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March 31st, 2016

Dr. Tomas Oberding
New Mexico Energy, Minerals, & Natural Resources
Oil Conservation Division, Environmental Bureau
1220 S. St. Francis Drive
Santa Fe, New Mexico 87504

RE: **2015 Annual Report**
Rice Operating Company
Vacuum K-35-1 Boot, UL K, Sec 35, T17S, R35E
OCD Case Number 1R425-03

Sent by E-mail

Dr. Oberding:

This letter summarizes remediation history and progress made for this project over the past calendar year. Location and site schematic maps are given in the Appendix (Figures 1 and 2, respectively). In brief:

- OCD granted termination of soil remediation requirements (soil closure) on October 13th, 2011, allowing for the cessation of groundwater withdrawals and stipulating that groundwater monitoring must continue semi-annually at wells MW-2, MW-3 and MW-4.
- A Groundwater Recovery Notification was submitted to the NMOCD on September 4, 2013 and NMOCD approved the notification on September 5, 2013. Groundwater recovery began from RW-1 on September 13, 2013. According to the NMOCD approved Groundwater Recovery Notification, ROC began sampling all the wells (MW-1, MW-2, MW-3, MW-4, and RW-1) on a semi-annual (twice a year) basis in 2013, and a quarterly basis in 2014 (Appendix Tables 1 & 2).
- Approximately 25,720 barrels of chloride-affected groundwater have been withdrawn from a near-source recovery well (RW-1) over the period June 2008 through November 2015 (Appendix Figures 3&4, Tables 1&2). This equates to approximately 900 kg of chloride removed from groundwater. Recovered groundwater has been used for Rice SWD line and well maintenance.
- Groundwater chloride concentrations in the down-gradient monitor well, MW-4, have decreased from 640 mg/l in November 2014 to 344 mg/l in November 2015 (Appendix Figure 3, Tables 1&2).

Vacuum K-35-1 Annual Report

- Groundwater chloride concentrations in the down-gradient monitor well, MW-2, have remained low, measuring 40 mg/l in November 2015 (Appendix Tables 1&2).
- Groundwater chloride concentrations in the down-gradient recovery well, RW-1, have continued their steady decline, dropping from their initial high value of 1,880 mg/l in April 2008 to 220 mg/l in November 2015 (Appendix Figure 4, Tables 1&2).
- Groundwater chloride concentrations in the up-gradient monitor well (MW-3) have risen more or less steadily from a low value of 72 mg/l measured in August of 2009 to 320 mg/l measured in November 2015 (Appendix Figure 4, Tables 1&2). This suggests that chloride impacted groundwater water from up-gradient source(s) may increase groundwater chloride concentrations beneath the subject site within the coming years.

ROC will continue with groundwater recovery and analysis during 2016, reporting to NMOCD the results by April of next year.

ROC is the service provider (agent) for the Vacuum Salt Water 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.

Please do not hesitate to contact either myself or Rice Operating Company if you have any questions or need additional information.

Sincerely,

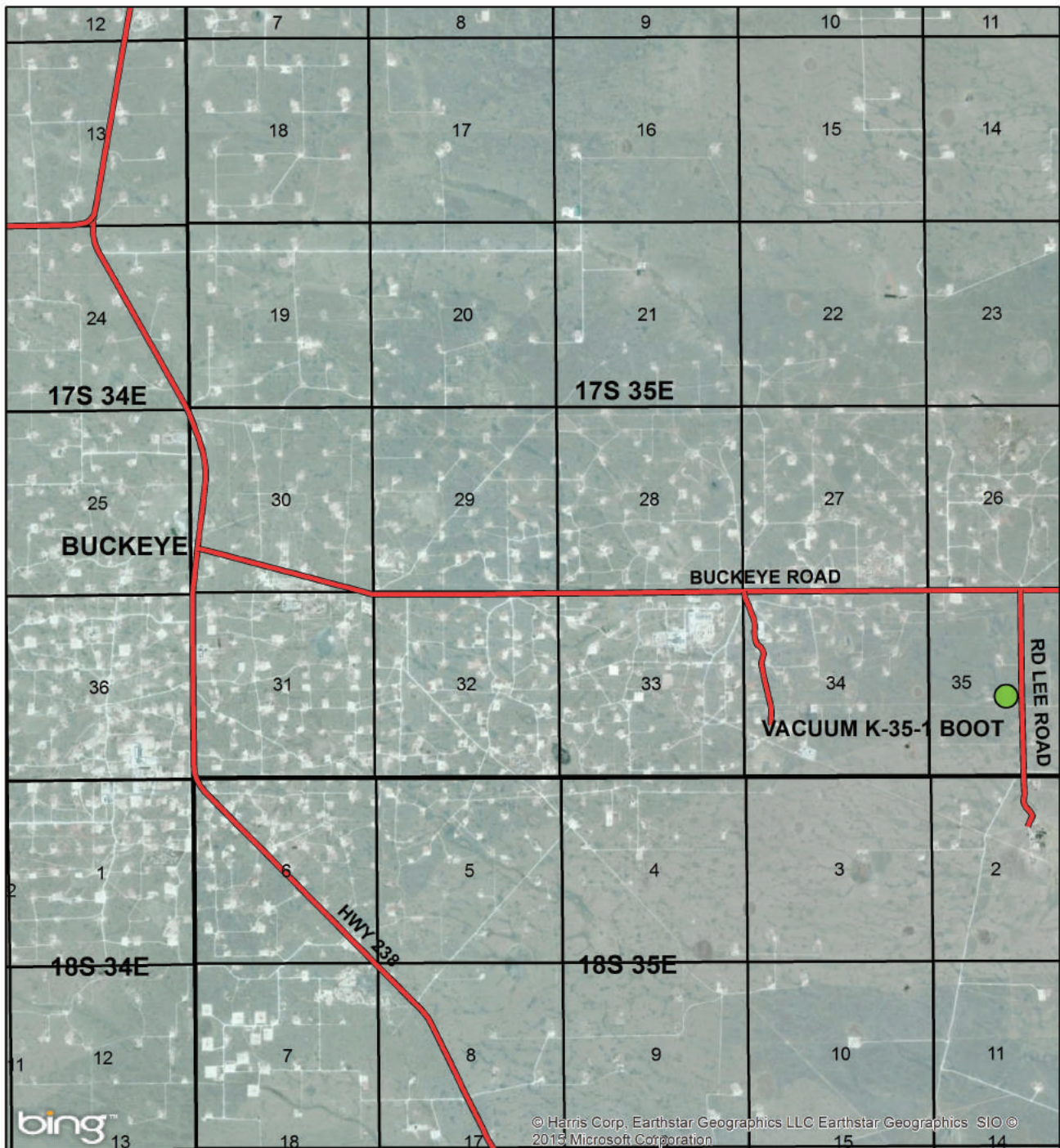
A handwritten signature in black ink, appearing to be 'L. Peter Galusky, Jr.', written in a cursive style.

