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April 1st, 2020

Bradford Billings

New Mexico Energy, Minerals, & Natural Resources
Oil Conservation Division, Environmental Bureau
1220 S. St. Francis Drive
Santa Fe, New Mexico 87505

RE: **2019 Annual Report**

OCD Case Number: 1R427-87

Rice Operating Company – EME SWD System

H-20 SWD (UL H, Sec 20, T20S, R37E)

Sent by E-mail

Mr. Billings:

This letter summarizes progress made over the past year pursuant to the NMOCD approved Corrective Action Plan for this site. An active SWD produced water disposal facility is operated at this location by Rice Operating Company (ROC). This project is located in the EME field approximately 4 miles south of Monument, New Mexico (Appendix, Figure 1). Over the course of 2019 we continued to monitor up and down-gradient monitor wells (Appendix, Figure 2) for chlorides and petroleum hydrocarbons (BTEX).

In brief:

Average annual groundwater chloride concentrations are given in the Appendix, Figure 3 and Table 1. Year average groundwater chloride concentrations in the near-source monitor well (MW-1) decreased from 1,070 mg/l in 2018 to 1,015 mg/l in 2019. Year average groundwater chloride concentrations in the up-gradient monitor well (MW-2) decreased from 1,093 mg/l in 2018 to 913 mg/l in 2019. Year average groundwater chlorides in the down-gradient monitor well (MW-3) dropped slightly, from 1,128 mg/l in 2018 to 1,093 mg/l in 2019. Year average groundwater chloride concentrations in the far down-gradient monitor well (MW-4) decreased from 1,343 mg/l in 2018 to 1,298 mg/l in 2019. Year average groundwater chloride concentrations in the east side-gradient monitor well (MW-5) was little changed, increasing from 1,143 mg/l in 2018 to 1,175 mg/l in 2019.

Average annual groundwater benzene concentrations are given in the Appendix, Figure 4 and Table 2. Yearly average groundwater benzene concentrations in the near-source monitor well (MW-1) was essentially unchanged, measuring 0.0218 mg/l in 2018 versus 0.0215 mg/l in 2019. Year average benzene

Rice Operating Company EME H-20 SWD Annual Report

concentrations in the up-gradient monitor well (MW-2) remained at the laboratory limit of detection of 0.0010 mg/l in 2018 and 2019. Year average benzene concentrations in the downgradient monitor well (MW-3) rose slightly from 0.0220 mg/l in 2018 to 0.0245 mg/l in 2019. Year average benzene concentrations in the far down-gradient monitor well (MW-4) remained at the laboratory limit of detection of 0.0010 mg/l in 2018 and 2019, as it did in the east side/down-gradient monitor well (MW-5).

The full dataset for groundwater chlorides and BTEX is given in Tables 3a – 3e.

Groundwater chloride concentrations appear to be slowly, if unevenly, converging toward the prevailing upgradient values (roughly 900 to 1,000 mg/l). It remains to be seen where near-source and down-gradient groundwater benzene concentrations are trending.

During the course of 2020 we plan to continue the monitoring of groundwater for chlorides and BTEX. However, due to the current climate, and in the interest of safety, ROC proposes to reduce the groundwater monitoring frequency from quarterly to semi-annually for the remainder of this year. This proposal is only temporary and regularly scheduled groundwater monitoring will commence as soon as possible.

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

Please contact either myself or Rice Operating Company if you have any questions or need additional information.

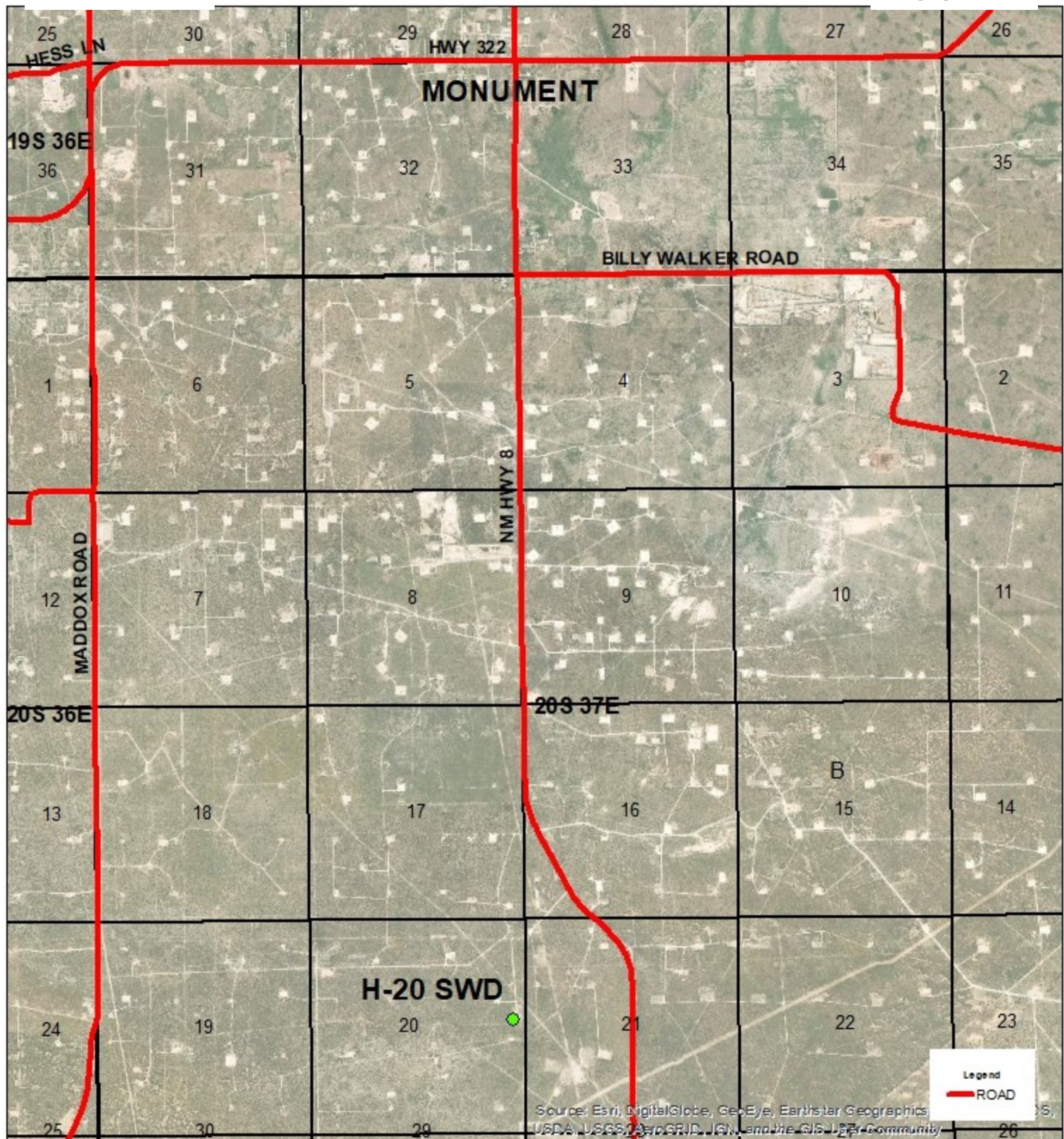
Sincerely,



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



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



EME
H-20 SWD
1R427-87

UL H SECTION 20
T-20-S R-37-E
LEA COUNTY, NM

GPS: 32.559077-103.265553
NAD83 STATE PLANE PROJ
NM EAST ZONE

0 0.5 1
Miles



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



EME
H-20 SWD
1R427-87

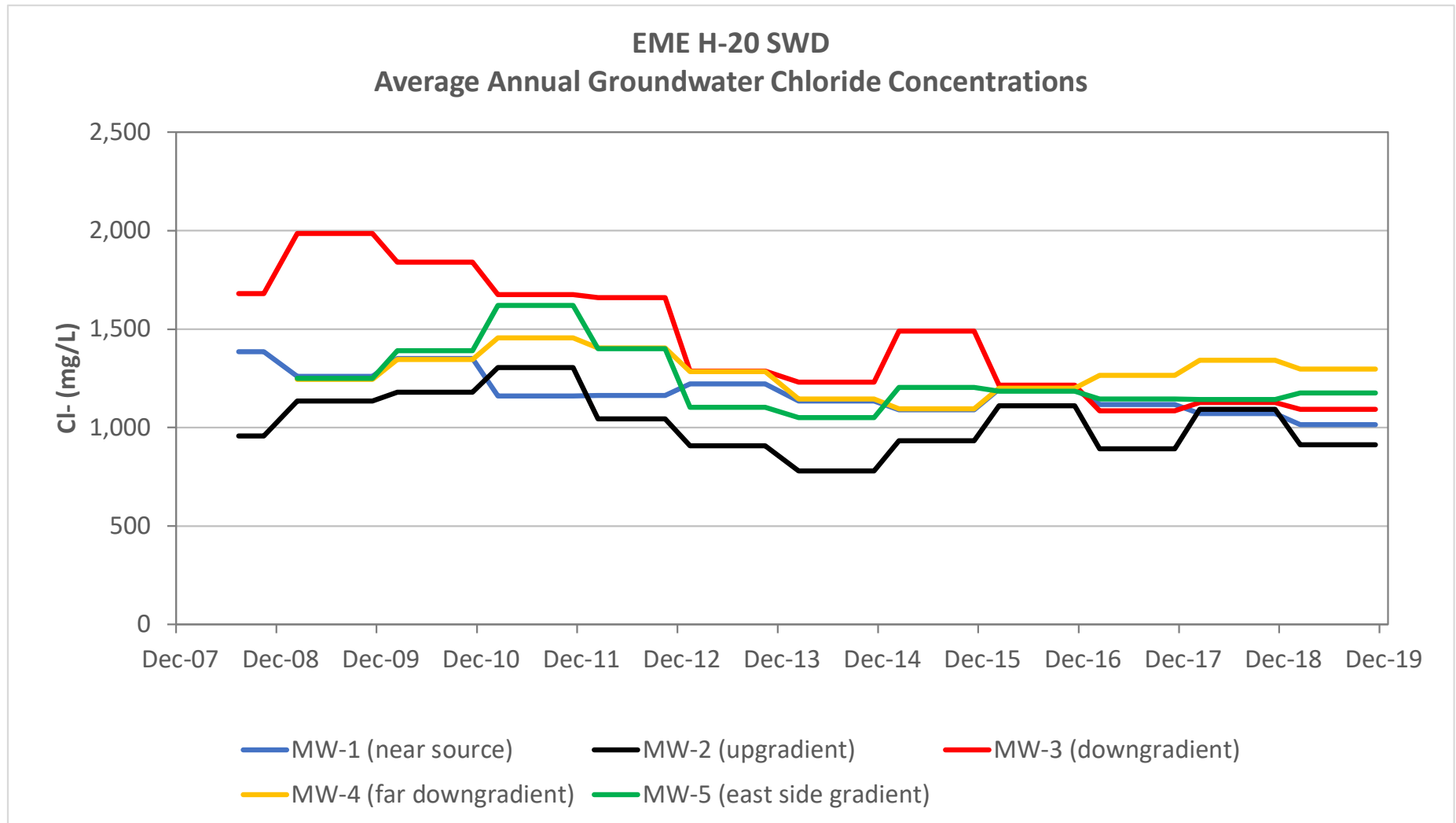
UL H SECTION 20
T-20-S R-37-E
LEA COUNTY, NM

