

**March 31, 2016**

**Tomáš Oberding, PhD**

Environmental Bureau, Oil Conservation Division

New Mexico Energy, Minerals, & Natural Resources Department

1220 S. St. Francis Drive

Santa Fe, New Mexico 87505

**RE: 2015 Annual Groundwater Monitoring Report  
Rice Operating Company – BD SWD System  
BD Santa Rita EOL Release Site (AP-58): UL/A, Sec. 27, T22S, R37E**

Dr. Oberding:

ROC is the service provider (agent) for the BD 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 site is located approximately 4.5 miles southeast of Eunice, New Mexico at UL/A, Sec. 27, T22S, R37E as shown on the Site Location Map. Groundwater sampling at the site indicated that the depth to groundwater is located at 54 +/- feet.

On November 22<sup>nd</sup>, 2003, ROC discovered a leak from a 2 inch PVC compression coupling. After initial backhoe characterization, the site was disclosed to NMOCD as a potential groundwater impact site on January 6<sup>th</sup>, 2004. Since groundwater impact was suspected, MW-1 was installed on August 30<sup>th</sup>, 2005. On October 30<sup>th</sup>, 2007, an up gradient well, MW-2, and a down gradient well, MW-3, were installed to fully delineate groundwater. NMOCD approved the Amended Stage 2 Abatement Plan on February 4<sup>th</sup>, 2009. As a result, MW-1 was plugged and abandoned on February 27<sup>th</sup>, 2009, and the excavation for liner installation commenced on March 24<sup>th</sup>, 2009. Two, 1 ft thick clay liners, one with dimensions of 40 x 20 ft at 30 ft bgs and one with dimensions of 40 x 50 ft at 12 ft bgs, were installed and a 20-mil plastic liner of equal size was placed above both clay layers. Each plastic liner was padded with a foot of blow sand. The site was backfilled with clean soil, contoured to the surrounding location, and seeded with a native vegetative mix. On June 16<sup>th</sup> and 17<sup>th</sup>, 2009, MW-4 and RW-1 were installed at the site. On October 10<sup>th</sup>, 2012, ROC submitted a Soil Closure Request which was approved by NMOCD on the same day.

Groundwater recovery began on June 22<sup>nd</sup>, 2010 from RW-1. Since that time, approximately 37,601 barrels of groundwater have been removed. Based on the most recent sampling event, this equates to approximately 3,109 Kg of chlorides removed from the site. Since pumping efforts began, quarterly groundwater sampling readings have generally remained steady in the down gradient wells (RW-1, MW-3, and MW-4) for both chlorides and TDS. Average

April 1, 2016

concentrations for those wells have decreased since sampling began when the wells were installed. This indicates that the pumping program at the site has been effective in reducing the chloride load in the groundwater. As such, ROC will continue the pumping program to continue throughout the 2016 year and will evaluate the data for continued pumping efficacy. In addition, quarterly groundwater sampling will continue through 2016.

Attached is the Appendix, which contains:

1. A Site Location Map.
2. A map showing well locations.
3. A table and graph presenting all laboratory results and depth to groundwater for each well at the site.
4. The laboratory analytical results for the most recent sampling event.

Basin appreciates the opportunity to work with you on this project. Please contact me at (575) 393-2967 or Katie Jones Davis at (575) 393-9174 if you have any questions or wish to further discuss this site. Thank you for your time and consideration.

Sincerely,

A handwritten signature in cursive script, reading "Kyle Norman", followed by a horizontal line.

