

# **RICE** *Operating Company*

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**April 1, 2020**

## **Bradford Billings**

Environmental Bureau, Oil Conservation Division

New Mexico Energy, Minerals, & Natural Resources Department

1220 S. St. Francis Drive

Santa Fe, New Mexico 87505

**RE: 2019 Annual Groundwater Report**

**Rice Operating Company – EME SWD System**

**EME Jct. G-18 (1R427-162): UL/G, Sec. 18, T19S, R37E**

Mr. Billings:

ROC is the service provider (agent) for the EME 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 3 miles northwest of Monument, New Mexico at UL/G, Sec. 18, T19S, R37E as shown on the Geographic Location Map. Monitor well sampling at the site indicates that groundwater has been encountered at approximately 54 ft below ground surface (bgs).

In 2004, ROC initiated work on the former EME G-18 junction box. The site was delineated using a backhoe to collect soil samples at regular intervals. The excavation reached dimensions of 20 ft x 18 ft x 12 ft (bgs). Composite samples were sent to a commercial laboratory for chloride and TPH analyses, resulting in elevated concentration of chlorides in the bottom composite, elevated concentrations of TPH and BTEX. A 1-ft thick clay layer was installed from 6-5 ft bgs, to inhibit further chloride migration and a compaction test was performed on April 16<sup>th</sup>, 2004. The site was backfilled, the area was contoured to the surrounding landscape and an identification plate was placed on the surface of the site to mark its location for future environmental considerations. A new junction box was not required at the site.

Between June 2<sup>nd</sup>, 2004 and December 6<sup>th</sup>, 2010, five soil bores and three monitor wells were drilled at and surrounding the former junction box. An ICP Report and CAP was then submitted to the NMOCD, which detailed the findings of the soil borings. The report requested a 6-month source removal and test pumping program and that MW-1 be plugged and replaced with a 4 inch well. In addition, a 44 ft x 49 ft, 20-mil reinforced liner would be installed at 4-5 ft bgs. NMOCD approved the plan on July 18<sup>th</sup>, 2011.

Beginning on November 23<sup>rd</sup>, 2011, the site was excavated to 44x49x5-ft deep. The excavation was padded with six inches of the imported sand and then the liner was properly seated at approximately 4.5 ft bgs. The top of the liner was padded with six inches of imported sand and

the excavation was backfilled and contoured to the surrounding location. The 20-mil reinforced liner will inhibit the further migration of chlorides through the vadose zone into groundwater. The site was seeded with a blend of native vegetation and a silt net fence was placed around the area to maintain seed integrity. On October 15<sup>th</sup>, 2012, ROC submitted a Soil Closure Request to NMOCD that detailed these activities and asked for 'Soil Closure' or similar closure status. NMOCD approved the soil closure on the same day.

On October 26<sup>th</sup>, 2011, MW-1 was plugged and abandoned with a 1-3% bentonite/concrete slurry and capped with three feet of concrete. MW-1 was then replaced with a 4 inch well (MW-1R) which was installed 9 ft southeast of the former MW-1.

On April 17<sup>th</sup>, 2012, ROC submitted the Vadose Zone Remediation and Termination Request to NMOCD. ROC had completed the vadose zone remediation approved by NMOCD in the CAP and plugged and replaced MW-1 with MW-1R. A 6-month source removal and test pumping program from MW-1R that was described in the CAP was deemed no longer necessary because two quarters of monitor well sampling data showed chlorides below WQCC standards. Therefore, ROC requested 'remediation termination' status of regulatory file. On June 5<sup>th</sup>, 2012, NMOCD responded with a request for two more quarters of monitor well sampling data from MW-1R prior to terminating the remediation plan.

The two additional sampling events of MW-1R occurred on November 1<sup>st</sup>, 2012 resulting in a chloride value of 570 mg/kg and on February 8<sup>th</sup>, 2013 also resulting in a chloride value of 570 mg/kg. Given that these two sampling events show chlorides outside WQCC standards, ROC continued with a 6-month source removal and test pumping program from MW-1R that was described in the CAP. This path forward was approved by NMOCD on July 2, 2013.

Groundwater recovery began on September 16<sup>th</sup>, 2013 from MW-1R and continued through November 2015. During that time, approximately 7,263 barrels of groundwater was removed which equates to approximately 277 kg of chlorides, based on a chloride concentration of 240 mg/L. Removed groundwater was utilized for pipeline maintenance. Since groundwater recovery began, chloride and TDS concentrations in MW-1R have decreased with concentrations below 250 mg/L and approximately 1,000 mg/L, respectively. BTEX concentrations have remained below detectable limits since the wells were installed.

The pumping program has been suspended based on low chloride concentrations. In 2018, one quarterly groundwater sample reading for MW-1R rose above 250 mg/L. Subsequent samples in 2018 and all four quarterly samples in 2019 have shown chloride concentrations below 250 mg/L.

Given that BTEX concentrations have been below detectable limits since installation, ROC requests to suspend BTEX sampling in all three wells (MW-1, MW-2 and MW-3). Further, due to the current climate, and in the interest of safety, ROC is proposing to reduce groundwater monitoring from quarterly to semi-annually for the remainder of this year. This request is only temporary and regularly scheduled groundwater monitoring will commence as soon as possible.

Attached is the Appendix, which contains:

1. A Geographic Location Map.
2. A map showing well locations.
3. A table presenting all laboratory results and depth to groundwater for each well at the site, and a graph showing recent laboratory results.
4. The laboratory analytical results for 2019.

Rice Operating Company appreciates the opportunity to work with you on this project. Please contact me at (575) 393-9174 or Edward Hansen at (505) 920-4965 if you have any questions or wish to further discuss this site. Thank you for your time and consideration.

