

L. Peter Galusky, Jr. P.E.

20055 Laredo Lane Monument, CO 80132

Tel: 719-339-6791 E-mail: lpg@terra.pro

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**

Vacuum F-35 & G-35 SWDs, Sec 35, T17S, R35E

OCD Case No. AP-59

Sent by E-mail

Dr. Oberding:

This letter summarizes the results of groundwater monitoring over the past year pursuant to the NMOCD approved Abatement Plan for Rice Operating Company (ROC)'s Vacuum F&G-35 project. Site and monitor well locations are given in the Appendix (Figures 1 & 2, respectively). Graphical data summaries are given in Figures 3-6 and well-specific historical data are given in Tables 1 & 2 of the Appendix.

Vacuum F-35

- Groundwater chloride concentrations in the at-source monitor well (MW-1) dropped from 280 mg/l in 2014 to 172 mg/l in 2015 (Appendix – Figure 3, Table 1), which is less than values measured in previous years. Groundwater chlorides in the down-gradient well, MW-3S (shallow) and MW-3D (deep), have remained low averaging 66 mg/l in MW-3S and 50 mg/l in MW-3D (deep).
- Total BTEX concentrations in MW-1 averaged 0.268 mg/l in 2015 vs 0.141 mg/l in 2014 (Appendix – Figure 4, Table 1). However, this is a small increase relative to the historic high value of 5.941 mg/l measured in March 2005 and still indicates that dissolved hydrocarbons appear to be a diminishing concern at this location.

Vacuum G-35

- Groundwater chloride concentrations in the at-source monitor well (MW-1) were essentially unchanged, averaging 80 mg/l in 2015 vs 78 mg/l in 2014 (Appendix - Figure 5, Table 2). Groundwater chlorides dropped in the near-source down-gradient monitor well (MW-4), averaging 166 mg/l in 2015 vs 238 mg/l in 2014. Average chloride concentrations in the down-gradient well MW-3S (shallow) was essentially unchanged, averaging 332 mg/l in 2015 vs 330 mg/l in 2014. Average chloride concentrations in the

Rice Operating Company – Vacuum F&G 35 Annual Report

down-gradient well MW-3D (deep) dropped from 675 mg/l in 2014 to 519 mg/l in 2015.

- Total BTEX concentrations dropped in the at-source well (MW-1) averaged somewhat higher at 0.0405 mg/l in 2015 vs 0.0080 mg/l in 2014 (Appendix - Figure 6, Table 2). Average total BTEX concentrations in the near-source down-gradient well (MW-4) dropped, from 0.4935 mg/l in 2014 to 0.1855 mg/l in 2015.

Taken together, it appears that chloride is still attenuating at both locations through dilution of a relatively small original mass and that BTEX is also gradually being reduced at both locations through natural microbial metabolism.

ROC will continue to monitor groundwater semi-annually (two sampling events) through 2016. Upon analysis of this additional data, we will consider if a change in course of action is warranted. As it presently stands, it appears that natural attenuation (dilution) will effectively reduce groundwater chloride and BTEX concentrations at the affected locations and that the chloride mass is sufficiently small so that down-gradient impacts will be negligible.

ROC is the service provider (agent) for the Vacuum SWD System and has no ownership of any portion of the pipeline, well, or facility. The System is owned by a consortium of oil producers, System Parties, who provide all operating capital on a percentage ownership/usage basis. The Vacuum system is now abandoned.

We appreciate your consideration of this Annual Report. Please do not hesitate to contact either Rice Operating Company or myself if you have any questions or need additional information.

