Environment and Natural Resources Trust Fund

2021 Request for Proposal

General Information

Proposal ID: 2021-260

Proposal Title: Floodplain Reconnection in Southeast Minnesota's Driftless Area

Project Manager Information

Name: Leah Hall

Organization: The Nature Conservancy

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Project Basic Information

Project Summary: Through GIS analysis, field data and hydrologic analysis, we will identify and prioritize opportunities in Southeast Minnesota to reconnect streams to their floodplains and implement pilot projects to demonstrate methods.

Funds Requested: $572,000

Proposed Project Completion: 2025-06-30

LCCMR Funding Category: Water Resources (B)

Project Location

What is the best scale for describing where your work will take place?

Region(s): SE

What is the best scale to describe the area impacted by your work?

Region(s): SE

When will the work impact occur?

During the Project and In the Future

Narrative

Describe the opportunity or problem your proposal seeks to address. Include any relevant background information.

In Southeast Minnesota's Driftless Area, stream managers, farmers, and communities are still dealing with the consequences of catastrophic flooding and erosion that occurred in the late 19th and early 20th centuries. The sedimentation left a legacy of deep sediment deposits that buried wetlands and raised streambanks several feet to where only major flood events escape the stream channel, thereby disconnecting streams from their historic floodplains. The result is a system where floods gain power within entrenched streams and mobilize large amounts of sediment, as unnaturally high stream-banks collapse. This degrades water quality and aquatic habitat. It adds stress to a regional fishery that generates millions of dollars of economic activity each year and threatens downstream infrastructure, agricultural fields, and rural communities. Additionally, floodplains that would have historically supported a matrix of riparian, wetland, and mesic upland communities have been replaced with homogeneous, flat deposits of alluvium, reducing the diversity and resilience of natural communities that occupy the valley bottoms.

What is your proposed solution to the problem or opportunity discussed above? i.e. What are you seeking funding to do? You will be asked to expand on this in Activities and Milestones.

Funding from this award will allow us to conduct a landscape-scale analysis to identify locations where streams are disconnected from their floodplain and produce a map of prioritized restoration opportunities. To date, such an analysis has not been completed in Southeast Minnesota's Driftless Area and few reconnection projects have been completed. Successful stream reconnection projects will depend on finding places along the stream where restoration is feasible, and the resulting storage volumes are worth the cost of the project. We will produce a map of restoration opportunities and develop and test restoration methods that can expand restoration efforts in the region and can guide future investment from other funding sources, including Outdoor Heritage and Clean Water Funds.
Reconnecting streams to their floodplains benefits water quality and aquatic habitat, while also enhancing floodplain habitat diversity. It increases flood storage, reduces the peak of moderate-sized flood events, and increases sediment removal on floodplains. It reduces risk to infrastructure like roads and bridges, farmland and other private development vulnerable to flooding. It will also benefit the numerous trout habitat projects in which the State of Minnesota, in partnership with Trout Unlimited, has invested tens of millions of dollars in recent years.

What are the specific project outcomes as they relate to the public purpose of protection, conservation, preservation, and enhancement of the state's natural resources?

This project will provide a watershed-scale spatial analysis of feasible floodplain reconnection sites across 4 major watersheds of Minnesota's Driftless Area. It will also complete a minimum of one demonstration project, where restoration techniques and resulting benefits can be monitored to measure success and inform future projects. This analysis and restoration project demonstration will be used to guide both protection and restoration work funded through The Nature Conservancy's Southeast Minnesota Blufflands Protection Program with the Lessard-Sam's Outdoor Heritage Council (Outdoor Heritage Funding).

Activities and Milestones

Activity 1: Floodplain reconnection feasibility analysis and map for four major watersheds using GIS, hydrologic and geomorphic analysis

Activity Budget: $65,000

Activity Description:
TNC staff will use existing analyses to target subwatersheds with the highest restoration potential. In targeted subwatersheds, we will use Digital Elevation Models and LiDAR to identify areas of the floodplain where reconnection is feasible logistically and economically.
To do so, we will begin by delineating areas that are inundated by frequent floods to distinguish true floodplains from terraces. We will then seek out restorable oxbows in lower river reaches. In headwaters reaches, we will focus on sites where floodplain reconnection requires minimal excavation to enhance flood storage or where simple revegetation will restore floodplain function. Existing river hydraulic models and DNR field data will be used to refine the potential restoration list. We'll investigate stream channelization sites in more detail to identify other channel reconnection sites. Finally, hydrologic benefits will be quantified on wetland size and depth, as well as expected length of inundation. Analysis results will be field verified through on-site survey of potential projects sites. This analysis will be completed in the Whitewater, Cannon, Zumbro and Root River Watersheds.

Activity Milestones:

Description	Completion Date
Hydrologic data collection and preparation	2021-10-31
GIS and hydrologic analysis	2022-03-31
Field verification of potential sites	2022-06-30
Draft report available for review by DNR and SWCD partners	2022-09-30
Complete floodplain reconnection feasibility report	2022-12-31

Activity 2: Complete demonstration project(s) selected from the floodplain reconnection feasibility analysis

Activity Budget: $472,000

Activity Description:
Working with partners from the DNR, as well as other government and non-profit organizations, we will identify demonstration project sites. Selection will be based on the feasibility analysis from Activity 1 and on other constraints, such as costs, landownership, site access, and permit obtainment.
Our ideal result would be two demonstration projects- one located in the upper watershed and one in the lower watershed. The upper watershed location will likely involve reconnection of floodplain cutoff by channelization and entrenchment and/or restoration of native floodplain ecosystems. It would involve earth-moving and excavation to establish reconnection and if necessary, placing berms and installing water control structures. The lower river project will likely involve connecting oxbows or side-channels that were cutoff at roads or by entrenchment. TNC will do restoration project planning and design in collaboration with partners. The earth work and on-the-ground restoration will be hired out to contractors by 2023.
Following construction, field days and a workshop will be held with landowners and partners on site to share insights from implementation and results to date. The project will also be promoted with local media attributing ENRTF.

Activity Milestones:

Description	Completion Date
Demonstration project sites selected	2022-06-30
Floodplain reconnection projects completed	2023-11-30
Field days and workshop at demonstration sites	2025-06-30

Activity 3: Post-project assessment and monitoring

Activity Budget: $35,000

Activity Description:
TNC staff will monitor all demonstration sites to ensure project success by documenting hydrologic conditions, vegetation growth and soil stabilization following the earth work.

Activity Milestones:

Description	Completion Date
Monitoring of demonstration projects	2025-06-30

Long-Term Implementation and Funding

Describe how the results will be implemented and how any ongoing effort will be funded. If not already addressed as part of the project, how will findings, results, and products developed be implemented after project completion? If additional work is needed, how will this be funded?

The floodplain reconnection opportunity map will be shared with other State and local agencies and NGOs to be incorporated into land management and watershed planning. The analysis will be used to guide future habitat protection by The Nature Conservancy with funds awarded from the Lessard-Sam's Outdoor Heritage Council. The Nature Conservancy and partners will also use the results to pursue additional funding from State, Federal, and private sources to implement additional projects.

Other ENRTF Appropriations Awarded in the Last Six Years

Name	Appropriation	Amount Awarded
Southeast Minnesota Watershed Protection Plan	M.L. 2014, Chp. 226, Sec. 2, Subd. 06e	$200,000

Project Manager and Organization Qualifications

Project Manager Name: Leah Hall

Job Title: Freshwater Specialist

Provide description of the project manager's qualifications to manage the proposed project.

Responsibilities Pertaining to the Proposal:

1) Administer contracts.
2) Prepare reports.
3) Coordinate restoration, monitoring and research programs.
4) Conduct and supervise GIS analyses for identification and prioritization of conservation projects.
5) Organize and lead field days, educational events and landowner outreach activities.

Leah has worked for The Nature Conservancy's Minnesota, North Dakota and South Dakota Chapter since 2017. She works within the Freshwater Program developing, managing and advancing conservation programs and strategies that benefit water quality. Prior to The Nature Conservancy, Leah was a Conservation Technician with the Anoka Conservation District, where she facilitated site-based restoration projects and conducting watershed analyses. Leah has more than eight years of professional experience in conservation. She is a graduate of the University of Minnesota, where she holds a Master of Science in Natural Resources Science and Management, and the University of Oregon, where she holds a Bachelor of Science in Environmental Science and Geography.

Organization: The Nature Conservancy

Organization Description:

Founded in 1951, the Nature Conservancy is a global conservation organization dedicated to conserving the lands and waters on which all life depends. Guided by science, we create innovative, on-the-ground solutions to our world's toughest challenges so that nature and people can thrive together. We are tackling climate change, conserving lands, waters and oceans at unprecedented scale, providing food and water sustainably and helping make cities more sustainable. One of our core values is our commitment to diversity. Therefore, we strive for a globally diverse and culturally competent workforce. Working in 72 countries and in all 50 United States, we use a collaborative approach that engages local communities, governments, the private sector, and other partners. Since 1958, The Nature Conservancy has helped protect more than 650,000 acres of forests, prairies, rivers, lakes and wetlands in Minnesota. In

Southeast Minnesota, The Nature Conservancy has been a leader in protecting and restoring habitat, as well as planning and coordination with diverse stakeholder groups to maximize effectiveness of conservation in Minnesota's Blufflands region.

Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	$ Amount
Personnel								
Project Manager		Oversee project completion and grant reporting and other tasks as necessary			43%	0.6		$41,428
Project Coordinator		Coordinate analysis and report development with technical staff, local and state partners. Coordinate landowner and partner outreach for demonstration project implementation and other tasks as necessary			43%	0.75		$51,786
Restoration Ecologist		Develop GIS analysis and floodplain reconnection opportunity report. Select demonstration site(s). Design and oversee construction of demonstration projects.			43%	0.75		$51,786
							Sub Total	**$145,000**
Contracts and Services								
TBD	Professional or Technical Service Contract	Construction of demonstration projects, including excavation, grading, and revegetating floodplain and wetland areas and other as necessary.				0		$400,000
							Sub Total	**$400,000**
Equipment, Tools, and Supplies								
	Tools and Supplies	Water level loggers, barometric loggers, soil auger for well installation, well materials, YSI water chem probe	Monitoring wells for floodplain restoration monitoring and other gear as needed.					$5,000
	Tools and Supplies	Seed mixes	Seed mixes and other erosion control material for demonstration project areas as needed					$15,000
							Sub Total	**$20,000**
Capital Expenditures								
							Sub Total	**-**

Acquisitions and Stewardship								
							Sub Total	**-**
Travel In Minnesota								
	Miles/ Meals/ Lodging	Travel expense for driving to project sites, to conduct field verification, to monitor restoration project, to bring people to the site for field days and to purchase boxed lunches and snacks for field days since no restaurants are nearby.	Travel to and from project sites in Southeastern Minnesota from Winona and Minneapolis					$5,500
							Sub Total	**$5,500**
Travel Outside Minnesota								
							Sub Total	**-**
Printing and Publication								
	Printing	Handouts and informational materials or other printing as needed	Outreach and educational materials to promote field days, provide information about analysis, etc.					$500
							Sub Total	**$500**
Other Expenses								
		DNR Waters and NPDES Permit	Required project permits					$500
		Meals	Field trip box lunches	X				$500
							Sub Total	**$1,000**
							Grand Total	**$572,000**

Classified Staff or Generally Ineligible Expenses

Category/Name	Subcategory or Type	Description	Justification Ineligible Expense or Classified Staff Request
Other Expenses		Meals	Full day field trip in an area where no food is available nearby and participants will be coming from long distances.

Non ENRTF Funds

Category	Specific Source	Use	Status	Amount
State				
			State Sub Total	**-**
Non-State				
In-Kind	The Nature Conservancy	Unrecovered indirect cost - This is an estimated dollar amount. It will not be tracked or reported on.	Secured	$134,420
			Non State Sub Total	**$134,420**
			Funds Total	**$134,420**

Acquisition and Restoration

Parcel List

Name	County	Site Significance	Activity	Acres	Miles	Estimated Cost	Type of Landowner	Easement or Title Holder	Status of Work
TBD			Restoration	-	-	$400,000			Has not begun
Totals				**0**	**0**	**$400,000**			

Restoration

1. Provide a statement confirming that all restoration activities completed with these funds will occur on land permanently protected by a conservation easement or public ownership.
All restoration work that is completed with these funds will be on land that is permanently protected by a conservation easement or is in public ownership.

2. Summarize the components and expected outcomes of restoration and management plans for the parcels to be restored by your organization, how these plans are kept on file by your organization, and overall strategies for long-term plan implementation.
We will complete at least one floodplain reconnection project on a site that will be determined after the completion of the analysis component of this proposal. Restoration will have a management plan, which we have experience creating and implementing from other projects we have completed.

3. Describe how restoration efforts will utilize and follow the Board of Soil and Water Resources "Native Vegetation Establishment and Enhancement Guidelines" in order to ensure ecological integrity and pollinator enhancement.
Selected restoration projects will follow the Board of Soil and Water Resources "Native Vegetation Establishment and Enhancement Guidelines" in order to ensure ecological integrity and pollinator enhancement. We will utilize BWSR seed mixes on all restoration projects where revegetation is needed.

4. Describe how the long-term maintenance and management needs of the parcel being restored with these funds will be met and financed into the future.
Restoration will be designed to minimize long-term maintenance and management needs. However, some will be needed and we fully understand how important it is to do so. We will write maintenance and management plans and will either maintain the site ourselves using other funding sources or work with the landowner to enter into an maintenance agreement.

5. Describe how consideration will be given to contracting with Conservation Corps of Minnesota for any restoration activities.
We will notify Conservation Corps of Minnesota about any restoration activity and will consider their bid for the project.

6. Provide a statement indicating that evaluations will be completed on parcels where activities were implemented both 1) initially after activity completion and 2) three years later as a follow-up. Evaluations should analyze improvements to the parcel and whether goals have been met, identify any problems with the implementation, and identify any findings that can be used to improve implementation of future restoration efforts at the site or elsewhere.
Project monitoring will be conducted before, during and after the restoration is complete. We plan to do long-term monitoring at our project sites to ensure restoration goals were met and to refine methods for scaling-up this type of restoration work.

Attachments

Required Attachments

Map

File: 7439f882-145.pdf

Alternate Text for Map

Illustration showing project examples.

Financial Capacity

File: cf104888-d06.pdf

Board Resolution or Letter

Title	File
Authorization Letter	c79a62fd-eae.pdf

Optional Attachments

Support Letter or Other

Title	File
Great River Green: Letter of Support	e709bcb2-3ef.pdf
Audubon: Letter of Support	6ec21a85-eb6.pdf

Administrative Use

Does your project include restoration or acquisition of land rights?

Yes: Restoration,

Does your project have patent, royalties, or revenue potential?

No

Does your project include research?

Yes

Does the organization have a fiscal agent for this project?

No

Floodplain Reconnection in Southeast Minnesota's Driftless Area

Example of project that this analysis will look to identify.

Environment and Natural Resources Trust Fund Request

$572,000 to identify and prioritize locations in SE MN to reconnect streams to their floodplain and to implement floodplain restoration projects to demonstrate methods and measure impact. This work will add flood storage, restore wetland habitat, improve water quality, and protect infrastructure, farmland and development in flood-prone areas. Catastrophic flooding and erosion that has occurred in this area disconnected floodplains, buried wetlands and continues to intensify the impacts of major flood events. Using LiDAR, field data, and a hydrologic analysis, floodplain reconnection sites will be identified and prioritized in the Whitewater, Root, Cannon and Zumbro River Watersheds.

The impact of this work will extend into following years as SWCDs, NRCS, DNR, counties and others adopt the prioritization and methods to direct their own floodplain and water storage restoration activities. This work will also inform the efficacy of Clean Water Fund, Outdoor Heritage Fund, and other conservation funding in the region.

For more information, please contact Leah Hall, TNC, Freshwater Specialist, at 612-331-0785 or leah.hall@tnc.org.

National Wetland Inventory showing locations where drained or impacted wetlands can be restored to improve floodplain connectivity.

Image showing disconnected floodplain on NE side of stream due to a constructed levee and a connected floodplain with old oxbow on SW side of stream.