

Bluff Creek Headwaters Ecological Restoration Project

Overview


The vision for this project is to create an ecologically diverse wetland and stream that:


- Improves ecological functions
- Restores hydrology to the headwaters of Bluff Creek
- Significantly reduces streambank erosion
- Provides diverse habitat layers
- Promotes diverse vegetation and soil health

Project Contact

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District Administrator

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 Project webpage
rpbcwd.org/Bluff-Headwaters-Project



Project Timeline



Bluff Creek Headwaters Ecological Restoration Project

Project Need

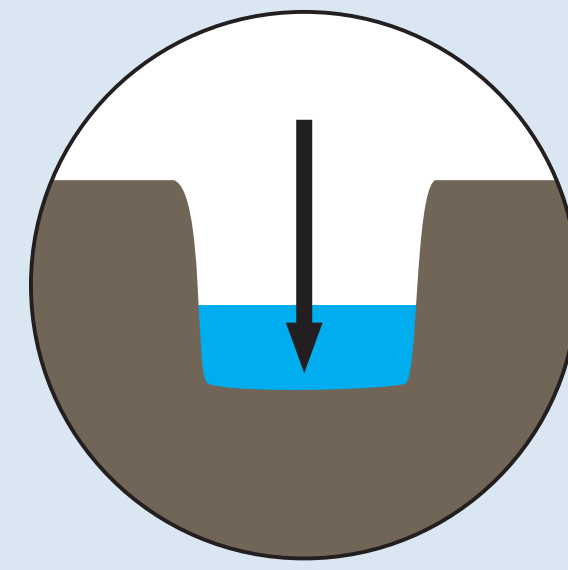
Bluff Creek does not meet water quality standards for streams set by the Minnesota Pollution Control Agency.

The primary concerns for this section of the creek are:

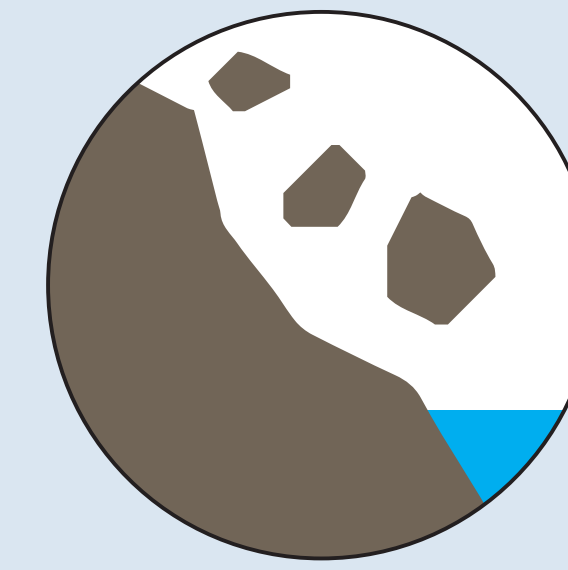
- Incised stream channel
- Disconnection from floodplain
- Streambank and gully erosion



Gully erosion



Incision is the deepening of the stream channel due to erosion caused by increased water flow from the watershed.



As streambank erosion worsens, the stream becomes **disconnected from its floodplain**.



