

L Peter Galusky, Jr PE

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April 1st, 2020

Bradford Billings

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

RE: **2019 Annual Report**
Rice Operating Company
Vacuum N-6-1 Jct, UL N, Sec 6, T18S, R35E
OCD Case Number 1R0479

Sent by E-mail

Mr. Billings:

This letter summarizes progress made over the past calendar year pursuant to the NMOCD approved Corrective Action Plan for this site (Appendix - Figure 1), which is operated by Rice Operating Company (ROC).

ROC submitted a Vadose Zone Corrective Action Plan (CAP) Update to NMOCD on November 8th, 2013, and approved on November 20th, 2013, which entailed the removal of high-chloride soils to 3 ft bgs and the installation of an impermeable, 20-mil reinforced synthetic liner to reduce the potential downward migration of residual soil chlorides (Appendix - Figure 2). This work was completed in 2014 and is summarized in the Vadose Zone CAP Report & Soil Closure Request dated and submitted to NMOCD on August 12th, 2014. NMOCD approved the report and granted 'Soil Closure' on September 18th, 2014.

ROC continued to monitor groundwater chloride concentrations during 2019. In brief,

- Approximately 41,927 barrels of chloride-affected groundwater have been removed from the source area between January 2008 and October 2019, when the system was shut down for the winter (Figure 3). The removed groundwater was hauled to an off-site location and utilized for a beneficial use.
- Average annual groundwater chloride concentrations in the near-source monitor well (MW-1) have dropped from 21,700 mg/l in 2006 to 5,100 mg/l in 2014 (Figure 3, Tables 1&2a). This well was replaced in summer 2014 with a new monitor well, MW-1R, after being damaged during the installation of the sub-surface soil liner. Groundwater chloride concentrations in MW-1R averaged 503 mg/l in 2019, down substantially from 915 mg/l in 2018 (Figure 3, Tables 1a, b & 2b).

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- Groundwater chloride concentrations in up and down gradient monitor wells (MW-2, MW-3 and MW-4) have continued to remain low throughout 2019 with concentrations below 50 mg/l (Figure 3, Tables 1a,b & 2b – 2d).
- Average annual groundwater chloride concentrations in the (down-gradient) recovery well (RW-1) dropped substantially from 1,360 mg/l in 2018 to 713 mg/l in 2019 (Figure 3, Tables 1a, b & 2e).

Water-soluble petroleum hydrocarbons (BTEX) were not detected in any of the groundwater samples taken in 2019 nor in any prior years. Given BTEX concentrations have been below detectable limits since installation, ROC requests to suspend BTEX sampling in all monitoring wells (MW-1R, MW-2, MW-3, MW-4, and RW-1) in 2020. Further, due to the current climate, and in the interest of safety, ROC proposes to reduce groundwater monitoring from quarterly to semi-annually for the remainder of this year. In addition, ROC proposes to suspend groundwater recovery for this year. These proposals are only temporary, and regularly scheduled groundwater monitoring and recovery will commence as soon as possible.

ROC is the service provider (agent) for the Vacuum Saltwater Disposal System and has no ownership of any portion of pipeline, well or facility. The Vacuum SWD 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.

Please contact either myself or Rice Operating Company if you have any questions or need additional information.

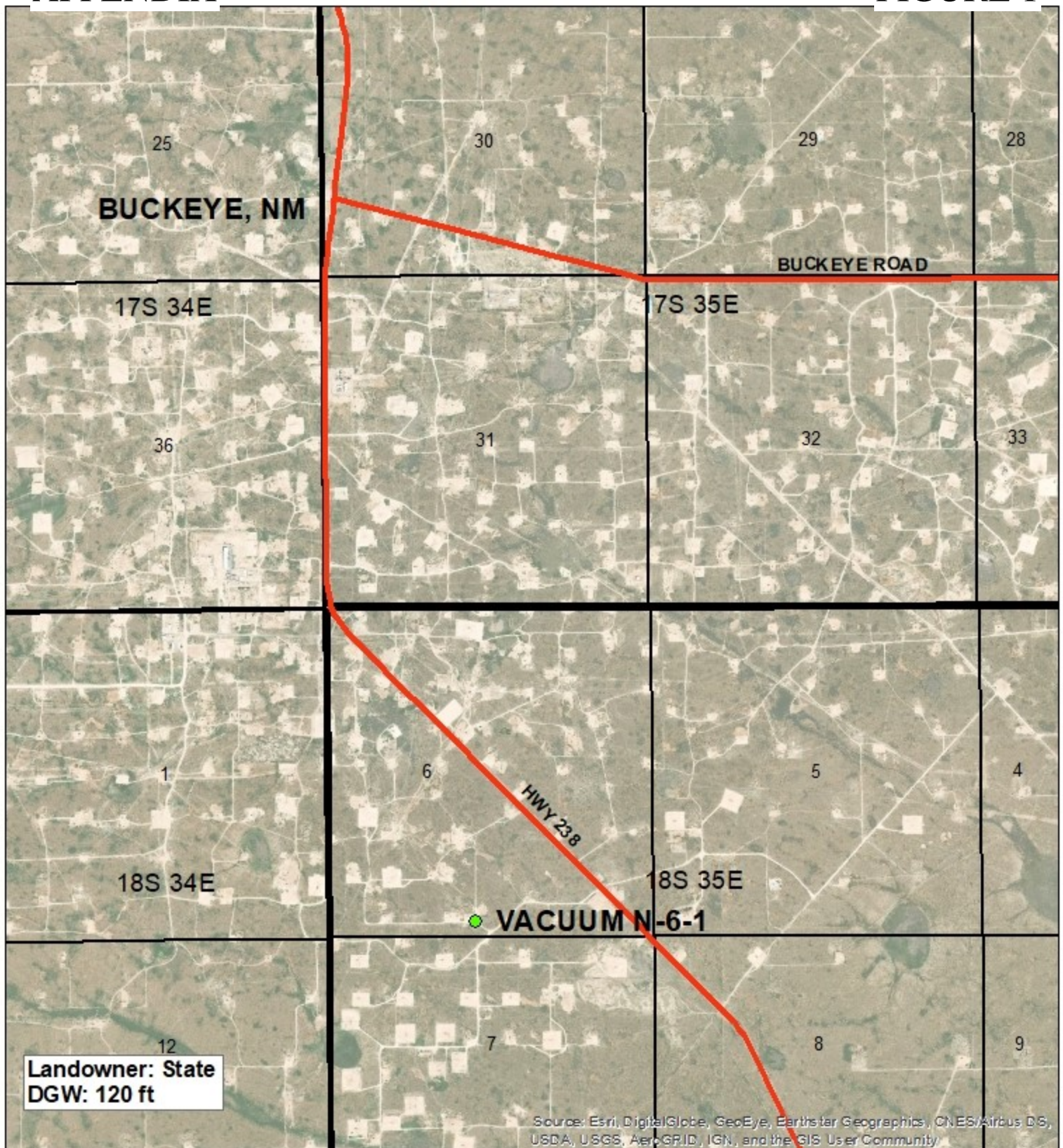
Sincerely,



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



Copy: Rice Operating Company
Attachments: ... as noted, above.



**VACUUM
N-6-1**

1R0479

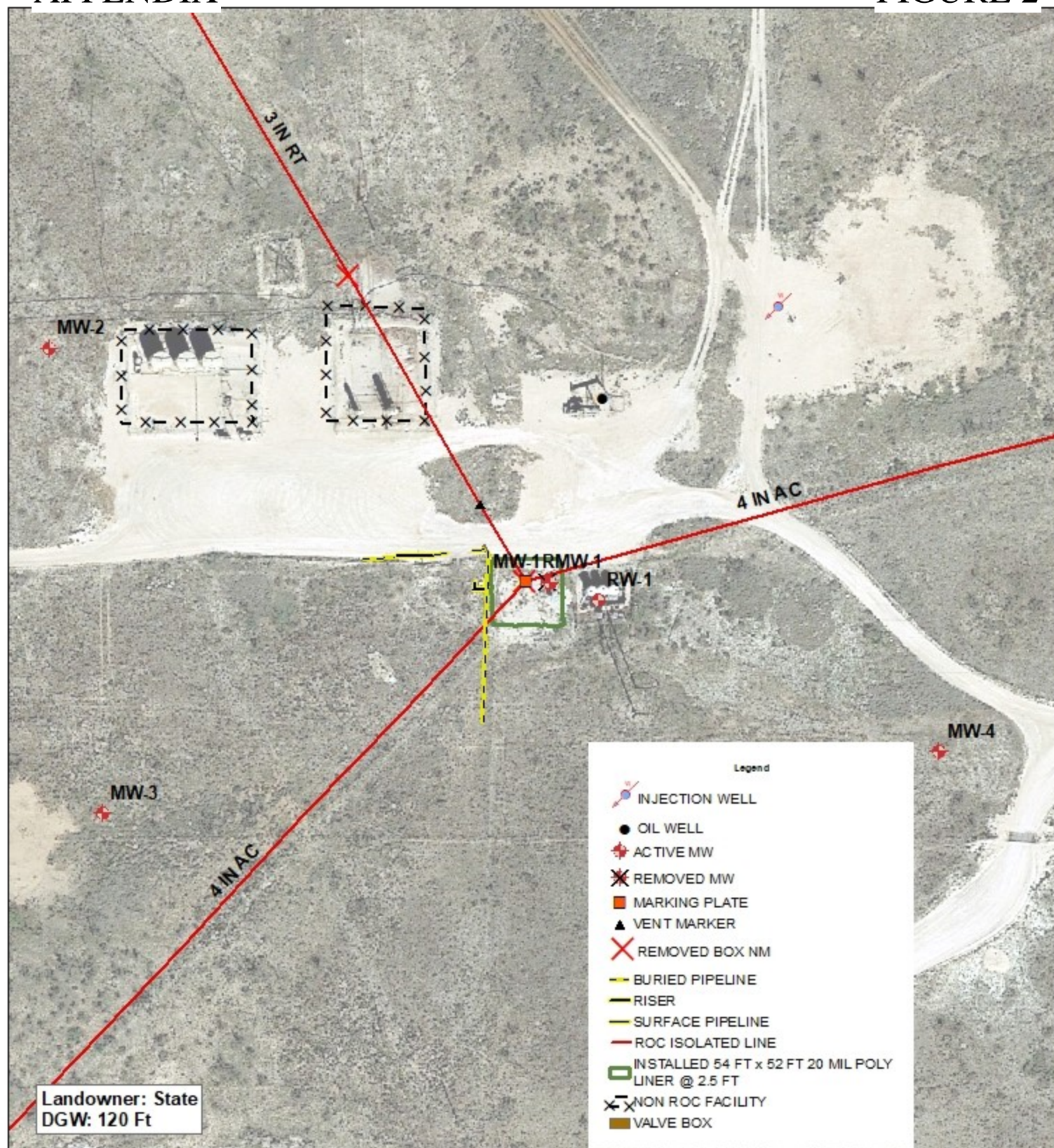
UL N SECTION 6
T-18-S R-35-E
LEA COUNTY, NM