Sincerely,

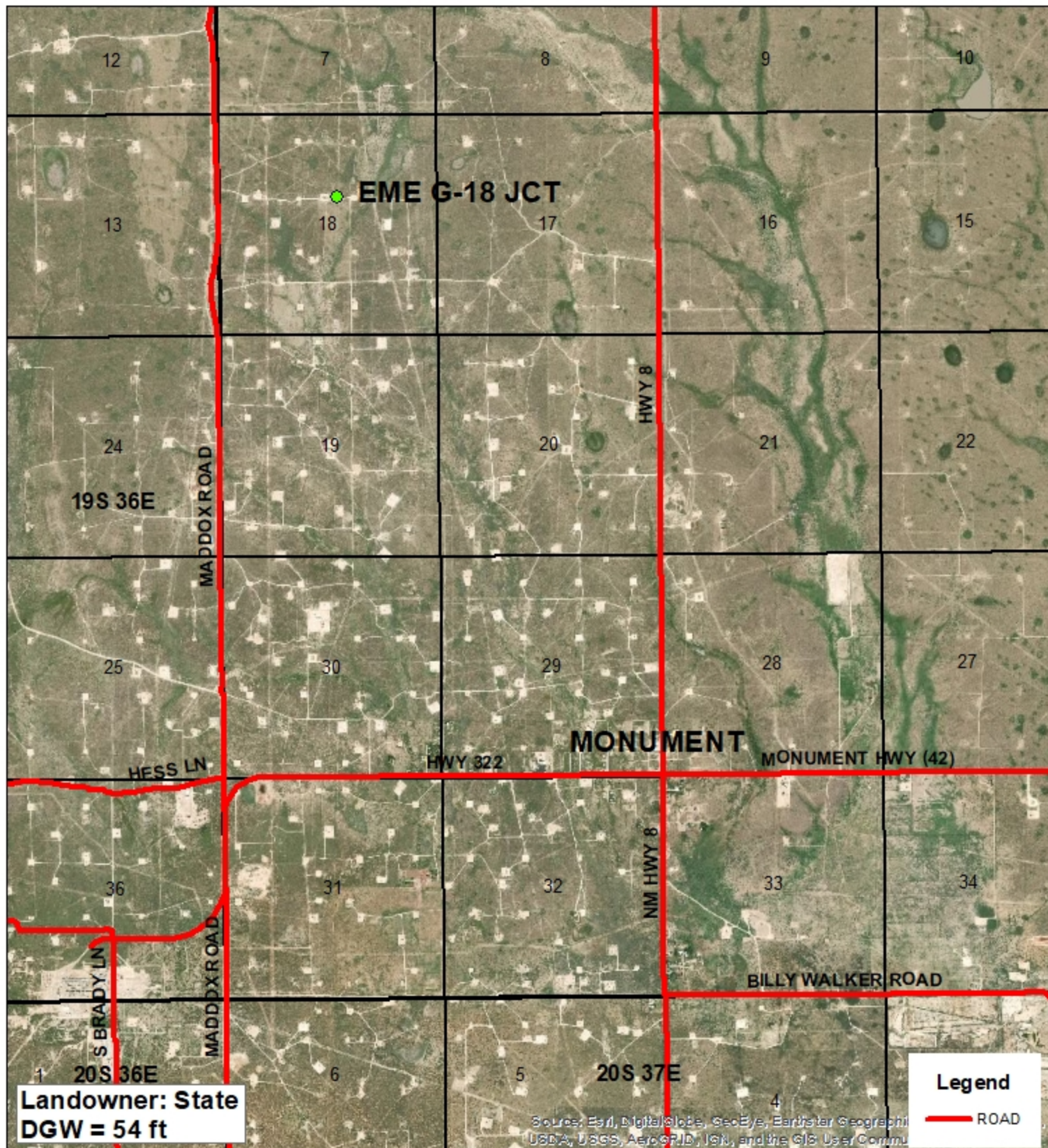
A handwritten signature in cursive script that reads "Katie Davis".

Katie Davis  
Environmental Manager  
RICE Operating Company (ROC)

Cc – Edward J. Hansen (ROC)

appendix

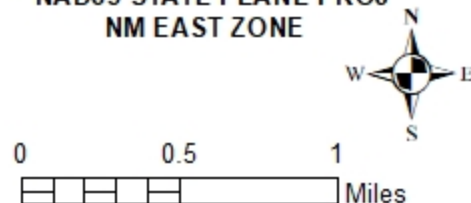
# Geographic Location



**EME**  
**JCT G-18**  
1R427-162

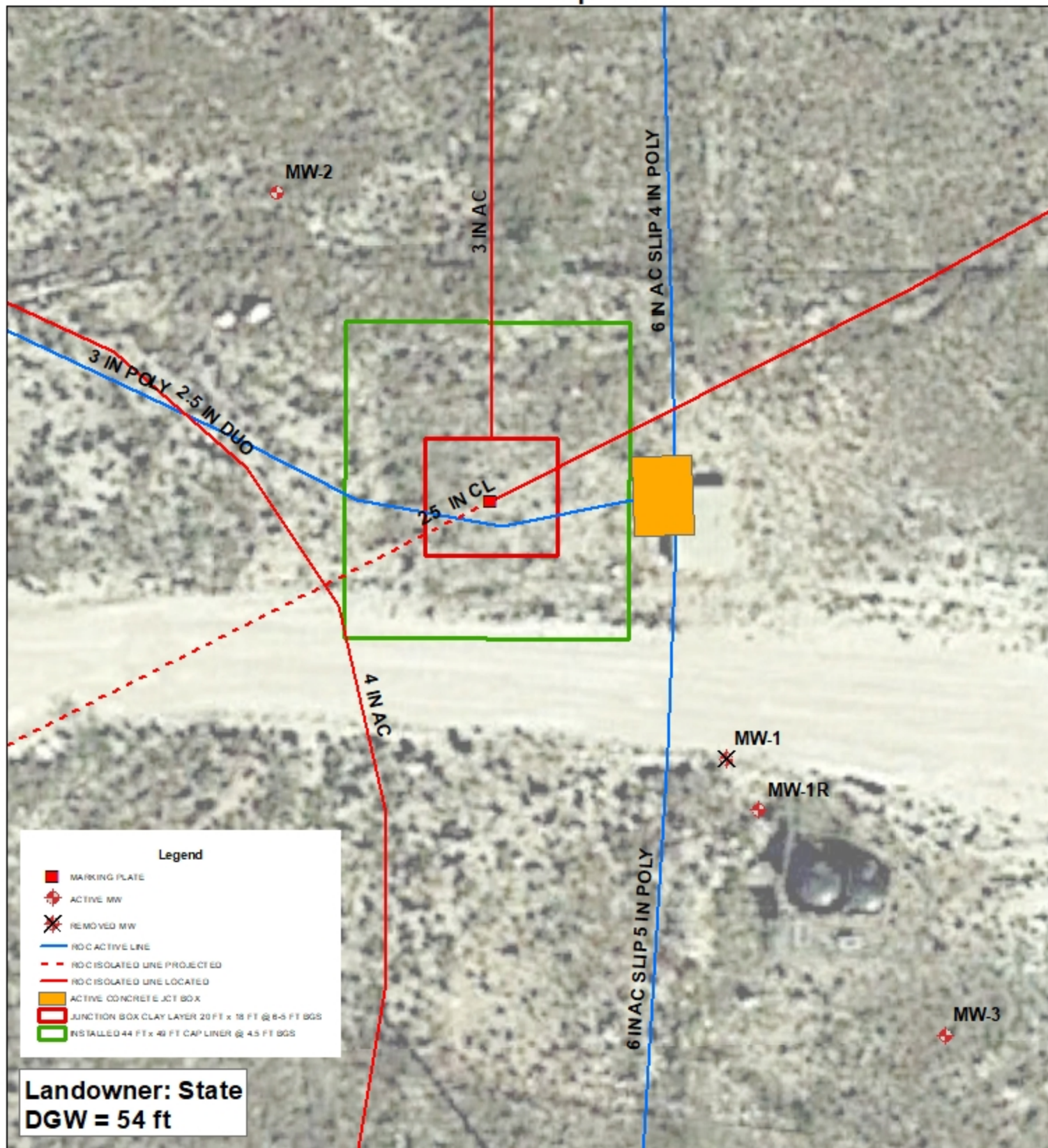
UL G SECTION 18  
T-19-S R-37-E  
LEA COUNTY, NM

