

From: [Joyce Guardado](mailto:Joyce.Guardado@trccompanies.com)
To: SMcGee@trccompanies.com
Cc: David.Weiss@shakeronline.com; william.gruber@shakeronline.com; acoyne@mggmlpa.com; dcalta@mggmlpa.com; [Frank Greenland](mailto:Frank.Greenland@shakeronline.com); [Matthew Scharver](mailto:Matthew.Scharver@shakeronline.com); [Eric Luckage](mailto:Eric.Luckage@shakeronline.com); [Janet Popielski](mailto:Janet.Popielski@shakeronline.com); [Kyle Dreyfuss-Wells](mailto:Kyle.Dreyfuss-Wells@shakeronline.com)
Subject: Horseshoe Lake Communication
Date: Friday, July 1, 2022 2:12:23 PM
Attachments: [TRC Shaker June 2022 Letter NEORSR Responses 7.1.2022.pdf](#)
[Horseshoe Lake Dam Letter to Mayor Weiss 06172022.pdf](#)

On behalf of Kyle Dreyfuss-Wells

Shawn McGee, PE
Office Practice Leader, Geotechnical Engineering & Inspection
TRC
1382 West Ninth Street, Suite 400
Cleveland, OH 44113

RE: NEORSR response to TRC's letter to Shaker Heights dated June 17, 2022

Dear Mr. McGee:

Per the request of Mayor Weiss, the Northeast Ohio Regional Sewer District has provided detailed responses to TRC's claims in a letter to the City of Shaker Heights dated June 17, 2022 related to *Doan Brook Restoration Near Horseshoe Lake Park*. In the attached document, we have included both TRC's claim and our detailed response.

The Sewer District's position remains consistent and our commitment to restoring Doan Brook to its natural, original state remains firm. Although we appreciate TRC's attempt to design an alternate plan, it does not address the failure of Horseshoe Lake dam in a manner consistent with the Regional Stormwater Management Program and cannot be funded through Program fees.

Kind regards,



Kyle Dreyfuss-Wells
Chief Executive Officer

Enclosure: TRC Letter to Shaker Heights dated June 17, 2022
NEORSR Responses

cc: Mayor David E. Weiss, City of Shaker Heights

William Gruber, City of Shaker Heights
Frank Greenland, Director of Watershed Programs, NEORS
Eric Luckage, Chief Legal Officer, NEORS
Matthew Scharver, Deputy Director of Watershed Programs, NEORS
Janet Popielski, Stormwater Program Manager, NEORS
Anthony J. Coyne, Esq., Mansour Gavin LPA
Diane A. Calta, Esq., Mansour Gavin LPA

	<p>June 17, 2022, TRC City of Shaker Heights Response Letter Statement regarding Horseshoe Lake Dam</p>	<p>NEORSD response</p>
<p>1 Pg 1</p>	<p><i>The lake will be dredged to the approximate depth of the original streambed and its footprint marginally smaller than its existing footprint, but a large portion of the lake surface area would remain. The design will use as much of the dredged materials on site as feasible to reduce the cost of removing dredge material from the site.</i></p>	<p>It is not clear what TRC’s assumptions were when determining the quantity of sediment required to excavate to the approximate depth of the original streambed and construct a new dam. Those quantities could add substantial costs onto TRC’s proposed design.</p> <p>During discussions with Mr. McGee, he indicated he was considering reusing sediment for the construction of the new dam. We asked Mia Kannik, Program Manager for the ODNR Dam Safety Program, if that was a feasible option. She said the sediment cannot be used for the construction of a new dam since it will contain too many organics. Soils with organics are not suitable for dam construction since they have a very low strength and high potential for settlement. This greatly increases the risk of dam failure.</p> <p>NEORSD’s plan has always included the design consultant exploring cost savings by evaluating the reuse of sediment for beneficial reuse, both on site and off, where appropriate given the nature of the material.</p>
<p>2 Pg 1</p>	<p><i>Furthermore, it should be noted that TRC’s FOHSL plan also addresses community and resident concerns related to aesthetics, community amenities and historic preservation. It is the opinion of FOHSL that these are all areas of concern that are not being fully addressed by the NEORSD’s preferred plan. It is our understanding that NEORSD’s position that these areas are not within the mandates of the program and would require outside funding sources to address. We believe the FOHSL’s concerns are complimentary to NEORSD’s focus and can be addressed simultaneously to achieve a balanced project for the both the District, the communities and the residents.</i></p>	<p>This statement of NEORSD’s position and approach to the project is not correct. NEORSD has retained a multifaceted team for this project to ensure all concerns raised by the community as well as regulatory agencies are fully addressed. Lead by STIMSON, a world-renowned landscape architecture firm, and including AECOM, EnviroScience, GPD Group, Bluestone Heights, KS Associates and River Reach Construction, NEORSD has assembled the correct team to address concerns related to aesthetics, community amenities, and historic preservation while also accounting for the long-term costs, responsibilities, and liabilities. NEORSD will also be working with Lawhon &</p>

