AP - 64

GW MONITORING REPORT

DATE:
9/7/1

AP-64
GW Mon. Report
9-7-01

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

CERTIFIED MAIL
RETURN RECEIPT NO. 7099 3220 0001 9928 4591

September 7, 2001

Mr. Wayne Price
NM Energy and Minerals Dept.
OCD Environmental Bureau
1220 S. St. Francis Drive
Santa Fe, NM 87504

Re: SWD F-29 Facility – Groundwater Monitoring
NW/4, Unit Letter F, Sec. 29, T18S, R38E
Lea County, NM

Dear Mr. Price:

Rice Operating Company (ROC) appreciates your consideration and response concerning the groundwater monitoring at the F-29 SWD Facility.

A brief background review: this facility operated with below-grade redwood tanks and an emergency overflow pit until 1999 when the facility was upgraded with fiberglass tanks and the overflow pit was closed. Site vertical delineation revealed that salt impact was arrested at 40' BGS at the west-redwood tank and 30' BGS at the east-redwood tank. The initial water analysis indicated no saltwater impact to the groundwater. ROC agreed to sample the monitor well for two years because an unexplained TPH pocket was found 40' BGS at the west-redwood location. (A full report of the delineation and closure activities was submitted to NMOCD June 25, 1999.)

A quarterly monitoring schedule was initiated and MW-1 was discovered to be full of sand, and the water analysis indicated an elevated chloride concentration. ROC received permission to complete an alternate well, MW-2, which also exhibited elevated chloride concentration. ROC verbally notified the NMOCD Santa Fe Office of this occurrence on August 1, 2000 and through email on September 11, 2000. After discussion on August 1, it was suggested that ROC drill and complete an up-gradient well to reference the groundwater quality in the area. ROC contacted the adjacent landowner, Mr. Gary Schubert of Grimes Land Company, for permission to drill and complete a monitor well, but Mr. Schubert respectfully declined permission.

As result of discussion with NMOCD in March 2001 of the F-29 Facility Annual Monitoring Report, ROC contracted with Safety & Environmental Solutions, Inc. (SESI) to "pump and

dispose" to attempt to remove the elevated-chloride groundwater in MW-2. A reduction in TDS concentration from 3470 ppm to 1385 ppm was realized from a purge of 18,355 gallons. At several points during the intensified effort (daily purge and test July 16 through July 30), the groundwater chloride concentration fell to 223ppm, below the WQCC level (250ppm). Enclosed with this letter is the fluid recovery report of F-29 Facility site activity and analytical results prepared by David Boyer of SESI.

Because the groundwater chloride concentration has fluctuated between 223 and 480ppm, depending on purge volume, ROC would like to expand the groundwater investigation with an up-gradient monitor well and a down-gradient monitor well, as depicted on the attached facility site map. Both of these wells will be located within the ROC property boundaries. All fluid produced from the monitor wells will be measured for volume and then disposed into the SWD Well F-29 Facility, a commercial disposal well owned and operated by ROC.

The monitor wells will be completed pursuant to NMOCD guidelines and sampled pursuant to NMOCD specifications for BTEX, pH, TDS, Conductivity, T-Alkalinity, and routine major cations and anions: Na, Ca, Mg, K, Cl, SO_4, CO_3, HCO_3. Upon receipt of the analytical results, ROC will contact the NMOCD for discussion of further action.

ROC would like to reiterate that this location is surrounded by the Occidental Permian North Hobbs Waterflood Unit and is adjacent to the historical "Windmill Oil Company" production and recovery area. ROC believes that because extensive vertical delineation results at this facility revealed salt-water impact to the vadose zone was arrested before groundwater was contacted, the elevated chloride and TDS concentrations are most likely the result of off-site historical events consistent with seventy-plus years of petroleum production.

If you have any questions, please call. ROC looks forward to your reply.

RICE OPERATING COMPANY

Carolyn Doran Haynes

Carolyn Doran Haynes
Operations Engineer

cc: LBG, file, Chris Williams
NMOCD Hobbs District 1
1625 N. French Drive
Hobbs, NM 88240

RICE *Operating Company*

From the desk of:
Carolyn Doran Haynes

9-7-01

Wayne

Dave Boyer's charts + graphs are in software not compatible w/ MS office or adobe; so I couldn't transmit email.

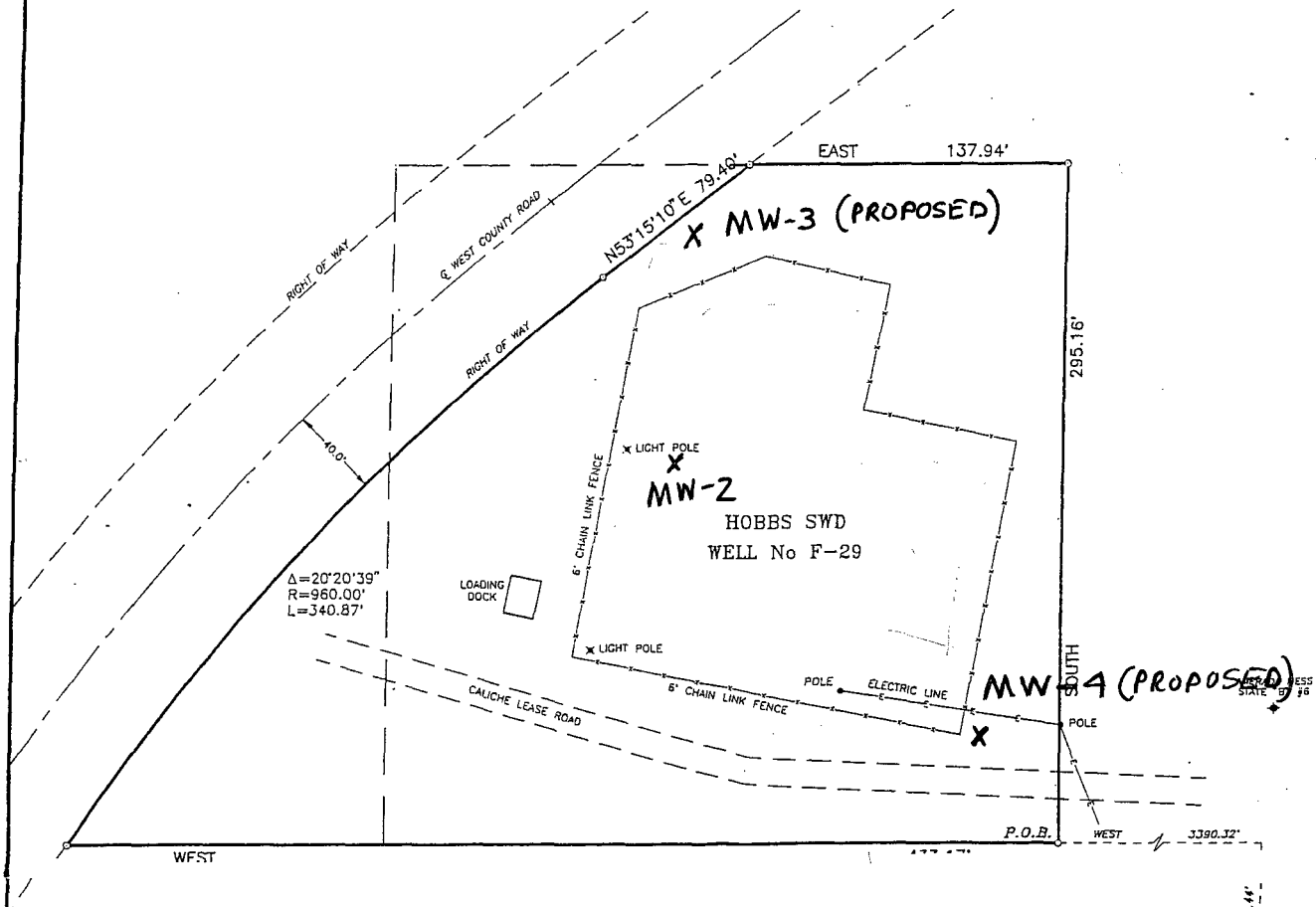
Don't hesitate to call if you have questions.

Thanks so much for all your help + patience!

Carolyn

SECTION 29, TOWNSHIP 18 SOUTH, RANGE 38 EAST, N.M.P.M.,

LEA COUNTY, NEW MEXICO



DENOTES
O = SET 1/2" STEEL

LEGAL DESCRIPTION

A TRACT OF LAND IN THE SE/4 OF THE NW/4 OF SECTION 29, TOWNSHIP 18 SOUTH, RANGE 38 EAST, N.M.P.M., LEA COUNTY, NEW MEXICO, BEING FULLY DESCRIBED AS FOLLOWS:

BEGINNING AT A POINT BEING N.00°002'E, 3254.44 FEET AND WEST, 3390.32 FEET FROM SOUTHEAST CORNER OF SAID SECTION 29. THENCE WEST, 433.17 FEET TO A POINT ON THE EAST RIGHT OF WAY LINE OF WEST COUNTY ROAD BYPASS, ALSO A POINT ON A CURVE TO THE NORTHEAST. THENCE ALONG THIS CURVE (HAVING A CENTRAL ANGLE OF 20°20'39", A RADIUS OF 960.00 FEET AND A CHORD BEARING AND DISTANCE OF N.43°04'56"E., 339.08 FEET) A LENGTH OF 340.87 FEET; THENCE N.53°15'10"E., 79.40 FEET; THENCE EAST, 137.94 FEET; THENCE SOUTH, 295.16 FEET TO THE POINT OF BEGINNING. SAID TRACT CONTAINS 2.068 ACRES MORE LESS.

