City Council Work Session
Tuesday, June 16, 2026 at 6:00 PM
Public Meeting Room

AGENDA

1. **Call to Order**
2. **Items for Discussion**
   A. Woolen Mill Dam Feasibility Report
   B. Fire Department Staffing
   C. 2027 Budget Preview - General Fund and Capital Fund Balances
   D. Review Housing Priorities for 2027 Budget
   E. Reorganization of the Housing and Redevelopment and Economic Development Authority Boards
3. **Future Discussion**
4. **Adjournment**

(The Council may meet as a group for dinner)

Please contact the City Administrator's Office if you need special accommodations while attending this meeting.

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Council Work Session Memorandum

TO:	Mayor and City Council
THROUGH:	Jessica Kinser, City Administrator
FROM:	Mark DuChene, Director of Engineering (City Engineer)
MEETING DATE:	June 16, 2026
SUBJECT:	Woolen Mill Dam Feasibility Report

Discussion:

Attached is the final feasibility report for the Woolen Mill Dam repair project. City Staff will provide a high-level review of the report with the Council and will be seeking direction from the Council on how to proceed. The report focuses on two design alternatives that are the result of previous input and feedback from a combination of city staff, elected officials, agency partners and the public. It should be noted that a third option of just repairing the damaged section of the dam with the allocated FEMA money is also still an option.

Attachments:

1. Woolen Mill Feasability Report_05212026_final

Faribault Woolen Mill Dam

Feasibility Study

Prepared for
The City of Faribault

Prepared by
Barr Engineering Co.

May 2026

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Minneapolis, MN 55435
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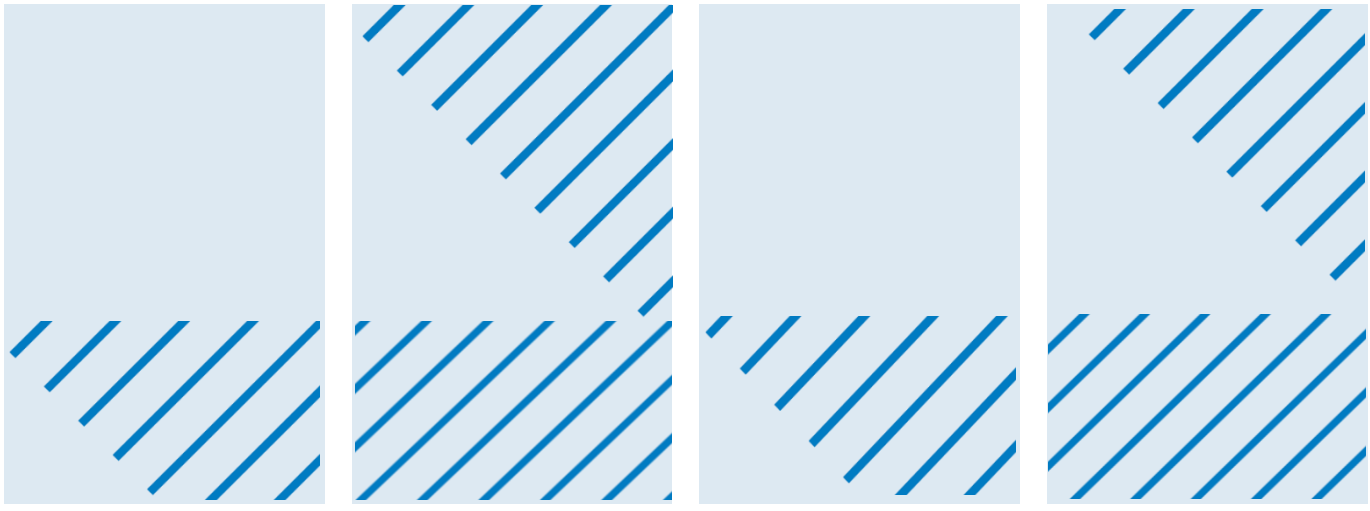
barr.com



Certification

Jon D Ausdemore, PE
Professional Engineer #: 45654

May 21, 2026
Date

The professional staff involved in the preparation of this report includes the following:

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Faribault Woolen Mill Dam

May 2026

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Abbreviations

BWSR	Board of Water and Soil Resources
CLOMR	Conditional Letter of Map Revision
Cfs	cubic feet per second
EAW	Environmental Assessment Worksheet
EIS	Environmental Impact Statement
EQB	Environmental Quality Board
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
IDF	Inflow Design Flood
LCCMR	Legislative-Citizen Commission on Minnesota Resources
LGU	Local Governing Unit
LSOHC	Lessard-Sams Outdoor Heritage Council
MnDNR	Minnesota Department of Natural Resources
MPARS	Minnesota Permitting and Reporting System
MPCA	Minnesota Pollution Control Agency
NPDES/SDS	National Pollutant Discharge Elimination System / State Disposal System
NOAA	National Oceanic and Atmospheric Administration
NRHP	National Register of Historic Places
OHWL	Ordinary High-Water Level
SWCD	Soil and Water Conservation District
SWPPP	Stormwater Pollution Prevention Plan
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Service

1 Woolen Mill Dam Description

1.1 General

The City owns and maintains the Woolen Mill Dam in Faribault, Minnesota, on the Cannon River. The dam is a popular feature in downtown Faribault located at Slevin Park next to the Faribault Woolen Mill. The dam and adjacent features are shown in Figure 1-1.

The City has contracted Barr Engineering Co. (Barr) to review the condition of the existing structures of the Woolen Mill Dam that partially failed in the summer of 2024 and develop options for repair or replacement of the structures such that they meet applicable dam safety standards and City objectives. This report summarizes the general background and design considerations used for the development of repair or replacement options, and includes the descriptions, assumptions, estimated opinion of probable construction costs, and relative advantages and disadvantages for each option developed in relation to project objectives. In conjunction with the evaluation of structure conditions, this report is intended to provide the necessary information to the City to select one option for further design and subsequent implementation at the project site.

1.2 Dam Description

The dam consists of two concrete gravity spillway structures: a primary concrete “ogee” dam on the right or southern abutment and a smaller concrete gravity dam with stop logs and an overflow ogee spillway, on the left or northern abutment. The two spillway structures are separated by an earthen island approximately 435 feet in length. The total storage is estimated to be 1,100 acre-feet (normal storage is 750 acre-feet), and the dam has a height of 12 feet and a total length of 650 feet.

The dam is listed as having a hazard rating of “significant,” meaning a failure would likely result in environmental or property damage but loss of life is unlikely.

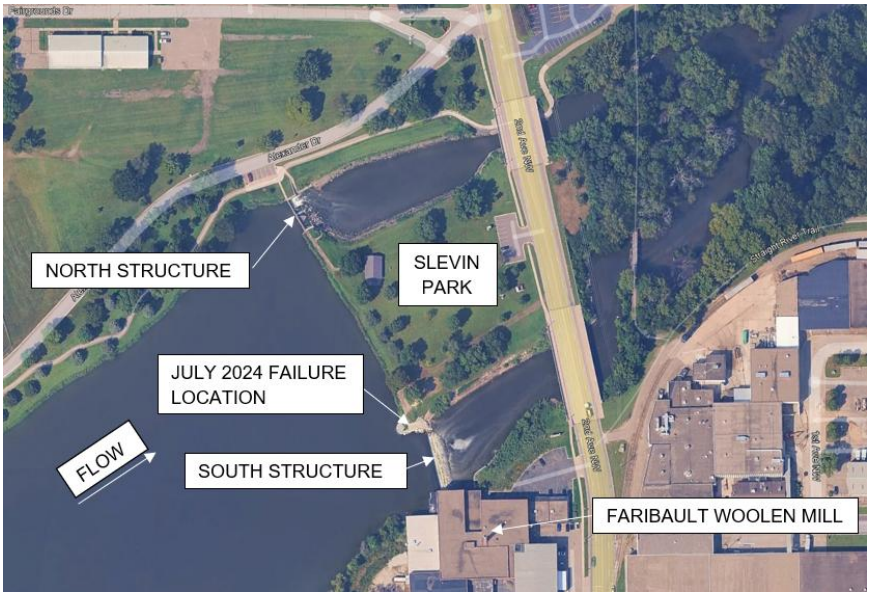


Figure 1-1 Site Layout

1.3 Dam History

The dam was originally constructed in 1865. The City became the owner in 1938 and was also deeded the flowage rights. Documented repairs to the dam were completed in approximately 1967 and 1984. These repairs included replacing and capping the original south spillway with reinforced concrete and also appear to have addressed seepage at both spillways.

Flooding in July of 2024 led to overtopping of the left (north) abutment of the south spillway that caused severe erosion and failure of the north abutment wing wall. The City placed rock and soil at the left abutment to maintain the pool. During this event, water also overtopped the earthen portion of the right abutment of the north spillway for approximately 100 feet. The overtopping of this earthen section has occurred several times as depicted in photos, discussions with City staff, and indicated by historic repair drawings showing re-grading of the area.

A visual condition inspection of the Woolen Mill Dam was completed by Barr Engineering Co. (Barr) on February 26, 2025. A memorandum documenting the findings of the inspection is included in Appendix A. The inspection concluded that the North spillway structure is considered to be in “Fair” condition per the definition developed by the National Inventory of Dams. Fair condition indicates no existing dam safety deficiencies are recognized for normal operating conditions. Extreme events and maintenance conditions may result in a dam deficiency. Additionally, the dam does not have an operations, maintenance, and monitoring plan, and it is showing signs of deterioration, with the stop logs being largely inoperable.

The South spillway structure is considered to be in “Unsatisfactory” condition. The South spillway structure’s left abutment has previously failed, and excessive seepage is moving through the abutment without any features to control or mitigate the seepage, such as a filter system.

2 Dam Repair or Replacement Project Background

2.1 Goals and Objectives

The following objectives were established in coordination with the City during the development of the dam repair or replacement options presented in this report. Items included are intended to address key issues/deficiencies, operational performance, aesthetics and support of park usage, and total project costs. They are organized into two categories: Required and Considerations.

Required:

- Mitigate hydraulic rollers – Repair or replace both spillways with long-term solutions, given both structures do not meet current dam safety standards and need repairs to maintain functionality
- Meet estimated IDF – Safely pass flows up to the IDF through the site
- Maintain upstream pool elevation – Preserve existing recreational uses
- Maintain or reduce existing upstream flood elevations for the 100-year event.
- Address historical seepage at the south spillway north abutment – Stabilize spillway

Considerations:

- Low maintenance – minimize needs for maintenance by implementing durable components with minimal upkeep requirements
- Passive operation – eliminate needs for operation by implementing a hands-off system
- Fishing opportunities – maintain and enhance fishing opportunities and improve fish and aquatic organism passage
- Funding opportunities – identify and maximize funding eligibility for grants, cost share, and low interest loans if desired by the City.
- Total cost to City – develop total project costs to the city for each option considering eligibility for grants and cost share.
- Public accessibility/enhancement – maintain or enhance accessibility to the river and park
- Protection of mill property – protect and preserve mill property
- Canoe/kayak accessible – maintain or improve accessibility for canoeing and kayaking

3 Description of Options Evaluated

3.1 Development of Options

This feasibility study initially examined the viability of 16 options for dam repair or replacement. The options varied, from the base case of implementing repairs to reach the pre-2024 flooding conditions, to more robust alternatives featuring channel adjustments. The original 17 options are listed below. Option 1 presents the base case, and each subsequent option incorporates the base case repairs as necessary, depending upon the recommended repair or replacement.

Table 3-1 Summary of Viable Options

Option No.	Description of Change to North Spillway	Description of Change to South Spillway
1	No change	Repair of south abutment, sheetpile cutoff wall with grouting (FEMA Repairs)
2	Non-linear weir	Rock arch rapids
3	Rock ramp	Rock arch rapids
4	Rock arch rapids	Rock arch rapids
5	Rock arch rapids	Non-linear weir
6	Removed and replaced with one rock arch rapids structure in the center of the park	Removed and replaced with one rock arch rapids structure in the center of the park
7	Removed and replaced with one non-linear weir in the center of the park	Removed and replaced with one non-linear weir in the center of the park
8	Rock arch rapids	Repair of south abutment, sheetpile cutoff wall with grouting
9	No change	Non-linear weir
10	Non-linear weir	Repair of south abutment, sheetpile cutoff wall with grouting
11	Non-linear weir	Non-linear weir
12	No change	Rock arch rapids
13	No change	Rock ramp with abutment repairs, sheetpile cutoff with grouting
14	No change	Reverse chute blocks below existing spillway with abutment repairs, sheetpile cutoff with grouting
15	No change	Concrete stepped spillway
16	No change	Crest gate
17	Removed and replaced with non-linear weir with rock arch rapids in the center of the park	Removed and replaced with one non-linear weir with rock arch rapids in the center of the park

The options were condensed down to seven through a workshop with City staff on May 22, 2025. The seven options were presented at a public engagement meeting held on June 11, 2025 and are included in Appendix D.

- Option 1 – South Repair in Kind

- Option 2 – North Non-Linear Weir and South Rock Arch Rapids
- Option 3 – North Rock Ramp and South Rock Arch Rapids
- Option 4 – North and South Rock Arch Rapids
- Option 5 (Alternative 1) – North Rock Arch Rapids and South Non-Linear Weir
- Option 6 – Centered Rock Arch Rapids
- Option 7 – Centered Non-Linear Weir

Barr developed a screening tool that included renderings of each option, a comparison matrix that considered the criteria and objectives developed, and rough order of magnitude costs. The options were narrowed down to two final alternatives by soliciting public input during an open house and online voting process, discussions with City staff and subsequent meetings with other key project stakeholders. These two alternatives for dam repair or replacement were further developed and examined for viability. They are listed below.

- Alternative 1 – North Rock Arch Rapids and South Non-Linear Weir: Replace the north spillway with rock arch rapids and the south spillway with a non-linear weir (piano key, labyrinth, arch).
- Alternative 2 – Series of Centered Rock Arch Rapids in Combination with North and South Rock Arch Rapids: Construct a series of centered rock arch rapids throughout the reservoir channel, extending upstream from the existing dam sites, and replace the north and south spillways with lowered rock arch rapids.

Both alternatives are shown in drawings included in Appendix E with renderings included in Appendix F and described further in the following sections. Materials from the in person and online public engagement are included in Appendix D.

3.1.1 Alternative 1

Alternative 1 would replace the existing north spillway with a rock arch rapids structure and the south spillway with a non-linear weir, such as a piano key, labyrinth, or arch configuration. The rock arch rapids would be designed to mitigate drowning hazards, enhance fish and aquatic organism passage, and create a more natural aesthetic.

The non-linear weir structure would be shifted slightly north from the current south weir location to optimize hydraulic performance and site conditions while also addressing the existing left abutment instability. The non-linear weir would increase crest length and hydraulic capacity without lowering the spillway crest, helping maintain existing reservoir elevations while controlling upstream flood impacts. Roller countermeasures would be incorporated to manage flow energy and reduce turbulence, and modest embankment raises around the park would be required to route flood flows through the arched rapid and non-linear weir structures. This alternative also provides opportunities for added land adjacent to the mill to minimize the reservoir and flowing water against the existing building.

The use of rock arch rapids on the north side and a non-linear weir on the south side were chosen to mimic current flow characteristics maintaining the downstream channel next to the mill for fishing. However, this alternative could reverse the two spillway features during detailed design if determined appropriate by the City. Figure 3-1 below shows a concept of Alternative 1.

Figure 3-1 Alternative 1 Conceptual Rendering

3.1.2 Alternative 2

Alternative 2 proposes constructing a series of rock arch rapids starting at each dam location and extending upstream through the reservoir. Both the north and south spillway structures would be replaced with rock arch rapids, creating a connected series of structures that mimic natural river morphology. This design would maximize fish and aquatic organism passage, provide a continuous and safe transition flow, and further reduce drowning hazards while maintaining reservoir elevations upstream of the upper most rapids. The existing reservoir would be lowered downstream of the boat launch between three and six feet during low flows, however, additional land space would be created on both banks that could be utilized by the City during non-flooding time periods.

The south structure could either be shifted slightly to the north or potentially narrowed since it will have a lower elevation to provide more land space between the dam and the Woolen Mill building. A moderate embankment raise around the park would be necessary to route flood flows through the two arch rapid structures. Although rock arch rapids are less hydraulically efficient than the current ogee spillway and could increase downstream flood levels, this configuration distributes flow more evenly, enhances ecological connectivity, and adds land adjacent to the mill area, offering both environmental and community benefits.

Alternative 2 was preferred by staff from the MnDNR Ecological and Water Resources Division during preliminary conversations because additional habitat is created, and the alternative maximizes passage of fish and other aquatic organisms. External funding opportunities may be maximized with this alternative due to interest from that MnDNR group. Figure 3-2 below shows a rendering of Alternative 2.

Figure 3-2 Alternative 2 Conceptual Rendering

4 Evaluation of Selected Alternatives

This feasibility study examines the viability of the two selected alternatives as they relate to the project objectives and considerations. The objectives and considerations were categorized into the following 4 categories and are discussed further in the following sections:

- Hydrology and Hydraulics
    - Mitigates downstream hydraulic roller
    - Meets estimated IDF
    - Maintain upstream pool elevation – Preserve existing recreational uses
    - Maintain or reduce current upstream regulatory 100-year flood event (no-rise condition).
- Maintenance, Operations and Long-term Durability
    - Address historical seepage at the south spillway north abutment
    - Low maintenance
    - Passive operation
    - Protection of mill property
- Project Funding
    - Funding opportunities
    - Total cost to City
- Recreation and Ecological Considerations
    - Fishing opportunities
    - Public accessibility/enhancement
    - Canoe/kayak accessible

In the following sections, each project requirement and consideration is discussed as they relate to the two selected alternatives. Additionally, in Section 4.5 additional considerations regarding sediment management are discussed.

4.1 Hydrology and Hydraulics

Four of the required project objectives are related to site hydraulics and hydrology. Each is discussed further throughout this section and summarized in Table 4-1 below. A 2D-Hydraulic Model was developed for the project to inform the proposed conditions. A more detailed discussion of the hydrology and hydraulic assessment is included in Appendix G.

Table 4-1 Hydrology and Hydraulics Objective Summary

Objective	Alternative 1	Alternative 2
Mitigates hydraulic roller	Yes	Yes
Meets estimated IDF	Yes	Yes
Maintains upstream pool	Yes	Not immediately upstream of current dam but at upstream bridge
Maintains or reduces current upstream regulatory 100-year flood event	Yes	Yes

4.1.1 Mitigates Hydraulic Roller

Alternatives 1 and 2 were designed to mitigate the hydraulic roller and improve site safety. Rock arch rapids featured in both designs replicate natural stream flow patterns and disperse energy across a broader area. Hydraulic energy is dissipated through multiple smaller drops, minimizing the formation of hazardous hydraulic rollers. The roughness and irregular geometry of the rocks further disrupt potential recirculating currents. Drop heights and spacing are selected to maintain subcritical flow under normal operating conditions, providing a hydraulically stable and safe recreational environment. Signage at public access points can further inform visitors of the engineered riffle drops and encourage caution during recreation.

The proposed non-linear weir in Alternative 1 provides effective flow regulation but introduces potential safety concerns commonly associated with low-head dams. Under certain flow conditions, the downstream nappe can remain submerged, producing a stable recirculating current, or reverse roller, immediately downstream of the weir crest. This hydraulic condition creates a potentially dangerous entrapment zone for individuals or objects entering the flow field. To mitigate this hazard, the design incorporates a stepped downstream ramp. The stepped geometry promotes energy dissipation through incremental drops and surface aeration, reducing the strength and persistence of recirculating currents. When properly designed, this configuration effectively mitigates the low-head dam hazard while maintaining overall hydraulic performance and operational reliability. In addition to structural measures, signage and warnings are recommended near the non-linear weir to discourage recreational use in the immediate vicinity.

4.1.2 Meets Estimated IDF

Both alternatives can pass the 100-year IDF event without increasing reservoir elevations above existing conditions. However, flood conditions are heavily dependent on the tailwater condition caused by the downstream confluence with the Straight River. The existing spillway configuration would have enough capacity to pass the 100-year flood without overtopping the embankment if the tailwater were not a limiting factor, but it is likely that the Straight River will experience coincident flooding during a flood event on the Cannon River, as was observed in 2024. Both alternatives maintain or provide increased hydraulic capacity as shown in Table 4-2, with a slight reduction in upstream flood elevation due to the influence of tailwater. While resulting in a slight decrease in upstream flood elevations, the rock arch rapids in Alternative 2 and the north channel of Alternative 1 do result in a slight increase in downstream water levels of approximately 0.1 feet (Alternative 2) or less (Alternative 1). The extent of this downstream increase will need to be evaluated in the detailed design.

Table 4-2 Flow Capacity for Different Dam Configurations (cfs)

Flow Condition	Existing	Alternative 1	Alternative 2
Low-flow	13	13.4	14
2-year	600	610	600
100-year	2580	2590	2580

4.1.3 Maintains Upstream Pool

Both alternatives maintain an upstream pool for recreational use. The reservoir size and water level is mostly unchanged in Alternative 1. Alternative 2 reduces the size of the reservoir from the most upstream rock-arch rapid (just downstream of the boat launch) to the existing dam (the lower pool). This approximately 35-acre pool area would be converted to approximately 2,000 feet of free-flowing river. Upstream of the first rock-arch rapid (the upper pool), the reservoir would remain mostly unchanged and accessible from the boat launch. Water levels at the upper pool and lower pool are included in Table 4-3 across three flow conditions to demonstrate pool levels during 1) a drought, 2) a moderate bankfull (or channel-full) flood, and 3) the 100-year IDF.

Table 4-3 Pool Elevations with Different Flows and Dam Configurations (feet, NAVD88)

Flow Condition	Location	Existing	Alternative 1	Alternative 2
Low-flow	Lower Pool	964.2	964.1	958.0
	Upper Pool	964.3	964.1	964.4
2-year	Lower Pool	965.6	964.6	962.8
	Upper Pool	966.2	964.8	965.9
100-year	Lower Pool	967.6	967.3	967.2
	Upper Pool	968.5	967.6	968.0

4.1.4 Maintains or Reduces Flood Event

As shown in Table 4-3, alternative 1 maintains similar pool levels to existing conditions with slightly lower levels during flood events. In Alternative 2, the lower pool is decreased approximately 6 feet to the free-flowing condition during low-flow. During floods, the water level in the lower pool would increase to or above the new channel banks and approach the existing pool flood elevation. In the upper pool, both alternatives would moderately decrease flood elevations with Alternative 1 lowering the upper pool by almost 1-foot during the 100-year event. The reduced upstream pool elevations may allow some upstream properties to be removed from the floodplain.

4.2 Maintenance, Operations and Long-term Durability

It was clear through discussions with City employees and the public through the engagement meeting and online survey that a low-maintenance, long-term solution for the facility is desired. Several objectives related to facility maintenance, operations and long-term durability were considered and are summarized in Table 4-4.

Table 4-4 Maintenance, Operations and Long-Term Durability Considerations

Objective	Alternative 1	Alternative 2
Addresses historical seepage	Yes	Yes
Low maintenance	Some maintenance requirements for concrete spillway, rock arch may require periodic debris removal	Yes, rock arch structures may require periodic debris removal
Passive operation	Yes, no gates are included	Yes, no gates are included
Protection of Mill Property	Yes, allows for land space to be developed against the building	Yes, allows for land space to be developed against the building

4.2.1 Addresses Historical Seepage

Seepage has been observed at both existing spillway structures and abutments. Alternative 1 features a sheet pile cutoff wall upstream of the rock arch rapids structure at the north spillway. To allow for additional organism passage, a low-permeability soil may be considered for a cutoff in lieu of sheet pile. The south spillway moves the non-linear weir north into the existing left abutment, an area that has historically seen seepage. This will help mitigate seepage in that area. Additionally, an upstream concrete key will help reduce seepage below the structure itself.

Alternative 2 allows for the implementation of a cutoff at each rock arch rapids structure. Low permeability soil may be considered at each upstream riffle. Otherwise, a sheet pile cutoff could be considered. By moving the rock riffle structures upstream at the current spillway locations, the seepage path through the abutments is extended and the rock layers serve as an aggregate filter.

4.2.2 Low Maintenance

Low-maintenance structures minimize annual upkeep requirements on the City. The design team worked to incorporate features that require little ongoing upkeep. Rock riffle structures, featured in both alternatives, are comprised of natural materials that are durable and resistant to weathering. The structures are also self-flushing in that items that may be caught up on the riffles (logs, debris, etc.) will flush over time through flooding. The City may desire to remove debris as the rock riffles will tend to accumulate more debris than the existing structures during lower flows.

Alternative 1 also features a concrete non-linear weir. Though designed to be robust, concrete structures do require periodic maintenance due to weathering from sun exposure and freeze-thaw effects. Periodic inspection for cracks, spalling, and damaged concrete should be performed by City staff. Crack and joint repairs may be required periodically when observed.

