

REVIEWED

By Mike Buchanan at 4:09 pm, Jul 28, 2023

L Peter Galusky, Jr PE5935 Exeter Cir Norcross, GA 30071 | 470 955-5335 | peter@bluerock.pro

April 1, 2022

Bradford Billings

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

Review of the 2021 Annual Report for
Vacuum F-35 & G-35 SWD: Content
Satisfactory

1. Continue further evaluation at F-35 by groundwater monitoring MW-1.
2. Continue to monitor groundwater at both sites.
3. Complete and submit 2022 & 2023 Annual Report and submit by April 1, 2024.

Re: **2021 Annual Report**
Vacuum F-35 & G-35 SWDs, Sec 35, T17S, R35E
OCD Case No. AP-59

Sent via E-mail

Mr. Billings:

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 Figures 1 & 2, respectively.

Vacuum F-35 SWD

Data for Vacuum F-35 SWD are summarized in Figure 3 and Table 1. The full dataset is given in Table 2.

Groundwater has not been sampled in the at-source monitor well (MW-1) since 2018, as free product was observed since then through 2021. We have placed a recovery sock in the well and will attempt to sample it during 2022. Average annual groundwater chloride concentrations in the shallow down-gradient well (MW-3S) were essentially unchanged at 80 mg/l in 2021 vs 82 mg/l in 2020 and measuring similarly in the deep down-gradient monitor well (MW-3D) at 82 mg/l in 2021 versus 78 mg/l in 2020. Groundwater chlorides have remained below the OCD standard of 250 mg/l since sampling in these monitor wells began in 2007.

Rice Operating Company Vacuum F&G 35 SWD Annual Report

Vacuum G-35 SWD

Data for Vacuum G-35 SWD are summarized in Figure 4 and Table 3. The full dataset is given in Table 4.

Average annual groundwater chloride concentrations in the at-source monitor well (MW-1) rose slightly from 76 mg/l in 2020 to 90 mg/l in 2021. Average annual chloride concentrations in the shallow down-gradient well (MW-3S) rose from 148 mg/l in 2020 to 220 mg/l in 2021. Average annual chloride concentrations in the deep down-gradient well (MW-3D) rose from 168 mg/l in 2020 to 218 mg/l in 2021. Average annual groundwater chlorides in the near-source down-gradient monitor well (MW-4) dropped from 116 mg/l in 2020 to 92 mg/l in 2021. Groundwater chlorides in all of these wells have measured considerably below the OCD standard of 250 mg/l for the past few years.

Average annual total BTEX concentrations in the at-source monitor well (MW-1) continued its decline observed over the past few years, dropping from 0.0055 mg/l in 2020 to 0.0010 mg/l in 2021, a tiny fraction of the maximum average value of 2.2385 mg/l measured in in 2005. Average annual total BTEX concentrations in the near-source down-gradient well (MW-4) also continued to decline, dropping from 0.0060 mg/l in 2020 to 0.0045 mg/l, again a tiny fraction of the maximum average value 1.0085 mg/l measured in 2012. These data suggest that BTEX is a diminishing concern at the G-35 SWD location.

Groundwater chloride concentrations have dropped considerably at both locations through dilution of an apparently relatively small original mass. BTEX concentrations have also clearly dropped at G-35. However, the recent emergence (since 2019) of free product sheen in the at-source monitor well (MW-1) at F-35 warrants further evaluation. ROC will continue to monitor groundwater concentrations at both sites in 2022.

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

Rice Operating Company Vacuum F&G 35 SWD Annual Report

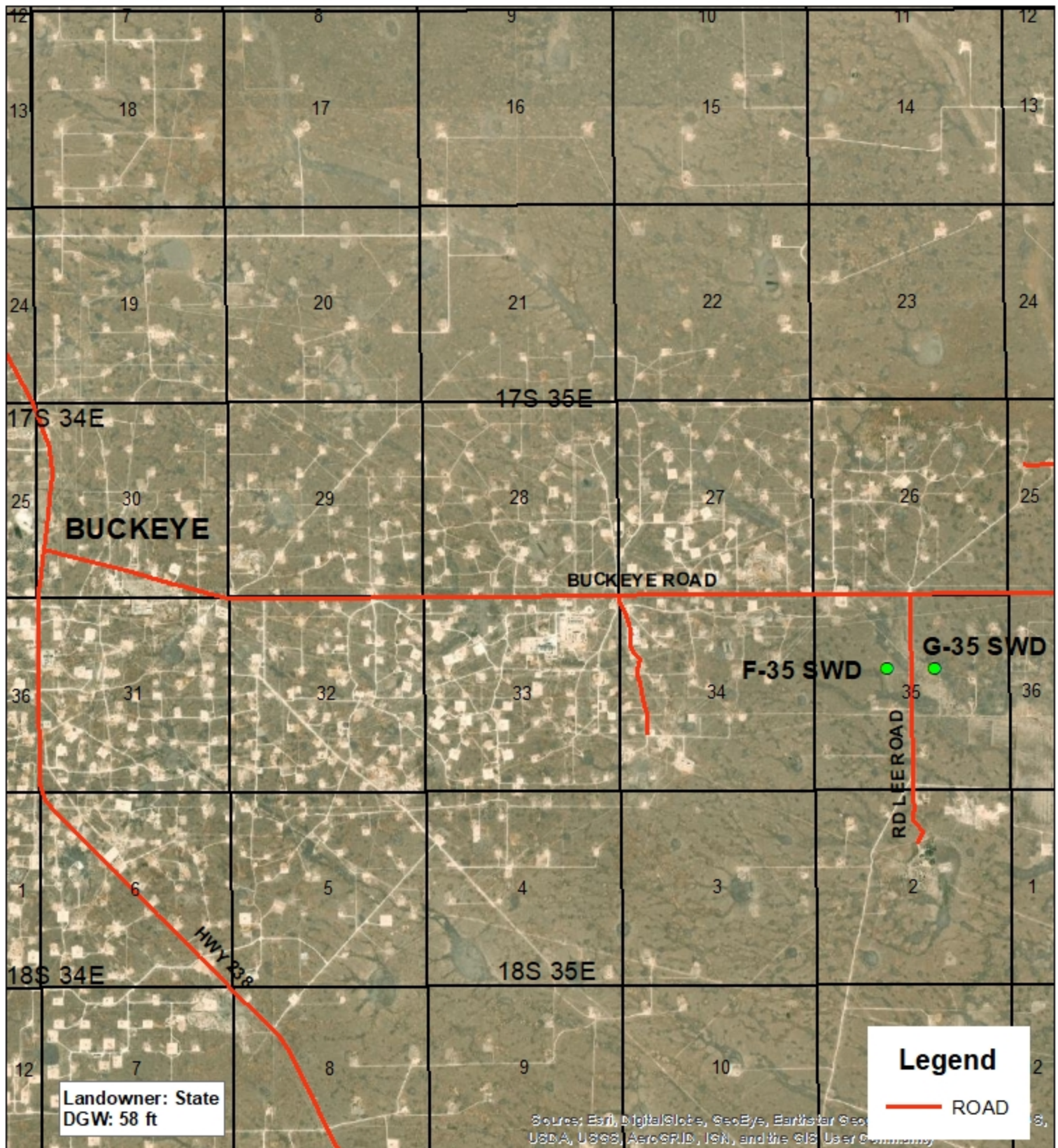
We submit this report for your review and consideration. Please call Katie Jones at Rice Operating Company or me if you have any questions or need additional information.

Sincerely,



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

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



VACUUM
F-35 & G-35
SWD
AP-59

UL F & G SECTION 35
T17S, R35E
LEA COUNTY, NM

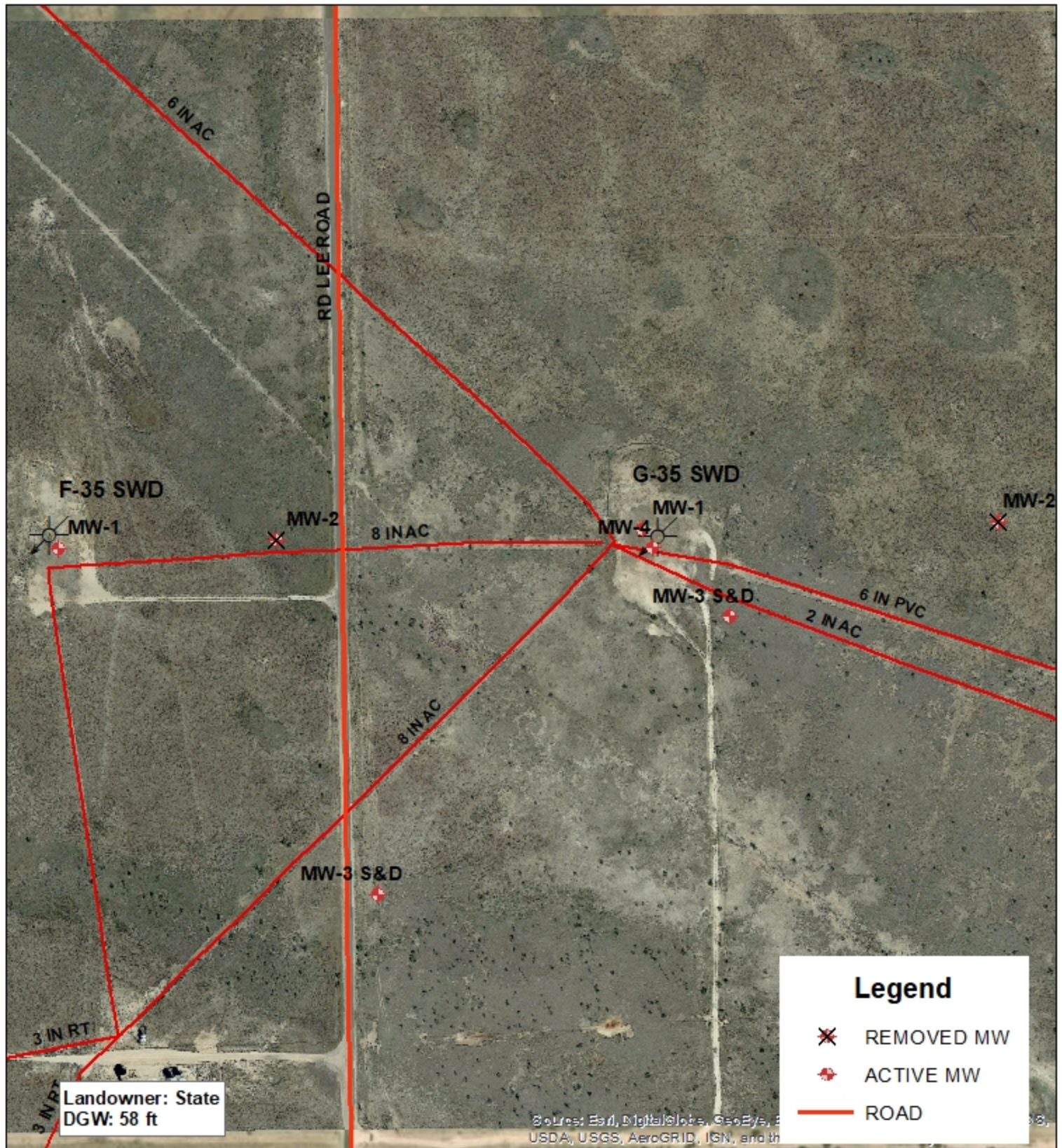
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G-35 SWD 32.793016 -103.426052
NAD83 STATE PLANE PROJ
NM EAST ZONE