Sincerely,

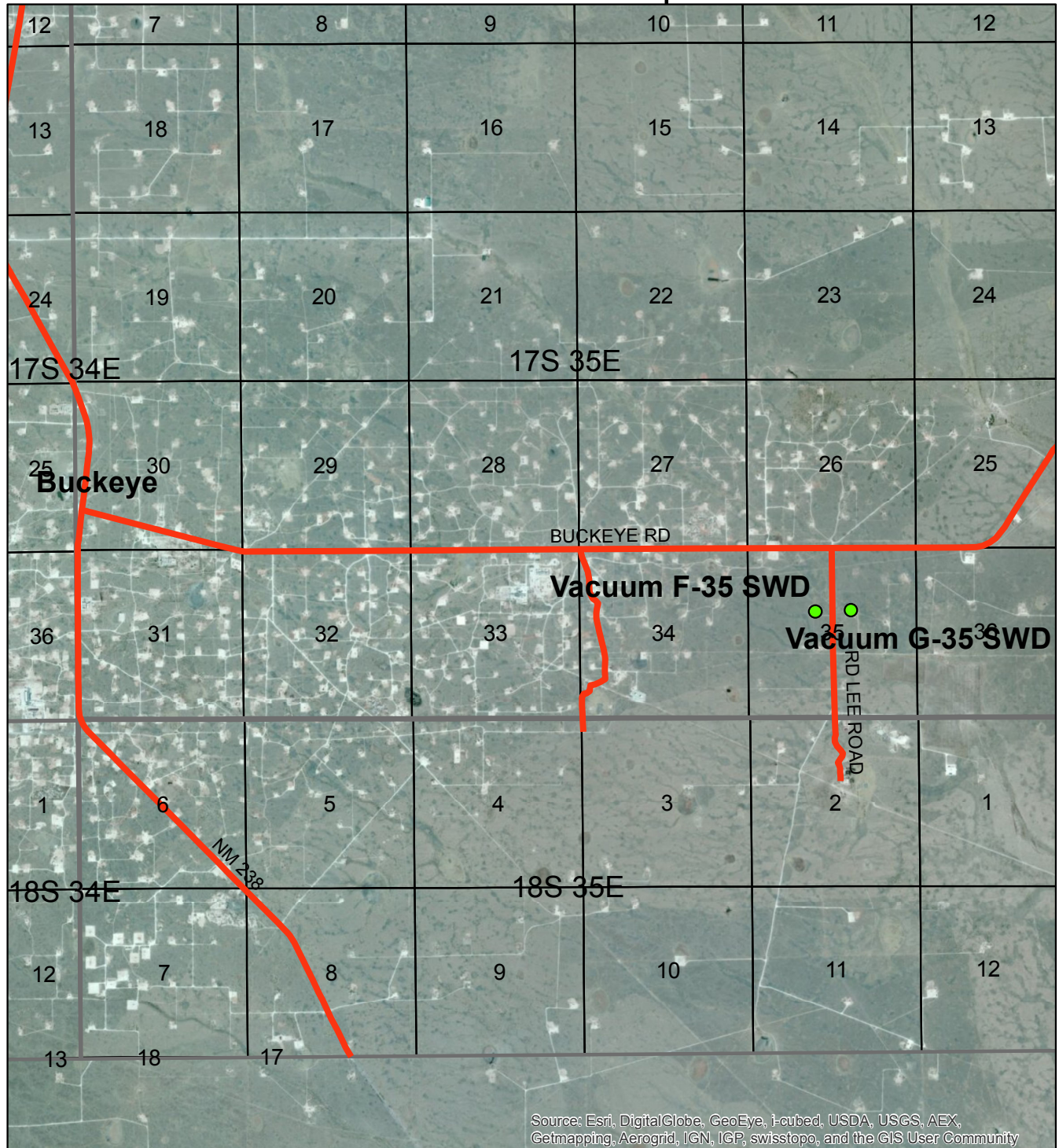


L. Peter Galusky, Jr. P.E.
NM Prof. Engineer No. 22561

Copy: Rice Operating Company

Attachments: Appendix

Site Location Map



***Vacuum
F-35 SWD
& G-35 SWD***
 Legals: UL/F, G sec. 35
 T17S R35E
 NMOCD Case #: AP-59

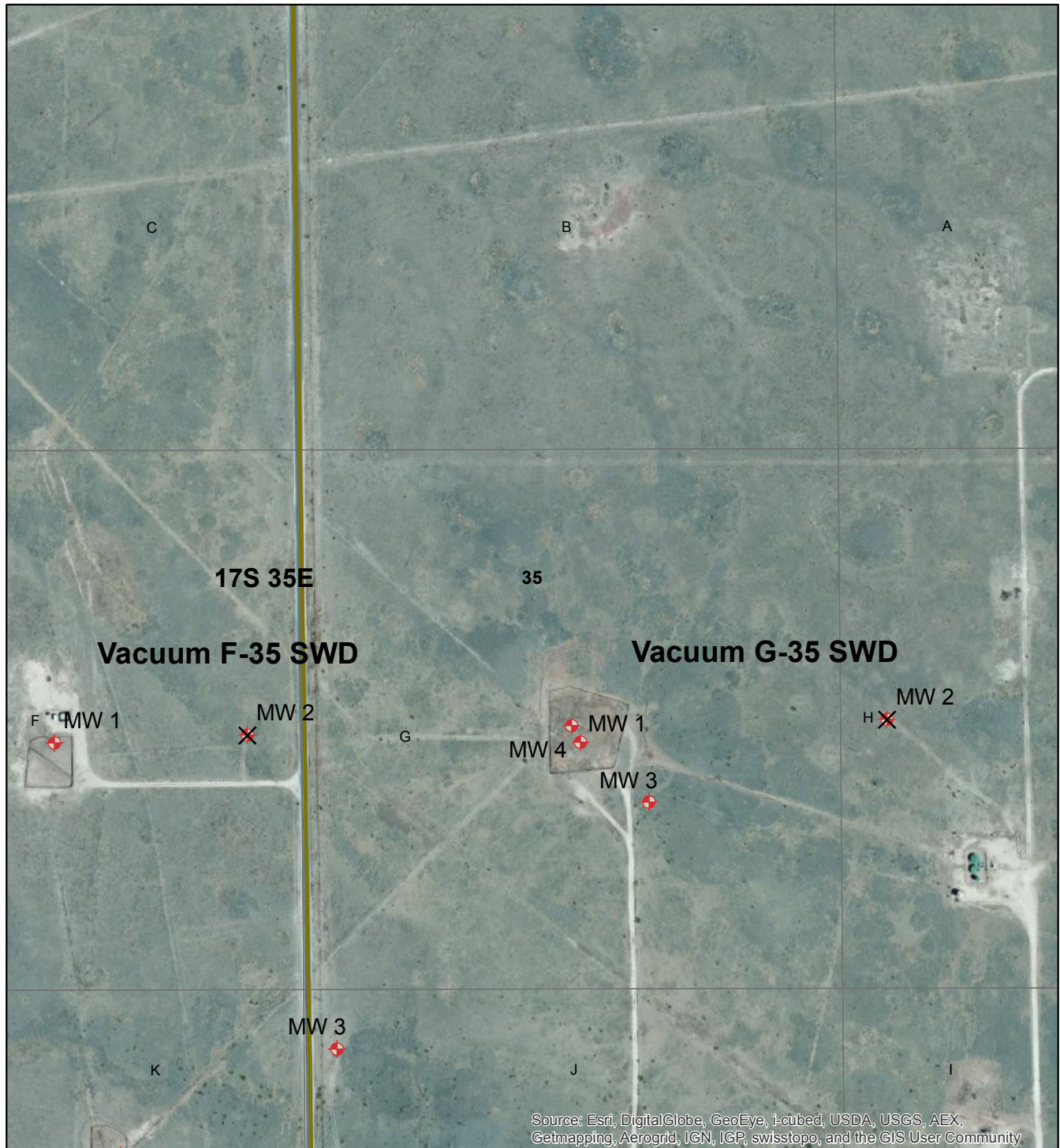
Figure 1



0 0.175 0.35 0.7 1.05 1.4
 Miles

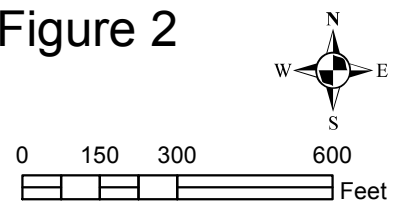
Drawing date: 3/24/14
 Drawn by: L. Flores

