

# L Peter Galusky, Jr PE

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April 1, 2022

## **Bradford Billings**

New Mexico Energy, Minerals, & Natural Resources

Oil Conservation Division, Environmental Bureau

1220 S. St. Francis Drive

Santa Fe, New Mexico 87504

Re: **2021 Annual Report**

Rice Operating Company – Vacuum SWD System

**Vacuum F-34 Vent Boot** UL F, Section 34, Township 17S, Range 35E

NMOCD Case Number 1R425-67

Sent via E-mail

## **Mr. Billings:**

This Annual Report is submitted to NMOCD for Rice Operating Company's (ROC) Vacuum F-34 Vent Boot project in Lea County, New Mexico.

## **Background and Brief Project History**

The site is located approximately 2.5 miles east-southeast of Buckeye, New Mexico (Appendix Figure 1). The regional topography slopes gently toward the southeast. Groundwater is encountered at a depth of approximately 74+/- ft below ground surface in the Ogallala Formation.

The junction box at this location was removed during the Vacuum SWD system abandonment and conducted an initial soils evaluation in 2008. The results of an NMOCD approved Investigation and Characterization Plan (ICP) indicated elevated levels of soil and groundwater chlorides, and a Notification of Groundwater Impact was submitted to NMOCD on October 26<sup>th</sup>, 2010. ROC installed a double synthetic subsurface soil liner and completed surface restoration in May 2011 and NMOCD granted vadose zone remediation termination status, or 'soil closure,' on September 15<sup>th</sup>, 2011. A Project Update was submitted to NMOCD on August 8<sup>th</sup>, 2013 which proposed continued groundwater monitoring and limited groundwater withdrawal from the

## Rice Operating Company – Vacuum F-34 Vent Boot Annual Report

near-source well (MW-1) to determine if this would effectively reduce groundwater chloride mass. NMOCD approved this work in August 13<sup>th</sup>, 2013. Monitor well locations are shown in the Appendix Figure 2.

### Past Year and Current Status

ROC began groundwater recovery from MW-1 in April of 2014. A total of 13,873 bbls of groundwater and approximately 1,066 kg of chloride have been removed through 2021. The removed groundwater has been hauled to off-site locations for beneficial use.

Groundwater chloride concentrations increased in the near-source monitor well (MW-1) from an average of 236 mg/l in 2020 to 444 mg/l in 2021 (Appendix Figure 3, Table 1). This increase is opposite the multi-year trend of declining chlorides and further monitoring will therefore be necessary.

Chlorides in the up-gradient monitor well (MW-2) remained below 100 mg/l in 2021 as they have in prior years (Appendix Figure 3, Table 1).

BTEX has not been sampled since March 2020 per NMOCD granted approval, due to the consistent absence of BTEX in groundwater samples taken during prior years.

The full dataset of groundwater results is given in Table 2 of the Appendix.

On January 25<sup>th</sup>, 2022, NMOCD granted approval to cease sampling of MW-2. ROC will continue to grab samples, as needed, to ensure there are no non-ROC, up-gradient sources contributing to the degradation of groundwater quality. ROC will continue quarterly groundwater sampling and recovery during 2022.

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 ownership/usage basis. The Vacuum system is now abandoned. We thus submit this report for your review and consideration.

## Rice Operating Company – Vacuum F-34 Vent Boot Annual Report

Please contact either Katie Jones at Rice Operating Company or me if you have any questions or need additional information.

Sincerely,



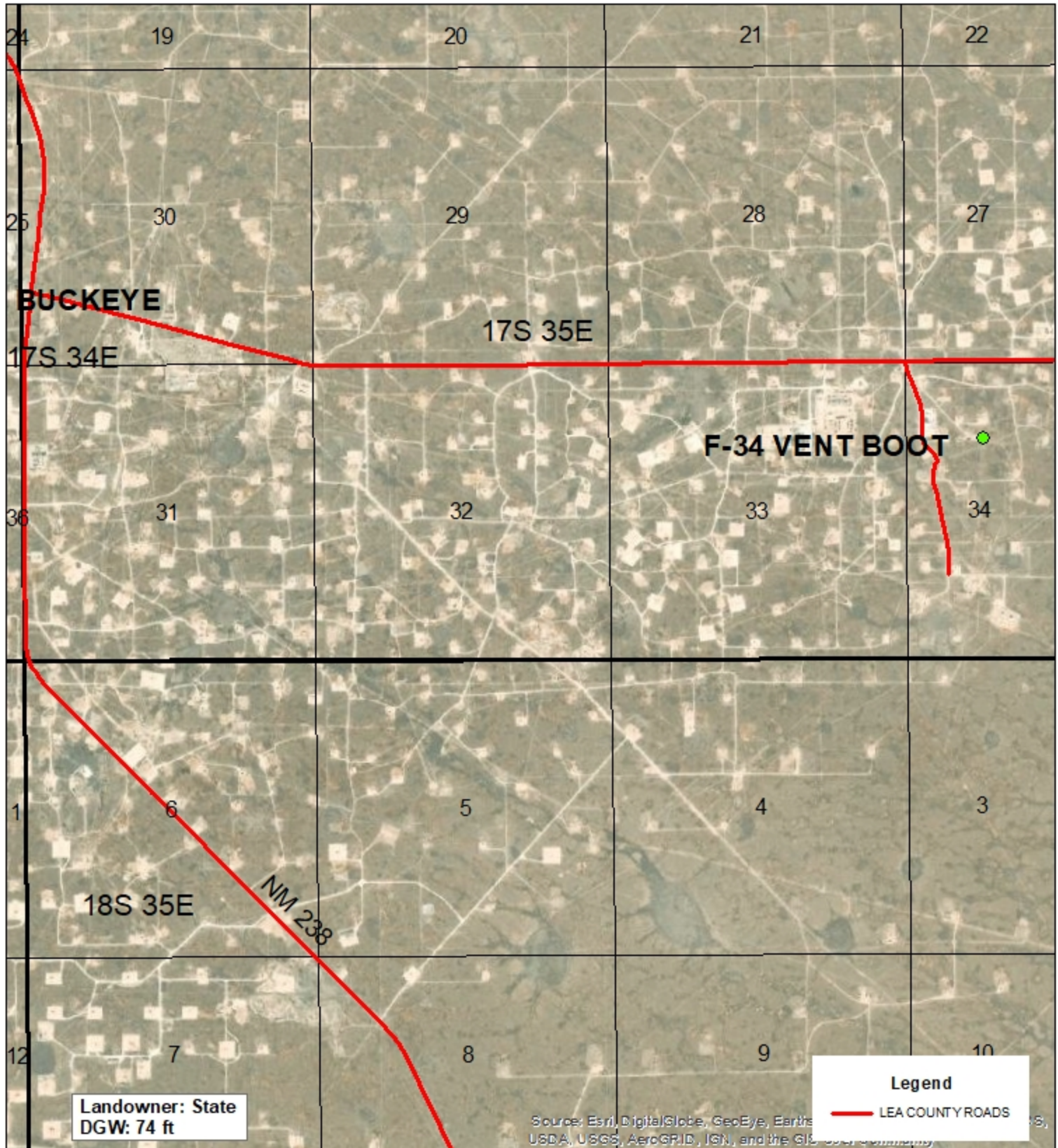
L. Peter Galusky, Jr. P.E.  
NM Prof. Engineer No. 22561

