Lessard-Sams Outdoor Heritage Council
Laws of Minnesota 2012 Final Report

Date: December 28, 2017

Program or Project Title: Coldwater Fish Habitat Enhancement , Phase 4

Funds Recommended: $2,120,000

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Legislative Citation: ML 2012, Ch. 264, Art. 1, Sec. 2, Subd. 5(e)

Appropriation Language: $2,120,000 in the second year is to the commissioner of natural resources for an agreement with Minnesota Trout Unlimited to restore and enhance coldwater fish lake, river, and stream habitats in Minnesota. A list of proposed restorations and enhancements must be provided as part of the required accomplishment plan.

County Locations: Cook, Fillmore, Goodhue, Lake, Olmsted, Wabasha, and Winona.

Regions in which work was completed:

- Northern Forest
- Southeast Forest
- Metro / Urban

Activity types:

- Enhance

Priority resources addressed by activity:

- Habitat

Summary of Accomplishments:

Minnesota Trout Unlimited enhanced in-stream and riparian fish and wildlife habitat in and along coldwater streams and lakes located on public lands and Aquatic Management Areas. We originally proposed 11 projects, yet completed 13 projects. Contracting efficiencies and leveraging of other funding allowed us to add three more habitat enhancement projects in northeast Minnesota and to lengthen others. One small budget project was dropped when a partner changed the scope from 144 acres to less than 15 and proposed costs outweighed the potential benefit. Despite dropping that project we finished with 89% of the proposed acres being achieved (347 acres completed versus 388 acres proposed).

Process & Methods:

The projects completed with Fy2013 funding used methods similar to those used on projects completed by MNTU chapters in the past several years and also incorporated new research to improve project designs and fish and wildlife benefits.

The specific fish habitat enhancement methods used on each stream varied depending upon the distinct natural resource characteristics of each watershed and ecological region, the limiting factors identified for each stream, and the variations in the type and magnitude of poor land uses practices within each watershed. MNTU tailored each project accordingly, using the best available science, in close consultation with resource professionals within the Minnesota Department of Natural Resources (“MNDNR”).

Purposes: Each project was designed and completed using techniques selected to accomplish one or more of the following purposes: (a) reduce stream bank erosion and associated sedimentation downstream; (b) reconnect streams to their floodplains to reduce negative resource impacts from severe flooding; (c) increase natural reproduction of trout and other aquatic organisms; (d) maintain or increase adult trout abundance; (e) increase habitat and biodiversity for both invertebrates and other non-game species; (f) be long lasting with minimal maintenance required; (g) improve angler access and participation; (h) improve lake productivity for trout species; and (i) protect productive trout waters from undesirable invasive species.

Habitat enhancement methods: Methods used on each project included one or more of the following techniques: (1) sloping back stream banks to both remove accumulated sediments eroded from uplands areas and better reconnect the stream to its floodplain; (2) removing undesirable woody vegetation (invasive box elder, buckthorn, etc.) from riparian corridors to enable removal of accumulated sediments, reduce competition with desirable plant and grass species, and allow beneficial energy inputs (sunlight) to reach the streams; (3) stabilizing eroding stream banks using vegetation and/or rock; (4) selectively installing overhead and other in-stream cover for trout; (5) installing soil erosion prevention measures; (6) mulching and seeding exposed stream banks (including with native prairie plant species where appropriate and feasible); (7) improving or maintaining stream access roads and stream crossings to reduce erosion; (8) fencing grassy riparian corridors, including in such a way as to facilitate managed grazing, in order to prevent damage from over grazing; (9) placing large logs in northern forested streams to restore cover logs removed a half century or more ago; and (10) in northern forested watersheds with little cold groundwater, planting desirable trees in riparian areas to provide shade for the stream channel and help cool the water.