		<p>Associates, Inc. to coordinate with the Ohio Historic Preservation Office.</p> <p>NEORSD is committed to a community engagement process that will allow the residents to provide input into the design of the stream restoration, including the integration of the surrounding recreational and historic resources.</p>
<p>3 Pg 2</p>	<p><i>TRC's preliminary hydrological modeling does not support the opinion that the presence of Horseshoe Lake caused flooding in University Circle</i></p>	<p>NEORSD has not said that Horseshoe Lake has caused flooding. NEORSD has said that Horseshoe Lake may cause flooding in University Circle if the dam were to fail. This has been demonstrated by the 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.</p> <p>Horseshoe Lake Dam is classified by ODNR as a Class I dam based on the risk of downstream flooding due to a dam breach, not due to a large storm event. There is a distinction between flooding due to a large storm event and flooding due to a dam failure. NEORSD's hydraulic/hydrologic model developed for the Chagrin River and Lake Erie Tributaries Stormwater Master Plan (SWMP), and provided to TRC, 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 does not recommend reconstructing the Horseshoe Lake Dam.</p>
<p>4 Pg 2</p>	<p><i>Based on evaluations completed by others, previous flooding was likely caused by the undersized culvert pipe near University Circle and debris that was restricting flow, which has since been removed.</i></p>	<p>Overall, this statement is correct and is the reason NEORSD proceeded with a contract in 2020 to remove the debris in the culvert pipe near University Circle, also referred to as the "Doan Brook culvert." We also are starting a study to determine the feasibility of installing a relief culvert in this area. Again, this comment does not relate the need to address the failing dam on Doan Brook at Horseshoe Lake.</p>