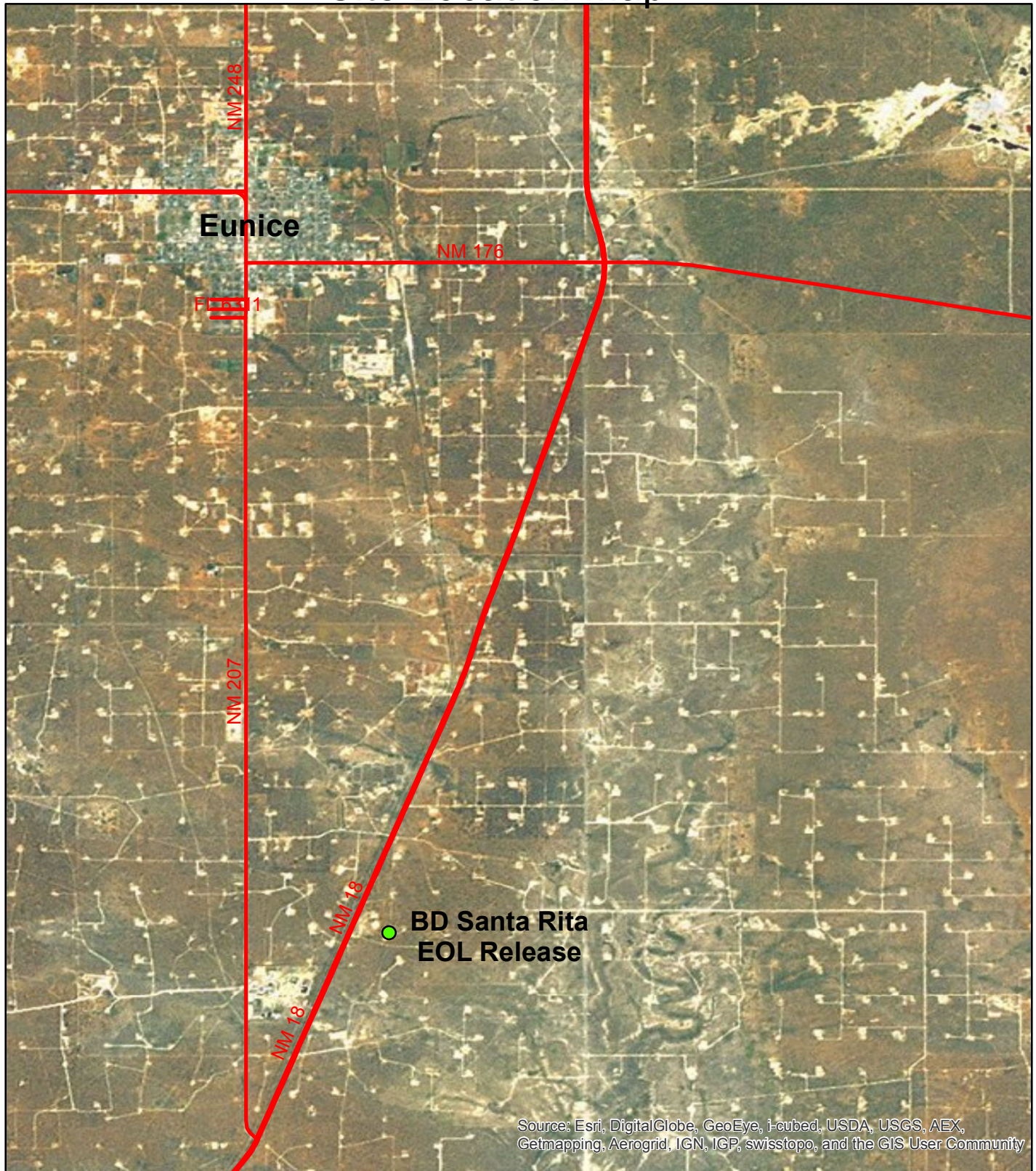
Kyle Norman  
Basin Environmental Service Technologies  
Project Manager

Cc – Katie Jones Davis (ROC)

