

## Memorandum

**To:** Bassett Creek Watershed Management Commission (BCWMC)  
**From:** Barr Engineering Co.  
**Subject:** Item 5A: Consider Approval of 50% Design Plans for Bassett Creek Main Stem Restoration, Regent Avenue to Golden Valley Road (CR-M 2024) – Golden Valley, MN  
BCWMC July 17, 2025 Meeting Agenda  
**Date:** July 10, 2025  
**Project:** 23272114.00

### **5A Consider Approval of 50% Design Plans for Bassett Creek Main Stem Restoration Project, Regent Avenue to Golden Valley Road (CR-M 2024), Golden Valley, MN**

#### **Summary:**

**Proposed Work:** Bassett Creek Main Stem Restoration Project, Regent Avenue to Golden Valley Road (CR-M 2024), Golden Valley

**Basis for Review at Commission Meeting:** 50% Design Plans Review

**Change Impervious Surface Area:** N/A

**Recommendations for Commission Action:**

- 1) Consider approval of 50% design plans
- 2) Authorize Commission Engineer to continue design and bring 90% design to a future Commission meeting
- 3) Consider options for reducing the estimated construction cost or revising project budget

At the September 21, 2023 meeting, the Commission passed resolution 23-06 officially ordering the Bassett Creek Main Stem Restoration Project (2024 CIP Project CR-M), at an estimated cost of \$2,241,000. The project's funding sources include:

- Up to \$1,741,000 available to the Commission through a Hennepin County tax levy on watershed taxpayers (CIP levy), with \$434,000 levied in 2024, \$653,500 levied in 2025, and an estimated \$653,500 to be levied in 2026.
- Up to \$200,000 from the Commission's Closed Project Account.
- \$200,000 from the City of Golden Valley's portion of the Commission's Channel Maintenance Fund.
- Up to \$100,000 from the City of Golden Valley's capital improvement program.

The Commission executed a cooperative agreement with the City of Golden Valley (City) that specifies the Commission will provide engineering services for the project and the City will bid, award, and administer construction of the project, and provide long term maintenance. In March 2025, the Commission approved a scope of work for engineering services to be provided by the Commission Engineer including project design, preparation of bid documents, assistance with community engagement, preparation of exhibits for necessary property rights, permitting and environmental review,

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Date: July 10, 2025  
Page: 2

---

construction observation, environmental oversight, and inspections, all in cooperation and close coordination with the City. Per a June 2025 Commission-approved amendment to the engineering services scope, the Commission Engineer's services also include performing a field wetland delineation, an architectural survey, and corresponding reports.

The Commission Engineer completed the 50% design plans which must be reviewed and approved by the Commission. The remainder of this memo presents information about the prior feasibility study, work completed since March, the design features of the 50% plans, cost, schedule and approval/permitting needs.

## **Feasibility Study and Selected Project**

The Commission completed a feasibility study in June 2023 (Feasibility Report for Bassett Creek Main Stem Restoration, Regent to Golden Valley Road, June 2023) that identified, mapped, and prioritized stream sections in need of restoration along a 7,000-foot section of Bassett Creek (known as Ĥaĥá Wakpádaŋ in the Dakota language) in Golden Valley from Regent Avenue to Golden Valley Road (see attached figure). The feasibility report and further project information can be found online at [Bassett Creek Watershed Management Commission :: Bassett Creek Restoration Project: Regent Ave. to Golden Valley Rd.](#)

The approximately 7,000-foot reach is located on a combination of privately-owned and publicly-owned properties, including portions of land owned by Golden Valley, and operated in partnership with Three Rivers Park (TRPD) through the Sochacki Park Joint Powers Agreement. The creek maintains a steady base flow year-round and meanders through neighborhoods and wooded backyards and alongside a wooded reach of Sochacki Park. Erosion of the stream banks varies along the reach from mild to severe, with eroding bank heights varying from 2.5 to approximately 8 feet. The goal of the study and the project was to identify methods to reduce sediment load and associated nutrient and contamination loading to Bassett Creek, preserve and enhance in-stream and riparian habitats, and prevent future channel erosion.