Monitor Well Locations



***Vacuum
F-35 SWD
& G-35 SWD***
Legals: UL/F, G sec. 35
T17S R35E
NMOCD Case #: AP-59

Figure 2



Drawing date: 3/24/14
Drafted by: L. Flores

Figure 3

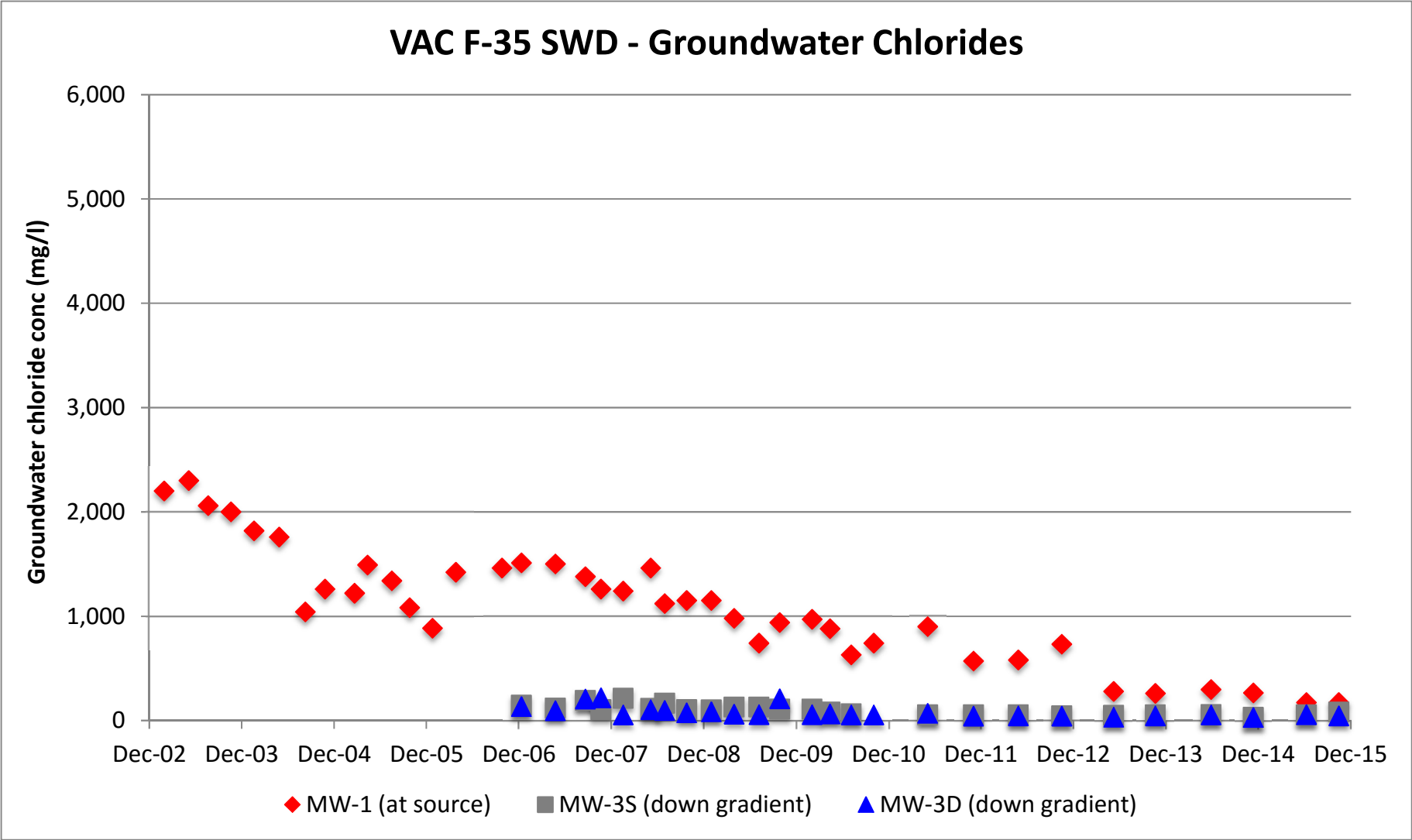


Figure 4

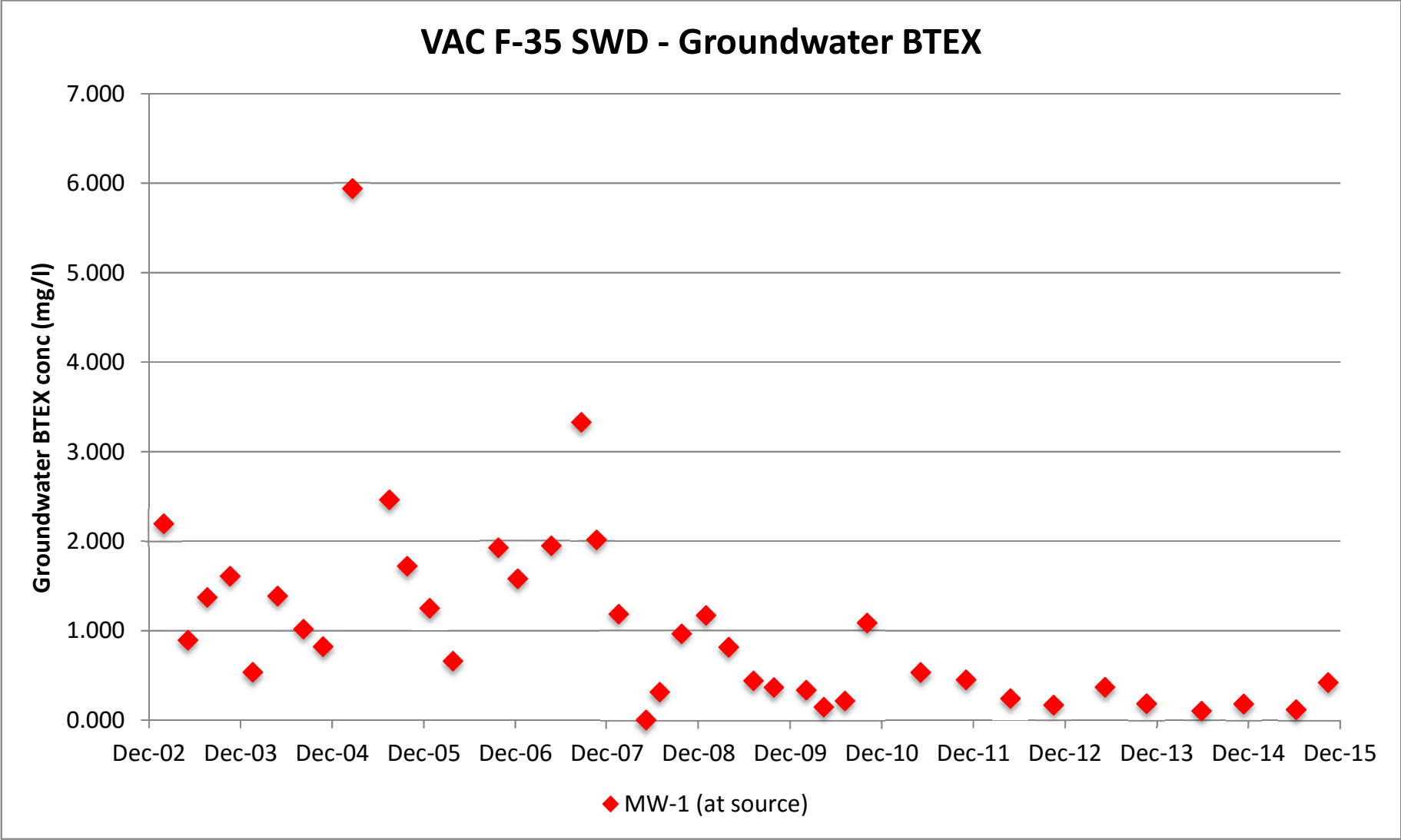


Table 1**ROC - Vacuum F-35 (AP-59)****Unit Letter F, Section 35, T17S, R35E**

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	CI	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
1	58	66	1.3	3.9	1/10/2002	5200	9425	0.05	0.053	0.05	0.09	5	
1	XXX	XXX	XXX	XXX	5/15/2002	3720	7050	0.744	0.207	0.51	0.309	3.2	
1	XXX	XXX	XXX	XXX	8/19/2002	3630	6040	0.705	0.172	0.112	0.076	10.7	
1	XXX	XXX	XXX	XXX	11/11/2002	3720	6020	1.21	0.343	0.835	0.431	2.8	
1	XXX	XXX	XXX	XXX	2/28/2003	2200	4040	0.909	0.84	0.321	0.124	26.2	
1	XXX	XXX	XXX	XXX	6/5/2003	2300	4180	0.632	0.134	0.061	0.067	20.3	
1	XXX	XXX	XXX	XXX	8/21/2003	2060	4000	0.617	0.36	0.202	0.192	4.9	
1	XXX	XXX	XXX	XXX	11/19/2003	2000	3760	0.797	0.301	0.264	0.248	5.1	
1	58.2	64	0.93	2.78	2/18/2004	1819	3932	0.349	0.038	0.121	0.027	0.19	
1	58.5	64	0.88	2.64	5/27/2004	1759	4008	0.726	0.176	0.268	0.215	8.7	
1	58.2	64.2	0.96	2.9	9/7/2004	1040	3000	0.429	0.221	0.143	0.2247	19.9	mod. odor; gray
1	57.81	64.2	1.02	3.1	11/24/2004	1260	2740	0.0489	0.313	0.209	0.2507	51	mod. odor; gray
1	57.18	64.2	1.2	3.6	3/21/2005	1220	2210	2.2	1.61	0.848	1.283	110	mod. odor; gray
1					5/11/2005	1490	2970	686	451	374	176.2	24.6	
1	58.4	64.2	0.9	2.8	8/15/2005	1340	2890	0.819	0.393	0.666	0.584	69.5	
1	57.45	64.2	1.1	4	10/25/2005	1080	2540	0.779	0.243	0.394	0.3062	72.7	
1	57.38	64.2	1.1	4	1/23/2006	886	2080	0.447	0.222	0.28	0.3006	88.2	Heavy skim of Oil: Septic Odor
1	57.58	64.2	1.1	4	4/25/2006	1420	3040	0.227	0.0956	0.174	0.1614	62.5	
1	XXX	64.2	XXX	XXX	10/24/2006	1460	3190	0.462	0.489	0.23	0.745	45.2	Clear with a strong septic odor
1	XXX	64.2	XXX	5	1/9/2007	1510	2980	0.486	0.577	0.185	0.333	67.2	Clear Strong Septic Odor
1	XXX	64.2	XXX	XXX	5/23/2007	1500	2850	0.557	0.387	0.323	0.681	44.4	Clear Strong Septic Odor
1	XXX	64.2	XXX	XXX	9/19/2007	1380	2902	0.902	0.706	0.582	1.14	23.2	Clear Strong Septic Odor
1	XXX	64.2	XXX	XXX	11/19/2007	1260	2642	0.719	0.203	0.429	0.665	44.2	Clear Strong septic odor
1	XXX	64.2	XXX	XXX	2/15/2008	1240	2650	0.305	0.099	0.218	0.563	49.7	Clear Strong septic odor
1	58.38	63.08	0.8	4	6/3/2008	1460	2840	<0.002	<0.002	<0.002	<0.006	25.4	Sand/silt to clear Strong septic odor
1	XXX	XXX	XXX	XXX	7/28/2008	1120	2510	0.051	0.023	0.066	0.172	35	Clear Strong septic odor
1	59.12	64.2	0.8	5	10/23/2008	1150	2580	0.193	0.013	0.232	0.526	27	Clear Sheen present Strong septic odor

ROC - Vacuum F-35 (AP-59)

Unit Letter F, 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	XXX	XXX	XXX	XXX	1/28/2009	1150	2440	0.431	0.044	0.332	0.362	16.8	Clear Sheen Strong septic odor
1	XXX	XXX	XXX	XXX	4/28/2009	980	1970	0.26	0.038	0.234	0.282	15.2	Clear Sheen Strong septic odor
1	XXX	XXX	XXX	5	8/5/2009	740	1660	0.063	0.024	0.116	0.236	18.7	Clear Sheen Strong hydrocarbon odor
1	XXX	XXX	XXX	5	10/26/2009	940	1890	0.034	0.019	0.136	0.177	15.6	Clear Sheen Strong hydrocarbon odor
1	XXX	XXX	XXX	5	3/3/2010	970	2010	0.041	0.02	0.122	0.154	15.8	Sheen present Strong septic odor
1	XXX	XXX	XXX	6	5/12/2010	880	1840	0.004	0.011	0.05	0.08	22.1	Clear Sheen present Strong septic odor
1	XXX	XXX	XXX	6	8/4/2010	630	1540	0.017	0.022	0.059	0.117	23.8	Clear Sheen present Strong septic odor
1	XXX	XXX	XXX	6	11/1/2010	740	1850	0.075	0.115	0.312	0.584	18.1	Clear Sheen present Strong septic odor
1	XXX	XXX	XXX	6	6/2/2011	900	2170	0.071	0.032	0.191	0.239	<10.0	Clear Sheen present Strong septic odor
1	XXX	XXX	XXX	6	11/30/2011	570	1310	0.057	0.011	0.2	0.183	31.3	Clear Sheen present Strong septic odor
1	XXX	XXX	XXX	6	5/25/2012	580	1420	0.061	0.016	0.078	0.085	30.8	Gray color/Product present with strong septic odor
1	XXX	XXX	XXX	6	11/13/2012	730	1900	0.04	0.013	0.058	0.057	34.9	Gray color/Product present with strong septic odor
1	XXX	XXX	XXX	6	6/6/2013	280	887	0.06	0.059	0.099	0.149	63.1	Gray color/Product present with a strong septic odor
1	XXX	XXX	XXX	6	11/18/2013	260	810	0.04	0.015	0.064	0.063	26.2	Gray color/Product present with a strong septic odor
1	XXX	XXX	XXX	6	6/26/2014	296	834	0.025	0.004	0.033	0.04	44.1	Gray color/Product present with a strong septic odor

Unit Letter F, 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	XXX	XXX	XXX	6	12/10/2014	264	810	0.048	0.006	0.075	0.05	55.2	Gray color/Product present w/strong septic odor
1	XXX	XXX	XXX	6	6/24/2015	172	914	0.018	<0.005	0.08	0.018	75	Gray Color/Product Present with a strong septic odor
1	XXX	XXX	0	2	11/11/2015	172	762	0.053	0.052	0.213	0.1	55	Gray Color/Product Present with a strong septic odor