GPS: 32.770216 -103.498268
NAD83 STATE PLANE PROJ
NM EAST ZONE

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Miles

Drawing date: 2/5/20
Drafted by: T. Grieco





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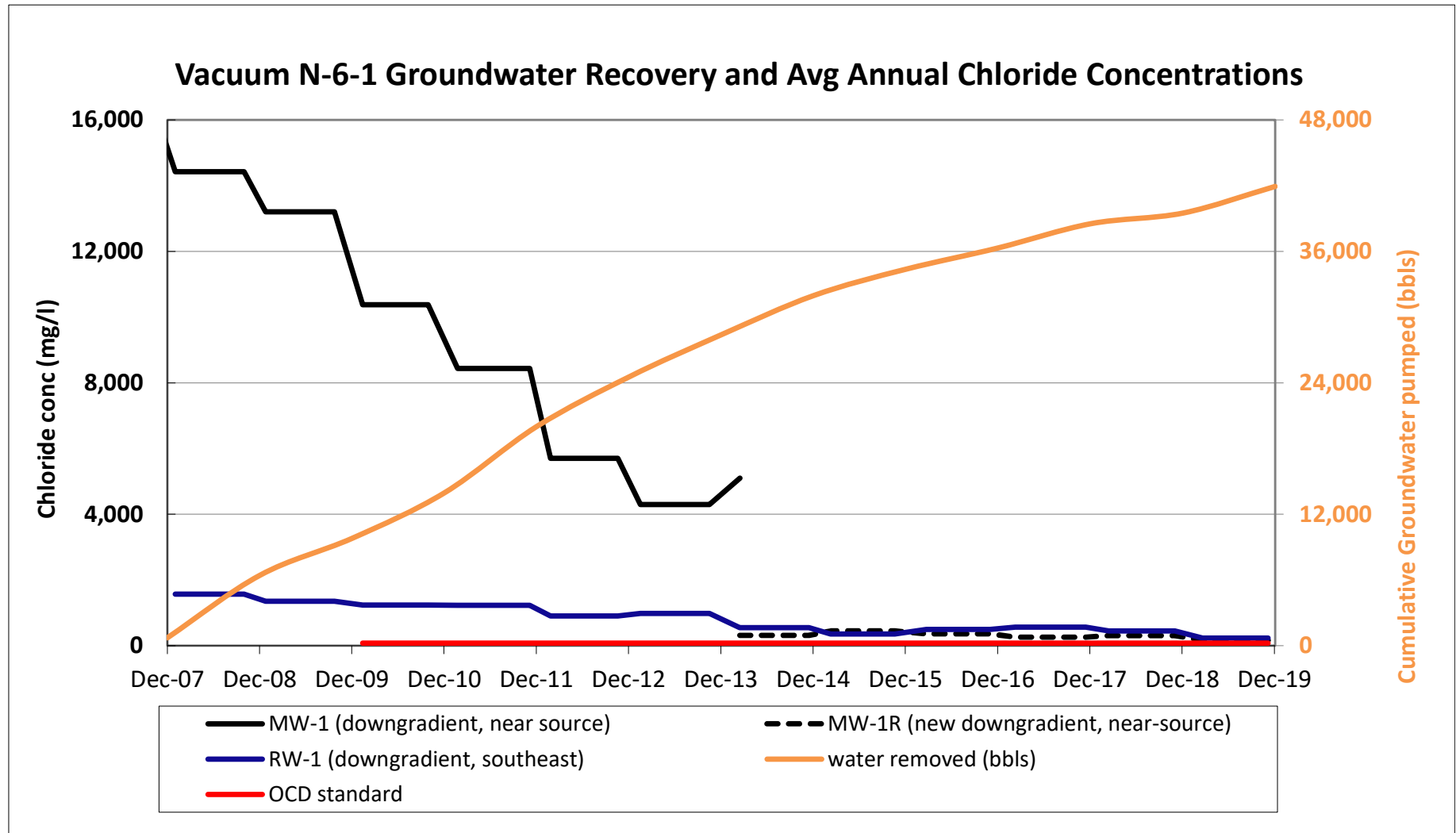
UL/N SEC 6
T-18-S R-35-E
LEA COUNTY, NM

GPS: 32.770216 -103.498268
NAD83 STATE PLANE PROJ
NM EAST ZONE

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Feet



Drawing date: 2/5/20
Drafted by: T. Grieco



Annual Average Groundwater Chloride Concentrations (mg/l)						
date	MW-1 (downgradient, near source)	MW-1R (new downgradient, near-source)	MW-2 (upgradient northwest)	MW-3 (upgradient, southwest)	MW-4 (downgradient, southeast)	RW-1 (downgradient, southeast)
May-07	16,898		25	24	42	
Sep-07	16,898		25	24	42	
Oct-07	16,898		25	24	42	
Jan-08	14,425		32	27	41	4,713
Apr-08	14,425		32	27	41	4,713
Aug-08	14,425		32	27	41	4,713
Oct-08	14,425		32	27	41	4,713
Jan-09	13,200		30	27	34	4,050
Apr-09	13,200		30	27	34	4,050
Aug-09	13,200		30	27	34	4,050
Oct-09	13,200		30	27	34	4,050
Feb-10	10,375		27	23	39	3,733
Apr-10	10,375		27	23	39	3,733
Aug-10	10,375		27	23	39	3,733
Oct-10	10,375		27	23	39	3,733
Feb-11	8,433		27	25	37	3,700
Jun-11	8,433		27	25	37	3,700
Sep-11	8,433		27	25	37	3,700
Dec-11	8,433		27	25	37	3,700
Feb-12	5,700		31	24	38	2,718
Jun-12	5,700		31	24	38	2,718
Aug-12	5,700		31	24	38	2,718
Nov-12	5,700		31	24	38	2,718
Feb-13	4,295		30	28	31	2,945
May-13	4,295		30	28	31	2,945
Sep-13	4,295		30	28	31	2,945
Nov-13	4,295		30	28	31	2,945
Mar-14	5,100	960	64	28	37	1,653
Jun-14		960	64	28	37	1,653
Aug-14		960	64	28	37	1,653
Dec-14		960	64	28	37	1,653
Mar-15		1,350	37	27	30	1,075
Jun-15		1,350	37	27	30	1,075
Aug-15		1,350	37	27	30	1,075
Nov-15		1,350	37	27	30	1,075
Mar-16		1,093	47	24	43	1,485
Jun-16		1,093	47	24	43	1,485
Sep-16		1,093	47	24	43	1,485
Nov-16		1,093	47	24	43	1,485
Mar-17		776	39	34	37	1,708
Jun-17		776	39	34	37	1,708
Sep-17		776	39	34	37	1,708
Dec-17		776	39	34	37	1,708
Mar-18		915	51	37	41	1,360
Jun-18		915	51	37	41	1,360
Sep-18		915	51	37	41	1,360
Nov-18		915	51	37	41	1,360
Mar-19		503	33	34	32	713
Jun-19		503	33	34	32	713
Sep-19		503	33	34	32	713
Dec-19		503	33	34	32	713

Measured Groundwater Chloride Concentrations (mg/l)							
date	MW-1 (downgradient, near source)	MW-1R (new downgradient, near-source)	MW-2 (upgradient northwest)	MW-3 (upgradient, southwest)	MW-4 (downgradient, southeast)	RW-1 (downgradient, southeast)	OCD standard
5/29/2007	18,500		24	24	37		250
9/25/2007	15,795		24	24	44	5,398	250
10/17/2007	16,400		28	24	44	5,400	250
1/31/2008	15,400		28	24	40	5,300	250
4/24/2008	14,300		28	24	40	3,900	250
8/7/2008	14,000		32	24	44	3,800	250
10/30/2008	14,000		40	36	40	5,850	250
1/23/2009	13,600		36	36	36	5,600	250
4/29/2009	14,200		24	24	40	4,050	250
8/7/2009	12,800		36	24	24	3,000	250
10/22/2009	12,200		24	24	36	3,550	250
2/11/2010	12,100		28	24	36	3,900	250
4/26/2010	10,700		28	24	36	4,200	250
8/5/2010	9,800		28	24	40	3,800	250
10/28/2010	8,900		24	20	40	3,200	250
2/21/2011	7,730		24	24	40	2,550	250
6/6/2011	9,800		28	32	40	4,800	250
9/2/2011	9,300		32	20	24	4,200	250
12/4/2011	6,900		24	24	44	3,250	250
2/24/2012	6,000		24	24	36	2,800	250
6/1/2012	5,700		32	20	40	3,250	250
8/31/2012	5,700		40	28	36	2,550	250
11/16/2012	5,400		28	24	40	2,270	250
2/14/2013	4,850		36	28	44	3,900	250
5/23/2013	5,100		24	28	28	4,200	250
9/4/2013	4,100		28	24	24	1,880	250
11/13/2013	3,130		32	32	28	1,800	250
3/14/2014	5,100		68	40	40	2,070	250
6/24/2014			60	24	20	1,640	250
8/22/2014		1,300	60	24	28	1,400	250
12/12/2014		620	68	24	60	1,500	250
3/9/2015		2,270	24	24	36	1,300	250
6/8/2015		1,110	48	28	32	1,020	250
8/25/2015		1,100	36	28	24	1,100	250
11/17/2015		920	40	28	28	880	250
3/21/2016		1,300	60	28	60	840	250
6/3/2016		1,300	44	4	40	1,040	250
9/21/2016		710	28	28	32	2,130	250
11/28/2016		1,060	56	36	40	1,930	250
3/8/2017		1,340	32	32	32	1,930	250
6/8/2017		32	36	32	36	1,740	250
9/20/2017		570	32	28	24	1,580	250
12/11/2017		1,160	56	44	56	1,580	250
3/13/2018		1,520	80	44	60	1,580	250
6/8/2018		570	64	44	44	1,480	250
9/17/2018		510	32	28	28	1,500	250
11/29/2018		1,060	28	32	32	880	250
3/19/2019		730	44	48	48	870	250
6/14/2019		450	28	28	24	710	250
9/18/2019		428	28	28	28	650	250
12/3/2019		404	32	32	28	620	250

Groundwater Analyte Concentrations (mg/l)

