



Environment and Natural Resources Trust Fund

2022 Request for Proposal

General Information

Proposal ID: 2022-119

Proposal Title: Mapping Construction Resources for Recreation and Transportation Infrastructure

Project Manager Information

Name: Heather Arends

Organization: MN DNR - Lands and Minerals Division

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Project Basic Information

Project Summary: To sustainably manage resources needed for publicly-funded transportation and recreation projects, DNR will provide St. Louis County with aggregate maps to inform decisions on land use and natural resource conservation.

Funds Requested: \$776,000

Proposed Project Completion: June 30 2025

LCCMR Funding Category: Foundational Natural Resource Data and Information (A)

Project Location

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

Region(s): NE

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

Region(s): NE

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.

Minnesota's transportation and recreation infrastructure relies on the availability of local aggregate resources. Since 1991, ENRTF funded at least 1,000 miles of new and reconstructed trails, 28 bridges, 2 interpretive centers, and 12 new water access sites. ENRTF projects restoring shorelines, producing clean energies, and making the outdoors ADA compliant all rely on the availability of aggregate resources.

The delivered price of aggregate doubles at approximately 23 miles. Aggregates for some projects travel more than twice this distance because local resources are depleted or unknown. Aggregate availability in many areas of the state, including the North Shore, is limited due to natural geological scarcity. These issues not only increase the cost of publicly funded projects, but also increase the project's carbon footprint.

St. Louis County is working to balance a limited supply of quality aggregate with a growing need for road and bridge maintenance, septic system installation, and outdoor recreation development. In the last three years, St. Louis County invested nearly \$10 Million in trail projects from grants, bonding requests, recent awards, and local matches. As demand for aggregate continues to grow, an aggregate map is needed to better protect and conserve ecological, recreational, and economic resources.

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.

Similar to how groundwater maps inform decisions about sustainable water use, aggregate resource maps inform decisions about the impacts of developing, or not developing, a potential resource. In this proposal, the DNR's Aggregate Resource Mapping Program (ARMP) will identify and characterize aggregate resources in St. Louis County, and make this information widely available so that all users of aggregates are better equipped to protect, conserve, preserve, and enhance the state's natural resources. The St. Louis County Board of Commissioners passed a resolution requesting this work in 2004, and the waitlist for aggregate mapping has grown to 18 counties who also passed similar resolution.

The Minnesota legislature directs (Minn. Stat. §84.94) the DNR to provide aggregate resource information to local governments. This proposal is also consistent with the final recommendations of the 2017 Aggregate Resources Task Force to fund ARMP, so that maps can be available statewide. ARMP uses a combination of remote sensing interpretation, geologic fieldwork, and GIS analysis to inventory aggregate resources and reclamation. Aggregate maps and associated GIS data can be layered with other natural resource layers to inform decisions on resource conservation and protection, infrastructure projects, sustainable community development, and land asset management.

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 proposal will produce technical, yet easy to understand, aggregate maps showing the distribution and quality of sand and gravel and crushed stone resources compiled at a 1:50,000 scale. Associated GIS datasets include spatial database of aggregate resource potential, field observations, and an inventory of all current and historical gravel mines, noting the status of reclamation. This information provides all stakeholders detailed information that can be layered with other natural resource data. For this reason, the Minnesota Association of County Planners and Zoning Administrator's 2020 Legislative platform supports statewide aggregate resource mapping.

Activities and Milestones

Activity 1: Map the aggregate resources of St. Louis County.

Activity Budget: \$776,000

Activity Description:

Aggregate resource mapping works in coordination with the Minnesota Geologic Survey and MN Department of Natural Resources. DNR geologists compile existing information on the geology of the county. DNR geologists will conduct an initial assessment of aggregate potential through analysis of glacial landform-sediment associations. Geologists will then conduct remote surveys as well as fieldwork to inventory the activity and reclamation status of all gravel mines. Field observations will also be collected and entered into a database. Final inventory of aggregate potential will be completed using GIS.