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

Copy: Rice Operating Company

Attachments: Appendix

Site Location Map



VACUUM K-35-1 boot

Legals: UL/K Sec. 35
T-17-S R-35-E

Case #: 1R425-03

Figure 1



0 0.5 1
Miles

Drawing date: 3/6/15
Drafted by: T. Grieco

Area Map



Legend	
■	MARKING PLATE
×	REMOVED BOXES
◆	ACTIVE MW
✕	REMOVED MW
—	ROC ISOLATED LINE LOCATED



VACUUM K-35-1 boot

Legals: UL/K Sec. 35
T-17-S R-35-E

Case #: 1R425-03

Figure 2



0 50 100
Feet

Drawing date: 3/6/15
Drafted by: T. Grieco

Figure 3

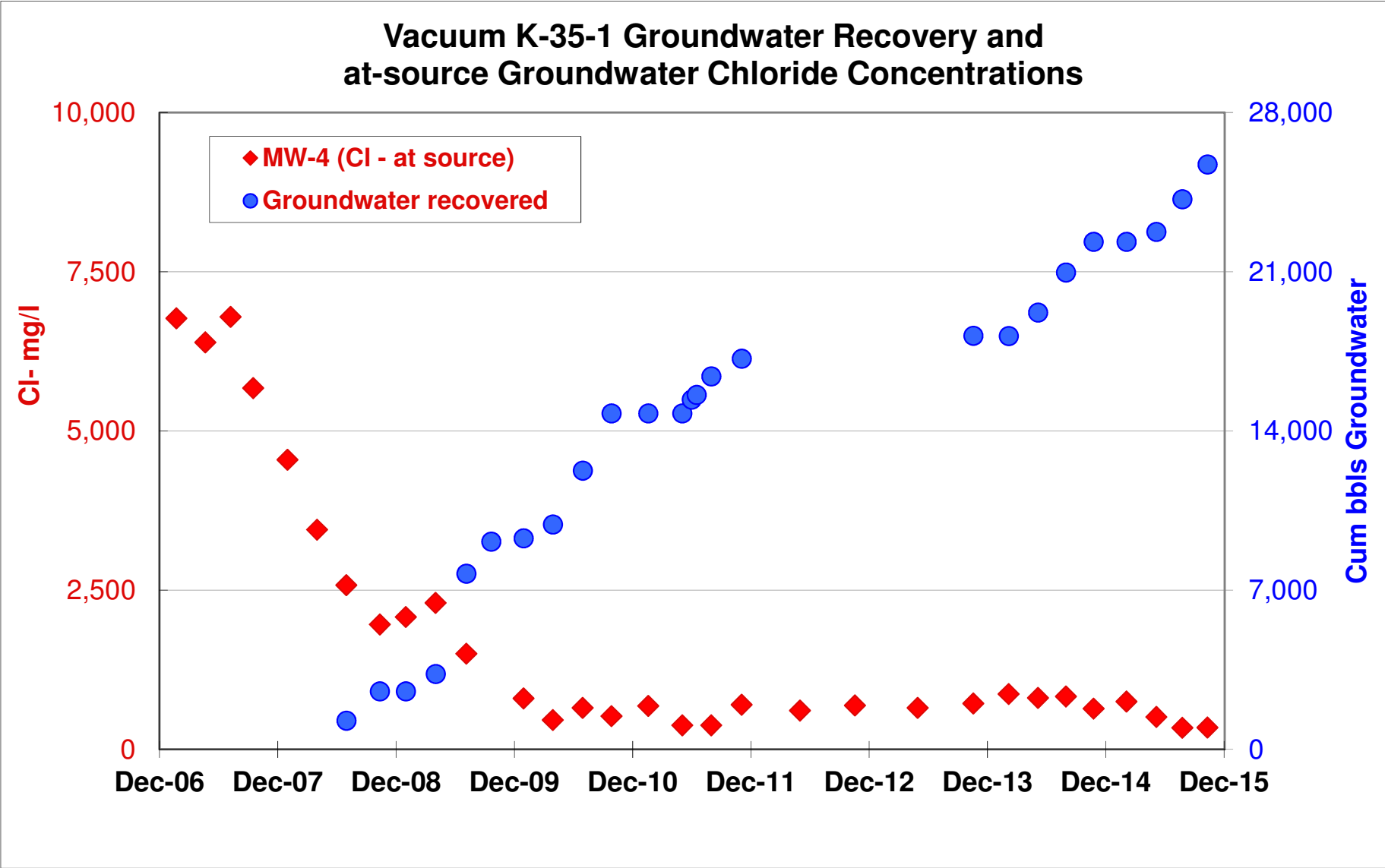


Figure 4

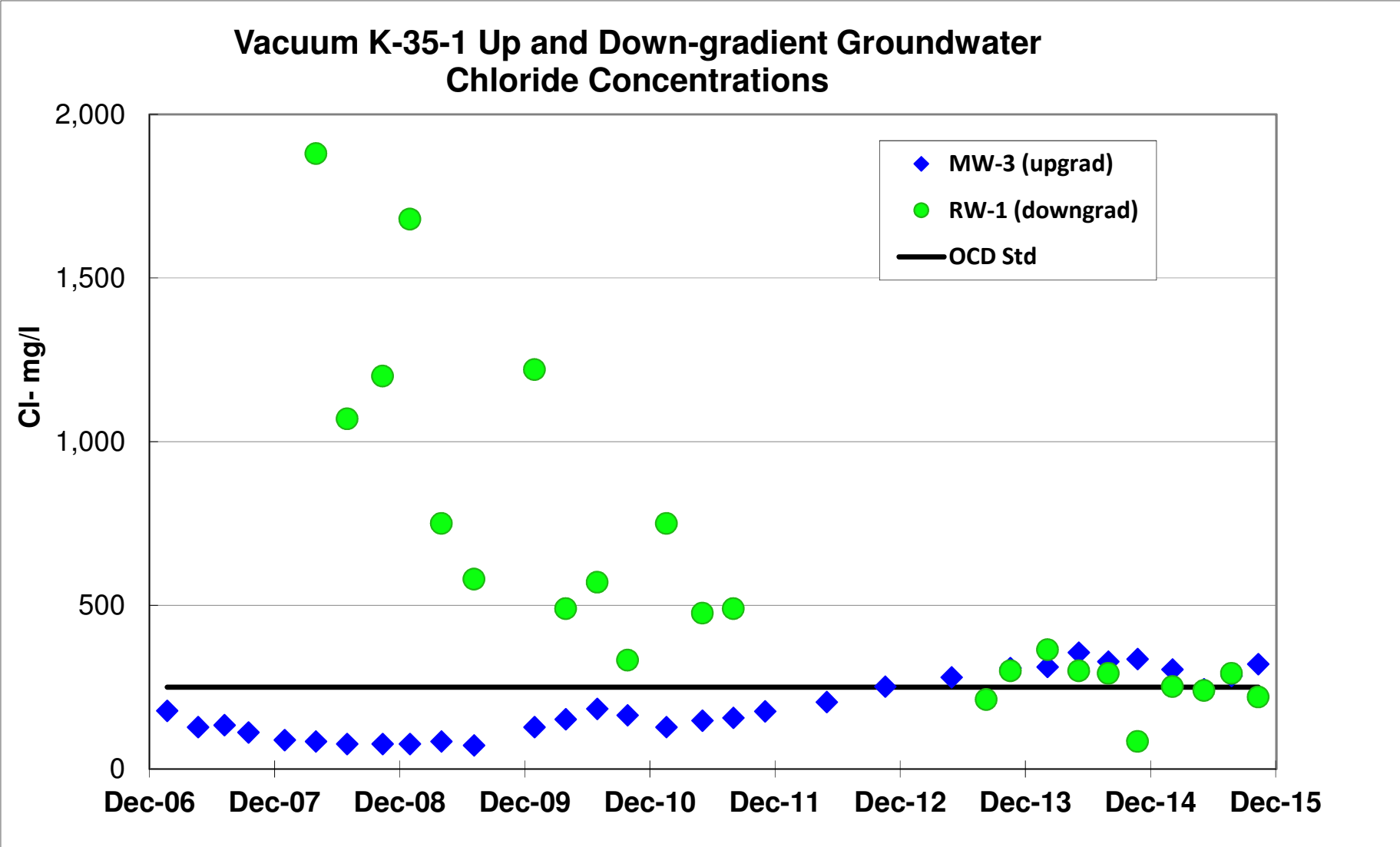


Table 1

Vacuum Field SWD System						
K-35-1 Monitor Well Water Analyses & Pumping Data						
Date	Groundwater Chloride Conc (mg/l)					cum water hailed (bbls)
	MW-1 (downgradient well)	MW-2 (down- gradient well)	MW-3 (up- gradient)	MW-4 (at- source)	RW-1 (down- gradient)	
2/21/07	1,080	29	178	6,770		
5/22/07	923	25	128	6,390		
8/7/07	1,150	27	134	6,790		