Agricultural area example: Many streams in the agricultural areas of southern and central Minnesota have been negatively impacted by many decades of poor land management practices. The projects in southeast Minnesota used the following approach to address this:

Erosion has led to wider, shallower and warmer streams, as well as excessive streamside sediments which regularly erode, covering food production and trout reproduction areas. In many cases shallow rooted invasive trees have taken over the riparian corridors, out competing native vegetation which better secures soils, and reducing energy inputs to the stream ecosystem. To remedy this, a typical enhancement project will involve several steps. First, invasive trees are removed from the riparian zone and steep, eroding banks are graded by machinery to remove excess sediments deposited here from upland areas. Importantly, this reconnects the stream to its floodplain. Since many of these agricultural watersheds still experience periodic severe flooding, select portions of the stream banks are then reinforced with indigenous rock. In lower gradient watersheds, or watersheds where flows are more stable, little or no rock is used. After enhancement work is completed the streams flow faster and become deeper, keeping them cooler and providing natural overhead cover through depth and the scouring of sediments deposited by decades of erosion.

Second, overhead cover habitat is created. Bank degradation and the removal of native prairie have dramatically decreased protective overhead cover in the riparian zone. Two methods are used to remedy this situation: increasing the stream's depth, which alone provides natural cover to trout, and installing overhead cover structures in select stream banks. Wooden structures are often installed into banks in hydraulically suitable locations and reinforced with rock as a way to restore or recreate the undercut banks which had existed before settlement and agricultural land use altered the more stable flows which had gradually created and maintained them. Finally, vegetation is reestablished in the re-graded riparian corridor to further stabilize banks and act as buffer strips to improve water quality. Depending upon the specific site conditions, landowner cooperation, and agricultural use, native prairie grasses may be planted along the stream corridors, although often mixed with fast sprouting annual grains to anchor soils the first year.

Taken together, these actions directly enhance physical habitat, and typically increase overall trout abundance, population structure, the number of larger trout, and levels of successful natural reproduction. In addition to the benefits to anglers of increased trout habitat and trout abundance, project benefits extending well downstream include reduced erosion and sedimentation, cooler water temperatures, improved water quality and numerous benefits to aquatic and terrestrial wildlife populations.

Explain Partners, Supporters, & Opposition:

The DNR Fisheries Section was a important partner on every project. We also partnered with Lake County on the Stewart River projects. We leveraged $205,000 from two sources for work in the Stewart River watershed ($120,000 federal and the balance county) and used all of it on the OHF funded projects and additional work on other parcels along the Stewart River. There was no opposition to any of the projects, but much support and encouragement.

Additional Comments:

Exceptional challenges, expectations, failures, opportunities, or unique aspects of program

The very slow pace of permit review and approval was a major challenge on many projects. Misinterpretations of environmental review rules by one DNR division contributed to delays. As a result, the implementation of several projects was delayed a year or more, although we persevered and completed all projects (and three added projects) within the grant term. The five year term for restoration and enhancement projects is vital to overcoming these permitting hurdles, as well as allow time to better establish riparian vegetation.

Other Funds Received:

- Not Listed

How were the funds used to advanced the program:

Not Listed

What is the plan to sustain and/or maintain this work after the Outdoor Heritage Funds are expended:

Each enhancement project was designed for long-term ecological and hydraulic stability. Once riparian vegetation becomes well established, no significant maintenance is usually required in order to sustain the habitat outcomes for several decades. Reconnected floodplains allow floodwater to quickly spread out and dissipate energy, reducing the destructive impact of a flood. Flood waters typically flatten streamside vegetation temporarily and do not damage the in-stream structures.

We anticipate that long-term monitoring of the integrity of the improvements will be done in conjunction with routine inspections and biological monitoring conducted by local MNDNR staff, MNTU members, or landowners as appropriate. In the event that there are significant maintenance costs, potential sources of funding and volunteer labor include MNTU, MNDNR AMA maintenance funding, and other grant funds and organizations. MNTU volunteers will help provide long-term monitoring and periodic labor.

Outcomes:

The original accomplishment plan stated the program would

Programs in the northern forest region:

- Increased angling opportunities along approximately 7 miles of public water which will draw increased use and enjoyment by anglers.

