

1R - 425-80

WORKPLANS

Date:

5-2-11

L. Peter Galusky, Jr. Ph.D., P.G.

Texerra

RECEIVED OCD

75 Wuthering Hts Drive Colorado Springs, CO 80921

Tel: 917-339-6791 E-mail: lpg@texerra.com

May 2nd, 2011

2011 MAY 12 A 11:49

Mr. Edward Hansen

New Mexico Energy, Minerals, & Natural Resources
Oil Conservation Division, Environmental Bureau
1220 S. St. Francis Drive
Santa Fe, New Mexico 87505

**RE: INVESTIGATION & CHARACTERIZATION PLAN (ICP)
Rice Operating Company – Vacuum SWD System
Vacuum Jct D-31-2: UL/D, Sec. 31, T17S, R35E (formerly Vacuum Jct C-31-2)
NMOCD Case Number: 1R425-80**

Sent via U.S. Mail w/ Certified Receipt No. 7011 0110 00015863 8163

Mr. Hansen:

RICE Operating Company (ROC) has retained Texerra to address potential environmental concerns at the above-referenced site in the Abandoned Vacuum Salt Water Disposal (SWD) system. This site was previously referred to as Vacuum Jct C-31-2. The name is being changed to Vacuum Jct D-31-2 to reflect the geographical location of the site. All future correspondence will be addressed as Vacuum Jct D-31-2. ROC is the service provider (agent) for the Vacuum 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 Parties, who provide all operating capital on a percentage/usage basis. Environmental projects of this nature require System Party AFE approval prior to work commencing at the site. In general, project funding is not forthcoming until NMOCD approves the work plan. Therefore, your timely review of this submission is greatly appreciated.

For all such environmental projects, ROC will choose the 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 generally have three submissions:

1. This Investigation and Characterization Plan (ICP) is proposed for gathering data 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) if warranted.
3. Finally, after implementing the remedy, a Termination Request with final documentation will be submitted.

Background and Previous Work

This site is located approximately 0.5 miles southeast of Buckeye, New Mexico in UL/D, Sec. 31, T17S, R35E as shown on the Site Location Map (Figure 1). NM OSE records indicate that groundwater will likely be encountered at a depth of approximately 100 +/- feet.

In 2008 ROC initiated work on the former Vacuum D-31-2 junction as part of the system abandonment. The site was delineated using a backhoe to form an excavation with dimensions 5x3x12-ft deep and soil samples were screened at regular intervals for both hydrocarbons and chlorides. (Field and laboratory results are summarized in the attached Junction Box Disclosure Report). Diesel range organics (DRO) and gasoline range organics (GRO) were detected in the 12 ft bgs grab sample (DRO 4,760 mg/kg; GRO 452 mg/kg). Soil chlorides from the same sample tested relatively low at 320 mg/kg. A soil bore was subsequently advanced at the former junction box location, with samples taken at 15 ft, 40 ft and 60 ft bgs for laboratory analysis. GRO was not detectable in any of these samples and DRO dropped to 645 mg/kg at 15 ft but was non-detectable in the 40 ft and 60 ft bgs samples. Soil chlorides measured 1,880 mg/kg, 3,120 mg/kg and 2,280 mg/kg at the 15 ft, 40 ft and 60 ft bgs sampling intervals, respectively. The entire borehole was plugged with bentonite to the ground surface. NMOCD was notified of potential groundwater impact on November 11th, 2009.

ROC proposes additional investigative and characterization work at the site to determine if there is potential for groundwater degradation from residual chlorides at the site.

Proposed Work Elements

1. Summarize information and data collected by ROC to date.
2. Summarize additional, publicly available regional and local hydrological information.
3. Conduct vertical and lateral delineation of residual soil chlorides from samples taken using a drill rig, hand auger and/or backhoe.
 - a. Vertical sampling will be conducted until the following criteria are met in the field.
 - i. Three samples in which the chloride concentration decreases and the third sample has a chloride concentration of ≤ 250 ppm; and,
 - ii. Three samples in which PID readings decrease and the third sample has a PID reading of ≤ 100 ppm; or,
 - iii. The sampling reaches the capillary fringe.
 - b. Lateral sampling will be conducted until the following criteria are met in the field.
 - i. A decrease is observed in chloride concentrations between lateral bores at similar depths; and,
 - ii. A chloride concentration of ≤ 250 ppm is observed in a lateral surface sample; or,
 - iii. Safety concerns impede further lateral delineation.
4. If warranted, install a monitor well to provide a direct measurement of potential groundwater impact. (All monitoring wells will be constructed per EPA, NMOCD, and industry standards).
5. Evaluate the risk of groundwater impact in light of the information obtained.