10/16/07	1,400	28	112	5,670		
1/30/08	1,300	88	88	4,550		
4/30/2008		32	84	3,450	1,880	
7/30/2008	1,360	32	76	2,580	1,070	1,269
11/10/2008	1,220	28	76	1,960	1,200	2,551
1/29/2009	1,280	28	76	2,080	1,680	2,551
5/1/2009	1,420	28	84	2,300	750	3,319
8/4/09	940	28	72	1,500	580	7,724
10/20/09	1,200					9,135
1/27/10	1,180	32	128	800	1,220	9,286
4/28/10	460	32	152	460	490	9,896
7/29/10	980	32	184	650	570	12,261
10/26/10	560	32	164	520	332	14,779
2/16/2011	800	32	128	680	750	14,779
6/1/2011	396	32	148	380	476	14,779
6/30/2011						15,381
7/15/2011						15,591
8/30/11	352	32	156	380	490	16,397
12/1/11	1,100	40	176	700		17,185
5/29/2012		36	204	610		
11/15/12		36	252	690		
5/28/13		36	280	650		
9/6/13					212	
11/15/13	1,040	36	308	720	300	18,185
3/4/14		32	312	870	364	18,181
6/3/14		36	356	810	300	19,215
8/28/14		44	328	830	292	20,965
11/21/14		32	336	640	84	22,320
3/3/15	499	40	304	750	252	22,320
6/3/15	470	60	244	510	240	22,760
8/22/15	292	36	284	340	292	24,190
11/8/15	432	40	320	344	220	25,720

