EIGHTH ANNUAL GROUNDWATER MONITORING REPORT
CHESAPEAKE ENERGY CORPORATION
STATE M LEASE (AP-72)
LEA COUNTY, NEW MEXICO

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EQUUS
Environmental, LLC

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1.0 INTRODUCTION

Chesapeake Energy Corporation (Chesapeake) has retained Equus Environmental, LLC (Equus), to perform impacted groundwater monitoring and light non-aqueous phase liquid (LNAPL) hydrocarbon remediation at Chesapeake's former State M Lease site (Site) located in Lea County, New Mexico. The Site is located approximately 8 miles south-southwest of Lovington, New Mexico in the SE-SW-SE of Section 18, Township 17 South, Range 36 East, Lea County, New Mexico (coordinates 32.828061º latitude, -103.391012º longitude). The Site location and topographic features are shown on **Figure 1**. A production tank battery for oil and gas was formerly located at the Site. Chesapeake purchased the Site in 2004, but never operated the tank battery. Chesapeake began abandonment and environmental investigation activities at the Site in 2007.

Initial Site investigation activities were conducted in May 2007. These investigation activities consisted of conducting EM-31 and EM-34 ground conductivity surveys, the collection of soil samples from nine boreholes, and the installation and sampling of seven groundwater monitoring wells. Following the investigation in August 2007, Chesapeake submitted to the New Mexico Oil Conservation Division (NMOCD) a Stage 1 Abatement Plan for the Site. In May 2010, the NMOCD responded to Chesapeake that the agency was not adequately staffed to review the abatement plan in a timely manner and advised Chesapeake that they could proceed with abatement operations at risk. In July 2010, Chesapeake notified the NMOCD of their intent to proceed with the Stage 1 Abatement activities. On March 20, 2012, following implementation of these activities, Chesapeake submitted the Stage 1 Abatement Report for the Site.

On March 27, 2012, Chesapeake submitted to the NMOCD the ***Stage 2 Abatement Plan*** (Plan) for the Site. A copy of the Plan is provided in **Appendix A**. In this Plan, Chesapeake proposed the following abatement activities at the Site:

- Excavate and remove the near-surface soils at the Site containing concentrations of chloride exceeding 1,000 milligrams per kilogram (mg/kg),

- Excavate and remove the near-surface soils at the Site containing concentrations of TPH exceeding 1,000 mg/kg,
- Install clay liners in areas where chloride and/or TPH concentrations exceed 1,000 mg/kg at depths greater than five feet below ground level (bgl),
- Install one additional groundwater monitoring well downgradient of the Site,
- Monitor the groundwater at the Site until the concentrations of chloride and benzene are below the New Mexico Water Quality Control Commission standards.

On March 7, 2013, NMOCD notified Chesapeake that the Plan was administratively complete and that Chesapeake should proceed with public notice of the Plan. On March 30, 2013, Chesapeake published a notice of the proposed activities in the Albuquerque Journal, the Hobbs-Daily News Sun and the Lovington Leader. In addition, written notification of the Plan submittal was sent to all surface owners of record within a 1-mile radius of the Site. On June 27, 2013 upon completion of the notification activities, the NMOCD approved the Plan for the Site. A copy of the NMOCD correspondence approving the Plan is included in **Appendix B**.

The soil remediation activities outlined in the Plan were conducted at the Site during the period January 15, 2014 through March 27, 2014. The soil remediation activities were summarized in the document titled ***Soil Remediation Summary Report***, submitted to the NMOCD on August 6, 2014.

This ***Eighth Annual Groundwater Monitoring Report*** (Report) summarizes the groundwater monitoring activities conducted at the Site during the following quarterly sampling events:

- Twenty-Ninth Event - June 8, 2021,
- Thirtieth Event - September 8-9, 2021,
- Thirty-First Event - December 7, 2021,
- Thirty-Second Event - March 8, 2022.

2.0 REMEDIATION

2.1 SVE SYSTEM

As documented in the ***First Annual Groundwater Monitoring Report***, dated May 19, 2015, during the period May 12-14, 2014, a soil vapor extraction (SVE) remediation system (System) was installed and made operational at the Site. The System is comprised of 8 SVE wells connected through a manifold system constructed of two- and three-inch Schedule 80 PVC piping and plumbed to a 10-horsepower 3-phase SVE Regenerative Blower housed within the System Building. The location of the SVE wells and the System Building are shown on attached **Figure 2**. Within the System, soil vapor from the SVE wells is drawn through a moisture knock out/separator and a particulate filter prior to reaching the blower. An air-flow meter is installed downstream of the blower in the air-exhaust line and an air sample port is located on the air-exhaust line at a location upstream of its exit from the System Building.

System start-up was conducted on June 6, 2014. Routine checks of the System are conducted to record the blower run times, discharge rate/ACFM and VOC concentration of the discharge-air stream. These field readings are used to calculate the approximate weight of VOCs extracted from the subsurface and discharged from the System. The field PID data are entered into to a spreadsheet to calculate the VOC discharge rate and approximate total pounds removed by the System. The approximate total VOC discharges for each quarter are then summed to provide a cumulative VOC discharge total. These data are summarized in **Table 1**. Through March 9, 2022, the field PID data suggest that approximately 8,903 pounds of VOCs have been removed from the subsurface and discharged from the System.

During this reporting period, discharge-air samples were collected quarterly in laboratory-provided Suma canisters, shipped under chain-of-custody control to Eurofins TestAmerica, Pittsburgh, Pennsylvania and analyzed for VOC compounds and total VOCs as hexane by Method TO-15.

During the twenty-ninth quarter, discharge-air sample 2021608 M-1 was collected on June 8, 2021. On this date, the System had been running for a total of 59,276 hours, was operating at 460 ACFM and had a field reading of 31 PPM from the discharge air stream. Laboratory analytical results for this discharge-air sample indicated a total VOC as Hexane concentration of 2,100 PPB V/V (2.1 PPM V/V).

During the thirtieth quarter, discharge-air sample 20210908 M-1was collected on September 9, 2021. On this date, the System had been running for a total of 56,128 hours, was operating at

422 ACFM and had a field reading of 92 PPM from the discharge air stream. Laboratory analytical results for this discharge-air sample indicated a total VOC as Hexane concentration of 140,000 PPB V/V (140 PPM V/V).

During the thirty-first quarter, discharge-air sample 20211207 M-1 was collected on December 7, 2022. On this date, the System had been running for approximately 58,266 hours, was operating at 250 ACFM and had a field reading of 6.0 PPM from the discharge air stream. Laboratory analytical results for this discharge-air sample indicated a total VOC as Hexane concentration of 1,600 PPB V/V (1.6 PPM V/V).

During the thirty-second quarter, discharge-air sample 20220308 M-1 was collected on March 8, 2022. On this date, the System had been running for a total of 60,449 hours, was operating at 383 ACFM and had a field reading of 16.7 PPM from the discharge air stream. Laboratory analytical results for this discharge-air sample indicated a total VOC as Hexane concentration of 24,000 PPB V/V (24 PPM V/V).

A summary of the laboratory analytical results for the discharge-air samples is presented in **Table 2**, and complete copies of the laboratory analytical reports and chain-of-custody documentation are provided in **Appendix C**. The discharge-air analytical data are used to compute a correlation factor for the field PID readings to more accurately calculate the total VOC discharged.

Field PID instrument readings are typically lower than laboratory analysis for total VOCs. To compensate for the low field PID readings, a correlation factor is calculated based upon the ratio of the laboratory analytical value versus the field PID value. The correlation factor is then used to multiply the field PID readings and calculate the total VOC discharge. To accurately reflect the total VOC discharge from the System during a given period, **Table 1** includes the calculated unique correlation factor for each quarterly air-discharge sampling event. This unique correlation factor is then utilized to calculate the total VOC discharge from the System for the period in which that particular air-discharge sample was collected. Utilizing the noted correlation factors, approximately 14,563 pounds of VOCs have been removed from the subsurface at the Site.

Figure 3 presents a graph of the VOC concentrations observed in the discharge air stream versus time. As can be seen on this figure, the levels of VOC observed in the air discharge stream have decreased dramatically since startup. These data indicate that the System is effective at removing the hydrocarbon vapors from the subsurface. Removal of hydrocarbon vapors coupled

with the influx of oxygen drawn into the impacted area by the System enhances biodegradation of the hydrocarbon impacts observed in this area.

2.2 MW-1R LNAPL RECOVERY

As documented in the ***First Annual Groundwater Monitoring Report***, dated May 19, 2015, to enhance LNAPL recovery in the MW-1R area, 2-inch diameter monitoring well MW-1 was plugged and replaced with 4-inch diameter monitoring well MW-1R. On June 5, 2014, a QED Environmental Genie LNAPL recovery pump was placed and made operational in monitoring well MW-1R. The Genie LNAPL recovery pump is an air-actuated bladder pump with a floating intake (skimmer), set at a depth that produces the maximum amount of LNAPL recovery per cycle. Air is provided to the Genie LNAPL recovery pump from a compressor located within the System Building.

During the prior reporting period (2020), the LNAPL thicknesses observed in MW-1R ranged from 0.24-feet to 0.10-feet. LNAPL thicknesses this small are outside of the operating capabilities of the Genie LNAPL recovery pump. Therefore, the LNAPL recovery pump was turned off to see if LNAPL thicknesses would rebound in monitoring well MW-1R. The observed LNAPL thicknesses in MW-1R during this most recent reporting period ranged from 0.78-feet to 0.14-feet and exhibited a decreasing thickness trend during each quarterly monitoring period. At this time, LNAPL thicknesses are still outside of the recovery range for the LNAPL recovery pump.

Since start-up of the Genie LNAPL recovery pump, a total of approximately 15 drums (822.5 gallons) of LNAPL have been recovered from the Site. Chesapeake will deploy a hydrophobic LNAPL absorption sock within MW-1R to facilitate further removal of LNAPL from the well.

3.0 QUARTERLY GROUNDWATER MONITORING

This Report describes the findings from four quarterly groundwater sampling events conducted at the Site from June 8, 2021 through March 8, 2022.

3.1 GROUNDWATER MONITORING METHODOLOGY

Prior to collecting groundwater samples during each quarterly event, Equus gauged all 8 monitoring wells (MW-1R through MW-8) at the Site using an electronic interface probe to determine the depth-to-water (DTW) and LNAPL thickness within each well. The locations of these monitoring wells are shown on **Figure 2**. DTWs were measured from the surveyed top-of-casing (TOC) of each well and converted to elevations relative to mean sea level. These data are presented in **Table 3**. Potentiometric surface maps were constructed utilizing these data to illustrate the groundwater flow direction within the shallow groundwater system beneath the Site. These potentiometric surface maps are presented on **Figures 4** through **7**. It should be noted that DTW measurements collected from monitoring well MW-1R are not honored for generating potentiometric surfaces due to the influence of LNAPL present in the monitoring well and the potential influence of the SVE system on groundwater levels. As can be seen on the figures, groundwater flow at the Site is, in general, from the northwest to the southeast.

Upon completion of DTW measurement activities, Equus field personnel collected groundwater samples per the Plan. As specified in the Plan, chloride is the primary constituent of concern (COC) at the Site until the LNAPL has been adequately eliminated from monitoring well MW-1R. When the LNAPL has been adequately eliminated from monitoring well MW-1R, the groundwater within this well will be monitored for benzene, toluene, ethylbenzene and total xylenes (BTEX) until the levels of BTEX fall below the Limits of 0.01 mg/L, 0.75 mg/L, 0.75 mg/L and 0.62 mg/L, respectively.

The laboratory analytical results for chloride from these sampling events are screened against *the* ***New Mexico Administrative Code 20.6.2, Standards for Groundwater of 10,000 mg/L TDS Concentration or Less*** for chloride of 250 mg/L (Limit). According to the remediation goals set in the Plan, each monitoring well is required to exhibit eight consecutive monitoring events where chloride is below the Limit of 250 mg/L. When these remediation goals are met, Chesapeake will cease groundwater sampling activities for chloride.

As recommended in the ***Fifth Annual Groundwater Monitoring Report***, dated May 20, 2019, during this reporting period groundwater samples were only collected from monitoring wells MW-4

and MW-8 for chloride analysis due to the remaining monitoring wells having already achieved the abatement goal of eight consecutive quarters of chloride concentrations below 250 mg/L.

The groundwater samples from monitoring wells MW-4 and MW-8 were collected utilizing EPA approved low-flow purging/sampling methodologies. Field parameters consisting of pH, specific conductivity, temperature, and dissolved oxygen (DO) were measured during field activities utilizing a multi-parameter meter and air-tight flow-through cell. Upon stabilization of the field parameters, groundwater samples were collected into laboratory prepared containers, labeled as to source and contents, placed on ice for preservation, placed under chain-of-custody control and shipped via overnight courier to the analytical laboratory (Eurofins TestAmerica, Edison, new Jersey). As per the Plan, groundwater samples collected from these monitoring wells were analyzed for chloride by EPA Method 300.0. A summary of the laboratory analytical results for chloride analyses is presented in **Table 4**, and complete copies of the laboratory analytical reports and chain-of-custody documentation is provided in **Appendix C**.

3.2 TWENTY-NINTH QUARTERLY GROUNDWATER SAMPLING RESULTS

The twenty-ninth groundwater sampling event was conducted at the Site on June 8, 2021. As can be seen in **Table 4**, the groundwater sample collected from monitoring well MW-4 (528 mg/L) exhibited a concentration of chloride that exceeds the Limit of 250 mg/L. The chloride concentration reported in monitoring well MW-8 (92.5 mg/L) exhibited a chloride concentration that was less than the Limit of 250 mg/L.

During the twenty-ninth quarterly groundwater sampling event, LNAPL was observed in monitoring well MW-1R at a thickness of 0.78 feet.

3.3 THIRTIETH QUARTERLY GROUNDWATER SAMPLING RESULTS

The thirtieth quarterly groundwater sampling event was conducted at the Site from September 8-9, 2021. As can be seen in **Table 4**, the groundwater sample collected from monitoring well MW-4 (438 mg/L) exhibited a concentration of chloride that exceeds the Limit of 250 mg/L. The chloride concentration reported in monitoring well MW-8 (65.5 mg/L) exhibited a chloride concentration that was less than the Limit of 250 mg/L

During the thirtieth quarterly groundwater sampling event, LNAPL was observed in monitoring well MW-1R at a thickness of 0.27 feet.

3.4 THIRTY-FIRST QUARTERLY GROUNDWATER SAMPLING RESULTS

The thirty-first quarterly groundwater sampling event was conducted at the Site on December 7, 2021. As can be seen in **Table 4**, the groundwater sample collected from monitoring well MW-4 (404 mg/L) exhibited a concentration of chloride that exceeds the Limit of 250 mg/L. The chloride concentration reported in monitoring well MW-8 (56.2 mg/L) exhibited a chloride concentration that was less than the Limit of 250 mg/L

During the thirty-first quarterly groundwater sampling event, LNAPL was observed in monitoring well MW-1R at a thickness of 0.16 feet.

3.5 THIRTY-SECOND QUARTERLY GROUNDWATER SAMPLING RESULTS

The thirty-second quarterly groundwater sampling event was conducted at the Site on March 2, 2021. As can be seen in **Table 4**, the groundwater sample collected from monitoring well MW-4 (387 mg/L) exhibited a chloride concentration that exceeds the Limit of 250 mg/L. The groundwater sample collected from monitoring well MW-8 (29.6 mg/L) exhibited a chloride concentration that was less than the Limit of 250 mg/L. **Figure 8** presents an isopleth of the chloride concentrations observed in the groundwater samples collected during this sampling event. As can be seen on this figure, the highest levels of chloride observed in Site groundwater are observed in monitoring wells MW-4 and MW-8, in the southeast portion of the Site. To complete the chloride isopleth, Equus used chloride concentrations detected in monitoring wells MW-1 through MW-3 and MW-5 through MW-7 during the March 2018 sampling event. It should be noted that concentrations of chloride in monitoring well MW-8 have been less than the Limit during the last eleven groundwater monitoring events.

Figure 9 presents chloride concentration trend graphs for each of the monitoring wells sampled at the Site. A review of this figure indicates that the chloride concentration trends observed in the groundwater samples are, in general, decreasing in monitoring wells MW-4 and MW-8. The soil remediation activities conducted in the first quarter of 2014 have removed the continuing source of chloride impacts to the groundwater at the Site. Source removal has facilitated the physical natural attenuation mechanisms of dispersion and dilution on remnant chloride concentrations present in Site groundwater.

During the thirty-second quarterly groundwater sampling event, LNAPL was observed in monitoring well MW-1R at a thickness of 0.14 feet.

4.0 CONCLUSIONS

Based upon the data presented herein, the following conclusions are presented:

- Groundwater beneath the Site is encountered at depths ranging from approximately 46 to 49 feet from the surveyed top-of-casing of the Site monitoring wells.
- The direction of groundwater flow at the Site is, in general, from the northwest to the southeast.
- During the reporting period, concentrations of chloride greater than the Limit of 250 mg/L were observed in the groundwater samples collected from monitoring wells MW-4, ranging from 387 mg/L to 528 mg/L. Concentrations of chloride less than the Limit of 250 mg/L were observed in MW-8 during all events, ranging from 29.6 mg/L to 92.5 mg/L. Concentrations of chloride less than the Limit have been observed in monitoring well MW-8 during the last eleven monitoring events.
- The SVE System is operating as designed and has removed approximately 14,563 pounds of VOCs since start-up on June 6, 2014.
- During the reporting period, a measurable quantity of LNAPL was not recovered from monitoring well MW-1R. The lack of recovery is attributed to the decreasing LNAPL thicknesses observed within MW-1R (0.14-feet to 0.78-feet) during the reporting period. LNAPL thicknesses this thin are outside the effective operating capabilities of the skimmer-pump technology deployed within monitoring well MW-1R.

5.0 RECOMMENDATIONS

Based upon a review of the data presented within this report, the following recommendations have been developed:

- Operation of the LNAPL skimmer-pump within monitoring well MW-1R has been stopped as the LNAPL thickness observed within this well is too thin to be recovered utilizing this technology. A hydrophobic LNAPL absorbent sock will be deployed within monitoring well MW-1R to continue LNAPL removal.

- As specified in the Plan, LNAPL recovery within monitoring well MW-1R should be continued until the LNAPL observed within this well has been adequately eliminated.

- As specified in the Plan, when the LNAPL has been adequately eliminated from monitoring well MW-1R, the groundwater within this well should be monitored for BTEX until the levels of these constituents fall below the Limits of 0.01 mg/L, 0.75 mg/L, 0.75 mg/L and 0.62 mg/L, respectively, for eight consecutive quarters.

- Concentrations of chloride in monitoring well MW-8 have exhibited levels below the New Mexico Water Quality Control Commission standard of 250 mg/l for eleven consecutive events. Based on this milestone and the NMOCD-approved ***Stage 2 Abatement Plan***, chloride monitoring will no longer be conducted from monitoring well MW-8.

- The groundwater within monitoring well MW-4 should continue to be monitored on a quarterly basis for chloride until eight consecutive quarterly sampling events result in chloride levels less than the New Mexico Water Quality Control Commission standards. The next groundwater monitoring event at the Site is scheduled to be conducted in June 2022.

TABLES

Table 1 : Summary of SVE System Field Readings
Chesapeake Energy Corporation, State M Lease (AP-72)
Lea County, New Mexico

Date	Time	Run Time Reading	Operating Hours		Discharge Readings		VOC Discharge				Calculated Correlation Factor
			since last reading	Total	PPM	CFM	lbs/Hr	lbs since last Reading	Total lbs	Total Tons	
06/07/14	8:00	4131.73	19.73	20	596	519	2.281	44.99	44.99	0.02	0.98
06/08/14	7:10	4154.69	22.96	43	398	483	1.416	32.50	77.50	0.04	
06/08/14	9:15	4156.94	2.25	45	5000	489	18.021	40.55	118.05	0.06	
06/12/14	12:40	4256.45	99.51	144	1817	120	1.607	159.92	277.96	0.14	
06/12/14	12:43	4259.65	3.20	148	1561	117	1.346	4.31	282.27	0.14	
06/13/14	7:15	4274.90	18.45	163	1804	122	1.622	29.93	307.89	0.15	
06/13/14	7:17	4276.27	1.37	164	3390	121	3.023	4.14	312.03	0.16	
06/13/14	7:18	4277.08	0.81	165	2301	120	2.035	1.65	313.68	0.16	
06/19/14	12:05	4422.02	144.94	310	1153	120	1.020	147.81	461.49	0.23	
06/19/14	13:30	4423.74	1.72	312	1117	107	0.881	1.52	463.00	0.23	
06/19/14	16:00	4426.00	2.26	314	1448	121	1.291	2.92	465.92	0.23	
06/24/14	12:05	4543.27	117.27	431	*1440*	*120*	1.274	149.36	615.28	0.31	
06/26/14	12:40	4591.01	165.01	479	1970	127	1.844	304.28	919.56	0.46	
06/26/14	12:42	4593.20	2.19	481	1968	120	1.741	3.81	923.37	0.46	
07/03/14	9:35	4755.92	162.72	644	1650	126	1.532	249.34	1172.71	0.59	
07/03/14	9:37	4757.95	2.03	646	1318	126	1.224	2.48	1175.20	0.59	
07/09/14	11:40	4901.77	143.82	790	875	126	0.812	116.80	1292.00	0.65	
07/09/14	11:42	4903.69	1.92	792	795	124	0.727	1.40	1293.39	0.65	
07/17/14	12:33	5094.48	190.79	982	*790*	124	0.722	137.75	1431.15	0.72	
07/17/14	12:34	5095.13	0.65	983	*790*	127	0.739	0.48	1431.63	0.72	
07/17/14	12:36	5097.75	2.62	986	*790*	127	0.739	1.94	1433.56	0.72	
08/01/14	11:00	5452.10	354.35	1,340	1078	139	1.104	391.35	1824.91	0.91	
08/01/14	11:42	5454.03	1.93	1,342	938	150	1.037	2.00	1826.91	0.91	1.86
08/01/14	11:44	5456.32	2.29	1,344	2314	14	0.239	0.55	1827.46	0.91	
10/10/14	13:00	7118.38	1662.06	3,006	130	51	0.049	81.70	1909.16	0.95	
10/10/14	13:02	7120.15	1.77	3,008	216	58	0.093	0.16	1909.32	0.95	
10/31/14	13:00	7622.85	502.70	3,511	161	48	0.057	28.63	1937.95	0.97	
10/31/14	13:04	7624.49	1.64	3,512	78	54	0.031	0.05	1938.00	0.97	
12/11/14	13:50	8607.53	983.04	4,496	352	***131***	0.340	334.10	2272.11	1.14	
01/15/15	10:11	9441.32	833.79	5,329	47	131	0.045	37.60	2309.70	1.15	0.21
01/15/15	10:12	9442.31	0.99	5,330	173	152	0.194	0.19	2309.89	1.15	
01/15/15	10:15	9445.26	2.95	5,333	388	136	0.389	1.15	2311.04	1.16	
01/29/15	11:50	9778.04	332.78	5,666	240	54	0.095	31.49	2342.53	1.17	
01/29/15	11:52	9780.13	2.09	5,668	239	50	0.088	0.18	2342.72	1.17	
02/26/15	11:00	10448.98	668.85	6,337	72	137	0.073	48.63	2391.35	1.20	
02/26/15	11:02	10450.10	1.12	6,338	178	155	0.204	0.23	2391.57	1.20	
03/12/15	10:15	10780.66	330.56	6,669	483	***155***	0.552	182.40	2573.97	1.29	
04/28/15	8:30	11901.34	1120.68	7,789	126	114	0.106	118.86	2692.84	1.35	1.10
04/28/15	8:36	11907.42	6.08	7,795	132	126	0.123	0.75	2693.58	1.35	
05/14/15	9:05	12285.12	377.70	8,173	96	55	0.039	14.68	2708.26	1.35	
05/14/15	9:10	12290.05	4.93	8,178	105	58	0.045	0.22	2708.48	1.35	
05/28/15	11:30	12623.70	333.65	8,512	6	150	0.006	2.07	2710.55	1.36	
06/11/15	10:39	12650.70	27.00	8,539	318	172	0.403	10.88	2721.43	1.36	
07/02/15	11:00	13154.04	503.34	9,042	85	112	0.070	35.32	2756.75	1.38	0.76
09/03/15	8:00	14662.17	1508.13	10,550	249	104	0.191	287.85	3044.60	1.52	
12/10/15	13:00	17015.28	2353.11	12,903	162	95	0.113	266.92	3311.52	1.66	0.86

Table 1 : Summary of SVE System Field Readings
Chesapeake Energy Corporation, State M Lease (AP-72)
Lea County, New Mexico

Date	Time	Run Time Reading	Operating Hours		Discharge Readings		VOC Discharge				Calculated Correlation Factor
			since last reading	Total	PPM	CFM	lbs/Hr	lbs since last Reading	Total lbs	Total Tons	
03/10/16	12:00	17899.58	884.30	13,788	209	105	0.162	143.03	3454.55	1.73	1.78
06/29/16	8:00	20558.59	2659.01	16,447	156	101	0.116	309.58	3764.13	1.88	3.77
07/27/16	12:30	21232.43	673.84	17,120	126	103	0.095	64.20	3828.33	1.91	
08/25/16	11:00	21927.96	695.53	17,816	115	270	0.229	159.45	3987.78	1.99	1.55
09/22/16	10:20	22596.81	668.85	18,485	169	220	0.274	183.07	4170.85	2.09	
12/08/16	9:30	24443.73	1846.92	20,332	109	220	0.177	327.03	4497.88	2.25	6.59
01/10/17	12:23	24758.20	314.47	20,646	173	233	0.297	93.37	4591.25	2.30	
01/25/17	10:56	25115.43	357.23	21,003	206	179	0.271	96.95	4688.20	2.34	3.06
02/22/17	10:35	25786.27	670.84	21,674	248	214	0.391	262.30	4950.50	2.48	
03/09/17	11:04	26146.82	360.55	22,035	321	209	0.495	178.51	5129.01	2.56	
04/05/17	11:55	26792.33	645.51	22,680	454	113	0.378	244.08	5373.09	2.69	
05/16/17	7:00	26967.77	175.44	22,856	61	198	0.089	15.69	5388.79	2.69	5.78
06/07/17	13:00	27495.83	528.06	23,384	54	221	0.087	46.02	5434.80	2.72	
09/07/17	11:36	29698.50	2202.67	25,587	62	200	0.091	201.31	5636.11	2.82	
09/22/17	11:30	30057.43	358.93	25,945	56	211	0.087	31.26	5667.37	2.83	
10/04/17	10:15	30344.40	286.97	26,232	57	198	0.083	23.87	5691.24	2.85	0.81
11/02/17	13:00	31042.78	698.38	26,931	58	185	0.079	55.23	5746.48	2.87	
12/01/17	12:30	31739.31	696.53	27,627	59	192	0.083	58.16	5804.63	2.90	
12/06/17	12:40	31859.62	120.31	27,748	6	270	0.011	1.36	5806.00	2.90	
12/18/17	15:00	32149.36	289.74	28,037	60	208	0.092	26.65	5832.65	2.92	
01/09/18	10:00	32672.25	522.89	28,560	52	189	0.072	37.88	5870.52	2.94	
01/26/18	10:15	33080.48	408.23	28,968	48	172	0.061	24.84	5895.36	2.95	
02/09/18	13:10	33416.85	336.37	29,305	32	220	0.052	17.45	5912.82	2.96	0.19
02/23/18	11:15	33753.60	336.75	29,642	34	186	0.047	15.70	5928.51	2.96	
03/07/18	10:55	34040.75	287.15	29,929	52	227	0.087	24.98	5953.50	2.98	
03/16/18	13:03	34251.67	210.92	30,140	48	195	0.069	14.55	5968.05	2.98	
04/13/18	9:15	34970.90	719.23	30,859	46	200	0.068	48.77	6016.82	3.01	
04/30/18	13:16	35332.87	361.97	31,221	46	200	0.068	24.54	6041.36	3.02	
05/15/18	13:34	35692.17	359.30	31,580	48	200	0.071	25.42	6066.78	3.03	
05/29/18	14:20	36028.04	335.87	31,916	48	200	0.071	23.77	6090.55	3.05	0.65
06/04/18	16:30	36169.50	141.46	32,058	71	200	0.105	14.81	6105.35	3.05	
06/20/18	14:30	36556.30	386.80	32,444	48	200	0.071	27.37	6132.72	3.07	
07/03/18	10:30	36865.13	308.83	32,753	56	520	0.215	66.28	6199.01	3.10	
07/19/18	10:40	37249.27	384.14	33,137	46	486	0.165	63.30	6262.30	3.13	
08/09/18	12:30	37754.97	505.70	33,643	58	386	0.165	83.45	6345.75	3.17	2.13
09/06/18					36						
09/19/18	12:00	38730.31	975.34	34,618	46	405	0.137	133.93	6479.67	3.24	
10/04/18	15:30	39093.45	363.14	34,981	73	425	0.227	82.47	6562.14	3.28	
10/18/18	13:00	39428.14	334.69	35,316	42	261	0.081	27.04	6589.19	3.29	
10/31/18	13:40	39716.90	288.76	35,605	52	317	0.121	35.08	6624.27	3.31	
11/16/18	8:00	39983.80	266.90	35,872	68	156	0.078	20.87	6645.14	3.32	1.19
11/16/18	9:54	39985.70	1.90	35,874	77	264	0.149	0.28	6645.42	3.32	
12/11/18	14:20	40585.95	600.25	36,474	90	150	0.099	59.53	6704.95	3.35	
12/27/18	13:40	40965.57	379.62	36,854	72	310	0.165	62.45	6767.40	3.38	

Table 1 : Summary of SVE System Field Readings
Chesapeake Energy Corporation, State M Lease (AP-72)
Lea County, New Mexico

Date	Time	Run Time Reading	Operating Hours		Discharge Readings		VOC Discharge				Calculated Correlation Factor
			since last reading	Total	PPM	CFM	lbs/Hr	lbs since last Reading	Total lbs	Total Tons	
01/24/19	14:58	41636.05	670.48	37,524	63	275	0.128	85.62	6853.01	3.43	
02/05/19	12:02	41919.95	283.90	37,808	48	251	0.088	25.08	6878.09	3.44	
02/21/19	12:00	42303.95	384.00	38,192	26	218	0.042	16.10	6894.20	3.45	
03/07/19	7:00	42632.85	328.90	38,521	80	208	0.122	40.29	6934.48	3.47	0.97
03/22/19	11:09	42986.51	353.66	38,875	47	177	0.062	21.78	6956.26	3.48	
04/03/19	15:00	43277.65	291.14	39,166	58	440	0.186	54.29	7010.55	3.51	
04/18/19	12:00	43634.32	356.67	39,522	105	450	0.348	124.21	7134.76	3.57	
05/17/19	13:30	44330.99	696.67	40,219	39	365	0.104	72.34	7207.11	3.60	
06/12/19	17:00	44952.75	621.76	40,841	6	170	0.008	4.67	7211.78	3.61	
06/25/19	11:00	45283.69	330.94	41,172	23	445	0.075	24.97	7236.75	3.62	
07/09/19	13:30	45573.87	290.18	41,462	27	360	0.072	20.79	7257.53	3.63	
07/22/19	14:00	45906.56	332.69	41,795	27	425	0.083	27.62	7285.15	3.64	0.87
08/05/19	11:30	46239.45	332.89	42,127	37	462	0.126	41.94	7327.09	3.66	
08/19/19	11:00	46575.01	335.56	42,463	23	533	0.090	30.32	7357.41	3.68	
09/03/19	15:15	46937.77	362.76	42,826	31	455	0.104	37.71	7395.12	3.70	
09/05/19	7:30	46980.41	42.64	42,868	79	227	0.133	5.65	7400.77	3.70	
09/16/19	11:30	47242.95	262.54	43,131	21	372	0.058	15.12	7415.89	3.71	
09/30/19	11:00	47576.43	333.48	43,464	24	355	0.063	20.94	7436.83	3.72	
10/16/19	12:00	47958.94	382.51	43,847	22	280	0.045	17.37	7454.20	3.73	
10/28/19	11:45	48246.61	287.67	44,135	16	326	0.038	11.06	7465.26	3.73	
11/11/19	11:00	48581.38	334.77	44,469	35	488	0.127	42.56	7507.82	3.75	
11/11/19	12:10	48582.46	1.08	44,470	27	188	0.037	0.04	7507.86	3.75	0.88
11/26/19	11:20	48916.78	334.32	44,805	16	284	0.033	10.95	7518.82	3.76	
11/26/19	11:50	48917.34	0.56	44,805	26	472	0.089	0.05	7518.87	3.76	
12/11/19	10:30	49294.17	376.83	45,182	30	214	0.047	17.79	7536.65	3.77	
12/22/19	11:00	49558.50	264.33	45,447	16	462	0.054	14.40	7551.05	3.78	
12/30/19	14:00	49631.20	72.70	45,519	30	462	0.102	7.43	7558.48	3.78	
01/12/20	13:00	49682.50	51.30	45,571	19	282	0.039	2.01	7560.49	3.78	
02/10/20	11:00	49806.20	123.70	45,694	19	145	0.021	2.55	7563.04	3.78	
03/05/20	12:40	50000.00	193.80	45,888	38	197	0.055	10.66	7573.71	3.79	0.69
03/09/20	12:10	50070.44	70.44	45,958	23	250	0.041	2.92	7576.62	3.79	
03/23/20	11:45	50083.25	12.81	45,971	25	323	0.060	0.76	7577.39	3.79	
04/06/20	10:30	50139.34	56.09	46,027	26	316	0.060	3.34	7580.73	3.79	
04/20/20	10:30	50225.20	85.86	46,113	19	408	0.056	4.84	7585.57	3.79	
05/05/20	11:00	50540.55	315.35	46,429	61	311	0.140	44.17	7629.74	3.81	1.06
05/18/20	12:30	50840.55	300.00	46,729	36	506	0.132	39.72	7669.46	3.83	
06/06/20	10:10	51279.56	439.01	47,168	47	340	0.118	51.71	7721.16	3.86	
06/20/20	13:20	51616.41	336.85	47,504	34	322	0.081	27.18	7748.35	3.87	
07/06/20	10:44	51998.22	381.81	47,886	0.5	425	0.002	0.60	7748.94	3.87	
07/19/20	11:10	52309.12	310.90	48,197	29	470	0.099	30.80	7779.75	3.89	0.51
08/09/20	17:30	52819.74	510.62	48,708	28	428	0.087	44.46	7824.20	3.91	
09/14/20	18:30	53480.00	660.26	49,368	25	421	0.076	50.19	7874.40	3.94	
09/24/20	13:20	53703.31	223.31	49,591	47	410	0.143	31.85	7906.25	3.95	
11/15/20	13:00	54664.23	960.92	50,552	38	418	0.116	111.61	8017.86	4.01	
12/11/20	8:27	55250.13	585.90	51,138	67	380	0.187	109.62	8127.48	4.06	1.36

Table 1 : Summary of SVE System Field Readings
Chesapeake Energy Corporation, State M Lease (AP-72)
Lea County, New Mexico

Date	Time	Run Time Reading	Operating Hours		Discharge Readings		VOC Discharge				Calculated Correlation Factor
			since last reading	Total	PPM	CFM	lbs/Hr	lbs since last Reading	Total lbs	Total Tons	
02/28/21	10:00	56876.10	1625.97	52,764	37	410	0.112	181.80	8309.28	4.15	0.36
03/02/21	14:05	56926.31	50.21	52,814	6.4	355	0.017	0.84	8310.12	4.16	
04/21/21	14:11	58101.61	1175.30	53,990	2.9	391	0.008	9.82	8319.94	4.16	0.07
05/13/21	13:42	58654.06	552.45	54,542	3.2	490	0.012	6.38	8326.32	4.16	
06/08/21	12:30	59275.70	621.64	55,164	31.0	460	0.105	65.34	8391.66	4.20	
09/09/21	12:50	60240.17	964.47	56,128	91.7	422	0.285	275.08	8666.74	4.33	1.53
09/24/21	12:30	60600.84	360.67	56,489	28.4	415	0.087	31.33	8698.07	4.35	
10/24/21	14:20	61323.92	723.08	57,212	23.7	312	0.055	39.41	8737.48	4.37	0.27
11/19/21	14:11	61946.79	622.87	57,835	26.1	402	0.077	48.17	8785.65	4.39	
12/07/21	12:30	62377.93	431.14	58,266	6.0	350	0.015	6.67	8792.32	4.40	
01/23/22	10:49	63503.18	1125.25	59,391	15.4	295	0.033	37.68	8830.00	4.42	1.38
02/16/22	11:30	64080.45	577.27	59,968	17.2	396	0.050	28.98	8858.98	4.43	
03/09/22	12:01	64561.31	480.86	60,449	16.7	383	0.047	22.67	8881.65	4.44	
03/27/22	9:05	65012.44	451.13	60,900	17.4	372	0.048	21.52	8903.17	4.45	
							Corrected Total:		14,563.70	7.40	

Notes:

1. Color shading indicates air sampling period with a unique correlation factor.
2. During the June 24 & July 17, 2014 site visit the field readings were not recorded. The italicized values presented above for these dates are conservative estimated values based upon last known readings.

