



# Environment and Natural Resources Trust Fund

2021 Request for Proposal

## General Information

**Proposal ID:** 2021-116

**Proposal Title:** Water: Keep It Fresh

## Project Manager Information

**Name:** Lee Furuseth

**Organization:** Headwaters Science Center

**Office Telephone:** (218) 444-4472

**Email:** director@hscbemidji.org

## Project Basic Information

**Project Summary:** A structured process for informal education presenting children (students) and adults opportunities to think, formulate, organize, and present thoughts related to the environment and more specifically water quality in Minnesota.

**Funds Requested:** \$86,000

**Proposed Project Completion:** 2023-06-30

**LCCMR Funding Category:** Small Projects (H)

**Secondary Category:** Environmental Education (C)

## Project Location

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

Region(s): NW

**What is the best scale to describe the area impacted by your work?**

Region(s): NW

**When will the work impact occur?**

In the Future

## Narrative

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

Minnesota is the "Land of 10,000 Lakes". Water is arguably MN's most valuable resource. In an extensive survey reflecting attitudes Minnesotans have towards water quality, 98% of Minnesotans say, "Lakes and Rivers are an important aspect of life in Minnesota". Yet, paradoxically, 42% of these survey respondents said they were "not knowledgeable about water quality issues." The Headwaters Science Center (HSC) sees this as an opportunity to do what we do best. Many Minnesotans enjoy the sport of fishing with an ultimate prize of a pan-fried dinner at the end of the fishing trip. Virtually every Minnesota in the above mentioned survey would like to know that the walleye on their plate came from a pristine water lake and the fish they are about to eat to be free from any noxious chemicals. Education, in fact, is empowering, creates hope, motivates action and leads to change.

Water contamination is running into our lakes and rivers with the Mississippi River at the base footstep of not only Minnesota, but our nation. The contaminants float down the Mississippi, where more contaminants add to the flow and eventually arrive at the Gulf of Mexico, where a bloom appears resulting from the runoff.

### **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 the prior section, there is a brief mention of what HSC does best. HSC believes that best practices in teaching and learning require a multi-sensory approach. While our Mission Statement says, "Science You Can Touch", what is meant by touch is using all the senses. HSC believes in engaging in scientific discovery by hearing, smelling, tasting (when appropriate), seeing and touching.

HSC will provide four broad activities. By activities we really mean age groups, with multiple opportunities for overlap. Here are the four activities: 1. Environmental Science Club, designed for upper elementary and middle school-age students, 2. Environmental Science Class, in cooperation with area high schools, working within school curriculum focused on the Minnesota Science Graduation Standards that are best applicable to water quality, 3. Interns and preparatory teacher training, providing college students complete practicums and internships at HSC, 4. Community education adult and/or evening classes, which focus on conducting water sample testing and water quality analysis. These activities will start with the science behind the testing, where students will be invited to bring their sample, whether from their own city tap water, their own well water, or from a river or lake.

### **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?**

SMART goals for the clubs and classes (including interns and practicum teachers:

100% of students/guests will be able to conduct a laboratory test to determine water quality.

100% of students/guests will be able to identify contaminants and toxins in a water sample.

100% of students/guests will complete a project: public presentation, social media presentation, video, or demonstration. Or, lead or participate in a community forum.

100% of students/guests will lead or participate in a community water preservation or improvement project.

50% of students/guest surveys will show a change in attitude (positive).

## Activities and Milestones

### Activity 1: Environmental Science Club

**Activity Budget:** \$32,512

**Activity Description:**

HSC will implement an environmental science club for 20 late elementary and middle school students with a focus on environmental science concepts, including watershed evaluation, aquatic invasive species, sustainable communities, and testing of water quality, both fresh and well water. The club will meet 30 times during the school year for 90 minutes and combine hydrologic field work and water quality education. We plan to partner with the Boys and Girls Club of the Bemidji Area to enroll more students, including those from traditionally under served populations, in the Environmental Science Club. Participants in the program will learn skills by actively engaging in the field and classroom water quality testing.

The environmental science club emphasizes quality contact hours with a cohort of 20 students. This approach will result in 30-35 contact hours per participant and 600 to 650 contact hours per year per cohort. The environmental science club will repeat annually with new cohorts of 20 students for a total of two years. We request two years of funding to implement, evaluate, and establish this effort.