Streambank erosion and stream channel incision

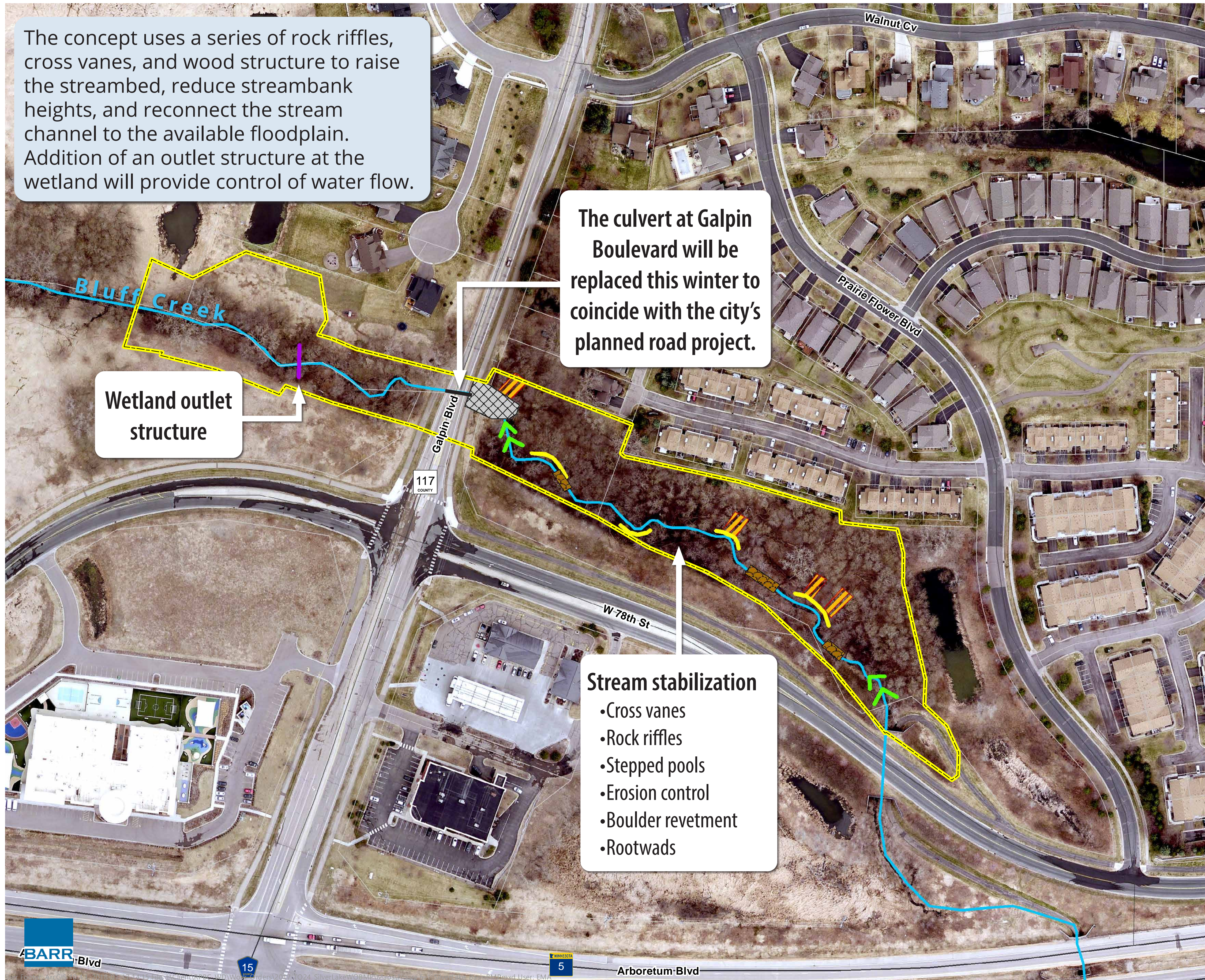
Restoration Concept

The concept uses a series of rock riffles, cross vanes, and wood structure to raise the streambed, reduce streambank heights, and reconnect the stream channel to the available floodplain. Addition of an outlet structure at the wetland will provide control of water flow.

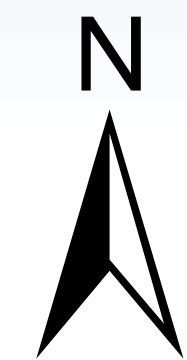
The culvert at Galpin Boulevard will be replaced this winter to coincide with the city's planned road project.

UPPER BLUFF CREEK REACH 5 RESTORATION PROJECT

FIGURE A



- Approximate Project Area
- Parcel Boundaries
- Existing Creek Alignment
- Constructed Feature**
- Cross Vane
- Toe Protection
- Wetland Outlet Structure
- Rock Riffle
- Riprap
- Stabilize Drainage