Copy: Rice Operating Company

Attachments: ... as noted in text



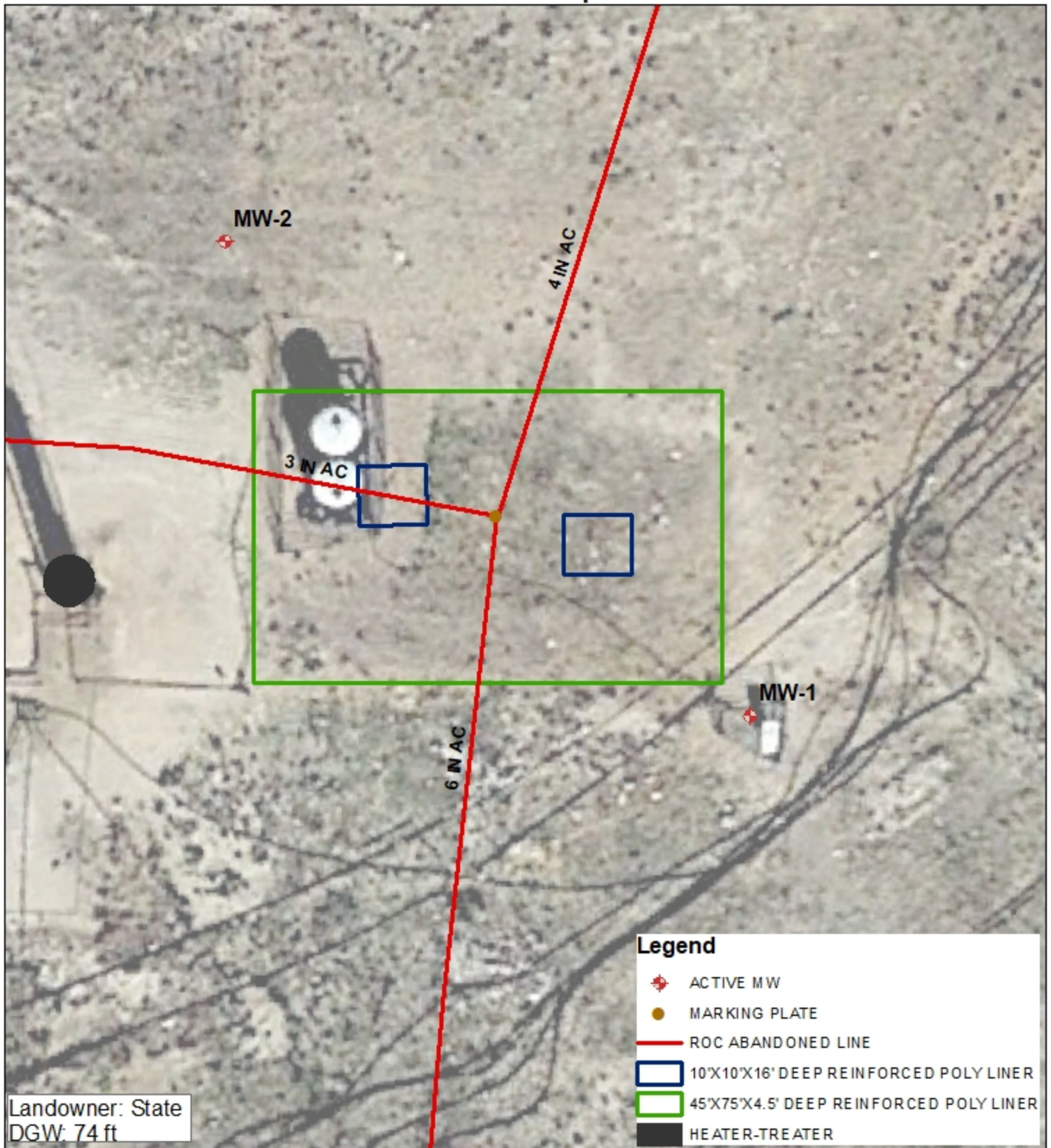
## Geographic Location





## Site Map

Figure 2



**VACUUM  
F-34 VENT BOOT**  
1R425-67

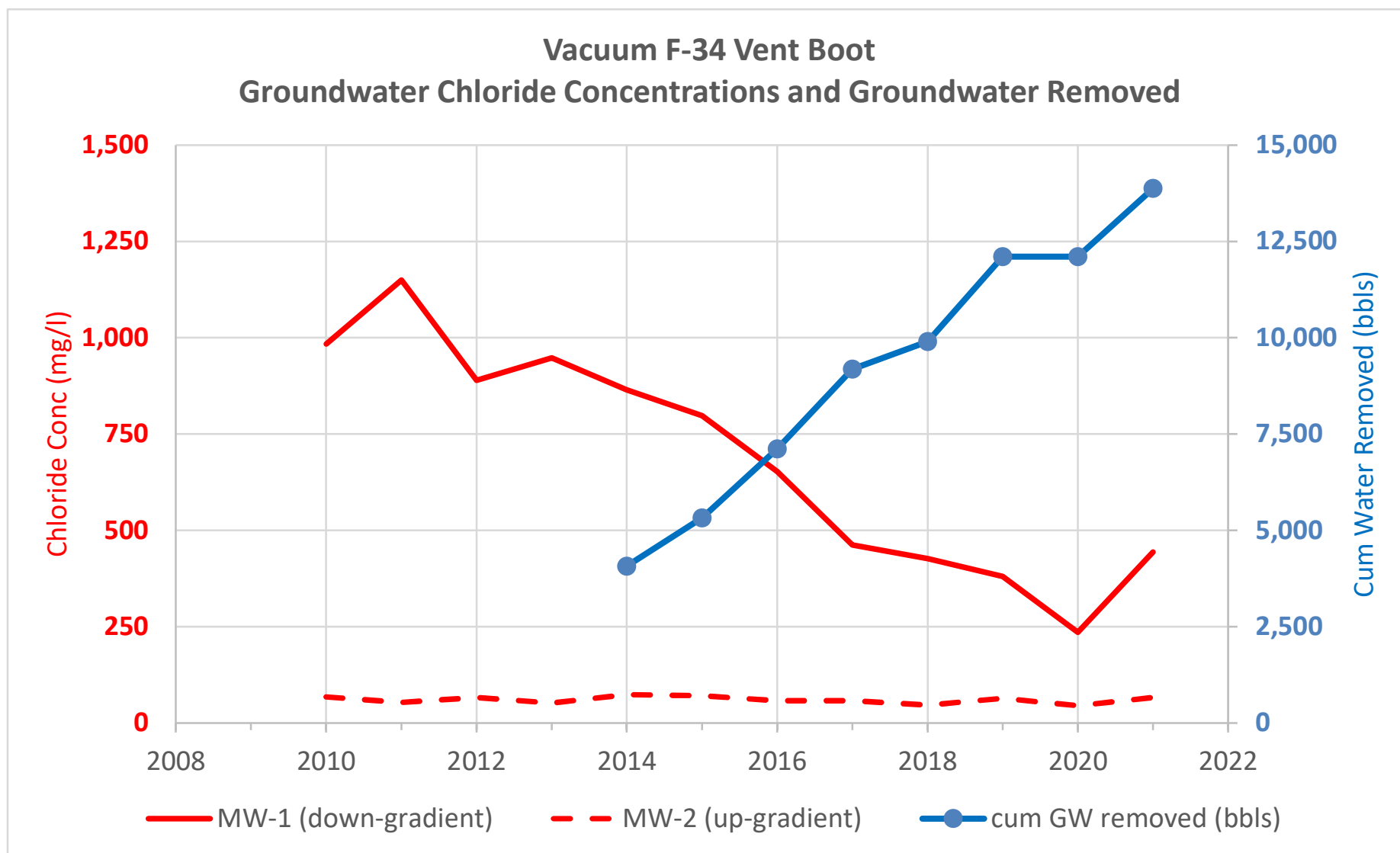
UL F SECTION 34  
T17S R35E  
LEA COUNTY, NM

GPS: 32.794820 -103.449485  
NAD83 STATE PLANE PROJ  
NM EAST ZONE

0 10 20  
Feet

Drawing date: 2/4/20  
Drawn by: T. Grieco





**ROC - Vacuum F-34 vent boot (1R425-67)****Data Summary: Annual Averages**

Avg Annual Groundwater  
Chloride Conc (mg/l)

	MW-1	MW-2	cum GW removed (bbls)	cum Cl- removed (kg)
year	(down-gradient)	(up-gradient)		
2010	983	68		
2011	1,150	54		
2012	890	67		
2013	948	52		
2014	865	74	4,077	396
2015	798	71	5,327	486
2016	653	58	7,117	642
2017	463	58	9,187	800
2018	427	47	9,907	850
2019	381	64	12,107	965
2020	236	45	12,107	965
2021	444	67	13,873	1,066

