



Environment and Natural Resources Trust Fund

2022 Request for Proposal

General Information

Proposal ID: 2022-157

Proposal Title: Enhanced Protection and Preservation of Lake Fourteen Waters

Project Manager Information

Name: Charlene Luke

Organization: Lake Fourteen Clear Water Alliance (LFCWA)

Office Telephone: (218) 741-5014

Email: lakefourteen@gmail.com

Project Basic Information

Project Summary: This proactive project will provide baseline data critical for efficient and effective resource management decisions focused on maintaining and enhancing water quality in, and beneficial uses of Lake Fourteen.

Funds Requested: \$136,000

Proposed Project Completion: December 31 2024

LCCMR Funding Category: Small Projects (H)

Secondary Category: Water Resources (B)

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.

Over the past 10+ years, increased aquatic plant growth has been observed, and in some areas has been preventing recreational use of Lake Fourteen. The aquatic invasive species rusty crayfish has also become established in Lake Fourteen. Currently, the Lake Fourteen Clear Water Alliance (LFCWA) funds the yearly aquatic plant removal using LFCWA member donations; this has become financially challenging. Despite yearly harvesting, aquatic plant densities and distributions appear to be problematically increasing throughout the lake. No data currently exist that focus on characterizing nutrient inputs to this lake during critical periods such as spring melt and precipitation events, which may be complicating current aquatic plant management efforts. Additionally, no aquatic plant assemblage data exist indicating the type, density, and/or extent of growth within Lake Fourteen; or where preferential habitat for rusty crayfish may exist. These Legislative-Citizen Commission on Minnesota Resources (LCCMR) funds will provide a unique opportunity to complete extensive whole-lake water, sediment, aquatic plant, and rusty crayfish sampling throughout approximately 2.5 years, resulting in more effective and efficient lake management decisions focused on preserving, protecting, and enhancing water quality in Lake Fourteen.

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.

We propose to complete approximately 2.5 years of water, sediment, aquatic plant sampling and surveying, and rusty crayfish monitoring focusing on aquatic plant nutrient and rusty crayfish habitat characterization. Understanding nutrient input timing (focused on spring melt and precipitation events) and amounts, are critical for consideration and design of effective management strategies. Sediment characterization throughout Lake Fourteen will provide critical information about locations where aquatic plants may become established and more dense. Samples of aquatic plants from yearly harvest events will be obtained to measure the mass of nutrient elements (N, P, K, S, among others) removed from each harvest event. Furthermore, knowing the locations, types, and composition of the aquatic plants will result in consequences which may require additional lake management tactics such as shoreline vegetation maintenance and erosion mitigation, and lawn-care and landscaping endeavors which focus on mitigating overland flow into Lake Fourteen. Location and density data of rusty crayfish populations will also inform lake and land management decisions, and allow for advanced aquatic invasive species education and outreach. LCCMR funds will allow the LFCWA to preserve critical donated funds and plan for proactive lake management recommendations.

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?

The overall project outcome will be a thorough and extensive characterization of water, sediment, aquatic plant assemblage, and rusty crayfish establishment within Lake Fourteen with the distinct intent of preserving, protecting, and enhancing water quality and long-term use of Lake Fourteen. Specific outcomes will be: 1) year-round water column characterization; 2) year-round sediment characterization; 3) yearly aquatic plant assemblage survey; 4) yearly characterization of harvested aquatic plants (type, amount, nutrient content, and removal); 5) protection and enhancement of stocked-fish habitat; and 6) yearly survey of rusty crayfish density and distribution.

Activities and Milestones

Activity 1: Year One (2022) Monitoring

Activity Budget: \$35,500

Activity Description:

During the first year of monitoring, 2022, Lake Fourteen water, sediment, aquatic plants, and rusty crayfish (aquatic invasive species, AIS) will be sampled. 'Event-based' water samples will be collected following the basic design of the Minnesota Pollution Control Agency (MPCA) Watershed Pollutant Load Monitoring Network (WPLMN) program, providing results for loading rates when possible. This will allow for characterization of lake nutrient inputs as a result of precipitation events. Water column sampling will continue monthly during frozen conditions. Sediment cores will be obtained from selected locations based on aquatic plant density, or lack thereof, and general appearance. By knowing sediment characteristics in areas of high and low plant density, predictions of potential future plant growth can be based on sediment characteristics. One sediment core sampling event will be completed during frozen conditions. Samples of harvested aquatic plants will be obtained to determine masses of nutrient removal. By knowing the types and nutrient content of harvested plants, more targeted aquatic plant harvest events may be planned. This will maximize nutrient removal and more effectively decrease the potential for lake nutrient cycling. Rusty crayfish monitoring will be completed by Vermilion Community College students. Required AIS sampling permits will be obtained. Reporting requirements