0 2,500 5,000

Feet

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





VACUUM F-35 & G-35 SWD

AP-59

UL F & G SECTION 35
T17S, R35E
LEA COUNTY, NM

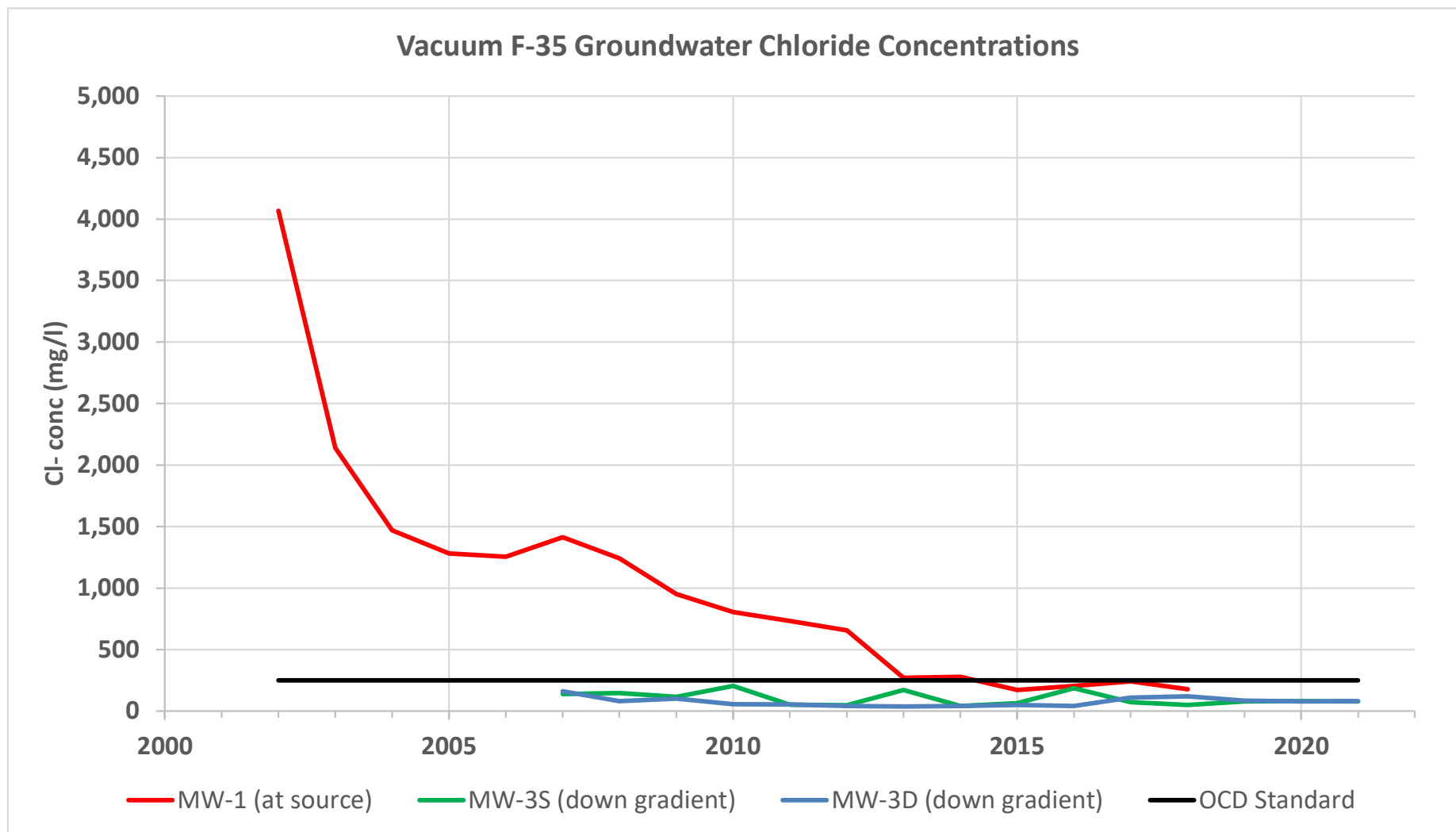
GPS: F-35 SWD 32.793056 -103.430348
G-35 SWD 32.793016 -103.426052
NAD83 STATE PLANE PROJ
NM EAST ZONE

0 250 500

Feet



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



Vacuum F-35 SWD**Groundwater Data Annual Average Values**

year	Chlorides (mg/l)				Total BTEX (mg/l)				OCD Standard
	MW-1 (at source)	MW-2 (east of source)	MW-3S (down gradient)	MW-3D (down gradient)	MW-1 (at source)	MW-2 (east of source)	MW-3S (down gradient)	MW-3D (down gradient)	
2002	4,068				1.4743				250
2003	2,140				1.5173				250
2004	1,470				0.9398				250
2005	1,283				3.3751				250
2006	1,255	89			1.2779				250
2007	1,413	96	139	161	2.2188	0.0000	0.0000	0.0000	250
2008	1,243	98	149	81	0.6153	0.0000	0.0000	0.0000	250
2009	953	80	116	102	0.6970				250
2010	805	128	206	56	0.4458				250
2011	735		52	54	0.4920				250
2012	655		48	42	0.2040				250
2013	270		172	38	0.2745				250
2014	280		42	40	0.1405				250
2015	172		66	50	0.2670				250
2016	206		186	40	0.1435				250
2017	242		72	110	0.1210				250
2018	180		50	122	0.1250				250
2019			80	86					250
2020			82	78					250
2021			80	82					250

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

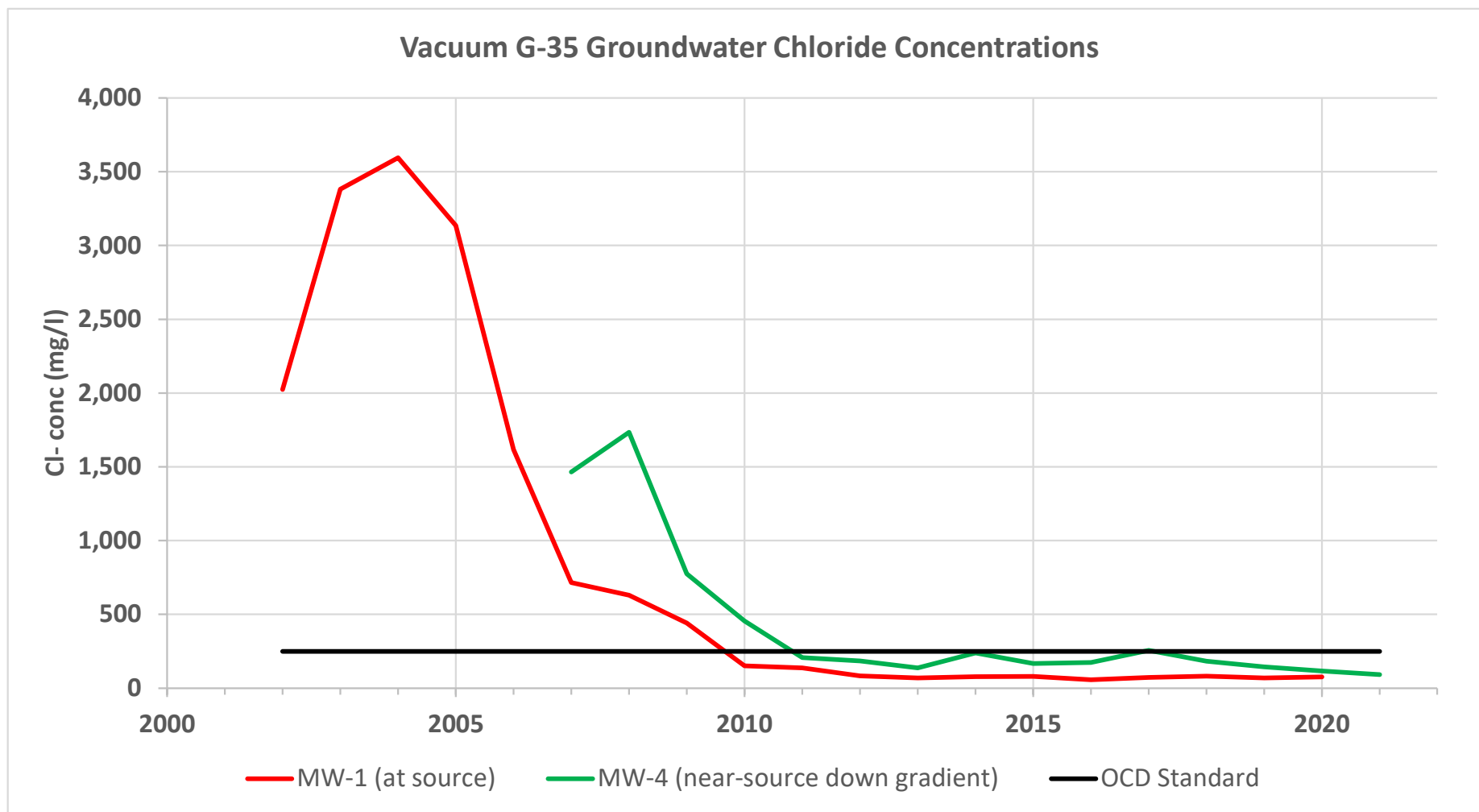
MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
1	58.0	66.0	1.3	3.9	1/10/2002	5,200	9,425	0.0500	0.0530	0.0500	0.0900	5.0	
1	XXX	XXX	XXX	XXX	5/15/2002	3,720	7,050	0.7440	0.2070	0.5100	0.3090	3.2	
1	XXX	XXX	XXX	XXX	8/19/2002	3,630	6,040	0.7050	0.1720	0.1120	0.0760	10.7	
1	XXX	XXX	XXX	XXX	11/11/2002	3,720	6,020	1.2100	0.3430	0.8350	0.4310	2.8	
1	XXX	XXX	XXX	XXX	2/28/2003	2,200	4,040	0.9090	0.8400	0.3210	0.1240	26.2	
1	XXX	XXX	XXX	XXX	6/5/2003	2,300	4,180	0.6320	0.1340	0.0610	0.0670	20.3	
1	XXX	XXX	XXX	XXX	8/21/2003	2,060	4,000	0.6170	0.3600	0.2020	0.1920	4.9	
1	XXX	XXX	XXX	XXX	11/19/2003	2,000	3,760	0.7970	0.3010	0.2640	0.2480	5.1	
1	58.2	64.0	0.9	2.8	2/18/2004	1,819	3,932	0.3490	0.0380	0.1210	0.0270	0.2	
1	58.5	64.0	0.9	2.6	5/27/2004	1,759	4,008	0.7260	0.1760	0.2680	0.2150	8.7	
1	58.2	64.2	1.0	2.9	9/7/2004	1,040	3,000	0.4290	0.2210	0.1430	0.2247	19.9	mod. odor; gray
1	57.8	64.2	1.0	3.1	11/24/2004	1,260	2,740	0.0489	0.3130	0.2090	0.2507	51.0	mod. odor; gray
1	57.2	64.2	1.2	3.6	3/21/2005	1,220	2,210	2.2000	1.6100	0.8480	1.2830	110.0	mod. odor; gray
1					5/11/2005	1,490	2,970					24.6	
1	58.4	64.2	0.9	2.8	8/15/2005	1,340	2,890	0.8190	0.3930	0.6660	0.5840	69.5	
1	57.5	64.2	1.1	4.0	10/25/2005	1,080	2,540	0.7790	0.2430	0.3940	0.3062	72.7	
1	57.4	64.2	1.1	4.0	1/23/2006	886	2,080	0.4470	0.2220	0.2800	0.3006	88.2	Heavy skim of Oil: Septic Odor
1	57.6	64.2	1.1	4.0	4/25/2006	1,420	3,040	0.2270	0.0956	0.1740	0.1614	62.5	
1	XXX	64.2	XXX	XXX	10/24/2006	1,460	3,190	0.4620	0.4890	0.2300	0.7450	45.2	Clear Strong septic odor
1	XXX	64.2	XXX	5.0	1/9/2007	1,510	2,980	0.4860	0.5770	0.1850	0.3330	67.2	Clear Strong septic odor
1	XXX	64.2	XXX	XXX	5/23/2007	1,500	2,850	0.5570	0.3870	0.3230	0.6810	44.4	Clear Strong septic odor
1	XXX	64.2	XXX	XXX	9/19/2007	1,380	2,902	0.9020	0.7060	0.5820	1.1400	23.2	Clear Strong septic odor
1	XXX	64.2	XXX	XXX	11/19/2007	1,260	2,642	0.7190	0.2030	0.4290	0.6650	44.2	Clear Strong septic odor
1	XXX	64.2	XXX	XXX	2/15/2008	1,240	2,650	0.3050	0.0990	0.2180	0.5630	49.7	Clear Strong septic odor
1	58.4	63.1	0.8	4.0	6/3/2008	1,460	2,840	<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	1,120	2,510	0.0510	0.0230	0.0660	0.1720	35.0	Clear Strong septic odor
1	59.1	64.2	0.8	5.0	10/23/2008	1,150	2,580	0.1930	0.0130	0.2320	0.5260	27.0	Clear Sheen present Strong septic odor
1	XXX	XXX	XXX	XXX	1/28/2009	1,150	2,440	0.4310	0.0440	0.3320	0.3620	16.8	Clear Sheen Strong septic odor
1	XXX	XXX	XXX	XXX	4/28/2009	980	1,970	0.2600	0.0380	0.2340	0.2820	15.2	Clear Sheen Strong septic odor
1	XXX	XXX	XXX	5.0	8/5/2009	740	1,660	0.0630	0.0240	0.1160	0.2360	18.7	Clear Sheen Strong hydrocarbon odor
1	XXX	XXX	XXX	5.0	10/26/2009	940	1,890	0.0340	0.0190	0.1360	0.1770	15.6	Clear Sheen Strong hydrocarbon odor
1	XXX	XXX	XXX	5.0	3/3/2010	970	2,010	0.0410	0.0200	0.1220	0.1540	15.8	Sheen present Strong septic odor
1	XXX	XXX	XXX	6.0	5/12/2010	880	1,840	0.0040	0.0110	0.0500	0.0800	22.1	Clear Sheen present Strong septic odor
1	XXX	XXX	XXX	6.0	8/4/2010	630	1,540	0.0170	0.0220	0.0590	0.1170	23.8	Clear Sheen present Strong septic odor
1	XXX	XXX	XXX	6.0	11/1/2010	740	1,850	0.0750	0.1150	0.3120	0.5840	18.1	Clear Sheen present Strong septic odor
1	XXX	XXX	XXX	6.0	6/2/2011	900	2,170	0.0710	0.0320	0.1910	0.2390	<10.0	Clear Sheen present Strong septic odor
1	XXX	XXX	XXX	6.0	11/30/2011	570	1,310	0.0570	0.0110	0.2000	0.1830	31.3	Clear Sheen present Strong septic odor
1	XXX	XXX	XXX	6.0	5/25/2012	580	1,420	0.0610	0.0160	0.0780	0.0850	30.8	Gray color/Product present with Strong septic odor
1	XXX	XXX	XXX	6.0	11/13/2012	730	1,900	0.0400	0.0130	0.0580	0.0570	34.9	Gray color/Product present with Strong septic odor