**Activity Milestones:**

Description	Completion Date
Recruit, enroll in class. Register. Forms and information. Fall. Winter. Spring.	2021-08-31
Final Project. Presentation. Recording. Report. Publication. Fall. Winter. Spring	2022-06-30
Water Sample Collection I, II, III. Testing. Recording. Fall. Winter Spring.	2022-06-30
Final Project. Presentation. Fall. Winter. Spring.	2023-06-30
Water Sample Collection I, II, III. Testing. Recording., Fall. Winter. Spring	2023-06-30

### Activity 2: Environmental Science Class. High School.

**Activity Budget:** \$19,044

**Activity Description:**

HSC will implement Environmental Science Club with fifteen to twenty high school students focusing on environmental science concepts, including watershed evaluation, aquatic invasive species, sustainable communities, and water quality testing. The club will meet 30 times during the school year for 60 minutes and combine hydrologic field work and water quality education. We plan to partner with Bemidji High School and other local high schools. In collaboration with high school teachers and administrative staff, students will complete science class activities as required work for high school credit. Also, as a part of high school course work, students will complete activities required for Academy learning.

Academy is a Bemidji High School program which places high school students in apprentice relationships in area organizations and businesses. HSC will be one of those apprentice sites.

The environmental science club emphasizes quality contact hours with a cohort of 20 students. This approach will result in 50-60 min./day per semester or full year course.

**Activity Milestones:**

Description	Completion Date
Enroll students. Set course syllabus. Plan and schedule projects (final and others). Fall. Winter. Fall	2021-08-31
Final projects. Presentations. Recording. Reporting. Publication. Fall. Winter. Spring.	2022-06-30
Water Sample Testing. I, II, III for each class. Fall. Winter. Spring.	2022-06-30

Final Projects. Presentations. Recordings. Recording. Publication. Fall. Winter. Spring.	2023-06-30
Water Sample Testing I, II, III. Fall. Winter. Spring.	2023-06-30

### Activity 3: Internship for Science Students. Student Teacher Preparation Practicum.

**Activity Budget:** \$15,000

**Activity Description:**

HSC will provide an opportunity for college students to intern and pre-teach experiences/practicum.

The Goals for the Intern and Pre-teaching Experiences are:

Leadership skills.

Student and people management skills.

Planning and implementation.

Laboratory and experiment processes.

Docent training.

College Practicum students will have the opportunity to practice teach. Students will put together lessons, assist in the teaching, tutor club/class students as well as adults participating in evening and weekend classes.

Science interns will experiment. Internships will provide real opportunities for college students to conduct water quality tests, both in our HSC lab as well as going out in the mobile lab.

**Activity Milestones:**

Description	Completion Date
Recruit, advertise, hire, provide initial training. First year.	2021-08-31
Review performance levels. Ongoing.	2022-06-30
Recruit, advertise, hire, and provide initial training. Second year.	2022-08-31
Review performance levels. Ongoing.	2023-06-30

### Activity 4: Community Education Class Adult/Guest

**Activity Budget:** \$19,444

**Activity Description:**

The Community Education Class HSC will enroll fifteen adult students/guests with a focus on environmental science concepts, including watershed evaluation, aquatic invasive species, sustainable communities, and water quality testing.

The community education class will meet 24 times during the year for 60 minutes and combine hydrologic field work and water quality testing education. Students/guests will learn how to conduct water quality testing, both of well water and fresh water samples. Samples will be provided for individuals in the class, as well as samples gathered from the surrounding freshwater locations, i.e. lakes, streams, and etc, in other words, from their backyards.

Upon demonstrating high levels of water testing competencies, adults/guests will be able to use the HSC lab, under a MakerSpace model. Water samples will be provided by individual participants/adults/guests. Also, on-site testing kits will be made available for checkout for testing of lakes, rivers and etc.

The Goals for the Community Education Class are:

Water sampling collection procedures.

Water testing and laboratory procedural skills.

**Activity Milestones:**

Description	Completion Date
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Recruit and enrollment in Community Education Classes. Ongoing	2021-08-31
Water Quality Presentations. Recordings. Report. Publication. Ongoing.	2023-06-30
Water Sampling Collection, testing, record keeping. Ongoing.	2023-06-30

## Project Partners and Collaborators

Name	Organization	Role	Receiving Funds
Melinda Neville, Professor at Leech Lake Tribal College	Leech Lake Tribal College	Dr. Neville places science students in internship roles with organizations and businesses. Interns receive stipend compensation based on responsibilities and role requirements (hours).	No
Rena Spangler, Director of Clinical Experience	Bemidji State University.	Rena is the Director of Clinical Experience. The proposed plan would create a collaborative effort benefiting BSU students and would provide a practice teaching location at the Headwaters Science Center.	No
Kristina Van Wilgen-Hammit	Bemidji High School	Kristina is the teacher of the Environmental Science Classes at Bemidji High School. The core purpose of this class is focusing on helping young people further their understanding of the environment and the issues of water quality.	No
Andrea Osted	Boys and Girls Club of the Bemidji Area	Andrea is the Executive Director of the Boys and Girls club, who serves nearly 500 children ranging in age from 6 to 18 years old. The Environmental Science Club project would combine staff members from the Headwaters Science Center and our staff from the Club.	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?**