Activity Milestones:

Description	Completion Date
Water column sampling.	December 31 2022
Sediment core sampling	December 31 2022
Plant assemblage survey and sampling	December 31 2022
Evaluation and reporting.	December 31 2022
Rusty Crayfish Monitoring	December 31 2022

Activity 2: Year Two (2023) Monitoring

Activity Budget: \$49,500

Activity Description:

During the first full year of this study, more intensive water column sampling will begin following ice-out, and will continue throughout spring melt, likely into June 2023, following the basic design of the MPCA WPLMN event-based sampling regime. Additional event-based water samples will be obtained at select locations in an effort to capture nutrient inputs prior to freeze-up. Monthly water samples will be obtained during frozen conditions. Sediment cores will be obtained from similar locations as in 2022 following ice-out and at the end of the aquatic plant growing season. A general assessment of the visible aquatic plant assemblage will then be compiled. One additional set of sediment cores will be obtained during frozen conditions from similar locations as during 2022. Aquatic plants will be identified and sampled from harvested material; and rusty crayfish monitoring will be completed during summer months. These data will allow for comparison and contrast of yearly and seasonal water, sediment, and plant characteristics. Reporting requirements will be completed as required or requested.

Activity Milestones:

Description	Completion Date
Water column sampling.	December 31 2023
Sediment core sampling.	December 31 2023
Plant assemblage survey and sampling.	December 31 2023

Evaluation and reporting.	December 31 2023
Rusty Crayfish Monitoring	December 31 2023

Activity 3: Year 3 (2024) Monitoring

Activity Budget: \$49,500

Activity Description:

During the second and last full year of this study, more intensive water column sampling will begin following ice-out as during 2023, and will continue throughout spring melt, likely into June 2024. Additional event-based water samples will be obtained at previously selected locations in an effort to capture nutrient inputs prior to freeze-up. Monthly water samples will be obtained during frozen conditions. Sediment cores will be obtained from similar locations as in 2023 following ice-out and at the end of the aquatic plant growing season; a general assessment of the visible aquatic plant assemblage will be obtained. One additional set of sediment cores will be obtained during frozen conditions from similar locations as during 2023. These data will allow for comparison and contrast of yearly and seasonal water, sediment, and plant characteristics. Aquatic plants will be identified and sampled from harvested material; and rusty crayfish monitoring will be completed during summer months. Final reporting requirements with conclusions and management recommendations will be completed by December 31, 2024.

Activity Milestones:

Description	Completion Date
Water column sampling.	December 31 2024
Sediment core sampling.	December 31 2024
Plant assemblage survey and sampling.	December 31 2024
Final evaluation and reporting.	December 31 2024
Rusty Crayfish Monitoring	December 31 2024

Activity 4: Education and Outreach

Activity Budget: \$1,500

Activity Description:

As an Adjunct Instructor at Vermilion Community College (VCC), Dr. Tedrow is in a unique position to involve students in multiple VCC courses and degree programs throughout the duration of this project. Specifically, students in the Water and Wastewater Program, and the Watershed Science Program will be offered opportunities to observe and participate in work associated with this project. Students in courses such as Field Biology, Environmental Science, and Limnology would benefit from exposure to this work. Additionally, Wade Klingsporn has been involved with previous rusty crayfish monitoring events focusing on student involvement and experience. The opportunity for students at VCC to have exposure to lake projects of this scale is atypical and would be an extraordinary experience; specifically, due to the AIS monitoring component. Only through LCCMR funding will this exceptional academic opportunity be possible. Additionally, LCCMR funds will allow for enhanced and more intense public outreach and education on rusty crayfish and AIS in general for property owners and resident on Lake Fourteen; something that is in critical need.