<p>5 Pg 2</p>	<p><i>NEORSD’s plan asserts that it will improve the downstream flooding in University Circle. However, based on H&H modeling completed by NEORSD’s consultant (as reported on Page 12 of the Shaker Lakes Alternatives Review and Preferred Alternative Demonstration, prepared by Wade Trim, dated Sept 2021) the Doan Brook culvert is currently sized to only handle a 10-year storm event and a 100-year storm could result in over 5 feet of flood depths within University Circle. Table 2-1 (page 15) of the Report also indicates that the total number of inundated buildings and impassable transportation assets, reported as 27, would be the same for a 100- year storm event for Alternative 2 (NEORSD’s preferred alternative where Horseshoe Lake Dam would be removed) and Alternative 4 (Horseshoe Lake Dam would remain and be reconstructed, similar to FOHSL’s design alternative). This does not suggest the presence of Horseshoe Lake Dam is causing a significant increase in flooding in University Circle.</i></p>	<p>As explained comments #3 and #4, NEORSD has not suggested that Horseshoe Lake Dam is causing flooding in University Circle, except in the case of a dam failure. This is supported by ODNR’s review and approval of the EAP and inundation mapping previously mentioned. NEORSD’s SWMP did conclude that the total number of inundated buildings and impassable transportation assets is the same for both Alternatives 2 and 4. The number of inundated assets does not change between Alternative 2 and 4. This is one primary reason why NEORSD has decided not to fund Horseshoe Lake Dam’s reconstruction under the Regional Stormwater Management Program.</p>
<p>6 Pg 2</p>	<p><i>Historically, the concern for the potential loss of life downstream was as a result of the poor conditions of both Lower Lake Dam and Horseshoe Lake Dam in the event that the dam(s) failed, not due to the hydrologic capacity of Horseshoe Lake Dam during normal operations.</i></p>	<p>NEORSD questioned the validity of this statement and called ODNR who confirmed it is an incorrect statement. ODNR has never indicated that the classification is the result of the condition of the dam. According to Ohio Administrative Code (OAC) 1501:21-13-01 and documented in ODNR’s "Inundation Study and Hazard Classification Guidance," "A dam shall be placed in Class I when sudden failure of the dam would result in one of the two following conditions: a) Probable loss of human life. b) Structural collapse of at least one residence or one commercial or industrial business."</p>
<p>7 Pg 2 & 3</p>	<p><i>Based on TRC’s preliminary hydrologic modeling, flow rates from the dam can be reduced by 20% and increase the active flood storage zone by approximately 15 MG by lowering the spillway at least two feet as proposed by FOHSL’s design alternative. This is anticipated to provide some flood relief at University Circle. TRC is currently</i></p>	<p>One of the early analyses by NEORSD’s consultant during the SWMP maximized the active storage at both lakes (Horseshoe Lake and Lower Lake) to determine the reduction of inundation of buildings and transportation assets in University Circle up to the 100-year storm event. For this analysis, the hydraulic/hydrologic modeling assumed that both lakes were</p>

	<p><i>performing hydraulic modeling to estimate flood depths, the limits of the flooding, and flow velocities for FOHSL’s design.</i></p> <p><i>It is anticipated that FOHSL’s plan will provide a flood control benefit as it will increase the active flood storage zone by lowering the principal spillway vertical pipe. FOHSL’s design will need to consider ODNR’s dam safety regulations, which require dam spillway systems to handle the Probable Maximum Flood (PMF) for Class I dams. The PMF is the theoretically largest flood resulting from a combination of the most severe meteorological and hydrologic conditions that could conceivably occur in a given area.</i></p>	<p>converted to dry detention basins with rebuilt Class I dams at their approximate existing heights. These assumptions would allow for the maximum active storage. Horseshoe Lake’s active storage was assumed to be 156.1 Acre-Feet (50 MG).</p> <p>Even with more than three times the volume of active storage being proposed by TRC, this analysis concluded that Lower Lake’s active storage was primarily responsible for reducing the number of inundated buildings and transportation assets downstream, not Horseshoe Lake (even with 50MG of active storage). This information had been previously discussed in public meetings and with TRC in the letter submitted to TRC on March 10, 2022, and at an in-person meeting on March 18, 2022.</p> <p>NEORSD agrees with the need to consider ODNR’s dam safety regulation.</p>
<p>8 Pg 3</p>	<p><i>FOHSL’s plan costs is expected to be millions less than the costs established in Wade Trim’s report for repairing or replacing both dams. By not disposing all of the dredging material offsite and by including a more appropriate cost of dredging of between \$30-50 a cubic yard (based upon contractor pricing) instead of approximately \$100 a cubic yard for total dredging costs, the dredging costs can be reduced from \$12.8 million, as determined in Wade Trim’s report, to approximately \$4-6 million.</i></p>	<p>To be clear, NEORSD did not rely on cost in making the recommendation to remove the Class I dam forming Horseshoe Lake. We relied on a \$10 million master plan study that used the latest watershed science that evaluated the entire Doan Brook watershed.</p> <p>NEORSD has never been provided details on how TRC arrived at their \$30-\$50 a cubic yard unit cost and has misinterpreted our cost estimate. Therefore, we do not believe that TRC’s cost estimates are accurate. NEORSD’s cost estimate is based on contractor pricing on recently-bid NEORSD projects, as well as market research and construction cost trends.</p>

