

Lessard-Sams Outdoor Heritage Council

Fiscal Year 2021 / ML 2020 Request for Funding



Date: May 31, 2019

Program or Project Title: Knife River Habitat Rehabilitation-Phase V

Funds Requested: \$1,890,000

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

Title: Ex. Director and Project Manager

Organization: Zeitgiest (ZG) and Lake Superior Steelhead Association (LSSA)

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Website: www.steelheaders.org

County Locations: 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

Abstract:

Eroding streambanks in the Knife River Watershed have degraded trout habitat and resulted in a total maximum daily load (TMDL) exceedance for turbidity. The LSSA proposes to rehabilitate instream habitat to increase trout spawning and rearing. Natural Channel Design construction techniques will be utilized to create a self-sustaining project that enhances instream habitat, improves channel stability, facilitates sediment transportation, stabilizes eroding streambanks, creates riparian wetlands and replant riparian trees/pollinator shrubs. This project will only be performed on public land or private land within a DNR easement. For more project information, please visit our website: www.steelheaders.org/projects.

Design and scope of work:

Problem Addressed:

The Minnesota Pollution Control Agency (MPCA) performed a water quality study from 1986-1996 on the Knife River. This water quality study determined that the Knife River exceeded the TMDL for turbidity. The MPCA conducted a follow-up study in 2008 to determine the sources of this turbidity. This study determined that the sources of the TMDL turbidity exceedance was primarily due to erosion from streambanks and stream bluffs. The LSSA assessed these identified erosion areas in the watershed (see illustration) to determine if the habitat remained suitable for trout. The LSSA found that summertime streamflow and water temperatures were sufficient for trout growth, but instream habitat was degraded from sediment deposition.

The LSSA and DNR have concluded that adult trout spawning and juvenile trout rearing habitat could be significantly improved by rehabilitating this stream reach. This project will provide an added secondary benefit to water quality by reducing sediment discharge. By stabilizing these banks this project will contribute to reducing the Knife River's elevated Turbidity levels.

Scope of Work:

- Restore the stream channel's shape, dimension and profile.
- Enhance instream trout habitat strategically positioning large woody debris, rock vanes and "J" hooks into the channel.
- Restore large woody debris back into the watershed.
- Create new floodplains wetlands.
- Remove flood debris/sediment from floodplain wetlands.
- Reconnect the river channel to the floodplain.
- Raise the groundwater table.
- Stabilize streambanks.
- Rehabilitate the riparian overhead tree canopy.
- Monitor water temperature.

How Priorities Were Set:

The MPCA identified erosion areas within the Knife River Watershed and determined sections of Reach 4 contributed to the overall TMDL exceedance for Turbidity. The LSSA also conducted a series of stream assessments to identify adequate streamflow and cool water temperatures to support trout growth. Biological data was collected to determine the quality of in-stream trout habitat. This data was combined and ranked to prioritize restoration areas that provide the best benefit to aquatic life and water quality in the Knife River Watershed.

Another major consideration in the prioritization of this stream reach is its upstream location. Our restoration goal is to utilize a top-down approach, so major upstream erosion does not re-impact the restoration project and floodwaters can be retained to minimize existing downstream impacts. So, this top/down approach not only rehabilitates a degraded upstream reach but also minimizes downstream impacts.

Urgency and Opportunity of the Project:

The upper section of Reach 4 is scheduled for construction during the summer of 2019 and the middle section of Reach 4 was awarded last year (2108) and construction is anticipated to begin the fall of 2019. This Lower Reach 4 project will restore the remaining 4,000+ linear feet of Reach 4. If this project is funded, construction will begin in the fall of 2020.

Stakeholder Involvement:

The LSSA has collaborated with Jeff Tillma, DNR Region 2 Stream Specialist and Deserae Hendrickson, DNR Duluth Area Fisheries Supervisor for the past three years on the Reach 4 restoration project and have implemented several of the DNR's project design recommendations.

