Environment and Natural Resources Trust Fund

M.L. 2025 Approved Work Plan

General Information

ID Number: 2025-323

Staff Lead: Michael Varien

Date this document submitted to LCCMR: June 16, 2025

Project Title: Chronic Wasting Disease Prions in Minnesota Waters

Project Budget: $322,000

Project Manager Information

Name: Diana Karwan

Organization: U of MN - College of Food, Agricultural and Natural Resource Sciences

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Project Reporting

Date Work Plan Approved by LCCMR: June 24, 2025

Reporting Schedule: March 1 / September 1 of each year.

Project Completion: June 30, 2028

Final Report Due Date: August 14, 2028

Legal Information

Legal Citation: M.L. 2025, First Special Session, Chp. 1, Art. 2, Sec. 2, Subd. 03jj

Appropriation Language: $322,000 the first year is from the trust fund to the Board of Regents of the University of Minnesota to evaluate the movement of chronic wasting disease in Minnesota waters, assess the risk of spread, and share results with wildlife and watershed managers.

Appropriation End Date: June 30, 2028

Narrative

Project Summary: Chronic Wasting Disease (CWD) environmental detection is combined with watershed knowledge to predict and evaluate how far and how fast CWD might move through watersheds and serve as a source

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

Chronic Wasting Disease (CWD) is a fatal disease of deer and elk which has been found on farms and in wild herds in Minnesota and 32 other states. CWD agents, called prions, can survive for long periods of time outside of animals. Current efforts mainly focus on disease detection, transmission, and movement between animals. The detection and movement of CWD in the environment, outside of deer, remains far less understood. Recent findings from our group indicate that CWD prions associate with fine sediments suspended in water and are detectable on sediments eroding from land in two distinct Minnesota regions. Specifically, sediments were found downstream of cervid farms with known CWD infections after the farms had been depopulated. In many areas of Minnesota, soils erode from the landscape and move to receiving waterways. This proposed project combines CWD environmental detection with watershed knowledge to predict and evaluate how far and how fast CWD might move through watersheds, outside of deer. Movement through water could spread CWD prions from known hotspots of contamination hence placing more deer in wild herds at risk. Evaluation of the movement of CWD through water to downstream areas requires collaboration of both veterinary and water scientists.

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.

We will evaluate the movement of CWD in streams and rivers as an emerging contaminant associated with fine sediment. The project team seeks to build on and integrate two bodies of distinct work, one in wildlife disease and the other in water resources, to assess and communicate the risk of CWD moving through Minnesota's waterways. Previous work identified water flows from CWD landscape hotspots to the Red River of the North, including Red Lake, as well as the Upper and Lower Mississippi River Basins. An Emerging Issues request (LCCMR 2022-307) has been approved, under which a sampling plan, based on fine sediment dynamics in each focal region. This project will follow on our Emerging Issues project, and sample identified potential areas to test for CWD in Minnesota's waterways including environmental sampling and analysis in MNPRO using RT-QuIC to evaluate for CWD according to best possible methods for environmental samples. We will use water science and watershed knowledge to predict where to sample, and MNPRO detection methods to evaluate CWD prions. Furthermore, we will communicate to groups invested in watershed planning (e.g. MPCA, tribal partners) on the outcomes of our study.

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?

1. CWD detection status for these predictions based on state hotspots determined under Emerging Issues project 2022-307.
2. Communication of the above in maps, reports, and presentations focused on watershed and wildlife management communities.

Project Location

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

Region(s): SE, Central, NW,

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: Field sampling and prion testing of downstream water environments

Activity Budget: $322,000

Activity Description:
We will use the information from Activity 1 to inform a stream and river sediment sampling effort to detect CWD on sediments further downstream of our known hotspots and other identified hotspots in the state. Sampling will be conducted under both spring high flow (e.g. snowmelt conditions if possible) and summer lower flow conditions. Sediments carried by water, and water present at the time from streams, lakes, etc, will be collected and subsequently analyzed for CWD by RT-QuIC testing in MNPRO based on established protocols. Additional sediment properties, such as clay content, will also be analyzed to refine estimates of sediment movement and the downstream sediment's suitability for facilitating CWD movement. Laboratory analysis will detect presence of CWD prions. Activity 2 leverages the diagnostic and testing capabilities existing in MNPRO and applies it to watershed predictions accounting for movement of soils. Results will be communicated in conjunction with the water movement report (Milestone 1, Activity 1) to assess the ability to detect CWD moving downstream from landscape hotspots via waterways in Minnesota. Timeline proposed reflects Emerging Issues Request.

Activity Milestones:

Description	Approximate Completion Date
Complete summer conditions environmental sampling	September 30, 2025
Complete spring conditions environmental sampling	May 31, 2026
Complete all laboratory analysis of prion presence/absence and corresponding sediment laboratory characterization	August 31, 2026
Present work and findings to key watershed and hunting groups	August 31, 2026

Project Partners and Collaborators

Name	Organization	Role	Receiving Funds
Tiffany Wolf	University of Minnesota	Co-PI	Yes
Stuart Lichtenberg	University of Minnesota	Co-PI	Yes

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.
Communication of results with be done through multiple channels to both the wildlife and watershed management communities. We will leverage MNPRO networks to provide informational material to state natural resource managers. Additional presentations will be made at state conferences targeting mangers, such as the Minnesota Water Resources Conference as well as through meeting attendance and targeted conversations with state and tribal natural resource management agencies. The Environment and Natural Resources Trust Fund 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 ENTRF Acknowledgment Guidelines.

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?
Information gathered, described above, will continue to be publicly available.