The feasibility study identified 79 unique locations for stabilization, which were grouped into 40 restoration areas within the approximate 7,000-foot assessed reach. The restoration areas included a variety of stream restoration methods such as grading, vegetation establishment (plantings, fascines, etc.), riprap, j-hook vanes, cross vanes, and toe wood. The restoration areas were ranked from low to high priority depending on several factors, including the severity of erosion, protection of existing infrastructure, and public vs. private ownership. The Commission Engineer developed three alternatives using the ranked restoration areas:

- Alternative 1 – completing restoration in high priority areas only
- Alternative 2 – completing restoration in high and medium priority areas
- Alternative 3 – completing restoration in high, medium, and low priority areas

At their June 15, 2023 meeting, the Commission approved the implementation of Alternative 3, to stabilize all eroding streambanks including those ranked high, medium, and low priority. The project is expected to reduce pollution in Ĥaĥá Wakpádaŋ / Bassett Creek and downstream in the Mississippi River by an estimated 82 lbs. of total phosphorus and 165,000 lbs. of total suspended solids on an average annual basis.

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BCWMC July 17, 2025 Meeting Agenda  
Date: July 10, 2025  
Page: 3

---

## Work Completed Since Feasibility Study

At their March 20, 2025 meeting, the Commission approved the Commission Engineer's scope and budget for design and construction oversight.

After the approval in March, the Commission Engineer began fieldwork, starting with a drone flight to collect elevation data along the stream reach. The drone technology can collect elevation data along the banks but cannot collect elevation data below the creek water level. The Commission Engineer supplemented data collected by the drone with a survey grade Real-Time Kinematic Global Positioning System (RTK-GPS) unit to collect elevation data below the water level, such as the toe of the banks and thalweg (flow path) of the channel. The elevation data collected by the drone and RTK GPS unit provided detailed surface information for the Commission Engineer to develop the 50% plan drawings and hydraulic model velocities and water levels throughout the reach.

During the field elevation data collection, the field team collected other data, including changes in erosion since the feasibility study, potential design modifications, and locations of existing utilities (power poles, manholes, etc.). The Commission Engineer's final field task completed as part of the 50% design plan development was to walk the stream reach with City staff to assess potential construction access routes. The Commission Engineer used data gathered from the fieldwork to update the concept plans from the feasibility study to reflect restoration design changes and proposed construction access routes.

On June 5, 2025, the City and Commission hosted a public open house to get feedback from the community on the in-progress 50% design plans. The Commission Engineer prepared 12 boards that described project background, the updated proposed restoration methods, and revised potential construction access along the reach. Forty-one individuals signed in at the public meeting and approximately half of those individuals filled out comment cards. The comment cards requested feedback on the design, willingness to allow construction access, and whether the homeowner wanted to be added to a project information email list. Overall, attendees expressed support for the proposed project, engaged in conversation and provided feedback on several topics, including:

- Opinions on restoration methods such as riprap vs. alternative stream restoration methods
- Desire to maintain existing riprap that homeowners installed
- Vegetation management and establishment including what it will look like, how it will be maintained, and some specific species suggestions
- Trees (falling into creek, tree removal, tree preservation, species of replacement trees)
- Desire to maintain ability to kayak in channel
- Public foot-traffic access such as new pathways to creek
- Construction access for the project including what it will entail and how it will be restored
- Construction-related concerns such as road closures, noise, types of equipment, etc.

During the feasibility study, the desktop environmental review identified a fuel oil release at ISD 281 Noble Elementary school. For the 50% environmental review, the Commission Engineer reviewed the MPCA regulatory files related to the fuel release and the Commission Engineer concluded that the fuel release is not expected to have migrated offsite and is not expected to impact Bassett Creek. Therefore, the Commission Engineer does not recommend additional record review or investigation at this time.

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BCWMC July 17, 2025 Meeting Agenda  
Date: July 10, 2025  
Page: 4

---

As part of the 50% design, the Commission Engineer communicated with permitting agencies including US Army Corps of Engineers (USACE), Minnesota State Historic Preservation Office (SHPO), and Minnesota Pollution Control Agency (MPCA) to verify permit application requirements. City staff, the BCWMC Administrator, and Commission Engineer held a pre-filing meeting with the MPCA in June as part of the Clean Water Act Section 401 Water Quality Certification process.

Three tasks not included in the base engineering and design scope were identified for completion as part of the permitting process: field wetland delineation, archaeological survey, and architectural survey.

#### Wetland Delineation

USACE staff informed the Commission Engineer that based on preliminary review, a field wetland delineation will be required for the proposed project. The Commission approved an amended scope and budget for the field wetland delineation at the June 18, 2025 BCWMC meeting. The field wetland delineation survey is tentatively scheduled for mid to late-July.

The field wetland delineation survey will also be used to evaluate the applicability of the City of Golden Valley's buffer ordinance requirements for the proposed project. The Commission Engineer will work with the City of Golden Valley staff to ensure the project meets the City's buffer requirements.

#### Archaeological and Architectural Surveys

SHPO and USACE staff recommended completing archaeological and architectural surveys based on their preliminary review of the project and anticipated permit requirements once we apply for the permits. The archaeological survey will be completed in late July or August as part of the initial project contingency scope. As authorized at the March meeting, BCWMC Administrator approved the scope and budget for the archeological survey on June 27, 2025. The Commission approved an amended scope and budget for the architectural survey at the June 18, 2025 BCWMC meeting, and that work is anticipated to begin in mid-July.

### **50% Design Features**

The project design is underway. In addition to comments from the Commission Administrator and the public during the feasibility study, the 50% design incorporated recent comments and direction from the City.

Similar to the feasibility study, the main components of the 50% design include:

- Stream bank grading and establishing vegetation
- Protecting existing utility infrastructure with rock riprap armoring and/or in-stream rock cross vanes to maintain stream bed elevation
- Installing a variety of stream bank stabilization elements including riprap, root wads and toe wood, coir logs, rock j-hook vanes and cross vanes, fascines, and live stakes
- Enhancing protection near pipe outfalls and street crossings
- Stabilizing channels that carry parking lot runoff
- Establishing new vegetation in areas disturbed by construction

Updates to the feasibility study as part of the 50% design include:

- Updating vegetation management (increasing buffer widths and removing invasive species for a total vegetation enhancement area of 7.1 acres)

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 BCWMC July 17, 2025 Meeting Agenda  
 Date: July 10, 2025  
 Page: 5

- Removing j-hook vanes in some areas
- Extending stabilization elements to protect areas where erosion has increased since the feasibility study
- Modifying protection or restoration methods in areas where erosion has increased (e.g., revising design from grading with vegetation to toe wood or riprap)
- Revising construction access routes based on field walk with City of Golden Valley staff

The table below highlights changes from the feasibility study to the 50% design plans for construction cost, restoration length, pollutant removal, and tree removal:

Item	Feasibility Study	50% Plans
Construction Cost with Contingency	\$1,568,700	\$2,592,000
Length of Restoration	7,370 feet	8,585 feet
Annual Pollutant Removal <sup>[1]</sup>	82.4 pounds total phosphorus 164,820 pounds total suspended solids	86.1 pounds total phosphorus 172,180 pounds total suspended solids
Tree Removals <sup>[2]</sup>	88	57

[1] Pollutant removal changes noted for the 50% design plans are directly related to the increased length of bank stabilization (thereby reducing phosphorus and total suspended solids loading downstream). For the 90% design plans review, pollutant removals will be calculated with additional detail related to changes in bank erodibility categories between the October 2022 feasibility study site visit and the April 2025 design site visit.

[2] Tree removal quantities do not include the removal of buckthorn or dead/dying trees.

### Opinion of Cost for 50% Design Plans

Description	Estimated Cost
Mobilization / Demobilization	\$182,000
Traffic Control	\$30,000
Erosion & Sediment Control	\$91,000
Removals (clearing / grubbing, trees, excavation)	\$202,000
Stream Restoration (grading, installing structures, etc.)	\$958,000
Restoration and Vegetation Management <sup>[1]</sup>	\$697,000
<b>Estimated Construction Cost</b>	<b>\$2,160,000</b>
<b>Construction Contingency (20%)</b>	<b>\$432,000</b>
<b>Total Estimated Construction Cost</b>	<b>\$2,592,000</b>

[1] This work will be completed under a separate bid and contract and includes mobilization, demobilization, traffic control and other items in addition to restoration and vegetation management

The detailed cost estimates are attached.

The total estimated project costs including design and engineering are currently over the total budget allocated for this project. As shown above, the estimated construction costs for the feasibility study were \$1,568,700, while the estimated construction costs for the 50% design plans are \$2,592,000, an increase of \$1,023,300. The estimated construction costs have increased since the feasibility study for multiple reasons, including:

- The feasibility study used construction pricing/bids that are now over two years old, and construction and material costs have increased.

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BCWMC July 17, 2025 Meeting Agenda  
Date: July 10, 2025  
Page: 6

---

- The stream restoration length increased by approximately 1,200 feet due to increased erosion since the Fall 2022 feasibility study field work.
- The 50% design plans incorporate more vegetation management (removal of invasives, establishment of native buffers) than proposed in the feasibility study. The vegetation management component of this project was expanded based on communications with City staff to enhance riparian health while complying with city buffer codes. In some situations (e.g., public land), native vegetation is proposed beyond the required city buffer width.

There are options for reducing the estimated construction costs as we proceed with developing the 90% design plans. For example, the Commission Engineer can re-prioritize the stream restoration areas based on the more recent field work and remove proposed construction in low priority areas. In addition, the 50% design assumes that all landowners will allow construction on their property, however, this may not be the case and stream restoration areas may have to be removed from those properties as part of the 90% plans. The Commission could pursue grant funding such as a Minnesota Department of Natural Resources (MDNR) Conservation Partners Legacy (CPL) grant to cover a portion of the increased construction costs. The Commission could also decide to revise the project budget by requesting additional levy funds in 2027 (the 2026 maximum levy has already been set).

## Schedule

The table below outlines the previous tentative schedule included in the engineering services work scope approved at the March 20, 2025 BCWMC meeting. At that meeting, the Commission engineer noted that the schedule was subject to change based on various factors such as permitting, design changes, and unforeseen circumstances. The Commission Engineer recommends revising the schedule as outlined below to account for anticipated delays related to permitting and to take advantage of a more favorable bidding environment in late winter or early spring of next year, rather than this fall.

Tasks and milestones	Previous Tentative Schedule	Recommended Revised Schedule
Design – complete 50% plans for review and permitting	Summer 2025	July 2025
Permitting	Summer / Fall 2025	Now through January 2026
Public Meeting #2	Not set	September 2025
Design – complete 90% plans for review	Fall 2025	October 2025
Design – complete 100% plans for review	Fall 2025	November 2025
Bidding	Fall 2025	January/February 2026
Construction	Fall 2025 / Winter 2025/2026	Late Summer / Fall 2026
Restoration, Planting and Vegetation Establishment	2026-2028	2026-2030 (Spring 2027 planting)
Record construction drawings, final restoration, project closeout	Fall 2025 / Winter 2026	Late 2026 / Early 2027

## Approvals/permits required

In addition to Commission approval of the plans, other permits/approvals will be required for this project, including the following:

- Compliance with the Minnesota Wetland Conservation Act (WCA)

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BCWMC July 17, 2025 Meeting Agenda  
Date: July 10, 2025  
Page: 7

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- USACE Permit (Section 404 permit, Section 401 Certification, and Section 106)
- MDNR Public Waters Work Permit
- Minnesota Pollution Control Agency (MPCA) Construction Stormwater General Permit
- City of Golden Valley Right-of-Way Permit
- City of Golden Valley Stormwater Permit
- City of Golden Valley Buffer Ordinance Requirements
- Bassett Creek Watershed Management Commission Floodplain Requirements

### **Anticipated Work for 90% Plans**

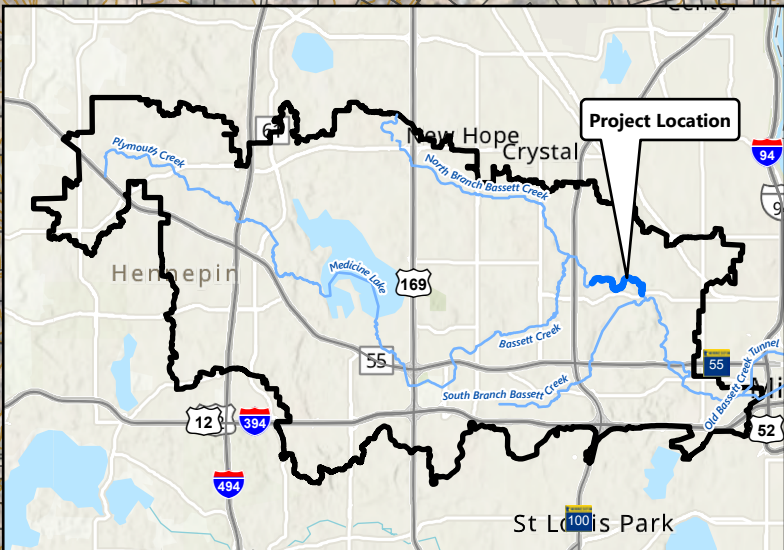
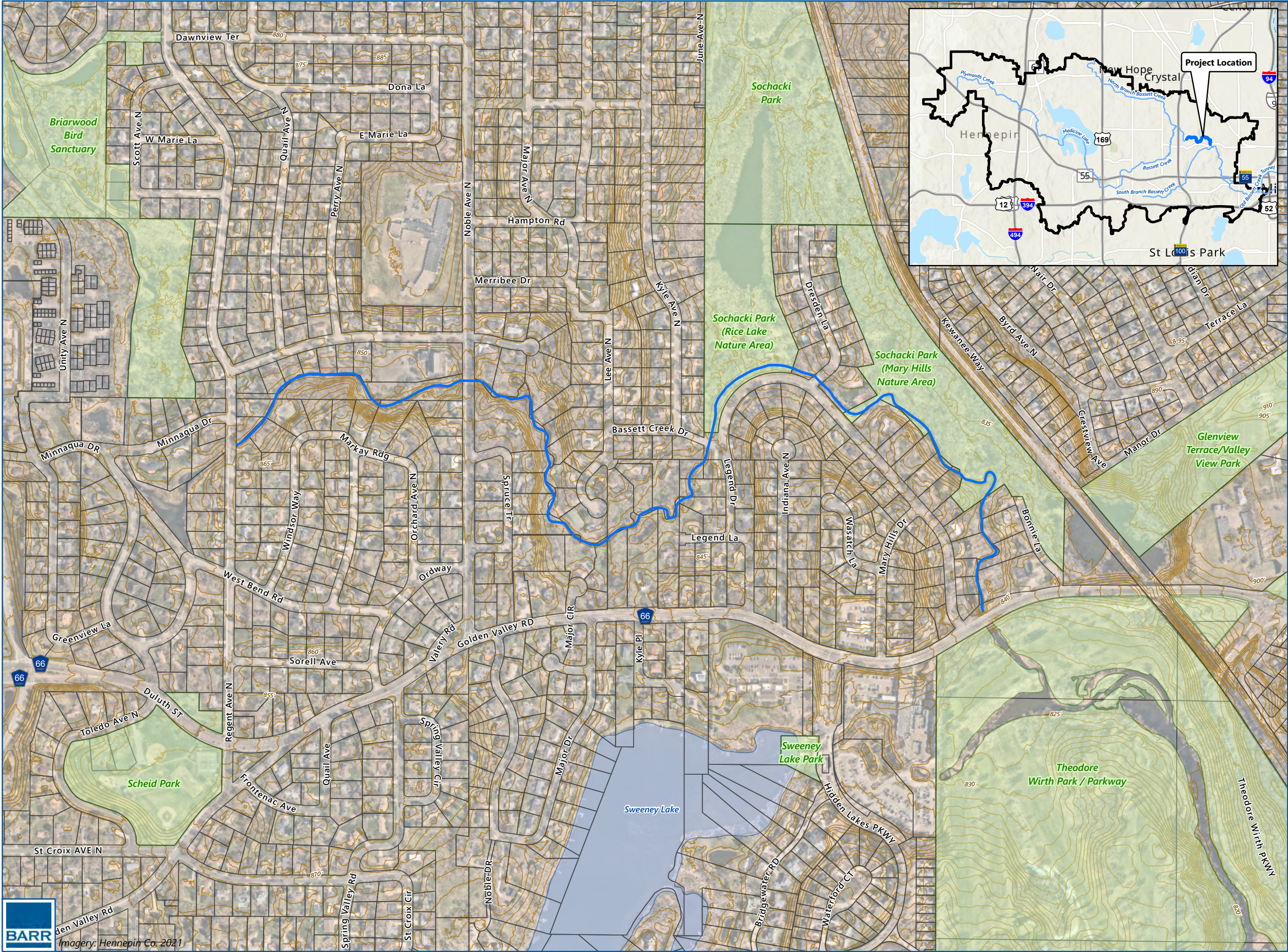
If the Commission approves the 50% plans and directs the Commission Engineer to move forward with 90% designs the following tasks will be necessary:

- Update plans to 90% design
- Update cost estimates for the 90% design
- Develop construction/technical specifications
- Host a second public meeting
- File permit applications
- Assist the City with easement acquisition
- Develop proposed conditions hydraulic model to demonstrate no net loss in floodplain storage and no increase in flood level because of the project

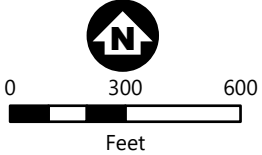
### **Recommendation for Commission Action**

- 1) Consider approval of 50% design plans
- 2) Authorize Commission Engineer to continue design, provide options for cost reductions, and bring 90% design to a future Commission meeting.
- 3) Consider options for reducing the estimated construction cost or revising project budget





- Bassett Creek
- 5-Foot Contour
- Lakes and Ponds
- Parcel Boundary
- Park Boundary



PROJECT LOCATION  
Main Stem  
Restoration Feasibility Study  
BCWMC

FIGURE 1-1





<div><div>BARR</div><div>ENGINEER'S OPINION OF PROBABLE PROJECT COST</div><div>PROJECT: Bassett Creek Main Stem Restoration Project, Regent Avenue to Golden Valley Road (CR-M 2024)</div><div>LOCATION: City of Golden Valley</div><div>PROJECT #: 23272114.00</div><div>PHASE ONE EARTHWORK AND STRUCTURES - 50% PRELIMINARY DESIGN OPINION OF COST - SUMMARY</div></div>			SHEET: 1 OF 1	
			CREATED BY: ADB2	DATE: 5/20/2025
			CHECKED BY: JCO	DATE: 6/29/2025
			APPROVED BY: JCO	DATE: 7/9/2025
			ISSUED: FOR REVIEW	DATE: 7/9/2025
			ISSUED:	DATE:
			ISSUED:	DATE:

Section Title	Item Code	ITEM DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT COST	ITEM COST	NOTES
GENERAL							
	A	MOBILIZATION/DEMObILIZATION	LS	1	\$132,000	\$ 132,000.00	1,2,3,4,5,6
	B	CONTROL OF WATER	LS	1	\$50,000	\$ 50,000.00	1,2,3,4,5,6
	C	TRAFFIC CONTROL	LS	1	\$30,000	\$ 30,000.00	1,2,3,4,5,6
EROSION CONTROL AND REMOVALS							
	D	CONSTRUCTION ENTRANCE	EA	19	\$2,500	\$ 47,500.00	1,2,3,4,5,6
	E	SILT FENCE	LF	2,275	\$4	\$ 9,100.00	1,2,3,4,5,6
	F	SEDIMENT CONTROL LOG	LF	2,980	\$4	\$ 11,920.00	1,2,3,4,5,6
	G	INLET PROTECTION	EA	14	\$200	\$ 2,800.00	1,2,3,4,5,6
	H	TEMPORARY STREAM CROSSING	EA	5	\$4,000	\$ 20,000.00	1,2,3,4,5,6
	I	CLEARING AND GRUBBING TREES/SHRUBS LESS THAN 12" DIAMETER (MEDIUM DENSITY)	LS	1.0	\$15,000	\$ 15,000.00	1,2,3,4,5,6
	J	SELECT TREE REMOVAL AND SALVAGE WITH ROOT WAD (<12")	EA	55.0	\$250	\$ 13,750.00	1,2,3,4,5,6
	K	SELECT TREE REMOVAL AND SALVAGE WITH ROOT WAD (>12")	EA	23.0	\$300	\$ 6,900.00	1,2,3,4,5,6
	L	COMMON EXCAVATION - EXCAVATE, HAUL, AND DISPOSE OFFSITE	CY	1,852	\$90	\$ 166,635.71	1,2,3,4,5,6
CIVIL							
	M	GRADING (P)	SY	4,390	\$15	\$ 65,850.00	1,2,3,4,5,6
	N	FURNISH AND INSTALL GRANULAR FILTER	TON	390	\$121	\$ 47,190.00	1,2,3,4,5,6
	O	FURNISH AND INSTALL FIELDSTONE RIPRAP	TON	1,560	\$120	\$ 187,200.00	1,2,3,4,5,6
	P	FURNISH AND INSTALL CROSS VANE	LF	675	\$120	\$ 81,000.00	1,2,3,4,5,6
	Q	FURNISH AND INSTALL J-HOOK VANE	EA	59	\$2,000	\$ 118,000.00	1,2,3,4,5,6
	R	FURNISH AND INSTALL FASCINES	LF	505	\$56	\$ 28,406.25	1,2,3,4,5,6
	S	FURNISH AND INSTALL TOE WOOD (INCLUDES 173 ROOT WADS)	LF	1,645	\$75	\$ 123,375.00	1,2,3,4,5,6
	T	FURNISH AND INSTALL ROOTWAD FROM OFF SITE SOURCE	EA	146	\$294	\$ 42,887.50	1,2,3,4,5,6
	U	INSTALL ROOTWAD FROM ON SITE SOURCE	EA	78	\$235	\$ 18,330.00	1,2,3,4,5,6
	V	FURNISH AND INSTALL VRSS LIFTS	LF	3,340	\$68	\$ 225,450.00	1,2,3,4,5,6
	W	FURNISH AND INSTALL RAIN GARDEN	LS	1	\$20,000	\$ 20,000.00	1,2,3,4,5,6
		CONSTRUCTION SUBTOTAL				\$1,463,000	1,2,3,4,5,6,7
		CONSTRUCTION CONTINGENCY (20%)				\$293,000	1,4,8
		ESTIMATED CONSTRUCTION COST				\$1,756,000	1,2,3,4,5,6,7
ESTIMATED ACCURACY RANGE			-10%			\$1,581,000	1,2,3,4,5,6,7
			15%			\$2,020,000	1,2,3,4,5,6,7

Notes

1

Quantities based on Design Work Completed (50%).

2

Unit Prices Based on Information Available at This Time.

3

Limited Soil Boring and Field Investigation Information Available.

4

This design level (Class 2, 30-70% design completion per ASTM E 2516-11) cost estimate is based on concept designs, alignments, quantities and unit prices. Costs will change with further design. Time value-of-money escalation costs are not included. A construction schedule is not available at this time. Contingency is an allowance for the net sum of costs that will be in the Final Total Project Cost at the time of the completion of design, but are not included at this level of project definition. The estimated accuracy range for the Total Project Cost as the project is defined is -10% to +15%. The accuracy range is based on professional judgement considering the level of design completed, the complexity of the project and the uncertainties in the project as scoped. The contingency and the accuracy range are not intended to include costs for future scope changes that are not part of the project as currently scoped or costs for risk contingency. Operation and Maintenance costs are not included.

5

Estimate assumes that projects will not be located on contaminated soil.

6

Estimate costs are to construct the project. The estimated costs do not include maintenance, monitoring or additional tasks following construction.

7

Estimate costs are reported to nearest thousand dollars.

PREPARED BY: BARR ENGINEERING COMPANY				SHEET:	1	OF	1
<b>ENGINEER'S OPINION OF PROBABLE PROJECT COST</b> PROJECT: Bassett Creek Main Stem Restoration Project, Regent Avenue to Golden Valley Road (CR-M 2024) LOCATION: City of Golden Valley PROJECT #: 23272114.00 <b>PHASE TWO RESTORATION - 50% PRELIMINARY DESIGN OPINION OF COST - SUMMARY</b>				CREATED BY:	ADB2	DATE:	5/20/2025
				CHECKED BY:	JCO	DATE:	6/25/2025
				APPROVED BY:	JCO	DATE:	7/9/2025
				ISSUED:	FOR REVIEW	DATE:	7/9/2025
				ISSUED:		DATE:	

Section Title	Item Code	ITEM DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT COST	ITEM COST	NOTES
GENERAL							
	A	MOBILIZATION/DEMOBILIZATION	LS	1	\$64,000	\$ 64,000.00	1,2,3,4,5,6
	B	TRAFFIC CONTROL	LS	1	\$5,000	\$ 5,000.00	1,2,3,4,5,6
LANDSCAPE AND RESTORATION							
	C	INVASIVE PLANT REMOVAL AND HERBICIDE APPLICATION	ACRE	5.6	\$6,400	\$ 35,840.00	1,2,3,4,5,6
	D	IMPORT AND PLACE TOPSOIL	CY	27.0	\$80	\$ 2,160.00	1,2,3,4,5,6
	E	FURNISH AND PLANT TREES	EA	200	\$500	\$ 100,000.00	1,2,3,4,5,6
	F	FURNISH AND INSTALL SHRUBS	EA	1,368	\$100	\$ 136,800.00	1,2,3,4,5,6
	G	FURNISH AND INSTALL PLUGS	EA	16,940	\$8	\$ 135,520.00	1,2,3,4,5,6
	H	FURNISH AND INSTALL SEED MIX	ACRE	7.1	\$4,500	\$ 31,950.00	1,2,3,4,5,6
	I	FURNISH AND INSTALL LIVE STAKES	EA	3,340	\$20	\$ 66,800.00	1,2,3,4,5,6
	J	FURNISH AND INSTALL EROSION CONTROL BLANKET	SY	17,169	\$3	\$ 51,506.00	1,2,3,4,5,6
	K	ANNUAL VEGETATION ESTABLISHMENT AND MAINTENANCE	EA	3	\$22,500	\$ 67,500.00	1,2,3,4,5,6
		CONSTRUCTION SUBTOTAL				\$697,000	1,2,3,4,5,6,7
		CONSTRUCTION CONTINGENCY (20%)				\$139,000	1,4,7
		ESTIMATED CONSTRUCTION COST				\$836,000	1,2,3,4,5,6,7
ESTIMATED ACCURACY RANGE			-10%			\$753,000	1,2,3,4,5,6,7
			15%			\$962,000	1,2,3,4,5,6,7

Notes

<sup>1</sup> Quantities based on Design Work Completed (50%).

<sup>2</sup> Unit Prices Based on Information Available at This Time.

<sup>3</sup> Limited Soil Boring and Field Investigation Information Available.

<sup>4</sup> This design level (Class 2, 30-70% design completion per ASTM E 2516-11) cost estimate is based on concept designs, alignments, quantities and unit prices. Costs will change with further design. Time value-of-money escalation costs are not included. A construction schedule is not available at this time. Contingency is an allowance for the net sum of costs that will be in the Final Total Project Cost at the time of the completion of design, but are not included at this level of project definition. The estimated accuracy range for the Total Project Cost as the project is defined is -10% to +15%. The accuracy range is based on professional judgement considering the level of design completed, the complexity of the project and the uncertainties in the project as scoped. The contingency and the accuracy range are not intended to include costs for future scope changes that are not part of the project as currently scoped or costs for risk contingency. Operation and Maintenance costs are not included.

<sup>5</sup> Estimate assumes that projects will not be located on contaminated soil.

<sup>6</sup> Estimate costs are to construct the project. The estimated costs do not include maintenance, monitoring or additional tasks following construction.

<sup>7</sup> Estimate costs are reported to nearest thousand dollars.