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Groundwater Remedy Selection and Design Semiannual Progress Report

Coal Combustion Residual Rule Compliance

Facility
Healy Power Plant
2.5 Mile Healy Spur Road
Healy, Alaska

September 8, 2020

This semiannual progress report is the fourth report following completion of the *Corrective Measures Assessment Report* in August 2018 to comply with §257.97 of the coal combustion residuals (CCR) rule (CCR Rule). This report documents GVEA's progress towards selecting and designing the remedy for the groundwater impacts associated with the four CCR¹ units at the Healy Power Plant near Healy, Alaska. The CCR units include three unlined CCR surface impoundments (the Ash Pond, the Recirculating Pond and the Emergency Overflow Pond) and an Ash Drying Area defined as a CCR landfill under the CCR Rule. This report has been documented in GVEA's facility operations records to satisfy requirements under §257.105(h)(12) of the CCR Rule, and posted to GVEA's CCR Website² in accordance with §257.107(h)(9).

At the Healy Power Plant, groundwater concentrations of constituents listed in Appendix IV of the CCR Rule have been detected at statistically significant levels above the groundwater protection standard. Accordingly, corrective measures are to be assessed and taken to prevent further releases, to remediate any releases, and to restore affected areas to their original conditions in accordance with the CCR Rule. Because the ponds are unlined, GVEA must cease placement of CCR into the ponds and either retrofit or close the ponds in accordance with the CCR Rule. GVEA intends to close the ponds under §257.101(a) rather than retrofit them because location requirements in the CCR Rule restrict GVEA's continued use of these ponds even if they were retrofitted with a liner. Closure of the ponds will involve removing coal ash from within the waste boundary of each of the four CCR units and backfilling excavations as outlined in the 2016 *Closure and Post-Closure Plan*. Recent revisions to the CCR Rule including new provisions under §257.101(a) were recently published in the Federal Register on August 28, 2020 (CCR Closure Part A³). GVEA is committed to complying with all applicable rules and regulations including the new deadline of April 11, 2021 to commence closure of the ponds.

Presently, CCR and non-CCR wastes from Unit 1 are processed in the four CCR units to dewater and prepare CCR for safe transport and final disposal offsite. The CCR units at the Healy Power Plant site do not receive CCR waste for final disposal. GVEA is currently overseeing plant upgrades to manage CCR and non-CCR waste streams from Unit 1 and eliminate the need for the CCR units, but at this time there is no fully-functional alternative CCR handling process in place. Modifications to both the Unit 1 and Unit 2 coal ash handling systems are currently under construction to convey all Unit 1 CCR (i.e., fly ash and slag/bottom ash) to the Unit 2 CCR handling systems and circumvent the CCR units. For the non-CCR waste streams currently entering the

¹ CCR is defined under the CCR Rule as fly ash, bottom ash, boiler slag, and flue gas desulfurization materials generated from burning coal for the purpose of generating electricity by electric utilities and independent power producers.

² <https://www.gvea.com/energy/ccrrulecompliance>

³ <https://www.federalregister.gov/documents/2020/08/28/2020-16872/hazardous-and-solid-waste-management-system-disposal-of-coal-combustion-residuals-from-electric>

ponds, GVEA is evaluating alternative processes to manage these wastes within the plant and circumvent the ponds. GVEA intends to cease all placement of waste in the CCR units by April 11, 2021. In the meantime, GVEA must continue to process waste through the existing CCR units in order to provide power to GVEA's cooperative member owners until the necessary plant modifications are complete.

In August 2018, GVEA completed an assessment of corrective measures to address monitored groundwater impacts associated with the CCR units at the Healy Power Plant. As part of the assessment process, potential corrective measure alternatives were developed and screened against threshold criteria to determine whether corrective measures would meet the remedial objectives and whether they should be retained or eliminated from further consideration. As described in the 2018 *Corrective Measures Assessment Report*, CCR source removal was incorporated in each alternative as a primary corrective measure since the ponds must close. Preliminary analyses of groundwater impacts at the site have suggested that infiltration of highly alkaline water from the ponds has led to elevated pH in down gradient groundwater, which in turn has increased mobilization of naturally-occurring metals from the aquifer matrix. Infiltrating pond water may also be contributing to concentrations of some metals in groundwater. Based on the current conceptual model it is anticipated that eliminating the alkaline recharge would lower pH levels in down gradient groundwater, reduce the mobilization of metals, and eventually eliminate exceedances of the groundwater protection standards (GWPS). If the preliminary conclusions are correct, closure of the CCR ponds will be necessary to eliminate the source of alkaline recharge to groundwater at the site. However, source removal cannot be completed until an alternative process is in place to manage CCR from Unit 1.

To support the selection of a final remedy and to assist in the effective implementation of corrective actions for groundwater, GVEA needs to further characterize the nature and extent of groundwater impacts at the site. An analytical modeling effort of groundwater geochemistry is currently in progress to better understand the fate and transport of contaminants in groundwater affected by the CCR units. In addition, a hydrogeologic investigation is planned for fall 2020. As part of the investigation, new groundwater monitoring wells are proposed to: 1) delineate the vertical extent of groundwater contamination, 2) further define the lateral extent of groundwater contamination downgradient of the CCR units, 3) improve understanding of background water quality and groundwater flow, and 4) better characterize the alluvial aquifer system. Groundwater samples will be collected from the new monitoring wells during the October 2020 and April 2021 semi-annual groundwater monitoring event and analyzed for all constituents listed in Appendix III and IV of the CCR Rule. Results of the modeling and field investigations will guide GVEA in further defining the nature and extent of contamination, refining the hydrogeologic conceptual site model, and assessing alternative remedies in accordance with §257.96.

Upon completion of site characterization efforts, GVEA will revise the 2018 *Corrective Measures Assessment Report* (CMAR). The CMAR will be updated to reflect groundwater and site characterization data collected since August 2018, and the assessment of corrective measures will be re-evaluated based on the enhanced understanding of site conditions and regulatory requirements.

Over the coming months GVEA will continue to engineer and construct alternative systems to fully bypass the CCR units, plan for final closure and removal of the CCR units, and evaluate corrective measures to address constituents of concern in groundwater at the site. Table 1 presents GVEA's planned tasks and anticipated completion dates to maintain compliance with the CCR Rule and to proceed toward final closure of the CCR units.

Table 1. CCR Rule Compliance Tasks and Anticipated Completion Dates

Task	Anticipated Completion Date
Modifications to Unit 1 and Unit 2 fly ash handling systems to process fly ash from Unit 1	December 2020
Analytical modeling of groundwater geochemistry to evaluate natural attenuation processes and estimate remediation timeframe	December 2020
Amend Closure and Post-Closure Plan	February 10, 2021
Complete upgrades to Unit 1 and Unit 2 CCR and non-CCR waste handling systems	March 2021
Cease placement of CCR and non-CCR waste and commence closure of CCR units	April 11, 2021
Issue revised Corrective Measures Assessment Report	August 2021
Complete CCR removal from the Ash Drying Area (i.e., CCR landfill)	October 11, 2021
Public meeting to discuss results of revised Corrective Measures Assessment Report	February 2022
Select a groundwater remedy	April 2022
Complete CCR removal from CCR surface impoundments	November 2022

Tasks and anticipated completion dates presented in Table 1 are tentative and subject to change, but GVEA is committed to initiating closure of the CCR units no later than April 11, 2021.