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Approved 10-19-23

Memorandum

To: Bassett Creek Watershed Management Commission
From: Barr Engineering Company
Subject: Item 5D – Order Feasibility Study for Plymouth Creek Restoration, Dunkirk Lane to 38th Avenue North behind Plymouth Ice Center (2026 CR-P)
BCWMC October 19, 2023, Meeting
Date: October 12, 2023

Item 5D. Order Feasibility Study for Plymouth Creek Restoration, Dunkirk Lane to 38th Avenue North behind Plymouth Ice Center (2026 CR-P)

Recommendations:

1. Consider approving the scope of work and $111,100 budget presented in this memorandum and direct the Engineer to complete the feasibility study for the restoration of Plymouth Creek from Dunkirk Lane to 38th Avenue North behind Plymouth Ice Center (2026 CR-P).
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 stream feasibility study that complies with the requirements of the USACE, MnDNR, and BCWMC criteria.

Background

The proposed Plymouth Creek restoration project is in the Bassett Creek Watershed Management Commission's (BCWMC) current CIP slated for 2026 (2026 CR-P) with an estimated budget of $2,000,000. Staff recommends that this project be moved ahead in the CIP schedule to 2025 because the project currently slated for 2025 implementation (the 3rd project in the Medicine Lake Rd & Winnetka Ave Long Term Flood Mitigation Plan in Golden Valley) is not currently ready for feasibility study development and is not ready for implementation in 2025.

This Plymouth Creek restoration project is located entirely within the City of Plymouth and would address needed stabilization and restoration along approximately 7,000 feet of Plymouth Creek from Dunkirk Lane to just south of 38th Avenue North behind Plymouth Ice Center (Figure 1). This reach is located on a combination of privately owned and publicly owned properties.

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 would examine methods to stabilize and restore areas of erosion within this corridor.

The CIP project would address the issues identified by the City of Plymouth including, erosion, steep slopes, and sediment accumulation in this approximately 7,000-foot-long reach of the creek. Continued erosion along the stream will result in increased sediment and pollutant loading downstream, including Medicine Lake. Restoration and repair of Plymouth Creek in this area will reduce phosphorus and sediment loading (assist in meeting Medicine Lake TMDL goals), possibly improve riparian and in-stream habitats, and the removal of accumulated sediment will lower the flood potential for homes and stormwater infrastructure. Another project goal is to work with private landowners along the reach to expand buffers adjacent to the stream. The project is consistent with the goals (Section 4.1) and policies (Section 4.2.5) for stream restoration and protection 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 reach of Plymouth Creek 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 typically requires a cultural resources inventory.

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 BCWMC Engineer will work with the BCWMC Administrator and staff from the City of Plymouth (including water resources, parks and recreation and forestry staff) to identify the most-effective means to gather public input. Prior to completing the draft feasibility report, we will seek input from impacted landowners and users of adjacent public lands by discussing identified problems and the means under consideration to address the issues.

This feasibility study will address the approximately 7,000-foot-long reach (Figure 1) from Dunkirk Lane to just south of 38th Avenue North behind Plymouth Ice Center. This project will include bank stabilization measures and erosion repair methods, sediment removal, and possible re-meandering of Plymouth Creek. Consideration will be given to a variety of best management practices. Per BCWMC policy, the Commission will strive to utilize soft armoring techniques as much as possible and where feasible, including bio-logs, erosion control blanket, live stakes and fascines, slope shaping, and native vegetation buffers. However, soft armoring can result in tree removal, so we will also consider the impacts of tree removal, including the value of existing trees.

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

1) Project Meetings

a) One (1) project kick-off meeting with BCWMC Administrator, Plymouth staff (including water resources, parks and recreation, and forestry staff), Wayzata School District staff, and BCWMC commissioners representing Plymouth.

b) One (1) virtual meeting with BCWMC staff, Plymouth staff (including water resources, parks and recreation, and forestry staff), Wayzata School District, and agency staff (i.e., USACE, MnDNR, and MPCA), as needed, to discuss concept alternatives and review permit requirements for the project. This task will also include preparation of meeting minutes to confirm discussion results.

c) Biweekly updates to the project team throughout the project to provide updates on work completed, upcoming work, and any outstanding data requests throughout the project.

