consultants) to address potential environmental concerns at the above-referenced site. As explained in more detail below, we plan to conduct the following activities:

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. Environmental projects of this magnitude require System Partner AFE approval and work begins as funds are received. 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 amended Investigation and Characterization Plan (ICP) is a proposal for data gathering and site characterization and assessment.

2. Upon evaluating the data and results from this 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.

SITE LOCATION AND LAND USE

The A-27 Release site is located at township 22 south, range 37 east, section 27, unit letter A approximately 4 miles south-southeast of Eunice, NM as shown on the attached Site Location Map (Figure 1). The surface landowner is Mr. Irwin Boyd. Land in the site area is primarily utilized for crude oil production and cattle ranching. Area crude oil production is operated by Moriah Resources, Inc., Lewis B. Burleson Inc., Texaco Exploration and Production Inc., Chevron USA Inc., Yarbrough Oil LP, Encore Operating LP, Anadarko Petroleum Corp, Apache Corp., John H. Hendrix Corp., and Arch Petroleum Inc.

On June 10, 2005, depth to groundwater was measured at 49 feet below ground surface. The measurement was obtained from a cathodic protection well located approximately 500 feet northeast of the site.

SITE HISTORY

ROC discovered an accidental discharge at the above-mentioned site that occurred on January 27, 2005. The NMOCD was notified of the release on January 27, 2005. High temperature in the 2-inch PVC line coming from the Santa Rita Battery's heater caused the line to swell and separate from its fittings. The line and fittings were replaced as a permanent repair. The volume of the release was estimated at 800 barrels (bbls). The size of the affected area was approximately 66,400 square feet. By January 28, 2005, ROC recovered 730 bbls for disposal into the BD SWD system. The initial C-141 form was submitted to the OCD Hobbs office on February 7, 2005. ROC submitted an Investigation and Characterization Plan (ICP) on March 28, 2005, which was denied by Mr. Paul Sheeley of the NMOCD office in Hobbs in his letter dated April 13, 2005. The amended ICP herein addresses those concerns expressed by Mr. Sheeley.

SUMMARY OF CHLORIDE CONCENTRATIONS IN SOIL

On January 31, 2005 and February 9, 2005, soil samples were collected using a backhoe in four areas where the major pooling of produced water occurred. The samples were field-tested for chloride content using the titration method in accordance with procedures explained in QP-01. In each area sampled the chloride concentrations decreased with depth to levels below 250 ppm at 10 feet below ground surface, with the exception of sample location C (Figure 2).

On February 17, 18, and 21, 2005, soil samples were collected with a hand auger over the affected area using a 25-foot grid spacing (Figure 3) for a more complete delineation of horizontal extent of chloride impact. The results of the soil sampling are summarized in Table 1 and depicted in Figures 3, 4, 5, and 6. Based on the chloride results versus depth from the preliminary field analysis, the chloride penetration was found to exceed 4 feet below ground surface only in low-lying areas.

At the request of Paul Sheeley (NMOCD Hobbs office), a sample of the produced water representative of the release was taken from the Santa Rita EOL location on May 16, 2005, and submitted to the lab for chloride analysis. The chloride concentration of this sample was 84,800 mg/l.

RECOMMENDATION FOR FURTHER ACTIONS

The repair of the line and fittings has minimized the threat of additional impact to the vadose zone, however further investigation and characterization of the site shall be conducted to confirm that the groundwater is not threatened by this release. The additional assessment will also assist ROC in selecting the appropriate environmental remedy, if necessary.

Task 1 Evaluate Concentrations of Constituents of Concern in the Vadose Zone

Additional subsurface soil samples are proposed for further characterization of the vertical extent (beyond 10 feet below ground surface) of chloride-impacted soil in areas where preliminary sampling results indicated the higher chloride concentrations. Soil samples will be and field-tested for chloride content using the titration method as explained in the attached quality procedure QP-02. Some of these samples will be submitted to a laboratory for chloride and moisture content. Samples will also be collected for headspace analysis using an organic vapor meter (OVM), which will be calibrated to assume a benzene response factor using quality procedure QP-07 (attached) Selected samples with headspace readings above 100 ppm will also be analyzed by a laboratory for the regulated constituents benzene, toluene, ethylbenzene, and xylenes (BTEX) using EPA Method 8260.

The following concentrations of analytes will be used to delineate the extent of impact to the vadose zone in the field:

- 100 ppm OVM, and
- 250 ppm chloride

Task 2 Evaluate Chloride Flux from the Vadose Zone to Ground Water

The HYDRUS-1D computer model will be used to evaluate the potential of any residual chloride mass in the vadose zone to materially impair groundwater quality at the site. HYDRUS-1D is used to simulate one-dimensional water flow, heat transport, and the movement of solutes involved in consecutive first-order decay reactions in variably-saturated soils. We will employ predictions of the migration of chloride ion zone to ground water in our selection of an appropriate remedy for the land surface and underlying vadose zone. If a threat to groundwater is confirmed, we will use the HYDRUS-1D model predictions to develop a remedy for the vadose zone. If necessary, we will simulate:

1. excavation, disposal and replacement of clean soil to remove the chloride and hydrocarbon mass,
2. installation of a low permeability barrier to minimize natural infiltration,
3. surface grading and seeding to eliminate any ponding of precipitation and promote evapotranspiration, thereby minimizing natural infiltration, and
4. a combination of the above potential remedies.

The information gathered from tasks 1 and 2 will be evaluated and utilized to design a soil and/or ground water remedy if needed. The 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.

We appreciate the opportunity to work with you on this project. Please feel free to call me at 432-638-8740 or Kristin Farris Pope at 505-393-9174, if you have any questions.

Sincerely,

Gilbert J. Van Deventer

Gilbert J. Van Deventer, REM, PG, NMCS
R.T. Hicks Consultants, Ltd.

cc: RTH, CDH, KFP, file

enclosures: site location map, photos, and sampling procedures

FIGURES

SITE LOCATION MAP

BD Jct. A-27 leak
UL/A Sec. 27 T22S R37E
N 32° 22.19'
W 103° 08.63'

In Eunice, NM, at the intersection of Hwy 234 and Hwy 18 proceed south 4 miles. Turn right and continue east 0.2 miles to Lewis Buzles on Santa Rita Battery. Turn left and proceed 400 ft north to the leak site.