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NM EAST ZONE

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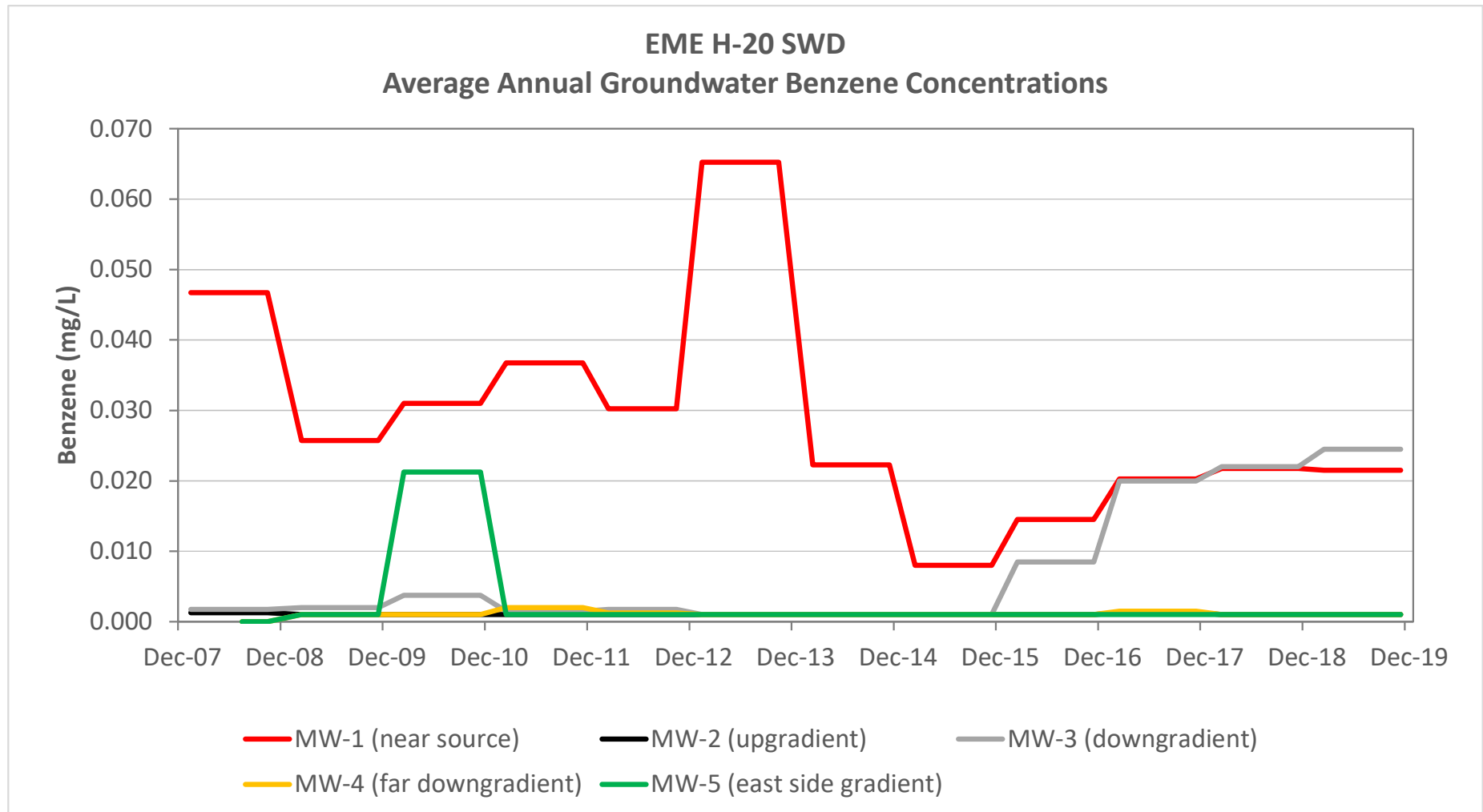
Drawing date: 2/3/20
Drafted by: T. Grieco





EME H-20 SWD Groundwater Chloride Concentrations

Sample Date	MW-1 (near source)		MW-2 (upgradient)		MW-3 (downgradient)		MW-4 (far downgradient)		MW-5 (east side gradient)	
	Measured Value (mg/l)	Calendar Yr Avg (mg/l)	Measured Value (mg/l)	Calendar Yr Avg (mg/l)	Measured Value (mg/l)	Calendar Yr Avg (mg/l)	Measured Value (mg/l)	Calendar Yr Avg (mg/l)	Measured Value (mg/l)	Calendar Yr Avg (mg/l)
4/23/2007	1,939									
7/12/2007	1,230									
11/1/2007	1,260		1,100		1,710					
1/18/2008	1,420	1,385	980	958	1,420	1,680				
4/9/2008	1,380	1,385	840	958	1,220	1,680				
7/21/2008	1,440	1,385	1,000	958	2,140	1,680	1,300		1,400	
10/20/2008	1,300	1,385	1,010	958	1,940	1,680	1,120		1,220	
2/5/2009	1,360	1,260	1,080	1,135	1,480	1,985	1,200	1,245	1,180	1,250
5/8/2009	1,220	1,260	1,120	1,135	1,840	1,985	1,340	1,245	1,320	1,250
8/14/2009	1,180	1,260	1,140	1,135	2,570	1,985	1,240	1,245	1,240	1,250
11/4/2009	1,280	1,260	1,200	1,135	2,050	1,985	1,200	1,245	1,260	1,250
2/17/2010	1,360	1,350	1,080	1,180	1,420	1,840	1,380	1,345	1,260	1,390
5/19/2010	1,280	1,350	1,180	1,180	1,640	1,840	1,340	1,345	1,340	1,390
8/11/2010	1,460	1,350	1,120	1,180	2,150	1,840	1,380	1,345	1,400	1,390
11/4/2010	1,300	1,350	1,340	1,180	2,150	1,840	1,280	1,345	1,560	1,390
2/25/2011	1,160	1,160	1,680	1,305	1,580	1,675	1,440	1,455	1,600	1,620
5/20/2011	1,220	1,160	1,120	1,305	1,880	1,675	1,500	1,455	1,680	1,620
8/11/2011	1,080	1,160	1,140	1,305	1,580	1,675	1,400	1,455	1,600	1,620
11/9/2011	1,180	1,160	1,280	1,305	1,660	1,675	1,480	1,455	1,600	1,620
2/8/2012	1,170	1,163	1,060	1,045	1,480	1,660	1,500	1,405	1,560	1,400
5/20/2012	1,100	1,163	1,040	1,045	1,400	1,660	1,360	1,405	1,480	1,400
8/7/2012	1,160	1,163	1,020	1,045	1,920	1,660	1,360	1,405	1,320	1,400
10/31/2012	1,220	1,163	1,060	1,045	1,840	1,660	1,400	1,405	1,240	1,400
1/30/2013	1,180	1,223	1,040	908	1,240	1,288	1,220	1,285	1,140	1,103
5/14/2013	1,230	1,223	960	908	1,250	1,288	1,340	1,285	1,200	1,103
8/14/2013	1,360	1,223	860	908	1,580	1,288	1,400	1,285	1,070	1,103
10/31/2013	1,120	1,223	770	908	1,080	1,288	1,180	1,285	1,000	1,103
2/18/2014	1,100	1,135	740	780	1,040	1,230	1,200	1,145	1,000	1,050
4/24/2014	1,080	1,135	830	780	1,020	1,230	1,240	1,145	1,060	1,050
7/31/2014	1,060	1,135	730	780	1,080	1,230	1,220	1,145	1,040	1,050
11/6/2014	1,300	1,135	820	780	1,780	1,230	920	1,145	1,100	1,050
2/12/2015	1,030	1,090	950	932	1,520	1,490	1,080	1,095	1,040	1,205
5/6/2015	1,120	1,090	860	932	1,260	1,490	1,040	1,095	1,200	1,205
8/11/2015	1,090	1,090	939	932	1,660	1,490	1,120	1,095	1,220	1,205
11/5/2015	1,120	1,090	980	932	1,520	1,490	1,140	1,095	1,360	1,205
2/10/2016	1,040	1,195	1,160	1,110	1,280	1,215	1,080	1,200	1,240	1,185
5/9/2016	1,300	1,195	1,160	1,110	1,380	1,215	1,140	1,200	1,080	1,185
9/8/2016	1,200	1,195	1,160	1,110	1,060	1,215	1,260	1,200	1,120	1,185
11/8/2016	1,240	1,195	960	1,110	1,140	1,215	1,320	1,200	1,300	1,185
2/16/2017	1,240	1,118	920	893	1,140	1,085	1,160	1,265	1,180	1,145
4/28/2017	1,040	1,118	900	893	1,108	1,085	1,200	1,265	1,180	1,145
9/5/2017	1,200	1,118	920	893	1,060	1,085	1,340	1,265	1,160	1,145
11/8/2017	990	1,118	830	893	1,030	1,085	1,360	1,265	1,060	1,145
2/23/2018	1,040	1,070	1,070	1,093	990	1,128	1,170	1,343	1,060	1,143
5/8/2018	1,240	1,070	1,240	1,093	1,340	1,128	1,500	1,343	1,230	1,143
8/30/2018	1,020	1,070	1,080	1,093	1,080	1,128	1,460	1,343	1,140	1,143
11/8/2018	980	1,070	980	1,093	1,100	1,128	1,240	1,343	1,140	1,143
2/27/2019	1,080	1,015	950	913	1,200	1,093	1,400	1,298	1,280	1,175
5/22/2019	990	1,015	1,000	913	1,090	1,093	1,230	1,298	1,280	1,175
8/26/2019	930	1,015	870	913	1,040	1,093	1,240	1,298	1,100	1,175
11/13/2019	1,060	1,015	830	913	1,040	1,093	1,320	1,298	1,040	1,175



