



Environment and Natural Resources Trust Fund

2026 Request for Proposal

General Information

Proposal ID: 2026-451

Proposal Title: Implementing Biochar in Natural System Management

Project Manager Information

Name: Todd Rexine

Organization: Great River Greening

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Project Basic Information

Project Summary: The project will advance scaling biochar for Natural Resource Management of wood waste, leading biochar demonstrations and documenting the effects on soil nutrient levels in buckthorn-infested landscapes.

ENRTF Funds Requested: \$300,000

Proposed Project Completion: December 31, 2029

LCCMR Funding Category: Small Projects (G)

Secondary Category: Resiliency (A)

Project Location

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

Statewide

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

Statewide

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.

The process of charring waste wood biomass on-site at high temperatures under low-oxygen conditions converts this waste product into biochar, a product that can then be used as a soil additive for carbon storage, drought resistance, and microbial support in natural systems, farm fields, and gardens. Mobile, on-site biochar production releases less smoke and greenhouse gas than pile burning. While it requires specific equipment and knowledge, it is an accessible technology and process.

Through the pilot phase (2023-043) Great River Greening has been collecting feedback from land managers and service providers. There are two main overarching questions that have risen to the top: 1) what does the processing of biochar at scale look like (10 acres or more) and what is the efficiency gained; and, 2) what is the impact of direct application of biochar on forest and woodland soils that are infested with non-native invasive common buckthorn. There has also been interest in other regions of the state for demonstrations and trainings that were outside the geographic parameters of the pilot project. This proposal builds from the pilot phase to continue to promote the use of biochar in natural resource management.

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

Great River Greening is proposing to continue to increase the understanding of biochar by expanding demonstrations and trainings of biochar processing while also addressing the scalability of biochar kilns and studying the effects of direct application on buckthorn-infested areas. We will be utilizing larger kiln setups to answer scalability questions that have arisen through hosting demonstrations during the pilot program. Great River Greening will be working with providers on using multiple Ring of Fire kilns, procured with funding from the pilot phase, as well as larger 10 cubic yard kilns that have been procured with private funds. There are also growing requests for demonstrations in other geographies of the state not currently served in the pilot project area. For this we are proposing to hold demonstrations statewide. Funding will support on-site demonstrations, working with service providers on scaling up the processing of wood waste to biochar, and monitoring the effects of applying biochar back on sites infested with buckthorn.

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?

Demonstrate biochar production at 6 sites statewide.

Engage 75 land managers, local government units, and service providers in the process.

Engage 50 individuals on the use at residential scale.

Allow access to kilns for land managers, local government units, and natural resource practitioners.

Work with contractors at 2 sites to process biochar at scale from wood waste related to natural resources management. Calculate and assess the cubic yards of biochar that can be processed at scale from invasive wood waste at different scales of density.

Measure the effects of the direct application of biochar on buckthorn-infested woodland and forest soils

Activities and Milestones

Activity 1: Biochar Demonstration

Activity Budget: \$93,000

Activity Description:

DEMONSTRATION and OUTREACH: Great River Greening will use and demonstrate kilns at trainings statewide. Trainings will focus on how to use biochar kilns properly and safely for wood waste disposal. Trainings will be offered to land managers, service providers, and other organizations that would share the benefits of using on-site kilns to manage wood waste from tree and shrub removal in addition to how to use a kiln. This process will also involve other entities having access to testing the kilns on projects, specifically land managers, practitioners, and other organizations that could benefit from using biochar kilns in habitat restoration activities. We will monitor and document the process including:

- Testing the quality of biochar produced through sample testing,
- Monitoring the timing and process to produce a full kiln of biochar,
- Conducting precutting density counts to discern the quantity of biochar produced per acre.
- Reporting on the carbon sequestration gained.

Activity Milestones:

Description	Approximate Completion Date
Work with partners to identify demonstration opportunities	January 31, 2027
Begin implementing demonstrations	May 31, 2027
Wrap up demonstrations	April 30, 2029

Activity 2: Processing Biochar at Scale

Activity Budget: \$122,000

Activity Description:

PROCESSING: Great River Greening will hire qualified contractors on 2 sites of 10 acres or more to process wood waste created through prescribed tree and shrub removal from invasive species, diseased tree removal or woody encroachment related to natural resource management activities. We will be prioritizing sites that are able to produce over 10 cubic yards of biochar from a minimum of 50 cubic yards of wood waste. Contractors will gain a more in-depth knowledge of the process, and we will monitor and document and disseminate the process including:

- Stand density prior to removal
- Preprocessing material volume in cubic yards
- Time required to process material at scale
- Amount of biochar produced in cubic yards
- Quality of biochar produced – independent lab testing to International Biochar Initiative standards

Activity Milestones:

Description	Approximate Completion Date
Identify sites	December 31, 2026
Hire contractors and begin processing	December 31, 2027
Report on results	December 31, 2029

Activity 3: Monitoring

Activity Budget: \$85,000

Activity Description:

Monitoring will occur pre- and post-application of raw biochar to determine the effects of application on soil nutrients and buckthorn sprout and re-sprout regeneration. Raw biochar application will be from biochar that is produced on site and not amended with any other nutrients, compost, dried manure, etc., prior to application. Monitoring will include soil samples being taken from application areas and control areas, photo point monitoring and vegetation assessments through transect surveys.

- Plots will be set up at three locations on ¼ acre test plots and ¼ acre control plots.
- Biochar processed from buckthorn removed from the site will be spread out on the test plots.
- 10 cubic yards of biochar will be applied per test plot.
- Five soil samples will be taken from each plot twice a year over three years and sent in for nutrient and texture analysis.
- Vegetation transect surveys and photo points will be conducted three times a year during the growing season.
- Dissemination

Activity Milestones:

Description	Approximate Completion Date
Identify sites and pre application sampling, vegetation survey and set up photo points	December 31, 2026
Complete first year monitoring and data collection	December 31, 2027
Complete second year monitoring and data collection	December 31, 2028
Complete third year monitoring, data collection and report	December 31, 2029

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 work be funded?

The goal is to address concerns and questions raised during the pilot phase to work toward larger-scale implementation. Great River Greening is continuing to assess long-term funding and incorporating the practice into conservation plans and natural resource management planning. There is some commercial value to biochar which may be a catalyst for larger implementation in Minnesota. Biochar produced from this funding will be utilized by the landowners and Great River Greening as a beneficial soil amendment in related habitat restoration projects and/or given away to volunteers, landowners, and partners, etc; but will not be sold for financial gain.

Other ENRTF Appropriations Awarded in the Last Six Years

Name	Appropriation	Amount Awarded
Pollinator Central: Habitat Improvement with Citizen Monitoring	M.L. 2021, First Special Session, Chp. 6, Art. 5, Sec. 2, Subd. 08a	\$750,000
Pollinator Central II: Habitat Improvement With Community Monitoring	M.L. 2021, First Special Session, Chp. 6, Art. 6, Sec. 2, Subd. 08c	\$631,000
Engaging a Diverse Public in Environmental Stewardship	M.L. 2022, , Chp. 94, Art. , Sec. 2, Subd. 05d	\$300,000
Biochar Implementation in Habitat Restoration: A Pilot	M.L. 2023, , Chp. 60, Art. 2, Sec. 2, Subd. 07b	\$185,000
Pollinator Central III: Habitat Improvement with Community Monitoring	M.L. 2023, , Chp. 60, Art. 2, Sec. 2, Subd. 08g	\$190,000
Restoring Forests and Savannas Using Silvopasture - Phase2	M.L. 2023, , Chp. 60, Art. 2, Sec. 2, Subd. 08h	\$674,000
Building Resilient Urban Forests for Climate Change	M.L. 2024, , Chp. 83, Art. , Sec. 2, Subd. 07b	\$752,000
Pollinator Central IV: Habitat Improvement with Public Engagement	M.L. 2024, , Chp. 83, Art. , Sec. 2, Subd. 08e	\$698,000

Project Manager and Organization Qualifications

Project Manager Name: Todd Rexine

Job Title: Conservation Director

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

Todd Rexine is the lead on GRG's Biochar Initiative and has become one of the go-to individuals in the state of MN related to implementing on-site biochar production in natural resources management. He also serves on the Minnesota Biochar Initiative's board of directors as a resource for on-site biochar production. Todd has a diverse set of experience in planning, executing, and funding the restoration of native habitats. Todd oversees and coordinates Great River Greening's programs and conversation staff, ensuring the conservation programs meet the agency's mission and goals. He works with the programs to analyze the organization's goals from a system-level approach analyzing how natural and human systems interact.

Organization: Great River Greening

Organization Description:

Great River Greening's mission is to inspire, engage and lead local communities in conserving and caring for the land and water that enrich our lives.

Great River Greening (GRG) as a non-profit has been restoring, adapting, and sustainably managing ecosystems to address climate change, providing benefits for both people and the environment since 1995. To achieve our vision of healthy, climate change resilient ecosystems throughout MN, GRG leans into the practices and projects that can truly impact our shared climate future. Our land-based restoration centers on three pillars of impact: (1) Restoring resilient landscapes, (2) Addressing critical biodiversity loss, and (3) Increasing carbon sequestration and storage.

Environmental stewardship is one of our core commitments. We partner with the communities we serve to increase environmental connection, teach environmental restoration, and ultimately empower committed individuals to join us in caring for our shared natural resources, engaging 6,000+ volunteers annually.

Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	\$ Amount
Personnel								
Grant and Program Manager		Grant management and project implementation. Coordination with the land managers and natural resource practitioners for project implementation.			21.83%	0.25		\$38,300
Ecologist		On the ground coordination with land managers and natural resource practitioners for implementation.			21.83%	0.46		\$71,000
Field Crew		Implementation of biochar demonstrations, equipment movement and soil sampling.			21.83%	0.35		\$46,000
Grant Administration		Finance administration and grant fund coordination, status reporting, and amendment communication.			21.83%	0.07		\$10,000
							Sub Total	\$165,300
Contracts and Services								
TBD	Service Contract	Contracting land management service providers to incorporate to process wood waste to biochar at scale.				0.28		\$90,000
TBD	Service Contract	Biochar testing analysis - testing to International Biochar standards				0.02		\$5,000
TBD	Service Contract	Soil nutrient and texture testing of samples.				0.06		\$18,000
							Sub Total	\$113,000
Equipment, Tools, and Supplies								
	Tools and Supplies	Supplies and equipment required for kiln use	Purchase of supplies to facilitate use of biochar kilns and to support biochar and soil sampling.					\$7,600
							Sub Total	\$7,600
Capital Expenditures								
							Sub Total	-

Acquisitions and Stewardship								
							Sub Total	-
Travel In Minnesota								
	Miles/ Meals/ Lodging	Travel related to project sites and demosntrations sites	Averaged trip miles, per diem and lodging to support travel to various parts of the state.					\$13,600
							Sub Total	\$13,600
Travel Outside Minnesota								
							Sub Total	-
Printing and Publication								
							Sub Total	-
Other Expenses								
		Permits	Local and state burn permits					\$500
							Sub Total	\$500
							Grand Total	\$300,000

Classified Staff or Generally Ineligible Expenses

Category/Name	Subcategory or Type	Description	Justification Ineligible Expense or Classified Staff Request
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Non ENRTF Funds

Category	Specific Source	Use	Status	Amount
State				
Cash	MN Pollution Control Agency – Wood waste grant	Additional demonstrations and kiln rental assistance	Secured	\$90,000
			State Sub Total	\$90,000
Non-State				
Cash	Great River Greening - cash match	GRG direct expenses required to do the work for this grant	Pending	\$62,300
In-Kind	Local Government partners	Site preparation of biochar demonstrations	Potential	\$40,000
			Non State Sub Total	\$102,300
			Funds Total	\$192,300

Total Project Cost: \$492,300

This amount accurately reflects total project cost?

Yes

Attachments

Required Attachments

Visual Component

File: [f08f63b4-7da.pdf](#)

Alternate Text for Visual Component

Two-page document giving an overview of the project with associated pictures and information....

Financial Capacity

Title	File
Financial Audit	39a4ffbf-b21.pdf
990	18f07561-6fe.pdf

Board Resolution or Letter

Title	File
Board Resolution letter	469277dd-c99.pdf

Administrative Use

Does your project include restoration or acquisition of land rights?

No

Do you understand that travel expenses are only approved if they follow the "Commissioner's Plan" promulgated by the Commissioner of Management of Budget or, for University of Minnesota projects, the University of Minnesota plan?

Yes, I understand the Commissioner's Plan applies.

Does your project have potential for royalties, copyrights, patents, sale of products and assets, or revenue generation?

No

Do you understand and acknowledge IP and revenue-return and sharing requirements in 116P.10?

N/A

Do you wish to request reinvestment of any revenues into your project instead of returning revenue to the ENRTF?

N/A

Does your project include original, hypothesis-driven research?

No

Does the organization have a fiscal agent for this project?

No

Does your project include the pre-design, design, construction, or renovation of a building, trail, campground, or other fixed capital asset costing \$10,000 or more or large-scale stream or wetland restoration?

No

Do you propose using an appropriation from the Environment and Natural Resources Trust Fund to conduct a project that provides children's services (as defined in Minnesota Statutes section 299C.61 Subd.7 as "the provision of care,

treatment, education, training, instruction, or recreation to children")?

No

Provide the name(s) and organization(s) of additional individuals assisting in the completion of this proposal:

Wiley Buck - Great River Greening

Do you understand that a named service contract does not constitute a funder-designated subrecipient or approval of a sole-source contract? In other words, a service contract entity is only approved if it has been selected according to the contracting rules identified in state law and policy for organizations that receive ENRTF funds through direct appropriations, or in the DNR's reimbursement manual for non-state organizations. These rules may include competitive bidding and prevailing wage requirements

Yes, I understand