[illegible]

ROC - Vacuum F-35 (AP-59)**Unit Letter F, 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 Shallow	52.35	102.75	32.8	100	1/9/2007	144	512	<0.001	0.015	<0.001	<0.001	99	Clear Slight Odor
3 Shallow	52.5	102.75	32.7	100	5/23/2007	117	494	<0.001	0.0013	<0.001	<0.001	56.9	Clear Slight Odor
3 Shallow	52.82	102.75	32.5	100	9/19/2007	192	789	<0.002	<0.002	<0.002	<0.006	73.5	Clear Slight Odor
3 Shallow	52.82	102.75	32.5	150	11/19/2007	104	467	<0.002	<0.002	<0.002	<0.006	66.3	Clear Slight odor
3 Shallow	52.92	102.75	32.4	200	2/5/2008	212	821	<0.002	<0.002	<0.002	<0.006	60.6	Clear Slight odor
3 Shallow	52.93	102.75	32.4	200	4/28/2008	116	502	<0.002	<0.002	<0.002	<0.006	63.1	Clear Slight odor
3 Shallow	53.12	102.75	32.3	200	7/28/2008	164	650	<0.001	<0.001	<0.001	<0.003	58	Clear Slight odor
3 Shallow	53.31	102.75	32.1	200	10/22/2008	104	690	<0.001	<0.001	<0.001	<0.003	74.3	Clear Slight odor
3 Shallow	53.38	101.09	31	200	1/28/2009	100	445	XXX	XXX	XXX	XXX	65	Clear Slight odor
3 Shallow	53.44	101.09	31	200	4/28/2009	128	579	XXX	XXX	XXX	XXX	74	Clear Slight odor
3 Shallow	53.6	101.09	31	200	8/5/2009	128	560	XXX	XXX	XXX	XXX	70.6	Clear Slight odor
3 Shallow	53.67	101.09	31	200	10/26/2009	108	535	XXX	XXX	XXX	XXX	63.1	Clear Slight odor
3 Shallow	53.84	101.09	31	200	3/4/2010	108	541	XXX	XXX	XXX	XXX	77.4	Clear Slight odor
3 Shallow	53.89	101.09	31	200	5/12/2010	80	442	XXX	XXX	XXX	XXX	79.2	Clear Slight odor
3 Shallow	53.93	101.09	31	200	8/3/2010	64	430	XXX	XXX	XXX	XXX	63.6	Clear Slight odor

ROC - Vacuum F-35 (AP-59)**Unit Letter F, 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 Shallow	54.03	101.09	31	200	11/2/2010	570	1320	XXX	XXX	XXX	XXX	19.4	Clear Slight odor
3 Shallow	54.13	101.09	31	200	6/2/2011	52	375	XXX	XXX	XXX	XXX	61.8	Clear Slight odor
3 Shallow	54.26	101.09	30	200	11/30/2011	52	420	XXX	XXX	XXX	XXX	64.6	Clear Slight odor
3 Shallow	54.5	101.09	30	200	5/25/2012	52	406	XXX	XXX	XXX	XXX	54.9	Clear Slight odor
3 Shallow	54.55	101.09	30	200	11/14/2012	44	393	XXX	XXX	XXX	XXX	61.9	Clear Slight odor
3 Shallow	54.62	101.09	30	200	6/7/2013	292	1090	XXX	XXX	XXX	XXX	47.2	Clear Slight odor
3 Shallow	54.86	101.09	30	200	11/17/2013	52	380	XXX	XXX	XXX	XXX	60.5	Clear Slight odor
3 Shallow	55.04	101.09	30	200	6/27/2014	56	358	XXX	XXX	XXX	XXX	59.9	Clear Slight Odor
3 Shallow	54.67	101.09	30	200	12/10/2014	28	246	XXX	XXX	XXX	XXX	29	Clear Slight Odor
3 Shallow	55.17	101.09	30	200	6/24/2015	52	510	XXX	XXX	XXX	XXX	99	Clear Slight Odor
3 Shallow	55.51	101.09	29.63	200	11/11/2015	80	500	XXX	XXX	XXX	XXX	62.3	Clear Slight Odor

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
3 Deep	52.35	102.75	32.8	100	1/9/2007	133	500	<0.001	0.0103	<0.001	<0.001	86.9	Clear Slight Odor
3 Deep	52.5	102.75	32.7	100	5/23/2007	91.9	452	<0.001	0.00241	<0.001	<0.001	47.5	Clear Slight Odor
3 Deep	52.82	102.75	32.5	100	9/19/2007	204	772	<0.002	<0.002	<0.002	<0.006	72.8	Clear Slight Odor

ROC - Vacuum F-35 (AP-59)**Unit Letter F, 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 Deep	52.82	102.75	32.5	150	11/19/2007	216	735	<0.002	<0.002	<0.002	<0.006	64.6	Clear Slight odor
3 Deep	52.92	102.75	32.4	200	2/5/2008	52	393	<0.002	<0.002	<0.002	<0.006	59.8	Clear Slight odor
3 Deep	52.93	102.75	32.4	200	4/28/2008	104	485	<0.002	<0.002	<0.002	<0.006	65.2	Clear Slight odor
3 Deep	53.12	102.75	32.2	200	7/28/2008	96	510	<0.001	<0.001	<0.001	<0.003	52	Clear Slight odor
3 Deep	53.31	102.75	32.1	200	10/22/2008	72	665	<0.001	<0.001	<0.001	<0.003	160	Clear Slight odor
3 Deep	53.38	101.09	31	200	1/28/2009	84	477	XXX	XXX	XXX	XXX	65	Clear Slight odor
3 Deep	53.44	101.09	31	200	4/28/2009	60	416	XXX	XXX	XXX	XXX	61.9	Clear Slight odor
3 Deep	53.6	101.09	30.9	200	8/5/2009	56	397	XXX	XXX	XXX	XXX	58.4	Clear Slight odor
3 Deep	53.67	101.09	30.8	200	10/26/2009	208	542	XXX	XXX	XXX	XXX	42	Clear Slight odor
3 Deep	53.84	101.09	30.7	200	3/4/2010	56	428	XXX	XXX	XXX	XXX	70.4	Clear Slight odor
3 Deep	53.89	101.09	30.7	200	5/12/2010	64	397	XXX	XXX	XXX	XXX	74.1	Clear Slight odor
3 Deep	53.93	101.09	30.7	200	8/3/2010	52	396	XXX	XXX	XXX	XXX	59.8	Clear Slight odor
3 Deep	54.03	101.09	30.6	200	11/2/2010	52	382	XXX	XXX	XXX	XXX	64.7	Clear Slight odor
3 Deep	54.13	101.09	30.5	200	6/2/2011	68	423	XXX	XXX	XXX	XXX	66.3	Clear Slight odor
3 Deep	54.26	101.09	30.4	200	11/30/2011	40	352	XXX	XXX	XXX	XXX	59.5	Clear Slight odor
3 Deep	54.5	101.09	30.3	200	5/25/2012	44	368	XXX	XXX	XXX	XXX	54.6	Clear Slight odor
3 Deep	54.55	101.09	30.3	200	11/14/2012	40	362	XXX	XXX	XXX	XXX	55.6	Clear Slight odor
3 Deep	54.62	101.09	30.2	200	6/7/2013	32	599	XXX	XXX	XXX	XXX	24.8	Clear Slight Odor
3 Deep	54.86	101.09	30	200	11/17/2013	44	343	XXX	XXX	XXX	XXX	60.3	Clear Slight Odor
3 Deep	55.04	101.09	29.9	200	6/27/2014	52	354	XXX	XXX	XXX	XXX	60.2	Clear Slight Odor
3 Deep	54.67	101.09	30.2	200	12/10/2014	28	252	XXX	XXX	XXX	XXX	25.6	Clear Slight Odor
3 Deep	55.07	101.09	29.9	200	6/24/2015	56	394	XXX	XXX	XXX	XXX	52.2	Clear Slight Odor
3 Deep	55.51	101.09	29.63	200	11/11/2015	44	578	XXX	XXX	XXX	XXX	34.2	Clear Slight Odor