EME H-20 SWD Groundwater Benzene Concentrations

Sample Date	MW-1 (near source)		MW-2 (upgradient)		MW-3 (downgradient)		MW-4 (far downgradient)		MW-5 (east side gradient)	
	Measured Value (mg/l)	Calendar Yr Avg (mg/l)	Measured Value (mg/l)	Calendar Yr Avg (mg/l)	Measured Value (mg/l)	Calendar Yr Avg (mg/l)	Measured Value (mg/l)	Calendar Yr Avg (mg/l)	Measured Value (mg/l)	Calendar Yr Avg (mg/l)
4/23/2007	0.0600									
7/12/2007	0.0684									
11/1/2007	0.0590		0.0020		0.0020					
1/18/2008	0.0520	0.0468	0.0010	0.0013	0.0020	0.0018				
4/9/2008	0.0320	0.0468	0.0010	0.0013	0.0020	0.0018				
7/21/2008	0.0480	0.0468	0.0020	0.0013	0.0020	0.0018	0.0020	0.0000	0.0020	0.0000
10/20/2008	0.0550	0.0468	0.0010	0.0013	0.0010	0.0018	0.0010	0.0000	0.0010	0.0000
2/5/2009	0.0310	0.0258	0.0010	0.0010	0.0010	0.0020	0.0010	0.0010	0.0010	0.0010
5/8/2009	0.0310	0.0258	0.0010	0.0010	0.0010	0.0020	0.0010	0.0010	0.0010	0.0010
8/14/2009	0.0240	0.0258	0.0010	0.0010	0.0020	0.0020	0.0010	0.0010	0.0010	0.0010
11/4/2009	0.0170	0.0258	0.0010	0.0010	0.0040	0.0020	0.0010	0.0010	0.0010	0.0010
2/17/2010	0.0300	0.0310	0.0010	0.0010	0.0050	0.0038	0.0010	0.0010	0.0010	0.0213
5/19/2010	0.0060	0.0310	0.0010	0.0010	0.0050	0.0038	0.0010	0.0010	0.0010	0.0213
8/11/2010	0.0140	0.0310	0.0010	0.0010	0.0020	0.0038	0.0010	0.0010	0.0010	0.0213
11/4/2010	0.0740	0.0310	0.0010	0.0010	0.0030	0.0038	0.0010	0.0010	0.0820	0.0213
2/25/2011	0.0330	0.0368	0.0010	0.0010	0.0020	0.0015	0.0010	0.0020	0.0010	0.0010
5/20/2011	0.0560	0.0368	0.0010	0.0010	0.0020	0.0015	0.0010	0.0020	0.0010	0.0010
8/11/2011	0.0340	0.0368	0.0010	0.0010	0.0010	0.0015	0.0040	0.0020	0.0010	0.0010
11/9/2011	0.0240	0.0368	0.0010	0.0010	0.0010	0.0015	0.0020	0.0020	0.0010	0.0010
2/8/2012	0.0280	0.0303	0.0010	0.0010	0.0030	0.0018	0.0020	0.0013	0.0010	0.0010
5/20/2012	0.0270	0.0303	0.0010	0.0010	0.0010	0.0018	0.0010	0.0013	0.0010	0.0010
8/7/2012	0.0400	0.0303	0.0010	0.0010	0.0020	0.0018	0.0010	0.0013	0.0010	0.0010
10/31/2012	0.0260	0.0303	0.0010	0.0010	0.0010	0.0018	0.0010	0.0013	0.0010	0.0010
1/30/2013	0.0440	0.0653	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010
5/14/2013	0.0820	0.0653	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010
8/14/2013	0.0740	0.0653	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010
10/31/2013	0.0610	0.0653	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010
2/18/2014	0.0380	0.0223	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010
4/24/2014	0.0370	0.0223	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010
7/31/2014	0.0130	0.0223	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010
11/6/2014	0.0010	0.0223	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010
2/12/2015	0.0290	0.0080	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010
5/6/2015	0.0010	0.0080	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010
8/11/2015	0.0010	0.0080	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010
11/5/2015	0.0010	0.0080	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010	0.0010
2/10/2016	0.0240	0.0145	0.0010	0.0010	0.0010	0.0085	0.0010	0.0010	0.0010	0.0010
5/9/2016	0.0010	0.0145	0.0010	0.0010	0.0010	0.0085	0.0010	0.0010	0.0010	0.0010
9/8/2016	0.0100	0.0145	0.0010	0.0010	0.0060	0.0085	0.0010	0.0010	0.0010	0.0010
11/8/2016	0.0230	0.0145	0.0010	0.0010	0.0260	0.0085	0.0010	0.0010	0.0010	0.0010
2/16/2017	0.0010	0.0203	0.0010	0.0013	0.0010	0.0200	0.0010	0.0015	0.0010	0.0010
4/28/2017	0.0140	0.0203	0.0010	0.0013	0.0230	0.0200	0.0010	0.0015	0.0010	0.0010
9/5/2017	0.0370	0.0203	0.0010	0.0013	0.0410	0.0200	0.0010	0.0015	0.0010	0.0010
11/8/2017	0.0290	0.0203	0.0020	0.0013	0.0150	0.0200	0.0030	0.0015	0.0010	0.0010
2/23/2018	0.0180	0.0218	0.0010	0.0010	0.0180	0.0220	0.0010	0.0010	0.0010	0.0010
5/8/2018	0.0010	0.0218	0.0010	0.0010	0.0010	0.0220	0.0010	0.0010	0.0010	0.0010
8/30/2018	0.0360	0.0218	0.0010	0.0010	0.0340	0.0220	0.0010	0.0010	0.0010	0.0010
11/8/2018	0.0320	0.0218	0.0010	0.0010	0.0350	0.0220	0.0010	0.0010	0.0010	0.0010
2/27/2019	0.0020	0.0215	0.0010	0.0010	0.0070	0.0245	0.0010	0.0010	0.0010	0.0010
5/22/2019	0.0190	0.0215	0.0010	0.0010	0.0060	0.0245	0.0010	0.0010	0.0010	0.0010
8/26/2019	0.0430	0.0215	0.0010	0.0010	0.0680	0.0245	0.0010	0.0010	0.0010	0.0010
11/13/2019	0.0220	0.0215	0.0010	0.0010	0.0170	0.0245	0.0010	0.0010	0.0010	0.0010

APPENDIX

TABLE 3a

EME H-20 SWD Groundwater Data

MW	Depth to Water (ft)	Total Depth (ft)	Well Volume (gal)	Volume Purged (gal)	Sample Date	Cl (mg/l)	TDS (mg/l)	Benzene (mg/l)	Toluene (mg/l)	Ethyl Benzene (mg/l)	Total Xylenes (mg/l)	Sulfate (mg/l)	Comments
1	22.9	35.0	7.8	25.0	4/23/2007	1,939	4,343	0.060	<0.002	<0.002	<0.006	544	Clear
1	23.5	35.0	7.5	25.0	7/12/2007	1,230	3,660	0.068	<0.005	0.016	<0.002	644	Clear
1	23.5	35.0	7.4	25.0	11/1/2007	1,260	3,824	0.059	<0.002	0.006	<0.006	612	Gray to clear Strong odor 0.16 inches of product in well
1	23.4	35.0	7.5	25.0	1/18/2008	1,420	3,896	0.052	<0.005	<0.005	<0.015	653	Hydrocarbon present Gray to clear with strong odor
1	23.3	35.0	7.6	25.0	4/9/2008	1,380	3,890	0.032	0.001	0.004	<0.003	862	Gray to clear Strong odor Hydrocarbon present
1	24.0	35.0	7.1	25.0	7/21/2008	1,440	4,070	0.048	<0.020	<0.020	<0.06	794	Hydrocarbon present Gray to clear Strong odor
1	23.5	35.0	7.4	25.0	10/20/2008	1,300	3,920	0.055	0.002	0.004	<0.003	744	Hydrocarbon present Gray to clear Strong odor
1	23.2	35.0	7.6	25.0	2/5/2009	1,360	3,900	0.031	0.001	0.004	<0.003	753	Hydrocarbon present Gray to clear Strong odor
1	23.1	35.0	7.7	25.0	5/8/2009	1,220	3,850	0.031	<0.001	<0.001	<0.003	746	Hydrocarbon present Gray to clear Strong odor
1	24.1	35.0	7.0	25.0	8/14/2009	1,180	3,690	0.024	<0.001	0.007	<0.003	694	Hydrocarbon present Gray to clear Strong odor
1	24.3	35.0	6.9	25.0	11/4/2009	1,280	3,840	0.017	<0.001	0.002	<0.003	631	Hydrocarbon present Gray to clear Strong odor
1	23.8	35.0	7.2	25.0	2/17/2010	1,360	3,800	0.030	<0.001	0.004	<0.003	946	Gray to Clear with Strong Odor
1	23.4	35.0	7.5	25.0	5/19/2010	1,280	3,950	0.006	<0.001	<0.001	<0.003	760	Hydrocarbon sheen Gray to clear Strong odor
1	23.1	35.0	7.7	25.0	8/11/2010	1,460	4,050	0.014	<0.001	0.003	<0.003	740	Hydrocarbon sheen Gray to clear Strong odor
1	23.6	35.0	7.4	25.0	11/4/2010	1,300	3,910	0.074	<0.002	0.004	<0.006	645	Hydrocarbon sheen Gray to clear Strong odor
1	23.3	35.0	7.6	25.0	2/25/2011	1,160	3,800	0.033	0.002	0.004	0.003	756	Hydrocarbon sheen gray to clear with strong odor
1	23.5	35.0	7.4	25.0	5/20/2011	1,220	3,700	0.056	0.003	0.006	0.007	761	Hydrocarbon sheen gray to clear with strong odor