0 90 180 360
Feet

Stream stabilization

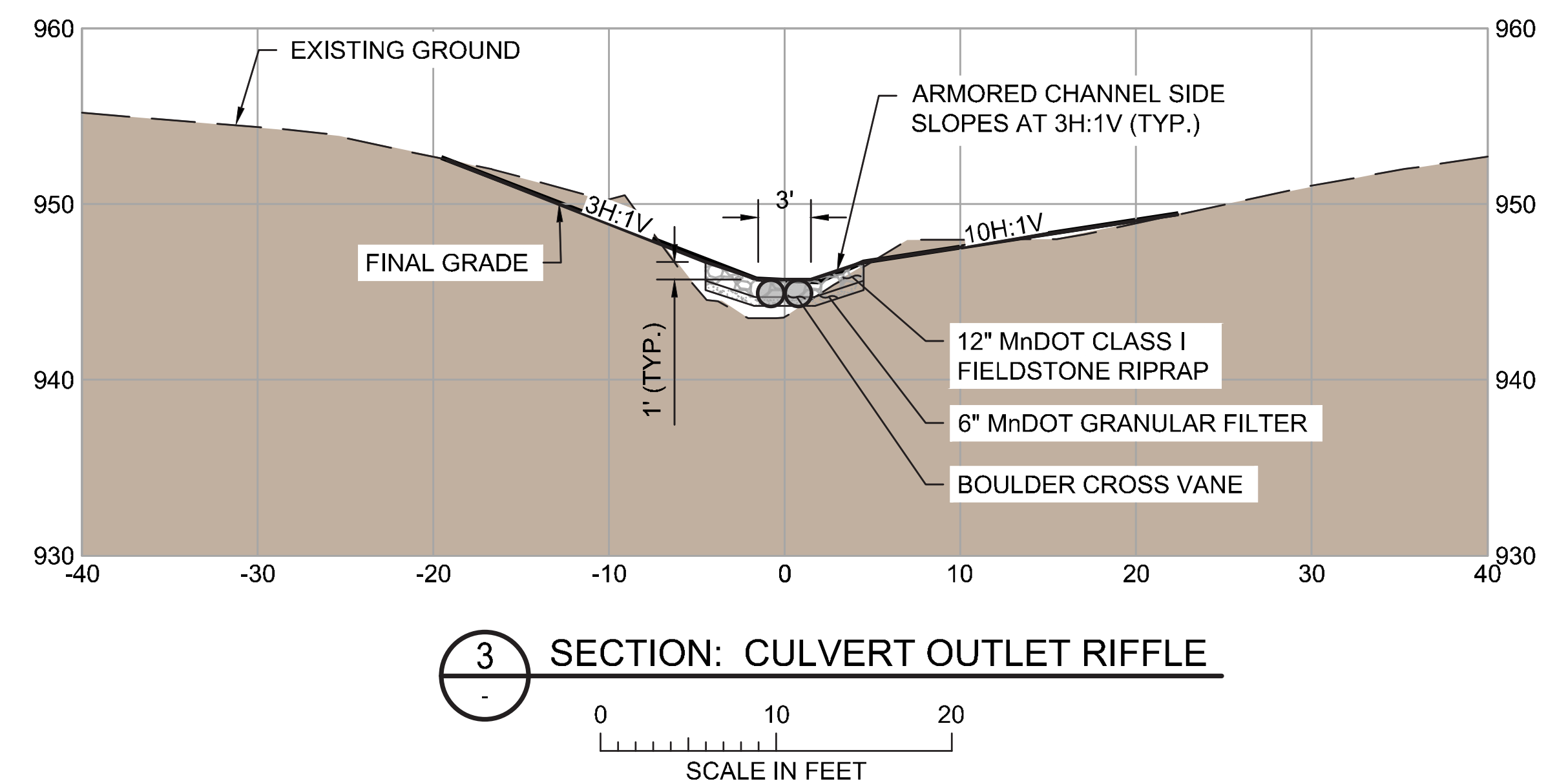
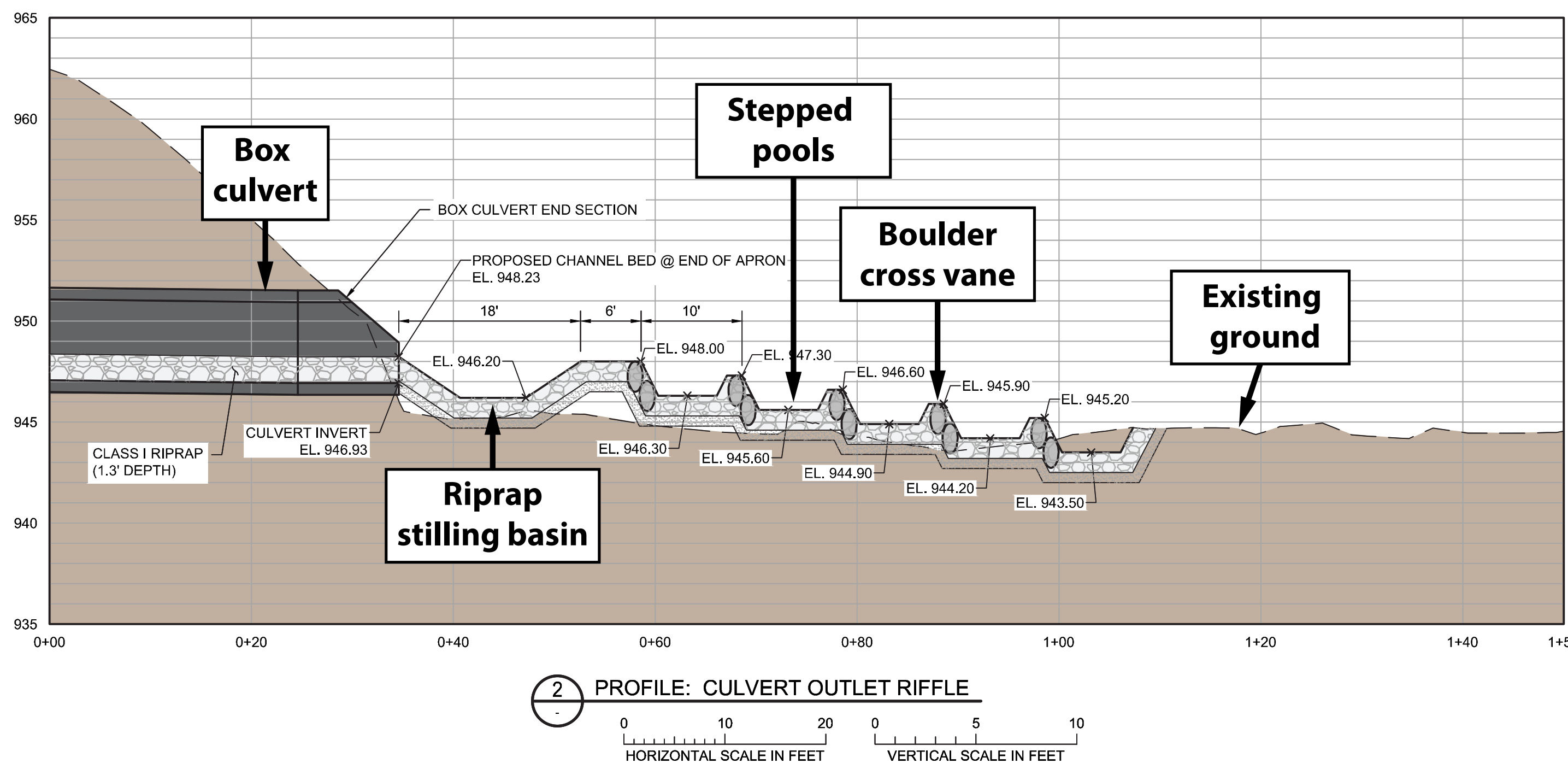