Which sections of the Minnesota Statewide Conservation and Preservation Plan are 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 other plans are addressed in this proposal:

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

Describe how your program will advance the indicators identified in the plans selected:

Rainbow Trout Section of the Lake Superior Management Plan

- Steelhead juveniles appear to be emigrating from the Knife River due to poor rearing habitat.
- Early emigrating juveniles (age 0 or 1) are preyed upon at a high rate in Lake Superior and is a major limiting factor to the recovery of the steelhead population in the Knife River.
- Restoring the Knife River's instream habitat should equate to a greater retention of 2 - year old juvenile steelhead.
- This greater retention could double the adult steelhead population in the Knife River Watershed.
- The LSSA restoration area has a lower MPCA Stream Habitat Assessment (MSHA) score than the reference reaches on the Knife River (NRRRI, Dumke 2017).
- By restoring the stream's rearing habitat using NCD Methodology, the MSHA score for Reach 4 will greatly improve.
- This will result should be an increase to the adult Knife River Steelhead trout population.

Which LSOHC section priorities are addressed in this proposal:

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

Describe how your program will produce and demonstrate a significant and permanent conservation legacy and/or outcomes for fish, game, and wildlife as indicated in the LSOHC priorities:

The LSSA uses Natural Channel Design (NCD) methodology for its stream restoration projects. This process restores the stream's geomorphic parameters by placing natural materials in and along the streambed to restore the channel's size, configuration and profile and stabilize streambanks. This is different from traditional restoration projects that apply armor (riprap) to streambanks without addressing stream channel deficiencies.

Another benefit of NCD projects, is the use of logs and root wads to restore the instream large woody debris habitat that support trout. Prior to the turn of the century, large trees fell into the channel providing instream habitat and overhead cover to invertebrates, trout, and non-game species. This instream deposition of large wood also resulted in the creation of deep scour pools that provided additional trout habitat features. The LSSA is restoring this lost woody habitat component by importing large root wads and logs from local loggers. This not only benefits the stream but provides additional income to loggers.

Another advantage of NCD stream restoration projects, is they are designed to be self-maintaining. This is due to the extensive survey and assessment parameters that are incorporated into the project's design. This data provides the basis for construction plans and specifications, so restoration activities can properly resize stream channels, set floodplain elevations and stabilize streambanks to withstand large flood events.

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

The upper Main Knife River Watershed is a geomorphically stable stream from Mile 23 (headwaters) downstream to Mile 16. At Mile 16, the stream starts to show signs of instability. This can be observed by the down cutting of the channel, eroding streambanks, sediment deposition in the channel and the streambed jumping channel and cutting across its banks. The LSSA has also determined that Mile 16 (Reach 4) is the top section where most of the steelhead spawning occurs in the Main Knife River. Because of this instability and sediment deposition, critical spawning and rearing habitat has become impaired from erosion.

The LSSA's restoration priorities have always featured a top/down restoration approach. This approach extends the habitat corridor and reduces downstream sediment deposition by creating:

- Improved trout spawning success: When trout spawn they discharge their eggs into the gravel. When sediment deposits accumulate after high spring flood events, these eggs or newly hatched trout become covered by settling silts and suffocate larval trout. By stabilizing these upstream banks sediment discharge is greatly reduced, which generally increases trout production.
- Enhanced trout rearing habitat: Juvenile trout need deep pools, undercut banks and woody debris overhangs rearing habitat. By replacing these lost habitat features, juvenile trout can rear until age 2, which is their natural emigration age to Lake Superior.
- Newly constructed floodplain: NCD restoration projects reconnect the stream channel to the floodplains, which allows floodwaters to crest the bank and dissipate the current's energy. Floodwaters also becomes trapped and stored in associated floodplain wetlands. This results in a lower velocity of floodwater and less volume that discharges downstream. This reduction of floodwater velocity and volume minimizes downstream erosion and habitat degradation.
- Reduction in downstream sediment load: By stabilizing upstream eroding banks, hundreds of tons of sediment will no longer discharge into the stream channel each year. This discharged material will no longer fill downstream pools and runs that are critical to rearing trout.

Our Reach 4 project will protect ~16.00 miles of downstream stream habitat and stabilize over a mile of slumping streambanks.