Results will be implemented and ongoing efforts will be funded through the volunteer efforts by club and class students/guests. Also students and guests will recruit volunteers as needed for each specific community project. Funding for community projects will be solicited through the interaction of students/guests with community agencies and individuals.

The Headwaters Science Center will continue to fund the clubs, classes, internships, and community education classes through tuition fees, water sample fees, admissions resulting from guest use of the lab which will serve as a MakerSpace made available through admissions and to HSC members.

## Other ENRTF Appropriations Awarded in the Last Six Years

Name	Appropriation	Amount Awarded
Developing Youth Watershed Stewardship in Northwest Minnesota	M.L. 2017, Chp. 96, Sec. 2, Subd. 05f	\$121,000

## Project Manager and Organization Qualifications

**Project Manager Name:** Lee Furuseth

**Job Title:** Executive Director

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

Lee Furuseth has thirty-seven years working in K-12 public education. Seventeen years as a teacher, mostly as an elementary classroom teacher, and twenty years as an elementary principal. On June 30, 2018, Lee retired from public education and shortly after retiring, joined the staff at the Headwaters Science Center (HSC) as the Executive Director (ED). Lee has been on board for the seven months, managing day-to-day operations, managing a current LCCMR grant,

which expires on June 30, 2020, as well as managing additional grants, including a grant from the Minnesota Department of Education totaling \$100,000 over two years. Lee's background managing grants spans twenty years as a building principal with grants exceeding \$800,000. Lee's experiences with managing staff include twenty years as a building administrator, with fourteen years at the Walker-Hackensack-Akeley (WHA) Elementary School, with direct supervision of more than fifty staff. Additionally, Lee managed the Bagley Elementary School with food service, custodial, transportation, security, teachers, counselors, and non-certified instructional staff, totally more than seventy employees. Besides supervision responsibilities of staff and management of grants, Lee had direct managerial responsibilities of a budget ranging from \$300,000 to \$400,000. The student population at WHA ranged from 300 to 400 students. The Bagley student population hovered around 550 students during Lee's six years a principal.

**Organization:** Headwaters Science Center

**Organization Description:**

In 1994 a group of highly dedicated science professors, teachers and concerned members of the Bemidji community and Northern Minnesota formed an action group to establish a science center for the citizens of Northern Minnesota. This group of leaders in science education were headed by Laddie and Jim Elwell, who served the Headwaters Science Center (HSC) for seventeen years as the Executive Director and the Chief Financial Officer respectively. What started as a dream in 1994, grew and flourished, and now HSC is a testament to their passionate dedication to science. HSC stands as the only science center from the Twins Cities to Winnipeg and from Fargo to Duluth. The Headwaters Science Center is accredited by the Association of Science and Technology Centers (ASTC) and joins the more than 300 ASTC science centers in the United States and the world.

HSC serves the communities of Northern Minnesota. While seventy-five percent of the members have addresses in Bemidji and Beltrami County, guests and visitors travel from 150 miles in all four directions from HSC. The mission at HSC is "Science You Can Touch". More than 30,000 guests and visitors experience the demonstrations, exhibits and instruction kits are available at HSC.

## Budget Summary

Category / Name	Subcategory or Type	Description	Purpose	Gen. Ineligible	% Benefits	# FTE	Classified Staff?	\$ Amount
<b>Personnel</b>								
Lead Teacher: Teaching and Learning		Responsibilities: both direct and indirect for all four activities. Coordinate implementation. Design Scope and Sequence. Teach in all four activities.			7%	0.4		\$17,000
Teacher(s)		Direct Instruction. Instruction in Environmental Club, Environment Class, and Community Ed. Adult Class			7%	1.1		\$29,000
Intern(s)		Practicum for Teaching or Intern in science field. Assist teaching. Lead students. Assist Docent.			0%	2		\$15,000
							<b>Sub Total</b>	<b>\$61,000</b>
<b>Contracts and Services</b>								
Boys and Girls Club of Bemidji	Professional or Technical Service Contract	Environmental Science Club is a club done in cooperation with the local Boys and Girls club. Students are members of the B and G Club. One staff person from B and G will accompany students to the science club site and assist with all activities.				0.2		\$10,000
							<b>Sub Total</b>	<b>\$10,000</b>
<b>Equipment, Tools, and Supplies</b>								
	Equipment	Camera, Tripod, Case, Accessories. (1)	Record presentations, Film for Social Media, Record Forums, Record Projects (pictures and videos)					\$570
	Equipment	Chloride Probe	Water Testing Equipment (1)					\$680
	Equipment	Chloride Standard and Solution (3)	Water Testing Equipment					\$220
	Equipment	Nitrate Probe (1)	Water Testing Equipment					\$860
	Equipment	Nitrate Standard and Solution (2)	Water Testing Equipment					\$190
	Equipment	HQ40D Meter (1)	Water Testing Equipment					\$1,200
	Equipment	HQ40D Field Rugged Probe (1)	Water Testing Equipment					\$700
	Tools and Supplies	Nitrate Nitra Ver 3 (5)	Water Testing Reagent Supply					\$220