GPS: 32.662229 -103.289861  
NAD83 STATE PLANE PROJ  
NM EAST ZONE



Drawing date: 2/3/20  
Drafted by: T. Grieco

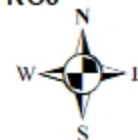
# Site Map



**EME**  
**JCT G-18**  
1R427-162

UL G SECTION 18  
T-19-S R-37-E  
LEA COUNTY, NM

GPS: 32.662229 -103.289861  
NAD83 STATE PLANE PROJ  
NM EAST ZONE



0 10 20  
Feet

Drawing date: 2/3/20  
Drafted by: T. Grieco

**ROC - EME Jct. G-18 (1R427-162)**

**Unit Letter G, Section 18, T19S, R37E**

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	CI	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
1	53.51	68.28	2.4	8	12/28/2010	630	1,810	<0.001	<0.001	<0.001	<0.003	308	Clear No odor
1	53.71	68.28	2.3	8	3/4/2011	470	1,670	<0.001	<0.001	<0.001	<0.003	282	Clear No odor
1	54.11	68.28	2.3	8	5/31/2011	550	1,560	<0.001	<0.001	<0.001	<0.003	217	Clear No odor
1	54.33	68.28	2.2	8	8/29/2011	550	1,420	<0.001	<0.001	<0.001	<0.003	174	Clear No odor
1R	54.4	100.15	29.7	100	11/14/2011	200	768	<0.001	<0.001	<0.001	<0.003	98.2	Clear No odor - replaced with 4 inch
1R	54.64	100.15	29.6	100	2/14/2012	192	713	<0.001	<0.001	<0.001	<0.003	78.1	Clear No odor
1R	54.83	100.15	29.5	100	5/23/2012	360	1,060	<0.001	<0.001	<0.001	<0.003	99.4	Clear No odor
1R	54.92	100.15	29.4	100	7/13/2012	308	1,060	<0.001	<0.001	<0.001	<0.003	117	Clear No odor
1R	55.17	100.15	29.2	100	11/1/2012	570	1,750	<0.001	<0.001	<0.001	<0.003	209	Clear No odor
1R	55.28	100.15	29.2	100	2/8/2013	570	1,660	<0.001	<0.001	<0.001	<0.003	243	Clear No odor
1R	55.47	100.15	29	100	5/22/2013	516	1,560	<0.001	<0.001	<0.001	<0.003	213	Clear No odor
1R	55.26	100.15	29.2	100	9/3/2013	850	2,270	<0.001	<0.001	<0.001	<0.003	531	Clear No odor
1R	XXX	100.15	XXX	running	11/11/2013	236	770	<0.001	<0.001	<0.001	<0.003	77.8	Clear No odor
1R	XXX	100.15	XXX	100	3/3/2014	490	1,900	<0.001	<0.001	<0.001	<0.003	381	Clear No odor
1R	XXX	100.15	XXX	running	5/28/2014	256	830	<0.001	<0.001	<0.001	<0.003	74	Clear No odor
1R	XXX	100.15	XXX	running	8/15/2014	268	830	<0.001	<0.001	<0.001	<0.003	76.1	Clear No odor
1R	XXX	100.15	XXX	running	11/19/2014	96	704	<0.001	<0.001	<0.001	<0.003	60.6	Clear No odor
1R	XXX	100.15	XXX	100	2/20/2015	328	1,090	<0.001	<0.001	<0.001	<0.003	136	Clear No odor
1R	XXX	100.15	XXX	100	5/28/2015	208	826	<0.001	<0.001	<0.001	<0.003	87.4	Clear No odor
1R	XXX	100.15	XXX	100	8/14/2015	196	736	<0.001	<0.001	<0.001	<0.003	51.6	Clear No odor
1R	XXX	100.15	XXX	running	11/9/2015	240	774	<0.001	<0.001	<0.001	<0.003	78	Clear No odor
1R	XXX	100.15	XXX	100	2/22/2016	140	880	<0.001	<0.001	<0.001	<0.003	112	Clear No odor
1R	XXX	100.15	XXX	100	2/22/2016	140	880	<0.001	<0.001	<0.001	<0.003	112	Clear No odor
1R	XXX	100.15	XXX	100	5/11/2016	60	802	<0.001	<0.001	<0.001	<0.003	183	Clear No odor
1R	XXX	100.15	XXX	100	9/9/2016	348	1,190	<0.001	<0.001	<0.001	<0.003	134	Clear No odor
1R	XXX	100.15	XXX	100	11/9/2016	52	964	<0.001	<0.001	<0.001	<0.003	337	Clear No odor
1R	XXX	100.15	XXX	100	2/17/2017	104	982	<0.001	<0.001	<0.001	<0.003	273	Clear No odor
1R	XXX	100.15	XXX	100	5/22/2017	76	766	<0.001	<0.001	<0.001	<0.003	77	Clear No odor

**ROC - EME Jct. G-18 (1R427-162)****Unit Letter G, Section 18, T19S, R37E**

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
1R	XXX	100.15	XXX	100	9/6/2017	80	1,280	<0.001	<0.001	<0.001	<0.003	505	Clear No odor
1R	XXX	100-15	XXX	100	11/28/2017	232	938	<0.001	<0.001	<0.001	<0.003	114	Clear No odor
1R	XXX	100-15	XXX	100	2/26/2018	164	1,110	<0.001	<0.001	<0.001	<0.003	261	Clear No odor
1R	XXX	100-15	XXX	100	5/14/2018	124	1,000	<0.001	<0.001	<0.001	<0.003	221	Clear No odor
1R	XXX	100-15	XXX	100	8/31/2018	416	1,430	<0.001	<0.001	<0.001	<0.003	151	Clear No odor
1R	XXX	100-15	XXX	100	11/9/2018	220	1,060	<0.001	<0.001	<0.001	<0.003	135	Clear No odor
1R	XXX	100.15	XXX	100	2/28/2019	140	605	<0.001	<0.001	<0.001	<0.003	85	Clear No odor
1R	XXX	100.15	XXX	100	5/23/2019	136	940	<0.001	<0.001	<0.001	<0.003	136	Clear No odor
1R	XXX	100.15	XXX	100	8/27/2019	84	886	<0.001	<0.001	<0.001	<0.003	165	Clear No odor
1R	XXX	100.15	XXX	100	11/14/2019	128	867	<0.001	<0.001	<0.001	<0.003	91	Clear No odor

