OHIO VALLEY ELECTRIC CORPORATION
3932 U. S. Route 23
P. O. Box 468
Piketon, Ohio 45661
740-289-7200

WRITER'S DIRECT DIAL NO:
740-897-7768

February 22, 2021

Delivered Electronically

Ms. Laurie Stevenson, Director
Ohio Environmental Protection Agency
50 West Town Street, Suite 700
P.O. Box 1049
Columbus, OH 43216-1049

Dear Ms. Stevenson:

Re: Ohio Valley Electric Corporation
2020 Annual Groundwater Monitoring and Corrective Actions Report

As required by 40 CFR 257.106(h)(1), the Ohio Valley Electric Corporation (OVEC) is providing notification to the Director of the Ohio Environmental Protection Agency that the fourth Annual CCR Groundwater Monitoring and Corrective Actions report has been completed in compliance with 40 CFR 257.90(e) for OVEC's Kyger Creek Station. The report has been placed in the facility's operating record in accordance with 40 CFR 257.105(h)(1), as well as, on the company's publically accessible internet site in accordance with 40 CFR 257.107(h)(1), which can be viewed at https://www.ovec.com/CCRCompliance.php .

If you have any questions, or require any additional information, please call me at (740) 897-7768.

Sincerely,

Tim Fulk
Engineer II

TLF:klr

Stantec Consulting Services Inc.
11687 Lebanon Road, Cincinnati OH 45241-2012

January 28, 2021

File: 175530019, 200.100

Ohio Valley Electric Corporation
Indiana-Kentucky Electric Corporation
Attention: Mr. Tim Fulk
3932 U.S. Route 23
P.O. Box 468
Piketon, Ohio 45661

Reference: 2020 Annual Groundwater Monitoring and Corrective Action Report
EPA Final Coal Combustion Residuals (CCR) Rule
Kyger Creek Generating Station
Cheshire, Ohio

Dear Mr. Fulk,

The EPA Final CCR Rule requires owners or operators of existing CCR landfills and surface impoundments to prepare an annual groundwater monitoring and corrective action report no later than January 31 of the year following the calendar year a groundwater monitoring system has been established for such CCR unit as required by 40 CFR 257.90(e). For the Ohio Valley Electric Corporation (OVEC), this applies to the Kyger Creek Station's South Fly Ash Pond, Boiler Slag Pond, and CCR Landfill.

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. At a minimum, the annual groundwater monitoring and corrective action report must contain the following information, to the extent available:

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;
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;
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;
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

Reference: 2020 Annual Groundwater Monitoring and Corrective Action Report
EPA Final Coal Combustion Residuals (CCR) Rule
Kyger Creek Generating Station
Cheshire, Ohio

addition to identifying the constituent(s) detected at a statistically significant increase over background level); and

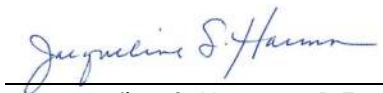
5. Other information required to be included in the annual report as specified in §§257.90 through 257.98.

OVEC has retained Applied Geology and Environmental Science, Inc. of Clinton, Pennsylvania (AGES) to perform the Kyger Creek Station's groundwater monitoring and corrective action support under the EPA Final CCR Rule. The 2020 CCR Regulation Groundwater Monitoring and Corrective Action Report (GWCAR) was prepared by AGES to present the annual groundwater monitoring at the South Fly Ash Pond, Boiler Slag Pond, and CCR Landfill of the Kyger Creek Station. Stantec Consulting Services Inc. (Stantec) has reviewed AGES (2021), and it meets the requirements specified in 40 CFR 257.90(e).

Please contact us with any questions or concerns. We appreciate the opportunity to continue to work with the Kyger Creek Generating Station and the Ohio Valley Electric Corporation.

Regards,

Stantec Consulting Services Inc.



Jacqueline S. Harmon, P.E.
Principal
Phone: (513) 842-8200 ext 8220
Jacqueline.Harmon@stantec.com

Attachment: AGES (2021). Coal Combustion Residuals Regulation, 2020 Groundwater Monitoring and Corrective Action Report, Ohio Valley Electric Corporation, Kyger Creek Station, Cheshire, Ohio, January.

c. John Griggs

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AGES
Applied Geology And Environmental Science, Inc.

2402 Hookstown Grade Road, Suite 200
Clinton, PA 15026
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P 412. 264. 6453
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COAL COMBUSTION RESIDUALS REGULATION
2020 GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT

OHIO VALLEY ELECTRIC CORPORATION
KYGER CREEK STATION
CHESHIRE, OHIO

JANUARY 2021

Prepared for:

OHIO VALLEY ELECTRIC CORPORATION (OVEC)

By:

APPLIED GEOLOGY AND ENVIRONMENTAL SCIENCE, INC.

COAL COMBUSTION RESIDUALS REGULATION
2020 GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT
OHIO VALLEY ELECTRIC CORPORATION
KYGER CREEK STATION
CHESHIRE, OHIO

JANUARY 2021

Prepared for:

OHIO VALLEY ELECTRIC CORPORATION (OVEC)

Prepared By:

Applied Geology and Environmental Science, Inc.

Bethany J. Flaherty

Bethany Flaherty
Senior Scientist

Robert W. King

Robert W. King, P.G.
President/Chief Hydrogeologist

COAL COMBUSTION RESIDUALS REGULATION
2020 GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT
OHIO VALLEY ELECTRIC CORPORATION
KYGER CREEK STATION
CHESHIRE, OHIO

T A B L E O F C O N T E N T S

COAL COMBUSTION RESIDUALS REGULATION
2020 GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT
OHIO VALLEY ELECTRIC CORPORATION
KYGER CREEK STATION
CHESHIRE, OHIO

T A B L E O F C O N T E N T S

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FIGURES

APPENDICES

LIST OF ACRONYMS

AGES	Applied Geology and Environmental Science, Inc.
ASD	Alternate Source Demonstration
BSP	Boiler Slag Pond
CCR	Coal Combustion Residuals
GMPP	Groundwater Monitoring Program Plan
GWPS	Groundwater Protection Standard
Landfill	Class III Residual Waste Landfill
LCL	Lower Confidence Limit
MCL	Maximum Contaminant Level
OEPA	Ohio Environmental Protection Agency
OVEC	Ohio Valley Electric Corporation
RCRA	Resource Conservation and Recovery Act
StAP	Statistical Analysis Plan
SFAP	South Fly Ash Pond
Stantec	Stantec Consulting Services, Inc.
SSI	Statistically Significant Increase
SSL	Statistically Significant Increase
TDS	Total Dissolved Solids
ug/L	Micrograms per liter
U.S. EPA	United States Environmental Protection Agency

COAL COMBUSTION RESIDUALS REGULATION
2020 GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT
OHIO VALLEY ELECTRIC CORPORATION
KYGER CREEK STATION
CHESHIRE, OHIO

EXECUTIVE SUMMARY

The Kyger Creek Station, located in Cheshire, Ohio, is a 1.1 gigawatt coal-fired generating station operated by Ohio Valley Electric Corporation (OVEC). The Kyger Creek Station has five (5), 217-megawatt generating units and has been in operation since 1955. Beginning in 1955, Coal Combustion Residuals (CCRs) were sluiced to surface impoundments located in the plant site. During the course of plant operations, CCRs have been managed in various units at the station.

There are three (3) CCR units at the Kyger Creek Station:

- Class III Residual Waste Landfill (Landfill);
- Boiler Slag Pond (BSP); and,
- SFAP.

A brief overview of the current status of groundwater monitoring and corrective action programs for the CCR units is provided below:

Landfill

At the start of this 2020 reporting period, the Landfill was operating under the Detection Monitoring program in accordance with §257.94 of the CCR Rule. The fifth and sixth rounds of Detection Monitoring were conducted in March and September 2020, respectively. Based on the sampling results, it was determined that there were no Appendix III constituent SSIs over background for either Detection Monitoring events. Therefore, the Landfill will remain operating under the Detection Monitoring program in accordance with §257.94 of the CCR Rule.

BSP

At the start of this 2020 reporting period, the BSP was operating under the Assessment Monitoring program in accordance with §257.95 of the CCR Rule. Based on exceedances of the Groundwater Protection Standard (GWPS) for an Appendix IV constituent (Arsenic at well KC-15-07), an assessment of corrective measures was initiated on May 15, 2019. An Assessment of Corrective Measures Report was completed on September 19, 2019 (Revision 1.0, November 2020); a public meeting was held on November 6, 2019.

In 2020, the fourth and fifth rounds of Assessment Monitoring were conducted in March and September, respectively. Based on the sampling results, it was determined that there were Appendix III SSIs over background. SSIs were confirmed in wells KC-15-04 (Total Dissolved Solids [TDS] and Sulfate) and KC-15-05 (Boron, TDS and Sulfate) during the March 2020 Assessment Monitoring event and in wells KC-15-05 (Boron, TDS and Sulfate) and KC-15-08 (Calcium, TDS and Sulfate) during the September 2020 Assessment Monitoring event.

Arsenic, an Appendix IV constituent, exceeded the GWPS in well KC-15-08 during both Assessment Monitoring events and exceeded in well KC-15-09 during the September 2020 Assessment Monitoring event. Arsenic did not exceed the GWPS in wells located at the property boundary downgradient of the BSP indicating that Arsenic exceedances are confined to the site. Based on these results, the BSP will remain operating under the Assessment Monitoring program in accordance with §257.95 of the CCR Rule.

To support the selection of a remedy, field monitoring activities, including the collection of water level measurements and ongoing groundwater sampling, were performed during 2020. Although a remedy was not selected pursuant to §257.97 of the CCR Rule during this current annual reporting period, the continued evaluation of remedial activities pursuant to §257.97 and §257.98 of the CCR Rule will continue during the 2021 annual reporting period.

SFAP

At the start of this 2020 reporting period, the SFAP was operating under the Assessment Monitoring program in accordance with §257.95 of the CCR Rule.

In 2020, the fourth and fifth rounds of Assessment Monitoring were conducted in March and September, respectively. Based on the sampling results, it was determined that there were Appendix III SSIs over background. During the March 2020 Assessment Monitoring event SSIs were confirmed in wells KC-15-18 (Calcium, Chloride and TDS), KC-15-19 (Calcium, TDS and Sulfate), KC-15-20 (Calcium, TDS and Sulfate), KC-15-21(Calcium) and KC-15-22 (Calcium). With the exception of Calcium in well KC-15-22, all of the same SSIs were confirmed during the September 2020 Assessment Monitoring event.

As part of the Assessment Monitoring program, concentrations of the Appendix IV constituents are compared to the applicable GWPS. During the September 2020 Assessment Monitoring Event, Cobalt exceeded the applicable GWPS of 12.7 micrograms per liter (ug/L) in well KC-15-19. Further statistical evaluation of the dataset was performed. It was determined that there is no evidence that the downgradient concentrations of Cobalt are at a statistically significant level (SSL) above the GWPS. Based on these results, the SFAP will remain operating under the Assessment Monitoring program in accordance with §257.95 of the CCR Rule.

COAL COMBUSTION RESIDUALS REGULATION
2020 GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT
OHIO VALLEY ELECTRIC CORPORATION
KYGER CREEK STATION
CHESHIRE, OHIO

1.0 INTRODUCTION

On December 19, 2014, the United States Environmental Protection Agency (U.S. EPA) issued their final Coal Combustion Residuals (CCR) regulation which regulates CCR as a non-hazardous waste under Subtitle D of Resource Conservation and Recovery Act (RCRA) and became effective six (6) months from the date of its publication (April 17, 2015) in the Federal Register, referred to as the "CCR Rule." The rule applies to new and existing landfills, and surface impoundments used to dispose of or otherwise manage CCR generated by electric utilities and independent power producers. Because the rule was promulgated under Subtitle D of RCRA, it does not require regulated facilities to obtain permits, does not require state adoption, and cannot be enforced by U.S. EPA.

This Groundwater Monitoring and Corrective Action Report has been prepared in accordance with §257.90 (e) of the CCR Rule and documents the status of the groundwater monitoring and corrective action program for each CCR unit, summarizes the key actions completed during 2020, describes any problems encountered, discusses actions to resolve the problems, and projects key activities for the upcoming year.

2.0 BACKGROUND

The Kyger Creek Station, located in Cheshire, Ohio, is a 1.1 gigawatt coal-fired generating station operated by Ohio Valley Electric Corporation (OVEC). The Kyger Creek Station has five (5), 217-megawatt generating units and has been in operation since 1955. Beginning in 1955, CCRs were sluiced to surface impoundments located in the plant site. During the course of plant operations, CCRs have been managed in various units at the station.

There are three (3) CCR units at the Kyger Creek Station (Figure 1):

- Class III Residual Waste Landfill (Landfill);
- Boiler Slag Pond (BSP); and,
- SFAP.

A discussion of the status of the groundwater monitoring program for each CCR unit is presented in the following sections of this report.

3.0 CLASS III RESIDUAL WASTE LANDFILL

The Landfill is a residual solid waste landfill located approximately one-half mile south of the intersection of Little Kyger Creek Road and Shaver Road in Addison Township, Gallia County, Ohio (Figure 1). The Landfill is bordered on the east by Shaver Road, and on the west, north and south by vacant, forested land owned by OVEC. The proposed permitted footprint of the Landfill occupies approximately 98 acres and is capable of managing approximately 20.4 million cubic yards (approximately 4,000 tons per day) of Class III residual waste generated by the coal-powered Kyger Creek Station located approximately two (2) miles southeast of the Landfill.

3.1 Groundwater Monitoring Network

As detailed in the Monitoring Well Installation Report (Applied Geology and Environmental Science, Inc. [AGES] 2016a), the CCR groundwater monitoring network for the Landfill consists of the following 13 wells:

- BUSW-1 (downgradient);
- BUSW-2 (upgradient);
- BUSW-3 (variable: usually side or downgradient);
- BUSW-4 (downgradient);
- BUSW-5 (upgradient);
- IMW-1BU (upgradient);
- BUSW-8 (upgradient);
- BUSW-10 (downgradient);
- MW-3D (upgradient);
- IMW-2BU (upgradient);
- MW-4D (upgradient);
- CCR-1BU (downgradient); and
- CCR-2BU (downgradient).

The locations of all of the wells in the groundwater monitoring network are shown on Figure 2. As listed above and shown on Table 3-1, the CCR groundwater monitoring network for the Landfill includes seven (7) upgradient monitoring wells and six (6) downgradient monitoring wells, which satisfies the requirements of the CCR Rule.

Groundwater levels measured in 2020 are included in Table A-1 of Appendix A. Groundwater flow maps for the two (2) monitoring events completed in 2020 are included in Appendix B.

3.2 Groundwater Sampling

In accordance with §257.94 of the CCR Rule, OVEC completed two (2) rounds of groundwater monitoring in 2020 in accordance with the requirements of the Detection Monitoring Program at

the Landfill. The fifth round of Detection Monitoring samples was collected in March 2020 and the sixth round of Detection Monitoring groundwater samples was collected in September 2020. In accordance with §257.90(e)(3), Table 3-2 presents a sampling summary, including the number of groundwater samples collected for analysis for each background and downgradient well, the dates the samples were collected, and whether the sample was required by the Detection or the Assessment Monitoring program. Table 3-3 summarizes the measurements of field parameters collected at the completion of purging, immediately prior to collection of each sample. All samples were collected in accordance with the Groundwater Monitoring Program Plan (GMPP) (AGES 2016b) and shipped to an analytical laboratory to be analyzed for all of the parameters listed in Appendix III of the CCR Rule (Appendix C).

3.3 Analytical Results

Upon receipt of the March and September 2020 analytical results, the groundwater monitoring data were statistically evaluated in accordance with §257.93(f) of the CCR Rule and the Kyger Creek Station CCR Statistical Analysis Plan (StAP) (Stantec Consulting Services, Inc. [Stantec] 2018). Appendix D summarizes the analytical results for groundwater samples collected in 2020. No potential SSIs were identified during either Detection Monitoring events. Therefore, the Landfill will remain in Detection Monitoring.

4.0 BOILER SLAG POND

The BSP is located at the south end of the Kyger Creek Station and is approximately 32 acres in size (Figure 3). The BSP was built in 1955 to serve as a process and disposal area for the coal combustion waste products generated at the station. Overflow from the BSP is carried into a reinforced concrete intake structure at the south end of the Boiler Slag Complex. Water entering the intake structure is discharged into the Clearwater Pond. The Clearwater Pond was built in 1980, is approximately nine (9) acres in size and is located to the southwest end of the BSP. The Clearwater Pond is not a CCR unit and monitoring is not required.