APPENDIX

1	24.4	35.0	6.8	25.0	8/11/2011	1,080	3,640	0.034	<0.001	0.002	<0.003	779	Hydrocarbon sheen Gray to clear Strong odor
1	24.2	35.0	7.0	25.0	11/9/2011	1,180	3,580	0.024	<0.001	0.002	<0.003	827	Hydrocarbon sheen Gray to clear Strong odor
1	23.8	35.0	7.2	25.0	2/8/2012	1,170	3,650	0.028	<0.001	0.003	<0.003	807	Hydrocarbon sheen Gray to clear Strong odor
1	23.7	35.0	7.3	25.0	5/20/2012	1,100	3,500	0.027	<0.001	0.004	<0.003	639	Hydrocarbon sheen Gray to clear Strong odor
1	24.3	35.0	6.9	25.0	8/7/2012	1,160	3,660	0.040	0.002	0.008	<0.003	727	Hydrocarbon sheen Gray to clear Strong odor
1	24.1	35.0	7.1	25.0	10/31/2012	1,220	3,720	0.026	<0.001	<0.001	<0.003	686	Hydrocarbon sheen Gray to clear Strong odor
1	23.9	35.0	7.2	25.0	1/30/2013	1,180	3,750	0.044	<0.001	0.004	<0.003	547	Hydrocarbon sheen Gray to clear Strong odor
1	23.8	35.0	7.3	25.0	5/14/2013	1,230	3,860	0.082	0.002	0.008	<0.003	842	Hydrocarbon sheen Gray to clear Strong odor
1	24.2	35.0	7.0	25.0	8/14/2013	1,360	3,820	0.074	0.003	0.013	<0.003	788	Hydrocarbon sheen Gray to clear Strong odor
1	24.3	35.0	6.9	25.0	10/31/2013	1,120	3,830	0.061	<0.001	<0.001	<0.003	832	Hydrocarbon sheen Gray to clear Strong odor
1	23.9	35.0	7.2	25.0	2/18/2014	1,100	3,720	0.038	<0.001	0.003	<0.003	815	Hydrocarbon sheen Gray to clear Strong odor
1	23.8	35.0	7.3	25.0	4/24/2014	1,080	3,760	0.037	<0.001	0.003	<0.003	785	Hydrocarbon sheen Gray to clear Strong odor
1	24.7	35.0	6.6	25.0	7/31/2014	1,060	3,510	0.013	<0.001	0.002	<0.003	626	Hydrocarbon sheen Gray to clear Strong odor
1	24.7	35.0	6.7	25.0	11/6/2014	1,300	4,340	<0.001	<0.001	<0.001	<0.003	983	Hydrocarbon sheen Gray to clear Strong odor PSH Sock Changed
1	23.5	35.0	7.4	25.0	2/12/2015	1,030	3,500	0.029	<0.001	0.001	<0.003	789	Hydrocarbon sheen Gray to clear Strong odor PSH Sock Changed
1	23.2	35.0	7.6	25.0	5/6/2015	1,120	3,790	<0.001	<0.001	<0.001	<0.003	812	Hydrocarbon sheen Gray to clear Strong odor
1	23.8	35.0	7.2	25.0	8/11/2015	1,090	4,120	<0.001	<0.001	<0.001	<0.003	759	Hydrocarbon sheen Gray to clear Strong odor

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1	23.6	35.0	7.4	25.0	11/5/2015	1,120	3,790	<0.001	<0.001	<0.001	<0.003	728	Hydrocarbon sheen
1	23.2	35.0	7.6	25.0	2/10/2016	1,040	3,690	0.024	<0.001	<0.001	<0.003	746	Hydrocarbon sheen Gray to clear Strong odor
1	23.0	35.0	7.8	25.0	5/9/2016	1,300	3,880	<0.001	<0.001	<0.001	<0.003	768	Hydrocarbon sheen Gray to clear Strong odor
1	23.7	35.0	7.3	25.0	9/8/2016	1,200	3,560	0.010	<0.001	0.001	0.012	830	Hydrocarbon sheen Gray to clear Strong odor
1	23.2	35.0	7.6	25.0	11/8/2016	1,240	3,620	0.023	0.004	0.003	0.030	819	Hydrocarbon sheen Gray to clear Strong odor
1	23.0	39.0	7.8	25.0	2/16/2017	1,240	3,690	0.001	<0.001	<0.001	<0.003	888	Hydrocarbon sheen Gray to clear Strong odor
1	22.7	39.0	7.9	25.0	4/28/2017	1,040	3,520	0.014	<0.001	0.002	<0.003	884	Hydrocarbon sheen Gray to clear Strong odor
1	23.4	39.0	7.9	25.0	9/5/2017	1,200	3,890	0.037	<0.001	0.007	<0.003	865	Hydrocarbon sheen Gray to clear Strong odor
1	23.4	39.0	7.9	25.0	11/8/2017	990	3,560	0.029	<0.001	0.005	<0.003	840	Hydrocarbon sheen Gray to clear Strong odor
1	22.8	35.0	7.9	25.0	2/23/2018	1,040	3,220	0.018	<0.001	0.003	<0.003	847	Hydrocarbon sheen Gray to clear Strong odor
1	23.0	35.0	7.8	25.0	5/8/2018	1,240	3,780	<0.001	<0.001	<0.001	<0.003	945	Hydrocarbon sheen Gray to clear Strong odor
1	24.2	35.0	7.0	25.0	8/30/2018	1,020	3,400	0.036	<0.001	0.006	<0.003	804	Hydrocarbon sheen Gray to clear Strong odor
1	23.6	35.0	7.4	25.0	11/8/2018	980	3,060	0.032	0.001	0.005	<0.003	980	Hydrocarbon sheen Gray to clear Strong odor
1	23.1	39.0	7.7	25.0	2/27/2019	1,080	3,100	0.002	<0.001	<0.001	<0.003	1,000	Hydrocarbon sheen Gray to clear Strong odor
1	23.1	39.0	7.7	25.0	5/22/2019	990	3,430	0.019	<0.001	<0.001	<0.003	836	Hydrocarbon sheen Gray to clear Strong odor
1	24.0	39.0	7.1	25.0	8/26/2019	930	3,360	0.043	<0.001	0.006	<0.003	1,090	Hydrocarbon sheen Gray to clear Strong odor
1	23.3	39.0	7.6	25.0	11/13/2019	1,060	3,490	0.022	<0.001	0.004	<0.003	681	Hydrocarbon sheen Gray to clear Strong odor

EME H-20 SWD Groundwater Data

MW	Depth to Water (ft)	Total Depth (ft)	Well Volume (gal)	Volume Purged (gal)	Sample Date	Cl (mg/l)	TDS (mg/l)	Benzene (mg/l)	Toluene (mg/l)	Ethyl Benzene (mg/l)	Total Xylenes (mg/l)	Sulfate (mg/l)	Comments
2	24.1	33.0	1.4	5.0	11/1/2007	1,100	3,664	<0.002	<0.002	<0.002	<0.006	849	Clear Slight odor
2	23.9	33.4	1.5	5.0	1/18/2008	980	3,205	<0.001	<0.001	<0.001	<0.003	746	Clear Slight odor
2	23.8	33.4	1.5	5.0	4/9/2008	840	2,990	<0.001	<0.001	<0.001	<0.003	988	Clear Slight odor
2	24.6	33.4	1.4	5.0	7/21/2008	1,000	3,210	<0.002	<0.002	<0.002	<0.006	796	Clear Slight odor
2	24.3	33.4	1.5	5.0	10/20/2008	1,010	3,270	<0.001	<0.001	<0.001	<0.003	762	Clear Slight odor
2	24.0	33.5	1.5	5.0	2/5/2009	1,080	3,510	<0.001	<0.001	<0.001	<0.003	815	Clear Slight odor
2	23.9	33.5	1.5	5.0	5/8/2009	1,120	3,480	<0.001	<0.001	<0.001	<0.003	772	Clear Slight odor
2	24.8	33.5	1.4	5.0	8/14/2009	1,140	3,550	<0.001	<0.001	<0.001	<0.003	750	Clear Slight odor
2	25.0	33.5	1.4	5.0	11/4/2009	1,200	3,570	<0.001	<0.001	<0.001	<0.003	564	Clear Slight odor
2	24.5	33.5	1.4	5.0	2/17/2010	1,080	3,480	<0.001	<0.001	<0.001	<0.003	929	Clear Slight odor
2	24.1	33.5	1.5	5.0	5/19/2010	1,180	3,670	<0.001	<0.001	<0.001	<0.003	841	Clear Slight odor
2	23.9	33.5	1.5	5.0	8/11/2010	1,120	3,520	<0.001	<0.001	<0.001	<0.003	783	Clear Slight odor
2	24.2	33.5	1.5	5.0	11/4/2010	1,340	4,210	<0.001	<0.001	<0.001	<0.003	1020	Clear Slight odor
2	23.9	33.5	1.5	6.0	2/25/2011	1,680	3,390	<0.001	<0.001	<0.001	<0.003	761	Clear Slight odor
2	24.1	33.5	1.5	6.0	5/20/2011	1,120	3,360	<0.001	<0.001	<0.001	<0.003	724	Clear Slight odor
2	24.9	33.5	1.4	6.0	8/11/2011	1,140	3,470	<0.001	<0.001	<0.001	<0.003	845	Clear Slight odor
2	24.4	33.5	1.4	6.0	11/9/2011	1,280	3,680	<0.001	<0.001	<0.001	<0.003	788	Clear Slight odor
2	24.5	33.5	1.4	6.0	2/8/2012	1,060	3,290	<0.001	<0.001	<0.001	<0.003	702	Clear Slight odor
2	24.3	33.5	1.5	6.0	5/20/2012	1,040	3,270	<0.001	<0.001	<0.001	<0.003	695	Clear Slight odor
2	24.9	33.5	1.4	6.0	8/7/2012	1,020	3,230	<0.001	<0.001	<0.001	<0.003	749	Clear Slight odor
2	24.8	33.5	1.4	6.0	10/31/2012	1,060	3,300	<0.001	<0.001	<0.001	<0.003	692	Clear Slight odor
2	24.5	33.5	1.4	6.0	1/30/2013	1,040	3,220	<0.001	<0.001	<0.001	<0.003	626	Clear Slight odor
2	24.3	33.5	1.5	6.0	5/15/2013	960	3,230	<0.001	<0.001	<0.001	<0.003	874	Clear Slight odor
2	24.8	33.5	1.4	6.0	8/14/2013	860	3,010	<0.001	<0.001	<0.001	<0.003	668	Clear Slight odor
2	24.9	33.5	1.4	6.0	10/31/2013	770	2,900	<0.001	<0.001	<0.001	<0.003	670	Clear Slight odor
2	24.5	33.5	1.4	6.0	2/18/2014	740	2,710	<0.001	<0.001	<0.001	<0.003	664	Clear Slight odor
2	24.4	33.5	1.5	6.0	4/24/2014	830	2,890	<0.001	<0.001	<0.001	<0.003	638	Clear Slight odor
2	25.3	33.5	1.3	6.0	7/31/2014	730	2,720	<0.001	<0.001	<0.001	<0.003	646	Clear Slight odor
2	24.5	33.5	1.4	6.0	11/6/2014	820	2,910	<0.001	<0.001	<0.001	<0.003	539	Clear Slight odor
2	24.3	33.5	1.5	6.0	2/12/2015	950	3,010	<0.001	<0.001	<0.001	<0.003	703	Clear Slight odor
2	24.0	33.5	1.5	6.0	5/6/2015	860	3,070	<0.001	<0.001	<0.001	<0.003	605	Clear Slight odor
2	24.6	33.5	1.4	6.0	8/11/2015	939	3,250	<0.001	<0.001	<0.001	<0.003	479	Clear Slight odor