Neither alternatives incorporate mechanical features that are prone to damage and require more frequent upkeep and maintenance.

4.2.3 Passive Operation

Both alternatives feature passive systems with fixed-crest weirs. Neither alternative incorporates mechanical or electrical components that would require staff to adjust gates, pumps, etc. Both alternatives are designed to allow water to pass freely during normal and high flow events.

4.2.4 Protection of Mill Property

The nearby infrastructure of interest includes the Faribault Woolen Mill that forms the southern spillway's right abutment. The original mill building was constructed in the mid to late 1890's. Both alternatives feature the incorporation of a wall adjacent to Mill property to help support the added land placed alongside the building. The additional land space would create access to both sides of the river and would help to keep water away from the Mill building and may improve flooding conditions in the basement of the building. Additionally, the additional land space may be desirable by the Mill to provide additional access to the newly created shoreline on the right bank.

The bridges downstream of each spillway would not be impacted by construction. Both were constructed relatively recently and will be maintained with both alternatives.

4.3 Project Funding

Funding is a critical consideration for the Woolen Mill Dam project. The City of Faribault is ultimately interested in minimizing the cost to the City and therefore places high value on alternatives that may qualify for external funding. The ability to leverage outside grants and cost-share programs can significantly influence the feasibility and selection of project alternatives.

A variety of federal, state, and local funding sources may be available to support dam removal, repair, or modification, as well as associated ecological and recreational enhancements. However, the funding landscape is dynamic, with some federal programs recently discontinued or delayed, and future availability of certain grants uncertain. The City and Barr Engineering have actively engaged with funding agencies to identify and pursue the most applicable opportunities.

4.3.1 Key Funding Sources and Recent Engagement

- **FEMA Reimbursement:** The City expects to utilize FEMA reimbursement for the cost to repair the left abutment of the south spillway, applying these funds toward the overall project.
- **Minnesota DNR (Dam Safety):** The City and Barr have met with the MnDNR Dam Safety group who will partially fund safety improvements or removal of the dam.
- **Minnesota DNR (Eco Services Group):** The City and Barr have met with the MnDNR twice to discuss funding. The MnDNR has expressed a preference for Alternative 2, which provides increased fish passage and a more natural river approach, potentially making it more competitive for DNR funding.
- **Get Outdoors and Lessard-Sams Outdoor Heritage Fund:** These programs may provide additional support, particularly for alternatives that enhance public access and ecological function.
- **Other Grant Programs:** Numerous federal and state grant programs are potentially applicable, including those focused on dam safety, aquatic organism passage, habitat restoration, and climate resilience.

It is important to note that federal funding is currently somewhat uncertain. For example, some major FEMA programs were discontinued in early 2025, and the status of several recurring grant programs remains unclear. Barr has reviewed the latest grant opportunities and prioritized those most likely to be available and applicable to the Woolen Mill Dam project.

4.3.2 Summary of Potential Funding Sources

The following Table 4-5 summarizes the most relevant grant programs for the Woolen Mill Dam project, based on current eligibility, focus areas, and recent funding cycles:

Table 4-5 Summary of relevant grant programs and funding sources

Grant Program	Agency	Focus	Typical Award/Match	Notes
Pre-Disaster Mitigation (PDM)	FEMA	Risk reduction, resilience	75% FEMA 25% Non-Federal (state reimbursement)	Uncertain future availability
Dam Safety Grants	MnDNR	Dam repair/removal	Up to 50% for safety improvements	Prioritizes public safety
Ecological Services Grants	MnDNR	Improved habitat, generally through dam removal	Up to 100% for removals or modifications that include fish habitat and passage	Prioritizes ecological benefits
Lessard-Sams Outdoor Heritage Fund	MN LSOHC	Habitat, fish passage, recreation	$500K–$130M	Highly competitive, leverage encouraged
National Fish Passage Program	USFWS	Fish passage, barrier removal	Up to $1M	Focus on aquatic connectivity, requires federal contract requirements be met during construction
Restoring Fish Passage through Barrier Removal	NOAA	Dam/culvert removal, fish passage	$750K–$8M	Emphasizes ecological and community resilience
MN Environment and Natural Resources Trust Fund	LCCMR	Water, habitat, recreation	No min/max	Broad eligibility, competitive
State Competitiveness Fund Match Program	MN Dept. of Commerce	Federal match	Up to $15M	Supports federal grant applications

Note: Funding is not guaranteed and is subject to the availability of funds, program availability, eligibility, and competitive application processes. The City's cost share will depend on the combination of grants awarded and the final project scope.

4.3.3 DNR Stream Restoration Priority

The MnDNR (ecological services) maintains a stream restoration priority list, which ranks projects for funding consideration. The Woolen Mill Dam project is included on this list, which may improve its competitiveness for MnDNR and related funding programs. Several factors contribute to the DNR's ranking system, including project time (partial removal, full removal, etc.), scale of impact, community support/acceptance and timing. The Woolen Mill dam has the opportunity to move up as the project becomes more feasible through the design process. Additionally, alternatives that maximize ecological benefits, public access, and resilience, such as Alternative 2, are likely to be more competitive in the MnDNR's ranking system.

4.3.4 DNR Dam Safety Priority

The MnDNR (dam safety) maintains a priority list for dams in the state. The list is typically ranked based upon hazard rating and condition of the dam, but they also prioritize based upon the status of the project, i.e., they prioritize projects that have been started. The MnDNR currently lists Woolen Mill Dam as #9 on their priority list and indicates a current allocation of $2.75 million, which is based upon a total estimated project cost of $5.5 million. Since they will fund up to 50% of the project cost, they would likely be willing to increase the estimated funding; however, their funding is contingent on available funds.

4.3.5 Total Cost to City

Barr prepared an Engineer's Opinion of Probable Cost estimate for the design, permitting, and construction of Alternatives 1 and 2. These feasibility-level estimates (Class 4, ASTM 2516-11) provide a cost range that is 25% below and 50% above the calculated cost value. Table 4-6 summarizes the estimated cost for Alternatives 1 and 2. Cost breakdowns for each option are in Appendix H. These costs are based on preliminary designs, quantities, and unit prices and include 15% for engineering and permitting and a 30% contingency. Unit rates are based on the design team's project experience, manufacturer quotes and recent project experience. Costs may change as design is further developed.

Table 4-6 Cost Estimation Summary of Alternatives 1 and 2

	Alternative 1	Alternative 2
Estimated Total Project Cost (Mid-Range Estimate)	$10.9 million	$12.4 million
Cost Range (-20% to + 30%)	$8.7 million to $14.1 million	$9.9 million to $16.0 million

Time value-of-money escalation costs are not included. Maturity level of project definition is estimated to be 10%. The accuracy range is 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.

As shown in Section 4.3.2, there are several potential opportunities for cost-share funding. Based upon current knowledge, the funding from FEMA for the PDM Grant appears likely and is applicable to both options. The City and MnDNR have been in consistent communication, and the MnDNR has indicated it will cost-share in the project, provided they have applicable available funds. Finally, the Lessards-Sams Outdoor Heritage Fund is another opportunity that we have seen fund similar projects. Table 4-7 below presents two scenarios for the total cost to the City. However, this cost will vary greatly based on the various agencies' abilities to support the project.

Table 4-7 Cost Estimation Summary of Alternatives 1 and 2

	Mid-Range Est.	FEMA PDM[1]	DNR Dam Safety[2]	DNR Ecological[3]	Total Cost to City 1[4]	Total Cost to City 2[5]
Alt. 1	$10.9m	$900k	$2.75m	$3.6m	$10.0m	$3.65m
Alt. 2	$12.4m	$900k	$2.75m	$8.75m	$11.5m	$0

[1] FEMA Consolidated Resource Center (CRC) proposed total project cost of $943,281 consisting of a 75% federal contribution and 25% non-federal contribution. It was rounded to 900,000 for clarity in the table.
[2] assumes current estimate of $2.75 million DNR currently has listed in their budget
[3] assumes 100% cost share of rock riffle structures after FEMA funding and Dam Safety funds
[4] estimated cost to city with only FEMA PDM grant
[5] estimated cost to city with maximum estimated DNR Ecological participation & current DNR Dam Safety estimate

Alternative 2 provides the greatest opportunity to maximize funding to the City. The MnDNR ecological services group has indicated a willingness to fund up to 100% of the project, provided funding is available. However, if funding from the MnDNR is not available or only a portion is available, the total cost to the City may be lower for Alternative 1 since it is estimated to cost about $1.5 million less.

4.4 Recreation and Ecological Considerations

Table 4-8 Summary of Recreation and Ecological Considerations

Objective	Alternative 1	Alternative 2
Fishing Opportunities	Yes, scour hole below south spillway and shoreline fishing along rock arch rapids	Yes, shoreline fishing along several rock arch rapids with additional upstream pools
Public accessibility/enhancement	Park maintained with enhanced opportunities near Mill building	Park maintained with enhanced opportunities near Mill building
Canoe/Kayak accessibility	Yes, potential passage through north spillway, upstream pool maintained	Yes, easier passage through riffles, however a smaller upstream pool to utilize

4.4.1 Fishing Opportunities

Currently, fishing immediately downstream of the south spillway structure is popular due to the scour hole that has developed along with the accessible shoreline. For alternative 1, that case will remain largely unchanged, and the dead end that currently exists, which promotes fishing opportunities, will remain. Additionally, the rock arch rapids for both alternatives feature an approximately 3% slope with 20’ spacing and 6” drops between each riffle to allow for fish and aquatic organism passage. The rock weirs themselves are laid out in a manner that allows for fish resting pools to help facilitate passage and provide additional fishing opportunities. The upstream pool would be maintained, allowing for similar use. Alternative 2 provides a longer stretch with various slow-moving pools that may create additional areas for fishing. A scour hole is expected to develop below each riffle providing additional fishing opportunities. However, the upstream pool would be smaller, so fishing a “lake” condition, specifically ice fishing opportunities, may be less.

Coordination with the MnDNR should continue through final design to maximize organism passage to create thriving ecological environments stretching both upstream and downstream of the current Woolen Mill Dam location.

4.4.2 Public Accessibility/Enhancement

This portion of the Cannon River is highly accessible to the public for recreation and enjoyment. As such, both design options incorporate public safety measures to limit the risks associated with in-river structures. Both design options reflect careful consideration of hydraulic performance and public safety. Each incorporates features to manage energy dissipation while reducing hazards associated with in-river structures, ensuring safe and reliable operation under typical flow conditions as follows:

For Alternative 1, landscaping features would be included to facilitate access to the water. This alternative best mimics current conditions but allows for potential improvements to the south/right riverbank adjacent to the Mill property and allows for new use (i.e. water access, fish viewing, aesthetics) opportunities at the rock arch structure.

For Alternative 2, additional park area and landscaping features would be incorporated to facilitate access to the water. Additionally, park land will be created along both sides of the new channel in the area that is now the upstream pool. This could be utilized by the City's parks department for native plantings, trails and shore fishing locations.

4.4.3 Canoe/Kayak Accessibility

Both alternatives would allow for canoe or kayak passage through the rock riffle structures. Alternative 1 would create a feature that could be navigated with canoes and kayaks through the north spillway structure during certain flow conditions. Additionally, the upstream pool would be maintained so watercraft could use the reservoir in a similar manner as it is used today.

Alternative 2 could incorporate a water trail, allowing canoe and kayak drop in and removal areas to allow for paddlers to navigate the rock arch rapids structures during certain flow conditions but likely a broader range of flows vs. Alternative 1. The lengthened channel and pool would add several features for canoes and kayas to navigate and could create a draw to the city for use. The upstream pool size would be smaller than current conditions so a change in conditions would occur.

4.5 Other Considerations

Removal and management of sediment were not considered during the initial project screening. However, a large volume of sediment has been deposited upstream of the existing dam. This sediment could be chemically impacted, which would require special handling and disposal if impacted during construction and presents a risk to both the project costs and permitting. Alternative 1 was developed to minimize impacts to the existing sediment. Sediment removal and disposal would only be required within the footprint of the new structures. Alternative 2 requires additional sediment removal and disposal due to the new structures within the current reservoir. Furthermore, the structures at the current spillway locations would be approximately 6 feet lower and may require additional sediment removal upstream to decrease the risk of sediment entrainment downstream and to maintain channel depth between the riffles. Alternative 1 has less risk to impacts caused by the existing sediment.

5 Detailed Design and Project Implementation

After an alternative is selected by the City, several items are needed prior to implementation and are noted in Table 5-1 and described in the following sections.

Table 5-1 Project Implementation Tasks

Task	Implementation Timeline	Notes
Detailed Design	9-12 months	Final design would include additional analysis and investigations
Permitting and Environmental Review	6-12 months	A summary table and discussion of permitting requirements are included in Section 5.3.6
Contractor Procurement	2-4 months	Work includes advertising, bidding, contract negotiations, and City acceptance
Construction	6-12 months	Construction considerations would need to consider weather and river flow conditions

5.1 Detailed Design

After selecting an alternative for the Woolen Mill dam to advance, one of the next steps will be the detailed design process. It is expected that the design process will include milestone checkpoints at 30%, 60%, and 95%. At each checkpoint, the City would be able to obtain updated estimated project costs and advance the permitting and funding. Additional investigations would be needed to advance final design and are expected to include additional surveys, geotechnical investigations, and sediment investigations. As a next step, it is recommended that the City select an alternative and advance the design to the 30% level, which would allow greater cost certainty with the development of a Class 3 cost estimate and allow the City to proceed with project funding and the advancement of the EAW.

5.2 Permitting and Environmental Review

The project will require several permits that are described in detail in Section 6. As a first step, an Environmental Review will need to be completed. The City will need to complete an Environmental Assessment Worksheet (EAW) to determine whether a full Environmental Impact Statement (EIS) is needed. Based upon our experience, an EIS is likely not required. The EAW could be started after the 30% design is completed. It is expected that the full process to complete the EAW and obtain project approval will be 6 – 8 months. The EAW process must be completed before construction permits can be granted.

Other permits would not be submitted until completion of the 95% design, which would allow for documents to be signed by the Engineer and issued for permitting. Once permits are submitted, it is expected to take 60 – 90 days for approval.

5.3 Contractor Procurement

Contractor procurement would take place after the completion of the 95% design documents, and ideally after receiving the permits. Procurement tasks include advertising the project, holding a pre-bid meeting, soliciting bids, reviewing bids, and developing a contract with the chosen contractor. It is assumed the project will follow a standard design-bid-build format, but the City may desire to utilize an alternative

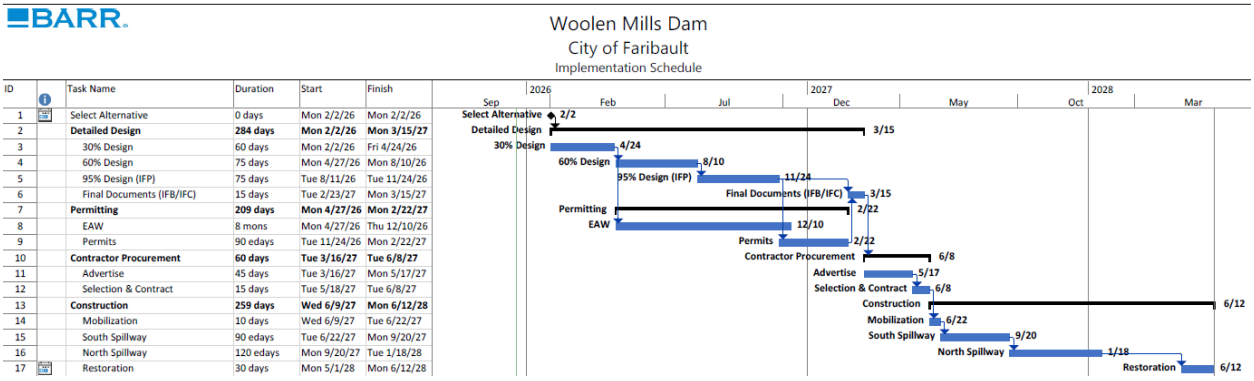
contracting method. Given some of the specialty components of the work, including a solicitation and selection process that allows the City to choose a Contractor based upon “best value” vs. “lowest price,” it is recommended.

5.4 Construction

It is expected that the construction will take approximately 6 – 12 months to complete the work. Since much of the work will be constructed in “dry” working conditions, the work areas will need to be dewatered, and river flows will need to be routed past the project site. Therefore, the work would ideally be completed in late summer through early winter to minimize the risk of large flood events occurring and minimize the volume of water that will need to bypass the work areas.

5.5 Implementation

An implementation schedule was developed assuming the City selects an alternative early in 2026 and proceeds with the design. Key milestones include completion of the 30% design, which would allow funding to proceed and the EAW process to start. The 95% milestone would be considered an “issued for permitting” design and would allow for submittal of the various permits. As shown in Figure 5-1, design would largely be completed during 2026, with construction occurring in 2027 and work being finalized in spring 2028, when restoration activities could occur.



ID	Task Name	Duration	Start	Finish
1	Select Alternative	0 days	Mon 2/2/26	Mon 2/2/26
2	**Detailed Design**	**284 days**	**Mon 2/2/26**	**Mon 3/15/27**
3	30% Design	60 days	Mon 2/2/26	Fri 4/24/26
4	60% Design	75 days	Mon 4/27/26	Mon 8/10/26
5	95% Design (IFP)	75 days	Tue 8/11/26	Tue 11/24/26
6	Final Documents (IFB/IFC)	15 days	Tue 2/23/27	Mon 3/15/27
7	**Permitting**	**209 days**	**Mon 4/27/26**	**Mon 2/22/27**
8	EAW	8 mons	Mon 4/27/26	Thu 12/10/26
9	Permits	90 edays	Tue 11/24/26	Mon 2/22/27
10	**Contractor Procurement**	**60 days**	**Tue 3/16/27**	**Tue 6/8/27**
11	Advertise	45 days	Tue 3/16/27	Mon 5/17/27
12	Selection & Contract	15 days	Tue 5/18/27	Tue 6/8/27
13	**Construction**	**259 days**	**Wed 6/9/27**	**Mon 6/12/28**
14	Mobilization	10 days	Wed 6/9/27	Tue 6/22/27
15	South Spillway	90 edays	Tue 6/22/27	Mon 9/20/27
16	North Spillway	120 edays	Mon 9/20/27	Tue 1/18/28
17	Restoration	30 days	Mon 5/1/28	Mon 6/12/28

Figure 5-1 Estimated Implementation Schedule

6 Permitting and Environmental Review

Environmental considerations will require permitting and oversight by various governmental entities. Permitting requirements will depend on several factors, including the dam removal methods, staging area location(s), sediment handling, and other factors depending on the full scope of the project.

Various federal, state, and local agencies regulate projects impacting Minnesota's water resources. Project activities must not be initiated until all applicable federal, state, and/or local approvals have been obtained. These include but are not limited to the following:

- The state environmental review process
- State permits from the MnDNR regulating activities in the bed of public waters as defined in Minn. Stat. 105
- Federal permits from the USACE for dredged or fill material
- Local permits from the City of Faribault

The permit requirements are expected to be consistent across the two project options.

Additional input will be needed from permitting agencies for design and to determine the scope of additional data necessary to meet environmental review and potential permit requirements. The following sections summarize the anticipated environmental review and permits associated with this project.

6.1.1 Environmental Review

The Minnesota Environmental Policy Act of 1973 (MEPA) established the Environmental Quality Board (EQB), which oversees the formal environmental review process for the state of Minnesota. An Environmental Assessment Worksheet (EAW) is a screening tool used to determine whether a full Environmental Impact Statement (EIS) is needed. Minnesota Rules 4410.4300 (Mandatory EAW Categories) identifies triggers requiring a project proposer to prepare an EAW. Minnesota Rules 4410.4300 Subp. 27A requires an EAW for projects that will change or diminish the course, current, or cross-section of 1 acre or more of any public water or public waters wetland. The total project footprint area is expected to be approximately 2 acres for Alternative 1 and up to 40 acres for Alternative 2; therefore, a mandatory EAW is anticipated for all options.

For this mandatory EAW category, the responsible government unit (RGU) would be the City of Faribault as the local governing unit (LGU) for the project. A record of decision on the EAW must be issued before construction permits can be granted, and the EAW process typically takes at least six months to complete. Based on the current scope of the proposed project, no triggers have been identified that would require the project to move beyond an EAW to a full EIS.

6.1.2 Minnesota Pollution Control Agency

Construction of the proposed project will require a National Pollutant Discharge Elimination System/State Disposal System Construction Stormwater (CSW) general permit issued by the MPCA. The CSW permit will require a stormwater pollution prevention plan (SWPPP) that explains how stormwater will be controlled within the project area during construction. Note that control of river flow below the ordinary

high water level is under the jurisdiction of the MnDNR and would be covered in the public waters work permit (Section 6.1.4) rather than by the CSW permit.

6.1.3 Minnesota Wetland Conservation Act

The Minnesota Wetland Conservation Act (WCA) regulates the filling and draining of wetlands and excavation within Type 3, 4, and 5 wetlands—and may regulate any other wetland type if fill is proposed. The WCA is administered by LGUs, which include cities, counties, watershed management organizations, soil and water conservation districts, and townships. The Rice County Soil and Water Conservation District (SWCD) is the LGU for the entire project area. The Minnesota Board of Water and Soil Resources (BWSR) oversees the administration of the WCA statewide.

As described in Minnesota Rules 8420, the WCA applies to the types of wetland impacts that could be a part of this project, and a permit related to wetland impacts may be required; however, the LGU will have the final determination. To assist with project permitting and design, a field wetland delineation is recommended to identify wetland boundaries.

6.1.4 Minnesota Department of Natural Resources

The MnDNR regulates projects constructed below the ordinary high-water level of public waters, watercourses, or wetlands that alter the waterbody's course, current, or cross-section. Public waters regulated by the MnDNR are identified on published public waters inventory (PWI) maps. The Cannon River is a public watercourse, so the proposed work would require an MnDNR public waters work permit for each option. Based on recent project experience, the MnDNR permit requirements give preference to projects that seek to closely emulate a river's natural flow conditions, provide enhanced opportunities for AOP, and use natural materials as much as possible. Both alternatives 1 and 2 have been discussed with the MnDNR. Based on the initial evaluations of AOP in Section 4.4, MnDNR permitting is likely to be successful for both alternatives due to the opportunities for AOP across a wide range of flows and the lower proposed slope of the rock rapids.

MnDNR also has jurisdiction over dam safety and floodplain permitting; all MnDNR permits would be consolidated into a single permit application. Because the project would involve work in the regulatory floodway of the Cannon River, a Conditional Letter of Map Revision would be required from the Federal Emergency Management Agency (FEMA).

6.1.5 United States Army Corps of Engineers

Per Section 404 of the Clean Water Act (CWA), the USACE regulates the placement of fill into wetlands if they are connected to a Water of the United States. The MPCA may be involved in wetland mitigation requirements as part of the CWA Section 401 water quality certification process for the 404 permit.

The USACE 404 permit requires a Section 106 review for historic and cultural resources. The results of the archeological desktop study are included in Appendix I. If the SHPO requests more detailed information, a Phase I Archaeological Survey may need to be completed. The USACE 404 permit will also require Section 7 consultation to evaluate if the project would have an impact on federally listed species under the ESA as threatened and endangered.

The USACE staff anticipates that the 404 permit review and approval process could require 120 days to complete. It is anticipated that the project options would be permitted under a nationwide or regional

general permit. Coordination with the USACE would be necessary to confirm specific project requirements.