Activity Milestones:

Description	Completion Date
Fall 2022 site visit.	December 31 2022
Spring 2023 site visit.	May 31 2023
Fall 2023 site visit.	December 31 2023
Spring 2024 site visit.	May 31 2024

Project Partners and Collaborators

Name	Organization	Role	Receiving Funds
O'Niell Tedrow, PH. D.	Northeast Technical Services, Inc., and Vermilion Community College (VCC)	As a Water Resources Scientist, Dr. Tedrow will be responsible for designing, implementing, and coordinating the monitoring program, and interpreting yearly and final results of this monitoring and evaluation. As an Adjunct Instructor at VCC, he will involve students in relevant degree programs throughout this study.	Yes
Jordan Erickson	Northeast Technical Services, Inc. (NTS)	As a Field Scientist, Jordan will work with Nick Myre (NTS) and LFCWA members to complete field work, including water, sediment, and plant sampling. As a GIS-CAD specialist, she will be responsible for creating specific maps such as aquatic plant assemblage figures associated with this proposal.	Yes
Nick Myre	Northeast Technical Services, Inc. (NTS)	As a Field Scientist, Nick will work with Jordan Erickson (NTS) and LFCWA members to properly complete all monitoring and other field work associated with this proposal. Nick Myre and Jordan Erickson will partner with LFCWA property owners to coordinate field events.	Yes
Jeff Anderson, PE, CWD	Lake Fourteen Clear Water Alliance (LFCWA)	As Science Officer with a degree in Chemical Engineering and a Registered Professional Environmental Engineer he will play a key role in coordinating, supporting, and working with NTS staff in the various tasks and requirements in nutrient management study.	No
Charlene Luke, PMP	Lake Fourteen Clear Water Alliance (LFCWA)	As project manager, she will be responsible for the organization, execution, and completion of specific project tasks. She will ensure the project stays on track and on budget, and adjusting if necessary, to project amendments.	No
Bois Forte	Bois Forte Band of Chippewa Reservation Tribal Council	Bois Forte will provide labor and equipment necessary to macerate rooted, submerged vegetation. They supply and operate the Aquatic Plant Harvester machine at an appropriate landing at Lake Fourteen at a date and time agreed upon by both parties. The harvester machine will macerate submerged Elodea vegetation from area defined.	Yes
Benji Neff	B. Neff Landscaping, Inc.	Benji Neff will provide labor and equipment necessary for pickup and removal of the macerated vegetation that is generated by Bois Forte Aquatic Plant Harvester Machine. This will occur throughout the harvest with pickup at a designated lake shore landing sight.	Yes
Wade Klingsporn, M. Sci.	Vermilion Community College (VCC)	As the Water / Wastewater and Watershed Science Program Coordinator and Lead Instructor, Mr. Klingsporn will assist with student involvement in this project. In particular, the AIS (rusty crayfish) monitoring component.	Yes

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?

Information and results obtained during and following this study will be used to develop and implement long term lake management strategies and goals. LCCMR funding will allow the LFCWA to conserve donations which can then be applied toward future lake management projects focused on water quality preservation and enhancement. Additionally, on October 3, 2020, 1,500 adult crappies were stocked in Lake Fourteen. Lake management recommendations will consider protecting and enhancing habitat for maintaining this resource. The goal is to ensure a favorable habitat for spawning and future stocking, while discouraging additional rusty crayfish establishment.

Project Manager and Organization Qualifications

Project Manager Name: Charlene Luke

Job Title: Project Manager and Board Secretary for LFCWA

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

Ms. Charlene Luke is a Project Management Professional (PMP) certified by the Project Management Institute (PMI). Her project management leadership experience and expertise cover a span of 15+ years effectively leading projects ranging from \$50,000 to \$16 million. She managed project teams ranging in size from 5 to 30 in the following industries: Financial Services, Airline, Food, and Retail. She has a Master of Arts Degree in Speech and Hearing Therapy and Mathematics from Adams State University in Colorado. A key team member on the project will be Mr. Jeff Anderson. He has a bachelor's degree in Chemical Engineering from the University of Minnesota Duluth and is a registered professional (PE) in the field of Environmental Engineering and is licensed in Minnesota and Wisconsin. In addition, he is a Certified Professional Wetland Delineator in Minnesota and focuses on projects within environmentally sensitive areas developing solutions to balance human land/water use needs and environmental sustainability. He has been working in this area for 15 years.