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
2	53.58	70.22	2.7	10	3/4/2011	32	715	<0.001	<0.001	<0.001	<0.003	191	Clear No odor
2	53.98	70.22	2.6	10	5/31/2011	44	821	<0.001	<0.001	<0.001	<0.003	243	Clear No odor
2	54.21	70.22	2.6	10	8/29/2011	32	643	<0.001	<0.001	<0.001	<0.003	213	Clear No odor
2	54.39	70.22	2.5	10	11/14/2011	28	744	<0.001	<0.001	<0.001	<0.003	184	Clear No odor
2	54.39	70.22	2.5	10	2/14/2012	24	818	<0.001	<0.001	<0.001	<0.003	209	Clear No odor
2	54.82	70.22	2.5	10	5/23/2012	32	815	<0.001	<0.001	<0.001	<0.003	203	Clear No odor
2	54.91	70.22	2.4	10	7/13/2012	36	821	<0.001	<0.001	<0.001	<0.003	214	Clear No odor
2	55.15	70.22	2.4	10	11/1/2012	72	867	<0.001	<0.001	<0.001	<0.003	198	Clear No odor
2	55.32	70.22	2.4	10	2/8/2013	28	748	<0.001	<0.001	<0.001	<0.003	177	Clear No odor
2	55.43	70.22	2.4	10	5/22/2013	40	783	<0.001	<0.001	<0.001	<0.003	206	Clear No odor
2	55.28	70.22	2.4	10	9/3/2013	28	686	<0.001	<0.001	<0.001	<0.003	131	Clear No odor
2	55.54	70.22	2.3	10	11/11/2013	28	721	<0.001	<0.001	<0.001	<0.003	155	Clear No odor
2	55.57	70.22	2.3	10	3/3/2014	40	704	<0.001	<0.001	<0.001	<0.003	166	Clear No odor
2	55.74	70.22	2.3	10	5/28/2014	32	766	<0.001	<0.001	<0.001	<0.003	153	Clear No odor
2	55.83	70.22	2.3	10	8/15/2014	20	748	<0.001	<0.001	<0.001	<0.003	183	Clear No odor

**ROC - EME Jct. G-18 (1R427-162)**

**Unit Letter G, Section 18, T19S, R37E**

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
2	54.44	70.22	2.5	10	11/19/2014	80	682	<0.001	<0.001	<0.001	<0.003	55.3	Clear No odor
2	54.14	70.22	2.6	10	2/20/2015	32	866	<0.001	<0.001	<0.001	<0.003	183	Clear No odor
2	54.52	70.22	2.5	10	5/28/2015	28	942	<0.001	<0.001	<0.001	<0.003	244	Clear No odor
2	54.53	70.22	2.5	10	8/14/2015	44	848	<0.001	<0.001	<0.001	<0.003	190	Clear No odor
2	54.8	70.22	2.47	10	11/9/2015	20	742	<0.001	<0.001	<0.001	<0.003	186	Clear No odor
2	54.63	70.22	2.5	10	2/22/2016	20	788	<0.001	<0.001	<0.001	<0.003	176	Clear No odor
2	54.63	70.22	2.5	10	2/22/2016	20	788	<0.001	<0.001	<0.001	<0.003	176	Clear No odor
2	54.52	70.22	2.5	10	5/11/2016	32	734	<0.001	<0.001	<0.001	<0.003	184	Clear No odor
2	54.82	70.22	2.6	10	9/9/2016	20	874	<0.001	<0.001	<0.001	<0.003	225	Clear No odor
2	54.83	70.22	2.6	10	11/9/2016	24	696	<0.001	<0.001	<0.001	<0.003	192	Clear No odor
2	53.75	70.22	2.6	10	2/17/2017	88	752	<0.001	<0.001	<0.001	<0.003	78	Clear No odor
2	53.56	70.22	2.7	10	5/22/2017	92	696	<0.001	<0.001	<0.001	<0.003	79	Clear No odor
2	54.8	70.22	2.7	10	9/6/2017	32	860	<0.001	<0.001	<0.001	<0.003	202	Clear No odor
2	54.78	70.22	2.7	10	11/28/2017	56	864	<0.001	<0.001	<0.001	<0.003	229	Clear No odor
2	54.76	70.22	2.5	10	2/26/2018	32	472	<0.001	<0.001	<0.001	<0.003	188	Clear No odor
2	54.73	70.22	2.5	10	5/14/2008	28	706	<0.001	<0.001	<0.001	<0.003	185	Clear No odor
2	54.98	70.22	2.4	10	8/31/2018	36	668	<0.001	<0.001	<0.001	<0.003	147	Clear No odor
2	54.2	70.22	2.6	10	11/9/2018	28	606	<0.001	<0.001	<0.001	<0.003	232	Clear No odor
2	54.19	70.22	2.6	10	2/28/2019	40	422	<0.001	<0.001	<0.001	<0.003	168	Clear No odor
2	54.16	70.22	2.6	10	5/23/2019	40	704	<0.001	<0.001	<0.001	<0.003	167	Clear No odor
2	55.38	70.22	2.4	10	8/27/2019	40	594	<0.001	<0.001	<0.001	<0.003	120	Clear No odor
2	55.59	70.22	2.3	10	11/14/2019	36	749	<0.001	<0.001	<0.001	<0.003	146	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	52.55	70.23	2.8	10	3/4/2011	80	687	<0.001	<0.001	<0.001	<0.003	97	Clear No odor
3	52.96	70.23	2.8	10	5/31/2011	80	632	<0.001	<0.001	<0.001	<0.003	94.3	Clear No odor
3	53.17	70.23	2.7	10	8/29/2011	84	685	<0.001	<0.001	<0.001	<0.003	93.8	Clear No odor