6.1.6 Local Permits

The City of Faribault would require the following permits/approvals to modify the dam:

- Construction grading, sediment and erosion-control permit: requires plans to ensure protection, repair, or replacement of any installed erosion and sediment-control measures disturbed by activity and monitor the current SWPPP during construction activity in the affected area.
- Right-of-way/obstruction permit: required to work within city property, right-of-way, or easements. Permits are issued by the City of Faribault Engineering Division.
- Stormwater management plan: required to be completed when a developer provides permanent stormwater management due to development within the city's shoreland overlay district; a stormwater management plan would not apply for the in-river work but may apply for adjacent park developments.
- Building permit: required for demolition projects. Permits are issued by the City of Faribault

Table 6-1 Potential Permitting Requirements

Agency	Authorization	Comments	Estimated Agency Review Timeframe	Information Necessary for Application/Consultation	Approximate Timeline
Environmental Quality Board (EQB)	Minnesota Environmental Policy Act of 1973	Environmental Assessment Worksheet (EAW) mandatory for projects altering ≥1 acre of public waters; City of Faribault is RGU	~6-8 months (includes public comment and decision)	Project description, maps, alternatives, environmental data, connected actions, phased actions, cumulative impacts	6-8 months
Minnesota Pollution Control Agency (MPCA)	NPDES/SDS Construction Stormwater (CSW) Permit	Requires SWPPP; applies to ≥1 acre disturbed	Coverage effective upon application; SWPPP review may take 30+ days for large/sensitive sites	Online application via MPCA e-Services, SWPPP (for ≥50 acres or near impaired waters), site plans, owner/operator info	60 days
Minnesota Board of Water and Soil Resources (BWSR) / LGU (Faribault County SWCD)	Wetland Conservation Act (WCA) Permit	Regulates fill/drain/excavation in wetlands; LGU determines applicability.0Typically 60 days for LGU decision; may extend	Typically 60 days for LGU decision; may extend under MN Stat. 15.99	Wetland delineation report, impact assessment, replacement plan (if needed), sequencing analysis	60-90 days
Minnesota Department of Natural Resources (MnDNR)	Public Waters Work Permit (includes dam safety & floodplain)	Required for work below OHWL; Cannon River is public water	~60 days if application complete; longer for complex projects	MPARS application, site plans, OHWL data, hydraulic modeling, FEMA CLOMR documentation	60-90 days
United States Army Corps of Engineers (USACE)	Section 404 Permit (Clean Water Act)	Regulates fill in Waters of the U.S.; includes Section 106 (historic) & Section 7 (ESA) reviews	~90 days for general/nationwide permit; longer for individual permit	Joint application form, wetland delineation, impact drawings, mitigation plan, cultural resource survey, species review	60-90 days
City of Faribault	Local permits: grading/erosion control, ROW/obstruction, stormwater management plan, building permit	Required for dam modification and adjacent park work	Varies: 2–4 weeks for building permits; longer for site plan reviews [ci.faribault.mn.us]	Construction plans, SWPPP, ROW plans, demolition details, compliance with city code	30 days

7 References

Federal Emergency Management Agency. (2022). *Flood Insurance Study for Rice County, Minnesota and Incorporated Areas.*

Minnesota StreamStats. (n.d.). (USGS) Retrieved 2025, from StreamStats: https://www.usgs.gov/streamstats/minnesota-streamstats

St Paul District, Corps of Engineers. (1980). *Cannon River Woolen Mill Dam Rice County Inventory No. 354; National Dam Safety Program; Inspection Report.* USACE.

U.S. Army Corps of Engineers. (2023). *HEC-RAS 2D User's Manual.*

Appendices

Appendix A

Inspection Memo

Memorandum

To: Mark DuChene, City of Faribault
From: Jon Ausdemore and Kali Gustafson, Barr Engineering Co.
Subject: Woolen Mill Dam Inspection
Date: April 1, 2025
Project: Woolen Mill Dam

Certification
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Minnesota.

Jon Ausdemore
PE #: 45654

04/1/2025
Date

A visual condition inspection of the Woolen Mill Dam was completed by Barr Engineering Co. (Barr) on February 26, 2025. The inspection was performed by Jon Ausdemore, P.E. and Kali Gustafson, P.E. from Barr.

The North Dam is considered to be in "Fair" condition per the definition developed by the National Inventory of Dams. Fair condition indicates no existing dam safety deficiencies are recognized for normal operating conditions. Extreme events and maintenance conditions may result in a dam deficiency. The North Dam has a history of overtopping the right abutment over the earthen embankment. Additionally, the dam does not have an operations, maintenance, and monitoring plan and is showing signs of deterioration, with the stop logs being largely inoperable.

The South Dam is considered to be in "Unsatisfactory" condition. The South Dam's left abutment has previously failed, and excessive seepage is moving through the abutment without any features to control or mitigate the seepage, such as a filter system.

1 General Description

The Woolen Mill dam consists of two concrete gravity dams, a primary concrete "ogee" dam on the right or southern abutment (South Dam) and a smaller auxiliary concrete gravity dam with stop log gates on the left or northern abutment (North Dam). See Figure 1 for the naming convention used in this memorandum. The two dams are separated by an earthen island approximately 435 feet in length. Both dams are a run-of-river structure and are considered low-head dams. The Woolen Mill dam was originally constructed in 1865. Repairs completed in approximately 1967 and 1984 included replacing (North Dam) and caping (North and South Dams) the original dam with reinforced concrete as well as addressing seepage. Seepage at the left abutment of the South Dam appears to be a historic issue and has been noted in past inspections. No additional information was found indicating other repairs or issues with the dam. Flooding in July 2024 lead to the failure of the left abutment of the South Dam, which caused severe erosion and failure of the left abutment wall. The city placed rock and soil at the left abutment to maintain the pool. During this event, water also overtopped the earthen portion of the right abutment of the North Dam for a distance of approximately 100 feet. The overtopping of this earthen section appears to have occurred several times in the past, as the old repair documents indicate re-grading of this slope.

Figure 1 Woolen Mill Dam Naming Convention

2 Inspection Findings

2.1 South Dam

Overall views of the South Dam are shown in Photograph 1, Photograph 2, and Photograph 3.

Photograph 1 Overall view looking Upstream at the South Dam

Photograph 2 Overall view of the South Dam looking right

Photograph 3 Overall view of the South Dam looking left

2.1.1 Upstream

A small reservoir exists upstream of the dam. At the time of the inspection, the reservoir was primarily frozen. The following observations were noted for the upstream area during the inspection.

- Riprap protects the immediate upstream shoreline of the island between the dams. The rock is small and extends above the normal water line to the top of the slope, although the face is filled with some sediment and vegetation. No significant erosion was noted.
- Sediment testing near the dams indicated sediment depths up to 5-feet and discussions with locals indicate the entire reservoir is filled with sediment.
- The upstream reservoir was not inspected other than a visual review from the dam and from aerial photographs. The shoreline is undeveloped and consists of trees, vegetation, and sloped turf into the reservoir. No signs of significant erosion of the shoreline were noted.

2.1.2 Downstream

- Downstream channel appears in fair condition. The channel is protected with riprap a few feet above the normal tailwater elevation on both sides. Erosion was observed on the left embankment (Photograph 4) and appeared to line up with historic high-water lines on the mill building wall along the right abutment.
- 2nd Avenue bridge limits flow downstream (Photograph 5).
- Pedestrian timber bridges limit flow downstream and also appear to accumulate debris further limiting flow capacity (Photograph 6).

Photograph 4 Erosion on the left Embankment of the South Dam

Photograph 5 2nd Ave Bridge looking Upstream at the South Dam

Photograph 6 Timber Bridge Downstream from the 2nd Ave Bridge and the South Dam

2.1.3 Concrete Structure

The South Dam consists of a concrete gravity dam with a crest width of 115 feet and a consistent height of approximately 11 feet. The dam contains a flip-bucket energy dissipator at the base of the ogee section. The left abutment is currently comprised of the remains of the previous concrete abutment wall and stairs in addition to rock and soil that was placed as part of the 2024 emergency stabilization efforts. The South Dam abuts the Faribault Woolen Mill building on the right. The South Dam is considered a low-head, run-of-river structure.

Observation of the concrete ogee spillway was limited by the water and ice flowing over the structure, but the reinforced concrete overlay from 1967 appeared to be in satisfactory condition. A scour hole does exist immediately downstream of the spillway. The scour hole depths exceeded 4-feet, but rock was present in the areas accessible by probing. A rock peninsula exists across 80-percent of the channel immediately downstream of the scour hole, likely indicating some movement of rock downstream (Photograph 3).

The failed left abutment wall and subsequent rock repair was observed (Photograph 7). Rock was placed both upstream, downstream, and over the left abutment. The concrete wall from the left abutment is visible within the rock. The top of the wall is tilted so as the upstream end is lower than the downstream end, likely indicating a loss of foundation material. At the downstream end of the repair at the elevated concrete walkway, seepage is flowing at a rate greater than 5 gallons per minute from beneath the walkway. A vortex was observed upstream of the left abutment (Photograph 8). Barr completed a dye test by pouring non-toxic, biodegradable liquid dye into the upstream vortex, observing where the dye exited downstream, and timing how long it took to travel downstream. The dye test was performed two times, first with red dye and then with blue dye, and showed that it takes the water just over one minute to move through the left abutment to where it exits beneath the concrete walkway, indicating a clear connection upstream to downstream (Photograph 9, Photograph 10, and Photograph 11).

Photograph 7 Left Abutment Wall and Rock Repair

Photograph 8 Vortex Upstream of the Left Abutment

Photograph 9 Left Abutment Dye Test Setup

Photograph 10 Red Dye First Starting to Exit Downstream of the Left Abutment

Photograph 11 Red Dye Traveling through the Left Abutment

The concrete dam is considered a low-head dam, which under certain flow conditions creates a re-circulating current at the toe of the dam that can trap objects or people within the current. This phenomenon is considered a significant drowning hazard and low-head dams are no longer considered safe and an acceptable structure in the dam safety industry. Most states, including Minnesota, no longer allow the construction of low-head dams unless the drowning hazard can be mitigated. Furthermore, the

State of Minnesota has aggressively pursued removing or modifying these dams to mitigate the safety hazard.

2.1.4 Faribault Woolen Mill Building

The Faribault Woolen Mill building serves as the right abutment for the South Dam. Barr toured the basement of the mill building and discussed typical conditions as well as flood impacts with Paul Mooty (Partner) and Jeremy Boudreau (Head of Facilities) from the Faribault Woolen Mill. They described how water penetrates the building during flooding events and causes maintenance concerns. Most of the discussion regarding flooding of the mill building was focused on the northwest corner of the building. Although water reportedly enters the building through joints in the exterior brick walls separating the building interior from the river, building personnel have observed that most of the water appears to enter through the floor, suggesting that water penetrates the bedrock and into the building foundation likely due to pressure from the reservoir and tailwater. Barr asked about the drains that appear to be present from the river side of the exterior mill building walls (Photograph 12 and Photograph 13). Mill building personnel reported that these drains are no longer active or functional.

Photograph 12 Drains on the River Side of the Exterior Mill Building Walls

Photograph 13 Drains on the River Side of the Exterior Mill Building Walls

A structural assessment of the building was completed in 2016, which concluded that the building appeared to be in generally good condition and recommended some repairs (Mattson Macdonald Young, 2016).

2.2 North Dam

Overall views of the North Dam are shown in Photograph 14 and Photograph 15.

Photograph 14 Overall View Looking Upstream at the North Dam

Photograph 15 Overall View of the North Dam

2.2.1 Upstream

See 2.1.1 for a description of upstream conditions.

2.2.2 Downstream

- Downstream channel (earthen slopes) appears in satisfactory condition. The channel is protected with riprap on both sides from the dam to the bridge. Riprap is present at the water line and varies in height. Minor erosion was noted immediately downstream of the walkway about 3-feet above the tailwater.

- A 4” diameter pipe was found on the left slope about 20-feet downstream of the dam and 3-feet above the tailwater. The pipe was partially crushed and filled with mud.

- 2nd Avenue bridge limits flow downstream (Photograph 16).

- Pedestrian timber bridges limit flow downstream and collect debris further limiting flows (Photograph 17).

Photograph 16 2nd Ave Bridge Looking Upstream at the North Dam

Photograph 17 Timber Bridge Downstream from the 2nd Ave Bridge and the North Dam

2.2.3 Concrete Structure

The North Dam consists of a concrete gravity dam with two sections: a left ogee overflow section and a right gravity dam section with two timber stop log bays. The two sections are divided by a concrete wall that is approximately 1.5-feet thick, and a concrete walkway/access slab extends along the top of the entire dam, approximately 64-feet in length. The northern ogee overflow section is approximately 19-feet wide and 8-feet tall. The southern gravity dam and stop log section is approximately 43.5-feet wide and 5.5-feet tall from top of walkway to top of base slab. The North Dam consists of concrete wingwalls that tie into earthen embankments on both sides. The North Dam is considered a low-head, run-of-river structure.

Minor leakage was observed through both the left and right stop logs (Photograph 18). The stop logs consist of rough-cut timber boards approximately 8-inches in height and 4-feet in width. The stop logs are slightly deflected in the downstream direction and do not have lifting rings or a mechanism to allow removal. According to discussions with the city, the stop logs were replaced in approximately the last 5-years but likely cannot be easily removed.

Photograph 18 Leakage Observed through Stop Logs

The majority of the joints between the downstream edge of the concrete dams and the base slab appeared to be in satisfactory condition (Photograph 19). There were a couple of exceptions. In one location vegetation growth was observed in this joint, likely indicating separation between the dam and the slab underneath it (Photograph 20). At the ogee overflow section, the joint is tight for about half the distance on the southern side; however, a small gap exists where the ogee ties to the concrete slab on the north half of the spillway. A probe was able to be inserted 3-feet before it hit a solid obstruction (Photograph 21). No visible water was flowing from this gap. A void was also identified beneath the left wingwall (Photograph 22).

Photograph 19 Typical Joint Between the Downstream Edge of Concrete Dams and the Base Slab

Photograph 20 Vegetation Growth in Joint Between the Downstream Edge of Concrete Dam and the Base Slab

Photograph 21 Undermining in Joint Between the Downstream Edge of Concrete Overflow Section and The Base Slab

Photograph 22 Undermining in Joint Between the Left Wingwall of Concrete Overflow Section and the Base Slab

Barr performed hammer soundings of the North Dam concrete and found that the concrete was generally sound and in satisfactory condition with localized areas of spalled or delaminated concrete. See Table 1 for the concrete condition descriptions used for this inspection.

Table 1 Concrete Condition Descriptions

Concrete Condition	Description
Spalled	Detachment of fragments (spalls), usually in the shape of flakes, from a concrete mass.[1]
Delaminated	A horizontal splitting, cracking, or separation of a concrete member in a plane roughly parallel to and generally near the surface.[1]
Sound	Appears to be in satisfactory condition and when tapped with a hammer produces a higher pitched sound when compared to delaminated concrete.

[1] American Society of Civil Engineers, Guideline for Structural Condition Assessment of Existing Buildings, SEI/ASCE 11-99, 2000.

Locations of spalled and delaminated concrete were identified at most locations where the concrete access slab above the dam connects to the gravity dam sections (Photograph 23). Spalled and delaminated concrete, including exposed rebar, was observed in the base slab supporting the concrete dividing wall between the right stop log section and the left overflow section of the dam (Photograph 24). A large void was also observed in the base slab for the dividing wall (Photograph 25). Hammer soundings indicated delaminated concrete along the concrete dividing wall, approximately the first 12-inches down from the top of the wall and the first 5.5-feet along the length of the wall starting from the connection to gravity dam (Photograph 26).

Photograph 23 Example of Spalled Concrete Near Access Slab Connection to Gravity Dam

Photograph 24 Spalled and Delaminated Concrete Between Right Stop Log Section and Left Overflow Section

Photograph 25 Void in Base Slab of Dividing Wall Between Right Stop Log Section and Left Overflow Section

Photograph 26 Delaminated Concrete On Left of Concrete Dividing Wall and Spalled Concrete on Right (Facing North)

Repairs to the deteriorated concrete would improve the long-term performance of the North Dam concrete structure.

The concrete dam is considered a low-head dam, which under certain flow conditions creates a re-circulating current at the toe of the dam that can trap objects or people within the current. This phenomenon is considered a significant drowning hazard and low-head dams are no longer considered safe and an acceptable structure in the dam safety industry. Most states, including Minnesota, no longer allow the construction of low-head dams unless the drowning hazard can be mitigated. Furthermore, the State of Minnesota has aggressively pursued removing or modifying these dams to mitigate the safety hazard.

3 Recommendations

The North and South Dams are both considered low-head dams that present a drowning hazard risk, and therefore, it is recommended that measures are taken at both dams to mitigate the drowning hazard by either replacing the dam or retrofitting the dam to remove the downstream recirculating current. The following recommendations for the North and South Dams are provided to address current structural deficiencies at each dam and are unrelated to mitigating the drowning hazard. Items were assigned priorities of critical, high, medium, or low. The priority assignments are defined as follows:

- **Critical** priority items require immediate attention, as they may pose an imminent dam failure risk (e.g., a sinkhole in the dam embankment, excessive seepage and/or piping).
- **High** priority items are those which are regulatory requirements or items that could develop into a dam failure risk if conditions change (e.g. minor seepage, settlement, voids reaching foundation

soils/rock, excessive cracking or changes to the concrete). High priority items should be addressed as soon as feasible.

- **Medium** priority items include items that don't pose an immediate safety risk and would require significant changes to pose a dam safety risk (e.g., existing concrete cracking and spalling, voids for overlays). Medium priority items should be completed as feasible and within the next five years, or if changes are occurring that could impact the dam.

- **Low** priority items include general maintenance tasks that present little to no risks if not altered (e.g., downstream erosion). Low priority items should be completed as feasible or if changes are occurring that could impact the dam.

3.1 South Dam

Recommendation #SD-1: Complete near-term, temporary stabilization measures on the left abutment to mitigate the risk of further erosion and increase the level of public safety. **(Critical)**

Recommendation #SD-2: Repair the left abutment to pre-failure conditions, including addressing seepage at the abutment interface and in the foundation. **(High)**

Recommendation #SD-3: Regrade the eroded left downstream slope and stabilize to prevent future erosion. **(Low)**

3.2 North Dam

Recommendation #ND-1: Replace the existing stop logs with a gate system or stop logs that include a lifting mechanism to allow removal and replacement to control upstream pool elevations as necessary. **(Low)**

Recommendation #ND-2: Repair the joint beneath the left wingwall and the concrete base slab to prevent water and ice from causing further damage. The repair would likely consist of filling the crack with a surface sealer and pumping epoxy grout into the crack to prevent future moisture from entering. **(Low)**

Recommendation #ND-3: Repair the joint between the ogee overflow section and the concrete base slab to prevent moisture and freeze/thaw conditions from creating further damage. The repair would likely consist of saw cutting the perimeter of the repair area, removing the existing concrete until sound concrete is encountered, evaluating any exposed rebar, adding splice bars if required, and placing new concrete on top. **(Medium)**

Recommendation #ND-4: Repair the deteriorated concrete at the divider wall between the left overflow section and the right stop log section. This step could consist of a repair or full replacement. A repair would likely involve filling the void in the base slab with concrete and repairing areas of spalled/delaminated concrete in a manner similar to the description in #ND-3. A full replacement would likely include demolition of the existing wall and slab, tying into the existing concrete with dowels, and installing a new reinforced concrete wall. **(Medium)**

Appendix B

FEMA Repairs Memo

Memorandum

To: Mark DuChene, P.E.
From: Jon Ausdemore, P.E.
Subject: South Dam – Permanent Repairs
Date: April 7, 2025
Project: Woolen Mills Dam, 23661050.00
c: file

This memorandum presents the recommended repair to restore the South Dam at the Woolen Mills Dam to its pre-existing conditions following large flows experienced in June 2024 that led to a failure of its left abutment. Included is a summary of the flood event, a description of the recommended repair and an opinion of probable construction costs (OPCC).

1 Background

High flows experienced in the Cannon River in June 2024 led to peak flows surpassing 10,000 cfs (USGS Gage 05354500) on June 23, 2024. Visual observation by the City of Faribault on June 28, 2024, documented pre-failure conditions at the left abutment of the South Dam at the Woolen Mills Dam site. Photograph 1 below shows the South Dam on June 23, 2024. Note the left retaining wall still in place.

Photograph 1 South Dam on June 23, 2024

Prior to the failure, water has been noted seeping from below the stairs and retaining wall. Water also appeared to be flowing over the stairs as shown in Photograph 2 taken July 2, 2024.

Photograph 2 South Dam on July 2, 2024

The high headwater was further noted at the North Dam where water had overtopped both abutments as shown in Photograph 3 taken on June 28, 2004.

Photograph 3 South Dam on June 28, 2024

The left retaining wall eventually failed. Photograph evidence appears to show the retaining wall tilted and leaning with the upstream end lower than the downstream indicating a possible loss of material beneath the wall foundation. Water then flowed over and around the top of the wall as shown below Photograph 4 taken on July 3, 2024.

Photograph 4 Water Flowing Over Top and Around the Wall

After the failure occurred, the City of Faribault implemented emergency repairs on July 3, 2024. A combination of rock of varying size with soil was dumped upstream, downstream, and over the left abutment until water was directed over the South Dam. Photograph 5 below shows the conditions after the repair.

Photograph 5 South Dam Conditions after the Repair

Prior to photos taken by the City on June 28th, headwater and tailwater at the Woolen Mills Dam was much higher and photographs taken by Minnesota Prairie Roots show the dam completely submerged

including the left abutment on June 21, 2024. It is assumed that as the tailwater dropped due to flows receding downstream at the convergence with the Straight River, the flows over the two Woolen Mills Dams increased as they drained the upstream reservoir. In coordination with the increased flows, the head differential upstream to downstream increased with the lower tailwater elevation. The combination of the previous overtopping, saturation of the embankment and abutment, and seepage in the foundation allowed the left abutment retaining wall to fail leading to flows through the left abutment area.

2 Recommended Repair

The specifics of the failure were not investigated, however, based upon visual reviews of photographs, available drawings, and prior inspection reports, two conditions likely led to the failure of the left abutment.

- The left abutment overtopped, and water bypassed around the South Dam.
- The City has a history of addressing the seepage at the left abutment that could lead to internal erosion of the underlying soils. Repairs have included a retaining wall and drains; however, seepage was noted prior to the failure.

Based upon the information available, the recommended repair addresses both conditions described above. Drawings for the recommended repair are provided in Attachment 1.

2.1 Repair Details

A summary of the recommended repair is described below. The repair is described as a sequence of potential order of operations to be completed by the Contractor.

- Contractor to manage water through the work area during construction. Repairs are to be constructed in the dry requiring a cofferdam to be constructed around the work area. It is assumed the Contractor will remove the stop logs in the North Dam to lower the water surface by approximately 4 feet, which will aid in the installation of a cofferdam. The cofferdam would need to be constructed tall enough to protect against higher flows in the headwater and tailwater during construction.
- Once the site is protected by the cofferdams and dewatered, the existing rock can be removed and stockpiled. The existing stairs, retaining walls, and walkway are assumed to be damaged and will be removed, and disposed offsite.
- To mitigate seepage, a new sheet pile wall will be installed from the left abutment of the dam and extending into the land area by approximately 50-feet. The sheet pile will be driven to refusal and is assumed to reach natural bedrock. To control seepage at the interface and in the rock, a grouting program will occur to grout the interface and top 5-feet in the bedrock for the length of the sheets and for 20-feet of the South Dam.
- To address overtopping along with seepage, a new retaining wall will be constructed at the left abutment. The wall will have a top elevation of at least 967 to prevent overtopping and will extend down to the bedrock to prevent water from seepage below the wall. The wall will follow the extents of the previous retaining wall and have a length of approximately 24-feet.

- The stairs and small retaining wall adjacent (land side) of the stairs will be reconstructed to original dimensions. It is also assumed the downstream walkway will need to be replaced; however, the existing pilings can be re-used.

- Once the area is reconstructed to pre-failure conditions, the salvaged riprap will be re-used along the wall, upstream slope, and downstream slope at the left abutment. Topsoil will be replaced, and the area restored and re-vegetated.

3 Opinion of Probable Construction Cost

An OPCC for the proposed repair was developed in accordance with ASTM E 2516. The estimate is considered a Class 4 estimate and utilizes unit costs from similar projects. Quantities were developed from the attached drawings. The repair estimate includes a construction contingency of 30% included to account for the current level of design, and an allowance of 20% to account for future geotechnical investigations, engineering design, and construction support services. The total estimate to complete the repairs is $890,000 with an expected cost range between $710,000 and $1,160,000. Details for the OPCC are provided in Attachment 2.

This repair does not include costs to address the reverse hydraulic roller associated with low-head dams. Low-head dams are no longer considered an acceptable structure without mitigation of the hydraulic roller in the dam safety community.

Attachments

Attachment 1 Repair Drawings
Attachment 2 Opinion of Probable Construction Cost

Attachment 1

Repair Drawings

LEGEND - PLAN

- 1380 — EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- 1+00 — CENTERLINE ALIGNMENT
- EXISTING SHORELINE
- EXISTING STRUCTURE
- EXISTING CONCRETE
- EXISTING RIPRAP
- EXISTING TREE
- EXISTING CONTROL POINT

NOTES:

1. EXISTING CONDITIONS CONTOURS ARE BASED ON SURVEY DATE OBTAINED BY BARR ENGINEERING ON FEBRUARY 26, 2025 WITH SUPPLEMENTAL LIDAR FROM 2021 OUTSIDE OF THE BARR SURVEY EXTENTS.
2. AERIAL IMAGERY WAS OBTAINED BY BARR ENGINEERING ON FEBRUARY 26, 2025 WITH SUPPLEMENTAL IMAGERY FROM 2021 OUTSIDE OF THE BARR SURVEY EXTENTS.