Table 2 : Summary of Laboratory Analytical Results for Discharge Air Samples
Chesapeake Energy Corporation, State M Lease (AP-72)
Lea County, New Mexico

Parameters	Sample ID:	SVE	Canister #34000823 Serial C8528 2014-12-11	CANISTER #C8522	Canister #8408 2015-06-11 Air Sample	Canister #5451 Batch #320-14155 9-3-15	CANISTER #34000512 BATCH ID #320-15930	STATE M-1 LEASE	20160629 M SVE	20160922 M SVE	20161208 M SVE	20170309 M SVE
	Sample Date:	1-Aug-14	11-Dec-14	12-Mar-15	11-Jun-15	3-Sep-15	10-Dec-15	10-Mar-16	29-Jun-16	22-Sep-16	8-Dec-16	9-Mar-17
Volatile Organic Compounds by TO-15												
Acetone	ppb v/v	<2000	<615	<965	<860	<615	<370	<915	<280	<175	<106	<203
Benzene	ppb v/v	**8,820**	**2,960**	**533**	**3,630**	**312**	**194**	**1,070**	**2,600**	**853**	**373**	**550**
Benzyl chloride	ppb v/v	<320	<98.4	<154	<138	<98.4	<59.2	<146	<44.8	<27.9	<16.9	<32.4
Bromodichloromethane	ppb v/v	<120	<36.9	<57.9	<51.6	<36.9	<22.2	<54.9	<16.8	103.5	<6.33	<12.2
Bromoform	ppb v/v	<160	<49.2	<77.2	<68.8	<49.2	<29.6	<73.2	<22.4	<14.0	<8.44	<16.2
Bromomethane	ppb v/v	<320	<98.4	<154	<138	<98.4	<59.2	<146	<44.8	<27.9	<16.9	<32.4
2-Butanone (MEK)	ppb v/v	<320	<98.4	<154	<138	<98.4	<59.2	<146	<44.8	<27.9	<16.9	<32.4
Carbon disulfide	ppb v/v	**1,800**	**272**	<154	<138	<98.4	<59.2	<146	**177**	<27.9	<16.9	<32.4
Carbon tetrachloride	ppb v/v	<320	<98.4	<154	<138	<98.4	<59.2	<146	<44.8	<27.9	<16.9	<32.4
Chlorobenzene	ppb v/v	<120	<36.9	<57.9	<51.6	<36.9	<22.2	<54.9	<16.8	<10.5	<6.33	<12.2
Dibromochloromethane	ppb v/v	<160	<49.2	<77.2	<68.8	<49.2	<29.6	<73.2	<22.4	<14.0	<8.44	<16.2
Chloroethane	ppb v/v	<320	<98.4	<154	<138	<98.4	<59.2	<146	<44.8	<27.9	<16.9	<32.4
Chloroform	ppb v/v	<120	<36.9	<57.9	<51.6	<36.9	<22.2	<54.9	<16.8	<10.5	<6.33	<12.2
Chloromethane	ppb v/v	<320	<98.4	<154	<138	<98.4	<59.2	<146	<44.8	<27.9	<16.9	<32.4
1,2-Dibromoethane	ppb v/v	<320	<98.4	<154	<138	<98.4	<59.2	<146	<44.8	<27.9	<16.9	<32.4
1,2-Dichlorobenzene	ppb v/v	<160	<49.2	<77.2	<68.8	<49.2	<29.6	<73.2	<22.4	<14.0	<8.44	<16.2
1,3-Dichlorobenzene	ppb v/v	<160	<49.2	<77.2	<68.8	<49.2	<29.6	<73.2	<22.4	<14.0	<8.44	<16.2
1,4-Dichlorobenzene	ppb v/v	<160	<49.2	<77.2	<68.8	<49.2	<29.6	<73.2	<22.4	<14.0	<8.44	<16.2
Dichlorodifluoromethane	ppb v/v	**1,980**	<49.2	<77.2	<68.8	<49.2	<29.6	<73.2	<22.4	<14.0	<8.44	<16.2
1,1-Dichloroethane	ppb v/v	<120	<36.9	<57.9	<51.6	<36.9	<22.2	<54.9	<16.8	<10.5	<6.33	<12.2
1,2-Dichloroethane	ppb v/v	<320	<98.4	<154	<138	<98.4	<59.2	<146	<44.8	<27.9	<16.9	<32.4
1,1-Dichloroethene	ppb v/v	<320	<98.4	<154	<138	<98.4	<59.2	<146	<44.8	<27.9	<16.9	<32.4
cis-1,2-Dichloroethene	ppb v/v	<160	<49.2	**84.5**	<68.8	<49.2	<29.6	<73.2	<22.4	<14.0	<8.44	<16.2
trans-1,2-Dichloroethene	ppb v/v	<160	<49.2	<77.2	<68.8	<49.2	<29.6	<73.2	<22.4	<14.0	<8.44	<16.2
1,2-Dichloropropane	ppb v/v	<160	<49.2	<77.2	<68.8	<49.2	<29.6	<73.2	<22.4	<14.0	<8.44	<16.2
cis-1,3-Dichloropropene	ppb v/v	<160	<49.2	<77.2	<68.8	<49.2	<29.6	<73.2	<22.4	<14.0	<8.44	<16.2
trans-1,3-Dichloropropene	ppb v/v	<160	<49.2	<77.2	<68.8	<49.2	<29.6	<73.2	<22.4	<14.0	<8.44	<16.2
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ppb v/v	<160	<49.2	<77.2	<68.8	<49.2	<29.6	<73.2	<22.4	<14.0	<8.44	<16.2
Ethylbenzene	ppb v/v	**13,500**	**3,830**	**799**	**2,890**	**731**	**723**	**446**	**2,530**	**1,390**	**531**	**908**
4-Ethyltoluene	ppb v/v	**974**	**533**	**164**	**299**	**256**	**186**	<73.2	**660**	**497**	**135**	**263**
Hexachlorobutadiene	ppb v/v	<800	<246	<386	<344	<246	<148	<366	<112	<69.8	<42.2	<81.0
2-Hexanone	ppb v/v	<160	<49.2	<77.2	<68.8	<49.2	<29.6	<73.2	<22.4	<14.0	<8.44	<16.2
Methylene Chloride	ppb v/v	<160	<49.2	<77.2	<68.8	<49.2	<29.6	<73.2	<22.4	<14.0	<8.44	<16.2
4-Methyl-2-pentanone	ppb v/v	<160	<49.2	<77.2	<68.8	<49.2	<29.6	<73.2	<22.4	<14.0	<8.44	<16.2
Styrene	ppb v/v	<160	<49.2	<77.2	<68.8	<49.2	<29.6	<73.2	<22.4	<14.0	<8.44	<16.2

Table 2 : Summary of Laboratory Analytical Results for Discharge Air Samples
Chesapeake Energy Corporation, State M Lease (AP-72)
Lea County, New Mexico

Parameters	Sample ID: / Sample Date:	SVE 1-Aug-14	Canister #34000823 Serial C8528 2014-12-11 11-Dec-14	CANISTER #C8522 12-Mar-15	Canister #8408 2015-06-11 Air Sample 11-Jun-15	Canister #5451 Batch #320-14155 9-3-15 3-Sep-15	CANISTER #34000512 BATCH ID #320-15930 10-Dec-15	STATE M-1 LEASE 10-Mar-16	20160629 M SVE 29-Jun-16	20160922 M SVE 22-Sep-16	20161208 M SVE 8-Dec-16	20170309 M SVE 9-Mar-17
1,1,2,2-Tetrachloroethane	ppb v/v	<160	<49.2	<77.2	<68.8	<49.2	<29.6	<73.2	**41.1**	<14.0	<8.44	**20.0**
Tetrachloroethene	ppb v/v	<160	**71.9**	<77.2	<68.8	<49.2	<29.6	**92.9**	<22.4	<14.0	<8.44	<16.2
Toluene	ppb v/v	**4,020**	**1,040**	**228**	**1,480**	<49.2	<29.6	**120**	**975**	**380**	**164**	**193**
1,2,4-Trichlorobenzene	ppb v/v	<800	<246	<386	<344	<246	<148	<366	<112	<69.8	<42.2	<81.0
1,1,1-Trichloroethane	ppb v/v	<120	<36.9	<57.9	<51.6	<36.9	<22.2	<54.9	<16.8	<10.5	<6.33	<12.2
1,1,2-Trichloroethane	ppb v/v	<160	<49.2	<77.2	<68.8	<49.2	<29.6	<73.2	<22.4	<14.0	<8.44	<16.2
Trichloroethene	ppb v/v	<160	<49.2	<77.2	<68.8	<49.2	<29.6	<73.2	<22.4	<14.0	<8.44	<16.2
Trichlorofluoromethane	ppb v/v	<160	<49.2	<77.2	<68.8	<49.2	<29.6	<73.2	<22.4	<14.0	<8.44	<16.2
1,1,2-Trichloro-1,2,2-trifluoroethane	ppb v/v	<160	<49.2	<77.2	<68.8	<49.2	<29.6	<73.2	<22.4	<14.0	<8.44	<16.2
1,2,4-Trimethylbenzene	ppb v/v	**2,020**	**648**	**299**	**774**	<98.4	**355**	<146	**968**	**740**	**228**	**411**
1,3,5-Trimethylbenzene	ppb v/v	**821**	**385**	**172**	**353**	**73.0**	**247**	<73.2	**727**	**541**	**192**	**397**
Vinyl acetate	ppb v/v	<320	<98.4	<154	<138	<98.4	<59.2	<146	<44.8	<27.9	<16.9	<32.4
Vinyl chloride	ppb v/v	<160	<49.2	<77.2	<68.8	<49.2	<29.6	<73.2	<22.8	<14.0	<8.44	<16.2
m,p-Xylene	ppb v/v	**12,700**	**4,680**	**1,110**	**3,920**	**1,140**	**1,380**	**609**	**5,050**	**2,550**	**870**	**1,510**
o-Xylene	ppb v/v	**4,520**	**1,190**	**286**	**1,120**	**164**	**194**	**107**	**720**	**419**	**177**	**337**
Total VOC as Hexane (C6-C12)	ppb v/v	**1,060,000**	**655,000**	**99,400**	**351,000**	**190,000**	**140,000**	**371,000**	**590,000**	**262,000**	**117,000**	**167,000**

Table 2 : Summary of Laboratory Analytical Results for Discharge Air Samples
Chesapeake Energy Corporation, State M Lease (AP-72)
Lea County, New Mexico

Parameters	Sample ID:	20170607M SVE	20170907 M SVE	20171206 -M-SVE	20180307-M-SVE	20180604-M-SVE	20180906-M-SVE	2018121-M-SVE	20190307 M SVE	20190905 M SVE	20200122 M1-SVE	20200305 M SVE	20200606-M-SVE	20200924M1SVE	20201211 M-1	20210302 M-1
	Sample Date:	7-Jun-17	7-Sep-17	6-Dec-17	7-Mar-18	4-Jun-18	6-Sep-18	11-Dec-18	7-Mar-19	5-Sep-19	22-Jan-20	5-Mar-20	6-Jun-20	24-Sep-20	11-Dec-20	2-Mar-21
Volatile Organic Compounds by TO-15																
Acetone	ppb v/v	<76.0	<116	<20.0	**5.67**	<78.0	<124	<178	<22.3	<84	<17	<78	<34	<29	<110	<7.8
Benzene	ppb v/v	**180**	**143**	**1.77**	**24.5**	**87.9**	**112**	**137**	**40.1**	**140**	**3.7**	**42**	**48**	**18**	**80**	<0.78
Benzyl chloride	ppb v/v	<12.2	<18.5	<3.20	<0.800	<12.5	<19.8	<28.4	<3.56	<8.4	<1.7	<7.8	<8.4	<2.9	<11	<0.78
Bromodichloromethane	ppb v/v	<4.56	<6.93	<1.20	<0.300	<4.68	<7.43	<10.7	<1.34	<8.4	<1.7	<7.8	<8.4	<2.9	<11	<0.78
Bromoform	ppb v/v	<6.08	<9.24	<1.60	<0.400	<6.24	<9.91	<14.2	<1.78	<8.4	<1.7	<7.8	<8.4	<2.9	<11	<0.78
Bromomethane	ppb v/v	<12.2	<18.5	<3.20	<0.800	<12.5	<19.8	<28.4	<3.56	<84	<17	<78	<34	<29	<110	<7.8
2-Butanone (MEK)	ppb v/v	<12.2	**178**	<3.20	<0.800	<12.5	<19.8	<28.4	**5.97**	<34	<6.7	<31	<34	<11	<43	<3.1
Carbon disulfide	ppb v/v	<12.2	<18.5	<3.20	<0.800	<12.5	<19.8	<28.4	<3.56	<34	<6.7	<31	<34	<11	<43	<3.1
Carbon tetrachloride	ppb v/v	<12.2	<18.5	<3.20	<0.800	<12.5	<19.8	<28.4	<3.56	<8.4	<1.7	<7.8	<8.4	<2.9	<11	<0.78
Chlorobenzene	ppb v/v	<4.56	<6.93	<1.20	<0.300	<4.68	<7.43	<10.7	<1.34	<8.4	<1.7	<7.8	<8.4	<2.9	<11	<0.78
Dibromochloromethane	ppb v/v	<6.08	<9.24	<1.60	<0.400	<6.24	<9.91	<14.2	<1.78	<8.4	<1.7	<7.8	<8.4	<2.9	<11	<0.78
Chloroethane	ppb v/v	<12.2	<18.5	<3.20	<0.800	<12.5	<19.8	<28.4	<3.56	<34	<6.7	<31	<34	<11	<43	<3.1
Chloroform	ppb v/v	<4.56	<6.93	<1.20	<0.300	<4.68	<7.43	<10.7	<1.34	<8.4	<1.7	<7.8	<8.4	<2.9	<11	<0.78
Chloromethane	ppb v/v	<12.2	<18.5	<3.20	<0.800	<12.5	<19.8	<28.4	<3.56	<84	<17	<78	<34	<29	<110	<7.8
1,2-Dibromoethane	ppb v/v	<12.2	<18.5	<3.20	<0.800	<12.5	<19.8	<28.4	<3.56	<8.4	<1.7	<7.8	<8.4	<2.9	<11	<0.78
1,2-Dichlorobenzene	ppb v/v	<6.08	<9.24	<1.60	<0.400	<6.24	<9.91	<14.2	<1.78	<8.4	<1.7	<7.8	<8.4	<2.9	<11	<0.78
1,3-Dichlorobenzene	ppb v/v	<6.08	<9.24	<1.60	<0.400	<6.24	<9.91	<14.2	<1.78	<8.4	<1.7	<7.8	<8.4	<2.9	<11	<0.78
1,4-Dichlorobenzene	ppb v/v	<6.08	<9.24	<1.60	<0.400	<6.24	<9.91	<14.2	<1.78	<8.4	<1.7	<7.8	<8.4	<2.9	<11	<0.78
Dichlorodifluoromethane	ppb v/v	<6.08	<9.24	<1.60	<0.400	<6.24	<9.91	<14.2	<1.78	<8.4	<1.7	<7.8	<8.4	<2.9	<11	<0.78
1,1-Dichloroethane	ppb v/v	<4.56	<6.93	<1.20	<0.300	<4.68	<7.43	<10.7	<1.34	<8.4	<1.7	<7.8	<8.4	<2.9	<11	<0.78
1,2-Dichloroethane	ppb v/v	<12.2	<18.5	<3.20	**0.881**	<12.5	<19.8	<28.4	<3.56	<8.4	<1.7	<7.8	<8.4	<2.9	<11	<0.78
1,1-Dichloroethene	ppb v/v	<12.2	<18.5	<3.20	<0.800	<12.5	<19.8	<28.4	<3.56	<8.4	<1.7	<7.8	<8.4	<2.9	<11	<0.78
cis-1,2-Dichloroethene	ppb v/v	<6.08	<9.24	<1.60	<0.400	<6.24	<9.91	<14.2	<1.78	<8.4	<1.7	<7.8	<8.4	<2.9	<11	<0.78
trans-1,2-Dichloroethene	ppb v/v	<6.08	<9.24	<1.60	<0.400	<6.24	<9.91	<14.2	<1.78	<8.4	<1.7	<7.8	<8.4	<2.9	<11	<0.78
1,2-Dichloropropane	ppb v/v	<6.08	<9.24	<1.60	<0.400	<6.24	<9.91	<14.2	<1.78	<8.4	<1.7	<7.8	<8.4	<2.9	<11	<0.78
cis-1,3-Dichloropropene	ppb v/v	<6.08	<9.24	<1.60	<0.400	<6.24	<9.91	<14.2	<1.78	<8.4	<1.7	<7.8	<8.4	<2.9	<11	<0.78
trans-1,3-Dichloropropene	ppb v/v	<6.08	<9.24	<1.60	<0.400	<6.24	<9.91	<14.2	<1.78	<8.4	<1.7	<7.8	<8.4	<2.9	<11	<0.78
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ppb v/v	<6.08	<9.24	<1.60	<0.400	<6.24	<9.91	<14.2	<1.78	<8.4	<1.7	<7.8	<8.4	<2.9	<11	<0.78
Ethylbenzene	ppb v/v	**229**	**219**	**4.75**	**25.4**	**250**	**334**	**363**	**284**	**270**	**33**	**120**	**150**	**56**	**180**	<0.78
4-Ethyltoluene	ppb v/v	**58.5**	**45.1**	**2.38**	**3.74**	**42.7**	**89.2**	**76.7**	**167**	**180**	**25**	**100**	**130**	**64**	**170**	**0.82**
Hexachlorobutadiene	ppb v/v	<30.4	<46.2	<8.00	<2.00	<31.2	<49.5	<71.0	<8.90	<34	<6.7	<31	<34	<11	<43	<3.1
2-Hexanone	ppb v/v	<6.08	<9.24	<1.60	<0.400	<4.68	<9.91	<14.2	<1.78	<34	<6.7	<31	<34	<11	<43	<3.1
Methylene Chloride	ppb v/v	<6.08	<9.24	<1.60	**0.540**	<6.24	<9.91	<14.2	<1.78	<84	<17	<78	<34	<29	<110	<7.8
4-Methyl-2-pentanone	ppb v/v	<6.08	<9.24	<1.60	<0.400	<6.24	<9.91	<14.2	<1.78	<8.4	<1.7	<7.8	<8.4	<2.9	<11	<0.78
Styrene	ppb v/v	<6.08	<9.24	<1.60	<0.400	<6.24	<9.91	<14.2	<1.78	<8.4	<1.7	<7.8	<8.4	<2.9	<11	<0.78

Table 2 : Summary of Laboratory Analytical Results for Discharge Air Samples
Chesapeake Energy Corporation, State M Lease (AP-72)
Lea County, New Mexico

Parameters	Sample ID: / Sample Date:	20170607M SVE 7-Jun-17	20170907 M SVE 7-Sep-17	20171206 -M-SVE 6-Dec-17	20180307-M-SVE 7-Mar-18	20180604-M-SVE 4-Jun-18	20180906-M-SVE 6-Sep-18	2018121-M-SVE 11-Dec-18	20190307 M SVE 7-Mar-19	20190905 M SVE 5-Sep-19	20200122 M1-SVE 22-Jan-20	20200305 M SVE 5-Mar-20	20200606-M-SVE 6-Jun-20	20200924M1SVE 24-Sep-20	20201211 M-1 11-Dec-20	20210302 M-1 2-Mar-21
1,1,2,2-Tetrachloroethane	ppb v/v	<6.08	<9.24	<1.60	<0.400	<6.24	<9.91	<14.2	<1.78	<8.4	<1.7	<7.8	<8.4	<2.9	<11	<0.78
Tetrachloroethene	ppb v/v	<6.08	<9.24	<1.60	<0.400	<6.24	<9.91	<14.2	<1.78	<8.4	<1.7	<7.8	<8.4	<2.9	<11	<0.78
Toluene	ppb v/v	**68.4**	**49.2**	<1.60	**6.92**	**34.4**	**44.3**	**41.0**	**38.8**	**30**	**3.1**	<7.8	**11**	**3.1**	<11	<0.78
1,2,4-Trichlorobenzene	ppb v/v	<30.4	<46.2	<8.00	<2.00	<31.2	<49.5	<71.0	<8.90	<34	<6.7	<31	<34	<11	<43	<3.1
1,1,1-Trichloroethane	ppb v/v	<4.56	<6.93	<1.20	<0.300	<4.68	<7.43	<10.7	<1.34	<8.4	<1.7	<7.8	<8.4	<2.9	<11	<0.78
1,1,2-Trichloroethane	ppb v/v	<6.08	<9.24	<1.60	<0.400	<6.24	<9.91	<14.2	<1.78	<8.4	<1.7	<7.8	<8.4	<2.9	<11	<0.78
Trichloroethene	ppb v/v	<6.08	<9.24	<1.60	<0.400	<6.24	<9.91	<14.2	<1.78	<8.4	<1.7	**20**	<8.4	<2.9	<11	<0.78
Trichlorofluoromethane	ppb v/v	<6.08	<9.24	<1.60	<0.400	<6.24	<9.91	<14.2	<1.78	<8.4	<1.7	<7.8	<8.4	<2.9	<11	<0.78
1,1,2-Trichloro-1,2,2-trifluoroethane	ppb v/v	<6.08	<9.24	<1.60	<0.400	<6.24	<9.91	<14.2	<1.78	<8.4	<1.7	<7.8	<8.4	<2.9	<11	<0.78
1,2,4-Trimethylbenzene	ppb v/v	**85.9**	**50.3**	**7.35**	**9.05**	**71.3**	**134**	**124**	**83.0**	**75**	**10**	**59**	**60**	**38**	**79**	<0.78
1,3,5-Trimethylbenzene	ppb v/v	**53.6**	**45.5**	**6.18**	**5.81**	**46.2**	**88.6**	**102**	**67.0**	**69**	**9.1**	**43**	**50**	**31**	**77**	**1.0**
Vinyl acetate	ppb v/v	<12.2	<18.5	<3.20	<0.800	<12.5	<19.8	<28.4	<3.56	<8.4	<6.7	<31	<34	<11	<43	<3.1
Vinyl chloride	ppb v/v	<6.08	<9.24	<1.60	<0.400	<6.24	<9.91	<14.2	<1.78	<8.4	<1.7	<7.8	<8.4	<2.9	<11	<0.78
m,p-Xylene	ppb v/v	**322**	**330**	**10.3**	**48.7**	**376**	**501**	**544**	**442**	**440**	**66**	**210**	**280**	**110**	**380**	<0.78
o-Xylene	ppb v/v	**98.4**	**96.4**	**2.54**	**15.6**	**107**	**133**	**158**	**137**	**120**	**55**	**50**	**63**	**25**	**83**	<0.78
Total VOC as Hexane (C6-C12)	ppb v/v	**54,500**	**40,900**	**4,630**	**9,930**	**46,500**	**76,600**	**107,000**	**77,900**	**69,000**	**14,000**	**26,000**	**50,000**	**24,000**	**91,000**	**2,300**

Table 2 : Summary of Laboratory Analytical Results for Discharge Air Samples
Chesapeake Energy Corporation, State M Lease (AP-72)
Lea County, New Mexico

Parameters	Sample ID:	20210608 M-1	20210908 M-1	20211207M-1	20220308 M-1
	Sample Date:	8-Jun-21	9-Sep-21	7-Dec-21	8-Mar-22
Volatile Organic Compounds by TO-15					
Acetone	ppb v/v	**16**	**92**	**8.6**	**30**
Benzene	ppb v/v	<0.71	**71**	<0.75	<1.6
Benzyl chloride	ppb v/v	<0.71	<0.80	<0.75	<1.6
Bromodichloromethane	ppb v/v	<0.71	<0.80	<0.75	<1.6
Bromoform	ppb v/v	<0.71	<0.80	<0.75	<1.6
Bromomethane	ppb v/v	<7.1	<8.0	<7.5	<16
2-Butanone (MEK)	ppb v/v	<2.8	**11**	<3.0	<6.2
Carbon disulfide	ppb v/v	<2.8	**11**	<3.0	<6.2
Carbon tetrachloride	ppb v/v	<0.71	<0.80	<0.75	<1.6
Chlorobenzene	ppb v/v	<0.71	<0.80	<0.75	<1.6
Dibromochloromethane	ppb v/v	<0.71	<0.80	<0.75	<1.6
Chloroethane	ppb v/v	<2.8	<3.2	<3.0	<6.2
Chloroform	ppb v/v	<0.71	<0.80	<0.75	<1.6
Chloromethane	ppb v/v	<7.1	<8.0	<7.5	<16
1,2-Dibromoethane	ppb v/v	<0.71	<0.80	<0.75	<1.6
1,2-Dichlorobenzene	ppb v/v	<0.71	<0.80	<0.75	<1.6
1,3-Dichlorobenzene	ppb v/v	<0.71	<0.80	<0.75	<1.6
1,4-Dichlorobenzene	ppb v/v	<0.71	<0.80	<0.75	<1.6
Dichlorodifluoromethane	ppb v/v	<0.71	<0.80	<0.75	<1.6
1,1-Dichloroethane	ppb v/v	<0.71	<0.80	<0.75	<1.6
1,2-Dichloroethane	ppb v/v	<0.71	<0.80	<0.75	<1.6
1,1-Dichloroethene	ppb v/v	<0.71	<0.80	<0.75	<1.6
cis-1,2-Dichloroethene	ppb v/v	<0.71	<0.80	<0.75	<1.6
trans-1,2-Dichloroethene	ppb v/v	<0.71	<0.80	<0.75	<1.6
1,2-Dichloropropane	ppb v/v	<0.71	<0.80	<0.75	<1.6
cis-1,3-Dichloropropene	ppb v/v	<0.71	<0.80	<0.75	<1.6
trans-1,3-Dichloropropene	ppb v/v	<0.71	<0.80	<0.75	<1.6
1,2-Dichloro-1,1,2,2-tetrafluoroethane	ppb v/v	<0.71	<0.80	<0.75	<1.6
Ethylbenzene	ppb v/v	<0.71	**88**	<0.75	**5.2**
4-Ethyltoluene	ppb v/v	<0.71	**140**	<0.75	**27**
Hexachlorobutadiene	ppb v/v	<2.8	<3.2	<3.0	<6.2
2-Hexanone	ppb v/v	<2.8	<3.2	<3.0	<6.2
Methylene Chloride	ppb v/v	<7.1	<8.0	<7.5	<16
4-Methyl-2-pentanone	ppb v/v	<0.71	<0.80	<0.75	<1.6
Styrene	ppb v/v	<0.71	<0.80	<0.75	<1.6

Table 2 : Summary of Laboratory Analytical Results for Discharge Air Samples
Chesapeake Energy Corporation, State M Lease (AP-72)
Lea County, New Mexico

Parameters	*Sample ID:* / *Sample Date:*	20210608 M-1 8-Jun-21	20210908 M-1 9-Sep-21	20211207M-1 7-Dec-21	20220308 M-1 8-Mar-22
1,1,2,2-Tetrachloroethane	ppb v/v	<0.71	<0.80	<0.75	<1.6
Tetrachloroethene	ppb v/v	<0.71	<0.80	<0.75	<1.6
Toluene	ppb v/v	<0.71	<0.80	<0.75	<1.6
1,2,4-Trichlorobenzene	ppb v/v	<2.8	<3.2	<3.0	<6.2
1,1,1-Trichloroethane	ppb v/v	<0.71	<0.80	<0.75	<1.6
1,1,2-Trichloroethane	ppb v/v	<0.71	<0.80	<0.75	<1.6
Trichloroethene	ppb v/v	<0.71	<0.80	<0.75	<1.6
Trichlorofluoromethane	ppb v/v	<0.71	<0.80	<0.75	<1.6
1,1,2-Trichloro-1,2,2-trifluoroethane	ppb v/v	<0.71	<0.80	<0.75	<1.6
1,2,4-Trimethylbenzene	ppb v/v	<0.71	**100**	**0.80**	**9.7**
1,3,5-Trimethylbenzene	ppb v/v	**1.3**	**110**	**1.3**	**14**
Vinyl acetate	ppb v/v	<2.8	<3.2	<3.0	<6.2
Vinyl chloride	ppb v/v	<0.71	<0.80	<0.75	<1.6
m,p-Xylene	ppb v/v	<0.71	**260**	<0.75	**20**
o-Xylene	ppb v/v	<0.71	**55**	<0.75	**4.0**
Total VOC as Hexane (C6-C12)	ppb v/v	**2,100**	**140,000**	**1,600**	**24,000**

Table 3 : Summary of Liquid Level Measurements
Chesapeake Energy Corporation, State M Lease (AP-72)
Lea County, New Mexico

Monitoring Well	Top of Casing Elevation (AMSL-Feet)	Depth to Liquid Measurement Date	Depth to LNAPL (Feet-TOC)	Depth to Groundwater (Feet-TOC)	LNAPL Thickness (Feet)	Groundwater Elevation (AMSL-Feet)
MW-1R	3888.97	06/03/14	44.57	49.89	5.32	3839.08
	3888.97	09/22/14	44.87	48.91	4.04	3840.06
	3888.97	12/10/14	45.80	46.30	0.50	3842.67
	3888.97	03/11/15	45.12	46.83	1.71	3842.14
	3888.97	06/10/15	45.54	46.31	0.77	3842.66
	3888.97	09/02/15	45.81	47.37	1.56	3841.60
	3888.97	12/09/15	45.22	49.07	3.85	3839.90
	3888.97	03/09/16	45.30	47.18	1.88	3841.79
	3888.97	06/28/16	45.75	47.02	1.27	3841.95
	3888.97	09/21/16	46.10	46.38	0.28	3842.59
	3888.97	12/07/16	46.13	46.88	0.75	3842.09
	3888.97	03/08/17	46.14	46.57	0.43	3842.40
	3888.97	06/06/17	45.82	48.86	3.04	3840.11
	3888.97	09/08/17	46.30	46.63	0.33	3842.34
	3888.97	12/04/17	46.36	46.77	0.41	3842.20
	3888.97	03/05/18	46.47	46.81	0.34	3842.16
	3888.97	06/05/18	46.56	46.93	0.37	3842.04
	3888.97	09/05/18	46.31	48.81	2.50	3840.16
	3888.97	12/11/18	46.34	49.11	2.77	3839.86
	3888.97	03/06/19	46.48	49.20	2.72	3839.77
	3888.97	06/04/19	46.58	48.84	2.26	3840.13
	3888.97	09/04/19	47.88	48.67	0.79	3840.30
	3888.97	12/06/19	47.13	47.43	0.30	3841.54
	3888.97	03/05/20	47.11	47.68	0.57	3841.29
	3888.97	06/06/20	47.21	47.45	0.24	3841.52
	3888.97	09/24/20	47.44	47.60	0.16	3841.37
	3888.97	12/10/20	47.51	47.69	0.18	3841.28
	3888.97	03/02/21	47.48	47.58	0.10	3841.39
	3888.97	06/08/21	47.52	48.30	0.78	3840.67
	3888.97	09/08/21	47.73	48.00	0.27	3840.97
	3888.97	12/07/21	47.87	48.03	0.16	3840.94
	3888.97	03/08/22	47.84	47.98	0.14	3840.99
MW-2	3890.51	06/03/14	--	47.23	--	3843.28
	3890.51	09/22/14	--	46.37	--	3844.14
	3890.51	12/10/14	--	45.91	--	3844.60
	3890.51	03/11/15	--	46.03	--	3844.48
	3890.51	06/10/15	--	46.38	--	3844.13
	3890.51	09/02/15	--	46.44	--	3844.07
	3890.51	12/09/15	--	46.51	--	3844.00
	3890.51	03/09/16	--	46.61	--	3843.90
	3890.51	06/28/16	--	46.70	--	3843.81
	3890.51	09/21/16	--	46.80	--	3843.71
	3890.51	12/07/16	--	46.82	--	3843.69
	3890.51	03/08/17	--	46.88	--	3843.63
	3890.51	06/06/17	--	46.98	--	3843.53
	3890.51	09/08/17	--	47.06	--	3843.45
	3890.51	12/04/17	--	47.11	--	3843.40
	3890.51	03/05/18	--	47.22	--	3843.29

Table 3 : Summary of Liquid Level Measurements
Chesapeake Energy Corporation, State M Lease (AP-72)
Lea County, New Mexico

Monitoring Well	Top of Casing Elevation (AMSL-Feet)	Depth to Liquid Measurement Date	Depth to LNAPL (Feet-TOC)	Depth to Groundwater (Feet-TOC)	LNAPL Thickness (Feet)	Groundwater Elevation (AMSL-Feet)
MW-2 (con't)	3890.51	06/05/18	--	47.31	--	3843.20
	3890.51	09/05/18	--	47.36	--	3843.15
	3890.51	12/11/18	--	47.46	--	3843.05
	3890.51	03/06/19	--	47.51	--	3843.00
	3890.51	06/04/19	--	47.61	--	3842.90
	3890.51	09/04/19	--	47.76	--	3842.75
	3890.51	12/06/19	--	47.81	--	3842.70
	3890.51	03/05/20	--	47.91	--	3842.60
	3890.51	06/06/20	--	49.98	--	3840.53
	3890.51	09/24/20	--	48.14	--	3842.37
	3890.51	12/10/20	--	48.21	--	3842.30
	3890.51	03/02/21	--	48.25	--	3842.26
	3890.51	06/08/21	--	48.31	--	3842.20
	3890.51	09/08/21	--	48.41	--	3842.10
	3890.51	12/07/21	--	48.51	--	3842.00
	3890.51	03/08/22	--	48.58	--	3841.93
MW-3	3889.34	06/03/14	--	46.35	--	3842.99
	3889.34	09/22/14	--	46.49	--	3842.85
	3889.34	12/10/14	--	46.08	--	3843.26
	3889.34	03/11/15	--	46.28	--	3843.06
	3889.34	06/10/15	--	46.51	--	3842.83
	3889.34	09/02/15	--	46.60	--	3842.74
	3889.34	12/09/15	--	46.68	--	3842.66
	3889.34	03/09/16	--	46.72	--	3842.62
	3889.34	06/28/16	--	46.85	--	3842.49
	3889.34	09/21/16	--	46.96	--	3842.38
	3889.34	12/07/16	--	47.02	--	3842.32
	3889.34	03/08/17	--	47.11	--	3842.23
	3889.34	06/06/17	--	47.13	--	3842.21
	3889.34	09/08/17	--	47.23	--	3842.11
	3889.34	12/04/17	--	47.28	--	3842.06
	3889.34	03/05/18	--	47.44	--	3841.90
	3889.34	06/05/18	--	47.48	--	3841.86
	3889.34	09/05/18	--	47.55	--	3841.79
	3889.34	12/11/18	--	47.60	--	3841.74
	3889.34	03/06/19	--	47.68	--	3841.66
	3889.34	06/04/19	--	47.80	--	3841.54
	3889.34	09/04/19	--	47.95	--	3841.39
	3889.34	12/06/19	--	48.00	--	3841.34
	3889.34	03/05/20	--	48.03	--	3841.31
	3889.34	06/06/20	--	48.16	--	3841.18
	3889.34	09/24/20	--	48.34	--	3841.00
	3889.34	12/10/20	--	48.42	--	3840.92
	3889.34	03/02/21	--	48.42	--	3840.92
	3889.34	06/08/21	--	48.50	--	3840.84
	3889.34	09/08/21	--	48.60	--	3840.74
	3889.34	12/07/21	--	48.71	--	3840.63
	3889.34	03/08/22	--	48.74	--	3840.60