**ROC - EME Jct. G-18 (1R427-162)**

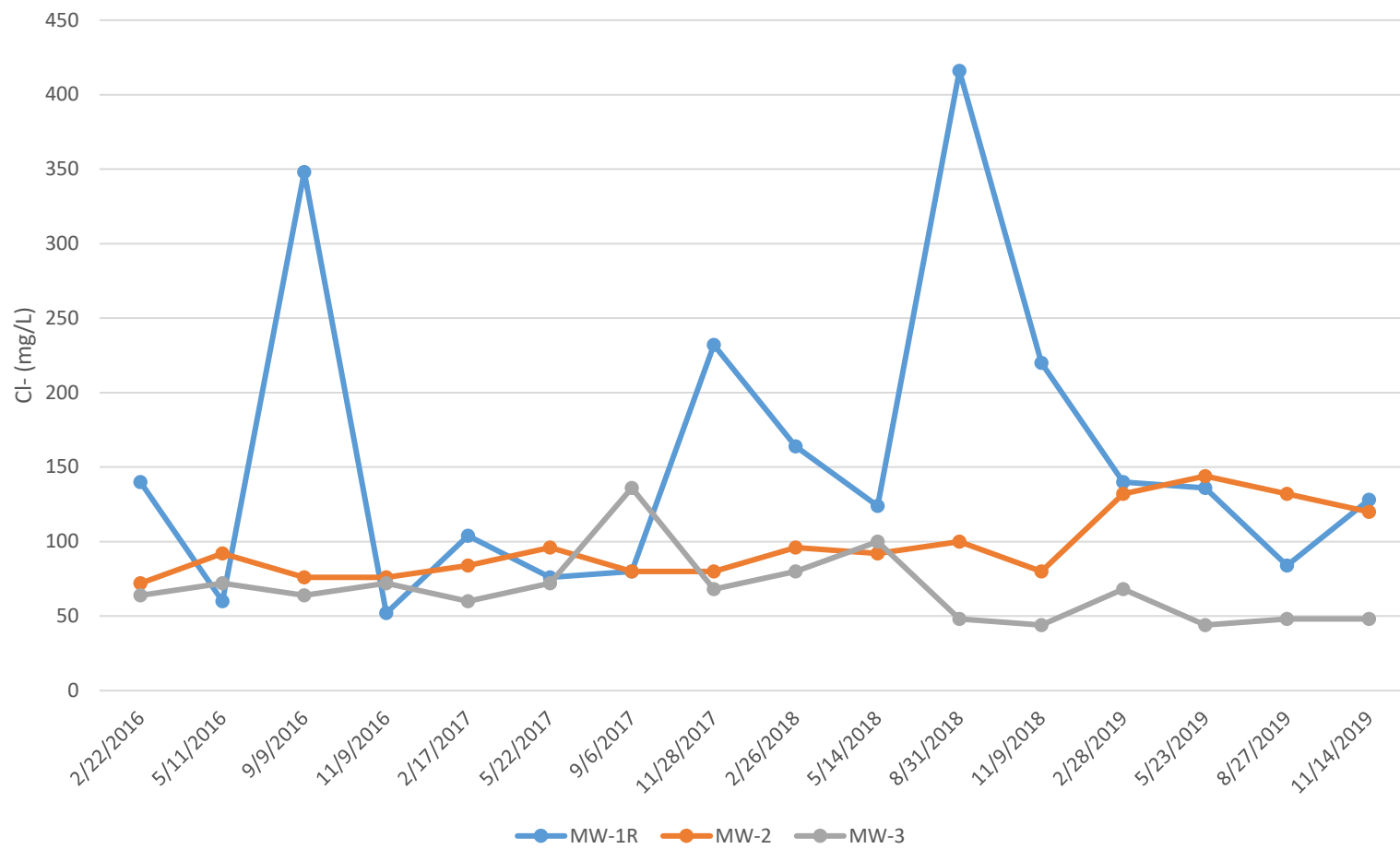
**Unit Letter G, Section 18, T19S, R37E**

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
3	53.34	70.23	2.7	10	11/14/2011	72	708	<0.001	<0.001	<0.001	<0.003	93.2	Clear No odor
3	53.58	70.23	2.7	10	2/14/2012	85	753	<0.001	<0.001	<0.001	<0.003	99.5	Clear No odor
3	53.75	70.23	2.6	10	5/23/2012	76	705	<0.001	<0.001	<0.001	<0.003	92.6	Clear No odor
3	53.84	70.23	2.6	10	7/13/2012	60	766	<0.001	<0.001	<0.001	<0.003	91.8	Clear No odor
3	54.14	70.23	2.6	10	11/1/2012	76	783	<0.001	<0.001	<0.001	<0.003	88.3	Clear No odor
3	55.27	70.23	2.4	10	2/8/2013	80	734	<0.001	<0.001	<0.001	<0.003	84	Clear No odor
3	55.38	70.23	2.4	10	5/22/2013	76	750	<0.001	<0.001	<0.001	<0.003	71.6	Clear No odor
3	54.17	70.23	2.6	10	9/3/2013	60	683	<0.001	<0.001	<0.001	<0.003	71.9	Clear No odor
3	54.51	70.23	2.5	10	11/11/2013	48	712	<0.001	<0.001	<0.001	<0.003	76.4	Clear No odor
3	54.54	70.23	2.5	10	3/3/2014	80	734	<0.001	<0.001	<0.001	<0.003	84.6	Clear No odor
3	54.73	70.23	2.5	10	5/28/2014	96	758	<0.001	<0.001	<0.001	<0.003	92.4	Clear No odor
3	54.94	70.23	2.4	10	8/15/2014	84	708	<0.001	<0.001	<0.001	<0.003	76.5	Clear No odor
3	53.38	70.23	2.7	10	11/19/2014	24	806	<0.001	<0.001	<0.001	<0.003	249	Clear No odor
3	53.12	70.23	2.7	10	2/20/2015	80	738	<0.001	<0.001	<0.001	<0.003	65	Clear No odor
3	53.56	70.23	2.7	10	5/28/2015	84	754	<0.001	<0.001	<0.001	<0.003	84.8	Clear No odor
3	53.64	70.23	2.7	10	8/14/2015	76	730	<0.001	<0.001	<0.001	<0.003	54	Clear No odor
3	53.88	70.23	2.62	10	11/9/2015	32	712	<0.001	<0.001	<0.001	<0.003	192	Clear No odor
3	53.64	70.23	2.7	10	2/22/2016	80	710	<0.001	<0.001	<0.001	<0.003	77	Clear No odor
3	53.64	70.23	2.7	10	2/22/2016	80	710	<0.001	<0.001	<0.001	<0.003	77	Clear No odor
3	53.53	70.23	2.7	10	5/11/2016	64	792	<0.001	<0.001	<0.001	<0.003	175	Clear No odor
3	54.83	70.23	2.6	10	9/9/2016	76	620	<0.001	<0.001	<0.001	<0.003	47	Clear No odor
3	53.84	70.23	2.6	10	11/9/2016	24	760	<0.001	<0.001	<0.001	<0.003	182	Clear No odor
3	53.76	70.23	2.6	10	2/17/2017	92	730	<0.001	<0.001	<0.001	<0.003	78	Clear No odor
3	53.58	70.23	2.7	10	5/22/2017	96	784	<0.001	<0.001	<0.001	<0.003	65	Clear No odor
3	54.83	70.23	2.7	10	9/6/2017	40	914	<0.001	<0.001	<0.001	<0.003	251	Clear No odor
3	54.81	70.23	2.7	10	11/28/2017	104	758	<0.001	<0.001	<0.001	<0.003	103	Clear No odor
3	54.78	70.23	2.5	10	2/26/2018	60	714	<0.001	<0.001	<0.001	<0.003	225	Clear No odor
3	54.75	70.23	2.5	10	5/14/2018	96	886	<0.001	<0.001	<0.001	<0.003	227	Clear No odor
3	55.01	70.23	2.4	10	8/31/2018	140	764	<0.001	<0.001	<0.001	<0.003	73.4	Clear No odor

