Lessard-Sams Outdoor Heritage Council

ML 2022 Request for Funding

General Information

Date: 06/08/2021

Proposal Title: Enhancing Metro and North Shore Trout Stream Habitats

Funds Requested: $1,990,000

Manager Information

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Location Information

County Location(s): Dakota, Lake, Winona and St. Louis.

Eco regions in which work will take place:

- Northern Forest
- Metro / Urban
- Southeast Forest

Activity types:

- Enhance

Priority resources addressed by activity:

- Forest
- Habitat

Narrative

Abstract

Minnesota Trout Unlimited will enhance and restore degraded habitat for fish and wildlife along coldwater streams with existing protections. We will utilize a crew of young people from diverse backgrounds to enhance habitat along Twin Cities area trout streams. Increasing threats to North Shore streams require accelerating work improving riparian forest habitat to improve stream flows and lower water temperatures, and buffering streams from larger, more frequent rainfall and flooding. Restoring connectivity of habitat through culvert replacements will maximize outcomes for fish and wildlife populations. Timely maintenance of old projects will ensure habitat outcomes continue for many years.

Design and Scope of Work

Degraded habitat is severely limiting the productivity of many Minnesota trout streams. The few remaining Twin Cities area streams suffer from invasive or poor-quality vegetation. We will recruit a diverse crew from the community to restore native vegetation - forest, prairie, and wetland - along these streams. Climate change is damaging North Shore forests, raising water temperatures, and increasing destructive floods. Minnesota Trout Unlimited ("MNTU") will counter this by restoring connectivity and enhancing riparian forests in priority watersheds. Work will be done on public lands and on streams with existing protections under the Aquatic Management Area system. We propose to restore or enhance habitat in and along these public waters (in these counties):

1. Metro trout streams;
2. Baptism & Manitou Rivers (Lake);
3. Keene Creek (St. Louis);
4. Split Rock River (Lake);
5. Manitou River (Lake); and
6. Southeast MN streams (maintenance in numerous counties).

Individual project descriptions are provided in an attachment.

Goals and scope of work:

The goals of projects are to increase the carrying capacity and trout population of the stream, increase angling access and participation, improve water quality, and provide other benefits to aquatic and terrestrial wildlife. Each project will accomplish one or more of these objectives: (a) increase adult trout abundance, (b) reduce stream bank erosion and associated sedimentation downstream, (c) reconnect the stream to its floodplains to reduce negative impacts from severe flooding, (d) increase natural reproduction of trout and other aquatic organisms, (e) increase habitat for invertebrates and non-game species, (f) improve connectivity of habitat along aquatic and riparian (terrestrial) corridors, (g) improve riparian forest health and function, (h) improve angler access and participation, and (i) protect productive trout waters from invasive species. The scope of work and methods utilized vary by project site conditions and are discussed in the individual project descriptions provided in the attachment.

How priorities were set:

MNTU focuses habitat enhancement and restoration efforts on those watersheds likely to continue to support viable, fishable populations of naturally reproducing trout and steelhead fifty years and more from now. Work is done only where degraded habitat is a limiting factor for a quality, sustainable fishery. Priority locations are

determined using MNTU members' knowledge of watersheds, MNDNR management plans and surveys, other habitat and conservation planning efforts, consultations with MNDNR professionals, and science-based criteria. All things being equal, we consider the potential to draw new anglers outdoors, increase public awareness, engage landowners in conservation, foster partnerships, and increase public support for OHF projects.

Stakeholder support:

We continue receiving strong support from anglers, landowners, rural communities, and local civic and sporting organizations. We will continue gathering local input and developing partnerships in the planning and implementation stages. Landowners are consistently very enthusiastic partners.

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 projects will restore or enhance degraded habitat for fish and wildlife in and along coldwater streams and rivers which historically supported naturally reproducing trout or steelhead populations highly valued by generations of anglers. While trout are the apex predator and key indicator species for the health of coldwater ecosystems, a host of rare aquatic and riparian species are uniquely associated with these systems. Well-functioning coldwater aquatic ecosystems are far fewer in number than the 6% of Minnesota's total stream and river miles which theoretically can still support trout. Even many streams considered to be the best remaining trout streams have badly degraded segments which disrupt connectivity and significantly impact the productivity and long-term resilience and sustainability of the overall trout population. Streams face growing threats from warming temperatures, increased frequency of severe flooding, and rising demand for groundwater extraction from the aquifers which supply inputs of vitally important cold water. The proposed projects are focused on streams and stream segments which will benefit from improved connectivity and help ensure Minnesota retains at least some high quality coldwater fisheries for future generations. A small portion of an appropriation would be used to maintain or add enhancements to past projects to ensure continuing habitat benefits.

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

Although Minnesota's trout streams are among the highest quality aquatic systems remaining in the state, and prized by anglers and the general public because of this, a majority have badly degraded habitat. The impacts of leaving degraded segments untreated extends throughout the stream. Degraded sections are no longer providing habitat, clean water benefits, angling opportunities, or other enticements which increase public appreciation and stewardship of aquatic ecosystems. Even where riparian corridors are protected, past habitat degradation cannot be reversed without active intervention. A warming climate and more frequent heavy rains require action now to increase connectivity and restore riparian forest canopy in northern watersheds. The state must continue restoring or enhancing degraded habitat to safeguard and improve the productivity and sustainability of these rare wild fisheries for future generations to enjoy. Timely maintenance now on older projects will extend habitat function and maximize outcomes well into the future.

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:

In selecting project sites, MNTU reviews MNDNR watershed specific fisheries management plans and other conservation planning efforts, consults with MNDNR professionals, and applies ranking criteria developed by the MNDNR. Projects must have the potential to increase the carrying capacity (fish numbers), the streams have natural reproduction, and the public have access to them. Improving the connectivity of good aquatic and riparian habitat is an important consideration and the projects are selected to expand or connect gaps in these corridors.

We are increasingly targeting stream segments which build off earlier habitat or protection work in the same stream or connected watershed. Targeted work improving forest habitat in connected corridors along the Split Rock River will benefit not only trout and steelhead fisheries, but numerous wildlife populations and native plant communities.

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

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

Which two other plans are addressed in this proposal?

- Long Range Plan for Fisheries Management
- Other : Fisheries Management Plan for the Minnesota Waters of Lake Superior

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

Both plans call for increasing the protection, improvement, and restoration of coldwater aquatic habitats and fish communities, by increasing the amount of stream and riparian habitat improved and maintained. MNTU's FY2023 projects will directly enhance or restore habitat on more than 400 acres and along more than 20 miles of trout streams. It will also benefit trout populations in a far larger number of miles of trout water above and below project sites.

Which LSOHC section priorities are addressed in this proposal?

Metro / Urban

- Enhance and restore coldwater fisheries systems

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

Southeast Forest

- Protect, enhance, and restore habitat for fish, game, and nongame wildlife in rivers, cold-water streams, and associated upland habitat

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:

We will directly restore or enhance critical habitat for fish, game, and nongame wildlife on key segments of coldwater streams and rivers around the state. The projects will restore or enhance habitat in and along more than 20 miles of streams and rivers, and connect much larger corridors of habitat, while also extending myriad benefits (including water quality improvements, reduced sedimentation, etc.) far downstream of each project site. 200 acres of forest on DNR Fisheries fee title land will be planted to set them on course to grow into mature, healthy forests which will deliver water storage and clean water quality benefits essential to in-stream trout and steelhead habitat.

What other fund may contribute to this proposal?

- N/A

Does this proposal include leveraged funding?

Yes

Explain the leverage:

We will leverage private funding of Trout Unlimited. TU members and chapters will donate in-kind labor/services. Several partners (MNDNR, SWCD offices, etc.) will likely contribute significant amounts of time and/or dollars assisting on several projects. We also hope to leverage substantial federal and other funding, especially for fish passage/culvert replacement work in key Lake Superior tributaries.

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

The request is not supplanting or a substitution for previous funding. The work proposed for funding is for new or additional work.

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

MNTU's coldwater aquatic habitat restoration and enhancement projects are designed for long-term ecological and hydraulic stability. Construction contracts include maintenance/warranty provisions to ensure habitat work is well established. After this period and once riparian vegetation is well established, major maintenance work is not typically required in order to sustain the habitat outcomes for decades. Reconnected floodplains allow flood water 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. The significant increases in trout populations resulting from the habitat work are sustainable long-term through natural reproduction.

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, and landowners as appropriate. This monitoring will not require separate OHF or other constitutional funding. In the event that there are other 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.

Actions to Maintain Project Outcomes

Year	Source of Funds	Step 1	Step 2	Step 3
One year after grant ends	MNTU volunteers or part of agency staff visits.	Inspect structural elements and vegetation.	If needed, alert DNR and develop action plans.	Conduct maintenance with volunteers and/or contractors if DNR does not.
Every 3 years thereafter	MNTU volunteers and/or agency.	Inspect structural elements and vegetation.	If needed, develop action plan with DNR.	Perform or assist DNR with maintenance if needed.

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

The various trout species present in a given stream or river (brook, brown and rainbow) are the key indicator species for our habitat projects. Our activities restore and/or enhance habitat that typically support a biomass of 100 to 130 pounds per acre of brook or brown trout in southeast Minnesota trout streams, and 40 pounds per acre of trout in northern Minnesota trout streams. These averages are generated from available data and published

sources, and do not capture the variability inherent in populations of fish. Natural populations, including healthy populations with good habitat, vary among locations, and also rise and fall within lakes and rivers based upon weather, climatic conditions, flood events, etc. Most fish surveys conducted by DNR produce an index of abundance (catch per unit effort) rather than a population estimate.

How will the program directly involve, engage, and benefit BIPOC (Black, Indigenous, People of Color) and diverse communities:

Our metro trout stream project will provide opportunities to racially, ethnically, and economically diverse people to learn conservation skills and work in the outdoors. We will actively recruit young people from BIPOC communities to participate in this project. Opportunities to join the habitat crew will be open to all, but we will specifically target recruitment efforts in the high schools, community colleges and community organizations serving the urban center. We hope this will be a gateway for some members of the BIPOC communities to enjoy the outdoors who previously have had few opportunities to do so. Hopefully, participation as a member of a work crew will inspire the members to pursue education and careers in natural resource management and conservation. Since these metro area habitat projects will be close to home, we hope crew members will inspire friends and community members to also engage with these natural resources.

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

Where does the activity take place?

- AMA
- Permanently Protected Conservation Easements
- County/Municipal
- Public Waters
- State Forests
- Other : National Forest land

Land Use

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

Other OHF Appropriation Awards

Have you received OHF dollars in the past through LSOHC?
Yes

Approp	Approp	Amount	Leverage	Leverage	Acres	Acres	Complete/Final

Year	Amount Received	Spent to Date	Reported in AP	Realized to Date	Affected in AP	Affected to Date	Report Approved?
2013	$2,470,000	$2,470,000	$543,900	$543,900	135	135	Yes
2012	$2,120,000	$2,080,000	-	-	347	347	Yes
2014	$1,900,000	$1,900,000	$507,400	$507,400	118	118	Yes
2011	$1,533,000	$1,533,000	$301,700	$301,700	91	91	Yes
2010	$1,269,000	$1,265,200	-	-	74	74	Yes
2009	$2,050,000	$2,050,000	$771,400	$771,400	277	277	Yes

Timeline

Activity Name	Estimated Completion Date
Begin planning, design and implementation of habitat enhancements.	July 2022
Complete implementation of habitat enhancements, including tree plantings and vegetation work.	June 2027
Utilize work crew on metro trout streams	Summers 2023, 2024, and 2025

Budget

Totals

Item	Funding Request	Antic. Leverage	Leverage Source	Total
Personnel	$497,000	-	-	$497,000
Contracts	$768,000	$150,000	USFWS, USFS, and other partners	$918,000
Fee Acquisition w/ PILT	-	-	-	-
Fee Acquisition w/o PILT	-	-	-	-
Easement Acquisition	-	-	-	-
Easement Stewardship	-	-	-	-
Travel	$20,000	-	-	$20,000
Professional Services	$150,000	-	-	$150,000
Direct Support Services	$80,000	$20,000	Trout Unlimited	$100,000
DNR Land Acquisition Costs	-	-	-	-
Capital Equipment	-	-	-	-
Other Equipment/Tools	$20,000	-	-	$20,000
Supplies/Materials	$455,000	$150,000	USFWS, USFS, and other partners	$605,000
DNR IDP	-	-	-	-
Grand Total	**$1,990,000**	**$320,000**	**-**	**$2,310,000**

Personnel

Position	Annual FTE	Years Working	Funding Request	Antic. Leverage	Leverage Source	Total
Metro habitat crew members	2.0	3.0	362000	-	-	$362,000
Habitat enhancement staff	1.5	5.0	135000	-	-	$135,000

Amount of Request: $1,990,000
Amount of Leverage: $320,000
Leverage as a percent of the Request: 16.08%
DSS + Personnel: $577,000
As a % of the total request: 28.99%
Easement Stewardship: -
As a % of the Easement Acquisition: -

Describe and explain leverage source and confirmation of funds:
Leverage estimates are estimates only. We hope to secure approximately $300,000 from federal sources, especially to assist with removal of fish passage barriers/culvert replacements in key Lake Superior tributaries. We will aggressively pursue leverage here and on all projects.

Does this proposal have the ability to be scalable?
Yes

If the project received 70% of the requested funding

Describe how the scaling would affect acres/activities and if not proportionately reduced, why?
We anticipate that acre amounts could be proportionately reduced.

Describe how personnel and DSS expenses would be adjusted and if not proportionately reduced, why?
We anticipate that personnel and DSS expenses could be proportionately reduced.

If the project received 50% of the requested funding

Describe how the scaling would affect acres/activities and if not proportionately reduced, why?
We anticipate that acre amounts could be proportionately reduced.

Describe how personnel and DSS expenses would be adjusted and if not proportionately reduced, why?
We anticipate that personnel and DSS expenses could be proportionately reduced.

Personnel

Has funding for these positions been requested in the past?
Yes

Please explain the overlap of past and future staffing and position levels previously received and how that is coordinated over multiple years?
Funding for the metro habitat crew has not been requested in the past. However, funding for the current personnel who perform similar work to that required to implement the other FY2023 projects has been requested in the past. All staff code each hour they work to the particular OHF grant which funds the particular project worked on. The personnel costs in each OHF grant are estimates. Any unused dollars budgeted for personnel and travel in a given grant will be shifted into contracts and materials budget categories to do additional habitat work under that grant. Funding for the metro habitat crew has not been requested in the past.

Contracts

What is included in the contracts line?
This is for contracted services on habitat enhancement construction projects, and includes heavy equipment use and other labor.

Travel

Does the amount in the travel line include equipment/vehicle rental?
No

Explain the amount in the travel line outside of traditional travel costs of mileage, food, and lodging
None.

I understand and agree that lodging, meals, and mileage must comply with the current MMB Commissioner Plan:
Yes

Direct Support Services

How did you determine which portions of the Direct Support Services of your shared support services is direct to this program?
The Direct Support Services requested represents a portion of Trout Unlimited's federal rate, which is approved annually. The requested amount is less than we would be eligible to claim based upon DNR approval of earlier grant agreements. Trout Unlimited is donating the other portion.

Other Equipment/Tools

Give examples of the types of Equipment and Tools that will be purchased?
Primarily hand tools for cutting trees and brush, raking and seeding areas, etc.

Federal Funds

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

Output Tables

Acres by Resource Type (Table 1)

Type	Wetland	Prairie	Forest	Habitat	Total Acres
Restore	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	200	285	485
Total	**0**	**0**	**200**	**285**	**485**

Total Requested Funding by Resource Type (Table 2)

Type	Wetland	Prairie	Forest	Habitat	Total Funding
Restore	-	-	-	-	-
Protect in Fee with State PILT Liability	-	-	-	-	-
Protect in Fee w/o State PILT Liability	-	-	-	-	-
Protect in Easement	-	-	-	-	-
Enhance	-	-	$320,000	$1,670,000	$1,990,000
Total	**-**	**-**	**$320,000**	**$1,670,000**	**$1,990,000**

Acres within each Ecological Section (Table 3)

Type	Metro/Urban	Forest/Prairie	SE Forest	Prairie	N. Forest	Total Acres
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	150	0	24	0	311	485
Total	**150**	**0**	**24**	**0**	**311**	**485**

Total Requested Funding within each Ecological Section (Table 4)

Type	Metro/Urban	Forest/Prairie	SE Forest	Prairie	N. Forest	Total Funding
Restore	-	-	-	-	-	-
Protect in Fee with State PILT Liability	-	-	-	-	-	-
Protect in Fee w/o State PILT Liability	-	-	-	-	-	-
Protect in Easement	-	-	-	-	-	-
Enhance	$570,000	-	$80,000	-	$1,340,000	$1,990,000
Total	**$570,000**	**-**	**$80,000**	**-**	**$1,340,000**	**$1,990,000**

Average Cost per Acre by Resource Type (Table 5)

Type	Wetland	Prairie	Forest	Habitat
Restore	-	-	-	-
Protect in Fee with State PILT Liability	-	-	-	-
Protect in Fee w/o State PILT Liability	-	-	-	-
Protect in Easement	-	-	-	-
Enhance	-	-	$1,600	$5,859

Average Cost per Acre by Ecological Section (Table 6)

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

PILT Liability					
Protect in Easement	-	-	-	-	-
Enhance	$3,800	-	$3,333	-	$4,308

Target Lake/Stream/River Feet or Miles

20 miles

Outcomes

Programs in metropolitan urbanizing region:

- Improved aquatic habitat indicators ~ *Measured through surveys of fish, macro invertebrates and/or exposed substrates. Abundance, size structure and species diversity are considered.*

Programs in the northern forest region:

- Improved aquatic habitat indicators ~ *Measured through surveys of fish, macro invertebrates and/or exposed substrates. Abundance, size structure and species diversity are considered.*

Programs in southeast forest region:

- Rivers, streams, and surrounding vegetation provide corridors of habitat ~ *Outcomes in aquatic life are measured through surveys of fish, macro invertebrates and/or exposed substrates. Abundance, size structure and species diversity are considered.*

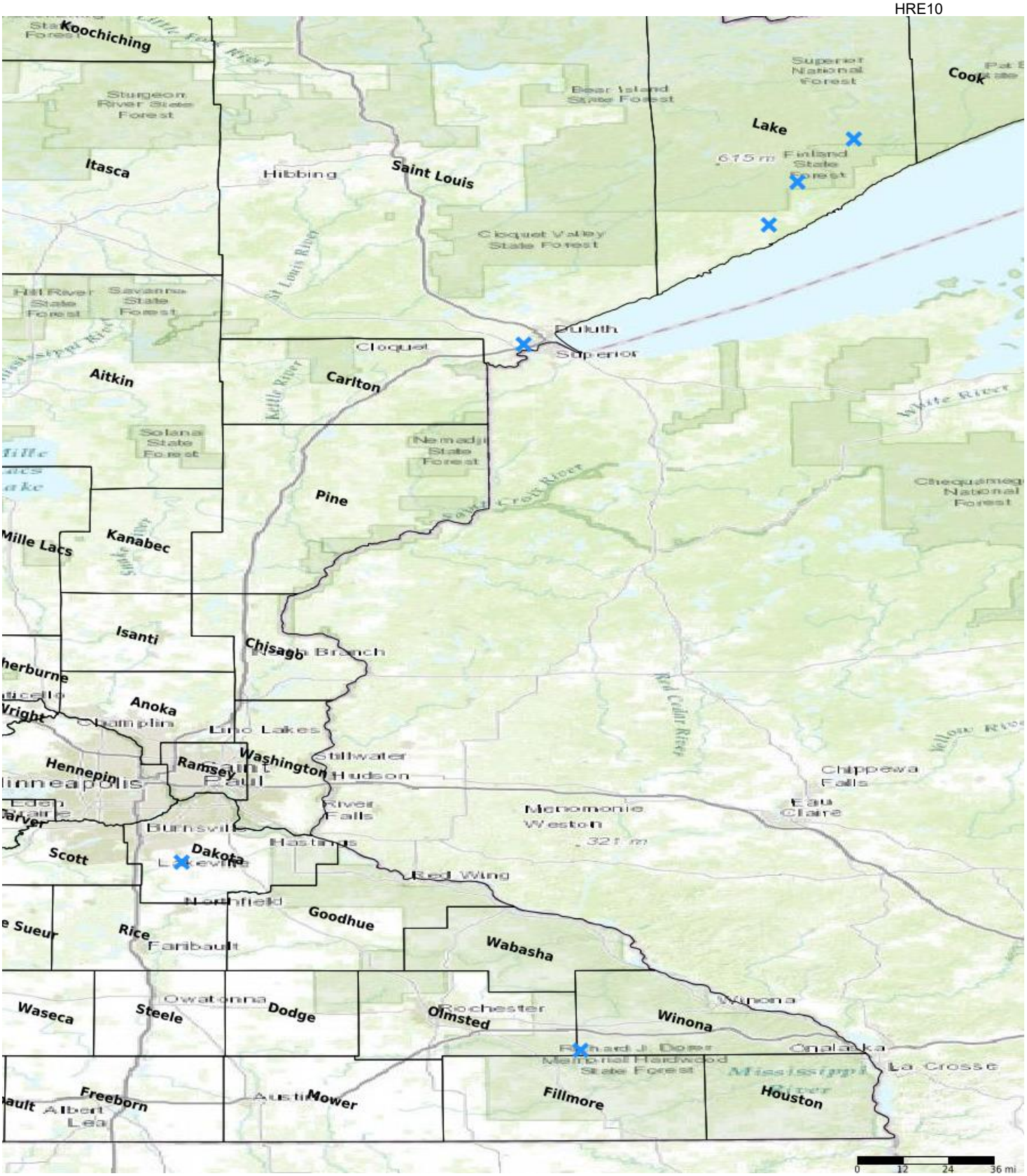
Parcels

Sign-up Criteria?
No

Explain the process used to identify, prioritize, and select the parcels on your list:
MNTU focuses habitat enhancement and restoration efforts on those watersheds likely to continue to support viable, fishable populations of naturally reproducing trout, steelhead, and salmon fifty years and more from now. Work is done only where degraded habitat is a limiting factor for a quality, sustainable fishery. Priority locations are determined using MNTU members' knowledge of watersheds, MNDNR management plans and surveys, other habitat and conservation planning efforts, consultations with MNDNR professionals, and science-based criteria.

Restore / Enhance Parcels

Name	County	TRDS	Acres	Est Cost	Existing Protection
Metro streams (prioritized)	Dakota	11420236	150	$0	Yes
Split Rock River	Lake	05509227	200	$0	Yes
Manitou River	Lake	05907227	10	$0	Yes
Baptism & Manitou Rivers	Lake	05708229	96	$0	Yes
Keene Creek	St. Louis	04915212	5	$0	Yes
Southeast Maintenance & Additional Enhancements	Winona	10510230	24	$0	Yes



- Protect in Easement
- Protect in Fee with PILT
- Protect in Fee W/O PILT
- Restore
- Enhance
- Other

Parcel Map
Enhancing Metro and North Shore Trout Stream Habitats
(Data Generated From Parcel List)

Enhancing Metro and North Shore Trout Stream Habitats

Enhanced Metro Trout Stream

CLEAN WATER LAND & LEGACY AMENDMENT

MINNESOTA TROUT UNLIMITED

Enhanced North Shore Stream

Habitat Project Descriptions - Minnesota Trout Unlimited - Fiscal Year 2023 *May 2021*

This attachment briefly summarizes the priority habitat enhancement projects which Minnesota Trout Unlimited proposes to complete using FY2023 funding from the Outdoor Heritage Fund. Additional priority habitats projects may be completed depending upon funds leveraged and construction efficiencies realized. All projects will enhance and/or restore degraded habitat on existing public property, on land permanently protected by a conservation and management easement under the aquatic management area system, or in public waters.

Methods. Methods used vary by region and project site. MNTU consults with professional in the MNDNR and uses the best available stream restoration and coldwater aquatic science to select specific habitat improvement methods for each stream that reflect the distinct characteristics of the watershed and ecological region, address the specific limiting factors (e.g. spawning substrate, adult cover, invertebrate production, etc.), and account for the land use practices. Habitat enhancement methods typically include: (1) sloping stream banks back to both remove streamside sediments that have previously been transported from uplands areas and better reconnect the stream to its floodplain, (2) removing shallow rooted woody vegetation (invasive box elder, buckthorn, etc.) 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, (4) installing overhead bank and other in-stream cover for trout, (5) utilizing soil erosion prevention measures, (6) seeding exposed banks and taking steps to firmly establish vegetation (including using native prairie grasses where appropriate and feasible), (7) improving angling accessibility, (8) fencing riparian corridors where appropriate to facilitate managed grazing and prevent damage from over-grazing, (9) removing barrier to fish movement, (10) restoring large cover logs to the channels of Northern forested streams to increase deep pool habitat, and (11) planting long lived trees along Northern forested streams to shade and cool the water, and provide a source of future cover logs.

These actions directly enhance physical habitat, and typically increase overall trout abundance (biomass), the number of larger trout, and levels of successful natural reproduction. Additional benefits include reduced erosion and sedimentation, cooler water temperatures, improved water quality, and increased connectivity of aquatic and riparian habitat.

Metro Urbanizing Section

1. Metro trout streams

The quality of habitat for trout and many other aquatic and riparian species is dependent upon healthy native vegetation outside the stream channel itself. Much of the vegetation bordering the remaining trout streams in the Twin Cities metropolitan area is of poor quality. To restore healthy vegetation - forest, prairie, and wetland – we need

active management, which is best accomplished with manual labor performed by trained work crews.

Trained work crews, however, are in short supply during the busy summer work season. The project we are proposing will increase the capacity for accomplishing this work during the peak of the summer season while providing opportunities for young adults from the Twin Cities urban center to gain experience in conservation work. The project will provide opportunities to racially, ethnically, and economically diverse people to learn conservation skills and work in the outdoors. We will actively seek to recruit young people of color to participate in this project, as doing so we hope will be a gateway for some to enjoy the outdoors who have not had many opportunities to do so.

The work crew will undertake habitat improvements, including invasive tree and shrub removal, tree plantings and maintenance, controlled burns, prairie establishment, invasive plant control, and wetland plantings. We will work with staff from the MNDNR, counties, and local soil and water conservation districts to compile a prioritized list of project sites within metro trout stream watersheds.

The need for habitat work on metro streams is great, as is the need for more workers willing to do the work. Trout Unlimited, like many conservation nonprofits, has for several years been striving to increase participation in conservation work by younger people and members of communities of color. For the past six years we have operated outdoor education programs in Minnesota schools to teach students about watersheds and conservation. Offering opportunities for employment in hands-on conservation work is a natural extension of these programs. We hope participation as a member of a work crew will inspire the members to pursue education and careers in natural resource management and conservation.

We will begin with a pilot program that will offer employment to high school graduates and community college students in the Twin Cities metro area, who will work on habitat projects close to home. Opportunities to join the crew will be open to all, but we will specifically target recruitment efforts in the schools and community organizations serving the urban center. If the pilot is successful, we hope to expand the program by adding more crews, including to other parts of Minnesota.

Northern Forest Section

2. Baptism & Manitou Rivers (Lake)

The Baptism River and Manitou River are top tier trout streams on the North Shore of Lake Superior. These large rivers systems are among a select group which the DNR and other resource managers agree are most likely to sustain robust wild trout and steelhead populations far into the future. However, removing fish passage barriers and

restoring habitat connectivity is essential to increase their resilience in the face of a impacts caused by a warming climate.

The Baptism River enters Lake Superior in Tettegouche State Park near Finland, Minnesota and it hosts a top tier coldwater fishery. Fisheries managers and researchers agree that this river is well suited to sustain coldwater fisheries long into the future - with a little help. In addition to supporting popular steelhead and coaster brook trout fisheries below barrier waterfalls in Tettegouche State Park, the extensive upper watershed holds good native brook trout populations in numerous tributaries and main stem reaches. The Manitou River watershed abuts the Baptism watershed and holds a robust native brook trout fishery.

While both watersheds are forested and only lightly developed, an extensive network of roads and old rail lines have resulted in a large number of poorly designed or maintained crossings which block the movement of brook trout at critical times of the year. Brook trout move considerable distances to reach cold water during dry and/or hot summer conditions, spawning areas in the fall, and deeper pool habitat for wintering. Perched and collapsed culverts act as dams, blocking access to essential habitat at key times of year. This fragmentation and loss of habitat connectivity is one of the greatest threats to sustaining wild brook trout populations. Research indicates the scope and impact of this habitat fragmentation will grow as climate and water temperatures warm.

Working with DNR Fisheries, Soil & Water Conservation Districts, local highway departments, and other partners we have already begun the process of replacing several of the worst culverts blocking brook trout movement. We are seeking additional funding to remove more of those causing the greatest negative impacts on trout populations and habitat. We continue working closely with the DNR Finland Area Fisheries Office to determine those culverts which are having the largest negative impact upon trout populations. The DNR has identified 55 problem crossing in the Baptism River watershed alone and developed criteria to prioritize replacements. We are using DNR's prioritized list for planning meetings with DNR, SWCD staff, MPCA, highway authorities, and other partners to identify those of the worst culverts which partners can collaborate with us to replace. This will increase leverage and stretch the natural resource impact of OHF dollars. The quantity of miles of trout habitat to which access will be restored is a key consideration. With replacement plans and cost estimates in hand we will aggressively seek to leverage federal funds and other sources of cost sharing. Many miles of productive trout habitat and increased populations will be gained through removal of these barriers.

3. <u>Keene Creek (St. Louis)</u>

Note that we are seeking construction funding only, since design and permitting work are being undertaken with FY2022 OHF funding.

Keene Creek is one of Duluth's top brook trout fisheries, despite decades of impacts to this "urban" trout stream. Duluth area streams were hammered by unprecedented flooding in June 2012, decimating brook trout habitat and leaving most streams with very unstable channels. Keene Creek did not escape damage. This project will restore the most visible segment of the stream channel, increasing the amount of deep pool habitat and trout cover, connecting good habitat and bolstering the size and sustainability of this native brook trout fishery.

Keene Creek begins in Hermantown and flows south through a forested park and enters Duluth above Skyline Drive. It then tumbles down the hillside in a series of pools and runs before it enters the St Louis River near Grassy Point. This surprisingly productive stream is a short bicycle ride from thousands of homes and is popular with children and adults alike. It is arguably the most productive, fishable trout stream on the western half of Duluth and supports itself through good natural reproduction. For this reason, we are focusing effort here, with plans to enhance or restore every degraded segment from the stream's headwaters to its mouth at the St. Louis River.

Earlier rounds of OHF funding are being used to enhance degraded habitat in the Hermantown portion of the stream where significant groundwater inputs and natural reproduction is found, and below Skyline Drive in the parkland owned by the City of Duluth. The proposed Fy2022 project will extend that work another 2,000 feet, including through the segment running under Interstate 35, which is elevated in this area. This reach flows through a well-used neighborhood park and will create great recreational opportunities for kids and families. MNDNR Duluth Area Fisheries Office agrees that this segment is a top priority for habitat work.

Portions of this reach had been straightened in the past and the 2012 floods destabilized and tore apart the stream channel in many places. Hurried repairs to protect structures did nothing to increase the quantity of pool habitat and woody cover.

In addition to removing fish passage barriers and stabilizing the channel, the project will directly increase the amount of deep pool habitat and overhead cover with large logs and boulders, using approaches similar to those employed on MNTU's Sucker River and Stewart River projects. The project will use significant volunteer labor provided by the Gitche Gumee Chapter of TU (Duluth), MNTU, local angling and conservation groups, and Duluth area residents.

The stream corridor is frequented by children and adults, but the poor habitat limits both trout numbers and angling interest. This highly visible and accessible project will create

good habitat capable of holding catchable numbers of trout in a setting thousands can reach by a short walk or bike ride.

4. Split Rock River (Lake)

This river supports native brook trout and a popular wild steelhead fishery. Healthy trout and steelhead fisheries are products of the forests through which they flow. However, due to recent outbreaks of tree diseases and pests, and lack of timely tree plantings, many forest stands lack conditions most favorable for long term productivity of coldwater fisheries, as well as for other game and wildlife. We propose to use professional foresters to develop management plans for DNR Fisheries' fee title Aquatic Management Area lands in this watershed and then undertake tree plantings to attain desirable conditions for fish and wildlife.

How well the forests within a given watershed have been managed in the past and how well they are managed in the future determine to what degree the coldwater fisheries in streams flowing through them will be productive, or whether the fisheries might vanish entirely. A healthy forest is essentially a sponge, which holds precipitation, both snowmelt and rainfall, and slowly releases it over time. A healthy forest reduces destructive peak flows and increase base flows, especially in warm summer months.

Fisheries biologists and foresters know that trout and steelhead fisheries benefit most from older forests with long-lived species capable of providing greater water storage, mature canopy, a supply of future large wood (as old trees fall into the floodplain), and riparian tree species not attractive to beavers. However, given the hodgepodge of past activities, tree diseases and pests, many stands lack these conditions and cannot reach or maintain these desirable conditions without tree harvest and tree planting. North Shore forests often need active management to achieve a healthy, mature forest that will store water and slowly release it into trout streams. The need for active management is increasing due to the warming climate and the waves of tree pests and diseases it will bring. We are already seeing many forests degenerating into brushland.

To protect the premier fisheries in this watershed, the DNR Fisheries owns more than 2,000 acres of riparian forests along the Split Rock River. However, it has not had funding for professional foresters to "ground truth" the limited stand information and develop good, data driven forest management roadmaps. Nor has DNR Fisheries had funding to plant trees where this is needed to convert forests to long-lived species capable of providing greater water storage and canopy, as well as wildlife habitat.

We will shortly retain one or more professional forester to inventory the condition of forest stands on these Aquatic Management Area lands and work with the DNR Area Fisheries Office to develop sound forest management plans to serve as roadmaps for each parcel. These plans will then be used by DNR to guide the scope of future harvest

and plantings on these Fisheries fee title lands. Fy2022 funding will be used for this work.

We are requesting FY2023 funding only additional tree plantings on approximately 200 acres, which will be timed to take advantage of planned harvest by the DNR Forestry Division.

5. Manitou River (Lake)

The Manitou River is among the top handful of wild brook trout fisheries along the North Shore. Despite this, many stretches are overly wide and warming due to historic logging practices which altered riparian forests. Human disturbance has caused alder and aspen to replace long lived conifers.

This change in riparian vegetation causes persistent problems for trout and trout stream habitat. The alder and aspen lined streams, formerly dominated by conifers, now attract unnaturally high numbers of beavers which dam the streams. This leads to sediment build up and warmer water. Increased stream temperatures, buried spawning gravels, and lack of large cover habitat lead to reduced trout populations. In some cases, perennial dams can block movement of brook trout to spawning areas or to thermal refuge areas in summer or winter.

This project will accelerate restoration of in-stream and riparian habitat in this targeted watershed through removal of streamside alders, aspen and ash (site preparation). We will plant of conifers and other long-lived tree species which are not attractive to beaver to provide shade and restore the cycle of gradual recruitment of large woody habitat to the stream channel. Cover logs may be placed in the channel in select locations. Work will primarily use hand labor, including by Conservation Corps crews. Habitat will be enhanced along a mile or more of stream. This intervention to restore riparian forests to long lived tree species unattractive to beaver is essential to sustaining stream habitat and health into the future.

Southeast Forest Section (Driftless area)

6. Maintenance and Additional Enhancement of older projects (numerous counties)

Funding is needed for routine maintenance and habitat upgrades on past projects in southeast Minnesota to ensure they continue to provide sustained habitat benefits well into the future. Using FY 2010 to FY 2013 OHF grants we completed 46 separate trout habitat projects enhancing approximately 39.9 miles of streams and 6 lakes, together totaling 789 acres of habitat. Routine maintenance and modest repair of even the best designed and built habitat projects is inevitable, especially given the increasing frequency and intensity of flooding. "Routine" floods often carry large trees into project

reaches and drop then in bends, causing streambanks and associated habitat to blow out. Most of these projects are now 5 to 10 years old and need spot maintenance or measures to control invasive trees and boost native plants. A few need additional inputs to increase durability and function.

The value of performing regular maintenance or repair on past stream habitat projects was discussed with some LSOHC members, LSOHC staff and the DNR. Roving crews are being funded with OHF dollars to enhance the state's conservation catalog of Wildlife Management Areas and a similar effort is needed for fish habitat projects. In fact the need is greater in riparian settings where, in addition to vegetation management, regular flooding causes a host of other repair needs.

We are already inspecting past project sites and prioritizing maintenance work. Some maintenance work has already been completed. However, additional funding beyond the amount provided by the FY2021 appropriation is necessary to do modest maintenance on numerous additional OHF and DNR habitat projects. If funding allows us to complete maintenance and additional enhancement on all Fy2010 to Fy2013 projects, we will move on to projects completed with Fy2014 appropriations.

Notes: The terms "restore" and "enhance" are used interchangeably throughout the grant proposal and the individual project descriptions since the dividing line is not clear and definitions (or interpretations) not well settled. All projects proposed here will enhance habitat, and several will also restore it. These are construction projects and estimates of the relative mix of contract versus materials are rough estimates only. If substantial contracting efficiencies and/or leveraged funding allows we may extend the length of one or more project or add other streams with LSOHC staff approval.

MNTU habitat projects completed with Fy2010 to Fy2013 OHF funding:

1. Hay Creek (Goodhue);

2. Kabekona Creek (Hubbard);

3. Lawndale Creek (Wilkin);

4. Little Rock Creek (Benton);

5. Middle Br. of Whitewater (Olmsted);

6. Mill Creek site 1 (Fillmore);

7. Pickwick Creek (Winona);

8. Trout Run Creek (Fillmore);

9. Straight River (Becker &Hubbard);

10. Sucker River site 1 (St. Louis);

11. Vermillion River site 1 (Dakota);

12. Vermillion River site 2 (Dakota);

13. "Fuel for Habitat" (more than 90 acres and 6 miles of riparian corridor);

14. Rush Creek (Winona);

15. Hay Creek site 3 (Goodhue);

16. Lost Creek (Fillmore);

17. Pine Creek site 1 (Winona);

18. Vermillion River site 3 (Dakota);

19. West Indian Creek (Wabasha);

20. Garvin Brook site 1 (Winona);

21. Hay Creek site 4 (Goodhue);

22. Seven Mile Creek (Nicollet);

23. Little Isabella River (Lake);

24. Manitou River (Lake);

25. Sucker River 2 (St. Louis);
26. Sucker River site 3 (St. Louis);
27. Cold Spring Brook (Wabasha);
28. Pine Creek site 2 (Winona);
29. Mill Creek site 2 (Olmsted);
30. Blagsvedt Creek (Fillmore);
31. So. Fork Root (Fillmore);
32. Kimball Creek (Cook);
33. Kimball Lake (Cook);
34. Mink Lake (Cook);
35. Boys Lakes (Cook);
36. Garvin Brook site 2 (Winona);
37. Pine Creek site 3 (Winona);
38. Hay Creek site 5 (Goodhue);
39. Little Stewart River (Lake);
40. Stewart River planting sites (Lake);
41. East Indian Creek site 1 (Wabasha);
42. Mill Creek site 3 (Olmsted);
43. Camp Creek (Fillmore);
44. Beetle Lake (Lake);
45. Redskin Lake (Lake);
46. North Shady Lake (Cook).