

Lower Shaker Lake Dam Reconstruction

Frequently Asked Questions (October 2023)

ABOUT THE PROJECT

Q: Why is the Northeast Ohio Regional Sewer District involved in this project?

A: The Cities of Cleveland Heights and Shaker Heights are responsible for dam safety regulatory compliance overseen by the Ohio Department of Natural Resources.

The Northeast Ohio Regional Sewer District has a Regional Stormwater Management Program that manages drainage areas greater than 300 acres in our service area and this portion of Doan Brook falls within the responsibilities of the Program.

The Sewer District is collaboratively working with Cleveland Heights, Shaker Heights and other key stakeholders for this work.

Q: Who oversees this project?

A: The Northeast Ohio Regional Sewer District is overseeing the reconstruction of the dam to satisfy ODNR dam safety criteria, which is the project that currently has funding to be implemented through the Regional Stormwater Management Program.

Q: Who is designing this project?

A: HDR is a nationally-renowned civil engineering firm with extensive experience in dam safety, design and construction. HDR is leading the design team consisting of SmithGroup, Lawhon & Associates, Bluestone and AECOM.

Q: How was the design team selected?

A: The team led by HDR was selected through an open Request for Proposal issued by the Sewer District. Staff from the Sewer District and the Cities of Cleveland Heights and Shaker Heights reviewed and ranked proposals from three design teams who submitted qualifications for this project. Two finalists were selected and invited for interviews in February 2023.

Two members of City staff—one from Cleveland Heights and one from Shaker Heights—participated on the selection committee.

Q: What are you planning to do with the dam at Lower Shaker Lake?

A: The dam at Lower Shaker Lake is not in compliance with the State of Ohio Regulations pertaining to dam safety. Additionally, through NEORSD’s Regional Stormwater Management Program’s “Chagrin and Lake Erie Tributaries Stormwater Master Plan,” Lower Shaker Lake was shown to provide flood control benefits. Therefore, the Sewer District’s recommendation is to replace the dam under the Regional Stormwater Management Program and bring it into compliance as a Class 1 dam under the State of Ohio Regulations.

Q: What research has NEORSD done to know if this is the right solution?

A: The Sewer District completed an extensive \$10 million multi-year stormwater master planning process throughout Doan Brook and other Lake Erie tributaries, resulting in the “Chagrin and Lake Erie Tributaries Stormwater Master Plan.” This included ecological evaluations, field surveys, rainfall and stream monitoring, stormwater modeling, geotechnical investigations, sediment sampling, consultation with historic resource experts, and evaluation of numerous alternatives. The Sewer District has thoroughly modeled and studied the Doan Brook watershed and is recommending the best solutions to holistically address flooding, erosion, and water quality issues to the communities.

DAMS

Q: Why does the dam have to be replaced?

A: The dam is the responsibility of both the Cities of Cleveland Heights and Shaker Heights as owners of the dam. Since Lower Shaker Lake Dam is out of compliance with the State of Ohio regulations pertaining to dam safety, the Ohio Department of Natural Resources, who oversees the Division of Water Resources - Dam Safety Program, has ordered the Cities of Cleveland Heights and Shaker Heights to resolve this critical dam problem.

The dam is recognized by the State of Ohio’s Department of Natural Resources as a Class I high hazard dam, which means that should the dam break during a major storm event, there is a probable loss of life.

The Sewer District’s Regional Stormwater Management Program works to solve intercommunity stormwater issues such as flooding, streambank erosion and

water quality. The Stormwater Master Plan for this area shows flood control benefits of this dam downstream, which is consistent with the requirements of the Regional Stormwater Management Program, and therefore Regional Stormwater Management Program funds can be used for the construction of a new dam at Lower Shaker Lake.

In addition to flood control, we consider issues like risk associated with an artificial stream impoundment, safety concerns, streambank erosion, water quality, environmental improvements, and ecological improvements when we're developing the Stormwater Master Plans and prioritizing projects.

Q: Why is the dam failing?

A: Lower Shaker Lake Dam is more than 180 years old and stretches across Doan Brook from North Park Boulevard to nearly South Park Boulevard. It is an earthen dam and the stone portion you see is just the spillway, or the area where water is supposed to exit Lower Shaker Lake in a safe manner.