1	XXX	XXX	XXX	6.0	6/6/2013	280	887	0.0600	0.0590	0.0990	0.1490	63.1	Gray color/Product present with Strong septic odor
1	XXX	XXX	XXX	6.0	11/18/2013	260	810	0.0400	0.0150	0.0640	0.0630	26.2	Gray color/Product present with Strong septic odor
1	XXX	XXX	XXX	6.0	6/26/2014	296	834	0.0250	0.0040	0.0330	0.0400	44.1	Gray color/Product present with Strong septic odor
1	XXX	XXX	XXX	6.0	12/10/2014	264	810	0.0480	0.0060	0.0750	0.0500	55.2	Gray color/Product present with Strong septic odor
1	XXX	XXX	XXX	6.0	6/24/2015	172	914	0.0180	<0.005	0.0800	0.0180	75.0	Gray color/Product present with Strong septic odor
1	XXX	XXX	0.0	2.0	11/11/2015	172	762	0.0530	0.0520	0.2130	0.1000	55.0	Gray color/Product present with Strong septic odor
1	XXX	XXX	XXX	6.0	5/23/2016	196	738	0.0230	0.0180	0.0510	0.0390	48.8	Gray color/Product present with Strong septic odor
1	XXX	64.2	XXX	6.0	11/15/2016	216	660	0.0230	0.0170	0.0700	0.0460	67.0	Gray color/Product present with Strong septic odor
1	XXX	64.2	XXX	6.0	5/31/2017	232	780	0.0320	0.0150	0.0770	0.0380	64.0	Gray color/Product present with Strong septic odor
1	XXX	64.2	XXX	6.0	12/5/2017	252	864	0.0280	<0.001	0.0520	<0.003	63.0	Gray color/Product present with Strong septic odor
1	XXX	XXX	XXX	6.0	5/23/2018	192	560	0.1230	<0.001	0.0520	<0.003	70.8	Gray color/Product present with Strong septic odor
1	XXX	XXX	XXX	6.0	11/27/2018	168	628	0.0180	0.0040	0.0080	0.0450	57.3	Gray color/Product present with Strong septic odor
1	XXX	XXX	XXX	XXX	6/7/2019	XXX	XXX	XXX	XXX	XXX	XXX	XXX	Product present PSH sock placed in well
1	XXX	XXX	XXX	XXX	11/18/2019	XXX	XXX	XXX	XXX	XXX	XXX	XXX	Product present PSH sock placed in well
1	XXX	XXX	XXX	XXX	6/11/2020	XXX	XXX	XXX	XXX	XXX	XXX	XXX	Product present PSH sock placed in well
1	XXX	XXX	XXX	XXX	11/12/2020	XXX	XXX	XXX	XXX	XXX	XXX	XXX	Product present PSH sock placed in well
1	XXX	XXX	XXX	XXX	6/16/2021	XXX	XXX	XXX	XXX	XXX	XXX	XXX	Product present PSH sock placed in well
1	XXX	XXX	XXX	XXX	9/16/2021	XXX	XXX	XXX	XXX	XXX	XXX	XXX	Product present PSH sock placed in well

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
2	52.6	68.1	2.5	10.0	6/6/2006	98	724	<0.001	<0.001	<0.001	<0.001	63.3	Clear no odor
2	52.8	68.1	2.5	10.0	10/24/2006	89	598	<0.001	<0.001	<0.001	<0.001	67.2	
2	52.9	68.1	2.4	10.0	1/9/2007	101	590	<0.001	<0.001	<0.001	<0.001	69.4	Clear No Odor
2	53.1	67.2	2.3	10.0	5/23/2007	88	512	<0.001	<0.001	<0.001	<0.001	61.0	Clear No Odor
2	53.3	67.2	2.2	10.0	9/19/2007	100	587	<0.002	<0.002	<0.002	<0.006	71.7	Clear No Odor
2	53.4	67.2	2.2	10.0	11/18/2007	96	571	<0.002	<0.002	<0.002	<0.006	85.7	Clear No odor
2	53.5	67.4	2.2	10.0	2/4/2008	100	652	<0.002	<0.002	<0.002	<0.006	60.6	Clear No odor
2	53.5	67.4	2.2	10.0	4/28/2008	96	604	<0.002	<0.002	<0.002	<0.006	79.8	Clear No odor
2	53.7	67.4	2.2	10.0	7/28/2008	96	586	<0.001	<0.001	<0.001	<0.003	62.0	Clear No odor
2	53.8	67.4	2.2	10.0	10/23/2008	100	710	<0.001	<0.001	<0.001	<0.003	77.7	Clear No odor
2	53.9	68.1	2.3	10.0	1/28/2009	96	660	XXX	XXX	XXX	XXX	73.2	Clear No odor
2	54.0	68.1	2.3	10.0	4/28/2009	100	663	XXX	XXX	XXX	XXX	73.6	Clear No odor
2	54.1	68.1	2.2	10.0	8/5/2009	104	666	XXX	XXX	XXX	XXX	76.2	Clear No odor
2	54.2	68.1	2.2	10.0	10/26/2009	20	296	XXX	XXX	XXX	XXX	21.3	Clear No odor
2	54.4	68.0	2.2	10.0	3/3/2010	124	689	XXX	XXX	XXX	XXX	84.8	Clear No odor
2	54.4	68.0	2.2	10.0	5/12/2010	128	680	XXX	XXX	XXX	XXX	99.8	Clear No odor
2	54.5	68.0	2.2	10.0	8/4/2010	132	733	XXX	XXX	XXX	XXX	91.0	Clear No odor
MW-2 Plugged 10/20/2010													

