Hayden Station CCR Landfill

SSI and Assessment Monitoring Notification

Public Service Company of Colorado (PSCo), an Xcel Energy Company, is the operator of Hayden Station, a coal-fired, steam turbine electric generating station. Hayden currently operates one CCR unit on site, a landfill that is used for final disposal of CCRs generated at Hayden Station. The CCR landfill has an estimated remaining life expectancy of 20 years and will provide CCR disposal capacity through approximately 2038, after which it will be closed with installation of a final cover that is compliant with 257.102(d) and State of Colorado solid waste regulations, as described in the Written Closure Plan (Burns & McDonnell, 2018).

Protecting the environment is a priority for Xcel Energy

PSCo conducts all of its business in an environmentally responsible manner and that includes regularly monitoring our operations and taking steps to protect our air, water and other natural resources. PSCo has made a determination of Statistically Significant Increases (SSIs) over background levels for the constituents listed in Appendix III of the Disposal of Coal Combustion Residuals from Electrical Utilities Rule (Federal CCR Rule). The attached Memo, Determination of Statistically Significant Increases over Background, identifies those constituents for which SSIs have been identified. These test results do not indicate there is any impact on local drinking water. The monitoring wells evaluate groundwater in the alluvial aquifer adjacent to the CCR landfill, and measure groundwater conditions within the Hayden Station property boundary.

As a next step, PSCo is establishing an assessment monitoring program for the CCR landfill at Hayden Station. The assessment monitoring program will sample and analyze for Appendix IV constituents in groundwater from wells in the certified CCR Groundwater Monitoring System at Hayden Station. This next step of the investigation is intended to obtain additional information about groundwater conditions and to determine whether any corrective actions might be warranted. However, it should be noted that at Hayden we are already implementing assessment monitoring and corrective action under the State groundwater monitoring program, which is functionally equivalent to the CCR assessment monitoring and corrective action program.

Memo

Date: Tuesday, August 20, 2019

To: Kristen Carney, Public Service Company of Colorado

Jennifer McCarter, Public Service Company of Colorado

From: Matt Rohr, HDR, Inc.

Subject: Hayden Station CCR Unit

Determination of Statistically Significant Increases over Background per 257.93(h)(2)

The U.S. Environmental Protection Agency's (EPA's) final Coal Combustion Residuals (CCR) Rule establishes a comprehensive set of requirements for the management and disposal of CCR (or coal ash) in landfills and surface impoundments by electric utilities. Hayden Station, located in Routt County, Colorado has one CCR unit, a landfill subject to the CCR Rule. The CCR unit operation and monitoring are described further in the Hayden Station Groundwater Monitoring System Certification (HDR 2019).

The objective of this memorandum is to document the identification of statistically significant increases (SSIs) over background water quality at the CCR Landfill at Hayden Station. Groundwater monitoring has been conducted to collect eight rounds of background sampling plus detection monitoring as specified under CCR Rule Part 257.94. The water quality collected from the monitoring well located upgradient of the CCR unit has been compiled and statistically analyzed to develop background threshold values (BTVs) for each constituent of interest (COI). The Background Water Quality Statistical Certification (HDR 2019) documents the background sample events and describes the data evaluation performed to select the appropriate statistical method in the background data water quality at the ash disposal facility at Hayden. The first detection monitoring event in the alluvial wells of the updated groundwater monitoring system was conducted in April 2019. The downgradient monitoring well data were compared against the BTVs and SSIs were identified.

Hydrogeologic characterization of the site is provided in the Hayden Station Groundwater Monitoring System Certification (HDR 2019). Upgradient, colluvial monitoring well MW-5 has been consistently dry over the three year monitoring period, reflecting the normally dry background conditions in the colluvium under the ash disposal facility. Therefore, no background water quality is available to develop BTVs. However, groundwater is observed in the colluvium downgradient wells MW-6, MW-7 and MW8 at the waste boundary, which likely represents seepage from within the footprint of the landfill collecting as perched groundwater in these wells, flowing along the top of bedrock and discharging to the northwest into the alluvial aquifer of Sage Creek. Therefore, existing monitoring wells in the Sage Creek alluvial aquifer were sampled. Eight rounds of background sampling were

completed in one upgradient (W-3) and three downgradient alluvial wells (W-1, W-2, and W-4) to establish background water quality for the CCR Constituents in Appendix III and Appendix IV.

As stipulated in the CCR Rule, eight background groundwater sampling events were completed between April and November 2018 in the alluvial monitoring wells. Background groundwater samples were analyzed for all of the parameters in Appendices III and IV of CCR Rule Part 257. While detection monitoring in the original colluvial landfill monitoring network has been ongoing at Hayden since September 2017, the first detection monitoring event for the alluvial wells downgradient of the ash disposal facility (W-1 through W-4) was conducted on April 15, 2019, after completion of background sampling. Detection monitoring groundwater samples from the alluvial wells were analyzed for all of the parameters in Appendix III of CCR Rule Part 257, as discussed below. The detection monitoring event will be described in detail in the Annual Groundwater Monitoring and Corrective Action Report due January 31, 2020. The annual report will include all laboratory data for the reporting period.

SSI Determination

Groundwater sampling for detection monitoring was analyzed for the CCR Rule Appendix III COIs. The concentrations of Appendix III COIs from each downgradient alluvial monitoring well were compared against the alluvial well BTVs and the COIs with SSIs are listed below.

W-1	none
W-2	boron
W-4	chloride, sulfate, total dissolved solids (TDS)

The identification of SSIs begins the process of further investigation at Hayden. Within 90 days of triggering an assessment monitoring program, Public Service Company of Colorado will either sample and analyze for Appendix IV constituents under an assessment monitoring program or document that the SSI resulted from an alternative source, an error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality.

References

HDR, 2019. Groundwater Monitoring System Certification - Compliance with the Coal Combustion Residuals Rule Hayden Station. February 26, 2019.

HDR, 2019. Hayden Station Background Water Quality Statistical Certification for Compliance with the Coal Combustion Residuals Rule. August, 2019.