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FINDING OF NO SIGNIFICANT IMPACT
TENNESSEE VALLEY AUTHORITY
NOLICHUCKY DAM GATE ENVIRONMENTAL ASSESSMENT
GREENE COUNTY, TENNESSEE

The Tennessee Valley Authority (TVA) is considering alternatives to replace the spillway gate on Nolichucky Dam to support management of reservoir levels and perform dam safety inspections or investigations within the spillway portion of the dam to support the operation and maintenance of the TVA Reservoir System. An Environmental Assessment (EA) was prepared to evaluate the impacts of the proposed alternatives.

Alternatives

TVA evaluated two primary alternatives for replacement of the existing spillway gate in the EA: Alternative A – No Action; and Alternative B – Replace the Existing Gate. Two possible designs for the replacement of the spillway gate are being considered. One option would be to replace the gate with a system that is similar to what was in place when the gate was operational. A second option would be to replace the gate with two sluice gates. Because environmental impacts are expected to be similar regardless of which gate design is chosen, both designs were analyzed concurrently.

Over time sediment has built up on the upstream side of the dam, and as part of the proposed action, TVA is evaluating options within Alternative B to manage the sediment during replacement and operation of the gate. The Alternative B options being evaluated include the following.

- **Alternative B1 – Replace the Existing Gate and Dredge in the Nolichucky Reservoir:** Dredging and removing up to 10,000 cubic yards (yd^3) of built up sediment on the upstream side of the dam to be placed on-site

- **Alternative B2 – Replace the Existing Gate with No Dredging in the Nolichucky Reservoir:** Leaving built-up sediment on the upstream side of the dam in place allowing for some sediment loss during initial gate operations

- **Alternative B3 – Replace the Existing Gate and Place Riprap Upstream of the Gate:** Placement of small stone and riprap upstream of the dam in the reservoir and on shoreline to stabilize the sediment during gate construction and operation

Under the No Action Alternative, TVA would not replace the Nolichucky Dam gate. Consequently, TVA would not be able to temporarily remove water from the downstream face of the dam to allow inspection of the spillway. This alternative would not satisfy the project purpose and need and, therefore, is not considered viable or reasonable. It does, however, provide a benchmark for comparing the environmental impacts of the proposed alternative.

Under Alternative B1, TVA would replace the Nolichucky Dam gate and dredge up to 10,000 yd^3 of sediment from upstream of the dam. A floating dredge would be placed in the water via the existing upstream boat ramp at Bird's Bridge Access located 5 miles upstream from the dam. No construction activities would be needed at the Birds Bridge access site. The dredged

sediment would be pumped into discharge piping which would extend from the dredging operation on the water to one or both of the dredge material placement areas located on adjacent undeveloped TVA property. This property is currently used to access an existing substation and is not accessible to the public. Site preparation would include clearing and grubbing of vegetation. The vegetation would be placed on the ground to aid in erosion and sediment control. All trees over 3 inches in diameter would be left in place. Previously disturbed, paved areas near the entrance of the property would be used for temporary laydown and parking.

Dredge discharge piping would be placed onsite alongside an existing asphalt roadway loop and secured in place with fence posts. Geotextile fabric tubes, or Geotubes, would be located in the dredge material placement areas and used to capture the sediment slurry coming out of the discharge pipe. The tubes are an effective dewatering technology which provide confinement of the fine solids inside the container, while allowing water to permeate through the textile. As the water drains, the solids continue to densify and consolidate over time. Once the solids are fully consolidated, the tubes would be cut and removed, and the sediment material would remain onsite where it would be graded, blended into existing contours, and stabilized in place.

In support of this alternative, TVA would construct a temporary access road that would be located next to the dam. This ramp would be constructed with stone pushed to the edge of the reservoir and used as a service ramp for personnel and support equipment.

Under Alternative B2, TVA would replace the existing gate as described under Alternative B1. However, TVA would not dredge sediment on the upstream side of the dam and, therefore, implementation of this alternative would not include land disposal of dredged material. In addition, replacement of the dam gate under this alternative would utilize the existing access to the dam and would not require the construction of a temporary access road.

Under Alternative B3, TVA would replace the existing gate as described under Alternative B1 and B2. Similar to Alternative B2, TVA would not dredge sediment on the upstream side of the dam. However, TVA would use an excavator to place small stone overlain by riprap upstream of the dam in the reservoir and on exposed banks to stabilize sediment. This alternative would require approximately 4,500 yd^3 of riprap which would be obtained from existing permitted quarries in the area. Construction activities under this alternative would also require construction of the temporary access road as described for Alternative B1.

