

Lessard-Sams Outdoor Heritage Council

Laws of Minnesota 2019 Accomplishment Plan



Date: December 18, 2018

Program or Project Title: Restoration of Norway Brook connectivity to the Pine River by removal of Norway Lake Dam and replacement with rock-arch rapids.

Funds Recommended: \$ 2,267,000

Manager's Name: Mike Hansen
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Legislative Citation: ML 2019, Ch. X, Art. 1, Sec. 2, subd. X(x)

Appropriation Language:

County Locations: Cass

Eco regions in which work will take place:

- Northern Forest

Activity types:

- Enhance
- Restore

Priority resources addressed by activity:

- Habitat

Abstract:

The Norway Lake Dam will be removed and replaced with a rock-arch rapids by the City of Pine River. Replacing the high hazard dam with a rock riffle will enhance fish passage, biological connectivity, habitat, safety, aesthetics, fishing, access, and whitewater boating opportunities.

The riffle pools and meandering low flow channel will enhance recreational opportunities for fishing, paddling and other water-based fun. Removal of the dam will restore fish passage and connectivity between the Whitefish Chain of Lakes and reconnect 134 lakes and 80 miles of river and stream corridors benefitting fish, mussels and many game and non-game animal species.

Design and scope of work:

The 13' high Norway Lake Dam was constructed in 1910, and is now proposed for removal and replacement with a rock-arch rapids. Trunk Highway 84 is constructed on top of the dam. MNDOT plans to replace the bridge and separate it from the dam within a year or two. The dam is classified as "High" hazard and needs to be modified to provide additional capacity. Replacing the dam with a rock riffle was selected to enhance: fish passage, biological connectivity, riffle habitat, safety, aesthetics, fishing, access, and whitewater boating opportunities.

The riffle will include a series of pools and a meandering low flow channel to provide enhanced recreational opportunities along the river for fishing, paddling and other water-based fun. Pools next to two City Parks will enhance fishing and maintain water near an historic WPA-constructed Beach and Swimming Area.

Removal of the dam will restore fish passage and connectivity between the Whitefish Chain of Lakes and the 149 square mile watershed above the dam. This reconnected watershed includes 134 lakes with surface areas totaling 11,338 acres and 80 miles of rivers and streams ranging from 1st order to 4th order. Twenty-seven lakes exceed 100 acres, with the largest-Pine Mountain Lake-having 1,622 acres. Removing the dam and reconnecting these high quality, diverse habitats and stream corridors will benefit fish, mussels and many game and non-game animal species.

Removal of the dam will result in the following outcomes: (Data sources include: MPCA stream surveys 2012-14, Fishes of MN Mapper, MNDNR stream survey, MNDNR lake surveys).

Habitat:

- Restores ecological connection between Outstanding Lakes of Biological Significance for fish community.
- Diverse stream habitat upstream and downstream of the dam will be reconnected. Riffle habitat will be constructed in 600-foot length of boulder-arch rapids.
- Common species that will benefit include: walleye, northern pike, largemouth bass, white sucker, shorthead redhorse, greater redhorse, hornyhead chub, and rock bass.
- The fish community in Norway Lake will likely be enhanced with an increase in walleye and other species abundance possible through upstream migration.
- Long-ear Sunfish, Northern Sunfish, Silver Redhorse, Sand Shiner and Black Sandshell (mussel) are present below the dam but have not been found upstream of the Pine River Dam.
- Upstream fish passage will not pose a risk of invasive aquatic species range expansion. Dam removal will not increase habitat favorable to invasive species.

Hydrology:

- Water levels upstream and downstream from the rock-riffle will adjust naturally in response to the seasonal runoff. The riffle will convey all streamflow from low flows through extreme floods and will provide similar upstream water levels within Norway Lake, although the fixed crest will result in some fluctuations as flow varies, but does not require operation.
- Public safety is enhanced due to the removal of the gate spillways and associated currents.
- Less city staff maintenance and liability exist with the rock-riffle construction.

Access:

- Creation of the rock riffle will improve the fishing and water access near two City Parks.
- The rock riffle will provide whitewater boating opportunities.
- ADA handicap accessible fishing.

