CCR COMPLIANCE
GROUNDWATER MONITORING AND CORRECTIVE ACTION
ANNUAL REPORT
ASH FILTER PONDS AND ASH DISPOSAL SITE

Prepared for:

Keystone-Conemaugh Projects, LLC
Keystone Generating Station
Shelocta, Pennsylvania

Prepared by:

Aptim Environmental & Infrastructure, LLC
Pittsburgh, Pennsylvania

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Executive Summary

In response to the newly adopted Part A elements (effective September 28, 2020) of the Coal Combustion Residuals (CCR) Rule (or Rule), this Executive Summary has been incorporated into the annual report per the specific provisions as codified in Title 40 Code of Federal Regulations (CFR) §257.90(e)(6). These provisions require that an up-front overview of the current status (covering the immediately preceding calendar year) of groundwater monitoring and corrective action programs be provided in a concise and focused manner for each CCR unit at the facility. Accordingly, the following paragraphs document the respective groundwater monitoring status (for Calendar Year 2020) of the Ash Filter Ponds and the Ash Disposal Site at the Keystone-Conemaugh Projects, LLC–Keystone Generating Station. Tables and/or figures referenced in the discussions below are included at the end of the report and further support the text (Sections 2.0, 3.0, and 4.0) in the main body of the report.

The Ash Filter Ponds represent a collective CCR unit which encompasses three ponds designated Ponds "A," "B," and "C" (see Figure 1). Also as shown on Figure 1, the associated CCR groundwater monitoring network is comprised of four wells, including one upgradient location (Well MW-5) and three downgradient locations (Wells MW-6, MP-29, and MP-30). For Calendar Year 2020, the Ash Filter Ponds entered and ended the period in the Assessment Monitoring Program. The Ash Filter Ponds have remained in Assessment Monitoring since being transitioned in March 2018 following confirmed statistically significant increases (SSIs) for CCR Appendix III constituents, including boron and chloride in two of the downgradient wells (see Table1). Assessment Monitoring events conducted in February, June, and November 2020 (see Table 2) did not reveal any CCR Appendix IV constituents at concentrations representing a statistically significant level (SSL) above the corresponding groundwater protection standards (GWPSs). These events further continued to show several Appendix III constituents at values above background in downgradient Wells MP-29 (boron, calcium, chloride, sulfate, and total dissolved solids [TDS]) and MP-30 (boron and chloride). No groundwater-related findings to date have triggered the Ash Filter Ponds into an Assessment of Corrective Measures.

As shown on Figure 2, the Ash Disposal Site is a captive landfill located in the northern portion of the Keystone Generating Station proper, and is represented by the East Valley and West Valley Disposal Sites. The CCR groundwater monitoring network for the East Valley Disposal Site consists of four wells, including one upgradient/side-gradient location (Well MP-21) and three downgradient locations (Wells MP-4, MP-17B, and MP-18). For Calendar Year 2020, the East Valley Disposal Site entered and ended the period in the Assessment Monitoring Program. The East Valley Disposal Site has remained in Assessment Monitoring since being transitioned in March 2018 following confirmed SSIs for CCR Appendix III constituents, including calcium, sulfate, and TDS in the downgradient wells (see Table 3). Assessment Monitoring events

conducted in February, May, and November 2020 (see Table 4) did not reveal any CCR Appendix IV constituents at concentrations representing an SSL above the corresponding GWPSs. These events further continued to show several Appendix III constituents at values above background in the downgradient wells, including Wells MP-4 and MP-18 (calcium and sulfate) and Well MP-17B (calcium, sulfate, and TDS). No groundwater-related findings to date have triggered the East Valley Disposal Site into an Assessment of Corrective Measures.

Also as shown on Figure 2, the CCR groundwater monitoring network for the West Valley Disposal Site consists of four wells, including one upgradient/side-gradient location (Well MP-21) and three downgradient locations (Wells MP-16, MP-23, and MP-24). For Calendar Year 2020, the West Valley Disposal Site entered and ended the period in the Assessment Monitoring Program. The West Valley Disposal Site has remained in Assessment Monitoring since being transitioned in March 2018 following confirmed SSIs for CCR Appendix III constituents, including calcium, chloride, pH, sulfate, and TDS in the downgradient wells (see Table 5). Assessment Monitoring events conducted in February, May, and November 2020 (see Table 6) did not reveal any CCR Appendix IV constituents at concentrations representing an SSL above the corresponding GWPSs. These events further continued to show several Appendix III constituents at values above/outside background in the downgradient wells, including Well MP-16 (boron, chloride, and TDS) and Well MP-23 (calcium, chloride, pH, sulfate, and TDS). No groundwater-related findings to date have triggered the East Valley Disposal Site into an Assessment of Corrective Measures.

