



# Environment and Natural Resources Trust Fund

2024 Request for Proposal

## General Information

**Proposal ID:** 2024-243

**Proposal Title:** Geolocation Technology for Minnesota Environmental Education

## Project Manager Information

**Name:** Stephen Swazee

**Organization:** SharedGeo

**Office Telephone:** (651) 456-5411

**Email:** sdswwazee@sharedgeo.org

## Project Basic Information

**Project Summary:** Project will create collaborative community-based partnerships to install permanent geolocation markers that will facilitate environmental education and research, and improve public access and safety in Minnesota's outdoor recreational spaces.

**Funds Requested:** \$198,000

**Proposed Project Completion:** June 30, 2026

**LCCMR Funding Category:** Small Projects (H)

**Secondary Category:** Environmental Education (C)

## 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.**

Anyone who has hiked through a forest knows that the ability to understand where you are is an important factor in your understanding of the habitat, your enjoyment of the journey, and your safety. Through installation of permanent geolocation markers based on Minnesota state government coordinate standard U.S. National Grid (<https://mn.gov/mnit/government/policies/geo/us-national-grid.jsp>), this project offers a multi-discipline opportunity to advance education and enjoyment of Minnesota's natural resources. First, it facilitates diverse groups of citizens and organizations coming together to work on local trail projects across the state. Second, it creates a point of focus for developing K-12 educational curriculum about geolocation technology and its use in the natural resource management community. Third, it provides accurately known anchor points for advanced environmental research through grid based climate change analysis over time. Fourth, as documented in the attached package of letters, it creates a statewide, uniform system of emergency location reporting which will greatly reduce response times for DNR and other wilderness rescue crews. Taken together, these elements create an exceptional opportunity to improve use, education, research and public safety when the state's citizens are in Minnesota's great outdoors.

### **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.**

If awarded, SharedGeo will provide no-cost consulting, planning, training and materials in support of community action groups, trail clubs, local land managers and Emergency Services Sector (ESS) personnel who wish to install Emergency Location Markers (ELM) in their areas of responsibility. To accomplish this mission, SharedGeo will provide administrative, education, and technical support, as well as training materials it previously developed ([www.usngcenter.org](http://www.usngcenter.org)), and new items it plans to develop in support of K-12 education and training programs. All training will be delivered by a core of highly experienced instructors SharedGeo has worked with over the past decade. Working collaboratively with local land managers and first responders, each project team will identify optimal locations to place ELM markers. SharedGeo will then have ELMs manufactured and shipped to the appropriate group for installation. Experience strongly indicates an in-kind labor program will cover installation costs and any ongoing maintenance. In support of this project flow, SharedGeo has already created a YouTube video describing the evolution of the ELM concept and management of an install (<https://www.youtube.com/watch?v=dJu98jUsh9U&t=348s>). SharedGeo will also publish an extensive ELM installation planning guide as part of the project.

### **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?**

There are different statewide outcomes for each group who will be involved in this project. Community groups working on trail projects will become more aware of their local natural resources and the need for conservation. Students will be able to learn geospatial skills and concepts in Minnesota's great outdoors. Environmental scientists will be able to leverage a growing network of accurately placed geolocation markers to facilitate research. And finally, responders will gain access to a system which has cut wilderness response times by as much as 90%, thereby making it safer for all citizens to enjoy Minnesota's natural resources.

## Activities and Milestones

### Activity 1: U.S. National Grid and Emergency Location Marker Training

**Activity Budget:** \$141,000

**Activity Description:**

On-site regional training one day workshops (3-6) with additional on-line webinars (5-10). This would include working with managers for parks, forests, trails, and aquatic environments, local schools, first responders, tribal leadership and emergency managers to provide instruction on the Emergency Location Marker system and identify key, strategic locations for marker placement. With the exception of a K-12 curriculum, much of this training has been previously created. Informational materials would be printed and also provided electronically to training attendees so they can return to their communities and serve in a "train-the-trainer" capacity.

**Activity Milestones:**

Description	Approximate Completion Date
Complete on-site and virtual project informational sessions around the state	January 31, 2025
Proposals due from trails and parks managers, clubs, scout groups, schools, research teams, and others.	March 31, 2025
Accepted projects announced	May 31, 2025
Complete development of K-12 educational and outreach items	August 31, 2025
Complete on-site and virtual education and installation sessions for selected partner organizations	November 30, 2025

### Activity 2: US National Grid Emergency Location Marker Manufacture and Installation Technical Support

**Activity Budget:** \$57,000

**Activity Description:**

By July 31, 2025, all ELM signs will be manufactured and shipped to the partners for installation by June 30, 2026. The amount budgeted is for an estimated 2,000 signs and outreach materials. As appropriate, locale specific ELM informational brochures will be developed, printed and shipped; then distributed by recipient as part of their project public relations program.