**ROC - EME Jct. G-18 (1R427-162)****Unit Letter G, Section 18, T19S, R37E**

MW	Depth to Water	Total Depth	Well Volume	Volume Purged	Sample Date	Cl	TDS	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Sulfate	Comments
3	54.24	70.23	2.6	10	11/9/2018	128	468	<0.001	<0.001	<0.001	<0.003	76.4	Clear No odor
3	54.23	70.23	2.6	10	2/28/2019	148	822	<0.001	<0.001	<0.001	<0.003	88	Clear No odor
3	54.21	70.23	2.6	10	5/23/2019	132	808	<0.001	<0.001	<0.001	<0.003	86	Clear No odor
3	55.41	70.23	2.4	10	8/27/2019	56	793	<0.001	<0.001	<0.001	<0.003	154	Clear No odor
3	55.62	70.23	2.3	10	11/14/2019	132	890	<0.001	<0.001	<0.001	<0.003	91	Clear No odor

EME Jct. G-18 (1R427-162)





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

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March 14, 2019

KATIE JONES

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: EME JUNCTION G-18

Enclosed are the results of analyses for samples received by the laboratory on 03/01/19 16:16.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-18-11. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at [www.tceq.texas.gov/field/qa/lab\\_accred\\_certif.html](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:	03/01/2019	Sampling Date:	02/28/2019
Reported:	03/14/2019	Sampling Type:	Water
Project Name:	EME JUNCTION G-18	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	T19S-R37E-SEC18 G-LEA COUNTY, NM		

**Sample ID: MONITOR WELL #1R (H900831-01)**

BTEX 8021B		mg/L		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	03/05/2019	ND	0.021	106	0.0200	0.538	
Toluene*	<0.001	0.001	03/05/2019	ND	0.019	97.0	0.0200	0.862	
Ethylbenzene*	<0.001	0.001	03/05/2019	ND	0.020	102	0.0200	1.06	
Total Xylenes*	<0.003	0.003	03/05/2019	ND	0.064	106	0.0600	1.06	
Total BTEX	<0.006	0.006	03/05/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 95.6 % 81.3-128

Chloride, SM4500Cl-B		mg/L		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	140	4.00	03/05/2019	ND	108	108	100	3.77	

Sulfate 375.4		mg/L		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	85.0	10.0	03/06/2019	ND	23.2	116	20.0	0.303	

TDS 160.1		mg/L		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	605	5.00	03/08/2019	ND	509	96.6	527	0.770	

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

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

Received:	03/01/2019	Sampling Date:	02/28/2019
Reported:	03/14/2019	Sampling Type:	Water
Project Name:	EME JUNCTION G-18	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	T19S-R37E-SEC18 G-LEA COUNTY, NM		

**Sample ID: MONITOR WELL #2 (H900831-02)**

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	03/05/2019	ND	0.021	106	0.0200	0.538		
Toluene*	<0.001	0.001	03/05/2019	ND	0.019	97.0	0.0200	0.862		
Ethylbenzene*	<0.001	0.001	03/05/2019	ND	0.020	102	0.0200	1.06		
Total Xylenes*	<0.003	0.003	03/05/2019	ND	0.064	106	0.0600	1.06		
Total BTEX	<0.006	0.006	03/05/2019	ND						

Surrogate: 4-Bromofluorobenzene (PID) 97.5 % 81.3-128

Chloride, SM4500CI-B		mg/L		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride*	40.0	4.00	03/05/2019	ND	108	108	100	3.77		

Sulfate 375.4		mg/L		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Sulfate*	168	10.0	03/06/2019	ND	23.2	116	20.0	0.303		

TDS 160.1		mg/L		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
TDS*	422	5.00	03/08/2019	ND	509	96.6	527	0.770		

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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

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

Received:	03/01/2019	Sampling Date:	02/28/2019
Reported:	03/14/2019	Sampling Type:	Water
Project Name:	EME JUNCTION G-18	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	T19S-R37E-SEC18 G-LEA COUNTY, NM		

**Sample ID: MONITOR WELL #3 (H900831-03)**

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	03/05/2019	ND	0.021	106	0.0200	0.538		
Toluene*	<0.001	0.001	03/05/2019	ND	0.019	97.0	0.0200	0.862		
Ethylbenzene*	<0.001	0.001	03/05/2019	ND	0.020	102	0.0200	1.06		
Total Xylenes*	<0.003	0.003	03/05/2019	ND	0.064	106	0.0600	1.06		
Total BTEX	<0.006	0.006	03/05/2019	ND						

Surrogate: 4-Bromofluorobenzene (PID) 97.8 % 81.3-128

Chloride, SM4500Cl-B		mg/L		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride*	148	4.00	03/05/2019	ND	108	108	100	3.77		

Sulfate 375.4		mg/L		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Sulfate*	88.4	10.0	03/06/2019	ND	23.2	116	20.0	0.303		

TDS 160.1		mg/L		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
TDS*	822	5.00	03/08/2019	ND	509	96.6	527	0.770		

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Celey D. Keene, Lab Director/Quality Manager

**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.
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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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

# Cardinal Laboratories, Inc.

### CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

LAB Order ID # \_\_\_\_\_

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

Project #:	Project Name:
	EME Junction G-18
Project Location:	Sampler Signature: Rozanne Johnson (575) 631-9310
T19S-R37E-Sec18 G ~ Lea County - New Mexico	

## ANALYSIS REQUEST

(Circle or Specify Method No.)

[illegible]

Relinquished by: <i>[Signature]</i> Date: <i>3/1/2019</i> Time: <i>16:15</i>	Received by: _____ Date: _____ Time: _____	
Relinquished by: <i>[Signature]</i> Date: _____ Time: _____	Received By: (Laboratory Staff) <i>[Signature]</i> Date: <i>3/1/19</i> Time: <i>16:16</i>	
Delivered By: (Circle One) <i>[Signature]</i>	Sample Condition Cool <input type="checkbox"/> Intact <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> No <input type="checkbox"/>	CHECKED BY: <i>[Signature]</i> (Initials)
Sampler - UPS - Bus - Other: _____		

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

REMARKS:

**Email Results:** [kjones@riceswd.com](mailto:kjones@riceswd.com)  
[rozanne11@windstream.net](mailto:rozanne11@windstream.net)



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

---

June 04, 2019

KATIE JONES

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: EME JUNCTION G-18

Enclosed are the results of analyses for samples received by the laboratory on 05/24/19 13:15.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-18-11. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at [www.tceq.texas.gov/field/qa/lab\\_accred\\_certif.html](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 style with a large, stylized 'C' and 'K'.