In 2019, OVEC conducted additional groundwater sampling to characterize the nature and extent of the release and an Assessment of Corrective Measures (ACM) in accordance with §257.95(g). As part of this assessment, in April 2019, three (3) additional wells (KC-19-27, KC-19-28 and KC-19-29) were installed in the uppermost aquifer at the property boundary downgradient from the BSP (Figure 3). Details regarding the installation of these wells and potential corrective measures are included in the ACM Report for the BSP (AGES 2020a). All details regarding the monitoring and corrective action associated with this unit in 2019 are provided in the 2019 Groundwater Monitoring and Corrective Action Report, Revision 1.0 (AGES 2020b).

4.1 Groundwater Monitoring Network

As detailed in the Monitoring Well Installation Report (AGES 2016a) and 2019 Groundwater Monitoring and Corrective Action Report, Revision 1.0 (AGES 2020b), the CCR groundwater monitoring network for the BSP consists of the following eleven (11) wells:

- KC-15-01 (Upgradient);
- KC-15-02 (Upgradient);
- KC-15-03 (Upgradient);
- KC-15-04 (Downgradient);
- KC-15-05 (Downgradient);
- KC-15-06 (Downgradient);
- KC-15-07 (Downgradient);
- KC-15-08 (Downgradient);
- KC-19-27 (Downgradient/Boundary);
- KC-19-28 (Downgradient/Boundary); and
- KC-19-29 (Downgradient/Boundary).

The locations of all the wells in the groundwater monitoring network are shown on Figure 3. As listed above and shown on Table 4-1, the CCR groundwater monitoring network for the BSP includes three (3) upgradient wells and five (5) downgradient wells, which satisfies the requirements of the CCR Rule. Three (3) wells (KC-19-27, KC-19-28 and KC-19-29) are located at the property boundary downgradient from the BSP.

Groundwater levels measured in 2020 are included in Table A-2 of Appendix A. Groundwater flow maps for the two (2) monitoring events completed in 2020 are included in Appendix B. Groundwater in the BSP flows from the northwest to the south and southeast toward the Ohio River. Because the BSP is located adjacent to the Ohio River, during periods when the water level in the Ohio River rises significantly and flooding occurs, groundwater flow in the uppermost aquifer may temporarily reverse and groundwater will flow toward the north and west beneath the BSP.

4.2 Groundwater Sampling

In accordance with §257.95 of the CCR Rule, the fourth and fifth rounds of Assessment Monitoring were conducted in March and September 2020, respectively.

All samples were collected in accordance with the GMPP (AGES 2016b) and analyzed for all Appendix III and Appendix IV constituents, which are listed in Appendix C. In accordance with §257.90(e)(3), Table 4-2 presents a sampling summary, including the number of groundwater samples collected for analysis for each background and downgradient well, the dates the samples were collected, and whether the sample was required by the Detection or the Assessment

Monitoring program. Table 4-3 summarizes the measurements of field parameters collected at the completion of purging, immediately prior to collection of each sample. All samples were shipped to an analytical laboratory to be analyzed.

4.3 Analytical Results

4.3.1 Analytical Results-Appendix III Constituents

Upon receipt, the groundwater monitoring data were statistically evaluated in accordance with §257.93(f) of the CCR Rule and the Kyger Creek Station CCR StAP (Stantec 2018). Appendix D summarizes the analytical results for groundwater samples collected in 2020.

The statistical evaluation of the data identified potential SSIs of one (1) or more Appendix III constituents in monitoring wells KC-15-04, KC-15-05 and KC-15-08 in the March and September 2020 Assessment Monitoring Events (Table 4-4). In accordance with the StAP, OVEC resampled the wells for those constituents with potential SSIs. Based on the results of the resampling events, the following Appendix III SSIs were confirmed at the BSP in 2020 (Table 4-4):

March 2020 Assessment Monitoring Event Appendix III SSIs

- KC-15-04: Total Dissolved Solids (TDS) and Sulfate; and
- KC-15-05: Boron, TDS and Sulfate.

September 2020 Assessment Monitoring Event Appendix III SSIs

- KC-15-05: Boron, TDS and Sulfate; and
- KC-15-08: Calcium, TDS and Sulfate.

4.3.2 Analytical Results-Appendix IV Constituents

Based on previous detections of Appendix IV constituents in groundwater at the BSP, OVEC established a Groundwater Protection Standard (GWPS) for each detected Appendix IV constituent in accordance with the §257.95(h)(1) through §257.95(h)(3) as follows:

(1) For constituents for which the U.S. EPA has established a Maximum Contaminant Level (MCL), the GWPS shall be the MCL for that constituent.

(2) On July 30, 2018, the U.S. EPA published alternate limits to be used for several constituents that did not have previously established MCLs to be used as the GWPS for those constituents.

(3) For constituents for which the background level is higher than the MCL or the alternate limit, the background concentration shall be the GWPS for that constituent.

Table 4-5 presents the list of GWPSs for the Assessment Monitoring program at the BSP that were developed in accordance with the above requirements.

During the fourth Assessment Monitoring Event (March 2020), it was confirmed that Arsenic in well KC-15-07 exceeded the GWPS of 10 micrograms per liter (ug/L) (Table 4-6). During the fifth Assessment Monitoring Event (September 2020), it was confirmed that Arsenic in wells KC-15-07 and KC-15-08 exceeded the GWPS (Table 4-6).

Arsenic concentrations did not exceed the GWPS at the wells located at the property boundary downgradient from the BSP (wells KC-19-27, KC-19-28 and KC-19-29). These results indicate that Arsenic concentrations in the uppermost aquifer exceeding the GWPS are confined to the site and are not reaching the Ohio River.

5.0 SOUTH FLY ASH POND

The SFAP is located at the northwest end of the station (Figure 4). The SFAP was built in 1955 to serve as a process and disposal area for the coal combustion waste products generated at the station. This collection pond is approximately 67 acres in size and banked on all sides.

5.1 Groundwater Monitoring Network

As detailed in the Monitoring Well Installation Report (AGES 2016a), the CCR groundwater monitoring network for the SFAP consists of the following 14 wells. The wells, along with revised location designations based on updated groundwater flow directions, are:

- KC-15-09 (Upgradient);
- KC-15-10 (Upgradient);
- KC-15-11 (Upgradient);
- KC-15-12 (Upgradient);
- KC-15-13 (Upgradient);
- KC-15-14 (Upgradient);
- KC-15-15 (Variable);
- KC-15-16 (Variable);
- KC-15-17 (Variable);
- KC-15-18 (Downgradient);
- KC-15-19 (Downgradient);
- KC-15-20 (Downgradient);
- KC-15-21 (Downgradient); and
- KC-15-22 (Downgradient).

The locations of the monitoring wells are shown on Figure 4. As listed above and shown on Table 5-1, the CCR groundwater monitoring network for the SFAP includes six (6) upgradient and five (5) downgradient wells, which satisfies the requirements of the CCR Rule.

As noted in the 2017 Annual Groundwater Monitoring and Corrective Action Report, due to fluctuations in the stage of the nearby Ohio River, well KC-15-17 was located upgradient of the northeast portion of the SFAP during five (5) of the nine (9) monitoring events conducted from October 2015 through September 2017 (prior to the Detection Monitoring period at the unit). KC-15-17 was downgradient of the area during three (3) events and sidegradient during one (1) event. Well KC-15-15 was located upgradient of the northeast portion of the SFAP during three (3) of the nine (9) events, downgradient of the area during five (5) events, and sidegradient during one (1) event. Because of this high degree of variability in flow direction, wells KC-15-15 and KC-15-17 (and well KC-15-16 which is located between the wells) could not be designated as either upgradient or downgradient. These wells are therefore not included in the statistical evaluations for the SFAP.

Groundwater levels measured during 2020 are included in Table A-3 of Appendix A. Groundwater flow maps for the two (2) monitoring events completed in 2020 are included in Appendix B. Based on the groundwater level measurements, groundwater in the central portion of the SFAP flows generally from the north/northwest to the south/southeast toward the Ohio River. However, due to the close proximity of the SFAP to the Ohio River, changes in the stage of the river have a significant impact on the direction of groundwater flow at the unit. However, during periods when the stage of the Ohio River rises, groundwater flow in the uppermost aquifer reverses direction and flows toward the north/northwest. When the Ohio River stage lowers, groundwater levels also begin to lower and return to a more typical flow pattern. With these fluctuations in groundwater levels, the assignment of the upgradient and downgradient well designations above may fluctuate as well. No flow reversals were noted at the SFAP during any of the 2020 monitoring events.

5.2 Groundwater Sampling

In accordance with §257.95 of the CCR Rule, the fourth and fifth rounds of Assessment Monitoring were conducted in March and September 2020, respectively.

All samples were collected in accordance with the GMPP (AGES 2016b) and analyzed for all Appendix III and Appendix IV constituents, which are listed in Appendix C. In accordance with §257.90(e)(3), Table 5-2 presents a sampling summary, including the number of groundwater samples collected for analysis for each background and downgradient well, the dates the samples were collected, and whether the sample was required by the Detection or the Assessment Monitoring program. Table 5-3 summarizes the measurements of field parameters collected at the completion of purging, immediately prior to collection of each sample. All samples were shipped to an analytical laboratory to be analyzed.

5.3 Analytical Results

5.3.1 Analytical Results-Appendix III Constituents

Upon receipt, the groundwater monitoring data were statistically evaluated in accordance with §257.93(f) of the CCR Rule and the Kyger Creek Station CCR StAP (Stantec 2018). Appendix D summarizes the analytical results for groundwater samples collected in 2020. The statistical evaluation identified potential SSIs of one (1) or more Appendix III constituents in monitoring wells KC-15-18, KC-15-19, KC-15-20, KC-15-21 and KC-15-22 at the SFAP. In accordance with the StAP, OVEC resampled the wells for those constituents with potential SSIs; however, due to the groundwater elevation calculation error described in the 2017 Groundwater Monitoring and Corrective Action Report (Revision 1.0-October 2020), resampling for two (2) SSI parameters was not conducted (Table 5-4). In the absence of resampling data, these SSIs were assumed to be confirmed. Based on the results, the following Appendix III SSIs were confirmed at the SFAP (Table 5-4):

March 2020 Assessment Monitoring Event Appendix III SSIs

- KC-15-18: Calcium, Chloride and TDS;
- KC-15-19: Calcium, TDS and Sulfate;
- KC-15-20: Calcium, TDS and Sulfate;
- KC-15-21: Calcium; and
- KC-15-22: Calcium.

September 2020 Assessment Monitoring Event Appendix III SSIs

- KC-15-18: Calcium, Chloride and TDS;
- KC-15-19: Calcium, TDS and Sulfate;
- KC-15-20: Calcium, TDS and Sulfate; and
- KC-15-21: Calcium.

5.3.2 Analytical Results-Appendix IV Constituents

Table 5-5 presents the list of GWPSs for the Assessment Monitoring program at the SFAP that were developed in accordance with the requirements listed in Section 4.3.2. All Appendix IV results were compared to the GWPSs. During the September 2020 Assessment Monitoring Event, Cobalt exceeded the applicable GWPS of 12.7 ug/L in well KC-15-19 (Table 5-6). Further statistical evaluation of the dataset was performed in accordance with the Kyger Creek Station CCR StAP (Stantec 2018). Using both the Thiel-Sen Bootstrap method and by calculating a Lower Confidence Limit (LCL), it was determined that there is no evidence that the downgradient concentrations of Cobalt are at a statistically significant level (SSL) above the GWPS. Therefore, the unit will remain in Assessment Monitoring.

6.0 PROBLEMS ENCOUNTERED

There were no problems encountered during the 2020 groundwater morning program at Kyger Creek Station.

7.0 PROJECTED ACTIVITIES FOR 2021

The Landfill will remain in Detection Monitoring and continue to be sampled on a semi-annual basis.

The BSP will remain in Assessment Monitoring and continue to be sampled on a semi-annual basis. As described above, an ACM has been completed for this unit and the process of the selection of remedy for the BSP will continue in 2021.

The SFAP will remain in Assessment Monitoring and continue to be sampled on a semi-annual basis.

8.0 REFERENCES

Applied Geology and Environmental Science, Inc. (AGES) 2020b. Coal Combustion Residuals Regulation 2019 Groundwater Monitoring and Corrective Action Report, Ohio Valley Electric Corporation, Kyger Creek Station, Cheshire, Gallia County, Ohio. Revision 1.0. October 2020.

Applied Geology and Environmental Science, Inc. (AGES) 2020a. Coal Combustion Residuals Regulation Assessment of Corrective Measures Report Boiler Slag Pond, Ohio Valley Electric Corporation, Kyger Creek Station, Cheshire, Gallia County, Ohio. Revision 1.0. November 2020.

Applied Geology and Environmental Science, Inc. (AGES) 2016a. Coal Combustion Residuals Regulation Monitoring Well Installation Report, Ohio Valley Electric Corporation, Kyger Creek Station, Cheshire, Gallia County, Ohio. August 2016.

Applied Geology and Environmental Science, Inc. (AGES) 2016b. Coal Combustion Residuals Regulation Groundwater Monitoring Program Plan, Ohio Valley Electric Corporation, Kyger Creek Station, Cheshire, Gallia County, Ohio. May 2016.

Stantec Consulting Services, Inc. (Stantec) 2018. Coal Combustion Residuals Regulation Statistical Analysis Plan, Ohio Valley Electric Corporation, Kyger Creek Station, Cheshire, Gallia County, Ohio. April 2018.

TABLES

TABLE 3-1
GROUNDWATER MONITORING NETWORK
CLASS III RESIDUAL WASTE LANDFILL
CCR GROUNDWATER MONITORING PROGAM
KYGER CREEK STATION
CHESHIRE, OHIO

Monitoring Well ID	Designation	Date of Installation	Coordinates		Ground Elevation (ft)[2]	Top of Casing Elevation (ft)[2]	Top of Screen Elevation (ft)	Base of Screen Elevation (ft)	Total Depth From Top of Casing (ft)
			Northing	Easting					
CCR Unit Boundary Wells									
BUSW-1	Downgradient	6/20/2006	335756.52	2063859.43	781.46	784.21	521.21	508.10	276.11
BUSW-2	Upgradient	--	336285.22	2062985.02	792.19	794.98	526.69	506.69	288.56
BUSW-3	Variable	9/13/2007	336746.19	2062430.81	787.57	790.01	529.57	504.57	283.56
BUSW-4	Downgradient	5/17/2006	337738.57	2062566.35	780.99	783.46	535.76	525.76	257.70
BUSW-5	Upgradient	8/2/2007	338123.59	2063553.15	781.06	783.27	542.06	502.06	281.12
IMW-1BU	Upgradient	9/6/2007	337177.94	2064160.50	699.89	702.29	519.39	499.39	202.97
CCR-1BU	Downgradient	10/13/2015	337641.36	2063220.23	783.41	785.80	524.41	504.41	281.39
CCR-2BU	Downgradient	10/21/2015	336302.19	2064286.87	742.28	744.69	514.78	494.78	249.91
Supplemental CCR Wells									
BUSW-8	Upgradient	4/17/2006	337692.04	2065706.88	630.59	633.48	498.12	498.12	145.36
BUSW-10	Downgradient	6/29/2007	336364.75	2065495.79	617.26	619.76	513.85	498.85	120.91
IMW-2BU	Upgradient	9/10/2007	337417.23	2065170.91	609.77	612.44	508.96	493.96	118.48
MW-3D	Upgradient	5/1/2006	338184.68	2065077.38	741.11	743.53	515.58	505.58	237.95
MW-4D	Upgradient	5/10/2006	336365.51	2066044.36	576.87	579.51	504.94	494.94	84.57

Notes:

1. The well locations are referenced to the Ohio State Plane South, North American Datum (NAD83), east zone coordinate system.

2. Elevations are referenced to the North American Vertical Datum (NAVD) 1988.

TABLE 3-2
SAMPLES COLLECTED DURING 2020
CLASS III RESIDUAL WASTE LANDFILL
CCR GROUNDWATER MONITORING PROGAM
KYGER CREEK STATION
CHESHIRE, OHIO

Well ID	Designation	Mar-20	Sep-20
BUSW-1	Downgradient	DM	DM
BUSW-2	Upgradient	DM	DM
BUSW-3	Variable	DM	DM
BUSW-4	Downgradient	DM	DM
BUSW-5	Upgradient	DM	DM
BUSW-8	Upgradient	DM	DM
BUSW-10	Downgradient	DM	DM
IMW-1BU	Upgradient	DM	DM
IMW-2BU	Upgradient	DM	DM
CCR-1BU	Downgradient	DM	DM
CCR-2BU	Downgradient	DM	DM
MW-3D	Upgradient	DM	DM
MW-4D	Upgradient	DM	DM

Notes:
1. DM: Detection Monitoring.

TABLE 3-3
SUMMARY OF MEASURED FIELD PARAMETERS DURING 2020
CLASS III RESIDUAL WASTE LANDFILL
CCR GROUNDWATER MONITORING PROGAM
KYGER CREEK STATION
CHESHIRE, OHIO

Sample ID	Date	Temperature (°C)	Conductivity (µohms/cm)	pH (S.U.)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)
BUSW-1	Mar-20	13.64	6640	7.05	-147	4.19	3.9
BUSW-2	Mar-20	13.91	8600	7.62	128	6.28	3.65
BUSW-3	Mar-20	13.73	42400	7.43	-82	2.41	4.16
BUSW-4	Mar-20	13.88	37100	7.07	158.5	2.98	21.3
BUSW-5	Mar-20	13.55	37500	7.73	-111	3.1	3.01
BUSW-8	Mar-20	14.41	28824	7.46	8	3.96	3.38
BUSW-10	Mar-20	14.35	6530	7.32	5	3.69	3.62
IMW-1BU	Mar-20	14.45	18202	7.71	-23	2.91	1.98
IMW-2BU	Mar-20	14.42	29200	7.37	18	2.4	3.72
MW-3D	Mar-20	16.81	45900	7.63	-106	2.75	3.01
MW-4D	Mar-20	11.57	1980	7.23	-26	2.28	3.61
CCR-1BU	Mar-20	12.2	30100	7.97	-143	2.56	3.01
CCR-2BU	Mar-20	18.79	7010	7.76	-124	2.91	4.12
BUSW-1	Oct-20	14.68	6670	7.06	-81	4.07	4.31
BUSW-2	Oct-20	19.63	10500	8.21	-211	0.12	3.62
BUSW-3	Oct-20	17.98	42300	7.19	-105	0.06	4.78
BUSW-4	Oct-20	15.01	35300	7.31	178	3.98	37.8
BUSW-5	Oct-20	15.51	34800	7.68	-58	4.32	3.12
BUSW-8	Oct-20	20.19	32	7.85	-28	2.4	4.49
BUSW-10	Sep-20	21.63	9.09	7.19	-155	3.57	3.92
IMW-1BU	Oct-20	12.48	17.5	7.95	-22	6.35	3.92
IMW-2BU	Sep-20	21.84	331	7.74	-106	3.87	3.87
MW-3D	Oct-20	17.32	43800	7.66	-81	2.92	3.91
MW-4D	Sep-20	15.23	1998	7.16	-150	2.58	4.31
CCR-1BU	Oct-20	18.88	31800	7.68	-165	0.35	4.02
CCR-2BU	Oct-20	15.52	6924	7.34	-174	2.96	3.12

Notes:

1. °C: Degrees Celsius.
2. µohms/cm: Micro-ohms per centimeter.
3. S.U.: Standard Units.
4. mV: Millivolts.
5. mg/L: Milligrams per liter.
6. NTUs: Nephelometric Turbidity Units.

TABLE 4-1
GROUNDWATER MONITORING NETWORK
BOILER SLAG POND
CCR GROUNDWATER MONITORING PROGRAM
KYGER CREEK STATION
CHESHIRE, OHIO

Monitoring Well ID	Designation	Date of Installation	Coordinates		Ground Elevation (ft)[2]	Top of Casing Elevation (ft)[2]	Top of Screen Elevation (ft)	Base of Screen Elevation (ft)	Total Depth From Top of Casing (ft)
			Northing	Easting					
KC-15-01	Upgradient	8/5/2015	332114.55	2072393.84	579.77	579.20	519.77	509.77	69.43
KC-15-02	Upgradient	8/7/2012	332500.654	2072569.222	580.79	580.25	520.79	510.79	69.46
KC-15-03	Upgradient	8/12/2015	332546.402	2073001.342	582.03	581.55	520.03	510.03	71.52
KC-15-04	Downgradient	8/12/2015	331782.439	2073755.607	579.89	579.37	519.89	509.89	69.48
KC-15-05	Downgradient	8/19/2015	331569.994	2073574.832	580.52	580.07	520.52	510.52	69.55
KC-15-06	Downgradient	8/18/2015	331218.52	2073210.42	579.98	579.48	519.98	509.98	69.50
KC-15-07	Downgradient	8/11/2015	331291.75	2072957.79	578.54	578.04	508.54	498.54	79.50
KC-15-08	Downgradient	8/10/2015	331460.59	2072675.87	579.41	578.75	509.41	499.41	79.34
KC-19-27	Downgradient	4/5/2019	331507.38	2073611.94	558.22	561.13	530.22	520.22	38.00
KC-19-28	Downgradient	4/4/2019	331064.43	2073270.03	558.41	561.10	526.41	516.41	42.00
KC-19-29	Downgradient	4/3/2019	330558.94	2072840.95	561.13	564.17	530.13	520.13	41.00

Notes:

1. The well locations are referenced to the Ohio State Plane South, North American Datum (NAD83), east zone coordinate system.

2. Elevations are referenced to the North American Vertical Datum (NAVD) 1988.

TABLE 4-2
SAMPLES COLLECTED DURING 2020
BOILER SLAG POND
CCR GROUNDWATER MONITORING PROGRAM
KYGER CREEK STATION
CHESHIRE, OHIO

Well ID	Designation	Mar-20	Jun-20	Sep-20	Dec-20
KC-15-01	Upgradient	AM	NS	AM	NS
KC-15-02	Upgradient	AM	NS	AM	NS
KC-15-03	Upgradient	AM	NS	AM	NS
KC-15-04	Downgradient	AM	AM	AM	AM
KC-15-05	Downgradient	AM	AM	AM	AM
KC-15-06	Downgradient	AM	NS	AM	NS
KC-15-07	Downgradient	AM	AM	AM	AM
KC-15-08	Downgradient	AM	AM	AM	AM
KC-19-27	Downgradient	AM	NS	AM	NS
KC-19-28	Downgradient	AM	NS	AM	NS
KC-19-29	Downgradient	AM	NS	AM	NS

Notes:
1. AM: Assessment Monitoring.
2. NS: Not Sampled.

TABLE 4-3
SUMMARY OF MEASURED FIELD PARAMETERS DURING 2020
BOILER SLAG POND
CCR GROUNDWATER MONITORING PROGRAM
KYGER CREEK STATION
CHESHIRE, OHIO

Sample ID	Date	Temperature (°C)	Conductivity (µohms/cm)	pH (S.U.)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)
KC-15-01	Mar-20	16.28	672	5.98	155	5.01	4.7
KC-15-02	Mar-20	14.22	753	6.3	111	8.78	4.74
KC-15-03	Mar-20	13	808	6.05	118	1.51	4.01
KC-15-04	Mar-20	15.48	835	6.08	145	6.22	4.08
KC-15-05	Mar-20	15.53	950	6.09	208	6.07	4.69
KC-15-06	Mar-20	15.78	802	6.46	42	7.15	3.77
KC-15-07	Mar-20	15.05	783	6.38	-6	7.69	15.4
KC-15-08	Mar-20	19.56	1320	6.67	13	7.26	4.69
KC-19-27	Mar-20	14.86	196	6.1	151	9.21	3.94
KC-19-28	Mar-20	16.74	334	5.67	314	3.91	4.71
KC-19-29	Mar-20	13.92	817	6.27	326	10.04	18.5
KC-15-04	Jun-20	21.22	857	6.33	-32	2.81	1.93
KC-15-05	Jun-20	17.75	947	6.98	9	2.76	3.92
KC-15-07	Jun-20	18.13	644	7.13	-152	2.18	2.91
KC-15-08	Jun-20	16.63	1210	7.34	-90.2	3.48	3.01
KC-15-01	Sep-20	17.55	713	5.7	407	3.09	4.8
KC-15-02	Sep-20	17.27	752	6.67	-17	3.47	3.22
KC-15-03	Oct-20	17.75	822	6.03	34	1.28	4.37
KC-15-04	Sep-20	18.31	813	6.27	117	8.15	4.59
KC-15-05	Sep-20	17.29	949	6.28	352	0.88	4.01
KC-15-06	Sep-20	19.08	729	6.97	-55	0.01	3.01
KC-15-07	Sep-20	18.67	735	6.56	-147	0.31	3.7
KC-15-08	Sep-20	18.88	1350	6.96	-130	0.36	3.82
KC-19-27	Oct-20	16.43	1410	6.05	-50	0.28	4.11
KC-19-28	Oct-20	17.35	539	5.86	60	1.74	4.1
KC-19-29	Oct-20	26.76	746	5.74	134	1.38	3.21
KC-15-04	Dec-20	14.87	843	5.44	94	1.26	2.26
KC-15-05	Dec-20	12.01	2000	6.04	371	5.74	4.57
KC-15-07	Dec-20	12.56	705	5.94	-77	0.99	0.61
KC-15-08	Dec-20	14.48	2580	6.58	92	4.15	4.59

Notes:

1. °C: Degrees Celsius.
2. µohms/cm: Micro-ohms per centimeter.
3. S.U.: Standard Units.
4. mV: Millivolts.
5. mg/L: Milligrams per liter.
6. NTUs: Nephelometric Turbidity Units.

TABLE 4-4
SUMMARY OF POTENTIAL AND CONFIRMED APPENDIX III SSIs
BOILER SLAG POND
CCR GROUNDWATER MONITORING PROGAM
KYGER CREEK STATION
CHESHIRE, OHIO

Well ID	Potential SSI Parameter (Units)	4th Assessment Monitoring Sampling Event March 2020		4th Assessment Monitoring Resampling Event June 2020		5th Assessment Monitoring Sampling Event September 2020		5th Assessment Monitoring Resampling Event December 2020	
		Potential SSI Result	UTL	Potential SSI Result	Confirmed SSI (Yes/No)	Potential SSI Result	UTL	Potential SSI Result	Confirmed SSI (Yes/No)
KC-15-04	TDS (mg/L)	930	575	630	**Yes**	580	575	570	**No**
	Sulfate (mg/L)	320	312	340	**Yes**	320	306	300	**No**
KC-15-05	Boron (mg/L)	0.98	0.5711	0.9	**Yes**	0.93	0.55	1.0	**Yes**
	Calcium (mg/L)	130	129	120	**No**	NA	NA	NA	NA
	TDS (mg/L)	730	575	680	**Yes**	700	575	710	**Yes**
	Sulfate (mg/L)	360	312	330	**Yes**	350	306	370	**Yes**
KC-15-08	Boron (mg/L)	0.58	0.57	0.17	**No**	0.57	0.55	0.51	**No**
	Calcium (mg/L)	220	129	34	**No**	220	129	190	**Yes**
	TDS (mg/L)	1200	575	450	**No**	1100	575	950	**Yes**
	Sulfate (mg/L)	580	312	170	**No**	550	306	500	**Yes**

Notes:
1. SSI: Statistically Significant Increase.
2. UTL: Upper Tolerance Limit (Pooled Interwell UTL).
3. mg/L: Milligrams per liter.
4. NA: Not Applicable—no SSI.

TABLE 4-5
GROUNDWATER PROTECTION STANDARDS
BOILER SLAG POND
CCR ASSESSMENT MONITORING PROGRAM
KYGER CREEK STATION
CHESHIRE, OHIO

Appendix IV Constituents			
Constituent (Units)	**Background**	**MCL/SMCL**	**GWPS**
Antimony, Sb (µg/L)	1	6	6
Arsenic, As (µg/L)	7	10	10
Barium, Ba (µg/L)	125	2000	2000
Beryllium, Be (µg/L)	0.5	4	4
Cadmium, Cd (µg/L)	0.5	5	5
Chromium, Cr (µg/L)	1.7	100	100
Cobalt, Co (µg/L)	9.1	6*	9.1
Fluoride, F (mg/L)	1.3	4	4
Lithium, Li (µg/L)	0.6	40*	40
Lead, Pb (µg/L)	0.02	15*	15
Mercury, Hg (µg/L)	0.3	2	2
Molybdenum, Mo (µg/L)	6	100*	100
Radium 226 & 228 (combined) (pCi/L)	2	5	5
Selenium, Se (µg/L)	2.5	50	50
Thallium, Tl (µg/L)	0.65	2	2

Notes:
1. MCL: Maximum Contaminant Level.
2. SMCL: Secondary Maximum Contaminant Level.
3. *: Established by U.S. EPA as part of 2018 decision.
4. GWPS: Groundwater Protection Standard.
5. µg/L: Micrograms per liter.
6. mg/L: Milligrams per liter.
7. pCi/L: Picocuries per liter.

TABLE 4-6
SUMMARY OF GWPS EXCEEDANCES
BOILER SLAG POND
CCR GROUNDWATER MONITORING PROGRAM
KYGER CREEK STATION
CHESHIRE, OHIO

Well ID	Potential Exceedance Parameter (Units)	4th Assessment Monitoring Sampling Event March 2020		4th Assessment Monitoring Resampling Event June 2020		5th Assessment Monitoring Sampling Event September 2020		5th Assessment Monitoring Resampling Event December 2020	
		Potential Exceedance Result	GWPS	Potential Exceedance Result	Confirmed Exceedance (Yes/No)	Potential Exceedance Result	GWPS	Potential Exceedance Result	Confirmed Exceedance (Yes/No)
KC-15-07	Arsenic (µg/L)	82	10	170	**Yes**	130	10	200	**Yes**
KC-15-08	Arsenic (µg/L)	11	10	2.3 J	**No**	12	10	11	**Yes**

Notes:
1. GWPS: Groundwater Protection Standard.
2. µg/L: Micrograms per liter.
3. NA: Not Applicable—no potential exceedance.
4. NI: Not Installed.

TABLE 5-1
GROUNDWATER MONITORING NETWORK
SOUTH FLY ASH POND
CCR GROUNDWATER MONITORING PROGRAM
KYGER CREEK PLANT
CHESHIRE, OHIO

Monitoring Well ID	Designation	Date of Installation	Coordinates		Ground Elevation (ft)[2]	Top of Casing Elevation (ft)[2]	Top of Screen Elevation (ft)	Base of Screen Elevation (ft)	Total Depth From Top of Casing (ft)
			Northing	Easting					
KC-15-09	Upgradient	9/15/2015	334631.959	2072494.446	587.85	587.47	516.85	506.85	80.62
KC-15-10	Upgradient	9/16/2015	335018.949	2072695.744	587.75	587.45	523.75	513.75	73.70
KC-15-11	Upgradient	8/20/2015	335426.144	2072970.304	588.07	587.71	524.07	514.07	73.64
KC-15-12	Upgradient	9/17/2015	335867.034	2073268.666	588.40	587.94	524.40	514.40	73.54
KC-15-13	Upgradient	9/1/2015	336047.047	2073665.155	588.23	587.86	521.23	511.23	76.73
KC-15-14	Upgradient	8/20/2015	335808.537	2074057.138	588.85	587.80	524.85	513.85	72.95
KC-15-15	Variable	9/2/2015	335558.54	2074472.666	587.95	587.63	523.95	513.95	73.68
KC-15-16	Variable	9/3/2015	335223.916	2074799.53	588.82	588.38	524.82	514.82	73.50
KC-15-17	Variable	9/3/2015	334881.253	2074480.308	588.68	588.13	524.68	514.68	73.45
KC-15-18	Downgradient	8/25/2015	334507.455	2074126.888	588.27	587.72	524.27	514.27	73.45
KC-15-19	Downgradient	9/9/2015	334132.454	2073771.27	588.47	588.18	524.47	514.47	73.71
KC-15-20	Downgradient	8/27/2015	333841.393	2073452.842	589.45	588.72	525.45	515.45	73.26
KC-15-21	Downgradient	8/27/2015	334089.953	2073009.526	588.28	587.84	518.28	508.28	79.56
KC-15-22	Downgradient	9/10/2015	334307.567	2072647.434	587.51	587.27	518.51	508.51	78.76

Notes:

1. The well locations are referenced to the Ohio State Plane South, North American Datum (NAD83), east zone coordinate system.

