

Memorandum

To: Bassett Creek Watershed Management Commission
From: Barr Engineering Co. (Barr) (Karen Chandler, P.E.; Patrick Brockamp, PE)
Subject: Item 5C—Consider Approval of Scope and Budget for Feasibility Study for CIP Project: Main Stem Lagoon Dredging Project, Wirth Park (2027, CIP Project BC-7)
BCWMC August 21, 2025 Meeting Agenda
Date: August 14, 2025

5C. Consider Approval of Scope and Budget for Feasibility Study for CIP Project: Main Stem Lagoon Dredging Project, Wirth Park (2027, CIP Project BC-7)

Recommendations:

1. Consider approving the scope of work and \$86,100 budget presented in this memorandum and directing the Engineer to complete the feasibility study for the Main Stem Lagoon Dredging Project, Wirth Park (2027, CIP Project BC-7) scheduled for construction in 2027.
2. Direct the Engineer to consult with the U.S. Army Corps of Engineers (USACE) to determine whether the Resources Management Plan Pre-application Consultation Protocols may apply to this project.
3. Direct the Engineer to prepare a feasibility study that complies with the applicable requirements of the USACE, MnDNR, and BCWMC criteria.

Background

In the winter of 2022/2023 Lagoons D, E, and F in Theodore Wirth Regional Park were dredged as part of the Main Stem Lagoon Dredging Project. The completed project resulted in an average depth of approximately 4 feet below the normal water level, rather than the design dredging depth of 6 feet. The total volume of sediment removed was approximately 25,650 CY, roughly 13,950 CY less than the 39,600 CY called for in the design. The sequence of dredging operations, unseasonably warm winter weather, spring road restrictions, and struggles with the general contractor led to acceptance and closeout of the project as constructed even though it was not constructed to specifications. While the project did achieve significant water quality benefits, by reducing the total phosphorus load by an estimated 390 pounds per year and the total suspended solids load by an estimated 101,000 pounds per year (approximately \$210/lb total phosphorus/year), additional dredging could provide further benefits. Immediately following closeout of the project, the TAC met for a “lessons learned” discussion and were in general agreement that it would be worthwhile to consider going back to Lagoons D, E, and F to perform additional dredging. The TAC also noted that dredging Lagoon G, upstream from the original lagoons, might be more beneficial and cost effective.

At their October 2023 meeting, the Commission agreed with a TAC recommendation to evaluate additional dredging of Lagoons D, E, and F or dredging of Lagoon G. There was acknowledgement that because the original Lagoon Dredging Project was not constructed to specifications, additional dredging may be warranted.

Related background documents the Commission may wish to review include:

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- [October 2023 TAC agenda with discussion of this project](#)
- [October 2023 TAC recommendation approved by Commission](#)
- [Lagoon Dredging Project webpage with final report](#)

At their February and March 2024 meetings, the TAC discussed potentially adding this project to the next 5-year CIP. Minneapolis Park and Recreation Board (MPRB) staff proposed that the Commission consider either (a) performing additional dredging in Lagoons D, E, and F, or (b) dredging accumulated sediment in Lagoon G, further upstream in Theodore Wirth Park. The TAC discussed the pros and cons of both options. They noted that it may be difficult for a contractor to remove additional sediment in Lagoons D, E, and F due to now-steeper side slopes. They also discussed the more natural features of Lagoon G, noting that although it was constructed as an open water lagoon in the 1930's, the stream seems to have reclaimed its channel through the area. The group wondered if the area should be left in its more natural state closer to conditions before the 1930's or if the presumably contaminated sediment should be removed to improve environmental conditions. Because of these complex questions, the TAC recommended that the Commission perform another feasibility study to fully assess the dredging options and their impacts.

At their April 17, 2025 meeting, the Commission approved the TAC's recommended 5-year (2025 – 2029) CIP, which included the Main Stem Bassett Creek Lagoon Dredging, Wirth Park (BC-7) project to dredge lagoons (either Lagoons D, E, and F, or Lagoon G) in Theodore Wirth Park, slated for construction in 2027.

The original Main Stem Lagoon Dredging Project was constructed under budget, leaving a current budget balance of approximately \$1,165,000. The proposed 5-year CIP budget of \$800,000 spread over years 2027 and 2028 reflects the estimated costs (in 2024) of a new feasibility study, plus the funds needed to design and construct the higher of the two options (\$1,900,000 for option (b)) minus the budget balance.

This project is located entirely within the City of Golden Valley in Theodore Wirth Park. Figure 1-1 shows the project area covered by this feasibility study, which will focus on Lagoons D, E, F, and G.

As is required for BCWMC CIP Projects, a feasibility study must be completed prior to BCWMC holding a hearing and ordering the project. The feasibility study will estimate the amount of material to be dredged, identify sediment contamination issues, discuss methods for dredging the material from the lagoons and disposing of the dredged material, review environmental and permitting requirements, and develop concept plans and cost estimates for the project. The feasibility study for the project needs to begin soon so it can be completed by June 2026 when the Commission must set a maximum levy for 2027.

The project is consistent with the goals (Section 4.1) and policies (Sections 4.2.1, 4.2.5, 4.2.8 and 4.2.10) in the 2015 – 2025 BCWMC Watershed Management Plan.

The BCWMC completed a Resource Management Plan (RMP) in 2009 through which the Corps of Engineers (USACE) and the BCWMC agreed on a series of steps, work items, deliverables (called "protocols") that must be accomplished and submitted to complete the RMP process and USACE review/approval process. Although this project was not included in the RMP, the USACE has allowed the RMP protocols to be applied to other projects not specifically included in the RMP. With the completion of the protocols, we expect the USACE application process to move more quickly than it would otherwise. Most of the protocols must be addressed as part of the feasibility study, in addition to the usual tasks that

would be performed as part of a feasibility study under the criteria adopted by the BCWMC in October 2013. In general, the protocols require compliance with Section 106 of the National Historic Preservation Act, compliance with Section 404 of the Clean Water Act, and Clean Water Act Section 401 Water Quality Certification. Compliance with Section 106 can require some level of cultural resources review.

Content and Scope of Feasibility Study

The feasibility study will address and include the feasibility study criteria adopted by the BCWMC in October 2013:

- Analysis of multiple alternatives with the context of Commission objectives, including the following for each alternative:
 - Pros and cons analysis
 - Cost estimate for construction and a “30-year cost”
 - Analysis of life expectancy
 - Summary of each alternative for the Commission to judge its merits
 - Cost estimate for annualized cost per pound of pollutant removal
- Evaluation of new and/or innovative approaches
- Identification of permitting requirements

As noted earlier, most of the RMP protocols must be addressed as part of the feasibility study. In addition to the tasks above, the feasibility study will include the following items to meet the RMP pre-applications protocols:

- Review of cultural resources
- Identification of wetland impacts

In addition to the RMP protocols and specific criteria adopted by the BCMWC, it is important to gather public input early and often in the process.

The proposed project will remove sediment the selected “lagoons” (D, E, and F, or G) along the Main Stem of Bassett Creek in Wirth Park, between Golden Valley Road and Trunk Highway 55. A total of seven lagoons were originally created in the mid-1930s by Civilian Conservation Corps crews. A study performed by Barr on behalf of the City of Minneapolis (Wirth Lagoon Sedimentation, December 2015) showed that the lagoons remained relatively unchanged until the early to mid-1990s, when large amounts of sediment began to appear in the lagoons. The sedimentation appeared to slow or stop by the mid-1990s. The sedimentation in lagoon G has allowed the creek to re-establish a defined channel and reduced the flow capacity and floodplain storage of the creek. In addition to improving flow capacity and floodplain storage, deepening the lagoons improves habitat for fish, macroinvertebrates, and turtles, and has the potential to improve downstream water quality by trapping sediment and associated pollutants like phosphorus in the lagoon(s), thus minimizing sediment (and pollutants) passing downstream within Bassett Creek and on to the Mississippi River.

Below is a summary of the work scope components for this project:

1) Project Meetings

- a) Project kick-off meeting (virtual) with BCWMC staff, commissioners, Minneapolis and Golden Valley staff, and MPRB staff and preparation of meeting notes. Loppet Foundation staff may also be invited to this meeting.
- b) Meeting (virtual) with BCWMC staff, Minneapolis and Golden Valley staff, MPRB staff, USACE, MnDNR and MPCA to discuss concept alternatives and review environmental review and permit requirements for project; and prepare meeting minutes to confirm regulatory agencies' discussion results.
- c) Prepare bi-weekly project email updates.

2) Desktop and Field Studies

- a) Lagoon survey – We will complete a survey for Lagoon G. Due to the variable nature of conditions in the lagoon (open water, water levels, creek channel, cattails and other vegetation) survey staff may utilize a range of methods and equipment to survey the Lagoon and provide an accurate volume of the material to be removed. Note that root mass of cattails or other dense vegetation will be represented in the dredged volume, since that material will need to be excavated and disposed along with the sediment.