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2	24.3	33.5	1.5	6.0	11/5/2015	980	3,490	<0.001	<0.001	<0.001	<0.003	691	Clear Slight odor
2	24.0	33.5	1.5	6.0	2/10/2016	1,160	3,800	<0.001	<0.001	<0.001	<0.003	720	Clear Slight odor
2	23.8	33.5	1.6	6.0	5/9/2016	1,160	3,670	<0.001	<0.001	<0.001	<0.003	892	Clear Slight odor
2	24.4	33.5	1.5	6.0	9/8/2016	1,160	3,700	<0.001	<0.001	<0.001	<0.003	826	Clear Slight odor
2	23.9	33.5	1.5	6.0	11/8/2016	960	3,080	<0.001	<0.001	<0.001	<0.003	716	Clear Slight odor
2	23.7	33.5	1.6	6.0	2/16/2017	920	2,900	<0.001	<0.001	<0.001	<0.003	771	Clear Slight odor
2	23.5	33.5	1.6	6.0	4/28/2017	900	2,980	<0.001	<0.001	<0.001	<0.003	802	Clear Slight odor
2	24.1	33.5	1.6	6.0	9/5/2017	920	3,110	<0.001	<0.001	<0.001	<0.003	713	Clear Slight odor
2	24.0	33.5	1.6	6.0	11/8/2017	830	3,030	0.002	<0.001	<0.001	<0.003	705	Clear Slight odor
2	23.5	33.5	1.6	6.0	2/23/2018	1,070	3,110	<0.001	<0.001	<0.001	<0.003	776	Clear Slight odor
2	23.6	33.5	1.6	6.0	5/8/2018	1,240	3,780	<0.001	<0.001	<0.001	<0.003	945	Clear Slight odor
2	24.7	33.5	1.4	6.0	8/30/2018	1,080	3,370	<0.001	<0.001	<0.001	<0.003	838	Clear Slight odor
2	24.2	33.5	1.5	6.0	11/8/2018	980	2,240	<0.001	<0.001	<0.001	<0.003	926	Clear Slight odor
2	23.8	33.5	1.6	6.0	2/27/2019	950	2,700	<0.001	<0.001	<0.001	<0.003	871	Clear Slight odor
2	23.7	33.5	1.6	6.0	5/22/2019	1,000	3,220	<0.001	<0.001	<0.001	<0.003	800	Clear Slight odor
2	24.8	33.5	1.4	6.0	8/26/2019	870	2,850	<0.001	<0.001	<0.001	<0.003	1,170	Clear Slight odor
2	24.4	33.5	1.4	6.0	11/13/2019	830	2,920	<0.001	<0.001	<0.001	<0.003	670	Clear Slight odor

EME H-20 SWD Groundwater Data

MW	Depth to Water (ft)	Total Depth (ft)	Well Volume (gal)	Volume Purged (gal)	Sample Date	Cl (mg/l)	TDS (mg/l)	Benzene (mg/l)	Toluene (mg/l)	Ethyl Benzene (mg/l)	Total Xylenes (mg/l)	Sulfate (mg/l)	Comments
3	23.6	33.7	1.6	5.0	11/1/2007	1,710	4,827	<0.002	<0.002	<0.002	<0.006	809	Clear Strong odor
3	23.4	33.8	1.7	5.0	1/18/2008	1,420	4,175	0.002	<0.001	0.002	<0.003	670	RISER HAS BEEN HIT Clear Strong odor
3	23.8	33.8	1.6	5.0	4/9/2008	1,220	3,720	0.002	<0.001	0.002	<0.003	1070	Clear Strong odor RISER HAS BEEN REPLACED
3	24.1	33.8	1.5	5.0	7/21/2008	2,140	5,570	<0.002	<0.002	<0.002	<0.006	978	Clear Strong odor
3	23.7	33.8	1.6	6.0	10/20/2008	1,940	5,170	0.001	<0.001	<0.001	<0.003	890	Clear Strong odor
3	23.4	33.7	1.7	6.0	2/5/2009	1,480	4,330	<0.001	<0.001	<0.001	<0.003	837	Clear Strong odor
3	23.3	33.7	1.7	6.0	5/8/2009	1,840	4,800	<0.001	<0.001	<0.001	<0.003	802	Clear Strong odor
3	24.4	33.7	1.5	6.0	8/14/2009	2,570	6,580	0.002	0.001	<0.001	<0.003	1060	Clear Strong odor
3	24.5	33.7	1.5	6.0	11/4/2009	2,050	4,890	0.004	<0.001	<0.001	<0.003	804	Clear Strong odor
3	24.0	33.8	1.6	6.0	2/17/2010	1,420	4,200	0.005	<0.001	<0.001	<0.003	1050	Clear Strong odor
3	23.5	33.8	1.6	6.0	5/19/2010	1,640	4,680	0.005	<0.001	<0.001	<0.003	974	Clear Strong odor
3	23.4	33.8	1.7	6.0	8/11/2010	2,150	5,430	0.002	<0.001	<0.001	<0.003	962	Hydrocarbon sheen Clear Strong odor
3	23.8	33.8	1.6	6.0	11/4/2010	2,150	5,760	0.003	<0.001	<0.001	<0.003	1190	Hydrocarbon sheen Clear Strong odor
3	23.4	33.8	1.7	6.0	2/25/2011	1,580	4,540	0.002	<0.001	<0.001	<0.003	933	Hydrocarbon sheen Clear Strong odor
3	23.7	33.8	1.6	6.0	5/20/2011	1,880	5,050	0.002	<0.001	<0.001	<0.003	967	Hydrocarbon sheen Clear Strong odor
3	24.6	33.8	1.5	6.0	8/11/2011	1,580	4,880	<0.001	<0.001	<0.001	<0.003	870	Hydrocarbon sheen Clear Strong odor
3	24.4	33.8	1.5	6.0	11/9/2011	1,660	4,550	0.001	<0.001	0.002	<0.003	904	Hydrocarbon sheen Clear Strong odor
3	24.0	33.8	1.6	6.0	2/8/2012	1,480	4,090	0.003	<0.001	<0.001	<0.003	835	Hydrocarbon sheen Clear Strong odor
3	23.8	33.8	1.6	6.0	5/20/2012	1,400	3,890	0.001	<0.001	<0.001	<0.003	740	Hydrocarbon sheen Clear Strong odor
3	24.5	33.8	1.5	6.0	8/7/2012	1,920	5,120	0.002	0.003	0.002	<0.003	833	Hydrocarbon sheen Clear Strong odor

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3	24.3	33.8	1.5	6.0	10/31/2012	1,840	4,830	<0.001	<0.001	<0.001	<0.003	913	Hydrocarbon sheen Clear Strong odor
3	24.0	33.8	1.6	6.0	1/30/2013	1,240	3,850	<0.001	<0.001	<0.001	<0.003	803	Hydrocarbon sheen Clear Strong odor
3	23.8	33.8	1.6	6.0	5/14/2013	1,250	3,720	<0.001	<0.001	<0.001	<0.003	885	Hydrocarbon sheen Clear Strong odor
3	24.4	33.8	1.5	6.0	8/14/2013	1,580	4,720	<0.001	0.001	<0.001	<0.003	976	Hydrocarbon sheen Clear Strong odor
3	24.4	33.8	1.5	6.0	10/31/2013	1,080	3,540	<0.001	<0.001	<0.001	<0.003	771	Hydrocarbon sheen Clear Strong odor
3	24.0	33.8	1.6	6.0	2/18/2014	1,040	3,440	<0.001	<0.001	<0.001	<0.003	808	Hydrocarbon sheen Clear Strong odor
3	23.8	33.8	1.6	6.0	4/24/2014	1,020	3,560	<0.001	<0.001	<0.001	<0.003	735	Hydrocarbon sheen Clear Strong odor
3	24.9	33.8	1.4	6.0	7/31/2014	1,080	3,750	<0.001	<0.001	<0.001	<0.003	852	Hydrocarbon sheen Clear Strong odor
3	23.9	33.8	1.6	6.0	11/6/2014	1,780	4,910	<0.001	<0.001	<0.001	<0.003	889	Hydrocarbon sheen Gray to clear Strong odor
3	23.7	33.8	1.6	6.0	2/12/2015	1,520	4,830	<0.001	<0.001	<0.001	<0.003	1,120	Hydrocarbon sheen Clear Strong odor
3	23.4	33.8	1.7	6.0	5/6/2015	1,260	3,900	<0.001	<0.001	<0.001	<0.003	939	Hydrocarbon sheen Clear Strong odor
3	24.2	33.8	1.5	6.0	8/11/2015	1,660	5,050	<0.001	<0.001	<0.001	<0.003	651	Hydrocarbon sheen Clear Strong odor
3	23.9	33.8	1.5	6.0	11/5/2015	1,520	5,110	<0.001	<0.001	<0.001	<0.003	915	Hydrocarbon sheen Clear Strong odor
3	23.6	33.8	1.6	6.0	2/10/2016	1,280	3,980	<0.001	<0.001	<0.001	<0.003	768	Hydrocarbon sheen Clear Strong odor
3	23.2	33.8	1.7	6.0	5/9/2016	1,380	3,910	<0.001	<0.001	<0.001	<0.003	829	Hydrocarbon sheen Clear Strong odor
3	23.7	33.8	1.6	6.0	9/8/2016	1,060	3,680	0.006	<0.001	<0.001	<0.003	829	Hydrocarbon sheen Clear Strong odor
3	23.3	33.8	1.7	6.0	11/8/2016	1,140	3,350	0.026	<0.001	0.005	0.003	808	Hydrocarbon sheen Clear Strong odor
3	23.0	33.8	1.7	6.0	2/16/2017	1,140	3,670	0.001	<0.001	<0.001	<0.003	928	Hydrocarbon sheen Clear Strong odor