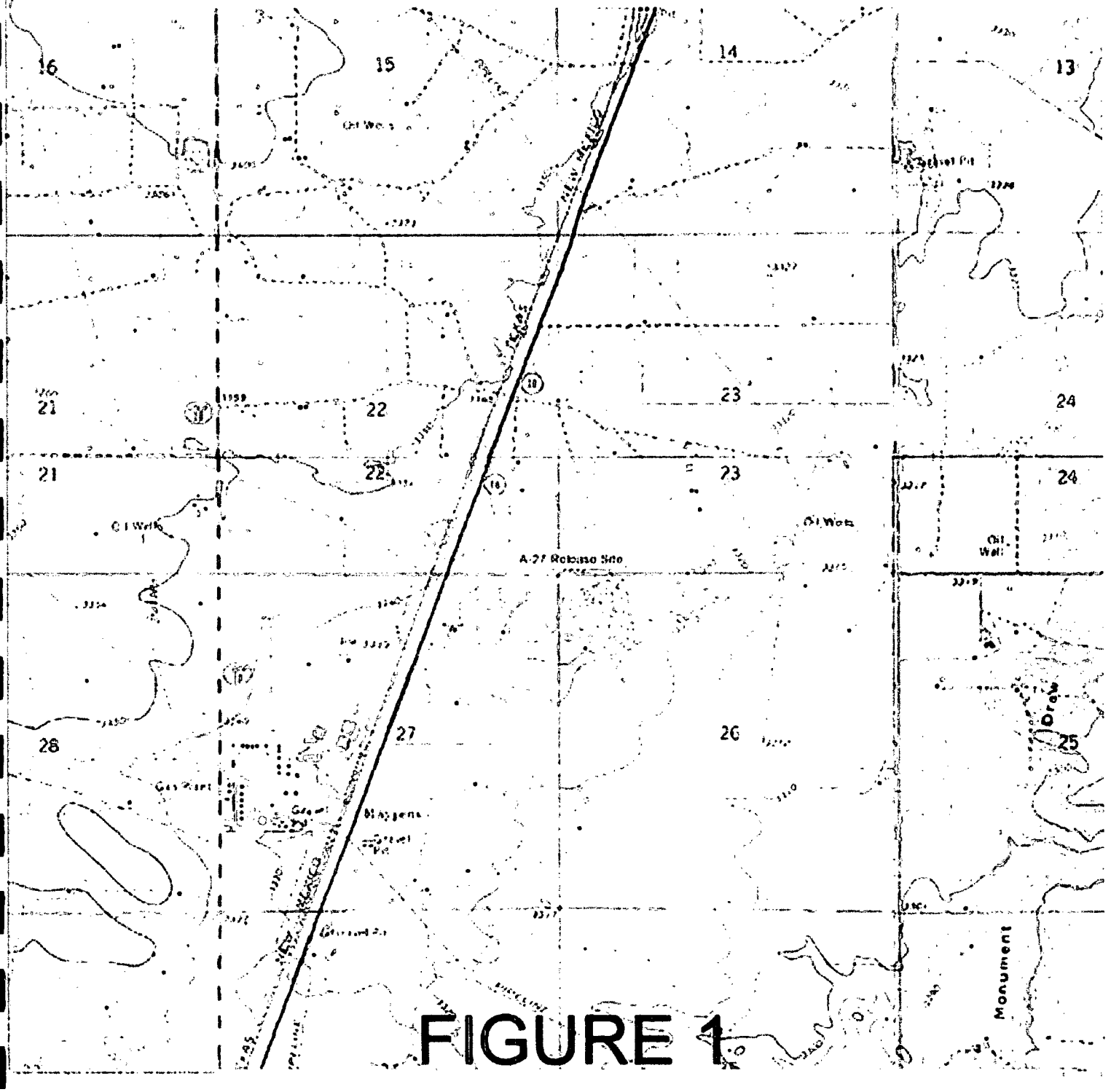
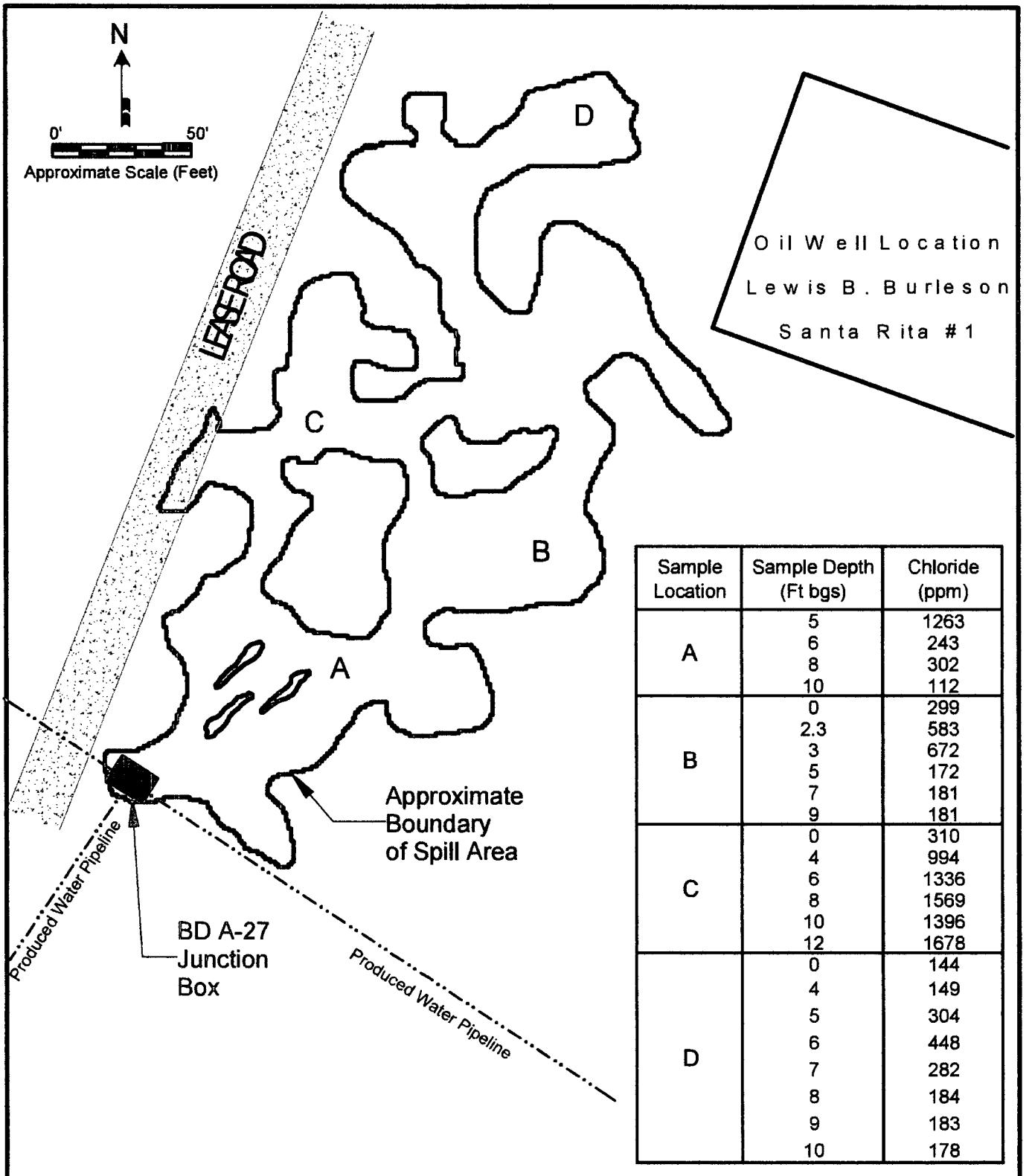


FIGURE 1



Sample Location	Sample Depth (Ft bgs)	Chloride (ppm)
A	5	1263
	6	243
	8	302
	10	112
B	0	299
	2.3	583
	3	672
	5	172
	7	181
	9	181
C	0	310
	4	994
	6	1336
	8	1569
	10	1396
	12	1678
D	0	144
	4	149
	5	304
	6	448
	7	282
	8	184
	9	183
	10	178

R. T. HICKS CONSULTANTS, LTD.
1909 Brunson Ave., Midland, Texas 79701

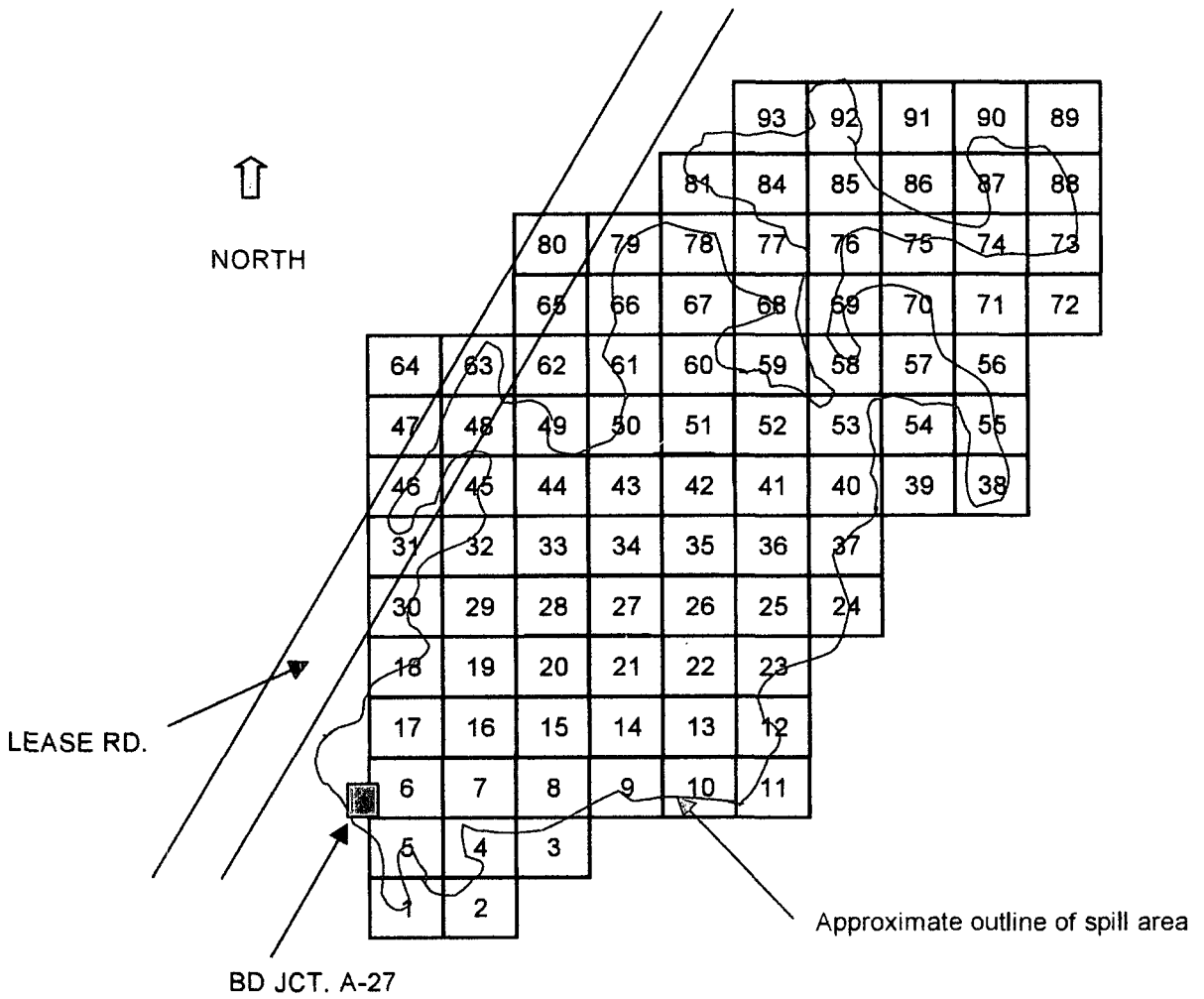
Site: BD A-27 Release Site
Sampling Dates: 01/31/05 and 02/09/05
Author: G. Van Deventer
Approximate Scale: 1 inch = 50 feet