How does the proposal 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. The trout stream designation is provided to watersheds that have a cold-water resource. Cold-water streams are designated for protection because of their value to fish and wildlife and their relatively scarce nature in Minnesota. The Knife River is even more unique than all other cold-water trout resources in Minnesota because this watershed has an anadromous fishery and does not have a barrier falls. The Knife River is the only watershed in Minnesota that combines these two features. Of the 60+ tributaries that connect to Lake Superior with populations of anadromous trout, only the Knife River does not have a barrier waterfall that limits upstream migration of steelhead, coaster brook trout or brown trout.

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

This proposal addresses rehabilitating instream habitat to enhance and protect the uniqueness of the Knife River trout population. This project will provide, enhance and protect instream habitats that are critical to trout spawning, rearing and staging prior to migrating to Lake Superior.

This project is even more critical with the closing of the French River Hatchery and also because the Knife River is no longer stocked. Trout stocking has been discontinued in the Knife River to protect the unique genetics of over 100 years and with the closure of the French River Hatchery the safety net is gone. So essentially, the Knife River is its own natural fish hatchery that must be protected and enhanced to continue to produce trout that have evolved unique genetic qualities and traits since the late 1800s.

Identify indicator species and associated quantities this habitat will typically support:

Steelhead Trout are an indicator species in the Knife River.

- Knife River juvenile steelhead are genetically predetermined to leave the Knife River at age 2 for Lake Superior.
- Approximately 75% of Knife River juvenile steelhead prematurely emigrate to Lake Superior.
- When juvenile steelhead prematurely (before age 2) emigrate the Knife River to Lake Superior they are smaller in size and significantly preyed upon.
- When juvenile steelhead emigrate the Knife River at age 2 they are larger and are preyed upon less frequently.
- According to the DNR, 1 adult steelhead will return from Lake Superior to spawn in the Knife River out of every 350 early emigrating juveniles. This is a 1:350 ratio.
- By contrast, 1 adult steelhead will return from Lake Superior to spawn in the Knife River out of every 10 (age 2) emigrating juveniles. This DNR study concludes that juvenile steelhead that remain in the Knife River until age 2 return at a 1:10 ratio or 35 times greater rate.
- The average annual number of juvenile steelhead that emigrate the Knife River is ~13,000.
- By increasing the number of 2-year old steelhead from ~ 25% to ~ 50%, we would expect the population of adult steelhead to double.
- If the average steelhead population were to double, it would reach the Lake Superior Management Plan's goal of 1,000 spawning adults.

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 trout (steelhead, coaster brook trout and brown trout) and resident stream trout (brook trout) populations should increase. This project will also provide habitat to invertebrates, amphibians, reptiles, birds and mammals. This project also will replant the riparian zone of the river with native, old growth tree species and various pollinator shrubs. These multiple specie plantings will establish a varied and lush riparian canopy benefitting the entire watershed and neighboring areas.*

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

A critical component of this project is to insure beaver do not re-impact areas that have been rehabilitated. To insure that the Lessard Sams Outdoor Heritage Council projects are maintained after project completion, annual helicopter flights are conducted to insure 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.

Explain the things you will do in the future to maintain project outcomes:

Year	Source of Funds	Step 1	Step 2	Step 3
July 1, 2020 - June 30, 2021	MNDNR	Beaver Flights	Beaver Trapping	N/A
July 1, 2020 - June 30, 2021	LSSA	Beaver Flights	Beaver Trapping	Tree Planting
July 1, 2021 - June 30, 2022	MNDNR	Beaver Flights	Beaver Trapping	N/A
July 1, 2021 - June 30, 2022	LSSA	Beaver Flights	Beaver Trapping	Tree Planting
July 1, 2022 - June 30, 2023	MNDNR	Beaver Flights	Beaver Trapping	N/A
July 1, 2022 - June 30, 2023	LSSA	Beaver Flights	Beaver Trapping	Tree Planting
July 1, 2023 - June 30, 2024	MNDNR	Beaver Flights	Beaver Trapping	N/A
July 1, 2023 - June 30, 2024	LSSA	Beaver Flights	Beaver Trapping	Tree Planting

What is the degree of timing/opportunistic urgency and why it is necessary to spend public money for this work as soon as possible:

The LSSA has been awarded a 2019 LSOHC grant (Phase IV) for the middle portion (~2,000 linear feet) of Reach 4. By funding this project now, the remainder of Reach 4 could be completed without delaying construction on the lower portion of the Reach. This will keep hundreds of tons of sediment from annually discharging from the eroding stream banks of lower reach 4.