Organization: Lake Fourteen Clear Water Alliance (LFCWA)

Organization Description:

The Lake Fourteen Clear Water Alliance (LFCWA) is a proactive, progressive organization of Lake Fourteen property owners who are dedicated to maintaining and enhancing critical Lake Fourteen resources. The organization has proactively funded, through donations, yearly aquatic plant harvesting since 2012 (8 years). This has been an effort to maintain existing water quality and provide recreation. Additionally, LFCWA funded water and sediment sampling during 2020 to better understand levels of nutrients such as nitrogen, phosphorus, potassium, and sulfur in Lake Fourteen water. Those sediment and nutrient contents potentially influence increased aquatic plant densities, thus impacting the lake's water quality and recreation. Thus, LFCWA is applying for the Legislative-Citizen Commission on Minnesota Resources (LCCMR) funds to support Minnesota's lake management philosophy. The Environment and Natural Resources Trust Fund (ENRTF) and LCCMR core values are identical to LFCWA's mission - To ensure the preservation, maintenance, and protection of the lake. The focus is to ensure that the quality and condition of the water will enhance the aesthetic beauty and recreational features for the benefit of the public.

Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	\$ Amount
Personnel								
							Sub Total	-
Contracts and Services								
Northeast Technical Services, Inc. (NTS)	Professional or Technical Service Contract	NTS will work with LFCWA members, supply personnel, training, and monitoring equipment. This includes field meters, imaging and GPS equipment, and all materials required for water, sediment, and plant sampling. NTS will also coordinate with Pace Analytical for all required sample containers: up to \$55,500/2.5 yrs		X		0.55		\$55,500
Bois Forte Band of Chippewa Reservation Tribal Council	Professional or Technical Service Contract	Bois Forte will complete yearly aquatic plant harvesting on Lake Fourteen as they have since 2012 (8 seasons). The yearly contract amount will be \$12,000 for each of the three seasons of this project - total cost = \$36,000.		X		0.1		\$36,000
Pace Analytical Laboratories (Pace)	Professional or Technical Service Contract	All samples: water (max 144 @\$111.50 each = ~\$16,000), sediment (max 27@\$120 each = ~\$3,300), plant (max 12@\$120 = ~\$1,500 each) submitted to Pace for characterization. By year: 2022: \$5,700; 2023: \$7,700; 2024: \$7,700. Total round to \$22,000.		X		0.07		\$22,000
B. Neff Landscaping, Inc.	Professional or Technical Service Contract	B Neff Landscaping service is responsible for the pickup and removal of harvested aquatic plants. Estimated cost of \$6,000 for three harvest seasons (\$2,000 per season) includes equipment, transportation and labor.		X		0.03		\$6,000
Vermilion Community College	Professional or Technical Service Contract	Vermilion Community College student interns will complete rusty crayfish monitoring for the duration of this study. This includes \$3,000 for VCC students and Project Manager for 2022, \$4,500 in 2023, and \$4,500 in 2024.		X		0.03		\$12,000
							Sub Total	\$131,500

Equipment, Tools, and Supplies								
	Tools and Supplies	Annual "LFCWA Town Hall" meeting. Expenses incurred would be room rental and setup, and publishing expenses to review project accomplishments, status, and next steps. \$1,000 (Approximately \$400 per "Town Hall")	LFCWA holds a "Town Hall" meeting each year to disseminate information about the organization including projects in progress. The meeting is open to LFCWA property owners and other interested people.	X				\$1,000
							Sub Total	\$1,000
Capital Expenditures								
							Sub Total	-
Acquisitions and Stewardship								
							Sub Total	-
Travel In Minnesota								
	Conference Registration Miles/ Meals/ Lodging	Present project status at MN Department of Natural Resources (MN DNR), MN Pollution Control Agency (MNPCHA), or Soil and Water Conservation Districts (SWCDs), or other related water conferences. Expenses would include two-200 mile round trips for 5 LFCWA project team members. One trip during "Activity 2"; second trip at the end of "Activity 3". Mileage and other allowed expenses will follow the Commissioner's Rates when applicable.	Chance for LFCWA to present project status and accomplishments to Minnesota water management related entities. Provide opportunity to share technical and educational practices that could be implemented for the preservation, protection, and enhancement of water quality and management at Lake Fourteen and surrounding area lakes, and lakes throughout Minnesota..	X				\$3,000
							Sub Total	\$3,000
Travel Outside Minnesota								
							Sub Total	-