If the evaluation demonstrates that residual constituents pose no threat to ground water quality, then only a surface restoration plan will be proposed to OCD. If this work indicates that there is a present or future risk of impacting groundwater quality from past operations at this location, then a corrective action plan (CAP) will be developed and proposed to OCD.

Thank you for your time and consideration on this project. Please call Hack Conder at (575) 393-9174 or myself if you have any questions or wish to discuss this project.

Sincerely,

A handwritten signature in black ink, appearing to be 'L. Peter Galusky, Jr.', written in a cursive style.

L. Peter Galusky, Jr. Ph.D., P.G.

Copy: Rice Operating Company

Attachments: Junction Box Disclosure Report

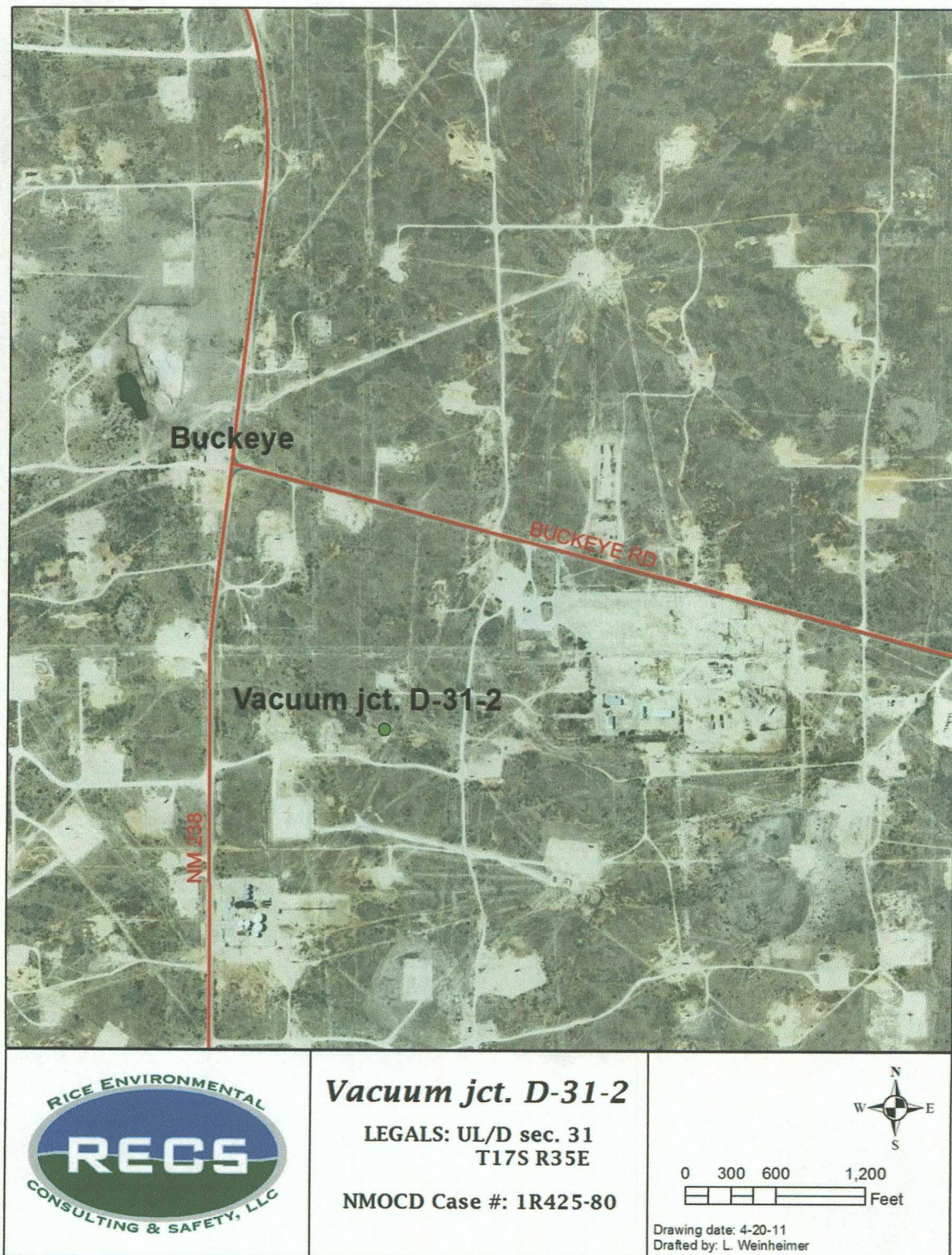


Figure 1 – Site location map.