**Activity Milestones:**

Description	Approximate Completion Date
Complete manufacture and shipment of sign orders	July 31, 2025
Print and distribute locale specific ELM system informational brochures	August 31, 2025
Complete follow up orders for any bad or damaged signs	October 31, 2025
Complete installation of ELMs	June 30, 2026

## Project Partners and Collaborators

Name	Organization	Role	Receiving Funds
Minnesota County Lands and Parks Departments	Minnesota Counties	Receive training on the Emergency Location Markers (ELM) system. Place and maintain ELMs at strategic locations on county trails, parks, forests, and waterways. Incorporate project provided educational materials into public outreach efforts.	No
Tribal Lands Departments	Minnesota Tribes	Receive training on the Emergency Location Markers (ELM) system. Place and maintain ELMs at strategic locations on tribal trails, parks, forests, and waterways. Incorporate project provided educational materials into public outreach efforts.	No
Recreational User Groups	Non-profit Recreational User Groups across Minnesota	Outdoor associations such as snowmobile, bicycle, hiking, hunting, and watercraft groups receive training on the Emergency Location Marker (ELM) system. Where appropriate, place and maintain ELMs at strategic locations in areas of responsibility in coordination with the trail land owners. Incorporate project provided educational materials into outreach efforts.	No
Emergency Services Sector: Wildland Search & Rescue teams, Conservation Officers, Law Enforcement, EMS, Firefighters, Emergency Managers	Minnesota First Responders	Receive training on the Geo-referencing chapter of the National Search and Rescue Committee's "Land Search and Rescue Addendum to the National Search and Rescue Manual," FEMA directive 092-5 "Use of the United States National Grid (USNG)," and how Emergency Location Markers connect to this national standards ecosystem for emergency geolocation.	No
Teachers in Project Area	K-12 education system	Work with local project teams to develop location appropriate geospatial training through in-field experience with GPS, ELMs and navigation concepts. For K-12 students, ELMs facilitate observations of known location environmental change over time on a rudimentary level.	No
Environmental Scientists	Research, education and policy groups	Similar to the USGS benchmark system, ELM placements can be used to deploy environmental research grids for climate change analysis and monitoring. Collaborate with environmental scientists to leverage this potential. As an example, see: <a href="https://usng-gis.org/why.html">https://usng-gis.org/why.html</a> .	No

## 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?**

As has been the case where pilot ELM projects which have already been installed in Minnesota - such as Lake, Dakota and Cook Counties - demonstration of utility has led local governments to fund project expansion. In one out-of-state case, Cobb County, Georgia, has committed over \$300,000 to its effort. Thus, it is envisioned the ENRTF grant will be "seed" money which facilitates concept adoption and expansion across Minnesota. As these additional projects take hold, a critical mass will be achieved which will bring on additional installs funded through other federal, state, tribal, local and club sources.

## Project Manager and Organization Qualifications

**Project Manager Name:** Stephen Swazee

**Job Title:** Executive Director

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

Steve Swazee is retired Navy Captain and former Delta Air Lines 747 pilot who has chaired the Emergency Preparedness Committee (EPC) of the Minnesota Geospatial Advisory Council since 2008. He was also previously a member of the Minnesota Geospatial Advisory Council and Geospatial Information and Technology Association (GITA) Board of Directors. During Hurricanes Katrina, Ophelia, Rita and Wilma in 2005, he was recalled to active duty to serve as the senior Department of Defense (DoD) Emergency Preparedness Liaison Officer at the Pentagon. He was subsequently a by-name appointment to the DHS-DoD post-Katrina data work group charged with developing a national Common Operating Picture (disaster visualization using electronic mapping) that can be used by all levels of responders and decision makers. He is a graduate of the Naval Post-Graduate School of Aviation Safety, and while on active duty was the Director of Safety and Standardization of the U.S. Marine Corps' largest Air Group. His expansive experience in the Emergency Services Sector led him to help found St. Paul based SharedGeo, a nonprofit well known for its innovative mapping products which are typically released into the public domain. He has served as that organization's Executive Director since 2008, and in 2010 was awarded a Governor's Commendation for his service to the state as chair of the EPC.

Specific to the geolocation markers described in this proposal:

- Created and built the national center of excellence for information on the U.S. National Grid (USNG), the U. S. National Grid Information Center ([www.usngcenter.org](http://www.usngcenter.org))
- Conceived the Emergency Location Marker (ELM) concept, and developed technical standards which led to formal creation of the ELM
- Managed development of ELM production standards and procedures now used by commercial vendors
- Developed multiple training programs during 31 years of military service