appendix



# Site Location Map



## ***BD Santa Rita EOL Release***

Unit Letter A, Section 27,  
T22S, R37E

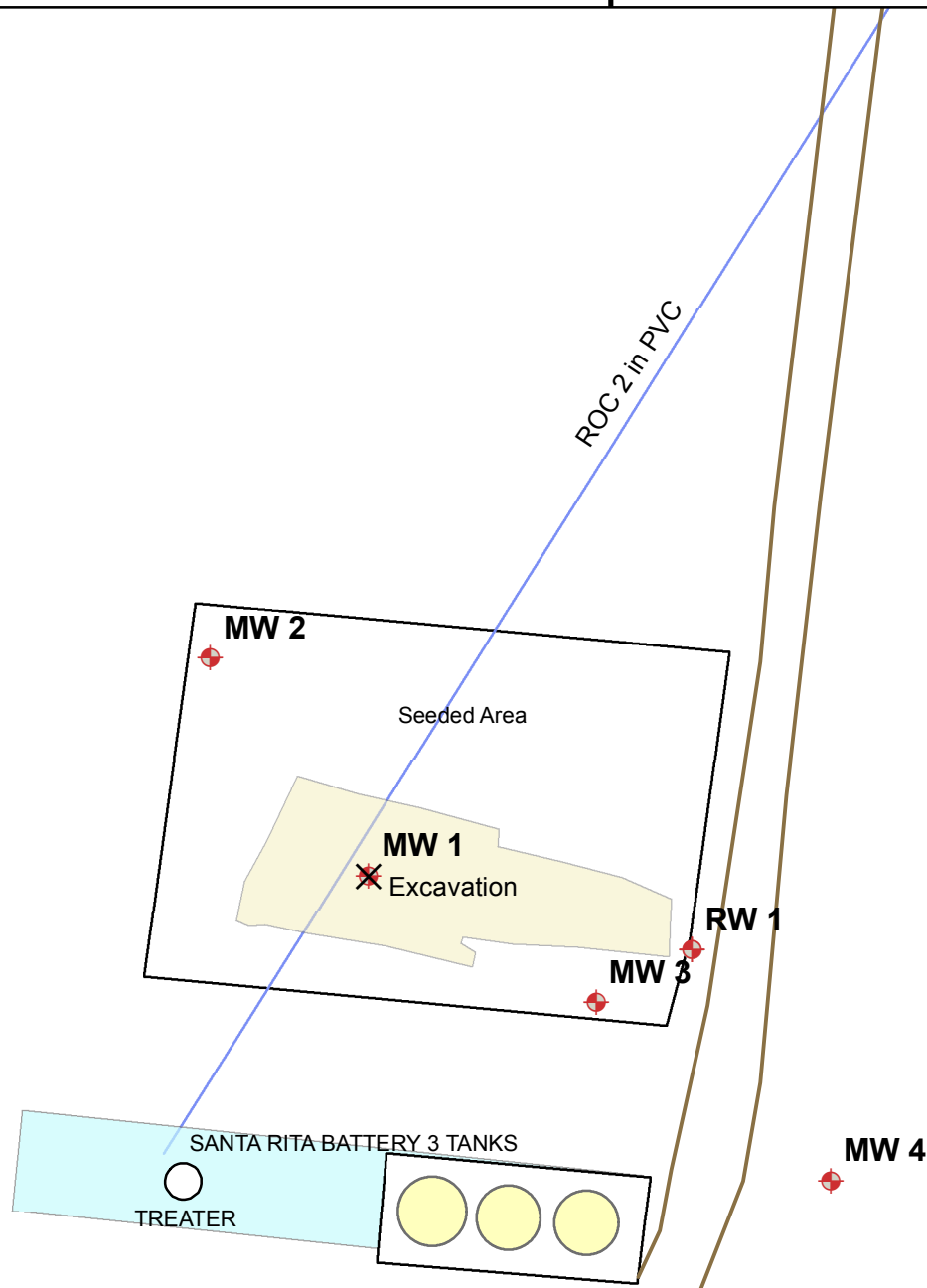
NMOCD Case #: AP-58



0 0.3 0.6 1.2  
Miles

Drawing date: 2/24/24  
Drafted by: L. Flores

# Site Map



## ***BD Santa Rita EOL Release***

Unit Letter A, Section 27,  
T22S, R37E

NMOCD Case #: AP-58



0 15 30 60  
Feet

Drawing date: 2/24/14  
Drafted by: L. Flores

**ROC - BD Santa Rita EOL (AP-58)**  
**Unit Letter A, Section 27, T22S, R37E**

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
1	54.04	63.58	1.53	4.752	9/2/2005	4480	7600	<0.001	<0.001	<0.001	<0.001	1380	red & silty
1	53.85	63.58	1.6	5	10/24/2005	7170	16400	<0.001	<0.001	<0.001	<0.001	726	red & silty
1	53.98	63.58	1.5	5	1/23/2006	7450	14300	<0.001	<0.001	<0.001	<0.001	723	red & silty
1	54.07	63.58	1.5	6	4/24/2006	7100	14300	<0.001	<0.001	<0.001	<0.001	675	
1	54.08	63.58	1.5	10	7/19/2006	6180	14000	<0.001	<0.001	<0.001	<0.001	583	
1	53.99	63.58	1.5	15	10/11/2006	2100	4560	<0.001	<0.001	<0.001	<0.001	408	Clear
1	54.1	63.58	1.5	5	1/25/2007	2740	4560	<0.001	<0.001	<0.001	<0.001	449	
1	54.11	63.58	1.5	5.5	4/4/2007	2610	5720	<0.001	<0.001	<0.001	<0.003	314	Clear No odor
1	53.8	63.58	1.6	6	7/9/2007	363	1470	<0.001	<0.001	<0.001	<0.003	267	Clear No odor
1	53.87	63.58	1.6	6	11/12/2007	356	1398	<0.001	<0.001	<0.001	<0.003	331	Clear No odor
1	53.88	63.58	1.6	6	1/15/2008	408	1499	<0.001	<0.001	<0.001	<0.003	232	Clear No odor
1	53.98	63.58	1.5	6	4/7/2008	420	1460	<0.001	<0.001	<0.001	<0.003	346	Sand to clear No odor
1	54.06	63.58	1.5	6	7/22/2008	440	1460	<0.002	<0.002	<0.002	<0.006	271	Sand to clear No odor
1	54.11	63.58	1.5	6	10/2/2008	392	1390	<0.001	<0.001	<0.001	<0.003	281	Sand to clear No odor
1	54.08	63.2	1.5	6	1/14/2009	352	1250	<0.001	<0.001	<0.001	<0.003	250	Sand to clear No odor
MW-1 Plugged 2/27/2009													

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
2	54.55	62.58	1.3	6	11/12/2007	160	930	<0.001	<0.001	<0.001	<0.003	257	Clear No odor
2	54.57	63.7	1.5	6	1/15/2008	128	1001	<0.001	<0.001	<0.001	<0.003	340	Clear No odor
2	54.65	63.7	1.4	6	4/7/2008	100	982	<0.001	<0.001	<0.001	<0.003	411	Sand to clear No odor
2	54.74	63.7	1.4	6	7/22/2008	92	931	<0.002	<0.002	<0.002	<0.006	377	Sand to clear No odor
2	54.81	63.7	1.4	6	10/2/2008	88	902	<0.001	<0.001	<0.001	<0.003	333	Sand to clear No odor
2	54.78	64.2	1.5	6	1/14/2009	84	850	<0.001	<0.001	<0.001	<0.003	309	Sand to clear No odor
2	54.82	64.2	1.5	6	4/14/2009	80	858	<0.001	<0.001	<0.001	<0.003	319	Sand to clear No odor
2	54.79	64.43	1.5	6	7/13/2009	76	802	<0.001	<0.001	<0.001	<0.003	279	Sand to clear No odor
2	54.79	64.43	1.5	6	10/8/2009	64	776	<0.001	<0.001	<0.001	<0.003	244	Sand to clear No odor



