

**Environment and Natural Resources Trust Fund
2016 Request for Proposals (RFP)**

Project Title:

ENRTF ID: 012-A

State Spring Inventory for Resource Management - Phase 2

Category: A. Foundational Natural Resource Data and Information

Total Project Budget: \$ 518,499

Proposed Project Time Period for the Funding Requested: 3 years, July 2016 to June 2019

Summary:

Springs are natural points of groundwater discharge. This project continues work to systematically inventory springs statewide to provide fundamental data needed to maintain spring flows and protect groundwater dependent resources.

Name: Jan Falteisek

Sponsoring Organization: MN DNR

Address: 500 Lafayette Rd N
St. Paul MN 55155-4032

Telephone Number: (651) 259-5665

Email jan.falteisek@state.mn.us

Web Address www.mndnr.gov

Location

Region: Statewide

County Name: Statewide

City / Township:

Alternate Text for Visual:

Map shows locations of verified springs in Minnesota and locations of reported springs that need to be verified.

_____ Funding Priorities	_____ Multiple Benefits	_____ Outcomes	_____ Knowledge Base
_____ Extent of Impact	_____ Innovation	_____ Scientific/Tech Basis	_____ Urgency
_____ Capacity Readiness	_____ Leverage	_____ TOTAL	_____ %



PROJECT TITLE: State Spring Inventory for Resource Management and Protection, Phase 2

I. PROJECT STATEMENT

Springs are natural points of groundwater discharge. Springs provide flow for:

- coldwater (trout streams) and cool water fisheries;
- base flow in streams during dry periods;
- create and sustain unique ecological habitats; and
- maintain the integrity of aquatic systems against invasive species.

An existing research database of southeast Minnesota springs maintained by the Minnesota Geological Survey identifies about 2,200 of the estimated 10,000 to 15,000 springs statewide.

This proposed project is a continuation of a current project to develop a statewide spring inventory. Significant progress has been made during the first year of the current project. The current spring inventory project is developing the procedures and methods for conducting spring mapping statewide, including evaluating the effectiveness of thermal imaging technology for certain areas.

Existing spring information from various agency records is being collected for inclusion in the statewide spring database that is in development. Responses to requests for information have been very positive and a significant number of springs have been identified for future verification. Citizens across the state have also supplied spring information and have been extremely enthusiastic and interested in the current project. Local governments have been very positive as well when contacted for information.

The database will contain both reported and verified spring location information and physical, chemical, and historical data for spring sites if available. The current and proposed projects will maintain the spring inventory database at the Minnesota Department of Natural Resources for long-term management and public access.

II. PROJECT ACTIVITIES AND OUTCOMES

Activity 1: Inventory Existing Spring Information and Data Management

Budget: \$311,099

Continue compiling existing and reported spring location information from Department of Natural Resources-Fisheries records, topographic maps, and other federal, state, and local sources. Field verify compiled spring information to collect location, elevation, and site information such as geologic setting, aquifer source, flow, temperature, and the source of spring water if known. Enter data into the DNR spring inventory database for long-term management and web access to the public.

Outcome	Completion Date
1. Continue to compile existing and reported spring location information and enter reported data into the spring inventory database.	June 30, 2019
2. Field verify location and characteristics of compiled, preliminary spring information. Enter verified data into the spring inventory database.	June 30, 2019
3. Manage and improve database; further develop and improve Web usability of spring inventory data for public access.	June 30, 2019

Activity 2: Inventory Spring Data in Unmapped Priority Areas.

Budget: \$207,400

Conduct field surveys in unmapped priority areas to collect spring locations and site information such as geologic setting, aquifer source, flow, temperature, and the source of spring water if known. Unmapped priority areas include state parks, scientific and natural areas, wildlife management areas, state historic sites, state forests,



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and city, local, and possibly federal lands. Other priority areas are expected to be identified by detailed analysis of the verified spring data. This activity will also evaluate and test alternative methodologies to identify efficient and cost-effective procedures to identify and survey springs. Of special interest is the use of thermal imaging technology, which has had some application for certain uses in Minnesota, but needs further evaluation for specific application for the spring inventory. Other technologies may also be evaluated for application in large areas or areas with difficult access.