Table 3 : Summary of Liquid Level Measurements
Chesapeake Energy Corporation, State M Lease (AP-72)
Lea County, New Mexico

Monitoring Well	Top of Casing Elevation (AMSL-Feet)	Depth to Liquid Measurement Date	Depth to LNAPL (Feet-TOC)	Depth to Groundwater (Feet-TOC)	LNAPL Thickness (Feet)	Groundwater Elevation (AMSL-Feet)
MW-4	3888.90	06/03/14	--	46.38	--	3842.52
	3888.90	09/22/14	--	46.50	--	3842.40
	3888.90	12/10/14	--	46.14	--	3842.76
	3888.90	03/11/15	--	46.35	--	3842.55
	3888.90	06/10/15	--	46.49	--	3842.41
	3888.90	09/02/15	--	46.57	--	3842.33
	3888.90	12/09/15	--	46.68	--	3842.22
	3888.90	03/09/16	--	46.75	--	3842.15
	3888.90	06/28/16	--	46.87	--	3842.03
	3888.90	09/21/16	--	46.94	--	3841.96
	3888.90	12/07/16	--	47.03	--	3841.87
	3888.90	03/08/17	--	47.08	--	3841.82
	3888.90	06/06/17	--	47.15	--	3841.75
	3888.90	09/08/17	--	47.24	--	3841.66
	3888.90	12/04/17	--	47.29	--	3841.61
	3888.90	03/05/18	--	47.38	--	3841.52
	3888.90	06/05/18	--	47.50	--	3841.40
	3888.90	09/05/18	--	47.53	--	3841.37
	3888.90	12/11/18	--	47.62	--	3841.28
	3888.90	03/06/19	--	47.72	--	3841.18
	3888.90	06/04/19	--	47.80	--	3841.10
	3888.90	09/04/19	--	47.98	--	3840.92
	3888.90	12/06/19	--	48.00	--	3840.90
	3888.90	03/05/20	--	48.07	--	3840.83
	3888.90	06/06/20	--	48.20	--	3840.70
	3888.90	09/24/20	--	48.32	--	3840.58
	3888.90	12/10/20	--	48.39	--	3840.51
	3888.90	03/02/21	--	48.44	--	3840.46
	3888.90	06/08/21	--	48.55	--	3840.35
	3888.90	09/08/21	--	48.60	--	3840.30
	3888.90	12/07/21	--	48.72	--	3840.18
	3888.90	03/08/22	--	48.80	--	3840.10
MW-5	3890.41	06/03/14	--	46.56	--	3843.85
	3890.41	09/22/14	--	46.70	--	3843.71
	3890.41	12/10/14	--	46.29	--	3844.12
	3890.41	03/11/15	--	46.44	--	3843.97
	3890.41	06/10/15	--	46.69	--	3843.72
	3890.41	09/02/15	--	46.79	--	3843.62
	3890.41	12/09/15	--	46.85	--	3843.56
	3890.41	03/09/16	--	46.90	--	3843.51
	3890.41	06/28/16	--	47.08	--	3843.33
	3890.41	09/21/16	--	47.13	--	3843.28
	3890.41	12/07/16	--	47.14	--	3843.27
	3890.41	03/08/17	--	47.23	--	3843.18
	3890.41	06/06/17	--	47.32	--	3843.09
	3890.41	09/08/17	--	47.40	--	3843.01
	3890.41	12/04/17	--	47.27	--	3843.14
	3890.41	03/05/18	--	47.54	--	3842.87

Table 3 : Summary of Liquid Level Measurements
Chesapeake Energy Corporation, State M Lease (AP-72)
Lea County, New Mexico

Monitoring Well	Top of Casing Elevation (AMSL-Feet)	Depth to Liquid Measurement Date	Depth to LNAPL (Feet-TOC)	Depth to Groundwater (Feet-TOC)	LNAPL Thickness (Feet)	Groundwater Elevation (AMSL-Feet)
MW-5 (con't)	3890.41	06/05/18	--	47.66	--	3842.75
	3890.41	09/05/18	--	47.72	--	3842.69
	3890.41	12/11/18	--	47.80	--	3842.61
	3890.41	03/06/19	--	47.85	--	3842.56
	3890.41	06/04/19	--	47.98	--	3842.43
	3890.41	09/04/19	--	48.15	--	3842.26
	3890.41	12/06/19	--	48.17	--	3842.24
	3890.41	03/05/20	--	48.23	--	3842.18
	3890.41	06/06/20	--	48.33	--	3842.08
	3890.41	09/24/20	--	48.51	--	3841.90
	3890.41	12/10/20	--	48.60	--	3841.81
	3890.41	03/02/21	--	48.60	--	3841.81
	3890.41	06/08/21	--	48.66	--	3841.75
	3890.41	09/08/21	--	48.76	--	3841.65
	3890.41	12/07/21	--	48.90	--	3841.51
	3890.41	03/08/22	--	48.90	--	3841.51
MW-6	3888.25	06/03/14	--	46.25	--	3842.00
	3888.25	09/22/14	--	46.39	--	3841.86
	3888.25	12/10/14	--	46.09	--	3842.16
	3888.25	03/11/15	--	46.23	--	3842.02
	3888.25	06/10/15	--	46.32	--	3841.93
	3888.25	09/02/15	--	46.48	--	3841.77
	3888.25	12/09/15	--	46.57	--	3841.68
	3888.25	03/09/16	--	46.62	--	3841.63
	3888.25	06/28/16	--	46.74	--	3841.51
	3888.25	09/21/16	--	46.81	--	3841.44
	3888.25	12/07/16	--	46.90	--	3841.35
	3888.25	03/08/17	--	46.93	--	3841.32
	3888.25	06/06/17	--	47.08	--	3841.17
	3888.25	09/08/17	--	47.12	--	3841.13
	3888.25	12/04/17	--	47.21	--	3841.04
	3888.25	03/05/18	--	47.30	--	3840.95
	3888.25	06/05/18	--	47.36	--	3840.89
	3888.25	09/05/18	--	47.43	--	3840.82
	3888.25	12/11/18	--	47.52	--	3840.73
	3888.25	03/06/19	--	47.60	--	3840.65
	3888.25	06/04/19	--	47.71	--	3840.54
	3888.25	09/04/19	--	47.81	--	3840.44
	3888.25	12/06/19	--	47.90	--	3840.35
	3888.25	03/05/20	--	47.98	--	3840.27
	3888.25	06/06/20	--	48.08	--	3840.17
	3888.25	09/24/20	--	48.23	--	3840.02
	3888.25	12/10/20	--	48.28	--	3839.97
	3888.25	03/02/21	--	48.33	--	3839.92
	3888.25	06/08/21	--	48.48	--	3839.77
	3888.25	09/08/21	--	48.50	--	3839.75
	3888.25	12/07/21	--	48.60	--	3839.65
	3888.25	03/08/22	--	48.67	--	3839.58

Table 3 : Summary of Liquid Level Measurements
Chesapeake Energy Corporation, State M Lease (AP-72)
Lea County, New Mexico

Monitoring Well	Top of Casing Elevation (AMSL-Feet)	Depth to Liquid Measurement Date	Depth to LNAPL (Feet-TOC)	Depth to Groundwater (Feet-TOC)	LNAPL Thickness (Feet)	Groundwater Elevation (AMSL-Feet)
MW-7	3889.23	06/03/14	--	45.94	--	3843.29
	3889.23	09/22/14	--	46.08	--	3843.15
	3889.23	12/10/14	--	45.70	--	3843.53
	3889.23	03/11/15	--	45.36	--	3843.87
	3889.23	06/10/15	--	46.08	--	3843.15
	3889.23	09/02/15	--	46.14	--	3843.09
	3889.23	12/09/15	--	46.24	--	3842.99
	3889.23	03/09/16	--	46.30	--	3842.93
	3889.23	06/28/16	--	46.42	--	3842.81
	3889.23	09/21/16	--	46.52	--	3842.71
	3889.23	12/07/16	--	46.59	--	3842.64
	3889.23	03/08/17	--	46.65	--	3842.58
	3889.23	06/06/17	--	46.73	--	3842.50
	3889.23	09/08/17	--	46.80	--	3842.43
	3889.23	12/04/17	--	46.88	--	3842.35
	3889.23	03/05/18	--	46.96	--	3842.27
	3889.23	06/05/18	--	47.04	--	3842.19
	3889.23	09/05/18	--	47.11	--	3842.12
	3889.23	12/11/18	--	47.20	--	3842.03
	3889.23	03/06/19	--	47.27	--	3841.96
	3889.23	06/04/19	--	47.37	--	3841.86
	3889.23	09/04/19	--	47.50	--	3841.73
	3889.23	12/06/19	--	47.58	--	3841.65
	3889.23	03/05/20	--	47.66	--	3841.57
	3889.23	06/06/20	--	47.72	--	3841.51
	3889.23	09/24/20	--	47.90	--	3841.33
	3889.23	12/10/20	--	47.96	--	3841.27
	3889.23	03/02/21	--	48.02	--	3841.21
	3889.23	06/08/21	--	48.06	--	3841.17
	3889.23	09/08/21	--	48.14	--	3841.09
	3889.23	12/07/21	--	48.26	--	3840.97
	3889.23	03/08/22	--	48.33	--	3840.90
MW-8	3887.06	06/03/14	--	44.94	--	3842.12
	3887.06	09/22/14	--	45.11	--	3841.95
	3887.06	12/10/14	--	44.79	--	3842.27
	3887.06	03/11/15	--	44.94	--	3842.12
	3887.06	06/10/15	--	45.22	--	3841.84
	3887.06	09/02/15	--	45.21	--	3841.85
	3887.06	12/09/15	--	45.29	--	3841.77
	3887.06	03/09/16	--	45.35	--	3841.71
	3887.06	06/28/16	--	45.56	--	3841.50
	3887.06	09/21/16	--	45.67	--	3841.39
	3887.06	12/07/16	--	45.64	--	3841.42
	3887.06	03/08/17	--	45.68	--	3841.38
	3887.06	06/06/17	--	45.78	--	3841.28
	3887.06	09/08/17	--	45.82	--	3841.24
	3887.06	12/04/17	--	45.91	--	3841.15
	3887.06	03/05/18	--	46.03	--	3841.03

Table 3 : Summary of Liquid Level Measurements
Chesapeake Energy Corporation, State M Lease (AP-72)
Lea County, New Mexico

Monitoring Well	Top of Casing Elevation (AMSL-Feet)	Depth to Liquid Measurement Date	Depth to LNAPL (Feet-TOC)	Depth to Groundwater (Feet-TOC)	LNAPL Thickness (Feet)	Groundwater Elevation (AMSL-Feet)
MW-8 (con't)	3887.06	06/05/18	--	46.12	--	3840.94
	3887.06	09/05/18	--	46.16	--	3840.90
	3887.06	12/11/18	--	46.26	--	3840.80
	3887.06	03/06/19	--	46.33	--	3840.73
	3887.06	06/04/19	--	46.42	--	3840.64
	3887.06	09/04/19	--	46.53	--	3840.53
	3887.06	12/06/19	--	46.62	--	3840.44
	3887.06	03/05/20	--	46.71	--	3840.35
	3887.06	06/06/20	--	46.79	--	3840.27
	3887.06	09/24/20	--	46.95	--	3840.11
	3887.06	12/10/20	--	47.02	--	3840.04
	3887.06	03/02/21	--	47.06	--	3840.00
	3887.06	06/08/21	--	47.21	--	3839.85
	3887.06	09/08/21	--	47.25	--	3839.81
	3887.06	12/07/21	--	47.36	--	3839.70
	3887.06	03/08/22	--	47.41	--	3839.65

Notes:
1. TOC : Measured from top of casing.
2. LNAPL : Light non aqueous phase liquid.
3. -- : Denotes Not Measured.
4. AMSL : Denotes above mean sea level (AMSL)

Table 4 : Summary of Laboratory Analytical Results for Groundwater Samples
Chesapeake Energy Corporation, State M Lease (AP-72)
Lea County, New Mexico

	Chloride (mg/L)															
	June 2014	Sept. 2014	Dec. 2014	March 2015	June 2015	Sept. 2015	Dec. 2015	March 2016	June 2016	Sept. 2016	Dec. 2016	March 2017	June 2017	Sept. 2017	Dec. 2017	March 2018
MW-1R	---	51.4	116	39.0	24.6	21.6	23.5	34.8	24.9	28.5	44.8	32.0	28.6	29.3	29.0	33.7
MW-2	17.7	17.4	18.3	16.6	16.8	16.6	15.4 *	13.5	18.9	17.6	18.2	15.0	15.9	15.2	16.2	16.6
MW-3	59.7	59.7	58.9	57.0	57.1	56.3	50.5 *	49.3	51.5	52.0	55.1	50.0	53.7	49.5	58.1	64.3
MW-4	**586**	**534**	**535**	**543**	**556**	**567**	**546 ***	**525**	**527**	**569**	**605**	**500**	**493**	**465**	**492**	**484**
MW-5	28.6	27.3	27.9	26.1	26.2	25.8	22.4 *	22.4	26.1	26.2	27.8	23.1	24.7	20.4	25.4	25.9
MW-6	**282**	**263**	**268**	**261**	**253**	**277**	197 *	150	128	128	125	94.4	86.3	79.3	71.8	64.7
MW-7	42.7	29.6	36.0	39.7	36.2	35.2	28.8 *	27.7	36.0	38.2	39.6	24.2	23.8	24.0	27.7	31.6
MW-8	**409**	**442**	**463**	**485**	**558**	**327**	**499**	**504**	**539**	**490**	**768**	**489**	**531**	**573**	**570**	**587**

Notes:

1. mg/L : milligrams per liter.
2. < : Analyte not detected at the laboratory reporting limit.
3. All analyses performed by TestAmerica Laboratories in Nashville, Tennessee.
4. Cells shaded in blue indicate results that are above the laboratory reporting limit.
5. Cells with text **bolded** indicate results that exceed the New Mexico Administrative Code 20.6.2.3103, Standards for Groundwater: chloride (250.0 mg/L).
6. --- : Analysis not performed.
7. * : Analysis performed outside of holding time.
8. December 2016 results for MW-1R and MW-8 were confirmed by laboratory. reanalysis.
9. Sample MW-1R was collected in December 2017 under sample ID MW-R1 as shown on the COC and in the field book.
10. Beginning with the September 2019 sampling event, Eurofins TestAmerica (Edison, NJ) became the Project Laboratory.

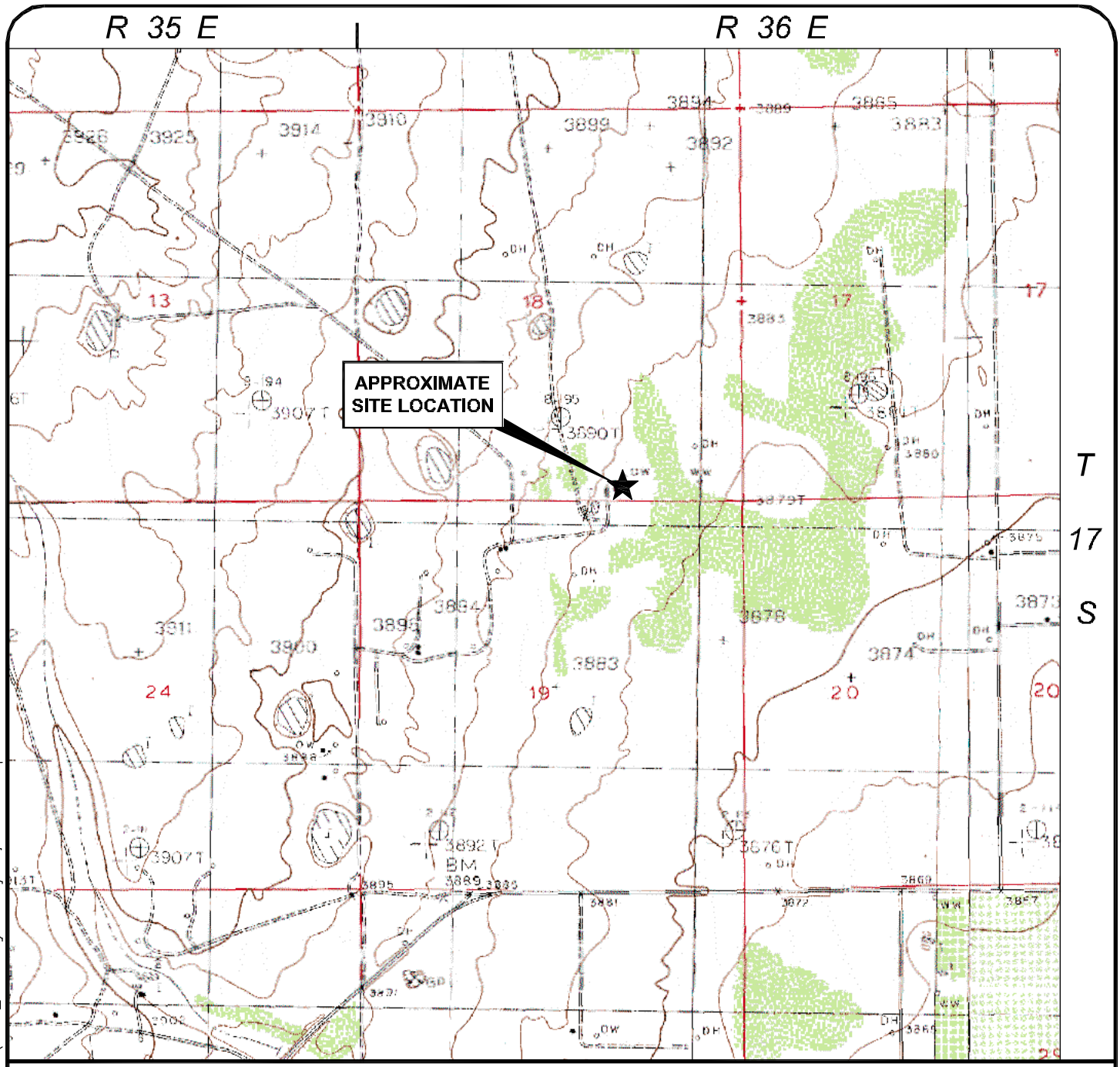
Table 4 : Summary of Laboratory Analytical Results for Groundwater Samples
Chesapeake Energy Corporation, State M Lease (AP-72)
Lea County, New Mexico

	Chloride (mg/L)															
	June 2018	Sept. 2018	Dec. 2018	March 2019	June 2019	Sept. 2019	Dec. 2019	March 2020	June 2020	Sept. 2020	Dec. 2020	March 2021	June 2021	Sept. 2021	Dec. 2021	March 2022
MW-1R	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-3	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-4	**413**	**387**	**373**	**617**	**392**	**404**	**421**	**443**	**429**	**430**	**475**	**437**	**528**	**438**	**404**	**387**
MW-5	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-6	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-7	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
MW-8	**539**	**398**	**474**	**308**	**283**	223	198	118	97.4	88.8	73.5	63.9	92.5	65.4	56.2	29.6

Notes:

1. mg/L : milligrams per liter.
2. < : Analyte not detected at the laboratory reporting limit.
3. All analyses performed by TestAmerica Laboratories in Nashville, Tennessee.
4. Cells shaded in blue indicate results that are above the laboratory reporting limit.
5. Cells with text **bolded** indicate results that exceed the New Mexico Administrative Code 20.6.2.3103, Standards for Groundwater: chloride (250.0 mg/L).
6. --- : Analysis not performed.
7. * : Analysis performed outside of holding time.
8. December 2016 results for MW-1R and MW-8 were confirmed by laboratory. reanalysis.
9. Sample MW-1R was collected in December 2017 under sample ID MW-R1 as shown on the COC and in the field book.
10. Beginning with the September 2019 sampling event, Eurofins TestAmerica (Edison, NJ) became the Project Laboratory.

FIGURES



SOURCE: U.S.G.S. 7.5 MINUTE TOPOGRAPHIC QUADRANGLES
LOVINGTON SW, NEW MEXICO - PROVISIONAL EDITION 1985 AND
LOVINGTON SE, NEW MEXICO - PROVISIONAL EDITION 1985

SCALE
0 1/2 1 MILE

NEW MEXICO

N

CLIENT: CHESAPEAKE ENERGY CORPORATION, LLC OKLAHOMA CITY, OKLAHOMA	FIGURE TITLE: *SITE LOCATION AND TOPOGRAPHIC FEATURES*
LOCATION: STATE M LEASE (AP-72) SEC. 18, T17S, R36E, LEA COUNTY, NEW MEXICO	DOCUMENT TITLE: EIGHTH ANNUAL GROUNDWATER MONITORING REPORT

Equus Environmental, LLC
1323 East 71st Street, Suite 200
Tulsa, Oklahoma 74136-5065
918.921.5331
www.EQUUSENV.com

		DESIGNED BY	MNM
DATE	5/6/2022	APPROVED BY	MNM
SCALE	AS SHOWN	DRAWN BY	SKG
PROJECT NUMBER		FIGURE NUMBER	
CHKSTATM:H21001		1	

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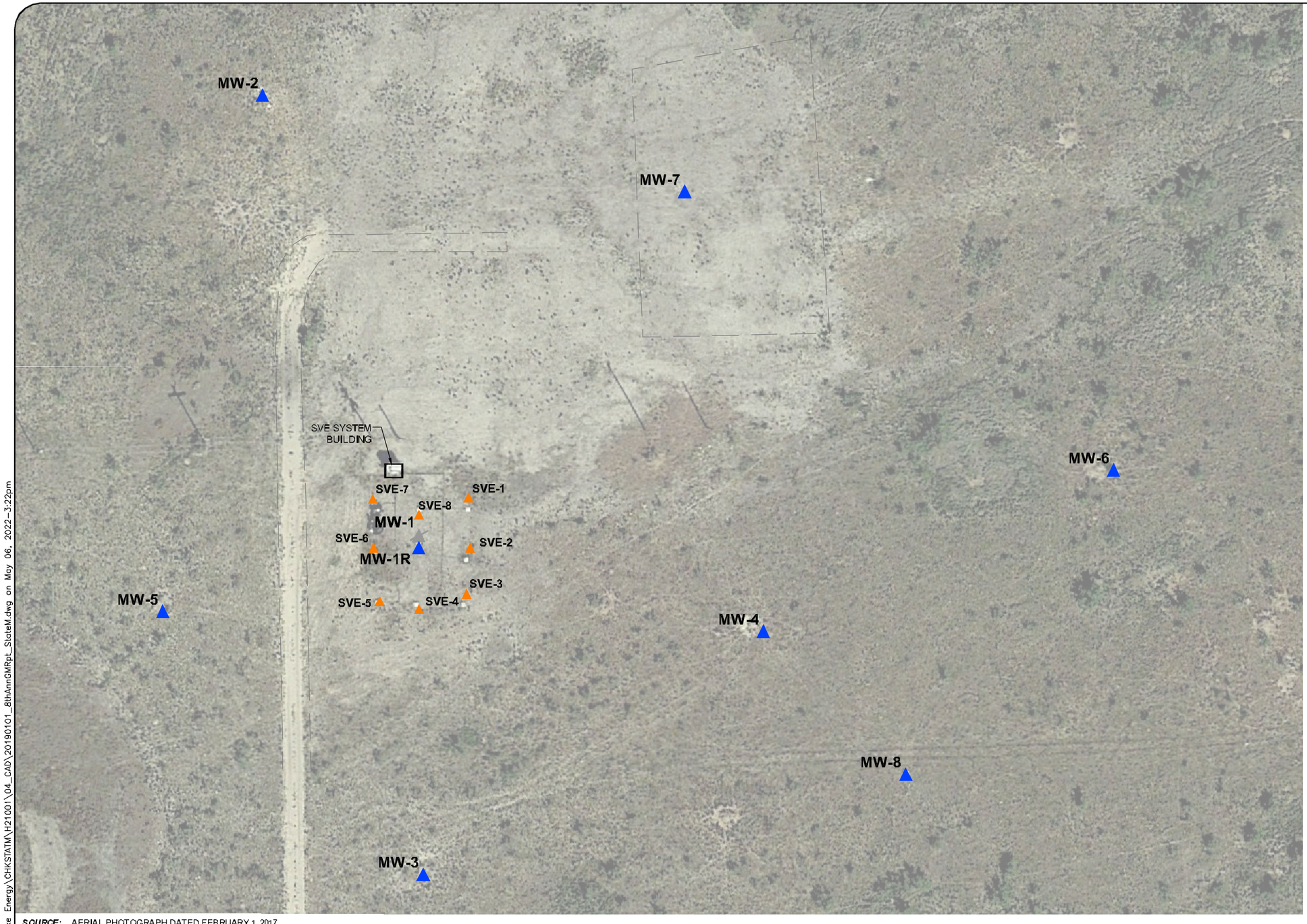

LEGEND

- MW-5 — LOCATION OF MONITORING WELL
- MW-1 — LOCATION OF PLUGGED AND ABANDONED MONITORING WELL
- SVE-1 — LOCATION OF SVE SYSTEM WELL

N

30 0 30 60
SCALE FEET

SOURCE: AERIAL PHOTOGRAPH DATED FEBRUARY 1, 2017, GOOGLE EARTH PRO SCREEN CAPTURE

H:\PROJECTS\Chesapeake Energy\CHKSTATM\H21001\04_CAD\20190101_8thAnnGMRpt_StateM.dwg on May 06, 2022 - 3:22pm

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DOCUMENT TITLE: EIGHTH ANNUAL GROUNDWATER MONITORING REPORT

FIGURE TITLE: *SITE BASE MAP*

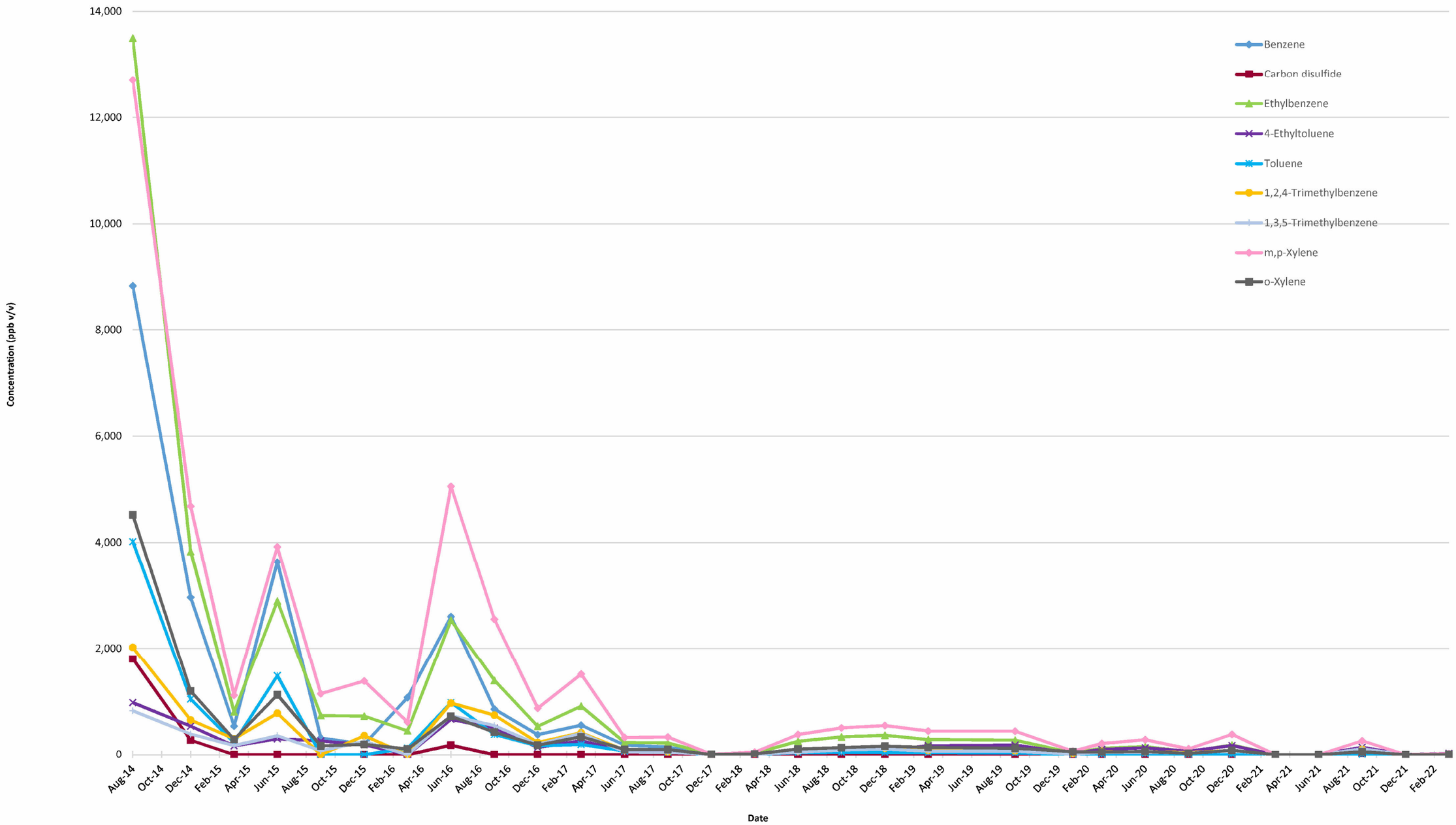
CLIENT: CHESAPEAKE ENERGY CORPORATION, OKLAHOMA CITY, OKLAHOMA

LOCATION: STATE M LEASE (AP-72), SEC. 18, T17S, R36E, LEA COUNTY, NEW MEXICO

DESIGNED BY	MNM		
APPROVED BY	MNM	SCALE	1"= 60'
DRAWN BY	SKG	DATE	5/6/2022

PROJECT NUMBER	FIGURE NUMBER
CHKSTATM:H21001	2

Total Discharge VOC Concentration



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DOCUMENT TITLE: EIGHTH ANNUAL GROUNDWATER MONITORING REPORT

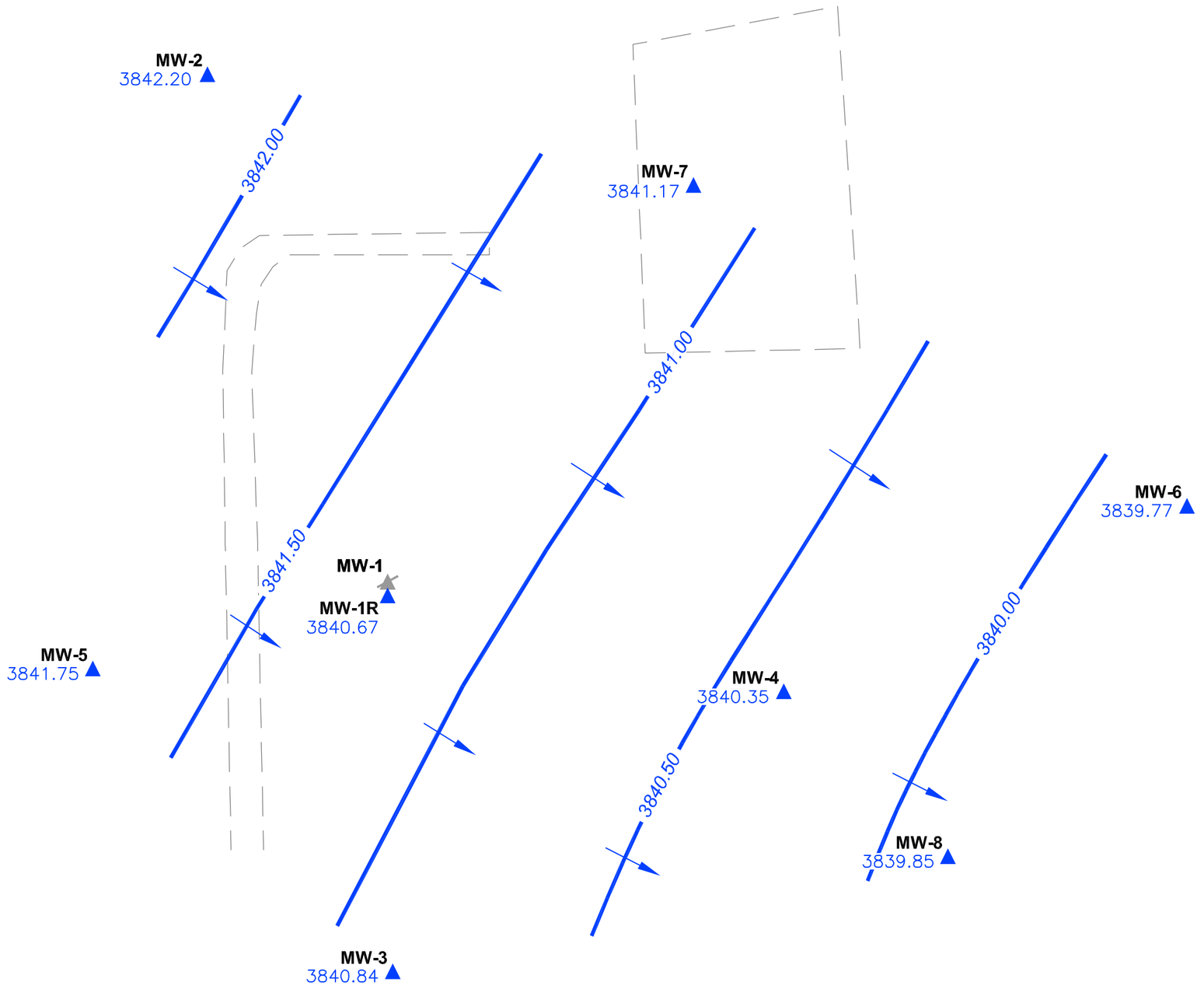
FIGURE TITLE: ***SVE SYSTEM VOC DISCHARGE CONCENTRATIONS VERSUS TIME***

CLIENT: CHESAPEAKE ENERGY CORPORATION, OKLAHOMA CITY, OKLAHOMA

LOCATION: STATE M LEASE (AP-72), SEC. 18, T17S, R36E, LEA COUNTY, NEW MEXICO

DESIGNED BY	JEC		
APPROVED BY	MNM	SCALE	NTS
DRAWN BY	SKG	DATE	4/9/2021

PROJECT NUMBER	FIGURE NUMBER
CHKSTATM:H21001	3



LEGEND

- **MW-5** 3841.75 — LOCATION OF MONITORING WELL AND GROUNDWATER ELEVATION 6/8/2021, FEET AMSL
- MW-1 — LOCATION OF PLUGGED AND ABANDONED MONITORING WELL
- 3842.00 — GROUNDWATER POTENTIOMETRIC SURFACE