1 PLAN: EXISTING CONDITIONS

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SCALE IN FEET

PROJECT DATUM:
HORIZONTAL: MINNESOTA DOT: RICE COUNTY, US SURVEY FOOT
VERTICAL: NAVD 88

PRELIMINARY DRAFT
NOT FOR CONSTRUCTION

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION
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DATE RELEASED: A B C 0 1 2 3

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Project Office:
BARR ENGINEERING CO.
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Minneapolis, Minnesota
Ph: 1-800-632-2277

Scale	AS SHOWN
Date	02/28/2025
Drawn	JKH2
Checked	JKH2
Designed	JKH2
Approved	JDA

CITY OF FARIBAULT
FARIBAULT, MINNESOTA

WOOLEN MILL DAM FEMA REPAIR
FARIBAULT, MINNESOTA

EXISTING CONDITIONS PLAN

BARR PROJECT No. 23661050.00
CLIENT PROJECT No.
DWG. No. C-01
REV. No. A

CADD USER: TAYLOR C. KUECHLE FILE: M:\DESIGN\23661050.00\23661050.00_FEMA_C-01.DWG PLOT SCALE: 1:2 PLOT DATE: 4/2/2025 1:47 PM

1 - PLAN: SOUTH SPILLWAY SITE MODIFICATIONS

0 20 40
SCALE IN FEET

LEGEND - PLAN

- PROPOSED CONSTRUCTION LIMITS
- 1380 EXISTING MAJOR CONTOUR
- 1379 EXISTING MINOR CONTOUR
- 1380 PROPOSED MAJOR CONTOUR
- 1379 PROPOSED MINOR CONTOUR
- 1+00 PROPOSED ALIGNMENT
- EXISTING TREE
- EXISTING CONTROL POINT
- EXISTING CONCRETE
- EXISTING RIPRAP
- PROPOSED RIPRAP
- PROPOSED SEEDING, MULCHING AND FERTILIZING
- PROPOSED SHEETPILE
- PROPOSED CONCRETE

NOTES:

1. GROUND MAY ONLY BE DISTURBED WITHIN CONSTRUCTION LIMITS.
2. CLEAR AND GRUB AS NECESSARY TO COMPLETE THE WORK. CLEAR AND GRUB ONLY WITHIN THE CONSTRUCTION LIMITS. OBTAIN APPROVAL FROM OWNER PRIOR TO REMOVING ANY TREES.
3. LOCATION OF CONSTRUCTION LIMITS ARE APPROXIMATE. OWNER OR ENGINEER WILL VERIFY IN THE FIELD.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTION OF ALL EXISTING STRUCTURES, UTILITIES, AND SITE FEATURES NOT MARKED FOR DEMOLITION.

PRELIMINARY DRAFT
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Checked	JKH2
Designed	BARR
Approved	JDA

CITY OF FARIBAULT
FARIBAULT, MINNESOTA

WOOLEN MILL DAM FEMA REPAIRS
FARIBAULT, MINNESOTA

SOUTH SPILLWAY SITE MODIFICATIONS
PLAN

BARR PROJECT No. 23661050.00
CLIENT PROJECT No.
DWG. No. C-02
REV. No. A

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LEGEND - PLAN

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- EXISTING MINOR CONTOUR
- 1+00 — CENTERLINE ALIGNMENT
- EXISTING SHORELINE
- EXISTING STRUCTURE
- EXISTING CONCRETE
- EXISTING RIPRAP
- EXISTING TREE
- EXISTING CONTROL POINT

NOTES:

1. CONTRACTOR TO REMOVE STOP LOGS FROM NORTH SPILLWAY LOWERING WATER SURFACE TO APPROXIMATELY 960.0 +/-. CONTRACTOR TO MANAGE SEDIMENT SO THAT NO SEDIMENT IS TRANSPORTED DOWNSTREAM. IT IS EXPECTED THAT THE CONTRACTOR WILL NEED TO DEMOLISH STOP LOGS TO REMOVE AND WILL BE REQUIRED TO REPLACE WITH NEW TIMBER STOP LOGS OF EQUAL DIMENSIONS AFTER CONSTRUCTION IS COMPLETED.
2. CONTRACTOR TO CONSTRUCT COFFERDAM AROUND WORK AREA BOTH UPSTREAM AND DOWNSTREAM OF SOUTH SPILLWAY. UPSTREAM COFFERDAM TO HAVE A TOP ELEVATION OF 966.0 OR GREATER. DOWNSTREAM COFFERDAM TO BE CONSTRUCTED TO AN ELEVATION OF 959.0 OR GREATER.
3. CONTRACTOR'S COFFERDAM(S) SHALL NOT CONTAIN LOOSE FILL IN DIRECT CONTACT WITH FLOW. ACCEPTABLE COFFERDAM PRODUCTS INCLUDE EARTH FILL WITH EROSION PROTECTION ON THE SLOPE FACE, SAND BAGS, WATER INFLATED DAMS, SHEET PILE, PORTADAM, JERSEY BARRIERS, AND OTHER PRODUCTS DESIGNED TO IMPOUND WATER.

1 PLAN: SOUTH SPILLWAY WATER CONTROL

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Date	02/28/2025
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Designed	BARR
Approved	JDA

CITY OF FARIBAULT
FARIBAULT, MINNESOTA

WOOLEN MILL DAM FEMA REPAIRS
FARIBAULT, MINNESOTA

SOUTH SPILLWAY WATER CONTROL PLAN

BARR PROJECT No. 23661050.00
CLIENT PROJECT No.
DWG. No. C-03
REV. No. A

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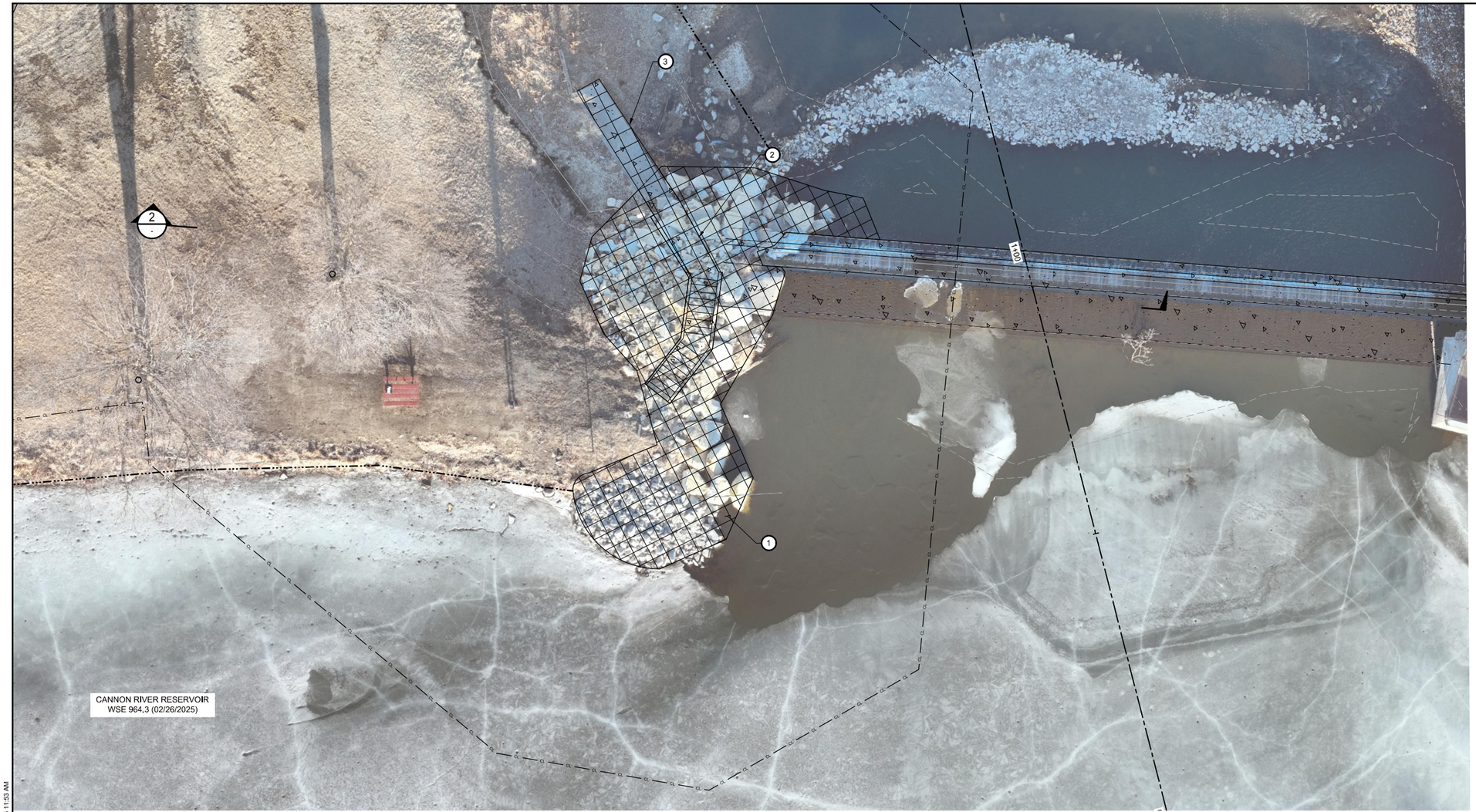

LEGEND - PLAN

- PROPOSED CONSTRUCTION LIMITS
- PROPERTY LINE
- EXISTING MAJOR CONTOUR
- EXISTING MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED ALIGNMENT
- EXISTING FENCE
- EXISTING SHORELINE
- EXISTING OVERHEAD ELECTRIC
- EXISTING UNDERGROUND ELECTRIC
- EXISTING SANITARY SEWER
- EXISTING STORM SEWER
- EXISTING WATER LINE
- EXISTING CONCRETE
- EXISTING RIPRAP
- EXISTING CONTROL POINT
- EXISTING POWER POLE
- EXISTING LIGHT POLE
- EXISTING MANHOLE
- EXISTING SANITARY MANHOLE
- EXISTING STORM MANHOLE
- REMOVAL

NOTES:

1. CONTRACTOR TO REMOVE EXISTING FILL AND RIPRAP PLACED AS PART OF THE EMERGENCY REPAIRS. EXISTING AGGREGATE MATERIALS TO BE SEGREGATED AND SALVAGED FOR REPLACEMENT. EXISTING SOIL MATERIALS TO BE RE-SPREAD ON THE PROJECT SITE AS DIRECTED BY THE ENGINEER.
2. CONTRACTOR TO REMOVE AND DISPOSE OF EXISTING STAIRWAY, RAILINGS, RETAINING WALL, REINFORCING, AND SUBGRADE MATERIALS. CONTRACTOR TO SAWCUT CONCRETE AT END OF SPILLWAY OGEE SECTION TO ALLOW REMOVAL OF LEFT ABUTMENT CONCRETE.
3. CONTRACTOR TO REMOVE AND DISPOSE OF EXISTING PATHWAY CONCRETE. PROTECT EXISTING PILING AND LEAVE IN PLACE.
4. CONTRACTOR TO REMOVE EXISTING SEDIMENT MATERIAL AS NECESSARY FOR TWO PHASES OF EXCAVATION.
5. APPROXIMATE EXCAVATION LIMITS ARE SHOWN. CONTRACTOR TO COMPLETE PHASE 1 EXCAVATION TO ALLOW REMOVAL OF EXISTING STAIRWAY, RETAINING WALL, AND APPURTENENCES. AFTER FUTURE SHEET PILE IS INSTALLED, EXCAVATE PHASE 2 EXCAVATION TO ALLOW PLACEMENT OF THE CONCRETE COLLAR.

1 - PLAN: SOUTH SPILLWAY REPAIRS

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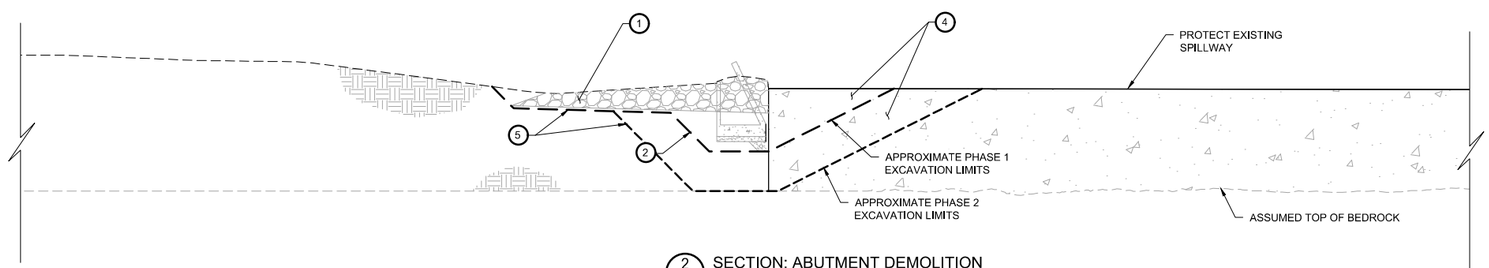

2 - SECTION: ABUTMENT DEMOLITION

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CITY OF FARIBAULT
FARIBAULT, MINNESOTA

WOOLEN MILL DAM FEMA REPAIR
FARIBAULT, MINNESOTA

DEMOLITION AND EXCAVATION PLAN AND SECTION

BARR PROJECT No.	
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CLIENT PROJECT No.	
DWG. No.	REV. No.
C-04	A

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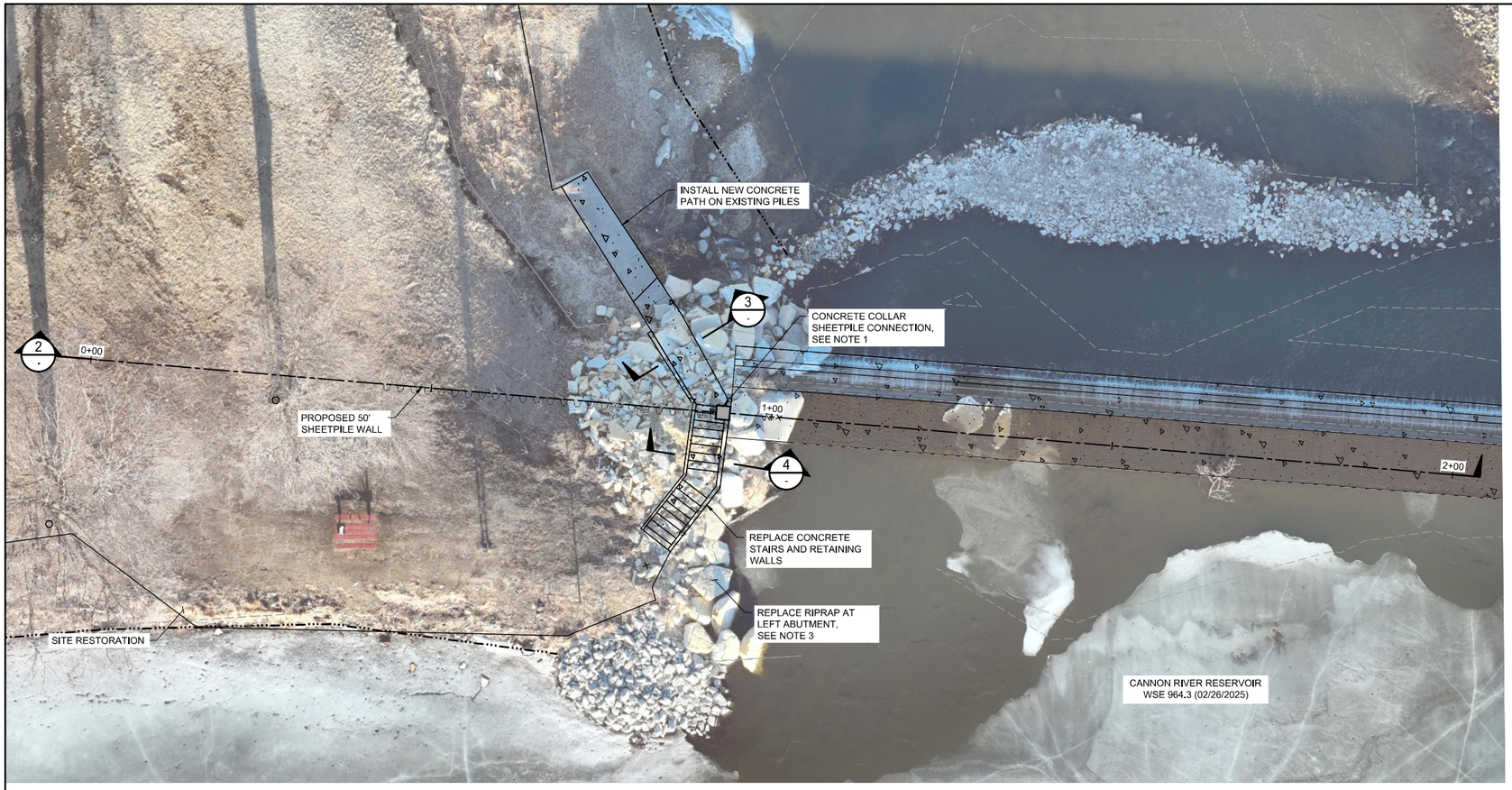

1 - PLAN: SOUTH SPILLWAY REPAIRS

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SCALE IN FEET

LEGEND - PLAN

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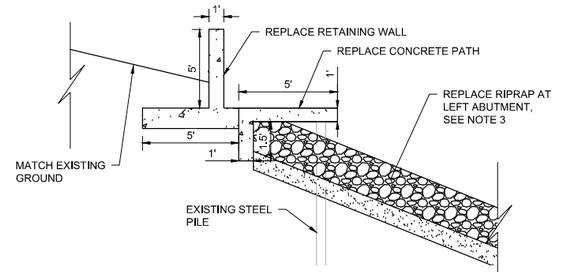
- 1379 EXISTING MINOR CONTOUR
- 1380 PROPOSED MAJOR CONTOUR
- 1379 PROPOSED MINOR CONTOUR
- 1+00 PROPOSED ALIGNMENT
- EXISTING FENCE
- EXISTING SHORELINE
- EXISTING OVERHEAD ELECTRIC
- EXISTING UNDERGROUND ELECTRIC
- EXISTING SANITARY SEWER
- EXISTING STORM SEWER
- EXISTING WATER LINE
- EXISTING CONCRETE
- EXISTING RIPRAP
- PROPOSED RIPRAP
- PROPOSED SEEDING, MULCHING AND FERTILIZING
- EXISTING SHEETPILE
- EXISTING CONCRETE

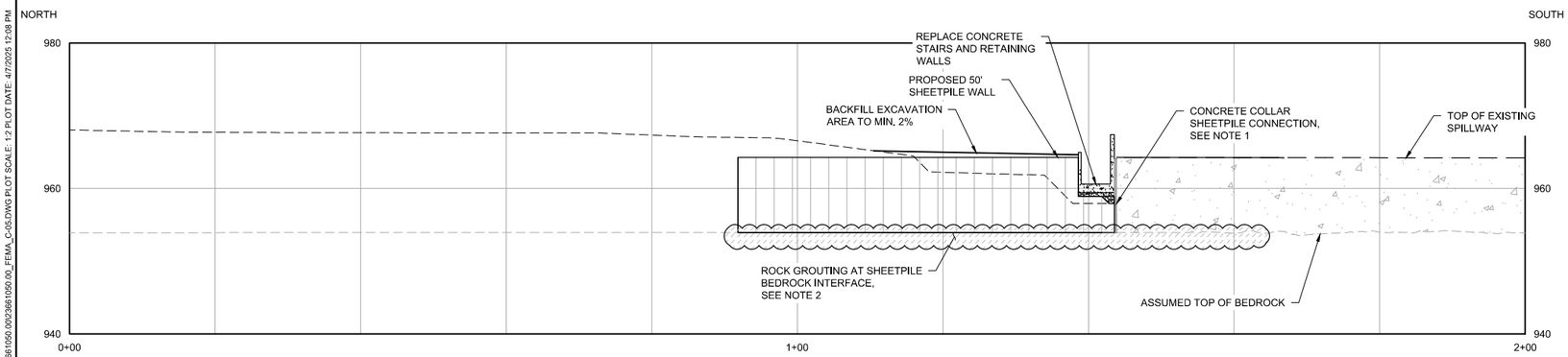
NOTES:

1. PLACE A CONCRETE COLLAR AT THE CONNECTION OF THE EXISTING SPILLWAY AND THE NEW STEEL SHEET PILES. THE COLLAR IS TO BE DOWELED INTO THE EXISTING SPILLWAY, BE 30" X 30" X COMPLETE LENGTH OF SHEETS, AND INCLUDE WATER STOPS ALONG THE SPILLWAY AND SHEET PILE INTERFACE.
2. ROCK GROUTING TO BE COMPLETED ALONG TWO GROUT LINES, ONE UPSTREAM AND ONE DOWNSTREAM OF THE SHEETS. SPACING IS ESTIMATED TO BE 10-FT. O.C. GROUTING TO OCCUR AT THE STRUCTURE AND SHEET PILE INTERFACE AND EXTEND 5-FEET INTO THE UNDERLYING BEDROCK.
3. RIPRAP SALVAGED FROM THE PRIOR REPAIR SHOULD BE REPLACED UPSTREAM AND DOWNSTREAM ALONG THE LEFT ABUTMENT AS DIRECTED BY THE ENGINEER.



3 - SECTION: CONCRETE PATH REPAIRS

NTS



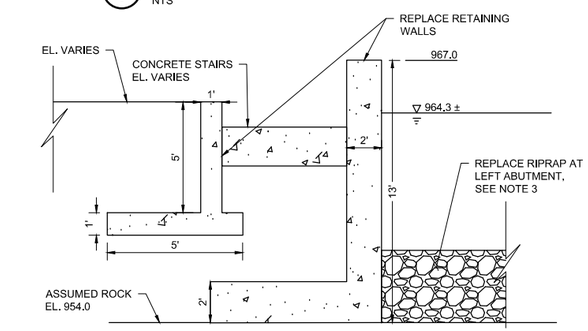
2 - PROFILE: SOUTH SPILLWAY REPAIRS

0 10 20

HORIZONTAL SCALE IN FEET

LEGEND - PROFILE

- EXISTING GROUND
- FINISHED GRADE



4 - SECTION: CONCRETE STAIRS AND RETAINING WALL REPAIRS

NTS

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Approved	JDA

CITY OF FARIBAULT
FARIBAULT, MINNESOTA

WOOLEN MILL DAM FEMA REPAIR
FARIBAULT, MINNESOTA

SOUTH SPILLWAY REPAIRS
PLAN AND PROFILE

BARR PROJECT No. 23661050.00
CLIENT PROJECT No.
DWG. No. C-05
REV. No. A

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Attachment 2

Opinion of Probable Construction Cost

PREPARED BY: BARR ENGINEERING CO.

Woolen Mills Dam - Repairs to Pre-Flooding Conditions

10% Design Level
ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COSTS
PROJECT: **Woolen Mills Dam Repairs**
CLIENT: **City of Faribault**
PROJECT #: 23661050.00
DATE: 4/7/2025

Engineer's Opinion of Probable Construction Costs

Item No:	Item Description	Units	Estimated Qty	Unit Cost	Total Cost
GENERAL ITEMS					
G.1	Mobilization & Demobilization	LS	1	$ 74,000	$ 74,000
G.2	Water Control	LS	1	$ 125,000	$ 125,000
G.3	Temporary Erosion Control	LS	1	$ 5,000	$ 5,000
G.4	Topsoil Strip, Stockpile, and Place	SF	10,000	$ 2.0	$ 20,000
				GENERAL ITEMS SUBTOTAL	**$ 224,000**
DEMOLITION					
D.1	Remove & Stockpile Riprap	CY	300	$ 25	$ 7,500
D.2	Remove & Dispose Stairs, Railings, Walkway, Retaining Wall & Appurtenances	LS	1	$ 7,500	$ 7,500
D.3	Sawcut Concrete	LF	10.5	$ 150	$ 1,575
D.4	Unclassified Exavation	CY	250	$ 50	$ 12,500
				DEMOLITION SUBTOTAL	**$ 29,075**
SPILLWAY REPAIR ITEMS					
R.1	Steel Sheet Pile	SF	540	$ 100	$ 54,000
R.2	Concrete Collar	LF	10.5	$ 700	$ 7,350
R.3	Rock Grouting	LF	72	$ 800	$ 57,600
R.4	Reinforced Concrete (Retaining Walls)	CY	55	$ 2,500	$ 137,500
R.5	Reinforced Concrete (Stairs and Walkway)	CY	17	$ 1,500	$ 25,500
R.6	Railings	LF	46	$ 150	$ 6,900
R.7	Spillway Backfill	CY	250	$ 25	$ 6,250
R.8	Place Salvaged Riprap	CY	300	$ 25	$ 7,500
R.9	Site Restoration	LS	1	$ 10,000	$ 10,000
				SPILLWAY REPAIR ITEMS SUBTOTAL	**$ 312,600**
	Construction Cost Subtotal				$ 566,000
	Contingency (30%)				$ 170,000
	Engineering & Construction Support (20%)				$ 148,000
	TOTAL COST (Rounded)				$ 890,000
	Low Range Estimate (-20%)				$ 710,000
	High Range Estimate (+30%)				$ 1,160,000

Notes:

[1] Design Work Completed to Approximately 10% Design Level.