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
1	116.4	125.8	1.5	10.0	10/18/2006	21,400	40,100	<0.001	<0.001	<0.001	<0.001	475	Silt to clear
1	116.7	125.1	1.4	10.0	3/7/2007	20,200	28,100	<0.001	<0.001	<0.001	<0.001	584	Silt to clear Slight odor
1	116.6	125.1	1.4	10.0	5/29/2007	18,500	35,900	<0.001	<0.001	<0.001	<0.001	449	Silt to clear Slight odor
1	117.0	125.1	1.3	5.0	9/25/2007	15,795	27,714	<0.002	<0.002	<0.002	<0.006	152	Silt to clear Slight odor
1	117.0	125.1	1.3	5.0	10/17/2007	16,400	27,927	<0.001	0.004	<0.001	<0.001	143	Silt to clear Slight odor
1	117.0	125.1	1.3	5.0	1/31/2008	15,400	28,300	<0.001	<0.001	<0.001	<0.003	148	Silt to clear Slight odor
1	117.2	125.1	1.3	5.0	4/24/2008	14,300	24,800	<0.001	<0.001	<0.001	<0.003	128	Silt to clear Slight odor
1	117.7	125.1	1.2	5.0	8/7/2008	14,000	24,900	<0.001	<0.001	<0.001	<0.003	158	Silt to clear Slight odor
1	117.6	125.1	1.2	5.0	10/30/2008	14,000	28,200	<0.001	<0.001	<0.001	<0.003	126	Silt to clear Slight odor
1	117.8	125.0	1.1	5.0	1/23/2009	13,600	24,200	<0.001	<0.001	<0.001	<0.003	109	Silt to clear Slight odor
1	118.1	125.0	1.1	5.0	4/29/2009	14,200	22,800	<0.001	<0.001	<0.001	<0.003	110	Silt to clear Slight odor
1	118.1	125.0	1.1	5.0	8/7/2009	12,800	21,200	<0.001	<0.001	<0.001	<0.003	102	Silt to clear Slight odor
1	118.4	125.0	1.0	5.0	10/22/2009	12,200	19,700	<0.001	<0.001	<0.001	<0.003	76	Silt to clear Slight odor
1	118.3	125.0	1.1	5.0	2/11/2010	12,100	20,700	<0.001	<0.001	<0.001	<0.003	94	Silt to clear Slight odor
1	118.8	125.0	1.0	5.0	4/26/2010	10,700	18,400	<0.001	<0.001	<0.001	<0.003	96	Silt to clear Slight odor
1	118.6	125.0	1.0	5.0	8/5/2010	9,800	15,600	<0.001	<0.001	<0.001	<0.003	79	Silt to clear Slight odor
1	119.0	125.0	1.0	5.0	10/28/2010	8,900	16,800	<0.001	<0.001	<0.001	<0.003	82	Silt to clear Slight odor
1	118.9	125.2	1.0	5.0	2/21/2011	7,730	13,200	<0.001	0.001	<0.001	<0.003	60	Silt to clear Slight odor
1	119.4	125.2	0.9	5.0	6/6/2011	9,800	13,700	<0.001	<0.001	<0.001	<0.003	78	Silt to clear Slight odor
1	120.2	125.2	0.8	5.0	9/2/2011	9,300	11,800	<0.001	<0.001	<0.001	<0.003	95	Silt to clear Slight odor
1	119.7	125.2	0.9	5.0	12/4/2011	6,900	11,500	<0.001	<0.001	<0.001	<0.003	81	Silt to clear Slight odor
1	119.8	125.2	0.9	5.0	2/24/2012	6,000	10,400	<0.001	<0.001	<0.001	<0.003	78	Silt to clear Slight odor
1	119.8	125.2	0.9	5.0	6/1/2012	5,700	10,100	<0.001	<0.001	<0.001	<0.003	77	Silt to clear Slight odor
1	119.8	125.2	0.9	5.0	8/31/2012	5,700	9,330	<0.001	<0.001	<0.001	<0.003	66	Silt to clear Slight odor
1	120.0	125.2	0.8	5.0	11/16/2012	5,400	9,240	<0.001	<0.001	<0.001	<0.003	72	Silt to clear Slight odor
1	120.0	125.2	0.8	5.0	2/14/2013	4,850	8,110	<0.001	<0.001	<0.001	<0.003	65	Silt to clear Slight odor
1	120.4	125.2	0.8	5.0	5/23/2013	5,100	8,230	<0.001	<0.001	<0.001	<0.003	74	Silt to clear Slight odor
1	120.6	125.2	0.7	5.0	9/4/2013	4,100	7,160	<0.001	<0.001	<0.001	<0.003	55	Silt to clear Slight odor
1	120.6	125.2	0.7	5.0	11/13/2013	3,130	6,910	<0.001	<0.001	<0.001	<0.003	61	Silt to clear Slight odor
1	120.6	125.2	0.7	5.0	3/14/2014	5,100	7,250	<0.001	<0.001	<0.001	<0.003	73	Silt to clear Slight odor

Groundwater Analyte Concentrations (mg/l)

MW-1R installed 7/17/2014

1R	XXX	XXX	0.0	Running	8/22/2014	1,300	2,770	<0.001	<0.001	<0.001	<0.003	46	Silt to clear Slight odor
1R	XXX	168.3	0.0	100.0	12/13/2014	620	1,360	<0.001	<0.001	<0.001	<0.003	37	Silt to clear Slight odor
1R	XXX	168.3	0.0	100.0	3/9/2015	2,270	5,920	<0.001	<0.001	<0.001	<0.003	180	Silt to clear Slight odor
1R	XXX	168.0	0.0	Running	6/8/2015	1,110	2,670	<0.001	<0.001	<0.001	<0.003	48	Silt to clear Slight odor
1R	XXX	168.0	0.0	Running	8/25/2015	1,100	1,970	<0.001	<0.001	<0.001	<0.003	36	Silt to clear Slight odor
1R	XXX	168.0	0.0	Running	11/17/2015	920	1,780	<0.001	<0.001	<0.001	<0.003	40	Silt to clear Slight odor

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1R	XXX	168.3	XXX	100.0	3/21/2016	1,300	2,880	<0.001	<0.001	<0.001	<0.003	209	Silt to clear Slight odor
1R	XXX	168.3	XXX	100.0	6/3/2016	1,300	2,750	<0.001	<0.001	<0.001	<0.003	72	Silt to clear Slight odor
1R	XXX	168.3	XXX	Running	9/21/2016	710	1,500	<0.001	<0.001	<0.001	<0.003	40	Silt to clear Slight odor
1R	XXX	168.3	XXX	100.0	11/28/2016	1,060	2,040	<0.001	<0.001	<0.001	<0.003	43	Silt to clear Slight odor
1R	XXX	168.3	XXX	100.0	3/8/2017	1,340	2,790	<0.001	<0.001	<0.001	<0.003	204	Silt to clear Slight odor
1R	XXX	168.3	XXX	Running	6/8/2017	32	320	<0.001	<0.001	<0.001	<0.003	43	Silt to clear Slight odor
1R	XXX	168.3	XXX	Running	9/20/2017	570	1,470	<0.001	<0.001	<0.001	<0.003	42	Silt to clear Slight odor
1R	XXX	168.3	XXX	100.0	12/11/2017	1,160	2,310	<0.001	<0.001	<0.001	<0.003	80	Silt to clear Slight odor
1R	XXX	168.0	XXX	100.0	3/13/2018	1,520	2,830	<0.001	<0.001	<0.001	<0.003	74	Silt to clear Slight odor
1R	XXX	168.0	XXX	100.0	6/8/2018	570	1,190	<0.001	<0.001	<0.001	<0.003	39	Silt to clear Slight odor
1R	XXX	168.3	XXX	Running	9/17/2018	510	1,030	<0.001	<0.001	<0.001	<0.003	40	Silt to clear Slight odor
1R	XXX	168.0	XXX	100.0	11/29/2018	1,060	1,760	<0.001	<0.001	<0.001	<0.003	53	Silt to clear Slight odor
1R	XXX	168.3	XXX	100.0	3/19/2019	730	1,540	<0.001	<0.001	<0.001	<0.003	70	Silt to clear Slight odor
1R	XXX	168.3	XXX	Running	6/14/2019	450	1,030	<0.001	<0.001	<0.001	<0.003	38	Silt to clear Slight odor
1R	XXX	168.3	XXX	Running	9/18/2019	428	966	<0.001	<0.001	<0.001	<0.003	40	Silt to clear Slight odor
1R	XXX	168.3	XXX	100.0	12/3/2019	404	828	<0.001	<0.001	<0.001	<0.003	40	Silt to clear Slight odor

APPENDIX

TABLE 2b

Groundwater Analyte Concentrations (mg/l)

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
2	117.3	125.8	1.4	10.0	10/18/2006	20	308	j[0.000837]	<0.001	<0.001	<0.001	33	Clear
2	117.6	126.9	1.5	8.0	3/7/2007	21	278	<0.001	<0.001	<0.001	<0.001	31	Sand to clear No odor
2	117.6	126.9	1.5	2.0	5/29/2007	24	296	<0.001	<0.001	<0.001	<0.001	34	Sand to clear No odor
2	117.9	126.9	1.4	6.0	9/25/2007	24	319	<0.002	<0.002	<0.002	<0.006	38	Sand to clear No odor
2	117.9	126.9	1.4	6.0	10/17/2007	28	289	<0.001	0.005	<0.001	0.004	38	Sand to clear No odor
2	118.0	126.6	1.4	6.0	1/31/2008	28	325	<0.001	<0.001	<0.001	<0.003	36	Sand to clear No odor
2	118.1	126.6	1.4	6.0	4/24/2008	28	286	<0.001	<0.001	<0.001	<0.003	31	Sand to clear No odor
2	118.4	126.6	1.3	6.0	8/7/2008	32	324	<0.001	<0.001	<0.001	<0.003	48	Sand to clear No odor
2	118.5	126.6	1.3	6.0	10/30/2008	40	342	<0.001	<0.001	<0.001	<0.003	47	Sand to clear No odor
2	118.7	126.6	1.3	6.0	1/23/2009	36	365	<0.001	<0.001	<0.001	<0.003	45	Sand to clear No odor
2	118.8	126.6	1.2	6.0	4/29/2009	24	346	<0.001	<0.001	<0.001	<0.003	34	Sand to clear No odor
2	119.0	126.6	1.2	6.0	8/7/2009	36	24	<0.001	<0.001	<0.001	<0.003	302	Silt to clear No odor
2	119.1	126.6	1.2	6.0	10/22/2009	24	314	<0.001	<0.001	<0.001	<0.003	33	Sand to clear No odor
2	119.5	126.5	1.1	6.0	4/26/2010	28	324	<0.001	<0.001	<0.001	<0.003	42	Sand to clear No odor
2	119.3	126.5	1.2	6.0	2/11/2010	28	343	<0.001	<0.001	<0.001	<0.003	43	Sand to clear No odor
2	119.6	126.5	1.1	6.0	8/5/2010	28	316	<0.001	<0.001	<0.001	<0.003	35	Sand to clear No odor
2	119.7	126.5	1.1	6.0	10/28/2010	24	336	<0.001	<0.001	<0.001	<0.003	39	Sand to clear No odor
2	120.0	127.0	1.1	6.0	2/21/2011	24	311	<0.001	<0.001	<0.001	<0.003	35	Sand to clear No odor
2	120.1	127.0	1.1	6.0	6/6/2011	28	309	<0.001	<0.001	<0.001	<0.003	39	Sand to clear No odor
2	120.3	127.0	1.1	6.0	9/2/2011	32	270	<0.001	<0.001	<0.001	<0.003	49	Sand to clear No odor
2	120.5	127.0	1.0	6.0	12/4/2011	24	303	<0.001	<0.001	<0.001	<0.003	40	Sand to clear No odor
2	120.6	127.0	1.0	6.0	2/24/2012	24	343	<0.001	<0.001	<0.001	<0.003	38	Sand to clear No odor
2	120.7	127.0	1.0	6.0	6/1/2012	32	311	<0.001	<0.001	<0.001	<0.003	40	Sand to clear No odor
2	120.9	127.0	1.0	6.0	8/31/2012	40	320	<0.001	<0.001	<0.001	<0.003	36	Sand to clear No odor
2	121.1	127.0	0.9	6.0	11/16/2012	28	303	<0.001	<0.001	<0.001	<0.003	30	Sand to clear No odor
2	121.1	127.0	0.9	6.0	2/14/2013	36	326	<0.001	<0.001	<0.001	<0.003	56	Sand to clear No odor
2	121.3	127.0	0.9	6.0	5/23/2013	24	255	<0.001	<0.001	<0.001	<0.003	44	Sand to clear No odor
2	121.5	127.0	0.9	6.0	9/4/2013	28	290	<0.001	<0.001	<0.001	<0.003	33	Sand to clear No odor
2	121.5	127.0	0.9	6.0	11/13/2013	32	300	<0.001	<0.001	<0.001	<0.003	47	Sand to clear No odor
2	121.7	127.0	0.9	6.0	3/14/2014	68	336	<0.001	<0.001	<0.001	<0.003	37	Sand to clear No odor
2	121.8	127.0	0.8	6.0	6/24/2014	60	368	<0.001	<0.001	<0.001	<0.003	58	Sand to clear No odor
2	121.9	127.0	0.8	6.0	8/22/2014	60	426	<0.001	<0.001	<0.001	<0.003	32	Sand to clear No odor
2	121.3	127.0	0.9	6.0	12/12/2014	68	370	<0.001	<0.001	<0.001	<0.003	28	Sand to clear No odor
2	122.0	127.0	0.8	6.0	3/9/2015	24	284	<0.001	<0.001	<0.001	<0.003	27	Sand to clear No odor
2	122.1	127.0	0.8	6.0	6/8/2015	48	276	<0.001	<0.001	<0.001	<0.003	34	Sand to clear No odor
2	122.3	127.0	4.7	6.0	8/25/2015	36	390	<0.001	<0.001	<0.001	<0.003	40	Sand to clear No odor
2	122.4	127.0	0.7	6.0	11/17/2015	40	356	<0.001	<0.001	<0.001	<0.003	44	Sand to clear No odor