How will the outcomes be measured and evaluated?

Habitat in six trout lakes was reclaimed, totaling 8.5 miles of shoreline. DNR is measuring angling usage of the trout lakes.

Programs in metropolitan urbanizing region:

- Increased natural reproduction of trout. Increases in the overall trout population in project reaches.

How will the outcomes be measured and evaluated?

Natural reproduction rates of trout and overall trout abundance in Hay Creek will be surveyed annually by DNR in the segment flowing through State Forest land.

Programs in southeast forest region:

- Reduction in stream bank erosion in project reaches and reduced sedimentation downstream. Reduced negative resource impacts from flooding.

How will the outcomes be measured and evaluated?

Significant bank erosion can be measured during periodic easement inspections, as well as DNR fisheries surveys. Erosion from stream banks accounts for roughly 85% of sediment in southeast streams. Consequently, reducing erosion to near zero in project reaches (observable by periodic inspections) is a good way to evaluate this outcome.

Budget Spreadsheet

Final Budget line item reallocations are allowed up to 10% and do not need require an amendment to the Accomplishment Plan

Total Amount: $2,120,000

Budget and Cash Leverage

Budget Name	Request	Spent	Cash Leverage (anticipated)	Cash Leverage (received)	Leverage Source	Total (original)	Total (final)
Personnel	$105,000	$82,500	$0	$0		$105,000	$82,500
Contracts	$908,500	$926,500	$0	$0		$908,500	$926,500
Fee Acquisition w/ PILT	$0	$0	$0	$0		$0	$0
Fee Acquisition w/o PILT	$0	$0	$0	$0		$0	$0
Easement Acquisition	$0	$0	$0	$0		$0	$0
Easement Stewardship	$0	$0	$0	$0		$0	$0
Travel	$3,000	$400	$0	$0		$3,000	$400
Professional Services	$348,500	$361,500	$0	$0		$348,500	$361,500
Direct Support Services	$0	$0	$0	$0		$0	$0
DNR Land Acquisition Costs	$0	$0	$0	$0		$0	$0
Capital Equipment	$1,200	$1,200	$0	$0		$1,200	$1,200
Other Equipment/Tools	$0	$0	$0	$0		$0	$0
Supplies/Materials	$753,800	$667,900	$0	$0		$753,800	$667,900
DNR IDP	$0	$40,000	$0	$0		$0	$40,000
Total	$2,120,000	$2,080,000	$0	$0		$2,120,000	$2,080,000

Personnel

Position	FTE	Over # of years	Spent	Cash Leverage	Leverage Source	Total
Manager of Programs	0.40	0.00	$57,600	$0		$57,600
Watershed director	0.10	0.00	$22,100	$0		$22,100
Program assistant	0.20	0.00	$2,800	$0		$2,800
Total	0.70	0.00	$82,500	$0		$82,500

Capital Equipment

Item Name	Spent	Cash Leverage	Leverage Source	Total
Automated pump and dispenser of detoxification chemicals for lakes	$1,200	$0		$1,200
Total	$1,200	$0		$1,200

Explain any budget challenges or successes:

We partnered with the DNR to successfully complete projects on three additional trout lakes in NE MN and transferred $40,000 to DNR through a use of funds letter to facilitate this. A small budget buffers project with a local watershed organization was dropped due to higher than expected costs per acre. We dropped this after consultation with LSOHC staff.

All revenues received by the recipient that have been generated from activities on land with money from the OHF:

Total Revenue: $0

Revenue Spent: $0

Revenue Balance: $0

- E. This is not applicable as there was no revenue generated.

Output Tables

Table 1a. Acres by Resource Type

Type	Wetlands (original)	Wetlands (final)	Prairies (original)	Prairies (final)	Forest (original)	Forest (final)	Habitats (original)	Habitats (final)	Total (original)	Total (final)
Restore	0	0	0	0	0	0	0	0	0	0
Protect in Fee with State PILT Liability	0	0	0	0	0	0	0	0	0	0
Protect in Fee W/O State PILT Liability	0	0	0	0	0	0	0	0	0	0
Protect in Easement	0	0	0	0	0	0	0	0	0	0
Enhance	0	0	0	0	0	0	388	347	388	347
Total	0	0	0	0	0	0	388	347	388	347

Table 2. Total Funding by Resource Type

Type	Wetlands (original)	Wetlands (final)	Prairies (original)	Prairies (final)	Forest (original)	Forest (final)	Habitats (original)	Habitats (final)	Total (original)	Total (final)
Restore	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Protect in Fee with State PILT Liability	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Protect in Fee W/O State PILT Liability	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Protect in Easement	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Enhance	$0	$0	$0	$0	$0	$0	$2,120,000	$2,080,000	$2,120,000	$2,080,000
Total	$0	$0	$0	$0	$0	$0	$2,120,000	$2,080,000	$2,120,000	$2,080,000

Table 3. Acres within each Ecological Section

Type	Metro Urban (original)	Metro Urban (final)	Forest Prairie (original)	Forest Prairie (final)	SE Forest (original)	SE Forest (final)	Prairie (original)	Prairie (final)	N Forest (original)	N Forest (final)	Total (original)	Total (final)
Restore	0	0	0	0	0	0	0	0	0	0	0	0
Protect in Fee with State PILT Liability	0	0	0	0	0	0	0	0	0	0	0	0
Protect in Fee W/O State PILT Liability	0	0	0	0	0	0	0	0	0	0	0	0
Protect in Easement	0	0	0	0	0	0	0	0	0	0	0	0
Enhance	144	0	0	0	65	63	0	0	179	284	388	347
Total	144	0	0	0	65	63	0	0	179	284	388	347

Table 4. Total Funding within each Ecological Section

Type	Metro Urban (original)	Metro Urban (final)	Forest Prairie (original)	Forest Prairie (final)	SE Forest (original)	SE Forest (final)	Prairie (original)	Prairie (final)	N Forest (original)	N Forest (final)	Total (original)	Total (final)
Restore	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Protect in Fee with State PILT Liability	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Protect in Fee W/O State PILT Liability	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Protect in Easement	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Enhance	$40,000	$0	$0	$0	$1,898,000	$1,753,000	$0	$0	$182,000	$327,000	$2,120,000	$2,080,000
Total	$40,000	$0	$0	$0	$1,898,000	$1,753,000	$0	$0	$182,000	$327,000	$2,120,000	$2,080,000

Target Lake/Stream/River Feet or Miles (original)

6.8

Target Lake/Stream/River Feet or Miles (final)

7.1 stream miles and six lakes with 8.5 miles of shoreline

Explain the success/shortage of acre goals:

Ten of the eleven original projects were completed and three projects were added! A small budget buffer project in the Vermillion watershed was dropped after consultation with LSOHC staff. A partner originally provided acreage and dollar estimates that proved far too optimistic. The actual scope and benefits no longer justified the costs. Unfortunately the original acreage estimate of 144 acres remains in the output tables and masks the fact that we completed 103 additional acres elsewhere. Contracting efficiencies and leverage permitted us to add three projects and complete 347 acres instead of the 244 targeted for the remaining projects.

Parcel List

Section 1 - Restore / Enhance Parcel List

Cook

Name	TRDS	Acres	Total Cost	Existing Protection?	Description
Kimball Creek	06202133	5	$9,000	Yes	Enhance brook trout habitat in 2,000 foot reach.
Kimball, Mink & Boys Lakes	06202108	159	$99,000	Yes	Enhance habitat in three interconnected trout lakes.
North Shady Lake	06402121	33	$19,000	Yes	Enhance habitat in trout lake.

Fillmore

Name	TRDS	Acres	Total Cost	Existing Protection?	Description
Camp Creek	10210205	16	$312,000	Yes	Enhanced habitat in and along 7,200 feet and completed another 2,700 with leveraged funds

Goodhue

Name	TRDS	Acres	Total Cost	Existing Protection?	Description
Hay Creek	11215224	15	$319,000	Yes	Enhanced habitat in and along 6,500 feet of stream

Lake

Name	TRDS	Acres	Total Cost	Existing Protection?	Description
Beetle Lake	06009207	29	$19,000	Yes	Enhance habitat in trout lake.
Redskin Lake	06008235	43	$19,000	Yes	Enhance habitat in trout lake.
Stewart River	05310219	4	$154,000	Yes	Enhanced habitat and restored stable channel in and along 1,700 feet of stream.
Stewart River	05311223	13	$8,000	Yes	Enhance habitat in riparian 5,800 feet of corridor via tree plantings.

Olmsted

Name	TRDS	Acres	Total Cost	Existing Protection?	Description
Mill Creek	10512225	12	$333,000	Yes	Enhanced habitat along 5,000 feet as part of two mile long project.

Wabasha

Name	TRDS	Acres	Total Cost	Existing Protection?	Description
East Indian Creek	10910228	7	$212,000	Yes	Enhance habitat in and along 3,200 feet of stream.

Winona

Name	TRDS	Acres	Total Cost	Existing Protection?	Description
Garvin Brook	10608204	6	$226,000	Yes	Enhance habitat in and along 2,700 feet of stream.
Pine Creek	10508232	7	$351,000	Yes	Enhance habitat in and along 3,200 feet, to complete 3 contiguous miles..

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.

Completed Parcel: Beetle Lake

# of Total Acres:	29
County:	Lake
Township:	060
Range:	09
Direction:	2
Section:	07
# of Acres: Wetlands/Upland:	
# of Acres: Forest:	
# of Acres: Prairie/Grassland:	
Amount of Shorline:	7100 (Linear Feet)
Name of Adjacent Body of Water (if applicable):	Beetle Lake
Has there been signage erected at the site:	Yes
Total cost of Restoration/Enhancement:	$16,000

Completed Parcel: Camp Creek

# of Total Acres:	16
County:	Fillmore
Township:	102
Range:	10
Direction:	2
Section:	05
# of Acres: Wetlands/Upland:	
# of Acres: Forest:	
# of Acres: Prairie/Grassland:	
Amount of Shorline:	7200 (Linear Feet)
Name of Adjacent Body of Water (if applicable):	Camp Creek
Has there been signage erected at the site:	Yes
Total cost of Restoration/Enhancement:	$312,000

Completed Parcel: East Indian Creek

# of Total Acres:	7
County:	Wabasha
Township:	109
Range:	10
Direction:	2
Section:	28
# of Acres: Wetlands/Upland:	
# of Acres: Forest:	
# of Acres: Prairie/Grassland:	
Amount of Shorline:	3200 (Linear Feet)
Name of Adjacent Body of Water (if applicable):	East Indian Creek
Has there been signage erected at the site:	
Total cost of Restoration/Enhancement:	$212,000

Completed Parcel: Garvin Brook

# of Total Acres:	6
County:	Winona
Township:	106
Range:	08
Direction:	2
Section:	04
# of Acres: Wetlands/Upland:	
# of Acres: Forest:	
# of Acres: Prairie/Grassland:	
Amount of Shorline:	2700 (Linear Feet)
Name of Adjacent Body of Water (if applicable):	Garvin Brook
Has there been signage erected at the site:	Yes
Total cost of Restoration/Enhancement:	$226,000

Completed Parcel: Hay Creek

# of Total Acres:	15
County:	Goodhue
Township:	112
Range:	15
Direction:	2
Section:	24
# of Acres: Wetlands/Upland:	
# of Acres: Forest:	
# of Acres: Prairie/Grassland:	
Amount of Shorline:	6500 (Linear Feet)
Name of Adjacent Body of Water (if applicable):	Hay Creek
Has there been signage erected at the site:	Yes
Total cost of Restoration/Enhancement:	$319,000

Completed Parcel: Kimball Creek

# of Total Acres:	5
County:	Cook
Township:	062
Range:	02
Direction:	1
Section:	33
# of Acres: Wetlands/Upland:	
# of Acres: Forest:	
# of Acres: Prairie/Grassland:	
Amount of Shorline:	2000 (Linear Feet)
Name of Adjacent Body of Water (if applicable):	Kimball Creek
Has there been signage erected at the site:	Yes
Total cost of Restoration/Enhancement:	$9,000

Completed Parcel: Kimball, Mink & Boys Lakes

# of Total Acres:	159
County:	Cook
Township:	062
Range:	02
Direction:	1
Section:	08
# of Acres: Wetlands/Upland:	
# of Acres: Forest:	
# of Acres: Prairie/Grassland:	
Amount of Shorline:	21750 (Linear Feet)
Name of Adjacent Body of Water (if applicable):	Kimball, Mink and Boys Lakes
Has there been signage erected at the site:	Yes
Total cost of Restoration/Enhancement:	$108,000

Completed Parcel: Mill Creek

# of Total Acres:	12
County:	Olmsted
Township:	105
Range:	12
Direction:	2
Section:	25
# of Acres: Wetlands/Upland:	
# of Acres: Forest:	
# of Acres: Prairie/Grassland:	
Amount of Shorline:	5000 (Linear Feet)
Name of Adjacent Body of Water (if applicable):	Mill Creek
Has there been signage erected at the site:	Yes
Total cost of Restoration/Enhancement:	$333,000

Completed Parcel: North Shady Lake

# of Total Acres:	33
County:	Cook
Township:	064
Range:	02
Direction:	1
Section:	21
# of Acres: Wetlands/Upland:	
# of Acres: Forest:	
# of Acres: Prairie/Grassland:	
Amount of Shorline:	6200 (Linear Feet)
Name of Adjacent Body of Water (if applicable):	North Shady Lake
Has there been signage erected at the site:	Yes
Total cost of Restoration/Enhancement:	$16,000

Completed Parcel: Pine Creek

# of Total Acres:	7
County:	Winona
Township:	105
Range:	08
Direction:	2
Section:	32
# of Acres: Wetlands/Upland:	
# of Acres: Forest:	
# of Acres: Prairie/Grassland:	
Amount of Shorline:	3200 (Linear Feet)
Name of Adjacent Body of Water (if applicable):	Pine Creek
Has there been signage erected at the site:	Yes
Total cost of Restoration/Enhancement:	$351,000

Completed Parcel: Redskin Lake

# of Total Acres:	43
County:	Lake
Township:	060
Range:	08
Direction:	2
Section:	35
# of Acres: Wetlands/Upland:	
# of Acres: Forest:	
# of Acres: Prairie/Grassland:	
Amount of Shorline:	9700 (Linear Feet)
Name of Adjacent Body of Water (if applicable):	Redskin Lake
Has there been signage erected at the site:	Yes
Total cost of Restoration/Enhancement:	$16,000