40 0 40 80 120 Feet

I HEREBY CERTIFY THAT THIS PLAT WAS PREPARED FROM FIELD NOTES OF AN ACTUAL SURVEY AND MEETS OR EXCEEDS ALL REQUIREMENTS FOR LAND SURVEYS AS SPECIFIED BY THIS STATE.

GARY L. JONES NEW MEXICO 7977 REGISTERED PROFESSIONAL LAND SURVEYOR

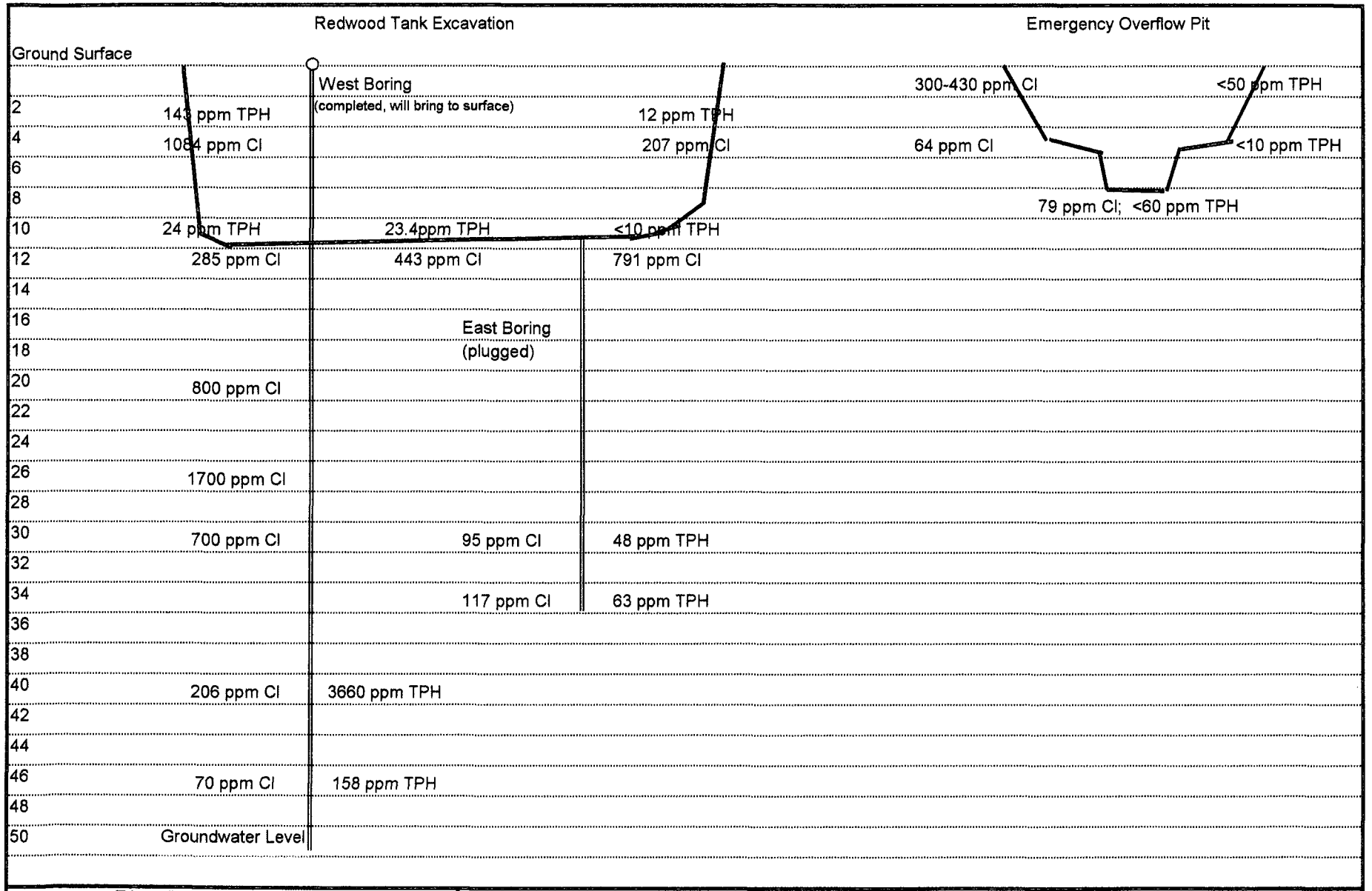
JOHN W. WEST, N.M. P.E. & P.S. No. 676
TEXAS P.L.S. No. 1138
RONALD J. EIDSON, N.M. L.S. No. 3239
TEXAS P.L.S. No. 1883
GARY L. JONES N.M. P.S. No. 7977

RICE ENGINEERING CORP.

A TRACT OF LAND LOCATED IN SECTION 29, TOWNSHIP 18 SOUTH, RANGE 38 EAST, N.M.P.M., LEA COUNTY, NEW MEXICO

JOHN WEST ENGINEERING CO.
CONSULTING ENGINEERS & SURVEYORS – HOBBS, NEW MEXICO

Surveyed By: CASON	Drawn By: HOLMES	Last Rev. Date:	Drawing Number
Date Begin: 8-20-93	Date: 8-27-93	Disk: JH No 51	D-819-1
Date End: 8-20-93	Approved By:	Sheet 1 of 1 Sheets	
W.O. Number: 93-11-1558	File Name: DRAWINGS\RICE1558		



Rice Operating Company 122 West Taylor Hobbs, NM 88240 (505) 393-9174	Chloride and TPH Delineation	Redwood Tank Excavation and Emergency Overflow Pit SWD Well F-29 Unit Letter F, Sec 29-T18S-R38E Lea County, New Mexico

Rice Operating Company
F-29 Monitor Well Fluid Recovery Report
Section 29, T19S, R38E
Lea County, New Mexico

August 29, 2001

Prepared for:

Rice Operating Company
122 W. Taylor
Hobbs, New Mexico 88240

By:

Safety & Environmental Solutions, Inc.
703 E. Clinton, Suite 102
Hobbs, New Mexico 88240
(505) 397-0510

TABLE OF CONTENTS

I. Background

Safety & Environmental Solutions, Inc. (SESI) was engaged to perform sampling and data collection on a Rice Operating SWD System Well. The well is referred to as the F-29 monitor well. The subject area is located in Section 29, Township 19 S Range 38 E in Lea County, New Mexico. (See Figure 1. Location Map).

II. Work Performed

The well was scheduled for pumping by SESI for 8-hour periods every other day with a small capacity (~1 gpm) submersible pump. The fluid recovered from the well was placed in a holding provided by Rice Operating Company. Due to equipment problems, the pumping schedule was not met in June. Beginning in mid-July, a larger submersible pump capable of pumping 7-10 gpm was utilized. On July 31, generator and wiring problems prevented pumping that day. Due to an August 1 OCD deadline, no further pumping was performed. Table 1 provides the pumping record for July including field measurement of chloride concentrations using Hach Quantabs. A total of 3,280 gallons of fluid was removed during the current test period ending July 31. An approximate total of 18,355 gallons has been removed since the beginning of the pumping period on March 9, 2001.

On August 14, 2001 a SESI technician performed sampling of the well. Samples were taken from the well after pumping a short period with the repaired generator. The samples were obtained and placed in appropriate containers, preserved and transported under chain of custody to Cardinal Laboratories of Hobbs, New Mexico for analysis. The analysis performed on these samples was for detection of Major Cations and Anions. (See Analytical Results)

III. Analytical Results

Comparison tables of the analytical data are provided in Table 2 to show the differences before and after pumping fluid from the F-29 well. Analysis of the groundwater samples performed by Cardinal Laboratories are compared and summarized as shown in the table. A negative number indicates a decrease in constituent concentration from the previous sampling date.

The final sampling on August 14 shows chloride concentration (340 mg/L) exceeding the NM Water Quality Control Commission (WQCC) groundwater standard[1] (250 mg/L) by 90 mg/L. Although the chloride concentration exceeds the standard, it has decreased by an order of magnitude from sampling conducted in March of 2000. Figure 2 shows the decline in concentration from March 2000 to August 2001. The decline stopped and became generally asymptotic beginning in March of this year.

1 The NM Oil Conservation Division (OCD) utilizes the NM WQCC groundwater standards in administration of OCD rules and regulations.

In July, heavy pumping of the monitor well did not substantially change the concentration of chloride in the well and might have caused a slight increase (Figure 3). The fact that daily pumping could cause chloride concentration to fluctuate between 250 and 480 mg/L as it did on July 29 indicates the likelihood of a nearby source.