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3	22.8	33.8	1.8	6.0	4/28/2017	1,108	3,680	0.023	<0.001	0.003	<0.003	999	Hydrocarbon sheen Clear Strong odor
3	23.6	33.8	1.8	6.0	9/5/2017	1,060	3,230	0.041	<0.001	0.006	<0.003	707	Hydrocarbon sheen Clear Strong odor
3	23.5	33.8	1.8	6.0	11/8/2017	1,030	3,770	0.015	<0.001	0.002	<0.003	856	Hydrocarbon sheen Clear Strong odor
3	23.0	33.8	1.7	6.0	2/23/2018	990	3,290	0.018	<0.001	0.002	<0.003	948	Hydrocarbon sheen Clear Strong odor
3	23.1	33.8	1.7	6.0	5/8/2018	1,340	3,580	<0.001	<0.001	0.002	<0.003	999	Hydrocarbon sheen Clear Strong odor
3	24.4	33.8	1.5	6.0	8/30/2018	1,080	3,560	0.034	<0.001	0.006	<0.003	0.04	Hydrocarbon sheen Clear Strong odor
3	23.9	33.8	1.6	6.0	11/8/2018	1,100	3,340	0.035	<0.001	0.002	<0.003	1370	Hydrocarbon sheen Clear Strong odor
3	23.2	33.8	1.7	6.0	2/27/2019	1,200	3,300	0.007	<0.001	<0.001	<0.003	1,080	Hydrocarbon sheen Clear Strong odor
3	23.2	33.8	1.7	6.0	5/22/2019	1,090	3,670	0.006	<0.001	<0.001	<0.003	920	Hydrocarbon sheen Clear Strong odor
3	24.2	33.8	1.5	6.0	8/26/2019	1,040	3,460	0.068	0.002	0.003	<0.003	1,150	Hydrocarbon sheen Clear Strong odor
3	24.0	33.8	1.6	6.0	11/13/2019	1,040	3,540	0.017	<0.001	0.003	<0.003	724	Hydrocarbon sheen Clear Strong odor

EME H-20 SWD Groundwater Data

MW	Depth to Water (ft)	Total Depth (ft)	Well Volume (gal)	Volume Purged (gal)	Sample Date	Cl (mg/l)	TDS (mg/l)	Benzene (mg/l)	Toluene (mg/l)	Ethyl Benzene (mg/l)	Total Xylenes (mg/l)	Sulfate (mg/l)	Comments
4	22.9	33.9	1.8	5.0	7/21/2008	1,300	3,860	<0.002	<0.002	<0.002	<0.006	819	Clear Slight odor
4	22.4	33.9	1.8	6.0	10/20/2008	1,120	3,700	<0.001	<0.001	<0.001	<0.003	812	Clear Slight odor
4	22.1	34.3	2.0	6.0	2/5/2009	1,200	3,640	<0.001	<0.001	<0.001	<0.003	746	Clear Slight odor
4	22.0	34.3	2.0	8.0	5/8/2009	1,340	3,720	<0.001	<0.001	<0.001	<0.003	694	Clear Slight odor
4	23.1	34.3	1.8	8.0	8/14/2009	1,240	3,770	<0.001	<0.001	<0.001	<0.003	648	Clear Slight odor
4	23.2	34.3	1.8	8.0	11/4/2009	1,200	3,710	0.001	<0.001	0.004	<0.003	555	Clear Slight odor
4	22.6	34.3	1.9	8.0	2/17/2010	1,380	3,920	<0.001	<0.001	<0.001	<0.003	825	Clear Slight odor
4	22.2	34.3	1.9	8.0	5/19/2010	1,340	3,750	<0.001	<0.001	<0.001	<0.003	760	Clear Slight odor
4	22.0	34.3	2.0	8.0	8/11/2010	1,380	3,870	<0.001	<0.001	<0.001	<0.003	692	Clear Slight odor
4	22.5	34.3	1.9	8.0	11/4/2010	1,280	3,610	0.001	<0.001	<0.001	<0.003	698	Clear Slight odor
4	22.1	34.4	2.0	8.0	2/25/2011	1,440	4,160	<0.001	<0.001	<0.001	<0.003	800	Clear No odor
4	22.4	34.4	1.9	8.0	5/20/2011	1,500	4,000	<0.001	<0.001	<0.001	<0.003	781	Clear Slight odor
4	23.4	34.4	1.8	8.0	8/11/2011	1,400	4,080	0.004	<0.001	<0.001	<0.003	544	Clear Slight odor
4	23.1	34.4	1.8	8.0	11/9/2011	1,480	4,030	0.002	<0.001	<0.001	<0.003	771	Clear Slight odor
4	22.7	34.4	1.9	8.0	2/8/2012	1,500	4,150	0.002	<0.001	<0.001	<0.003	808	Clear Slight odor
4	22.5	34.4	1.9	8.0	5/20/2012	1,360	3,990	<0.001	<0.001	<0.001	<0.003	910	Clear Slight odor
4	23.2	34.4	1.8	8.0	8/7/2012	1,360	3,960	0.001	<0.001	<0.001	<0.003	792	Clear Slight odor
4	23.0	34.4	1.8	8.0	10/31/2012	1,400	4,090	<0.001	<0.001	<0.001	<0.003	773	Clear Slight odor
4	22.7	34.4	1.9	8.0	1/30/2013	1,220	4,000	<0.001	<0.001	<0.001	<0.003	638	Clear Slight odor
4	22.5	34.4	1.9	8.0	5/14/2013	1,340	4,060	<0.001	<0.001	<0.001	<0.003	854	Clear Slight odor
4	23.1	34.4	1.8	8.0	8/14/2013	1,400	4,060	<0.001	<0.001	<0.001	<0.003	878	Clear Slight odor
4	23.1	34.4	1.8	8.0	10/31/2013	1,180	3,730	<0.001	<0.001	<0.001	<0.003	780	Clear Slight odor
4	22.7	34.4	1.9	8.0	2/18/2014	1,200	3,510	<0.001	<0.001	<0.001	<0.003	765	Clear Slight odor
4	22.6	34.4	1.9	8.0	4/24/2014	1,240	3,630	<0.001	<0.001	<0.001	<0.003	593	Clear Slight odor
4	23.7	34.4	1.7	8.0	7/31/2014	1,220	3,740	<0.001	<0.001	<0.001	<0.003	758	Clear Slight odor
4	22.6	34.4	1.9	8.0	11/6/2014	920	3,410	<0.001	<0.001	<0.001	<0.003	501	Clear Slight odor
4	22.4	34.4	1.9	8.0	2/12/2015	1,080	3,520	<0.001	<0.001	<0.001	<0.003	784	Clear Slight Odor
4	22.2	34.4	2.0	8.0	5/6/2015	1,040	3,420	<0.001	<0.001	<0.001	<0.003	719	Clear Slight odor
4	23.0	34.4	1.8	8.0	8/11/2015	1,120	3,930	<0.001	<0.001	<0.001	<0.003	580	Clear Slight odor
4	22.7	34.4	1.8	8.0	11/5/2015	1,140	3,640	<0.001	<0.001	<0.001	<0.003	782	Clear Slight odor
4	22.2	34.4	1.9	8.0	2/10/2016	1,080	3,520	<0.001	<0.001	<0.001	<0.003	703	Clear Slight odor
4	21.9	34.4	2.0	8.0	5/9/2016	1,140	3,460	<0.001	<0.001	<0.001	<0.003	797	Clear Slight odor

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4	22.4	34.4	1.9	8.0	9/8/2016	1,260	3,800	<0.001	<0.001	<0.001	<0.003	693	Clear Slight odor
4	22.0	34.4	2.0	8.0	11/8/2016	1,320	3,610	0.001	<0.001	<0.001	<0.003	732	Clear Slight odor
4	21.8	34.4	2.0	8.0	2/16/2017	1,160	3,680	<0.001	<0.001	<0.001	<0.003	960	Clear Slight odor
4	21.6	34.4	2.0	8.0	4/28/2017	1,200	3,780	<0.001	<0.001	<0.001	<0.003	856	Clear Slight odor
4	22.3	34.4	2.0	8.0	9/5/2017	1,340	4,040	<0.001	<0.001	<0.001	<0.003	798	Clear Slight odor
4	22.3	34.4	2.0	8.0	11/8/2017	1,360	3,930	0.003	<0.001	<0.001	<0.003	903	Clear Slight odor
4	21.7	34.4	2.0	8.0	2/23/2018	1,170	3,470	<0.001	<0.001	<0.001	<0.003	863	Clear Slight odor
4	21.8	34.4	2.0	8.0	5/8/2018	1,500	3,730	<0.001	<0.001	<0.001	<0.003	892	Clear Slight odor
4	23.2	34.4	1.8	8.0	8/30/2018	1,460	4,030	<0.001	<0.001	<0.001	<0.003	956	Clear Slight odor
4	22.4	34.4	1.9	8.0	11/8/2018	1,240	2,800	<0.001	<0.001	<0.001	<0.003	968	Clear Slight odor
4	21.9	34.4	2.0	8.0	2/27/2019	1,400	3,790	<0.001	<0.001	<0.001	<0.003	1,080	Clear Slight odor
4	22.0	34.4	2.0	8.0	5/22/2019	1,230	3,650	<0.001	<0.001	<0.001	<0.003	908	Clear Slight odor
4	23.2	34.4	1.8	8.0	8/26/2019	1,240	3,970	<0.001	<0.001	<0.001	<0.003	742	Clear Slight odor
4	22.7	34.4	1.9	8.0	11/13/2019	1,320	3,910	<0.001	<0.001	<0.001	<0.003	756	Clear Slight odor