**ROC - BD Santa Rita EOL (AP-58)**

**Unit Letter A, Section 27, T22S, R37E**

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
2	54.83	64.42	1.5	6	1/6/2010	60	726	<0.001	<0.001	<0.001	<0.003	268	Sand to clear No odor
2	54.85	64.42	1.5	6	4/9/2010	52	710	<0.001	<0.001	<0.001	<0.003	250	Sand to clear No odor
2	55.1	64.42	1.5	6	7/9/2010	52	644	<0.001	<0.001	<0.001	<0.003	201	Sand to clear No odor
2	55.05	64.42	1.5	6	10/6/2010	40	530	<0.001	<0.001	<0.001	<0.003	115	Sand to clear No odor
2	54.82	64.42	1.5	6	2/11/2011	88	601	<0.001	<0.001	<0.001	<0.003	123	Sand to clear No odor
2	54.92	64.42	1.5	6	4/12/2011	40	470	<0.001	<0.001	<0.001	<0.003	117	Sand to clear No odor
2	55.23	64.42	1.5	6	7/18/2011	36	491	<0.001	<0.001	<0.001	<0.003	106	Sand to clear No odor
2	55.33	64.42	1.5	6	10/13/2011	44	496	<0.001	<0.001	<0.001	<0.003	121	Sand to clear No odor
2	54.98	64.42	1.5	6	1/18/2012	40	414	<0.001	<0.001	<0.001	<0.003	116	Sand to clear No odor
2	55.34	64.42	1.5	6	4/17/2012	32	458	<0.001	<0.001	<0.001	<0.003	94.6	Sand to clear No odor
2	55.06	64.42	1.5	6	7/16/2012	80	613	<0.001	<0.001	<0.001	<0.003	327	Sand to clear No odor
2	55.33	64.42	1.5	6	10/5/2012	40	510	<0.001	<0.001	<0.001	<0.003	108	Sand to clear No odor
2	55.03	64.42	1.5	6	1/8/2013	40	456	<0.001	<0.001	<0.001	<0.003	94	Sand to clear No odor
2	55.03	64.42	1.5	6	4/19/2013	44	428	<0.001	<0.001	<0.001	<0.003	83	Sand to clear No odor
2	55.07	64.42	1.5	6	7/16/2013	44	424	<0.001	<0.001	<0.001	<0.003	99	Sand to clear No odor
2	55.14	64.42	1.5	6	10/17/2013	40	437	<0.001	<0.001	<0.001	<0.003	85.2	Sand to clear No odor
2	54.92	64.42	1.5	6	1/17/2014	36	406	<0.001	<0.001	<0.001	<0.003	82.3	Sand to clear No odor
2	55.02	64.42	1.5	6	4/7/2014	44	456	<0.001	<0.001	<0.001	<0.003	111	Sand to clear No odor
2	55.05	64.42	1.5	6	7/16/2014	40	472	<0.001	<0.001	<0.001	<0.003	77.4	Sand to clear No odor
2	54.01	64.42	1.7	6	10/23/2014	52	454	<0.001	<0.001	<0.001	<0.003	116	Sand to clear No odor
2	53.83	64.42	1.7	6	2/2/2015	56	438	<0.001	<0.001	<0.001	<0.003	117	Sand to clear No odor
2	54.05	64.42	1.7	6	4/21/2015	40	434	<0.001	<0.001	<0.001	<0.003	89.7	Sand to clear No odor
2	54.32	64.42	1.62	6	7/21/2015	60	480	<0.001	<0.001	<0.001	<0.003	83	Sand to clear No odor
2	54.34	64.42	1.61	6	11/18/2015	76	626	<0.001	<0.001	<0.001	<0.003	135	Sand to clear No odor

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
3	53.7	65.45	1.9	6	11/12/2007	1210	2596	<0.001	<0.001	<0.001	<0.003	326	Clear No odor