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
3 Shallow	52.4	102.8	32.8	100.0	1/9/2007	144	512	<0.001	0.0150	<0.001	<0.001	99.0	Clear Slight Odor
3 Shallow	52.5	102.8	32.7	100.0	5/23/2007	117	494	<0.001	0.0013	<0.001	<0.001	56.9	Clear Slight Odor
3 Shallow	52.8	102.8	32.5	100.0	9/19/2007	192	789	<0.002	<0.002	<0.002	<0.006	73.5	Clear Slight Odor
3 Shallow	52.8	102.8	32.5	150.0	11/19/2007	104	467	<0.002	<0.002	<0.002	<0.006	66.3	Clear Slight odor
3 Shallow	52.9	102.8	32.4	200.0	2/5/2008	212	821	<0.002	<0.002	<0.002	<0.006	60.6	Clear Slight odor
3 Shallow	52.9	102.8	32.4	200.0	4/28/2008	116	502	<0.002	<0.002	<0.002	<0.006	63.1	Clear Slight odor
3 Shallow	53.1	102.8	32.3	200.0	7/28/2008	164	650	<0.001	<0.001	<0.001	<0.003	58.0	Clear Slight odor
3 Shallow	53.3	102.8	32.1	200.0	10/22/2008	104	690	<0.001	<0.001	<0.001	<0.003	74.3	Clear Slight odor
3 Shallow	53.4	101.1	31.0	200.0	1/28/2009	100	445	XXX	XXX	XXX	XXX	65.0	Clear Slight odor
3 Shallow	53.4	101.1	31.0	200.0	4/28/2009	128	579	XXX	XXX	XXX	XXX	74.0	Clear Slight odor
3 Shallow	53.6	101.1	31.0	200.0	8/5/2009	128	560	XXX	XXX	XXX	XXX	70.6	Clear Slight odor
3 Shallow	53.7	101.1	31.0	200.0	10/26/2009	108	535	XXX	XXX	XXX	XXX	63.1	Clear Slight odor
3 Shallow	53.8	101.1	31.0	200.0	3/4/2010	108	541	XXX	XXX	XXX	XXX	77.4	Clear Slight odor
3 Shallow	53.9	101.1	31.0	200.0	5/12/2010	80	442	XXX	XXX	XXX	XXX	79.2	Clear Slight odor
3 Shallow	53.9	101.1	31.0	200.0	8/3/2010	64	430	XXX	XXX	XXX	XXX	63.6	Clear Slight odor
3 Shallow	54.0	101.1	31.0	200.0	11/2/2010	570	1,320	XXX	XXX	XXX	XXX	19.4	Clear Slight odor
3 Shallow	54.1	101.1	31.0	200.0	6/2/2011	52	375	XXX	XXX	XXX	XXX	61.8	Clear Slight odor
3 Shallow	54.3	101.1	30.0	200.0	11/30/2011	52	420	XXX	XXX	XXX	XXX	64.6	Clear Slight odor
3 Shallow	54.5	101.1	30.0	200.0	5/25/2012	52	406	XXX	XXX	XXX	XXX	54.9	Clear Slight odor
3 Shallow	54.6	101.1	30.0	200.0	11/14/2012	44	393	XXX	XXX	XXX	XXX	61.9	Clear Slight odor
3 Shallow	54.6	101.1	30.0	200.0	6/7/2013	292	1,090	XXX	XXX	XXX	XXX	47.2	Clear Slight odor
3 Shallow	54.9	101.1	30.0	200.0	11/17/2013	52	380	XXX	XXX	XXX	XXX	60.5	Clear Slight odor
3 Shallow	55.0	101.1	30.0	200.0	6/27/2014	56	358	XXX	XXX	XXX	XXX	59.9	Clear Slight odor
3 Shallow	54.7	101.1	30.0	200.0	12/10/2014	28	246	XXX	XXX	XXX	XXX	29.0	Clear Slight odor
3 Shallow	55.2	101.1	30.0	200.0	6/24/2015	52	510	XXX	XXX	XXX	XXX	99.0	Clear Slight odor
3 Shallow	55.5	101.1	29.6	200.0	11/11/2015	80	500	XXX	XXX	XXX	XXX	62.3	Clear Slight odor
3 Shallow	55.5	101.1	30.0	200.0	5/23/2016	300	1,070	XXX	XXX	XXX	XXX	62.0	Clear Slight odor
3 Shallow	55.6	101.1	29.0	200.0	11/15/2016	72	456	XXX	XXX	XXX	XXX	34.0	Clear Slight odor
3 Shallow	56.1	101.1	29.0	200.0	5/31/2017	84	452	XXX	XXX	XXX	XXX	56.0	Clear Slight odor
3 Shallow	59.9	101.1	29.0	200.0	12/5/2017	60	374	XXX	XXX	XXX	XXX	57.0	Clear Slight odor
3 Shallow	56.0	101.1	29.0	200.0	5/23/2018	36	347	XXX	XXX	XXX	XXX	76.5	Clear Slight odor
3 Shallow	56.4	101.1	29.0	200.0	11/27/2018	64	345	XXX	XXX	XXX	XXX	49.1	Clear Slight odor
3 Shallow	56.8	101.1	29.0	100.0	6/7/2019	84	399	XXX	XXX	XXX	XXX	49.0	Clear Slight odor
3 Shallow	57.1	101.1	29.0	100.0	11/18/2019	76	236	XXX	XXX	XXX	XXX	48.0	Clear Slight odor
3 Shallow	57.2	101.1	29.0	100.0	6/11/2020	72	369	XXX	XXX	XXX	XXX	54.7	Clear Slight odor
3 Shallow	57.4	101.1	28.0	100.0	11/12/2020	92	387	XXX	XXX	XXX	XXX	54.0	Clear Slight Odor
3 Shallow	58.1	101.1	28.0	100.0	6/15/2021	80	424	XXX	XXX	XXX	XXX	50.7	Clear Slight Odor
3 Shallow	58.5	101.1	28.0	100.0	9/17/2021	80	423	XXX	XXX	XXX	XXX	69.7	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	52.4	102.8	32.8	100.0	1/9/2007	133	500	<0.001	0.0103	<0.001	<0.001	86.9	Clear Slight Odor
3 Deep	52.5	102.8	32.7	100.0	5/23/2007	92	452	<0.001	0.0024	<0.001	<0.001	47.5	Clear Slight Odor
3 Deep	52.8	102.8	32.5	100.0	9/19/2007	204	772	<0.002	<0.002	<0.002	<0.006	72.8	Clear Slight Odor
3 Deep	52.8	102.8	32.5	150.0	11/19/2007	216	735	<0.002	<0.002	<0.002	<0.006	64.6	Clear Slight odor
3 Deep	52.9	102.8	32.4	200.0	2/5/2008	52	393	<0.002	<0.002	<0.002	<0.006	59.8	Clear Slight odor
3 Deep	52.9	102.8	32.4	200.0	4/28/2008	104	485	<0.002	<0.002	<0.002	<0.006	65.2	Clear Slight odor
3 Deep	53.1	102.8	32.2	200.0	7/28/2008	96	510	<0.001	<0.001	<0.001	<0.003	52.0	Clear Slight odor
3 Deep	53.3	102.8	32.1	200.0	10/22/2008	72	665	<0.001	<0.001	<0.001	<0.003	160.0	Clear Slight odor
3 Deep	53.4	101.1	31.0	200.0	1/28/2009	84	477	XXX	XXX	XXX	XXX	65.0	Clear Slight odor
3 Deep	53.4	101.1	31.0	200.0	4/28/2009	60	416	XXX	XXX	XXX	XXX	61.9	Clear Slight odor
3 Deep	53.6	101.1	30.9	200.0	8/5/2009	56	397	XXX	XXX	XXX	XXX	58.4	Clear Slight odor
3 Deep	53.7	101.1	30.8	200.0	10/26/2009	208	542	XXX	XXX	XXX	XXX	42.0	Clear Slight odor
3 Deep	53.8	101.1	30.7	200.0	3/4/2010	56	428	XXX	XXX	XXX	XXX	70.4	Clear Slight odor
3 Deep	53.9	101.1	30.7	200.0	5/12/2010	64	397	XXX	XXX	XXX	XXX	74.1	Clear Slight odor
3 Deep	53.9	101.1	30.7	200.0	8/3/2010	52	396	XXX	XXX	XXX	XXX	59.8	Clear Slight odor
3 Deep	54.0	101.1	30.6	200.0	11/2/2010	52	382	XXX	XXX	XXX	XXX	64.7	Clear Slight odor
3 Deep	54.1	101.1	30.5	200.0	6/2/2011	68	423	XXX	XXX	XXX	XXX	66.3	Clear Slight odor
3 Deep	54.3	101.1	30.4	200.0	11/30/2011	40	352	XXX	XXX	XXX	XXX	59.5	Clear Slight odor
3 Deep	54.5	101.1	30.3	200.0	5/25/2012	44	368	XXX	XXX	XXX	XXX	54.6	Clear Slight odor
3 Deep	54.6	101.1	30.3	200.0	11/14/2012	40	362	XXX	XXX	XXX	XXX	55.6	Clear Slight odor
3 Deep	54.6	101.1	30.2	200.0	6/7/2013	32	599	XXX	XXX	XXX	XXX	24.8	Clear Slight odor
3 Deep	54.9	101.1	30.0	200.0	11/17/2013	44	343	XXX	XXX	XXX	XXX	60.3	Clear Slight odor
3 Deep	55.0	101.1	29.9	200.0	6/27/2014	52	354	XXX	XXX	XXX	XXX	60.2	Clear Slight odor
3 Deep	54.7	101.1	30.2	200.0	12/10/2014	28	252	XXX	XXX	XXX	XXX	25.6	Clear Slight odor
3 Deep	55.1	101.1	29.9	200.0	6/24/2015	56	394	XXX	XXX	XXX	XXX	52.2	Clear Slight odor
3 Deep	55.5	101.1	29.6	200.0	11/11/2015	44	578	XXX	XXX	XXX	XXX	34.2	Clear Slight odor
3 Deep	55.5	101.1	30.0	200.0	5/23/2016	40	372	XXX	XXX	XXX	XXX	69.5	Clear Slight odor
3 Deep	55.6	101.1	29.0	200.0	11/15/2016	40	560	XXX	XXX	XXX	XXX	38.0	Clear Slight odor
3 Deep	56.1	101.1	29.0	200.0	5/31/2017	168	564	XXX	XXX	XXX	XXX	63.0	Clear Slight odor
3 Deep	59.9	101.1	29.0	200.0	12/5/2017	52	378	XXX	XXX	XXX	XXX	64.0	Clear Slight odor
3 Deep	56.0	101.1	29.3	200.0	5/23/2018	164	546	XXX	XXX	XXX	XXX	71.8	Clear Slight odor
3 Deep	56.4	101.1	29.0	200.0	11/27/2018	80	273	XXX	XXX	XXX	XXX	49.1	Clear Slight odor
3 Deep	56.8	101.1	29.0	100.0	6/7/2019	96	428	XXX	XXX	XXX	XXX	55.0	Clear Slight odor
3 Deep	57.1	101.1	29.0	100.0	11/18/2019	76	273	XXX	XXX	XXX	XXX	48.0	Clear Slight odor
3 Deep	57.2	101.1	29.0	100.0	6/11/2020	80	407	XXX	XXX	XXX	XXX	86.0	Clear Slight odor
3 Deep	57.2	101.1	29.0	100.0	11/12/2020	76	386	XXX	XXX	XXX	XXX	54.6	Clear Slight odor
3 Deep	58.1	101.1	28.0	100.0	6/15/2021	80	417	XXX	XXX	XXX	XXX	52.9	Clear Slight Odor
3 Deep	58.5	101.1	28.0	100.0	9/17/2021	84	450	XXX	XXX	XXX	XXX	74.2	Clear Slight Odor



Vacuum G-35 SWD**Groundwater Data Annual Average Values**

Chlorides (mg/l)						Total BTEX (mg/l)					OCD Standard
year	MW-1 (at source)	MW-2 (east of source)	MW-3S (down gradient)	MW-3D (down gradient)	MW-4 (near- source down gradient)	MW-1 (at source)	MW-2 (east of source)	MW-3S (down gradient)	MW-3D (down gradient)	MW-4 (near- source down gradient)	
2002	2,025					0.9595					250
2003	3,383					0.6598					250
2004	3,595					1.3313					250
2005	3,135					2.2385					250
2006	1,617	13				0.5540	0.0000				250
2007	717	16	547	525	1,467	0.2076	0.0000	0.0048	0.0034	0.1738	250
2008	630	16	661	858	1,735	0.8547	0.0000	0.0000	0.0000	0.6803	250
2009	442	41	663	1,113	775	0.5543	0.0000			0.2408	250
2010	152	17	508	828	455	0.0580	0.0000			0.0658	250
2011	138		775	750	208	0.1260				0.0130	250
2012	84		715	990	186	0.1165				1.0085	250
2013	68		545	985	138	0.0570				0.3595	250
2014	78		330	675	238	0.0080				0.4935	250
2015	80		332	519	166	0.0405				0.1850	250
2016	58		296	298	174	0.0035				0.0630	250
2017	72		272	308	258	0.0015				0.0930	250
2018	82		254	248	184	0.0580				0.0530	250
2019	68		126	142	144	0.0095				0.0150	250
2020	76		148	168	116	0.0055				0.0060	250
2021	90		220	218	92	0.0010				0.0045	250