Table 2**ROC - Vacuum K-35-1 boot (1R425-03)****Unit Letter K, Section 35, T17S, R35E**

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	CI	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
1	55.06	66.95	1.9	10	6/28/2006	508	1101	<0.002	<0.002	<0.002	<0.006	54.3	
1	55.15	66.95	1.9	10	10/19/2006	859	1650	<0.001	<0.001	<0.001	<0.001	59.3	Silt to clear with no odor. Field conductivity results have increased since last sampling
1					2/21/2007	1080	2160	<0.001	<0.001	<0.001	<0.001	77.9	
1	55.4	66.85	1.8	8	2/21/2007	1080	2160	<0.001	<0.001	<0.001	<0.001	77.9	Silt to clear No odor
1	55.51	66.85	1.8	8	5/22/2007	923	2330	<0.001	<0.001	<0.001	<0.001	79.8	Silt to clear No odor
1	55.74	66.85	1.8	8	8/7/2007	1150	2980	<0.001	<0.001	<0.001	<0.002	57.8	Silt to clear No odor
1	55.75	66.85	1.8	8	10/16/2007	1400	2634	<0.001	<0.001	<0.001	<0.001	70	Silt to clear No odor
1	55.92	66.8	1.7	8	1/30/2008	1300	2540	<0.001	<0.001	<0.001	<0.003	69.8	Silt to clear No odor
1	55.91	66.8	1.7	8	4/30/2008	1440	2800	<0.002	<0.002	<0.002	<0.006	78.6	Silt to clear No odor
1	56.21	66.8	1.7	8	7/30/2008	1360	2680	<0.001	<0.001	<0.001	<0.003	39	Silt to clear No odor
1	56.36	66.8	1.7	8	11/10/2008	1220	2400	<0.001	<0.001	<0.001	<0.003	74.8	Silt to clear No odor
1	55.92	66.85	1.7	8	1/30/2009	1280	2580	<0.001	<0.001	<0.001	<0.003	74	Silt to clear No odor
1	56.44	67.18	1.7	8	5/1/2009	1420	2170	<0.001	<0.001	<0.001	<0.003	68.8	Silt to clear No odor
1	56.61	67.18	1.7	6	8/4/2009	940	2250	<0.001	<0.001	<0.001	<0.003	70.1	Silt to clear No odor
1	56.84	67.18	1.7	6	10/20/2009	1200	2520	<0.001	<0.001	<0.001	<0.003	70.1	Silt to clear No odor
1	56.92	67.09	1.6	6	1/27/2010	1180	2430	<0.001	<0.001	<0.001	<0.003	77.8	Silt to clear No odor
1	56.95	67.09	1.6	6	4/28/2010	460	1050	<0.001	<0.001	<0.001	<0.003	64.1	Silt to clear No odor
1	57.13	67.09	1.6	6	7/29/2010	980	1840	<0.001	<0.001	<0.001	<0.003	73.9	Silt to clear No odor
1	57.28	67.09	1.6	6	10/26/2010	560	1330	<0.001	<0.001	<0.001	<0.003	81.2	Silt to clear No odor
1	57.24	67.12	1.6	6	2/16/2011	800	1750	<0.001	<0.001	<0.001	<0.003	68	Silt to clear No odor
1	57.15	67.12	1.6	6	6/1/2011	396	965	<0.001	<0.001	<0.001	<0.003	69.4	Silt to clear No odor
1	57.21	67.12	1.6	6	8/30/2011	352	888	<0.001	<0.001	<0.001	<0.003	75.7	Silt to clear No odor
1	57.19	67.12	1.6	6	12/1/2011	1100	2310	<0.001	<0.001	<0.001	<0.003	76.3	Silt to clear No odor
1	57.89	67.12	1.5	6	11/15/2013	1040	2250	XXX	XXX	XXX	XXX	69.4	Silt to clear No odor
1	57.98	67.12	1.5	6	3/4/2014	920	2030	XXX	XXX	XXX	XXX	79.9	Silt to clear No odor
1	58.08	67.12	1.4	6	6/3/2014	800	1720	XXX	XXX	XXX	XXX	55.2	Silt to clear No odor
1	58.16	67.12	1.4	6	8/28/2014	750	1840	XXX	XXX	XXX	XXX	73.3	Silt to clear No odor
1	57.75	67.12	1.5	6	11/21/2014	460	1070	XXX	XXX	XXX	XXX	43.3	Silt to clear No odor
1	57.67	67.12	1.5	6	3/3/2015	499	1230	XXX	XXX	XXX	XXX	74.6	Silt to clear No odor
1	58.21	67.12	1.4	6	6/3/2015	470	1250	XXX	XXX	XXX	XXX	75.6	Silt to clear No odor
1	58.43	67.12	1.4	6	8/22/2015	292	1090	XXX	XXX	XXX	XXX	42.6	Silt to clear No odor

ROC - Vacuum K-35-1 boot (1R425-03)

Unit Letter K, Section 35, T17S, R35E

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
1	58.54	67.12	1.37	6	11/8/2015	432	1210	XXX	XXX	XXX	XXX	76.3	Silt to clear No odor