Table 2

## ROC - Vacuum F-34 vent boot (1R425-67)

## Unit Letter F, Section 34, T17S, R35E

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	CI	ann. avg CI	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
1	69.91	118.36	31.5	100	5/28/2010	940	983	2,030	<0.001	<0.001	<0.001	<0.003	91	Clear No odor
1	69.74	118.36	31.6	100	7/27/2010	1,040	983	2,130	<0.001	<0.001	<0.001	<0.003	99.1	Clear No odor
1	69.75	118.36	31.6	100	10/27/2010	970	983	2,300	<0.001	<0.001	<0.001	<0.003	94.9	Clear No odor
1	69.87	118.36	31.5	100	2/18/2011	1,030	1,150	2,010	<0.001	<0.001	<0.001	<0.003	85.6	Clear No odor
1	70.06	118.36	31.4	100	6/3/2011	1,150	1,150	2,160	<0.001	<0.001	<0.001	<0.003	89.7	Clear No odor
1	70.08	118.36	31.4	100	9/1/2011	1,160	1,150	2,380	<0.001	<0.001	<0.001	<0.003	87.3	Clear No odor
1	70.09	118.36	31.4	100	12/3/2011	1,260	1,150	2,470	<0.001	<0.001	<0.001	<0.003	86.6	Clear No odor
1	70.22	118.36	31.3	100	2/23/2012	1,060	890	2,360	<0.001	<0.001	<0.001	<0.003	98.4	Clear No odor
1	70.26	118.36	31.3	100	5/31/2012	930	890	2,130	<0.001	<0.001	<0.001	<0.003	81.2	Clear No odor
1	70.02	118.36	31.4	100	8/24/2012	980	890	2,060	<0.001	<0.001	<0.001	<0.003	80.8	Clear No odor
1	70.06	118.36	31.4	100	11/19/2012	590	890	1,320	<0.001	<0.001	<0.001	<0.003	77.7	Clear No odor
1	70.24	118.36	31.3	100	2/13/2013	960	948	1,990	<0.001	<0.001	<0.001	<0.003	76	Clear No odor
1	70.56	118.36	31.1	100	5/29/2013	1,020	948	2,320	<0.001	<0.001	<0.001	<0.003	71	Clear No odor
1	70.83	118.36	30.9	100	9/5/2013	920	948	2,150	<0.001	<0.001	<0.001	<0.003	289	Clear No odor
1	XXX	118.36	XXX	100	11/14/2013	890	948	2,040	<0.001	<0.001	<0.001	<0.003	59.7	Clear No odor
1	XXX	118.36	XXX	100	3/6/2014	1,040	865	2,080	<0.001	<0.001	<0.001	<0.003	55.2	Clear No odor
1	XXX	118.36	XXX	running	6/4/2014	769	865	1,490	<0.001	<0.001	<0.001	<0.003	82	Clear No odor
1	XXX	118.36	XXX	running	8/23/2014	630	865	1,570	<0.001	<0.001	<0.001	<0.003	80	Clear No odor
1	XXX	118.36	XXX	100	12/4/2014	1,020	865	2,170	<0.001	<0.001	<0.001	<0.003	78.3	Clear No odor
1	XXX	118.36	XXX	100	3/5/2015	810	798	1,850	<0.001	<0.001	<0.001	<0.003	53.4	Clear No odor
1	XXX	118.36	XXX	running	6/4/2015	432	798	1,140	<0.001	<0.001	<0.001	<0.003	65.5	Clear No odor
1	70.64	118.36	31	100	8/24/2015	1,060	798	1,950	<0.001	<0.001	<0.001	<0.003	34.8	Clear No odor
1	XXX	118.36	0	200	11/13/2015	890	798	1,770	<0.001	<0.001	<0.001	<0.003	32.4	Clear No odor
1	XXX	118.36	XXX	200	2/29/2016	810	653	1,700	<0.001	<0.001	<0.001	<0.003	68.4	Clear No odor
1	XXX	118.36	XXX	200	5/20/2016	620	653	1,530	<0.001	<0.001	<0.001	<0.003	64	Clear No odor
1	XXX	118.36	XXX	running	9/13/2016	710	653	1,930	<0.001	<0.001	<0.001	<0.003	73	Clear No odor
1	XXX	118.36	XXX	100	11/16/2016	470	653	1,110	<0.001	<0.001	<0.001	<0.003	79	Clear No odor
1	XXX	118.36	XXX	100	2/23/2017	400	463	1,470	<0.001	<0.001	<0.001	<0.003	193	Clear No odor
1	XXX	118.36	XXX	Running	5/26/2017	400	463	1,060	<0.001	<0.001	<0.001	<0.003	66	Clear No odor



Table 2

## ROC - Vacuum F-34 vent boot (1R425-67)

## Unit Letter F, Section 34, T17S, R35E

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	CI	ann. avg CI	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
1	XXX	118.36	XXX	Running	9/11/2017	490	463	1,120	<0.001	<0.001	<0.001	<0.003	79	Clear No odor
1	XXX	118.36	XXX	100	11/30/2017	560	463	1,310	<0.001	<0.001	<0.001	<0.003	75	Clear No odor
1	XXX	118.36	XXX	100	3/1/2018	550	427	1,260	<0.001	<0.001	<0.001	<0.003	110	Clear No odor
1	XXX	118.36	XXX	100	6/1/2018	470	427	1,100	<0.001	<0.001	<0.001	<0.003	39	Clear No odor
1	XXX	118.36	XXX	100	9/7/2018	400	427	840	<0.001	<0.001	<0.001	<0.003	65.6	Clear No odor
1	XXX	118.36	XXX	100	11/15/2018	288	427	452	<0.001	<0.001	<0.001	<0.003	129	Clear No odor
1	XXX	118.36	XXX	100	3/7/2019	530	381	1,160	<0.001	<0.001	<0.001	<0.003	74	Clear No odor
1	XXX	118.36	XXX	Running	5/30/2019	336	381	881	<0.001	<0.001	<0.001	<0.003	61	Clear No odor
1	XXX	118.36	XXX	Running	8/30/2019	380	381	932	<0.001	<0.001	<0.001	<0.003	61	Clear No odor
1	XXX	118.36	XXX	100	11/20/2019	276	381	737	<0.001	<0.001	<0.001	<0.003	56	Clear No odor
1	XXX	118.36	XXX	100	3/6/2020	228	236	592	<0.001	<0.001	<0.001	<0.003	52.7	Clear No odor
1	XXX	118.36	XXX	100	9/11/2020	204	236	740	XXX	XXX	XXX	XXX	71.9	Clear No odor
1	XXX	118.36	XXX	100	11/9/2020	276	236	977	XXX	XXX	XXX	XXX	69.3	Clear No odor
1	XXX	118.36	XXX	100	3/11/2021	720	444	1,550	XXX	XXX	XXX	XXX	69.4	Clear No odor
1	XXX	118.36	XXX	100	6/11/2021	356	444	912	XXX	XXX	XXX	XXX	63.4	Clear No odor
1	XXX	118.36	XXX	100	9/8/2021	360	444	926	XXX	XXX	XXX	XXX	78.3	Clear No odor
1	XXX	118.36	XXX	100	11/10/2021	340	444	866	XXX	XXX	XXX	XXX	83.1	Clear No odor