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	1,284	0.0110	0.0220	0.0340	0.0550	23.0	
1	52.9	65.0	1.9	6.0	5/15/2002	1,950	3,260	0.4140	0.0570	0.1310	0.0650	2.1	oil skim
1	53.0	64.8	1.9	5.8	8/19/2002	1,950	3,850	0.7050	0.5980	0.2090	0.2530	7.0	
1	53.1	64.7	1.9	5.6	11/11/2002	3,630	6,740	0.9210	0.0780	0.1540	0.1310	5.8	oil skim; yellow
1	53.1	64.2	1.8	5.3	2/28/2003	2,730	4,770	0.7130	0.0100	0.0180	0.0270	24.6	
1	53.2	64.2	1.8	5.3	5/22/2003	3,860	7,320	0.5830	0.0020	0.1200	0.0270	5.3	
1	53.2	64.1	1.7	5.2	8/21/2003	5,010	8,850	0.6890	0.0040	0.3070	0.0320	3.5	
1	53.3	64.2	1.7	5.2	11/19/2003	1,930	3,590	0.0120	0.0020	0.0900	0.0030	20.9	
1	53.3	64.2	1.7	5.2	2/18/2004	2,579	5,000	0.0590	<0.002	0.3500	0.0070	1.5	
1	52.9	64.2	1.8	5.0	5/27/2004	1,899	4,188	1.1700	0.3080	0.3570	0.3190	2.2	
1	52.6	64.4	1.9	5.7	9/7/2004	4,700	8,270	1.1100	0.0525	0.3460	0.1382	17.7	mod. odor; gray
1	52.9	64.4	1.8	5.5	11/24/2004	5,200	10,400	0.8810	0.0226	0.1330	0.0717	799.0	mod. odor; gray
1	52.4	64.4	1.9	5.8	3/21/2005	5,750	9,190	2.7600	0.2470	0.3990	0.2862	136.0	mod. odor; gray; sheen
1	52.4	64.4	1.9	5.8	8/15/2005	4,430	6,960	1.0700	0.2260	0.3960	0.2417	126.0	
1	52.5	64.4	1.9	6.0	10/25/2005	2,360	4,420	0.7990	0.0607	0.1460	0.0839	166.0	light skim oil: strong septic odor
1	52.5	64.4	1.9	6.0	1/23/2006	1,960	3,540	0.1410	J[0.00537]	0.0780	0.0229	80.5	light skim oil: strong septic odor
1	52.7	64.4	1.9	6.0	4/25/2006	1,540	3,280	0.7490	0.0143	0.0930	0.0282	67.4	
1	52.9	64.4	1.8	6.0	10/25/2006	1,350	2,800	0.3940	0.0204	0.0774	0.0438	45.2	Light
1	53.1	64.4	1.8	6.0	1/9/2007	873	1,950	0.1880	<0.001	0.0883	0.0076	34.6	Light skim of oil Clear to dark gray Strong septic odor
1	53.2	64.4	1.8	10.0	5/24/2007	873	1,820	0.1430	0.0074	0.0664	0.0227	41.2	Light skim of oil Clear to dark gray Strong septic odor
1	53.4	64.4	1.8	10.0	9/20/2007	800	1,738	0.1890	0.0040	0.0820	0.0290	22.2	Light skim of oil Clear to dark gray Strong septic odor
1	53.4	64.4	1.8	10.0	11/20/2007	320	969	0.0030	<0.002	<0.002	<0.006	35.3	Light skim of oil Clear to dark gray Strong septic odor
1	53.7	64.4	1.7	6.0	2/4/2008	540	1,380	0.1590	0.0610	0.0870	0.0580	23.1	Light skim of oil Clear to dark gray Strong septic odor
1	53.7	64.4	1.7	6.0	4/29/2008	440	1,150	0.1090	0.0200	0.0740	0.0380	22.4	Light skim of oil Clear to dark gray Strong septic odor
1	53.8	64.4	1.7	6.0	7/29/2008	860	2,160	0.9150	0.2610	0.7400	0.6490	<10	Light skim of oil Clear to dark gray Strong septic odor
1	53.9	64.4	1.7	6.0	10/23/2008	680	1,790	0.7850	0.1920	0.5310	0.4500	<10	Clear turning to dark gray Light sheen Strong septic odor
1	53.8	64.5	1.7	6.0	1/26/2009	500	1,330	0.6200	0.0440	0.3720	0.1730	<10	Clear turning to dark gray Light sheen Strong septic odor
1	54.0	64.5	1.7	6.0	4/27/2009	550	1,300	0.2160	0.0040	0.2120	0.1100	14.9	Clear turning to dark gray Light sheen Strong septic odor
1	54.2	64.5	1.6	6.0	8/6/2009	384	1,090	0.0910	0.0160	0.0860	0.1090	14.8	Clear turning to dark gray Light sheen Strong septic odor

1	54.3	64.5	1.6	6.0	10/23/2009	332	896	0.0400	0.0010	0.0860	0.0370	10.9	Clear turning to dark gray Light sheen Strong septic odor
1	54.5	64.4	1.6	6.0	3/3/2010	232	795	0.0130	0.0040	0.0750	0.0410	22.6	Light sheen Clear to dark gray Strong septic odor
1	54.6	64.4	1.6	6.0	5/13/2010	152	599	<0.001	<0.001	0.0160	0.0050	29.9	Light sheen Clear to dark gray Strong septic odor
1	54.6	64.4	1.6	6.0	8/3/2010	124	520	0.0030	0.0010	0.0230	0.0060	24.1	Light sheen Clear to dark gray Strong septic odor
1	54.7	64.4	1.6	6.0	11/1/2010	100	489	0.0030	0.0030	0.0310	0.0080	25.4	Light sheen Clear to dark gray Strong septic odor
1	54.8	64.4	1.5	6.0	6/2/2011	156	565	0.0180	<0.001	0.0760	0.0250	30.9	Light sheen Clear to dark gray Strong septic odor
1	55.0	64.4	1.5	6.0	11/30/2011	120	526	0.0430	0.0010	0.0780	0.0110	29.1	Light sheen Clear to dark gray Strong septic odor
1	55.1	64.4	1.5	6.0	5/25/2012	100	488	0.0720	0.0030	0.0540	0.0170	26.2	Light sheen Clear to dark gray Strong septic odor
1	55.2	64.4	1.5	6.0	11/13/2012	68	421	0.0170	<0.001	0.0580	0.0120	30.9	Light sheen Clear to dark gray Strong septic odor
1	55.3	64.4	1.4	6.0	6/6/2013	72	441	0.0020	0.0010	<0.001	<0.003	38.6	Light sheen Clear to dark gray Strong septic odor
1	55.5	64.4	1.4	6.0	11/18/2013	64	425	0.0220	0.0020	0.0800	0.0070	40.1	Light sheen Clear to dark gray Strong septic odor
1	55.8	64.4	1.4	6.0	6/26/2014	68	408	0.0030	<0.001	<0.001	<0.003	38.0	Light sheen Clear to dark gray Strong septic odor
1	55.7	64.4	1.4	6.0	12/9/2014	88	432	0.0100	0.0020	0.0010	<0.003	44.6	Light sheen Clear to dark gray Strong septic odor
1	55.8	64.4	1.4	6.0	6/23/2015	84	492	0.0200	<0.001	0.0540	0.0030	45.4	Light sheen
1	56.0	64.4	1.4	6.0	11/12/2015	76	422	0.0040	<0.001	<0.001	<0.003	52.8	Light sheen
1	56.1	64.4	1.3	6.0	5/24/2016	56	372	0.0020	<0.001	<0.001	<0.003	43.4	Light sheen
1	56.3	64.4	1.3	6.0	11/14/2016	60	422	0.0050	<0.001	<0.001	<0.003	39.0	Light sheen
1	56.4	64.4	1.3	6.0	5/30/2017	52	420	<0.001	<0.001	<0.002	<0.003	74.0	Light sheen
1	56.6	64.4	1.2	6.0	12/4/2017	92	492	0.0030	<0.001	<0.001	<0.003	37.0	Light sheen
1	56.8	64.4	1.2	6.0	5/22/2018	88	476	0.0080	<0.001	0.0040	<0.003	38.5	Light sheen
1	57.0	64.4	1.2	6.0	11/26/2018	76	481	0.0510	<0.001	0.0440	0.0090	31.8	Light sheen
1	57.4	64.4	1.1	6.0	6/6/2019	64	439	0.0040	0.0040	0.0040	<0.003	36.0	Light Sheen
1	57.6	64.4	1.1	6.0	11/19/2019	72	451	0.0020	<0.001	0.0050	<0.003	33.0	Light Sheen
1	57.8	64.4	1.1	6.0	6/12/2020	72	461	0.0110	<0.001	<0.001	<0.003	38.9	Light sheen Clear to dark gray Strong septic odor
1	57.9	64.4	1.0	6.0	11/13/2020	80	373	<0.001	<0.001	<0.001	<0.003	36.5	Light sheen Clear to dark gray Strong septic odor
1	58.3	64.4	1.0	6.0	6/16/2021	92	490	0.0020	<0.001	<0.001	<0.003	32.5	Light sheen Clear to dark gray Strong septic odor
1	58.6	64.4	1.0	6.0	9/16/2021	88	484	<0.001	<0.001	<0.001	<0.003	37.5	Light sheen Clear to dark gray Strong septic odor

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
2	52.1	63.7	1.9	6.0	6/6/2006	17	286	<0.001	j[0.000839]	j[0.000385]	0.0044	24.7	
2	52.4	63.7	1.8	6.0	10/25/2006	13	264	<0.001	<0.001	<0.001	<0.001	22.8	Clear
2	52.6	63.7	1.8	6.0	1/9/2007	14	322	<0.001	j[0.000540]	<0.001	<0.001	21.7	Clear No odor Well pumps off
2	52.7	63.9	1.8	6.0	5/24/2007	17	254	<0.001	<0.001	<0.001	<0.001	20.1	Clear No odor Well pumps off
2	52.8	63.9	1.8	6.0	9/20/2007	16	262	<0.002	<0.002	<0.002	<0.006	25.6	Clear No odor Well pumps off
2	52.9	63.9	1.8	6.0	11/20/2007	16	283	<0.002	<0.002	<0.002	<0.006	25.0	Clear No odor Well pumps off
2	53.0	64.2	1.8	6.0	2/4/2008	16	296	<0.002	<0.002	<0.002	<0.006	23.0	Clear No odor Well pumps off
2	53.0	64.2	1.8	6.0	4/29/2008	16	283	<0.002	<0.002	<0.002	<0.006	23.8	Clear No odor Well pumps off
2	53.2	64.2	1.8	6.0	7/29/2008	16	312	<0.001	<0.001	<0.001	<0.003	24.0	Clear No odor Well pumps off
2	53.4	64.2	1.7	6.0	10/23/2008	16	386	<0.001	<0.001	<0.001	<0.003	24.6	Clear No odor
2	53.4	66.5	2.1	6.0	1/28/2009	16	282	XXX	XXX	XXX	XXX	24.0	Clear No odor
2	53.5	66.5	2.1	8.0	4/27/2009	16	288	XXX	XXX	XXX	XXX	21.6	Clear No odor
2	53.6	66.5	2.1	8.0	8/6/2009	16	296	XXX	XXX	XXX	XXX	21.2	Clear No odor
2	53.7	66.5	2.1	8.0	10/23/2009	116	666	XXX	XXX	XXX	XXX	71.0	Clear No odor
2	53.8	66.5	2.0	8.0	3/3/2010	16	333	XXX	XXX	XXX	XXX	26.2	Clear No odor
2	53.9	66.5	2.0	8.0	5/13/2010	16	273	XXX	XXX	XXX	XXX	22.6	Clear No odor
2	53.9	66.5	2.0	8.0	8/4/2010	20	311	XXX	XXX	XXX	XXX	19.3	Clear No odor
MW-2 Plugged 10/20/2010													