Figure 5

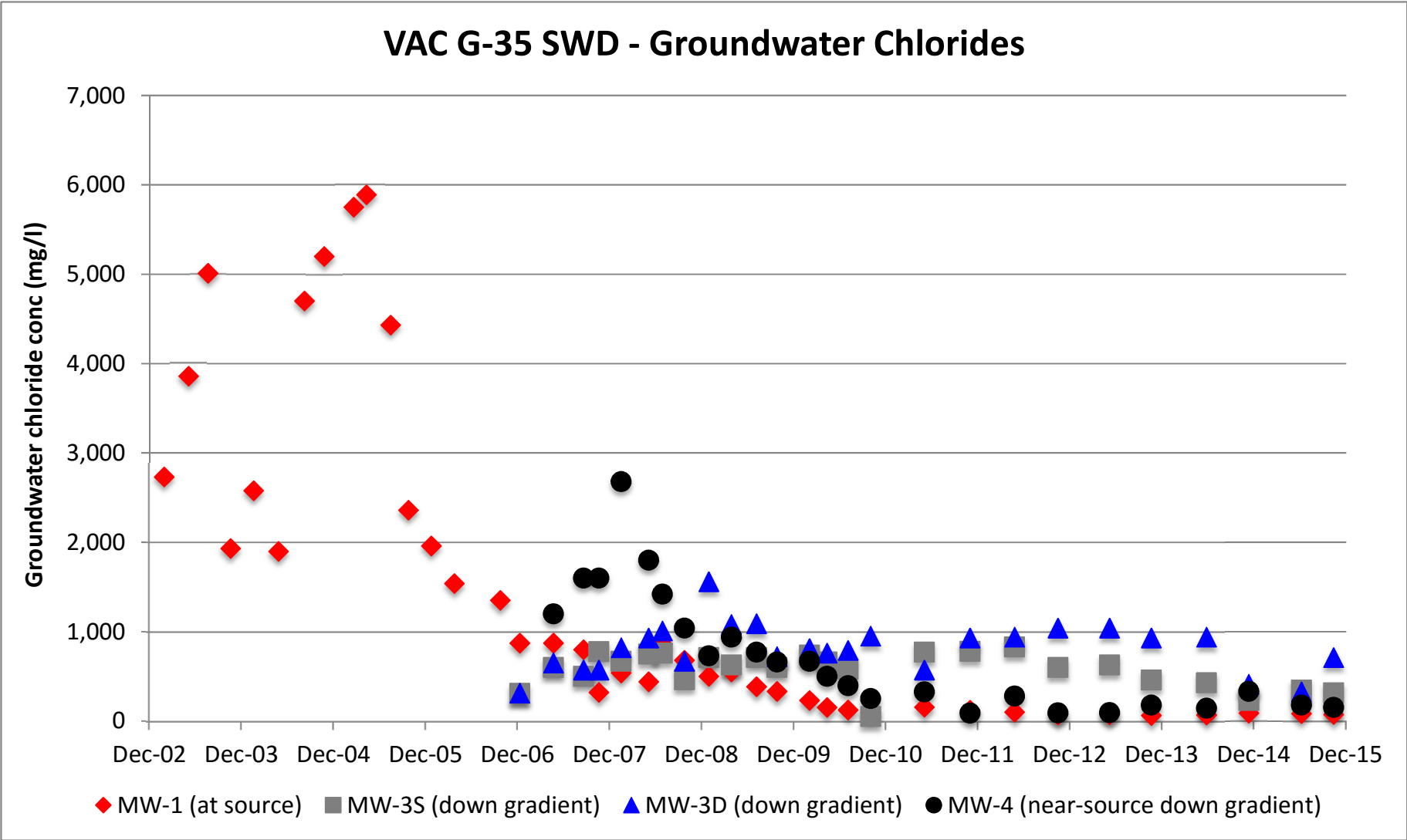


Figure 6

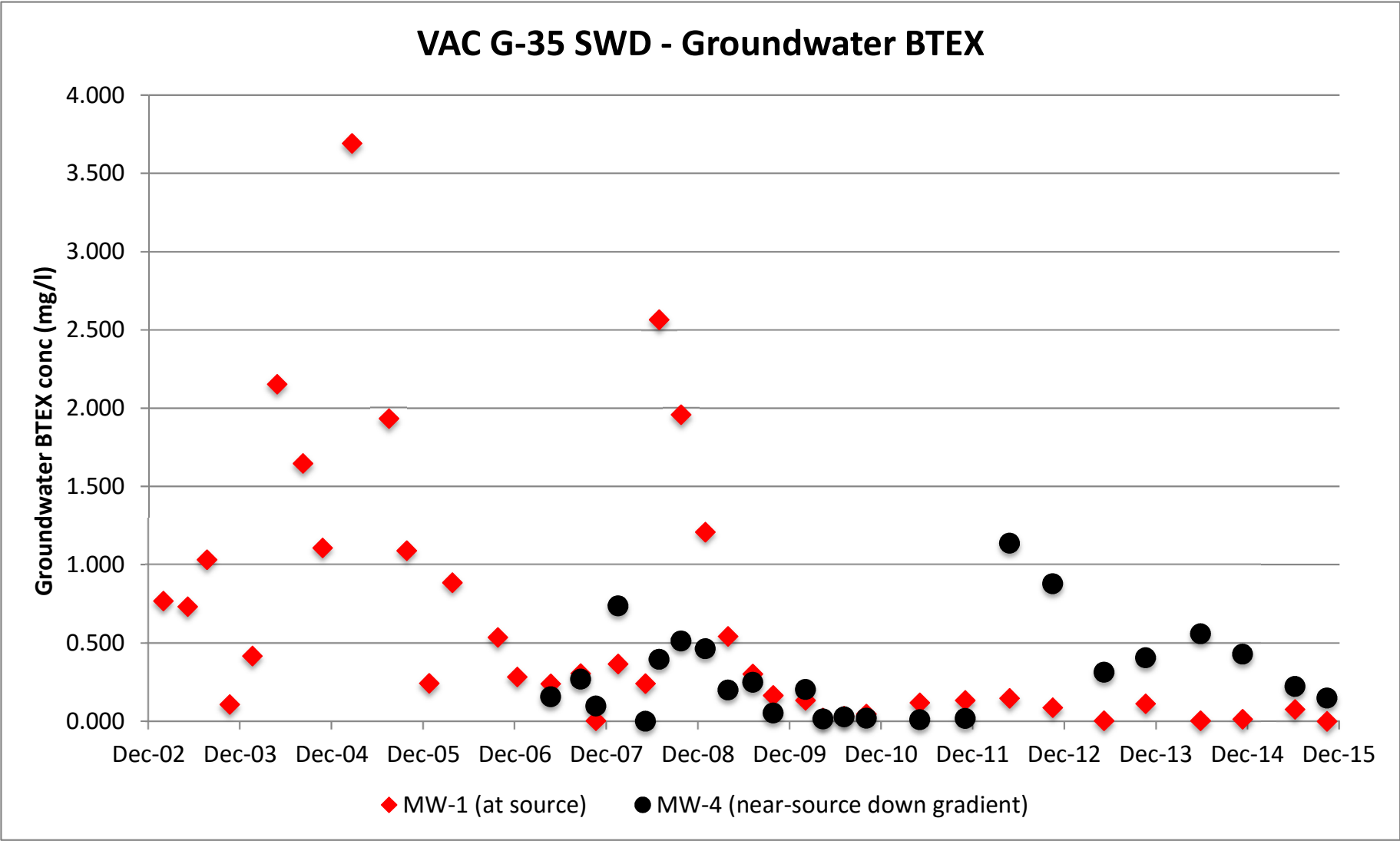


Table 2**ROC - Vacuum G-35 (AP-59)****Unit Letter G, Section 35, T17S, R35E**

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
1	53.6	64.3	1.8	5.3	1/10/2002	568	1284	0.011	0.022	0.034	0.055	23	
1	52.89	65.03	1.94	6	5/15/2002	1950	3260	0.414	0.057	0.131	0.065	2.1	oil skim
1	53.02	64.75	1.877	5.75	8/19/2002	1950	3850	0.705	0.598	0.209	0.253	7	
1	53.08	64.7	1.859	5.6	11/11/2002	3630	6740	0.921	0.078	0.154	0.131	5.8	oil skim; yellow
1	53.06	64.19	1.78	5.3	2/28/2003	2730	4770	0.713	0.01	0.018	0.027	24.6	
1	53.2	64.2	1.75	5.28	5/22/2003	3860	7320	0.583	0.002	0.12	0.027	5.3	
1	53.21	64.1	1.74	5.2	8/21/2003	5010	8850	0.689	0.004	0.307	0.032	3.5	
1	53.29	64.2	1.746	5.2	11/19/2003	1930	3590	0.012	0.002	0.09	0.003	20.9	
1	53.3	64.15	1.73	5.2	2/18/2004	2579	5000	0.059	<0.002	0.35	0.007	1.49	
1	52.9	64.15	1.8	5	5/27/2004	1899	4188	1.17	0.308	0.357	0.319	2.15	
1	52.6	64.4	1.89	5.66	9/7/2004	4700	8270	1.11	0.0525	0.346	0.1382	17.7	mod. odor; gray
1	52.91	64.4	1.84	5.5	11/24/2004	5200	10400	0.881	0.0226	0.133	0.0717	799	mod. odor; gray
1	52.4	64.4	1.92	5.8	3/21/2005	5750	9190	2.76	0.247	0.399	0.2862	136	mod. odor; gray; sheen
1					5/11/2005	5890	10700	2490	466	672	693	9.75	
1	52.35	64.4	1.93	5.8	8/15/2005	4430	6960	1.07	0.226	0.396	0.2417	126	
1	52.51	64.4	1.9	6	10/25/2005	2360	4420	0.799	0.0607	0.146	0.0839	166	light skim oil: strong septic odor
1	52.46	64.4	1.9	6	1/23/2006	1960	3540	0.141	J[0.00537]	0.078	0.0229	80.5	light skim oil: strong septic odor
1	52.7	64.4	1.9	6	4/25/2006	1540	3280	0.749	0.0143	0.093	0.0282	67.4	
1	52.88	64.4	1.8	6	10/25/2006	1350	2800	0.394	0.0204	0.0774	0.0438	45.2	Light
1	53.08	64.4	1.8	6	1/9/2007	873	1950	0.188	<0.001	0.0883	0.00764	34.6	Light skim of oil Clear to dark gray Strong septic odor
1	53.2	64.4	1.8	10	5/24/2007	873	1820	0.143	0.00735	0.0664	0.0227	41.2	Light skim of oil Clear to dark gray Strong septic odor
1	53.37	64.4	1.8	10	9/20/2007	800	1738	0.189	0.004	0.082	0.029	22.2	Light skim of oil Clear to dark gray Strong septic odor
1	53.39	64.4	1.8	10	11/20/2007	320	969	0.003	<0.002	<0.002	<0.006	35.3	Light skim of oil Clear to dark gray Strong septic odor
1	53.68	64.4	1.7	6	2/4/2008	540	1380	0.159	0.061	0.087	0.058	23.1	Light skim of oil Clear to dark gray Strong septic odor

ROC - Vacuum G-35 (AP-59)
Unit Letter G, 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	53.74	64.4	1.7	6	4/29/2008	440	1150	0.109	0.02	0.074	0.038	22.4	Light skim of oil Clear to dark gray Strong septic odor
1	53.81	64.4	1.7	6	7/29/2008	860	2160	0.915	0.261	0.74	0.649	<10	Light skim of oil Clear to dark gray Strong septic odor
1	53.9	64.4	1.7	6	10/23/2008	680	1790	0.785	0.192	0.531	0.45	<10	Clear turning to dark gray Light sheen Strong septic odor
1	53.77	64.45	1.7	6	1/26/2009	500	1330	0.62	0.044	0.372	0.173	<10	Clear turning to dark gray Light sheen Strong septic odor
1	54.04	64.45	1.7	6	4/27/2009	550	1300	0.216	0.004	0.212	0.11	14.9	Clear turning to dark gray Light sheen Strong septic odor
1	54.23	64.45	1.6	6	8/6/2009	384	1090	0.091	0.016	0.086	0.109	14.8	Clear turning to dark gray Light sheen Strong septic odor
1	54.32	64.45	1.6	6	10/23/2009	332	896	0.04	0.001	0.086	0.037	10.9	Clear turning to dark gray Light sheen Strong septic odor
1	54.5	64.39	1.6	6	3/3/2010	232	795	0.013	0.004	0.075	0.041	22.6	Light sheen Clear to dark gray Strong septic odor
1	54.55	64.39	1.6	6	5/13/2010	152	599	<0.001	<0.001	0.016	0.005	29.9	Light sheen Clear to dark gray Strong septic odor
1	54.6	64.39	1.6	6	8/3/2010	124	520	0.003	0.001	0.023	0.006	24.1	Light sheen Clear to dark gray Strong septic odor
1	54.65	64.39	1.6	6	11/1/2010	100	489	0.003	0.003	0.031	0.008	25.4	Light sheen Clear to dark gray Strong septic odor

ROC - Vacuum G-35 (AP-59)