IV. Report Tables, Figures and Laboratory Results

Table 1. July 2001 Rice F-29 Monitor Well Pumping

Date	Sample Time	Tank Start (ft)	Tank Finish (ft)	Difference (ft.)	Approx. Volume Change (gal)	Time Pumped (min)	Avg. Pumping Rate (gpm)	Avg. Chloride (ppm)
07/05/01	--	--	--	--	410	8 hr	0.85	--
07/06/01	--	1.92	2.14	0.22	336	8 hr	0.7	--
07/16/01	12:00 PM	2.14	2.88	0.74 (?)	--	20	--	--
07/19/01	12:45 PM	--	--	--	--	--	--	333
07/20/01	8:36 AM	6.23	6.08	0.15	229	22	10.4	298
07/20/01	7:24 PM	7.12	6.99	0.13	198	25	7.9	298
07/21/01	10:24 AM	7.47	7.34	0.13	198	25	7.9	359
07/22/01	12:34 PM	7.35	7.26	0.09	137	20	6.9	258
07/23/01	8:49 AM	7.26	7.18	0.08	122	20	6.1	258
07/23/01	5:34 PM	7.18	7.09	0.09	137	20	6.9	321
07/24/01	8:29 AM	7.09	7.02	0.07	107	15	7.1	384
07/25/01	7:26 AM	7.03	6.96	0.07	107	16	6.7	414
07/26/01	7:20 AM	7.37	7.26	0.11	168	25	6.7	321
07/26/01	7:34 AM	--	--	--	--	--	--	445
07/27/01	7:07 AM	6.89	6.75	0.14	214	30	7.1	288
07/27/01	7:15 AM	--	--	--	--	--	7.0	249, 258
07/27/01	7:24 AM	--	--	--	--	--	--	398
07/27/01	7:34 AM	--	--	--	--	--	--	480
07/29/01	10:17 AM	7.24	7.02	0.22	336	60	5.6	384
07/29/01	10:25 AM	--	--	--	--	--	--	429
07/29/01	10:34 AM	--	--	--	--	--	--	223
07/29/01	10:44 AM	--	--	--	--	--	--	357
07/29/01	10:54 AM	--	--	--	--	--	--	258
07/29/01	11:04 AM	--	--	--	--	--	--	223
07/29/01	11:14 AM	--	--	--	--	--	--	398
07/29/01	7:20 PM	7.01	6.88	0.13	198	30	6.6	429
07/29/01	7:29 PM	--	--	--	--	--	--	278
07/29/01	7:39 PM	--	--	--	--	--	--	398
07/30/01	6:55 AM	7.53	7.41	0.12	183	30	6.1	298
07/30/01	7:04 AM	--	--	--	--	--	--	333
07/30/01	1:42 PM	--	--	--	--	--	--	462
07/30/01	7:20 PM	7.41	7.28	0.13	198	30	6.6	429
07/30/01	7:29 PM	--	--	--	--	--	--	370
07/30/01	7:39 PM	--	--	--	--	--	--	345
			July Total Volume Pumped:		**3,280**			
Tank strapped 7/25. Circumference 50.65 ft., radius 8.06 ft., area 204.12 ft^2								

Table 2. Summary of F-29 Chemical Analyses December 2000 to August 2001

F-29 Monitor Well	Na (mg/L)	Ca (mg/L)	Mg (mg/L)	K (mg/L)	Conductivity (µmhos/cm)	T-Alkalinity (mg $CaCO_3$/L)
December 12, 2000	500	250	51	15.16	4,239	246
March 16, 2001	167	142	49	12.65	2,146	228
Change	-333	-108	-2	-2.51	-2,093	-18
	Cl^- (mg/L)	**SO_4 (mg/L)**	**CO_3 (mg/L)**	**HCO_3 (mg/L)**	**pH (s.u.)**	**TDS (mg/L)**
December 12, 2000	1,027	127	0	300	7.32	2,586
March 16, 2001	396	221	0	279	7.32	1,373
Change	-631	94	0	-21	0	-1,213

F-29 Monitor Well	Na (mg/L)	Ca (mg/L)	Mg (mg/L)	K (mg/L)	Conductivity (µmhos/cm)	T-Alkalinity (mg $CaCO_3$/L)
March 16, 2001	167	142	49	12.65	2,146	228
March 23, 2001	226	142	41	11.00	1,823	228
Change	59	0	-8	-1.65	-323	0
	Cl^- (mg/L)	**SO_4 (mg/L)**	**CO_3 (mg/L)**	**HCO_3 (mg/L)**	**pH (s.u.)**	**TDS (mg/L)**
March 16, 2001	396	221	0	279	7.32	1,373
March 23, 2001	368	271	0	279	6.98	1,312
Change	-28	50	0	0	-0.34	-61

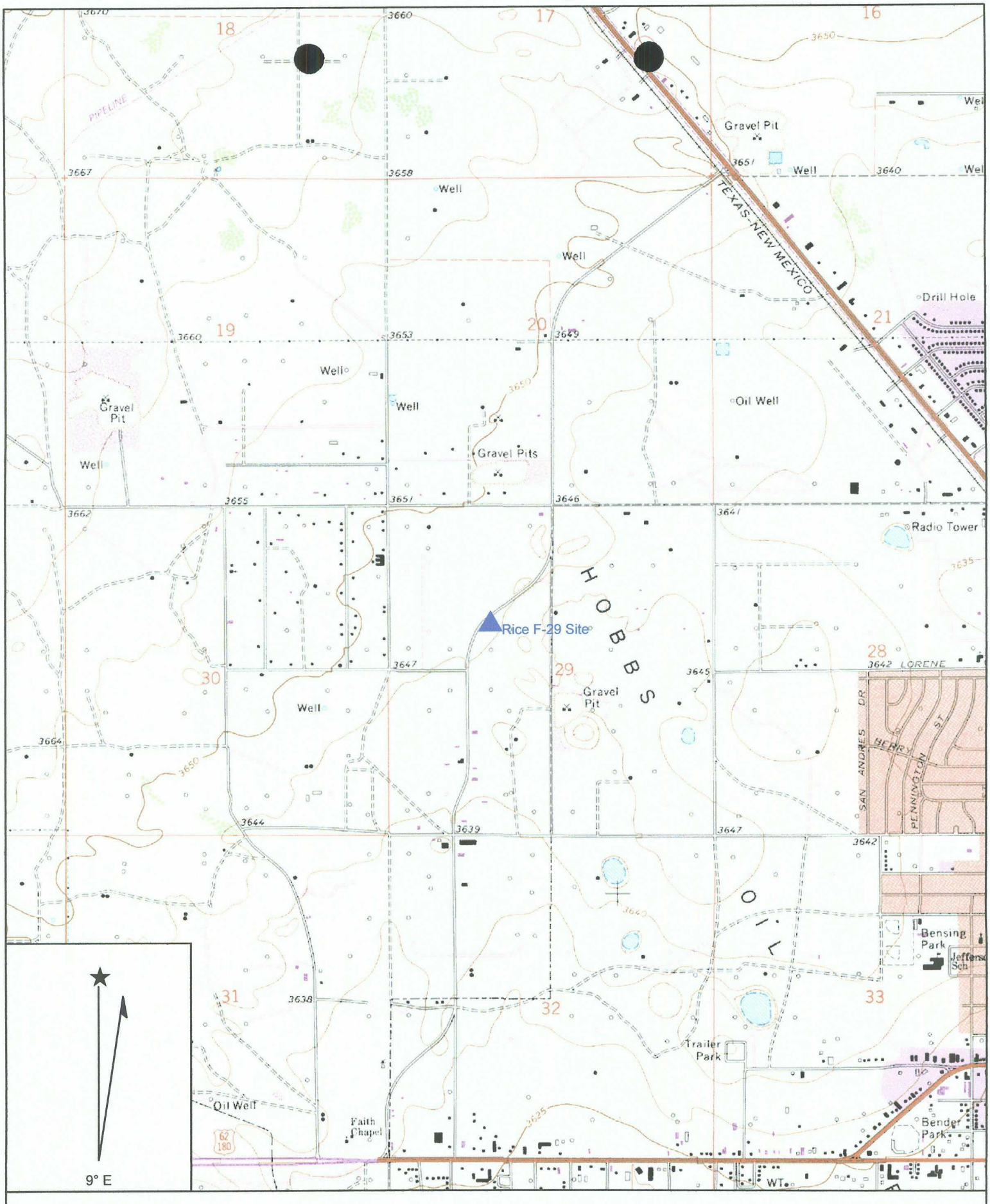
F-29 Monitor Well	Na (mg/L)	Ca (mg/L)	Mg (mg/L)	K (mg/L)	Conductivity (µmhos/cm)	T-Alkalinity (mg $CaCO_3$/L)
March 23, 2001	226	142	41	11.00	1,823	228
May 7, 2001	219	139	37	9.31	1,846	230
Change	-7	-3	-4	-1.69	23	2
	Cl^- (mg/L)	**SO_4 (mg/L)**	**CO_3 (mg/L)**	**HCO_3 (mg/L)**	**pH (s.u.)**	**TDS (mg/L)**
March 16, 2001	368	271	0	279	6.98	1,312
May 7, 2001	365	234	0	280	7.01	1,272
Change	-3	-37	0	1	0.03	-40

Table 2. Summary of F-29 Chemical Analyses December 2000 to August 2001 (concluded)

F-29 Monitor Well	Na (mg/L)	Ca (mg/L)	Mg (mg/L)	K (mg/L)	Conductivity (µmhos/cm)	T-Alkalinity (mg $CaCO_3$/L)
May 7, 2001	219	139	37	9.31	1,846	230
June 8, 2001	256	184	37	14.3	2,289	243
Change	37	45	0	4.99	443	13
	Cl^- (mg/L)	**SO_4 (mg/L)**	**CO_3 (mg/L)**	**HCO_3 (mg/L)**	**pH (s.u.)**	**TDS (mg/L)**
May 7, 2001	365	234	0	280	7.01	1,272
June 8, 2001	513	212	0	297	6.92	1,796
Change	148	-22	0	17	-0.09	524

F-29 Monitor Well	Na (mg/L)	Ca (mg/L)	Mg (mg/L)	K (mg/L)	Conductivity (µmhos/cm)	T-Alkalinity (mg $CaCO_3$/L)
June 8, 2001	256	184	37	14.3	2,289	243
August 14, 2001	171	124	31	7.46	1,854	217
Change	-85	-60	-6	-6.8	-435	-26
	Cl^- (mg/L)	**SO_4 (mg/L)**	**CO_3 (mg/L)**	**HCO_3 (mg/L)**	**pH (s.u.)**	**TDS (mg/L)**
June 8, 2001	513	212	0	297	6.92	1,796
August 14, 2001	340	133	0	264	6.76	1,385
Change	-173	-79	0	-33	-0.16	-411

Figure 1
Location Map



Name: HOBBS WEST
Date: 8/30/2001
Scale: 1 inch equals 2000 feet

Location: 032° 43' 17.1" N 103° 10' 23.0" W
Caption: Rice Operation Company
F-29 Monitor Well
Section 29, T19S, R38E