Outcome	Completion Date
1. Conduct field surveys of springs in priority areas to locate and collect site-specific data	June 30, 2019
2. Evaluate and test alternative methodologies for efficient field surveys and verification	June 30, 2019

III. PROJECT STRATEGY

A. Project Team/Partners

The project team will include DNR specialists in springs, karst, and hydrogeologic systems mapping. The Minnesota Geological Survey will partner with the DNR to provide geologic interpretations and maintain the existing Minnesota Karst Features Database as the repository for karst features and associated spring information as a research database primarily for the southeast Minnesota karst landscape. The State Spring Inventory database in development will be coordinated with the existence and continued use of the Karst Features Database as a research database managed by the Minnesota Geological Survey.

B. Project Impact and Long-Term Strategy

Springs are natural features that return groundwater to surface waters. The groundwater that discharges from springs is critical for maintaining surface stream flow in Minnesota’s streams and rivers. The quantity and quality of that water has a direct impact on surface water ecosystems and human use of those rivers and streams. This information is critical for Total Maximum Daily Load (TMDL) implementation strategies, impaired waters remediation, trout stream management, ground water protection and allocation issues, and local land and water management decisions. The state spring inventory is part of a long-term continuing need to identify, assess, and monitor all parts of the hydrologic cycle so that observed or projected hydrologic system response to change, whether climatic or anthropogenic, can be measured and accurately evaluated. The long-term strategy is to conduct the inventory and establish the Spring Inventory at DNR as an ongoing hydrologic cycle database on the same basis as the existing DNR stream gaging, groundwater level monitoring, lake level, climatology, and related hydrologic cycle databases. On-going support of the Spring Inventory database will be needed to assure the assembled data are current and remain accessible to users. If thermal imaging to locate springs over large areas proves in this proposed project to be feasible and cost-effective, a separate proposal will need to be brought forward to fund that work.

C. Timeline Requirements

The proposed project is for years three and four of a four-year project. Years one and two are currently underway. Given the statewide scope of the project, it is projected that the proposed project for a total of four years of project work will be needed to bring the major inventory, site verification, and database work to closure for selected priority areas. Some level of spring identification and site verification work will be needed by DNR or other agencies after the four-year project period to meet on-going resource protection information requirements.