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	CI	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
3 Shallow	52.8	103.1	32.7	100.0	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	100.0	5/24/2007	599	1,070	<0.001	j[0.000380]	<0.001	<0.001	34.5	Clear Slight odor
3 Shallow	53.1	103.1	32.5	120.0	9/20/2007	500	1,373	<0.002	<0.002	<0.002	<0.006	39.1	Clear Strong odor
3 Shallow	53.2	103.1	32.4	150.0	11/20/2007	776	1,670	<0.002	<0.002	<0.002	<0.006	40.4	Clear Strong odor
3 Shallow	53.3	103.1	32.3	200.0	2/5/2008	670	1,590	<0.002	<0.002	<0.002	<0.006	34.3	Clear Strong odor
3 Shallow	53.3	103.1	32.3	200.0	4/29/2008	750	1,790	<0.002	<0.002	<0.002	<0.006	31.8	Clear Strong odor
3 Shallow	53.5	103.1	32.2	200.0	7/29/2008	760	1,870	<0.001	<0.001	<0.001	<0.003	27.0	Clear Strong odor
3 Shallow	53.6	103.1	32.1	200.0	10/22/2008	464	1,570	<0.001	<0.001	<0.001	<0.003	68.6	Clear Strong odor
3 Shallow	53.7	103.0	32.0	200.0	1/28/2009	710	1,690	XXX	XXX	XXX	XXX	24.3	Clear Strong odor
3 Shallow	53.8	103.0	32.0	200.0	4/27/2009	630	1,790	XXX	XXX	XXX	XXX	18.8	Clear Strong odor
3 Shallow	53.6	103.0	32.1	200.0	8/6/2009	710	1,680	XXX	XXX	XXX	XXX	16.5	Clear Strong odor
3 Shallow	54.0	103.0	31.8	200.0	10/23/2009	600	1,320	XXX	XXX	XXX	XXX	17.3	Clear Strong odor
3 Shallow	54.1	103.0	31.7	200.0	3/4/2010	740	1,950	XXX	XXX	XXX	XXX	26.9	Clear Strong odor
3 Shallow	54.2	103.0	31.7	200.0	5/12/2010	660	1,620	XXX	XXX	XXX	XXX	25.8	Clear Strong odor
3 Shallow	54.2	103.0	31.7	200.0	8/3/2010	580	1,470	XXX	XXX	XXX	XXX	21.0	Clear Strong odor
3 Shallow	54.3	103.0	31.7	200.0	11/2/2010	52	396	XXX	XXX	XXX	XXX	62.1	Clear Strong odor
3 Shallow	54.5	103.0	31.5	200.0	6/2/2011	770	1,560	XXX	XXX	XXX	XXX	34.6	Clear Strong odor
3 Shallow	54.6	103.0	31.5	200.0	11/30/2011	780	1,690	XXX	XXX	XXX	XXX	38.7	Clear Strong odor
3 Shallow	54.7	103.0	31.4	200.0	5/25/2012	830	1,680	XXX	XXX	XXX	XXX	38.7	Clear Strong odor
3 Shallow	54.8	103.0	31.3	200.0	11/14/2012	600	1,380	XXX	XXX	XXX	XXX	30.3	Clear Strong odor
3 Shallow	54.9	103.0	31.2	200.0	6/7/2013	630	1,410	XXX	XXX	XXX	XXX	64.3	Clear Strong odor
3 Shallow	55.2	103.0	31.1	200.0	11/17/2013	460	1,200	XXX	XXX	XXX	XXX	35.9	Clear Strong odor
3 Shallow	55.4	103.0	30.9	200.0	6/27/2014	428	1,140	XXX	XXX	XXX	XXX	30.3	Clear Strong odor
3 Shallow	55.1	103.0	31.1	200.0	12/9/2014	232	600	XXX	XXX	XXX	XXX	24.0	Clear Strong odor
3 Shallow	55.4	103.0	30.9	200.0	6/26/2015	348	874	XXX	XXX	XXX	XXX	27.2	Clear Strong odor
3 Shallow	55.6	103.0	30.8	200.0	11/12/2015	316	1,130	XXX	XXX	XXX	XXX	48.8	Clear Strong odor
3 Shallow	55.8	103.0	30.7	200.0	5/24/2016	300	1,070	XXX	XXX	XXX	XXX	37.8	Clear Strong odor
3 Shallow	55.9	103.0	29.0	200.0	11/14/2016	292	1,070	XXX	XXX	XXX	XXX	50.0	Clear Strong odor
3 Shallow	56.0	103.0	30.0	200.0	5/30/2017	296	998	XXX	XXX	XXX	XXX	48.0	Clear Strong odor
3 Shallow	56.2	103.0	30.0	200.0	12/4/2017	248	922	XXX	XXX	XXX	XXX	35.0	Clear Strong odor
3 Shallow	56.4	103.0	30.3	200.0	5/22/2018	232	896	XXX	XXX	XXX	XXX	58.1	Clear Strong odor
3 Shallow	56.7	103.0	30.1	200.0	11/26/2018	276	906	XXX	XXX	XXX	XXX	39.6	Clear Strong odor
3 Shallow	57.0	103.0	30.0	100.0	6/6/2019	116	806	XXX	XXX	XXX	XXX	27.0	Clear Strong odor
3 Shallow	57.3	103.0	30.0	100.0	11/19/2019	136	471	XXX	XXX	XXX	XXX	38.0	Clear Strong odor
3 Shallow	57.5	103.0	30.0	200.0	6/12/2020	148	661	XXX	XXX	XXX	XXX	33.3	Clear Strong odor
3 Shallow	57.6	103.0	29.0	200.0	11/13/2020	148	661	XXX	XXX	XXX	XXX	33.3	Clear Strong odor
3 Shallow	58.0	103.0	30.0	100.0	6/16/2021	224	862	XXX	XXX	XXX	XXX	25.5	Clear Strong odor
3 Shallow	58.3	103.0	30.0	100.0	9/16/2021	216	946	XXX	XXX	XXX	XXX	14.4	Clear Strong odor

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	CI	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
3 Deep	52.8	103.1	32.7	100.0	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	100.0	5/24/2007	648	1,090	<0.001	j[0.000320]	<0.001	<0.001	34.7	Clear Slight odor
3 Deep	53.1	103.1	32.5	120.0	9/20/2007	570	1,442	<0.002	<0.002	<0.002	<0.006	34.0	Clear Strong Odor
3 Deep	53.2	103.1	32.4	150.0	11/20/2007	570	1,312	<0.002	<0.002	<0.002	<0.006	42.5	Clear Strong odor
3 Deep	53.3	103.1	32.3	200.0	2/5/2008	820	1,710	<0.002	<0.002	<0.002	<0.006	32.7	Clear Strong odor
3 Deep	53.3	103.1	32.3	200.0	4/29/2008	930	1,920	<0.002	<0.002	<0.002	<0.006	36.7	Clear Strong odor
3 Deep	53.5	103.1	32.2	200.0	7/29/2008	1,010	2,110	<0.001	<0.001	<0.001	<0.003	40.0	Clear Strong odor
3 Deep	53.6	103.1	32.1	200.0	10/22/2008	670	1,710	<0.001	<0.001	<0.001	<0.003	<10	Clear Strong odor
3 Deep	53.7	103.0	32.0	200.0	1/28/2009	1,560	3,000	XXX	XXX	XXX	XXX	31.0	Clear Strong odor
3 Deep	53.8	103.0	32.0	200.0	4/27/2009	1,080	2,770	XXX	XXX	XXX	XXX	19.2	Clear Strong odor
3 Deep	53.6	103.0	32.1	200.0	8/6/2009	1,090	2,110	XXX	XXX	XXX	XXX	26.8	Clear Strong odor
3 Deep	54.0	103.0	31.8	200.0	10/23/2009	720	1,930	XXX	XXX	XXX	XXX	14.4	Clear Strong odor
3 Deep	54.1	103.0	31.7	200.0	3/4/2010	810	1,860	XXX	XXX	XXX	XXX	32.2	Clear Strong odor
3 Deep	54.2	103.0	31.7	200.0	5/12/2010	760	1,940	XXX	XXX	XXX	XXX	28.2	Clear Strong odor
3 Deep	54.2	103.0	31.7	200.0	8/3/2010	790	1,510	XXX	XXX	XXX	XXX	29.4	Clear Strong odor
3 Deep	54.3	103.0	31.7	200.0	11/2/2010	950	2,050	XXX	XXX	XXX	XXX	22.4	Clear Strong odor
3 Deep	54.5	103.0	31.5	200.0	6/2/2011	570	1,400	XXX	XXX	XXX	XXX	48.6	Clear Strong odor
3 Deep	54.6	103.0	31.5	200.0	11/30/2011	930	2,140	XXX	XXX	XXX	XXX	23.2	Clear Strong odor
3 Deep	54.7	103.0	31.4	200.0	5/25/2012	940	2,090	XXX	XXX	XXX	XXX	35.5	Clear Strong odor
3 Deep	54.8	103.0	31.3	200.0	11/14/2012	1,040	2,450	XXX	XXX	XXX	XXX	27.6	Clear Strong odor
3 Deep	54.9	103.0	31.2	200.0	6/7/2013	1,040	2,520	XXX	XXX	XXX	XXX	55.1	Clear Strong odor
3 Deep	55.2	103.0	31.1	200.0	11/17/2013	930	2,090	XXX	XXX	XXX	XXX	29.0	Clear Strong odor
3 Deep	55.7	103.0	30.7	200.0	6/27/2014	940	2,200	XXX	XXX	XXX	XXX	22.2	Clear Strong odor
3 Deep	55.1	103.0	31.1	200.0	12/9/2014	410	1,040	XXX	XXX	XXX	XXX	27.6	Clear Strong odor
3 Deep	55.4	103.0	30.9	200.0	6/23/2015	328	998	XXX	XXX	XXX	XXX	27.4	Clear Strong odor
3 Deep	55.6	103.0	30.8	200.0	11/12/2015	710	1,500	XXX	XXX	XXX	XXX	37.4	Clear Strong odor
3 Deep	55.8	103.0	30.7	200.0	5/24/2016	304	1,070	XXX	XXX	XXX	XXX	41.1	Clear Strong odor
3 Deep	55.9	103.0	30.6	200.0	11/14/2016	292	1,070	XXX	XXX	XXX	XXX	50.8	Clear Strong odor
3 Deep	56.0	103.0	30.0	200.0	5/30/2017	392	992	XXX	XXX	XXX	XXX	68.0	Clear Strong odor
3 Deep	56.2	103.0	30.0	200.0	12/4/2017	224	956	XXX	XXX	XXX	XXX	19.0	Clear Strong odor
3 Deep	56.4	103.0	30.3	200.0	5/22/2018	260	794	XXX	XXX	XXX	XXX	61.6	Clear Strong odor
3 Deep	56.7	103.0	30.1	200.0	11/26/2018	236	452	XXX	XXX	XXX	XXX	33.5	Clear Strong odor
3 Deep	57.0	103.0	29.0	100.0	6/6/2019	116	806	XXX	XXX	XXX	XXX	27.0	Clear Strong odor
3 Deep	67.3	103.0	29.0	100.0	11/19/2019	168	535	XXX	XXX	XXX	XXX	27.0	Clear Strong odor
3 Deep	57.5	103.0	30.0	200.0	6/12/2020	160	669	XXX	XXX	XXX	XXX	36.0	Clear Strong odor
3 Deep	57.6	103.0	29.0	200.0	11/13/2020	176	715	XXX	XXX	XXX	XXX	32.5	Clear Strong odor
3 Deep	58.0	103.0	29.0	200.0	6/16/2021	220	873	XXX	XXX	XXX	XXX	24.6	Clear Strong odor
3 Deep	58.3	103.0	29.0	200.0	9/16/2021	216	939	XXX	XXX	XXX	XXX	11.0	Clear Strong odor