**ROC - BD Santa Rita EOL (AP-58)**

**Unit Letter A, Section 27, T22S, R37E**

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
3	53.69	65.44	1.9	6	1/15/2008	1010	2398	<0.001	<0.001	<0.001	<0.003	269	Clear No odor
3	53.73	65.44	1.9	6	4/7/2008	1080	2620	<0.001	<0.001	<0.001	<0.003	373	Sand to clear No odor
3	53.82	65.44	1.9	6	7/22/2008	1030	2890	<0.002	<0.002	<0.002	<0.006	292	Sand to clear No odor
3	53.86	65.44	1.9	6	10/2/2008	1020	2830	<0.001	<0.001	<0.001	<0.003	280	Sand to clear No odor
3	53.83	65.42	1.9	6	1/14/2009	1050	2670	<0.001	<0.001	<0.001	<0.003	280	Sand to clear No odor
3	53.9	65.42	1.8	6	4/14/2009	960	2200	<0.001	<0.001	<0.001	<0.003	294	Sand to clear No odor
3	53.88	65.45	1.9	6	7/13/2009	900	2080	<0.001	<0.001	<0.001	<0.003	270	Sand to clear No odor
3	53.85	65.45	1.9	6	10/8/2009	900	2340	<0.001	<0.001	<0.001	<0.003	254	Sand to clear No odor
3	54.04	65.45	1.8	6	1/6/2010	910	2170	<0.001	<0.001	<0.001	<0.003	254	Sand to clear No odor
3	53.94	65.45	1.8	6	4/9/2010	1110	2150	<0.001	<0.001	<0.001	<0.003	181	Sand to clear No odor
3	54.94	65.45	1.7	6	7/9/2010	780	1840	<0.001	<0.001	<0.001	<0.003	276	Sand to clear No odor
3	54.98	65.45	1.7	6	10/6/2010	1000	2360	<0.001	<0.001	<0.001	<0.003	266	Sand to clear No odor
3	54.38	65.43	1.8	6	2/11/2011	780	1560	<0.001	<0.001	<0.001	<0.003	192	Sand to clear No odor
3	55.03	65.43	1.7	6	4/12/2011	1080	2350	<0.001	<0.001	<0.001	<0.003	274	Sand to clear No odor
3	54.61	65.43	1.7	6	7/18/2011	720	1740	<0.001	<0.001	<0.001	<0.003	234	Sand to clear No odor
3	54.7	65.43	1.7	6	10/13/2011	670	1590	<0.001	<0.001	<0.001	<0.003	247	Sand to clear No odor
3	54.18	65.43	1.8	6	1/18/2012	630	1520	<0.001	<0.001	<0.001	<0.003	244	Sand to clear No odor
3	54.69	65.43	1.7	6	4/17/2012	520	1410	<0.001	<0.001	<0.001	<0.003	208	Sand to clear No odor
3	54.48	65.43	1.8	6	7/16/2012	520	1460	<0.001	<0.001	<0.001	<0.003	267	Sand to clear No odor
3	54.64	65.43	1.7	6	10/5/2012	520	1520	<0.001	<0.001	<0.001	<0.003	226	Sand to clear No odor
3	54.06	65.43	1.8	6	1/8/2013	730	1520	<0.001	<0.001	<0.001	<0.003	177	Sand to clear No odor
3	54.42	65.43	1.8	6	4/19/2013	750	1620	<0.001	<0.001	<0.001	<0.003	202	Sand to clear No odor
3	54.26	65.43	1.8	6	7/16/2013	448	1280	<0.001	<0.001	<0.001	<0.003	220	Sand to clear No odor
3	54.28	65.43	1.8	6	10/17/2013	600	1490	<0.001	<0.001	<0.001	<0.003	174	Sand to clear No odor
3	54.02	65.43	1.8	6	1/17/2014	540	1320	<0.001	<0.001	<0.001	<0.003	176	Sand to clear No odor
3	54.22	65.43	1.8	6	4/7/2014	580	1510	<0.001	<0.001	<0.001	<0.003	251	Sand to clear No odor
3	54.24	65.43	1.8	6	7/16/2014	460	1400	<0.001	<0.001	<0.001	<0.003	215	Sand to clear No odor
3	53.82	65.43	1.9	6	10/23/2014	490	1420	<0.001	<0.001	<0.001	<0.003	206	Sand to clear No odor
3	53.39	65.43	1.9	6	2/2/2015	520	1520	<0.001	<0.001	<0.001	<0.003	349	Sand to clear No odor

**ROC - BD Santa Rita EOL (AP-58)**

**Unit Letter A, Section 27, T2S, R37E**

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
3	53.49	65.43	1.9	6	4/21/2015	580	1560	<0.001	<0.001	<0.001	<0.003	219	Sand to clear No odor
3	53.88	65.43	1.85	6	7/21/2015	500	1430	<0.001	<0.001	<0.001	<0.003	185	Sand to clear No odor
3	53.85	65.43	1.85	6	11/18/2015	540	1420	<0.001	<0.001	<0.001	<0.003	190	Sand to clear No odor

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
4	52.28	64.4	1.9	6	7/13/2009	1040	2260	<0.001	<0.001	<0.001	<0.003	230	Sand to clear No odor
4	52.23	64.4	1.9	6	10/8/2009	1240	3320	<0.001	<0.001	<0.001	<0.003	233	Sand to clear No odor
4	52.23	64.29	1.9	6	1/6/2010	1200	2750	<0.001	<0.001	<0.001	<0.003	209	Sand to clear No odor
4	52.24	64.29	1.9	6	4/9/2010	900	2100	<0.001	<0.001	<0.001	<0.003	313	Sand to clear No odor
4	52.76	64.29	1.8	6	7/9/2010	1450	2810	<0.001	<0.001	<0.001	<0.003	280	Sand to clear No odor
4	52.83	64.29	1.8	6	10/6/2010	1040	2320	<0.001	<0.001	<0.001	<0.003	251	Sand to clear No odor
4	52.22	65.2	2.1	8	2/11/2011	610	1490	<0.001	<0.001	<0.001	<0.003	208	Sand to clear No odor
4	52.92	65.2	2	8	4/12/2011	640	1580	<0.001	<0.001	<0.001	<0.003	238	Sand to clear No odor
4	52.95	65.2	2	8	7/18/2011	640	1530	<0.001	<0.001	<0.001	<0.003	232	Sand to clear No odor
4	52.91	65.2	2	8	10/13/2011	450	1160	<0.001	<0.001	<0.001	<0.003	235	Sand to clear No odor
4	52.32	65.2	2.1	8	1/18/2012	380	915	<0.001	<0.001	<0.001	<0.003	216	Sand to clear No odor
4	52.81	65.2	2	8	4/17/2012	344	1110	<0.001	<0.001	<0.001	<0.003	207	Sand to clear No odor
4	52.64	65.2	2	8	7/16/2012	344	1190	<0.001	<0.001	<0.001	<0.003	244	Sand to clear No odor
4	52.79	65.2	2	8	10/5/2012	352	1180	<0.001	<0.001	<0.001	<0.003	218	Sand to clear No odor
4	52.41	65.2	2	8	1/8/2013	380	980	<0.001	<0.001	<0.001	<0.003	149	Sand to clear No odor
4	52.73	65.2	2	8	4/19/2013	410	1140	<0.001	<0.001	<0.001	<0.003	213	Sand to clear No odor
4	52.57	65.2	2	8	7/16/2013	388	1140	<0.001	<0.001	<0.001	<0.003	202	Sand to clear No odor
4	52.57	65.2	2	8	10/17/2013	368	1100	<0.001	<0.001	<0.001	<0.003	197	Sand to clear No odor
4	52.34	65.2	2.1	8	1/17/2014	360	1070	<0.001	<0.001	<0.001	<0.003	192	Sand to clear No odor
4	52.58	65.2	2	8	4/7/2014	448	1200	<0.001	<0.001	<0.001	<0.003	204	Sand to clear No odor
4	52.59	65.2	2	8	7/16/2014	384	1140	<0.001	<0.001	<0.001	<0.003	174	Sand to clear No odor
4	51.97	65.2	2.1	8	10/23/2014	360	1100	<0.001	<0.001	<0.001	<0.003	157	Sand to clear No odor