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2	122.4	127.0	0.7	6.0	3/21/2016	60	362	<0.001	<0.001	<0.001	<0.003	39	Sand to clear No odor
2	122.5	127.0	0.7	6.0	6/3/2016	44	320	<0.001	<0.001	<0.001	<0.003	38	Sand to clear No odor
2	123.0	127.0	0.6	6.0	9/21/2016	28	288	<0.001	<0.001	<0.001	<0.003	40	Sand to clear No odor
2	123.0	127.0	0.6	6.0	11/28/2016	56	376	<0.001	<0.001	<0.001	<0.003	46	Sand to clear No odor
2	123.2	127.0	0.6	5.0	3/8/2017	32	320	<0.001	<0.001	<0.001	<0.003	43	Sand to clear No odor
2	123.3	127.0	0.6	5.0	6/8/2017	36	332	<0.001	<0.001	<0.001	<0.003	42	Sand to clear No odor
2	123.2	127.0	0.6	6.0	9/20/2017	32	340	<0.001	<0.001	<0.001	<0.003	45	Sand to clear No odor
2	123.2	127.0	0.6	6.0	12/11/2017	56	396	<0.001	<0.001	<0.001	<0.003	54	Sand to clear No odor
2	123.4	127.0	0.6	5.0	3/13/2018	80	386	<0.001	<0.001	<0.001	<0.003	40	Sand to clear No odor
2	123.6	127.0	0.5	5.0	6/8/2018	64	312	<0.001	<0.001	<0.001	<0.003	45	Sand to clear No odor
2	123.7	127.0	0.5	5.0	9/17/2018	32	250	<0.001	<0.001	<0.001	<0.003	42	Sand to clear No odor
2	123.8	127.0	0.5	3.0	11/29/2018	28	299	<0.001	<0.001	<0.001	<0.003	41	Sand to clear No odor
2	123.9	127.0	0.5	3.0	3/19/2019	44	338	<0.001	<0.001	<0.001	<0.003	47	Sand to clear No odor
2	123.8	127.0	0.5	3.0	6/14/2019	28	330	<0.001	<0.001	<0.001	<0.003	44	Sand to clear No odor
2	124.0	127.0	0.5	3.0	9/18/2019	28	266	<0.001	<0.001	<0.001	<0.003	42	Sand to clear No odor
2	124.2	127.0	0.5	3.0	12/3/2019	32	311	<0.001	<0.001	<0.001	<0.003	43	Sand to clear No odor

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TABLE 2c

Groundwater Analyte Concentrations (mg/l)

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
3	117.1	129.0	1.9	10.0	10/18/2006	20	342	<0.001	<0.001	<0.001	<0.001	35	Clear
3	117.4	127.6	1.6	8.0	3/7/2007	20	236	<0.001	<0.001	<0.001	<0.001	34	Sand to clear No odor
3	117.4	127.6	1.6	8.0	5/29/2007	24	290	<0.001	<0.001	<0.001	<0.001	40	Sand to clear No odor
3	117.7	127.6	1.6	6.0	9/25/2007	24	332	<0.002	<0.002	<0.002	<0.006	41	Sand to clear No odor
3	117.8	127.6	1.6	6.0	10/17/2007	24	281	<0.001	0.004	<0.001	0.004	40	Sand to clear No odor
3	117.9	127.6	1.6	6.0	1/31/2008	24	291	<0.001	<0.001	<0.001	<0.003	38	Sand to clear No odor
3	118.0	127.6	1.5	6.0	4/24/2008	24	306	<0.001	<0.001	<0.001	<0.003	38	Sand to clear No odor
3	118.2	127.6	1.5	6.0	8/7/2008	24	264	<0.001	<0.001	<0.001	<0.003	51	Sand to clear No odor
3	118.3	127.6	1.5	6.0	10/30/2008	36	325	<0.001	<0.001	<0.001	<0.003	48	Sand to clear No odor
3	118.5	127.5	1.4	6.0	1/23/2009	36	328	<0.001	<0.001	<0.001	<0.003	46	Sand to clear No odor
3	118.5	127.5	1.4	6.0	4/29/2009	24	229	<0.001	<0.001	<0.001	<0.003	36	Sand to clear No odor
3	118.8	127.5	1.4	6.0	8/7/2009	24	313	<0.001	<0.001	<0.001	<0.003	38	Sand to clear No odor
3	119.0	127.5	1.4	6.0	10/22/2009	24	319	<0.001	<0.001	<0.001	<0.003	35	Sand to clear No odor
3	119.4	127.6	1.3	6.0	4/26/2010	24	312	<0.001	<0.001	<0.001	<0.003	42	Sand to clear No odor
3	119.1	127.6	1.4	6.0	2/11/2010	24	297	<0.001	<0.001	<0.001	<0.003	45	Sand to clear No odor
3	119.4	127.6	1.3	6.0	8/5/2010	24	257	<0.001	<0.001	<0.001	<0.003	34	Sand to clear No odor
3	119.6	127.6	1.3	6.0	10/28/2010	20	289	<0.001	<0.001	<0.001	<0.003	33	Sand to clear No odor
3	119.2	127.7	1.4	6.0	2/21/2011	24	294	<0.001	<0.001	<0.001	<0.003	34	Sand to clear No odor
3	119.9	127.7	1.2	6.0	6/6/2011	32	291	<0.001	<0.001	<0.001	<0.003	41	Sand to clear No odor
3	120.2	127.7	1.2	6.0	9/2/2011	20	263	<0.001	<0.001	<0.001	<0.003	46	Sand to clear No odor
3	120.4	127.7	1.2	6.0	12/4/2011	24	275	<0.001	<0.001	<0.001	<0.003	41	Sand to clear No odor
3	120.4	127.4	1.2	6.0	2/24/2012	24	294	<0.001	<0.001	<0.001	<0.003	38	Sand to clear No odor
3	120.5	127.7	1.1	6.0	6/1/2012	20	307	<0.001	<0.001	<0.001	<0.003	32	Sand to clear No odor
3	120.8	127.7	1.1	6.0	8/31/2012	28	289	<0.001	<0.001	<0.001	<0.003	42	Sand to clear No odor
3	120.8	127.7	1.1	6.0	11/16/2012	24	296	<0.001	<0.001	<0.001	<0.003	32	Sand to clear No odor
3	120.9	127.7	1.1	6.0	2/14/2013	28	278	<0.001	<0.001	<0.001	<0.003	38	Sand to clear No odor
3	121.0	127.7	1.1	6.0	5/23/2013	28	287	<0.001	<0.001	<0.001	<0.003	44	Sand to clear No odor
3	121.3	127.7	1.0	6.0	9/4/2013	24	305	<0.001	<0.001	<0.001	<0.003	35	Sand to clear No odor
3	121.3	127.7	1.0	6.0	11/13/2013	32	316	<0.001	<0.001	<0.001	<0.003	45	Sand to clear No odor
3	121.5	127.7	1.0	6.0	3/14/2014	40	138	<0.001	<0.001	<0.001	<0.003	47	Sand to clear No odor
3	121.7	127.7	1.0	6.0	6/24/2014	24	286	<0.001	<0.001	<0.001	<0.003	38	Sand to clear No odor
3	121.8	127.7	0.9	6.0	8/22/2014	24	300	<0.001	<0.001	<0.001	<0.003	34	Silt to clear No odor
3	121.2	127.7	1.0	6.0	12/12/2014	24	266	<0.001	<0.001	<0.001	<0.003	33	Sand to clear No odor
3	122.0	127.7	0.9	6.0	3/9/2015	24	296	<0.001	<0.001	<0.001	<0.003	30	Sand to clear No odor
3	122.1	127.7	0.9	6.0	6/8/2015	28	266	<0.001	<0.001	<0.001	<0.003	43	Sand to clear No odor
3	122.2	127.7	0.9	6.0	8/25/2015	28	270	<0.001	<0.001	<0.001	<0.003	26	Sand to clear No odor
3	122.4	127.7	0.9	6.0	11/17/2015	28	330	<0.001	<0.001	<0.001	<0.003	37	Sand to clear No odor

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3	122.4	127.7	0.8	6.0	3/21/2016	28	272	<0.001	<0.001	<0.001	<0.003	19	Sand to clear No odor
3	122.5	127.7	0.8	6.0	6/3/2016	4	180	<0.001	<0.001	<0.001	<0.003	17	Sand to clear No odor
3	122.9	127.7	0.8	6.0	9/21/2016	28	294	<0.001	<0.001	<0.001	<0.003	38	Sand to clear No odor
3	123.0	127.7	0.7	6.0	11/28/2016	36	286	<0.001	<0.001	<0.001	<0.003	42	Sand to clear No odor
3	123.1	127.7	0.7	5.0	3/8/2017	32	292	<0.001	<0.001	<0.001	<0.003	41	Sand to clear No odor
3	123.2	127.7	0.7	5.0	6/8/2017	32	312	<0.001	<0.001	<0.001	<0.003	40	Sand to clear No odor
3	123.1	127.7	0.7	6.0	9/20/2017	28	310	<0.001	<0.001	<0.001	<0.003	47	Sand to clear No odor
3	123.2	127.7	0.7	6.0	12/11/2017	44	334	<0.001	<0.001	<0.001	<0.003	47	Sand to clear No odor
3	123.4	127.7	0.7	5.0	3/13/2018	44	330	<0.001	<0.001	<0.001	<0.003	43	Sand to clear No odor
3	123.6	127.7	0.6	5.0	6/8/2018	44	168	<0.001	<0.001	<0.001	<0.003	46	Sand to clear No odor
3	123.7	127.7	0.6	3.0	9/17/2018	28	276	<0.001	<0.001	<0.001	<0.003	41	Sand to clear No odor
3	123.9	127.7	0.6	3.0	11/29/2018	32	285	<0.001	<0.001	<0.001	<0.003	45	Sand to clear No odor
3	123.8	127.7	0.6	3.0	3/19/2019	48	261	<0.001	<0.001	<0.001	<0.003	37	Sand to clear No odor
3	123.8	127.7	0.6	3.0	6/14/2019	28	303	<0.001	<0.001	<0.001	<0.003	40	Sand to clear No odor
3	124.1	127.7	0.6	3.0	9/18/2019	28	266	<0.001	<0.001	<0.001	<0.003	42	Sand to clear No odor
3	124.2	127.7	0.6	3.0	12/3/2019	32	160	<0.001	<0.001	<0.001	<0.003	43	Sand to clear No odor

APPENDIX

TABLE 2d

Groundwater Analyte Concentrations (mg/l)