EME H-20 SWD Groundwater Data

MW	Depth to Water (ft)	Total Depth (ft)	Well Volume (gal)	Volume Purged (gal)	Sample Date	Cl (mg/l)	TDS (mg/l)	Benzene (mg/l)	Toluene (mg/l)	Ethyl Benzene (mg/l)	Total Xylenes (mg/l)	Sulfate (mg/l)	Comments
5	23.3	37.6	2.3	5.0	7/21/2008	1,400	4,350	<0.002	<0.002	<0.002	<0.006	928	Clear Slight odor
5	23.1	37.6	2.3	8.0	10/20/2008	1,220	4,060	<0.001	<0.001	<0.001	<0.003	894	Clear Slight odor
5	22.7	37.6	2.4	8.0	2/5/2009	1,180	3,940	<0.001	<0.001	<0.001	<0.003	902	Clear Slight odor
5	22.6	37.6	2.4	8.0	5/8/2009	1,320	3,840	<0.001	<0.001	<0.001	<0.003	858	Clear Slight odor
5	23.7	37.6	2.2	8.0	8/14/2009	1,240	3,740	<0.001	<0.001	<0.001	<0.003	730	Clear Slight odor
5	23.8	37.6	2.2	8.0	11/4/2009	1,260	3,640	<0.001	<0.001	<0.001	<0.003	600	Clear Slight odor
5	23.4	37.7	2.3	8.0	2/17/2010	1,260	3,800	<0.001	<0.001	<0.001	<0.003	940	Clear Slight odor
5	22.8	37.7	2.4	8.0	5/19/2010	1,340	3,660	<0.001	<0.001	<0.001	<0.003	783	Clear Slight odor
5	22.6	37.7	2.4	8.0	8/11/2010	1,400	3,690	<0.001	<0.001	<0.001	<0.003	785	Clear Slight odor
5	23.1	37.7	2.3	8.0	11/4/2010	1,560	4,210	0.082	0.002	0.004	<0.006	881	Clear Slight odor
5	22.7	37.7	2.4	8.0	2/25/2011	1,600	4,390	<0.001	<0.001	<0.001	<0.003	829	Clear No odor
5	23.0	37.7	2.3	8.0	5/20/2011	1,680	4,380	<0.001	<0.001	<0.001	<0.003	877	Clear Slight odor
5	23.9	37.7	2.2	8.0	8/11/2011	1,600	4,420	<0.001	<0.001	<0.001	<0.003	799	Clear Slight odor
5	23.9	37.7	2.2	8.0	11/9/2011	1,600	4,460	<0.001	<0.001	<0.001	<0.003	974	Clear Slight odor
5	23.3	37.7	2.3	8.0	2/8/2012	1,560	4,430	<0.001	<0.001	<0.001	<0.003	973	Clear Slight odor
5	23.1	37.7	2.3	8.0	5/20/2012	1,480	4,190	<0.001	<0.001	<0.001	<0.003	1,030	Clear Slight odor
5	23.9	37.7	2.2	8.0	8/7/2012	1,320	3,840	<0.001	<0.001	0.001	<0.003	935	Clear Slight odor
5	23.7	37.7	2.2	8.0	10/31/2012	1,240	3,820	<0.001	<0.001	<0.001	<0.003	750	Clear Slight odor
5	23.3	37.7	2.3	8.0	1/30/2013	1,140	3,730	<0.001	<0.001	<0.001	<0.003	686	Clear Slight odor
5	23.1	37.7	2.3	8.0	5/14/2013	1,200	3,850	<0.001	<0.001	<0.001	<0.003	961	Clear Slight odor
5	23.7	37.7	2.2	8.0	8/14/2013	1,070	3,600	<0.001	<0.001	<0.001	<0.003	802	Clear Slight odor
5	23.8	37.7	2.2	8.0	10/31/2013	1,000	3,460	<0.001	<0.001	<0.001	<0.003	750	Clear Slight odor
5	23.4	37.7	2.3	8.0	2/18/2014	1,000	3,540	<0.001	<0.001	<0.001	<0.003	850	Clear Slight odor
5	23.2	37.7	2.3	8.0	4/24/2014	1,060	3,690	<0.001	<0.001	<0.001	<0.003	860	Clear Slight odor
5	24.3	37.7	2.1	8.0	7/31/2014	1,040	3,520	<0.001	<0.001	<0.001	<0.003	955	Clear Slight odor
5	23.3	37.7	2.3	8.0	11/6/2014	1,100	3,500	<0.001	<0.001	<0.001	<0.003	549	Clear Slight odor
5	23.0	37.7	2.3	8.0	2/12/2015	1,040	3,760	<0.001	<0.001	<0.001	<0.003	869	Clear Slight odor
5	22.7	37.7	2.4	8.0	5/6/2015	1,200	4,090	<0.001	<0.001	<0.001	<0.003	977	Clear Slight odor
5	23.5	37.7	2.3	8.0	8/11/2015	1,220	4,350	<0.001	<0.001	<0.001	<0.003	1,270	Clear Slight odor
5	23.2	37.7	2.3	8.0	11/5/2015	1,360	4,060	<0.001	<0.001	<0.001	<0.003	353	Clear Slight odor
5	22.7	37.7	2.3	8.0	2/10/2016	1,240	4,160	<0.001	<0.001	<0.001	<0.003	1,060	Clear Slight odor
5	22.5	37.7	2.4	8.0	5/9/2016	1,080	3,860	<0.001	<0.001	<0.001	<0.003	979	Clear Slight odor

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5	23.1	37.7	2.3	8.0	9/8/2016	1,120	3,790	<0.001	<0.001	<0.001	<0.003	905	Clear Slight odor
5	22.6	37.7	2.4	8.0	11/8/2016	1,300	4,010	<0.001	<0.001	<0.001	<0.003	1,020	Clear Slight odor
5	22.4	37.7	2.4	8.0	2/16/2017	1,180	3,710	<0.001	<0.001	<0.001	<0.003	975	Clear Slight odor
5	22.2	37.7	2.5	8.0	4/28/2017	1,180	3,760	<0.001	<0.001	<0.001	<0.003	1050	Clear Slight odor
5	22.9	37.7	2.5	8.0	9/5/2017	1,160	3,940	<0.001	<0.001	<0.001	<0.003	941	Clear Slight odor
5	22.8	37.7	2.5	8.0	11/8/2017	1,060	3,570	<0.001	<0.001	<0.001	<0.003	926	Clear Slight odor
5	22.3	37.7	2.5	8.0	2/23/2018	1,060	3,690	<0.001	<0.001	<0.001	<0.003	974	Clear Slight odor
5	22.4	37.7	2.4	8.0	5/8/2018	1,230	3,890	<0.001	<0.001	<0.001	<0.003	1120	Clear Slight odor
5	23.7	37.7	2.2	8.0	8/30/2018	1,140	3,500	<0.001	<0.001	<0.001	<0.003	958	Clear Slight odor
5	23.0	37.7	2.3	8.0	11/8/2018	1,140	3,290	<0.001	<0.001	<0.001	<0.003	992	Clear Slight odor
5	22.5	34.7	2.4	8.0	2/27/2019	1,280	3,450	<0.001	<0.001	<0.001	<0.003	1,230	Clear Slight odor
5	22.6	34.7	2.4	8.0	5/22/2019	1,280	4,110	<0.001	<0.001	<0.001	<0.003	1,060	Clear Slight odor
5	23.7	34.7	2.2	8.0	8/26/2019	1,100	3,610	<0.001	<0.001	<0.001	<0.003	806	Clear Slight odor
5	23.3	34.7	2.3	8.0	11/13/2019	1,040	3,420	<0.001	<0.001	<0.001	<0.003	792	Clear Slight odor



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

March 08, 2019

KATIE JONES

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: EME JUNCTION H - 20

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.

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:	02/27/2019
Reported:	03/08/2019	Sampling Type:	Water
Project Name:	EME JUNCTION H - 20	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	T20S-R37E-SEC20 H-LEA CO NM		

Sample ID: MONITOR WELL #1 (H900830-01)

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	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) 96.1 % 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*	1080	4.00	03/05/2019	ND	100	100	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*	1000	250	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*	3100	5.00	03/08/2019	ND	509	96.6	527	0.770	

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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:	02/27/2019
Reported:	03/08/2019	Sampling Type:	Water
Project Name:	EME JUNCTION H - 20	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	T20S-R37E-SEC20 H-LEA CO NM		

Sample ID: MONITOR WELL #2 (H900830-02)

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) 98.8 % 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*	950	4.00	03/05/2019	ND	100	100	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*	871	250	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*	2700	5.00	03/08/2019	ND	509	96.6	527	0.770		

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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:	02/27/2019
Reported:	03/08/2019	Sampling Type:	Water
Project Name:	EME JUNCTION H - 20	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	T20S-R37E-SEC20 H-LEA CO NM		

Sample ID: MONITOR WELL #3 (H900830-03)

BTX 8021B		mg/L		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	0.007	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 BTX	0.007	0.006	03/05/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 95.8 % 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*	1200	4.00	03/05/2019	ND	100	100	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*	1080	250	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*	3300	5.00	03/08/2019	ND	509	96.6	527	0.770	

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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:	02/27/2019
Reported:	03/08/2019	Sampling Type:	Water
Project Name:	EME JUNCTION H - 20	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	T20S-R37E-SEC20 H-LEA CO NM		

Sample ID: MONITOR WELL #4 (H900830-04)

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	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) 98.1 % 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*	1400	4.00	03/05/2019	ND	108	108	100	3.77	QM-07	

Sulfate 375.4		mg/L		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Sulfate*	1080	250	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*	3790	5.00	03/08/2019	ND	509	96.6	527	0.770		

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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:	02/27/2019
Reported:	03/08/2019	Sampling Type:	Water
Project Name:	EME JUNCTION H - 20	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Jodi Henson
Project Location:	T20S-R37E-SEC20 H-LEA CO NM		

Sample ID: MONITOR WELL #5 (H900830-05)

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) 97.9 % 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*	1280	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*	1230	250	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*	3450	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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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: PO# RICE Operating Company	
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 H-20	
Project Location: T20S-R37E-Sec20 H ~ Lea County - New Mexico		Sampler Signature:  Rozanne Johnson (575)631-9310	

ANALYSIS REQUEST

(Circle or Specify Method No.)

[illegible]



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 H - 20

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.

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:	05/24/2019	Sampling Date:	05/22/2019
Reported:	06/04/2019	Sampling Type:	Water
Project Name:	EME JUNCTION H - 20	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T20S-R37E-SEC20 H-LEA CO NM		

Sample ID: MONITOR WELL #1 (H901863-01)

BTX 8021B		mg/L		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	0.019	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*	0.003	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 BTX	0.022	0.006	05/28/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 98.3 % 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*	990	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*	836	250	05/30/2019	ND	21.6	108	20.0	7.75	

TDS 160.1		mg/L		Analyzed By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
TDS*	3430	5.00	05/30/2019	ND	532	101	527		

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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:	05/22/2019
Reported:	06/04/2019	Sampling Type:	Water
Project Name:	EME JUNCTION H - 20	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T20S-R37E-SEC20 H-LEA CO NM		

Sample ID: MONITOR WELL #2 (H901863-02)

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) 98.9 % 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*	1000	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*	800	250	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*	3220	5.00	06/04/2019	5.00	510	96.8	527	0.498		

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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:	05/22/2019
Reported:	06/04/2019	Sampling Type:	Water
Project Name:	EME JUNCTION H - 20	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T20S-R37E-SEC20 H-LEA CO NM		

Sample ID: MONITOR WELL #3 (H901863-03)

BTX 8021B		mg/L		Analyzed By: ms					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	0.006	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 BTX	0.006	0.006	05/28/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 97.9 % 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*	1090	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*	920	250	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*	3670	5.00	06/04/2019	5.00	510	96.8	527	0.498		

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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:	05/22/2019
Reported:	06/04/2019	Sampling Type:	Water
Project Name:	EME JUNCTION H - 20	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T20S-R37E-SEC20 H-LEA CO NM		

Sample ID: MONITOR WELL #4 (H901863-04)

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	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) 98.4 % 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*	1230	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*	908	250	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*	3650	5.00	06/04/2019	5.00	510	96.8	527	0.498		

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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:	05/22/2019
Reported:	06/04/2019	Sampling Type:	Water
Project Name:	EME JUNCTION H - 20	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T20S-R37E-SEC20 H-LEA CO NM		

Sample ID: MONITOR WELL #5 (H901863-05)

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) 99.8 % 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*	1280	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*	1060	250	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*	4110	5.00	06/04/2019	5.00	510	96.8	527	0.498		

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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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Celey D. Keene, Lab Director/Quality Manager

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

Cardinal Laboratories, Inc.