**ROC - BD Santa Rita EOL (AP-58)**

**Unit Letter A, Section 27, T22S, R37E**

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
4	51.52	65.2	2.2	8	2/2/2015	460	1310	<0.001	<0.001	<0.001	<0.003	188	Sand to clear No odor
4	51.58	65.2	2.2	8	4/21/2015	500	1350	<0.001	<0.001	<0.001	<0.003	207	Sand to clear No odor
4	51.89	65.2	2.13	8	7/21/2015	550	1450	<0.001	<0.001	<0.001	<0.003	190	Sand to clear No odor
4	51.88	65.2	2.13	8	11/18/2015	500	1350	<0.001	<0.001	<0.001	<0.003	228	Sand to clear No odor

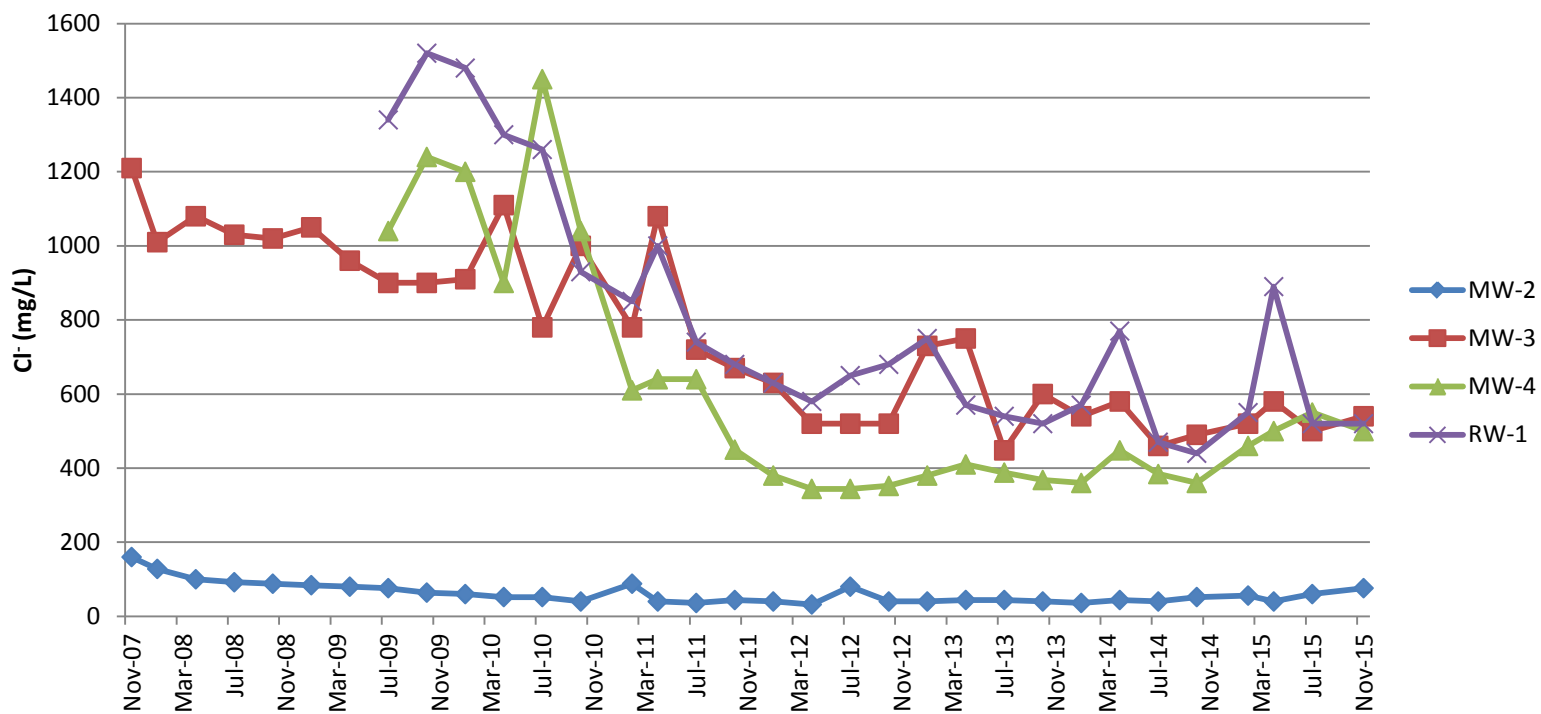
MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
RW-1	53.02	98.85	29.8	90	7/13/2009	1340	2750	<0.001	<0.001	<0.001	<0.003	288	Sand to clear No odor
RW-1	53.01	98.85	29.8	90	10/8/2009	1520	2970	<0.001	<0.001	<0.001	<0.003	251	Sand to clear No odor
RW-1	53.04	98.85	29.8	90	1/6/2010	1480	2880	<0.001	<0.001	<0.001	<0.003	224	Sand to clear No odor
RW-1	53.06	98.85	29.8	90	4/9/2010	1300	2620	<0.001	<0.001	<0.001	<0.003	290	Sand to clear No odor
RW-1	XXX	98.85	XXX	XXX	7/9/2010	1260	2750	<0.001	<0.001	<0.001	<0.003	291	Solar pump used to purge
RW-1	XXX	98.85	XXX	XXX	10/6/2010	930	2360	<0.001	<0.001	<0.001	<0.003	298	Solar pump used to purge
RW-1	XXX	98.85	XXX	90	2/11/2011	850	1800	<0.001	<0.001	<0.001	<0.003	180	Solar pump used to purge
RW-1	XXX	98.85	XXX	XXX	4/12/2011	1000	2190	<0.001	<0.001	<0.001	<0.003	298	Solar pump used to purge
RW-1	XXX	98.85	XXX	XXX	7/18/2011	740	1740	<0.001	<0.001	<0.001	<0.001	255	Solar pump used to purge
RW-1	XXX	98.85	XXX	pumping	10/13/2011	680	1630	<0.001	<0.001	<0.001	<0.003	199	Solar pump used to purge
RW-1	XXX	98.85	XXX	pumping	1/18/2012	630	1500	<0.001	<0.001	<0.001	<0.003	244	Solar pump used to purge
RW-1	XXX	98.85	XXX	pumping	4/17/2012	580	1490	<0.001	<0.001	<0.001	<0.003	277	Solar pump used to purge