<p>9 Pg 3</p>	<p><i>As part of the FOSHL's approach, TRC would attempt to reclassify the dam from a Class I structure per ODNR Dam Safety regulations. Based on preliminary discussions with ODNR, reclassification to a lower class could be possible provided Lower Lake Dam is reconstructed and is also brought back into dam compliance and H&H models demonstrate loss of life is no longer probable at University Circle as a result of a sudden failure of Horseshoe Lake Dam. ODNR has allowed dams to be reclassified from a Class I status, this includes a couple dams that are currently being analyzed by ODNR from Class I to a lower classification. Consequently, reclassification of a new dam while preserving the historic dam and lake will also reduce the cost of the necessary emergency spillway as the size of the spillway can be smaller for lower class dams.</i></p>	<p>The reason to pursue a request to lower the classification of the dam is to reduce the cost of reconstruction. Since the SWMP determined that reconstruction of Horseshoe Lake Dam was not needed to control flooding in the Doan Brook watershed, NEORSD will not pay for it, even at a lower cost.</p> <p>NEORSD recently spoke with Mia Kannik, Program Manager for ODNR Dam Safety and she could not recall granting any request to lower a dam classification without removing the downstream hazard. She did make us aware of a recent request to lower the classification of a private Class I dam in in our service area; this request was denied by ODNR.</p> <p>During a phone conversation on June 3, 2022, between the NEORSD and TRC, NEORSD asked TRC if they have ever lowered a classification of a Class I dam, due to its existing hazard classification, based upon an updated Dam Break/Inundation Study. TRC's answer was no.</p>
<p>10 Pg 3</p>	<p><i>NEORSD's preliminary cost estimate for their preferred alternate is \$28.3 million, of which \$14.7 million is the cost estimate for the removal of Horseshoe Lake dam and \$13.6 million is the cost estimate to reconstruct Lower Lake dam. The cost estimate to solely reconstruct Horseshoe Lake dam is \$20.7 million, which includes \$12.8 million for dredged material management. To repair both dams, NEORSD estimated a cost of \$34.3. TRC estimated that FOHSL's alternate could result in cost savings of approximately \$8 million dollars. This brings the reconstruction of Lower Lake dam and the replacement of Horseshoe Lake dam to \$26.5 million. It should be noted that the construction costs presented by NEORSD and TRC are very preliminary and will need to be refined as the design progresses.</i></p>	<p>As TRC noted, the cost estimates are very preliminary and can vary greatly during detailed design. Again, NEORSD has not been provided a detailed cost estimate to evaluate the purported \$8 million savings in sediment costs and therefore we do not believe the TRC cost estimate is accurate.</p> <p>As mentioned in Response #1, Mr. McGee commented that he would consider reusing some of the sediment for the construction of the new dam. We asked Mia Kannik if that was a feasible option and she said no, since it will have too many organics. Soils with organics are not suitable for dam construction since they have a very low strength and high potential for settlement. This greatly increases the risk of dam failure.</p>

<p>11 Pg 3</p>	<p><i>NEORS D removal of the dam may have an adverse impact on the existing ecological habitat. Due to the area being highly urbanized, Horseshoe Lake is a popular area for water bird migration. FOHSL's plan will continue to support the migratory bird population. The FOSHLS's plan can also incorporate components into the design, such as substrate (rock and vegetation), into the adjacent feeder streams, that will support fish habitat, along with possibly exposing and returning any natural springs, there were historically present in the area.</i></p>	<p>TRC has overlooked the ecological adverse impacts that are well documented and accepted throughout the water resource professionals' community of dams on natural streams such as Doan Brook. Impacts of dams include negative impacts to fish populations, poor stream habitat, and poor water quality.</p> <p>TRC has not provided any costs for incorporating the restoration of the feeder streams or exposing natural springs.</p>
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