Other ENRTF Appropriations Awarded in the Last Six Years

Name	Appropriation	Amount Awarded
Understanding Brainworm Transmission to Find Solutions for Minnesota Moose Decline	M.L. 2019, First Special Session, Chp. 4, Art. 2, Sec. 2, Subd. 03f	$400,000
Diagnostic Test for Chronic Wasting Disease	M.L. 2019, First Special Session, Chp. 4, Art. 2, Sec. 2, Subd. 03t	$1,804,000
CWD Prion Research in Soils	M.L. 2021, First Special Session, Chp. 6, Art. 5, Sec. 2, Subd. 20a5	$336,000
Establishing a Center for Prion Research and Outreach	M.L. 2022, , Chp. 94, Art. , Sec. 2, Subd. 03k	$3,877,000
Chronic Wasting Disease Prion Soil Research	M.L. 2022, , Chp. 94, Art. , Sec. 2, Subd. 03n	$732,000

Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	$ Amount
Personnel								
Senior Personnel / PI and Co-PI		Lead science, manage project, supervise and design review, lab, and fieldwork			36.5%	0.05		$21,536
Staff - P&A: includes research, laboratory, and		Conduct literature review, field and laboratory sampling and analysis. Meet with communities to disucss findings			36.5%	1.3		$119,130
Graduate Students		University of Minnesota Graduate Students contributing to all aspects of research; fringe includes tuition			63.7%	1		$89,186
							Sub Total	**$229,852**
Contracts and Services								
							Sub Total	-
Equipment, Tools, and Supplies								
	Tools and Supplies	Field and laboratory supplies / consumables	Consumable supplies and supplies needed for field and laboratory work compliant with prion sampling protocols (e.g. chemical reagents, sampling and storage supplies such as bags, bottles, PPE including tyvek, gloves, waders for stream sampling)					$59,648
	Equipment	submersible pumps (2 @ ~$250 each)	Pumps used used for water sampling from bridges / other areas needing access from a higher road crossing					$500
							Sub Total	**$60,148**
Capital Expenditures								
		Freezer	Freezer dedicated for environmental samples (-80C); needed to keep	X				$18,000

			samples separate and stored prior to analysis					
							Sub Total	**$18,000**
Acquisitions and Stewardship								
							Sub Total	**-**
Travel In Minnesota								
	Miles/ Meals/ Lodging	Approximiatley 4 trips/year will be conducted (e.g. near cities of Bemidji and Winona). At this time, team will collect samples and meet with relevant local groups. 3-5 team members will travel for 3 nights each time.	Approximiatley 4 trips/year will be conducted for sample collection in effected areas of the state (e.g. near cities of Bemidji and Winona). At this time, team will collect samples and meet with relevant local groups. Meeting participation with agency staff will also take place in person.					$10,000
							Sub Total	**$10,000**
Travel Outside Minnesota								
							Sub Total	**-**
Printing and Publication								
	Publication	Fees associated with open source publication in peer reviewed literature	Fees necessary to publish in a scientific journal in such a way that readers don't have to pay for access to publication, or have an institutional affiliation that provides a subscription.					$4,000
							Sub Total	**$4,000**
Other Expenses								
							Sub Total	**-**
							Grand Total	**$322,000**

Classified Staff or Generally Ineligible Expenses

Category/Name	Subcategory or Type	Description	Justification Ineligible Expense or Classified Staff Request
Capital Expenditures		Freezer	Samples collected under this project need to be stored appropriately for analysis to be properly conducted. **Additional Explanation :** storage for environmental samples will remain in the MNPRO facility and store any unused portion of sediment and environmental samples after analysis under this project

Non ENRTF Funds

Category	Specific Source	Use	Status	$ Amount
State				
			State Sub Total	**-**
Non-State				
			Non State Sub Total	**-**
			Funds Total	**-**

Total Project Cost: $322,000

This amount accurately reflects total project cost?

Yes

Attachments

Required Attachments

Visual Component

File: 12fe2c8a-726.pdf

Alternate Text for Visual Component

Map showing the hypothetical flow of CWD prions through Minnesota watersheds if they were to enter the stream network from depopulated CWD-positive farms. This is based on the watersheds containing farms and the next 10 watersheds downstream. The proposed project aims to add possible travel times to such distances....

Supplemental Attachments

Capital Project Questionnaire, Budget Supplements, Support Letter, Photos, Media, Other

Title	File
SPA Letter - Karwan	9841e9c8-135.pdf
Final Report to the Clean Water Fund - 2024	67c21abd-d69.pdf
2025-323 Research Addendum revised_Final	e97fe457-f17.docx

Difference between Proposal and Work Plan

Describe changes from Proposal to Work Plan Stage

I have worked to separate out the work plan steps between Emerging Issues project (2022-307) based on communication with Staff. Project narrative and budget have also been updated to reflect the split between this project and Emerging Issues 2022-307. The original proposal included the combination of this current version and Emerging Issues (2022-307).

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?

Yes

Do you understand that travel expenses are only approved if they 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 understand the UMN Policy on travel applies.

Does your project have potential for royalties, copyrights, patents, sale of products and assets, or revenue generation?

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?

Yes, Sponsored Projects Administration

Does your project include the pre-design, design, construction, or renovation of a building, trail, campground, or other fixed capital asset costing $10,000 or more or large-scale stream or wetland restoration?

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 as "the provision of care, treatment, education, training, instruction, or recreation to children")?

No

Provide the name(s) and organization(s) of additional individuals assisting in the completion of this project:

Tiffany Wolf, Stuart Lichtenberg

Do you understand that a named service contract does not constitute a funder-designated subrecipient or approval of a sole-source contract? In other words, a service contract entity is only approved if it has been selected according to the contracting rules identified in state law and policy for organizations that receive ENRTF funds through direct appropriations, or in the DNR's reimbursement manual for non-state organizations. These rules may include competitive bidding and prevailing wage requirements

N/A