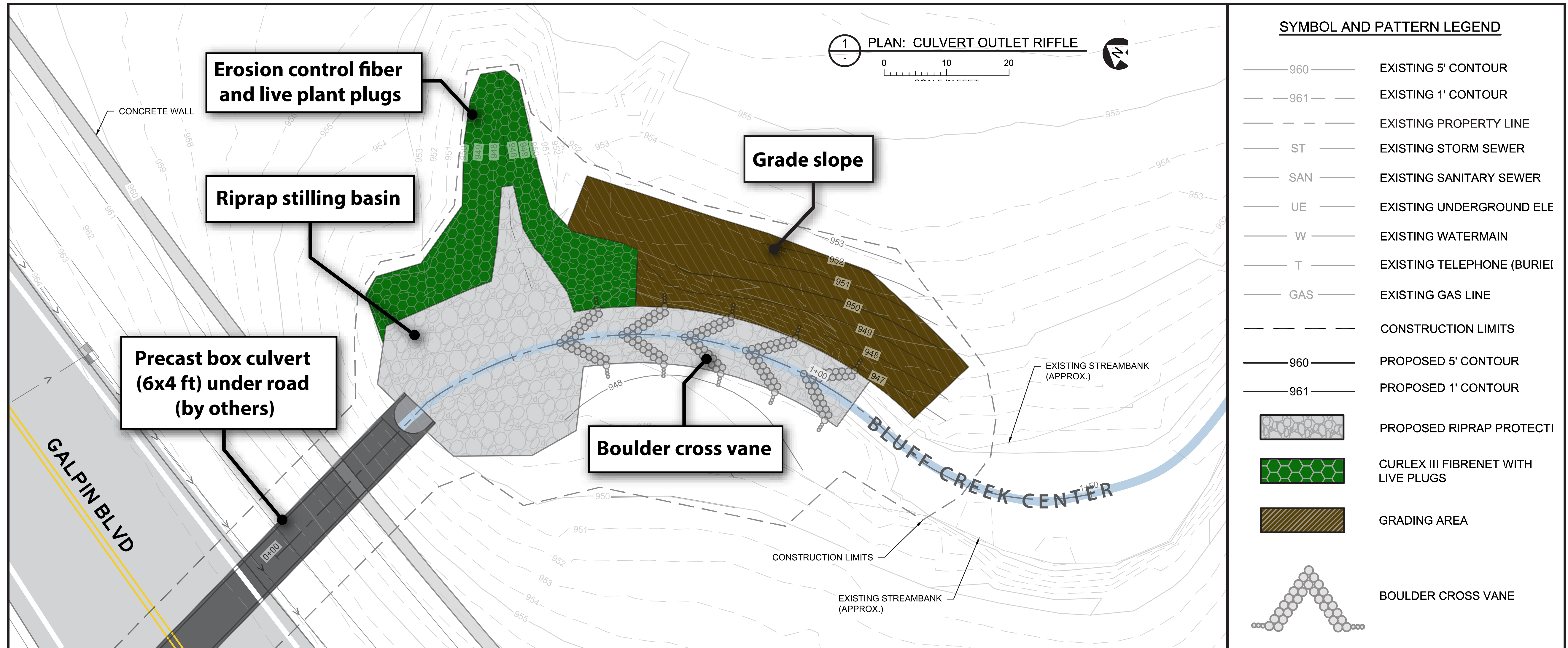
- Cross vanes
- Rock riffles
- Stepped pools
- Erosion control
- Boulder revetment
- Rootwads