2016-2017 Detailed Project Budget

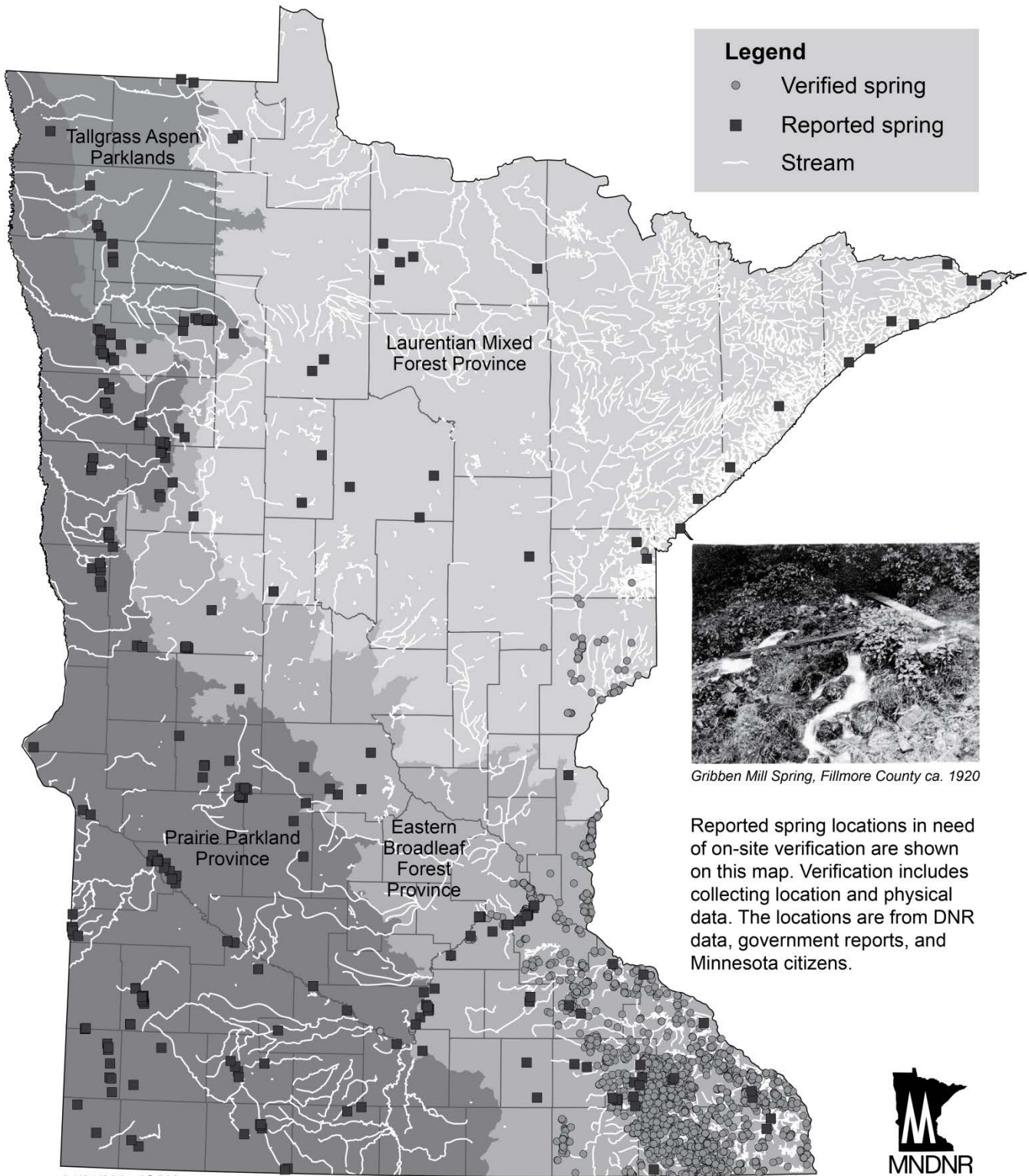
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IV. TOTAL ENRTF REQUEST BUDGET 3 years (two year budget work plan with additional 1 year to complete work)

BUDGET ITEM	AMOUNT
Personnel: five positions, total 2.9 FTE each year for direct project activities	
Research Scientist 3: est \$11,510 (1 classified @ 0.1 FTE for two years), 74.2 % salary, 25.8 % benefits	\$ 23,019
Hydrologist 3: est. \$86,472 (1 classified @ 0.8 FTE for two years), 73.3% salary, 26.7% benefits	\$ 172,944
Research Analysis Specialist: est. \$63,347 (1 unclassified @ 1 FTE for two years), 79% salary, 21% benefits	\$ 126,694
Student Worker-ParaProfessional: (PT) (2 unclassified @ 0.5 FTE for two years), 100% salary	\$ 29,336
Professional/Technical/Service Contracts:	
Geologic interpretations of spring location data, field review of selected spring sites to confirm geologic conditions, and assistance and coordination with development of the spring inventory database. Minnesota Geological Survey	\$ 15,000
Technical assistance and equipment rental for testing or applying thermal imaging or other field data collection technology. Exact types of services required and specialty contractor/vendor to be determined and selected by RFP process or state contract.	\$ 20,000
Database and specialty programming services; web design and user support. MN.IT service level agreement	\$ 20,000
*Direct and Necessary expenses: HR Support (~\$8,439), Safety Support (~\$1,989), Financial Support (~\$5,838), Communication Support (~\$1,236), IT Support (~\$27,940), Planning Support (~\$829), and Procurement Support (~\$235), necessary to accomplishing funded programs/projects.	\$ 46,506
Equipment/Tools/Supplies:	
Field equipment such as current meters, data loggers, specific expenses for use of specialized field data tablets or ruggedized field laptop computers to collect field data, waders, hip boots, GPS equipment, GIS or specialty software, and misc. tools and supplies for field data collection and equipment maintenance.	\$ 15,000
Travel expenses in Minnesota:	
Fleet charges for travel to statewide locations to acquire existing data, meetings, and on-site verification of reported springs, est. \$22,000; lodging, meals, mileage as per state contracts, est. \$22,000	\$ 44,000
Additional Budget Items:	
Required and necessary project personnel training for safety, technical, web and data management, and professional development in support of and to enhance the spring inventory project.	\$ 3,000
Necessary expenses in support of attending or giving project-related presentations at events such as the Minnesota Ground Water Association or the Minnesota Water Resources conferences in support of project results dissemination.	\$ 3,000
TOTAL ENVIRONMENT AND NATURAL RESOURCES TRUST FUND \$ REQUEST =	\$ 518,499