DESIGN PROCESS

Q: What does “pre-design” mean? How does this differ from “design”?

A: We are in the early stages of the Lower Shaker Lake Dam Reconstruction project's “pre-design” phase. This is the phase where the design team (led by HDR) gathers data and information to guide the development of several alternatives. This will be done through public engagement, field data collection and engineering analyses.

Pre-design will last approximately 15 months, and the team will identify a preferred alternative to reconstruct the dam and design a spillway that can pass the “probable maximum level” of flood.

Following pre-design, the design team will enter the “detailed design” phase of the project. They will further refine and develop construction plans to reconstruct the dam to modern engineering standards.

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

A: We are in the pre-design phase, and so it is too early to present alternatives and visual renderings. The Sewer District has hired expert civil engineering and landscape architecture professionals as part of the design team. We will create an improved and safe asset for the community.

Your participation in our public outreach meetings and surveys will be vital throughout the pre-design and design processes. There will continue to be numerous opportunities for residents to meet with the design team, share ideas, and provide information as we embark on this new project.

Q: Will there be a path around the park in the future?

A: Changes to the park have not been fully designed yet, but considerations for spaces to include walking paths will be reviewed with the communities.

Q: How does this project intersect with the Doan Brook Restoration near Horseshoe Lake Park project?

A: These are separate projects with different consultant teams. The consultant teams for both projects will regularly interact as directed by the Sewer District to ensure they are sharing relevant information. Both project teams will continue to communicate with the cities and stakeholders.

Q: Will the lake be drained during construction?

A: More information will be available as we move through the pre-design process and better understand the alternatives to replace the dam.

Q: Will Brook Road be closed during construction?

A: It is likely that Brook Road will be closed during construction for the safety of park users. The closure duration is not yet known. The design team understands the popularity of the park area and will look for opportunities to minimize the duration of the road closure.

FUNDING

Q: Who is going to manage and maintain the project after it's done? Who is paying for this project?

A: The Sewer District will manage and maintain the Doan Brook stream corridor. The Cities of Cleveland Heights and Shaker Heights will manage and maintain any improvements made to the surrounding parkland.

The Sewer District is paying for the removal and reconstruction of the dam at Lower Shaker Lake, sediment management, and re-establishing connectivity between North Park and South Park Boulevards. The Sewer District is also paying for the landscape integration planning that is part of this design process and will

continue to work collaboratively with the Cities of Cleveland Heights and Shaker Heights on park planning.

Q: What will Cleveland Heights and Shaker Heights need to pay for? Where are those dollars going to come from?

A: The Sewer District is responsible for the costs of dam reconstruction through the Regional Stormwater Management Program. Any additional costs associated with park improvements would be discussed in the design phase.

Q: What is currently happening with the grant funding for the new trail in Shaker Heights along South Park Boulevard?

A: The City of Shaker Heights has started designing the new trail along South Park Boulevard. The Sewer District is coordinating with the City to understand future impacts on the trail. Any trail sections impacted by dam construction will be repaired or rebuilt.

A grant of \$309,727 has been received from ODNR. The city match is \$103,240 for a total project cost of \$412,962. GPD engineers has been hired to design the project and public engagement will kick off this fall.

Q: Who makes the final decisions about this project?

A: The Sewer District will work in partnership with the Cities of Cleveland Heights, Shaker Heights, and Cleveland.

STORMWATER MANAGEMENT

Q: Where is the flooding occurring?

A: There are two types of flooding to consider.

The first is flooding during storm events from lack of stormwater management, development in the Doan Brook watershed, and the significant amount of impervious surface throughout the watershed. Examples of this include further downstream from Lower Shaker Lake, repeated flooding in University Circle and within and along Martin Luther King Jr. Boulevard at the City of Cleveland Cultural Gardens. NEORSD's stormwater model developed for the "Chagrin River and Lake Erie Tributaries Stormwater Master Plan" (SWMP) demonstrated that Horseshoe Lake does not directly cause flooding, nor does it solve flooding, in University Circle. This model result is one of the primary reasons NEORSD cannot reconstruct the Horseshoe Lake Dam. However, the SWMP determined that

Lower Shaker Lake Dam does provide a flood control benefit in University Circle and Martin Luther King Jr. Boulevard and justifies reconstruction of the dam.

