



## Lessard-Sams Outdoor Heritage Council

Knife River Habitat Rehabilitation-Phase VI  
Laws of Minnesota 2021 Accomplishment Plan

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### General Information

**Date:** 07/26/2024

**Project Title:** Knife River Habitat Rehabilitation-Phase VI

**Funds Recommended:** \$467,000

**Legislative Citation:** ML 2021, First Sp. Session, Ch. 1, Art. 1, Sec. 2, subd. 5(n)

**Appropriation Language:** \$467,000 the first year is to the commissioner of natural resources for an agreement with Zeitgeist, a nonprofit corporation, in cooperation with the Lake Superior Steelhead Association, to restore and enhance trout habitat in the Knife River watershed. A list of proposed enhancements must be provided as part of the required accomplishment plan.

### Manager Information

**Manager's Name:** Tony Cuneo and Kevin J. Bovee

**Title:** Ex. Director and Project Manager

**Organization:** Zeitgeist (ZG) and Lake Superior Steelhead Association (LSSA)

**Address:** 222 E. Superior

Street, Duluth, MN. 55802 P. O. Box 16034, Duluth, MN. 55816

**City:** Duluth, MN 55816

**Email:** tony@zeitgeiststarts.com

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**Website:** www.steelheaders.org

### Location Information

**County Location(s):** Lake and St. Louis.

**Eco regions in which work will take place:**

- Northern Forest

**Activity types:**

- Enhance

#### Priority resources addressed by activity:

- Wetlands
- Forest
- Habitat

## Narrative

### Abstract

Historic Knife River flooding has led to stream channel degradation. This degradation resulted in slumping streambanks, sediment discharge exceeding the total maximum daily load (TMDL) and the loss of instream trout habitat. This is LSSA's 6th LSOHC Grant proposal in the Knife River. Since the LSSA began grant work on the Knife River (2013), the DNR has observed a 215% increase in the adult steelhead population. Our LSOHC projects have also stabilized ~2 miles of stream channel, restored ~15,000 feet of streambanks and reduced annual sediment discharge by 700 tons. For more information go to [www.steelheaders.org](http://www.steelheaders.org).

### Design and Scope of Work

#### PROBLEM TO BE ADDRESSED

The Knife River's forest has changed over the past century, which has led to instability of the stream channel during flood events. This channel instability has resulted in significant streambank erosion, channel widening, streambed downcutting and loss of trout habitat.

The LSSA's LSOHC grant projects have attempted to reverse this channel instability by restoring the underlying causes of these stream impairments, while at the same time improving the overall trout fishing. Our previous LSOHC projects have achieved this goal by stabilizing ~2 miles of stream channel, restoring ~15,000 feet of streambank, reducing annual sediment discharge by 700 tons, replanting thousands of trees/shrubs and observing a 215% increase to the adult steelhead population. This 215% increase occurred when two prominent Lake Superior Tributaries saw their steelhead return decrease (Brule River -4.5% from average) (Portage Creek -201% from 2007).

The LSSA and DNR have worked together to identify three priority restoration reaches. These three restoration project sites will not only rehabilitate key trout habitats and restore fishing opportunities, but will also reverse the historic ecological damage to the watershed by stabilizing streambanks, reducing erosion, minimizing sediment discharge, decreasing turbidity levels, reconstructing riparian wetlands, reducing downstream flood impacts and reestablishing instream trout habitat in the watershed.

#### SCOPE OF WORK

- Assess, survey and design the stream reach(s) to obtain a permit to DNR and Army Corp of Engineers.
- Obtain baseline assessment data.
- Restore the stream channel's shape, dimension and profile.
- Remove flood debris and sediment from the streambed.
- Enhance instream trout habitat by strategically positioning large woody debris, rock structures and "J" hooks into the channel.
- Create new floodplains/wetlands.
- Reconnect the river channel to the floodplain.
- Raise groundwater table.
- Stabilize streambanks.
- Rehabilitate riparian tree canopy.
- Monitor water temperature.