MW	Depth	Total	Well	Volume	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl	Total	Sulfate	Comments
4	53.0	68.3	9.9	35.0	5/24/2007	1,200	2,050	0.0521	0.0582	0.0170	0.0282	43.2	Clear to gray Strong odor Light sheen of oil
4	53.2	68.3	9.8	35.0	9/20/2007	1,600	3,262	0.1460	0.0580	0.0230	0.0420	17.8	Clear to gray Strong odor Light sheen of oil
4	53.2	68.3	9.8	35.0	11/20/2007	1,600	3,256	0.0360	0.0340	0.0100	0.0170	26.0	Clear to gray Strong odor Light sheen of oil
4	53.3	68.3	9.7	35.0	2/4/2008	2,680	5,140	0.4110	0.1510	0.0820	0.0920	9.9	Clear to gray Light sheen of oil Clear to dark gray Strong septic odor
4	53.3	68.3	9.7	35.0	4/29/2008	1,800	3,370	0.5290	0.2220	0.1500	0.1760	11.2	Clear turning to dark gray Light sheen of oil Strong septic odor
4	53.4	68.3	9.6	35.0	7/29/2008	1,420	2,620	0.2080	0.0860	0.0410	0.0600	20.0	Clear turning to dark gray Light sheen of oil Strong septic odor
4	53.5	68.3	9.6	35.0	10/23/2008	1,040	2,110	0.1890	0.1370	0.0780	0.1090	21.5	Clear turning to dark gray Light sheen of oil Strong septic odor
4	53.6	68.2	9.5	35.0	1/26/2009	730	1,650	0.1960	0.1600	0.0480	0.0590	21.9	Clear turning to dark gray Light sheen Strong septic odor
4	53.7	68.2	9.4	35.0	4/27/2009	940	1,970	0.0970	0.0330	0.0370	0.0320	20.9	Clear turning to dark gray Light sheen Strong septic odor
4	53.7	68.2	9.4	35.0	8/6/2009	770	1,750	0.0790	0.0550	0.0460	0.0690	16.9	Clear turning to dark gray Light sheen Strong septic odor
4	53.9	68.2	9.2	35.0	10/23/2009	660	1,420	0.0180	0.0120	0.0120	0.0100	13.6	Clear turning to dark gray Light sheen Strong septic odor
4	54.1	68.2	9.1	35.0	3/3/2010	670	1,490	0.0660	0.0640	0.0250	0.0470	20.2	Product present Sock in well Clear to gray Strong odor
4	54.2	66.2	9.1	35.0	5/13/2010	500	1,270	0.0020	0.0050	0.0020	0.0050	26.4	Product present Sock in well Clear to gray Strong odor
4	54.2	68.2	9.1	35.0	8/3/2010	396	1,010	0.0110	0.0080	0.0030	0.0050	23.3	Product present Sock in well Clear to gray Strong odor
4	54.3	68.2	9.0	35.0	11/1/2010	252	689	0.0060	0.0070	0.0030	0.0040	24.5	Heavy sheen Clear to gray Strong odor Sock in well
4	54.4	68.2	8.9	35.0	6/2/2011	328	887	0.0030	0.0030	0.0030	<0.003	32.5	Heavy sheen Clear to gray Strong odor Sock in well
4	54.6	68.2	8.8	35.0	11/30/2011	88	457	0.0080	0.0060	0.0030	<0.003	30.8	Heavy sheen Clear to gray Strong odor Sock in well
4	54.8	68.2	8.7	35.0	5/25/2012	280	792	0.1570	0.4050	0.2120	0.3630	25.9	Heavy sheen Clear to gray Strong odor Sock in well
4	54.9	68.2	8.6	35.0	11/13/2012	92	469	0.1420	0.2240	0.2000	0.3140	27.4	Heavy sheen Clear to gray Strong odor Sock in well
4	55.0	68.2	8.6	35.0	6/6/2013	96	462	0.1530	0.0190	0.1180	0.0230	23.6	Heavy sheen Clear to gray Strong odor Sock in well
4	55.2	68.2	8.4	35.0	11/18/2013	180	590	0.1180	0.0500	0.1950	0.0430	23.3	Heavy sheen present/Sock placed in well/Clear to gray/Strong odor
4	55.5	68.2	8.2	35.0	6/27/2014	144	478	0.2440	0.0820	0.1770	0.0550	13.8	Heavy sheen Clear to gray Strong odor Sock in well
4	55.1	68.2	8.5	35.0	12/9/2014	332	852	0.1430	0.0860	0.1560	0.0440	28.5	Heavy sheen present/Sock placed in well/Clear to gray/Strong odor
4	55.5	68.2	8.3	35.0	6/23/2015	180	656	0.0800	0.0250	0.1010	0.0160	15.8	Heavy sheen present/Sock placed in well/Clear to gray/Strong odor/Heavy sheen
4	55.6	68.2	8.0	35.0	11/12/2015	152	604	0.0480	0.0150	0.0760	0.0090	12.2	Heavy sheen present/Sock placed in well
4	55.8	68.2	8.0	35.0	5/24/2016	204	666	0.0740	0.0110	0.0320	0.0060	33.4	Heavy sheen present/Sock placed in well
4	56.0	68.2	8.0	35.0	11/14/2016	144	800	0.0030	<0.001	<0.001	<0.003	48.0	Heavy sheen present/Sock placed in well
4	56.1	68.2	7.8	35.0	5/30/2017	312	988	0.0200	<0.001	0.0520	0.0720	64.0	Heavy sheen present/Sock placed in well
4	56.3	68.2	7.7	35.0	12/4/2017	204	650	0.0230	0.0070	0.0080	0.0040	27.0	Heavy sheen present/Sock placed in well
4	56.5	68.2	7.6	35.0	5/22/2018	208	600	0.0310	0.0070	0.0080	0.0050	30.1	Heavy sheen present/Sock placed in well
4	56.9	68.2	7.4	35.0	11/26/2018	160	624	0.0280	0.0100	0.0100	0.0070	37.4	Heavy sheen present/Sock placed in well
4	57.1	67.2	7.2	35.0	6/6/2019	148	574	0.0090	0.0040	0.0040	<0.003	28.0	Heavy sheen present/Sock placed in well
4	57.3	67.2	7.1	25.0	11/19/2019	140	552	0.0070	0.0030	0.0030	<0.003	28.0	Heavy sheen present/Sock placed in well
4	57.5	68.2	6.9	35.0	6/12/2020	112	513	0.0070	0.0030	0.0020	<0.003	30.2	Heavy sheen present/Sock placed in well/Clear to gray/Strong odor/Heavy sheen
4	57.7	68.2	6.8	35.0	11/13/2020	120	509	<0.001	<0.001	<0.001	<0.003	30.4	Heavy sheen present/Sock placed in well/Clear to gray/Strong odor/Heavy sheen
4	58.1	67.2	6.6	35.0	6/16/2021	96	494	0.0050	0.0030	0.0010	<0.003	32.4	Heavy sheen present/Sock placed in well/Clear to gray/Strong odor
4	58.4	67.2	6.6	35.0	9/16/2021	88	477	<0.001	<0.001	<0.001	<0.003	40.6	Heavy sheen present/Sock placed in well/Clear to gray/Strong odor



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

June 23, 2021

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 06/18/21 12:40.

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

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



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Analytical Results For:

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

Received:	06/18/2021	Sampling Date:	06/15/2021
Reported:	06/23/2021	Sampling Type:	Water
Project Name:	VACUUM F-35 SWD AND G-35 SWD	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T17S-R35E-SEC35 F&G-LEA CTY., NM		

Sample ID: F -35 SWD MONITOR WELL #3- SHALLOW (H211581-01)

Chloride, SM4500Cl-B		mg/L		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride*	80.0	4.00	06/21/2021	ND	104	104	100	3.92		
Sulfate 375.4		mg/L		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Sulfate*	50.7	10.0	06/22/2021	ND	23.5	117	20.0	9.79		
TDS 160.1		mg/L		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
TDS*	424	5.00	06/23/2021	ND	527	105	500	0.00		

Sample ID: F -35 SWD MONITOR WELL #3- DEEP (H211581-02)

Chloride, SM4500Cl-B		mg/L		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride*	80.0	4.00	06/21/2021	ND	104	104	100	3.92		
Sulfate 375.4		mg/L		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Sulfate*	52.9	10.0	06/22/2021	ND	23.5	117	20.0	9.79		
TDS 160.1		mg/L		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
TDS*	417	5.00	06/23/2021	ND	527	105	500	0.00		

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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:

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

Received:	06/18/2021	Sampling Date:	06/16/2021
Reported:	06/23/2021	Sampling Type:	Water
Project Name:	VACUUM F-35 SWD AND G-35 SWD	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T17S-R35E-SEC35 F&G-LEA CTY., NM		

Sample ID: G-35 SWD MONITOR WELL #1 (H211581-03)

BTEX 8021B		mg/L		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	0.002	0.001	06/18/2021	ND	0.021	104	0.0200	0.0958	
Toluene*	<0.001	0.001	06/18/2021	ND	0.019	96.0	0.0200	1.67	
Ethylbenzene*	<0.001	0.001	06/18/2021	ND	0.019	96.8	0.0200	0.685	
Total Xylenes*	<0.003	0.003	06/18/2021	ND	0.060	100	0.0600	1.71	
Total BTEX	<0.006	0.006	06/18/2021	ND					

Surrogate: 4-Bromofluorobenzene (PID) 113 % 77.1-124

Chloride, SM4500CI-B		mg/L		Analyzed By: GM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	92.0	4.00	06/21/2021	ND	104	104	100	3.92	

Sulfate 375.4		mg/L		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	32.5	10.0	06/22/2021	ND	23.5	117	20.0	9.79	

TDS 160.1		mg/L		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	490	5.00	06/23/2021	ND	527	105	500	0.00	

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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:

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

Received:	06/18/2021	Sampling Date:	06/16/2021
Reported:	06/23/2021	Sampling Type:	Water
Project Name:	VACUUM F-35 SWD AND G-35 SWD	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T17S-R35E-SEC35 F&G-LEA CTY., NM		

Sample ID: G-35 SWD MONITOR WELL #3 - SHALLOW (H211581-04)

Chloride, SM4500Cl-B		mg/L		Analyzed By: GM						
	Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*		224	4.00	06/21/2021	ND	104	104	100	3.92	
	Sulfate 375.4									
		mg/L		Analyzed By: AC						
	Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*		25.5	10.0	06/22/2021	ND	23.5	117	20.0	9.79	
	TDS 160.1									
		mg/L		Analyzed By: AC						
	Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*		862	5.00	06/23/2021	ND	527	105	500	0.00	

Sample ID: G-35 SWD MONITOR WELL #3- DEEP (H211581-05)

Chloride, SM4500Cl-B		mg/L		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride*	220	4.00	06/21/2021	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*	24.6	10.0	06/22/2021	ND	23.5	117	20.0	9.79		
TDS 160.1		mg/L		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
TDS*	873	5.00	06/23/2021	ND	527	105	500	0.00		

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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:

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

Received:	06/18/2021	Sampling Date:	06/16/2021
Reported:	06/23/2021	Sampling Type:	Water
Project Name:	VACUUM F-35 SWD AND G-35 SWD	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T17S-R35E-SEC35 F&G-LEA CTY., NM		

Sample ID: G-35 SWD MONITOR WELL #4 (H211581-06)

BTX 8021B		mg/L		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	0.005	0.001	06/18/2021	ND	0.021	104	0.0200	0.0958	
Toluene*	0.003	0.001	06/18/2021	ND	0.019	96.0	0.0200	1.67	
Ethylbenzene*	0.001	0.001	06/18/2021	ND	0.019	96.8	0.0200	0.685	
Total Xylenes*	<0.003	0.003	06/18/2021	ND	0.060	100	0.0600	1.71	
Total BTX	0.009	0.006	06/18/2021	ND					

Surrogate: 4-Bromofluorobenzene (PID) 113 % 77.1-124

Chloride, SM4500CI-B		mg/L		Analyzed By: GM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	96.0	4.00	06/21/2021	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*	32.4	10.0	06/22/2021	ND	23.5	117	20.0	9.79	

TDS 160.1		mg/L		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	494	5.00	06/23/2021	ND	527	105	500	0.00	

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Celey D. Keene, Lab Director/Quality Manager



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Notes and Definitions

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

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

Celey D. Keene, Lab Director/Quality Manager

Cardinal Laboratories, Inc.