	Tools and Supplies	Nitrate Nitra Ver 6 (5)	Water Testing Reagent					\$300
	Tools and Supplies	Phosphate Phos Ver (6)	Water Testing Reagent					\$240
	Tools and Supplies	Amber Samples (4)	Water Testing Plastic Bottles					\$150
	Tools and Supplies	Goggles (50)	Eye Protection					\$100
	Tools and Supplies	E coli/coliform testing kits (10)	Supplies for water testing.					\$1,700
	Tools and Supplies	Kim Wipes (2)	Wipes					\$30
	Tools and Supplies	Petri Dishes (6)	Water Testing Supplies					\$200
	Tools and Supplies	Parafilm (2)	Vial Sealer					\$50
	Tools and Supplies	Dissection Kits (50)	Perform Dissection Procedures					\$800
	Tools and Supplies	Dissection Trays (25)	Perform Dissections					\$390
	Tools and Supplies	Beakers, Flasks, and Vials (Misc. 500)	Water Testing					\$500
	Tools and Supplies	DR 900 Cuvettes (10)	Water Testing					\$400
	Tools and Supplies	Ferro Ver (3)	Water Testing Reagent					\$200
	Tools and Supplies	Pipette Tips (6)	Water Testing Supplies					\$200
							<b>Sub Total</b>	<b>\$9,900</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	Miles to and from lakes, rivers, and other water sources. 2,600 miles	Water samples.					\$3,300
							<b>Sub Total</b>	<b>\$3,300</b>
<b>Travel Outside Minnesota</b>								
							<b>Sub Total</b>	-
<b>Printing and Publication</b>								
	Publication	Website maintenance and submission.	Publication of presentations					\$1,800
							<b>Sub Total</b>	<b>\$1,800</b>
<b>Other Expenses</b>								
							<b>Sub Total</b>	-
							<b>Grand Total</b>	<b>\$86,000</b>

Classified Staff or Generally Ineligible Expenses

Category/Name	Subcategory or Type	Description	Justification Ineligible Expense or Classified Staff Request
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Non ENRTF Funds

Category	Specific Source	Use	Status	Amount
<b>State</b>				
			<b>State Sub Total</b>	-
<b>Non-State</b>				
In-Kind	Leech Lake Tribal College. Intern Salary.	Training and experience for college intern.	Pending	\$15,000
			<b>Non State Sub Total</b>	<b>\$15,000</b>
			<b>Funds Total</b>	<b>\$15,000</b>

## Attachments

### Required Attachments

#### *Visual Component*

File: [f6608dba-a19.pdf](#)

#### *Alternate Text for Visual Component*

Three scientists (apprentices) gathering water samples.

#### *Financial Capacity*

File: [3453a82e-2ba.pdf](#)

#### *Board Resolution or Letter*

Title	File
Headwaters Science Center Board Action on April 22, 2020	<a href="#">e057fa8e-ebb.docx</a>
HSC 2019 990	<a href="#">7d4e2d1f-a3d.pdf</a>

### Optional Attachments

#### *Support Letter or Other*

Title	File
Boys and Girls Club of Bemidji	<a href="#">34fbd410-8dc.docx</a>
Bemidji High School Letter	<a href="#">b13703ea-280.docx</a>
BSU Letter of Support: Practicum Students	<a href="#">ad9978e5-182.docx</a>

## Administrative Use

**Does your project include restoration or acquisition of land rights?**

No

**Does your project have patent, royalties, or revenue potential?**

Yes,

- Potential revenue generated or net income from the sale of products or assets developed or acquired with ENRTF funding

**Does your project include research?**

No

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

No