How does the request address MN habitats that have: historical value to fish and wildlife, wildlife species of greatest conservation need, MN County Biological Survey data, and/or rare, threatened and endangered species inventories:

Removal of the dam will restore fish passage and connectivity between the Whitefish Chain of Lakes and 134 lakes and 80 miles of rivers and streams. The project will restore the ecological connection between Outstanding Lakes of Biological Significance for fish community-Whitefish Chain and upstream Lake Hattie as well as additional Outstanding Lakes of Biological Significance in headwaters: Lizzie, Brockway, Lind, Bowen, Pine Mountain, Beuber and Deep Portage. Removing the dam and reconnecting these high quality, diverse habitats and stream corridors will benefit fish, mussels and many game and non-game animal species.

Removal of the dam will result in the following habitat outcomes:

- Restores ecological connection between Outstanding Lakes of Biological Significance for fish community.
- Diverse stream habitat upstream and downstream of the dam will be reconnected. Riffle habitat will be constructed in 600-foot length of boulder-arch rapids.
- Long-ear Sunfish, Northern Sunfish, Silver Redhorse, Sand Shiner and Black Sandshell (mussel) are present below the dam but have not been found upstream of the Pine River Dam. Northern Sunfish (special concern) are found downstream of the dam but have not been found upstream. Restoring fish passage may enable Northern Sunfish to expand their range in the watershed. Pugnose Shiner (threatened), Least Darter (special concern), and Hornyhead Chub (species of greatest conservation need) are found in the Pine River system both upstream and downstream of the dam. Populations of these fish will benefit from reestablished connectivity between the middle and upper reaches of the Pine River and the associated lakes and streams of the watershed. Black Sandshell mussel (special concern) are found below the dam but not upstream. Upstream fish passage may allow Black Sandshells to expand upstream as larval mussels are carried upstream by bluegill and largemouth bass hosts. Blandings Turtle (threatened) has been found in the area around the City of Pine River and any turtles moving along the river will be able to move through the rock riffle instead of crossing the dam on the present road. The aquatic plant, Olive-colored Southern Naiad (special concern) has been found within the Whitefish Chain of Lakes.

Describe the science based planning and evaluation model used:

The Norway Lake dam has been a fish barrier for 108 years and has created a significant fragmentation of aquatic habitat. Removal of the dam and replacement with a rock-arch rapids will restore fish passage and connectivity between the Whitefish Chain of Lakes and the 149 square mile watershed above the dam. This reconnected watershed includes 134 lakes with surface areas totaling 11,338 acres and 80 miles of rivers and streams ranging from 1st order to 4th order. Twenty-seven lakes exceed 100 acres, with the largest-Pine Mountain Lake-having 1,622 acres. Removing the dam and reconnecting these high quality, diverse habitats and stream corridors will benefit fish, mussels and many game and non-game animal species.

Which sections of the Minnesota Statewide Conservation and Preservation Plan are applicable to this program:

- H3 Improve connectivity and access to recreation
- H6 Protect and restore critical in-water habitat of lakes and streams

Which other plans are addressed in this program:

- Minnesota DNR Fish Habitat Plan; Norway Lake Management Plan;

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

Relationship to other funds:

- DNR Dam Safety Program has provided a \$200,000 grant for engineering and design services.

Describe the relationship of the funds:

DNR Dam Safety Program has provided a \$200,000 grant for engineering and design services.

Does this program include leverage in funds:

Yes

DNR Dam Safety has provided \$200,000 in funding for engineering and design services. The City of Pine River will provide \$89,000 for the fishing pier, benches and ADA compliant walks and railings. The City and Nature Conservancy are applying for funds through the Midwest Glacial Lakes Partnership.

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:

Not applicable

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

Not Listed

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

The City of Pine River will maintain the rock riffle features. The project will be monitored to determine that it works as planned. The rock riffle incorporates natural channel features which are sustainable and don't typically require significant maintenance. Native plantings will be inspected and maintained as necessary while the vegetation becomes established.

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

Year	Source of Funds	Step 1	Step 2	Step 3
Annually	City of Pine River-Local Tax Levy	Inspect rock riffle	Determine whether boulder weirs, base rock and habitat features are performing adequately	Perform maintenance to remove debris and adjust or maintain spillway.
1 year following construction	City of Pine River-Local Tax Levy	Inspect native plantings	Maintain native plantings, reseed as necessary and control invasive plants as native vegetation becomes established.	
1 year following construction	DNR Fisheries	Perform fish survey	Determine whether fish passage is improved and species populations are responding to reconnected habitats	
5 years following construction	DNR Fisheries	Perform fish survey	Determine whether fish passage is improved and species populations are responding to reconnected habitats	
10 year following construction	DNR Fisheries	Perform fish survey	Determine whether fish passage is improved and species populations are responding to reconnected habitats	
Annually	City of Pine River-Local Tax Levy	Perform recreational user survey	Determine recreational use of rock riffle and adjoining parks. Report on numbers of people fishing, kayaking and using adjoining park spaces.	