Activity Milestones:

Description	Completion Date
Compile existing geology, soils, wells, aggregate quality data	December 31 2022
Digitize draft lines and mapping units within the county.	June 30 2024
Conduct fieldwork, collect filed observations, inventory active, inactive, and reclaimed aggregate mines.	November 30 2024
Complete and publish aggregate resource maps for St. Louis County, host a workshop.	June 30 2025

Project Partners and Collaborators

Name	Organization	Role	Receiving Funds
Julie Marinucci	St. Louis County	Deputy Director of the St. Louis County Department of Lands and Minerals.	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 be funded?

The results of the project will be available on the DNR website. St. Louis County will have a dedicated page where the public can access this information in four ways: by requesting a paper copy of the maps, downloading a PDF of the maps, downloading GIS databases, and viewing GIS data on a web map server. The DNR will host a workshop for St. Louis County to review results and information. No additional funding or work is anticipated once the project is completed.

Other ENRTF Appropriations Awarded in the Last Six Years

Name	Appropriation	Amount Awarded
Accelerated Aggregate Resource Mapping	M.L. 2019, First Special Session, Chp. 4, Art. 2, Sec. 2, Subd. 03h	\$700,000

Project Manager and Organization Qualifications

Project Manager Name: Heather Arends

Job Title: Mineral Potential Section Manager

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

Heather has worked for the DNR for 20 years as an industrial minerals geologist, supervisor, and now section manager that oversees the stewardship of the state's 12 million acre mineral estate. Heather has a degree in geology from the University of Minnesota, Morris and is working on a M.S. of Geological Sciences from the University of Minnesota, Duluth.

Organization: MN DNR - Lands and Minerals Division

Organization Description:

The mission of the Minnesota Department of Natural Resources (DNR) is to work with Minnesotans to conserve and manage the state's natural resources, to provide outdoor recreation opportunities, and to provide for commercial uses of natural resources in a way that creates a sustainable quality of life.

Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	\$ Amount
Personnel								
Research Scientist 2		Geologist			20%	3		\$287,899
Research Scientist 2		Geologist			20%	3		\$262,174
Program Coordinator		Project Lead Worker			20%	0.9		\$103,480
Technician		Field Assistant			20%	0.5		\$24,296
							Sub Total	\$677,849
Contracts and Services								
							Sub Total	-
Equipment, Tools, and Supplies								
	Equipment	drilling equipment, hand augers	Field work related expenditures					\$1,000
	Tools and Supplies	field gear, sample bags, safety gear and boots, notebooks for 4 staff	Supplies to conduct fieldwork					\$2,000
							Sub Total	\$3,000
Capital Expenditures								
							Sub Total	-
Acquisitions and Stewardship								
							Sub Total	-
Travel In Minnesota								
	Miles/ Meals/ Lodging	12 weeks of lodging, mileage, food for 4 people	Field work for geologic mapping and training,					\$42,680

							Sub Total	\$42,680
Travel Outside Minnesota								
							Sub Total	-
Printing and Publication								
	Printing	Paper, ink, labels	Printing maps for distribution					\$500
							Sub Total	\$500
Other Expenses								
		Direct and Necessary Costs	HR support, IT support, fiscal support, communication support, planning support					\$51,971
							Sub Total	\$51,971
							Grand Total	\$776,000

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				
In-Kind	General Fund	Supplement training budget and out of state travel, salaries of permanent staff	Pending	\$100,000
			State Sub Total	\$100,000
Non-State				
In-Kind	St. Louis County will provide in-kind services to test aggregate texture and quality	Laboratory analysis	Pending	\$18,000
			Non State Sub Total	\$18,000
			Funds Total	\$118,000

Attachments

Required Attachments

Visual Component

File: [a3540e20-dd6.pdf](#)

Alternate Text for Visual Component

Status map of completed, in progress, and requested counties. Three quotes of support Harvey Thorleifson, Director of the Minnesota Geological Survey, Beth Pierce, Norther St. Louis County Trails task Force, and Nancy Daubenberger, Deputy Commissioner of the Department of Transportation....

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?

