



Upper North River's Short Story:

The Soil Conservation Service (SCS) developed the original Watershed Work Plan for the Upper North River Watershed for the sponsor, the Shenandoah Valley Soil Conservation District (SWCD), in 1960.

This plan called for the construction of three flood control dams in the headwaters of the North River. These three structures are known today as Todd Lake (built in 1963), Elkhorn Lake (built in 1965), and Hearsthstone Lake (built in 1966).

The Headwaters SWCD assumed responsibility for the Operation and Maintenance (O&M) of Todd Lake and Hearsthstone Lake in 1993. The City of Staunton owns and maintains Elkhorn Lake.

When Hearsthstone Lake was built, it was considered to be a high hazard structure with the potential for loss of life. New analysis tools have revealed that the auxiliary spillway does not have the capacity to comply with Virginia dam safety regulations, and needs to be rehabilitated.

January 2015

Dam Rehabilitation Fact Sheet

Hearsthstone Lake, Upper North River Watershed



Looking upstream, this view of the Hearsthstone Lake Dam shows the pool and riser.

Flood control dams, such as Hearsthstone Lake, are designed to store floodwater during storm events and gradually release it into the stream over several days through the principal spillway pipe. This principal spillway riser and pipe regulate the daily water level in the dam and controls the rate at which the detained stormwater is released from behind the dam.

Excess water that cannot be stored in the reservoir exits through the grassy area at the end of the dam known as the auxiliary spillway. Hearsthstone Lake controls about 40 percent of the drainage area above Stokesville. In a dam breach, the floodwater would extend beyond the Town of Bridgewater.

The Headwaters Soil and Water Conservation District and the Augusta County Board of Supervisors have entered into a project agreement with the USDA Natural Resources Conservation Service to (NRCS) share costs for rehabilitating the dam. NRCS will pay 65 percent of the project costs and up to 100 percent of the construction costs. The sponsors will be responsible for the remaining 35 percent of the project funding. The estimated cost of this rehabilitation is \$2.95 million.

Hearthstone Lake At A Glance

Lake drainage area: 10,131 acres
Dam height: 107.3 feet
Dam length: 705 feet
Surface area at normal pool: 12.3 acres
Surface area at flood pool: 83.5 acres
Storage in normal pool: 134 acre-feet
Storage in flood pool: 2,800 acre-feet

The Hearthstone Lake Plan was completed in July 2015 and will continue into design and construction. The rehabilitation plan includes:

- Widening the auxiliary spillway from 250 to 342 feet. A 42-foot wide splitter dike will be installed to divide the auxiliary spillway into two bays to improve flow characteristics. The level (control) section will be moved upstream and lengthened to 70 feet.
- Raising the top of the dam 2.6 feet with earthfill and reseeding it. Raising the top of the dam and widening the auxiliary will increase its capacity enough to safely pass the flow from the Probable Maximum Precipitation storm event.
- Enhancing the stability of the vegetation in the auxiliary spillway by covering the level section and the constructed outlet with Turf Reinforcement Matting (TRM). The TRM will be covered with soil and vegetated with grass to look a lot like the existing spillway.
- Widening the footer of the concrete principal spillway riser to bring it into compliance with seismic design criteria.

Flood control dams also serve to trap sediment and keep it from moving downstream. In the 49 years since this dam was built, it has trapped about 59 acre-feet of sediment. Additional sediment storage was not included in the rehabilitation plan because 2012 calculations showed that the reservoir still had the capacity to retain sediment for the next 73 years.

Once design and construction are concluded, the dam's flood protection, recreation, and water quality benefits will continue for the next 68 years. For more information on Virginia watershed projects, visit www.va.nrcs.usda.gov/.



UNR 77 - Hearthstone Lake
VGIN 2011 Aerial Imagery



The rehabilitation project will widen the existing auxiliary spillway.



The Turf Reinforcement Matting (TRM) will not be visible after the project is completed.

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Natural Resources Conservation Service

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