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
2	54.42	65.2	1.7	10	6/28/2006	32	350	<0.002	<0.002	<0.002	<0.006	64.1	
2	54.51	65.2	1.7	10	10/19/2006	26	354	<0.001	<0.001	<0.001	<0.001	61.9	Clear some sand with no odor
2	54.75	65.45	1.7	8	2/21/2007	28.8	348	<0.001	<0.001	<0.001	<0.001	59.2	clear some sand with no odor
2	54.86	65.45	1.7	8	5/22/2007	25	376	<0.001	<0.001	<0.001	<0.001	47.9	clear some sand with no odor
2	55.12	65.45	1.7	8	8/7/2007	26.8	354	<0.001	<0.001	<0.001	<0.002	54.2	Clear Some Sand No Odor
2	XXX	XXX	XXX	8	10/16/2007	28	382	<0.001	<0.001	<0.001	<0.003	59.4	RISER AND PAD DISPLACED DEPTH READINGS NOT ACCURATE Clear some sand No odor
2	XXX	XXX	XXX	8	1/30/2008	80	418	<0.001	<0.001	<0.001	<0.003	72.9	Clear some sand No odor Well casing has been displaced
2	56.1	65.45	1.5	8	4/30/2008	32	417	<0.002	<0.002	<0.002	<0.006	64.7	Clear some sand No odor Well casing is displaced
2	56.34	65.45	1.5	8	7/30/2008	32	336	<0.001	<0.001	<0.001	<0.003	67	Clear some sand No odor
2	56.59	64.45	1.4	8	11/10/2008	28	397	<0.001	<0.001	<0.001	<0.003	69.4	Clear some sand No odor
2	56.58	65.39	1.4	8	1/30/2009	28	379	<0.001	<0.001	<0.001	<0.003	60	Clear some sand No odor
2	56.57	65.61	1.4	8	5/1/2009	28	299	<0.001	<0.001	<0.001	<0.003	60.5	Clear some sand No odor
2	56.84	65.61	1.4	6	8/4/2009	28	411	<0.001	<0.001	<0.001	<0.003	58.6	Clear some sand No odor
2	56.99	65.61	1.4	6	10/20/2009	28	406	<0.001	<0.001	<0.001	<0.003	58.6	Clear some sand No odor
2	57.1	65.6	1.4	6	1/27/2010	32	372	<0.001	<0.001	<0.001	<0.003	74.1	Clear some sand No odor
2	57.13	65.6	1.4	6	4/28/2010	32	396	<0.001	<0.001	<0.001	<0.003	75.8	Clear pumping some sand No odor
2	57.22	65.6	1.3	6	7/29/2010	32	423	<0.001	<0.001	<0.001	<0.003	64.2	Clear some sand No odor
2	57.36	65.6	1.3	6	10/26/2010	32	386	<0.001	<0.001	<0.001	<0.003	69.1	Clear some sand No odor
2	57.44	65.85	1.3	6	2/16/2011	32	407	<0.001	<0.001	<0.001	<0.003	57	Clear some sand No odor
2	57.38	65.85	1.4	6	6/1/2011	32	383	<0.001	<0.001	<0.001	<0.003	61.6	Clear some sand No odor
2	57.41	65.85	1.4	6	8/30/2011	32	362	<0.001	<0.001	<0.001	<0.003	59.2	Clear some sand No odor
2	57.51	65.85	1.3	6	12/1/2011	40	391	<0.001	<0.001	<0.001	<0.003	70.3	Clear some sand No odor

ROC - Vacuum K-35-1 boot (1R425-03)

Unit Letter K, Section 35, T17S, R35E

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	CI	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
2	57.74	65.85	1.3	6	5/29/2012	36	434	XXX	XXX	XXX	XXX	65.7	Clear some sand No odor
2	57.92	65.85	1.3	6	11/15/2012	36	389	XXX	XXX	XXX	XXX	60.5	Clear some sand No odor
2	57.9	65.85	1.3	6	5/28/2013	36	424	XXX	XXX	XXX	XXX	66.1	Clear some sand No odor
2	58.09	65.85	1.2	6	11/15/2013	36	408	XXX	XXX	XXX	XXX	62.2	Clear some sand No odor
2	58.19	65.85	1.2	6	3/4/2014	32	520	XXX	XXX	XXX	XXX	36.6	Clear some sand No odor
2	58.26	65.85	1.2	6	6/3/2014	36	280	XXX	XXX	XXX	XXX	53.2	Clear some sand No odor
2	58.34	65.85	1.2	6	8/28/2014	44	432	XXX	XXX	XXX	XXX	56.1	Clear some sand No odor
2	57.95	65.85	1.3	6	11/21/2014	32	346	XXX	XXX	XXX	XXX	47.8	Clear some sand No odor
2	57.9	65.85	1.3	6	3/3/2015	40	372	XXX	XXX	XXX	XXX	45.4	Clear some sand No odor
2	58.28	65.85	1.2	6	6/3/2015	60	450	XXX	XXX	XXX	XXX	29.8	Clear some sand No odor
2	58.59	65.85	1.2	6	8/22/2015	36	436	XXX	XXX	XXX	XXX	41.2	Clear some sand No odor
2	58.66	65.85	1.15	6	11/8/2015	40	436	XXX	XXX	XXX	XXX	57.1	Clear some sand No odor