2) Field Investigations

a) Barr will complete a site walk of the reach with City staff to evaluate the existing conditions of the reach; locate (via GPS) and identify potential project features and design approaches to address

erosion, sedimentation, and/or obstruction concerns; and consider potential metrics for site prioritization. As part of the site visit, Barr will develop an ARC-GIS online map that can be used to document site conditions, photos, and document erosion throughout the creek reach. Following site visit, Barr will meet with City staff to review and get feedback on the prioritization matrix developed for the Bassett Creek Main Stem Feasibility Study, which was utilized to rank problem areas to focus the restoration concept development. Afterwards, Barr will incorporate one round of revisions to the prioritization matrix to align with City goals. We assume the City will coordinate access (as needed) and send letters to all property owners notifying them in advance of the site visit.

b) Sediment investigation – As part of the site walk, Barr will use hand tools, such as hand augers, to estimate the approximate depth and volume of sediment accumulation in the following sediment accumulation areas identified by the City: downstream of Yuma Lane, Vicksburg Lane, and 38th Avenue. During the site walk, Barr will review the reach for additional areas of sediment accumulation and evaluate if sediment accumulation investigation is needed in additional locations. Due to the expected small volume of accumulated material, we will not perform sediment testing as part of this study. For cost estimating purposes, we will assume the sediment is contaminated and requires landfill disposal. During design, if deemed necessary, sediment could be performed to analyze for potential contaminants such as polycyclic aromatic hydrocarbons, arsenic, and copper.

c) Desktop Wetland Assessment – Barr will perform a Level 1 desktop assessment for the project reach. A Level 1 review consists of reviewing soils, topography, National Wetland Inventory (NWI), and aerial photos to evaluate the potential presence of a wetland, identify its type, and/or estimate its approximate boundaries. We will complete the assessment for the project reach and within a 50-foot buffer on either side of the reach. Full wetland delineations as per the USACE 1987 Manual and regional supplements may need to be performed during the project design phase (outside the scope of this project). In the possible re-meander location, we will assume the entire re-meander area is a wetland, based on information provided by the City.

d) Desktop environmental review – Barr will conduct a review of the Minnesota Pollution Control Agency's (MPCA) "What's in my Neighborhood?" database to assess the potential for prior contamination along the project reach. We will include a summary of this data review in the feasibility study. Considering historic land use in the project area is primarily residential and park, we assume we will not need to complete a Phase I environmental site assessment (ESA) for this project; however, should the desktop assessment suggest there is concern for contamination along the creek, a Phase I ESA could be completed as part of final design.

e) Desktop topographic and utility location review – Barr will utilize the 2011 Minnesota Department of Natural Resources (MnDNR) LiDAR data for topographic information, in addition to any data collected during the site visit. We assume that Plymouth staff will provide available utility data (sanitary sewer, water main, and storm sewer) in GIS format. Sanitary sewer is adjacent to most of the creek reach and crosses the creek in multiple locations; we will need to consider the potential impacts of the sanitary sewer on restoration options. Full topographic and utility survey will need to occur during the project design phase (outside the scope of this project).

f) Drone video and photos – Based on communications with City staff, City staff will use an unmanned aircraft system (UAS) to collect video and photos of the project reach following leaf off to provide current detailed imagery of the reach that can also be used to help define project components, visualize the concepts, and estimate quantities. Due to tree cover, we do not recommend use of the UAS to collect topographic information.

g) Tree location, diameter, species, and condition survey – Barr will survey by GPS methods all trees with a diameter of 6 inches or greater, recording the location, diameter, species, and condition (e.g., dead/live, shaggy/peeling/deeply furrowed bark) of the trees within a 50-ft buffer on either side of the stream centerline (total width of 100 ft). In addition to aiding in the development of estimated project costs for the various scenarios (if tree removal is required), the tree survey will help us evaluate if the trees within the project area could provide habitat for the northern long eared bat (endangered). We assume no tagging of trees will be required.

h) Desktop threatened and endangered species review – Barr will perform a desktop review of the available databases to assess the potential for adverse impacts to state and federally listed species.

i) Desktop cultural resources review - In anticipation of future permitting for project development, Barr will request review of the existing database from the State Historic Preservation Office (SHPO) for information related to known historic and archaeological resources in the project vicinity and summarize any available information in the feasibility report. This work does not include a Phase I cultural resources review; if one is needed, it would be performed during final design.

j) Project easements – The proposed project is located on a combination of private and public properties. According to the City, no additional easements (permanent and/or temporary) will be required for construction.. We assume the City of Plymouth can provide a GIS layer showing existing easement locations within the project area. We will review the existing easements with City staff and confirm whether any easements are required for the project. If required, easement survey and acquisition will be completed during final design.

3) Evaluation and Concept Plans

a) Develop concepts for the project, considering input from stakeholders. This includes developing three concepts for stream restoration, channel stabilization, and erosion repair. In addition, the concepts will include design features such as sediment removal, re-establishing stream meanders, exploring ways to improve in-stream habitat, and improving the public's physical or visual access to the creek where it runs through public property, such as Plymouth Creek Elementary School and trail areas. To develop the three concepts, the reach will be reviewed in terms of erosion and site conditions to determine all locations that could be potentially used as a stream restoration area. The three concepts will be based on ranking potential stream restoration areas from low to high with the prioritization matrix developed as part of the project, similar to the methodology used for the 2023 Bassett Creek Main Stem Feasibility study.

   i) Analyze the alternatives for addressing identified issues within each reach.

   ii) Develop draft concept plans for each alternative.

   iii) Refine concept plans based on input from City staff and BCWMC.

b) Use the most current BCWMC XP-SWMM model results to review flow and flood information for the reach.

c) Identify permitting requirements for the concepts, based on available field and desktop data, and the results of the agency meeting (see task 1b).

d) Develop cost estimates for each concept, including a "30-year cost," analysis of life expectancy, and annualized cost per pound of pollutant removal for water quality treatment portions of the project.

e) Develop tree removal estimates for each concept, including removals needed to gain access to implement the concept as well as any estimated tree replacement.

4) Public Engagement

a) Coordinate with the BCWMC Administrator and City 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 adjacent property owners, other stakeholders including Plymouth Creek Elementary School staff. The budget for this task includes time to prepare for and attend one (1) in-person 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 presentations, 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.

5) Feasibility Report

a) Prepare draft report for review by City staff and BCWMC Administrator; revise report based upon review comments. We assume one set of comments will be provided by the City and BCWMC.

b) Present draft feasibility study findings at BCWMC meeting.

c) Prepare final report (revising draft report based on comments provided by the BCWMC) for approval at BCWMC meeting and use at future project hearing.

d) Present final feasibility study findings at BCWMC meeting.

Cost Estimate

Our cost estimate for the scope of work outlined above is summarized in the table below.

