

As requested by the City of Cleveland Heights and when appropriate, the Northeast Ohio Regional Sewer District has provided answers to resident and City Council questions submitted following the Gannett Fleming presentation on October 25, 2021.

#	Questions from the Public	NEORSD Comments (Provided 11/5/21)	Gannett Fleming Response (Provided 11/8/21)
1	<p>If Horseshoe Lake is dredged to a greater depth, and a dam rebuilt, can the resulting lake have an active storage capacity that could help reduce the flood control capacity of Lower Lake? If not, why not. My thought is that a new Horseshoe Lake could assist if times of flooding by actively storing storm water, and reduce the storage necessity of Lower Lake. <i>(Online form, Michael Madorsky)</i></p>	<p>Lake depth has nothing to do with active storage. The active storage is the volume of water from the normal lake surface to the very top of the dam crest, so dredging the sediment would not have an impact.</p>	<p>Gannett Fleming agrees with NEORSD response.</p>
2	<p>According to NEORSD, Horseshoe Lake drains an area about 1/3 the size of Lower Lake's drainage area. I believe the numbers were something like 1.8 sq. mi. compared to 4.8 sq. mi.</p> <p>Obviously, both a permanent rehabilitation of the dam and removal of the dam will alleviate the current danger to life and property downstream caused by the damaged dam.</p> <p>So if (a) both options alleviate the risk and (b) the dam option actually provides at least *some* stormwater storage capabilities, why would the NEORSD be so vehemently against the dam option?</p> <p>Especially since the Gannett consultants have stated that they didn't believe NEORSD took cost into consideration, not to mention the fact that Gannett admitted the cost estimates were very rough estimates at this point and that all 4 options were roughly the same cost when taking contingencies into account? <i>(Online form, Noah Collin)</i></p>	<p>The District's Regional Stormwater Management Program manages stormwater and looks for the best stormwater management solution. The District balances many factors, including cost and benefit.</p> <p>Lower Lake provides flood reduction benefits so the District is prepared to invest in the replacement of the Lower Lake Dam. The Stormwater Master Plan results indicated that the Horseshoe Lake Dam did not add to the reduction of flooded structures beyond the reductions achieved through replacement of the Lower Lake Dam. Lacking this benefit, the overall costs of keeping an impoundment along a stream system are not justified in terms of the District's mission.</p> <p>The communities could choose to replace the dam at Horseshoe Lake, but the Sewer District cannot fund the replacement with Regional Stormwater Management Program dollars because there is no additional flood control benefit to the region, which includes the City of Cleveland Heights, the City of Shaker Heights, and the City of Cleveland.</p>	<p>Question best answered by NEORSD. GF does not take issue with NEORSD response.</p>

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		<p>The water quality and stream function benefits of removing dams are well researched and accepted by environmental organizations and agencies such as the U.S. Fish and Wildlife Service, American Rivers, and the US EPA.</p> <p>Class I dams, even new ones, pose a high risk to human life and property which is why they are closely regulated. Also, as stated by Gannett Fleming during their presentation, Class I dams do require regular maintenance, repairs, and inspections since they are engineered structures.</p>	
3	<p>Mr. Kingston said that NEORSD and Wade Trim “alluded” to other environmental analyses being done but could not produce any actual analysis. Mr. Kingston believes that maybe they took a more “qualitative approach to assessing topics” instead of producing an official written analysis.</p> <p>Question: Is it typical for large public works projects to produce non-written, qualitative environmental analyses?</p> <p>It seems that since environmentalism is one of the reasons cited for removing the dam, an erosion and water quality analysis would have been done long ago. Now we are told that they either were not done at all or were done in a "qualitative" and non-written manner. <i>(Online form, Noah Collin)</i></p>	<p>The environmental analysis done for this project was consistent with all the District Stormwater Master Plan Studies. This study included the Doan Brook Aquatic Life Technical Memorandum as well as a geomorphic assessment to evaluate existing erosion conditions. Individual qualitative analyses of the environmental benefits of removing dams were not performed since the water quality, stream function, and aquatic habitat benefits of dam removals are well researched and widely accepted by environmental agencies and organizations.</p> <p>Under the National Environmental Policy Act (NEPA), an Environmental Assessment (EA) or an Environmental Impact Statement (EIS) is required for some federally funded projects or when certain federal permits are necessary. If the City of Cleveland Heights and the City of Shaker Heights decide to move forward with the District-proposed recommendation to remove the dam using District funds, the federal government will not be paying any portion of the project and such permits are not expected here. Therefore, a formal EA/EIS has not</p>	<p>The appropriate level of detail of analysis and documentation of environmental issues for large public works projects is determined by permitting requirements, funding requirements, and decision-making requirements. GF agrees that an EA or an EIS will likely not be required in this situation. Additional detail or documentation would only be necessary if required by state or federal regulators during the permitting process or to assist NEORSD in decision-making. For instance, additional detail may assist in choosing between alternatives that have similar costs and benefits. The project-specific environmental requirements will likely be identified with the permitting agencies during a preapplication meeting at a later point in the design process. GF agrees that the environmental</p>

