



# Environment and Natural Resources Trust Fund

M.L. 2020 Approved Work Plan

## General Information

**ID Number:** 2020-026

**Staff Lead:** Michael Varien

**Date this document submitted to LCCMR:** August 13, 2021

**Project Title:** Foundational Hydrology Data For Wetland Protection And Restoration

**Project Budget:** \$400,000

## Project Manager Information

**Name:** Jennie Skancke

**Organization:** MN DNR - Ecological and Water Resources Division

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## Project Reporting

**Date Work Plan Approved by LCCMR:** August 13, 2021

**Reporting Schedule:** May 1 / November 1 of each year.

**Project Completion:** October 31, 2024

**Final Report Due Date:** December 15, 2024

## Legal Information

**Legal Citation:** M.L. 2021, First Special Session, Chp. 6, Art. 5, Sec. 2, Subd. 03d

**Appropriation Language:** \$400,000 the second year is from the trust fund to the commissioner of natural resources to improve wetland protection, management, and restoration in Minnesota by completing the partially established long-term Wetland Hydrology Monitoring Network that will provide critical knowledge of wetland hydrology dynamics. This appropriation is available until June 30, 2025, by which time the project must be completed and final products delivered.

**Appropriation End Date:** June 30, 2025



## Narrative

**Project Summary:** This project will improve wetland protection, management, and restoration in Minnesota by completing a partially established long-term wetland hydrology monitoring network that will provide critical knowledge of wetland hydrology.

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

This proposal seeks to improve wetland protection, management and restoration in Minnesota by completing a partially established long-term wetland hydrology monitoring network. Effective wetland management and restoration requires a fundamental understanding the frequency, timing, duration and depth of water level fluctuations in different types of wetlands -- the hydrologic regime. Also, because wetlands are frequently connected to and dependent on groundwater, understanding wetland hydrology can better inform groundwater management. The hydrology of lakes and streams has been systematically monitored for decades, yet there has never been a comprehensive program to monitor wetland hydrology. To address this lack of foundational data, we designed a monitoring framework that requires installing hydrology monitoring equipment in 60 reference (minimally disturbed) wetland sites across the state (see attachment). This number of sites (60) is the minimum necessary to adequately sample the wide variety of wetland types that occur in Minnesota as well as account for geographic variation.

**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.**

In 2017 we began a pilot monitoring effort by installing equipment at 10 wetland sites and collecting continuous hydrology data. In 2018, the U.S. Environmental Protection Agency (EPA) awarded the DNR a grant of \$200,160 to fund 20 monitoring stations, which will include upgrading the existing pilot installations. This proposal seeks ENRTF funds to complete the monitoring network by purchasing and installing hydrology monitoring equipment at an additional 40 sites. The proposed ENRTF funding is solely for purchasing and installing the monitoring equipment (wells/gauges and automatic data loggers) and to conduct baseline vegetation and wetland bathymetry surveys. Subsequent, long-term data collection and maintenance of the monitoring network will be done by the DNR using other funding sources.

**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?**

- Improve the design and implementation of wetland restoration and management projects;
- Improve our understanding of how alterations to groundwater affect wetlands and their associated benefits and allow more informed and objective management of both wetlands and groundwater;
- Improve our understanding of the relationship between hydrology and wetland plant communities;
- Reveal long-term changes to the state's wetlands that may result from a variety of factors such as land use changes, climatic changes and changes in surface and groundwater use.

## 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: Install Wetland Hydrology Monitoring Equipment at 40 Sites

**Activity Budget:** \$350,000

**Activity Description:**

Purchase and install hydrology monitoring equipment at 40 reference (minimally-disturbed) wetlands around the state over two field seasons. Conduct elevation surveys for each site to calibrate the monitoring equipment and establish ground surface elevations. Conduct follow-up site visits as needed to ensure all sites are operating properly. The monitoring equipment at each site consists of a shallow water table monitoring well (a pipe with slotted or perforated walls along its length) and a continuously recording data logger with sensors to record water level.

**Activity Milestones:**

Description	Completion Date
All sites identified and first 5-10 sites intalled	October 31, 2021
10-25 more sites installed	October 31, 2022
Remainder of sites installed	October 31, 2023
Initial Data Analysis and Project Completion Report	January 31, 2024

### Activity 2: Conduct Wetland Vegetation Surveys at 40 Hydrology Monitoring Sites

**Activity Budget:** \$50,000

**Activity Description:**

Wetland vegetation surveys will be conducted at each of the reference wetlands where hydrology monitoring equipment is installed. Vegetation and hydrology data will be analyzed to understand how long term wetland hydrology patterns influence wetland plant communities, which in turn relates to various wetland benefits, especially fish and wildlife habitat.

**Activity Milestones:**

Description	Completion Date
First 20 sites surveyed	September 30, 2022
Remaining Wetland Vegetation Surveyed and Report Completed	October 31, 2023

## 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.**

The project will collect water level data and wetland ground surface elevation data at a variety of wetlands in Minnesota. Those data will be used to calculate metrics such as:

- Range of monthly water table depth in specified wetland plant community types
- Monthly average water depth above and below ground surface

These metrics will be used to establish a better understanding of wetland thresholds. A threshold is a range of water levels that wetland plant communities can withstand before undergoing change. The DNR and others, such as the US Fish and Wildlife Service, or Board of Water and Soil Resources, can use those thresholds to better make regulatory or management decisions. The DNR hopes to use the wetland thresholds to better inform water use regulatory decision-making and modeling.

DNR wetland scientists will plan to present this information to the water resource professionals at the annual Water Resources Conference and to other wetland professionals outside of Minnesota to inform similar efforts in other states. This data might also be informative in understanding climate change impacts in Minnesota's wetlands.