## HOW PRIORITIES WERE SET

The MPCA identified erosion areas within the Knife River Watershed during their TMDL study. The LSSA has assessed these MPCA identified erosion areas, along with other watershed reaches, for the presence of cool water, availability of trout and potential to restore stream impacts. This has allowed LSSA to prioritize areas for restoration that provide the best benefit for aquatic life and improved water quality. The LSSA also has a policy to work from an upstream to downstream manner. Our top-down restoration approach eliminates re-impacting previous restored reaches and reduces downstream flooding and sedimentation.

## Urgency and Opportunity of the Project

Reach 8 and 13 are within prime trout habitat sections of the Knife River and by restoring these areas, we can improve trout spawning success and juvenile retention. Restoring the Lower River improves adult trout access to the spawning grounds. This Lower River project also restores a historic but now lost fishing opportunity in the Knife River. This Lower River fishing area was once revered as one of the premier areas to catch steelhead.

## STAKEHOLDER INVOLVEMENT

The LSSA has consulted and collaborated with DNR Lake Superior Area Supervisor, DNR Duluth Area Fisheries Supervisor, DNR Region 2 Stream Specialist and private landowners.

**How does the plan address habitats that have significant value for wildlife species of greatest conservation need, and/or threatened or endangered species, and list targeted species?**

The Knife River is a designated trout stream. DNR trout stream designations are provided to watersheds that have a cold-water resource. Cold-water streams receive special protection because of their value to fish and wildlife and because they are relatively scarce in Minnesota.

The Knife River is more unique than other trout streams in Minnesota because this watershed has anadromous (migratory trout) and does not have a barrier falls. The Knife River is the only watershed in Minnesota that has these two combined features. So, of the 60 + tributaries that connect to Lake Superior with anadromous trout populations, only the Knife River, does not have a barrier waterfall that limits upstream migration. Finally, the Knife River Watershed consists of over 65 miles of anadromous trout habitat, which represents over 50% of all the anadromous trout habitat in Minnesota.

The Knife River also has another unique feature; according to DNR genetics researcher Charles Kruger, the Knife River has a genetically distinct strain of steelhead. Not only are these trout genetically distinct from other North Shore watersheds, but Knife River steelhead, are genetically distinct within its own watershed. This means that trout produced in the Main Knife River are genetically different and distinct than other trout produced within its tributaries of: Stanley Creek, McCarthy Creek, Main West Branch, Little West Branch, Captain Jacobson and Little Knife River.

This grant proposes to rehabilitate, restore and create instream habitat to enhance and protect the uniqueness of the Knife River's trout population. This project will specifically create, enhance and protect instream habitats that are critical to trout spawning, rearing and staging steelhead.

Finally, trout stocking has been discontinued in the Knife River with the closure of the French River Hatchery. The closing of this hatchery removes the safety net for the Knife River trout population. So essentially, the Knife River is on its own to maintain its trout population exclusively through natural reproduction and to continue to do so we need to focus on rehabilitating its degraded habitat.

## **Describe how the plan uses science-based targeting that leverages or expands corridors and complexes, reduces fragmentation or protects areas identified in the MN County Biological Survey:**

The LSSA uses scientifically based, current Natural Channel Design (NCD) principles/parameters for all of our stream restoration projects. Prior to conducting any LSOHC grant projects, the LSSA first conducts a series of NCD stream assessments. The following is summary of our assessments.

The Main Knife River Stem is geomorphically stable from Mile 23 (headwaters) downstream to Mile 16. This section has the coolest water and most intact tree canopy.

Mile 16-12 is where channel instability begins. This instability is observed by the down cutting of the streambed, eroding streambanks and sediment deposition. This section is where 90% of the spawning occurs because the streambed gradient flattens and gravel deposits can form. This 4-mile section is the LSSA's "priority" area because our restoration work is most effective here. This is where the highest trout population and the start of channel instability coexist. Reach13 is located in our priority area.