SOURCE OF FUNDS	AMOUNT	Status
Other Non-State \$ Being Applied to Project During Project Period: none	\$ -	
Other State \$ Being Applied to Project During Project Period: none	\$ -	
In-kind Services During Project Period: none	\$ -	
Remaining \$ from Current ENRTF Appropriation (if applicable): \$177,480 remaining from M.L. 2014 05b "State Spring Inventory"	\$ 177,480	Unspent as of March 15, 2015
Funding History: \$200,000 - ENRTF for M.L. 2014, Chp.226, Sec. 2, Subd. 05b "State Spring Inventory" Partial funding for spring inventory work provided under three Springshed mapping projects M.L.2007, M.L. 2009, M.L. 2011. Total ENRTF funding for the three projects \$1,270,000, of which estimated \$93,250 (7.3%) was spent on spring inventory tasks.	\$ 293,250	

State Spring Inventory for Resource Management and Protection – Phase 2



04/24/2015 JG/HJ

LCCMR 2016 RFP Project Proposal: State Spring Inventory, Phase 2

Project Manager Qualifications and Organization Description

Project Manager: Jan D. Falteisek, MN Department of Natural Resources, Ecological and Water Resources Division

Degrees and Professional Certificates:

M.A. Geology, University of Missouri, Columbia, Missouri	1984
B.A. Mathematics, Southwest State University, Marshall, Minnesota	1974
Minnesota Professional Geologist, License #30114	

Qualifications:

1992 to present MN DNR Hydrogeologist Supervisor
Provided technical and program direction for the completion of 17 Part B county geologic atlases or regional hydrogeologic assessments. Authored or co-authored several individual plates in reports. Directed the development of project databases, directed the editing and publication of part B atlases and documents, assured web access of project data, supported staff development of improved mapping tools and techniques, and assisted others in use of and access to project results and data. Most recently also provided project oversight and staff supervision for the springshed mapping projects in southeast Minnesota. Currently is the Project Manager for the LCCMR 2014 State Spring Inventory project. As project manager provides project oversight and staff supervision for the spring inventory work underway.

Previous employment:

1990 to 1991	DNR Waters Hydrogeologist , coordinating several LCMR projects and completed guidelines for pollution sensitivity.
1984 to 1989	MN Pollution Control Agency, Hydrogeologist, hazardous waste regulations and Superfund site investigations.
1980 to 1983	Missouri Dept. of Natural Resources, Hydrologist, coal mine permitting and regulations.

Project Responsibilities: The project manager will be responsible for: providing overall project management and technical direction for the project; hiring and supervising project staff; contracting for professional services in support of the project; contracting for other services; coordinating with project partners; directing the development of project reports and any other deliverables; and preparing and submitting project work plans, updates and final reports.

Organization Description: The Minnesota Department of Natural Resources (DNR)'s mission is to work with citizens 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.