[2] Quantities Based on Design Work Completed.

[3] Unit Prices Based on Information Available at This Time.

[4] This 10% Design Level (Class 4 per ASTM E 2516-11) cost estimate is based on designs, quantities and unit prices. Time value-of-money escalation costs are not included. The estimated accuracy range for the Total Project Cost as the project is defined is -20% to +30%. 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 and Construction Administration costs are not included.

Appendix C

Alternative Analysis Screening Tool

Option Analysis Screening
Faribault Woolen Mill Dam
City of Faribault

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No.	Option	Description	Description of Change to North Spillway	Description of Change to South Spillway	Mitigates Hydraulic Roller (North Spillway)	Mitigates Hydraulic Roller (South Spillway)	Meets Estimated IDF	Addresses historical seepage at South	Maintains Pool Elevation	Increases Capacity (North Spillway)	Increases Capacity (South Spillway)	Improves Fish Passage	Funding Opportunities	Low Maintenance	Low Operations	Public Accessibility/ Enhancement/ADA	Construction Cost	Protection of Mill Property	Total Cost to City	Improving Fishing	Canoe/Kayak Accessible
1	**Repair in kind**	Peform proposed FEMA repairs to achieve pre-flood conditions	No change	Repair of south abutment, sheetpile cutoff wall with grouting				x	x				x		x						
2	**North non-linear weir with South rock arch rapids**	Replace north spillway with non non linear weir and south spillway with rock arch rapids	Non-linear weir	Rock arch rapids with sheetpile cutoff and grouting	x	x	x	x	x	x	x			x	x	x		x			
3	**North rock ramp with South rock arch rapids**	Replace north spillway with rock ramp andn south spillway with rock arch rapids	Rock ramp	Rock arch rapids with sheetpile cutoff and grouting	x	x	x	x	x												
4	**Both rock arch rapids**	Replace both spillways with rock arch rapids	Rock arch rapids	Rock arch rapids with sheetpile cutoff and grouting	x	x	x	x	x	x	x	x	x	x	x	x		x			
5	**North rock arch rapids with South non-linear weir**	Replace north spillway with rock arch rapids and south spillway with a non-linear wier (piano key, labyrinth, arch)	Rock arch rapids	Install non linear weir, sheetpile cutoff wall with grouting	x	x	x	x	x		x	x	x		x	x					
6	**Both replaced with one center rock arch structure**	Construct one rock arch rapids spillway in the center area of the park	Removed and replaced with one spillway in the center of the park	Removed and replaced with one spillway in the center of the park	x	x	x	x	x	x	x	x	x	x	x	x		x		x	x
7	**Both replaced with one center non-linear weir**	Construct one non-linear wier (piano key, labyrinth, arch) in the center area of the park	Removed and replaced with one spillway in the center of the park	Removed and replaced with one spillway in the center of the park	x	x	x	x	x	x	x				x	x		x			
8	**North rock arch rapids**	Replace north spillway with rock arch rapids	Rock arch rapids	Repair of south abutment, sheetpile cutoff wall with grouting	x		x	x	x	x		x	x	x	x	x					
9	**South non-linear weir**	Replace the south spillway with a non-linear wier (piano key, labyrinth, arch), no change to north	No change	Install non linear weir, sheetpile cutoff wall with grouting	x	x	x	x	x		x				x	x					
10	**North non-linear weir**	Replace the north spillway with a non-linear wier (piano key, labyrinth, arch), repair south spillway in kind	Non-linear weir	Repair of south abutment, sheetpile cutoff wall with grouting	x			x	x	x					x	x					
11	**Both non-linear weir**	Replace both with a non-linear wier (piano key, labyrinth, arch)	Non-linear weir	Non-linear weir with sheetpile cutoff and grouting	x			x	x	x	x				x	x		x			
12	**South rock arch rapids**	Replace south spillway with rock arch rapids	No change	Rock arch rapids with sheetpile cutoff and grouting	x			x	x		x		x	x	x	x		x			
13	**South rock ramp**	Replace south spillway with rock ramp	No change	Rock ramp with abutment repairs, sheetpile cutoff with grouting	x			x	x					x	x						
14	**South reverse chute blocks**	Replace south spillway with reverse chute blocks	No change	Reverse chute blocks with abutment repairs, sheetpile cutoff with grouting	x			x	x						x						
15	**South staircase spillway**	Replace south spillway with staircase spillway	No change	Staircase spillway with abutment repairs, sheetpile cutoff with grouting	x			x	x						x						
16	**Crest Gate**	Install crest gate (obermeyer or	No change	Crest gate installed on south spillway. Existing spillway structure would be modified				x	x		x										
17	**Both replaced with one center non-linear weir + rock arch rapids**	Construct one narrow rock arch rapids spillway with a non linear weir in the center area of the park	Removed and replaced with one spillway in the center of the park	Removed and replaced with one spillway in the center of the park	x			x	x	x	x	x	x		x	x		x			

Orange text signifies high priority inclusions
Underlined alternatives signify they will be pursued further.

Appendix D

Public Engagement Meeting Materials

What design considerations matter to you? Vote here!

Please review the various design alternatives displayed around the room. Once you've identified aspects of the designs that are most important to you, use the provided stickers to mark your choices as indicated on this board. Your feedback will help us understand the preferences and priorities of the community.

Required components

- Eliminates or reduces dam drowning hazards
- Meets current design requirements
- Addresses historical seepage at site

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Considerations

Place a sticker next to the design consideration that is **most important to you**.

Low maintenance	
Hands-off system (no controls)	
Fishing opportunities	
Funding opportunities	
Total cost	
Public accessibility/ enhancement	
Protection of neighboring properties	
Canoe/kayak accessible	
Maintains upstream pool elevation	

Alternative design examples

Real-life examples of some design alternatives.
NOTE: These photos are for illustrative purposes only and do not represent the project's final appearance.

Rock ramp

Non-linear weir

Alternative design examples

Real-life examples of some design alternatives.
NOTE: These photos are for illustrative purposes only and do not represent the project's final appearance.

Non-linear weirs

Alternative design examples

Real-life examples of some design alternatives.
NOTE: These photos are for illustrative purposes only and do not represent the project's final appearance.

Rock arch rapids

Alternative 1: Repair in kind

Repair south spillway per FEMA repairs.

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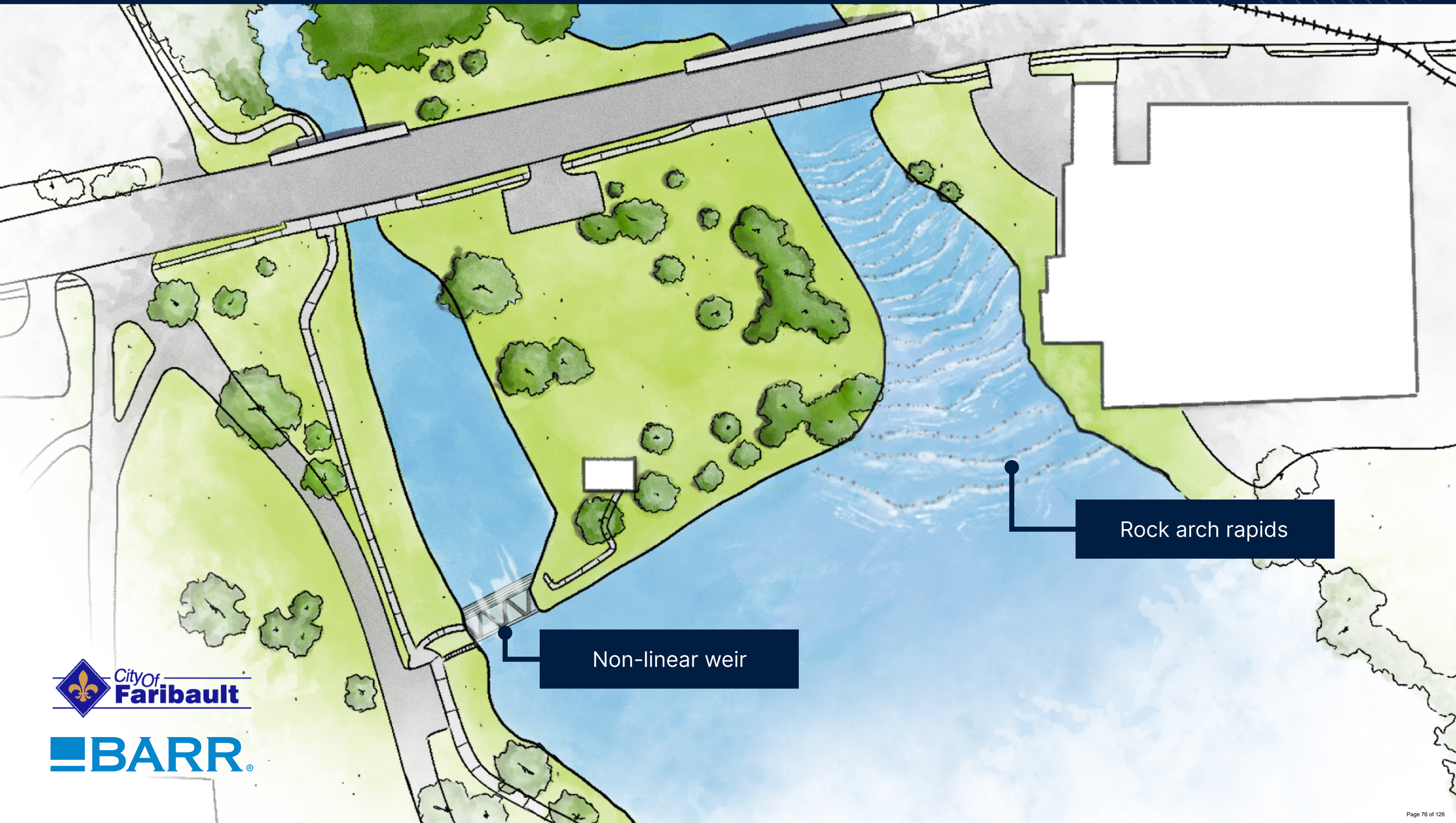
Alternative 2: North non-linear weir with south rock arch rapids

Replace the north spillway with a non-linear weir (piano key, labyrinth, arch).
Replace south spillway with rock arch rapids.



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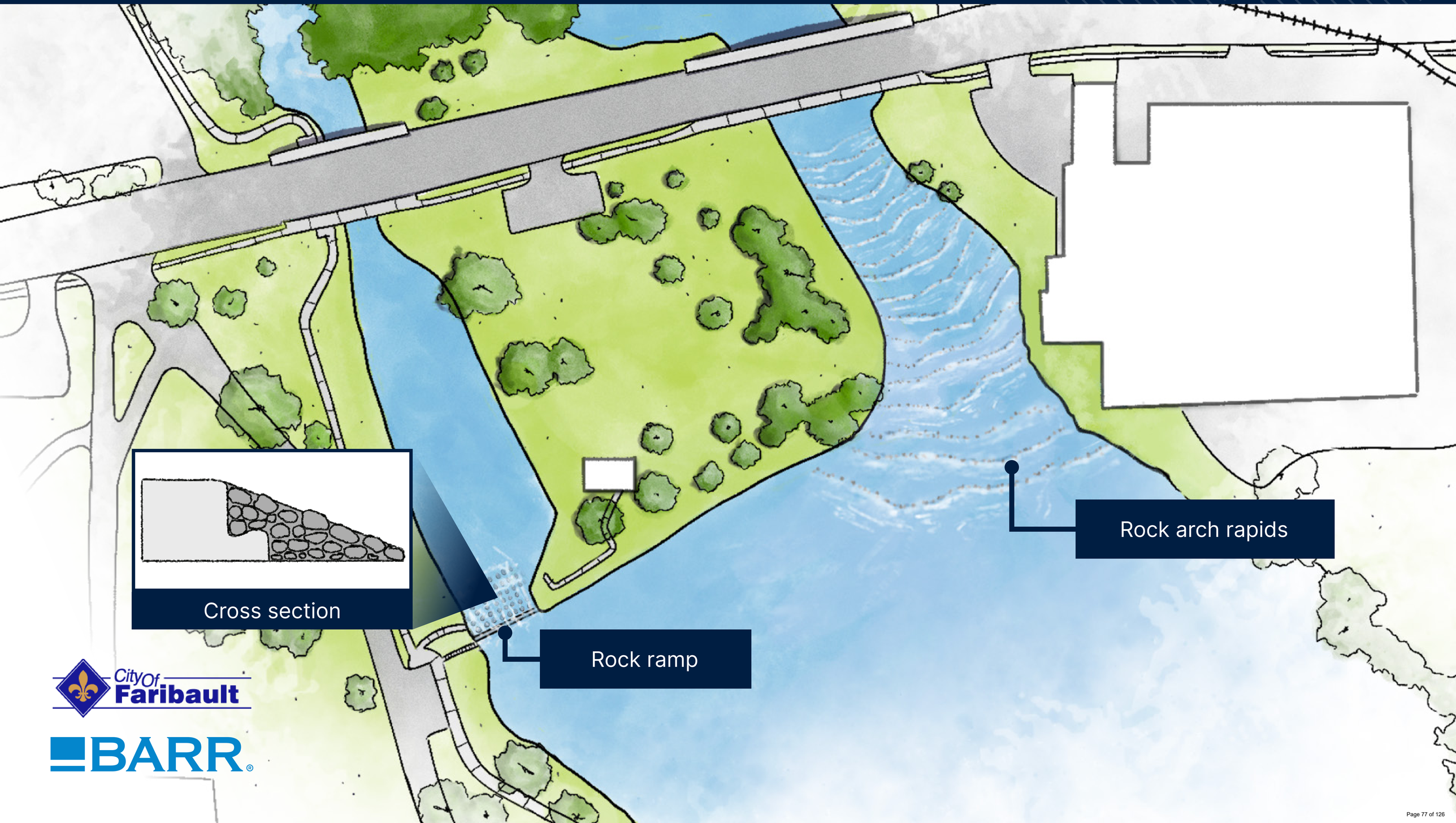
Alternative 3: North rock ramp with south rock arch rapids

Replace the north spillway with a rock ramp downstream of existing weir.
Replace south spillway with rock arch rapids pushed upstream to increase the weir length.



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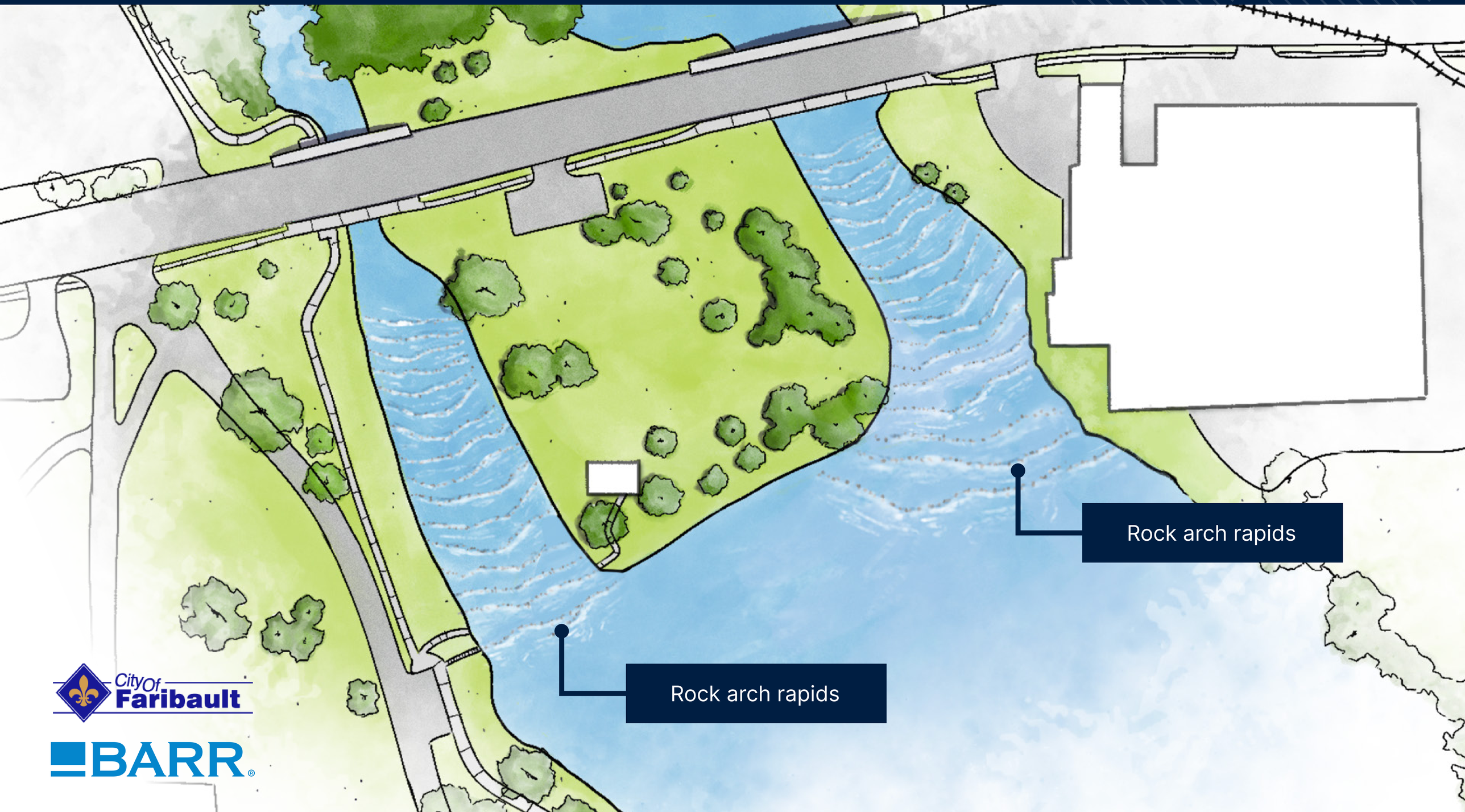
Alternative 4: Both rock arch rapids

Replace both spillways with rock arch rapids.



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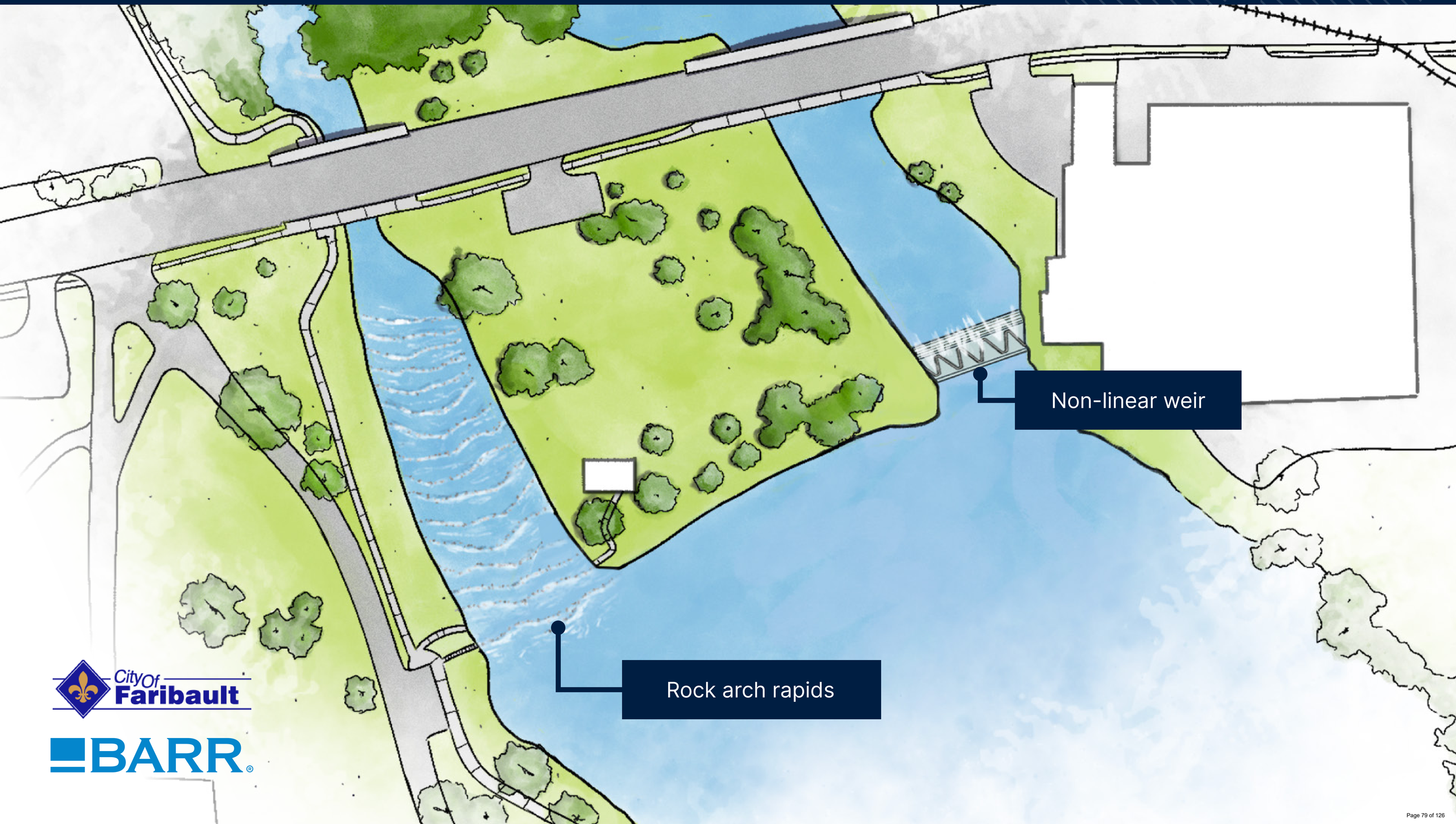
Alternative 5: North rock arch rapids with south non-linear weir

Replace north spillway with rock arch rapids.
Replace south spillway with non-linear weir.



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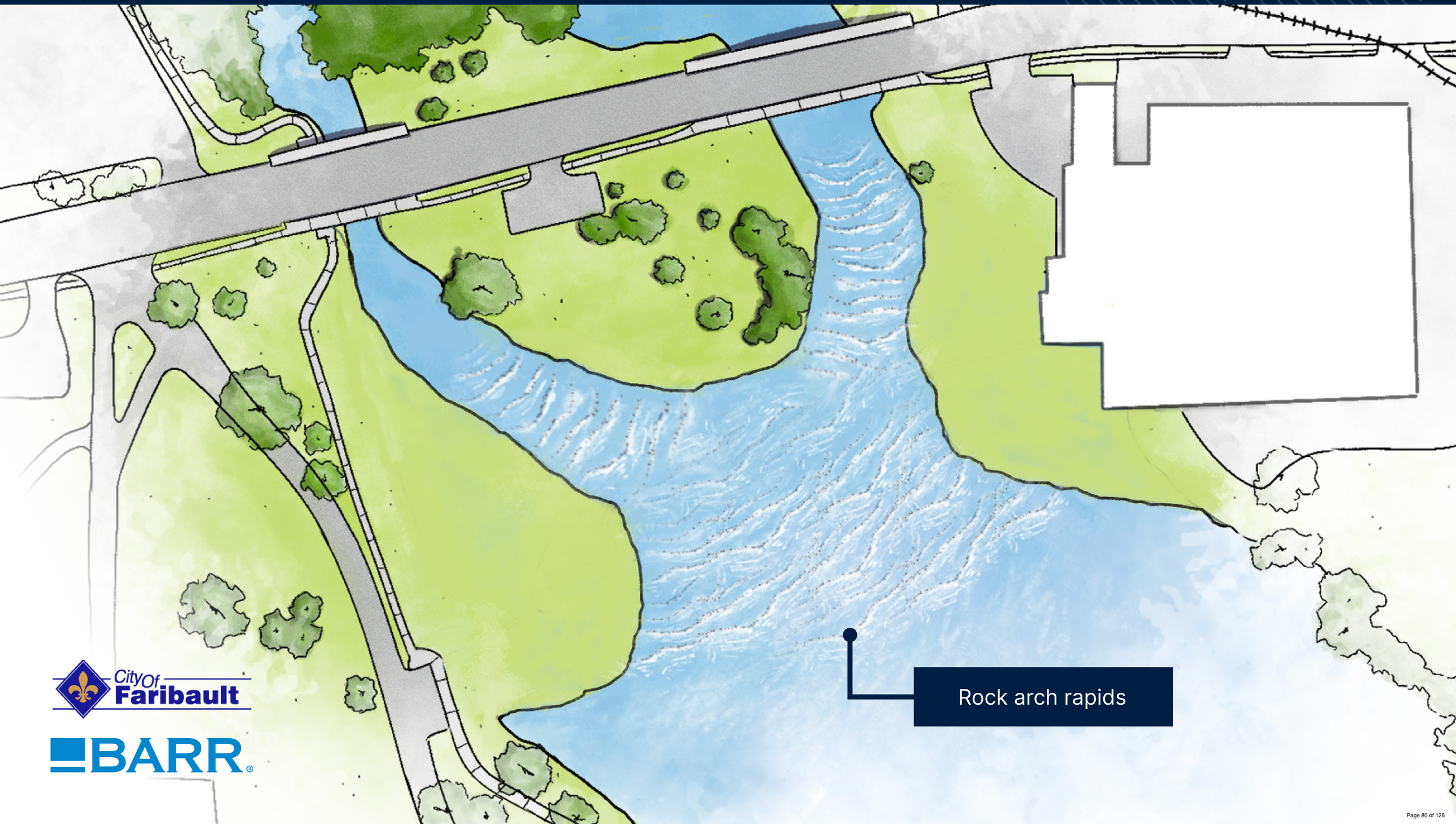
Alternative 6: Both replaced with one center rock arch structure

Construct one rock arch rapids spillway in the center area of the park.