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		been performed and such requirement is not expected.	benefits of removing dams are well researched and widely accepted in the industry.
4	<p>Is it typical for a project of this magnitude to only investigate one dam rehab design for each dam? Why didn't the NEORSD's extensive plan investigate multiple options?</p> <p>It seems like the only reason someone would provide a single option (with cost estimates encompassing huge contingencies) is because they don't want them to choose the dam option. If there were 3-5 options, it might actually encourage the cities to pursue one of those designs.</p> <p>Mr. Kingston mentioned different types of overtopping protection and spillway designs that were not pursued in the plan options.</p> <p>Again, Mr. Kingston said that NEORSD referenced some supposedly unwritten investigation in his meeting with them, but nothing was in the final report except the single options at each of the dams. <i>(Online form, Noah Collin)</i></p>	<p>Multiple options were considered as part of the Stormwater Master Plan process; however, Horseshoe Lake Dam is in active failure mode and must be removed. This analysis is planning-level to identify the benefits and/or drawbacks to certain alternatives. During this process, some alternatives are eliminated due to a variety of reasons including cost, maintenance needs and construction feasibility. This is typical for a planning-level assessment and was confirmed by Gannett Fleming during their presentation.</p> <p>Planning-level recommendations are further refined during the pre-design and detailed design phases of the project that are forthcoming once a landscape architect and engineering design firm are chosen.</p>	<p>As part of a larger stormwater master plan process, it would be considered typical to evaluate only categories of alternatives (removing both dams, keeping both dams, removing a single dam and keeping the other) to evaluate benefits and costs at a very high level. At this level of detail, costs are often presented in a range or as an order of magnitude. If cost is a major factor in decision-making and if the high-level costs between the alternatives are similar, it is typical to evaluate several design alternatives to meet a certain objective. This provides more confidence in selections that are based on cost.</p>
5	<p>It seems that a large portion of the cost hinges on what the sludge removal will involve. Is it possible to get a better idea of that – for example by knowing what the nature of sludge was from the recently handled nearby Green Lake in Shaker or by taking some samples or by considering what was in the sludge the last time Horseshoe lake was dredged? A \$50/cubic yard estimate that appears to be based on nothing and could end up being \$20/yard or \$100/yard seems to be very significant. <i>(Online form, Brian Luntz)</i></p>	<p>Horseshoe Lake has not been dredged in recent memory. The District did conduct an initial characterization of the sediment and obtained sediment depths. This information, as well as an evaluation of other projects with similar dredging work, were used to determine the planning-level cost of \$50/cubic yard. As the project proceeds from planning to final design the costs will continue to be evaluated.</p>	<p>Overall project costs could be refined by answering the following questions for each of the alternatives considered:</p> <ul style="list-style-type: none"> ▪ What is the goal of removing the sediment? ▪ How much sediment must be removed to meet that goal? Where must the sediment be removed to meet that goal? ▪ Given the sediment chemical