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	CI	ann. avg CI	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
2	70.48	84.22	2.2	10	11/22/2010	68	68	340	<0.001	<0.001	<0.001	<0.003	71.7	Clear No odor
2	70.57	84.32	2.2	10	2/18/2011	60	54	403	<0.001	<0.001	<0.001	<0.003	50.5	Clear No odor
2	70.72	84.32	2.2	10	6/3/2011	56	54	384	<0.001	<0.001	<0.001	<0.003	56.9	Clear No odor
2	70.73	84.32	2.2	10	9/1/2011	56	54	407	<0.001	<0.001	<0.001	<0.003	58.6	Clear No odor
2	70.75	84.32	2.2	10	12/3/2011	44	54	350	<0.001	<0.001	<0.001	<0.003	54.1	Clear No odor
2	70.89	84.32	2.1	10	2/23/2012	116	67	448	<0.001	<0.001	<0.001	<0.003	61.8	Clear No odor
2	70.94	84.32	2.1	10	5/31/2012	40	67	422	<0.001	<0.001	<0.001	<0.003	64	Clear No odor
2	71.12	84.32	2.1	10	8/24/2012	60	67	399	<0.001	<0.001	<0.001	<0.003	50.8	Clear No odor

Table 2

## ROC - Vacuum F-34 vent boot (1R425-67)

## Unit Letter F, Section 34, T17S, R35E

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	CI	ann. avg CI	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
2	71.18	84.32	2.1	10	11/19/2012	52	67	398	<0.001	<0.001	<0.001	<0.003	47.6	Clear No odor
2	71.37	84.32	2.1	10	2/13/2013	60	52	380	<0.001	<0.001	<0.001	<0.003	54.5	Clear No odor
2	71.71	84.32	2	10	5/29/2013	32	52	595	<0.001	<0.001	<0.001	<0.003	43	Clear No odor
2	71.88	84.32	2	10	9/5/2013	56	52	419	<0.001	<0.001	<0.001	<0.003	53.7	Clear No odor
2	71.84	84.32	2	10	11/14/2013	60	52	419	<0.001	<0.001	<0.001	<0.003	56.8	Clear No odor
2	71.92	84.32	2	10	3/6/2014	64	74	292	<0.001	<0.001	<0.001	<0.003	56.6	Clear No odor
2	71.82	84.32	2	10	6/4/2014	68	74	406	<0.001	<0.001	<0.001	<0.003	54.4	Clear No odor
2	71.85	84.32	2	10	8/23/2014	72	74	414	<0.001	<0.001	<0.001	<0.003	49.7	Clear No odor
2	71.11	84.32	2.1	10	12/4/2014	92	74	456	<0.001	<0.001	<0.001	<0.003	41.2	Clear No odor
2	71.05	84.32	2.1	10	3/5/2015	100	71	500	<0.001	<0.001	<0.001	<0.003	44.2	Clear No odor
2	71.17	84.32	2.1	10	6/4/2015	64	71	446	<0.001	<0.001	<0.001	<0.003	48.4	Clear No odor
2	71.73	84.32	2	10	8/24/2015	36	71	470	<0.001	<0.001	<0.001	<0.003	39.2	Clear No odor
2	71.87	84.32	1.99	10	11/13/2015	84	71	346	<0.001	<0.001	<0.001	<0.003	61.7	Clear No odor
2	71.85	84.32	2	10	2/29/2016	40	58	436	<0.001	<0.001	<0.001	<0.003	63	Clear No odor
2	71.84	84.32	2	10	5/20/2016	40	58	356	<0.001	<0.001	<0.001	<0.003	65.2	Clear No odor
2	71.89	84.32	2	10	9/13/2016	56	58	392	<0.001	<0.001	<0.001	<0.003	79	Clear No odor
2	71.98	84.32	2	10	11/16/2016	96	58	466	<0.001	<0.001	<0.001	<0.003	32	Clear No odor
2	72.03	84.32	2	10	2/23/2017	52	58	424	<0.001	<0.001	<0.001	<0.003	60	Clear No odor
2	71.1	84.32	2	10	5/26/2017	92	58	522	<0.001	<0.001	<0.001	<0.003	52	Clear No odor
2	72.22	84.32	1.9	10	9/11/2017	40	58	278	<0.001	<0.001	<0.001	<0.003	64	Clear No odor
2	72.18	84.32	1.9	10	11/30/2017	48	58	444	<0.001	<0.001	<0.001	<0.003	62	Clear No odor
2	72.21	84.32	1.9	10	3/1/2018	40	47	230	<0.001	<0.001	<0.001	<0.003	64	Clear No odor
2	72.27	84.32	1.9	10	6/1/2018	68	47	402	<0.001	<0.001	<0.001	<0.003	78.6	Clear No odor
2	72.39	84.32	1.9	8	9/7/2018	40	47	482	<0.001	<0.001	<0.001	<0.003	58.7	Clear No odor
2	72.54	84.32	1.9	8	11/15/2018	40	47	196	<0.001	<0.001	<0.001	<0.003	63.9	Clear No odor
2	72.63	84.32	1.9	10	3/7/2019	96	64	546	<0.001	<0.001	<0.001	<0.003	61	Clear No odor
2	72.74	84.32	1.9	10	5/30/2019	36	64	445	<0.001	<0.001	<0.001	<0.003	62	Clear No odor
2	72.78	84.32	1.8	10	8/30/2019	60	64	456	<0.001	<0.001	<0.001	<0.003	57	Clear No odor
2	73.12	84.32	1.8	8	11/20/2019	64	64	407	<0.001	<0.001	<0.001	<0.003	55	Clear No odor