The other reason timing is so critical is to reestablish the lost riparian canopy. A major component of rehabilitating a trout stream is to restore a mixed overhead canopy. This canopy takes 5 to 10 years for shrubs and 25 to 75 years for large trees to reestablish. The reestablishment of riparian cover is critical to minimize the colonization of invasive species, such as reed canary grass and buckthorn that are already present in the watershed.

Does this program include leverage in funds:

Yes

The LSSA has used our 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, 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 two 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 an educational/promotional video on our Grant Funded Projects. The LSSA has also spent approximately \$20,000 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 up to \$50,000 to this project (Phase V Lower Reach 4) in the form of payments and in-kind donations.

Relationship to other funds:

- Clean Water Fund
- Coastal Grant Program

Describe the relationship of the funds:

In 2012, Legacy Clean Water Fund and Great Lakes Commission provided money to the Lake County Soil and Water Conservation District for the Knife River watershed's private stream sections. This money was used to stabilize slumping clay banks as part of the TMDL implementation plan. This money was awarded to the Lake County Soil and Water Conservation District. The Lake County SWCD has also received three Buck thorn removal grants to protect the Knife River riparian zone.

The LSSA and SWCD have been working cooperatively on separate sections of river to insure the entire watershed is addressed and

improved. The LSSA is primarily working on the upper river habitat on public lands and private lands with MNDNR easements, while the SWCD is working on the lower river sections and concentrating on private lands.

The LSSA obtained a Lake Superior Coast Grant (NOAA funded/MNDNR administered) in 2018 for the design/permitting of entire Reach 4 project.

Per MS 97A.056, Subd. 24, Any state agency or organization requesting a direct appropriation from the OHF must inform the LSOHC at the time of the request for funding is made, 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 is not supplanting nor a substitution for any previous funding.

Describe the source and amount of non-OHF money spent for this work in the past:

Appropriation Year	Source	Amount
Fy 2012	Great Lakes Commission (GLRI funded)-Hawk Hill Road Project	\$ 293,000
Fy 2012	Clean Water Fund-Copperhead Road Project	\$ 212,000
Fy 2015	LCMR-Buckthorn Control/Removal	\$ 54,000
Fy 2015	MNDNR-Buckthorn Removal	\$ 12,800
Fy 2017	Clean Water Fund-Buckthorn Removal	\$ 144,000
Fy 2018	Federal Coastal Grant - LSSA PH III Entire Reach 4 Project; Design and Permitting	\$ 50,000

Activity Details

Requirements:

If funded, this proposal 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 - **Yes (Permanently Protected Conservation Easements Public Waters)**

Do you anticipate federal funds as a match for this program - **No**

Land Use:

Will there be planting of corn or any crop on OHF land purchased or restored in this program - **No**

Accomplishment Timeline

Activity	Approximate Date Completed
Design, Build, Restoration and Construction Activities	June 15, 2020 - June 30, 2023
Tree/Pollinator/Riparian Zone Planting	July 1, 2020 - June 30, 2023
As-built Survey as required by MNDNR	July 1, 2021 - June 30, 2024

Budget Spreadsheet

Total Amount of Request: \$1,890,000

Budget and Cash Leverage

BudgetName	LSOHC Request	Anticipated Leverage	Leverage Source	Total
Personnel	\$220,000	\$0		\$220,000
Contracts	\$1,490,000	\$3,000	Private Source: LSSA	\$1,493,000
Fee Acquisition w/ PILT	\$0	\$0		\$0
Fee Acquisition w/o PILT	\$0	\$0		\$0
Easement Acquisition	\$0	\$0		\$0
Easement Stewardship	\$0	\$0		\$0
Travel	\$0	\$8,000	Private Source: ZG and LSSA	\$8,000
Professional Services	\$0	\$10,000	Private Source: ZG and LSSA	\$10,000
Direct Support Services	\$0	\$0		\$0
DNR Land Acquisition Costs	\$0	\$0		\$0
Capital Equipment	\$0	\$0		\$0
Other Equipment/Tools	\$5,000	\$10,000	Private Source: LSSA	\$15,000
Supplies/Materials	\$175,000	\$0		\$175,000
DNR IDP	\$0	\$65,000	MNDNR	\$65,000
Total	\$1,890,000	\$96,000		\$1,986,000