Printing and Publication								
	Printing	Publication of project information.	Expenses include quarterly newsletters to all property owners, presentation materials for conferences, LFCWA Town Hall meetings, and required state agencies (MN DNR, MN PCA).	X				\$500
							Sub Total	\$500
Other Expenses								
							Sub Total	-
							Grand Total	\$136,000

Classified Staff or Generally Ineligible Expenses

Category/Name	Subcategory or Type	Description	Justification Ineligible Expense or Classified Staff Request
Contracts and Services - Northeast Technical Services, Inc. (NTS)	Professional or Technical Service Contract	NTS will work with LFCWA members, supply personnel, training, and monitoring equipment. This includes field meters, imaging and GPS equipment, and all materials required for water, sediment, and plant sampling. NTS will also coordinate with Pace Analytical for all required sample containers: up to \$55,500/2.5 yrs	NTS is a local Science and Engineering firm who worked with the Lake Fourteen Clear Water Alliance (LFCWA) on a 2020 monitoring study. NTS' rates for LFCWA are ~20% less than market for comparable personnel. The firm is within 20 miles of the project site, employs experienced field scientists and water resource experts, and has a history of providing pro-bono work for the LFCWA. This proposed project would be an exceptional benefit for the LFCWA and would ensure critical professional jobs are retained on Minnesota's Iron Range. This is a single source contract.
Contracts and Services - Bois Forte Band of Chippewa Reservation Tribal Council	Professional or Technical Service Contract	Bois Forte will complete yearly aquatic plant harvesting on Lake Fourteen as they have since 2012 (8 seasons). The yearly contract amount will be \$12,000 for each of the three seasons of this project - total cost = \$36,000.	Bois Forte is one of two MN DNR permitted commercial mechanical control companies that service our area. They have designated a specific harvester and related equipment for Lake Fourteen. They closely follow the MN DNR Aquatic Invasive Species (AIS) Prevention Program designed to prevent introduction of invasive species. A trusting relationship exists between LFCWA and Bois Forte allowing negotiation of competitive pricing. Services provided are mobilization and setup of harvester, site clearing, labor, and fuel at cost. Costs: Mobilization, transport, and setup (max 10 hours @ \$230.00 per hour = \$2,300); Plant harvest (max 40 hours @ \$230.00 per hour = \$9,200.00); On road diesel (max 36 gallons @ ~\$3.10 per gallons = \$111.60); Off-Road Diesel (max 130 gallons @ ~\$2.90 per gallon = \$377.00) Total ~\$12,000.00. By year: 2022: \$12,000; 2023: \$12,000; 2024: \$12,000. Total \$36,000.00. A respectable working relationship between LFCWA and Bois Forte, for annual harvesting, has generated positive financial benefits. This is a single source contract.
Contracts and Services - Pace Analytical Laboratories (Pace)	Professional or Technical Service Contract	All samples: water (max 144 @ \$111.50 each = ~\$16,000), sediment (max 27 @ \$120 each = ~\$3,300), plant (max 12 @ \$120 = ~\$1,500 each) submitted to Pace for characterization. By year: 2022: \$5,700; 2023: \$7,700; 2024: \$7,700. Total round to \$22,000.	Pace Analytical Services (Pace) is a local full service environmental laboratory located in Virginia, MN, approximately 20 miles from the project site. They maintains a close relationship with NTS and the LFCWA. Pace has provided competitive pricing to LFCWA for other projects. Their efficient processing and timely delivery of sample results, along with competitive pricing, ensure that LFCWA will meet their lake management goals. Location and working relationships Pace has with NTS and LFCWA ensures promoting and maintaining locally filled jobs on Minnesota's Iron Range. Pace's location and working relationship with NTS, and indirectly with LFCWA, helps stimulate Minnesota's Iron Range economy. This is a single source contract.
Contracts and Services - B. Neff Landscaping, Inc.	Professional or Technical Service Contract	B Neff Landscaping service is responsible for the pickup and removal of harvested aquatic plants. Estimated cost of \$6,000 for three	Skid steer loader/operator (max 15 hours @ \$95.00 per hour = \$1,425.00) ; Dump Truck/driver (max 5 hours @ \$75.00 per hour = \$375.00); Cleaning of equipment (max 2 hours @ \$100.00 per hour = \$200.00). By year: 2022: \$2,000; 2023: \$2,000; 2024: \$2,000. Total \$6,000.00