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Alternative 7: Both replaced with one center non-linear weir

Construct one center non-linear weir in the center area of the park.

City Of Faribault

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Appendix E

10% Drawings

LEGEND

- 1010 — EXISTING INDEX CONTOUR
- EXISTING INTERMEDIATE CONTOUR
- 1010 — PROPOSED INDEX CONTOUR
- PROPOSED INTERMEDIATE CONTOUR
- EXISTING ROAD OR TRAIL
- EXISTING CONCRETE
- EXISTING WATERLINE
- ROCK RIFFLE WEIR
- PROPOSED LAND RAISE

1/- PLAN: ALTERNATIVE 1

0 50 100

SCALE IN FEET

NOT FOR CONSTRUCTION

CADD USER: TAYLOR C.-KUECHLE FILE: M:\DESIGN\23661050.00\23661050.00_10% LEVEL_ALT OPTION 1_A-PLAN.DWG PLOT SCALE: 1:2 PLOT DATE: 11/18/2025 9:55 AM

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION
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CLIENT	04/04/25							
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Checked	JKH2
Designed	BARR
Approved	JDA

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FARIBAULT, MINNESOTA

WOOLEN MILL DAM FEMA REPAIR
FARIBAULT, MINNESOTA

SPILLWAY REPAIRS
ALTERNATIVE 1

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DWG. No.	ALT 1 - A
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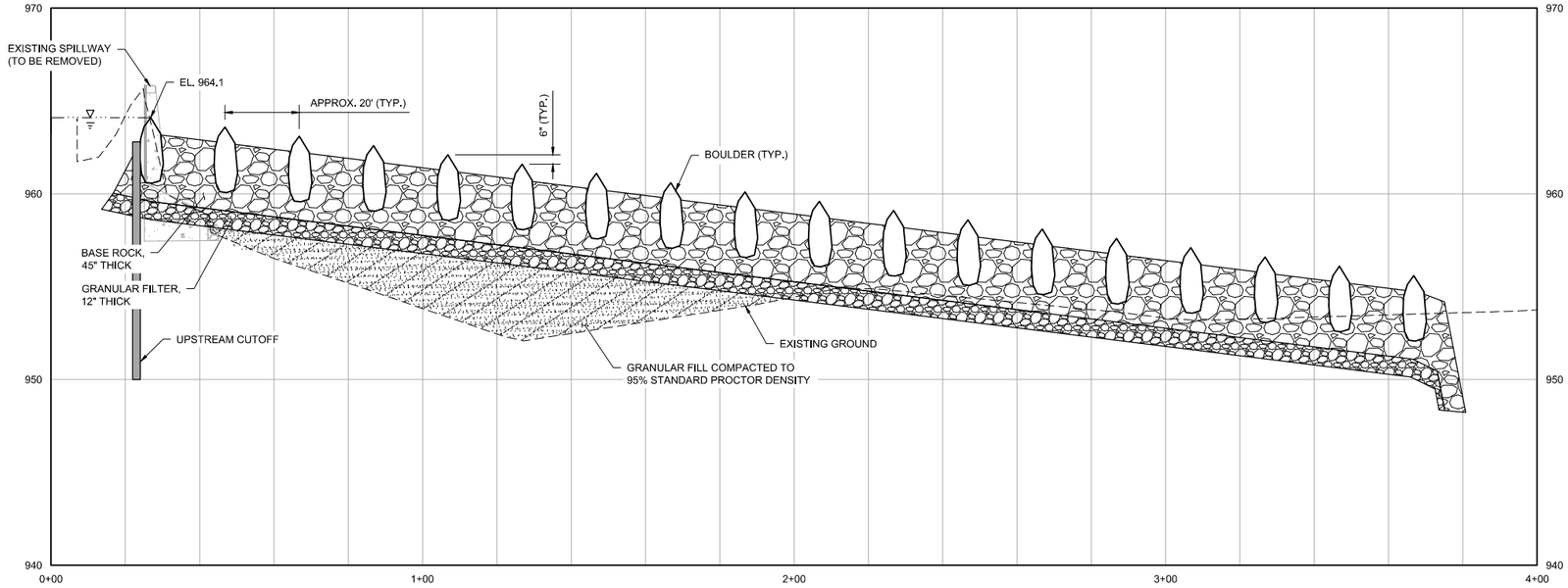


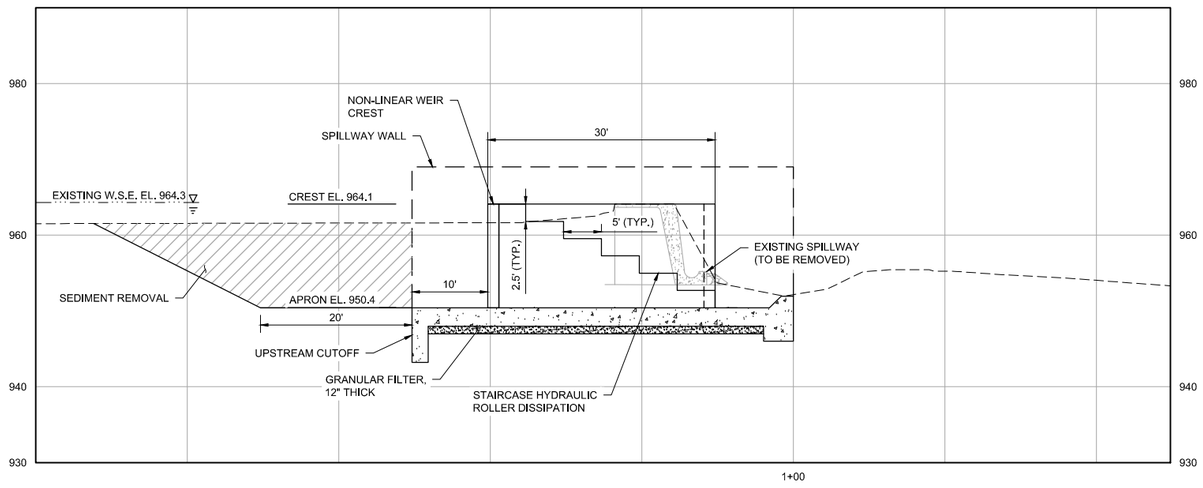
1 / 1A PROFILE: ROCK RIFFLES

0 20 40 SCALE IN FEET

0 2 4 6 8 VERTICAL SCALE IN FEET

LEGEND

- 1010 EXISTING INDEX CONTOUR
- EXISTING INTERMEDIATE CONTOUR
- 1010 PROPOSED INDEX CONTOUR
- PROPOSED INTERMEDIATE CONTOUR
- EXISTING ROAD OR TRAIL
- EXISTING CONCRETE
- EXISTING WATERLINE
- ROCK RIFFLE WEIR



2 / 1A PROFILE: NON-LINEAR WEIR

0 10 20 SCALE IN FEET

NOT FOR CONSTRUCTION

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SPILLWAY REPAIR
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REV. No. -

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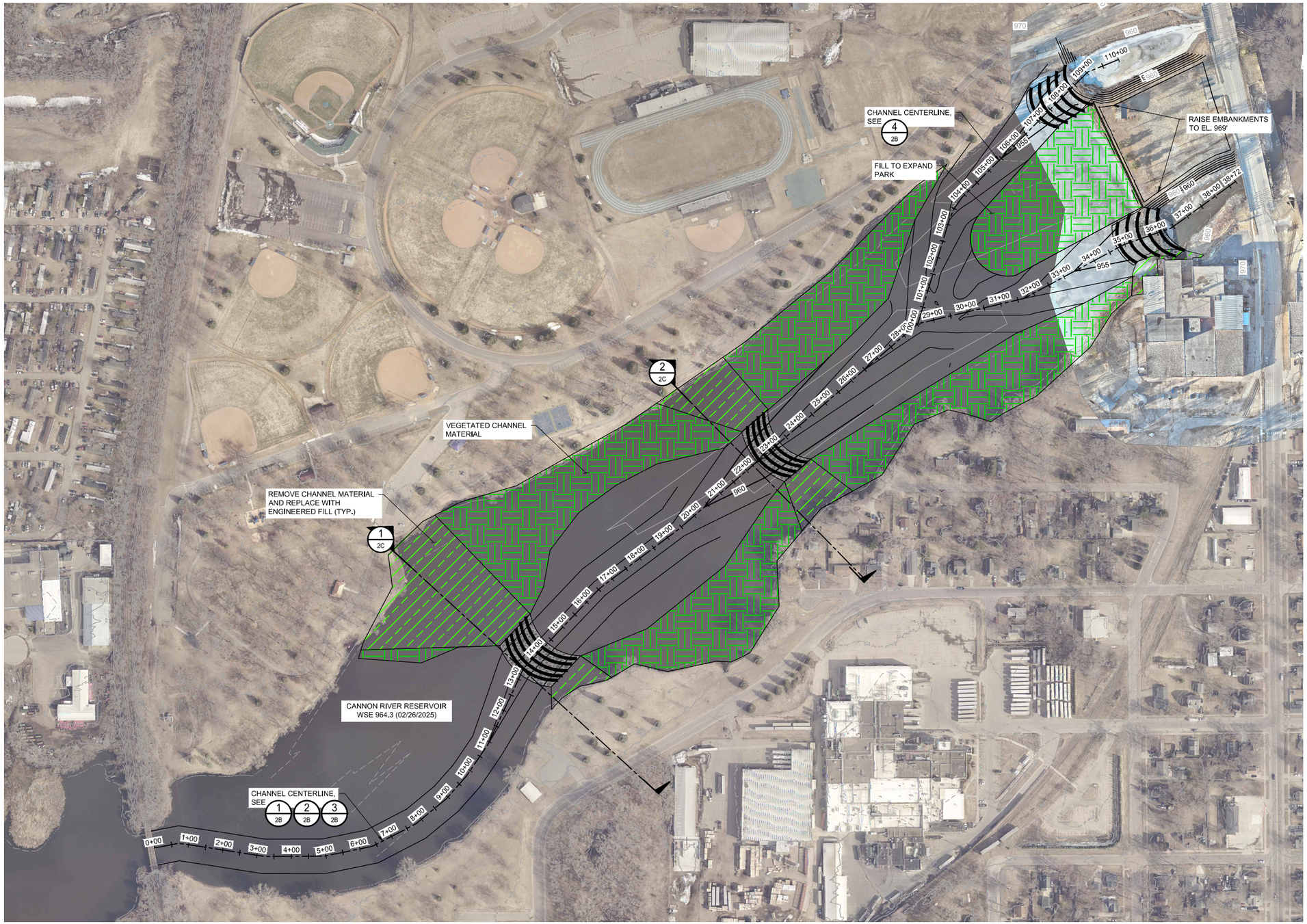

LEGEND

- 1010 — EXISTING INDEX CONTOUR
- EXISTING INTERMEDIATE CONTOUR
- 1010 — PROPOSED INDEX CONTOUR
- PROPOSED INTERMEDIATE CONTOUR
- EXISTING ROAD OR TRAIL
- EXISTING CONCRETE
- EXISTING WATERLINE
- ROCK RIFFLE WEIR
- ENGINEERED FILL
- VEGETATED CHANNEL MATERIAL

1 - PLAN: ALTERNATIVE 2

0 50 100

SCALE IN FEET

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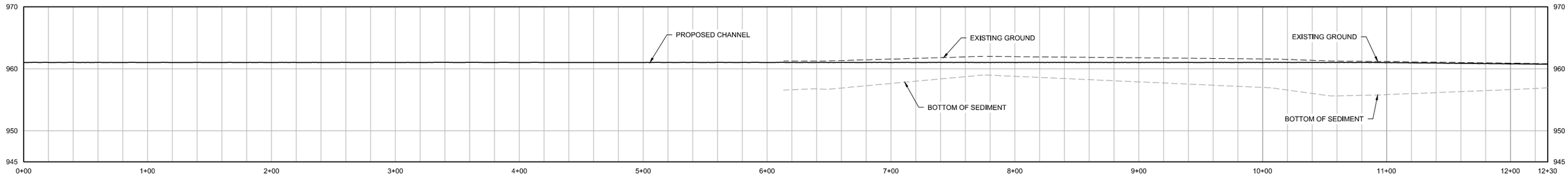

1 2A PROFILE: ROCK RIFFLES

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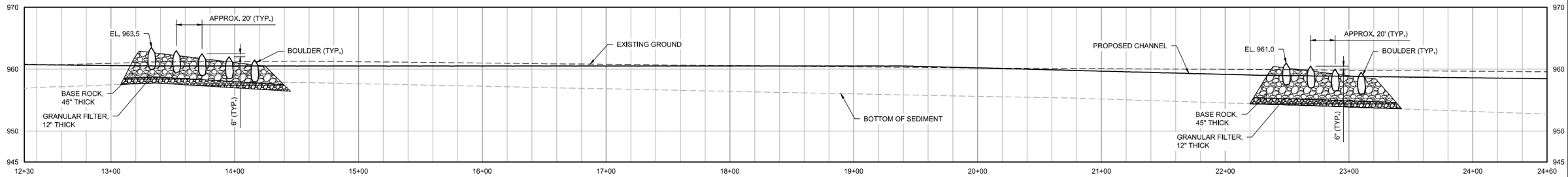

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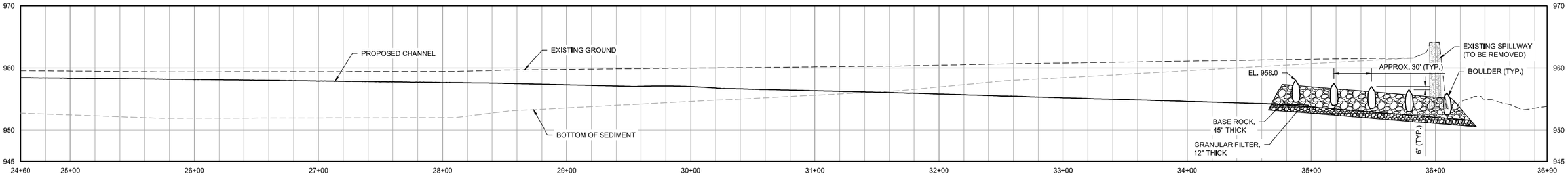

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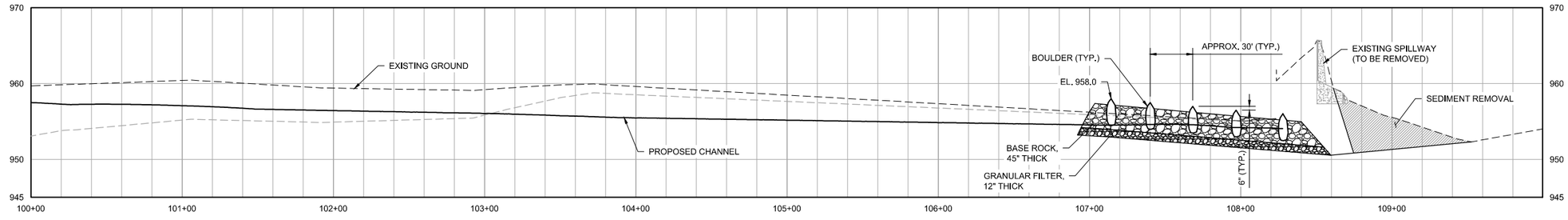

4 2A PROFILE: ROCK RIFFLES

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BID	———	———	———	———	———	———	———	———
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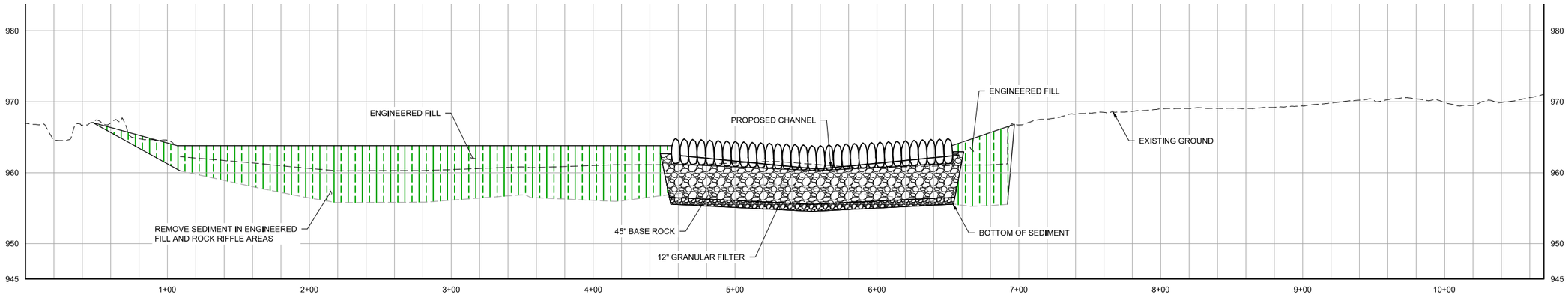

1 SECTION: UPSTREAM ROCK RIFFLES

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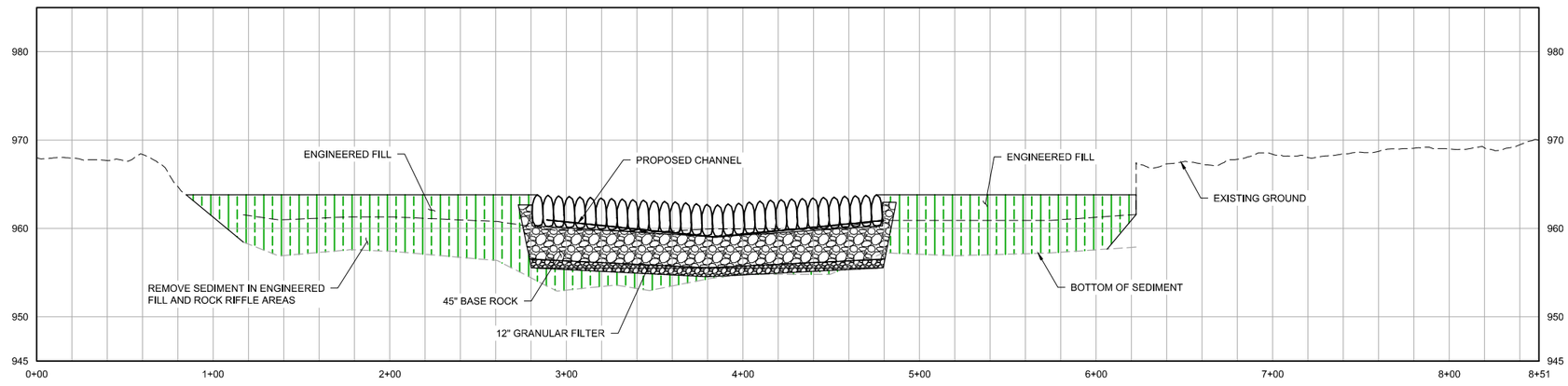
0 4 8 12 16 VERTICAL SCALE IN FEET



2 SECTION: MIDDLE ROCK RIFFLES

0 40 80 SCALE IN FEET

0 4 8 12 16 VERTICAL SCALE IN FEET

NOT FOR CONSTRUCTION

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SPILLWAY REPAIRS
ALTERNATIVE 2 - SECTIONS

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CLIENT PROJECT No.
DWG. No. ALT 2 - C
REV. No. -

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Appendix F

Renderings

Alternative 1: North Rock Arch Rapids with South Non-linear Weir

Alexander Dr

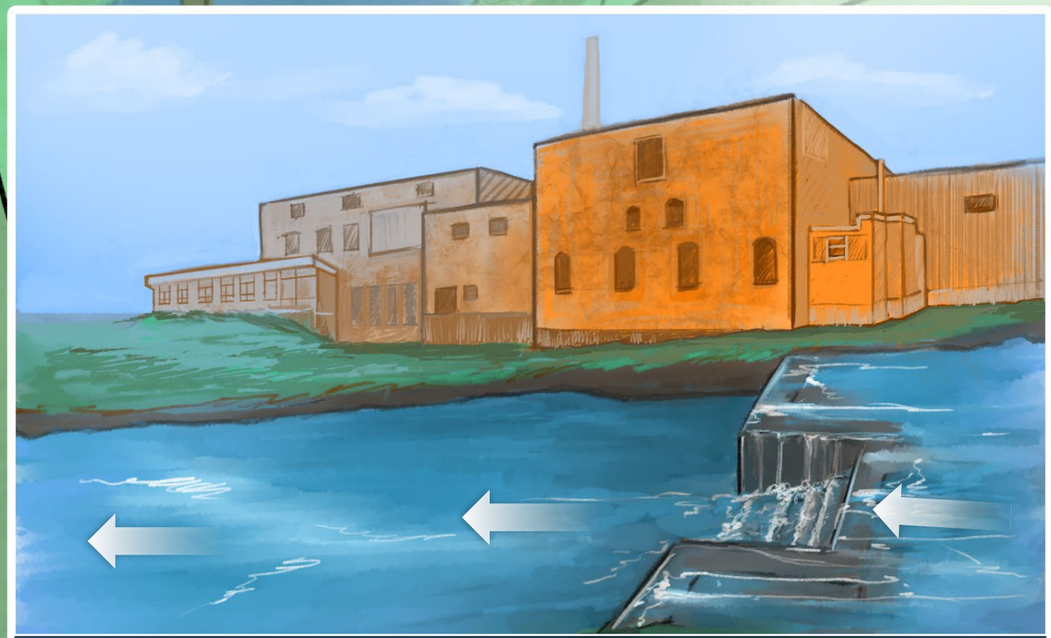
Trails and fishing access

2nd Ave NW

N

Constructed rock arch rapids

Cannon River Reservoir



Non-linear weir

Woolen Mill

BARR

Alternative 1: North Rock Arch Rapids with South Non-linear Weir

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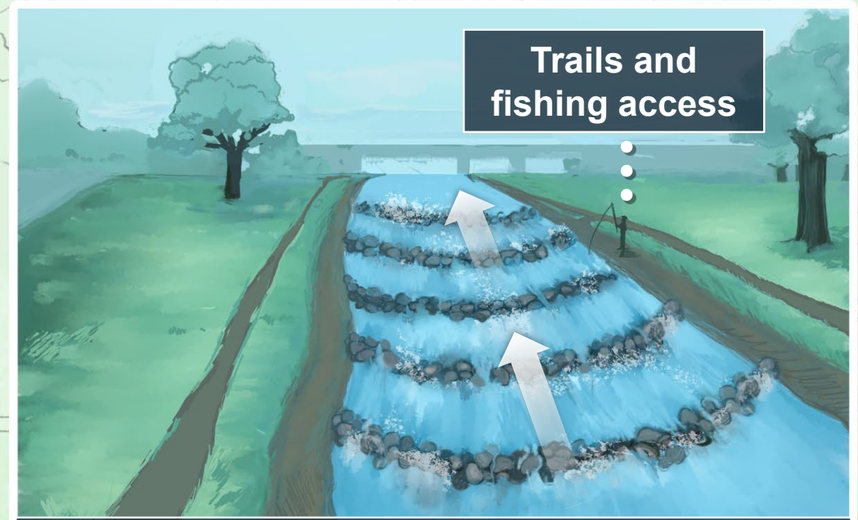
Alternative 2: Both Rock Arch Rapids



Alexander Dr

Park filled and expanded

Ground filled and expanded

2nd Ave NW

N

Woolen Mill

Constructed rock arch rapids

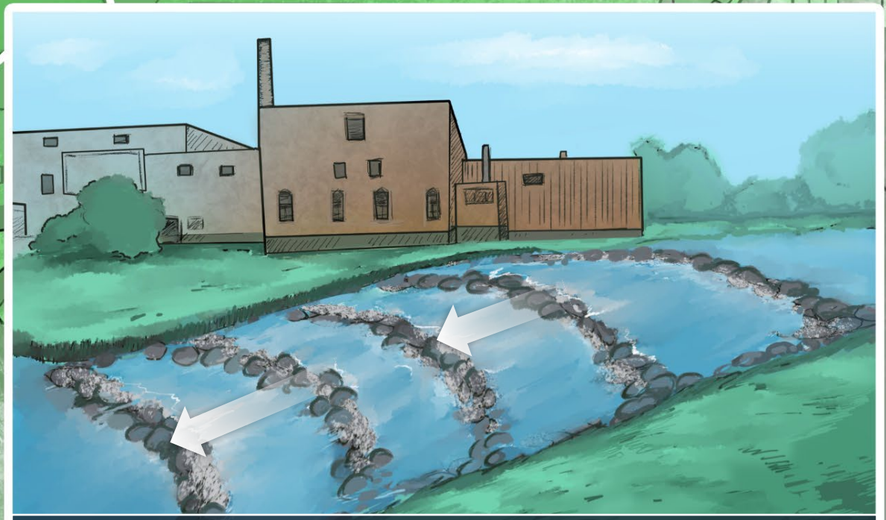
Constructed rock arch rapids

Ground filled and expanded

7th Ave NW

Cannon River Reservoir

Boat launch



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Alternative 2: Both Rock Arch Rapids

BARR

Appendix G

Preliminary Woolen Mill Dam Hydraulic Assessment Memorandum

Technical Memorandum

To: Mark DuChene, City of Faribault
From: Alex VanDeWeghe, Jill Geyer, Tom MacDonald, Barr Engineering Co.
Subject: Preliminary Woolen Mill Dam Hydraulic Assessment
Date: December 12, 2025
Project: Faribault Woolen Mill Dam

Barr Engineering Co. (Barr) conducted a preliminary assessment of the hydraulics of the Woolen Mill Dam to support the Feasibility Study. This technical memorandum is a supplement to the Feasibility Study to summarize the hydrologic Inputs, hydraulic model development, and key results.