Junction Box Disclosure Report

RICE Environmental Consulting and Safety (RECS)

P.O. Box 5630 Hobbs, NM 88241

Phone 575.393.4411 Fax 575.393.0293

**RICE OPERATING COMPANY
JUNCTION BOX DISCLOSURE* REPORT**

BOX LOCATION

SWD SYSTEM	JUNCTION	UNIT	SECTION	TOWNSHIP	RANGE	COUNTY	BOX DIMENSIONS - FEET		
Vacuum	Jct. C-31-2	C	31	17S	35E	Lea	Length	Width	Depth
							eliminated		

LAND TYPE: BLM _____ STATE X FEE LANDOWNER _____ OTHER _____

Depth to Groundwater 100 feet NMOC SITE ASSESSMENT RANKING SCORE: 20

Date Started 6/3/2008 Date Completed 6/19/2009 OCD Witness no

Soil Excavated 6.7 cubic yards Excavation Length 5 Width 3 Depth 12 feet

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

FINAL ANALYTICAL RESULTS: Sample Date 6/4/2008; 6/19/2009 Sample Depth 12 ft, 15 ft, 40 ft, 60 ft

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

Sample Location	Benzene mg/kg	Toluene mg/kg	Ethyl Benzene mg/kg	Total Xylenes mg/kg	GRO mg/kg	DRO mg/kg	Chloride mg/kg
SOURCE 12' GRAB	PID (field) = 847.0				452	4,760	320
SB #1 15' GRAB	<0.050	<0.050	<0.050	<0.300	<10.0	645	1,880
SB #1 40' GRAB					<10.0	<10.0	3,120
SB #1 60' GRAB					<10.0	<10.0	2,280

General Description of Remedial Action: This junction was addressed during the Vacuum SWD System Abandonment. An investigation was conducted at the former junction box site using a backhoe to collect soil samples at regular intervals creating a 5x3x12-ft excavation. Chloride field tests were performed on each sample which yielded some elevated concentrations. Organic vapors were measured using a PID which also yielded elevated concentrations. The deepest sample, 12 ft BGS, was sent to a commercial laboratory for analysis of chloride and TPH. Laboratory analysis confirmed elevated concentrations of DRO, but lower concentrations of GRO and chloride. The excavated soil was returned to the excavation to ground surface and contoured to the surrounding area. To further investigation depth of TPH presence, a soil bore was initiated at the former junction box site on 6/19/2009. The boring was advanced to a depth of 60 ft BGS with soil samples collected at 5 ft intervals. Chloride field test performed on each sample yielded elevated concentrations. The 15 ft, 40 ft, and 60 ft samples were sent to a commercial laboratory for analysis of chloride and TPH. Laboratory analysis confirmed elevated concentrations of chloride but low concentrations of TPH. The entire bore hole was plugged with bentonite to the ground surface. NMOC was notified of potential groundwater impact on 11/11/2009.

CHLORIDE FIELD TESTS

LOCATION	DEPTH	mg/kg
vertical delineation trench at the junction (source)	5'	573
	6'	825
	7'	1,183
	8'	483
	9'	737
	10'	3,198
	11'	627
SOIL BORING at the former junction (source) 6/19/2009	12'	646
	15'	1,391
	20'	3,890
	25'	3,299
	30'	3,660
	35'	3,231
	40'	3,050
	45'	2,460
	50'	2,411
	55'	2,533
	60'	2,584

ADDITIONAL EVALUATION IS HIGH PRIORITY

enclosures: photos, lab results, PID (field) screenings, boring log, chloride curve

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

SITE SUPERVISOR Roy Rascon SIGNATURE _____ not available COMPANY RICE OPERATING COMPANY