The second type of flooding is due to a dam failure which would result in the release of a large quantity of water which would likely result in the loss of life and property damage occurring immediately downstream and continuing to University Circle. This has been documented through a dam break analysis for the Emergency Action Plan (EAP) which was completed per ODNR's guidelines and reviewed and approved by ODNR's Dam Safety Program. Lower Shaker Lake Dam is classified by ODNR as a Class I high hazard dam based on the risk of downstream flooding due to a dam breach, not due to a large storm event.

Q: What is the Sewer District doing with the culverted section of Doan Brook in University Circle?

A: The Chagrin River and Lake Erie Tributaries Stormwater Master Plan (SWMP) identified conveyance limitations in the culverted stream segments of Doan Brook through University Circle that contribute to flooding. Recommendations in the SWMP included increasing conveyance (flow) capacity of these culverted stream segments.

NEORSD has started a feasibility study to determine if increased conveyance is an option, whether by enlarging the existing culvert or adding a parallel culvert for conveyance. The study will also identify constraints for implementation and results of this study are expected late-2023.

TIMELINE

Q: How long will this project take?

A: The Sewer District is just beginning the pre-design phase of the Lower Shaker Lake Dam Reconstruction project, and this is expected to continue for another 12 months (Sept. 2024). Our next public engagement meetings will likely occur in April/May 2024 and Sept. 2024.

The next step will be to move into the detailed design phase which is expected to be completed at the end of 2025, then the Sewer District will bid the project for construction. The construction is expected to begin in mid-2026 and continue through early 2029.

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

A: Lower Lake's drainage area is 3,121 acres, whereas Horseshoe Lake's drainage area is 1,180 acres. Lower Lake is what we call a "point of control" because the flows from the North branch of Doan Brook (where Horseshoe Lake is located), but also from the South branch (where Marshall Lake and Green Lake are), drain or flow into Lower Lake and there is more storage opportunity at Lower Lake that will assist with downstream flood control.

Q: What have you been doing so far on this project?

A: As of October 2023, the design team has been performing topographic surveys, structural inspections, geotechnical exploration, tree surveys, sediment sampling and fish relocation.

ENVIRONMENT & ECOLOGY

Q: What about the bird population? Where are the birds going? Will there be bird habitat?

A: The Sewer District's project will not significantly change the existing habitat.

Q: What will you do with the fish in the lake? Where will the birds swim?

A: We relocated some native fish species prior to lowering the lake level in Sept. 2023, and will do so in the future if needed.

Q: What is the difference between a natural lake and an artificial lake?

A: Manmade lakes are artificially created by damming a river or other waterbody. Lakes rise and lower with the seasons and weather, so species living there have adapted to seasonal changes.

Artificial lakes permanently change habitats. Creating a waterbody permanently affects the existing ecosystem in which it's established. Fish cannot move freely throughout the watershed and biodiversity is permanently impacted.

Q: What species of fish live in Lower Shaker Lake?

A: Fish are great bioindicators. Some species are replaced over time by others – often invasive – that are better suited to conditions created by dams. Fish need safe places to lay eggs and dams change those habitats.

- Native fish species: green sunfish, pumpkinseed sunfish, bluegill sunfish, largemouth bass, and creek chub.
- Invasive fish species: common carp and goldfish.
- Native mussel species: giant floater, paper pondshell, and lilliput.

HISTORY

Q: How will history be told / displayed in the future?

A: Embracing the history of this site is important to the Sewer District and the Cities of Cleveland Heights and Shaker Heights. In addition to a local historian and archaeologist on the design team, we have been coordinating with the Ohio Historic Preservation Office.

OTHER QUESTIONS

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

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

Q: How do I share my opinion?

A: Please join us in the public engagement process! Our first formal event will be Saturday, October 7, 2023, at the Lower Shaker Lake Dam Spillway (Brook Road between North Park and South Park Boulevards).

We will be at a variety of events in your community, including Shaker Heights Historical Society's AppleFest, Nature Center at Shaker Lakes AutumnFest, and more!

Our next public engagement opportunities include a virtual public meeting and engagement open house in April/May 2024. Details and registration will be available at www.neorsd.org/LowerLake.

All prior virtual meetings are posted at www.neorsd.org/LowerLake.

The Sewer District's Customer Service email address is askus@neorsd.org.