We will ensure we acknowledge ENRTF funding through attribution language,

## 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?**

This grant will fund the start-up costs for this effort, including the installation of monitoring equipment and vegetation surveys. The long-term operation of the program will be funded from a combination of other funding sources. The DNR is committed to the long-term operation of this monitoring network.

## Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	\$ Amount
<b>Personnel</b>								
Field Hydrologist		Install and troubleshoot equipment			20%	1.32	X	\$95,000
Wetland vegetation botanist		Conduct wetland vegetation surveys			15%	0.4		\$30,000
Wetland Research Scientist		Identify sites, conduct statistical analyses and project troubleshooting			20%	0.6	X	\$60,000
							<b>Sub Total</b>	<b>\$185,000</b>
<b>Contracts and Services</b>								
							<b>Sub Total</b>	-
<b>Equipment, Tools, and Supplies</b>								
	Equipment	Monitoring equipment - wells and loggers. 40 stations x \$4626 per station. Some stations require 2 loggers require 2 loggers and cost more, some cost less, but all are less than \$4700/station	Monitor hydrology in wetlands using pressure transducers in shallow wells					\$185,068
							<b>Sub Total</b>	<b>\$185,068</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	Mileage, and per diem	In state travel for installation and troubleshooting of equipment.					\$10,200
							<b>Sub Total</b>	<b>\$10,200</b>
<b>Travel Outside Minnesota</b>								
							<b>Sub Total</b>	-
<b>Printing and Publication</b>								
							<b>Sub Total</b>	-
<b>Other Expenses</b>								
		DNR's Direct and Necessary Costs	Costs for activities that are directly related to and necessary for accomplishing appropriated projects. Direct and necessary costs cover HR Support (~\$3556), Safety Support (~\$644), Financial Support (~\$4,549), Communication Support (~\$1,388), IT Support (~\$8457), and Planning Support (~\$1,138) necessary to accomplish funded programs/projects.	X				\$19,732
							<b>Sub Total</b>	<b>\$19,732</b>
							<b>Grand Total</b>	<b>\$400,000</b>

## Classified Staff or Generally Ineligible Expenses

Category/Name	Subcategory or Type	Description	Justification Ineligible Expense or Classified Staff Request
Personnel - Field Hydrologist		Install and troubleshoot equipment	<b>Classified</b> : If existing employees are used to achieve this work, their existing duties will be backfilled.
Personnel - Wetland Research Scientist		Identify sites, conduct statistical analyses and project troubleshooting	<b>Classified</b> : DNR does not have an existing staff to analyze this data. The wetland research scientist would play a unique role in this project.
<b>Other Expenses</b>		DNR's Direct and Necessary Costs	These are costs associated with activities that are directly related to and necessary for accomplishing appropriated programs/projects.



## Non ENRTF Funds

Category	Specific Source	Use	Status	Amount
<b>State</b>				
In-Kind	In kind staff time:	Project management, coordination, supervision of field staff, report writing, field ops coordination.	Secured	\$50,000
			<b>State Sub Total</b>	<b>\$50,000</b>
<b>Non-State</b>				
Cash	U.S EPA Grant	Used to purchase and install hydrology equipment on 20 wetland sites.	Secured	\$349,967
			<b>Non State Sub Total</b>	<b>\$349,967</b>
			<b>Funds Total</b>	<b>\$399,967</b>

## Attachments

### Required Attachments

#### *Visual Component*

File: [b652be1e-4f7.docx](#)

#### *Alternate Text for Visual Component*

This is the design grid used to select sites for long-term hydrologic monitoring of reference wetlands as well as the equipment set-up, including power source, shallow well and logger....

### Optional Attachments

#### *Support Letter or Other*

Title	File
US Fish and Wildlife Letter of Support	<a href="#">a745970b-349.pdf</a>
Background Check Cert Form	<a href="#">238e1694-a9d.pdf</a>

## Difference between Proposal and Work Plan

### *Describe changes from Proposal to Work Plan Stage*

Since the initial submittal of this project, the equipment has evolved and we have discovered we can collect the same data at a lower cost. Within this workplan, I have moved some funds from the equipment budget into the personnel budget. During the initiation of this project, using EPA grant funds, we have discovered that a wetland research scientist is needed to analyze these data and disseminate the results. DNR had planned to hire this position prior to the hiring freeze, in anticipation of this project getting funded. I have added a portion of the research scientist's salary to the personnel budget and adjusted the direct and necessary costs for this grant. We have kept the total grant amount the same along with the same outcomes as originally proposed.

## 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?**

Yes

**Does the organization have a fiscal agent for this project?**

No



Example of installed wetland hydrology monitoring station.

Wetland Characteristics			Ecological Province		
Hydro-Geomorphic Class	Water Regime Class	Plant Community	Prairie Parkland	Eastern Broadleaf	Laurentian Mixed Forest
Depression/Flat	Temporarily Flooded to Saturated	Wet Meadow	3	3	3
Depression/Flat	Temporarily to Seasonally Flooded	Wooded and Shrub Swamps	3	3	3
Depression	Seasonally Flooded	Shallow Marsh	3	3	3
Depression	Semi-Permanently Flooded to Intermittently Exposed	Deep Marsh	3	3	3
Riverine Floodplain Flats	Temporarily to Seasonally Flooded	Forested and Shrub Floodplain	3	3	3
Depression/Sloped	Saturated	Rich Fen and Poor Fen	3	3	3
Organic Peatland	Saturated	Open and Coniferous Bog	--	3	3
Lacustrine	Semi-Permanently to Permanently Flooded	Aquatic	Monitored by Shallow Lakes Program		

Proposed wetland hydrology monitoring design. The grid indicates the proposed number of monitoring sites for each wetland type and ecological province. Twenty-five of these sites will be installed using non-ENRTF funding sources.