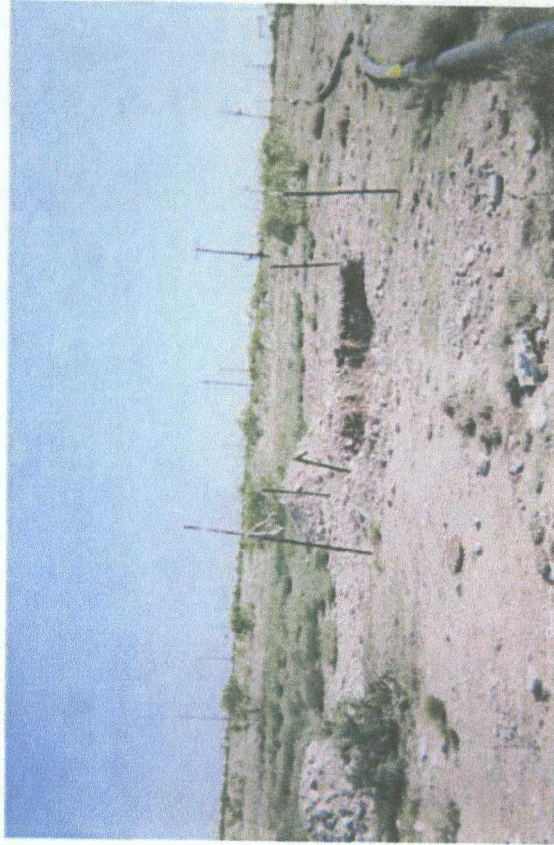
REPORT ASSEMBLED BY Katie Jones INITIAL KJ

PROJECT LEADER Larry Bruce Baker Jr. SIGNATURE Larry Bruce Baker Jr. DATE 11-12-09

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

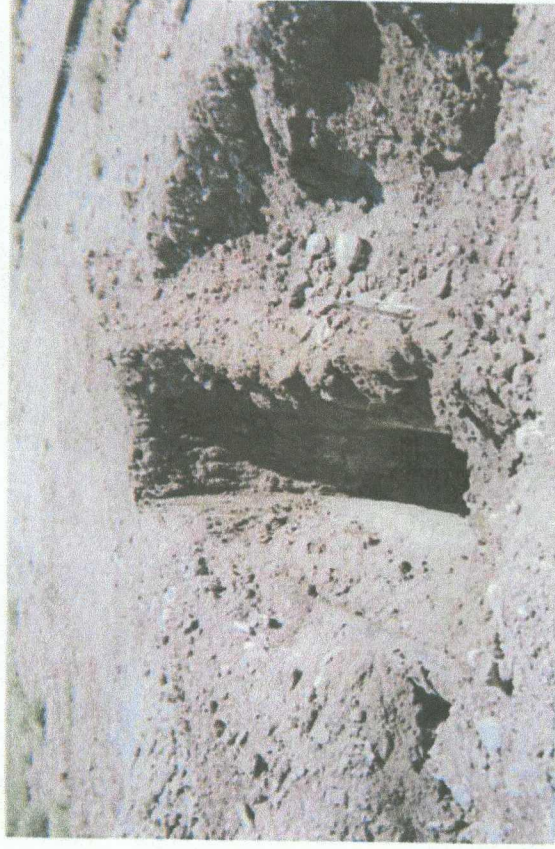
Vacuum Jct. C-31-2

Unit C, Section 31, T17S, R35E



prior to excavation, facing north

5/29/2008



vertical at the source, facing north

6/4/2008



drilling SB #1 at the former junction box site

6/19/2009



plugging SB #1 with bentonite

6/19/2009



PHONE (575) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

JUN 17 2008

RICE OPERATING
HOBBS, NM

ANALYTICAL RESULTS FOR
RICE OPERATING COMPANY
ATTN: ROY R. RASCON
122 W. TAYLOR
HOBBS, NM 88240
FAX TO: (575) 397-1471

Receiving Date: 06/04/08
Reporting Date: 06/10/08
Project Owner: NOT GIVEN
Project Name: NOT GIVEN
Project Location: VAC JCT. C-31-2

Sampling Date: 06/04/08
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: ML
Analyzed By: CK/AB

COPY

METHODS: TPH GRO & DRO: EPA SW-846 8015 M; Cl: Std. Methods 4500-ClB

*Analysis performed on a 1:4 w/v aqueous extract.