**Organization:** SharedGeo

**Organization Description:**

SharedGeo is a federally recognized 501 (c) 3 nonprofit founded in September 2008 with the mission to help government, nonprofit, education, and corporate entities use mapping technologies and share geographic data for the public good. SharedGeo's initial focus was on disaster response and relief operations in the United States, but it has since become engaged in a wide variety of related activities – including environmental, public safety and specialized software development. Many of its employees donate their time – which allows SharedGeo to keep expenses low and use incoming revenues to develop additional products which benefit the public. Some of its current and past clients include the nation's largest professional geospatial association focused on infrastructure, Geospatial Information & Technology Association ([www.gita.org](http://www.gita.org)), U.S. Fish and Wildlife Service, Iowa Department Homeland Security and Emergency Management, Minnesota Department of Transportation, and Airborne Data Systems ([www.airbornedatasystems.com](http://www.airbornedatasystems.com)). It is home to one of the world's 21 software programs sanctioned by the Open Source Geospatial Foundation (OSGeo), GeoMOOSE ([www.geomoose.com](http://www.geomoose.com)), which since 2008 has been used by hundreds of units of government around the world to share their geospatial data with the public for free.

## Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	\$ Amount
<b>Personnel</b>								
Project Manager		Responsible for overall project management and goal attainment			7.1%	0.5		\$30,000
Technical Support		Responsible for providing technical assistance and training to the project			7.1%	0.2		\$15,000
Administrative Support		Responsible for project administrative functions such as coordinating outreach material production and development of training materials			7.1%	0.1		\$6,000
							<b>Sub Total</b>	<b>\$51,000</b>
<b>Contracts and Services</b>								
Project Instructors	Professional or Technical Service Contract	Instructors will be individually contracted via respective Project Assignments to provide high quality, task specific training throughout the project cycle. It is anticipated all instructor personnel who will be used are currently known to SharedGeo and have been previously vetted for their expertise on subject matter. Develop curriculum as needed.				1.2		\$80,000
							<b>Sub Total</b>	<b>\$80,000</b>
<b>Equipment, Tools, and Supplies</b>								
	Tools and Supplies	2000 Emergency Location Marker Signs at \$25/sign delivered, \$50,000 total.	Manufacture and shipping of ELM signs					\$50,000
							<b>Sub Total</b>	<b>\$50,000</b>
<b>Capital Expenditures</b>								
							<b>Sub Total</b>	-
<b>Acquisitions and Stewardship</b>								
							<b>Sub Total</b>	-

<b>Travel In Minnesota</b>								
	Miles/ Meals/ Lodging	In person workshops and installation support	As needed, in-person educational workshops and outreach by employees in support of project					\$5,000
							<b>Sub Total</b>	<b>\$5,000</b>
<b>Travel Outside Minnesota</b>								
							<b>Sub Total</b>	-
<b>Printing and Publication</b>								
	Printing	Brochures describing ELM system - 50,000 copies total (5,000/10 projects)	Project specific outreach to the public to help them understand how to use the ELM system					\$6,000
	Printing	Training support handouts/materials - 1,000 packets/\$4.00	Take away information packet given to attendees of instructional sessions					\$4,000
							<b>Sub Total</b>	<b>\$10,000</b>
<b>Other Expenses</b>								
		Art support	Graphic designer in support of project outreach materials. \$1,000 allocated to public information brochures, \$1,000 allocated to training support items.					\$2,000
							<b>Sub Total</b>	<b>\$2,000</b>
							<b>Grand Total</b>	<b>\$198,000</b>

Classified Staff or Generally Ineligible Expenses

Category/Name	Subcategory or Type	Description	Justification Ineligible Expense or Classified Staff Request
---------------	---------------------	-------------	--



## Non ENRTF Funds

Category	Specific Source	Use	Status	Amount
<b>State</b>				
In-Kind	Existing State, County and Tribal sign infrastructure installation and repair programs.	State, County and Tribal land managers will contribute their time and tools to install ELM signs at their designated locations. This may be done as part of their on-going sign installation and repair programs.	Potential	\$50,000
			<b>State Sub Total</b>	<b>\$50,000</b>
<b>Non-State</b>				
			<b>Non State Sub Total</b>	-
			<b>Funds Total</b>	<b>\$50,000</b>

## Attachments

### Required Attachments

#### *Visual Component*

File: [1fc3c187-116.pdf](#)

#### *Alternate Text for Visual Component*

Example of descriptive trifold for ELM geolocation marker system developed for northern Minnesota which is now in use in nine states, NASA's Cape Kennedy Space Center, several national parks, and a growing number of cities. Although attachment is emergency response focused, the system can be used in many ways....

#### *Financial Capacity*

File: [b52ccf8b-b8a.pdf](#)

#### *Board Resolution or Letter*

Title	File
SharedGeo BOD Support Resolution	<a href="#">1b9c6c38-3b2.pdf</a>

### Optional Attachments

#### *Support Letter, Photos, Media, Other*

Title	File
11 Letters of Support	<a href="#">841c652e-3f7.pdf</a>

## Administrative Use

**Does your project include restoration or acquisition of land rights?**

No

**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?**

Yes, SharedGeo

**Does your project include the design, construction, or renovation of a building, trail, campground, or other capital asset costing \$10,000 or more?**

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?**

No