Mile 2 to the mouth is critical for steelhead staging and migration but is more noteworthy as the main fishing area. This stretch is where large adult trout migrate and stage to pass over two large waterfalls to reach the spawning grounds. Efficient movement of spawning trout through this section is critical, so they reach the spawning grounds in good reproductive condition. The first waterfalls area is where the Lower River project is located.

The LSSA's restoration priorities feature a top/down approach. This approach overtime will ultimately extend suitable trout habitat corridor downstream because we have systematically improved the habitat by:

- Stabilizing the stream channel.
- Cooling water temperature.
- Restoring spawning gravel.
- Enhancing rearing habitat.
- Retaining floodwaters.
- Reducing erosion and sediment load.
- Reestablishing overhead riparian tree canopies.

The only exception to the LSSA top/down approach involves Lower River fish migration impairments. Fish migration is the most critical restoration priority in the Knife River because anadromous trout migrate several miles upstream to access their spawning grounds. If these fish are confined to the Lower River, they will spawn in poor habitat and their offspring will prematurely leave the watershed and be preyed upon in Lake Superior.

## **Which two sections of the Minnesota Statewide Conservation and Preservation Plan are most applicable to this project?**

- H5 Restore land, wetlands and wetland-associated watersheds
- H6 Protect and restore critical in-water habitat of lakes and streams

## **Which two other plans are addressed in this program?**

- Long Range Plan for Fisheries Management
- Other : Knife River Implementation Plan for Turbidity-Total Maximum Daily Load (TMDL).

## **Which LSOHC section priorities are addressed in this program?**

### **Northern Forest**

- Protect shoreland and restore or enhance critical habitat on wild rice lakes, shallow lakes, cold water lakes, streams and rivers, and spawning areas

## Outcomes

### Programs in the northern forest region:

- Healthy populations of endangered, threatened, and special concern species as well as more common species ~ *By funding this project, anadromous and stream trout populations should increase. This project will also provide habitat to invertebrate, amphibians, reptiles, birds and mammals. This project also will replant the riparian zone of the river with a mix old growth tree species (both deciduous and coniferous) and pollinator shrubs/native flowers. These plantings will reestablish a lush riparian canopy, help cool the water as trees mature and provide large wood debris in the stream as the trees die and fall into the river. DNR shocking data and future returns to the weir will measure the improvement in the fishery.*

### Does this program include leveraged funding?

Yes

### Explain the leverage:

The LSSA has used its charitable gaming funds to perform over \$500,000 for Knife River restoration work prior to the Legacy Amendment being passed. This funding donated money to the DNR for the Knife River fish traps, population assessments and creel census on the Knife River, a smolt stocking program for five years, stream access stairs and walking platforms to reduce bank erosion, signs to highlight regulation changes, in stream restoration, trees, tree planting materials and labor and stocking of fish.

We continued to use our gaming funds to supplement our first five phases of this LSOHC grant. The LSSA has spent approximately \$60,000 to fund grant work on private, non-easement property, design on the Second Falls restoration project and creation of two LSOHC promotional videos on our Grant Funded Projects. The LSSA has also spent in excess of \$25,000 on beaver flights, dam removal and beaver trapping in the watershed.

Finally, the LSSA has provided a large in-kind volunteer effort. This in-kind donation has amounted to over \$60,000 for equipment use and rental, volunteer labor, meals, travel and other expenses. The LSSA anticipates contributing \$5,000 to this project in the form of payments and in-kind donations.

### **Per MS 97A.056, Subd. 24, Please explain whether the request is supplanting or is a substitution for any previous funding that was not from a legacy fund and was used for the same purpose.**

This request does not supplant any funding nor does it is a substitution for any projects mentioned.