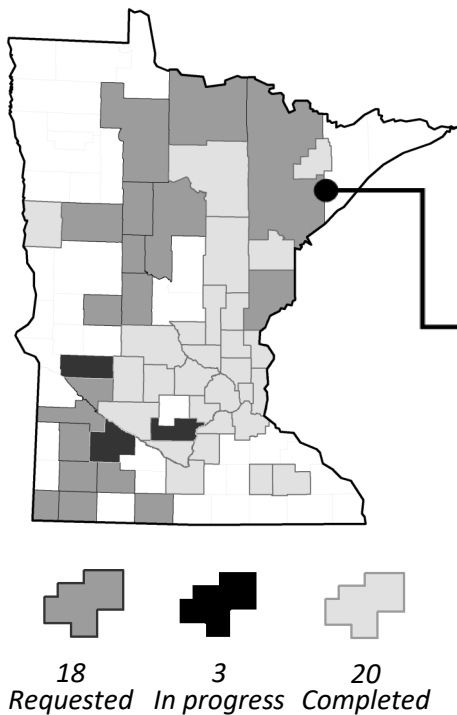
No

Does the organization have a fiscal agent for this project?

No

Aggregate Resource Mapping of St. Louis County

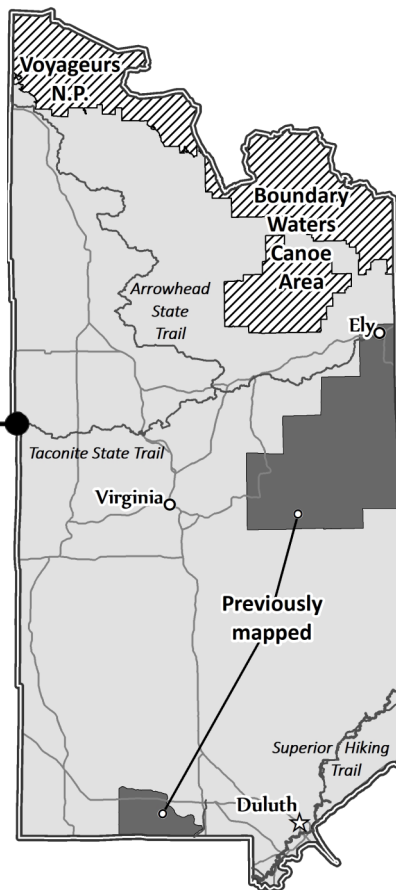
ARMP Statewide Status



St. Louis County Infrastructure

+2,500 miles of highway
+3,000 miles of county and township roads
+900 bridges
+1,200 miles of public trails
+200 state park campsites
+200 boat launches

m DEPARTMENT OF
NATURAL RESOURCES
Division of Lands and Minerals



Support for Aggregate Mapping

Beth Pierce, Northern St. Louis County Trails Task Force (NSLCTTF)

"Aggregate mapping in St. Louis County would benefit user groups, land managers and local governments that make up NSLCTTF as we navigate planning and construction of many current and future trail projects. Identifying aggregate sources before trails are conceived could save user groups and trail sponsors such as counties and cities money in redesign and relocation costs, and assist us with materials sourcing in the construction phase. Aggregate maps are a valuable resource to clubs, engineering firms and construction companies as proposed trail projects move forward."

Dr. Harvey Thorleifson, Director of the Minnesota Geologic Survey (MGS)

"We support this proposal, as aggregate assessment is needed in every County. Our mapping supports all decision-making, and for each application, additional work is needed beyond what we do. This is true for groundwater, engineering, metallic minerals, and aggregate – sand and gravel or crushed stone. Future sources of aggregates will be needed to keep construction costs competitive, and to minimize truck traffic."

Nancy Daubenberger, Deputy Commissioner of Department of Transportation (MNDOT)

"MNDOT supports mapping the aggregate resources of St. Louis County. Our agency is committed to meeting sustainability targets to reduce greenhouse gas emissions, reducing the cost of transportation projects, and preparing for impacts of climate change. Aggregate maps that identify local sources of aggregate are an important factor in meeting these goals."