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			<p>and physical qualities, what is the most cost-effective means of spoiling the sediment?</p> <ul style="list-style-type: none"> ▪ How far must the dredged material be transported?
6	<p>From the interim report it appears the class 1 designation for Horseshoe Lake is largely governed by the downstream risk to people and property (I seem to remember University Circle being mentioned) but the immediate downstream is ex the Nature Center and another lake - whose dam is about to be redesigned.</p> <p>Would it be possible for the new design of the Lower Shaker Lake dam to be such that a redesigned Horseshoe Lake could accordingly be considered to be a lower than Class 1 dam? <i>(Online form, Brian Luntz)</i></p>	<p>No, both dams are classified as Class 1 dams by the Ohio Department of Natural Resources due to existing roadways and buildings that may be partially or fully inundated with water during an uncontrolled breach of either or both dams.</p> <p>Any regulated dam at the existing Horseshoe Lake location would be designated a Class I due to the downstream hazards. A dam can only be de-regulated if it meets certain criteria which, in this case, would mean lowering of the dam height from the current 30-feet to between 6-10 feet. This would also require removal of approximately 20-feet of sediment behind the dam. A cursory review of this option was completed by the Stormwater Master Plan but eliminated since it did not meet any goals of the Regional Stormwater Management Program.</p>	<p>The classification of the dams is governed by the consequences that are likely to occur if the dams were to fail. ODNR inspection reports document a population at risk of "16+" for both of the structures. This population at risk is documented to be located in the University Circle area. It may be possible that the dam(s) could be redesigned to a lower classification by reducing the volume of water that is stored during normal pool conditions and in flood conditions; however, these changes would create a smaller lake in normal pool conditions and would also likely reduce the flood control benefits of the lake even further.</p>
7	<p>There are so many ramifications that would result from the closure of Horseshoe Lake not only in the immediate area and habitat of the lake but also downstream to the Lower Lake . I would like to know the proposed plan for Lower Lake. There has been little information given as to the impact of the Horseshoe Lake closure on Lower Lake. How is Lower Lake to handle the additional water and what exactly are they planning to do to repair the dam at Lower Lake? Ever since the Horseshoe Lake closure the water level is very high at Lower Lake. I understand that they plan to "repair" the dam at</p>	<p>The dam at Lower Lake will be replaced and will need a larger spillway to manage flood water conveyance that meets ODNR Dam Safety Program and O.R.C. Administrative Code standards.</p> <p>The loss of these assets is not a question of cost. Both Horseshoe Lake and Lower Lake were constructed prior to any modern dam standards so their designs and the materials used are no longer acceptable for dams. Lower Lake Dam will look very different once it is brought into compliance with current law. The Ohio Historic Preservation Office</p>	<p>Question best answered by NEORSR.</p>