Activity Details:

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

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

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

Is the activity on permanently protected land per 97A.056, subd 13(f), tribal lands, and/or public waters per MS 103G.005, Subd. 15 - **Yes (County/Municipal, Public Waters)**

Accomplishment Timeline:

Activity	Approximate Date Completed
Complete design, deliver plans, specifications and construction documents.	December 2019
Complete project permitting	December 2019
Advertise for bids, receive bids, award construction contract	April 2020
Begin Construction of rock riffle	October 2020
Complete Construction of rock riffle	June 2021
Begin monitoring of project and operation and maintenance activities	July 2021

Date of Final Report Submission: 7/1/2021

Federal Funding:

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

Outcomes:

Programs in the northern forest region:

- Improved aquatic habitat indicators *This project will restore and enhance habitat within a Public Water by reconnecting a disconnected river*

reach and restoring fish passage and biological connectivity. The project improves habitat by restoring fish passage and biological connectivity between the Whitefish Chain of Lakes and 134 lakes and 80 miles of rivers and streams and in excess of 11,000 acres of aquatic habitat. Future lake and stream surveys will confirm improvements in species diversity and populations. The project will also provide enhanced recreational opportunities for fishing, paddling and other users which can be tracked through City Park use.

Budget Spreadsheet

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

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

The City will provide the remaining project costs outside of LSOHC funding: (\$2.556 Million - \$2.267 Million - \$200 Thousand) \$89,000. The City will apply for additional funds: from DNR Dam Safety

Total Amount of Request: \$ 2267000

Budget and Cash Leverage

BudgetName	LSOHC Request	Anticipated Leverage	Leverage Source	Total
Personnel	\$36,000	\$0		\$36,000
Contracts	\$2,011,000	\$89,000	City of Pine River	\$2,100,000
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	\$0		\$0
Professional Services	\$220,000	\$200,000	\$200,000 DNR Dam Safety Program	\$420,000
Direct Support Services	\$0	\$0		\$0
DNR Land Acquisition Costs	\$0	\$0		\$0
Capital Equipment	\$0	\$0		\$0
Other Equipment/Tools	\$0	\$0		\$0
Supplies/Materials	\$0	\$0		\$0
DNR IDP	\$0	\$0		\$0
Total	\$2,267,000	\$289,000		\$2,556,000

Personnel

Position	FTE	Over # of years	LSOHC Request	Anticipated Leverage	Leverage Source	Total
Project Manager	0.05	2.00	\$24,000	\$0		\$24,000
City Clerk	0.03	2.00	\$12,000	\$0		\$12,000
Total	0.08	4.00	\$36,000	\$0		\$36,000

Amount of Request: \$2,267,000
 Amount of Leverage: \$289,000
 Leverage as a percent of the Request: 12.75%
 DSS + Personnel: \$36,000
 As a % of the total request: 1.59%

What is included in the contacts line?

The whole amount listed for contracts is for R/E work. \$2.1 Million is the estimated construction contract cost for removal of the existing dam and replacement with the rock riffle. The construction estimate includes mobilization, water control, steel sheet piling, excavation, furnishing and installing rock and associated items.

Describe and explain leverage source and confirmation of funds:

The DNR Dam Safety program has provided a \$200,000 grant for engineering and design services. The City of Pine River will provide \$89,000 for the fishing pier, benches and ADA compliant walks and railings.

Output Tables

Table 1a. Acres by Resource Type

Type	Wetlands	Prairies	Forest	Habitats	Total
Restore	0	0	0	6	6
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	0
Total	0	0	0	6	6

Table 2. Total Funding by Resource Type

Type	Wetlands	Prairies	Forest	Habitats	Total
Restore	\$0	\$0	\$0	\$2,267,000	\$2,267,000
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	\$0
Total	\$0	\$0	\$0	\$2,267,000	\$2,267,000

Table 3. Acres within each Ecological Section

Type	Metro Urban	ForestPrairie	SE Forest	Prairie	N Forest	Total
Restore	0	0	0	0	6	6
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	0	0
Total	0	0	0	0	6	6

Table 4. Total Funding within each Ecological Section

Type	Metro Urban	ForestPrairie	SE Forest	Prairie	N Forest	Total
Restore	\$0	\$0	\$0	\$0	\$2,267,000	\$2,267,000
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	\$0	\$0
Total	\$0	\$0	\$0	\$0	\$2,267,000	\$2,267,000

