GNEISS!! Exploring the Conklingville Dam Spillway and Foundation

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Conklingville Dam impounds the Great Sacandaga Lake, New York’s largest man-made reservoir, and provides flood control, power generation, and upstream and downstream recreation. The dam was constructed circa 1930 and is operated by the Hudson River - Black River Regulating District. As the dam approaches 100 years of service, the Regulating District is implementing a rehabilitation program. A primary goal is to repair the 425-foot long concrete ogee spillway weir and the narrow 70-foot tall bedrock foundation on which it is constructed. Directly upstream of the spillway structure is a 50-foot deep spillway channel cut from bedrock that also leads to a hydropower facility owned and operated by Brookfield Renewable. The concrete spillway weir has gradually deteriorated, the bedrock foundation has eroded, and there is seepage through both concrete and rock. The evaluation of the structure included a comprehensive exploration program to characterize the conditions of the spillway structure and foundation to assist the team in recommending repairs. The field explorations included physical surveys, digital scanning, drone photogrammetry and thermal imagery, 3D sonar bathymetry, underwater ROV video, concrete and rock coring, piezometric monitoring, laboratory testing, geologic mapping, packer testing, and downhole and surficial geophysics. We combined the results of these site characterization techniques into a 3D geologic model to facilitate evaluation, design, and stakeholder communication. This presentation will focus on the geologic data collection and incorporation into the 3D model to support a holistic review of the structural features of the bedrock and spillway. We will also present the unique challenges and lessons learned regarding difficult site access, multiple stakeholder coordination, and limited work windows inside the active and fluctuating intake channel due to complex project scheduling and real-time operational adjustments by the Regulating District in response to project obligations and seasonal weather patterns.