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

LAB Order ID # _____

ANALYSIS REQUEST

(Circle or Specify Method No.)

Project #: _____ Project Name: Vacuum F-35 SWD and G-35 SWD

Project Location: T17S-R35E-Sec35 F and G ~ Lea County - New Mexico

LAB # (LAB USE ONLY)	FIELD CODE	(G)rab or (C)omp	# CONTAINERS	MATRIX				PRESERVATIVE METHOD					SAMPLING		
				WATER	SOIL	AIR	SLUDGE	HCL (2 40ml VOA)	HNO ₃	NaHSO ₄	H ₂ SO ₄	ICE (1-Liter HDPE)	NONE	DATE (2021)	TIME
421581															
1	F-35 SWD Monitor Well #3-Shallow	G	1	X								1	6/15	11:30	
2	F-35 SWD Monitor Well #3-Deep	G	1	X								1	6/15	11:15	
3	G-35 SWD Monitor Well #1	G	3	X					2			1	6/16	9:10	
4	G-35 SWD Monitor Well #3-Shallow	G	1	X								1	6/16	14:25	
5	G-35 SWD Monitor Well #3-Deep	G	1	X								1	6/16	14:15	
6	G-35 SWD Monitor Well #4	G	3	X					2			1	6/16	10:35	

[illegible]

Relinquished by: <i>Rozanne Johnson</i>	Date: <i>6/18/21</i>	Time: <i>12:35</i>	Received by: <i>Janara Alday</i>	Date: <i>6/18/21</i>	Time: <i>1240</i>
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:		<table border="1"> <tr> <td></td> <td>Cool</td> <td></td> <td>Intact</td> </tr> <tr> <td>Yes</td> <td>☒</td> <td>Yes</td> <td>☒</td> </tr> <tr> <td>No</td> <td>☐</td> <td>No</td> <td>☐</td> </tr> </table>			Cool		Intact	Yes	☒	Yes	☒	No	☐	No	☐	(Initials) 	
	Cool		Intact														
Yes	☒	Yes	☒														
No	☐	No	☐														

REMARKS:

Email Results to: kjones@riceswd.com
rozanne@sdacres.com



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

September 28, 2021

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 09/22/21 16:00.

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

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

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

Accreditation applies to public drinking water matrices.

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

Sincerely,

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

Celey D. Keene

Lab Director/Quality Manager



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

Analytical Results For:

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

Received:	09/22/2021	Sampling Date:	09/17/2021
Reported:	09/28/2021	Sampling Type:	Water
Project Name:	VACUUM F-35 SWD AND G-35 SWD	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T17S-R35E-SEC35 F&G-LEA CTY., NM		

Sample ID: F -35 SWD MONITOR WELL #3- SHALLOW (H212639-01)

Chloride, SM4500Cl-B		mg/L		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride*	80.0	4.00	09/23/2021	ND	100	100	100	3.92		
Sulfate 375.4		mg/L		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Sulfate*	69.7	10.0	09/24/2021	ND	20.0	100	20.0	1.10		
TDS 160.1		mg/L		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
TDS*	423	5.00	09/27/2021	ND	268	89.3	300	1.07		

Sample ID: F -35 SWD MONITOR WELL #3- DEEP (H212639-02)

Chloride, SM4500Cl-B		mg/L		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride*	84.0	4.00	09/23/2021	ND	100	100	100	3.92		
Sulfate 375.4		mg/L		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Sulfate*	74.2	10.0	09/24/2021	ND	20.0	100	20.0	1.10		
TDS 160.1		mg/L		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
TDS*	450	5.00	09/27/2021	ND	268	89.3	300	1.07		

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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:

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

Received:	09/22/2021	Sampling Date:	09/16/2021
Reported:	09/28/2021	Sampling Type:	Water
Project Name:	VACUUM F-35 SWD AND G-35 SWD	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T17S-R35E-SEC35 F&G-LEA CTY., NM		

Sample ID: G-35 SWD MONITOR WELL #1 (H212639-03)

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	09/27/2021	ND	0.019	92.7	0.0200	1.82	
Toluene*	<0.001	0.001	09/27/2021	ND	0.020	99.4	0.0200	2.33	
Ethylbenzene*	<0.001	0.001	09/27/2021	ND	0.020	99.3	0.0200	1.14	
Total Xylenes*	<0.003	0.003	09/27/2021	ND	0.061	102	0.0600	0.254	
Total BTX	<0.006	0.006	09/27/2021	ND					

Surrogate: 4-Bromofluorobenzene (PID) 102 % 77.1-124

Chloride, SM4500CI-B		mg/L		Analyzed By: GM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	88.0	4.00	09/23/2021	ND	100	100	100	3.92	

Sulfate 375.4		mg/L		Analyzed By: GM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	37.5	10.0	09/24/2021	ND	20.0	100	20.0	1.10	

TDS 160.1		mg/L		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
TDS*	484	5.00	09/27/2021	ND	268	89.3	300	1.07		

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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:

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

Received:	09/22/2021	Sampling Date:	09/16/2021
Reported:	09/28/2021	Sampling Type:	Water
Project Name:	VACUUM F-35 SWD AND G-35 SWD	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T17S-R35E-SEC35 F&G-LEA CTY., NM		

Sample ID: G-35 SWD MONITOR WELL #3 - SHALLOW (H212639-04)

Chloride, SM4500Cl-B		mg/L		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride*	216	4.00	09/23/2021	ND	100	100	100	3.92		
Sulfate 375.4		mg/L		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Sulfate*	14.4	10.0	09/24/2021	ND	20.0	100	20.0	1.10		
TDS 160.1		mg/L		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
TDS*	946	5.00	09/27/2021	ND	268	89.3	300	2.79		

Sample ID: G-35 SWD MONITOR WELL #3 - DEEP (H212639-05)

Chloride, SM4500Cl-B		mg/L		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride*	216	4.00	09/23/2021	ND	100	100	100	3.92		
Sulfate 375.4		mg/L		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Sulfate*	11.0	10.0	09/24/2021	ND	20.0	100	20.0	1.10		
TDS 160.1		mg/L		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
TDS*	939	5.00	09/27/2021	ND	268	89.3	300	2.79		

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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:

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

Received:	09/22/2021	Sampling Date:	09/16/2021
Reported:	09/28/2021	Sampling Type:	Water
Project Name:	VACUUM F-35 SWD AND G-35 SWD	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T17S-R35E-SEC35 F&G-LEA CTY., NM		

Sample ID: G-35 SWD MONITOR WELL #4 (H212639-06)

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	09/27/2021	ND	0.019	92.7	0.0200	1.82		
Toluene*	<0.001	0.001	09/27/2021	ND	0.020	99.4	0.0200	2.33		
Ethylbenzene*	<0.001	0.001	09/27/2021	ND	0.020	99.3	0.0200	1.14		
Total Xylenes*	<0.003	0.003	09/27/2021	ND	0.061	102	0.0600	0.254		
Total BTEX	<0.006	0.006	09/27/2021	ND						

Surrogate: 4-Bromofluorobenzene (PID) 102 % 77.1-124

Chloride, SM4500Cl-B		mg/L		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride*	88.0	4.00	09/23/2021	ND	100	100	100	3.92		

Sulfate 375.4		mg/L		Analyzed By: GM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	40.6	10.0	09/24/2021	ND	20.0	100	20.0	1.10	

TDS 160.1		mg/L		Analyzed By: GM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	477	5.00	09/27/2021	ND	268	89.3	300	2.79	

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Notes and Definitions

QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
BS-3	Blank spike recovery outside of lab established statistical limits, but still within method limits. Data is not adversely affected.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C Samples reported on an as received basis (wet) unless otherwise noted on report

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

Celey D. Keene, Lab Director/Quality Manager

Cardinal Laboratories, Inc.

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

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

LAB Order ID # _____

ANALYSIS REQUEST

(Circle or Specify Method No.)

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

BILL TO Company: **RICE Operating Company** PO#
Address: (Street, City, Zip)
122 W Taylor Street ~ Hobbs, New Mexico 88240
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: **Rozanne Johnson (575) 631-9310**

LAB # (LAB USE ONLY)	FIELD CODE	(G)rab or (C)omp	# CONTAINERS	MATRIX				PRESERVATIVE METHOD					SAMPLING		
				WATER	SOIL	AIR	SLUDGE	HCL (2 40ml VOA)	HNO ₃	NaHSO ₄	H ₂ SO ₄	ICE (1-1 Liter HDPE)	NONE	DATE (2021)	TIME
1	F-35 SWD Monitor Well #3-Shallow	G	1	X								1		9/17	10:30
2	F-35 SWD Monitor Well #3-Deep	G	1	X								1		9/17	10:20
3	G-35 SWD Monitor Well #1	G	3	X					2			1		9/16	10:45
4	G-35 SWD Monitor Well #3-Shallow	G	1	X								1		9/16	15:40
5	G-35 SWD Monitor Well #3-Deep	G	1	X								1		9/16	15:30
6	G-35 SWD Monitor Well #4	G	3	X					2			1		9/16	12:20

MTBE 8021B/602	BTEX 8021B/602	TPH 418.1/TX1005 / TX1005 Extended (C35)	PAH 8270C	Total Metals Ag As Ba Cd Cr Pb Se Hg 6010B/200.7	TCLP Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Volatiles	TCLP Semi Volatiles	TCLP Pesticides	RCI	GC/MS Vol. 8260B/624	GC/MS Semi. Vol. 8270C/625	PCB's 8082/608	Pesticides 8081A/608	BOD, TSS, pH	Moisture Content	Cations (Ca, Mg, Na, K)	Anions (Cl, SO ₄ , CO ₃ , HCO ₃)	Sulfates	Total Dissolved Solids	Chlorides	Turn Around Time ~ 24 Hours
																		X	X	X	
																		X	X	X	
																		X	X	X	
																		X	X	X	
																		X	X	X	
																		X	X	X	

Relinquished by: **Rozanne Johnson** Date: **9/22/2021** Time: **15:55**

Received by: **Rozanne Johnson** Date: **9-22-21** Time: **1600**

Phone Results Yes No

Fax Results Yes No Additional Fax Number:

REMARKS:

Email Results to: kjones@riceswd.com
rozanne@sdacres.com

Relinquished by: _____ Date: _____ Time: _____

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

Delivered By: (Circle One)

Sample Condition

CHECKED BY:

Sampler - UPS - Bus - Other:

Cool Intact
Yes ☒ Yes ☒
No ☐ No ☐

(Initials)
Y.O.

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

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

CONDITIONS

Action 90581

CONDITIONS

Operator: RICE OPERATING COMPANY 122 W Taylor Hobbs, NM 88240	OGRID: 19174
	Action Number: 90581
	Action Type: [UF-GWA] Ground Water Abatement (GROUND WATER ABATEMENT)

CONDITIONS

Created By	Condition	Condition Date
michael.buchanan	Review of the 2021 Annual Report for Vacuum F-35 & G-35 SWD: Content Satisfactory 1.Continue further evaluation at F-35 by groundwater monitoring MW-1. 2. Continue to monitor groundwater at both sites. 3. Complete and submit 2022 & 2023 Annual Report and submit by April 1, 2024.	7/28/2023