N

30 0 30 60
SCALE FEET

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DOCUMENT TITLE: EIGHTH ANNUAL GROUNDWATER MONITORING REPORT

FIGURE TITLE: ***GROUNDWATER POTENTIOMETRIC SURFACE, JUNE 8, 2021***

CLIENT: CHESAPEAKE ENERGY CORPORATION
OKLAHOMA CITY, OKLAHOMA

LOCATION: STATE M LEASE (AP-72)
SEC. 18, T17S, R36E, LEA COUNTY, NEW MEXICO

DESIGNED BY	MNM		
APPROVED BY	MNM	SCALE	1"= 60'
DRAWN BY	SKG	DATE	5/6/2022

PROJECT NUMBER	FIGURE NUMBER
CHKSTATM:H21001	4

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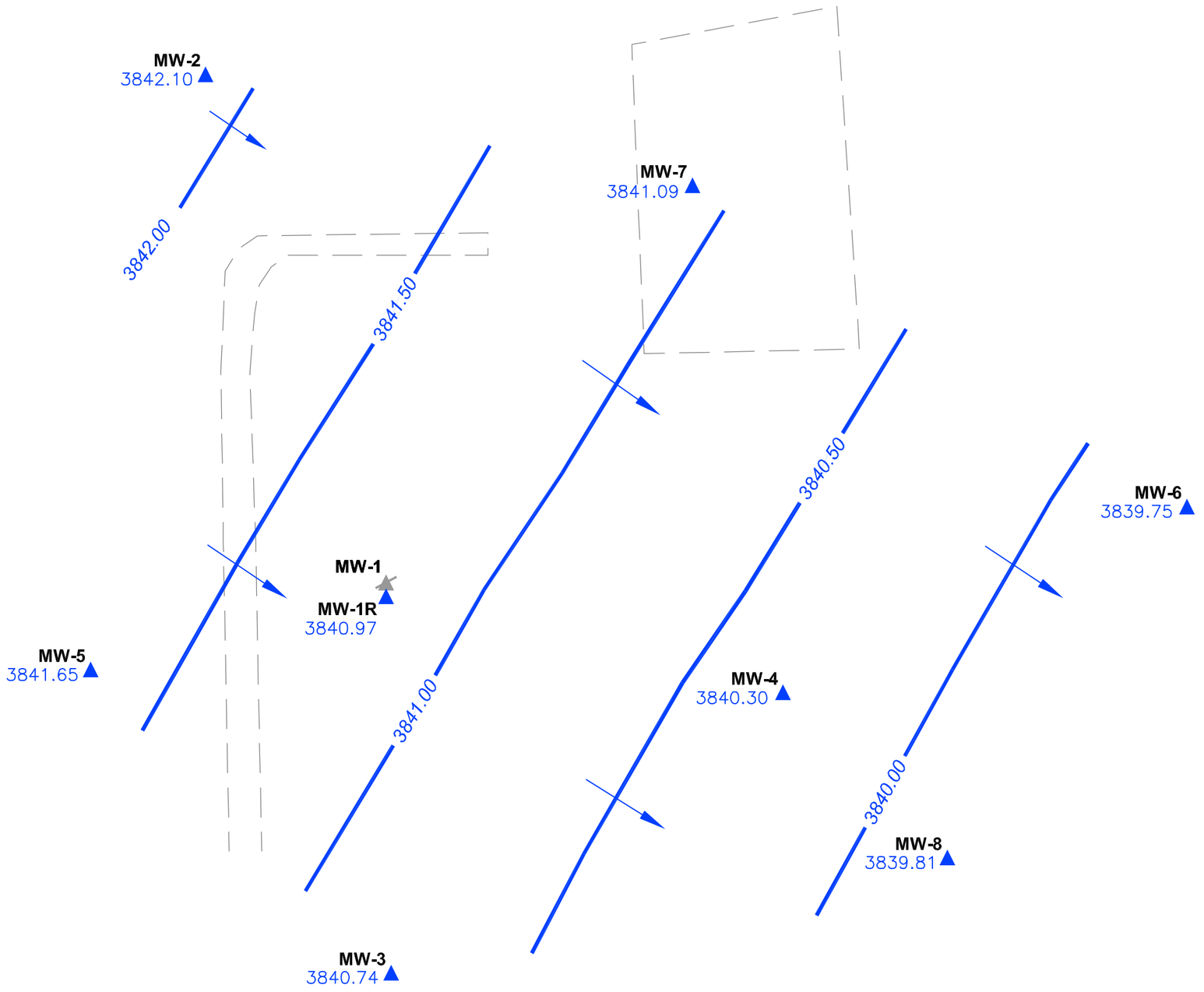

LEGEND

- **MW-5** 3841.65 — LOCATION OF MONITORING WELL AND GROUNDWATER ELEVATION 9/8/2021, FEET AMSL
- MW-1 — LOCATION OF PLUGGED AND ABANDONED MONITORING WELL
- 3842.00 — GROUNDWATER POTENTIOMETRIC SURFACE

N

30 0 30 60
SCALE FEET

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DOCUMENT TITLE: EIGHTH ANNUAL GROUNDWATER MONITORING REPORT

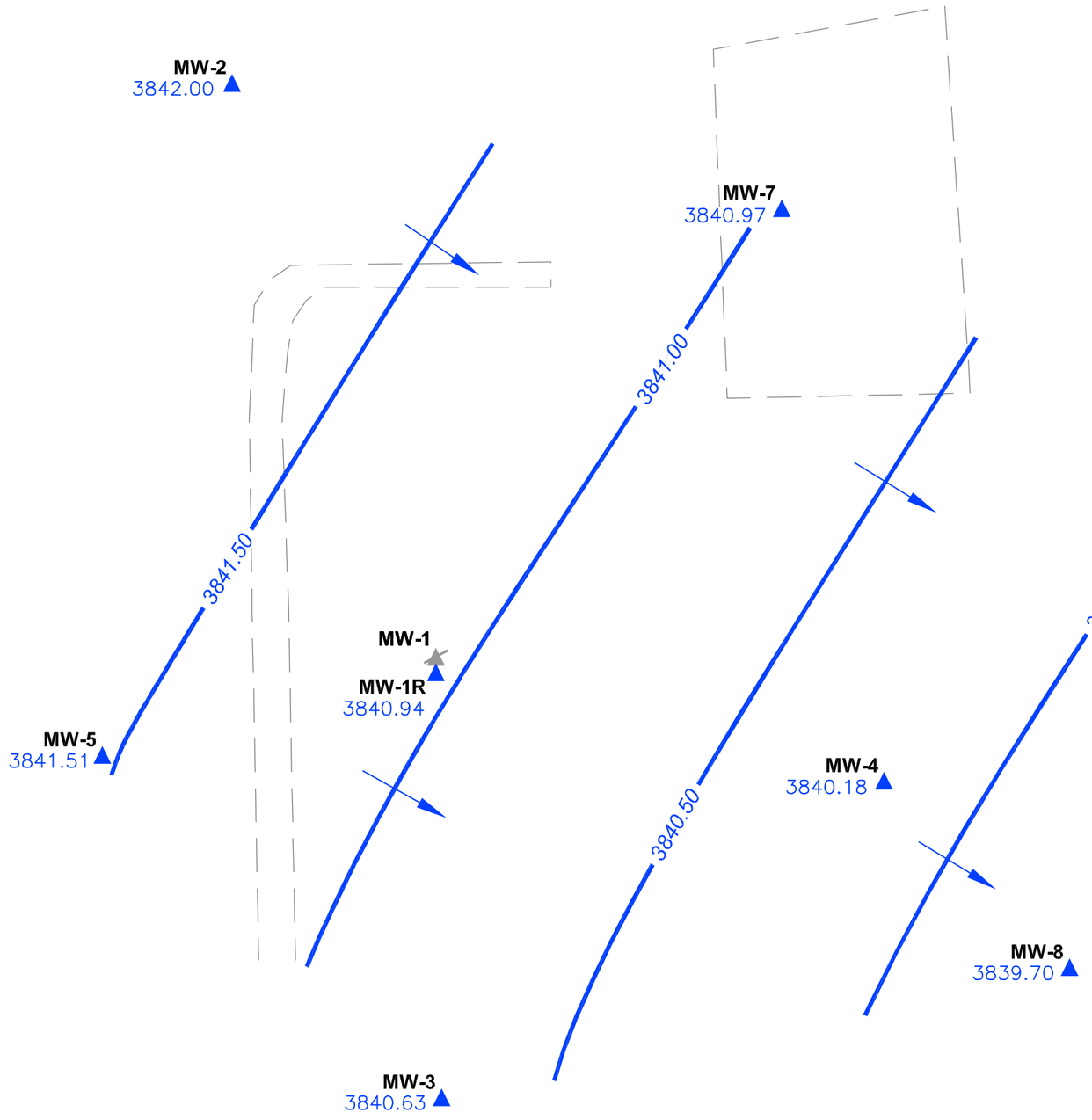
FIGURE TITLE: ***GROUNDWATER POTENTIOMETRIC SURFACE, SEPTEMBER 8, 2021***

CLIENT: CHESAPEAKE ENERGY CORPORATION, OKLAHOMA CITY, OKLAHOMA

LOCATION: STATE M LEASE (AP-72), SEC. 18, T17S, R36E, LEA COUNTY, NEW MEXICO

DESIGNED BY	MNM		
APPROVED BY	MNM	SCALE	1"= 60'
DRAWN BY	SKG	DATE	5/6/2022

PROJECT NUMBER	FIGURE NUMBER
CHKSTATM:H21001	5



LEGEND

- **MW-5** 3841.51 — LOCATION OF MONITORING WELL AND GROUNDWATER ELEVATION 12/7/2021, FEET AMSL
- MW-1 — LOCATION OF PLUGGED AND ABANDONED MONITORING WELL
- 3842.00 — GROUNDWATER POTENTIOMETRIC SURFACE

N

30 0 30 60
SCALE FEET

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www.EQUUSENV.com

DOCUMENT TITLE: EIGHTH ANNUAL GROUNDWATER MONITORING REPORT

FIGURE TITLE: ***GROUNDWATER POTENTIOMETRIC SURFACE, DECEMBER 7, 2021***

CLIENT: CHESAPEAKE ENERGY CORPORATION, OKLAHOMA CITY, OKLAHOMA

LOCATION: STATE M LEASE (AP-72), SEC. 18, T17S, R36E, LEA COUNTY, NEW MEXICO

				PROJECT NUMBER	FIGURE NUMBER
DESIGNED BY	MNM			CHKSTATM:H21001	6
APPROVED BY	MNM	SCALE	1"= 60'		
DRAWN BY	SKG	DATE	5/6/2022		

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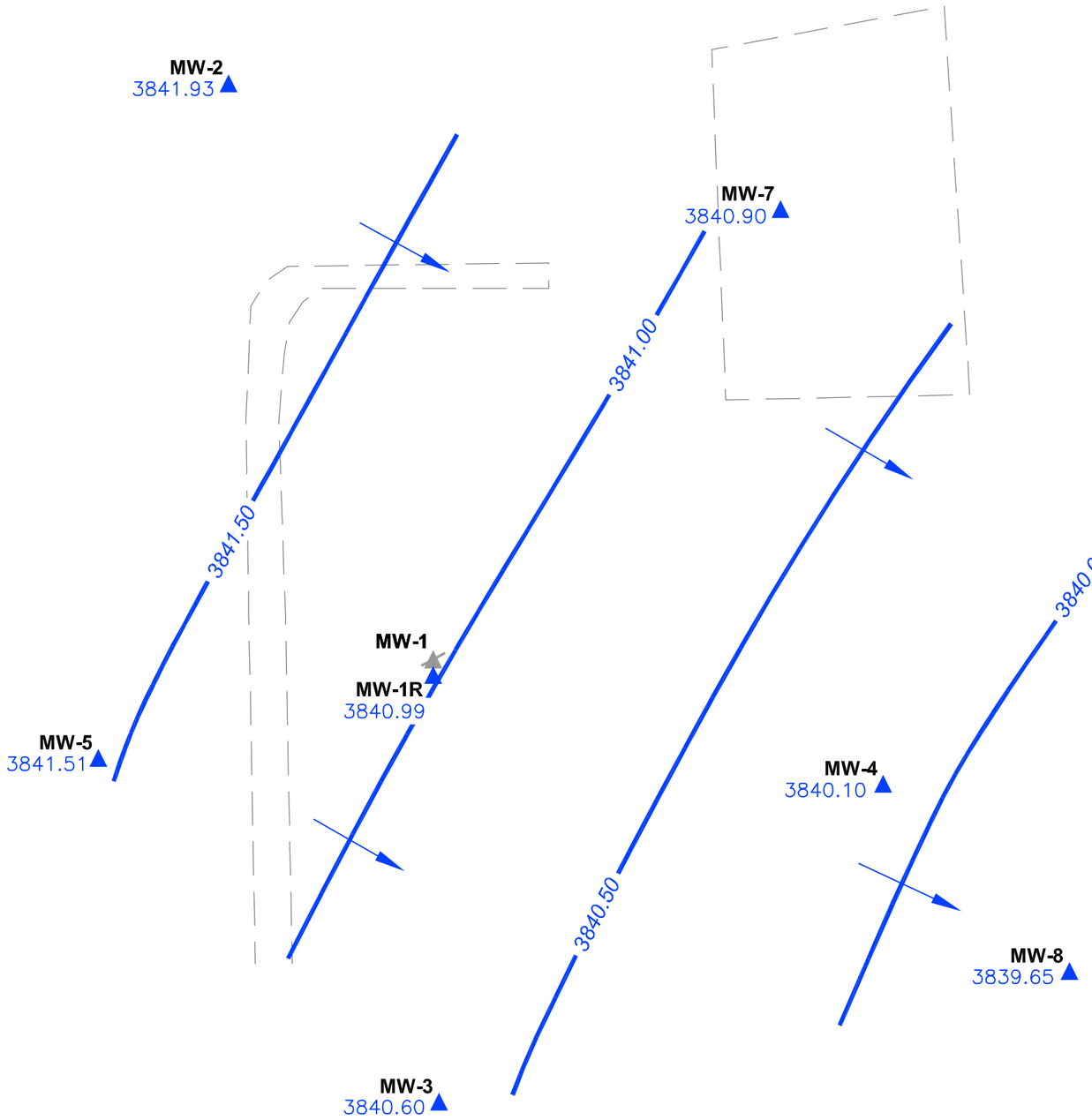

LEGEND

- **MW-5** 3841.51 — LOCATION OF MONITORING WELL AND GROUNDWATER ELEVATION 3/8/2022, FEET AMSL
- MW-1 — LOCATION OF PLUGGED AND ABANDONED MONITORING WELL
- 3842.00 — GROUNDWATER POTENTIOMETRIC SURFACE

N

30 0 30 60
SCALE FEET

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DOCUMENT TITLE: EIGHTH ANNUAL GROUNDWATER MONITORING REPORT

FIGURE TITLE: ***GROUNDWATER POTENTIOMETRIC SURFACE, MARCH 8, 2022***

CLIENT: CHESAPEAKE ENERGY CORPORATION, OKLAHOMA CITY, OKLAHOMA

LOCATION: STATE M LEASE (AP-72), SEC. 18, T17S, R36E, LEA COUNTY, NEW MEXICO

DESIGNED BY	MNM		
APPROVED BY	MNM	SCALE	1"= 60'
DRAWN BY	SKG	DATE	5/6/2022

PROJECT NUMBER	FIGURE NUMBER
CHKSTATM:H21001	7

MW-2
16.6
(3/5/2018)

MW-7
31.6
(3/5/2018)

MW-1

MW-1R
33.7
(3/5/2018)

MW-5
25.9
(3/5/2018)

250

MW-4
387

MW-6
64.7
(3/5/2018)

MW-8
29.6

MW-3
64.3
(3/5/2018)

LEGEND

MW-4
387
LOCATION OF MONITORING WELL AND CONCENTRATION OF CHLORIDE IN GROUNDWATER 3/8/2022, mg/L

MW-1
LOCATION OF PLUGGED AND ABANDONED MONITORING WELL

250
CONTOUR LINE SHOWING EQUAL CONCENTRATIONS OF CHLORIDE IN GROUNDWATER, mg/L.
(DASHED WHERE INFERRED)

N

30 0 30 60
SCALE FEET

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DOCUMENT TITLE
EIGHTH ANNUAL GROUNDWATER MONITORING REPORT

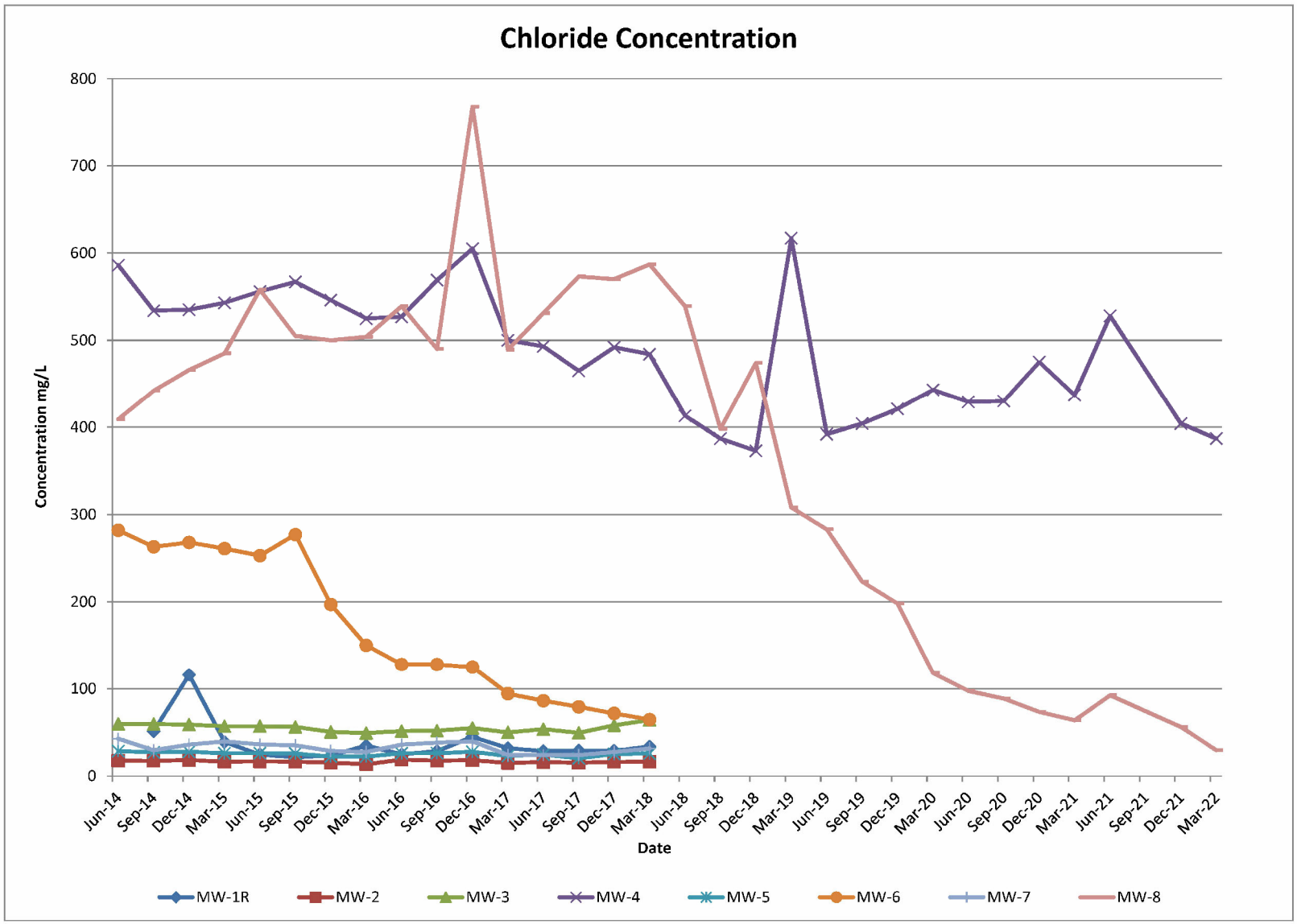
FIGURE TITLE
ISOPLETH OF CHLORIDE CONCENTRATIONS IN GROUNDWATER, MARCH 8, 2022

CLIENT CHESAPEAKE ENERGY CORPORATION
OKLAHOMA CITY, OKLAHOMA

LOCATION STATE M LEASE (AP-72)
SEC. 18, T17S, R36E, LEA COUNTY, NEW MEXICO

DESIGNED BY	MNM		
APPROVED BY	MNM	SCALE	1"= 60'
DRAWN BY	SKG	DATE	5/6/2022

PROJECT NUMBER	FIGURE NUMBER
CHKSTATM:H21001	8



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DOCUMENT TITLE
EIGHTH ANNUAL GROUNDWATER MONITORING REPORT

FIGURE TITLE
CHLORIDE CONCENTRATION TREND GRAPHS

CLIENT CHESAPEAKE ENERGY CORPORATION
OKLAHOMA CITY, OKLAHOMA

LOCATION STATE M LEASE (AP-72)
SEC. 18, T17S, R36E, LEA COUNTY, NEW MEXICO

DESIGNED BY	CNA		
APPROVED BY	MNM	SCALE	NTS
DRAWN BY	SKG	DATE	5/6/2022

PROJECT NUMBER	FIGURE NUMBER
CHKSTATM:H21001	9

APPENDICES

A Stage 2 Abatement Plan

B NMOCD Approval of Stage 2 Abatement Plan

C Laboratory Analytical Reports and Chain-of-Custody Documentation

APPENDIX A

STAGE 2 ABATEMENT PLAN

ARCADIS
Infrastructure · Water · Environment · Buildings

ARCADIS U.S., Inc.
1004 North Big Spring Street
Suite 300
Midland
Texas 79701
Tel 432 687 5400
Fax 432 687 5401
www.arcadis-us.com

ENVIRONMENT

Mr. Glenn Von Gonten
New Mexico Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

Subject:
State M-1 AP-072
Stage 2 Abatement Plan

Date:
March 27, 2012

Dear Mr. Von Gonten:

On behalf of Chesapeake Energy Corporation, ARCCADIS U.S. Inc. respectfully submits the enclosed Stage 2 Abatement plan for the State M-1 site (AP-072). A Stage 1 Abatement Plan Report was submitted on March 20, 2012. Your review and approval of this Abatement Plan will be appreciated. The landowner, Darr Angell, is anxious for us to complete soil remediation at this site.

If you have any questions please do not hesitate to contact Bradley Blevins at (575) 391-1462 or via e-mail at bblevins@chkenergy or me at (432) 687-5400, e-mail address shall@aracdis-us.com.

Contact:
Sharon Hall

Phone:
432 687-5400

Email:
shall@aracdis-us.com

Our ref:
MT001088

ARCADIS U.S., Inc.
TX Engineering License # F-533

Sincerely,

ARCADIS U.S., Inc.

Sharon E. Hall

Sharon E. Hall
Associate Vice President

Copies:
Bradley Blevins- Chesapeake, Hobbs

Imagine the result

g:\aproject\chesapeake\m-1 stage 2 plan\transmitall letter.doc

ARCADIS
Infrastructure · Water · Environment · Buildings

Imagine the result

Chesapeake Energy Corporation

State M-1 AP-072
Stage 2 Abatement
Plan Proposal

Hobbs, New Mexico

March 27, 2012

ARCADIS

Sharon Hall
Associate Vice President

State M-1 AP-072

Stage 2 Abatement
Plan Proposal

Prepared for:
Chesapeake Energy
Corporation
Hobbs, New Mexico

Prepared by:
ARCADIS U.S., Inc.
1004 North Big Spring Street
Suite 300
Midland
Texas 79701
Tel 432 687 5400
Fax 432 687 5401

Our Ref.:
MT001088.0001.00001

Date:
March 27, 2012

Table of Contents

1. INTRODUCTION 1

2. SUMMARY OF STAGE 1 ABATEMENT ACTIVITIES 1

3. STAGE 2 ABATEMENT PLAN PROPOSAL 2

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   3.2 Groundwater Remediation and Monitoring 3

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4. PUBLIC NOTIFICATION 4

5. REMEDIATION WORK SCHEDULE 4

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Figures

Figure 1 Soil and Groundwater Analyte Concentrations

Figure 2 Proposed Excavation

Appendices

Appendix A Multi-Med Model Inputs and Outputs

ARCADIS

1. INTRODUCTION

The subject site is a former tank battery site located east of Buckeye, New Mexico. The site was purchased by Chesapeake Energy Corporation (Chesapeake) in April 2004. Chesapeake did not operate the tank battery or the associated well field and began the process of facility abandonment in 2007.

Seven monitor wells and nine soil borings have been drilled at the site. Elevated chloride concentrations and limited hydrocarbon compounds were detected in soil samples collected from soil borings and monitoring wells. Elevated chlorides were detected in the down gradient monitor wells and light non-aqueous phase liquid (LNAPL) occurs in monitoring well MW-1. LNAPL recovery activities have been piloted at the site and will commence again upon completion of surface reclamation activities.

2. SUMMARY OF STAGE 1 ABATEMENT ACTIVITIES

Initial site investigation activities were conducted in May of 2007 following abandonment of the tank battery. Stage 1 Abatement activities were conducted during the period of May 2007 through September 2011. Stage 1 Abatement activities included drilling and soil sampling of nine boreholes, drilling and sampling of seven monitor wells, EM 31 and EM 34 surveys, conversion of one monitoring well into a recovery well and recovery of phase-separated hydrocarbons from the recovery well.

New Mexico Oil Conservation Division (NMOCD) was notified of impacts to groundwater at the site via e-mail on May 30, 2007. NMOCD notified Chesapeake in a letter dated June 19, 2007 that a Stage 1 Abatement Plan was required for the site in accordance with Rule 19.

The Stage 1 Abatement Plan was submitted to NMOCD on August 22, 2007. The plan summarized site activities taken to date. The plan proposed the drilling and sampling of a minimum of three additional soil borings and installation and sampling of nine groundwater monitoring wells.

BBC contacted NMOCD via email on April 24, 2010 to inquire about the status of the Stage 1 Abatement Plan approval and Chesapeake's desire to conduct the proposed Stage 1 Abatement Plan activities. On May 27, 2010, NMOCD responded via email that the State was not staffed to review the Abatement Plans (APs) in a timely manner. On June 23, 2010, BBC contacted NMOCD via email to request a waiver of the Public Notice requirement and inform NMOCD that Chesapeake and the landowner were

anxious to move forward with the proposed AP activities. NMOCD replied via email on June 23, 2010 stating they were still understaffed to review the AP and could not waive the Public Notice requirement. They advised BBC that Chesapeake could proceed "at risk." On July 12, 2010 BBC informed NMOCD by registered letter that Chesapeake was planning to start the Stage 1 Assessment on or about August 23, 2010. They further informed NMOCD they would be submitting the required Public Notices, a copy of which was attached to the letter. NMOCD did not respond to the registered letter.

The public notices were published in the Hobbs News-Sun and Lovington Leader on July 22, 2010 and the Albuquerque Journal on July 24, 2010. No comments were received from the public or NMOCD during the 30-day comment period and Chesapeake proceeded with the proposed Stage 1 Abatement Plan activities on August 26, 2010. Copies of correspondence and Public Notice are included in Appendix A.

A detailed description of site activities and results can be found in the report submitted to NMOCD dated March 20, 2012 entitled State M-1 AP-072, Stage 1 Abatement Report (Site Assessment Investigation). Analytical results for soil and groundwater sampling are summarized on Figure 1.

3. STAGE 2 ABATEMENT PLAN PROPOSAL

After review of various remedial options, we propose the following Stage 2 Abatement Plan. The plan addresses soil and groundwater remediation.

3.1 Soil Remediation

The selected remedial option will be the excavation of near-surface soils and installation of clay liners. The anticipated extent and depth of excavation is based on assessment activities (laboratory analysis and visual observation) and is shown in Figure 2. Near surface soils (to a depth of 5 feet below ground surface) with chloride concentrations in excess of 1,000 milligrams per kilogram (mg/kg) and a Total Petroleum Hydrocarbons (TPH) concentration in excess of 1,000 mg/kg will be excavated and disposed. Excavated soils will be disposed at Lea Land Landfill.

Areas where chloride or TPH concentrations are expected to exceed 1,000 mg/kg at depths greater than 5 feet below ground surface soils will be excavated to a depth of 5

feet below ground surface. Soils will be screened in the field for chlorides using chloride field test kits and for TPH using a photoionization. Critical samples (samples used to delineate the excavations) will be submitted for laboratory analysis of chlorides and/or TPH. Following excavation, a 12-inch compacted clay layer that meets or exceeds a permeability of equal to or less than 1×10^{-8} centimeters per second will be installed in the excavations. The lined excavations will be backfilled with four feet of locally obtained native soil. All of the excavated areas will be re-seeded with native vegetation. Areas that are supporting vegetation will not be disturbed.

Use of the USEPA Multi-Med model demonstrates that the clay liners will mitigate the leaching of chlorides to groundwater. The model predicts that after 7000 years of infiltration through the liner the maximum concentration of chlorides in groundwater will be 221.8 milligrams per liter (mg/L). The Multi-Med inputs and outputs are included in Appendix A.

3.2 Groundwater Remediation and Monitoring

One additional groundwater monitoring well will be installed downgradient of the site. The monitoring well will be designated MW-8.

Groundwater samples will be collected from all of the monitoring wells and analyzed for chlorides using USEPA method 9056 for each of four quarters. Based on sample results for one year (four quarters), sampling frequency will be reviewed and may be revised.

Sampling will be discontinued when eight quarters of sample results indicate chloride concentrations are below New Mexico Water Quality Control Commission, Title 20, Chapter 6, Part 2 standards. Sample results will be submitted to the NMOCD annually on June 15.

Following removal of LNAPL from MW-1, groundwater samples will be collected from MW-1 and analyzed for benzene, toluene ethylbenzene and xylenes (BTEX) using USEPA method 8260B for each of four quarters. Based on sample results for one year (four quarters), sampling frequency will be reviewed and may be revised.

Sampling of MW-1 for BTEX will be discontinued when eight quarters of sample results indicate BTEX concentrations are below New Mexico Water Quality Control Commission, Title 20, Chapter 6, Part 2 standards. Sample results will be submitted to

the NMOCD annually on June 15. Proposed groundwater remediation is presented in Sections 3.2.1 and 3.2.2.

3.2.1 Chlorides

Chloride concentrations in groundwater exceed New Mexico Water Quality Control Commission standards in two wells (MW-1 411mg/L and MW-4 472mg/L).

Removal of near-surface soils that are a potential source of chlorides and BTEX in groundwater and lining of excavations with chloride and TPH concentrations in excess of 1,000 mg/kg will mitigate leaching of chlorides to groundwater. Considering the relatively low concentrations of chlorides in groundwater and the fact that soil removal and clay liner infiltration barrier installation will be conducted at this site, we propose monitoring the site for a period of two years before considering pumping of groundwater at this site. With the proposed source removal and mitigation and the severe drought conditions being experienced in this area, we believe it prudent to evaluate if chloride mass removal by pumping is warranted at this site.

3.2.2 Hydrocarbons

A pilot LNAPL recovery test will take place over a three week period and will be used to develop long-term recovery procedures. LNAPL will be recovered from MW-1 and disposed in a NMOCD approved facility. Additionally, two soil vent borings equipped with wind turbines will be installed in the area near MW-1.

4. PUBLIC NOTIFICATION

Written notification of submittal of the Stage 2 Abatement Plan Proposal and site activities will be sent to all surface owners of record within a one-mile radius of the site. NMOCD will be supplied with a list of parties to be notified. Publication of notice of activities will be published in a state-wide circulated newspaper, the Albuquerque Journal, and two county newspapers, the Hobbs-Daily News Sun and the Lovington Leader.

5. REMEDIATION WORK SCHEDULE

Soil remediation activities are expected to be completed in 15 working days (Monday through Friday). Groundwater remediation activities will be ongoing. An estimated completion date for groundwater remediation is not available.

6. REFERENCES

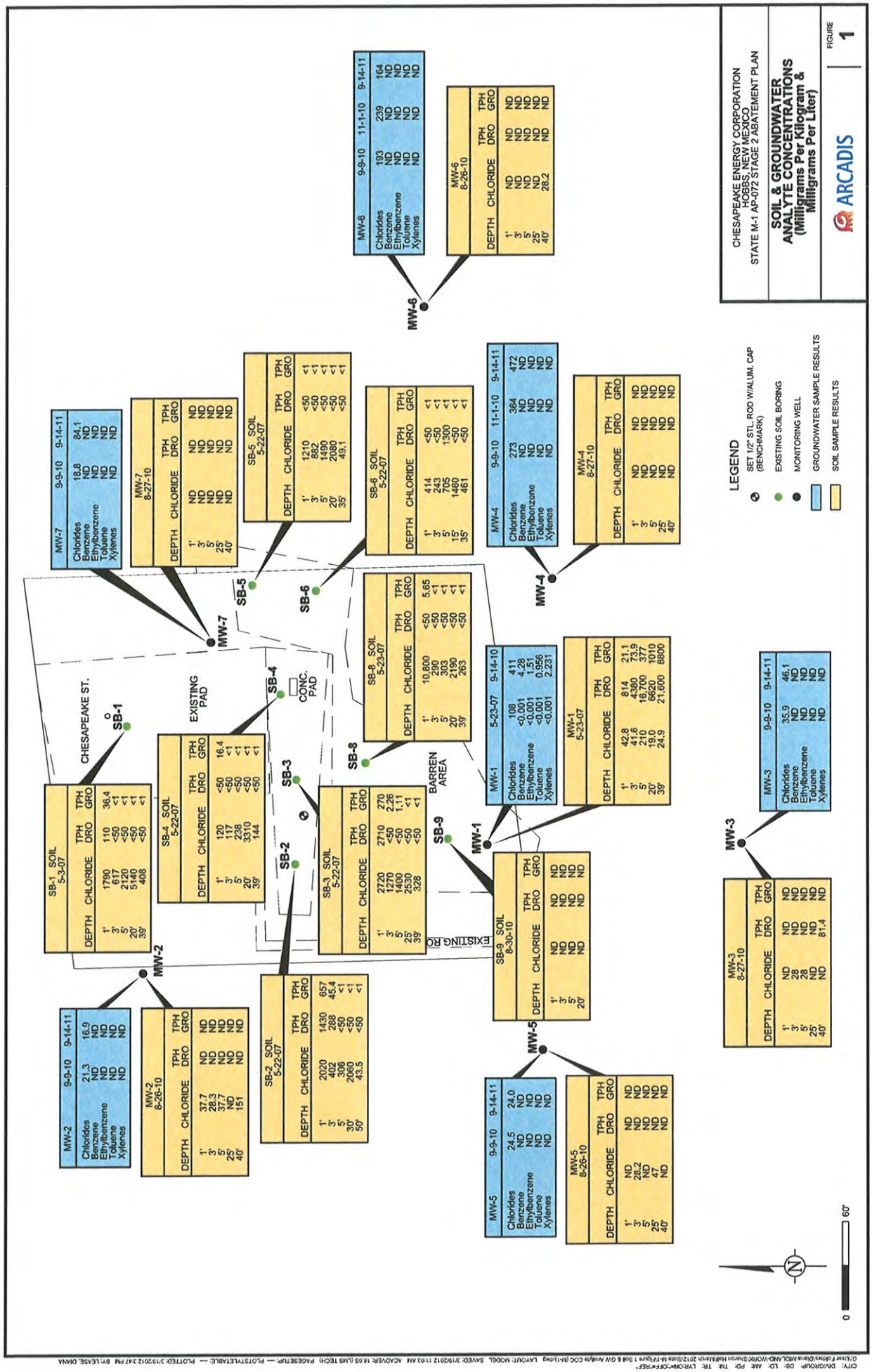
Groundwater Handbook; United States Environmental Protection Agency, Office of Research and Development, Center for Environmental Research Information; 1992

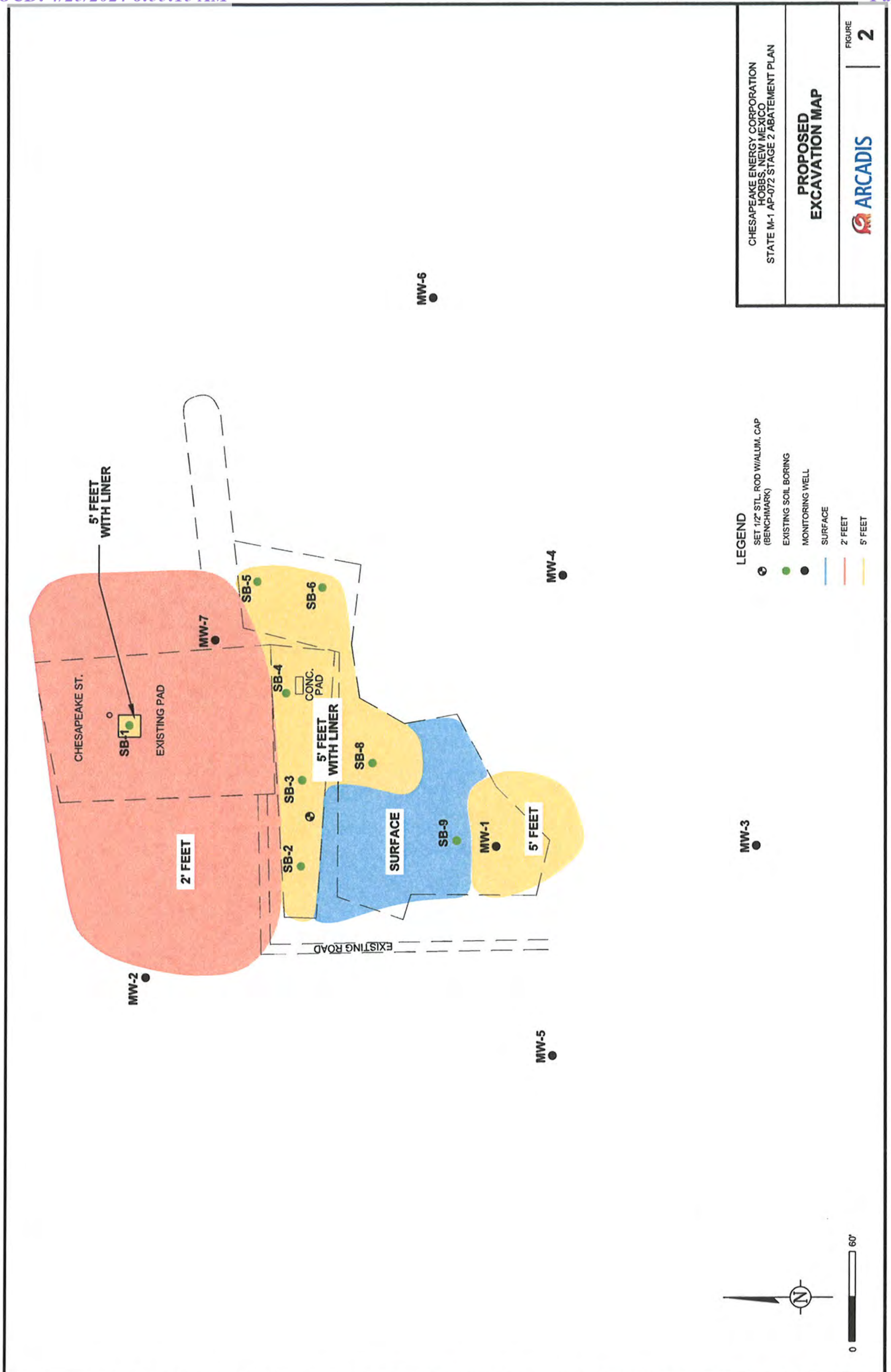
New Mexico Water Quality Control Commission, Title 20 Chapter 6, Part 2, Subpart I

State M-1 AP-072 Stage 1 Abatement Report (Site Assessment Investigation); ARCADIS; March 2012

State M-1Salt Water Disposal Tank Battery, Stage 1 Abatement Plan (Ap-072), BBC International; August 2007

New Mexico Water Quality Control Commission, Title 20 Chapter 6, Part 2, Subpart I


CHESAPEAKE ENERGY CORPORATION
HOBBS, NEW MEXICO
STATE M-1 AP-072 STAGE 2 ABATEMENT PLAN
SOIL & GROUNDWATER ANALYTE CONCENTRATIONS (Milligrams Per Kilogram & Milligrams Per Liter)
FIGURE 1
ARCADIS
LEGEND
SET 1/2" STL. ROD W/ALUM. CAP (BENCHMARK)
EXISTING SOIL BORING
MONITORING WELL
GROUNDWATER SAMPLE RESULTS
SOIL SAMPLE RESULTS
CHESAPEAKE ST.
EXISTING PAD
CONC. PAD
BARREN AREA
EXISTING ROAD
SB-1
SB-2
SB-3
SB-4
SB-5
SB-6
SB-8
SB-9
MW-1
MW-2
MW-3
MW-4
MW-5
MW-6
MW-7
SB-1 SOIL 5-3-07
SB-2 SOIL 5-22-07
SB-3 SOIL 5-22-07
SB-4 SOIL 5-22-07
SB-5 SOIL 5-22-07
SB-6 SOIL 5-22-07
SB-8 SOIL 5-23-07
SB-9 SOIL 8-30-10
MW-1 5-23-07 9-14-11
MW-2 9-9-10 9-14-11
MW-2 8-26-10
MW-3 9-9-10 9-14-11
MW-3 8-27-10
MW-4 9-9-10 11-1-10 9-14-11
MW-4 8-27-10
MW-5 9-9-10 9-14-11
MW-5 8-26-10
MW-6 9-9-10 11-1-10 9-14-11
MW-6 8-26-10
MW-7 9-9-10 9-14-11
MW-7 8-27-10
0
60'


CHESAPEAKE ENERGY CORPORATION
HOBBS, NEW MEXICO
STATE M-1 AP-072 STAGE 2 ABATEMENT PLAN
PROPOSED EXCAVATION MAP
ARCADIS
FIGURE
2
LEGEND
SET 1/2" STL. ROD W/ALUM. CAP (BENCHMARK)
EXISTING SOIL BORING
MONITORING WELL
SURFACE
2' FEET
5' FEET
5' FEET WITH LINER
CHESAPEAKE ST.
EXISTING PAD
CONC. PAD
EXISTING ROAD
2' FEET
SURFACE
5' FEET
SB-1
SB-2
SB-3
SB-4
SB-5
SB-6
SB-8
SB-9
MW-1
MW-2
MW-3
MW-4
MW-5
MW-6
MW-7
0
60'

ARCADIS

Appendix A

Multi-Med Model Inputs and Outputs

Chesapeake State M-1
Chesapeake Energy Corporation
Buckeye, Lea County, New Mexico
Multimed Model Input and Output (With Liner)

MODEL INPUT AND OUTPUT						MODEL RANGE	
INPUT PARAMETERS						Minimum	Maximum
Unsaturated Zone Flow Parameters							
Depth of Unsaturated Zone	m	45	feet	13.7	m	0.000000001	None
Hydraulic Conductivity	cm/hr	2	ft/day	2.54	cm/hr	0.00000000001	10,000
Unsaturated Zone Porosity	fraction	0.05	fraction	0.05	fraction	0.000000001	0.99
Residual Water Content	fraction	0.01	fraction	0.010	fraction	0.000000001	1
Unsaturated Zone Transport Parameters							
Thickness of Layer	m	45	feet	13.7	m	0.000000001	None
Percent of Organic Matter	%	2.6	%	2.6	%	0	100
Bulk Density	g/cm^3	1.35	g/cm^3	1.35	g/cm^3	0.01	5
Biological Decay Coefficient	1/yr	0	1/yr	0	1/yr	0	None
Aquifer Parameters							
Aquifer Porosity	fraction	0.25	fraction	0.25	fraction	0.000000001	0.99
Bulk Density	g/cm^3	1.35	g/cm^3	1.35	g/cm^3	0.01	5
Aquifer Thickness	m	50	ft	15.24	m	0.000000001	100,000
Hydraulic Conductivity	m/yr	2	ft/day	223	m/yr	0.0000001	100,000,000
Hydraulic Gradient	m/m	0.007	m/m	0.007	m/m	0.00000001	None
Organic Carbon Content	fraction	0.00315	fraction	0.00315	fraction	0.000001	1
Temperature of Aquifer	°C	14.4	°C	14.4	°C	0.00000001	None
pH		6.2		6.2		0.3	14
x-distance Radial Distance from Site to Receptor	m	1	m	1	m	1	None
Source Parameters							
Infiltration Rate from the Facility	m/yr	0.124	in/yr	0.00315	m/yr	0.0000000001	10,000,000,000
Area of Waste Disposal Unit	m^2	46,800	ft^2	4348	m^2	0.01	None
Length Scale of Facility	m	240	feet	73.2	m	0.000000001	10,000,000,000
Width Scale of Facility	m	195	feet	59.4	m	0.000000001	10,000,000,000
Recharge Rate into the Plume	m/yr	16.71	in/yr	0.4244	m/yr	0	10,000,000,000
Duration of Pulse	yr	8,000	yr	8000	yr	0.000000001	None
Initial Concentration at Landfill	mg/L	6,000	mg/L	6,000	mg/L	0	None
Additional Parameters							
Method				Gaussian		Gaussian	Patch
Name of Chemical Specified				Chloride			

MODEL OUTPUT			
Final Concentration at Landfill	mg/L	221.8	mg/L

MODEL OUTPUT				
Concentration at Landfill	0.0 mg/L	Time	1 yr
	0.0 mg/L		10 yr
	0.0 mg/L		20 yr
	18.9 mg/L		50 yr
	36.6 mg/L		70 yr
	45.4 mg/L		80 yr
	61.8 mg/L		100 yr
	123.4 mg/L		200 yr
	154.1 mg/L		300 yr
	166.3 mg/L		400 yr
	178.5 mg/L		500 yr
	190.7 mg/L		600 yr
	204.8 mg/L		800 yr
	211.1 mg/L		1,000 yr
	220.4 mg/L		2,000 yr
	221.6 mg/L		3,000 yr
	221.8 mg/L		4,000 yr
	221.8 mg/L		5,000 yr
	221.8 mg/L		6,000 yr
	221.8 mg/L		7,000 yr

Chesapeake State M-1
Chesapeake Energy Corporation
Buckeye, Lea County, New Mexico

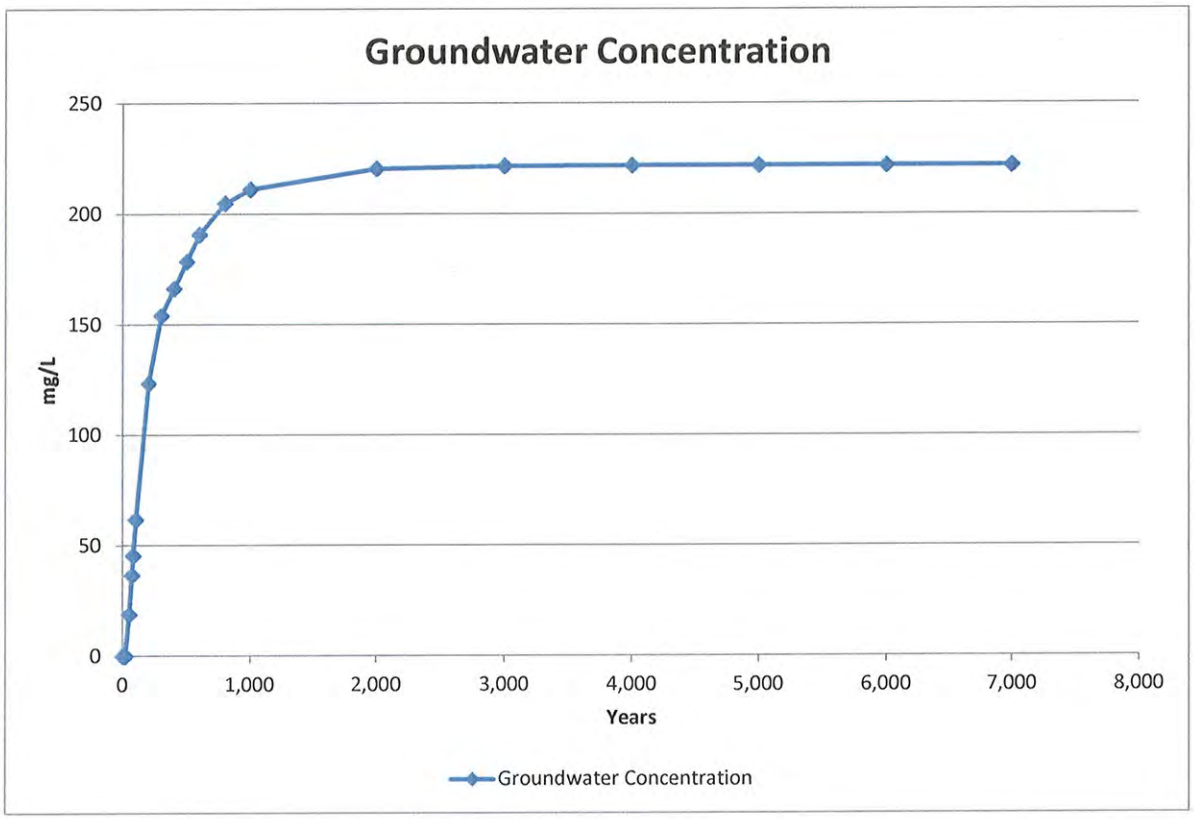


TABLE 6-3. TOTAL POROSITY OF VARIOUS MATERIALS

Material	No. of Analyses	Range	Arithmetic Mean
Igneous Rocks			
Weathered granite	8	0.34-0.57	0.45
Weathered gabbro	4	0.42-0.45	0.43
Basalt	94	0.03-0.35	0.17
Sedimentary Materials			
Sandstone	65	0.14-0.49	0.34
Siltstone	7	0.21-0.41	0.35
Sand (fine)	243	0.26-0.53	0.43
Sand (coarse)	26	0.31-0.46	0.39
Gravel (fine)	38	0.25-0.38	0.34
Gravel (coarse)	15	0.24-0.36	0.28
Silt	281	0.34-0.61	0.46
Clay	74	0.34-0.57	0.42
Limestone	74	0.07-0.56	0.3
Metamorphic Rocks			
Schist	18	0.04-0.49	0.38

Sources: From Mercer et al. (1982),
McWhorter and Sunada (1977),
Original reference Morris and Johnson, (1967).

Texture	Bulk Density g/cm^3	Average Wilting Point	Plant Available Water Inches/Ft
Sandy loam	1.6	0.057	1.66
Silt Loam	1.45	0.119	2
Loam	1.5	0.097	2.4
Sandy clay loam	1.45	0.137	1.66
Clay loam	1.45	0.157	1.9

TABLE 6-8. MEAN BULK DENSITY (g/cm3) FOR FIVE SOIL TEXTURAL CLASSIFICATIONSa,b

Soil Texture	Mean Value	Range Reported
Silt Loams	1.32	0.86 - 1.67
Clay and Clay Loams	1.3	0.94 - 1.54
Sandy Loams	1.49	1.25 - 1.76
Gravelly Silt Loams	1.22	1.02 - 1.58
Loams	1.42	1.16 - 1.58
All Soils	1.35	0.86 - 1.76

a Baes, C.F., III and R.D. Sharp. 1983. A Proposal for Estimation of Soil Leaching Constants for Use in Assessment Models. J. Environ. Qual. 12(1):17-28 (Original reference).

b From Dean et al. (1989)

TABLE 6-2. DESCRIPTIVE STATISTICS FOR SATURATED HYDRAULIC CONDUCTIVITY (cm hr-1)

Soil Type	Hydraulic Conductivity (Ks)* x	s	CV	n		
Clay**	0.2	0.42	210.3	114	cm/hr	17.52
Clay Loam	0.26	0.7	267.2	345	cm/hr	22.776
Loam	1.04	1.82	174.6	735	cm/hr	91.104
Loamy Sand	14.59	11.36	77.9	315	cm/hr	1278.084
Silt	0.25	0.33	129.9	88	cm/hr	21.9
Silt Loam	0.45	1.23	275.1	1093	cm/hr	39.42
Silty Clay	0.02	0.11	453.3	126	cm/hr	1.752
Silty Clay Loam	0.07	0.19	288.7	592	cm/hr	6.132
Sand	29.7	15.6	52.4	246	cm/hr	2601.72
Sandy Clay	0.12	0.28	234.1	46	cm/hr	10.512
Sandy Clay Loam	1.31	2.74	208.6	214	cm/hr	114.756
Sandy Loam	4.42	5.63	127	1183	cm/hr	387.192

* n = Sample size, = Mean, s = Standard deviation, CV = Coefficient of variation (percent)

** Agricultural soil, less than 60 percent clay

Sources: From Dean et al. (1989),
Original reference Carsel and Parrish (1988).

Saturated water content is the maximum volumetric amount of water in the soil when all pores are filled with water. Very often it is assumed that saturated water content equals the porosity n . However, in many cases qS is smaller than n due to the fact that small amounts of air will be trapped in very small pores. Residual water content can be defined as the asymptote of the pF-curve when h gets very high negative values. Usually qR is very small - on the order of 0.001--0.02 for coarse soils but gets as high values as 0.15..0.25 for heavy clay soils. Air entry point ha is

Soil texture. Fine-textured soils can hold much more organic matter than sandy soils for two reasons. First, clay particles form electrochemical bonds that hold organic compounds. Second, decomposition occurs faster in well-aerated sandy soils. A sandy loam rarely holds more than 2% organic matter.

The recharge rate in this model is the net amount of water that percolates directly into the aquifer system outside of the land disposal facility. The recharge is assumed to have no contamination and hence dilutes the groundwater contaminant plume. The recharge rate into the plume can be calculated in a variety of ways. One possibility is to use a model, such as HELP (Hydrologic Evaluation of Landfill Performance) (Schroeder et al., 1984), without any engineering controls (leachate collection system or a liner) to simulate the water balance for natural conditions.

The infiltration rate is the net amount of leachate that percolates into the aquifer system from a land disposal facility. Because of the use of engineering controls and the presence of non-native porous materials in the landfill facility, the infiltration rate will typically be different than the recharge rate. However, it can be estimated by similar

Most soils contain 2-10 percent organic matter. *The Importance of Soil Organic Matter: Key to Drought-Resistant Soil and Sustained Food Production. http://www.fao.org*

APPENDIX B

NMOCD APPROVAL OF STAGE 2 ABATEMENT PLAN

From:	Chase Acker
To:	Bruce McKenzie
Subject:	FW: Stage 2 Abatement Plan Approval: AP-72 Former State M-1 Tank Battery located in Unit Letter O of Section 18 in Township 17 South, Range 36 East, NMPM in Lea County, NM
Date:	Monday, April 14, 2014 1:56:01 PM

From: Griswold, Jim, EMNRD [mailto:Jim.Griswold@state.nm.us]
Sent: Thursday, June 27, 2013 5:14 PM
To: Larry Wooten
Cc: Hall, Sharon; Chase Acker
Subject: Stage 2 Abatement Plan Approval: AP-72 Former State M-1 Tank Battery located in Unit Letter O of Section 18 in Township 17 South, Range 36 East, NMPM in Lea County, NM

Mr. Wooten,

The Oil Conservation Division (OCD) has reviewed the Stage 2 Abatement Plan for the above-referenced site submitted on your behalf by Arcadis and dated 3/27/12. That plan has substantially met the requirements of 19.15.30 NMAC and is hereby approved. Please proceed with field activities.

Be advised this approval does not relieve Chesapeake of responsibility should the situation continue to pose a threat to groundwater, surface water, human health, or the environment. Furthermore, this approval does not relieve your responsibility for compliance with any federal, state, or local laws and/or regulations. Please retain a copy of this email for your files, as no hardcopy will be sent. If you have any questions, please feel free to contact me at any time.

Jim Griswold
Senior Hydrologist
EMNRD/Oil Conservation Division
1220 South St. Francis Drive
Santa Fe, New Mexico 87505
505.476.3465
email: jim.griswold@state.nm.us

APPENDIX C

LABORATORY ANALYTICAL REPORTS AND CHAIN-OF-CUSTODY DOCUMENTATION

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ANALYTICAL REPORT

Eurofins TestAmerica, Pittsburgh
301 Alpha Drive
RIDC Park
Pittsburgh, PA 15238
Tel: (412)963-7058

Laboratory Job ID: 180-123031-1
Laboratory Sample Delivery Group: Property ID: 891077
Client Project/Site: State M-1

For:
Chesapeake Energy Corporation
PO BOX 548806
Oklahoma City, Oklahoma 73154

Attn: Chase Acker

CathyGartner

Authorized for release by:
7/9/2021 3:26:35 PM

Cathy Gartner, Project Manager II
(615)301-5041
Cathy.Gartner@Eurofinset.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

PA Lab ID: 02-00416

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Laboratory Job ID: 180-123031-1
SDG: Property ID: 891077

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Subcontract Data 6
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Case Narrative

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 180-123031-1
SDG: Property ID: 891077

Job ID: 180-123031-1

Laboratory: Eurofins TestAmerica, Pittsburgh

Narrative

Job Narrative
180-123031-1

Subcontract Work
Method TO 15: This method was subcontracted to Eurofins Air Toxics. The subcontract laboratory certification is different from that of the facility issuing the final report.

Definitions/Glossary

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 180-123031-1
SDG: Property ID: 891077

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Sample Summary

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 180-123031-1
SDG: Property ID: 891077

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
180-123031-1	20210608 M-1	Air	06/08/21 12:40	06/10/21 10:22	

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6/23/2021
Ms. Cathy Gartner
Eurofins Test America
500 Wilson Pike Circle Suite 100

Brentwood TN 37027

Project Name: CHK STATE M
Project #: CHKSTATM:H20001
Workorder #: 2106254

Dear Ms. Cathy Gartner

The following report includes the data for the above referenced project for sample(s) received on 6/10/2021 at Eurofins Air Toxics LLC.

The data and associated QC analyzed by TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics LLC. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Brian Whittaker

Project Manager

eurofins | Air Toxics

WORK ORDER #: 2106254

Work Order Summary

CLIENT:	Ms. Cathy Gartner Eurofins Test America 500 Wilson Pike Circle Suite 100 Brentwood, TN 37027	**BILL TO:**	Accounts Payable Eurofins Test America 4104 Shuffel St NW North Canton, OH 44720
PHONE:	800-765-0980	**P.O. #**	180-123031
FAX:	615-726-3404	**PROJECT #**	CHKSTATM:H20001 CHK STATE M
DATE RECEIVED:	06/10/2021	**CONTACT:**	Brian Whittaker
DATE COMPLETED:	06/23/2021		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	20210608 M-1	TO-15	6.0 "Hg	2 psi
02A	Lab Blank	TO-15	NA	NA
03A	CCV	TO-15	NA	NA
04A	LCS	TO-15	NA	NA
04AA	LCSD	TO-15	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 06/23/21

Technical Director

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209220, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-20-16, UT NELAP – CA009332020-12, VA NELAP - 10615, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005-014, Effective date: 10/18/2020, Expiration date: 10/17/2021.
Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

eurofins | Air Toxics

LABORATORY NARRATIVE
EPA Method TO-15
Eurofins Test America
Workorder# 2106254

One 6 Liter Summa Canister sample was received on June 10, 2021. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

TVOC (Total Volatile Organic Compounds) referenced to Hexane includes area counts for peaks that elute from Hexane minus 0.08 minutes to Naphthalene plus 0.08 minutes and quantitating the area based on the response factor of Hexane.

All Quality Control Limit exceedances and affected sample results are noted by flags. Each flag is defined at the bottom of this Case Narrative and on each Sample Result Summary page. Target compound non-detects in the samples that are associated with high bias in QC analyses have not been flagged.

Definition of Data Qualifying Flags

Ten qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

M - Reported value may be biased due to apparent matrix interferences.

CN - See Case Narrative.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

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Summary of Detected Compounds
EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: 20210608 M-1

Lab ID#: 2106254-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Acetone	7.1	16	17	37
1,3,5-Trimethylbenzene	0.71	1.3	3.5	6.4
TVOC Ref. to Hexane	14	2100	50	7400

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Client Sample ID: 20210608 M-1

Lab ID#: 2106254-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j062114**	**Date of Collection:**	**6/8/21 12:40:00 PM**
Dil. Factor:	**1.42**	**Date of Analysis:**	**6/21/21 05:32 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Acetone	7.1	16	17	37
Benzene	0.71	Not Detected	2.3	Not Detected
alpha-Chlorotoluene	0.71	Not Detected	3.7	Not Detected
Bromodichloromethane	0.71	Not Detected	4.8	Not Detected
Bromoform	0.71	Not Detected	7.3	Not Detected
Bromomethane	7.1	Not Detected	28	Not Detected
2-Butanone (Methyl Ethyl Ketone)	2.8	Not Detected	8.4	Not Detected
Carbon Disulfide	2.8	Not Detected	8.8	Not Detected
Carbon Tetrachloride	0.71	Not Detected	4.5	Not Detected
Chlorobenzene	0.71	Not Detected	3.3	Not Detected
Dibromochloromethane	0.71	Not Detected	6.0	Not Detected
Chloroethane	2.8	Not Detected	7.5	Not Detected
Chloroform	0.71	Not Detected	3.5	Not Detected
Chloromethane	7.1	Not Detected	15	Not Detected
1,2-Dibromoethane (EDB)	0.71	Not Detected	5.4	Not Detected
1,2-Dichlorobenzene	0.71	Not Detected	4.3	Not Detected
1,3-Dichlorobenzene	0.71	Not Detected	4.3	Not Detected
1,4-Dichlorobenzene	0.71	Not Detected	4.3	Not Detected
1,1-Dichloroethane	0.71	Not Detected	2.9	Not Detected
Freon 12	0.71	Not Detected	3.5	Not Detected
1,2-Dichloroethane	0.71	Not Detected	2.9	Not Detected
1,1-Dichloroethene	0.71	Not Detected	2.8	Not Detected
cis-1,2-Dichloroethene	0.71	Not Detected	2.8	Not Detected
trans-1,2-Dichloroethene	0.71	Not Detected	2.8	Not Detected
1,2-Dichloropropane	0.71	Not Detected	3.3	Not Detected
cis-1,3-Dichloropropene	0.71	Not Detected	3.2	Not Detected
trans-1,3-Dichloropropene	0.71	Not Detected	3.2	Not Detected
Freon 114	0.71	Not Detected	5.0	Not Detected
Ethyl Benzene	0.71	Not Detected	3.1	Not Detected
4-Ethyltoluene	0.71	Not Detected	3.5	Not Detected
Hexachlorobutadiene	2.8	Not Detected	30	Not Detected
2-Hexanone	2.8	Not Detected	12	Not Detected
Methylene Chloride	7.1	Not Detected	25	Not Detected
4-Methyl-2-pentanone	0.71	Not Detected	2.9	Not Detected
Styrene	0.71	Not Detected	3.0	Not Detected
1,1,2,2-Tetrachloroethane	0.71	Not Detected	4.9	Not Detected
Tetrachloroethene	0.71	Not Detected	4.8	Not Detected
Toluene	0.71	Not Detected	2.7	Not Detected
1,2,4-Trichlorobenzene	2.8	Not Detected UJ	21	Not Detected UJ
1,1,1-Trichloroethane	0.71	Not Detected	3.9	Not Detected
1,1,2-Trichloroethane	0.71	Not Detected	3.9	Not Detected
Trichloroethene	0.71	Not Detected	3.8	Not Detected

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Client Sample ID: 20210608 M-1

Lab ID#: 2106254-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j062114**	**Date of Collection: 6/8/21 12:40:00 PM**	
Dil. Factor:	**1.42**	**Date of Analysis: 6/21/21 05:32 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.71	Not Detected	4.0	Not Detected
Freon 113	0.71	Not Detected	5.4	Not Detected
1,2,4-Trimethylbenzene	0.71	Not Detected	3.5	Not Detected
1,3,5-Trimethylbenzene	0.71	1.3	3.5	6.4
Vinyl Acetate	2.8	Not Detected	10	Not Detected
Vinyl Chloride	0.71	Not Detected	1.8	Not Detected
m,p-Xylene	0.71	Not Detected	3.1	Not Detected
o-Xylene	0.71	Not Detected	3.1	Not Detected
TVOC Ref. to Hexane	14	2100	50	7400

UJ = Analyte associated with low bias in the CCV.

Container Type: 6 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	120	70-130
1,2-Dichloroethane-d4	112	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: Lab Blank

Lab ID#: 2106254-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j062108d**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/21/21 01:42 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Acetone	5.0	Not Detected	12	Not Detected
Benzene	0.50	Not Detected	1.6	Not Detected
alpha-Chlorotoluene	0.50	Not Detected	2.6	Not Detected
Bromodichloromethane	0.50	Not Detected	3.4	Not Detected
Bromoform	0.50	Not Detected	5.2	Not Detected
Bromomethane	5.0	Not Detected	19	Not Detected
2-Butanone (Methyl Ethyl Ketone)	2.0	Not Detected	5.9	Not Detected
Carbon Disulfide	2.0	Not Detected	6.2	Not Detected
Carbon Tetrachloride	0.50	Not Detected	3.1	Not Detected
Chlorobenzene	0.50	Not Detected	2.3	Not Detected
Dibromochloromethane	0.50	Not Detected	4.2	Not Detected
Chloroethane	2.0	Not Detected	5.3	Not Detected
Chloroform	0.50	Not Detected	2.4	Not Detected
Chloromethane	5.0	Not Detected	10	Not Detected
1,2-Dibromoethane (EDB)	0.50	Not Detected	3.8	Not Detected
1,2-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,3-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,4-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,1-Dichloroethane	0.50	Not Detected	2.0	Not Detected
Freon 12	0.50	Not Detected	2.5	Not Detected
1,2-Dichloroethane	0.50	Not Detected	2.0	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
trans-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
1,2-Dichloropropane	0.50	Not Detected	2.3	Not Detected
cis-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
trans-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
Freon 114	0.50	Not Detected	3.5	Not Detected
Ethyl Benzene	0.50	Not Detected	2.2	Not Detected
4-Ethyltoluene	0.50	Not Detected	2.4	Not Detected
Hexachlorobutadiene	2.0	Not Detected	21	Not Detected
2-Hexanone	2.0	Not Detected	8.2	Not Detected
Methylene Chloride	5.0	Not Detected	17	Not Detected
4-Methyl-2-pentanone	0.50	Not Detected	2.0	Not Detected
Styrene	0.50	Not Detected	2.1	Not Detected
1,1,2,2-Tetrachloroethane	0.50	Not Detected	3.4	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected
Toluene	0.50	Not Detected	1.9	Not Detected
1,2,4-Trichlorobenzene	2.0	Not Detected UJ	15	Not Detected UJ
1,1,1-Trichloroethane	0.50	Not Detected	2.7	Not Detected
1,1,2-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected

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Client Sample ID: Lab Blank

Lab ID#: 2106254-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j062108d**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/21/21 01:42 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.50	Not Detected	2.8	Not Detected
Freon 113	0.50	Not Detected	3.8	Not Detected
1,2,4-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
1,3,5-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
Vinyl Acetate	2.0	Not Detected	7.0	Not Detected
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
m,p-Xylene	0.50	Not Detected	2.2	Not Detected
o-Xylene	0.50	Not Detected	2.2	Not Detected
TVOC Ref. to Hexane	10	Not Detected	35	Not Detected

UJ = Analyte associated with low bias in the CCV.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	105	70-130
1,2-Dichloroethane-d4	111	70-130
4-Bromofluorobenzene	87	70-130

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Client Sample ID: CCV

Lab ID#: 2106254-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j062103**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/21/21 10:14 AM**	

Compound	%Recovery
Acetone	87
Benzene	107
alpha-Chlorotoluene	107
Bromodichloromethane	112
Bromoform	110
Bromomethane	94
2-Butanone (Methyl Ethyl Ketone)	92
Carbon Disulfide	99
Carbon Tetrachloride	103
Chlorobenzene	101
Dibromochloromethane	113
Chloroethane	99
Chloroform	102
Chloromethane	98
1,2-Dibromoethane (EDB)	111
1,2-Dichlorobenzene	116
1,3-Dichlorobenzene	117
1,4-Dichlorobenzene	110
1,1-Dichloroethane	97
Freon 12	107
1,2-Dichloroethane	117
1,1-Dichloroethene	85
cis-1,2-Dichloroethene	96
trans-1,2-Dichloroethene	97
1,2-Dichloropropane	118
cis-1,3-Dichloropropene	95
trans-1,3-Dichloropropene	105
Freon 114	97
Ethyl Benzene	100
4-Ethyltoluene	115
Hexachlorobutadiene	78
2-Hexanone	108
Methylene Chloride	103
4-Methyl-2-pentanone	102
Styrene	110
1,1,2,2-Tetrachloroethane	124
Tetrachloroethene	106
Toluene	106
1,2,4-Trichlorobenzene	66 Q
1,1,1-Trichloroethane	101
1,1,2-Trichloroethane	113
Trichloroethene	109

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Client Sample ID: CCV

Lab ID#: 2106254-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j062103**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/21/21 10:14 AM**	

Compound	%Recovery
Freon 11	102
Freon 113	92
1,2,4-Trimethylbenzene	108
1,3,5-Trimethylbenzene	121
Vinyl Acetate	77
Vinyl Chloride	94
m,p-Xylene	106
o-Xylene	99
TVOC Ref. to Hexane	100

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	108	70-130
1,2-Dichloroethane-d4	104	70-130
4-Bromofluorobenzene	112	70-130

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Client Sample ID: LCS

Lab ID#: 2106254-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j062104**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/21/21 10:42 AM**	

Compound	%Recovery	Method Limits
Acetone	88	70-130
Benzene	104	70-130
alpha-Chlorotoluene	104	70-130
Bromodichloromethane	106	70-130
Bromoform	104	70-130
Bromomethane	96	70-130
2-Butanone (Methyl Ethyl Ketone)	95	70-130
Carbon Disulfide	100	70-130
Carbon Tetrachloride	102	70-130
Chlorobenzene	98	70-130
Dibromochloromethane	105	70-130
Chloroethane	100	70-130
Chloroform	102	70-130
Chloromethane	90	70-130
1,2-Dibromoethane (EDB)	106	70-130
1,2-Dichlorobenzene	111	70-130
1,3-Dichlorobenzene	112	70-130
1,4-Dichlorobenzene	106	70-130
1,1-Dichloroethane	99	70-130
Freon 12	106	70-130
1,2-Dichloroethane	110	70-130
1,1-Dichloroethene	90	70-130
cis-1,2-Dichloroethene	98	70-130
trans-1,2-Dichloroethene	100	70-130
1,2-Dichloropropane	112	70-130
cis-1,3-Dichloropropene	93	70-130
trans-1,3-Dichloropropene	102	70-130
Freon 114	99	70-130
Ethyl Benzene	98	70-130
4-Ethyltoluene	110	70-130
Hexachlorobutadiene	118	70-130
2-Hexanone	101	70-130
Methylene Chloride	102	70-130
4-Methyl-2-pentanone	99	70-130
Styrene	105	70-130
1,1,2,2-Tetrachloroethane	101	70-130
Tetrachloroethene	102	70-130
Toluene	100	70-130
1,2,4-Trichlorobenzene	105	70-130
1,1,1-Trichloroethane	101	70-130
1,1,2-Trichloroethane	107	70-130
Trichloroethene	121	70-130

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Client Sample ID: LCS

Lab ID#: 2106254-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j062104**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/21/21 10:42 AM**	

Compound	%Recovery	Method Limits
Freon 11	103	70-130
Freon 113	93	70-130
1,2,4-Trimethylbenzene	107	70-130
1,3,5-Trimethylbenzene	114	70-130
Vinyl Acetate	84	70-130
Vinyl Chloride	96	70-130
m,p-Xylene	104	70-130
o-Xylene	96	70-130
TVOC Ref. to Hexane	Not Spiked	

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	106	70-130
1,2-Dichloroethane-d4	105	70-130
4-Bromofluorobenzene	112	70-130

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Client Sample ID: LCSD

Lab ID#: 2106254-04AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j062105**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/21/21 11:09 AM**	

Compound	%Recovery	Method Limits
Acetone	88	70-130
Benzene	103	70-130
alpha-Chlorotoluene	103	70-130
Bromodichloromethane	106	70-130
Bromoform	102	70-130
Bromomethane	96	70-130
2-Butanone (Methyl Ethyl Ketone)	96	70-130
Carbon Disulfide	100	70-130
Carbon Tetrachloride	102	70-130
Chlorobenzene	97	70-130
Dibromochloromethane	102	70-130
Chloroethane	100	70-130
Chloroform	103	70-130
Chloromethane	90	70-130
1,2-Dibromoethane (EDB)	103	70-130
1,2-Dichlorobenzene	108	70-130
1,3-Dichlorobenzene	108	70-130
1,4-Dichlorobenzene	104	70-130
1,1-Dichloroethane	98	70-130
Freon 12	107	70-130
1,2-Dichloroethane	109	70-130
1,1-Dichloroethene	91	70-130
cis-1,2-Dichloroethene	100	70-130
trans-1,2-Dichloroethene	99	70-130
1,2-Dichloropropane	113	70-130
cis-1,3-Dichloropropene	94	70-130
trans-1,3-Dichloropropene	101	70-130
Freon 114	101	70-130
Ethyl Benzene	98	70-130
4-Ethyltoluene	106	70-130
Hexachlorobutadiene	121	70-130
2-Hexanone	100	70-130
Methylene Chloride	104	70-130
4-Methyl-2-pentanone	99	70-130
Styrene	103	70-130
1,1,2,2-Tetrachloroethane	99	70-130
Tetrachloroethene	100	70-130
Toluene	100	70-130
1,2,4-Trichlorobenzene	108	70-130
1,1,1-Trichloroethane	101	70-130
1,1,2-Trichloroethane	103	70-130
Trichloroethene	119	70-130

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Client Sample ID: LCSD

Lab ID#: 2106254-04AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j062105**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/21/21 11:09 AM**	

Compound	%Recovery	Method Limits
Freon 11	103	70-130
Freon 113	93	70-130
1,2,4-Trimethylbenzene	107	70-130
1,3,5-Trimethylbenzene	113	70-130
Vinyl Acetate	86	70-130
Vinyl Chloride	94	70-130
m,p-Xylene	102	70-130
o-Xylene	96	70-130
TVOC Ref. to Hexane	Not Spiked	

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	104	70-130
1,2-Dichloroethane-d4	106	70-130
4-Bromofluorobenzene	108	70-130

CHAIN OF CUSTODY RECORD

2106254

No. 1775

EQUUS

PROJECT NUMBER: CHKSTATM:H20001	PROJECT NAME: CHK STATE M	COC 1 of 1	
SHIPPED TO: AIR TOXICS	PROJECT MANAGER: DAVID BRADY	TAT: STANDARD	

SAMPLER'S PRINTED NAME: Terry Fisher

SAMPLER'S SIGNATURE: Terry Fisher

ASOW: N/A.