Celey D. Keene

Lab Director/Quality Manager

**Analytical Results For:**

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

Received:	05/24/2019	Sampling Date:	05/23/2019
Reported:	06/04/2019	Sampling Type:	Water
Project Name:	EME JUNCTION G-18	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T19S-R37E-SEC18 G-LEA COUNTY, NM		

**Sample ID: MONITOR WELL #1 R (H901864-01)**

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	05/28/2019	ND	0.020	98.3	0.0200	1.32	
Toluene*	<0.001	0.001	05/28/2019	ND	0.021	103	0.0200	0.306	
Ethylbenzene*	<0.001	0.001	05/28/2019	ND	0.020	98.1	0.0200	0.373	
Total Xylenes*	<0.003	0.003	05/28/2019	ND	0.061	102	0.0600	0.931	
Total BTEX	<0.006	0.006	05/28/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 94.9 % 81.3-128

Chloride, SM4500Cl-B		mg/L		Analyzed By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	136	4.00	05/30/2019	ND	100	100	100	3.92	

Sulfate 375.4		mg/L		Analyzed By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	230	50.0	05/30/2019	ND	21.6	108	20.0	7.75	

TDS 160.1		mg/L		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	940	5.00	06/04/2019	5.00	510	96.8	527	0.498	

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

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

Received:	05/24/2019	Sampling Date:	05/23/2019
Reported:	06/04/2019	Sampling Type:	Water
Project Name:	EME JUNCTION G-18	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T19S-R37E-SEC18 G-LEA COUNTY, NM		

**Sample ID: MONITOR WELL #2 (H901864-02)**

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	05/28/2019	ND	0.020	98.3	0.0200	1.32	
Toluene*	<0.001	0.001	05/28/2019	ND	0.021	103	0.0200	0.306	
Ethylbenzene*	<0.001	0.001	05/28/2019	ND	0.020	98.1	0.0200	0.373	
Total Xylenes*	<0.003	0.003	05/28/2019	ND	0.061	102	0.0600	0.931	
Total BTEX	<0.006	0.006	05/28/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 97.7 % 81.3-128

Chloride, SM4500Cl-B		mg/L		Analyzed By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	40.0	4.00	05/30/2019	ND	100	100	100	3.92	

Sulfate 375.4		mg/L		Analyzed By: JH						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Sulfate*	167	25.0	05/30/2019	ND	21.6	108	20.0	7.75		

TDS 160.1		mg/L		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
TDS*	704	5.00	06/04/2019	5.00	510	96.8	527	0.498		

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

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

Received:	05/24/2019	Sampling Date:	05/23/2019
Reported:	06/04/2019	Sampling Type:	Water
Project Name:	EME JUNCTION G-18	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T19S-R37E-SEC18 G-LEA COUNTY, NM		

**Sample ID: MONITOR WELL #3 (H901864-03)**

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	05/28/2019	ND	0.020	98.3	0.0200	1.32	
Toluene*	<0.001	0.001	05/28/2019	ND	0.021	103	0.0200	0.306	
Ethylbenzene*	<0.001	0.001	05/28/2019	ND	0.020	98.1	0.0200	0.373	
Total Xylenes*	<0.003	0.003	05/28/2019	ND	0.061	102	0.0600	0.931	
Total BTEX	<0.006	0.006	05/28/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 94.1 % 81.3-128

Chloride, SM4500Cl-B		mg/L		Analyzed By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	132	4.00	05/30/2019	ND	100	100	100	3.92	

Sulfate 375.4		mg/L		Analyzed By: JH						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Sulfate*	86.2	25.0	05/30/2019	ND	21.6	108	20.0	7.75		

TDS 160.1		mg/L		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	808	5.00	06/04/2019	5.00	510	96.8	527	0.498	

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

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

---

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager





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

---

September 09, 2019

KATIE JONES

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: EME JUNCTION G-18

Enclosed are the results of analyses for samples received by the laboratory on 08/29/19 13:35.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-18-11. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at [www.tceq.texas.gov/field/qa/lab\\_accred\\_certif.html](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:	08/29/2019	Sampling Date:	08/27/2019
Reported:	09/09/2019	Sampling Type:	Water
Project Name:	EME JUNCTION G-18	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T19S-R37E-SEC18 G-LEA COUNTY, NM		

**Sample ID: MONITOR WELL #1 R (H903000-01)**

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	08/30/2019	ND	0.020	100	0.0200	3.23	
Toluene*	<0.001	0.001	08/30/2019	ND	0.020	99.2	0.0200	3.43	
Ethylbenzene*	<0.001	0.001	08/30/2019	ND	0.019	93.5	0.0200	4.99	
Total Xylenes*	<0.003	0.003	08/30/2019	ND	0.060	101	0.0600	5.68	
Total BTEX	<0.006	0.006	08/30/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 90.2 % 81.3-128

Chloride, SM4500Cl-B		mg/L		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	84.0	4.00	09/03/2019	ND	100	100	100	0.00	

Sulfate 375.4		mg/L		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	165	50.0	09/03/2019	ND	18.4	92.1	20.0	0.217	

TDS 160.1		mg/L		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	886	5.00	09/03/2019	ND	544	103	527	2.98	

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

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

Received:	08/29/2019	Sampling Date:	08/27/2019
Reported:	09/09/2019	Sampling Type:	Water
Project Name:	EME JUNCTION G-18	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T19S-R37E-SEC18 G-LEA COUNTY, NM		

**Sample ID: MONITOR WELL #2 (H903000-02)**

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	08/30/2019	ND	0.020	100	0.0200	3.23	
Toluene*	<0.001	0.001	08/30/2019	ND	0.020	99.2	0.0200	3.43	
Ethylbenzene*	<0.001	0.001	08/30/2019	ND	0.019	93.5	0.0200	4.99	
Total Xylenes*	<0.003	0.003	08/30/2019	ND	0.060	101	0.0600	5.68	
Total BTEX	<0.006	0.006	08/30/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 91.3 % 81.3-128

Chloride, SM4500CI-B		mg/L		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	40.0	4.00	09/03/2019	ND	100	100	100	0.00	

Sulfate 375.4		mg/L		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Sulfate*	120	50.0	09/03/2019	ND	18.4	92.1	20.0	0.217		

TDS 160.1		mg/L		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	594	5.00	09/03/2019	ND	544	103	527	2.98	

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

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

Received:	08/29/2019	Sampling Date:	08/27/2019
Reported:	09/09/2019	Sampling Type:	Water
Project Name:	EME JUNCTION G-18	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T19S-R37E-SEC18 G-LEA COUNTY, NM		