Table 5. Average Cost per Acre by Resource Type

Type	Wetlands	Prairies	Forest	Habitats
Restore	\$0	\$0	\$0	\$377833
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	\$0	\$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	\$377833
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	\$0

Automatic system calculation / not entered by managers

Target Lake/Stream/River Feet or Miles

80

Parcel List

For restoration and enhancement programs ONLY: Managers may add, delete, and substitute projects on this parcel list based upon need, readiness, cost, opportunity, and/or urgency so long as the substitute parcel/project forwards the constitutional objectives of this program in the Project Scope table of this accomplishment plan. The final accomplishment plan report will include the final parcel list.

Section 1 - Restore / Enhance Parcel List

Cass

Name	TRDS	Acres	Est Cost	Existing Protection?
94-231-3401	13829231	1	\$566,100	No
94-231-3404	13829231	0	\$566,100	No
94-337-1810	13729206	0	\$283,000	No
94-337-1820	13729206	0	\$106,400	No
94-337-1830	13729206	0	\$254,700	No
94-338-0110 to 0260	13829231	0	\$396,300	No
94-339-0001	13829231	0	\$113,200	No
94-340-0210	13829231	0	\$90,600	No
94-340-0220	13829231	0	\$90,600	No

Section 2 - Protect Parcel List

No parcels with an activity type protect.

Section 2a - Protect Parcel with Bldgs

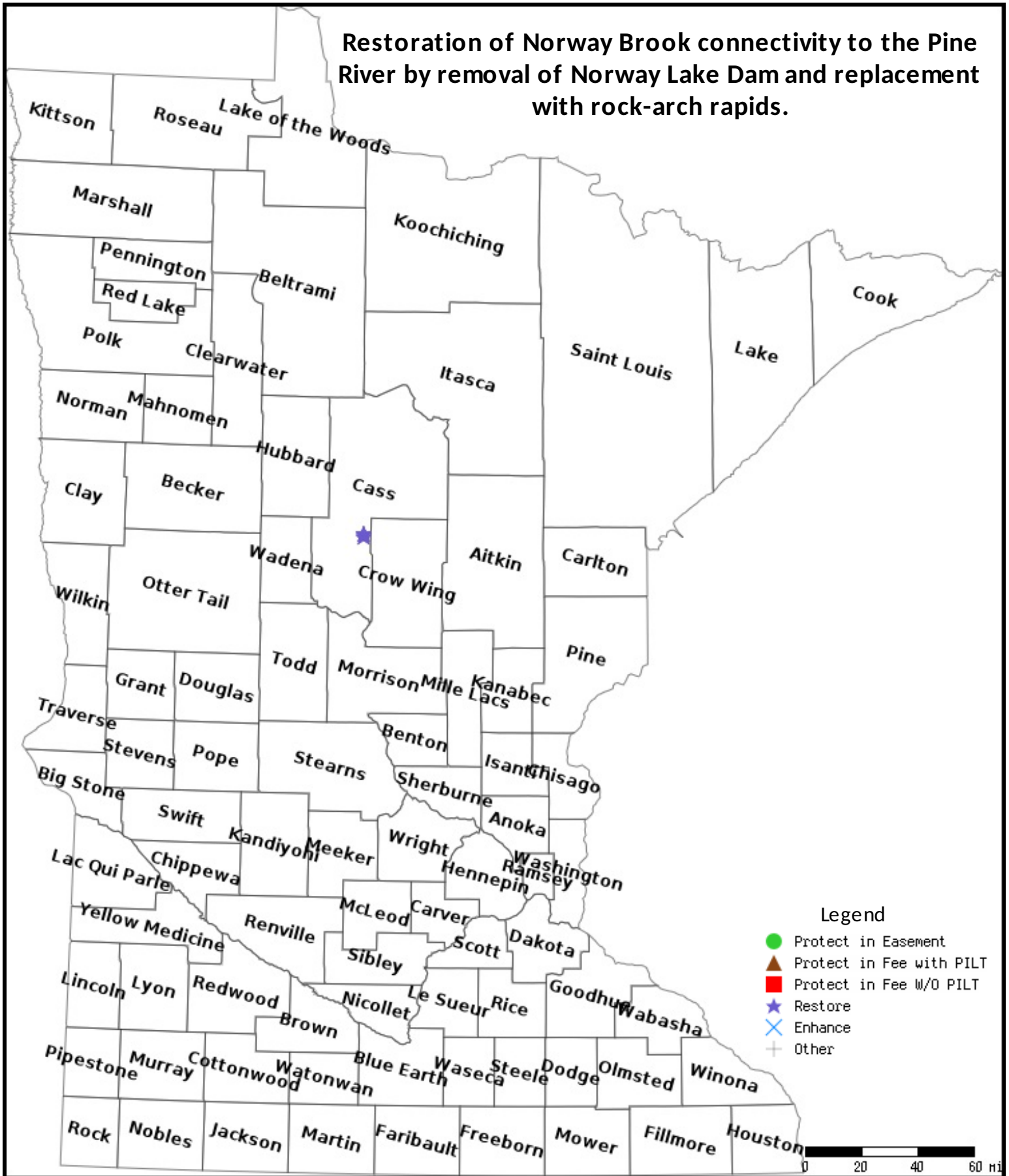
No parcels with an activity type protect and has buildings.