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

LAB Order ID # _____

Company Name: RICE Operating Company		BILL TO Company: RICE Operating Company		PO#
Project Manager: Katie Jones		Address: (Street, City, Zip) 122 W Taylor Street ~ Hobbs, New Mexico 88240		
Address: (Street, City, Zip) 122 W Taylor Street ~ Hobbs, New Mexico 88240		Phone#: (575) 393-9174		Fax#: (575) 397-1471
Phone #: (575) 393-9174		Fax #: (575) 397-1471		
Project #:		Project Name: EME Junction H-20		
Project Location: T20S-R37E-Sec20 H ~ Lea County - New Mexico		Sampler Signature: <i>Rozanne Johnson</i> (575) 631-9310		

ANALYSIS REQUEST

(Circle or Specify Method No.)

LAB # (LAB USE ONLY) <i>H901863</i>	FIELD CODE	(G)rab or (C)omp	# CONTAINERS	MATRIX				PRESERVATIVE METHOD					SAMPLING		MTBE 8021B/602	BTEX 8021B/602	TPH 418.1/TX1005 / TX1005 Extended (C35)	PAH 8270C	Total Metals Ag As Ba Cd Cr Pb Se Hg 6010B/200.7	TCLP Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Volatiles	TCLP Semi Volatiles	TCLP Pesticides	RCI	GC/MS Vol. 8260B/624	GC/MS Semi. Vol. 8270C/625	PCB's 8082/608	Pesticides 8081A/608	BOD, TSS, pH	Moisture Content	Cations (Ca, Mg, Na, K)	Anions (Cl, SO4, CO3, HCO3)	Sulfates	Total Dissolved Solids	Chlorides	Turn Around Time ~ 24 Hours			
				WATER	SOIL	AIR	SLUDGE	HCL (2.40ml VOA)	HNO3	NaHSO4	H2SO4	ICE (1-1 Liter HDPE)	NONE	DATE (2019)																							TIME		
<i>1</i>	Monitor Well #1	G	3	X				2				1	5/22	14:20		X																			X	X	X		
<i>2</i>	Monitor Well #2	G	3	X				2				1	5/22	9:05		X																				X	X	X	
<i>3</i>	Monitor Well #3	G	3	X				2				1	5/22	11:50		X																				X	X	X	
<i>4</i>	Monitor Well #4	G	3	X				2				1	5/22	15:45		X																				X	X	X	
<i>5</i>	Monitor Well #5	G	3	X				2				1	5/22	10:30		X																				X	X	X	

Relinquished by: <i>Rozanne Johnson</i> Date: <i>5/24/2019</i> Time: <i>13:10</i>	Received by: <i>Jamara Oldat</i> Date: <i>5/24/19</i> Time: <i>13:15</i>
Relinquished by: _____ Date: _____ Time: _____	Received By: (Laboratory Staff) Date: _____ Time: _____

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

REMARKS:

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

Delivered By: (Circle One) <i>Sampler</i> - UPS - Bus - Other:	Sample Condition Cool <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> Intact Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	CHECKED BY: (Initials) <i>TO</i>
---	--	--



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

September 05, 2019

KATIE JONES

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: EME JUNCTION H - 20

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.

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:	08/26/2019
Reported:	09/05/2019	Sampling Type:	Water
Project Name:	EME JUNCTION H - 20	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T20S-R37E-SEC20 H-LEA CO NM		

Sample ID: MONITOR WELL #1 (H902999-01)

BTEX 8021B		mg/L		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	0.043	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*	0.006	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	0.049	0.006	08/30/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 87.2 % 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*	930	4.00	09/03/2019	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*	1090	250	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*	3360	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:	08/26/2019
Reported:	09/05/2019	Sampling Type:	Water
Project Name:	EME JUNCTION H - 20	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T20S-R37E-SEC20 H-LEA CO NM		

Sample ID: MONITOR WELL #2 (H902999-02)

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) 93.6 % 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*	870	4.00	09/03/2019	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*	1170	250	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*	2850	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:	08/26/2019
Reported:	09/05/2019	Sampling Type:	Water
Project Name:	EME JUNCTION H - 20	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T20S-R37E-SEC20 H-LEA CO NM		

Sample ID: MONITOR WELL #3 (H902999-03)

BTX 8021B		mg/L		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	0.068	0.001	08/30/2019	ND	0.020	100	0.0200	3.23	
Toluene*	0.002	0.001	08/30/2019	ND	0.020	99.2	0.0200	3.43	
Ethylbenzene*	0.003	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 BTX	0.073	0.006	08/30/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 89.3 % 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*	1040	4.00	09/03/2019	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*	1150	250	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*	3460	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:	08/26/2019
Reported:	09/05/2019	Sampling Type:	Water
Project Name:	EME JUNCTION H - 20	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T20S-R37E-SEC20 H-LEA CO NM		

Sample ID: MONITOR WELL #4 (H902999-04)

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	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 BTX	<0.006	0.006	08/30/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 84.8 % 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*	1240	4.00	09/03/2019	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*	742	250	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*	3970	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:	08/26/2019
Reported:	09/05/2019	Sampling Type:	Water
Project Name:	EME JUNCTION H - 20	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T20S-R37E-SEC20 H-LEA CO NM		

Sample ID: MONITOR WELL #5 (H902999-05)

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) 92.1 % 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*	1100	4.00	09/03/2019	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*	806	250	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*	3610	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

Cardinal Laboratories

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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: 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 H-20		
Project Location: T20S-R37E-Sec20 H ~ Lea County - New Mexico				
Sampler Signature:  Rozanne Johnson (575) 631-9310				

ANALYSIS REQUEST

(Circle or Specify Method No.)

[illegible]

Relinquished by: <u>Rozanne Johnson</u>	Date: <u>8-29-2019</u>	Time: <u>13:35</u>	Received by: <u>Lawrence S. [Signature]</u>	Date: <u>8-29-19</u>	Time: <u>13:35</u>
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)

[illegible]

CHECKED BY:

Sampler - UPS - Bus - Other:

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

(Initials)

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

November 25, 2019

KATIE JONES

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: EME JUNCTION H - 20

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.

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,



Mike Snyder For Celey D. Keene

Lab Director/Quality Manager

Analytical Results For:

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

Received:	11/15/2019	Sampling Date:	11/13/2019
Reported:	11/25/2019	Sampling Type:	Water
Project Name:	EME JUNCTION H - 20	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T20S-R37E-SEC20 H-LEA CO NM		

Sample ID: MONITOR WELL #1 (H903889-01)

BTEX 8021B		mg/L		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	0.022	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*	0.004	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	0.026	0.006	11/24/2019	ND					

Surrogate: 4-Bromofluorobenzene (PID) 99.8 % 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*	1060	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*	681	125	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*	3490	5.00	11/21/2019	ND	533	101	527	0.375	

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

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

Received:	11/15/2019	Sampling Date:	11/13/2019
Reported:	11/25/2019	Sampling Type:	Water
Project Name:	EME JUNCTION H - 20	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T20S-R37E-SEC20 H-LEA CO NM		

Sample ID: MONITOR WELL #2 (H903889-02)

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) 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*	830	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*	670	125	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*	2920	5.00	11/21/2019	ND	533	101	527	0.375		

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

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

 Received: 11/15/2019
 Reported: 11/25/2019
 Project Name: EME JUNCTION H - 20
 Project Number: NONE GIVEN
 Project Location: T20S-R37E-SEC20 H-LEA CO NM

 Sampling Date: 11/13/2019
 Sampling Type: Water
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: MONITOR WELL #3 (H903889-03)

BTX 8021B		mg/L		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	0.017	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*	0.003	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 BTX	0.020	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*	1040	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*	724	125	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*	3540	5.00	11/21/2019	ND	533	101	527	0.375		

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

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

 Received: 11/15/2019
 Reported: 11/25/2019
 Project Name: EME JUNCTION H - 20
 Project Number: NONE GIVEN
 Project Location: T20S-R37E-SEC20 H-LEA CO NM

 Sampling Date: 11/13/2019
 Sampling Type: Water
 Sampling Condition: Cool & Intact
 Sample Received By: Tamara Oldaker

Sample ID: MONITOR WELL #4 (H903889-04)

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	11/24/2019	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) 98.6 % 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*	1320	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*	756	125	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*	3910	5.00	11/21/2019	ND	533	101	527	0.375		

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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

Analytical Results For:

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

Received:	11/15/2019	Sampling Date:	11/13/2019
Reported:	11/25/2019	Sampling Type:	Water
Project Name:	EME JUNCTION H - 20	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	T20S-R37E-SEC20 H-LEA CO NM		

Sample ID: MONITOR WELL #5 (H903889-05)

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) 99.1 % 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*	1040	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*	792	125	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*	3420	5.00	11/21/2019	ND	533	101	527	0.375		

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Mike Snyder For 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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Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

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

Cardinal Laboratories, Inc.

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

LAB Order ID # _____

Company Name: RICE Operating Company		BILL TO Company: PO# RICE Operating Company	
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 H-20	
Project Location: T20S-R37E-Sec20 H ~ Lea County - New Mexico		Sampler Signature: Rozanne Johnson (575)631-9310	

ANALYSIS REQUEST

(Circle or Specify Method No.)

[illegible]

Relinquished by: <i>Rozanne Johnson</i>	Date: <i>11/15/2019</i>	Time: <i>12:10</i>	Received by: <i>Samara [Signature]</i>	Date: <i>11-15-19</i>	Time: <i>12:10</i>
Relinquished by:	Date:	Time:	Received By: (Laboratory Staff)	Date:	Time:

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

REMARKS:

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

Delivered By: (Circle One)

[illegible]

CHECKED BY:

	Cool	Intact	
Yes	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	(Initials)
No	<input type="checkbox"/>	<input type="checkbox"/>	YD.

Sampler - UPS - Bus - Other: