Item 5A.
BCWMC 7-18-19

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Memorandum

To: Bassett Creek Watershed Management Commission
From: Barr Engineering Co.
Subject: Item 5A – Consider Approval of Proposal to Prepare Feasibility Study for Project to Dredge Accumulated Sediment in the Main Stem of Bassett Creek in Wirth Park (2021 CIP Project BC-7)
BCWMC July 18, 2019 Meeting Agenda
Date: July 10, 2019

5A. Consider Approval of Proposal to Prepare Feasibility Study for Project to Dredge Accumulated Sediment in the Main Stem of Bassett Creek in Wirth Park (2021 CIP Project BC-7)

Recommendations:

1. Consider approving the scope of work and $74,000 budget presented in this memorandum and direct the Engineer to complete the feasibility study for the Dredge Accumulated Sediment in the Main Stem of Bassett Creek in Wirth Park Project (2021 CIP Project BC-7), scheduled for construction in 2021 and 2022.
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 for this project.
3. Direct the Engineer to prepare a feasibility study that complies with the requirements of the USACE and BCWMC criteria.

Background

The proposed project to dredge accumulated sediment in the Main Stem of Bassett Creek in Wirth Park is in the Bassett Creek Watershed Management Commission's (BCWMC) current CIP (Table 5-3, as amended in 2018), listed as project BC-7 with a total estimated cost of $400,000. At its April 18, 2019 meeting, the Commission approved the 5-year (working) CIP, which included project BC-7, scheduled for construction in 2021.

The proposed project will remove sediment that has collected in three of the seven "lagoons" created along the Main Stem of Bassett Creek in Wirth Park, between Golden Valley Road and Trunk Highway 55. These lagoons were originally created in the mid-1930s by Civilian Conservation Corps crews. Based on a study performed by Barr on behalf of the City of Minneapolis (Wirth Lagoon Sedimentation, December 2015), the lagoons were later determined to be part of the Minneapolis Grand Rounds System, "which has been deemed eligible by the U.S. Department of the Interior under the Historic Preservation Act for listing

on the National Register of Historic Places." The 2015 study found 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 "E" (immediately to the east of the chalet and parking area) is of concern to City of Minneapolis and Minneapolis Park and Recreation Board (MPRB) staff because the sedimentation may be contributing to flooding of the parking lot and a short section of Theodore Wirth Parkway. In addition, the sedimentation has resulted in the creation of new "islands" in the creek/lagoons that reduce the flow capacity and floodplain storage of the creek. In addition to improving flow capacity and floodplain storage, the project will improve habitat for fish and macroinvertebrates and has the potential to improve downstream water quality by trapping sediment in the lagoons, thus minimizing sediment passing downstream within Bassett Creek and on to the Mississippi River.

Figure 1 shows the project area covered by this feasibility study, which will focus on Lagoons D, E, and F.

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 the environmental review and permitting requirements, and develop a concept plan and cost estimate for the project.

This 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 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 inventory. The first step in reviewing cultural resources is submitting a data request to the State Historic Preservation Office (SHPO). Based on the findings of the data request, additional cultural resources inventory may be required as the project progresses. At this time, it is anticipated that a Phase I cultural resources review (a literature review) may be required and can be completed as part of subsequent design and environmental review processes. The feasibility study will follow/include the other applicable RMP protocols.

In addition to the RMP protocols and BCWMC feasibility study criteria, sediment sampling will be conducted following the Minnesota Pollution Control Agency's (MPCA) "Managing Stormwater Sediment Best Management Practice Guidance" (June 2015).

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 environmental review and permitting requirements

The BCWMC developed the above criteria when the BCWMC's CIP was limited to water quality improvement projects, so they do not specifically address flood mitigation aspects of CIP projects.

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 identification of wetland impacts to meet the RMP pre-application protocols.

In addition to the RMP protocols and specific criteria adopted by the BCMWC, it is important to gather stakeholder input. The BCWMC Engineer will work with the BCWMC Administrator, City of Minneapolis staff and MPRB staff to identify the most-effective means to gather input from the public and other affected stakeholders.

The report will also include the results of scoring the project options according to the BCWMC Project Prioritization Scoring Matrix.

Previous Work

Several studies and projects have been completed in and along the study area. Relevant work and scope implications are listed below:

- Feasibility Report for the 2012 Bassett Creek Main Stem Restoration Project - Golden Valley Road to Irving Avenue North (Barr, 2011)

  - Wetland delineation - full delineation of Lagoon D, partial delineation of Lagoon F, and no delineation of Lagoon E. This information expires 5 years following wetland delineation approval and therefore is outdated and only serves as reference material.
  - Cultural resources survey – reconnaissance survey performed for a portion of the channels upstream of Lagoon F and between Lagoons F/E and E/D. This information expires 5 years following approval and therefore is outdated and only serves as reference material.
  - Phase I environmental site assessment – consisted of the entire stretch of creek including Lagoons F, E and D, plus all properties within 200 feet in any direction of the centerline.
- BCWMC CIP project 2012 CR –M, Main Stem of Bassett Creek Restoration Project (WSB, 2014) – Tree removals, and multiple stream restoration features such as root wads, rock vanes, and biologs were installed primarily in the channels from upstream of Lagoon F to downstream of Lagoon D.

For this project, we anticipate utilizing and amending the above information and other available information (e.g., from the Blue Line LRT project), and amending these documents as appropriate, based on further investigations that will be required as outlined below.

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

1) Project Meetings

a) Project kick-off meeting with BCWMC staff, commissioners, Minneapolis staff, and MPRB staff and preparation of meeting notes.

b) Meeting with BCWMC staff, Minneapolis staff, MPRB staff, USACE, MN DNR 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.

3) Desktop and Field Studies

a) Bathymetric surveys – We will complete bathymetric surveys for each of the three lagoons. The survey results, along with the sediment sampling information (see below), will be used to help obtain an accurate estimate of the volume of sediment to be removed.

b) Topographic, utility location, and tree survey – We will complete a topographic, utility location and tree survey for the project area, 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. Additionally we will 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.

c) Wetland delineations – We will perform a field wetland delineation around the perimeter of Lagoons E and F. 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 WCA LGUs in MN. We will identify/flag and record 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 also will obtain a Wetland Type and Boundary Approval from the Local Government Unit (LGU). Our cost estimate includes a wetland functions and values assessment (i.e., a Minnesota Rapid Assessment Method, or MNRAM, analysis) of all of the delineated wetlands.
Although the 2011 wetland delineation for Lagoon D officially expired in 2016, we can use the results to guide the concept design. Also, we expect the dredging of Lagoon D to be a lower priority for project completion than Lagoon E; a wetland delineation performed now would likely expire again before the project could be completed. A full delineation of Lagoon D would be required during final design.

d) Stream restoration/stability review – We will complete a site inspection of the previously completed stream restoration project. The report will include discussion of the current stream conditions and recommendations for final design.

e) Desktop study to assess for potential contamination - 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.
A preliminary review of the Minnesota Pollution Control Agency's (MPCA) "What's in my Neighborhood?" database indicated the presence of a leaking fuel oil tank at the adjacent Theodore Wirth Golf Course near Lagoon E. The leak was fuel oil 1 & 2 that occurred in 1991 and resulted in 272 cubic yards of soil and documented groundwater contamination. The MPCA

closed the leak site in 2009. 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.

f) Sediment sampling – Sediment sampling will be conducted 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 Practice Guidance" (May 2017). 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 from each lagoon:

- Lagoon F – 2 sediment samples collected from 2 coring locations, based on its approximate size of 1.7 acres.
- Lagoon E – 4 sediment samples collected from 4 coring locations, based on its approximate size of 3.2 acres.
- Lagoon D – 2 sediment samples collected from 2 coring locations, based on its approximate size of 1.8 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. For Lagoon E, located near a previous petroleum fuel oil leak site, we recommend also analyzing those sediment 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 or a reduced list, if warranted.

The cost estimate includes the cost of the analyses listed above with a 20% contingency for additional analyses. We will access this contingency only upon approval by the BCWMC administrator. We will develop a memo summarizing the sediment sampling results and compare contaminant levels to MPCA Soil Reference Values to determine if the material could be used on another property as Unregulated Fill, or if the material will require landfill disposal if excavated.

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.

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.

g) 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.

h) Cultural resources desktop review - Barr will submit a data request to 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. At this time, it is anticipated that a Phase I cultural resources review (a literature review) may be required and can be completed as part of subsequent design and environmental review processes.

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

3) Evaluation and Concept Plans

a) Estimation of the extent and volume of accumulated sediment in Lagoons D, E, & F, based on review of the bathymetric 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) Identify environmental review and permitting requirements for the concepts, based on wetland delineations and other compiled data, and one (1) meeting with USACE, MN DNR and MPCA staff (see task 1b).

c) Use the BCWMC Phase 2 XP-SWMM and P8 models to estimate impacts to peak flood elevations and pollutant removals, respectively, as a result of the project concepts.

d) 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

a) Coordinate with BCWMC Administrator, Minneapolis staff and MPRB staff to determine the best means to gather public input, such as mailings, newspaper articles, open houses, etc. Primary group for public discussions will be the nearby residents, property owners, and, possibly, 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 City and MPRB.

5) Feasibility Report

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	$5,200
2) Field Investigations	$28,800
3) Evaluation and Concept Plans	$18,400
4) Public Engagement	$ 4,300
5) Feasibility Report	$17,300
Total	**$74,000**

Schedule

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

Tasks and milestones	Estimated Schedule
Kick-off meeting with BCWMC, City of Minneapolis, and MPRB staff	August 2019
Bathymetric surveys	August/September 2019
Sediment sampling	August/September 2019
Topographic and utility survey	August/September 2019
Wetland review/delineations	August/September 2019
Combined agency field review/TEP review	August/September 2019
Desktop Environmental study to assess for potential contamination	August 2019
Desktop Review – threatened and endangered species, cultural resources	August/September 2019
Meeting with BCWMC, City, MPRB, USACE, MN DNR, and MPCA	September/October 2019
Develop concept alternatives and cost estimates	October 2019 – January 2020
Public meeting	January/February 2020
Submit draft feasibility report for City and BCWMC staff review	March 13, 2020
City, MPRB and BCWMC staff complete review	March 27, 2020
Submit draft feasibility report for BCWMC review at Commission meeting	April 8, 2020
BCWMC completes review at Commission meeting	April 16, 2020
Submit final feasibility report for BCWMC review at Commission meeting	May 13, 2020
Final Feasibility Report – BCWMC approval at Commission meeting	May 21, 2020

Project Area
Ponds and Wetlands
Open Channel
Culvert or Bridge

N

0 300 600
Feet

Bassett Creek Watershed Management Commission

MAIN STEM DREDGING PROJECT AREA

FIGURE 1