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Galpin Boulevard Outlet



TIMING: Installation is tentatively planned for winter 2024-25 to coincide with City of Chanhasen's Galpin Boulevard project.



Creek Restoration Action Strategy (CRAS)

The District developed the Creek Restoration Action Strategy to prioritize creek reaches, sub-reaches, or sites, in need of stabilization or restoration.

Step 1: Categorize subreaches by condition

A subreach is scored as a one, three, five, or seven for each Tier I variable. The total score determines if the subreach is of low, moderate, high, or severe priority for restoration.

Subreach Tier I Scorecard	
Tier I variables	SCORE
	1 3 5 7
Infrastructure risk	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>
Erosion & channel stability	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>
Ecological benefit	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>
Water quality	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>

Step 2: Prioritize the most severe subreaches

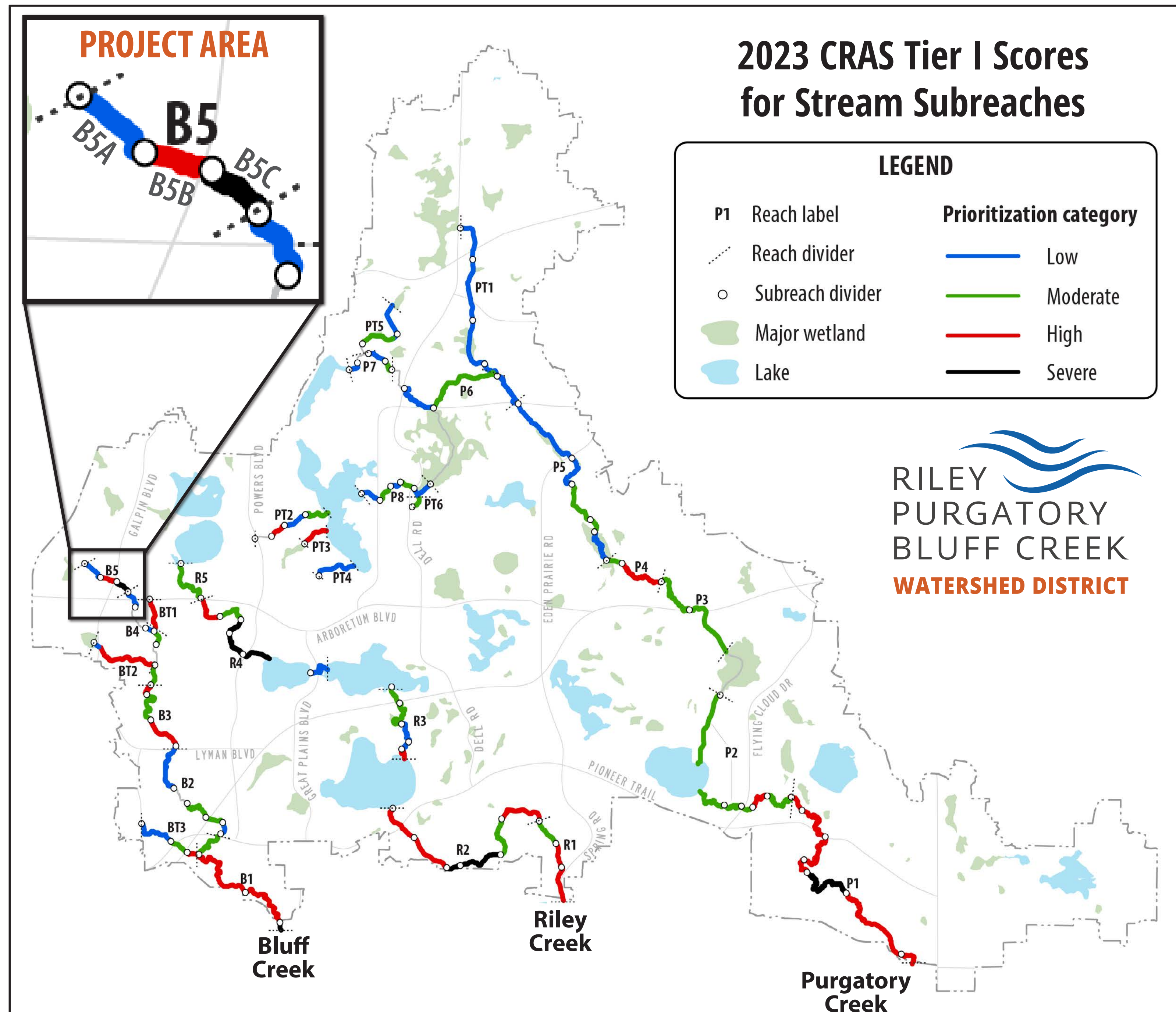
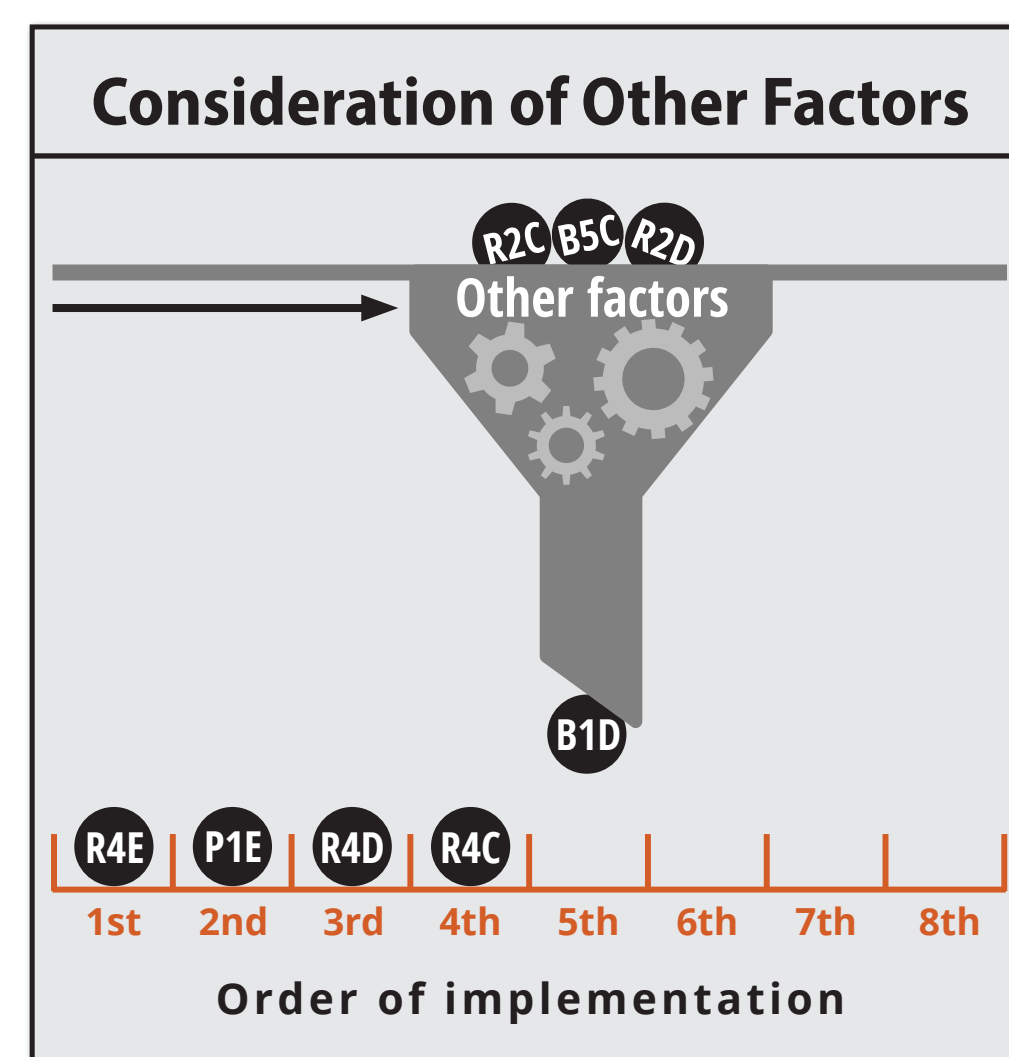
The subreaches are then scored for Tier II variables. This refines the list to the "worst of the worst."