### Non-OHF Appropriations

Year	Source	Amount
FY 2012	Great Lakes Commission (GLRI funded) on Hawk Hill Road	\$293,000
FY 2012	Clean Water Fund-Copper Hill Road	\$212,000
FY 2015	LCMR-Buckthorn Removal	\$54,000
FY 2016	DNR-Buckthorn Removal	\$12,800
FY 2017	Clean Water Fund-Buckthorn Removal	\$144,000
2018	Minnesotas Lake Superior Coastal Program	\$50,000

**How will you sustain and/or maintain this work after the Outdoor Heritage Funds are expended?**

A critical component of this project is to ensure beaver do not re-impact areas that have been rehabilitated. To ensure that the Lessard Sams Outdoor Heritage Council projects are maintained after project completion, annual helicopter flights are conducted to ensure beavers do not re-colonize the project areas. These beaver flights are conducted in late autumn by the DNR as they have been previously for over 15 years. If dams or beaver activity is noted in the annual flight, the DNR will contract with Federal trappers to remove the beavers and notch their dams. The estimated cost of the flight, beaver removal and dam notching throughout the entire Knife River watershed is approximately \$15,000. If the DNR loses funding for this project, the TMDL implementation plan has budgeted \$35,000 annually for this task. Included in this budget is beaver flights, trapping, dam notching and supplemental tree planting.

**Actions to Maintain Project Outcomes**

Year	Source of Funds	Step 1	Step 2	Step 3
July 1, 2023 - June 30, 2024	DNR	Beaver Flights	Beaver Trapping	N/A
July 1, 2023 - June 30, 2024	DNR and LSSA	Beaver Flights	Beaver Trapping	Tree Planting
July 1, 2024 - June 30, 2025	DNR	Beaver Flights	Beaver Trapping	N/A
July 1, 2024 - June 30, 2025	DNR and LSSA	Beaver Flights	Beaver Trapping	Tree Planting

**Activity Details**

**Requirements**

**If funded, this program will meet all applicable criteria set forth in MS 97A.056?**

Yes

**Will restoration and enhancement work follow best management practices including MS 84.973 Pollinator Habitat Program?**

Yes

**Is the restoration and enhancement activity on permanently protected land per 97A.056, Subd 13(f), tribal lands, and/or public waters per MS 103G.005, Subd. 15 or on lands to be acquired in this program?**

Yes

**Where does the activity take place?**

- Permanently Protected Conservation Easements
- County/Municipal

**Land Use**

**Will there be planting of any crop on OHF land purchased or restored in this program, either by the proposer or the end owner of the property, outside of the initial restoration of the land?**

No

**Timeline**

Activity Name	Estimated Completion Date
Assess, design and permit Knife River Restoration Reach	July 1, 2021 - July 1, 2023
Construction Activities Reach 13	July 1, 2022 - September 15, 2024

Tree Planting	September 1, 2022 - June 30, 2025
Post Construction Survey as required by MN DNR	July 1, 2023 - June 30, 2025

**Date of Final Report Submission:** 11/01/2026

**Availability of Appropriation:** Subd. 7. Availability of Appropriation

Money appropriated in this section may not be spent on activities unless they are directly related to and necessary for a specific appropriation and are specified in the accomplishment plan approved by the Lessard-Sams Outdoor Heritage Council. Money appropriated in this section must not be spent on indirect costs or other institutional overhead charges that are not directly related to and necessary for a specific appropriation. For acquiring real property, the amounts in this section are available until June 30, 2025. Money for restoration or enhancement is available until June 30, 2026. Money for restoration and enhancement of land acquired with an appropriation in this article is available for four years after the acquisition date with a maximum end date of June 30, 2029. If a project receives at least 15 percent of its funding from federal funds, the time of the appropriation may be extended to equal the availability of federal funding to a maximum of six years if the federal funding was confirmed and included in the original approved draft accomplishment plan. Money appropriated for acquiring land in fee title may be used to restore, enhance, and provide for public use of the land acquired with the appropriation. Public-use facilities must have a minimal impact on habitat in acquired lands.