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
4	115.5	126.0	1.7	10.0	10/18/2006	38	288	<0.001	<0.001	<0.001	<0.001	45	Clear
4	115.8	125.3	1.5	8.0	3/7/2007	39	296	<0.001	<0.001	<0.001	<0.001	43	Silt to clear No odor
4	115.9	125.2	1.5	8.0	5/29/2007	37	316	<0.001	<0.001	<0.001	<0.001	40	Silt to clear No odor
4	116.1	125.2	1.5	6.0	9/25/2007	44	358	<0.002	<0.002	<0.002	<0.006	54	Silt to clear No odor
4	116.1	125.2	1.5	6.0	10/17/2007	44	337	<0.001	0.004	<0.001	<0.003	48	Silt to clear No odor
4	116.2	125.0	1.4	6.0	1/31/2008	40	326	<0.001	<0.001	<0.001	<0.003	50	Silt to clear No odor
4	116.4	125.0	1.4	6.0	4/24/2008	40	297	<0.001	<0.001	<0.001	<0.003	40	Silt to clear No odor
4	116.6	125.0	1.3	6.0	8/7/2008	44	357	<0.001	<0.001	<0.001	<0.003	52	Silt to clear No odor
4	116.8	125.0	1.3	6.0	10/30/2008	40	358	<0.001	<0.001	<0.001	<0.003	49	Silt to clear No odor
4	116.9	124.5	1.2	6.0	1/23/2009	36	354	<0.001	<0.001	<0.001	<0.003	45	Silt to clear No odor
4	117.1	124.5	1.2	6.0	4/29/2009	40	247	<0.001	<0.001	<0.001	<0.003	45	Silt to clear No odor
4	117.3	124.5	1.2	6.0	8/7/2009	24	351	<0.001	<0.001	<0.001	<0.003	37	Silt to clear No odor
4	117.2	124.5	1.2	6.0	10/22/2009	36	362	<0.001	<0.001	<0.001	<0.003	42	Silt to clear No odor
4	117.8	125.0	1.2	6.0	4/26/2010	36	330	<0.001	<0.001	<0.001	<0.003	71	Silt to clear No odor
4	117.5	125.0	1.2	6.0	2/11/2010	36	325	<0.001	<0.001	<0.001	<0.003	50	Silt to clear No odor
4	117.9	125.0	1.1	6.0	8/5/2010	40	284	<0.001	<0.001	<0.001	<0.003	44	Silt to clear No odor
4	118.0	125.0	1.1	6.0	10/28/2010	40	246	<0.001	<0.001	<0.001	<0.003	41	Silt to clear No odor
4	118.2	125.9	1.2	6.0	2/21/2011	40	338	<0.001	<0.001	<0.001	<0.003	41	Silt to clear No odor
4	118.4	125.9	1.2	6.0	6/6/2011	40	321	<0.001	<0.001	<0.001	<0.003	50	Silt to clear No odor
4	118.6	125.9	1.2	6.0	9/2/2011	24	268	<0.001	<0.001	<0.001	<0.003	44	Silt to clear No odor
4	118.8	125.9	1.1	6.0	12/4/2011	44	304	<0.001	<0.001	<0.001	<0.003	63	Silt to clear No odor
4	118.8	125.9	1.1	6.0	2/24/2012	36	323	<0.001	<0.001	<0.001	<0.003	39	Silt to clear No odor
4	118.9	125.9	1.1	6.0	6/1/2012	40	349	<0.001	<0.001	<0.001	<0.003	51	Silt to clear No odor
4	119.2	125.9	1.1	6.0	8/31/2012	36	302	<0.001	<0.001	<0.001	<0.003	43	Silt to clear No odor
4	119.3	125.9	1.0	6.0	11/16/2012	40	340	<0.001	<0.001	<0.001	<0.003	43	Silt to clear No odor
4	119.4	125.9	1.0	6.0	2/14/2013	44	317	<0.001	<0.001	<0.001	<0.003	52	Silt to clear No odor
4	119.5	125.9	1.0	6.0	5/23/2013	28	265	<0.001	<0.001	<0.001	<0.003	43	Silt to clear No odor
4	119.8	125.9	1.0	6.0	9/4/2013	24	296	<0.001	<0.001	<0.001	<0.003	33	Silt to clear No odor
4	119.8	125.9	1.0	6.0	11/13/2013	28	283	<0.001	<0.001	<0.001	<0.003	44	Silt to clear No odor
4	120.0	125.9	0.9	6.0	3/14/2014	40	316	<0.001	<0.001	<0.001	<0.003	46	Silt to clear No odor
4	120.1	125.9	0.9	6.0	6/24/2014	20	216	<0.001	<0.001	<0.001	<0.003	38	Silt to clear No odor
4	120.2	125.9	0.9	6.0	8/22/2014	28	294	<0.001	<0.001	<0.001	<0.003	34	Silt to clear No odor
4	119.6	125.9	1.0	6.0	12/12/2014	60	400	<0.001	<0.001	<0.001	<0.003	27	Silt to clear No odor
4	120.4	125.9	0.9	6.0	3/9/2015	36	338	<0.001	<0.001	<0.001	<0.003	25	Silt to clear No odor
4	120.4	125.9	0.9	6.0	6/8/2015	32	264	<0.001	<0.001	<0.001	<0.003	36	Silt to clear No odor
4	120.5	125.9	0.9	6.0	8/25/2015	24	318	<0.001	<0.001	<0.001	<0.003	36	Silt to clear No odor
4	120.7	125.9	0.8	6.0	11/17/2015	28	210	<0.001	<0.001	<0.001	<0.003	36	Silt to clear No odor

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4	120.8	125.9	0.8	6.0	3/21/2016	60	356	<0.001	<0.001	<0.001	<0.003	43	Silt to clear No odor
4	120.9	125.9	0.8	5.0	6/3/2016	40	286	<0.001	<0.001	<0.001	<0.003	20	Silt to clear No odor
4	121.3	125.9	0.7	6.0	9/21/2016	32	250	<0.001	<0.001	<0.001	<0.003	59	Silt to clear No odor
4	121.4	125.9	0.7	6.0	11/28/2016	40	336	<0.001	<0.001	<0.001	<0.003	44	Silt to clear No odor
4	121.6	125.9	0.7	5.0	3/8/2017	32	314	<0.001	<0.001	<0.001	<0.003	41	Silt to clear No odor
4	121.7	125.9	0.7	5.0	6/8/2017	36	338	<0.001	<0.001	<0.001	<0.003	39	Silt to clear No odor
4	121.6	125.9	0.7	5.0	9/20/2017	24	472	<0.001	<0.001	<0.001	<0.003	54	Silt to clear No odor
4	121.6	125.9	0.7	5.0	12/11/2017	56	332	<0.001	<0.001	<0.001	<0.003	49	Silt to clear No odor
4	121.8	125.9	0.7	5.0	3/13/2018	60	348	<0.001	<0.001	<0.001	<0.003	44	Silt to clear No odor
4	122.0	125.9	0.6	5.0	6/8/2018	44	286	<0.001	<0.001	<0.001	<0.003	41	Silt to clear No odor
4	122.3	125.9	0.6	3.0	9/17/2018	28	244	<0.001	<0.001	<0.001	<0.003	40	Silt to clear No odor
4	122.3	125.9	0.6	3.0	11/29/2018	32	253	<0.001	<0.001	<0.001	<0.003	42	Silt to clear No odor
4	122.3	125.9	0.6	3.0	3/19/2019	48	333	<0.001	<0.001	<0.001	<0.003	48	Silt to clear No odor
4	122.3	125.9	0.6	3.0	6/14/2019	24	311	<0.001	<0.001	<0.001	<0.003	43	Silt to clear No odor
4	122.5	125.9	0.6	3.0	9/18/2019	28	308	<0.001	<0.001	<0.001	<0.003	41	Silt to clear No odor
4	123.7	125.9	0.4	3.0	12/3/2019	28	283	<0.001	<0.001	<0.001	<0.003	42	Silt to clear No odor

Groundwater Analyte Concentrations (mg/l)

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
RW-1	116.2	143.3	17.6	70.0	6/20/2007	4,220	8,110	0.0022	<0.001	<0.001	<0.002	119	Silt to clear Slight odor
RW-1	116.3	143.3	17.6	60.0	9/25/2007	5,398	9,775	<0.002	<0.002	<0.002	<0.006	67	Silt to clear Slight odor
RW-1	XXX	XXX	XXX	60.0	10/17/2007	5,400	9,071	<0.001	0.004	<0.001	<0.003	57	Clear Slight odor
RW-1	XXX	XXX	XXX	XXX	1/31/2008	5,300	9,320	<0.001	<0.001	<0.001	<0.003	55	Clear Slight odor
RW-1	XXX	XXX	XXX	XXX	4/24/2008	3,900	6,870	<0.001	<0.001	<0.001	<0.003	45	Clear Slight odor
RW-1	XXX	XXX	XXX	XXX	8/7/2008	3,800	7,180	<0.001	<0.001	<0.001	<0.003	68	Clear Slight odor
RW-1	XXX	XXX	XXX	XXX	10/30/2008	5,850	13,700	<0.001	<0.001	<0.001	<0.003	83	Clear Slight odor
RW-1	XXX	XXX	XXX	XXX	1/26/2009	5,600	10,700	<0.001	<0.001	<0.001	<0.003	83	Clear Slight odor
RW-1	XXX	XXX	XXX	XXX	4/29/2009	4,050	7,700	<0.001	<0.001	<0.001	<0.003	54	Clear Slight odor
RW-1	XXX	XXX	XXX	XXX	8/7/2009	3,000	5,450	<0.001	<0.001	<0.001	<0.003	54	Clear Slight odor
RW-1	XXX	XXX	XXX	XXX	10/22/2009	3,550	5,820	<0.001	<0.001	<0.001	<0.003	56	Clear Slight odor
RW-1	XXX	XXX	XXX	XXX	4/26/2010	4,200	7,240	<0.001	<0.001	<0.001	<0.003	71	Clear Slight odor
RW-1	XXX	XXX	XXX	80.0	2/11/2010	3,900	6,600	<0.001	<0.001	<0.001	<0.003	89	Clear Slight odor
RW-1	XXX	XXX	XXX	Running	8/5/2010	3,800	6,480	<0.001	<0.001	<0.001	<0.003	62	Clear Slight odor
RW-1	XXX	XXX	XXX	Running	10/28/2010	3,200	6,970	<0.001	<0.001	<0.001	<0.003	54	Clear Slight odor
RW-1	XXX	XXX	XXX	Running	5/23/2013	2,550	4,480	<0.001	<0.001	<0.001	<0.003	67	Purged with Solar Pump Clear Slight odor
RW-1	XXX	XXX	XXX	80.0	2/21/2011	4,800	8,430	<0.001	<0.001	<0.001	<0.003	78	Clear Slight odor
RW-1	XXX	XXX	XXX	80.0	6/6/2011	4,200	5,850	<0.001	<0.001	<0.001	<0.003	62	Clear Slight odor
RW-1	XXX	XXX	XXX	Running	9/2/2011	3,250	4,850	<0.001	<0.001	<0.001	<0.003	63	Clear Slight odor
RW-1	XXX	XXX	XXX	Running	12/4/2011	2,800	4,790	<0.001	<0.001	<0.001	<0.003	62	Clear Slight odor
RW-1	XXX	XXX	XXX	Running	2/24/2012	3,250	5,170	<0.001	<0.001	<0.001	<0.003	60	Clear Slight odor
RW-1	XXX	XXX	XXX	Running	6/1/2012	2,550	4,960	<0.001	<0.001	<0.001	<0.003	60	Purged with Solar Pump Clear Slight odor
RW-1	XXX	XXX	XXX	Running	8/31/2012	2,270	4,150	<0.001	<0.001	<0.001	<0.003	59	Purged with Solar Pump Clear Slight odor
RW-1	XXX	XXX	XXX	Running	11/16/2012	3,900	6,800	<0.001	<0.001	<0.001	<0.003	78	Purged with Solar Pump Clear Slight odor
RW-1	Pump in Well	XXX	XXX	100.0	2/14/2013	4,200	6,840	<0.001	<0.001	<0.001	<0.003	72	Purged with Solar Pump Clear Slight odor
RW-1	XXX	XXX	XXX	Running	9/4/2013	1,880	3,730	<0.001	<0.001	<0.001	<0.003	65	Purged with Solar Pump Clear Slight odor