**ROC - BD Santa Rita EOL (AP-58)**

**Unit Letter A, Section 27, T22S, R37E**

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
RW-1	XXX	98.85	XXX	pumping	7/16/2012	650	1710	<0.001	<0.001	<0.001	<0.003	250	Solar pump used to purge
RW-1	XXX	98.85	XXX	pumping	10/5/2012	680	1760	<0.001	<0.001	<0.001	<0.003	218	Solar pump used to purge
RW-1	XXX	98.85	XXX	pumping	1/7/2013	750	1600	<0.001	<0.001	<0.001	<0.003	188	Solar pump used to purge
RW-1	XXX	98.85	XXX	pumping	4/19/2013	570	1480	<0.001	<0.001	<0.001	<0.003	224	Solar pump used to purge
RW-1	XXX	98.85	XXX	pumping	7/16/2013	540	1480	<0.001	<0.001	<0.001	<0.003	247	Solar pump used to purge
RW-1	XXX	98.85	XXX	pumping	10/17/2013	520	1430	<0.001	<0.001	<0.001	<0.003	195	Solar pump used to purge
RW-1	XXX	98.85	XXX	pumping	1/17/2014	570	1300	<0.001	<0.001	<0.001	<0.003	188	Solar pump used to purge
RW-1	XXX	98.85	XXX	pumping	4/7/2014	770	1800	<0.001	<0.001	<0.001	<0.003	258	Solar pump used to purge
RW-1	XXX	98.85	XXX	pumping	7/16/2014	470	1410	<0.001	<0.001	<0.001	<0.003	210	Solar pump used to purge
RW-1	XXX	98.85	XXX	pumping	10/23/2014	440	1430	<0.001	<0.001	<0.001	<0.003	200	Solar pump used to purge
RW-1	XXX	98.85	XXX	100	2/2/2015	550	1450	<0.001	<0.001	<0.001	<0.003	220	Solar pump used to purge
RW-1	XXX	98.85	XXX	100	4/21/2015	890	2030	<0.001	<0.001	<0.001	<0.003	198	Solar pump used to purge
RW-1	XXX	98.85	XXX	100	7/21/2015	520	1430	<0.001	<0.001	<0.001	<0.003	195	Solar pump used to purge
RW-1	XXX	98.85	XXX	pumping	11/18/2015	520	1380	<0.001	<0.001	<0.001	<0.003	259	Solar pump used to purge

# BD Santa Rita EOL (AP-58)





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

---

December 01, 2015

KATIE JONES

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: BD SANTA RITA LEAK

Enclosed are the results of analyses for samples received by the laboratory on 11/19/15 14:51.

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](http://www.tceq.texas.gov/field/qa/lab_accred_certif.html).

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

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

Accreditation applies to public drinking water matrices.