**Budget**

Budget reallocations up to 10% do not require an amendment to the Accomplishment Plan.

**Totals**

Item	Funding Request	Leverage	Leverage Source	Total
Personnel	-	-	-	-
Contracts	\$334,000	\$1,000	Private Source: LSSA	\$335,000
Fee Acquisition w/ PILT	-	-	-	-
Fee Acquisition w/o PILT	-	-	-	-
Easement Acquisition	-	-	-	-
Easement Stewardship	-	-	-	-
Travel	-	\$3,000	Private Source: ZG and LSSA	\$3,000
Professional Services	\$100,000	\$2,000	Private Source: ZG and LSSA	\$102,000
Direct Support Services	-	-	-	-
DNR Land Acquisition Costs	-	-	-	-
Capital Equipment	-	-	-	-
Other Equipment/Tools	-	-	-	-
Supplies/Materials	\$33,000	-	-	\$33,000
DNR IDP	-	\$75,000	MN DNR	\$75,000
<b>Grand Total</b>	<b>\$467,000</b>	<b>\$81,000</b>	-	<b>\$548,000</b>

**Personnel**

Position	Annual FTE	Years Working	Funding Request	Leverage	Leverage Source	Total
Project Management	0.5	4.0	-	-	-	-
Fiscal Management	0.5	4.0	-	-	-	-

**Amount of Request:** \$467,000

**Amount of Leverage:** \$81,000

**Leverage as a percent of the Request:** 17.34%

**DSS + Personnel:** -

**As a % of the total request:** 0.0%

**Easement Stewardship:** -

**As a % of the Easement Acquisition:** -

**How will this program accommodate the reduced appropriation recommendation from the original proposed requested amount?**

Originally we had included three reaches to be rehabilitated. Due to the reduced appropriation under this grant, we will rehabilitate only one reach-Reach 13. Work on other stream reaches mentioned in the original AP for PH VI will be covered under other grants.

**Describe and explain leverage source and confirmation of funds:**

Using LSSA's charitable gaming, general fund and in-kind donations. Allocated by LSSA Board approval. ZG funds allocated by ZG Board approval. Other Knife River estimated at \$ 100,00: weir operation, creel census, annual shocking program, temp monitoring, easement work, project field/permitting review/data accumulation.

**Contracts**

**What is included in the contracts line?**

The Contracts line includes the cost of doing the actual work on the project which will be outlined in the RFP phase of this project. It also includes possible outside contracting that may occur to accomplish the goals of the project: ie contracting with CCM, NRRI, etc.

**Federal Funds**

**Do you anticipate federal funds as a match for this program?**

No

Output Tables**Acres by Resource Type (Table 1)**

Type	Wetland	Prairie	Forest	Habitat	Total Acres
Restore	-	-	-	-	-
Protect in Fee with State PILT Liability	-	-	-	-	-
Protect in Fee w/o State PILT Liability	-	-	-	-	-
Protect in Easement	-	-	-	-	-
Enhance	-	-	300	-	300
<b>Total</b>	-	-	<b>300</b>	-	<b>300</b>

**Total Requested Funding by Resource Type (Table 2)**

Type	Wetland	Prairie	Forest	Habitat	Total Funding
Restore	-	-	-	-	-
Protect in Fee with State PILT Liability	-	-	-	-	-
Protect in Fee w/o State PILT Liability	-	-	-	-	-
Protect in Easement	-	-	-	-	-
Enhance	-	-	\$467,000	-	\$467,000
<b>Total</b>	-	-	<b>\$467,000</b>	-	<b>\$467,000</b>