Unit Letter G, 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	54.81	64.39	1.5	6	6/2/2011	156	565	0.018	<0.001	0.076	0.025	30.9	Light sheen Clear to dark gray Strong septic odor
1	54.96	64.39	1.5	6	11/30/2011	120	526	0.043	0.001	0.078	0.011	29.1	Light sheen Clear to dark gray Strong septic odor
1	55.08	64.39	1.5	6	5/25/2012	100	488	0.072	0.003	0.054	0.017	26.2	Light sheen Clear to dark gray Strong septic odor
1	55.24	64.39	1.5	6	11/13/2012	68	421	0.017	<0.001	0.058	0.012	30.9	Light sheen Clear to dark gray Strong septic odor
1	55.33	64.39	1.4	6	6/6/2013	72	441	0.002	0.001	<0.001	<0.003	38.6	Light sheen Clear to dark gray Strong septic odor
1	55.53	64.39	1.4	6	11/18/2013	64	425	0.022	0.002	0.08	0.007	40.1	Light sheen Clear to dark gray Strong septic odor
1	55.79	64.39	1.4	6	6/26/2014	68	408	0.003	<0.001	<0.001	<0.003	38	Light sheen Clear to dark gray Strong septic odor
1	55.65	64.39	1.4	6	12/9/2014	88	432	0.01	0.002	0.001	<0.003	44.6	Light sheen Clear to dark gray Strong septic odor
1	55.77	64.39	1.4	6	6/23/2015	84	492	0.02	<0.001	0.054	0.003	45.4	Light sheen Clear to dark gray Strong septic odor
1	55.98	64.39	1.35	6	11/12/2015	76	422	0.004	<0.001	<0.001	<0.003	52.8	Light sheen Clear to dark gray Strong septic odor

ROC - Vacuum G-35 (AP-59)
Unit Letter G, Section 35, T17S, R35E

[illegible]

ROC - Vacuum G-35 (AP-59)
Unit Letter G, 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
MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
3 Shallow	52.77	103.1	32.7	100	1/9/2007	311	804	<0.001	0.0191	<0.001	<0.001	48.9	Clear Slight odor
3 Shallow	52.9	103.1	32.6	100	5/24/2007	599	1070	<0.001	j[0.000380]	<0.001	<0.001	34.5	Clear Slight odor
3 Shallow	53.11	103.1	32.5	120	9/20/2007	500	1373	<0.002	<0.002	<0.002	<0.006	39.1	Clear Strong odor
3 Shallow	53.15	103.1	32.4	150	11/20/2007	776	1670	<0.002	<0.002	<0.002	<0.006	40.4	Clear Strong odor
3 Shallow	53.29	103.1	32.3	200	2/5/2008	670	1590	<0.002	<0.002	<0.002	<0.006	34.3	Clear Strong odor
3 Shallow	53.31	103.1	32.3	200	4/29/2008	750	1790	<0.002	<0.002	<0.002	<0.006	31.8	Clear Strong odor
3 Shallow	53.47	103.1	32.2	200	7/29/2008	760	1870	<0.001	<0.001	<0.001	<0.003	27	Clear Strong odor
3 Shallow	53.6	103.1	32.1	200	10/22/2008	464	1570	<0.001	<0.001	<0.001	<0.003	68.6	Clear Strong odor
3 Shallow	53.68	103	32	200	1/28/2009	710	1690	XXX	XXX	XXX	XXX	24.3	Clear Strong odor
3 Shallow	53.79	103	32	200	4/27/2009	630	1790	XXX	XXX	XXX	XXX	18.8	Clear Strong odor
3 Shallow	53.59	103	32.1	200	8/6/2009	710	1680	XXX	XXX	XXX	XXX	16.5	Clear Strong odor
3 Shallow	53.97	103	31.8	200	10/23/2009	600	1320	XXX	XXX	XXX	XXX	17.3	Clear Strong odor
3 Shallow	54.13	103	31.7	200	3/4/2010	740	1950	XXX	XXX	XXX	XXX	26.9	Clear Strong odor
3 Shallow	54.21	103	31.7	200	5/12/2010	660	1620	XXX	XXX	XXX	XXX	25.8	Clear Strong odor
3 Shallow	54.23	103	31.7	200	8/3/2010	580	1470	XXX	XXX	XXX	XXX	21	Clear Strong odor
3 Shallow	54.25	103	31.7	200	11/2/2010	52	396	XXX	XXX	XXX	XXX	62.1	Clear Strong odor
3 Shallow	54.45	103	31.5	200	6/2/2011	770	1560	XXX	XXX	XXX	XXX	34.6	Clear Strong odor
3 Shallow	54.56	103	31.5	200	11/30/2011	780	1690	XXX	XXX	XXX	XXX	38.7	Clear Strong odor
3 Shallow	54.71	103	31.4	200	5/25/2012	830	1680	XXX	XXX	XXX	XXX	38.7	Clear Strong odor
3 Shallow	54.8	103	31.3	200	11/14/2012	600	1380	XXX	XXX	XXX	XXX	30.3	Clear Strong odor
3 Shallow	54.89	103	31.2	200	6/7/2013	630	1410	XXX	XXX	XXX	XXX	64.3	Clear Strong odor
3 Shallow	55.18	103	31.1	200	11/17/2013	460	1200	XXX	XXX	XXX	XXX	35.9	Clear Strong odor
3 Shallow	55.41	103	30.9	200	6/27/2014	428	1140	XXX	XXX	XXX	XXX	30.3	Clear Strong odor
3 Shallow	55.09	103	31.1	200	12/9/2014	232	600	XXX	XXX	XXX	XXX	24	Clear Strong odor
3 Shallow	55.39	103	30.9	200	6/26/2015	348	874	XXX	XXX	XXX	XXX	27.2	Clear Strong odor
3 Shallow	55.61	103	30.77	200	11/12/2015	316	1130	XXX	XXX	XXX	XXX	48.8	Clear Strong odor