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

Sincerely,

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

Celey D. Keene

Lab Director/Quality Manager

**Analytical Results For:**

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

Received:	11/19/2015	Sampling Date:	11/18/2015
Reported:	12/01/2015	Sampling Type:	Water
Project Name:	BD SANTA RITA LEAK	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Jodi Henson
Project Location:	T22S R37E SEC27 A-LEA CTY., NM		

**Sample ID: MONITOR WELL #2 (H503066-01)**

BTEX 8021B		mg/L		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	11/23/2015	ND	0.025	98.8	0.0250	1.09	
Toluene*	<0.001	0.001	11/23/2015	ND	0.024	95.2	0.0250	1.76	
Ethylbenzene*	<0.001	0.001	11/23/2015	ND	0.025	98.2	0.0250	2.73	
Total Xylenes*	<0.003	0.003	11/23/2015	ND	0.075	99.9	0.0750	1.93	
Total BTEX	<0.006	0.006	11/23/2015	ND					

Surrogate: 4-Bromofluorobenzene (PID) 100 % 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	11/25/2015	ND	120	120	100	14.3	

Sulfate 375.4		mg/L		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	135	25.0	11/30/2015	ND	23.1	116	20.0	8.30	

TDS 160.1		mg/L		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	626	5.00	11/30/2015	ND	524	99.4	527	1.93	

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.



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:	11/19/2015	Sampling Date:	11/18/2015
Reported:	12/01/2015	Sampling Type:	Water
Project Name:	BD SANTA RITA LEAK	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Jodi Henson
Project Location:	T22S R37E SEC27 A-LEA CTY., NM		

**Sample ID: MONITOR WELL #3 (H503066-02)**

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	11/23/2015	ND	0.025	98.8	0.0250	1.09		
Toluene*	<0.001	0.001	11/23/2015	ND	0.024	95.2	0.0250	1.76		
Ethylbenzene*	<0.001	0.001	11/23/2015	ND	0.025	98.2	0.0250	2.73		
Total Xylenes*	<0.003	0.003	11/23/2015	ND	0.075	99.9	0.0750	1.93		
Total BTEX	<0.006	0.006	11/23/2015	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*	540	4.00	11/25/2015	ND	120	120	100	14.3		

Sulfate 375.4		mg/L		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Sulfate*	190	50.0	11/30/2015	ND	23.1	116	20.0	8.30		

TDS 160.1		mg/L		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
TDS*	1420	5.00	11/30/2015	ND	524	99.4	527	1.93		

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.



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:	11/19/2015	Sampling Date:	11/18/2015
Reported:	12/01/2015	Sampling Type:	Water
Project Name:	BD SANTA RITA LEAK	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Jodi Henson
Project Location:	T22S R37E SEC27 A-LEA CTY., NM		

**Sample ID: MONITOR WELL #4 (H503066-03)**

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	11/23/2015	ND	0.025	98.8	0.0250	1.09	
Toluene*	<0.001	0.001	11/23/2015	ND	0.024	95.2	0.0250	1.76	
Ethylbenzene*	<0.001	0.001	11/23/2015	ND	0.025	98.2	0.0250	2.73	
Total Xylenes*	<0.003	0.003	11/23/2015	ND	0.075	99.9	0.0750	1.93	
Total BTEX	<0.006	0.006	11/23/2015	ND					

Surrogate: 4-Bromofluorobenzene (PID) 101 % 73.7-146

Chloride, SM4500CI-B		mg/L		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	500	4.00	11/25/2015	ND	120	120	100	14.3	

Sulfate 375.4		mg/L		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	228	50.0	11/30/2015	ND	23.1	116	20.0	8.30	

TDS 160.1		mg/L		Analyzed By: AP					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	1350	5.00	11/30/2015	ND	524	99.4	527	1.93	

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.



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:	11/19/2015	Sampling Date:	11/18/2015
Reported:	12/01/2015	Sampling Type:	Water
Project Name:	BD SANTA RITA LEAK	Sampling Condition:	Cool & Intact
Project Number:	NOT GIVEN	Sample Received By:	Jodi Henson
Project Location:	T22S R37E SEC27 A-LEA CTY., NM		

**Sample ID: RECOVERY WELL #1 (H503066-04)**

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	11/24/2015	ND	0.025	98.8	0.0250	1.09		
Toluene*	<0.001	0.001	11/24/2015	ND	0.024	95.2	0.0250	1.76		
Ethylbenzene*	<0.001	0.001	11/24/2015	ND	0.025	98.2	0.0250	2.73		
Total Xylenes*	<0.003	0.003	11/24/2015	ND	0.075	99.9	0.0750	1.93		
Total BTEx	<0.006	0.006	11/24/2015	ND						

Surrogate: 4-Bromofluorobenzene (PID) 101 % 73.7-146

Chloride, SM4500CI-B		mg/L		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride*	520	4.00	11/25/2015	ND	120	120	100	14.3		

Sulfate 375.4		mg/L		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Sulfate*	259	50.0	11/30/2015	ND	23.1	116	20.0	8.30		

TDS 160.1		mg/L		Analyzed By: AP						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
TDS*	1380	5.00	11/30/2015	ND	524	99.4	527	1.93		

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.



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.



---

Celey D. Keene, Lab Director/Quality Manager