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	CI	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
3	57.05	67.6	1.7	10	6/28/2006	140	540	<0.002	<0.002	<0.002	<0.002	117	
3	57.12	67.6	1.7	10	10/19/2006	165	570	<0.001	<0.001	<0.001	<0.001	75.8	Clear some sand No odor
3	57.35	66.72	1.5	8	2/21/2007	178	550	<0.001	<0.001	<0.001	<0.001	82	Clear some sand No odor
3	57.46	66.72	1.5	8	5/22/2007	128	530	<0.001	<0.001	<0.001	<0.001	61.4	Clear some sand No odor
3	57.75	66.72	1.4	8	8/7/2007	134	536	<0.001	<0.001	<0.001	<0.001	69	Clear some sand No odor
3	57.76	66.72	1.4	8	10/16/2007	112	537	<0.001	<0.001	<0.001	<0.003	83.1	Clear some sand No odor
3	57.92	66.75	1.4	8	1/30/2008	88	510	<0.001	<0.001	<0.001	<0.003	79.2	Some sand to clear No odor
3	57.88	66.75	1.4	8	4/30/2008	84	543	<0.002	<0.002	<0.002	<0.006	88.4	Clear some sand No odor
3	58.17	66.75	1.4	8	7/30/2008	76	418	<0.001	<0.001	<0.001	<0.003	77	Clear some sand No odor
3	58.4	66.75	1.3	8	11/10/2008	76	448	<0.001	<0.001	<0.001	<0.003	81.4	Clear some sand No odor
3	58.46	66.42	1.3	8	1/30/2009	76	442	<0.001	<0.001	<0.001	<0.003	68.7	Clear some sand No odor
3	58.45	66.42	1.3	8	5/1/2009	84	477	<0.001	<0.001	<0.001	<0.003	64	Clear some sand No odor
3	58.6	66.42	1.3	6	8/4/2009	72	424	<0.001	<0.001	<0.001	<0.003	63.8	Clear some sand No odor
3	58.88	66.42	1.2	6	10/20/2009	100	466	<0.001	<0.001	<0.001	<0.003	59.5	Clear some sand No odor
3	58.93	66.41	1.2	6	4/28/2010	152	534	<0.001	<0.001	<0.001	<0.003	74.7	Clear pumping some sand No odor
3	58.92	66.41	1.2	6	3/27/2010	128	469	<0.001	<0.001	<0.001	<0.003	68	Clear some sand No odor

ROC - Vacuum K-35-1 boot (1R425-03)

Unit Letter K, Section 35, T17S, R35E

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
3	59.18	66.41	1.2	6	7/29/2010	184	608	<0.001	<0.001	<0.001	<0.003	84.5	Clear some sand No odor
3	59.35	66.41	1.1	6	10/26/2010	164	621	<0.001	<0.001	<0.001	<0.003	95.4	Clear some sand No odor
3	59.24	66.83	1.2	6	2/16/2011	128	522	<0.001	<0.001	<0.001	<0.003	63.7	Clear some sand No odor
3	59.12	66.83	1.2	6	6/1/2011	148	539	<0.001	<0.001	<0.001	<0.003	91.1	Clear some sand No odor
3	59.19	66.83	1.2	6	8/30/2011	156	560	<0.001	<0.001	<0.001	<0.003	91.7	Clear some sand No odor
3	59.2	66.83	1.2	6	12/1/2011	176	595	<0.001	<0.001	<0.001	<0.003	92.4	Clear some sand No odor
3	59.55	66.83	1.2	6	5/29/2012	204	676	XXX	XXX	XXX	XXX	71.9	Clear some sand No odor
3	59.63	66.83	1.2	6	11/15/2012	252	742	XXX	XXX	XXX	XXX	91.2	Clear some sand No odor
3	59.68	66.83	1.1	6	5/28/2013	280	823	XXX	XXX	XXX	XXX	81.7	Clear some sand No odor
3	59.82	66.83	1.1	6	11/15/2013	308	856	XXX	XXX	XXX	XXX	74	Clear some sand No odor
3	59.98	66.83	1.1	6	3/4/2014	312	790	XXX	XXX	XXX	XXX	96	Clear some sand No odor
3	60.07	66.83	1.1	6	6/3/2014	356	910	XXX	XXX	XXX	XXX	96.6	Clear some sand No odor
3	60.08	66.83	1.1	6	8/28/2014	328	926	XXX	XXX	XXX	XXX	84	Clear some sand No odor
3	59.74	66.83	1.1	6	11/21/2014	336	764	XXX	XXX	XXX	XXX	74.4	Clear some sand No odor
3	59.67	66.83	1.1	6	3/3/2015	304	848	XXX	XXX	XXX	XXX	89	Clear some sand No odor
3	60.2	66.83	1.1	6	6/3/2015	244	1040	XXX	XXX	XXX	XXX	42.5	Clear some sand No odor
3	60.44	66.83	1	6	8/22/2015	284	964	XXX	XXX	XXX	XXX	41.8	Clear some sand No odor
3	60.62	66.83	0.99	6	11/8/2015	320	1090	XXX	XXX	XXX	XXX	48.1	Clear some sand No odor

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
4	57.32	68.05	1.7	10	10/19/2006	1980	3660	<0.001	<0.001	<0.001	<0.001	83	Clear some sand No odor
4	57.59	68.33	1.7	8	2/21/2007	6770	9320	<0.001	<0.001	<0.001	<0.001	178	Clear some sand No odor
4					2/21/2007	6770	9320	<0.001	<0.001	<0.001	<0.001	178	
4	58.16	68.33	1.6	10	5/22/2007	6390	10400	<0.001	<0.001	<0.001	<0.001	183	Clear some sand No odor
4	58.39	68.33	1.6	8	8/7/2007	6790	13000	<0.001	<0.001	<0.001	<0.002	89.5	Clear some sand No odor
4	58.41	68.33	1.6	8	10/16/2007	4000	7420	<0.001	<0.001	<0.001	<0.003	91.4	Clear some sand No odor
4	58.56	68.35	1.6	8	1/30/2008	4550	8260	<0.001	<0.001	<0.001	<0.003	89.9	Some sand to clear No odor
4	58.08	68.35	1.6	8	4/30/2008	3450	6430	<0.002	<0.002	<0.002	<0.006	99.2	Clear some sand No odor
4	58.36	68.35	1.6	8	7/30/2008	2580	4990	<0.001	<0.001	<0.001	<0.003	109	Clear some sand No odor
4	58.47	68.35	1.6	8	11/10/2008	1960	3860	<0.001	<0.001	<0.001	<0.003	81.8	Clear some sand No odor
4	58.49	68.27	1.6	8	1/30/2009	2080	3540	<0.001	<0.001	<0.001	<0.003	88.9	Clear some sand No odor