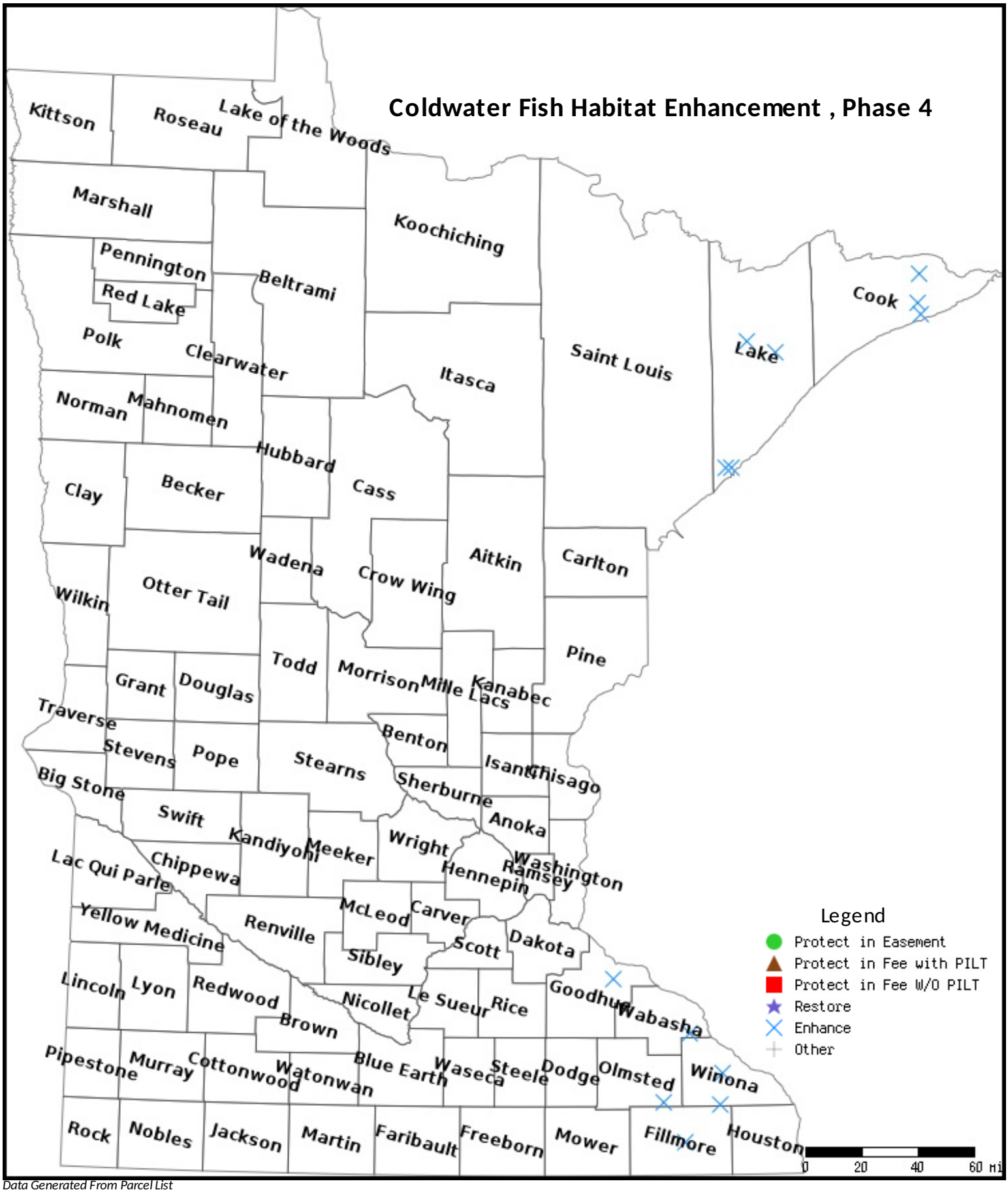
Completed Parcel: Stewart River

# of Total Acres:	4
County:	Lake
Township:	053
Range:	10
Direction:	2
Section:	19
# of Acres: Wetlands/Upland:	
# of Acres: Forest:	
# of Acres: Prairie/Grassland:	
Amount of Shorline:	1700 (Linear Feet)
Name of Adjacent Body of Water (if applicable):	Stewart River, Little
Has there been signage erected at the site:	Yes
Total cost of Restoration/Enhancement:	$154,000

Completed Parcel: Stewart River

# of Total Acres:	13
County:	Lake
Township:	053
Range:	11
Direction:	2
Section:	23
# of Acres: Wetlands/Upland:	
# of Acres: Forest:	
# of Acres: Prairie/Grassland:	
Amount of Shorline:	5800 (Linear Feet)
Name of Adjacent Body of Water (if applicable):	Stewart River, Little
Has there been signage erected at the site:	Yes
Total cost of Restoration/Enhancement:	$8,000

Parcel Map



Data Generated From Parcel List