4/8/2021

		harvest seasons (\$2,000 per season) includes equipment, transportation and labor.	This is a single source contract.
Contracts and Services - Vermilion Community College	Professional or Technical Service Contract	Vermilion Community College student interns will complete rusty crayfish monitoring for the duration of this study. This includes \$3,000 for VCC students and Project Manager for 2022, \$4,500 in 2023, and \$4,500 in 2024.	Wade Klingsporn has experience in managing previous rusty crayfish monitoring projects for local lake associations. Involving Water/Wastewater and Watershed Science Program students in this type of project is extraordinary, and will not be possible without LCCMR funding. This is a single source contract.
Equipment, Tools, and Supplies		Annual "LFCWA Town Hall" meeting. Expenses incurred would be room rental and setup, and publishing expenses to review project accomplishments, status, and next steps. \$1,000 (Approximately \$400 per "Town Hall")	LFCWA organization is funded by donations from property owners. Without their support there would be no water management at Lake Fourteen. These donors as well as members of the local community are entitled to know the purpose of the project, expected outcomes and how they will be beneficial to the lake. The objective is continual endorsement of lake management.
Travel In Minnesota	Conference Registration Miles/Meals/Lodging	Present project status at MN Department of Natural Resources (MN DNR), MN Pollution Control Agency (MNPCA), or Soil and Water Conservation Districts (SWCDs), or other related water conferences. Expenses would include two-200 mile round trips for 5 LFCWA project team members. One trip during "Activity 2"; second trip at the end of "Activity 3". Mileage and other allowed expenses will follow the Commissioner's Rates when applicable.	Opportunity to share project knowledge and outcome that could be used by other state and local organizations to promote water management.
Printing and Publication	Printing	Publication of project information.	LFCWA organization is funded by donations from property owners. Without their support there would be no water management at Lake Fourteen. These donors as well as members of the local community are entitled to know the purpose of the project, expected outcomes and how they will be beneficial to the lake. The objective is continual endorsement of lake management.

Non ENRTF Funds

Category	Specific Source	Use	Status	Amount
State				
In-Kind	Project management, coordination, sampling, and monitoring time, and personal equipment use. This amount is an estimate based on the amount of time and an hourly rate commensurate with private industry professionals.	Individuals of the LFCWA will donate time and personal equipment in support of this Lake Fourteen project and will collaborate for sampling and monitoring events associated with this project.	Secured	\$20,000
			State Sub Total	\$20,000
Non-State				
			Non State Sub Total	-
			Funds Total	\$20,000

Attachments

Required Attachments

Visual Component

File: [c1885994-74c.pdf](#)

Alternate Text for Visual Component

Water sampling in support of this project will be scheduled more intensely during spring melt, event based until October 31 of each year, and monthly during frozen conditions. Sediment cores will be sampled fall, spring, and winter of each year. Aquatic plant survey and harvesting will be completed during August of each year, and harvested plants will be identified and sampled to calculate nutrient load removals. Additionally, yearly rusty crayfish monitoring will be completed by VCC student ...

Financial Capacity

File: [934f5e05-58e.pdf](#)

Board Resolution or Letter

Title	File
LFCWA Board Resolution-Meeting Minutes Approval for Submitting Grant Request	1a249a69-299.pdf

Optional Attachments

Support Letter or Other

Title	File
LFCWA-Member Communication-2020 NTS & Organization Update	7308a86c-571.pdf
LFCWA-Member Communication-2019 Plant Harvest & Organization Update	6b30beb0-a29.pdf
LFCWA IRS-990-N (e-Postcard) Details	47171870-e6b.pdf
LFCWA 2019 Electronic Notice for Organizations Exempt from Income Tax (e-Postcard) from Walker, Giroux & Hahne LLC - CPA firm.	6bd6b690-fc8.pdf

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

Lake Fourteen Nutrient Management Study

“We really need to know our lake!” - Lake Fourteen Clear Water Alliance

Study Focus: Seasonal and yearly water, sediment, and plant nutrient characteristics and rusty crayfish survey

Study Goal: Inform lake and land management decisions to protect, preserve, and enhance Lake Fourteen



Water Quality

Precipitation event and seasonal sampling



Lake Fourteen Britt, MN



Aquatic Plants

- Plant survey – identify type & abundance
- Identify and sample harvested plants and calculate nutrient load removals



Sediment Characteristics

Fall, winter, spring sediment core sampling

Rusty Crayfish

Yearly density and distribution monitoring