2. Elevations are referenced to the North American Vertical Datum (NAVD) 1988.

TABLE 5-2
SAMPLES COLLECTED DURING 2020
SOUTH FLY ASH POND
CCR GROUNDWATER MONITORING PROGRAM
KYGER CREEK STATION
CHESHIRE, OHIO

Well ID	Designation	Mar-20	Jun-20	Sep-20	Dec-20
KC-15-09	Upgradient	AM	NS	AM	NS
KC-15-10	Upgradient	AM	NS	AM	NS
KC-15-11	Upgradient	AM	NS	AM	NS
KC-15-12	Upgradient	AM	NS	AM	NS
KC-15-13	Upgradient	AM	NS	AM	NS
KC-15-14	Upgradient	AM	NS	AM	NS
KC-15-15	Variable	AM	NS	AM	NS
KC-15-16	Variable	AM	NS	AM	NS
KC-15-17	Variable	AM	NS	AM	NS
KC-15-18	Downgradient	AM	AM	AM	AM
KC-15-19	Downgradient	AM	AM	AM	AM
KC-15-20	Downgradient	AM	AM	AM	AM
KC-15-21	Downgradient	AM	AM	AM	AM
KC-15-22	Downgradient	AM	AM	AM	NS

Notes:
1. AM: Assessment Monitoring.
2. NS: Not Sampled.

TABLE 5-3
SUMMARY OF MEASURED FIELD PARAMETERS DURING 2020
SOUTH FLY ASH POND
CCR GROUNDWATER MONITORING PROGRAM
KYGER CREEK STATION
CHESHIRE, OH

Sample ID	Date	Temperature (°C)	Conductivity (µohms/cm)	pH (S.U.)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/L)	Turbidity (NTUs)
KC-15-09	Mar-20	14.92	102	8.05	510	0.21	3.41
KC-15-10	Mar-20	14.26	235	7.74	450	0.78	3.81
KC-15-11	Mar-20	14	407	7.65	474	0.76	4.05
KC-15-12	Mar-20	14.44	940	6.78	579	0.29	3.71
KC-15-13	Mar-20	14.37	940	6.98	579	0.26	4.7
KC-15-14	Mar-20	14.77	362	6.61	676	0.68	4.71
KC-15-15	Mar-20	14.79	419	7.03	572	0.75	4.3
KC-15-16	Mar-20	15.35	324	7.61	1050	0.78	4.11
KC-15-17	Mar-20	16.95	82	7.95	140	0.27	3.81
KC-15-18	Mar-20	15.32	288	7.71	1125	0.28	3.7
KC-15-19	Mar-20	15.2	281	7.88	1305	0.26	3.67
KC-15-20	Mar-20	16.72	272	7.96	1266	0.25	3.97
KC-15-21	Mar-20	16.11	361	7.95	1115	0.51	4.52
KC-15-22	Mar-20	14.66	212	7.98	740	0.71	3.51
KC-15-18	Jun-20	17.16	1190	6.57	8	3.53	1.98
KC-15-19	Jun-20	18.99	1320	6.6	21	3.31	3.01
KC-15-20	Jun-20	18.7	1270	6.93	-24	2.17	2.27
KC-15-21	Jun-20	17.07	1130	7.62	17	4.09	4.03
KC-15-09	Oct-20	17.94	369	8.08	416	0.35	4.05
KC-15-10	Oct-20	15.1	395	6.17	28	7.39	4.81
KC-15-11	Oct-20	17.55	458	6.19	22	7.15	4.42
KC-15-12	Oct-20	17.89	597	6.75	-34	4.69	3.68
KC-15-13	Oct-20	17.77	924	6.02	-29	7.85	4.81
KC-15-14	Sep-20	19.9	716	6.05	-14	4.11	8.32
KC-15-15	Sep-20	17.16	756	5.26	154	1.1	5.25
KC-15-16	Sep-20	16.9	120	5.9	27	0.1	4.64
KC-15-17	Sep-20	21.03	2350	5.99	23	0.1	10.69
KC-15-18	Sep-20	21.66	1180	6.07	32	5.4	3.89
KC-15-19	Sep-20	16.53	1340	6.1	98	7.64	4.38
KC-15-20	Oct-20	18.53	1280	6.18	5	1.43	3.72
KC-15-21	Oct-20	22.16	886	6.2	-21	1.46	3.95
KC-15-22	Oct-20	17.94	319	7.92	701	0.63	4.05
KC-15-18	Dec-20	15.29	1180	5.46	269	1.6	4
KC-15-19	Dec-20	15.37	2350	6.05	381	5.49	4.02
KC-15-20	Dec-20	15	1290	7.63	53	2.57	4.81
KC-15-21	Dec-20	14.7	1200	7.89	84	7.99	4.57

Notes:
1. °C: Degrees Celsius.
2. µohms/cm: Micro-ohms per centimeter.
3. S.U.: Standard Units.
4. mV: Millivolts.
5. mg/L: Milligrams per liter.
6. NTUs: Nephelometric Turbidity Units.

TABLE 5-4
SUMMARY OF POTENTIAL AND CONFIRMED APPENDIX III SSIs
SOUTH FLY ASH POND
CCR GROUNDWATER MONITORING PROGRAM
KYGER CREEK STATION
CHESHIRE, OHIO

Well ID	Potential SSI Parameter (Units)	4th Assessment Monitoring Sampling Event March 2020		4th Assessment Monitoring Resampling Event June 2020		5th Assessment Monitoring Sampling Event September 2020		5th Assessment Monitoring Resampling Event December 2020	
		Potential SSI Result	UTL	Potential SSI Result	Confirmed SSI (Yes/No)	Potential SSI Result	UTL	Potential SSI Result	Confirmed SSI (Yes/No)
KC-15-18	Calcium (mg/L)	140	118	140	**Yes**	130	117	140	**Yes**
	Chloride (mg/L)	92	61	93	**Yes**	91	61	95	**Yes**
	TDS (mg/L)	850	830	NS	**Yes**	850	830	880	**Yes**
KC-15-19	Calcium (mg/L)	190	118	180	**Yes**	180	117	160	**Yes**
	TDS (mg/L)	1000	830	1000	**Yes**	1000	830	930	**Yes**
	Sulfate (mg/L)	660	508	620	**Yes**	580	508	550	**Yes**
KC-15-20	Calcium (mg/L)	200	118	190	**Yes**	190	117	180	**Yes**
	TDS (mg/L)	980	830	1000	**Yes**	980	830	940	**Yes**
	Sulfate (mg/L)	580	508	540	**Yes**	630	508	510	**Yes**
KC-15-21	Calcium (mg/L)	160	118	160	**Yes**	140	117	190	**Yes**
KC-15-22	Calcium (mg/L)	120	118	NS	**Yes**	NA	NA	NA	NA

Notes:
1. SSI: Statistically Significant Increase.
2. UTL: Upper Tolerance Limit (Pooled Interwell UTL).
3. mg/L: Milligrams per liter.
4. NA: Not Applicable—no SSI.
5. NS: Well was not re-sampled. SSI was therefore assumed to be confirmed. Refer to Section 5.0.

TABLE 5-5
GROUNDWATER PROTECTION STANDARDS
SOUTH FLY ASH POND
CCR ASSESSMENT MONITORING PROGRAM
KYGER CREEK STATION
CHESHIRE, OHIO

Appendix IV Constituents			
Constituent (Units)	**Background**	**MCL/SMCL**	**GWPS**
Antimony, Sb (µg/L)	1	6	6
Arsenic, As (µg/L)	4.7	10	10
Barium, Ba (µg/L)	129	2000	2000
Beryllium, Be (µg/L)	0.5	4	4
Cadmium, Cd (µg/L)	1.2	5	5
Chromium, Cr (µg/L)	5.3	100	100
Cobalt, Co (µg/L)	12.7	6*	12.7
Fluoride, F (mg/L)	0.25	4	4
Lead, Pb (µg/L)	1.2	15*	15
Lithium, Li (µg/L)	0.03	40*	40
Mercury, Hg (µg/L)	0.3	2	2
Molybdenum, Mo (µg/L)	5	100*	100
Radium 226 & 228 (combined) (pCi/L)	2.5	5	5
Selenium, Se (µg/L)	2.5	50	50
Thallium, Tl (µg/L)	0.7	2	2

Notes:

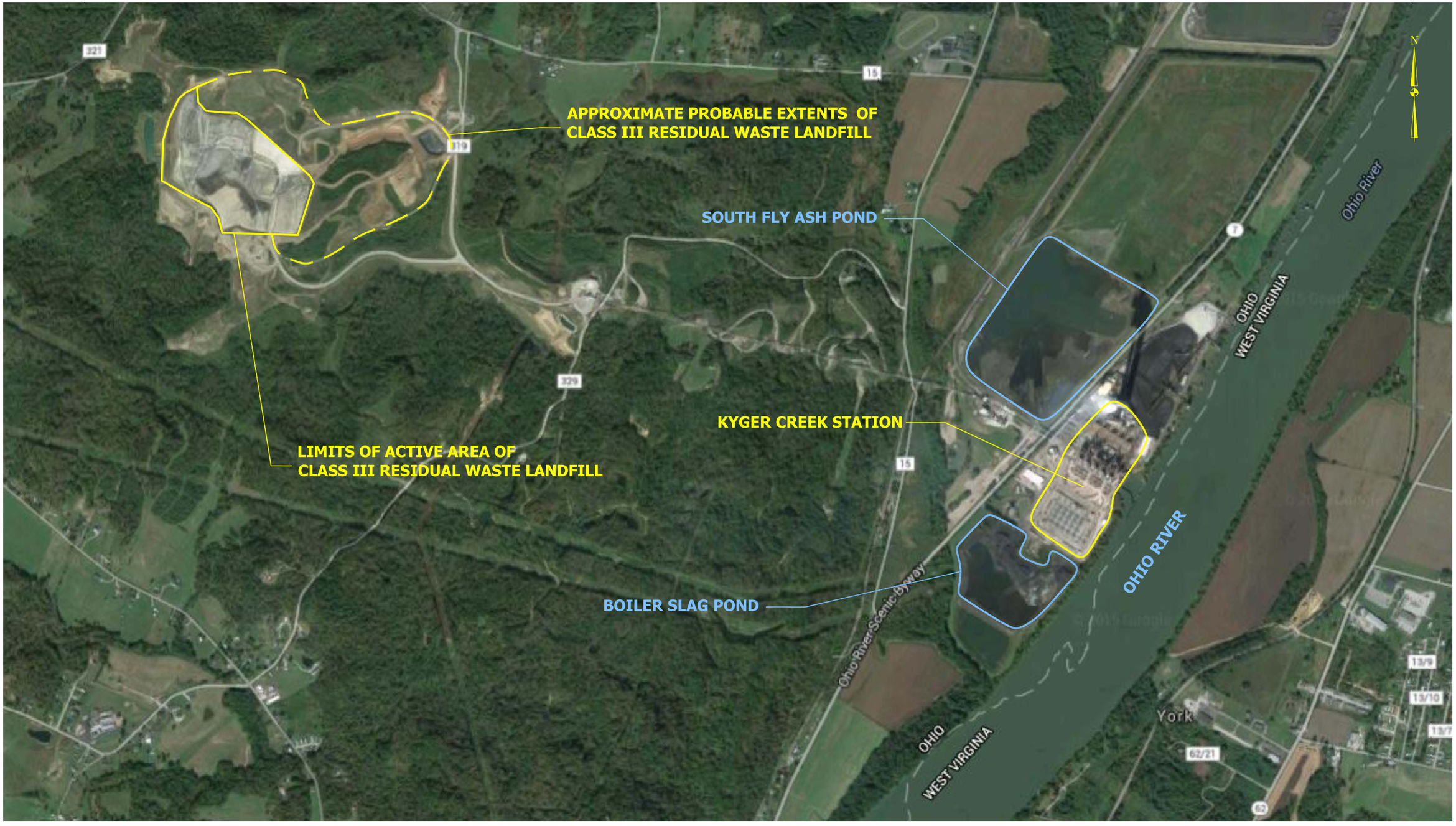
1. MCL: Maximum Contaminant Level.
2. SMCL: Secondary Maximum Contaminant Level.
3. *: Established by U.S. EPA as part of 2018 decision.
4. GWPS: Groundwater Protection Standard.
5. µg/L: Micrograms per liter.
6. mg/L: Milligrams per liter.
7. pCi/L: Picocuries per liter.

TABLE 5-6
SUMMARY OF POTENTIAL GWPS EXCEEDANCES
SOUTH FLY ASH POND
CCR GROUNDWATER MONITORING PROGRAM
KYGER CREEK STATION
CHESHIRE, OHIO

Well ID	Potential Exceedance Parameter (Units)	4th Assessment Monitoring Sampling Event March 2020		4th Assessment Monitoring Resampling Event June 2020		5th Assessment Monitoring Sampling Event September 2020		5th Assessment Monitoring Resampling Event December 2020	
		Potential Exceedance Result	GWPS	Potential Exceedance Result	Confirmed Exceedance (Yes/No)	Potential Exceedance Result	GWPS	Potential Exceedance Result	Confirmed Exceedance (Yes/No)
KC-15-19	Cobalt (µg/L)	NA	NA	NA	NA	17	12.7	13	**No**

Notes:
1. GWPS: Groundwater Protection Standard.
2. µg/L: Micrograms per liter.
3. NA: Not Applicable—no potential exceedance.
4. Based on further statistical evaluation, there is no evidence that the downgradient concentrations of Cobalt are at a statistically significant level (SSL) above the GWPS.

FIGURES



DRAWN BY	JM
DATE	
CHECKED BY	
JOB NO.	2019018-KYG
DWG FILE	KYGER_CCR_2019 Annual GW Rpt_Aerial Site b01.dwg
DRAWING SCALE	NOT TO SCALE

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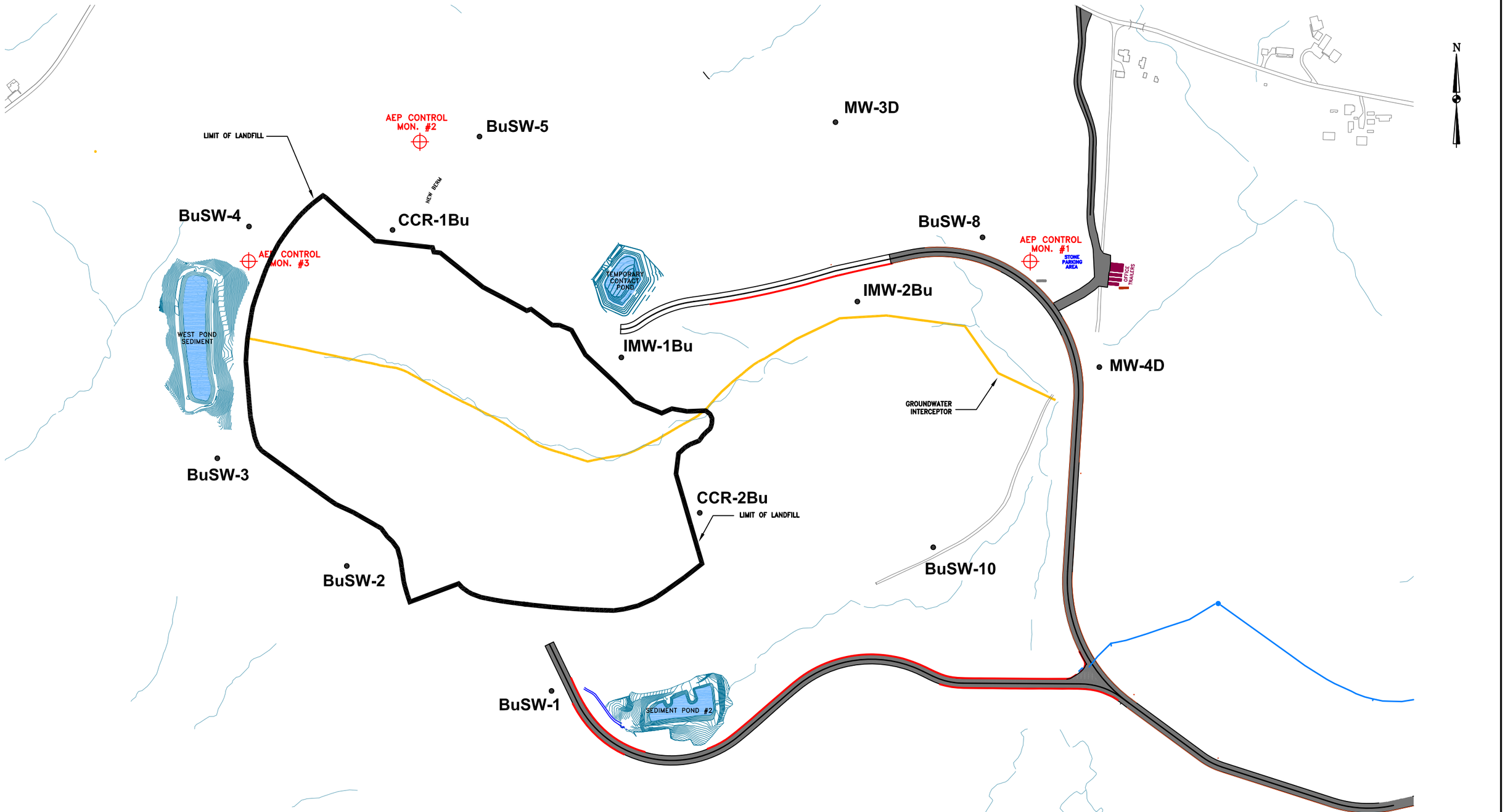
OHIO VALLEY ELECTRIC COMPANY

KYGER CREEK STATION
CHESHIRE, GALLIA COUNTY, OHIO
SITE LOCATION MAP

DRAWING NAME	REV.
FIGURE 1	0



LEGEND:

BuSW-1 BUFFALO SANDSTONE WELL

400' 0' 400' 800'

SCALE: 1"= 400'

DRAWN BY	JM
DATE	
CHECKED BY	
JOB NO.	2019018-KYGER
DWG FILE	KYGER_CCR_2019 Annual GW Rpt_Well Locs b02.dwg
DRAWING SCALE	AS SHOWN

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OHIO VALLEY ELECTRIC COMPANY

KYGER CREEK STATION
CHESHIRE, GALLIA COUNTY, OHIO
CLASS III RESIDUAL WASTE LANDFILL
GROUNDWATER MONITORING WELL LOCATIONS

DRAWING NAME: FIGURE 2

REV. 0

Plot: 01/08/2020 09:28 _PROGRAMS-KYGER OVEC\Kyger Creek-CCR Program\CAD\2019 GW Monitoring-Corrective Action Rpt\KYGER_CCR_2019 Annual GW Rpt_Well Locs b02.dwg

N

OHIO ROUTE 7

KC-15-01

KC-15-02

KC-15-03

BOILER SLAG POND

KC-15-04

KC-15-05

KC-19-27

KC-15-08

KC-15-07

KC-15-06

CLEARWATER POND

KC-19-28

KYGER CREEK

OHIO RIVER

KC-19-29

LEGEND:

EXISTING CCR PROGRAM MONITORING WELL

NEW CCR PROGRAM MONITORING WELL (INSTALLED IN APRIL 2019)

200' 0' 200' 400'

SCALE: 1"= 200'

DRAWN BY	JM
DATE	
CHECKED BY	
JOB NO.	2019018-KYGER
DWG FILE	KYGER_CCR_2019 Annual GW Rpt_Ponds+MWs b03-b04.dwg
DRAWING SCALE	1"=200'

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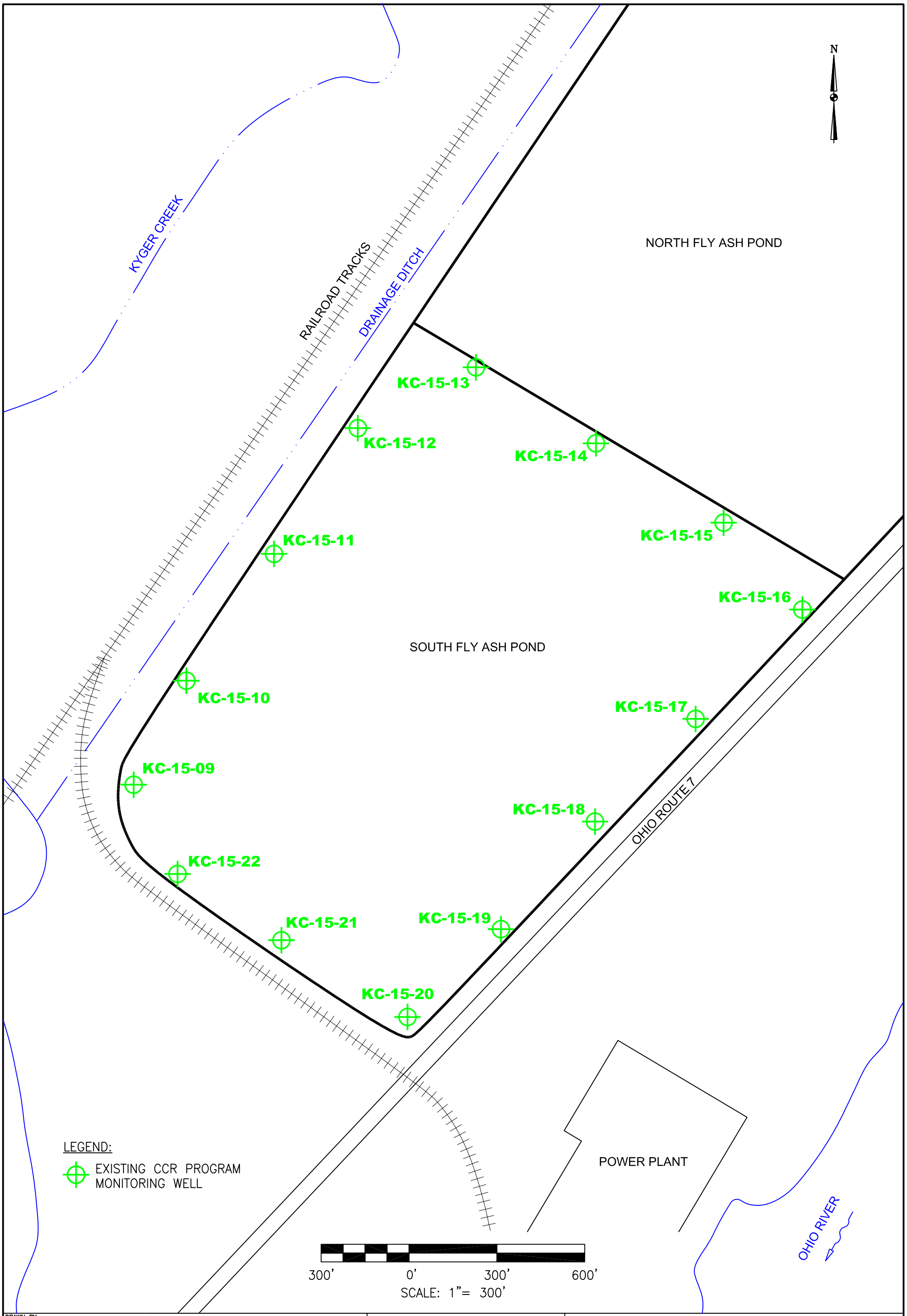
OHIO VALLEY ELECTRIC COMPANY

KYGER CREEK STATION
CHESHIRE, GALLIA COUNTY, OHIO
BOILER SLAG POND
GROUNDWATER MONITORING WELL LOCATIONS

DRAWING NAME	REV.
FIGURE 3	0



DRAWN BY	JM
DATE	
CHECKED BY	
JOB NO.	2019018-KYGER
DWG FILE	KYGER_CCR_2019 Annual GW Rpt_Ponds+MWs b03-b04.dwg
DRAWING SCALE	1"=300'

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OHIO VALLEY ELECTRIC COMPANY

KYGER CREEK STATION
CHESHIRE, GALLIA COUNTY, OHIO
SOUTH FLY ASH POND
GROUNDWATER MONITORING WELL LOCATIONS

DRAWING NAME	REV.
FIGURE 4	0

APPENDIX A

GROUNDWATER ELEVATIONS

TABLE A-1
SUMMARY OF GROUNDWATER ELEVATION DATA DURING 2020
CLASS III RESIDUAL WASTE LANDFILL
CCR GROUNDWATER MONITORING PROGRAM
KYGER CREEK STATION
CHESHIRE, OHIO

Well ID	Mar-20	Jun-20	Sep-20	Dec-20
	Groundwater Elevation (ft)	Groundwater Elevation (ft)	Groundwater Elevation (ft)	Groundwater Elevation (ft)
BUSW-1	569.96	NM	568.21	NM
BUSW-2	572.54	NM	571.15	NM
BUSW-3	553.90	NM	596.46	NM
BUSW-4	531.21	NM	531.03	NM
BUSW-5	577.14	NM	576.12	NM
BUSW-8	566.19	NM	564.55	NM
BUSW-10	566.88	NM	568.34	NM
IMW-1BU	574.08	NM	574.06	NM
IMW-2BU	565.69	NM	564.82	NM
CCR-1BU	565.63	NM	581.01	NM
CCR-2BU	567.46	NM	566.85	NM
MW-3D	573.08	NM	578.08	NM
MW-4D	567.50	NM	566.01	NM

Notes:
1. NM: Not Measured

TABLE A-2
SUMMARY OF GROUNDWATER ELEVATION DATA DURING 2020
BOILER SLAG POND
CCR GROUNDWATER MONITORING PROGRAM
KYGER CREEK STATION
CHESHIRE, OHIO

Well ID	Mar-20	Jun-20	Sep-20	Dec-20
	Groundwater Elevation (ft)	Groundwater Elevation (ft)	Groundwater Elevation (ft)	Groundwater Elevation (ft)
KC-15-01	540.85	540.95	541.10	539.82
KC-15-02	541.10	541.17	539.70	540.07
KC-15-03	543.35	543.42	539.35	542.30
KC-15-04	538.37	538.45	538.59	536.76
KC-15-05	539.26	539.31	537.97	537.75
KC-15-06	539.23	539.30	538.48	538.00
KC-15-07	539.54	539.66	538.54	538.62
KC-15-08	540.15	540.28	538.85	539.15
KC-19-27	539.30	539.34	538.75	538.29
KC-19-28	538.90	538.99	538.30	537.87
KC-19-29	539.17	539.27	538.37	538.25

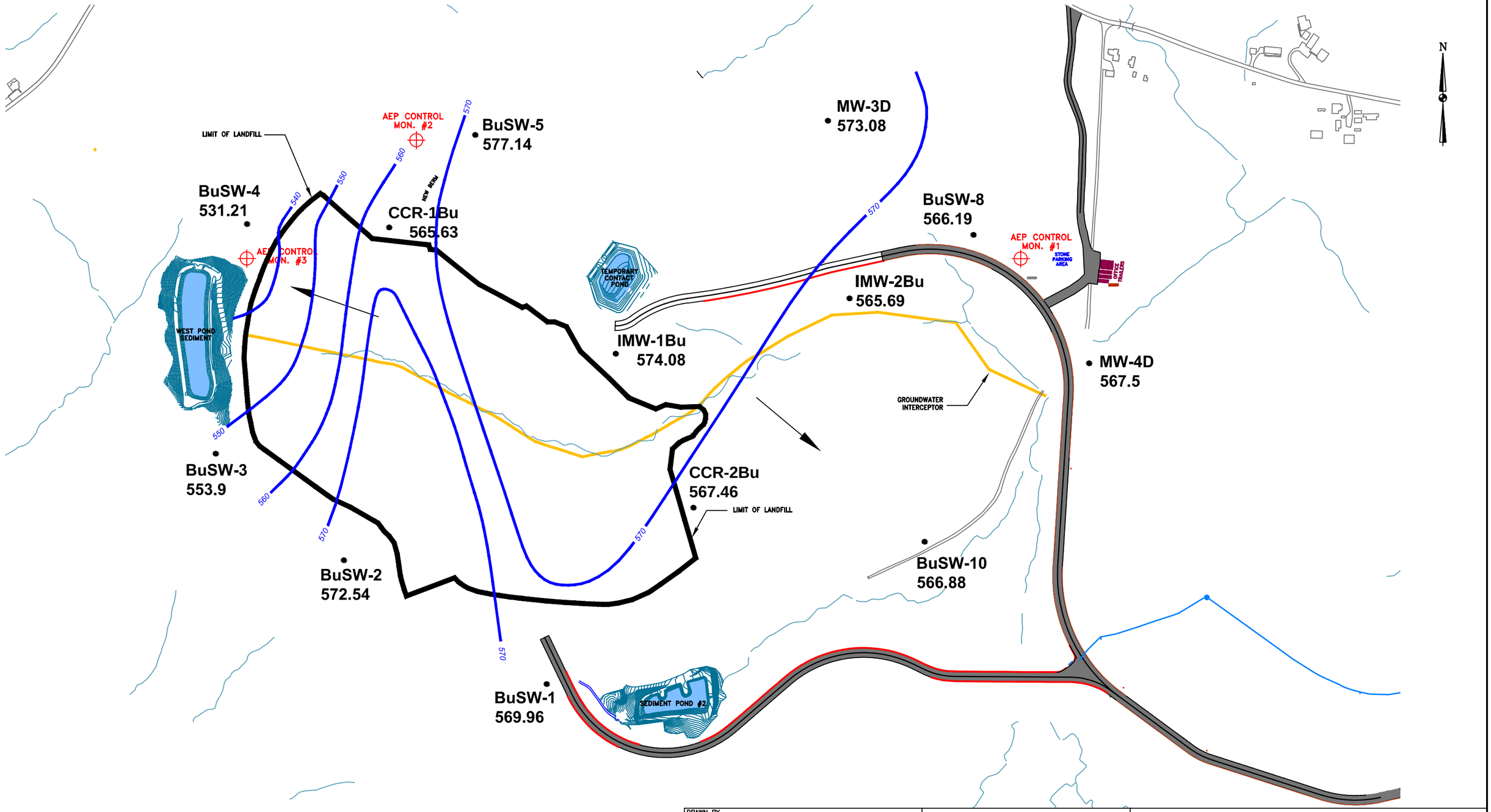
TABLE A-3
SUMMARY OF GROUNDWATER ELEVATION DATA DURING 2020
SOUTH FLY ASH POND
CCR GROUNDWATER MONITORING PROGRAM
KYGER CREEK STATION
CHESHIRE, OHIO

Well ID	Mar-20	Jun-20	Sep-20	Dec-20
	Groundwater Elevation (ft)	Groundwater Elevation (ft)	Groundwater Elevation (ft)	Groundwater Elevation (ft)
KC-15-09	542.61	NM	541.19	540.24
KC-15-10	542.65	NM	540.76	540.53
KC-15-11	542.86	NM	541.30	540.65
KC-15-12	542.99	NM	541.31	540.78
KC-15-13	542.96	NM	541.05	540.72
KC-15-14	542.75	NM	541.09	540.62
KC-15-15	542.43	NM	540.43	540.38
KC-15-16	542.18	NM	523.20	540.05
KC-15-17	542.33	NM	525.33	540.21
KC-15-18	542.02	NM	538.12	539.88
KC-15-19	541.88	NM	523.63	539.75
KC-15-20	541.62	NM	540.12	539.49
KC-15-21	544.64	NM	540.24	539.48
KC-15-22	543.17	NM	546.57	539.92

Notes:
1. NM: Not Measured

APPENDIX B

GROUNDWATER FLOW MAPS



LEGEND:

● BuSW-1 BUFFALO SANDSTONE WELL

400' 0' 400' 800'

SCALE: 1"= 400'

DRAWN BY	JM
DATE	
CHECKED BY	
JOB NO.	2020020-KYGER
DWG FILE	B-1_KYGER_CCR_2020 Annual GW Rpt_Landfill_GW Flow_MAR2020.dwg
DRAWING SCALE	AS SHOWN

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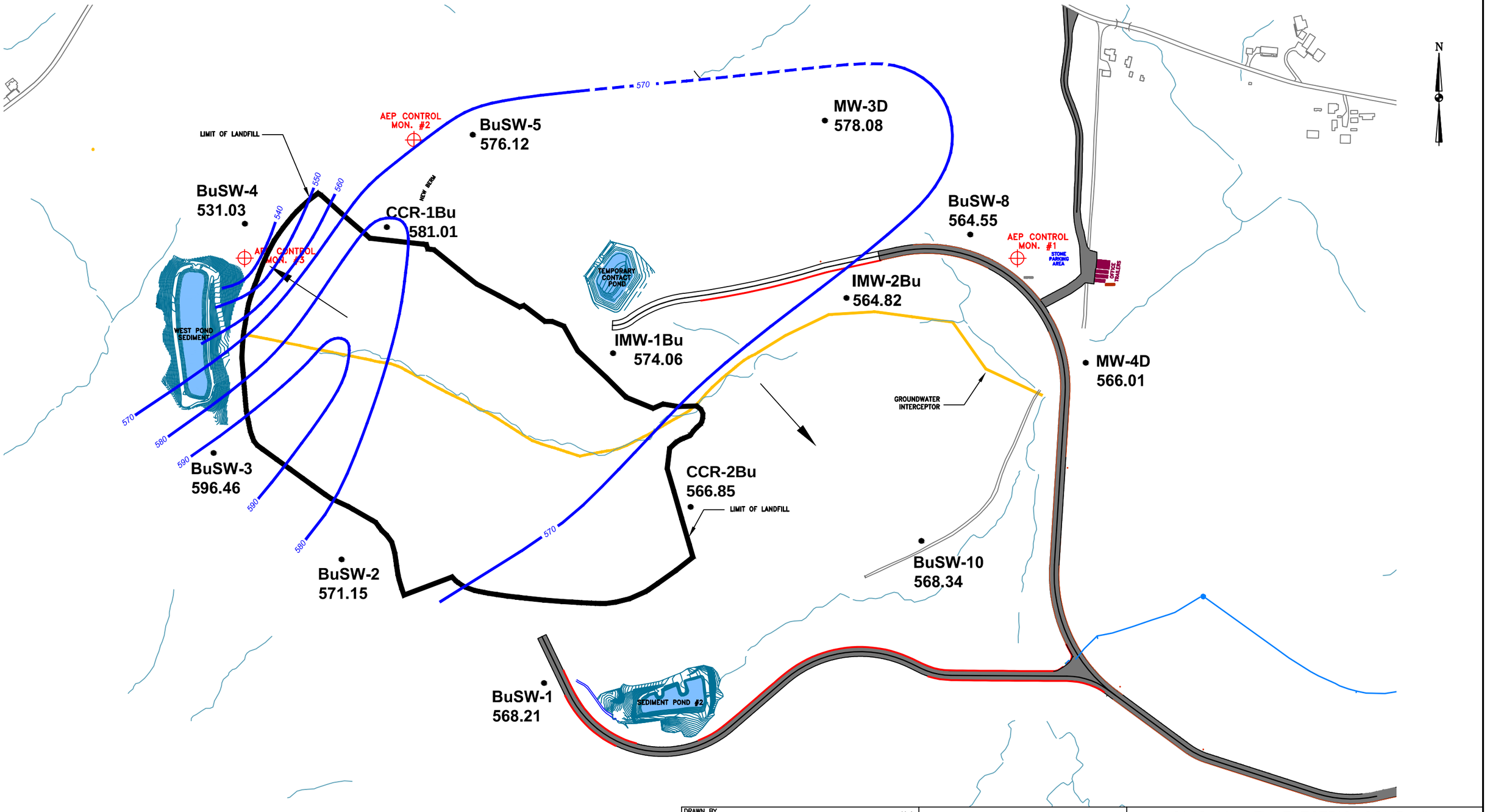
OHIO VALLEY ELECTRIC COMPANY
KYGER CREEK STATION
CHESHIRE, GALLIA COUNTY, OHIO
CLASS III RESIDUAL WASTE LANDFILL
GROUNDWATER ELEVATIONS AND FLOW MAP
MARCH 2020

DRAWING NAME: FIGURE B-1

REV. 0

Plot: 01/18/2021 15:45 _PROGRAMS-KYGER OVEC\Kyger Creek-CCR Program\CAD\2020 GW Monitoring-Corrective Action Rpt\Appx B\B-1_KYGER_CCR_2020 Annual GW Rpt_Landfill_GW Flow_MAR2020.dwg



LEGEND:

● BuSW-1 BUFFALO SANDSTONE WELL

400' 0' 400' 800'

SCALE: 1"= 400'

DRAWN BY	JM
DATE	
CHECKED BY	
JOB NO.	2020020-KYGER
DWG FILE	B-2_KYGER_CCR_2020 Annual GW Rpt_Landfill_GW Flow_SEPT2020.dwg
DRAWING SCALE	AS SHOWN

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OHIO VALLEY ELECTRIC COMPANY
KYGER CREEK STATION
CHESHIRE, GALLIA COUNTY, OHIO
CLASS III RESIDUAL WASTE LANDFILL
GROUNDWATER ELEVATIONS AND FLOW MAP
SEPTEMBER 2020

DRAWING NAME: FIGURE B-2 REV. 0

N

OHIO ROUTE 7

KC-15-03
543.35

543

542

541

KC-15-02
541.10

KC-15-01
540.85

BOILER SLAG POND

539

KC-15-04
538.37

KYGER CREEK

540

KC-15-05
539.26

KC-15-08
540.15

KC-19-27
539.3

KC-15-07
539.54

KC-15-06
539.23

CLEARWATER POND

KC-19-28
538.9

OHIO RIVER
~539' MSL

KC-19-29
539.17

LEGEND:

EXISTING CCR PROGRAM MONITORING WELL

NEW CCR PROGRAM MONITORING WELL
(INSTALLED IN APRIL 2019)

200' 0' 200' 400'

SCALE: 1"= 200'

DRAWN BY	JM
DATE	
CHECKED BY	
JOB NO.	2020020-KYGER
DWG FILE	B-3_KYGER_CCR_2020 Annual GW Rpt_BSP_GW Flow_MAR2020.dwg
DRAWING SCALE	1"=200'

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OHIO VALLEY ELECTRIC COMPANY
KYGER CREEK STATION
CHESHIRE, GALLIA COUNTY, OHIO
BOILER SLAG POND
GROUNDWATER LEVELS AND FLOW DIRECTION
MARCH 2020

DRAWING NAME: FIGURE B-3

REV.: 0

N

OHIO ROUTE 7

KYGER CREEK

KC-15-03
539.35

KC-15-02
539.7

KC-15-01
541.10

KC-15-04
538.59

KC-15-05
537.97

KC-15-06
538.48

KC-15-07
538.54

KC-15-08
538.85

KC-19-27
538.75

KC-19-28
538.30

KC-19-29
538.37

540

539

538

541

BOILER SLAG POND

CLEARWATER POND

OHIO RIVER
~538' MSL

LEGEND:

EXISTING CCR PROGRAM MONITORING WELL

NEW CCR PROGRAM MONITORING WELL
(INSTALLED IN APRIL 2019)

200' 0' 200' 400'
SCALE: 1"= 200'

DRAWN BY	JM
DATE	
CHECKED BY	
JOB NO.	2020020-KYGER
DWG FILE	B-4_KYGER_CCR_2020 Annual GW Rpt_BSP_GW Flow_SEPT2020.dwg
DRAWING SCALE	1"=200'

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OHIO VALLEY ELECTRIC COMPANY
KYGER CREEK STATION
CHESHIRE, GALLIA COUNTY, OHIO
BOILER SLAG POND
GROUNDWATER LEVELS AND FLOW DIRECTION
SEPTEMBER 2020

DRAWING NAME: FIGURE B-4
REV.: 0

Plot: 01/18/2021 13:47 \Kyger Creek-CCR Program\CAD\2020 GW Monitoring-Corrective Action Rpt\Appx B\B-4_KYGER_CCR_2020 Annual GW Rpt_BSP_GW Flow_SEPT2020.dwg

N

KYGER CREEK

RAILROAD TRACKS

DRAINAGE DITCH

NORTH FLY ASH POND

KC-15-13
542.96

KC-15-14
542.75

KC-15-12
542.99

KC-15-15
542.43

KC-15-11
542.86

KC-15-16
542.18

KC-15-10
542.65

SOUTH FLY ASH POND

KC-15-17
542.33

KC-15-09
542.61

KC-15-18
542.02

OHIO ROUTE 7

543

KC-15-22
543.17

542

544

KC-15-21
544.64

544

543

KC-15-19
541.88

542

KC-15-20
541.61

POWER PLANT

OHIO RIVER
~539 MSL

LEGEND:

EXISTING CCR PROGRAM MONITORING WELL

300' 0' 300' 600'

SCALE: 1"= 300'

DRAWN BY	JM
DATE	
CHECKED BY	
JOB NO.	2020020-KYG
DWG FILE	B-5_KYGER_CCR_2020 Annual GW Rpt_SFAP_GW Flow_MAR2020.dwg
DRAWING SCALE	1"=300'

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OHIO VALLEY ELECTRIC COMPANY

KYGER CREEK STATION
CHESHIRE, GALLIA COUNTY, OHIO
SOUTH FLY ASH POND
GROUNDWATER LEVELS AND FLOW DIRECTION
MARCH 2020

DRAWING NAME	REV.
FIGURE B-5	0

Plot: 01/21/2021 13:02 \Kyger Creek-CCR Program\CAD\2020 GW Monitoring-Corrective Action Rpt\Appx B\B-5_KYGER_CCR_2020 Annual GW Rpt_SFAP_GW Flow_MAR2020.dwg

N

KYGER CREEK

RAILROAD TRACKS

DRAINAGE DITCH

NORTH FLY ASH POND

KC-15-13
541.05

KC-15-14
541.09

KC-15-12
541.31

KC-15-15
540.43

KC-15-11
541.30

540

530

KC-15-16
523.20

SOUTH FLY ASH POND

KC-15-10
540.76

KC-15-17
525.33

KC-15-18
538.12

KC-15-09
541.19

OHIO ROUTE 7

KC-15-22
546.57

530

KC-15-19
523.63

KC-15-21
540.24

530

540

KC-15-20
540.12

LEGEND:

EXISTING CCR PROGRAM MONITORING WELL

POWER PLANT

OHIO RIVER

~538 MSL

300' 0' 300' 600'

SCALE: 1"= 300'

DRAWN BY	JM
DATE	
CHECKED BY	
JOB NO.	2020020-KYG
DWG FILE	B-6_KYGER_CCR_2020 Annual GW Rpt_SFAP_GW Flow_SEPT2020.dwg
DRAWING SCALE	1"=300'

AGES
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OHIO VALLEY ELECTRIC COMPANY

KYGER CREEK STATION
CHESHIRE, GALLIA COUNTY, OHIO
SOUTH FLY ASH POND
GROUNDWATER LEVELS AND FLOW DIRECTION
SEPTEMBER 2020

DRAWING NAME	REV.
FIGURE B-6	0

Plot: 01/21/2021 13:08 \Kyger Creek-CCR Program\CAD\2020 GW Monitoring-Corrective Action Rpt\Appx B\B-6_KYGER_CCR_2020 Annual GW Rpt_SFAP_GW Flow_SEPT2020.dwg

APPENDIX C

APPENDIX III AND APPENDIX IV CONSTITUENTS

APPENDIX III AND APPENDIX IV CONSTITUENTS
KYGER CREEK STATION
CHESHIRE, OHIO

Appendix III Constituents
Boron, B
Calcium, Ca
Chloride, Cl
Fluoride, F
pH (units=SU)
Sulfate, SO4
Total Dissolved Solids (TDS)
Appendix IV Constituents
Antimony, Sb
Arsenic, As
Barium, Ba
Beryllium, Be
Cadmium, Cd
Chromium, Cr
Cobalt, Co
Fluoride, F
Lithium, Li
Lead, Pb
Mercury, Hg
Molybdenum, Mo
Radium 226 & 228 (combined)(units=pCi/L)
Selenium, Se
Thallium, Tl

APPENDIX D

ANALYTICAL RESULTS

BuSW-1
SUMMARY OF 2020 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-20	Sep-20
Appendix III Constituents			
Boron, B	mg/L	0.36	0.3
Calcium, Ca	mg/L	14	22
Chloride, Cl	mg/L	2200	1800
Fluoride, F	mg/L	1.4	1.3
pH	s.u.	7.05	7.06
Sulfate, SO4	mg/L	75	110
Total Dissolved Solids (TDS)	mg/L	2900	2700

BuSW-2
SUMMARY OF 2020 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-20	Sep-20
Appendix III Constituents			
Boron, B	mg/L	0.4	0.42
Calcium, Ca	mg/L	35	42
Chloride, Cl	mg/L	2900	4300
Fluoride, F	mg/L	1.6	1.4
pH	s.u.	7.62	8.21
Sulfate, SO4	mg/L	6.9	2.4
Total Dissolved Solids (TDS)	mg/L	4200	4900

BuSW-3
SUMMARY OF 2020 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-20	Sep-20
Appendix III Constituents			
Boron, B	mg/L	0.4	0.42
Calcium, Ca	mg/L	1000	950
Chloride, Cl	mg/L	18000	20000
Fluoride, F	mg/L	2.5 U	1
pH	s.u.	7.43	7.19
Sulfate, SO4	mg/L	34 J	32
Total Dissolved Solids (TDS)	mg/L	29000	18000

BuSW-4
SUMMARY OF 2020 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-20	Sep-20
Appendix III Constituents			
Boron, B	mg/L	0.34	0.39
Calcium, Ca	mg/L	1000	1000
Chloride, Cl	mg/L	20000	19000
Fluoride, F	mg/L	2.5 U	0.5 U
pH	s.u.	7.07	7.31
Sulfate, SO4	mg/L	29 J	15
Total Dissolved Solids (TDS)	mg/L	33000	25000

BuSW-5
SUMMARY OF 2020 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Oct-15	Jan-16	Mar-16	May-16	Sep-16	Dec-16	Mar-17
Appendix III Constituents								
Boron, B	mg/L	0.443	0.308	0.368	0.61	0.324	0.251	0.321
Calcium, Ca	mg/L	764	872	735	1040	1000	833	701
Chloride, Cl	mg/L	15700	18100	14500	20300	19700	20600	17800
Fluoride, F	mg/L	2 U	0.5 U	0.3 J	0.8 U	2 U	2 U	0.3 J
pH	s.u.	7.11	6.28	7.28	7.03	7.49	6.39	9.57
Sulfate, SO4	mg/L	10 U	0.4 J	13.4	2	2 U	2 U	1.3
Total Dissolved Solids (TDS)	mg/L	25100	28900	22600	32900	32500	33300	27100

BuSW-5
SUMMARY OF 2020 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Mar-20	Sep-20
Appendix III Constituents		
Boron, B	0.36	0.37
Calcium, Ca	810	530
Chloride, Cl	16000	15000
Fluoride, F	2.5 U	0.43 J
pH	7.73	7.68
Sulfate, SO4	50 U	10 U
Total Dissolved Solids (TDS)	27000	19000

BuSW-8
SUMMARY OF 2020 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-20	Sep-20
Appendix III Constituents			
Boron, B	mg/L	0.35	0.37
Calcium, Ca	mg/L	490	470
Chloride, Cl	mg/L	14000	15000
Fluoride, F	mg/L	2.5 U	0.34
pH	s.u.	7.46	7.85
Sulfate, SO4	mg/L	50 U	10
Total Dissolved Solids (TDS)	mg/L	23000	15000

BuSW-10
SUMMARY OF 2020 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-20	Sep-20
Appendix III Constituents			
Boron, B	mg/L	0.37	0.43
Calcium, Ca	mg/L	40	36
Chloride, Cl	mg/L	3200	3000
Fluoride, F	mg/L	1.4	1.1
pH	s.u.	7.32	7.19
Sulfate, SO4	mg/L	6.6	4.1
Total Dissolved Solids (TDS)	mg/L	4600	4700

CCR-1BU
SUMMARY OF 2020 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-20	Sep-20
Appendix III Constituents			
Boron, B	mg/L	0.25	0.28
Calcium, Ca	mg/L	620	580
Chloride, Cl	mg/L	13000	14000
Fluoride, F	mg/L	2.5 U	1 U
pH	s.u.	7.97	7.68
Sulfate, SO4	mg/L	50 U	20 U
Total Dissolved Solids (TDS)	mg/L	23000	14000

CCR-2BU
SUMMARY OF 2020 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-20	Sep-20
Appendix III Constituents			
Boron, B	mg/L	0.29	0.13
Calcium, Ca	mg/L	47	160
Chloride, Cl	mg/L	2500	780
Fluoride, F	mg/L	1.5	0.7
pH	s.u.	7.76	7.34
Sulfate, SO4	mg/L	49	26
Total Dissolved Solids (TDS)	mg/L	4900	1900

IMW-1BU
SUMMARY OF 2020 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-20	Sep-20
Appendix III Constituents			
Boron, B	mg/L	0.4	0.4
Calcium, Ca	mg/L	180	140
Chloride, Cl	mg/L	6600	6600
Fluoride, F	mg/L	1.1	1
pH	s.u.	7.71	7.95
Sulfate, SO4	mg/L	7	12
Total Dissolved Solids (TDS)	mg/L	11000	8900

IMW-2BU
SUMMARY OF 2020 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-20	Sep-20
Appendix III Constituents			
Boron, B	mg/L	0.38	0.39
Calcium, Ca	mg/L	480	580
Chloride, Cl	mg/L	13000	14000
Fluoride, F	mg/L	2.5 U	2.5
pH	s.u.	7.37	7.74
Sulfate, SO4	mg/L	50 U	50
Total Dissolved Solids (TDS)	mg/L	22000	27000

MW-3D
SUMMARY OF 2020 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-20	Sep-20
Appendix III Constituents			
Boron, B	mg/L	0.3	0.38
Calcium, Ca	mg/L	1000	1000
Chloride, Cl	mg/L	23000	18000
Fluoride, F	mg/L	2.5 U	0.28 J
pH	s.u.	7.63	7.66
Sulfate, SO4	mg/L	50 U	10 U
Total Dissolved Solids (TDS)	mg/L	35000	25000

MW-4D
SUMMARY OF 2020 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-20	Sep-20
Appendix III Constituents			
Boron, B	mg/L	0.43	0.4
Calcium, Ca	mg/L	3.8 J	3.5 J
Chloride, Cl	mg/L	240	210
Fluoride, F	mg/L	1.4	1.2
pH	s.u.	7.23	7.16
Sulfate, SO4	mg/L	320	290
Total Dissolved Solids (TDS)	mg/L	920	1000

KC-15-01
SUMMARY OF 2020 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-20	Sep-20
Appendix III Constituents			
Boron, B	mg/L	0.13	0.39
Calcium, Ca	mg/L	96	86
Chloride, Cl	mg/L	30	25
Fluoride, F	mg/L	0.087	0.034 J
pH	s.u.	5.98	5.7
Sulfate, SO4	mg/L	170	310
Total Dissolved Solids (TDS)	mg/L	460	520
Appendix IV Constituents			
Antimony, Sb	ug/L	2 U	2 U
Arsenic, As	ug/L	2.7 J	5 U
Barium, Ba	ug/L	42	37
Beryllium, Be	ug/L	1 U	1 U
Cadmium, Cd	ug/L	1 U	1 U
Chromium, Cr	ug/L	2 U	2.4
Cobalt, Co	ug/L	2.8	8.1
Fluoride, F	mg/L	0.087	0.034 J
Lithium, Li	mg/L	0.0038 J	0.0055 J
Lead, Pb	ug/L	1 U	0.86 J
Mercury, Hg	ug/L	0.2 U	0.2 U
Molybdenum, Mo	ug/L	5 U	5 U
Radium 226 & 228 (combined)	pCi/L	5 U	5 U
Selenium, Se	ug/L	5 U	5 U
Thallium, Tl	ug/L	1 U	1 U

KC-15-02
SUMMARY OF 2020 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-20	Sep-20
Appendix III Constituents			
Boron, B	mg/L	0.055 J	0.12
Calcium, Ca	mg/L	110	120
Chloride, Cl	mg/L	31	33
Fluoride, F	mg/L	0.13	0.13
pH	s.u.	6.3	6.67
Sulfate, SO4	mg/L	120	140
Total Dissolved Solids (TDS)	mg/L	510	520
Appendix IV Constituents			
Antimony, Sb	ug/L	2 U	2 U
Arsenic, As	ug/L	3.1 J	3.1 J
Barium, Ba	ug/L	110	110
Beryllium, Be	ug/L	1 U	1 U
Cadmium, Cd	ug/L	1 U	1 U
Chromium, Cr	ug/L	2 U	2 U
Cobalt, Co	ug/L	1.1	0.71 J
Fluoride, F	mg/L	0.13	0.13
Lithium, Li	mg/L	0.0044 J	0.0048 J
Lead, Pb	ug/L	1 U	1 U
Mercury, Hg	ug/L	0.2 U	0.2 U
Molybdenum, Mo	ug/L	1.1 J	1.2 J
Radium 226 & 228 (combined)	pCi/L	0.454	1.1
Selenium, Se	ug/L	5 U	5 U
Thallium, Tl	ug/L	1 U	0.25 J

KC-15-03
SUMMARY OF 2020 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-20	Sep-20
Appendix III Constituents			
Boron, B	mg/L	0.21	0.24
Calcium, Ca	mg/L	120	98
Chloride, Cl	mg/L	29	28
Fluoride, F	mg/L	0.11	0.092
pH	s.u.	6.05	6.03
Sulfate, SO4	mg/L	200	210
Total Dissolved Solids (TDS)	mg/L	530	520
Appendix IV Constituents			
Antimony, Sb	ug/L	2 U	2 U
Arsenic, As	ug/L	2 J	1.1 J
Barium, Ba	ug/L	59	55
Beryllium, Be	ug/L	1 U	1 U
Cadmium, Cd	ug/L	1 U	1 U
Chromium, Cr	ug/L	1 J	2 U
Cobalt, Co	ug/L	3.9	4
Fluoride, F	mg/L	0.11	0.092
Lithium, Li	mg/L	0.0063 J	0.0042 J
Lead, Pb	ug/L	1 U	1 U
Mercury, Hg	ug/L	0.2 U	0.2 U
Molybdenum, Mo	ug/L	5 U	5 U
Radium 226 & 228 (combined)	pCi/L	5 U	5 U
Selenium, Se	ug/L	5 U	5 U
Thallium, Tl	ug/L	1 U	1 U

KC-15-04
SUMMARY OF 2020 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-20	Jun-20	Sep-20	Dec-20
Appendix III Constituents					
Boron, B	mg/L	0.54	NA	0.67	NA
Calcium, Ca	mg/L	93	NA	93	NA
Chloride, Cl	mg/L	29	NA	29	NA
Fluoride, F	mg/L	0.093	NA	0.082	NA
pH	s.u.	6.08	NA	6.27	NA
Sulfate, SO4	mg/L	320	340	320	300
Total Dissolved Solids (TDS)	mg/L	930	630	580	570
Appendix IV Constituents					
Antimony, Sb	ug/L	2 U	NA	2 U	NA
Arsenic, As	ug/L	1.5 J	NA	1.5 J	NA
Barium, Ba	ug/L	45	NA	44	NA
Beryllium, Be	ug/L	1 U	NA	1 U	NA
Cadmium, Cd	ug/L	1 U	NA	1 U	NA
Chromium, Cr	ug/L	2 U	NA	2 U	NA
Cobalt, Co	ug/L	8.5	NA	8.8	NA
Fluoride, F	mg/L	0.093	NA	0.082	NA
Lithium, Li	mg/L	0.01	NA	0.011	NA
Lead, Pb	ug/L	1 U	NA	1 U	NA
Mercury, Hg	ug/L	0.2 U	NA	0.2 U	NA
Molybdenum, Mo	ug/L	5 U	NA	5 U	NA
Radium 226 & 228 (combined)	pCi/L	5 U	NA	0.686	NA
Selenium, Se	ug/L	5 U	NA	5 U	NA
Thallium, Tl	ug/L	1 U	NA	1 U	NA

Notes:
NA: Sampling not required for this parameter.

KC-15-05
SUMMARY OF 2020 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-20	Jun-20	Sep-20	Dec-20
Appendix III Constituents					
Boron, B	mg/L	0.98	0.9	0.93	1.0
Calcium, Ca	mg/L	130	120	120	NA
Chloride, Cl	mg/L	29	NA	31	NA
Fluoride, F	mg/L	0.14	NA	0.13	NA
pH	s.u.	6.09	NA	6.28	NA
Sulfate, SO4	mg/L	360	330	350	370
Total Dissolved Solids (TDS)	mg/L	730	680	700	710
Appendix IV Constituents					
Antimony, Sb	ug/L	2 U	NA	2 U	NA
Arsenic, As	ug/L	2.1 J	NA	1.7 J	NA
Barium, Ba	ug/L	39	NA	37	NA
Beryllium, Be	ug/L	1 U	NA	1 U	NA
Cadmium, Cd	ug/L	1 U	NA	1 U	NA
Chromium, Cr	ug/L	2 U	NA	2 U	NA
Cobalt, Co	ug/L	6	NA	6.4	NA
Fluoride, F	mg/L	0.14	NA	0.13	NA
Lithium, Li	mg/L	0.011	NA	0.0042 J	NA
Lead, Pb	ug/L	1 U	NA	1 U	NA
Mercury, Hg	ug/L	0.2 U	NA	0.2 U	NA
Molybdenum, Mo	ug/L	1.2 J	NA	5 U	NA
Radium 226 & 228 (combined)	pCi/L	5 U	NA	0.523	NA
Selenium, Se	ug/L	5 U	NA	5 U	NA
Thallium, Tl	ug/L	1 U	NA	1 U	NA

Notes:
NA: Sampling not required for this parameter.

KC-15-06
SUMMARY OF 2020 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-20	Sep-20
Appendix III Constituents			
Boron, B	mg/L	0.41	0.41
Calcium, Ca	mg/L	110	87
Chloride, Cl	mg/L	39	37
Fluoride, F	mg/L	0.13	0.097
pH	s.u.	6.46	6.97
Sulfate, SO4	mg/L	190	180
Total Dissolved Solids (TDS)	mg/L	520	480
Appendix IV Constituents			
Antimony, Sb	ug/L	2 U	2 U
Arsenic, As	ug/L	7.3	2.2 J
Barium, Ba	ug/L	170	85
Beryllium, Be	ug/L	1 U	1 U
Cadmium, Cd	ug/L	1 U	0.21 J
Chromium, Cr	ug/L	2 U	2 U
Cobalt, Co	ug/L	1.4	2.9
Fluoride, F	mg/L	0.13	0.097
Lithium, Li	mg/L	0.0049 J	0.0048 J
Lead, Pb	ug/L	1 U	1 U
Mercury, Hg	ug/L	0.2 U	0.2 U
Molybdenum, Mo	ug/L	5 U	5 U
Radium 226 & 228 (combined)	pCi/L	0.742	5 U
Selenium, Se	ug/L	5 U	5 U
Thallium, Tl	ug/L	0.37 J	0.25 J

KC-15-07
SUMMARY OF 2020 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-20	Jun-20	Sep-20	Dec-20
Appendix III Constituents					
Boron, B	mg/L	0.16	NA	0.13	NA
Calcium, Ca	mg/L	100	NA	90	NA
Chloride, Cl	mg/L	34	NA	34	NA
Fluoride, F	mg/L	0.083	NA	0.063	NA
pH	s.u.	6.38	NA	6.56	NA
Sulfate, SO4	mg/L	130	NA	87	NA
Total Dissolved Solids (TDS)	mg/L	460	NA	380	NA
Appendix IV Constituents					
Antimony, Sb	ug/L	2 U	NA	2 U	NA
Arsenic, As	ug/L	82	170	130	200
Barium, Ba	ug/L	390	NA	490	NA
Beryllium, Be	ug/L	1 U	NA	1 U	NA
Cadmium, Cd	ug/L	1 U	NA	1 U	NA
Chromium, Cr	ug/L	2 U	NA	1.6 J	NA
Cobalt, Co	ug/L	0.66 J	NA	0.73 J	NA
Fluoride, F	mg/L	0.083	NA	0.063	NA
Lithium, Li	mg/L	0.0042 J	NA	0.0042 J	NA
Lead, Pb	ug/L	1 U	NA	1 U	NA
Mercury, Hg	ug/L	0.2 U	NA	0.2 U	NA
Molybdenum, Mo	ug/L	5 U	NA	5 U	NA
Radium 226 & 228 (combined)	pCi/L	1.01	NA	1.64	NA
Selenium, Se	ug/L	5 U	NA	5 U	NA
Thallium, Tl	ug/L	1 U	NA	1 U	NA

Notes:
NA: Sampling not required for this parameter.

KC-15-08
SUMMARY OF 2020 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-20	Jun-20	Sep-20	Dec-20
Appendix III Constituents					
Boron, B	mg/L	0.58	0.17	0.57	0.51
Calcium, Ca	mg/L	220	34	220	190
Chloride, Cl	mg/L	44	NA	47	NA
Fluoride, F	mg/L	0.12	NA	0.1	NA
pH	s.u.	6.67	NA	6.96	NA
Sulfate, SO4	mg/L	580	170	550	500
Total Dissolved Solids (TDS)	mg/L	1200	450	1100	950
Appendix IV Constituents					
Antimony, Sb	ug/L	2 U	NA	2 U	NA
Arsenic, As	ug/L	11	2.3 J	12	11
Barium, Ba	ug/L	43	NA	51	NA
Beryllium, Be	ug/L	1 U	NA	1 U	NA
Cadmium, Cd	ug/L	1 U	NA	1 U	NA
Chromium, Cr	ug/L	2 U	NA	1.3 J	NA
Cobalt, Co	ug/L	3.4	NA	4.8	NA
Fluoride, F	mg/L	0.12	NA	0.1	NA
Lithium, Li	mg/L	0.0092	NA	0.007 J	NA
Lead, Pb	ug/L	1 U	NA	1 U	NA
Mercury, Hg	ug/L	0.2 U	NA	0.2 U	NA
Molybdenum, Mo	ug/L	5 U	NA	5 U	NA
Radium 226 & 228 (combined)	pCi/L	0.804	NA	5 U	NA
Selenium, Se	ug/L	5 U	NA	5 U	NA
Thallium, Tl	ug/L	1 U	NA	1 U	NA

Notes:
NA: Sampling not required for this parameter.

KC-19-27
SUMMARY OF 2020 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-20	Sep-20
Appendix IV Constituents			
Arsenic, As	ug/L	5.4	9.3

KC-19-28
SUMMARY OF 2020 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-20	Sep-20
Appendix IV Constituents			
Arsenic, As	ug/L	5 U	1.3 J

KC-19-29
SUMMARY OF 2020 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-20	Sep-20
Appendix IV Constituents			
Arsenic, As	ug/L	1 J	4.6 J

KC-15-09
SUMMARY OF 2020 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-20	Sep-20
Appendix III Constituents			
Boron, B	mg/L	0.1 U	0.043 J
Calcium, Ca	mg/L	78	61
Chloride, Cl	mg/L	12	9.4
Fluoride, F	mg/L	0.2	0.17
pH	s.u.	8.05	8.08
Sulfate, SO4	mg/L	64	55
Total Dissolved Solids (TDS)	mg/L	300	260
Appendix IV Constituents			
Antimony, Sb	ug/L	2 U	2 U
Arsenic, As	ug/L	1 J	5 U
Barium, Ba	ug/L	32	37
Beryllium, Be	ug/L	1 U	1 U
Cadmium, Cd	ug/L	1 U	1 U
Chromium, Cr	ug/L	2 U	2 U
Cobalt, Co	ug/L	2.2	2.4
Fluoride, F	mg/L	0.2	0.17
Lithium, Li	mg/L	0.0048 J	0.0097
Lead, Pb	ug/L	1 U	1 U
Mercury, Hg	ug/L	0.2 U	0.2 U
Molybdenum, Mo	ug/L	5 U	1.4 J
Radium 226 & 228 (combined)	pCi/L	0.565	0.491
Selenium, Se	ug/L	5 U	5 U
Thallium, Tl	ug/L	0.52 J	1 U

KC-15-10
SUMMARY OF 2020 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-20	Sep-20
Appendix III Constituents			
Boron, B	mg/L	0.1 U	0.1 U
Calcium, Ca	mg/L	64	46
Chloride, Cl	mg/L	9.4	8.7
Fluoride, F	mg/L	0.21	0.17
pH	s.u.	7.74	6.17
Sulfate, SO4	mg/L	68	59
Total Dissolved Solids (TDS)	mg/L	270	230
Appendix IV Constituents			
Antimony, Sb	ug/L	2 U	2 U
Arsenic, As	ug/L	2.2 J	1.3 J
Barium, Ba	ug/L	32	27
Beryllium, Be	ug/L	0.38 J	1 U
Cadmium, Cd	ug/L	1 U	1 U
Chromium, Cr	ug/L	2 U	2 U
Cobalt, Co	ug/L	1	0.9 J
Fluoride, F	mg/L	0.21	0.17
Lithium, Li	mg/L	0.0059 J	0.0059 J
Lead, Pb	ug/L	1 U	1 U
Mercury, Hg	ug/L	0.2 U	0.2 U
Molybdenum, Mo	ug/L	5 U	5 U
Radium 226 & 228 (combined)	pCi/L	0.554	5 U
Selenium, Se	ug/L	5 U	5 U
Thallium, Tl	ug/L	0.74 J	1 U

KC-15-11
SUMMARY OF 2020 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-20	Sep-20
Appendix III Constituents			
Boron, B	mg/L	0.1 U	0.03 J
Calcium, Ca	mg/L	69	54
Chloride, Cl	mg/L	11	11
Fluoride, F	mg/L	0.21	0.16
pH	s.u.	7.65	6.19
Sulfate, SO4	mg/L	80	80
Total Dissolved Solids (TDS)	mg/L	330	270
Appendix IV Constituents			
Antimony, Sb	ug/L	2 U	2 U
Arsenic, As	ug/L	5 U	0.93 J
Barium, Ba	ug/L	24	32
Beryllium, Be	ug/L	1 U	1 U
Cadmium, Cd	ug/L	1 U	1 U
Chromium, Cr	ug/L	2 U	2 U
Cobalt, Co	ug/L	0.89 J	1.3
Fluoride, F	mg/L	0.21	0.16
Lithium, Li	mg/L	0.0048 J	0.0077 J
Lead, Pb	ug/L	1 U	1 U
Mercury, Hg	ug/L	0.2 U	0.18 J
Molybdenum, Mo	ug/L	5 U	5 U
Radium 226 & 228 (combined)	pCi/L	0.646	5 U
Selenium, Se	ug/L	5 U	5 U
Thallium, Tl	ug/L	0.25 J	0.34 J

KC-15-12
SUMMARY OF 2020 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-20	Sep-20
Appendix III Constituents			
Boron, B	mg/L	0.2	0.047 J
Calcium, Ca	mg/L	92	89
Chloride, Cl	mg/L	15	12
Fluoride, F	mg/L	0.13	0.13
pH	s.u.	6.78	6.75
Sulfate, SO4	mg/L	77	69
Total Dissolved Solids (TDS)	mg/L	360	340
Appendix IV Constituents			
Antimony, Sb	ug/L	2 U	2 U
Arsenic, As	ug/L	5 U	1.2 J
Barium, Ba	ug/L	74	78
Beryllium, Be	ug/L	1 U	1 U
Cadmium, Cd	ug/L	1 U	1 U
Chromium, Cr	ug/L	2 U	2 U
Cobalt, Co	ug/L	0.72 J	0.64 J
Fluoride, F	mg/L	0.13	0.13
Lithium, Li	mg/L	0.0047 J	0.0044 J
Lead, Pb	ug/L	1 U	1 U
Mercury, Hg	ug/L	0.2 U	0.17 J
Molybdenum, Mo	ug/L	5 U	5 U
Radium 226 & 228 (combined)	pCi/L	5 U	5 U
Selenium, Se	ug/L	5 U	5 U
Thallium, Tl	ug/L	1 U	1 U

KC-15-13
SUMMARY OF 2020 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-20	Sep-20
Appendix III Constituents			
Boron, B	mg/L	0.056 J	4.3
Calcium, Ca	mg/L	27	85
Chloride, Cl	mg/L	0.4 J	41
Fluoride, F	mg/L	0.087	0.065
pH	s.u.	6.98	6.02
Sulfate, SO4	mg/L	24	340
Total Dissolved Solids (TDS)	mg/L	170	600
Appendix IV Constituents			
Antimony, Sb	ug/L	2 U	2 U
Arsenic, As	ug/L	0.78 J	1.2 J
Barium, Ba	ug/L	20	52
Beryllium, Be	ug/L	1 U	1 U
Cadmium, Cd	ug/L	1 U	1 U
Chromium, Cr	ug/L	5.3	2 U
Cobalt, Co	ug/L	0.94 J	10
Fluoride, F	mg/L	0.087	0.065
Lithium, Li	mg/L	0.03	0.024
Lead, Pb	ug/L	1 U	1 U
Mercury, Hg	ug/L	0.2 U	0.2 U
Molybdenum, Mo	ug/L	2.3 J	5 U
Radium 226 & 228 (combined)	pCi/L	5 U	5 U
Selenium, Se	ug/L	5 U	5 U
Thallium, Tl	ug/L	0.54 J	1 U

KC-15-14
SUMMARY OF 2020 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-20	Sep-20
Appendix III Constituents			
Boron, B	mg/L	11	10
Calcium, Ca	mg/L	68	65
Chloride, Cl	mg/L	45	51
Fluoride, F	mg/L	0.12	0.13
pH	s.u.	6.61	6.05
Sulfate, SO4	mg/L	220	210
Total Dissolved Solids (TDS)	mg/L	490	480
Appendix IV Constituents			
Antimony, Sb	ug/L	2 U	2 U
Arsenic, As	ug/L	2.6 J	2 J
Barium, Ba	ug/L	46	31
Beryllium, Be	ug/L	1 U	1 U
Cadmium, Cd	ug/L	1 U	1 U
Chromium, Cr	ug/L	1.3 J	2 U
Cobalt, Co	ug/L	4.2	2.6
Fluoride, F	mg/L	0.12	0.13
Lithium, Li	mg/L	0.016	0.017
Lead, Pb	ug/L	0.5 J	1 U
Mercury, Hg	ug/L	0.2 U	0.2 U
Molybdenum, Mo	ug/L	5 U	5 U
Radium 226 & 228 (combined)	pCi/L	5 U	5 U
Selenium, Se	ug/L	5 U	5 U
Thallium, Tl	ug/L	1 U	1 U

KC-15-15
SUMMARY OF 2020 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-20	Sep-20
Appendix III Constituents			
Boron, B	mg/L	12	14
Calcium, Ca	mg/L	69	74
Chloride, Cl	mg/L	67	56
Fluoride, F	mg/L	0.072	0.093
pH	s.u.	7.03	5.26
Sulfate, SO4	mg/L	240	270
Total Dissolved Solids (TDS)	mg/L	520	540
Appendix IV Constituents			
Antimony, Sb	ug/L	2 U	2 U
Arsenic, As	ug/L	0.76 J	5 U
Barium, Ba	ug/L	21	22
Beryllium, Be	ug/L	1 U	1 U
Cadmium, Cd	ug/L	1.7	0.99 J
Chromium, Cr	ug/L	2 U	2 U
Cobalt, Co	ug/L	24	14
Fluoride, F	mg/L	0.072	0.093
Lithium, Li	mg/L	0.016	0.02
Lead, Pb	ug/L	1 U	1 U
Mercury, Hg	ug/L	0.2 U	0.2 U
Molybdenum, Mo	ug/L	5 U	5 U
Radium 226 & 228 (combined)	pCi/L	5 U	0.582
Selenium, Se	ug/L	5 U	5 U
Thallium, Tl	ug/L	1 U	0.3 J

KC-15-16
SUMMARY OF 2020 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-20	Sep-20
Appendix III Constituents			
Boron, B	mg/L	7.9	8.7
Calcium, Ca	mg/L	140	150
Chloride, Cl	mg/L	77	84
Fluoride, F	mg/L	0.045 J	0.034 J
pH	s.u.	7.61	5.9
Sulfate, SO4	mg/L	430	460
Total Dissolved Solids (TDS)	mg/L	810	860
Appendix IV Constituents			
Antimony, Sb	ug/L	2 U	2 U
Arsenic, As	ug/L	2.4 J	1.6 J
Barium, Ba	ug/L	68	52
Beryllium, Be	ug/L	1 U	1 U
Cadmium, Cd	ug/L	0.25 J	0.23 J
Chromium, Cr	ug/L	2.4	31
Cobalt, Co	ug/L	4.3	5.3
Fluoride, F	mg/L	0.045 J	0.034 J
Lithium, Li	mg/L	0.0084	0.011
Lead, Pb	ug/L	0.65 J	1 U
Mercury, Hg	ug/L	0.2 U	0.2 U
Molybdenum, Mo	ug/L	5 U	1.2 J
Radium 226 & 228 (combined)	pCi/L	5 U	5 U
Selenium, Se	ug/L	5 U	5 U
Thallium, Tl	ug/L	1 U	1 U

KC-15-17
SUMMARY OF 2020 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-20	Sep-20
Appendix III Constituents			
Boron, B	mg/L	19	18
Calcium, Ca	mg/L	260	310
Chloride, Cl	mg/L	120	130
Fluoride, F	mg/L	0.048 J	0.04 J
pH	s.u.	7.95	5.99
Sulfate, SO4	mg/L	1100	1100
Total Dissolved Solids (TDS)	mg/L	1700	1700
Appendix IV Constituents			
Antimony, Sb	ug/L	2 U	2 U
Arsenic, As	ug/L	2.7 J	2.4 J
Barium, Ba	ug/L	34	30
Beryllium, Be	ug/L	1 U	1 U
Cadmium, Cd	ug/L	0.43 J	0.52 J
Chromium, Cr	ug/L	2 U	7.8
Cobalt, Co	ug/L	27	30
Fluoride, F	mg/L	0.048 J	0.04 J
Lithium, Li	mg/L	0.026	0.025
Lead, Pb	ug/L	1 U	1 U
Mercury, Hg	ug/L	0.2 U	0.2 U
Molybdenum, Mo	ug/L	1.3 J	5 U
Radium 226 & 228 (combined)	pCi/L	0.585	0.718
Selenium, Se	ug/L	5 U	5 U
Thallium, Tl	ug/L	1 U	1 U

KC-15-18
SUMMARY OF 2020 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-20	Jun-20	Sep-20	Dec-20
Appendix III Constituents					
Boron, B	mg/L	15	NA	14	NA
Calcium, Ca	mg/L	140	140	130	140
Chloride, Cl	mg/L	92	93	91	95
Fluoride, F	mg/L	0.085	NA	0.064	NA
pH	s.u.	7.71	NA	6.07	NA
Sulfate, SO4	mg/L	460	NA	440	NA
Total Dissolved Solids (TDS)	mg/L	850	NA	850	880
Appendix IV Constituents					
Antimony, Sb	ug/L	2 U	NA	2 U	NA
Arsenic, As	ug/L	2.2 J	NA	2.2 J	NA
Barium, Ba	ug/L	23	NA	23	NA
Beryllium, Be	ug/L	1 U	NA	1 U	NA
Cadmium, Cd	ug/L	0.27 J	NA	0.26 J	NA
Chromium, Cr	ug/L	2 U	NA	3.7	NA
Cobalt, Co	ug/L	7.5	NA	11	NA
Fluoride, F	mg/L	0.085	NA	0.064	NA
Lithium, Li	mg/L	0.029	NA	0.065	NA
Lead, Pb	ug/L	1 U	NA	1 U	NA
Mercury, Hg	ug/L	0.2 U	NA	0.13 J	NA
Molybdenum, Mo	ug/L	5 U	NA	1.1 J	NA
Radium 226 & 228 (combined)	pCi/L	5 U	NA	5 U	NA
Selenium, Se	ug/L	5 U	NA	5 U	NA
Thallium, Tl	ug/L	1 U	NA	1 U	NA

Notes:
NA: Sampling not required for this parameter.

KC-15-19
SUMMARY OF 2020 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-20	Jun-20	Sep-20	Dec-20
Appendix III Constituents					
Boron, B	mg/L	16	NA	16	NA
Calcium, Ca	mg/L	190	180	180	160
Chloride, Cl	mg/L	44	NA	43	NA
Fluoride, F	mg/L	0.097	NA	0.096	NA
pH	s.u.	7.88	NA	6.1	NA
Sulfate, SO4	mg/L	660	620	580	550
Total Dissolved Solids (TDS)	mg/L	1000	1000	1000	930
Appendix IV Constituents					
Antimony, Sb	ug/L	2 U	NA	2 U	NA
Arsenic, As	ug/L	5 U	NA	5 U	NA
Barium, Ba	ug/L	15	NA	16	NA
Beryllium, Be	ug/L	1 U	NA	1 U	NA
Cadmium, Cd	ug/L	0.29 J	NA	1.2	NA
Chromium, Cr	ug/L	2 U	NA	1.3 J	NA
Cobalt, Co	ug/L	12	NA	17	13
Fluoride, F	mg/L	0.097	NA	0.096	NA
Lithium, Li	mg/L	0.016	NA	0.015	NA
Lead, Pb	ug/L	1 U	NA	1 U	NA
Mercury, Hg	ug/L	0.2 U	NA	0.2 U	NA
Molybdenum, Mo	ug/L	5 U	NA	5 U	NA
Radium 226 & 228 (combined)	pCi/L	5 U	NA	0.465	NA
Selenium, Se	ug/L	5 U	NA	5 U	NA
Thallium, Tl	ug/L	1 U	NA	0.23 J	NA

Notes:
NA: Sampling not required for this parameter.

KC-15-20
SUMMARY OF 2020 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-20	Jun-20	Sep-20	Dec-20
Appendix III Constituents					
Boron, B	mg/L	11	NA	11	NA
Calcium, Ca	mg/L	200	190	190	180
Chloride, Cl	mg/L	40	NA	41	NA
Fluoride, F	mg/L	0.1	NA	0.1	NA
pH	s.u.	7.96	NA	6.18	NA
Sulfate, SO4	mg/L	580	540	630	510
Total Dissolved Solids (TDS)	mg/L	980	1000	980	940
Appendix IV Constituents					
Antimony, Sb	ug/L	2 U	NA	2 U	NA
Arsenic, As	ug/L	1.5 J	NA	2.6 J	NA
Barium, Ba	ug/L	29	NA	40	NA
Beryllium, Be	ug/L	1 U	NA	1 U	NA
Cadmium, Cd	ug/L	1 U	NA	1 U	NA
Chromium, Cr	ug/L	2 U	NA	2.6	NA
Cobalt, Co	ug/L	3.6	NA	4.2	NA
Fluoride, F	mg/L	0.1	NA	0.1	NA
Lithium, Li	mg/L	0.015	NA	0.012	NA
Lead, Pb	ug/L	1 U	NA	1.1	NA
Mercury, Hg	ug/L	0.2 U	NA	0.2 U	NA
Molybdenum, Mo	ug/L	5 U	NA	1.1 J	NA
Radium 226 & 228 (combined)	pCi/L	5 U	NA	5 U	NA
Selenium, Se	ug/L	5 U	NA	5 U	NA
Thallium, Tl	ug/L	1 U	NA	1 U	NA

Notes:
NA: Sampling not required for this parameter.

KC-15-21
SUMMARY OF 2020 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-20	Jun-20	Sep-20	Dec-20
Appendix III Constituents					
Boron, B	mg/L	4.9	NA	5.5	NA
Calcium, Ca	mg/L	160	160	140	190
Chloride, Cl	mg/L	23	NA	29	NA
Fluoride, F	mg/L	0.22	NA	0.16	NA
pH	s.u.	7.9	NA	6.2	NA
Sulfate, SO4	mg/L	480	NA	350	NA
Total Dissolved Solids (TDS)	mg/L	800	NA	650	NA
Appendix IV Constituents					
Antimony, Sb	ug/L	2 U	NA	2 U	NA
Arsenic, As	ug/L	1.5 J	NA	1.8 J	NA
Barium, Ba	ug/L	27	NA	28	NA
Beryllium, Be	ug/L	1 U	NA	1 U	NA
Cadmium, Cd	ug/L	1 U	NA	1 U	NA
Chromium, Cr	ug/L	2 U	NA	2 U	NA
Cobalt, Co	ug/L	8.1	NA	8.8	NA
Fluoride, F	mg/L	0.22	NA	0.16	NA
Lithium, Li	mg/L	0.0051 J	NA	0.0047 J	NA
Lead, Pb	ug/L	1 U	NA	1 U	NA
Mercury, Hg	ug/L	0.2 U	NA	0.2 U	NA
Molybdenum, Mo	ug/L	1.3 J	NA	5 U	NA
Radium 226 & 228 (combined)	pCi/L	0.373	NA	5 U	NA
Selenium, Se	ug/L	5 U	NA	5 U	NA
Thallium, Tl	ug/L	0.42 J	NA	1 U	NA

Notes:
NA: Sampling not required for this parameter.

KC-15-22
SUMMARY OF 2020 ANALYTICAL RESULTS
Ohio Valley Electric Corporation
Kyger Creek Station
Gallia County, Ohio

Parameter	Units	Mar-20	Sep-20
Appendix III Constituents			
Boron, B	mg/L	0.54	0.48
Calcium, Ca	mg/L	120	110
Chloride, Cl	mg/L	20	11
Fluoride, F	mg/L	0.13	0.14
pH	s.u.	7.98	7.92
Sulfate, SO4	mg/L	140	110
Total Dissolved Solids (TDS)	mg/L	360	410
Appendix IV Constituents			
Antimony, Sb	ug/L	2 U	2 U
Arsenic, As	ug/L	2.2 J	3.1 J
Barium, Ba	ug/L	68	60
Beryllium, Be	ug/L	1 U	1 U
Cadmium, Cd	ug/L	1 U	1 U
Chromium, Cr	ug/L	2 U	1.2 J
Cobalt, Co	ug/L	0.53 J	0.28 J
Fluoride, F	mg/L	0.13	0.14
Lithium, Li	mg/L	0.0042 J	0.0086
Lead, Pb	ug/L	1 U	1 U
Mercury, Hg	ug/L	0.2 U	0.2 U
Molybdenum, Mo	ug/L	4.6 J	2.8 J
Radium 226 & 228 (combined)	pCi/L	5 U	0.464
Selenium, Se	ug/L	5 U	5 U
Thallium, Tl	ug/L	1 U	1 U