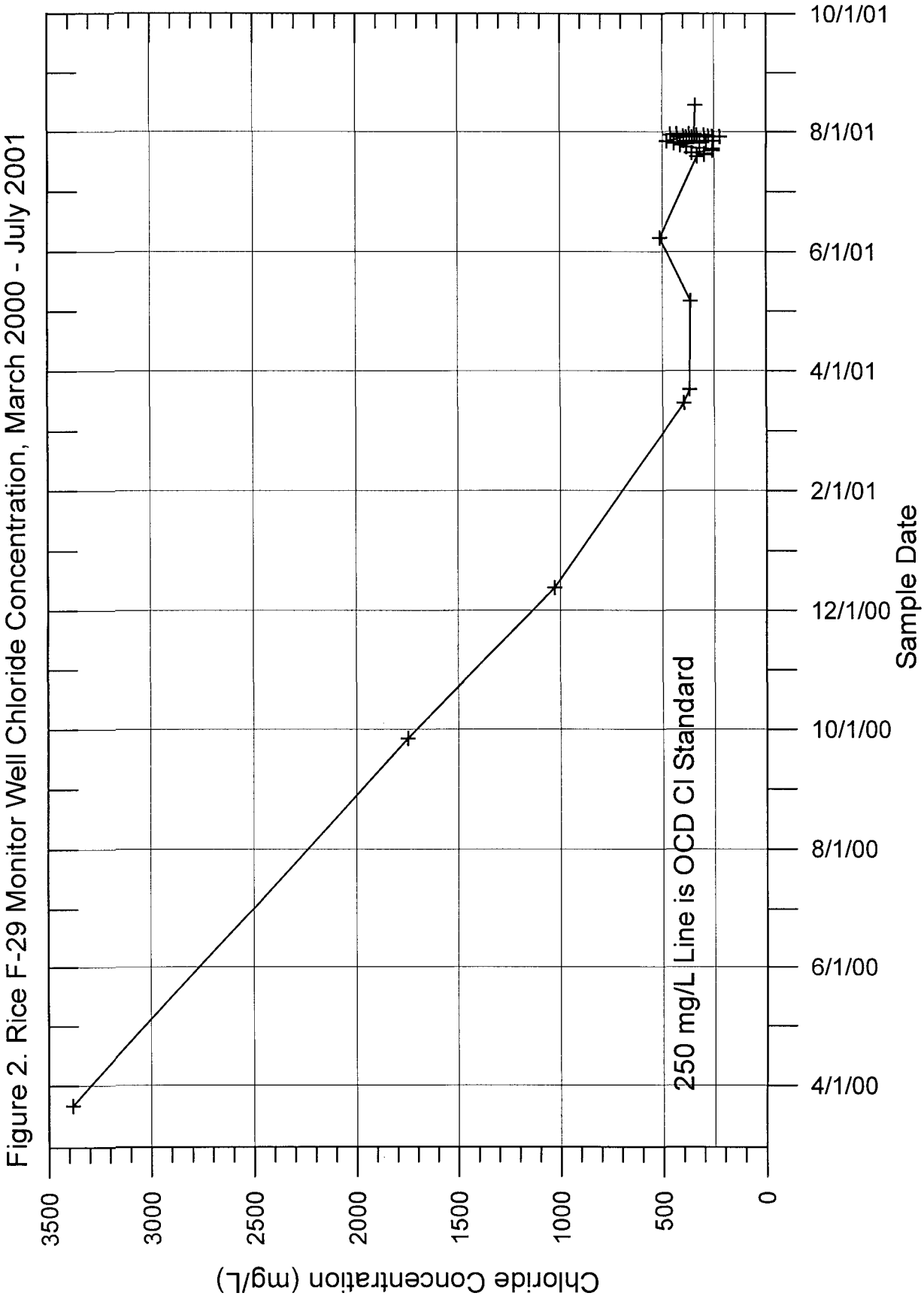


Figure 2. Rice F-29 Monitor Well Chloride Concentration, March 2000 - July 2001
Chloride Concentration (mg/L)
3500
3000
2500
2000
1500
1000
500
0
Sample Date
10/1/01
8/1/01
6/1/01
4/1/01
2/1/01
12/1/00
10/1/00
8/1/00
6/1/00
4/1/00
250 mg/L Line is OCD Cl Standard

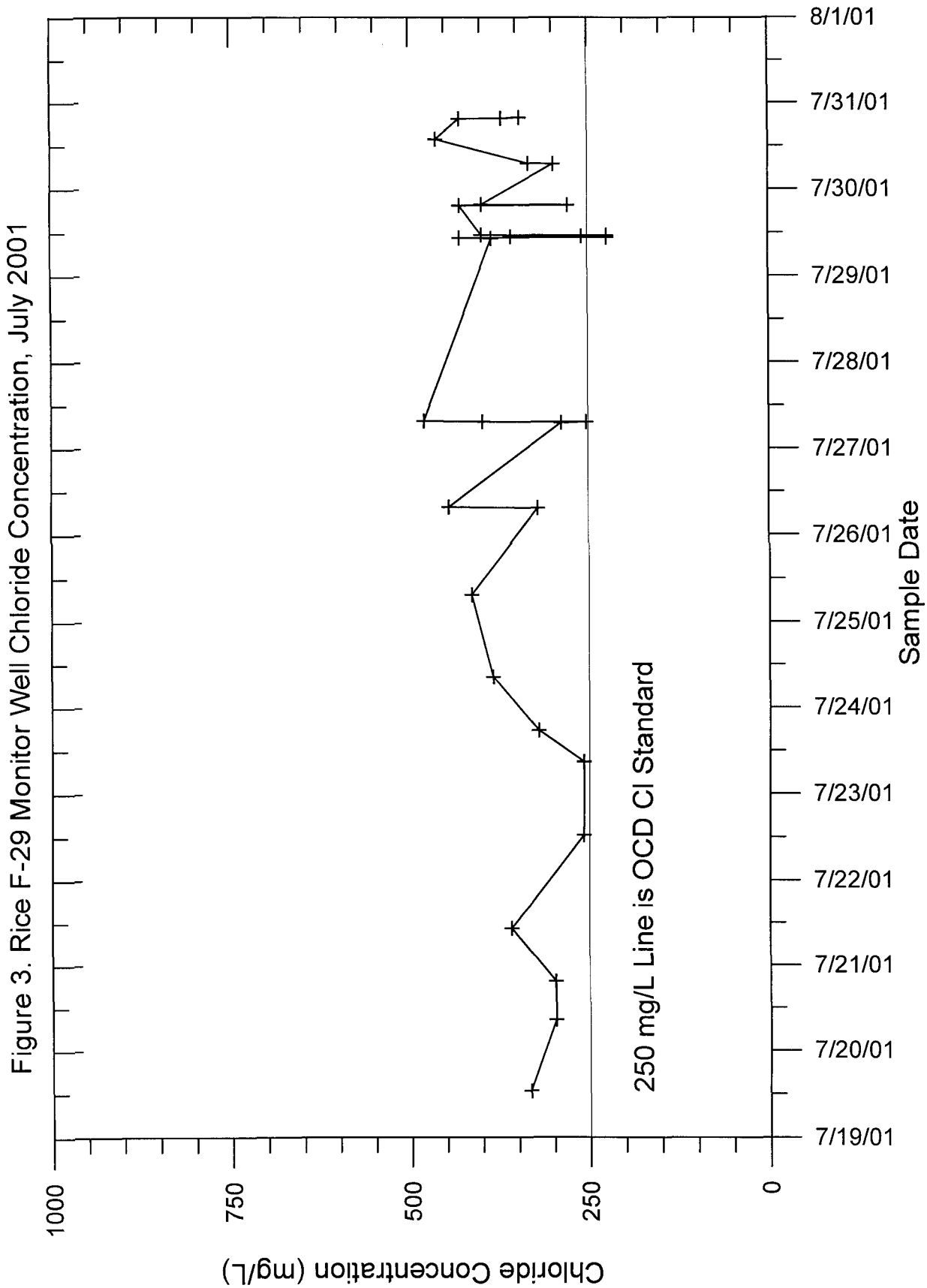


Figure 3. Rice F-29 Monitor Well Chloride Concentration, July 2001
Chloride Concentration (mg/L)
1000
750
500
250
0
250 mg/L Line is OCD Cl Standard
Sample Date
8/1/01
7/31/01
7/30/01
7/29/01
7/28/01
7/27/01
7/26/01
7/25/01
7/24/01
7/23/01
7/22/01
7/21/01
7/20/01
7/19/01

Copies of Laboratory Analytical Results

CARDINAL LABORATORIES

PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
SAFETY & ENVIRONMENTAL SOLUTIONS, INC.
ATTN: BOB ALLEN
703 E. CLINTON, STE 103
HOBBS, NM 88240
FAX TO: (505) 393-4388

Receiving Date: 08/14/01
Reporting Date: 08/16/01
Project Owner: RICE
Project Name: F-29
Project Location: WEST COUNTY ROAD

Sampling Date: 08/14/01
Sample Type: GROUNDWATER
Sample Condition: COOL & INTACT
Sample Received By: GP
Analyzed By: AH

LAB NUMBER SAMPLE ID	Na (mg/L)	Ca (mg/L)	Mg (mg/L)	K (mg/L)	Conductivity (u S/cm)	T-Alkalinity ($mgCaCO_3/L$)
ANALYSIS DATE:	08/15/01	08/15/01	08/15/01	08/15/01	08/15/01	08/15/01
H6077-1 WATER WELL	171	124	31	7.46	1854	217
Quality Control	1.076	47	44	5.02	1489	NR
True Value QC	1.000	50	50	5.00	1413	NR
% Recovery	108	94.9	88.5	100	105	NR
Relative Percent Difference	1.5	8.5	13.6	5.2	0.3	NR
METHODS:	273.1	3500-Ca-D	3500-Mg E	8049	120.1	310.1

LAB NUMBER SAMPLE ID	Cl^- (mg/L)	SO_4 (mg/L) 8/15/01	CO_3 (mg/L)	HCO_3 (mg/L)	pH (s.u.)	TDS (mg/L)
ANALYSIS DATE:	08/15/01	05/12/00	08/15/01	08/15/01	08/15/01	08/15/01
H6077-1 WATER WELL	340	133	0	264	6.76	1385
Quality Control	1001	51.06	NR	1011	6.86	NR
True Value QC	1000	50.00	NR	1000	7.00	NR
% Recovery	100	102	NR	101	98.0	NR
Relative Percent Difference	6.5	0	NR	0	0.6	NR
METHODS:	SM4500-Cl-B	375.4	310.1	310.1	150.1	160.1

Chemist

8-16-01
Date

H6077.XLS

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

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Company Name: SESI	BILL TO PO #:
Project Manager:	Company: SAME
Address: 703 E. CLINTON, #103	Attn:
City: HOBBS State: NM Zip: 88240	Address:
Phone #: (505) 397-0510	City:
Fax #: (505) 393-4388	State: Zip:
Project #: Project Owner: RICE	Phone #:
Project Name: F-29	Fax #:
Project Location: West County Rd.	

FOR LAB USE ONLY				MATRIX						PRES.			SAMPLING		ANALYSIS REQUEST
LAB I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER:	ACID:	ICE / COOL	OTHER:	DATE	TIME	Major Cations & Anions
H6077-1	WATER WELL		1	X							X		8-14-01	10:30AM	X

PLEASE 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 collections, including attorney's fees.

Sampler Relinquished:	Date:	Received By:	Phone Result ☐ Yes ☐ No Additional Fax #:
	Time:		Fax Result: ☐ Yes ☐ No
Relinquished By: Robert Hasbey	Date: 8-14-01	Received By: (Lab Staff)	REMARKS:
	Time: 1135 PM		
Delivered By: (Circle One) Sampler - UPS - Bus - Other:		Sample Condition Cool: ☐ Yes ☐ No Intact: ☑ Yes ☐ No	CHECKED BY: (Initials)

† Cardinal cannot accept verbal changes. Please fax written changes to 915-673-7020.

Price, Wayne

From: Rice Operating Hobbs[SMTP:riceswd@gte.net]
Reply To: Rice Operating Hobbs
Sent: Monday, March 05, 2001 7:53 AM
To: Price, Wayne
Subject: Read: Rice F-29 GW


ATT29615.TXT

This is a receipt for the mail you sent to
"Price, Wayne" <WPrice@state.nm.us>; "'riceswd'" <riceswd@gte.net> at 03/02/2001 5:03 PM

This receipt verifies that the message has been displayed on the recipient's computer at 03/05/2001 7:53 AM

Price, Wayne

From: Price, Wayne
Sent: Friday, March 02, 2001 5:03 PM
To: Price, Wayne; 'riceswd'
Cc: Williams, Chris
Subject: RE: Rice F-29 GW

OCD has reviewed the Rice Operating Company (ROC) letter dated March 02, 2001 requesting emergency abatement actions by pumping contaminated water from the on-site monitor well. The OCD hereby aprroves of this emergency action with the following additonal conditions:

1. Install a sufficient number of monitor wells to properly define the site specific groundwater flow gradient(s) and the extent of contamination from the source area.

2. All new bore holes, monitor and recovery well(s) on site shall be sampled and analyzed for BTEX, General Chemistry and WQCC metals.

3. ROC will notify the OCD Santa Fe office and the OCD District office at least 72 hours in advance of all scheduled activities such that the OCD has the opportunity to witness the events and/or split samples during OCD's normal business hours.

4. ROC shall submit the results of the investigation to the OCD Santa Fe Office **by April 28, 2001** with a copy provided to the OCD Hobbs District Office and shall include the following investigative information:

   a. A description of all investigation, remediation and monitoring activities which have occurred including conclusions and recommendations.

   b. A geologic/lithologic log and well completion diagram for each monitor well.

   c. A water table potentiometric map showing the location of the leaks and spills, excavated areas, monitor wells, and any other pertinent site features as well as the direction and magnitude of the hydraulic gradient.

   d. Isopleth maps for contaminants of concern which were observed during the investigations.

   e. Summary tables of all ground water quality sampling results and copies of all laboratory analytical data sheets and associated QA/QC data taken within the past year.

   f. The quantity and disposition of all recovered product and/or wastes generated.

Please be advised that NMOCD approval of this plan does not relieve ROC of liability should their operations fail to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD approval does not relieve ROC of responsibility for compliance with any other federal, state, or local laws and/or regulations.

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

March 2, 2001

Mr. Wayne Price
NM Energy and Minerals Dept.
OCD Environmental Bureau
1220 St. Francis
Santa Fe, NM 87504

Re: SWD F-29 Facility – Groundwater Monitoring
NW/4, Unit Letter F, Sec. 29, T18S, R38E
Lea County, NM

Dear Mr. Price:

Rice Operating Company (ROC) appreciates your consideration and response concerning the groundwater monitoring at the F-29 SWD Facility. This letter is to follow-up on our telephone conversation of earlier today and request approval to initiate emergency conditions at this site.

A brief background review: the water analysis indicated elevated dissolved salt concentrations in the alternate well (MW-2) as well as in the sanded-up well (MW-1). ROC verbally notified the NMOCD Santa Fe Office of this occurrence on August 1, 2000 and through email on September 11, 2000. After discussion on August 1, it was suggested that ROC drill and complete an up-gradient well to reference the groundwater quality in the area. ROC contacted the adjacent landowner, Mr. Gary Schubert of Grimes Land Company, for permission to drill and complete a monitor well, but Mr. Schubert respectfully declined permission.

ROC will continue the effort to establish the extent of groundwater impact at this site. ROC will re-evaluate the surrounding area and investigate possibilities of any alternative measures to gain adjoining groundwater information. ROC will also discuss the matter further with Mr. Schubert.

Regarding the concentration of TDS in MW-2, it is well to considerer the reduction in TDS concentration form 3470 ppm to 2586 ppm over the short period of time and minimal amount of purge. ROC would like to initiate an emergency condition at this site in order to immediately focus an intensified purge of this well by pumping continuously at a rate the well will support. All fluid produced from the MW-2 will be measured for volume and then disposed into the SWD Well F-29 Facility, a commercial disposal well owned and operated by ROC.

MW-2 fluid will be periodically sampled pursuant to NMOCD specifications for BTEX, pH, TDS, Conductivity, T-Alkalinity, and routine major cations and anions: Na, Ca, Mg, K, Cl, SO_4, CO_3, HCO_3. Quarterly sampling events will continue pursuant to NMOCD specifications.

ROC has discussed this activity with Safety and Environmental Solutions Inc., (SESI) the consulting firm assisting with the F-29 project. If this emergency condition is approved by the NMOCD, SESI will install a 12-volt pump, capacity of approximately 0.5 gpm and begin fluid recovery the week of March 5, 2001. ROC, through SESI, will informally report results to NMOCD on a monthly basis, probably through email, or as fluctuation in results would dictate.

If you have any questions, please call. ROC looks forward to your reply.

RICE OPERATING COMPANY

Carolyn Doran Haynes
Operations Engineer

Cc: LBG, file

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

CERTIFIED MAIL
RETURN RECEIPT NO. 7099 3220 0001 9928 4379

February 8, 2001

Mr. Wayne Price
NM Energy and Minerals Dept.
OCD Environmental Bureau
1220 St. Francis
Santa Fe, NM 87504

Re: SWD F-29 Facility – Groundwater Monitoring
NW/4, Unit Letter F, Sec. 29, T18S, R38E
Lea County, NM

Dear Mr. Price:

Rice Operating Company (ROC) appreciates your consideration and response concerning the closure for the emergency overflow pit and the below-ground redwood tanks that were located at the F-29 Facility. ROC understands that NMOCD has requested a two-year sampling plan for monitoring the groundwater at this facility.

The initial monitor well at this location was documented to have been completed with 2-inch casing to 60 feet BGS with 10 feet of screen above the water table interface and 10 feet below. The initial sample was tested for BTEX and Chlorides and was found to be within the WQCC limits. However, when the 2-year sampling program started in April 2000, it was discovered that the well could not be properly purged and there was sparse influx of water into the wellbore. Depth indicators revealed that the well had filled with sand to 51 feet BGS (the water table is at 50.5 feet BGS.) ROC had tried to bail the sand from the well with no avail. Water analysis revealed an elevated concentration of dissolved salts that was not found in the initial sample.

In order to assure re-producible water sampling events, ROC requested to complete an alternate monitor well with 4-inch casing and 15 feet of screen: 5 feet above the water table interface and 10 feet below. (Verbal approval was received via telephone conversation June 1, 2000.) This well was drilled by Harrison and Cooper of Wolfforth, TX on July 10, 2000 and was completed and developed pursuant to NMOCD guidelines. A well log report and location of the replacement monitor well is included in this package.

The water analysis indicated elevated dissolved salt concentrations in this alternate well also. ROC verbally notified the NMOCD Santa Fe Office. After discussion, it was suggested that ROC drill and complete and up-gradient well to reference the ground water quality in the area. ROC contacted the adjacent landowner, Mr. Gary Schubert of Grimes Land Company, for permission to drill and complete a monitor well. Mr. Schubert respectfully declined permission.

The 2000 quarterly monitoring events for the alternate monitor well were scheduled and conducted by Safety and Environmental Solutions, Inc. (SES) of Hobbs. Analytical tests were conducted by Cardinal Laboratories of Hobbs. The 2000 MW Report was compiled by SES.

ROC has contracted with SES for Year 2001 monitor well sampling and SES will schedule all major events with a 48-hour advance notice to the NMOCD. All sampling activities will be conducted pursuant to NMOCD guidelines.

The ground water will be tested for BTEX, pH, TDS, Conductivity, T-Alkalinity, and routine major cations and anions: Na, Ca, Mg, K, Cl, SO_4, CO_3, HCO_3. The well will be sampled pursuant to NMOCD specifications and the Hobbs NMOCD Office will be notified 48 hours in advance of sampling events.

At this time, ROC offers to continue the sampling program without pumping the well because there is no information concerning the up-gradient ground water quality. ROC prefers to minimize the risk of inviting influx of possibly impacted off-site water.

If you have any questions, please call.

RICE OPERATING COMPANY

Carolyn Doran Haynes

Carolyn Doran Haynes
Operations Engineer

Enclosures: Monitor Well Boring Report
2000 Analytical and Elevation Tables
Site Map
SESI Monitoring Reports and Lab Results

Cc: LBG, TG, file, Chris Williams
OCD Hobbs District I
1625 N. French Drive
Hobbs, NM 88240

Send original copy by certified mail to: TDLR, P.O. Box 12157, Austin, TX 78711

ATTENTION OWNER: *Confidentiality Privilege Notice on reverse side of Well Owner's copy (pink)*

State of Texas
WELL REPORT

Texas Department of Licensing & Regulation
P.O. Box 12157
Austin, TX 78711
512-463-7880

1) OWNER **Rice Operating Co.** (Name) ADDRESS **122 W. Taylor** (Street or RFD) **Hobbs** (City) **NM** (State) **88240** (Zip)

2) ADDRESS OF WELL'S LOCATION: Long. _____ Lat. _____

County **Lea** **W. Co. Rd.** (Street, RFD or other) **Hobbs** (City) **NM** (State) **88240** (Zip) GRID # _____

3) TYPE OF WORK (Check):
☒ New Well ☐ Deepening
☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check): ☒ Monitor ☐ Environmental Soil Boring ☐ Domestic
☐ Industrial ☐ Irrigation ☐ Injection ☐ Public Supply ☐ De-watering ☐ Testwell
If Public Supply well, were plans submitted to the TNRCC? ☐ Yes ☐ No

5)

N

6) WELL LOG:
Date Drilling:
Started **7/10/00**
Completed **7/10/00**

DIAMETER OF HOLE		
Dia.. (in.)	From (ft.)	To (ft.)
7	Surface	65

7) DRILLING METHOD (Check): ☐ Driven
☒ Air Rotary ☐ Mud Rotary ☐ Bored
☐ Air Hammer ☐ Cable Tool ☐ Jetted
☐ Other _____

From (ft.)	To (ft.)	Description and color of formation material
		MW-1R
0	10	**Caliche/Sand - Tan (Fill)**
10	65	**Caliche/Sand - Tan**

8) Borehole Completion (Check): ☐ Open Hole ☐ Straight Wall
☐ Underreamed ☒ Gravel Packed ☐ Other **16/30 Filter Sand**
If Gravel Packed give interval from **28** ft. to **65** ft.

CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casing Screen
4	N	PVC Solid	0	30	
4	N	PVC Slotted	30	60	0.010

(Use reverse side of Well Owner's copy, if necessary)

9) CEMENTING DATA
Cemented from **0** ft. to **10** ft. No. of sacks used **10**
Bentonite from **10** ft. to **28** ft. No. of sacks used **5**
Method used **Slurry**
Cemented by **Harrison & Cooper, Inc.**
Distance to septic system field lines or other concentrated contamination _____ ft.
Method of verification of above distance _____

13) ☐ Well plugged within 48 hours

Casing left in well: From (ft)	Casing left in well: To (ft)	Cement/bentonite placed in well: From (ft)	Cement/bentonite placed in well: To (ft)	Sacks used:

10) SURFACE COMPLETION
☒ Specified Surface Slab Installed
☐ Specified Steel Sleeve Installed
☐ Pitless Adapter Used
☐ Approved Alternative Procedure Used

14) TYPE PUMP:
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder
☐ Other: _____
Depth to pump bowls, cylinder, jet, etc., _____ ft.

15) WELL TESTS:
Type test: ☐ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: _____ gpm with _____ ft. drawdown after _____ hrs.

11) WATER LEVEL
Static level **49** ft. below land surface Date **7/10/00**
Artesian Flow _____ gpm. Date _____

16) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable constituents?
☐ Yes ☒ No If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? _____ Depth of strata _____
Was chemical analysis made? ☐ Yes ☒ No

12) PACKERS: Type Depth

I certify that I drilled this well (or the well was drilled under my direct supervision) and that each and all of the statements herein are true and correct. I understand that failure to complete items 1 thru 16 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME **Claiborne Harrison** (Type or Print) WELL DRILLER'S LICENSE NO. **NM WD-1271**

ADDRESS **7202 66th St.** (Street or RFD) **Lubbock** (City) **TX** (State) **79407** (Zip)

(Signed) _____ (Licensed Well Driller)

(Signed) _____ (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

SUMMARY OF WATER SAMPLE ANALYTICAL RESULTS 1999 - 2000
RICE OPERATING COMPANY SWD WELL F-29 SITE

Well Name	Date Sampled	Benzene (ppm)	Toluene (ppm)	Ethylbenzene (ppm)	Xylenes (ppm)	Total BTEX (ppm)	TDS (mg/l)	Chloride (mg/l)
NMWQCC Standards		0.010	0.750	0.750	0.620	N/A	1,000	250
MW-1	03/05/99	<0.002	<0.002	<0.002	<0.006	<0.012		194
MW-1	03/21/2001	<0.002	<0.002	<0.002	<0.006	<0.012	**6600**	**2564**
MW-2	07/14/2000	<0.002	<0.002	<0.002	<0.006	<0.012	**3470**	**1829**
MW-2	09/27/2000	<0.002	<0.002	<0.002	<0.006	<0.012	**3032**	**1748**
MW-2	12/12/2000	<0.002	<0.002	<0.002	<0.006	<0.012	**2586**	**1027**

Analysis was performed by Cardinal Laboratories in Hobbs, New Mexico.

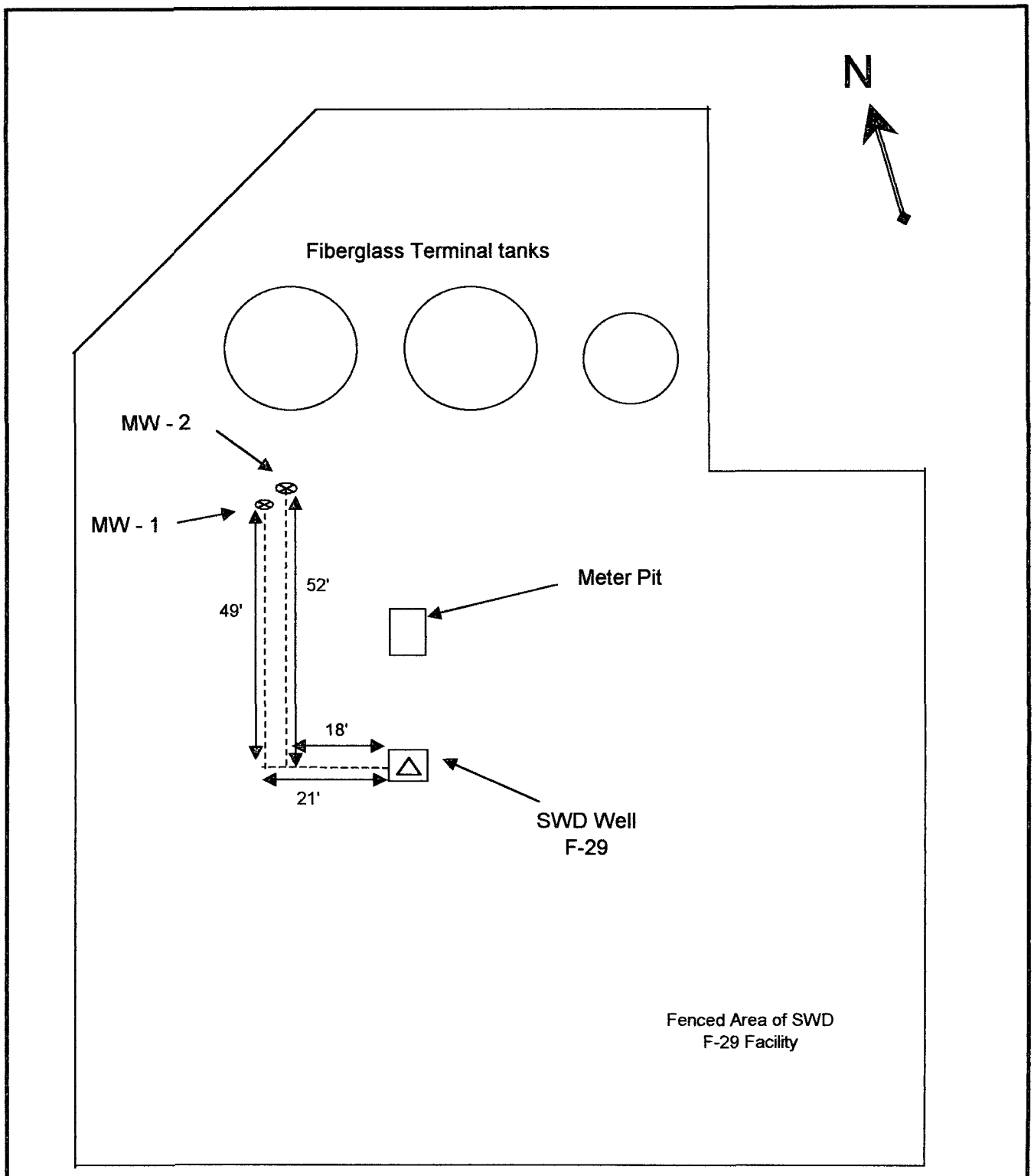
Benzene, toluene, eythlbenzene, and xylene (BTEX); total dissolved solids (TDS); and chloride analyses were conducted using EPA Methods 8020, 160.1, and 352.3, respectively.

Results presented in bold print exceed NMWQCC human health standards for ground water.

All results are reported in milligrams per liter (mg/l); parts per million (ppm).

SUMMARY OF GROUNDWATER MEASUREMENTS by QUARTER
RICE OPERATING COMPANY SWD WELL F-29 SITE

Well	Date Gauged	Depth to Water	Water Elevation	Casing Elevation	Surface Elevation	LNAPL Thickness
MW-1	03/05/99	50.00				0.00
MW-1	03/21/2000	49.89	50.11	100.00		0.00
MW-2	07/10/2000	49.00				0.00
MW-2	09/27/2000	49.26	50.74	100.00	98.5	0.00
MW-2	12/12/2000	49.61	50.39	100.00	98.5	0.00



Rice Operating Company 122 West Taylor Hobbs, NM 88240 (505) 393-9174	Monitor Well Location	SWD Facility F-29 Unit Letter F, Sec 29-T18S-R38E Lea County, New Mexico

CARDINAL LABORATORIES

PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
RICE OPERATING CO.
ATTN: F.WESLEY ROOT
122 W. TAYLOR
HOBBS, NM 88240
FAX TO:

Receiving Date: 03/05/99
Reporting Date: 03/06/99
Project Owner: RICE OPERATING
Project Name: SWD F-29
Project Location: 29-T18S-R38E, LEA CO., NM

Sampling Date: 03/05/99
Sample Type: GROUNDWATER
Sample Condition: COOL & INTACT
Sample Received By: BC
Analyzed By: BC

LAB NO.	SAMPLE ID	Cl^- (mg/L)	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL BENZENE (mg/L)	TOTAL XYLENES (mg/L)
ANALYSIS DATE:		03/05/99	03/05/99	03/05/99	03/05/99	03/05/99
H4046-1	B-1	194	<0.002	<0.002	<0.002	<0.006
Quality Control		1335	0.089	0.095	0.092	0.276
True Value QC		1319	0.100	0.100	0.100	0.300
% Recovery		101	88.9	94.6	91.5	92.0
Relative Percent Difference		1.5	3.5	4.6	4.0	5.1

METHODS: Cl^- - Std. Methods 4500-Cl^-B; BTEX - EPA SW-846 8260

Chemist

3/6/99
Date

H4046.XLS

CARDINAL LABORATORIES, INC.

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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

Company Name:	Rice Operating Company
Project Manager:	F. Wesley Root
Address:	122 West Taylor
City:	Hobbs State: NM Zip: 88240
Phone #:	505 393-9174
Fax #:	
Project #:	Project Owner: Rice Operating
Project Name:	SWD F-29
Project Location:	29-T18S-R38E, Lea Co. NM

BILL TO	PO #:
Company:	Rice Operating
Attn:	F. Wesley Root
Address:	122 West Taylor
City:	Hobbs
State:	NM Zip: 88240
Phone #:	505-393-9174
Fax #:	

ANALYSIS REQUEST

FOR LAB USE ONLY LAB I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER:	PRES.: ACID:	ICE / COOL	OTHER:	SAMPLING: DATE	TIME	BTEX	Chloride
H4046-1	B-1	G	2	V							V		3-5-99	17:15	V	
	B-1	G	1	V							V		3-5-99	17:15		V

Sampler Relinquished: F. Wesley Root	Date: 3-5-99 Time: 17:45	Received By:	Phone Result ☐ Yes ☐ No Additional Fax #:
Relinquished By:	Date: Time:	Received By: (Lab Staff)	Fax Result: ☐ Yes ☐ No REMARKS:
Delivered By: (Circle One) Sampler - UPS - Bus - Other:		Sample Condition Cool: ☒ Yes ☐ No Intact: ☒ Yes ☐ No	CHECKED BY: (Initials)

† Cardinal cannot accept verbal changes. Please fax written changes to 915-673-7020.

Rice Operating Company
F-29 Monitor Well Report
Lea County, New Mexico

Section 29, T19S, R38E
Lea County, New Mexico

April 24, 2000

prepared for:

Rice Operating Company
122 W. Taylor
Hobbs, New Mexico 88240

By:

Safety & Environmental Solutions, Inc.
703 E. Clinton, Suite 103

Hobbs, New Mexico 88240
(505) 397-0510

TABLE OF CONTENTS

I. Background

Safety & Environmental Solutions, Inc. (SESI) was engaged on March 21, 2000 to perform sampling and data collection from a Rice Operating Hobbs SWD System Well F-29 monitor well (See Vicinity Map). The subject area is located in Sections 29, Township 19 S Range 38 E in Lea County, New Mexico.

II. Work Performed

SESI personnel Dee Whatley arrived at the site on March 21, 2000. Ground water samples were taken from each well after either hand bailing or a submersible pump developed the wells. Three to five casing volumes of water were removed from each well until pH and temperature of the water were stabilized. The samples were obtained and placed in appropriate containers, preserved and transported under chain of custody to Cardinal Laboratories of Hobbs, New Mexico for analysis. The analyses requested by Rice Operating Company included Benzene, Toulene, Ethyl Benzene, and Xylenes (BTEX) and Major Cations and Anions. (See Analytical Data)

In addition to the sampling, SESI also surveyed and marked the north side of the top of casing in each well. From that point, the depth to the top of ground water was measured using a Solinst water level indicator. The total depth of each well was measured in order to compute the proper casing volumes. (See TOC and TOW Maps) A summary of this data follows:

ID	Date	Casing Elevation	Depth to Water	Water Elevation	Free Product Thickness
F-29 Well	3/21/00	100.00'	49.89'	50.11'	N/a

III. Analytical Results

The analysis of the groundwater samples performed by Cardinal Laboratories are summarized as follows:

SAMPLE ID	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL BENZENE (mg/L)	TOTAL XYLENES (mg/L)
F-29 WELL	<0.002	<0.002	<0.002	<0.006

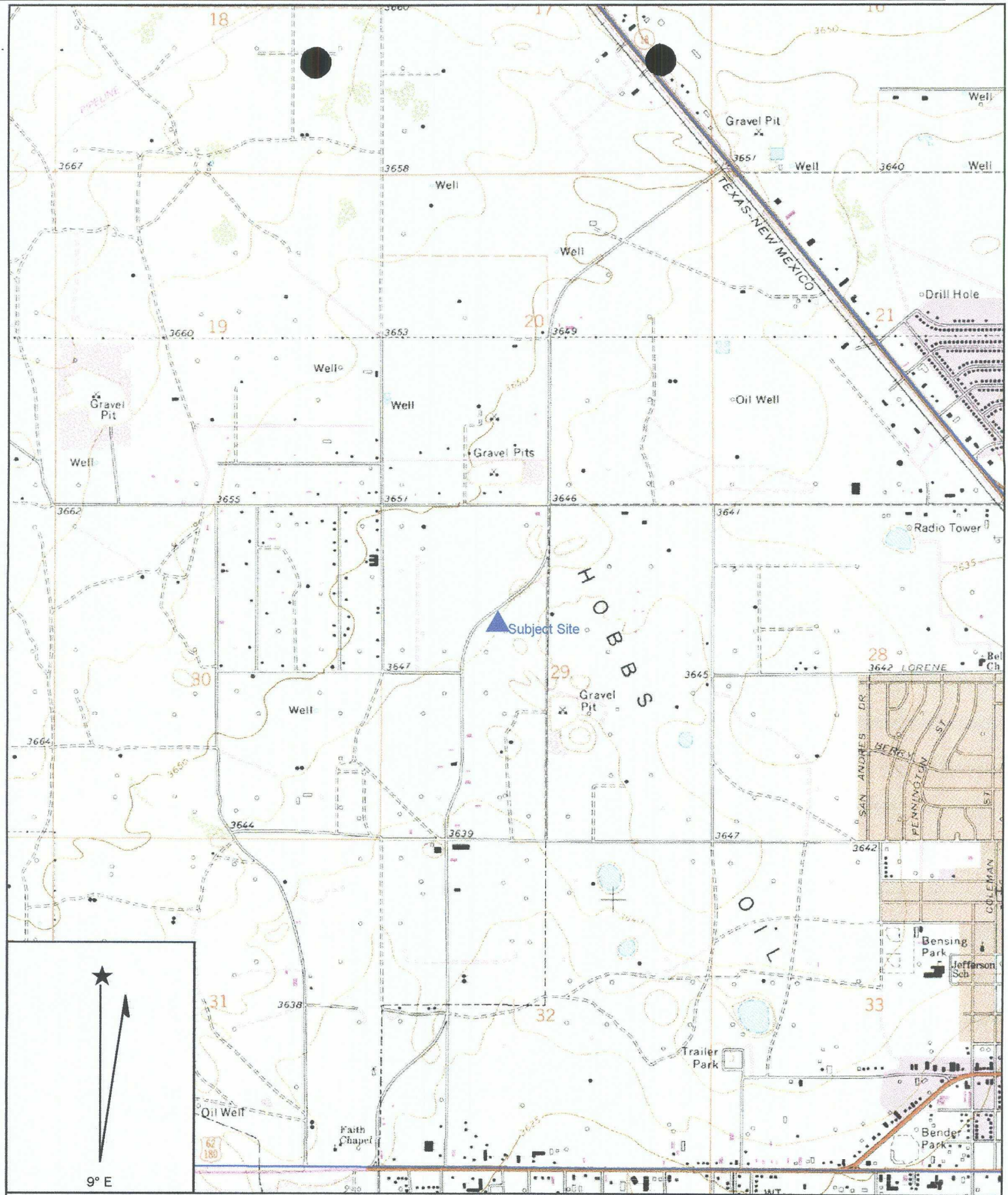
SAMPLE ID	Na (mg/L)	Ca (mg/L)	Mg (mg/L)	K (mg/L)	Conductivity (umhos/cm)	T-Alkalinity ($mgCaCO_3/L$)
F-29 WELL	991	399	122	28.9	8910	284

SAMPLE ID	Cl (mg/L)	SO_4 (mg/L)	CO_3 (mg/L)	HCO_3 (mg/L)	pH (s.u.)	TDS (mg/L)
F-29 WELL	2564	227	0	346	7.56	6600

IV. Maps and Figures

Vicinity Map
Analytical Results

Figure 1
Vicinity Map



Name: HOBBS WEST
Date: 4/27/2000
Scale: 1 inch equals 2000 feet

Location: 032° 43' 17.1" N 103° 10' 20.4" W
Caption: Rice Operating Company
F - 29
Vicinity Map

Figure 2
Analytical Results

CARDINAL LABORATORIES

PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

ANALYTICAL RESULTS FOR
SAFETY & ENVIRONMENTAL SOLUTIONS, INC.
ATTN: DEE WHATLEY
703 E. CLINTON, SUITE #103
HOBBS, NM 88240
FAX TO:

Receiving Date: 03/21/00
Reporting Date: 03/22/00
Project Owner: RICE
Project Name: RICE F-29 MONITOR WELL
Project Location: F-29
Modified Reporting Date: 04/14/00

Sampling Date: 03/21/00
Sample Type: GROUNDWATER
Sample Condition: COOL & INTACT
Sample Received By: AH
Analyzed By: AH

MODIFIED REPORT

LAB NUMBER	SAMPLE ID	Na (mg/L)	Ca (mg/L)	Mg (mg/L)	K (mg/L)	Conductivity (u mhos/cm)	T-Alkalinity ($mgCaCO_3/L$)
ANALYSIS DATE:		03/22/00	03/21/00	03/21/00	03/21/00	03/21/00	03/21/00
H4733-1	F-29 WELL	991	399	122	28.9	8910	284
Quality Control		0.851	52	53	5.02	1392	NR
True Value QC		1.000	50	50	5.00	1413	NR
% Recovery		85.1	104	106	100	98.5	NR
Relative Percent Difference		5.3	0	0	1.8	0.2	NR
METHODS:		273.1	3500-Ca-D	3500-Mg E	8049	120.1	310.1

LAB NUMBER	SAMPLE ID	Cl^- (mg/L)	SO_4 (mg/L)	CO_3 (mg/L)	HCO_3 (mg/L)	pH (s.u.)	TDS (mg/L)
ANALYSIS DATE:		04/10/00	04/10/00	03/22/00	03/22/00	03/21/00	03/21/00
H4733-1	F-29 WELL	2564	227	0	346	7.56	6600
Quality Control		992	49.39	NR	971	7.01	NR
True Value QC		1000	50.00	NR	1000	7.00	NR
% Recovery		99.2	98.8	NR	97.1	100	NR
Relative Percent Difference		0.9	3.5	NR	-	0.1	NR
METHODS:		SM4500-Cl-B	375.4	310.1	310.1	150.1	160.1

Chemist

04/14/2000
Date

CARDINAL LABORATORIES, INC.

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

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Page____ of____

Company Name:	SESI	**BILL TO**	
Project Manager:	Dee Whatley	P.O. #:	
Address:		Company:	
City:	State: Zip:	Attn:	
Phone #:	Fax #:	Address:	
Project #:	Project Owner: Rice	City:	
Project Name:	Rice F-29 Monitor Well	State: Zip:	
Project Location:	F-29	Phone #:	
Sampler Name:		Fax #:	

FOR LAB USE ONLY				MATRIX						PRESERV.			SAMPLING		ANALYSIS REQUEST												
Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	GROUNDWATER	WASTEWATER	SOIL	CRUDE OIL	SLUDGE	OTHER :	ACID/BASE:	ICE / COOL	OTHER :	DATE	TIME	BTEX	Major Cations Anions	TDH										
H4733-1	F-29 Well	C	3	✓							✓		3-21-00	12:30	✓	✓	✓										

PLEASE 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 collections, including attorney's fees.

Sampler Relinquished:	Date: 3-21-00	Received By:	
	Time: 12:30pm		
Relinquished By:	Date: 3/21/00	Received By: (Lab Staff)	
	Time: 12:30		
Delivered By: (Circle One)	Sample Condition: Cool ☐Yes ☐No; Intact ☐Yes ☐No	CHECKED BY: (Initials)	
Sampler - UPS - Bus - Other:			

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

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

CARDINAL LABORATORIES

PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

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

Receiving Date: 07/17/00
Reporting Date: 07/21/00
Project Number: NOT GIVEN
Project Name: NOT GIVEN
Project Location: F-29 MW-2

Sampling Date: 07/14/00
Sample Type: GROUNDWATER
Sample Condition: COOL & INTACT
Sample Received By: AH
Analyzed By: AH

LAB NUMBER SAMPLE ID	Na (mg/L)	Ca (mg/L)	Mg (mg/L)	K (mg/L)	Conductivity (mS/cm)	T-Alkalinity ($mgCaCO_3/L$)
ANALYSIS DATE:	07/20/00	07/20/00	07/20/00	07/20/00	07/20/00	07/20/00
H5014-1 F-29	740	263	220	11.07	5941	307
Quality Control	0.875	46	56	5.05	1368	NR
True Value QC	1.000	50	50	5.00	1413	NR
% Recovery	87.5	92	112	101	96.7	NR
Relative Percent Difference	7.2	8.7	0	4.2	0.1	NR
METHODS:		SM3500-Ca-D	3500-Mg E	8049	120.1	310.1

LAB NUMBER SAMPLE ID	Cl (mg/L)	SO_4 (mg/L)	CO_3 (mg/L)	HCO_3 (mg/L)	pH (s.u.)	TDS (mg/L)
ANALYSIS DATE:	07/18/00	07/20/00	07/20/00	07/20/00	07/20/00	07/21/00
H5014-1 F-29	1629	260	0	375	7.12	3470
Quality Control	1080	50.73	NR	1000	6.98	NR
True Value QC	1000	50.00	NR	1000	7.00	NR
% Recovery	108	101	NR	100	99.7	NR
Relative Percent Difference	4.6	1.2	NR	0	0	nr
METHODS:	SM4500-Cl-B	375.4	310.1	310.1	150.1	160.1

Amy Hill
Chemist

7/21/00
Date

CARDINAL LABORATORIES

PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TX 79603
PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

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

Receiving Date: 07/17/00
Reporting Date: 07/19/00
Project Number: NOT GIVEN
Project Name: NOT GIVEN
Project Location: F-29 MW-2

Sampling Date: 07/14/00
Sample Type: GROUNDWATER
Sample Condition: COOL & INTACT
Sample Received By: AH
Analyzed By: BC

LAB NO.	SAMPLE ID	BENZENE (mg/L)	TOLUENE (mg/L)	ETHYL BENZENE (mg/L)	TOTAL XYLENES (mg/L)
ANALYSIS DATE		07/17/00	07/17/00	07/17/00	07/17/00
H5014-1	F-29	<0.002	<0.002	<0.002	<0.006
Quality Control		0.100	0.100	0.095	0.288
True Value QC		0.100	0.100	0.100	0.300
% Recovery		99.8	99.8	95.3	96.0
Relative Percent Difference		1.6	2.0	8.1	8.1

METHOD: EPA SW 846-8021B, 5030, 5021 Gas Chromatography

Chemist

7/19/00
Date

H5014B.XLS

CARDINAL LABORATORIES, INC.

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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 6	BILL TO	PO #:
Project Manager:	CAROLYN HAYNES	Company:	
Address:	122 W TAYLOR	Attn:	Same
City:	HOBBS State/NM Zip: 88240	Address:	
Phone #:	505 393 9174	City:	
Fax #:	505 397 1471	State:	Zip:
Project #:	Project Owner:	Phone #:	
Project Name:		Fax #:	
Project Location:	F-29 MW-2		

ANALYSIS REQUEST

FOR LAB USE ONLY LAB I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER:	PRES.: ACID:	ICE / COOL	OTHER:	SAMPLING: DATE	TIME	TDS	CATIONS/ANIONS	BTEX
H5014-1	F-29	G	1	✓									7/14/00		✓	✓	✓

PLEASE 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 collections, including attorney's fees.

Sampler Relinquished:	Date:	Received By:	Phone Result ☐ Yes ☐ No Additional Fax #:
Carolyn Brain Haynes	Time:		Fax Result: ☐ Yes ☐ No
Relinquished By:	Date: 7/17/00	Received By: (Lab Staff)	REMARKS:
	Time: 3:25	Amy Hill	1- Cations & Anions @ 135
Delivered By: (Circle One)	Sample Condition: Cool ☑ Yes ☐ No; Intact ☑ Yes ☐ No	CHECKED BY: (Initials)	1- BTEX @ 60
Sampler - UPS - Bus - Other:			STATE TAX 11.70
			195 / 206.70

† Cardinal cannot accept verbal changes. Please fax written changes to 915-673-7020.