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	<p>Lower Lake- but I have also heard them say there would be "modifications" on the footprint of Lower Lake to do so. What exactly is that plan and what is the timeline to do so?</p> <p>Also, what is the plan (and budget allocated) to maintain the Lower Lake dam (dredging, etc over time) so that we are not faced with another potential closing of this lake in the future. It is important for the community to have a full understanding of how the Horseshoe Lake closure would impact Lower Lake.</p> <p>I would also like clarification on the statement "cost is not a factor in the sewer district's position "- if cost is not a factor - then why are we not committed to preserving this beautiful and historical asset of our community? <i>(Online form, Trudy Fitzpatrick)</i></p>	<p>will be consulted during the entire process to ensure all historic preservation laws are followed.</p> <p>Lower Lake provides flood reduction benefits so the District is prepared to invest in the replacement of the Lower Lake Dam. The Stormwater Master Plan results indicated that the Horseshoe Lake Dam did not add to the reduction of flooded structures beyond those achieved through reconstruction of the Lower Lake Dam. Lacking this benefit, the overall costs of keeping an impoundment along a stream system are not justified in terms of the District's mission.</p> <p>The design process for the replacement of Lower Lake Dam will begin in mid-2022 and will likely take two years.</p>	
8	<p>If Cleveland Heights rejects the NEORSD project, please describe the consequences to the City's residents as you see them, including:</p> <ul style="list-style-type: none"> -The cost to the City whenever Horseshoe Lake needs to be dredged and the relocation of the sediment. -How often would Horseshoe Lake require dredging to clean up the sediment. -The cost to the City evaluate the sediment for any toxic present which might limit where the sediment can go. -Maintenance costs for repairing the Dam to ODNR standards to bring it into compliance. <i>(Online form, Gail Larson)</i> 	<p>These are questions for Cleveland Heights to address. However, it is important to note that the District will manage inspection and maintenance costs for the restored stream at Horseshoe Lake Park and replaced Lower Lake Dam.</p>	<p>Question best answered by the City of Cleveland Heights.</p>
9	<p>Because of the significance of Horseshoe Lake Park on many levels, and since NEORSD is basing its</p>	<p>This is a question for Gannett Fleming.</p>	<p>Gannett Fleming has worked with many technical/specialized partners</p>

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	<p>decisions only on sewerage and flood control, can Gannett Fleming recommend names of professional instruments/firms to be hired by the cities of Cleveland Heights and, hopefully, Shaker Heights, who would conduct and manage comprehensive, reliable and reputable representations and evaluations of the historical, aesthetic, environmental and recreational values of and options for any changes at Horseshoe Lake, involving not only public input and feedback iterations throughout the process, but also conducting surveys and polls of residents' feelings and values, wishes and choices, preferences and decisions on this controversial and long-lasting issue? <i>(Online form, William Hopkins)</i></p>	<p>Please note, however, that the District's decisions as noted above are made based on the mission of the Regional Stormwater Management Program to address flooding, erosion, and water quality problems. The District's proposal to restore Doan Brook at Horseshoe Lake Park is unrelated to sewers.</p>	<p>to provide the support services described by Mr. Hopkins on other projects. Gannett Fleming can share additional information with the City of Cleveland Heights, if desired.</p>
10	<p>In your knowledge of available technology, is there any way to stabilize the existing dam without replacing it, and would that be cheaper than the sewer district's estimates for removing it? Recognizing that the lake is never going to harbor trout but did support warm-water-tolerant fish and freshwater snails, would there be a cost savings in leaving the main pool of the lake alone and clearing silt-collecting pools in both arms, where they might be conveniently emptied now and then? Could something like that be consistent with encouraging wetlands plants to grow in the arms and along the north shore, as they do now? <i>(Online form, Peter Zicari)</i></p>	<p>No, the existing dam cannot be repaired and must be replaced to meet safety standards per the Ohio Department of Natural Resources Dam Safety Program guidance.</p>	<p>A more detailed alternatives analysis and conceptual design could consider all of these factors; however, Gannett Fleming agrees that the existing embankment requires reconstruction to meet Dam Safety guidelines.</p>
11	<p>With all due respect and appreciation for the Gannett Fleming interim report, how is a meeting with residents to understand their questions and concerns beyond the scope of the assignment? The purpose of a second opinion was to be independent of NEORSD influence and its predetermined</p>	<p>Please note that the characterization of the District as "unable to provide evidence-based documentation" is inaccurate. The District provided Gannett Fleming and the City of Cleveland Heights Administration as well as the City of Shaker Heights Administration with any and all information that</p>	<p>The Scope of Services requested by the City of Cleveland Heights did not include meeting with residents. Gannett Fleming was tasked with reviewing provided materials related to the Alternatives Analysis. The</p>