FIGURE 2
PRELIMINARY
SOIL SAMPLE
RESULTS

R. T. Hicks Consultants, Ltd.
1909 Brunson Ave., Midland, Texas 79701-6924

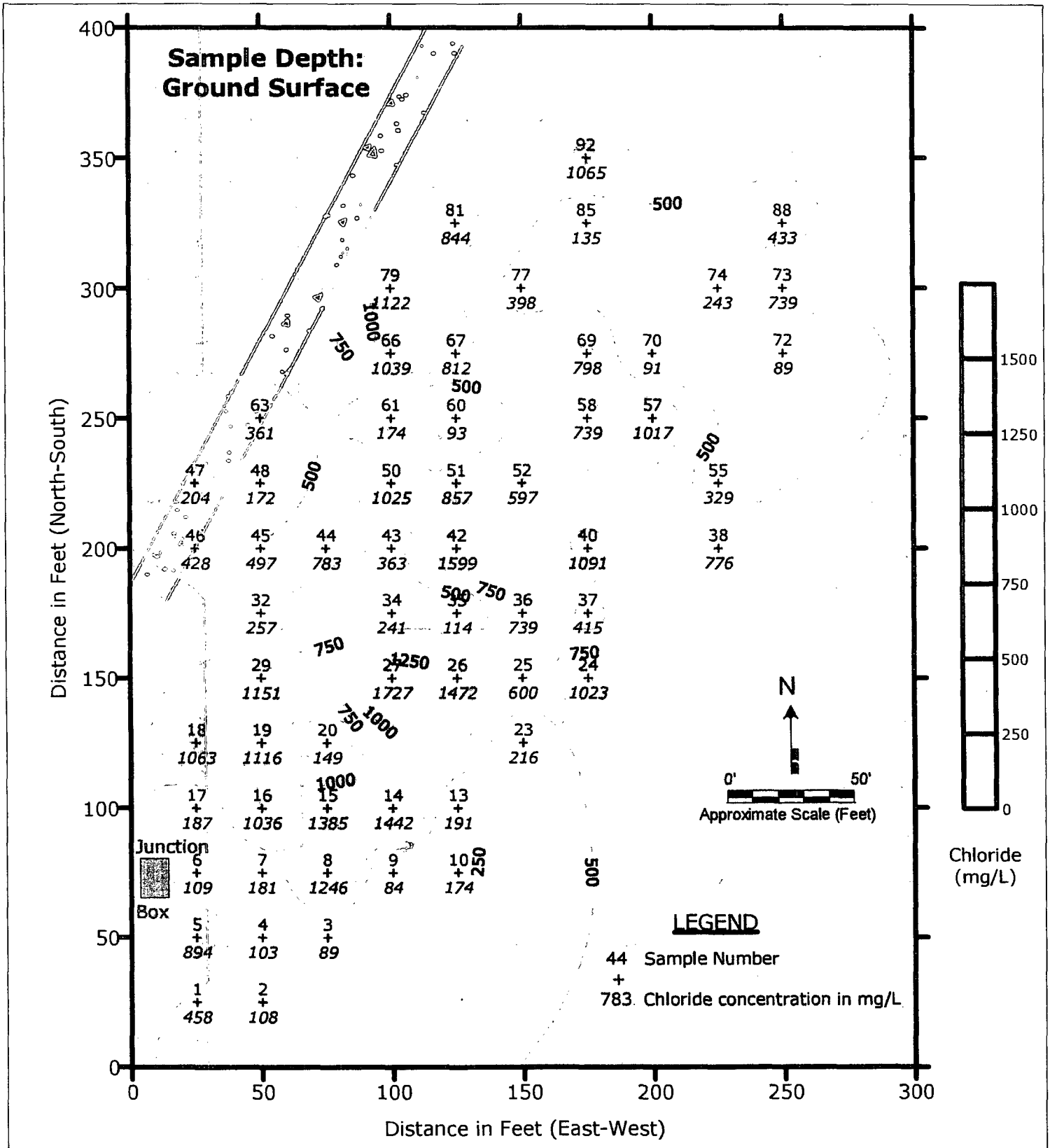
FIGURE 3

BD JCT. A-27 RELEASE GRID

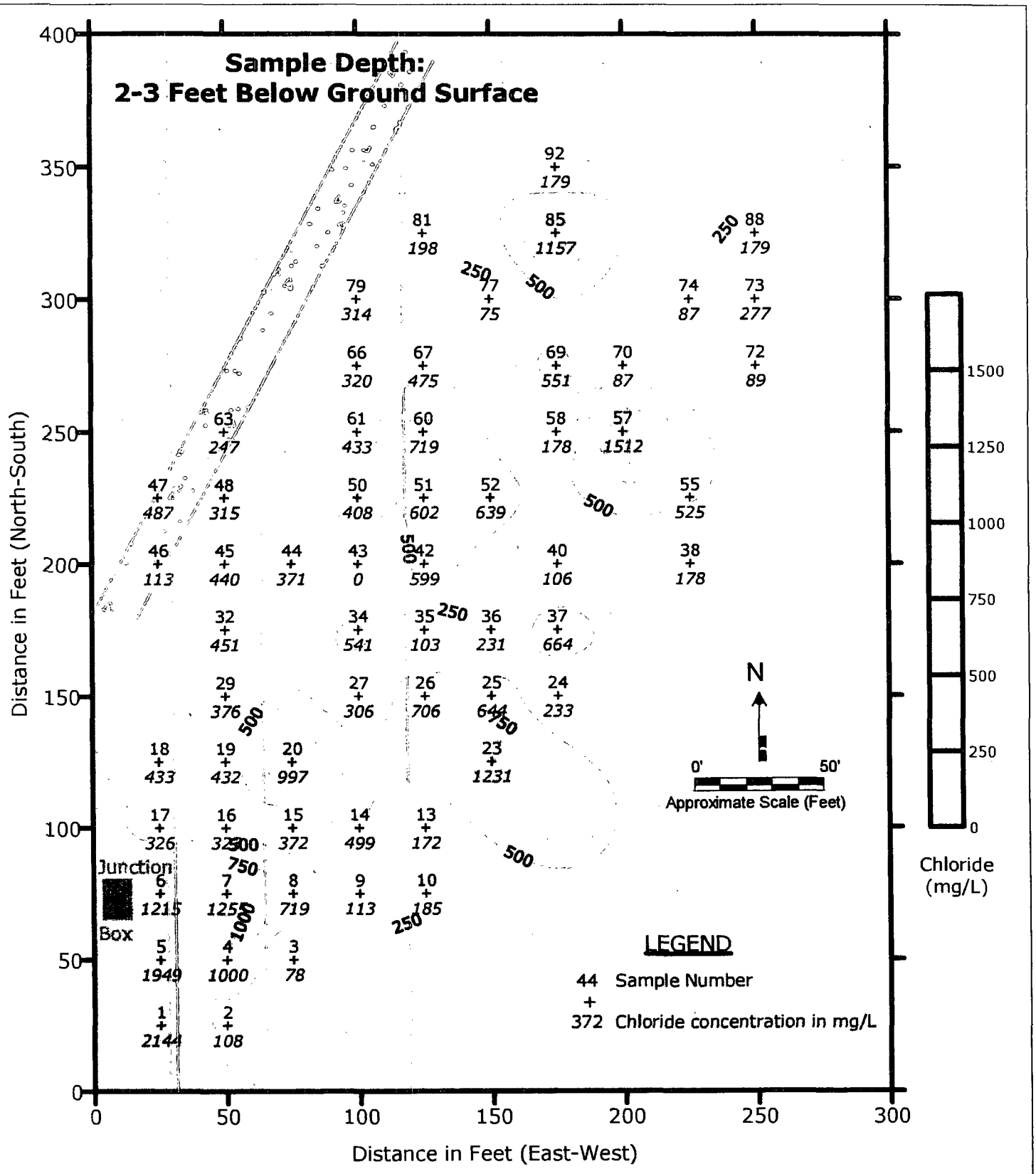


Number on each grid indicates a sampling point location.

Grids set up on 25-foot spacing

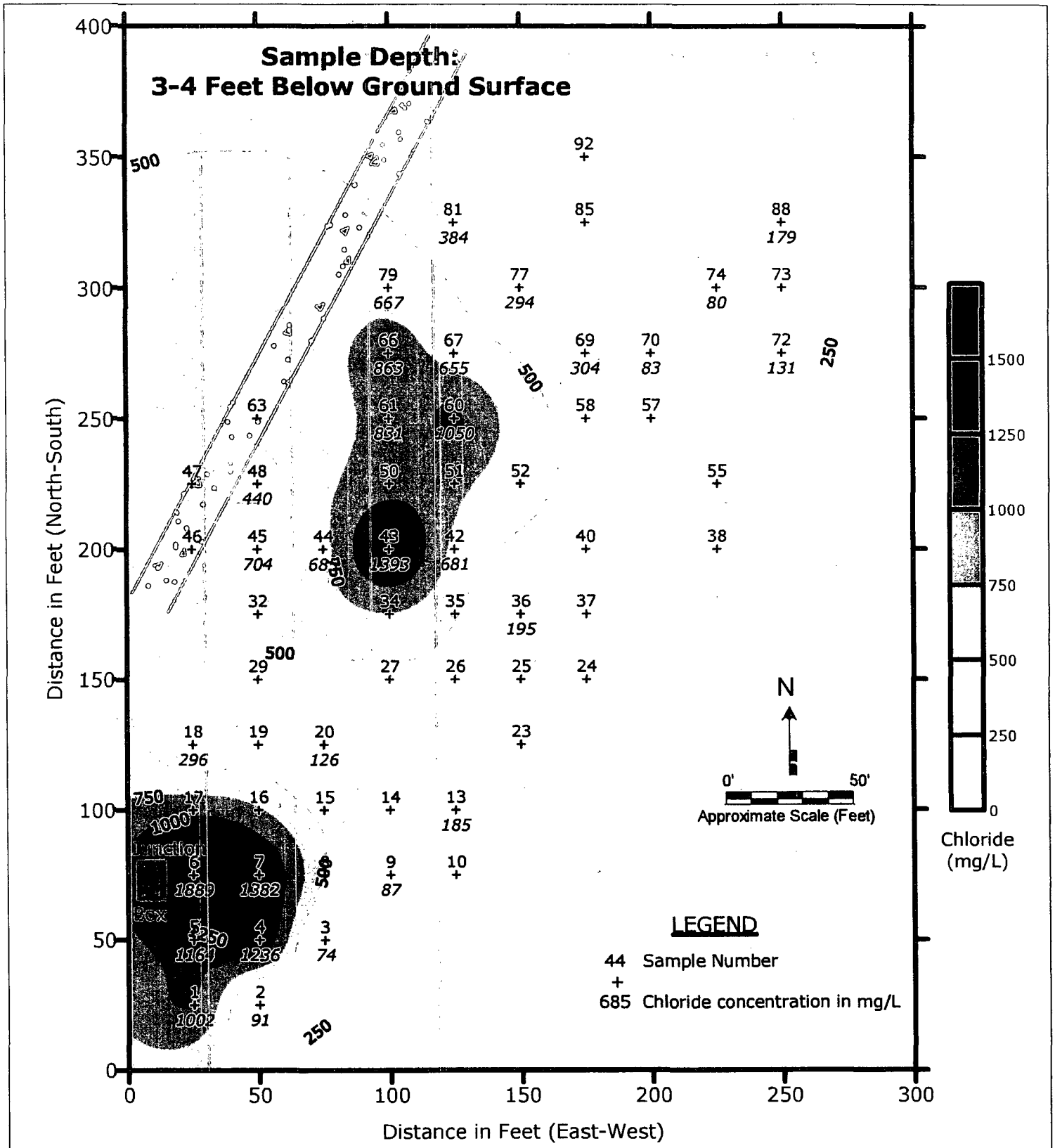


R. T. Hicks Consultants, Ltd 1909 Brunson Ave. Midland, Texas 79701	Client: RICE Operating Company Site: BD A-27 Release Site Date: February 17-22, 2005 Approximate Scale: 1 inch = 50 feet	FIGURE 4 CHLORIDE CONCENTRATIONS AT GROUND SURFACE



Isopleth Contouring Method: Surfer Version 7.0 - Radial Inverse Multiquadratic Function

R. T. Hicks Consultants, Ltd 1909 Brunson Ave. Midland, Texas 79701	Client: RICE Operating Company Site: BD A-27 Release Site Date: February 17-22, 2005 Approximate Scale: 1 inch = 50 feet	FIGURE 5 CHLORIDE CONCENTRATIONS AT 2-3 FEET BGS



Isopleth Contouring Method: Surfer Version 7.0 - Radial Inverse Multiquadratic Function

R. T. Hicks Consultants, Ltd 1909 Brunson Ave. Midland, Texas 79701	Client: RICE Operating Company Site: BD A-27 Release Site Date: February 17-22, 2005 Approximate Scale: 1 inch = 50 feet	FIGURE 6 CHLORIDE CONCENTRATION AT 3-4 FEET BGS

TABLES

R. T. Hicks Consultants, Ltd.

1909 Brunson Ave., Midland, Texas 79701

TABLE 1
BD A-27 RELEASE SITE
CHLORIDE CONCENTRATIONS
Sampling Date: February 17, 18, & 21, 2005