Per the December 2023 TAC recommendations, the survey should include use of sonar or an extra wide foot on the survey rod because a normal foot will sink in the soft sediment. Also, based on the TAC recommendations, the lagoon survey may need repeating during final design to have better pre-dredge sediment depths (within one year of construction) and more accurate dredge quantities.

The post-construction bathymetry survey of Lagoons D, E, and F can be used for the feasibility study, so new bathymetry is not needed at this time, and is not included in this scope. If the Lagoons D, E, and F option is selected for construction, a bathymetric survey would be needed during final design.

- b) Topographic and utility location survey – We will complete a topographic, utility location for the project area around Lagoon G, including survey of any existing storm sewer. As part of the topographic survey, we will also take elevation measurements on the top and bottom of the banks and the sediment islands within the lagoons. Underground utilities will be located based on the location of manhole structures in the field, as-built/construction plan drawings from the City and MPRB, and utilization of a Gopher State One Call utility locate. We will also survey several cross sections that align with the BCWMC Phase 2 XP-SWMM cross sections. We will conduct the survey in NAVD88 and use available City of Golden Valley and/or Minneapolis benchmarks.

A Topcon GR5 VRS, base/receiver will be used to gather topographic and utility information within the project extents. Topographic information was collected in Hennepin County NAD83 horizontal datum and NAVD88 vertical datum. The utility survey included a detailed survey of the storm sewer entering the lagoons. Topographic survey information will be imported into AutoCAD Civil 3D to create an existing conditions base map for this feasibility study.

- c) Tree location, diameter, species, and condition survey – We will coordinate with the MPRB Forester for any proposed tree impacts. We anticipate the MPRB forester will do a tree survey and categorize which trees should be protected and/or removed.

A tree survey is not needed for Lagoons D, E, and F as the proposed work is all in the water and therefore is not included in this scope.

- d) Wetland delineations – We will perform a field wetland delineation around the perimeter of Lagoon G. Barr will perform a field wetland delineation in accordance with the Routine Level 2 procedures specified in the U.S. Army Corps of Engineers 1987 Wetland Delineation Manual (“1987 Manual”, USACE, 1987), the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (USACE, 2010), and the 2013 Guidance for Submittal of Wetland Delineation Reports to the USACE and Wetland Conservation Act (WCA) Local Government Unit (LGU). We will delineate the wetland boundaries using a GPS unit with sub-meter accuracy. We will prepare a wetland delineation report that includes the wetland type classifications and descriptions of the delineated wetlands, a brief description of the proposed project, general environmental information, and a discussion of regulations and the administering authorities. The report will also include wetland data forms, precipitation analysis, and site photographs. Barr will also obtain a Wetland Type and Boundary Approval from the LGU. Our cost estimate includes a wetland functions and values assessment (i.e., a Minnesota Rapid Assessment Method, or MNRAM, analysis) for all of the delineated wetlands.

For Lagoons D, E, and F, we will consult with the LGU regarding a time extension to allow the previous wetland delineations to remain valid for the future dredging work. We assume that full field-delineations will not be needed. However, this scope does include costs for a desktop review and wetland updates for Lagoons D, E, and F if required.

- a) Desktop study to assess for potential contamination – We will review the Minnesota Pollution Control Agency’s (MPCA) What’s In My Neighborhood (WIMN) database for both options; for the previous feasibility study, we performed a file review of a leak contamination site. If WIMN shows the same information as for the previous feasibility study, the information from the previous feasibility study could be re-used for this feasibility study.

We will review the previously completed 2011 Phase I Environmental Site Assessment for this reach of creek. Similar to wetland delineations, Phase I assessments expire after five years. However, we can use the Phase I results to identify potential sources of contamination that may impact the project and determine the scope for sampling. An updated Phase I would be needed only if the project involved a property transaction or if the project would be enrolled in the MPCA voluntary brownfield program; neither of these situations apply to this project. As part of this feasibility project, we will request and review the information in the MPCA’s file for this site. The review will be used to confirm sediment testing parameters and locations for each lagoon. This site was identified in the Phase I study.

- b) Sediment sampling – We will perform sediment sampling for Lagoon G to determine if the planned dredged sediment is contaminated, thus restricting the use of the dredged material and to select proper disposal of the material, and to estimate the location of the natural lagoon bottom.

The sediment sampling will follow the Minnesota Pollution Control Agency's (MPCA) "Managing Stormwater Sediment Best Management Practices" guidance (December 2024). For ponds with a dredge area from 1 to 4 acres, the MPCA guidance requires collection of one sediment core and sample for each acre of planned dredge area. Therefore, the following number of samples will be collected and analyzed:

- Lagoon G – 5 sediment samples collected from 5 coring locations, based on its approximate size of 4.3 acres.

At a minimum, sediment samples will be analyzed for the baseline parameters described in the MPCA guidance document: polycyclic aromatic hydrocarbons, arsenic, and copper. In addition, we recommend analyzing each sediment sample for common contaminants found at golf courses, which include: RCRA metals and Minnesota Department of Agriculture (MDA) List 1 Pesticides. We also recommend analyzing samples for volatile organic compounds and diesel range organics with silica gel cleanup. Based on the results of the environmental desktop study, the parameter list may be modified to include additional parameters.

We will develop a memo summarizing the sediment sampling results and compare contaminant levels to MPCA Soil Reference Values (SRVs) to determine if the material could be used on another property as Unregulated Fill, or if the material will require landfill disposal.

Assuming the lagoons are wetlands, sediment removal must be limited to accumulated material. In addition to the sediment cores taken for laboratory analysis, additional sediment probing and/or coring in the lagoons will be conducted to delineate the natural lagoon bottom. These additional samples will not be analyzed for contaminants.

Per the December 2023 TAC recommendations, several samples will be collected, as part of feasibility study, to determine in-situ unit weight of sediment for later inclusion in bid documents. The sediment probe/core information, combined with the bathymetric surveys and construction plans, will be used to estimate the extent and volume of accumulated sediment in the lagoons.

The sediment in Lagoons D, E, and F is already well characterized and will not be re-sampled for this feasibility study. However, the landfill may require more recent testing to be performed prior to accepting the material. We assume that, if needed, this testing would be performed later either during final design or construction.

- e) Threatened and endangered species desktop review – Barr will perform a desktop review of available databases to determine the potential for adverse impacts to state and federally listed species. If the new review notes the same species that were listed in the previous feasibility study, the text from the previous study can likely be re-used in this feasibility study.
- c) Cultural resources desktop review – Based on the previous feasibility study and dredging project, we assume a cultural resources desktop review will only be needed for Lagoon G. Barr will submit a data request to the State Historic Preservation Office (SHPO) to acquire information related to known historic and archaeological resources in the project vicinity. Relevant information will be summarized in the feasibility report. Based on the findings of the data request, additional cultural resources inventory may be required as the project progresses. Assuming the dredging would be limited to removing accumulated sediment and no grading will occur above the USACE's ordinary high-water mark, no additional cultural review should be needed. We also

assume that an architectural survey will not be required for Lagoon G or Lagoons D, E, and F dredging.

- f) Project easements –The proposed project is in Wirth Park and located on public property, so no additional easement acquisition is anticipated.

3) Evaluation and Concept Plans

This task includes evaluating permit requirements, including the need for an EAW. We expect an EAW will be required for Lagoon G, and possibly required for new impacts to Lagoons D, E, and F. If required, an EAW would be prepared during final design.

This task includes fully assessing the dredging options and their impacts, keeping in mind the issues/considerations from the April 2024 TAC memo to the Commission and other considerations from the Commission Engineer.

- Completing the dredging in Lagoons D, E, and F. In addition to the issue of now-steeper side slopes noted above, an even larger issue is the lack of dredged sediment volume available to build an access road, plus the deeper water creates an access issue. To use backhoes to dredge, the contractor might have to haul in temporary fill to create an access road. Hydraulic dredging might be a better option for performing this work. Also, turtles could be a bigger issue with this follow-up project because of the deeper, more suitable turtle habitat. There are also more issues due to required access off the parkway, conflicts with park users (winter sports enthusiasts), and the MPRB permitting required.
 - Dredging Lagoon G. Although there are issues with the more stream-like features of Lagoon G, as noted above, dredging Lagoon G is a viable option, as there is a haul/access route off Golden Valley Road. This means that site access and hauling would not require use of the parkway (which is not designed for heavy traffic). The access route would cross through the rough of Hole #12 of the golf course, avoiding the fairway, resulting in minimal restoration needed on the golf course. Also (as noted above), removing the presumed contaminated sediment would improve environmental conditions.
- a) Estimation of the extent and volume of accumulated sediment in Lagoon G based on review of the surveys and sediment probe/core information; and develop up to three alternative concept plans for accumulated sediment removal, including alternate methods for removing and dewatering the material, as appropriate.
 - b) Evaluate alternative dredging methods (e.g., hydraulic dredging) for Lagoons D, E, and F.
 - c) Identify environmental review and permitting requirements for the concepts, based on wetland delineations and other compiled data, and one (1) meeting with USACE, MnDNR and MPCA staff (see task 1b).
 - d) Estimate the impacts to peak flood elevations resulting from the Lagoon G project concept, using the BCWMC XP-SWMM model.

- e) Calculate the pollutant removals resulting from the Lagoon G project concept, using the same method used in the prior feasibility study for Lagoons D, E, and F.
- f) Develop cost estimates for the project, including a “30-year cost,” analysis of life expectancy, and annualized cost per pound of pollutant removal for the water quality treatment portion of the project.

4) Public Engagement

There were only two attendees at the February 2020 open house for the previous Lagoon D, E, and F dredging project. However, during review of the EAW, there was considerable input and concern from some members of the public regarding impacts on wildlife and questions about the benefits of dredging rather than leaving the channel to continue to naturalize over time.

The BCWMC Engineer will coordinate with the BCWMC Administrator and staff from the City of Minneapolis, City of Golden Valley and the Minneapolis Park & Recreation Board (MPRB) to identify the most effective means to gather public input. The Loppet Foundation may also help with public engagement ideas and activities. Public engagement could include mailings, newspaper articles, open houses, signage (QR codes), etc. The primary groups for public discussions will be the nearby residents, property owners, and park users. The budget for this task includes time to prepare for and attend one public meeting early in the process, after the development of concept plans. This task also includes assisting with the public involvement process as necessary – preparing handouts, boards, and/or presentation, and recording and compiling comments. We assume that meeting coordination, expenses, and set-up will be largely completed by the BCWMC Administrator with assistance from the cities and MPRB.

5) Feasibility Report and Presentations

- a) Prepare draft report for review by City staff, MPRB staff, and BCWMC staff/interested commissioners; revise report based upon review comments.
- b) Present draft feasibility study findings at BCWMC meeting.
- c) Prepare final report for approval at BCWMC meeting and for use at future project public hearing.
- d) Present final feasibility study findings at BCWMC meeting.

Cost Estimate

The table below summarizes our cost estimate for the scope of work outlined above.

Tasks	Estimated Total
1) Project Meetings	\$6,800
2) Desktop and Field Studies	\$36,500
3) Evaluation and Concept Plans	\$19,000
4) Public Engagement	\$3,100
5) Feasibility Report and Presentations	\$20,700
Total	\$86,100

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Schedule

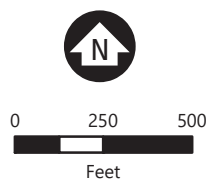
We will complete the tasks and milestones outlined in the scope of work on the following estimated schedule.

Tasks and milestones	Estimated Schedule
Kick-off meeting with BCWMC, Minneapolis, Golden Valley and MPRB staff	September 2025
Bathymetric survey	September 2025
Sediment sampling	September 2025
Topographic and utility survey	September 2025
Wetland delineation (Lagoon G) and wetland review (Lagoons D, E, F)	September 2025
Combined agency field review/TEP review	October 2025
Desktop environmental study to assess for potential contamination	September 2025
Desktop review of threatened and endangered species	September 2025
Desktop review of cultural resources	September 2025
Meeting with BCWMC, Minneapolis, Golden Valley, MPRB, USACE, MN DNR, and MPCA staff	October 2025
Develop concept alternatives and cost estimates	October 2025 – January 2026
Public meeting	January/February 2026
Submit draft feasibility report for Minneapolis, Golden Valley, MPRB, and BCWMC staff review	May 1, 2026
Minneapolis, Golden Valley, MPRB and BCWMC staff complete review	May 8, 2026
Submit draft feasibility report for BCWMC review at Commission meeting	May 14, 2026
BCWMC completes review at Commission meeting	May 21, 2026
Submit final feasibility report for BCWMC review at Commission meeting	June 11, 2026
Final feasibility report – BCWMC approval at Commission meeting	June 18, 2026



Aerial Imagery: April 2019; NearMap

-  Project Area
-  Theodore Wirth Regional Park



SITE LOCATION MAP

Golden Valley, Minnesota

FIGURE 1-1