1 Hydrologic Inputs

Three flow scenarios were analyzed: the 100-year event, the 2-year event, and a low-flow scenario. These flow scenarios were selected to evaluate 1) a flood condition and best match the current dam capacity, 2) a near-bankfull (1-2-year event) condition, and 3) a draught condition. The 100-year flow was obtained from the effective FIS study (last revised 2022, Reference (1)) and the 2-year and low-flow were obtained using USGS regional regressions via the StreamStats web interface (Reference (2)). These sources estimated a 100-year event of 2580 cfs, a 2-year event of 604 cfs, and a low-flow of 13.4 cfs, here taken nominally to be the flow that is exceeded 90% of the time. While these flows are used for the feasibility study to select an alternative, a more detailed hydrologic assessment will be necessary during the detailed design phase.

2 Hydraulic Model Development

A 2D-hydraulic model was constructed for the Project along the Cannon River from Lyndale Avenue to the confluence of the Cannon and Straight Rivers. The hydraulic modeling was completed using HEC-RAS Version 6.6 in the vertical datum of NAVD88 and the horizontal coordinate system NAD1983_HARN_Adj_MN_Rice_Feet. The model used 2021 LiDAR from the USGS to represent the terrain in the reservoir and overbanks. Bathymetric data collected by Barr in February 2025 was used to model the channel downstream of Woolen Mill Dam. For proposed conditions, the terrain modifications feature tool was used to represent proposed features such as rock arch rapids and areas of proposed regrading. The 2021 USDA NAIP Aerial Imagery was processed using ArcGIS Pro Image Analyst to develop the land cover data used to estimate the surface roughness in the hydraulic model. An estimate for Manning's n roughness coefficients for the 2D model was developed from these land cover classifications (Table 2-1) (Reference (2)).

Table 2-1 Land Cover Types and Associated Manning's n (Roughness)

Land Cover Type	n-Values
Channel/Water	0.035
Tree Canopy and Shrubs	0.08
Low Vegetation	0.04
Barren	0.03
Impervious Surfaces	0.12
Impervious Roads	0.12

The model mesh used a cell spacing of 20 feet by 20 feet in the channel and 50 feet by 50 feet in the overbanks. Breaklines were used along the channel banks and features of high ground to capture prominent terrain features in the 2D mesh. Data for the 2nd Avenue bridges were entered using the 2007 Design and Bridge Survey Drawings provided by the City of Fairbault Engineering Department. The railings of the bridge were considered blocked flow area based on photos showing small opening sizes prone to becoming blocked with debris. Survey data was unavailable for the railroad bridges East of 2nd Avenue. Assumptions were made about the bridge deck and pier geometry for the railroad bridges were estimated based on site photos and LiDAR.

Both the north and south structures are represented in the hydraulic model. The north channel structure is 64.2 feet long. The left side of the structure (looking downstream) is an ogee spillway with a crest of 964.74 feet. This is the overflow section of the dam. The right side of the structure is a concrete non-overflow section with two stop log bays, each 4 feet wide with sill elevations of 960.1 feet. The crest elevation of the non-overflow section is 965.9. The south channel structure is a 115-foot-long concrete spillway. The spillway crest is 8 feet wide with a crest elevation of 964.1 feet. Dam dimensions were based on the Woolen Mill Dam Inspection Report from USACE (Reference (4)). Values in the inspection report were listed in the National Geodetic Vertical Datum of 1929 (NGVD29). To convert to NAVD88, the following equation was applied:

$$NAVD88 = NGVD29 - 0.03 \text{ feet}$$

The flows discussed in Section 1 were used as a constant inflow hydrograph upstream boundary condition. For the downstream boundary condition, a rating curve was used based on the discharges and corresponding water surface elevation from the FIS study (Table 5-2) (Reference (1)). There is additional flood data from a 2012 letter of map revision (LOMR) that does not appear in the effective 2022 study. The 2012 LOMR updated the hydrology for the Straight River, which resulted in lower tailwater elevations at the Woolen Mill Dam. This data was discussed with Ceil Strauss and Jeff Weiss of the MnDNR. Although the 2012 LOMR was valid and erroneously excluded from the effective 2022 study, it was not used in the feasibility study because the Straight River has experienced multiple floods exceeding the 2012 LOMR-reported 100-year event water surface elevations since 2012, indicating that a higher tailwater condition is a more realistic assumption. The initial elevation of the reservoir was set at a normal pool elevation of 964.1.

Table 2-2 Downstream Boundary Condition Rating Curve

Event	FIS Discharge (cfs)	FIS Water Surface Elevation (ft)
No flow	0	955.3(2)
90% flow exceedance	13.4(1)	955.5(2)
2-year	604(1)	962.2(3)
10-year	1,320	963.9
50-year	2,150	965.8
100-year	2,580	966.9
500-year	3,650	968.7

(1) Discharge estimated using USGS StreamStats
(2) Water surface elevation estimated from Survey data
(3) Water surface elevation extrapolated from FIS data

The final two alternatives identified in the feasibility study were both modeled with the flow and tailwater boundary conditions described above to compare with existing conditions.

3 Results

The following two tables present a direct comparison of pool elevations and flows across existing conditions, Alternative 1 (a non-linear weir in the south channel and rock-arch rapids in the north channel) and Alternative 2 (rock-arch rapids throughout the reservoir). The pool elevations are summarized at two key locations: just upstream of the existing dam and at the upstream rail bridge, shown with the model domain in Figure 3-1. The flow is specified for both the north and south channels.

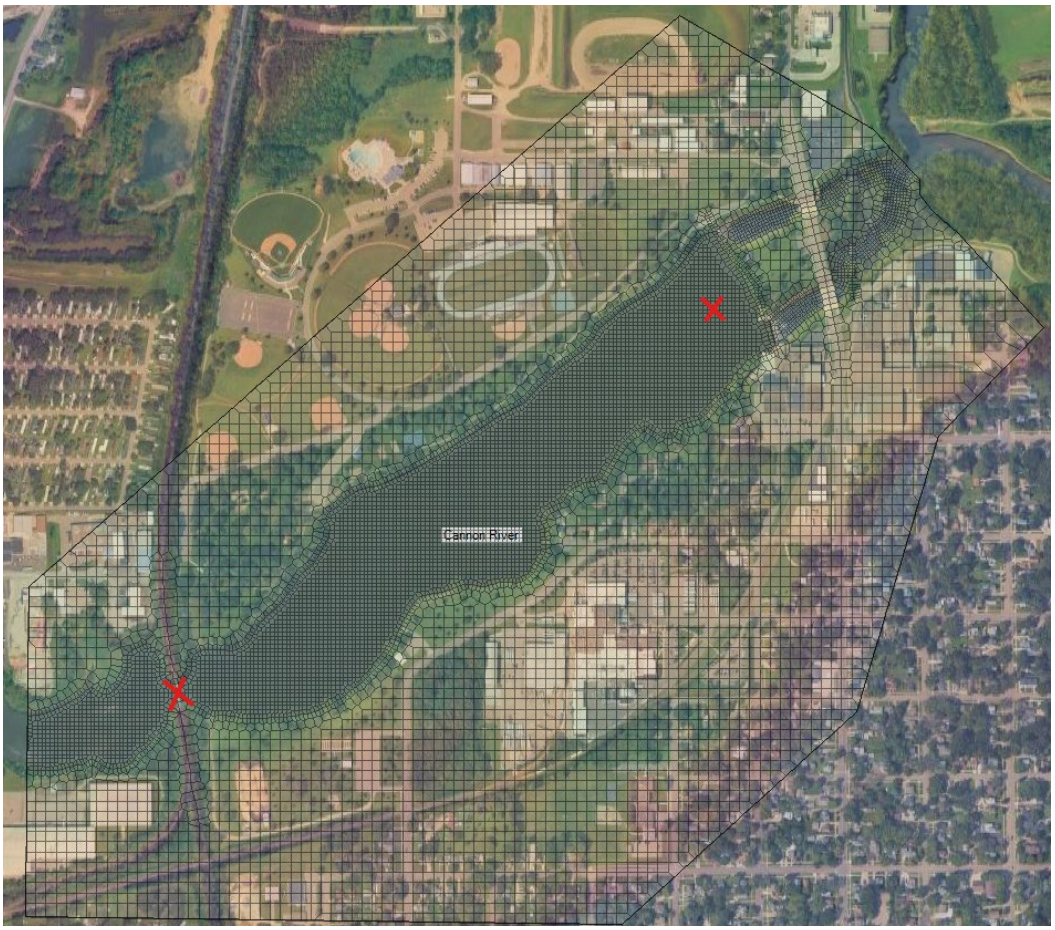


Figure 3-1 Evaluation points and hydraulic model domain

Table 3-1 Pool elevations with different flows and dam configurations (feet, NAVD88)

Flow Condition	Location	Existing	Alternative 1	Alternative 2
Low-flow	Existing Dam	964.2	964.1	958.0
	Upstream Rail Bridge	964.3	964.1	964.4
2-year	Existing Dam	965.6	964.6	962.8
	Upstream Rail Bridge	966.2	964.8	965.9
100-year	Existing Dam	967.6	967.3	967.2
	Upstream Rail Bridge	968.5	967.6	968.0

As shown in Table 3-1, Alternative 2 maintains a lower pool level during low-flow conditions near the existing dam. The pool level near the existing dam is similar to Alternative 1 and existing conditions for the 100-year flow. Alternative 1 maintains similar pool levels to existing conditions with slightly lower levels during flood events.

Table 3-2 Flow split between channels for different dam configurations (cfs)

Flow Condition	Location	Existing	Alternative 1	Alternative 2
Low-flow	North Channel	0	7.5	0
	South Channel	13	5.9	14
2-year	North Channel	60	360	40
	South Channel	540	250	560
100-year	North Channel	760	990	760
	South Channel	1820	1600	1820

Under low-flow conditions, the North Channel goes dry with the existing spillway structure configuration. This is also true of Alternative 2. The rock-arch rapids are set at the same elevation in both the north and south channels, but a slightly shorter flow path to the downstream convergence results in what little flow is in the river going through the south channel. Alternative 2 maintains a very similar flow split to existing conditions across flow scenarios. Alternative 1 maintains a mostly equal flow split between the two channels under low-flow conditions (and any non-flood condition). However, the south spillway conveys more flow during the 100-year flood due to the hydraulically efficient non-linear weir. Downstream water levels during the 100-year flood are primarily controlled by tailwater conditions resulting from the convergence with Straight River.

4 References

1. **Federal Emergency Management Agency.** *Flood Insurance Study for Rice County, Minnesota and Incorporated Areas.* 2022.

2. **Minnesota StreamStats.** ***StreamStats.*** **[Online] USGS. https://www.usgs.gov/streamstats/minnesota-streamstats.**

3. U.S. Army Corps of Engineers. ***HEC-RAS 2D User's Manual.*** **2023.**

4. St Paul District, Corps of Engineers. ***Cannon River Woolen Mill Dam Rice County Inventory No. 354; National Dam Safety Program; Inspection Report.*** **s.l. : USACE, 1980.**

Appendix H

10% Cost Spreadsheets

PREPARED BY: BARR ENGINEERING CO.

Woolen Mills Dam Alternative 1 - North Rock Arch Rapids with South Non-Linear Weir

ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COSTS

PROJECT: **Woolen Mills Dam Repairs**
CLIENT: **City of Faribault**
PROJECT #: 23661050.00
DATE: 10/15/2025

Engineer's Opinion of Probable Construction Costs

Item No:	Item Description	Units	Estimated Qty	Unit Cost	Total Cost
GENERAL ITEMS					
G.1	Mobilization & Demobilization	LS	1	$ 555,000	$ 555,000
G.2	Water Control	LS	1	$ 400,000	$ 400,000
G.3	Erosion Control and Restoration	LS	1	$ 200,000	$ 200,000
G.4	Embankment Raise	CY	2,000	$ 15	$ 30,000
				GENERAL ITEMS SUBTOTAL	**$ 1,155,000**
DEMOLITION					
D.1	North Spillway Demolition	LS	1	$ 75,000	$ 75,000
D.2	South Spillway Demolition	LS	1	$ 150,000	$ 150,000
				DEMOLITION SUBTOTAL	**$ 225,000**
NORTH SPILLWAY ITEMS					
N.1	Excavation, Sediment Removal and Subgrade Prep	LS	1	$ 200,000	$ 200,000
N.2	Granular Fill	CY	900	$ 30	$ 27,000
N.3	Granular Filter	TON	2,700	$ 50	$ 135,000
N.4	Base Rock (Class IV Riprap)	TON	12,500	$ 60	$ 750,000
N.5	Boulders (4-5' Diameter)	EA	630	$ 600	$ 378,000
N.6	Upstream Cutoff	SF	3,100	$ 50	$ 155,000
				NORTH SPILLWAY REPAIR ITEMS SUBTOTAL	**$ 1,645,000**
SOUTH SPILLWAY ITEMS					
S.1	Excavation, Sediment Removal and Subgrade Prep	LS	1	$ 100,000	$ 100,000
S.2	Filter Aggregate	TON	844	$ 50	$ 42,222
S.3	Left Retaining Wall	CY	107	$ 2,400	$ 256,000
S.4	Left Retaining Wall Footing	CY	107	$ 1,500	$ 160,000
S.5	Right Retaining Wall	CY	213	$ 2,400	$ 512,000
S.6	Right Retaining Wall Footing	CY	213	$ 1,500	$ 320,000
S.7	Right Dummy Wall (near Mill)	CY	200	$ 2,400	$ 480,000
S.8	Right Dummy Wall Footing (near Mill)	CY	320	$ 1,500	$ 480,000
S.9	Spillway Floor	CY	433	$ 1,500	$ 650,000
S.10	Spillway Weir	CY	197	$ 2,500	$ 492,593
S.11	Spillway Stairs	CY	244	$ 2,500	$ 611,111
S.12	Upstream Key	CY	67	$ 1,800	$ 121,333
S.13	Downstream Key	CY	116	$ 1,800	$ 208,000
S.14	Fill near Mill	CY	1,435	$ 30	$ 43,056
				SOUTH SPILLWAY REPAIR ITEMS SUBTOTAL	**$ 4,433,259**
	Construction Cost Subtotal				$ 7,459,000
	Contingency (30%)				$ 2,238,000
	Engineering & Construction Support (15%)				$ 1,164,000
	TOTAL COST (Rounded)				$ 10,861,000
	Low Range Estimate (-20%)				$ 8,690,000
	High Range Estimate (+30%)				$ 14,120,000

Notes:

[1] Design Work Completed to Concept Screening Level.

[2] Quantities Based on Design Work Completed.

[3] Unit Prices Based on Information Available at This Time.

[4] This Concept Screening Level (Class 5 per ASTM E 2516-11) cost estimate is based on designs, quantities and unit prices. Time value-of-money escalation costs are not included. The estimated accuracy range for the Total Project Cost as the project is defined is -30% to +50%. 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 and Construction Administration costs are not included.

PREPARED BY: BARR ENGINEERING CO.

Woolen Mills Dam Alternative 2 - Rock Arch Rapids and Channel Grading

ENGINEER'S OPINION OF PROBABLE CONSTRUCTION COSTS

PROJECT: **Woolen Mills Dam Repairs**
CLIENT: **City of Faribault**
PROJECT #: 23661050.00
DATE: 10/15/2025

Engineer's Opinion of Probable Construction Costs

Item No:	Item Description	Units	Estimated Qty	Unit Cost	Total Cost
GENERAL ITEMS					
G.1	Mobilization & Demobilization	LS	1	$ 651,000	$ 651,000
G.2	Water Control	LS	1	$ 500,000	$ 500,000
G.3	Erosion Control and Restoration	LS	1	$ 300,000	$ 300,000
				GENERAL ITEMS SUBTOTAL	**$ 1,451,000**
DEMOLITION					
D.1	North Spillway Demolition	LS	1	$ 75,000	$ 75,000
D.2	South Spillway Demolition	LS	1	$ 150,000	$ 150,000
				DEMOLITION SUBTOTAL	**$ 225,000**
UPSTREAM ROCK RIFFLE 1 ITEMS					
R1.1	Subgrade Prep	LS	1	$ 120,000	$ 120,000
R1.2	Granular Fill	CY	1,200	$ 30	$ 36,000
R1.3	Granular Filter	TON	1,241	$ 50	$ 62,028
R1.4	Base Rock (Class IV Riprap)	TON	5,775	$ 60	$ 346,500
R1.5	Boulders (4-5' Diameter)	EA	233	$ 600	$ 140,000
R1.6	Upstream Cutoff	SF	4,200	$ 50	$ 210,000
				SOUTH SPILLWAY REPAIR ITEMS SUBTOTAL	**$ 914,528**
UPSTREAM ROCK RIFFLE 2 ITEMS					
R2.1	Excavation, Backfill and Subgrade Prep	LS	1	$ 90,000	$ 90,000
R2.2	Granular Fill	CY	900	$ 30	$ 27,000
R2.3	Granular Filter	TON	924	$ 50	$ 46,185
R2.4	Base Rock (Class IV Riprap)	TON	4,300	$ 60	$ 258,000
R2.5	Boulders (4-5' Diameter)	EA	187	$ 600	$ 112,000
R2.6	Upstream Cutoff	SF	4,200	$ 50	$ 210,000
				SOUTH SPILLWAY REPAIR ITEMS SUBTOTAL	**$ 743,185**
NORTH SPILLWAY ITEMS					
N.1	Excavation, Backfill and Subgrade Prep	LS	1	$ 110,000	$ 110,000
N.2	Granular Fill	CY	900	$ 30	$ 27,000
N.3	Granular Filter	TON	1,122	$ 50	$ 56,120
N.4	Base Rock (Class IV Riprap)	TON	5,225	$ 60	$ 313,500
N.5	Boulders (4-5' Diameter)	EA	172	$ 600	$ 103,333
N.6	Upstream Cutoff	SF	3,100	$ 50	$ 155,000
				NORTH SPILLWAY REPAIR ITEMS SUBTOTAL	**$ 764,954**
SOUTH SPILLWAY ITEMS					
S.1	Excavation, Backfill and Subgrade Prep	LS	1	$ 115,000	$ 115,000
S.2	Granular Fill	CY	1,000	$ 30	$ 30,000
S.3	Granular Filter	TON	1,224	$ 50	$ 61,222
S.4	Base Rock (Class IV Riprap)	TON	5,700	$ 60	$ 342,000
S.5	Boulders (4-5' Diameter)	EA	200	$ 600	$ 120,000
S.6	Upstream Cutoff	SF	3,600	$ 50	$ 180,000
				SOUTH SPILLWAY REPAIR ITEMS SUBTOTAL	**$ 848,222**
CHANNEL ITEMS					
C.1	Subgrade Prep	CY	1	$ 150,000	$ 150,000

C.2	Sediment Removal	CY	15,542	$ 30	$ 466,254
C.3	Engineered Fill	CY	67,741	$ 20	$ 1,354,815
C.4	Vegetated Channel Material (reused sediment)	CY	122,800	$ 3	$ 368,400
C.5	Park Expansion	CY	49,259	$ 10	$ 492,593
C.6	Embankment Raise	CY	2,000	$ 20	$ 40,000
C.7	Dummy Wall near Mill	CY	200	$ 2,400	$ 480,000
C.8	Dummy Wall near Mill (Footings)	CY	320	$ 1,500	$ 480,000
			SOUTH SPILLWAY REPAIR ITEMS SUBTOTAL		**$ 3,832,062**
	Construction Cost Subtotal				$ 8,779,000
	Contingency (30%)				$ 2,634,000
	Engineering & Construction Support (15%)				$ 914,000
	TOTAL COST (Rounded)				$ 12,327,000
	Low Range Estimate (-20%)				$ 9,860,000
	High Range Estimate (+30%)				$ 16,030,000

Notes:

[1] Design Work Completed to Concept Screening Level.

[2] Quantities Based on Design Work Completed.

[3] Unit Prices Based on Information Available at This Time.

[4] This Concept Screening Level (Class 5 per ASTM E 2516-11) cost estimate is based on designs, quantities and unit prices. Time value-of-money escalation costs are not included. The estimated accuracy range for the Total Project Cost as the project is defined is -30% to +50%. 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 and Construction Administration costs are not included.

Appendix I

Cultural Resources Desktop Analysis Memo

Technical Memorandum

To: Mark DuChene, City of Faribault
From: Veronica Parsell, Barr Engineering Co.
Subject: Cultural Resources Desktop Analysis
Date: December 19, 2025
Project: Faribault Woolen Mill Dam

In evaluating the options, a desktop analysis of documented cultural resources within and adjacent to the dam was conducted to understand how the project may impact significant cultural resources (historic properties) under the Minnesota Historic Sites Act (MN State Statute 138.665) and to anticipate a potential federal undertaking for the project subject to Section 106 of the National Historic Preservation Act and its implementing regulations 36CFR800 (Section 106).

Barr's cultural resources review focused on identifying documented archaeological and historic architectural resources. Archaeological resources are defined as any site location that contains material remains of past human life or activities, or other places and/or items that possess cultural importance to individuals or a group. Historic architectural resources include "buildings, bridges, tunnels, statues, and other structures that create tangible links to the American past, whether in relation to historical events and people, traditional ways of life, architectural design, or methods of construction"[1].

Once identified through documentary research and/or fieldwork, archaeological sites and historic architectural resources are evaluated for NRHP eligibility based on the following criteria.

"The quality of significance in American history, architecture, archaeology, engineering and culture is present in the districts, sites, buildings, structures and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

- *That are associated with the events that have made a significant contribution to the broad patterns of our history; or*
- *That are associated with the lives of persons significant in our past; or*
- *That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or*
- *That have yielded or may be likely to yield, information important in prehistory or history" (36 CFR 60.4)."*

The review was conducted through the Minnesota Office of the State Archaeologist (OSA) online data portal for archaeological sites and surveys, and the Minnesota State Historic Preservation Office (SHPO) online State Historic Inventory Portal (MnSHIP). In addition, Barr consulted the NRHP database

[1] https://www.nps.gov/orgs/1027/architecture.htm

maintained by the National Park Service, as well as the National Historic Landmarks list to identify significant historic properties that could be affected by removing or otherwise altering the dam.

1 Identification of Historic Properties

The data reviewed through the OSA portal and MnSHIP indicate that there are no archaeological sites in or near the dam. Two archaeological sites have been documented within 1-mile of the dam (see Section 2 below for more information).

Two documented historic architectural resources, the Woolen Mill Dam (south) (RC-FAC-00102) and Woolen Mill Dam (north), are in the project area and would be directly impacted by the project. These resources are currently unevaluated for the NRHP. Further, seven additional historic architectural resources are in close proximity to the project, including one resource that is listed on the NRHP (Faribault Woolen Mill/RC-FAC-00103) (see Section 3 below for more information).

2 Archaeological Sites

The OSA online portal indicates that there are no archaeological sites in or near the project area. Two sites are within 1-mile of the project.

Site 21RC0060 consists of the “Sixth Street NW Burial” and is located 0.7 miles southwest of the dam. This site is a post-contact burial, discovered in the context of an artifact scatter consisting of ash, coal, glass, ceramic, metal and faunal remains. A precise date for the burial is not included on the OSA site form.