Chemist

Date _____

H14926TCL RICE

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L. LABORATORIES
2111 Beechwood, Abilene, TX 79603 101 East Marland, Hobbs, NM 88240
(325) 673-7001 FAX (325) 673-7020 (505) 393-2336 FAX (505) 393-2476

[illegible]

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

Logger:	Lara Weinheimer		Client:	RICE Operating Company	Well ID: SB - 1
Driller:	Harrison & Cooper, Inc. Drilling		Project Name:	Vacuum jct. C-31-2	
Drilling Method:	Air rotary		Location:	VACUUM SWD System	
Start Date:	6-19-09		unit 'C' Sec.31 T17S, R35E		
End Date:	6-19-09		Lea County, NM		
Comments: Located: 1 ft north of former jct. box site TD = 60 ft					

Depth (feet)	chloride field	PID	Description	Lithology	Soil Bore Construction
			0 - 15 ft		
			VERY FINE TO FINE SAND		
15	1391	82	caliche, light brown, dry		
LAB	1880	GRO <10 DRD < 846			
	BTE <0.05 X <0.03				
20	3890	5.1	15 - 30 ft		
			VERY FINE TO FINE SAND		
			light brown, slightly moist		
25	3299				
30	3660				
35	3231		30 - 45 ft		
			VERY FINE TO FINE SAND		
			reddish-brown, slightly moist		
40	3050				
LAB	3120	GRO <10 DRD < 112			
45	2460				
			45 - 50 ft		
			VERY FINE TO FINE SAND		
			light brown, dry		
50	2411				
			50 - 55 ft		
			VERY FINE TO FINE SAND		
55	2533		quartzite, reddish-brown, slightly moist		
			55 - 60 ft		
			VERY FINE TO FINE SAND		
			reddish-brown, moist		
60	2584				
LAB	2280	GRO <10 DRD < 118			



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ANALYTICAL RESULTS FOR
RICE OPERATING COMPANY
ATTN: HACK CONDER
122 W. TAYLOR
HOBBS, NM 88240
FAX TO: (575) 397-1471

Receiving Date: 06/23/09
Reporting Date: 06/24/09
Project Owner: NOT GIVEN
Project Name: VACUUM JCT C-31-2
Project Location: VACUUM JCT C-31-2

Sampling Date: 06/19/09
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: HM
Analyzed By: AB/HM

COPY

LAB NUMBER	SAMPLE ID	GRO (C ₆ -C ₁₀) (mg/kg)	DRO (>C ₁₀ -C ₂₈) (mg/kg)	Cl ⁻ (mg/kg)
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ANALYSIS DATE		02/10/09	02/10/09	06/23/09
H17688-1	SB #1 @ 15'	<10.0	645	1,880
H17688-2	SB #1 @ 40'	<10.0	<10.0	3,120
H17688-3	SB #1 @ 60'	<10.0	<10.0	2,280
Quality Control		590	600	490
True Value QC		500	500	500
% Recovery		118	120	98.0
Relative Percent Difference		1.6	1.0	2.0

METHODS: TPH GRO & DRO: EPA SW-846 8015 M; Cl⁻: Std. Methods 4500-Cl⁻B

*Analyses performed on 1:4 w:v aqueous extracts. Reported on wet weight.

Not accredited for GRO/DRO and Chloride.

Chemist

06/26/09
Date

H17688 TCL RICE

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ANALYTICAL RESULTS FOR
RICE OPERATING COMPANY
ATTN: HACK CONDER
122 W. TAYLOR
HOBBS, NM 88240
FAX TO: (575) 397-1471

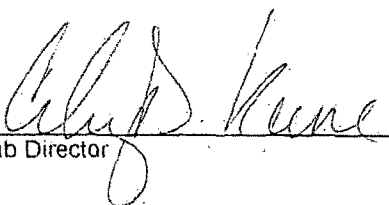
Receiving Date: 06/23/09
Reporting Date: 06/26/09
Project Owner: NOT GIVEN
Project Name: VACUUM JCT C-31-2
Project Location: VACUUM JCT C-31-2

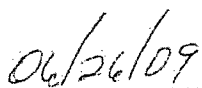
Sampling Date: 06/19/09
Sample Type: SOIL
Sample Condition: COOL & INTACT
Sample Received By: HM
Analyzed By: ZL

LAB NO.	SAMPLE ID	ETHYL TOTAL			
		BENZENE	TOLUENE	BENZENE	XYLENES
		(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
ANALYSIS DATE:		06/25/09	06/25/09	06/25/09	06/25/09
H17688-1	SB#1 @ 15'	<0.050	<0.050	<0.050	<0.300
Quality Control		0.057	0.055	0.057	0.171
True Value QC		0.050	0.050	0.050	0.150
% Recovery		114	110	114	114
Relative Percent Difference		3.8	3.9	3.8	4.4

METHODS: BTEX - SW-846 8021B

TEXAS NELAP ACCREDITATION T104704398-08-TX FOR BENZENE, TOLUENE, ETHYL BENZENE,
AND TOTAL XYLENES. Reported on wet weight.