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	<p>conclusions.</p> <p>Despite this stipulation, Gannett Fleming consultants met with NEORSD representatives, who were often unable to provide evidence-based documentation for their findings. We (Gannett Fleming and citizens) are expected to accept NEORSD verbal testimony rather than evidenced-based records of their results? This is not an objective investigation - it is standard practice to expect documentation of findings.</p> <p>NEORSD once again has an insider advantage, given the opportunity to present their opinions orally, while omitting the scientific evidence documentation to support their conclusions. How can we be certain NEORSD performed due diligence in exploring alternatives with missing or omitted documentation? Is it possible to arrange for a meeting with concerned residents to provide fair and equal representation for oversight of this process? <i>(Online form, Christine Heggie)</i></p>	<p>was requested. In addition, the District met with Gannett Fleming to answer any questions that arose from their review(s).</p>	<p>purpose of the meeting with the NEORSD was to obtain supplemental information to address initial questions from the review and additional context on the effort. There is not a standard practice for documentation of findings in this situation. The City of Cleveland Heights will need to respond to the issue of organizing a meeting of residents.</p>
12	<p>Missing or omitted documentation of evidence based findings by NEORSD should raise serious concerns about the integrity of NEORSD's methodology and conclusions. Thorough documentation is critical, considering NEORSD had approximately three years and millions of taxpayer dollars to investigate options for Horseshoe Lake. All of their evidence-based findings should be documented, and should adhere to scientific guidelines, including objective description of the methodology and results. This is so the scientific process can be repeated with the same results consistently in order to confirm the accuracy of the</p>	<p>Please note that the characterization of the District as "unable to provide evidence-based documentation" is inaccurate. The District provided Gannett Fleming and the City of Cleveland Heights Administration as well as the City of Shaker Heights Administration with any and all information that was requested. In addition, the District met with Gannett Fleming to answer any questions that arose from their review(s).</p>	<p>There is not a standard practice for documentation of findings in this situation. Based on the available documentation reviewed as part of this effort and additional discussions with the NEORSD, Gannett Fleming agrees that the opportunity to provide downstream flood reduction at Horseshoe Lake Dam is minimal.</p>

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	<p>conclusions drawn based on these findings. We cannot accept NEORS D conclusions based on faith. How can we be certain the assessments, including scientific evidence-based findings for alternatives to the NEORS D plan were actually performed? Proof requires evidence, in this case evidence-based documentation of relevant results. How can Gannett Fleming be certain of NEORS D conclusions without any evidenced-based documentation? What can be done to remedy this omission of information? <i>(Online form, Christine Heggie)</i></p>		
13	<p>The main question concerns possible alternatives that would repair or replace Horseshoe Lake dam in regards to safety, and keep the lake. Considering the variability in costs for dredging, for example, can Gannett Fleming provide or envision possible alternatives to achieve this goal at reduced costs to the community? Many residents would like to see the historical lake and dam preserved. Our communities may be able to pay for the preservation of this valued ecological icon with creative funding options, thus, meeting the desired wishes of these citizens. <i>(Online form, Christine Heggie)</i></p>	<p>This is a question for Gannett Fleming.</p>	<p>Opportunities to reduce overall project costs could include minimizing dredging volume and extent, reducing the reservoir size upstream of the dam, and optimizing the rehabilitation design and dredge-spoil design through a more thorough engineering and value engineering effort.</p>
14	<p>Is NEORS D's goal a 100-year storm? If so, did they meet that goal with their recommendation? <i>(Email, Councilperson Melody Joy Hart)</i></p>	<p>We did not. The District's goal is a 100-year level of service for Regional Stormwater Management Program projects when possible. In many older and highly developed parts of our service area this goal is not achievable, including Doan Brook. Even if we cannot achieve alleviation of all flooding in the 100-year event, we strive to maximize benefits where possible.</p>	<p>Question best answered by NEORS D.</p>
15	<p>Has NEORS D considered flooding in Cleveland Heights or just in University Circle as constituents have told me that there has been flooding in</p>	<p>The District has considered regional stormwater flooding of all impacted assets (buildings, transportation assets, and utility assets) throughout</p>	<p>Question best answered by NEORS D. Gannett Fleming concurs with NEORS D comments based on</p>