ROC - Vacuum K-35-1 boot (1R425-03)

Unit Letter K, Section 35, T17S, R35E

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	CI	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
4	58.59	68.27	1.5	8	5/1/2009	2300	4600	<0.001	<0.001	<0.001	<0.003	74.5	Clear some sand No odor
4	58.73	68.27	1.5	6	8/4/2009	1500	2960	<0.001	<0.001	<0.001	<0.003	75.8	Clear some sand No odor
4	58.89	68.27	1.5	6	10/20/2009	1200	2540	<0.001	<0.001	<0.001	<0.003	72.7	Clear some sand No odor
4	59.08	68.16	1.5	8	4/28/2010	460	1250	<0.001	<0.001	<0.001	<0.003	69.9	Clear some sand No odor
4	59.04	68.16	1.5	8	1/27/2010	800	1800	<0.001	<0.001	<0.001	<0.003	86	Clear some sand No odor
4	59.27	66.16	1.4	8	7/29/2010	650	1430	<0.001	<0.001	<0.001	<0.003	76.9	Clear some sand No odor
4	59.42	68.16	1.4	8	10/26/2010	520	1300	<0.001	<0.001	<0.001	<0.003	75	Clear some sand No odor
4	59.15	68.15	1.4	8	2/16/2011	680	1600	<0.001	<0.001	<0.001	<0.003	72	Clear some sand No odor
4	59.19	68.15	1.4	8	6/1/2011	380	941	<0.001	<0.001	<0.001	<0.003	69.1	Clear some sand No odor
4	59.35	68.15	1.4	8	8/30/2011	380	908	<0.001	<0.001	<0.001	<0.003	71.8	Clear some sand No odor
4	59.32	68.15	1.4	8	12/1/2011	700	1470	<0.001	<0.001	<0.001	<0.003	78.3	Clear some sand No odor
4	59.64	68.15	1.4	8	5/29/2012	610	1560	XXX	XXX	XXX	XXX	81.5	Clear some sand No odor
4	59.72	68.15	1.3	8	11/15/2012	690	1660	XXX	XXX	XXX	XXX	80.6	Clear some sand No odor
4	59.83	68.15	1.3	8	5/28/2013	650	1550	XXX	XXX	XXX	XXX	71	Clear some sand No odor
4	59.99	68.15	1.3	8	11/15/2013	720	1630	XXX	XXX	XXX	XXX	75.5	Clear some sand No odor
4	60.07	68.15	1.3	8	3/4/2014	870	1560	XXX	XXX	XXX	XXX	81.8	Clear some sand No odor
4	60.23	68.15	1.3	8	6/3/2014	810	1730	XXX	XXX	XXX	XXX	78.8	Clear some sand No odor
4	60.31	68.15	1.3	8	8/28/2014	830	1840	XXX	XXX	XXX	XXX	75.5	Clear some sand No odor
4	59.87	68.15	1.3	8	11/21/2014	640	1350	XXX	XXX	XXX	XXX	67.5	Clear some sand No odor
4	59.79	68.15	1.3	8	3/3/2015	750	1770	XXX	XXX	XXX	XXX	50	Clear some sand No odor
4	60.35	68.15	1.2	8	6/3/2015	510	1210	XXX	XXX	XXX	XXX	71.6	Clear some sand No odor
4	60.55	68.15	1.2	8	8/22/2015	340	1220	XXX	XXX	XXX	XXX	49.4	Clear some sand No odor
4	60.68	68.15	1.2	8	11/8/2015	344	1210	XXX	XXX	XXX	XXX	59.6	Clear some sand No odor

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	CI	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
RW-1	56.54	92.9	23.6	500	4/30/2008	1880	920	<0.002	<0.002	<0.002	<0.006	77.7	Clear some sand No odor
RW-1	XXX	92.9	XXX	XXX	7/30/2008	1070	2200	<0.001	<0.001	<0.001	<0.003	61	Clear some sand No odor
RW-1	XXX	92.9	XXX	XXX	11/10/2008	1200	2360	<0.001	<0.001	<0.001	<0.003	57.9	Clear some sand No odor
RW-1	XXX	92.9	XXX	XXX	1/30/2009	1680	3170	<0.001	<0.001	<0.001	<0.003	103	Clear No odor
RW-1	XXX	92.9	XXX	50	5/1/2009	750	1570	<0.001	<0.001	<0.001	<0.003	54.3	Clear No odor
RW-1	XXX	92.9	XXX	50	8/4/2009	580	1290	<0.001	<0.001	<0.001	<0.003	60.5	Clear No odor