* TVOC as C_6 - C_{12}

	Date	Time	Sample ID	Sample Matrix	# of Sample Containers	TO-15	*TVOCs as HEXANE	REMARKS
01A	6-8-21	1240	20210608 M-1	AIR	1	X	X	TAG # 27420

Custody Seal Intact?
Y N (None) Temp NA

TOTAL NUMBER OF CONTAINERS	1		
RELINQUISHED BY: Terry Fisher	DATE 6-8-21 TIME 1600	RECEIVED BY:	DATE 6/10/24 TIME 1022
RELINQUISHED BY:	DATE TIME	RECEIVED BY:	DATE TIME
METHOD OF SHIPMENT: FEDEX		AIRBILL NUMBER:	
RECEIVED IN LABORATORY BY:	DATE TIME	Send PDF, EDD, and INVOICE (if applicable) to: QAQC@EQUUSENV.COM	
LABORATORY CONTACT: CATHY GARTNER 615-301-5041		LABORATORY ADDRESS: 180 BLUE RAVINE RD STE B FOLSOM, CA 95630	

POINT OF ORIGIN:

Login Sample Receipt Checklist

Client: Chesapeake Energy Corporation

Job Number: 180-123031-1
SDG Number: Property ID: 891077

Login Number: 123031
List Number: 1
Creator: Gartner, Cathy

List Source: Eurofins TestAmerica, Pittsburgh

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.		
The cooler's custody seal, if present, is intact.		
Sample custody seals, if present, are intact.		
The cooler or samples do not appear to have been compromised or tampered with.		
Samples were received on ice.		
Cooler Temperature is acceptable.		
Cooler Temperature is recorded.		
COC is present.		
COC is filled out in ink and legible.		
COC is filled out with all pertinent information.		
Is the Field Sampler's name present on COC?		
There are no discrepancies between the containers received and the COC.		
Samples are received within Holding Time (excluding tests with immediate HTs)		
Sample containers have legible labels.		
Containers are not broken or leaking.		
Sample collection date/times are provided.		
Appropriate sample containers are used.		
Sample bottles are completely filled.		
Sample Preservation Verified.		
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs		
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").		
Multiphasic samples are not present.		
Samples do not require splitting or compositing.		
Residual Chlorine Checked.		

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ANALYTICAL REPORT

Eurofins TestAmerica, Pittsburgh
301 Alpha Drive
RIDC Park
Pittsburgh, PA 15238
Tel: (412)963-7058

Laboratory Job ID: 180-126970-1
Laboratory Sample Delivery Group: Property ID: 891077
Client Project/Site: State M-1

For:
Chesapeake Energy Corporation
PO BOX 548806
Oklahoma City, Oklahoma 73154

Attn: Chase Acker

CathyGartner

Authorized for release by:
9/24/2021 2:07:34 PM

Cathy Gartner, Project Manager II
(615)301-5041
Cathy.Gartner@Eurofinset.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

PA Lab ID: 02-00416

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Laboratory Job ID: 180-126970-1
SDG: Property ID: 891077

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Case Narrative

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 180-126970-1
SDG: Property ID: 891077

Job ID: 180-126970-1

Laboratory: Eurofins TestAmerica, Pittsburgh

Narrative

Job Narrative
180-126970-1

Comments
No additional comments.

Receipt
The sample was received on 9/10/2021 10:17 AM. Unless otherwise noted below, the sample arrived in good condition, and where required, properly preserved and on ice.

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Subcontract Work
Method TO 15: This method was subcontracted to Eurofins Air Toxics. The subcontract laboratory certification is different from that of the facility issuing the final report.

Definitions/Glossary

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 180-126970-1
SDG: Property ID: 891077

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Sample Summary

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 180-126970-1
SDG: Property ID: 891077

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
180-126970-1	20210908 M-1	Air	09/09/21 15:25	09/10/21 10:17

Method Summary

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 180-126970-1
SDG: Property ID: 891077

Method	Method Description	Protocol	Laboratory
TO-15	TO-15	EPA	Eurofins

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

Eurofins = Eurofins Air Toxics, 180 Blue Ravine Road, Suite B, Folsom, CA 95630

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9/23/2021
Ms. Cathy Gartner
Eurofins Test America
500 Wilson Pike Circle Suite 100

Brentwood TN 37027

Project Name: CHK STATE M
Project #: CHKSTATM:H21001
Workorder #: 2109253

Dear Ms. Cathy Gartner

The following report includes the data for the above referenced project for sample(s) received on 9/10/2021 at Eurofins Air Toxics LLC.

The data and associated QC analyzed by TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics LLC. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Brian Whittaker

Project Manager

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WORK ORDER #: 2109253

Work Order Summary

CLIENT:	Ms. Cathy Gartner Eurofins Test America 500 Wilson Pike Circle Suite 100 Brentwood, TN 37027	**BILL TO:**	Accounts Payable Eurofins Test America 4104 Shuffel St NW North Canton, OH 44720
PHONE:	800-765-0980	**P.O. #**	180-126970
FAX:	615-726-3404	**PROJECT #**	CHKSTATM:H21001 CHK STATE M
DATE RECEIVED:	09/10/2021	**CONTACT:**	Brian Whittaker
DATE COMPLETED:	09/23/2021		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	20210908M-1	TO-15	9.4 "Hg	1.6 psi
02A	Lab Blank	TO-15	NA	NA
03A	CCV	TO-15	NA	NA
04A	LCS	TO-15	NA	NA
04AA	LCSD	TO-15	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 09/23/21

Technical Director

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209220, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-20-16, UT NELAP – CA009332020-12, VA NELAP - 10615, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005-014, Effective date: 10/18/2020, Expiration date: 10/17/2021.
Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

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LABORATORY NARRATIVE
EPA Method TO-15
Eurofins Test America
Workorder# 2109253

One 6 Liter Summa Canister sample was received on September 10, 2021. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

TVOC (Total Volatile Organic Compounds) referenced to Hexane includes area counts for peaks that elute from Hexane minus 0.08 minutes to Naphthalene plus 0.08 minutes and quantitating the area based on the response factor of Hexane.

The recovery of surrogate 1,2-Dichloroethane-d4 in sample 20210908M-1 was outside laboratory control limits due to high level hydrocarbon matrix interference. The surrogate recovery is flagged.

Definition of Data Qualifying Flags

Ten qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

M - Reported value may be biased due to apparent matrix interferences.

CN - See Case Narrative.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

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Summary of Detected Compounds
EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: 20210908M-1

Lab ID#: 2109253-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Acetone	8.0	92	19	220
Benzene	0.80	71	2.6	230
2-Butanone (Methyl Ethyl Ketone)	3.2	11	9.5	33
Carbon Disulfide	3.2	11	10	33
Ethyl Benzene	0.80	88	3.5	380
4-Ethyltoluene	0.80	140	4.0	700
Trichloroethene	0.80	1.2	4.3	6.6
1,2,4-Trimethylbenzene	0.80	100	4.0	500
1,3,5-Trimethylbenzene	0.80	110	4.0	560
m,p-Xylene	0.80	260	3.5	1100
o-Xylene	0.80	55	3.5	240
TVOC Ref. to Hexane	16	140000	57	490000

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Client Sample ID: 20210908M-1

Lab ID#: 2109253-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3092127**	**Date of Collection:**	**9/9/21 3:25:00 PM**
Dil. Factor:	**1.61**	**Date of Analysis:**	**9/22/21 01:26 AM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Acetone	8.0	92	19	220
Benzene	0.80	71	2.6	230
alpha-Chlorotoluene	0.80	Not Detected	4.2	Not Detected
Bromodichloromethane	0.80	Not Detected	5.4	Not Detected
Bromoform	0.80	Not Detected	8.3	Not Detected
Bromomethane	8.0	Not Detected	31	Not Detected
2-Butanone (Methyl Ethyl Ketone)	3.2	11	9.5	33
Carbon Disulfide	3.2	11	10	33
Carbon Tetrachloride	0.80	Not Detected	5.1	Not Detected
Chlorobenzene	0.80	Not Detected	3.7	Not Detected
Dibromochloromethane	0.80	Not Detected	6.8	Not Detected
Chloroethane	3.2	Not Detected	8.5	Not Detected
Chloroform	0.80	Not Detected	3.9	Not Detected
Chloromethane	8.0	Not Detected	17	Not Detected
1,2-Dibromoethane (EDB)	0.80	Not Detected	6.2	Not Detected
1,2-Dichlorobenzene	0.80	Not Detected	4.8	Not Detected
1,3-Dichlorobenzene	0.80	Not Detected	4.8	Not Detected
1,4-Dichlorobenzene	0.80	Not Detected	4.8	Not Detected
1,1-Dichloroethane	0.80	Not Detected	3.2	Not Detected
Freon 12	0.80	Not Detected	4.0	Not Detected
1,2-Dichloroethane	0.80	Not Detected	3.2	Not Detected
1,1-Dichloroethene	0.80	Not Detected	3.2	Not Detected
cis-1,2-Dichloroethene	0.80	Not Detected	3.2	Not Detected
trans-1,2-Dichloroethene	0.80	Not Detected	3.2	Not Detected
1,2-Dichloropropane	0.80	Not Detected	3.7	Not Detected
cis-1,3-Dichloropropene	0.80	Not Detected	3.6	Not Detected
trans-1,3-Dichloropropene	0.80	Not Detected	3.6	Not Detected
Freon 114	0.80	Not Detected	5.6	Not Detected
Ethyl Benzene	0.80	88	3.5	380
4-Ethyltoluene	0.80	140	4.0	700
Hexachlorobutadiene	3.2	Not Detected	34	Not Detected
2-Hexanone	3.2	Not Detected	13	Not Detected
Methylene Chloride	8.0	Not Detected	28	Not Detected
4-Methyl-2-pentanone	0.80	Not Detected	3.3	Not Detected
Styrene	0.80	Not Detected	3.4	Not Detected
1,1,2,2-Tetrachloroethane	0.80	Not Detected	5.5	Not Detected
Tetrachloroethene	0.80	Not Detected	5.5	Not Detected
Toluene	0.80	Not Detected	3.0	Not Detected
1,2,4-Trichlorobenzene	3.2	Not Detected	24	Not Detected
1,1,1-Trichloroethane	0.80	Not Detected	4.4	Not Detected
1,1,2-Trichloroethane	0.80	Not Detected	4.4	Not Detected
Trichloroethene	0.80	1.2	4.3	6.6

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Client Sample ID: 20210908M-1

Lab ID#: 2109253-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3092127**	**Date of Collection: 9/9/21 3:25:00 PM**	
Dil. Factor:	**1.61**	**Date of Analysis: 9/22/21 01:26 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.80	Not Detected	4.5	Not Detected
Freon 113	0.80	Not Detected	6.2	Not Detected
1,2,4-Trimethylbenzene	0.80	100	4.0	500
1,3,5-Trimethylbenzene	0.80	110	4.0	560
Vinyl Acetate	3.2	Not Detected	11	Not Detected
Vinyl Chloride	0.80	Not Detected	2.0	Not Detected
m,p-Xylene	0.80	260	3.5	1100
o-Xylene	0.80	55	3.5	240
TVOC Ref. to Hexane	16	140000	57	490000

Q = Exceeds Quality Control limits.

Container Type: 6 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	210 Q	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: Lab Blank

Lab ID#: 2109253-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3092107d**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/21/21 01:28 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Acetone	5.0	Not Detected	12	Not Detected
Benzene	0.50	Not Detected	1.6	Not Detected
alpha-Chlorotoluene	0.50	Not Detected	2.6	Not Detected
Bromodichloromethane	0.50	Not Detected	3.4	Not Detected
Bromoform	0.50	Not Detected	5.2	Not Detected
Bromomethane	5.0	Not Detected	19	Not Detected
2-Butanone (Methyl Ethyl Ketone)	2.0	Not Detected	5.9	Not Detected
Carbon Disulfide	2.0	Not Detected	6.2	Not Detected
Carbon Tetrachloride	0.50	Not Detected	3.1	Not Detected
Chlorobenzene	0.50	Not Detected	2.3	Not Detected
Dibromochloromethane	0.50	Not Detected	4.2	Not Detected
Chloroethane	2.0	Not Detected	5.3	Not Detected
Chloroform	0.50	Not Detected	2.4	Not Detected
Chloromethane	5.0	Not Detected	10	Not Detected
1,2-Dibromoethane (EDB)	0.50	Not Detected	3.8	Not Detected
1,2-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,3-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,4-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,1-Dichloroethane	0.50	Not Detected	2.0	Not Detected
Freon 12	0.50	Not Detected	2.5	Not Detected
1,2-Dichloroethane	0.50	Not Detected	2.0	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
trans-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
1,2-Dichloropropane	0.50	Not Detected	2.3	Not Detected
cis-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
trans-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
Freon 114	0.50	Not Detected	3.5	Not Detected
Ethyl Benzene	0.50	Not Detected	2.2	Not Detected
4-Ethyltoluene	0.50	Not Detected	2.4	Not Detected
Hexachlorobutadiene	2.0	Not Detected	21	Not Detected
2-Hexanone	2.0	Not Detected	8.2	Not Detected
Methylene Chloride	5.0	Not Detected	17	Not Detected
4-Methyl-2-pentanone	0.50	Not Detected	2.0	Not Detected
Styrene	0.50	Not Detected	2.1	Not Detected
1,1,2,2-Tetrachloroethane	0.50	Not Detected	3.4	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected
Toluene	0.50	Not Detected	1.9	Not Detected
1,2,4-Trichlorobenzene	2.0	Not Detected	15	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected	2.7	Not Detected
1,1,2-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected

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Client Sample ID: Lab Blank

Lab ID#: 2109253-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3092107d**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/21/21 01:28 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.50	Not Detected	2.8	Not Detected
Freon 113	0.50	Not Detected	3.8	Not Detected
1,2,4-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
1,3,5-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
Vinyl Acetate	2.0	Not Detected	7.0	Not Detected
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
m,p-Xylene	0.50	Not Detected	2.2	Not Detected
o-Xylene	0.50	Not Detected	2.2	Not Detected
TVOC Ref. to Hexane	10	Not Detected	35	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	103	70-130
4-Bromofluorobenzene	98	70-130

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Client Sample ID: CCV
Lab ID#: 2109253-03A
EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3092102**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/21/21 09:58 AM**	

Compound	%Recovery
Acetone	100
Benzene	100
alpha-Chlorotoluene	102
Bromodichloromethane	100
Bromoform	104
Bromomethane	99
2-Butanone (Methyl Ethyl Ketone)	104
Carbon Disulfide	101
Carbon Tetrachloride	102
Chlorobenzene	98
Dibromochloromethane	102
Chloroethane	104
Chloroform	97
Chloromethane	110
1,2-Dibromoethane (EDB)	98
1,2-Dichlorobenzene	98
1,3-Dichlorobenzene	100
1,4-Dichlorobenzene	99
1,1-Dichloroethane	98
Freon 12	102
1,2-Dichloroethane	102
1,1-Dichloroethene	97
cis-1,2-Dichloroethene	99
trans-1,2-Dichloroethene	97
1,2-Dichloropropane	98
cis-1,3-Dichloropropene	102
trans-1,3-Dichloropropene	103
Freon 114	103
Ethyl Benzene	101
4-Ethyltoluene	100
Hexachlorobutadiene	87
2-Hexanone	116
Methylene Chloride	100
4-Methyl-2-pentanone	103
Styrene	100
1,1,2,2-Tetrachloroethane	99
Tetrachloroethene	104
Toluene	100
1,2,4-Trichlorobenzene	87
1,1,1-Trichloroethane	98
1,1,2-Trichloroethane	100
Trichloroethene	100

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Client Sample ID: CCV
Lab ID#: 2109253-03A
EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3092102**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/21/21 09:58 AM**	

Compound	%Recovery
Freon 11	104
Freon 113	97
1,2,4-Trimethylbenzene	100
1,3,5-Trimethylbenzene	99
Vinyl Acetate	103
Vinyl Chloride	97
m,p-Xylene	102
o-Xylene	101
TVOC Ref. to Hexane	100

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	99	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: LCS

Lab ID#: 2109253-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3092103**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/21/21 10:25 AM**	

Compound	%Recovery	Method Limits
Acetone	98	70-130
Benzene	99	70-130
alpha-Chlorotoluene	102	70-130
Bromodichloromethane	100	70-130
Bromoform	103	70-130
Bromomethane	96	70-130
2-Butanone (Methyl Ethyl Ketone)	99	70-130
Carbon Disulfide	101	70-130
Carbon Tetrachloride	102	70-130
Chlorobenzene	98	70-130
Dibromochloromethane	102	70-130
Chloroethane	103	70-130
Chloroform	98	70-130
Chloromethane	106	70-130
1,2-Dibromoethane (EDB)	99	70-130
1,2-Dichlorobenzene	96	70-130
1,3-Dichlorobenzene	98	70-130
1,4-Dichlorobenzene	98	70-130
1,1-Dichloroethane	99	70-130
Freon 12	101	70-130
1,2-Dichloroethane	101	70-130
1,1-Dichloroethene	99	70-130
cis-1,2-Dichloroethene	101	70-130
trans-1,2-Dichloroethene	98	70-130
1,2-Dichloropropane	99	70-130
cis-1,3-Dichloropropene	102	70-130
trans-1,3-Dichloropropene	103	70-130
Freon 114	102	70-130
Ethyl Benzene	101	70-130
4-Ethyltoluene	101	70-130
Hexachlorobutadiene	102	70-130
2-Hexanone	97	70-130
Methylene Chloride	101	70-130
4-Methyl-2-pentanone	94	70-130
Styrene	99	70-130
1,1,2,2-Tetrachloroethane	97	70-130
Tetrachloroethene	104	70-130
Toluene	98	70-130
1,2,4-Trichlorobenzene	99	70-130
1,1,1-Trichloroethane	99	70-130
1,1,2-Trichloroethane	99	70-130
Trichloroethene	100	70-130

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Client Sample ID: LCS

Lab ID#: 2109253-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3092103**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/21/21 10:25 AM**	

Compound	%Recovery	Method Limits
Freon 11	103	70-130
Freon 113	99	70-130
1,2,4-Trimethylbenzene	102	70-130
1,3,5-Trimethylbenzene	98	70-130
Vinyl Acetate	102	70-130
Vinyl Chloride	95	70-130
m,p-Xylene	104	70-130
o-Xylene	101	70-130
TVOC Ref. to Hexane	Not Spiked	

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	98	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: LCSD

Lab ID#: 2109253-04AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3092104**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/21/21 10:53 AM**	

Compound	%Recovery	Method Limits
Acetone	97	70-130
Benzene	98	70-130
alpha-Chlorotoluene	103	70-130
Bromodichloromethane	98	70-130
Bromoform	104	70-130
Bromomethane	96	70-130
2-Butanone (Methyl Ethyl Ketone)	99	70-130
Carbon Disulfide	100	70-130
Carbon Tetrachloride	101	70-130
Chlorobenzene	98	70-130
Dibromochloromethane	102	70-130
Chloroethane	104	70-130
Chloroform	97	70-130
Chloromethane	106	70-130
1,2-Dibromoethane (EDB)	98	70-130
1,2-Dichlorobenzene	97	70-130
1,3-Dichlorobenzene	99	70-130
1,4-Dichlorobenzene	99	70-130
1,1-Dichloroethane	98	70-130
Freon 12	99	70-130
1,2-Dichloroethane	99	70-130
1,1-Dichloroethene	97	70-130
cis-1,2-Dichloroethene	101	70-130
trans-1,2-Dichloroethene	97	70-130
1,2-Dichloropropane	98	70-130
cis-1,3-Dichloropropene	102	70-130
trans-1,3-Dichloropropene	102	70-130
Freon 114	101	70-130
Ethyl Benzene	101	70-130
4-Ethyltoluene	101	70-130
Hexachlorobutadiene	112	70-130
2-Hexanone	97	70-130
Methylene Chloride	98	70-130
4-Methyl-2-pentanone	94	70-130
Styrene	100	70-130
1,1,2,2-Tetrachloroethane	97	70-130
Tetrachloroethene	104	70-130
Toluene	99	70-130
1,2,4-Trichlorobenzene	110	70-130
1,1,1-Trichloroethane	97	70-130
1,1,2-Trichloroethane	99	70-130
Trichloroethene	100	70-130

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Client Sample ID: LCSD

Lab ID#: 2109253-04AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**3092104**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 9/21/21 10:53 AM**	

Compound	%Recovery	Method Limits
Freon 11	102	70-130
Freon 113	98	70-130
1,2,4-Trimethylbenzene	102	70-130
1,3,5-Trimethylbenzene	99	70-130
Vinyl Acetate	105	70-130
Vinyl Chloride	97	70-130
m,p-Xylene	103	70-130
o-Xylene	101	70-130
TVOC Ref. to Hexane	Not Spiked	

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	97	70-130
4-Bromofluorobenzene	100	70-130

CHAIN OF CUSTODY RECORD

No. 2623

EQUUS Environmental LLC
(918) 921-5331

PROJECT NUMBER: CHKSTATM:H21001	PROJECT NAME: CHK STATE M
SHIPPED TO: AIR TOXICS	PROJECT MANAGER: DAVID BRADY
COC ____ of ____	TAT: STANDARD

SAMPLER'S PRINTED NAME: TERRY Fisher

SAMPLERS SIGNATURE:

PO# ____ WO# ____

*TVOC as C6-C12

2109253

	Date	Time	Sample ID	Sample Matrix	# of Sample Containers	TO-15	*TVOC as HEXANE	REMARKS
01A	9-9-21	1525	20210908M-1	AIR	1	X	X	TAG # 6L0871

TOTAL NUMBER OF CONTAINERS → 1

RELINQUISHED BY: TERRY Fisher	DATE 9-9-21 TIME 1600	RECEIVED BY:	DATE 9/10/21 TIME 1017
RELINQUISHED BY:	DATE TIME	RECEIVED BY:	DATE TIME

Custody Seal Intact?
Y N None Temp

METHOD OF SHIPMENT: FEDEX

AIRBILL NUMBER: 5196 7961 4036

RECEIVED IN LABORATORY BY: DATE TIME

Send PDF, EDD, and INVOICE (if applicable) to: QAQC@EquusEnv.com

LABORATORY CONTACT: CATHY GARTNER 615-301-5041

LABORATORY ADDRESS: 180 BLUE RAVINE RD STE B FOLSOM, CA 95630

White: Receiving Lab Yellow: Equus Environmental Project File Pink: Equus QA/QC

Login Sample Receipt Checklist

Client: Chesapeake Energy Corporation

Job Number: 180-126970-1
SDG Number: Property ID: 891077

Login Number: 126970
List Number: 1
Creator: Gartner, Cathy

List Source: Eurofins TestAmerica, Pittsburgh

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.		
The cooler's custody seal, if present, is intact.		
Sample custody seals, if present, are intact.		
The cooler or samples do not appear to have been compromised or tampered with.		
Samples were received on ice.		
Cooler Temperature is acceptable.		
Cooler Temperature is recorded.		
COC is present.		
COC is filled out in ink and legible.		
COC is filled out with all pertinent information.		
Is the Field Sampler's name present on COC?		
There are no discrepancies between the containers received and the COC.		
Samples are received within Holding Time (excluding tests with immediate HTs)		
Sample containers have legible labels.		
Containers are not broken or leaking.		
Sample collection date/times are provided.		
Appropriate sample containers are used.		
Sample bottles are completely filled.		
Sample Preservation Verified.		
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs		
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").		
Multiphasic samples are not present.		
Samples do not require splitting or compositing.		
Residual Chlorine Checked.		

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Pittsburgh
301 Alpha Drive
RIDC Park
Pittsburgh, PA 15238
Tel: (412)963-7058

Laboratory Job ID: 180-131325-1
Laboratory Sample Delivery Group: Property ID: 891077
Client Project/Site: State M-1

For:
Chesapeake Energy Corporation
PO BOX 548806
Oklahoma City, Oklahoma 73154

Attn: Chase Acker

CathyGartner

Authorized for release by:
12/21/2021 5:31:40 PM

Cathy Gartner, Project Manager II
(615)301-5041
Cathy.Gartner@Eurofinset.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

PA Lab ID: 02-00416

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Laboratory Job ID: 180-131325-1
SDG: Property ID: 891077

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Case Narrative

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 180-131325-1
SDG: Property ID: 891077

Job ID: 180-131325-1

Laboratory: Eurofins TestAmerica, Pittsburgh

Narrative

Job Narrative
180-131325-1

Comments
No additional comments.

Receipt
The sample was received on 12/8/2021 12:09 PM. Unless otherwise noted below, the sample arrived in good condition.

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Subcontract Work
Method TO 15: This method was subcontracted to Eurofins Air Toxics. The subcontract laboratory certification is different from that of the facility issuing the final report.

Definitions/Glossary

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 180-131325-1
SDG: Property ID: 891077

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Sample Summary

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 180-131325-1
SDG: Property ID: 891077

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
180-131325-1	20211207 M-1	Air	12/07/21 12:50	12/08/21 12:09

Method Summary

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 180-131325-1
SDG: Property ID: 891077

Method	Method Description	Protocol	Laboratory
TO-15	TO-15	EPA	Eurofins

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

Eurofins = Eurofins Air Toxics, 180 Blue Ravine Road, Suite B, Folsom, CA 95630

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12/21/2021
Ms. Cathy Gartner
Eurofins Test America
500 Wilson Pike Circle Suite 100

Brentwood TN 37027

Project Name: CHK STATE M
Project #: CHKSTATM:H21001
Workorder #: 2112234

Dear Ms. Cathy Gartner

The following report includes the data for the above referenced project for sample(s) received on 12/8/2021 at Eurofins Air Toxics LLC.

The data and associated QC analyzed by TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics LLC. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Brian Whittaker

Project Manager

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WORK ORDER #: 2112234

Work Order Summary

CLIENT:	Ms. Cathy Gartner Eurofins Test America 500 Wilson Pike Circle Suite 100 Brentwood, TN 37027	**BILL TO:**	Accounts Payable Eurofins Test America 4104 Shuffel St NW North Canton, OH 44720
PHONE:	800-765-0980	**P.O. #**	180-131325
FAX:	615-726-3404	**PROJECT #**	CHKSTATM:H21001 CHK STATE M
DATE RECEIVED:	12/08/2021	**CONTACT:**	Brian Whittaker
DATE COMPLETED:	12/21/2021		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	20211207M-1	TO-15	7.6 "Hg	1.8 psi
02A	Lab Blank	TO-15	NA	NA
03A	CCV	TO-15	NA	NA
04A	LCS	TO-15	NA	NA
04AA	LCSD	TO-15	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 12/21/21

Technical Director

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209221, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-21-17, UT NELAP – CA009332021-13, VA NELAP - 10615, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005-015, Effective date: 10/18/2021, Expiration date: 10/17/2022.
Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

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LABORATORY NARRATIVE
EPA Method TO-15
Eurofins Test America
Workorder# 2112234

One 6 Liter Summa Canister sample was received on December 08, 2021. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

TVOC (Total Volatile Organic Compounds) referenced to Hexane includes area counts for peaks that elute from Hexane minus 0.08 minutes to Naphthalene plus 0.08 minutes and quantitating the area based on the response factor of Hexane.

Definition of Data Qualifying Flags

Ten qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

M - Reported value may be biased due to apparent matrix interferences.

CN - See Case Narrative.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

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Summary of Detected Compounds
EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: 20211207M-1

Lab ID#: 2112234-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Acetone	7.5	8.6	18	20
1,2,4-Trimethylbenzene	0.75	0.80	3.7	3.9
1,3,5-Trimethylbenzene	0.75	1.3	3.7	6.6
TVOC Ref. to Hexane	15	1600	53	5600

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Client Sample ID: 20211207M-1

Lab ID#: 2112234-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17121623**	**Date of Collection:**	**12/7/21 12:50:00 PM**
Dil. Factor:	**1.50**	**Date of Analysis:**	**12/17/21 02:37 AM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Acetone	7.5	8.6	18	20
Benzene	0.75	Not Detected	2.4	Not Detected
alpha-Chlorotoluene	0.75	Not Detected	3.9	Not Detected
Bromodichloromethane	0.75	Not Detected	5.0	Not Detected
Bromoform	0.75	Not Detected	7.8	Not Detected
Bromomethane	7.5	Not Detected	29	Not Detected
2-Butanone (Methyl Ethyl Ketone)	3.0	Not Detected	8.8	Not Detected
Carbon Disulfide	3.0	Not Detected	9.3	Not Detected
Carbon Tetrachloride	0.75	Not Detected	4.7	Not Detected
Chlorobenzene	0.75	Not Detected	3.4	Not Detected
Dibromochloromethane	0.75	Not Detected	6.4	Not Detected
Chloroethane	3.0	Not Detected	7.9	Not Detected
Chloroform	0.75	Not Detected	3.7	Not Detected
Chloromethane	7.5	Not Detected	15	Not Detected
1,2-Dibromoethane (EDB)	0.75	Not Detected	5.8	Not Detected
1,2-Dichlorobenzene	0.75	Not Detected	4.5	Not Detected
1,3-Dichlorobenzene	0.75	Not Detected	4.5	Not Detected
1,4-Dichlorobenzene	0.75	Not Detected	4.5	Not Detected
1,1-Dichloroethane	0.75	Not Detected	3.0	Not Detected
Freon 12	0.75	Not Detected	3.7	Not Detected
1,2-Dichloroethane	0.75	Not Detected	3.0	Not Detected
1,1-Dichloroethene	0.75	Not Detected	3.0	Not Detected
cis-1,2-Dichloroethene	0.75	Not Detected	3.0	Not Detected
trans-1,2-Dichloroethene	0.75	Not Detected	3.0	Not Detected
1,2-Dichloropropane	0.75	Not Detected	3.5	Not Detected
cis-1,3-Dichloropropene	0.75	Not Detected	3.4	Not Detected
trans-1,3-Dichloropropene	0.75	Not Detected	3.4	Not Detected
Freon 114	0.75	Not Detected	5.2	Not Detected
Ethyl Benzene	0.75	Not Detected	3.2	Not Detected
4-Ethyltoluene	0.75	Not Detected	3.7	Not Detected
Hexachlorobutadiene	3.0	Not Detected	32	Not Detected
2-Hexanone	3.0	Not Detected	12	Not Detected
Methylene Chloride	7.5	Not Detected	26	Not Detected
4-Methyl-2-pentanone	0.75	Not Detected	3.1	Not Detected
Styrene	0.75	Not Detected	3.2	Not Detected
1,1,2,2-Tetrachloroethane	0.75	Not Detected	5.1	Not Detected
Tetrachloroethene	0.75	Not Detected	5.1	Not Detected
Toluene	0.75	Not Detected	2.8	Not Detected
1,2,4-Trichlorobenzene	3.0	Not Detected	22	Not Detected
1,1,1-Trichloroethane	0.75	Not Detected	4.1	Not Detected
1,1,2-Trichloroethane	0.75	Not Detected	4.1	Not Detected
Trichloroethene	0.75	Not Detected	4.0	Not Detected

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Client Sample ID: 20211207M-1

Lab ID#: 2112234-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17121623**	**Date of Collection: 12/7/21 12:50:00 PM**	
Dil. Factor:	**1.50**	**Date of Analysis: 12/17/21 02:37 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.75	Not Detected	4.2	Not Detected
Freon 113	0.75	Not Detected	5.7	Not Detected
1,2,4-Trimethylbenzene	0.75	0.80	3.7	3.9
1,3,5-Trimethylbenzene	0.75	1.3	3.7	6.6
Vinyl Acetate	3.0	Not Detected	10	Not Detected
Vinyl Chloride	0.75	Not Detected	1.9	Not Detected
m,p-Xylene	0.75	Not Detected	3.2	Not Detected
o-Xylene	0.75	Not Detected	3.2	Not Detected
TVOC Ref. to Hexane	15	1600	53	5600

Container Type: 6 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	99	70-130
4-Bromofluorobenzene	104	70-130

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Client Sample ID: Lab Blank

Lab ID#: 2112234-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17121607d**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/16/21 01:29 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Acetone	5.0	Not Detected	12	Not Detected
Benzene	0.50	Not Detected	1.6	Not Detected
alpha-Chlorotoluene	0.50	Not Detected	2.6	Not Detected
Bromodichloromethane	0.50	Not Detected	3.4	Not Detected
Bromoform	0.50	Not Detected	5.2	Not Detected
Bromomethane	5.0	Not Detected	19	Not Detected
2-Butanone (Methyl Ethyl Ketone)	2.0	Not Detected	5.9	Not Detected
Carbon Disulfide	2.0	Not Detected	6.2	Not Detected
Carbon Tetrachloride	0.50	Not Detected	3.1	Not Detected
Chlorobenzene	0.50	Not Detected	2.3	Not Detected
Dibromochloromethane	0.50	Not Detected	4.2	Not Detected
Chloroethane	2.0	Not Detected	5.3	Not Detected
Chloroform	0.50	Not Detected	2.4	Not Detected
Chloromethane	5.0	Not Detected	10	Not Detected
1,2-Dibromoethane (EDB)	0.50	Not Detected	3.8	Not Detected
1,2-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,3-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,4-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,1-Dichloroethane	0.50	Not Detected	2.0	Not Detected
Freon 12	0.50	Not Detected	2.5	Not Detected
1,2-Dichloroethane	0.50	Not Detected	2.0	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
trans-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
1,2-Dichloropropane	0.50	Not Detected	2.3	Not Detected
cis-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
trans-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
Freon 114	0.50	Not Detected	3.5	Not Detected
Ethyl Benzene	0.50	Not Detected	2.2	Not Detected
4-Ethyltoluene	0.50	Not Detected	2.4	Not Detected
Hexachlorobutadiene	2.0	Not Detected	21	Not Detected
2-Hexanone	2.0	Not Detected	8.2	Not Detected
Methylene Chloride	5.0	Not Detected	17	Not Detected
4-Methyl-2-pentanone	0.50	Not Detected	2.0	Not Detected
Styrene	0.50	Not Detected	2.1	Not Detected
1,1,2,2-Tetrachloroethane	0.50	Not Detected	3.4	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected
Toluene	0.50	Not Detected	1.9	Not Detected
1,2,4-Trichlorobenzene	2.0	Not Detected	15	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected	2.7	Not Detected
1,1,2-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected

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Client Sample ID: Lab Blank

Lab ID#: 2112234-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17121607d**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/16/21 01:29 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.50	Not Detected	2.8	Not Detected
Freon 113	0.50	Not Detected	3.8	Not Detected
1,2,4-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
1,3,5-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
Vinyl Acetate	2.0	Not Detected	7.0	Not Detected
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
m,p-Xylene	0.50	Not Detected	2.2	Not Detected
o-Xylene	0.50	Not Detected	2.2	Not Detected
TVOC Ref. to Hexane	10	Not Detected	35	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	94	70-130
4-Bromofluorobenzene	101	70-130

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Client Sample ID: CCV
Lab ID#: 2112234-03A
EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17121604**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/16/21 11:14 AM**	

Compound	%Recovery
Acetone	92
Benzene	97
alpha-Chlorotoluene	102
Bromodichloromethane	98
Bromoform	103
Bromomethane	88
2-Butanone (Methyl Ethyl Ketone)	97
Carbon Disulfide	96
Carbon Tetrachloride	96
Chlorobenzene	98
Dibromochloromethane	101
Chloroethane	96
Chloroform	94
Chloromethane	105
1,2-Dibromoethane (EDB)	100
1,2-Dichlorobenzene	98
1,3-Dichlorobenzene	98
1,4-Dichlorobenzene	99
1,1-Dichloroethane	95
Freon 12	96
1,2-Dichloroethane	96
1,1-Dichloroethene	100
cis-1,2-Dichloroethene	99
trans-1,2-Dichloroethene	98
1,2-Dichloropropane	98
cis-1,3-Dichloropropene	103
trans-1,3-Dichloropropene	104
Freon 114	98
Ethyl Benzene	101
4-Ethyltoluene	99
Hexachlorobutadiene	98
2-Hexanone	97
Methylene Chloride	97
4-Methyl-2-pentanone	97
Styrene	104
1,1,2,2-Tetrachloroethane	96
Tetrachloroethene	102
Toluene	98
1,2,4-Trichlorobenzene	103
1,1,1-Trichloroethane	96
1,1,2-Trichloroethane	99
Trichloroethene	101

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Client Sample ID: CCV

Lab ID#: 2112234-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17121604**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/16/21 11:14 AM**	

Compound	%Recovery
Freon 11	96
Freon 113	97
1,2,4-Trimethylbenzene	99
1,3,5-Trimethylbenzene	98
Vinyl Acetate	103
Vinyl Chloride	97
m,p-Xylene	102
o-Xylene	104
TVOC Ref. to Hexane	100

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	94	70-130
4-Bromofluorobenzene	102	70-130

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Client Sample ID: LCS

Lab ID#: 2112234-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17121605**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/16/21 11:53 AM**	

Compound	%Recovery	Method Limits
Acetone	90	70-130
Benzene	96	70-130
alpha-Chlorotoluene	99	70-130
Bromodichloromethane	95	70-130
Bromoform	102	70-130
Bromomethane	88	70-130
2-Butanone (Methyl Ethyl Ketone)	95	70-130
Carbon Disulfide	96	70-130
Carbon Tetrachloride	96	70-130
Chlorobenzene	97	70-130
Dibromochloromethane	100	70-130
Chloroethane	97	70-130
Chloroform	92	70-130
Chloromethane	104	70-130
1,2-Dibromoethane (EDB)	99	70-130
1,2-Dichlorobenzene	95	70-130
1,3-Dichlorobenzene	96	70-130
1,4-Dichlorobenzene	96	70-130
1,1-Dichloroethane	94	70-130
Freon 12	95	70-130
1,2-Dichloroethane	94	70-130
1,1-Dichloroethene	98	70-130
cis-1,2-Dichloroethene	98	70-130
trans-1,2-Dichloroethene	99	70-130
1,2-Dichloropropane	96	70-130
cis-1,3-Dichloropropene	102	70-130
trans-1,3-Dichloropropene	103	70-130
Freon 114	99	70-130
Ethyl Benzene	102	70-130
4-Ethyltoluene	98	70-130
Hexachlorobutadiene	94	70-130
2-Hexanone	98	70-130
Methylene Chloride	94	70-130
4-Methyl-2-pentanone	97	70-130
Styrene	104	70-130
1,1,2,2-Tetrachloroethane	97	70-130
Tetrachloroethene	103	70-130
Toluene	96	70-130
1,2,4-Trichlorobenzene	96	70-130
1,1,1-Trichloroethane	97	70-130
1,1,2-Trichloroethane	102	70-130
Trichloroethene	101	70-130

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Client Sample ID: LCS

Lab ID#: 2112234-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17121605**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/16/21 11:53 AM**	

Compound	%Recovery	Method Limits
Freon 11	95	70-130
Freon 113	98	70-130
1,2,4-Trimethylbenzene	98	70-130
1,3,5-Trimethylbenzene	99	70-130
Vinyl Acetate	120	70-130
Vinyl Chloride	97	70-130
m,p-Xylene	102	70-130
o-Xylene	103	70-130
TVOC Ref. to Hexane	Not Spiked	

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	95	70-130
4-Bromofluorobenzene	102	70-130

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Client Sample ID: LCSD
Lab ID#: 2112234-04AA
EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17121606**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/16/21 12:31 PM**	

Compound	%Recovery	Method Limits
Acetone	88	70-130
Benzene	95	70-130
alpha-Chlorotoluene	98	70-130
Bromodichloromethane	94	70-130
Bromoform	101	70-130
Bromomethane	87	70-130
2-Butanone (Methyl Ethyl Ketone)	94	70-130
Carbon Disulfide	95	70-130
Carbon Tetrachloride	95	70-130
Chlorobenzene	97	70-130
Dibromochloromethane	100	70-130
Chloroethane	95	70-130
Chloroform	90	70-130
Chloromethane	102	70-130
1,2-Dibromoethane (EDB)	99	70-130
1,2-Dichlorobenzene	96	70-130
1,3-Dichlorobenzene	96	70-130
1,4-Dichlorobenzene	96	70-130
1,1-Dichloroethane	92	70-130
Freon 12	93	70-130
1,2-Dichloroethane	93	70-130
1,1-Dichloroethene	97	70-130
cis-1,2-Dichloroethene	97	70-130
trans-1,2-Dichloroethene	97	70-130
1,2-Dichloropropane	94	70-130
cis-1,3-Dichloropropene	101	70-130
trans-1,3-Dichloropropene	102	70-130
Freon 114	97	70-130
Ethyl Benzene	101	70-130
4-Ethyltoluene	97	70-130
Hexachlorobutadiene	97	70-130
2-Hexanone	97	70-130
Methylene Chloride	92	70-130
4-Methyl-2-pentanone	96	70-130
Styrene	103	70-130
1,1,2,2-Tetrachloroethane	96	70-130
Tetrachloroethene	102	70-130
Toluene	95	70-130
1,2,4-Trichlorobenzene	100	70-130
1,1,1-Trichloroethane	96	70-130
1,1,2-Trichloroethane	101	70-130
Trichloroethene	100	70-130

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Client Sample ID: LCSD

Lab ID#: 2112234-04AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**17121606**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 12/16/21 12:31 PM**	

Compound	%Recovery	Method Limits
Freon 11	94	70-130
Freon 113	96	70-130
1,2,4-Trimethylbenzene	98	70-130
1,3,5-Trimethylbenzene	98	70-130
Vinyl Acetate	116	70-130
Vinyl Chloride	95	70-130
m,p-Xylene	101	70-130
o-Xylene	102	70-130
TVOC Ref. to Hexane	Not Spiked	

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	93	70-130
4-Bromofluorobenzene	102	70-130

CHAIN OF CUSTODY RECORD

No. 2702

EQUUS Environmental LLC (918) 921-5331

PROJECT NUMBER: CHKSTATM: H21001
PROJECT NAME: CHK STATE M
COC 1 of 1
SHIPPED TO: AIR TOXICS
PROJECT MANAGER: DAVID BRADY
TAT: STANDARD
SAMPLER'S PRINTED NAME: TERRY FISHER
SAMPLERS SIGNATURE:
PO# —
WO# —

* TVOC as C_6-C_{12}

Date	Time	Sample ID	Sample Matrix	# of Sample Containers	TO-15	*TVOC as HEXANE
12-7-21	1250	20211207M-1	Air	1	X	X

REMARKS: TAG #: 5668

Custody Seal Intact?
Y N None Temp ΔLO

TOTAL NUMBER OF CONTAINERS: 1

RELINQUISHED BY: TERRY Fisher — DATE 12/7/21 — TIME 1600
RECEIVED BY: [signature] — DATE 12.8.21 — TIME 1209
RELINQUISHED BY: — DATE — TIME
RECEIVED BY: — DATE — TIME

2112234

METHOD OF SHIPMENT: FEDEX
AIRBILL NUMBER: 5196 7464 3970
RECEIVED IN LABORATORY BY: — DATE — TIME
Send PDF, EDD, and INVOICE (if applicable) to: QAQC@EquusEnv.com
LABORATORY CONTACT: CATHY 615-301-5041
LABORATORY ADDRESS: 180 BLUE RAVINE RD STE B FOLSOM, CA 95630

White: Receiving Lab Yellow: Equus Environmental Project File Pink: Equus QA/QC

Login Sample Receipt Checklist

Client: Chesapeake Energy Corporation

Job Number: 180-131325-1
SDG Number: Property ID: 891077

Login Number: 131325
List Number: 1
Creator: Gartner, Cathy

List Source: Eurofins TestAmerica, Pittsburgh

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.		
The cooler's custody seal, if present, is intact.		
Sample custody seals, if present, are intact.		
The cooler or samples do not appear to have been compromised or tampered with.		
Samples were received on ice.		
Cooler Temperature is acceptable.		
Cooler Temperature is recorded.		
COC is present.		
COC is filled out in ink and legible.		
COC is filled out with all pertinent information.		
Is the Field Sampler's name present on COC?		
There are no discrepancies between the containers received and the COC.		
Samples are received within Holding Time (excluding tests with immediate HTs)		
Sample containers have legible labels.		
Containers are not broken or leaking.		
Sample collection date/times are provided.		
Appropriate sample containers are used.		
Sample bottles are completely filled.		
Sample Preservation Verified.		
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs		
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").		
Multiphasic samples are not present.		
Samples do not require splitting or compositing.		
Residual Chlorine Checked.		

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ANALYTICAL REPORT

Eurofins Pittsburgh
301 Alpha Drive
RIDC Park
Pittsburgh, PA 15238
Tel: (412)963-7058

Laboratory Job ID: 180-135471-1
Laboratory Sample Delivery Group: Property ID: 891077
Client Project/Site: State M-1

For:
Chesapeake Energy Corporation
PO BOX 548806
Oklahoma City, Oklahoma 73154

Attn: Chase Acker

CathyGartner

Authorized for release by:
3/27/2022 5:08:36 PM

Cathy Gartner, Project Manager II
(615)301-5041
Cathy.Gartner@Eurofinset.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

PA Lab ID: 02-00416

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Laboratory Job ID: 180-135471-1
SDG: Property ID: 891077

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Case Narrative

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 180-135471-1
SDG: Property ID: 891077

Job ID: 180-135471-1

Laboratory: Eurofins Pittsburgh

Narrative

Job Narrative
180-135471-1

Comments
No additional comments.

Receipt
The sample was received on 3/14/2022 10:23 AM. Unless otherwise noted below, the sample arrived in good condition, and where required, properly preserved and on ice.

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Subcontract Work
Method TO 15: This method was subcontracted to Eurofins Air Toxics. The subcontract laboratory certification is different from that of the facility issuing the final report.

Definitions/Glossary

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 180-135471-1
SDG: Property ID: 891077

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Sample Summary

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 180-135471-1
SDG: Property ID: 891077

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
180-135471-1	20220308 M-1	Air	03/08/22 12:51	03/14/22 10:23

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3/25/2022
Ms. Cathy Gartner
Eurofins Test America
500 Wilson Pike Circle Suite 100

Brentwood TN 37027

Project Name: CHKSTATM
Project #: CHKSTATM
Workorder #: 2203521

Dear Ms. Cathy Gartner

The following report includes the data for the above referenced project for sample(s) received on 3/14/2022 at Eurofins Air Toxics LLC.

The data and associated QC analyzed by TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics LLC. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Brian Whittaker at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Brian Whittaker

Project Manager

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WORK ORDER #: 2203521

Work Order Summary

CLIENT:	Ms. Cathy Gartner Eurofins Test America 500 Wilson Pike Circle Suite 100 Brentwood, TN 37027	**BILL TO:**	Accounts Payable Eurofins Test America 4104 Shuffel St NW North Canton, OH 44720
PHONE:	800-765-0980	**P.O. #**	180-135471
FAX:	615-726-3404	**PROJECT #**	CHKSTATM CHKSTATM
DATE RECEIVED:	03/14/2022	**CONTACT:**	Brian Whittaker
DATE COMPLETED:	03/25/2022		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	20220308M-1	TO-15	8 "Hg	2 psi
02A	Lab Blank	TO-15	NA	NA
03A	CCV	TO-15	NA	NA
04A	LCS	TO-15	NA	NA
04AA	LCSD	TO-15	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 03/25/22

Technical Director

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209221, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-21-17, UT NELAP – CA009332021-13, VA NELAP - 10615, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005-015, Effective date: 10/18/2021, Expiration date: 10/17/2022.
Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

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LABORATORY NARRATIVE
EPA Method TO-15
Eurofins Test America
Workorder# 2203521

One 6 Liter Summa Canister sample was received on March 14, 2022. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

TVOC (Total Volatile Organic Compounds) referenced to Hexane includes area counts for peaks that elute from Hexane minus 0.08 minutes to Naphthalene plus 0.08 minutes and quantitating the area based on the response factor of Hexane.

Dilution was performed on sample 20220308M-1 due to the presence of high level non-target species.

Definition of Data Qualifying Flags

Ten qualifiers may have been used on the data analysis sheets and indicates as follows:
B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).
J - Estimated value.
E - Exceeds instrument calibration range.
S - Saturated peak.
Q - Exceeds quality control limits.
U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.
UJ- Non-detected compound associated with low bias in the CCV
N - The identification is based on presumptive evidence.
M - Reported value may be biased due to apparent matrix interferences.
CN - See Case Narrative.

File extensions may have been used on the data analysis sheets and indicates as follows:
a-File was requantified
b-File was quantified by a second column and detector
r1-File was requantified for the purpose of reissue

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Summary of Detected Compounds
EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: 20220308M-1

Lab ID#: 2203521-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Acetone	16	30	37	70
Ethyl Benzene	1.6	5.2	6.7	22
4-Ethyltoluene	1.6	27	7.6	130
1,2,4-Trimethylbenzene	1.6	9.7	7.6	48
1,3,5-Trimethylbenzene	1.6	14	7.6	70
m,p-Xylene	1.6	20	6.7	85
o-Xylene	1.6	4.0	6.7	18
TVOC Ref. to Hexane	31	24000	110	84000

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Client Sample ID: 20220308M-1

Lab ID#: 2203521-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a032506**	**Date of Collection:**	**3/8/22 12:51:00 PM**
Dil. Factor:	**3.10**	**Date of Analysis:**	**3/25/22 01:07 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Acetone	16	30	37	70
Benzene	1.6	Not Detected	5.0	Not Detected
alpha-Chlorotoluene	1.6	Not Detected	8.0	Not Detected
Bromodichloromethane	1.6	Not Detected	10	Not Detected
Bromoform	1.6	Not Detected	16	Not Detected
Bromomethane	16	Not Detected	60	Not Detected
2-Butanone (Methyl Ethyl Ketone)	6.2	Not Detected	18	Not Detected
Carbon Disulfide	6.2	Not Detected	19	Not Detected
Carbon Tetrachloride	1.6	Not Detected	9.8	Not Detected
Chlorobenzene	1.6	Not Detected	7.1	Not Detected
Dibromochloromethane	1.6	Not Detected	13	Not Detected
Chloroethane	6.2	Not Detected	16	Not Detected
Chloroform	1.6	Not Detected	7.6	Not Detected
Chloromethane	16	Not Detected	32	Not Detected
1,2-Dibromoethane (EDB)	1.6	Not Detected	12	Not Detected
1,2-Dichlorobenzene	1.6	Not Detected	9.3	Not Detected
1,3-Dichlorobenzene	1.6	Not Detected	9.3	Not Detected
1,4-Dichlorobenzene	1.6	Not Detected	9.3	Not Detected
1,1-Dichloroethane	1.6	Not Detected	6.3	Not Detected
Freon 12	1.6	Not Detected	7.7	Not Detected
1,2-Dichloroethane	1.6	Not Detected	6.3	Not Detected
1,1-Dichloroethene	1.6	Not Detected	6.1	Not Detected
cis-1,2-Dichloroethene	1.6	Not Detected	6.1	Not Detected
trans-1,2-Dichloroethene	1.6	Not Detected	6.1	Not Detected
1,2-Dichloropropane	1.6	Not Detected	7.2	Not Detected
cis-1,3-Dichloropropene	1.6	Not Detected	7.0	Not Detected
trans-1,3-Dichloropropene	1.6	Not Detected	7.0	Not Detected
Freon 114	1.6	Not Detected	11	Not Detected
Ethyl Benzene	1.6	5.2	6.7	22
4-Ethyltoluene	1.6	27	7.6	130
Hexachlorobutadiene	6.2	Not Detected	66	Not Detected
2-Hexanone	6.2	Not Detected	25	Not Detected
Methylene Chloride	16	Not Detected	54	Not Detected
4-Methyl-2-pentanone	1.6	Not Detected	6.3	Not Detected
Styrene	1.6	Not Detected	6.6	Not Detected
1,1,2,2-Tetrachloroethane	1.6	Not Detected	11	Not Detected
Tetrachloroethene	1.6	Not Detected	10	Not Detected
Toluene	1.6	Not Detected	5.8	Not Detected
1,2,4-Trichlorobenzene	6.2	Not Detected	46	Not Detected
1,1,1-Trichloroethane	1.6	Not Detected	8.4	Not Detected
1,1,2-Trichloroethane	1.6	Not Detected	8.4	Not Detected
Trichloroethene	1.6	Not Detected	8.3	Not Detected

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Client Sample ID: 20220308M-1

Lab ID#: 2203521-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a032506**	**Date of Collection: 3/8/22 12:51:00 PM**	
Dil. Factor:	**3.10**	**Date of Analysis: 3/25/22 01:07 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	1.6	Not Detected	8.7	Not Detected
Freon 113	1.6	Not Detected	12	Not Detected
1,2,4-Trimethylbenzene	1.6	9.7	7.6	48
1,3,5-Trimethylbenzene	1.6	14	7.6	70
Vinyl Acetate	6.2	Not Detected	22	Not Detected
Vinyl Chloride	1.6	Not Detected	4.0	Not Detected
m,p-Xylene	1.6	20	6.7	85
o-Xylene	1.6	4.0	6.7	18
TVOC Ref. to Hexane	31	24000	110	84000

Container Type: 6 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	108	70-130
1,2-Dichloroethane-d4	99	70-130
4-Bromofluorobenzene	96	70-130

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Client Sample ID: Lab Blank

Lab ID#: 2203521-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a032505c**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/25/22 11:14 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Acetone	5.0	Not Detected	12	Not Detected
Benzene	0.50	Not Detected	1.6	Not Detected
alpha-Chlorotoluene	0.50	Not Detected	2.6	Not Detected
Bromodichloromethane	0.50	Not Detected	3.4	Not Detected
Bromoform	0.50	Not Detected	5.2	Not Detected
Bromomethane	5.0	Not Detected	19	Not Detected
2-Butanone (Methyl Ethyl Ketone)	2.0	Not Detected	5.9	Not Detected
Carbon Disulfide	2.0	Not Detected	6.2	Not Detected
Carbon Tetrachloride	0.50	Not Detected	3.1	Not Detected
Chlorobenzene	0.50	Not Detected	2.3	Not Detected
Dibromochloromethane	0.50	Not Detected	4.2	Not Detected
Chloroethane	2.0	Not Detected	5.3	Not Detected
Chloroform	0.50	Not Detected	2.4	Not Detected
Chloromethane	5.0	Not Detected	10	Not Detected
1,2-Dibromoethane (EDB)	0.50	Not Detected	3.8	Not Detected
1,2-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,3-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,4-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,1-Dichloroethane	0.50	Not Detected	2.0	Not Detected
Freon 12	0.50	Not Detected	2.5	Not Detected
1,2-Dichloroethane	0.50	Not Detected	2.0	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
trans-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
1,2-Dichloropropane	0.50	Not Detected	2.3	Not Detected
cis-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
trans-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
Freon 114	0.50	Not Detected	3.5	Not Detected
Ethyl Benzene	0.50	Not Detected	2.2	Not Detected
4-Ethyltoluene	0.50	Not Detected	2.4	Not Detected
Hexachlorobutadiene	2.0	Not Detected	21	Not Detected
2-Hexanone	2.0	Not Detected	8.2	Not Detected
Methylene Chloride	5.0	Not Detected	17	Not Detected
4-Methyl-2-pentanone	0.50	Not Detected	2.0	Not Detected
Styrene	0.50	Not Detected	2.1	Not Detected
1,1,2,2-Tetrachloroethane	0.50	Not Detected	3.4	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected
Toluene	0.50	Not Detected	1.9	Not Detected
1,2,4-Trichlorobenzene	2.0	Not Detected	15	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected	2.7	Not Detected
1,1,2-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected

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Client Sample ID: Lab Blank

Lab ID#: 2203521-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a032505c**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/25/22 11:14 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 11	0.50	Not Detected	2.8	Not Detected
Freon 113	0.50	Not Detected	3.8	Not Detected
1,2,4-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
1,3,5-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
Vinyl Acetate	2.0	Not Detected	7.0	Not Detected
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
m,p-Xylene	0.50	Not Detected	2.2	Not Detected
o-Xylene	0.50	Not Detected	2.2	Not Detected
TVOC Ref. to Hexane	10	Not Detected	35	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	109	70-130
1,2-Dichloroethane-d4	93	70-130
4-Bromofluorobenzene	98	70-130

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Client Sample ID: CCV
Lab ID#: 2203521-03A
EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a032502**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/25/22 09:18 AM**	

Compound	%Recovery
Acetone	92
Benzene	98
alpha-Chlorotoluene	109
Bromodichloromethane	102
Bromoform	107
Bromomethane	100
2-Butanone (Methyl Ethyl Ketone)	104
Carbon Disulfide	98
Carbon Tetrachloride	99
Chlorobenzene	101
Dibromochloromethane	99
Chloroethane	99
Chloroform	100
Chloromethane	96
1,2-Dibromoethane (EDB)	100
1,2-Dichlorobenzene	102
1,3-Dichlorobenzene	101
1,4-Dichlorobenzene	102
1,1-Dichloroethane	102
Freon 12	97
1,2-Dichloroethane	93
1,1-Dichloroethene	104
cis-1,2-Dichloroethene	107
trans-1,2-Dichloroethene	103
1,2-Dichloropropane	108
cis-1,3-Dichloropropene	110
trans-1,3-Dichloropropene	95
Freon 114	99
Ethyl Benzene	100
4-Ethyltoluene	106
Hexachlorobutadiene	96
2-Hexanone	95
Methylene Chloride	101
4-Methyl-2-pentanone	110
Styrene	111
1,1,2,2-Tetrachloroethane	102
Tetrachloroethene	94
Toluene	110
1,2,4-Trichlorobenzene	96
1,1,1-Trichloroethane	98
1,1,2-Trichloroethane	97
Trichloroethene	104

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Client Sample ID: CCV

Lab ID#: 2203521-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a032502**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/25/22 09:18 AM**	

Compound	%Recovery
Freon 11	94
Freon 113	101
1,2,4-Trimethylbenzene	104
1,3,5-Trimethylbenzene	105
Vinyl Acetate	105
Vinyl Chloride	99
m,p-Xylene	104
o-Xylene	105
TVOC Ref. to Hexane	100

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	108	70-130
1,2-Dichloroethane-d4	96	70-130
4-Bromofluorobenzene	100	70-130

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Client Sample ID: LCS

Lab ID#: 2203521-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a032503**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/25/22 09:41 AM**	

Compound	%Recovery	Method Limits
Acetone	86	70-130
Benzene	98	70-130
alpha-Chlorotoluene	111	70-130
Bromodichloromethane	102	70-130
Bromoform	108	70-130
Bromomethane	94	70-130
2-Butanone (Methyl Ethyl Ketone)	99	70-130
Carbon Disulfide	97	70-130
Carbon Tetrachloride	98	70-130
Chlorobenzene	102	70-130
Dibromochloromethane	97	70-130
Chloroethane	99	70-130
Chloroform	97	70-130
Chloromethane	91	70-130
1,2-Dibromoethane (EDB)	99	70-130
1,2-Dichlorobenzene	104	70-130
1,3-Dichlorobenzene	101	70-130
1,4-Dichlorobenzene	102	70-130
1,1-Dichloroethane	100	70-130
Freon 12	94	70-130
1,2-Dichloroethane	93	70-130
1,1-Dichloroethene	102	70-130
cis-1,2-Dichloroethene	104	70-130
trans-1,2-Dichloroethene	102	70-130
1,2-Dichloropropane	108	70-130
cis-1,3-Dichloropropene	112	70-130
trans-1,3-Dichloropropene	96	70-130
Freon 114	96	70-130
Ethyl Benzene	100	70-130
4-Ethyltoluene	108	70-130
Hexachlorobutadiene	113	70-130
2-Hexanone	91	70-130
Methylene Chloride	94	70-130
4-Methyl-2-pentanone	109	70-130
Styrene	111	70-130
1,1,2,2-Tetrachloroethane	106	70-130
Tetrachloroethene	94	70-130
Toluene	111	70-130
1,2,4-Trichlorobenzene	113	70-130
1,1,1-Trichloroethane	99	70-130
1,1,2-Trichloroethane	101	70-130
Trichloroethene	103	70-130

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Client Sample ID: LCS

Lab ID#: 2203521-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a032503**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/25/22 09:41 AM**	

Compound	%Recovery	Method Limits
Freon 11	93	70-130
Freon 113	97	70-130
1,2,4-Trimethylbenzene	106	70-130
1,3,5-Trimethylbenzene	106	70-130
Vinyl Acetate	120	70-130
Vinyl Chloride	94	70-130
m,p-Xylene	102	70-130
o-Xylene	103	70-130
TVOC Ref. to Hexane	Not Spiked	

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	109	70-130
1,2-Dichloroethane-d4	97	70-130
4-Bromofluorobenzene	100	70-130

eurofins | Air Toxics

Client Sample ID: LCSD

Lab ID#: 2203521-04AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a032504**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/25/22 10:05 AM**	

Compound	%Recovery	Method Limits
Acetone	86	70-130
Benzene	100	70-130
alpha-Chlorotoluene	113	70-130
Bromodichloromethane	102	70-130
Bromoform	111	70-130
Bromomethane	93	70-130
2-Butanone (Methyl Ethyl Ketone)	99	70-130
Carbon Disulfide	95	70-130
Carbon Tetrachloride	97	70-130
Chlorobenzene	103	70-130
Dibromochloromethane	99	70-130
Chloroethane	96	70-130
Chloroform	96	70-130
Chloromethane	91	70-130
1,2-Dibromoethane (EDB)	100	70-130
1,2-Dichlorobenzene	106	70-130
1,3-Dichlorobenzene	104	70-130
1,4-Dichlorobenzene	104	70-130
1,1-Dichloroethane	99	70-130
Freon 12	94	70-130
1,2-Dichloroethane	93	70-130
1,1-Dichloroethene	99	70-130
cis-1,2-Dichloroethene	104	70-130
trans-1,2-Dichloroethene	100	70-130
1,2-Dichloropropane	107	70-130
cis-1,3-Dichloropropene	113	70-130
trans-1,3-Dichloropropene	97	70-130
Freon 114	95	70-130
Ethyl Benzene	103	70-130
4-Ethyltoluene	108	70-130
Hexachlorobutadiene	116	70-130
2-Hexanone	92	70-130
Methylene Chloride	94	70-130
4-Methyl-2-pentanone	113	70-130
Styrene	112	70-130
1,1,2,2-Tetrachloroethane	107	70-130
Tetrachloroethene	95	70-130
Toluene	112	70-130
1,2,4-Trichlorobenzene	116	70-130
1,1,1-Trichloroethane	98	70-130
1,1,2-Trichloroethane	101	70-130
Trichloroethene	103	70-130

eurofins | Air Toxics

Client Sample ID: LCSD

Lab ID#: 2203521-04AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**a032504**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/25/22 10:05 AM**	

Compound	%Recovery	Method Limits
Freon 11	92	70-130
Freon 113	97	70-130
1,2,4-Trimethylbenzene	107	70-130
1,3,5-Trimethylbenzene	108	70-130
Vinyl Acetate	123	70-130
Vinyl Chloride	94	70-130
m,p-Xylene	107	70-130
o-Xylene	106	70-130
TVOC Ref. to Hexane	Not Spiked	

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	109	70-130
1,2-Dichloroethane-d4	95	70-130
4-Bromofluorobenzene	100	70-130

CHAIN OF CUSTODY RECORD

No. 2707

EQUUS Environmental, LLC
(918) 921-5331

PROJECT NUMBER: CHKSTATM	PROJECT NAME: CHK STATE M	COC 1 of 1	
SHIPPED TO: AIR TOXICS	PROJECT MANAGER: DAVID BRADY	TAT: STANDARD	
SAMPLER'S PRINTED NAME: TERRY Fisher		PO#	WO#
SAMPLERS SIGNATURE:			

Date	Time	Sample ID	Sample Matrix	# of Sample Containers	TO-15	*TVOC as HEXANE									REMARKS
~~3-22-~~															*TVOC as C_6 - C_{12}
															2203521
															TAG #
OK 3-8-22	1251	20220308 M-1	Air	1	X	Y									TAG # D772
															catalog # 24142
															serial # 2375
															FAC
															Custody Seal Intact?
															Y N None Temp N/A
TOTAL NUMBER OF CONTAINERS				1											

RELINQUISHED BY:	DATE 3-10-22	RECEIVED BY:	DATE 3-10-22
	TIME 1830		TIME 1023
RELINQUISHED BY:	DATE	RECEIVED BY:	DATE
	TIME		TIME
METHOD OF SHIPMENT: FEDEX		AIRBILL NUMBER: Fedex 5196 7470 0146	
RECEIVED IN LABORATORY BY:	DATE	Send PDF, EDD, and INVOICE (if applicable) to: QAQC@EquusEnv.com	
	TIME		
LABORATORY CONTACT: CATHY 615-301-5041		LABORATORY ADDRESS: 180 BLUE RAVINE RD STE B FOLSOM, CA 95630	

White: Receiving Lab Yellow: Equus Environmental Project File Pink: Equus QA/QC

Login Sample Receipt Checklist

Client: Chesapeake Energy Corporation

Job Number: 180-135471-1
SDG Number: Property ID: 891077

Login Number: 135471
List Number: 1
Creator: Gartner, Cathy

List Source: Eurofins Pittsburgh

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.		
The cooler's custody seal, if present, is intact.		
Sample custody seals, if present, are intact.		
The cooler or samples do not appear to have been compromised or tampered with.		
Samples were received on ice.		
Cooler Temperature is acceptable.		
Cooler Temperature is recorded.		
COC is present.		
COC is filled out in ink and legible.		
COC is filled out with all pertinent information.		
Is the Field Sampler's name present on COC?		
There are no discrepancies between the containers received and the COC.		
Samples are received within Holding Time (excluding tests with immediate HTs)		
Sample containers have legible labels.		
Containers are not broken or leaking.		
Sample collection date/times are provided.		
Appropriate sample containers are used.		
Sample bottles are completely filled.		
Sample Preservation Verified.		
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs		
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").		
Multiphasic samples are not present.		
Samples do not require splitting or compositing.		
Residual Chlorine Checked.		

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Edison
777 New Durham Road
Edison, NJ 08817
Tel: (732)549-3900

Laboratory Job ID: 460-236444-1
Laboratory Sample Delivery Group: Property ID: 891077
Client Project/Site: State M-1

For:
Chesapeake Energy Corporation
PO BOX 548806
Oklahoma City, Oklahoma 73154

Attn: Dana Drury

CathyGartner

Authorized for release by:
6/22/2021 3:14:38 PM

Cathy Gartner, Project Manager II
(615)301-5041
Cathy.Gartner@Eurofinset.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Laboratory Job ID: 460-236444-1
SDG: Property ID: 891077

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Definitions/Glossary

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 460-236444-1
SDG: Property ID: 891077

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 460-236444-1
SDG: Property ID: 891077

Job ID: 460-236444-1

Laboratory: Eurofins TestAmerica, Edison

Narrative

Job Narrative
460-236444-1

Comments
No additional comments.

Receipt
The samples were received on 6/12/2021 3:11 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.2º C.

GC Semi VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Detection Summary

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 460-236444-1
SDG: Property ID: 891077

Client Sample ID: MW-4 — Lab Sample ID: 460-236444-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	528		25.0		mg/L	25		300.0	Total/NA

Client Sample ID: MW-8 — Lab Sample ID: 460-236444-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	92.5		25.0		mg/L	25		300.0	Total/NA

Client Sample ID: Dup — Lab Sample ID: 460-236444-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	524		25.0		mg/L	25		300.0	Total/NA

Client Sample ID: EQ Blank — Lab Sample ID: 460-236444-4

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Edison

Client Sample Results

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 460-236444-1
SDG: Property ID: 891077

Client Sample ID: MW-4
Lab Sample ID: 460-236444-1
Date Collected: 06/08/21 09:15
Matrix: Water
Date Received: 06/12/21 15:11

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	528		25.0		mg/L			06/21/21 15:38	25

Client Sample ID: MW-8
Lab Sample ID: 460-236444-2
Date Collected: 06/08/21 10:40
Matrix: Water
Date Received: 06/12/21 15:11

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	92.5		25.0		mg/L			06/21/21 15:58	25

Client Sample ID: Dup
Lab Sample ID: 460-236444-3
Date Collected: 06/08/21 00:00
Matrix: Water
Date Received: 06/12/21 15:11

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	524		25.0		mg/L			06/21/21 16:13	25

Client Sample ID: EQ Blank
Lab Sample ID: 460-236444-4
Date Collected: 06/08/21 00:00
Matrix: Water
Date Received: 06/12/21 15:11

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		1.00		mg/L			06/21/21 16:28	1

QC Sample Results

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 460-236444-1
SDG: Property ID: 891077

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 460-785587/3
Matrix: Water
Analysis Batch: 785587

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		1.00		mg/L			06/21/21 12:15	1

Lab Sample ID: LCS 460-785587/5
Matrix: Water
Analysis Batch: 785587

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	3.20	3.070		mg/L		96	90 - 110

Lab Sample ID: LCSD 460-785587/6
Matrix: Water
Analysis Batch: 785587

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	3.20	3.063		mg/L		96	90 - 110	0	15

QC Association Summary

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 460-236444-1
SDG: Property ID: 891077

HPLC/IC

Analysis Batch: 785587

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-236444-1	MW-4	Total/NA	Water	300.0	
460-236444-2	MW-8	Total/NA	Water	300.0	
460-236444-3	Dup	Total/NA	Water	300.0	
460-236444-4	EQ Blank	Total/NA	Water	300.0	
MB 460-785587/3	Method Blank	Total/NA	Water	300.0	
LCS 460-785587/5	Lab Control Sample	Total/NA	Water	300.0	
LCSD 460-785587/6	Lab Control Sample Dup	Total/NA	Water	300.0	

Lab Chronicle

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 460-236444-1
SDG: Property ID: 891077

Client Sample ID: MW-4
Date Collected: 06/08/21 09:15
Date Received: 06/12/21 15:11

Lab Sample ID: 460-236444-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		25	785587	06/21/21 15:38	VMI	TAL EDI

Client Sample ID: MW-8
Date Collected: 06/08/21 10:40
Date Received: 06/12/21 15:11

Lab Sample ID: 460-236444-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		25	785587	06/21/21 15:58	VMI	TAL EDI

Client Sample ID: Dup
Date Collected: 06/08/21 00:00
Date Received: 06/12/21 15:11

Lab Sample ID: 460-236444-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		25	785587	06/21/21 16:13	VMI	TAL EDI

Client Sample ID: EQ Blank
Date Collected: 06/08/21 00:00
Date Received: 06/12/21 15:11

Lab Sample ID: 460-236444-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1	785587	06/21/21 16:28	VMI	TAL EDI

Laboratory References:

TAL EDI = Eurofins TestAmerica, Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900

Accreditation/Certification Summary

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 460-236444-1
SDG: Property ID: 891077

Laboratory: Eurofins TestAmerica, Edison

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Connecticut	State	PH-0200	09-30-22
DE Haz. Subst. Cleanup Act (HSCA)	State	N/A	12-31-21
Georgia	State	12028 (NJ)	07-01-21
Massachusetts	State	M-NJ312	06-30-21
New Jersey	NELAP	12028	06-30-21
New York	NELAP	11452	04-01-22
Pennsylvania	NELAP	68-00522	02-28-22
Rhode Island	State	LAO00132	12-30-21
USDA	US Federal Programs	P330-20-00244	11-03-23

Method Summary

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 460-236444-1
SDG: Property ID: 891077

Method	Method Description	Protocol	Laboratory
300.0	Anions, Ion Chromatography	MCAWW	TAL EDI

Protocol References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

Laboratory References:

TAL EDI = Eurofins TestAmerica, Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900

Sample Summary

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 460-236444-1
SDG: Property ID: 891077

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
460-236444-1	MW-4	Water	06/08/21 09:15	06/12/21 15:11	
460-236444-2	MW-8	Water	06/08/21 10:40	06/12/21 15:11	
460-236444-3	Dup	Water	06/08/21 00:00	06/12/21 15:11	
460-236444-4	EQ Blank	Water	06/08/21 00:00	06/12/21 15:11	

CHAIN OF CUSTODY RECORD

No. 1776

EQUUS

PROJECT NUMBER: CHKSTATM: H20001	PROJECT NAME: CHK STATE M	COC 1 of 1	
SHIPPED TO: TA-EDISON	PROJECT MANAGER: DAVID BRADY	TAT: STANDARD	

SAMPLER'S PRINTED NAME: TERRY Fisher

SAMPLER'S SIGNATURE:

ASOW: N/A 236444

Date	Time	Sample ID	Sample Matrix	# of Sample Containers	CHLORIDE	REMARKS
6-8-21	915	mw-4	w	1	X	1
6-8-21	1040	mw-8	w	1	X	2
6-8-21	—	Dup	w	1	X	3
6-8-21	—	Eq Blank	w	1	X	4

TOTAL NUMBER OF CONTAINERS → 4

460-236444 Chain of Custody

RELINQUISHED BY: Terry Fisher	DATE 6-8-21 TIME 1600	RECEIVED BY:	DATE TIME
RELINQUISHED BY:	DATE TIME	RECEIVED BY:	DATE TIME
METHOD OF SHIPMENT: FedEx		AIRBILL NUMBER:	
RECEIVED IN LABORATORY BY: Jeanette Urena	DATE 6/9/21 TIME 1400	Send PDF, EDD, and INVOICE (if applicable) to: QAQC@EQUUSENV.COM	
LABORATORY CONTACT: CATHY GARTNER 615-301-5041		LABORATORY ADDRESS: 777 NEW DURHAM RD. EDISON, NJ 08817	

POINT OF ORIGIN:

CS# 1541531

Temp 27°C / 2.2°C

Eurofins TestAmerica Edison
Receipt Temperature and pH Log

Job Number: 236424

Number of Coolers: 1 IR Gun # 9

Cooler Temperatures

	RAW	CORRECTED		RAW	CORRECTED		RAW	CORRECTED
Cooler #1:	2.7 °C	2.2 °C	Cooler #4:	°C	°C	Cooler #7:	°C	°C
Cooler #2:	°C	°C	Cooler #5:	°C	°C	Cooler #8:	°C	°C
Cooler #3:	°C	°C	Cooler #6:	°C	°C	Cooler #9:	°C	°C

TALS Sample Number	Ammonia (pH<2)	COD (pH<2)	Nitrate Nitrite (pH<2)	Metals* (pH<2)	Hardness (pH<2)	Pest (pH 5-9)	EPH or QAM (pH<2)	Phenols (pH<2)	Sulfide (pH>9)	TKN (pH<2)	TOC (pH<2)	Total Cyanide (pH>12)	Total Phos (pH<2)	Other	Other

If pH adjustments are required record the information below:

Sample No(s). adjusted: _____

Preservative Name/Conc.: _____ Volume of Preservative used (ml): _____

Lot # of Preservative(s): _____ Expiration Date: _____

The appropriate Project Manager and Department Manager should be notified about the samples which were pH adjusted.

** Samples for Metal analysis which are out of compliance must be acidified at least 24 hours prior to analysis.*

Initials: JA **Date:** 6/9/24

EDS-WI-038, Rev 4.1
10/22/2019

Login Sample Receipt Checklist

Client: Chesapeake Energy Corporation

Job Number: 460-236444-1
SDG Number: Property ID: 891077

Login Number: 236444
List Number: 1
Creator: Rivera, Kenneth

List Source: Eurofins TestAmerica, Edison

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	1541531
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Edison
777 New Durham Road
Edison, NJ 08817
Tel: (732)549-3900

Laboratory Job ID: 460-242638-1
Laboratory Sample Delivery Group: Property ID: 891077
Client Project/Site: State M-1

For:
Chesapeake Energy Corporation
PO BOX 548806
Oklahoma City, Oklahoma 73154

Attn: Dana Drury

CathyGartner

Authorized for release by:
9/22/2021 11:11:47 AM

Cathy Gartner, Project Manager II
(615)301-5041
Cathy.Gartner@Eurofinset.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Laboratory Job ID: 460-242638-1
SDG: Property ID: 891077

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Definitions/Glossary

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 460-242638-1
SDG: Property ID: 891077

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 460-242638-1
SDG: Property ID: 891077

Job ID: 460-242638-1

Laboratory: Eurofins TestAmerica, Edison

Narrative

Job Narrative
460-242638-1

Comments
No additional comments.

Receipt
The samples were received on 9/10/2021 10:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 0.3º C.

GC Semi VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Detection Summary

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 460-242638-1
SDG: Property ID: 891077

Client Sample ID: EQ Blank — Lab Sample ID: 460-242638-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	9.80		1.00		mg/L	1		300.0	Total/NA

Client Sample ID: MW-4 — Lab Sample ID: 460-242638-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	438		10.0		mg/L	10		300.0	Total/NA

Client Sample ID: MW-8 — Lab Sample ID: 460-242638-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	65.4		1.00		mg/L	1		300.0	Total/NA

Client Sample ID: DUP — Lab Sample ID: 460-242638-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	65.4		1.00		mg/L	1		300.0	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 460-242638-1
SDG: Property ID: 891077

Client Sample ID: EQ Blank
Lab Sample ID: 460-242638-1
Date Collected: 09/08/21 11:38
Matrix: Water
Date Received: 09/10/21 10:00

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	9.80		1.00		mg/L			09/21/21 15:38	1

Client Sample ID: MW-4
Lab Sample ID: 460-242638-2
Date Collected: 09/08/21 14:55
Matrix: Water
Date Received: 09/10/21 10:00

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	438		10.0		mg/L			09/21/21 21:05	10

Client Sample ID: MW-8
Lab Sample ID: 460-242638-3
Date Collected: 09/08/21 16:45
Matrix: Water
Date Received: 09/10/21 10:00

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	65.4		1.00		mg/L			09/21/21 16:10	1

Client Sample ID: DUP
Lab Sample ID: 460-242638-4
Date Collected: 09/08/21 00:00
Matrix: Water
Date Received: 09/10/21 10:00

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	65.4		1.00		mg/L			09/21/21 16:26	1

QC Sample Results

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 460-242638-1
SDG: Property ID: 891077

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 460-802015/3
Matrix: Water
Analysis Batch: 802015

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		1.00		mg/L			09/21/21 12:14	1

Lab Sample ID: LCS 460-802015/5
Matrix: Water
Analysis Batch: 802015

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	3.20	2.920		mg/L		91	90 - 110

Lab Sample ID: LCSD 460-802015/6
Matrix: Water
Analysis Batch: 802015

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	3.20	2.963		mg/L		93	90 - 110	1	15

QC Association Summary

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 460-242638-1
SDG: Property ID: 891077

HPLC/IC

Analysis Batch: 802015

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-242638-1	EQ Blank	Total/NA	Water	300.0	
460-242638-2	MW-4	Total/NA	Water	300.0	
460-242638-3	MW-8	Total/NA	Water	300.0	
460-242638-4	DUP	Total/NA	Water	300.0	
MB 460-802015/3	Method Blank	Total/NA	Water	300.0	
LCS 460-802015/5	Lab Control Sample	Total/NA	Water	300.0	
LCSD 460-802015/6	Lab Control Sample Dup	Total/NA	Water	300.0	

Lab Chronicle

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 460-242638-1
SDG: Property ID: 891077

Client Sample ID: EQ Blank
Date Collected: 09/08/21 11:38
Date Received: 09/10/21 10:00

Lab Sample ID: 460-242638-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1	802015	09/21/21 15:38	VMI	TAL EDI

Client Sample ID: MW-4
Date Collected: 09/08/21 14:55
Date Received: 09/10/21 10:00

Lab Sample ID: 460-242638-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		10	802015	09/21/21 21:05	VMI	TAL EDI

Client Sample ID: MW-8
Date Collected: 09/08/21 16:45
Date Received: 09/10/21 10:00

Lab Sample ID: 460-242638-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1	802015	09/21/21 16:10	VMI	TAL EDI

Client Sample ID: DUP
Date Collected: 09/08/21 00:00
Date Received: 09/10/21 10:00

Lab Sample ID: 460-242638-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1	802015	09/21/21 16:26	VMI	TAL EDI

Laboratory References:

TAL EDI = Eurofins TestAmerica, Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900

Accreditation/Certification Summary

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 460-242638-1
SDG: Property ID: 891077

Laboratory: Eurofins TestAmerica, Edison

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Connecticut	State	PH-0200	09-30-22
DE Haz. Subst. Cleanup Act (HSCA)	State	N/A	12-31-21
Georgia	State	12028 (NJ)	06-30-22
Massachusetts	State	M-NJ312	06-30-22
New Jersey	NELAP	12028	06-30-22
New York	NELAP	11452	04-01-22
Pennsylvania	NELAP	68-00522	02-28-22
Rhode Island	State	LAO00132	12-30-21
USDA	US Federal Programs	P330-20-00244	11-03-23

Method Summary

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 460-242638-1
SDG: Property ID: 891077

Method	Method Description	Protocol	Laboratory
300.0	Anions, Ion Chromatography	MCAWW	TAL EDI

Protocol References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

Laboratory References:

TAL EDI = Eurofins TestAmerica, Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900

Sample Summary

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 460-242638-1
SDG: Property ID: 891077

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
460-242638-1	EQ Blank	Water	09/08/21 11:38	09/10/21 10:00
460-242638-2	MW-4	Water	09/08/21 14:55	09/10/21 10:00
460-242638-3	MW-8	Water	09/08/21 16:45	09/10/21 10:00
460-242638-4	DUP	Water	09/08/21 00:00	09/10/21 10:00

CHAIN OF CUSTODY RECORD

No. 2624

EQUUS Environmental, LLC
(918) 921-5331

PROJECT NUMBER: CHKSTATM: H21001	PROJECT NAME: CHK STATE M	COC 1 of 1	
SHIPPED TO: TA-EDISON	PROJECT MANAGER: DAVID BRADY	TAT: STANDARD	
SAMPLER'S PRINTED NAME: TERRY FISHER		PO# —	WO# —
SAMPLERS SIGNATURE:		242638	

Date	Time	Sample ID	Sample Matrix	# of Sample Containers	CHLORIDE	REMARKS
9-8-21	1138	EQ Blank	W	1	X	1
9-8-21	1455	mw-4	W	1	X	2
9-8-21	1645	mw-8	W	1	X	3
9-8-21	—	Dup	W	1	X	4

460-242638 Chain of Custody

TOTAL NUMBER OF CONTAINERS: 4

RELINQUISHED BY:	DATE 9-9-21	RECEIVED BY: Via Fedex/ETA	DATE 9/10/21	~~PO#~~ 22-0-8-30-3	
	TIME 1600		TIME 10am	C.S.# 167459	
RELINQUISHED BY:	DATE	RECEIVED BY:	DATE		
	TIME		TIME		

METHOD OF SHIPMENT: FedEx

AIRBILL NUMBER: 5049 4013 0470

RECEIVED IN LABORATORY BY: DATE / TIME

Send PDF, EDD, and INVOICE (if applicable) to: QAQC@EquusEnv.com

LABORATORY CONTACT: CATHY GARTNER 615-301-5041

LABORATORY ADDRESS: 777 NEW DURHAM RD EDISON, NJ 08817

White: Receiving Lab Yellow: Equus Environmental Project File Pink: Equus QA/QC

Eurofins TestAmerica Edison
Receipt Temperature and pH Log

Job Number: 242638

Number of Coolers: 1 **IR Gun #** 9

Cooler Temperatures

	RAW	CORRECTED		RAW	CORRECTED		RAW	CORRECTED
Cooler #1:	0.5 °C	0.3 °C	Cooler #4:	°C	°C	Cooler #7:	°C	°C
Cooler #2:	°C	°C	Cooler #5:	°C	°C	Cooler #8:	°C	°C
Cooler #3:	°C	°C	Cooler #6:	°C	°C	Cooler #9:	°C	°C

TALS Sample Number	Ammonia (pH<2)	COD (pH<2)	Nitrate Nitrite (pH<2)	Metals* (pH<2)	Hardness (pH<2)	Pest (pH 5-9)	EPH or QAM (pH<2)	Phenols (pH<2)	Sulfide (pH>9)	TKN (pH<2)	TOC (pH<2)	Total Cyanide (pH>12)	Total Phos (pH<2)	Other	Other

If pH adjustments are required record the information below:

Sample No(s). adjusted: _____

Preservative Name/Conc.: _____ Volume of Preservative used (ml): _____

Lot # of Preservative(s): _____ Expiration Date: _____

The appropriate Project Manager and Department Manager should be notified about the samples which were pH adjusted.

** Samples for Metal analysis which are out of compliance must be acidified at least 24 hours prior to analysis.*

Initials: E.S. **Date:** 9/10/21

EDS-WI-038, Rev 4.1
10/22/2019

Login Sample Receipt Checklist

Client: Chesapeake Energy Corporation

Job Number: 460-242638-1
SDG Number: Property ID: 891077

Login Number: 242638
List Number: 1
Creator: DiGuardia, Joseph L

List Source: Eurofins TestAmerica, Edison

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Edison
777 New Durham Road
Edison, NJ 08817
Tel: (732)549-3900

Laboratory Job ID: 460-249019-1
Laboratory Sample Delivery Group: Property ID: 891077
Client Project/Site: State M-1
Revision: 1

For:
Chesapeake Energy Corporation
PO BOX 548806
Oklahoma City, Oklahoma 73154

Attn: Dana Drury

CathyGartner

Authorized for release by:
12/20/2021 1:20:47 PM

Cathy Gartner, Project Manager II
(615)301-5041
Cathy.Gartner@Eurofinset.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Laboratory Job ID: 460-249019-1
SDG: Property ID: 891077

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Definitions/Glossary

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 460-249019-1
SDG: Property ID: 891077

Qualifiers

HPLC/IC

Qualifier	Qualifier Description
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 460-249019-1
SDG: Property ID: 891077

Job ID: 460-249019-1

Laboratory: Eurofins TestAmerica, Edison

Narrative

Job Narrative
460-249019-1

Revised report
Sample ID was updated.
This replaces the previously generated report.

Receipt
The samples were received on 12/8/2021 11:00 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 0.7º C.

GC Semi VOA
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Detection Summary

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 460-249019-1
SDG: Property ID: 891077

Client Sample ID: MW-4 — Lab Sample ID: 460-249019-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	404		10.0		mg/L	10		300.0	Total/NA

Client Sample ID: EQ Blank — Lab Sample ID: 460-249019-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	13.9		1.00		mg/L	1		300.0	Total/NA

Client Sample ID: MW-8 — Lab Sample ID: 460-249019-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	56.2		10.0		mg/L	10		300.0	Total/NA

Client Sample ID: Dup — Lab Sample ID: 460-249019-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	56.0		10.0		mg/L	10		300.0	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 460-249019-1
SDG: Property ID: 891077

Client Sample ID: MW-4
Lab Sample ID: 460-249019-1
Date Collected: 12/07/21 09:55
Matrix: Water
Date Received: 12/08/21 11:00

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	404		10.0		mg/L			12/17/21 20:01	10

Client Sample ID: EQ Blank
Lab Sample ID: 460-249019-2
Date Collected: 12/07/21 10:00
Matrix: Water
Date Received: 12/08/21 11:00

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	13.9		1.00		mg/L			12/17/21 20:15	1

Client Sample ID: MW-8
Lab Sample ID: 460-249019-3
Date Collected: 12/07/21 11:20
Matrix: Water
Date Received: 12/08/21 11:00

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	56.2		10.0		mg/L			12/17/21 20:30	10

Client Sample ID: Dup
Lab Sample ID: 460-249019-4
Date Collected: 12/07/21 00:00
Matrix: Water
Date Received: 12/08/21 11:00

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	56.0		10.0		mg/L			12/17/21 20:45	10

QC Sample Results

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 460-249019-1
SDG: Property ID: 891077

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 460-819446/3
Matrix: Water
Analysis Batch: 819446

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		1.00		mg/L			12/17/21 15:25	1

Lab Sample ID: LCS 460-819446/5
Matrix: Water
Analysis Batch: 819446

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chloride			3.20	3.331		mg/L		104	90 - 110		

Lab Sample ID: 460-249111-C-6 MS
Matrix: Water
Analysis Batch: 819446

Client Sample ID: Matrix Spike
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Chloride	148		32.0	148.1	4	mg/L		1	90 - 110		

Lab Sample ID: 460-249111-C-6 MSD
Matrix: Water
Analysis Batch: 819446

Client Sample ID: Matrix Spike Duplicate
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	148		32.0	149.0	4	mg/L		4	90 - 110	1	15

QC Association Summary

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 460-249019-1
SDG: Property ID: 891077

HPLC/IC

Analysis Batch: 819446

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-249019-1	MW-4	Total/NA	Water	300.0	
460-249019-2	EQ Blank	Total/NA	Water	300.0	
460-249019-3	MW-8	Total/NA	Water	300.0	
460-249019-4	Dup	Total/NA	Water	300.0	
MB 460-819446/3	Method Blank	Total/NA	Water	300.0	
LCS 460-819446/5	Lab Control Sample	Total/NA	Water	300.0	
460-249111-C-6 MS	Matrix Spike	Total/NA	Water	300.0	
460-249111-C-6 MSD	Matrix Spike Duplicate	Total/NA	Water	300.0	

Lab Chronicle

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 460-249019-1
SDG: Property ID: 891077

Client Sample ID: MW-4
Date Collected: 12/07/21 09:55
Date Received: 12/08/21 11:00

Lab Sample ID: 460-249019-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		10	819446	12/17/21 20:01	VMI	TAL EDI

Client Sample ID: EQ Blank
Date Collected: 12/07/21 10:00
Date Received: 12/08/21 11:00

Lab Sample ID: 460-249019-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1	819446	12/17/21 20:15	VMI	TAL EDI

Client Sample ID: MW-8
Date Collected: 12/07/21 11:20
Date Received: 12/08/21 11:00

Lab Sample ID: 460-249019-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		10	819446	12/17/21 20:30	VMI	TAL EDI

Client Sample ID: Dup
Date Collected: 12/07/21 00:00
Date Received: 12/08/21 11:00

Lab Sample ID: 460-249019-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		10	819446	12/17/21 20:45	VMI	TAL EDI

Laboratory References:

TAL EDI = Eurofins TestAmerica, Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900

Accreditation/Certification Summary

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 460-249019-1
SDG: Property ID: 891077

Laboratory: Eurofins TestAmerica, Edison

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Connecticut	State	PH-0200	09-30-22
DE Haz. Subst. Cleanup Act (HSCA)	State	N/A	12-31-21
Georgia	State	12028 (NJ)	06-30-22
Massachusetts	State	M-NJ312	06-30-22
New Jersey	NELAP	12028	07-01-23
New York	NELAP	11452	04-01-23
Pennsylvania	NELAP	68-00522	02-28-22
Rhode Island	State	LAO00132	12-30-21
USDA	US Federal Programs	P330-20-00244	11-03-23

Method Summary

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 460-249019-1
SDG: Property ID: 891077

Method	Method Description	Protocol	Laboratory
300.0	Anions, Ion Chromatography	MCAWW	TAL EDI

Protocol References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

Laboratory References:

TAL EDI = Eurofins TestAmerica, Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900

Sample Summary

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 460-249019-1
SDG: Property ID: 891077

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
460-249019-1	MW-4	Water	12/07/21 09:55	12/08/21 11:00
460-249019-2	EQ Blank	Water	12/07/21 10:00	12/08/21 11:00
460-249019-3	MW-8	Water	12/07/21 11:20	12/08/21 11:00
460-249019-4	Dup	Water	12/07/21 00:00	12/08/21 11:00

CHAIN OF CUSTODY RECORD

No. 2703 249019

EQUUS Environmental, LLC (918) 921-5331

PROJECT NUMBER: CHKSTATM: H21001	PROJECT NAME: CHK STATE M	COC 1 of 1	
SHIPPED TO: TA-EDISON	PROJECT MANAGER: DAVID BRADY	TAT: STANDARD	
SAMPLER'S PRINTED NAME: TERRY Fisher		PO# —	WO# —
SAMPLERS SIGNATURE:			

Date	Time	Sample ID	Sample Matrix	# of Sample Containers	CHLORIDE	REMARKS
12-7-21	955	MW-4	water	1	X	
12-7-21	1000	Eq Blank	water	1	X	
12-7-21	1120	MW-8	water	1	X	
12-7-21	—	Dup	water	1	X	

460-249019 Chain of Custody

TOTAL NUMBER OF CONTAINERS →

RELINQUISHED BY:	DATE 12-7-21	RECEIVED BY: Via Fedex/ETA	DATE 12/8/21	CS# 1770151	
	TIME 1600		TIME 11:20		
RELINQUISHED BY:	DATE	RECEIVED BY:	DATE		
	TIME		TIME		

METHOD OF SHIPMENT: FedEx

AIRBILL NUMBER: 5355 3981 0120

RECEIVED IN LABORATORY BY: DATE / TIME

Send PDF, EDD, and INVOICE (if applicable) to: QAQC@EquusEnv.com

LABORATORY CONTACT: CATHY 615-301-5041

LABORATORY ADDRESS: 777 NEW DURHAM RD EDISON, NJ 08817

White: Receiving Lab Yellow: Equus Environmental Project File Pink: Equus QA/QC

Eurofins TestAmerica Edison
Receipt Temperature and pH Log

Job Number: 249019

Number of Coolers: 1 IR Gun # 9

Cooler Temperatures

	RAW	CORRECTED		RAW	CORRECTED		RAW	CORRECTED
Cooler #1:	0.8 °C	0.3 °C	Cooler #4:	°C	°C	Cooler #7:	°C	°C
Cooler #2:	°C	°C	Cooler #5:	°C	°C	Cooler #8:	°C	°C
Cooler #3:	°C	°C	Cooler #6:	°C	°C	Cooler #9:	°C	°C

08:31:37

TALS Sample Number	Ammonia (pH<2)	COD (pH<2)	Nitrate Nitrite (pH<2)	Metals* (pH<2)	Hardness (pH<2)	Pest (pH 5-9)	EPH or QAM (pH<2)	Phenols (pH<2)	Sulfide (pH>9)	TKN (pH<2)	TOC (pH<2)	Total Cyanide (pH>12)	Total Phos (pH<2)	Other	Other

If pH adjustments are required record the information below:

Sample No(s). adjusted: _____

Preservative Name/Conc.: _____ Volume of Preservative used (ml): _____

Lot # of Preservative(s): _____ Expiration Date: _____

The appropriate Project Manager and Department Manager should be notified about the samples which were pH adjusted.

** Samples for Metal analysis which are out of compliance must be acidified at least 24 hours prior to analysis.*

Initials: _____ Date: 12/8/21

EDS-WI-038, Rev 4.1
10/22/2019

Login Sample Receipt Checklist

Client: Chesapeake Energy Corporation

Job Number: 460-249019-1
SDG Number: Property ID: 891077

Login Number: 249019
List Number: 1
Creator: Sgro, Angela M

List Source: Eurofins TestAmerica, Edison

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	1770151
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins Pittsburgh
301 Alpha Drive
RIDC Park
Pittsburgh, PA 15238
Tel: (412)963-7058

Laboratory Job ID: 180-135251-1
Laboratory Sample Delivery Group: Property ID: 891077
Client Project/Site: State M-1

For:
Chesapeake Energy Corporation
PO BOX 548806
Oklahoma City, Oklahoma 73154

Attn: Dana Drury

CathyGartner

Authorized for release by:
3/29/2022 9:48:49 AM

Cathy Gartner, Project Manager II
(615)301-5041
Cathy.Gartner@Eurofinset.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

PA Lab ID: 02-00416

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Laboratory Job ID: 180-135251-1
SDG: Property ID: 891077

Table of Contents

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Case Narrative

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 180-135251-1
SDG: Property ID: 891077

Job ID: 180-135251-1

Laboratory: Eurofins Pittsburgh

Narrative

Job Narrative
180-135251-1

Receipt
The samples were received on 3/11/2022 10:40 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.0°C

HPLC/IC
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Definitions/Glossary

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 180-135251-1
SDG: Property ID: 891077

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Accreditation/Certification Summary

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 180-135251-1
SDG: Property ID: 891077

Laboratory: Eurofins Edison

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Connecticut	State	PH-0200	09-30-22
DE Haz. Subst. Cleanup Act (HSCA)	State	N/A	01-01-23
Georgia	State	12028 (NJ)	06-30-22
Massachusetts	State	M-NJ312	06-30-22
New Jersey	NELAP	12028	06-30-22
New York	NELAP	11452	04-01-22
Pennsylvania	NELAP	68-00522	02-28-23
Rhode Island	State	LAO00376	12-31-22
USDA	US Federal Programs	P330-20-00244	11-03-23

Sample Summary

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 180-135251-1
SDG: Property ID: 891077

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
180-135251-1	EQ Blank	Water	03/08/22 08:25	03/11/22 10:40
180-135251-2	MW-4	Water	03/08/22 09:50	03/11/22 10:40
180-135251-3	MW-8	Water	03/08/22 11:30	03/11/22 10:40
180-135251-4	Dup	Water	03/08/22 00:00	03/11/22 10:40

Method Summary

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 180-135251-1
SDG: Property ID: 891077

Method	Method Description	Protocol	Laboratory
300.0	Anions, Ion Chromatography	MCAWW	TAL EDI

Protocol References:

MCAWW = "Methods For Chemical Analysis Of Water And Wastes", EPA-600/4-79-020, March 1983 And Subsequent Revisions.

Laboratory References:

TAL EDI = Eurofins Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900

Lab Chronicle

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 180-135251-1
SDG: Property ID: 891077

Client Sample ID: EQ Blank
Date Collected: 03/08/22 08:25
Date Received: 03/11/22 10:40

Lab Sample ID: 180-135251-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1			836018	03/28/22 14:36	VMI	TAL EDI
	Instrument ID: IC 2									

Client Sample ID: MW-4
Date Collected: 03/08/22 09:50
Date Received: 03/11/22 10:40

Lab Sample ID: 180-135251-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		10			836018	03/28/22 14:51	VMI	TAL EDI
	Instrument ID: IC 2									

Client Sample ID: MW-8
Date Collected: 03/08/22 11:30
Date Received: 03/11/22 10:40

Lab Sample ID: 180-135251-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		10			836018	03/28/22 15:20	VMI	TAL EDI
	Instrument ID: IC 2									

Client Sample ID: Dup
Date Collected: 03/08/22 00:00
Date Received: 03/11/22 10:40

Lab Sample ID: 180-135251-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		10			836018	03/28/22 15:41	VMI	TAL EDI
	Instrument ID: IC 2									

Laboratory References:
TAL EDI = Eurofins Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900

Analyst References:
Lab: TAL EDI
Batch Type: Analysis
VMI = Warleny Infante

Client Sample Results

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 180-135251-1
SDG: Property ID: 891077

Client Sample ID: EQ Blank
Lab Sample ID: 180-135251-1
Date Collected: 03/08/22 08:25
Matrix: Water
Date Received: 03/11/22 10:40

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		1.00		mg/L			03/28/22 14:36	1

Client Sample ID: MW-4
Lab Sample ID: 180-135251-2
Date Collected: 03/08/22 09:50
Matrix: Water
Date Received: 03/11/22 10:40

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**387**		10.0		mg/L			03/28/22 14:51	10

Client Sample ID: MW-8
Lab Sample ID: 180-135251-3
Date Collected: 03/08/22 11:30
Matrix: Water
Date Received: 03/11/22 10:40

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**29.6**		10.0		mg/L			03/28/22 15:20	10

Client Sample ID: Dup
Lab Sample ID: 180-135251-4
Date Collected: 03/08/22 00:00
Matrix: Water
Date Received: 03/11/22 10:40

Method: 300.0 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**388**		10.0		mg/L			03/28/22 15:41	10

QC Sample Results

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 180-135251-1
SDG: Property ID: 891077

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 460-836018/3
Matrix: Water
Analysis Batch: 836018

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		1.00		mg/L			03/28/22 12:47	1

Lab Sample ID: LCS 460-836018/5
Matrix: Water
Analysis Batch: 836018

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	3.20	3.498		mg/L		109	90 - 110

QC Association Summary

Client: Chesapeake Energy Corporation
Project/Site: State M-1

Job ID: 180-135251-1
SDG: Property ID: 891077

HPLC/IC

Analysis Batch: 836018

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
180-135251-1	EQ Blank	Total/NA	Water	300.0	
180-135251-2	MW-4	Total/NA	Water	300.0	
180-135251-3	MW-8	Total/NA	Water	300.0	
180-135251-4	Dup	Total/NA	Water	300.0	
MB 460-836018/3	Method Blank	Total/NA	Water	300.0	
LCS 460-836018/5	Lab Control Sample	Total/NA	Water	300.0	

CHAIN OF CUSTODY RECORD

No. 2706

EQUUS Environmental, LLC
(918) 921-5331

PROJECT NUMBER: CHKSTATM	PROJECT NAME: CHK STATE M	COC 1 of 1	
SHIPPED TO: TA-EDISON	PROJECT MANAGER: DAVID BRADY	TAT: STANDARD	

SAMPLER'S PRINTED NAME: TERRY FISHER
SAMPLERS SIGNATURE:

PO# —
WO# ~~E54403~~ 180-135251

Date	Time	Sample ID	Sample Matrix	# of Sample Containers	CHLORIDE	REMARKS
3-8-22	0825	EQ Blank	W	1	X	-1
3-8-22	0950	MW-4	W	1	X	-2
3-8-22	1130	MW-8	W	1	X	-3
3-8-22	—	Dup	W	1	X	-4
—	—	Temp Blank	W	1		

180-135251 Chain of Custody

TOTAL NUMBER OF CONTAINERS:

RELINQUISHED BY:	DATE 3-10-22	RECEIVED BY:	DATE
	TIME 1830		TIME
RELINQUISHED BY:	DATE	RECEIVED BY:	DATE
	TIME		TIME

METHOD OF SHIPMENT: FEDEX
AIRBILL NUMBER: 7762 6009 9560

RECEIVED IN LABORATORY BY: via Fedex
DATE 3/11/22
TIME 1046

Send PDF, EDD, and INVOICE (if applicable) to: QAQC@EquusEnv.com

LABORATORY CONTACT: CATHY 615-201-5041

LABORATORY ADDRESS: 777 NEW DURHAM ROAD EDISON, NJ 08817

White: Receiving Lab Yellow: Equus Environmental Project File Pink: Equus QA/QC

2.8°C / 3.0°C

180-135251

Eurofins TestAmerica Edison
Receipt Temperature and pH Log

Job Number: ~~254403~~

Number of Coolers: 1 IR Gun # 9

Cooler Temperatures

	RAW	CORRECTED		RAW	CORRECTED		RAW	CORRECTED
Cooler #1:	2.8 °C	3.0 °C	Cooler #4:	°C	°C	Cooler #7:	°C	°C
Cooler #2:	°C	°C	Cooler #5:	°C	°C	Cooler #8:	°C	°C
Cooler #3:	°C	°C	Cooler #6:	°C	°C	Cooler #9:	°C	°C

TALS Sample Number	Ammonia (pH<2)	COD (pH<2)	Nitrate Nitrite (pH<2)	Metals* (pH<2)	Hardness (pH<2)	Pest (pH 5-9)	EPH or QAM (pH<2)	Phenols (pH<2)	Sulfide (pH>9)	TKN (pH<2)	TOC (pH<2)	Total Cyanide (pH>12)	Total Phos (pH<2)	Other	Other

If pH adjustments are required record the information below:

Sample No(s). adjusted: _____

Preservative Name/Conc.: _____ Volume of Preservative used (ml): _____

Lot # of Preservative(s): _____ Expiration Date: _____

The appropriate Project Manager and Department Manager should be notified about the samples which were pH adjusted.

** Samples for Metal analysis which are out of compliance must be acidified at least 24 hours prior to analysis.*

Initials: JA Date: 3/11/22

Login Sample Receipt Checklist

Client: Chesapeake Energy Corporation

Job Number: 180-135251-1
SDG Number: Property ID: 891077

Login Number: 135251
List Number: 1
Creator: Gartner, Cathy

List Source: Eurofins Pittsburgh

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.		
The cooler's custody seal, if present, is intact.		
Sample custody seals, if present, are intact.		
The cooler or samples do not appear to have been compromised or tampered with.		
Samples were received on ice.		
Cooler Temperature is acceptable.		
Cooler Temperature is recorded.		
COC is present.		
COC is filled out in ink and legible.		
COC is filled out with all pertinent information.		
Is the Field Sampler's name present on COC?		
There are no discrepancies between the containers received and the COC.		
Samples are received within Holding Time (excluding tests with immediate HTs)		
Sample containers have legible labels.		
Containers are not broken or leaking.		
Sample collection date/times are provided.		
Appropriate sample containers are used.		
Sample bottles are completely filled.		
Sample Preservation Verified.		
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs		
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").		
Multiphasic samples are not present.		
Samples do not require splitting or compositing.		
Residual Chlorine Checked.		

Login Sample Receipt Checklist

Client: Chesapeake Energy Corporation

Job Number: 180-135251-1
SDG Number: Property ID: 891077

Login Number: 135251
List Number: 2
Creator: Lysy, Susan

List Source: Eurofins Edison
List Creation: 03/16/22 04:25 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	2.8/3.0°C IR#9
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	N/A	
Residual Chlorine Checked.	N/A	

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

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

CONDITIONS

Action 337545

CONDITIONS

Operator: CHESAPEAKE OPERATING, INC. 6100 NORTH WESTERN AVE OKC, OK 73118	OGRID: 147179
	Action Number: 337545
	Action Type: [UF-GWA] Ground Water Abatement (GROUND WATER ABATEMENT)

CONDITIONS

Created By	Condition	Condition Date
michael.buchanan	EIGHTH ANNUAL GROUNDWATER MONITORING REPORT CHESAPEAKE ENERGY CORPORATION STATE M LEASE (AP-72) has been accepted as part of the record.	6/4/2024