1.0 Introduction

Title 40 Code of Federal Regulations (CFR) §257.90 mandates that existing Coal Combustion Residuals (CCR) landfills and surface impoundments, also known as CCR units, be subject to groundwater monitoring and corrective action requirements as further detailed in §257.91 through §257.98. These requirements are part of the overall CCR Rule (or Rule) which was published in the Federal Register on April 17, 2015 and which became effective on October 19, 2015. Specific obligations for owners and operators of existing CCR units regarding the preparation of "Annual Groundwater Monitoring and Corrective Action Reports (Annual Report)" are outlined in §257.90(e)(1-5). The first of these Annual Reports was completed no later than January 31, 2018, and provided information to address the following aspects for the preceding calendar year:

- Document the status of the groundwater monitoring and corrective action program for the respective CCR units;
- Summarize key actions completed;
- Describe any problems encountered and actions taken to resolve the problems; and
- Offer a projection of key activities for the upcoming year.

At a minimum, the Annual Report must contain the following information to the extent applicable and available, and beginning with the current report, must also address the items contained in §257.90(e)(6) in the form of an Executive Summary:

- A map, aerial image, or diagram showing the CCR unit and all background/upgradient and downgradient monitoring wells, to include the well identification numbers, that are part of the groundwater monitoring program;
- 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;
- 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/upgradient and downgradient well, the dates the samples were collected, and whether the sample was required by the Detection Monitoring or Assessment Monitoring programs;
- 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); and
- Any other information required to be included as specified in §257.90 through §257.98.

Keystone-Conemaugh Projects, LLC–Keystone Generating Station is a coal-fired power plant located in Shelocta, Pennsylvania. The Rule applies to this facility due to the management/ disposal of CCR materials that are generated from the combustion of coal. CCR units associated with station operations include the Keystone Ash Disposal Site (represented by the East Valley and West Valley Disposal Sites), and three Ash Filter Ponds (Ponds "A," "B," and "C") used for the management of bottom ash. Each of these CCR units has a dedicated groundwater monitoring system that was originally installed to comply with Commonwealth of Pennsylvania Residual Waste Regulations and was subsequently evaluated and modified (as needed) for use under the CCR program. Additionally, in accordance with the provisions of §257.91(d) of the Rule, the groundwater monitoring system for the Ash Filter Ponds has been designated to provide coverage in the context of a multiunit system encompassing all three ponds collectively.

In summary, this fourth Annual Report has been prepared to comply with the requirements of §257.90(e), addressing each of the Keystone Generating Station's CCR units with respect to the groundwater monitoring and corrective actions undertaken during Calendar Year 2020. This Annual Report and all subsequent reports thereto will be placed in the station's operating record per §257.105(h)(1), noticed to the State Director per §257.106(h)(1), and posted to the publicly accessible internet site per §257.107(h)(1).

2.0 Ash Filter Ponds

2.1 Groundwater Monitoring Network

The CCR groundwater monitoring system for the Ash Filter Ponds is comprised of four wells, including Well MW-5 (upgradient) and Wells MW-6, MP-29, and MP-30 (downgradient). The screened intervals of all four wells cross the interface between the Carmichaels Formation and the Mahoning Sandstone, recognized as the horizon for the uppermost aquifer. The locations of the groundwater monitoring wells are shown on Figure 1, along with a depiction of the generalized groundwater flow direction in the area of the ponds. Each of these wells was already existing, and no new wells were added nor were any existing wells abandoned/replaced during the 2020 reporting period.

2.2 2020 Data Collection

Following their transition in early 2018, the Ash Filter Ponds continued in the CCR Assessment Monitoring Program during the 2020 reporting period. Accordingly, samples were collected and analyzed for Appendix III and Appendix IV constituents as required, during the February, May, and November 2020 monitoring events (similar to the monitoring frequency for the Appendix III constituents, the required monitoring frequency is "on at least a semiannual basis" for the Appendix IV constituents following completion of the initial sampling event for the Assessment Monitoring Program). Results from the 2020 sampling events are summarized in Tables 1 and 2, covering Appendix III and Appendix IV, respectively. As shown in Table 2, none of the Appendix IV constituents from the 2020 sampling events were measured at concentrations representing a statistically significant level (SSL) above the corresponding groundwater protection standards (GWPSs) in any of the downgradient wells. Detected concentrations of at least one Appendix IV constituent (barium) as well as several Appendix III constituents, however, do remain above calculated background, providing the basis for continued Assessment Monitoring into 2021.