APPENDIX

RW-1	XXX	XXX	XXX	Running	11/13/2013	1,800	3,550	<0.001	<0.001	<0.001	<0.003	60	Purged with Solar Pump Clear Slight odor
RW-1	XXX	XXX	XXX	100.0	3/14/2014	2,070	3,900	<0.001	<0.001	<0.001	<0.003	67	Purged with Solar Pump
RW-1	XXX	XXX	XXX	Running	6/24/2014	1,640	3,730	<0.001	<0.001	<0.001	<0.003	60	Purged with Solar Pump
RW-1	XXX	XXX	XXX	Running	8/22/2014	1,400	3,180	<0.001	<0.001	<0.001	<0.003	52	Purged with Solar Pump Clear Slight odor
RW-1	120.3	143.3	14.9	60.0	12/12/2014	1,500	3,140	<0.001	<0.001	<0.001	<0.003	54	Clear Slight odor
RW-1	120.4	143.3	14.9	60.0	3/10/2015	1,300	2,960	<0.001	<0.001	<0.001	<0.003	61	Clear Slight odor
RW-1	120.5	143.3	14.8	50.0	6/8/2015	1,020	2,670	<0.001	<0.001	<0.001	<0.003	49	Clear Slight odor
RW-1	120.7	143.5	14.7	50.0	8/25/2015	1,100	2,070	<0.001	<0.001	<0.001	<0.003	37	Clear Slight odor
RW-1	120.9	143.3	14.6	50.0	11/17/2015	880	1,780	<0.001	<0.001	<0.001	<0.003	53	Clear Slight odor
RW-1	XXX	143.3	XXX	50.0	3/21/2016	840	1,690	<0.001	<0.001	<0.001	<0.003	39	Clear Slight odor
RW-1	XXX	143.3	XXX	50.0	6/3/2016	1,040	2,100	<0.001	<0.001	<0.001	<0.003	57	Clear Slight odor
RW-1	XXX	143.3	XXX	50.0	9/21/2016	2,130	4,110	<0.001	<0.001	<0.001	<0.003	77	Clear Slight odor
RW-1	XXX	143.3	XXX	50.0	11/28/2016	1,930	3,690	<0.001	<0.001	<0.001	<0.003	75	Clear Slight odor
RW-1	XXX	143.3	XXX	50.0	3/8/2017	1,930	3,680	<0.001	<0.001	<0.001	<0.003	78	Clear Slight odor
RW-1	XXX	143.3	XXX	50.0	6/8/2017	1,740	3,560	<0.001	<0.001	<0.001	<0.003	70	Clear Slight odor
RW-1	XXX	143.3	XXX	50.0	9/20/2017	1,580	3,850	<0.001	<0.001	<0.001	<0.003	88	Clear Slight odor
RW-1	XXX	143.3	XXX	50.0	12/11/2017	1,580	2,740	<0.001	<0.001	<0.001	<0.003	72	Clear Slight odor
RW-1	XXX	143.3	XXX	100.0	3/12/2018	1,580	2,700	<0.001	<0.001	<0.001	<0.003	71	Clear Slight odor
RW-1	XXX	143.3	XXX	100.0	6/8/2018	1,480	2,740	<0.001	<0.001	<0.001	<0.003	69	Clear Slight odor
RW-1	XXX	143.3	XXX	50.0	9/17/2018	1,500	2,370	<0.001	<0.001	<0.001	<0.003	63	Clear Slight odor
RW-1	XXX	143.3	XXX	100.0	11/30/2018	880	1,870	<0.001	<0.001	<0.001	<0.003	93	Clear Slight odor
RW-1	XXX	143.3	XXX	100.0	3/20/2019	870	1,770	<0.001	<0.001	<0.001	<0.003	76	Clear Slight odor
RW-1	XXX	143.3	XXX	100.0	6/14/2019	710	1,410	<0.001	<0.001	<0.001	<0.003	79	Clear Slight odor
RW-1	XXX	143.3	XXX	100.0	9/18/2019	650	1,450	<0.001	<0.001	<0.001	<0.003	74	Clear Slight odor
RW-1	XXX	143.3	XXX	100.0	12/4/2019	620	1,420	<0.001	<0.001	<0.001	<0.003	72	Clear Slight odor



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

March 29, 2019

KATIE JONES

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: VACUUM N-6-1

Enclosed are the results of analyses for samples received by the laboratory on 03/22/19 14:25.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-18-11. 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.

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

Analytical Results For:

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

Received:	03/22/2019	Sampling Date:	03/19/2019
Reported:	03/29/2019	Sampling Type:	Water
Project Name:	VACUUM N-6-1	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Jodi Henson
Project Location:	T17S-R35E-SEC6 N-LEA CTY., NM		

Sample ID: MONITOR WELL #1R (H901114-01)

BTEX 8021B		mg/L		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	03/27/2019	ND	0.022	109	0.0200	5.98	
Toluene*	<0.001	0.001	03/27/2019	ND	0.020	101	0.0200	2.19	
Ethylbenzene*	<0.001	0.001	03/27/2019	ND	0.020	100	0.0200	7.43	
Total Xylenes*	<0.003	0.003	03/27/2019	ND	0.061	102	0.0600	0.670	
Total BTEX	<0.006	0.006	03/27/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 86.7 % 81.3-128

Chloride, SM4500Cl-B		mg/L		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	730	4.00	03/25/2019	ND	104	104	100	0.00	

Sulfate 375.4		mg/L		Analyzed By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	70.4	10.0	03/27/2019	ND	23.4	117	20.0	3.74	

TDS 160.1		mg/L		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	1540	5.00	03/27/2019	ND	470	89.2	527	1.68	

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

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

Received:	03/22/2019	Sampling Date:	03/19/2019
Reported:	03/29/2019	Sampling Type:	Water
Project Name:	VACUUM N-6-1	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Jodi Henson
Project Location:	T17S-R35E-SEC6 N-LEA CTY., NM		

Sample ID: MONITOR WELL #2 (H901114-02)

BTX 8021B		mg/L		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	03/27/2019	ND	0.022	109	0.0200	5.98	
Toluene*	<0.001	0.001	03/27/2019	ND	0.020	101	0.0200	2.19	
Ethylbenzene*	<0.001	0.001	03/27/2019	ND	0.020	100	0.0200	7.43	
Total Xylenes*	<0.003	0.003	03/27/2019	ND	0.061	102	0.0600	0.670	
Total BTX	<0.006	0.006	03/27/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 86.0 % 81.3-128

Chloride, SM4500CI-B		mg/L		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	44.0	4.00	03/25/2019	ND	104	104	100	0.00	

Sulfate 375.4		mg/L		Analyzed By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	47.7	10.0	03/27/2019	ND	23.4	117	20.0	3.74	

TDS 160.1		mg/L		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
TDS*	338	5.00	03/27/2019	ND	470	89.2	527	1.68		

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

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

Received:	03/22/2019	Sampling Date:	03/19/2019
Reported:	03/29/2019	Sampling Type:	Water
Project Name:	VACUUM N-6-1	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Jodi Henson
Project Location:	T17S-R35E-SEC6 N-LEA CTY., NM		

Sample ID: MONITOR WELL #3 (H901114-03)

BTX 8021B		mg/L		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	03/27/2019	ND	0.022	109	0.0200	5.98	
Toluene*	<0.001	0.001	03/27/2019	ND	0.020	101	0.0200	2.19	
Ethylbenzene*	<0.001	0.001	03/27/2019	ND	0.020	100	0.0200	7.43	
Total Xylenes*	<0.003	0.003	03/27/2019	ND	0.061	102	0.0600	0.670	
Total BTX	<0.006	0.006	03/27/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 85.7 % 81.3-128

Chloride, SM4500CI-B		mg/L		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	48.0	4.00	03/25/2019	ND	104	104	100	0.00	

Sulfate 375.4		mg/L		Analyzed By: JH						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Sulfate*	36.9	10.0	03/27/2019	ND	23.4	117	20.0	3.74		

TDS 160.1		mg/L		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
TDS*	261	5.00	03/27/2019	ND	470	89.2	527	1.68		

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

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

Received:	03/22/2019	Sampling Date:	03/19/2019
Reported:	03/29/2019	Sampling Type:	Water
Project Name:	VACUUM N-6-1	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Jodi Henson
Project Location:	T17S-R35E-SEC6 N-LEA CTY., NM		

Sample ID: MONITOR WELL #4 (H901114-04)

BTX 8021B		mg/L		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	03/27/2019	ND	0.022	109	0.0200	5.98	
Toluene*	<0.001	0.001	03/27/2019	ND	0.020	101	0.0200	2.19	
Ethylbenzene*	<0.001	0.001	03/27/2019	ND	0.020	100	0.0200	7.43	
Total Xylenes*	<0.003	0.003	03/27/2019	ND	0.061	102	0.0600	0.670	
Total BTX	<0.006	0.006	03/27/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 88.0 % 81.3-128

Chloride, SM4500CI-B		mg/L		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	48.0	4.00	03/25/2019	ND	104	104	100	0.00	

Sulfate 375.4		mg/L		Analyzed By: JH						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Sulfate*	48.1	10.0	03/27/2019	ND	23.4	117	20.0	3.74		

TDS 160.1		mg/L		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
TDS*	333	5.00	03/27/2019	ND	470	89.2	527	1.68		

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

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

Received:	03/22/2019	Sampling Date:	03/20/2019
Reported:	03/29/2019	Sampling Type:	Water
Project Name:	VACUUM N-6-1	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Jodi Henson
Project Location:	T17S-R35E-SEC6 N-LEA CTY., NM		

Sample ID: RECOVERY WELL #1 (H901114-05)

BTX 8021B		mg/L		Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.001	0.001	03/27/2019	ND	0.022	109	0.0200	5.98		
Toluene*	<0.001	0.001	03/27/2019	ND	0.020	101	0.0200	2.19		
Ethylbenzene*	<0.001	0.001	03/27/2019	ND	0.020	100	0.0200	7.43		
Total Xylenes*	<0.003	0.003	03/27/2019	ND	0.061	102	0.0600	0.670		
Total BTX	<0.006	0.006	03/27/2019	ND						

Surrogate: 4-Bromofluorobenzene (PID) 93.0 % 81.3-128

Chloride, SM4500CI-B		mg/L		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride*	870	4.00	03/25/2019	ND	104	104	100	0.00		

Sulfate 375.4		mg/L		Analyzed By: JH						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Sulfate*	76.1	10.0	03/27/2019	ND	23.4	117	20.0	3.74		

TDS 160.1		mg/L		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
TDS*	1770	5.00	03/27/2019	ND	470	89.2	527	1.68		

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Celey D. Keene, Lab Director/Quality Manager

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

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Cardinal Laboratories, Inc.

