Northeast Ohio Regional Sewer District

Lower Shaker Lake Dam Reconstruction

Frequently Asked Questions (October 2024)

ABOUT THE PROJECT

Q: Why is the 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 (ODNR).

The Sewer District has a Regional Stormwater Management Program that manages streams that drain 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 stakeholders, including the City of Cleveland as the property owner, on this project.

Q: Who oversees this project?

A: The Sewer District is overseeing the reconstruction of the dam to satisfy ODNR dam safety regulations, and this project is funded through the Regional Stormwater Management Program.

Q: Who is designing this project?

- A: HDR is a civil engineering firm with extensive experience in dam safety, design, and construction. HDR is leading the design team including:
 - SmithGroup, landscape design services
 - Lawhon & Associates, historical and cultural resource review and analysis
 - Bluestone Conservation, local archaeological services
 - DLZ, structural design
 - Sustainable Streams, streambank stabilization
 - AECOM, additional civil engineering support

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, together with Sewer District staff.

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 for dam safety. Additionally, through the Sewer District's Regional Stormwater Management Program's Chagrin River and Lake Erie Tributaries Stormwater Master Plan, Lower Shaker Lake Dam was shown to provide stormwater flood control benefits to downstream areas. Therefore, the Sewer District's recommendation is to reconstruct the dam under the Regional Stormwater Management Program and bring it into compliance as a Class 1 dam under State of Ohio dam safety regulations.

Q: What research has The Sewer District 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 River 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, streambank erosion, and water quality issues.

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 implements the Division of Water Resources - Dam Safety Program, is requiring the Cities of Cleveland Heights and Shaker Heights to resolve the dam safety non-compliance deficiencies.

The dam is recognized by the ODNR as a Class I High Hazard dam, which means that should the dam fail, there is a probable loss of life and damage to property.

The Sewer District's Regional Stormwater Management Program solves 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, which is consistent with the requirements of the Regional Stormwater Management Program. As a result, 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 during development of the Stormwater Master Plans and prioritizing projects.

Q: Why is the dam not in compliance with State of Ohio dam safety requirements?

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 visible stone portion is the dam's spillway, or the area designed to safely pass water from the lake to the downstream channel.

ODNR has identified deficiencies with the dam, the most serious being the limited spillway flow capacity, i.e. the maximum amount of water able to pass through the spillway. The consultant team has evaluated the existing dam during the pre-design phase. This work confirmed the limited spillway flow capacity and identified stability concerns related to the existing spillway and earthen embankments.

DESIGN PROCESS

Q: What does "pre-design" mean? How does this differ from "detailed design"?

A: We are in the Lower Shaker Lake Dam Reconstruction project's "pre-design" phase. This is the phase where the consultant team gathers data and information to guide the development of several proposed 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 to safely pass the Probable Maximum Flood (PMF) and meet current dam safety regulations.

Following pre-design, the design team will enter the "detailed design" phase of the project. This phase will further refine the design and develop construction plans to reconstruct the dam to current engineering standards based on the alternative selected from the pre-design phase.

Q: What is a Probable Maximum Flood?

A: The Probable Maximum Flood (PMF) is the design storm that results from the most severe combination of critical meteorologic and hydrologic conditions that are reasonably possible in the drainage area. It is specific to the geographic location of the actual dam. The PMF and the associated Probable Maximum Precipitation are developed using published criteria developed for the state of Ohio, required by the ODNR Dam Safety Program.

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 detailed alternatives and visual renderings. The Sewer District has hired expert civil engineering and landscape architecture professionals as part of the pre-design team. We will create an improved asset that ensures the safety of the community that complies with Ohio dam safety standards.

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

Q: What will the floodwall look like along North Park and South Park Boulevards?

A: This will be determined during the next phase of this project, the detailed design phase. As we work through pre-design, many factors are still in conceptual form. We know that the floodwall is required to safely pass the Probable Maximum Flood (PMF), but the exact height and materials will be determined as we move forward with this project in the detailed design phase.

Q: What factors contribute to the height of the floodwall?

A: The top of the floodwall will match the water elevation of the Probable Maximum Flood (PMF). During larger storm events, these floodwalls will contain flood waters and direct flood waters through the new spillways and over the reconstructed dam to reduce the impact to adjacent roads and structures. The proposed improvements meet ODNR Dam Safety requirements.

Q: Will the floodwall impact our views of the lake?

A: Due to ODNR's Dam Safety requirements that the reconstructed dam must safely pass the Probable Maximum Flood (PMF), it is necessary to design and construct floodwalls along both North Park and South Park Boulevards. During larger storm events, these floodwalls will contain flood waters and reduce the impact to adjacent roads and structures. The floodwalls will change the viewshed in some areas, but the Sewer District is working with the design team's landscape architects to integrate them into the existing landscape and enhance other areas of the park to minimize the impact.

Q: When the project is complete, will I still be able to park my car along Brook Road?

A: During construction and when the project is complete, parking will not be possible on the new structure.

Q: Can I still walk around the lake?

- A: When the project is complete, pedestrian connectivity between North Park and South Park Boulevards will be restored via the top of the reconstructed dam. During construction, there will be temporary impacts to pedestrian traffic in and around active construction zones.
- Q: Why does there need to be a second spillway?