**Acres within each Ecological Section (Table 3)**

Type	Metro/Urban	Forest/Prairie	SE Forest	Prairie	N. Forest	Total Acres
Restore	-	-	-	-	-	-
Protect in Fee with State PILT Liability	-	-	-	-	-	-
Protect in Fee w/o State PILT Liability	-	-	-	-	-	-
Protect in Easement	-	-	-	-	-	-
Enhance	-	-	-	-	300	300
<b>Total</b>	-	-	-	-	<b>300</b>	<b>300</b>

**Total Requested Funding within each Ecological Section (Table 4)**

Type	Metro/Urban	Forest/Prairie	SE Forest	Prairie	N. Forest	Total Funding
Restore	-	-	-	-	-	-
Protect in Fee with State PILT Liability	-	-	-	-	-	-
Protect in Fee w/o State PILT Liability	-	-	-	-	-	-
Protect in Easement	-	-	-	-	-	-
Enhance	-	-	-	-	\$467,000	\$467,000
<b>Total</b>	-	-	-	-	<b>\$467,000</b>	<b>\$467,000</b>

**Average Cost per Acre by Resource Type (Table 5)**

Type	Wetland	Prairie	Forest	Habitat
Restore	-	-	-	-
Protect in Fee with State PILT Liability	-	-	-	-
Protect in Fee w/o State PILT Liability	-	-	-	-
Protect in Easement	-	-	-	-
Enhance	-	-	\$1,556	-

**Average Cost per Acre by Ecological Section (Table 6)**

Type	Metro/Urban	Forest/Prairie	SE Forest	Prairie	N. Forest
Restore	-	-	-	-	-
Protect in Fee with State PILT Liability	-	-	-	-	-

Protect in Fee w/o State PILT Liability	-	-	-	-	-
Protect in Easement	-	-	-	-	-
Enhance	-	-	-	-	\$1,556