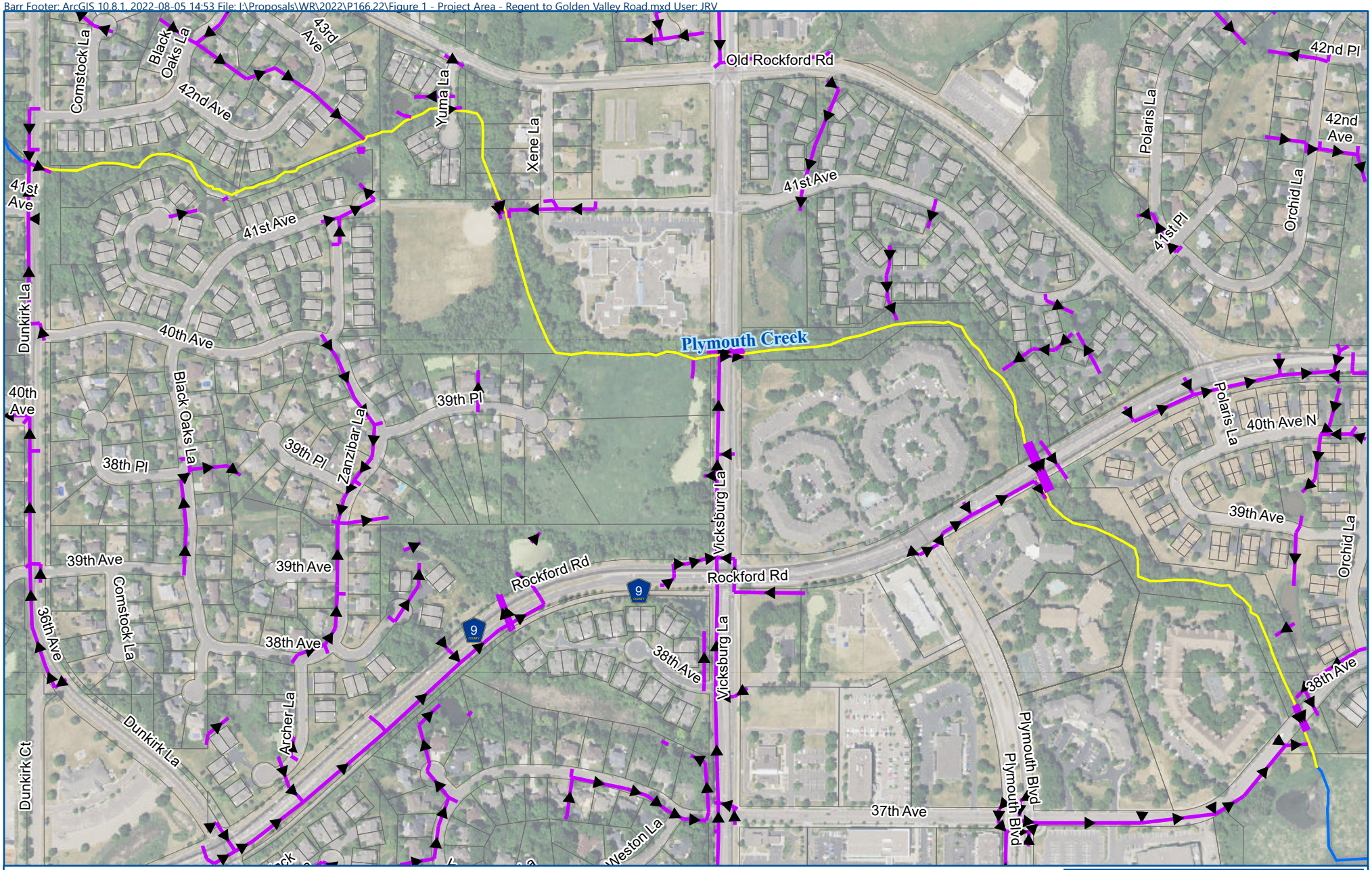
Tasks	Estimated Total
1) Project Meetings	$ 10,500
2) Field Investigations	$ 37,700
3) Evaluation and Concept Plans	$ 23,800
4) Public Engagement	$ 8,500
5) Feasibility Report	$ 30,600
Total	**$111,100**

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 and City of Plymouth	Late October 2023
Site visit	November 2023
Desktop topographic and utility review	November 2023
Desktop wetland review	November 2023
UAS photos/videos of alignment	November 2023
Desktop environmental review ("What's in My Neighborhood?")	November 2023
Desktop review – threatened and endangered species, cultural resources	November 2023
Meeting with BCWMC, city, and agency staff	December 2023
Develop concept alternatives and cost estimates	December 2023 – February 2024
Public meeting	March 2024
Submit draft feasibility report for city and BCWMC staff review	April 12, 2024
City and BCWMC staff complete review	April 26, 2024
Submit draft feasibility report for BCWMC review at Commission meeting	May 9, 2024
BCWMC completes review at Commission meeting	May 16, 20243
Submit final feasibility report for BCWMC review at Commission meeting	June 13, 2024
Final feasibility report – BCWMC approval at Commission meeting	**June 20, 2024**

Barr Footer: ArcGIS 10.8.1, 2022-08-05 14:53 File: I:\Proposals\WR\2022\P166.22\Figure 1 - Project Area - Regent to Golden Valley Road.mxd User: JRV



Project Area
Creeks
Storm Pipe
Parcels

N

500 0 500
Feet

BARR

PLYMOUTH CREEK
DUNKIRK LANE TO 38TH AVENUE BEHIND PLYMOUTH ICE CENTER
PROJECT AREA

FIGURE 1