Lab Director


Date

H17688 B RICE

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RICE OPERATING COMPANY

122 West Taylor ~ Hobbs, NM 88240

PHONE: (575) 393-9174 FAX: (575) 397-1471

PID METER CALIBRATION & FIELD REPORT FORM

CK	<input checked="" type="checkbox"/>
MODEL	
NO.	

MODEL: PGM 7300	SERIAL NO: 590-000183
MODEL: PGM 7300	SERIAL NO: 590-000504
MODEL: PGM 7600	SERIAL NO: 110-12383
MODEL: PGM 7600	SERIAL NO: 110-02920

GAS COMPOSITION: ISOBUTYLENE 100PPM / AIR: BALANCE

LOT NO: 08-3425	EXPIRATION DATE: 6-29-09
FILL DATE: 2-29-09	METER READING ACCURACY: 100.0

ACCURACY: +/- 2%

SYSTEM	SITE	UNIT	SECTION	TOWNSHIP	RANGE
Vacuum	J4 C-31-2	C	31	T17S	R35E

SAMPLE ID: Soil box #1

DEPTH	PID	DEPTH	PID	DEPTH	PID	DEPTH	PID
15'	82						
20'	5.1						

COPY

I verify that I have calibrated the above instrument in accordance to the manufacture's operation manual.

Signature [Signature]

Date 6-16-09

SITE MAP



CHLORIDE CONCENTRATION CURVE

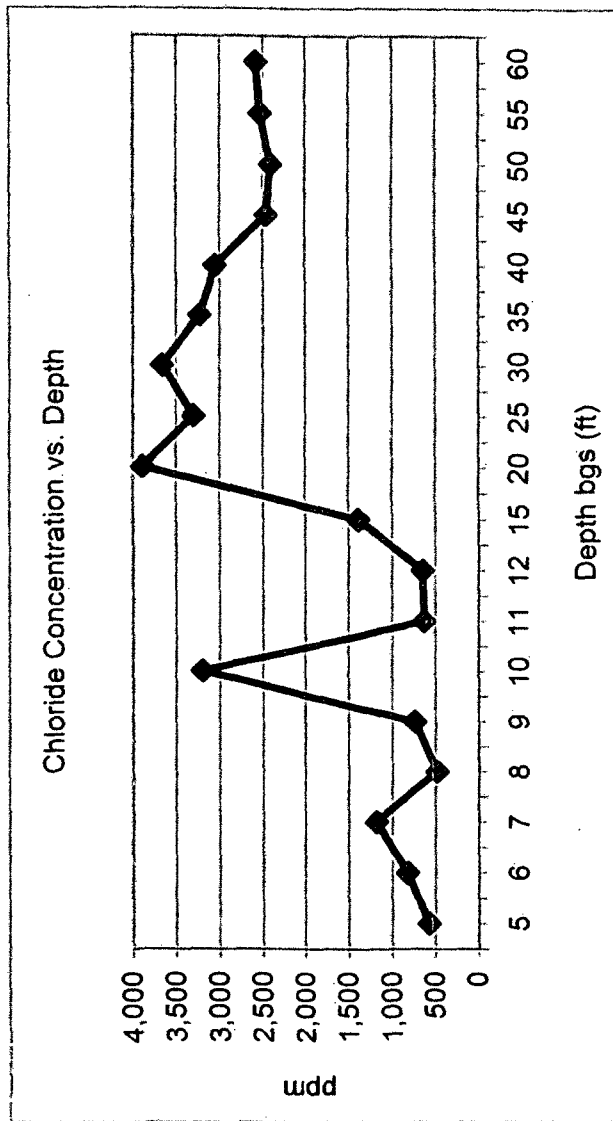
RICE Operating Company

Vacuum Jct. C-31-2

Unit 'C', Sec. 31, T17S, R35E

Backhoe and Soil Bore samples at the junction (source)

Depth bgs (ft)	[Cl ⁻] ppm
5	573
6	825
7	1,183
8	483
9	737
10	3,198
11	627
12	646
15	1,391
20	3,890
25	3,299
30	3,660
35	3,231
40	3,050
45	2,460
50	2,411
55	2,533
60	2,584



Groundwater = 100 ft