ROC - Vacuum K-35-1 boot (1R425-03)
Unit Letter K, Section 35, T17S, R35E

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
RW-1	XXX	92.2	XXX	50	10/20/2009	730	1620	<0.001	<0.001	<0.001	<0.003	59	Clear No odor
RW-1	XXX	92.9	XXX	XXX	4/28/2010	490	1160	<0.001	<0.001	<0.001	<0.003	72.1	Clear No odor
RW-1	XXX	92.9	XXX	100	1/27/2010	1220	2360	<0.001	<0.001	<0.001	<0.003	82.8	Clear No odor
RW-1	XXX	92.9	XXX	Pumping	7/29/2010	570	1330	<0.001	<0.001	<0.001	<0.003	65.2	Clear No odor
RW-1	XXX	92..90	XXX	Pumping	10/26/2010	332	888	<0.001	<0.001	<0.001	<0.003	58.5	Clear No odor
RW-1	XXX	92.9	XXX	100	2/16/2011	750	1670	<0.001	<0.001	<0.001	<0.003	71.3	Clear No odor
RW-1	XXX	92.9	XXX	100	6/1/2011	476	1130	<0.001	<0.001	<0.001	<0.003	60.5	Clear No odor
RW-1	XXX	92.9	XXX	100	8/30/2011	490	1090	<0.001	<0.001	<0.001	<0.003	63.1	Clear No odor
RW-1	XXX	92.9	XXX	100	12/1/2011	XXX	XXX	XXX	XXX	XXX	XXX	XXX	Well not sampled Solar pump down
RW-1	XXX	XXX	XXX	XXX	9/6/2013	212	645	XXX	XXX	XXX	XXX	XXX	XXX
RW-1	XXX	92.9	XXX	100	11/15/2013	300	779	XXX	XXX	XXX	XXX	65.5	Clear No Odor
RW-1	XXX	92.9	XXX	100	3/4/2014	364	902	XXX	XXX	XXX	XXX	85	Clear No odor
RW-1	XXX	92.9	XXX	Running	6/3/2014	300	838	XXX	XXX	XXX	XXX	60	Clear No odor
RW-1	XXX	92.9	XXX	running	8/28/2014	292	762	XXX	XXX	XXX	XXX	58.6	Clear No odor
RW-1	XXX	92.9	XXX	100	11/21/2014	84	376	XXX	XXX	XXX	XXX	51.2	Clear No odor
RW-1	XXX	92.9	XXX	100	3/3/2015	252	1040	XXX	XXX	XXX	XXX	45.9	Clear No odor
RW-1	XXX	92.9	XXX	Running	6/3/2015	240	1010	XXX	XXX	XXX	XXX	49.1	Clear No odor
RW-1	XXX	92.9	XXX	Running	8/22/2015	292	812	XXX	XXX	XXX	XXX	59.7	Clear No odor
RW-1	XXX	92.9	0	Running	11/8/2015	220	636	XXX	XXX	XXX	XXX	60.2	Clear No odor



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

November 19, 2015

KATIE JONES

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: VACUUM JUNCTION K-35-1

Enclosed are the results of analyses for samples received by the laboratory on 11/11/15 14:36.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-13-5. 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:	11/11/2015	Sampling Date:	11/08/2015
Reported:	11/19/2015	Sampling Type:	Water
Project Name:	VACUUM JUNCTION K-35-1	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Judy Garcia
Project Location:	T17S-R35E-SEC35 K LEA COUNTY, NM		

Sample ID: MONITOR WELL #1 (H502988-01)

Chloride, SM4500Cl-B		mg/L		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride*	432	4.00	11/16/2015	ND	100	100	100	3.92		
Sulfate 375.4		mg/L		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Sulfate*	76.3	10.0	11/17/2015	ND	20.6	103	20.0	15.3		
TDS 160.1		mg/L		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
TDS*	1210	5.00	11/17/2015	ND	504	95.6	527	3.30		

Sample ID: MONITOR WELL #2 (H502988-02)

Chloride, SM4500Cl-B		mg/L		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride*	40.0	4.00	11/16/2015	ND	100	100	100	3.92		
Sulfate 375.4		mg/L		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Sulfate*	57.1	10.0	11/17/2015	ND	20.6	103	20.0	15.3		
TDS 160.1		mg/L		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
TDS*	436	5.00	11/18/2015	ND	504	95.6	527	3.30		

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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:	11/11/2015	Sampling Date:	11/08/2015
Reported:	11/19/2015	Sampling Type:	Water
Project Name:	VACUUM JUNCTION K-35-1	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Judy Garcia
Project Location:	T17S-R35E-SEC35 K LEA COUNTY, NM		

Sample ID: MONITOR WELL #3 (H502988-03)

Chloride, SM4500Cl-B		mg/L		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride*	320	4.00	11/16/2015	ND	100	100	100	3.92		
Sulfate 375.4		mg/L		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Sulfate*	48.1	10.0	11/19/2015	ND	20.7	104	20.0	3.83		
TDS 160.1		mg/L		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
TDS*	1090	5.00	11/17/2015	ND	504	95.6	527	3.30		

Sample ID: MONITOR WELL #4 (H502988-04)

Chloride, SM4500Cl-B		mg/L		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride*	344	4.00	11/16/2015	ND	100	100	100	3.92		
Sulfate 375.4		mg/L		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Sulfate*	59.6	10.0	11/19/2015	ND	20.7	104	20.0	3.83		
TDS 160.1		mg/L		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
TDS*	1210	5.00	11/17/2015	ND	504	95.6	527	3.30		

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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: 11/11/2015
 Reported: 11/19/2015
 Project Name: VACUUM JUNCTION K-35-1
 Project Number: NOT GIVEN
 Project Location: T17S-R35E-SEC35 K LEA COUNTY, NM

 Sampling Date: 11/08/2015
 Sampling Type: Water
 Sampling Condition: Cool & Intact
 Sample Received By: Judy Garcia

Sample ID: RECOVERY WELL #1 (H502988-05)

Chloride, SM4500Cl-B		mg/L		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride*	220	4.00	11/16/2015	ND	100	100	100	3.92		
Sulfate 375.4		mg/L		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Sulfate*	60.2	10.0	11/19/2015	ND	20.7	104	20.0	3.83		
TDS 160.1		mg/L		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
TDS*	636	5.00	11/18/2015	ND	504	95.6	527	3.30		

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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.

LAB Order ID # H502988

Sampler Signature: Rozanne Johnson (575)631-9310

[illegible]

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

Sampler - UPS - Bus - Other:

(Initials)

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