

Environment and Natural Resources Trust Fund (ENRTF)

M.L. 2020 ENRTF Work Plan (Main Document)

Today's Date: November 27, 2019 Date of Next Status Update Report: April 1, 2021 Date of Work Plan Approval: Project Completion Date: June 2023 Does this submission include an amendment request? ____

PROJECT TITLE: Foundational Hydrology Data for Wetland Protection and Restoration
Project Manager: Doug Norris, Wetlands Program Coordinator
Organization: Minnesota Department of Natural Resources
College, Department, or Division: Ecological and Water Resources Division
Mailing Address: 500 Lafayette Road, Box 25
City, State, Zip Code: St. Paul, MN, 55155
Project Manager Direct Telephone Number: 651-259-5125
Email Address: doug.norris@state.mn.us
Web Address: mndnr.gov

Location: Statewide

Total Project Budget: \$400,000 Amount Spent: \$0 Balance: \$400,000

Legal Citation: M.L. 2020, Chp. xx, Sec. xx, Subd. xx **Appropriation Language:**

PROJECT STATEMENT:

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.

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 35 sites. (*This reflects a reduced ENRTF funding recommendation from the original proposal, and falls short of the 60-site monitoring system design. Other funding options will be explored to complete the system.*) The proposed ENRTF funding is solely for purchasing and installing the monitoring equipment (wells/gauges and automatic data loggers) and to conduct baseline vegetation surveys. Subsequent, long-term data collection and maintenance of the monitoring network will be done by the DNR using other funding sources.

The wetland hydrology data from this long-term monitoring effort will:

- 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.

These data will complement wetland data collected by other programs including the DNR groundwater program, the DNR wetland program, the Minnesota Biological Survey, the U.S. Fish and Wildlife Service, and the Board of Water and Soil Resources' wetland restoration monitoring. The information will be available to local, state, and federal land and water managers as well as to the public.

II. OVERALL PROJECT STATUS UPDATES:

First Update April 1, 2021 Second Update October 1, 2021 Third Update April 1, 2022 Fourth Update October 1, 2022 Fifth Update April 1, 2023 Final Report between project end date (June 30, 2023) and August 15, 2023

III. PROJECT ACTIVITIES AND OUTCOMES:

ACTIVITY 1 Title: Install Wetland Hydrology Monitoring Equipment at 35 Sites **Description:** Purchase and install hydrology monitoring equipment at 35 reference (minimallydisturbed) wetlands around the state over two to three field seasons. This represents a portion of the overall optimal monitoring scheme, which calls for 60 monitoring sites. 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 1 ENRTF BUDGET: \$369,600

Outcome	Completion Date				
1. 10 to 15 wetland hydrology monitoring stations installed	September 2020				
2. 10 to 15 additional monitoring stations installed	September 2021				
3. Remainder of monitoring stations installed (35 total)	September 2022				
4. Initial data analysis and project completion report	June 2023				

First Update April 1, 2021

Second Update October 1, 2021

Third Update April 1, 2022

Fourth Update October 1, 2022

Fifth Update April 1, 2023

Final Report between project end date (June 30, 2023) and August 15, 2023

ACTIVITY 2 Title: Conduct Wetland Vegetation Surveys at 35 Hydrology Monitoring Sites **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 2 ENRTF BUDGET: \$30,400

Outcome	Completion Date
1. Wetland vegetation survey reports completed on 5 - 10 monitoring sites	September 2020
2. Wetland vegetation survey reports completed on 10 - 20 add'l. monitoring sites	September 2021
3. Wetland vegetation survey reports completed on remaining monitoring sites	September 2022

First Update April 1, 2021

Second Update October 1, 2021

Third Update April 1, 2022

Fourth Update October 1, 2022

Fifth Update April 1, 2023

Final Report between project end date (June 30, 2023) and August 15, 2023

IV. DISSEMINATION:

Description:

The wetland hydrology data collected for this long-term monitoring program will be entered and stored in a state agency-supported enterprise database, which is accessible to the public. The data will also be provided in response to specific requests. In addition, the interpreted results of the monitoring effort will be disseminated through periodic written reports (published on the DNR web page), through peerreviewed journal articles and through presentations at applicable conferences and workshops, such as the Minnesota Water Resources Conference.

The Minnesota Environment and Natural Resources Trust Fund (ENRTF) will be acknowledged through use of the trust fund logo or attribution language on project print and electronic media, publications, signage, and other communications per the <u>ENRTF Acknowledgement Guidelines</u>.

First Update April 1, 2021 Second Update October 1, 2021 Third Update April 1, 2022 Fourth Update October 1, 2022 Fifth Update April 1, 2023 Final Report between project end date (June 30, 2023) and August 15, 2023

V. ADDITIONAL BUDGET INFORMATION:

A. Personnel and Capital Expenditures

Explanation of Capital Expenditures Greater Than \$5,000:

Explanation of Use of Classified Staff: Either new (temporary) personnel will be hired using ENRTF funding, or current, classified DNR staff will be used, with their existing duties backfilled using other, existing funding sources.

