

Main Request for Funding Form
Lessard-Sams Outdoor Heritage Council
Fiscal Year 2012

Program or Project Title:

Rat-Root River Erosion Control and Walleye Spawning Enhancement

	Funding Request	OHF Out-Year Projections of Needs		
		FY 2013	FY 2014	FY 2015
Funds Requested (\$000s)	FY 2012			
Outdoor Heritage Fund	\$ 255,500	0	0	0

Manager's Name: Justin Berg
Organization: Rainy Lake Sportfishing Club / Koochiching SWCD
Street Address: 715 4th Street
City: International Falls **State:** MN **Zip:** 56649
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Organization Web Site: www.koochichingswcd.org

County Location: Koochiching

Ecological Planning Regions:

- Northern Forest
 Forest/Prairie Transition
 Southeast Forest
 Prairie
 Metro/Urban

Activity Type:

- Protect
 Restore
 Enhance

Priority Resources addressed by activity:

- Wetlands
 Forests
 Prairie
 Habitat

Project Abstract

Repair eroded streambanks; remove log jams to improve fish passage, flow, and sediment transport; and enhance walleye spawning habitat on the Rat Root River, a tributary to Rainy Lake.

Project Narrative

Introduction

The Rainy Lake Sportfishing Club (Club) has partnered with the Koochiching Soil & Water Conservation District (SWCD) to address increased erosion and sedimentation along the Rat Root River as well as the decline of the walleye spawning run. The Club was organized to assist in the enhancement of the fisheries resources on Rainy Lake, Rainy River and their tributaries and has invested considerable time and treasure in the last several years to identify problems that have led to the decline of the Rat Root River system with regard to fish habit. Primary activities include access improvement, restocking efforts, physical maintenance and protection of spawning beds and water quality in an ongoing effort to improve fish stocks in these waters.

The Koochiching SWCD is a local conservation office with 56 years of experience in the successful management and implementation of conservation and has a history of working with local landowners to implement good conservation practices. The SWCD has successfully completed numerous shoreline erosion control projects on area lakes and streams and is in an ideal position to work with private landowners and public land managers within the Rat Root River Watershed to address the land use changes that led to some of the problems now faced. The SWCD will administer any grant monies that are received and has the accounting and reporting systems in place to ensure funds are used appropriately. Through their website, the SWCD will provide the necessary transparency and public access to information about the project including photos and narratives throughout the various stages of implementation.

The Club is actively engaged in building partnerships to further a 50 year commitment toward improving the Rat Root fishery. The Club's intent is to leverage Outdoor Heritage Funds to obtain professional guidance from both private and governmental entities toward improving fish habitat, curtailing erosion and thereby improving the quality of the fishery. The Rat Root, as a major tributary to Rainy Lake, has a very significant role in the fishery and reinvigorating the fish habitat and the potential for spawning in the Rat Root contributes significantly to the vitality of Black Bay and all of Rainy Lake.

Problem Identification

The Rat Root River provides walleye spawning and nursery habitat for walleye traveling upstream from Rainy Lake. The size of this annual spawning run has diminished greatly since the 1930's. Records kept at a DNR walleye egg taking operation located at the mouth of Rat

Root Lake documented the decline: From 1933 to 1943 recorded an average of 3,887 female walleye passed through the trapping site each year. By the 1970's the average number of female walleye at the trap site had declined to just 243. Although the egg taking operation was discontinued in 1978, annual sampling by Minnesota DNR Fisheries in recent years shows that walleye continue to travel up the Rat Root River each spring to spawn. Early results of a tagging study begun by MN DNR Fisheries in 2010 shows that Rainy Lake walleye travel long distances to spawn in the Rat Root River (up to 40 miles), with some even dispersing back to the North Arm basin in Ontario. This shows the importance of protecting and enhancing walleye spawning habitat in the Rat Root River as one of the means to maintain a healthy, self-sustaining walleye population in Rainy Lake.

Land use changes in the Rat Root River watershed which increased erosion and sedimentation, excessive harvest of walleye in Rainy Lake by commercial fishermen and changing flow patterns as a result of the dam built on the outlet of Rainy Lake in 1910 have all likely contributed to the decline of the walleye spawning run. Spawning sites on the Rat Root River have been degraded by sediment and Rat Root Lake has become so shallow that walleye may have difficulty reaching spawning grounds located upstream during low water levels. Log jams located upstream impede flows, trap sediment and block fish migration.

The Rat Root River has a very high occurrence of log jams. These log jams are likely the result of maturing early succession forests of aspen, white birch, and balsam fir and especially, a high mortality of American elm from Dutch elm disease. While some wood in a stream is beneficial providing food and cover for aquatic organisms and fish, large log jams can impede flows and block fish movements. These large log jams impound and slow the water behind them, causing sediment to drop out and cover walleye spawning substrate and other important aquatic habitat. Aerial photos from 1940 to 2008 show the frequency of log jams has increased dramatically in recent years. Log jams occur approximately every 300 feet, which is at the upper range of occurrence reported in the scientific literature. Sandy Verry identified at least six major, channel blocking log jams in the West Branch of the Rat Root River in 2008 and recommended they be removed.

Increased sedimentation of Rat Root Lake may be impeding walleye spawning movements in the early spring. Sandy Verry reviewed aerial photographs of the area just downstream from the town of Ericsburg and found evidence of the river building many point bars (as it dropped its sediment load) which were then cut off. "Most of this sediment came from the slumps in areas cleared for agriculture right up to the channel edge" (Verry, 2008). Much of the land clearing occurred in the 1920's and 1930's. Mr. Verry concluded that sedimentation downstream of Ericsburg probably began with slumps and flood flows in the flood of record in 1916. This began filling the upper end of Rat Root Lake, but was not enough to seriously impair

walleye spawning movements. Additional sedimentation in the 1937 to 1954 period filled portions of Rat Root Lake enough to severely limit the space available for walleye migration. “Then, as now, only a foot or so of water is available during the mid-April to mid-May walleye spawning run” (Verry, 2008).

Water levels on Rat Root Lake and the lower reaches of Rat Root River are influenced by the dam in International Falls/Fort Frances, which controls lake elevations according to a “Rule Curve” established by the International Joint Commission (IJC). Lake levels are drawn down over the winter and begin to refill on April 1 at about the same time walleye are beginning their spawning migration up the Rat Root River from Rainy Lake and Black Bay.

Design and scope of work

The area of focus will extend from the mouth of Rat Root Lake upstream on the West Branch of the Rat Root River to the Highway 217 road crossing, approximately 24 river miles (not including the length of Rat Root Lake). The problems identified above will be addressed in at least two or three Phases over a period of several years.

Phase 1 will generally focus on repairing and protecting eroded streambanks at three high priority sites, adjacent to County roads (see attached map) and removing log jams. Walleye spawning habitat will be enhanced at these sites by placing additional rock at the toe of the slope (in the river) for walleye to spawn on. These sites were chosen because they are adjacent to County Roads (providing access); two of the three sites are threatening (undermining) the road bed; and DNR electrofishing surveys during the spring spawning run show walleye are present (and presumably spawning) near these sites. Erosion is occurring at other sites on the Rat Root River; therefore Phase 1 will include a survey to identify additional sites where erosion control measures are needed to reduce sediment inputs to the Rat Root River. Plans will be developed to treat erosion at any additional high priority sites that are identified.

Removal of log jams from the West Branch of the Rat Root River may provide additional walleye spawning habitat by allowing fish to get further upstream (improved fish passage) and by improving flows and transporting sediment. A quantitative and qualitative assessment of walleye spawning habitat and spawning success in the West Branch will be done during Phase 1 after the log jams are removed. Plans will be developed in Phase 2 to create and or enhance walleye spawning areas if the assessment finds this is a limiting factor.

The Rainy Lake Sportfishing Club began a survey of Rat Root Lake in December, 2009 to determine if water levels are sufficient for fish passage through Rat Root Lake during the spawning period. This survey will be completed during Phase 1. If the survey shows this is a limiting factor, plans will be developed during Phase 2 to restore the channel through Rat Root Lake.

Here then is a summary of the key components of each Phase of the Rat Root River Erosion Control and Walleye Spawning Enhancement Project. Funding from this Grant will be used to implement Phase 1. Phase 2 and 3 plans are tentative, based on information gathered during Phase 1.

Phase 1

- Remove log jams in the West Branch of the Rat Root River from Rat Root Lake upstream to Highway 217, a distance of approximately 24 miles. Note that previous efforts by the Club and MN DNR staff have cleared log jams from the lower reaches (Rat Root Lake to the Galvin Line Bridge).
- Survey and engineer project design for erosion control of streambanks at County Road 145, County Road 97 and the Galvin Line).
- Repair and stabilize eroded streambanks according to engineered plans and specifications at the three priority sites identified (County Road 145, County Road 97 and the Galvin Line).
- Enhance walleye spawning habitat by adding additional spawning rock at the toe of each erosion control project.
- Survey the West Branch of the Rat Root River (Rat Root Lake upstream to Highway 217) for additional erosion sites and develop a prioritized plan, designs and cost estimates for treating these additional sites.
- Complete the survey of Rat Root Lake to determine if sediment deposits are impeding walleye movements during the spring spawning migration.
- Inventory and assess walleye spawning habitat in the West Branch of the Rat Root River.
- Erect signage crediting the OHF with supporting the Rat Root River Erosion Control and Walleye Spawning Enhancement Project.

Phase 2

- Implement erosion control projects at sites identified as a high priority in Phase 1.
- Develop, design and implement walleye spawning enhancement projects by placing rock at suitable locations if spawning habitat quantity or quality is found to be a limiting factor.
- Develop plans and a design to restore a natural stream channel through Rat Root Lake if surveys find inadequate water depths for walleye spawning movements.
- Survey the potential for easement purchases with private landowners along the Rat Root River

Phase 3

- Restore a natural stream channel through Rat Root Lake to improve passage for spawning walleye during April and May.

Planning

In keeping with the LSOHC priorities outlined in the Northern Forest Section Vision, the Rat Root River Erosion Control and Walleye Spawning Enhancement project will address the top priority action item for the Northern Forest Section which is to “protect shoreland and restore or enhance critical habitat on wild rice lakes, shallow lakes, cold water lakes, streams and rivers, and spawning areas“. The Club has a long history and strong commitment to maintaining and improving a healthy walleye fishery on Rainy Lake through many Club activities and cooperative projects with the MN DNR. A partial list of these activities and projects would include walleye spawning enhancement in Black Bay, supporting catch-and-release and special regulations for walleye with promotional materials such as rulers and hats, promoting alternative species such as black crappie by installing crappie cribs, improving fish passage in the Rat Root River by removing log jams, and contracting with Sandy Verry to evaluate the Rat Root River.

Relationship to Other Constitutional Funds

This project will not utilize or seek other constitutional funding. Preliminary work up to this point, including the 2008 log jam review by Sandy Verry and the ongoing DNR tagging study, has been funded by the local budget of the Club and the regular DNR budget funded through fishing licenses.

Relationship to Current Organizational Budget

Funding for the Rainy Lake Sportfishing Club is derived through various fund raising activities, membership dues and through licensed charitable gambling with the State of Minnesota. Club funds alone are not sufficient to address a restoration and enhancement project of this scale. The Club, working in concert with SWCD, MN DNR and contract resource professionals, hopes to leverage Outdoor Heritage Funding into this project to restore a critical fish habitat in the Northern Forest Section of Minnesota.

Sustainability and Maintenance

Accompanying the engineered project design will be a detailed maintenance plan that will be implemented jointly by the Club and SWCD with assistance from the County Highway Department. The Club has committed to annual maintenance (removal of wood as needed) of the West Branch of the Rat Root River from Rat Root Lake upstream to the Highway 217 Bridge. These removal efforts will be funded by the Club and aimed at maintaining fish passage, not an attempt to remove all wood from the stream.

Sandy Verry recommended in his report to the Rainy Lake Sportfishing Club that the early succession forest along the Rat Root River should be allowed to mature to longer lived species (conifers and hardwoods) to slow the recruitment of wood into the Rat Root River in the future. Appropriate riparian buffers should be established to prevent future erosion and bank slumping. The Koochiching County SWCD will take the lead in these efforts and ensure the use of native species.

MN DNR Fisheries has been and will continue monitoring spawning walleye in the Rat Root River each spring. In addition, a rigorous sampling program is implemented each year to evaluate and monitor the fish population status of Rainy Lake. Walleye were tagged in April, 2010 during their annual spawning migration up the Rat Root River to learn more about where these fish are coming from, where they go after spawning, and if the same fish return again the following year. The tagging effort will continue for at least three consecutive years and tag returns will be collected for many years thereafter. Early results of the tagging study suggest that walleye are dispersing to a much larger portion of Rainy Lake than earlier thought. Movements up to 40 miles have been documented, including from the North Arm basin which lies entirely in Ontario, Canada. These early results highlight the importance of improving fish passage and enhancing walleye spawning habitat in the Rat Root River, with potential benefits for all of Rainy Lake. Future studies could include larval drift netting in the Rat Root River to evaluate walleye fry production before and after spawning rock is placed and egg sampling at spawning sites if local Area budget and staffing levels allow. To date these studies have been funded out of the International Falls Area Fisheries Office budget, which comes mostly from fishing license dollars.

Types of Projects

Fee Acquisition Projects

Will local government approval be sought prior to acquisition?

Yes No, please explain not applicable

If no, please explain here:

Is the land you plan to acquire free of any other permanent protection?

Yes No, please explain not applicable

If no, please explain here:

Easement Acquisition Projects

Will the eased land be open for public use?

Yes No, please explain not applicable

If no, please explain here:

Will the conservation easement be permanent?

Yes No, please explain not applicable

If no, please explain here:

Restoration and Enhancement Projects

Is the activity on permanently protected land and/or public waters?

Yes No, please explain not applicable

If no, please explain here:

Does the activity take place on an Aquatic Management Area (AMA), Scientific and Natural Area (SNA), Wildlife Management Area (WMA), or State Forests?

Yes, which ones No, please explain not applicable

If so, please indicate which ones:

Accomplishment Timeline

Activity	Milestone	Date
Remove log jams	All log jams successfully removed	July 1, 2013
Survey & engineer erosion control project design for streambank stabilization	Engineer has delivered project design plans to the Club	July 1, 2012
Implement streambank stabilization project	Contractor has successfully completed the streambank stabilization at all three sites according to the engineered plans and specifications	September 30, 2013
Enhance walleye spawning habitat	Additional spawning rock added at the toe of each erosion control project	September 30, 2013

Survey the West Branch of the Rat Root River for additional erosion sites	Survey complete. A prioritized plan is completed including designs and cost estimates for treating additional sites outlined in the survey	July 1, 2013
Survey the Rat Root Lake to determine if sediment deposits are impeding walleye movements during the spring spawning migration.	Survey complete	July 1, 2012
Inventory and assess walleye spawning habitat in the West Branch of the Rat Root River.	Inventory and assessment complete	July 1, 2013
Signage	Erect signage crediting the OHF with supporting the Rat Root River Erosion Control and Walleye Spawning Enhancement Project	September 30, 2013

Attachments:

- A. Budget**
- B. Proposed Outcome Tables 1-5**
- C. Map**
- D. Parcel List**

Attachment A. Budget Spreadsheet

[Link Here to definitions of the budget items below.](#)

Total Amount of Request \$ 255,500 *From page 1 on the funding form.*

Personnel

Position breakdown here	FTE	Over # of years	LSOHC Request	Anticipated Cash Leverage	Cash Leverage Source	Total
	<i>Project Manager</i>	0.2	2	\$ 20,000		
<i>Project Accountant</i>	0.1	2	\$ 10,000			\$ 10,000
						\$ -
						\$ -
						\$ -
						\$ -
Total			\$ 30,000	\$ -	\$ -	\$ 30,000

Budget and Cash Leverage *(All your LSOHC Request Funds must be direct to and necessary for program outcomes.)*

Please describe how you intend to spend the requested funds.

Budget Item	LSOHC Request	Anticipated Cash Leverage	Cash Leverage Source	Total
	Personnel - auto entered from above	\$ 30,000	\$ -	\$ -
Contracts	\$ 126,000	\$ 10,000	RLSC	\$ 136,000
Fee Acquisition w/ PILT <i>(breakout in table 6 & 7)</i>				\$ -
Fee Acquisition w/o PILT <i>(breakout in table 6 & 7)</i>				\$ -
Easement Acquisition				\$ -
Easement Stewardship				\$ -
Travel (in-state)	\$ 1,500			\$ 1,500
Professional Services	\$ 94,700			\$ 94,700
DNR Land Acquisition Costs				\$ -
Other				\$ 3,300
Capital Equipment				\$ -
Other Equipment/Tools	\$ 1,200			\$ 1,200
Supplies/Materials	\$ 2,100			\$ 2,100
	\$ 255,500	\$ 10,000	\$ -	\$ 265,500

Attachment B. Proposed Outcome Tables

Only enter data in the outlined cells

Table 1 and Table 3 column totals should be the same AND Table 2 and Table 4 column totals should be the same

If your project has lakes or shoreline miles instead of land acres, convert miles to acres for Tables 1 and 3 using the following conversion:

Lakeshore = 6 acres per lakeshore mile / Stream & River Shore = 12 acres per linear mile, if both sides

Table 1. Acres by Resource Type

Describe the scope of the project in acres (use conversion above if needed)

	Wetlands	Prairies	Forest	Habitats	Total
Restore				288	288
Protect					0
Enhance				13122	13122
Total	0	0	0	13410	

Total Acres (sum of Total column)

13410

These two cells should be the same figure.

Total Acres (sum of Total row)

13410

Table 2. Total Requested Funding by Resource Type

	Wetlands	Prairies	Forest	Habitats	Total
Restore				\$ 178,250	\$ 178,250
Protect					\$ -
Enhance				\$ 77,250	\$ 77,250
Total	\$ -	\$ -	\$ -	\$ 255,500	

Total Dollars (sum of Total column)

\$ 255,500

These two cells should be the same figure.

Total Dollars (sum of Total row)

\$ 255,500

Check to make sure this amount is the same

as the Funding Request Amount on page 1 of Main Funding Form.

Table 3. Acres within each Ecological Section

	Metro/Urban	Forest/Prairie	SE Forest	Prairie	Northern Forest	Total
Restore					288	288
Protect						0
Enhance					13122	13122
Total	0	0	0	0	13410	

Total Acres (sum of Total column)

13410

These three cells should be the same figure.

Total Acres (sum of Total row)

13410

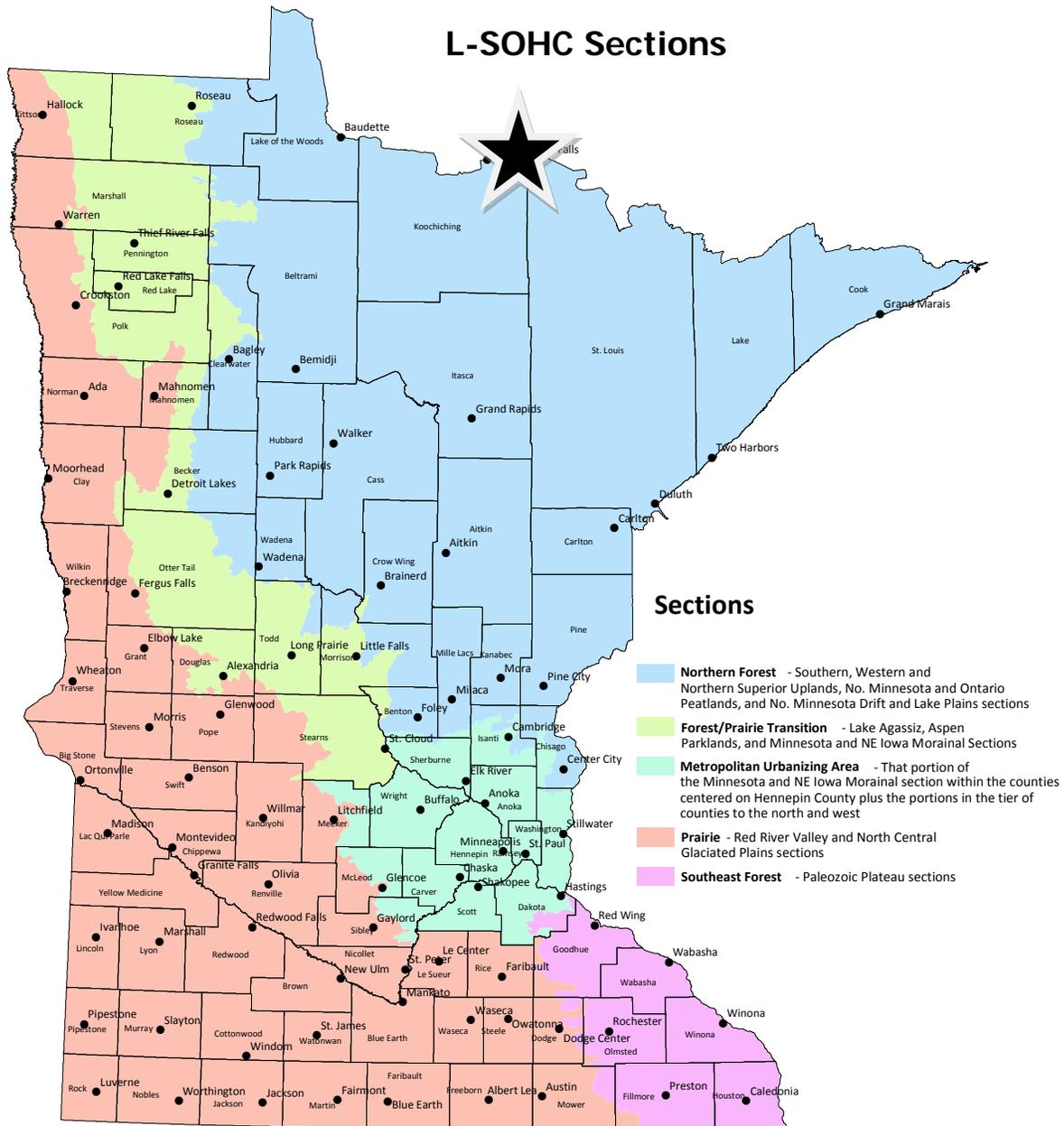
Total Acres from Table 1.

13410

Attachment C.

Instructions: Double left click to bring up the map editor. Symbols should be on the left side of the pop-up banner at the top of your screen or at the bottom left depending on your software.

If you can't bring up the interactive map editor: 1) Make a paper copy of the map, 2) By hand place symbols on the map corresponding to the location of the projects in your proposal, 3) Scan the marked map to a pdf, 4) Attach to web form.



Attachment D. Parcel List

Rat Root River Erosion Control and Walley Spawning Enhancement

Parcel Name	County	Township	Range	Direction	Section	TRDS	# of acres	Estimated Cost to OHF	Description	Activity R=Restore P=Protect E=Enhance	Any existing protection? (yes/no)	Open to hunting and fishing? (yes/no)
NOTE: Although we have identified three erosion control and walley spawning enhancement sites, this project in its entirety is not parcel specific.												