Personnel

Position	FTE	Over # of years	LSOHC Request	Anticipated Leverage	Leverage Source	Total
Fiscal Lead	0.60	4.00	\$110,000	\$0		\$110,000
Project Field Manager	0.60	4.00	\$110,000	\$0		\$110,000
Total	1.20	8.00	\$220,000	\$0		\$220,000

Amount of Request: \$1,890,000
 Amount of Leverage: \$96,000
 Leverage as a percent of the Request: 5.08%
 DSS + Personnel: \$220,000
 As a % of the total request: 11.64%
 Easement Stewardship: \$0
 As a % of the Easement Acquisition: -%

What is included in the contracts line?

Contracts line includes cost of subcontractor to complete the project as outlined in the RFP (to be determined) and also the use of Conservation Corps Minnesota (or other similar groups) to perform miscellaneous field work on the project.

Describe and explain leverage source and confirmation of funds:

LSSA's charitable gaming, general fund and in-kind donations. Allocated by LSSA Board approval. ZG's in-kind donations. ZG funds allocated by ZG Board approval. Other KR leverage estimated at \$ 100,000: MNDNR weir operation, creel census, field time/easement work. PH IV will allow for a shovel ready project for PHV.

Does this proposal have the ability to be scalable? - Yes

Tell us how this project would be scaled and how administrative costs are affected, describe the "economy of scale" and how outputs would change with reduced funding, if applicable:

If full funding is not received, less linear stream footage can be rehabilitated.. If fully funded, cost savings would include mobilization costs, RFP preparation/awarding, materials cost increases (rocks, toe wood, trees, planting supplies, etc). Completing the Reach 4 project under PH V would benefit the state and taxpayers.

Output Tables

Table 1a. Acres by Resource Type

Type	Wetlands	Prairies	Forest	Habitats	Total
Restore	0	0	0	0	0
Protect in Fee with State PILT Liability	0	0	0	0	0
Protect in Fee W/O State PILT Liability	0	0	0	0	0
Protect in Easement	0	0	0	0	0
Enhance	0	0	300	0	300
Total	0	0	300	0	300

Table 2. Total Requested Funding by Resource Type

Type	Wetlands	Prairies	Forest	Habitats	Total
Restore	\$0	\$0	\$0	\$0	\$0
Protect in Fee with State PILT Liability	\$0	\$0	\$0	\$0	\$0
Protect in Fee W/O State PILT Liability	\$0	\$0	\$0	\$0	\$0
Protect in Easement	\$0	\$0	\$0	\$0	\$0
Enhance	\$0	\$0	\$1,890,000	\$0	\$1,890,000
Total	\$0	\$0	\$1,890,000	\$0	\$1,890,000

Table 3. Acres within each Ecological Section

Type	Metro/Urban	Forest/Prairie	SE Forest	Prairie	Northern Forest	Total
Restore	0	0	0	0	0	0
Protect in Fee with State PILT Liability	0	0	0	0	0	0
Protect in Fee W/O State PILT Liability	0	0	0	0	0	0
Protect in Easement	0	0	0	0	0	0
Enhance	0	0	0	0	300	300
Total	0	0	0	0	300	300

Table 4. Total Requested Funding within each Ecological Section

Type	Metro/Urban	Forest/Prairie	SE Forest	Prairie	Northern Forest	Total
Restore	\$0	\$0	\$0	\$0	\$0	\$0
Protect in Fee with State PILT Liability	\$0	\$0	\$0	\$0	\$0	\$0
Protect in Fee W/O State PILT Liability	\$0	\$0	\$0	\$0	\$0	\$0
Protect in Easement	\$0	\$0	\$0	\$0	\$0	\$0
Enhance	\$0	\$0	\$0	\$0	\$1,890,000	\$1,890,000
Total	\$0	\$0	\$0	\$0	\$1,890,000	\$1,890,000