Total Number of Full-time Equivalents (FTE) Directly Funded with this ENRTF Appropriation:

Enter Total Estimated Personnel Hours for entire	Divide total personnel hours by 2,080 hours in
duration of project: 2,500	1 yr = TOTAL FTE: 1.2

Total Number of Full-time Equivalents (FTE) Estimated to Be Funded through Contracts with this ENRTF Appropriation:

Enter Total Estimated Contract Personnel Hours	Divide total contract hours by 2,080 hours in 1
for entire duration of project: N/A	yr = TOTAL FTE: N/A

VI. PROJECT PARTNERS:

- A. Partners outside of project manager's organization receiving ENRTF funding None.
- B. Partners outside of project manager's organization NOT receiving ENRTF funding

All funds will be spent within DNR. The project team includes: Doug Norris (DNR – EWR) – Project manager EWR Biometrician/Wetland Research Scientist (formerly held by Steve Kloiber) – Monitoring design as well as data analysis and reporting

Joy Loughry (DNR – EWR) – Manage acquisition, installation and operation of monitoring equipment

Keylor Andrews, Cory Peterson, Andrew Lindloff (DNR – EWR) – Installation and operation of monitoring equipment

Collaborators in the monitoring network design and site selection include staff from the Minn. Board of Water and Soil Resources, the Pollution Control Agency, the U.S. Fish and Wildlife Service and the U.S. Army Corps of Engineers. The USEPA has provided funding for installing a portion (20 sites) of the overall monitoring network (optimal design = 60 monitoring sites).

We will coordinate this project with other related efforts, including the following ENRTF projects or proposals:

- "Statewide Monitoring Network for Minnesota's Changing Habitat" conducted by the Minnesota Biological Survey.
- "Peatland forest management," which involves hydrology monitoring in peatlands.

VII. LONG-TERM- IMPLEMENTATION AND FUNDING: This grant will fund a portion of the startup costs for this effort. 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.

VIII. REPORTING REQUIREMENTS:

- Project status update reports will be submitted April 1 and October 1 each year of the project.
- A final report and associated products will be submitted by August 15, 2023

IX. SEE ADDITIONAL WORK PLAN COMPONENTS:

A. Budget Spreadsheet

- B. Visual Component or Map
- C. Parcel List Spreadsheet
- D. Acquisition, Easements, and Restoration Requirements
- E. Research Addendum

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Work Plan Attachment A: Project Budget Spreadsheet Environment and Natural Resources Trust Fund M.L. 2020 Budget Spreadsheet Legal Citation: Project Manager: Doug Norris, Wetlands Program Coordinator Project Title: Foundational Hydrology Data for Wetland Protection



 Project Manager: Doug Norris, Wetlands Program Coordinator

 Project Title: Foundational Hydrology Data for Wetland Protection and Restoration

 Organization: Minnesota Department of Natural Resources

 Project Budget: \$400,000

 Project Length and Completion Date: Three years -- June 2023

Today's Date: 11-27-2019

ENVIRONMENT AND NATURAL RESOURCES TRUST FUND BUDGET				Amount Spent	E	Balance
BUDGET ITEM						
Personnel (Wages and Benefits) DNR field hydrology crews will install and trouble	\$	90,480	\$-	\$	90,480	
for 35 wetland hydrology monitoring stations. Work will occur in teams of two. The						
level of effort required for field crew time is 1,810 hours (approximately 0.44 FTE x	2 yrs.). Salaries					
include ~15-25% fringe benefits as per state union contracts. Either new (temporar	y) personnel will					
be hired using ENRTF funding, or current DNR staff will be used, with their existing	duties backfilled.					
Personnel (Wages and Benefits) DNR staff will conduct wetland vegetation survey	rs for 35 wetland	\$	27,840	\$-	\$	27,840
monitoring stations. The total estimated level of effort required for field crew time	is 700 hours					
(approximately 0.17 FTE x 2 yrs.). Salaries include ~15-25% fringe benefits as per st	ate union					
contracts. Either new (temporary) personnel will be hired using ENRTF funding, or	current DNR staff					
will be used, with their existing duties backfilled.						
Equipment/Tools/Supplies Monitoring equipment including well screens, bubble	r systems,	\$	259,178	\$ -	\$	259,178
dataloggers, power supply, and cables (35 stations) .		,		·	,	
Travel expenses in Minnesota In state travel for installation and troubleshooting of	of wetland water	\$	8,700	\$-	\$	8,700
level monitoring network and vegetation surveys. Costs include mileage and per di	em for DNR		,		·	
monitoring staff.						
Other * Direct and Necessary expenses: HP Support (~\$1,870), Safety Support (~\$3	28) Einancial	ć	12 802	ć _	ć	13 802
Support (\sim \$4,620) Communication Support (\sim \$1,880) IT Support (\sim \$4,447) and P	lanning Sunnort	Ş	15,002	- ڊ	ç	15,602
/~\$1 138) necessary to accomplish funded programs/projects	ianning Support					
		\$	400,000	\$-	\$	400,000
COLUMN TOTAL						
			Budget	Spent	E	Balance
SOURCE AND USE OF OTHER FUNDS CONTRIBUTED TO THE PROJECT	Status (secured	\$	-	\$-	\$	-
	or pending)					
Non-State: U.S. EPA Grant - used to purchase and install hydrology monitoring		\$	200,160	\$-	\$	200,160
equipment on 20 wetland sites.	Secured					
State:		\$	-	\$ -	\$	-
In kind: DNR staff time: project management (\$5,000/yr.), project coordination,		\$	99,000	\$ -	\$	99,000
data analysis, report writing (\$12,000/yr.); field operations coordination						
(\$16,000/yr.)	Secured					
			Budget	Spent	E	Balance
Other ENRTE ADDRODRIATIONS AWARDED IN THE LAST SIX VEADS	Amount legally	\$	-	\$ -	\$	-
	obligated but					
	not yet spent					
		I				



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 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.