2.3 2020 Monitoring Program Transitions

During 2020, there were no transitions between monitoring programs, with the Ash Filter Ponds remaining in the CCR Assessment Monitoring Program.

2.4 2020 Corrective Actions

During 2020, there were no problems identified or corrective actions undertaken.

2.5 2021 Projected Activities

As noted, it is anticipated that Assessment Monitoring activities will continue for the Ash Filter Ponds during 2021, with continued review of Appendix III/Appendix IV constituent

concentrations and comparison against calculated background and established groundwater protection standards.

3.0 East Valley Disposal Site

3.1 Groundwater Monitoring Network

The CCR groundwater monitoring system for the East Valley Disposal Site is comprised of four wells, including Well MP-21 (upgradient/side-gradient) and Wells MP-4, MP-17B, and MP-18 (downgradient). The screened intervals of all four monitoring wells are in bedrock units, including the Mahoning Sandstone which is represented as the uppermost aquifer in this area. The locations of the monitoring wells are shown on Figure 2 along with a depiction of the generalized groundwater flow direction. Each of these wells was already existing, and no new wells were added nor were any existing wells abandoned/replaced during the 2020 reporting period.

3.2 2020 Data Collection

Following its transition in early 2018, the East Valley Disposal Site continued in the CCR Assessment Monitoring Program during the 2020 reporting period. Accordingly, samples were collected and analyzed for Appendix III and Appendix IV constituents as required, during the February, May, and November 2020 monitoring events. Results from the 2020 sampling events are summarized in Tables 3 and 4, covering Appendix III and Appendix IV, respectively. As shown in Table 4, none of the Appendix IV constituents from the 2020 sampling events were measured at concentrations representing an SSL above the corresponding GWPSs in any of the downgradient wells. In this regard, it is noted that downgradient Well MP-18 could not be sampled during the November 2020 monitoring event due to seasonally depressed groundwater levels. Detected concentrations of several Appendix III constituents, however, do remain above calculated background, providing the basis for continued Assessment Monitoring into 2021.

3.3 2020 Monitoring Program Transitions

During 2020, there were no transitions between monitoring programs, with the East Valley Disposal Site remaining in the CCR Assessment Monitoring Program.

3.4 2020 Corrective Actions

During 2020, there were no problems identified or corrective actions undertaken.

3.5 2021 Projected Activities

As noted, it is anticipated that Assessment Monitoring activities will continue for the East Valley Disposal Site during 2021, with continued review of Appendix III/Appendix IV constituent concentrations and comparison against calculated background and established groundwater protection standards.

4.0 West Valley Disposal Site

4.1 Groundwater Monitoring Network

The CCR groundwater monitoring system for the West Valley Disposal Site is comprised of four wells, including Well MP-21 (upgradient/side-gradient) and Wells MP-16, MP-23, and MP-24 (downgradient). The screened intervals of all four monitoring wells are in the Mahoning Sandstone which is represented as the uppermost aquifer in this area. The locations of the monitoring wells are shown on Figure 2 along with a depiction of the generalized groundwater flow direction. Each of these wells was already existing, and no new wells were added nor were any existing wells abandoned/replaced during the 2020 reporting period.

4.2 2020 Data Collection

Following its transition in early 2018, the West Valley Disposal Site continued in the CCR Assessment Monitoring Program during the 2020 reporting period. Accordingly, samples were collected and analyzed for Appendix III and Appendix IV constituents, as required, during the February, May, and November 2020 monitoring events. Results from the 2020 sampling events are summarized in Tables 5 and 6, covering Appendix III and Appendix IV, respectively. As shown in Table 6, none of the Appendix IV constituents from the 2020 sampling events were measured at concentrations representing an SSL above the corresponding GWPSs in any of the downgradient wells. Detected concentrations of at least one Appendix IV constituent (barium) as well as several Appendix III constituents, however, do remain above calculated background, providing the basis for continued Assessment Monitoring into 2021.

4.3 2020 Monitoring Program Transitions

During 2020, there were no transitions between monitoring programs, with the West Valley Disposal Site remaining in the CCR Assessment Monitoring Program.

4.4 2020 Corrective Actions

During 2020, there were no problems identified or corrective actions undertaken.

4.5 2021 Projected Activities

As noted, it is anticipated that Assessment Monitoring activities will continue for the West Valley Disposal Site during 2021, with continued review of Appendix III/Appendix IV constituent concentrations and comparison against calculated background and established groundwater protection standards.

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