Table 5. Average Cost per Acre by Resource Type

Type	Wetlands	Prairies	Forest	Habitats
Restore	\$0	\$0	\$0	\$0
Protect in Fee with State PILT Liability	\$0	\$0	\$0	\$0
Protect in Fee W/O State PILT Liability	\$0	\$0	\$0	\$0
Protect in Easement	\$0	\$0	\$0	\$0
Enhance	\$0	\$0	\$6,300	\$0

Table 6. Average Cost per Acre by Ecological Section

Type	Metro/Urban	Forest/Prairie	SE Forest	Prairie	Northern Forest
Restore	\$0	\$0	\$0	\$0	\$0
Protect in Fee with State PILT Liability	\$0	\$0	\$0	\$0	\$0
Protect in Fee W/O State PILT Liability	\$0	\$0	\$0	\$0	\$0
Protect in Easement	\$0	\$0	\$0	\$0	\$0
Enhance	\$0	\$0	\$0	\$0	\$6,300

Automatic system calculation / not entered by managers

Target Lake/Stream/River Feet or Miles

Approximately 16 linear miles of stream

I have read and understand Section 15 of the Constitution of the State of Minnesota, Minnesota Statute 97A.056, and the Call for Funding Request. I certify I am authorized to submit this proposal and to the best of my knowledge the information provided is true and accurate.

Parcel List

Explain the process used to select, rank and prioritize the parcels:

The MPCA identified erosion areas within the Knife River Watershed and determined sections of Reach 4 contributed to the overall TMDL exceedance for Turbidity. The LSSA also conducted a series of stream assessments to identify adequate streamflow and cool water temperatures to support trout growth. Biological data was collected to determine the quality of in-stream trout habitat. This data was combined and ranked to prioritize restoration areas that provide the best benefit to aquatic life and water quality in the Knife River Watershed.

Another major consideration in the prioritization of this stream reach is its upstream location. Our restoration goal is to utilize a top-down approach, so major upstream erosion does not re-impact the restoration project and floodwaters can be retained to minimize existing downstream impacts. So, this top/down approach not only rehabilitates a degraded upstream reach but also minimizes downstream impacts.

Finally, the Reach 4 project area has been identified as a major spawning area on the main stem of the Knife River. Identification of the importance of this area was done through LSSA stream walks looking for spawning activity and actual redds. As one heads upstream past Reach 4, spawning activity and habitat is greatly reduced which increases the importance of the Reach 4 project.

Section 1 - Restore / Enhance Parcel List

Lake

Name	TRDS	Acres	Est Cost	Existing Protection?
Knife River	05211204	0	\$0	Yes
Knife River	05211208	0	\$0	Yes
Knife River	05211217	0	\$0	Yes
Knife River	05211218	0	\$0	Yes
Knife River	05211219	0	\$0	Yes
Knife River	05211231	0	\$0	Yes
Knife River	05311220	0	\$0	Yes
Knife River	05311229	0	\$0	Yes
Knife River	05311232	0	\$0	Yes
Knife River	05311233	0	\$0	Yes

St. Louis

Name	TRDS	Acres	Est Cost	Existing Protection?
Knife River	05212224	0	\$0	Yes
Knife River	05212225	0	\$0	Yes
Knife River	05212236	0	\$0	Yes

Section 2 - Protect Parcel List

No parcels with an activity type protect.

