Are our local Headwaters dams safe?

By Bobby Whitescarver, Special to The News Leader Published 9:22 p.m. ET May 28, 2020

The recent rupture of the Edenville dam in Michigan is a stark reminder of the importance of infrastructure maintenance and upgrades. The Edenville dam is an earthen dam in Midland that held back 2,600 acres of water known as Wixom Lake.

On May 19, floodwaters filled the inadequate emergency spillways and then overtopped the dam, causing it to rupture. Parts of Midland County and the city of Midland flooded. Eleven thousand people were evacuated, toxic waste washed into the raging Tittabawassee river, and a lot of property was destroyed.

Could the Edenville dam disaster have been prevented, or was the floodwater simply overwhelming? Regulators informed the owner of the dam in 1999 that its emergency spillways—wide, flat areas that direct floodwater around a dam to prevent the water from overtopping it—were not adequate to accommodate the rainfall caused by what authorities then called a probable maximum flood.

The probable maximum flood was defined as "the flood that may be expected from the most severe combination of critical meteorological and hydrological conditions that is reasonably possible in the drainage basin under study." The owners of the Edenville dam ignored regulators for 21 years and did nothing about the inadequate emergency spillways.

Could a dam failure happen here to one of the 11 earthen flood control dams operated and maintained by the Headwaters Soil and Water Conservation District?

I remember in the early 1990s when state regulators informed the directors of the Headwaters Soil and Water Conservation District that some of their dams had inadequate emergency spillways.

Our story is a little different than in Midland. The headwaters district, which serves Augusta County, and the cities of Staunton and Waynesboro, accepted responsibility, assumed a leadership role, and developed strong partnerships. The district directors took action, though at first, they had no money—like an unfunded mandate from the state.

The headwaters district and Augusta County launched a campaign to install an early warning system on the dams, and eventually the state came up with enough funds to widen one of the spillways. The district chose to widen the spillway at Lofton Lake, and it was the first flood control dam in Virginia to be upgraded to current dam safety regulations.

The regulations at that time required that permitted dams be able to accommodate the probable maximum flood through the emergency spillway. Today the probable maximum flood is called

the probable maximum precipitation, and for the dams in the headwaters district, the average is 26.5 inches of rain in a 24-hour period.

The Lofton Lake upgrade was completed in 1994. Since then the district, with its local partners and the Natural Resources Conservation Service and the Virginia Department of Conservation and Recreation, has upgraded the spillways of five more dams: Robinson Hollow (2007), Inch Branch (2008), Toms Branch (2010), Todd Lake (2016), and Hearthstone (2020).

“The headwaters district has an impressive record of cooperation with its partners that makes it a national leader in dam rehabilitation,” wrote Lisa Knauf Owen, chair of the National Watershed Coalition, a nonprofit organization, based in Oklahoma that assists watershed project sponsors.

Augusta County and the cities of Staunton and Waynesboro contribute annual funds to the district to employ a full-time dam maintenance technician; to conduct annual mowing and brush cutting; to develop emergency action plans; and to carry out other tasks, including annual inspections, to keep the structures safe.

“When I saw the video of the breech of the Edenville dam it gave me added resolve to maintain our dams in excellent condition and comply with regulations,” said Otis Bilkins, chair of the Headwaters Dam Safety Committee, in a recent interview.

We are fortunate that the headwaters district has taken dam maintenance seriously for so long.

There are nearly 2 million dams throughout the country. Many of these are past their design lifespan; they’re obsolete or unsafe. And most localities have allowed development downstream of the structures, which raises the potential for property damage and loss of life should a dam fail. And the risk of flooding is greater as climate change is causing more frequent and higher intensity storms.

Could one of our dams rupture like the one in Midland, Michigan? We can’t be certain, but I can assure you that the headwaters district directors and their employees take their responsibilities seriously and have done everything they can to maintain the integrity of the 11 flood control dams in their care.

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