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

LAB Order ID #

Company Name: RICE Operating Company		BILL TO Company: PO# RICE Operating Company	
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 N-6-1	
Project Location: T17S-R35E-Sec 6 N ~ Lea County New Mexico		Sampler Signature:  Rozanne Johnson (575) 631-9310	

ANALYSIS REQUEST

(Circle or Specify Method No.)

[illegible]

Relinquished by: Rozanne Johnson Date: 3/22/2019 Time: 14:25

Received by:	Date:	Time:
--------------	-------	-------

Phone Results	Yes	No
Fax Results	Yes	No Additional Fax Number

Relinquished by: _____ Date: _____ Time: _____

Received By: (Laboratory Staff)	Date:	Time:
---------------------------------	-------	-------

REMARKS:

Email Results: kjones@riceswd.com
rozanne11@windstream.net

Delivered By: (Circle One)

[illegible]

CHECKED BY:

Sampler - UPS - Bus - Other:

	Cool	Intact
Yes	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
No	<input type="checkbox"/>	<input type="checkbox"/>

(Initials)



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

June 27, 2019

KATIE JONES

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: VACUUM N-6-1

Enclosed are the results of analyses for samples received by the laboratory on 06/19/19 12:05.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-18-11. 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.

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,

Celey D. Keene

Lab Director/Quality Manager

Analytical Results For:

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

Received:	06/19/2019	Sampling Date:	06/14/2019
Reported:	06/27/2019	Sampling Type:	Water
Project Name:	VACUUM N-6-1	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T17S-R35E-SEC6 N-LEA CTY., NM		

Sample ID: MONITOR WELL #1R (H902107-01)

BTEX 8021B		mg/L		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	06/21/2019	ND	0.021	107	0.0200	0.177	
Toluene*	<0.001	0.001	06/21/2019	ND	0.022	109	0.0200	1.39	
Ethylbenzene*	<0.001	0.001	06/21/2019	ND	0.020	102	0.0200	2.50	
Total Xylenes*	<0.003	0.003	06/21/2019	ND	0.062	103	0.0600	2.49	
Total BTEX	<0.006	0.006	06/21/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 103 % 81.3-128

Chloride, SM4500Cl-B		mg/L		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	450	4.00	06/19/2019	ND	100	100	100	4.08	

Sulfate 375.4		mg/L		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	38.5	10.0	06/21/2019	ND	20.8	104	20.0	8.09	

TDS 160.1		mg/L		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	1030	5.00	06/24/2019	ND	523	99.2	527	11.3	

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

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

Received:	06/19/2019	Sampling Date:	06/14/2019
Reported:	06/27/2019	Sampling Type:	Water
Project Name:	VACUUM N-6-1	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T17S-R35E-SEC6 N-LEA CTY., NM		

Sample ID: MONITOR WELL #2 (H902107-02)

BTX 8021B		mg/L		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	06/21/2019	ND	0.021	107	0.0200	0.177	
Toluene*	<0.001	0.001	06/21/2019	ND	0.022	109	0.0200	1.39	
Ethylbenzene*	<0.001	0.001	06/21/2019	ND	0.020	102	0.0200	2.50	
Total Xylenes*	<0.003	0.003	06/21/2019	ND	0.062	103	0.0600	2.49	
Total BTX	<0.006	0.006	06/21/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 103 % 81.3-128

Chloride, SM4500Cl-B		mg/L		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	28.0	4.00	06/19/2019	ND	100	100	100	4.08	

Sulfate 375.4		mg/L		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	44.0	10.0	06/21/2019	ND	20.8	104	20.0	8.09	

TDS 160.1		mg/L		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
TDS*	330	5.00	06/24/2019	ND	523	99.2	527	11.3		

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

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

Received:	06/19/2019	Sampling Date:	06/14/2019
Reported:	06/27/2019	Sampling Type:	Water
Project Name:	VACUUM N-6-1	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T17S-R35E-SEC6 N-LEA CTY., NM		

Sample ID: MONITOR WELL #3 (H902107-03)

BTX 8021B		mg/L		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	06/21/2019	ND	0.021	107	0.0200	0.177	
Toluene*	<0.001	0.001	06/21/2019	ND	0.022	109	0.0200	1.39	
Ethylbenzene*	<0.001	0.001	06/21/2019	ND	0.020	102	0.0200	2.50	
Total Xylenes*	<0.003	0.003	06/21/2019	ND	0.062	103	0.0600	2.49	
Total BTX	<0.006	0.006	06/21/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 104 % 81.3-128

Chloride, SM4500CI-B		mg/L		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	28.0	4.00	06/19/2019	ND	100	100	100	4.08	

Sulfate 375.4		mg/L		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	40.4	10.0	06/21/2019	ND	20.8	104	20.0	8.09	

TDS 160.1		mg/L		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
TDS*	303	5.00	06/24/2019	ND	523	99.2	527	11.3		

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

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

Received:	06/19/2019	Sampling Date:	06/14/2019
Reported:	06/27/2019	Sampling Type:	Water
Project Name:	VACUUM N-6-1	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T17S-R35E-SEC6 N-LEA CTY., NM		

Sample ID: MONITOR WELL #4 (H902107-04)

BTX 8021B		mg/L		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	06/22/2019	ND	0.021	107	0.0200	0.177	
Toluene*	<0.001	0.001	06/22/2019	ND	0.022	109	0.0200	1.39	
Ethylbenzene*	<0.001	0.001	06/22/2019	ND	0.020	102	0.0200	2.50	
Total Xylenes*	<0.003	0.003	06/22/2019	ND	0.062	103	0.0600	2.49	
Total BTX	<0.006	0.006	06/22/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 105 % 81.3-128

Chloride, SM4500CI-B		mg/L		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride*	24.0	4.00	06/19/2019	ND	100	100	100	4.08		

Sulfate 375.4		mg/L		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Sulfate*	43.4	10.0	06/21/2019	ND	20.8	104	20.0	8.09		

TDS 160.1		mg/L		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
TDS*	311	5.00	06/24/2019	ND	523	99.2	527	11.3		

Cardinal Laboratories

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

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

Received:	06/19/2019	Sampling Date:	06/14/2019
Reported:	06/27/2019	Sampling Type:	Water
Project Name:	VACUUM N-6-1	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T17S-R35E-SEC6 N-LEA CTY., NM		

Sample ID: RECOVERY WELL #1 (H902107-05)

BTX 8021B		mg/L		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	06/22/2019	ND	0.021	107	0.0200	0.177	
Toluene*	<0.001	0.001	06/22/2019	ND	0.022	109	0.0200	1.39	
Ethylbenzene*	<0.001	0.001	06/22/2019	ND	0.020	102	0.0200	2.50	
Total Xylenes*	<0.003	0.003	06/22/2019	ND	0.062	103	0.0600	2.49	
Total BTX	<0.006	0.006	06/22/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 105 % 81.3-128

Chloride, SM4500Cl-B		mg/L		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	710	4.00	06/19/2019	ND	100	100	100	4.08	

Sulfate 375.4		mg/L		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	79.5	10.0	06/21/2019	ND	20.8	104	20.0	8.09	

TDS 160.1		mg/L		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
TDS*	1410	5.00	06/24/2019	ND	523	99.2	527	11.3		

Cardinal Laboratories

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Celey D. Keene, Lab Director/Quality Manager

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

Cardinal Laboratories

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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 N-6-1		
Project Location: T17S-R35E-Sec 6 N ~ Lea County New Mexico				
			Sampler Signature: Rozanne Johnson (575) 631-9310	

[illegible]

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, SO₄, CO₃, HCO₃)

Sulfates

Total Dissolved Solids

Chlorides

111

Turn Around Time ~ 24 Hours

Relinquished by: _____ Date: _____ Time: _____	Received by: _____ Date: _____ Time: _____
Rozanne Johnson 6/19/2019 12:05	Jamara P. 6-19-19 12:05
Relinquished by: _____ Date: _____ Time: _____	Received By: (Laboratory Staff) _____ Date: _____ Time: _____

Relinquished by:	Date:	Time:	Received By: (Laboratory Staff)	Date:	Time:
------------------	-------	-------	---------------------------------	-------	-------

Delivered By: (Circle One)	Sample Condition	CHECKED BY:
----------------------------	------------------	-------------

Sampler - UPS - Bus - Other: _____

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

REMARKS:	
----------	--

Email Results: kjones@riceswd.com
rozanne11@windstream.net



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

September 27, 2019

KATIE JONES

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: VACUUM N-6-1

Enclosed are the results of analyses for samples received by the laboratory on 09/23/19 13:25.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-18-11. 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.

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

Analytical Results For:

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

Received:	09/23/2019	Sampling Date:	09/18/2019
Reported:	09/27/2019	Sampling Type:	Water
Project Name:	VACUUM N-6-1	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T17S-R35E-SEC6 N-LEA CTY., NM		

Sample ID: MONITOR WELL #1R (H903267-01)

BTEX 8021B		mg/L		Analyzed By: BF					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	09/27/2019	ND	0.020	98.4	0.0200	0.209	
Toluene*	<0.001	0.001	09/27/2019	ND	0.019	95.5	0.0200	1.14	
Ethylbenzene*	<0.001	0.001	09/27/2019	ND	0.019	93.9	0.0200	1.57	
Total Xylenes*	<0.003	0.003	09/27/2019	ND	0.056	94.1	0.0600	2.12	
Total BTEX	<0.006	0.006	09/27/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 88.2 % 81.3-128

Chloride, SM4500Cl-B		mg/L		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	428	4.00	09/24/2019	ND	100	100	100	0.00	

Sulfate 375.4		mg/L		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	40.4	10.0	09/25/2019	ND	21.4	107	20.0	0.558	

TDS 160.1		mg/L		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	966	5.00	09/24/2019	ND	532	101	527	0.269	

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

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

Received:	09/23/2019	Sampling Date:	09/18/2019
Reported:	09/27/2019	Sampling Type:	Water
Project Name:	VACUUM N-6-1	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T17S-R35E-SEC6 N-LEA CTY., NM		

Sample ID: MONITOR WELL #2 (H903267-02)

BTEX 8021B		mg/L		Analyzed By: BF						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.001	0.001	09/27/2019	ND	0.020	98.4	0.0200	0.209		
Toluene*	<0.001	0.001	09/27/2019	ND	0.019	95.5	0.0200	1.14		
Ethylbenzene*	<0.001	0.001	09/27/2019	ND	0.019	93.9	0.0200	1.57		
Total Xylenes*	<0.003	0.003	09/27/2019	ND	0.056	94.1	0.0600	2.12		
Total BTEX	<0.006	0.006	09/27/2019	ND						

Surrogate: 4-Bromofluorobenzene (PID) 89.8 % 81.3-128

Chloride, SM4500Cl-B		mg/L		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride*	32.0	4.00	09/24/2019	ND	100	100	100	0.00		

Sulfate 375.4		mg/L		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Sulfate*	45.9	10.0	09/25/2019	ND	21.4	107	20.0	0.558		

TDS 160.1		mg/L		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
TDS*	276	5.00	09/24/2019	ND	532	101	527	0.269		

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

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

Received:	09/23/2019	Sampling Date:	09/18/2019
Reported:	09/27/2019	Sampling Type:	Water
Project Name:	VACUUM N-6-1	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T17S-R35E-SEC6 N-LEA CTY., NM		

Sample ID: MONITOR WELL #3 (H903267-03)