A: A second (auxiliary) spillway is necessary so elevated flows generated by large storm events can pass through the dam safely. Currently, only two percent of the Probable Maximum Flood can safely pass through the existing spillway at Lower Shaker Lake before water begins to flow uncontrolled over the dam and into the North Park Boulevard / Coventry Road intersection. The second (auxiliary) spillway will add to the combined spillway capacity and greatly limit the uncontrolled flood risk that currently exists at the dam.

Q: Where does the second spillway take the water?

A: A second (auxiliary) spillway will be routed across Coventry Road and will outfall into the historic Doan Brook, immediately west of Coventry Road.

Q: Will we get to choose park amenities like the Doan Brook Restoration near Horseshoe Lake Park project?

 A: Due to regulatory and historical constraints of this project, the opportunities for park amenities are limited. The overall footprint of Lower Shaker Lake will remain about the same size, and therefore there is limited room to add new features. During the detailed design phase of the project, collaboration with the Cities on possible opportunities will continue to be discussed.

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 via the Sewer District.

Q: Will the lake be drained during construction?

A: It is anticipated that the lake will be temporarily drained during significant periods of construction. However, more information will be available as we continue to move through the pre-design and detailed design processes and better understand the construction methods to replace the dam which will dictate the need and duration for lake draining or partial dewatering of the lake.

Q: Will Brook Road be closed during construction?

A: Brook Road will be closed during construction for the safety of park users. The closure duration is not yet known. At the conclusion of the project, this area will be reopened to pedestrians only. Public parking will not be provided any longer

on the top of the dam. The design team understands the popularity of the park area and will look for opportunities to minimize the duration of the closure to pedestrian use.

Q: Will Coventry Road be closed during construction?

A: Coventry Road will be impacted by the construction of the outlet for the second (auxiliary) spillway. There will be either partial or full closure of Coventry Road within the construction area for a period. The decision to move forward with full or partial closure will be made during the detailed design phase, which will begin in 2025.

Q: What impacts are anticipated for the historic Doan Brook?

A: During larger storms, much of the flow that currently spills over the low spot (right side of dam crest, or top of dam) re-enters Doan Brook, downstream of Coventry Road. This condition does not change significantly since the second (auxiliary) spillway outlets into Doan Brook. While conditions are anticipated to be somewhat similar, the design team is evaluating streambank stabilization measures that may be necessary to mitigate the threat of erosion and stream channel scour. Additional details will be developed during the detailed design phase.

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 cities will remain owners of the dam.

The Sewer District is paying for the removal and reconstruction of the dam at Lower Shaker Lake, and re-establishing connectivity between North Park and South Park Boulevards through the Regional Stormwater Management Program.

Q: Will the new trail in Shaker Heights along South Park Boulevard be impacted?

A: The City of Shaker Heights has recently built a new trail along South Park Boulevard between Coventry Road and North Woodland Road. GPD Group designed this trail, and meetings were held with residents and stakeholders throughout this process. The Sewer District is coordinating with Shaker Heights to understand future impacts on the trail. Any trail sections impacted by dam reconstruction will be repaired or rebuilt.

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: Flooding downstream in University Circle during storm events is the result of the lack of stormwater management during the development of the Doan Brook watershed, and the significant amount of impervious surface throughout the watershed.

The Sewer District's stormwater model developed for the Chagrin River and Lake Erie Tributaries Stormwater Master Plan (SWMP) determined that Lower Shaker Lake Dam provides flood control benefit in University Circle and Martin Luther King Jr. Boulevard and justifies reconstruction of the dam.

Flooding can also be caused by a dam failure which would result in the release of a large volume of water, ultimately resulting in probable 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) for Lower Shaker Lake, 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 or uncontrolled failure of the dam.

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.

The Sewer District completed a feasibility study that evaluated increasing the conveyance capacity of the culvert by enlarging the existing culvert or adding a parallel culvert for conveyance. The study also identified constraints for implementation.

TIMELINE

Q: How long will this project take?

A: The Sewer District is completing the pre-design phase of the Lower Shaker Lake Dam Reconstruction project. The next step will be to move into the detailed design phase, which is expected to be completed in 2026, then the Sewer District will bid the project for construction. The construction is currently scheduled to begin in early 2027 and continue through early 2028.

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

A: Lower Shaker Lake's drainage area is 3,224 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), and from the south branch (where Marshall Lake and Green Lake are located), drain or flow into Lower Shaker Lake. There is more opportunity for flood storage at Lower Lake due to its location within the watershed that assists with downstream flood control. Without a dam at Lower Lake, flood risk to downstream areas increases.

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

A: Since our last public engagement in July 2024, the pre-design team has been performing topographic surveys, structural inspections, geotechnical exploration, tree surveys, sediment sampling, and assessments of the existing dam features. Following the existing condition assessment, the team has been developing conceptual alternatives for the necessary dam safety improvements. In addition, we continue to meet with city officials and stakeholders to ensure they are fully informed throughout this project.

ENVIRONMENT & ECOLOGY

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 and often specific places or habitats 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 will continue coordinating with the Ohio Historic Preservation Office.

OTHER QUESTIONS

Q: Where can I get more information / see the presentation recordings / 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 next in-person event will be in the Spring of 2025, or you can email us at askus@neorsd.org.

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

The Sewer District's Customer Service email address is <u>askus@neorsd.org</u>.