Subreach Tier II Scorecard	
Tier II variables	SCORE
	1 3 5 7
Cost to restore	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
Partnership opportunities	<input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/>
Watershed benefit	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/>
Public education	<input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

Step 3: Decide order of restoration

Decide when to implement a subreach restoration project by identifying other factors such as:

- Outside funding
- Coordination with other projects
- Potential root causes
- Acute threats to infrastructure



Each year staff reassess a portion of creek subreaches to update CRAS scores. The higher the score, the more severe the condition of the creek subreach. The map shows subreaches color-coded by condition with black being the worst condition. A high CRAS score informs the District's decision to plan and implement an improvement project for that section of creek.

Bluff Creek Headwaters Ecological Restoration Project

Stream Restoration

The project will improve about 1,000 feet of Upper Bluff Creek and 7.9 acres of its headwater wetland. This includes critical ecological health improvements.

Engineers estimate that the project will prevent 68,455 pounds of total suspended solids and 69 pounds of total phosphorus from entering the creek each year. This reduction will improve water quality in downstream Bluff Creek, which drains to the Lower Minnesota River.

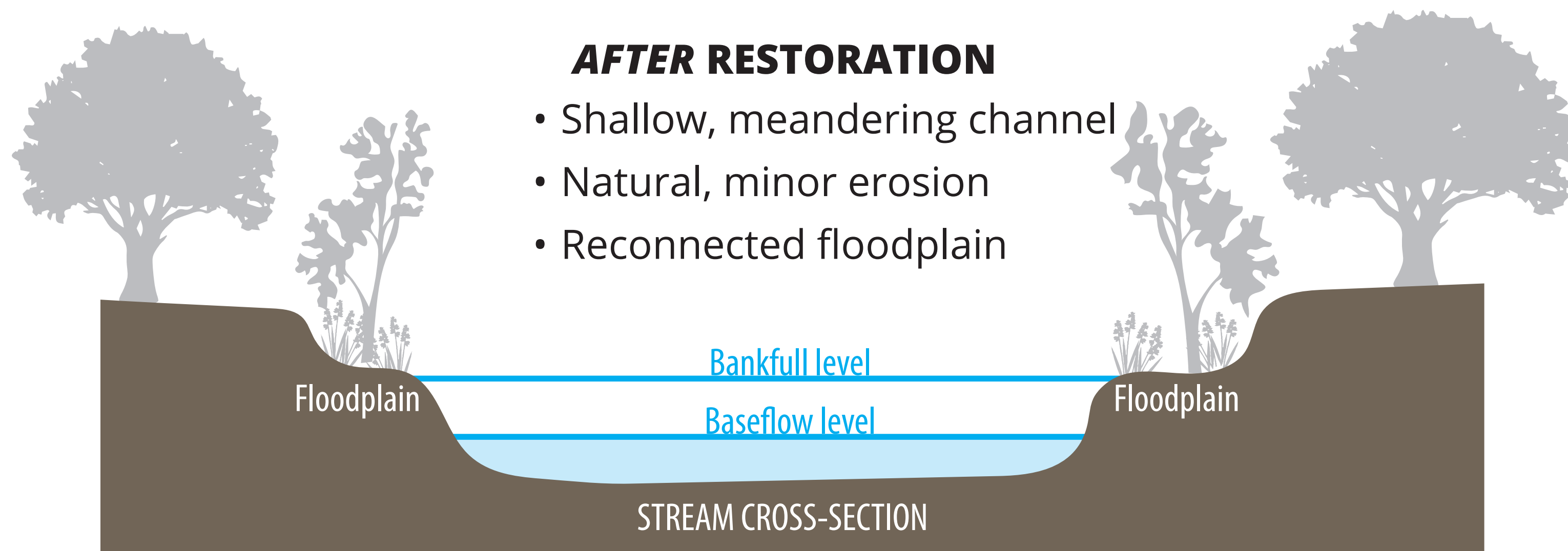
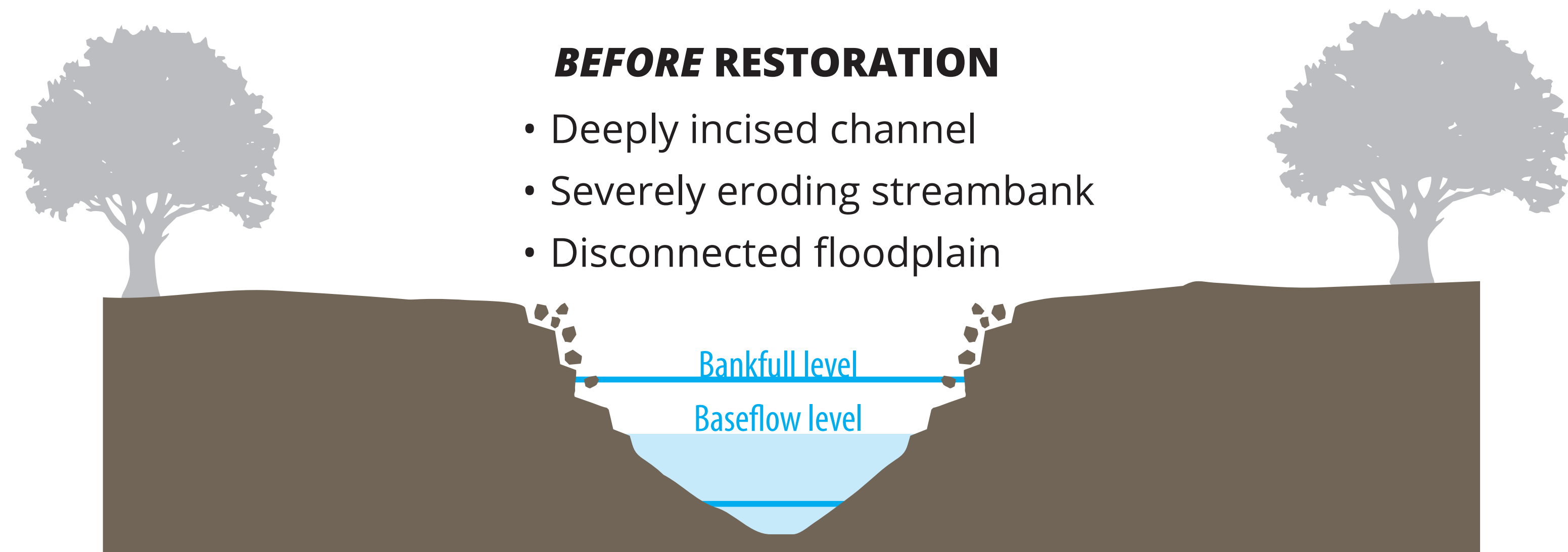


The project will keep nearly **3 dump truck loads of sediment** from entering Bluff Creek each year!