Site 21RCau is an alpha site mapped at the PLSS section level. An alpha site is an archaeological site that has been recorded based on documentation, maps or reporting, but has not been surveyed by a qualified archaeologist. Locations of alpha sites are approximate and mapped in a larger area than the actual site occupies. Alpha site 21RCau consists of a historic mill and is mapped approximately 0.8 miles southwest of the project, but may be located anywhere within Section 36 of Township 110 North, Range 21 West. No additional information is available on the OSA portal regarding this site.

3 Historic Architectural Resources

The review of MnSHIP indicates that nine historic architectural resources are in or adjacent to the project area, including the two Woolen Mill Dam spillway structures (RC-FAC-00102 and RC-FAC-00103), which the project proposes to modify (Table 3-1) (see Section 3.1). The Woolen Mill Dam spillway structures are unevaluated for the NRHP; however, these structures are associated with the NRHP-listed Faribault Woolen Mills/RC-FAC-00101 (see Section 3.2).

The remaining seven historic architectural resources are outside the immediate project area but may be impacted in terms of changes to the setting, noise and/or visibility of the project. Of these, one is listed on the NRHP (Faribault Woolen Mills/RC-FAC-00101), four are unevaluated, and two are not eligible.

Table 3-1 Historic architectural resources in or near the project area

Resource ID	Resource Name	Description	NRHP Status	Distance from Project Area
RC-FAC-00102	Woolen Mill Dam (South)	c. 1865, gravity dam on the Cannon River, associated with the adjacent Faribault Woolen Mill	Unevaluated	Project Area
RC-FAC-00103	Woolen Mill Dam	c. 1944, poured concrete dam on the Cannon River, constructed by the Schroeder Company, walkway addition c. 1945	Unevaluated	Project Area
RC-FAC-00101	Faribault Woolen Mills	c. 1893 Woolen Mill founded by Carl H. Klemer	Listed (May 23, 2012)	Directly Adjacent
RC-FAC-00962	Rice County Fairgrounds	Fairgrounds and associated properties, including seven contributing, and two non-contributing structures consisting of fair buildings and outdoor facilities, a school, a house, a museum and a church	Unevaluated	Directly Adjacent
XX-ROD-00178	Trunk Highway 65	Active Highway	Not Eligible	Directly Adjacent
XX-RRD-CGW018/ XX-RRD-CGW013	Wisconsin Minnesota and Pacific Railroad Company/ Chicago Great Western Railway Company/ Minnesota Central Railroad Company/ Wisconsin Minnesota and Pacific Railroad Company/ Chicago Great Western Railway Company	c. 1882, Non-extant corridor between Dundas and Faribault	Not Eligible	~120 meters
RC-FAC-00104	Bridge No. 3579	c. 1922, concrete bridge crossing Second Avenue over the Cannon River	Unevaluated	~100 meters
RC-FAC-00106	Train trestle	c. 1920, one of two timber train trestles carrying the Chicago Northwestern Railroad over the Cannon River; non-active	Unevaluated	~120 meters
RC-FAC-00105	Train trestle	c. 1920, one of two timber train trestles carrying the Chicago Northwestern Railroad over the Cannon River; non-active	Unevaluated	~120 meters

3.1 Woolen Mill Dam (RC-FAC-00102 and RC-FAC-00103)

The Woolen Mill Dam (south) (RC-FAC-00102) was first constructed from timber in 1865 for a flour mill, prior to the development of the Faribault Woolen Mill (RC-FAC-00101) at this site in 1892. The dam includes two spillways, one north (left), and another south (right), which control the flow of the Cannon River at its junction with the Straight River. In 1894, the Faribault Woolen Mill Company constructed new structures (one to the north of Second Ave: Woolen Mill Dam (north)/RC-FAC-00103) from stone, and made unspecified modifications in 1905 (Howard 2012). In 1938, the company donated the structures, tailrace, and mill pond to the city for inclusion in a newly proposed public park. In the 1940s, the northern structure was completely reconstructed from concrete, consisting of an ogee spillway and three stoplog gates, as a part of a Works Progress Administration initiative. A walkway was built crossing the dam in 1945 (Howard 2012).

Major modifications were made to both the south and north spillway structures in the 1960s, including the refacing the southern spillway structure and replacement of the gate on the stoplog channel spillway on the northern spillway structure (St Paul District Corps of Engineers 1980). In the late 1980s, further updates were made, including the addition of a new abutments and a new concrete apron on the southern spillway structure (Howard 2012).

The Woolen Mill dam spillway structures (resources RC-FAC-00102 and RC-FAC-00103) were not included as contributing resources to the Faribault Woolen Mill on its 2012 NRHP nomination form due to the major modifications that have been completed on these structures over the years, particularly after the transfer of ownership to the City of Faribault in 1938, which significantly impacted the historic integrity of the original spillway structures. Because these structures have been heavily modified and updated over the years to maintain their safety and structural integrity, for the purposes of this project the Woolen Mill Dam spillway structures are recommended not eligible for the NRHP.

3.2 Faribault Woolen Mill (RC-FAC-00101)

The Faribault Woolen Mill was listed on the NRHP on May 23, 2012 under criterion A for its association with “events that have made significant contribution to the broad patterns of our history” (Howard 2012) in the area of Industry. The mill is significant to Minnesota’s textile industry as the “longest running, fully integrated mill in the state” (Howard 2012), with a period of significance from 1892, the year construction began, to 1971, when the mill achieved its peak success in terms of production and reach.

Carl Henry Klemer, a German immigrant, cabinetmaker, and farmer sold his farm in 1864 and relocated to the village of Faribault to establish a wool carding operation. Faribault was founded by Alexander Faribault in 1835, and when Klemer arrived in mid 1860s, flour and lumber mills were the dominant industries in the area. Faribault’s location along the Cannon and Straight Rivers offered consistent sources of waterpower for milling operations, and after the civil war, the demand for domestic wool products increased, further propelled by the Tariff Acts of 1867, which provided protection for domestic wool producers by increasing tariffs on British and European products.

Klemer established his wool carding business in 1865 under the name C.H. Klemer Company on a lot near downtown Faribault. In the 1870s, he expanded the business by adding a spinning machine and looms, and changed the name to “Faribault Woolen Mill”. In 1882, Klemer moved the business to a building on the Straight River, and his two sons, Henry and Ferdinand, joined the family business in the 1880s. Over the next decade, several fires damaged the company, and in 1892, a catastrophic fire caused irreparable damage. That same year, the company moved to its current location on the Cannon

River, which was then occupied by a flour mill with a timber dam. The Klemers constructed a new brick building to house the woolen mill, and replaced the existing dam with a stone construction

Originally built as a two-story, brick structure, the building has since been modified with a third floor, a basement, improvements to entrances and window opening, interior alterations to improve manufacturing efficiency, and a new building addition in 1971. Despite the updates in design and manufacturing equipment, the building maintains good integrity, with much of the original structure and physical features remaining intact. Further, the function of the facility as a woolen mill has remained consistent through the present day, as have the general procedures for producing woolen materials.

Modifications to the two spillway structures associated with the Faribault Woolen Mill (resources RC-FAC-00102 and RC-FAC-00103) are unlikely to impact the character, setting, feeling, or association of the mill as defined by the NRHP. Although the spillway structures were historically part of the mill property and contributed to its early industrial operations, they were significantly altered in the 1940s and 1980s, which compromised their historic integrity. As a result, neither dam is included within the NRHP boundaries of the Faribault Woolen Mill. The mill itself retains all seven aspects of historic integrity - location, setting, design, materials, workmanship, feeling, and association - independent of the spillway structures.

4 Interim Effects Analysis

Although the project is not yet considered an undertaking subject to Section 106, a federal agency undertaking is anticipated due to United States Army Corps of Engineers (USACE) permitting requirements. As a result, an interim effects analysis has been completed for the project according to 36 CFR 800.5.

According to 36 CFR 800.5(a)(1), “an adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property’s location, design, setting, materials, workmanship, feeling, or association.” Based on the current project information, although the Woolen Mill Dam spillway structures will be altered, because the structures have already been heavily modified and because they do not contribute to the historic integrity of the NRHP-listed Faribault Woolen Mill, our preliminary finding is that the project will have “no adverse effect” on the Faribault Woolen Mill.

This recommendation is not the official effects finding for the project, which is the responsibility of the USACE once the project is determined an undertaking subject to Section 106. However, based on the current project plans, an analysis of the effects of the project on the Faribault Woolen Mill follows. The analysis references the examples of adverse effects found in 36 CFR 800.5(a)(2).

> Per 36 CFR 800.5(a)(2)(i), the undertaking will not cause “physical destruction of or damage to all or part of the property.” The Faribault Woolen Mill will not be physically altered as a result of the project.
>
> Per 36 CFR 800.5(a)(2)(ii), the undertaking will not cause “alteration of a property, including restoration, rehabilitation, repair, maintenance, stabilization, hazardous material remediation and provision of handicapped access, that is not consistent with the Secretary’s Standards for the Treatment of Historic Properties (36 CFR part 68) and applicable guidelines.” The Faribault Woolen Mill will not be altered in a manner inconsistent with the Secretary’s Standards for the Treatment of Historic Properties.

Per 36 CFR 800.5(a)(2)(iii), the undertaking will not cause "removal of the property from its historic location". The Faribault Woolen Mill will not be moved or altered as a result of the project.

Per 36 CFR 800.5(a)(2)(iv), the undertaking will not cause a "change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance." Although the spillway structures would be replaced with some combination of rock arch rapids and/or a non-linear weir, both alternatives would keep an upstream pool, preserving the visual and functional relationship between the river and the Faribault Woolen Mill. The use of rock arch rapids and/or a non-linear weir would also maintain the look and sound of flowing water without introducing modern or more intrusive structures.

Per 36 CFR 800.5(a)(2)(v), the undertaking would not cause the "introduction of visual, atmospheric or audible elements that diminish the integrity of the property's significant historic features." Because the spillway structures would be replaced with rock rapids and/or a non-linear weir, the audible elements of the sound of falling water will have minimal changes. Any construction-related visual or audible elements during project construction would be temporary and limited to the duration of construction activities.

Per 36 CFR 800.5(a)(2)(vi), the undertaking will not cause "neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization."

Per 36 CFR 800.5(a)(2)(vii), the undertaking will not cause "transfer, lease, or sale of property out of Federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property's historic significance."

Because the anticipated Section 106 Finding for the project is "no adverse effect", avoidance, minimization, and/or mitigation measures would not be required.

Council Work Session Memorandum

TO:	Mayor and City Council
THROUGH:	Jessica Kinser, City Administrator
FROM:	Dustin Dienst, Director of Fire & Code Services
MEETING DATE:	June 16, 2026
SUBJECT:	Fire Department Staffing

Discussion:

In 1985, the Faribault Fire Department changed its staffing model from an *all-full-time* fire department to the current *combination* fire department by replacing full-time firefighters with paid-on-call (POCFF) firefighters. The staffing model consisted of 9 full-time firefighters and between 25–30 paid-on-call firefighters; this number can vary.

The only change to this staffing model came in February 2024, when the City Council added a 10th full-time firefighter to work a 40-hour schedule.

Our workload/call volume has increased exponentially over the years. The addition of two more full-time firefighters, bringing our current three firefighters per shift model to four firefighters per shift, is necessary to operate safely, effectively and efficiently. The addition of two firefighters would bring us up to the NFPA recommended staffing level. Studies have shown the increased safety and effectiveness of a four-person shift over our current three-person shift model.

For the past couple of years, we have applied for FEMA's SAFER (Staffing for Adequate Fire and Emergency Response) Grant. This grant assists fire departments by providing dollars toward the wages of the firefighters requested in the grant. The grant will pay 75% of the actual costs incurred in each of the first and second years, and 35% in the third year. We are requesting permission to apply for the SAFER grant, due June 22nd.

Attachments:

Council Work Session Memorandum

TO:	Mayor and City Council
THROUGH:	Jessica Kinser, City Administrator
FROM:	Kindra Papenfus, Finance Director
MEETING DATE:	June 16, 2026
SUBJECT:	2027 Budget Preview - General Fund and Capital Fund Balances

Discussion:

Understanding current fund balances is an essential early step in the annual budget process - these balances establish the financial foundation that the City will build on when planning future spending and levy levels. Healthy reserves provide flexibility to absorb unexpected costs, fund capital needs, and maintain the City's financial standing with bond rating agencies. This work session provides the Council with an understanding of where our major funds stand (general fund) or are projected to stand (capital funds) heading into 2027 budget deliberations.

Attachments:

1. Fund Balances - Worksession 6.16

City Of Faribault

Fund Balance Work Session

Funds 101 · 401 · 404 · 431 · 437

City Council Work Session | June 16, 2026

Tonight's Agenda

01 **Fund 101 – General Fund**
2025 year-end balance & 50% policy compliance

02 **Fund 401 – Street Improvements**
2026 projected year-end balance

03 **Fund 404 – Parkland Improvements**
2026 projected year-end balance

04 **Fund 431 – Capital Replacement**
2026 projected year-end balance

05 **Fund 437 – Public Facilities**
2026 projected year-end balance

Fund 101 – General Fund: 2025 Year-End

Fiscal year ended December 31, 2025

$14,312,843

Total Fund Balance

As of 12/31/2025

$10,809,648

Unrestricted / Unassigned

Available for 50% test

$24,428,099

2026 Budgeted Expenditures

FY2026 appropriation

2025 Operating Results

Category	Amount
Actual Revenues	$23,408,213
Actual Expenditures	$23,335,131
Net Surplus	**$73,082**
Transfer to Capital Funds	$0

Fund Balance Components

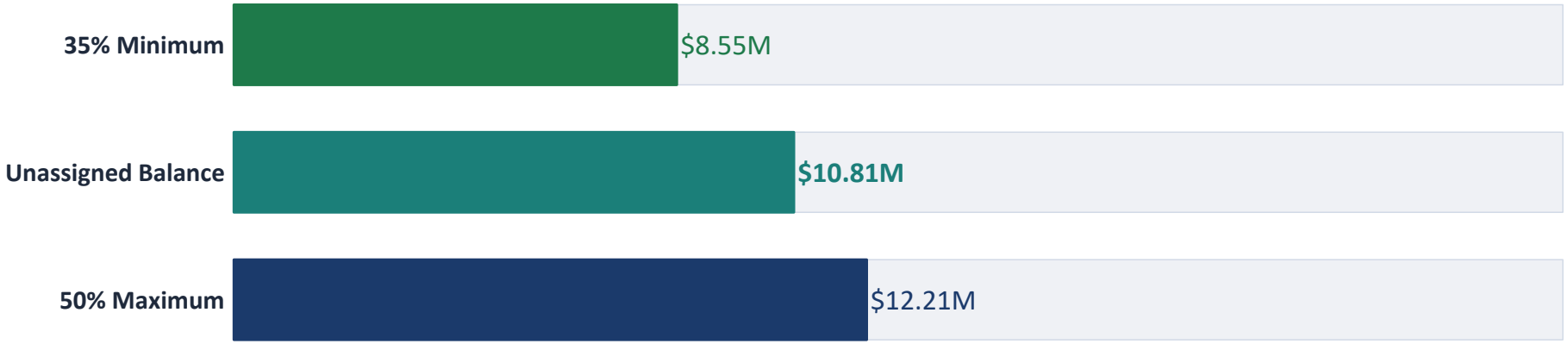
Nonspendable (prepaids, capital fund loan)	$1,769,722
Restricted (fire escrow, Smith donation)	$133,701
Assigned (donations, state aid)	$579,779
Other deductions	$1,019,993
Unrestricted Unassigned	**$10,809,648**

City Of Faribault

Fund 101 – Reserve Policy Compliance

Unassigned fund balance vs. 35% minimum and 50% maximum policy targets

✓ **WITHIN POLICY — BETWEEN 35% MINIMUM AND 50% MAXIMUM**



44.3%	35% – 50%	5.7%	$2.26M
Actual %	Policy Range	Headroom to Max	Excess Reserves (above 35%)

Funds 401 & 404 – Street & Parkland Improvements

Fund 401

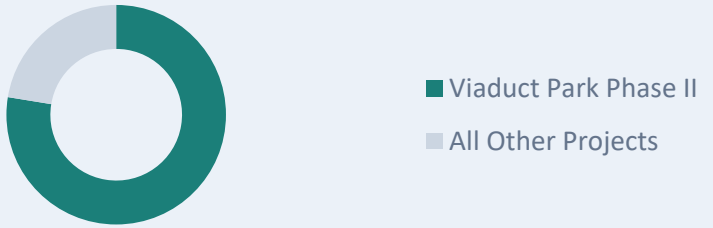
Street Improvements

Beginning Balance (1/1/26)	$1.86M
2026 Revenues	$2.47M
2025 Encumbrances	($353,456)
2026 Budgeted Expenditures	($3.37M)
Projected Savings (Overages)	(45,0000)
Projected 2026 Ending Balance	**$549,839**

Fund 404

Parkland Improvements

Beginning Balance (1/1/26)	$3.86M
2026 Revenues	$3.63M
2025 Encumbrances	($1.70M)
2026 Budgeted Expenditures	($4.77M)
Projected Savings (Overages)	$0
Projected 2026 Ending Balance	**$1.02M**



Viaduct Park Phase II = 77% of 2026 budget

Fund 431 – Capital Replacement

2026 projected year-end balance

$1,284,977	$134,000	($936,209)	$111,639
Beginning Balance	2026 Revenue	Budgeted Expenditures	Projected Savings

Projected 2026 Ending Balance: $594,407

Key 2026 Expenditures

Category	Item	Budget	Actual/Est	Savings
Public Works	Volvo Loader (Nuss Truck)	$425,000	$370,565	**$54,435**
Public Safety	PD Door & Camera Access (AllTrees)	$213,000	$151,436	**$61,564**
Public Works	Street Truck (Harry Brown's)	$56,000	$49,345	**$6,655**
Capital / Rec	New Climbing Wall (Pyramide USA)	$25,000	$24,000	**$1,000**
Government IT	Tyler Technologies (EPL/UB Impl.)	—	$38,089	**($38,089)**

Fund 437 – Public Facilities

2026 projected year-end balance

$68,155	$783,687	($65,800)	($186,000)
Beginning Balance (1/1/26)	2026 Estimated Revenues	2025 Encumbrances	Budgeted Expenditures

Projected 2026 Ending Balance (incl. $21,700 overage): $578,342

2026 Active Projects

Project	Description	Budget	Actual/Est	Savings (Overage)
Library Elevator Modernization	Schindler Elevator Corp	$124,999	$146,700	($21,700)
Library Exterior Cleaning	Restoration Services Inc	$65,800	$65,800	$0
Expansion Joint Rehab	Scheduled – not yet encumbered	$11,000	—	TBD

Summary – All Funds at a Glance

2025 actuals (Fund 101) and 2026 projections (Funds 401, 404, 431, 437)

Fund 101 General Fund	Unassigned balance; 44.2% of 2026 budget — within 35%–50% policy range	**$10.81M**
Fund 401 Street Improvements	Projected after $3.37M 2026 expenditures	**$594,840**
Fund 404 Parkland Improvements	Projected after $4.77M 2026 expenditures (Viaduct Park II)	**$1.02M**
Fund 431 Capital Replacement	No dedicated revenue source — funded only by equipment trade-ins & sales	**$594,407**
Fund 437 Public Facilities	Potential future revenue source identified; $21,700 elevator overage absorbed	**$578,342**

Questions?

A special thank you to Mark DuChene and Rochelle Anderholm-Parch for their significant contributions of data and knowledge in the preparation of these reports.

Council Work Session Memorandum

TO: Mayor and City Council
THROUGH: Jessica Kinser, City Administrator
FROM:
MEETING DATE: June 16, 2026
SUBJECT: Review Housing Priorities for 2027 Budget

Discussion:

For the April 21st work session, the City Council was asked to rank a number of recommendations from the 2025 Housing Study as well as the Housing For All initiative led by Community Action Center. Four Council members participated, and the ranked results are attached with this memo.

We are starting the 2027 budget process, and a number of the items that ranked 4 or higher would have a cost component that would impact annual revenues or would represent a new or ongoing expense. The same is true of lower ranked items. The goal of this review is to identify any of the recommendations the Council would like to see as part of the 2027 budget, so staff can include requested items. The items in green will have a financial cost that will impact the 2027 budget, while the blue items have an unknown cost at this point. The items in white are ones in which there is likely only staff time or minimal to no cost involved.

Attachments:

1. 4.21.26 Housing Priority Survey

City of Faribault

Council Ranking of Housing Recommendations

Recommendation/Idea	Score
Investigate an employer assisted housing (EAH) program with local businesses and industries	4.75
Purchase blighted or substandard housing units from willing sellers.	4.75
Develop and promote housing rehabiltation programs to benefit low-income or first-time homeowners who are looking to repair their properties	4.5
Ensure all available rental units are licensed through the City of Faribault and in-person inspections are completed before license approval	4.5
Fast Track Permitting - Program designed to reduce delays during the development process that ultimately add to the total costs of housing development. By expediting the permitting process, costs can be reduced to developers while providing certainty into the development process.	4.5
Impose a fine structure which culminates in criminal charges when landlords repeatedly neglect standardized health and safety conditions or licensing requirements of their rental properties	4.25
Waiver or Reduction of Development Fees - To help facilitate affordable housing, some fees could be waived or reduced to pass the cost savings onto the housing consumer.	4.25
Develop a residential subdivision with free or low-cost lots	4.25
Construction Management Services - Assist homeowners regarding local building codes, reviewing contractor bids, etc. Typically provided as a service by the building department. This type of service could also be rolled into various remodeling related programs.	4.25
Home Energy Loans - Offer low-interest home energy loans to make energy improvements in their homes.	4.25
Incentivize aging property owners to sell their homes to first-time home buyers, young families, buyers at 80% AMI (or less) and people of color through tax breaks or other financial incentives	4
Implement a public rating system for rental properties and landlords so people looking for housing can make informed decisions	4
Provide annual education to landlords and tenants on their mutual rights and responsibilities	4
Live Where You Work - Program designed to promote homeownership in the same community where employees work. City provides a grant to eligible employees to purchase a home near their workplace. Participants must obtain a first mortgage through participating lenders. The grant can be allocated towards down payment assistance, closing costs and gap financing.	4
Remodeling Tours - City-driven home remodeling tour intended to promote the enhancement of the housing stock through home renovations/additions. Homeowners open their homes to the public to highlight home improvements.	4

City of Faribault

Council Ranking of Housing Recommendations

Recommendation/Idea	Score
Provide advocacy and resources when landlords and tenants are engaged in disputes	3.75
Purchase land for residential development where the current owner is not seeking to develop	3.75
Host a Housing Fair - Free seminars and advice for homeowners related to remodeling and home improvements. Most housing fairs offer educational seminars and "ask the expert" consulting services. Exhibitors include architects, landscapers, building contractors, home products, City inspectors, financial services, among others.	3.75
Land Acquisition/Banking - Land Banking is a program of acquiring land with the purpose of developing at a later date. After a holding period, the land can be sold to a developer (often at a price lower than market) with the purpose of developing affordable housing.	3.75
Offer incentives to developers like TIF or tax abatement	3.5
Promote the placement of ADUs to accommodate multiple generations living on one lot	3.25
Share in infrastructure costs in the development of new residential subdivisions by private developers	3.25
Research rent control policies to manage the percentage property owners may increase their rental rates over time	3
Realtor Forum - Typically administered by City with partnership by local school board. Inform local realtors about school district news, current development projects, and other marketing factors related to real estate in the community. In addition, realtors usually receive CE credits.	2.75
Amend zoning ordinances to allow for more affordable housing through reduced setbacks, ADUs in areas zoned R1, etc.	2.5
Explore financial safety nets for people who fall behind on their mortgage payments in addition to existing efforts to prevent evictions through rental assistance	2.5
Research municipal moratoriums related to new single family home rentals and short-term vacation rentals	2
Density Bonuses - Since the cost of land is a significant barrier to housing affordability, increasing densities can result in lower housing costs by reducing the land costs per unit. Municipalities can offer density bonuses as a way to encourage higher-density residential development while also promoting an affordable housing component.	2
Include Spanish- and Somali-speaking housing specialists within City of Faribault housing departments to establish relationships with tenants/landlords, providing education and resources for maintaining health and safety measures in their homes - work alongside families to address home repairs and preventative maintenance	1.75
Home Point of Sale - City ordinance requiring an inspection prior to the sale or transfer of residential real estate. The inspection is intended to prevent adverse conditions and meet minimum building codes. Sellers are responsible for incurring any costs for the inspection.	1.75
Increase the number of property owners who accept Section 8 rental vouchers	1.25

Council Work Session Memorandum

TO: Mayor and City Council
THROUGH: Jessica Kinser, City Administrator
FROM:
MEETING DATE: June 16, 2026
SUBJECT: Reorganization of the Housing and Redevelopment and Economic Development Authority Boards

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Discussion:
Council member Ross has requested the Council discuss reorganizing the Housing and Redevelopment Authority and the Economic Development Authority boards, both of which are under the Community and Economic Development Department.

Attachments: