Environment and Natural Resources Trust Fund

M.L. 2023 Approved Work Plan

General Information

ID Number: 2023-117

Staff Lead: Mike Campana

Date this document submitted to LCCMR: May 30, 2023

Project Title: Restoring Forests and Savannas Using Silvopasture - Phase2

Project Budget: $674,000

Project Manager Information

Name: Brad Gordon

Organization: Great River Greening

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Project Reporting

Date Work Plan Approved by LCCMR: June 22, 2023

Reporting Schedule: April 1 / October 1 of each year.

Project Completion: June 30, 2026

Final Report Due Date: August 14, 2026

Legal Information

Legal Citation: M.L. 2023, Chp. 60, Art. 2, Sec. 2, Subd. 08h

Appropriation Language: $674,000 the first year is from the trust fund to the commissioner of natural resources for an agreement with Great River Greening to continue to partner with the University of Minnesota and the Sustainable Farming Association to demonstrate, evaluate, and increase adoption of the combined use of intensive tree, forage, and grazing as a method to restore and manage forest and savanna habitats.

Appropriation End Date: June 30, 2026

Narrative

Project Summary: Demonstrate, evaluate, and increase adoption of silvopasture - the combined use of tree, forage, and grazing management - as a method to restore and manage forests and savannas across Minnesota

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

Many farms across Minnesota contain forested acres that are considered marginal or unproductive and thus unmanaged, invasive infested, and underutilized. These acres, left unmanaged, contain many invasive shrub and tree species that have degraded the habitat and become sources of seed into neighboring public lands. Minnesota contains 17.4 million acres of forestland, and over 7 million of those acres are privately owned. In 2014, there were over 640,000 acres of unmanaged wooded pasture in Minnesota, and many of the degraded forest acres were once oak savanna which has been reduced by approximately 99.8% across the state.
Landowners are losing habitat for wildlife and pollinator species, but they are also incurring the crop treatment costs related to allowing buckthorn to thrive as an alternate host to oat crown rust (Puccinia coronata) and soybean aphid (Aphis glycines Matsumura). Managing these forests also includes costs for private landowners. However, there are opportunities for farmers to create returns on these management investments which could drive private land restoration. Silvopasture, the practice of intentionally combining management of trees, forage, and grazing as one integrated practice has been successfully implemented in parts of Minnesota, but its potential still needs to be better understood.

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.

This project is the second phase of the M.L.2019 project "Promoting and Restoring Oak Savanna Using Silvopasture." We are seeking funding to better understand the benefits and expand the practice of silvopasture across the state of Minnesota. First, we are seeking to conduct outreach and demonstration projects through workshops, field days, webinars, online materials, and e-learning tools, including the University of Minnesota's Silvopasture Learning Network. Through field days and workshops we will invite farmers and landowners (with and emphasis on BIPOC and other traditionally underserved communities) to learn about best practices for restoring forests and savannas, fencing construction, economic considerations, and managed grazing techniques. Second, we will continue to assess the environmental effects of silvopasture. We will continue to monitor plants, pollinators, soil health, and water quality at the Sherburne National Wildlife Refuge, heading into years 4 through 7 of managed grazing. There will also be before-and-after surveys at each of the six outreach and demonstration sites to determine how well native plants and pollinators recover after the initial restoration practices and grazing implementation. Third, we will perform an economic survey and case studies to help farmers evaluate the costs and benefits of initiating silvopasture on their lands.

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 outreach, demonstration, and monitoring work will continue to inform restoration partners of the benefits of utilizing silvopasture for restoring and managing forests and savannas across the state of Minnesota. It will also provide the economic data and training needed for landowners to perform initial restoration activities and maintain proper grazing practices for the benefit of native plants and pollinators. The silvopasture partners will continue to recruit members to the Silvopasture Learning Network where farmers and agricultural and forestry professionals can exchange ideas, methods, and results from demonstrations and surveys.

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

Activities and Milestones

Activity 1: Facilitate the use of Silvopasture across Minnesota through the Silvopasture Learning Network, conducting outreach activities and educational materials

Activity Budget: $317,300

Activity Description:
Great River Greening and the Sustainable Farming Association of Minnesota will utilize the recently developed Silvopasture Learning Network (SLN) to create farmer-to-farmer learning opportunities and outreach activities. We will share results from environmental surveys, best practices for initial restoration, intensive grazing practices for managing habitat, and economic tools for determining return on investment. Six on-farm demonstration workshops and field day sites will be established to engage farmers and landowners and educate attendees about considerations for restorations and ensuing management with silvopasture on their lands. Native plants, pollinators, wildlife and soil health will be emphasized while demonstrating buckthorn removal, tree thinning, and native seedings and plantings. Workshops and field days will be hosted in each of the northern, central, and southern regions of Minnesota and demonstrate activities in various forest and savanna systems, depending on the ecological region. Additionally, workshops specifically about fencing and grazing management will be hosted in each region of the state due to its importance in correctly implementing silvopasture. There will also be one webinar each year that will focus on questions raised by SLN members. Other interactive materials will be developed, including e-learning tools and video documentation, that will be posted and shared through the SLN.

Activity Milestones:

Description	Approximate Completion Date
Host three demonstration workshops, one fencing workshop, and one webinar in year one.	June 30, 2024
Host one demonstration workshop/field day, one fencing workshop, and one webinar in year two.	June 30, 2025
Develop and share online e-learning tools and video documentation through the Silvopasture Learning Network	June 30, 2026
Host two demonstration workshops/field days, one fencing workshop, and one webinar in final year.	June 30, 2026
Engage >200 farmers and educators through workshops, field days, and webinars by the final year	June 30, 2026

Activity 2: Establish Silvopasture monitoring and data sharing platform

Activity Budget: $210,800

Activity Description:
To advance the practice of restoration with silvopasture and improve the distribution of data, Great River Greening (GRG) and the Sustainable Farming Association of Minnesota will monitor sites that have been restored and managed with silvopasture and develop a data-sharing platform through the Silvopasture Learning Network. Continued monitoring of vegetation, pollinators, soil health, and water quality at Sherburne National Wildlife Refuge is essential for establishing baseline data for long-term grazing management in Minnesota oak savannas. Additionally, the six demonstration sites from Activity 1 will be surveyed and monitored before and after demonstration workshops using the same parameters as the long-term monitoring site. These surveys will display the initial impacts and recovery of native forest and savanna habitats on private lands over the course of two to three years using meander and quadrat survey methods. GRG will work with farmers and landowners to help them monitor improvements to habitat and share results on data-sharing platforms. It is important to monitor how well native plant and pollinator species recover and thrive in these systems when good grazing practices are implemented. Soil health surveys will evaluate fertility, microbial activity, carbon, organic matter, and aggregate stability and will follow protocols established during phase one.

Activity Milestones:

Description	Approximate Completion Date
Survey six sites before demonstration workshop activities	June 30, 2024
Establish data sharing platform for landowners and farmers to share vegetation and pollinators observed	June 30, 2024
Develop report of monitoring at Sherburne Wildlife Refuge	June 30, 2026
Survey six sites after demonstration workshop activities	June 30, 2026
Develop a report of the six sites surveyed before and after demonstration workshop activities	June 30, 2026

Activity 3: Conduct economic analyses to understand costs to restore forests and savannas with silvopasture and compare to traditional restoration approaches

Activity Budget: $145,900

Activity Description:
Economic data are presently lacking for helping farmers and landowners calculate whether there will be a return on investments to convert neglected forest acres to productive silvopasture systems. The Center for Integrated Natural Resources and Agricultural Management at the University of Minnesota will lead an economic analysis of silvopasture for restoring and managing forests and savannas in the state of Minnesota. We will compare current costs of agency-sponsored savanna and forest restoration to restoration using a silvopasture approach. We will estimate how much costs for restoration can be reduced by using a silvopasture approach in partnership with local farmers, thus saving agency and taxpayer dollars. We will also estimate the costs farmers and landowners would incur if they convert their land to a silvopasture system along with the benefits they would gain from grazing previously unproductive and invasive species-dominated acres. The Farmmaps program and networking tool developed in the first phase of this project will be adapted to include silvopasture economic case studies and calculators for switching to silvopasture. The case studies, Farmmaps program, and interactive tool can be accessed by other farmers and natural resource professionals interested in learning more about silvopasture and how to apply it into practice.

Activity Milestones:

Description	Approximate Completion Date
Report on collection of cost data from farmers, restoration professionals, and literature review	June 30, 2024
Report on cost comparison- restoring oak savanna using silvopasture with farmers vs current restoration practices	June 30, 2025
Develop interactive material for farmer/landowners to estimate costs and benefits of silvopasture systems	June 30, 2025
Share and demonstrate case studies, Farmmaps program, and interactive tool at demonstration workshops	June 30, 2026
Final report of the economic analyses and cost comparison	June 30, 2026

Project Partners and Collaborators

Name	Organization	Role	Receiving Funds
Lucinda Winter	Sustainable Farming Association of Minnesota	SFA is a 30-year-old farmer-to-farmer network, with a membership of 1,300 family farmers, small-business people, agricultural professionals, educators, and food advocates who are dedicated to improving soil health and protecting our natural resources by advancing sustainable farming practices through technical assistance, mentorships, workshops, café chats, webinars, and more.	Yes
Dean Current	Center for Integrated Natural Resources and Agricultural Management - University of Minnesota	CINRAM is a partner-based organization that catalyzes the development and adoption of integrated land use systems. They will perform economic surveys, interviews, and evaluations of the costs and benefits of silvopasture in Minnesota. Staff will work directly with farmers, agency staff, and partners to collect the most accurate data.	Yes

Dissemination

Describe your plans for dissemination, presentation, documentation, or sharing of data, results, samples, physical collections, and other products and how they will follow ENRTF Acknowledgement Requirements and Guidelines.
Great River Greening, Sustainable Farming Association of Minnesota, and Center for Integrated Natural Resources and Agricultural Management will utilize the Silvopasture Learning Network (SLN) to create farmer-to-farmer learning opportunities and outreach activities. They will also use Farmmaps, a professional networking tool to communicate case study findings to other farmers and professionals. They will share results from the site surveys and monitoring on these platforms, each organization's media and website platforms, and at least one regional conference relevant to the Silvopasture and oak savanna restoration field. Results from University of Minnesota staff surveys will also be archived in their respective data-sharing platforms. Six on-farm demonstration workshops and field day sites will be established to engage farmers and landowners and educate attendees about considerations for restorations and ensuing management with silvopasture on their lands. Workshops and field days will be hosted in each of the northern, central, and southern regions of Minnesota and demonstrate activities in various forest and savanna systems, depending on the ecological region. Additionally, workshops specifically about fencing and grazing management will be hosted in each region of the state due to its importance in correctly implementing silvopasture. There will also be one webinar each year that will focus on questions raised by SLN members. Other interactive materials will be developed, including e-learning tools and video documentation, that will be posted and shared through the SLN and each organization's media platforms which each have thousands of subscribers. Members of this project are also in the early stages of partnership with BIPOC-led sustainable agricultural organizations to ask where and how we can better engage BIPOC farmers and farming communities. This partnership will be prioritized during this project. Users and attendees of the above dissemination materials and events include farmers, landowners, public land managers, agency staff (i.e. DNR, MDA, USDA NRCS, etc.), scientists, ecological restoration professionals, and more. All dissemination will include acknowledgement of the Environment and Natural Resources Trust Fund.

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?
This is the second phase of the project. The goal of the project is to create a network of farmers through which data and best practices can be shared. We aim to collect and organize the data necessary to help farmers make the best decisions

for improving the bottom line of their operations and habitat on their lands. The results of this project will be shared and circulated through the Silvopasture Learning Network, e-learning tools, conferences, online material, and webinars. As long-term restoration data are collected and organized, the network should become sustainable through smaller grants to manage the network.

Other ENRTF Appropriations Awarded in the Last Six Years

Name	Appropriation	Amount Awarded
Upland, Wetland, and Shoreline Restoration in Greater Metropolitan Area	M.L. 2016, Chp. 186, Sec. 2, Subd. 08g	$509,000
Community Stewardship to Restore Urban Natural Resources - Phase Ten	M.L. 2017, Chp. 96, Sec. 2, Subd. 08i	$524,000
Promoting and Restoring Oak Savanna Using Silvopasture	M.L. 2019, First Special Session, Chp. 4, Art. 2, Sec. 2, Subd. 08b	$750,000
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

Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	$ Amount
Personnel								
Program/Project Manager Ecologist		Manages day to day project execution, contractors, project deliverables, budget and timeline. Leads vegetation, pollinator, and soil surveys; analyzes data; evaluates demonstration sites; maintains the Silvopasture Learning Network; and assists with field days and webinars.			21%	0.39		$109,600
Field Technician(s)		Conducts demonstration site work to support project deliverables and performs plant, pollinator, and soil surveys			21%	0.27		$44,300
Events and Outreach Manager		Manages tasks related to event development, event execution, and outreach in coordination with the Sustainable Farming Association			21%	0.03		$3,400
Communications Manager		Assists with developing promotional materials and coordinating the communications contract			21%	0.03		$3,000
Operations Director		Oversees and assists Project Managers and Ecologists for activities related to this project			21%	0.06		$10,300
Finance Director		Oversees Finance department for activities related to this project			21%	0.03		$3,000
Accounting Manager		Processes reimbursement requisitions			21%	0.12		$7,900
Grant Administrator		Tracks grant budget, project budgets, develops status reports and amendments			21%	0.42		$27,900
							Sub Total	**$209,400**
Contracts and Services								
TBD	Professional or Technical Service Contract	Tree and shrub removal sub-contracts following state competitive RFP requirements; there will likely be multiple subcontracts due to the multiple locations across the state; tree and shrub removal will be for each demonstration workshop				0.2		$52,000
Sustainable Farming Association of Minnesota	Sub award	Provide farm consults and on-site assistance to support farmers and landowners who are adopting silvopasture; lead grazing management demonstrations; host webinars and field days; assist with network outreach and material		X		0.42		$105,000

		development; Funds for personnel, travel, mileage, supplies, and other: event expenses include handouts, healthy food/beverages, and toilet/tent rental.						
TBD	Professional or Technical Service Contract	Communications contract for documenting silvopasture activities through video and other online material development				0.9		$28,000
University of Minnesota - Bioproducts and Biosystems Engineering	Sub award	Hydrological and water quality monitoring at Sherburne demonstration site; faculty from Phase 1 will continue monitoring the wells and piezometers they installed previously				0.18		$35,000
Department of Soil, Water, and Climate-University of Minnesota	Sub award	Expert consultation and assistance with soil health surveys across Sherburne Wildlife Refuge and the six demonstration workshop sites by UMN staff who designed the soil monitoring protocols in Phase 1 of the project.				0.04		$7,200
Center for Integrated Natural Resources and Agricultural Management - University of Minnesota	Sub award	Conduct economic analyses to understand costs to restore forests and savannas with silvopasture and compare to traditional restoration approaches. Adapt Farmmaps professional networking tool to include silvopasture case studies. Funds for personnel, travel, mileage, supplies, and tool development for one faculty, one graduate student, and one undergraduate student.				1.26		$140,800
TBD - Soil Testing Laboratory	Professional or Technical Service Contract	Soil sample submission to a soil-testing laboratory. Costs include shipping and laboratory processing fees. Processing fees are estimated to be approximately $100/sample for soil carbon, organic matter, fertility, active carbon, soil aggregate stability, and microbial activity.				0.3		$55,000
							Sub Total	**$423,000**
Equipment, Tools, and Supplies								
	Tools and Supplies	Seed and tree seedlings for demonstration workshops	Native seed for grazing the understory and tree seedlings for demonstrating restoration activities in silvopasture acres					$26,000

	Tools and Supplies	Sampling supplies	Gloves, bags, coolers, sampling equipment, and other field supplies for plant, pollinator, and soil sampling					$2,600
							Sub Total	**$28,600**
Capital Expenditures								
							Sub Total	**-**
Acquisitions and Stewardship								
							Sub Total	**-**
Travel In Minnesota								
	Miles/ Meals/ Lodging	Mileage, lodging, and meals for project personnel to implement all components of the project - 100 trips with approximately 14,000 miles ($8,440)- rates are based on state projected rates; lodging for 6 events, 2 staff, 1 night each ($2,160); Meals for 12 travel days, 2 staff ($300)	Mileage to Sherburne Wildlife Refuge for annual surveys, demonstration workshop setup, demonstration workshop events, demonstration site surveys, and farmer meetings					$10,900
							Sub Total	**$10,900**
Travel Outside Minnesota								
	Conference Registration Miles/ Meals/ Lodging	Green Lands Blue Waters Conference; Travel will include a formal presentation of the project findings at an out-of-state conference that attracts Minnesotan and regional attendees interested in sustainable and regenerative agriculture- particularly silvopasture.	Great River Greening staff will share results of surveys at Sherburne Wildlife Refuge and demonstration sites and economic analyses at a regional conference filled with farmers, agricultural professionals, and restoration professionals.	X				$1,500
							Sub Total	**$1,500**
Printing and Publication								
	Printing	Printing educational materials and displays	Printing educational materials and displays for distribution at workshops and field days					$600
							Sub Total	**$600**
Other Expenses								

							Sub Total	**-**
							Grand Total	**$674,000**

Classified Staff or Generally Ineligible Expenses

Category/Name	Subcategory or Type	Description	Justification Ineligible Expense or Classified Staff Request
Contracts and Services - Sustainable Farming Association of Minnesota	Sub award	Provide farm consults and on-site assistance to support farmers and landowners who are adopting silvopasture; lead grazing management demonstrations; host webinars and field days; assist with network outreach and material development; Funds for personnel, travel, mileage, supplies, and other: event expenses include handouts, healthy food/beverages, and toilet/tent rental.	Workshop and field day events will include supplies and rentals as a standard recruitment tool and safety item: healthy food, beverages, tables, chairs, portable toilets, and tent rentals for 100-200 attendees total. We do not want attendees hungry or thirsty while walking on or participating in hands-on activities at remote locations. Standard food items and beverages include selections of fruit, granola bars, muffins, juice, water, coffee, and sandwiches (Food, beverages and rentals: $15,000/9 total events). Travel will include a formal presentation of the project findings at an out-of-state conference that attracts attendees from Minnesota and the surrounding region who are interested in sustainable and regenerative agriculture practices, particularly silvopasture, at the Green Lands Blue Waters Conference ($3,500). It's a conference that has many Minnesota attendees who attend this particular conference for regional updates and knowledge related to and emphasizing sustainable and regenerative agriculture where silvopasture will be a popular and important topic and create greater discussion and interest than other in-state conferences. There is a possibility this conference will be in Minnesota as it annually rotates around the Midwest, but it is likely out of state the year we would present.
Travel Outside Minnesota	Conference Registration Miles/Meals/Lodging	Green Lands Blue Waters Conference; Travel will include a formal presentation of the project findings at an out-of-state conference that attracts Minnesotan and regional attendees interested in sustainable and regenerative agriculture- particularly silvopasture.	There will be travel expenses related to the formal presentation of results from this project at the Green Lands Blue Waters Conference. It's a conference that has many Minnesota attendees who attend this particular conference for regional updates and knowledge related to and emphasizing sustainable and regenerative agriculture where silvopasture will be a popular and important topic and create greater discussion and interest than at other in-state conferences. There is a possibility this conference will be in Minnesota as it annually rotates around the Midwest, but it is likely out of state the year we would present.

Non ENRTF Funds

Category	Specific Source	Use	Status	$ Amount
State				
			State Sub Total	**-**
Non-State				
In-Kind	Equipment, tools, and supplies usage and degradation	Activity 1 & 2: tablets, augers, shovels, spades, loppers, and other equipment for conducting vegetation and soil surveys and seeding, planting, and tree cutting at demonstration workshops	Secured	$5,000
In-Kind	General support funds (foundations, corporations, private donations)	GRG overhead costs covered by General Operating Support	Potential	$30,000
In-Kind	In-kind volunteer hours	Total of 200 hours farmer, landowner, and workshop attendee time preparing and hosting workshops; 50 hours of farmer/landowner assistance surveying habitat before and after workshops	Potential	$6,000
Cash	Private Foundations	Community outreach and promotion	Pending	$50,000
Cash	Federal	Field days, demonstrations, outreach	Pending	$10,000
			Non State Sub Total	**$101,000**
			Funds Total	**$101,000**

Attachments

Required Attachments

Visual Component

File: ec8c3311-c9c.pdf

Alternate Text for Visual Component

We have attached a one-page, front-and-back, informational handout describing silvopasture and the project partnership....

Financial Capacity

File: ee1261e3-fa7.pdf

Board Resolution or Letter

Title	File
CINRAM UMN Letter of Commitment	c9d98e77-92e.pdf
SFA Letter of Commitment	3585972a-5d6.pdf
GRG Board Resolution LCCMR ML2023FY2024	ee37a5ab-fa5.pdf

Optional Attachments

Support Letter, Photos, Media, Other

Title	File
CRP Letter of Support	8761877d-eab.pdf
UMN Extension LOS	860e0175-9e4.pdf
Background Check	5d0670db-2d1.pdf

Difference between Proposal and Work Plan

Describe changes from Proposal to Work Plan Stage

No changes were made aside from the title number from "....Phase 2" to "...Phase II."

Additional Acknowledgements and Conditions:

The following are acknowledgements and conditions beyond those already included in the above workplan:

Do you understand and acknowledge the ENRTF repayment requirements if the use of capital equipment changes?

N/A

Do you agree travel expenses must 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 agree to the Commissioner's Plan.

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

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