Section 3 - Other Parcel Activity

No parcels with an other activity type.

Parcel Map

Restoration of Norway Brook connectivity to the Pine River by removal of Norway Lake Dam and replacement with rock-arch rapids.



Data Generated From Parcel List

Lessard-Sams Outdoor Heritage Council Comparison Report

Program Title: 2019 - Restoration of Norway Brook connectivity to the Pine River by removal of Norway Lake Dam and replacement with rock-arch rapids.

Organization: City of Pine River

Manager: Mike Hansen

Budget

Requested Amount: \$2,356,000

Appropriated Amount: \$2,267,000

Percentage: 96.22%

Budget Item	Total Requested		Total Appropriated		Percentage of Request	
	LSOHC Request	Anticipated Leverage	Appropriated Amount	Anticipated Leverage	Percentage of Request	Percentage of Leverage
Personnel	\$36,000	\$0	\$36,000	\$0	100.00%	-
Contracts	\$2,100,000	\$0	\$2,011,000	\$89,000	95.76%	-
Fee Acquisition w/ PILT	\$0	\$0	\$0	\$0	-	-
Fee Acquisition w/o PILT	\$0	\$0	\$0	\$0	-	-
Easement Acquisition	\$0	\$0	\$0	\$0	-	-
Easement Stewardship	\$0	\$0	\$0	\$0	-	-
Travel	\$0	\$0	\$0	\$0	-	-
Professional Services	\$220,000	\$200,000	\$220,000	\$200,000	100.00%	100.00%
Direct Support Services	\$0	\$0	\$0	\$0	-	-
DNR Land Acquisition Costs	\$0	\$0	\$0	\$0	-	-
Capital Equipment	\$0	\$0	\$0	\$0	-	-
Other Equipment/Tools	\$0	\$0	\$0	\$0	-	-
Supplies/Materials	\$0	\$0	\$0	\$0	-	-
DNR IDP	\$0	\$0	\$0	\$0	-	-
Total	\$2,356,000	\$200,000	\$2,267,000	\$289,000	96.22%	144.50%

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

The City will provide the remaining project costs outside of LSOHC funding: (\$2.556 Million - \$2.267 Million - \$200 Thousand) \$89,000. The City will apply for additional funds: from DNR Dam Safety

Output

Table 1a. Acres by Resource Type

Type	Total Proposed	Total in AP	Percentage of Proposed
Restore	6	6	100.00%
Protect in Fee with State PILT Liability	0	0	-
Protect in Fee W/O State PILT Liability	0	0	-
Protect in Easement	0	0	-
Enhance	0	0	-

Table 2. Total Funding by Resource Type

Type	Total Proposed	Total in AP	Percentage of Proposed
Restore	2,356,000	2,267,000	96.22%
Protect in Fee with State PILT Liability	0	0	-
Protect in Fee W/O State PILT Liability	0	0	-
Protect in Easement	0	0	-
Enhance	0	0	-

Table 3. Acres within each Ecological Section

Type	Total Proposed	Total in AP	Percentage of Proposed
Restore	6	6	100.00%
Protect in Fee with State PILT Liability	0	0	-
Protect in Fee W/O State PILT Liability	0	0	-
Protect in Easement	0	0	-
Enhance	0	0	-

Table 4. Total Funding within each Ecological Section

Type	Total Proposed	Total in AP	Percentage of Proposed
Restore	2,356,000	2,267,000	96.22%
Protect in Fee with State PILT Liability	0	0	-
Protect in Fee W/O State PILT Liability	0	0	-
Protect in Easement	0	0	-
Enhance	0	0	-