**Target Lake/Stream/River Feet or Miles**

16 Miles

## Parcels

### Parcel Information

#### Sign-up Criteria?

No

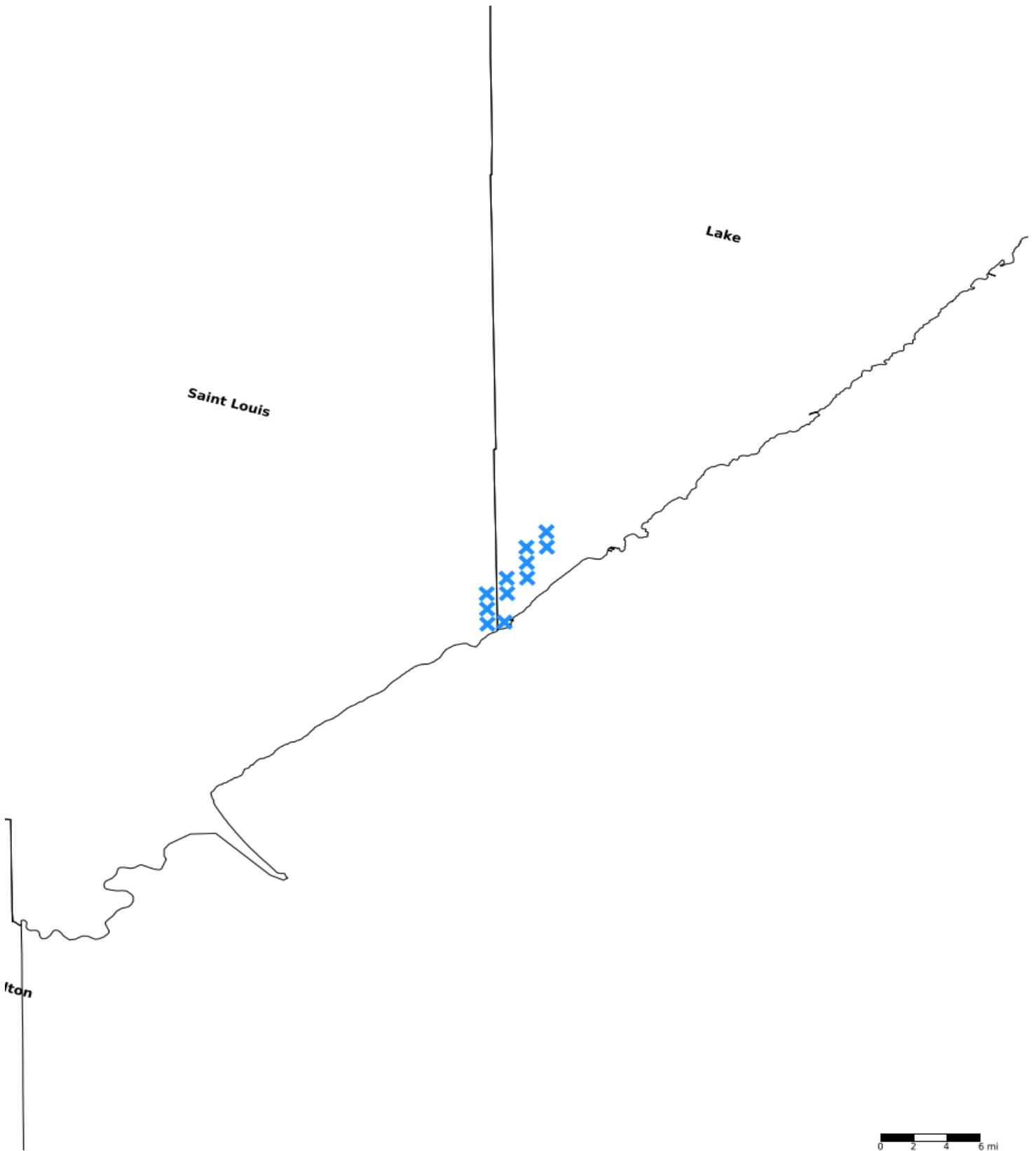
#### Explain the process used to identify, prioritize, and select the parcels on your list:

The MPCA identified erosion areas within the Knife River Watershed during their TMDL study. The LSSA has assessed these MPCA identified erosion areas, along with other watershed reaches, for the presence of cool water, availability of trout and potential to restore stream impacts. This has allowed LSSA to prioritize areas for restoration that provide the best benefit for aquatic life and improved water quality. The LSSA's also has a policy to work from an upstream to downstream manner. Our top-down restoration approach eliminates re-impacting previous restored reaches and reduces downstream flooding and sedimentation. As we move downstream and rehabilitate impacted reaches, the upstream work will benefit these new reaches by eliminating upstream sedimentation and providing cooler water due to the riparian zone restoration.

### Restore / Enhance Parcels

Name	County	TRDS	Acres	Est Cost	Existing Protection	Description
Knife River	Lake	05211205	0	\$0	Yes	Riparian Zone
Knife River	Lake	05211208	0	\$0	Yes	Riparian Zone
Knife River	Lake	05311233	0	\$0	Yes	Riparian Zone
Knife River	Lake	05211231	0	\$0	Yes	Riparian Zone
Knife River	Lake	05211204	0	\$0	Yes	Riparian Zone
Knife River	Lake	05211218	0	\$0	Yes	Riparian Zone
Knife River	Lake	05211217	0	\$0	Yes	Riparian Zone
Knife River	Lake	05211219	0	\$0	Yes	Riparian Zone
Knife River	St. Louis	05212236	0	\$0	Yes	Riparian Zone
Knife River	St. Louis	05212225	0	\$0	Yes	Riparian Zone
Knife River	St. Louis	05212224	0	\$0	Yes	Riparian Zone

Parcel Map



- Protect in Easement
- ▲ Protect in Fee with PILT
- Protect in Fee W/O PILT
- ★ Restore
- ✕ Enhance
- ⊕ Other