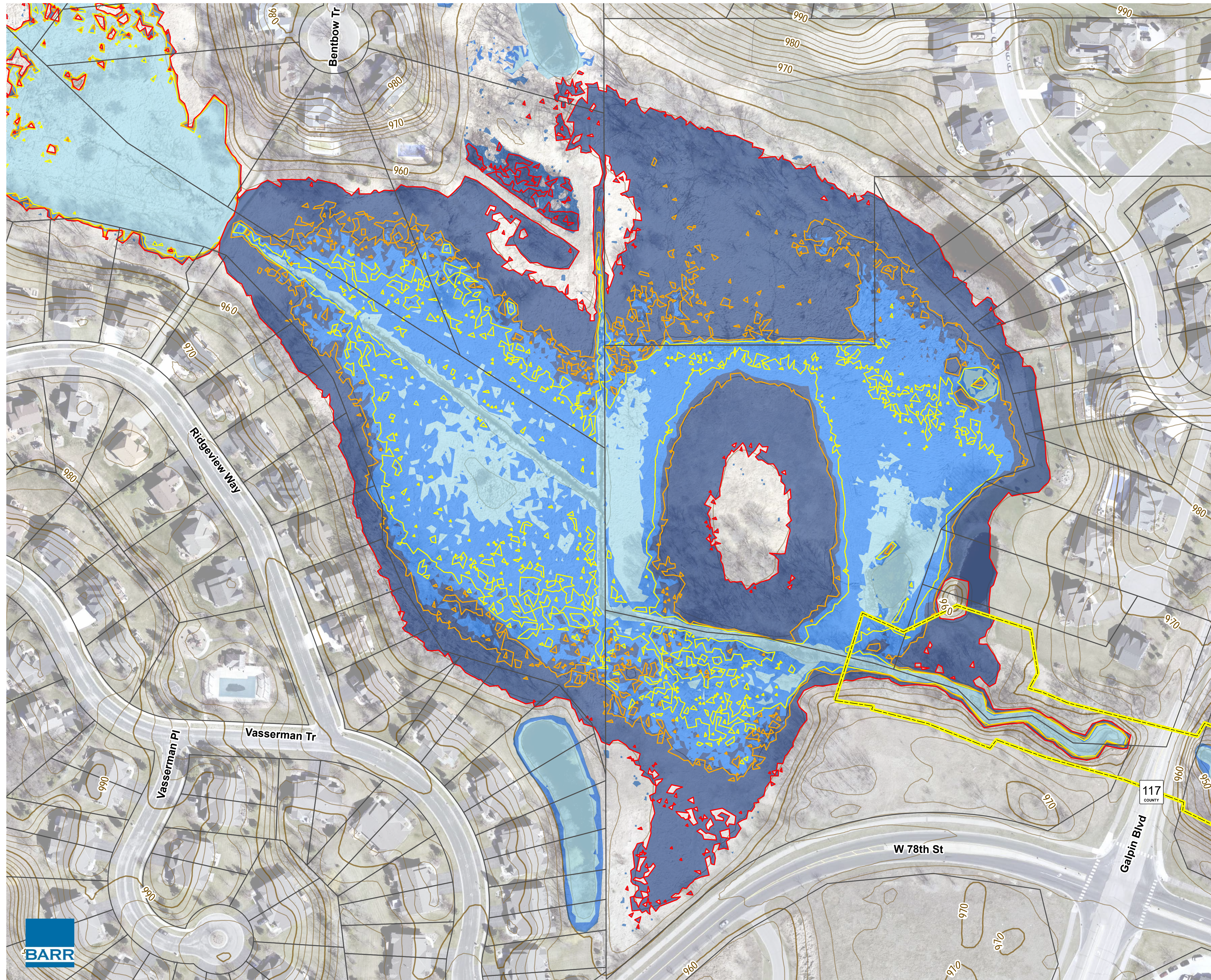


Headwaters Restoration

The project includes installation of a wetland outlet structure to improve the wetland hydrology and reduce sediment and nutrient loading to Bluff Creek. The structure will reduce erosive flow into the creek, improve creek baseflow, and enhance stream system resiliency.



Wetland Bounce

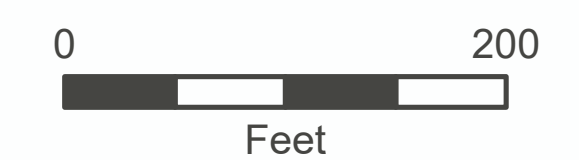
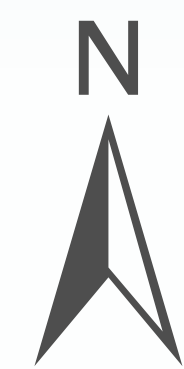


UPPER BLUFF CREEK REACH 5 RESTORATION PROJECT

WETLAND INUNDATION AREAS

FIGURE B

- Approximate Project Area
 - Parcel Boundaries
 - 2-year Event Existing Conditions Inundation Area
 - 10-year Event Existing Conditions Inundation Area
 - 100-year Event Existing Conditions Inundation Area
 - 2-year Event Proposed Conditions Inundation Area
 - 10-year Event Proposed Conditions Inundation Area
 - 100-year Event Proposed Conditions Inundation Area
- 2 Foot Contours, Carver County, 2011
- 10-Foot Contour
 - 2-Foot Contour



Imagery Source: Carver County (2024)