Sample Point	Chloride (ppm)		
	Surface	2-3 ft bgs	3-4 ft bgs
1	458	2144	1002
2	108	108	91
3	89	78	74
4	103	1000	1236
5	894	1949	1164
6	109	1215	1889
7	181	1255	1382
8	1246	719	---
9	84	113	87
10	174	185	---
13	191	172	185
14	1442	499	---
15	1385	372	---
16	1036	323	---
17	187	326	---
18	1063	433	296
19	1116	432	---
20	149	997	126
23	216	1231	---
24	1023	233	---

TABLE 1
BD A-27 RELEASE SITE
CHLORIDE CONCENTRATIONS
Sampling Date: February 17, 18, & 21, 2005

Sample Point	Chloride (ppm)		
	Surface	2-3 ft bgs	3-4 ft bgs
25	600	644	---
26	1472	706	---
27	1727	306	---
29	1151	376	---
32	257	451	---
34	241	541	---
35	114	103	---
36	739	231	195
37	415	664	---
38	776	178	---
40	1091	106	---
42	1599	599	681
43	363	0	1393
44	783	371	685
45	497	440	704
46	428	113	---
47	204	487	---
48	172	315	440
50	1025	408	---
51	857	602	---

TABLE 1
BD A-27 RELEASE SITE
CHLORIDE CONCENTRATIONS
Sampling Date: February 17, 18, & 21, 2005

Sample Point	Chloride (ppm)		
	Surface	2-3 ft bgs	3-4 ft bgs
52	597	639	---
55	329	525	---
57	1017	1512	---
58	739	178	---
60	93	719	1050
61	174	433	831
63	361	247	---
66	1039	320	863
67	812	475	655
69	798	551	304
70	91	87	83
72	89	89	131
73	739	277	---
74	243	87	80
77	398	75	294
79	1122	314	667
81	844	198	384
85	135	1157	---
88	433	179	179
92	1065	179	---

Chloride analysis performed on site using chloride titration method (QP-03)

Produced water sample taken at Santa Rita EOL indicated a chloride concentration of 84,800 mg/L.

PHOTODOCUMENTATION

TRACEANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298
155 McCutcheon, Suite H El Paso, Texas 79932 888•588•3443 915•585•3443 FAX 915•585•4944
E-Mail lab@traceanalysis.com

Analytical and Quality Control Report

Paul Sheeley
OCD-Hobbs
1625 N. French Dr.
Hobbs, NM 88240

Report Date: April 15, 2005

Work Order: 5041202

Project Location: A-27-22-37
Project Name: RICE a-27
Project Number: 05128-050411

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
59682	0501281200	water	2005-01-28	12:00	2005-04-12
59683	0404111030	soil	2005-04-11	10:30	2005-04-12

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 4 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Michael Abel

Dr. Blair Leftwich, Director

Analytical Report

Sample: 59682 - 0501281200

Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	17323	Date Analyzed:	2005-04-12	Analyzed By:	WB
Prep Batch:	15270	Sample Preparation:	2005-04-12	Prepared By:	WB

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**25800**	mg/L	1000	0.500

Sample: 59683 - 0404111030

Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	17324 [a]	Date Analyzed:	2005-04-12	Analyzed By:	WB
Prep Batch:	15271	Sample Preparation:	2005-04-12	Prepared By:	WB

[a]Matrix spike not being reported. %EA= 108 and RPD is 1.

Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		**37200**	mg/Kg	5000	1.00

Method Blank (1) QC Batch: 17323

Parameter	Flag	MDL Result	Units	RL
Chloride		<0.337	mg/L	0.5

Matrix Blank (1) QC Batch: 17324

Parameter	Flag	MDL Result	Units	RL
Chloride		1.93	mg/Kg	1

Laboratory Control Spike (LCS-1) QC Batch: 17323

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Chloride	13.2	13.1	mg/L	1	12.5	<0.337	106	1	90 - 110	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1) QC Batch: 17324

Param	LCS Result	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Chloride	14.4	<0.0602	mg/Kg	1	12.5	1.93	100		90 - 110	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) QC Batch: 17323 Spiked Sample: 59679

Param	MS Result	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	RPD	Rec. Limit	RPD Limit
Chloride	80.1	79.0	mg/L	5	12.5	11.1	110	1	70.7 - 124	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Standard (ICV-1) QC Batch: 17323

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/L	12.5	12.9	103	90 - 110	2005-04-12

Standard (CCV-1) QC Batch: 17323

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/L	12.5	13.0	104	90 - 110	2005-04-12

Standard (ICV-1) QC Batch: 17324

Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	12.5	13.1	105	90 - 110	2005-04-12

Standard (CCV-1) QC Batch: 17324

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	12.5	13.1	105	90 - 110	2005-04-12

Report Date: April 15, 2005
05128-050411

Work Order: 5041202
RICE a-27

Page Number: 4 of 4
A-27-22-37

Page 1 of 1

6701 Aberdeen Avenue, Ste 9
Lubbock, Texas 79424
Tel (806) 794-1296
Fax (806) 794-1298
1 (800) 378-1296
email: lab@traceanalysis.com

TraceAnalysis, Inc.

~~155 McGoldrick, Suite H~~
~~El Paso, Texas 79932~~
~~Tel (915) 585-3443~~
~~Fax (915) 585-4944~~
1 (888) 588-3443

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

LAB Order ID # 5041202

Company Name: New Mexico Oil Conservation Div Phone #: 505 393 6161
Address: (Street, City, Zip) 1625 N. French Dr Fax #: 393 0720
e-mail: psheeley@state.nm.us
Contact Person: Paul Sheeley, x113
Invoice to: (If different from above) Ed Martin 505 476 3492
Project #: 050128-050411 Project Name: RYE A-27
Project Location: A-27-22-37 BD-SWD Sampler Signature:

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume/Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	PRESERVATIVE METHOD: HCl	HNO_3	H_2SO_4	NaOH	ICE	NONE	SAMPLING: DATE	TIME
59682	050128 1200	1	4oz	X								X		1/28	1200
683	050411 1030	1	4oz		X							X		4/11	1030

ANALYSIS REQUEST (Circle or Specify Method No.)

MTBE 8021B/602	BTEX 8021B/602	TPH 418.1/TX1005	TX 1005 Extended (C35)	PAH 8270C	Total Metals Ag As Ba Cd Cr Pb Se Hg 6010B/200.7	TCLP Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Volatiles	TCLP Semi Volatiles	TCLP Pesticides	RCI	GC/MS Vol 8260B/624	GC/MS Semi Vol 8270C/625	PCB's 8082/608	Pesticides 8081A/608	BOD TSS pH	Moisture Content	Chlorides			Turn Around Time if different from standard	Hold
																	X				
																	X				

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
	4-11-05	1415			
Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Relinquished by:	Date:	Time:	Received at Laboratory by: Brenda Ward	4/12/05	9:20

LAB USE ONLY
Intact Y / N
Headspace Y / N
Temp 2°
Log-in Review MM

REMARKS:

- ☐ Dry Weight Basis Required
- ☐ TRRP Report Required
- ☐ Check If Special Reporting Limits Are Needed

Carrier # TNM&O 903 339 4480

Submittal of samples constitutes agreement to Terms and Conditions listed on reverse side of C.O.C.

ORIGINAL COPY

4-11-05

Previous RICE A-27

Water Sample from surface on 1-28-05

0501281200

Sampled w/ L. Johnson between Jct. Box and Pump Jack

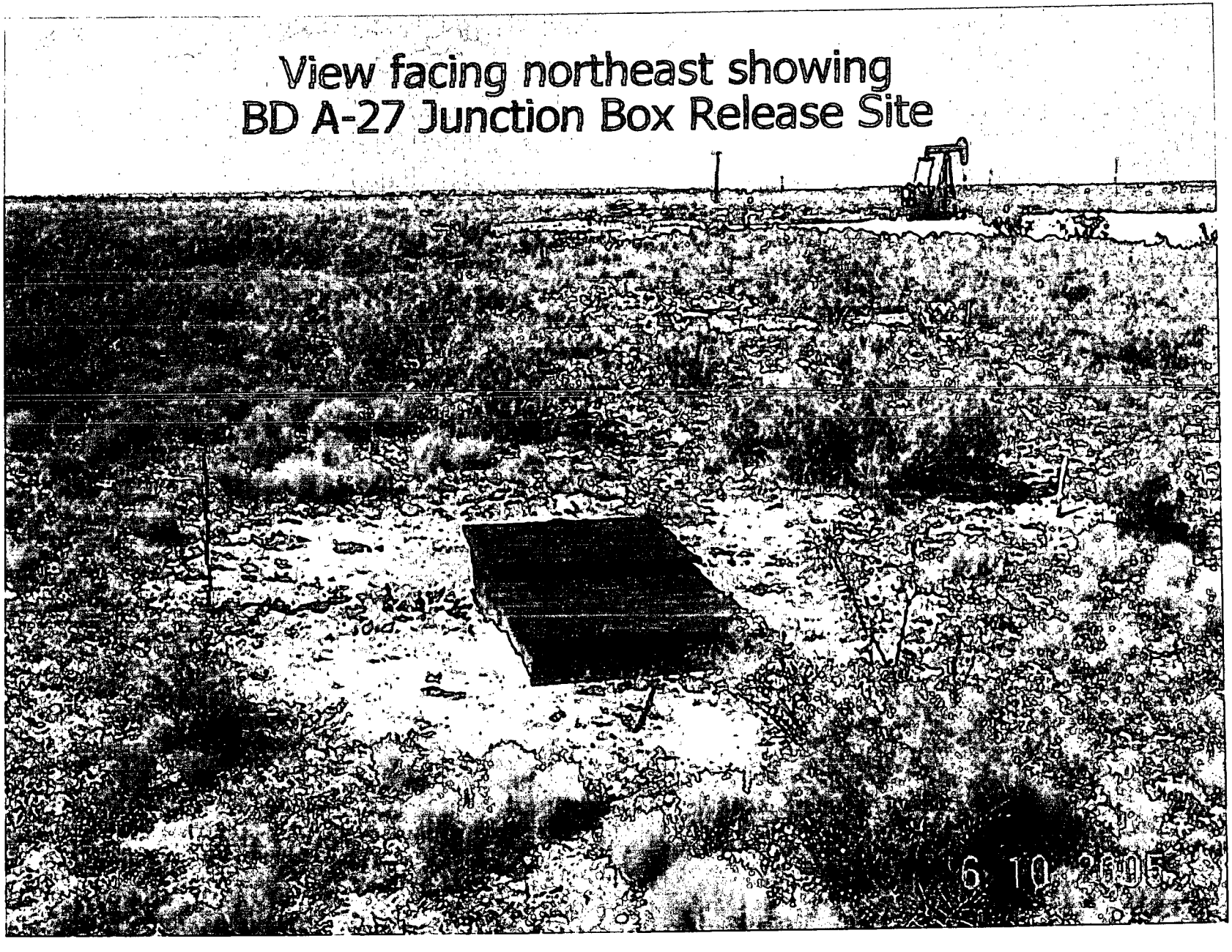
4-11-05

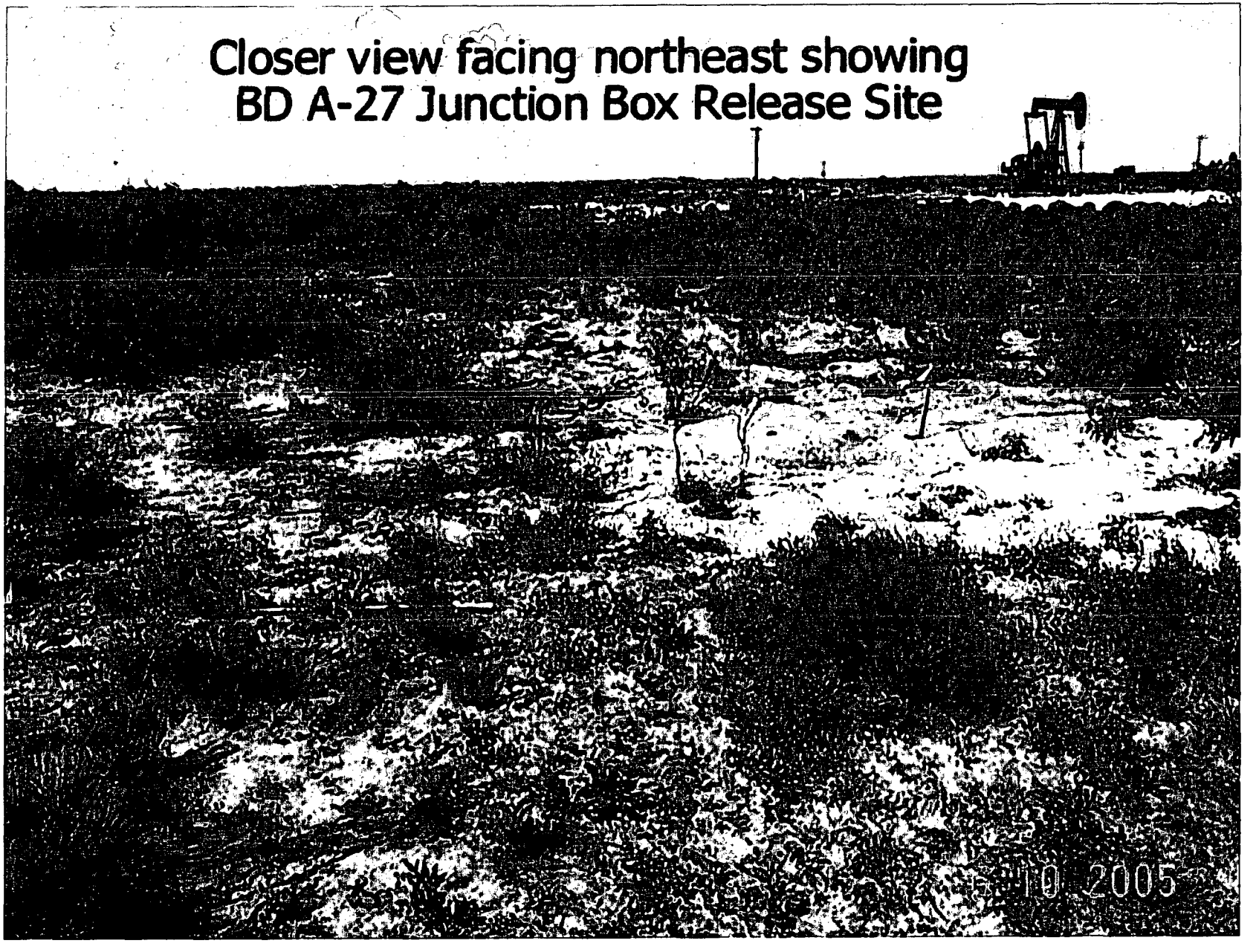
RICE A-27

N 32° 22.130 W 103.08682

2-pt comp ~ 30' N of J. Box

Sequix I.D.	40Z Soil	Test
0504110030	2pt-comp	Cl⁻


View facing northeast showing
BD A-27 Junction Box Release Site
6 10 2005


Closer view facing northeast showing
BD A-27 Junction Box Release Site
10 2005

LABORATORY REPORTS

AND

CHAIN OF CUSTODY DOCUMENTATION

ENVIRONMENTAL LAB OF

12600 West I-20 East - Odessa, Texas 79765

Analytical Report

Prepared for:

Roy Rascon

Rice Operating Co.

122 W. Taylor

Hobbs, NM 88240

Project: BD Santa Rita Eol Produce Water

Project Number: None Given

Location: None Given

Lab Order Number: 5E17003

Report Date: 05/23/05

Rice Operating Co.	Project: BD Santa Rita Eol Produce Water	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Roy Rascon	05/23/05 11:38

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Produce Water @ Santa Rita Eol	5E17003-01	Water	05/16/05 14:29	05/17/05 07:35

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

Rice Operating Co.	Project: BD Santa Rita Eol Produce Water	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Roy Rascon	05/23/05 11:38

Organics by GC

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Produce Water @ Santa Rita Eol (5E17003-01) Water									
Benzene	**0.549**	0.0100	mg/L	10	EE51708	05/17/05	05/17/05	EPA 8021B	
Toluene	**0.477**	0.0100	"	"	"	"	"	"	
Ethylbenzene	**0.0670**	0.0100	"	"	"	"	"	"	
Xylene (p/m)	**0.231**	0.0100	"	"	"	"	"	"	
Xylene (o)	**0.162**	0.0100	"	"	"	"	"	"	
Surrogate: a,a,a-Trifluorotoluene		*214 %*	*80-120*		"	"	"	"	*S-04*
Surrogate: 4-Bromofluorobenzene		*360 %*	*80-120*		"	"	"	"	*S-04*

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

Rice Operating Co.	Project: BD Santa Rita Eol Produce Water	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Roy Rascon	05/23/05 11:38

General Chemistry Parameters by EPA / Standard Methods

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Produce Water @ Santa Rita Eol (5E17003-01) Water									
Chloride	**84800**	2500	mg/L	5000	EE52003	05/19/05	05/19/05	EPA 300.0	

12600 West I-20 East - Odessa, Texas 79705 - (432) 563-1800 - Fax (432) 563-1713

Rice Operating Co.	Project: BD Santa Rita Eol Produce Water	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Roy Rascon	05/23/05 11:38

Organics by GC - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EE51708 - EPA 5030C (GC)										
Blank (EE51708-BLK1)				Prepared & Analyzed: 05/17/05						
Benzene	ND	0.00100	mg/L							
Toluene	ND	0.00100	"							
Ethylbenzene	ND	0.00100	"							
Xylene (p/m)	ND	0.00100	"							
Xylene (o)	ND	0.00100	"							
Surrogate: a,a,a-Trifluorotoluene	*18.9*		*ug/l*	*20.0*		*94.5*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*23.0*		*"*	*20.0*		*115*	*80-120*			
LCS (EE51708-BS1)				Prepared & Analyzed: 05/17/05						
Benzene	94.7		ug/l	100		94.7	80-120			
Toluene	108		"	100		108	80-120			
Ethylbenzene	109		"	100		109	80-120			
Xylene (p/m)	223		"	200		112	80-120			
Xylene (o)	110		"	100		110	80-120			
Surrogate: a,a,a-Trifluorotoluene	*18.2*		*"*	*20.0*		*91.0*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*22.3*		*"*	*20.0*		*112*	*80-120*			
Calibration Check (EE51708-CCV1)				Prepared & Analyzed: 05/17/05						
Benzene	97.6		ug/l	100		97.6	80-120			
Toluene	100		"	100		100	80-120			
Ethylbenzene	101		"	100		101	80-120			
Xylene (p/m)	207		"	200		104	80-120			
Xylene (o)	103		"	100		103	80-120			
Surrogate: a,a,a-Trifluorotoluene	*19.9*		*"*	*20.0*		*99.5*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*23.6*		*"*	*20.0*		*118*	*80-120*			
Matrix Spike (EE51708-MS1)	**Source: 5E13028-08**			Prepared & Analyzed: 05/17/05						
Benzene	400		ug/l	100	293	107	80-120			
Toluene	113		"	100	ND	113	80-120			
Ethylbenzene	113		"	100	ND	113	80-120			
Xylene (p/m)	228		"	200	ND	114	80-120			
Xylene (o)	110		"	100	ND	110	80-120			
Surrogate: a,a,a-Trifluorotoluene	*22.7*		*"*	*20.0*		*114*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*23.9*		*"*	*20.0*		*120*	*80-120*			

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Rice Operating Co.	Project: BD Santa Rita Eol Produce Water	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Roy Rascon	05/23/05 11:38

Organics by GC - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EE51708 - EPA 5030C (GC)										
Matrix Spike Dup (EE51708-MSD1)	**Source: 5E13028-08**			Prepared & Analyzed: 05/17/05						
Benzene	397		ug/l	100	293	104	80-120	2.84	20	
Toluene	109		"	100	ND	109	80-120	3.60	20	
Ethylbenzene	111		"	100	ND	111	80-120	1.79	20	
Xylene (p/m)	221		"	200	ND	110	80-120	3.57	20	
Xylene (o)	108		"	100	ND	108	80-120	1.83	20	
Surrogate: a,a,a-Trifluorotoluene	*21.2*		"	*20.0*		*106*	*80-120*			
Surrogate: 4-Bromofluorobenzene	*21.4*		"	*20.0*		*107*	*80-120*			

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Rice Operating Co.	Project: BD Santa Rita Eol Produce Water	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Roy Rascon	05/23/05 11:38

General Chemistry Parameters by EPA / Standard Methods - Quality Control

Environmental Lab of Texas

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch EE52003 - General Preparation (WetChem)										
Blank (EE52003-BLK1)				Prepared & Analyzed: 05/19/05						
Chloride	ND	0.500	mg/L							
LCS (EE52003-BS1)				Prepared & Analyzed: 05/19/05						
Chloride	10.4		mg/L	10.0		104	80-120			
Calibration Check (EE52003-CCV1)				Prepared & Analyzed: 05/19/05						
Chloride	10.4		mg/L	10.0		104	80-120			
Duplicate (EE52003-DUP1)	**Source: 5E19001-01**			Prepared & Analyzed: 05/19/05						
Chloride	217	5.00	mg/L		223			2.73	20	

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Rice Operating Co.	Project: BD Santa Rita Eol Produce Water	Fax: (505) 397-1471
122 W. Taylor	Project Number: None Given	**Reported:**
Hobbs NM, 88240	Project Manager: Roy Rascon	05/23/05 11:38

Notes and Definitions

S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
LCS	Laboratory Control Spike
MS	Matrix Spike
Dup	Duplicate

Report Approved By: Raland K Tuttle Date: 5/23/2005

Raland K. Tuttle, Lab Manager
Celey D. Keene, Lab Director, Org. Tech Director
Peggy Allen, QA Officer
Jeanne Mc Murrey, Inorg. Tech Director
James L. Hawkins, Chemist/Geologist
Sandra Sanchez, Lab Tech.

Environmental Lab of Texas, Inc.

12600 West I-20 East
Odessa, Texas 79763
Phone: 915-563-1800
Fax: 915-563-1713

CHAIN OF CUSTODY RECORD AND ANALYSIS REQUEST

Project Manager: Roy Rascon
Company Name: Rice Operating Company
Company Address: 122 W Taylor
City/State/Zip: Hobbs, NM 88240
Telephone No: 505-393-9174 Fax No: 505-397-1471
Sampler Signature: Israel Juarez

Project Name: BD Santa Rita Eol Produce Water
Project #:
Project Loc:
PO #:

* Do not run BTEX as per attached e-mail 05-18-05

LAB # (lab use only)	FIELD CODE	Date Sampled	Time Sampled	No. of Containers	Preservative: Ice	Preservative: HNO_3	Preservative: HCl	Preservative: NaOH	Preservative: H_2SO_4	Preservative: None	Preservative: Other (Specify)	Matrix: Water	Matrix: Sludge	Matrix: Soil	Matrix: Other (specify):	Analyze For: TCLP: / CL /	TPH 418.1	TPH TX 1005/1006	TPH 8015M GRO/DRO	Metals: As Ag Ba Cd Cr Pb Hg Se	Volatiles	Semivolatiles	TOTAL: BTEX 8021B/5030	EC, CEC, SAR, ESP	Major cations/anions, TDS					RUSH TAT (Pre-Schedule)	Standard TAT
5E17003																							X								
-01	Produce water @ Santa Rita Eol	5/16/05	2:29	1	X							X				X							X							X	

Special Instructions:

Sample Containers Intact? (Y) N
Temperature Upon Receipt: -1.0°C
Laboratory Comments: 1 L HDPE on ice w/label + seal headspace

Relinquished by:	Date	Time	Received by:	Date	Time
Israel Juarez	5/16/05	3:55	[illegible]	5/16	17:45
Relinquished by:	Date	Time	Received by ELOT:	Date	Time
[illegible]	5/17/05	7:35	Jana McMurray	05-17-05	0735

Jeanne McMurrey

From: "Roy Rascon" <royriceswd@leaco.net>
To: "Jeanne McMurrey" <jeanne@elabtexas.com>
Sent: Wednesday, May 18, 2005 12:37 PM
Subject: BD Santa Rita water sample

Jeanne
Please do not run the BETX on this sample.
Thank you,
Roy

Roy R. Rascon
RICE Operating Company
122 W. Taylor
Hobbs, NM 88240
505-393-9174

--

Environmental Lab of Texas
Variance / Corrective Action Report – Sample Log-In

Client: Rice Operating Co.

Date/Time: 05-17-05 @ 0735

Order #: 5E17003

Initials: JMM

Sample Receipt Checklist

Temperature of container/cooler?	(Yes)	No	-1.0 C
Shipping container/cooler in good condition?	(Yes)	No	
Custody Seals intact on shipping container/cooler?	(Yes)	No	Not present
Custody Seals intact on sample bottles?	(Yes)	No	Not present
Chain of custody present?	(Yes)	No	
Sample Instructions complete on Chain of Custody?	(Yes)	No	
Chain of Custody signed when relinquished and received?	(Yes)	No	
Chain of custody agrees with sample label(s)	(Yes)	No	
Container labels legible and intact?	(Yes)	No	
Sample Matrix and properties same as on chain of custody?	(Yes)	No	
Samples in proper container/bottle?	Yes	(No)	BTEX should be in glass w/ Teflon-lined lid
Samples properly preserved?	Yes	(No)	BTEX should be preserved w/ HCl
Sample bottles intact?	(Yes)	No	
Preservations documented on Chain of Custody?	(Yes)	No	
Containers documented on Chain of Custody?	(Yes)	No	
Sufficient sample amount for indicated test?	(Yes)	No	
All samples received within sufficient hold time?	(Yes)	No	
VOC samples have zero headspace?	Yes	(No)	Not Applicable

Other observations:

Variance Documentation:

Contact Person: - Roy Rascon Date/Time: 05-17-05 Contacted by: Jeanne McMurrey

Regarding:

proper sample preservation

Corrective Action Taken:

Left message on voice mail and e-mailed

05-17-05 Lab preserve in house BTEX

QUALITY PROCEDURES

Rice Operating Company

Quality Procedure
Soil Samples for Transportation to a Laboratory

1.0 Purpose

This procedure outlines the methods to be employed when obtaining soil samples to be taken to a laboratory for analysis.

2.0 Scope

This procedure is to be used when collecting soil samples intended for ultimate transfer to a testing laboratory.

3.0 Preliminary

3.1 Obtain sterile sampling containers from the testing laboratory designated to conduct analyses of the soil. The shipment should include a Certificate of Compliance from the manufacturer of the collection bottle or vial and a Serial Number for the lot of containers. Retain this Certificate for future documentation purposes.

3.2 If collecting TPH, BTEX, RCRA 8 metals, cation /anions or O&G, the sample jar may be a clear 4 oz. container with Teflon lid. If collecting PAH's, use an amber 4 oz. container.

4.0 Chain of Custody

4.1 Prepare a Sample Plan. The plan will list the number, location and designation of each planned sample and the individual tests to be performed on the sample. The sampler will check the list against the available inventory of appropriate sample collection bottles to insure against shortage.

4.2 Transfer the data to the Laboratory Chain of Custody Form. Complete all sections of the form except those that relate to the time of delivery of the samples to the laboratory.

4.3 Pre-label the sample collection jars. Include all requested information except time of collection. (Use a fine point Sharpie to insure that the ink remains on the label.) Affix the labels to the jars.

5.0 Sampling Procedure

5.1 Do not touch the soil with your bare hands. Use new latex gloves with each sample to help minimize any cross-contamination.

5.2. Go to the sampling point with the sample container. If not analyzing for ions or metals, use a trowel to obtain the soil.

5.3. Pack the soil tightly into the container leaving the top slightly domed. Screw the lid down tightly. Enter the time of collection onto the sample collection jar label.

5.4. Place the sample directly on ice for transport to the laboratory if required.

5.5. Complete the Chain of Custody form to include the collection times for each sample. Deliver all samples to the laboratory.

6.0 Documentation

6.1 The testing laboratory shall provide the following minimum information:

a. Project and sample name.
b. Signed copy of the original Chain of Custody Form including the time the sample was received by the lab.
c. Results of the requested analyses
d. Test Methods employed
e. Quality Control methods and results

Rice Operating Company

QUALITY PROCEDURE
Sampling and Testing Protocol for VOC in Soil

1.0 Purpose

This procedure is to be used to determine the concentrations of Volatile Organic Compounds in soils.

2.0 Scope

This procedure is to be used as the standard field measurement for soil VOC concentrations. It is not to be used as a substitute for full spectrographic speciation of organic compounds.

3.0 Procedure

3.1 Sample Collection and Preparation

3.1.1 Collect at least 500 g. of soil from the sample collection point. Take care to insure that the sample is representative of the general background to include visible concentrations of hydrocarbons and soil types. If necessary, prepare a composite sample of soils obtained at several points in the sample area. Take care to insure that no loose vegetation, rocks or liquids are included in the sample(s).

3.1.2 The soil sample(s) shall be immediately inserted into a one-quart or larger polyethylene freezer bag and sealed. When sealed, the bag should contain a nearly equal space between the soil sample and trapped air. Record the sample name and the time that the sample was collected on the Field Analytical Report Form.

3.1.3 The sealed samples shall be allowed to set for a minimum of five minutes at a temperature of between 10-15 Celsius, (59-77 ^{0}F). The sample temperatures may be adjusted by cooling the sample in ice, or by heating the sample within a generally controlled environment such as the inside of a vehicle. The samples should not be placed directly on heated surfaces or placed in direct heat sources such as lamps or heater vents.

3.1.4 The sealed sample bag should be massaged to break up any clods, and to provide the soil sample with as much exposed surface area as practically possible.

3.2 Sampling Procedure

3.2.1 The instrument to be used in conducting VOC concentration testing shall be an Environmental Instruments 13471 OVM / Datalogger or a similar PID-type instrument. (Device will be identified on VOC Field Test Report Form.) Prior to use, the instrument shall be zeroed-out in accordance with the appropriate maintenance and calibration procedure outlined in the instrument operation manual. The PID device will be calibrated each day it's used.

3.2.2 Carefully open one end of the collection bag and insert the probe tip into the bag taking care that the probe tip not touch the soil sample or the sidewalls of the bag.

3.2.3 Set the instrument to retain the highest result reading value. Record the reading onto the Field Test Report Form.

3.2.4 If the instrument provides a reading exceeding 100 ppm, proceed to conduct BTEX Speciation in accordance with **QP-02 and QP-06. If the reading is 100 ppm or less, NMOCD BTEX guideline has been met and no further testing for BTEX is necessary. File the Field Test Report Form in the project file.**

4.0 Clean-up

After testing, the soil samples shall be returned to the sampling location, and the bags collected for off-site disposal. **IN NO CASE SHALL THE SAME BAG BE USED TWICE. EACH SAMPLE CONTAINER MUST BE DISCARDED AFTER EACH USE.**

District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-141
Revised October 10, 2003

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 of Company: Rice Operating Company	Contact: Bryan Clay
Address: 122 W. Taylor Hobbs, New Mexico	Telephone No.: 505-393-9174
Facility Name: BD	Facility Type: SWD Gathering Line

Surface Owner: Irwin Boyd	Mineral Owner	Lease No.

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
A	27	22S	37E					Lea

Latitude: 32*22.19 N Longitude: 103*08.63 W

NATURE OF RELEASE

Type of Release: Produced Water	Volume of Release: 800 bbls	Volume Recovered: 730 bbls
Source of Release: Pipeline	Date and Hour of Occurrence: 1-27-05	Date and Hour of Discovery: 1-27-05 @ 3:30 p.m.
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Gary Wink	
By Whom? Bryan Clay	Date and Hour: 1-27-05 @ 4:49 p.m.	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*
High temperature in the 2-inch pvc line, cause the line to swell and separate from its fittings. The released freestanding fluid was picked up and hauled to a near by disposal station.

Describe Area Affected and Cleanup Action Taken.*
The affected area was approximately 66,400 square feet mainly in pastureland. ROC will be submitting a NEW MEXICO Generic Spill and Leak Remediation Work Plan with this C-141 Form.

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, surface 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: Bryan Clay	Approved by District Supervisor:	
Title: Environmental Technician	Approval Date:	Expiration Date:
E-mail Address: bcriceswd@leaco.net	Conditions of Approval:	Attached ☐
Date: February 7, 2005 Phone: 505-393-9174		

* Attach Additional Sheets If Necessary

NEW MEXICO 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.

NOTIFICATION AND DELINEATION

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 horizontal and 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.

REMEDIATION / CLEAN-UP MAY INCLUDE:

1. Excavation and proper disposal/blending of highly impacted soils as is practical.
2. Compacted clay layer application as is practical for impeding the downward migration of any remaining contaminants. Backfill with clean or appropriately blended (meets NMOCD guidelines for depth to groundwater) soils.
3. Where appropriate, incorporate enhanced surface remediation activities consisting of salt flushing/leaching below root zone; application of microbes or nutrients to decompose hydrocarbons; basic application of gypsum, fertilizer, etc. to enhance re-growth of natural vegetation or re-seeding as needed. Topsoils of major chloride impact and shallow groundwater may require replacement with clean topsoil before re-seeding.
4. 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.

RICE *Operating Company*

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

February 7, 2005

Paul Sheeley
NMOCD Hobbs Office
1625 N. French Dr.
Hobbs, NM 88240

Re: BD Salt Water Disposal (SWD) System
UL / A Sec. 27 T22S R37E
Lea County, New Mexico

Dear Mr. Sheeley:

Rice Operating Company (ROC) wishes to notify NMOCD of the actions implemented on the above-mentioned release site. On January 27, 2005, the site located in the BD SWD System experienced an accidental discharge of produced water. High temperature in the 2-inch pvc line coming from the Santa Rita Battery's heater, cause the line to swell and separate from its fittings. The line and fittings were replaced as a permanent repair.

The release occurred on land owned by Irwin Boyd who was notified. Immediate notification was given to NMOCD on January 27, 2005. The volume of the release was 800 bbls and 730 bbls were recovered. The size of the affected area was approximately 66,400 square feet. The depth to ground water is approximately 58 feet bgs.

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

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 number above.

Sincerely,

Bryan Clay
Environmental Technician

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

CAUSE OF LEAK

Discribe cause of problem & how it was repaired. Operator Running Heater treater @ to High temp. swelled PVC & Pushed couplers out, old PVC Removed & Replaced w/ Sch 40 PVC Pipe & Coupler