BTX 8021B		mg/L		Analyzed By: BF					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	09/27/2019	ND	0.020	98.4	0.0200	0.209	
Toluene*	<0.001	0.001	09/27/2019	ND	0.019	95.5	0.0200	1.14	
Ethylbenzene*	<0.001	0.001	09/27/2019	ND	0.019	93.9	0.0200	1.57	
Total Xylenes*	<0.003	0.003	09/27/2019	ND	0.056	94.1	0.0600	2.12	
Total BTX	<0.006	0.006	09/27/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 88.2 % 81.3-128

Chloride, SM4500Cl-B		mg/L		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	28.0	4.00	09/24/2019	ND	100	100	100	0.00	

Sulfate 375.4		mg/L		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	42.3	10.0	09/25/2019	ND	21.4	107	20.0	0.558	

TDS 160.1		mg/L		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	266	5.00	09/24/2019	ND	532	101	527	0.269	

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

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

Received:	09/23/2019	Sampling Date:	09/18/2019
Reported:	09/27/2019	Sampling Type:	Water
Project Name:	VACUUM N-6-1	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T17S-R35E-SEC6 N-LEA CTY., NM		

Sample ID: MONITOR WELL #4 (H903267-04)

BTX 8021B		mg/L		Analyzed By: BF					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	09/27/2019	ND	0.020	98.4	0.0200	0.209	
Toluene*	<0.001	0.001	09/27/2019	ND	0.019	95.5	0.0200	1.14	
Ethylbenzene*	<0.001	0.001	09/27/2019	ND	0.019	93.9	0.0200	1.57	
Total Xylenes*	<0.003	0.003	09/27/2019	ND	0.056	94.1	0.0600	2.12	
Total BTX	<0.006	0.006	09/27/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 87.4 % 81.3-128

Chloride, SM4500Cl-B		mg/L		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	28.0	4.00	09/24/2019	ND	100	100	100	0.00	

Sulfate 375.4		mg/L		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	41.2	10.0	09/25/2019	ND	21.4	107	20.0	0.558	

TDS 160.1		mg/L		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
TDS*	308	5.00	09/24/2019	ND	532	101	527	0.269		

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

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

Received:	09/23/2019	Sampling Date:	09/18/2019
Reported:	09/27/2019	Sampling Type:	Water
Project Name:	VACUUM N-6-1	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T17S-R35E-SEC6 N-LEA CTY., NM		

Sample ID: RECOVERY WELL #1 (H903267-05)

BTX 8021B		mg/L		Analyzed By: BF						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.001	0.001	09/27/2019	ND	0.020	98.4	0.0200	0.209		
Toluene*	<0.001	0.001	09/27/2019	ND	0.019	95.5	0.0200	1.14		
Ethylbenzene*	<0.001	0.001	09/27/2019	ND	0.019	93.9	0.0200	1.57		
Total Xylenes*	<0.003	0.003	09/27/2019	ND	0.056	94.1	0.0600	2.12		
Total BTX	<0.006	0.006	09/27/2019	ND						

Surrogate: 4-Bromofluorobenzene (PID) 87.7 % 81.3-128

Chloride, SM4500CI-B		mg/L		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	650	4.00	09/24/2019	ND	100	100	100	0.00	

Sulfate 375.4		mg/L		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Sulfate*	74.4	10.0	09/25/2019	ND	21.4	107	20.0	0.558		

TDS 160.1		mg/L		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	1450	5.00	09/24/2019	ND	532	101	527	0.269	

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Celey D. Keene, Lab Director/Quality Manager

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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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 N-6-1		
Project Location: T17S-R35E-Sec 6 N ~ Lea County New Mexico				
		Sampler Signature: Rozanne Johnson (575) 631-9310		

Sampler Signature: Rozanne Johnson (575)631-9310

[illegible]

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Rozanne Johnson	9/23/2019	13:25	<i>[Signature]</i>	9-23-19	13:25
Relinquished by:	Date:	Time:	Received By: (Laboratory Staff)	Date:	Time:

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

Delivered By: (Circle One)

Sample Condition

CHECKED BY:

Sampler - UPS - Bus - Other:

	Cool	Intact
Yes	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
No	<input type="checkbox"/>	<input type="checkbox"/>

(Initials)

Email Results: kjones@riceswd.com
rozanne11@windstream.net



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

December 12, 2019

KATIE JONES

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: VACUUM N-6-1

Enclosed are the results of analyses for samples received by the laboratory on 12/06/19 13:50.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-19-12. 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.

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 style with a large, stylized 'C' and 'K'.

Celey D. Keene

Lab Director/Quality Manager

Analytical Results For:

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

Received:	12/06/2019	Sampling Date:	12/03/2019
Reported:	12/12/2019	Sampling Type:	Water
Project Name:	VACUUM N-6-1	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T17S-R35E-SEC6 N-LEA CTY., NM		

Sample ID: MONITOR WELL #1R (H904092-01)

BTEX 8021B		mg/L		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	12/11/2019	ND	0.022	109	0.0200	1.83	
Toluene*	<0.001	0.001	12/11/2019	ND	0.022	109	0.0200	1.64	
Ethylbenzene*	<0.001	0.001	12/11/2019	ND	0.022	108	0.0200	1.13	
Total Xylenes*	<0.003	0.003	12/11/2019	ND	0.063	105	0.0600	0.783	
Total BTEX	<0.006	0.006	12/11/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 103 % 58.2-133

Chloride, SM4500Cl-B		mg/L		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	404	4.00	12/09/2019	ND	104	104	100	0.00	

Sulfate 375.4		mg/L		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	39.7	10.0	12/09/2019	ND	20.9	105	20.0	4.15	

TDS 160.1		mg/L		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	828	5.00	12/10/2019	ND	540	102	527	2.96	

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

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

Received:	12/06/2019	Sampling Date:	12/03/2019
Reported:	12/12/2019	Sampling Type:	Water
Project Name:	VACUUM N-6-1	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T17S-R35E-SEC6 N-LEA CTY., NM		

Sample ID: MONITOR WELL #2 (H904092-02)

BTX 8021B		mg/L		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	12/11/2019	ND	0.022	109	0.0200	1.83	
Toluene*	<0.001	0.001	12/11/2019	ND	0.022	109	0.0200	1.64	
Ethylbenzene*	<0.001	0.001	12/11/2019	ND	0.022	108	0.0200	1.13	
Total Xylenes*	<0.003	0.003	12/11/2019	ND	0.063	105	0.0600	0.783	
Total BTX	<0.006	0.006	12/11/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 102 % 58.2-133

Chloride, SM4500CI-B		mg/L		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	32.0	4.00	12/09/2019	ND	104	104	100	0.00	

Sulfate 375.4		mg/L		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	42.7	10.0	12/09/2019	ND	20.9	105	20.0	4.15	

TDS 160.1		mg/L		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
TDS*	311	5.00	12/10/2019	ND	540	102	527	2.96		

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

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

Received:	12/06/2019	Sampling Date:	12/03/2019
Reported:	12/12/2019	Sampling Type:	Water
Project Name:	VACUUM N-6-1	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T17S-R35E-SEC6 N-LEA CTY., NM		

Sample ID: MONITOR WELL #3 (H904092-03)

BTX 8021B		mg/L		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	12/11/2019	ND	0.022	109	0.0200	1.83	
Toluene*	<0.001	0.001	12/11/2019	ND	0.022	109	0.0200	1.64	
Ethylbenzene*	<0.001	0.001	12/11/2019	ND	0.022	108	0.0200	1.13	
Total Xylenes*	<0.003	0.003	12/11/2019	ND	0.063	105	0.0600	0.783	
Total BTX	<0.006	0.006	12/11/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 103 % 58.2-133

Chloride, SM4500Cl-B		mg/L		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	32.0	4.00	12/09/2019	ND	104	104	100	0.00	

Sulfate 375.4		mg/L		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Sulfate*	42.6	10.0	12/09/2019	ND	20.9	105	20.0	4.15		

TDS 160.1		mg/L		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
TDS*	160	5.00	12/10/2019	ND	540	102	527	2.96		

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Analytical Results For:

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

Received:	12/06/2019	Sampling Date:	12/03/2019
Reported:	12/12/2019	Sampling Type:	Water
Project Name:	VACUUM N-6-1	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T17S-R35E-SEC6 N-LEA CTY., NM		

Sample ID: MONITOR WELL #4 (H904092-04)

BTX 8021B		mg/L		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	12/11/2019	ND	0.022	109	0.0200	1.83	GC-NC
Toluene*	<0.001	0.001	12/11/2019	ND	0.022	109	0.0200	1.64	
Ethylbenzene*	<0.001	0.001	12/11/2019	ND	0.022	108	0.0200	1.13	
Total Xylenes*	<0.003	0.003	12/11/2019	ND	0.063	105	0.0600	0.783	
Total BTEX	<0.006	0.006	12/11/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 91.5 % 58.2-133

Chloride, SM4500CI-B		mg/L		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride*	28.0	4.00	12/09/2019	ND	104	104	100	0.00		

Sulfate 375.4		mg/L		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Sulfate*	41.2	10.0	12/09/2019	ND	20.9	105	20.0	4.15		

TDS 160.1		mg/L		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
TDS*	283	5.00	12/10/2019	ND	540	102	527	2.96		

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Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

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

Received:	12/06/2019	Sampling Date:	12/04/2019
Reported:	12/12/2019	Sampling Type:	Water
Project Name:	VACUUM N-6-1	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T17S-R35E-SEC6 N-LEA CTY., NM		

Sample ID: RECOVERY WELL #1 (H904092-05)

BTEX 8021B		mg/L		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	12/11/2019	ND	0.022	109	0.0200	1.83	
Toluene*	<0.001	0.001	12/11/2019	ND	0.022	109	0.0200	1.64	
Ethylbenzene*	<0.001	0.001	12/11/2019	ND	0.022	108	0.0200	1.13	
Total Xylenes*	<0.003	0.003	12/11/2019	ND	0.063	105	0.0600	0.783	
Total BTEX	<0.006	0.006	12/11/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 105 % 58.2-133

Chloride, SM4500CI-B		mg/L		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	620	4.00	12/09/2019	ND	104	104	100	0.00	

Sulfate 375.4		mg/L		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	72.1	10.0	12/09/2019	ND	20.9	105	20.0	4.15	

TDS 160.1		mg/L		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
TDS*	1420	5.00	12/10/2019	ND	540	102	527	2.96		

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Celey D. Keene, Lab Director/Quality Manager

Notes and Definitions

GC-NC	8260 confirmation analysis was performed; initial GC results were not supported by GC/MS analysis and are reported as ND.
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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Celey D. Keene, Lab Director/Quality Manager

Cardinal Laboratories, Inc.

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

LAB Order ID # _____

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 N-6-1	
Project Location: T17S-R35E-Sec 6 N ~ Lea County New Mexico		Sampler Signature:  Rozanne Johnson (575) 631-9310	

ANALYSIS REQUEST

(Circle or Specify Method No.)

[illegible]

Relinquished by: <u>Rozanne Johnson</u>	Date: <u>12/6/2019</u>	Time: <u>13:50</u>	Received by: <u>Imogene D. Baker</u>	Date: <u>12-6-19</u>	Time: <u>13:50</u>
Relinquished by:	Date:	Time:	Received By: (Laboratory Staff)	Date:	Time:

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

REMARKS:

Email Results: kjones@riceswd.com
rozanne11@windstream.net

Delivered By: (Circle One)

[illegible]

CHECKED BY:

Sampler - UPS - Bus - Other:

	Cool	Intact
Yes	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
No	<input type="checkbox"/>	<input type="checkbox"/>

(Initials)
T.D.