

ENRTF Request for Proposal (RFP) - FY 2023
Final Proposals Received by Category with Summaries

As of April 2, 2021, the Legislative-Citizen Commission on Minnesota Resources (LCCMR) received 220 proposals requesting a total of approximately \$178 million. This RFP process is for funding beginning July 1, 2022. On June 16-17, members will select a subset of high-ranking proposals to invite for presentation before the LCCMR on July 6-8 and 13-15 in order to receive further consideration. On July 28-29, LCCMR will make final selection and funding allocation decisions. These selected projects will be presented to the 2022 Minnesota Legislature as the official LCCMR recommendations for spending from the Environment and Natural Resources Trust Fund.

Proposal ID	Last Name	First Name	Title	Summary	Organization	Funding Total
A. Foundational Natural Resource Data and Information (26 Proposals / \$22,766,000)						
2022-031	Haus	Jacob	Efficacy of Urban Archery Hunting to Manage Deer	Several municipalities across Minnesota conduct special deer hunts within city-limits, but the efficacy is unknown. An analysis of deer survival and habitat use will improve management practices in these regions.	Minnesota State Colleges and Universities, Bemidji State University	\$329,000
2022-076	Kloiber	Steve	Modernizing Minnesota's Digital Lake Inventory	Enhance lake conservation planning of state and local partners with a comprehensive update of Minnesota's lake and pond GIS data as well as streamlining future maintenance.	MN DNR, Ecological and Water Resources Division	\$787,000
2022-081	Van Offelen	Henry	Strategic Framework to Guide Local Water Storage Implementation	Framework to prioritize water storage projects strategically throughout the state. The framework will use existing data, local stakeholder input, be scalable, and emphasize multi-benefit water storage (water quality, flooding, habitat).	Board of Water and Soil Resources	\$220,000
2022-091	Wagenius	Stuart	How Do Prescribed Fires Affect Native Prairie Bees?	Pollinators are declining in Minnesota's tallgrass prairies. We will investigate how prescribed fire affects the nesting habitat, food resources, and diversity of ground-nesting bees to make recommendations for prairie management.	Negaunee Institute for Plant Conservation Science and Action at the Chicago Botanic Garden	\$421,000
2022-102	Anderson	Pamela	Public Portal for Algae Blooms in Lakes	Provides a public portal for lake users as well as researchers and resource managers showing and predicting the locations of harmful algae blooms.	Minnesota Pollution Control Agency	\$846,000
2022-106	Putzier	Paul	County Groundwater Atlas ML2022	This project supports continuing development of the County Groundwater Atlases. The goal is to provide this valuable water and resource management "information infrastructure" to every county in Minnesota.	MN DNR, Ecological and Water Resources Division	\$1,400,000
2022-108	Noe	Ryan	Walleye or Water Clarity? Evaluating Alternative Lake Futures	Scenarios, models, and stakeholder workshops to assess tradeoffs between water quality, fisheries, recreation, and other lake values. Recommendations for more efficient and equitable targeting of lake restoration and protection activities.	U of MN, Humphrey School of Public Affairs	\$207,000
2022-114	Grinde	Alexis	EAB and Black Ash: Maintaining Forests and Benefits-Resubmission	Utilize ongoing experiments to determine impending EAB impacts on water, vegetation, and wildlife; optimal replacement species and practices for forest diversification; develop indicators and criteria for prioritization of mitigation activities.	U of MN, Duluth - NRRI	\$800,000
2022-119	Arends	Heather	Mapping Construction Resources for Recreation and Transportation Infrastructure	To sustainably manage resources needed for publicly-funded transportation and recreation projects, DNR will provide St. Louis County with aggregate maps to inform decisions on land use and natural resource conservation.	MN DNR, Lands and Minerals Division	\$776,000

ENRTF Request for Proposal (RFP) - FY 2023
Final Proposals Received by Category with Summaries

Proposal ID	Last Name	First Name	Title	Summary	Organization	Funding Total
2022-122	Joyce	Michael	Distribution and Movements of Fishers in Southern Minnesota	We will determine the distribution, status, and habitat use of fishers in the southern half of Minnesota to provide the information needed to manage fishers in this region.	U of MN, Duluth - NRRI	\$347,000
2022-123	Joyce	Michael	Bobcat and Fisher Habitat Use and Interactions	We will describe habitat use, diet, and activity patterns of bobcats and fishers to understand why bobcats kill female fishers and identify potential solutions to reverse the fisher population decline.	U of MN, Duluth - NRRI	\$447,000
2022-148	Bump	Joseph	Voyageurs Wolf Project - Phase II	Wolf predation in summer is almost unknown but critical to deer, moose, wolf, and disease management. We'll measure wolf predation rates on these species and promote Voyageurs' region wildlife.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$694,000
2022-149	Bump	Joseph	Offal Wildlife Watching: How Do Hunters Provision Scavengers?	This is a citizen-science project driven by hunters. We'll recruit hunters statewide and provide remote cameras to deploy at field-dressed deer gut piles to study scavengers, hunter provisioning, and CWD.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$531,000
2022-172	Fulton	David	Addressing Conflict between Wild Canids and People	The project will study resident's beliefs, attitudes and behaviors toward coyotes and foxes in the Metro and Central Regions to develop outreach activities and strategies for human-carnivore conflict management.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$326,000
2022-173	Lusardi	Barbara	Geologic Atlases for Water Resource Management	Geologic atlases provide maps/databases essential for improved management of ground and surface water. This proposal will complete current projects and start new projects to equal about 10 complete atlases.	U of MN, MN Geological Survey	\$4,122,000
2022-182	McCann	Nicholas	Determining Effectiveness of Donkeys for Nonlethal Wolf Deterrence	Wolf damage management costs Minnesota 7% of its wolves and >\$750,000 annually. We will determine if guard donkeys (which attack canids) deter wolves from livestock, thereby reducing these costs.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$349,000
2022-187	Forester	James	Mapping the Ecology of Urban and Rural Canids	We will determine how disease prevalence, diet, habitat use, and inter-species interactions of coyote and red fox populations change from urban to rural areas along the Mississippi River corridor.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$550,000
2022-200	Windmuller-Campione	Marcella	Maximizing Lowland Conifer Ecosystem Services: Phase 2	Continue monitoring forested peatland network for hydrology and wildlife including a new species, bog lemming. Add measures to quantify above and below ground carbon by age and forest type.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$500,000
2022-204	Shaw	Ruth	Healthy Prairies III: Restoring Minnesota's Prairie Plant Diversity	We will collect native seed throughout Minnesota's prairie region, study microbial effects on plant survival, estimate the geographic scale and rate of adaptation, and communicate results aiding restoration and propagation.	U of MN, College of Biological Sciences	\$531,000
2022-215	Tri	Andrew	What's Causing Declines in Black Bear Reproduction	We will examine why bear reproduction has declined in central and northwestern Minnesota using citizen-science to collect samples from hunters to assess reproduction, health, and exposure to disease and pesticides.	MN DNR, Fish and Wildlife Division	\$553,000
2022-217	Larsen	Peter	Establishing a Center for Prion Research and Outreach	Responding to the immediate need for cohesive research efforts focused on a prion disease that is spreading across Minnesota through the formation of an innovative and multidisciplinary research center.	U of MN, College of Veterinary Medicine	\$4,356,000

ENRTF Request for Proposal (RFP) - FY 2023
Final Proposals Received by Category with Summaries

Proposal ID	Last Name	First Name	Title	Summary	Organization	Funding Total
2022-226	Carstensen	Michelle	Neonicotinoid Impacts on Minnesota Deer and Prairie Chickens	We will examine impacts of neonicotinoid exposure on game species in Minnesota by collecting samples from deer and prairie chickens where low and high neonicotinoid concentrations were previously determined.	MN DNR, Fish and Wildlife Division	\$1,060,000
2022-238	Rowe	Erika	Expanding the Minnesota Ecological Monitoring Network	This project proposes to expand the Ecological Monitoring Network by establishing an additional 250 plots to inform the conservation and management of Minnesota's native forests, wetlands, prairies.	MN DNR, Ecological and Water Resources Division	\$800,000
2022-247	Whitfeld	Timothy	Minnesota Biodiversity Atlas - Phase 3	We propose to expand the Minnesota Biodiversity Atlas, an online natural resource management tool, to include 2.5 million records by integrating expert observations and specimen records from multiple organizations.	U of MN, Bell Museum of Natural History	\$593,000
2022-266	Anderson	Neil	Sweetening the Crop: Perennial Flax for Pollinator/Ecosystem Benefits	We will produce, select, and evaluate how perennial flax provides ecosystem (pollinator) services for the environment while enhancing yield for oilseed, fiber, and nectar/honey production.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$791,000
2022-275	Duncan	Nancy	Beavers, Trees and Climate - Increasing Floodplain Forest Resilience	Climate change, beaver herbivory and Emerald Ash Borer are significant threats to upper Mississippi floodplain forests. Our extensive partnership is identifying solutions to save floodplain wildlife habitat before it disappears.	National Park Service, Mississippi National River and Recreation Area	\$430,000
Subtotal						\$22,766,000
A. Foundational Natural Resource Data and Information						
H. Small Projects (14 Proposals / \$2,571,000)						
2022-043	Grinde	Alexis	Improving Golden-Winged Warbler Conservation and Habitat Restoration	Assess Golden-winged Warbler productivity throughout the breeding season and inform habitat restoration to conserve Minnesota's biodiversity.	U of MN, Duluth - NRRI	\$197,000
2022-045	Huberty	Brian	Charting Minnesota's Future Natural Resources	Create a recommendation report to coordinate and collaborate future collections of aerial and satellite imagery to help Minnesotans make better decisions for natural resource management and emergency response.	SharedGeo	\$142,000
2022-048	Harris	Fred	Enhancing Natural Resource Conservation through Species Distribution Modeling	Create Species Distribution Models (SDMs) for rare species in Minnesota to provide new tools for natural areas conservation and rare species surveys.	MN DNR, Ecological and Water Resources Division	\$200,000
2022-068	Moen	Ron	Minnesota Mammal Atlas	The Minnesota Mammal Atlas will be a one-stop solution for knowledge on all Minnesota mammal species	U of MN, Duluth - NRRI	\$116,000
2022-069	Moen	Ron	Effects of Road Mortality on Minnesota Wildlife	Study road mortality of wildlife species in Minnesota and identify ways to reduce frequency of animal-vehicle collisions to conserve wildlife and improve safety on Minnesota roads	U of MN, Duluth - NRRI	\$183,000
2022-109	Gross	Briana	Status of Minnesota Blueberries and Relatives	Northeastern Minnesota is home to several native, edible blueberries and related berries. This project will assess how land management practices impact the reproductive and genetic health of four key species.	U of MN, Duluth	\$191,000
2022-138	Stanton	Daniel	Moss and Lichens of Minnesota Prairies and Meadows	Mosses, lichens and cyanobacteria are an overlooked part of our prairies and meadows as "biocrusts". This project will document this forgotten diversity and its important functions.	U of MN, College of Biological Sciences	\$160,000

ENRTF Request for Proposal (RFP) - FY 2023
Final Proposals Received by Category with Summaries

Proposal ID	Last Name	First Name	Title	Summary	Organization	Funding Total
2022-153	Bracey	Annie	Conserving Black Terns and Forster's Terns in Minnesota-Resubmission	Black and Forster's tern populations have declined. Comprehensive assessment of distribution and breeding status will identify population limiting factors to inform best management practices and prioritize conservation and restoration.	U of MN, Duluth - NRRI	\$199,000
2022-163	Wickert	Andrew	Land-Use and Climate Impacts on Minnesota's Whitewater River	Augment, digitize and disseminate repeat topographic surveys of the Whitewater River valley since 1939, which provide critical information for sustainable land and water management.	U of MN, St. Anthony Falls Laboratory	\$199,000
2022-185	Aukema	Brian	Protecting Minnesota's Spruce-Fir Forests from Tree-Killing Budworm	Spruce budworm is native to Minnesota and the most significant tree killer in spruce-balsam fir forests. This project studies why populations increase to improve management opportunities in affected forests/regions.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$189,000
2022-193	David	Andrew	Restoration of Eastern Hemlock; Minnesota's Endangered Tree Species	This project will develop planting guidelines for eastern hemlock, Minnesota's only endangered tree species from four different seed sources planted on four different sites across northeast and north central Minnesota.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$199,000
2022-208	Salomon	Christine	Characterizing Microbial Diversity of Ephemeral Minnesota Wetlands	Collection of foundational information about unique microbial species associated with plants, animals, insects and sediments in vernal (ephemeral) wetland pools throughout Minnesota that serve as critical and threatened habitat	U of MN, College of Pharmacy	\$200,000
2022-225	Breidenbach	Virginia	Native Plant Community Data in City of Duluth	Develop Native Plant Community data and maps for the City of Duluth and St. Louis River estuary to support conservation and restoration activities.	Minnesota Land Trust	\$198,000
2022-254	Petersen	Jessica	Tools for Supporting Healthy Ecosystems and Pollinators	Create a pollination companion guide to MNDNR's Field Guides to Native Plant Communities for conservation practitioners to better integrate plant-pollinator interactions into natural resource planning and decision-making.	MN DNR, Ecological and Water Resources Division	\$198,000
Subtotal						\$2,571,000
B. Water Resources (34 Proposals / \$17,503,000)						
2022-046	Jordan	Nicholas	Scaling A Market-Driven Water-Quality Solution for Row-Crop Farming	Adding a year of grain/winter camelina production to Minnesota crop rotations provides a highly scalable market-driven clean-water solution; our pilot supply chains will accelerate wide adoption of this solution.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$835,000
2022-053	Ruan	Roger	Advanced Anaerobic Digestion for Organic Waste Utilization	Overcome technical issues faced by anaerobic digestion industry through blending and pretreatment of organic wastes, adjusting carbon/nitrogen ratio, optimizing operating parameters, effluent processing, ensuring complete treatment /utilization of wastewater.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$523,000
2022-056	Montgomery	Brandon	Unsewered Area Pilot Program: NE MN Project Facilitator	Currently, Minnesota has 975 unsewered areas. This pilot project focuses on the 258 unsewered areas in NE MN and tests whether in-community facilitators can generate, and accelerate, wastewater solutions.	Minnesota Pollution Control Agency	\$450,000

ENRTF Request for Proposal (RFP) - FY 2023
Final Proposals Received by Category with Summaries

Proposal ID	Last Name	First Name	Title	Summary	Organization	Funding Total
2022-059	Kang	Peter	Site Suitability for Aquifer Storage and Recovery	We develop a GIS-based, site suitability mapping tool for aquifer storage and recovery; use it to evaluate several aquifers; and demonstrate it with field tests in a controlled setting.	U of MN, St. Anthony Falls Laboratory	\$394,000
2022-063	Groten	Joel	Website Development: Statewide Sediment Estimates Improves River Restoration	Develop a publicly accessible website tool to estimate sediment in Minnesota's Rivers lacking sampled data. This website is needed by the public and resource managers for river protection and restoration.	US Geological Survey, Upper Midwest Water Science Center	\$250,000
2022-079	Griffin	Daniel	Rainfall History Recovered from Old Oak Tree Rings	We will use tree rings to recover rainfall history over the last 250-300+ years. We will organize workshops and multimedia resources to communicate our findings with stakeholder communities across Minnesota.	U of MN, College of Liberal Arts	\$570,000
2022-086	Baker	Lawrence	Can We Turn Our Cities' Green Lakes Blue?	This project seeks to find new ways to reduce impairment of Minnesota's urban lakes in ways that are more effective and less expensive, moving upstream to the source of pollution.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$632,000
2022-087	LaPara	Timothy	High Temperature Anaerobic Digestion of Sewage Sludge	This research project will demonstrate that high temperature anaerobic digestion is highly effective at treating sewage sludge, particularly with respect to destroying disease-causing microorganisms and antibiotic resistance genes.	U of MN, College of Science and Engineering	\$302,000
2022-095	Breneman	Dan	Evaluating Locally Sourced BIOCHAR for Restoring Impaired Waterbodies	Laboratory research on St. Louis River sediments will evaluate biochar as an amendment for managing moderate-level contamination in aquatic habitats, introducing potential market opportunities for Minnesota's wood product industries.	Minnesota Pollution Control Agency	\$278,000
2022-098	Hozalski	Raymond	Assessing Prevalence of Brain-Eating Amoeba in Minnesota Lakes	This research project will determine the presence and concentration of the brain-eating amoeba (<i>Naegleria fowleri</i>) in Minnesota Lakes and identify lake characteristics that correlate with occurrence of the amoeba.	U of MN, College of Science and Engineering	\$487,000
2022-099	Yang	Judy	Mitigating Cyanobacterial Blooms and Toxins Using Clay-Algae Flocculation	We plan to develop a clay-algae flocculation method to mitigate cyanobacterial blooms, which produce toxins that contaminate drinking water and cause mass mortalities in fishes and other animals in Minnesota.	U of MN, St. Anthony Falls Laboratory	\$366,000
2022-103	Ozersky	Ted	Changing Winters and Game Fish in Minnesota Lakes	Winter is a critical period for game fish recruitment and survival, yet little is known about winter lake ecology. We will determine how changing winter conditions affect Minnesota's fish resources.	U of MN, Duluth - Large Lakes Observatory	\$267,000
2022-116	Baker	Anna	Rainy River Drivers of Lake-of-the-Woods Algal Blooms	Guiding management for reduction of phosphorus inputs to Lake of the Woods by examining sources, mobility, and storage of sediment-bound phosphorus within Rainy River.	US Geological Survey, Upper Midwest Water Science Center	\$683,000
2022-129	Hansen	Gretchen	Causes and Consequences of Lake Water Quality Change	Understanding causes and consequences of changing water clarity in Minnesota's lakes can enable effective conservation and prioritize actions to locations where it will have the highest impact for fish habitat	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$397,000

ENRTF Request for Proposal (RFP) - FY 2023
Final Proposals Received by Category with Summaries

Proposal ID	Last Name	First Name	Title	Summary	Organization	Funding Total
2022-141	Novak	Paige	Enhancing Biodegradation of Emerging Contaminants via Microbial Starvation	Our research will provide concrete data to improve the design of waste-, storm-, or drinking water systems to biodegrade mixtures of pharmaceuticals, hormones, and other contaminants of emerging concern	U of MN, College of Science and Engineering	\$263,000
2022-152	Twine	Tracy	Water and Climate Information to Enhance Community Resilience	To support Minnesota's climate resiliency investments, we will generate critical water resources information and share it with impacted communities and individuals to guide adaptation planning and water resources management.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$564,000
2022-155	Ulrich	Bridget	Catch and Reveal: Discovering Unknown Fish Contamination Threats	Harmful "forever chemicals" were recently discovered in rainbow smelt- what else are we missing? We seek to protect anglers and their families by uncovering unknown contamination threats to Minnesota fish.	U of MN, Duluth - NRRI	\$276,000
2022-164	Beck	Brian	Leveraging Innovations in Data Analytics for Project Implementation	Integrating local and statewide datasets into a 21st-century planning tool, widely called for by our communities, that forecasts the impacts of changing precipitation patterns and quantitatively compares cost-effective solutions.	Minnehaha Creek Watershed District	\$791,000
2022-175	Keegan	Bill	Innovative PFAS Solution to Protect Minnesota Natural Resources	Protection of State's drinking water resources and natural resources by eliminating a new Contaminant of Emerging Concern (CEC) known as Perfluoroalkyl and Polyfluoroalkyl substances (PFAS) from point source discharges.	Dem-Con	\$750,000
2022-184	Penn	Lee	Microplastics from Paint Chips: Impact on Contaminant Transport	Paint chips release microplastics into the environment. We propose to determine how microplastics from paint chips impact the fate and transport of contaminants of concern in Minnesota waters.	U of MN, College of Science and Engineering	\$471,000
2022-191	Cui	Tianhong	Solar Powered Sensor for Monitoring Pesticide in Water	The project aims to develop a small, cheap, solar-powered sensor with data storage to continuously monitor pesticide pollutants in very large areas of lakes and rivers in Minnesota.	U of MN, College of Science and Engineering	\$300,000
2022-192	Cui	Tianhong	Smart Purification System for Clean Drinking Water	We propose to develop a smart system to purify drinking water while monitoring pollutants with tiny sensors. The purification system is very efficient, small, cheap, simple, and easy to use.	U of MN, College of Science and Engineering	\$400,000
2022-201	Novak	Paige	Technology for Energy-Generating Onsite Industrial Wastewater Treatment	We will advance an "off the shelf" technology to treat industrial wastewater onsite, turning pollutants into energy and treated water. This will lead to water quality benefits and cost savings.	U of MN, College of Science and Engineering	\$352,000
2022-206	Arnold	William	Mapping Pollutant Sources across Land Use Gradients	The relative importance of sources of nutrients and emerging contaminants to the Twin Cities Metropolitan area will be quantified to help make better decisions for water quality protection and improvement.	U of MN, College of Science and Engineering	\$420,000
2022-218	Erickson	Andy	Removing CECs from Stormwater with Biofiltration	This project will optimize a treatment practice design for removing contaminants of emerging concern (CECs) from stormwater runoff using biofiltration media. Guidance will be developed for stormwater managers statewide.	U of MN, St. Anthony Falls Laboratory	\$646,000

ENRTF Request for Proposal (RFP) - FY 2023
Final Proposals Received by Category with Summaries

Proposal ID	Last Name	First Name	Title	Summary	Organization	Funding Total
2022-224	Phelps	Nicholas	Is the Tire Chemical 6PPDq Killing Minnesota's Fish?	A newly discovered and highly toxic tire-derived chemical (6PPDq) may be impacting Minnesota's fish populations - we will optimize detection methods, determine occurrence in the environment, and evaluate risk statewide.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$491,000
2022-230	Wright	Natasha	Managing Highly Saline Waste from Municipal Water Treatment	We aim to develop a cost- and energy-efficient method of managing concentrated saline waste from municipal desalination plants, increasing the economic feasibility of centralized water softening and sulfate removal.	U of MN, College of Science and Engineering	\$266,000
2022-235	Downing	John	Different Causes=Different Cures for Murky Lakes	We build on recent ENRTF-funded work showing decreased clarity in north-central lakes, leveraging a unique dataset and a unique team to diagnose causes, prescribe cures and stop or reverse it.	U of MN, Duluth - Sea Grant	\$769,000
2022-257	Sattar	Junaed	Automated Weed Management for Herbicide Water Runoff Reduction	This project will quantify the effect of herbicide use in precision agriculture on water quality using observations from autonomous underwater and aerial vehicles towards environmental sustainability and cost-effective weed control.	U of MN, College of Science and Engineering	\$816,000
2022-264	Edlund	Mark	Unprecedented Change Threatens Minnesota's Pristine Lakes	Why are Minnesota's nicest lakes turning green? We determine what's causing this change and which lakes are most at risk.	Science Museum of Minnesota, St. Croix Watershed Research Station	\$850,000
2022-265	Deng	Shaobo	Innovative Technology for PFAS Destruction in Drinking Water	Develop and demonstrate a novel and efficient process based on continuous liquid-phase plasma discharge technology to decompose /destroy Perfluoroalkyl and Polyfluoroalkyl substances (PFAS) in drinking water.	U of MN, Southern Research and Outreach Center	\$500,000
2022-269	Stapleton	Seth	Expanding Restoration and Promoting Awareness of Native Mussels	The Minnesota Zoo will improve mussel conservation by rearing juvenile mussels for reintroduction, researching methods to improve growth and survival in captivity, and encouraging public action to benefit water quality.	Minnesota Zoological Society	\$415,000
2022-272	Edlund	Mark	Salt Threatens Minnesota Water Quality and Fisheries	Salt levels are rising in Minnesota lakes, and biological impacts may be worse than we think. We determine effects on water quality and foodwebs, and how to save our lakes.	Science Museum of Minnesota, St. Croix Watershed Research Station	\$1,228,000
2022-286	St. Lawrence	Mark	Emerging PFAS Contaminant Mitigation Using Hybrid Engineered Wetlands	This project will result in the design, implementation, and evaluation of an innovative method for protection of water resources and mitigation of emerging water contaminants in landfill leachate; specifically, PFAS.	St. Louis County	\$501,000
					Subtotal	\$17,503,000
B. Water Resources						
H. Small Projects (11 Proposals / \$1,892,000)						
2022-049	Ruan	Roger	Destruct Per/Polyfluoroalkyl Substances (PFAS) in Landfill Leachates	Develop and examine physical, biological, thermochemical, and photochemical methods for destruction of per- and polyfluoroalkyl substances (PFAS) in landfill leachate.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$200,000

ENRTF Request for Proposal (RFP) - FY 2023
Final Proposals Received by Category with Summaries

Proposal ID	Last Name	First Name	Title	Summary	Organization	Funding Total
2022-094	Boser	Sarah	Comprehensive Management Plan - Big Birch Lake	Development of a Comprehensive Lake Management Plan, complete with an adaptive management strategy, communications and outreach strategy and materials, and actions required to meet goals identified in Comprehensive Management Plan.	Sauk River Watershed District	\$25,000
2022-134	Ishii	Satoshi	Algal Granule Bioreactors for Nitrogen and Phosphorus Removal	This project will develop novel algae bioreactors to reduce nitrogen and phosphorus concentrations in agricultural runoff, thereby improving surface water quality.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$200,000
2022-157	Luke	Charlene	Enhanced Protection and Preservation of Lake Fourteen Waters	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.	Lake Fourteen Clear Water Alliance (LFCWA)	\$136,000
2022-166	Ulrich	Jason	Increased Intense Rain and Flooding in Minnesota's Watersheds	The causes of increased flooding and the most cost-effective solutions for reducing flood risk will be determined for the Cottonwood River watershed and nine other agricultural watersheds in southern Minnesota.	Science Museum of Minnesota, St. Croix Watershed Research Station	\$192,000
2022-213	Simon	Terrence	Toxic Algae Removal System Powered by Solar Energy	We propose to develop a cheap and efficient water purification system powered by solar energy that can simultaneously remove algae and organic pollutants from lakes and rivers in Minnesota.	U of MN, College of Science and Engineering	\$200,000
2022-219	Herb	William	Big Waves and Their Impact on Lake Shorelines	This project will develop information and tools needed to manage large boat waves and wind waves impacting shorelines on typical Minnesota lakes.	U of MN, St. Anthony Falls Laboratory	\$199,000
2022-234	Hill	Craig	Monitoring Wind and Boat Waves Using IoT Technology	This project demonstrates low-cost long-range IoT sensor and telemetry technology, providing Minnesota communities opportunities to implement affordable methods to monitor water and wave conditions influenced by weather and recreational activity.	U of MN, Duluth	\$196,000
2022-242	Hill	Kimberly	Freeze-Thaw and Flood-Drought Cycling on Streambank Erosion	This project will study streambank erodibility as it varies with embankment materials, vegetation, and freeze-thaw / drought-flood cycling toward reducing sediment loading and protecting near-bank infrastructure and habitat.	U of MN, St. Anthony Falls Laboratory	\$199,000
2022-251	Tallaksen	Joel	Mitigations Strategies for Agroplastic PFAS and Microplastic Contamination	This project examines strategies to reduce water and land contamination from microplastics, PFASs, and other contaminants due to plastics use in agriculture (agroplastics) and their limited recycling options	U of MN, WCROC	\$169,000
2022-285	Kiesling	Richard	Trace Metal Benchmarks for NE Minnesota Lakes	This project will establish baseline trace metal accumulation rates and pre-industrial and pre-mining sediment trace metal benchmarks for a chain of lakes downstream of proposed copper-nickel mining area in Minnesota.	US Geological Survey, Upper Midwest Water Science Center	\$176,000
					Subtotal	\$1,892,000
C. Environmental Education (16 Proposals / \$9,311,000)						
2022-007	Remucal	David	Cultivating Minnesota's Next Generation of Natural Heritage Protectors	Create a long-term appreciation for Minnesota's natural heritage through immersive leading-edge research in diverse grade school classrooms, brought together across MN to engage and work with professional conservation researchers.	U of MN, Landscape Arboretum	\$480,000

ENRTF Request for Proposal (RFP) - FY 2023
Final Proposals Received by Category with Summaries

Proposal ID	Last Name	First Name	Title	Summary	Organization	Funding Total
2022-026	Born	Patty	Teacher Field School: Stewardship through Nature-Based Education	We create an immersive, research-backed field school addressing a gap in teachers' preparedness and willingness to use nature-based education to benefit student well-being and academic outcomes while increasing stewardship habits.	Hamline University	\$500,000
2022-029	Wood	Bryan	Increasing K-12 Student Learning to Achieve ENRTF's Goals	Minnesota's six accredited residential environmental learning centers (RELCs) will provide life-changing, immersive multi-day environmental learning experiences to a minimum statewide distribution of 25,000 K-12 students, achieving ENRTF's goals.	Osprey Wilds Environmental Learning Center	\$1,800,000
2022-066	Cariveau	Alison	Expanding Access to Wildlife Learning Bird by Bird	Bird by Bird engages young people in wildlife conservation with three approaches: 1. Bird watching in schools, 2. Young adult outdoor leadership training, 3. Neighborhood bird walks inspiring community engagement.	MN DNR, Ecological and Water Resources Division	\$276,000
2022-083	Thompson	Seth	Connecting Minnesotans to Water through Informal Environmental Education	The primary goal of this project is to cultivate a new generation of environmental stewards by providing informal hands-on learning opportunities in the environmental sciences to Minnesotans across the state.	U of MN, College of Biological Sciences	\$445,000
2022-084	Thompson	Seth	Sparking Curiosity through Hands-On Environmental Education in Minnesota	We will provide teacher professional development, inquiry-based classroom activities, and sustained mentorship to deliver high quality environmental education to high school students in both the Twin Cities and Greater Minnesota.	U of MN, College of Biological Sciences	\$298,000
2022-100	Dorn	Cindy	Statewide Environmental Education via PBS Outdoor Series	Pioneer PBS will produce 26 new episodes of a statewide television series designed to inspire Minnesotans to connect with the outdoors and to restore and protect our valuable natural resources.	Pioneer Public Television	\$300,000
2022-104	Gagner	Alyson	Illuminate the Natural World and Inspire Its Conservation	Provide scholarships for 450 young people from areas of persistent poverty and support transportation to bring them to camp for science outdoors and to gain understanding of conservation and preservation.	YMCA of the Greater Twin Cities	\$492,000
2022-160	Hobbs	Joy	LCCMR Stories: Sharing Minnesota's Biggest Environmental Investment	The Science Museum of Minnesota will relay the results of LCCMR-funded research to public audiences; dissemination will include a free online interactive map, in-depth videos, and public events.	Science Museum of Minnesota	\$604,000
2022-169	Schmitt	Lee	ESTEP (Earth Science Teacher Education Project)	The Earth Science Teacher Education Project (ESTEP) will provide statewide professional development for Minnesota science teachers in Environmental and Earth Science content and pedagogy to strengthen environmental education in schools.	Minnesota Science Teachers Association	\$495,000
2022-240	Loon	Deborah	Mentoring the Next Generation of Conservation Professionals	Internships and apprenticeships on the Minnesota Valley National Wildlife Refuge will introduce 52 diverse young people over two years to careers in the conservation field.	Minnesota Valley National Wildlife Refuge Trust Inc	\$708,000

**ENRTF Request for Proposal (RFP) - FY 2023
Final Proposals Received by Category with Summaries**

Proposal ID	Last Name	First Name	Title	Summary	Organization	Funding Total
2022-241	Thompson	Molly	North Shore Private Forestry Outreach Education and Implementation	The North Shore Forest Collaborative (via Sugarloaf) seeks to contract foresters to perform a concerted private land forestry outreach to restore ecological health to Minnesota's North Shore forest landscape.	Sugarloaf The North Shore Stewardship Association	\$375,000
2022-249	Lenczewski	John	Strengthening Watershed Stewardship through Outdoor Youth Education	Hands-on learning outdoors will focus on water quality, groundwater, aquatic life and students' role as watershed stewards. Angling and volunteer opportunities for students and families will foster a conservation ethic.	Minnesota Trout Unlimited	\$298,000
2022-280	Rice	Rebecca	Trees for Equity	Pilot project engaging residents in environmental justice areas of concern in three cities statewide to plant native trees in bioswales to maximize environmental benefits and stewardship and to measure impact.	Metro Blooms	\$598,000
2022-282	Edmiston	Julie	Minnesota Freshwater Quest: Environmental Education for 30000 Youth	30,000 diverse and underserved Minnesota youth (grades 6-12) participate in place-based, STEM environmental education to explore and preserve local ecosystems and waterways through the Minnesota Freshwater Quest online program.	Wilderness Inquiry	\$1,432,000
2022-283	Cleary	Pete	Dodge Nature Center Naturalist for Outreach and Inclusion	Through a new naturalist position for outreach, Dodge Nature Center will improve inclusive practices and extend environmental education to students and communities we've not previously engaged.	Dodge Nature Center	\$210,000
Subtotal						\$9,311,000
C. Environmental Education						
H. Small Projects (15 Proposals / \$2,607,000)						
2022-022	Capel	Paul	Reaching Minnesota's Recent Immigrant Community with Environmental Education	With Minnesota's recent immigrant high school students as liaisons, this will identify the priority needs for environment education for their local communities, help develop, and communicate these educational materials.	U of MN, College of Science and Engineering	\$177,000
2022-060	Zimmermann	Candice	Enhancing Outdoor Education and Conservation Awareness	This project will enhance and expand the nature-based educational opportunities for all ages, including at-risk youth, in partnership with the school district, local nonprofit organizations, daycare centers, and homeschool families.	Paul Bunyan Arboretum	\$154,000
2022-085	Thompson	Seth	Supporting Community-Based Water Conservation through Public Engagement	To cultivate community-based water conservation, we will host a series of events focused on facilitating conversation about environmental sustainability and water conversation, specifically integrating western science and Indigenous perspective.	U of MN, College of Biological Sciences	\$125,000
2022-093	Heneghan	Natalie	Statewide Deconstruction Education Program	Rethos: Places Reimagined and Better Futures MN will conduct statewide training on the practice and environmental benefits of building deconstruction, providing hands-on, accessible education to Minnesota contractors and property owners.	Preservation Alliance of Minnesota d.b.a Rethos: Places Reimagined	\$186,000

**ENRTF Request for Proposal (RFP) - FY 2023
Final Proposals Received by Category with Summaries**

Proposal ID	Last Name	First Name	Title	Summary	Organization	Funding Total
2022-096	Furuseth	Lee	Mobile Lab Science Comes to You	A mobile science lab and off-site programs allow structured process for informal education presenting children (students) and adults opportunities to think, formulate, organize, and present science phenomena.	Headwaters Science Center	\$134,000
2022-107	Kilgore	Amy	Engaging a Diverse Public in Environmental Stewardship	We will increase community awareness of natural resources through directed outreach and engagement targeting a diverse audience that more accurately reflects the community in which we are restoring natural areas.	Great River Greening	\$200,000
2022-162	Swenson	Rebecca	Bugs Below Zero: Engaging Citizens in Winter Research	Bugs Below Zero raises awareness about the winter life of bugs, inspires citizens and classrooms to unlock secrets of stream food webs, and engages new citizen scientists in research.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$198,000
2022-196	Montgomery	Maggie	Engaging Minnesotans with Phenology: Radio, Podcasts, Citizen Science	This education project will build the next generation of conservationists in Minnesota by engaging youth and adults in science and outdoor learning through radio, podcasts, citizen science and schoolyard exploration.	Northern Community Radio, Inc.	\$198,000
2022-210	Watkins	Eric	Lawn Sustainability through a Pilot Lawn Ambassador Program	We will train a group of lawn ambassadors in the Twin Cities to deliver knowledge about sustainable lawn care through existing personal and neighborhood social networks.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$136,000
2022-212	Swazee	Stephen	Emergency Location Markers for Minnesota's Trails, Parks and Landings	Improve the enjoyment and safety of Minnesota's trails and outdoor recreational areas by accelerating installation of Emergency Location Markers (ELM) on these public lands.	SharedGeo	\$198,000
2022-236	Foster	Shelli-Kae	YES! Students Take Action-Complete 80+ Eco Projects	YES! (Youth Eco Solutions) will empower 300 Minnesota youth to connect with natural resource experts, identify ecological challenges in over 50 communities, and TAKE ACTION to complete 80+ innovative projects.	Prairie Woods Environmental Learning Center	\$199,000
2022-250	Daniel	Mimi	Increasing Diversity in Environmental Careers	This collaborative project creates a college to workforce pathway for under-represented students interested in pursuing Natural Resources careers by reducing barriers that inhibit successful educational attainment.	MN DNR, Operational Services Division (OSD)	\$182,000
2022-259	Caldwell	Wendy	Partnering for Pollinator Protection	The Monarch Joint Venture will increase the efficiency and scale of pollinator conservation across the state by fostering an organized network of stakeholders in a multi-sector conservation consortium.	Monarch Joint Venture	\$123,000
2022-273	Pulscher	MaryLynn	BioBlitzes Engaging Community in Scientific Efforts	MPRB will work strategically with allies and volunteers to collect baseline biodiversity data for neighborhood and regional parks to inspire stewardship and inform habitat restoration work.	Minneapolis Parks and Recreation Board	\$198,000
2022-279	Safiq	Alexandrea	Diversity and Access to Wildlife Related Opportunities	We will research : 1) interest in and preferences for experiences with nature and wildlife among diverse communities, and 2) barriers to more robust engagement with wildlife resources and activities.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$199,000
Subtotal						\$2,607,000
D. Aquatic and Terrestrial Invasive Species (6 Proposals / \$15,376,000)						

ENRTF Request for Proposal (RFP) - FY 2023
Final Proposals Received by Category with Summaries

Proposal ID	Last Name	First Name	Title	Summary	Organization	Funding Total
2022-019	McClannahan	Valerie	Protect Community Forests by Managing Ash for EAB	Project will reduce EAB through community developed management (inventory, canopy assessment, management plan, removal, non-neonicotinoid treatment) and improve their community forest by involving citizens and planting a diversity of trees.	MN DNR, Forestry Division	\$5,930,000
2022-067	Koop	Heather	Minnesota Invasive Terrestrial Plants and Pests Center	The MITPPC requests \$7 million to fund up to 20 new research projects to protect Minnesota's natural and agricultural resources from terrestrial invasive species.	U of MN, MITPPC	\$7,000,000
2022-186	Abrahamson	Mark	Noxious Weed Grants for Local Governments / Tribal Nations	A continuation of M.L. 2019, First Special Session, Chp. 4, Art. 2, Subd. 6c Noxious Weed Detection and Eradication to provide critical funding to local governments and Tribal Nations for noxious weed prevention and management.	Minnesota Department of Agriculture	\$1,000,000
2022-207	Salomon	Christine	White Nose Bat Syndrome Biological Control: Phase 3	Testing of best biocontrol microbes for controlling white nose syndrome (WNS) in bats: Mapping of fungal pathogen, field testing, and assessment of a WNS-free cave with healthy bats	U of MN, College of Pharmacy	\$449,000
2022-237	Clark	Mark	Evaluating Bowfishing for Invasive Carp Control	Invasive fish degrade freshwater ecosystems. Recreational bowfishing has the potential to reduce carp populations. We will evaluate whether educational workshops combined with regulated bowfishing can effectively reduce carp numbers.	U of MN, Duluth	\$519,000
2022-281	Nerbonne	Brian	Applying New Tools and Techniques Against Invasive Carp	This project will enhance the current MN DNR Invasive Carp program by integrating new control and detection methods to manage invasive carp expansion in Minnesota waterways.	MN DNR, Fish and Wildlife Division	\$478,000
					Subtotal	\$15,376,000
D. Aquatic and Terrestrial Invasive Species						
H. Small Projects (5 Proposals / \$844,000)						
2022-089	Sickmann	Katie	Purple Loosestrife Biocontrol Citizen Science Program	Purple Loosestrife Biocontrol Citizen Science Program aims to prevent and reduce purple loosestrife by engaging, educating and empowering citizens in using a biocontrol to protect and restore native ecosystems.	St. Croix River Association	\$174,000
2022-136	Ruhland	Christopher	Photosynthetic Temperature Response of Parrot Feather (Myriophyllum Aquaticum)	Parrot feather is potentially invasive to Minnesota waters. Little is known about its ability to photosynthesize and survive under ice, and as such its ability to expand its invasive range.	Minnesota State Colleges and Universities, Minnesota State University Mankato	\$151,000
2022-139	Brady	Valerie	How Effective and Protective are AIS Removal Methods?	The best way to prevent aquatic invasive species spread is to stop the transfer of water and living material between lakes. We will test how well boat cleaning methods work.	U of MN, Duluth - NRRI	\$122,000
2022-256	Edlund	Mark	Invasive Rock Snot Threatens North Shore Streams	We examine the recent spread, origin, cause, and economic and ecological threat of nuisance rock snot formation in North Shore streams and Lake Superior to inform management and outreach.	Science Museum of Minnesota, St. Croix Watershed Research Station	\$197,000
2022-261	Sadowsky	Maurice	Commercialization Safe, Selective and Low-Cost Carp Piscicide	The project commercializes a proved-on Koi and patented (US 10,617,119,) a safe (FDA additives), selective by digestion and low-cost piscicide with the goal of controlling invasive carps.	MJSTI Corp.	\$200,000

ENRTF Request for Proposal (RFP) - FY 2023
Final Proposals Received by Category with Summaries

Proposal ID	Last Name	First Name	Title	Summary	Organization	Funding Total
					Subtotal	\$844,000
E. Air Quality, Climate Change, and Renewable Energy (18 Proposals / \$9,651,000)						
2022-028	Hamilton	Patrick	Advanced Aquifer Heat Transfer Technology for Buildings	Pilot project to document the efficacy of new, advanced aquifer heat transfer technology that uses the earth to reduce dramatically the costs and carbon emissions of heating and cooling buildings.	Science Museum of Minnesota	\$606,000
2022-054	Ruan	Roger	Nitrogen Fixation and Nitrate Concentration for Land Crops	Develop a novel technology to produce high-concentration nitrogen fertilizers from water and air using catalytic non-thermal plasma coupled with a nitrate concentration system	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$802,000
2022-055	Ruan	Roger	Chemical and Molecular Recycling of Environmental Plastics	Develop a novel pyrolysis-reforming technology to convert waste plastics to high quality naphtha for new plastic production and recover the non-condensable pyrolytic gas for carbon nanotubes (CNTs) and hydrogen production.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$910,000
2022-071	Barry	Brian	Using Minnesota Timber to Mitigate Landfill Methane Emissions	Develop a landfill cover that sustainably reduces greenhouse gas emissions through natural biological processes. Test pods will be used to simulate landfill covers and demonstrate emission reductions in Minnesota's climate.	U of MN, Duluth - NRRI	\$1,235,000
2022-072	Wilson	David	Merging lidar and Satellite Imagery for Carbon Estimation	We will use lidar and Landsat data to provide spatially and temporally discrete estimates of biomass and carbon flux for disturbed and undisturbed forest landscapes.	MN DNR, Forestry Division	\$344,000
2022-077	Singsaas	Eric	Biochar Soil Amendment to Improve Urban Tree Survival	We will demonstrate opportunities to turn waste wood from dying trees into biochar to supplement soils for urban tree plantings. Biochar stores carbon and helps to improve sapling establishment.	U of MN, Duluth - NRRI	\$397,000
2022-090	Wright	Christopher	Reforestation Projects for Carbon Markets	With a modest public investment we will build the technical and institutional infrastructure required for a substantial tree planting effort to address climate change as a Minnesota-based, "Natural Climate Solution".	U of MN, Duluth - NRRI	\$247,000
2022-092	Toan	Sam	Reducing Greenhouse Gases through CO2 Conversion to Ethanol	To mitigate greenhouse gas emissions in Minnesota, we propose CO2 capture and conversion to ethanol with nano-fluids as the sorbent and electrolyte, enhanced by a non-noble metal single-atom three-dimensional graphene electrocatalyst.	U of MN, Duluth	\$400,000
2022-117	Cotner	James	How Do Lakes Influence Minnesota's Carbon Budget?	Minnesota has inventoried the major sources of greenhouse gases but lakes have not been included. We will fill that gap by measuring the release of three greenhouse gases from them.	U of MN, College of Biological Sciences	\$499,000
2022-177	Gerber	James	Pathways to Reduced Emissions while Improving Land Use	Develop pathways and assessment tools with stakeholder input to help MN reach zero greenhouse gas emissions goals in agriculture and land use.	U of MN, Institute on the Environment	\$597,000
2022-180	Leighton	Chris	Green Solar Cells from a Minnesota Natural Resource	Recent U of M breakthroughs will be built upon to realize the first truly environmentally friendly solar cells, simultaneously unlocking exciting new renewable energy opportunities for the MN Iron Range.	U of MN, College of Science and Engineering	\$756,000

ENRTF Request for Proposal (RFP) - FY 2023
Final Proposals Received by Category with Summaries

Proposal ID	Last Name	First Name	Title	Summary	Organization	Funding Total
2022-190	Li	Jiayu	Quantify Air Exposure Levels of Different Demographic Groups	We plan on evaluating indoor air quality and estimate pollution exposure levels of the population with low-cost air quality sensors. This proposal can advance environmental justice.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$360,000
2022-199	Li	Jiayu	Quantify On-Farm Methane Emissions with Low-Cost Sensor Networks	We will characterize and deploy a suite of low-cost methane sensors for quantifying on-farm methane emissions.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$425,000
2022-211	Watkins	Eric	Climate Resilient Lawns for Minnesota	There is a need to develop turfgrasses for Minnesota greenspaces that are more resilient to warming winters, hotter summers, and increased flooding rains.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$479,000
2022-231	Kortshagen	Uwe	Minnesota Renewable Energy Jobs through Technology Commercialization	The program will support a fellowship program that trains graduate students in the commercialization of renewable energy technologies developed at the University of Minnesota.	U of MN, College of Science and Engineering	\$332,000
2022-232	Shen	Lian	Study of Fog in Minnesota Climate and Environment	We will study the generation of fog and its life cycle in Minnesota environment, its effects on snow melting, climate change influences, and traffic and health hazards caused by fog.	U of MN, St. Anthony Falls Laboratory	\$340,000
2022-239	Ferry	Vivian	Transparent Solar Panes for Agrivoltaics	This project will create solar panes for greenhouses that simultaneously generate electricity from sunlight and promote plant growth.	U of MN, College of Science and Engineering	\$404,000
2022-252	Li	Jiayu	Quantify Indoor Air Quality Improvement with Air Purifiers	This proposal will characterize various air purifiers to examine how they can improve indoor air quality and ventilation conditions.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$518,000
					Subtotal	\$9,651,000
E. Air Quality, Climate Change, and Renewable Energy						
H. Small Projects (7 Proposals / \$1,306,000)						
2022-050	Ruan	Roger	Remove Pollutants from Landfill Air Emissions	Develop and evaluate catalytic nonthermal plasma based process to decompose hazardous gaseous compounds in landfill emissions.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$200,000
2022-051	Ruan	Roger	Nitrogen Fixation from Atmosphere for Urban Hydroponics	Develop a novel technology to produce nitrogen fertilizers from water and air using catalytic non-thermal plasma for urban food production.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$200,000
2022-052	Ruan	Roger	Produce Carbon Nanotube and Hydrogen from Waste Plastics	Develop a catalytic chemical vapor deposition (cCVD) technology to produce high quality carbon nanotubes (CNTs) and hydrogen from non-condensable pyrolytic gas recovered from waste plastic pyrolysis.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$200,000
2022-120	Tucker	Rebecca	Biochar Implementation in Habitat Restoration: Pilot	Implement the use of biochar kilns as a low carbon emitting, biologically beneficial alternative to woody material disposal in habitat restoration projects.	Great River Greening	\$176,000
2022-179	Bazurto	Jannell	Employing the Plant Microbiome to Protect Minnesota Plants	We will isolate beneficial plant microbes, characterize their ability to protect plants from temperature stress, and employ them to protect various plant hosts from extreme temperatures associated with climate change.	U of MN, College of Biological Sciences	\$162,000

**ENRTF Request for Proposal (RFP) - FY 2023
Final Proposals Received by Category with Summaries**

Proposal ID	Last Name	First Name	Title	Summary	Organization	Funding Total
2022-189	Sarkanen	Simo	Processing Biodegradable Plastics from Cloquet Pulp Mill Lignin	Pollution from conventional plastics will be reduced by creating biodegradable replacements from pulp-mill byproduct lignins. Successful compounding and injection-molding conditions for these biodegradable plastics will attract industrial interest.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$198,000
2022-291	Hill	Blaine	Morris GHG Emissions Inventory and Mitigation Strategies	Conduct GHG emissions inventory of City and County operations within the operational boundary of the Morris Model partnership, implement policy to achieve regional targeted reductions, and document and disseminate findings	City of Morris	\$170,000
Subtotal						\$1,306,000
F. Methods to Protect, Restore, and Enhance Land, Water, and Habitat (27 Proposals / \$32,218,000)						
2022-006	Remucal	David	Minnesota's Volunteer Rare Plant Conservation Corps	Establish a volunteer corps to survey, monitor and bank seed for rare plant populations around the state, enhancing the effectiveness and efficiencies of conservation efforts of multiple stakeholders across Minnesota.	U of MN, Landscape Arboretum	\$859,000
2022-018	Smith	Brittany	Rare Species Habitat Restoration	Preserve and restore rare species habitat and diversity in the Big Woods and Prairies of River Bend Nature Center by managing invasive species, establishing pollinator habitat, and increasing habitat connectivity.	River Bend Nature Center	\$223,000
2022-034	Miller	Brian	Conservation Corps Veterans Service Corps Program	To provide more and better natural resource restoration to Minnesota and create workforce development opportunities for the state's veterans, Conservation Corps proposes to create a Veterans Service Corps program.	Conservation Corps Minnesota	\$1,504,000
2022-047	Bruse	Tanner	Conservation Cooperative for Working Lands	Increasing federal conservation dollars coming to Minnesota by expanding technical expertise for working lands programs available to landowners. This project enhances our natural resources providing public benefits for every Minnesotan.	Pheasants Forever Inc	\$4,993,000
2022-058	Pederson	Eric	Pollinator Habitat Pilot Project at Closed Landfills	Create the maximum acres of pollinator habitat at five Closed Landfill Program sites. These sites will act as pilot projects to inform future pollinator habitat reconstruction projects in the program.	Minnesota Pollution Control Agency	\$1,375,000
2022-062	Foehrenbacher	Colleen	Root River Habitat Restoration Project	The Root River Restoration project is 3,300 linear feet of stream bank and instream habitat restoration located within Eagle Bluff and state owned land north of Lanesboro, Minnesota.	Eagle Bluff Environmental Learning Center	\$790,000
2022-065	Jenkins	Chris	Hastings Lake Rebecca Park Area	Lake Rebecca Park Area Redevelopment & Restoration	City of Hastings, Parks & Recreation	\$2,000,000
2022-137	Hogan	Christopher	Minnesota Center for Agricultural Spray Drift Reduction	The University of Minnesota will establish a center devoted to developing and implementing protocols and technologies to mitigate the impacts of pesticide spray drift on water and land habitats.	U of MN, College of Science and Engineering	\$1,090,000

**ENRTF Request for Proposal (RFP) - FY 2023
Final Proposals Received by Category with Summaries**

Proposal ID	Last Name	First Name	Title	Summary	Organization	Funding Total
2022-142	Winter	Colleen	RDB	The Sauk River Channel Restoration project includes 1,000 linear feet of channel realignment and instream habitat restoration located adjacent to the Sauk River Dam within the City of Melrose Minnesota.	City of Melrose	\$1,105,000
2022-145	Gordon	Brad	Restoring Forests and Savannas Using Silvopasture- Phase 2	Demonstrate, evaluate, and increase adoption of silvopasture - the combined use of tree, forage, and grazing management - as a method to restore and manage forests and savannas across Minnesota	Great River Greening	\$618,000
2022-146	Weiss	Eric	Minnesota Green Schoolyards	Environmentally-focused renovation of three schoolyards, designed through student- and community-centered design process, to be park-like spaces that demonstrate water, air, and habitat improvements and foster next-generation stewards.	The Trust for Public Land	\$1,088,000
2022-167	Snell-Rood	Emilie	Pollinator Plantings and the Redistribution of Soil Toxins	This research will test whether plantings for pollinators can remediate soils impacted by metals (like lead) and emerging contaminants (like microplastics) through the redistribution of toxins to safer areas.	U of MN, College of Biological Sciences	\$610,000
2022-174	Tucker	Rebecca	Pollinator Central: Habitat Improvement with Citizen Monitoring	Restore / enhance 500 acres of pollinator habitat on 20 traditional and nontraditional sites, from Hastings to St. Cloud, to benefit pollinators and build knowledge of the impacts through citizen monitoring.	Great River Greening	\$981,000
2022-181	Luokkala	Lisa	Mitigating the Effects of Visitor Use Patterns	Rehabilitate and renew the Trail for a more resilient future in the midst of unprecedented use. Employ modern-day sustainable trail maintenance and design strategies to address an aged trail system.	Superior Hiking Trail Association	\$485,000
2022-209	Ferrington	Leonard	Winter Dynamics of Trout Streams: Southeast/Southcentral Minnesota	Warming temperatures resulting from climate change will affect trout populations in Minnesota. Streams of Minnesota are particularly vulnerable. We will model winter dynamics to identify the most vulnerable headwater streams	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$497,000
2022-214	Hu	Bo	Phytoremediation for Extracting Deicing Salt	We propose to develop application methods to apply native plants that can adsorb salts to be planted on the roadside to address the environmental concerns over deicing road salts.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$507,000
2022-221	Beyer	Jamie	Mustinka River Fish and Wildlife Habitat Corridor Rehabilitation	The Mustinka River Fish and Wildlife Habitat Corridor project will permanently rehabilitate a 5-mile straightened reach of the Mustinka River to a naturally functioning stream channel and floodplain.	Bois de Sioux Watershed District	\$3,025,000
2022-223	Yavarow	Matthew	Phelps Mill Wetland and Prairie Restoration	Restoration of 28 acres of prairie and 20 acres of wetland along 3/4 miles of the Otter Tail River.	Otter Tail County	\$792,000
2022-233	Shen	Lian	Wave-Vegetation Interaction Research for Shoreline Protection and Environment	We will conduct experiments and computer simulations to study the roles of vegetation in lakeshore limnology and ecology, to guide the revegetation for shoreline protection and wetland restoration in Minnesota.	U of MN, St. Anthony Falls Laboratory	\$300,000
2022-244	Arvidson	Adam	Bohemian Flats Savanna Restoration	This project will restore approximately 5.5 acres of compacted urban turf adjacent to the Mississippi River to a vibrant oak savanna ecosystem.	Minneapolis Parks and Recreation Board	\$286,000

**ENRTF Request for Proposal (RFP) - FY 2023
Final Proposals Received by Category with Summaries**

Proposal ID	Last Name	First Name	Title	Summary	Organization	Funding Total
2022-246	Arvidson	Adam	Roberts Bird Sanctuary and Lyndale Gardens	Environmental restoration and accessibility improvements at Roberts Bird Sanctuary and Lyndale Gardens, with implementation of sustainability practices and chemical reduction at the gardens, to protect the sanctuary and Lake Harriet.	Minneapolis Parks and Recreation Board	\$995,000
2022-258	Delong	Michael	Stream Ecosystems: Are Restorative Efforts Effective?	Assess stream habitat improvement projects. Using various catchment features (geomorphology, habitat conditions, present biological communities), we will be able to describe a successful restoration project.	Minnesota State Colleges and Universities, Winona State University	\$533,000
2022-260	Ekola	Lindberg	Watershed and Forest Restoration: What a Match!	This project builds capacity in soil water conservation districts and Mille Lacs Band with BWSR and DNR to accelerate tree planting for water quality and carbon sequestration by private landowners.	Board of Water and Soil Resources	\$3,728,000
2022-267	Zentner	Dave	Educating and Supporting Farmers to Fully Implement Regenerative Agriculture	We will form a cohort of 20-30 farmers and provide continued education on regenerative agricultural practices, including seasonal workshops led by farmer mentors and agricultural experts to troubleshoot challenges faced in this difficult transition.	Izaak Walton League of America, Minnesota Division	\$550,000
2022-271	Kohno	Satomi	Perfluorinated Pollutants and Raising Temperature Exterminate Turtles	Many Minnesota turtle species are considered threatened or of special concern. The proposed study elucidates how known feminizing factors, Perfluorinated pollutants, and rising temperatures, impact the sexes of turtle offspring.	Minnesota State Colleges and Universities, St. Cloud State University	\$348,000
2022-274	Arvidson	Adam	Mississippi River Aquatic Habitat Restoration and Mussel Reintroduction	This project will restore lost Mississippi River habitat and reintroduce mussels above St. Anthony Falls on four river islands and along approximately 6,000 linear feet of shoreline.	Minneapolis Parks and Recreation Board	\$2,538,000
2022-287	Aukema	Brian	Native Eastern Larch Beetle (FY2020 pending recommendation 219-F)	Eastern larch beetle, native to Minnesota, is suddenly decimating Minnesota's tamarack forests. This proposal develops insect management techniques and determines how bad this problem may remain in the future.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$398,000
Subtotal						\$32,218,000
F. Methods to Protect, Restore, and Enhance Land, Water, and Habitat						
H. Small Projects (12 Proposals / \$2,183,000)						
2022-011	Blumentritt	Tony	Pickwick Mill Dam Repair	The repair of Pickwick Mill dam deficiencies noted by the Minnesota DNR Ecological and Water Resources Division Dam Safety Unit.	Pickwick Mill, Inc.	\$197,000
2022-061	Ritchie	Alan	Seed Collection of Early-Blooming Plants for Pollinators	We will establish new populations of early-season flowers by hand harvesting and planting species that are currently lacking in prairie restorations and are essential to pollinator health.	MN DNR, Ecological and Water Resources Division	\$200,000
2022-113	Jennings	Carrie	Water, Wildlife and Weather Friendly Funds	Research and stakeholder input to design program to target lands for perennials that provide co-benefits to water, habitat and carbon sequestration using funds from product-labeling, piloted by two Minnesota companies.	Freshwater Society	\$195,000

**ENRTF Request for Proposal (RFP) - FY 2023
Final Proposals Received by Category with Summaries**

Proposal ID	Last Name	First Name	Title	Summary	Organization	Funding Total
2022-124	Barney	Brett	Developing a Novel Biodegradable Plastic to Replace Polyethylene	Our project seeks to develop a novel biodegradable plastic produced by microbes that is naturally biodegradable and can serve as a replacement for polyethylene.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$172,000
2022-125	Arvidson	Adam	Connecting the Mississippi Flyway to Urban Open Space	A pilot project that will connect neighborhood parks and the Mississippi Flyway through habitat restoration and implementation of identified habitat corridors in the urban core.	Minneapolis Parks and Recreation Board	\$175,000
2022-132	Swenson	John	Monitoring Post-Nourishment Beach Evolution on Minnesota Point	Following significant storms, we will obtain topographic / bathymetric / grain-size data from recently nourished beach areas on Minnesota Point. These data will document post-nourishment beach evolution and inform sediment-transport models.	U of MN, Duluth	\$99,000
2022-151	Schrank	Amy	Increase Golden Shiner Production To Protect Aquatic Communities	We propose four strategies to increase in-state Golden Shiner (bait) production because angler demand exceeds production. Out-of-state importation creates a high risk of introducing aquatic invasive species and disease.	U of MN, Duluth - Sea Grant	\$197,000
2022-188	Zhang	Jiwei	PFAS Fungal-Woodchip Filtering System	Develop and implement a fungal filtering system that combines the benefits of both waste wood chips and soil fungi to sequester and degrade PFAS leachate from contaminated waste sites.	U of MN, College of Food, Agricultural and Natural Resource Sciences	\$189,000
2022-205	Pirkl	Anthony	Lake of the Woods Angler Biosolids Feasibility Study	Feasibility study for handling human excrement generated on Lake of the Woods in the winter ice fishing season in a safe, clean, and environmentally friendly manner.	Lake of the Woods County	\$195,000
2022-216	Kaproth	Matthew	Shifting Savannas: Assessing Management of At-Risk Sites	We propose to survey unmapped Central and Southern Minnesota savannas to develop localized management recommendations for habitats at risk of degradation due to climate change and invasive species.	Minnesota State Colleges and Universities, Minnesota State University Mankato	\$194,000
2022-248	Van Natta	Steven	Wetland Restoration of UMLA's New Gateway Entry	County/MnDOT improvements expand Highway 5 by 2025, addressing traffic/safety concerns. UMLA must move its gateway entry to "Wetlands 14 and 15", requiring restoration to these newly prominent areas.	U of MN, Landscape Arboretum	\$174,000
2022-293	Meagher	Jen	Lake Koronis Water Quality and Restoration Action Plan	Analyses leading to an action plan to prevent and reduce phosphorus levels and improve Lake Koronis water quality. Identify mix of solutions promoting short-term effects, and long-term benefits and partnerships.	Koronis Lake Association	\$196,000
Subtotal						\$2,183,000
G. Land Acquisition, Habitat, Recreation (25 Proposals / \$59,278,000)						
2022-005	Manzoline	Robert	Mesabi Trail: Wahlsten Road (CR 26) to Tower	The construction of an approximately 6.5 mile long segment of the Mesabi Trail beginning at the intersection of Wahlsten Road (CR 26) and Benson Road in Embarrass to Tower.	St. Louis & Lake Counties Regional Railroad Authority	\$1,980,000
2022-008	Yoho	Marla	The Missing Link: Gull Lake Trail, Fairview Township	This 3.7-mile portion of the Fairview Township Trail is the missing link that completes the Gull Lake Trail master plan for this recreational amenity in the Brainerd Lakes area.	Fairview Township, Fairview Trail North Portion - Gull Lake Trail	\$2,362,000

ENRTF Request for Proposal (RFP) - FY 2023
Final Proposals Received by Category with Summaries

Proposal ID	Last Name	First Name	Title	Summary	Organization	Funding Total
2022-038	Johnson	Donna	Redhead Mountain Bike Park	The Redhead Mountain Bike Park will add an additional 14 miles of trail and accommodations to Redhead Mountain Bike Trail System at the Minnesota Discovery Center in Chisholm, Minnesota.	Minnesota Discovery Center	\$1,977,000
2022-057	Mularie	Audrey	Local Parks, Trails and Natural Areas Grant Programs	Provide approximately 19 matching grants for local parks, trail, acquisition of natural areas and trails to connect people safely to desirable community locations and regional or state facilities.	MN DNR, Grants Unit	\$4,000,000
2022-088	Knettel	Cliff	St. Louis River Re-Connect	Acquire, preserve and enhance strategic quality natural resources and expand outdoor recreational access to the St. Louis River through additions and connections to state, regional, and local parks and trails.	City of Duluth	\$2,000,000
2022-101	Schulte	Judy	Native Prairie Stewardship and Prairie Bank Easement Acquisition	Native Prairie Bank (NPB) will help landowners conserve native prairie through multiple outreach methods, restoration and enhancement of 470 acres, and protection of 120 acres through conservation easements.	MN DNR, Ecological and Water Resources Division	\$1,520,000
2022-111	Kok	Shelby	Minnesota State Parks and State Trails Acquisitions	Acquire top priority in-holdings within legislatively established boundaries of Minnesota's 75 State Parks and State Recreation Areas and 26 State Trails from willing sellers.	MN DNR, State Parks and Trails Division	\$4,250,000
2022-127	Fralich	Lana	Silver Bay Multi-Modal Trailhead Project	Development of a Multi-Modal Trailhead Center that provides ample parking, safe access to non-motorized and motorized trails, a multi-use building with lavatories/showers, picnic/playgrounds, and conveniently located.	City of Silver Bay	\$3,000,000
2022-128	Markle	Jami	Gateway Wildlife Management Area Pilot Project	The Gateway wildlife management area (WMA) pilot project will allow wildlife managers to acquire and design inclusive WMAs with an emphasis on outreach and engagement with new audiences.	MN DNR, Fish and Wildlife Division	\$2,862,000
2022-135	Skaar	Kent	Minnesota State Trails Development	This project proposes to expand recreational opportunities on Minnesota State Trails through the rehabilitation and enhancement of existing state trails and replacement or repair of existing state trail bridges.	MN DNR, State Parks and Trails Division	\$8,300,000
2022-140	Melin	Kaycee	Brookston Campground, Boat Launch and Outdoor Recreational Facility	The City of Brookston will be building a campground, boat launch, and outdoor recreation area on the banks of the St. Louis River in northeastern Minnesota.	City of Brookston	\$925,000
2022-143	See-Benes	Britt	Silver Lake Trail Connection	This project consists of construction of a multi-use trail that will connect to the existing Silver Lake Trail. The trail will begin at Lakeside Park and end at Twelfth Avenue.	City of Virginia	\$1,275,000
2022-144	Geissler	John	Preserving the Avon Hills with Reverse-Bidding Easements	Use the MMAPLE reverse-bid and conservation easement ranking system to permanently protect 650 acres and restore/enhance 400 acres of priority permanently protected lands in the Avon Hills area.	Saint Johns Arboretum and University	\$2,507,000
2022-150	Suonvieri	Corinne	Floodwood Campground Improvement Project	The City of Floodwood will be upgrading their existing campground. Improvements include additional camping sites, a fishing pier, RV dump station, electrical services, river access and park buildings.	City of Floodwood	\$1,600,000

**ENRTF Request for Proposal (RFP) - FY 2023
Final Proposals Received by Category with Summaries**

Proposal ID	Last Name	First Name	Title	Summary	Organization	Funding Total
2022-158	Roske	Molly	SNA Habitat Restoration, Public Engagement, and Protection	Scientific and Natural Area (SNA) habitat restoration/enhancement (800+ acres), increased public involvement, and strategic acquisition (100+ acres) will conserve Minnesota's most unique and rare resources for everyone's benefit.	MN DNR, Ecological and Water Resources Division	\$3,110,000
2022-165	Gautreaux	Sherril	Ranier Safe Harbor/Transient Dock Phase 2	The City of Ranier will be constructing a safe harbor/transient dock on Rainey Lake to accommodate watercraft of all sizes.	City of Ranier	\$2,100,000
2022-170	Langowski	Harold	Prospector ATV Trails	The City of Ely and the Prospector ATV Club will be upgrading several sections of their trail system and extending the trails to connect to regional trails.	City of Ely	\$1,851,000
2022-183	Simonson	Ryan	Paul M. Thiede Fire Tower Park Acquisition	Acquire private land surrounding a historic fire tower to protect and provide a buffer to the tower itself while creating interpretive walking trails on the newly acquired property.	Crow Wing County	\$405,000
2022-195	Terrill	Tim	Whiskey Creek & Mississippi River Water Quality/Habitat/Recreation 2	Project will acquire 13.8 acres and construct water quality, habitat, and recreational improvements to protect the Mississippi River from contaminants in the 400-acre, highly impervious watershed in Baxter Minnesota.	Mississippi Headwaters Board	\$500,000
2022-222	Yavarow	Matthew	Perham to Pelican Rapids Regional Trail (West Segment)	Construction of the West Segment (6.83 miles) of the 32-mile Perham to Pelican Rapids Regional Trail that will connect the City of Pelican Rapids to Maplewood State Park.	Otter Tail County	\$2,836,000
2022-253	Jacobson	Jeff	City of Biwabik Recreation Area	Reconstruction & renovation of amenities and multi-modal pathways to, and within, the Biwabik Recreation Area which consists of the city campground, beach, boat access, fishing pier, and walking/biking trails.	City of Biwabik	\$1,414,000
2022-262	Arvidson	Adam	Above the Falls Regional Park Acquisition and Restoration	This project would acquire 3.25 acres of industrial land along the Mississippi River within the Above the Falls Regional Park.	Minneapolis Parks and Recreation Board	\$950,000
2022-263	Forbes	DJ	Turning Back to Rivers: Environmental and Recreation Protection	This project will help communities acquire priority land along the Mississippi, St. Croix, and Minnesota Rivers, and their tributaries, protecting the environment and water quality while creating much-needed recreational opportunities.	The Trust for Public Land	\$3,804,000
2022-276	Monson	Kjersti	Early Enhancements: Upper St. Anthony Falls Lock	Acquire, preserve, and improve land on the Central Riverfront in Minneapolis abutting the Upper Lock (but not the Lock structure itself) for recreation, conservation, natural restoration, and education.	Friends of the Lock and Dam	\$2,800,000
2022-292	Welle	Ron	Brooten Land Acquisition	We would maintain what has been done so beautifully already but may add some ponds to attract more ducks-geese etc.	Midwest Outdoors Unlimited	\$950,000
Subtotal						\$59,278,000
G. Land Acquisition, Habitat, and Recreation						
H. Small Projects (3 Proposals / \$460,000)						

**ENRTF Request for Proposal (RFP) - FY 2023
Final Proposals Received by Category with Summaries**

Proposal ID	Last Name	First Name	Title	Summary	Organization	Funding Total
2022-027	Otremba	Bob	Pierz Park and Campground Expansion Project	Purchase land adjacent to city owned park and campground for the purpose of expansion. Create a master park plan to serve as more regional park, campground and trail system.	City of Pierz	\$200,000
2022-041	Engebritson	Reggie	Environmental Learning Classroom with Trails	We will build an outdoor classroom and an additional 2.5+ miles of accessible trails, including a foot bridge connecting the School Forest Trail System.	Independent School District #712, Mountain Iron Buhl Public Schools	\$82,000
2022-074	Langowski	Harold	Pioneer Mine Site Restoration/Trezona Trail Preservation	This project seeks funding to repair the Pioneer Mine Retaining Wall to protect the popular Trezona Trail, Miners Lake access and structures at the Pioneer Mine site.	City of Ely	\$178,000
					Subtotal	\$460,000
I. Administration (1 Proposal / \$210,000)						
2022-121	Sherman-Hoehn	Katherine	ML 2022 Contract Agreement Reimbursement	Provide contract management to ENRTF pass-through appropriation recipients for approximately 70 open grants. Ensure funds are expended in compliance with appropriation law, state statute, grants policies, and approved work plans.	MN DNR, Grants Unit	\$210,000
					Subtotal	\$210,000
					Total	\$178,176,000