ROC - Vacuum G-35 (AP-59)
Unit Letter G, 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
MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
3 Deep	52.77	103.1	32.7	100	1/9/2007	313	830	<0.001	0.0136	<0.001	<0.001	46.5	Clear Slight Odor
3 Deep	52.9	103.1	32.6	100	5/24/2007	648	1090	<0.001	j[0.000320]	<0.001	<0.001	34.7	Clear Slight Odor
3 Deep	53.11	103.1	32.5	120	9/20/2007	570	1442	<0.002	<0.002	<0.002	<0.006	34	Clear Strong Odor
3 Deep	53.15	103.1	32.4	150	11/20/2007	570	1312	<0.002	<0.002	<0.002	<0.006	42.5	Clear Strong odor
3 Deep	53.29	103.1	32.3	200	2/5/2008	820	1710	<0.002	<0.002	<0.002	<0.006	32.7	Clear Strong odor
3 Deep	53.31	103.1	32.3	200	4/29/2008	930	1920	<0.002	<0.002	<0.002	<0.006	36.7	Clear Strong odor
3 Deep	53.47	103.1	32.2	200	7/29/2008	1010	2110	<0.001	<0.001	<0.001	<0.003	40	Clear Strong odor
3 Deep	53.6	103.1	32.1	200	10/22/2008	670	1710	<0.001	<0.001	<0.001	<0.003	<10	Clear Strong odor
3 Deep	53.68	103	32	200	1/28/2009	1560	3000	XXX	XXX	XXX	XXX	31	Clear Strong odor
3 Deep	53.79	103	32	200	4/27/2009	1080	2770	XXX	XXX	XXX	XXX	19.2	Clear Strong odor
3 Deep	53.59	103	32.1	200	8/6/2009	1090	2110	XXX	XXX	XXX	XXX	26.8	Clear Strong odor
3 Deep	53.97	103	31.8	200	10/23/2009	720	1930	XXX	XXX	XXX	XXX	14.4	Clear Strong odor
3 Deep	54.13	103	31.7	200	3/4/2010	810	1860	XXX	XXX	XXX	XXX	32.2	Clear Strong odor
3 Deep	54.21	103	31.7	200	5/12/2010	760	1940	XXX	XXX	XXX	XXX	28.2	Clear Strong odor
3 Deep	54.23	103	31.7	200	8/3/2010	790	1510	XXX	XXX	XXX	XXX	29.4	Clear Strong odor
3 Deep	54.25	103	31.7	200	11/2/2010	950	2050	XXX	XXX	XXX	XXX	22.4	Clear Strong odor
3 Deep	54.45	103	31.5	200	6/2/2011	570	1400	XXX	XXX	XXX	XXX	48.6	Clear Strong odor
3 Deep	54.56	103	31.5	200	11/30/2011	930	2140	XXX	XXX	XXX	XXX	23.2	Clear Strong odor
3 Deep	54.71	103	31.4	200	5/25/2012	940	2090	XXX	XXX	XXX	XXX	35.5	Clear Strong odor
3 Deep	54.8	103	31.3	200	11/14/2012	1040	2450	XXX	XXX	XXX	XXX	27.6	Clear Strong odor
3 Deep	54.89	103	31.2	200	6/7/2013	1040	2520	XXX	XXX	XXX	XXX	55.1	Clear Strong odor
3 Deep	55.18	103	31.1	200	11/17/2013	930	2090	XXX	XXX	XXX	XXX	29	Clear Strong odor
3 Deep	55.71	103	30.7	200	6/27/2014	940	2200	XXX	XXX	XXX	XXX	22.2	Clear Strong odor
3 Deep	55.09	103	31.1	200	12/9/2014	410	1040	XXX	XXX	XXX	XXX	27.6	Clear Strong odor
3 Deep	55.39	103	30.9	200	6/23/2015	328	998	XXX	XXX	XXX	XXX	27.4	Clear Strong odor
3 Deep	55.61	103	30.77	200	11/12/2015	710	1500	XXX	XXX	XXX	XXX	37.4	Clear Strong odor

ROC - Vacuum G-35 (AP-59)

Unit Letter G, 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
MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
4	52.98	68.25	9.9	35	5/24/2007	1200	2050	0.0521	0.0582	0.017	0.02819	43.2	Clear to gray Strong odor Light sheen of oil
4	53.18	68.25	9.8	35	9/20/2007	1600	3262	0.146	0.058	0.023	0.042	17.8	Clear to gray Strong odor Light sheen of oil
4	53.21	68.25	9.8	35	11/20/2007	1600	3256	0.036	0.034	0.01	0.017	26	Clear to gray Strong odor Light sheen of oil
4	53.28	68.25	9.7	35	2/4/2008	2680	5140	0.411	0.151	0.082	0.092	9.94	Clear to gray Light sheen of oil Clear to dark gray Strong septic odor
4	53.33	68.25	9.7	35	4/29/2008	1800	3370	0.529	0.222	0.15	0.176	11.2	Clear turning to dark gray Light sheen of oil Strong septic odor
4	53.43	68.25	9.6	35	7/29/2008	1420	2620	0.208	0.086	0.041	0.06	20	Clear turning to dark gray Light sheen of oil Strong septic odor
4	53.52	68.25	9.6	35	10/23/2008	1040	2110	0.189	0.137	0.078	0.109	21.5	Clear turning to dark gray Light sheen of oil Strong septic odor
4	53.58	68.17	9.5	35	1/26/2009	730	1650	0.196	0.16	0.048	0.059	21.9	Clear turning to dark gray Light sheen Strong septic odor
4	53.72	68.17	9.4	35	4/27/2009	940	1970	0.097	0.033	0.037	0.032	20.9	Clear turning to dark gray Light sheen Strong septic odor
4	53.72	68.17	9.4	35	8/6/2009	770	1750	0.079	0.055	0.046	0.069	16.9	Clear turning to dark gray Light sheen Strong septic odor

ROC - Vacuum G-35 (AP-59)
Unit Letter G, 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
4	53.94	68.17	9.2	35	10/23/2009	660	1420	0.018	0.012	0.012	0.01	13.6	Clear turning to dark gray Light sheen Strong septic odor
4	54.13	68.17	9.1	35	3/3/2010	670	1490	0.066	0.064	0.025	0.047	20.2	Product present Sock in well Clear to gray Strong odor
4	54.19	66.17	9.1	35	5/13/2010	500	1270	0.002	0.005	0.002	0.005	26.4	Product present Sock in well Clear to gray Strong odor
4	54.22	68.17	9.1	35	8/3/2010	396	1010	0.011	0.008	0.003	0.005	23.3	Product present Sock in well Clear to gray Strong odor
4	54.27	68.17	9	35	11/1/2010	252	689	0.006	0.007	0.003	0.004	24.5	Heavy sheen Clear to gray Strong odor Sock in well
4	54.42	68.17	8.9	35	6/2/2011	328	887	0.003	0.003	0.003	<0.003	32.5	Heavy sheen Clear to gray Strong odor Sock in well
4	54.64	68.17	8.8	35	11/30/2011	88	457	0.008	0.006	0.003	<0.003	30.8	Heavy sheen Clear to gray Strong odor Sock in well
4	54.78	68.17	8.7	35	5/25/2012	280	792	0.157	0.405	0.212	0.363	25.9	Heavy sheen Clear to gray Strong odor Sock in well
4	54.91	68.17	8.6	35	11/13/2012	92	469	0.142	0.224	0.2	0.314	27.4	Heavy sheen Clear to gray Strong odor Sock in well
4	55.01	68.17	8.6	35	6/6/2013	96	462	0.153	0.019	0.118	0.023	23.6	Heavy sheen Clear to gray Strong odor Sock in well
4	55.24	68.17	8.4	35	11/18/2013	180	590	0.118	0.05	0.195	0.043	23.3	Heavy sheen present/Sock placed in well/Clear to
4	55.49	68.17	8.2	35	6/27/2014	144	478	0.244	0.082	0.177	0.055	13.8	Heavy sheen Clear to gray Strong odor Sock in well
4	55.12	68.17	8.5	35	12/9/2014	332	852	0.143	0.086	0.156	0.044	28.5	Heavy sheen present/Sock placed in well/Clear to
4	55.47	68.17	8.3	35	6/23/2015	180	656	0.08	0.025	0.101	0.016	15.8	Heavy sheen present/Sock placed in well/Clear to
4	55.6	68.17	0	4	11/12/2015	152	604	0.048	0.015	0.076	0.009	12.2	Heavy sheen present/Sock placed in well



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

November 23, 2015

KATIE JONES

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: VACUUM F-35 SWD AND G-35 SWD

Enclosed are the results of analyses for samples received by the laboratory on 11/16/15 16:31.