**Sample ID: MONITOR WELL #3 (H903000-03)**

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	08/30/2019	ND	0.020	100	0.0200	3.23	
Toluene*	<0.001	0.001	08/30/2019	ND	0.020	99.2	0.0200	3.43	
Ethylbenzene*	<0.001	0.001	08/30/2019	ND	0.019	93.5	0.0200	4.99	
Total Xylenes*	<0.003	0.003	08/30/2019	ND	0.060	101	0.0600	5.68	
Total BTEX	<0.006	0.006	08/30/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 97.3 % 81.3-128

Chloride, SM4500Cl-B		mg/L		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	56.0	4.00	09/03/2019	ND	100	100	100	0.00	

Sulfate 375.4		mg/L		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Sulfate*	154	50.0	09/03/2019	ND	18.4	92.1	20.0	0.217		

TDS 160.1		mg/L		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
TDS*	793	5.00	09/03/2019	ND	544	103	527	2.98		

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Celey D. Keene, Lab Director/Quality Manager

**Notes and Definitions**

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

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Celey D. Keene, Lab Director/Quality Manager

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

# Cardinal Laboratories, Inc.

## CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

LAB Order ID # \_\_\_\_\_

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

Project #:	Project Name:
	EME Junction G-18

Project Location: T19S-R37E-Sec18 G ~ Lea County - New Mexico

[illegible]

Relinquished by: <i>Reanne Johnson</i>	Date: <i>8/29/2019</i>	Time: <i>13:35</i>	Received by: <i>Reanne Johnson</i>	Date: <i>8-29-19</i>	Time: <i>13:35</i>
Relinquished by:	Date:	Time:	Received By: (Laboratory Staff)	Date:	Time:

Delivered By: (Circle One)

Sampler - UPS - Bus - Other:

[illegible]

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

CHECKED BY:

(Initials)

Phone Results	Yes	No
---------------	-----	----

Fax Results	Yes	No
-------------	-----	----

REMARKS:

Email Results: [kjones@riceswd.com](mailto:kjones@riceswd.com)  
[rozanne11@windstream.net](mailto:rozanne11@windstream.net)

December 04, 2019

KATIE JONES

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: EME JUNCTION G-18

Enclosed are the results of analyses for samples received by the laboratory on 11/15/19 12:10.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-19-12. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at [www.tceq.texas.gov/field/qa/lab\\_accred\\_certif.html](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,



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:	11/15/2019	Sampling Date:	11/14/2019
Reported:	12/04/2019	Sampling Type:	Water
Project Name:	EME JUNCTION G-18	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T19S-R37E-SEC18 G-LEA COUNTY, NM		

**Sample ID: MONITOR WELL #1 R (H903888-01)**

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	11/24/2019	ND	0.019	96.8	0.0200	0.956	
Toluene*	<0.001	0.001	11/24/2019	ND	0.019	93.7	0.0200	0.628	
Ethylbenzene*	<0.001	0.001	11/24/2019	ND	0.019	95.4	0.0200	0.648	
Total Xylenes*	<0.003	0.003	11/24/2019	ND	0.058	95.9	0.0600	0.741	
Total BTEX	<0.006	0.006	11/24/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 121 % 58.2-133

Chloride, SM4500Cl-B		mg/L		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	128	4.00	11/19/2019	ND	100	100	100	0.00	

Sulfate 375.4		mg/L		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	90.7	25.0	11/22/2019	ND	21.1	106	20.0	14.9	

TDS 160.1		mg/L		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	867	5.00	11/21/2019	ND	533	101	527	0.375	

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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

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

Received:	11/15/2019	Sampling Date:	11/14/2019
Reported:	12/04/2019	Sampling Type:	Water
Project Name:	EME JUNCTION G-18	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T19S-R37E-SEC18 G-LEA COUNTY, NM		

**Sample ID: MONITOR WELL #2 (H903888-02)**

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	11/24/2019	ND	0.019	96.8	0.0200	0.956	
Toluene*	<0.001	0.001	11/24/2019	ND	0.019	93.7	0.0200	0.628	
Ethylbenzene*	<0.001	0.001	11/24/2019	ND	0.019	95.4	0.0200	0.648	
Total Xylenes*	<0.003	0.003	11/24/2019	ND	0.058	95.9	0.0600	0.741	
Total BTEX	<0.006	0.006	11/24/2019	ND					

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

Chloride, SM4500Cl-B		mg/L		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	36.0	4.00	11/19/2019	ND	100	100	100	0.00	

Sulfate 375.4		mg/L		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Sulfate*	146	25.0	11/22/2019	ND	21.1	106	20.0	14.9	

TDS 160.1		mg/L		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	749	5.00	11/21/2019	ND	533	101	527	0.375	

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

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

Received:	11/15/2019	Sampling Date:	11/14/2019
Reported:	12/04/2019	Sampling Type:	Water
Project Name:	EME JUNCTION G-18	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T19S-R37E-SEC18 G-LEA COUNTY, NM		

**Sample ID: MONITOR WELL #3 (H903888-03)**

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	11/24/2019	ND	0.019	96.8	0.0200	0.956		
Toluene*	<0.001	0.001	11/24/2019	ND	0.019	93.7	0.0200	0.628		
Ethylbenzene*	<0.001	0.001	11/24/2019	ND	0.019	95.4	0.0200	0.648		
Total Xylenes*	<0.003	0.003	11/24/2019	ND	0.058	95.9	0.0600	0.741		
Total BTEX	<0.006	0.006	11/24/2019	ND						

Surrogate: 4-Bromofluorobenzene (PID) 100 % 58.2-133

Chloride, SM4500Cl-B		mg/L		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride*	132	4.00	11/19/2019	ND	100	100	100	0.00		

Sulfate 375.4		mg/L		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Sulfate*	91.0	25.0	11/22/2019	ND	21.1	106	20.0	14.9		

TDS 160.1		mg/L		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
TDS*	890	5.00	11/21/2019	ND	533	101	527	0.375		

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Celey D. Keene, Lab Director/Quality Manager

### 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.
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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Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

# Cardinal Laboratories, Inc.

## CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

LAB Order ID # \_\_\_\_\_

**ANALYSIS REQUEST**  
(Circle or Specify Method No.)

[illegible][illegible]

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="0"> <thead> <tr> <th></th> <th>Cool</th> <th>Intact</th> </tr> </thead> <tbody> <tr> <td>Yes</td> <td><input checked="" type="checkbox"/></td> <td><input checked="" type="checkbox"/></td> </tr> <tr> <td>No</td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </tbody> </table>		Cool	Intact	Yes	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>	<input type="checkbox"/>	(Initials) Te
	Cool	Intact									
Yes	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>									
No	<input type="checkbox"/>	<input type="checkbox"/>									

Email Results: [kjones@riceswd.com](mailto:kjones@riceswd.com)  
[rozanne11@windstream.net](mailto:rozanne11@windstream.net)