



COMMITTEE OF THE WHOLE

ITEM NUMBER 4A

DATE: November 16, 2021

SUBJECT: DISCUSSION: A Discussion regarding the Spillway Improvement and Dam Removal Feasibility Study.

SUBMITTED BY: Peter Riggs, Director of Public Works

BACKGROUND/HISTORY:

On February 16, 2021 the Common Council approved Resolution 5059(55) authorizing Ayres Associates to perform a feasibility study to identify projects that achieve compliance with Wisconsin Department of Natural Resource (WDNR) requirements for the Echo Lake Dam. In 2015, WDNR provided the City of Burlington with a 10-year compliance timeline to bring the Echo Lake Dam into compliance with the requirements of Wisconsin State Statute Chapter NR 333, specifically relating to the dam's inability to contain the 500-year flood within the spillway without overtopping the embankment. The scope of the feasibility study was to provide multiple viable solutions to achieve compliance through either modification of the dam or removal of the dam.

Throughout 2021 City staff and Ayres have worked to understand the unique hydrological features that exist around the Echo Lake dam in order to present compliant solutions as part of the feasibility study. On August 3, 2021 staff from the City and Ayres presented findings to the Common Council that no viable solution exists for a dam to be compliant with NR 333.07(1) to contain the 500-year flood. However, it was likely that additional modeling of downstream river conditions could provide a case to achieve compliance with NR 333.07(2)(a) by showing the spillway was capable of containing floodwaters up to the point of dam submergence. On August 3, 2021 the Common Council approved Resolution 5111(20) authorizing a contract amendment for additional modeling to determine if compliance could be achieved through this alternative route. Staff from the City and Ayres performed this additional research and presented the findings to WDNR in a technical memorandum. This document provided the basis to begin collaboration with WDNR and ultimately resulted in WDNR agreeing that our concept to achieve compliance with NR 333.07(2)(a) was appropriate.

Achieving conceptual buy-in from WDNR allowed Ayres to continue with their project concept designs for the report. The resulting attached report contains essentially two projects, each with a few variations.

Dam Modification Options (Options 1, 2, and 3)

The dam modification project achieves compliance by constructing improvements to the dam and Echo Park that allow the spillway to contain floodwaters up to the point of dam submergence. The project consists of removing the existing tainter gate, installing three new gates, reconstructing the concrete retaining wall downstream from the dam, and increasing the elevation of the north embankment and extending it into Echo Park. Extending the north embankment into the park will have impacts on the park which can be mitigated by design choices. *The variation for this project comes in the form of which style of gate is to be installed: tainter gates, crest gates, or sliding gates.* Each style of gate has its benefits and draw backs for cost, ease of operation, performance, maintenance, and aesthetics. These details are presented in the attached study.

Dam Removal Option (Option 4)

The dam removal project removes the dam structure, restores the river channel, and restores the drained lake bed to wetland with a variety of potential enhancements. This project contains a vast amount of customization concerning how to restore the former lake bed. Simplistically, the project could allow the lake bed to revert to natural space and wetland. At its most complex, the project could include features like stormwater ponds, pedestrian paths, boardwalks through the wetlands, bridges over the river, fishing ponds, and boat launches. These details are presented in the attached study.

TIMING/IMPLEMENTATION:

This item is scheduled for discussion at the November 16, 2021 Committee of the Whole Meeting.

It is anticipated that an authorizing resolution to determine which project to pursue will be presented to the Common Council at the February 1, 2022 Committee of the Whole Meeting for discussion and at the February 16, 2022 Common Council Meeting for final consideration. This resolution would authorize staff to apply for grant funding for the selected project.

Attachments

Dam Feasibility Study
