

Doan Brook Restoration Near Horseshoe Lake Park

Frequently-Asked Questions

Q: Where can I get more information / see the presentation recording / watch the informational video?

A: The Northeast Ohio Regional Sewer District is posting all updates to our dedicated online landing page at www.neorsd.org/shakerlakes.

Q: What are you planning to do with the dams at Horseshoe Lake and Lower Lake?

A: Safety is everyone's top priority. Neither dam is in compliance with the State of Ohio Regulations pertaining to dam safety and Ohio Department of Natural Resources, who oversees the Dam Safety Program, has ordered the Cities of Cleveland Heights and Shaker Heights to resolve these critical dam problems.

Through our Regional Stormwater Management Program's "Chagrin and Lake Erie Tributaries Stormwater Master Plan" NEORSD has identified notable flood control benefits at Lower Lake. The same cannot be said for Horseshoe Lake: flood control benefits were insignificant because it has a much smaller drainage area flowing into Horseshoe Lake from upstream via the north branch tributary of Doan Brook.

Therefore, the Sewer District's recommendation is to remove the dam at Horseshoe Lake, restore Doan Brook to its natural state and replace the dam at Lower Lake. The former Horseshoe Lake pool will be converted to new free-flowing Doan Brook corridors planted with trees and native vegetation. A natural Doan Brook stream will be restored to the area.

Q: Why is the dam failing?

A: Horseshoe Lake Dam is more than 170 years old and stretches all the way from North Park Boulevard to South Park Boulevard, approximately 615 feet in length. It is an "earthen" dam and the stone portion you see is just the spillway, or the area where water is supposed to exit the Horseshoe Lake in a safe manner.

Over the years, the Cities have completed some minor repairs but the major problems are related to the age of the originally-constructed dam. Seepage through the earthen dam and masonry joints, cracking in the masonry and sinkholes indicate the dam is unstable and deteriorating.

Q: Why can't you just replace it?

A: We estimate a cost of \$28.3 million to remove the dam at Horseshoe Lake, fully restore Doan Brook and eventually replace the dam at Lower Lake. The Sewer District can pay for this solution through the Regional Stormwater Management Program.

The Horseshoe Lake dam could be replaced but the Sewer District cannot fund the replacement with Regional Stormwater Management Program dollars because there is no significant flood control benefit to the region, which includes Cleveland Heights, Shaker Heights and the City of Cleveland. Flood control isn't the only thing we look at; we also consider issues like streambank erosion and water quality when we're developing the Master Plans and prioritizing projects.

To replace the dam, we estimate the replacement cost to be \$20.7 million because a lot of sediment must be removed from the current lake bed to the depth required for a healthy lake. The dam replacement at Horseshoe Lake provides no regional stormwater benefit and as such, it would be a cost born by other entities, not the Sewer District.

Q: Did you look at any alternatives?

A: We did. We looked at removing both dams at Horseshoe Lake and Lower Lake, replacing both dams, and keeping just one of the two dams. This solution – removing the dam at Horseshoe Lake, restoring Doan Brook to a more natural state, and replacing the dam at Lower Lake – maximizes stormwater flood control, maintains the size of Lower Lake and improves stream function throughout the Doan Brook Watershed.

There are three main factors we need to consider: safety, flood control and ODNR compliance. Safety is #1. If this dam fails, it would likely be catastrophic.

Q: What is it going to look like when complete?

A: The Sewer District will hire a landscape architect and stream restoration expert as part of the design team. If you've ever been to the Nature Center at Shaker Lakes, you can see Doan Brook in a much more natural state than what we have at

Horseshoe Lake Park. We want to create an improved, safe and natural asset for the community that eliminates the risk of a failing earthen dam.

Q: How will you manage stormwater if there's no lake?

A: When Horseshoe Lake Dam was constructed 170 years ago, it was designed to power mills operated by the Shakers until 1889 when the community disbanded. Horseshoe Lake and its dam was never intended to provide flood control and has primarily served as an aesthetic water feature since the late 1800s.

By restoring Doan Brook, adding vegetation and sinuosity (or curves along the stream) that were once there, and constructing a floodplain throughout the area, we will be able to manage stormwater the way nature intended, reducing flooding along area roads and downstream.

Lakes, such as Lower Lake and Horseshoe Lake were not really designed for flood control because they're already filled with water. There is minimal active storage of stormwater at Horseshoe Lake, which is the amount of additional water that can be stored during heavy rains.

Lower Lake, on the other hand, does provide significant active storage during rain events to minimize downstream flooding and with improvements made to the Lower Lake dam during reconstruction, this dam could provide more active storage than it currently does. This is beneficial to overall flood control in the Doan Brook watershed due to Lower Lake's position of being downstream of Horseshoe, Green and Marshall Lakes. Lower Lake serves as a point of control for managing larger rain events in the watershed.

Q: How long will this project take?

A: This project will take some time to design and construct, and we are just working on Horseshoe Lake now. We hope to begin the design process for the dam at Lower Lake the next year or two. We hope to release the RFP (Request for Proposals) for the "Doan Brook Restoration Near Horseshoe Lake Park" project this summer. Design will not be complete until late 2023, then we will bid the project for construction in 2024. The construction duration is currently not known because it depends on design details but we anticipate it may take two years to complete all construction within the dam and lake footprint.

Q: How much will this project cost?

A: The Sewer District will invest \$28.3 million to restore Doan Brook near Horseshoe Lake Park and replace the dam at Lower Lake. This improves stream function and

maintains the size of Lower Lake, complies with ODNR and protects area assets. We will actively reach out to key stakeholders throughout the design process.

Q: Where is the flooding occurring?

A: Coventry Road and North Park Boulevard flood regularly when the Lower Lake dam overtops which replacement of Lower Lake dam would resolve. Lee Road and South Park Road, which cross Doan Brook downstream of Horseshoe Lake and upstream of Lower Lake also are susceptible to flooding if severe overtopping of Horseshoe Lake occurs. Further downstream from Lower Lake, University Circle and Martin Luther King Jr. Boulevard frequently flood during large storm events.

Q: Why will you replace the dam at Lower Lake and not Horseshoe Lake?

A: Lower Lake's drainage area is 4.8 square miles, whereas Horseshoe Lake's drainage area is only 1.8 square miles. Lower Lake is what we call a "point of control" because the flows from not only Horseshoe Lake, but also Marshall Lake and Green Lake, drain or flow into Lower Lake and there is significantly more storage opportunity at Lower Lake that will assist with regional stormwater management and flood control.