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,

Hope S. Moreno For 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:	11/16/2015	Sampling Date:	11/11/2015
Reported:	11/23/2015	Sampling Type:	Water
Project Name:	VACUUM F-35 SWD AND G-35 SWD	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Jodi Henson
Project Location:	T17S-R35E-SEC35 F & G -LEA CTY, NM		

Sample ID: F-35 SWD MONITOR WELL #1 (H503026-01)

BTX 8021B		mg/L		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	0.053	0.020	11/18/2015	ND	0.020	100	0.0200	0.134	
Toluene*	0.052	0.020	11/18/2015	ND	0.021	105	0.0200	1.34	
Ethylbenzene*	0.213	0.020	11/18/2015	ND	0.019	95.9	0.0200	0.442	
Total Xylenes*	0.100	0.060	11/18/2015	ND	0.062	103	0.0600	0.0650	
Total BTX	0.419	0.120	11/18/2015	ND					

Surrogate: 4-Bromofluorobenzene (PID) 99.8 % 73.7-146

Chloride, SM4500Cl-B		mg/L		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	172	4.00	11/18/2015	ND	96.0	96.0	100	15.4	

Sulfate 375.4		mg/L		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	55.0	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*	762	5.00	11/18/2015	ND	478	90.7	527	7.36	

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Hope S. Moreno For 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:	11/16/2015	Sampling Date:	11/11/2015
Reported:	11/23/2015	Sampling Type:	Water
Project Name:	VACUUM F-35 SWD AND G-35 SWD	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Jodi Henson
Project Location:	T17S-R35E-SEC35 F & G -LEA CTY, NM		

Sample ID: F-35 SWD MONITOR WELL #3-SHALLOW (H503026-02)

Chloride, SM4500Cl-B		mg/L		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride*	80.0	4.00	11/18/2015	ND	96.0	96.0	100	15.4		
Sulfate 375.4		mg/L		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Sulfate*	62.3	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*	500	5.00	11/18/2015	ND	478	90.7	527	7.36		

Sample ID: F-35 SWD MONITOR WELL #3-DEEP (H503026-03)

Chloride, SM4500Cl-B		mg/L		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride*	44.0	4.00	11/18/2015	ND	96.0	96.0	100	15.4		
Sulfate 375.4		mg/L		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Sulfate*	34.2	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*	578	5.00	11/18/2015	ND	478	90.7	527	7.36		

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Hope S. Moreno For Caley 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:	11/16/2015	Sampling Date:	11/12/2015
Reported:	11/23/2015	Sampling Type:	Water
Project Name:	VACUUM F-35 SWD AND G-35 SWD	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Jodi Henson
Project Location:	T17S-R35E-SEC35 F & G -LEA CTY, NM		

Sample ID: G-35 SWD MONITOR WELL #1 (H503026-04)

BTEx 8021B		mg/L		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	0.004	0.001	11/18/2015	ND	0.020	100	0.0200	0.134	
Toluene*	<0.001	0.001	11/18/2015	ND	0.021	105	0.0200	1.34	
Ethylbenzene*	<0.001	0.001	11/18/2015	ND	0.019	95.9	0.0200	0.442	
Total Xylenes*	<0.003	0.003	11/18/2015	ND	0.062	103	0.0600	0.0650	
Total BTEX	<0.006	0.006	11/18/2015	ND					

Surrogate: 4-Bromofluorobenzene (PID) 97.5 % 73.7-146

Chloride, SM4500Cl-B		mg/L		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	76.0	4.00	11/18/2015	ND	96.0	96.0	100	15.4	

Sulfate 375.4		mg/L		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	52.8	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*	422	5.00	11/18/2015	ND	478	90.7	527	7.36	

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Hope S. Moreno For 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:	11/16/2015	Sampling Date:	11/12/2015
Reported:	11/23/2015	Sampling Type:	Water
Project Name:	VACUUM F-35 SWD AND G-35 SWD	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Jodi Henson
Project Location:	T17S-R35E-SEC35 F & G -LEA CTY, NM		

Sample ID: G-35 SWD MONITOR WELL #3 - SHALLOW (H503026-05)

Chloride, SM4500Cl-B		mg/L		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride*	316	4.00	11/18/2015	ND	96.0	96.0	100	15.4		
Sulfate 375.4		mg/L		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Sulfate*	48.8	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*	1130	5.00	11/18/2015	ND	478	90.7	527	7.36		

Sample ID: G-35 SWD MONITOR WELL #3-DEEP (H503026-06)

Chloride, SM4500Cl-B		mg/L		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride*	710	4.00	11/18/2015	ND	96.0	96.0	100	15.4		
Sulfate 375.4		mg/L		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Sulfate*	37.4	10.0	11/19/2015	ND	18.2	91.0	20.0	5.45		
TDS 160.1		mg/L		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
TDS*	1500	5.00	11/18/2015	ND	478	90.7	527	7.36		

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Hope S. Moreno For Caley 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:	11/16/2015	Sampling Date:	11/12/2015
Reported:	11/23/2015	Sampling Type:	Water
Project Name:	VACUUM F-35 SWD AND G-35 SWD	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Jodi Henson
Project Location:	T17S-R35E-SEC35 F & G -LEA CTY, NM		

Sample ID: G-35 SWD MONITOR WELL #4 (H503026-07)

BTEx 8021B		mg/L		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	0.048	0.001	11/17/2015	ND	0.020	100	0.0200	0.134	
Toluene*	0.015	0.001	11/17/2015	ND	0.021	105	0.0200	1.34	
Ethylbenzene*	0.076	0.001	11/17/2015	ND	0.019	95.9	0.0200	0.442	
Total Xylenes*	0.009	0.003	11/17/2015	ND	0.062	103	0.0600	0.0650	
Total BTEX	0.148	0.006	11/17/2015	ND					

Surrogate: 4-Bromofluorobenzene (PID) 109 % 73.7-146

Chloride, SM4500Cl-B		mg/L		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	152	4.00	11/18/2015	ND	96.0	96.0	100	15.4	

Sulfate 375.4		mg/L		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	12.2	10.0	11/19/2015	ND	18.2	91.0	20.0	5.45	

TDS 160.1		mg/L		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	604	5.00	11/18/2015	ND	478	90.7	527	7.36	

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Hope S. Moreno For 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

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Hope S. Moreno For 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 # _____

Company Name: RICE Operating Company		BILL TO Company: RICE Operating Company		PO#
Project Manager: Katie Jones		Address: (Street, City, Zip) 122 W Taylor Street ~ Hobbs, New Mexico 88240		
Address: (Street, City, Zip) 122 W Taylor Street ~ Hobbs, New Mexico 88240		Phone#: (575) 393-9174		Fax#: (575) 397-1471
Phone #: (575) 393-9174		Fax #: (575) 397-1471		
Project #:		Project Name: Vacuum F-35 SWD and G-35 SWD		
Project Location: T17S-R35E-Sec35 F and G ~ Lea County - New Mexico		Sampler Signature: <i>Rozanne Johnson</i> (575) 631-9310		

ANALYSIS REQUEST

(Circle or Specify Method No.)

LAB # (LAB USE ONLY) H503026	FIELD CODE	(G)rab or (C)omp	# CONTAINERS	MATRIX				PRESERVATIVE METHOD						SAMPLING		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	Turn Around Time ~ 24 Hours																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
				WATER	SOIL	AIR	SLUDGE	HCL (2.40ml VOA)	HNO3	NaHSO4	H2SO4	ICE (1-1 Liter HDPE)	NONE	DATE (2015)	TIME																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
1	F-35 SWD Monitor Well #1	G	3	X				2				1		11/11	11:05	X																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									</

Relinquished by: *Rozanne Johnson* Date: *11/16/2015* Time: *16:31*

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:

rozanne11@windstream.net

Email Results to:

kjones@riceswd.com

Delivered By: (Circle One)

Sample Condition

CHECKED BY:

Sampler - UPS - Bus - Other: _____

Cool Intact
Yes ☒ Yes ☒
No ☐ No ☐

(Initials)

#54

bjarguijo@basinenv.com