Section 2a - Protect Parcel with Bldgs

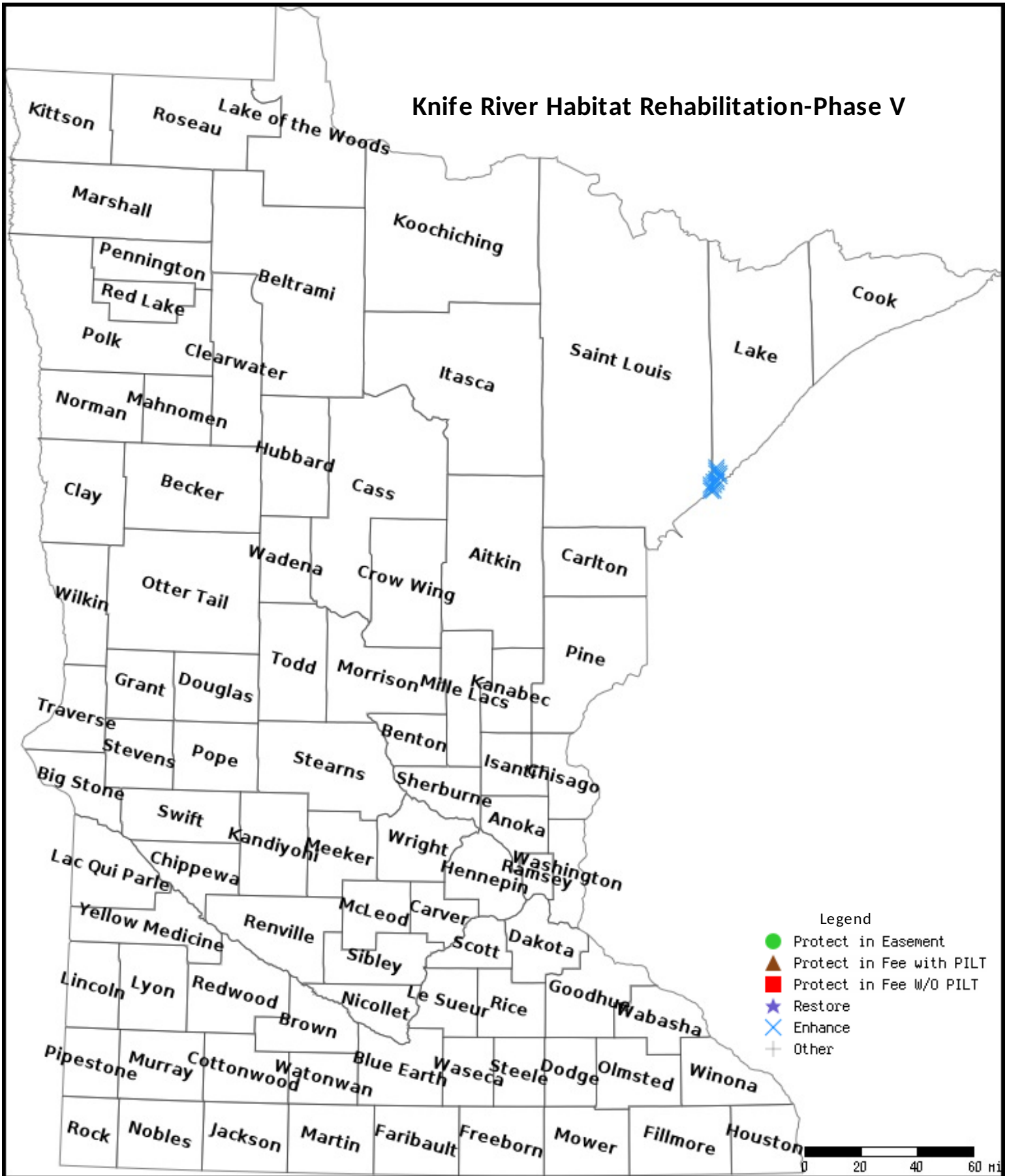
No parcels with an activity type protect and has buildings.

Section 3 - Other Parcel Activity

No parcels with an other activity type.

Parcel Map

Knife River Habitat Rehabilitation-Phase V



Data Generated From Parcel List

Map of Lower Reach 4



Slumping Bank Lower Reach 4 – Rehabilitation similar to Reach 12



Reach Before Restoration



Reach After Restoration



Congress of the United States
House of Representatives
Washington, DC 20515-2308
May 28, 2019

Lessard-Sams Outdoor Heritage Council
100 Rev. Dr. Martin Luther King Jr. Blvd.
State Office Building, Room 95
St. Paul, MN 55155

Dear Lessard-Sams Outdoor Heritage Council,

I write in support of the the Lake Superior Steelhead Association's (LSSA) grant application in their plan to restore a section of the Knife River in St. Louis County, Minnesota. The Knife River is critically important for Steelhead along Minnesota's North Shore and the section the LSSA plans to restore is an ideal area for spawning. This section was heavily impacted by flooding in 2012 and has several steep eroding banks contributing excessive sediment to the stream. Reducing turbidity will not only benefit Steelhead, but the entire riparian ecosystem. Restoration plans for this project are consistent with current best practices aimed at restoring aquatic habitat and helps fulfill Lessard-Sams Outdoor Heritage Council's goal to "...restore, protect, and enhance Minnesota's wetlands, prairies, forests, and habitat for fish, game, and wildlife...".

Fish habitat in our rivers, and especially those along the North Shore of Lake Superior, are critically important to northeastern Minnesota. The Lake Superior Steelhead Association's Knife River restoration project aimed at improving water quality and boosting natural fish reproduction in Lake Superior is immensely beneficial to our area and it has my full support.

Sincerely,



Pete Stauber
Member of Congress
Minnesota's 8th Congressional District

Fond du Lac Band of Lake Superior Chippewa

Resource Management Division

1720 Big Lake Rd
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To: Kevin Bovee, Lake Superior Steelhead Association
From: Brian Borkholder, Fisheries Program Manager
Date: 20 May 2019
Re: Support for Knife River Project



Administration
Conservation
Enforcement
Environmental
Forestry
Fisheries
Natural Resources
Wildlife

Dear Lessard Sams Outdoor Heritage Council Members

The Fond du Lac Band of Chippewa (FDL) has participated in several regional habitat restoration projects throughout northern Minnesota. After reviewing the Lake Superior Steelhead Association's (LSSA) project plans, FDL feels that this project is consistent with current scientific methodology and knowledge to restore and rehabilitate a critical aquatic habitat.

Fond du Lac understands that rivers do get degraded and incised, and they will naturally try to reconfigure their dimension, pattern, and profile. This often leads to further degradation, erosion, and downcutting. FDL understands that some of these processes are currently occurring in the Knife River. The Knife River's current channel is incised and the floodplain has lost much of its capacity to store groundwater. This project reconnects the river bed to the floodplain by raising the streambed and grading the point bars to restore the groundwater storage capacity for this cold-water stream. Any construction project that has clear objectives, a clear understanding of the hydrological processes present, and includes a goal of re-connecting the river with its floodplain would be supported by the Fond du Lac Band.

Fond du Lac does recognize the importance of fish habitat in our rivers, and especially those along the North Shore of Lake Superior. Most of the north shore streams have extremely limited spawning habitat, given the proximity of natural fish passage barriers to the river mouths. The Knife River isn't such a river, and has more fish spawning habitat than do most of the north shore streams. Any restoration project that improves water quality and access to suitable spawning habitat by anadromous fishes from Lake Superior would be immensely valuable, and likely worth pursuing.

It would appear that the Lake Superior Steelhead Association is two-thirds of the way through a huge multi-year and multi-stage river restoration effort in the Knife River. My contacts with the MN DNR suggest that the previous work on the River was successful. At this point, securing the funding to see the project through completion would be supported by the Fond du Lac Band.



Saint Louis County

First District Commissioner • 100 N. 5th Avenue West, Room 202 • Duluth, MN 55802
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Frank Jewell
County Commissioner

May 22, 2019

Lessard Sams Outdoor Heritage Council
100 Rev. Dr. Martin Luther King Jr. Blvd.
State Office Building, Room 95
St. Paul, MN 55155

Ladies and Gentlemen,

I am writing to support a grant application from the Lake Superior Steelhead Association (LSSA) to restore a reach of the Knife River in St. Louis County. The Knife River is critically important for Steelhead along Minnesota's North Shore and the reach of the LSSA plans to restore is a known spawning area. This reach was heavily impacted by flooding in 2012 and has several steep eroding banks contributing excessive sediment to the stream.

I visited the area with Kevin Bovee, an Association member, to look at a completed restoration they did on the Knife River. It was extremely well done and I was impressed by the way in which the Association worked with private property owners to accomplish it. The project was very successful and clearly demonstrates LSSA's ability to succeed in this next project.

It is important to St. Louis County that there are NGO's that can drive these projects and assure that they get done. While this project is aimed at fish habitat I know, as Chair of the MN Clean Water Council, that it will also have clean water benefit, decreasing the turbidity downstream. I lend my wholehearted support to their work and look forward to touring another successful project.

Sincerely,

Frank Jewell
St. Louis County Commissioner, First District

FJ/sn