**Table 2****ROC - Vacuum F-34 vent boot (1R425-67)****Unit Letter F, Section 34, T17S, R35E**

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	Cl	ann. avg Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
2	73.18	84.32	1.8	8	3/6/2020	60	45	457	<0.001	<0.001	<0.001	<0.003	63.4	Clear No odor
2	73.33	84.32	1.8	8	9/11/2020	40	45	338	XXX	XXX	XXX	XXX	46.1	Clear No odor
2	73.4	84.32	1.7	8	11/9/2020	36	45	496	XXX	XXX	XXX	XXX	73	Clear No odor
2	73.52	84.32	1.7	10	3/11/2021	52	67	362	XXX	XXX	XXX	XXX	48.5	Clear No odor
2	73.55	84.32	1.7	10	6/11/2021	40	67	588	XXX	XXX	XXX	XXX	54.8	Clear No odor
2	73.59	84.32	1.7	10	9/8/2021	140	67	552	XXX	XXX	XXX	XXX	75.8	Clear No odor
2	73.66	84.32	1.7	10	11/10/2021	36	67	615	XXX	XXX	XXX	XXX	60.7	Clear No odor



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

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March 22, 2021

KATIE JONES

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: VACUUM F-34 VENT

Enclosed are the results of analyses for samples received by the laboratory on 03/16/21 13:00.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-20-13. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at [www.tceq.texas.gov/field/qa/lab\\_accred\\_certif.html](http://www.tceq.texas.gov/field/qa/lab_accred_certif.html).

Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Celey D. Keene". The signature is written in a cursive, flowing style.

Celey D. Keene

Lab Director/Quality Manager





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

**Analytical Results For:**

Rice Operating Company  
KATIE JONES  
112 W. Taylor  
Hobbs NM, 88240  
Fax To: (575) 397-1471

Received:	03/16/2021	Sampling Date:	03/11/2021
Reported:	03/22/2021	Sampling Type:	Water
Project Name:	VACUUM F-34 VENT	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T17S-R35E-SEC34 F - LEA CTY, NM		

**Sample ID: MONITOR WELL #1 (H210659-01)**

Chloride, SM4500Cl-B		mg/L		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride*	720	4.00	03/17/2021	ND	104	104	100	3.92		
Sulfate 375.4		mg/L		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Sulfate*	69.4	10.0	03/17/2021	ND	19.2	96.0	20.0	14.2		
TDS 160.1		mg/L		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
TDS*	1550	5.00	03/19/2021	ND	546	109	500	2.49		

**Sample ID: MONITOR WELL #2 (H210659-02)**

Chloride, SM4500Cl-B		mg/L		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride*	52.0	4.00	03/17/2021	ND	104	104	100	3.92		
Sulfate 375.4		mg/L		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Sulfate*	48.5	10.0	03/17/2021	ND	19.2	96.0	20.0	14.2		
TDS 160.1		mg/L		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
TDS*	362	5.00	03/19/2021	ND	546	109	500	2.49		

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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

### Notes and Definitions

- QM-07      The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
- ND          Analyte NOT DETECTED at or above the reporting limit
- RPD        Relative Percent Difference
- \*\*          Samples not received at proper temperature of 6°C or below.
- \*\*\*        Insufficient time to reach temperature.
- Chloride by SM4500Cl-B does not require samples be received at or below 6°C
- Samples reported on an as received basis (wet) unless otherwise noted on report

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A handwritten signature in black ink, appearing to read "Celey D. Keene", is written over a horizontal line.

Celey D. Keene, Lab Director/Quality Manager

# Cardinal Laboratories, Inc.

### CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

LAB Order ID # \_\_\_\_\_

## ANALYSIS REQUEST

(Circle or Specify Method No.)

Company Name: RICE Operating Company		BILL TO Company: RICE Operating Company		PO#	
Project Manager: Katie Jones		Address: (Street, City, Zip) 122 W Taylor Street ~ Hobbs, New Mexico 88240			
Address: (Street, City, Zip) 122 W Taylor Street ~ Hobbs, New Mexico 88240		Phone#: (575) 393-9174		Fax#: (575) 397-1471	
Phone #: (575) 393-9174		Fax #: (575) 397-1471			

Project #:	Project Name:
	Vacuum F-34 Vent
Project Location:	Sampler Signature: Rozanne Johnson (575)631-9310
T17S-R35E-Sec34 F ~ Lea County New Mexico	

[illegible]

Relinquished by: <i>Rozanne Johnson</i>	Date: <i>3/16/21</i>	Time: <i>12:55</i>	Received by: <i>Kimberly D. Dyer</i>	Date: <i>3/16/21</i>	Time: <i>1:30</i>
Relinquished by:	Date:	Time:	Received By: (Laboratory Staff)	Date:	Time:

Delivered By: (Circle One)	Sample Condition	CHECKED BY:									
	<table border="1"> <tr> <td></td> <td>Cool</td> <td>Intact</td> </tr> <tr> <td>Yes</td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>No</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </table>		Cool	Intact	Yes	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>	<input type="checkbox"/>	(Initials)
	Cool	Intact									
Yes	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>									
No	<input type="checkbox"/>	<input type="checkbox"/>									
Sampler - UPS - Bus - Other:											

[illegible]

Phone Results	Yes	No
Fax Results	Yes	No      Additional Fax Number:

REMARKS:
Email Results: <a href="mailto:kjones@riceswd.com">kjones@riceswd.com</a> <a href="mailto:rozanne@sdacres.com">rozanne@sdacres.com</a>



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

---

June 21, 2021

KATIE JONES

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: VACUUM F-34 VENT

Enclosed are the results of analyses for samples received by the laboratory on 06/15/21 13:31.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-20-13. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at [www.tceq.texas.gov/field/qa/lab\\_accred\\_certif.html](http://www.tceq.texas.gov/field/qa/lab_accred_certif.html).

Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Celey D. Keene". The signature is written in a cursive, flowing style.

Celey D. Keene

Lab Director/Quality Manager





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

**Analytical Results For:**

Rice Operating Company  
KATIE JONES  
112 W. Taylor  
Hobbs NM, 88240  
Fax To: (575) 397-1471

Received:	06/15/2021	Sampling Date:	06/11/2021
Reported:	06/21/2021	Sampling Type:	Water
Project Name:	VACUUM F-34 VENT	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Jodi Henson
Project Location:	T17S-R35E-SEC34 F - LEA CTY, NM		

**Sample ID: MONITOR WELL #1 (H211524-01)**

Chloride, SM4500Cl-B		mg/L		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride*	356	4.00	06/16/2021	ND	100	100	100	0.00		
Sulfate 375.4		mg/L		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Sulfate*	63.4	10.0	06/16/2021	ND	21.4	107	20.0	12.4		
TDS 160.1		mg/L		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
TDS*	912	5.00	06/17/2021	ND	532	106	500	2.99		

**Sample ID: MONITOR WELL #2 (H211524-02)**

Chloride, SM4500Cl-B		mg/L		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride*	40.0	4.00	06/16/2021	ND	100	100	100	0.00		
Sulfate 375.4		mg/L		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Sulfate*	54.8	10.0	06/16/2021	ND	21.4	107	20.0	12.4		
TDS 160.1		mg/L		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
TDS*	588	5.00	06/17/2021	ND	532	106	500	2.99		

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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

### Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C Samples reported on an as received basis (wet) unless otherwise noted on report

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A handwritten signature in black ink, appearing to read "Celey D. Keene".

Celey D. Keene, Lab Director/Quality Manager

**Sampler** - UPS - Bus - Other:



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

---

September 15, 2021

KATIE JONES

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: VACUUM F-34 VENT

Enclosed are the results of analyses for samples received by the laboratory on 09/10/21 15:55.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-21-14. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at [www.tceq.texas.gov/field/qa/lab\\_accred\\_certif.html](http://www.tceq.texas.gov/field/qa/lab_accred_certif.html).

Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Celey D. Keene".

Celey D. Keene

Lab Director/Quality Manager





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

**Analytical Results For:**

Rice Operating Company  
KATIE JONES  
112 W. Taylor  
Hobbs NM, 88240  
Fax To: (575) 397-1471

Received:	09/10/2021	Sampling Date:	09/08/2021
Reported:	09/15/2021	Sampling Type:	Water
Project Name:	VACUUM F-34 VENT	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T17S-R35E-SEC34 F - LEA CTY, NM		

**Sample ID: MONITOR WELL #1 (H212520-01)**

Chloride, SM4500Cl-B		mg/L		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride*	360	4.00	09/13/2021	ND	104	104	100	3.92		
Sulfate 375.4		mg/L		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Sulfate*	78.3	10.0	09/14/2021	ND	20.5	103	20.0	7.55		
TDS 160.1		mg/L		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
TDS*	926	5.00	09/14/2021	ND	275	91.7	300	5.59		

**Sample ID: MONITOR WELL #2 (H212520-02)**

Chloride, SM4500Cl-B		mg/L		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride*	140	4.00	09/13/2021	ND	104	104	100	3.92		
Sulfate 375.4		mg/L		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Sulfate*	75.8	10.0	09/14/2021	ND	20.5	103	20.0	7.55		
TDS 160.1		mg/L		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
TDS*	552	5.00	09/14/2021	ND	275	91.7	300	5.59		

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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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

### Notes and Definitions

ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
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\*=Accredited Analyte

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A handwritten signature in black ink, appearing to read "C. D. Keene".

Celey D. Keene, Lab Director/Quality Manager

**Email Results:** [kjones@riceswd.com](mailto:kjones@riceswd.com)  
[rozanne@sdacres.com](mailto:rozanne@sdacres.com)



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

---

November 18, 2021

KATIE JONES

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: VACUUM F-34 VENT

Enclosed are the results of analyses for samples received by the laboratory on 11/15/21 14:20.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-21-14. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at [www.tceq.texas.gov/field/qa/lab\\_accred\\_certif.html](http://www.tceq.texas.gov/field/qa/lab_accred_certif.html).

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Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

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Sincerely,

A handwritten signature in black ink that reads "Celey D. Keene". The signature is written in a cursive, flowing style.

Celey D. Keene

Lab Director/Quality Manager





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

**Analytical Results For:**

Rice Operating Company  
KATIE JONES  
112 W. Taylor  
Hobbs NM, 88240  
Fax To: (575) 397-1471

Received:	11/15/2021	Sampling Date:	11/10/2021
Reported:	11/18/2021	Sampling Type:	Water
Project Name:	VACUUM F-34 VENT	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T17S-R35E-SEC34 F - LEA CTY, NM		

**Sample ID: MONITOR WELL #1 (H213250-01)**

Chloride, SM4500Cl-B		mg/L		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride*	340	4.00	11/16/2021	ND	100	100	100	0.00		
Sulfate 375.4		mg/L		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Sulfate*	83.1	25.0	11/18/2021	ND	22.1	110	20.0	7.07		
TDS 160.1		mg/L		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
TDS*	866	5.00	11/17/2021	ND	512	102	500	1.51		

**Sample ID: MONITOR WELL #2 (H213250-02)**

Chloride, SM4500Cl-B		mg/L		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride*	36.0	4.00	11/16/2021	ND	100	100	100	0.00		
Sulfate 375.4		mg/L		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Sulfate*	60.7	10.0	11/18/2021	ND	22.1	110	20.0	7.07		
TDS 160.1		mg/L		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
TDS*	615	5.00	11/17/2021	ND	512	102	500	1.51		

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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

### Notes and Definitions

- QM-07      The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
- ND      Analyte NOT DETECTED at or above the reporting limit
- RPD      Relative Percent Difference
- \*\*      Samples not received at proper temperature of 6°C or below.
- \*\*\*      Insufficient time to reach temperature.
- Chloride by SM4500Cl-B does not require samples be received at or below 6°C  
Samples reported on an as received basis (wet) unless otherwise noted on report

Cardinal Laboratories

\*=Accredited Analyte

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A handwritten signature in black ink, appearing to read "Celey D. Keene", written in a cursive style.

Celey D. Keene, Lab Director/Quality Manager

101 East Marland - Hobbs, NM 88240  
Tel (575) 393-2326  
Fax (575) 393-2476

# Cardinal Laboratories, Inc.

## CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

LAB Order ID # \_\_\_\_\_

### ANALYSIS REQUEST

(Circle or Specify Method No.)

Company Name:

RICE Operating Company

BILL TO Company:

RICE Operating Company

PO#

Project Manager:

Katie Jones

Address: (Street, City, Zip)

122 W Taylor Street ~ Hobbs, New Mexico 88240

Address: (Street, City, Zip)

122 W Taylor Street ~ Hobbs, New Mexico 88240

Phone#:

(575) 393-9174

Fax#:

(575) 397-1471

Phone #:

(575) 393-9174

Fax #:

(575) 397-1471

Project #:

Project Name:

Vacuum F-34 Vent

Project Location:

T17S-R35E-Sec34 F ~ Lea County New Mexico

Sampler Signature: Rozanne Johnson (575) 631-9310

H213250

LAB #

(LAB USE ONLY)

FIELD CODE

(G)rab or (C)omp

# CONTAINERS

MATRIX

PRESERVATIVE  
METHOD

SAMPLING

WATER

SOIL

AIR

SLUDGE

HCL (4 40ml VOA)

HNO<sub>3</sub>NaHSO<sub>4</sub>H<sub>2</sub>SO<sub>4</sub>

ICE (1-1 Liter HDPE)

NONE

DATE (2021)

TIME

MTBE 8021B/602

BTEX 8021B/602

TPH 418.1/TX1005 / TX1005 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

Cations (Ca, Mg, Na, K)

Anions (Cl, SO<sub>4</sub>, CO<sub>3</sub>, HCO<sub>3</sub>)

Sulfates

Total Dissolved Solids

Chlorides

Turn Around Time ~ 24 Hours

Relinquished by:

Date: Time:

Rozanne Johnson

Date: Time:

Received by:

Date: Time:

Relinquished by:

Received By: (Laboratory Staff)

Date: Time:

Delivered By: (Circle One)

Sample Condition

Yes

Cool

Yes

Intact

No

No

CHECKED BY:

(Initials)

Sampler - UPS - Bus - Other:

Phone Results

Yes

No

Fax Results

Yes

No

Additional Fax Number:

REMARKS:

Email Results:

[kjones@riceswd.com](mailto:kjones@riceswd.com)[rozanne@sdacres.com](mailto:rozanne@sdacres.com)

**District I**  
1625 N. French Dr., Hobbs, NM 88240  
Phone:(575) 393-6161 Fax:(575) 393-0720  
**District II**  
811 S. First St., Artesia, NM 88210  
Phone:(575) 748-1283 Fax:(575) 748-9720  
**District III**  
1000 Rio Brazos Rd., Aztec, NM 87410  
Phone:(505) 334-6178 Fax:(505) 334-6170  
**District IV**  
1220 S. St Francis Dr., Santa Fe, NM 87505  
Phone:(505) 476-3470 Fax:(505) 476-3462

**State of New Mexico**  
**Energy, Minerals and Natural Resources**  
**Oil Conservation Division**  
**1220 S. St Francis Dr.**  
**Santa Fe, NM 87505**

CONDITIONS  
  
Action 90578

CONDITIONS

Operator: RICE OPERATING COMPANY 122 W Taylor Hobbs, NM 88240	OGRID: 19174
	Action Number: 90578
	Action Type: [UF-GWA] Ground Water Abatement (GROUND WATER ABATEMENT)

CONDITIONS

Created By	Condition	Condition Date
michael.buchanan	Review of the 2021 Annual Report for Vacuum F-34 Vent Boot, ROC: Content Satisfactory 1. Continue to grab samples as needed and continue quarterly groundwater sampling. 2. Continue recovery for during 2022 and 2023. 3. Submit Annual Report for 2023 by April 1, 2024.	7/28/2023