2019 ANNUAL CCR RULE GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT

COAL COMBUSTION BYPRODUCT LANDFILL

Ft. Martin Power Station
Monongalia County, West Virginia

Prepared for:

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Tetra Tech Project No. 212C-SW-00068

January 2020

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1.0 INTRODUCTION

This 2019 Annual Coal Combustion Residuals (CCR) Groundwater Monitoring and Corrective Action Report was prepared by Tetra Tech, Inc. (Tetra Tech) on behalf of FirstEnergy (FE), for the Coal Combustion Byproduct Landfill (CCBL or "CCR unit") at the Ft. Martin Power Station (hereinafter referred to as the "Station"). The Station is located in Monongalia County, West Virginia. This report was developed to comply with the requirements of § 257.90(e) of the federal CCR Rule (40 CFR, Part 257, Subpart D).

1.1 BACKGROUND AND SITE CHARACTERISTICS

CCRs produced at the Station are placed in the facility's captive CCBL, which is located approximately 0.75 miles northwest of the Station. The landfill is an existing CCR unit that is regulated under West Virginia Department of Environmental Protection (WVDEP) Solid Waste/National Pollutant Discharge Elimination System (NPDES) Water Pollution Control Permit No. WV0075752 and the CCR Rule. A WVDEP groundwater monitoring program for the landfill has been in effect since 1993 and a separate CCR Rule groundwater monitoring program has been in effect since 2017. The permitted CCBL facility consists of two separate, active disposal areas, a haul road that also doubles as the primary station access road, a gypsum stack out/loading pad, five combined leachate/sedimentation ponds, one equalization/settling pond, and a variety of stormwater management controls (channels, culverts, slope drains, etc.). The two active disposal areas are separated by the haul road and consist of the Original landfill (approximately 70 acres in size and located south of the Haul Road) and the Expansion Area landfill (approximately 77 acres in size and located north of the haul road). The Original landfill, which has historically been the primary disposal area, is unlined but was built with a bottom ash drainage blanket placed on prepared original ground that serves as a leachate collection layer. The Expansion Area landfill, which was constructed in 2009, is underlain with a composite liner system (geomembrane and geosynthetic clay liner) and has both leachate collection and leak detection layers. The Expansion Area landfill is permitted to be developed in two construction phases, referred to as Phase 1 and Phase 2. At this time, the Phase 1 area (approximately 30 acres) has been constructed and represents the active portion of the Expansion Area landfill.

Groundwater in the CCBL area occurs primarily within fractured bedrock. The Connellsville Sandstone has been identified as the uppermost aquifer for CCR Rule groundwater monitoring over most of the CCBL area, with the underlying Clarksburg units considered the uppermost aquifer in a few limited areas where monitoring is required but the Connellsville Sandstone has

eroded away. Due to the site's positioning on a topographic high and its geologic setting, there is no shallow groundwater flow to the site from offsite areas. Historic and recent groundwater level data indicate groundwater flow at the CCBL to be primarily radial, away from the disposal areas and to the local springs/seeps in the nearby stream valleys, and that both flow systems (Connellsville and Clarksburg) exhibit very little seasonal and temporal fluctuations. A representative set of water level data from the current reporting period (2019) were used for contouring groundwater flow patterns at the site. A more detailed discussion of the site's geologic and hydrogeologic characteristics is provided in Section 2.0 of this report.

1.2 REGULATORY BASIS

As required by § 257.90(e) of the CCR Rule, Owners or Operators of existing CCR landfills and surface impoundments must prepare an Annual Groundwater Monitoring and Corrective Action Report ("AGWMCA Report") no later than January 31, 2018 and annually thereafter. According to the subject section, "For the preceding calendar year, the annual report must document the status of the groundwater monitoring and corrective action program for the CCR unit, summarize key actions completed, describe any problems encountered, discuss actions to resolve the problems, and project key activities for the upcoming year."

This report has been developed to meet the general requirements above and the specific requirements of § 257.90(e)(1) through (5), which include:

"(1) A map, aerial image, or diagram showing the CCR unit and all background (or upgradient) and downgradient monitoring wells, to include the well identification numbers, that are part of the groundwater monitoring program for the CCR unit (see Figure 2-1);

(2) Identification of any monitoring wells that were installed or decommissioned during the preceding year, along with a narrative description of why those actions were taken (see Section 2.1.1);

(3) In addition to all the monitoring data obtained under §§ 257.90 through 257.98, a summary including the number of groundwater samples that were collected for analysis for each background and downgradient well, the dates the samples were collected, and whether the sample was required by the detection monitoring or assessment monitoring programs (see Sections 3.0 and 4.0 and Table 3-1);

(4) A narrative discussion of any transition between monitoring programs (e.g., the date and circumstances for transitioning from detection monitoring to assessment monitoring in

addition to identifying the constituent(s) detected at a statistically significant increase over background levels) (see Section 2.3); and

(5) Other information required to be included in the annual report as specified in §§ 257.90 through 257.98."

In addition, the Owner or Operator must place the report in the facility's operating record as required by § 257.105(h)(1), provide notification of the report's availability to the appropriate State Director within 30 days of placement in the operating record as required by § 257.106(h)(1), and place the report on the facility's publicly accessible website, also within 30 days of placing the report in the operating record.

1.3 OVERVIEW OF REPORT CONTENTS

Section 1.0 of this report provided an overview of the CCR unit characteristics, regulatory basis, and a summary of the requirements for CCR Annual Groundwater Monitoring and Corrective Action Reports. Section 2.0 summarizes the status of key actions pertaining to CCR groundwater monitoring completed during 2019 for the CCBL and plans for the upcoming year. Section 3.0 discusses Detection Monitoring (DM) results from groundwater sampling events completed in 2019. Finally, Section 4.0 presents Assessment Monitoring (AM) results and corresponding statistical analyses and evaluations completed in 2019.

2.0 GENERAL INFORMATION

This section provides an overview of the status of the CCR groundwater monitoring program through 2019 and key activities planned for 2020.

2.1 STATUS OF THE CCR GROUNDWATER MONITORING AND CORRECTIVE ACTION PROGRAM

During calendar year 2019 (January 1st through December 31st), the following key actions were completed with regard to the CCR groundwater monitoring program for the CCBL.

2.1.1 Groundwater Monitoring Well System

As documented in the facility's 2017 and 2018 AGWMCA Reports (accessible at http://ccrdocs.firstenergycorp.com/), the certified CCR monitoring well network consists of three background wells (MW-101, -127, and -128), eight downgradient wells for the Original landfill (MW-106, -107, -129, -130, -131, -132, -133, and -134), eight downgradient wells for the Expansion Area landfill (MW-121, -123, -125, -135, -136, -137, -138, and -139), and two downgradient wells positioned between the two landfills (MW-109 and -112), as summarized in attached Table 2-1 and shown on attached Figure 2-1.

It was originally intended that upgradient wells MW-101 and -127, which are both screened in the Connellsville Sandstone, would be grouped for statistical evaluation purposes. However, it was subsequently determined that the two wells did not have the level of statistical similarity needed for grouping. As such, it was decided that only MW-101 would be used to establish background chemistry for the Connellsville Sandstone since it exhibited lower concentrations of all the Appendix III parameters than those measured in MW-127. MW-127 was left in place (i.e., it was not abandoned) as it remains part of the WVDEP groundwater monitoring program and its water levels have continued to be used to verify groundwater flow patterns at the site. No other changes to the monitoring well network (i.e., new wells added, or existing wells abandoned) occurred during 2019.

2.1.2 Groundwater Monitoring Plan

Consistent with the work performed and summarized in the 2017 and 2018 AGWMCA Reports, the CCR unit's Groundwater Monitoring Plan (GWMP) was followed during all 2019 field sampling and laboratory analysis activities and for statistically evaluating groundwater monitoring data developed from the CCR sampling and analysis program. No changes to the facility's GWMP occurred during 2019.

2.1.3 Background Groundwater Sampling

As documented in the 2017 and 2018 AGWMCA Reports, eight independent rounds of background groundwater samples for analyzing all Appendix III and IV parameters from each of the CCR monitoring wells were collected prior to initiating the facility's CCR Detection Monitoring program in October 2017. No modifications to this background data set occurred during 2019.

2.1.4 Statistical Methods

As documented in the 2017 and 2018 AGWMCA Reports, the background data set discussed in Section 2.1.3 of this Report was used to select the appropriate statistical evaluation methods for each CCR groundwater monitoring parameter to identify any Statistically Significant Increases (SSIs) over background concentrations and determine whether any concentrations were at Statistically Significant Levels (SSLs) above their respective Groundwater Protection Standards (GWPS) established for the site. These statistical methods are available on the facility's publicly accessible website and no changes were made to them during 2019.

2.2 PROBLEMS ENCOUNTERED/RESOLVED

There were two minor issues encountered during 2019 with regard to the CCR groundwater monitoring program. The first was an issue that arose during sampling event AM-3 which was performed in late January 2019. During this time period, rain and snow resulted in MW-123 (Expansion Area landfill) and MW-134 (Original landfill) being inaccessible to the field sampling team and, as such, samples were not collected from those wells. MW-123 only has two Appendix IV parameters that have been exhibiting SSIs (barium and combined radium 226/228) and those have been occurring at concentrations approximately twenty times (barium) and five times (radium) below their respective GWPS. Similarly, MW-134 only has one Appendix IV parameter that has been exhibiting SSIs (barium) and that has been occurring at concentrations approximately ten times below the barium GWPS. As such, the AM-3 data gaps for these two wells were determined to be non-critical and both wells were able to be accessed and sampled during the AM-4 event that was performed in August 2019.

The second issue was a carry-over from 2018. As noted in the 2018 AGWMCA Report, some of the CCR program wells were found to be exhibiting cracking of their concrete surface pads during the AM-2 sampling event. In July 2019 FE repaired a total of eleven damaged concrete surface pads (monitoring wells MW-129, -130, -131, -132, -133, -134, -135, -136, -137, -138, and -139) by replacing them with reinforced concrete.

Other than the issues noted above, there were no other significant problems encountered during 2019 with regard to the CCR groundwater monitoring program.

2.3 TRANSITION BETWEEN MONITORING PROGRAMS

As documented in the 2018 AGWMCA Report, the CCR unit transitioned from Detection Monitoring to Assessment Monitoring. As part of this transition, all required notifications were issued, appropriate GWPS for Appendix IV parameters were established, and the first two AM sampling events (AM-1 and AM-2) were completed. The CCR unit remained in Assessment Monitoring throughout 2019, with two additional AM sampling events completed (AM-3 and AM-4) and statistical evaluations of the AM-1, -2, and -3 sampling events being performed. As discussed in Section 4.1 of this Report, statistical evaluations of the AM-1, -2, and -3 data indicated there were no SSLs in any of the monitoring wells. Accordingly, as of December 31, 2019, the CCR unit remains in Assessment Monitoring.

2.4 KEY ACTIVITIES PLANNED FOR THE UPCOMING YEAR

The following are the key CCR groundwater compliance activities planned for 2020:

- Complete the statistical evaluation of the AM-4 sampling event that occurred in August 2019 to determine if there are any Appendix IV constituent concentrations in the downgradient wells that are at SSLs above applicable GWPS.
- If there are no SSLs, then continue with Assessment Monitoring by conducting the annual and semi-annual rounds of sampling and analysis for applicable Appendix III and Appendix IV constituents [per 40 CFR § 257.95(f)] and evaluate the need to update the background data sets and associated Upper Prediction Limits (UPLs).
- If any SSLs are identified, provide appropriate notification [per 40 CFR § 257.95(g)] then potentially conduct an Appendix IV ASD [per 40 CFR § 257.95(g)(3)(ii)] to determine if a source other than the CCR unit may be causing the SSLs. Concurrent with undertaking an Appendix IV ASD, characterize the Nature and Extent (N&E) of the Appendix IV release and provide appropriate notification depending on the findings [per 40 CFR §§ 257.95(g)(1) and (2), respectively].
- If any SSLs are identified and an ASD is either not undertaken, indicates that an alternative source is not responsible for all the SSLs identified, or is not completed within 90 days of

identifying there are SSLs, then initiate and perform an Assessment of Corrective Measures (ACM) in accordance with 40 CFR § 257.96.

3.0 DETECTION MONITORING INFORMATION

3.1 GROUNDWATER ANALYTICAL RESULTS SUMMARY

As noted in Section 2.3, site-wide Assessment Monitoring was performed throughout 2019. As part of the AM program, all DM (Appendix III) parameters were also analyzed during each AM sampling event. This exceeds the requirements of 40 CFR § 257.95(d)(1) which only stipulate analyzing Appendix III parameters during every other AM sampling event.

The need to statistically analyze the 2019 Appendix III data to identify SSIs and determine if AM was necessary was precluded by the CCR unit already being in AM during all of 2019, so no statistical analysis of the data was necessary. The 2019 Appendix III data that was collected and validated is presented in Table 3-1 with the intent of using it during the next update of the background dataset and associated UPLs, which will help increase the statistical power of future analyses.

4.0 ASSESSMENT MONITORING INFORMATION

4.1 GROUNDWATER ANALYTICAL RESULTS SUMMARY

In accordance with 40 CFR §§ 257.95(b) and (d)(1), the CCR groundwater sampling and analysis program implemented during 2019 consisted of two AM sampling events (AM-3 and AM-4) performed between January 14 and 29, 2019 and between August 6 and 19, 2019, respectively. For AM-3, all Appendix III and all Appendix IV constituents were analyzed while, for AM-4, analyses included all Appendix III parameters and only those Appendix IV parameters that were detected during previous AM sampling events. Laboratory analysis and validation of the sample data were completed on July 13, 2019 and January 13, 2020 for AM-3 and AM-4, respectively. Table 3-1 presents the validated analytical results for these events.

Statistical evaluations of AM data performed in 2019 included sampling events AM-1, AM-2, and AM-3. As noted in the 2018 AGWMCA Report, evaluations of data from sampling events AM-1 and AM-2 ended up being completed in January 2019 since receipt of outstanding validated results occurred late in the fourth quarter of that year. Statistical evaluation of AM-3 data was completed in July 2019 while evaluation of AM-4 data remains in-progress as of the end of the 2019 reporting period since receipt of validated AM-4 data occurred late in the fourth quarter of 2019 and a 90-day period is allowed by the CCR Rule for statistical evaluation, which falls in the first quarter of 2020. All statistical evaluation work was performed in accordance with the certified methods included in both the facility's operating record and the publicly accessible website and the results were used to determine whether there were any detected Appendix IV parameters at SSLs above the CCR unit's established GWPS. As documented in the 2018 AGWMCA Report, site-specific Appendix IV GWPS were established for the CCR unit using the higher of the federal Maximum Contaminant Level (MCL) or UPL for each parameter or, for those parameters that don't have MCLs, the higher of the EPA Risk Screening Level (RSL) or the UPL. The site-specific GWPS and the results of the statistical evaluations of AM-1, -2, and -3 are presented in Tables 4-1a, 4-1b, 4-2, and 4-3 and discussed below.

Statistical evaluation of the AM-1 and AM-2 data indicated the following:

- For the Original landfill, SSIs occurred for multiple parameters in multiple wells in the two aquifers monitored beneath the site. For the Connellsville Sandstone (Table 4-1a), SSIs were identified for eight different Appendix IV parameters with at least one parameter having an SSI in all six of the downgradient wells. However, none of the parameters were

found at SSLs above their respective GWPS. For the underlying Clarksburg formation (Table 4-1b), no SSIs were identified for any Appendix IV parameters.

- For the Expansion Area landfill, SSIs were identified in the Connellsville Sandstone (Table 4-2) for five different Appendix IV parameters with at least one parameter having an SSI in seven of the eight downgradient wells. However, none of the parameters were found at SSLs above their respective GWPS.
- For the area between both landfills, SSIs were identified in the Connellsville Sandstone (Table 4-3) for three different Appendix IV parameters with at least one parameter having an SSI in each of the two downgradient wells. However, none of the parameters were found at SSLs above their respective GWPS.

Statistical evaluation of the AM-3 data indicated the following:

- For the Original landfill, SSIs were identified in the Connellsville Sandstone (Table 4-1a), for seven of the same eight Appendix IV parameters identified in the prior AM events with the exception being chromium. Again, none of the parameters were found at SSLs above their respective GWPS. However, for the underlying Clarksburg formation (Table 4-1b), SSIs were identified for two Appendix IV parameters, with each in a different well. However, neither of the parameters were found at SSLs above their respective GWPS.
- For the Expansion Area landfill, SSIs were identified in the Connellsville Sandstone (Table 4-2) for the same Appendix IV parameters and in the same wells identified in the prior AM events. As before, none of the parameters were found at SSLs above their respective GWPS.
- For the area between both landfills, SSIs were identified in the Connellsville Sandstone (Table 4-3) for the same Appendix IV parameters and in the same wells identified in the prior AM events with the exception being an additional SSI for combined radium 226/228 in one of the wells. However, none of the parameters were found at SSLs above their respective GWPS.

In summary, although there were SSIs identified for multiple Appendix IV parameters for both CCR disposal areas, none of the parameter concentrations were found at SSLs above their respective GWPS during sampling events AM-1, AM-2, or AM-3. If any Appendix IV SSLs are identified during the evaluation of AM-4 data or data from the upcoming 2020 AM sampling events, ASD, N&E Characterization, and/or ACM activities will be undertaken as outlined in Section 2.4 of this Report, and the associated recordkeeping, notification, and reporting will be performed in accordance with the applicable requirements of 40 CFR §§ 257.95, 96, 105, 106, and 10.

TABLES

TABLE 2-1
CCR RULE GROUNDWATER MONITORING SYSTEM WELL SUMMARY
FT. MARTIN CCB LANDFILL – 2019 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT

Well	Year Installed	Formation Monitored	Ground Surface Elevation (ft MSL)	Total Well Depth (ft bgs)	Monitored Interval (ft bgs)	Monitored Interval (ft MSL)	Casing ID and Material
Background							
MW-101	1993	Connellsville SS	1113.05	34.0	24.0 – 34.0	1079.05 - 1089.05	2" - Sch. 40 PVC
MW-127*	2008	Connellsville SS	1112.00	37.0	27.0 – 37.0	1075.00 – 1085.00	2" - Sch. 40 PVC
MW-128	2008	Clarksburg	1114.00	97.5	77.5 – 97.5	1016.50 – 1036.50	2" - Sch. 40 PVC
Original Landfill - Downgradient							
MW-106	1993	Connellsville SS	1111.51	44.0	24.0 – 44.0	1067.51 – 1087.51	2" - Sch. 40 PVC
MW-107	1993	Connellsville SS	1107.28	55.5	45.5 – 55.5	1051.78 – 1061.78	2" - Sch. 40 PVC
MW-129	2016	Clarksburg	1057.84	29.4	19.4 – 29.4	1028.40 – 1038.40	2" - Sch. 40 PVC
MW-130	2016	Clarksburg	1034.29	33.3	23.3 – 33.3	1001.03 – 1011.03	2" - Sch. 40 PVC
MW-131	2016	Connellsville SS	1133.45	25.5	15.5 – 25.5	1107.95 – 1117.95	2" - Sch. 40 PVC
MW-132	2016	Connellsville SS	1155.72	77.5	67.5 – 77.5	1078.27 – 1088.27	2" - Sch. 40 PVC
MW-133	2016	Connellsville SS	1130.70	45.3	35.3 – 45.3	1085.45 – 1095.45	2" - Sch. 40 PVC
MW-134	2016	Connellsville SS	1088.67	23.8	13.8 – 23.8	1064.91 – 1074.91	2" - Sch. 40 PVC
Expansion Area Landfill - Downgradient							
MW-121	2008	Connellsville SS	1098.00	39.0	29.0 – 39.0	1059.00 – 1069.00	2" - Sch. 40 PVC
MW-123	2008	Connellsville SS	1084.00	35.5	25.5 – 35.5	1048.50 – 1058.50	2" - Sch. 40 PVC
MW-125	2008	Connellsville SS	1140.41	75.0	55.0 – 75.0	1065.41 – 1085.41	2" - Sch. 40 PVC
MW-135	2016	Connellsville SS	1081.36	37.5	27.5 – 37.5	1043.82 – 1053.82	2" - Sch. 40 PVC
MW-136	2016	Connellsville SS	1075.59	22.5	12.5 – 22.5	1053.12 – 1063.12	2" - Sch. 40 PVC
MW-137	2016	Connellsville SS	1094.53	37.9	27.9 – 37.9	1056.64 – 1066.64	2" - Sch. 40 PVC
MW-138	2016	Connellsville SS	1150.12	49.9	39.9 – 49.9	1100.25 – 1110.25	2" - Sch. 40 PVC
MW-139	2016	Connellsville SS	1127.26	42.8	32.8 – 42.8	1084.48 – 1094.48	2" - Sch. 40 PVC
Both Landfills - Downgradient							
MW-109	1993	Connellsville SS	1122.79	54.5	34.5 – 54.5	1068.29 – 1088.29	2" - Sch. 40 PVC
MW-112	2002	Connellsville SS	1124.11	50.0	40.0 – 50.0	1074.11 – 1084.11	2" - Sch. 40 PVC

Notes: SS = sandstone MSL = mean sea level bgs = below ground surface ID = inside diameter PVC = polyvinyl chloride
* = used only for water level measurements

TABLE 3-1
CCR RULE GROUNDWATER ASSESSMENT MONITORING ANALYTICAL RESULTS SUMMARY
FT. MARTIN CCB LANDFILL - 2019 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT

			APPENDIX III (all Chemical Constituents reported as TOTAL RECOVERABLE)[1]							APPENDIX IV (all Chemical Constituents reported as TOTAL RECOVERABLE)[1]														
SAMPLING EVENT NO.[2]	WELL ID[3]	SAMPLE DATE	BORON METALS MG/L	CALCIUM METALS MG/L	CHLORIDE MISC MG/L	FLUORIDE MISC MG/L	PH MISC S.U.	SULFATE MISC MG/L	TDS MISC MG/L	ANTIMONY METALS MG/L	ARSENIC METALS MG/L	BARIUM METALS MG/L	BERYLLIUM METALS MG/L	CADMIUM METALS MG/L	CHROMIUM METALS MG/L	COBALT METALS MG/L	LEAD METALS MG/L	LITHIUM METALS MG/L	MERCURY METALS MG/L	MOLYBDENUM METALS MG/L	SELENIUM METALS MG/L	THALLIUM METALS MG/L	RADIUM-226 RADIOCHEM PCI/L	RADIUM-228 RADIOCHEM PCI/L
13 (AM-3)	MW-101	1/16/2019	0.0436 J	63.995	20.2	0.088 J	6.89	53 J-	336	0.00107 U	0.00035 U	0.06786	0.00022 U	0.00067 U	0.00145 U	0.00047 U	0.00052 U	0.00841	0.00016 U	0.00113 U	0.0034 U	0.00017 U	0.0561 U	0.772
14 (AM-4)	MW-101	8/7/2019	0.0322 J	70.012	40.3 J+	0.062 J	6.92 J	65.3	456	0.00107 U	0.00035 U	0.07419	0.00022 U	0.00067 U	0.00145 U	0.00047 U	0.00052 U	0.00931	0.00016 U	0.00113	0.0034 U	0.00017 U	NA	NA
13 (AM-3)	MW-106	1/23/2019	0.015 U	84.002	1.44	0.128	7.09	76.9 J-	344	0.00107 U	0.00035 U	0.06195	0.00022 U	0.00067 U	0.00145 U	0.00047 U	0.00052 U	0.00667	0.00016 U	0.00113 U	0.0034 U	0.00017 U	0.207	0.399 U
14 (AM-4)	MW-106	8/7/2019	0.025 J	83.091	1.52 J+	0.139	7.08 J	79.2	360	0.00107 U	0.00035 U	0.0548	0.00022 U	0.00067 U	0.00145 U	0.00047 U	0.00052 U	0.00642	0.00016 U	0.00311	0.0034 U	0.00017 U	NA	NA
14 (AM-4)	MW-106 (D)	8/7/2019	0.0214 J	84.564	1.51 J+	0.132 J+	7.09 J	79 J+	360	0.00107 U	0.00035 U	0.05533	0.00022 U	0.00067 U	0.00145 U	0.00047 U	0.00052 U	0.00637	0.00016 U	0.00306	0.0034 U	0.00017 U	NA	NA
13 (AM-3)	MW-107	1/29/2019	0.8032	79.702	3.65	0.187	7.13	151	544	0.00107 U	0.00035 U	0.0313	0.00022 U	0.00067 U	0.00145 U	0.00047 U	0.00052 U	0.01186	0.00016 U	0.00113 U	0.0034 U	0.00017 U	0.0903 U	0.312 U
14 (AM-4)	MW-107	8/8/2019	0.6552 J	80.846	3.49	0.191	7.25 J	144	552	0.00107 U	0.00035 U	0.04626	0.00022 U	0.00067 U	0.00145 U	0.00065 U	0.00052 U	0.02134	0.00016 U	0.00128	0.0034 U	0.00017 U	NA	NA
13 (AM-3)	MW-109	1/29/2019	0.1194 J	242	16.6	0.198	6.94	500	1108	0.00107 U	0.00035 U	0.03469	0.00022 U	0.00067 U	0.00145 U	0.00047 U	0.00052 U	0.01467	0.00016 U	0.00116	0.0034 U	0.00017 U	0.147	0.294 U
14 (AM-4)	MW-109	8/15/2019	0.1065 J	240	16.8 J-	0.193	6.98 J	486	1180	0.00107 U	0.00035 U	0.03334	0.00022 U	0.00067 U	0.00145 U	0.00129 U	0.00052 U	0.01553	0.00016 U	0.00184	0.0034 U	0.00017 U	NA	NA
13 (AM-3)	MW-112	1/29/2019	0.0194 J	78.837	43.6	0.041 J	7.36	30.8	320	0.00107 U	0.00035 U	0.1498	0.00022 U	0.00067 U	0.00145 U	0.00047 U	0.00052 U	0.00714	0.00016 U	0.00113 U	0.0034 U	0.00017 U	0.279	0.778 U
14 (AM-4)	MW-112	8/13/2019	0.0229 J	86.377	46.3	0.075 J	7.26 J	40	396	0.00107 U	0.00035 U	0.15014	0.00022 U	0.00067 U	0.00145 U	0.00047 U	0.00052 U	0.00754	0.00016 U	0.00113	0.0034 U	0.00017 U	NA	NA
13 (AM-3)	MW-121	1/28/2019	0.015 U	74.151	13.8 J-	0.098 J	7.29	89.6 J-	476	0.00107 U	0.00036	0.04214	0.00022 U	0.00067 U	0.00145 U	0.00047 U	0.00052 U	0.00808	0.00016 U	0.00113 U	0.0034 U	0.00017 U	0.109	0.295 U
14 (AM-4)	MW-121	8/14/2019	0.0256 J	85.103	15.3	0.084 J	7.39 J	92.5	548	0.00107 U	0.00038 J	0.03886 J	0.00022 U	0.00067 U	0.00145 U	0.00047 U	0.00052 U	0.00815	0.00016 U	0.00117 J	0.0034 U	0.00017 U	NA	NA
13 (AM-3)	MW-123	1/24/2019	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
14 (AM-4)	MW-123	8/13/2019	0.015 U	74.437	5.77	0.076 J	7.35 J	24.3	352	0.00107 U	0.00035 U	0.09988	0.00022 U	0.00067 U	0.00145 U	0.00047 U	0.00052 U	0.00461	0.00016 U	0.0013	0.0034 U	0.00017 U	NA	NA
13 (AM-3)	MW-125	1/23/2019	0.0808 J	125	1.07	0.165	7.25	195 J-	708	0.00107 U	0.00035 U	0.01729	0.00022 U	0.00067 U	0.00145 U	0.00047 U	0.00052 U	0.0132	0.00016 U	0.00113 U	0.0034 U	0.00017 U	0.277	0.844
14 (AM-4)	MW-125	8/8/2019	0.0829 J	126	1.12	0.163	7.26 J	196	668	0.00107 U	0.00035 U	0.01545	0.00022 U	0.00067 U	0.00145 U	0.00047 U	0.00052 U	0.01353	0.00016 U	0.00113 U	0.0034 U	0.00017 U	NA	NA
13 (AM-3)	MW-127	1/29/2019	0.0233 J	158	128	0.09 J	7.17	115	808	0.00107 U	0.00035 U	0.04397	0.00022 U	0.00067 U	0.00547	0.00047 U	0.00052 U	0.0367	0.00068 J	0.00113 U	0.0034 U	0.00017 U	0.32	0.862
14 (AM-4)	MW-127	8/19/2019	0.0219 J	158	119	0.1	7.13 J	124	812	0.00107 U	0.00035 U	0.04931	0.00022 U	0.00067 U	0.00145 U	0.00063 J	0.00052 U	0.03743	0.00016 U	0.00113 U	0.0034 U	0.00017 U	NA	NA
13 (AM-3)	MW-128	1/16/2019	0.1816 J	10.973	0.616	2.1	7.95	3.23 J-	288	0.00131 J	0.00035 U	0.45937	0.00022 U	0.00067 U	0.00145 U	0.00047 U	0.00052 U	0.01094	0.00016 U	0.00113 U	0.0034 U	0.00017 U	0.126 U	0.467 U
14 (AM-4)	MW-128	8/7/2019	0.1847 J	11.31	0.606 J+	1.92 J+	7.86 J+	3.35 J+	352	0.00107 U	0.00035 U	0.46245	0.00022 U	0.00067 U	0.00145 U	0.00047 U	0.00052 U	0.01173	0.00016 U	0.00113 U	0.0034 U	0.00017 U	NA	NA
13 (AM-3)	MW-129	1/24/2019	3.24	323	20.7	0.069 J	6.72	1030	1880	0.00107 U	0.00035 U	0.01988	0.00044 U	0.00067 U	0.00145 U	0.00095 U	0.00052 U	0.01953	0.00016 U	0.00113 U	0.0034 U	0.00017 U	0.0747 U	0.252 U
14 (AM-4)	MW-129	8/14/2019	2.97	332	21.9	0.085 J	6.67 J	1060	1966.667	0.00107 U	0.00053	0.02078	0.00044 U	0.00067 U	0.00145 U	0.00047 U	0.00052 U	0.01616	0.00016 U	0.00113 U	0.0034 U	0.00017 U	NA	NA
13 (AM-3)	MW-130	1/28/2019	0.0962 J	57.011	7.57 J-	0.144	7.11	98.6 J-	344	0.00107 U	0.00037	0.07108	0.00022 U	0.00067 U	0.00145 U	0.0005 J	0.00052 U	0.00353	0.00016 U	0.00113 U	0.0034 U	0.00017 U	0.0635 U	0.0106 U
14 (AM-4)	MW-130	8/14/2019	0.118 J	63.375	7.42	0.132	7.11 J	94.4	404	0.00107 U	0.00105 J	0.06579	0.00022 U	0.00067 U	0.00145 U	0.00057 J	0.00052 U	0.0038 J	0.00016 U	0.00113 U	0.0034 U	0.00017 U	NA	NA
13 (AM-3)	MW-131	1/28/2019	0.015 U	64.433	0.823 J-	0.171	7.5	39 J-	300	0.00107 U	0.00035 U	0.10815	0.00022 U	0.00067 U	0.00145 U	0.00047 U	0.00052 U	0.01002	0.00016 U	0.00113 U	0.0034 U	0.00017 U	0.148	0.13 U
14 (AM-4)	MW-131	8/14/2019	0.0363 J	67.487	0.719	0.194	7.3 J	40.8	304	0.00107 U	0.00035 U	0.10601	0.00022 U	0.00067 U	0.00145 U	0.00047 U	0.00052 U	0.00888	0.00016 U	0.00113 U	0.0034 U	0.00017 U	NA	NA
13 (AM-3)	MW-132	1/17/2019	0.2601	11.251	3.3	2.37	8.36	217	688	0.00344	0.00526	0.03967	0.00022 U	0.00067 U	0.00145 U	0.00047 U	0.00052 U	0.02704	0.00016 U	0.01411	0.0034 U	0.00017 U	0.129 U	0.635
14 (AM-4)	MW-132	8/6/2019	0.2532	11.5	2.06 J+	1.84 J+	8.27 J	217 J+	724	0.00297	0.00648	0.03659	0.00022 U	0.00067 U	0.00145 U	0.00047 U	0.00052 U	0.03563	0.00016 U	0.02194	0.0034 U	0.00017 U	NA	NA
13 (AM-3)	MW-133	1/17/2019	0.4876	129	5.11	0.141	6.91	208	592	0.00107 U	0.00035 U	0.02671	0.00022 U	0.00067 U	0.00145 U	0.00047 U	0.00052 U	0.01514	0.00016 U	0.00119	0.0034 U	0.00017 U	1 U	0.196 U
14 (AM-4)	MW-133	8/6/2019	0.657	163	5.42 J+	0.117	7.27 J	306	836	0.00107 U	0.00038	0.02736	0.00022 U	0.00067 U	0.00145 U	0.00047 U	0.00052 U	0.01735	0.00016 U	0.00315	0.0034 U	0.00017 U	NA	NA
13 (AM-3)	MW-134	1/29/2019	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
14 (AM-4)	MW-134	8/12/2019	0.0305 J	56.437	1.52	0.033 J	7.25 J	6.32	264	0.00107 U	0.00135	0.27914	0.00022 U	0.00067 U	0.00145 U	0.00047 U	0.00261	0.00697	0.00016 U	0.00113 U	0.0034 U	0.00017 U	NA	NA
13 (AM-3)	MW-135	1/28/2019	0.0484 J	65.115	3.14 J-	0.098 J	7.36	19.6 J-	332	0.00107 U	0.00124	0.15249	0.00022 U	0.00067 U	0.00145 U	0.00062 J	0.00052 U	0.00716	0.00016 U	0.00113 U	0.0034 U	0.00017 U	0.288	0.575
13 (AM-3)	MW-135 (D)	1/28/2019	0.0406 J	66.543	2.67 J-	0.125	7.43	18.7 J-	328	0.00107 U	0.00146	0.16968	0.00022 U	0.00067 U	0.00145 U	0.00069 J	0.00052 U	0.00786	0.00016 U	0.00113 U	0.0034 U	0.00017 U	0.273	0.204 U
14 (AM-4)	MW-135	8/15/2019	0.0396 J	71.422	3.46	0.131	7.29 J	21.2 J-	364	0.00107 U	0.00126	0.16118	0.00022 U	0.00067 U	0.00032 U	0.00099 J	0.00052 U	0.00735	0.00016 U	0.00352	0.0034 U	0.00017 U	NA	NA
13 (AM-3)	MW-136	1/17/2019	0.015 U	55.251	3.22	0.181	7.32	38.9	268	0.00107 U	0.00035	0.08231	0.00022 U	0.00067 U	0.00145 U	0.00047 U	0.00052 U	0.0025 U	0.00016 U	0.00113 U	0.0034 U	0.00017 U	0.155 U	0.378 U
14 (AM-4)	MW-136	8/12/2019	0.0241 J	55.39	3.97	0.169	6.97 J	39.9	304	0.00107 U	0.00035 U	0.06958	0.00022 U	0.00067 U	0.00145 U	0.00047 U	0.00052 U	0.00267	0.00016 U	0.00113 U	0.0034 U	0.00017 U	NA	NA
13 (AM-3)	MW-137	1/17/2019	0.015 U	55.356	2.3	0.094 J	7.23	15.2	244	0.00107 U	0.00072 J	0.1324	0.00022 U	0.00067 U	0.00145 U	0.00072 J	0.00052 U	0.00423 J	0.00016 U	0.00113 U	0.0034 U	0.00017 U	0.122 U	0.801
14 (AM-4)	MW-137	8/7/2019	0.0164 J	53.362	2.12 J+	0.068 J	7.18 J	18 J+	248	0.00107 U	0.00041	0.12647	0.00022 U	0.00067 U	0.00145 U	0.00047 U	0.00052 U	0.00473	0.00016 U	0.00113 U	0.0034 U	0.00017 U	NA	NA
13 (AM-3)	MW-138	1/16/2019	0.0857 J	238	1.77	0.316	6.86	476 J-	1070	0.00107 U	0.00039 J	0.0136 U	0.00022 U	0.00067 U	0.00145 U	0.00085 J	0.00052 U	0.01271	0.00016 U	0.00113 U	0.0034 U	0.00017 U	1 U	1,5
14 (AM-4)	MW-138	8/6/2019	0.0952 J	253	2.12	0.29	7.03 J	512 J+	1475	0.00107 U	0.0005	0.0136 U	0.00022 U	0.00067 U	0.00145 U	0.00106	0.00052 U	0.01481	0.00016 U	0.00113 U	0.0034 U	0.00017 U	NA	NA
13 (AM-3)	MW-139	1/16/2019	0.1609 J	111	2.12	0.394	7.2	84.5 J-	444	0.00107 U	0.00035 U	0.04165 J	0.00022 U	0.00067 U	0.00145 U	0.00047 U	0.00052 U	0.00979	0.00016 U	0.00113 U	0.0034 U	0.00017 U	1 U	0.858
14 (AM-4)	MW-139	8/6/2019	0.1745 J	119	2.42	0.269 J+	7.32 J	96.1 J+	480	0.00107 U	0.00035 U	0.04136	0.00022 U	0.00067 U	0.00145 U	0.00047 U	0.00052 U	0.01015	0.00016 U	0.00113 U	0.0034 U	0.00017 U	NA	NA

NOTES:

[1] Lab analyses were completed by Beta Lab and TestAmerica Laboratories, Inc., both of which are accredited/certified laboratories: Beta Lab ISO/IEC 17025 Cert No. 2489.01 (Exp. 11-30-20) and ISO/IEC 9001 Cert. No. 83761-IS7 (Exp. 01-16-21) and TestAmerica NELAP Identification Number: 68-00340, EPA Region: 3, Expiration Date: 08-31-20.

[2] Event Nos. 13 and 14 correspond to Assessment Monitoring (AM) sampling events AM-3 and AM-4, respectively.

[3] Field duplicate samples that were taken for Quality Control purposes are noted with a (D).

NA = Parameter was not analyzed.

NS = Well was not sampled due to accessibility issues

DATA QUALIFER DEFINITIONS:

The following definitions provide brief explanations of the validation qualifiers assigned to results in the data review process.

U	The analyte was analyzed for, but was not detected at a level greater than or equal to the level of the adjusted method detection limit for sample and method.
J	The analyte was positively identified and the associated numerical value is the approximate concentration of the analyte in the sample (due either to the quality of the data generated because certain quality control criteria were not met, or the concentration of the analyte was below the reporting limit).
J+	The result is an estimated quantity, but the result may be biased high.
J-	The result is an estimated quantity, but the result may be biased low.
UJ	The analyte was analyzed for, but was not detected. The reported detection limit is approximate and may be inaccurate or imprecise.
R	The sample result (detected) is unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in sample
UR	The sample result (nondetected) is unusable due to the quality of the data generated because certain criteria were not met. The analyte may or may not be present in sample.

Original Landfill - Connellsville Sandstone							Event 11 (AM-1) Downgradient Wells						Event 11 (AM-1) Background Well MW-101	
Parameter	Units	Data Distribution for Background Well MW-101	UPL Type	UPL Value[a,b]	Federal MCLs/RSLs	GWPS	MW-131	MW-132	MW-133	MW-134	MW-106	MW-107		
Antimony	mg/L	Unknown	Poisson	0.00146	0.006	0.006	<0.00017	0.00484	<0.00017	<0.00017	<0.00017	<0.00017	<0.00017	U
Arsenic	mg/L	Unknown	Poisson	0.0015	0.01	0.01	<0.00015	0.00785	0.00041	0.00048	<0.00015	<0.00015	<0.00015	U
Barium	mg/L	Normal	Parametric	0.092642	2	2	0.12558	0.04799	0.02043	0.28388	0.06233	0.03345	0.06207	
Beryllium	mg/L	Unknown[c]	DQ[d]	NA	0.004	0.004	<0.00022	<0.00022	<0.00004	<0.00022	<0.00022	<0.00022	<0.00022	U
Cadmium	mg/L	Unknown[c]	DQ[d]	NA	0.005	0.005	<0.00017	<0.00017	<0.00017	<0.00017	<0.00017	<0.00017	<0.00017	U
T. Chromium	mg/L	Unknown[c]	DQ[d]	NA	0.1	0.1	<0.00045	0.00086	<0.00045	<0.00045	<0.00045	0.00189	<0.00045	U
Cobalt	mg/L	Unknown[c]	DQ[d]	NA	0.006	0.006	<0.00047	<0.00047	<0.00047	<0.00047	<0.00047	<0.00047	<0.00047	U
Fluoride	mg/L	Normal	Parametric	0.103	4	4	0.159	2.28	0.069	0.032	0.128	0.182	0.062	J
Lead	mg/L	Unknown[c]	DQ[d]	NA	0.015	0.015	<0.00052	<0.00052	<0.00052	<0.00052	<0.00052	<0.00052	<0.00052	U
Lithium	mg/L	Normal	Parametric	0.009909	0.04	0.04	0.00991	0.03419	0.022	0.0065	0.00648	0.01427	0.00915	J
Mercury	mg/L	Unknown	Poisson	0.00029	0.002	0.002	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	U
Molybdenum	mg/L	Unknown	Poisson	0.00765	0.1	0.1	<0.00028	0.03236	0.00277	0.00028	0.00513	0.00066	<0.00028	U
Selenium	mg/L	Unknown[c]	DQ[d]	NA	0.5	0.5	<0.0011	0.00115	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	U
Thallium	mg/L	Unknown[c]	DQ[d]	NA	0.002	0.002	<0.00017	<0.00017	<0.00017	<0.00017	<0.00017	<0.00017	<0.00017	U
Sum Ra226+Ra228	pCi/L	Unknown	Poisson	0.54	5	5	1.0838	0.164	0.1687	0.484	0.3955	<0.0898	<0.3568	U

[a]Prediction Limits calculated using 5% alpha.
[b]Upper Prediction Limit used for all parameters.
[c]Data distribution set to Unknown if all values non-detect in upgradient well
[d]DQ is Double Quantification Rule. If Event 11 sample is detectible, will need to resample the downgradient well to see if two successive, independent detected values occur. If so, that would be an SSI. If value was detected in upgradient well in Event 11, would use Poisson PL instead.

#.#### = UPL > Result > MCL/RSL
= SSI < GWPS
= SSI > GWPS
= DQ Parameter with Verification Sampling Needed

Original Landfill - Connellsville Sandstone							Event 12 (AM-2) Downgradient Wells						Event 12 (AM-2) Background Well MW-101	
Parameter	Units	Data Distribution for Background Well MW-101	UPL Type	UPL Value[a,b]	Federal MCLs/RSLs	GWPS	MW-131	MW-132	MW-133	MW-134	MW-106	MW-107		
Antimony	mg/L	Unknown	Poisson	0.00146	0.006	0.006	<0.00017	0.00446	<0.00017	0.00019	<0.00017	0.00023	<0.00017	U
Arsenic	mg/L	Unknown	Poisson	0.0015	0.01	0.01	<0.00015	0.0071	0.00031	0.00083	<0.00015	0.00025	<0.00015	U
Barium	mg/L	Normal	Parametric	0.092642	2	2	0.1274	0.04611	0.019965	0.27394	0.06001	0.04726	0.07174	
Beryllium	mg/L	Unknown[c]	DQ[d]	NA	0.004	0.004	NS	NS	NS	NS	NS	NS	NS	
Cadmium	mg/L	Unknown[c]	DQ[d]	NA	0.005	0.005	NS	NS	NS	NS	NS	NS	NS	
T. Chromium	mg/L	Unknown[c]	DQ[d]	NA	0.1	0.1	<0.00045	0.00089	<0.00045	<0.00045	<0.00045	0.00546	<0.00045	U
Cobalt	mg/L	Unknown[c]	DQ[d]	NA	0.006	0.006	<0.00047	<0.00047	<0.00047	<0.00047	<0.00047	<0.00047	<0.00047	U
Fluoride	mg/L	Normal	Parametric	0.103	4	4	0.193	2.54	0.118	0.039	0.142	0.189	0.069	J
Lead	mg/L	Unknown[c]	DQ[d]	NA	0.015	0.015	NS	NS	NS	NS	NS	NS	NS	
Lithium	mg/L	Normal	Parametric	0.009909	0.04	0.04	0.01158	0.031	0.01988	0.00674	0.00657	0.01955	0.00796	J
Mercury	mg/L	Unknown	Poisson	0.00029	0.002	0.002	NS	NS	NS	NS	NS	NS	NS	
Molybdenum	mg/L	Unknown	Poisson	0.00765	0.1	0.1	<0.00028	0.02123	0.002045	0.00081	0.00438	0.00185	<0.00028	U
Selenium	mg/L	Unknown[c]	DQ[d]	NA	0.5	0.5	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	U
Thallium	mg/L	Unknown[c]	DQ[d]	NA	0.002	0.002	NS	NS	NS	NS	NS	NS	NS	
Sum Ra226+Ra228	pCi/L	Unknown	Poisson	0.54	5	5	<1.109	<1.289	<1.16895	<2	<1.625	<1.145	<1.19	U

[a]Prediction Limits calculated using 5% alpha.
[b]Upper Prediction Limit used for all parameters.
[c]Data distribution set to Unknown if all values non-detect in upgradient well
[d]DQ is Double Quantification Rule. If Event 12 sample is detectible but Event 11 was ND, need to resample the well to see if two successive, independent detected values occur. If so, that would be an SSI. If value was detected in upgradient well in Event 12, would use Poisson PL instead.

#.#### = UPL > Result > MCL/RSL
= SSI < GWPS
= SSI > GWPS
= DQ Parameter with Verification Sampling Needed

TETRA TECH

Original Landfill - Connellsville Sandstone							Event 13 (AM-3) Downgradient Wells					
Parameter	Units	Data Distribution for Background Well MW-101	UPL Type	UPL Value[a,b]	Federal MCLs/RSLs	GWPS	MW-131	MW-132	MW-133	MW-134[e]	MW-106	MW-107
Antimony	mg/L	Unknown	Poisson	0.00146	0.006	0.006	<0.00107	0.00344	<0.00107	NS	<0.00107	<0.00107
Arsenic	mg/L	Unknown	Poisson	0.0015	0.01	0.01	<0.00035	0.00526	<0.00035	NS	<0.00035	<0.00035
Barium	mg/L	Normal	Parametric	0.092642	2	2	0.10815	0.03967	0.02671	NS	0.06195	0.0313
Beryllium	mg/L	Unknown[c]	DQ[d]	NA	0.004	0.004	NS	NS	NS	NS	NS	NS
Cadmium	mg/L	Unknown[c]	DQ[d]	NA	0.005	0.005	NS	NS	NS	NS	NS	NS
T. Chromium	mg/L	Unknown[c]	DQ[d]	NA	0.1	0.1	<0.00145	<0.00145	<0.00145	NS	<0.00145	<0.00145
Cobalt	mg/L	Unknown[c]	DQ[d]	NA	0.006	0.006	<0.00047	<0.00047	<0.00047	NS	<0.00047	<0.00047
Fluoride	mg/L	Normal	Parametric	0.103	4	4	0.171	2.37	0.141	NS	0.128	0.187
Lead	mg/L	Unknown[c]	DQ[d]	NA	0.015	0.015	NS	NS	NS	NS	NS	NS
Lithium	mg/L	Normal	Parametric	0.009909	0.04	0.04	0.01002	0.02704	0.01514	NS	0.00667	0.01186
Mercury	mg/L	Unknown	Poisson	0.00029	0.002	0.002	NS	NS	NS	NS	NS	NS
Molybdenum	mg/L	Unknown	Poisson	0.00765	0.1	0.1	<0.00113	0.01411	0.00119	NS	<0.00113	<0.00113
Selenium	mg/L	Unknown[c]	DQ[d]	NA	0.5	0.5	<0.0034	<0.0034	<0.0034	NS	<0.0034	<0.0034
Thallium	mg/L	Unknown[c]	DQ[d]	NA	0.002	0.002	NS	NS	NS	NS	NS	NS
Sum Ra226+Ra228	pCi/L	Unknown	Poisson	0.54	5	5	0.213	0.699	<1.16895	NS	0.406	0.201

Event 13 (AM-3) Background Well MW-101	
<0.00017	U
<0.00015	U
0.06786	
NS	
NS	
<0.00045	U
<0.00047	U
0.088	J
NS	
0.00841	
NS	
<0.00028	U
<0.0011	U
NS	
0.8	

[a]Prediction Limits calculated using 5% alpha.
[b]Upper Prediction Limit used for all parameters.
[c]Data distribution set to Unknown if all values non-detect in upgradient well
[d]DQ is Double Quantification Rule. If Event 13 sample is detectible but Event 12 was ND, need to resample the well to see if two successive, independent detected values occur. If so, that would be an SSI. If value was detected in upgradient well in Event 13, would use Poisson PL instead.
[e]MW-134 not sampled due to access limitations.

#.#### = UPL > Result > MCL/RSL
= SSI < GWPS
= SSI > GWPS
= DQ Parameter with Verification Sampling Needed

TETRA TECH

Original Landfill - Clarksburg Formation							Event 11 (AM-1) Downgradient Wells						Event 11 (AM-1) Background Well MW-128	
Parameter	Units	Data Distribution for Background Well MW-128	UPL Type	UPL Value[a,b]	Federal MCLs/RSLs	GWPS	MW-129	MW-130						
Antimony	mg/L	Unknown	Poisson	0.000576	0.006	0.006	<0.00017	<0.00017					<0.00017	U
Arsenic	mg/L	Normal	Parametric	0.001357	0.01	0.01	0.00033	0.000255					0.00073	J
Barium	mg/L	Normal	Parametric	0.509786	2	2	0.01783	0.06779					0.40822	
Beryllium	mg/L	Unknown[c]	DQ[d]	NA	0.004	0.004	<0.00022	<0.00022					<0.00022	U
Cadmium	mg/L	Unknown[c]	DQ[d]	NA	0.005	0.005	<0.00017	<0.00017					<0.00017	U
T. Chromium	mg/L	Unknown	Poisson	0.00114	0.1	0.1	<0.00045	<0.00045					<0.00045	U
Cobalt	mg/L	Unknown[c]	DQ[d]	NA	0.006	0.006	<0.00047	<0.00047					<0.00047	U
Fluoride	mg/L	Normal	Parametric	2.133	4	4	0.056	0.128					2.05	
Lead	mg/L	Unknown[c]	DQ[d]	NA	0.015	0.015	<0.00052	<0.00052					<0.00052	U
Lithium	mg/L	Normal	Parametric	0.013878	0.04	0.04	0.01361	<0.005					0.01172	J
Mercury	mg/L	Unknown	Poisson	0.00099	0.002	0.002	<0.00004	<0.00004					<0.00004	U
Molybdenum	mg/L	Normal	Parametric	0.009648	0.1	0.1	<0.00028	<0.00028					0.00096	J
Selenium	mg/L	Unknown[c]	DQ[d]	NA	0.5	0.5	<0.0011	<0.0011					<0.0011	U
Thallium	mg/L	Unknown[c]	DQ[d]	NA	0.002	0.002	<0.00017	<0.00017					<0.00017	U
Sum Ra226+Ra228	pCi/L	Unknown	Non-parametric	1.127	5	5	<1.0838	<0.1286					0.4201	U

[a]Prediction Limits calculated using 5% alpha.
[b]Upper Prediction Limit used for all parameters.
[c]Data distribution set to Unknown if all values non-detect in upgradient well
[d]DQ is Double Quantification Rule. If Event 11 sample is detectible, will need to resample the downgradient well to see if two successive, independent detected values occur. If so, that would be an SSI. If value was detected in upgradient well in Event 11, would use Poisson PL instead.

#.#### = UPL > Result > MCL/RSL
= SSI < GWPS
= SSI > GWPS
= DQ Parameter with Verification Sampling Needed

Original Landfill - Clarksburg Formation							Event 12 (AM-2) Downgradient Wells						Event 12 (AM-2) Background Well MW-128	
Parameter	Units	Data Distribution for Background Well MW-128	UPL Type	UPL Value[a,b]	Federal MCLs/RSLs	GWPS	MW-129	MW-130						
Antimony	mg/L	Unknown	Poisson	0.000576	0.006	0.006	<0.00017	<0.00017					<0.00017	U
Arsenic	mg/L	Normal	Parametric	0.001357	0.01	0.01	0.00024	0.00035					0.00068	J
Barium	mg/L	Normal	Parametric	0.509786	2	2	0.02006	0.0698					0.41717	
Beryllium	mg/L	Unknown[c]	DQ[d]	NA	0.004	0.004	NS	NS					NS	
Cadmium	mg/L	Unknown[c]	DQ[d]	NA	0.005	0.005	NS	NS					NS	
T. Chromium	mg/L	Unknown	Poisson	0.00114	0.1	0.1	<0.00045	<0.00045					<0.00045	U
Cobalt	mg/L	Unknown[c]	DQ[d]	NA	0.006	0.006	<0.00047	0.00048					<0.00047	U
Fluoride	mg/L	Normal	Parametric	2.133	4	4	0.073	0.185					2.05	
Lead	mg/L	Unknown[c]	DQ[d]	NA	0.015	0.015	NS	NS					NS	
Lithium	mg/L	Normal	Parametric	0.013878	0.04	0.04	0.01359	<0.005					0.00973	J
Mercury	mg/L	Unknown	Poisson	0.00099	0.002	0.002	NS	NS					NS	
Molybdenum	mg/L	Normal	Parametric	0.009648	0.1	0.1	<0.00028	<0.00028					0.00089	J
Selenium	mg/L	Unknown[c]	DQ[d]	NA	0.5	0.5	<0.0011	<0.0011					<0.0011	U
Thallium	mg/L	Unknown[c]	DQ[d]	NA	0.002	0.002	NS	NS					NS	
Sum Ra226+Ra228	pCi/L	Unknown	Non-parametric	1.127	5	5	<1.438	0.993					1.03	

[a]Prediction Limits calculated using 5% alpha.
[b]Upper Prediction Limit used for all parameters.
[c]Data distribution set to Unknown if all values non-detect in upgradient well
[d]DQ is Double Quantification Rule. If Event 12 sample is detectible but Event 11 was ND, need to resample the well to see if two successive, independent detected values occur. If so, that would be an SSI. If value was detected in upgradient well in Event 12, would use Poisson PL instead.

#.#### = UPL > Result > MCL/RSL
= SSI < GWPS
= SSI > GWPS
= DQ Parameter with Verification Sampling Needed

TETRA TECH

Original Landfill - Clarksburg Formation							Event 13 (AM-3) Downgradient Wells						Event 13 (AM-3) Background Well MW-128	
Parameter	Units	Data Distribution for Background Well MW-128	UPL Type	UPL Value[a,b]	Federal MCLs/RSLs	GWPS	MW-129	MW-130						
Antimony	mg/L	Unknown	Poisson	0.000576	0.006	0.006	<0.00107	<0.00017					0.00131	J
Arsenic	mg/L	Normal	Parametric	0.001357	0.01	0.01	<0.00035	0.00037					<0.00035	U
Barium	mg/L	Normal	Parametric	0.509786	2	2	0.01988	0.07108					0.45937	
Beryllium	mg/L	Unknown[c]	DQ[d]	NA	0.004	0.004	NS	NS					NS	
Cadmium	mg/L	Unknown[c]	DQ[d]	NA	0.005	0.005	NS	NS					NS	
T. Chromium	mg/L	Unknown	Poisson	0.00114	0.1	0.1	<0.00045	<0.00045					<0.00045	U
Cobalt	mg/L	Unknown[c]	DQ[d]	NA	0.006	0.006	<0.00095	0.0005					<0.00047	U
Fluoride	mg/L	Normal	Parametric	2.133	4	4	0.069	0.144					2.1	
Lead	mg/L	Unknown[c]	DQ[d]	NA	0.015	0.015	NS	NS					NS	
Lithium	mg/L	Normal	Parametric	0.013878	0.04	0.04	0.01953	0.00353					0.01094	
Mercury	mg/L	Unknown	Poisson	0.00099	0.002	0.002	NS	NS					NS	
Molybdenum	mg/L	Normal	Parametric	0.009648	0.1	0.1	<0.00113	<0.00113					<0.00113	U
Selenium	mg/L	Unknown[c]	DQ[d]	NA	0.5	0.5	<0.0034	<0.0034					<0.0034	U
Thallium	mg/L	Unknown[c]	DQ[d]	NA	0.002	0.002	NS	NS					NS	
Sum Ra226+Ra228	pCi/L	Unknown	Non-parametric	1.127	5	5	<0.327	<0.074					<0.593	U

[a]Prediction Limits calculated using 5% alpha.

[b]Upper Prediction Limit used for all parameters.

[c]Data distribution set to Unknown if all values non-detect in upgradient well

[d]DQ is Double Quantification Rule. If Event 13 sample is detectible but Event 12 was ND, need to resample the well to see if two successive, independent detected values occur. If so, that would be an SSI. If value was detected in upgradient well in Event 13, would use Poisson PL instead.

#.#### = UPL > Result > MCL/RSL

= SSI < GWPS

= SSI > GWPS

= DQ Parameter with Verification Sampling Needed

TETRA TECH

Expansion Area Landfill - Connellsville Sandstone							Event 11 (AM-1) Downgradient Wells								Event 11 (AM-1) Background Well MW-101	
Parameter	Units	Data Distribution for Background Well MW-101	UPL Type	UPL Value[a,b]	Federal MCLs/RSLs	GWPS	MW-121	MW-123	MW-125	MW-135	MW-136	MW-137	MW-138	MW-139		
Antimony	mg/L	Unknown	Poisson	0.00146	0.006	0.006	<0.00017	<0.00017	<0.00017	<0.00017	<0.00017	0.00018	<0.00017	<0.00017	<0.00017	U
Arsenic	mg/L	Unknown	Poisson	0.0015	0.01	0.01	0.00016	0.00015	<0.00015	0.00066	0.00027	0.0006	0.00025	0.00023	<0.00015	U
Barium	mg/L	Normal	Parametric	0.092642	2	2	0.04019	0.10988	0.01621	0.16488	0.07547	0.13408	0.01102	0.04192	0.06207	
Beryllium	mg/L	Unknown[c]	DQ[d]	NA	0.004	0.004	<0.00022	<0.00022	<0.00022	<0.00022	<0.00022	<0.00022	<0.00022	<0.00022	<0.00022	U
Cadmium	mg/L	Unknown[c]	DQ[d]	NA	0.005	0.005	<0.00017	<0.00017	<0.00017	<0.00017	<0.00017	<0.00017	<0.00017	<0.00017	<0.00017	U
T. Chromium	mg/L	Unknown[c]	DQ[d]	NA	0.1	0.1	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045	U
Cobalt	mg/L	Unknown[c]	DQ[d]	NA	0.006	0.006	<0.00047	<0.00047	<0.00047	<0.00047	<0.00047	0.00058	0.0008	<0.00047	<0.00047	U
Fluoride	mg/L	Normal	Parametric	0.103	4	4	0.09	0.061	0.185	0.116	0.157	0.082	0.267	0.311	0.062	J
Lead	mg/L	Unknown[c]	DQ[d]	NA	0.015	0.015	<0.00052	<0.00052	<0.00052	<0.00052	<0.00052	<0.00052	<0.00052	<0.00052	<0.00052	U
Lithium	mg/L	Normal	Parametric	0.009909	0.04	0.04	0.00944	<0.005	0.01477	0.00781	<0.005	0.005	0.01504	0.0128	0.00915	J
Mercury	mg/L	Unknown	Poisson	0.00029	0.002	0.002	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	<0.00004	U
Molybdenum	mg/L	Unknown	Poisson	0.00765	0.1	0.1	0.00167	0.00249	0.00094	0.00119	0.00059	0.00058	<0.00028	0.00061	<0.00028	U
Selenium	mg/L	Unknown[c]	DQ[d]	NA	0.5	0.5	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	U
Thallium	mg/L	Unknown[c]	DQ[d]	NA	0.002	0.002	<0.00017	<0.00017	<0.00017	<0.00017	<0.00017	<0.00017	<0.00017	<0.00017	<0.00017	U
Sum Ra226+Ra228	pCi/L	Unknown	Poisson	0.54	5	5	0.262	0.493	0.2661	0.39725	0.394	1.076	1.618	0.354	0.3568	U

[a]Prediction Limits calculated using 5% alpha.

[b]Upper Prediction Limit used for all parameters.

[c]Data distribution set to Unknown if all values non-detect in upgradient well.

[d]DQ is Double Quantification Rule. If Event 11 sample is detectible, will need to resample the downgradient well to see if two successive, independent detected values occur. If so, that would be an SSI. If value was detected in upgradient well in Event 11, would use Poisson PL instead.

#.#### = UPL > Result > MCL/RSL

= SSI < GWPS

= SSI > GWPS

= DQ Parameter with Verification Sampling Needed

Expansion Area Landfill - Connellsville Sandstone							Event 12 (AM-2) Downgradient Wells								Event 12 (AM-2) Background Well MW-101	
Parameter	Units	Data Distribution for Background Well MW-101	UPL Type	UPL Value[a,b]	Federal MCLs/RSLs	GWPS	MW-121	MW-123	MW-125	MW-135	MW-136	MW-137	MW-138	MW-139		
Antimony	mg/L	Unknown	Poisson	0.00146	0.006	0.006	<0.00017	<0.00017	<0.00017	<0.00017	<0.00017	<0.00017	<0.00017	<0.00017	<0.00017	U
Arsenic	mg/L	Unknown	Poisson	0.0015	0.01	0.01	0.00015	0.00021	<0.00015	0.00114	0.00035	0.00036	<0.00015	0.0002	<0.00015	U
Barium	mg/L	Normal	Parametric	0.092642	2	2	0.03933	0.11072	0.01853	0.17694	0.08234	0.13097	0.0107	0.0434	0.07174	
Beryllium	mg/L	Unknown[c]	DQ[d]	NA	0.004	0.004	NS	NS	NS	NS	NS	NS	NS	NS	NS	
Cadmium	mg/L	Unknown[c]	DQ[d]	NA	0.005	0.005	NS	NS	NS	NS	NS	NS	NS	NS	NS	
T. Chromium	mg/L	Unknown[c]	DQ[d]	NA	0.1	0.1	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045	U
Cobalt	mg/L	Unknown[c]	DQ[d]	NA	0.006	0.006	<0.00047	<0.00047	<0.00047	0.00054	<0.00047	<0.00047	0.0009	<0.00047	<0.00047	U
Fluoride	mg/L	Normal	Parametric	0.103	4	4	0.103	0.084	0.205	0.132	0.174	0.082	0.31	0.397	0.069	J
Lead	mg/L	Unknown[c]	DQ[d]	NA	0.015	0.015	NS	NS	NS	NS	NS	NS	NS	NS	NS	
Lithium	mg/L	Normal	Parametric	0.009909	0.04	0.04	0.00752	<0.005	0.01258	0.00624	<0.005	<0.005	0.01363	0.00963	0.00796	J
Mercury	mg/L	Unknown	Poisson	0.00029	0.002	0.002	NS	NS	NS	NS	NS	NS	NS	NS	NS	
Molybdenum	mg/L	Unknown	Poisson	0.00765	0.1	0.1	0.0008	0.00206	0.001	0.00107	0.00043	<0.00028	<0.00028	0.00079	<0.00028	U
Selenium	mg/L	Unknown[c]	DQ[d]	NA	0.5	0.5	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	<0.0011	U
Thallium	mg/L	Unknown[c]	DQ[d]	NA	0.002	0.002	NS	NS	NS	NS	NS	NS	NS	NS	NS	
Sum Ra226+Ra228	pCi/L	Unknown	Poisson	0.54	5	5	<1.336	1.002	<1.411	<1.025	<1	<1	<1.316	1.201	<1.19	U

[a]Prediction Limits calculated using 5% alpha.

[b]Upper Prediction Limit used for all parameters.

[c]Data distribution set to Unknown if all values non-detect in upgradient well.

[d]DQ is Double Quantification Rule. If Event 12 sample is detectible but Event 11 was ND, need to resample the well to see if two successive, independent detected values occur. If so, that would be an SSI. If value was detected in upgradient well in Event 12, would use Poisson PL instead.

#.#### = UPL > Result > MCL/RSL

= SSI < GWPS

= SSI > GWPS

= DQ Parameter with Verification Sampling Needed

TETRA TECH

Expansion Area Landfill - Connellsville Sandstone							Event 13 (AM-3) Downgradient Wells								Event 13 (AM-3) Background Well MW-101	
Parameter	Units	Data Distribution for Background Well MW-101	UPL Type	UPL Value[a,b]	Federal MCLs/RSLs	GWPS	MW-121	MW-123[e]	MW-125	MW-135	MW-136	MW-137	MW-138	MW-139		
Antimony	mg/L	Unknown	Poisson	0.00146	0.006	0.006	<0.00107	NS	<0.00107	<0.00107	<0.00107	<0.00107	<0.00107	<0.00107	<0.00017	U
Arsenic	mg/L	Unknown	Poisson	0.0015	0.01	0.01	0.00036	NS	<0.00035	0.00135	0.00035	0.00072	0.00039	<0.00035	<0.00035	U
Barium	mg/L	Normal	Parametric	0.092642	2	2	0.04214	NS	0.01729	0.161085	0.08231	0.1324	<0.0136	0.04165	0.06786	
Beryllium	mg/L	Unknown[c]	DQ[d]	NA	0.004	0.004	NS	NS	NS	NS	NS	NS	NS	NS	NS	
Cadmium	mg/L	Unknown[c]	DQ[d]	NA	0.005	0.005	NS	NS	NS	NS	NS	NS	NS	NS	NS	
T. Chromium	mg/L	Unknown[c]	DQ[d]	NA	0.1	0.1	<0.00145	NS	<0.00145	<0.00145	<0.00145	<0.00145	<0.00145	<0.00145	<0.00145	U
Cobalt	mg/L	Unknown[c]	DQ[d]	NA	0.006	0.006	<0.00047	NS	<0.00047	0.000655	<0.00047	0.00072	0.00085	<0.00047	<0.00047	U
Fluoride	mg/L	Normal	Parametric	0.103	4	4	0.098	NS	0.165	0.1115	0.181	0.094	0.316	0.394	0.088	J
Lead	mg/L	Unknown[c]	DQ[d]	NA	0.015	0.015	NS	NS	NS	NS	NS	NS	NS	NS	NS	
Lithium	mg/L	Normal	Parametric	0.009909	0.04	0.04	0.00808	NS	0.0132	0.00751	<0.0025	0.00423	0.01271	0.00979	0.00841	J
Mercury	mg/L	Unknown	Poisson	0.00029	0.002	0.002	NS	NS	NS	NS	NS	NS	NS	NS	NS	
Molybdenum	mg/L	Unknown	Poisson	0.00765	0.1	0.1	<0.00113	NS	<0.00113	<0.00113	<0.00113	<0.00113	<0.00113	<0.00113	<0.00113	U
Selenium	mg/L	Unknown[c]	DQ[d]	NA	0.5	0.5	<0.0034	NS	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	<0.0034	U
Thallium	mg/L	Unknown[c]	DQ[d]	NA	0.002	0.002	NS	NS	NS	NS	NS	NS	NS	NS	NS	
Sum Ra226+Ra228	pCi/L	Unknown	Poisson	0.54	5	5	0.256	NS	1.121	0.619	<0.533	0.862	2	1.358	<0.8	U

[a]Prediction Limits calculated using 5% alpha.

[b]Upper Prediction Limit used for all parameters.

[c]Data distribution set to Unknown if all values non-detect in upgradient well.

[d]DQ is Double Quantification Rule. If Event 13 sample is detectible but Event 12 was ND, need to resample the well to see if two successive, independent detected values occur. If so, that would be an SSI. If value was detected in upgradient well in Event 13, would use Poisson PL instead.

[e]MW-123 not sampled due to access limitations.

#.#### = UPL > Result > MCL/RSL

= SSI < GWPS

= SSI > GWPS

= DQ Parameter with Verification Sampling Needed

Both Landfills (Perimeter Wells) - Connellsville Sandstone							Event 11 (AM-1) Downgradient Wells						Event 11 (AM-1) Background Well MW-101	
Parameter	Units	Data Distribution for Background Well MW-101	UPL Type	UPL Value[a,b]	Federal MCLs/RSLs	GWPS	MW-109	MW-112						
Antimony	mg/L	Unknown	Poisson	0.00146	0.006	0.006	<0.00017	<0.00017					<0.00017	U
Arsenic	mg/L	Unknown	Poisson	0.0015	0.01	0.01	<0.00015	0.00017					<0.00015	U
Barium	mg/L	Normal	Parametric	0.092642	2	2	0.03148	0.15157					0.06207	
Beryllium	mg/L	Unknown[c]	DQ[d]	NA	0.004	0.004	<0.00022	<0.00022					<0.00022	U
Cadmium	mg/L	Unknown[c]	DQ[d]	NA	0.005	0.005	<0.00017	<0.00017					<0.00017	U
T. Chromium	mg/L	Unknown[c]	DQ[d]	NA	0.1	0.1	<0.00045	<0.00045					<0.00045	U
Cobalt	mg/L	Unknown[c]	DQ[d]	NA	0.006	0.006	<0.00047	<0.00047					<0.00047	U
Fluoride	mg/L	Normal	Parametric	0.103	4	4	0.239	0.047					0.062	J
Lead	mg/L	Unknown[c]	DQ[d]	NA	0.015	0.015	<0.00052	<0.00052					<0.00052	U
Lithium	mg/L	Normal	Parametric	0.009909	0.04	0.04	0.01689	0.00734					0.00915	J
Mercury	mg/L	Unknown	Poisson	0.00029	0.002	0.002	<0.00004	<0.00004					<0.00004	U
Molybdenum	mg/L	Unknown	Poisson	0.00765	0.1	0.1	0.00077	<0.00028					<0.00028	U
Selenium	mg/L	Unknown[c]	DQ[d]	NA	0.5	0.5	<0.0011	<0.0011					<0.0011	U
Thallium	mg/L	Unknown[c]	DQ[d]	NA	0.002	0.002	<0.00017	<0.00017					<0.00017	U
Sum Ra226+Ra228	pCi/L	Unknown	Poisson	0.54	5	5	0.414	0.188					<0.3568	U

[a]Prediction Limits calculated using 5% alpha.
[b]Upper Prediction Limit used for all parameters.
[c]Data distribution set to Unknown if all values non-detect in upgradient well
[d]DQ is Double Quantification Rule. If Event 11 sample is detectible, will need to resample the downgradient well to see if two successive, independent detected values occur. If so, that would be an SSI. If value was detected in upgradient well in Event 11, would use Poisson PL instead.

#.#### = UPL > Result > MCL/RSL
= SSI < GWPS
= SSI > GWPS
= DQ Parameter with Verification Sampling Needed

Both Landfills (Perimeter Wells) - Connellsville Sandstone							Event 12 (AM-2) Downgradient Wells						Event 12 (AM-2) Background Well MW-101	
Parameter	Units	Data Distribution for Background Well MW-101	UPL Type	UPL Value[a,b]	Federal MCLs/RSLs	GWPS	MW-109	MW-112						
Antimony	mg/L	Unknown	Poisson	0.00146	0.006	0.006	<0.00017	<0.00017					<0.00017	U
Arsenic	mg/L	Unknown	Poisson	0.0015	0.01	0.01	0.00018	0.00024					<0.00015	U
Barium	mg/L	Normal	Parametric	0.092642	2	2	0.03025	0.1646					0.07174	
Beryllium	mg/L	Unknown[c]	DQ[d]	NA	0.004	0.004	NS	NS					NS	
Cadmium	mg/L	Unknown[c]	DQ[d]	NA	0.005	0.005	NS	NS					NS	
T. Chromium	mg/L	Unknown[c]	DQ[d]	NA	0.1	0.1	<0.00045	<0.00045					<0.00045	U
Cobalt	mg/L	Unknown[c]	DQ[d]	NA	0.006	0.006	<0.00047	<0.00047					<0.00047	U
Fluoride	mg/L	Normal	Parametric	0.103	4	4	0.239	0.067					0.069	J
Lead	mg/L	Unknown[c]	DQ[d]	NA	0.015	0.015	NS	NS					NS	
Lithium	mg/L	Normal	Parametric	0.009909	0.04	0.04	0.01534	0.00732					0.00796	J
Mercury	mg/L	Unknown	Poisson	0.00029	0.002	0.002	NS	NS					NS	
Molybdenum	mg/L	Unknown	Poisson	0.00765	0.1	0.1	0.00078	<0.00028					<0.00028	U
Selenium	mg/L	Unknown[c]	DQ[d]	NA	0.5	0.5	<0.0011	<0.0011					<0.0011	U
Thallium	mg/L	Unknown[c]	DQ[d]	NA	0.002	0.002	NS	NS					NS	
Sum Ra226+Ra228	pCi/L	Unknown	Poisson	0.54	5	5	<1.23	<1.219					<1.19	U

[a]Prediction Limits calculated using 5% alpha.
[b]Upper Prediction Limit used for all parameters.
[c]Data distribution set to Unknown if all values non-detect in upgradient well
[d]DQ is Double Quantification Rule. If Event 12 sample is detectible but Event 11 was ND, need to resample the well to see if two successive, independent detected values occur. If so, that would be an SSI. If value was detected in upgradient well in Event 12, would use Poisson PL instead.

#.#### = UPL > Result > MCL/RSL
= SSI < GWPS
= SSI > GWPS
= DQ Parameter with Verification Sampling Needed

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Both Landfills (Perimeter Wells) - Connellsville Sandstone							Event 13 (AM-3) Downgradient Wells						Event 13 (AM-3) Background Well MW-101	
Parameter	Units	Data Distribution for Background Well MW-101	UPL Type	UPL Value[a,b]	Federal MCLs/RSLs	GWPS	MW-109	MW-112						
Antimony	mg/L	Unknown	Poisson	0.00146	0.006	0.006	<0.00107	<0.00107					<0.00017	U
Arsenic	mg/L	Unknown	Poisson	0.0015	0.01	0.01	<0.00035	<0.00035					<0.00035	U
Barium	mg/L	Normal	Parametric	0.092642	2	2	0.03469	0.1498					0.06786	
Beryllium	mg/L	Unknown[c]	DQ[d]	NA	0.004	0.004	NS	NS					NS	
Cadmium	mg/L	Unknown[c]	DQ[d]	NA	0.005	0.005	NS	NS					NS	
T. Chromium	mg/L	Unknown[c]	DQ[d]	NA	0.1	0.1	<0.00145	<0.00145					<0.00145	U
Cobalt	mg/L	Unknown[c]	DQ[d]	NA	0.006	0.006	<0.00047	<0.00047					<0.00047	U
Fluoride	mg/L	Normal	Parametric	0.103	4	4	0.198	0.041					0.088	J
Lead	mg/L	Unknown[c]	DQ[d]	NA	0.015	0.015	NS	NS					NS	
Lithium	mg/L	Normal	Parametric	0.009909	0.04	0.04	0.01467	0.00714					0.00841	J
Mercury	mg/L	Unknown	Poisson	0.00029	0.002	0.002	NS	NS					NS	
Molybdenum	mg/L	Unknown	Poisson	0.00765	0.1	0.1	0.00116	<0.00113					<0.00113	U
Selenium	mg/L	Unknown[c]	DQ[d]	NA	0.5	0.5	<0.0034	<0.0034					<0.0034	U
Thallium	mg/L	Unknown[c]	DQ[d]	NA	0.002	0.002	NS	NS					NS	
Sum Ra226+Ra228	pCi/L	Unknown	Poisson	0.54	5	5	0.294	1.057					<0.8	U

[a]Prediction Limits calculated using 5% alpha.
[b]Upper Prediction Limit used for all parameters.
[c]Data distribution set to Unknown if all values non-detect in upgradient well
[d]DQ is Double Quantification Rule. If Event 13 sample is detectible but Event 12 was ND, need to resample the well to see if two successive, independent detected values occur. If so, that would be an SSI. If value was detected in upgradient well in Event 13, would use Poisson PL instead.
[e]MW-134 not sampled due to access limitations.

#.#### = UPL > Result > MCL/RSL
= SSI < GWPS
= SSI > GWPS
= DQ Parameter with Verification Sampling Needed

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FIGURES

PGH P:\GIS\FIRST_ENERGY\MAPDOCS\FORTMARTIN_PROPOSED_MW_AUG2019_CCR.MXD 01/29/20 TT

References:
1. Aerial photograph provided by ESRI's ArcGIS Online World Imagery map service (© 2014 ESRI and its data suppliers).
2. Contours obtained from the West Virginia GIS Technical Center.
3. Monitoring wells MW-101 through MW-109 locations were obtained from FirstEnergy Drawing No. C69502213, Rev. A.
4. Monitoring wells MW-112, MW-116, MW-118, and MW-120 locations were obtained from HydroSystems Management, Inc. (HMI) report titled "Installation of New Monitoring Wells", dated 12/5/2002.
5. Monitoring wells MW-121 through MW-128 locations were obtained from Potesta & Associates, Inc. report titled "Report of Installation and Testing, Groundwater Monitoring System", dated 10/29/2008.
6. Approximate Waste Boundary lines were obtained from FirstEnergy Drawing Nos. C6950015, Rev. A and C69503791, Rev. 0.
7. Approximate Parcel Boundary obtained from FirstEnergy Drawing Nos. C69503322-1 and C69503322-2, dated 8/4/15.
8. Monitoring wells MW-129 through MW-139 were installed by Tetra Tech, Inc. in June 2016. As-built well locations were obtained by field survey performed by Tetra Tech, Inc. on 7-1-2016.

WELL_NO	NORTHING	EASTING
MW-101	443179.8	1845890.2
MW-104	440850.6	1843814.4
MW-105	440919.7	1842727.1
MW-106	441863.0	1842637.5
MW-107	442422.9	1842940.8
MW-109	442812.0	1844177.5
MW-112	443035.6	1844854.6
MW-121	443305.3	1843323.0
MW-123	444211.6	1843051.3
MW-125	444898.2	1844554.4
MW-127	443894.6	1845758.0
MW-128	443204.3	1845917.7
MW-129	442400.5	1845552.0
MW-130	441564.6	1844830.9
MW-131	441403.0	1844341.7
MW-132	440977.7	1843547.3
MW-133	441238.8	1842884.0
MW-134	442444.4	1843413.2
MW-135	443815.5	1843246.6
MW-136	444597.3	1843509.3
MW-137	444895.8	1844006.8
MW-138	444372.8	1844334.4
MW-139	443833.8	1844200.7

Coordinates are in NAD 1983 State Plane West Virginia North (feet)

Phase 1 Expansion Area Landfill (Active)

Phase 2 Expansion Area Landfill (Undeveloped)

Original Landfill

MW-123 (1055.29)
MW-135 (1057.36)
MW-121 (1077.74)
MW-137 (1070.74)
MW-125 (1078.18)
MW-136 (1063.41)
MW-138 (1113.85)
MW-139 (1109.56)
MW-127 (1089.42)
MW-128
MW-101 (1090.57)
MW-112 (1092.35)
MW-109 (1108.04)
MW-107 (1063.96)
MW-134 (1082.75)
MW-129 (1049.40)
MW-106 (1104.71)
MW-130 (1018.64)
MW-131 (1120.67)
MW-133 (1103.20)
MW-132 (1095.01)
MW-104 (1095.60)
MW-105 (1092.24)

Legend

CCR Monitoring Wells
- Connellsville Sandstone
- Clarksburg Formation

CCR/WVDEP Monitoring Wells
- Connellsville Sandstone
- Clarksburg Formation

WVDEP Monitoring Wells (GW Level)
- Connellsville Sandstone
- Approximate Waste Boundary
- Approximate Parcel Boundary
- Groundwater Elevation Contour (20-foot) (Dashed where inferred)
- (1103.79) Groundwater Elevation August 2019
- Connellsville Sandstone Outcrop
- Topographic Contour (10-foot)

500 0 500 Feet

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CCR RULE GROUNDWATER MONITORING SYSTEM
INTERPRETED GROUNDWATER FLOW AUGUST 2019
FORT MARTIN POWER STATION
CCB LANDFILL

FIRSTENERGY CORPORATION
GREENSBURG, PENNSYLVANIA

DRAWN BY: T. TEAFORD 01/29/20
CHECKED BY: J. MARLOW 01/29/20
APPROVED BY: D. MOORE 01/29/20

CONTRACT NUMBER: 212C-SW-00068

FIGURE NUMBER 2-1

REVISION 0