TVA's preferred alternative is Alternative B2 - Replace the Existing Gate and No Dredging in the Nolichucky Reservoir. Recent sediment transport modeling indicated that opening the gate would probably result in localized scour at the gate for a brief period. Further, the temporary elevation of the concentration of suspended solids in the river as a result of the scour would be much less than existing conditions at natural higher flows. Under this alternative, therefore, transport of sediment downstream while the gate is open would be minimal, and dredging would not be required. Alternative B2 is the preferred alternative as it would replace the inoperable gate with a new gate structure that would allow the water level to be managed to allow observation and inspection of the dam and would avoid additional environmental impacts associated with dredging and placement of riprap on the shoreline.

Impacts Assessment

Based on the analyses in the EA, TVA concludes that the implementation of Alternative B2 would have no impact on climate change, groundwater, floodplains, geologic resources, vegetation, wildlife, threatened and endangered species, wetlands, cultural and historic

resources, land use, transportation, or socioeconomics and environmental justice. Implementation of this alternative would allow TVA to manage the reservoir levels to temporarily remove water from the downstream face of the dam and perform safety inspections within the spillway. Routine safety inspections ensure the dam continues to meet regulations and maintains public safety in the vicinity. Therefore, impacts to public health and safety under this alternative are beneficial.

During construction of the gate, there would be minor, temporary impacts to air quality, noise, visual resources, and solid and hazardous waste. However, due to the temporary nature of construction (estimated as up to three months) impacts would be minor.

Minor adverse impacts to water quality are also expected immediately after the gate is opened. These adverse impacts are anticipated to be of short duration creating temporarily elevated concentrations of total suspended solids. Recent sediment transport modeling of the proposed action indicated that opening the gate would probably result in localized scour at the gate for a brief period. The modeling also indicated that the temporary elevation of the concentration of suspended solids in the river as a result of the scour would be much less than existing conditions at natural higher flows. Transport of sediment downstream while the gate is open therefore would be minimal, and dredging would not be required.

A small accumulation of sediment immediately behind the dam would pass through the gate once it is initially opened. However, these impacts would be of short duration and deposition is not expected to be widespread. As the effect from opening the gate is significantly less than the current bedload and sediment transport already occurring in the system, there will be no effect on federally listed mussels or critical habitat in the Nolichucky River. Only minor impacts to aquatic species are expected.

Impacts to water quality, aquatic resources and recreation as a result of periodic drawdown of the reservoir to allow inspection of the spillway would be minor. Drawdowns are anticipated to occur infrequently and be of short duration.

Alternatives B1, B2, and B3 all meet the purpose and need of the project as they would allow TVA to manage the reservoir levels to perform dam safety inspections or investigations within the spillway portion of the dam.

TVA's preferred alternative is Alternative B2 - Replace the Existing Gate and No Dredging in the Nolichucky Reservoir. Recent sediment transport modeling (West 2018) indicated that opening the gate would probably result in localized scour at the gate for a brief period. Further, the temporary elevation of the concentration of suspended solids in the river as a result of the scour would be much less than existing conditions at natural higher flows. As such, transport of sediment downstream while the gate is open would be minimal, and dredging would not be required. Therefore, Alternative B2 is the preferred alternative as it would replace the inoperable gate with a new gate structure that would allow the water level to be managed to allow observation and inspection of the dam and would avoid additional environmental impacts associated with dredging and placement of riprap on the shoreline.

Public and Intergovernmental Review

The Draft EA was released for public review and comment for 30 days beginning on July 3, 2018. The availability of the Draft EA was announced in the *Greenville Sun*, a newspaper that serves the Greene County area, and the Draft EA was posted on TVA's website. TVA notified local, state, and federal agencies and federally recognized tribes of its availability through their

required consultations. Pursuant to Section 106 of the National Historic Preservation Act, TVA consulted with the Tennessee State Historic Preservation Officer (SHPO) requesting concurrence that the proposed action would have no effect on cultural resources. The SHPO concurred on with this determination in a letter dated June 21, 2017. In addition, TVA received responses from The Cherokee Nation, Shawnee Tribe, and Thlopthlocco Tribal Town with no objections to the proposed project.

Mitigation

TVA would implement routine best management practices listed in the EA to avoid or reduce minor adverse environmental effects from the construction of the projects as described in the EA. The following BMPs would be used to minimize impacts and restore areas disturbed during proposed project activities.

- The first gate opening will be performed at flows less than or equal to 1,900 cubic feet per second (cfs), based on observations and forecasts from the TVA River Forecast Center.
- The TVA River Forecast Center will consider forecast rainfall and model runoff from the Embreeville and local watersheds when coordinating the best time for the first gate opening.

Additionally, for Alternatives B1 and B3, TVA would use turbidity curtains or other protective measures during instream construction to minimize the transport of sediment downstream.

Conclusion and Findings

Based on the findings in the EA, TVA concludes that its proposed action of replacing the gate on the Nolichucky Dam would not be a major federal action significantly affecting the environment. TVA's preferred alternative is Alternative B2 - Replace the Existing Gate and No Dredging in the Nolichucky Reservoir. Accordingly, an environmental impact statement is not required.

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9/21/2018
Date Signed