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	Cleveland Heights in the past 50 years. <i>(Email, Councilperson Melody Joy Hart)</i>	the entirety of the Doan Brook Watershed. Cleveland Heights is made up of several watersheds – Doan Brook, Dugway Brook, and Nine Mile Creek – and each of these watersheds was examined in the Stormwater Master Plan with the same level of effort. Problem areas have been identified along the regional stormwater system along with proposed alternatives to help solve regional problems. The models developed by the District are available to the communities to expand and develop solutions to flooding issues on the local system.	materials reviewed as part of this effort.
16	If there is storm water value to HSL dam, albeit not as much as lower lake dam, and the NEORSD is willing to spend \$14.7M to tear down the dam and create landscaping, why shouldn't they be willing to spend that on the HSL dam and dredging the lake if another \$6M could be raised by residents of SH and CH? <i>(Email, Councilperson Melody Joy Hart)</i>	<p>Lower Lake provides flood reduction benefits, so the District is prepared to invest in the replacement of the Lower Lake Dam. The Stormwater Master Plan results indicated that the Horseshoe Lake Dam did not add to the reduction of flooded structures beyond those achieved through reconstruction of the Lower Lake Dam. Lacking this benefit, the overall costs of keeping an impoundment along a stream system are not justified in terms of the District's mission.</p> <p>The District is willing to invest \$14.7 million to eliminate a public safety risk of a Class I dam failure in an urban environment that spans two of the District's Member Communities and may impact a third Member Community due to Doan Brook's intercommunity drainage area. Secondly, removal of the dam will resolve the threat of excessive discharge of uncontrolled sediment downstream through Doan Brook (part of the Regional Stormwater System) which will negatively impact Doan Brook's conveyance of stream flow and protection from streambank erosion.</p>	Question best answered by NEORSD.

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17	Is it possible to cap the earthen dam to put it back into use rather than replace it? Would that be a lower cost? <i>(Email, Councilperson Melody Joy Hart)</i>	Existing materials do not meet ODNR's current dam standards and the entirety of the existing earthen dam must be removed. As the existing dam cannot be repaired, there is no cost comparison available for that suggestion	Gannett Fleming concurs with NEORSD's comments.

In addition to responding to the questions from residents and City Council, the District was asked to clarify any statements made by Gannett Fleming at the October 25, 2021, meeting. Statements made at the meeting are *italicized* and proceed the District's response.

Gannett Fleming stated that it appeared the District had formulated other alternatives, but they were not documented.

The Stormwater Master Plan was a watershed-level evaluation designed to look at problem areas and solutions from a regional perspective. The District actually evaluated 10 scenarios over the course of the Stormwater Master Plan study to address Horseshoe Lake Dam and Lower Lake Dam, some of which involved either modification, rehabilitation or declassification of these dams along Doan Brook. Many of these scenarios had high anticipated costs with minimal benefits relative to the goals of the Regional Stormwater Management Program and were not carried forward.

Gannett Fleming stated that the largest (cost) uncertainty comes down to sediment, and we didn't get a lot on what their plan is.

The District provided Gannett Fleming with all cost estimates and other information requested and explained why costs cannot be determined with certainty at this planning stage. The District has done sampling to characterize the material, researched pricing from other projects, and took sediment depth measurements which are standard at this stage in a project. The costs for sediment removal, hauling and disposal will continue to be evaluated as the design progresses, including a determination of how much sediment can be repurposed on-site and therefore not hauled away.

Clarification to the District's response: The NEORS D answered Gannett Fleming's questions verbally during the coordination call, but additions written resources were not provided for review.

Gannett Fleming stated that it is very early in the process, so the District has pretty high contingencies set aside on their costs.

The District follows industry standard cost estimating practices. These estimates are considered a Class 5 or concept level which have high contingencies.